GE Healthcare

# Veo

## Pre-Installation Manual

OPERATING DOCUMENTATION

5395804-1EN
Revision 4

The information in this manual applies to the Veo system and associated optional catalogs.

# IMPORTANT PRECAUTIONS

## LANGUAGE

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| **ПРЕДУПРЕЖДЕНИЕ**<br>(BG) | Това упътване за работа е налично само на английски език.<br>• Ако доставчикът на услугата на клиента изиска друг език, задължение на клиента е да осигури превод.<br>• Не използвайте оборудването, преди да сте се консултирали и разбрали упътването за работа.<br>• 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**<br>(ZH-CN) | 本维修手册仅提供英文版本。<br>• 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。<br>• 未详细阅读和完全理解本维修手册之前，不得进行维修。<br>• 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**<br>(ZH-HK) | 本服務手冊僅提供英文版本。<br>• 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。<br>• 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。<br>• 不遵從本警告或會令服務供應商、網絡供應商或病人受到觸電、機械性或其他的危險。 |
| **警告**<br>(ZH-TW) | 本維修手冊僅有英文版。<br>• 若客戶的維修廠商需要英文版以外的語言，應由客戶自行提供翻譯服務。<br>• 請勿試圖維修本設備，除非 您已查閱並瞭解本維修手冊。<br>• 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**<br>(HR) | Ovaj servisni priru?nik dostupan je na engleskom jeziku.<br>• Ako davatelj usluge klijenta treba neki drugi jezik, klijent je dužan osigurati prijevod.<br>• Ne pokušavajte servisirati opremu ako niste u potpunosti pro?itali i razumjeli ovaj servisni priru?nik.<br>• Zanemarite li ovo upozorenje, može do?i do ozljede davatelja usluge, operatera ili pacijenta uslijed strujnog udara, mehani?kih ili drugih rizika. |
| **VÝSTRAHA**<br>(CS) | Tento provozní návod existuje pouze v anglickém jazyce.<br>• V případě, že externí služba zákazníkům potřebuje návod v jiném jazyce, je zajištění překladu do odpovídajícího jazyka úkolem zákazníka.<br>• Nesnažte se o údržbu tohoto zařízení, aniž byste si přečetli tento provozní návod a pochopili jeho obsah.<br>• 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. |

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

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| **WARNUNG**<br>(DE) | Diese Serviceanleitung existiert nur in englischer Sprache.<br>• Falls ein fremder Kundendienst eine andere Sprache benötigt, ist es Aufgabe des Kunden für eine entsprechende Übersetzung zu sorgen.<br>• Versuchen Sie nicht diese Anlage zu warten, ohne diese Serviceanleitung gelesen und verstanden zu haben.<br>• 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**<br>(EL) | Το παρόν εγχειρίδιο σέρβις διατίθεται μόνο στα αγγλικά.<br>• Εάν ο τεχνικός σέρβις ενός πελάτη απαιτεί το παρόν εγχειρίδιο σε γλώσσα εκτός των αγγλικών, αποτελεί ευθύνη του πελάτη να παρέχει τις υπηρεσίες μετάφρασης.<br>• Μην επιχειρήσετε την εκτέλεση εργασιών σέρβις στον εξοπλισμό αν δεν έχετε συμβουλευτεί και κατανοήσει το παρόν εγχειρίδιο σέρβις.<br>• 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**<br>(HU) | Ezen karbantartási kézikönyv kizárólag angol nyelven érhető el.<br>• Ha a vevő szolgáltatója angoltól eltérő nyelvre tart igényt, akkor a vevő felelőssége a fordítás elkészíttetése.<br>• Ne próbálja elkezdeni használni a berendezést, amíg a karbantartási kézikönyvben leírtakat nem értelmezték.<br>• Ezen figyelmeztetés figyelmen kívül hagyása a szolgáltató, működtető vagy a beteg áramütés, mechanikai vagy egyéb veszélyhelyzet miatti sérülését eredményezheti. |
| **AÐVÖRUN**<br>(IS) | Þessi þjónustuhandbók er aðeins fáanleg á ensku.<br>• Ef að þjónustuveitandi viðskiptamanns þarfnast annas tungumáls en ensku, er það skylda viðskiptamanns að skaffa tungumálaþjónustu.<br>• Reynið ekki að afgreiða tækið nema að þessi þjónustuhandbók hefur verið skoðuð og skilin.<br>• Brot á sinna þessari aðvörun getur leitt til meiðsla á þjónustuveitanda, stjórnanda eða sjúklings frá raflosti, vélrænu eða öðrum áhættum. |
| **AVVERTENZA**<br>(IT) | Il presente manuale di manutenzione è disponibile soltanto in lingua inglese.<br>• Se un addetto alla manutenzione richiede il manuale in una lingua diversa, il cliente è tenuto a provvedere direttamente alla traduzione.<br>• Procedere alla manutenzione dell'apparecchiatura solo dopo aver consultato il presente manuale ed averne compreso il contenuto.<br>• 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**<br>(JA) | このサービスマニュアルには英語版しかありません。<br>• 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。<br>• 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。<br>• 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。 |

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

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| **ATENÇÃO**<br>(PT-PT) | Este manual de assistência técnica só se encontra disponível em inglês.<br>• Se qualquer outro serviço de assistência técnica solicitar este manual noutro idioma, é da responsabilidade do cliente fornecer os serviços de tradução.<br>• Não tente reparar o equipamento sem ter consultado e compreendido este manual de assistência técnica.<br>• O não cumprimento deste aviso pode colocar em perigo a segurança do técnico, do operador ou do paciente devido a choques eléctricos, mecânicos ou outros. |
| **ATENŢIE**<br>(RO) | Acest manual de service este disponibil doar în limba engleză.<br>• Dacă un furnizor de servicii pentru clienţi necesită o altă limbă decât cea engleză, este de datoria clientului să furnizeze o traducere.<br>• Nu încercaţi să reparaţi echipamentul decât ulterior consultării şi înţelegerii acestui manual de service.<br>• Ignorarea acestui avertisment ar putea duce la rănirea depanatorului, operatorului sau pacientului în urma pericolelor de electrocutare, mecanice sau de altă natură. |
| **ОСТОРОЖНО!**<br>(RU) | Данное руководство по техническому обслуживанию представлено только на английском языке.<br>• Если сервисному персоналу клиента необходимо руководство не на английском, а на каком-то другом языке, клиенту следует самостоятельно обеспечить перевод.<br>• Перед техническим обслуживанием оборудования обязательно обратитесь к данному руководству и поймите изложенные в нем сведения.<br>• 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**<br>(SR) | Ovo servisno uputstvo je dostupno samo na engleskom jeziku.<br>• Ako klijentov serviser zahteva neki drugi jezik, klijent je du?an da obezbedi prevodila?ke usluge.<br>• Ne poku?avajte da opravite ure?aj ako niste pro?itali i razumeli ovo servisno uputstvo.<br>• Zanemarivanje ovog upozorenja mo?e dovesti do povre?ivanja servisera, rukovaoca ili pacijenta usled strujnog udara ili mehani?kih i drugih opasnosti. |
| **UPOZORNENIE**<br>(SK) | Tento návod na obsluhu je k dispozícii len v angličtine.<br>• Ak zákazníkov poskytovateľ služieb vyžaduje iný jazyk ako angličtinu, poskytnutie prekladateľských služieb je zodpovednosťou zákazníka.<br>• Nepokúšajte sa o obsluhu zariadenia, kým si neprečítate návod na obluhu a neporozumiete mu.<br>• Zanedbanie tohto upozornenia môže spôsobiť zranenie poskytovateľa služieb, obsluhujúcej osoby alebo pacienta elektrickým prúdom, mechanické alebo iné ohrozenie. |

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| **ATENCION**<br>(ES) | Este manual de servicio sólo existe en inglés.<br>• 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.<br>• No se deberá dar servicio técnico al equipo, sin haber consultado y comprendido este manual de servicio.<br>• 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**<br>(SV) | Den här servicehandboken finns bara tillgänglig på engelska. .<br>• Om en kunds servicetekniker har behov av ett annat språk än engelska, ansvarar kunden för att tillhandahålla översättningstjänster.<br>• Försök inte utföra service på utrustningen om du inte har läst och förstår den här servicehandboken.<br>• 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**<br>(SL) | Ta servisni priročnik je na voljo samo v angleškem jeziku.<br>• Če ponudnik storitve stranke potrebuje priročnik v drugem jeziku, mora stranka zagotoviti prevod.<br>• Ne poskušajte servisirati opreme, če tega priročnika niste v celoti prebrali in razumeli.<br>• Če tega opozorila ne upoštevate, se lahko zaradi električnega udara, mehanskih ali drugih nevarnosti poškoduje ponudnik storitev, operater ali bolnik. |

## DAMAGE IN TRANSPORTATION

You should closely examine all packages at time of delivery. If you notice any damage, have the notation “Damage in Shipment” written on all copies of the freight or express bill before delivery is accepted or “signed for” by any General Electric representative or hospital receiving agent. Whether noted or concealed, you MUST report damage to the carrier immediately upon discovery and within 14 days after receipt, and you must hold the contents and containers for inspection by the carrier. A transportation company will not pay a claim for damage if you do not request an inspection within this 14-day period.

To file a report:

- Call 1-800-548-3366 and use option 6.
- Fill out a report on http://egems.med.ge.com/edq/home.jsp
- Contact your local service coordinator for more information on this process.

## CERTIFIED ELECTRICAL CONTRACTOR STATEMENT

All electrical installations that are preliminary to positioning of the equipment at the site prepared for the equipment shall be performed by licensed electrical contractors. In addition, electrical feeds into the Power Distribution Unit shall be performed by licensed electrical contractors. Other connections between pieces of electrical equipment, calibrations and testing shall be performed by qualified GE Healthcare personnel. The products involved (and the accompanying electrical installations) are highly sophisticated, and special engineering competence is required. In performing all electrical work on these products, GE will use its own specially trained field engineers. All of GE’s electrical work on these products will comply with the requirements of the applicable electrical codes.

The purchaser of GE equipment shall only utilize qualified personnel (i.e., GE’s field engineers, personnel of third-party service companies with equivalent training, or licensed electricians) to perform electrical servicing on the equipment.

## OMISSIONS & ERRORS

Customers, contact your GE Healthcare Sales or Service representatives.

GE personnel, use the current complaint handling process to report all omissions, errors, and defects in this publication.

# Revision History



| Revision | Date | Reason for change |
|---|---|---|
| 4 | 31 Oct 2015 | Added 11 KVA UPS Information |
| 3 | 21 Nov 2011 | PR#6597522 Chapt. 3 revised Fig. 3-1 and Fig. 3-2, Chapt. 7 Sec. 1-3 added new statement and Fig.7-3, Removed operational clearance diagrams |
| 2 | 23 Nov 2010 | FCTge60781 Updated point to point Ethernet network connections, Page 20 and Page 61.<br>FCTge60834 LOTO requirements for UPS. |
| 1 | 25 Oct 2010 | Initial Release |

# Chapter 1 Introduction



This document contains the physical and electrical data necessary for planning and preparing a site for Veo system installation. The responsibility of arranging and paying for this work rests solely with the purchaser.

## Section 1.0: What is Pre-Installation?

Pre-installation work comprises any site preparation that requires completion prior to the installation of the Veo system. This manual guides you through the pre-installation siting and regulatory requirements. A GE Healthcare Project Manager (PM) will be available for specific questions or concerns not addressed in this manual. The PM's primary responsibility is to assist the buyer with the siting requirements.

Likewise, prior to any construction or approval, General Electric Headquarters Design Center must review all Veo site plans, preliminary concepts, and final working drawings. Contact your GEHC Project Manager (PM) for complete information regarding your site-specific room layout.

## Section 2.0: What is Pre-Installation Work?

Pre-Installation work includes:

- Site renovation.
- Alterations or modifications to products not specifically included in the sales contract.
- Installation of electrical conduit, junction boxes, ducts, outlets, and line safety switches.
- Installation of AWG stranded copper interconnection wiring, conforming to the following requirements:
    - The electrical contractor shall ring out and tag all wires at both ends.
    - Wires shall be continuous and without splices.
    - Ground wires shall conform to product requirements.
    - Color-coded wires shall be used whenever possible, to enable easier identification.
- All work shall conform to IBC (International Building Code) and local building and safety codes.

Note: GE Healthcare neither provides nor installs the wires, conduits, junction boxes, or ducts illustrated in this publication, unless specifically mentioned.

# Section 3.0 Pre-Installation Tools

A list of primary customer tools for successfully completing the pre-installation process for a Veo system appears below.

## 3.1 Customer Installation Check List

- **Veo Pre-Installation Manual**
- **Pre-Installation Check List**

  Located on page 19 of the Pre-Installation Manual.
- **Regulatory and Service Clearance Information**

  Included in the Pre-Installation Manual.
- **Site Print**

  Supplied by your GE Healthcare Representative or sales rep. Must show all service and operating clearances, and meet all regulatory requirements.

### 3.1.1 Pre-Installation Manual Guide

Table 1-1 shows the location in this Pre-Installation Manual of the information necessary for fulfilling each the corresponding pre-installation requirements.

| Installation Site Requirement Information | |
|---|---|
| *System Siting Requirements*, on page 23 | *Regulatory and Service Requirements*, on page 27 |
| *System Component Dimensions*, on page 33 | *Structural and Mounting Requirements*, on page 41 |
| *Environmental Requirements*, on page 47 | *Power Requirements*, on page 57 |
| *Interconnection Data*, on page 65 | *Delivery and Storage Requirements*, on page 69 |
| *Handling Requirements*, on page 73 | |
| Contractors must complete ALL WORK before the scheduled delivery date. | |

**Table 1-1 Locations of Site Requirement Information in this manual**

# Section 4.0 Pre-Installation Checklist



**Required Information for Site**

*Complete before the scheduled delivery date.*

**Hospital Name** as it appears on the system screens:

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**Veo System ID number or GON (Global Order Number):**

_____

| GE | Cust | Dates |
|---|---|---|
| Y N | Y N | |
| | ❒ ❒ | Have the facilities department, contractor, and GEHC verified the project schedule? |
| | ❒ ❒ | Will the committed site-ready date be met? |
| ❒ ❒ | ❒ ❒ | Does the completion date for any/all construction meet or precede the delivery date? |
| ❒ ❒ | ❒ ❒ | Is the Power & Ground survey complete? Date: _____<br>Hospital contact: _____ |
| | ❒ ❒ | Is the Site-Ready visit scheduled?Date: _____ |
| | ❒ ❒ | Is the delivery date scheduled?Date: _____ |
| | ❒ ❒ | Is the installation date scheduled?Date: _____ |
| ❒ ❒ | ❒ ❒ | Is the installation timing determined? A: Weekdays___ B: Weekend___ C: Quick Install___<br>If B or C, have all sub-contractors been notified?No___ Yes ___ |
| ❒ ❒ | ❒ ❒ | Does the delivery and/or installation date require adjustment? |
| | ❒ ❒ | Is the first-use date scheduled?Date: _____ |
| ❒ ❒ | ❒ ❒ | Applications/Training dates scheduled? On-Site TrainingDate: _____<br>Healthcare Institute Training Date: _____ |

**Table 1-2 Schedule Date Commitments**

| GE | CUST | General / Site Requirements |
|---|---|---|
| Y N | Y N | *Must be completed five (5) weeks before scheduled delivery date.* |
| ❒ ❒ | ❒ ❒ | Is the room type a non-medical room? Acceptable room types are: Data Center, IT, Nework, or Equipment rooms. Unacceptable room types are: Scan Rooms and Operators Console Rooms |
| ❒ ❒ | ❒ ❒ | Were final drawings approved and distributed to the contractors? |
| ❒ ❒ | ❒ ❒ | Are final drawings “signed off” to approve equipment layout and orientation? |
| ❒ ❒ | ❒ ❒ | Do the actual room dimensions match those on the final drawings? |
| | ❒ ❒ | Have any additional requirements or questions about the installation been discussed with GEHC?<br>List: _____<br>_____<br>_____<br>_____ |
| | ❒ ❒ | Is there a person assigned to review and verify that all installation requirements are met? Name: _____ |
| | ❒ ❒ | Have the specific site requirements been discussed with the contractors?<br>Refer to the GEHC final drawings specifications. (See Table 1-1.) |
| | ❒ ❒ | Has the specific power requirements been reviewed and understood by the customers electrician. Customer shall provide power source lock-out for a Padlock and LOTO tag. |
| | ❒ ❒ | Have all regulatory requirements been met per *Regulatory and Service Requirements*, on page 27? |
| | ❒ ❒ | Has the dedicated Point-To-Point, 1Gigabit Ethernet network, connecting the Veo Blade Center to the Operator Console been ordered by the customer and installed prior to equipment delivery? (Not supplied by GEHC, see Page 61 Chapter 8 *Interconnect Data for Ethernet Specifications*.) |

**Table 1-3 Site Planning**

| GE | Cust | Equipment |
|---|---|---|
| Y N | Y N | *Must be completed five (5) weeks before scheduled delivery date.* |
| ❒ ❒ | ❒ ❒ | Has the order been reviewed for completeness and compatibility with existing equipment? |
| ❒ ❒ | ❒ ❒ | Are existing customer racks available or are new racks being ordered from GEHC? If racks are being provided by customer, refer to detailed rack requirements in Chapter 8 Section 1.4; additionally, refer to Chapter 7 Section 1.2 regarding specific service clearance requirements. |
| ❒ ❒ | ❒ ❒ | Is the customer site in an earthquake or seismic area? If so, the only compliant GEHC offered rack is the 42U Seismic rack. If the customer is going to use their own rack, they must consult with their rack OEM to ensure compliance to all local seismic requirements. |
| ❒ ❒ | ❒ ❒ | Have the following peripheral locations been included in the site drawings for the following Veo Options?<br>UPS (For 11U Packs Only) Tower Configuration ___ 42U Rack ___ 11U Rack ___<br>NOTE: The UPS is rack mounted inside the rack for both versions of the 42U Racks. |
| ❒ ❒ | ❒ ❒ | Will GE Healthcare provide additional services per contract negotiations? |

**Table 1-4 Equipment Compatibility**

| GE | Cust | Other |
|---|---|---|
| Y N | Y N | *Must be completed before the scheduled delivery date.* |
| | ❒ ❒ | Arrangements made in the schedule to allow adequate time for remodeling, if required (such as wall, floor, or ceiling repair work, painting, other cosmetic finishes) |
| ❒ ❒ | ❒ ❒ | Delivery route identified and verified with the proper hospital personnel? No__ Yes __<br>Elevators and doors checked for size and weight constraints? No__ Yes __ |
| ❒ ❒ | ❒ ❒ | Are trash and/or recycling bins available for the removal of papers, boxes, etc. during the installation? No__ Yes __ |
| ❒ ❒ | ❒ ❒ | **If installing a 42U Seismic Rack.** Has the GEHC Surface Penetration Permit been completed before equipment delivery? (A copy of this form must be sent to GEHC as defined in the permit.) No__ Yes __ |

**Table 1-5 Miscellaneous Tasks**

# Chapter 2
# System Siting Requirements



## Section 1.0: System Siting Requirements

The requirements listed in this manual apply to all fixed-site customer installations, including installations within relocatable buildings. The following requirements represent the MINIMUM that a site must meet before beginning ANY new or replacement system installation. All parties should review these requirements to ensure that the site:

- Meets all service requirements.
- Meets all regulatory requirements.
- Meets all minimum structural, flooring, and vibration requirements.
- Meets minimum HVAC requirements.
- Meets minimum electrical requirements.
- Meets all network cable requirements.
- Meets all operational clearances.

## Section 2.0 Customer System Siting Requirements

This section provides a breakdown of customer tasks crucial for ensuring proper site preparation, regardless of whether planning for a replacement system at an existing site, or designing a new scan room for a first system.

Installation cannot proceed until verification of site-readiness occurs. A site is ready ONLY when it meets ALL delivery, regulatory, system, network, and operational requirements, as well as requirements for any options. The purchaser is responsible for completing all work necessary to install the system, and includes:

- Completion of all items in Section 2.4, Structural (recommended before installation begins).
- GE Healthcare Representative verification that ALL items on the Pre-Installation Checklist are completed.
- Review and preparation of all site-ready items.

To ensure timely delivery and installation, GE Healthcare recommends that the customer complete all necessary work and schedule a site-ready visit prior to the delivery date.

To confirm that the site meets all requirements, you may need to employ these and other contractors:

- Structural Engineer and/or Architect
- HVAC Contractor
- Electrical Contractor
- Cleaning Services

**NOTICE:** **An improperly prepared site—one that is in a state of construction—can result in a delayed installation date and/or damage to the system.**

## 2.1 Regulatory Requirements

Verify that the site conforms to all of the following:

- The room meets all regulatory clearance requirements.
- The room meets all minimum size requirements.
- The site print is on-site, reflects actual room size and layout, and has received final approval.
- No grounded walls are found in regulatory clearance areas.
- The room meets all local codes.

## 2.2 Room Type

The room type must be a non-medical room.

- Acceptable room types are: Data Center, IT, Nework, or Equipment rooms.
- Unacceptable room types are: Scan  Rooms and Operators Console Rooms

## 2.3 Electrical

- Install the correct size junction boxes with covers at locations shown in the installation plan.
- Install appropriate conduits and duct work for system cables. If the suite houses additional components, determine the necessary considerations and complete the connections.
- Install a power supply of correct voltage output and adequate kVA rating.
- Install local disconnects, including proper over-current protection.
- Shall provide power source lock-out for a Padlock and LOTO tag.

## 2.4 Structural

- Review structural requirements, including:
  - Floor vibration
  - Floor levelness
  - Floor thickness
  - Any seismic considerations, if applicable.
- Complete all room renovations and modifications prior to delivery.

## 2.5 Environmental

Review HVAC requirements, including system environmental controls and patient comfort needs. Make sure the site provides an HVAC system capable of maintaining the recommended temperature and humidity specifications at the time of installation. See Chapter 6.

## 2.6 Delivery

- Determine room dimensions and verify that doorways adequately accommodate the system.
- Verify the existence of an accessible, dust-free, non-construction-zone route to the final location.
- Identify elevators, doorways, and hallways that can accommodate delivery.
- Provide floor protection, if needed.

- Request rigging, if needed.

# Section 3.0 Site Readiness - GE's Responsibilities

## 3.1 Project Manager of Installation Tasks

The GE Healthcare Project Manager of Installation (PMI) assists the purchaser in meeting all system siting requirements.

### 3.1.1 Pre-Installation Delivery Tasks

The GE Healthcare Representative also performs the following pre-installation delivery tasks:

- Determines the delivery type: ground or dock.
- Determines if delivery requires riggers.
- Determines if the delivery requires the use of floor protection.

### 3.1.2 Site Review with Customer

A site-ready visit should occur prior to the delivery date. This visit verifies that the site meets all system siting requirements and confirms that installation can proceed. During the site-ready visit, a GE representative confirms that the site meets all of the required site-ready conditions including floor levelness, and delivery route readiness. Lifting options and construction site packaging must be ordered prior to delivery and cannot be added on-site.

# Chapter 3
# Regulatory and Service Requirements



## Section 1.0 Regulatory Clearances

### 1.1 Regulations

**Federal regulations and national standards that determine the minimum clearances for U.S. installations include:**

- **29 CFR 1910 (OSHA)**
- **NFPA 70E (STANDARD FOR ELECTRICAL SAFETY IN THE WORKPLACE)**
- **NFPA 101 (LIFE SAFETY CODE)**
- **AMERICANS WITH DISABILITIES ACT**

**NOTICE** All systems installed within the United States and United States territories, and within U.S. government facilities, regardless of country, must comply with all United States Federal and local regulations. All systems installed outside the United States must comply with either the national, state, or local regulatory clearance requirements for the country in which the installation occurs, or U.S. Federal regulations, whichever is greater.

### 1.2 Clearance Requirements

A map of clearance requirements necessary for proper servicing of the Veo system and/or optional UPS is provided in Figure 3-1 and Figure 3-2 for the three GEHC optional rack offerings.

Customer-provided racks that are less than or equal to a height of 25U (43.75 in./1111.25mm) must comply with minimum clearance requirements specified for the 11U rack in Figure 3-2. All racks higher than 25U must comply with minimum clearance requirements specified for the 42U rack in Figure 3-1.

Note: For customer provided 42U racks that are banked/ganged together, the side clearance ONLY pretains to the outside covers of the banked rack.

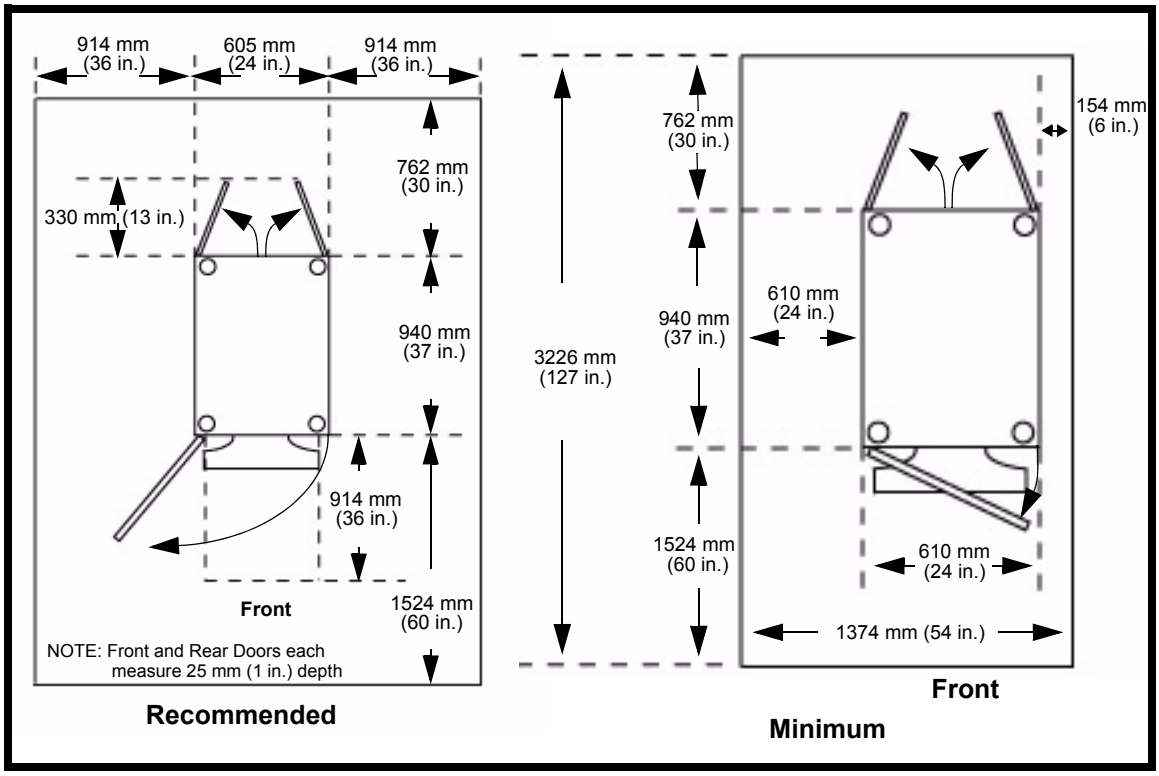



**Figure 3-1 42U Rack Service Clearances**

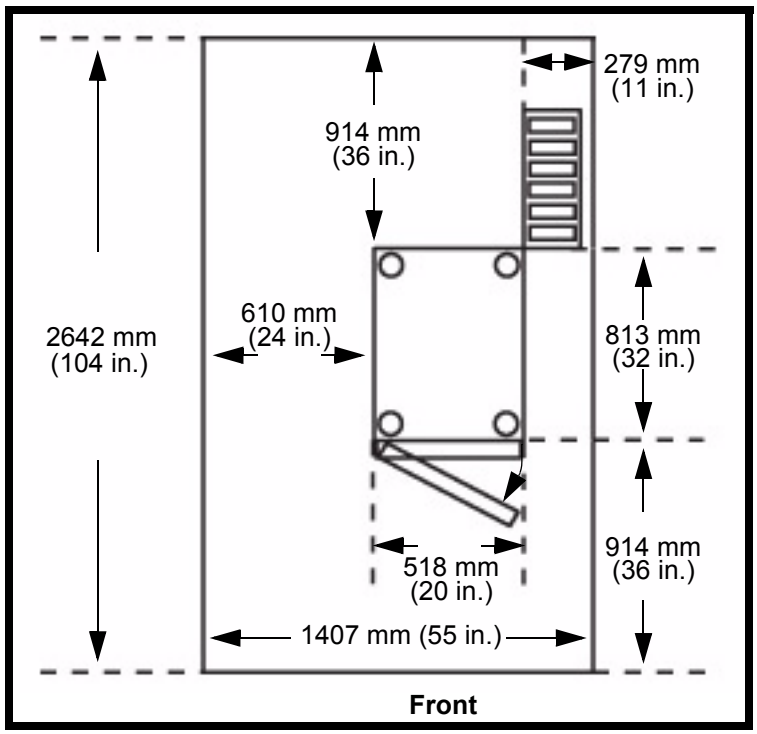



**Figure 3-2 11U Rack Service Clearance**

# Section 2.0 Room Type

The room type must be a non-medical room.

- Acceptable room types are: Data Center, IT, Nework, or Equipment rooms.
- Unacceptable room types are: Scan Rooms and Operators Console Rooms

# Section 3.0 Typical Room Layouts

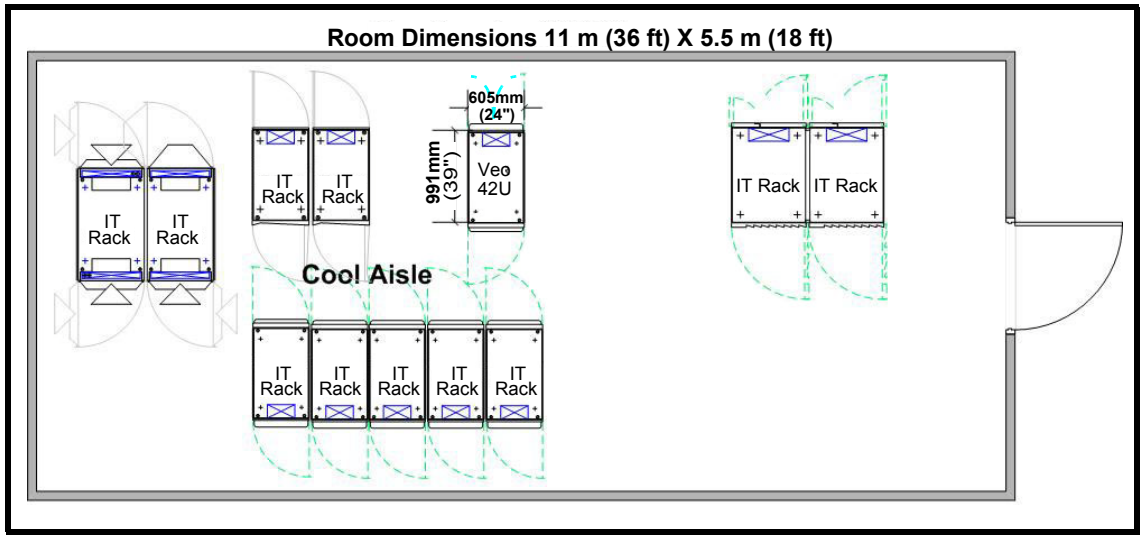



**Figure 3-3 Example of Data Room Layout**

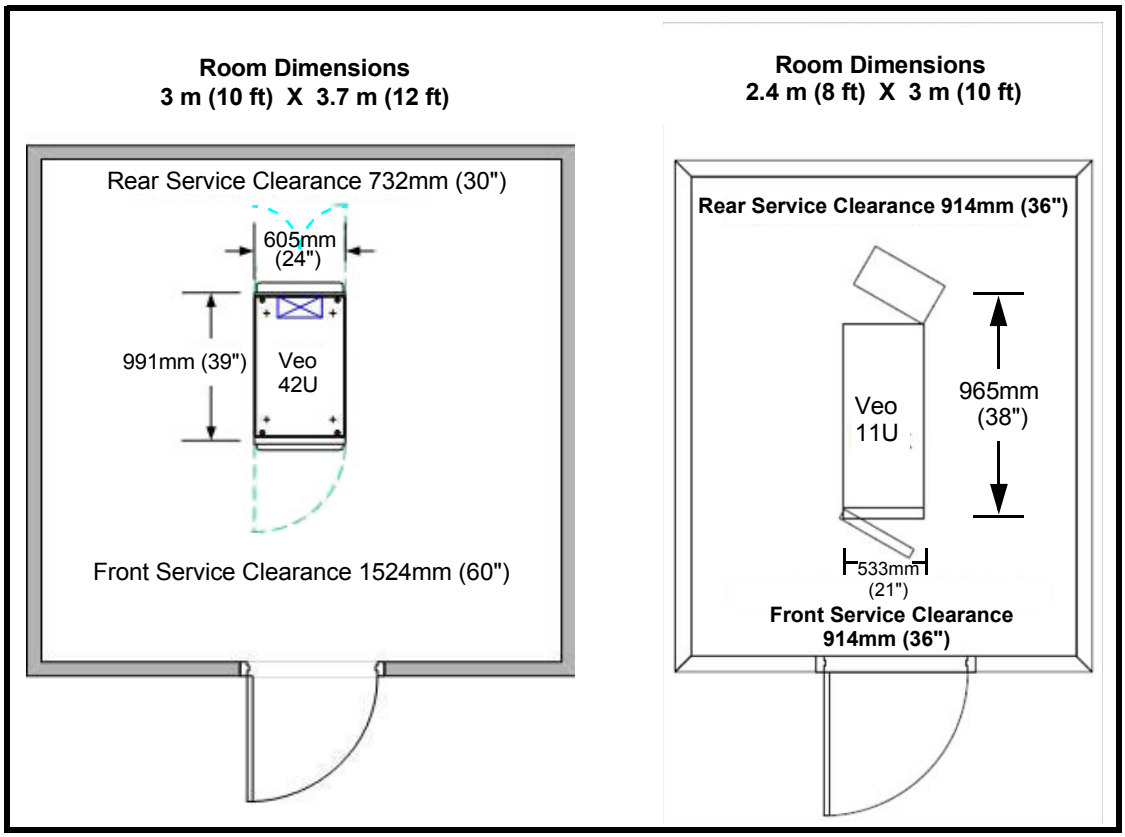



**Figure 3-4 Example of Equipment Room Layout**

# Section 4.0: Terms and Definitions



## CLEARANCES

Clearances are the clear space or distance between or around objects and equipment, governed by all applicable safety, service, and regulatory requirements and representing the lowest margin of freedom permissible for equipment siting.

## DIMENSIONS

Dimensions are the length, width, depth, and height of equipment.

## (PRE-INSTALLATION) ESCALATION

Pre-installation escalation is the process used to consult CT Engineering, the Design Center, or EHS to resolve pre-installation issues related to siting concerns and requirements.

## GROUNDED WALL

A grounded wall is any wall with electrical conductivity to earth. Conductive materials generally found in walls include masonry, concrete, and tile. Treat as grounded additional elements commonly found in walls, including but not limited to:

- Medical gas ports and plates
- Metal doors and window frames
- Water sources and metallic sink structures
- Metallic wall-mounted cabinets
- A1 main disconnect panel
- Equipment Emergency Off panels
- Industrial equipment (such as air conditioners and vents)
- Expansion joints
- Surface raceway
- Exposed wall conduits
- Floor outlet boxes
- Floor HVAC boxes
- Floor medical gas

Common wall components NOT constituting grounded elements include:

- Standard wall outlet
- Light switches
- Telephones
- Communication wall jacks
- Ceiling tile grids

## MINIMUM

Minimum indicates the lowest limit permitted by law or other authority.

## SERVICE CLEARANCE TERMS

The service envelopes provides sufficent space to safely allow servicing of the equipment.

Service access width refers to the width of the working space in front of the equipment.

# Chapter 4
# System Component Dimensions



## Section 1.0 Component Dimensions

### 1.1 BladeCenter Dimensions

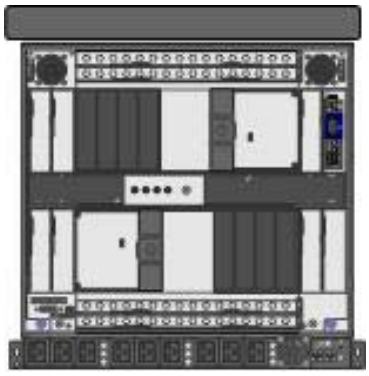
Note: The BladeCenter chassis is rack-mountable per IEC 60297-1 Dimensions of Mechanical Structures of the 482.6mm (19 in.) Series Part 1: Panels and Racks.

Note: 1U = 1.75" (ex. 11U = 19.25")

**Physical Size**

| | |
|---|---|
| BladeCenter Maximum height (11U) | 489 mm (19.25 inches) |
| Maximum depth | 711 mm (28 inches) |
| Maximum width | 482 mm (19 inches) |
| *Basis BladeCenter includes the Keyboard and PDU | |

**Front View**



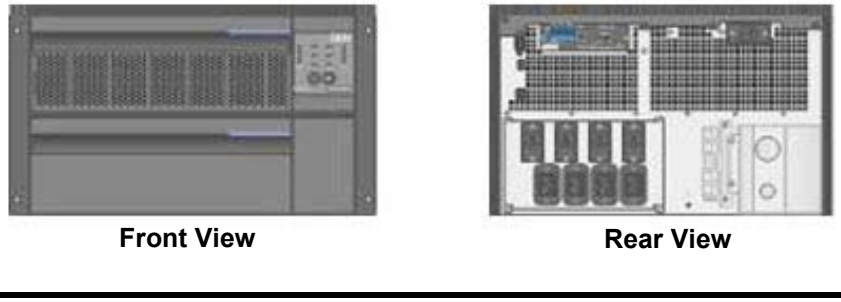
**Rear View**

**Figure 4-1 BladeCenter**

## 1.2 UPS Dimensions

### 1.2.1 UPS 10 KVA (GE P/N: 5235082-10/5235082-20, IBM P/N: 81Y3374/81Y3375) (Extended Battery Module Included)

| | |
|---|---|
| UPS Maximum Height (6U) | 267mm (10.50 inches) |
| Maximum Depth | 683 mm (27 inches) |
| Maximum Width | 430 mm (17 inches) |

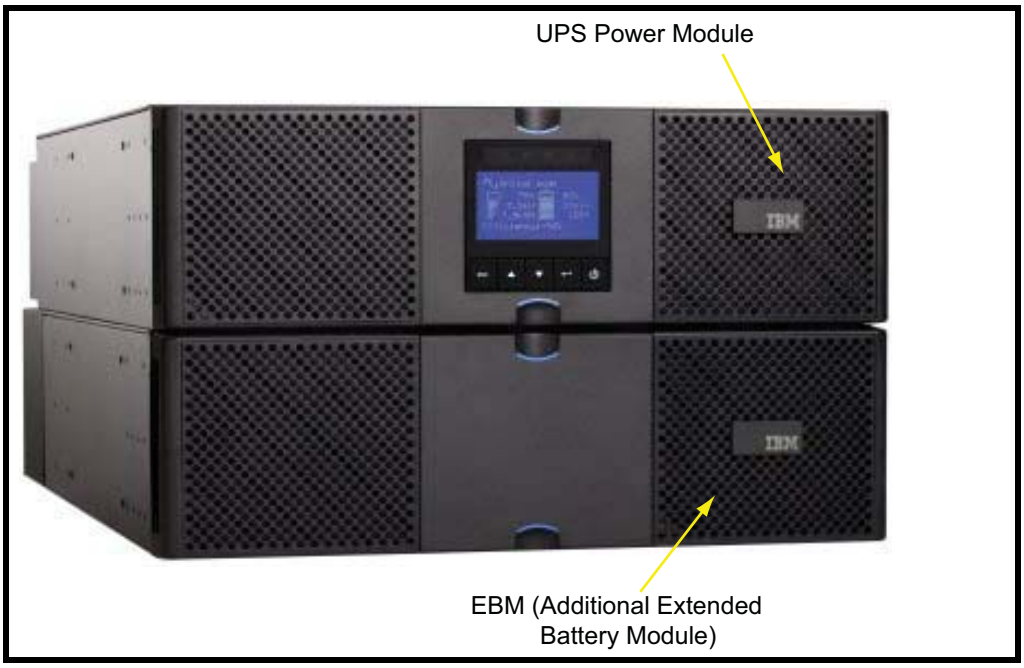


Front View Rear View

**Figure 4-2 Uninterrupted Power Supply**

### 1.2.2 UPS 11 KVA (GE P/N: 5235082-70, Product ID: 55949KX) (Extended Battery Module Included)

| | |
|---|---|
| UPS Maximum Height (6U) | 260 mm (10.24 inches) |
| Maximum Depth | 700 mm (27.56 inches) |
| Maximum Width | 440 mm (17.32 inches) |




| | |
|---|---|
| EBM Maximum Height | 130 mm (5.12 inches) |
| Maximum Depth | 680 mm (26.77 inches) |
| Maximum Width | 440 mm (17.32 inches) |

## 1.3 Optional Racks

| 42U Non-Seismic Rack (Standard/Netbay) | |
|---|---|
| height | 1999 mm (79 inches) |
| width | 605 mm (24 inches) |
| depth | 1000 mm (39 inches) |
| **42U Seismic Rack** | |
| height | 2020 mm (80 inches) |
| width | 648 mm (26 inches) |
| depth | 1105 mm (44 inches) |

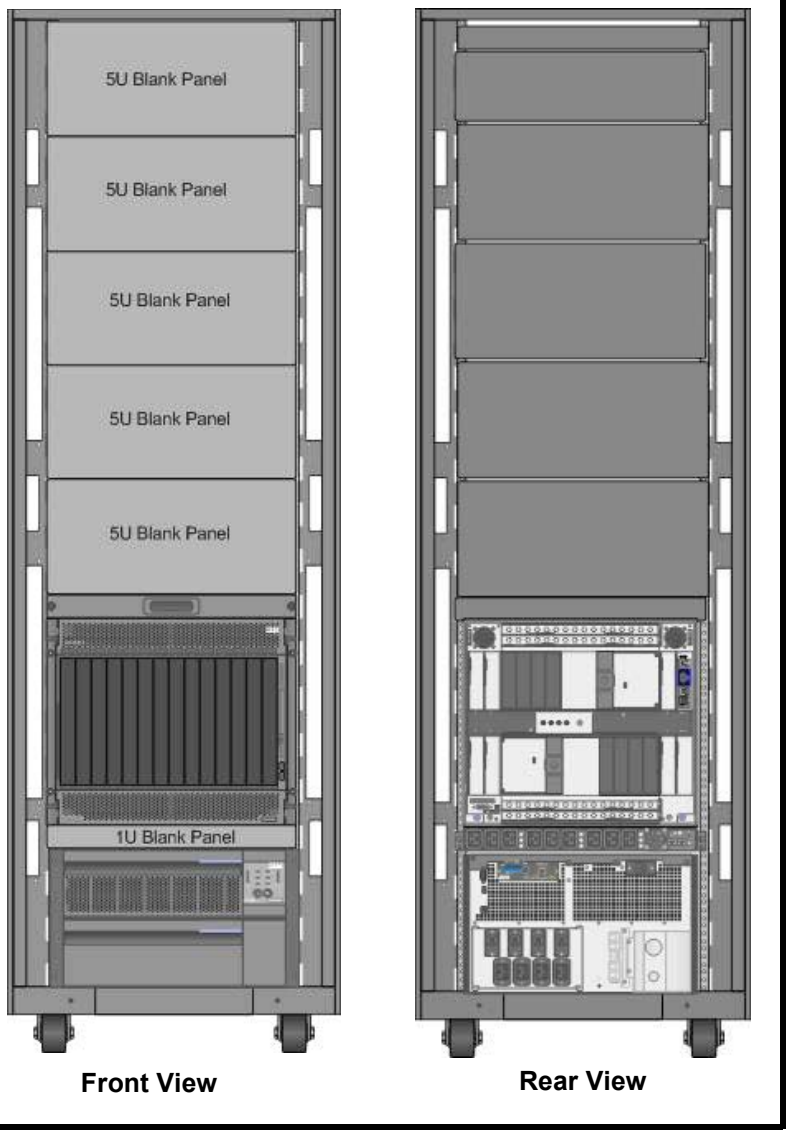



**Figure 4-3 42U Rack**

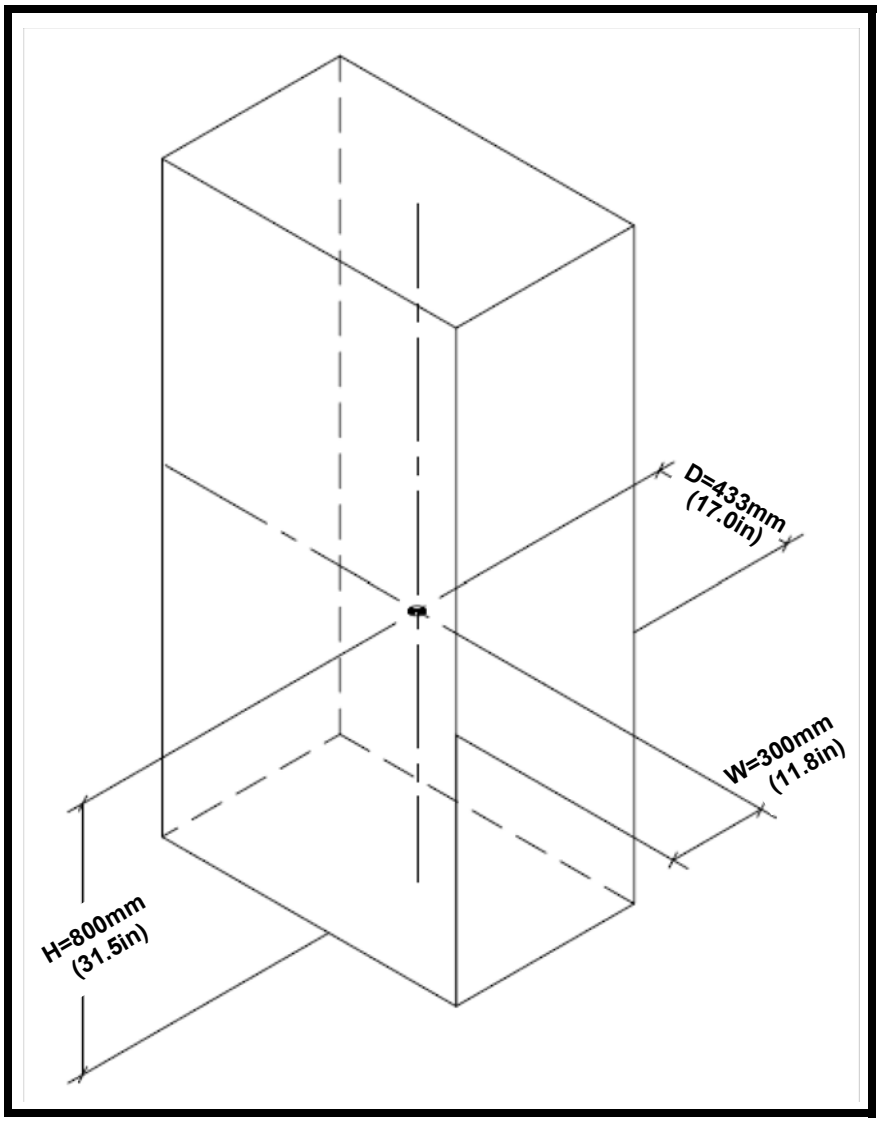



**Figure 4-4 42U Rack Isometric Illustration**

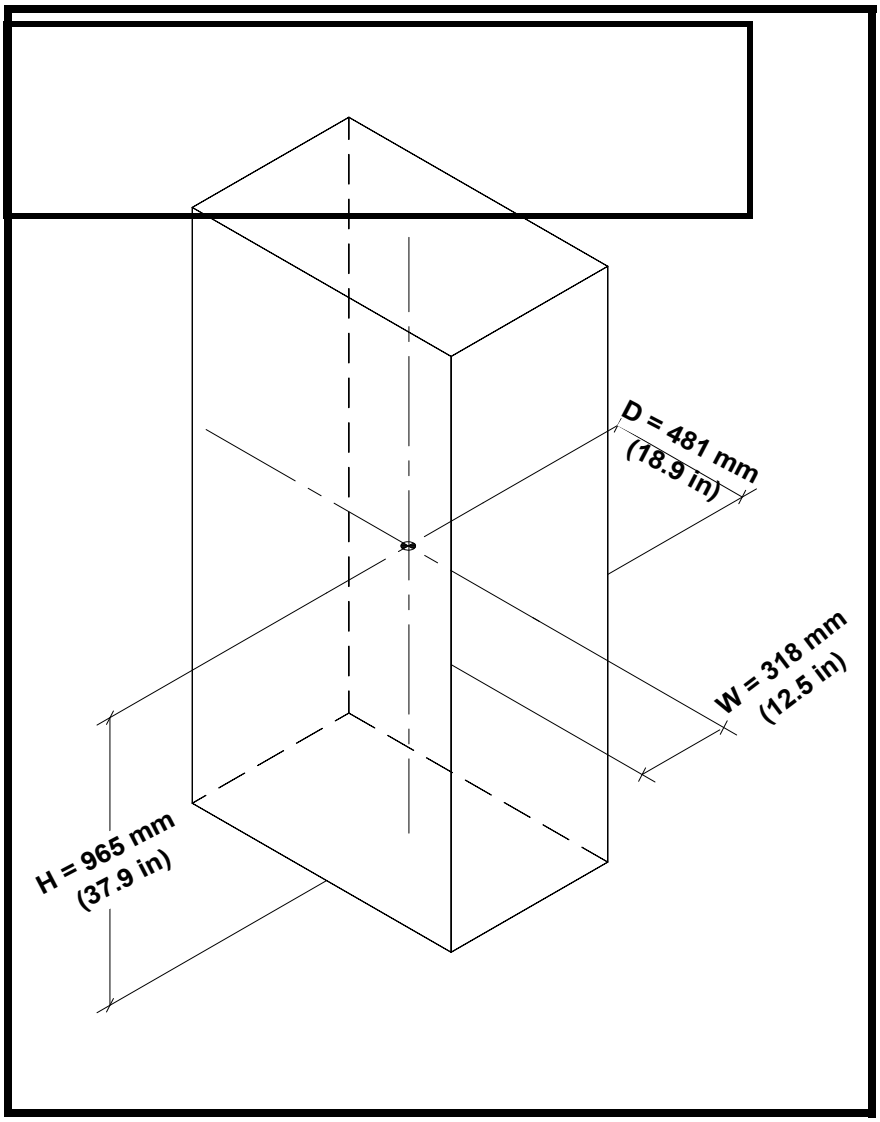



**Figure 4-5 42U Seismic Rack Isometric Illustration**

| 11U Rack | |
|---|---|
| height | 610 mm (24 inches) |
| width | 518 mm (20 inches) |
| depth | 1153 mm (45 inches) |

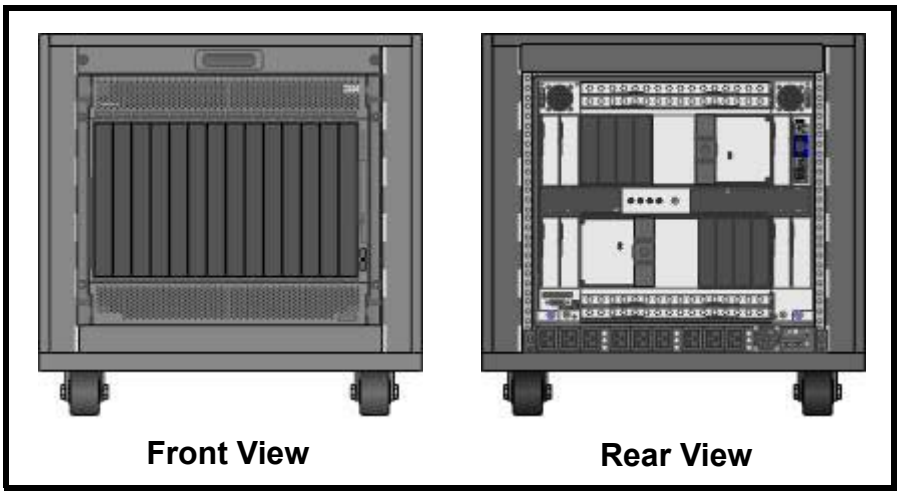



**Figure 4-6 11U Rack**

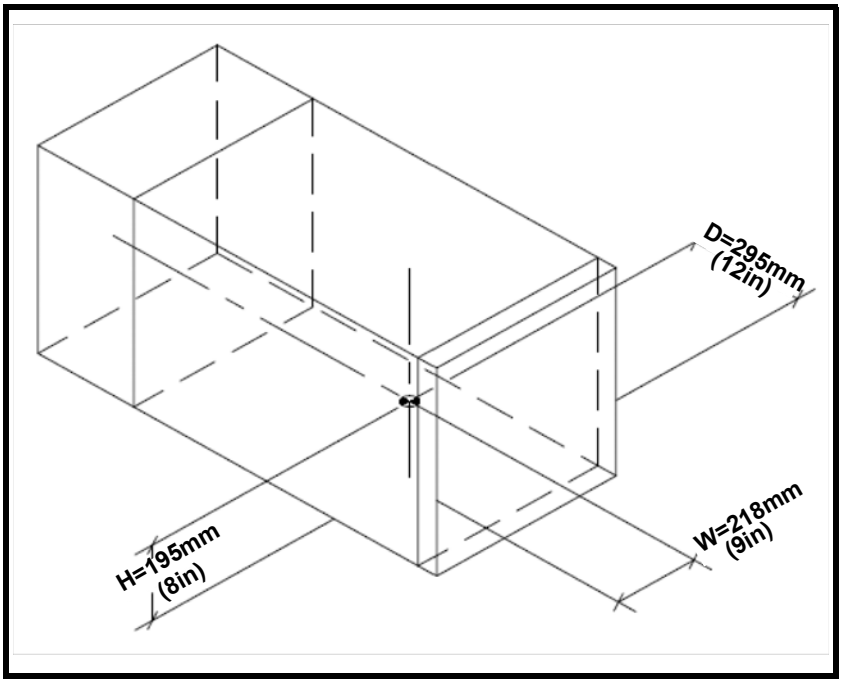



**Figure 4-7 11U Rack Isometric**

## 1.4 Customer-provided Rack Specifications

If the customer does not order a GEHC Optional Rack and decides to use a third party product, it is essential that their rack meets the following requirements to ensure proper fit and function.

- The rack must meet EIA-310-D standards for mounting flanges and hole locations.
- The front to rear distance of the mounting flanges must be between 698.5 mm and 762 mm (27.5 and 30 inches).
- The thickness of the mounting flanges must be between 1.9 mm and 3 mm.
- The mounting flanges must have either 7.1 mm (.28 in.) diameter holes or 9.6 mm (.38 in.) square holes on the standard EIA hole spacing.
- The rack must have a minimum depth of 70 mm (2.76 in.) between the front mounting flange and inside of the front door for appropriate cooling.
- The rack must have a minimum depth of 157 mm (6.2 in.) between the rear mounting flange and inside of the rear door to install the server and make space for cable management.
- The minimum side-to-side clearance in the rack between the front and rear mounting flanges must be 467 mm (18.2 in.) to accommodate the width of the server and the slide mounting brackets.
- The minimum side-to-side clearance in the rack between each door and the mounting flanges must be 484 mm (19.1 in.) to accommodate the slide mounting brackets.
- The rack must not prevent the flow of cool air into the front of the rack and hot air out of the rear of the rack (front and rear doors, if present, must be perforated).
- It is recommended that any side and top panels be used to try and prevent any unnecessary recirculation within the rack. In addition, it is also strongly recommended that any adjoining racks be sealed between them, also to prevent recirculation. Any openings between, above, or below the rack equipment can cause significant increase in inlet temperature (and hence increase fan and blower speeds undesirably) from this recirculation, so it should be avoided if at all possible.
- All empty EIA space in the rack must be closed off with filler panels to prevent the recirculation of air within the rack.
- The weight-handling capacity of the rack must be able to support the maximum rack configuration, including all servers, external cables, and PDUs.
- The rack must provide proper stabilization so that the rack does not become unstable when servers are pulled out for service.

# Chapter 5
# Structural and Mounting Requirements



## Section 1.0 Overview

Note: System performance specifications require close consideration of the customer's floor properties. The information in this chapter provides critical information and guidelines that the customer or GE Healthcare Representative should communicate to the architect, structural engineer, and contractor prior to construction or renovation. Failure to properly evaluate the customer's floor may result in limited performance and possible safety hazards.

### 1.1 Vibration

It might be necessary to install the Veo system in an area subject to minor vibrations. The vibration levels normally present in data centers are well within the indicated levels. However, mounting the equipment in racks, stackers, or similar equipment might increase the risks of vibration-related problems. It is important to consult the manufacturer of such equipment to ensure that vibration factors will not exceed the specifications provided in Table 5-1.

Note: Vibration levels at any discrete frequency should not exceed a level of 1/2 the g rms values for the class listed in the vibration environment Table 5-1

| Class | g rms | g peak | Mils | Shock |
|---|---|---|---|---|
| V1 L | 0.10 | 0.30 | 3.4 | 3 g at 3 ms |
| V1 H | 0.05 | 0.15 | 1.7 | 3 g at 3 ms |

**Table 5-1 Operational Vibration and Shock Limits**

| | |
|---|---|
| **V1** | Floor-mounted machines in a data center or equipment room environment |
| **L** | Light, weight less than 600 kg |
| **H** | Heavy, weight equal to or greater than 600 kg |
| **g rms** | Overall average g level over the 5 to 500 Hz frequency range |
| **g peak** | maximum real-time instantaneous peak value of the vibration time history wave form (excluding events defined as shocks) |
| **Mils** | Peak-to-peak displacement of a discrete frequency in the 5 to 17 Hz range. One mil equal.001 inch |
| **Shock** | Amplitude and pulse width of a classical 1/2 sine shock pulse |

**Table 5-2 Legend Table**

The values given in the Operational vibration and shock limit table are based on worst-case field data measured at customer installations for current and previously released products. the vibration and shock environment will not exceed these values except for abnormal cases involving earthquakes or direct impacts.

# Section 2.0 Floor Loading

Follow the floor loading and anchoring guidelines below when preparing a site for system installation:

- **The floor loading requirement for a Veo system is 345 kg/per sq. meters (75 lbs/per sq. ft).**
- Hospitals and scanning facilities throughout the world may utilize a variety of floor types, and the disposition of different floor types may necessitate additional planning to adequately accommodate the scanner:
  - Wood floors often require substantial reinforcement. GE does not recommend using wood floors.
  - Temperature variation in blacktop or marble floors may allow anchor movement and pullout. GE does not recommend using these floors.
  - GE recommends using concrete floors with a minimum thickness of 102 mm (4 in.) when using GE-supplied anchoring or any other equivalent anchoring method.

**NOTICE** Responsibility for providing an approved support structure and mounting method for all floor types other than the GE-recommended floor rests with the purchaser. General Electric accepts no responsibility for any failure of the support structure or anchoring method, including those used for seismic mounting. GE accepts no responsibility for methods other than those listed.

## 2.1 Floor Levelness

The optional 42U and 11U racks that house the Veo system and optional UPS have adjustable leveling pads. The FE (Field Engineer) will make this adjustment as part of the rack installation.

# Section 3.0 Anchoring / Seismic Mounting

- Customers that order a rack from GE and their facility is located in an earthquake or seismic area, **MUST order the 42U Seismic Rack**. This is the only compliant rack. There is no GE seismic offering for the 11U Rack. If the customer is going to use their own rack, they must consult with their rack OEM to ensure compliance to all local seismic requirements
- Customer should contact their local GE representative to obtain a copy of the seismic anchoring requirements.

# Section 4.0 Weights and Center-of-Gravity

| | |
|---|---|
| Chassis | 158.7 Kg (350 lbs) |
| UPS 10 KVA | 114.2 Kg (252 lbs) |
| UPS 11 KVA | 92.2 Kg (203.3 lbs) |
| 42U Rack Standard | 125 kg (276 lbs) |
| 42U Rack Seismic | 200 kg (485 lbs) |
| 11U rack | 41 kg (90 lbs) |

**Table 5-3 Weights**

The information in the following figures provides the customer's contractor and/or structural engineer with center-of gravity information to assist in seismic calculations for the system:

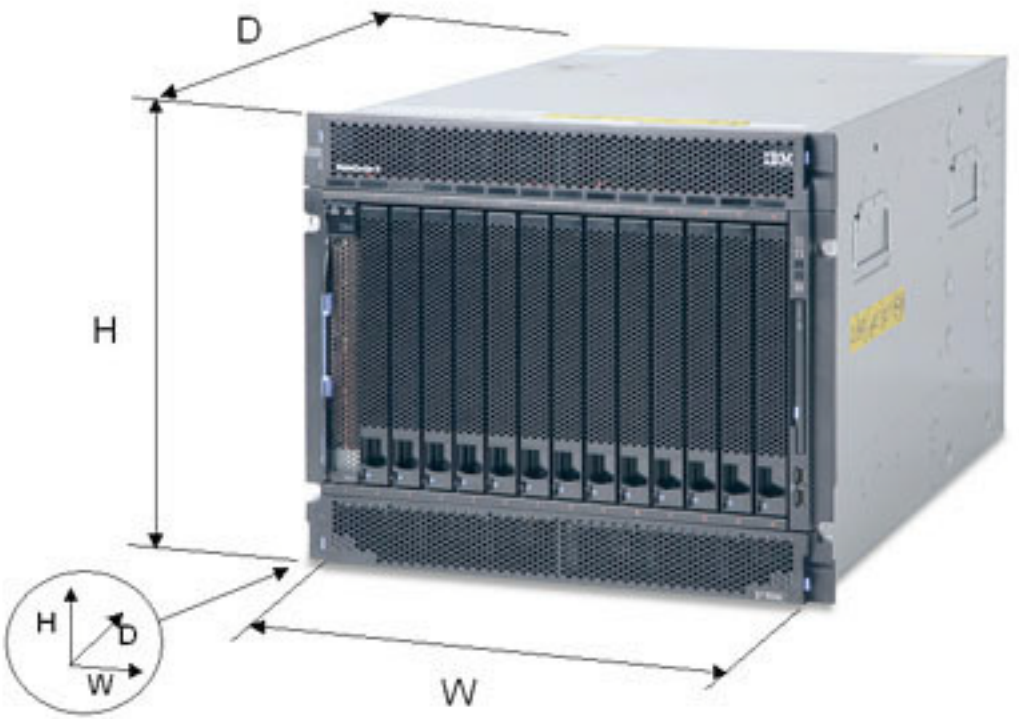
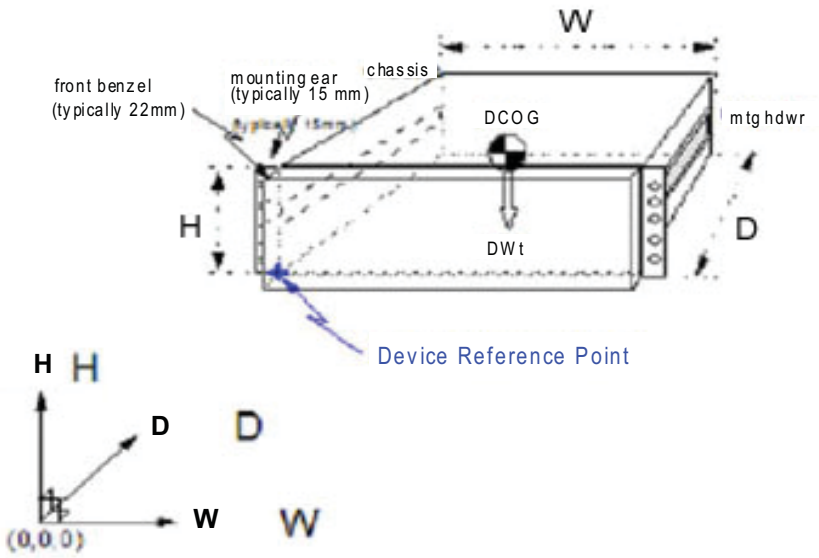


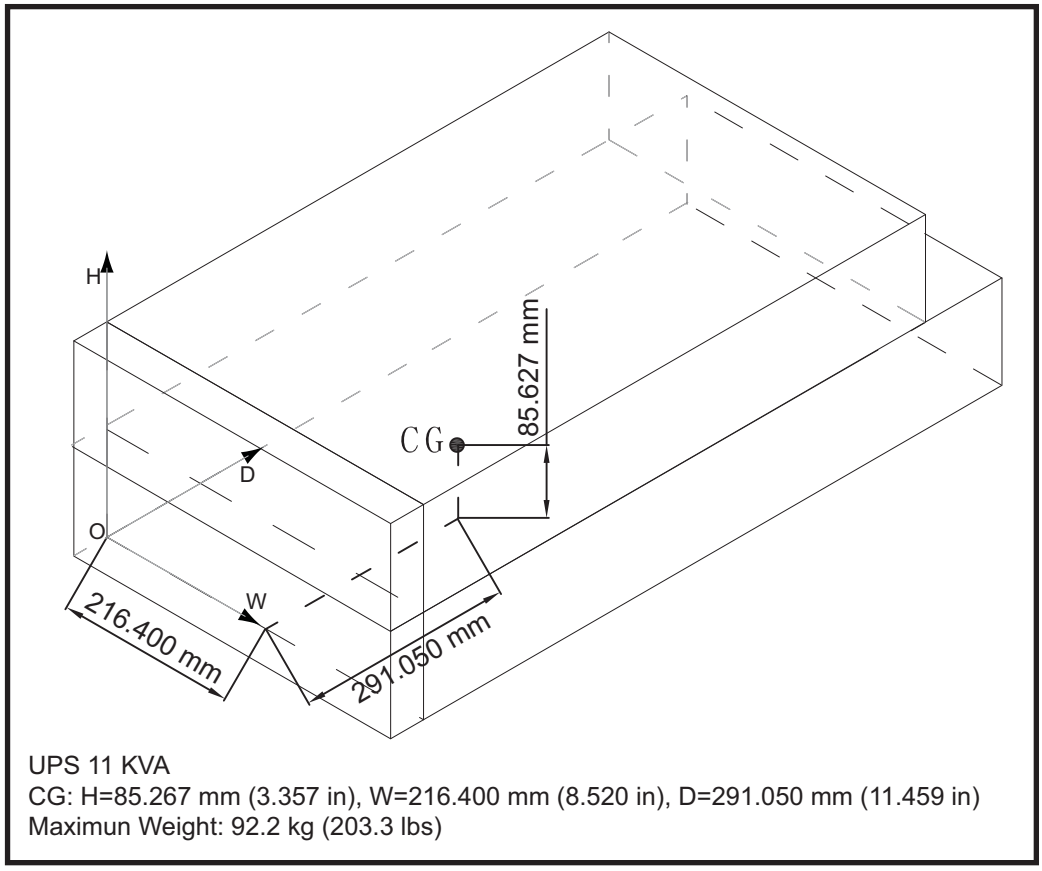

**Figure 5-1 BladeCenter Center of Gravity**

**UPS 10KVA (IBM# 21304RX) Center of Gravity**




UPS 10KWA CG: H = 127 mm (5in), W = 212 mm (8.3 in), D=314 mm (12.4 in)
Maximum Weight: 114.2 Kg (252 lbs)

**Figure 5-2 UPS Center of Gravity**




UPS 11 KVA
CG: H=85.267 mm (3.357 in), W=216.400 mm (8.520 in), D=291.050 mm (11.459 in)
Maximun Weight: 92.2 kg (203.3 lbs)

**Figure 5-3 UPS Center of Gravity**

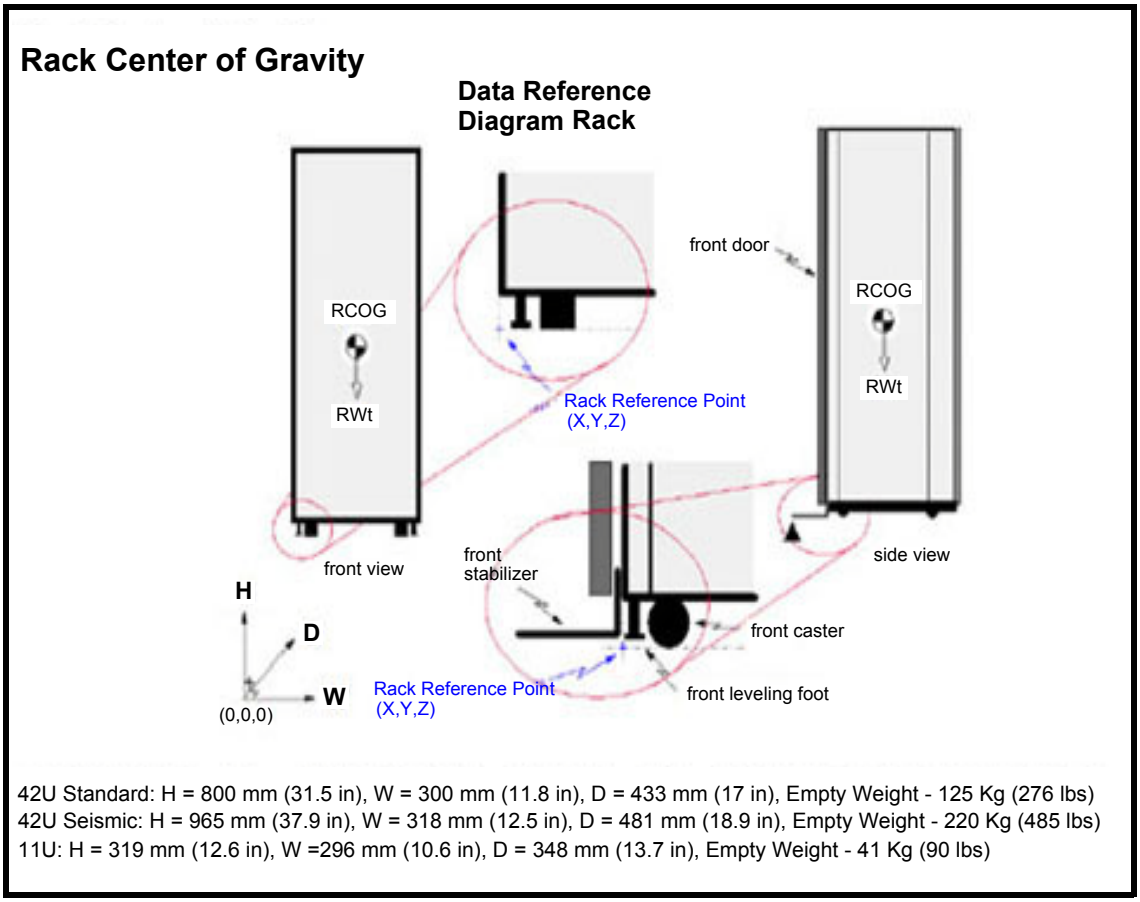



**Figure 5-4 Racks Center-of-Gravity**

# Chapter 6
# Environmental Requirements



Ensure the operational readiness and proper system calibration of HVAC prior to installation. Maintain the environmental conditions listed below at ALL times, including over nights, weekends, and holidays. Shut down the Veo BladeCenter if air conditioning is not working.

## Section 1.0: Temperature and Humidity Specifications

**NOTICE** **Exceeding environmental specifications may adversely affect system operation and image quality.**

### 1.1 Temperature of Data/IT/Equipment Room

| | |
|---|---|
| Maximum allowable ambient room temperature: | 26° C (78.8° F) |
| Minimum allowable ambient room temperature: | 18° C (64.4° F) |

**Table 6-1 System Temperature Limits**

Note: Be certain to account for ANY cooling equipment cycle control range, ensuring that the maximum and minimum ambient room temperatures do not exceed those shown in Table 6-1during room thermal cycling.

### 1.2 Humidity of Data/IT/Equipment Room

| | |
|---|---|
| Maximum allowable non-condensing relative humidity: | 60% |
| Minimum allowable non-condensing relative humidity: | 30% |

**Table 6-2 System Humidity Limits**

### 1.3 Other Guidelines

- Accurate determination of hospital room environmental conditions may require the temporary installation of a temperature and humidity recorder near the location designated for system installation. Record temperature and humidity readings before and after installation to verify the site's true environmental conditions.
- Consider heating, ventilating, air conditioning (HVAC) needs, and redundancy (back-up). An air conditioner with two compressor units rather than one, may prevent system downtime. A redundant (back-up) air conditioner permits Veo BladeCenter operation during an extended repair of the primary air conditioner.

# Section 2.0 Cooling Requirements

Use Table 6-3 to assist in cooling requirements planning. Contact an HVAC specialist to determine optimal placement of the thermostat and all HVAC vents.

| System Component | Max Heat Dissipation | Max Power Consumption |
|---|---|---|
| | BTU/HR | Watts |
| **BladeCenter Room** | **15,000** | **4,000** |
| **Options** | | Normal Operation |
| UPS | 3,000 | 660 |

**Table 6-3 System Heat Output**

# Section 3.0 Air Flow and Air Quality

## 3.0.1 Dust and Air Quality

Ensure that the scan suite area is free of all dust, and not subject to ANY ongoing construction, including the installation of cabinets, hanging doors, and ceiling tiles.

When planning a data center, take the following points into consideration regarding cooling.

### AIR FLOW

Air flow is critical for ensuring that the operating air temperature stays within permissible limits. Keep the following information in mind when planning your installation: **Air flow direction is from front to back.** All BladeCenter chassis bays must be populated with a module, a blade server, or a filler in place of the component. If a location is left empty for more than one minute while the BladeCenter unit is operating, performance degradation or thermal failures might occur.

Note: **All equipment installed in a rack with a BladeCenter unit must use front-to-back air flow to prevent warm air recirculation problems. Devices that use back-to-front air flow cause warm air to enter the front of the BladeCenter unit. This can result in reduced reliability, component failure, data loss, or server shutdown.**

### PREVENTION OF AIR RECIRCULATION

Consider these factors when planning for single or multiple rack installations:

When racks are positioned adjacent to each other, ensure that the racks fit tightly together from side to side to prevent inter-rack air recirculation from the back to the front. Air recirculation occurs over the top or around the side of a rack in a room that does not have a cooling system with sufficient airflow volume capacity. Ensure that the cooling system has adequate capacity for the room cooling load.

### ROOM COOLING

To prevent possible Veo system thermal failures, proper room cooling is vital. Keep these points in mind when planning for the installation:

- Ensure that the site cooling system has adequate capacity for the room cooling load.
- Ensure that cool air is provided to the front of the Veo system Veo and rack.
- Ensure that the room cooling system is positioned so warm exhaust air is directed away from the Veo system towards the room cooling system without passing in front of the Veo system.

Note: **A significant air temperature gradient can occur from the bottom to the top of a rack in a room which has a cooling system that does not have sufficient airflow volume and cooling capacity. This might cause equipment at the top of the rack to run hot resulting in reduced reliability, component failure, data loss, or Veo system shutdown.**

## 3.0.2 Dust and Air Quality

Ensure that the Data/IT/Equipment room is free of all dust.

### PARTICULATE CONTAMINATION

Use the particulates and gases specifications to create a safe operating environment for your blade server.

**NOTICE** Airborne particulates (including metal flakes or particles) and reactive gases acting alone or in combination with other environmental factors such as humidity or temperature might pose a risk to the server that is described in this document. Risks that are posed by the presence of excessive particulate levels or concentrations of harmful gases include damage that might cause the server to malfunction or cease functioning altogether. This specification sets forth limits for particulates and gases that are intended to avoid such damage. The limits must not be viewed or used as definitive limits, because numerous other factors, such as temperature or moisture content of the air, can influence the impact of particulates or environmental corrosives and gaseous contaminant transfer. In the absence of specific limits that are set forth in this document, you must implement practices that maintain particulate and gas levels that are consistent with the protection of human health and safety. If GE determines that the levels of particulates or gases in your environment have caused damage to the server, GE may condition provision of repair or replacement of servers or

parts on implementation of appropriate remedial measures to mitigate such environmental contamination. Implementation of such remedial measures is a customer responsibility.

| CONTAMINANT | LIMITS |
|---|---|
| Particulate | • the room air must be continuously filtered with 40% atmospheric dust spot efficiency (MERV 9) according to ASHRAE Standard 52.2 (See note 1).<br>• Air that enters a data center must be filtered to 99.97% efficiency or greater, using high-efficiency particulate air (HEPA) filters that meet MIL-STD-282.<br>• The deliquescent relative humidity of the particulate contamination must be more than 60%. (See note 2)<br>• The room must be free of conductive contamination such as zinc whiskers. |
| Gaseous | • Copper: Class G1 as per ANSI/ISA 71.04-1985. (See note 3)<br>• Silver: Corrosion rate of less than 300 Å in 30 days. |
| Note 1 | *ASHRAE 52.2-2008 - Method of Testing General Ventilation Air-Cleaing Devices for Removal Efficiency by Particle Size. Atlanta: American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.* |
| Note 2 | *The deliquescent relative humidity of particulate contamination is the relative humidity at which the dust absorbs enough water to become wet and promote ionic conduction.* |
| Note 3 | *ANSI/ISA-71.04-1985. Environmental conditions for process measurement and control systems: Airborne contaminants. Instrument Society of America, Research Triangle Park, North Carolina, U.S.A.* |

**Table 6-4 Limits for particulates and gases**

### TYPES OF DUST TO AVOID

Ensure that NO construction occurs in or immediately around the room that results in:

- Concrete dust
- Drywall dust
- Ceiling tile dust
- Wood sawdust or shavings

Failure to take appropriate precautions to protect the system against these types of dust may result in DAMAGE to the system and early SYSTEM FAILURE.

## 3.1 Chemical Contamination

Never install wet film processors in the same room as the system, as this may result in possible contamination of the system components. Chemicals utilized by such processors can contribute to increased equipment failures and downtime, and decreased reliability.

When siting this equipment, consider the effects that contact with these chemicals and the resulting fumes might have on human subjects in proximity to them. In addition, film processor equipment

installation must meet all manufacturer requirements (e.g. ventilation specifications) as well as all applicable local, state, and national codes.



# Section 4.0 Lighting

Sufficient lighting is required to properly install and service the Veo system. Light sources in the equipment room should have a general lighting level of 300 to 500 lumens/$m^2$ (lux) or 30 to 50 foot-candles. When preparing the equipment room consider painting the room a light color with a white ceiling to reflect (rather than absorb) light.

# Section 5.0 Altitude

The Veo BladeCenter shall meet all functional and performance specifications when placed in a room that is at an elevation of **-150 m to 2400 m (-492 ft to 7,875 ft)** above sea level.

# Section 6.0 Electro-Magnetic Interference (EMI)

Locate the Veo system in ambient static magnetic fields of less than $10^{-3}$ tesla (10,000 milligauss) to guarantee data integrity.

## 6.1 EMI Reduction

If you know of or suspect the presence of fields of excessive EMI, consult GE Healthcare Sales & Service for recommendations. Consider the following when attempting to reduce EMI:

- External field strength decreases rapidly with distance from source of the magnetic field.
- External leakage magnetic field of a three-phase transformer measures much less than that of a bank of three single-phase transformers of an equivalent power rating.
- Large electric motors constitute a source of substantial EMI.
- High-powered radio signals constitute a source of EMI.
- Maintain good screening of cables and cabinets.
- Consider and measure EMI fields of sites with main facility power running UNDER the floor or WITHIN the walls or ceilings of the scan room.
- Pay special attention to power substations and high-voltage power lines in proximity to the scan facility.
- If any concerns remain regarding excessive EMI fields, be sure to measure to confirm that your site meets all required specifications.

# Section 7.0 Electro-Magnetic Compatibility (EMC)

## 7.1 General Scope

The Veo product is a CE-compliant device that satisfies regulations regarding Electro-Magnetic Compatibility (EMC) and Electro-Magnetic Interference (EMI) pursuant to IEC 60950-1 and the GE Discovery CT750 HD in combination with Veo satisfies IEC 60601-1-2.

## 7.2 Electromagnetic Emission

The Veo is intended for use in the electromagnetic environment specified below. The customer or the user of the Veo should assure that it is used in such an environment.

| EMISSIONS | | | |
|---|---|---|---|
| **TEST** | **CLASS** | **STANDARD AND TEST PROCEDURES** | **COUNTRY** |
| Radiated and Conducted Emissions | A | FCC 47 CFR Part 15, Subpart B, ANSI C63.4 (2003) | United States |
| | A | ICES-003, Issue-004, ANSI C63.4 (2003) | Canada |
| | A | EN 55022 (2006) | Europe |
| | A | CISPR-22 (2006) | |
| | A | CNS 13438 (2006)* | Taiwan |
| | A | AS/NZS CISPR 22:2006 | Australia/New Zealand |
| | A | VCCI April 2008 | Japan |
| | A | GB 9254-1998 | China |
| | A | Communique 2004/9; Communique 2004/22 | Turkey |
| | A | EMC.CVG, 28 October 2002 | Saudi Arabia |
| | A | TCVN 7189:2002 | Vietnam |
| Power Line Harmonics | A | EN 61000-3-2 (2006) | Europe |
| | A | GB17625.1-2003 | China |
| Power Line Fluctuation/Flicker | N/A | EN 61000-3-3 (1995) + A1 (2001) + A2 (2005) | Europe |
| | | GB 17625.2:1999 | China |
| * Above 1GHz Radiated and Telecom Conducted Emission measurements are currently not required by BSMI | | | |

**Table 6-5 Emission**

## 7.3 Electronic emission notices

### 7.3.1 Federal Communications Commission (FCC) statement

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emis-

sion limits. GE is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

### 7.3.2 Industry Canada Class A emission compliance statement

This Class A digital apparatus complies with Canadian ICES-003. Avis de conformité à la réglementation d'Industrie Canada Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

### 7.3.3 Australia and New Zealand Class A statement

Note: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

### 7.3.4 United Kingdom telecommunications safety requirement

Note: This apparatus is approved under approval number NS/G/1234/J/100003 for indirect connection to public telecommunication systems in the United Kingdom.

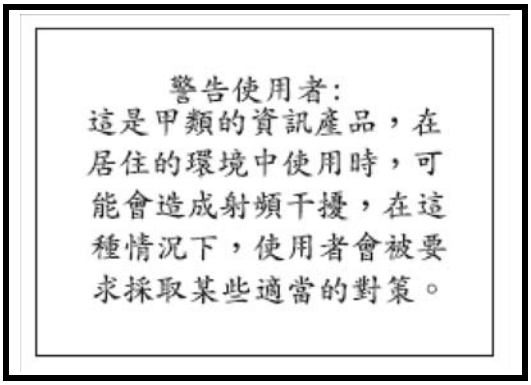
### 7.3.5 European Union EMC Directive conformance statement

This product is in conformity with the protection requirements of EU Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility. GE cannot accept responsibility for any failure to satisfy the protection requirements resulting from a nonrecommended modification of the product, including the fitting of non-GE option cards. This product has been tested and found to comply with the limits for Class A Information Technology Equipment according to CISPR 22/European Standard EN Appendix C. Notices 49

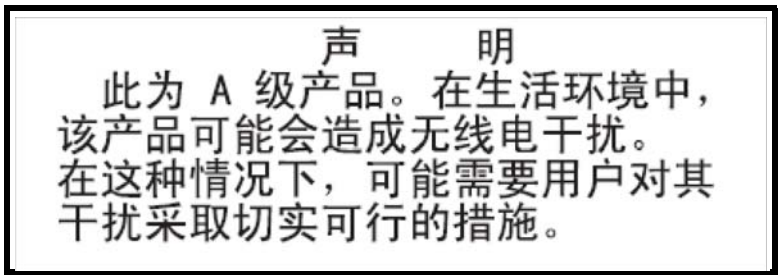
55022. The limits for Class A equipment were derived for commercial and industrial environments to provide reasonable protection against interference with licensed communication equipment.

Note: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

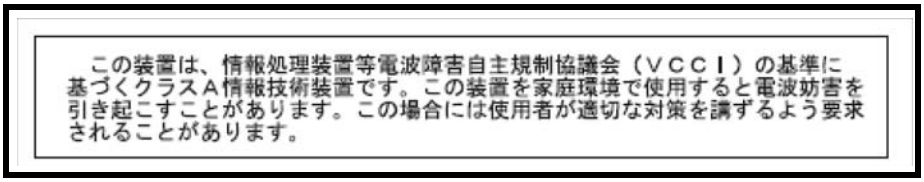
### 7.3.6 Taiwanese Class A Warning Statement




### 7.3.7 Chinese Class A Warning Statement




### 7.3.8 Japanese Voluntary Control Council for Interference (VCCI) Statement



## 7.4 Electromagnetic Immunity



| IMMUNITY - EN 55024:1998 + AMD 1:2001 + AMD 2:2003 | | | | |
|---|---|---|---|---|
| **TEST** | **PERFORMANCE CRITERIA** | **SEVERITY LEVEL** | **TEST LEVEL** | **TEST PROCEDURE** |
| ESD - Contact | B | 2 | 4 kV | IEC 61000-4-2:1995 |
| ESD - Air | B | 3 | 8 kV | IEC 61000-4-2:1995 |
| RES | A | 2 | 3 V/m | IEC 61000-4-3:1997 |
| EFT/B - Power | B | 2 | 1 kV | IEC 61000-4-4:1995 |
| EFT/B - Signal | B | 2 | 0.5 kV | IEC 61000-4-4:1995 |
| Surges - Signal Ports | B | 2 | 1 kV | IEC 61000-4-5:1995 |
| Surges - AC Mains | B | 2 | 1 kV (L-L) / 2 kV (L-E) | IEC 61000-4-5:1995 |
| Conducted Immunity | A | 2 | 3 V | IEC 61000-4-6:1996 |
| Power Frequency Magnetic Fields | A | 1 | 10 A/m | IEC 61000-4-8:1994 |
| Voltage Dips | B<br>C | | >95% reduction 0.5 periods<br>30% reduction 25 periods | IEC 61000-4-11:1994 |
| Voltage Interruptions | C | | >95% reduction 250 periods | IEC 61000-4-11:1994 |

**Table 6-6 Immunity**

## 7.5 Installation Requirements and Environment Control

In order to minimize interference risks, the following requirements apply.

### 7.5.1 Cable Shielding and Grounding

All interconnect cables to peripheral devices must be shielded and properly grounded. Use of cables not properly shielded and grounded may result in the equipment causing radio frequency interference.

The manufacturer is not responsible for any interference caused by using other than recommended interconnect cables or panels, or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the users' authority to operate the equipment.

All interconnect cables to peripheral devices must be shielded and properly grounded, except when technologically prohibited. Use of cables not properly shielded and grounded may result in the equipment causing radio frequency interference.

# Chapter 7
# Power Requirements



Be sure to communicate all necessary information in this chapter to the electrical contractor employed at the installation site.

## Section 1.0 Power & Grounding Requirements

### 1.1 Power Requirements for BladeCenter

The BladeCenter power requirements shall be within the following input voltage and frequency ranges:

| | |
|---|---|
| Voltage | +200 VAC to +240 VAC +/- 10% |
| Frequency | 50 +/-3 Hz and 60 +/-3 Hz |
| Total Power Consumption | 4,000W (4 KVA) max output |
| Transient Current (Rush Current) | 50A for less than 4ms |
| Standby Mode | 2,300W (2.3KVA) |

### 1.2 Power Connection Type

**Customer** is required to provide the matching receptacle to provide the line power: 360C6W IP-67 HUBBELL or equivalent (North America/Japan) or 363C6W IP-67 HUBBELL or equivalent (European).

**GE** will provide the needed BladeCenter line cord plug (male sleeve shown below). Both versions will be included with the BladeCenter.

- Power Cable (p/n 40K9615) - North American/Japan Power Standard. IEC 309 2P+G (2.5m) - 60A (48A Derated) 200V-240V Single Phase. See Figure 7-1
- Power Cable (p/n 40K9613) - European Power Standard. IEC 309 P+N+G (2.5m) - 63A / 220-240V Single Phase. See Figure 7-2

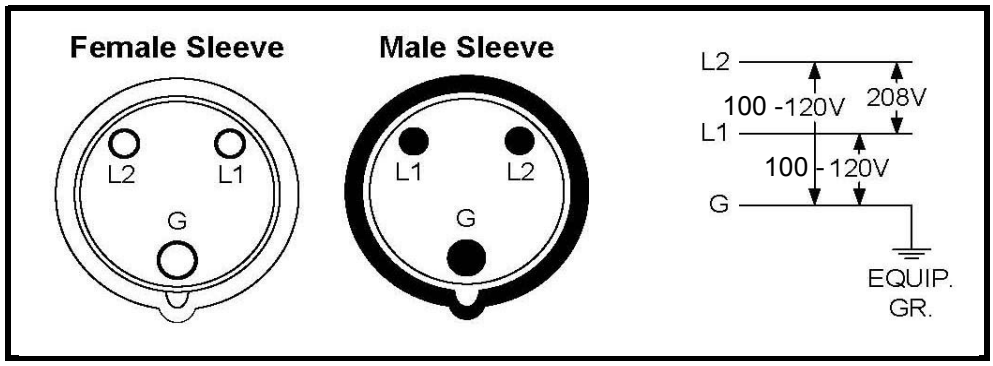



**Figure 7-1 North American/Japan Power Standard Receptacle**

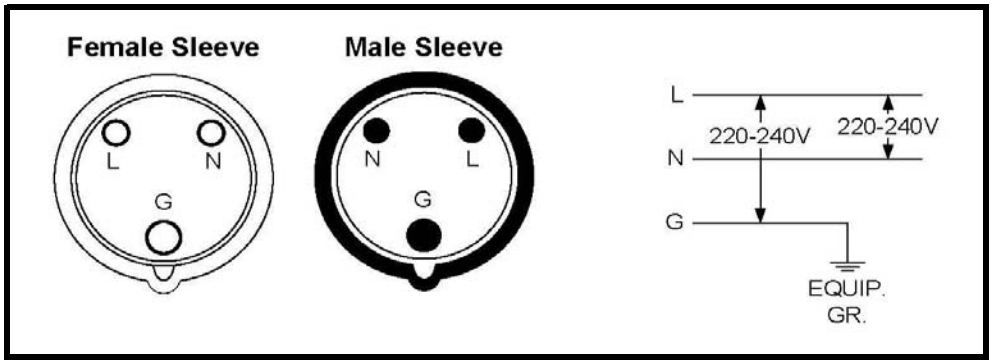



**Figure 7-2 European power Standard Receptacle**

## 1.3 Power Requirements for Optional UPS

**The 10KVA UPS (GE P/N: 5235082-10/5235082-20, IBM P/N: 81Y3374/81Y3375) and 11KVA UPS (GE P/N: 5235082-70, Product ID: 55949KX) each require a separate power source in addition to the BladeCenter power. See Figure 7-7. The UPS unit does not come with an input line cord.** It must be hardwired by an electrician. It can be supplied by North America and Japan Standard power with a 60A/200-240V single phase (2P+G) circuit or by European Standard power with a 63A/200-240V single phase (P+N+G) circuit. Customer shall provide power source lock-out for a Padlock and LOTO tag.

.

| | |
|---|---|
| Voltage | +200 VAC to +240 VAC +/- 10% |
| Frequency | 50 +/-3 Hz and 60 +/-3 Hz |
| Total Power Consumption for 10 KVA UPS | 660W (.66 KVA) in Standby Mode with line voltage present<br>Provides full power for 17 minutes with loss of line power |
| Total Power Consumption for 11 KVA UPS | 660W (.66 KVA) in Standby Mode with line voltage present<br>Provides full power for 10 minutes with loss of line power |

## 1.4 Additional information related to hardwiring of the UPS



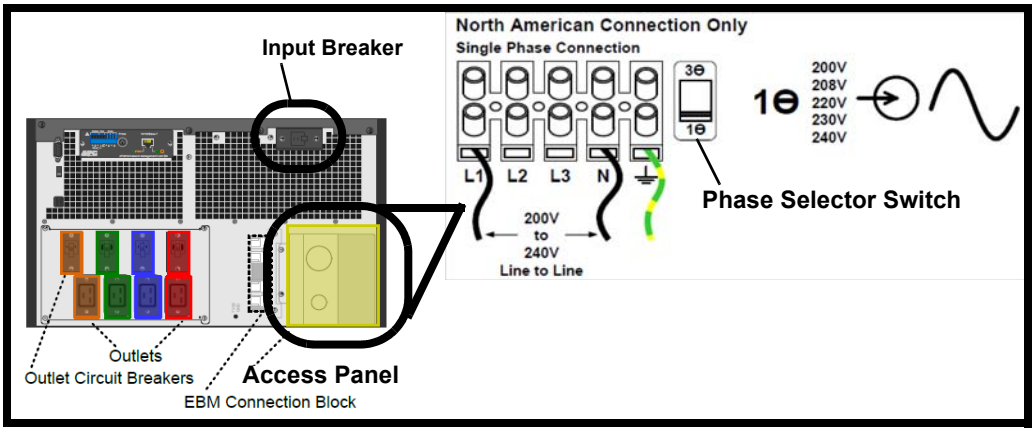



**Figure 7-3 North American and Japanese Connection for UPS 10 KVA (GE P/N: 5235082-10/ 5235082-20, IBM P/N: 81Y3374/81Y3375)**

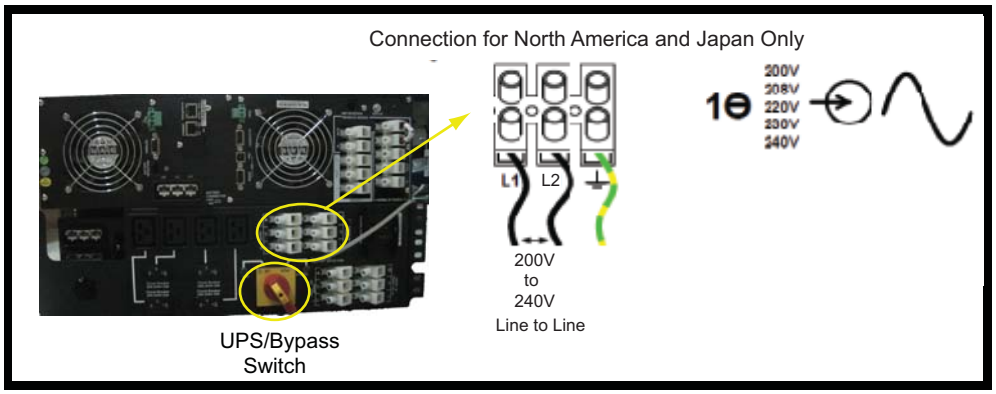



**Figure 7-4 North American and Japanese Connection for UPS 11 KVA (GE P/N: 5235082-70, Product ID: 55949KX)**

| SYSTEM | Product ID | INPUT VOLTAGE | NOMINAL CURRENT FULL LOAD | TYPICAL BREAKER SIZE | TYPICAL AWG |
|---|---|---|---|---|---|
| UPS10 KVA | 81Y3374/ 81Y3375 | 200-240V 1ph (2P+G) | 50A | 63A | 6 |
| UPS11 KVA | 55949KX | 200-240V 1ph (2P+G) | 50A | 63A | 6 |

**Table 7-1 North American and Japanese Connection**

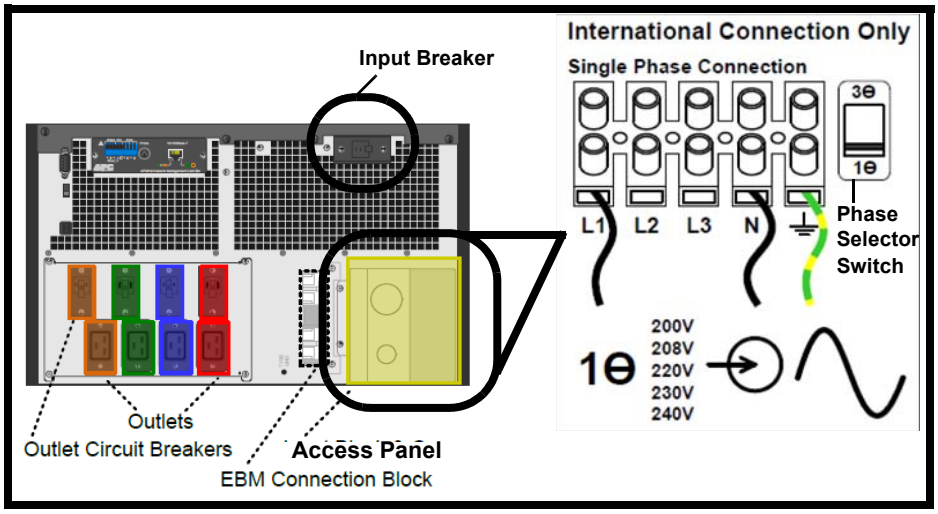



**Figure 7-5 International Connection for UPS 10 KVA (GE P/N: 5235082-10, IBM P/N: 81Y3374)**

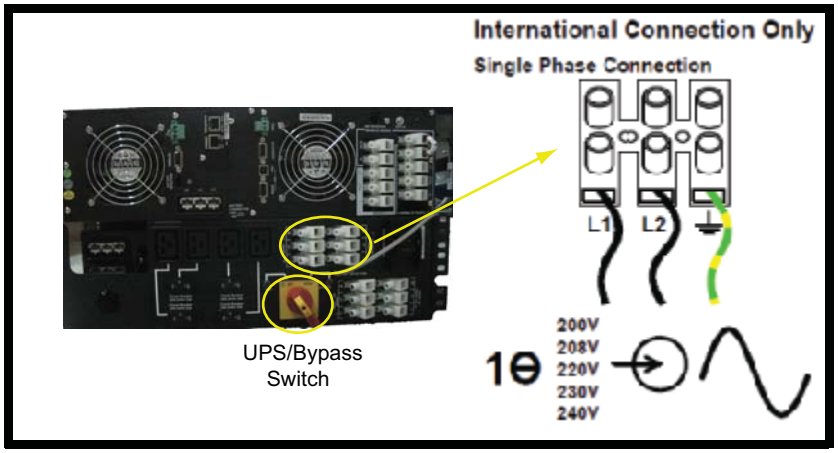



**Figure 7-6 International Connection for UPS 11 KVA (GE P/N: 5235082-70, Product ID: 55949KX))**

| SYSTEM | Product ID | INPUT VOLTAGE | NOMINAL CURRENT FULL LOAD | TYPICAL BREAKER SIZE | TYPICAL WIRE SIZE |
|---|---|---|---|---|---|
| UPS 10 KVA | 81Y3374 | 220/230/240 V 1ph | 50A | 63A | 16mm$^2$ |
| UPS 11 KVA | 55949KX | 220/230/240 V 1ph | 50A | 63A | 16mm$^2$ |

**Table 7-2 International Connection**

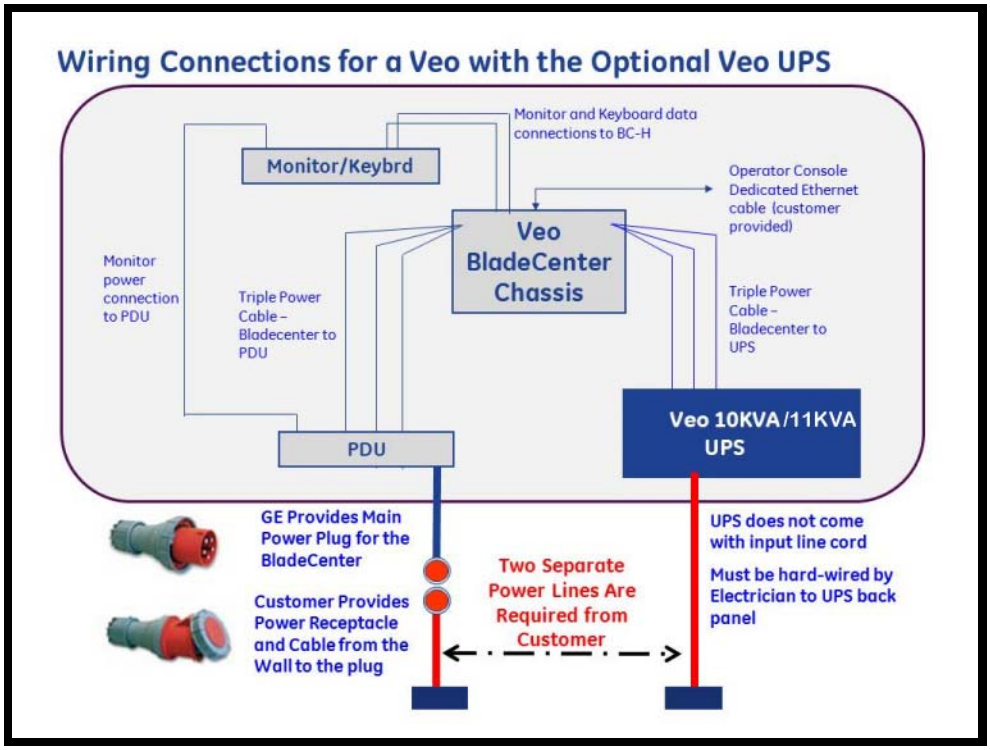



**Figure 7-7 UPS Main Power Connection**

## 1.5 Technical specifications

| | |
|---|---|
| Part Number | 55949KX |
| Form Factor | 6U Rack or Tower |
| Topology | Online, double conversion, sinewave output |
| VA/Watts Rating | 11000 VA/10000 W |
| Efficiency (on utility power) | Online mode: Up to 94.5%<br>High efficiency mode: Up to 98% |
| Transfer Time | Online mode: 0 ms (no break)<br>High efficiency mode: 10 ms maximum (due to loss of utility power) |
| Energy Star Complaint: | Yes |

**Table 7-3 General**

| | |
|---|---|
| Input Voltage | 200-240 VAC, 1Phase |
| Input Frequency | 50/60Hz |
| Max Input Amperage | 50 A |
| Input Connector | Hardwired Terminal Block |
| Input Line Cord | Onsite wiring Required |

**Table 7-4 Electrical Input**

| | |
|---|---|
| Output Voltage Settings | 200/208/220/230/240 VAC |
| Output Frequency | 50/60 Hz |
| Output Power Capacity | 200-208 VAC: 10000 VA/ 9000W<br>220 VAC: 11000 VA/ 9900 W<br>230-240 VAC: 11000 VA/ 10000 W |
| Output Connectors | 4x IEC 320-C19 (16 A) (on the MBP) |

**Table 7-5 Electrical Output**

| | |
|---|---|
| Battery Type | Valve Regulated Lead Acid (VRLA): Maintenance-free, sealed, leak-proof |
| Battery Management | ABM technology or temperature-compensated charging method (user selectable), automatic battery test and deep discharge protection, and automatic recognition of external battery units |
| Battery Replacement | Hot-swap standard and extended battery modules |
| External Battery Support | Up to EBM (PN 55949BX) |

| | |
|---|---|
| Typical backup times | See 11Table 7-8, Runtime Chart |

**Table 7-6 Batteries**

| | |
|---|---|
| USB port (Type B) | Yes |
| RS-232 serial port (RJ-45) | Yes |
| 10/100 Mbps Ethernet port (RJ-45) | Yes (on the Network Management Card) |
| Environmental monitoring | Optional with Environmental Monitoring Probe, 46M4113 (connects to the Network Management Card) |
| Management software | UPS Power Manager and UPS Power Protector |
| Control panel | Intelligent 5-button graphical LCD |
| LED indicators | Online, On Battery, Bypass, and Fault |
| Remote On/Off and Power Off | Remote On/Off and Remote Power Off terminal block connectors |

**Table 7-7 Communications and Management**

Battery backup times are approximate and can vary with equipment, configuration, battery age, and temperature.

| **LOAD** | | **RUNTIME, MINUTES** | | | | |
|---|---|---|---|---|---|---|
| Percentage | Watts | Standard Battery Module | 1 x EBM | 2 x EBM | 3 x EBM | 4 x EBM |
| 25% | 2500 | 25 | 60 | 97 | 136 | 163 |
| 50% | 5000 | 10 | 25 | 42 | 61 | 79 |
| 75% | 7500 | 5.5 | 15 | 25 | 37 | 48 |
| 100% | 10000 | 3 | 10 | 18 | 25 | 34 |

**Table 7-8 Runtime Chart**

# Chapter 8
# Interconnection Data



## Section 1.0: BladeCenter Connections

### 1.1 Connection Type

- Veo BladeCenter requires a dedicaded point-to-point 1 Gigabit broadband network connection from the Veo Blade Center unit to the Operator Console. Implemented using either:
  - Cat 5e FTP (Foil Twisted Pair - shielded) Cable or Better (See Section 1.2 Interconnecting Cable Routing for distribution length limits.)
  - Fiber Optic link with copper to fiber converters.
  -
- The connection at both ends (Operator Console and Veo Blade Center) of the dedicated Ethernet connection will be RJ45.
  - RJ45 Shielded Cat5 Modular Plug at Operator Console End.
  - RJ45 Unshielded Cat5 Modular Plug at Blade Center End.
- A bandwidth of 1GB/sec is required.
- This will be the responsibility of the customer. The dedicated Ethernet connection should be routed prior to the arrival of the equipment.

### 1.2 Interconnecting Cable Routing

- Cable length not to exceed 100 m (300 ft), otherwise the bandwidth performance degrades significantly.
- If cable run length exceeds 100 m (300 ft), customer supplied repeaters or optical cabling will be required.
- See Figure 8-1 for BladeCenter without optional UPS.
- See Figure 8-2 for BladeCenter with optional UPS.

### 1.3 Provide GE with IT Contact Information for the Site

Provide your GE Healthcare Representative with an accurate site address, telephone number, contact name, and e-mail address for the customer IT contact to ensure access to the installation area.

## 1.4 Interconnect without UPS

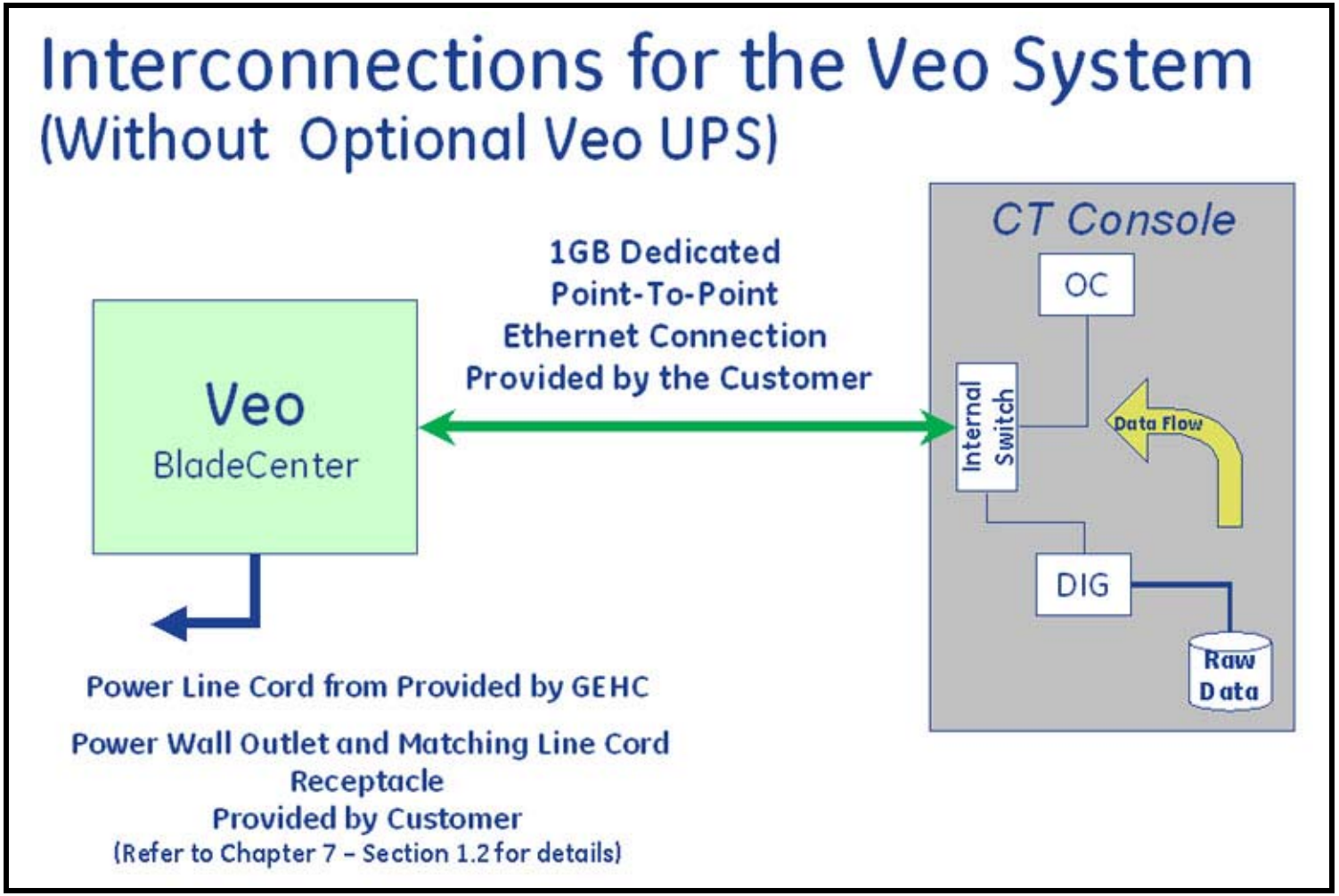



**Figure 8-1 Veo Interconnection without optional UPS**

## 1.5 Interconnect with UPS

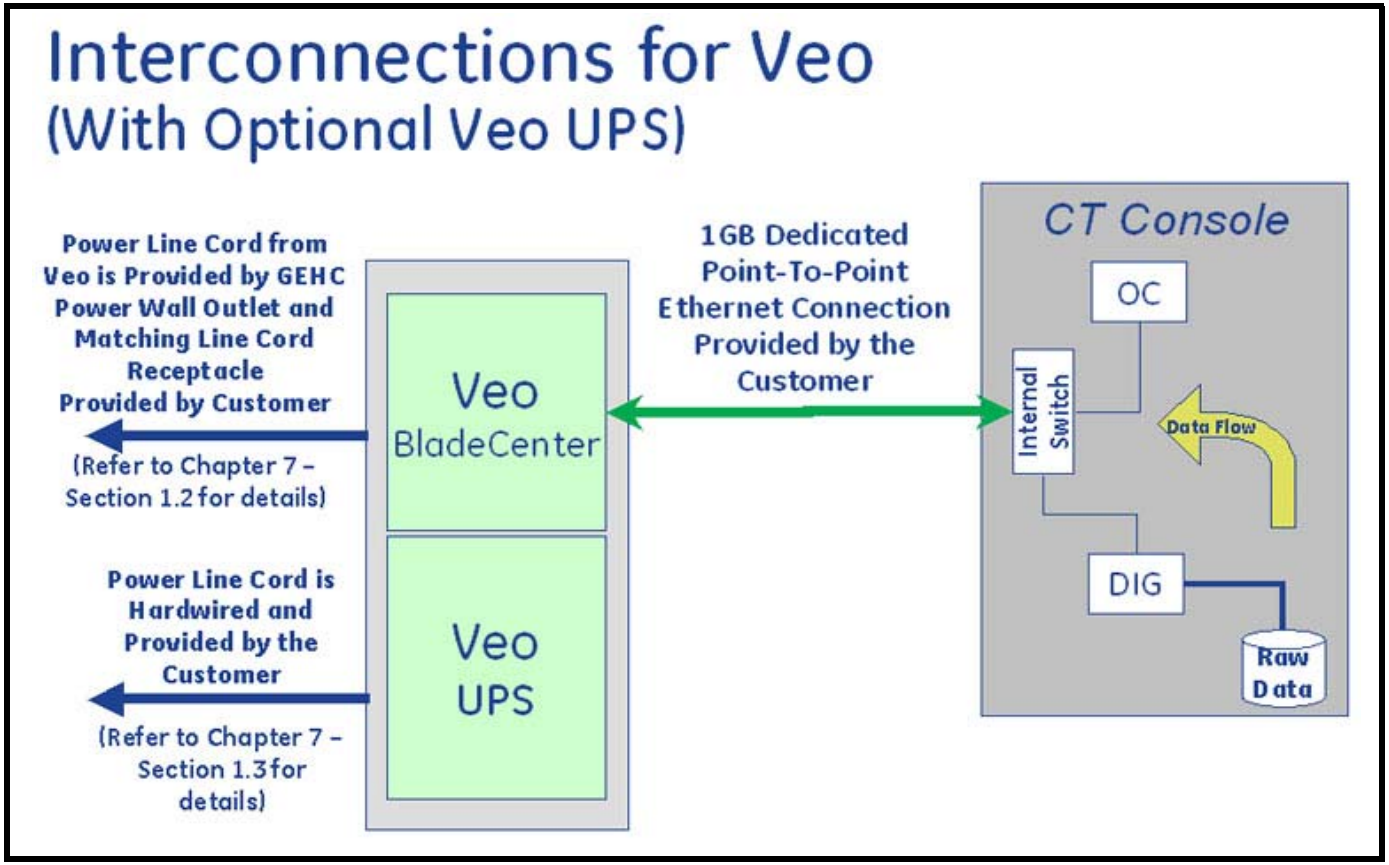



**Figure 8-2 Veo Interconnections with optional UPS**

# Chapter 9
# Delivery and Storage Requirements



This chapter provides information necessary for planning a safe and successful delivery of the Veo system from GE Healthcare to the receiving area of the installation site, and from the receiving area of that facility to the scan suite.

## Section 1.0: Delivery to the Facility

Your Project Manager of Installation will determine the most appropriate means of transporting the system to your facility. However, the type of receiving area at the facility where the installation will occur determines, to a large extent, the method used to transport the system to that facility. When planning for delivery, facilities fall into two general categories: those with a loading dock, and those without a loading dock.

### 1.1 Loading Dock Deliveries

Facilities with a loading dock in their receiving area can generally accommodate delivery of the system by van. This is the preferred method of transporting the system to the installation site, as dock-to-dock shipment by van minimizes the possibility of dropping the unit.

### 1.2 Ground (Non-Loading Dock) Deliveries

Facilities without a loading dock usually require ground delivery by either liftgate or tiltbed truck. Such deliveries require unloading the system components from the truck and then rolling them across smooth sidewalks or other paved surfaces into the facility.

## Section 2.0: Delivery to the Data/IT/Equipment Room

Once at the installation site, conveyance of the Veo option into the Data/IT room may involve special considerations, such as vertical lifting, or transportation though stairwells, which involves additional planning by the Project Manager of Installation.

### 2.1 Floor Protection

GE recommends floor protection along the delivery path from the dock/receiving area to scan room.

### 2.2 Un-loading and un-packing the System

### 2.3 Acclimation

Server and storage equipment must be acclimated to the surrounding environment to prevent condensation.

When server and storage equipment is shipped in a climate where the outside temperature is below the dew point of an indoor location, there is a possibility that water condensation will form on the cooler surfaces inside the equipment when brought into a warmer indoor environment. If condensation occurs, sufficient time must be allowed for the equipment to reach equilibrium with the warmer indoor temperature before removing the shipping bag, if used. Leave the system in the shipping bag, if used, for up to 48 hours, or until there is no visible signs of condensation, to let it acclimate to the indoor environment.

- The IT equipment acclimation period is 1 hour per 20º C (86º F) of temperature change from the shipping environment to the operating environment.

# Section 3.0: Storage Requirements

**NOTICE** **Failure to adhere to storage requirements can result in equipment damage.**

**Storage Environment**

## 3.1 Storage (Less than Six Months)

If storing the Veo system before installation for less than six months, store it in a temperature- and humidity-controlled warehouse. Protect it from weather, dirt, and dust.

The BladeCenter shall withstand the following storage conditions for up to 6 months when placed in its packaging container.

- Temperature 0º C to +30º C
- Relative Humidity up to 70% (non-condensing)
- Storage longer than 6 months is not recommended

**NOTICE** **Between delivery qualifies as short-term storage. Van storage must meet the same specifications listed above.**

## 3.2 Construction-Site Storage

When storing the Veo system at a construction site be sure to adhere to the following storage requirements:

- Do not damage or puncture the shipping crate.
- Do not remove packaging until all construction is completed at the site and all dust created by the construction is removed.
- Maintain a storage temperature within the range of 0º to 30º C (32º to 86º F).
- Maintain a relative humidity (non-condensing) up to 70%.

# Section 4.0 Extreme Temperature Delivery and Storage

**NOTICE** **Failure to adhere to extreme temperature requirements during delivery and storage can result in equipment damage.**

Avoid extreme temperatures during system transportation and delivery.

Extreme temperatures consist of temperatures below -18º C (0º F), or above 49º C (120 º F), without humidity control.

When transporting the Veo system, prevent extended exposure of the system to temperatures or humidity outside of the following specifications:

- Temperature: -40º to +70º C (-40º to +158º F)
- Humidity: 5% to 95%

**NOTICE** **Component freezing occurs when exposing the Veo system to temperatures below -18º C (0º F) for a period longer than two (2) days. Allow a minimum of 12 hours for the Veo system to adjust to ambient room temperature prior to installation.**

# Chapter 10
# Handling Requirements



Communicate the information in this chapter to any personnel who will transport, move, or otherwise handle the system components during transportation and delivery of the system.

## Section 1.0: Transportation

To avoid dropping the Veo system, it is recommended that it be transported from GE Healthcare to the facility of the installation site, shipping dock-to-dock in a van. However, facilities without a loading dock may transport the system using liftgate or flatbed trucks, provided that no dropping or mishandling of the system occurs. These methods involve unloading system components from the truck and then rolling them across SMOOTH sidewalks or other paved surfaces.

## Section 2.0: Handling Requirements

The design of the Veo and catalog items does not tolerate dropping, shock, vibration, tipping, or hoisting. Be sure to communicate these handling requirements to all parties involved in transporting, moving, and handling system components.

### 2.1 Avoid Dropping

Never drop the Veo and option catalog items. A drop from a height greater than 13 mm (0.5 in.) may cause structural damage to the frame or other major components. Damage resulting from a drop (e.g., bent frame, misalignment) may not become apparent until after the system is installed

### 2.2 Avoid Shocks and Vibrations

The design of the Veo and option catalog items does not tolerate excessive shock or vibration, which may occur during unloading. For example, rolling the console across a “washboard” style ramp may vibrate components, causing loose or broken connections. Damage resulting from shock or vibration may not become evident until after the unit is installed.

### 2.3 Avoid Tipping

The Veo and optional UPS must remain upright at all times; avoid tipping.

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