



Site Planning Guide

Siemens Somatom go.Top
CT05



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1. Introduction

This Site Planning Guide describes the preparations needed to be made by Compleo Health's customers to ensure that the relocatable CT unit can be successfully delivered, deployed and put into clinical operation.

The guide describes the unit in details, and the environmental and electrical requirements to receive and connect the unit.

Please contact Compleo Health for any questions regarding deployment of the relocatable MRI unit at your location.

2. Unit Specifications

The unit is divided into 5 rooms:

- Operator room
- Changing room
- Examination room
- Technical room
- Technical bridges

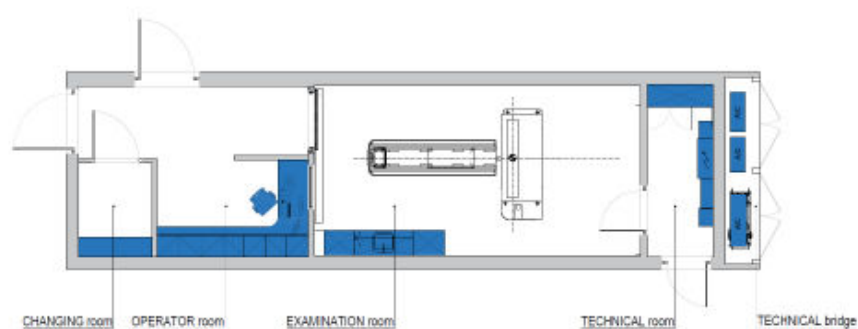


Figure 1

2.1 System Specifications

Gantry bore opening	780 mm
Max. Table load	307 kg.
Length of the table	2000 mm
Max. Scan range	1800 mm

3. Sitting and ground requirements

3.1 Sitting

Minimal modular sitting conditions:

- Modular building must lean at least in 10 points or circumferentially on the strip foundation (see drawing No. 4.2.0 Sitting scheme)
- Minimal measurements of the foundation block:
 - F1 - 0,7x0,7m
 - F2 - 1,1x1,1m
 - Strip foundation - 0,5m
- For non-swelling soil the covering height min 0.5m.

For swelling soil the depth of foundation is according zone of ground freezing depth.

- All fulcrums shall be leveled.
- In the case of weak soils with a deformation modulus $E < 40 \text{ MPa}$, replace the soil up to the freezing depth.
- Use a non-high density soil with good compactability (e.g. sand/aggregate - $I_s \geq 0,97$).

- Required parameters of ground on level of foundations:

Foundation ground / superstructure:

secondary deformation module in the foundation level: $E_2 \geq 100 \text{ MPa}$

The compaction index is measured as the ratio of secondary to primary deformation $E_2/E_1 < 2,5$

3.2 Lifting

Lifting of the building needs to meet the requirements shown on figure 4 and figure 5.

Conditions of modular lifting:

Guidelines:

- The modular must be lifted by 4 lifting brackets 20T mounted on the upper frame
- Acceleration value while modular lifting should be insignificant
- Four-lifting slings of modular lifting should be adjusted according to the centre of gravity of construction location
- Countersink angle between slings must not be bigger than 90°
- Before lifting, the modular's roof should be cleared of snow.
- Modular lifting should be carried out freely - the construction must not be covered with ground, frozen or jammed.
- Modular should not be lifted when wind exceeds 10m/s

It is prohibited to:

- Be inside or on the upper layers of modular for people
- Lift the modular under the high-voltage lines
- Be under the jib while lifting and moving the construction hanging on the hooks
- Carry the construction above people and driver's compartment
- Leave the hanging modular without supervision after work finishing or during the breaks
- Lift the modular with the equipment unprotected

Lifting scheme can be found on drawing XXX

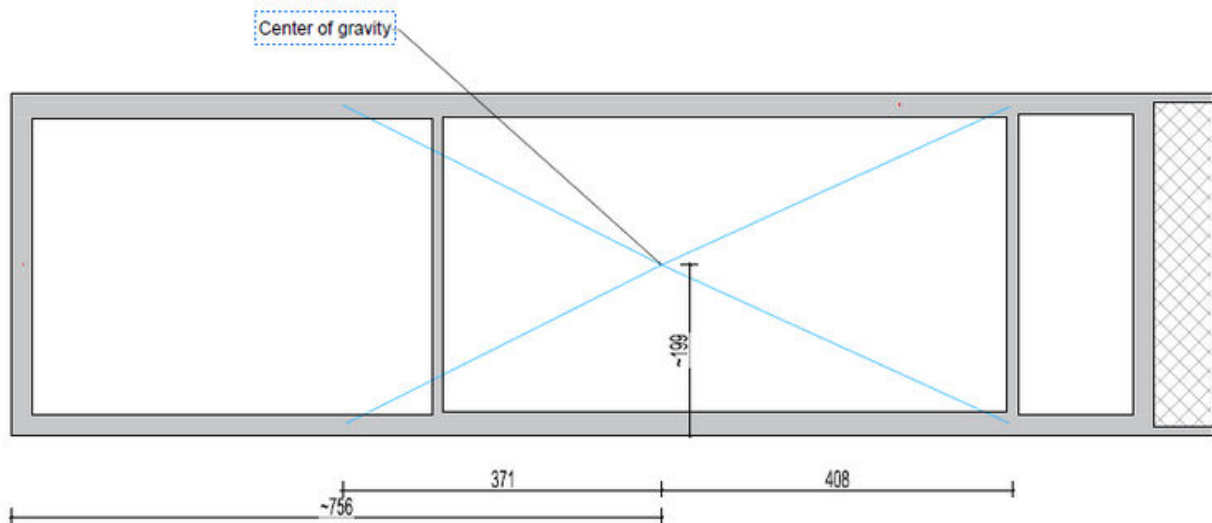


Figure 2

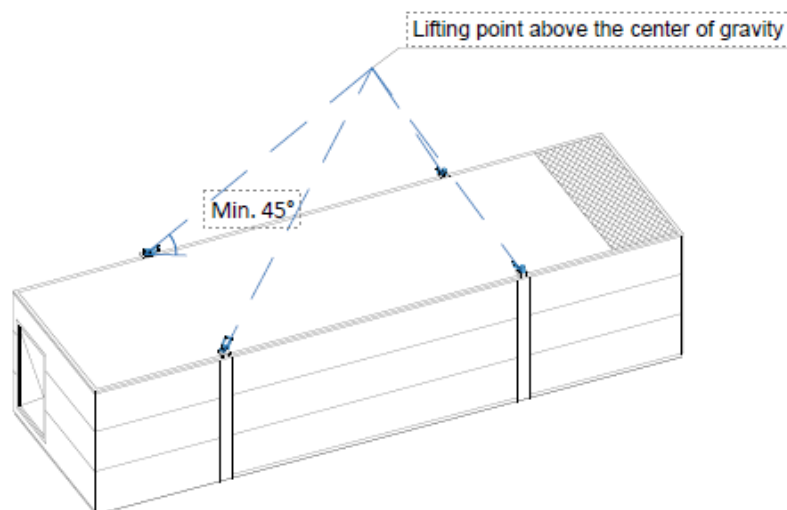


Figure 3

Lifting guidelines:

- The container must be lifted by 4 lifting brackets 20T mounted on the upper frame
- Acceleration value while container lifting should be insignificant
- Four-lifting slings of container lifting should be adjusted according to the center of gravity of construction location
- Countersink angle between slings must not be bigger than 90°
- Before lifting, the container's roof should be cleared of snow.
- Container lifting should be carried out freely – the construction must not be covered with ground, frozen or jammed.
- Container should not be lifted when wind exceeds 10m/s

IT IS PROHIBITED TO:

- Be inside or on the upper layers of container for people
- Lift the container under the high-voltage lines
- Be under the jib while lifting and moving the construction hanging on the hooks
- Carry the construction above people and driver's compartment
- Leave the hanging container without supervision after work finishing or during the breaks
- Lift the container with the equipment unprotected inside

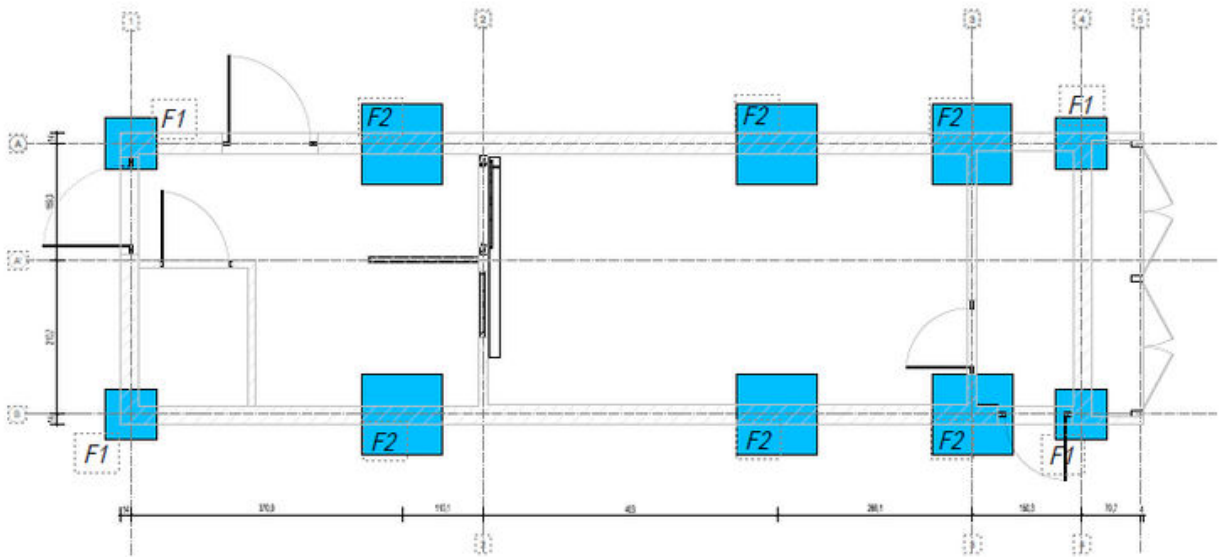


Figure 4

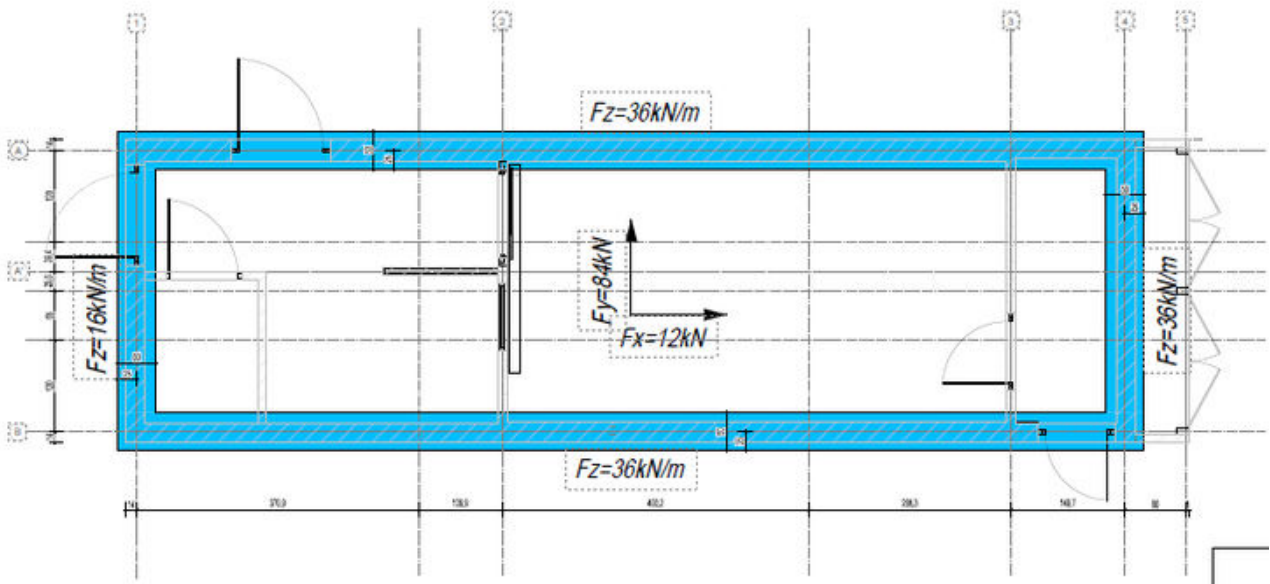


Figure 5

4. Preparation for use the CT building

4.1 Media connections

4.1.1 Main power connections

ALL ELECTRICAL WORK MUST BE DONE ACCORDING TO THE RESPECTIVE COUNTRY'S LOCAL AND NATIONAL REGULATIONS.

Before connecting the power supply, the insulation resistance for the cables supplying the unit should be measured. After connecting the target power supply for the unit, the short-circuit loop impedance measurement should be carried out.

Applying power to the main power connection, connecting the building to electricity, and performing protective measurements after connecting the power supply are the responsibility of the user. These activities must be performed by a person with appropriate qualifications.

The main power connection is a box on the technical bridge with rail connectors 5x70mm² located in the technical bridge.



Figure 6 - Main power connector

4.1.2 Grounding

IT IS STRONGLY RECOMMENDED TO INSTALL GROUNDING ROD. YOU HAVE TO ACCORDANCE WITH NATIONAL, STATE AND LOCAL CODES.

The ground conductor impedance from CT system to main power line, including the ground rod, must be in accordance with the respective country's local and national regulations. We recommend grounding conductor impedance to be not more than 0.2 ohms (according to IEC 60601-1).

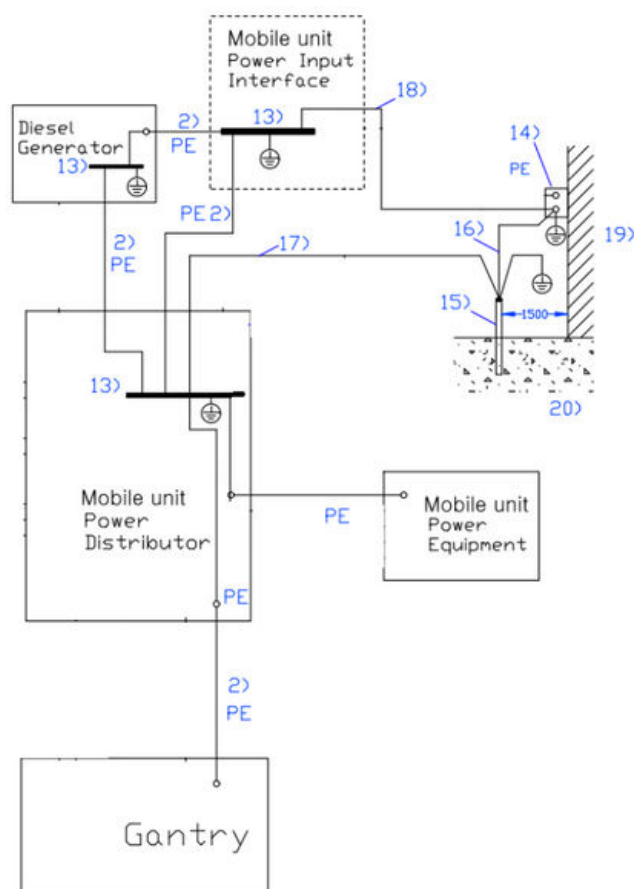


Figure 7 - Power and grounding scheme (proposal)

- 2 Ground wires
- 13 Ground bus connection terminals
- 14 Hospital power interface, e.g., power receptacle
- 15 Earth driven grounding rod; within 1500 mm to no. 14)
- 16 Ground wire between grounding rod and hospital grounding
- 17 Ground wire between grounding rod and mobile unit power distributor; as short as possible
- 19 Hospital side
- 20 Ground

4.1.3 Hydraulic lifting system power connection

The unit can be connected lifted using the hydraulic lifting system. The Hydraulic lifting system power connection CEE32A 5-pin is in the junction box located on the rear part of right external wall (Figure 9). On the Figure 8 can be found a photo of hydraulic system connection.



Figure 8 - The Hydraulic lifting system power connection

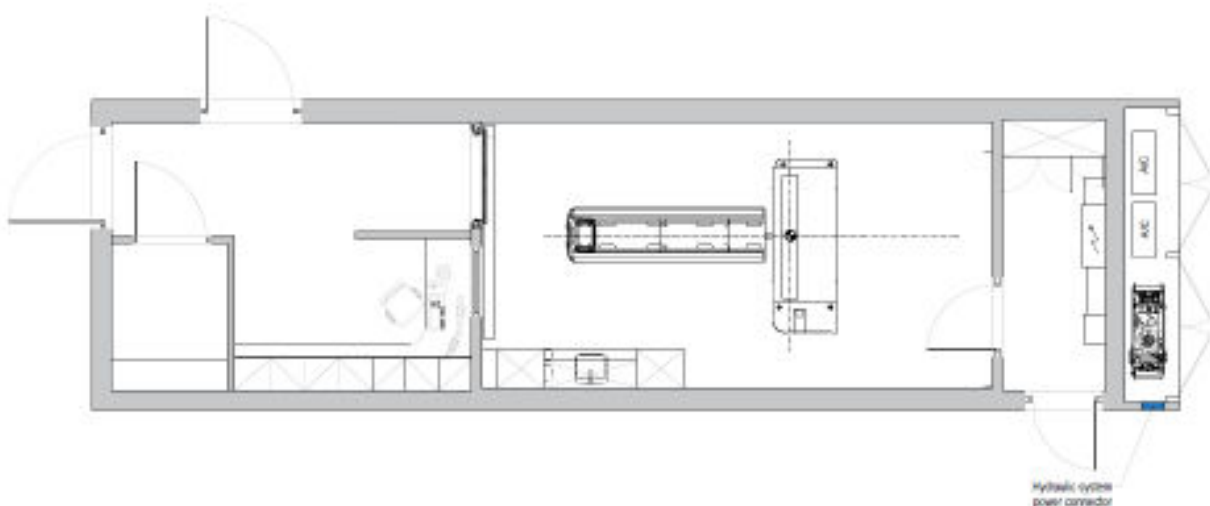


Figure 9 - The Hydraulic lifting system power connection location

4.1.4 Ethernet connection

The unit can be connected to the local LAN network. The Ethernet connection is patch-panel located in the junction box located in the technical room. On the Figure 10 can be found a photo of Ethernet connection. The location of external patch-panel is shown on the Figure 11.



Figure 10 - Patch-panel box

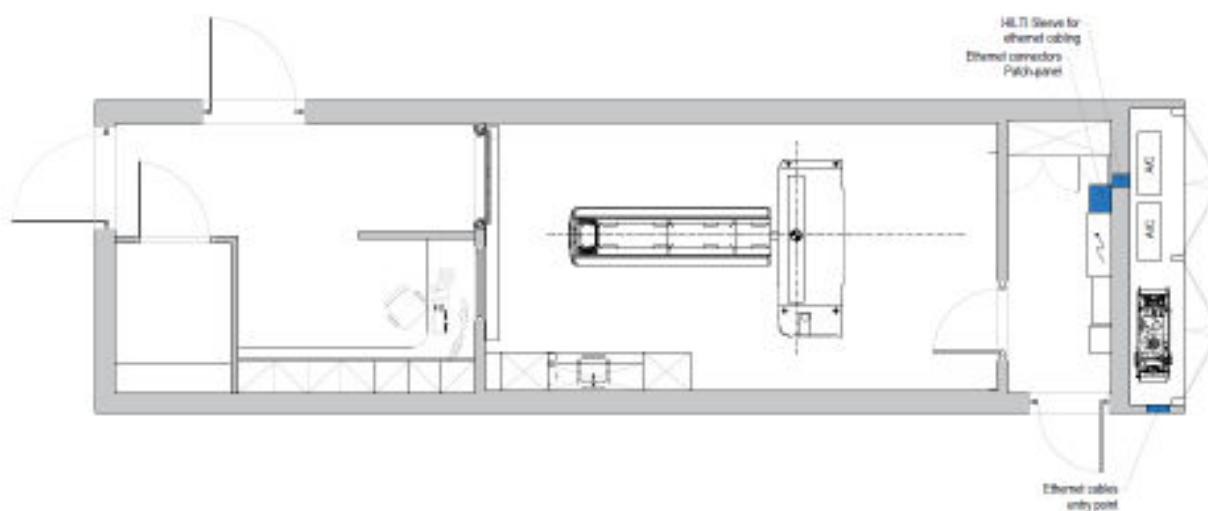


Figure 11 - Patch-panel location

4.1.5 Water connection

To enable the humidifier to function, water must be supplied to the unit, as well as sewage drained away. For the water there is 1/2" water connector (1) and for the drain from humidifier there is DN32 connector (2), and for drain from air conditioner is 3/4" connector (3). Both are located in the technical bridge. On the Figure 12 can be found a photo of water and sewage connectors.

To prevent freezing of the water when the temperature drops below 0 degrees Celsius, on the water pipe there is mounted heating cord. To use the cord it is needed to connect the heating cord plug to the socket on the technical bridge.



Figure 12 - Water and sewage connections with heating cord

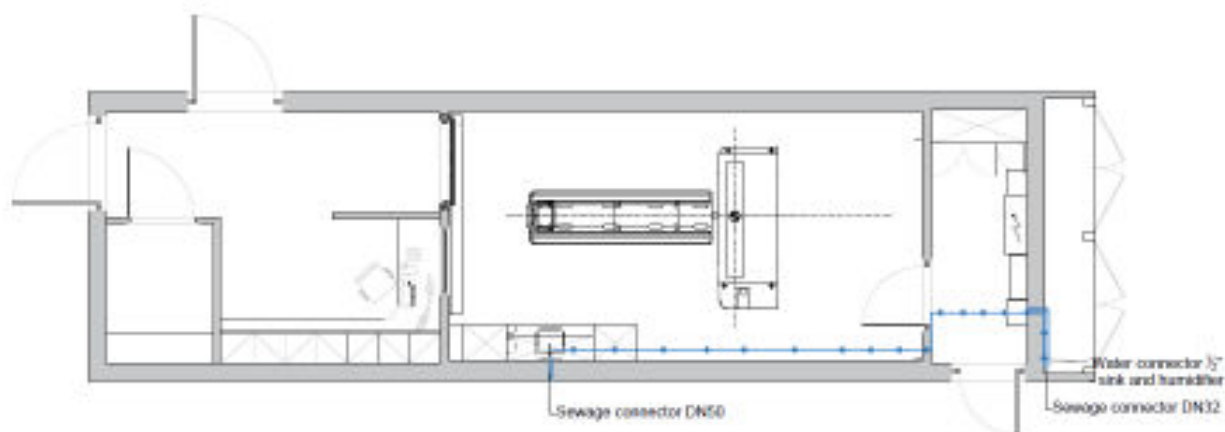


Figure 13 - Location of water and sewage connections with heating cord

5. Special provisions



A computed tomograph is a radiological device and generates strong ionizing radiation that is dangerous to living organisms.

Radiological shielding in the form of lead shields was used in the examination room to reduce the ionization radiation of the computed tomograph. All walls floor, and ceiling are protected with a layer of lead. Between the examination room and the operator room, there are also specialized doors and a window protecting people in the operator room against harmful radiation.

WARNING!

Drilling holes in the walls, ceiling, floor or doors of the Examination room is strictly prohibited!

6. Transportation

6.1 Securing equipment for safe transportation

Before moving the CT building ensure that all parts are secured for safe transportation!

- Make sure that every loose item is properly fixed
- Secure all equipment in the Examination room
- Secure all equipment in the Operator room
- Secure all equipment in the Technical room
- Secure all equipment in the Technical bridge
- Secure the doors of all cupboards
- Ensure that all doors are closed and locked

6.2 Fixing the unit on the trailer

THE UNIT MUST BE TRANSPORTED BY AIR SUSPENDED VEHICLES.

The unit has to be supported according the transport supporting scheme shown in Figure 14.

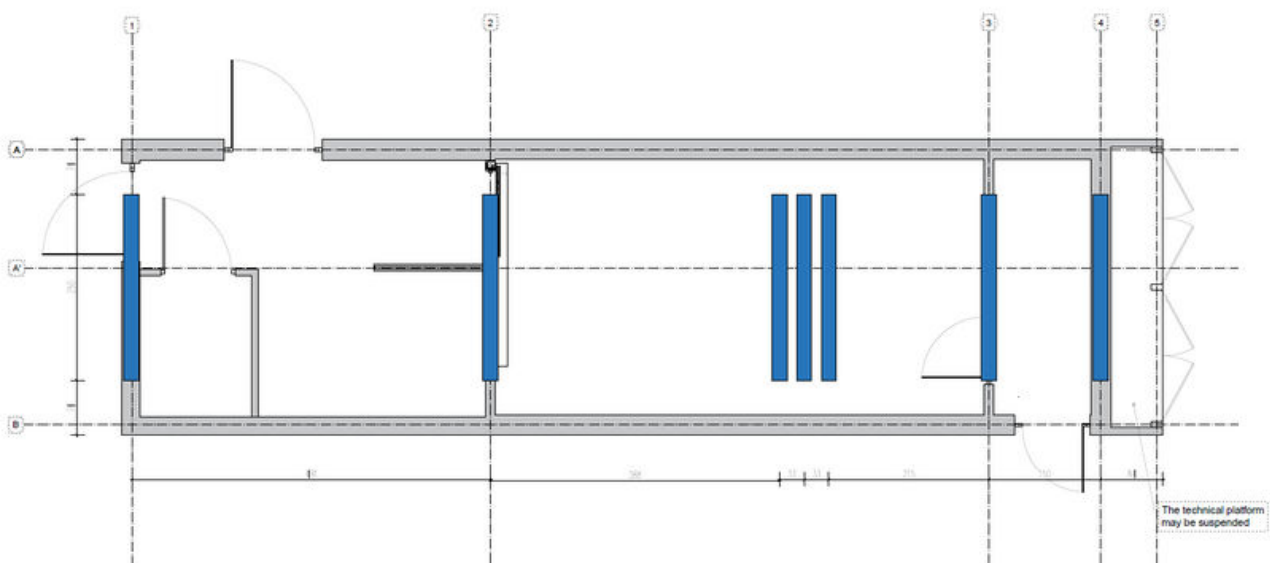


Figure 14 - Transport support

WARNING!
Only certified chains can be used

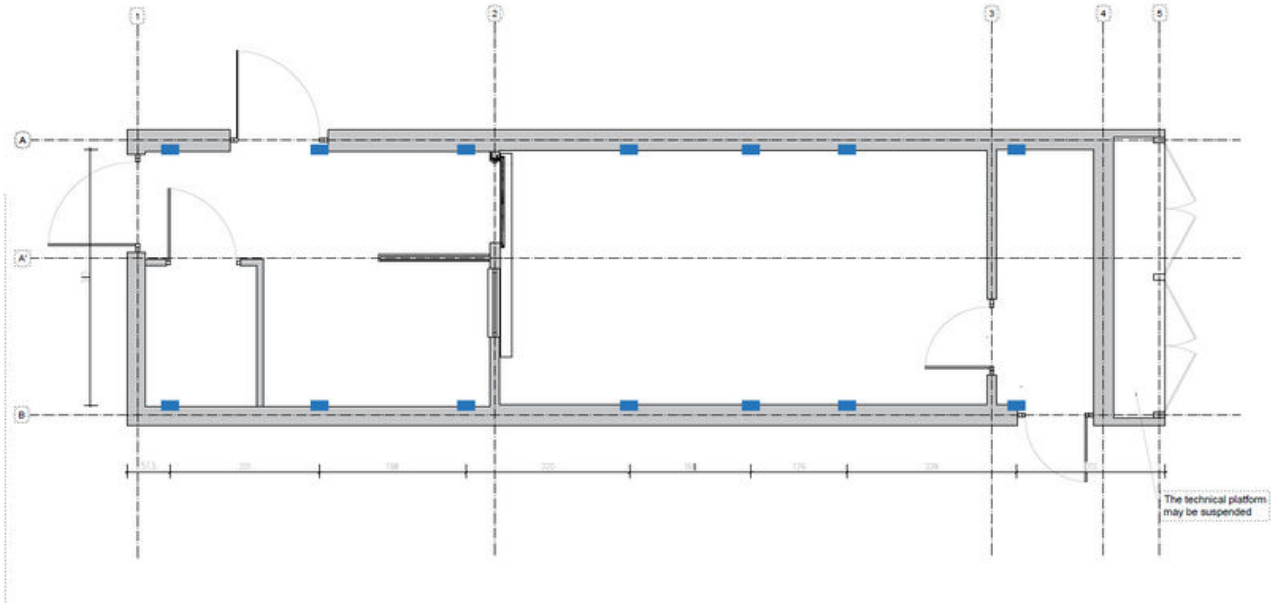


Figure 15 - Mounting brackets for transport



Figure 16



Figure 17

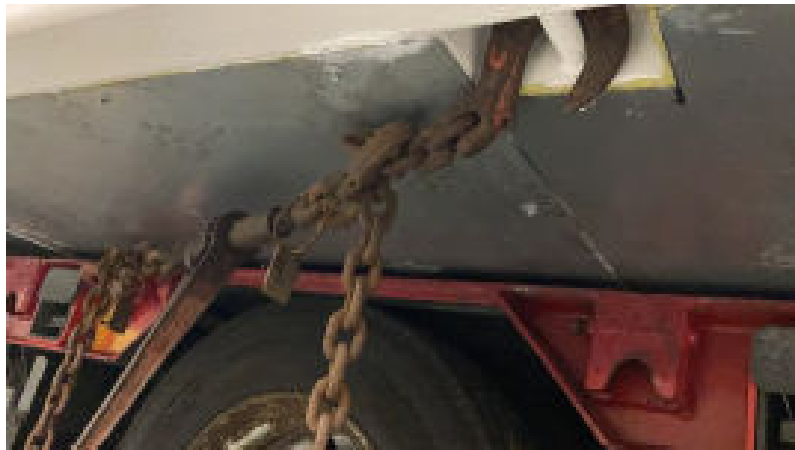


Figure 18

The exact position of the mounting brackets can be found on the scheme shown in Figure 15

After that, the chains should be tensioned with the tensioner, to get the properly stiffness of the unit on the chassis – see photos:

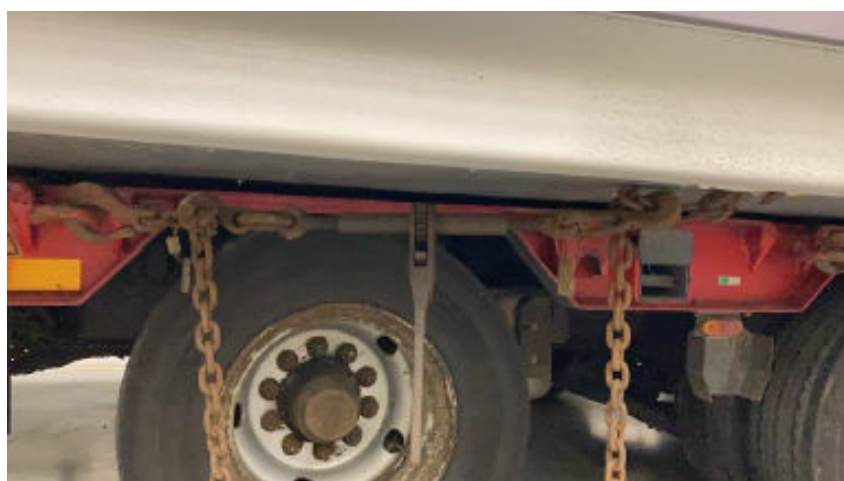


Figure 19

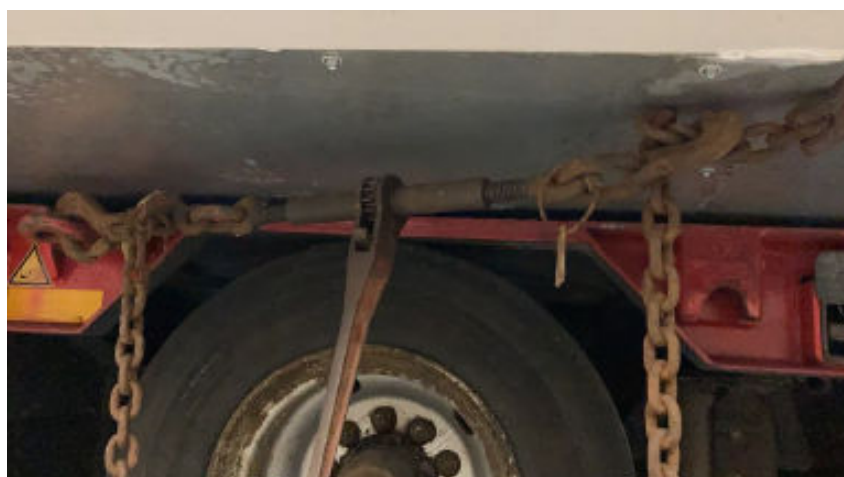


Figure 20

The Figure 21 and Figure 22 show the unit correctly fastened to the chassis.



Figure 21



Figure 22

7. Preparation after delivery

7.1 Floor level

After relocation of the unit it is necessary to check the level of the floor in the unit – especially in the examination room. At first it is necessary to check the level on the 4 clinometers mounted on the unit – location of the clinometers is shown on the Figure 23. The Figure 24 shows the correct position of clinometers. The Figure 25 shows wrong position of the clinometers. After that it is needed to apply a spirit level in at least 6 points of the unit (as shown in the diagram on following pages – Figure 26). The mobile unit include a leveling device in cabinet at the technical room. There is Electronic levels DL60L. This device is capable of leveling the gantry along the fore and aft axis/ right and left axis of the mobile unit to within 0.2° degrees of absolute level. Please check the manual below. It possible to check floor level is two ways by digital result or visual reading. During the visual reading the bubble has to be centred at all points. The Figure 27 and Figure 28 show the instruction of spirit level checking. If you check the level by digital result, the value on the display should be close $0,00^\circ$.

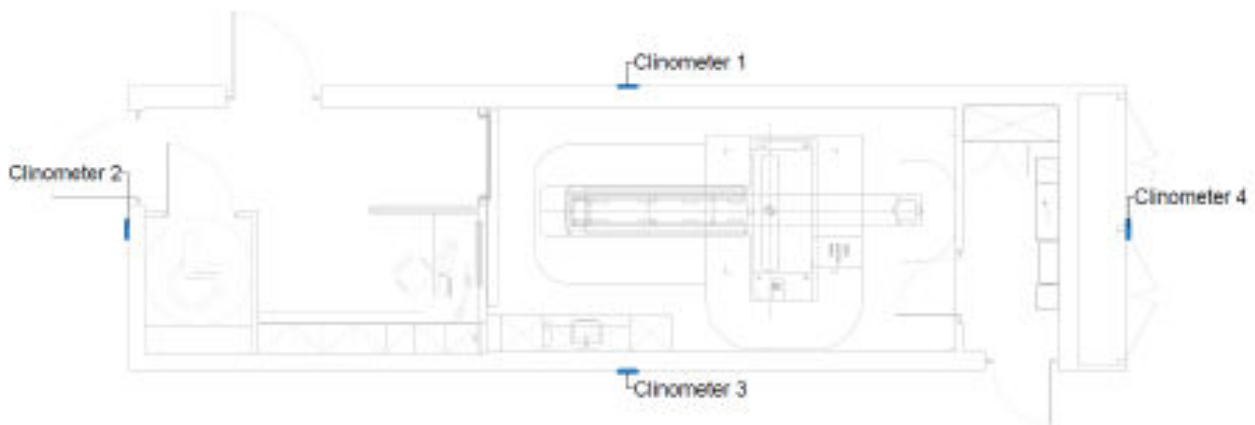


Figure 23 - Location of clinometers

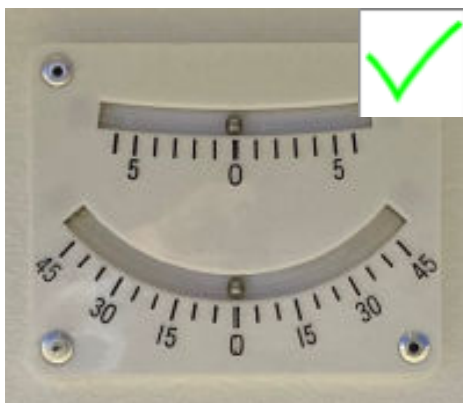


Figure 24 - Correct position of the clinometer

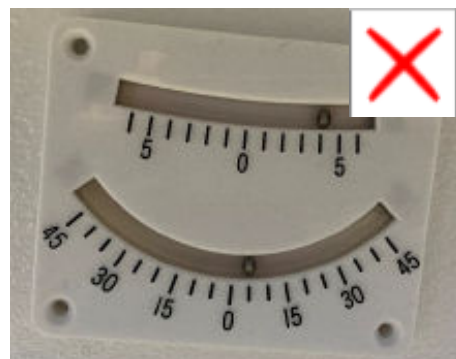


Figure 25 - Wrong position of the clinometer

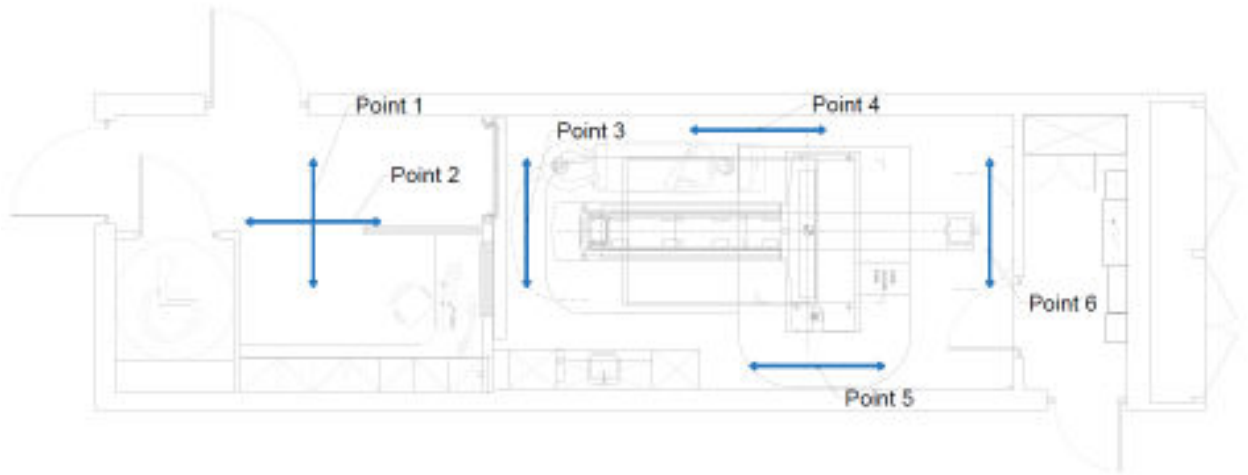


Figure 26 - Level check points

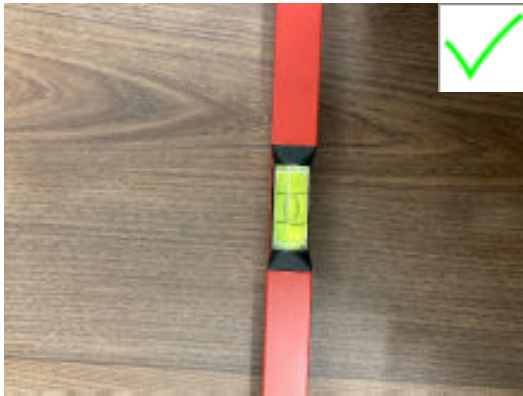


Figure 27



Figure 28