Symbia Evo

Basic Planning Information

SIEMENS Healthineers

Table of contents

Legend

- Motion area / Swivelling range / Minimal room size / Safety distance
- Service area
- Floor mounted
- Ceiling mounted
- Wall mounted
- Additional equipment
- Demolition

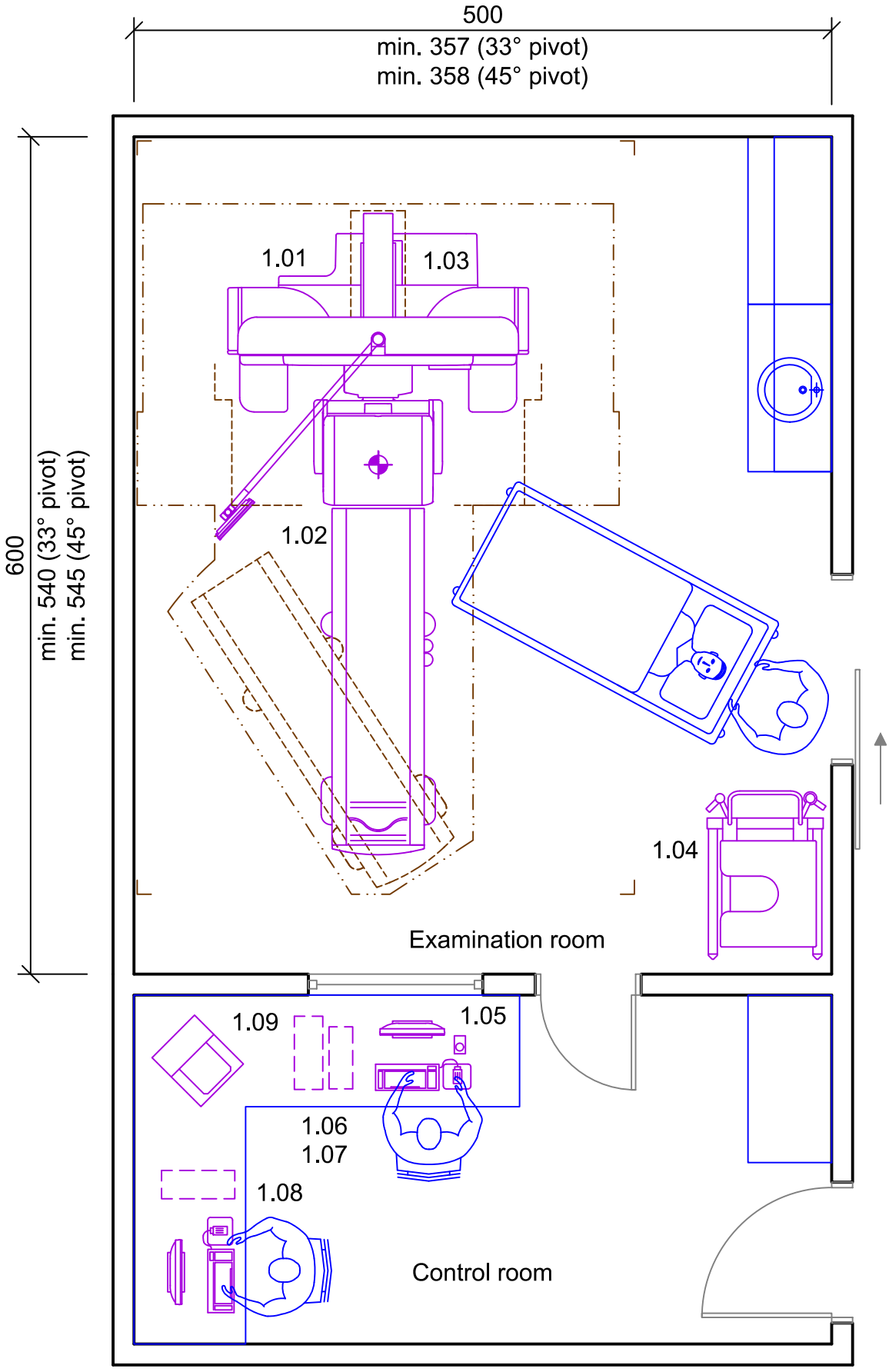
Dimensioning

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



Symbia Evo - Equipment Legend				
		Weight (kg), Heat dissipation to the air (W)		
Pos.	Description	kg	W	Remark
1.01	Symbia Evo	2524 #1	1500 1000	in operation standby
1.02	PHS, pivot 33°, without collimators	892 #2	*	* included in 1.01
1.03	Rear PHS with SNAC	150	*	* included in 1.01
1.04	Collimator cart with 2 Low energy, high resolution collimators with 2 Medium energy collimators with 2 High energy collimators with 2 Low energy, all purpose collimators with 2 Low energy, ultra high resolution collimators with 2 Fan Beam collimators with 1 Pinhole collimator with 2 Low penetration, high resolution collimators with 2 SMARTZOOM collimators	248 #3 45 127 250 46 56 57 81 72 95		 only if IQ-SPECT
1.05	syngo Acquisition Workplace with e-soft Tower PC, monitor, keyboard and mouse	35	ca.800	
1.06	E-Stop			
1.07	DRS Tower PC	17	543	
1.08	MI Workplace with monitor, keyboard and mouse	32	563	optional
1.09	Laser printer	21	100	optional
	#1 Weight without collimators and patient! #2 Weight without collimators and patient! Weight collimator cart in docking position has to be observed! #3 Weight without collimators!			

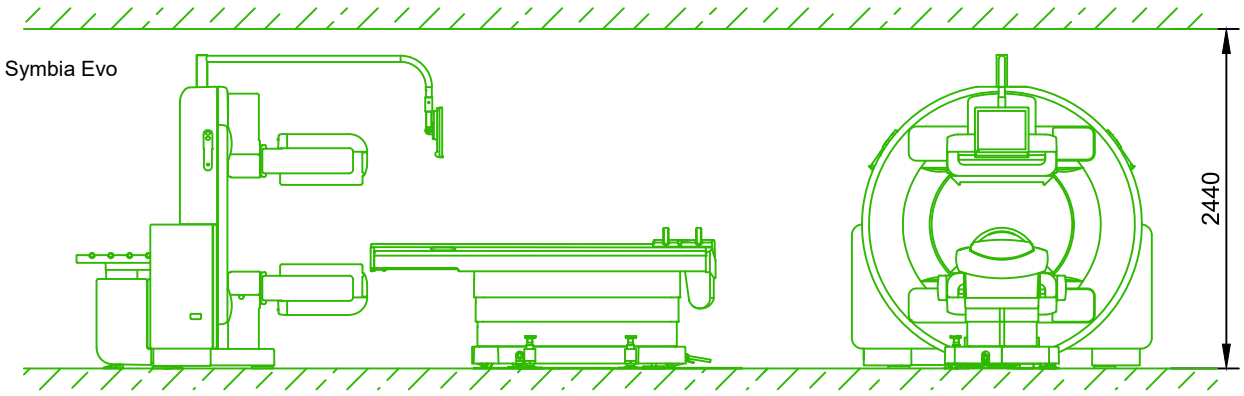
Room Dimensioning

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

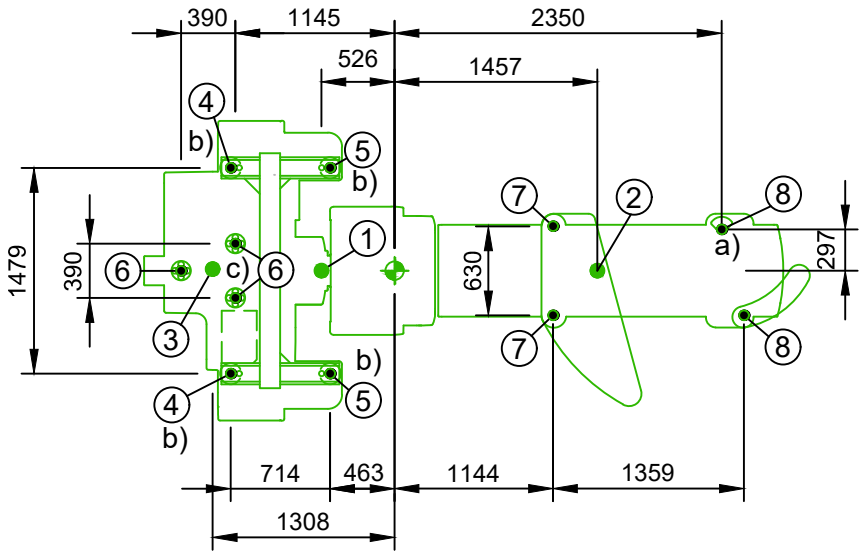
Recommended room height is 2440 mm, minimum room height is 2390 mm, measured from the highest point of the finished floor (with covering) to the lowest point of the ceiling. 2290 mm is minimum room height, if drop ceiling is available and may provide 130 mm additional clearance to install Gantry Boom.



Statics and Transport

Statics Symbia Evo

not to scale



1 Center of gravity Gantry 2773 kg incl. 2 HE collimators
2 Center of gravity PHS 1417 kg incl. ICC, ACC, AQC, 2 LE collimators + 2 ME collimators + 227 kg patient
3 Center of gravity Rear PHS 150 kg
4 Floor load per contact surface 123 kg (0,70 kg/cm²)
5 Floor load per contact surface 1263kg (7,10 kg/cm²)
6 Floor load per retainer plate 2,95 kg/cm²
7 Floor load per caster 422 kg (525 kg incl. ICC/ACC)
8 Floor load per caster 149 kg (185 kg incl. ICC/ACC)

AQC = Automatic Quality Control (option)
ICC = Integrated Collimator Changer (option)
ACC = Automatic Collimator Changer (option)

a) 3x 0,38" pivot assembly anchors, tension load 2696 N each *
b) Anchors mounting frame, tension load 552 N each *
c) Anchors Rear PHS, tension load 3215 N each *

* safety factor of 4 already included according to IEC 60601-1

Conditions of flooring:	Installation of the gantry and PHS only on - concrete flooring (min. class C20/25 to C50/60), min. 152 mm thick - composite flooring - access floor with suitable on-site mounting frame or sub-construction. Require an on-site friction free sub-construction made from steel in areas of support.
Weight capacity:	Have the concrete or composite flooring tested by a stress analyst.
Floor levelness:	The scan room floor must be leveled, and its surface must be smooth. Any deviation in levels will have a detrimental effect on the PHS-to-Gantry alignment which may effect the collimator exchange. It is recommended that the floor in the entire room will be leveled and flattened. If this is not possible, it is imperative, that the system installation area is leveled and flattened: Area of min. 191 cm x 461 cm; Acceptable slope max. 0.25°: max. 2.0 cm over 461 cm length or max. 0.8 cm over 191 cm width Flatness: no more than 0.5 cm deviation in any 122 cm throughout room or system installation area. The whole room (in minimum the system installation area) should be re-surfaced, if there are unacceptable deviations and the floor should have one single poured surface without filling material compensating for holes.
Floor covering:	The minimum requirement for compressive strength for the floor covering is 27 kg/cm² within the cruising range of the loaded collimator cart. This is based on worse case loading. Anti-static flooring is recommended for the examination room. ESD (electrostatic discharge) flooring is also suitable.

The engineer of record for the building and Siemens engineering shall jointly review deviations for the a.m. requirements. The engineer of record shall provide a support structure designed to support all weights and forces. It is the customer´s responsibility to contract a qualified specialist to implement site modifications that meet these specific limits and to design structural solutions in case of deviations.
Installation on a floating floor without sub-construction is prohibited.
In areas prone to earthquakes it is required to bolt down all system components according to the local or national regulations.

Transport Symbia Evo

not to scale

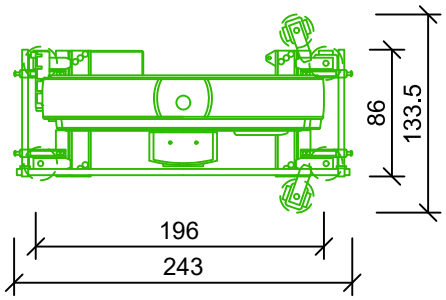
The transport route (doors and hallways) needs sufficient dimensions for the following parts

MI Gantry	- without packaging with transport frame - (depending on position of transport frame)	ca. 228 x 86 x 202 cm (BxDxH) or ca. 196 x 131 x 202 cm (BxDxH) Weight approx. 1868 kg
PHS (Patient Handling System)		approx. 249 x 87 x 90 cm (BxDxH) Weight approx. 1244 kg

Tipping hazard! Transport with the rollers swivelled in is permissible only in narrow passages!
As soon as the system has passed through narrow passages, the transport rollers have to be swivelled out again.
Access floors have to be designed for a weight capacity of min. 588 kg per plate. During gantry transport, the load may be higher at certain individual points (3-point load etc.) due to uneven flooring.

The door must have a final clearance of 125 cm if bed entrance is requested.

Top-view NM-Gantry
with transport device



Floor- and building vibrations

Floor- and building vibrations can reduce image quality! Therefore the gantry and the patient table must be installed in an environment free of vibrations.

Sources that produce vibrations are, e.g.:
Railroad routes, subways, roads, road work and construction sites, hospital power plants, mines, open-cast mines, quarries (explosions), ferry moorings, any other source of striking vibrations.

The system is not sensitive to common vibrations. If the system is away from vibrational sources, or the system is replacing a system that so far has not had any image quality problems due to vibrations, it is usually not necessary to measure vibrations.

If there are any doubts, the thresholds described in the following have to be verified via measurement:

Permitted vibration sensitivity	
Vibrational amplitude	V_{rms} = 25 µm/s
Frequency range*	1 to 120 Hz

* Vibrational speed V_{rms} transferred through the building or through the floor to the Gantry must not be exceeded in the 3 spatial orientations at this frequency range.

Impulse load: In addition to nominal floor loading (weight), gantry rotation generates additional 5,338 N impulse load per foot during stop and shoot procedures.

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.

Climatic Conditions for Transport

Temperature	-20 to +49 °C	Relative humidity	10 to 90 % non condensing
Temperature gradient	4 °C/h	Air pressure	700 to 1060 hPa

The data given is applicable only if the system is shipped free of damage in the transport packaging provided by the manufacturer.

Air-conditioning

Environment

Recommended temperature range for optimum workflow (less calibration):

Examination room	Temperature range	18 to 30 °C
	Relative humidity	20 to 80 % without condensation
	max. temperature gradient	4.4 °C/h

We recommend to install a temperature controller and display for monitoring the a.m. room conditions.
If outside air (fresh air) is supplied, we recommend using dust filters on-site of filter class EU3 to EU4 for filtering dust particles > 10µm according to DIN 24185, Part 2, or in accordance with the hygiene regulations of the respective country.
Ventilation and air change according to DIN 6844 part 1, or in accordance with national regulations.

The system needs to be protected from sunlight or incandescent lighting as it is an infrared sensitive device. Limit 800LUX. We recommend to install suitable sunblinds or curtains in front of possibly existing windows.

Siemens Healthineers has established the upper limit of magnetic field exposure for a Symbia detector to be 1 Gauss AC or DC. 2 Gauss for the CT scanner, 10 Gauss for computers and 1,5 Gauss for LCD monitors.

Electrical Installation

Power requirements			
Powerline:	1/N/PE AC 50/60 Hz	Powerload:	
Line-Voltage:	230 V±10%	max. in operation standby	ca. 3.0 kVA ca. 1.6 kVA
Wire cross section is to be determined by calculation !			

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.

On account of certain regional limitations of sales rights and service availability, we cannot guarantee that all products included in this brochure are available through the Siemens sales organization worldwide. Availability and packaging may vary by country and are subject to change without prior notice. Some/all of the features and products described herein may not be available in the United States.
The information in this document contains general technical descriptions of specifications and options as well as standard and optional features which do not always have to be present in individual cases.
The statements by Siemens' customers described herein are based on results that were achieved in the customer's unique setting. Since there is no "typical" hospital and many variables exist (e.g, hospital size, case mix, level of IT adoption), there can be no guarantee that other customers will achieve the same results.
The customers cited are employed by an institution that might provide Siemens product reference services, R&D collaboration or other relationship for compensation pursuant to a written agreement.
Siemens reserves the right to modify the design, packaging, specifications, and options described herein without prior notice. Please contact your local Siemens sales representative for the most current information.
Note: Any technical data contained in this document may vary within defined tolerances. Original images always lose a certain amount of detail when reproduced.
Not all features shown in this brochure are necessarily standard and available in all countries.

Published by
Siemens Healthineers AG
SHS ES FD

Siemens Healthineers Headquarters
Siemens Healthineers AG
Siemensstr. 3
91301 Forchheim, Germany
Phone: +49 9191 180
siemens-healthineers.com

SIEMENS Healthineers