

OP3D Pre-Installation Guide



- The place where the device is to be installed and the position from where the user takes images must be correctly shielded from the radiation that is generated when the device is operated. Follow the local radiation and safety requirements.
- The device must be fixed to the wall and the floor. If floor attachment is not possible, use either an additional wall support (ordered separately) or an exhibition stand together with one wall mount bracket.
- Ensure that each of the wall mount fixing screws and the wall can withstand pull-out force of at least 1500 N.



NOTICE! Mounting bolts for floor and wall fastening are not included in the delivery. The fixing hardware used to fix the device to the wall must be of correct type for the wall.

- The wall material should be suitable for fixing the device. If the wall is made of a weak material, you may have to use a reinforcing plate on the rear side of the wall to hold the fixing hardware.
- Make sure that the floor, where the device is to be installed, can support its weight. To avoid the device from tipping over, fix the device with floor bolts appropriate to the floor material. The bolts
- Do not install the device in environments where corrosive or explosive vapours or flammable anaesthetics are present.
- Special steps regarding EMC need to be taken when installing the device. For more information, refer to the chapter [Electromagnetic Compatibility \(EMC\) tables](#).
- Maximum allowed mains line impedance is 0.2 Ω .
- For permanent installation, a separate lockable mains switch (not supplied) is required to be installed to the mains feed.
- Maximum mains over-current releases:
100-120V: 20A
220-240V: 16A

Space Requirements

The following tools and hardware are required to install and set up the device. These are not included in the delivery, unless otherwise stated.

Fixing hardware

The type and length of hardware to be used (max. M10 bolts) depend on the wall material and floor material where the device is to be fixed.

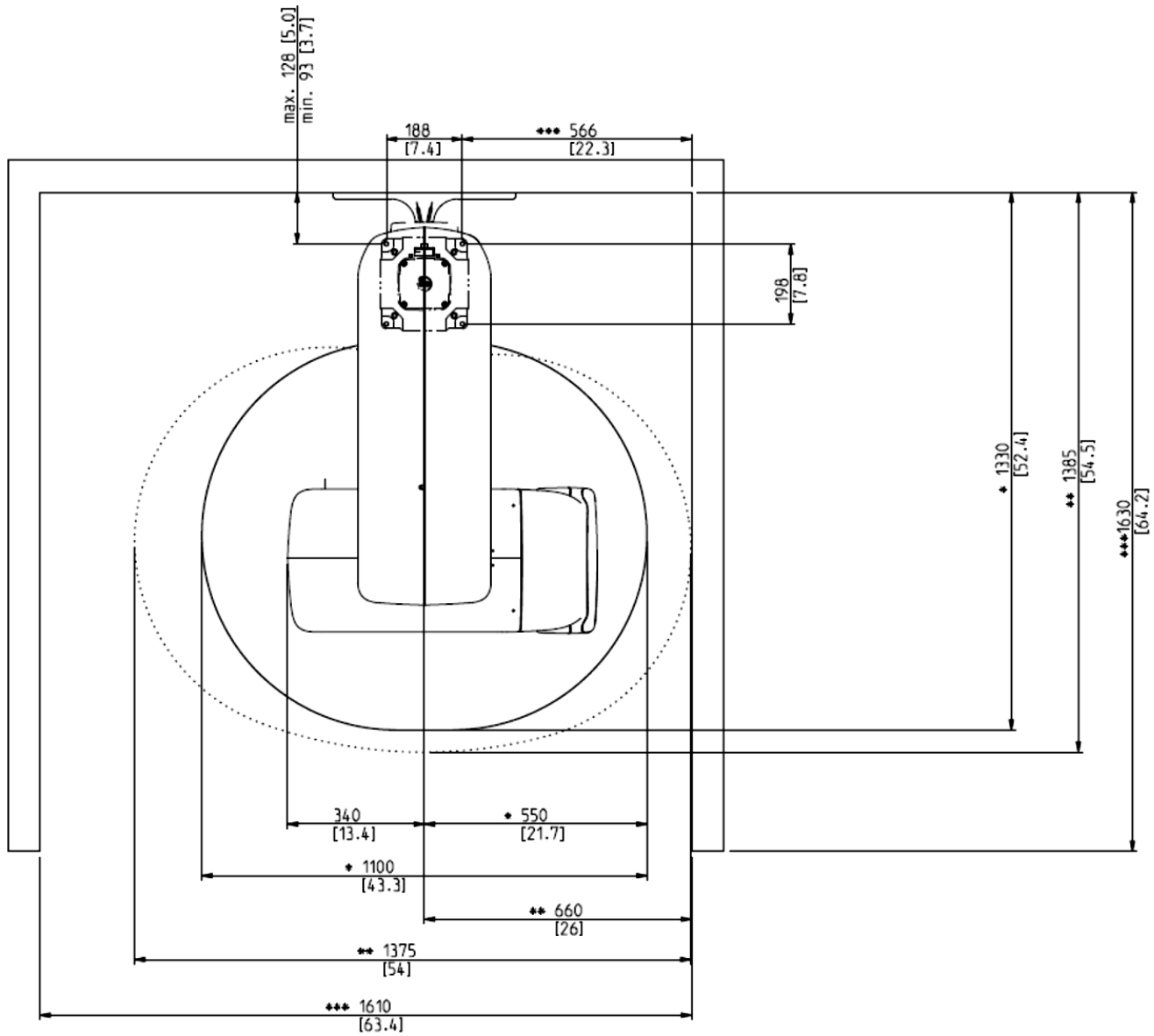
Pull-out force withstand min. 1500 N

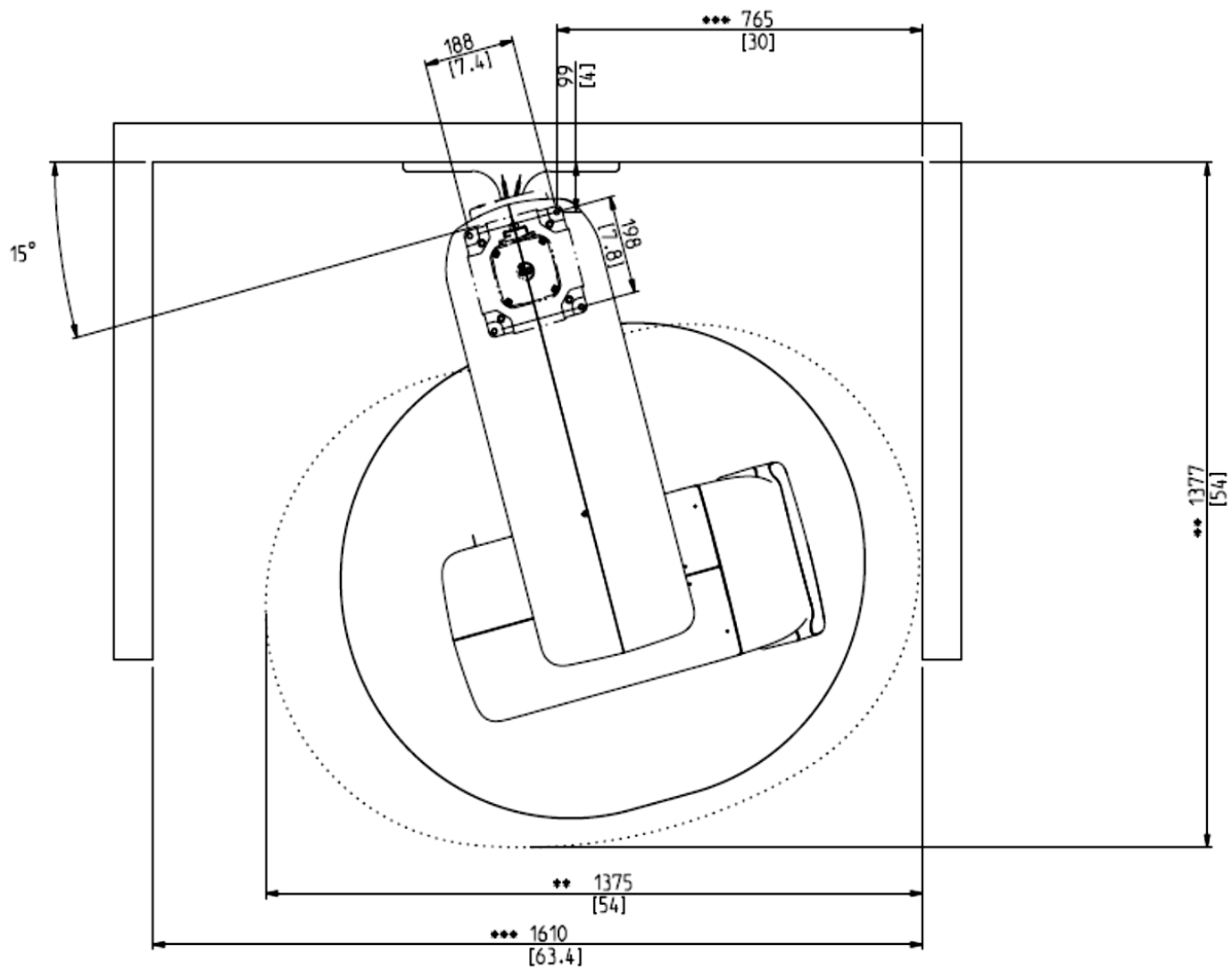
Installation tools

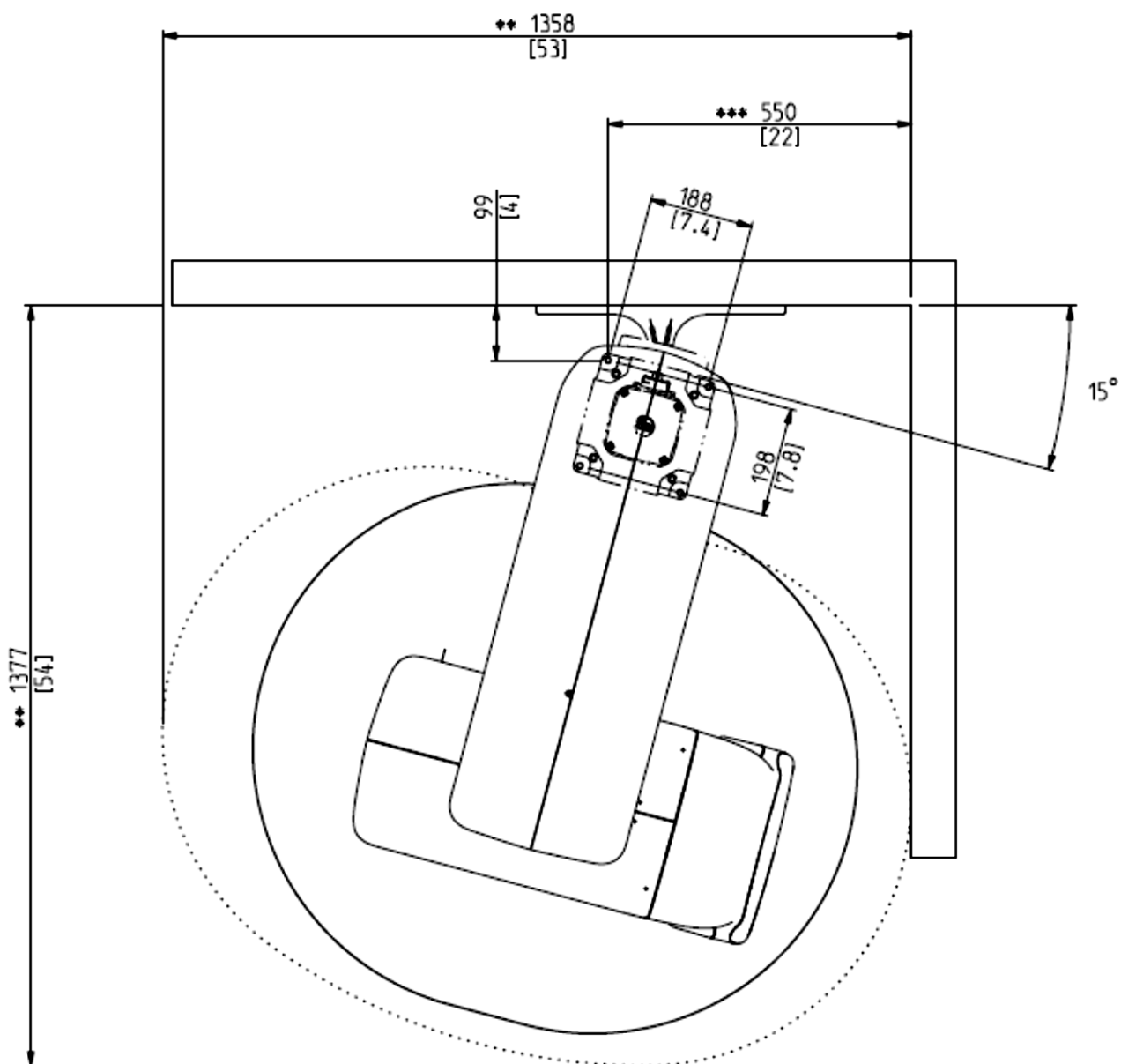
- Electric drill
- Spanners size 13 & 17 mm
- Allen keys 3 & 6 mm
- Flat head screwdriver
- Spirit level
- Pliers and wire cutter
- Scissors/knife
- Torque wrench

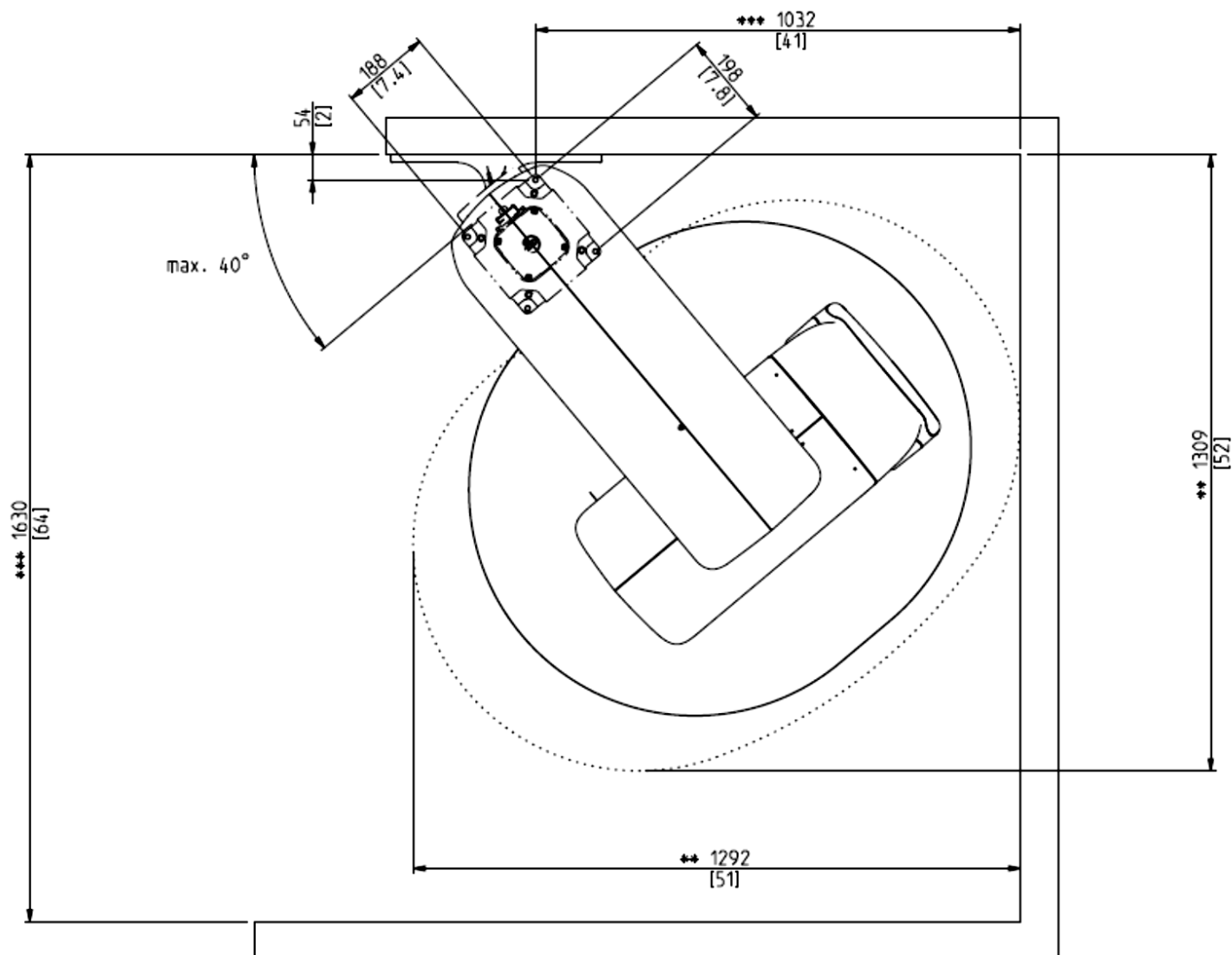
When you install the device, ensure that:

- There is enough space at the front and sides of the device to allow patients to enter and exit the device easily. Patients in wheelchairs will require more space than standing patients.
- There is enough space for the operator to position the patient correctly.
- The device is positioned at least 1.5m (59") away from any non-medical electrical or electromechanical equipment.
- The device is positioned so that the operator who is protected from radiation can see and hear the patient during the imaging, while maintaining visibility to the GUI.

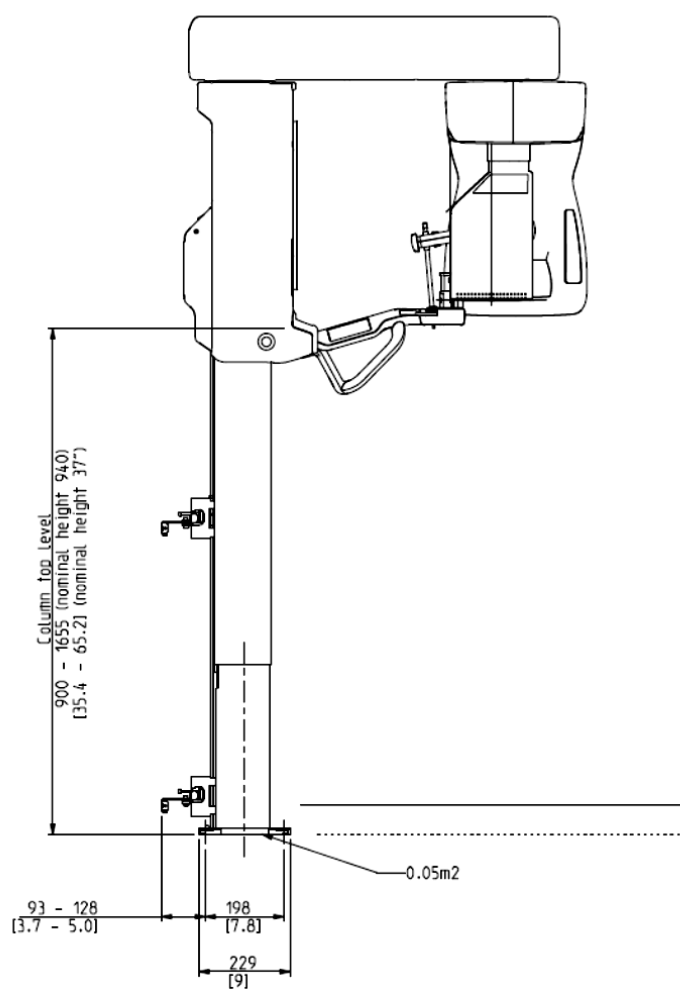
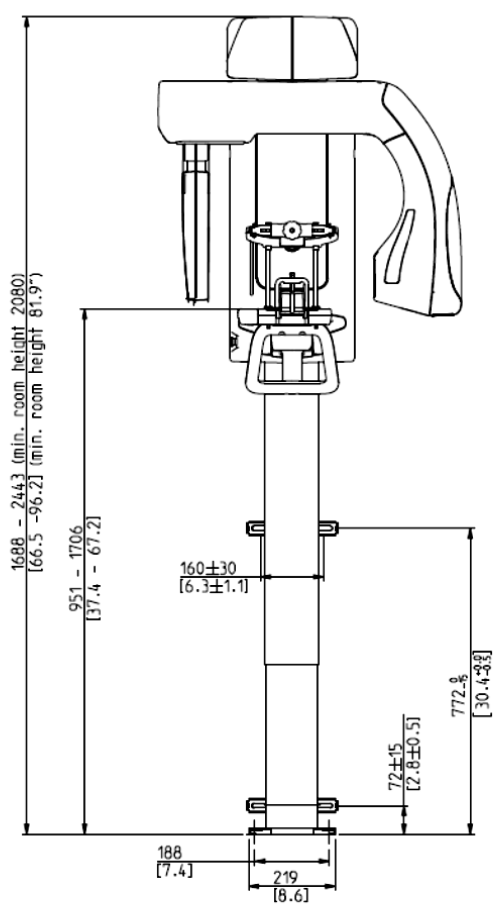




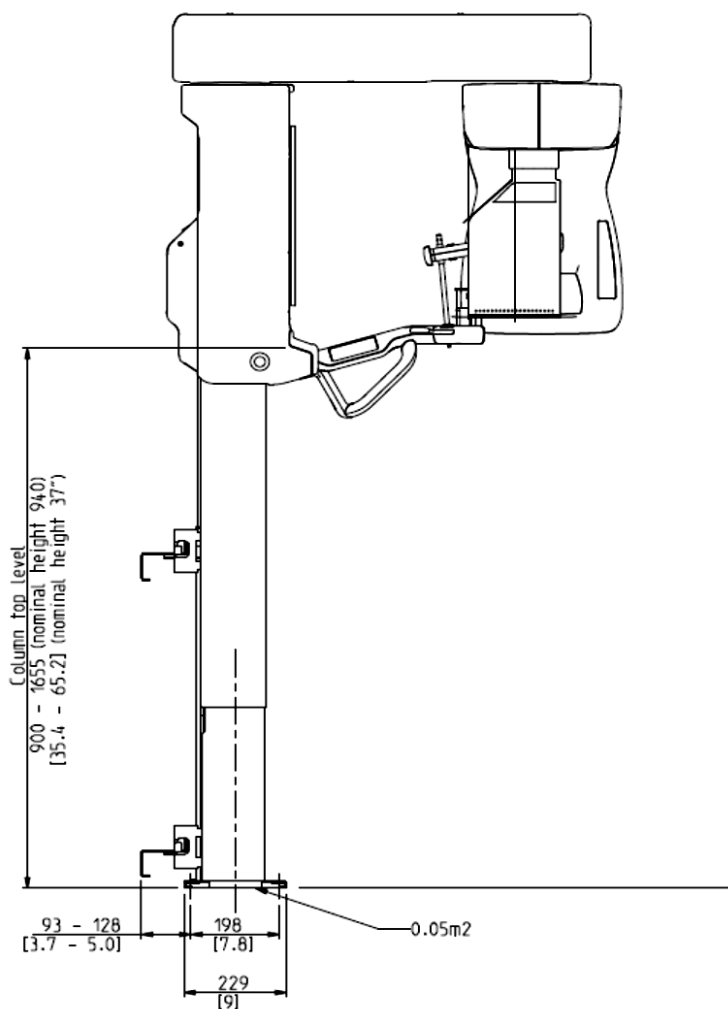
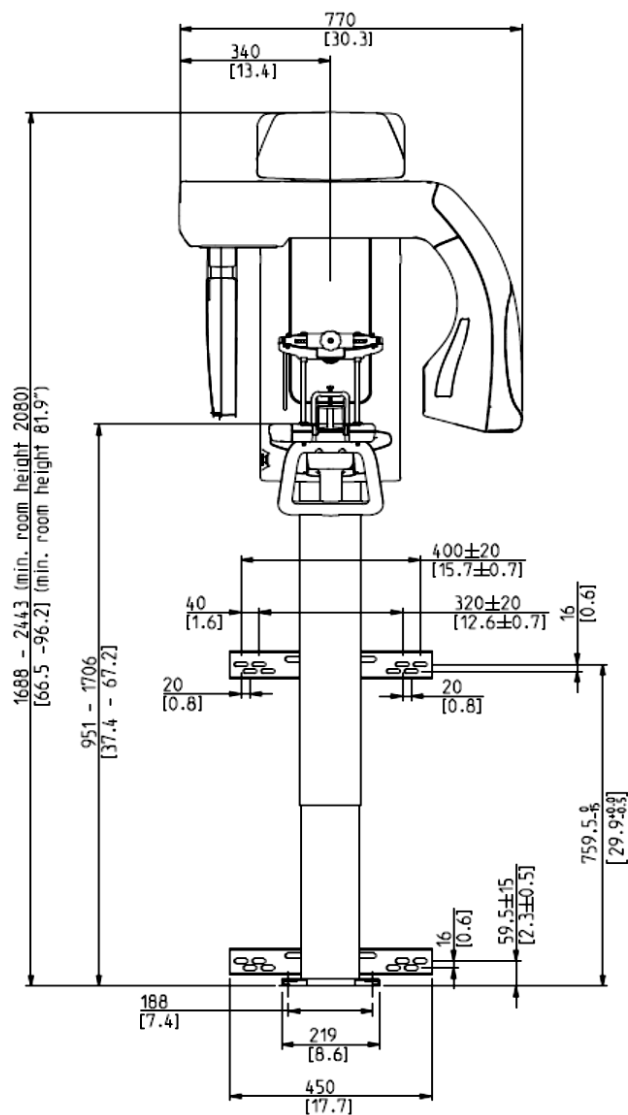


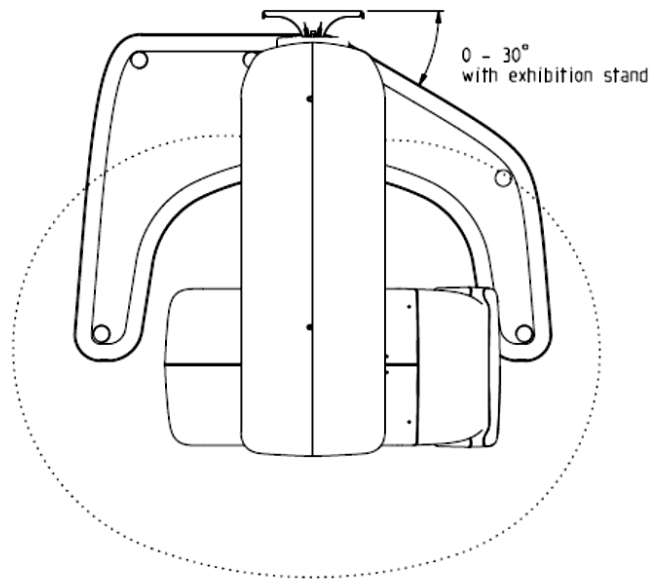
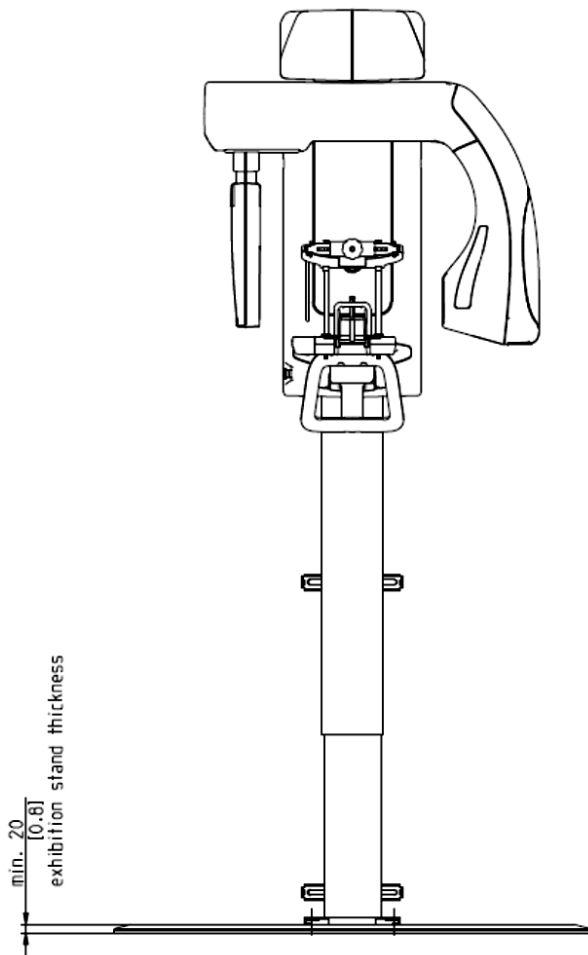


Narrow Wall Bracket

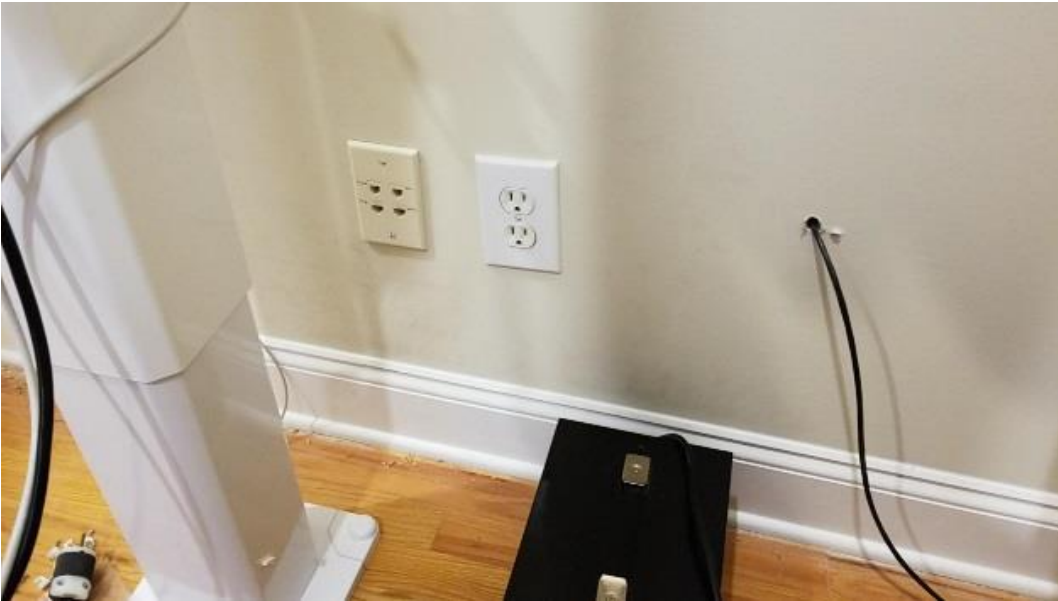


Wide Wall Bracket





Location of the network and power junction boxes and the data drop loops back to the network PC.



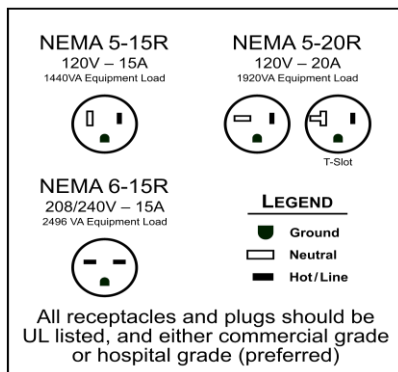
Maximum height of the unit is 80 inches, allow 40 inches of cable from the back panel of the unit for the up and down movement.



Power Requirements:

Electrical connections	
Nominal mains voltage	100-240 Vac
Input power frequency	50 / 60 Hz
Nominal current	10A @ 220-240 VAC, 15A @ 100 - 120 VAC
Main fuses (F1 & F2)	<p>220-240Vac: Littelfuse 215 (Time-Lag) 10A Cooper Bussman (Time Delay) S505H-10-R</p> <p>100-120Vac: Littelfuse 326 (SlowBlow) 15A Cooper Bussman (Time Delay) MDA-15</p>
External warning light fuse (F3)	Cooper Bussmann (Time Delay) S506-2-R
Power consumption	2,3 kVA @ 220-240 VAC, 1,65 kVA @ 100-120 VAC
Maximum impedance of mains	0,2 Ω
Recommended circuit breaker	max. 30 mA
Mains cord	<p>EU: 16 A / 250 VAC; 50/60 Hz H05VV-F3G1.5</p> <p>US: 15 A / 125 VAC 50/60 Hz SJT 3 x AWG 14</p>
Exposure controller cable	<p>Exposure switch: Li12Y11Y 2 x AWG 26, 3m</p> <p>Remote exposure switch: DINFLEX-YY 4 x AWG 26, max. 15m</p>
Data communication cable	CAT6 UTP Ethernet cable

***Note: Both 110 and 230 VAC power cords come with the unit**



Unit And Box Dimensions:

User interface	
Program and technical factors selection, exposure control	GUI, optional remote exposure switch, exposure button with 3m cable.
Patient positioning	Positioning panel, integrated

Device package	
Package dimensions (L x W x H)	1200 x 770 x 1100 mm 47.2" x 30.3" x 43.3"
Package weight	160 kg / 353 lbs
Package material weight	Pallet: 17 kg / 37.5 lbs Plywood: 14 kg / 30.9 lbs Cardboard: 12 kg / 26.5 lbs

Weight	113 kg / 249 lbs
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Ambient temperatures	
Transportation and storage	-25°...+55°C
Operation Temperature	+10°...+35°C RH 30-80% Atmospheric pressure 70 - 106 kPa

PC Requirements:

Minimum requirements for 3D acquisition workstation

Processor	Intel Core i5, i7 or Xeon, 4-cores or more
Memory	16 GB
GPU	<p>Minimum:</p> <p>NVIDIA GTX 1050 TI with 4GB memory, or better</p> <p>Recommended:</p> <p>NVIDIA Quadro M2000 with 4GB memory, or better.</p> <p>① NOTICE! Always use the latest drivers found from the GPU manufacturer web site.</p>
Free storage space	1 TB
Operating System	<p>Windows 10 Pro or Enterprise, 64 bit</p> <p>Windows 8.1 Pro or Enterprise, 64 bit</p> <p>Windows 7 Professional, Ultimate or Enterprise, 64 bit with SP1</p>
Network	<p>Gigabit Ethernet 1000 Base-T</p> <p>The device has to be connected to a private, firewall protected LAN network. All outbound connections to the unit shall be blocked.</p>
Display	1280x1024 Resolution

***Note: Kavo provides a Dell model T5810 PC that has a NVIDIA Quadro K2200 video card that has 4 GB of RAM**

Image file size:

Image dynamics/ grayscales	12-bit/4096 (capture) 16-bit/64k (process & handling) 8-bit/256 (display)
Image storage mode	16-bit
Typical file size	Intraoral SNAPSHOT: 3-5 MB Intraoral EXPRESS: 0.3-2 MB Panoramic: 2-4 MB Cephalometric: 3-5 MB CB3D: 60 MB - 1.2 GB
Import/Export file formats	BMP, D32, PNG, JPG, TIF, DICOM, JPG2000, MNG

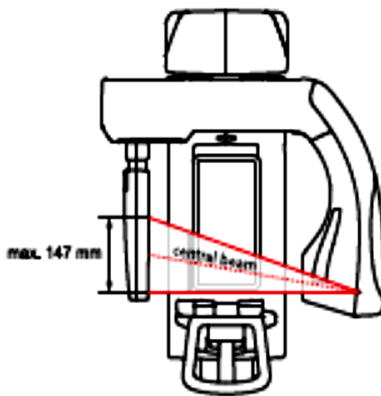
Imaging Program And Dose Specifications:

Panoramic programs & technical factors			
Program	kV range	mA range	Exposure time
Standard Panoramic	60 - 70 kV	2.0 - 16.0 mA	9.0 s
Segmented Standard Panoramic			1.38-9.0 s
Pediatric Panoramic			9.0 s
Segmented Pediatric Panoramic	73 - 81 kV	2.0 - 14.0 mA	1.39-9.0 s
Bitewing	85 - 90 kV	2.0 - 12.5 mA	5.20 s (2.6s + 2.6s)
TMJ, Lateral			4.0 s (2.0s + 2.0s)

Scout programs & technical factors					
① NOTICE! Tube voltage is fixed to 95 kV					
FOV size	Resolution	Pixel size	mA range	Exposure time	DAP range
5 x 5	Scout	200 µm	4.0 - 12.5 mA	0.04 - 0.03 s	3 - 7 mGycm ²
6 x 9	Scout	200 µm	4.0 - 12.5 mA	0.08 - 0.07 s	5 - 18 mGycm ²
9 x 11	Scout	200 µm	4.0 - 12.5 mA	0.08 - 0.07 s	5 - 18 mGycm ²
9 x 14 (optional)	Scout	200 µm	4.0 - 12.5 mA	0.08 - 0.07 s	5 - 18 mGycm ²

3D imaging programs & technical factors					
① NOTICE! Tube voltage is fixed to 95 kV					
FOV size	Resolution	Voxel size	mA range	Exposure time	DAP range
5 x 5	LDT	280 µm	2.0 - 4.0 mA	1.49 - 1.40 s	30 - 56 mGycm ²
	Standard	200 µm	4.0 - 12.5 mA	3.06 - 2.87 s	123 - 362 mGycm ²
	High	125 µm	2.0 - 4.0 mA	9.99 s	202 - 404 mGycm ²
	ENDO	80 µm	2.0 - 4.0 mA	20.0 s	404 - 808 mGycm ²
6 x 9	LDT	320 µm	2.0 - 4.0 mA	4.48 - 4.19 s	109 - 204 mGycm ²
	Standard	300 µm	4.0 - 12.5 mA	4.19 - 3.61 s	204 - 551 mGycm ²
	High	200 µm	2.0 - 4.0 mA	20.0 s	488 - 977 mGycm ²
9 x 11	LDT	320 µm	2.0 - 4.0 mA	4.48 - 4.19 s	190 - 356 mGycm ²
	Standard	300 µm	4.0 - 12.5 mA	4.19 - 3.61 s	356 - 959 mGycm ²
	High	200 µm	2.0 - 4.0 mA	20.0 s	850 - 1700 mGycm ²
9 x 14 (optional)	LDT	400 µm	2.0 - 4.0 mA	4.48 - 4.19 s	228 - 427 mGycm ²
	Standard	350 µm	4.0 - 12.5 mA	4.19 - 3.61 s	427 - 1150 mGycm ²
	High	250 µm	2.0 - 4.0 mA	20.0 s	1020 - 2040 mGycm ²

Pan/3D Receptor Data:

Panoramic / 3D image detector	
Technology / Sensor type	CMOS
Image receptor area	147 x 112 mm / 5.78" x 4.4"
 <p>The diagram illustrates the KAVO Pan/3D Receptor unit. It shows a top-down view of the device with a central beam indicated by a red dashed line. A dimension line on the left indicates a maximum width of 147 mm. The unit is shown in a compact, rectangular form with a handle on the right side.</p>	

Source-Image distance (SID)	580 mm / 22.83"
Dimensions (H x W x D)	1670-2467 x 765 x 1300 mm 65.7-97.1" x 30.1" x 51.1"