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Symbia Evo
Excel



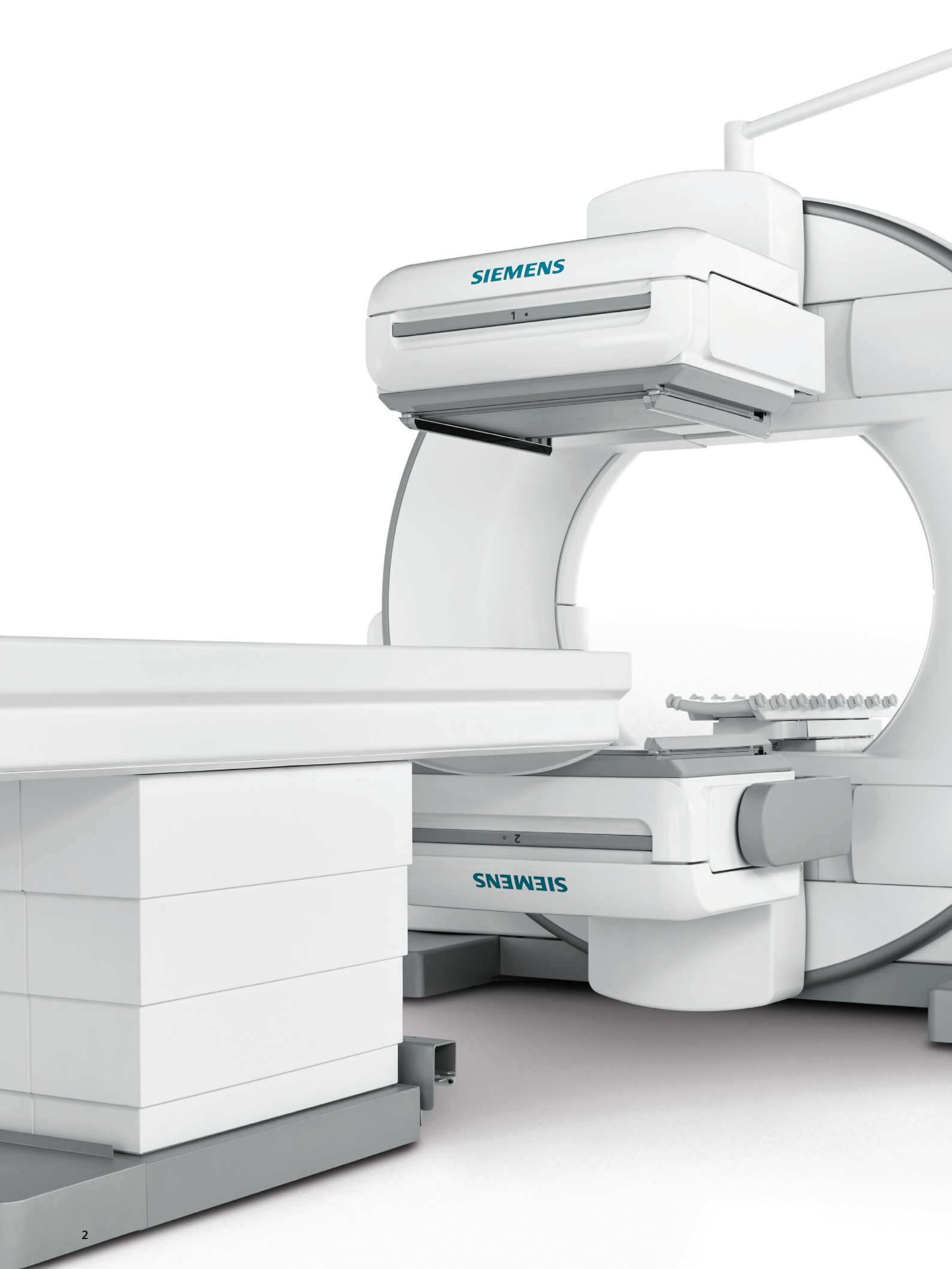
[siemens.com/symbia-evo-excel](https://www.siemens.com/symbia-evo-excel)



Symbia Evo Excel



System Specifications



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Symbia Evo Excel

Small is the new big.

Small on the outside, yet big on the inside, Symbia Evo™ Excel¹ empowers you to image every patient² knowing you have the clinical information needed for confident decision making and a system designed to optimize your investment.

Optimize Your Investment

Engineered to manage key life-cycle costs, Symbia Evo Excel is the most cost-effective SPECT scanner in its class.³ The system design addresses space requirements, as well as maintenance and serviceability, making it an investment that works for you. With the smallest³ room size requirement in its class—up to 29%³ smaller than conventional SPECT systems—Symbia Evo Excel significantly reduces costs associated with room remodeling and expansion. Lower up-front costs equate to a faster return on investment.

Image Every Patient²

With exceptional detector flexibility, Symbia Evo Excel supports gurney and hospital bed imaging. The streamlined bed accommodates patients up to 227 kg (500 lb) and the lowest bed position offers easy access to patients with limited mobility. Increase your scannable population and improve patient comfort with a 30% larger bore, compared to prior systems; a high-capacity, low-height patient bed; and gurney and hospital bed imaging capabilities.

Read with Confidence

Equipped with advanced high-definition detector technology, Symbia Evo Excel offers the highest³ collimator sensitivity and the best³ NEMA-reconstructed resolution. Symbia Evo Excel's industry-leading³ image quality delivers accurate and reproducible clinical information to support physicians' diagnostic confidence, potentially leading to improved clinical outcomes and reduced readmission rates.

Features

Gantry Dimensions		Symbia Evo Excel
Height		225 cm (7 ft 4.7 in)
Width		215.6 cm (7 ft 0.9 in)
Depth		194.7 cm (6 ft 4 in)
Axis of rotation (from floor)		104 cm (3 ft 5 in)
Weight ⁴		2,369 kg (5,224 lb)
Min./max. patient opening (HE Coll)		12 cm (4.7 in)/65.4 cm (25.7 in)
Min./max. patient opening (LEHR Coll)		19.2 cm (7.6 in)/72.6 cm (28.6 in)
Patient positioning monitor		38.1 cm (15 in) flat panel color LCD display
Tunnel opening		101.2 x 78.3 cm (39.8x30.8 in)
Tunnel length		34.1 cm (13.4 in)
SPECT Motions		Symbia Evo Excel
Average autocontour distance		1.1 cm (0.45 in)
Max. radial and lateral		72 cm/min (28.3 in/min)
Max. lateral position left/right		37.5 cm (14.7 in)/10 cm (4 in)
Max. clockwise (CW)/counter-clockwise (CCW) rotation detector 1		405°/135°
Ring rotation range		540°
Rotational uniformity		Yes
Rotational accuracy		0.1°
Rotational speed		0.03-3.0 RPM
Center of rotation		≤0.25 pixel (64x64 matrix)
Max. caudal tilt		+16°/-16°
Patient Bed		Symbia Evo Excel
Width		65.2 cm (25.7 in)
Length		233.2 cm (7 ft 7.8 in)
Weight		483 kg (1,065 lb)
Height		113.4 cm (3 ft 8.6 in)
Vertical motion range		53.9-103.7 cm (21.2-40.8 in)
Vertical speed		72 cm/min (28 in/min), maximum
Pallet material		Aluminum
Pallet thickness		2.6 mm (0.10 in)
Pallet width		40.3 cm (15.8 in)
Attenuation at 140 keV		<7%
Max. patient weight		227 kg (500 lb)
Max. deflection of patient pallet		<2.0 mm (<0.08 in) for 92 kg (200 lb) patient
Max. scan length in whole-body mode		200 cm (6 ft 6.7 in)
Horizontal motion accuracy		0.7 mm (0.02 in)
Min./max. horizontal speed		3-600 cm/min (1.2-236 in/min)

SPECT Specifications

Rear Pallet Support	Symbia Evo Excel
Width	26.3 cm (10.3 in)
Length	104.3 cm (3 ft 5.1 in)
Weight	162 kg (357.1 lb)
ECG Trigger	Symbia Evo Excel
Integration	External
Framing modes	Forward or forward/backward by thirds
Buffered beat window	Yes
Bad beat rejection	Yes
Criteria for framing images	Frames/R-R interval
Beat acceptance window	Automatic or manual selection
Collimator Exchanger Cart	Symbia Evo Excel
Height	101.4 cm (3 ft 3.9 in)
Width	82.8 cm (2 ft 8.6 in)
Depth	120.4 cm (3 ft 11.4 in)
Weight	181.4 kg (400 lb)
Detector Dimensions	Symbia Evo Excel
Field of view (FOV)	53.3 x 38.7 cm (21x15.25 in)
Diagonal FOV	65.9 cm (25.9 in)
Crystal	Symbia Evo Excel
Size	59.1 x 44.5 cm (23.25x17.5 in)
Diagonal	73.9 cm (29.1 in)
Thickness	9.5 mm (3/8 in) or 15.9 mm (5/8 in)
Photomultiplier Tubes	Symbia Evo Excel
Total number	59
Diameter	53-7.6 cm (3 in) and 6-5.1 cm (2.4-2 in)
Type	Bialkali high-efficiency box-type dynodes
Array	Hexagonal
Detector Shielding	Symbia Evo Excel
Back	9.5 mm (0.375 in)
Sides	12.7 mm (0.5 in)
Min./max. in patient direction ⁵	27.9/36.4 mm (1.1/1.435 in)
Brain reach ⁶	7.6 cm (3 in)

SPECT Specifications

Detector ⁷	3/8"	5/8"
Intrinsic spatial resolution		
Full width at half maximum (FWHM) in central field of view (CFOV)	≤3.8 mm	≤4.5 mm
FWHM in useful field of view (UFOV)	≤3.9 mm	≤4.6 mm
Full width at tenth maximum (FWTM) in CFOV	≤7.5 mm	≤8.7 mm
FWTM in UFOV	≤7.7 mm	≤8.9 mm
Intrinsic spatial linearity		
Differential in CFOV	≤0.2 mm	≤0.2 mm
Differential in UFOV	≤0.2 mm	≤0.2 mm
Absolute in CFOV	≤0.4 mm	≤0.5 mm
Absolute in UFOV	≤0.7 mm	≤1.0 mm
Intrinsic energy resolution		
FWHM in CFOV	≤9.9%	≤9.9%
Intrinsic flood field uniformity (uncorrected)		
Differential in CFOV	≤2.5%	≤2.5%
Differential in UFOV	≤2.7%	≤2.7%
Integral in CFOV	≤2.9%	≤2.9%
Integral in UFOV	≤3.7%	≤3.7%
Multiple window spatial registration	≤0.6 mm	≤1.0 mm
Intrinsic count rate performance in air		
Maximum count rate	310 kcps	310 kcps
Intrinsic spatial resolution at 75 kcps		
FWHM in UFOV	≤4.1 mm	≤4.6 mm
FWTM in UFOV	≤7.8 mm	≤8.9 mm
Intrinsic flood field uniformity at 75 kcps (uncorrected)		
Differential in CFOV	≤2.5%	≤2.5%
Differential in UFOV	≤2.7%	≤2.7%
Integral in CFOV	≤2.9%	≤2.9%
Integral in UFOV	≤3.7%	≤3.7%
Detector with Collimator ⁷	3/8"	5/8"
System spatial resolution without scatter (LEHR at 10 cm)		
FWHM in CFOV	≤7.5 mm	≤7.8 mm
FWTM in CFOV	≤13.6 mm	≤14.9 mm
System spatial resolution with scatter (LEHR at 10 cm)		
FWHM in CFOV	≤8.3 mm	≤8.9 mm
FWTM in CFOV	≤18.6 mm	≤19.5 mm
System planar sensitivity (LEHR at 10 cm)		
Absolute ^{99m} Tc	202 cpm/μCi	225 cpm/μCi
System planar sensitivity (MELP at 10 cm)		
Absolute ¹¹¹ In	430 cpm/μCi	565 cpm/μCi

SPECT Specifications

Detector with Collimator Tomographic ⁷	3/8"	5/8"
Reconstructed spatial resolution without scatter at 15 cm radius (LEHR)	Filtered back projection	
Central transaxial	≤10.2 mm	–
Central axial	≤10.8 mm	–
Peripheral radial	≤9.8 mm	–
Peripheral tangential	≤8.4 mm	–
Peripheral axial	≤9.0 mm	–
Reconstructed spatial resolution without scatter at 15 cm radius (LEHR)	Flash 3D iterative reconstruction	
Central transaxial	≤4.4 mm	–
Central axial	≤4.4 mm	–
Peripheral radial	≤4.0 mm	–
Peripheral tangential	≤3.9 mm	–
Peripheral axial	≤4.2 mm	–
Reconstructed spatial resolution with scatter (LEHR)	Filtered back projection	
Center	≤10.7 mm	≤11.5 mm
Radial	≤10.9 mm	≤12.0 mm
Tangential	≤7.9 mm	≤8.8 mm
Reconstructed spatial resolution with scatter (LEHR)	Flash 3D iterative reconstruction	
Center	≤5.8 mm	–
Radial	≤5.0 mm	–
Tangential	≤4.1 mm	–
Average volume sensitivity per axial centimeter		
LEHR, ^{99m} Tc	12,000 (cts/sec)/(MBq/cm ²)	–
Detector-to-detector sensitivity variation		
LEHR, ^{99m} Tc	≤5.0%	–
Detector with Collimator Whole-body Scanning	3/8"	5/8"
Whole-body system spatial resolution without scatter at 10 cm/min scan speed (LEHR at 10 cm)		
FWHM perpendicular	≤7.5 mm	–
FWHM parallel	≤7.9 mm	–
FWTM perpendicular	≤14.0 mm	–
FWTM parallel	≤14.2 mm	–

SPECT Specifications

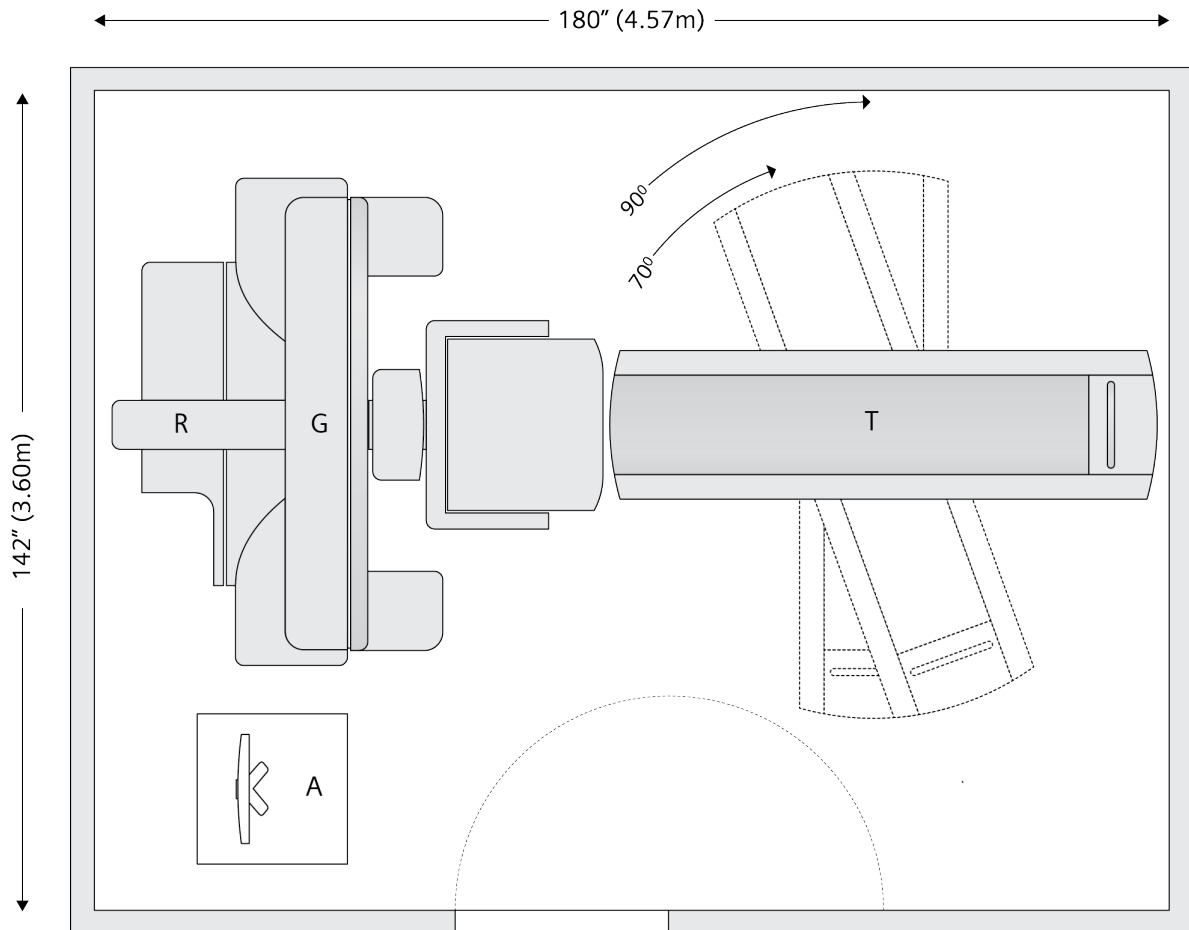
Collimators	LEHR	LPHR	LEAP	LEUHR	LEFB	MELP	HE
	Low Energy High Resolution	Low Penetration High Resolution	Low Energy All Purpose	Low Energy Ultra-High Resolution	Low Energy Fan Beam	Medium Energy Low Penetration	High Energy
Isotope	^{99m} Tc	¹²³ I	^{99m} Tc	^{99m} Tc	^{99m} Tc	⁶⁷ Ga	¹³¹ I
Hole shape	Hex	Hex	Hex	Hex	Hex	Hex	Hex
Number of joles (x1000)	148	86	90	146	64	14	8
Hole length	24.05 mm	35.0 mm	24.05 mm	35.8 mm	35 mm	40.64 mm	50.8 mm
Septal thickness	0.16 mm	0.2 mm	0.2 mm	0.13 mm	0.16 mm	1.14 mm	2 mm
Hole diameter across the flats	1.11 mm	1.5 mm	1.45 mm	1.16 mm	1.53 mm	2.94 mm	3.4 mm
Sensitivity at 10 cm ⁸	202 cpm/ μCi	330 cpm/ μCi	330 cpm/ μCi	100 cpm/ μCi	280 cpm/ μCi	275 cpm/ μCi	135 cpm/ μCi
Geometric resolution at 10 cm	6.4 mm	6.4 mm	8.3 mm	4.6 mm	6.3 mm	10.8 mm	12.6 mm
System resolution at 10 cm	7.5 mm	8.0 mm	9.4 mm	6.0 mm	7.3 mm	12.5 mm	14.5 mm
Calculated penetration	1.5%	1.2%	1.9%	0.8%	1.0%	1.2%	3.5%
Weight	22.6 kg (49.8 lb)	33.1 kg (73 lb)	22.6 kg (49.8 lb)	28 kg (61.8 lb)	28.4 kg (62.5 lb)	63.5 kg (140.1 lb)	N/A

SPECT Specifications

Pinhole Collimator ⁹	Isotope		
	^{99m} Tc	¹²³ I	¹³¹ I
Hole shape	Round	Round	Round
Number of holes	1	1	1
Cone aperture	4 mm, 6 mm, 8 mm	4 mm, 6 mm, 8 mm	4 mm, 6 mm, 8 mm
Cone length	219.3 mm	219.3 mm	219.3 mm
Diameter at base of cone (approximate)	220 mm	220 mm	220 mm
Sensitivity at 10 cm with 4 mm	123 cpm/μCi	111 cpm/μCi	67 cpm/μCi
Sensitivity at 10 cm with 6 mm	271 cpm/μCi	243 cpm/μCi	133 cpm/μCi
Sensitivity at 10 cm with 8 mm	478 cpm/μCi	426 cpm/μCi	221 cpm/μCi
Geometric resolution at 10 cm with 4 mm	6.2 mm	6.3 mm	7.5 mm
Geometric resolution at 10 cm with 6 mm	9.3 mm	9.3 mm	10.6 mm
Geometric resolution at 10 cm with 8 mm	12.3 mm	12.4 mm	13.6 mm
System resolution at 10 cm with 4 mm	6.6 mm	6.6 mm	7.6 mm
System resolution at 10 cm with 6 mm	9.5 mm	9.5 mm	10.7 mm
System resolution at 10 cm with 8 mm	12.5 mm	12.5 mm	13.7 mm
Weight	80.3 kg (177 lb)	80.3 kg (177 lb)	80.3 kg (177 lb)

Symbia Evo Excel

Minimum room size



Room size	3.60 m (11 ft 9 in)x4.57 m (14 ft 11 in)
Ceiling height	2.44 m (8 ft 0 in)
Hung ceiling height	2.29 m (7.5 ft)
System length	4.48 m (14.7 ft)
System width	2.16 m (7.1 ft)

Example layout. Please request site-specific plans for your project.

Installation Specifications

Label	Item Name	Weight	Heat Output
G	Symbia Evo Excel gantry	2,369 kg (5,224 lb)	3,400 BTU/h, 1.0 kW
T	Symbia Evo Excel imaging table	483 kg (1,065 lb)	–
R	Symbia Evo Excel rear patient handling system	162 kg (357.1 lb)	–
A	Acquisition computers	–	1,000 BTU/h, 0.3 kW
Power Requirements			
SPECT input voltage	Single-phase 200/208/220/230/240 VAC~ 50/60Hz		
Electrical supply	Single phase 200/208/220/230/240 VAC~ 50/60 Hz, 3.0 kVa		
Environment			
Ambient operating temperature	18°-30° C (64°-86° F)		
Allowable temperature change	4.4° C (8° F) per hour		
Humidity range	20-80% non-condensing		
Floor loading ¹⁰	3.37 kg/sq cm (48 lb/sq in) maximum under the ganty		
Heat dissipation ¹¹	6,500 BTU/hr		
Temperature range	18°-30°C (64°-86° F)		
Maximum temperature gradient	4.4° C/hour (8° F/hour)		

Detector Versatility



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¹ Symbia Evo Excel is not commercially available in all countries. Due to regulatory reasons, its future availability cannot be guaranteed. Please contact your local Siemens organization for further details.

² Patients up to 227 kg (500 lb).

³ Based on competitive literature available at time of publication.

⁴ Gantry weight: NM gantry 2,374 kg (5,224 lb).

⁵ For any point on the pallet at maximum 183 cm (6 ft) from the detector while the detector is at 25.4 cm (10 in) radial position.

⁶ Distance from the edge of the detector housing to the edge of the FOV.

⁷ Values are determined at the manufacturer's facility using methods described in NEMA Standards Publications NU 1-2007 "Performance measurements of Scintillation Cameras."

⁸ Values measured in accordance with NEMA Standards Publication NU-1 2007 using 3/8" crystal.

⁹ Values measured in accordance with NEMA Standards Publication NU-1 2007 using 3/8" crystal. Sensitivities for pinhole collimators measured using a 9 cm diameter phantom. Resolution for pinhole collimator measured using a line separation of 6 cm (4 mm and 6 mm aperture) and 4 cm (8 mm aperture).

¹⁰ Floor loading based on utilization of a floor plate.

¹¹ Includes gantry, detectors, patient bed, acquisition workstation, LCD monitor, PPM and UPS. Values in idle mode and operating mode would produce higher values.

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