SOMATOM Definition AS

Basic Planning Information

SIEMENS Healthineers

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Legend

- Motion area / Swivelling range / Minimal room size / Safety distance
- Service area
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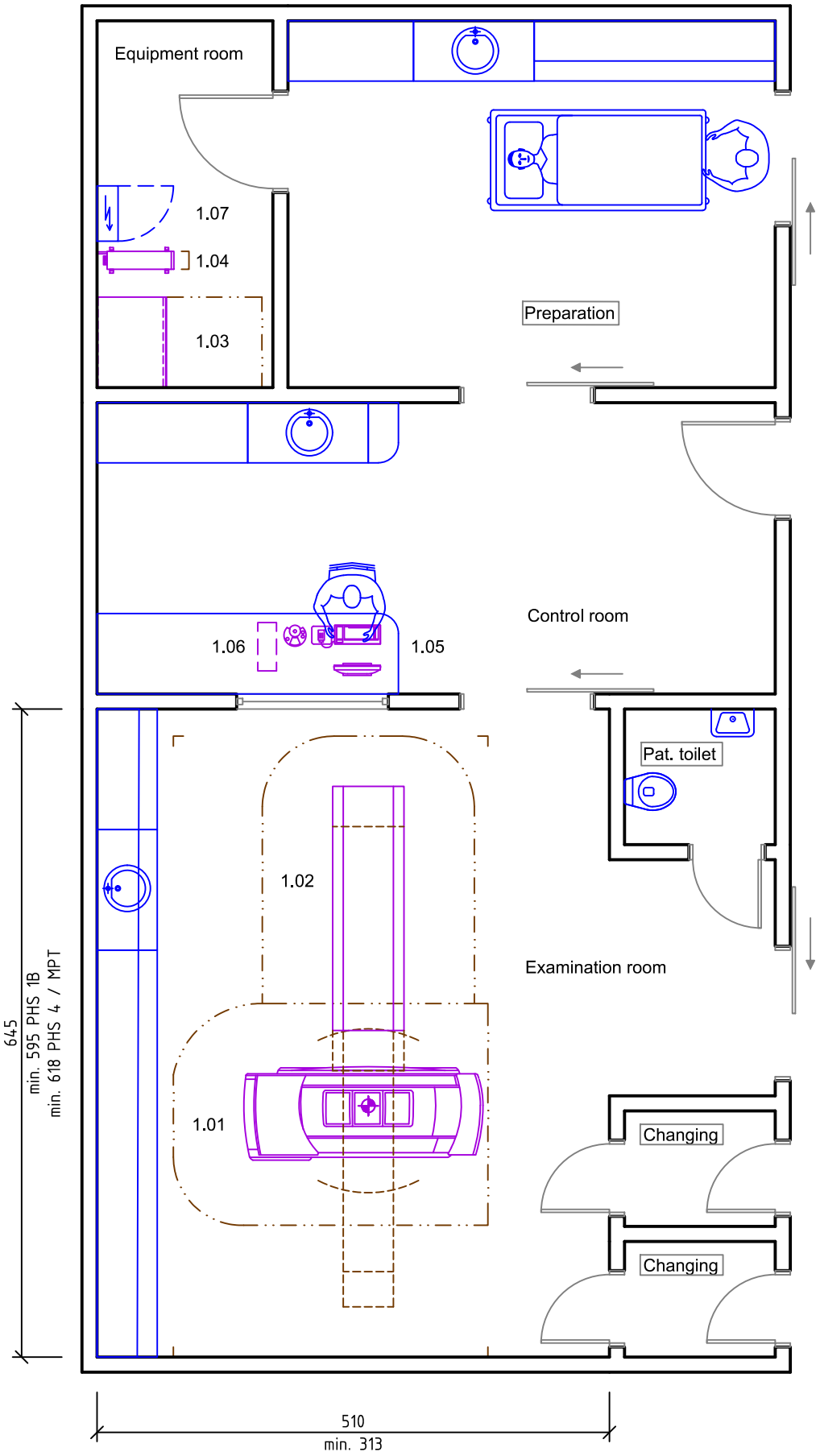
Dimensioning

All installation measurements apply to finished wall/floor/ceiling and are to be checked prior to assembling the unit.

Orientation point = reference point of the Siemens Healthineers unit for planning and installation

Please note: The drawing parts in this document are not to scale!

Planning Example



SOMATOM Definition AS - Equipment Legend				
		Weight (kg), Heat dissipation to the air (W)		
Pos.	Description	kg	W	Remark
1.01	Gantry (water cooled)	2200	1000	#1, Isocenter 1020 mm
1.02	Patient table PHS 4 (2000mm scannable range)	500	*	* included in 1.01
1.03	PDC (Power distribution cabinet) with integrated UPS	610	2000	
1.04	IRSmx5b Tower PC (Image Reconstruction System)	25	500	128 slices
1.05	Control unit with monitor, control box, keyboard	10	100	
1.06	ICS Tower 13 PC (syngo Acquisition Workplace)	25	500	
1.07	Power Distributor			by customer
	#1 Additional heat dissipation up to 12 kW to water			

Room Dimensioning

Room dimensioning

The indicated room dimensions have to be checked on site. The planning department has to be informed about possible deviations. Otherwise we cannot assume any guarantee for the accurate implementation of the dimensions indicated in the planning documents.

Room height

Technically required minimum room height 2300 mm for the CT system - additional components not considered. Measured from the highest point of the finished floor (with covering) to the lowest point of the ceiling

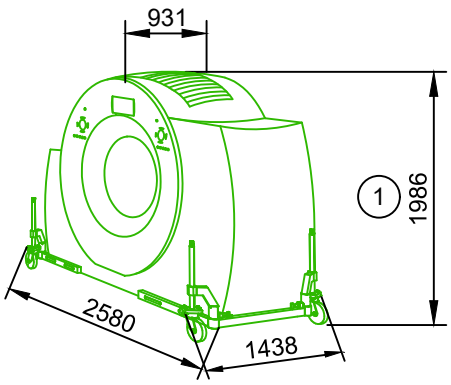
Statics and Transport

Transport Gantry

not to scale

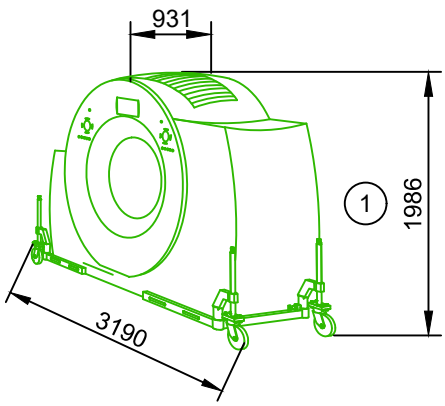
Standard transport

Rollers swivelled out



Transport through narrow passages (2)

Rollers swivelled in



(1) Transport device set to minimum floor clearance (7 mm)

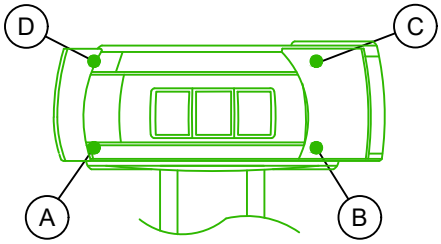
(2) TIPPING HAZARD! Transport with the rollers swivelled in is permissible only when narrow passages make it impossible to transport the system with the rollers swivelled out. As soon as the system has passed through narrow passages, the transport rollers have to be swivelled out again. **Attention:** The overall dimensions between the front cover and back cover are larger than the maximum width of the transport device when the rollers are swiveled in.

Gantry with transport device : 2389 kg, Transport device : 189 kg
If there is false floor in transportation route please check bearing capacity of this floor on-site!
The maximum possible floor load (two-point load) per roller that may arise during gantry transport is 16 kN.
If necessary, cover the transport route with metal sheets to distribute the load.

The door must have a final clearance of 1250 mm if bed entrance to the CT examination room is requested.

Statics

not to scale



The floor construction has to be performed solid and free of vibration, e.g. concrete flooring C20/25 to C50/60 corresponding to DIN EN 206-1, according to the maximum values as specified in the textblock “Floor and building vibrations”.

It is recommended to test the weight capacity of the concrete or composite flooring by a stress analyst.

Fastening the gantry on the floor is possible but only necessary in countries prone to earthquakes or according to local regulations.

Securing the patient table to the floor is mandatory.

The static floor load on the measuring points A to D is:			
4600 N on point A	6850 N on point B	5550 N on point C	4600 N on point D
The amplitude for the dynamic floor load (gantry-rotation) is:			
± 600 N on point A	± 500 N on point B	± 500 N on point C	± 600 N on point D
Bearing area per adjustable foot: 50.27 cm² / Diameter 80 mm			

Floor- and building vibrations

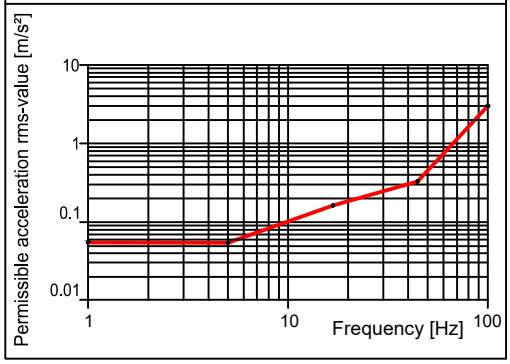
Floor- and building vibrations can reduce image quality!

Sources that produce vibrations are, e.g.:
Railroad routes, subways, roads, road works and construction sites, hospital power plants, mines, open-cast minings, quarries (explosions), ferry moorings, any other sources of striking vibrations. Any transient vibration has to be less than 0.5 m/s² peak-to-peak in the time domain.

The CT system is not sensitive to common vibrations. If the CT is away from vibrational sources, or the CT is replacing a CT system that to date has not shown image quality problems due to vibrations, it is usually not necessary to execute vibrational measurements.

It is the customer's responsibility to contract a qualified specialist. The specialist must implement site modifications to meet the specific limits, and to design structural solutions in case of deviations.

Permissable continuous floor vibrations



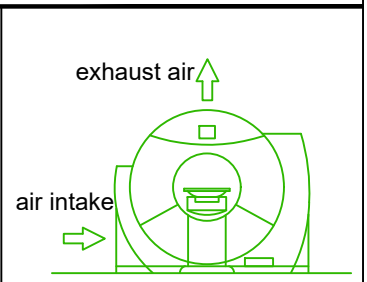
If there are any doubts, the following thresholds have to be verified by measurement:
In the three spatial directions, acceleration in vibrations at the mounting points of the computer tomograph (Gantry and Patient Handling System PHS) must not exceed the thresholds as described in the above shown diagram.

Air-conditioning

Climatic conditions for transport and storage		
Transport and storage of all components	Temperature Relative humidity Barometric pressure Temperature gradient Max. storage time	-20 to +50 °C 10 to 90 % 700 to 1060 hPa 10 K/h 2 months
The data for transporting and storing the CT system apply only if the system is shipped free of damage in the transport packaging provided by the manufacturer. All components have to be stored in the original transport packaging. If the original packaging is no longer available, you have to use an equivalent packaging for intermediate storage.		

Environment		
Entire CT System	Temperature Relative humidity Barometric pressure Temperature gradient	18 to 28 °C 20 to 75 % 800 to 1060 hPa 6 K/h
Maintain the temperature range required to meet the needs of changing seasons. If it is not possible, an on-site room heating and air conditioning system is required. When supplying air from the outside (fresh air), we recommend the on-site use of coarse Filters, Filter class EU3 to EU4 for filtering dust particles up to > 10 µm (DIN 24185/Part 2).		

On-site cooling water requirements for the water-cooled Gantry					
Utilisation of the CT system [%]	100 (Max. power)	75	50	25	0 (stand-by)
Heat dissipation to cooling water [kW]	12	9	7	5	2
Heat dissipation (Gantry and patient table) to air [kW]	1	1	1	1	1
Water temperature	4° to 16° C (without anti-freeze) 4° to 14° C (with anti-freeze)				
Temperature gradient (cooling water)	1 K / min				
Water pressure	Nominal: 2 - 6 bar Max.: 10 bar				
Water quality	Recommended potable water quality, max. particle size ≤ 0,25 mm (max. anti-freeze mixing ratio 40%)				
Depending on the water input temperature following requirements are valid:					
Minimum flow rate (without antifreeze)	470 to 2400 l/h	Pressure loss (without anti-freeze)	0.2 to 1 bar		
Minimum flow rate (with antifreeze)	730 to 2450 l/h	Pressure loss (with anti-freeze)	0.4 to 1 bar		
For service and filling procedure a water faucet with screw connection and a water drain (e.g. a sink or a siphon) in vicinity of the gantry is necessary.					

On-site cooling requirements for the air-cooled Gantry						
Workload CT-system [%]	100 (max power)	75	50	25	0 (stand-by)	
Heat dissapation to ambient air [kW]	13	10	8	6	3	
Air temperature (air intake)	18 to 28 °C					
Temperature gradient (air intake)	max. ± 1 K/min; max.<6 K/h; max. ± 4 K/h in 24h					
Humidity (air intake)	20 to 75 %					
Air flow rate (through the Gantry)	2300 m³/h					

The climatic room conditions for all air-cooled CT system components are influenced by design room conditions (e.g. windows, large glass areas, building and room insulation, room size and volume, etc.) and must be observed in the case of a new or existing air conditioning system in the examination room.

Electrical Installation

Power requirements			
Connection with 80 kW water cooling system or air cooling system			
Power line: TN-S System	3/N/PE AC 50/60 Hz ± 2 Hz	Connection value	86.5 kVA
Line voltage:	400 V ± 10 %	Power consumption:	
Line impedance:	see diagram	Stand-by:	≤ 4 kVA
Cable cross section is to be determined by calculation		CompOn:	≤ 2.5 kVA
		System off:	≤ 1.7 kVA
		for time up to 6 s:	max. 125 kVA
Size of connector terminals in the PDC is 25 to 95 mm². N, PE adapter terminal 16 mm² available			

Power requirements			
Connection with 80 kW water/air-split cooling system			
Power line: TN-S System	3/N/PE AC 50/60 Hz ± 2 Hz	Connection value	86.5 kVA + 22 kVA
Line voltage:	400 V ± 10 %	Power consumption:	
Line impedance:	see diagram	Stand-by:	≤ 20 kVA
Cable cross section is to be determined by calculation		CompOn:	≤ 2.5 kVA
		System off:	≤ 1.7 kVA
		for time up to 6 s:	max.141 kVA
Size of connector terminals in the PDC is 25 to 95 mm². N, PE adapter terminal 16 mm² available			

Power requirements

Connection with 100 kW water cooling system or air cooling system

Power line: TN-S System	3/N/PE AC 50/60 Hz ± 2 Hz	Connection value	86.5 kVA
Line voltage:	400 V ± 10 %	Power consumption:	
Line impedance:	see diagram	Stand-by:	≤ 4 kVA
Cable cross section is to be determined by calculation		CompOn:	≤ 2.5 kVA
		System off:	≤ 1.7 kVA
		for time up to 3 s:	max. 140 kVA

Size of connector terminals in the PDC is 25 to 95 mm². N, PE adapter terminal 16 mm² available

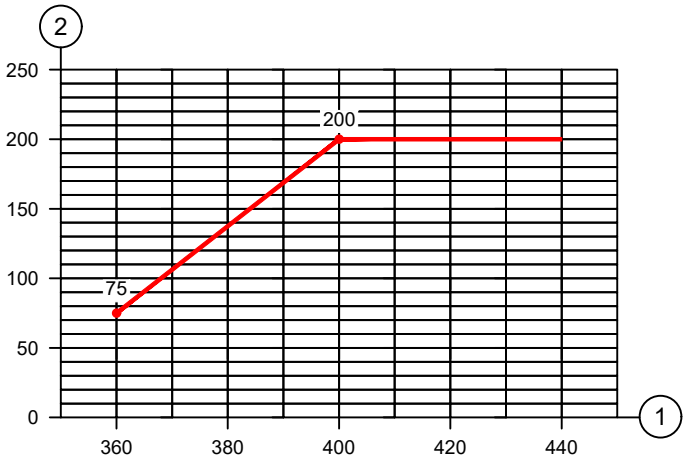
Power requirements

Connection with 100 kW water/air-split cooling system

Power line: TN-S System	3/N/PE AC 50/60 Hz ± 2 Hz	Connection value	86.5 kVA + 22 kVA
Line voltage:	400 V ± 10 %	Power consumption:	
Line impedance:	see diagram	Stand-by:	≤ 20 kVA
Cable cross section is to be determined by calculation		CompOn:	≤ 2.5 kVA
		System off:	≤ 1.7 kVA
		for time up to 6 s:	max.156 kVA

Size of connector terminals in the PDC is 25 to 95 mm². N, PE adapter terminal 16 mm² available

Line impedance related to measured line voltage



(1) Minimum measured line voltage [VAC]

(2) Maximum allowed line impedance [mΩ]

The maximum allowed line impedance depends on the actual measured lowest line voltage.
We recommend monitoring the voltage over a period of 24 hours preferable on work days to specify the minimum.

Room lighting

Ambient lighting in rooms with diagnostics or with workstations must comply with the respective local and national regulations.
General requirements like the needed intensity of illumination - adjustable, reproducible, flicker-free or a limitation of dazzlings and reflections etc. have to be observed (EN 12464-1, DIN 5035-7).

General Information

Display screen workstations

For setting up display screen workstations, take account of the guidelines in the Display Screen Workstation directive as well as any national regulations (e.g. EN ISO 9241-5).

Smart Remote Services (SRS)

Smart Remote Services (SRS) is used for remote diagnostics as well as remote service to provide highest system availability.
Requirements:
- Broadband connection (minimum 4 MBit/s down- and 768 kBit/s upstream, optimum 30 MBit/s down- and 2 MBit/s upstream) without time or volume limitations
- Router (for exclusive use with SRS)

Data protection and security is defined in the Smart Remote Services security concept.

Network Integration

The Siemens Healthineers components are using TCP/IP Protocol, a 100/1000 Mbit/s switched Ethernet network and static IP addresses.
The required network cabling (min. CAT 5 TP) has to be provided on site. Media converters, which are needed for using fibre optic cabling, are not in scope of delivery.
To prepare the implementation of the new system into the existing network environment, the availability of the needed network data at least two weeks before starting the installation is mandatory.
This is the only way to ensure a seamless integration of the new system into the workflow of the department.

Notes on preparations for installation

Contracts for performing and supervising on-site installation preparations should be concluded with technically competent companies by the customer. The customer is responsible for timely and proper completion and supervision of all preparations for installation at the construction site in observance of all applicable legal regulations (e.g. X-ray regulations, radiation protection regulations) and all applicable general recognized rules of technology (e.g. VDE regulations, DIN standards).
Execution and supervision of installation preparations at the construction site and later observance of the standard operating conditions are not included in our duties. The customer is responsible for checking the static calculations and, where applicable, the air conditioning in the building to be equipped.

Safety distances

Distances from moving parts of the medical device to walls, furniture and other equipment have to be kept to avoid injuries by crushing in compliance with local regulations, e.g. a minimum distance of 50 cm according to DIN EN ISO 13854.

It is the customer's responsibility to ensure the above requirements are followed.
This is to avoid the risk of injury.

If safety distances are not maintained appropriate on-site safety measures have to be put in place.
Clear visible markings according to national guidelines, e.g. crushing warning signs, hazard warning tape, hazard area cordon, safety mats, may be required.

Radiation protection

The structural radiation protection depends on the location of the unit and the function of the surrounding rooms. By order, the planning departments of Siemens Healthineers prepare radiation protection calculation and radiation protection plan.

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