

Open Monitor Suspensions

Service Instruction for Installation



Revision History

Date	Part Number / Rev	Change Description
Feb 19, 2009	5335951-1-1EN rev 1	Initial release
July 23, 2009	5335951-2-1EN rev 1	Initial release of 5335951-2-1EN. The previous release was 5335951-1-1EN.

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。
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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. Zanemarite 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 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)	<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)	<p>This service manual is available in English only.</p> <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)	<p>See teenindusjuhend on saadaval ainult inglise keeles</p> <ul style="list-style-type: none"> • 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)	<p>Tämä huolto-ohje on saatavilla vain englanniksi.</p> <ul style="list-style-type: none"> • 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)	<p>Ce manuel d'installation et de maintenance est disponible uniquement en anglais.</p> <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)	<p>Diese Serviceanleitung existiert nur in englischer Sprache.</p> <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)	<p>Το παρόν εγχειρίδιο σέρβις διατίθεται μόνο στα αγγλικά.</p> <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)	<p>Ezen karbantartási kézikönyv kizárólag angol nyelven érhető el.</p> <ul style="list-style-type: none"> • Ha a vevő szolgáltatója angoltól eltérő nyelvre tart igényt, akkor a vevő felelőssége a fordítás elkészíttetése. • 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)

Þessi þjónustuhandbók er aðeins fánleg á ensku.

- 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)

Il presente manuale di manutenzione è disponibile soltanto in lingua inglese.

- Se un addetto alla manutenzione richiede il manuale in una lingua diversa, il cliente è tenuto a provvedere direttamente alla traduzione.
- Procedere alla manutenzione dell'apparecchiatura solo dopo aver consultato il presente manuale ed averne compreso il contenuto.
- Il mancato rispetto della presente avvertenza potrebbe causare lesioni all'addetto alla manutenzione, all'operatore o ai pazienti provocate da scosse elettriche, urti meccanici o altri rischi.

警告
(JA)

このサービスマニュアルには英語版しかありません。

- サービスを担当される業者が英語以外の言語を要求される場合、翻訳作業はその業者の責任で行うものとさせていただきます。
- このサービスマニュアルを熟読し理解せずに、装置のサービスを行わないでください。
- この警告に従わない場合、サービスを担当される方、操作員あるいは患者 さんが、感電や機械的又はその他の危険により負傷する可能性があります。

경고
(KO)

본 서비스 매뉴얼은 영어로만 이용하실 수 있습니다.

- 고객의 서비스 제공자가 영어 이외의 언어를 요구할 경우, 번역 서비스를 제공하는 것은 고객의 책임입니다.
- 본 서비스 매뉴얼을 참조하여 숙지하지 않은 이상 해당 장비를 수리하려고 시도하지 마십시오.
- 본 경고 사항에 유의하지 않으면 전기 쇼크, 기계적 위험, 또는 기타 위험으로 인해 서비스 제공자, 사용자 또는 환자에게 부상을 입힐 수 있습니다.

BRĪDINĀJUMS
(LV)

Šī apkopes rokasgrāmata ir pieejama tikai angļu valodā.

- Ja klienta apkopes sniedzējam nepieciešama informācija citā valodā, klienta pienākums ir nodrošināt tulkojumu.
- Neveiciet aprīkojuma apkopi bez apkopes rokasgrāmatas izlasīšanas un saprašanas.
- Šī brīdinājuma neievērošanas rezultātā var rasties elektriskās strāvas trieciena, mehānisku vai citu faktoru izraisītu traumu risks apkopes sniedzējam, operatoram vai pacientam.

ĮSPĖJIMAS
(LT)

Šis eksploatavimo vadovas yra tik anglų kalba.

- Jei kliento paslaugų tiekėjas reikalauja vadovo kita kalba – ne anglų, suteikti vertimo paslaugas privalo klientas.
- Nemėginkite atlikti įrangos techninės priežiūros, jei neperskaitėte ar nesupratote šio eksploatavimo vadovo.
- Jei nepaisysite šio įspėjimo, galimi paslaugų tiekėjo, operatoriaus ar paciento sužalojimai dėl elektros šoko, mechaninių ar kitų pavojų.

ADVARSEL
(NO)

Denne servicehåndboken finnes bare på engelsk.

- Hvis kundens serviceleverandør har bruk for et annet språk, er det kundens ansvar å sørge for oversettelse.
- Ikke forsøk å reparere utstyret uten at denne servicehåndboken er lest og forstått.
- Manglende hensyn til denne advarselen kan føre til at serviceleverandøren, operatøren eller pasienten skades på grunn av elektrisk støt, mekaniske eller andre farer.

OSTRZEŻENIE
(PL)

Niniejszy podręcznik serwisowy dostępny jest jedynie w języku angielskim.

- Jeśli serwisant klienta wymaga języka innego niż angielski, zapewnienie usługi tłumaczenia jest obowiązkiem klienta.
- Nie próbować serwisować urządzenia bez zapoznania się z niniejszym podręcznikiem serwisowym i zrozumienia go.
- Niezastosowanie się do tego ostrzeżenia może doprowadzić do obrażeń serwisanta, operatora lub pacjenta w wyniku porażenia prądem elektrycznym, zagrożenia mechanicznego bądź innego.

AVISO (PT-BR)	<p>Este manual de assistência técnica encontra-se disponível unicamente em inglês.</p> <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)	<p>Este manual de assistência técnica só se encontra disponível em inglês.</p> <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)	<p>Acest manual de service este disponibil doar în limba engleză.</p> <ul style="list-style-type: none"> • 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 acestui avertisment ar putea duce la rănirea depanatorului, operatorului sau pacientului în urma pericolelor de electrocutare, mecanice sau de altă natură.
ОСТОРОЖНО! (RU)	<p>Данное руководство по техническому обслуживанию представлено только на английском языке.</p> <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)	<p>Ovo servisno uputstvo je dostupno samo na engleskom jeziku.</p> <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. • Zanimanje ovog upozorenja može dovesti do povređivanja serviser, rukovaoca ili pacijenta usled strujnog udara ili mehaničkih i drugih opasnosti.
UPOZORNENIE (SK)	<p>Tento návod na obsluhu je k dispozícii len v angličtine.</p> <ul style="list-style-type: none"> • 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)	<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)

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.

DİKKAT
(TR)

Bu servis kılavuzunun sadece ingilizcesi mevcuttur.

- Eğer müşteri teknisyeni bu kılavuzu İngilizce 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.

Table of contents

1	Introduction.....	11
2	Regulatory Requirements.....	11
3	Pre-Installation Instructions	12
3.1	GE Delivery Parts.....	12
3.2	Overview of GE Innova System delivered without suspension	12
3.3	Limitations	13
3.4	Room Layout.....	13
3.5	Mounting Specifications for Diamantor and IR Receiver Modules	17
4	Specifications of GE material	18
4.1	Specifications of GE Monitors interfaces (in exam-room).....	18
4.1.1	Mechanical characteristics (available for B&W and Color monitors)	18
4.1.2	Connections:.....	20
4.2	Specifications of GE Innova System Outputs (For B&W and Color display)	25
4.2.1	Outputs of C1 cabinet.....	26
4.2.2	VGA outputs.....	30
4.3	Particular requirements for customer.....	31
4.3.1	Specific requirements for a 3rd party monitor(s) suspension(s).....	31
4.3.2	Configuration with Interconnection Box	32
4.3.3	Specific requirements for a 3rd party monitor(s) suspension(s) cables.....	32
5	Installation and Power ON.....	35
5.1	Mechanical Install	35
5.2	System Install and Interconnection.....	35
5.3	Inspec Procedures	35
5.4	Additional Verification Procedure.....	36
6	Spares parts	39

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1 Introduction

The Open Monitor Suspension GE option consists of the delivery of an Innova System without the standard fully integrated Mavig overhead suspension which includes the associated rails and cables.

Whereas the system is still delivered with up to 6 GE monitors for **Exam Room** display, the customer is then authorized to install its own suspension (non-GE suspension) assuming GE requirements and recommendations described in this document are followed.

All display features-available in **Exam Room** (Live, Road Map, Simultaneous Display, AW, IVUS, ECG) are the same as for an Innova system usually delivered with the Mavig monitors suspension.

The GEHC 19" monitors (EIZO SMD19100G) is the only configuration authorized to be used with an Innova System.

Notes:

- The Open Monitor Suspension option does not modify the display usually delivered by GE in the **Control Room**.
- This addendum is to be considered in addition to Innova Service Manual and Pre Installation Manual (PIM). Service Manual is applicable for this option excepted the Sections in Service Manual related to the Mavig suspension normally delivered with the Innova 2100/3100/4100 System.

2 Regulatory Requirements

For Innova 2100-IQ /3100-IQ, 4100-IQ product with Open Monitors Suspension Option, the overhead monitor suspension shall be installed by strictly following the GEMS installation instructions. The manufacturer specifically disclaims any and all liability arising out of or relating to the use or performance of the monitor suspension (including cables), including, without limitation, any liability or claims relating to patient injury, death, or the reliability of such monitors suspension(s).

Where a stand-alone monitor suspension(s) is supplied by the Purchaser of the Innova System, the stand-alone monitors suspension(s) shall comply with the applicable Regulation enforced in the country (eg., when installed in an European Community country, the associated monitors suspension(s) shall be CE marked)."

The association of Innova product delivered with Open Suspension Option and the purchaser's (customer) monitors suspension(s), is not covered by Innova product certification.

3 Pre-Installation Instructions

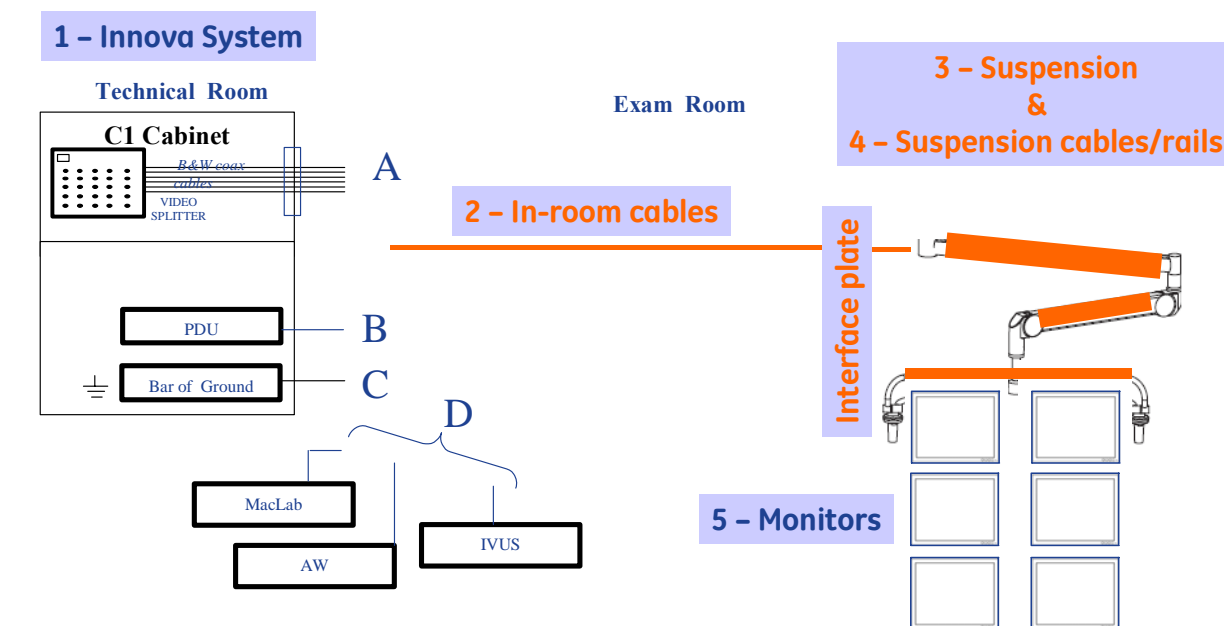
3.1 GE Delivery Parts

Parts delivered with open monitor suspension option:

Only GEHC 19" monitors can be provided (6 max) for this option

- Up to 3 B&W GEHC 19" monitors
EIZO SMD19100G w/o stand 5148720-3
- Up to 3 color GEHC monitors
EIZO SMD19100G w/o stand 5148721-3

3.2 Overview of GE Innova System delivered without suspension



1 – Innova Cabinet

2 – In-room cables/interface plate

3 – Suspension

4 – Suspension cables

5 – Monitors

InRoom Infrared Remote Control

Diamantor (option)

PROVIDER

GEHC

3rd part monitors suspension(s)

3rd part monitors suspension(s)

3rd part monitors suspension(s)

GEHC

GEHC

GEHC

3.3 Limitations

The Innova System delivered with the Open Monitor Suspension option cannot presume on the mechanical constraints of non-GE monitor(s) suspension(s) introduced in the system.

As a consequence:

- Refer to the Diamantor Dose Monitoring Display SM for installation.
- InRoom Infrared Remote Control options cannot be installed as described in IST0020 of Mechanical Installation Flow of the GE Service Manual. Refer to section 2.x of this Chapter for mounting specifications.

Note:

- Diamantor option is delivered with cables that shall be used for interconnection of the Display module.
- InRoom Infrared Remote Control cable is not delivered with the Innova System.
Refer to specifications and requirements concerning this cable given in Chap 3.3.2.5.

3.4 Room Layout

For the installation of the 3rd party monitors suspension(s) to support the GE monitors, it is the customer's responsibility to ensure that:

- The 3rd party monitors suspension(s) and its cables shall be installed prior the GE equipment (gantry, table, cabinet) to ensure standard GE Service Process can be followed during system install
- Whatever the configuration of the installation, the ceiling monitors suspension(s) must be fixed and disposed as such that they can never fall on patients.
Note: the monitors suspension(s) installed by the 3rd party will be attached to the ceiling so that they withstand up to 4 times the nominal load of the monitors fixed on it (them)
- Suspension Vendor must take care of any other equipment mounted on the ceiling and that could interfere with its suspension.
- It is recommended that the vendor contact GE Service Representative and review the site planning details before the suspension is installed.
- The monitors suspension(s) must be positioned in such a manner that it never collides with the gantry (see Illustration 2 and Illustration 3) or the table (see Illustration 4).

- In order to avoid people getting caught between the suspension and the gantry/table:
There shall be an entrapment of 50 cm between the Innova gantry/table and the fixed stationary part of the monitor suspension. A moving /articulated arm of the suspension is acceptable in that area provided that the suspension and its monitors will escape if pushed by normal human effort. See Illustration on the Illustration 1.
- Refer to the PIM Innova Service Documentation to identify all Environmental Constraints that need to be respected.

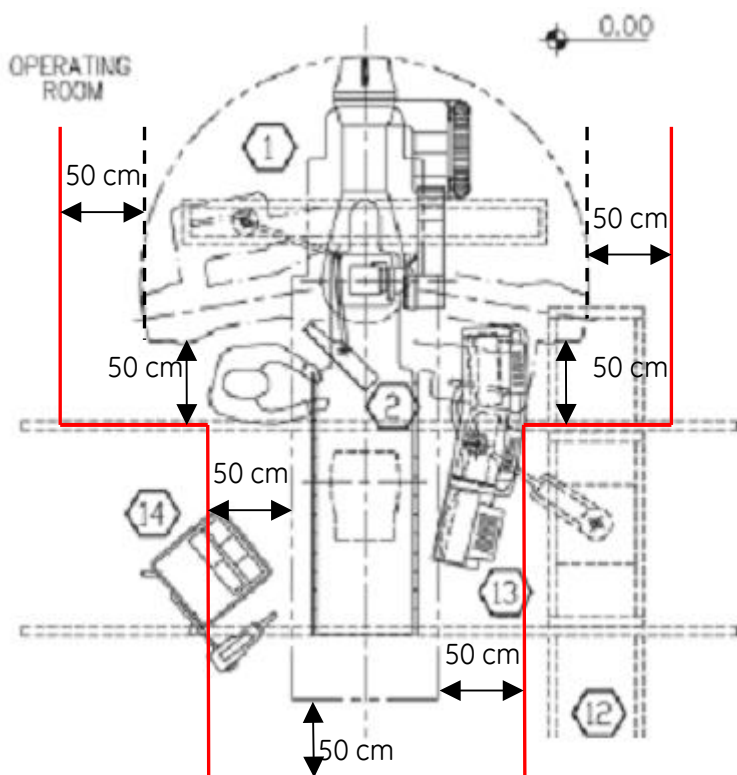
Illustration 1

Illustration 2

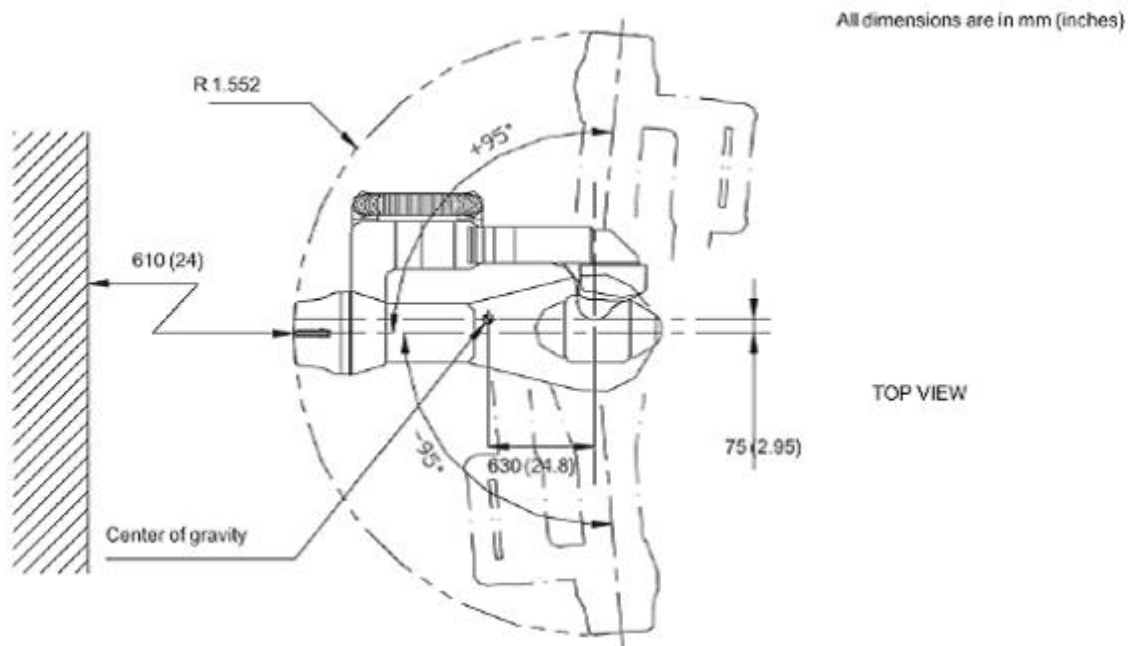


Illustration 3

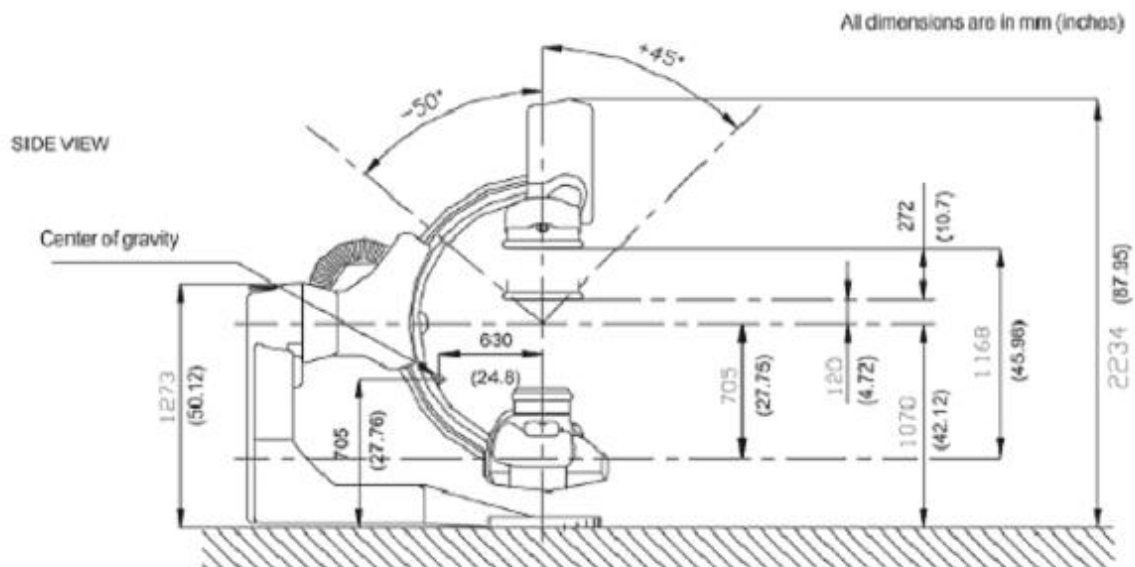
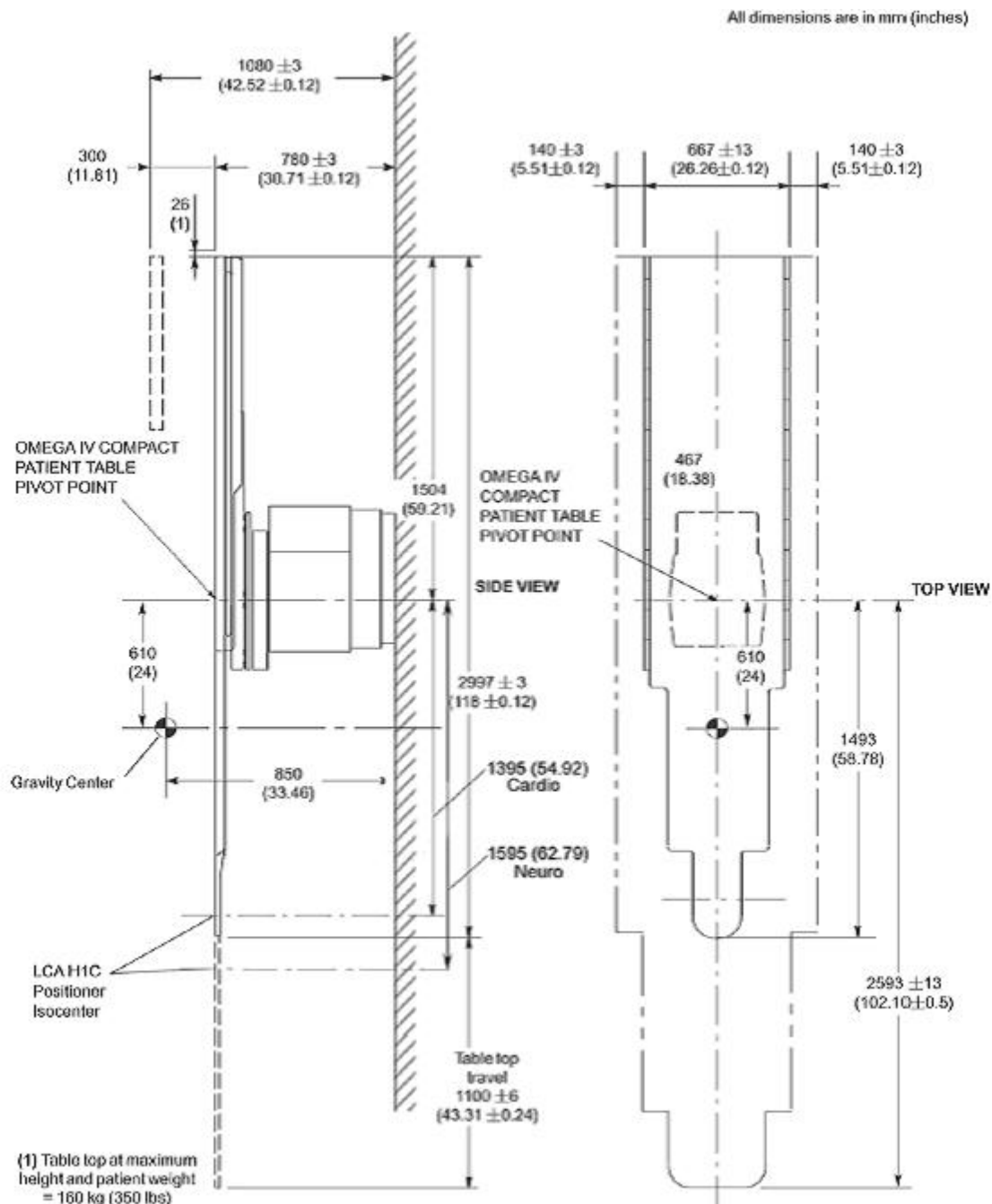


Illustration 4



3.5 Mounting Specifications for Diamantor and IR Receiver Modules

The following characteristics shall be taken in account if the Diamantor Display module or the IR Receiver module is to be mounted on the suspension:

Diamantor Display module:

- **Weight:** 1.0 Kg (+/- 0.1 Kg)
- **Dimensions** (W x H x D): 210 mm x 146 mm x 58 mm (+/-1 mm)

IR Receiver module:

- **Weight:** 0.2 Kg (+/- 0.1 Kg)
- **Dimensions** (W x H x D): 112 mm x 31 mm x 76 mm (+/-1 mm)

If installed on the 3rd part monitors suspension(s), the IR Receiver shall be fixed with self-adhesive Velcro tape (male and female, size: 50 mm x 200 mm).

One bracket has to be available for Velcro tape installation. The infrared remote control receiver should be installed above the LCD monitors with the front surface tilted downwards as 15 °degrees as a default fixing position.

4 Specifications of GE material

This paragraph is applicable to GE monitors that will be installed in the exam-room on the 3rd party monitors suspension(s).

4.1 Specifications of GE Monitors interfaces (in exam-room)

Service Manual of Black&White and color monitors is provided with Innova System.

4.1.1 Mechanical characteristics (available for B&W and Color monitors)

- Monitors weight and dimensions
Refer to Service Manual of monitors paragraphs 7.6.

Monitors weight

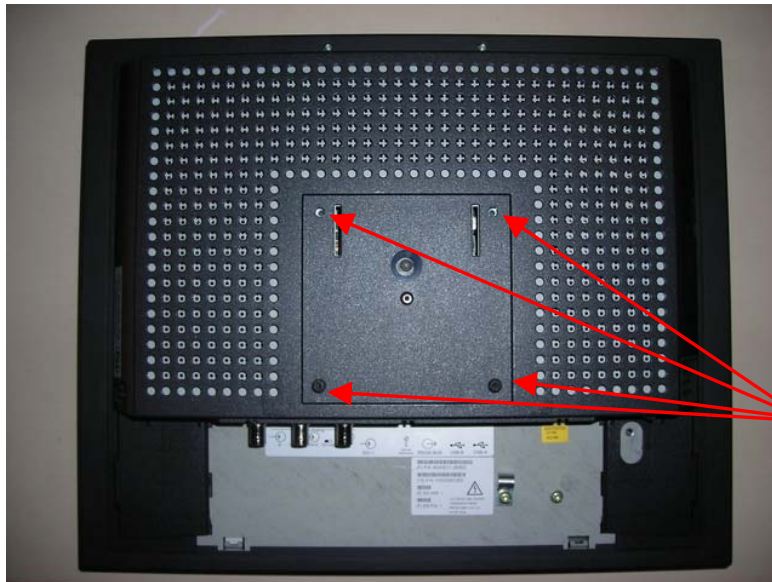
Display without stand	6.3 Kg (-0.3 Kg)
-----------------------	------------------

Dimensions (W x H x D) in mm

Display without stand	422.5 mm x 348.5 mm x 95 mm
-----------------------	-----------------------------

- Mounting of the monitors

Refer to Service Manual of monitors paragraphs 9.1.



4 x M4 for 100 mm x 100 mm
(Max depth of insertion: 10 mm)

For mounting instructions (standard VESA mounting), refer to paragraphs 3.4 of the monitors Service Manual.

- Position of sockets and switches

Refer to Service Manual of monitors paragraphs 3.3.1



Power switch

Grounding screw

Grounding clamp

4.1.2 Connections:

Refer to Service Manual of monitors paragraphs 3.3.

4.1.2.1 Monitor Power Supply Connection (available for B&W and Color monitors):

Refer to Service Manual of monitors paragraphs 3.3.5 for power supply connection description.

Power supply characteristics:

- Mains voltage: 100 to 240 Volts
- Fine-wire fuse 2 x 3.5 A, quick-blow
- Main Frequency 50 to 60 Hz
- Power consumption < 58 W



Power Supply
Connection



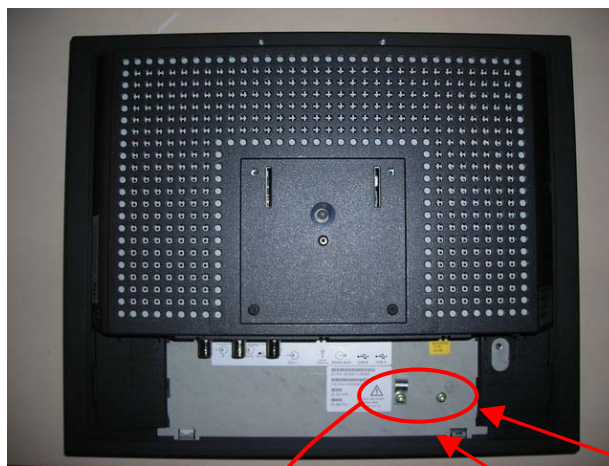
ONLY USE A CABLE WITH PE CONDUCTOR AND APPLIANCE SOCKET TO DIN 49 547, IEC 320.

4.1.2.2 Monitor Ground Connection

- B&W Monitor

Each B&W monitor is equipped with a screw for monitor grounding and a clamp for video cable shield grounding.

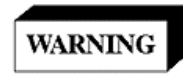
Refer to Service Manual of monitors paragraphs 3.3.1.



Grounding screw

Grounding clamp





EACH B&W MONITOR SHALL BE GROUNDED WITH ADDITIONAL PROTECTIVE EARTH CABLE.



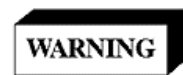
THE SHIELD OF EACH VIDEO COAX CABLE SHALL BE GROUNDED BY USING THE GROUNDING CLAMP.

- Color Monitor

Each B&W monitor is equipped with a screw for monitor grounding.



Grounding screw



EACH COLOR MONITOR SHALL BE GROUNDED WITH ADDITIONAL PROTECTIVE EARTH CABLE.

4.1.2.3 Display Connection

- B&W Monitors



BNC input for B&W video display

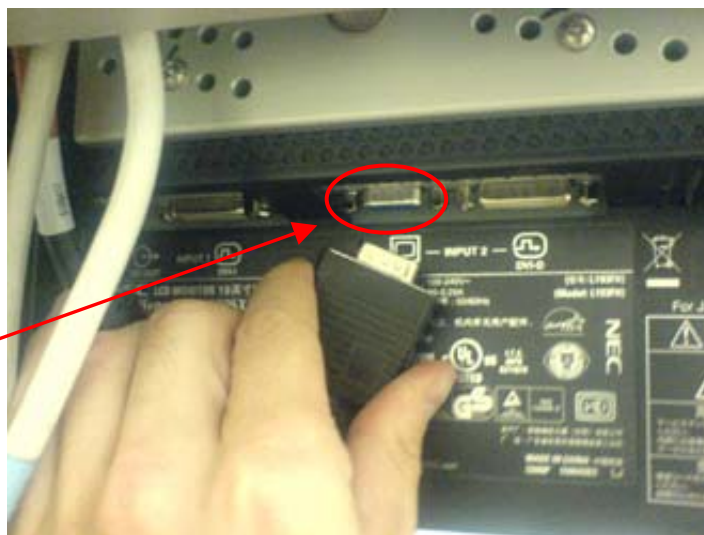
Push the SW1 and SW2 switches in order to select the 75 Ohms position.

Refer to Service Manual of monitors paragraphs 3.3.4 for DIP switches position.

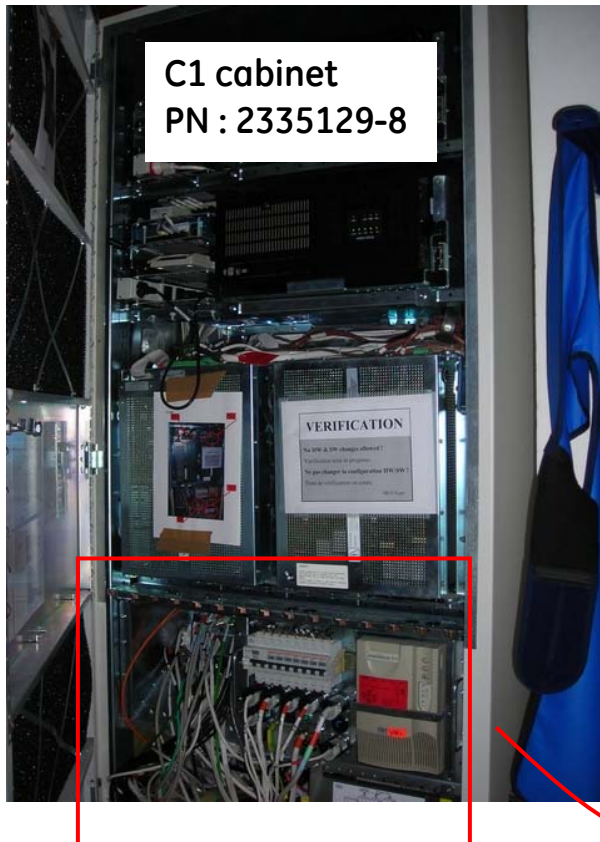


- Color Monitor

15 pin VGA socket



4.2 Specifications of GE Innova System Outputs (For B&W and Color display)

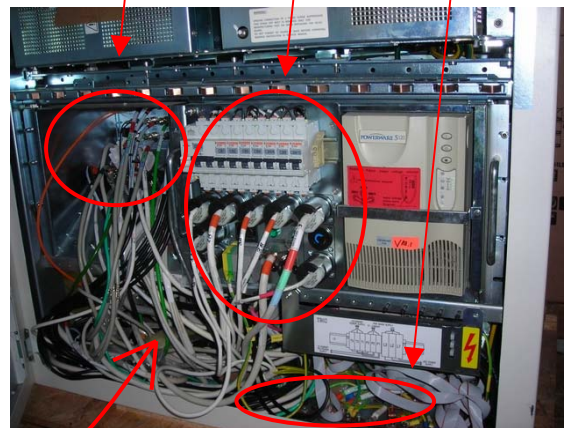


Overview of C1 cabinet

B&W video Bulkhead

Power Distribution Unit

Bar of Ground



4.2.1 Outputs of C1 cabinet

4.2.1.1 Power connection for GE monitors in exam-room

The system is delivering the power to supply up to 6 GEHC 19" monitors (maximum). The power plug output for in-room monitors is J9 located on PDU of C1 cabinet.



J9 = Power output for GE monitors

Output J9 characteristics:

Voltage: 230 VAC –25% +15% RMS

Output J9 is protected in his line circuit by a 10 A single pole IEC or UL approved for 250 VAC circuit protection devices. Trip curve on this breaker is designed for transformer or motor loads.

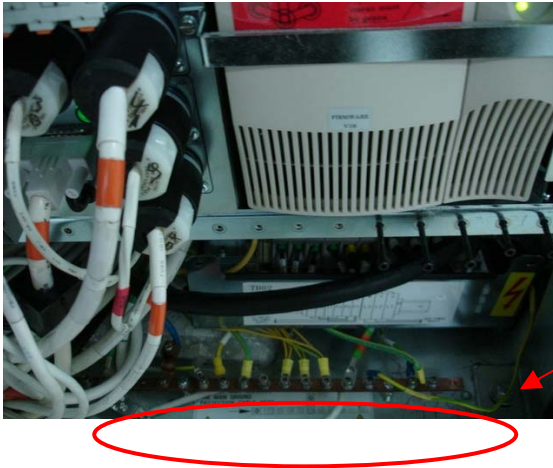
WARNING

J9 SHALL ONLY BE CONNECTED TO SUPPLY MONITORS DELIVERED WITH INNOVA PRODUCT AND INSTALLED ON THE 3RD PARTY MONITORS SUSPENSION(S). A MAXIMUM OF 6 MONITORS IS TO BE CONNECTED TO J9. ONLY J9 SHALL BE USED AS POWER SUPPLY.

The interconnect for output power is Hubble 4563A type L6-15R, twist lock

4.2.1.2 Ground connection for monitors

The system is delivering a ground connection for monitors. This ground connection is available on the bar of ground (part5197356), located in C1 cabinet.



Overview of the C1 Cabinet bar of ground



ONLY THIS BAR OF GROUND SHALL BE USED FOR MONITORS GROUNDING.

4.2.1.3 Video outputs for B&W monitors in exam-room

The system is delivering 3 video outputs for B&W monitors, located on the Bulkhead A of C1 cabinet. These 3 video displays consist of:

- 1 Live output
- 1 Reference output
- 1 Simultaneous output

Live output

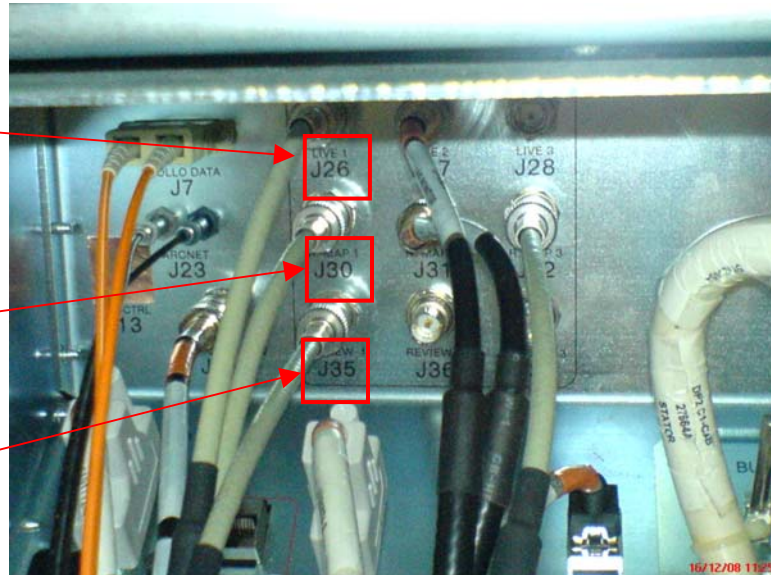
Reference output

Or

Sub/NoSub Simultaneous Display if
2nd Barco option installed

Reference output

when 2nd Barco option installed
which option

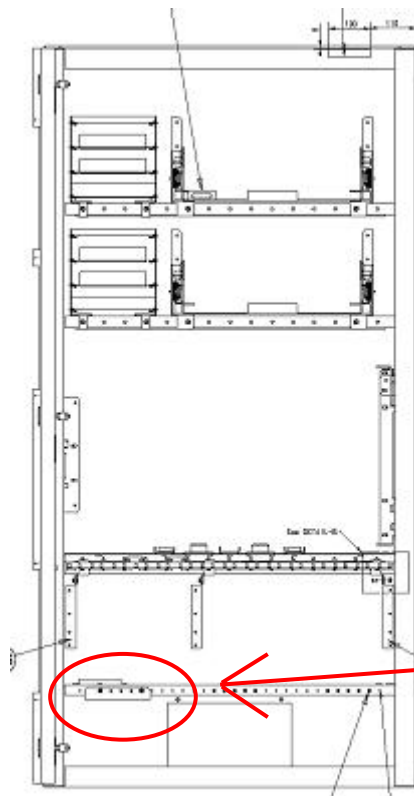
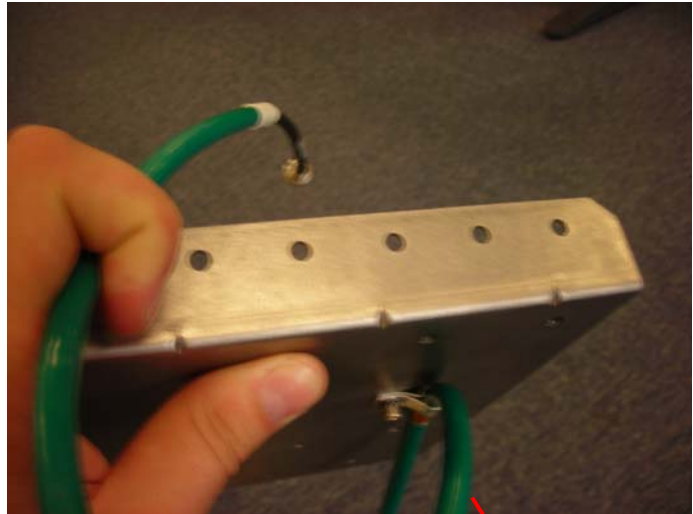


Overview of the B&W video bulkhead

4.2.1.4 Grounding of shield of video cables for B&W monitors

WARNING

THE SHIELD OF THE EACH VIDEO COAX CABLE SHALL BE GROUNDED TO THE C1 CABINET BULKHEAD.



Shielding of coax cables on the Bulkhead

Shielding of coax cable is given for example

GE C1 Cabinet

Overview of the Bulkhead for video coax cables in C1 cabinet

4.2.2 VGA outputs

In case of the use of optional **color** monitors (AW2 display, IVUS, cardio lab...), standards VGA outputs 15 pin HD Female connector are available.

The specifications of the VGA video switcher output are given below for example:



AW2 outputs for in-room display

Overview of the VGA video switcher

Connectot Type : 15-Pin HD Female		Video: Analog		Sync: TTL			
	PIN#	Function	PIN#	Function	PIN#	Function	
	1	Red signal	7	Green Ground	13	Horizontal Sync	
	2	Green signal	8	Blue Ground	14	Vertical Sync	
	3	Blue signal	10	Ground	15	ID Bit 3 (XGA2 Only)	
	4	ID Bit 2	11	ID Bit 0			
	6	Red Ground	12	ID Bit 1			

4.3 Particular requirements for customer

4.3.1 Specific requirements for a 3rd party monitor(s) suspension(s)

- Any monitors suspension(s) introduced in the GE Innova system shall be grounded. The center of the ground connection shall be the bar of ground of the C1 Cabinet.
- Only one ground cable shall be connected on the bar of ground of the C1 cabinet.
- All accessible conductive part (eg. monitor suspension) introduced in the GE Innova system shall be grounded.
- For the use of an Electro Cardiograph, or 3rd party system display:
 - The display monitor(s) shall not be powered by the Innova system.
A specific label shall be added to remind the potential presence of power supply (need to be located at any location where Field engineer may need to access for servicing the equipment). Refer to Annex 1 for the drawing and material specification.
 - For the ECG display monitor, the label shall be manufactured as defined in the PSP 5265264 (refer to Annex 1) and visible when the ECG cable is connected to the monitor.
- For the use/installation of any monitors suspension(s):
 - The force applied by the monitors suspension(s) on the patient shall not exceed 70 N in static in the vertical axis (to avoid patient jammed between table and monitor/monitor suspension)
- Ground stud shall not be put on an insulated surface such as anodized or painted ones and shall be mark with the protective earth connection symbol (IEC 60417-5019 symbol).
- Attention is drawn to verify and ensure that there is not potential cable pinch and sharp edge when routing the cable in the monitor suspension.

Refer to Section 3.4 - Room Layout for particular requirements concerning the installation of any monitors suspension(s).

4.3.2 Configuration with Interconnection Box

In the case an Interconnection box needs to be used between the C1 Cabinet and the Suspension itself (this mainly depends on suspension internal cabling), the following recommendations shall be followed:

- The cable shielding continuity shall be maintained
- The same type of connectors & cables shall be used
- The maximum length between C1 Cabinet and Monitor shall not exceed 30 m
- Protection against live part shall to be added
- A warning sticker of potential power presence shall be added
- A protective earth marking shall be added

4.3.3 Specific requirements for a 3rd party monitor(s) suspension(s) cables

The following requirements are given to the customer for the use of additional cables (not provided by GE) for interconnection between the Innova System and the GE monitors in exam-room.

All the cables length between the Innova system and the additional monitors shall not exceed 30 meters
Coax and VGA cables will be preferably one-piece cables

4.3.3.1 Requirements for Video coax cables

- All coax cables shall be **RG59U** / KX-6 type, AWG24, UL 1007 style, double shielded
- Connectors mounted on this cable shall be BNC 75 Ohms (ref 221185-9 AMP/TYCO or equivalent)

GE PSP 5161232 provided in Annex 2 of this document is the cable specification of the cable.

Only this type of cable will warranty the Image quality performances and EMC compliance.

4.3.3.2 Requirements for Video color cables

- The video color AW cables shall be: Low voltage computer cable – 15P Male UL style 2919 – VW-1
- The Connectors mounted on this cable shall be: VGA HD15 Male

GE PSP 5161236 provided in Annex 3 of this document is the detailed specification of the cable.

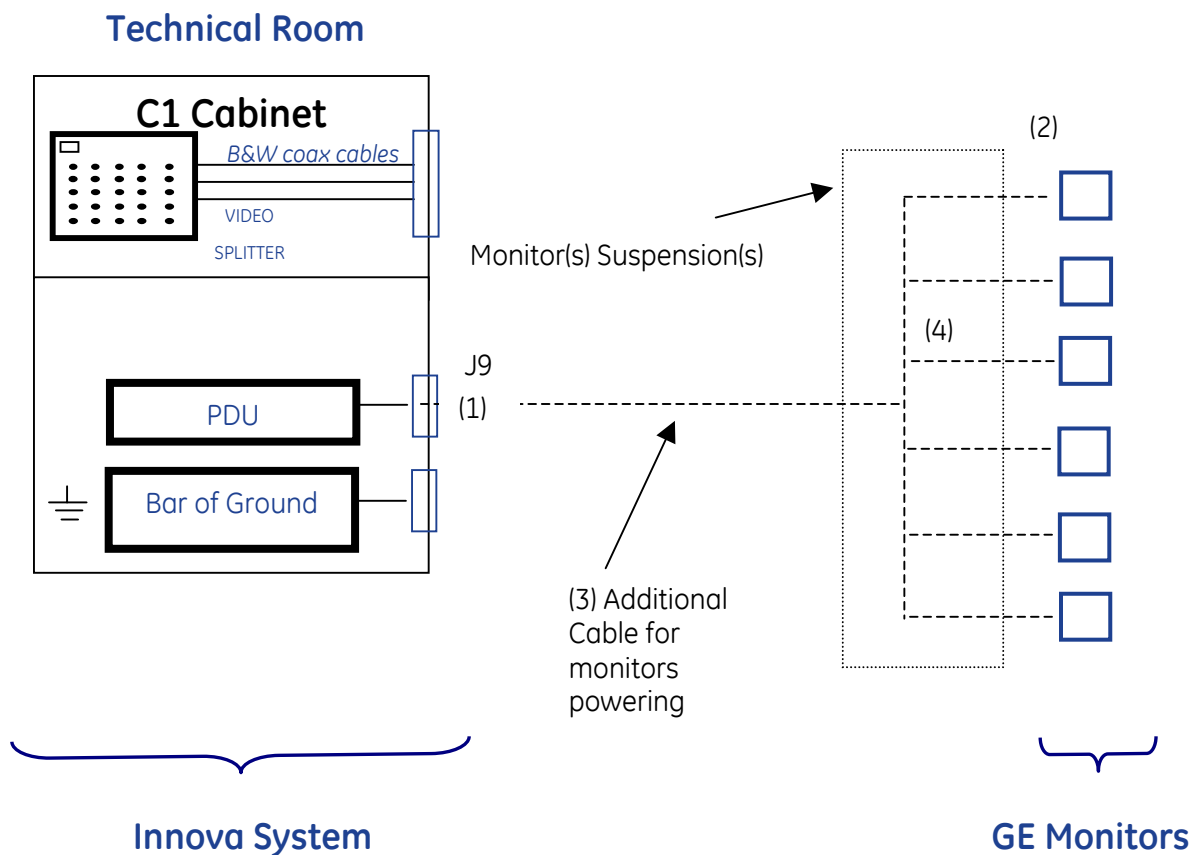
4.3.3.3 Requirements for Monitors Power supply cables

The following requirements shall be respected for the Monitors power supply cables / power distribution:

- The connector (1) for Monitors power supply that will be connected to J9 on the PDU of C1 cabinet shall be: HUBELL Twist Lock HBL4570C
- The connector (2) for Monitors power supply on monitor's shall be: Plug Male Shurter Prise-sect-M02 ref 4784 0000
- The power cable (3) connected to J9 and the power cables (4) powering the 6 additional monitors shall be 1 cable (N, Live, PE) with 3 wires 2.5 mm² (UL) VW-1 CSA SJT 60C FT1
- The line cord shall be secured with screw on bulkhead terminal

GE PSP 5161019 provided in Annex 4 of this document is the detailed specification of the cable.

This schematic is describing the power distribution:



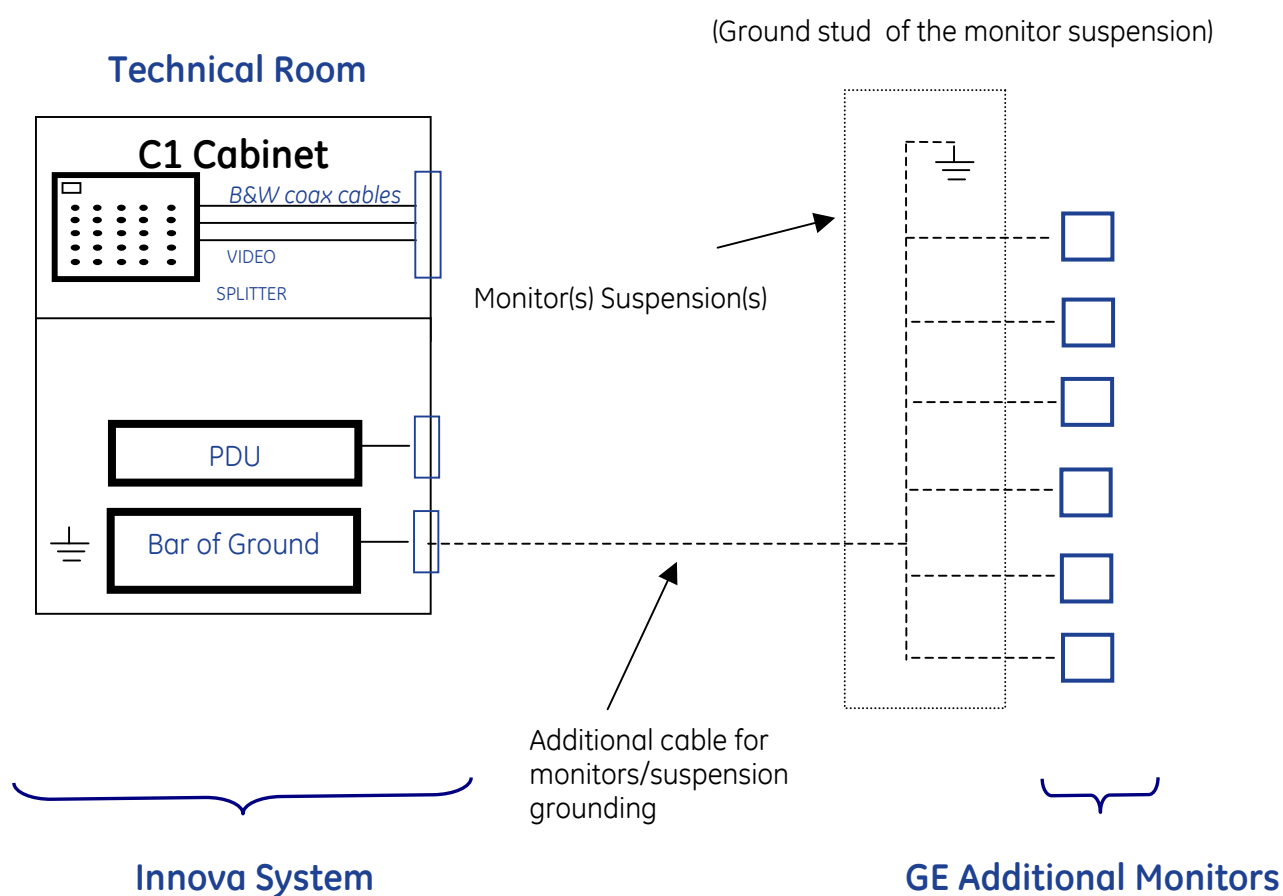
4.3.3.4 Requirements for Monitors/Suspension Ground cables

The following requirements shall be respected for the Monitors/Suspension grounding:

- The ground cable providing from C1 cabinet shall be Yellow/Green AWG10-6 mm² UL1015 105°C 600 V
- The connectors on both sides of the ground cable shall be an insulated terminal plug D5mm for 6-mm² wire.

GE PSP 5161020 provided in Annex 5 of this document is the detailed specification of the cable.

This schematic is describing the grounding:



4.3.3.5 Requirements for IR Remote Receiver cable

These requirements are given in the case of the use of the in-room InfraRed Remote Control option.

- The I/R cable shall be 2x2 wires AWG22, UL style 2103
- Connector on I/R receiver side is sub-D female, 9 terminals, metallic cover, 4 female terminals, gold plated
- Connector on GE Cabinet I/R receiver side is sub-D male, 9 terminals, metallic cover, 4 male terminals, gold plated
- The I/R Remote Receiver cable shall have the following pin out:

C1 Cabinet side	I/R Receiver side
pin 1	pin 6
pin 2	pin 4
pin 6	pin 5
pin 7	pin 3

GE PSP5161018 of this cable is provided in Annex 6 of this document.

5 Installation and Power ON

5.1 Mechanical Install

- The mechanical installation of the non-GE suspension is fully under customer's responsibility.

5.2 System Install and Interconnection

- To allow a normal system installation of the GE equipment, the non-GE suspension must comply with all GE requirements and recommendations provided in this document.
- It is strongly recommended that connection of the non-GE suspension cables to the GE equipment be made in presence of a GE Service Representative.

5.3 Inspec Procedures

GE Inspec Procedure will be executed when complete system install including non-GE parts will be done.

All mechanical and functional checks related to the 3rd party monitors suspension(s) itself will not be executed as it is customer's responsibility to ensure this equipment is safe and functional.

However, to ensure a safe association of the external suspension with the Innova system, it is required to perform Leakage Current measurement as defined in section 5.4.



FOR LOGOUT – TAGOUT PROCEDURES: REFER TO THE REG0044 OF THE GE SERVICE MANUAL 5314696-2-2EN.

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

5.4 Additional Verification Procedure

Patient/enclosure Leakage Currents between the GE monitors installed on the 3rd party monitors suspension(s) and components in patient environment shall be measured at the end of the installation.

This procedure is required to complete the safety measures to be done on a full Innova system including the 3rd party Monitor Suspension and that are reported in the Inspec Procedure files.

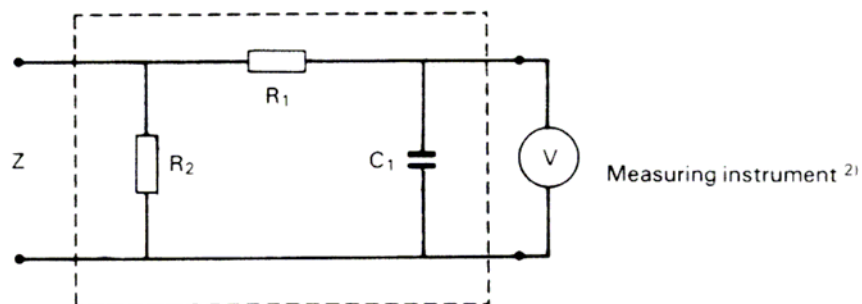
Tools Description

Use a calibrated multimeter and the test box (typical meter circuit also called MD - Illustration 5) described below.

The measuring instrument (voltmeter) is to have an input resistance of at least 1 M Ω and input capacitance of no more than 150 pF. It should indicate the true RMS value of the voltage being DC or AC or a composite waveform having components with frequencies from 0,1 Hz up to and including 1 MHz, with an indicating error not exceeding $\pm 5\%$ of the indicated value.

Set the multimeter in AC position.

Illustration 5 Example of a Measuring Device (MD)



$$\begin{aligned} R_1 &= 10 \text{ k}\Omega \pm 5\%^{1)} \\ R_2 &= 1 \text{ k}\Omega \pm 1\%^{1)} \\ C_1 &= 0.015 \text{ }\mu\text{F} \pm 5\%^{1)} \end{aligned}$$

¹⁾ Non-inductive components

²⁾ Impedance \gg measuring impedance Z

Note:

- Use a calibrated multimeter with 4 digits 400.0 mV RMS AC/DC (e.g. Fluke 87 or equivalent).
- The test box can be a certified IEC60601 MD cell.
- The Dale 601/601E (46-328406G1) from Dale Technology can be used for this measure (or any other equivalent device which measuring circuit conforms to above IEC60601 MD specifications).

Test conditions

The equipment shall be operated in “Normal Condition”.

This means the complete system shall be energized and in fully operating conditions with maximum functions activated.

Practically, it is recommended to move up & down both the table top and the detector lift to ensure the measure will be significant.

Note: it is not requested to make xray during leakage current measurement.

Test Description

Measure with MD between earth and each part of the enclosure(s) of the Monitor Suspension.

Measure with MD between earth and each part of the monitors.

Measure with MD between part of the enclosures that is not protectively earthed and the part listed in the table below (see Test Results paragraph).

Measure the leakage current between GE monitors installed on the 3rd party monitors suspension(s) and environment patient components.

This test shall be done on all monitors installed on the 3rd party monitors suspension(s),

Test Acceptance

Patient Leakage Currents between GE monitors installed on the 3rd party monitors suspension(s) and environment patient components shall not exceed 80 μ A.

Test Results

The tests results for patient leakage current values between GE monitors installed on the 3rd party monitors suspension(s) and environment patient components shall be recorded in the logbook of the Innova system delivered with the Open Monitor Suspension option.

Complete the table with the leakage current values measured while activating table and detector motions.

Measure is to be performed only in Normal Condition as specified earlier.

19.201.1	System Leakage Current		P
Leakage current measured from or between the following parts:	Measured Value (NC)	Remarks	
Between LC and Monitors		Measure between C-Arm rails and monitor cables BNC	
Between the different joysticks and LC		Measure between TSCC screws and C-Arm rails	
Between the different joysticks and monitors		Measure between TSCC screws and monitor cables BNC	
From monitors to Reference Point		Measure between monitor cables BNC and the Reference Point (Terminal Earth of Table)	
Applied part (table) and monitors		Measure between monitor cables BNC and table rail	
Between Monitor Suspension and the table rail		Measure between Monitor Suspension Protective Earth and table rail	
(Record at least maximum measured value for each test required by Clause 19 and the specific conditions of the test circuit and equipment).			
Main Voltage (Volts)		Main Frequency (Hz)	

Exp. Outcome 1

Measurements of leakage current shall not exceed 80 μ A.

Test Results & Comments:

☐ Pass ☐ Fail ☐ N/A

6 Spares parts

Customer is responsible for providing/replacing any parts used for the installation of the non-GE suspension and non-GE monitors.

In case of GE parts failure (GE monitors for example), refer to the FRU Illustrated Catalog in Chapter “Parts” of the Innova Service Manual 5314696-2-2EN to identify FRU Part Numbers (Field Replacement Unit references to order).

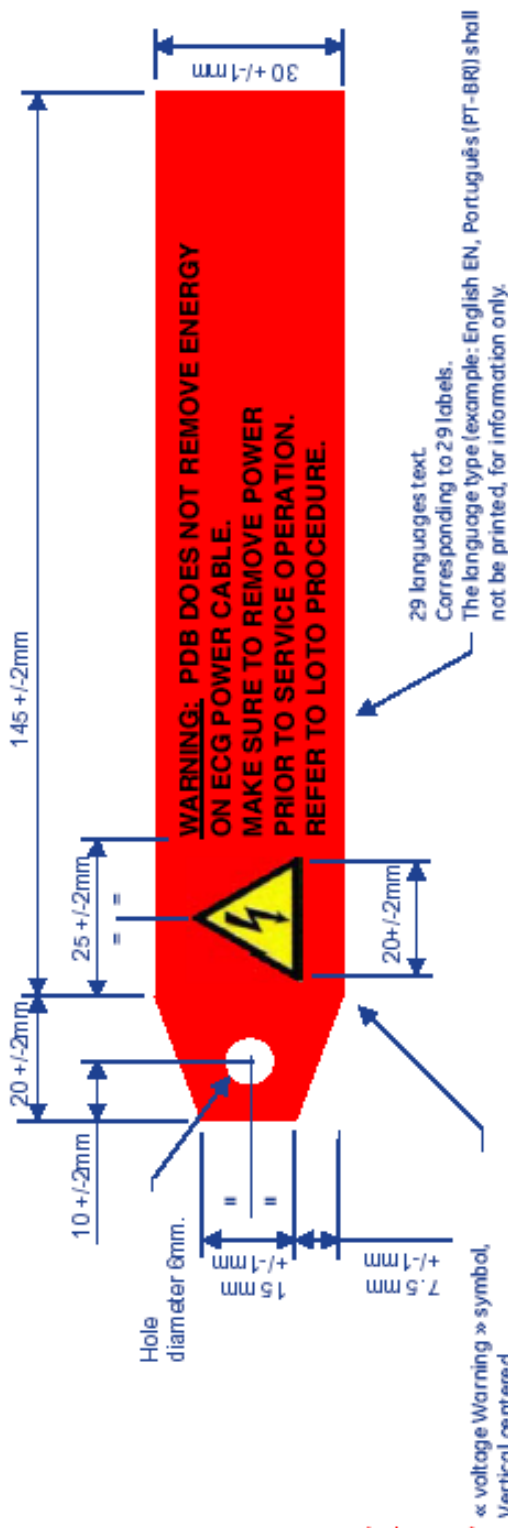
Annex 1

English version

This specification is a set of 29 labels (each label corresponds to 1 language). The 29 labels will be provided in a plastic bag, attached but they could be manually singly splitted, fusing not continuous drilling or equivalent.
Material: Polycarbonate Lexan FR65 compliant to UL94V0, UL/CSA certified. Thickness 250µm.

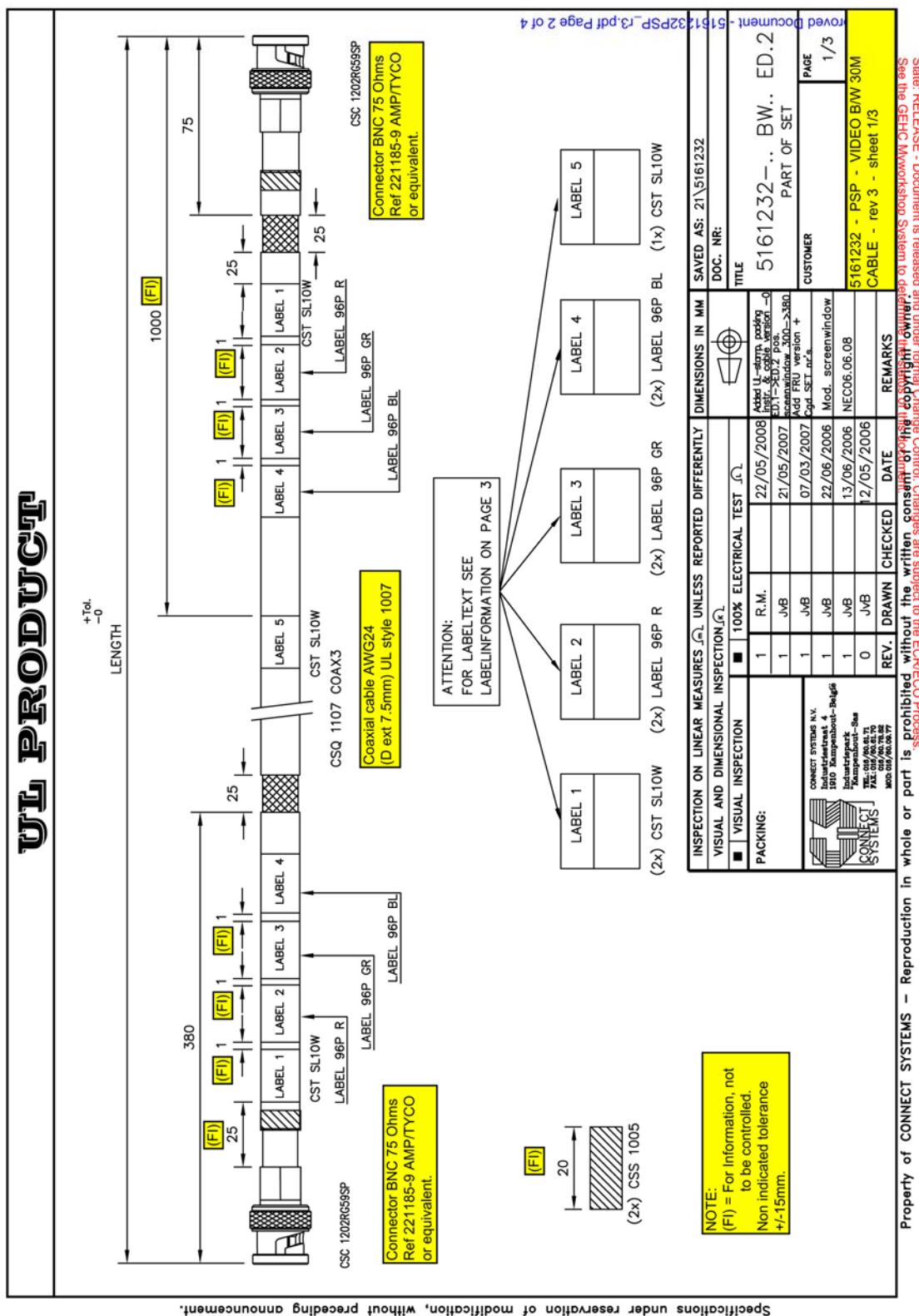
FRONT side: black screenprinting, red background (excepted triangular symbol with yellow background), smooth finishing.
Minimum font size: 3 mm. Minimum line spacing: 2 mm
Font type: Helvetica Medium condensed.
BACK side: screenprinting red. Smooth finishing.

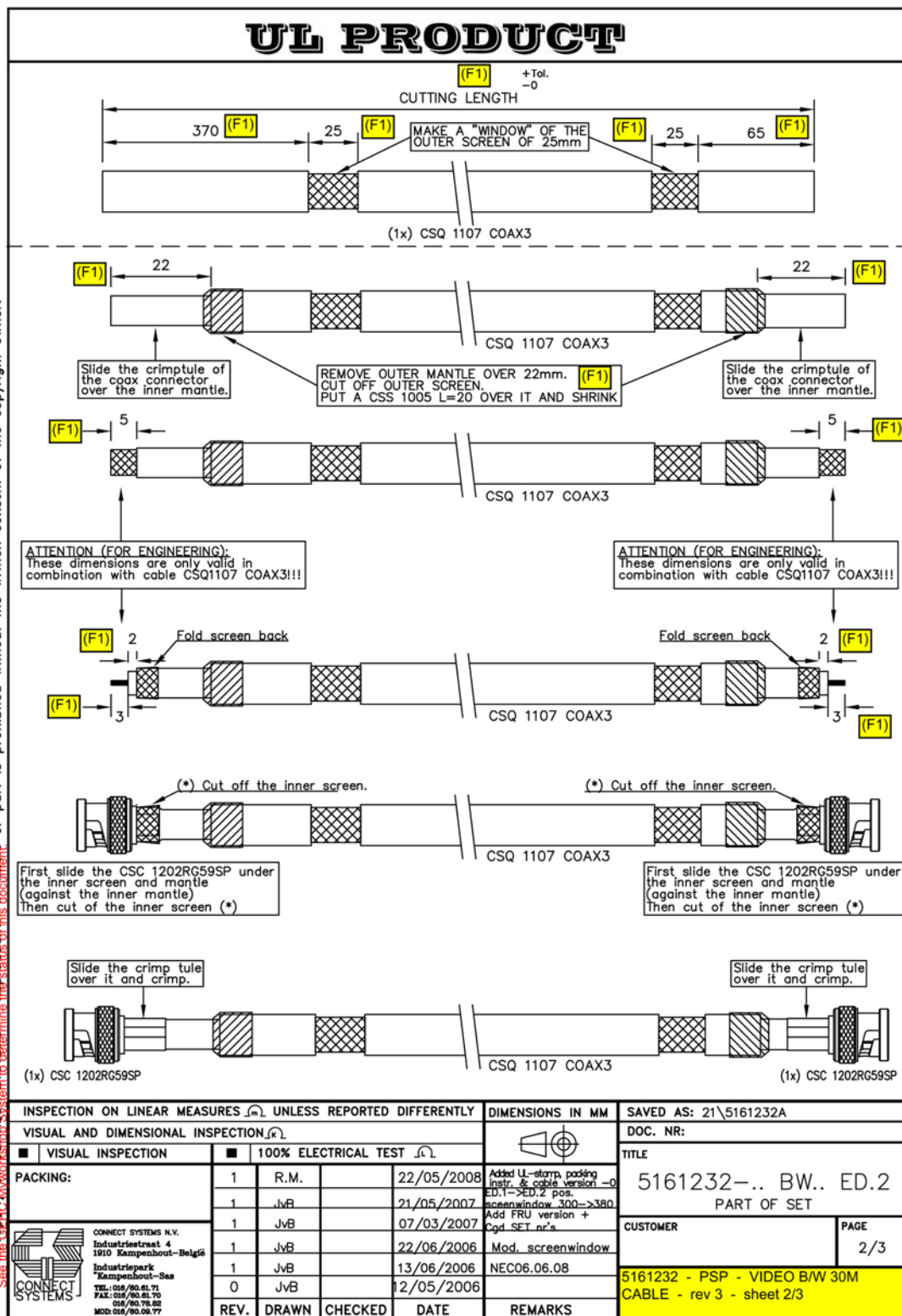
RECORD OF CHANGES			
Rev.	Date	Author	Comments
1	20 Dec. 2007	P. Remot	Creation of the document
2	08 Feb. 2008	P. Remot	Change material to F865
3	16 Apr. 2008	P. Remot	Add 7 new languages



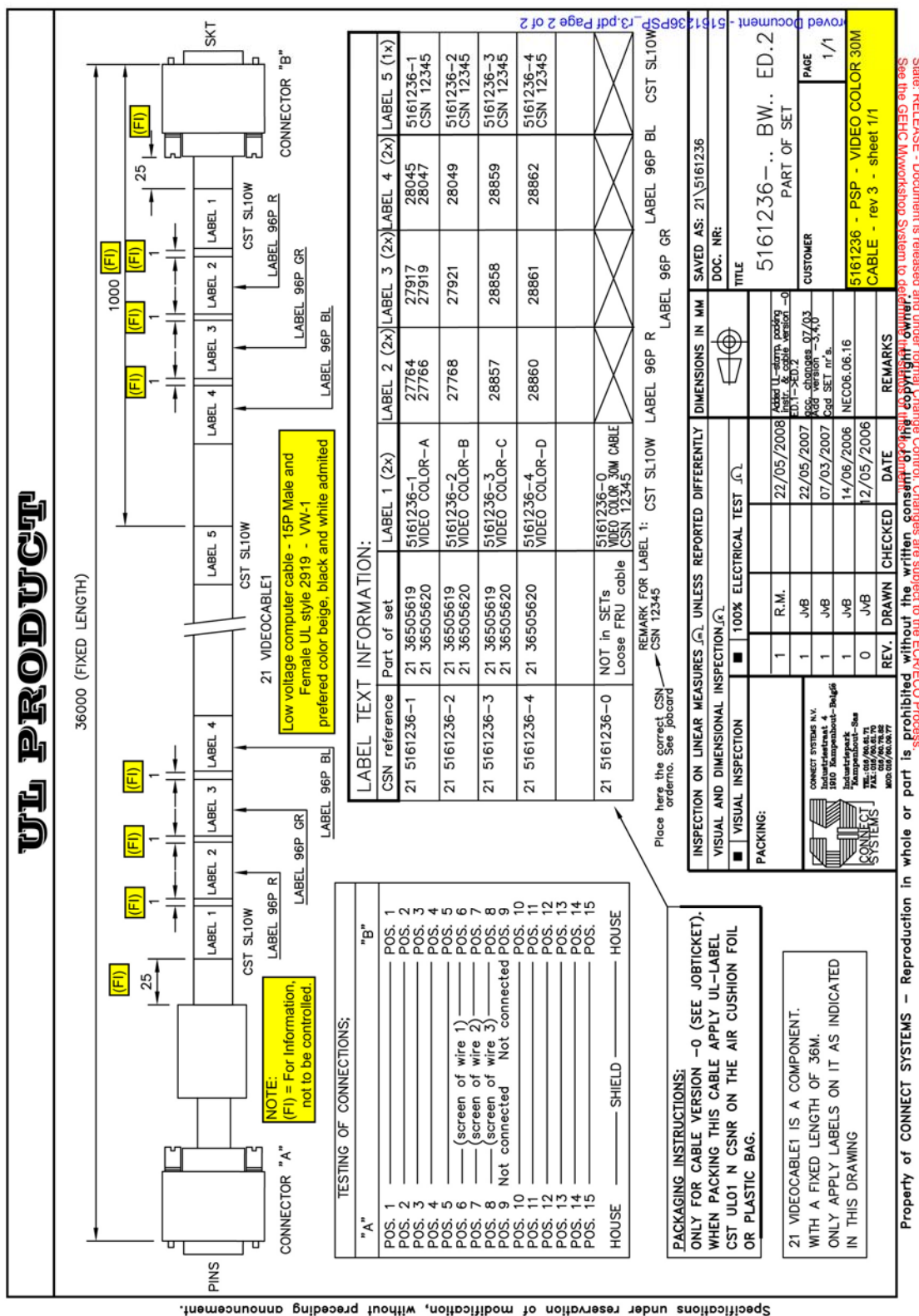
	VOLTAGE WARNING LABEL (for suspension ECG cable)				
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GE Medical Systems - Europe		Article Number	Type	Format	Sheets
		5265264	PSP	A4	2 / 7
BUC - France				3	Rev

Annex 2

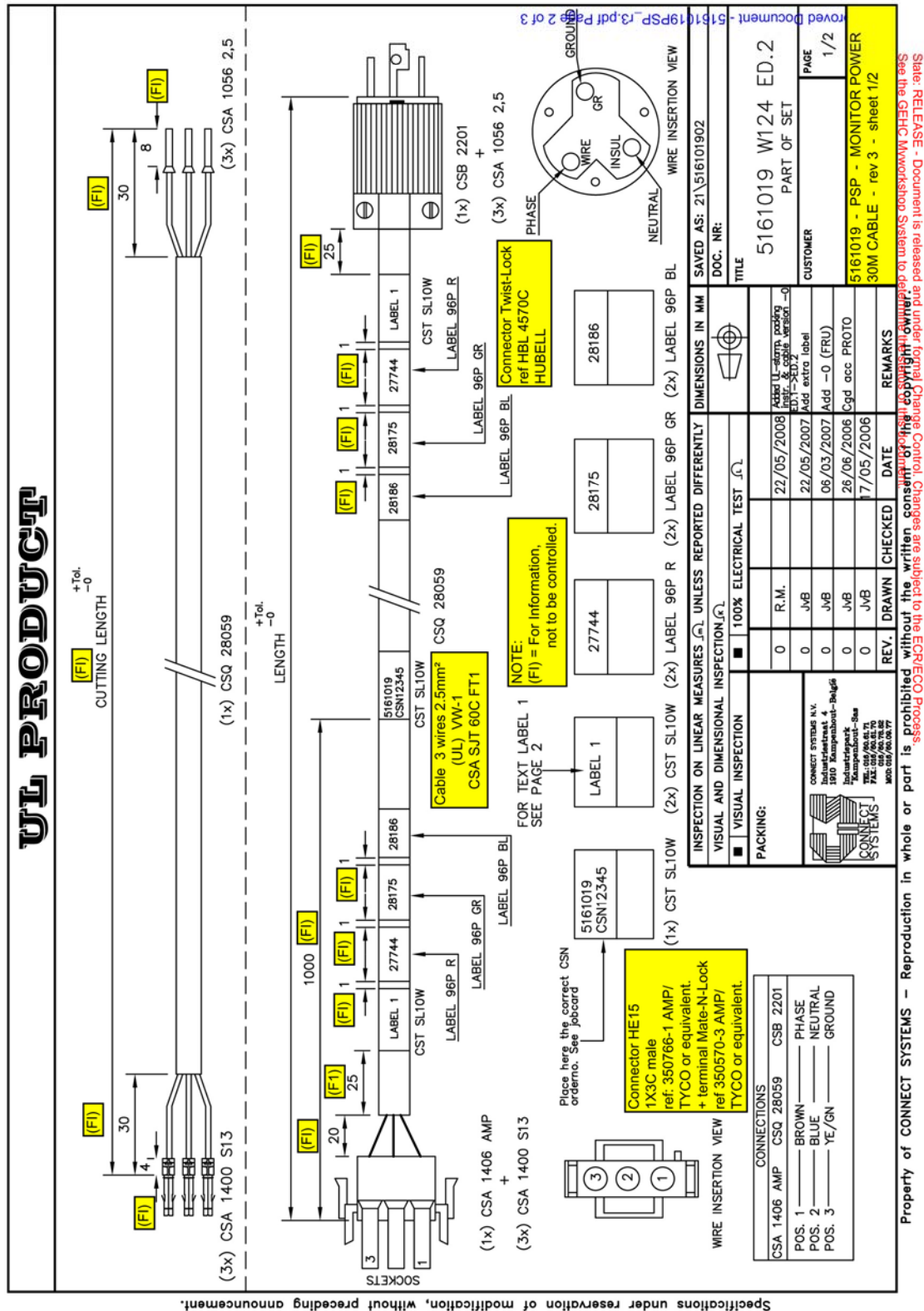




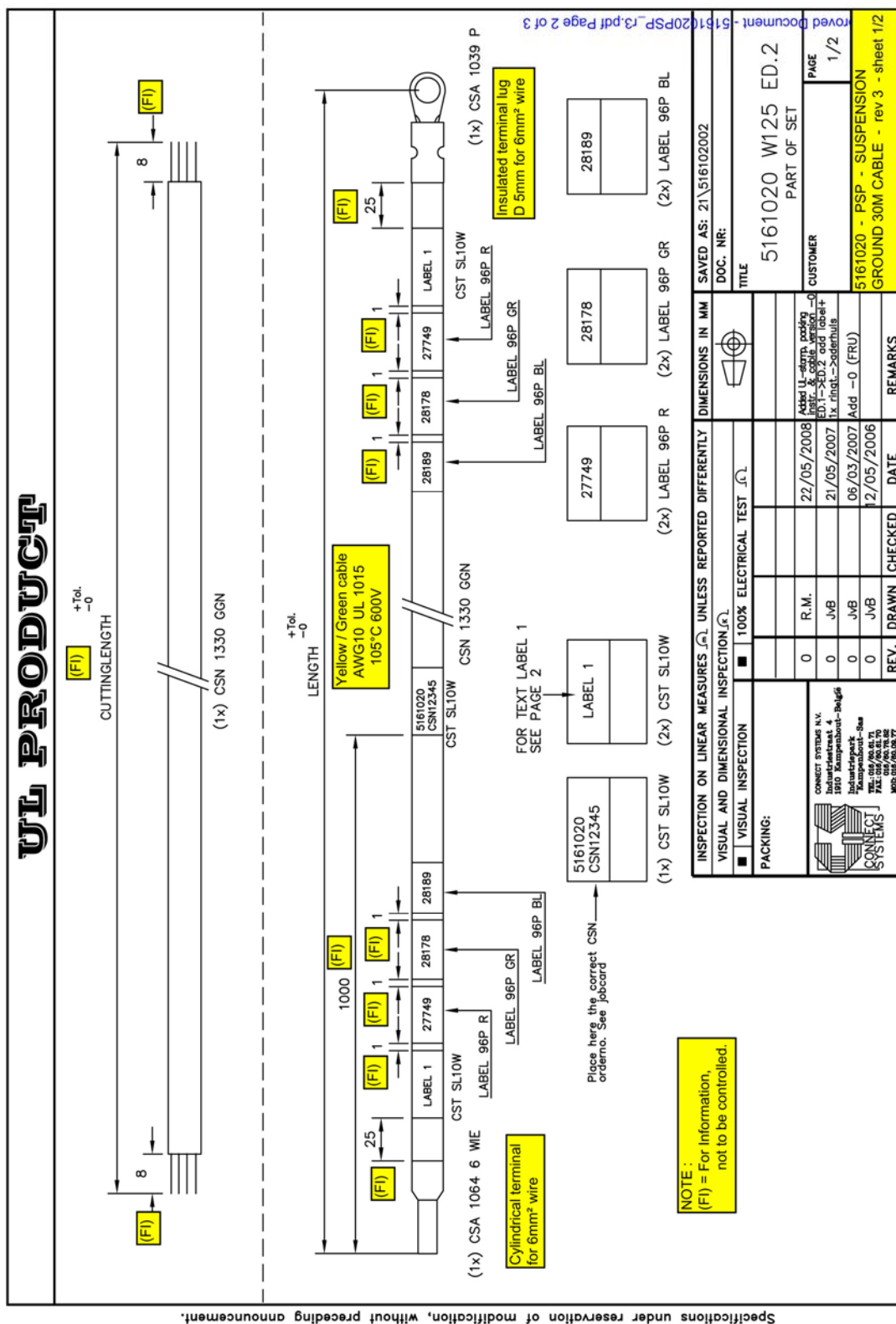
Annex 3



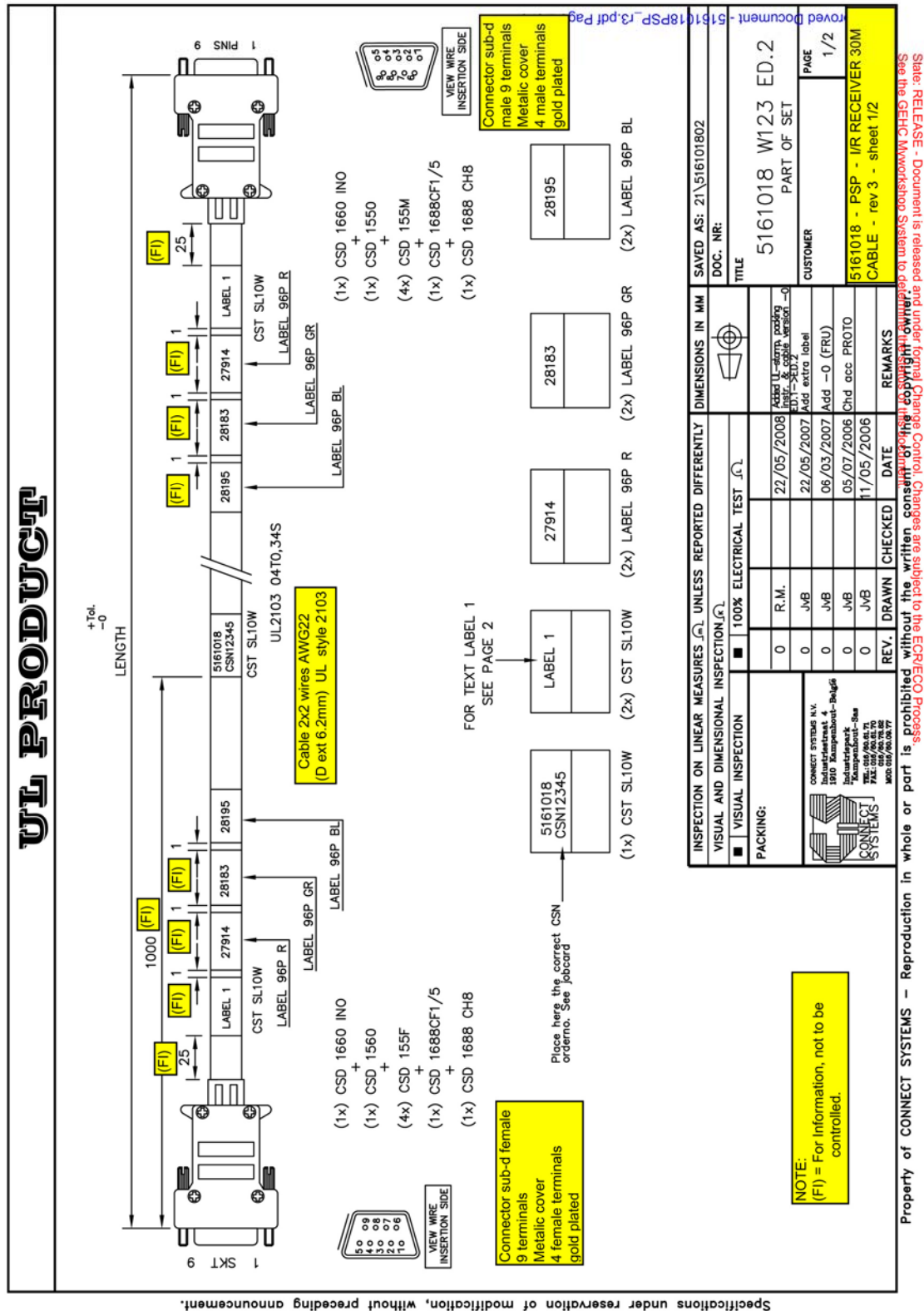
Annex 4



Annex 5



Annex 6



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GE Medical Systems, a General Electric Company, going to market as GE Healthcare.
283, rue de la Minière
78530, Buc
FRANCE

www.gehealthcare.com



Imagination at work