



***GE Medical Systems***

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# **Technical Publications**

**2337741–100**

**Revision 5**

## **Innova 2000 Cardiovascular Imaging System Pre–Installation Manual pim**

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# ATTENTION

## **LES APPAREILS À RAYONS X SONT DANGEREUX À LA FOIS POUR LE PATIENT ET POUR LE MANIPULATEUR SI LES MESURES DE PROTECTION NE SONT PAS STRICTEMENT APPLIQUEES**

Bien que cet appareil soit construit selon les normes de sécurité les plus sévères, la source de rayonnement X représente un danger lorsque le manipulateur est non qualifié ou non averti. Une exposition excessive au rayonnement X entraîne des dommages à l'organisme.

Par conséquent, toutes les précautions doivent être prises pour éviter que les personnes non autorisées ou non qualifiées utilisent cet appareil créant ainsi un danger pour les autres et pour elles-mêmes.

Avant chaque manipulation, les personnes qualifiées et autorisées à se servir de cet appareil doivent se renseigner sur les mesures de protection établies par la Commission Internationale de la Protection Radiologique, Annales 26 : Recommandations de la Commission Internationale sur la Protection Radiologique et les normes nationales en vigueur.

# WARNING

## **X-RAY EQUIPMENT IS DANGEROUS TO BOTH PATIENT AND OPERATOR UNLESS MEASURES OF PROTECTION ARE STRICTLY OBSERVED**

Though this equipment is built to the highest standards of electrical and mechanical safety, the useful x-ray beam becomes a source of danger in the hands of the unauthorized or unqualified operator. Excessive exposure to x-radiation causes damage to human tissue.

Therefore, adequate precautions must be taken to prevent unauthorized or unqualified persons from operating this equipment or exposing themselves or others to its radiation.

Before operation, persons qualified and authorized to operate this equipment should be familiar with the Recommendations of the International Commission on Radiological Protection, contained in Annals Number 26 of the ICRP, and with applicable national standards.

# ATENCION

## **LOS APARATOS DE RAYOS X SON PELIGROSOS PARA EL PACIENTE Y EL MANIPULADOR CUANDO LAS NORMAS DE PROTECCION NO ESTAN OBSERVADAS**

Aunque este aparato está construido según las normas de seguridad más estrictas, la radiación X constituye un peligro al ser manipulado por personas no autorizadas o incompetentes. Una exposición excesiva a la radiación X puede causar daños al organismo.

Por consiguiente, se deberán tomar todas las precauciones necesarias para evitar que las personas incompetentes o no autorizadas utilicen este aparato, lo que sería un peligro para los demás y para sí mismas.

Antes de efectuar las manipulaciones, las personas habilitadas y competentes en el uso de este aparato, deberán informarse sobre las normas de protección fijadas por la Comisión Internacional de la Protección Radiológica, Anales No 26: Recomendaciones de la Comisión Internacional sobre la Protección Radiológica y normas nacionales.

# ACHTUNG

## **RÖNTGENAPPARATE SIND EINE GEFAHR FÜR PATIENTEN SOWIE BEDienungSPERSONAL, WENN DIE GELTENDEN SICHERHEITSVORKEHRUNGEN NICHT GENAU BEACHTET WERDEN**

Dieser Apparat entspricht in seiner Bauweise strengsten elektrischen und mechanischen Sicherheitsnormen, doch in den Händen unbefugter oder unqualifizierter Personen wird er zu einer Gefahrenquelle. Übermäßige Röntgenbestrahlung ist für den menschlichen Organismus schädlich.

Deswegen sind hinreichende Vorsichtsmaßnahmen erforderlich, um zu verhindern, daß unbefugte oder unqualifizierte Personen solche Geräte bedienen oder sich selbst und andere Personen deren Bestrahlung aussetzen können.

Vor Inbetriebnahme dieses Apparats sollte sich das qualifizierte und befugte Bedienungspersonal mit den geltenden Kriterien für den gefahrlosen Strahleneinsatz durch sorgfältiges Studium des Hefts Nr. 26 der Internationalen Kommission für Strahlenschutz (ICRP) vertraut machen: Empfehlungen der Internationalen Kommission für Strahlenschutz und anderer nationaler Normenbehörden.

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## WARNING



**DO NOT ATTEMPT TO SERVICE THE EQUIPMENT UNLESS  
THIS SERVICE MANUAL HAS BEEN CONSULTED AND IS UNDERSTOOD**

If a customer's service provider requires a language other than English, it is the customer's responsibility to provide translation services.

This Service Manual is available in English only.

Failure to heed this warning may result in injury to the service provider, operator or patient from electric shock, mechanical or other hazards.

## ATTENTION



**NE PAS TENTER D'INTERVENIR SUR LES ÉQUIPEMENTS  
TANT QUE LE MANUEL SERVICE N'A PAS ÉTÉ CONSULTÉ ET COMPRIS**

Ce Manuel de service n'est disponible qu'en anglais.

Si le technicien du client a besoin de ce manuel dans une autre langue que l'anglais, c'est au client qu'il incombe de le faire traduire.

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.

## ATENCION



**NO SE DEBERÁ DAR SERVICIO TÉCNICO AL EQUIPO,  
SIN HABER CONSULTADO Y COMPRENDIDO ESTE MANUAL DE SERVICIO.**

Este Manual de Servicio sólo existe en inglés.

Si algún proveedor de servicios ajeno a GEMS solicita un idioma que no sea el inglés, es responsabilidad del cliente ofrecer un servicio de traducción.

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.

## WARNING



**ERSUCHEN SIE NICHT DIESE ANLAGE ZU WARTEN,  
OHNE DIESE SERVICEANLEITUNG GELESEN UND VERSTANDEN ZU HABEN.**

Diese Serviceanleitung existiert nur in englischer Sprache.

Falls ein fremder Kundendienst eine andere Sprache benötigt, ist es Aufgabe des Kunden für eine entsprechende Übersetzung zu sorgen.

Wird diese Warnung nicht beachtet, so kann es zu Verletzungen des Kundendiensttechnikers, des Bedieners oder des Patienten durch Stromschläge, mechanische oder sonstige Gefahren kommen.

## ATENÇÃO



### **NÃO TENTE REPARAR O EQUIPAMENTO SEM TER CONSULTADO E COMPREENDIDO ESTE MANUAL DE ASSISTÊNCIA TÉCNICA**

Este Manual de Assistência Técnica só se encontra disponível em Inglês.

Se qualquer outro serviço de assistência técnica, que não a GEMS, solicitar estes manuais noutro idioma, é da responsabilidade do cliente fornecer os serviços de tradução.

O não cumprimento deste aviso pode por em perigo a segurança do técnico, operador ou paciente devido a choques elétricos, mecânicos ou outros.

## AVVERTENZA



### **SI PROCEDA ALLA MANUTENZIONE DELL'APPARECCHIATURA SOLO DOPO AVER CONSULTATO IL PRESENTE MANUALE ED AVERNE COMPRESO IL CONTENUTO**

Il presente manuale di manutenzione è disponibile soltanto in inglese.

Se un addetto alla manutenzione esterno alla GEMS richiede il manuale in una lingua diversa, il cliente è tenuto a provvedere direttamente alla traduzione.

Non tenere conto della presente avvertenza potrebbe far compiere operazioni da cui derivino lesioni all'addetto alla manutenzione, all'utilizzatore ed al paziente per folgorazione elettrica, per urti meccanici od altri rischi.

## 警告



- ・このサービスマニュアルには英語版しかありません。
- ・GEMS以外で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下さい。
- ・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。

## 注意:



- ・ 本维修手册仅存有英文本。
- ・ 非 GEMS 公司的维修员要求非英文本的维修手册时，客户需自行负责翻译。
- ・ 未详细阅读和完全了解本手册之前，不得进行维修。
- ・ 忽略本注意事项会对维修员，操作员或病人造成触电，机械伤害或其他伤害。



## CHAPTER 1 – INTRODUCTION

### 1 OBJECTIVE AND SCOPE OF THIS MANUAL

This document is intended as a guide and information resource to properly plan and prepare a site for the installation of an Innova 2000 system.

In addition, this document provides references to the pre-installation documents of the various product included with an Innova 2000 System.

These documents are intended to assist the Installation Specialist and the Site Planner in properly preparing a site for the installation of this system.

It provides preinstallation data, such as site preparation prior to the delivery of the Innova 2000 System, environmental and electrical requirements and some additional planning aids.



**MAKE SURE THE ROOM PREPARATION COMPLIES WITH LOCAL REGULATIONS AS THE PIM IS NOT INTENDED TO REFLECT ALL OF THEM.**

### 2 DESCRIPTION OF INNOVA 2000 SYSTEM

An Innova 2000 system is used for cardiography cases with several options.

An Innova 2000 system is first offered in one configuration.

#### 2-1 Description of the Innova LC positioner

A complete Innova LC positioner comprises only three parts.

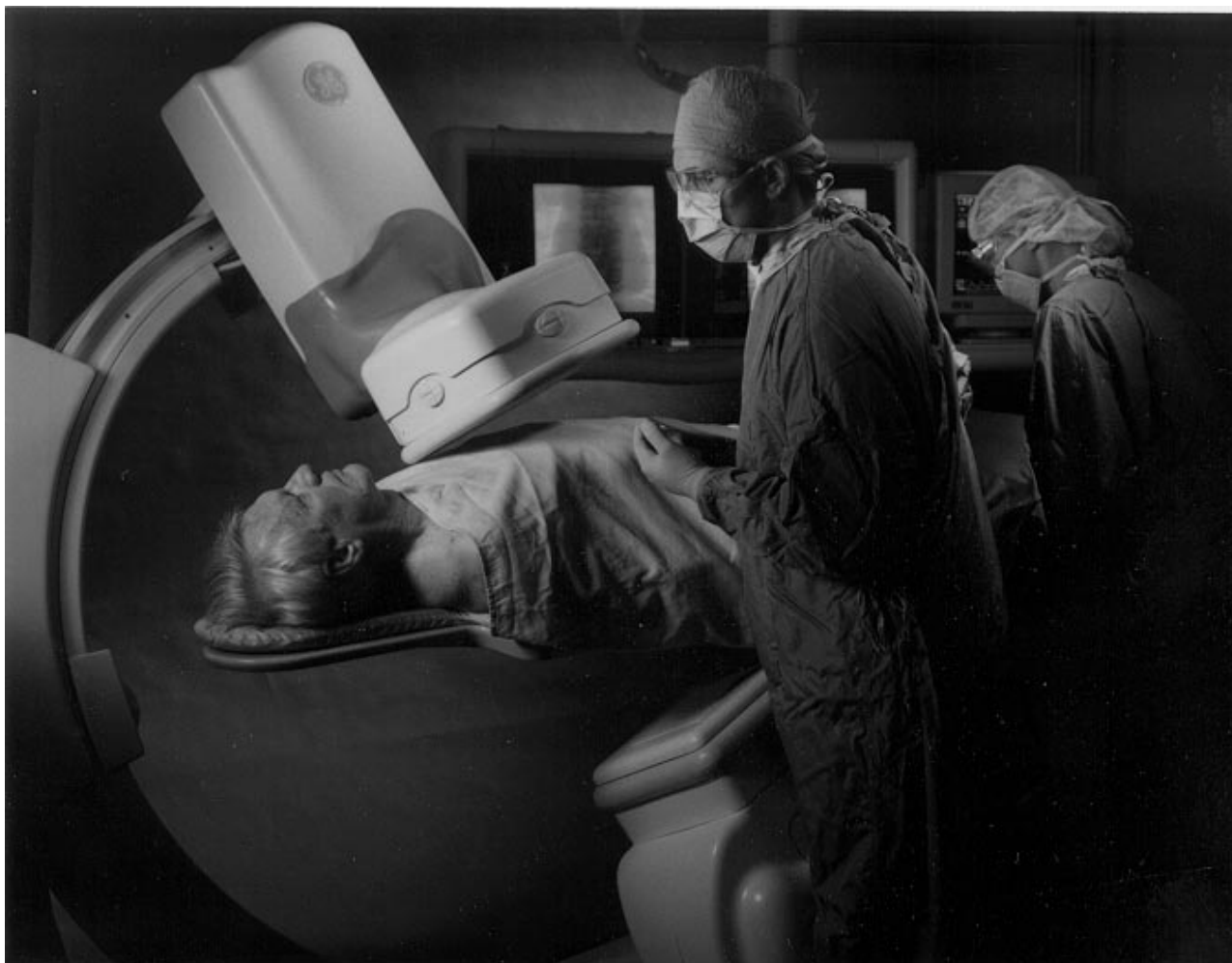
- Innova 2000 positioner/titan cabinet,
- Innova 2000 positioner including an X-ray tube housing with a SIEMENS collimator and a 22 cm Revolution Digital Detector.
- Multiaxis control (smart handle+/or Smart Box).

#### 2-2 Description of the Innova Patient table

Innova 2000 Systems can be supplied with an OMEGA IV Compact patient table which includes a table side control with Contour Filter or an OMEGA V Long table.



**Innova patient tables are offered following the needs of customer. The main recommendation is the location from Innova LC positioner. Omega IV Compact or Omega V Long tables are basically located to LC at 1395 mm but for long examination, Omega V can be located at 1278 mm. Have to be defined before site preparation.**



### 2-3 Description of the X-Ray generator

The Innova 2000 System uses an Innova High Voltage System with component parts as follows according to the power requested (100 kW):

- MPPU1 – Cabinet with X-Ray generator,
- MPPU2 – Cabinet with AC distribution panel,
- MPPU5 – Microgrid H.V. tank mounted on the Maxiray150 X – Ray tube housing.

### 2-4 Description of the X-Ray head

The Innova 2000 System uses a MAXIRAY 150 tube housing including an X-Ray tube, a SIEMENS collimator, VMP micro grid HV tank, oil/water exchanger, contour filter, etc.

**Note:** An external recirculating chiller is mandatory.



**The Chiller elevation cannot exceed 3 meters (210 feet).**

Depending on the location of the system, you may choose:

- either low noise chiller (if placed in an exam room),
- or a high ambient chiller (if placed in a technical room).

## 2-5 Description of the Innova 2000 Imaging System

An Innova 2000 System is managed and controlled by a System including:

- Atlas cabinet (inside which are located the RTAC, the DL, the modem, the HUB, the KVM, the 4 KVA PDU),
- Innova Console with a plasma screen mounted on a wall support or pedestal,
- 22 cm Revolution Digital Detector mounted on Innova LC positioner.
- An external Digital Detector chiller is mandatory.



**The distance cannot exceed 3 m (1 floor) below the detector**

- 53 cm (21") 21" Hi-Brite monitor,
- 43 cm (17") 17" Hi-Brite monitor (optional).

## 2-6 Description of the TV monitor & Rad Shield suspensions

The common type of this suspension is an XT inboard monitor bridge.

A monitor frame support receiving 3 CRT monitors (2x Hi-Brite monitors and one monitoring).

A monitor frame support receiving 4 CRT monitors (2x Hi-Brite monitors and 2 monitorings) (to be defined later).

A monitor frame support receiving 3 or 4 LCD monitors.

Only for Control Area a Gyro TV® wall mount can supports the 2 Hi-Brite monitors 53 cm or 43 cm (21" or 17").

### Rad Shield

A counterbalanced radiation shield suspension is supplied as an option. A high intensity lamp can also be added.

## 2-7 Description of the DL

An Innova 2000 System uses the DL Digital Imaging system.

A complete DL System contains the following:

- included in the Atlas Cabinet:
  - DL Computer,
  - modem,
  - Ethernet HUB,
  - KVM,
  - Video Splitter,

- DL user area with:
  - I/R Receiver / Emitter,
  - color flat panel (15"),
  - Hi-Bright monitor as 17" Image Monitor
  - keyboard,
  - mouse,
  - keypads for user dialogue,
  - videostation:
    - Hi-Brite monitor in a user area,
    - VCR in option.

## 2-8 TV monitors

As basic configuration, two 21" (53 cm) (Hi-Brite) monitor are mounted on a TV monitor frame support. In this case, the frame is fastened to a boom.

As an option 3 monitors, dual 21" (Hi-Brite) monitors and an additional monitoring screen are supplied mounted on the TV frame support with tray. The frame is fastened to a boom.

Another option, in case of four 21" (Hi-Brite) monitors, is a fixed suspension. It's the precabled four monitor frame support.

## 2-9 GEMNet option

Refer to:

- Document FP10105, *GEMNet System (Ethernet) Pre-Installation Manual*.
- Document 2266396-100 (GEMS) or 2002377-003 (GE Marquette), *GEMNet Image Vault Pre-Installation Guide*.

## 2-10 Injectors

ILLUMINA injectors (Remote or Pedestal) are offered.

Other injectors (Remote or Pedestal) S.O.I. required.

### 3 INNOVA LC PRODUCT IDENTIFICATION

#### 3-1 Innova LC positioner

The Innova LC positioner includes a positioner cabinet, a positioner and TSUI.

**Table 1 – INNOVA 2000 BASIC PRODUCT**

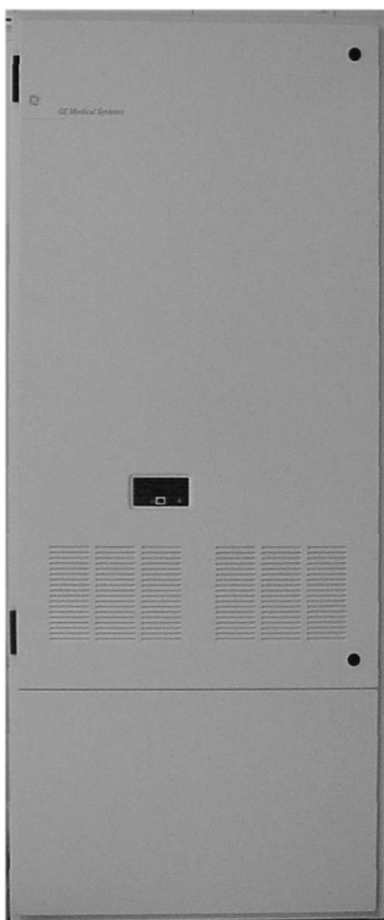
| Part Number           | DESIGNATION   | LOCATION of Name Plate     |
|-----------------------|---|----------------------------|
| 2243600,<br>2243600-2 | LCA H1C POSITIONER with HV cables 24 m (80 feet)<br>LCA H1C POSITIONER with HV cables 30 m (100 feet) | Positioner lower left side |
| 2243594               | POS-TIT CABINET   | Left top side              |
| 2237456-3             | SMART HANDLE+ S P   | At the bottom              |
| 2237457-3             | SMART BOX+ SP   | At the bottom              |
|                       |   |                            |

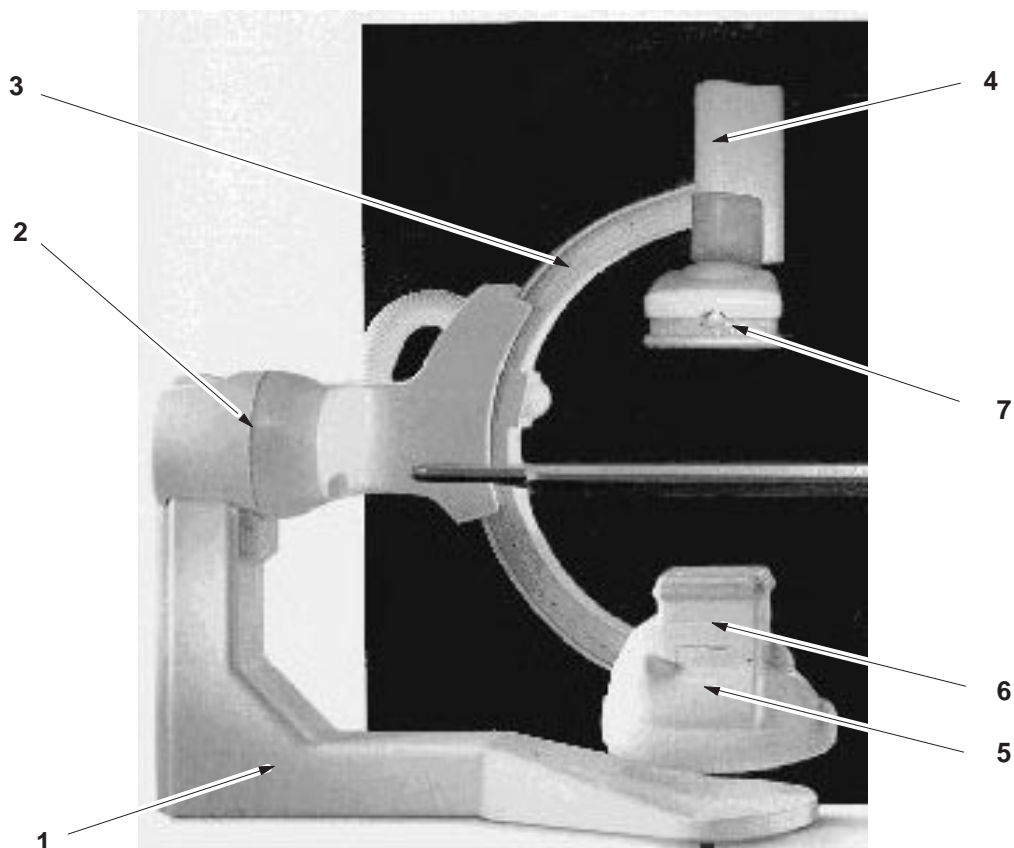
**Table 2 – PRODUCT ASSOCIATION**

The Innova LC will be used with an OMEGA patient table identified as follows:

| Part Number | DESIGNATION             | LOCATION of Name Plate |
|-------------|-------------------------|------------------------|
| 2243720     | OMEGA IV CCOMPACT TABLE |                        |
| 2237459-3   | TSSC+ S P W CF          | At the bottom          |
| 2294541     | OMEGA V LONG TABLE      |                        |
|             |                         |                        |

**Illustration 1 – POSTIT CABINET**



**Illustration 2 – INNOVA LC BASIC PRODUCT**

Innova LC Positioner

Innova LC positioner including:

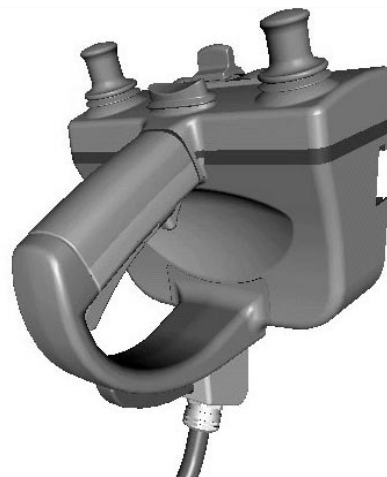
- L-arm (Item 1),
- Pivot (Item 2),
- C-arm (Item 3),
- motorized elevator (Item 4) for the Revolution Digital Detector,
- X-ray tube (Item 5),
- Siemens collimator (Item 6),
- 22 cm Revolution Digital Detector (Item 7)



**Illustration 3 – OMEGA PATIENT TABLE BASIC PRODUCT**



**MULTIAXIS CONTROL BOX  
(OR SMART BOX)**



**MULTIAXIS CONTROL HANDLE  
(OR SMART HANDLE +)**



**TABLE SIDE CONTROL (OR TSSC+)  
WITH CONTOUR FILTER**



**Illustration 4 – OMEGA PATIENT TABLE**



**OMEGA PATIENT TABLE**

**Illustration 5 – X-RAY TUBE CHILLER & DIGITAL DETECTOR CHILLER**

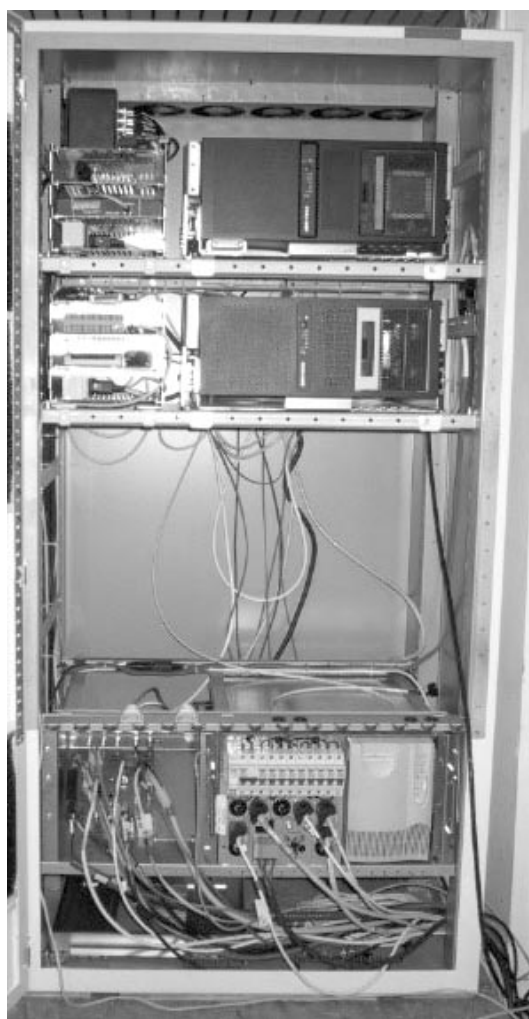
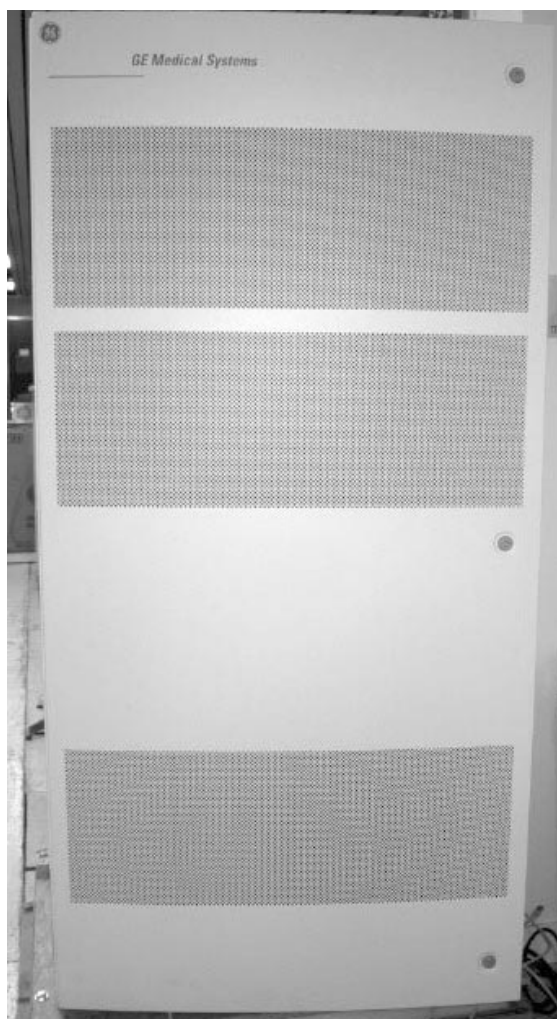


**X-Ray tube CHILLER**



**Digital Detector CHILLER**

**Illustration 6 – ACAB CABINET**



**Illustration 7 – INNOVA USER AREA**



**17" Hi-Brite Image Monitor**



**Color flat panel (15"), keyboard  
and mouse**



**Remote control**



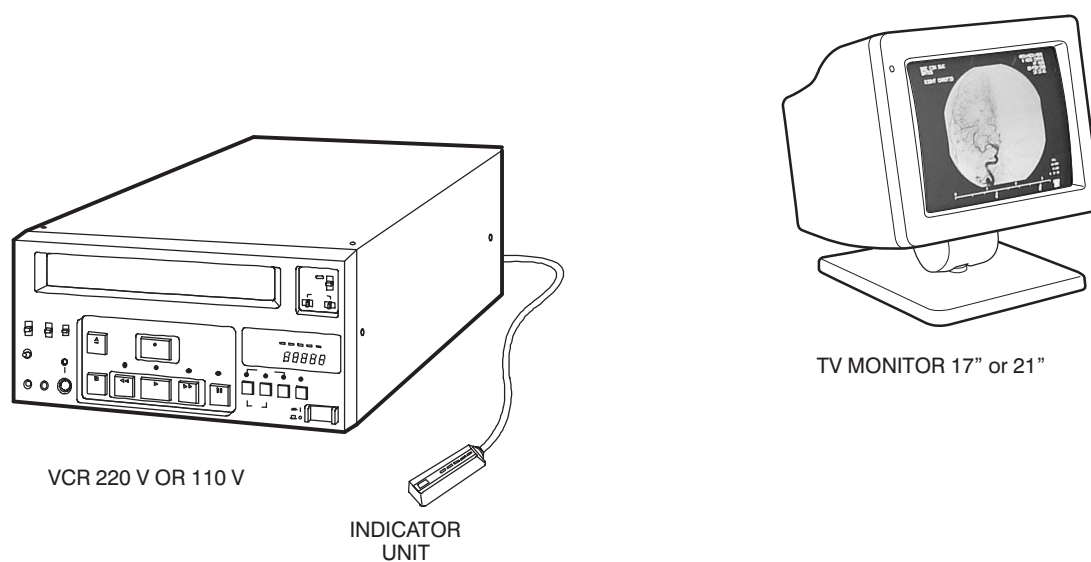
**Keypad**



**Innova console**

## 3-2 Product Options

Illustration 8 – PRODUCT OPTIONS



## 4 RESPONSIBILITIES OF THE PURCHASER/CUSTOMER

To ensure that the installation of an Innova Cardio System meets the purchaser or customer expectations, it is important to determine who will take responsibility for the various items during the system installation process. To help you in determining these responsibilities, review the following checklists with the customer and assign responsibilities as appropriate:

- **Tool and Test Equipment** (Chapter 7, Section 3 of this document)
- **Pre-Installation Checklist** (Chapter 7, Section 6 of this document)

### Contract Changes

Be sure to inform the customer that the cost of any alteration or modification not specified in the sales contract are liable to the customer.

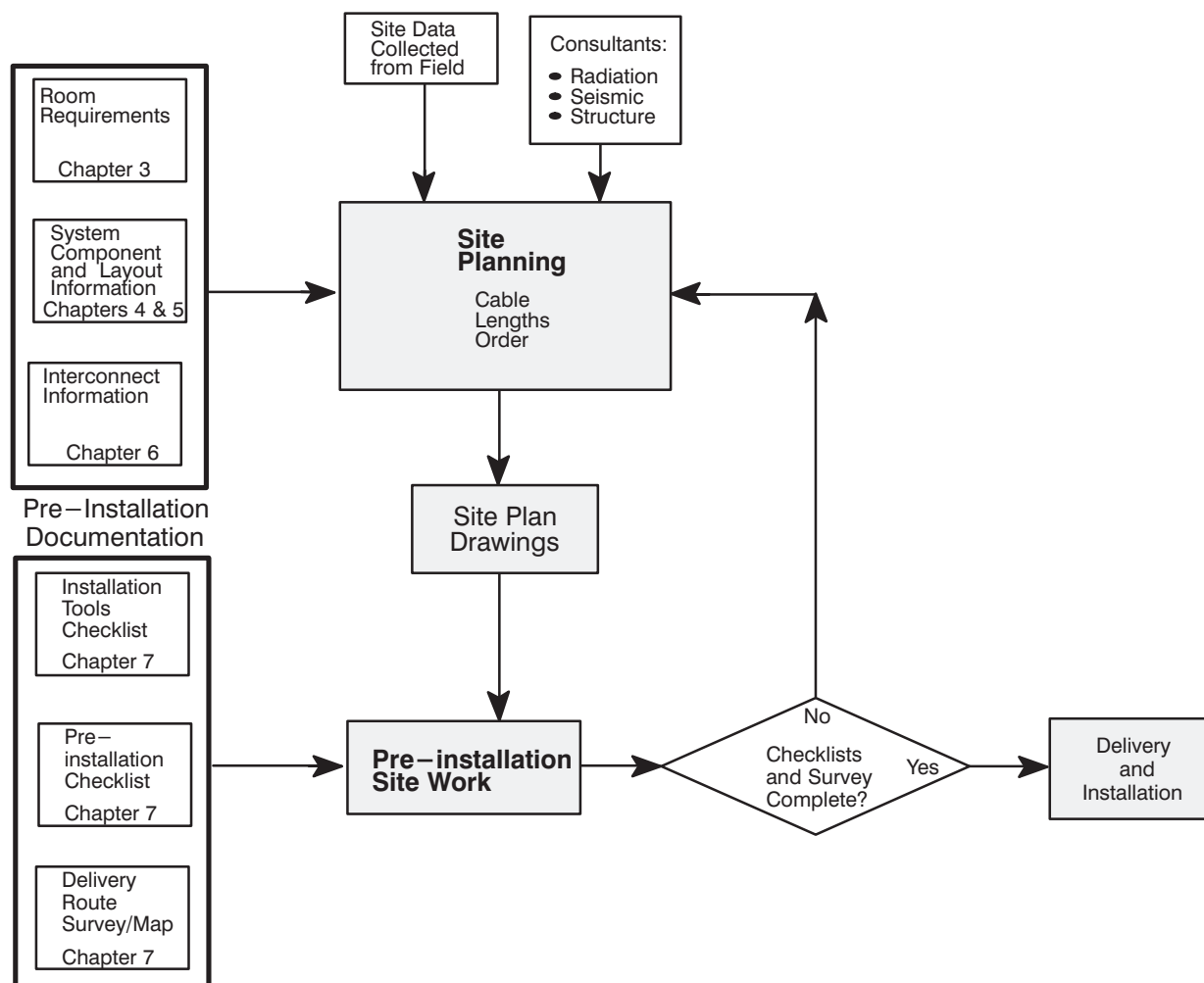
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## 5 PRE-INSTALLATION PROCESS

Complete the checklists in Chapters 5, 6, and 7 of this manual. They represent an important part of the pre-installation process. The checklists summarize the required preparations and allow to verify the proper completion of the pre-installation procedures.

You will find hereafter a chart of the information flow in the pre-installation process.

**Illustration 9 – PRE-INSTALLATION PROCESS**



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**CHAPTER 2 – SYSTEM COMPATIBILITY****1 BASIC INNOVA LC SYSTEM COMPATIBILITY****Table 3 – SYSTEM COMPATIBILITY CROSS-REFERENCE TABLE – INNOVA LC POSITIONER/TABLE SUB-SYSTEM**

| PRODUCT NAME       | MODEL NUMBER       | PRE-INSTALLATION DOCUMENT NUMBER | NOTES                 |
|--------------------|--------------------|----------------------------------|-----------------------|
| LCA H1C POSITIONER | 2243600, 2243600-2 | This document                    | HV cable 24 m or 30 m |
| POSTIT CABINET     | 2243594            | This document                    |                       |
| SMART HANDLE+ S P  | 2237456-3          | This document                    | Optional: Second MAC  |
| SMART BOX+ SP      | 2237457-3          | This document                    | Optional: Second MAC  |
| TSSC               | 2237459-3          | This document                    | Optional: Second MAC  |

**Table 4 – SYSTEM COMPATIBILITIES CROSS-REFERENCE TABLE-OMEGA TABLES SUB-SYSTEM**

| PRODUCT NAME  | MODEL NUMBER | PRE-INSTALLATION DOCUMENT NUMBER | NOTES                 |
|---|--------------|----------------------------------|-----------------------|
| OMEGA IV COMPACT TABLE  | 2243720      | This document                    | Includes tabletop     |
| OMEGA V LONG TABLE  | 2294541      | This document                    | Includes tabletop     |
| TSSC+ S P W/ CF   | 2237459-3    | This document                    | Optional: Second TSSC |
| TABLE PANING DEVICE   | 2214620      |                                  |                       |
| Note 1: w/CF means with Contour Filter and w/o CF means without Contour Filter. |              |                                  |                       |

**Table 5 – SYSTEM COMPATIBILITIES CROSS-REFERENCE TABLE – VMP X-RAY GENERATOR/TABLE SUB-SYSTEM**

| PRODUCT NAME                 | MODEL NUMBER | PRE-INSTALLATION DOCUMENT NUMBER | NOTES |
|------------------------------|--------------|----------------------------------|-------|
| Advantx MP Phase IV Cabinets | 2150138-3    | 2127979-100                      |       |

**Table 6 – SYSTEM COMPATIBILITY CROSS REFERENCE TABLE – X-RAY HEAD/TABLE SUB-SYSTEM**

| PRODUCT NAME           | MODEL NUMBER | PRE-INSTALLATION DOCUMENT NUMBER | NOTES                     |
|------------------------|--------------|----------------------------------|---------------------------|
| Maxiray 150 X-Ray tube | 2149520-4    | Not applicable                   |                           |
| Cardiac collimator     | 2237071      | Not applicable                   |                           |
| Chiller COOLIX 2200    | 2210405-9    | 2137573-100                      | Low noise or High ambient |

**Table 7 – SYSTEM COMPATIBILITY CROSS-REFERENCE TABLE – INNOVA LC IMAGING AND X-RAY CONTROL/TABLE SUB-SYSTEM**

| PRODUCT NAME                                   | MODEL NUMBER                 | PRE-INSTALLATION DOCUMENT NUMBER | NOTES                                 |
|--|------------------------------|----------------------------------|---------------------------------------|
| Innova console                                 | 2224559 or A8010LW           | 46-019682                        | – Desk wall mount<br>– Pedestal mount |
| DL user interface set                          | 2318958                      | This document                    |                                       |
| ATLAS Cabinet                                  | 2252302-2<br>or<br>2252302-3 | This document                    |                                       |
| Innova 2000, 20 cm Revolution Digital detector | 2270465                      | This document                    |                                       |
| Detector Chiller HEAT DRY 1                    | 2210405                      | This document                    |                                       |

**Table 8 – SYSTEM COMPATIBILITY CROSS-REFERENCE TABLE – TV MONITOR SUPPORT & TV SUSPENSION/TABLE SUB-SYSTEM**

| PRODUCT NAME   | MODEL NUMBER                                  | PRE-INSTALLATION DOCUMENT NUMBER | CATALOG NUMBER     |
|--|---|----------------------------------|--------------------|
| PRECABLED 3 MONITOR COUNTERBALANCED SUSPENSION (1) <ul style="list-style-type: none"> <li>• 2 FFD and ECG (2) monitor frame support</li> <li>• 9 ft 6 in (2.9 m) Inboard Monitor Bridge</li> </ul> or <ul style="list-style-type: none"> <li>• 7 ft 9 in (2.4 m) Inboard Monitor Bridge</li> </ul> | 2270677-2<br>46-182884G2<br>or<br>46-193992G2 | 2248370-100                      | B2057AE<br>B2057AG |
| PRECABLED 4 MONITOR FIXED HEIGHT SUSPENSION <ul style="list-style-type: none"> <li>• 4 FFD monitor frame support (2)</li> <li>• 9 ft 6 in (2.9 m) Inboard Monitor Bridge</li> </ul> or <ul style="list-style-type: none"> <li>• 7 ft 9 in (2.4 m) Inboard Monitor Bridge</li> </ul>                | 2270678<br>46-182884G2<br>or<br>46-193992G2   | 2208876-100                      | B2057AE<br>B2057AG |
| Note (1): By S.O.I process the B2057JB sleeve selection can be ordered with 2283393 short or 2283392 long.<br>Note (2): With power strip for Innova  |   |                                  |                    |
| PRECABLED LCD 3 MONITOR SUSPENSION<br>CABLE HARNESS 24 m<br>or CABLE HARNESS 36 m  | 2371503<br>2378538<br>or 2378540              | 2393190-100                      |                    |
| PRECABLED LCD 4 MONITOR SUSPENSION<br>CABLE HARNESS 24 m<br>or CABLE HARNESS 36 m  | 2371504<br>2378538<br>or 2378540              | 2393190-100                      |                    |

**Table 9 – SYSTEM COMPATIBILITIES CROSS REFERENCE TABLE – 21" (53 CM) & 17" (43 CM) MONITORS/TABLE SUB-SYSTEM**

| PRODUCT NAME                                  | MODEL NUMBER | PRE-INSTALLATION DOCUMENT NUMBER | CATALOG NUMBER |
|---|--------------|----------------------------------|----------------|
| 17" (43 cm) Flicker Free Extra Bright Monitor | 2223415      | sm 2224863-100                   |                |
| 21" (53 cm) Flicker Free Extra Bright Monitor | 2305765-3    | sm 2224863-100                   |                |

## 2 OPTIONAL INNOVA LC SYSTEM COMPONENTS

**Table 10 – SYSTEM COMPATIBILITIES CROSS-REFERENCE TABLE – OMEGA TABLE SUB-SYSTEM**

| PRODUCT NAME  | MODEL NUMBER | PRE-INSTALLATION<br>DOCUMENT<br>NUMBER | CATALOG<br>NUMBER |
|---|--------------|--|-------------------|
| SMART HANDLE  | 2237456-3    | This document                          |                   |
| SMART BOX   | 2237457-3    | This document                          |                   |
| TSSC+ S P W/ CF   | 2237459-3    | This document                          |                   |
| Note 1: w/CF means with Contour Filter and w/o CF means without Contour Filter. |              |  |                   |

**Table 11 – SYSTEM COMPATIBILITIES CROSS-REFERENCE TABLE – WALL MOUNT MONITOR**

| PRODUCT NAME   | MODEL NUMBER | PRE-INSTALLATION<br>DOCUMENT<br>NUMBER | CATALOG<br>NUMBER |
|--|--------------|--|-------------------|
| Wall Mount for 17 or 21" (43 or 53 cm)                 | 2305202      | 2129003-100                            |                   |
| Note: The wall mount monitor is for Control Room only. |              |  |                   |

**Table 12 – SYSTEM COMPATIBILITIES CROSS-REFERENCE TABLE – RAD SHIELD/TABLE SUB-SYSTEM**

| PRODUCT NAME   | MODEL NUMBER | PRE-INSTALLATION<br>DOCUMENT<br>NUMBER | CATALOG<br>NUMBER |
|--|--------------|--|-------------------|
| Radiation Shield   |              |  | E30591 A B C E    |
| Counter balanced Radiation shield with patient contour cut out and 2.5 m ceiling rails                         |              |  | E3050AG           |
| Counter balanced radiation shield with patient contour cut out and 2.5 m ceiling rails and high intensity lamp |              |  | E3050AH           |

## **CHAPTER 3 – PHYSICAL REQUIREMENTS OF ROOM**

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# 1 ENVIRONMENTAL REQUIREMENTS/LIMITATIONS

## 1-1 Room Climate



Avoid extremes in temperatures.

**Table 13 – INNOVA 2000 SYSTEM ROOM CLIMATE REQUIREMENTS (BY COMPONENT) – RELATIVE HUMIDITY AND TEMPERATURE**

| PRODUCT OR COMPONENT           | RELATIVE HUMIDITY (NON-CONDENSING) |     |         |     | TEMPERATURE |        |            |            |
|--------------------------------|------------------------------------|-----|---------|-----|-------------|--------|------------|------------|
|                                | IN-USE                             |     | STORAGE |     | IN-USE      |        | STORAGE    |            |
|                                | MIN.                               | MAX | MIN.    | MAX | MIN.        | MAX    | MIN.       | MAX        |
| Innova LC Positioner           | 5%                                 | 90% | 5%      | 85% | +5 °C       | +38 °C | −40 °C     | +70 °C     |
| POSTIT Cabinet                 | 10%                                | 90% | 10%     | 80% | +5 °C       | +35 °C | −40 °C     | +70 °C     |
| Omega Patient table            | 5%                                 | 90% | 5%      | 90% | +5 °C       | +35 °C | −40 °C     | +70 °C     |
| Maxiray 150 V5 X-Ray tube assy | N/A                                | N/A | N/A     | N/A | +5 °C       | +40 °C | −20 °C     | +80 °C     |
| Innova Digital Detector (2)    | 5%                                 | 70% |         | 70% | +10 °C      | +32 °C | +10 °C     | +40 °C     |
| ACAB Cabinet                   | 10%                                | 90% | 10%     | 90% | +10 °C      | +35 °C | −20 °C     | +70 °C     |
| VMP Cabinets                   | 30%                                | 80% |         | 95% | +16 °C      | +32 °C | −40 °C     | +80 °C     |
| Coolix 2200 Chiller            | N/A                                | N/A | N/A     | N/A | +13 °C      | +40 °C | −40 °C     | +80 °C     |
| Detector Chiller HEAT DRY 1    | 10%                                | 80% | 5%      | 95% | 10 °C       | 40 °C  | −40 °C (1) | +70 °C (1) |
| Innova 2000 Operator console   | 20%                                | 80% | 5%      | 95% | +5 °C       | +40 °C | −40 °C     | +70 °C     |
| DL flat panel                  | 10%                                | 80% | 50%     | 95% | +10 °C      | +40 °C | −25 °C     | +45 °C     |
| DL Infrared emitter/receiver   | 30%                                | 80% | 20%     | 85% | +10 °C      | +35 °C | −20 °C     | +70 °C     |
| DL keypad                      |                                    |     | 8%      | 90% | +10 °C      | +35 °C | −20 °C     | +70 °C     |

**Note: (1)** Shipped within GEMS packaging.

**Relative Humidity and Temperature**

Refer to Table 13. To obtain relative humidity and temperature requirements for components not specified in Table 13, refer to the appropriate component Pre-Installation Manual listed in Chapter 2.

**Altitude and Atmospheric Pressure**

Refer to Table 14. To obtain altitude and atmospheric pressure requirements for components not specified in Table 14, refer to the appropriate component Pre-Installation Manual listed in Chapter 2.

**Table 14 – INNOVA 2000 SYSTEM ROOM CLIMATE REQUIREMENTS – ALTITUDE AND ATMOSPHERIC PRESSURE**

| INSTALLATION<br>ROOM OF<br>PRODUCT OR<br>COMPONENT | RELATIVE HUMIDITY<br>(NON-CONDENSING) |     |         |     | TEMPERATURE |        |                       |        |
|--|---------------------------------------|-----|---------|-----|-------------|--------|-----------------------|--------|
|  | IN-USE                                |     | STORAGE |     | IN-USE      |        | STORAGE/<br>TRANSPORT |        |
|  | MIN.                                  | MAX | MIN.    | MAX | MIN.        | MAX    | MIN.                  | MAX    |
| Examination room                                   | 10%                                   | 70% | 10%     | 70% | +15 °C      | +32 °C | –10 °C                | +50 °C |
| Technical room (1)                                 | 20%                                   | 75% | 10%     | 70% | +13 °C      | +35 °C | –10 °C                | +50 °C |
| Control room                                       | 30%                                   | 80% | 10%     | 70% | +15 °C      | +35 °C | –10 °C                | +50 °C |
| Innova Digital<br>Detector                         | See note 2                            |     |         |     |             |        |                       |        |

**Note: (1)** The Detector chiller HEAT DRY 1 is shipped within GEMS packaging.

**Note: (2)** The detector should be stored at 10–40 °C and less than or equal to 90% RH in the plastic wrapped shipping box. (This should include two bags of desiccant as well). The lowest temperature (e.g. 10 °C) and humidity is preferable. If they are to be stored outside of their shipping box or in the inner shipping box without plastic wrapping they should be stored at 20 °C or less and 30% RH or less. In terms of transportation, do not expose to temperatures below –20 °C **in its shipping box** for more than 15 hours. The detector will reach the ambient temperature after 20–25 hours. The detector should not be allowed to reach temperatures less than –10 °C or irreparable damage to the detectors scintillator will occur.

Care must be taken when removing a detector from a shipping box. If the detector has been subject to cold temperatures for an extended period the detector in the box should be allowed to sit in the plastic wrapped box to reach room temperature. This will prevent condensation from occurring. Condensation on the detector can cause irreparable damage to the electronics.

Storage 10–40 °C; 10–90 % RH 250 day storage

Transportation –20 to +60 °C and 10–80% RH



## 1-2 Equipment Heat Output (Dissipation)

Refer to Table 15. To obtain heat output information for components not specified in Table 15, refer to the appropriate component Pre-Installation Manual listed in Chapter 2.

**Table 15 – INNOVA 2000 SYSTEM HEAT OUTPUTS (BY COMPONENT)**

| PRODUCT OR COMPONENT  | HEAT OUTPUT (BTU/HR) |            | HEAT OUTPUT (WATTS) |            |
|---|----------------------|------------|---------------------|------------|
|   | STANDBY              | IN-USE     | STANDBY             | IN-USE     |
| Innova LC Positioner  | negligible           | 1166       | negligible          | 342        |
| POSTIT Cabinet  | 5600                 | 11123      | 1640                | 3260       |
| Omega Patient table   | negligible           |            | negligible          |            |
| Maxiray 150 V5 X-Ray tube assy  | negligible           | 1,000      | negligible          | 300        |
| Innova Digital Detector   |                      |            |                     |            |
| ACAB Cabinet  |                      |            |                     | 2500/2800W |
| VMP Cabinets  | 3400                 | 5100       | 1000                | 1500       |
| Tube Chiller  | 5120                 | 20470(1/2) | 1500                | 6000W      |
| Digital Detector Chiller  |                      |            |                     | 250W       |
| Innova 2000 Operator console  | 181                  | 194        | 53                  | 57         |
| DL user area  |                      | 1000       |                     | 300        |
| Note 1: Air intake requirements 1360 cubic meter per hour<br>2: For more details, consult appropriate pre-installation manual |                      |            |                     |            |

## 1-3 IEC601-1-2 Electromagnetic Standard Compliance & Documentation

### 1-3-1 GENERAL SCOPE

This equipment complies with IEC60601-1-2 Edition 2 EMC standard for medical devices.

The Innova system is suitable to be used in the electromagnetic environment, as per the limits & recommendations described in the tables here after:

- Emission Compliance level & limits (Table 16).
- Immunity Compliance level & recommendations to maintain equipment clinical utility (see Table 17, Table 18 and Table 19).

**Note:** This system complies with above-mentioned EMC standard when used with supplied cables up to maximum lengths referenced in the MIS MAPS or system cables interconnect diagrams.

### 1-3-2 ELECTROMAGNETIC EMISSION


**Table 16 – Electromagnetic Emission**

| The Innova 2000 system is suitable for use in the specified electromagnetic environment. The purchaser or user of the Innova 2000 system should assure that it is used in an electromagnetic environment as described below: |                          |   |
|--|--------------------------|---|
| Emissions Test   | Compliance               | Electromagnetic Environment   |
| Radio-Frequency<br>Emissions<br>CISPR11  | Group1 Class A<br>limits | The Innova 2000 system is suitable for use in all establishments other than domestic and those directly connected to the low voltage power supply network that supplies buildings used for domestic purposes. |
|  | Group1 Class A<br>limits | The Innova 2000 system uses RF energy only for its internal function. Therefore, the RF emission is very low and not likely to cause any interference in nearby electronic equipment.                         |
| Harmonic emissions<br><br>IEC 61000-3-2  | Not applicable           | The Innova 2000 system is suitable for use only in establishments not directly connected to a public low voltage power supply network.  |
| Voltage fluctuations/<br>flicker emissions<br><br>IEC 61000-3-3  | Not applicable           | The Innova 2000 system is suitable for use only in establishments not directly connected to a public low voltage power supply network.  |

**1-3-3 ELECTROMAGNETIC IMMUNITY****Table 17 – Electromagnetic Immunity**

| The Innova 2000 system is suitable for use in the specified electromagnetic environment. The purchaser or user of the Innova 2000 system should assure that it is used in an electromagnetic environment as described below: |  |  |  |
|--|--|--|--|
| <b>Immunity Test</b>   | <b>IEC 60601-1-2<br/>Test Level</b>                            | <b>Compliance Level</b>  | <b>Electromagnetic Environment</b>   |
| Electrostatic discharge (ESD)<br>IEC 61000-4-2   | 6 kV contact<br>8 kV air                                       | 6 kV contact<br>8 kV air                                       | Floors are wood, concrete, or ceramic tile, or floors are covered with synthetic material and the relative humidity is at least 30 percent.  |
| Electrical fast transient/burst<br>IEC 61000-4-4   | 2 kV for power supply lines<br><br>1 kV for input/output lines | 2 kV for power supply lines<br><br>1 kV for input/output lines | Mains power quality is that of a typical commercial and/or hospital environment  |
| Surge<br>IEC 61000-4-5   | 1 kV line(s) to lines(s)<br>2 kV line(s) to earth              | 1 kV line(s) to lines(s)<br>2 kV line(s) to earth              | Mains power quality is that of a typical commercial and/or hospital environment.   |
| Voltage dips, short interruptions and voltage variations on power supply input lines<br>IEC 61000-4-11   | 0 % $U_n$ for 5 sec  | 0 % $U_n$ for 5 sec  | Mains power quality is that of a typical commercial and/or hospital environment. If the user of the Innova 2000 system requires continued operation during power mains interruptions, it is recommended that the Innova 2000 system be powered from an uninterruptible power supply or a battery.  |
| Power frequency (50/60 Hz) magnetic field<br>IEC 61000-4-8   | 3 A/m  | 3 A/m<br><br>1A/m  | Power frequency magnetic fields are at levels characteristic of a typical location in a typical commercial and/or hospital environment.<br><br>At that disturbance amplitude level the monitor image might present some slight flicker. For image quality improvement, the monitor might be removed from the low frequency magnetic field source vicinity.<br><br>At that disturbance amplitude level the system is fully operational. |
| Note: These are guidelines. Actual conditions may vary.  |  |  |  |

Table 18 – Electromagnetic Immunity IEC 60601-1-2

| The Innova 2000 system is suitable for use in the specified electromagnetic environment. The purchaser or user of the Innova 2000 system should assure that it is used in an electromagnetic environment as described below: |   |  |  |
|--|---|--|--|
| Immunity Test  | IEC 60601-1-2 Test Level  | Compliance Level   | Electromagnetic Environment  |
| Conducted RF<br>IEC 61000-4-6  | 3 V<br>150 kHz to<br>80 MHz   | $[V_1 \leq] 3 \text{ V}$<br><br>$[V_2 \leq] 0.3 \text{ V}$   | <p>Portable and mobile RF communications equipment are used no closer to any part of the Innova 2000 system, including cables, than the recommended separation distance calculated from the equation appropriate for the frequency of the transmitter.</p> <p>At that disturbance amplitude the monitor image might present some slight flicker. For image quality improvement, the monitor might be removed from the electric field source vicinity.</p> <p>At that disturbance amplitude the system is fully operational.</p>  |
| Radiated RF<br>IEC 61000-4-3   | 3 V/m<br>80 kHz to<br>800 MHz<br><br>3 V/m<br>800 MHz to<br>2,5 GHz | $[E_{1\leq}] 3 \text{ V/m}$<br><br>$[E_{2\leq}] 0.3 \text{ V/m}$<br><br>$[E_{3\leq}] 3 \text{ V/m}$<br><br>$[E_{4\leq}] 0.3 \text{ V/m}$ | <p>At that disturbance amplitude the monitor image might present some slight flicker. For image quality improvement, the monitor might be removed from the electric field source vicinity.</p> <p>At that disturbance amplitude the system is fully operational.</p> <p>At that disturbance amplitude the monitor image might present some slight flicker. For image quality improvement, the monitor might be removed from the electric field source vicinity.</p> <p>At that disturbance amplitude level the system is fully operational.</p> <p>Note: P is the power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m).</p> <p>Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey,* are less than the compliance level in each frequency range.**</p> <p>Interference may occur in the vicinity of equipment marked with the following symbol:</p>  |

\*Field strengths from fixed transmitters, such as base stations for cellular telephones and land mobile radios, amateur radio, AM and FM radiobroadcast, and TV broadcast cannot be estimated accurately. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be performed. If the measured field strength exceeds the RF compliance level above, observe the Innova 2000 system to verify normal operation in each use location. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the Innova 2000 system.

\*\*Over the frequency range 150 kHz to 80 MHz, field strengths are less than  $[V_2] \text{ V/m}$ .

**The Recommended Separation Distances are listed in the next table.**

**Note:** These are guidelines. Actual conditions may vary.

**Table 19 – Recommended Separation Distances for Portable and Mobile RF Communications  
Equipment IEC 60601-1-2**

| Frequency of Transmitter   | 150 KHz to 26 MHz                | 26 MHz to 80 MHz                 | 80 MHz to 800 MHz                | 800 MHz to 2.5 GHz             |
|--|----------------------------------|----------------------------------|----------------------------------|--------------------------------|
| Equation   | $d = [\frac{3.5}{V_2}] \sqrt{P}$ | $d = [\frac{3.5}{V_2}] \sqrt{P}$ | $d = [\frac{3.5}{E_2}] \sqrt{P}$ | $d = [\frac{7}{E_4}] \sqrt{P}$ |
| Rated Power of Transmitter(watts)  | DISTANCE<br>(meters)             | DISTANCE<br>(meters)             | DISTANCE<br>(meters)             | DISTANCE<br>(meters)           |
| 10 mW  | 1.2                              | 1.2                              | 1.2                              | 2.3                            |
| 100 mW   | 3.8                              | 3.8                              | 3.8                              | 7.3                            |
| 1  | 12                               | 12                               | 12                               | 23 (*)                         |
| 10   | 38                               | 38                               | 38                               | 73                             |
| 100  | 120                              | 120                              | 120                              | 230                            |
| <p>For transmitters rated at a power not listed above, the <b>DISTANCE</b> can be estimated using the equation in the corresponding column, where P is the power rating of the transmitter in watts (W) according to the transmitter manufacturer.</p> <p><b>Note:</b> These are guidelines. Actual conditions may vary.</p> |                                  |                                  |                                  |                                |

**1-3-4 LIMITATIONS MANAGEMENT:**

Adhering to the distance separation recommended in Figure 4, between 150KHz & 2.5GHz, will reduce disturbances recorded at the image level, but may not eliminate all disturbances. However, when installed and operated as specified herein, the system will maintain its essential performance by continuing to acquire, display, and store diagnostic quality images safely.

(\*) For example, a 1W mobile phone (800MHz to 2.5GHz carrier frequency) shall be put 23 meters apart from the Innova 2000 system (in order to avoid images interferences risks).

**1-3-5 USE LIMITATION :**

The use of accessories, transducers, and cables other than those specified may result in degraded ELECTROMAGNETIC COMPATIBILITY of the Innova 2000 system

**1-3-6 INSTALLATIONS REQUIREMENTS & ENVIRONMENT CONTROL :**

In order to minimize interference risks, the following requirements shall apply:

- ***Cables shielding & 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.

- ***Separated Power supply distribution panel & separated power line:***

This product complies with the radiated emission limits as per the CISPR11 Group1 ClassA standard.

The Innova 2000 system is predominantly intended for use (e.g. in hospitals) with a dedicated supply system, and with an X-ray shielded room.

In case of using in a domestic environment (e.g. doctors' offices), in order to avoid interferences, it is recommended to use a separated AC power distribution panel & separated power line, and an X-ray shielded room.

- ***Subsystem & accessories Power supply distribution:***

All components, accessories subsystems, systems which are electrically connected to the Innova 2000 system, have to be all AC power supplied by the same power distribution panel & line.

**Note:** In order to avoid interferences, the same AC power distribution panel should supply all components, accessories, the Innova 2000 system (& subsystems as the Advantage Workstation). The separated AC power line should supply the panel.

- ***Stacked components & equipment:***

The Innova 2000 system should not be used adjacent to or stacked with other equipment; if adjacent or stacked use is necessary, the Innova 2000 system should be observed to verify normal operation in the configuration in which it will be used.

- ***Low frequency magnetic field:***

In case of an Innova 2000 system, the Gantry(digital detector) shall be apart 1meter from the generator cabinet, and 1meter apart from the analog (CRT) monitors. These distances specifications shall minimize the low frequency magnetic field interference risk.

- ***Static magnetic field limits:***

In order to avoid interference on the Innova 2000 system, static field limits from the surrounding environment are specified.

Static field is specified less than <1 Gauss in Examination room, and in the Control Area.

Static field is specified less than <3 Gauss in the Technical Room.

- ***Electrostatic discharges environment & recommendations:***

In order to reduce electrostatic discharge interference, install a charge dissipative floor material to avoid electrostatic charge buildup.

The relative humidity shall be at least 30 percent.

The dissipative material shall be connected to the system ground reference, if applicable.

## 1-4 Radiation Protection

Because x-ray equipment produces radiation, special precautions may be needed or special site modifications may be required. The General Electric Company does not make recommendations regarding radiation protection. It is the purchasers' responsibility to consult a radiation physicist for advice on radiation protection in x-ray rooms.

## 1-5 Mobile requirements

To prevent any potential susceptibility and system perturbation, the Mobile Innova trailer should not be located and operated near the following:

- High voltage transformers,
- Antennas (radio, TV or telecom)
- Other system behind the hospital wall that could disturb the Mobile Innova (X-Ray, CT, MR, ...).
- Other system behind the hospital wall that could be disturbed by the Mobile Innova (nursery, emergency room, ...)
- Any other equipment, which may disturb the Mobile Innova.

## 1-6 Audible noise

- Less than 62 dB (A) at 1 meter for a Innova LC Positioner
- Limited to 50 dB (A) at 1 meter for Omega 4 table.
- Limited to 65 dB (A) at 1 meter for VMP Cabinet.
- Limited to 57 dB (A) with a "low noise" cover or to 65 dB (A) with a "high ambient" cover at 1 m for the COOLIX 2200.
- Limited to 65 dB (A) at 1 meter for ACAB Cabinet
- Limited to 60 dB (A) at 1 meter for Digital Detector Chiller
- Less than 52 dB (A) at 1 meter for a DL Flat panel.
- Limited to 60dB(A) at 1 meter for optional UPS.

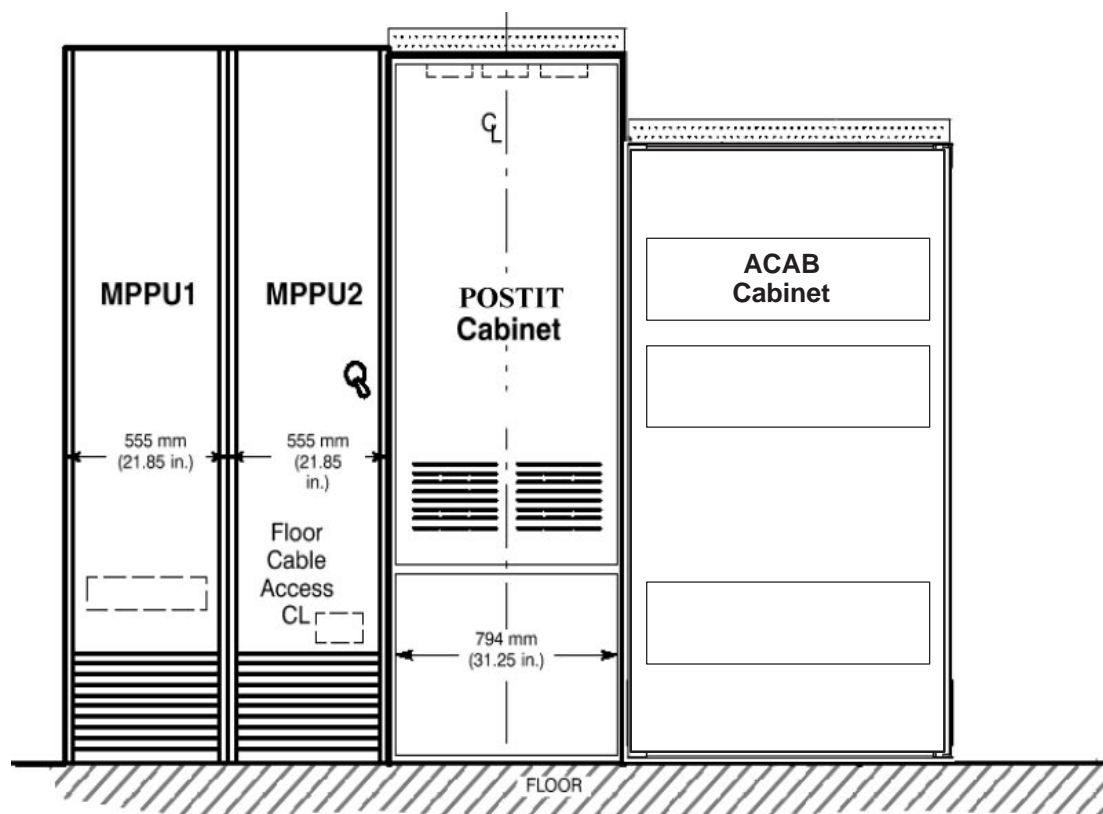
## 1-7 Windows and curtains

When the examination room has a window with an aperture outside of the controlled light area (day light, other...) a curtain has to maintain the light intensity under a limit fixed to 150 lux.



## 1-8 Preference Cabinet location

Illustration 10 – PREFERRED SYSTEM CABINET LOCATION IN ALL CASES



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## 2 STRUCTURAL REQUIREMENTS

### 2-1 Room Size

Refer to Table 20 for recommended and minimum Innova LC system room dimensions.

The Innova 2000 system room dimensions reflect the specifications determined by General Electric Medical Systems Installation Services group.

**Table 20 – INNOVA LC SYSTEM RECOMMENDED AND MINIMUM ROOM SIZE DIMENSIONS**

| LENGTH   |         | WIDTH       |         | CEILING HEIGHT (1) |             |
|--|---------|-------------|---------|--------------------|-------------|
| RECOMMENDED  | MINIMUM | RECOMMENDED | MINIMUM | RECOMMENDED        | MINIMUM     |
| 9.75   | TBD     | 6.00        | TBD     | 3.05 (10 ft)       | 2.74 (9 ft) |
| Note (1): With a 3 monitor frame suspension, take care with the ceiling height not more 3.05 m (10 ft) |         |             |         |                    |             |

For additional details, refer to Chapter 5, *Room Layouts*.

### 2-2 Door Size Requirements

Minimum door sizes also apply to hallways and elevators. For additional details, refer to Chapter 7, *Planning Aids*, .

#### Door Height

The minimum door height (to accommodate Innova positioner cabinet on its dolly) is **2.09 m (82 in)**. If the height is limited to 2 m (79 in), you will need a fall over cabinet.

With the Innova LC positioner on dolly the minimum door height must be at least of 2,00 m (79 in).

#### Door Width

The minimum door width needed (to accommodate the Innova LC shipping dolly) is:

- 1.165 m (46 in) with protective side rail,
- 1.096 m (43 in) with one protective side rail removed on site.

**Note:** Door widths are based on a “straight-in” approach requiring a 2.44 m (96 in) wide corridor. Calculations need to be made for accommodation of equipment through narrower corridors.

### 2-3 Floor

#### General Vascular GEMS Policy

**GEMS’s Customer is responsible for the structural analysis and mounting of the base plates. If GEMS is forced to mount the base plate, the LCT must hire a structural engineer to design and approve the mounting method and provide GEMS with an engineering report.**

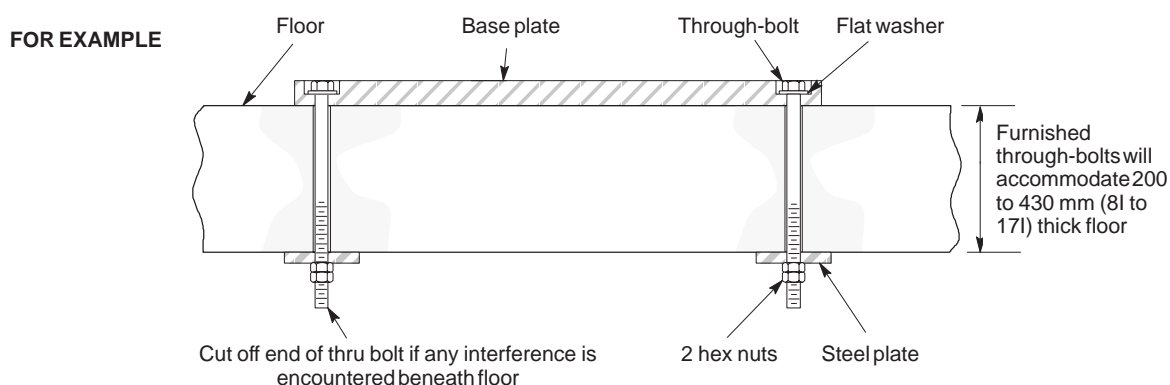
The floor level cannot exceed a general levelness of 5 mm (0.2 in) for any 2 meters (79 in).



The floor slabs on which the equipment is to be installed must have a levelness of 1 mm (0.04 in) per meter (40 in) . Baseplate and table basement must be at the same level.

The preferred installation method for the Innova LC Positioner or the Omega tables is through-bolting. The through-bolting method can be used in all seismic zones. If through-bolting cannot be used, use provided floor anchors instead.

#### Illustration 11 – THROUGH-BOLT SUPPLIED (SLAB TYPE FLOOR CONSTRUCTION)



#### Floor requirements when using provided floor anchors

The maximum pullout force per provided anchor was calculated assuming:

- A concrete compression strength ( $f'_c$ ) of **17.24 MPa** at 28 days (which is the minimum required compression strength).
- Anchors installed to the required hole depth of **165.1 mm** minimum, and
- Center of anchor hole to concrete edge distance **79.4 mm**.

*Make sure to obtain data on compression strength of the concrete before using floor anchors.*

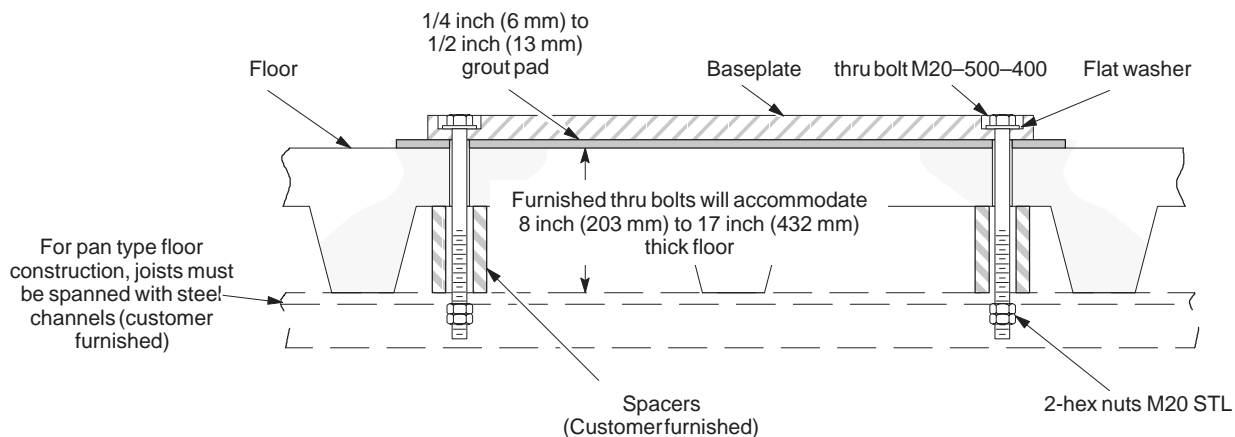
#### Pan Type Floor Construction Requirement

For Pan type floor construction, steel channels must be designed by a local structural engineer to span floor joists. See Illustration 12.

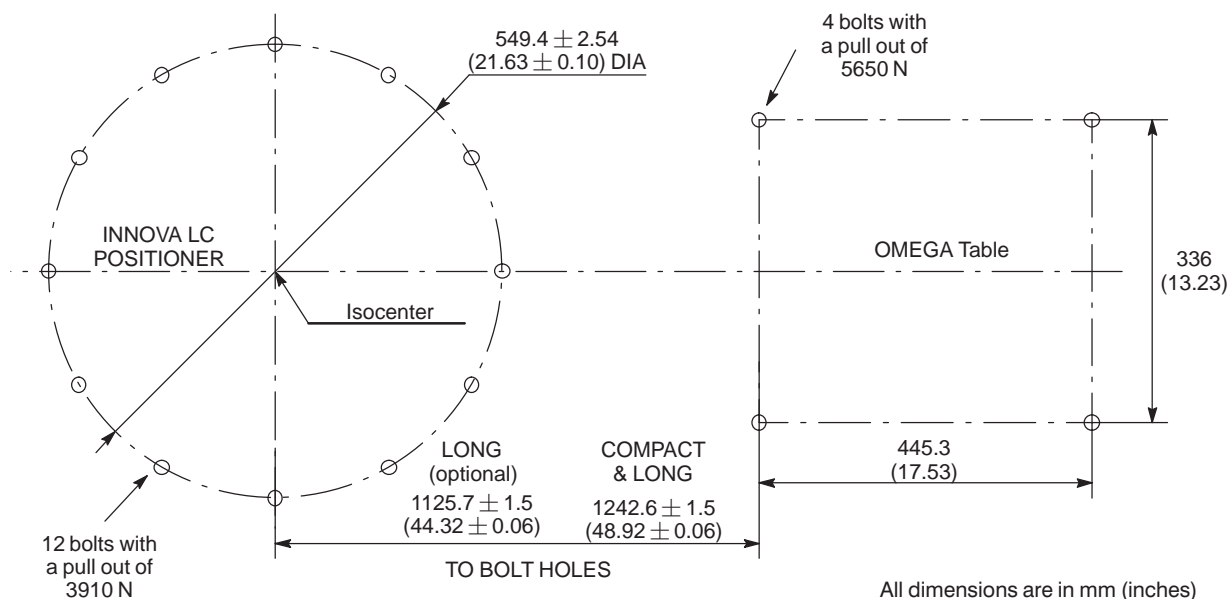
**Note:** For specific floor preparation procedures, refer to im (Installation Manual) 2290880-100 Cardiovascular Imaging System Pre-Installation kit Installation.

### Illustration 12 – THROUGH-BOLT SUPPLIED (PAN TYPE FLOOR CONSTRUCTION)

**FOR EXAMPLE**



### Illustration 13 – LOCATION OF FIXING BOLTS



For alternative table bolts or seismic area, refer to template drawing shown in Illustration 43.

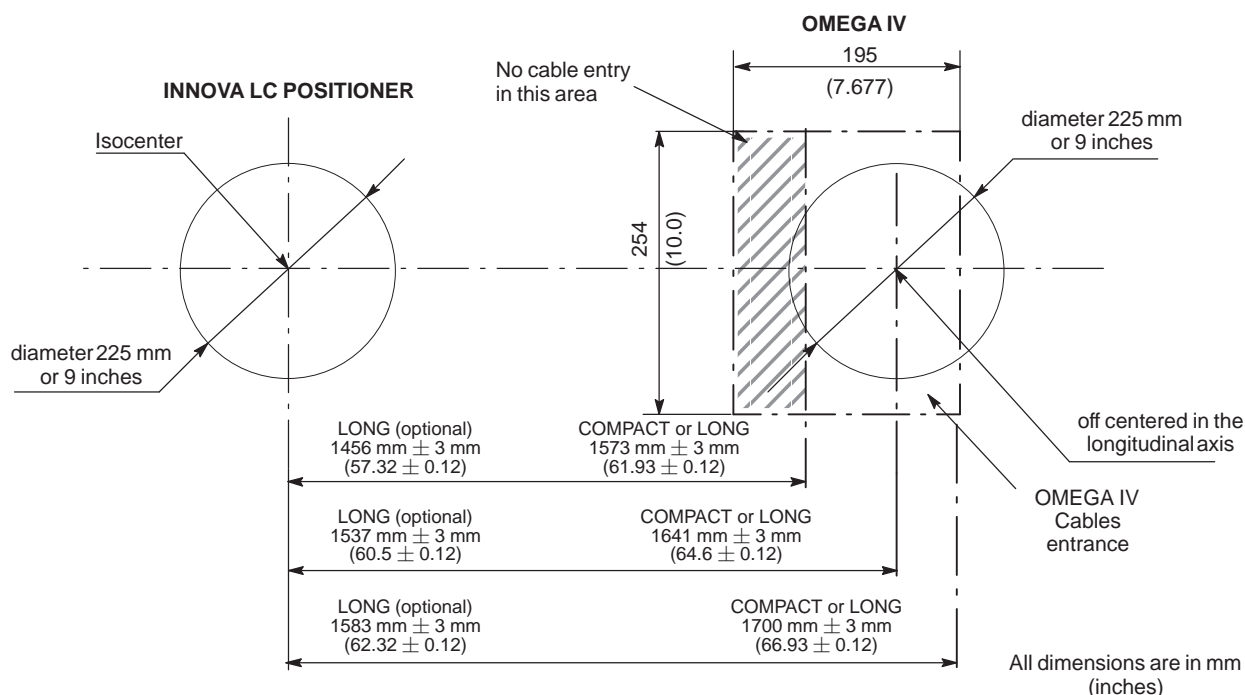
### Hole dimension and preferred location in concrete floor

If in the examination room, the Innova LC Positioner and the OMEGA patient tables are not placed on a computer floor but directly put on concrete floor, the location of the cable access needs to be carefully planned.

Otherwise, if the cable run is located under the concrete floor, the cables will have to come through the floor and in this case you will need two holes, one for the LC Positioner and the other for the patient table.

The diameter of both holes can be the same (225 mm / 9 in).

Illustration 14 – HOLE LOCATIONS IN CONCRETE FLOOR



**Note :** If both hole are the same diameter, it must be 1641 mm (64.6 in) or 1537 mm (60.5 in).



Due to the plastic bushing used in the USA to protect cables from the sharp edges of conduits it is necessary to place the cable conduit inside the table cable access opening but the height of the outcoming conduit plus bushing is limited to 1/2 in (12 mm).

### Water Pipe Requirements

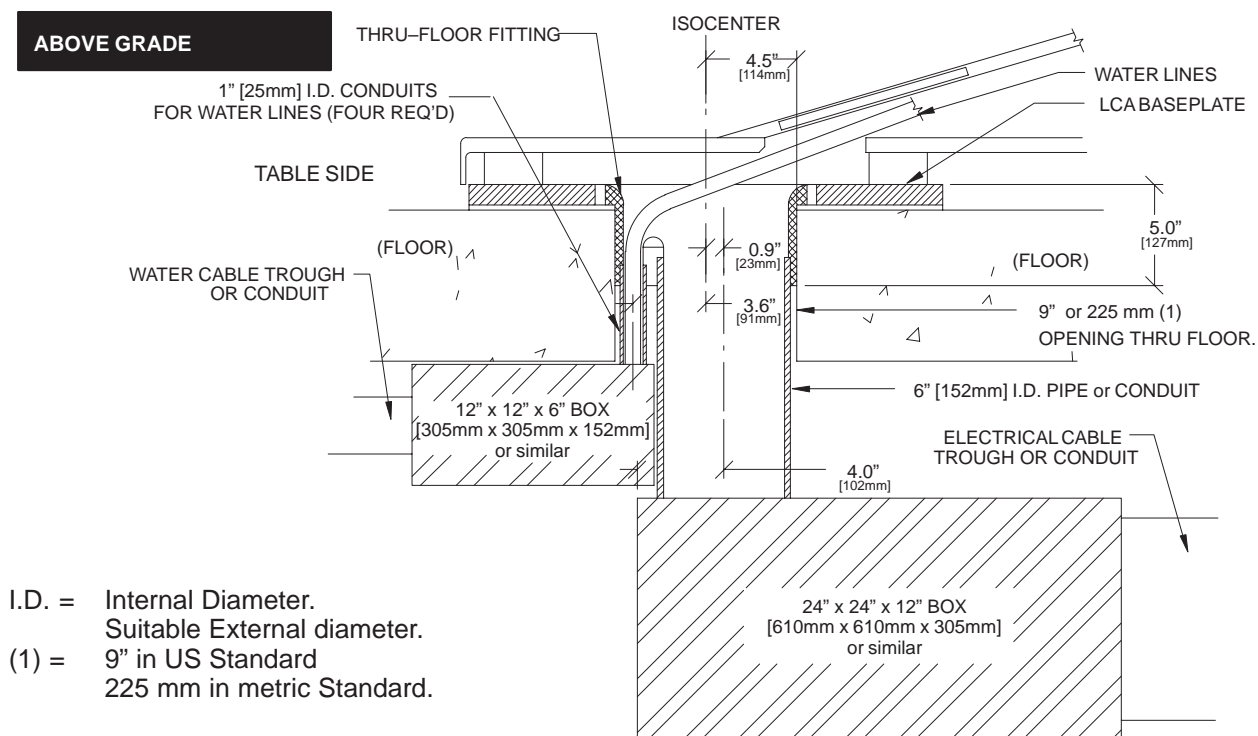
- An Innova LC System uses a MAXIRAY 150 with a recirculating chiller.
- Two water pipes are supplied to allow water circulation between Innova LC Positioner and chiller.
- In some countries, it is forbidden to run electrical cables and water pipes in the same conduit. In this case, two separate conduits are required. But then a problem arises at the level of the Innova LC Positioner entrance.
- Depending on the method used, one of the two options shown hereafter (Illustration 15) must be used.

### Seismic areas

In Seismic areas all cabinets must be anchored to the floor. See Chapter 2 for referential documents.

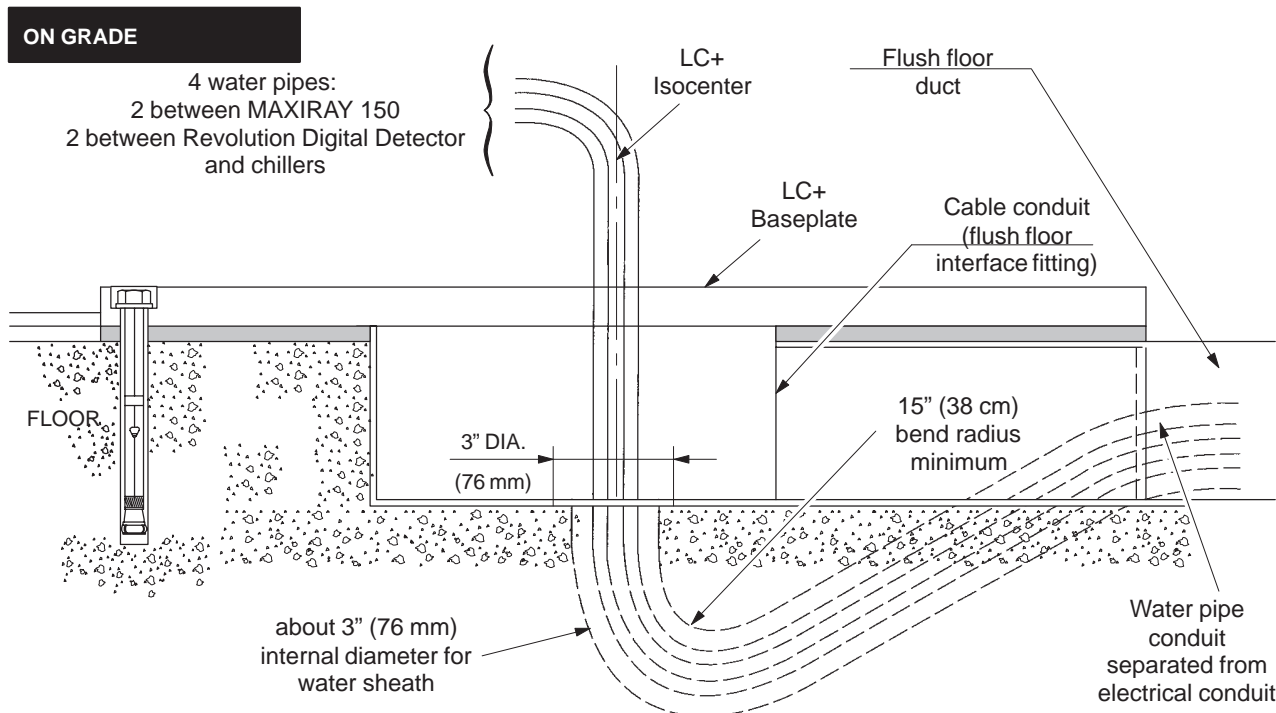
Every sub-system is delivered on site with its proper seismic kit.

Anti-seismic means be installed before opening the system for normal use.

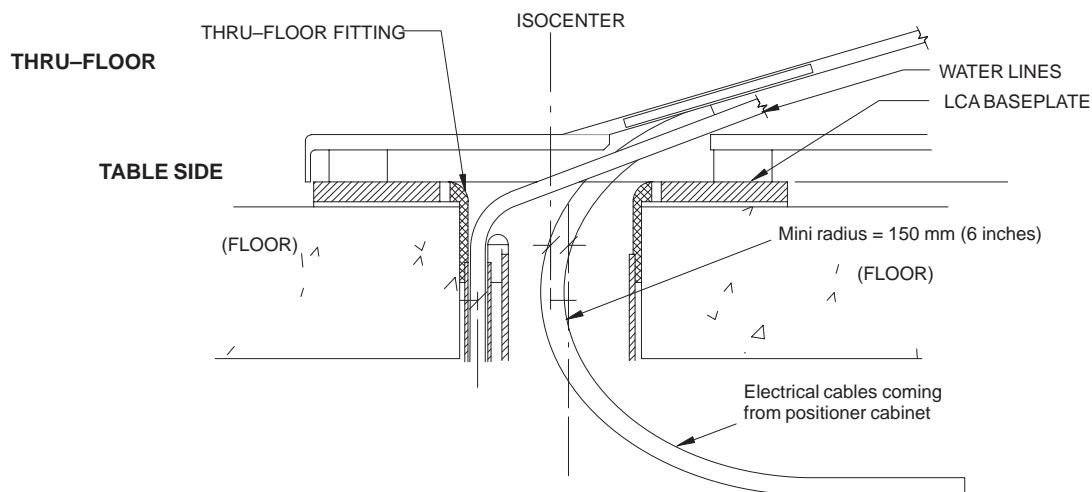
**Illustration 15 – WATER CONDUIT LOCATION**

I.D. = Internal Diameter.  
 Suitable External diameter.  
 (1) = 9" in US Standard  
 225 mm in metric Standard.

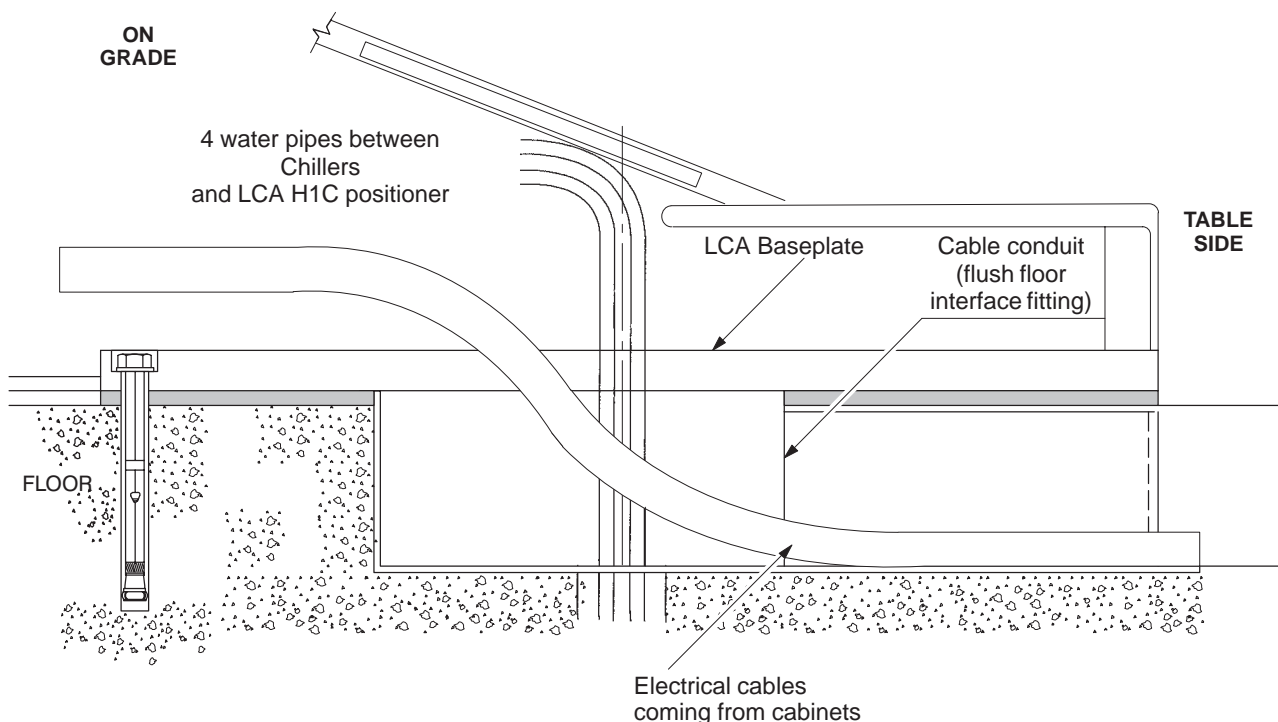
**Note:** Pipe, junction box and duct or conduit are to be supplied and installed by Customer or customer's Contractor.



**Note:** Flush floor interface fitting is part of GEMS installation kit 2286398 and is installed by Customer or customer's Contractor.

**Illustration 16 – CABLE CURVATURE**

**Note:** In case of thru-floor cabling, if the electrical cables are coming from the head side, they will need to have a minimum curvature with a minimum radius of 150 mm (6").  
**In any other cases (i.e. flush floor) no such curvature is allowed.**



**Note:** In case of on grade cabling, because of the minimum curvature constraint of 150 mm (6"), the cable will have to come from the side between Innova LC Positioner and patient table.



## 2-4 Ceiling

Aluminum rails support the In-Room TV Monitor bridge used in Innova 2000 system X-ray rooms.

### Reference

For additional details on ceiling requirements for stationary rails, refer to:

- Direction 46-019639, *Advantx (VHLA) XT Stationary Rails Installation and Adjustment*.

When evaluating ceiling you must take into account the following mounting information:

### Rail Mounting

Attach stationary rails to structural steel with through-bolts in concrete ceilings. Do not use screw anchors in direct tension.

Mount stationary rails directly to the ceiling slab or to flush-mounted unistrut or halfen structure. In higher rooms with false ceiling, mount stationary rails to rigid vertical members hung from ceiling slab.

Securing a supplementary channel to the bottom of the vertical members and mounting the stationary rails to this channel can greatly reduce the number of vertical members.

The stationary rail support structure must be leveled before installation can begin. Do not assume that any support structure is level within specified tolerances, particularly after removing suspensions from an existing room.

### Bolt Specifications

- The maximum load per bolt will not exceed **1557 N**.
- Each bolt must not “pull out” or otherwise fail under a vertically downward “dead” load of **6227 N**.

### Select Rails

All XT Stationary rails are with a select length process. Detail of available length is illustrated in Chapter 7, Section 5.

### Boom Mounted for TV Suspension

One type of boom mounted is supplied as counterpoised monitor suspension not adjusted on site as follows:

- for 2 x 21” (53 cm) VEGA 21” (HI-bright) and additional ECG monitor.



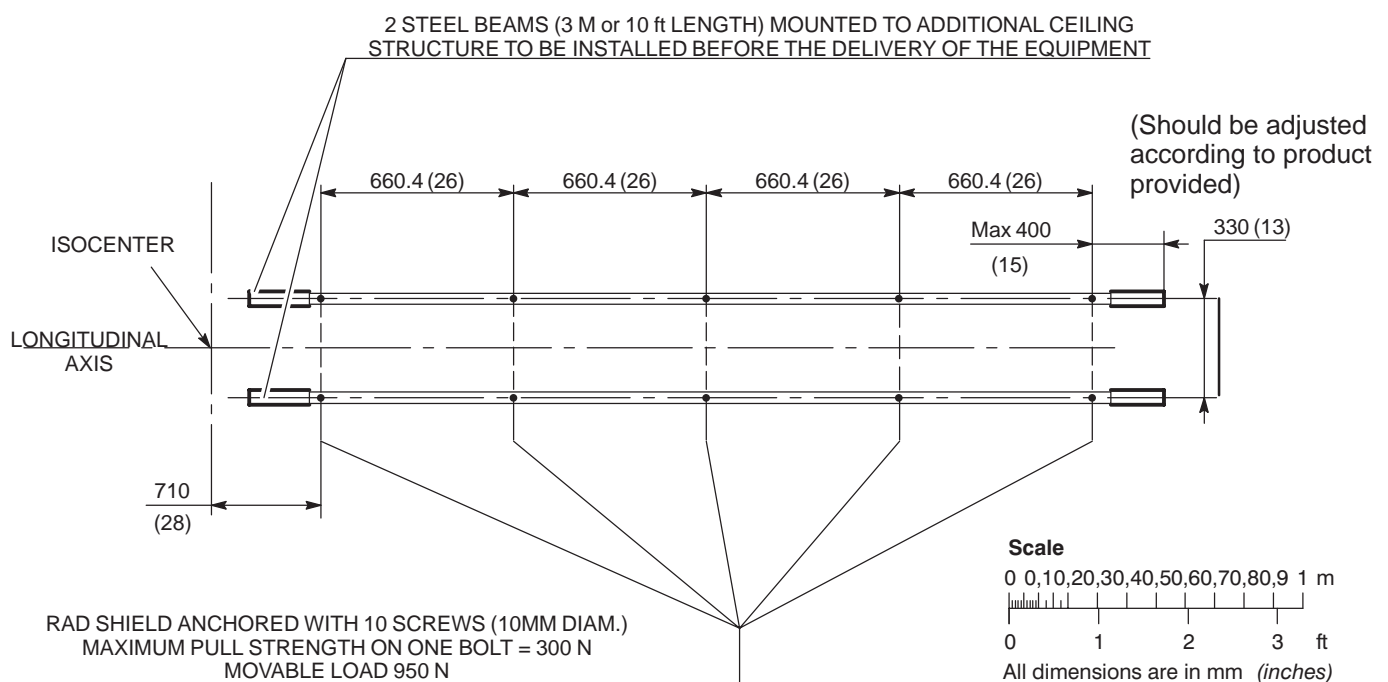
## Radiation Shield

A counterbalanced radiation shield can be supplied as an option with an Innova 2000 System. The radiation shield longitudinal axis is not always the same as the OMEGA Patient table longitudinal axis.

A counterbalanced radiation shield can be supplied with a pair of rails. To mount the rails, you will have to install 3 m steel beams before delivery of the Innova 2000 System.

The 2 steel beams can be used for a DIA product. In this case, the distance of 330 mm (13 inches) should be changed to adjust both beams to the new product support.

### Illustration 18 – CEILING REQUIREMENTS FOR COUNTERBALANCED RADIATION SHIELD



## Cable Support for TV Monitor Cables

A cable support (cable drape) is provided with an Innova LC System.

The cable support kit contains:

- 1 B2054 EK
- 1 B2055 ED

**Note:** In Americas the Cable Support Kit must be provided locally by the Customer (e.g. CPGE55 from Unistrut).

## 2-5 Walls

### General requirement

A normal way to mount heavy cabinets such as ACAB Cabinet, POSTIT Cabinet and X-Ray Generator Cabinet is to securely fasten them to the wall to prevent them from tipping.

### **Seismic Areas**

Consider local seismic codes when planning cabinet mounting. Consult seismic expert to determine which mounting method is appropriate for the seismic region. Certain seismic regions require additional reinforcement in walls. See Chapter 2 – System compatibilities for referential documents.

## 3 ELECTRICAL REQUIREMENTS

Innova System requires three specific power lines, one for the X-Ray Generator, one for the Cabinets, and one for the Chillers (see Illustration 52).

Connect the main power demand to the X-Ray generator.

X-Ray generator is feed by a 126 kVA three phase power line.

For Generator Power Supply Features, see ref 60601.1 IEC.

**Table 21 – ELECTRICAL REQUIREMENTS: System line voltage**

|   | PHASES | VOLTS                                    | I inrush                 | CURRENT                        | COS PHI | FREQ                 |
|---|--------|--|--------------------------|--------------------------------|---------|----------------------|
| <b>Cabinet</b>                              | 3Ø     | 400 V – 480 V<br>+ 10 % – 5 %            | 280 A<br>0.1 sec         | 28 A                           | 0.95    | 50 – 60 Hz<br>± 3 Hz |
| <b>X-Ray generator<br/>(see note below)</b> | 3Ø     | 380 V – 480 V<br>± 10 %                  | 380: 191 A<br>480: 151 A | 380: 16 A<br>480: 14 A         | 0.8     | 50 – 60 Hz<br>± 3 Hz |
| <b>CHILLER</b>                              | 3Ø     | 380 V – 480 V<br>± 10 %<br>3 second 15 % | 48 A                     | 5.5 A (50 Hz)<br>6.8 A (60 Hz) | 0.95    | 50 – 60 Hz           |

### NOTICE

**Line impedance should be compliant with IEC 601.2.7**  
**Refer to the table paragraph NO TAG, page NO TAG.**

## 4 GROUNDING

A minimum of 35 square millimeter (AWG2) copper wire is mandatory from Hospital Vault to ACAB Cabinet.

The ground cable inserted between the PDB (Main Disconnect Panel) and the X-Ray generator Cabinet can be reduced to a nominal of 25 square millimeter (or AWG2) compliant with size of plugs. (From AWG4 to AWG0) common with feed cables.

Refer to Illustration 53, page 116.

## 5 INSITE

EDM is a part of the ACAB cabinet. The modem is fitted inside the ACAB cabinet . A dedicated phone line with a local socket used only for the connection to a modem will preferably be located close to the cabinet. The phone outlet must be located less than 1 meter (3 feet) from the ACAB cabinet



**A modem compliant to each country is supplied with the Innova 2000 System.**

InSite requires an Internet Address connecting it to the Innova 2000. This address must be available before installing the system. A request form has been defined. For more information, please refer to Chapter 8 or contact your GEMS OLC representative.

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## CHAPTER 4 – PHYSICAL CHARACTERISTICS

### 1 DIMENSION DRAWINGS

Refer to this section for the dimensional drawings of the components of the Innova LC Positioner and Omega Tables sub-systems. These components include:

- Innova LC Positioner.
- Omega Patient Tables.
- Postit Cabinet.
- ACAB Cabinet.
- Chillers.

In addition, refer to this section for Positioner/table relative position drawings. These include:

- Innova LC Positioner and Omega Patient Tables.

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Illustration 19 – INNOVA LC POSITIONER DIMENSIONS

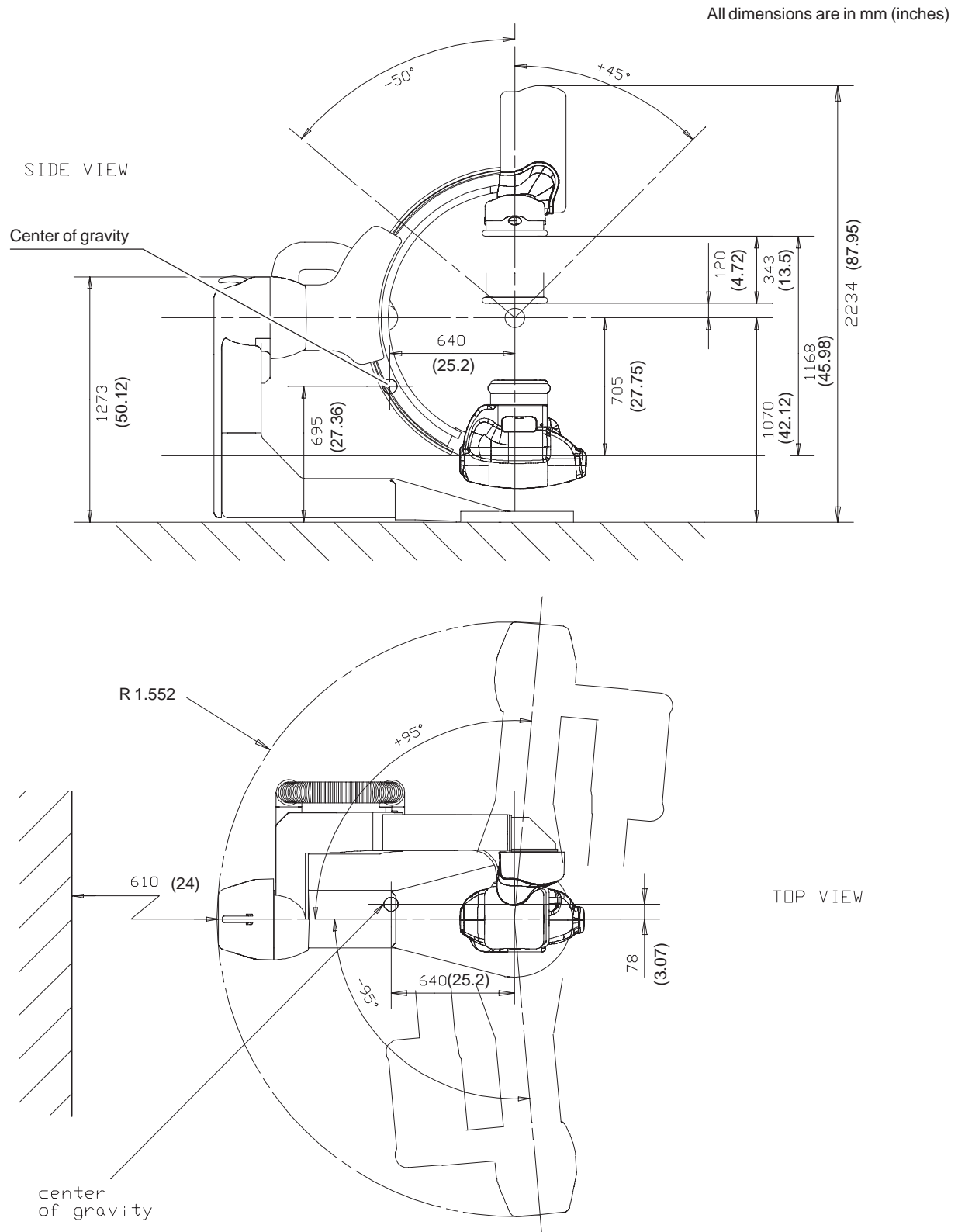
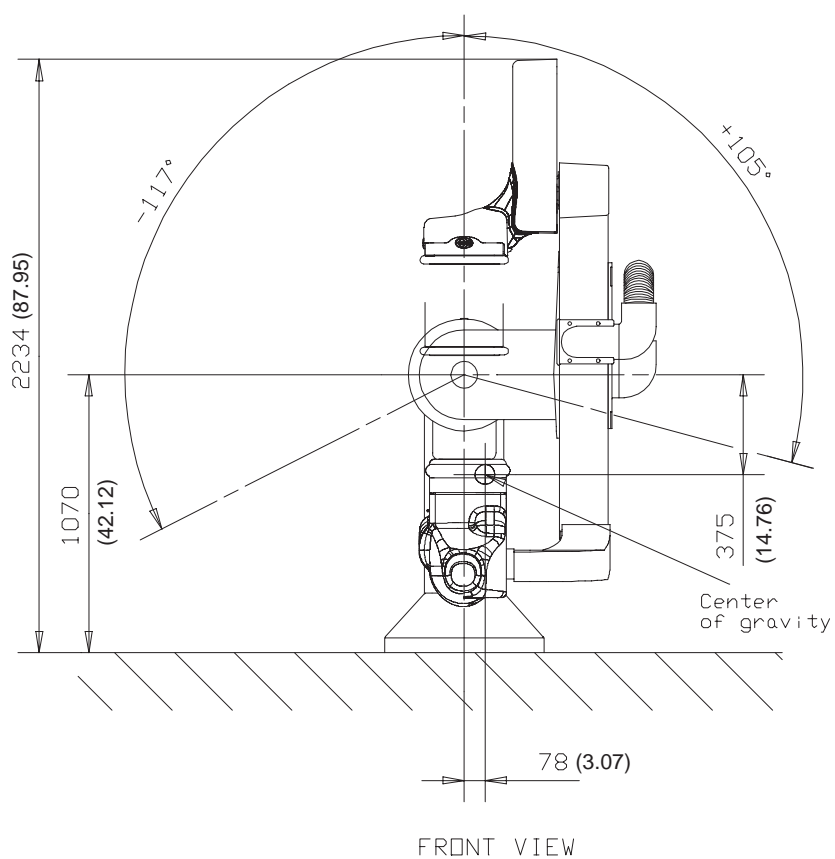


Illustration 19 b – INNOVA LC POSITIONER DIMENSIONS

All dimensions are in mm (inches)



**Illustration 20 – OMEGA IV COMPACT PATIENT TABLE DIMENSIONS**

All dimensions are in mm (inches)

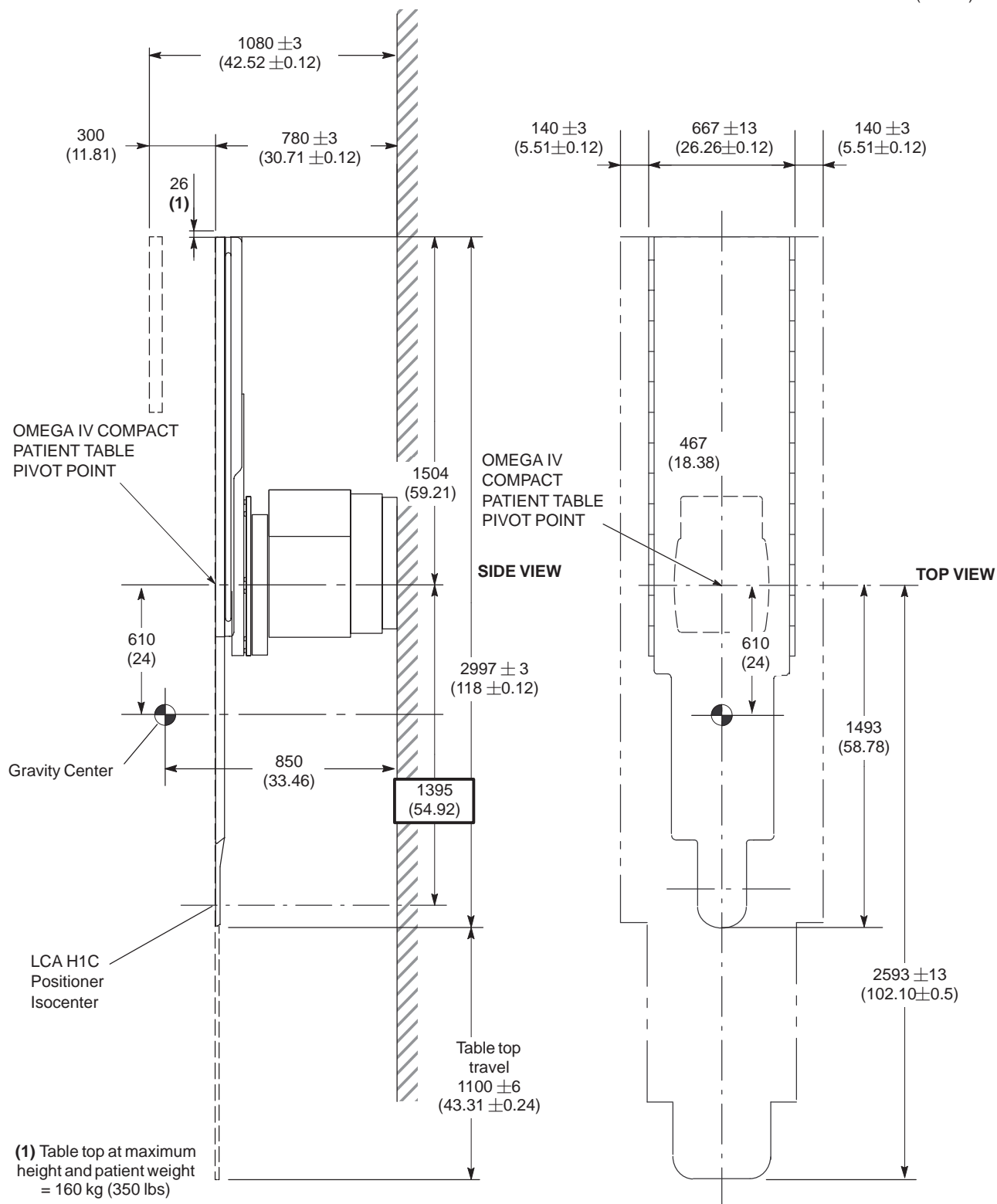
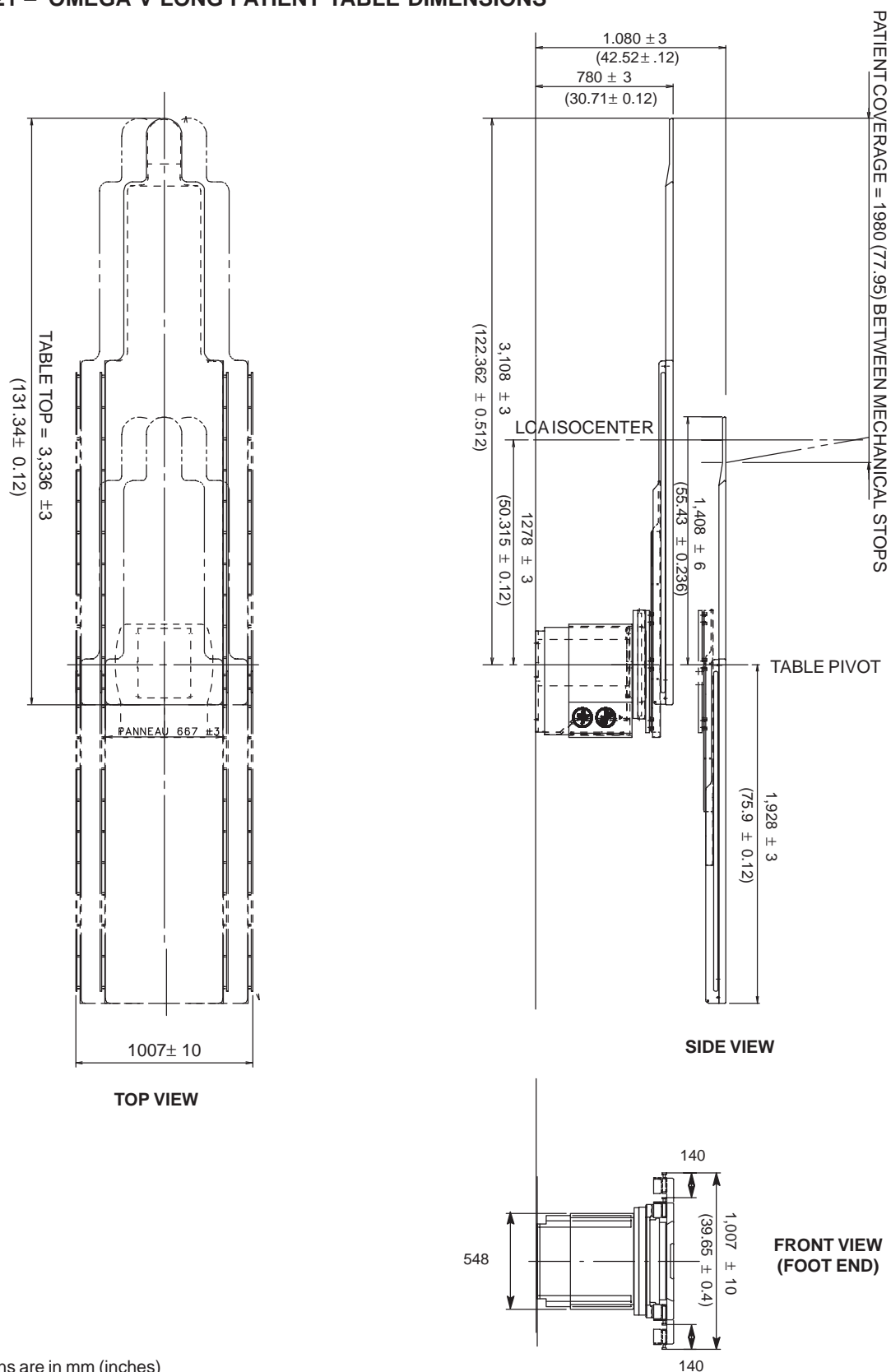


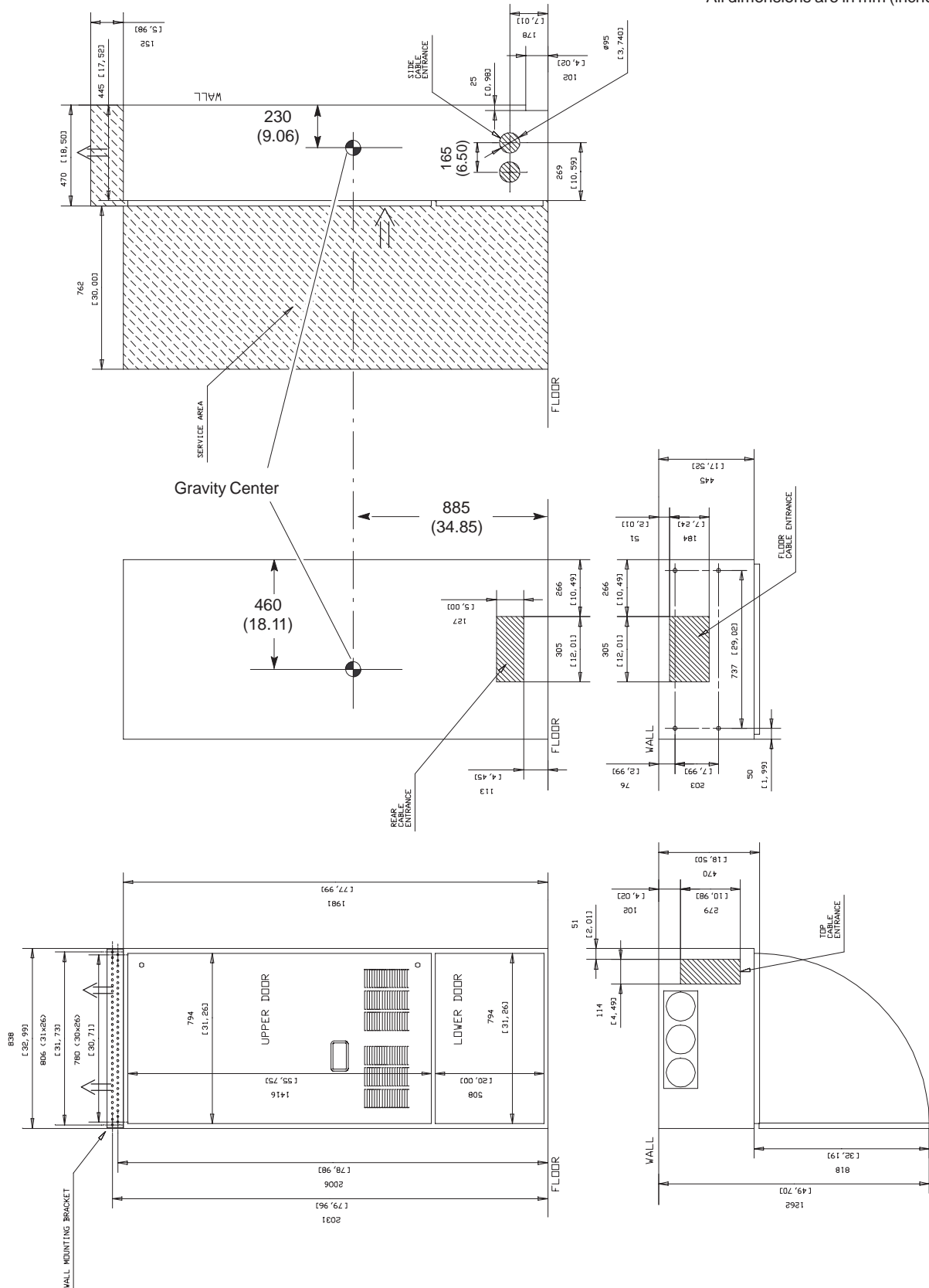
Illustration 21 – OMEGA V LONG PATIENT TABLE DIMENSIONS



All dimensions are in mm (inches)

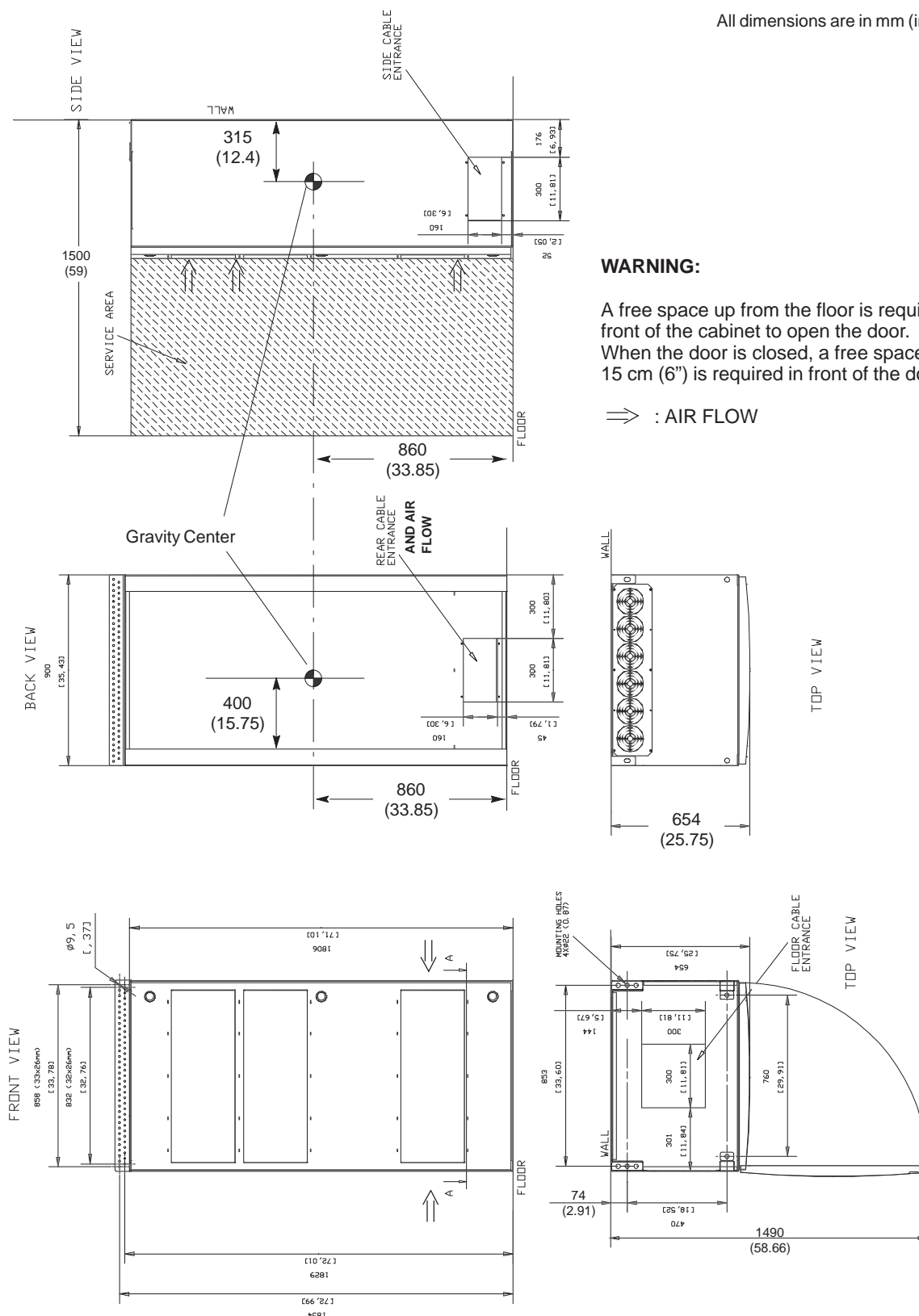
Illustration 22 – POSTIT CABINET DIMENSIONS

All dimensions are in mm (inches)



## Illustration 23 – ACAB CABINET DIMENSIONS

All dimensions are in mm (inches)



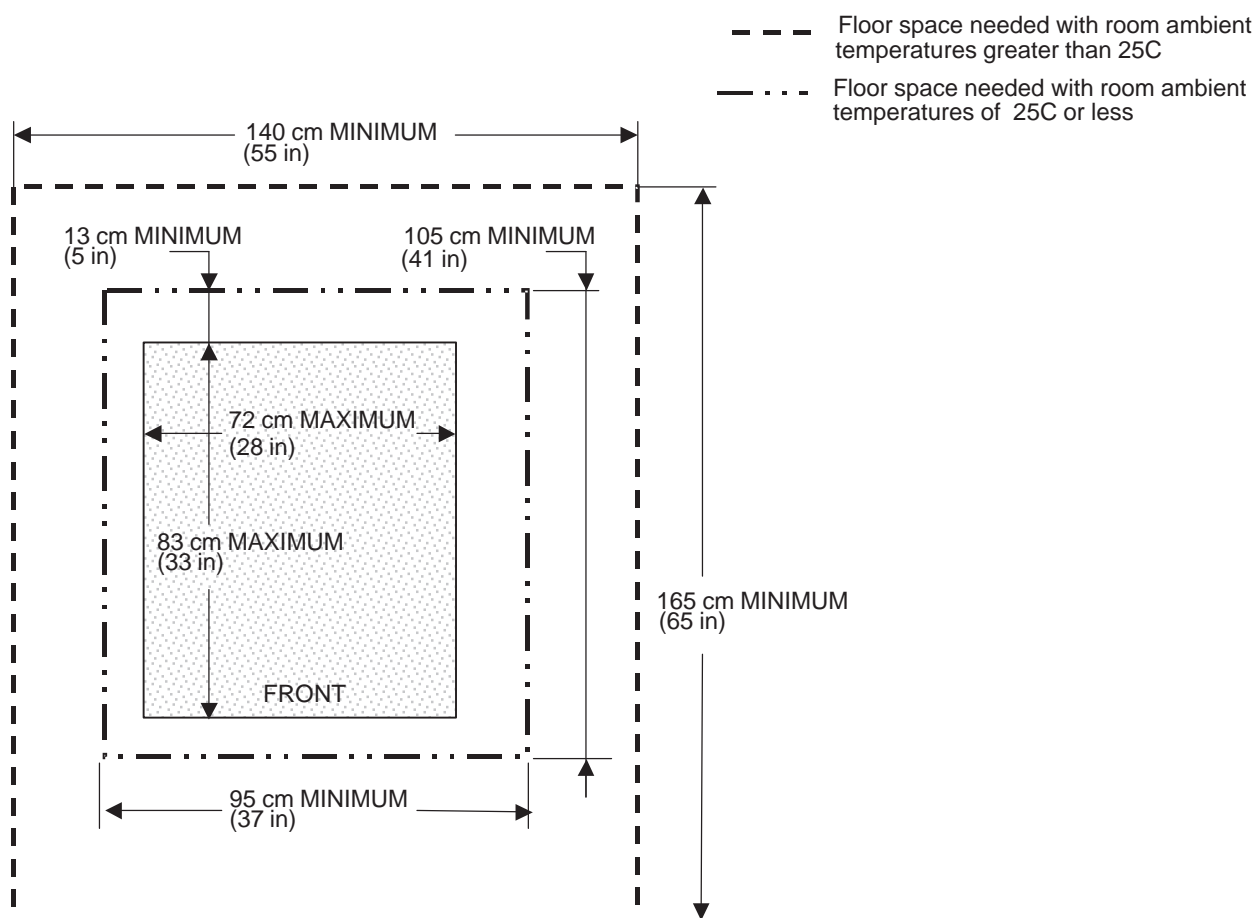
## Illustration 24 – X-RAY CHILLER DIMENSIONS



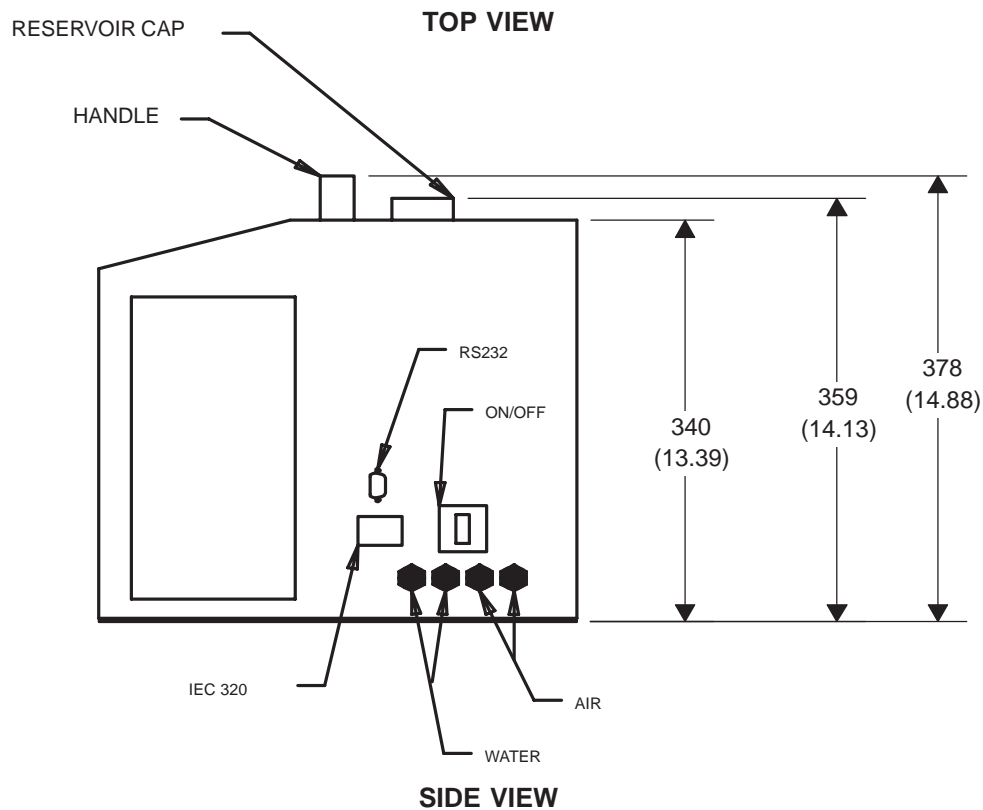
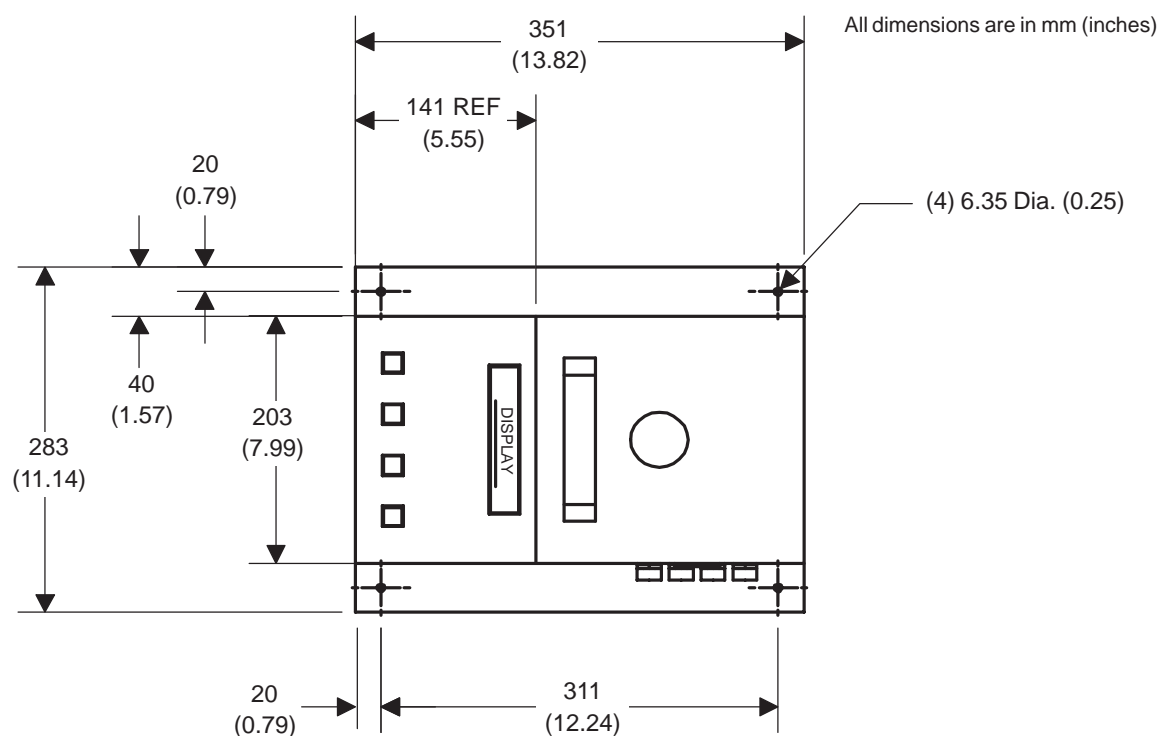
The maximum elevation difference between X-Ray Tube Housing and Chiller is around 3 meters (10 ft).

Exact dimensions of the chiller depends on the model type.

Required floor space depends on ambient room temperatures. When in doubt, allow for maximum floor space.



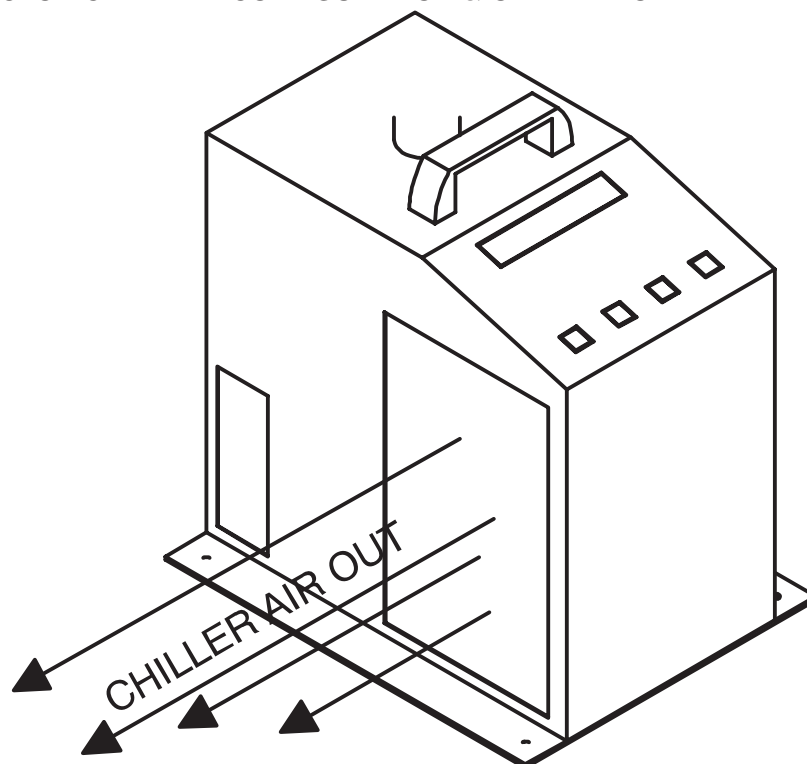
### Illustration 25 – DETECTOR CHILLER DIMENSIONS



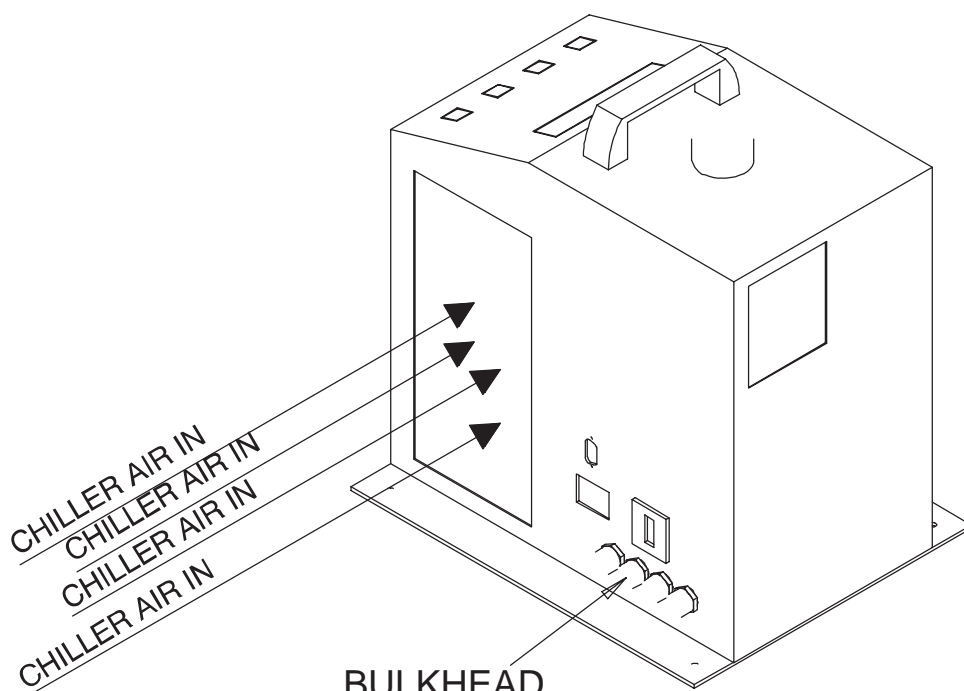
**The chiller cannot be located more than 3 m (10 ft) below the detector**



Illustration 26 – DETECTOR CHILLER – CONFIGURATION & ORIENTATION



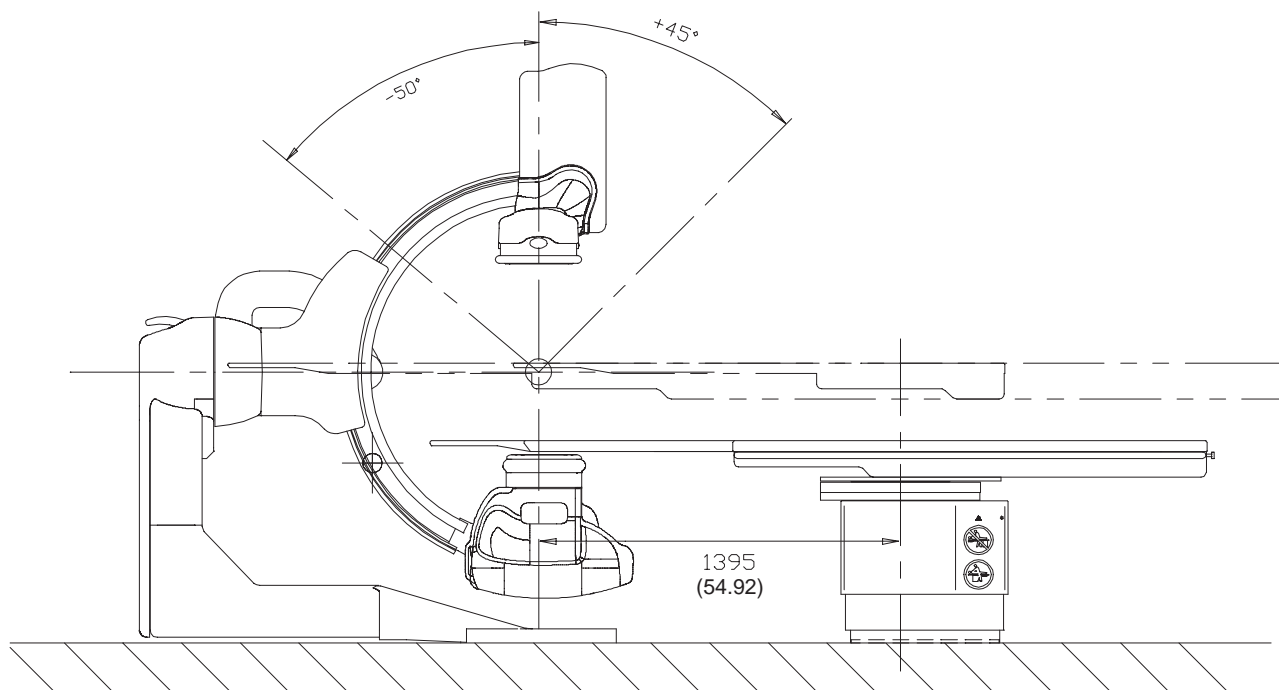
CLEAR AIR ZONE



AIR FLOW & BULKHEAD LOCATION

**Illustration 27 – INNOVA LC POSITIONER AND OMEGA IV COMPACT PATIENT TABLE RELATIVE POSITIONS (SIDE VIEW)**

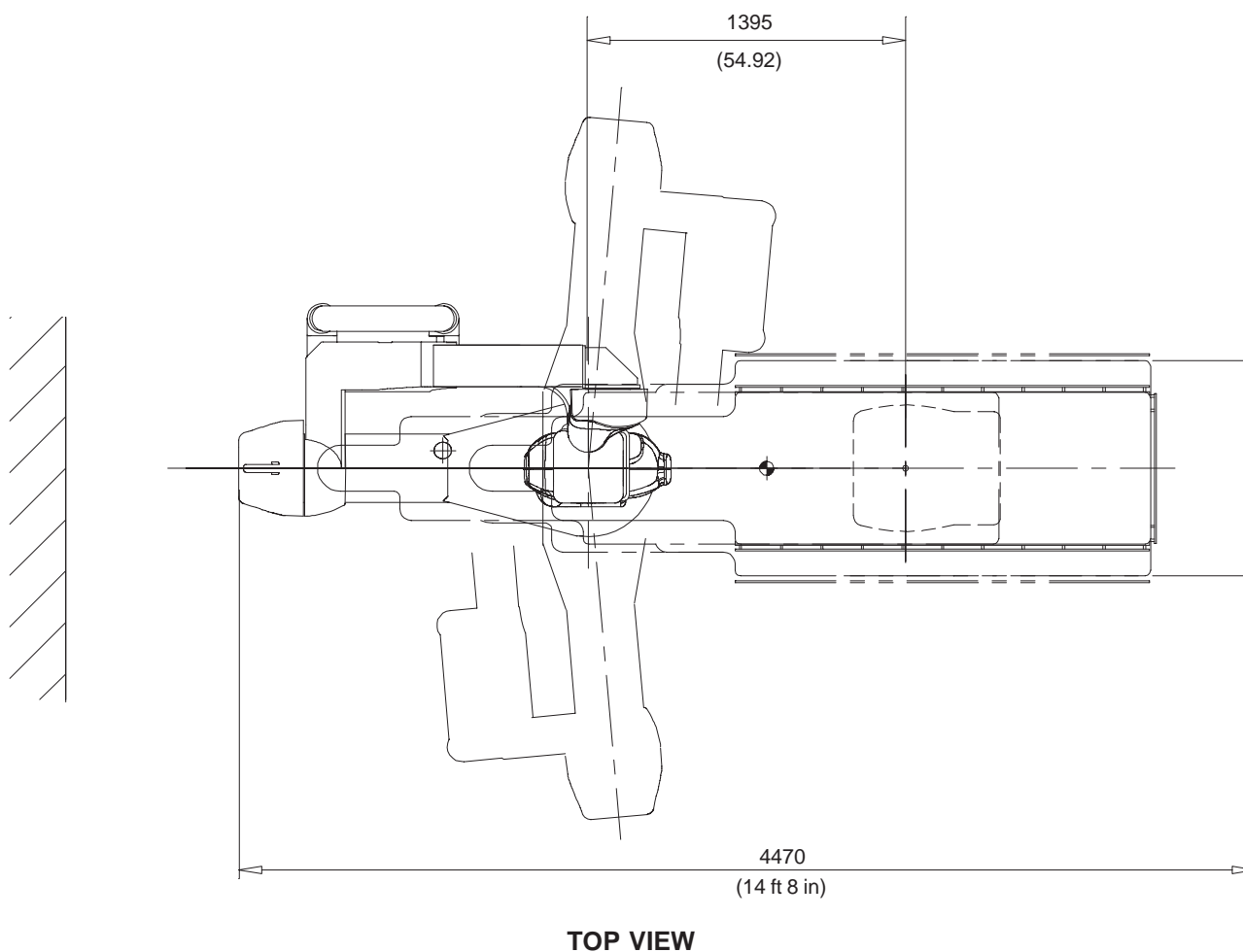
All dimensions are in mm (inches)



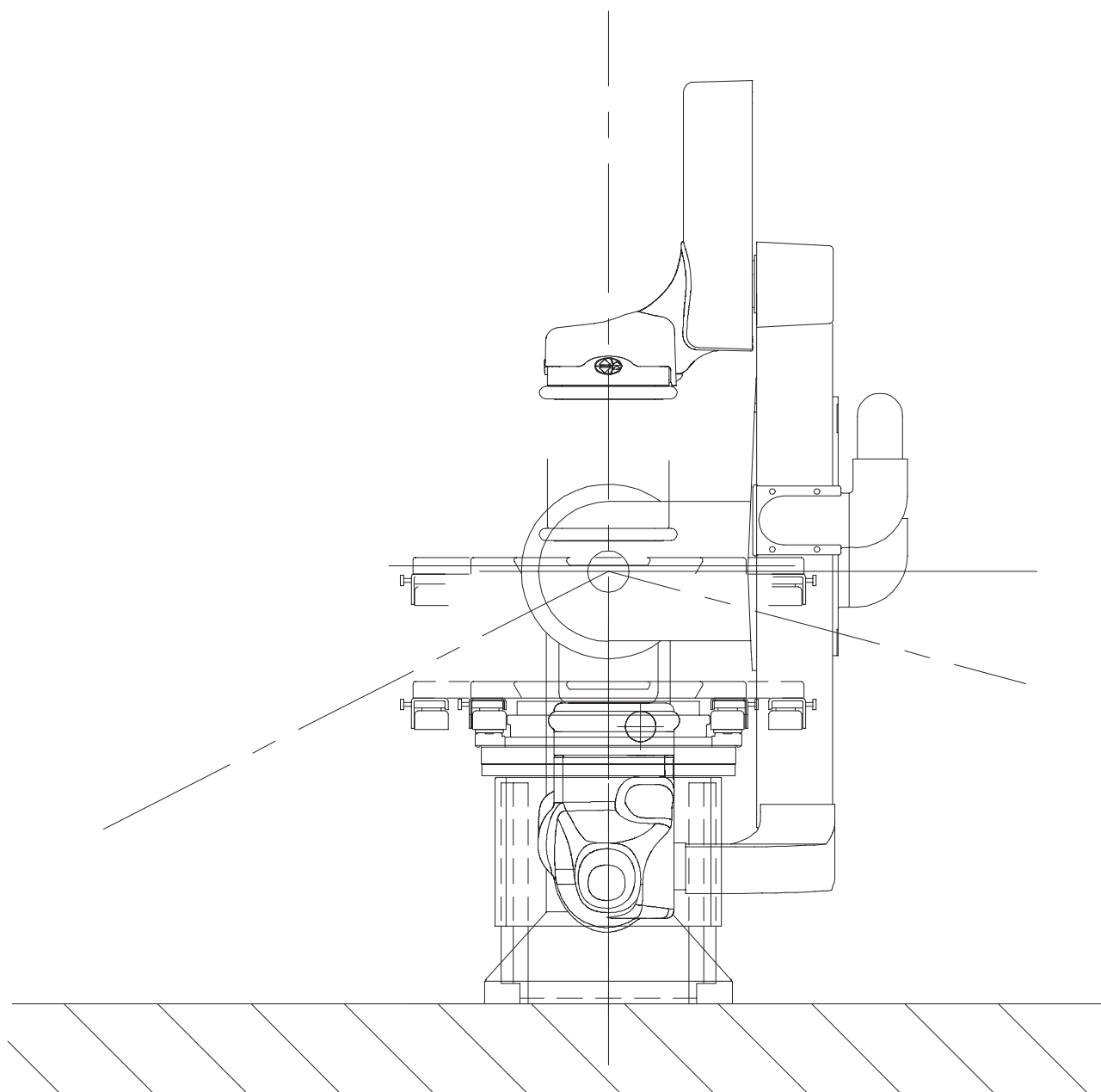
**SIDE VIEW**

**Illustration 28 – INNOVA LC POSITIONER AND OMEGA IV COMPACT PATIENT TABLE RELATIVE POSITIONS (TOP VIEW)**

All dimensions are in mm (inches)



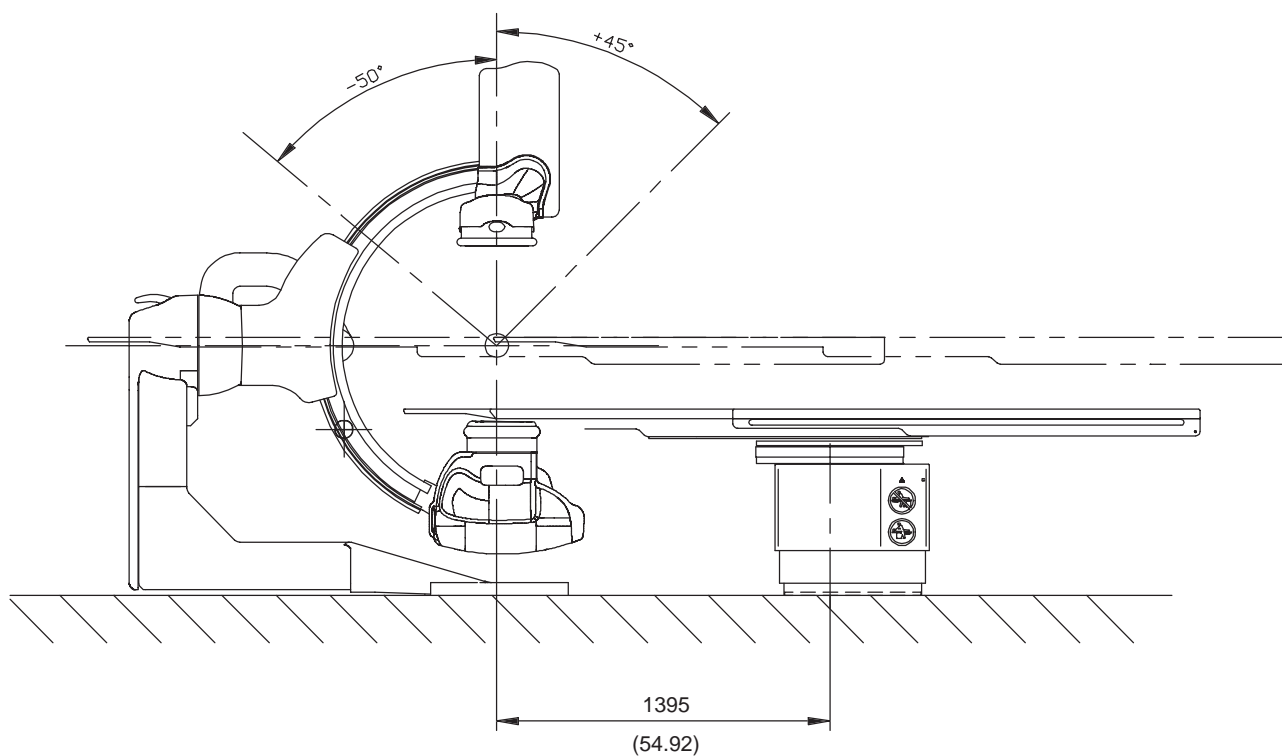
**Illustration 29 – INNOVA LC POSITIONER AND OMEGA IV COMPACT PATIENT TABLE RELATIVE POSITIONS (FRONT VIEW)**



**FRONT VIEW**

**Illustration 30 – INNOVA LC POSITIONER AND OMEGA V LONG PATIENT TABLE RELATIVE POSITIONS (SIDE VIEW)**

All dimensions are in mm (inches)



**SIDE VIEW**

**Illustration 31 – INNOVA LC POSITIONER AND OMEGA V LONG PATIENT TABLE RELATIVE POSITIONS (TOP VIEW)**

All dimensions are in mm (inches)

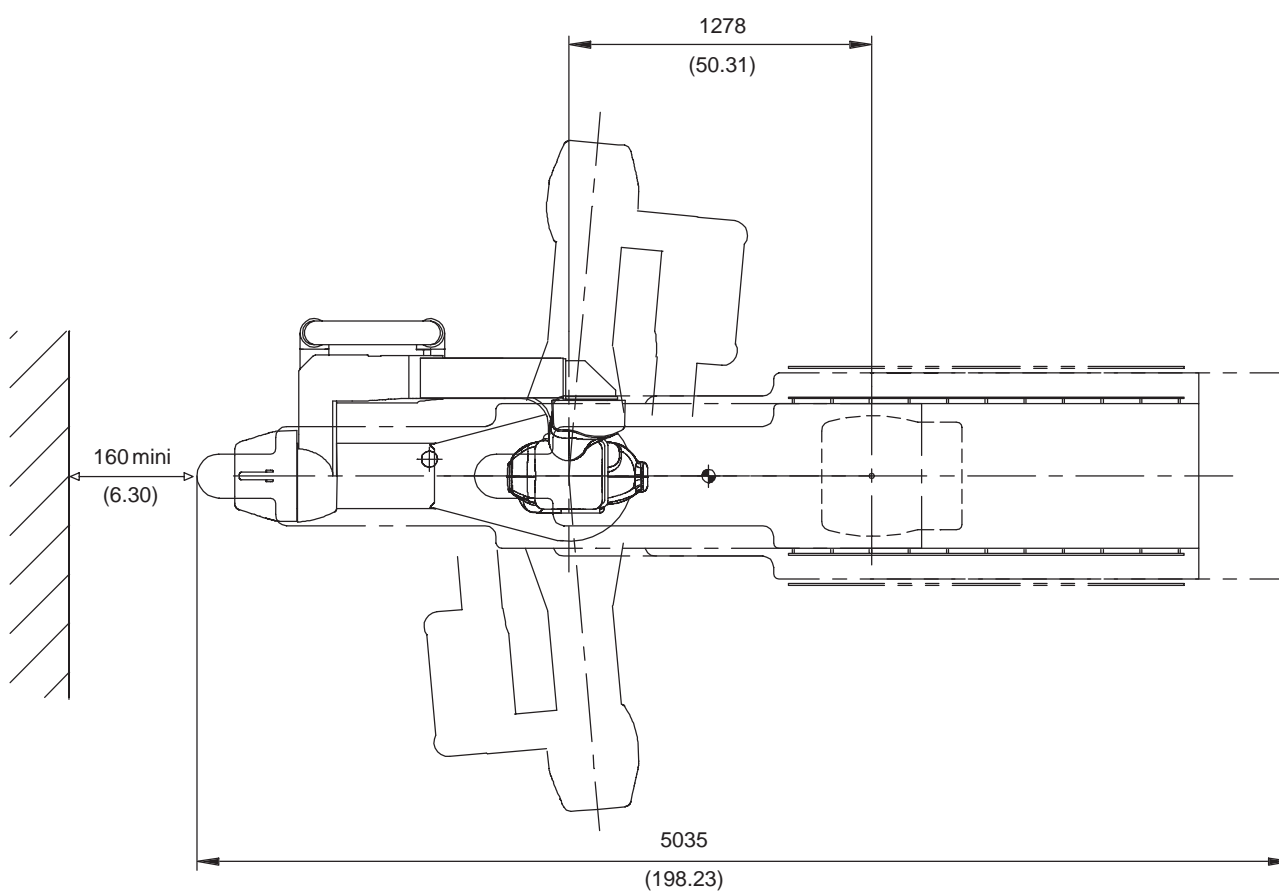
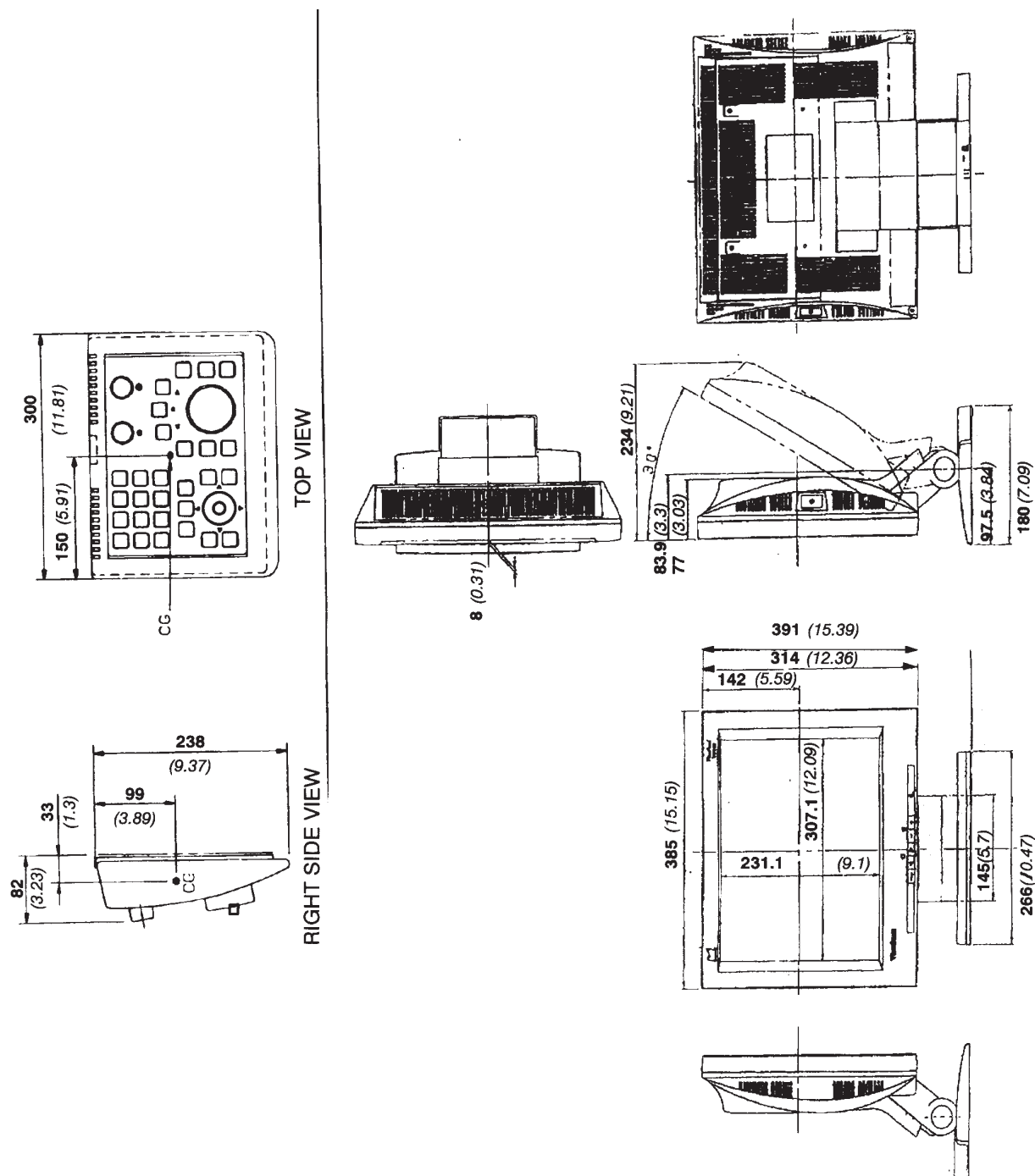
**TOP VIEW**

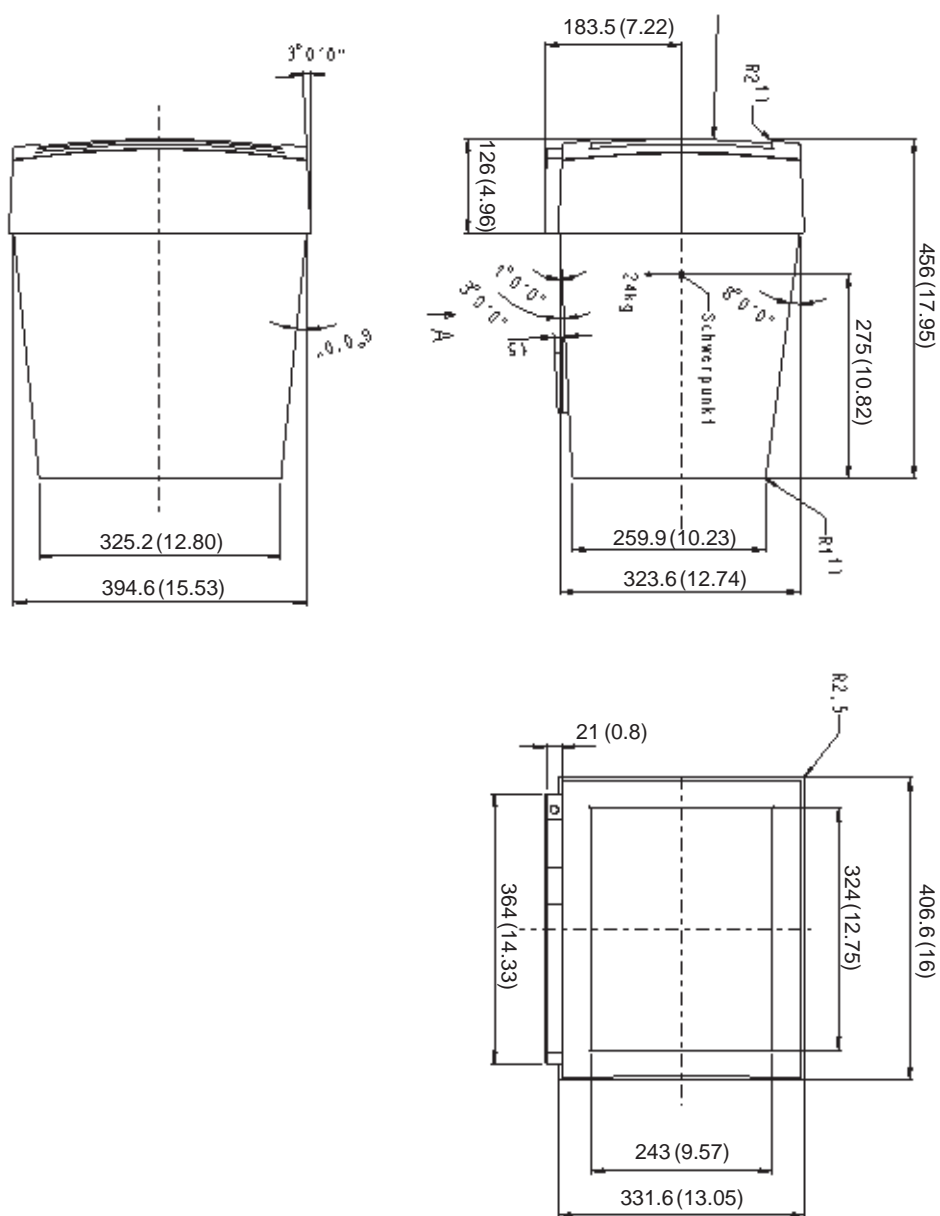
Illustration 32 – DL KEYPAD AND FLAT PANEL (DIMENSIONS)

All dimensions are in mm (inches)



## Illustration 33 – DL IMAGE MONITOR (DIMENSIONS)

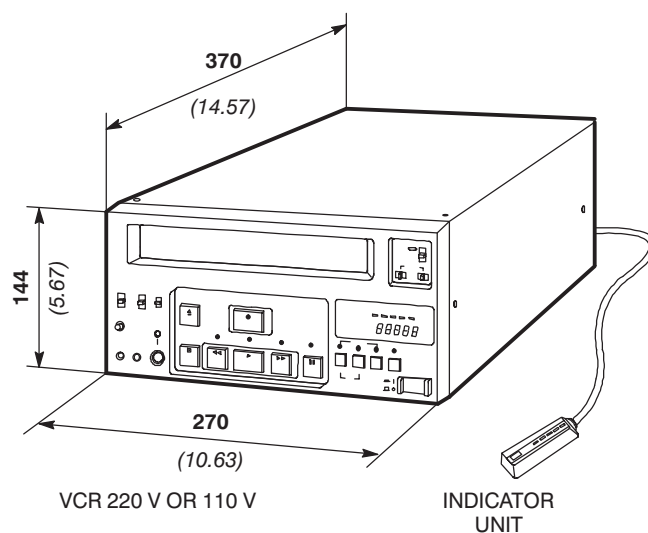
All dimensions are in mm (inches)





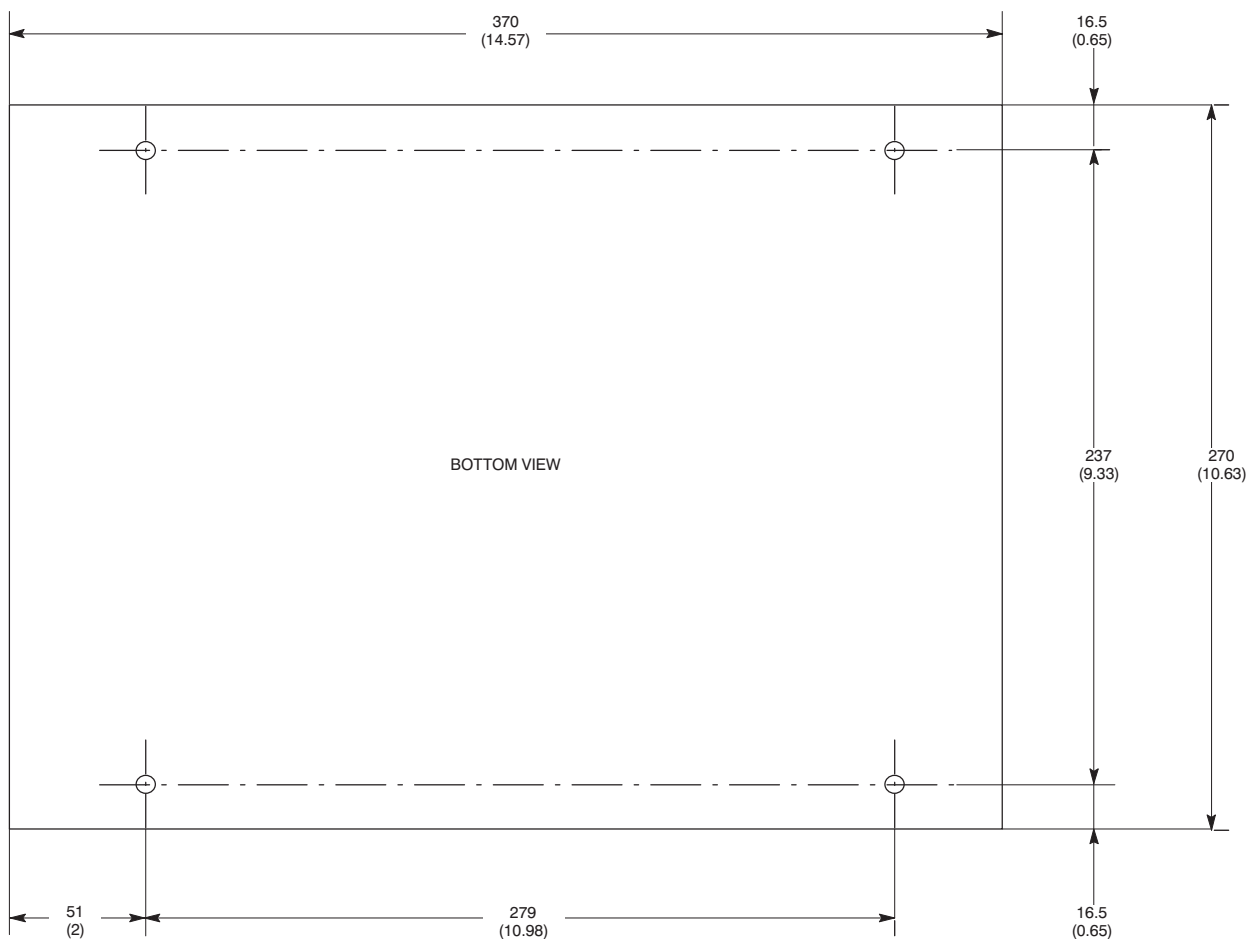
**Illustration 34 – VCR VIDEO STATION (OPTIONAL)**

All dimensions are in mm (inches)



**Illustration 35 – VCR MOUNTING HOLES LOCATION**

All dimensions are in mm (inches)



**Note:** Unscrew the four “feet” on the bottom. Use these four holes to fix the VCR. The mounting holes accommodate M3 x 10 mm screws. The holes are 0.4 inches (10 mm) deep.

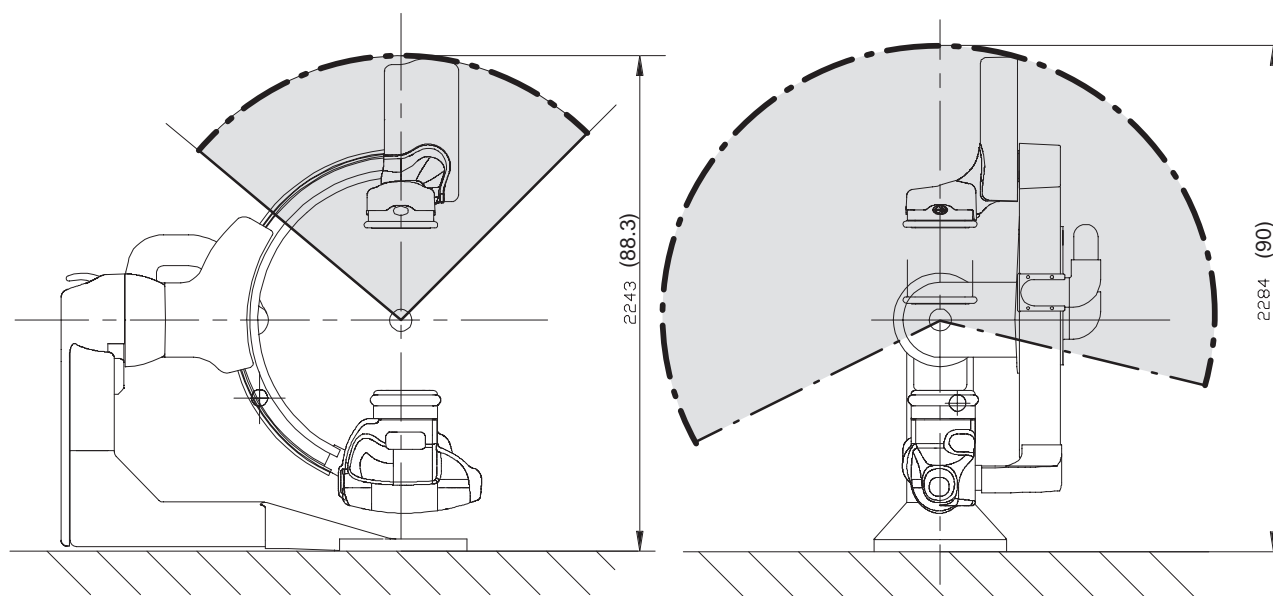
## 2 SWEPT VOLUME CURVES

Refer to this section for details on the mechanical curve dimensions for the Innova LC Positioner and OMEGA IV Vascular tables. These dimensions represent the interference zones for the rotating parts of the positioner and table.

Refer to Illustration 36 and Illustration 37.

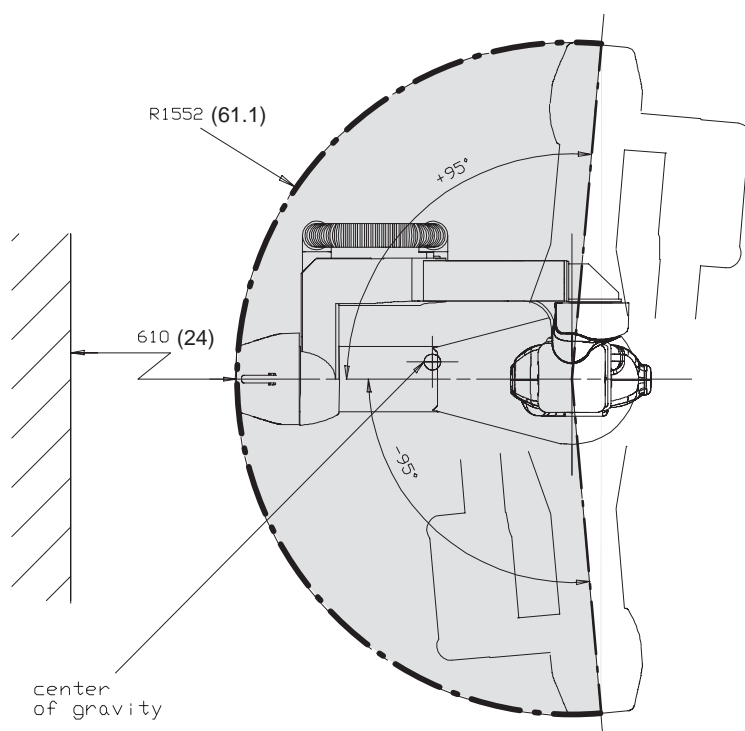
**Illustration 36 – INNOVA LC POSITIONER INTERFERENCE REGIONS**

All dimensions are in mm (inches)



**SIDE VIEW**

**FRONT VIEW**



**TOP VIEW**

**Illustration 37 – OMEGA IV COMPACT PATIENT TABLE INTERFERENCE REGIONS**

All dimensions are in mm (inches)

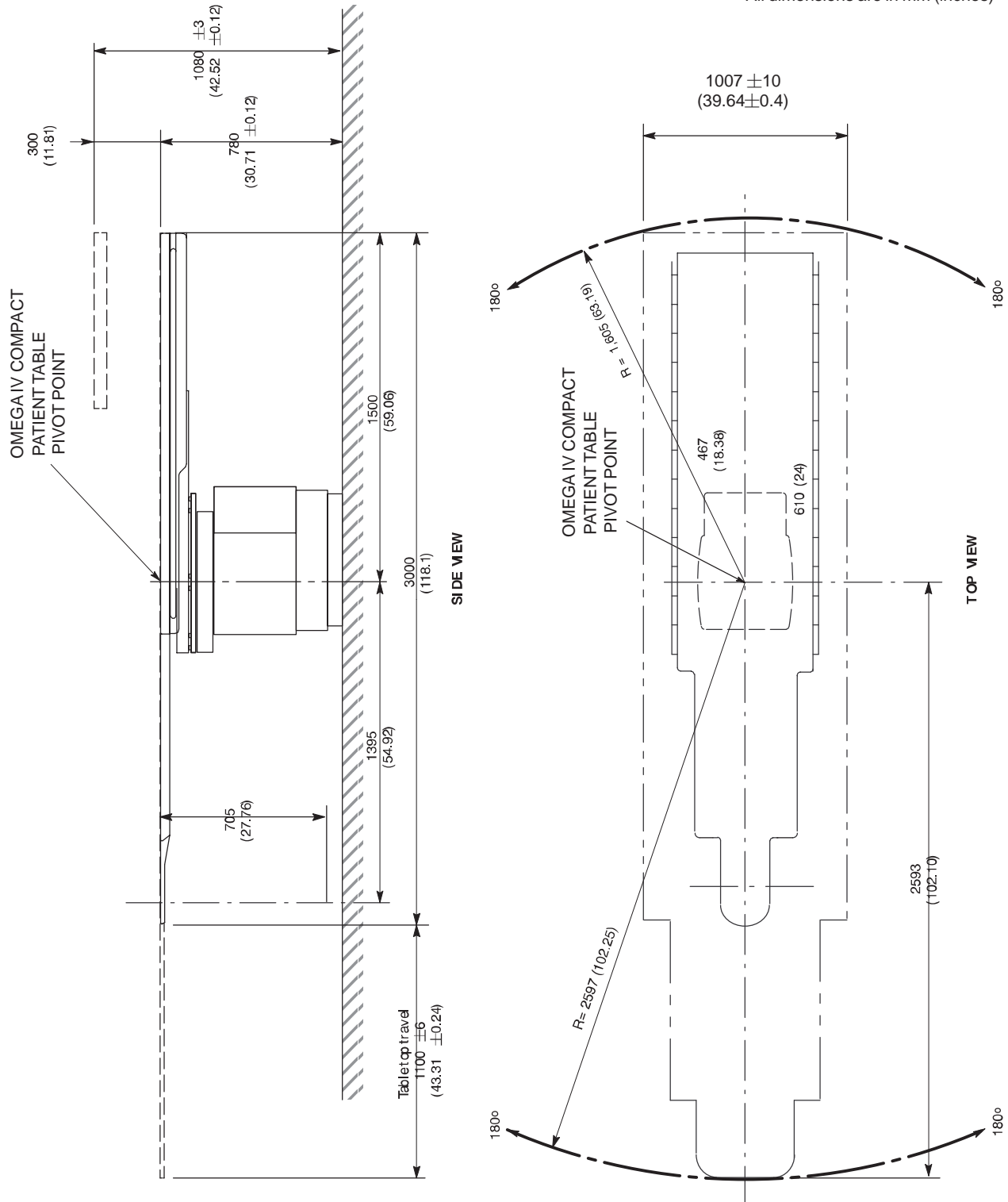
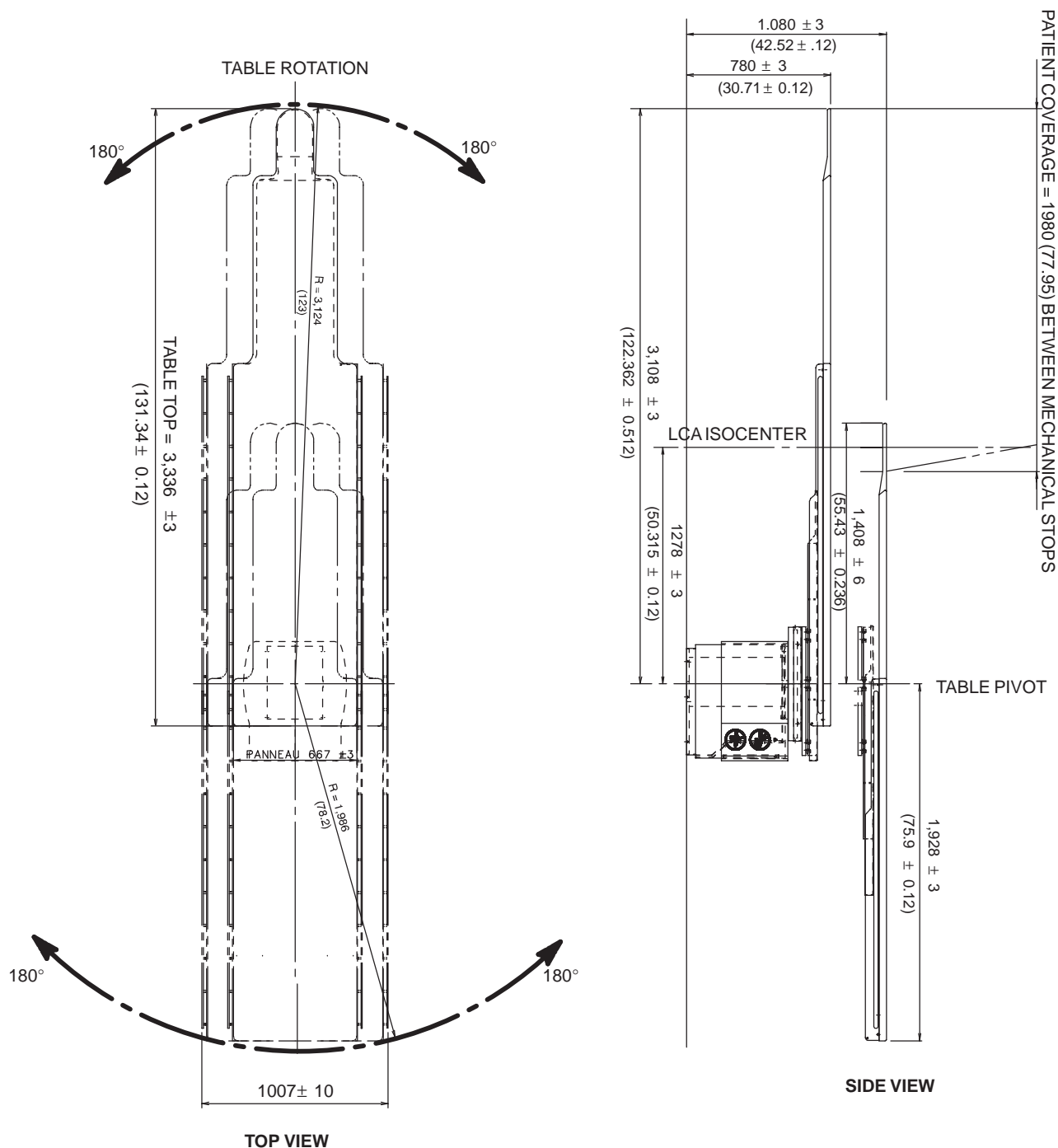


Illustration 38 – OMEGA V LONG PATIENT TABLE INTERFERENCE REGIONS



All dimensions are in mm (inches)

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### 3 MOUNTING REQUIREMENTS

#### 3-1 Floor Loading and Recommended Mounting Methods

See Table 22. To obtain floor loading and recommended mounting methods for components not specified in Table 22, refer to the appropriate component Pre-Installation Manual listed in Chapter 2.

**Table 22 – INNOVA LC SYSTEM FLOOR LOADING, WEIGHTS, AND MOUNTING METHODS**

| PRODUCT OR COMPONENT | NET WEIGHT<br>KG (LBS)       | DIMENSIONS                                |                |                 | LOAD BEARING AREA<br>INCHES (MM)     | WEIGHT/<br>OCCUPIED AREA                               | MOUNTING METHOD  |
|----------------------|------------------------------|---|----------------|-----------------|--------------------------------------|--|--|
|                      |                              | LENGTH                                    | WIDTH          | HEIGHT          |                                      |  |  |
| Innova LC Positioner | 700<br>(1543)                | See Illustration 19 and Illustration 19 b |                |                 | Circle diameter<br>23.62<br>(600 mm) |  | Recommended:<br><ul style="list-style-type: none"> <li>Through-Bolts (12)</li> </ul> Alternates:<br><ul style="list-style-type: none"> <li>On Grade 5/8 in. Anchors (12)</li> <li>Above Grade 3/4 in. Anchors (12)</li> </ul> See Illustration 39 and Illustration 40 (Mounting hardware provided by GEMS) |
| Omega Table          | 590<br>(1,300)<br>See note 1 | See Illustration 20                       |                |                 | 22.5 x 16.9<br>(571.5 x 429)         | 492.3 lb/ft <sup>2</sup><br>(2,410 kg/m <sup>2</sup> ) | Same as Innova LC Positioner   |
| Postit Cabinet       | 301.5<br>(664)               | See Illustration 22                       |                |                 | 17.54 x 33<br>(445x838)              | 808 kg/m <sup>2</sup>                                  |  |
| ACAB Cabinet         | 430<br>(946)                 | See Illustration 23                       |                |                 | 23.63 x 35.44<br>(600x900)           | 796 kg/m <sup>2</sup>                                  |  |
| Advantx<br>VMP       | MPPU1<br>290<br>(640)        | 473<br>(18.62)<br>See note 4              | 555<br>(21.85) | 1980<br>(77.95) | 21.85 x 15.75<br>(555 x 400)         | 1,306 kg/m <sup>2</sup>                                | Recommended for both cabinets 3/8 in or 10 mm (12) anchors to floor and wall   |
|                      | MPPU2<br>325<br>(716)        |   |                |                 |                                      | 1,477 kg/m <sup>2</sup>                                |  |
| COOLIX 2200          | 104<br>(229)                 | 730<br>(28.75)<br>See note 4              | 470<br>(18.5)  | 686<br>(27)     | Four casters                         | Not applicable   |  |

| PRODUCT OR COMPONENT   | NET WEIGHT<br>KG (LBS) | DIMENSIONS          |                |               | LOAD BEARING AREA<br>INCHES (MM) | WEIGHT/<br>OCCUPIED AREA | MOUNTING METHOD |
|--|------------------------|---------------------|----------------|---------------|----------------------------------|--------------------------|-----------------|
|  |                        | LENGTH              | WIDTH          | HEIGHT        |                                  |                          |                 |
| Detector Chiller<br>HEAT DRY 1   |                        | See Illustration 25 |                |               | 11.14 x<br>13.82<br>(283x351)    |                          |                 |
| DL keypad  | 1.4<br>(3)             | 283<br>(11.55)      | 300<br>(11.8)  | 82<br>(3.25)  |                                  |                          |                 |
| Videostation<br>VCR (8)  | 12<br>(26.5)           | 370<br>(14.57)      | 270<br>(10363) | 144<br>(5.67) |                                  |                          |                 |
| <b>Note 1:</b> including 353 lbs (160 kg) patient.<br><b>2:</b> 420 kg (926 lbs) with SEP III inside.<br><b>3:</b> 268 kg (590 lbs) without cine.<br><b>4:</b> Depth.<br><b>5:</b> With 300 lbs (136 kg) patient.<br><b>6:</b> Secured with four supplied 3/4" (19 mm) diameter x 4 – 1/4" (108 mm) floor anchors or 3/4 – 10 x 20", grade 5 thru bolts (for slab or pan construction).<br><b>7:</b> With 2 real time disks or 121.3 kg (325 lbs) and one real time disk.<br><b>8:</b> 110 V or 220 V model has the same physical characteristics. |                        |                     |                |               |                                  |                          |                 |

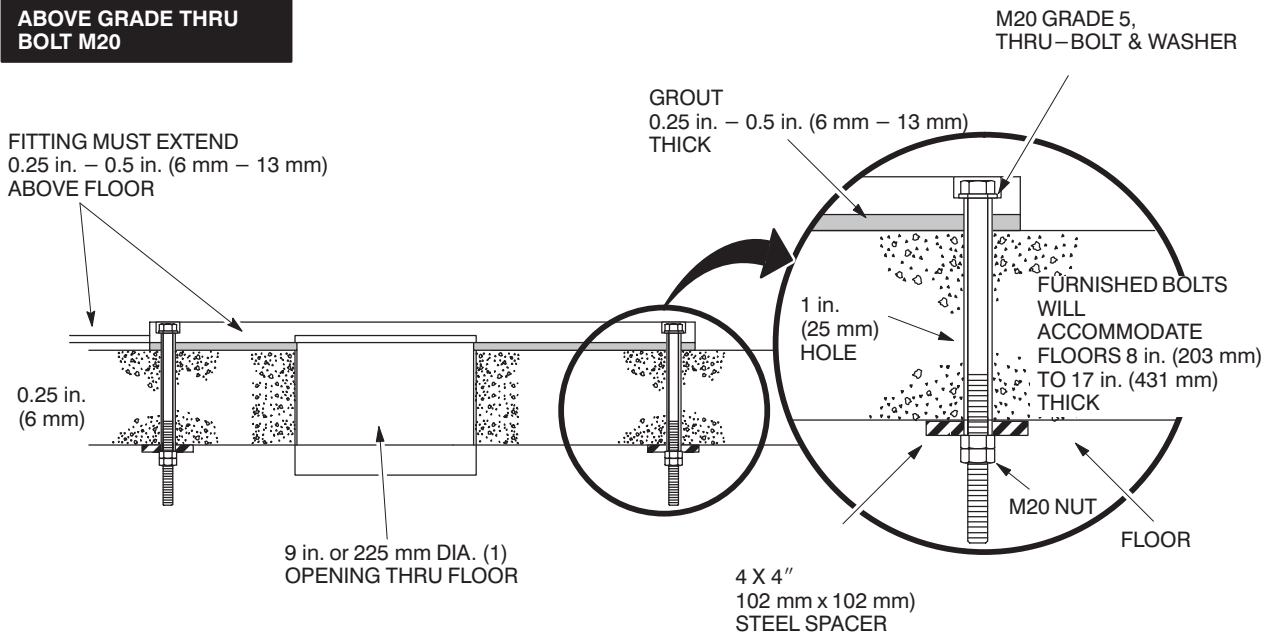
### 3-2 Positioner and Table Floor Mounting

The distances between the Innova LC Positioner and the Omega TableS are critical for a proper clinical usage. For this reason, GEMS provides two floor mounting templates to ensure these components are properly placed in relation to one another.

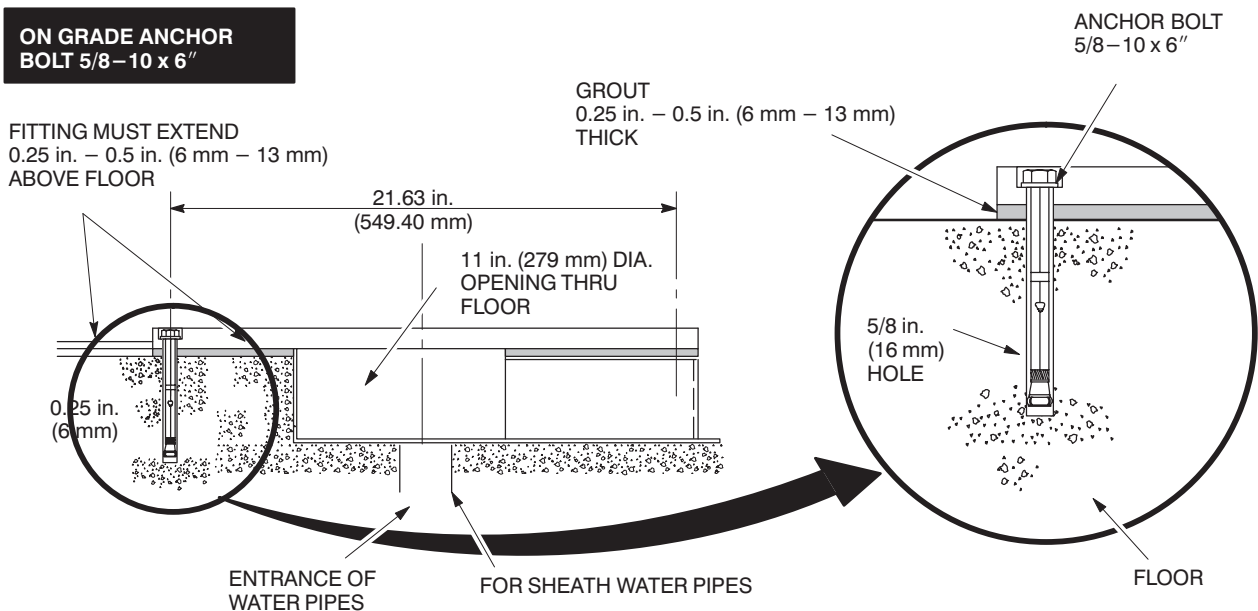
Refer to the following illustrations for Innova LC Positioner to Omega Table floor mounting details:

- 2185979 Innova LC positioner and Omega IV Compact or Omega V Long patient table floor mounting template, Illustration 43.
- 2127792 Innova LC positioner and Omega V Long patient table floor mounting template (optional), Illustration 42.

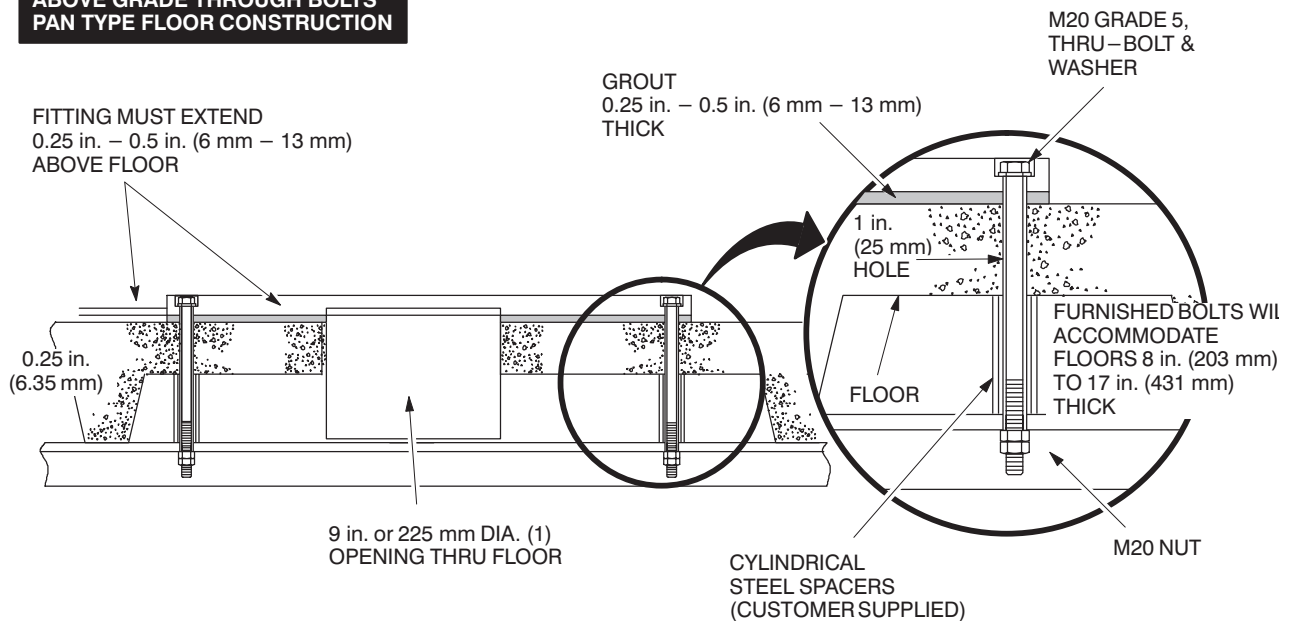


**Illustration 39 – INNOVA LC POSITIONER FLOOR MOUNTING METHODS****ABOVE GRADE THRU  
BOLT M20**

(1) The US or the METRIC standard for base plate inner

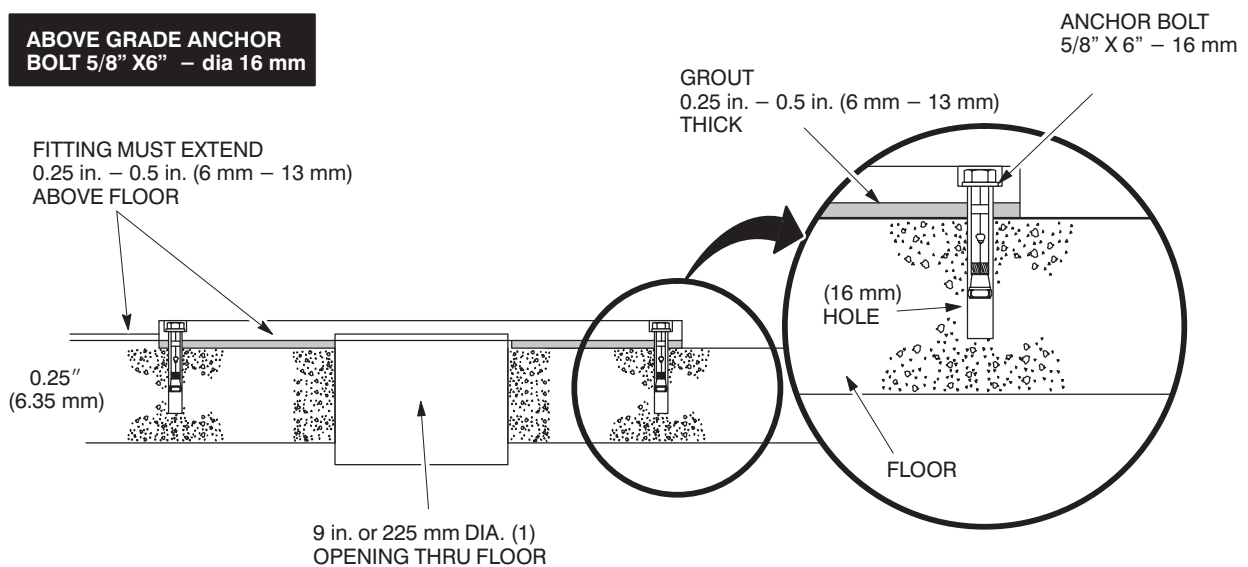
**ON GRADE ANCHOR  
BOLT 5/8-10 x 6"**

**ABOVE GRADE THROUGH BOLTS  
PAN TYPE FLOOR CONSTRUCTION**



(1) The US or the METRIC standard for base plate inner

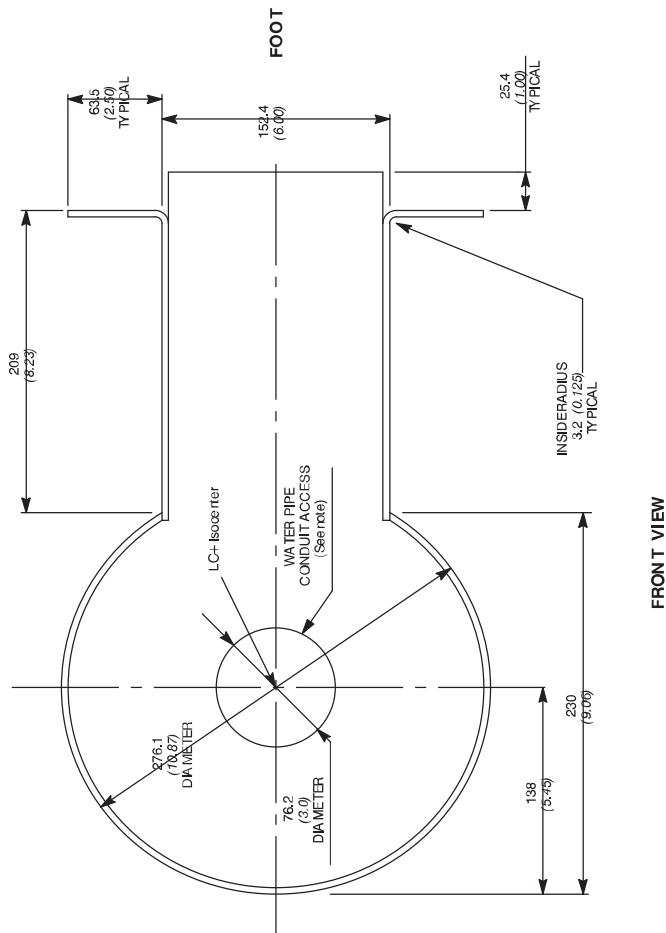
**ABOVE GRADE ANCHOR  
BOLT 5/8" X 6" - dia 16 mm**



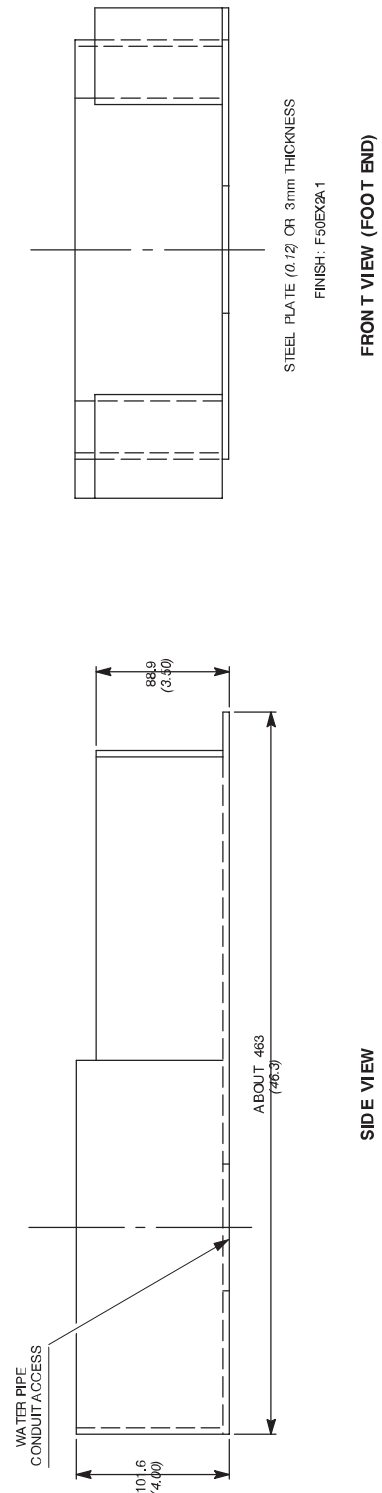
(1) The US or the METRIC standard for base plate inner

## Illustration 40 – CABLE CONDUIT FOR ON-GRADE FLOOR ANCHOR KIT

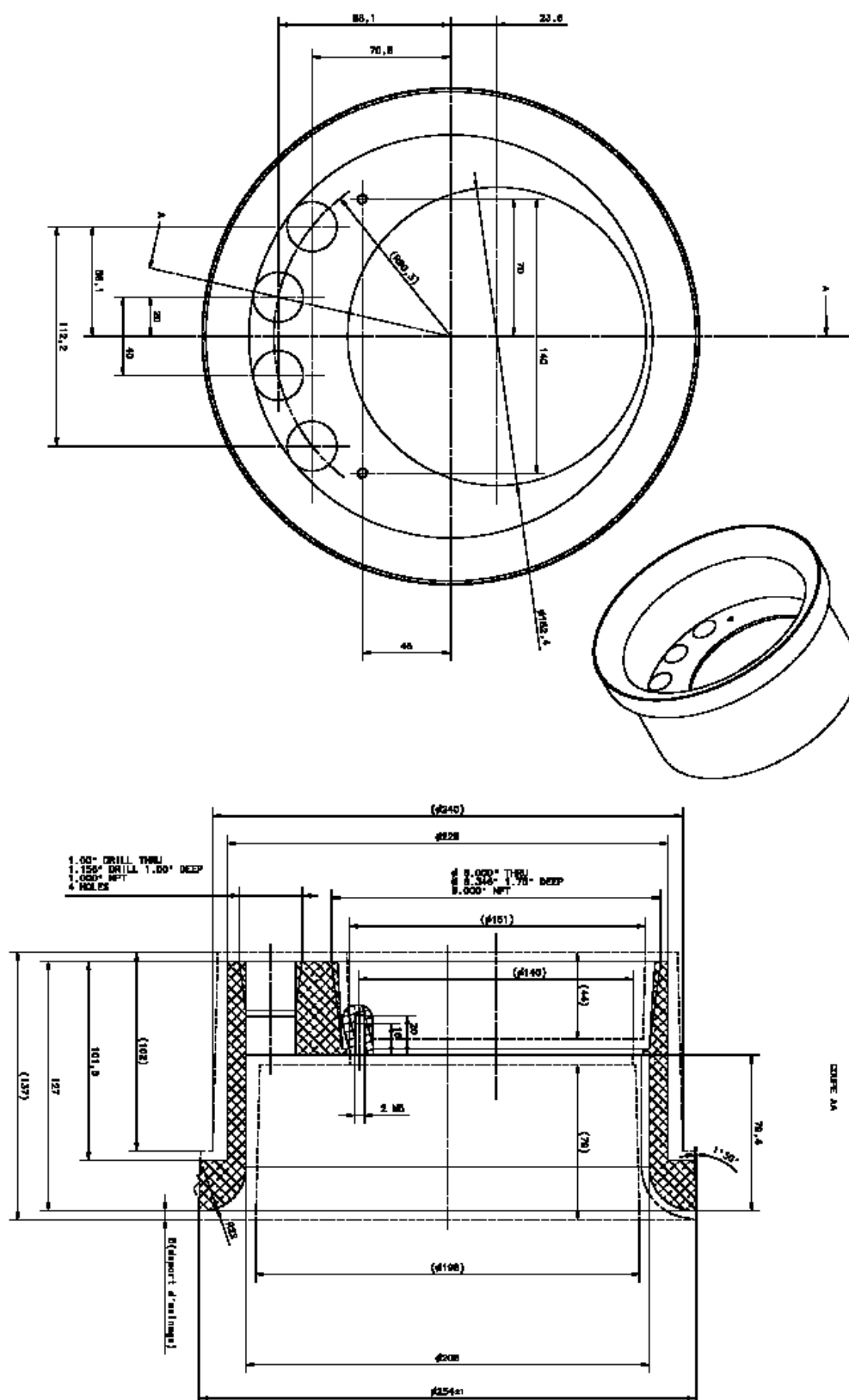
All dimensions are in mm (inches)



- Note:
- The key hole has been redesigned to permit a 60 mm (2.5 in.) water conduit for a separate access for water pipes used with a MAXIRAY 150.
  - Push 76 (3.0) hole in center.
  - Reinsert slug and tack well in one spot hole is for 63.5 (2.5) internal diameter conduit tack well from bottom if possible.

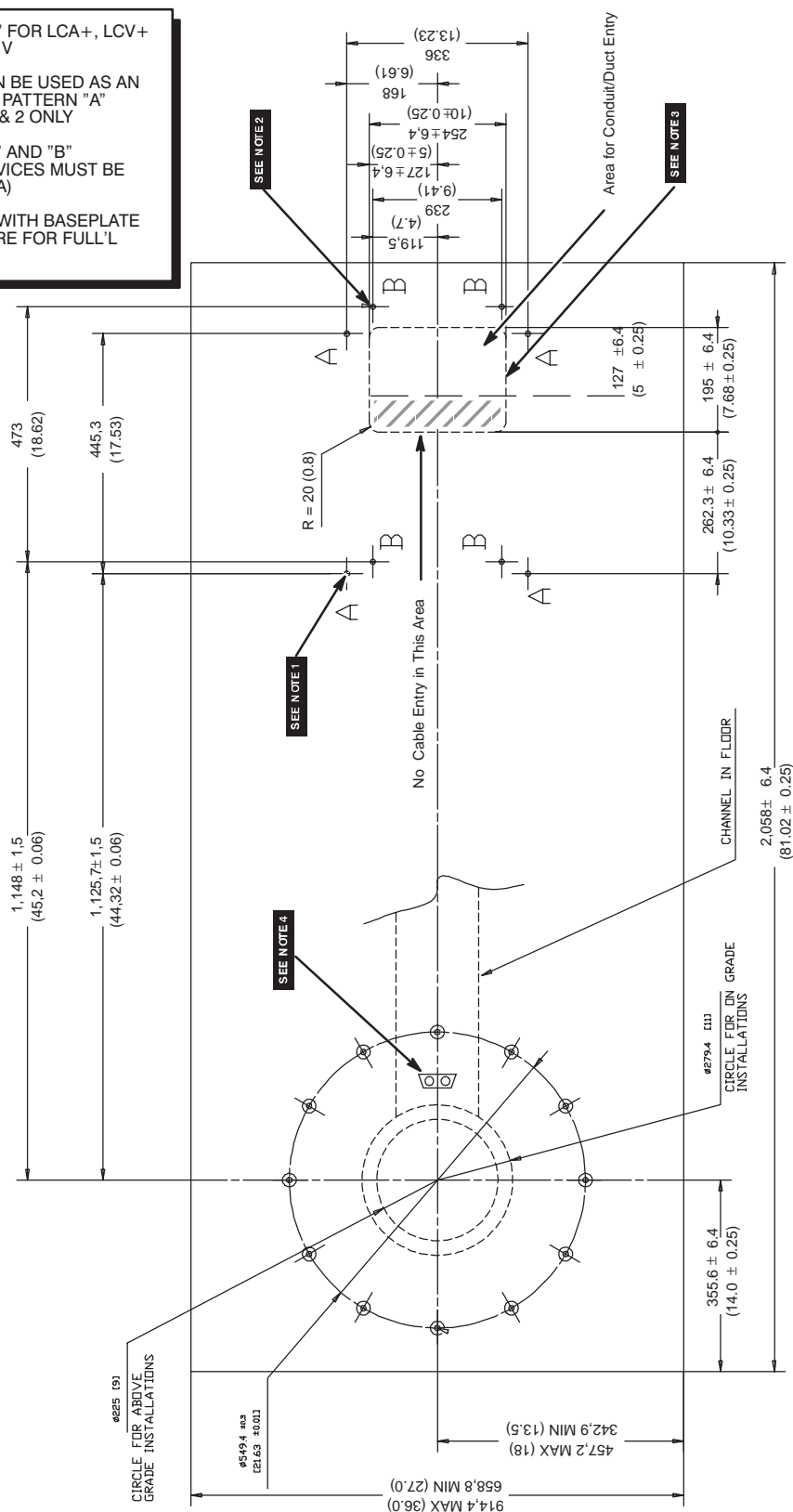


### Illustration 41 – INNER BASE PLATE FOR ABOVE GRADE FLOOR ANCHOR KIT

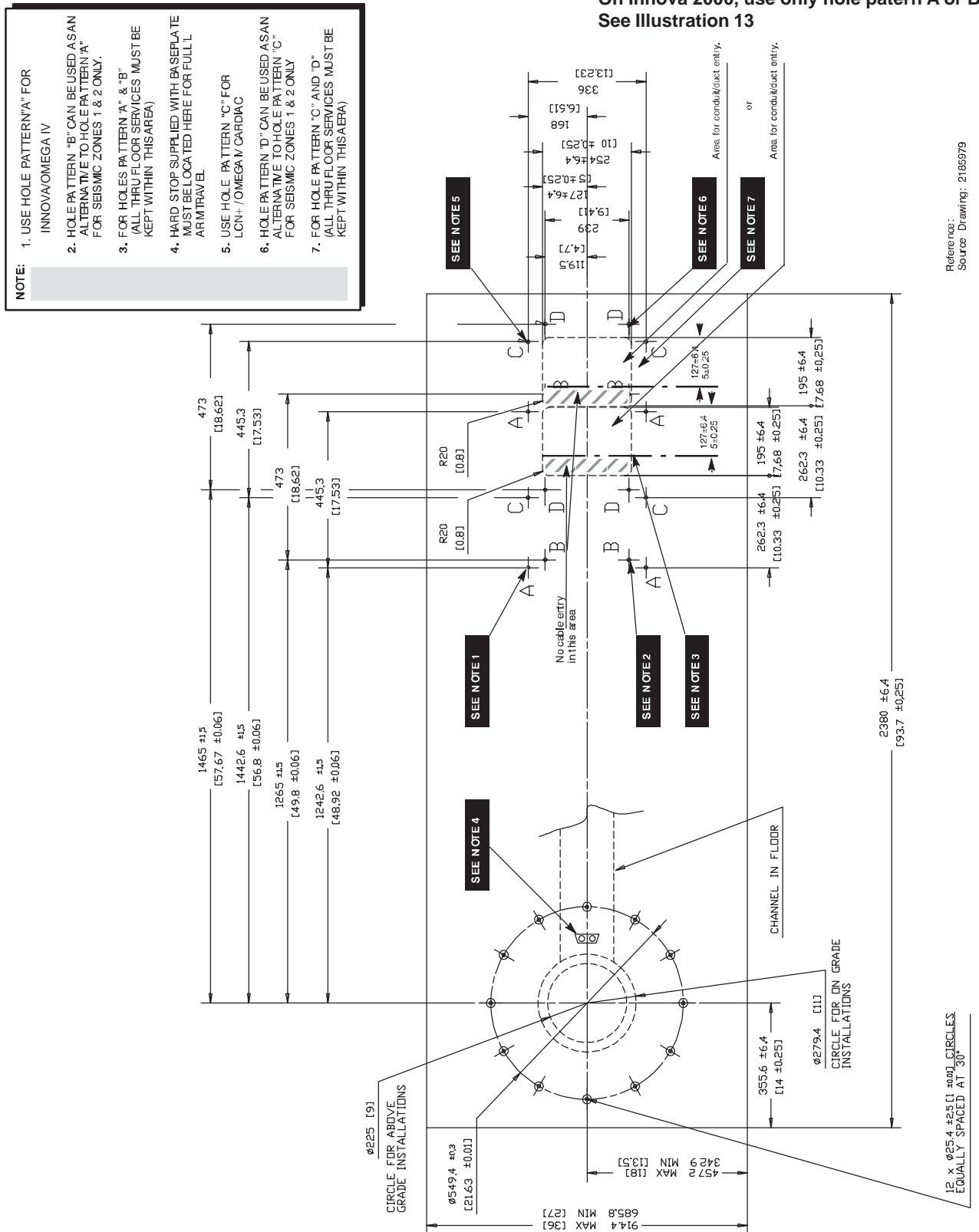


**Illustration 42 – INNOVA LC/OMEGA V LONG TABLE SYSTEM FLOOR MOUNTING TEMPLATE (PREFERRED)**

- NOTE**
- 1 USE HOLE PATTERN "A" FOR LCA+, LCV+ & LC+/INNOVA/OMEGA V
  - 2 HOLE PATTERN "B" CAN BE USED AS AN ALTERNATIVE TO HOLE PATTERN "A" FOR SEISMIC ZONES 1 & 2 ONLY
  - 3 FOR HOLE PATTERN "A" AND "B" (ALL THRU FLOOR SERVICES MUST BE KEPT WITHIN THIS AREA)
  - 4 HARD STOP SUPPLIED WITH BASEPLATE MUST BE LOCATED HERE FOR FULL L ARM TRAVEL

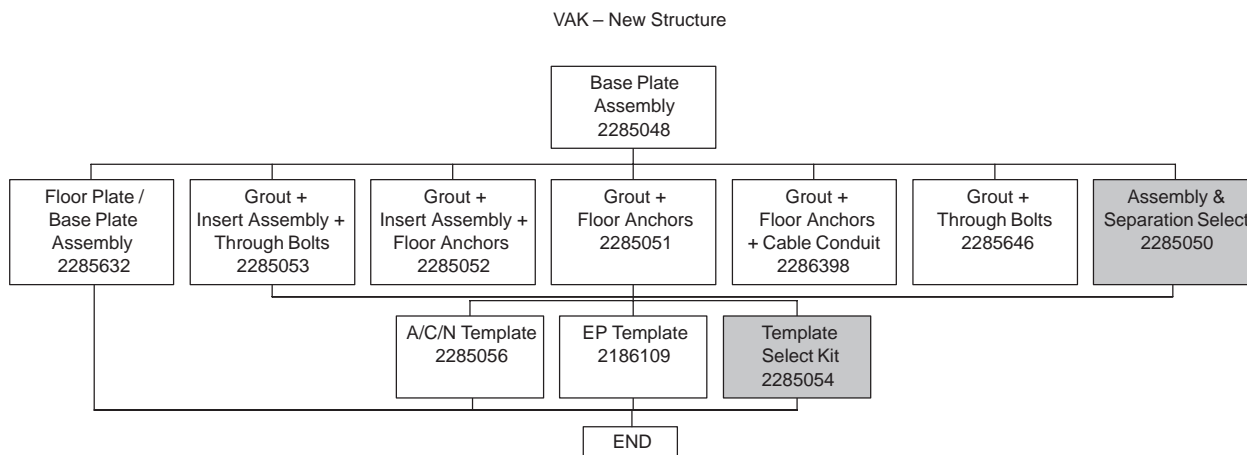


Reference:  
Source Drawing: 2127792

**Illustration 43 – INNOVA LC/OMEGA IV COMPACT OR OMEGA V LONG TABLE SYSTEM FLOOR MOUNTING TEMPLATE**

### 3-3 Innova LC Positioner and Omega Table Floor Preparation Kits (GEMS supplied)

Illustration 44 – Component Select



All GE supplied vascular system floor preparation are contained in catalog. There are some additional gantry/table mounting kits based on the on each mounting method: through bolts or floor anchors.

- Base plate assembly (mandatory) 2285048 – Refer to Table 23
- Assembly and separation (Select kit) 2285050 – Refer to Table 24
  - Above grade, Floor anchors without insert – 2285051.
  - Through bolts without insert – 2285646.
  - On grade, Floor anchors – 2286398.
  - Above grade, Floor anchors and insert – 2285052.
  - Through bolts and insert – 2285053.
  - Floor plate / Base plate Assembly – 2285632.
- Templates (select kit) – 2285054 – Refer to Table 25
  - A/C/N templates – 2285056.
  - EP template – 2186109.

Table 23 – 2285048 – Base Plate Assembly







| ITEM  | NAME           | PART #        | DESCRIPTION  | QUAN. | NOTES   |
|---|----------------|---------------|--|-------|---|
|   | Baseplate      | 2285059       | 12 Hole Floor Baseplate  | 1 pc  |   |
|   | Lift Plate     | 2290939       | Lifting Straps   | 2 pc  |   |
|  | Cap Screw      | 46-170498P183 | 1/2-20 x 1-1/2" Soc Hd Machine Screw For Mounting LC Baseplate   | 12 pc | Used when installing new system on old baseplate (US threads) |
|  | Hex Head Screw | 46-170498P35  | Hex Head Screw; 1/2-13 x 1.00 in. (Used to attach L-brackets on table shipping pallet to positioner dolly for table positioning) | 2 pc  |   |
|  | Cap Screw      | 99034044      | Hex Head Screw; M12-50-50/10.9 (Used to attach L-brackets on table shipping pallet to positioner dolly for table positioning)    | 12 pc | The new baseplate is metric threads                           |
|   | Grease         | 2295599       | Lithium grease lubricant   | 1 pc  |   |
|   | Doc            | 2230112-100   | Vascular Gantry Baseplate and Table  | 1 pc  |   |
|   | Doc            | 2229297-100   | LCA/LCV+/LC+ System Baseplate and Omega/EP Table Preparation   | 1 pc  |   |
|   | Doc            | 2290880-100   | Innova Pre-Installation Kit Install Procedure  | 1 pc  |   |







Table 24 – 2285050 – Assembly and separation kit

## 2285051 – Above grade, Floor Anchors without insert




| ITEM  | NAME         | PART #      | DESCRIPTION   | QUAN. | NOTES  |
|---|--------------|-------------|---|-------|--|
|  | Floor Anchor | 46-302265P1 | Floor Anchor Bolt; 5/8 - 10x6 " (16 mm) drilling.<br>12 anchors for LC Positioner and 4 anchors for Table               | 16 pc | Above Grade anchor mounting method hardware  |
|  | Grout assy   | 2285055     | - 10 kg Powdered Mortar Ardex K-15<br>- RTV Silicon Rubber Adhesive<br>- 18 mm making tape adhesive<br>- Open cell foam | 1 kit | Used in constructing LC Positioner grout dam |
|  | Dowel        | 2290937-2   | Wood Dowel; . (16 mm) diameter;   | 12 pc |  |






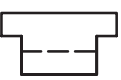
**2285646 – Through bolts without insert**

| ITEM  | NAME         | PART #   | DESCRIPTION   | QUAN. | NOTES   |
|---|--------------|----------|---|-------|---|
|    | Bolt, Hex    | 2296892  | Through Bolt;<br>M20 – 500–400<br><br>12 bolts for LC Positioner and<br>4 bolts for Table                               | 16 pc | Through Bolt<br>mounting<br>method<br>hardware        |
|    | Washer, Flat | 99142204 | Special Flat Washer for Through<br>Bolts; one for each bolt   | 16 pc | same as above   |
|    | Plate        | 2290941  | Special Steel Spacer Plate;<br>4 in. x 4 in. (102 mm x 102 mm);<br>one for each bolt                                    | 16 pc | same as above   |
|    | Nut, Hex     | 99141607 | Hex Nut M20 STL galvanized<br>two for each bolt   | 32 pc | same as above   |
|   | Grout assy   | 2285055  | – 10 kg Powdered Mortar Ardex K–15<br>– RTV Silicon Rubber Adhesive<br>– 18 mm making tape adhesive<br>– Open cell foam | 1 kit | Used in<br>constructing<br>LC Positioner<br>grout dam |
|  | Dowel        | 2290937  | Wood Dowel; . (24 mm) diameter;   | 12 pc |   |







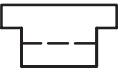
**2286398 – On grade, Floor anchor**

| ITEM  | NAME          | PART #      | DESCRIPTION   | QUAN. | NOTES  |
|---|---------------|-------------|---|-------|--|
|  | Floor Anchor  | 46–302265P1 | Floor Anchor Bolt; 5/8–10 x 6 in.<br><br>12 anchors for LC Positioner and<br>4 anchors for Table                        | 16 pc | On Grade<br>anchor mount-<br>ing<br>method<br>hardware |
|  | Grout assy    | 2285055     | – 10 kg Powdered Mortar Ardex K–15<br>– RTV Silicon Rubber Adhesive<br>– 18 mm making tape adhesive<br>– Open cell foam | 1 kit | Used in<br>constructing<br>LC Positioner<br>grout dam  |
|  | Dowel         | 2290937–2   | Wood Dowel; (16 mm) dia.  | 12 pc |  |
|   | Cable Conduit | 2285057     | Cable conduit – sheet metal part  | 1 pc  | See<br>Illustration 41                                 |
|   | Vinyl Trim    | 2296890     | Gripping Range .15 to 3 mm THK  | 1 m   |  |
|   | Vinyl Trim    | 46–221561P3 | Vinyl trim with segmented metal core<br>12 mm   | 1 m   |  |



**2285052 – Above grade, Floor anchor with insert**

| ITEM  | NAME                            | PART #      | DESCRIPTION   | QUAN. | NOTES  |
|---|---------------------------------|-------------|---|-------|--|
|  | Floor Anchor                    | 46-302265P1 | Floor Anchor Bolt; 5/8-10 x 6 in. drilling<br>12 anchors for LC Positioner and<br>4 anchors for Table   | 16 pc | Above Grade anchor mounting method hardware                            |
|  | Grout assy                      | 2285055     | <ul style="list-style-type: none"> <li>- 10 kg Powdered Mortar Ardex K-15</li> <li>- RTV Silicon Rubber Adhesive</li> <li>- 18 mm making tape adhesive</li> <li>- Open cell foam</li> </ul> | 1 kit | Used in constructing LC Positioner grout dam                           |
|  | Dowel                           | 2290937-2   | Wood Dowel; (16 mm) dia.  | 12 pc |  |
|  | LCV+ Base-plate insert assembly | 2272981     | Manufactured part introduced in Positioner key hole to fit: <ul style="list-style-type: none"> <li>- 1 electrical conduit of 6".</li> <li>- 4 water conduits of 1".</li> </ul>              | 1 kit | Electrical and water conduits separated inch size. See Illustration 41 |

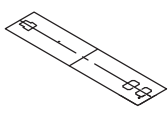
**2285053 – Through bolts with insert**

| ITEM  | NAME                            | PART #   | DESCRIPTION   | QUAN. | NOTES  |
|---|---------------------------------|----------|---|-------|--|
|  | Bolt, Hex                       | 2296892  | Through Bolt;<br>M20 - 500-400<br>12 bolts for LC Positioner and<br>4 bolts for Table   | 16 pc | Through Bolt mounting method hardware                                  |
|  | Washer, Flat                    | 99142204 | Special Flat Washer for Through Bolts; one for each bolt  | 16 pc | same as above  |
|  | Plate                           | 2290941  | Special Steel Spacer Plate;<br>4 in. x 4 in. (102 mm x 102 mm);<br>one for each bolt  | 16 pc | same as above  |
|  | Nut, Hex                        | 99141607 | Hex Nut M20 STL galvanized<br>two for each bolt   | 32 pc | same as above  |
|  | Grout assy                      | 2285055  | <ul style="list-style-type: none"> <li>- 10 kg Powdered Mortar Ardex K-15</li> <li>- RTV Silicon Rubber Adhesive</li> <li>- 18 mm making tape adhesive</li> <li>- Open cell foam</li> </ul> | 1 kit | Used in constructing LC Positioner grout dam                           |
|  | Dowel                           | 2290937  | Wood Dowel; . (24 mm) diameter;   | 12 pc |  |
|  | LCV+ Base-plate insert assembly | 2272981  | Manufactured part introduced in Positioner key hole to fit: <ul style="list-style-type: none"> <li>- 1 electrical conduit of 6".</li> <li>- 4 water conduits of 1".</li> </ul>              | 1 kit | Electrical and water conduits separated inch size. See Illustration 41 |

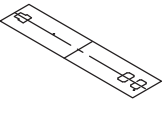
**2285632 – Floor plate / Base plate assembly**

| ITEM  | NAME      | PART #   | DESCRIPTION                  | QUAN. | NOTES                                 |
|---|-----------|----------|------------------------------|-------|---------------------------------------|
|  | Cap Screw | 2286730  | Screw M20x30x30 Inox A2 – 70 | 16 pc | For floor plate / Base plate assembly |
|  | Washer    | 99142204 | Washer STL M20 Galvanized    | 16 pc |                                       |

**Table 25 – 2285054 – Templates****2285056 – A/C/N Templates**

|   |                    |         |  |      |   |
|---|--------------------|---------|--|------|---|
|  | A/C/N<br>Templates | 2185979 | LC Positioner and Omega IV C/N Patient Table floor mounting template | 1 pc | See Illustration 43 and Illustration 42 for details |
|   |                    | 2127792 | LCV+ Gantry and Omega IV A Patient Table floor mounting template     | 1 pc |   |

**2186109 – EP Template**

|   |                |         |  |      |  |
|---|----------------|---------|--|------|--|
|  | EP<br>Template | 2186109 | LCV+ Gantry and EP Patient Table floor mounting template | 1 pc |  |
|---|----------------|---------|--|------|--|

- Note:**
- 1: Old Kit B5079 KS is replaced by 2285048, and B5079 KT is split into 2285056 and 2186109.
  - 2: The kit 2285632 Floor plate / Baseplate assembly is needed when the floor plate is installed. This part isn't GE part. It's ordered locally; used currently in some European countries, and would be used worldwide.

### 3-4 Ceiling Loading and Recommended Mounting Methods

See Table 26. To obtain ceiling loading and recommended mounting methods for components not specified in Table 26, refer to the appropriate component Pre-Installation Manual listed in Chapter 2.

**Table 26 – INNOVA LC SYSTEM CEILING LOADING, WEIGHTS, AND MOUNTING METHODS**

| PRODUCT<br>OR COMPO-<br>NENT | NET<br>WEIGHT<br>kg (lbs) | DIMENSIONS |       |        | LOAD<br>BEARING AREA<br>INCHES (MM) | WEIGHT/<br>OCCUPIED<br>AREA | MOUNTING<br>METHOD |
|------------------------------|---------------------------|------------|-------|--------|-------------------------------------|-----------------------------|--------------------|
|                              |                           | LENGTH     | Width | Height |                                     |                             |                    |
|                              |                           |            |       |        |                                     |                             |                    |

### 3-5 Wall Loading and Recommended Mounting Methods

See Table 27. To obtain wall loading and recommended mounting methods for components not specified in Table 27, refer to the appropriate component Pre-Installation Manual listed in Chapter 2.

**Table 27 – INNOVA LC SYSTEM WALL LOADING, WEIGHTS, AND MOUNTING METHODS**

| PRODUCT<br>OR COMPO-<br>NENT | NET<br>WEIGHT<br>kg (lbs) | DIMENSIONS |       |        | LOAD<br>BEARING AREA<br>INCHES (MM) | WEIGHT/<br>OCCUPIED<br>AREA | MOUNTING<br>METHOD |
|------------------------------|---------------------------|------------|-------|--------|-------------------------------------|-----------------------------|--------------------|
|                              |                           | LENGTH     | WIDTH | HEIGHT |                                     |                             |                    |
|                              |                           |            |       |        |                                     |                             |                    |
|                              |                           |            |       |        |                                     |                             |                    |
| <b>Note 1:</b> Depth.        |                           |            |       |        |                                     |                             |                    |

## **CHAPTER 5 – ROOM LAYOUTS**

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## 1 ROOM LAYOUT CONSIDERATIONS

### 1-1 Radiation Protection

Because X-Ray equipment produces radiation, you may need to take special precautions or make special site modifications. The General Electric Company does not make recommendations regarding radiation protection. It is the purchasers' responsibility to consult a radiation physicist for advice on radiation protection in x-ray rooms.

### 1-2 Service Access

Allow appropriate space for service access of equipment. Consult component pre-installation directions for clearance information.

### 1-3 Clinical Access

Make sure that you plan the room with the following clinical access requirements:

- Provide easy access to the patient table. Stretchers and other mobile hospital equipment must reach the table quickly.
- Provide sufficient space around the patient table for the unimpeded conduct of CPR (Cardiac Pulmonary Resuscitation).
- Clinicians at the patient table must be able to communicate with assistants in the control area.
- There must be an unrestricted view of the video monitors and physiological monitoring equipment from the vascular table.
- Operators in the control area must have easy access to the control console. However, position the controls (including handswitches) so that the operator cannot take exposures while looking around or standing outside the control booth's lead glass window.
- Operators in the control area must have easy access to video recorders and injector programmers, film and video storage cabinets, and service and operating manuals.
- Consult customer on the number and location of nonelectrical lines (air, oxygen, vacuum, water, etc.) in the vascular room.

### 1-4 Peripheral Equipment

Consult hospital personnel regarding additional space requirements for the following types of hospital equipment:

- Storage cabinets.
- Sinks.
- Oxygen stations.
- IV apparatus.
- Injectors.
- Heart monitoring equipment.
- Crash cart.

### 1-5 Emergency Stop

Protect the Emergency Stop from accidental actuation.

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## 2 ROOM LAYOUT DRAWINGS

See Illustration 45, Illustration 46, Illustration 47, Illustration 48 and Illustration 49, for recommended room layouts for an Innova LC system.

## 3 ROOM SPEAKER

If the Advantx console tone cannot be heard from the exam room, a remote loud-speaker must be installed in that room; the loud-speaker, which must be purchased locally, has to be compliant with the local legal requirements (if any; e.g. CE Marking for EEC).

The loud-speaker is to be connected to the console (1/4", serial 3 conductor connector). In US, a Radio Shack loud-speaker (catalog #40-1383), tested and validated, can be used.

## 4 ROOM LIGHTING

See Illustration 49, for a recommended room lighting layout for an Innova LC system.

### 4-1 Requirements for lighting

Requirement for lighting concern the following, general, light-technique characteristics:

- Illuminator level.
- Lighting distribution.
- Preventing the operator from being dazzled by the light (by direct light sources or by reflection on bright objects).

The Illumination level must be compliant with established lighting technical rules and be as constant as possible.

## 5 EMERGENCY

During an examination, any operator can encounter two main cases of failures.

### 5-1 Main power supply cut

In this case, refer to Chapter 6, section 11.

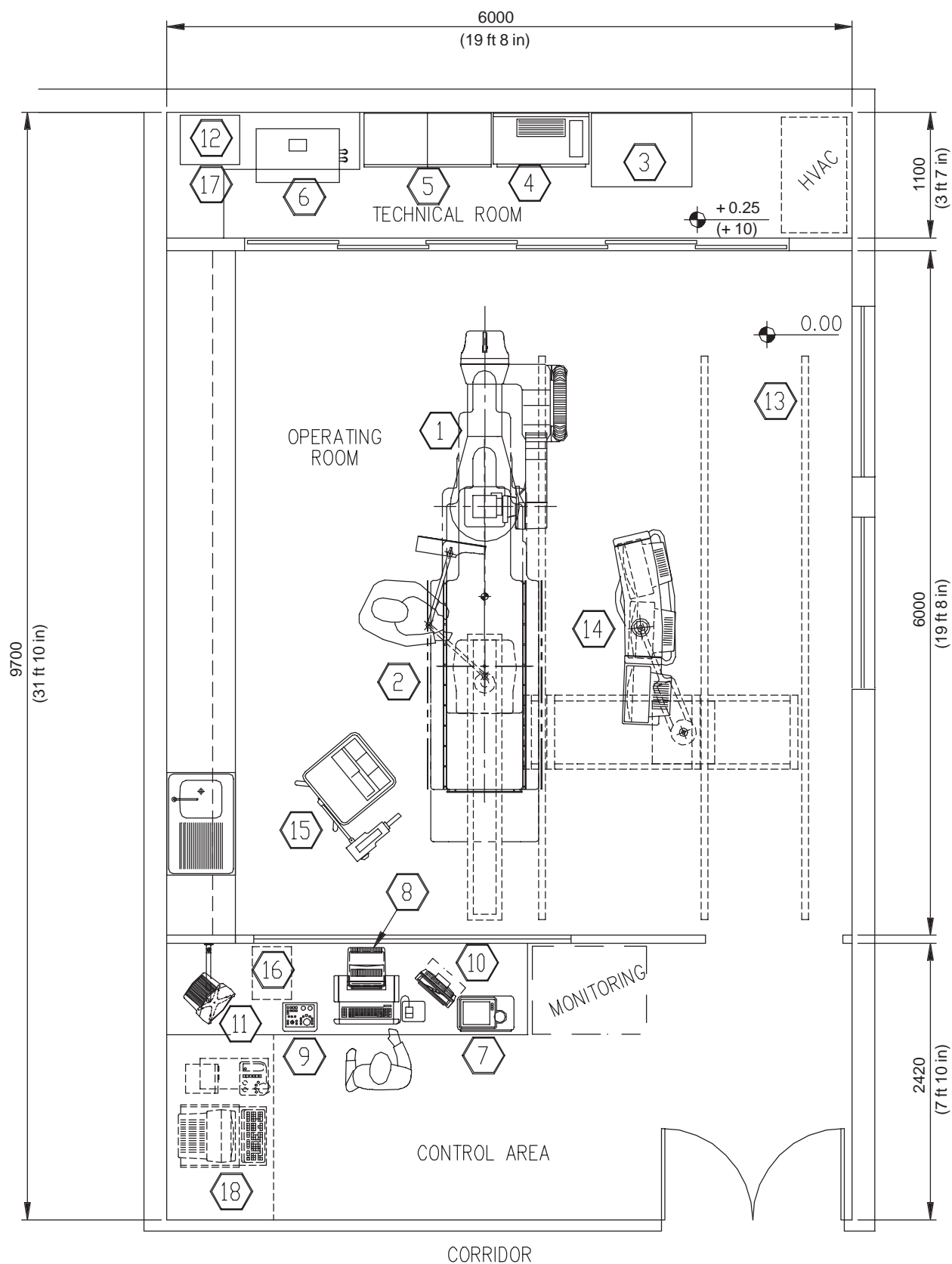
### 5-2 System itself fall into failure

When the system fall into failure with a patient on table during an examination, the operator can require a help with a Surgical Imaging mobile unit to finish the examination.

In this case a wall outlet single phase + ground is required to feed the mobile. It is also requires a free space around the patient table to proceed with the mobile instead of Innova LC Positioner. The table has to rotate to 90 °.

Refer to Illustration 50 and Illustration 51 for a surgical imaging mobile use.

Illustration 45 – RECOMMENDED ROOM LAYOUT FOR INNOVA 2000 SYSTEM



| ROOM DIMENSIONS | L X W  | CEILING HEIGHT           |
|-----------------|--|--------------------------|
| RECOMMENDED:    | 32 ft. 0 in. x 20 ft. 0 in.<br>(9.75 m x 6.00 m) | 10 ft. 0 in.<br>(3.05 m) |
| MINIMUM:        | TBD<br>TBD                                       | 9 ft 0 in<br>2.74 m      |

**Legend of Illustration:**

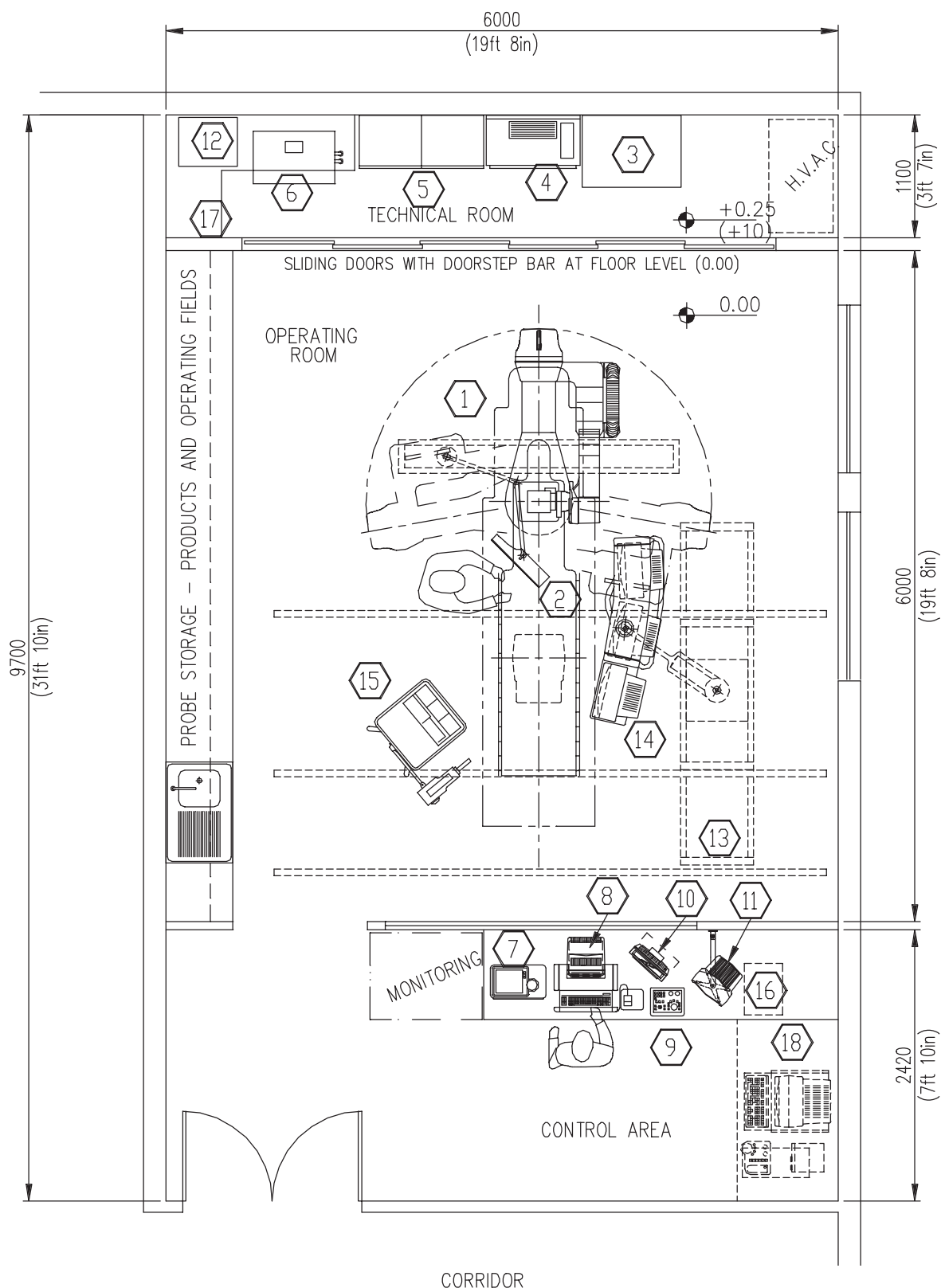
- 1 – Innova LC positioner
- 2 – OMEGA IV Compact patient table
- 3 – ACAB Cabinet
- 4 – POSTIT Cabinet
- 5 – MP Phase IV cabinets
- 6 – Chiller Coolix 2200 (X-Ray tube housing)
- 7 – Innova Console
- 8 – DL Image monitor and keyboard
- 9 – DL Keypad
- 10 – DL Flat panel
- 11 – 17" (43 cm) FFD monitor
- 12 – Chiller Innova Detector
- 13 – XT monitor suspension
- 14 – 21" (53 cm) FFD Monitors put on frame  
with System Status Display and monitoring screen
- 15 – Injector on Pedestal
- 16 – VCR
- 17 – Bookcase or bookshelves required for Technical Publications and  
special parts and tools.
- 18 – GEMnet CRS Station

**Note:** The phone outlet must be located less than 1 meter (3 feet) from the ACAB Cabinet (3).

**Note:** It is strongly recommended to reserve the layout for an extra cabinet of size 27"(82cm) wide, 31"(95cm) deep in the technical area, anticipating potential upgrade (UPS for instance).

**Note:** The size of the Operating (patient) Room as defined in the drawing (Illustration 45) shows the minimum length acceptable. Anticipating a potential table/TSUI Upgrade, it is strongly recommended to extend the length by another 2' 8" (80cm), so that, the Operating Room length is increased to 21'16"(680cm)

Illustration 46 – RECOMMENDED ROOM LAYOUT FOR INNOVA 2000 SYSTEM



TV Monitor suspension shown on this illustration is not finalized location yet.

| ROOM DIMENSIONS | L X W  | CEILING HEIGHT           |
|-----------------|--|--------------------------|
| RECOMMENDED:    | 32 ft. 0 in. x 20 ft. 0 in.<br>(9.75 m x 6.00 m) | 10 ft. 0 in.<br>(3.05 m) |
| MINIMUM:        | TBD<br>TBD                                       | 9 ft 0 in<br>2.74 m      |

**Legend of Illustration:**

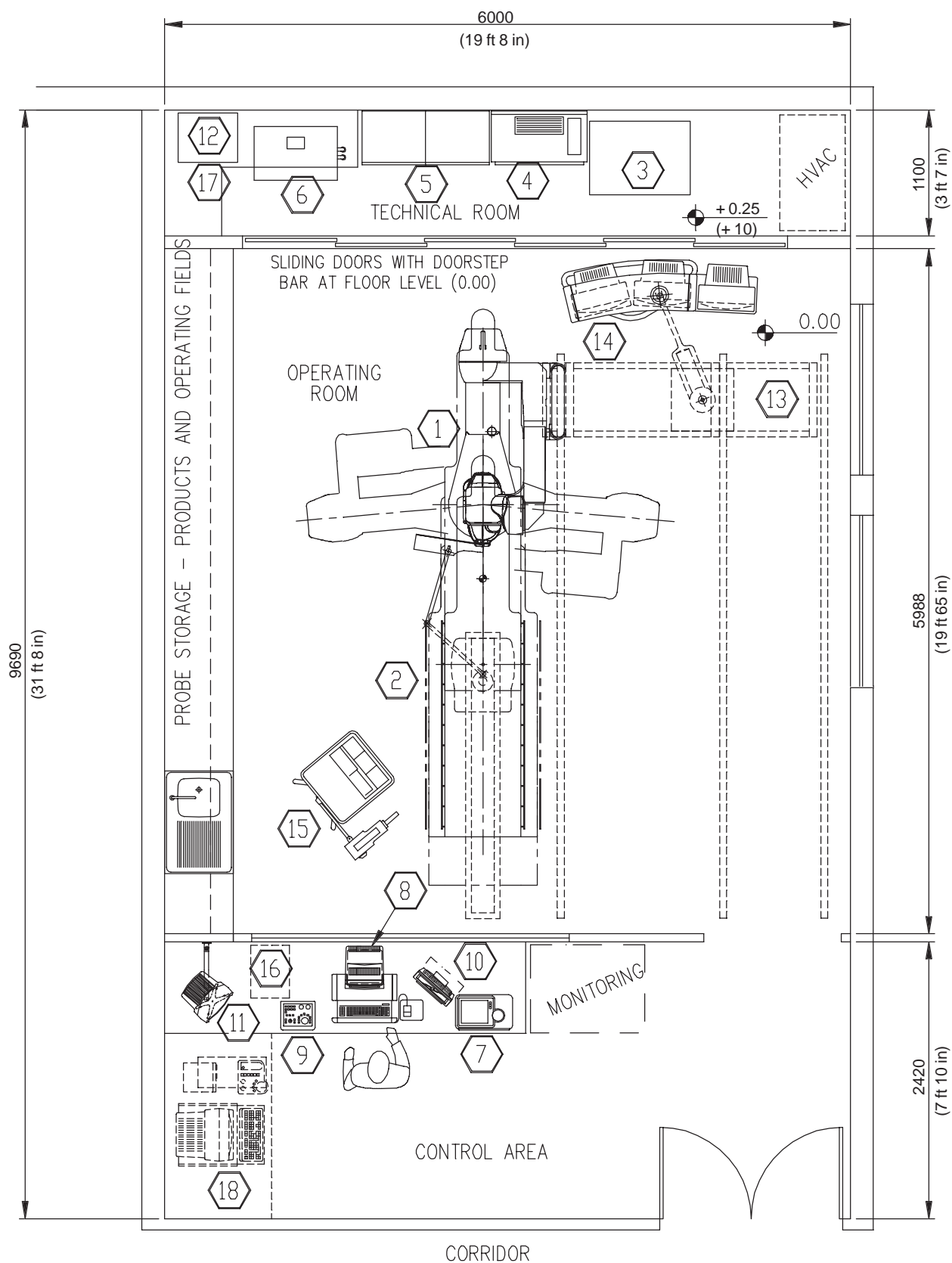
- 1 – Innova LC positioner
- 2 – OMEGA IV Compact patient table
- 3 – ACAB Cabinet
- 4 – POSTIT Cabinet
- 5 – MP Phase IV cabinets
- 6 – Chiller Coolix 2200 (X-Ray tube housing)
- 7 – Innova Console
- 8 – DL Image monitor and keyboard
- 9 – DL Keypad
- 10 – DL Flat panel
- 11 – 17" (43 cm) FFD monitor
- 12 – Chiller Innova Detector
- 13 – XT monitor suspension
- 14 – 21" (53 cm) FFD Monitors put on frame  
with System Status Display and monitoring screen
- 15 – Injector on Pedestal
- 16 – VCR
- 17 – Bookcase or bookshelves required for Technical Publications and  
special parts and tools.
- 18 – GEMnet CRS Station

**Note:** The phone outlet must be located less than 1 meter (3 feet) from the ACAB Cabinet (3).

**Note:** It is strongly recommended to reserve the layout for an extra cabinet of size 27"(82cm) wide, 31"(95cm) deep in the technical area, anticipating potential upgrade (UPS for instance).

**Note:** The size of the Operating (patient) Room as defined in the drawing (Illustration 46) shows the minimum length acceptable. Anticipating a potential table/TSUI Upgrade, it is strongly recommended to extend the length by another 2' 8" (80cm), so that, the Operating Room length is increased to 21'16"(680cm)

Illustration 47 – RECOMMENDED ROOM LAYOUT FOR INNOVA 2000 SYSTEM



| ROOM DIMENSIONS | L X W  | CEILING HEIGHT           |
|-----------------|--|--------------------------|
| RECOMMENDED:    | 32 ft. 0 in. x 20 ft. 0 in.<br>(9.75 m x 6.00 m) | 10 ft. 0 in.<br>(3.05 m) |
| MINIMUM:        | TBD<br>TBD                                       | 9 ft 0 in<br>2.74 m      |

**Legend of Illustration:**

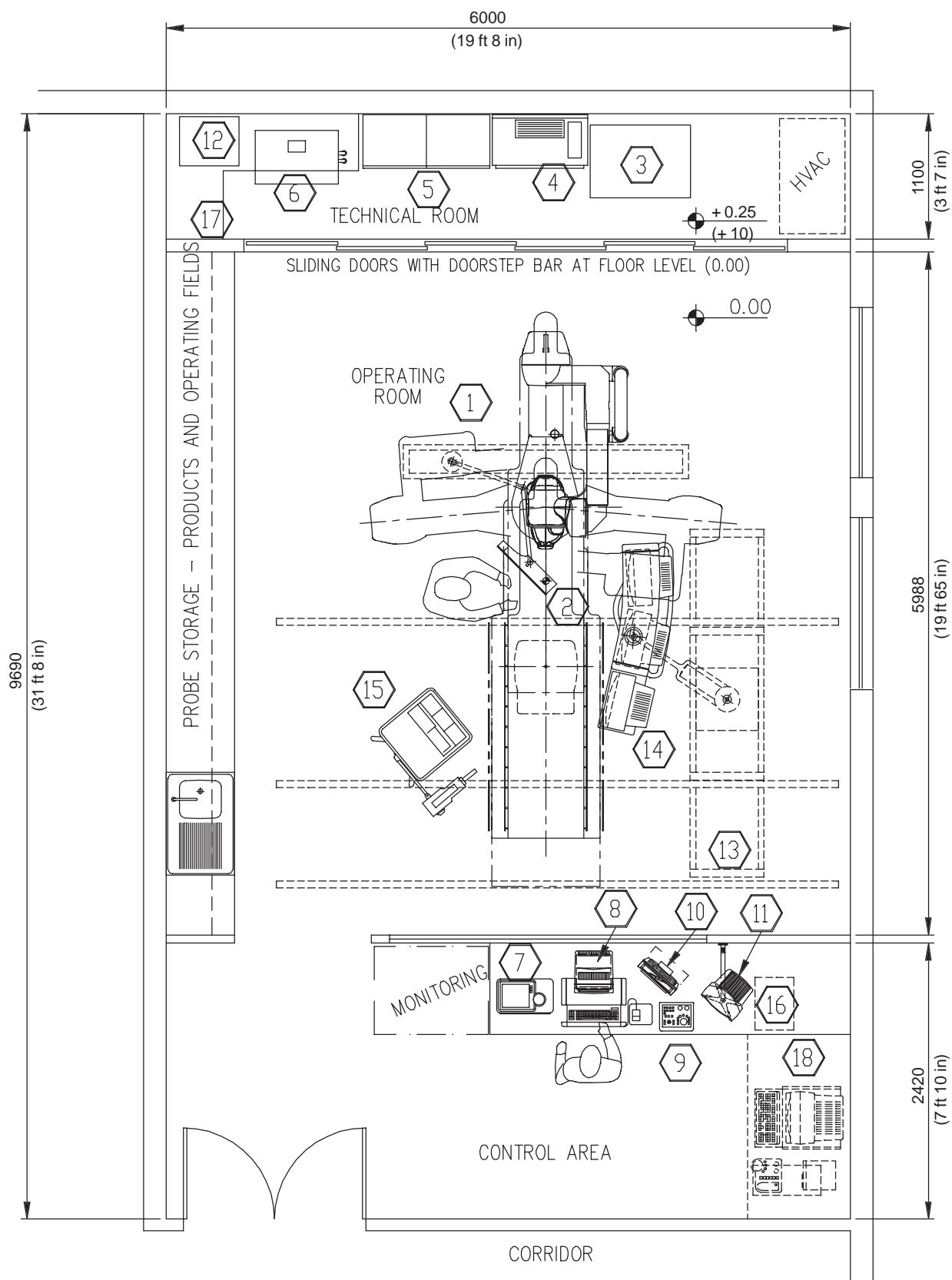
- 1 – Innova LC positioner
- 2 – OMEGA V Long patient table
- 3 – ACAB Cabinet
- 4 – POSTIT Cabinet
- 5 – MP Phase IV cabinets
- 6 – Chiller Coolix 2200 (X-Ray tube housing)
- 7 – Innova Console
- 8 – DL Image monitor and keyboard
- 9 – DL Keypad
- 10 – DL Flat panel
- 11 – 17" (43 cm) FFD monitor
- 12 – Chiller Innova Detector
- 13 – XT monitor suspension
- 14 – 21" (53 cm) FFD Monitors put on frame  
with System Status Display and monitoring screen
- 15 – Injector on Pedestal
- 16 – VCR
- 17 – Bookcase or bookshelves required for Technical Publications and  
special parts and tools.
- 18 – GEMnet CRS Station

**Note:** The phone outlet must be located less than 1 meter (3 feet) from the ACAB Cabinet (3).

**Note:** It is strongly recommended to reserve the layout for an extra cabinet of size 27"(82cm) wide, 31"(95cm) deep in the technical area, anticipating potential upgrade (UPS for instance).

**Note:** The size of the Operating (patient) Room as defined in the drawing (Illustration 47) shows the minimum length acceptable. Anticipating a potential table/TSUI Upgrade, it is strongly recommended to extend the length by another 2' 8" (80cm), so that, the Operating Room length is increased to 21'16"(680cm)

Illustration 48 – RECOMMENDED ROOM LAYOUT FOR INNOVA 2000 SYSTEM





| ROOM DIMENSIONS | L X W  | CEILING HEIGHT           |
|-----------------|--|--------------------------|
| RECOMMENDED:    | 32 ft. 0 in. x 20 ft. 0 in.<br>(9.75 m x 6.00 m) | 10 ft. 0 in.<br>(3.05 m) |
| MINIMUM:        | TBD<br>TBD                                       | 9 ft 0 in<br>2.74 m      |

**Legend of Illustration:**

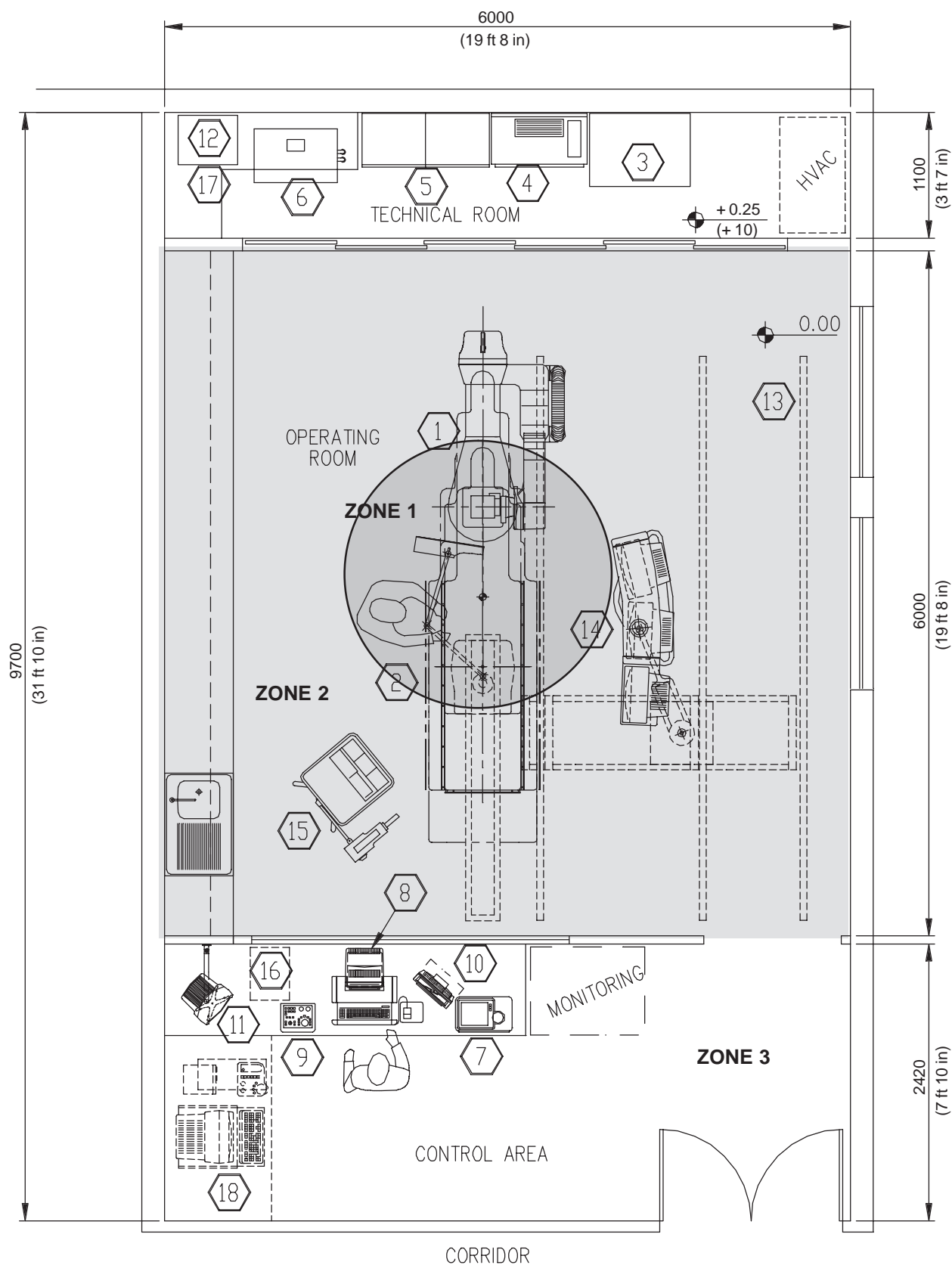
- 1 – Innova LC positioner
- 2 – OMEGA V Long patient table
- 3 – ACAB Cabinet
- 4 – POSTIT Cabinet
- 5 – MP Phase IV cabinets
- 6 – Chiller Coolix 2200 (X-Ray tube housing)
- 7 – Innova Console
- 8 – DL Image monitor and keyboard
- 9 – DL Keypad
- 10 – DL Flat panel
- 11 – 17" (43 cm) FFD monitor
- 12 – Chiller Innova Detector
- 13 – XT monitor suspension
- 14 – 21" (53 cm) FFD Monitors put on frame  
with System Status Display and monitoring screen
- 15 – Injector on Pedestal
- 16 – VCR
- 17 – Bookcase or bookshelves required for Technical Publications and  
special parts and tools.
- 18 – GEMnet CRS Station

**Note:** The phone outlet must be located less than 1 meter (3 feet) from the ACAB Cabinet (3).

**Note:** It is strongly recommended to reserve the layout for an extra cabinet of size 27"(82cm) wide, 31"(95cm) deep in the technical area, anticipating potential upgrade (UPS for instance).

**Note:** The size of the Operating (patient) Room as defined in the drawing (Illustration 48) shows the minimum length acceptable. Anticipating a potential table/TSUI Upgrade, it is strongly recommended to extend the length by another 2' 8" (80cm), so that, the Operating Room length is increased to 21'16"(680cm)

Illustration 49 – RECOMMENDED ROOM LIGHTING FOR INNOVA 2000 SYSTEM



**Legend of Illustration:**

- 1 – Innova LC positioner
- 2 – OMEGA IV Compact patient table
- 3 – ACAB Cabinet
- 4 – POSTIT Cabinet
- 5 – MP Phase IV cabinets
- 6 – Chiller Coolix 2200 (X-Ray tube housing)
- 7 – Innova Console
- 8 – DL Image monitor and keyboard
- 9 – DL Keypad
- 10 – DL Flat panel
- 11 – 17" (43 cm) FFD monitor
- 12 – Chiller Innova Detector
- 13 – XT monitor suspension
- 14 – 21" (53 cm) FFD Monitors put on frame with System Status Display and monitoring screen
- 15 – Injector on Pedestal
- 16 – VCR
- 17 – Bookcase or bookshelves required for Technical Publications and special parts and tools.
- 18 – GEMnet CRS Station

**Note:** The phone outlet must be located less than 1 meter (3 feet) from the ACAB Cabinet (3).

**In Examination room**

- Zone 1 – Intensive lighting needed by operator. Manually cut.
- Zone 2 – Variable lighting without specular reflection on Display and monitor screens.  
Indirect lighting but preferably from ceiling automatically cut by the Innova 2000 System.

**In Control room**

- Zone 3 – Variable lighting without artifact on Display and monitor screens.  
Manually cut.

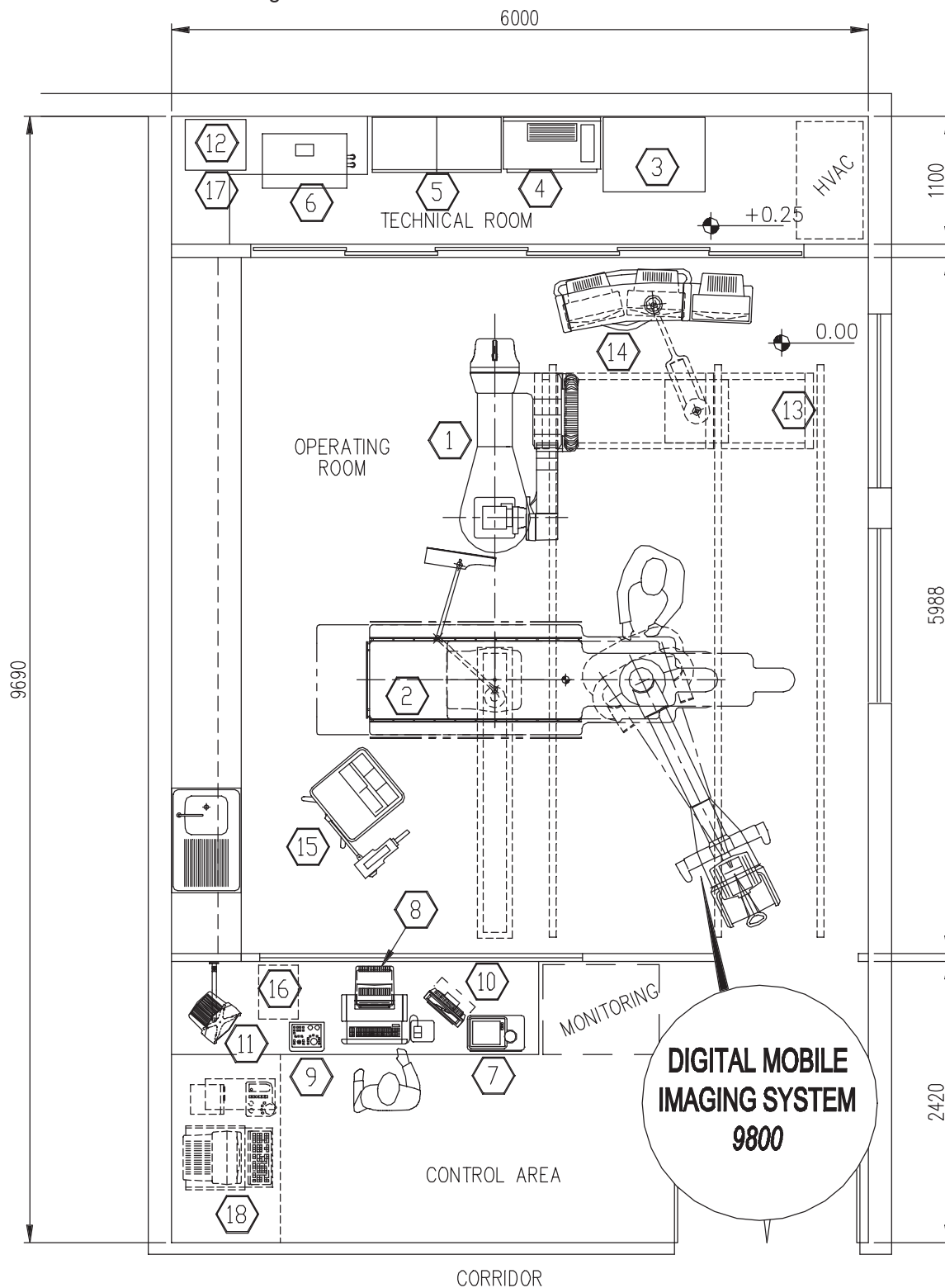


**Lighting level shall be measured on screen and adjusted to a value < to 40 lux:**

- avoiding reflections by direct sunlight
- avoiding reflections by indirect sunlight impinging on a reflecting surface
- avoiding reflections from a light source.

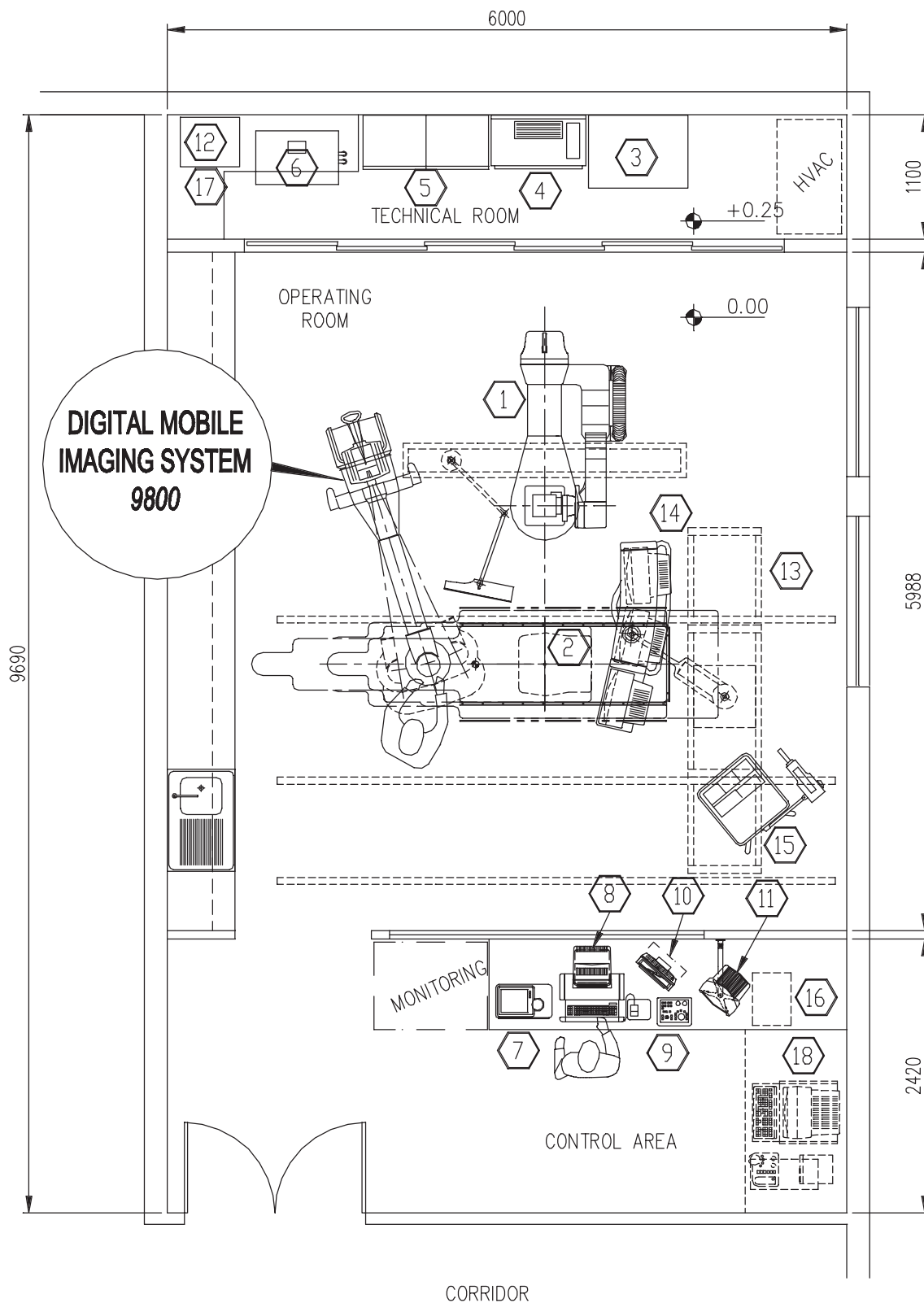
**Illustration 50 – INNOVA 2000 SYSTEM WITH DIGITAL MOBILE 9800**

Refer to Illustration 45 for the legend.



**Illustration 51 – INNOVA 2000 SYSTEM WITH DIGITAL MOBILE 9800**

Refer to Illustration 46 for the legend.



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## **CHAPTER 6 – ELECTRICAL CONNECTIONS**

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## 1 CABLE CHANNELING

### 1-1 Conduit

Conduit has some important restrictions when used with modularized X-ray systems. The primary consideration is that most of the cables used are preterminated, which greatly simplifies interconnection, but makes cable-pulling difficult because of the added dimensions of the connectors. Conduit must be large enough to pass the cable and connector through with all other cables already in the conduit. Also consider the possibility of additional cables being together added as the system is being developed.

The use of conduit is recommended for cables running overhead between rooms, especially when a diagonal run provides the shortest cable path.

### 1-2 Floor Duct

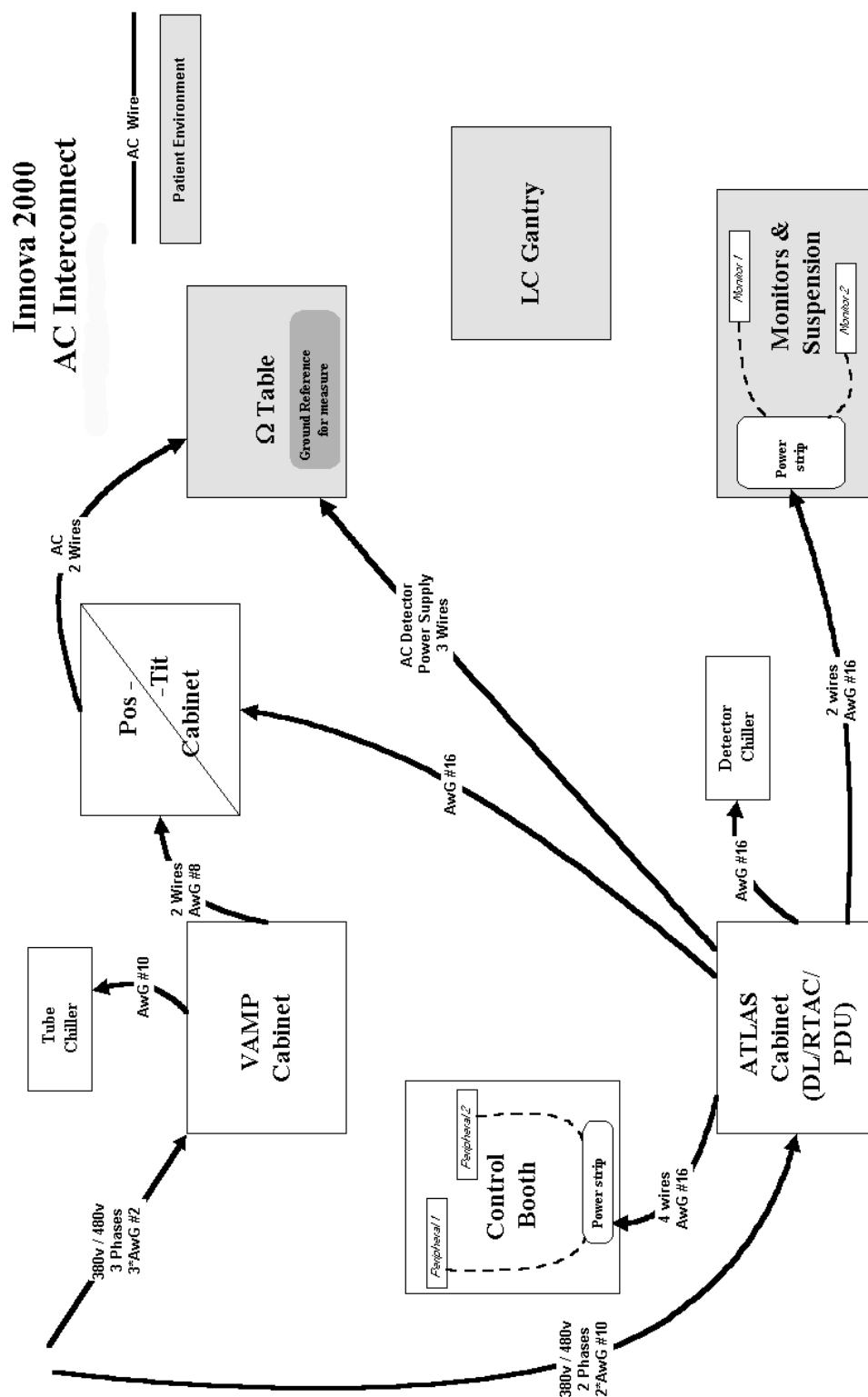
Floor duct has advantages when used with a single room or two adjacent rooms. Floor duct combines a neat, functional appearance with accessibility and room for expansion. The disadvantage is the amount of work required to install it, which is generally prohibitive in old installations. For the same reason, it is impractical to attempt to add on to existing floor duct systems.

### 1-3 Raceway

The raceway provided by General Electric Medical Systems offers some unique advantages. It is very easy to use in existing structures, since it is surface-mounted. There is no problem with preterminated cables, since the entire raceway system can be opened. Raceway systems are relatively easy to expand, as compared to other means of routing cables. Equipment cabinets have been designed for extensive interfacing with raceways. For more information on raceway systems, refer to Direction 46-014232, *Surface Raceway System*.

## 2 POWER DISTRIBUTION

Illustration 52 – AC INTERCONNECT



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### 3 ROOM DISTRIBUTION

Innova LC provides a room distribution from Positioner cabinet as follows:

- a. X-ray-on-line (low voltage limited to 24 Vac). Acting during X-Ray exposures.
- b. X-ray-on-line (yellow, low voltage limited to 24 Vac).  
In the Exam Room, visible from any place in the room.  
Acting during X-ray exposures.
- c. room light (limited to 24 Vac maxi, wires sized to 10 Amps maxi), controls an external relay which applies power to the room lamp.



**IEC 601-2-43 requires not to install door interlocks. It is the responsibility of the field service to check that this requirement is not in contradiction with local regulation. In case of conflict, follow local regulation. No other measures employed for radiation protection should cause the interruption of irradiation and any other disturbance of a procedure in progress.**

### 4 GROUNDING

A vascular lab is a critical care area and requires a special grounding system for patient safety. An equipotential grounding system is recommended for meeting patient safety requirements.

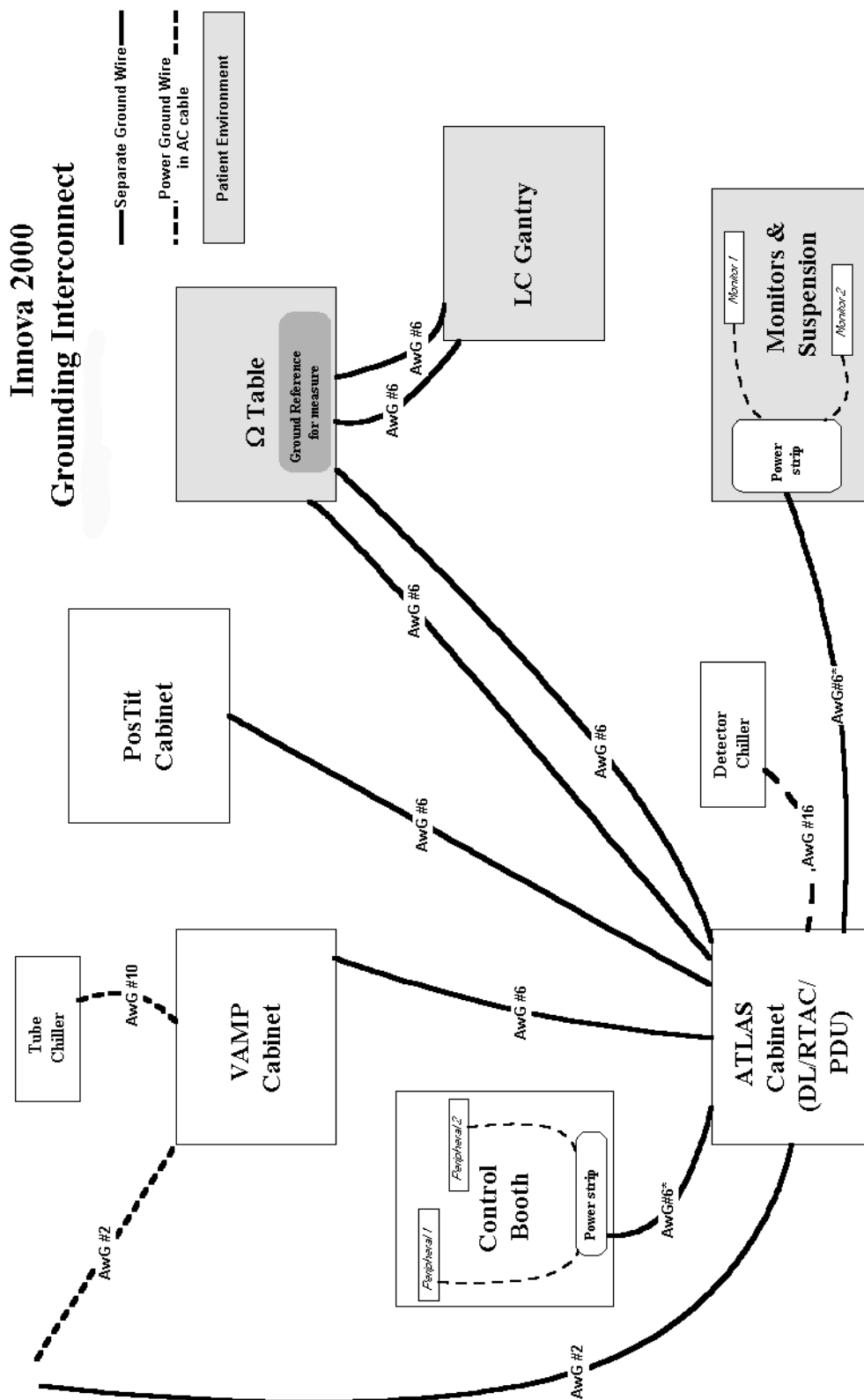
Reference: For general system grounding requirements and information on establishing an equipotential grounding system, refer to:

- Installation manual 2337745-100, JobCard CHK53-011 – Grounding Continuity.

Reference: For specific Vascular system grounding requirements and information on establishing an equipotential grounding system, refer to:

- Direction 46-019668, Vascular System Facility Power and Ground Requirements.

Illustration 53 – GROUNDING INTERCONNECT



(\*) realized with 11 Awg #16 wires

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## 5 POWER & GROUNDING RECOMMENDATION

- Impedance of the ground wire to earth should be lower than 2 ohms (refer to direction 46-019668 for method of measurement).
- This cable should be at minimum a 25 square mm sized wire (AWG2).
- The power supply cable of the PDB power unit and of the generator shall come from a subpanel, as long as the wires are sized to ensure proper voltage drop.
- These cables must not be used to supply other systems and be in conformity with local regulation (UL, CSA, IEC, and of Size: AWG2 or AWG4).

| Max line Impedance for PDB cable and generator cable |      |       |       |       |       |      |
|--|------|-------|-------|-------|-------|------|
| V  | 380  | 400   | 420   | 440   | 460   | 480  |
| Ω  | 0.09 | 0.096 | 0.102 | 0.108 | 0.114 | 0.12 |

**Note:** These cables are not furnished by GEMS; they are provided by the installer.

- These cables must be kept separated as much as possible from room system cables.
- Power and ground must come from the same distribution panel. They must run near one another.
- The shield of any shielded cable coming from the distribution cannot replace the ground wire.

Reference: For specific Vascular system grounding maps and connection details, refer to the MisMap and mis chart listed in Section 6.

## 6 MIS (MASTER INTERCONNECT SYSTEM)

Advantx LC+ system interconnect cables are described in MIS (Master Interconnect System) documents. These documents specify all interconnections between components within the system.

Reference: For specific Vascular system interconnect maps and connection details, refer to the following:

- Document 2337742-100, INNOVA 2000 MIS Map
- Document 2337743-100, INNOVA 2000 MIS Charts.

### General Guidelines

Innova 2000 introduce a new system interconnect with a star distribution for all cables from the technical area. The cables are shipped on spools to create cable groups. Cable group 1 for Exam room and cable group 2 for control room. The cable group shall be put in place during the same action, keeping if necessary the plastic sleeve. The cables are routed in the same duct.

The HV cables could be pulled separately.

Minimize cable length between the power input panel and the VAMP and Atlas Cabinet. These line cables shall be routed in separate duct.

## **7 INJECTORS**

### **7-1 Remote Injector (rack mount)**

A power cord is supplied with the injector.

If the voltage is 110 Vac, the cord should be connected inside the bulkhead positioner cabinet, but it is highly recommended to connect it to a wall outlet fed by the main disconnect room device.

### **7-2 Pedestal Injector**

A power cord is supplied with the injector.

In all cases (110 Vac or 230 Vac), it will be connected to a wall outlet near the operator location, fed by the main disconnect room device.

### **7-3 Injector L.F. ILLUMINA**

As a result of power demand availability for all functions of this new injector, in any cases it will be connected to a wall outlet sized to 1500 W, 110 VAC or 230 VAC as nominal voltage. The wall outlet is fed by the main disconnect room device.

## 8 RECOMMENDED POWER DISTRIBUTION SYSTEM



The drawing hereafter is a guide to illustrate all functions included inside the main disconnect room device.

It should be compliant with the specific country rules.

### 8-1 Main functions

Lock-out/Tag-out by CM, R1 and R,

Main disconnect device by DMD1 and DMD2,

Low voltage created by TR1 applied on remote, L1 and L2,

Separated injection circuit by TR2 and BR,

L is mandatory for French standards,

Protect the Room Emergency Off (AU1, AU2) from accidental activation



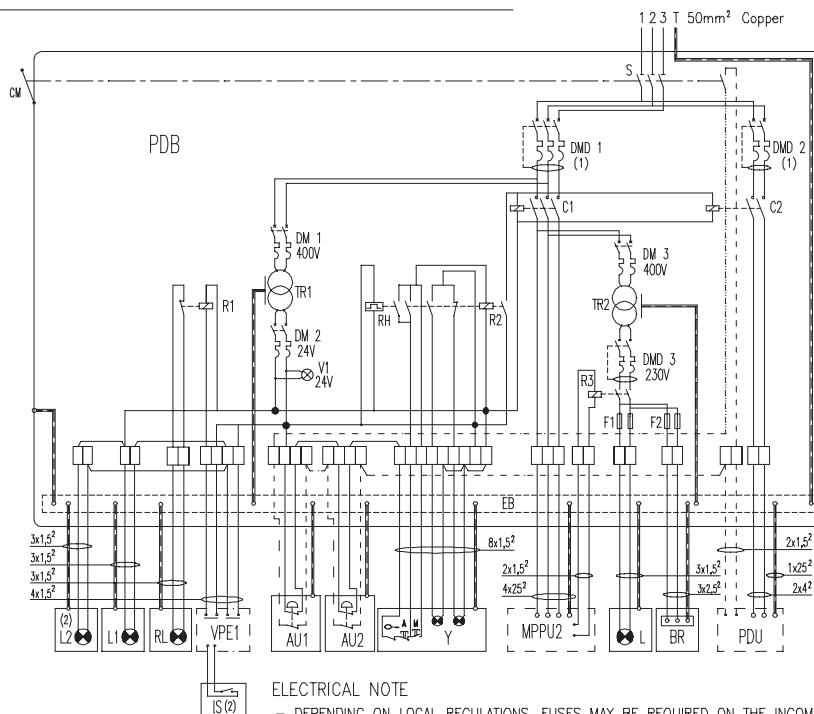
L1 is mandatory in several countries. By the same L1 circuit one or many other(s) light indicator(s) have to be mounted inside the examination room and have to be visible from anywhere by operators.



It is recommended to separate the two power supply cables from the other cables.

## 8-2 Typical PDB

## RECOMMENDED POWER DISTRIBUTION SYSTEM ( TYPICAL )



## ELECTRICAL NOTE

- DEPENDING ON LOCAL REGULATIONS, FUSES MAY BE REQUIRED ON THE INCOMING SUPPLY LINES.
- POWER CABLES TO GEMS CABINETS ARE COMPLIANT WITH TYPE HO 7RN-F.

|        |  |
|--------|--|
| PDB    | POWER DISTRIBUTION BOX ONLY FOR RADIOLOGICAL EQUIPMENTS IN THE ROOM<br>(NOT SUPPLIED BY GEMS, CAN BE ORDERED AS AN OPTION)                                   |
| S      | DISCONNECTOR WITH AUXILIARY CONTACT  |
| CM     | LOCK OUT / TAG OUT DEVICE  |
| DMD1   | THERMALMAGNETIC CIRCUIT BREAKER In= 80A. I <sub>mag</sub> = 12In±20% DIFFERENTIAL 30mA. (1)  |
| DMD2   | THERMALMAGNETIC CIRCUIT BREAKER In= 16A. I <sub>mag</sub> = 12In±20%. DIFFERENTIAL 30mA. (1)   |
| DMD3   | THERMALMAGNETIC CIRCUIT BREAKER In= 16A. I <sub>mag</sub> = 12In±20%. DIFFERENTIAL 30mA. (1)   |
| DM1    | THERMALMAGNETIC CIRCUIT BREAKER In= 2A. I <sub>mag</sub> = 12In±20%.   |
| DM2    | THERMALMAGNETIC CIRCUIT BREAKER In= 6A. I <sub>mag</sub> = 7In±20%.  |
| DM3    | THERMALMAGNETIC CIRCUIT BREAKER In= 6A. I <sub>mag</sub> = 12In±20%.   |
| TR1    | 400V/24V SAFETY TRANSFORMER. P=250VA   |
| TR2    | 400V/230V TRANSFORMER. P= 1600VA   |
| V1     | 24V TELLTALE LAMP  |
| R1     | 24V RELAY. 10A CONTACT FOR LIGHTING ROOM   |
| R2     | 24V PILOT RELAY  |
| R3     | 230V RELAY. 16A CONTACT FOR SWITCHING ON/OFF L & BR FURTHER TO MPPU2 STATE (ON/OFF).   |
| RH     | 24V RELAY. 10A CONTACT (200mS) FOR AUTOMATIC POWER ON  |
| F1     | 1A FUSE (230V)   |
| F2     | 10A FUSE (230V)  |
| C1     | REMOTE CONTACTOR 80A CONTROLLED BY Y, COIL 24V   |
| C2     | REMOTE CONTACTOR 16A CONTROLLED BY Y, COIL 24V   |
| EB     | EQUIPOTENTIAL BAR LINKING ALL CONDUCTEURS IN ROOMS WHERE SYSTEM COMPONENTS ARE LOCATED   |
| AU1-2  | 'BREAK THE GLASS' TYPE EMERGENCY STOP, 1.50m ABOVE FLOOR NEAR ACCES DOORS WITH<br>DOUBLE CONTACTS FOR TWO INDEPENDENT CIRCUITS. SECOND CIRCUIT SIZED FOR 5A. |
| Y      | CONTACTORS C1 C2 REMOTE-CONTROL LOCKED WHEN POWERED OFF. IN & OFF IMPULSE BUTTONS WITH<br>INDICATOR LAMPS RED=IN / GREEN=OFF LOCATED AT 1.50m ABOVE FLOOR    |
| MPPU2  | MP PHASE IV POWER CABINET: CABLES INLET ON THE FLOOR WITH 2.00m EXTRA LENGTH   |
| PDU    | ACAB CABINET: CABLES INLET ON THE FLOOR WITH 2.00m EXTRA LENGTH  |
| VEP1   | POSTIT CABINET: CABLES INLET ON THE FLOOR WITH 2.00m EXTRA LENGTH  |
| (2) IS | DOOR INTERLOCK SWITCH  |
| (1) L  | RED 220V LIGHT INDICATOR, CONTINUOUS OR FLASHING, LOCATED ABOVE THE MAIN ENTRANCE DOORS<br>L LIGHTS UP WHEN LOW VOLTAGE IS SUPPLIED TO THE X-RAY GENERATOR.  |
| L1     | YELLOW 24V LIGHT LOCATED INSIDE EXAM ROOM, INDICATES X-RAY GENERATION  |
| (2) L2 | YELLOW 24V LIGHT LOCATED NEAR TO L, INDICATES X-RAY GENERATION   |
| RL     | ROOM LIGHT CIRCUIT, INACTING DURING X-RAY RADIATIONS, CABLES INLET TO PDB WITH 1.00m EXTRA LENGTH  |
| BR     | INJECTOR WALL OUTLET 10/16A+G, LOCATED 1.50m ABOVE THE FLOOR LABELLED "ONLY FOR INJECTOR".   |

NOTES: (1) DIFFERENTIAL 30mA & L MANDATORY FOR FRANCE, HAVE TO BE CHECKED IN EACH COUNTRY.  
(2) ACCORDING TO LOCAL STANDARDS

AEL-IN20002



### 8-3 Interlocks

Door interlocks is manageable on Innova 2000 depending on the country local regulation and X-Ray system state.

No other measures employed for radiation protection should cause the interruption of radiation and any other disturbance of a procedure in progress.

Refer to Chapter 6 – Section 3 – Room distribution.

## 9 EMERGENCY

An Innova 2000 System has to be powered by a second circuit coming from an emergency power generator.

In this case, if the power is cut for about 20 seconds, the system reboot is long and requires about 5 minutes.

If a UPS feeds the system, it should be sized for 300 kVA (\*) with an autonomy of 10 minutes minimum, or more for further local contingency.

An interconnect diagram is defined as follows:



(\*) In cooperation with GE Digital Energy, a new UPS is under validation.

In all cases, contact your local GEMS representative for more information and/or public power distribution analysis.

**Note:** An UPS is inserted inside ACAB Cabinet and the DL is not affected by microcuts with a duration less than 10  $\mu$ s.

ACAB UPS accepts a power cut without a hardware risk.

The UPS inserted inside ACAB Cabinet is a part of the system and it is not permitted to replace it by another locally supplied unit.

UPS autonomy is 1 minute before shutdown

Delay before shut down is 1 minute without risk of losing stored image.

Time to completely charge the battery of UPS is 48 hours.

## 10 MAC-LAB SYSTEM EX

The best location for a MAC-LAB Acquisition Unit Floor mount kit 408431-001 isn't defined yet.

For MAC-LAB System EX, refer to:

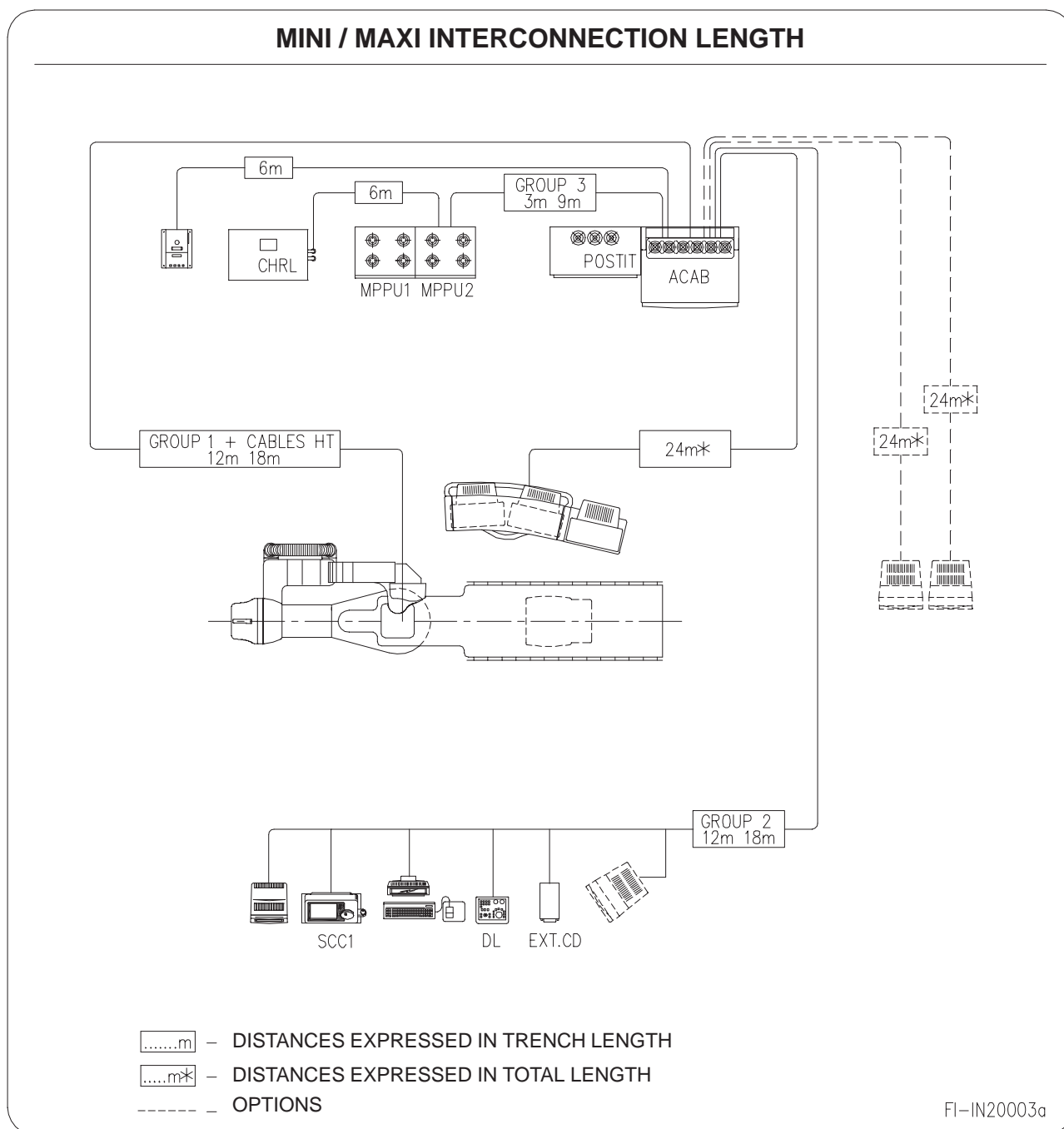
- Marquette document P/N 2000465-001 Preinstallation Guide.

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## 11 PHYSICAL RUNS

### 11-1 Synoptic

Illustration 54 – PHYSICAL RUN - SYNOPTIC



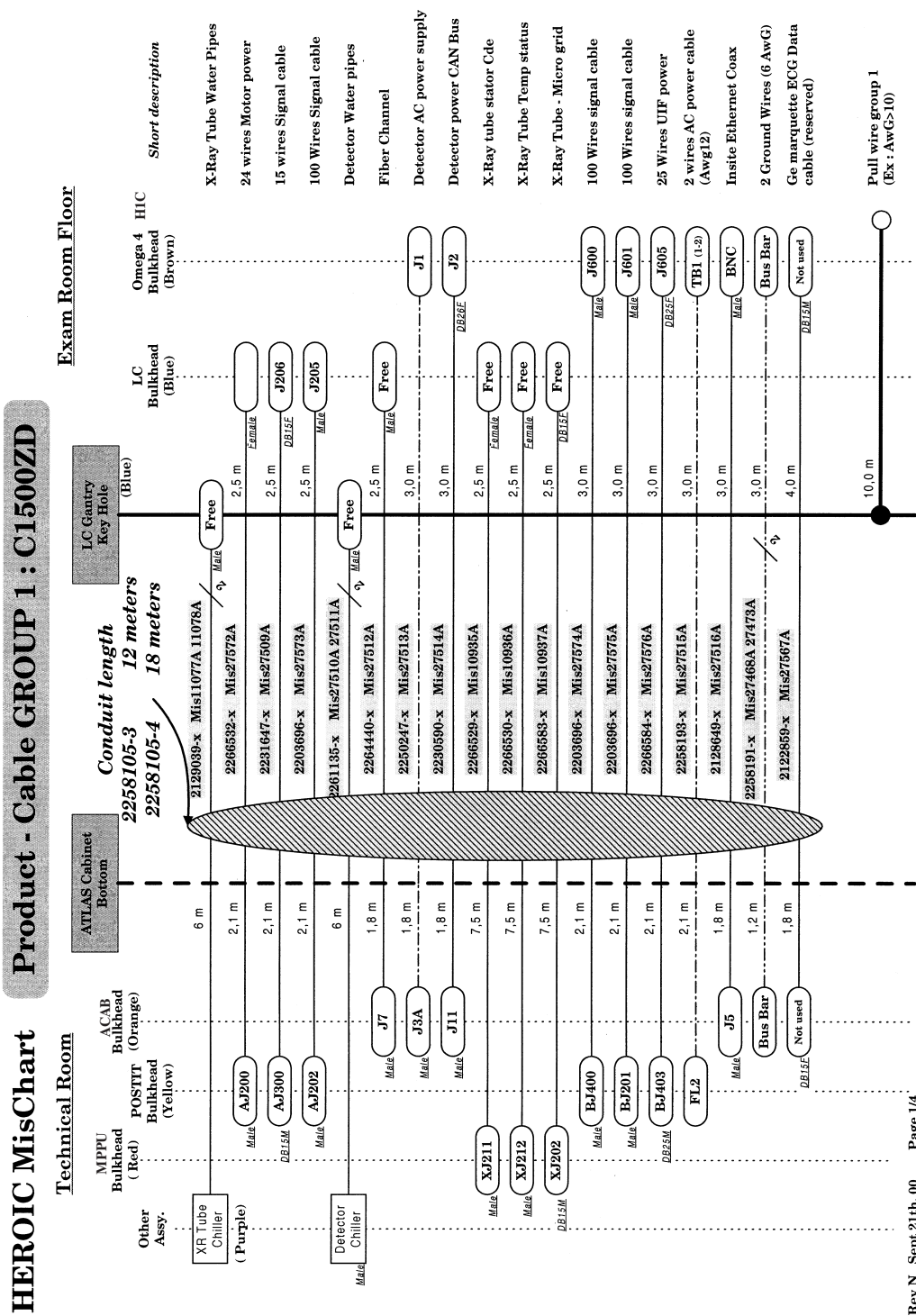
## 11-2 System Core Matrix



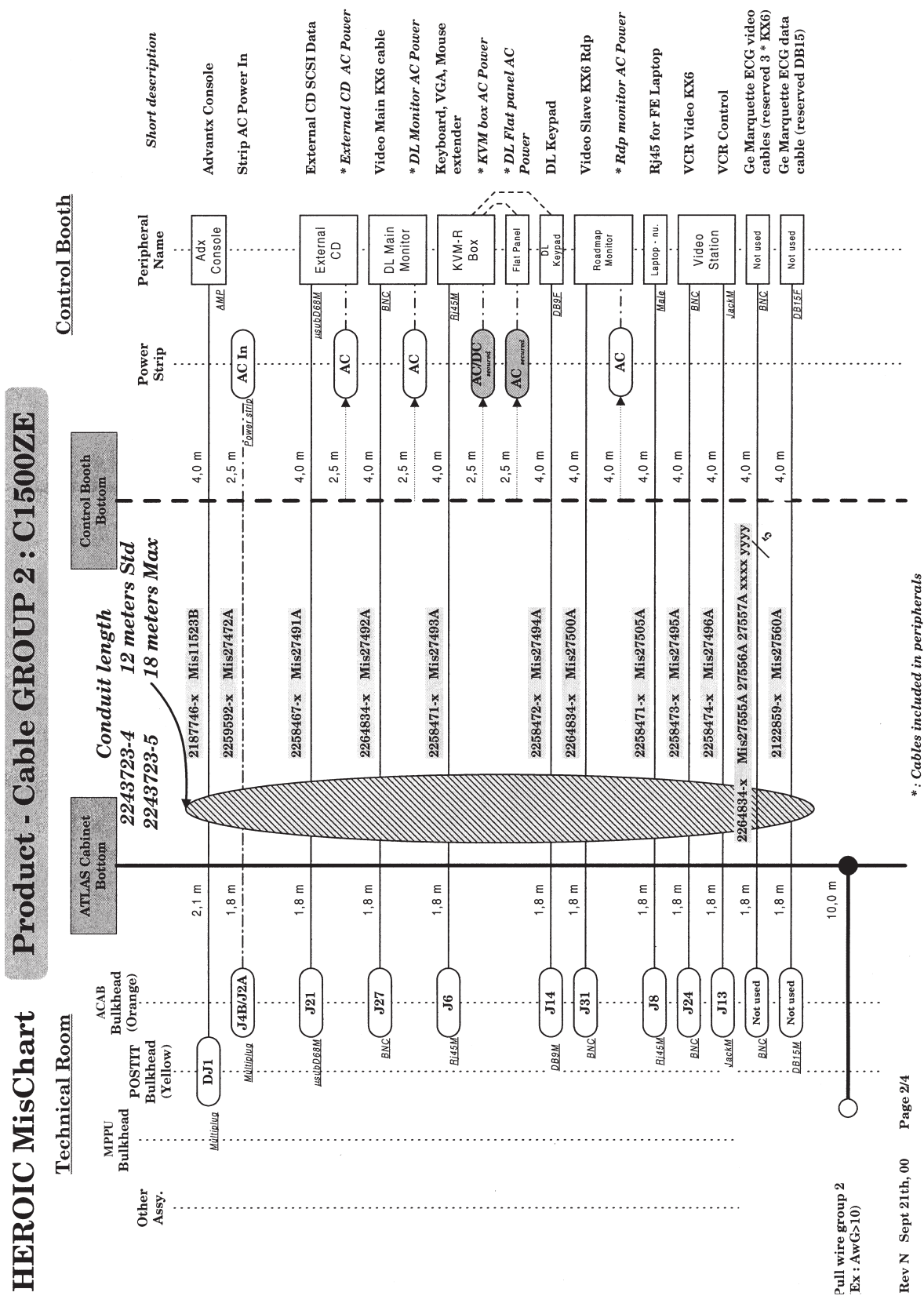
All lengths of cable are:

- in useable meter when you look at group level, or
- in meters (connector to connector) when you look at the cable level.

Illustration 55 – CABLE GROUP 1 – FROM TECHNICAL AREA TO EXAM ROOM



**Illustration 56 – CABLE GROUP 2 – FROM TECHNICAL AREA TO CONTROL ROOM**







**Illustration 58 – CABLE GROUP 4 WITH STANDARD SUSPENSION**

Suspension are always pre-cabled with 24 meter cables of connector to connector

Monitor options includes their 24 meters length for cabling

Extension cables (6 or 12 meters) are available for the suspension or optional monitors.

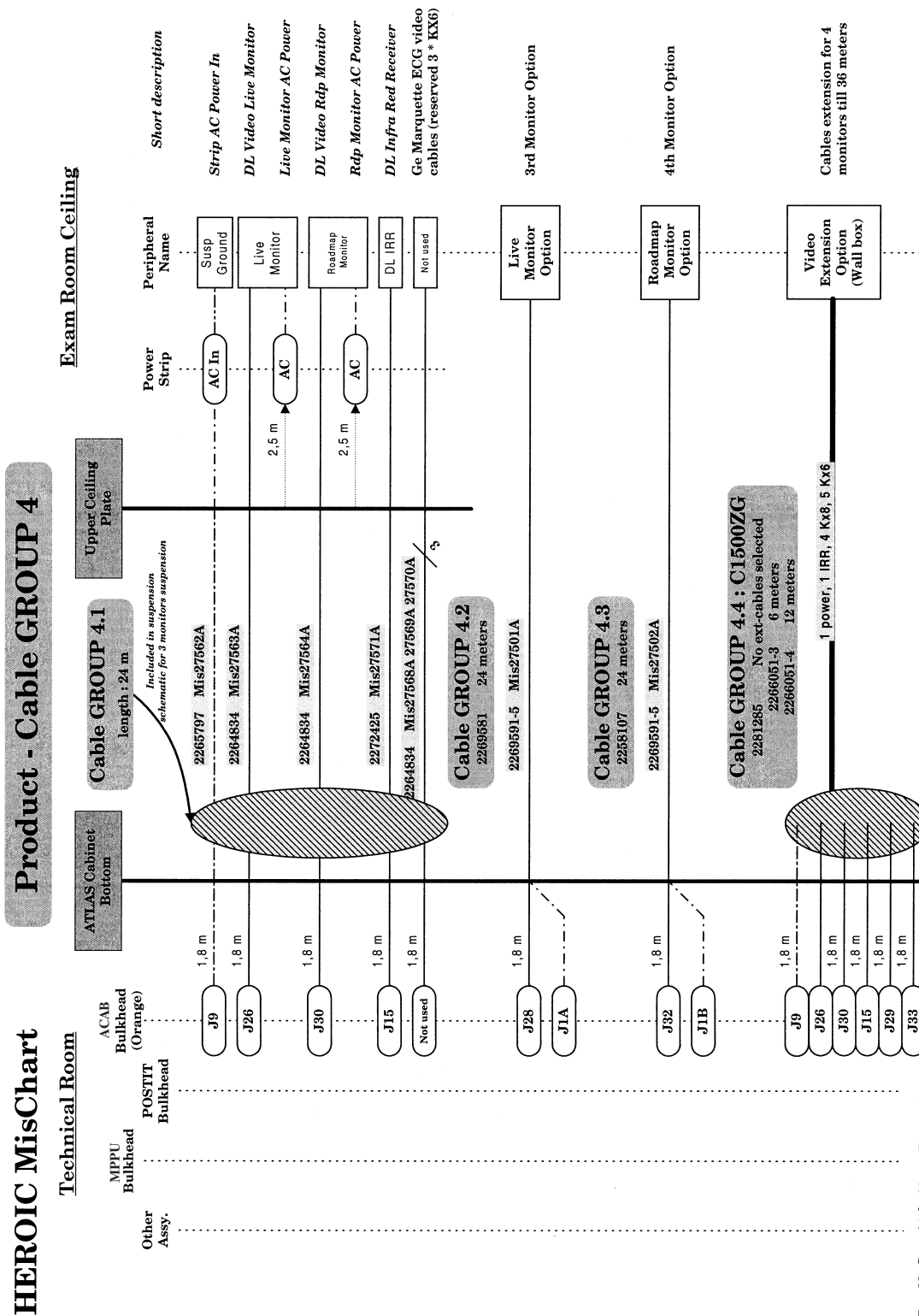
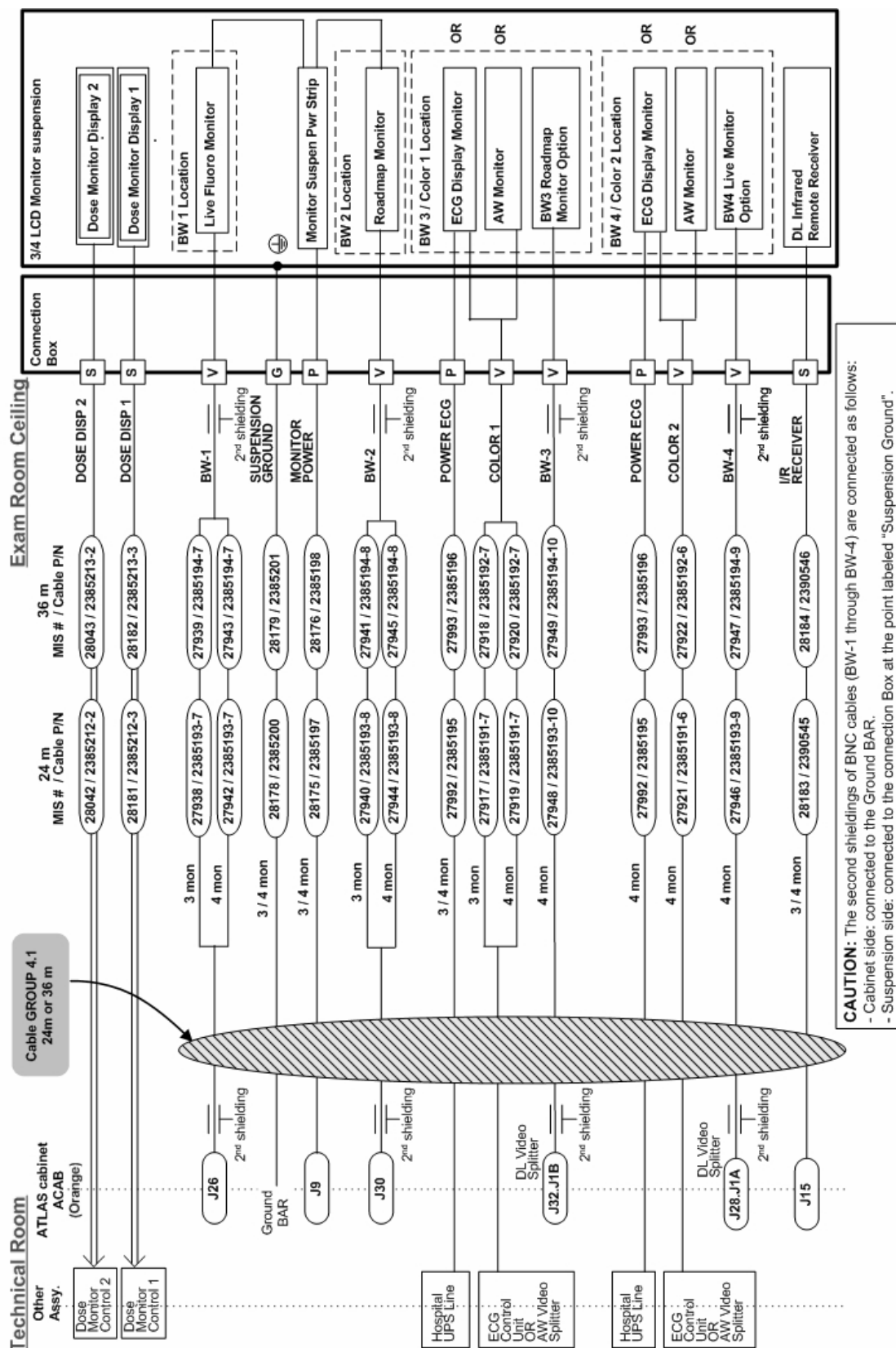


Illustration 59 – CABLE GROUP 4 WITH LCD SUSPENSION

## Product - Cable GROUP 4 with LCD Suspension





## 11-3 System Core Detail

Table 28 – PHYSICAL RUN – SYSTEM CORE DETAIL

| MIS number   | Cable Assembly | UL Style                | Voltage rating (V) | Max Voltage carried (V) | Cable diameter (mm) | Connector type            | Bigger Plug size (mm) | Min. conduit | dimensions flush floor |
|--|----------------|-------------------------|--------------------|-------------------------|---------------------|---------------------------|-----------------------|--------------|------------------------|
| <b>Group n°1 (From ACAB / POSTIT to LC positioner / Table)</b> |                |                         |                    |                         |                     |                           |                       |              |                        |
| 10935A   | 2266529        | 2463                    | 600                |                         | 13.8                | Metrimate 12 pts          | 34.4                  |              |                        |
| 10936A   | 2266530        | 2463                    | 600                |                         | 8.3                 | Metrimate 6 pts           | 29                    |              |                        |
| 10937A   | 2266583        | 2464                    | 300                |                         | 9.2                 | SubD 15 pts               | 42.7                  |              |                        |
| 11077A   | 2129039        | WATER LINE              |                    |                         |                     |                           |                       |              |                        |
| 11078A   | 2129039        | WATER LINE              |                    |                         |                     |                           |                       |              |                        |
| 27468A   | 2258191        | 1019                    | 600                |                         | 9.1                 | Pre-dénudage, cosse ronde | 12                    |              |                        |
| 27473A   | 2258191        | 1019                    | 600                |                         | 9.1                 | Pre-dénudage, cosse ronde | 12                    |              |                        |
| 27509A   | 2231647        |                         |                    |                         |                     |                           |                       |              |                        |
| 27510A   | 2261135        | WATER LINE              |                    |                         |                     |                           |                       |              |                        |
| 27511A   | 2261135        | WATER LINE              |                    |                         |                     |                           |                       |              |                        |
| 27512A   | 2264440        | OPTIC FIBER             |                    |                         |                     |                           |                       |              |                        |
| 27513A   | 2250247        | 2464                    | 300                |                         | 7                   | CEI 320 – Fiche HBL4570C  | 38.6                  |              |                        |
| 27514A   | 2230590        | 2789                    | 30                 |                         | 7.3                 | SubD 26 pts               | 41.2                  |              |                        |
| 27515A   | 2258193        | Type CL2                | 150                |                         | 8.2                 | Predenudage               | 8.2                   |              |                        |
| 27516A   | 2128649        | RG58CU (non UL)         | N/A                |                         | 5                   | BNC 50 ohms               | 14.4                  |              |                        |
| 27567A   | 2122859        | 2464                    | 300                |                         | 9.9                 | SubD 15 pts               | 41.9                  |              |                        |
| 27571A   | 2266532        | 2464                    | 300                |                         | 16.2                | Fiche circulaire libre    | 47.8                  |              |                        |
| 27572A   | 2266532        | 2464                    | 300                |                         | 16.2                | Fiche circulaire libre    | 47.8                  |              |                        |
| 27573A   | 2203696        | 2789                    | 30                 |                         | 10.9                | Amplimite 100 pts         | 84.6                  |              |                        |
| 27574A   | 2203696        | 2789                    | 30                 |                         | 10.9                | Amplimite 100 pts         | 84.6                  |              |                        |
| 27575A   | 2203696        | 2789                    | 30                 |                         | 10.9                | Amplimite 100 pts         | 84.6                  |              |                        |
| 27576A   | 2266584        | 2464                    | 300                |                         | 10.6                | SubD 25 pts               | 56.6                  |              |                        |
| <b>Following cables are part of component</b>                  |                |                         |                    |                         |                     |                           |                       |              |                        |
| 27470A   | 2264824        |                         |                    |                         |                     |                           |                       |              |                        |
| 27471A   | 2264824        |                         |                    |                         |                     |                           |                       |              |                        |
| 27586A   | 2260420        |                         |                    |                         |                     |                           |                       |              |                        |
| 27589A   | 2258207        | Locaflex spec. 1311418A |                    |                         | 11.7                | Connector HT              | 72                    |              |                        |
| 27590A   | 2115483        | Locaflex spec. 1311418A |                    |                         | 11.7                | Connector HT              | 72                    |              |                        |

[illegible]

[illegible]

| MIS number  | Cable Assembly | UL Style | Voltage rating (V) | Max Voltage carried (V) | Cable diameter (mm) | Connector type  | Bigger Plug size (mm) | Min. conduit | dimensions flush floor |
|---|----------------|----------|--------------------|-------------------------|---------------------|---|-----------------------|--------------|------------------------|
| <b>Group n°4-1 (From ACAB / POSTIT to Monitors-Standard suspension)</b> |                |          |                    |                         |                     |   |                       |              |                        |
| 27562A  | 2265797        |          |                    |                         |                     |   |                       |              |                        |
| 27463A  | 2264834        | 1354     | 30                 |                         | 6                   | BNC 75 ohms   | 14.4                  |              |                        |
| 27464A  | 2264834        | 1354     | 30                 |                         | 6                   | BNC 75 ohms   | 14.4                  |              |                        |
| 27568A  | 2264834        | 1354     | 30                 |                         | 6                   | BNC 75 ohms   | 14.4                  |              |                        |
| 27569A  | 2264834        | 1354     | 30                 |                         | 6                   | BNC 75 ohms   | 14.4                  |              |                        |
| 27570A  | 2264834        | 1354     | 30                 |                         | 6                   | BNC 75 ohms   | 14.4                  |              |                        |
| 27571A  | 2272425        |          |                    |                         |                     |   |                       |              |                        |
|   |                |          |                    |                         |                     |   |                       |              |                        |
| <b>Group n°4-2 (From ACAB / POSTIT to Monitors-Standard suspension)</b> |                |          |                    |                         |                     |   |                       |              |                        |
| 27501A  | 2269591        | 2343     | 300                |                         | 16                  | (CEE22 – cosse ronde – BNC50)<br>– (BNC50 – cosse ronde – Fiche HBL4570C) | 38.6                  |              |                        |
| <b>Group n°4-3 (From ACAB / POSTIT to Monitors-Standard suspension)</b> |                |          |                    |                         |                     |   |                       |              |                        |
| 27502A  | 2269591        | 2343     | 300                |                         | 16                  | (CEE22 – cosse ronde – BNC50)<br>– (BNC50 – cosse ronde – Fiche HBL4570C) | 38.6                  |              |                        |
| <b>Group n°4 (From ACAB / POSTIT to Connection Box- LCD suspension)</b> |                |          |                    |                         |                     |   |                       |              |                        |
| 27917   | 2385191-7      |          | 30V                |                         |                     | VGA   |                       |              |                        |
| 27918   | 2385192-7      |          | 30V                |                         |                     | VGA   |                       |              |                        |
| 27919   | 2385191-7      |          | 30V                |                         |                     | VGA   |                       |              |                        |
| 27920   | 2385192-7      |          | 30V                |                         |                     | VGA   |                       |              |                        |
| 27921   | 2385191-6      |          | 30V                |                         |                     | VGA   |                       |              |                        |
| 27922   | 2385192-6      |          | 30V                |                         |                     | VGA   |                       |              |                        |
| 27938   | 2385193-7      | 1354     | 30V                |                         |                     | BNC   | 14.4                  |              |                        |
| 27939   | 2385194-7      | 1354     | 30V                |                         |                     | BNC   | 14.4                  |              |                        |
| 27940   | 2385193-8      | 1354     | 30V                |                         |                     | BNC   | 14.4                  |              |                        |
| 27941   | 2385194-8      | 1354     | 30V                |                         |                     | BNC   | 14.4                  |              |                        |
| 27942   | 2385193-7      | 1354     | 30V                |                         |                     | BNC   | 14.4                  |              |                        |
| 27943   | 2385194-7      | 1354     | 30V                |                         |                     | BNC   | 14.4                  |              |                        |
| 27944   | 2385193-8      | 1354     | 30V                |                         |                     | BNC   | 14.4                  |              |                        |
| 27945   | 2385194-8      | 1354     | 30V                |                         |                     | BNC   | 14.4                  |              |                        |
| 27946   | 2385193-9      | 1354     | 30V                |                         |                     | BNC   | 14.4                  |              |                        |
| 27947   | 2385194-9      | 1354     | 30V                |                         |                     | BNC   | 14.4                  |              |                        |
| 27948   | 2385193-10     | 1354     | 30V                |                         |                     | BNC   | 14.4                  |              |                        |
| 27949   | 2385194-10     | 1354     | 30V                |                         |                     | BNC   | 14.4                  |              |                        |
| 27992   | 2385195        |          | 300                |                         |                     | Power   |                       |              |                        |

| MIS number | Cable Assembly | UL Style | Voltage rating (V) | Max Voltage carried (V) | Cable diameter (mm) | Connector type | Bigger Plug size (mm) | Min. conduit | dimensions flush floor |
|------------|----------------|----------|--------------------|-------------------------|---------------------|----------------|-----------------------|--------------|------------------------|
| 27993      | 2385196        |          | 300                |                         |                     | Power          |                       |              |                        |
| 28042      | 2385212-2      | 2789     | 30                 |                         |                     | SubD-9pts      |                       |              |                        |
| 28043      | 2385213-2      | 2789     | 30                 |                         |                     | SubD-9pts      |                       |              |                        |
| 28175      | 2385197        |          | 300                |                         |                     | Power          |                       |              |                        |
| 28176      | 2385198        |          | 300                |                         |                     | Power          |                       |              |                        |
| 28178      | 2385200        |          |                    |                         |                     | G/Y            |                       |              |                        |
| 28179      | 2385201        |          |                    |                         |                     | G/Y            |                       |              |                        |
| 28182      | 2385213-3      | 2560     | 30                 |                         | 6.6                 |                |                       |              |                        |
| 28183      | 2390545        | 2789     | 300                |                         |                     | SubD-9pts      |                       |              |                        |
| 28184      | 2390546        | 2789     | 300                |                         |                     | SubD-9pts      |                       |              |                        |
| 29181      | 2385212-3      | 2560     | 30                 |                         | 6.6                 |                |                       |              |                        |

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## **JOB CARD PIST044-007 – System facility power**

Time: 0 h 15 min – Personnel: 1 field engineer

1 of 8

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### **1 SUPPLIES**

- None.

### **2 TOOLS**

- None.

### **3 SAFETY PRECAUTIONS**

- None.

### **4 PREREQUISITES**

- None.

## 5 SCOPE

Invasive procedure room shall have all exposed metal parts *that are likely to become energized*, grounded to an approved grounding bus called room ground point. The room ground point is located:

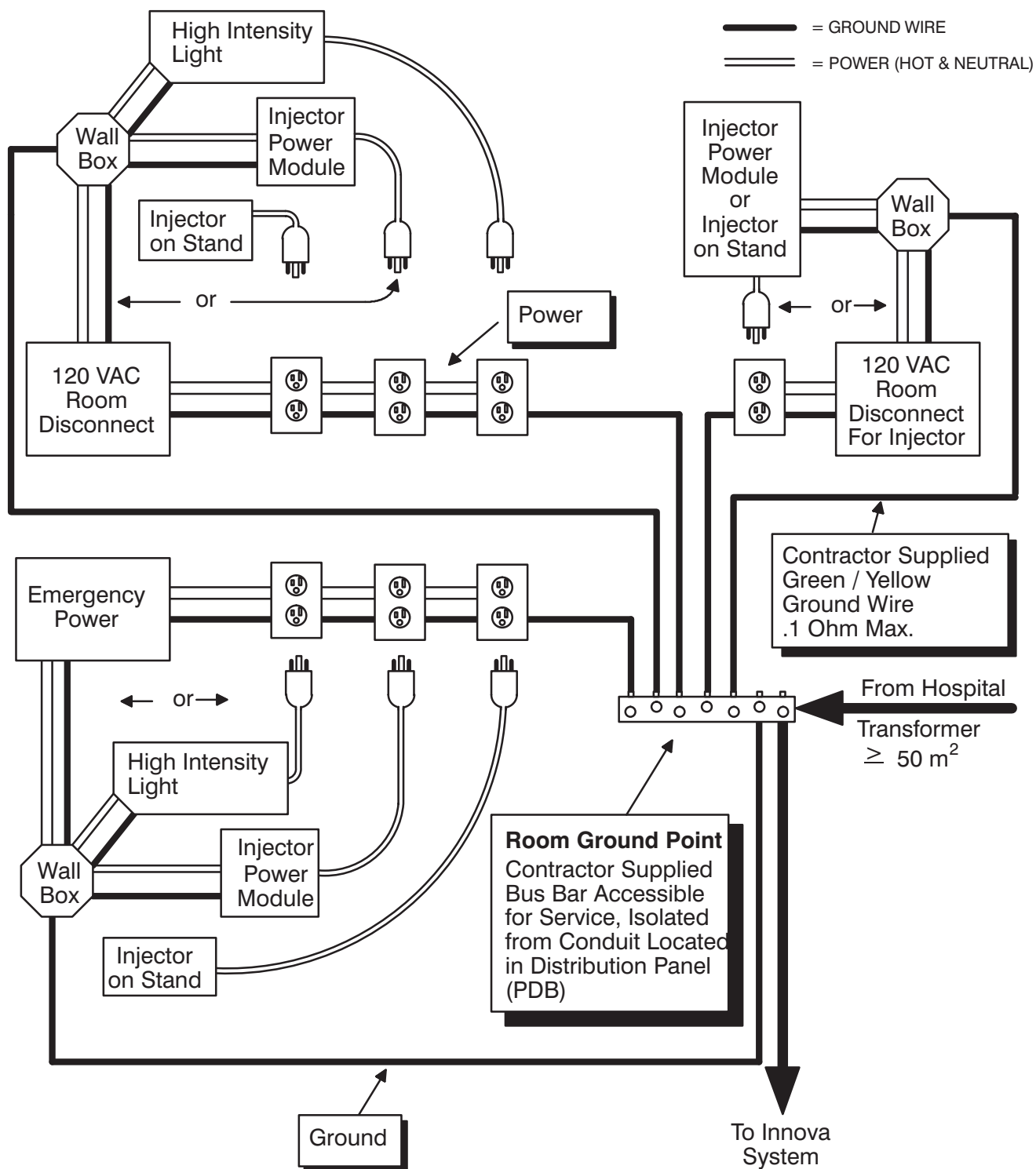
- in the distribution panel (PDB) for Innova 2000 system and for any other medical devices powered in the examination room (refer to Illustration 2).
- in the Atlas Cabinet for Innova 2000 subsystems.

All room outlets and emergency power sources in the room shall isolated ground receptacles with the primary grounding coming from the power source and a secondary ground bonded to the room ground point. For the receptacle or electrical box which powers the injectors power module there must be one ground wire back to the room ground point even if the power module is in a separate room.

All ground wire impedances shall be less than 0.1  $\Omega$  when measured to the room ground point.



Illustration 1 – Room ground point description



## 6 PROCEDURE

The facility shall provide to the GE installation specialist a written statement that the grounding and power supply meets General Electric's specifications including the 2 ohms to earth before the system installation begins.

The local service or installation specialist, to be determined by local service, shall do a physical walk through to the facility to insure that the following are correct:

1. The ground wires are the same size as the power feeder or AWG 1/0 whichever is larger.
2. The grounds at junction points are connected in an approved grounding bus.
3. Grounds within an enclosure must be tied together with copper wire or approved buss bar (i.e., separate buss bars within an enclosure must be tied together with copper wire of appropriate size).
4. The ground originates at the power sources, i.e., transformer or entrance panel in facility.
5. When more than one ground terminal is mounted on the ground screw, the incoming terminal shall always be mounted first and removed last.

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## Customer's Confirmation

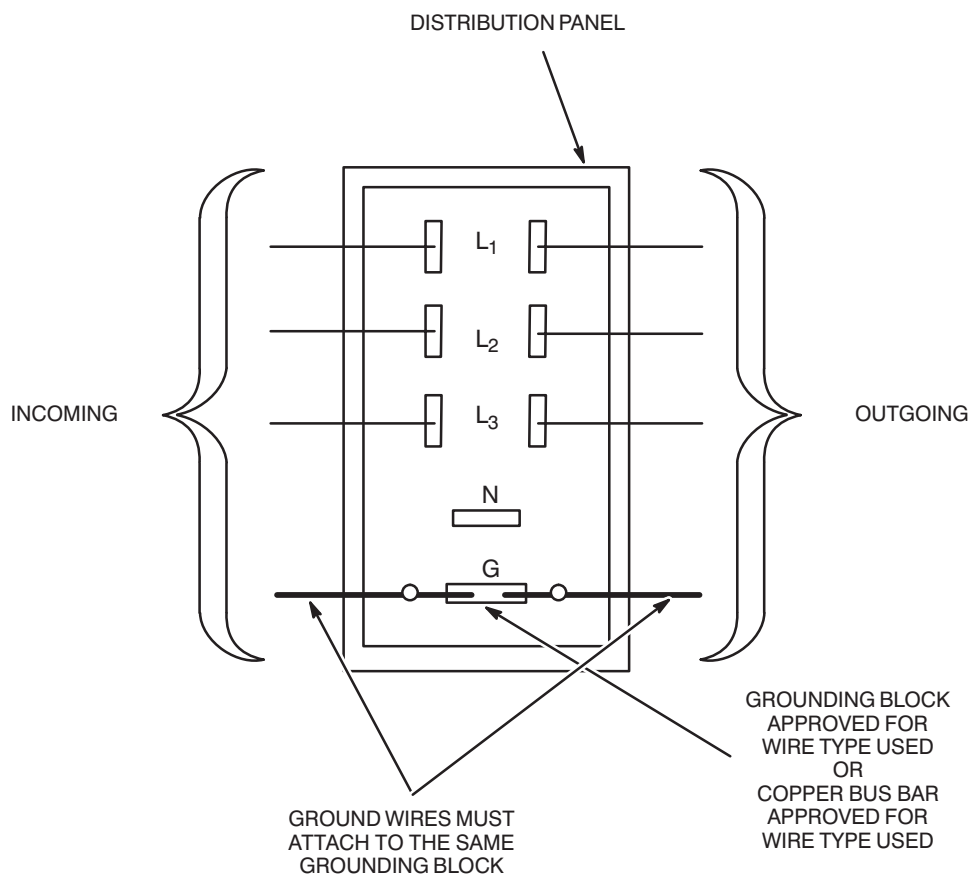
Signature below confirms that all customer/contractor supplied equipment (see definition in NEC article 100) and wiring conductors required have been installed and will provide power as specified in GE Medical System preinstallation drawings and meets requirements set forth in GE Medical System direction 2290880-10 Innova 2000 Pre-Installation Kit Installation Procedures.

GROUND IMPEDANCE WAS MEASURED TO BE \_\_\_\_\_ OHMS.

DATE: \_\_\_\_\_

CUSTOMER'S NAME: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_

**Illustration 2 – Ground connection at distribution panel**

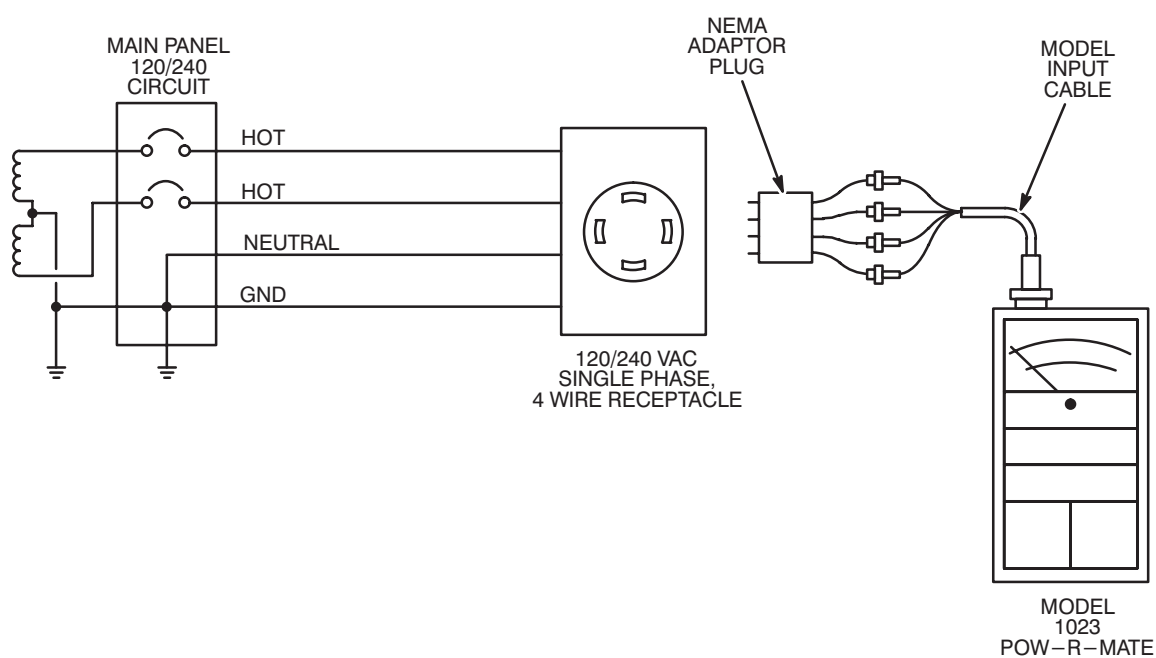
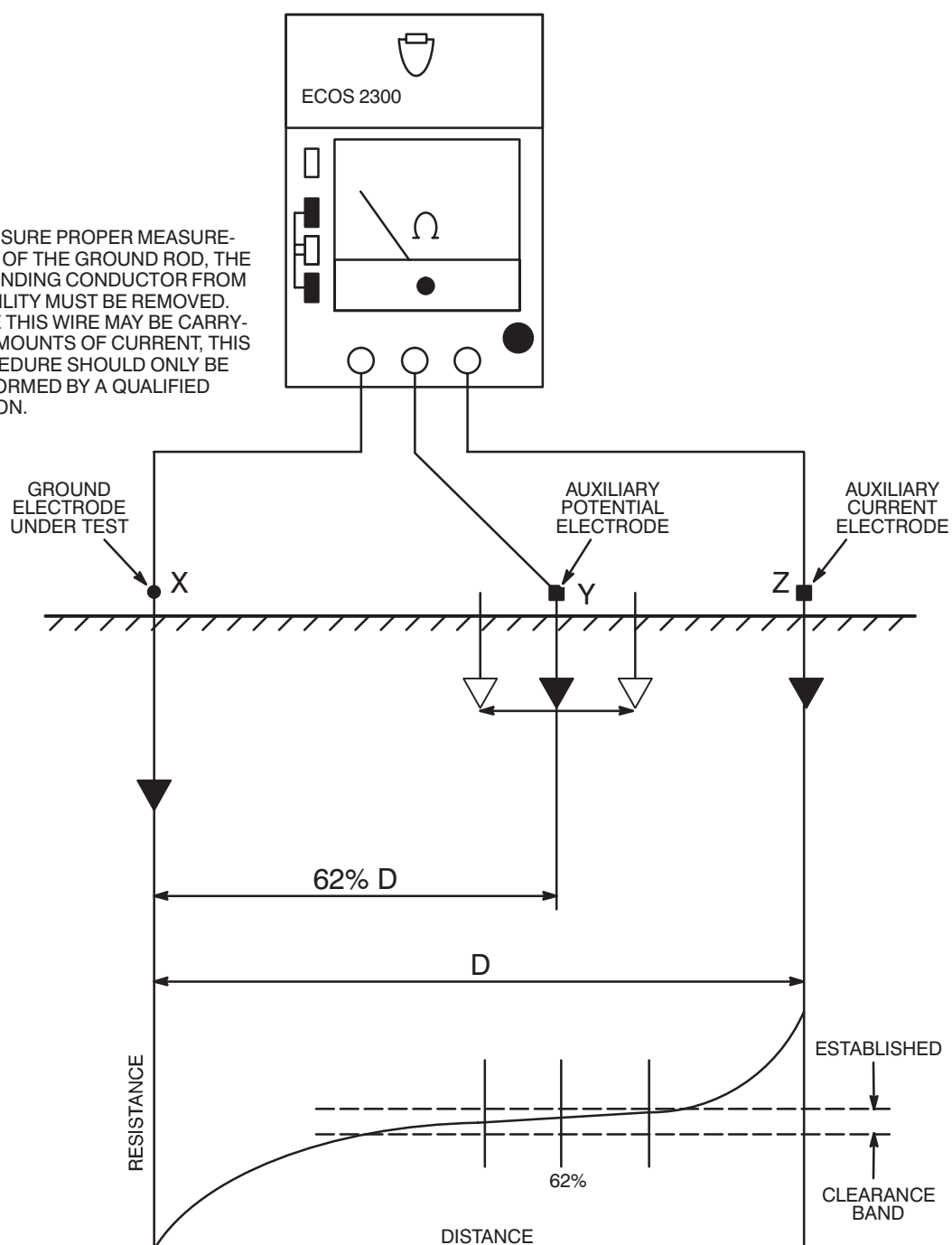
**Illustration 3 – Wire impedance test**

Illustration 4 – Ground rod impedance test

**NOTE:** TO ENSURE PROPER MEASUREMENT OF THE GROUND ROD, THE GROUNDING CONDUCTOR FROM A FACILITY MUST BE REMOVED. SINCE THIS WIRE MAY BE CARRYING AMOUNTS OF CURRENT, THIS PROCEDURE SHOULD ONLY BE PERFORMED BY A QUALIFIED PERSON.



**JOB CARD PIST044-001 – Innova 2000 System Interconnect**

Time: 9 h 00 min – Personnel: 2 field engineers = 18 h 00 of workload

1 of 10

**1 SUPPLIES**

- None.

**2 TOOLS**

- Standard Tools: screwdrivers, drilling machine.

**3 SAFETY PRECAUTIONS**

- Follow the procedure to unpack the spool.
- Attach the power strip on wall to respect regulatory constraints.

**4 PREREQUISITES**

- Gulleys, raceways in place.
- Different subsystems shall be color coded to check the cable distribution in real time:
  - Yellow for POSTIT cabinet.
  - Orange for ACAB cabinet.
  - Red for MPPU cabinet.
  - Purple for X-Ray tube chiller & Detector conditioner – LC gantry.
  - Blue for Gantry.
  - Brown for Table.

## 5 PROCEDURE

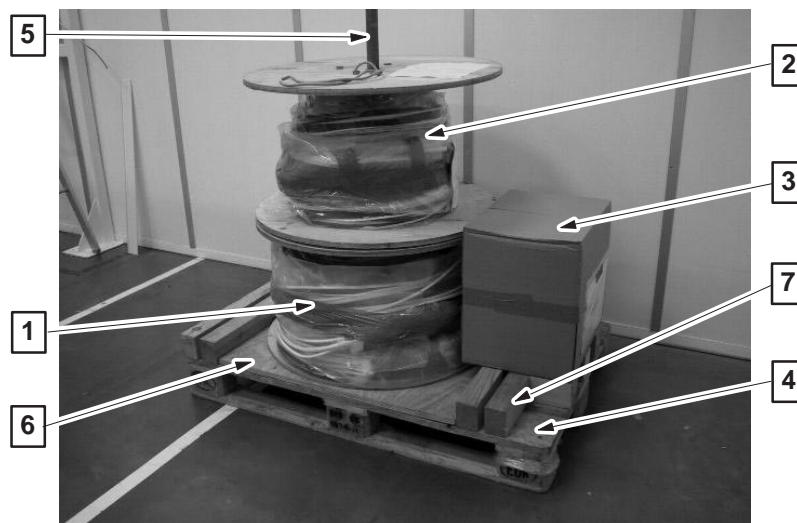
### 5-1 Unpack the spools

The cables sets are delivered on a pallet, lengths were defined during ordering process, with the cable select process. The pallet includes group 1 **[1]** under group 2 **[2]** on two independent spools, the group 3 **[3]** is delivered in a separate box. The pallet could be used as a tool, to unspool the cables sets. This tool **[4]** includes the axis **[5]**, the two wooden forms **[6]** and the support **[7]**.

**WARNING**

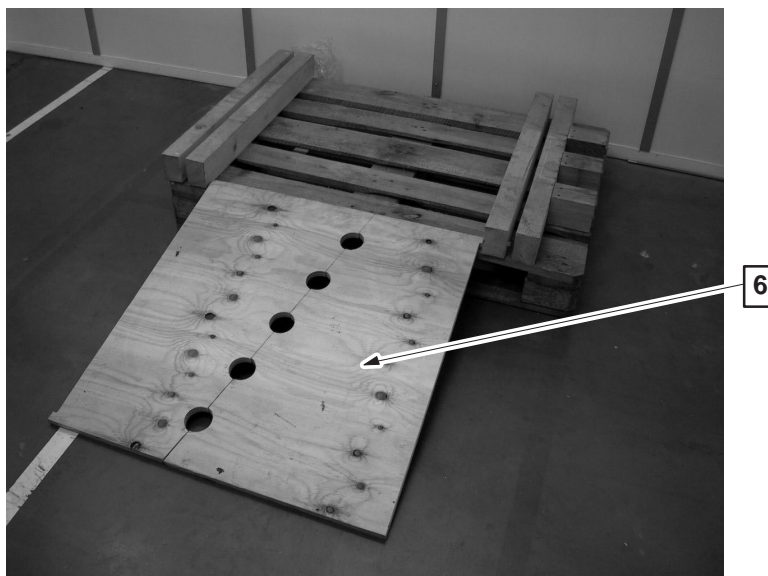
**THE SPOOLS ARE VERY HEAVY, YOU MUST FOLLOW THE FOLLOWING PROCEDURE TO UNWIND THE CABLES.**

Illustration 1 –



- The axis **[5]** shall be extracted from the spools.
- The group 3 **[3]** box shall be put in an other area.
- The upper spool shall be slid down by hands (avoid lifting the full load).
- The lower spool shall be slid down by hands (avoid lifting the full load).





- Use the two wooden forms as a slope to run the spool on the pallet **6**, The cable set will be pulled from the bottom side of the spool.

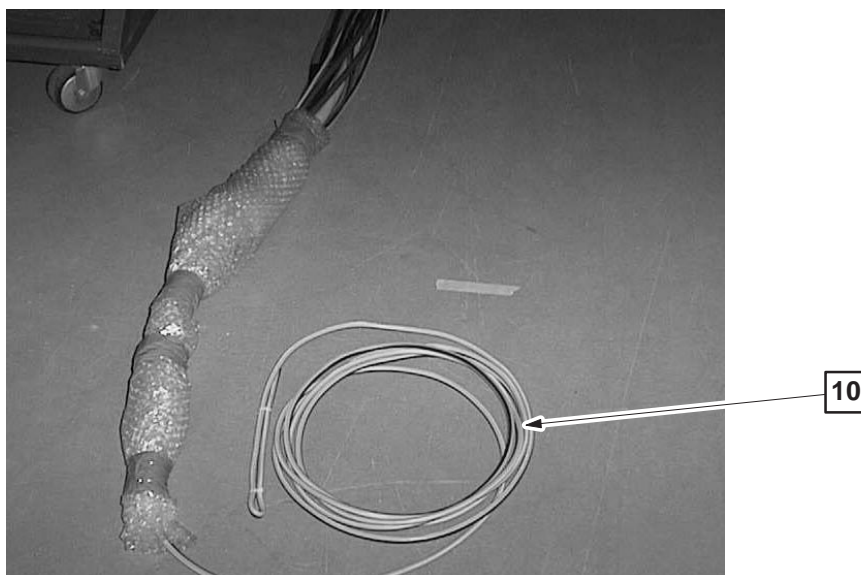




- Put in place the two forms to build side support with anchor **8**.
- Put the axis in the spool and raise the spool to avoid contact with the pallet.
- Spool is ready to extract the cable sets.



- Cables are included in a long plastic bag [9] to limit the cables crossed. This plastic bag can be kept on site in the gullet, depending on local regulations.



- Pull out the cable set from the spool. A specific pull wire [10] is attached to the opposite side of the cable set. This pull wire could be used to pull the full cable set inside the raceway, gullets or other to facilitate the run in hospital.

## 5-2 Run the cable Set Group 1

1. Unroll the cable set from the spool and lie it down between gantry and technical area (power cables are not linked to the cable set).
2. Unpack carefully and lie down the free cables of group 1 (optical fiber, water pipes).
3. Add a “pulling wire” to the cable or cable set to be placed in the duct.
4. Pull an other “pulling wire” through the duct between technical area and gantry.
5. Link the cable or cable set to the “pulling wire”.
6. Pull the “pulling wire” out of the appropriate duct sliding the cable set through the duct.
7. Adjust cable position at gantry and table level.
8. Unlink cable set and “pulling wire”.

**Note:** Depending on local regulations, it can be required to put water pipes and power cables in dedicated ducts.

**Note:** The power cable detector between Omega V and LC (mischart 27722A) is not part of spool but part of group 1.

## 5-3 Run the cable Set Group 2

Group 2 links the Control booth area to the Technical area.

Extract the cable set from the spool, put the cables on the floor.

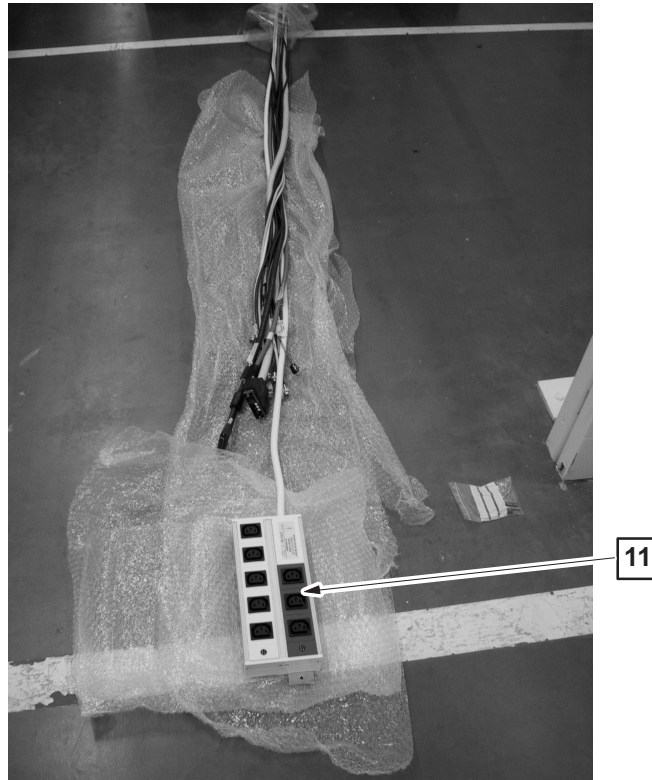
- Suppress, if needed the plastic bag and the connector protections.
- Pull the “pulling wire” **10** in the gullet from the control booth area to the technical area.
- The attachment between “pulling wire” and cable set is a virtual limit to put at the Atlas Cabinet entrance. If done, all cables shall be long enough to reach the ACAB or the POSTIT bulkheads.
- In Control booth area, the power strip **11** shall be placed in the isocenter of the peripherals. All of them will have a power cord of 2.5 meters to reach the power strip.
- Power strip and KVM support have to be attached on the wall – see § NO TAG.
- Set of cables includes 13 cables for ACAB and 1 cable for POSTIT cabinets.

The power strip delivers two powers:

- UPS type: Flat panel, KVM, one free.
- Non UPS type: External CD, Live monitor, roadmap monitor, two free.

**WARNING**

**THE FREE PLUGS DRIVE A MAXIMUM POWER OF 150 VA / PLUG**



#### 5-4 Run the cable Set Group 4

Group 4 links the 3 Monitor suspension to the Technical area.

This cable set of 24 meters is delivered with the suspension.

- Suppress, if needed the plastic bag and the connector protections.
- Run the cable set in the gullet from the 3 monitor suspension to the technical area.
- Keep enough loop to enable the bridge movement.
- Set of cables includes 7 cables for ACAB cabinet.
- If cable set is too short use the extended cable set **12** delivered following select process.
- Extended cable set extends the video lines, the remote control cable and the power distribution.
- The extended cable set has a junction box (yellow box **13** or wall plate) to be connected to the 3 monitor suspension cable set, other side is connected to ACAB bulkhead.



## 5-5 Run the cables for Extra monitors

The extra monitors are delivered with their respective composite cables:

- These two options are independent.
- The cable includes video cable, ground cable and power cable.
- The cable is 24 meters length.
- The cable could be extended with the same option than the 3 monitor suspension.
- Cables are connected to the ACAB bulkhead.

## 5-6 Run the cable Set Group 3

Group 3 links the technical area cabinets to the technical area cabinets.

The cable set is delivered in the box **3** Illustration 1, each cable is individual:

- ACAB and POSTIT shall be close to each other, length reference is ACAB entrance.
- MPPU1 and MPPU2 shall be close to each other.
- Chiller and conditioner shall be at 6 meters maximum from their control subsystem.
- Use the cable rings to run the different cables on subsystems in conformity with the subsystem color coded (See Section 4).
- Set of cables includes:
  - 2 cables between MPPU and Chiller.
  - 3 cables between MPPU and POSTIT Cabinets.

- 
- 6 cables between POSTIT and ACAB cabinets.
  - 2 cables between ACAB cabinet and conditioner.
  - 1 cable between MPPU and ACAB cabinets.
  - 2 cables between ACAB and Phone plug / PDB.

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## **CHAPTER 7 – ADDITIONAL PLANNING AIDS**

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## 1 PRODUCT SHIPPING INFORMATION

Refer to Table 29. To obtain shipping information for components not specified in Table 29, refer to the appropriate component Pre-Installation Manual listed in Chapter 2.

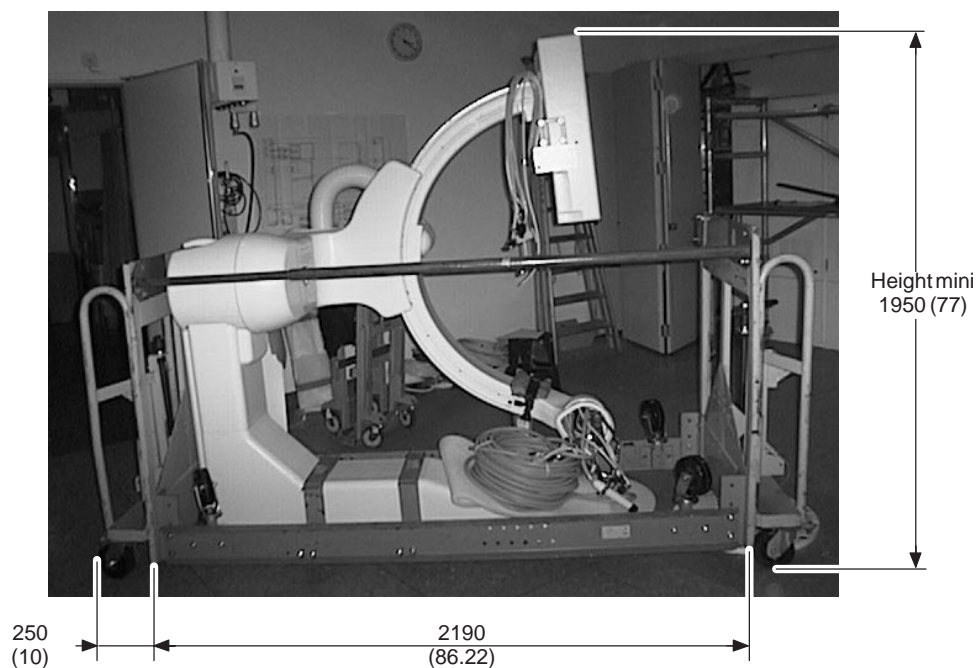
**Table 29 – INNOVA 2000 SYSTEM PACKING**

| PRODUCT OR COMPONENT        | DIMENSIONS<br>INCHES (METERS) |                |                | WEIGHT<br>POUNDS<br>(KILOGRAMS) | METHOD OF SHIPMENT                     |
|-----------------------------|-------------------------------|----------------|----------------|---------------------------------|--|
|                             | Height                        | Width          | Depth          |                                 |  |
| Innova LC Positioner        | 77<br>(1.95)                  | 110<br>(2.79)  | 45.5<br>(1.16) | 2,340<br>(1060)                 | Shipping Dolly.<br>See Illustration 2. |
|                             | 90.5<br>(2.30)                | 54.5<br>(1.38) | 114<br>(2.90)  | 2,645<br>(1200)                 | Air shipment.<br>See Illustration 3.   |
| POSTIT Cabinet              | 82<br>(2.08)                  | 29<br>(0.74)   | 52<br>(1.32)   |                                 | Shipping Dolly<br>See Illustration 4.  |
| Omega Table Base Assembly   | 49<br>(1.24)                  | 38<br>(0.96)   | 84.2<br>(2.14) | 1,290<br>(585)                  | On pallet<br>See Illustration 5.       |
| Omega Table Top Assembly    | 9<br>(0.22)                   | 137<br>(3.47)  | 33<br>(0.84)   | 155<br>(70)                     | On pallet<br>See Illustration 5.       |
| VMP MPPU1                   | 83<br>(2.11)                  | 31.5<br>(0.80) | 43.3<br>(1.10) | 677<br>(307)                    | On pallet<br>Domestic Shipment         |
| VMP MPPU2                   |                               |                |                | 754 lbs<br>(342 kg)             | On pallet<br>Domestic Shipment         |
| Advantx VMP X-Ray generator | 90.5<br>(2.30)                | 25.2<br>(0.64) | 51.2<br>(1.30) | 1,630<br>(740)                  | Air Shipment                           |
| ACAB Cabinet                |                               |                |                |                                 | On pallet<br>Domestic Shipment         |
|                             |                               |                |                |                                 | Air Shipment                           |
| DL User parts               | 41<br>(1.04)                  | 33.9<br>(0.86) | 26.8<br>(0.68) | 220<br>(100)                    | On pallet                              |
| Videostation VCR            | 11.5<br>(0.29)                | 21.3<br>(0.54) | 16.2<br>(0.41) | 210<br>(95)                     | On pallet                              |
| X-Ray tube housing          | 45<br>(1.14)                  | 23.6<br>(0.60) | 30.7<br>(0.78) | 32.6<br>(14.8)                  | Carton                                 |
| Chiller                     | 49.6<br>(1.26)                | 32.3<br>(0.82) | 43.3<br>(1.10) | 410<br>(186)                    | On pallet                              |
| Innova LC Requisites        |                               |                |                |                                 | On pallet                              |
| Innova LC Requisites        |                               |                |                |                                 | On pallet                              |
| Cables                      |                               |                |                |                                 | On pallet                              |

| PRODUCT OR COMPONENT    | DIMENSIONS<br>INCHES (METERS) |                |                 | WEIGHT<br>POUNDS<br>(KILOGRAMS) | METHOD OF SHIPMENT |
|-------------------------|-------------------------------|----------------|-----------------|---------------------------------|--------------------|
|                         | Height                        | Width          | Depth           |                                 |                    |
| TV monitor susp. bridge | 25.2<br>(0.64)                | 38.6<br>(0.98) | 120.5<br>(3.06) | 445<br>(210)                    | On pallet          |
| TV monitor susp. rails  | 15<br>(0.38)                  | 12<br>(0.30)   | 235<br>(5.96)   | 355<br>(160)                    | On pallet          |

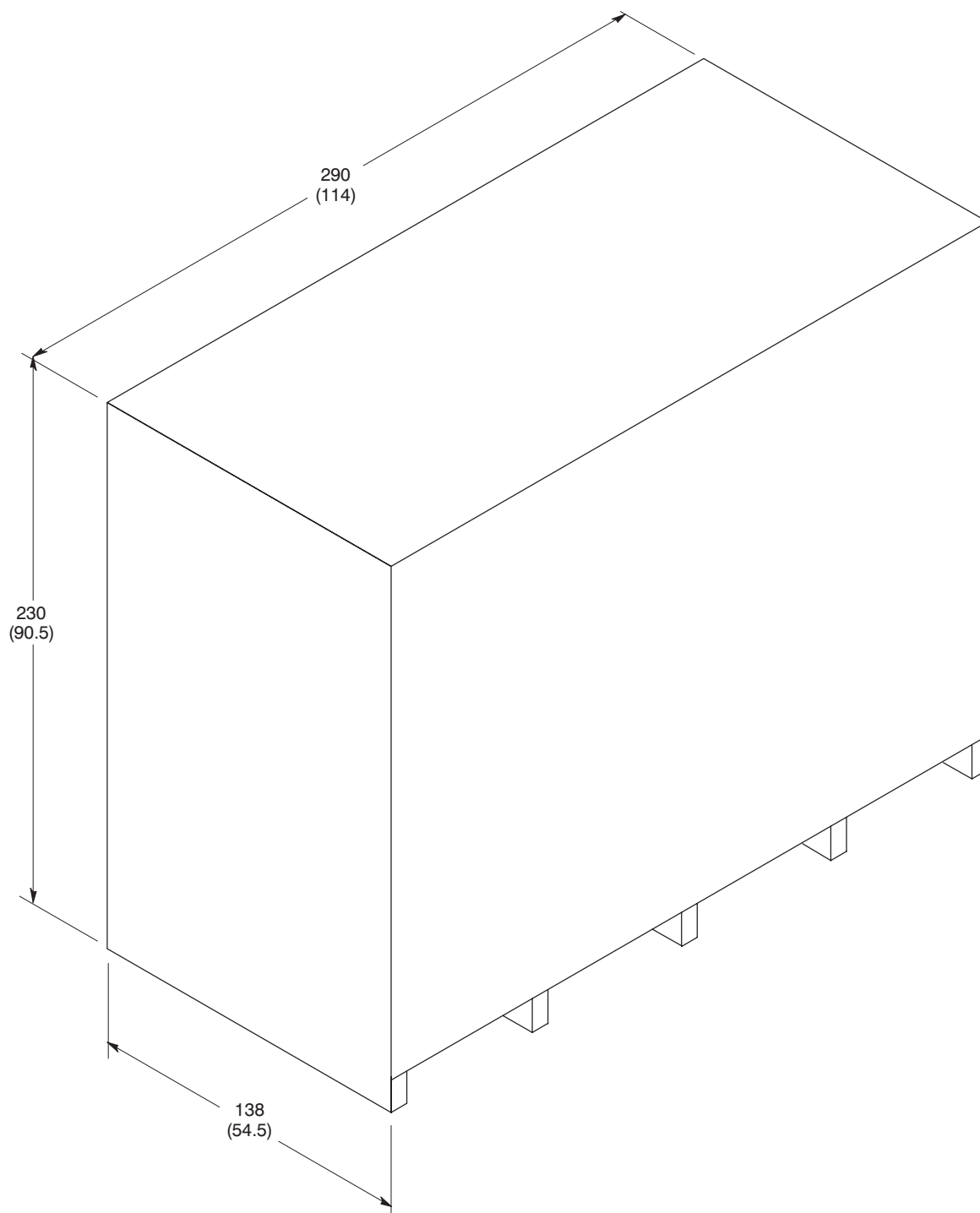
## 2 DETAIL OF INNOVA SHIPPING INFORMATION

Illustration 2 – INNOVA LC POSITIONER GANTRY ON SHIPPING DOLLY



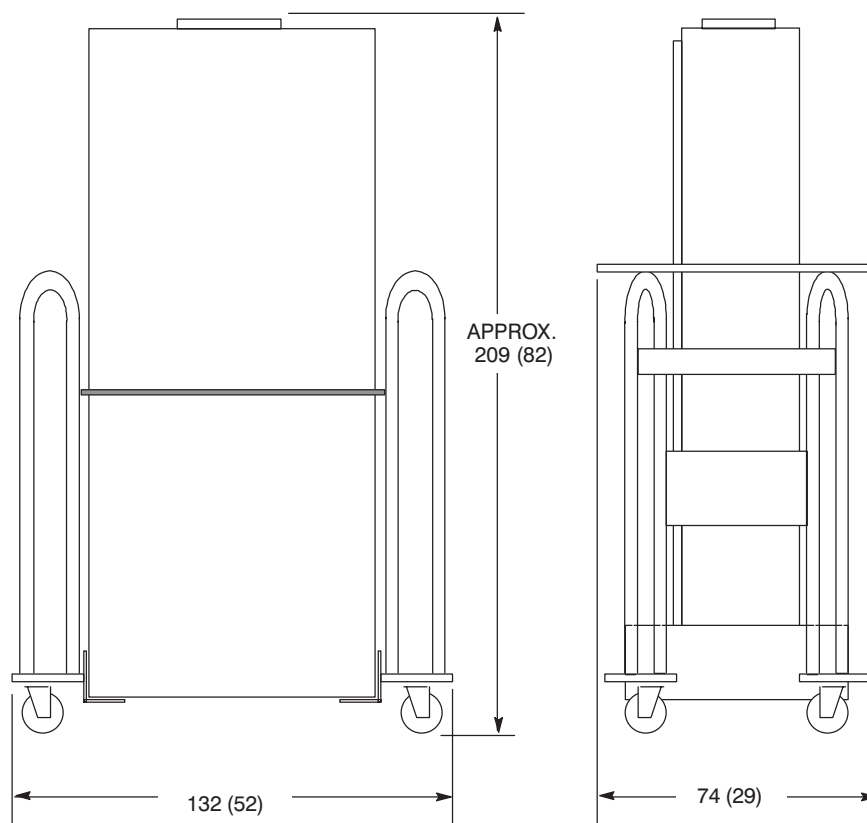
All dimensions are in mm (in inches)

**Illustration 3 – INNOVA LC POSITIONER AIR SHIPMENT**



DIMENSIONS IN CM (INCHES)

**NOT TO SCALE**

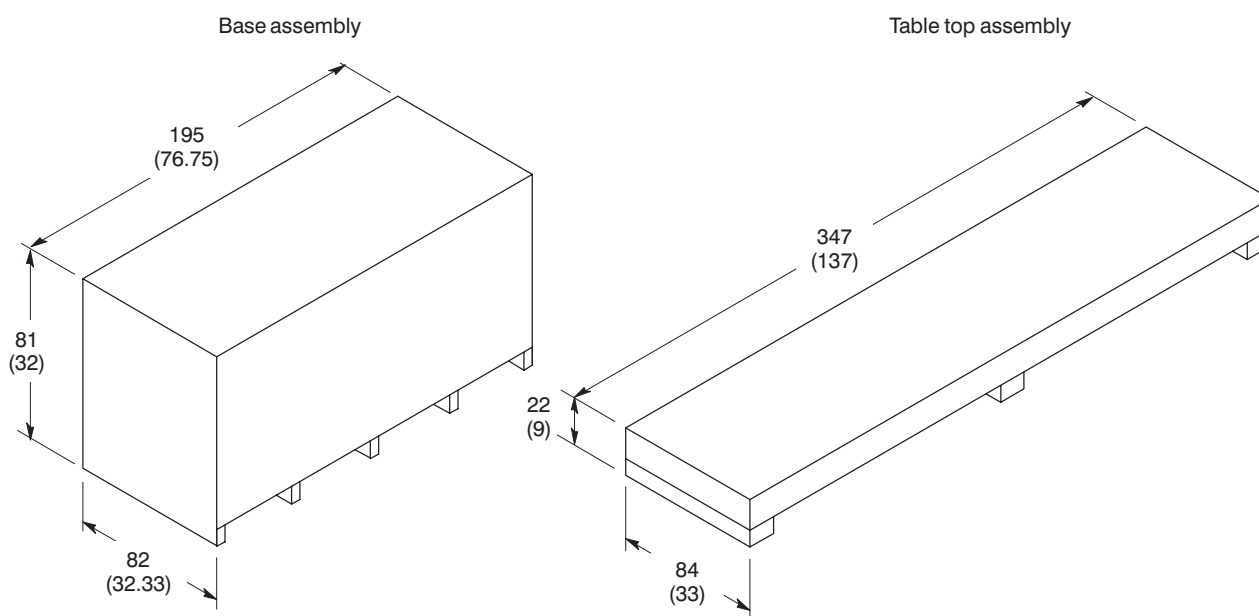
**Illustration 4 – INNOVA LC POSITIONER CABINET ON SHIPPING DOLLY**

DIMENSIONS IN CM (INCHES)

**NOT TO SCALE**

This cabinet is shipped strapped to two dollies. The cabinet requires a door opening of about 82 inches (208 cm) high and 29 inches (74 cm) wide when attached to the dollies.

The shipping weight is of about 81 lbs per dolly.

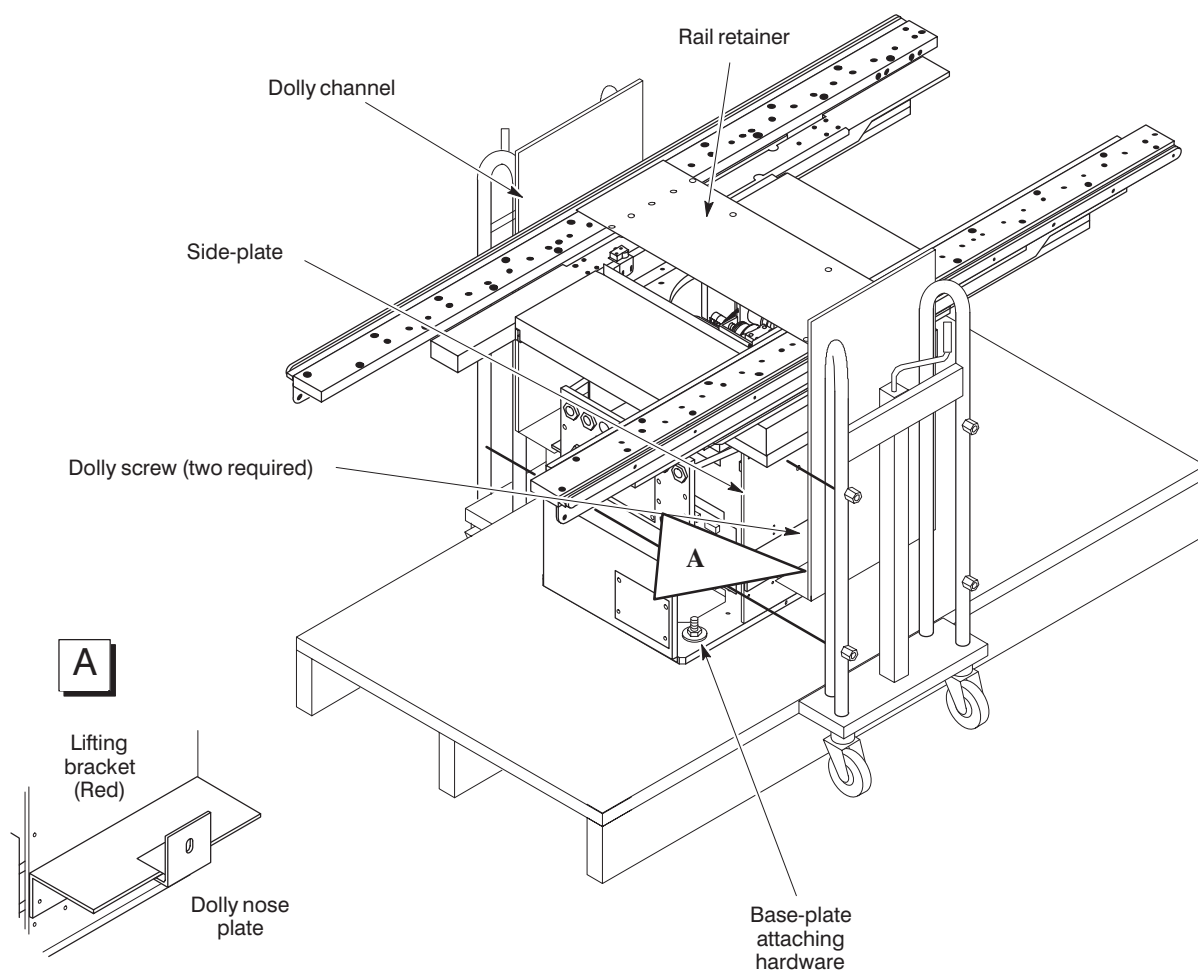
**Illustration 5 – OMEGA SHIPMENT**

DIMENSIONS IN CM (INCHES)

**NOT TO SCALE**

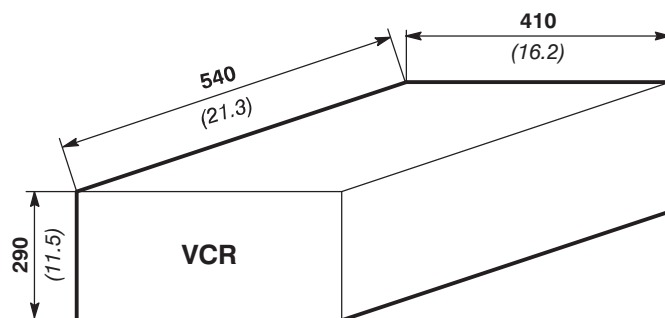


**Illustration 6 – OMEGA USING POSITIONER DOLLIES**



**Illustration 7 – OTHER ELEMENTS PACKAGE**

**Note:** All OEM parts are shipped inside there original boxes group as needed on pallets.



### 3 TOOLS AND TEST EQUIPMENT

Refer to Table 30. To obtain a list of tools and test equipment for components not specified in Table 30, refer to the appropriate component Pre-Installation Manual listed in Chapter 2.

**Table 30 – INNOVA LC SYSTEM REQUIRED TOOLS AND TEST EQUIPMENT**

| PRODUCT OR COMPONENT | TOOL OR TEST EQUIPMENT   | USED FOR                                  | SOURCE | RECEIVED (DATE)          |
|----------------------|--|---|--------|--------------------------|
| Innova LC Positioner | Service Engineer's Tool Case   | General Use                               |        | <input type="checkbox"/> |
|                      | Level, Protractor Type   | Positioner Checks                         |        | <input type="checkbox"/> |
|                      | Plumb Line included in 46-216640G1   | Positioner Checks                         |        | <input type="checkbox"/> |
|                      | Torque Wrench<br>2 to 20 daN.m<br>(15 ft. lbs. to 150 ft. lbs.)  | Positioner Checks                         |        | <input type="checkbox"/> |
|                      | 1/2 inch Ratchet Wrench (2)  | Raise and Lower Positioner shipping dolly |        | <input type="checkbox"/> |
|                      | Wrench, Spanner (46-176584P1)  | High Voltage Cable Installation           |        | <input type="checkbox"/> |
|                      | Laptop Computer (MS-DOS Windows)   | Positioner Configuration and Calibration  |        | <input type="checkbox"/> |
| Status Display       | Same as for Innova LC (Service Engineer's Tool Case)   |   |        |                          |
| Omega IV Table       | Same as for Innova LC (Service Engineer's Tool Case)<br>Fill in any additional tools or test equipment as required |   |        |                          |
|                      |  |   |        | <input type="checkbox"/> |
|                      |  |   |        | <input type="checkbox"/> |
|                      |  |   |        | <input type="checkbox"/> |
| POSTIT Cabinet       | Same as for Innova LC (Service Engineer's Tool Case)<br>Fill in any additional tools or test equipment as required |   |        |                          |
|                      |  |   |        | <input type="checkbox"/> |
|                      |  |   |        | <input type="checkbox"/> |
| X-Ray Head           | Same as for Innova LC (Service Engineer's Tool Case)<br>Fill in any additional tools or test equipment as required |   |        |                          |
|                      |  |   |        | <input type="checkbox"/> |
|                      |  |   |        | <input type="checkbox"/> |
| Control MPPU1        | Same as for Innova LC (Service Engineer's Tool Case)<br>Fill in any additional tools or test equipment as required |   |        |                          |
|                      |  |   |        | <input type="checkbox"/> |
|                      |  |   |        | <input type="checkbox"/> |
| Power MPPU2          | Same as for Innova LC (Service Engineer's Tool Case)<br>Fill in any additional tools or test equipment as required |   |        |                          |
|                      |  |   |        | <input type="checkbox"/> |
|                      |  |   |        | <input type="checkbox"/> |

| PRODUCT OR COMPONENT | TOOL OR TEST EQUIPMENT   | USED FOR  | SOURCE | RECEIVED (DATE)          |
|----------------------|--|---|--------|--------------------------|
|                      | Same as for Innova LC (Service Engineer's Tool Case)<br>Fill in any additional tools or test equipment as required |   |        |                          |
|                      | Ethernet adaptation kit for laptop 2128794   | General use (to be ordered before delivery of system) |        | <input type="checkbox"/> |
|                      |  |   |        | <input type="checkbox"/> |
| Innova Console SCC1  | Same as for Innova LC (Service Engineer's Tool Case)<br>Fill in any additional tools or test equipment as required |   |        |                          |
|                      |  |   |        | <input type="checkbox"/> |
|                      |  |   |        | <input type="checkbox"/> |
|                      |  |   |        |                          |
|                      |  |   |        | <input type="checkbox"/> |
|                      |  |   |        | <input type="checkbox"/> |
| DL User parts        |  |   |        |                          |
|                      |  |   |        | <input type="checkbox"/> |
|                      |  |   |        | <input type="checkbox"/> |
| Monitor Suspension   |  |   |        |                          |
|                      |  |   |        | <input type="checkbox"/> |
|                      |  |   |        | <input type="checkbox"/> |
| Chiller              |  |   |        |                          |
|                      |  |   |        | <input type="checkbox"/> |
|                      |  |   |        | <input type="checkbox"/> |

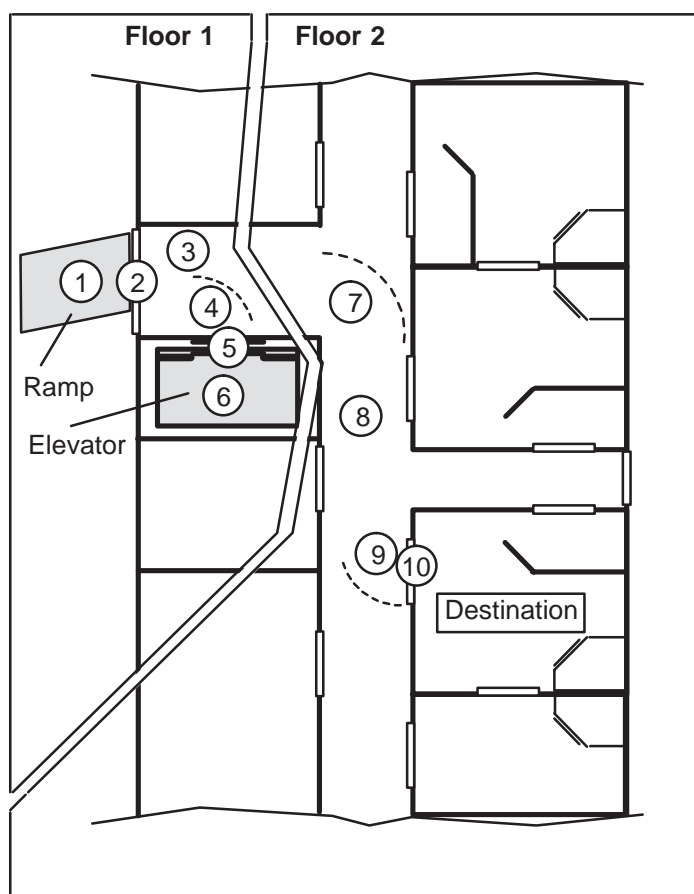
## 4 ROUTE SURVEY

### 4-1 Step One — Sketch

Start preparing Route Survey by sketching a floor plan of the hospital or clinic which will receive the equipment. Include all areas on the delivery route from outside the building to destination. See sample sketch below.

**Reference Numbers** Numbers in circles refer to Route Survey data. The Route Survey is a form on which site data are listed (step 2).

**Illustration 8 – ROUTE SURVEY MAP**



### 4-2 Step Two — Survey

Data concerning the intended delivery route are recorded on the Route Survey in the following pages. Record all loading capacities, corridor widths, door openings, turning radii, flooring materials, elevator sizes, obstructions and so on.

### 4-3 Step Three — Check

Verify equipment can be transported via the route specified in step 1. Compare Route Survey compiled in step 2 to equipment specifications in this and other applicable pre-installation directions.

### Table 31 – ROUTE SURVEY TABLE

[illegible]

## 5 PROCESS ORDER SELECT

### 5-1 Generality

Several components like cables, stationary rails, etc. are length selectable. This selection should reflect the particularities encountered by an Installation Specialist on Site.

### 5-2 XT Stationary Rails

Table 32 – XT stationary rail cat numbers

| Rail length mm (ft) | A             | C   | D   | INBOARD RAILS |
|---------------------|---------------|-----|-----|---------------|
| 3,404 (11'2")       | 5*660.4=3,302 | —   | 51  | B0134JA       |
| 3,505 (11'6")       | 5*660.4=3,302 | 102 | 51  | B0138JA       |
| 3,607 (11'10")      | 5*660.4=3,302 | 203 | 51  | B0142JA       |
| 3,708 (12'2")       | 5*660.4=3,302 | 305 | 51  | B0146JA       |
| 3,810 (12'6")       | 5*660.4=3,302 | 406 | 51  | B0150JA       |
| 3,912 (12'10")      | 5*660.4=3,302 | 508 | 51  | B0154JA       |
| 4,013 (13'2")       | 5*660.4=3,302 | 610 | 51  | B0158JA       |
| 4,115 (13'6")       | 6*660.4=3,962 | —   | 102 | B0162JA       |
| 4,216 (13'10")      | 6*660.4=3,962 | 152 | 51  | B0166JA       |
| 4,318 (14'2")       | 6*660.4=3,962 | 254 | 51  | B0170JA       |
| 4,420 (14'6")       | 6*660.4=3,962 | 356 | 51  | B0174JA       |
| 4,521 (14'10")      | 6*660.4=3,962 | 457 | 51  | B0178JA       |
| 4,623 (15'2")       | 6*660.4=3,962 | 559 | 51  | B0182JA       |
| 4,724 (15'6")       | 7*660.4=4,623 | —   | 51  | B0186JA       |
| 4,826 (15'10")      | 7*660.4=4,623 | 102 | 51  | B0190JA       |
| 4,928 (16'2")       | 7*660.4=4,623 | 203 | 51  | B0194JA       |
| 5,029 (16'6")       | 7*660.4=4,623 | 305 | 51  | B0198JA       |
| 5,131 (16'10")      | 7*660.4=4,623 | 406 | 51  | B0202JA       |
| 5,232 (17'2")       | 7*660.4=4,623 | 508 | 51  | B0206JA       |
| 5,334 (17'6")       | 7*660.4=4,623 | 610 | 51  | B0210JA       |
| 5,436 (17'10")      | 8*660.4=5,283 | —   | 102 | B0214JA       |
| 5,537 (18'2")       | 8*660.4=5,283 | 152 | 51  | B0218JA       |
| 5,639 (18'6")       | 8*660.4=5,283 | 254 | 51  | B0222JA       |
| 5,791 (19')         | 8*660.4=5,283 | 406 | 51  | B0228JA       |

All dimensions are given in millimeter.

Select length of rails from 3,404 mm (134 inches) to 5,791 mm (228 inches) with an increment of 4 inches (102 mm).

Depending on the length, the origin of the several holes is the same, but the ending may differ.

It is recommended to check the reference number on the layout.

Refer to Illustration 9 for mounting hole location according to each length.

### 5-3 Cable and Component Select

To avoid mistakes in performing an unfamiliar process, GEMSE has been involved in assisting Installation Specialist in far countries.

A thorough research has allowed us to produce a matrix of interconnections between components and to draw a corresponding table. Refer to Table 33. This table can help anybody to select a system cable and component set. Now an electronic tool defined for Innova 2000 system is available for all GEMSE's and GEMSA's Installation Specialist and sent to GEMSE's Vascular OCP where all the information is processed.



**All cable information must be sent to Vascular OCP at least 5 weeks before RAD (Request Arrival Date).**

**If no information is received on time, the RAD is shifted to an other date.**

### 5-4 Pre-Installation kit S18721PN BASIC

During site preparation, Installation specialists will need different spare parts.

The pre-installation kit therefore contains the following components:

- Baseplate assembly 2285848 (see page 87),
- Anchor kit Selection 2285050 (see page 87),
- Template select kit 2285054,
- Innova Console mount selection A8010KC or A8010KB,
- In board Stationary rails selection from B0134JA to B0228JA,
- Cable Drape for monitor bundled cables, B2054EK and B2055ED,
- Bridge length selection B2057J (B2057AE (L) or B2057AG (S)),
- Replacement bridge B2057JB (2283393 (S) or 2283392 (L)),
- Set of system cables,
- COOLIX 2200A Chiller 2124035-4,
- Set of pre-installation documentation 2288767,
- HEROIC operator manual 2261287.



**These parts can be sent before SAD (scheduled arrival date) but it is mandatory to send all information needed by this delivery at least 5 weeks before RAD (Request Arrival Date) to Vascular OCP.**

**A partial delivery for the pre-installation kit can be done within 2 weeks before the SAD.**



All dimensions are in millimeters



Table 33 – VASCULAR ROOM CABLE SELECT

| Innova 2000<br>Cable Group Select     |                        | EUROPE/ASIA PROCESS   |   | US PROCESS   |  | Conduit length Meters   |   |   |  |  |  |
|---------------------------------------|------------------------|---|---|--|--|---|---|---|--|--|--|
|                                       |                        | SEND THIS DOCUMENT 5 WEEKS BEFORE SHIPMENT TO VASCULAR OCP BUC<br>FAX 33 1 30 70 40 10 OR INCLUDE IN E-MAIL @MED VASC SELECT CBL                      |   | UPDATE THE FDO IN CSS DATABASE WITH THE SELECTED PARTS   |  | OPTIONS   |   |   |  |  |  |
| TO<br>FROM                            |                        | Gantry & Table  | Pre-cabled Suspension<br>24 m                     | Control Booth  | VAMP & Chillers                              | Pre-cabled 3rd Live Monitor<br>24 m   | Pre-cabled 3rd Roadmap Monitor<br>24 m                            |   |  |  |  |
| System Cabinets<br>ACAB, POSTIT       |                        | <b>Group 1</b><br>2258105-3: 12 m <input type="checkbox"/><br>2258105-4: 18 m <input type="checkbox"/>  |   | <b>Group 2</b><br>2243723-4: 12 m <input type="checkbox"/><br>2243723-5: 18 m <input type="checkbox"/> |  | <b>Group 3</b><br>2258106-3: 2 m <input type="checkbox"/><br>2258106-4: 9 m <input type="checkbox"/>  |   |   |  |  |  |
|                                       |                        |   |   |  |  |   |   |   |  |  |  |
| Option                                | Extra Cables<br>Lenght | <b>Group 4.4</b><br>No Cable required <input type="checkbox"/><br>2266051-3: 6 m <input type="checkbox"/><br>2266051-4: 12 m <input type="checkbox"/> |   |  |  | <b>Group 4.4</b><br>No Cable required <input type="checkbox"/><br>2266051-3: 6 m <input type="checkbox"/><br>2266051-4: 12 m <input type="checkbox"/> |   |   |  |  |  |
|                                       |                        |   |   |  |  |   |   |   |  |  |  |
| COMPONENT<br>SELECTS<br>(PRELIMINARY) |                        | INNOVA CONSOLE MOUNT  | DESK/WALL<br>A8010KC <input type="checkbox"/>     | PEDESTAL<br>A8010KB <input type="checkbox"/>   | X-RAY CHILLER                                | LOW NOISE<br>2124035-2 <input type="checkbox"/>   | HIGH AMBIANT<br>2124035-3 <input type="checkbox"/>                |   |  |  |  |
|                                       |                        | STATIONARY RAIL<br>LENGTH (INBOARD)   | B0134JA<br>(134 in) <input type="checkbox"/>      | B0138JA<br>(138 in) <input type="checkbox"/>   | B0142JA<br>(142 in) <input type="checkbox"/> | B0146JA<br>(146 in) <input type="checkbox"/>  | B0150JA<br>(150 in) <input type="checkbox"/>                      | B0154JA<br>(154 in) <input type="checkbox"/>                        | B0158JA<br>(158 in) <input type="checkbox"/> | B0162JA<br>(162 in) <input type="checkbox"/>           |  |
|                                       |                        |   | B0166JA<br>(166 in) <input type="checkbox"/>      | B0170JA<br>(170 in) <input type="checkbox"/>   | B0174JA<br>(174 in) <input type="checkbox"/> | B0178JA<br>(178 in) <input type="checkbox"/>  | B0182JA<br>(182 in) <input type="checkbox"/>                      | B0186JA<br>(186 in) <input type="checkbox"/>                        | B0190JA<br>(190 in) <input type="checkbox"/> | B0194JA<br>(194 in) <input type="checkbox"/>           | B0198JA<br>(198 in) <input type="checkbox"/> |
|                                       |                        |   | B0202JA<br>(202 in) <input type="checkbox"/>      | B0206JA<br>(206 in) <input type="checkbox"/>   | B0210JA<br>(210 in) <input type="checkbox"/> | B0214JA<br>(214 in) <input type="checkbox"/>  | B0218JA<br>(218 in) <input type="checkbox"/>                      | B0222JA<br>(222 in) <input type="checkbox"/>                        | B0228JA<br>(228 in) <input type="checkbox"/> | B0000JA<br>(No rail required) <input type="checkbox"/> |  |
|                                       |                        | MONITOR TV<br>BRIDGE LENGTH   | 9' 6" INBOARD<br>B2057AE <input type="checkbox"/> | 7' 9" INBOARD<br>B2057AG <input type="checkbox"/>  | ANCHOR KIT                                   |   | ABOVE GRADE<br>Without insert<br>2285051 <input type="checkbox"/> | THROUGH BOLTS<br>Without insert<br>2285646 <input type="checkbox"/> | ON GRADE<br>2286398 <input type="checkbox"/> |  |  |
|                                       |                        |   |   |  |  | ABOVE GRADE<br>With insert<br>2285052 <input type="checkbox"/>  | THROUGH BOLTS<br>With insert<br>2285053 <input type="checkbox"/>  | FLOOR PLATE/<br>BASE PLATE<br>2285632 <input type="checkbox"/>      |  |  |  |
| SITE NAME <input type="text"/>        |                        | INSTALLATION SPECIALIST NAME <input type="text"/>   |   | FDO NUMBER <input type="text"/>  |  | PHONE NUMBER <input type="text"/>   |   |   |  |  |  |
| DATE: <input type="text"/>            |                        | DRAWING REF. <input type="text"/>   |   | ROOM TYPE <input type="text"/>   |  | INNOVA <input type="checkbox"/>   |   |   |  |  |  |

**6 PRE-INSTALLATION CHECKLIST**Return to attention : **ORGANIZATION** GEMS Buc**1. General Information****INNOVA 2000 System**

Site Name: .....  
 Site Contact: .....  
 Address: .....  
 .....

GE Contacts: Sales representative: ..... Field Engineer: .....  
 Regional Support: ..... Site Planner: .....  
 Installation Specialist: .....

Requested Arrival Date (site ready): ..... Scheduled Arrival Date: .....  
 First Patient planned date: .....  
 Today's date: .....

Period Legend: O: Ordering L: Layout definition P: Pre-installation start I: Installation start

**2. Customer & Sales**

|  | Period |   |   |   | Great |   |   |   | Poor |  | Yes | No |
|--|--------|---|---|---|-------|---|---|---|------|--|-----|----|
|  | O      | L | P | I | ++    | + | = | - | --   |  |     |    |
| Price Book or GTC reference used for FDO definition:   |        |   |   |   |       |   |   |   |      |  |     |    |
| FDO already known in GE Data Base ?  | *      |   |   |   |       |   |   |   |      |  | O   | O  |
| How are "NL" parts on FDO (<2 is great, >8 is poor – modulo 2)                                     | *      |   |   |   | O     | O | O | O | O    |  |     |    |
| How are "Cat Numbers" coming from structure other than INNOVA (<2 is great, >8 is poor – modulo 2) | *      |   |   |   | O     | O | O | O | O    |  |     |    |
| Operator Manual language agreed by customer ?  | *      |   |   |   |       |   |   |   |      |  | O   | O  |
| Application specialist training planned  |        |   | * |   |       |   |   |   |      |  | O   | O  |

**3. Service – Regional/Local Area**

|   | Period |   |   |   | Great |   |   |   | Poor |  | Yes | No |
|---|--------|---|---|---|-------|---|---|---|------|--|-----|----|
|   | O      | L | P | I | ++    | + | = | - | --   |  |     |    |
| System PIM received by site planner                             | *      |   |   |   |       |   |   |   |      |  | O   | O  |
| ISERV known by FE / RSE / CII                                   | *      |   |   |   |       |   |   |   |      |  | O   | O  |
| Service and Diagnostic tools available in country               |        |   | * |   |       |   |   |   |      |  | O   | O  |
| Installation team trained on the INNOVA system, EHS & GE policy |        |   | * |   | O     |   | O |   | O    |  | O   | O  |
| GE team and/or Subcontractor agreement on SAD                   | *      |   |   |   | O     |   | O |   | O    |  | O   | O  |
| Specific day identified for delivery                            | *      |   |   |   |       |   |   |   |      |  | O   | O  |

**4. Equipment & Site (Environmental)**

|   | Period |   |   |   | Great |   |   |   | Poor |  | Yes | No |
|---|--------|---|---|---|-------|---|---|---|------|--|-----|----|
|   | O      | L | P | I | ++    | + | = | - | --   |  |     |    |
| Truck easy access   |        |   | * |   |       | O | O | O |      |  |     |    |
| Hospital room easy access: height, width, steps, elevator, corridor | *      |   |   |   | O     |   | O |   | O    |  |     |    |
| Room layout defined & agreed  |        |   | * |   |       |   |   |   |      |  | O   | O  |
| Select cables, rails .... Defined and sent to source pole           |        |   | * |   |       |   |   |   |      |  | O   | O  |
| 2 day pre-installation planned                                      |        |   | * |   |       |   |   |   |      |  | O   | O  |
| Is a loading doc accessible for delivery?                           |        |   | * |   |       |   |   |   |      |  | O   | O  |

|  | Period |   |   |   | Great |   |   |   | Poor |   | Yes | No |
|--|--------|---|---|---|-------|---|---|---|------|---|-----|----|
|  | O      | L | P | I | ++    | + | = | - | --   |   |     |    |
| <b>Exam room well prepared:</b>  |        |   |   |   |       |   |   |   |      |   |     |    |
| Ceiling: Rails in place & plastic covers available   |        |   | * |   |       |   |   |   |      |   | O   | O  |
| Ceiling light agreed by radiologist  |        | * |   |   |       | O | O | O |      |   | O   | O  |
| Wall , Floor: Raceways, conduits in place  |        |   | * |   | O     |   | O |   |      | O | O   | O  |
| Floor: Anchor holes done for gantry (Qty 16) & table (Qty 4)   |        |   | * |   | O     |   |   |   |      | O | O   | O  |
| Wall, Floor: Raceways , conduits in place for Accessories & options (Injector, Extra monitors, ECG, ...) |        |   | * |   |       | O | O | O |      |   | O   | O  |
| Windows: reduced light with black curtains   |        |   | * |   | O     |   | O |   | O    |   |     |    |
| Gases: available on wall, optionally on anesthesia support   |        |   | * |   |       | O | O | O |      |   | O   | O  |
| User power plugs with ground connected to our reference  |        |   | * |   |       |   |   |   |      |   | O   | O  |
| Anesthesia support ground or Injector ground connected to our reference                                  |        |   | * |   |       |   |   |   |      |   | O   | O  |
| Be sure that examination room complies with the 27°C max   |        | * |   |   | O     | O | O | O | O    |   |     |    |
| <b>Technical area ready:</b>   |        |   |   |   |       |   |   |   |      |   |     |    |
| Wall / floor:  |        |   |   |   |       |   |   |   |      |   |     |    |
| Raceways, conduits in place for cable routing the way through to ceiling, gantry and control booth       |        |   | * |   | O     | O | O | O | O    |   | O   | O  |
| False floor installed for easy access to cables  |        |   | * |   | O     | O | O | O | O    |   |     |    |
| Cable access ready for the 4 cabinets and the 2 conditioners   |        |   | * |   | O     | O | O | O | O    |   |     |    |
| Humidity / temperature – is AC completed   |        |   |   |   |       |   |   |   |      |   |     |    |
| Be sure that the temperature in the technical area will not exceed 32°C (for 7.5kW)                      |        |   | * |   | O     | O | O | O | O    |   | O   | O  |
| Electrical:  |        |   |   |   |       |   |   |   |      |   |     |    |
| PDB cabinet or equivalent in place   |        |   | * |   |       |   |   |   |      |   | O   | O  |
| Cabling done for ON/Off room button, Injector power, emergency stop, X-ray on room light                 |        |   | * |   |       |   |   |   |      |   | O   | O  |
| Direct phone line available  |        |   | * |   |       |   |   |   |      |   | O   | O  |
| Shelves for documentation and local service tools  |        |   | * |   |       |   |   |   |      |   | O   | O  |
| <b>Control Booth ready:</b>  |        |   |   |   |       |   |   |   |      |   |     |    |
| Wall floor:  |        |   |   |   |       |   |   |   |      |   |     |    |
| Raceways, conduits in place for cable routing (from technical area & under table top)                    |        |   | * |   |       |   |   |   |      |   | O   | O  |
| False wall available behind table top to mask power boxes and cables                                     |        |   | * |   | O     | O | O | O | O    |   |     |    |
| Table top:   |        |   |   |   |       |   |   |   |      |   |     |    |
| Large enough to support peripherals >1 M <sup>2</sup> (1,5 *0,6m mini)                                   |        |   | * |   |       |   |   |   |      |   | O   | O  |
| Holes in table top to mask the cables under the table  |        |   | * |   | O     | O | O | O | O    |   |     |    |
| <b>Others:</b>   |        |   |   |   |       |   |   |   |      |   |     |    |
| Paints & flooring finalized  |        |   | * |   | O     |   | O |   | O    |   | O   | O  |
| Black Circle Qty :   |        |   |   |   |       |   |   |   |      |   |     |    |
| A – G =  |        |   |   |   |       | A | B | C | D    | E | F   | G  |

Pre-Installation could start if:

Column F = 29

When System is powered up for the first time, the completed form shall be returned to:

BODELET Philippe GEMS

Fax: (33) 01 30 70 95 90 through June 2001

Difficulty of installation = (2 x A) + B – C – (2 x D)

&gt; 24 = Okay

18 – 24 = + 1 day to complete

12 – 18 = + 2 days to complete

6 – 12 = + 3 days to complete

&lt; 6 = + 4 days to complete.

## CHAPTER 8 – IP ADDRESSING PROCESS

To obtain an IP address, contact the following for your pole:

### **GEMSAM:**

Contact: OnLine Center–Americas  
Network Products and Services (NP&S)

Telephone: 1-800-321-7937

Press “1” for the Online Center. Follow the phone tree instructions to select X-Ray modality. When prompted, select the option for obtaining an IP address.

### **GEMSE:**

Use the new mail form called “INSFORM.xls” or “INSFORM.txt for obtaining an IP Address.

If you have questions or need clarification regarding the use of this form, do not hesitate to ask the Operation support OnLine.

Contact: OnLine Center–Europe

Telephone: +33 (0)1 30 83 13 00

FAX: +33 (0)1 30 70 99 70

**Note:** The INSITE FORM is on the formatted sheet (.xls) or text sheet (.txt) that can be found on the Service CD–Rom.

### **GEMSA:**

Contact: OnLine Center–Asia  
Network Products and Services (NP&S)

Telephone: (81) 426 56 0033

FAX: (81) 426 56 0053

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**REVISION HISTORY**

| REV | DATE             | REASON FOR CHANGE   | PAGES |
|-----|------------------|---|-------|
| 0   | June 12, 2002    | Initial release, VCP version created from 2276550-100   | 154   |
| 1   | October 30, 2002 | Manual updated for Heroic 2   | 174   |
| 2   | October 28, 2003 | Manual updated for Heroic 2 VCP   | 176   |
| 3   | March 30, 2004   | ACAB audible noise level modification (spr EURge01205)  | 176   |
| 4   | March 30, 2004   | Chapter 3 – Section 1-3: IEC601-1-2 Electromagnetic Standard Compliance updated (spr EURge018509) | 176   |
| 5   | January 18, 2005 | Includes reservations for potential upgrades  | 176   |

| NUMBER         | SIZE | REVISION |
|----------------|------|----------|
| 2337741-100TPH | A4   | 5        |

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