

Pre-Installation Manual

Discovery RF180



Discovery RF180
Pre-Installation Manual
5793724-1EN

Revision 6
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Revision History

Revision	Date	Reason for change
01	May 2018	First Version, changes from draft. Base plate torque values and drawing, Wall stand dimensions, overvoltage image translation, materials and tools review. Underfloor drawings update, RSVP requirements, information for room layout, torque values for wall stand. Critical components data, base plate installation, room height requirements, wifi detector, details in base plate installation.
02	November 2018	July 2018 Small room packaging, access point, OTS bridge dimension. September 2018 Base plate installation, dimensions and weights, doors requirements, ducts dimension, in-room secondary console. November 2018 Wall stand center of gravity, door sizes, 4" floor example, OTS fixation example, in-room package, door sizes.
03	April 2019	Par. 4.3.3.2: added grout pad note. Par. 4.3.3.3 note added. OTS drawings, notes for UPS and MSP for US.
04	July 2019	Floor flatness requirements. Base plate dolly.
05	October 2019	Correction drawing 40833.A page 29. Addition of Advantech monitor. Added overall dimensions for monitor suspension
06	March 2020	Par. 5.3.5 service area correction; par. 4.3.1 added a note; added subparagraph to par. 4.3.3.4 , modified par. 5.2.1 and par. 5.3.1. for Monitor Suspension and OTS data.

Manufacturer: GENERAL MEDICAL MERATE S.p.A.
Via Partigiani, 25
24068 Seriate (BG) – Italy
Tel. +39 035 45 25 311
Fax +39 035 29 77 87 / 29 95 37
www.gmmspa.com

Distributor: GE Medical Systems, SCS
283, rue de la Minière, 78530 Buc, France

The original version of this publication was drafted in English and will be referred to for any controversy regarding interpretation of the eventual corresponding versions, translated into other languages.

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1. General Notes



Important note

THIS SERVICE MANUAL IS AVAILABLE IN ENGLISH ONLY.

IF A CUSTOMER'S SERVICE PROVIDER REQUIRES A LANGUAGE OTHER THAN ENGLISH, IT IS THE CUSTOMER'S RESPONSIBILITY TO PROVIDE TRANSLATION SERVICES.

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

FAILURE TO HEED THIS WARNING MAY RESULT IN INJURY TO THE SERVICE PROVIDER, OPERATOR OR PATIENT FROM ELECTRIC SHOCK, MECHANICAL OR OTHER HAZARDS.

1.1. Damage in transportation

All packages should be closely examined at time of delivery. If damage is apparent, write "Damage in Shipment" on ALL copies of the freight or express bill BEFORE delivery is accepted or "signed for" by a distributor representative or hospital receiving agent. Whether noted or concealed, damage MUST be reported to the carrier immediately upon discovery, or in any event, within 14 days after receipt, and the contents and containers held for inspection by the carrier.

A transportation company will not pay a claim for damage if an inspection is not requested within this 14 day period. Call the distributor service department, immediately after damage is found. At this time be ready to supply name of carrier, delivery date, consignee name, freight or express bill number, item damaged and extent of damage.

1.2. Certified electrical contractor statement

All electrical Installations that are preliminary to equipment positioning shall be performed by licensed electrical contractors. In addition, electrical feeds into the Power Distribution Unit shall be performed by licensed electrical contractors. Other connections between pieces of electrical equipment, calibrations and testing shall be performed by qualified Systems personnel. The products involved (and the accompanying electrical installations) are highly sophisticated, and special engineering competence is required.

In performing all electrical work on these products, the distributor shall use their own specifically trained field engineers. All of distributor's electrical work on these products shall comply with the requirements of the applicable electrical codes.

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

1.3. Important X-Ray protection



X-RAY EQUIPMENT AND DEVICES CAN BE DANGEROUS FOR THE HEALTH OF BOTH PATIENTS AND OPERATORS UNLESS PROPER SAFETY MEASURES ARE STRICTLY OBSERVED.

Although this equipment was designed and manufactured according to the most up-to-date safety standards, the source of X-rays is always dangerous when the operator is not properly qualified or trained. Excessive exposure to X-rays damages the human body.

Therefore, all the necessary precautions must be taken to prevent unauthorized or unskilled personnel from operating this equipment, thus jeopardizing themselves and other people. Do not use the equipment if you have not received appropriate training in the correct and safe use of the equipment itself by the manufacturer or any of his appointed instructors.

Before executing any operation, the persons qualified and authorized to operate this equipment must be informed about the protection and safety measures established by the International Committee for Radiological Protection, as well as any other relevant national Standards.

1.4. Omissions & Errors

The manufacturer declines all responsibility with regard to the proper functioning of the equipment, should the installation or the maintenance of it be executed by unauthorized personnel.

The X-ray system's installation instructions are included in the service manual, which is a separate item from the Operator's manual.

2. Preface

2.1. Typographic conventions

In order to facilitate the reading of the manual, different styles and types were used.

The text identified by bullets indicates:

- Instructions to be executed according to the sequence specified.

The text in italics inside a frame indicates:

Useful supplementary information for the technician.

The following icons are also used:



Important information

It is advisable that extra attention be paid in reading the topics identified with this symbol.

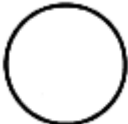
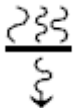


WARNING

The topics identified with this icon regard aspects of safety for the patient and/or operator.

2.2. Warning symbols on the equipment

	Warning symbol that indicates potential generic danger for the equipment or the operator. It invites the operator to check the equipment documentation for further details.
	Warning symbol that invites operators to follow the instructions for using the device on which the symbol itself is applied.
	Hazard symbol that indicates X-ray radiation exposure.
	Warning symbol that indicates electrical components which are sensitive to electrostatic discharge.

	Warning symbol that indicates live electrical parts with a possible risk of electric shock.
	Warning symbol that indicates that fingers may be crushed.
	Symbol of protective earth (ground).
	“ON” symbol (power).
	“OFF” symbol (power).
	“ON” / “OFF” symbol (push-push).
	Symbol of applied part B type.
	Symbol of filtration.
	Symbol that indicates electrical and electronic components which must be collected separately.
	Fluoroscopy and radiography foot pedal connector fitting
	The screws labelled with ETS symbol (Essential To Safety) are involved in safety during installation or parts replacement. The technician is asked to label with a red marker each of these screws.

3. Introduction

3.1. Objective and Scope of pre-installation

This document is intended as a guide and informational resource for planning and properly preparing a location for the system installation. This document is intended to assist the customer and installer in properly preparing a site for product installation.

3.2. Responsibilities of the Purchaser

The purchaser is responsible for the completion of the “pre-installation” requirements. This includes the procurement and installation of all required materials and services to get the room ready for the product installation.

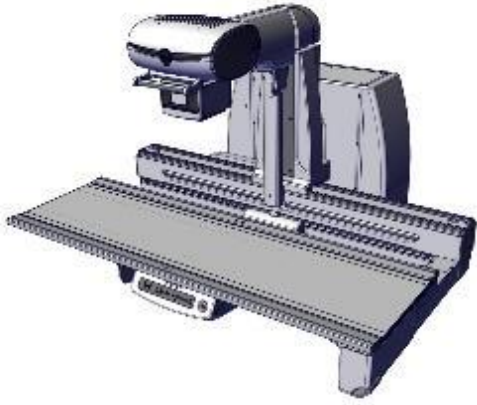
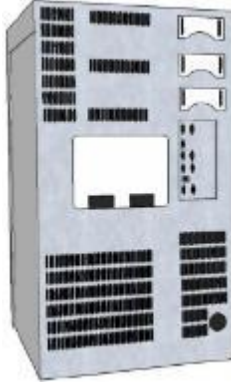
This responsibility includes providing:

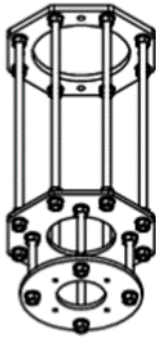
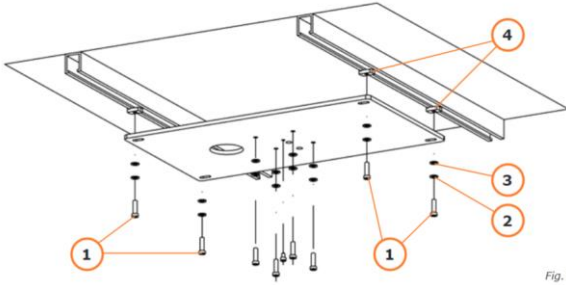
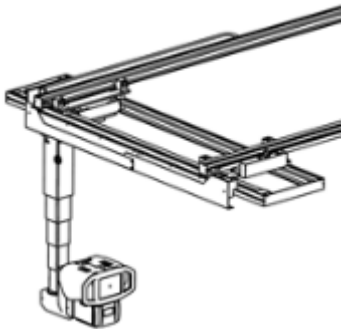
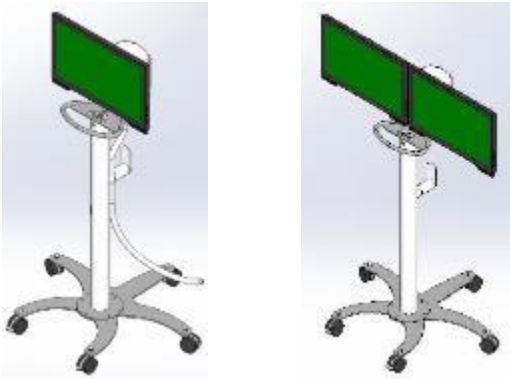
- A clean and safe work environment for the product installation (finished floor, ceiling, walls, and proper room lighting).
- A location suitable for the product installation. See Chapter 2 - Suite/Room Requirements.
- Suitable support structures in the floor, walls, or ceiling necessary for the mounting of the product and/or its components. Installation of conduit ducts and/or raceways necessary to route cables safely. System Physical Characteristics and Chapter 6 – [Planning Electrical Connections](#).

Note: Unistrut / halfen / equivalent rails and means necessary to anchor of the Mavig Substructure and the Mavig mounting plate for the “in room ceiling suspension on fixed point” (rails, anchors, bolts, screws, etc.) are not delivered with the kit and should be provided and designed under customer responsibility.

- Electrical power and grounds of specified quality and reliability. See Chapter 8 – [System Facility Power and Grounds](#).
- Electrical power of the required voltage, including an emergency-off safety switch in the room. Power and ground cables to the PDU.
- Properly installed and sized junction boxes, including covers and fittings at locations required and called out in the architectural drawings.

3.3. What You Will Receive (System Components)

	
Table assembly with table cabinet	Table main control console
	
Digital system (with UPS*) *UPS provided by GMM except for US (specific version for US available with CAT Number S13411PS)	H.V. Indico IQ Generator
	
Single / Double monitor suspension (option)	S13441MM – Single Monitor Suspension S13441RF – Radshield on fixed point (option)

	 Fig. 9
S13441MF – Substructure for ceiling fixation of the in-room monitor suspension fixed point. In case of installation on concrete ceiling preferred.	S13441MP – Mounting Plate for ceiling fixation of the In-room monitor suspension fixed point (including the items 1, 2, 3 and 4) In case of installation on Unistrut / Halfen / equivalent rails preferred.
	
OTS (option)	Wall stand (option)
	
In-room secondary Console (option)	Single / Double monitor cart (option)

Product Name	Catalog Number
Discovery RF180 system	S13441RS
Digital system (RF4343 detector + Monitor)	S13431AB
Digital system (RF4343FL detector + Monitor) (not for US)	S13431AC
DIN Monitor (Option)	S13441GM
RAD Wifi detector (Gadox) 3543EZ and access point (not for US)	S13431FG
RAD Wifi detector (CSI) 3543EZ and access point	S13431FH
RAD Wifi detector (CSI) 2430EZ and access point	S13431FK
High Voltage Generator (65kW – 1 tube) (not for US)	S13431BR
High Voltage Generator (80kW – 1 tube) (not for US)	S13431BT
High Voltage Generator (65kW – 2 tube)	S13431E
High Voltage Generator (80kW – 2 tube)	S13431EA
Single Monitor Suspension Radshield on fixed point (option)	S13441MM S13441RF
Substructure for ceiling fixation of the in-room monitor suspension fixed point.	S13441MF
Mounting Plate for ceiling fixation of the In-room monitor suspension fixed point.	S13441MP
(Option) Single Monitor Ceiling Suspension including Bridge & Carriage	S13431NG
(Option) Dual Monitor Ceiling Suspension including Bridge & Carriage	S13431NH
Radshield for ceiling suspension (Option)	S13441SR
In-Room single monitor on Cart (option)	S13431DG
UPS unit (Version provided by GMM except for US)	S13441PE
Wall Stand (option) Tilting Left hand (not for US)	S13441TL
Wall Stand (option) Tilting Right hand (not for US)	S13441TR
Wall Stand (option) NON tilting Left hand	S13441WL
Wall Stand (option) NON tilting Right hand	S13441WR
Overhead Tube Suspension OTS (option)	S13411EB
In-room secondary console (option)	S13441RC
UPS (US SYSTEM ONLY not provided by GMM)	S13441PS
MDP (US SYSTEM ONLY not provided by GMM)	S13411MD

4. Room requirements

4.1. Environmental

The unit has been designed to operate in a room respecting the following environmental conditions:

Device	Storage temperature	Operating Temperature
Digital system (PU included)	-20 ... +60 °C	+10 ... +40 °C
Detector Pixium 4343FL	-25 ... +55 °C	+15 ... +35 °C
Detector Pixium RF4343	-25 ... +55 °C	+15 ... +35 °C
Detector Pixium 3543EZ	-10 ... +55 °C	+15 ... +35 °C
Detector Pixium 2430EZ	-10 ... +55 °C	+15 ... +35 °C
Generator	-20 ... +50 °C	+10 ... +40 °C
Table	-20 ... +60 °C	+15 ... +40 °C
Monitor (Eizo)	-20 ... +60 °C	+5 ... +35 °C
Monitor (Advantech)	-20 ... +60 °C	+0 ... +40 °C
UPS (not valid for US)	-15 ... +50 °C	+0 ... +40 °C
Monitor suspension (option)	-20 ... +70 °C	+10 ... +40 °C
OTS (option)	-20 ... +60 °C	+15 ... +40 °C
Wall Stand	-20 ... +70 °C	+10 ... +40 °C
Wall Stand (tilting)	-20 ... +70 °C	+10 ... +40 °C
Vacutec DAP (Dose Area Product)	-20 ... +60 °C	+10 ... +40 °C
Access Point	-20 ... +65 °C	+0 ... +40 °C
UPS (US ONLY, not provided by GMM)	-25 ... +55 °C	+0 ... +40 °C
MDP (US ONLY, not provided by GMM)	-25 ... +70 °C	+0 ... +40 °C

Device	Storage Humidity	Operating Humidity (non cond.)
Digital system (PU included)	10 ... 90%	30 ... 75%
Detector Pixium 4343FL	5 ... 95%	20 ... 75%
Detector Pixium RF4343	5 ... 95%	20 ... 75%
Detector Pixium 3543EZ	5 ... 95%	20 ... 80%
Detector Pixium 2430EZ	5 ... 95%	20 ... 80%
Generator	5 ... 85%	20 ... 80%
Table	10 ... 80%	20 ... 80%
Monitor (Eizo)	10 ... 90%	20 ... 80%
Monitor (Advantech)	5 ... 90%	Ta = 40 °C, 90% RH
UPS (not valid for US)	10 ... 90%	0 ... 95%
Monitor suspension (option)	10 ... 95%	20 ... 75%
OTS (option)	10 ... 80%	20 ... 80%
Wall Stand	10 ... 90%	30 ... 75%

Device	Storage Humidity	Operating Humidity (non cond.)
Wall Stand (tilting)	10 ... 90%	30 ... 75%
Vacutec DAP (Dose Area Product)	10 ... 80%	10 ... 80%
Access Point	5 ... 95%	10 ... 90%
UPS (US ONLY, not provided by GMM)	0 ... 95%	0 ... 96%
MDP (US ONLY, not provided by GMM)	5 ... 95%	0 ... 95%

Device	Storage Pressure	Operating Pressure
Digital system (PU included)	700 ... 1060hPa	700 ... 1060hPa
Detector Pixium 4343FL	500 ... 1060hPa	700 ... 1060hPa
Detector Pixium RF4343	500 ... 1060hPa	700 ... 1060hPa
Detector Pixium 3543EZ	500 ... 1100hPa	700 ... 1100hPa
Detector Pixium 2430EZ	500 ... 1100hPa	700 ... 1100hPa
Generator	700 ... 1060hPa	700 ... 1060hPa
Table	500 ... 1060hPa	500 ... 1060hPa
Monitor (Eizo)	200 ... 1060hPa	700 ... 1060hPa
Monitor (Advantech)	500 ... 1013hPa	500 ... 1013hPa
Monitor suspension (option)	500 ... 1060hPa	700 ... 1060hPa
OTS (option)	500 ... 1060hPa	700 ... 1060hPa
Wall Stand	700 ... 1060hPa	700 ... 1060hPa
Wall Stand (tilting)	700 ... 1060hPa	700 ... 1060hPa
Vacutec DAP (Dose Area Product)	800 ... 1060hPa	800 ... 1060hPa
UPS (US ONLY, not provided by GMM)	700 ... 1060hPa	700 ... 1060hPa
MDP (US ONLY, not provided by GMM)	794 ... 1060hPa	794 ... 1060hPa

Device	Supply Voltage	Mains Frequency	Momentary Current	Operating Current	Operating Power
Digital system (PU and detector included)	230Vac ± 10 %	50/60 Hz	1.5A	1.3A	350 VA
Generator IQ (65kW)	400Vac 3-phase ± 10 %	50/60 Hz ± 2 %	135A/phase	---	300 VA stand-by 95 kVA peak

Device	Supply Voltage	Mains Frequency	Momentary Current	Operating Current	Operating Power
	480Vac 3-phase ± 10 %	50/60 Hz ± 2 %	110A/phase	---	300 VA stand-by 95 kVA peak
Generator IQ (80kW)	400Vac 3-phase ± 10 %	50/60 Hz ± 2 %	168A/phase	---	300 VA stand-by 115 kVA peak
	480Vac 3-phase ± 10 %	50/60 Hz ± 2 %	140A/phase	---	300 VA stand-by 115 kVA peak
Monitor (for all the devices)	200Vac 240Vac	50/60 Hz	---	0.5A	21 W typ. 57 W max.
Monitor (Advantech)	100 – 240 Vac (power supply)	50/60 Hz	---	---	65 W max
OTS	220/230/240Vac (±10%) Single phase	50/60 Hz ± 3 %	---	---	100 VA stand-by 1370 VA peak
Table	400V 3-phase ± 10 %	50/60 Hz ± 2 %	3.5A phase	N.A.	600 VA stand-by 4000 VA peak

Device	Heat dissipation	
	W	BTU/hour
Digital system (PU and detector included)	320	1092
Generator (IQ)	22 (standby) 1026 (during fluoro)	75 (standby) 3500 (during fluoro)
UPS (average) (not valid for US)	50	171
Monitor (single)	57	149
Monitor (single Advantech)	65 max	222 max
OTS (option)	350	1190
Table	700 (average)	2388 (average)
Wall Stand	N.A.	N.A.

System noise in stand-by: < 45 dB

System noise in working conditions: < 65 dB

4.2. Magnetic/Electrical Field Sensitivity and Electromagnetic Emissions

All the products or components of the system meet EMI and EMC requirements and IEC 60601-1-2 (International). Because X-ray equipment produces radiation, special precautions may need to be taken or special site modifications may be required. This manual does not make recommendations regarding radiation protection. It is the purchaser's responsibility to consult a radiation physicist for advice on radiation protection in X-ray rooms.

4.3. Structural

4.3.1. Doors requirements

Make reference to the following examples pictures.

Component	Minimum Doors size requirements (using provided dollies, pallets, etc)				Minimum corridor depth	
	Height		Width		Table delivered in	
	cm	inches	cm	inches	One piece	Two pieces
Table	185	73	120	47.2	≥ 120 cm (47.2 inches)	≥ 115 cm (45.3 inches)
			117	46	≥ 122 cm (48 inches)	≥ 117 cm (46 inches)
			102	40.2	≥ 160 cm (63 inches)	≥ 130 cm (51.2 inches)
			95	37.4	NO	≥ 135 cm (53.1 inches)

In case the doorway is between 102 - 105 cm, be aware that the Spot Film Device (SFD) has to be removed temporarily from the table beam during maneuvered thru the doorway. Refer to the Installation Manual, section 10.2.1. (P/N 5793725-1EN).

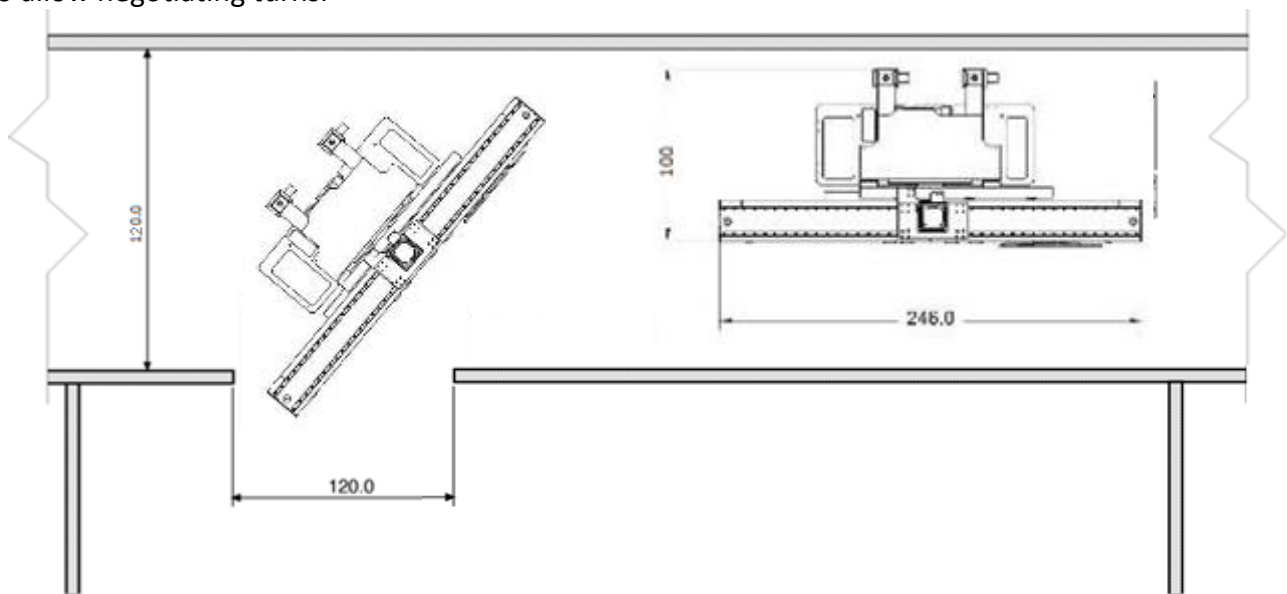
Component	Minimum Doors size requirements (using provided dollies, pallets, etc)				Minimum corridor depth	
	Height		Width			
	cm	inches	cm	inches	inches	cm
Overhead Tube Suspension (and Monitor suspension transversal bridge)	180	71	90	35	≥ 102.4	≥ 260
			140	55	≥ 71	≥ 180
Generator	132	52	71	28	---	---
Digital system	---	---	80	31.5	---	---
Wall stand	---	---	80	31.5	---	---

Table – delivered in one piece

The unit can be shipped in a whole lot that can be maneuvered through a 102 – 120-cm doorway.

In case of 102cm doorway, the table main frame will require about 1.60 m minimum hallway width to allow negotiating turns.

In case of 120-cm doorway the table main frame will require about 1.20-mt. minimum hallway width to allow negotiating turns.



(Measure in cm)

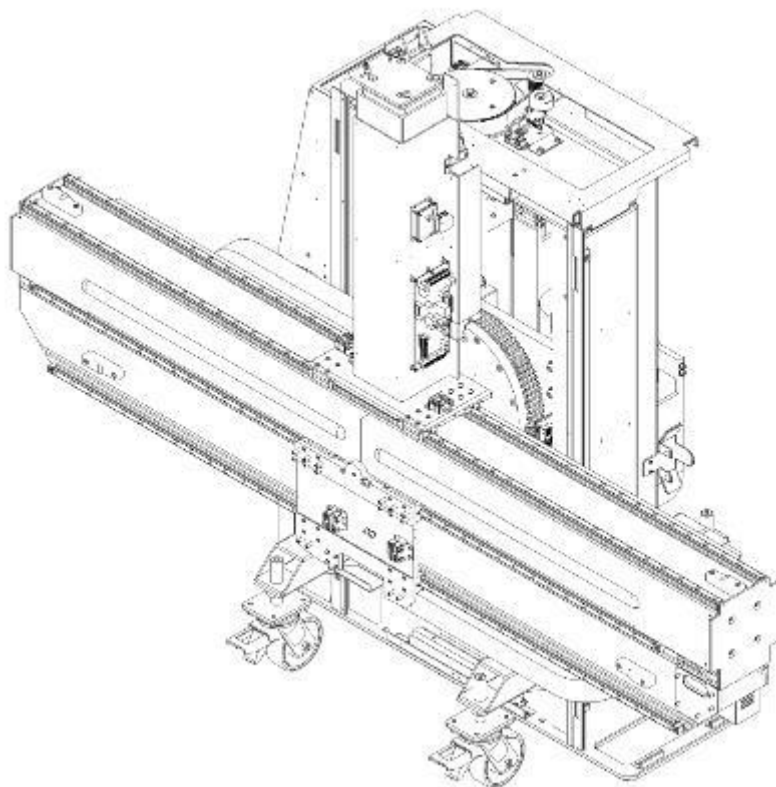
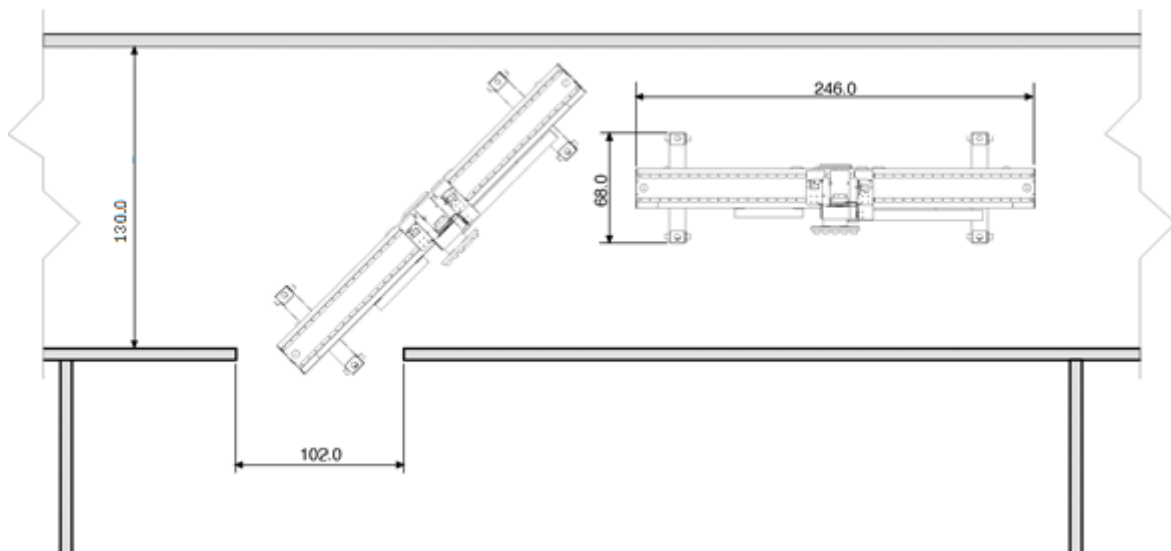


Table – delivered in two pieces

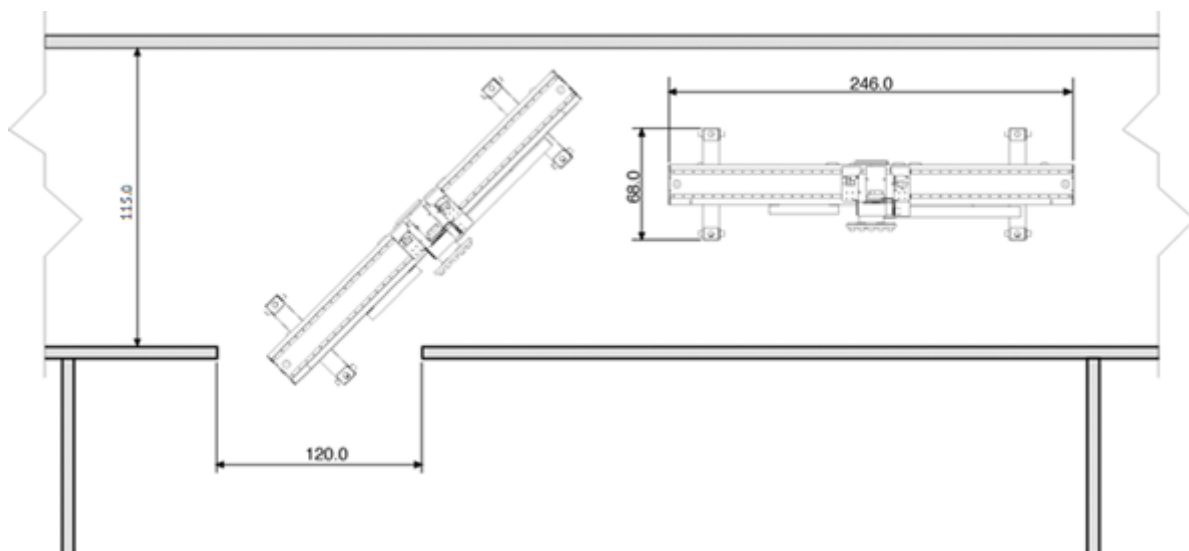
The unit can be divided into few assemblies, in most cases the two major assemblies could be maneuvered through a 102-cm doorway.

The most limiting item is the table main frame that will require about 1.30-mt. minimum hallway width to allow negotiating turns.



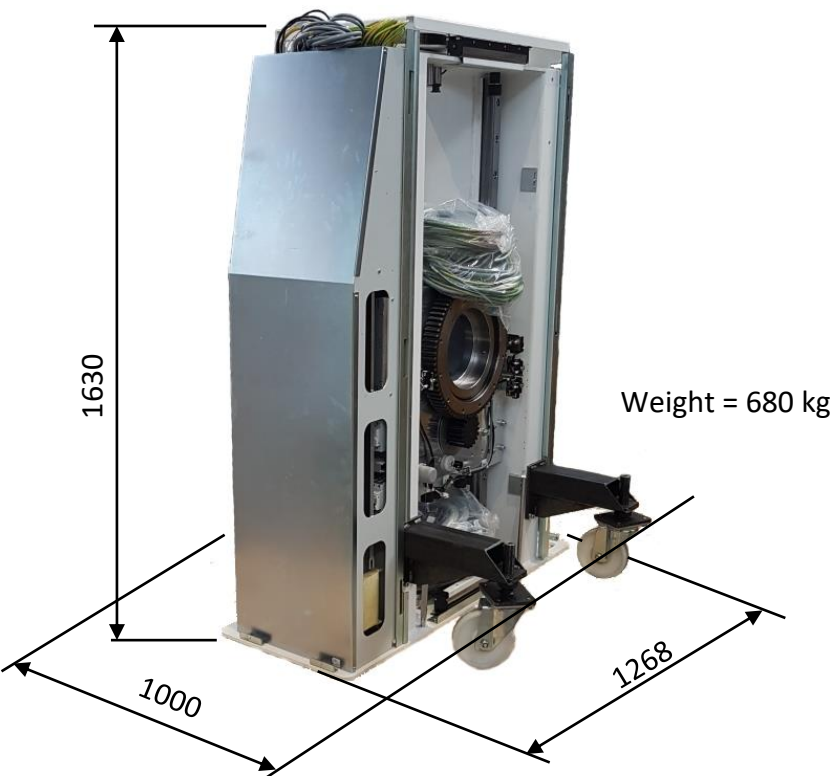
Measure in cm.

In case of 120cm doorway, the table main frame will require about 1.15 m minimum hallway width to allow negotiating turns.

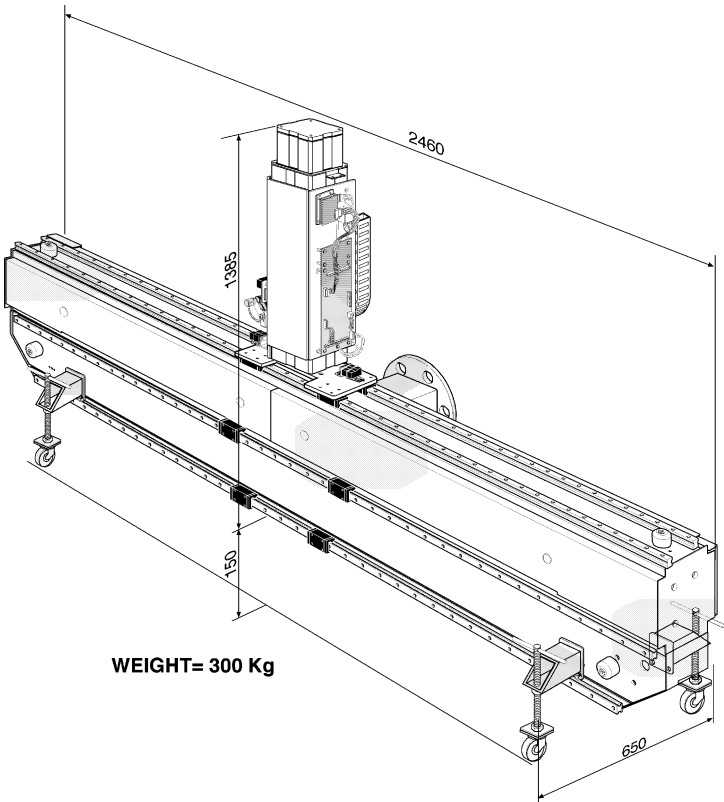


Measure in cm.

In case the unit is shipped into two pieces, please find sizes and weight in the following pictures:



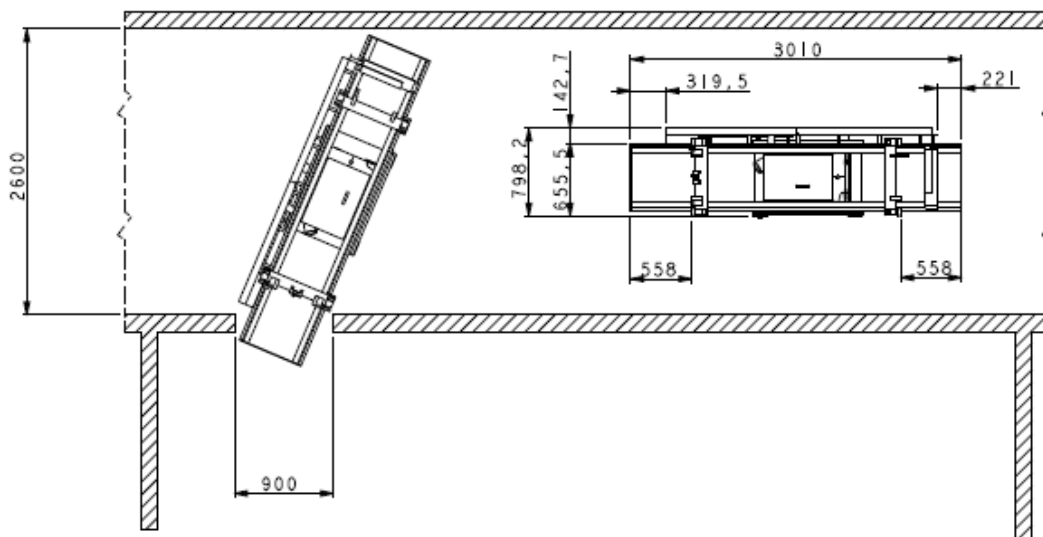
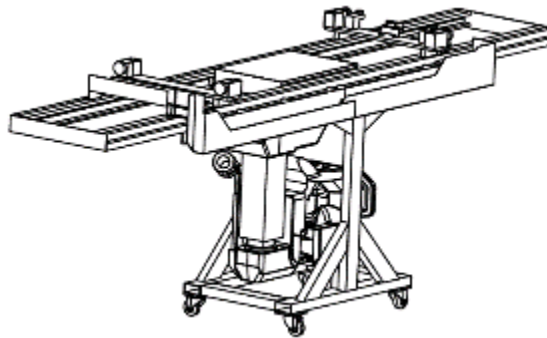
Measures in mm.



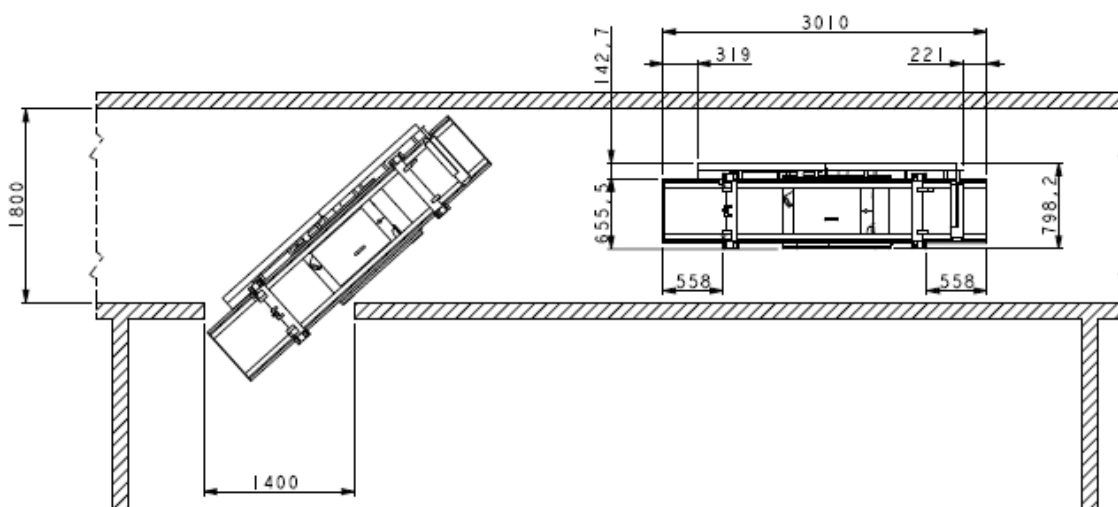
Measures in mm.

OTS

The same constraints can be considered valid also for monitor suspension transversal bridge.



Measures in mm



Measures in mm

4.3.2. Room height requirement

The minimum room height for the table must take into consideration the most protruding object from the ceiling that is in the system area (for example the rails for OTS).

The minimum room height for the table is 260 cm (103"). In any case, the recommended room height to move the system with software limitations is 300 cm (118").

However, for a system with OTS and wall stand, full range of wall stand use is achieved with a ceiling height of 292 cm. A higher height will limit the lower end of the useful travel range of the wall stand.

For all OTS dimensions and travels make reference to par. 5.2, page 37.

Parameter value	Minimum ceiling height [cm]	Table constrains
Value of the ceiling height.	From 260 to 269	WARNING! Tilting limitation! It is not possible to reach a complete tilting. The tilting angulation will be limited to a value less than +90° and -90°. It is not possible to reach the maximum focal distance and the maximum table elevation together. It means that if you need the maximum focal distance you cannot use the maximum table elevation and vice versa.
	From 270 to 299	A complete table tilting is always possible but with some software limitations. It means that during the tilting movement the focal distance is automatically reduced. The tilting movement is automatically stopped if the longitudinal position of the column introduces a collision risk with the ceiling. In this case it is necessary to manually move the column to place it in the middle of the longitudinal area. Because the maximum table height is 295 cm when it is in horizontal position, it is not possible to reach the maximum focal distance and the maximum table elevation at the same time. The recommended room height is 300 cm. NOTE: IF AN OTS KALOS OTS HAVE TO BE INSTALLED IN THE ROOM WITH FIXATION RAILS ABOVE THE RF180 SYSTEM, THE MIN CEILING HEIGHT TO HAVE THE COMPLETE TABLE TILTING IS 293cm (9.6 feet).
	From 300 to 319	As in the previous condition a complete table tilting is always possible with software limitations. With this ceiling height it is possible tilt the table with the column in the middle of the longitudinal area but with the maximum focal distance and maximum table elevation.

Parameter value	Minimum ceiling height [cm]	Table constrains
	From 320 to 359	With the minimal focal distance, it is always possible to tilt the table with the column in any longitudinal position.
	From 360 to ∞	Table without limited movements. It is possible to tilt the table in every condition, maximum elevation and focal distance with the column in every longitudinal position.

	Minimum ceiling height [cm]	Wall Stand constrains
Tilting wall stand	From 260 to 264	Wall Stand Arm Support option not applicable
	From 265 to ∞	Wall Stand Arm Support option applicable
Not tilting wall stand	From 240 to 279	Wall Stand Arm Support option not applicable
	From 280 to ∞	Wall Stand Arm Support option applicable

Minimum ceiling height [cm]	Monitor suspension
From 260 to 320	Complete vertical travel is possible
From 320 to ∞	For rooms higher than 320 cm / 126 in, we strongly suggest a ceiling construction between structural ceiling and vertical column.

Minimum ceiling height [cm]	Overhead Tube Suspension constrains
From 260 to 292	The vertical travel must be manually reduced because the ceiling height is not enough.
From 292 to 300	OTS can use the complete vertical travel.
From 300 to ∞	OTS with limited lower end of the useful travel range of the wall stand is possible.

4.3.3. Floors, Ceilings and Walls

4.3.3.1. Seismic Requirements

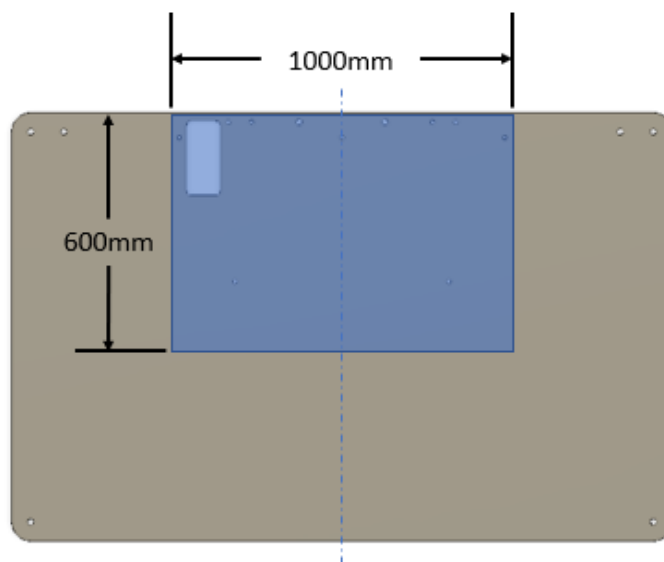
Seismic requirements are determined and specified by the hospital structural engineer of record and approved by the specific state or country agency.

4.3.3.2. Floor Flatness Requirements

See below figure for graphical definition of “flatness”. To insure a sufficient contact surface with the floor, the below shaded region under the base plate must be within 1.5mm or 1/16” flatness (i.e. no local concave or convex regions >1.5mm from flat). The critical region of flatness is:

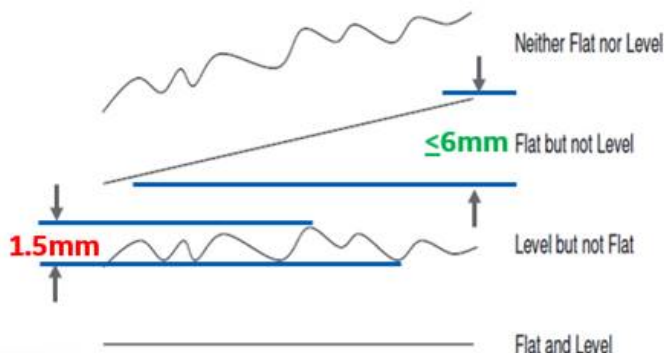
- 1000mm wide and centered longitudinally under base
- 600mm deep against the rear of the base plate

Outside this region, shims may be used along the perimeter of the base plate to improve surface contact.



Floor Levelness Requirement

See below figure for graphical definition of “levelness”. Discovery RF180 requires a floor levelness of 6mm or ¼”: the maximum height difference between any two points on the floor under the baseplate with respect to perfect level measured via self-leveling laser, may not exceed 6mm or ¼”.



Grout Pad Concession

In case of any violations of the above flatness/levelness requirements, it is **STRONGLY** recommended the floor be leveled by the contractor to insure proper contact of base plate. This will greatly improve the overall install quality and timing.

In the event this is not possible, a concession will be required. Self-levelling products may be an option, including:

- Keratech Eco Flex (Kerakoll S.p.A.)
- “Ardex K15”, available at GE, orderable with SCAT S0915SW – reference installation procedure GE DOC2242533
- Henry 565 which may be locally available

However, a concession will be required to review the specifics of the room and whether grout will be a viable solution.

Strictly follow the instructions provided in the products’ technical data sheets.

It is recommended to entrust this job to field professionals who will be able to suitably prepare the floor surface and to set up the containment structures for the solidification of these materials.

Upon solidifying, these products can usually be drilled with low speed drills until reaching the slab or by performing a sequence of drilling, starting from smaller diameter drills and increasing up to the diameter desired. Please ask the permission to the installation responsible team before drilling.

4.3.3.3. Floor Requirements when using provided Table Floor Anchors

The maximum pullout force per provided anchor was calculated assuming:

- A regular weight concrete having a minimum of 28-day compression, class min C20/C25 (UNI EN 206-1).
- Concrete thickness should be at least 200mm. For 100 and 140mm thickness refer to 5.4.2.
- Anchors installed to the required hole depth of 130mm. Refer to 5.4.2 for others examples.
- Center of anchor hole to concrete edge distance 106.5 mm (valid for all the examples).

Make sure to obtain concrete compression strength data before using floor anchors.

NOTE: make reference to par. 5.4.2 for 140mm or 100mm concrete thickness examples.

4.3.3.4. Ceiling requirement for OTS and/or Monitor suspension installation

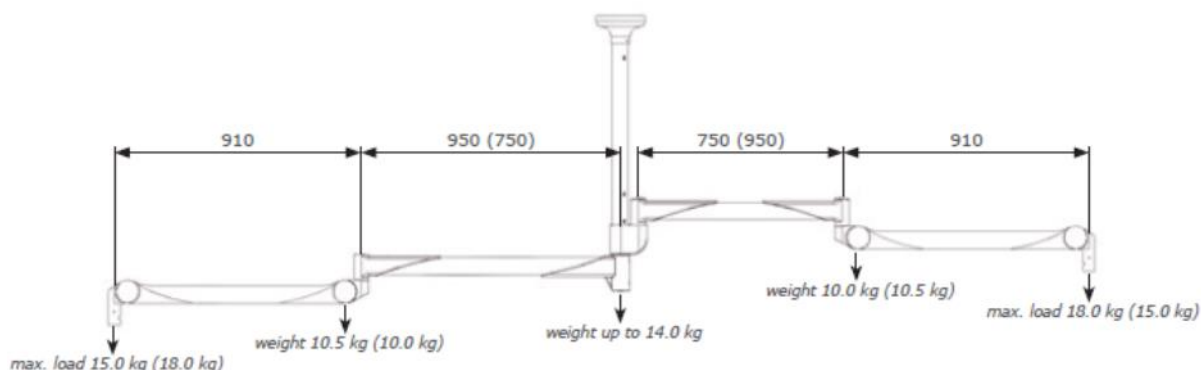
The construction and load capability of the ceiling must be sufficient for the installation of the unit.

It is the responsibility of the customer or structural engineer to evaluate the best fixation system to be used for the ceiling rails/mounting systems as described in the following layout example under consideration of the options to be installed.

A good ceiling levelness is required. For OTS, a maximum of 7 mm height displacement along the ceiling longitudinal rails is allowed and can be corrected with the use of shims to ensure the rails are as close to perfect level as possible.

Aluminum rails support the Overhead Tube Suspension and the in-room LCD Monitor bridge used in X-ray rooms.

Monitor Suspension, that will be included:



measured in mm

The installation of the single/double Monitor option is to be installed to the upper mounting point of the suspension.

An optional Radshield has to be mounted to the lower mounting point.

Reference - For details on ceiling requirements for stationary rails, refer to Chapter [5 System Physical Characteristics](#).

4.3.3.4.1. In-room Ceiling suspension – Single monitor on fixed point

The In-room Ceiling monitor suspension on fixed point can be attached to the solid ceiling using one of the two following options:

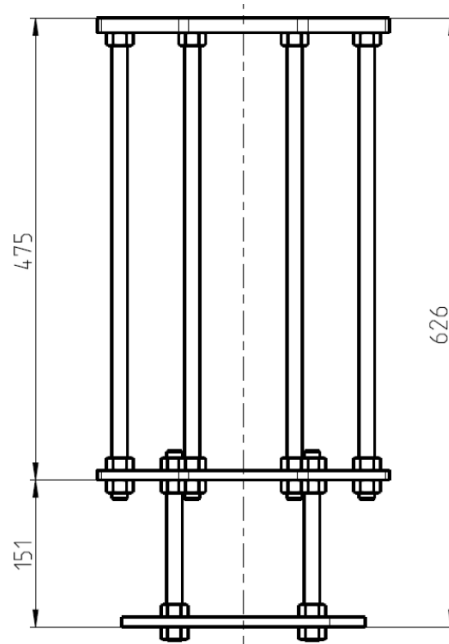
- attached to the substructure: the substructure is used as the bridging element between the solid ceiling and the ceiling flange (top plate of the monitor suspension). The means required for the fixation of the suspension to the substructure are delivered with the substructure.
- attached to the mounting plate: the mounting plate is installed to the hardware defined by the structural engineer (It could be Unistrut / Halfen or equivalent rails). The ceiling flange (top plate of the monitor suspension) is fixed to the mounting plate. The means required for the fixation of the suspension to the mounting plate are delivered with the substructure.

4.3.3.4.2. Substructure for ceiling fixation of the In-room monitor suspension fixed point

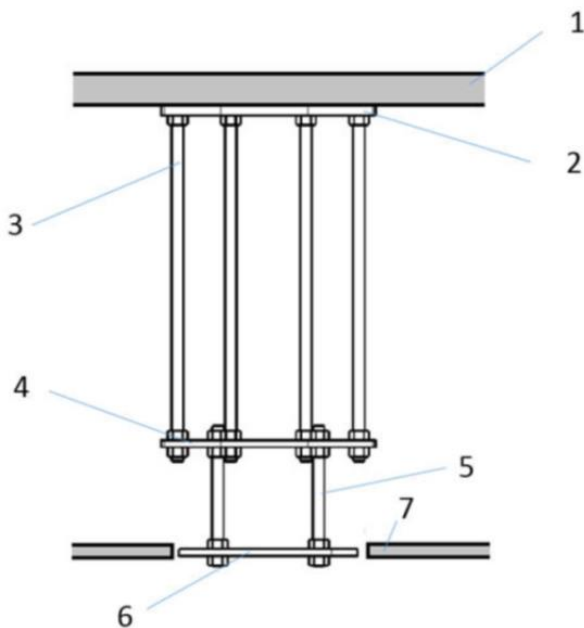
The used mounting of the Monitor Suspension can be realized in three different ways:

- Fixed Monitor Suspension, direct to the ceiling
Standard Installation of MAVIGs Portegra2 System. Refer to the GE DOC 5849374-1EN for MAVIGs Portegra2 Installation Manual - POR03Oxx (where xx stands for the latest revision, 12 or higher).

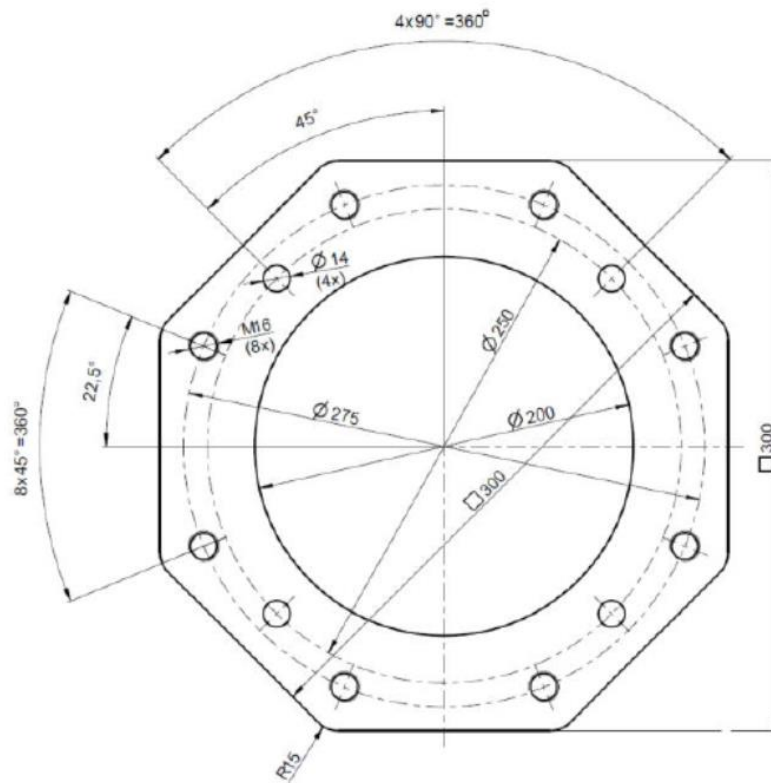
- Fixed Monitor Suspension to the ceiling with Substructure.
The Substructure is mandatory to install the MAVIG suspension with fixed point directly to the solid ceiling for Non-seismic Zones. For Seismic Zone installations, refer to Structural Engineer for appropriate design of the structure for installing the MAVIG suspension system. For standard site configurations, the distance between the ceiling and the ceiling flange should be in a range of minimum 100 mm and maximum 626 mm. If the distance between the ceiling and the ceiling flange is more than 626 mm, Long variation of the Substructure for could be proposed by MAVIG.



Substructure (schematic)



1. Ceiling
2. Ceiling Plate - weight approx. 4,9 kg
3. Threaded rods (8 pieces), M16 - 8.8, length 495mm
4. Middle Plate - weight approx. 4,5 kg
5. Threaded rods (4 pieces), M16 - 8.8, length 195mm
6. Interface Plate – weight approx. 2,3 kg
7. False Ceiling (not part of Delivery)



Substructure Ceiling Plate for installation to the ceiling

The Substructure must be fastened to the ceiling using 8 suitable screws. These screws must be dimensioned according to the conditions of the ceiling and provided by the customer and must be checked by the structural engineer.

The Substructure ceiling plate must be seated flush to the ceiling in order to ensure optimum load distribution.

Bolt Specifications:

Appropriate ceiling anchoring must withstand a maximum load of:

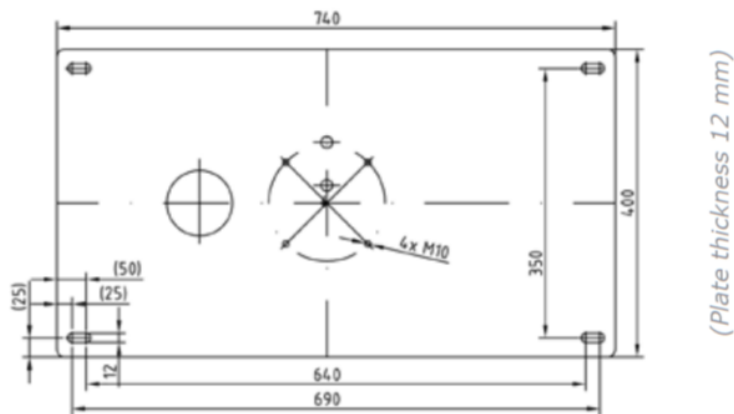
Normal Force: 1182,3 N
Momentum: 1148.51 Nm

The maximum pullout force shall be calculated in accordance with local building codes and it is part of structural analysis done by customer.

Refer to GE Doc: 5849373-1-EN for MAVIGs Substructure Installation Manual - DBF02Oxx (where xx stands for the latest revision, 04 or higher)

4.3.3.4.3. Substructure for ceiling fixation of the In-room monitor suspension fixed point

The Mounting plate is mandatory to install the MAVIG suspension with fixed point to an existing Unistrut / Halfen or equivalent rails for Non-seismic Zones. For Seismic Zone installations, refer to Structural Engineer for appropriate design of the structure for installing the MAVIG suspension system.

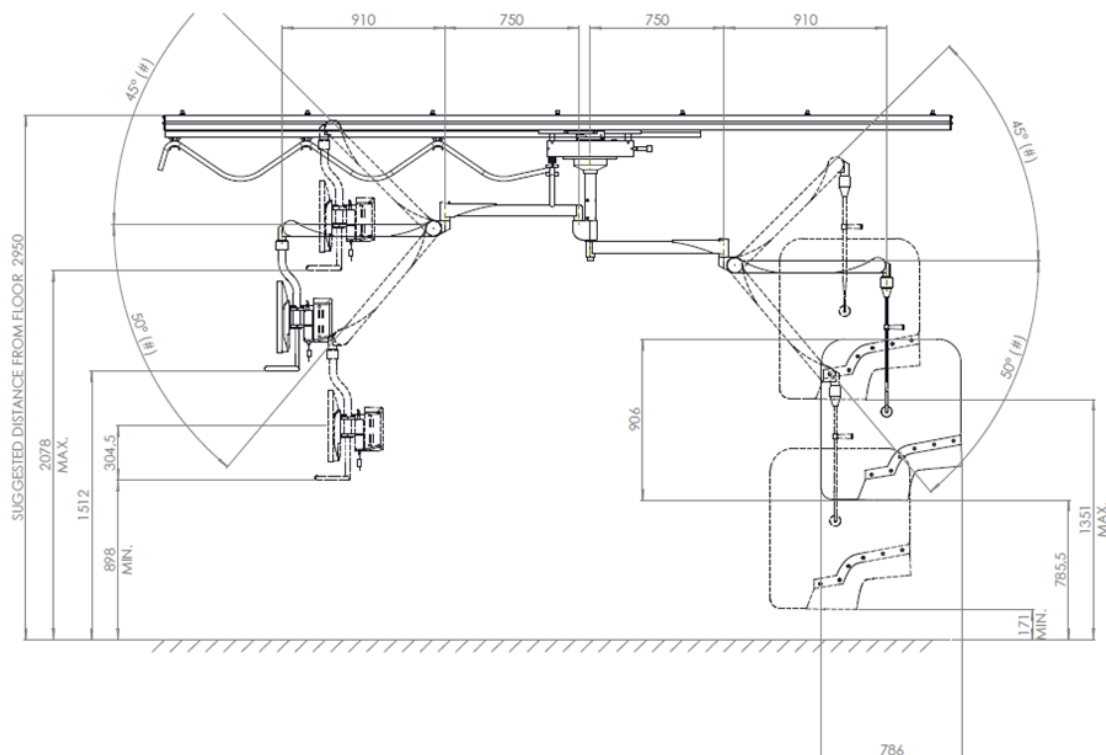


Mounting Plate for rails (Unistrut or Halfen)

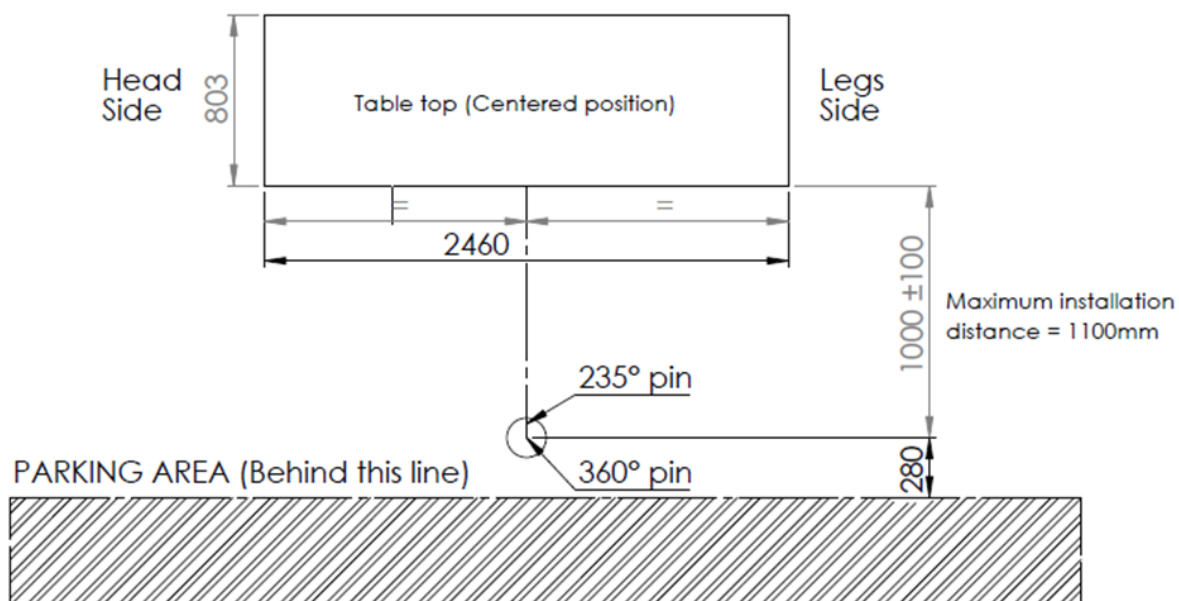
Refer to the GE Doc: 5849374-1EN for MAVIGs Portegra2 Installation Manual - POR03Oxx (where xx stands for the latest revision, 12 or higher).

Room layout

MAXIMUM SUGGESTED DISTANCE FROM FLOOR 3100mm



Suggested position for Mavig 360° column installation (fixed on ceiling), in order to cover all clinical scenario with no limitation of use.



Warning: the operator is responsible for the position and potential collision of the suspension in relation to the position of the table. There are not safety interlocks which avoid table movements depending from suspension position.

4.3.3.5. Walls

Precautionary measures have been taken to prevent scatter radiation from entering other rooms and/or hallways and that all exposed walls are lead-lined.

In particular the hospital physicians should approve the room layout before the installation starts.

Under normal conditions, the wall at the installation site must be capable of supporting, minimally, a 110 lb. (490 N) pull from the wall at each anchor bolt.

5. System Physical Characteristics

Refer to this section for the dimensional drawings of the components

Note: Drawings are not to scale. Dimensions are called out on each drawing

Component	Width	Height	Depth	Weight	Mounting comments
Table Assembly	246-414 cm	177-295cm (not tilted)	201-221cm	1380kg	Mount on floor
Table main control console	44cm	19cm	27cm	8kg	Placed on desk
Generator cabinet	51cm	106cm	41cm	91kg	Mount on floor 118kg packed
Digital system	56.8cm	90.1cm	73.7cm	110kg	Mount on wheels
UPS (not valid for US)	25.5cm	42.5cm	36cm	33,6kg	Mount on floor
Monitor (for all the devices)	55.7cm	36.1cm	21.6cm 40.1cm ⁽¹⁾	6.6 kg	Mount on desk
Monitor (Advantech)	57.8cm	40.3cm	68cm	9 kg ⁽³⁾	---
Monitor suspension mounting Plate	74cm	40cm	1.2cm	22kg	Mount to rails / directly to the ceiling
Monitor suspension substructure	62.6cm	30cm	30cm	22kg	Mount on ceiling
Single Monitor suspension ⁽²⁾	441cm	205cm	301cm	85 kg ⁽⁴⁾	Monitor not included
Double Monitor suspension ⁽²⁾	441cm	205cm	301cm	86 kg ⁽⁴⁾	Monitors not included
Overhead Tube Suspension bridge included ⁽²⁾	441cm	291cm	301cm	300 kg + 78 kg	Mount on ceiling rails
Wall Stand not tilting	62cm	225cm	46cm	171kg	Mount on floor and to wall
Wall Stand tilting	62cm	225cm	72cm max	200kg	Mount on floor and to wall
UPS (ONLY FOR US)	203.2mm (8.4inches)	330.2mm (13.6inches)	406.4mm (16.2inches)	34.9Kg (77.2lbs)	(ONLY FOR US, NOT PROVIDED BY GMM)
MDP (ONLY FOR US)	637.5mm (25inches)	889mm (35inches)	254mm (10inches)	80Kg (175lbs)	(ONLY FOR US, NOT PROVIDED BY GMM)

⁽¹⁾. Make reference to par. [5.9.2](#).

⁽²⁾. The dimensions refer to the maximum occupancy area.

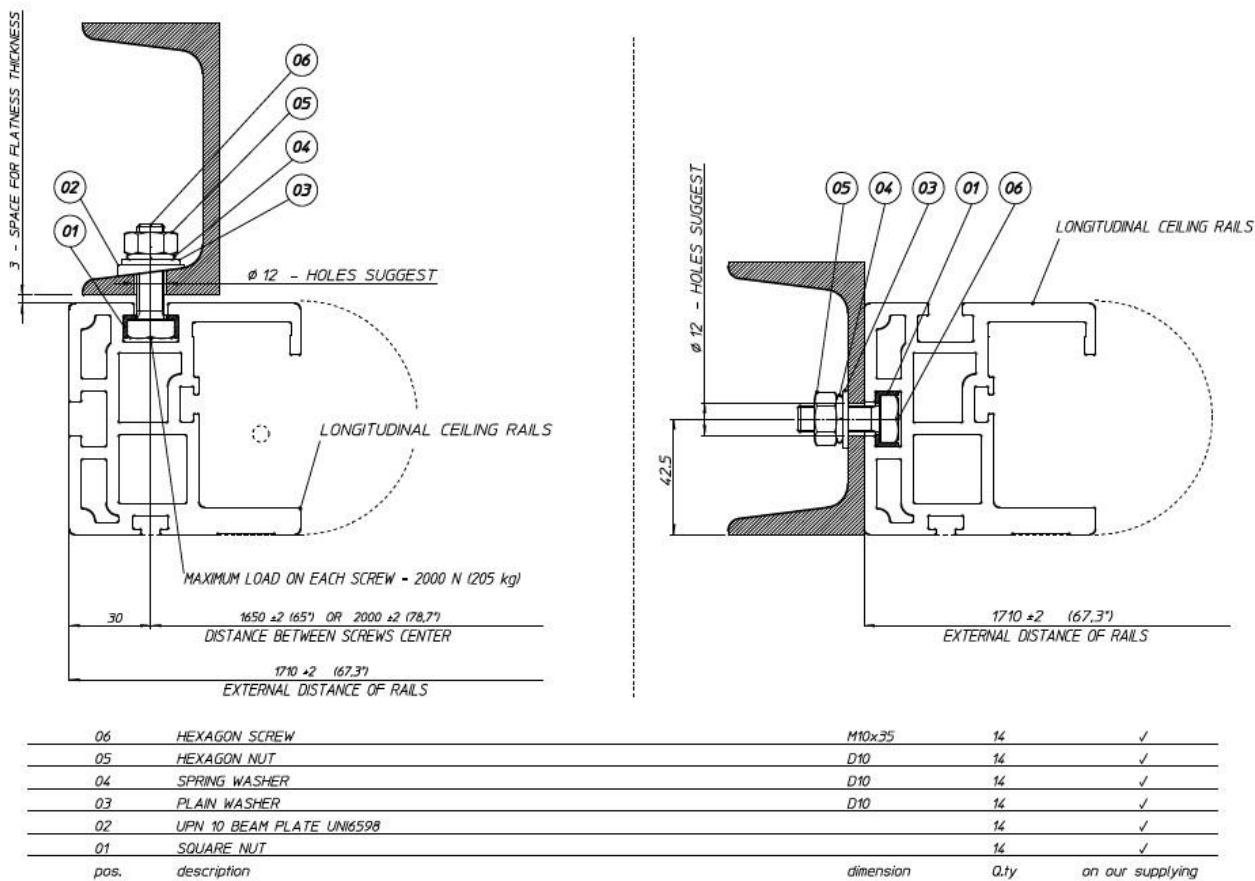
⁽³⁾. The weight includes the external power supply.

⁽⁴⁾ The weight does not include the longitudinal rails.

5.1. Ceiling rails (for OTS and / or Monitor suspension) - option

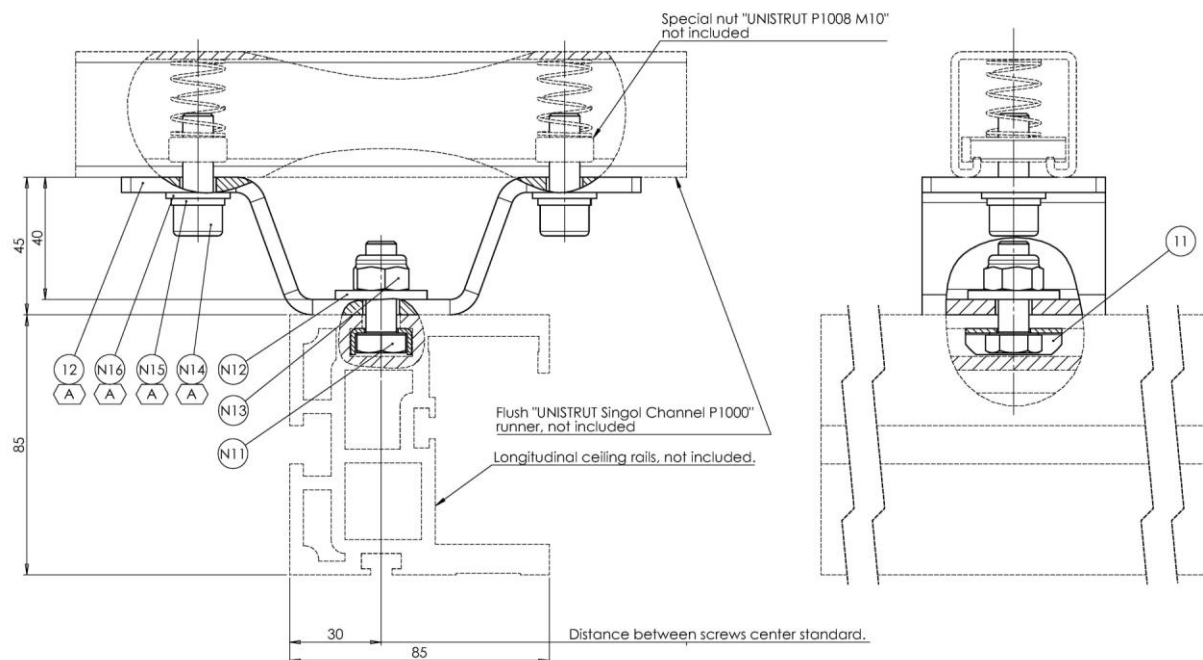
The stationary rails utilize extruded aluminum channels that are ceiling mounted and are 440cm in length. The spacing between these stationary rails accommodates an overhead mounted bridge structure. The bridge length is 301cm (or 361cm) and the bridge width is 61cm. The standard distance between rails is 165cm.

A proper iron beam has been immured in the ceiling in accordance with one of the solutions suggested in the following figure:



Measures in mm

The calculation of the support structure of the ceiling stand depends exclusively on the designer, who is responsible of the room preparation. Type and dimension of the T-irons, shown in these drawings, are just an indication.



Measures in mm

Code	Description	Quantity
11	CAGE FOR SCREW TE 10	14
12	UNISTRUT BRACKET H=45	14
N11	SCREW TE 8.8 Z UNI 5739 M10x30	14
N12	PLAIN WASHER D10.5 D30 THICKNESS 3	14
N13	NUT M10 UNI7473 DIN9820	14
N14	SCREW TCEI M10x30 8.8Z UNI5931	28
N15	GROWER WASHER C72Z UNI1751 D10.5	28
N16	PLAIN WASHER B.R40Z D.10.5 UNI6592	28



WARNING:

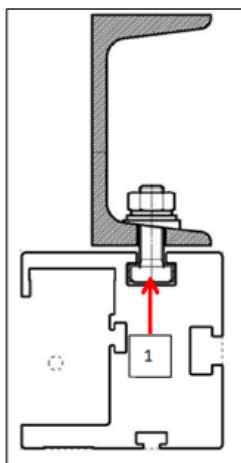
THE **SUSPENSION** CEILING RAILS ARE MOUNTED ON THE IRON BEAM BY MEANS OF A SET OF SCREWS DELIVERED WITH THE UNIT. EACH FIXATION SCREW MUST RESIST A **PULL OF 205 Kg** AND IT IS UNDER THE INSTALLER'S RESPONSIBILITY TO MAKE SURE THAT THE FIXATION METHOD USED FOR THE IRON BEAM CAN WITHSTAND SUCH VALUE.



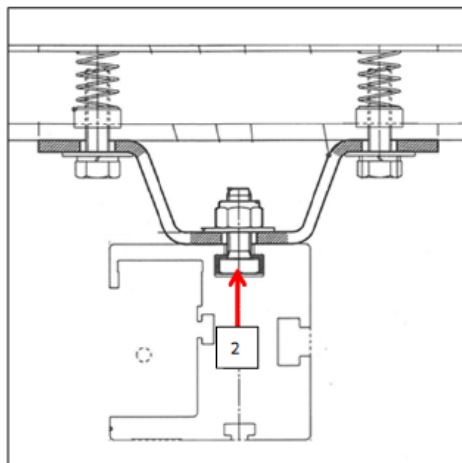
WARNING:

IT IS POSSIBLE THAT THE IRON BEAMS IMMURED IN THE CEILING ARE NOT LEVELLED. THE INSTALLER MUST CAREFULLY VERIFY THAT AND, IF NECESSARY, LEVEL THE CEILING RAILS USING PROPER SPACERS.

Reference to the critical component on Installation Manual	Description	Part Number	Dimension	Number of elements	According to and material grade	Torque to apply [Nm]	Loctite use	Nut size and washers	Thread engagement [mm]	Material of the parent to which the screw is mounted on
Component No 1	Screw for installation of the ceiling rails	02176 02128	TE M10x35 (1) M10x30 (2)	14 (Every 70 cm)	UNI5739 8.8	49	No, use of spring washer	Washers and nuts	8	8.8



OR



5.1.1. Maximum flexion between 2 anchoring points

During the worst working equipment conditions, it is necessary to find out the working stress on each equipment support. The stress force of each equipment part is split into the following items:

P1 = 1000 N Rails (4 of 14 points anchoring)

P2 = 600 N Bridge (it slides on 4 support bearings)

P3 = 1700 N Carriage (stand with tube, collimator, mechanical and electrical parts)

In order to find out rail flexures, the study must be related to a close rectangular shape that reproduces the rails core dimensions.

If you work in this way, you will always be able to simplify job calculation and in addition we will always be in a Safety situation

As a matter of fact, rails are more complex, ribs and cores (that in this study are not taken into consideration) really add large stiffness to the rails

At the same way for the below calculation, the rail steel plate is not taken into consideration that it is the guide for sliding bearings and as a matter of fact it does add stiffness to the rails too.

If you make reference to the attached drawing you can calculate rails flexure by taking into consideration the main involved sizes.

P = 2000 N half suspension weight and transversal carriage weight

L = 700 mm distance between rail anchoring points

E = 60000 MPa aluminum modulus of elasticity

I = 365000 mm⁴ inertia module related to the rail section (make reference to the following drawings).

As a result, the flexibility of beam rested between extreme sides is calculated by the beam deflection formula.

5.1.2. Rail mounting

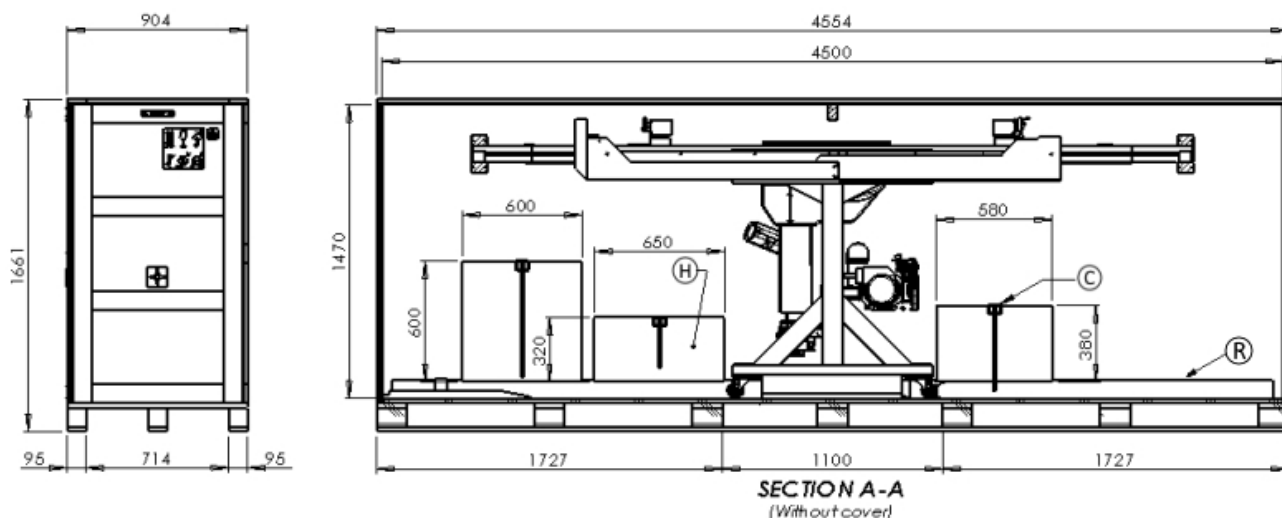
Make reference to the 5780106-1EN Kalos Service manual par. 6.3.3 “Installation of the Ceiling Rails”.

5.2. Overhead Tube Suspension

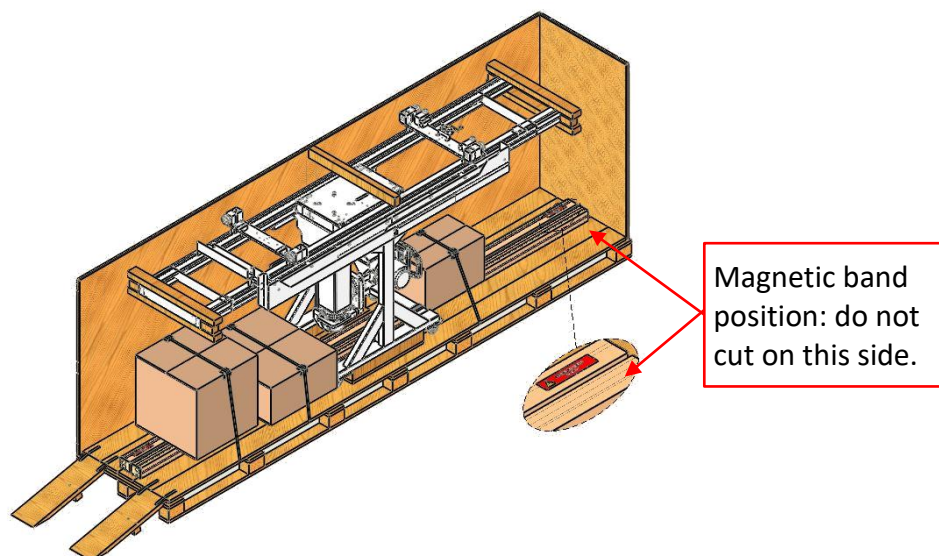
5.2.1. Packaging

ITEM	LENGTH	WIDTH	HEIGHT	WEIGHT
Single packaging in wooden case (All inclusive)	455.4 cm	90.4 cm	166 cm	920 kg

ITEM	LENGTH	WIDTH	HEIGHT	WEIGHT
Overhead Tube Suspension longitudinal rails (two packages)	442 cm	12 cm	12 cm	42 kg + 42 kg
Overhead Tube Suspension, transversal bridge	301 cm	80 cm	140 cm	378 kg
Collimator	58 cm	36 cm	38 cm	25 kg
High voltage cables	65 cm	74 cm	32 cm	15 kg

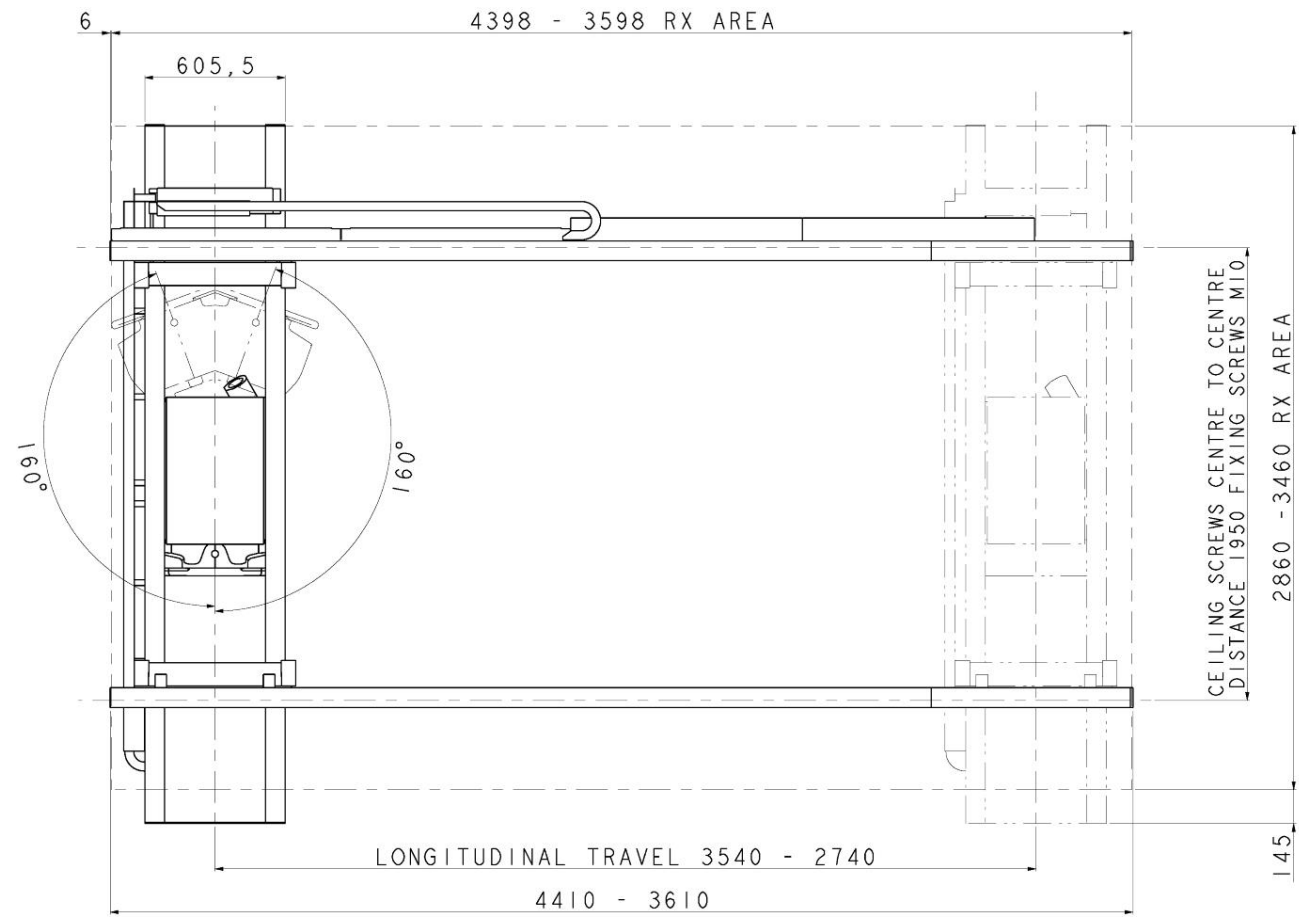


H = High voltage cables; C = Collimator; R = Longitudinal Rails



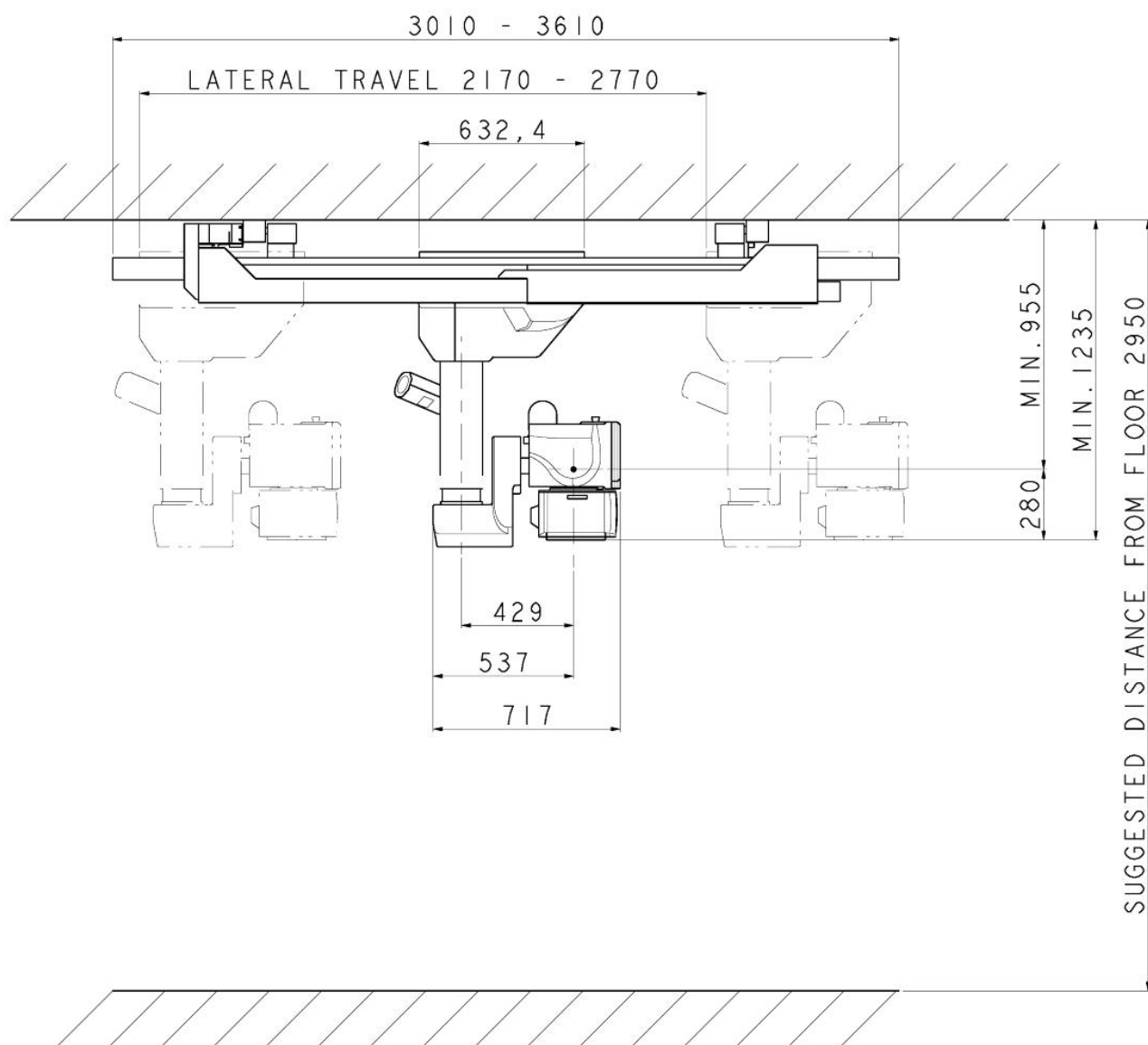
5.2.2. Dimensions

ITEM	LENGTH	WIDTH
Rails area	441 cm	360 cm



The measures in this picture are in millimeters.





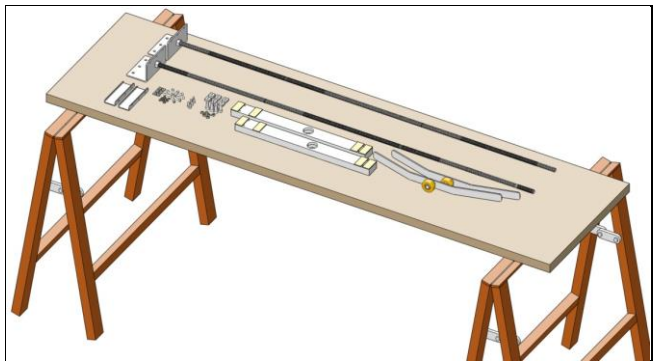
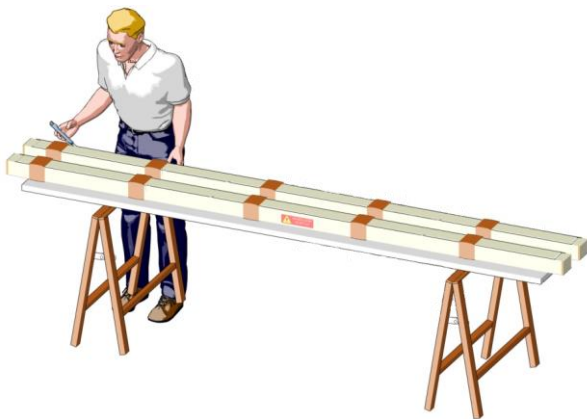
The measures in this picture are in millimeters.

5.3. Monitor suspension (single / double) - option

5.3.1. Packaging

ITEM	LENGTH	WIDTH	HEIGHT	WEIGHT
Mounting Plate (option)	79 cm	48 cm	10 cm	25 kg
Substructure for Ceiling Suspension	104 cm	49 cm	33 cm	43 kg

ITEM	LENGTH	WIDTH	HEIGHT	WEIGHT
Rails (only if OTS is not supplied)	450 cm	12 cm 22 cm	12 cm	31 kg + 41 kg



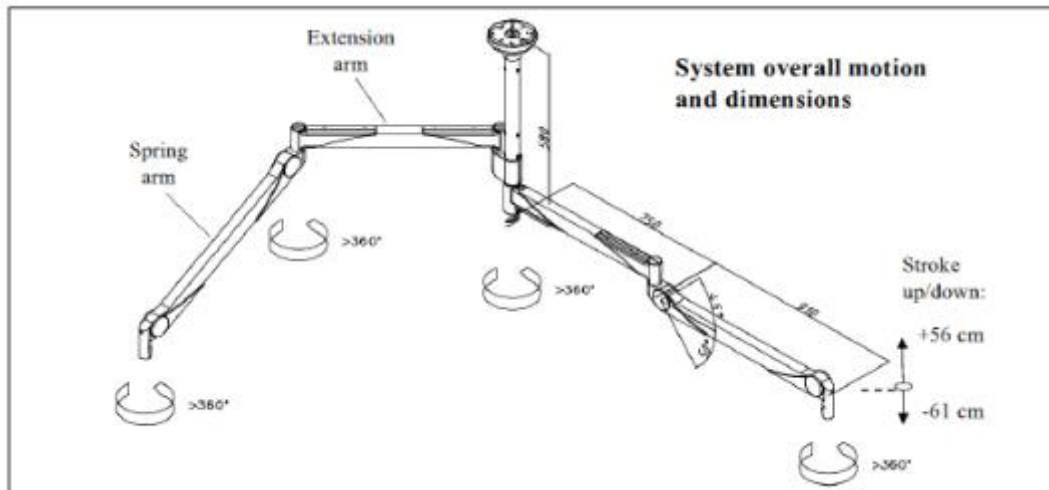
Longitudinal rails and lifting tool are present only if OTS is not supplied

ITEM	LENGTH	WIDTH	HEIGHT	WEIGHT
Monitor Suspension. Transversal bridge included	455 cm	80 cm	75 cm	382 kg

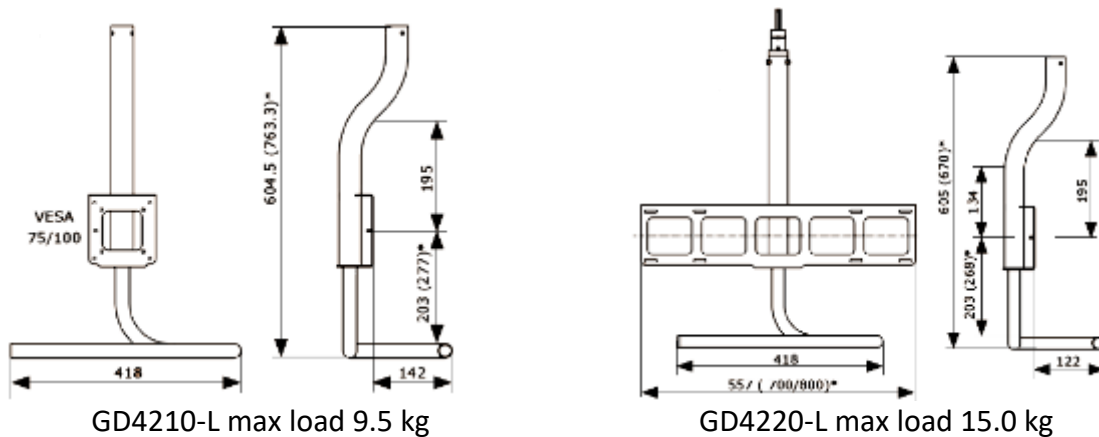


5.3.2. Dimensions

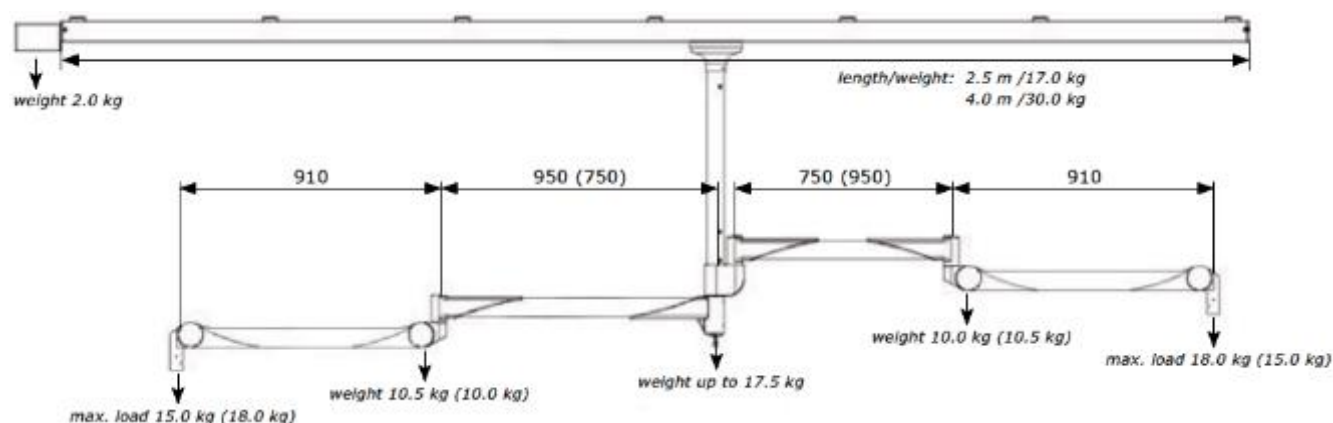
The provided device is equipped with only one arm. The following drawings show two arms in order to have a complete mechanical documentation.



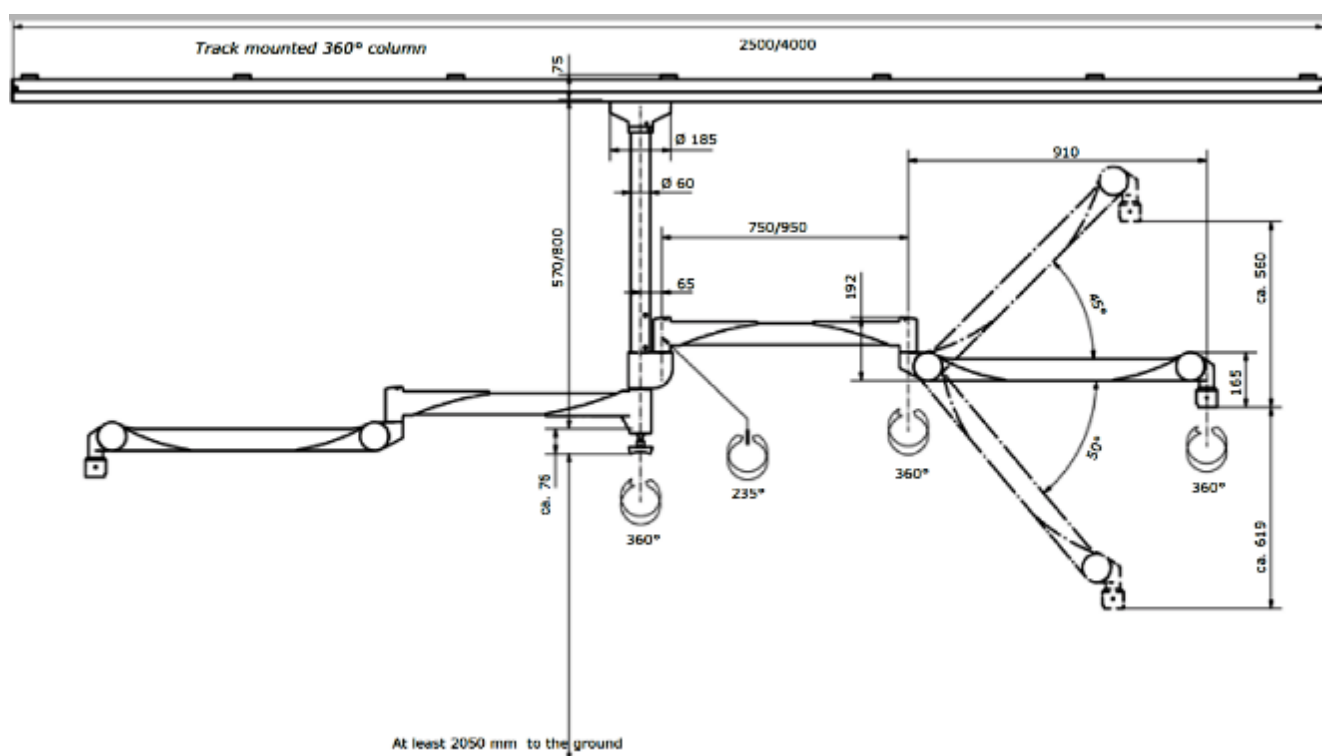
The ceiling suspension spring arm can be moved up and down by max 45°, but this range can be adjusted/limited; for details, please refer to the monitor manufacturer's manual. The downward movement is limited by a lower stop. For upward movement, check clearance with ceiling and avoid any collision. The extension arm has no up/down movement, but rotates on the column pins. Avoid alignment of the extension arm and spring arm.



* dimension for L version. Measures in mm.



Measures in mm.

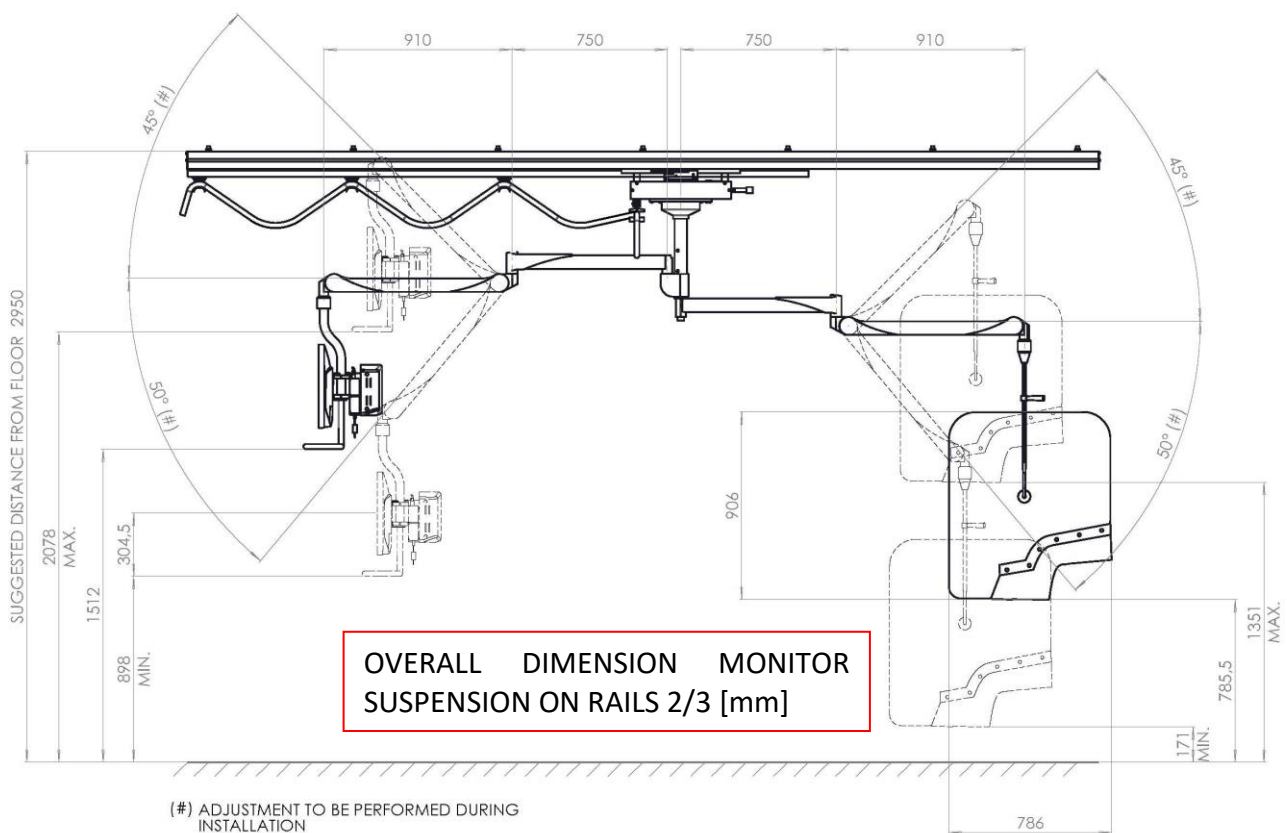
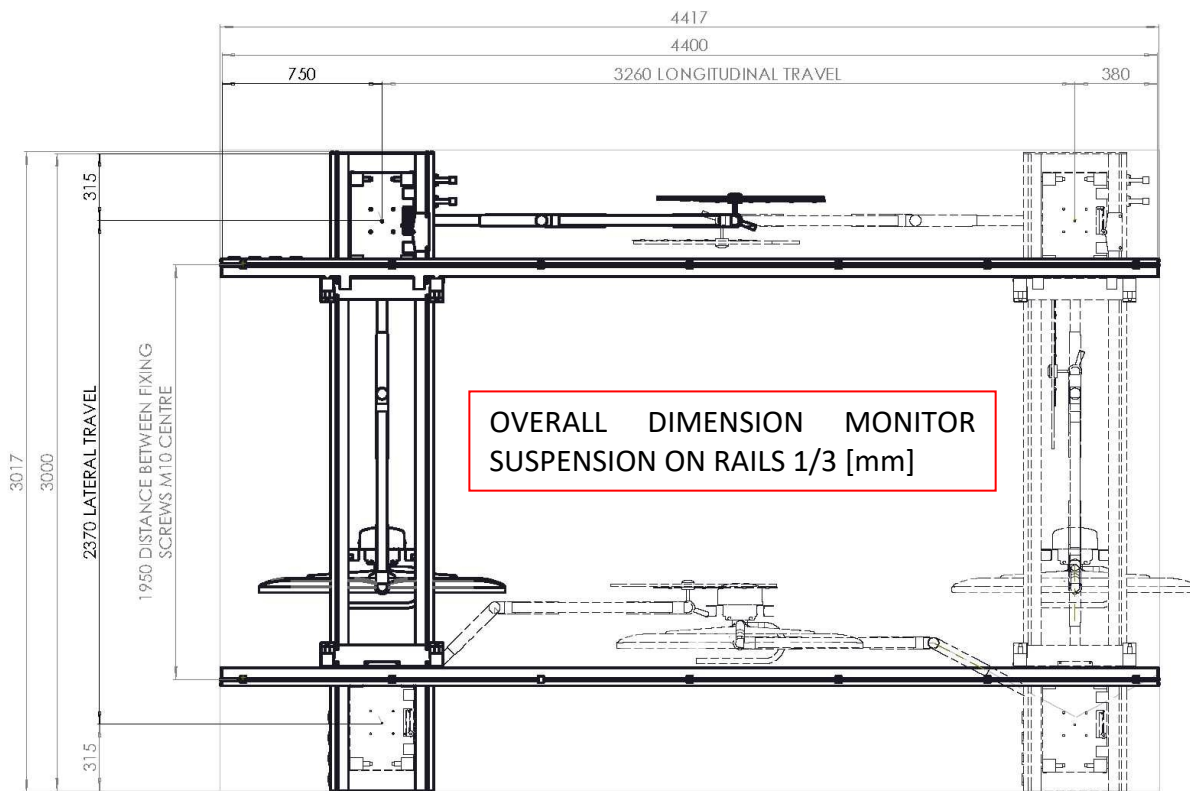


Measures in mm.

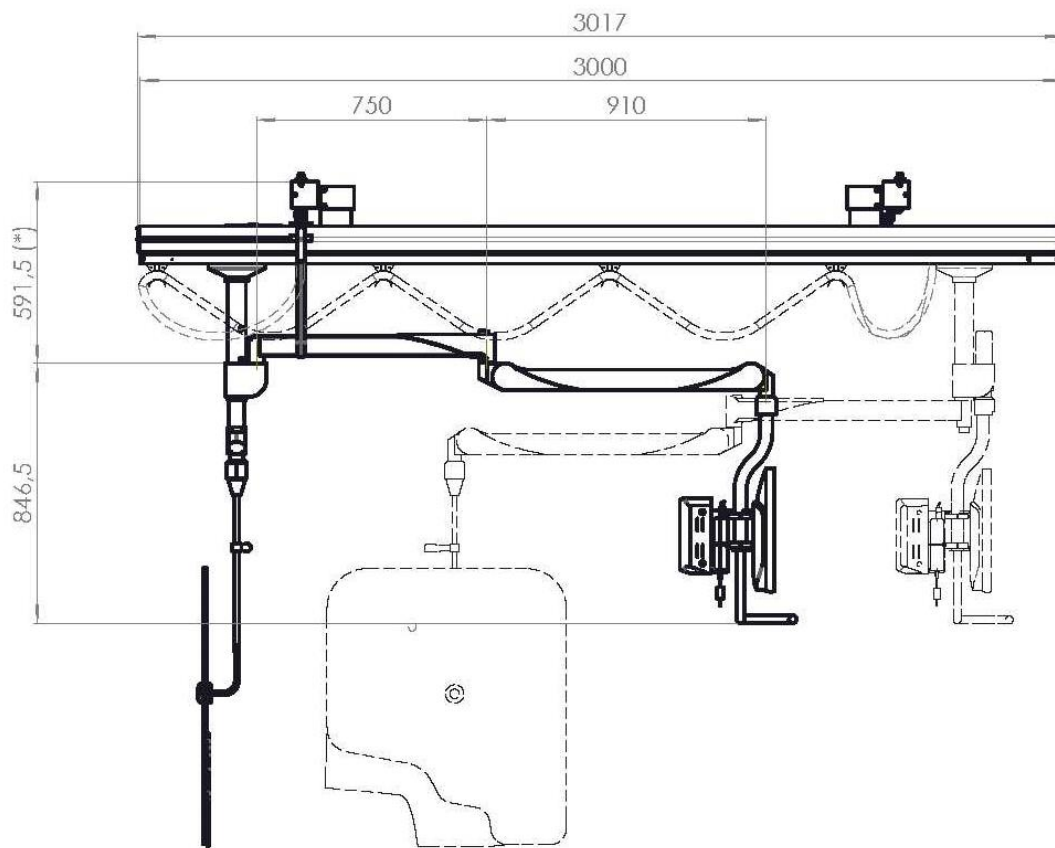


WARNING

The motion should always be smooth and easy, if any hard point is felt by moving the system, please contact the manufacturer. If you encounter damages such as bent ceiling columns, collision marks or cracks in the color coating or the material of the system, broken plastic covers, loose connection of parts, or similar, please contact the manufacturer without further delay.



MAXIMUM SUGGESTED DISTANCE FROM FLOOR 3100mm



OVERALL DIMENSION MONITOR
SUSPENSION ON RAILS 3/3 [mm]

(*) = DIMENSION TO BE INCREASED OF 86mm
IN CASE OF UNISTUT FIXATION.

Table

5.3.3. Packaging – table delivered in one piece

ITEM	LENGTH	WIDTH	HEIGHT	WEIGHT
Table	267 cm	130 cm	232 cm	1500 kg
SFD	120 cm	130 cm	165 cm	220 kg



Table



SFD and accessories

5.3.4. Packaging – table delivered in two pieces

ITEM	LENGTH	WIDTH	HEIGHT	WEIGHT
Main frame + tabletop	260 cm	130 cm	218 cm	1000 kg
Beam, SFD and accessories	260 cm	130 cm	218 cm	773 kg

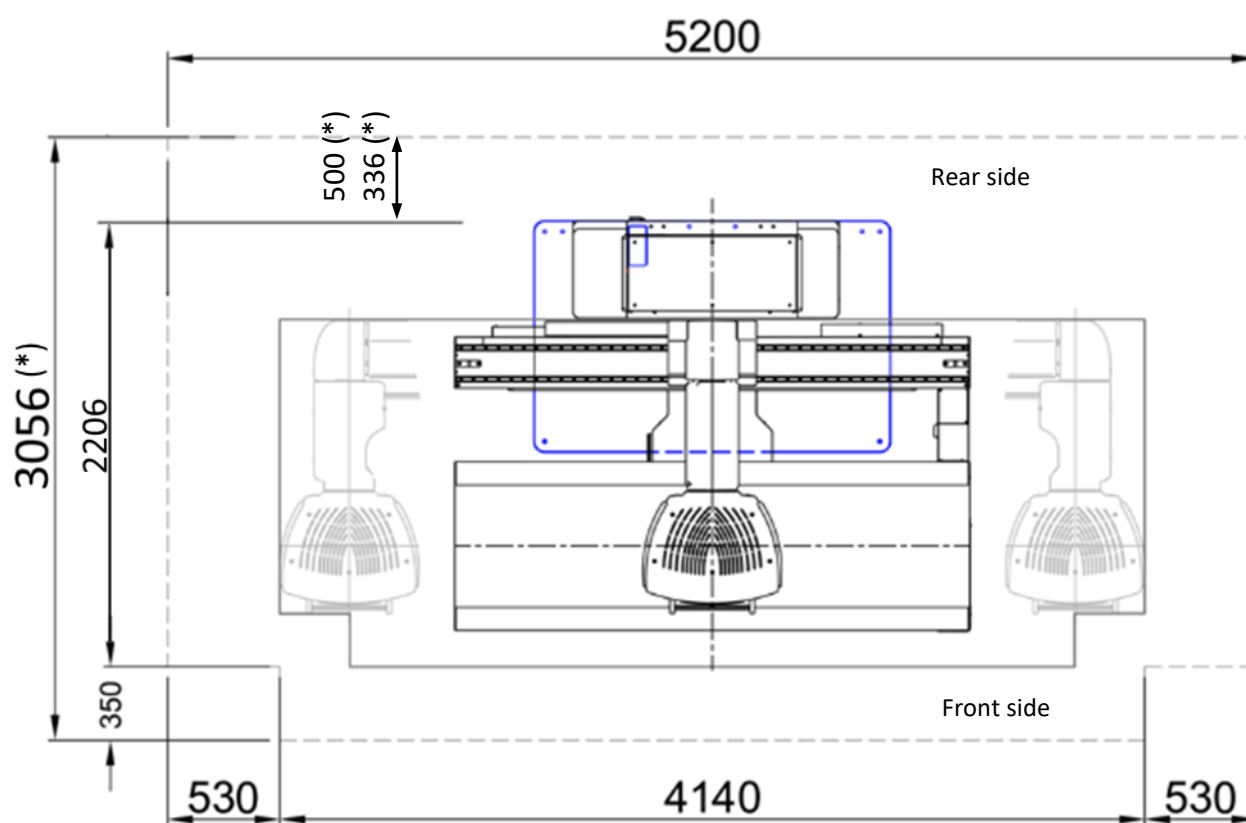
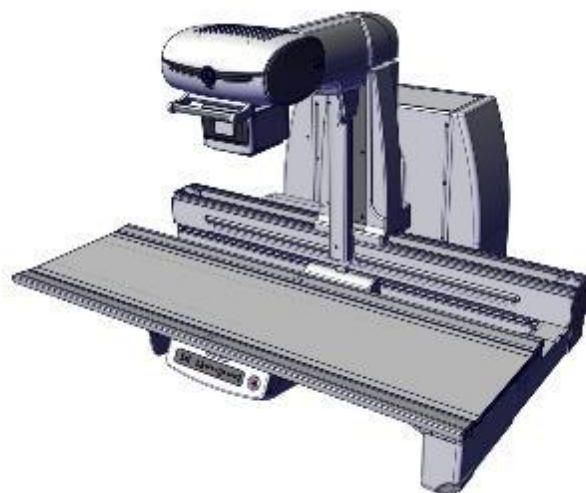


Main frame + tabletop



Beam, SFD and accessories

5.3.5. Dimensions



Measures in [mm].

(*) NOTE: The recommended service area behind the table is 500mm. The minimum service area behind the table must be 336 mm.

530 mm space left and right the table, represents the anti-collision escape area for operators and patients.

Technical drawing of the M175.5 motor unit, showing front and side views with dimensions in mm.

Front View Dimensions:

- Overall width: 1549
- Motor housing width: 576.5
- Flange width: 270
- Flange thickness: 610
- Shaft diameter: 77.5
- Shaft length: 470.5
- Shaft end flange thickness: 80
- Motor housing height: 340
- Motor housing mounting flange width: 500
- Motor housing mounting flange thickness: 100
- Motor housing mounting flange height: 155

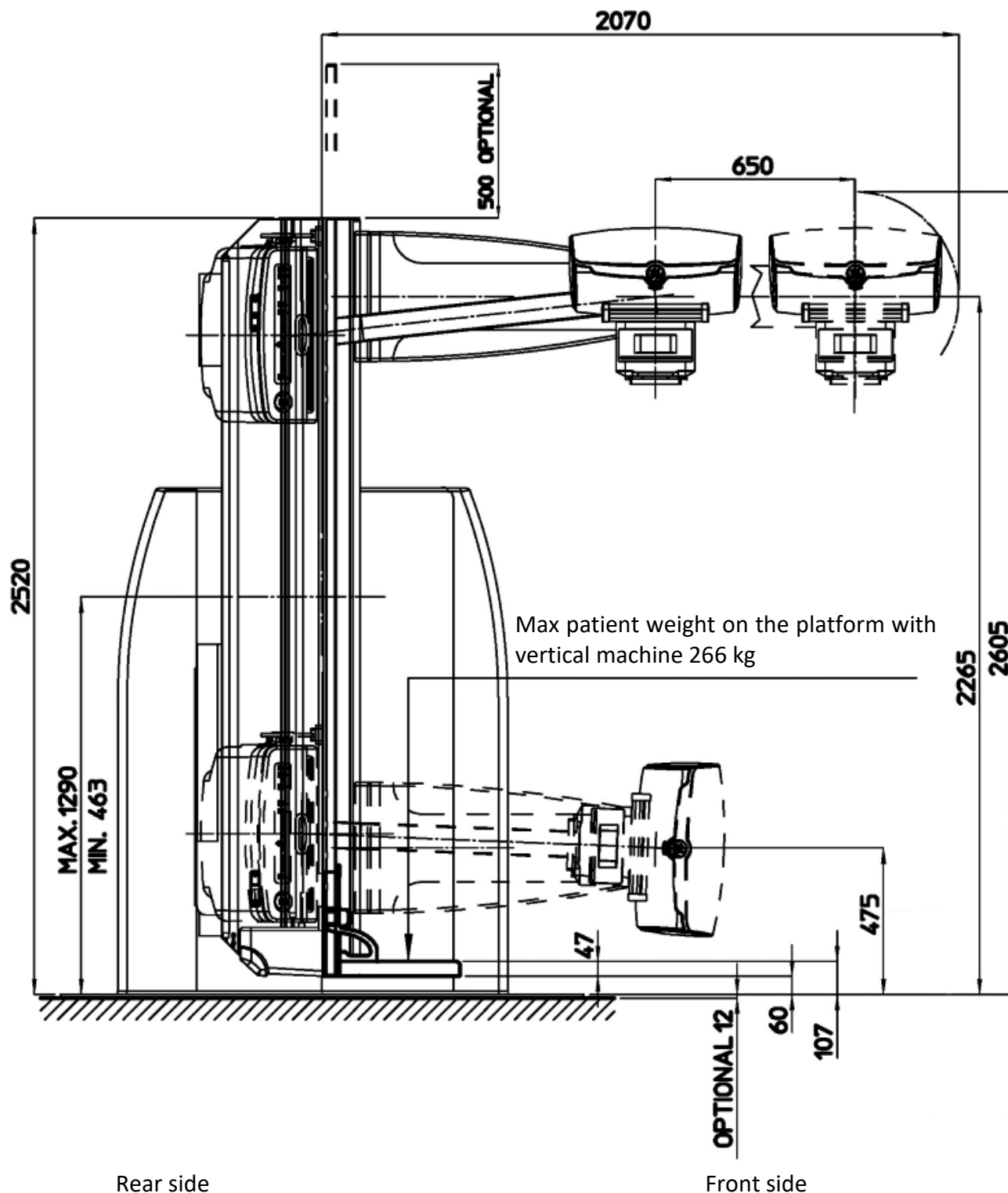
Side View Dimensions:

- Overall height: 1700
- Motor housing height: 2460
- Motor housing mounting flange width: 500
- Motor housing mounting flange thickness: 175
- Motor housing mounting flange height: 340
- Motor housing mounting flange width: 500
- Motor housing mounting flange thickness: 175
- Motor housing mounting flange height: 340
- Motor housing mounting flange width: 500
- Motor housing mounting flange thickness: 175
- Motor housing mounting flange height: 340

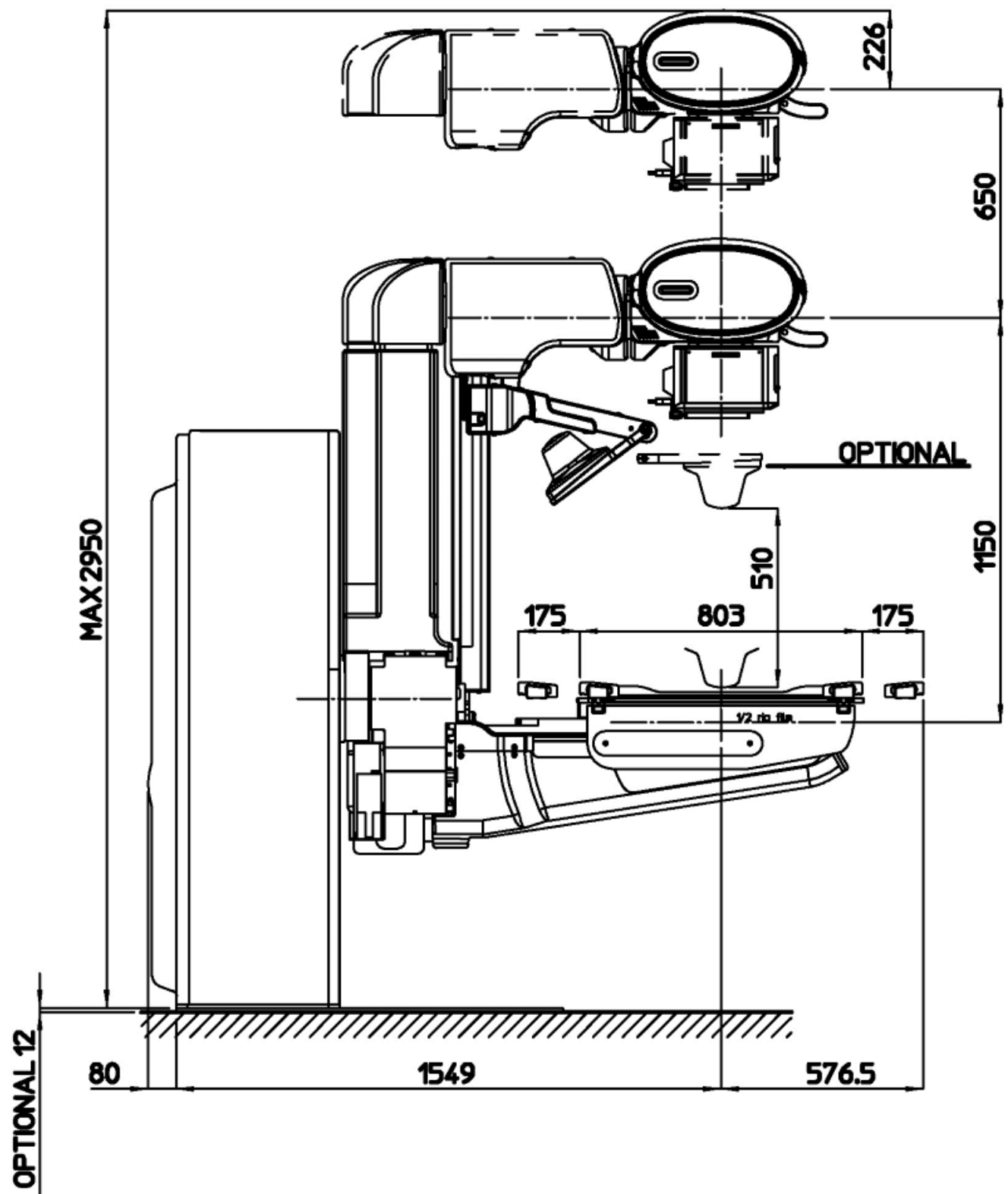
Other Dimensions:

- Motor housing mounting flange width: 2125.5
- Motor housing mounting flange thickness: 470.5
- Motor housing mounting flange height: 155
- Motor housing mounting flange width: 2125.5
- Motor housing mounting flange thickness: 470.5
- Motor housing mounting flange height: 155

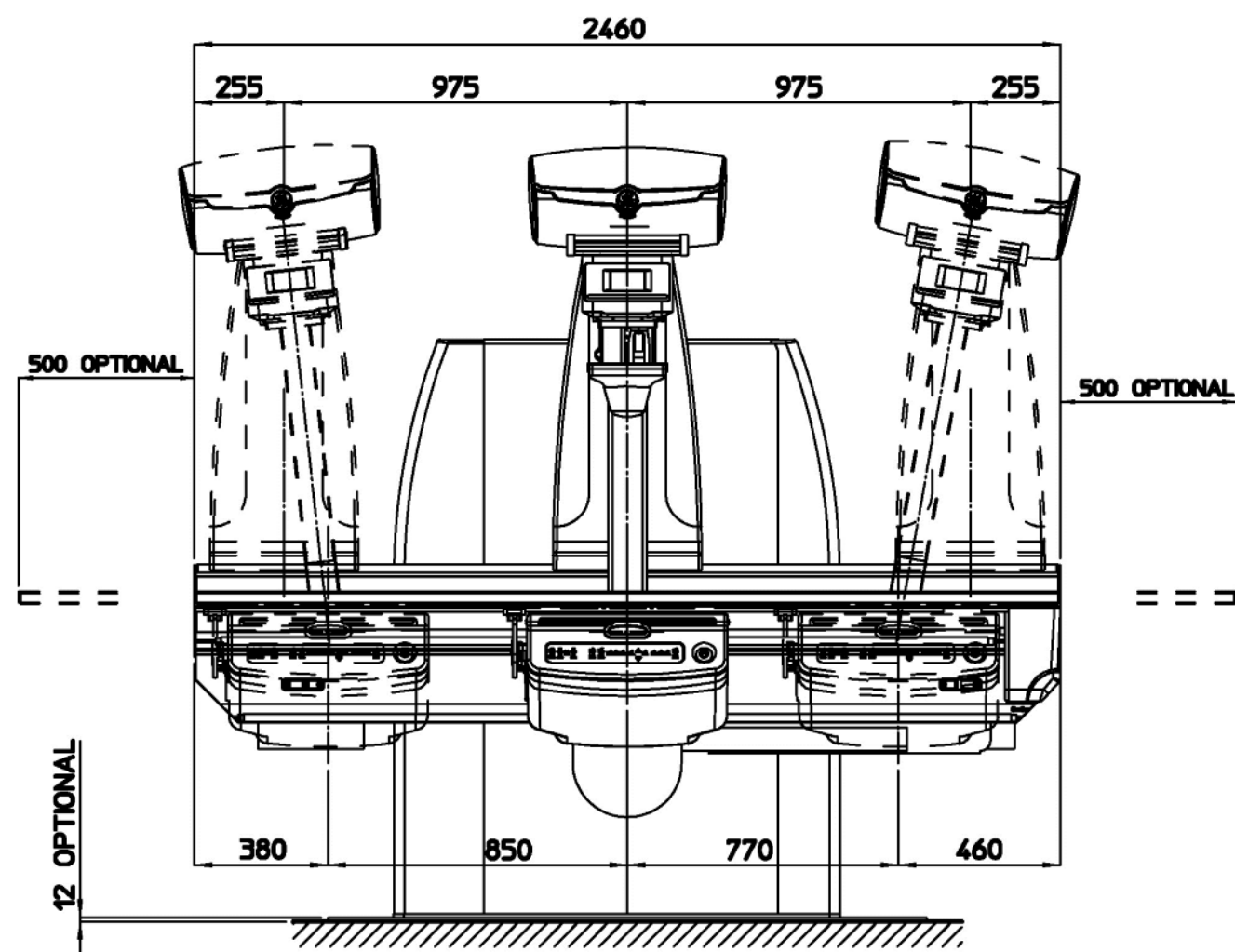
Page 49



Measures in [mm].



Measures in [mm].



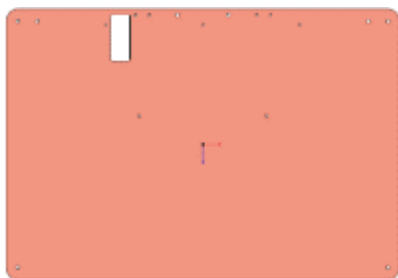
Measures in [mm].



It is the responsibility of the pre-installation to select the fixation method that grants the correct unit anchoring in function of the constructive characteristics of the floor. The team must provide this information regarding the fixation method and the room physical characteristics to the installer.



WARNING FOR THE OVERFLOOR BASE PLATE

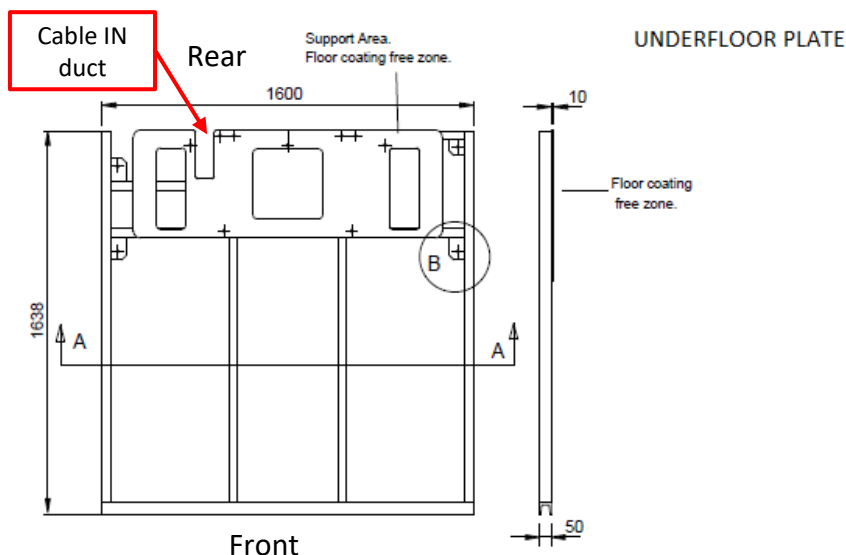


In case of over floor base plate, pay attention to the position of the base plate with the right orientation. The hole has to be oriented as in the figure, with respect to the main frame. Otherwise mismatches will occur between the two objects.
Check how the machine will be oriented during installation.

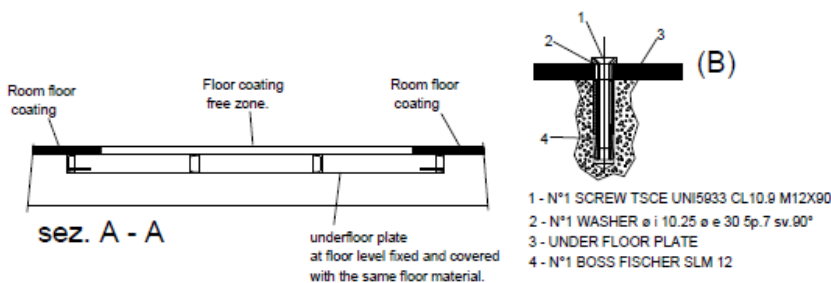
5.4.1. Use of the under floor installation plate

With this base, the floor loading capability must be greater than 550 kg/m² (unit weight = 1025+80 Kg; patient weight= 323 Kg; loading area = 2,60 m²). In order to correctly install the base plate, the installer will be responsible to:

- Remove the upper part of the floor for a minimum area of 2200 x 1700mm (x about 100mm):
- Make sure that the floor surface on the bottom side of the base plate is rugged enough to grant a proper grip of the concrete (it is possible to use a welded mesh.)
- Make sure that the base plate is accurately leveled with the upper plate aligned with the finished surface of the floor as detailed in the following drawing.
- If required, fix the base plate to the floor using M12 screws as detailed in the following drawing.
- Insert M12 screws in the unit fixation holes to prevent the possibility that the concrete could obstruct the eight-unit fixation holes.
- Pour the concrete between cement and sand in a 1:2.5 ratio.



Unit weight = 1025 kg
Patient weight = 323 kg
Plate weight = 80 kg
Loading area = 2.60 m²
Floor loading = 550 Kg/m²



Measures in mm.

The M12 screws are not supplied with the product. Use the same described in the figure or similar.

It is in charge of the structural engineer of the hospital to evaluate whether the floor characteristics are suitable for this type of base plate.

5.4.2. Use of the over floor installation plate

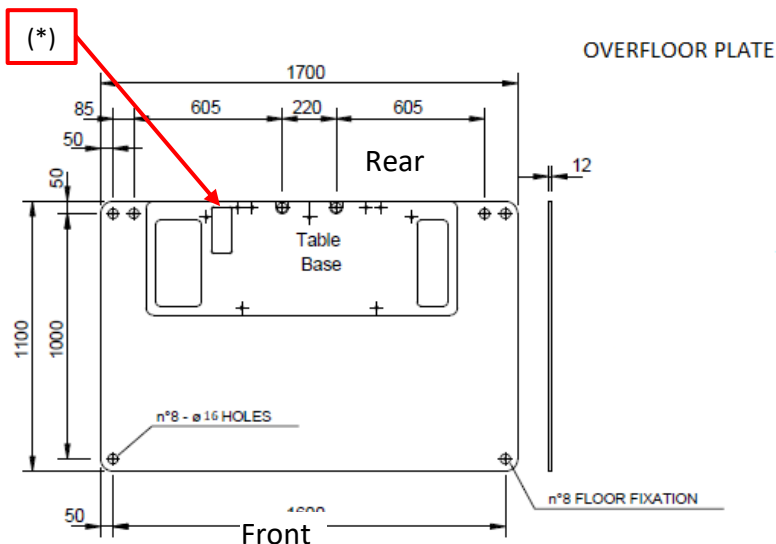
BEFORE INSTALL THE BASEPLATE ON THE FLOOR CHOOSE THE FIXATION METHOD (three different here below) IN ACCORDANCE WITH THE FLOOR THICKNESS AND WITH YOUR NEEDS.

This should be done during the PRE-INSTALLATION PHASE.

This fixation method is recommended when the floor characteristics are not suitable to allow the installation of the under-floor plate (It is in charge of the structural engineer of the hospital to evaluate whether the floor characteristics are suitable for the under floor base plate.). In this case, the installer must use the optional over floor installation plate to distribute the weight on a larger surface and to offer a better and easier fixation to the floor as detailed in the following figure.



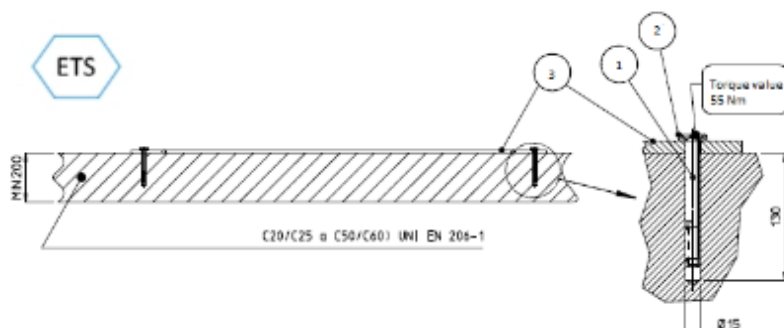
It is responsibility of the installer to grant the correct anchoring of the base plate in function of the constructive characteristics of the floor.



Unit weight = 1025 kg
Patient weight = 323 kg
Plate weight = 180 kg
Loading area = 1.90 m²
Floor loading = 805 kg/m²

Drilling hole depth = 130 mm
(5,1 inches)
Drilling hole diameter = 15 mm
(37/64 inches)

OVER FLOOR PLATE FIXATION



1 → N°1 anchor screw Bossong
2 → N°1 countersunk washer
3 → over-floor plate

Measures in mm

(*) Cable in point: cut the table cover at the predefined weakening point, in correspondence of the plate hole.



WARNING

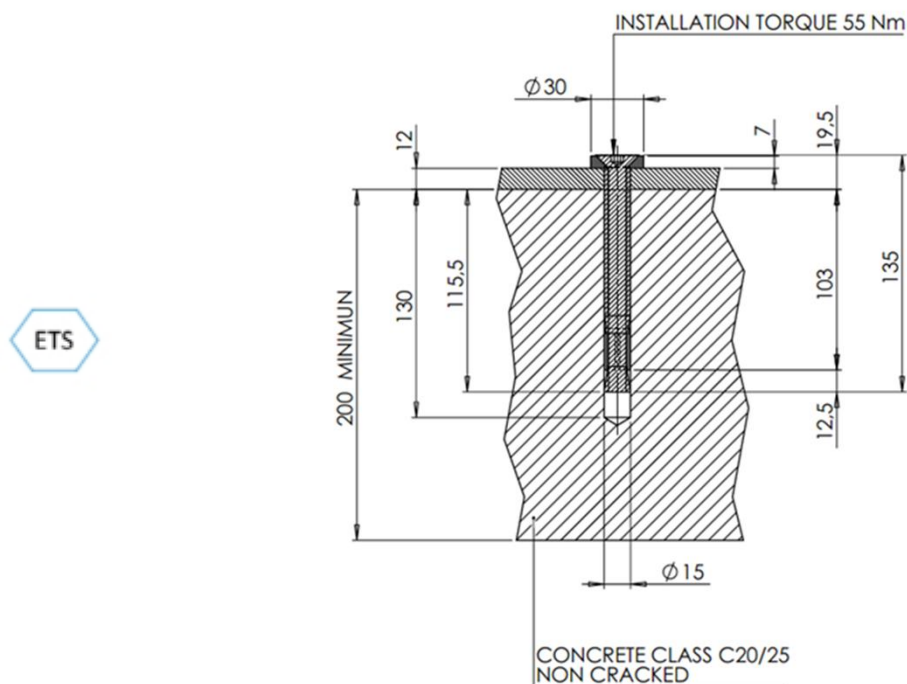
Be sure to have completely tightened the screws (torque value in the table below).

Reference to the critical component on Installation Manual	Description	Dimension	Number of elements	According to and material grade	Torque to apply [Nm]	Loctite use	Nut size and washers	Embedment depth [mm]	Material of the parent to which the screw is mounted on
Component No 1 and 4	Anchor screw for fixation of the over floor base plate	M10	8	Screw 8.8	55	No	Countersunk Washer	115.5	Concrete C20/25 not cracked

The M10 screws and the washers are supplied with the system.
Remind to tight the screws/bolts using the cross rule.

ANCHORAGE DIAGRAM MINIMUM THICKNESS 200 MILLIMETER MINIMUM

MEASURE UNITS MILLIMETER



Default fastening method

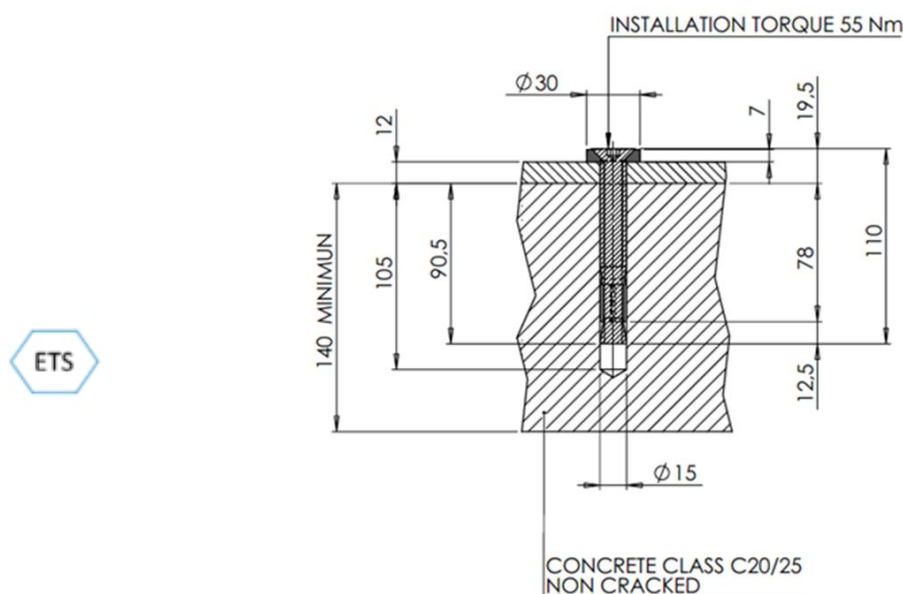
Example of fastening on a 140 mm floor.

Reference to the critical component on Installation Manual	Description	Dimension	Number of elements	According to and material grade	Torque to apply [Nm]	Loctite use	Nut size and washers	Embedment depth [mm]	Material of the parent to which the screw is mounted on
Component No 1 and 4	Anchor screw for fixation of the over floor base plate	M10	8	Screw 8.8	55	No	Countersunk Washer	90.5	Concrete C20/25 not cracked

The M10 screws and the washers are supplied with the system.
Remind to tight the screws/bolts using the cross rule.

ANCHORAGE DIAGRAM MINIMUM THICKNESS 140 MILLIMETER MINIMUM

MEASURE UNITS MILLIMETER



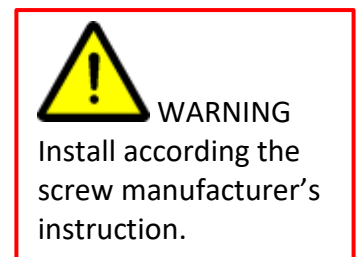
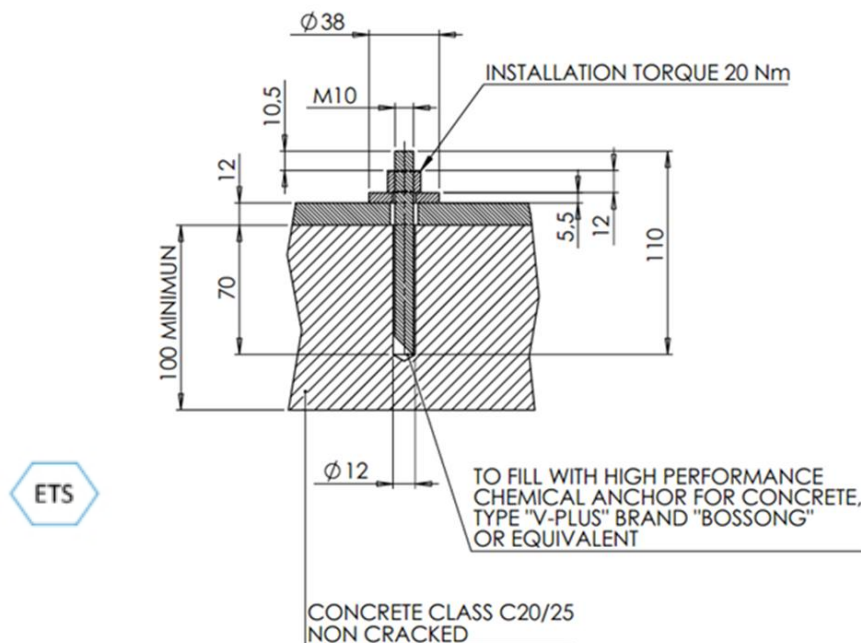
The applicability verification of this example is under the responsibility of the room PMI Project Manager Installation.

Example of chemical fastening on a 100 mm floor.
(Example of approved chemical is Bossong BCR-300 V-Plus.)

Reference to the critical component on Installation Manual	Description	Dimension	Number of elements	According to and material grade	Torque to apply [Nm]	Loctite use	Nut size and washers	Embedment depth [mm]	Material of the parent to which the screw is mounted on
Component No 1 and 4	Anchor screw for fixation of the over floor base plate	M10	8	Screw 8.8	20	No	Nut M10 + Washer	70	Concrete C20/25 not cracked

ANCHORAGE DIAGRAM MINIMUM THICKNESS 100 MILLIMETER MINIMUM

Screws type M10 (screws, nuts and the washers included in the shipment).
Remind to tight the screws/bolts using the cross rule.



Measure in millimeters.

NOTE: the hole must be perfectly clean.

The applicability verification of this example is under the responsibility of the room PMI Project Manager Installation.

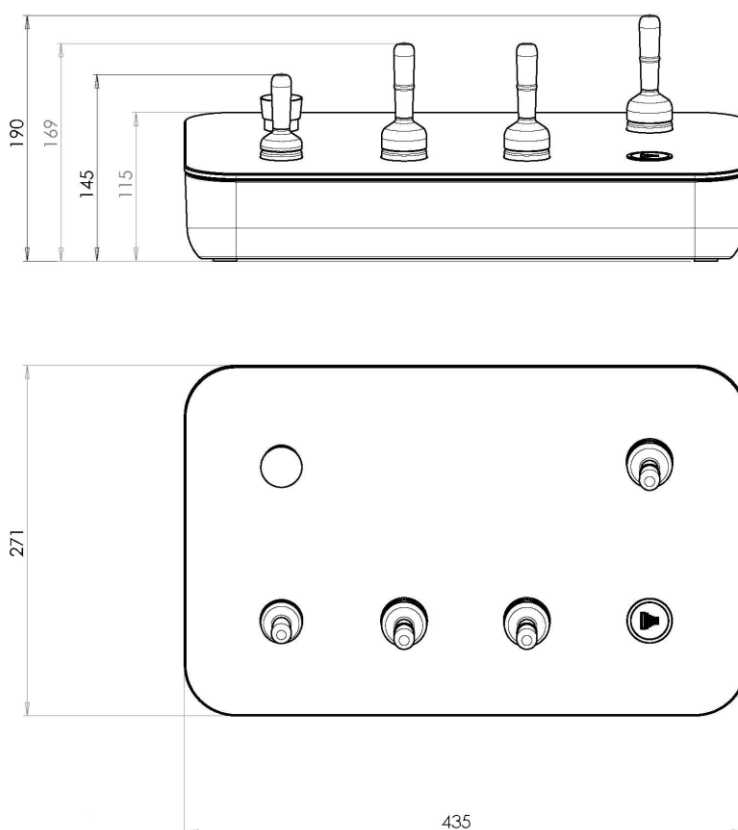
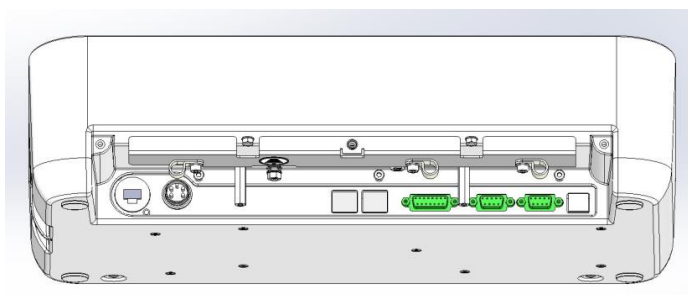
Not all fastening options are obtainable if customer site is in seismic / OSHPD regions. It is required to work with regional guidelines for expectable floor thickness that is greater than the options below to meet code.

5.5. Table main control console

5.5.1. Packaging

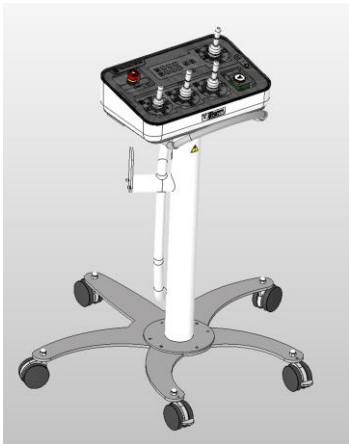
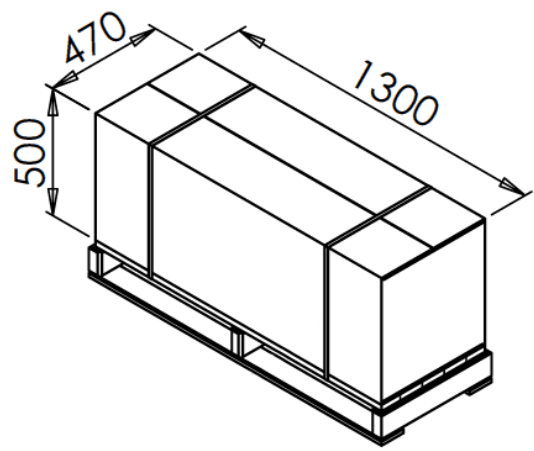
The main control console is not shipped with a separate package. It is included in the Package 2, referring to the Unpacking Procedure in the Installation Manual.

5.5.2. Dimensions



Measures in mm.

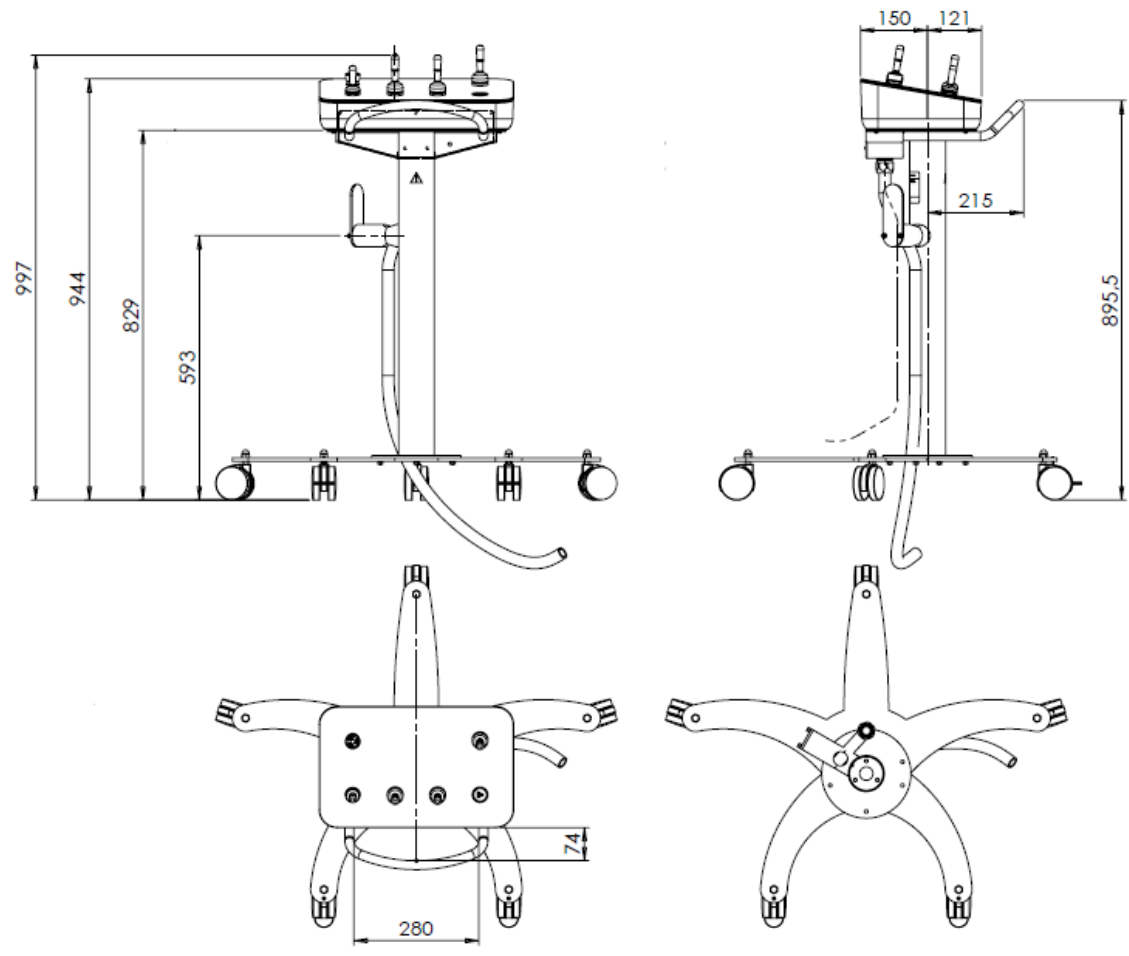
5.6. In-room secondary console (option)



5.6.1. Packaging

ITEM	LENGTH	WIDTH	HEIGHT	WEIGHT
In-room secondary console shipping pack	130 cm (51.2in)	47 cm (18.5in)	50 cm (19.7in)	50 kg (110 lbs)

5.6.2. Dimensions



The measures are in millimeters.

5.7. Generator Cabinet

5.7.1. Packaging

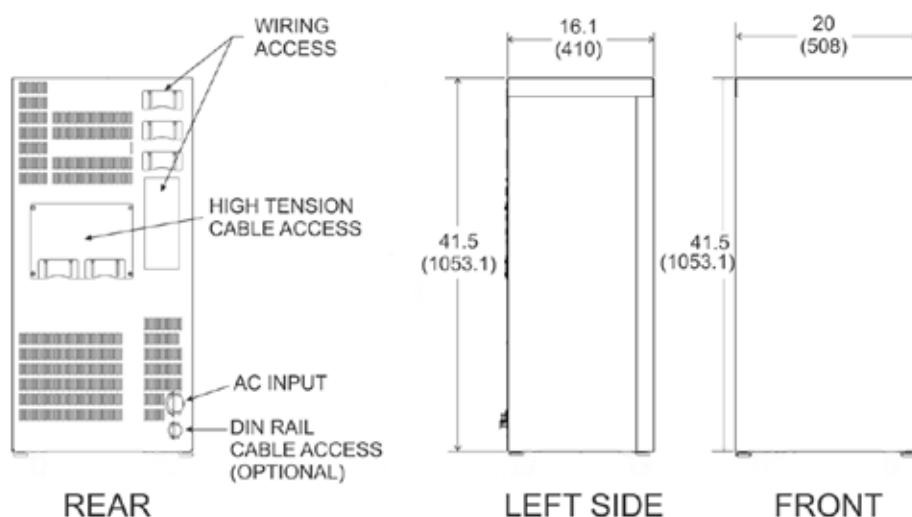
The dimensions of the packed Indico IQ® X-ray generator are shown in the table below.

ITEM	LENGTH	WIDTH	HEIGHT	WEIGHT
Main cabinet in shipping pack	71 cm (28in)	61 cm (24in)	132 cm (52in)	* 109-118 kg (240-260 lbs)

* The packed weight of the generator will vary within the specified range depending on console type and options.

5.7.2. Dimensions

ITEM	LENGTH	WIDTH	HEIGHT	WEIGHT
Generator cabinet (wheels are optional / not included)	50.8 cm (20 in)	41 cm (16 in)	106cm (41.5in)	91 kg (200 lbs)



Measure in inches (mm)

A minimum of 3 inches (76 mm) of clearance is required between the back of the generator and any wall behind the generator. Areas around the generator vents must be unobstructed to prevent overheating.

Cable conduits, troughs or raceways should be provided to route cables from the generator cabinet to the console and to the room equipment if required. These should be large enough to allow the cables to be routed without risk of damage.

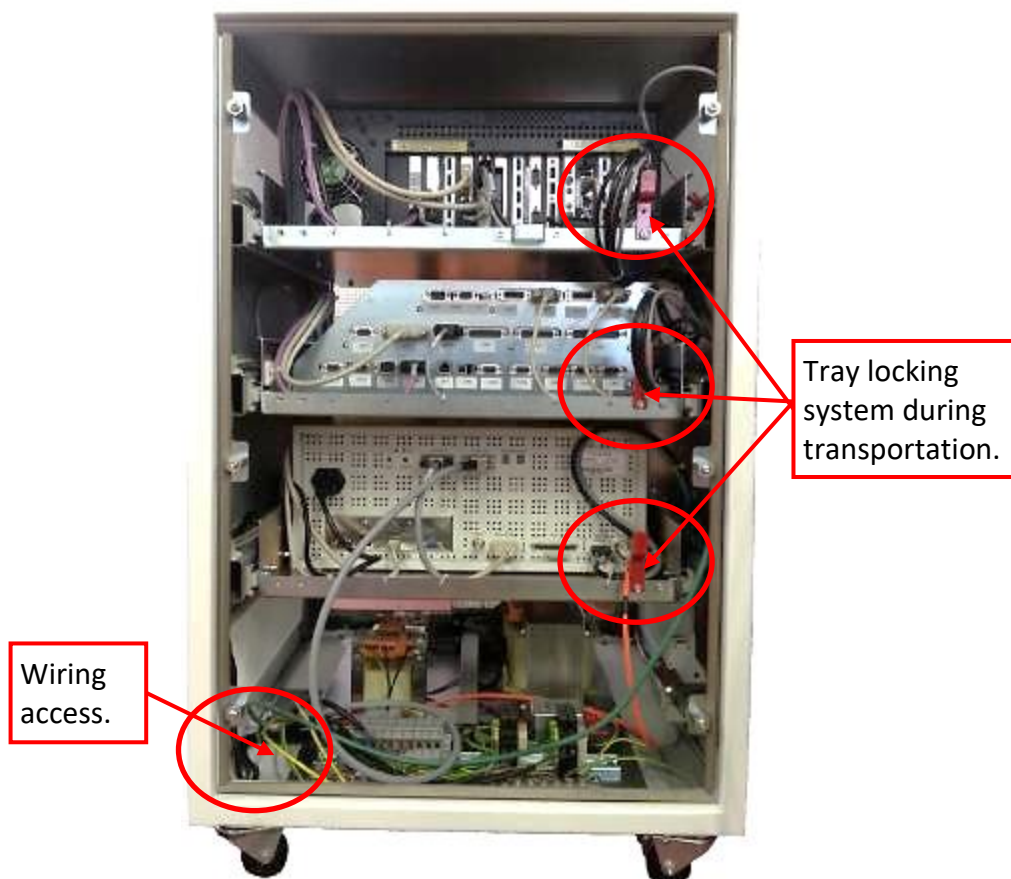
Sufficient room must be provided to allow access to the generator for installation. A minimum of 42 inches (1.07 m) clearance is recommended on any side for which service access may be required during installation. This is to minimize the risk of accidentally contacting high voltage during service and maintenance.

5.8. Digital system

5.8.1. Packaging

The digital system is shipped with the detector/detectors in a single package.

ITEM	LENGTH	WIDTH	HEIGHT	WEIGHT
Main cabinet in shipping pack	73 cm	65 cm	154 cm	160 kg



A minimum of 10 cm of clearance is required around the digital system. Areas around the digital system grids must be unobstructed to prevent overheating.

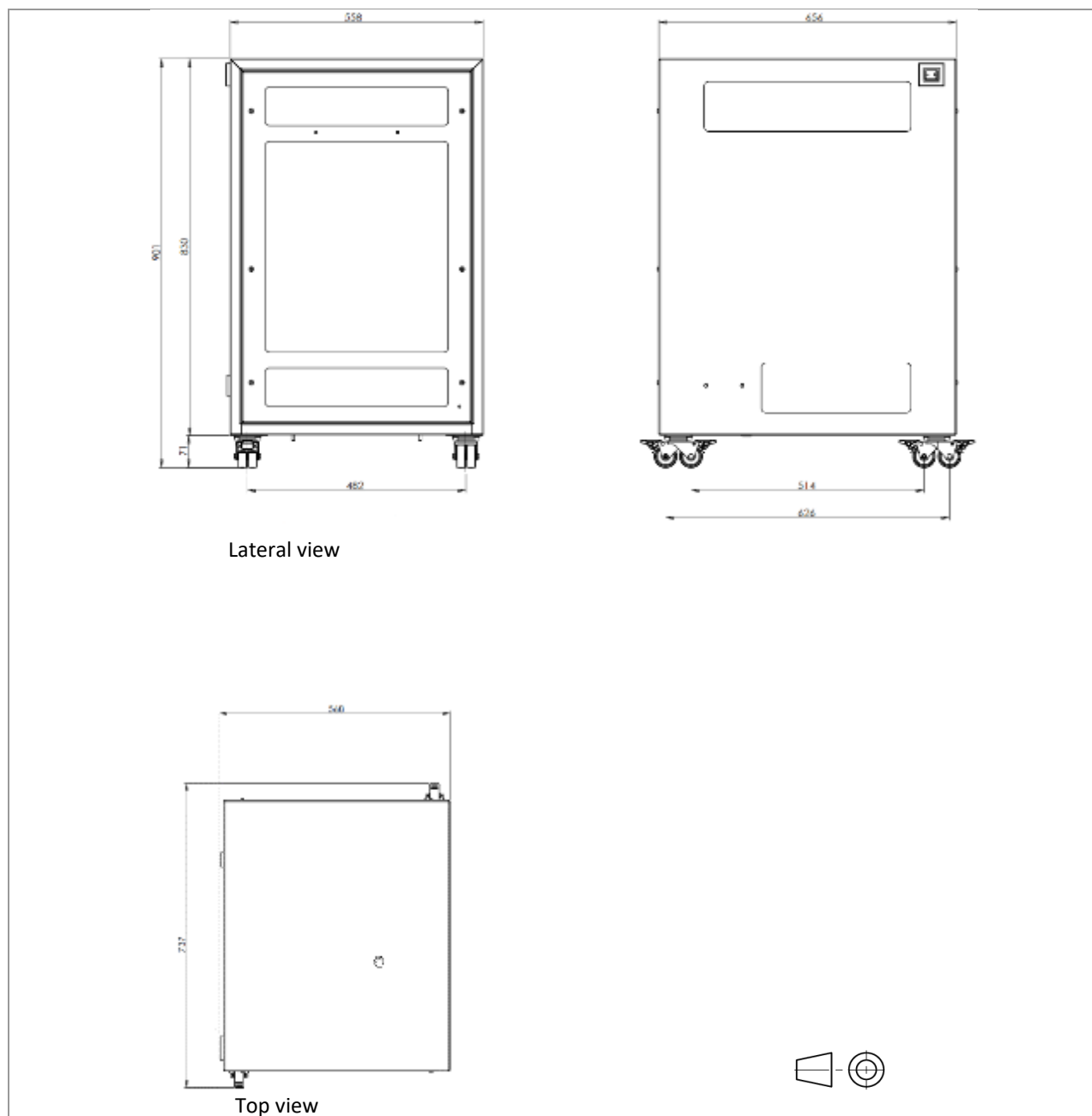
In order to aid installation and maintenance activities, the system stands on wheels. This allows shorts repositioning for accessing the internal component.

A minimum of 100 cm clearance is recommended on front and rear sides during installation and maintenance.

Cable routing should be large enough to allow the cables to be routed without risk of damage.

5.8.2. Dimensions

ITEM	LENGTH	WIDTH	HEIGHT	WEIGHT
Digital Cabinet	66 – 74 cm	57 cm	90 cm	110 kg



Lateral view

Top view

Measures in mm

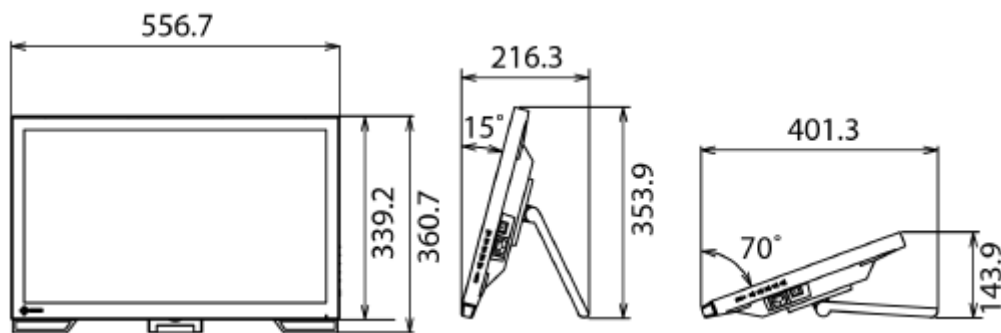
5.9. Monitor

5.9.1. Packaging

ITEM	LENGTH	WIDTH	HEIGHT	WEIGHT
Monitor 23"	18.5 cm	62.5 cm	46.5 cm	8.6 kg

5.9.2. Dimensions

ITEM	LENGTH	WIDTH	HEIGHT	WEIGHT
Monitor 23"	22 / 40 cm	56 cm	36 cm	6.6 kg



Measures in mm.

5.10. Monitor Advantech

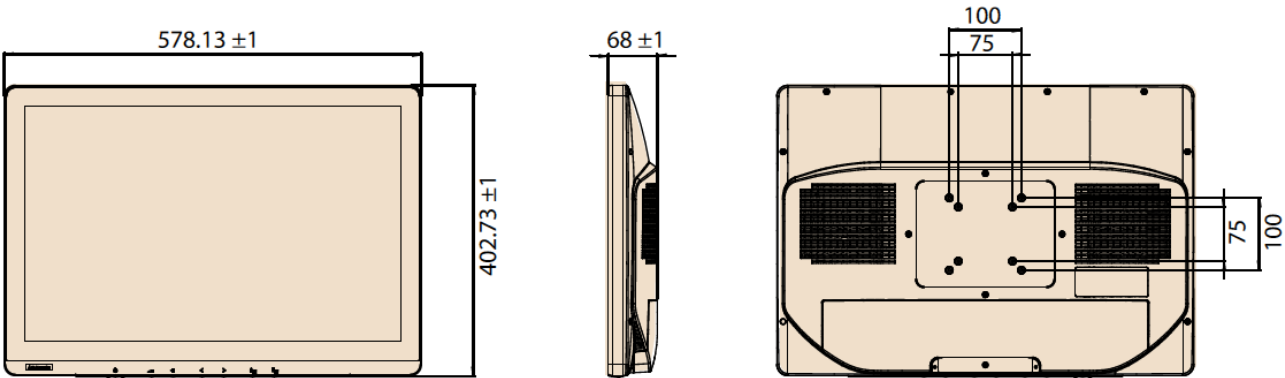
5.10.1. Packaging

ITEM	LENGTH	WIDTH	HEIGHT	WEIGHT
Monitor 24"	71.5 cm	18.5 cm	59.5 cm	11 kg

Weight includes external power supply (1 kg).

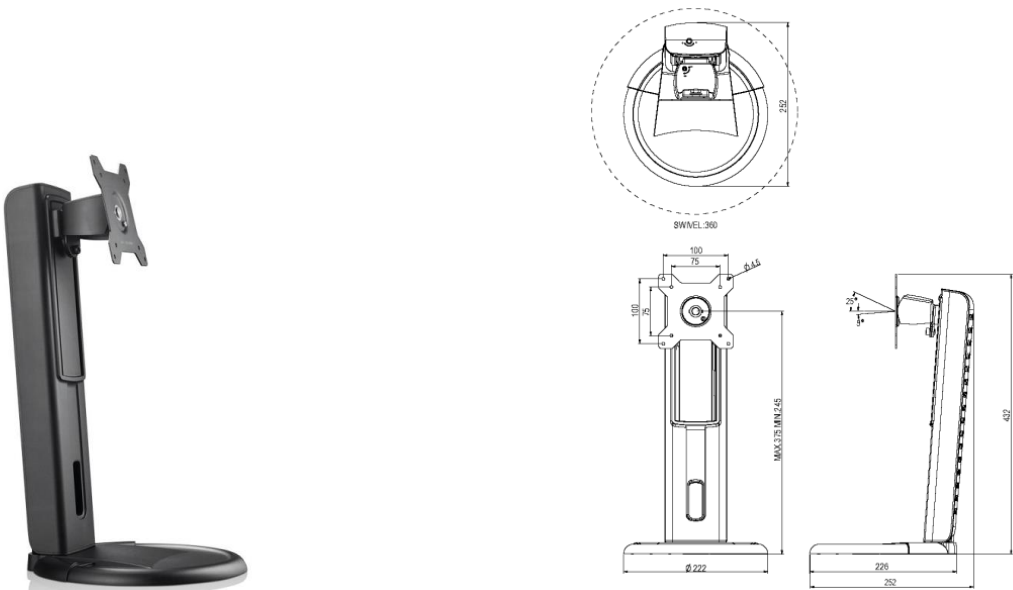
5.10.2. Dimensions

ITEM	LENGTH	WIDTH	HEIGHT	WEIGHT
Monitor 24"	68 cm	57.8 cm	40.3 cm	7.8 kg



Measures in mm.

ITEM	LENGTH	WIDTH	HEIGHT	WEIGHT
Display stand	222 mm	252 mm	432 mm	3.2 kg



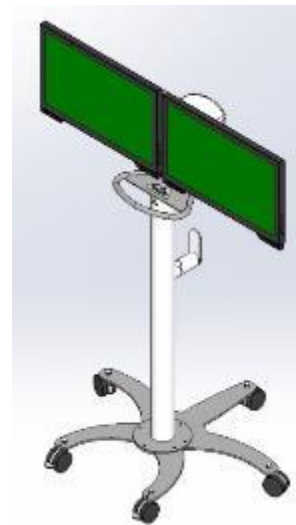
For desk installation.

5.11. Monitor cart

5.11.1. Packaging

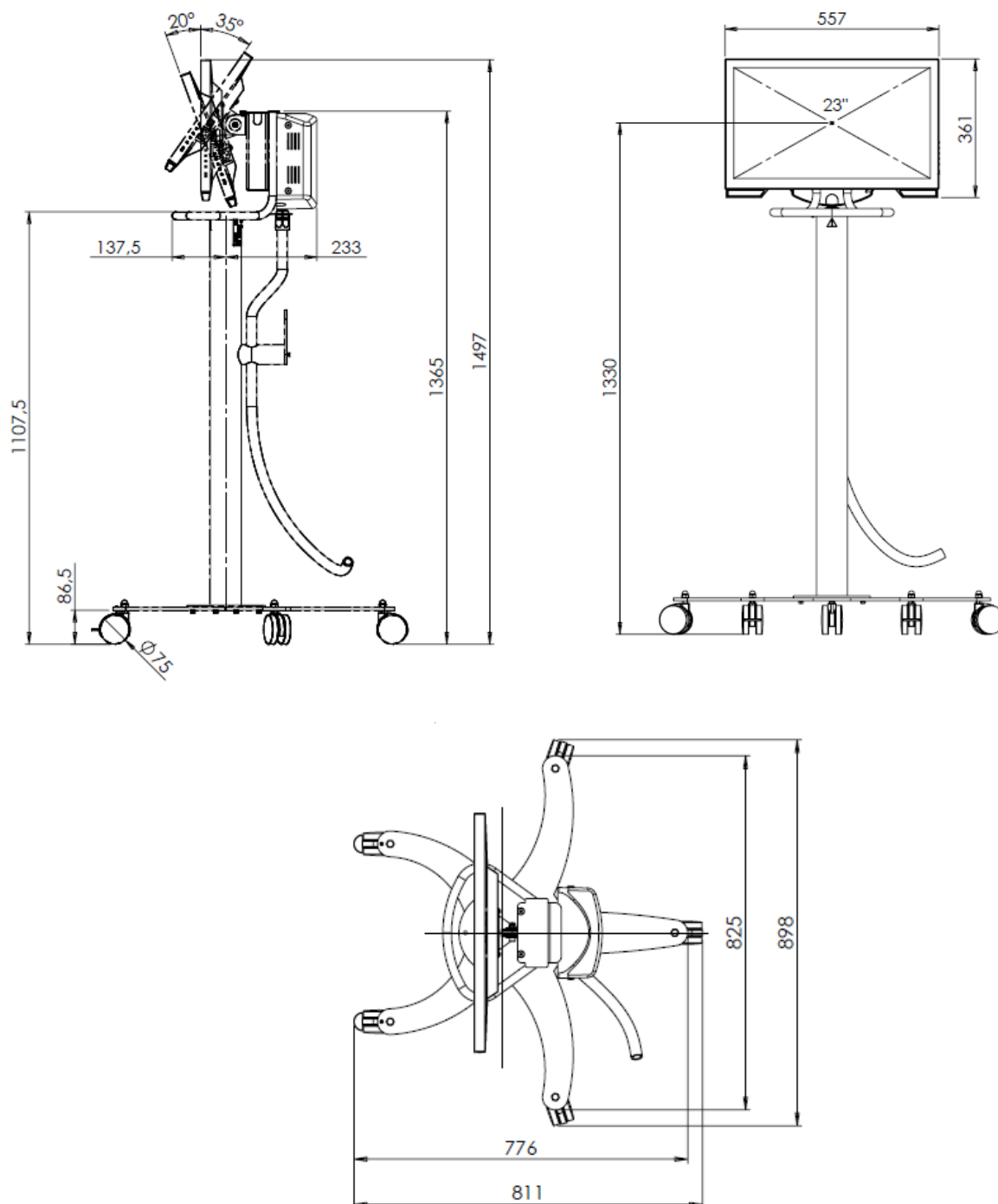
ITEM	LENGTH	WIDTH	HEIGHT	WEIGHT
Monitor cart (without monitor)	47 cm	47 cm	140 cm	10 kg

5.11.2. Dimensions



Single monitor cart

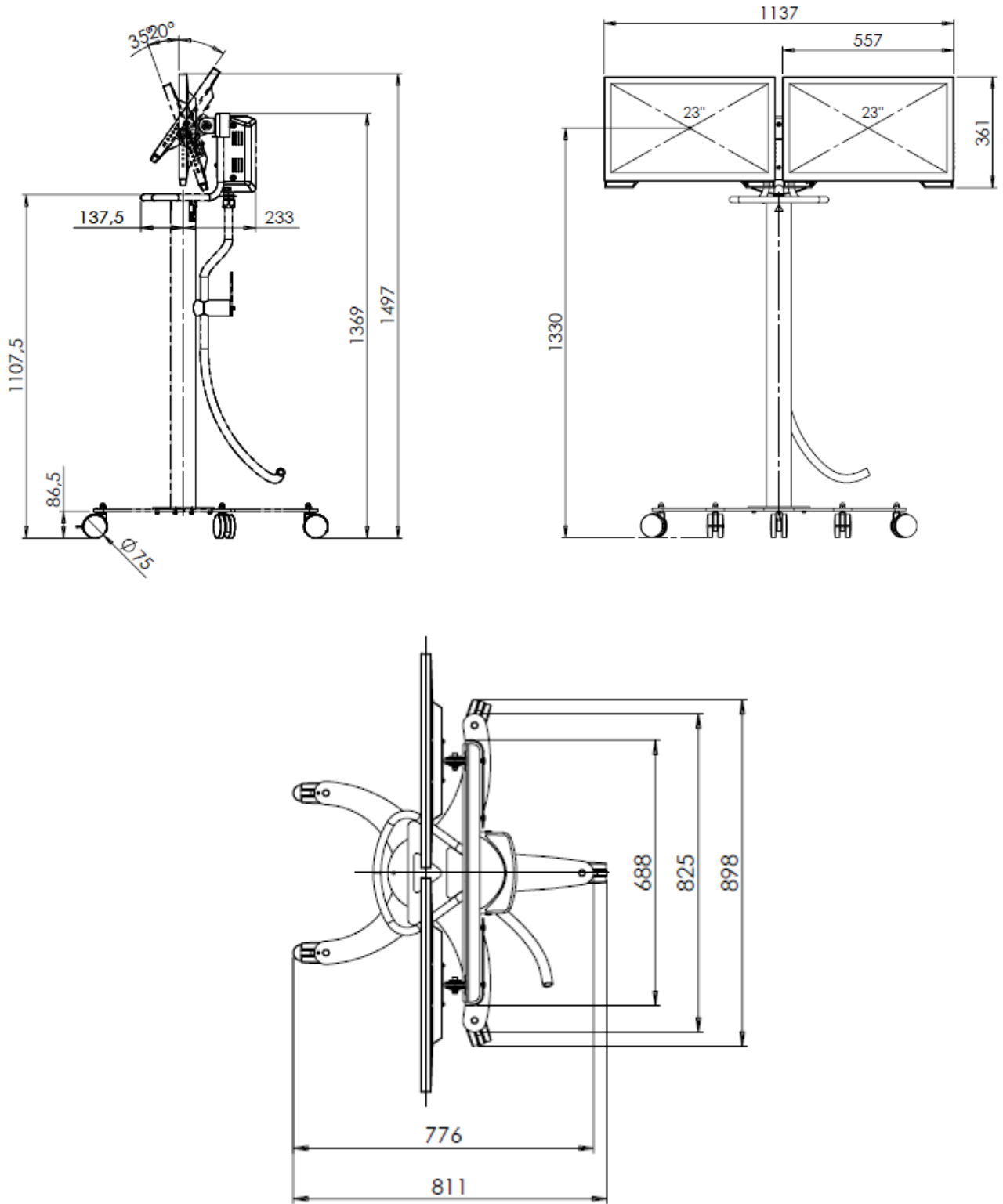
ITEM	LENGTH	WIDTH	HEIGHT	WEIGHT
Monitor cart (with monitor)	898 mm-	811 mm	1497 mm	--- kg



Measures in mm.

Double monitor cart

ITEM	LENGTH	WIDTH	HEIGHT	WEIGHT
Monitor cart (with monitors)	1137 mm-	811 mm	1497 mm	--- kg

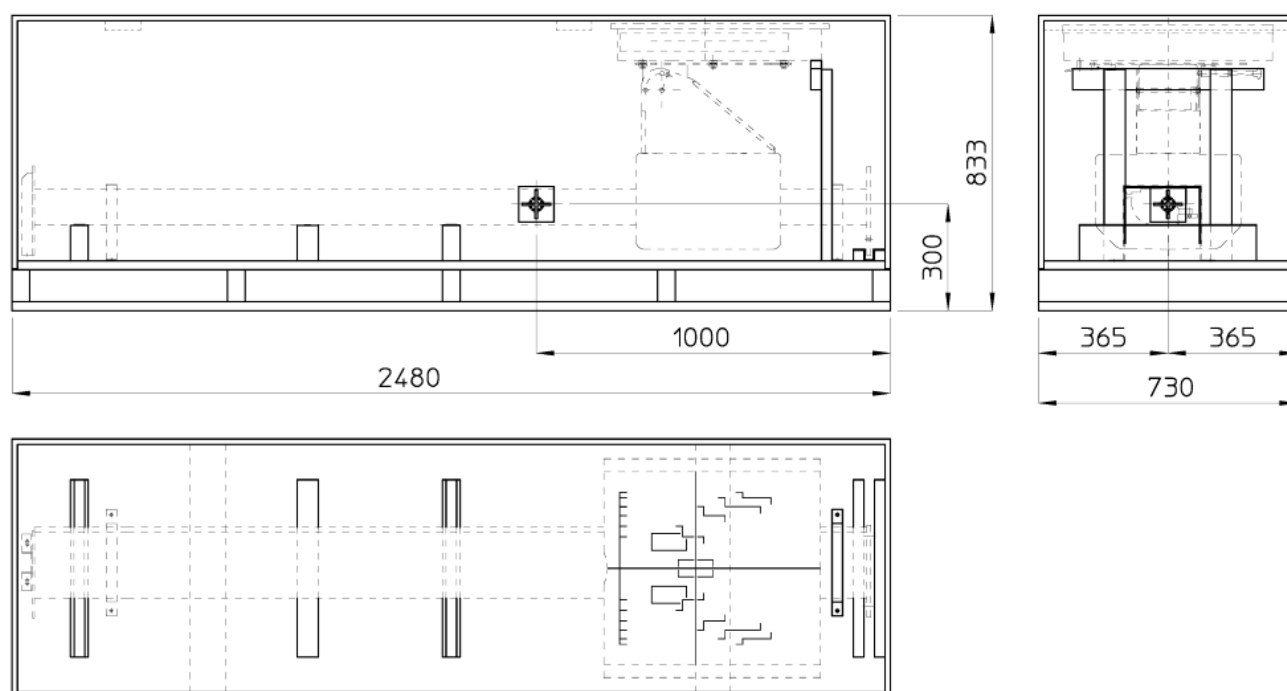


Measures in mm.

5.12. Wall Stand - option

5.12.1. Packaging

ITEM	LENGTH	WIDTH	HEIGHT	WEIGHT
Wall Stand (not tilting)	248 cm	73 cm	83 cm	222 kg
Wall Stand (tilting) (not available for US)	248 cm	73 cm	83 cm	251 kg



Measures in mm.

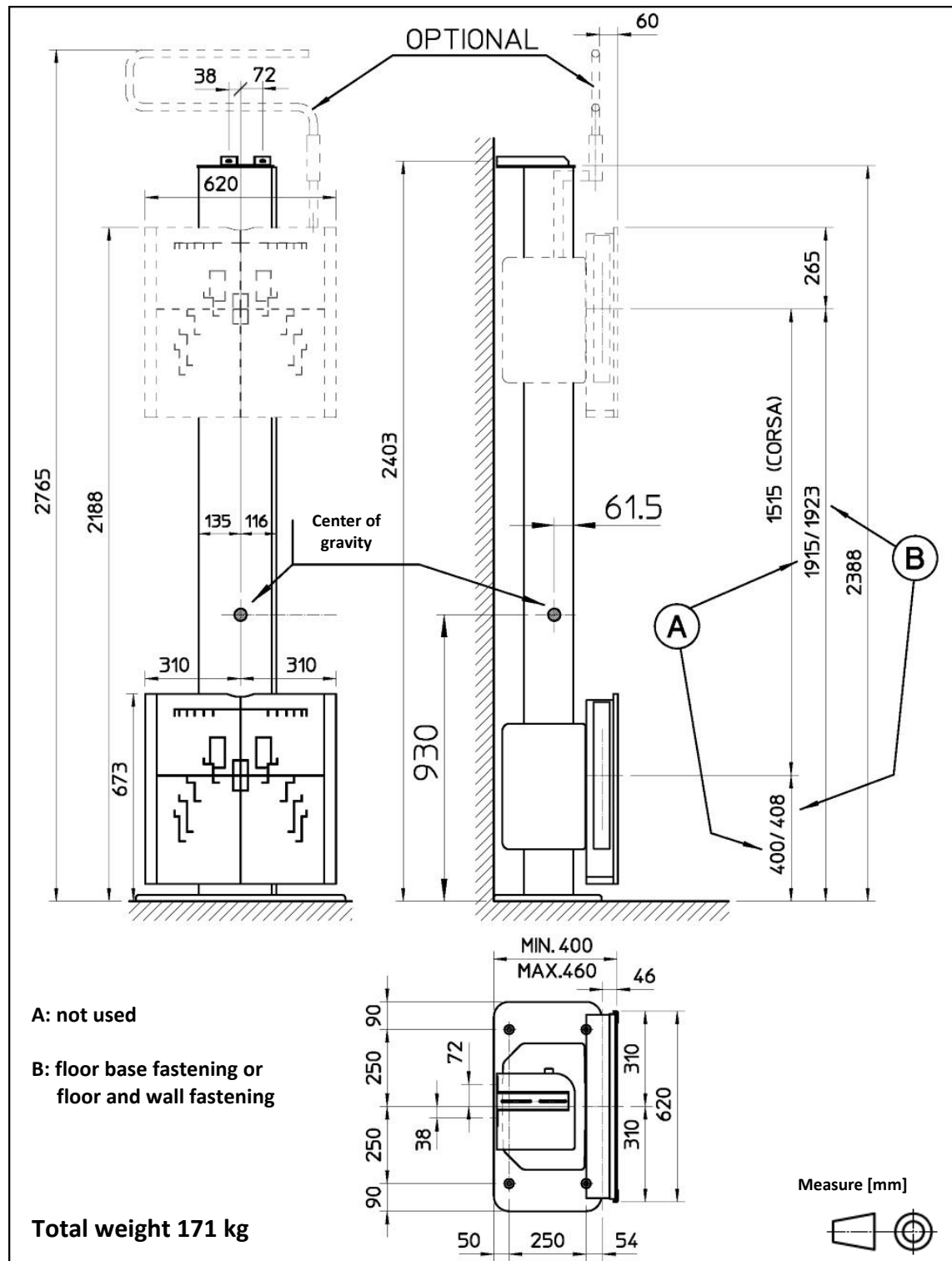
The case content is:

The stand (fastened lying down in a horizontal position), complete with bucky carriage (and detection chamber according to the customer's requests);

The box contains the small blocks for fixing the wall stand some additional screws, and the optional accessories to complete the equipment installation and its manuals.

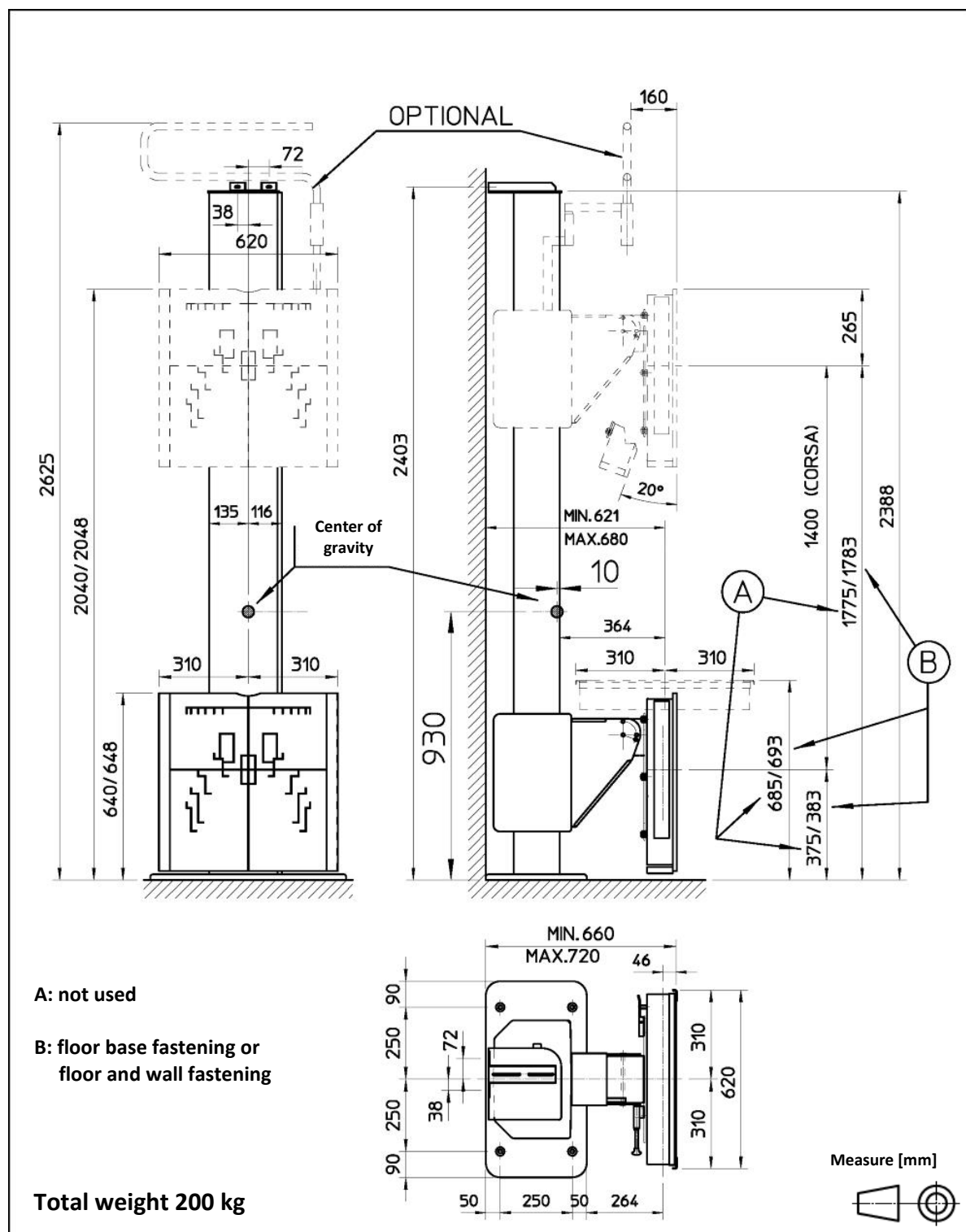
5.12.2. Dimensions

ITEM	LENGTH	WIDTH	HEIGHT	WEIGHT
Wall Stand Not tilting	40 cm (46 cm)	62 cm	239 cm (277 cm*)	171 kg



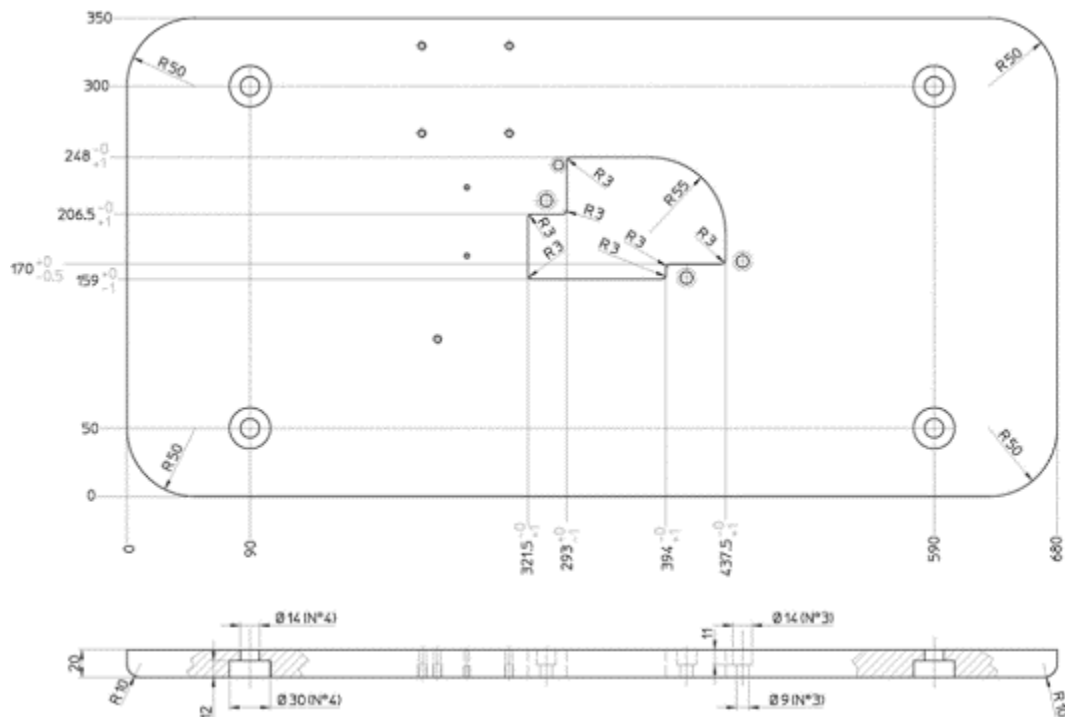
* with arm holder accessory

ITEM	LENGTH	WIDTH	HEIGHT	WEIGHT
Wall Stand Tilting (not available for US)	66 cm (72 cm)	62 cm	239 cm (263 cm)*	200 kg

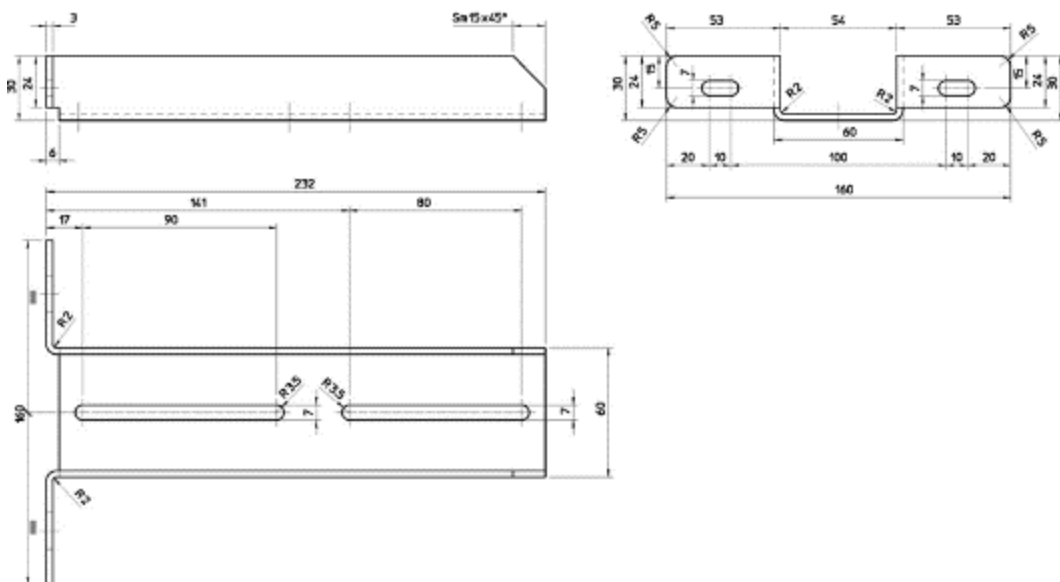


* with arm holder accessory

5.12.3. Wall Stand Base Plate and Wall Bracket



Wall stand fixation onto the floor and onto the floor and wall. Measures in mm.



Wall bracket (for wall fixation). Measure in [mm]

5.13. Wall stand and Table Layout

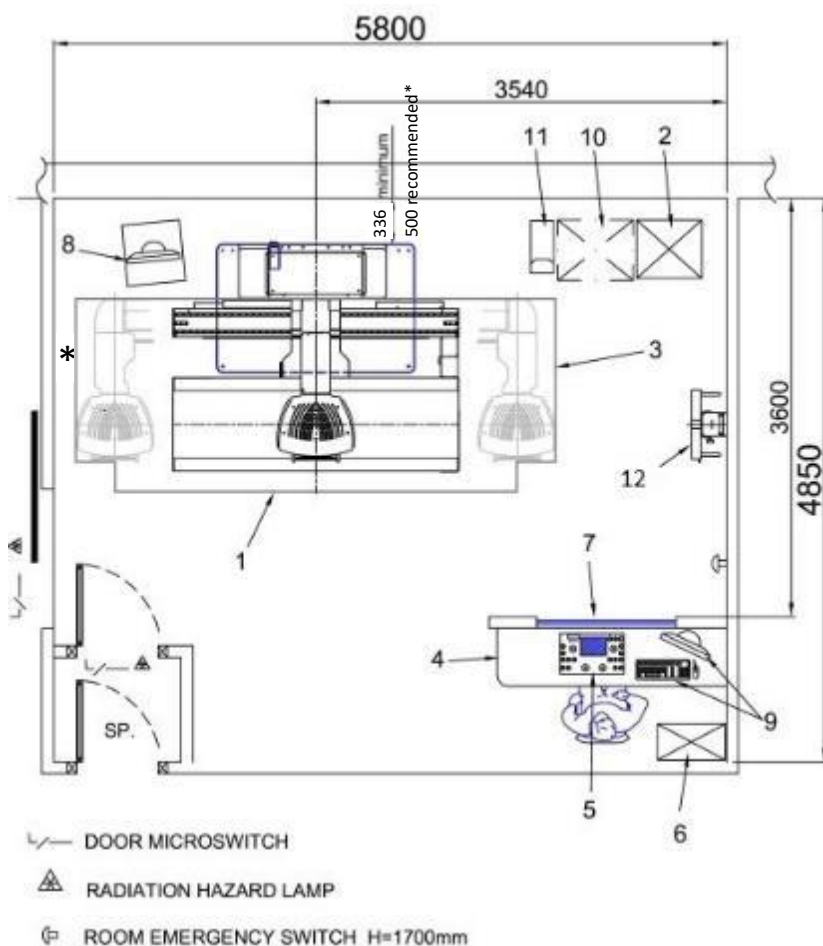
The recommended distance of the base plate rear from the wall is 500 mm. The minimum distance of the base plate rear from the wall must be 336mm.

During the installation, the recommended distance from the wall for the generator is 1,07 m (42 inches). During normal use, a minimum distance of 76 mm (3 inches) is required.

The minimum distance from the wall for the digital system is 100 mm (4 inches).

Lower distances could prevent proper maintenance.

Safety distances from the wall must be respected. For the positioning of the devices inside the room, it is necessary to consider cables length.



LEGEND

- 1) Table
- 2) Generator power cabinet
- 3) Operative limit
- 4) Control desk
- 5) Main console
- 6) Room power electrical board
- 7) Anti-X glass
- 8) Monitor on cart
- 9) Monitor+keyboard+mouse
- 10) Digital system cabinet
- 11) UPS
- 12) Bucky stand

NOTE: The recommended service area behind the table is 500mm. The minimum service area behind the table must be 336 mm.

Example of positioner table with wall stand. Measures in mm.

(*) This layout is an example. Specific details regarding room dimensions and system-wall distances will be considered with the pre-installation team.

5.14. Detector

The detector must be stored and handled within its original larger outer cardboard box. Do not open this outer box if there is no need.

While not used nor powered, the detector should be stored within the inner protective bag resealed or reclosed with an adhesive tape, and using desiccant material inside the bag to avoid any humidity on the detector.

5.14.1. Packaging

The detectors are shipped with the digital system in a single package.

ITEM	LENGTH	WIDTH	HEIGHT	WEIGHT
Detector Pixium 4343FL	70 cm	64 cm	31 cm	21 kg
Detector Pixium 4343RF	72 cm	72 cm	31 cm	32 kg
Wifi Detector Pixium 3543EZ	63 cm	67 cm	25 cm	10 kg
Wifi Detector Pixium 2430EZ	63 cm	67 cm	25 cm	10 kg
PU**	N.A.	N.A.	N.A.	N.A.

** The PU unit is already installed into the digital system cabinet. Make reference to the Digital System information

The cardboard box and the inner protective bag have to be opened with care in order to be reused.
Unpacking procedure:

- a) Open the cardboard box using the two fasteners on the front side of the box.
- b) Remove the inner protective bag from the box (See next page for continuation of instructions).

CAUTION!

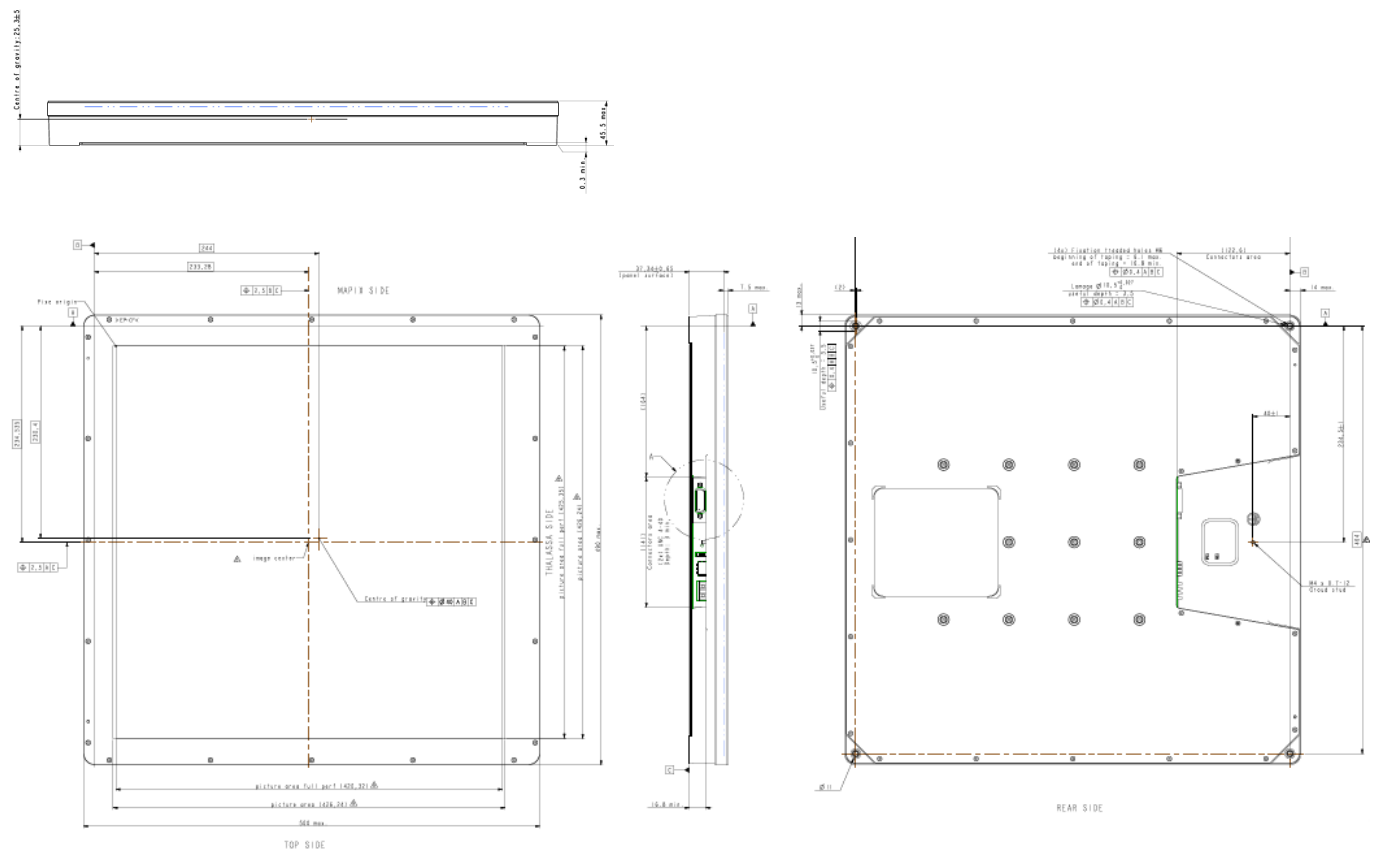
Do not open the inner protective bag before a sufficient acclimatization time. The acclimatization time is specified as 7h30 hours (minimum). It is mandatory to remove the detector from the cardboard box during this time – however do not under any condition open the sealed protective bag during this time. Refer to the PIXIUM FE 4343 [R or F] specification for storage conditions (environmental temperature and humidity, etc...) of the detector once the protective bag has been opened at the end of this acclimatization time.

- c) In order to open the inner protective bag, cut off only the sealed part of the bag.
- d) Immediately after opening the inner protective bag, check and note the value provided by humidity indicator placed inside the bag.
- e) A digital readout thermometer is placed inside the inner cardboard box, to record max and min temperatures during transport and storage. To read these temperatures, just press MAX/MIN pushbutton and note the indications. Refer to the PIXIUM FE 4343 [R or F] specification for specified temperature values.
- f) Keep the following original parts in a secure place in case of detector return :

- cardboard box,
 - foams,
 - digital thermometer,
- as well as a new inner protective bag (with Velcro strip) which contains a small sealed bag with desiccant material bag and a new humidity indicator. DO NOT OPEN this small sealed bag as it will be used in the case of any detector return. Take care to not apply undo shocks to the shipping containers even if empty.

5.14.2. Dimensions

ITEM	LENGTH	WIDTH	HEIGHT	WEIGHT
Detector Pixium 4343FL	49 cm	50 cm	4,6 cm	14 kg
Detector Pixium 4343RF	51 cm	52 cm	4,6 cm	25 kg
Wifi Detector Pixium 3543EZ	38 cm	46 cm	1,5 cm	3 kg
Wifi Detector Pixium 2430EZ	26,5 cm	32,5 cm	1,5 cm	2 kg



Detector Pixium 4343FL. Measures in mm.

5.15. Access Point

5.15.1. Packaging

The access point is not shipped with a separate package. It is included in the Package 2.

5.15.2. Dimensions

ITEM	LENGTH	WIDTH	HEIGHT	WEIGHT
Access Point	170 mm	170 mm	28 mm	316 g

Place this component inside the room.

6. Planning Electrical Connections

6.1. Routing Cables

*The dimension of cable ducts should be 20x8 cm or larger.
Smaller ducts may lead to difficulties during installation.*

6.1.1. General

Whenever possible, keep high-voltage and power cables away from any other cables. Use separate trough in duct system. Minimize cable length between the line disconnect and the system cabinet power unit to reduce voltage regulation problems and wiring costs. For information about the cables supplied with your system, please refer to the paragraph “Schematic overview and cable list” in the System Installation manual.

6.1.2. Conduit

Using conduit imposes some important considerations when used with this system. Of primary concern, the majority of cables used are pre-terminated. Pre-termination 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, the size of conduit chosen must allow for future growth. There's the possibility of additional cables being added later as the system is developed and options are added. The use of conduit is recommended for cables running overhead between rooms, especially when a diagonal run provides the shortest cable path.

6.1.3. Floor Ducts

Floor ducts have advantages when used with a single room or two adjacent rooms. Floor duct combines cabling in 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 existing installations. For the same reason, it is impractical to attempt to add on to existing floor duct systems.

6.1.4. Power Distribution

Make reference to the par. [8.2 Electrical Requirements](#) page 89.

6.1.5. Emergency Power

R&F rooms may be used as critical care areas. Primary power to the patient table auxiliary outlets should be distributed from the customer's emergency power branch. The auxiliary outlets may have life-support devices plugged in that must remain on during a power failure in the main branch. This will require a separate, independent circuit breaker so service personnel can remove all power from the table during installation and servicing without removing power from the room outlets. Always check local codes for emergency power requirements.

6.2. Master Interconnect System (MIS)

System interconnect cables are described in MIS (Master Interconnect System) documents shipped with the system. These documents specify all interconnections between components within the system and its options.

Note: for specific system interconnect maps and connection details please refer to the System Service Manual.

6.3. Hospital Network Connections

All Digital systems are equipped with Broadband fast Ethernet hardware for Service Diagnostics. The systems equipped with Digital Imaging are capable of placing electronic images on the Hospital image Ethernet Network (DICOM).

The Digital PC (part of the Digital subsystem) is the connectivity point between the system and the hospital. For a Broadband connection, it is the purchaser's responsibility to provide the connection at the Ethernet port on the Digital PC via a Cat 5 Ethernet cable and the hospital Ethernet connection.

Note: System hardware is rated at 100/1000Mbps transfer rate. Hospital connections must be rated for 100/1000Mbps for optimal performance. One RJ45 Ethernet plug should be present in the room.

6.3.1. Remote services broadband pre-installation requirements for Europe

To enable an easier installation and to benefit from remote support (service and engineering teams), the equipment should be connected to installation on site.

Thus, the connectivity solution to implement should be decided during pre-installation and all related data should be available before installation starts.

For all installations make sure that you have at least one RJ45 dedicated to connect the new equipment on the LAN.

In case of Broadband, this connection will also be used for the remote service of the equipment.

The distributor offers a wide range of connectivity solutions.

Network devices (like CISCO Routers for instance) can be shipped with the equipment only if the Sales Representative has added the connectivity item in the order.

For complete descriptions of these connectivity solutions, please refer to the Broadband Solutions catalogue.

Connectivity Process and pre-installations checklists are available in the Broadband Connectivity PIM.

For each solution selected by the customer the pre-installation checklist must be fulfilled by site IT manager in order to get connectivity information (site IT manager contacts, IP address...) available at installation.

6.3.2. RSVP Network requirements

System should be connected to external network in order to reach RSVP server. Port 443 has to be opened. Check with your Connectivity leaders if hospital network is ready for RSVP.

6.3.3. DICOM hospital Network

If the customer wants to use the DICOM services provided by the digital system, please be sure to have a Local Area Network plug (RJ45 type) connected to the Hospital Network and one Ethernet cable cat. 5 for the connection to the digital system DICOM network board (connector B11C4).

The customer must also supply the following information:

- Local Network board TCP-IP address (or the indication to use the DHCP service);
- Local Digital PC “Station Name” (Local AE title);
- DICOM Store Server AE title;
- DICOM Store Server TCP-IP address and port number;
- DICOM Print Server AE title;
- DICOM Print Server TCP-IP address and port number;
- DICOM Worklist Server AE title;
- DICOM Worklist Server TCP-IP address and port number;
- DICOM MPPS Server AE title;
- DICOM MPPS Server TCP-IP address and port number;
- DICOM Dose SR Store Server AE title (option);
- DICOM Dose SR Store Server TCP-IP address and port number (option);

Option

Only in case the customer wants to grant Internet access to this device, also the following information is needed:

- Default gateway TCP-IP address;
- Preferred DNS server (or the indication to use the DHCP service)
- Alternate DNS server (option)

ATTENTION

The customer MUST be aware of the risks concerning cybersecurity of an enabled Internet connection.

Internet connection can be activated only if the user logs in Windows as “Administrator”. The normal Windows user “Operator” can never connect to Internet.

7. Laying Out the Room

7.1. Considerations

7.1.1. Privacy and security

It is strongly recommended that the system is installed in a secure location and is protected from physical access by unauthorized individuals. It is recommended that the room where the system is installed is access controlled and audited by either physical or electronic means.

The monitors should be placed in a way limiting the visibility to the user only.

The computer should be physically secured in a way that it is not physically accessible to unintended use.

The digital system should be connected to a secured network, not open to unintended users or hosts.

7.1.2. Radiation Protection

Because X-ray equipment produces radiation, you may need to take special precautions or make special site modifications. GE Medical Systems does not make recommendations regarding radiation protection. It is the purchaser's responsibility to consult a radiation physicist for advisement on radiation protection in X-ray rooms.

Remember to locate the User Interface per local codes and regulations. The IUI must not be located anywhere there's a possibility of exposing the operator to radiation during use. This includes operation of the system using the hand switch. The hand switch is on the right side of the unit, and cannot be relocated to the left side.

7.1.3. Service Access

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

7.1.4. 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.
- Clinicians at the patient table must be able to communicate with assistants in the control area monitoring equipment from the table.
- Operators in the control area must have easy access to the control console. However, position the controls (including hand switches) so 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 non-electrical lines (air, oxygen, vacuum, water, etc.) in the room.

7.1.5. Peripheral Equipment

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

- storage cabinets
- sinks
- oxygen stations
- IV apparatus

7.2. Typical Room Layout

The remote tilting table can be installed in a room that has been officially approved for the operation of radiological equipment of the same class.

In addition, proper operation of the unit can be achieved only if the environmental characteristics specified in the following sections are strictly observed.

The recommended distance of the base plate rear from the wall is 500 mm. The minimum distance of the base plate rear from the wall must be 336mm.

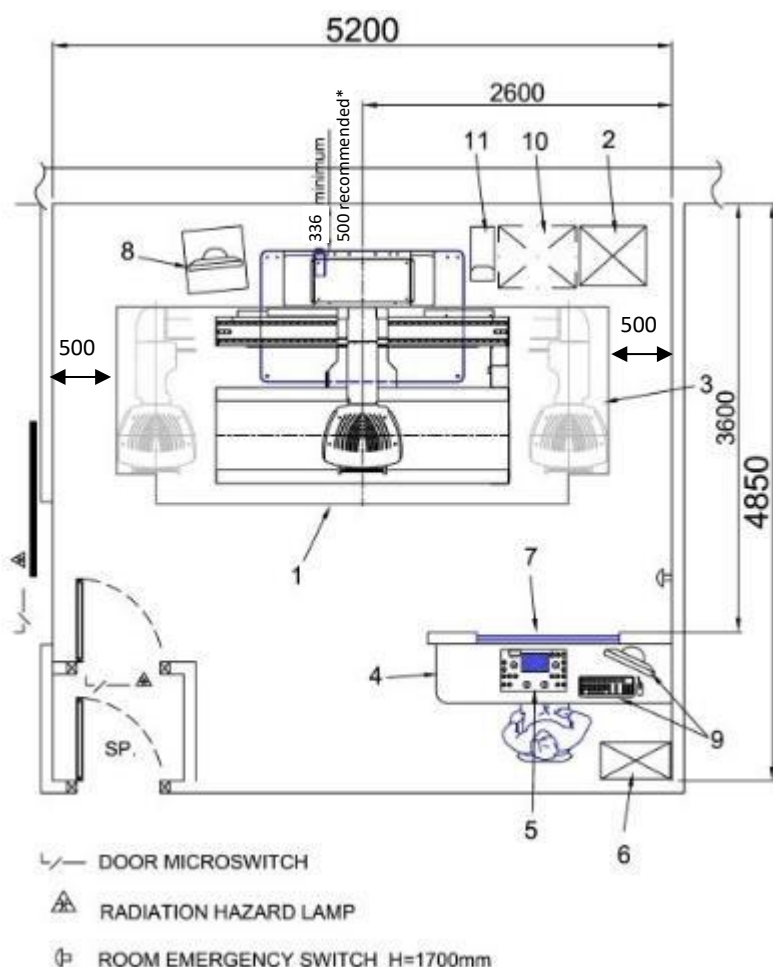
During the installation, the recommended distance from the wall for the generator is 1,07 m (42 inches). During normal use, a minimum distance of 76 mm (3 inches) is required.

The minimum distance from the wall for the digital system is 100 mm (4 inches).

Lower distances could prevent proper maintenance.

Safety distances from the wall must be respected. For the positioning of the devices inside the room, it is necessary to consider cables length.

A typical room layout (without OTS and wall stand) could be the following one.



LEGEND

- 1) Table
- 2) Generator power cabinet
- 3) Operative limit
- 4) Control desk
- 5) Main control console
- 6) Room power electrical board
- 7) Anti-X glass
- 8) Monitor on cart
- 9) Monitor+keyboard+mouse
- 10) Digital system cabinet
- 11) UPS

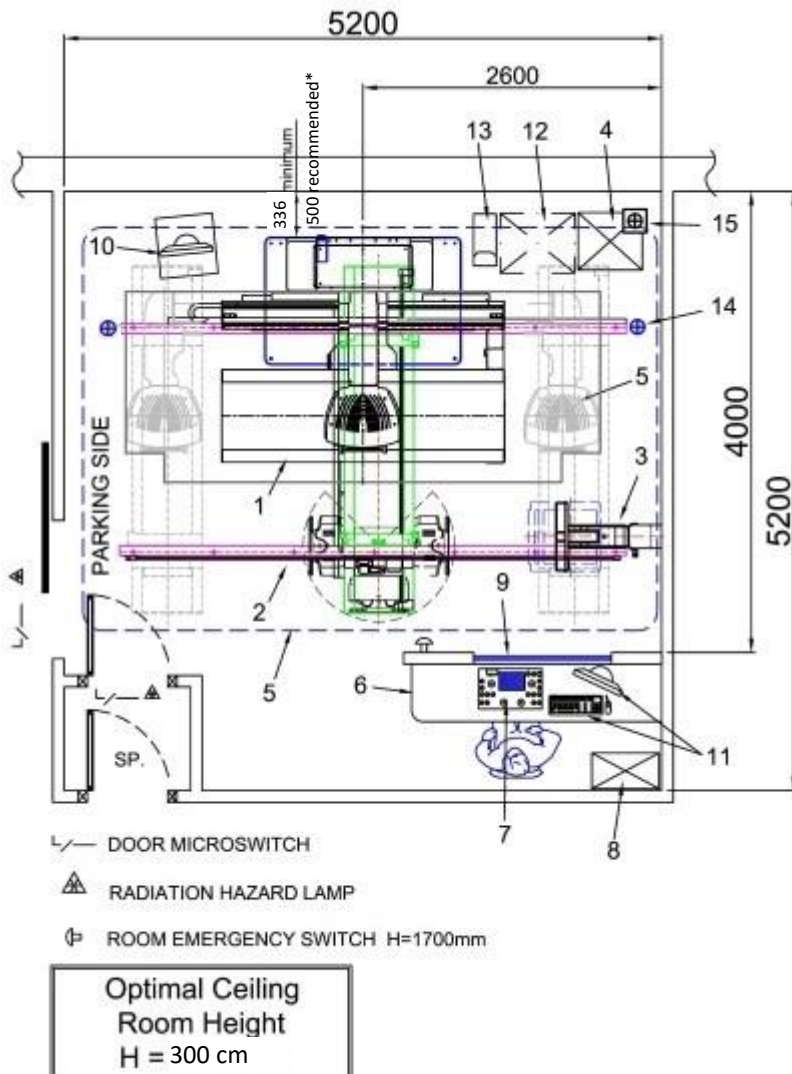
NOTE: The recommended service area behind the table is 500mm. The minimum service area behind the table must be 336 mm.

Measures in mm.

A typical layout with OTS and wall stand could be the following one.

WARNING:

it is important that the longitudinal OTS rails are parallel to the table longitudinal movement.



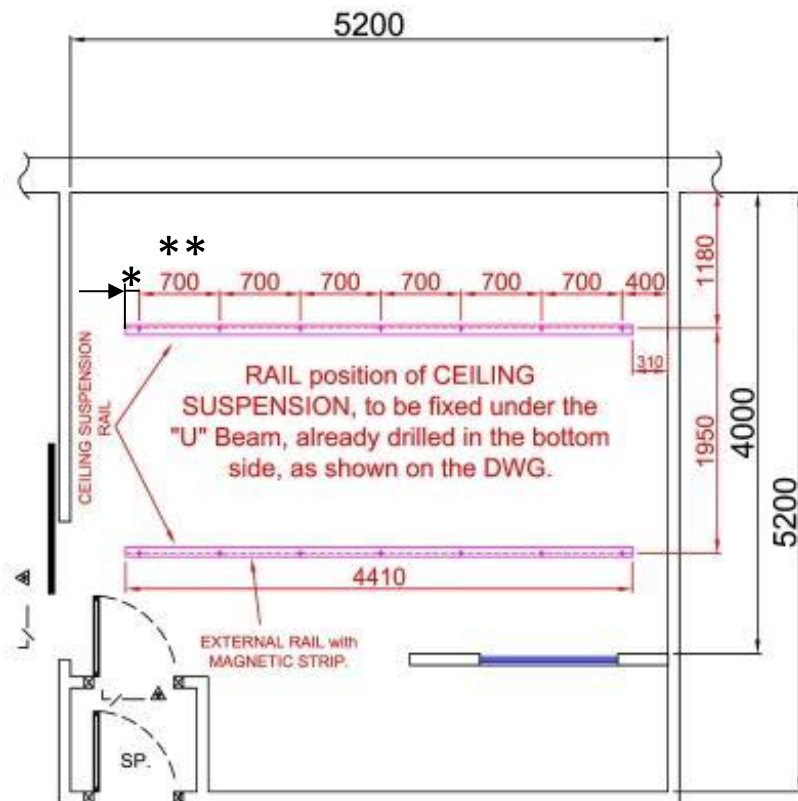
LEGEND

- 1) Table
- 2) Ceiling suspension
- 3) Bucky stand
- 4) Generator power cabinet
- 5) Operative limit
- 6) Control desk
- 7) Main control console
- 8) Room power electrical board
- 9) Anti-X glass
- 10) Monitor on cart
- 11) Monitor+keyboard+mouse
- 12) Digital system cabinet
- 13) UPS
- 14) Ceiling suspension cable IN (*)
- 15) Cable out from the generator for the ceiling suspension

NOTE: The recommended service area behind the table is 500mm. The minimum service area behind the table must be 336 mm.

(*) The ceiling cable IN is on the right or on the left, according to the generator position (right or left). This information must be provided to the manufacturer in the pre-installation phase. In this example, the cable exit RIGHT is chosen because the generator is on the right.

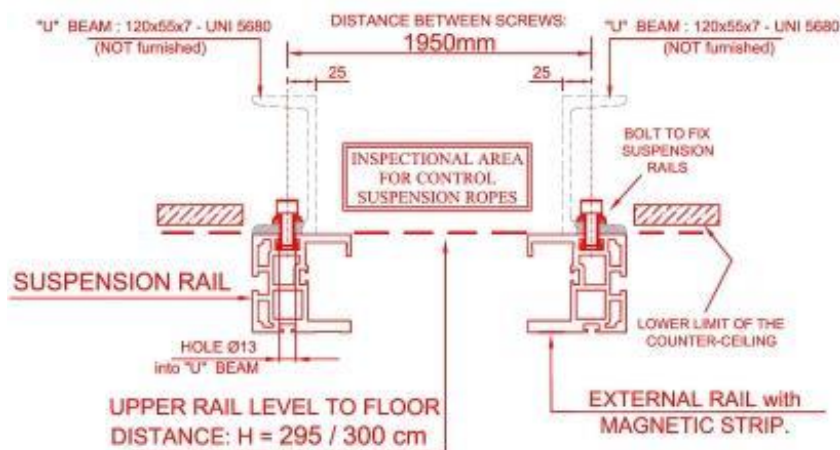
The system is shipped already cabled. If you need to change the cable exit, make reference to procedure in the OTS Service Manual.



* The max extremity length is = 350 mm.

** 660 mm steps are also possible.

DETAIL OF VERTICAL FIXING



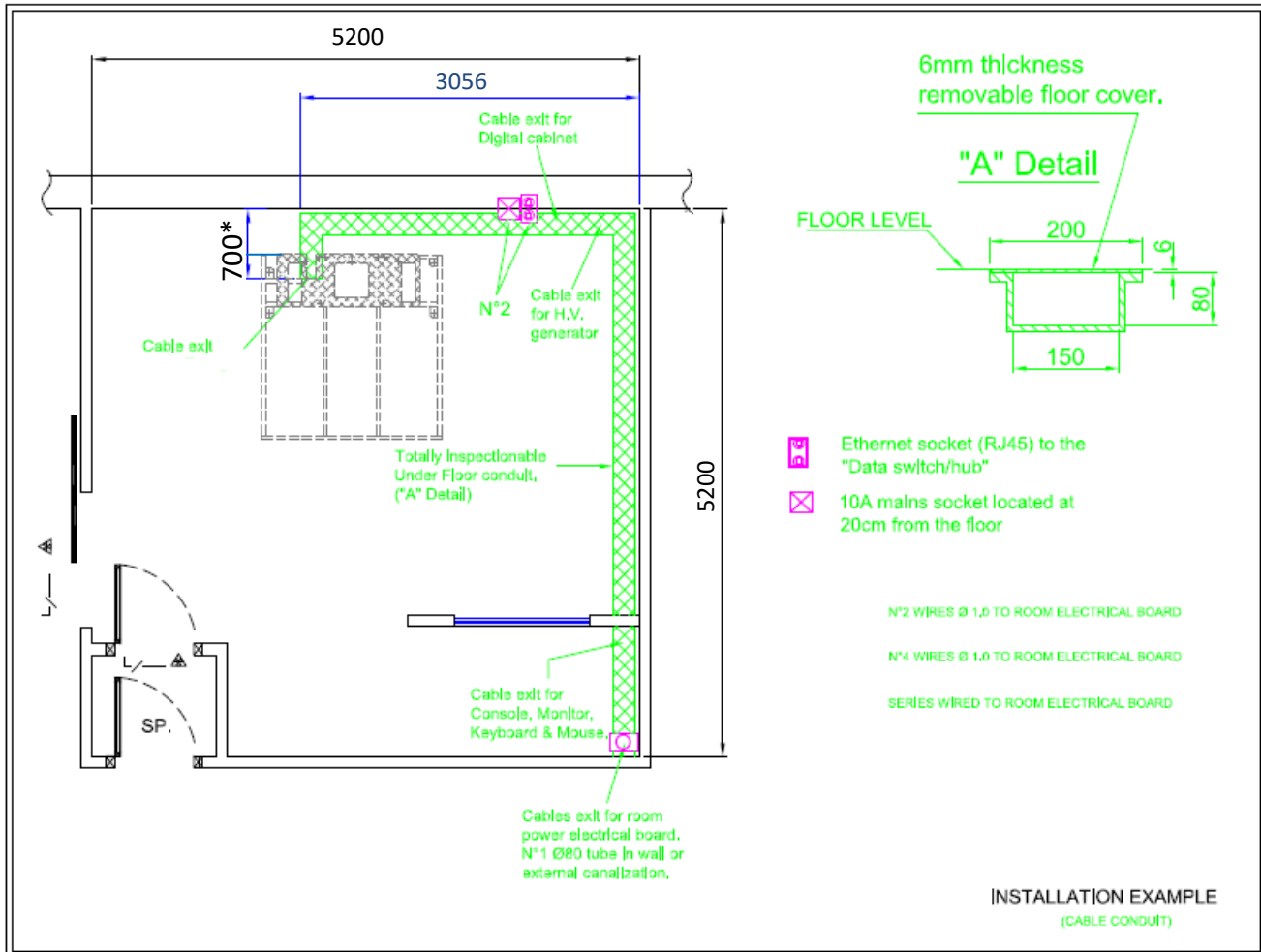
All dimensions are in MILLIMETERS.

THE "U" BEAM MUST BE LONGER THAN THE CEILING SUSPENSION RAILS

LOAD ON EACH BOLT = 150Kg

IMPORTANT:
THE "U" CEILING SUPPORT MUST BE FIXED PERFECTLY PARALLEL AND ON THE SAME PLANE.

For both layouts, the following drawings illustrate how to perform cable conduit and plate fixing.



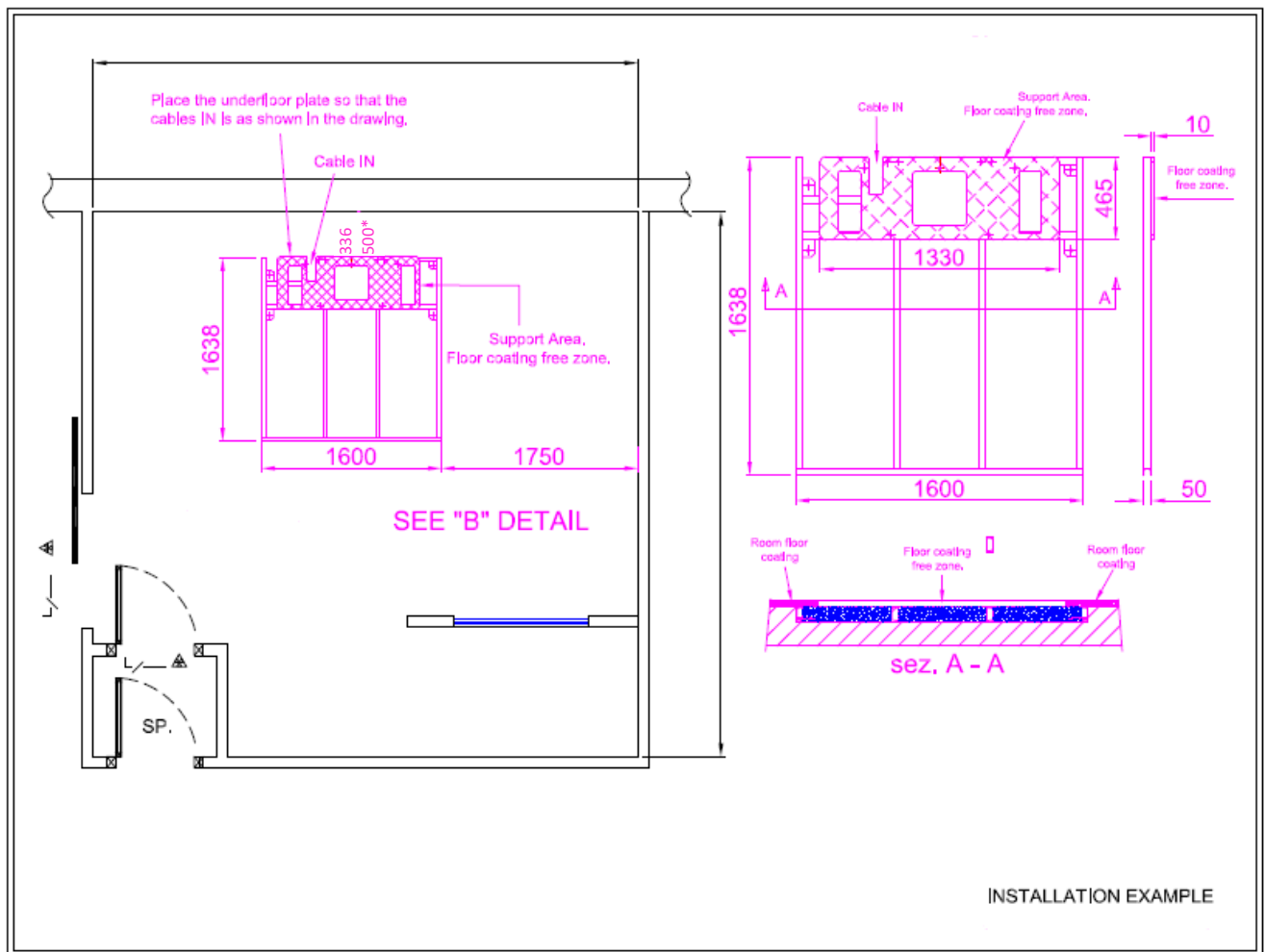
Measures in mm.

Recommended opening for duct should be 20x10 cm.

In case of ducts fixed in the floor, also the connectors have to be passed through the ducts. So, it is important to dimension the ducts correctly. The following indications are listed as guideline to understand the overall space needed to pass connectors and cables:

- metal cylindrical 6 inches (15,3 cm) diameter ducts for power cables,
- metal cylindrical 7 inches (17,8 cm) diameter ducts for signal cables,
- metal cylindrical 3 inches (7,7 cm) diameter ducts for console and first monitor cables.

(*) NOTE: This distance is 700mm (200+500) if the 500mm recommended service area behind the table is used. It must be 536 (200+336) if the 336mm minimum service area behind the table is used.

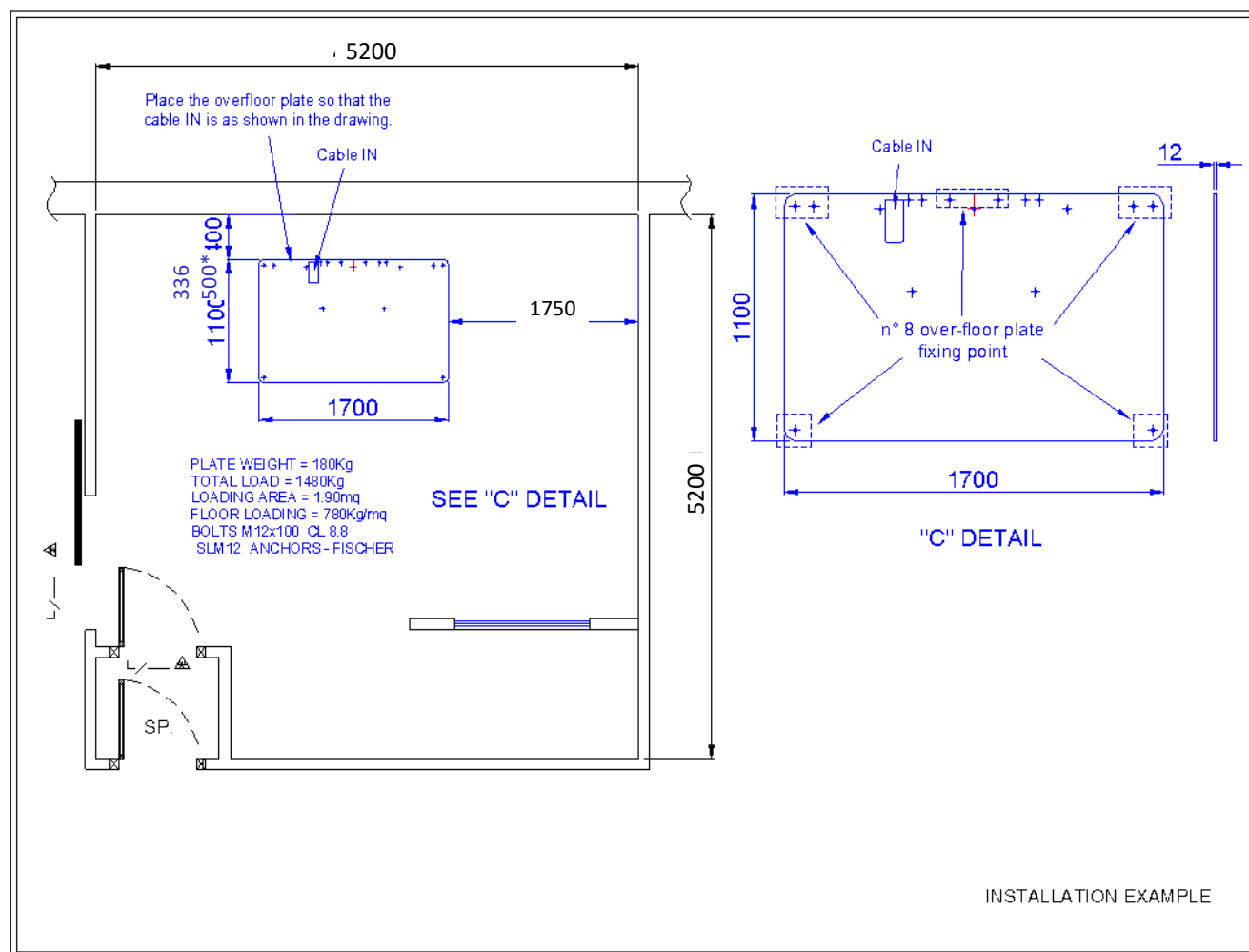


Unit weight = 1025+323 kg
Loading area = 2.60 m²
Plate weight = 80 kg
Floor loading ≥ 550 kg/m²

measure in mm

(*) NOTE: The recommended service area behind the table is 500mm. The minimum service area behind the table must be 336 mm.

It is important to check the floor composition: other materials different from concrete floors should be managed by the costumers in order to guarantee a good plate fixation.



Unit weight = 1025+ 323 kg
Plate weight = 180 kg

measure in mm

(*) NOTE: The recommended service area behind the table is 500mm. The minimum service area behind the table must be 336 mm.

8. System Facility Power and Grounds

8.1. Introduction

All the control electronics of the remote tilting table has the 0V grounded.

It is consequently clear that a grounding error in the installation or a ground connection made with a cable of inadequate section may degrade both reliability and safety level of the unit.

The following rules must be observed for a correct grounding:

- 1 Check that the central ground terminal in the examination room has the characteristics specified in the safety norms of the country. In particular ground resistances lower than 2Ω is suggested.
- 2 Connect the central ground terminal directly to the central ground terminal of the power distribution box by means of a 4 mm² single conductor if the distance is less than 10 m. The cable section must be increased proportionally in case of higher distances.
- 3 Connect all ground internal cables only to the central ground terminal of the unit located in the upper side of the power cabinet as shown in the following figure. Make sure that the brass fixation screws have been properly tightened.
- 4 Do not add other ground connections that might involve sections of the system, in order to avoid the possibility to cause ground loops.

8.2. Electrical Requirements

8.2.1. Power quality and System Power Specifications

System power and absorbance

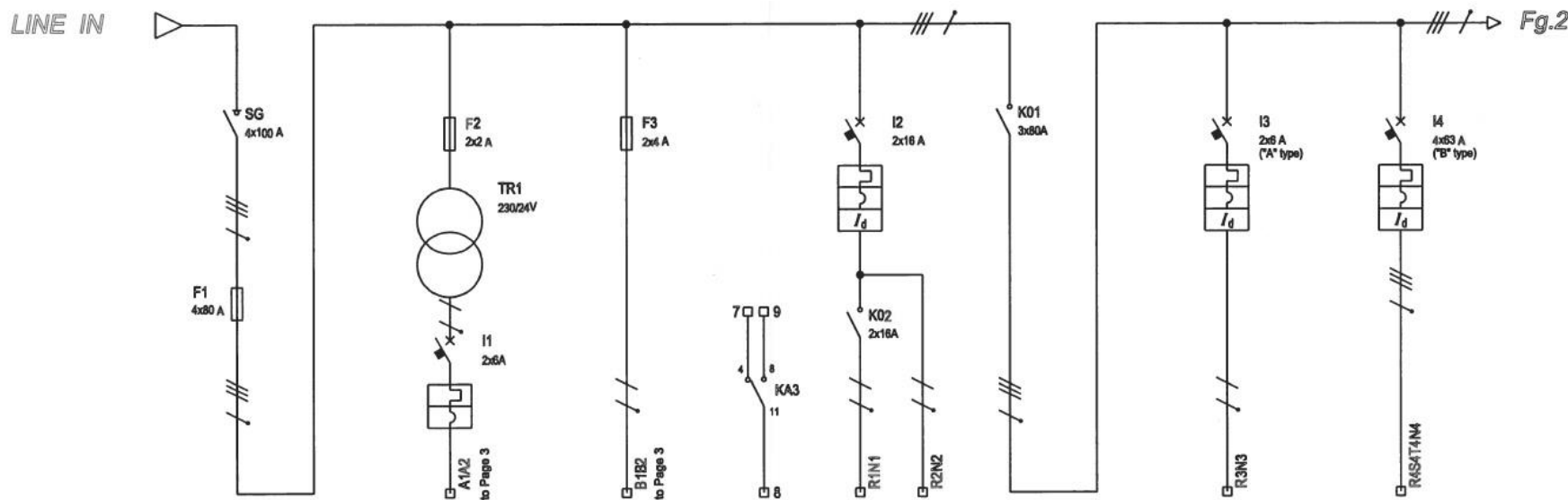
Device	Voltage	Momentary Power	Standby Power
Table	400Vac	4kVA	600VA
Generator 65kW	400Vac	95 kVA	300VA
	480Vac	95 kVA	300VA
Generator 80kW	400Vac	115 kVA	300VA
	480Vac	115 kVA	300VA
Digital system	230Vac	350VA	300VA
OTS Overhead Tube Suspension	220/230/240 Vac	1370 VA	100VA

NOTE: the presence of two auxiliary 230 Vac plugs could be useful in the radiological room and in the control room for the connection of service tools as laptop PC or dosimetry devices.

NOTE: FOR US ONLY, S13441MD Mains Disconnect Panel and Transformer may be purchased from GE for US Installations to provide the above power requirements. (the MDP does not require a neutral line).

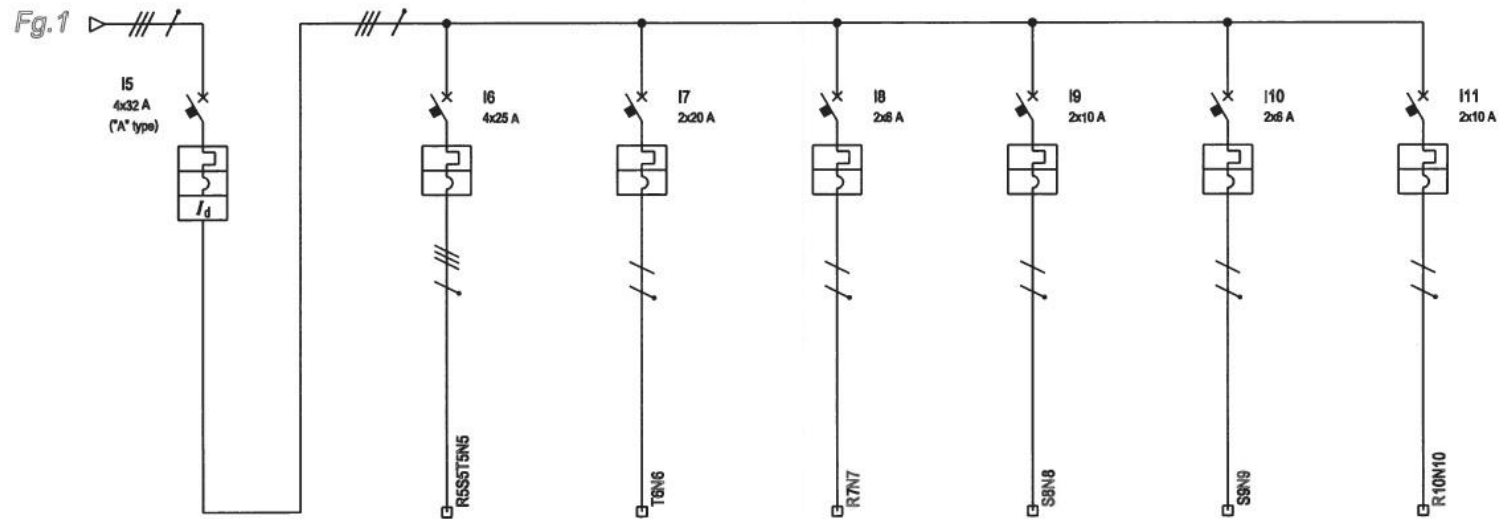
IMPORTANT NOTICE FOR THE INSTALLER:

The input line of each component must be protected by means of a safety switch, calibrated for a maximum leakage current of 30 mA.



ITEM	IDENTIFICATION		LINE IN MAIN SWITCH		ON/OFF CIRCUIT		INTERNAL POWER		UPS E.P.O.	UPS POWER SUPPLY (DETECTOR / DIGITAL)		ROOM CONTACTOR		SALA IN FUNZIONE		X-RAY GENERATORE	
	REFERENCE																
	TYPE	TOTAL POWER kW	TT		TT/L1-N		TT/L1-N			TT/L1-N		TT		TT/L1-N		TT	
	POWER kW	lb	A														
SWITCH OR MAGNETIC SWITCH	TEMP. COEFF.	COS Ø															
	MANUFACTURER		SIEMENS		SIEMENS-LEGRAND		LEGRAND			SIEMENS-LEGRAND		SIEMENS		SIEMENS		SIEMENS	
	TYPE		5TE8 714		5SY6206-7					5SY6216-7 + 5SM2322-6				5SY6206-7 + 5SM2322-6		5SY6463-7+5SM3346-4	
	N° CONTACTS	In	A	4	100	2	6	2	25	2	16			2	6	4	63
	Ith	A	Idn	A		6				16	0.03			6	0.03	63	0.03
FUSE	Im (o curve)	A	Pdi	kA		60	6			160	6			60	6	630	6
	TYPE	3NW7261				05828 2P+25A		05828									
CONTACTOR	VALUE	80 aM				2 aM		4 aM									
	TYPE									3RT1026-1AL20		3RT10 44-1AP04					
ACCESSORY	In	A	Pn	kW								3x80	45				
	TYPE																
POWER LINE	VALUE	V															
	CABLE TYPE					N07G9-K		N07G9-K		N07G9-K		N07G9-K		N07G9-K		N07G9-K	
	ASSEMBLING					4x(1x35)		2x(1x1,5)		2x(1x1,5)		2x(1x1)		2x(1x2,5)		4x(1x35)	
	LENGHT	m				1		1		1		1		1		1	
	Iz	A															
	C.d.T. a In	%	C.d.T. a Ib	%													
	Zk	mΩ	Zs	mΩ													
	Ik	kA	Ik1	kA													
TERMINAL NUMBER			L1,L2,L3,N						7,8,9	R1N1 - R2N2		R3N3		R4S4T4N4			

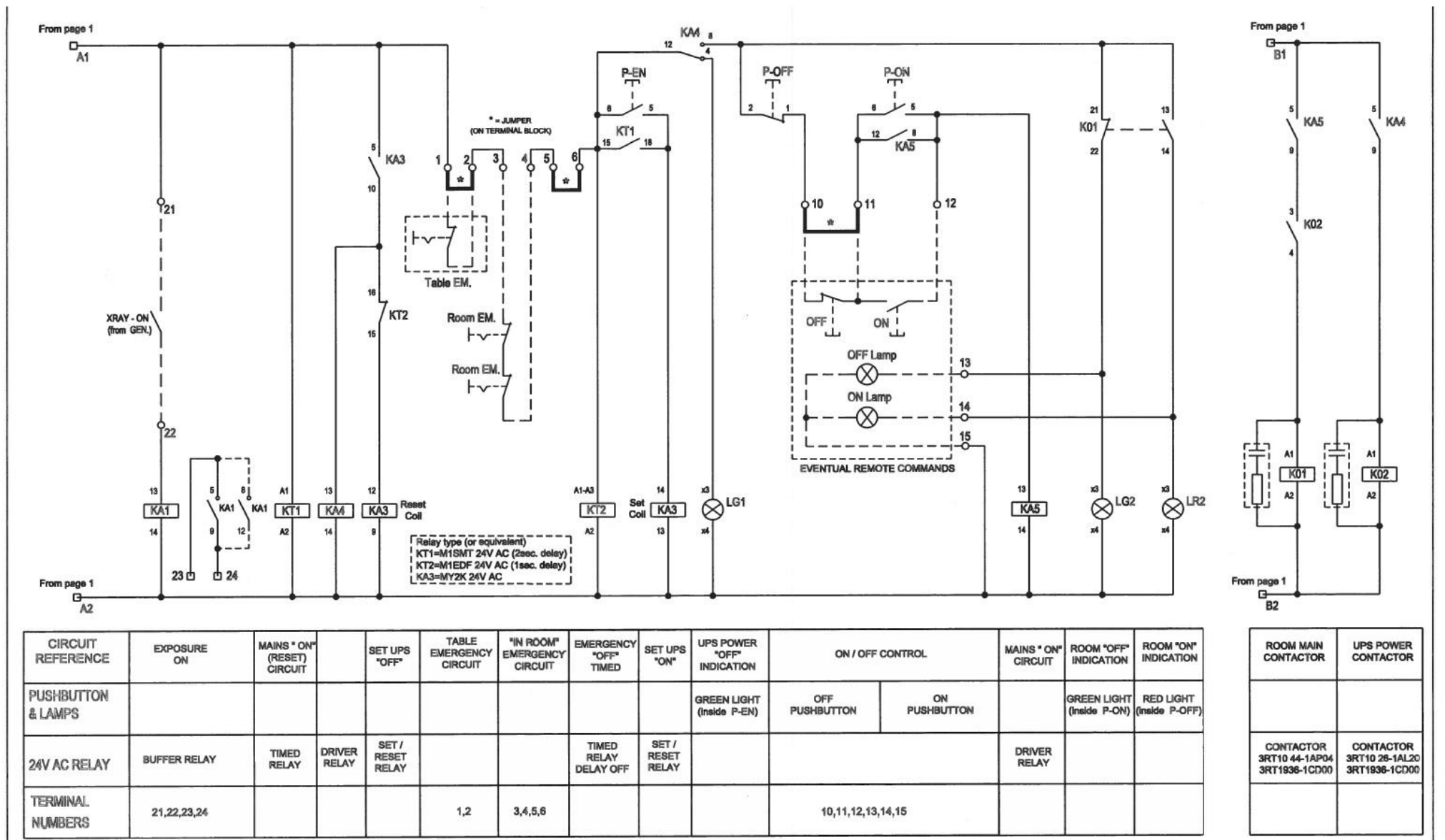
NOTE: Variato committente, da MECALL
a GMM General Medical Merate

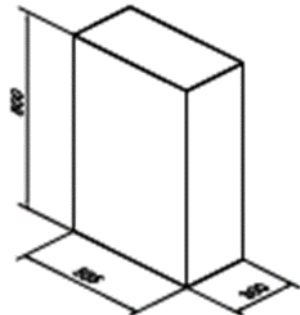


ITEM	IDENTIFICATION				MAIN DIFFERENTIAL PROTECTION		REMOTE TILTING TABLE		RADIOGRAPHIC SYSTEM (STANDARD TABLE)		MURAL BUCKY		CEILING SUSPENSION		COLLIMATOR		SPARE	
	REFERENCE																	
	TYPE		TOTAL POWER kW		TT		TT		TT/L3-N		TT/L1-N		TT/L2-N		TT/L2-N		TT/L1-N	
	POWER kW		lb A															
	TEMP. COEF.		COS Ø															
SWITCH OR MAGNETIC SWITCH	MANUFACTURER				SIEMENS		SIEMENS		SIEMENS		SIEMENS		SIEMENS		SIEMENS		SIEMENS	
	TYPE				5SY6432-7+5SM2342-6		5SY6425-7		5SY4220-8		5SY6206-7		5SY6210-7		5SY6210-7		5SY6210-7	
	N. POLI		In A		4 32		4 25		2 20		2 6		2 10		2 6		2 10	
	Ith A		Idn A		32 0.03		25		20		6		10		6		10	
	Im (o curve) A		Pdi kA		320 6		250 6		"D" CURVE 6		60 6		100 6		60 6		100 6	
FUSE	TYPE																	
	VALUE A																	
CONTACTOR	TYPE																	
	In A		Pn kW															
THERMIC RELAY	TYPE																	
	SETTING A																	
POWER LINE	CABLE TYPE				N07G9-K		N07G9-K		N07G9-K		N07G9-K		N07G9-K		N07G9-K		N07G9-K	
	ASSEMBLING				4x(1X10)		4x(1x4)		2x(1x2,5)		2x(1x1,5)		2x(1x1,5)		2x(1x1,5)		2x(1x1,5)	
	LENGHT m				1		1		1		1		1		1		1	
	Iz A																	
	C.d.T. a In %		C.d.T. a lb %															
	Zk mΩ		Zs mΩ															
	Ik tri fase/monof. kA		Ik t1 fase/terra kA															
TERMINAL NUMBER						R535TSN5		TGNG		R7N7		S8N8		S9N9		R10N10		

NOTE:

NOTE: Variato committente, da MECALL a GMM General Medical Morate



Calculation of overvoltage in the electric cabinet according to CEI 17-43					
Electric Cabinet: DIGITAL / REMOTE ROOM					
Cabinet Type:800X585X300MM					
Frame Dimensions: Height : 800 mm Width : 585 mm Depth : 300 mm No. Diaphragms: 0					
Material: Thermal transmission K:3,5					
Maximum radiant power from the [W] frame:146W Casing constant (k):0517					
Calculation of the actual cooling surface	Cabinet wall	Size [mm x mm]	Wall surface A ₀ [m ²]	Surface Factor b	Effective Surface A ₀ x b [m ²]
	Upper Compartment	585X300	0,18	1,4	0,25
	Front side	585X800	0,47	0,9	0,42
	Rear side	585X800	0,47	0,5	0,23
	Left side	300x800	0,24	0,9	0,22
	Right wall	300x800	0,24	0,9	0,22
	Effective total surface Ae=Σ (A ₂ x b) = total [m ²] 1.33mq				
	General data	Temperature data		Power data	
Environment Temperature		20	Installed Power [W]		160,30 W
Maximum temperature inside the Cabinet		50	Usage factor		0,30
			Simultaneity factor		0,60
		Effective power dissipated in the Cabinet [W]		28,85 W	
Calculation results	Calculation results: Temperatures		Calculation results: Cooling		
	Average temperature in the Cabinet	27,4	Air Inlet Section Opening [cm]		
	Maximum temperature in the Cabinet	31.4	Air volume required for the fan [m / h]		
	Cabinet Delta Temperature	3,30K	Thermal input Required for the Heat Exchanger [W / K]		
	Delta Temperature at the top of the Cabinet	11,40K	Cooling power required for the air conditioner [W]		

8.2.2. Table Electrical requirements

The remote tilting table requires the connection to an electrical line with the following characteristics:

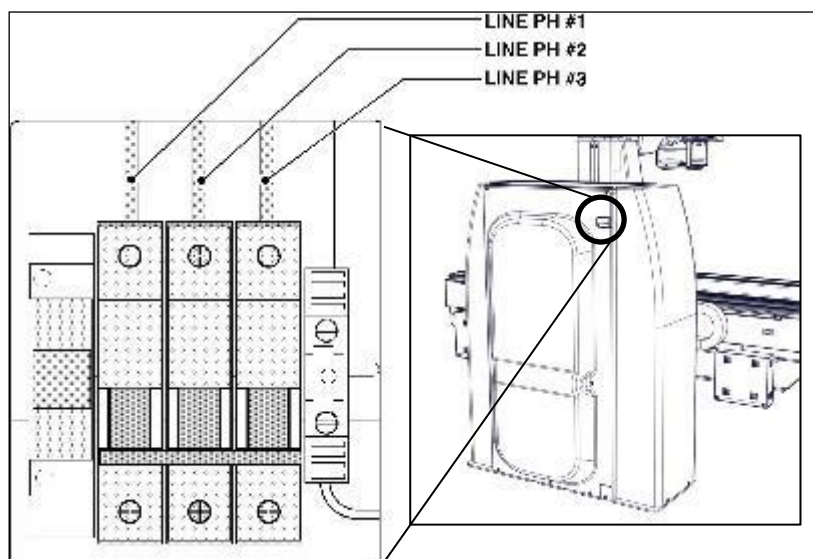
Line Voltage	380 / 400V 3-phases
Line Voltage tolerance	$\pm 10\%$ (absolute max. rating)
Line frequency	50 Hz – 60 Hz
Line frequency tolerance	$\pm 2\%$
Stand-by power	600 VA
Peak power	4.000 VA

The standard configuration of the units includes the 380 / 400V 3-phase insulation transformer. In case the line voltage is different from the standard one.

If possible, it is also a good norm to apply the following rules for the line connection:

- The input line must be totally independent from any other lines that might create interference.
- The main line cable is laid in conduit separate from the cable conduit.
- The section of the line cables must be minimum 4.0 mm².
- In case the input line characteristics do not match the requirements, it is a good practice to install a line conditioner.

The input line cable must be connected at the power cabinet line terminals, as detailed in the following figures.



IMPORTANT NOTICE FOR THE INSTALLER:

The input line must be protected by means of a safety switch, calibrated for a maximum leakage current of 30 mA.

8.2.3. Generator Electrical Requirements

Note: Shunt trip circuit breaker required.

The main circuit breaker supplied by the customer must be sized in accordance with local regulations and have remote (shunt) trip.

In particular, the general requirements of the room input line are:

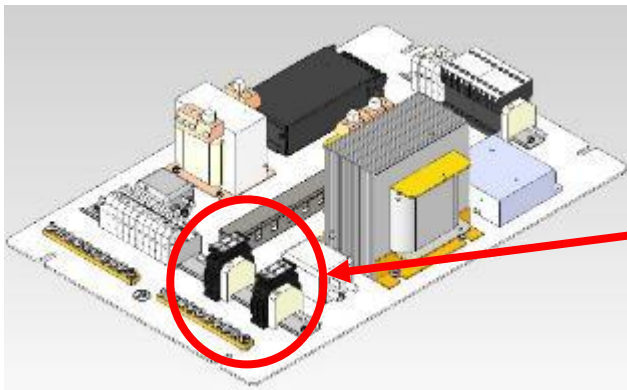
Line Voltage	400V 3-phase
Line Voltage tolerance	$\pm 10\%$ (absolute max. rating)
Line frequency	50 Hz – 60 Hz
Line frequency tolerance	$\pm 2\%$
Line input reactive power (peak)	95kVA or 115 kVA
Line input active power	65kW or 80 kW
Power source impedance @ 400V	0.13 Ω or 0.11 Ω
Stand-by current	< 0.5 A



8.3. UPS Electrical Requirements

This option is not valid for US.

Input Line Voltage	208-240 Vac
Input Line frequency	50 Hz – 60 Hz ($\pm 5\%$)
Power	2000VA
Output Voltage	230Vac (default)
Output Voltage tolerance	$\pm 2\%$
Output frequency	50 Hz – 60 Hz ($\pm 3\%$)



Digital cabinet



UPS OP2003 (rear)

8.4. Electrical Grounds

If a neutral line is provided with the system, under no circumstances is it to be used for ground purposes. The ground conductor only may carry fault currents.

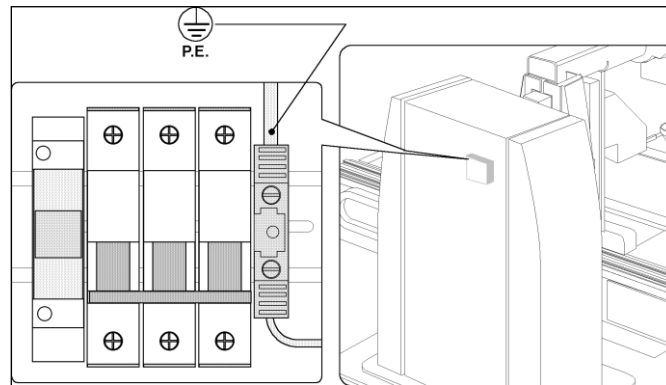
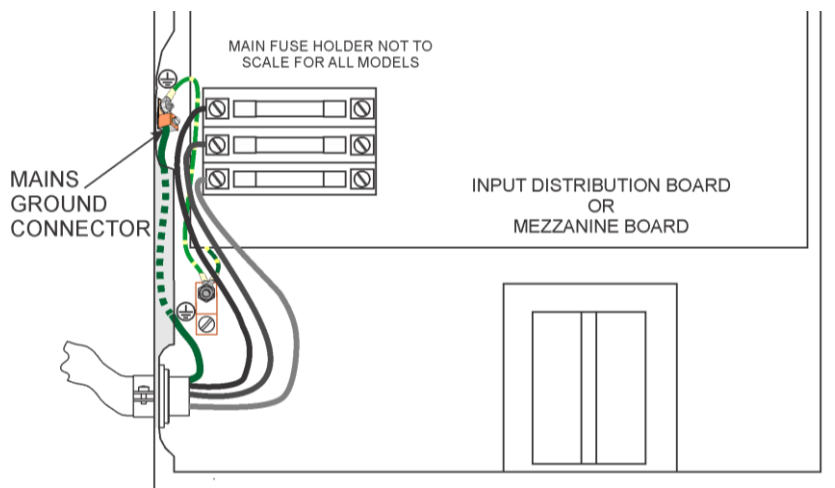
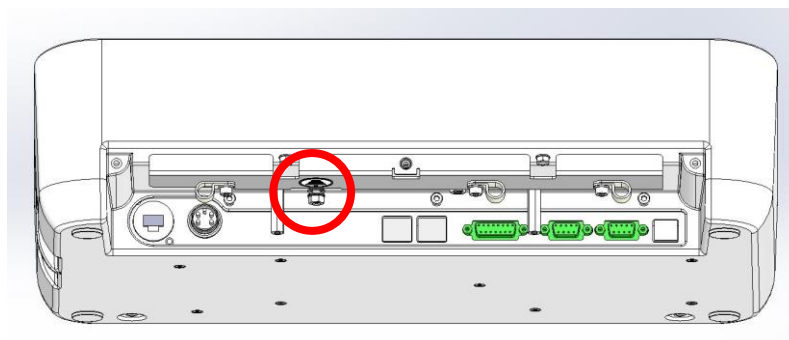


Table ground connection

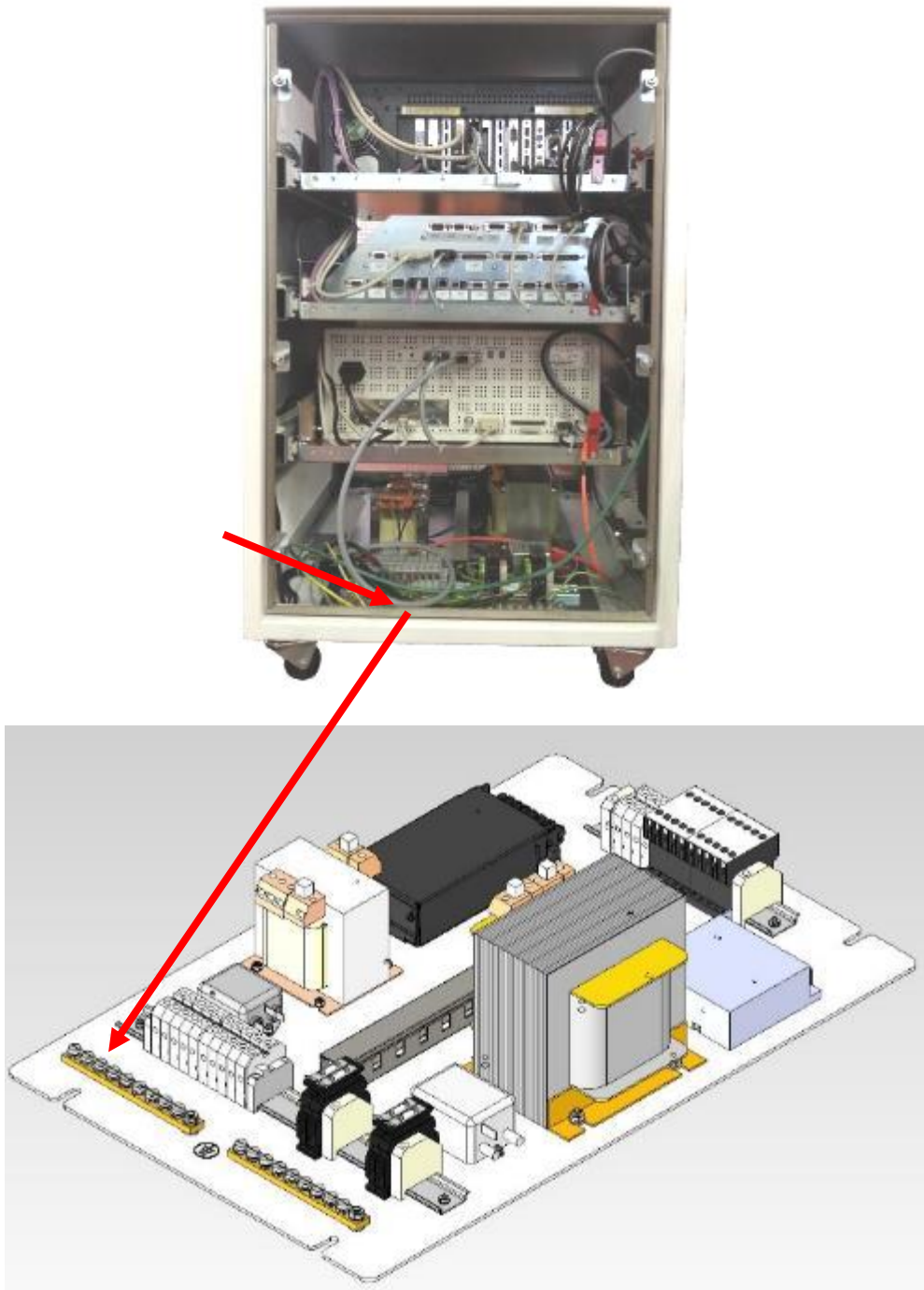


IndicolQ-015.cdr

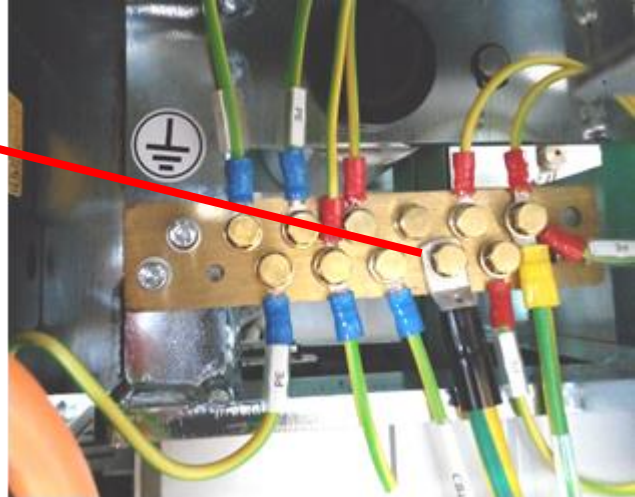
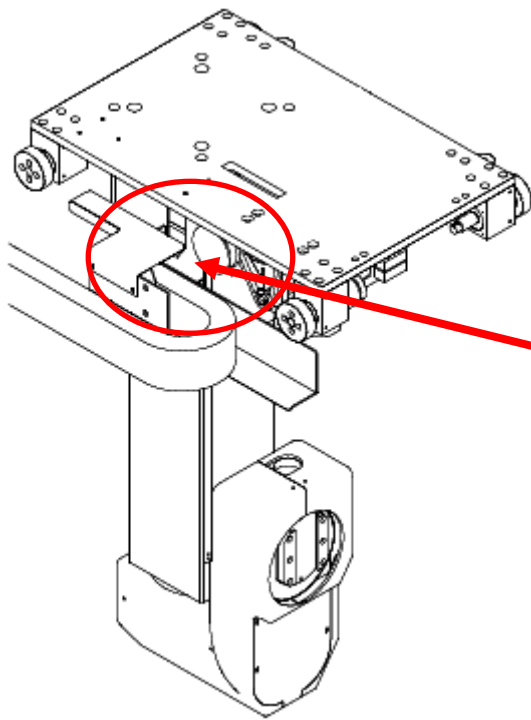
Generator ground connection



Console ground connection (main and secondary)



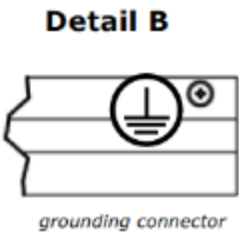
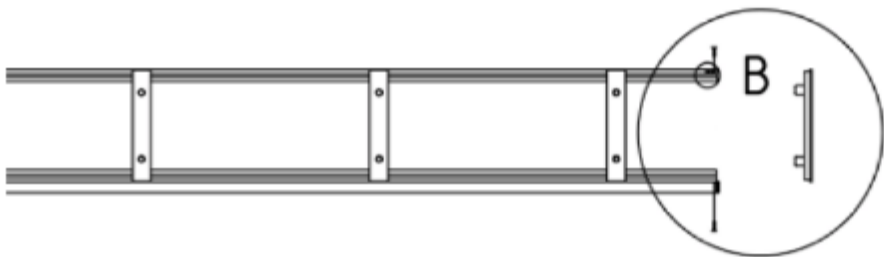
Digital system ground connection



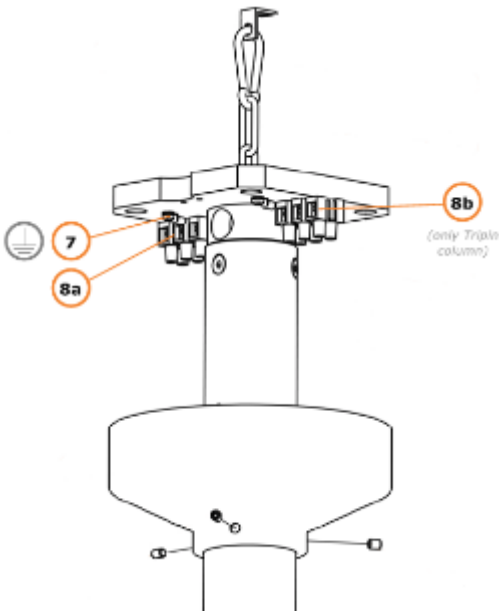
OTS ground connection



Wall stand ground connection



Monitor suspension ground connection



Monitor suspension ground connection

9. Materials and Tools

The tools listed below are referred to the base plate installation only. For the tools needed to install the machine, refer to the Installation manual.

The following tools and materials are needed to install the over-floor base plate:

- Hammer drill,
- Drill beats (10 mm, 12 mm and 15 mm),
- Dynamometric key with adapter (metric system).

The following tools and materials are needed to install the under floor base plate:

- Materials needed for the floor and base plate masonry,
- Dynamometric key with adapter (metric system).

10. System Cable Information

The remote tilting table must be completed with a special set of cables that allows the proper operation of the additional accessories.

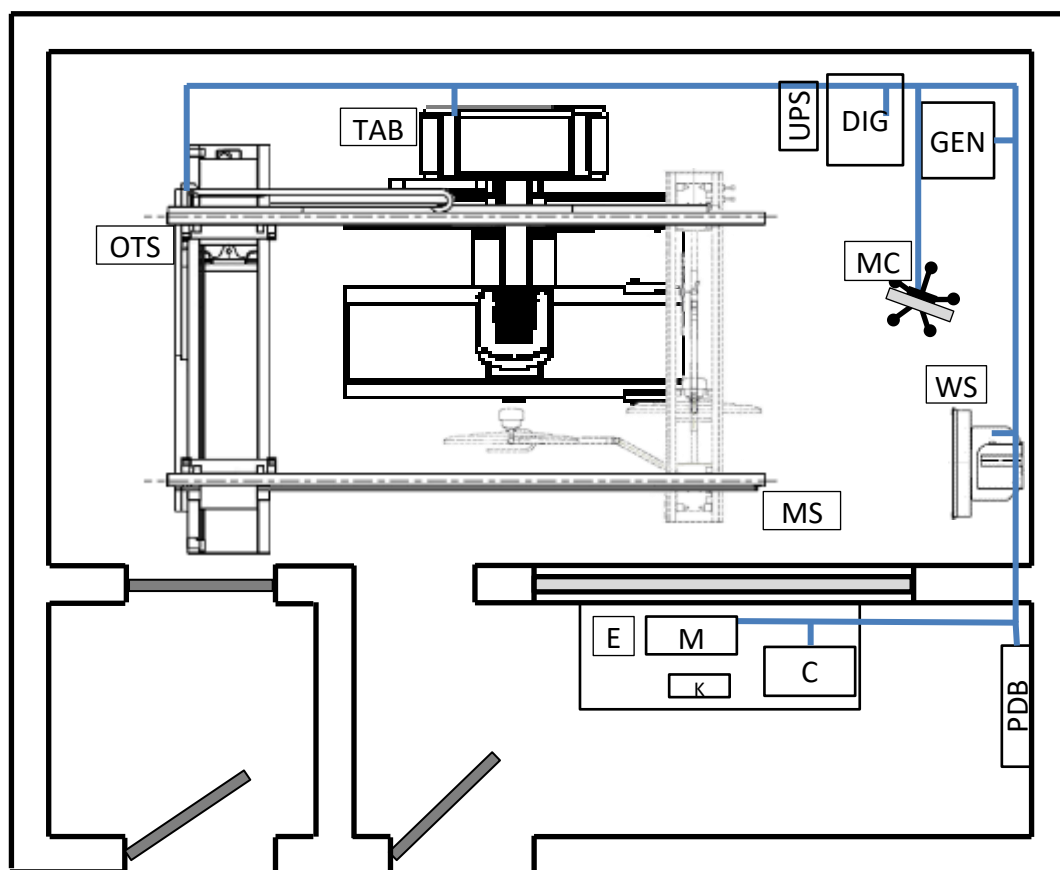
Because each installation has its own typical layout, in this section are detailed the lengths of the standard cables supplied with the systems, showing also the correct way to route the cables.

In case during the design of the room layout, it is necessary to modify the standard length of a group of cables, it is responsibility of the installer to clearly specify this configuration change.

In this document has been also added the system interconnection diagrams for the most complete configuration supported by the table. Such drawings show all physical connections between the internal parts of the remote tilting table and the system itself with other accessories.



Before starting the installation, it is necessary for the installer verify that all accessories or interface cables are present and delivered in the lengths defined during the room layout design phase.



C = Console
M = Monitor
PDB = Power box
E = Monitor Extender

DIG = Digital system
MC = Monitor Cart
TAB = Table
MS = Monitor Susp.

GEN = Generator
MS = Monitor Susp.
UPS = UPS

K = Keyboard
OTS = O.T. Suspension
WS = Wall Stand

Code	Source	Destin.	Description	Length [m]	Usable [m]	Diameter [mm]	N°cores x section	Shield
97055A	PDB	TAB	Table Power supply cable	15	11	13.7	4 x 6 mm ²	☒
97053A		TAB	Table ground cable	15	11	9.3	1 x AWG4	☐
97054A		GEN	Generator PWS cable	15	12	20.7	4 x 16 mm ²	☐
55428		DIG	Digital system ground cable	10	8	6	1 x 10 mm ²	☐
121046A		OTS	OTS Power supply cable	22	10	9.6	4 x 2.5 mm ²	☐
121014A		OTS	OTS ground cable	22	10	9.3	1 x AWG4	☐
56119		UPS	UPS Power Supply	11	9	8.1	3 x 1.5 mm ²	☐
56758	UPS	DIG	Digital sys. power supply cable	3	2	6.5	3 x 0.75 mm ²	☐
121048A	OTS	WS	Potentiometer	30	15	4.5	3 x 0.25 mm ²	☒
05118	DIG	WS	AEC chamber cable	20	11	7.2	(3 x 2) x 0.23 mm ²	☒
95765	GEN	OTS	High Voltage cables	24	11	---	---	☐
121027A			Thermal Safety cable	25	11	6.6	2 x 1 mm ²	☐
122178A			Anode cable	25	11	8.4	4 x 1.5 mm ²	☒
---			Tube ground cable	25	11	---	---	
121028A			Housing Fan cable	25	11	6.9	3 x 1 mm ²	
49558	DIG	OTS	RS485 DAP cable	25	11	6.1	4 x 0.25 mm ²	☒
95764	TAB	GEN	High Voltage cables	16	5	---	---	
55782			Thermal Safety cable	21	10	6.4	2 x 0.5 mm ²	☒
55786			Anode cable	21	10	10.3	3 x 2.5 mm ²	☒
55783			Tube ground cable	21	10	5.3	1 x AWG10	
55797			Housing Fan cable	21	10	6.4	2 x 0.5 mm ²	☒
97049A			Table/Generator console cable	15	12	5.6	7 x 0.25 mm ²	☒
97050A			Table/Generator interface cable	15	12	10.6	37 x 0.25 mm ²	☒
97662A (int.) 97663 (ext.)	TAB	DIG	Webcam cable	15 30	5 30	6.6 6.6	(4 x 2) x AWG26 (4 x 2) x AWG24	☒
49558			RS485 DAP cable	25	15	6.1	4 x 0.25 mm ²	☒
96351A			Table to Digital system CAN BUS connection cable	15	11	6.6	(4 x 2) x AWG26	☒
57372			Detector ground cable	20	11	5.2	1 x AWG10	☐
05118			AEC chamber cable	20	11	7.2	(3 x 2) x 0.23 mm ²	☒
79379			Detector optical link cable	20	11	3 (x 2 cables)	---	☐
79380			Detector 24Vdc power supply PWS cable	20	11	9	4 x 1.5 mm ²	☒

Code	Source	Destin.	Description	Length [m]	Usable [m]	Diameter [mm]	N°cores x section	Shield
96212A	TAB	C	Table Console cable (*)	15	11	10	25 x 0.25 mm ²	☒
97145A (option)		C		21	17	10	25 x 0.25 mm ²	☒
97149A (option)		C		25	21	10	25 x 0.25 mm ²	☒
96534A		C	X-Ray interlock cable (*)	15	11	6.6	(4 x 2) x AWG26	☒
97146A (option)		C		21	17	6.6	(4 x 2) x AWG26	☒
97150A (option)		C		25	21	6.6	(4 x 2) x AWG26	☒
165012		C	PWS and emergency cable (*)	15	11	8	5 x 1 mm ²	☐
167203 (option)		C		21	17	8	5 x 1 mm ²	☐
167227 (option)		C		25	21	8	5 x 1 mm ²	☐
96460		C	Console ground cable (*)	15	11	5.2	1 x AWG10	☐
97148 (option)		C		21	17	5.2	1 x AWG10	☐
97152 (option)		C		25	21	5.2	1 x AWG10	☐
57430 (int.) 57365 (ext.)		C	Microphone	10 20	0 20	4.9 4.9	3 x 0.25 3 x 0.25	☒
---	DIG	M	Video signal cable (Ethernet)	20	18	---	---	☐
57427	DIG	M	Power supply cable	20	18	9	3 x AWG18	☒
56114	DIG	M	Ground cable	20	18	5	1 x 6 mm ²	☐
---	DIG	MC	Video signal cable (Ethernet)	20	17	---	---	☐
57427	DIG	MC	Power supply cable	20	17	9	3 x AWG18	☒
56114	DIG	MC	Ground cable	20	17	5	1 x 6 mm ²	☐
57385	DIG	Access Point	Power supply cable	20	20	7,1	3 x 1 mm ²	☐
56232	DIG	Access Point	Ethernet cable	20	19	5,5	(4 x 2) x AWG26/7	☐
97051A	DIG	GEN	I/O Interface Cable 1	20	17	9.2	25 x 0.25 mm ²	☒
97052A	DIG	GEN	I/ O Interface Cable 2	20	17	12	37 x 0.25 mm ²	☒
167036	DIG	GEN	Ethernet cable	15	12	6.6	(4 x 2) x AWG26	☒
---	GEN	Room	Door interlock	---	---			
---	GEN	Room	External light as warning signal that the room is ready to make exposures.	---	---			
---	GEN	Room	External RED light to indicate X-rays ON	---	---			
---	DIG	Room	DICOM Network cable	---	---			

(*) For these cables it is possible to choose among three cables lengths: option 167044 for 15m length, option 167230 for 21m length and option 167231 for 25m length.

For a detailed cable list, make reference to the Installation Manual.

End of the Publication

You have reached the end of this Publication.

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