






RADspeed Pro

Specification

About the Symbols Appearing in this Specifications

Throughout the text in this specifications, warnings and other information essential when using this unit, such as cautionary or prohibited items, appear classified as per the following:

Mark	Description
 DANGER	Indicates an imminently hazardous situation which, if not avoided, will result in serious injury or death.
 WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in serious injury or possibly death.
 CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in minor to moderate injury or equipment damage.
 NOTE	States information which helps to use the system correctly.
	Indicates the location of related reference information.

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Outline

This chapter describes the applications and features of the RADspeed Pro.

1.1 Application

■ Intended Use

The RADspeed Pro is an X-ray radiography system is used for the radiography of patients while they are standing or laying down.

A wide range of applications are offered including digital radiography with portable FPDs, as well as general radiography with a CR cassette or X-ray film cassette.

■ Indications for Use

This system is used for radiographic examinations of whole body except mammography.

This system must only be operated by qualified personnel, such as radiography technicians or those with equivalent qualifications.

This system is used for total patient population including pediatric examination.



- **Do NOT use the system for any other purpose than indicated above.**
- **Do NOT connect the system to any other equipment, either by electrical or mechanical means, or modify the system.**

1.2 Features

■ System layout

This system consists of an X-ray high voltage generator, X-ray tube assembly, collimator, and X-ray tube support or stand, and if necessary, X-ray radiography table and/or X-ray radiography stand.

The abundant combination of system components allows a variety of system configurations according to the intended application either with manual positioning or motorized auto positioning.

■ Enhancement of tracking units

The enhanced tracking units such as for tracking with radiography conditions and positioning as well as the auto-positioning function help the operator save time and labor required for preparation for radiography while making the patient feel more relaxed during care. (Availability of these functions may vary depending on the system configuration or options provided.)

1.3 Principle

This system measures the X-ray absorption data of X-rays, which are radiated from the X-ray tube unit and passed through the patient's body, using an X-ray flat detector, photo-stimulable phosphor plate cassette, or X-ray film cassette, and creates a plane image of the patient's body based on the X-ray absorption data.

The system displays a processed image on the monitor and saves the image data to an internal storage device. Saved image data can be redisplayed or enhanced using a range of image processing algorithms.

Images and study information can be transferred over a network.

1.4 Environmental Condition

1.4.1 Operation Environment

Use the equipment under the environmental conditions listed below:

The installation of a dedicated air-conditioner in the examination room is recommended if the building air-conditioning cannot meet the necessary environmental conditions.

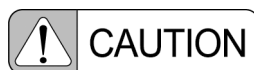
The calorific power of the power supply is not significant enough to affect the use environment of the equipment.

 The X-ray high voltage generator operation manual



Do NOT use the equipment in an oxygen-rich environment.

The use of the equipment in an oxygen-rich environment may cause fatal or serious injuries or damage to the equipment due to easy ignition.



Even under the prescribed conditions, avoid rapid changes of temperature or humidity.

Condensation may occur and cause failure. Also, rust or corrosion may occur inside the equipment.

■ Common Items

Item	Specifications
Atmosphere	No explosive or corrosive gases
Environment luminosity	150 lx to 500 lx
Ambient noise level	Under 70 dB

■ Except Digital Radiography System

Item	Specifications
Ambient temperature	10 °C to 40 °C
Relative humidity	30 % to 85 % (non condensing)
Atmospheric pressure	800 hPa to 1060 hPa


■ For Digital Radiography System

 ["3.6.7 Digital Radiography System"](#)

1

1.4.2 Transportation and Storage Environment

Keep the system under the following environmental conditions during transportation or storage:

 **CAUTION**

Rust and corrosion may be generated due to dew inside this unit. The internal circuits may be damaged by frozen dew at a low temperature. Pay rigid attention when this unit is stored in a place with drastic difference in temperature and humidity such as warehouse.

■ Except Side Station RAD

Item	Specifications
Temperature	-10 °C to 60 °C
Humidity	10 % to 95 % (non condensing)
Air pressure	700 hPa to 1060 hPa

■ For Side Station RAD

Item	Specifications
Temperature	0 °C to 50 °C
Humidity	10 % to 90 % (non condensing)

■ For Digital Radiography System

 ["3.6.7 Digital Radiography System"](#)

1.4.3 Power Supply

Item	Specifications
Phase	3-phase, single-phase
Frequency	50/60 Hz
Standard voltages	3-phase 200/220/240/380/400/415/440/480 V Single-phase 200/220/230/240 V
Permitted voltage range	±10 % of standard voltage
Supply capacity	3-phase 120 kVA Single-phase 8.5 kVA



Be sure to use the power supply specified in the operation manual.
Using a power supply other than the one specified may cause equipment malfunction or serious accidents such as fire, smoke emission, or explosions.



If an earth leakage breaker is used with either power voltage, use an inverter-type earth leakage breaker to prevent malfunctions in the high-frequency circuits.

1.4.4 Grounding

Grounding resistance: less than 100 Ω



Be sure to connect the equipment only to a (commercial) power outlet with a ground terminal.
If the outlet does not have a ground terminal, electric shock may occur.

1.4.5 Installation Requirements

The equipment must be installed in an examination room that satisfies the requirements given below. If the strength of the examination room floor is less than the stipulated level or if the system is not installed correctly, radiographic images may not be clear enough to help accurate diagnosis because vibrations are not dampened properly. When the equipment has been installed, be sure to fasten it to the floor or ceiling, and if necessary reinforce the fastening. Before relocating the system, contact your Shimadzu service representative.

Item	Specifications
Examination room size	5000 × 3500 mm (recommended)
Ceiling height required for installation	2860 mm ^{*1} 2300 mm or higher ^{*2} (recommended)

*1: Recommended when CH-200 or CH-200M is used

*2: Recommended when the FH-20HR/FH-20HS/FH-21HR/FH-21HS is used



NOTE

For detail, refer to operation manual provided to each component unit.

1.4.6 Wireless Communications



NOTE

For detail, refer to operation manual attached to the digital radiography system.

■ For Digital Radiography System

 ["3.6.7 Digital Radiography System"](#)

1.5 Classification of Equipment

This system is classified as follows, based on safety standards for electrical medical equipment.

■ Protection Method Against Electric Shock

Class I equipment

■ Degree of Protection Against Electric Shock

Equipment including Type B Applied Parts

■ Operation Mode

Continuous operation

■ Degree of Protection Against Liquid Ingress

- Foot switch: IPX1*1
- FPD*2: Conforming to IPX6, IP56*3
- Otherwise: Ordinary equipment

*1: The IPX Waterproof Specification, specified by the International Electrotechnical Commission, indicates waterproof/drip-proof performance on instruments and equipment.

*2: DR-ID 1201SE/DR-ID 1211SE/DR-ID 1202SE/DR-ID 1212SE/DR-ID 1213SE:IPX6
DR-ID 1831SE/DR-ID 1832SE/DR-ID 1811SE/DR-ID 1812SE/DR-ID 1814SE:IP56

*3: Because of product characteristics, these effects cannot always be guaranteed into the future.

■ For Use in an Oxygen-rich Environment

Not to be used in presence of flammable anaesthetic gas



Do NOT use the equipment in an oxygen-rich environment.

The use in an oxygen-rich environment may cause fatal or serious injuries or damage to the equipment due to easy ignition.

■ For Use in Flammable Atmosphere



Do NOT use the equipment or system in the presence of flammable anesthetics gas.

It may cause an explosion.

■ Classification of Installation Type

Permanently installed equipment

Stationary equipment for cabinet only

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System and Configuration

The RADspeed Pro system consists of an X-ray high voltage generator, X-ray tube assembly, collimator, and X-ray tube support or stand, and if necessary, X-ray radiography table, X-ray radiography stand, and/or digital radiography system.

This chapter describes the typical system configuration.

2.1 Combined with DR-ID 900

2.1.1 System Configuration

Component	System Configuration A
X-Ray High Voltage Generator ^{*1}	UD150B-40/L-40/V-40 D150BC-40/BC-41/LC-40/LC-41/VC-40/VC-41 GSC-2002L
X-Ray Tube Device ^{*2}	0.6/1.2P326D-150 0.6/1.2P366D-150 0.6/1.2P324DK-125 0.6/1.2P324DK-85 0.6/1.2P33DK-85 ^{*4} 0.6/1.2P38DE-85 ^{*4} 0.6/1.2P364DK-85 0.6/1.2P364DK-125
X-Ray Tube Support ^{*2}	CH-200
X-Ray Collimator ^{*2}	R-300
X-Ray Radiography Table ^{*2}	BK-120 BK-200
X-Ray Radiography Stand ^{*2}	BR-120 BR-120T
Digital Radiography System ^{*2}	DR-ID 900
Image processing workstation ^{*3}	Side Station RAD PPU

*1: Equipment suitable for use in the patient environment (Control cabinet only)

*2: Equipment suitable for use in the patient environment

*3: To perform tomosynthesis radiography (option), Side Station RAD or PPU will be combined depending on its sales channel.

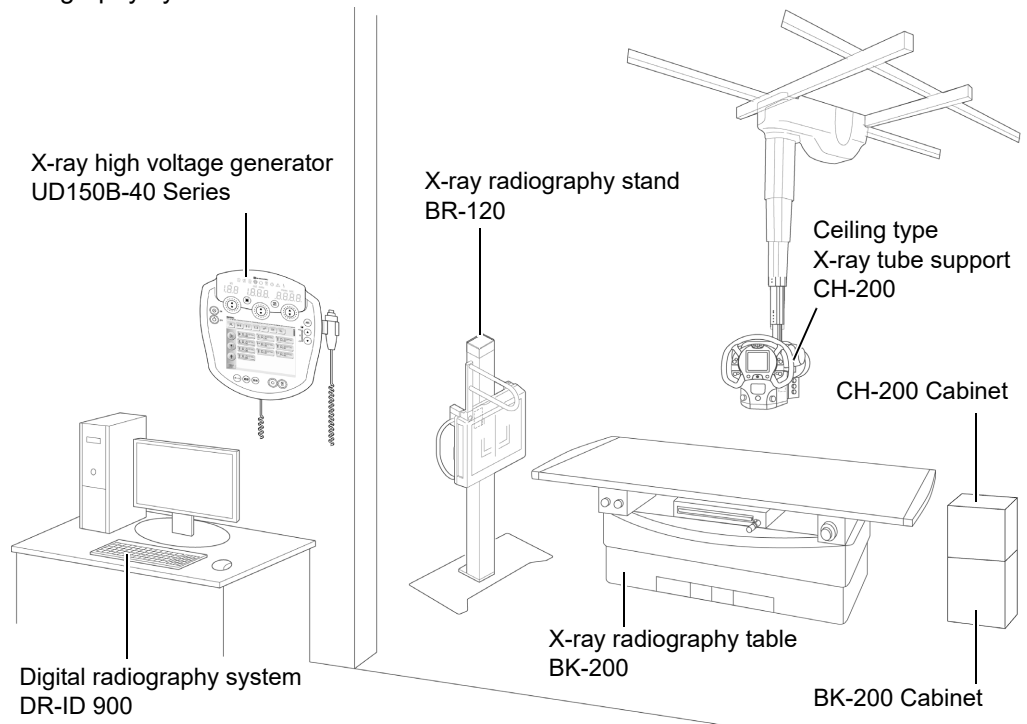
*4: Can not perform tomosynthesis radiography (option).



Connect this equipment only to Shimadzu certificated devices or devices that are proven to be safe and show no performance degradation in any combination including connecting system.

Typical system A

System with ceiling suspension type X-ray tube support upgradable to a digital radiography system



2

2.1.2 Combinable Models in the FPD

FPD	X-Ray Radiography Table	X-Ray Radiography Stand
	BK-120 BK-200	BR-120 BR-120T
Handy Type Model		
DR-ID 911SE	✓	✓
Cassette Type Model		
DR-ID 1201SE/ DR-ID 1202SE/ DR-ID 1211SE/ DR-ID 1212SE/ DR-ID 1831SE/ DR-ID 1832SE/ DR-ID 1811SE/ DR-ID 1812SE	▲	▲

▲✓: Radiography is possible.

When the FPD is combined with the following equipment, the radiography conditions and X-ray irradiation field size can be linked to the operation on the DR console (DR-ID 900CL for DR-ID 900). With an additional option, long view radiography that tracks the FPD position and X-ray irradiation field of each exposure can be performed. Energy subtraction radiography and tomosynthesis radiography are available for the combination marked with ✓. To perform tomosynthesis radiography, the image processing workstation is required. Side Station RAD or PPU will be combined as the image processing workstation depending on its sales channel.

- X-ray High Voltage Generator UD150B-40/L-40/V-40
- Ceiling Type X-ray Tube Support CH-200
- Collimator Type R-300

*: There is no FPD mount kit that supports DR-ID 1213SE/DR-ID 1814SE.

2.1.3 Available System Combination

■ FPD Mount Kit

When an FPD mount kit (FPD-dedicated tray) that supports each FPD type is combined with an X-ray radiography stand or table, the following functions are available.

Note, however, that the FPD mount kit only holds the supported FPDs.

Supported FPD	Function
DR-ID 911SE	<ul style="list-style-type: none"> FPD automatic detection Detects the FPD on the tray automatically. Automatic connection If the FPD on the tray is inserted into the Bucky of the radiography table, the FPD and SE cable are automatically connected.
DR-ID 1201SE DR-ID 1211SE DR-ID 1831SE DR-ID 1811SE	<ul style="list-style-type: none"> FPD automatic detection Detects the FPD on the tray automatically. This function also automatically detects the insert direction of the FPD on the tray (portrait/landscape), as well as the reference position (top, center, and bottom) for the X-ray radiography stand. FPD can be inserted under wired connection Note, however, that the FPD cannot be inserted with the bottom reference for the right-insert model of the X-ray radiography stand.
DR-ID 1202SE DR-ID 1212SE DR-ID 1832SE DR-ID 1812SE	<ul style="list-style-type: none"> FPD automatic detection Detects the FPD on the tray automatically. FPD can be inserted under wired connection

*: There is no FPD mount kit that supports DR-ID 1213SE/DR-ID 1814SE.

■ Exposure condition linkage

The following functions are available.

Function	Details
Exposure condition linkage	<p>The exposure conditions on the X-ray high voltage generator are automatically set in conjunction with the radiography menu selected on the DR system console.</p> <p>For the setting, there are the following two methods:</p> <ul style="list-style-type: none"> APR specification Designates a specific radiography program on the X-ray high voltage generator. Individual condition specification Specifies individual exposure conditions, such as tube voltage, instead of radiography programs on the X-ray high voltage generator. <p>The exposure condition linkage for long view radiography, energy subtraction radiography, and the auto-positioning function of the X-ray tube support is only available for the APR specification method.</p>

Function	Details
Selector interlock	Switching the selector* on the DR system console automatically switches the selectors* for the X-ray high voltage generator, as well as for the X-ray tube support. Similarly, changing the selectors* for the X-ray high voltage generator and for the X-ray tube support also switches the selector* on the DR system console.
Exposure field size interlock (option)	The exposure field size on the collimator is automatically adjusted in conjunction with the radiography menu and the exposure field size selected on the DR system console. Note that selecting the exposure field size on the X-ray tube support also switches the exposure field size on the DR system console.
Patient information display (option)	The patient information on the DR system console is also displayed in the X-ray tube support screen. The displayed items are as follows: <ul style="list-style-type: none"> • Name • Gender • Age • ID number

*: Operation icon which indicates X-ray tube used, radiography technique, and FPD used

■ Long View Radiography Function (Option)

This option allows for generating a long view radiographic image by taking X-rays of continuous body parts, with the FPD position and the exposure field being interlocked.

Item	Details
Long view operation method	While the X-ray tube focus position is being fixed, the FPD position, X-ray exposure field, and X-ray tube angle move in conjunction. After setting the long view radiography region, holding down the exposure button on the X-ray high voltage generator performs exposure at each position, and when all exposures are completed, the obtained images are automatically stitched on the DR system console.
Long view radiography region setting method	Illuminate the patient with the laser marker of the X-ray tube support, and specify the upper and lower ends of the long view radiography region on the X-ray tube support touch panel. It is also possible to set only one end of the radiography region. (In this case, the end of the FPD movable range is set to the other end of the radiography region.)
Long view radiography region	Stand: 160 cm max. Table: 120 cm max. (The value on the FPD detection surface. The region varies depending on the size and direction of the FPD, and the amount of image overlap.)
No. of exposures for a long view image	4 exposures max. (The set long view radiography region is evenly split by the No. of the exposures.)

Item	Details
Long view radiography time	<p>The time varies depending on stand/table, FPD, No. of exposures, and radiography region. When performing three exposures at standing position with radiography region of 120 cm, the radiography time from the start of the first exposure is as follows.</p> <p>[DR-ID 911SE] Until all exposures are completed: 10 sec or less Until the composite long view image is completely displayed: 15 sec or less [DR-ID 1201/DR-ID 1211SE/DR-ID 1831SE/DR-ID 1811SE] Until all exposures are completed: 16 sec or less Until the composite long view image is completely displayed: 23 sec or less [DR-ID 1202/DR-ID 1212SE/DR-ID 1832SE/DR-ID 1812SE] Until all exposures are completed: 17 sec or less Until the composite long view image is completely displayed: 24 sec or less</p>
Patient protection	The patient stand is required for vertical radiography.
Supported FPD	DR-ID 911SE DR-ID 1201SE DR-ID 1211SE DR-ID 1202SE DR-ID 1212SE DR-ID 1831SE DR-ID 1832SE DR-ID 1811SE DR-ID 1812SE

■ Energy subtraction radiography function (Option)

The energy subtraction radiography performs exposures continuously on the same region of the patient under high and low tube voltages, and obtains a soft tissue image and bone image simultaneously through image-merge processing.

Item	Details
Operation procedure	Holding down the exposure button on the X-ray high voltage generator irradiates X-rays consecutively two times, and when all exposures are completed, the images are automatically merged on the DR system console.
Exposure image display	It is possible to alternate among a diagnostic image (under high or low X-ray tube voltage), soft tissue image, or bone image on the DR system console.
Exposure condition change	Different tube voltages, irradiation time, and AEC can be set for each X-ray irradiation.
Max. irradiation time	200 msec (duration for a single X-ray irradiation)
Exposure interval	<p>The interval is either of the following depending on the set irradiation time.</p> <ul style="list-style-type: none"> • 200 msec (irradiation time of 32 msec or shorter) • 500 msec (irradiation time from 36 msec up to 200 msec) <p>(The value indicates the duration from the 1st X-ray irradiation start to the 2nd X-ray irradiation start.)</p>
Supported FPD	DR-ID 911SE

■ Tomosynthesis radiography (Option)

Tomosynthesis radiography performs exposures continuously from multiple angles by moving the X-ray tube, and obtains the tomogram at an arbitrary height through image-reconstruction processing.

Item	Details
Operation procedure	Holding down the exposure button on the X-ray high voltage generator irradiates X-rays consecutively while the X-ray tube is moving, and when all exposures are completed, the images are automatically merged on the image processing workstation.
Exposure image display/operation	Projection images or reconstruction images are displayed on the image processing workstation, allowing for image edit operation. When combined with Side Station RAD as the image processing workstation, once the exposure image is transferred to the image processing workstation, it is possible to perform the next exposure using the DR system console.
Exposure image transfer	The image can be transferred from the image processing workstation.
Exposure condition change	If any simple radiography has been performed for the same body region through the DR system console, the irradiation time for a new tomosynthesis exposure is automatically set according to the exposure conditions of the simple radiography. It is also possible to change the exposure conditions manually. Note that AEC is not available during tomosynthesis radiography.
Radiography method	Stand: FPD does not move during exposure.
	Table: FPD moves during exposure.
Section center height	Stand: FPD surface
	Table: Adjustable from 0 to 250 mm from tabletop surface
Exposure distance	Stand: 100 to 180 cm (depending on the system layout)
	Table: 100 to 150 cm (depending on the ceiling height)
Tube swing angle	Stand: 20°, 30°, and 40°
	Table: 20°, 30°, 40°, and 60°
Max. irradiation time	32 msec (duration for a single X-ray irradiation)
Exposure interval	200 msec (The value indicates the duration from the 1st X-ray irradiation start to the 2nd X-ray irradiation start.)
No. of exposures	60 exposures max.
Total radiography time	About 12 sec from the start to the end of X-ray irradiation (The duration varies depending on the number of exposures. The value is determined by the number of exposures × exposure interval.)
Supported FPD	DR-ID 911SE

2.2 Combined with CXDI

2.2.1 System Configuration

2

Component	System Configuration		
	System B Ceiling suspension type auto positioning system	System C Ceiling suspension type manual positioning system	System D Floor mounted type manual positioning system
X-Ray High Voltage Generator* ¹	UD150B-40/L-40/ V-40 D150BC-40/BC-41/ LC-40/LC-41/ VC-40/VC-41 GSC-2002L	UD150L-40E/F D150BC-41/LC-41/VC-41 GSC-2002S	
X-Ray Tube Device * ²	0.6/1.2P326D-150 0.6/1.2P366D-150 0.6/1.2P324DK-125 0.6/1.2P364DK-125 0.6/1.2P324DK-85 0.6/1.2P364DK-85 0.6/1.2P164DK-85 0.6/1.2P323DK-85 0.6/1.2P38DE-85 0.6/1.2P18DE-85 0.6/1.2P33DK-85 0.6/1.2P13DK-85 1/2P18DK-85 1/2P13DK-85		
X-Ray Tube Support* ²	CH-200	CH-200M	FH-20HR FH-20HS FH-21HR FH-21HS
X-Ray Collimator* ²	R-300	R-20J	
X-Ray Radiography Table * ²	BK-120 BK-200	BK-120MK BK-12HK	
X-Ray Radiography Stand * ²	BR-120 BR-120T	BR-120M	

Component	System Configuration		
	System B Ceiling suspension type auto positioning system	System C Ceiling suspension type manual positioning system	System D Floor mounted type manual positioning system
Digital Radiography System *2 *3	CXDI-720C Wireless CXDI-710C Wireless CXDI-703C Wireless CXDI-702C Wireless CXDI-420C Wireless CXDI-410C Wireless CXDI-403C Wireless CXDI-402C Wireless CXDI-810C Wireless CXDI-420C Fixed CXDI-401G/C COMPACT		

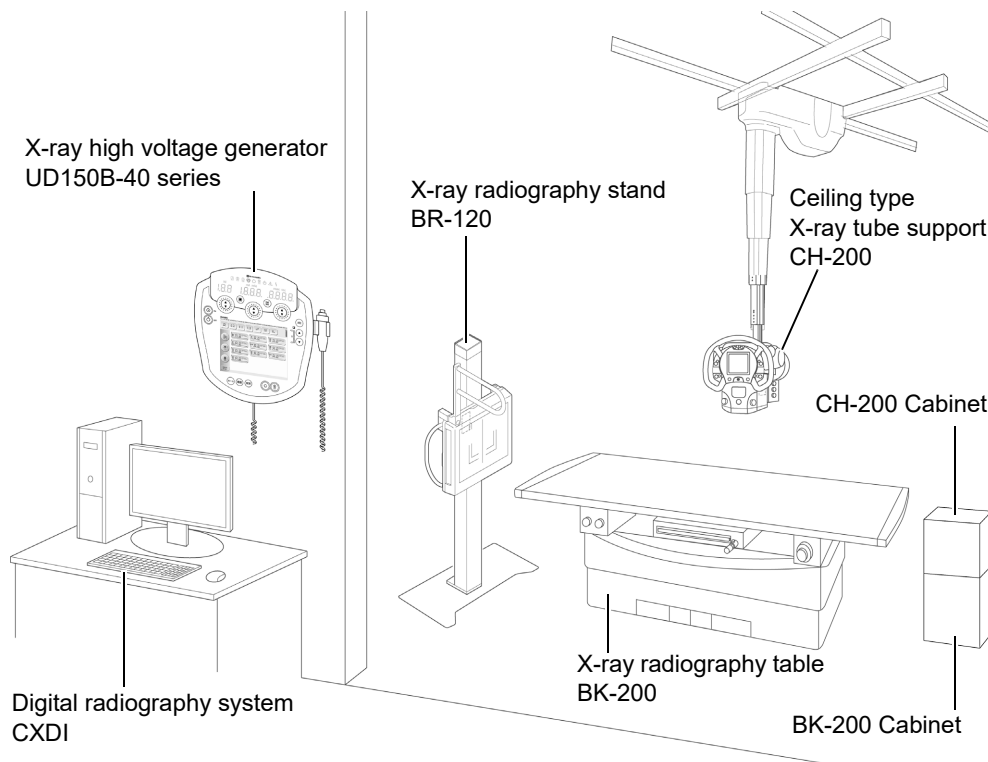
- *1: Equipment suitable for use in the patient environment (Control cabinet only)
- *2: Equipment suitable for use in the patient environment
- *3: Digital Radiography system CXDI is not a component system for RADspeed Pro, but can be combined with the RADspeed Pro system.


WARNING

Do NOT connect the equipment other than the designated equipment to the system.

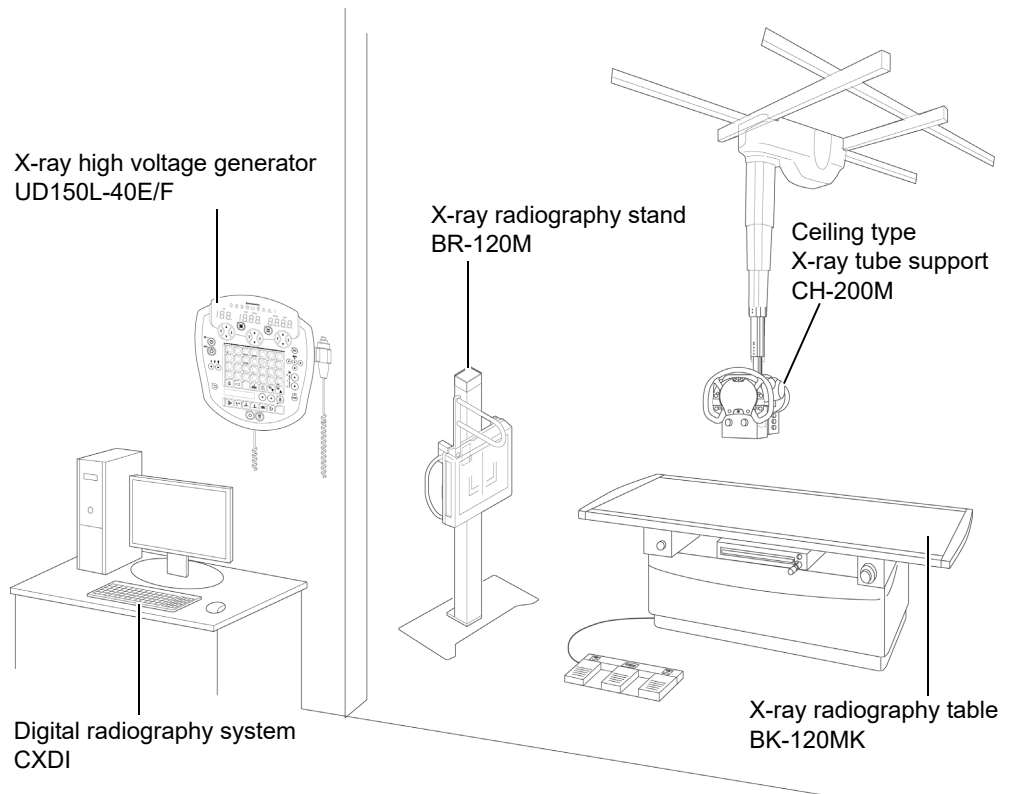
■ Typical system B

System with ceiling suspension type X-ray tube support upgradable to a digital radiography system



Typical system C

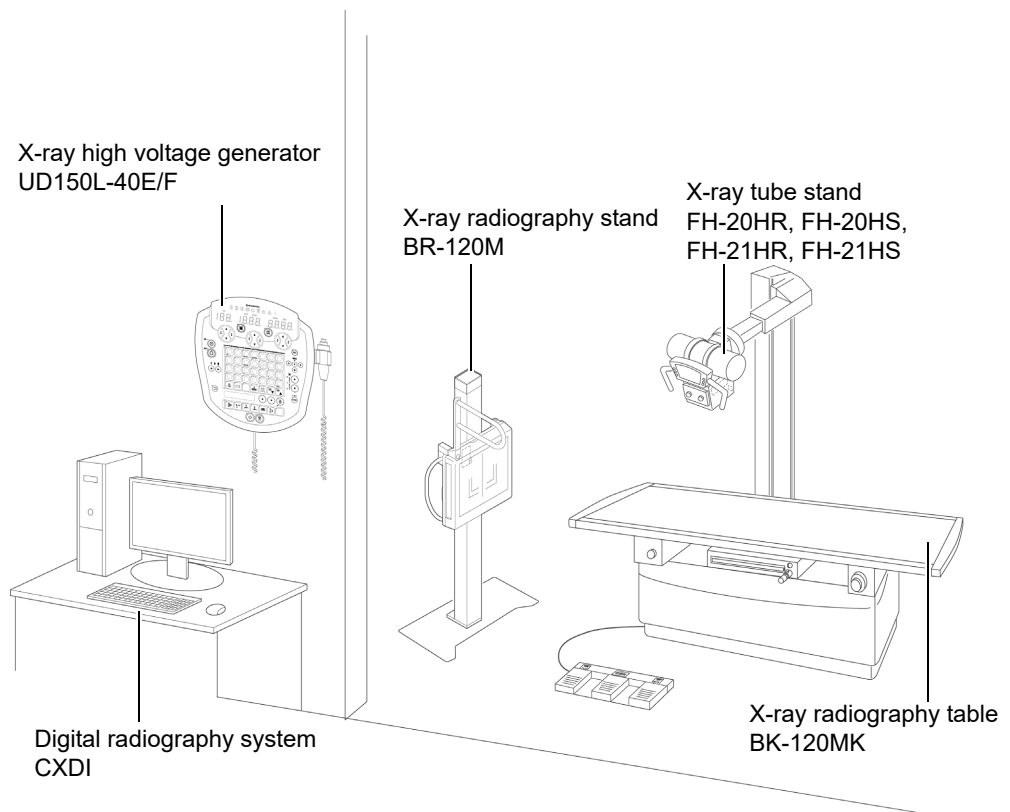
Manual positioning system with ceiling suspension type X-ray tube support



2

Typical system D

Manual positioning system with floor mounted type X-ray tube stand



2.2.2 Combinable Models in the FPD

FPD	X-ray Radiography Table			X-ray Radiography Stand	
	BK-120 BK-200	BK-120MK	BK-12HK	BR-120 BR-120T	BR-120M
Wireless Model					
CXDI-720C Wireless	✓	▲	▲	✓	▲
CXDI-710C Wireless	✓	▲	▲	✓	▲
CXDI-703C Wireless	✓	▲	▲	✓	▲
CXDI-702C Wireless	✓	▲	▲	✓	▲
CXDI-420C Wireless	✓	▲	▲	✓	▲
CXDI-410C Wireless	✓	▲	▲	✓	▲
CXDI-403C Wireless	✓	▲	▲	✓	▲
CXDI-402C Wireless	✓	▲	▲	✓	▲
Full Size Model					
CXDI-420C Fixed	✓	▲		✓	▲
CXDI-401G/C COMPACT	✓	▲		✓	▲

▲: Radiography is possible.

✓: Radiography is possible. In addition, the radiography conditions and X-ray irradiation field size can be linked to the radiography protocol of the DR console (CXDI Control Software NE) by combining the above models with the following software and devices.

With an additional option, long view radiography that tracks the FPD position and X-ray irradiation field of each exposure can be performed.

- CXDI Control Software NE
- X-ray High Voltage Generator UD150B-40/V-40/L-40
- Ceiling Tube Support CH-200
- Collimator Type R-300

2.2.3 Available System Combination

■ FPD Mount Kit

When an FPD mount kit (FPD-dedicated tray) that supports each FPD type is combined with an X-ray radiography stand BR-120/BR-120T or table BK-120/BK-200, the following functions are available.

Note, however, that the FPD mount kit only holds the supported FPDs.

Supported FPD	Function
CXDI-720C Wireless CXDI-710C Wireless CXDI-703C Wireless CXDI-702C Wireless	FPD automatic detection Detects the FPD on the tray automatically. This function also automatically detects the insert direction of the FPD on the tray (portrait/landscape), as well as the reference position (top, center, and bottom) for the X-ray radiography stand.
CXDI-420C Wireless CXDI-410C Wireless CXDI-403C Wireless CXDI-402C Wireless	FPD automatic detection Detects the FPD on the tray automatically.

*: FPDs of the full-size model cannot be removed.

■ Exposure condition linkage

The following functions are available.

Function	Details
Exposure condition linkage	<p>The exposure conditions on the X-ray high voltage generator are automatically set in conjunction with the radiography protocol selected on the DR system console.</p> <p>For the setting, there are the following two methods:</p> <ul style="list-style-type: none"> • APR specification Designates a specific radiography program on the X-ray high voltage generator. • Individual condition specification Specifies individual exposure conditions, such as tube voltage, instead of radiography programs on the X-ray high voltage generator. <p>The exposure condition linkage for long view radiography and the auto-positioning function, exposure field size interlock, and patient information display of the X-ray tube support is only available for the APR specification method.</p>
Exposure field size interlock (option)	<p>The exposure field size on the collimator R-300 is automatically adjusted in conjunction with the radiography protocol selected on the DR system console.</p>
Patient information display (option)	<p>The patient information on the DR system console is also displayed in the X-ray tube support CH-200 screen.</p> <p>The displayed items are as follows:</p> <ul style="list-style-type: none"> • Name • Gender • Age • ID number

■ Long View Radiography Function (Option)

This option allows for generating a long view radiographic image by taking X-rays of continuous body parts, with the FPD position and the exposure field being interlocked.

Item	Details
Long view operation method	<p>While the X-ray tube focus position is being fixed, the FPD position, X-ray exposure field, and X-ray tube angle move in conjunction.</p> <p>After setting the long view radiography region, pressing the exposure button on the X-ray high voltage generator at each radiography position performs exposure sequentially at the specified position, and when all exposures are completed, the obtained images are automatically stitched on the DR system console.</p>
Long view radiography region setting method	<p>Illuminate the patient with the laser marker of the X-ray tube support, and specify the upper and lower ends of the long view radiography region on the X-ray tube support touch panel.</p> <p>It is also possible to set only one end of the radiography region. (In this case, the end of the FPD movable range is set to the other end of the radiography region.)</p>
Long view radiography region	<p>Stand: 160 cm max. Table: 120 cm max. (The value on the FPD detection surface. The region varies depending on the size and direction of the FPD, and the amount of image overlap.)</p>
No. of exposures for a long view image	<p>4 exposures max. (The set long view radiography region is evenly split by the No. of the exposures.)</p>
Long view radiography time	<p>About 20 sec from the start of the first exposure until all exposures are completed, and about 24 sec until the composite long view image is completely displayed.</p> <p>(When combined with CXDI-720C Wireless, three exposures at standing position under wireless connection with radiography region of 120 cm. The time varies depending on stand/table, X-ray tube, FPD, No. of long view images, radiography region, and timing of radiography.)</p>
Patient protection	<p>The patient stand is required for vertical radiography.</p>
Supported FPD	<p>CXDI-720C Wireless CXDI-710C Wireless CXDI-703C Wireless CXDI-702C Wireless CXDI-420C Wireless CXDI-410C Wireless CXDI-403C Wireless CXDI-402C Wireless CXDI-420C Fixed CXDI-401G/C COMPACT</p>

2.3 Combined with AeroDR

2.3.1 System Configuration

2

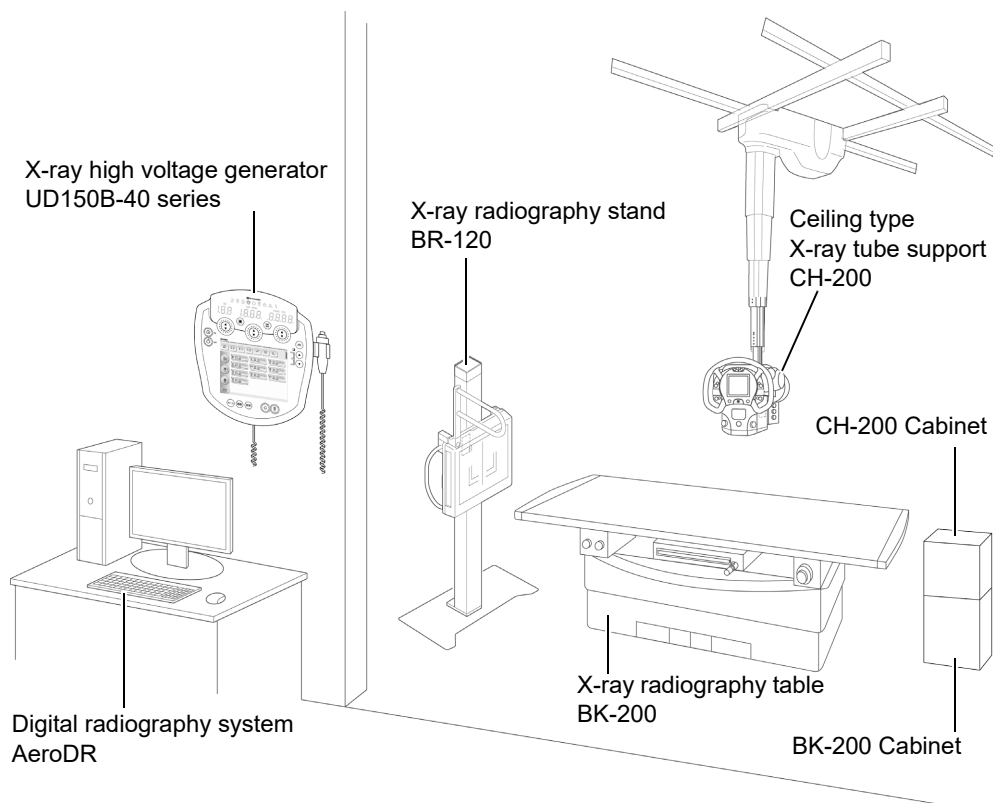
Component	System Configuration		
	System E Ceiling suspension type auto positioning system	System F Ceiling suspension type manual positioning system	System G Floor mounted type manual positioning system
X-Ray High Voltage Generator ^{*1}	UD150B-40/L-40/ V-40 D150BC-40/BC-41/ LC-40/LC-41/ VC-40/VC-41 GSC-2002L	UD150L-40E/F D150BC-41/LC-41/VC-41 GSC-2002S	
X-Ray Tube Device ^{*2}	0.6/1.2P326D-150 0.6/1.2P366D-150 0.6/1.2P324DK-125 0.6/1.2P364DK-125 0.6/1.2P324DK-85 0.6/1.2P364DK-85 0.6/1.2P164DK-85 ^{*4} 0.6/1.2P323DK-85 ^{*4} 0.6/1.2P38DE-85 ^{*4} 0.6/1.2P18DE-85 ^{*4} 0.6/1.2P33DK-85 ^{*4} 0.6/1.2P13DK-85 ^{*4} 1/2P18DK-85 ^{*4} 1/2P13DK-85 ^{*4}		
X-Ray Tube Support ^{*2}	CH-200	CH-200M	FH-20HR FH-20HS FH-21HR FH-21HS
X-Ray Collimator ^{*2}	R-300	R-20J	
X-Ray Radiography Table ^{*2}	BK-120 BK-200	BK-120MK BK-12HK	
X-Ray Radiography Stand ^{*2}	BR-120 BR-120T	BR-120M	
Digital Radiography System ^{*2 *3}	SKR 3000 AeroDR SYSTEM 2 AeroDR SYSTEM		

- *1: Equipment suitable for use in the patient environment (Control cabinet only)
- *2: Equipment suitable for use in the patient environment
- *3: Digital Radiography system AeroDR is not a component system for RADspeed Pro, but can be combined with the RADspeed Pro system.
- *4: Can not perform serial radiography (option).

**WARNING**
Do NOT connect the equipment other than the designated equipment to the system.

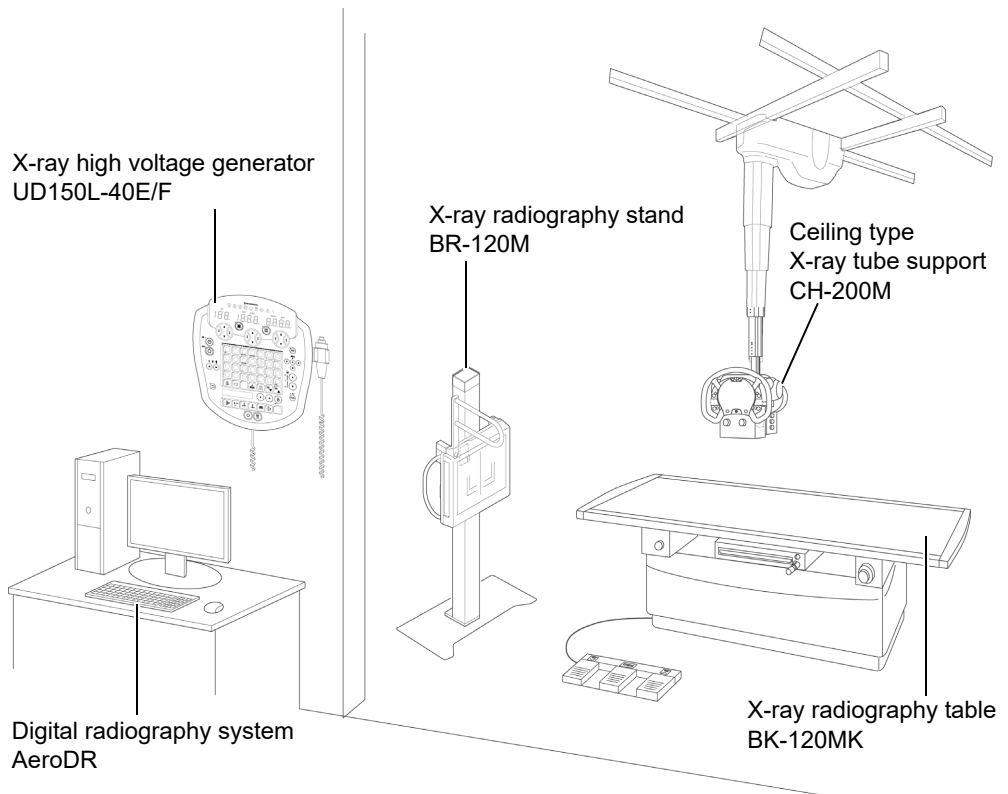
■ Typical system E

System with ceiling suspension type X-ray tube support upgradable to a digital radiography system



Typical system F

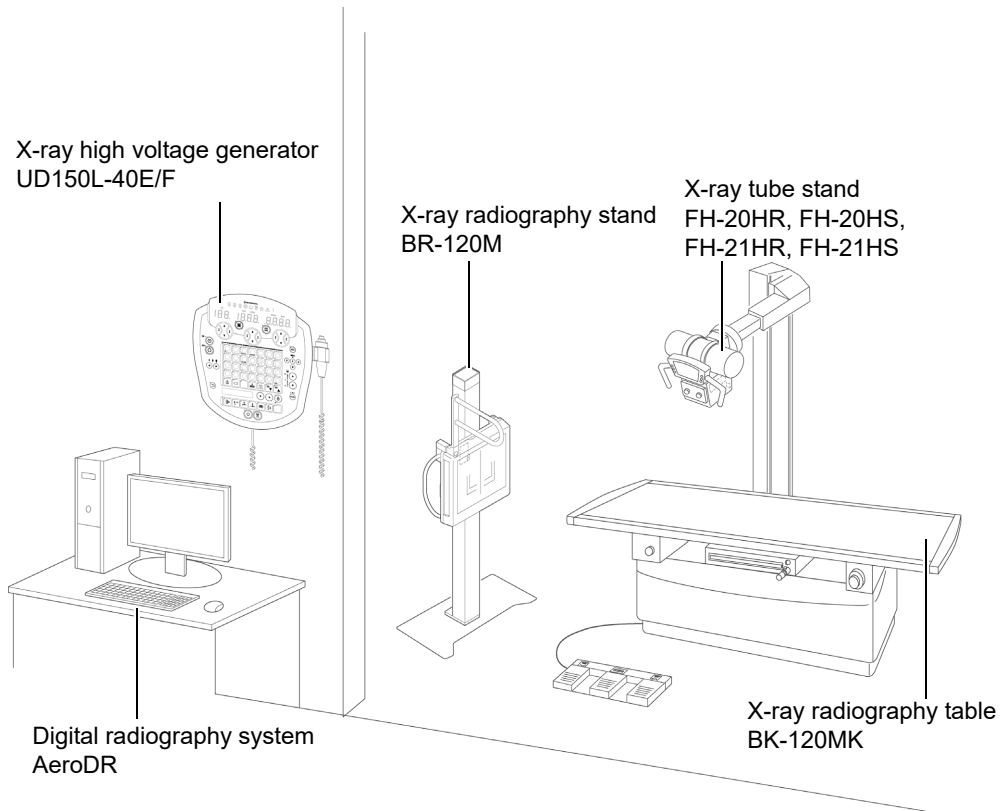
Manual positioning system with ceiling suspension type X-ray tube support



2

Typical system G

Manual positioning system with floor mounted type X-ray tube stand



2.3.2 Combinable Models in the FPD

FPD	X-ray Radiography Table			X-ray Radiography Stand	
	BK-120 BK-200	BK-120MK	BK-12HK	BR-120 BR-120T	BR-120M
SKR 3000					
AeroDR 3 1417HD/HD2	✓*1	▲	▲	✓*1	▲
AeroDR 3 1717HD/HD2	✓*1	▲	▲	✓*1	▲
AeroDR 3 1417HL/SL	✓	▲	▲	✓	▲
AeroDR 3 1717HL	✓	▲	▲	✓	▲
AeroDR SYSTEM 2					
AeroDR 2 1417HQ/S	✓	▲	▲	✓	▲
AeroDR SYSTEM					
AeroDR 1417HQ/S	✓	▲	▲	✓	▲
AeroDR 1717HQ	✓	▲	▲	✓	▲

▲: Radiography is possible.

✓: Radiography is possible. In addition, the radiography conditions and the X-ray irradiation field size can be linked to the Exam. Tag of the DR console (CS-7) by combining the above models with the following software and devices.

With an additional option, long view radiography that tracks the FPD position and X-ray irradiation field of each exposure can be performed.

- CS-7
- X-ray High Voltage Generator UD150B-40/V-40/L-40
- Ceiling Tube Support CH-200
- Collimator Type R-300

*1: Serial radiography can be optionally performed by combining the following equipment.

- CS-7
- X-ray High Voltage Generator UD150B-40/V-40/L-40
- Ceiling Tube Support CH-200
- Collimator Type R-300
- X-ray tube assembly 0.6/1.2P324DK-125, 0.6/1.2P324DK-85, 0.6/1.2P364DK-85, 0.6/1.2P364DK-125

*2: There is no FPD mount kit that supports AeroDR 3 1012HQ and AeroDR 1012HQ.

2.3.3 Available System Combination

■ FPD Mount Kit

When an FPD mount kit (FPD-dedicated tray) that supports each FPD type is combined with an X-ray radiography stand BR-120/BR-120T or table BK-120/BK-200, the following functions are available.

Note, however, that the FPD mount kit only holds the supported FPDs.

Supported FPD	Function
AeroDR 3 1417HD/ HD2/HL/SL AeroDR 2 1417HQ/S AeroDR 1417HQ	FPD automatic detection Detects the FPD on the tray automatically. This function also automatically detects the insert direction of the FPD on the tray (portrait/landscape), as well as the reference position (top, center, and bottom) for the X-ray radiography stand.
AeroDR 3 1717HD/ HD2/HL AeroDR 1717HQ	FPD automatic detection Detects the FPD on the tray automatically.

*: There is no FPD mount kit that supports AeroDR 3 1012HQ and AeroDR 1012HQ.

■ Exposure condition linkage

The following functions are available.

Function	Details
Exposure condition linkage	<p>The exposure conditions on the X-ray high voltage generator are automatically set in conjunction with the Exam. Tag selected on the DR system console.</p> <p>For the setting, there are the following two methods:</p> <ul style="list-style-type: none"> • APR specification Designates a specific radiography program on the X-ray high voltage generator. • Individual condition specification Specifies individual exposure conditions, such as tube voltage, instead of radiography programs on the X-ray high voltage generator. <p>The exposure condition linkage for long view radiography and serial radiography, the auto-positioning function, exposure field size interlock, and patient information display of the X-ray tube support is only available for the APR specification method.</p>
Exposure field size interlock (option)	<p>The exposure field size on the collimator R-300 is automatically adjusted in conjunction with the Exam. Tag selected on the DR system console.</p>
Patient information display (option)	<p>The patient information on the DR system console is also displayed in the X-ray tube support CH-200 screen.</p> <p>The displayed items are as follows:</p> <ul style="list-style-type: none"> • Name • Gender • Age • ID number • B.O.D. (Birth Of Date)

■ Long View Radiography Function (Option)

This option allows for generating a long view radiographic image by taking X-rays of continuous body parts, with the FPD position and the exposure field being interlocked.

Item	Details
Long view operation method	<p>While the X-ray tube focus position is being fixed, the FPD position, X-ray exposure field, and X-ray tube angle move in conjunction.</p> <p>After setting the long view radiography region, pressing the exposure button on the X-ray high voltage generator at each radiography position performs exposure sequentially at the specified position, and when all exposures are completed, the obtained images are automatically stitched on the DR system console.</p>
Long view radiography region setting method	<p>Illuminate the patient with the laser marker of the X-ray tube support, and specify the upper and lower ends of the long view radiography region on the X-ray tube support touch panel.</p> <p>It is also possible to set only one end of the radiography region. (In this case, the end of the FPD movable range is set to the other end of the radiography region.)</p>
Long view radiography region	<p>Stand: 160 cm max. Table: 120 cm max. (The value on the FPD detection surface. The region varies depending on the size and direction of the FPD, and the amount of image overlap.)</p>
No. of exposures for a long view image	<p>4 exposures max. (The set long view radiography region is evenly split by the No. of the exposures.)</p>
Long view radiography time	<p>About 18 sec from the start of the first exposure until all exposures are completed, and about 26 sec until the composite long view image is completely displayed.</p> <p>(When combined with AeroDR 3 1417HD, three exposures at standing position under wired connection with radiography region of 120 cm. The time varies depending on stand/table, X-ray tube, FPD, No. of long view images, radiography region, and timing of radiography.)</p>
Patient protection	<p>The patient stand is required for vertical radiography.</p>
Supported FPD	<p>AeroDR 3 1417HD/HD2/HL/SL AeroDR 3 1717HD/HD2/HL AeroDR 2 1417HQ/S AeroDR 1417HQ AeroDR 1717HQ</p>

■ Serial Radiography Function (Option)

This option allows for performing serial radiography that enables the examination of the dynamics in a patient's body by performing multiple exposures consecutively.

Item	Details
Radiography method	Holding down the exposure button on the X-ray high voltage generator irradiates X-rays consecutively.
Exposure image display	Images are displayed consecutively on the DR system console.
Frame rate	15 frames/sec max.
No. of exposures	300 exposures max.
Supported FPD	AeroDR 3 1417HD/HD2 AeroDR 3 1717HD/HD2

2.4 Combined with VXvue

2.4.1 System Configuration

Component	System Configuration		
	System B Ceiling suspension type auto positioning system	System C Ceiling suspension type manual positioning system	System D Floor mounted type manual positioning system
X-Ray High Voltage Generator* ¹	UD150B-40/L-40/ V-40 D150BC-40/BC-41/ LC-40/LC-41/ VC-40/VC-41 GSC-2002L	UD150L-40E/F D150BC-41/LC-41/VC-41 GSC-2002S	
X-Ray Tube Device * ²	0.6/1.2P326D-150 0.6/1.2P366D-150 0.6/1.2P324DK-125 0.6/1.2P364DK-125 0.6/1.2P324DK-85 0.6/1.2P364DK-85 0.6/1.2P164DK-85 0.6/1.2P323DK-85 0.6/1.2P38DE-85 0.6/1.2P18DE-85 0.6/1.2P33DK-85 0.6/1.2P13DK-85 1/2P18DK-85 1/2P13DK-85		
X-Ray Tube Support* ²	CH-200	CH-200M	FH-20HR FH-20HS FH-21HR FH-21HS
X-Ray Collimator* ²	R-300	R-20J	
X-Ray Radiography Table * ²	BK-120 BK-200	BK-120MK BK-12HK	
X-Ray Radiography Stand * ²	BR-120 BR-120T	BR-120M	

Component	System Configuration		
	System B Ceiling suspension type auto positioning system	System C Ceiling suspension type manual positioning system	System D Floor mounted type manual positioning system
Digital Radiography System *2 *3	VXvue VIVIX-S		

- *1: Equipment suitable for use in the patient environment (Control cabinet only)
- *2: Equipment suitable for use in the patient environment
- *3: Digital Radiography system VXvue is not a component system for RADspeed Pro, but can be combined with the RADspeed Pro system.

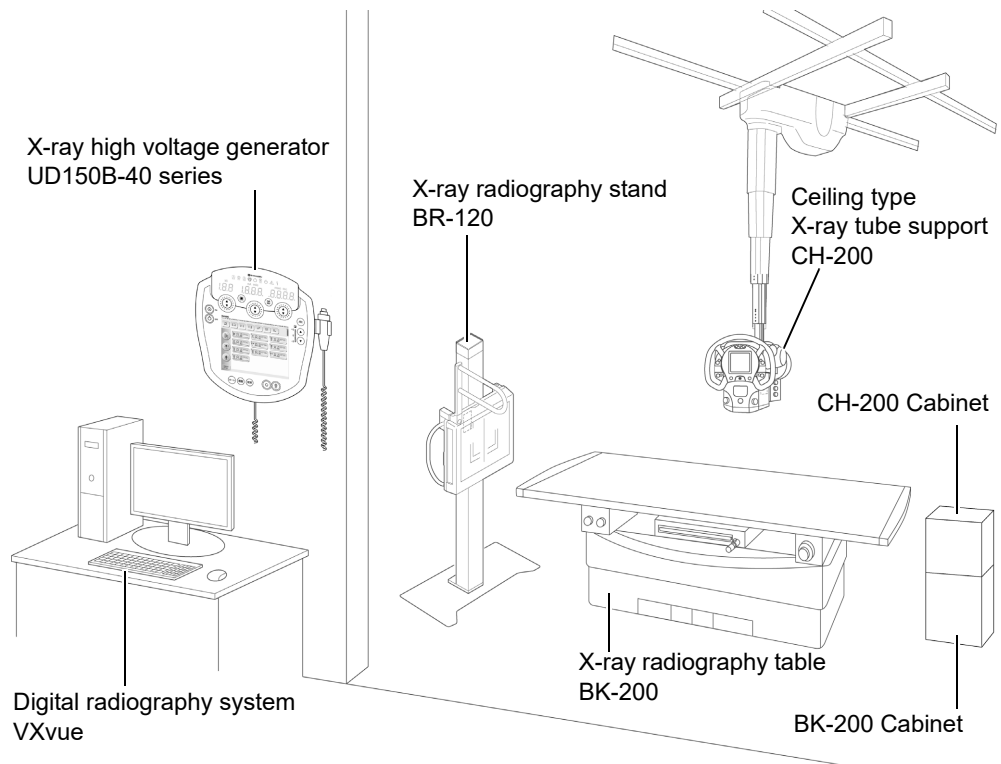


WARNING

Do NOT connect the equipment other than the designated equipment to the system.

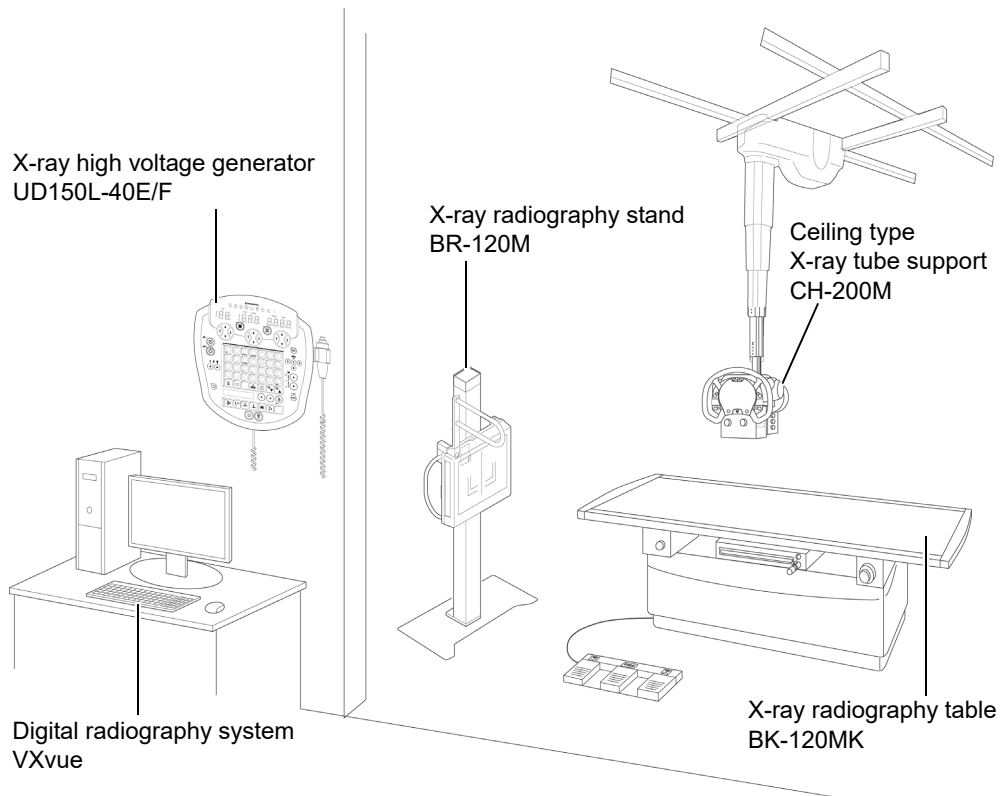
■ Typical system B

System with ceiling suspension type X-ray tube support upgradable to a digital radiography system



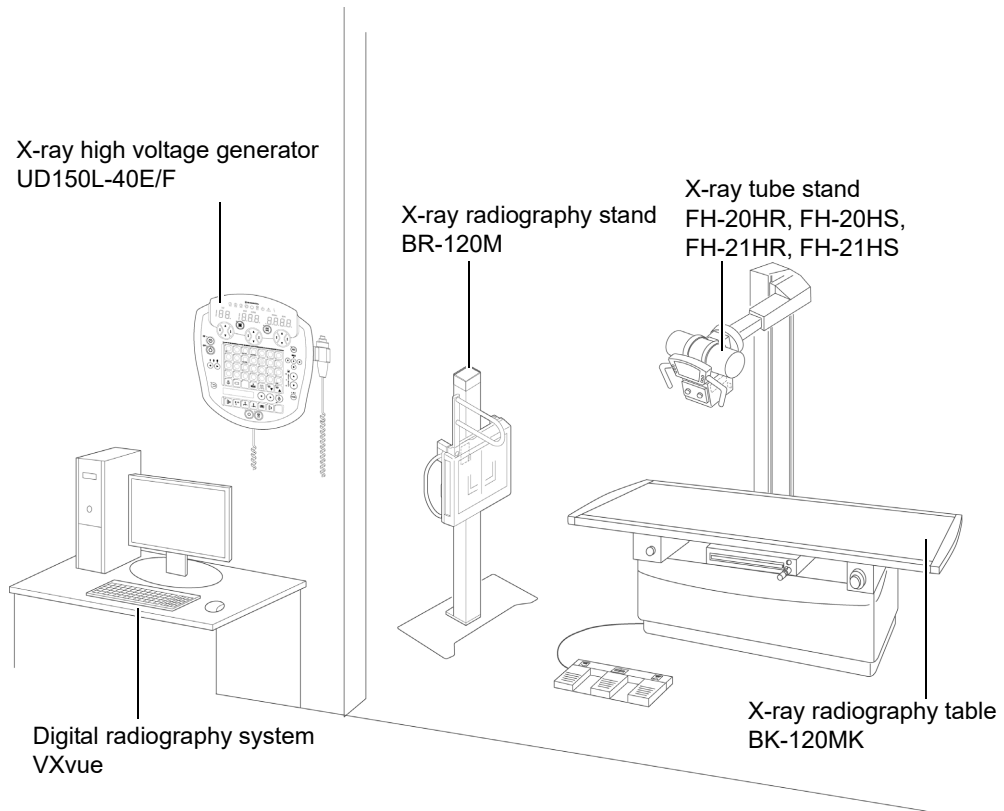
Typical system C

Manual positioning system with ceiling suspension type X-ray tube support



Typical system D

Manual positioning system with floor mounted type X-ray tube stand



2.4.2 Combinable Models in the FPD

FPD	X-ray Radiography Table			X-ray Radiography Stand	
	BK-120 BK-200	BK-120M	BK-12H	BR-120 BR-120T	BR-120M
VIVIX-S 3643VW	✓	▲	▲	✓	▲
VIVIX-S 3643VW PLUS	✓	▲	▲	✓	▲
VIVIX-S 3643FW	✓	▲	▲	✓	▲
VIVIX-S 4343VW	✓	▲	▲	✓	▲
VIVIX-S 4343VW PLUS	✓	▲	▲	✓	▲
VIVIX-S 4343FW	✓	▲	▲	✓	▲

▲: Radiography is possible.

✓: Radiography is possible. In addition, the radiography conditions and X-ray irradiation field size can be linked to the radiography protocol of the DR console (VXvue) by combining the above models with the following software and devices.

With an additional option, long view radiography that tracks the FPD position and X-ray irradiation field of each exposure can be performed.

- VXvue
- X-ray High Voltage Generator UD150B-40/V-40/L-40
- Ceiling Tube Support CH-200
- Collimator Type R-300

*: There is no FPD mount kit that supports VIVIX-S 2530VW/ VIVIX-S 2530VW PLUS/ VIVIX-S 2530FW/VIVIX-S 1751S.

2.4.3 Available System Combination

■ FPD Mount Kit

When an FPD mount kit (FPD-dedicated tray) that supports each FPD type is combined with an X-ray radiography stand BR-120/BR-120T or table BK-120/BK-200, the following functions are available.

Note, however, that the FPD mount kit only holds the supported FPDs.

Supported FPD	Function
VIVIX-S 3643VW/ VIVIX-S 3643VW PLUS/ VIVIX-S 3643FW	FPD automatic detection Detects the FPD on the tray automatically. This function also automatically detects the insert direction of the FPD on the tray (portrait/landscape), as well as the reference position (top, center, and bottom) for the X-ray radiography stand.
VIVIX-S 4343VW/ VIVIX-S 4343VW PLUS/ VIVIX-S 4343FW	FPD automatic detection Detects the FPD on the tray automatically.

*: There is no FPD mount kit that supports VIVIX-S 2530VW/ VIVIX-S 2530VW PLUS/ VIVIX-S 2530FW/VIVIX-S 1751S.

■ Exposure condition linkage

The following functions are available.

Function	Details
Exposure condition linkage	<p>The exposure conditions on the X-ray high voltage generator are automatically set in conjunction with the radiography protocol selected on the DR system console.</p> <p>For the setting, there are the following two methods:</p> <ul style="list-style-type: none"> • APR specification Designates a specific radiography program on the X-ray high voltage generator. • Individual condition specification Specifies individual exposure conditions, such as tube voltage, instead of radiography programs on the X-ray high voltage generator. <p>The exposure condition linkage for long view radiography and the auto-positioning function, exposure field size interlock, and patient information display of the X-ray tube support is only available for the APR specification method.</p>
Exposure field size interlock (option)	<p>The exposure field size on the collimator R-300 is automatically adjusted in conjunction with the radiography protocol selected on the DR system console.</p>
Patient information display (option)	<p>The patient information on the DR system console is also displayed in the X-ray tube support CH-200 screen.</p> <p>The displayed items are as follows:</p> <ul style="list-style-type: none"> • Name • Gender • Age • ID number

■ Long View Radiography Function (Option)

This option allows for generating a long view radiographic image by taking X-rays of continuous body parts, with the FPD position and the exposure field being interlocked.

Item	Details
Long view operation method	While the X-ray tube focus position is being fixed, the FPD position, X-ray exposure field, and X-ray tube angle move in conjunction. After setting the long view radiography region, pressing the exposure button on the X-ray high voltage generator at each radiography position performs exposure sequentially at the specified position, and when all exposures are completed, the obtained images are automatically stitched on the DR system console.
Long view radiography region setting method	Illuminate the patient with the laser marker of the X-ray tube support, and specify the upper and lower ends of the long view radiography region on the X-ray tube support touch panel. It is also possible to set only one end of the radiography region. (In this case, the end of the FPD movable range is set to the other end of the radiography region.)
Long view radiography region	Stand: 160 cm max. Table: 120 cm max. (The value on the FPD detection surface. The region varies depending on the size and direction of the FPD, and the amount of image overlap.)
No. of exposures for a long view image	4 exposures max. (The set long view radiography region is evenly split by the No. of the exposures.)
Long view radiography time	About 30 sec from the start of the first exposure until all exposures are completed, and about 45 sec until the composite long view image is completely displayed (in Auto Save mode). (When combined with VIVIX-S 3643FW, three exposures at standing position under wireless connection with radiography region of 120 cm. The time varies depending on stand/table, X-ray tube, FPD, No. of long view images, radiography region, and timing of radiography.)
Patient protection	The patient stand is required for vertical radiography.
Supported FPD	VIVIX-S 3643VW VIVIX-S 3643VW PLUS VIVIX-S 3643FW VIVIX-S 4343VW VIVIX-S 4343VW PLUS VIVIX-S 4343FW

2.5 Combined with Other Digital Radiography System/CR Cassette/ X-ray Film Cassette

2.5.1 System Configuration

Component	System Configuration		
	System H Ceiling suspension type auto positioning system	System I Ceiling suspension type manual positioning system	System J Floor mounted type manual positioning system
X-Ray High Voltage Generator* ¹	UD150B-40/L-40/ V-40 D150BC-40/BC-41/ LC-40/LC-41/ VC-40/VC-41 GSC-2002L	UD150L-40E/F D150BC-41/LC-41/VC-41 GSC-2002S	
X-Ray Tube Device* ²	0.6/1.2P326D-150 0.6/1.2P366D-150 0.6/1.2P324DK-125 0.6/1.2P364DK-125 0.6/1.2P324DK-85 0.6/1.2P364DK-85 0.6/1.2P164DK-85 0.6/1.2P323DK-85 0.6/1.2P38DE-85 0.6/1.2P18DE-85 0.6/1.2P33DK-85 0.6/1.2P13DK-85 1/2P18DK-85 1/2P13DK-85		
X-Ray Tube Support* ²	CH-200	CH-200M	FH-20HR FH-20HS FH-21HR FH-21HS
X-Ray Collimator* ²	R-300	R-20J	
X-Ray Radiography Table* ²	BK-120 BK-200	BK-120MK BK-12HK	
X-Ray Radiography Stand* ²	BR-120 BR-120T	BR-120M	

*1: Equipment suitable for use in the patient environment (Control cabinet only)

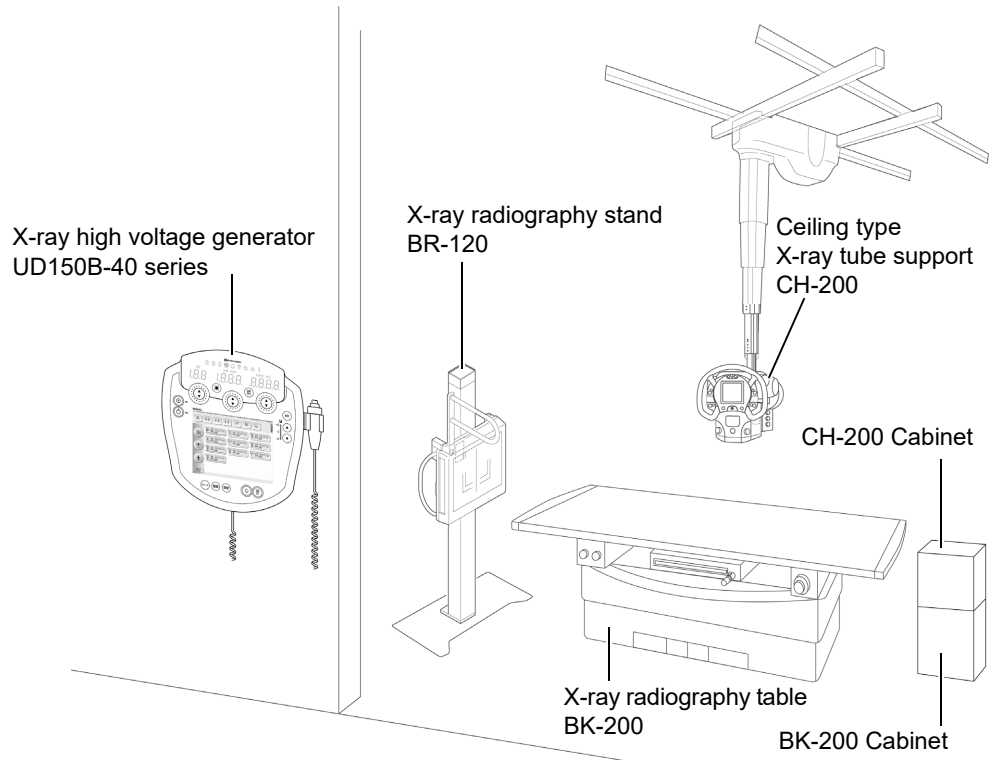
*2: Equipment suitable for use in the patient environment



Do NOT connect the equipment other than the designated equipment to the system.

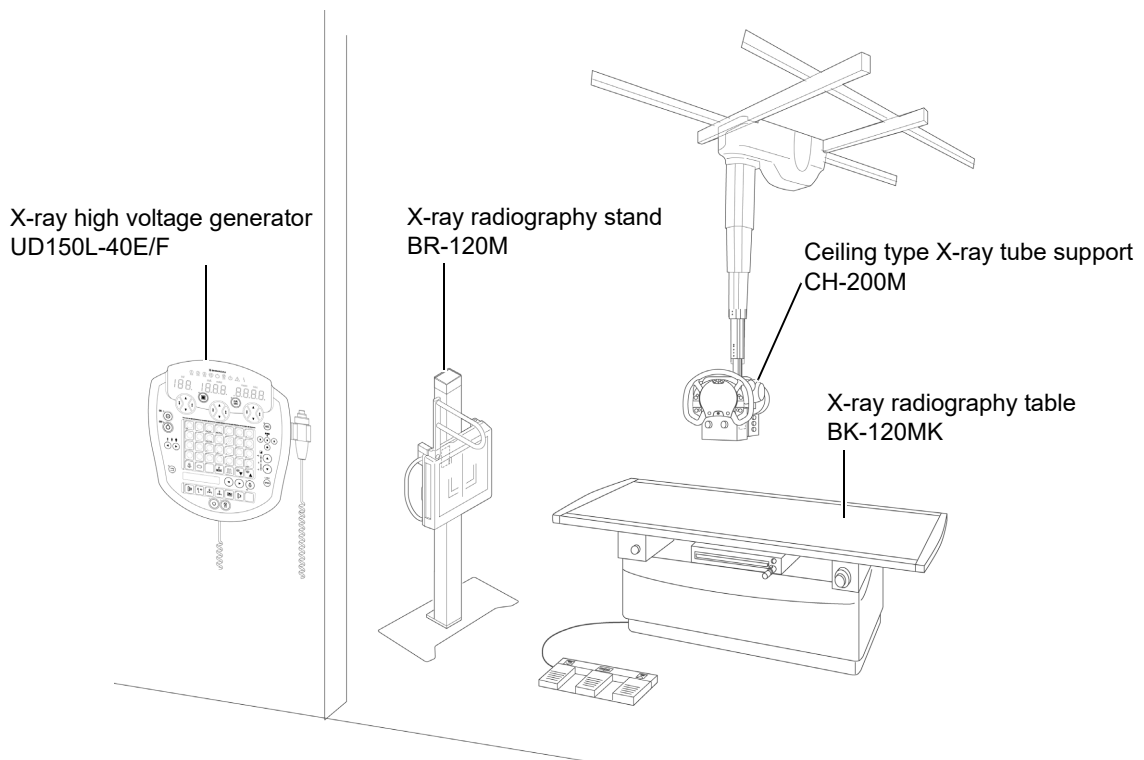
Typical system H

System with ceiling suspension type X-ray tube support upgradable to a digital radiography system



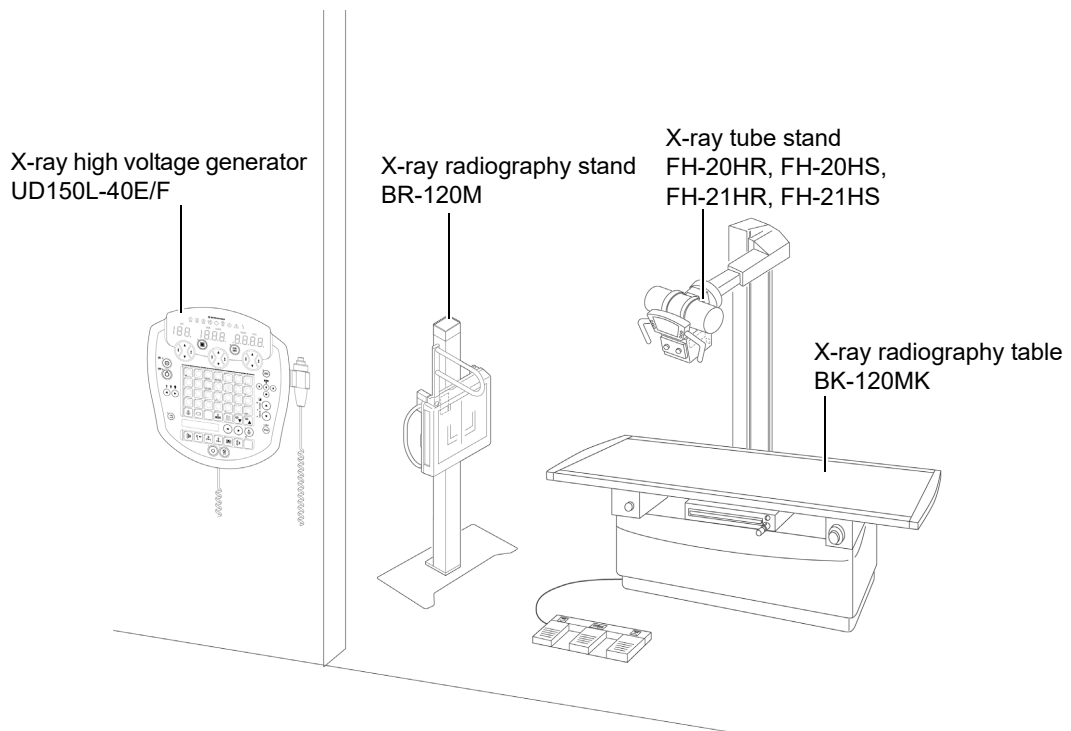
■ Typical system I

Manual positioning system with ceiling suspension type X-ray tube support



■ Typical system J

Manual positioning system with floor mounted type X-ray tube stand



2.5.2 Combinable Models in the FPD (Combined with DR-ID 1200/DR-ID 1800)

FPD	X-ray Radiography Table			X-ray Radiography Stand	
	BK-120 BK-200	BK-120MK	BK-12HK	BR-120 BR-120T	BR-120M
DR-ID 1201SE	▲	▲	▲	▲	▲
DR-ID 1202SE	▲	▲	▲	▲	▲
DR-ID 1211SE	▲	▲	▲	▲	▲
DR-ID 1212SE	▲	▲	▲	▲	▲
DR-ID 1831SE	▲	▲	▲	▲	▲
DR-ID 1832SE	▲	▲	▲	▲	▲
DR-ID 1811SE	▲	▲	▲	▲	▲
DR-ID 1812SE	▲	▲	▲	▲	▲

▲: Radiography is possible.

*: There is no FPD mount kit that supports DR-ID 1213SE/DR-ID 1814SE.

2.5.3 Available System Combination

■ FPD Mount Kit (Combined with DR-ID 1200/DR-ID 1800)

When an FPD mount kit (FPD-dedicated tray) that supports each FPD type is combined with an X-ray radiography stand BR-120/BR-120T or table BK-120/BK-200, the following functions are available.

Note, however, that the FPD mount kit only holds the supported FPDs.

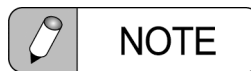
Supported FPD	Function
DR-ID 1201SE DR-ID 1211SE DR-ID 1831SE DR-ID 1811SE	<ul style="list-style-type: none"> FPD automatic detection Detects the FPD on the tray automatically. This function also automatically detects the insert direction of the FPD on the tray (portrait/landscape), as well as the reference position (top, center, and bottom) for the X-ray radiography stand. FPD can be inserted under wired connection Note, however, that the FPD cannot be inserted with the bottom reference for the right-insert model of the X-ray radiography stand.
DR-ID 1202SE DR-ID 1212SE DR-ID 1832SE DR-ID 1812SE	<ul style="list-style-type: none"> FPD automatic detection Detects the FPD on the tray automatically. FPD can be inserted under wired connection

*: There is no FPD mount kit that supports DR-ID 1213SE/DR-ID 1814SE.

■ Exposure condition linkage

The following function may be available depending on the digital radiography system that is used.

Function	Details
Exposure condition linkage	<p>The exposure conditions on the X-ray high voltage generator are automatically set in conjunction with the radiography protocol selected on the DR system console.</p> <p>For the setting, there are the following two methods:</p> <ul style="list-style-type: none"> • APR specification Designates a specific radiography program on the X-ray high voltage generator. • Individual condition specification Specifies individual exposure conditions, such as tube voltage, instead of radiography programs on the X-ray high voltage generator. <p>The exposure condition linkage for the auto-positioning function of the X-ray tube support is only available for the APR specification method.</p>



The exposure field size on the collimator R-300 cannot be automatically adjusted in conjunction with the radiography protocol selected on the digital radiography system. However, when the APR specification method is selected for exposure condition linkage, the exposure field size on the collimator R-300 can be adjusted in conjunction with the radiography program on the X-ray high voltage generator (optional function).

3

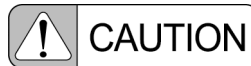
Specifications

This chapter describes the specification of RADspeed Pro.

3.1 Environmental Conditions of EMC (Electromagnetic Compatibility)

The equipment satisfies the EMC (Electromagnetic Compatibility) standard below:

IEC 60601-1-2:2014+A1:2020



The equipment is suitable for installing at a professional healthcare facility environment except below:

- Medical treatment areas with high-powered medical electrical equipment (High frequency surgical equipment, short-wave therapy equipment)
- Inside the radio frequency shielded room of an MRI.

■ Classification of EMI in Accordance with IEC 60601-1-2:2014+A1:2020

Group 1, Class A

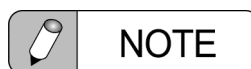
The system uses radio-frequency energy only for its internal function and is not intended to deliver energy to the patient. But little leakage radio-frequency energy does harm to high sensitive equipment.

The system main power line in the clinical site should be connected to the domestic power sources which are separated from the public main network.



For replacement parts of internal components, make sure to apply the cables supplied by Shimadzu.

The use of non-cable devices, accessories, or cables other than those sold by Shimadzu as replacement parts for the internal components may result in increased emissions or decreased immunity of the equipment.



The emissions characteristics of the system make it suitable for use in industrial areas and hospitals (CISPR 11 class A).

If it is used in a residential environment (for which CISPR 11 class B is normally required) the system might not offer adequate protection to radio-frequency communication services.

The user might need to take mitigation measures, such as relocating or re-orienting the system.

■ Performance to Be EMC Immunity Tested (Essential Performance)

Essential performances of this equipment are as followings:

- Holding the patient
- Positioning of X-ray irradiation field
- Settings of X-ray conditions
- X-ray exposure
- Retention in the X-ray radiography device
- Holding the X-ray tube unit
- Patient information registration
- Image acquisition
- Image display
- Adjustment of X-ray field
- Maintain accuracy of X-ray tube load condition
- Reproduction of radiation output
- Automatic Exposure Control (AEC)

If an essential performance of this equipment is degraded or lost due to electromagnetic disturbances, the following may occur.

- The device is damaged when the patient is hold.
- Operations for positioning the X-ray irradiation field cannot be performed.
- X-ray radiography conditions cannot be changed.
- X-ray exposure cannot be performed.
- The X-ray radiography device moves during X-ray exposure.
- The X-ray tube unit moves during X-ray exposure.
- Patient information cannot be properly registered and incorrect patient information is registered.
- Image can not be acquired from the FPD in conjunction with X-ray irradiation, or an artifact appear in the collected image.
- An incorrect image is displayed.
- X-ray irradiation field exceeds the accuracy specified in IEC 60601-1-3.
- The X-ray tube loading condition exceed the accuracy specified in IEC 60601-2-54.
- The radiation output exceed the accuracy specified in IEC 60601-2-54.
- AEC operates with errors exceeding the accuracy specified in IEC 60601-2-54.

No transient phenomena due to electromagnetic disturbances were observed.

■ List of Cables

No.	Cable Name	Cable Length (MAX)	Shield	Note (Manufacturer)
1	PC AC Cable	2 m	U	---
2	Mouse Cable	2 m	S	---
3	KEY BOARD Cable	2 m	S	---
4	LCD Display VIDEO cable	2 m	S	---
5	LCD Display AC Cable	2 m	U	---
6	LAN CABLE (Category 5e)	20 m	U	---
7	LAN CABLE (Category 5e)	20 m	U	---
8	COM-LAN Converter AC Cable	2 m	U	---
9	LAN CABLE(Category 5e)	20 m	U	---

S: Shielded / U: Unshielded



NOTE

- The cables listed above are the parts specified to be compliant with the standards. These parts are not provided to the equipment.
- For details about the other cables, refer to operation manual provided to each component unit.

■ Guidance and Manufacturer's Declaration - Electromagnetic Immunity

Immunity test	EN 60601/IEC 60601 test level	IEC TR 60601-4-2 test level	Compliance level
Electrostatic discharge (ESD) EN 61000-4-2/ IEC 61000-4-2	±8 kV Contact ±2 kV, ±4 kV, ±8 kV, ±15 kV Air	±4 kV contact ±2 kV, ±4 kV, ±8 kV Air	±8 kV Contact ±2 kV, ±4 kV, ±8 kV, ±15 kV Air
Electrical fast transient/burst EN 61000-4-4/ IEC 61000-4-4	±2 kV for power supply lines ±1 kV for input/output lines	±1 kV for power supply lines ±0.5 kV for input/output lines	±2 kV for power supply lines ±1 kV for input/output lines
Surge EN 61000-4-5/ IEC 61000-4-5	±0.5 kV, ±1 kV line(s) to line(s) ±0.5 kV, ±1 kV, ±2 kV line(s) to earth	±0.5 kV, ±1 kV line(s) to line(s) ±0.5 kV, ±1 kV, ±2 kV line(s) to earth	±0.5 kV, ±1 kV line(s) to line(s) ±0.5 kV, ±1 kV, ±2 kV line(s) to earth
Voltage dips, short interruptions and voltage variations on power supply input lines EN 61000-4-11/ IEC 61000-4-11	0 % U_T^{*1} : 0.5 cycle at 0°, 45°, 90°, 135°, 180°, 225°, 270°, 315° 0 % U_T : 1 cycle at 0° 70 % U_T : 25/30 cycles at 0° Short interruption 0 % U_T ; 250/300 cycles	0 % U_T : 0.5 cycle at 0°, 180° 70 % U_T : 25/30 cycles at 0° Short interruption 0 % U_T ; 250/300 cycles	0 % U_T : 0.5 cycle at 0°, 45°, 90°, 135°, 180°, 225°, 270°, 315° 0 % U_T : 1 cycle at 0° 70 % U_T : 25/30 cycles at 0° Short interruption 0 % U_T ; 250/300 cycles
Power frequency (50/60Hz) magnetic field EN 61000-4-8/ IEC 61000-4-8	30 A/m	3 A/m	30 A/m
Conducted RF EN 61000-4-6/ IEC 61000-4-6	150 kHz to 80 MHz 3 Vrms (outside ISM bands ^{*2}) 6 Vrms (in ISM bands) (1 kHz, AM80 %)	150 kHz to 80 MHz 3 Vrms (1 kHz, AM80 %)	150 kHz to 80 MHz 3 Vrms (outside ISM bands) 6 Vrms (in ISM bands) (1 kHz, AM80 %)
Radiated RF EN 61000-4-3/ IEC 61000-4-3	80 MHz to 2.7 GHz 3 V/m (1 kHz, AM80 %) Enclosure port immunity to RF wireless communications equipment Refer to the Table 3.1 .	80 MHz to 2.7 GHz 3 V/m (1 kHz, AM80 %) Enclosure port immunity to RF wireless communications equipment Refer to the Table 3.1 .	80 MHz to 2.7 GHz 3 V/m (1 kHz, AM80 %) Enclosure port immunity to RF wireless communications equipment Refer to the Table 3.1 .
Proximity magnetic fields EN 61000-4-39/ IEC 61000-4-39	134.2 kHz 65 A/m (Pulse modulation 2.1 kHz, 50 % duty cycle square wave signal)	N/A	134.2 kHz 65 A/m (Pulse modulation 2.1 kHz, 50 % duty cycle square wave signal)
	13.56 MHz 7.5 A/m (Pulse modulation 50 kHz, 50 % duty cycle square wave signal)	N/A	13.56 MHz 7.5 A/m (Pulse modulation 50 kHz, 50 % duty cycle square wave signal)

Immunity test	EN 60601/IEC 60601 test level	IEC TR 60601-4-2 test level	Compliance level
<p>Note</p> <p>*1: U_T is the a.c. mains voltage prior to application of the test level.</p> <p>*2: The ISM bands between 150 kHz and 80 MHz are 6.765 to 6.795 MHz; 13.553 MHz to 13.567 MHz; 26.957 MHz to 27.283 MHz; and 40.66 MHz to 40.70 MHz.</p>			

Table 3.1 Test specifications for ENCLOSURE PORT IMMUNITY to RF Wireless Communications Equipment

Test frequency (MHz)	Modulation	EN 60601-1/ IEC 60601-1 test level (V/m)	IEC TR 60601-4-2 test level (V/m)	Compliance level (V/m)
385	Pulse modulation: 18 Hz ^{*1}	27	6	19
450	FM ± 5 kHz deviation: 1 kHz sine ^{*2}	28	9	28
710	Pulse modulation: 217 Hz ^{*1}	9	3	9
745				
780				
810	Pulse modulation: 18 Hz ^{*1}	28	9	28
870				
930				
1462	Pulse modulation: 217 Hz ^{*1}	10	3	10
1720	Pulse modulation: 217 Hz ^{*1}	28	9	19
1845				
1970				
2450	Pulse modulation: 217 Hz ^{*1}	28	9	19
5240	Pulse modulation: 217 Hz ^{*1}	9	6	9
5500				
5785				

*1: The carrier shall be modulated using a 50 % duty cycle square wave signal.

*2: As an alternative to FM modulation, the carrier may be pulse modulated using a 50 % duty cycle square wave signal at 18 Hz. While it does not represent actual modulation, it would be worst case.

3.2 Statement of Compliance [For Europe]

3.2.1 Regulatory Information

For Europe:

This product complies with the requirement of the Medical Device Directive 93/42/EEC and RoHS Directive 2011/65/EU.

Product Name: RADspeed Pro

Manufacturer: SHIMADZU CORPORATION Medical Systems Division
1, NISHINOKYO-KUWABARACHO,
NAKAGYO-KU, KYOTO, 604-8511, JAPAN

Authorized Representative Shimadzu Europa GmbH
/ Importer: Albert-Hahn-Strasse 6-10,
47269 Duisburg, Germany



NOTE

When any serious incident occurred in relation to the system, report that to your Shimadzu service representative and to the competent authority of the Member State in you are established.

“Serious incident” means any incident that directly or indirectly led, might have led or might lead to any of the following:

- (a) The death of a patient, user or other person
- (b) The temporary or permanent serious deterioration of a patient's, user's or other person's state of health
- (c) A serious public health threat

3.2.2 Company's Quality System

The company's quality management system complies with the requirements of Annex II, excluding Section 4 of the MDD 93/42/EEC, which is certified by TÜV Rheinland LGA Products GmbH (Notified under No.0197)

3.2.3 International Standards

This equipment conforms the following international standards.

- IEC 60601-1: 2005+A1:2012+A2:2020 / EN 60601-1:2006+A1:2013+A12:2014+A2:2021
- IEC 60601-1-2:2014+A1:2020 / EN 60601-1-2:2015+A1:2021
- IEC 60601-1-3:2008+A1:2013+A2:2021 / EN 60601-1-3:2008+A2:2021
- IEC 60601-1-6:2010+A1:2013+A2:2020 / EN 60601-1-6:2010+A1:2015+A2:2021
- IEC 60601-2-54:2022 / EN IEC 60601-2-54:2024
- ISO 10993-1:2018 Corrected version / EN ISO 10993-1:2020
- ISO 14971:2019 / EN ISO 14971:2019+A11:2021
- IEC 62304:2006+A1:2015 / EN 62304:2006+A1:2015
- IEC 62366-1:2015+A1:2020 / EN 62366-1:2015+A1:2020
- ISO 15223-1:2021 / EN ISO 15223-1:2021
- EN 1041:2008+A1:2013

3.2.4 Protection Against Radiation

Refer to the standard about the acceptance and performance testing.

(ex:DIN 6868-150:2013-06)

3.3 Statement of Compliance [For USA]

The RADspeed Pro was tested according to the recommendations of IEC TR 60601-4-2: Medical electrical equipment - Part 4-2: Guidance and interpretation - Electromagnetic immunity: performance of medical electrical equipment and medical electrical systems.

3.4 Statement of Compliance with Standards

- X-RAY EQUIPMENT for RADIOGRAPHY ...
Digital Radiography System RADspeed Pro
IEC 60601-2-54:2022
- X-RAY EQUIPMENT for RADIOGRAPHY ...
Digital Radiography System RADspeed Pro
EN IEC 60601-2-54:2024

3.5 Manufacturer Information

Manufacturer:	SHIMADZU CORPORATION Medical Systems Division
Address:	1, NISHINOKYO-KUWABARACHO, NAKAGYO-KU, KYOTO, 604-8511, JAPAN

3.6 Specification



NOTE

For detail, refer to operation manual attached to each component unit.

The contents of this operation manual may be subject to change due to system improvements.

See "1.4.1 Operation Environment" P.4 for the operation environment of the equipment except digital radiography system. See "1.4.2 Transportation and Storage Environment" P.5 for the transportation and storage environment of the equipment except digital radiography system.

3.6.1 X-Ray High Voltage Generator

■ UD150B-40/D150BC-40 and GSC-2002L

Item		Specifications	
Radiography technique		General radiography, Bucky radiography, auto-changer radiography, tomography	
Number of connectable X-ray tubes		2 tubes	
Setting range *1 *2 *3	Radiography	Tube voltage	40 to 150 kV
		Tube current	10 to 1000 mA Any 12 of the following positions permitted by the X-ray tube can be used for each focus: 1000, 900, 800, 710, 630, 560, 500, 450, 400, 360, 320, 280, 250, 220, 200, 180, 160, 140, 125, 110, 100, 90, 80, 71, 63, 56, 50, 45, 40, 36, 32, 28, 25, 22, 20, 18, 16, 14, 12, 11, 10 mA
	mAs		0.5 to 800 mAs
			Set from the following 65 positions. (500 mAs upper limit for AEC radiography.) 0.50, 0.56, 0.63, 0.71, 0.80, 0.90, 1.0, 1.1, 1.25, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10, 11, 12.5, 14, 16, 18, 20, 22, 25, 28, 32, 36, 40, 45, 50, 56, 63, 71, 80, 90, 100, 110, 125, 140, 160, 180, 200, 220, 250, 280, 320, 360, 400, 450, 500, 560, 630, 710, 800 mAs

Item			Specifications
Setting range *1 *2 *3	Radiography	Time	0.001 to 10 sec
			Set from the following 81 positions. (Cannot be set with an mAs value below 0.5 or above 800 mAs. 500 mAs upper limit for AEC radiography.) 1.0, 1.1, 1.2, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10, 11, 12, 14, 16, 18, 20, 22, 25, 28, 32, 36, 40, 45, 50, 56, 63, 71, 80, 90, 100, 110, 125, 140, 160, 180, 200, 220, 250, 280, 320, 360, 400, 450, 500, 560, 630, 710, 800, 900 ms, 1.0, 1.1, 1.2, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10 sec
Radiography programs			Advanced anatomical program method, offering up to 800 types of user-created radiography conditions.
Display method			Liquid-crystal display of radiography conditions, etc.
Setting method			Set on touch panel
Self-diagnostic functions			Displayed on touch panel
Nominal supply voltage (50/60 Hz)		400 V system	3-phase: 380/400/415/440/480 VAC
		200 V system	3-phase: 200/220/240 VAC
		Factor depending on the waveform	1.00
Power input			3-phase AC: 120 kVA
Rated output			80 kW (100 kV, 800 mA) Product of tube voltage and max. current that can flow in 0.1 s at 100 kV tube voltage
Short-time rating *2			150 kV 500 mA, 125 kV 630 mA, 100 kV 800 mA, 80 kV 1000 mA
Nominal max. tube voltage and max. tube current that can flow at nominal max. tube voltage *2			Short-time rating: 150 kV 500 mA Long-time rating: 125 kV 12 mA
Max. tube current and max. tube voltage to achieve max. tube current *2			Short-time rating: 80 kV 1000 mA Long-time rating: 75 kV 20 mA
Tube voltage and tube current combination for max. electrical output *2			Short-time rating: 80 kV 1000 mA, 100 kV 800 mA Long-time rating: 75 kV 20 mA, 125 kV 12 mA
Min. tube current time product			0.5 mAs
Long-time rating *2			75 kV 20 mA, 125 kV 12 mA
Nominal min. exposure time (AEC radiography) *4			3 ms
Dimensions	Operation panel		W308 × D82 × H345 mm
	Control cabinet		W700 × D400 × H1830 mm

Item		Specifications
Mass	Operation panel	2.5 kg
	Control cabinet	250 kg

- *1: Setting range differs according to the X-ray tube type.
- *2: Limited according to the X-ray tube type.
- *3: The various conditions are as follows (conform to IEC-standards):
Tube voltage (within $\pm 8\%$), Tube current (within $\pm 20\%$)
mAs within $\pm (10\% + 0.2 \text{ mAs})$, Time within $\pm (10\% + 1 \text{ ms})$
- *4: 9 ms if both of the following conditions apply.
 - Setting time is over 1s.
 - Phototimer receiver inside the FPD is used.

■ UD150L-40/D150LC-40 and GSC-2002L

Item		Specifications	
Radiography technique		General radiography, Bucky radiography, auto-changer radiography, tomography	
Number of connectable X-ray tubes		2 tubes	
Setting range *1 *2 *3	Radiography	Tube voltage	40 to 150 kV
		Tube current	10 to 630 mA
			Any 12 of the following positions permitted by the X-ray tube can be used for each focus: 630, 560, 500, 450, 400, 360, 320, 280, 250, 220, 200, 180, 160, 140, 125, 110, 100, 90, 80, 71, 63, 56, 50, 45, 40, 36, 32, 28, 25, 22, 20, 18, 16, 14, 12, 11, 10 mA
		mAs	0.5 to 800 mAs
			Set from the following 65 positions. (500 mAs upper limit for AEC radiography.) 0.50, 0.56, 0.63, 0.71, 0.80, 0.90, 1.0, 1.1, 1.25, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10, 11, 12.5, 14, 16, 18, 20, 22, 25, 28, 32, 36, 40, 45, 50, 56, 63, 71, 80, 90, 100, 110, 125, 140, 160, 180, 200, 220, 250, 280, 320, 360, 400, 450, 500, 560, 630, 710, 800 mAs
		Time	0.001 to 10 sec
Set from the following 81 positions. (Cannot be set with an mAs value below 0.5 or above 800 mAs. 500 mAs upper limit for AEC radiography.) 1.0, 1.1, 1.2, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10, 11, 12, 14, 16, 18, 20, 22, 25, 28, 32, 36, 40, 45, 50, 56, 63, 71, 80, 90, 100, 110, 125, 140, 160, 180, 200, 220, 250, 280, 320, 360, 400, 450, 500, 560, 630, 710, 800, 900 ms, 1.0, 1.1, 1.2, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10 sec			
Radiography programs		Advanced anatomical program method, offering up to 800 types of user-created radiography conditions.	
Display method		Liquid-crystal display of radiography conditions, etc.	
Setting method		Set on touch panel	
Self-diagnostic functions		Displayed on touch panel	

Item		Specifications
Nominal supply voltage (50/60 Hz)	400 V system	3-phase: 200/220/240/380/400/415/440/480 VAC
	200 V system	Single-phase: 200/220/240 VAC
	Factor depending on the waveform	1.00
Power input		3-phase AC: 80 kVA Single-phase AC: 95 kVA
Rated output		50 kW (100 kV, 500 mA) Product of tube voltage and max. current that can flow in 0.1 s at 100 kV tube voltage
Short-time rating *2		150 kV 320 mA, 125 kV 400 mA, 100 kV 500 mA, 80 kV 630 mA
Nominal max. tube voltage and max. tube current that can flow at nominal max. tube voltage*2		Short-time rating: 150 kV 320 mA Long-time rating: 125 kV 9 mA
Max. tube current and max. tube voltage to achieve max. tube current *2		Short-time rating: 80 kV 630 mA Long-time rating: 125 kV 9 mA
Tube voltage and tube current combination for max. electrical output*2		Short-time rating: 80 kV 630 mA Long-time rating: 125 kV 9 mA
Min. tube current time product		0.5 mAs
Long-time rating *2		125 kV 9 mA
Nominal min. exposure time (AEC radiography) *4		3 ms
Dimensions	Operation panel	W308 × D82 × H345 mm
	Control cabinet	W700 × D400 × H1830 mm
Mass	Operation panel	2.5 kg
	Control cabinet	240 kg

*1: Setting range differs according to the X-ray tube type.

*2: Limited according to the X-ray tube type.

*3: The various conditions are as follows (conform to IEC-standards):
Tube voltage (within ± 8 %), Tube current (within ± 20 %)
mAs within ± (10 % + 0.2 mAs), Time within ± (10 % + 1 ms)

*4: 9 ms if both of the following conditions apply.

- Setting time is over 1s.
- Phototimer receiver inside the FPD is used.

■ UD150V-40/D150VC-40 and GSC-2002L

Item		Specifications	
Radiography technique		General radiography, Bucky radiography, auto-changer radiography, tomography	
Number of connectable X-ray tubes		2 tubes	
Setting range *1 *2 *3	Radiography	Tube voltage	40 to 150 kV
		Tube current	10 to 800 mA
			Any 12 of the following positions permitted by the X-ray tube can be used for each focus: 800,710,650, 560, 500, 450, 400, 360, 320, 280, 250, 220, 200, 180, 160, 140, 125, 110, 100, 90, 80, 71, 63, 56, 50, 45, 40, 36, 32, 28, 25, 22, 20, 18, 16, 14, 12, 11, 10 mA
		mAs	0.5 to 800 mAs
			Set from the following 65 positions. (500 mAs upper limit for AEC radiography.) 0.50, 0.56, 0.63, 0.71, 0.80, 0.90, 1.0, 1.1, 1.25, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10, 11, 12.5, 14, 16, 18, 20, 22, 25, 28, 32, 36, 40, 45, 50, 56, 63, 71, 80, 90, 100, 110, 125, 140, 160, 180, 200, 220, 250, 280, 320, 360, 400, 450, 500, 560, 630, 710, 800 mAs
		Time	0.001 to 10 sec
Set from the following 81 positions. (Cannot be set with an mAs value below 0.5 or above 800 mAs. 500 mAs upper limit for AEC radiography.) 1.0, 1.1, 1.2, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10, 11, 12, 14, 16, 18, 20, 22, 25, 28, 32, 36, 40, 45, 50, 56, 63, 71, 80, 90, 100, 110, 125, 140, 160, 180, 200, 220, 250, 280, 320, 360, 400, 450, 500, 560, 630, 710, 800, 900 ms, 1.0, 1.1, 1.2, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10 sec			
Radiography programs		Advanced anatomical program method, offering up to 800 types of user-created radiography conditions.	
Display method		Liquid-crystal display of radiography conditions, etc.	
Setting method		Set on touch panel	
Self-diagnostic functions		Displayed on touch panel	

Item		Specifications
Nominal supply voltage (50/60 Hz)	400 V system	3-phase: 380/400/415/440/480 VAC
	200 V system	3-phase: 200/220/240 VAC
	Factor depending on the waveform	1.00
Power input		3-phase AC: 120 kVA
Rated output		65 kW (100 kV, 650 mA) Product of tube voltage and max. current that can flow in 0.1 s at 100 kV tube voltage
Short-time rating *2		150 kV 400 mA, 125 kV 500 mA, 100 kV 650 mA, 80 kV 800 mA
Nominal max. tube voltage and max. tube current that can flow at nominal max. tube voltage*2		Short-time rating: 150 kV 400 mA Long-time rating: 125 kV 9 mA
Max. tube current and max. tube voltage to achieve max. tube current *2		Short-time rating: 80 kV 800 mA Long-time rating: 125 kV 9 mA
Tube voltage and tube current combination for max. electrical output*2		Short-time rating: 100 kV 650 mA Long-time rating: 125 kV 9 mA
Min. tube current time product		0.5 mAs
Long-time rating *2		125 kV 9 mA
Nominal min. exposure time (AEC radiography) *4		3 ms
Dimensions	Operation panel	W308 × D82 × H345 mm
	Control cabinet	W700 × D400 × H1830 mm
Mass	Operation panel	2.5 kg
	Control cabinet	250 kg

*1: Setting range differs according to the X-ray tube type.

*2: Limited according to the X-ray tube type.

*3: The various conditions are as follows (conform to IEC-standards):
Tube voltage (within ± 8 %), Tube current (within ± 20 %)
mAs within ± (10 % + 0.2 mAs), Time within ± (10 % + 1 ms)

*4: 9 ms if both of the following conditions apply.

- Setting time is over 1s.
- Phototimer receiver inside the FPD is used.

 **UD150L-40E**

Item		Specifications	
Radiography technique ^{*1}		General radiography, Bucky radiography, auto-changer radiography	
Number of connectable X-ray tubes		1 tube	
Setting Range ^{*2 *3 *5}	Radiography	Tube voltage	40 to 150 kV
		Tube current	10 to 630 mA
			Any 12 of the following positions permitted by the X-ray tube can be used for each focus: 630, 560, 500, 450, 400, 360, 320, 280, 250, 220, 200, 180, 160, 140, 125, 110, 100, 90, 80, 71, 63, 56, 50, 45, 40, 36, 32, 28, 25, 22, 20, 18, 16, 14, 12, 11, 10 mA
		mAs	0.5 to 800 mAs
			Set from the following 65 positions. (500 mAs upper limit for AEC radiography.) 0.50, 0.56, 0.63, 0.71, 0.80, 0.90, 1.0, 1.1, 1.25, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10, 11, 12.5, 14, 16, 18, 20, 22, 25, 28, 32, 36, 40, 45, 50, 56, 63, 71, 80, 90, 100, 110, 125, 140, 160, 180, 200, 220, 250, 280, 320, 360, 400, 450, 500, 560, 630, 710, 800 mAs
Time	0.001 to 10 sec		
	Set from the following 81 positions. (Cannot be set with a mAs value below 0.5 or above 800 mAs. 500 mAs upper limit for AEC radiography.) 1.0, 1.1, 1.2, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10, 11, 12, 14, 16, 18, 20, 22, 25, 28, 32, 36, 40, 45, 50, 56, 63, 71, 80, 90, 100, 110, 125, 140, 160, 180, 200, 220, 250, 280, 320, 360, 400, 450, 500, 560, 630, 710, 800, 900 ms, 1.0, 1.1, 1.2, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10 sec		
Radiography programs		Advanced anatomical program method, offering up to 245 types of user-created radiography conditions.	
Display method		Display of radiography conditions, etc. Sub-display of related information	
Setting method		Sheet key	
Self-diagnostic functions		Display, Sub-display	
Nominal Supply Voltage (50/60 Hz)		3-phase ^{*4} : 200/220/240/380/400/415/440/480 VAC	
		1-phase: 200/220/240 VAC	
		Factor depending on the waveform: 1.00	
Power input		3-phase AC: 80 kVA Single-phase AC: 60 kVA	

Item		Specifications
Rated Output		3-phase: 50 kW (100 kV, 500 mA) 1-phase: 32 kW (100 kV, 320 mA) Product of tube voltage and max. current that can flow in 0.1 s at 100 kV tube voltage
Short-time Rating ^{*3}		3-phase: 150 kV 320 mA, 125 kV 400 mA, 100 kV 500 mA, 80 kV 630 mA 1-phase: 150 kV 200 mA, 125 kV 250 mA, 100 kV 320 mA, 80 kV 400 mA, 60 kV 500 mA
Long-time rating ^{*3}		125 kV 4 mA
Nominal max. tube voltage and max. tube current that can flow at nominal max. tube voltage ^{*3}		Short-time rating: 3-phase: 150 kV 320 mA 1-phase: 150 kV 200 mA Long-time rating: 125 kV 4 mA
Max. tube current and max. tube voltage to achieve max. tube current ^{*3}		Short-time rating: 3-phase: 80 kV 630 mA 1-phase: 60 kV 500 mA Long-time rating: 125 kV 4 mA
Tube voltage and tube current combination for max. electrical output ^{*3}		Short-time rating: 3-phase: 80 kV 630 mA, 100 kV 500 mA 1-phase: 80 kV 400 mA, 100 kV 320 mA Long-time rating: 125 kV 4 mA
Min. Tube current and time product		0.5 mAs
Nominal min. exposure time (AEC radiography)		3 ms
Dimensions	Operation panel	W308 x D65 x H345 mm
	Control cabinet	W700 x D400 x H1830 mm
Mass	Operation panel	2.0 kg
	Control cabinet	240 kg
Classification according to the System for Protection against Electric Shocks		Class I

*1: Max. of 7 techniques and 3 tables can be used. If the extended radiographic option is used, a total of 4 tables can be used.

*2: Setting range differs according to the X-ray tube type.

*3: Limited according to the X-ray tube type.

*4: When using a 3-phase power voltage of 200 V AC/ 220 V AC/240 V AC, the automatic transformer option is required.

*5: The various conditions are as follows (conform to IEC-standards):

Tube voltage (within $\pm 8\%$), Tube current (within $\pm 20\%$)
mAs within $\pm (10\% + 0.2 \text{ mAs})$, Time within $\pm (10\% + 1 \text{ ms})$

 **UD150L-40F**

Item		Specifications	
Radiography technique ^{*1}		General radiography, Bucky radiography, auto-changer radiography	
Number of connectable X-ray tubes		2 tubes	
Setting Range ^{*2 *3 *5}	Radiography	Tube voltage	40 to 150 kV
		Tube current	10 to 630 mA
			Any 12 of the following positions permitted by the X-ray tube can be used for each focus: 630, 560, 500, 450, 400, 360, 320, 280, 250, 220, 200, 180, 160, 140, 125, 110, 100, 90, 80, 71, 63, 56, 50, 45, 40, 36, 32, 28, 25, 22, 20, 18, 16, 14, 12, 11, 10 mA
		mAs	0.5 to 800 mAs
			Set from the following 65 positions. (500 mAs upper limit for AEC radiography.) 0.50, 0.56, 0.63, 0.71, 0.80, 0.90, 1.0, 1.1, 1.25, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10, 11, 12.5, 14, 16, 18, 20, 22, 25, 28, 32, 36, 40, 45, 50, 56, 63, 71, 80, 90, 100, 110, 125, 140, 160, 180, 200, 220, 250, 280, 320, 360, 400, 450, 500, 560, 630, 710, 800 mAs
		Time	0.001 to 10 sec
			Set from the following 81 positions. (Cannot be set with an mAs value below 0.5 or above 800 mAs. 500 mAs upper limit for AEC radiography.) 1.0, 1.1, 1.2, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10, 11, 12, 14, 16, 18, 20, 22, 25, 28, 32, 36, 40, 45, 50, 56, 63, 71, 80, 90, 100, 110, 125, 140, 160, 180, 200, 220, 250, 280, 320, 360, 400, 450, 500, 560, 630, 710, 800, 900 ms, 1.0, 1.1, 1.2, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10 sec
		Radiography programs	
Display method		Display of radiography conditions, etc. Sub-display of related information	
Setting method		Sheet key	
Self-diagnostic functions		Display, Sub-display	
Nominal supply voltage (50/60 Hz)		3-phase ^{*4} : 200/220/240/380/400/415/440/480 VAC	
		1-phase: 200/220/240 VAC	
		Factor depending on the waveform: 1.00	
Power input		3-phase AC: 80 kVA Single-phase AC: 60 kVA	

Item		Specifications
Rated Output		3-phase: 50 kW (100 kV, 500 mA) 1-phase: 32 kW (100 kV, 320 mA) Product of tube voltage and max. current that can flow in 0.1 sec at 100 kV tube voltage.
Short-time Rating *3		3-phase: 150 kV 320 mA, 125 kV 400 mA, 100 kV 500 mA, 80 kV 630 mA 1-phase: 150 kV 200 mA, 125 kV 250 mA, 100 kV 320 mA, 80 kV 400 mA, 60 kV 500 mA
Long-time rating *3		125 kV 4 mA
Nominal max. tube voltage and max. tube current that can flow at nominal max. tube voltage*3		Short-time rating: 3-phase: 150 kV 320 mA, 1-phase: 150 kV 200 mA Long-time rating: 125 kV 4 mA
Max. tube current and max. tube voltage to achieve max. tube current*3		Short-time rating: 3-phase: 80 kV 630 mA, 1-phase: 60 kV 500 mA Long-time rating: 125 kV 4 mA
Tube voltage and tube current combination for max. electrical output*3		Short-time rating: 3-phase: 80 kV 630 mA, 100 kV 500 mA 1-phase: 80 kV 400 mA, 100 kV 320 mA Long-time rating: 125 kV 4 mA
Min. Tube Current and Time Product		0.5 mAs
Nominal min. exposure time (AEC radiography)		3 ms
Dimensions	Operation panel	W308 x D65 x H345 mm
	Control cabinet	W700 x D400 x H1830 mm
Mass	Operation panel	2.0 kg
	Control cabinet	240 kg
Classification according to the System for Protection against Electric Shocks		Class I

*1: Max. techniques is 1. Max. tables are 4.

*2: Setting range differs according to the X-ray tube type.

*3: Limited according to the X-ray tube type.

*4: When using a 3-phase power voltage of 200 V AC/ 220 V AC/240 V AC, the automatic transformer option is required.

*5: The various conditions are as follows (conform to IEC-standards):

Tube voltage (within $\pm 8\%$), Tube current (within $\pm 20\%$)

mAs within $\pm (10\% + 0.2 \text{ mAs})$, Time within $\pm (10\% + 1 \text{ ms})$

■ **D150BC-41 and GSC-2002L**

Item		Specifications	
Radiography technique		General radiography, Bucky radiography, auto-changer radiography, tomography	
Number of connectable X-ray tubes		1 tube	
Setting range *1 *2 *3	Radiography	Tube voltage	40 to 150 kV
		Tube current	10 to 1000 mA
			Any 12 of the following positions permitted by the X-ray tube can be used for each focus: 1000, 900, 800, 710, 630, 560, 500, 450, 400, 360, 320, 280, 250, 220, 200, 180, 160, 140, 125, 110, 100, 90, 80, 71, 63, 56, 50, 45, 40, 36, 32, 28, 25, 22, 20, 18, 16, 14, 12, 11, 10 mA
		mAs	0.5 to 800 mAs
			Set from the following 65 positions. (500 mAs upper limit for AEC radiography.) 0.50, 0.56, 0.63, 0.71, 0.80, 0.90, 1.0, 1.1, 1.25, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10, 11, 12.5, 14, 16, 18, 20, 22, 25, 28, 32, 36, 40, 45, 50, 56, 63, 71, 80, 90, 100, 110, 125, 140, 160, 180, 200, 220, 250, 280, 320, 360, 400, 450, 500, 560, 630, 710, 800 mAs
		Time	0.001 to 10 sec
			Set from the following 81 positions. (Cannot be set with an mAs value below 0.5 or above 800 mAs. 500 mAs upper limit for AEC radiography.) 1.0, 1.1, 1.2, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10, 11, 12, 14, 16, 18, 20, 22, 25, 28, 32, 36, 40, 45, 50, 56, 63, 71, 80, 90, 100, 110, 125, 140, 160, 180, 200, 220, 250, 280, 320, 360, 400, 450, 500, 560, 630, 710, 800, 900 ms, 1.0, 1.1, 1.2, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10 sec
		Radiography programs	
Display method		Liquid-crystal display of radiography conditions, etc.	
Setting method		Set on touch panel	
Self-diagnostic functions		Displayed on touch panel	
Nominal supply voltage (50/60 Hz)	400 V system	3-phase: 380/400/415/440/480 VAC	
	200 V system	3-phase: 200/220/240 VAC	
	Factor depending on the waveform	1.00	

Item		Specifications
Power input		3-phase AC: 120 kVA
Rated output		80 kW (100 kV, 800 mA) Product of tube voltage and max. current that can flow in 0.1 s at 100 kV tube voltage
Short-time rating *2		150 kV 500 mA, 125 kV 630 mA, 100 kV 800 mA, 80 kV 1000 mA
Nominal max. tube voltage and max. tube current that can flow at nominal max. tube voltage *2		Short-time rating: 150 kV 500 mA Long-time rating: 125 kV 12 mA
Max. tube current and max. tube voltage to achieve max. tube current *2		Short-time rating: 80 kV 1000 mA Long-time rating: 75 kV 20 mA
Tube voltage and tube current combination for max. electrical output *2		Short-time rating: 80 kV 1000 mA, 100 kV 800 mA Long-time rating: 75 kV 20 mA, 125 kV 12 mA
Min. tube current time product		0.5 mAs
Long-time rating *2		75 kV 20 mA, 125 kV 12 mA
Nominal min. exposure time (AEC radiography) *4		3 ms
Dimensions	Operation panel	W308 × D82 × H345 mm
	Control cabinet	W700 × D400 × H1830 mm
Mass	Operation panel	2.5 kg
	Control cabinet	250 kg

*1: Setting range differs according to the X-ray tube type.

*2: Limited according to the X-ray tube type.

*3: The various conditions are as follows (conform to IEC-standards):
 Tube voltage (within ± 8 %), Tube current (within ± 20 %)
 mAs within ± (10 % + 0.2 mAs), Time within ± (10 % + 1 ms)

*4: 9 ms if both of the following conditions apply.

- Setting time is over 1s.
- Phototimer receiver inside the FPD is used.

D150LC-41 and GSC-2002L

Item		Specifications	
Radiography technique		General radiography, Bucky radiography, auto-changer radiography, tomography	
Number of connectable X-ray tubes		1 tube	
Setting range *1 *2 *3	Radiography	Tube voltage	40 to 150 kV
		Tube current	10 to 630 mA
			Any 12 of the following positions permitted by the X-ray tube can be used for each focus: 630, 560, 500, 450, 400, 360, 320, 280, 250, 220, 200, 180, 160, 140, 125, 110, 100, 90, 80, 71, 63, 56, 50, 45, 40, 36, 32, 28, 25, 22, 20, 18, 16, 14, 12, 11, 10 mA
		mAs	0.5 to 800 mAs
			Set from the following 65 positions. (500 mAs upper limit for AEC radiography.) 0.50, 0.56, 0.63, 0.71, 0.80, 0.90, 1.0, 1.1, 1.25, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10, 11, 12.5, 14, 16, 18, 20, 22, 25, 28, 32, 36, 40, 45, 50, 56, 63, 71, 80, 90, 100, 110, 125, 140, 160, 180, 200, 220, 250, 280, 320, 360, 400, 450, 500, 560, 630, 710, 800 mAs
		Time	0.001 to 10 sec
Set from the following 81 positions. (Cannot be set with an mAs value below 0.5 or above 800 mAs. 500 mAs upper limit for AEC radiography.) 1.0, 1.1, 1.2, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10, 11, 12, 14, 16, 18, 20, 22, 25, 28, 32, 36, 40, 45, 50, 56, 63, 71, 80, 90, 100, 110, 125, 140, 160, 180, 200, 220, 250, 280, 320, 360, 400, 450, 500, 560, 630, 710, 800, 900 ms, 1.0, 1.1, 1.2, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10 sec			
Radiography programs		Advanced anatomical program method, offering up to 800 types of user-created radiography conditions.	
Display method		Liquid-crystal display of radiography conditions, etc.	
Setting method		Set on touch panel	
Self-diagnostic functions		Displayed on touch panel	

Item		Specifications
Nominal supply voltage (50/60 Hz)	400 V system	3-phase: 200/220/240/380/400/415/440/480 VAC
	200 V system	Single-phase: 200/220/240 VAC
	Factor depending on the waveform	1.00
Power input		3-phase AC: 80 kVA Single-phase AC: 95 kVA
Rated output		50 kW (100 kV, 500 mA) Product of tube voltage and max. current that can flow in 0.1 s at 100 kV tube voltage
Short-time rating *2		150 kV 320 mA, 125 kV 400 mA, 100 kV 500 mA, 80 kV 630 mA
Nominal max. tube voltage and max. tube current that can flow at nominal max. tube voltage*2		Short-time rating: 150 kV 320 mA Long-time rating: 125 kV 9 mA
Max. tube current and max. tube voltage to achieve max. tube current *2		Short-time rating: 80 kV 630 mA Long-time rating: 125 kV 9 mA
Tube voltage and tube current combination for max. electrical output*2		Short-time rating: 80 kV 630 mA Long-time rating: 125 kV 9 mA
Min. tube current time product		0.5 mAs
Long-time rating *2		125 kV 9 mA
Nominal min. exposure time (AEC radiography) *4		3 ms
Dimensions	Operation panel	W308 × D82 × H345 mm
	Control cabinet	W700 × D400 × H1830 mm
Mass	Operation panel	2.5 kg
	Control cabinet	240 kg

*1: Setting range differs according to the X-ray tube type.

*2: Limited according to the X-ray tube type.

*3: The various conditions are as follows (conform to IEC-standards):
Tube voltage (within ± 8 %), Tube current (within ± 20 %)
mAs within ± (10 % + 0.2 mAs), Time within ± (10 % + 1 ms)

*4: 9 ms if both of the following conditions apply.

- Setting time is over 1s.
- Phototimer receiver inside the FPD is used.

D150VC-41 and GSC-2002L

Item		Specifications	
Radiography technique		General radiography, Bucky radiography, auto-changer radiography, tomography	
Number of connectable X-ray tubes		1 tube	
Setting range *1 *2 *3	Radiography	Tube voltage	40 to 150 kV
		Tube current	10 to 800 mA
			Any 12 of the following positions permitted by the X-ray tube can be used for each focus: 800,710,650, 560, 500, 450, 400, 360, 320, 280, 250, 220, 200, 180, 160, 140, 125, 110, 100, 90, 80, 71, 63, 56, 50, 45, 40, 36, 32, 28, 25, 22, 20, 18, 16, 14, 12, 11, 10 mA
		mAs	0.5 to 800 mAs
			Set from the following 65 positions. (500 mAs upper limit for AEC radiography.) 0.50, 0.56, 0.63, 0.71, 0.80, 0.90, 1.0, 1.1, 1.25, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10, 11, 12.5, 14, 16, 18, 20, 22, 25, 28, 32, 36, 40, 45, 50, 56, 63, 71, 80, 90, 100, 110, 125, 140, 160, 180, 200, 220, 250, 280, 320, 360, 400, 450, 500, 560, 630, 710, 800 mAs
		Time	0.001 to 10 sec
Set from the following 81 positions. (Cannot be set with an mAs value below 0.5 or above 800 mAs. 500 mAs upper limit for AEC radiography.) 1.0, 1.1, 1.2, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10, 11, 12, 14, 16, 18, 20, 22, 25, 28, 32, 36, 40, 45, 50, 56, 63, 71, 80, 90, 100, 110, 125, 140, 160, 180, 200, 220, 250, 280, 320, 360, 400, 450, 500, 560, 630, 710, 800, 900 ms, 1.0, 1.1, 1.2, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10 sec			
Radiography programs		Advanced anatomical program method, offering up to 800 types of user-created radiography conditions.	
Display method		Liquid-crystal display of radiography conditions, etc.	
Setting method		Set on touch panel	
Self-diagnostic functions		Displayed on touch panel	

Item		Specifications
Nominal supply voltage (50/60 Hz)	400 V system	3-phase: 380/400/415/440/480 VAC
	200 V system	3-phase: 200/220/240 VAC
	Factor depending on the waveform	1.00
Power input		3-phase AC: 120 kVA
Rated output		65 kW (100 kV, 650 mA) Product of tube voltage and max. current that can flow in 0.1 s at 100 kV tube voltage
Short-time rating *2		150 kV 400 mA, 125 kV 500 mA, 100 kV 650 mA, 80 kV 800 mA
Nominal max. tube voltage and max. tube current that can flow at nominal max. tube voltage*2		Short-time rating: 150 kV 400 mA Long-time rating: 125 kV 9 mA
Max. tube current and max. tube voltage to achieve max. tube current *2		Short-time rating: 80 kV 800 mA Long-time rating: 125 kV 9 mA
Tube voltage and tube current combination for max. electrical output*2		Short-time rating: 100 kV 650 mA Long-time rating: 125 kV 9 mA
Min. tube current time product		0.5 mAs
Long-time rating *2		125 kV 9 mA
Nominal min. exposure time (AEC radiography) *4		3 ms
Dimensions	Operation panel	W308 × D82 × H345 mm
	Control cabinet	W700 × D400 × H1830 mm
Mass	Operation panel	2.5 kg
	Control cabinet	250 kg

*1: Setting range differs according to the X-ray tube type.

*2: Limited according to the X-ray tube type.

*3: The various conditions are as follows (conform to IEC-standards):
Tube voltage (within $\pm 8\%$), Tube current (within $\pm 20\%$)
mAs within $\pm (10\% + 0.2 \text{ mAs})$, Time within $\pm (10\% + 1 \text{ ms})$

*4: 9 ms if both of the following conditions apply.

- Setting time is over 1s.
- Phototimer receiver inside the FPD is used.

■ **D150BC-41 and GSC-2002S**

Item		Specifications	
Radiography technique ^{*1}		General radiography, Bucky radiography, auto-changer radiography	
Number of connectable X-ray tubes		1 tube	
Setting range ^{*2 *3 *4}	Radiography	Tube voltage	40 to 150 kV
		Tube current	10 to 1000 mA
			Any 12 of the following positions permitted by the X-ray tube can be used for each focus: 1000, 900, 800, 710, 630, 560, 500, 450, 400, 360, 320, 280, 250, 220, 200, 180, 160, 140, 125, 110, 100, 90, 80, 71, 63, 56, 50, 45, 40, 36, 32, 28, 25, 22, 20, 18, 16, 14, 12, 11, 10 mA
		mAs	0.5 to 800 mAs
			Set from the following 65 positions. (500 mAs upper limit for AEC radiography.) 0.50, 0.56, 0.63, 0.71, 0.80, 0.90, 1.0, 1.1, 1.25, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10, 11, 12.5, 14, 16, 18, 20, 22, 25, 28, 32, 36, 40, 45, 50, 56, 63, 71, 80, 90, 100, 110, 125, 140, 160, 180, 200, 220, 250, 280, 320, 360, 400, 450, 500, 560, 630, 710, 800 mAs
		Time	0.001 to 10 sec
Set from the following 81 positions. (Cannot be set with an mAs value below 0.5 or above 800 mAs. 500 mAs upper limit for AEC radiography.) 1.0, 1.1, 1.2, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10, 11, 12, 14, 16, 18, 20, 22, 25, 28, 32, 36, 40, 45, 50, 56, 63, 71, 80, 90, 100, 110, 125, 140, 160, 180, 200, 220, 250, 280, 320, 360, 400, 450, 500, 560, 630, 710, 800, 900 ms, 1.0, 1.1, 1.2, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10 sec			
Radiography programs		Advanced anatomical program method, offering up to 245 types of user-created radiography conditions.	
Display method		Display of radiography conditions, etc. Sub-display of related information	
Setting method		Sheet key	
Self-diagnostic functions		Display, Sub-display	

Item		Specifications
Nominal supply voltage (50/60 Hz)	400 V system	3-phase: 380/400/415/440/480 VAC
	200 V system	3-phase: 200/220/240 VAC
	Factor depending on the waveform	1.00
Power input		3-phase AC: 120 kVA
Rated output		80 kW (100 kV, 800 mA) Product of tube voltage and max. current that can flow in 0.1 s at 100 kV tube voltage
Short-time rating *3		150 kV 500 mA, 125 kV 630 mA, 100 kV 800 mA, 80 kV 1000 mA
Nominal max. tube voltage and max. tube current that can flow at nominal max. tube voltage *3		Short-time rating: 150 kV 500 mA Long-time rating: 125 kV 12 mA
Max. tube current and max. tube voltage to achieve max. tube current *3		Short-time rating: 80 kV 1000 mA Long-time rating: 75 kV 20 mA
Tube voltage and tube current combination for max. electrical output *3		Short-time rating: 80 kV 1000 mA, 100 kV 800 mA Long-time rating: 75 kV 20 mA, 125 kV 12 mA
Min. tube current time product		0.5 mAs
Long-time rating *3		75 kV 20 mA, 125 kV 12 mA
Nominal min. exposure time (AEC radiography)		3 ms
Dimensions	Operation panel	W308 × D82 × H345 mm
	Control cabinet	W700 × D400 × H1830 mm
Mass	Operation panel	2.0 kg
	Control cabinet	250 kg

*1: Max. of 7 techniques and 3 tables can be used. If the extended radiographic option is used, a total of 4 tables can be used.

*2: Setting range differs according to the X-ray tube type.

*3: Limited according to the X-ray tube type.

*4: The various conditions are as follows (conform to IEC-standards):

Tube voltage (within ± 8 %), Tube current (within ± 20 %)
mAs within ± (10 % + 0.2 mAs), Time within ± (10 % + 1 ms)

D150LC-41 and GSC-2002S

Item		Specifications	
Radiography technique *1		General radiography, Bucky radiography, auto-changer radiography	
Number of connectable X-ray tubes		1 tube	
Setting range 2*3*4	Radiography	Tube voltage	40 to 150 kV
		Tube current	10 to 630 mA
			Any 12 of the following positions permitted by the X-ray tube can be used for each focus: 630, 560, 500, 450, 400, 360, 320, 280, 250, 220, 200, 180, 160, 140, 125, 110, 100, 90, 80, 71, 63, 56, 50, 45, 40, 36, 32, 28, 25, 22, 20, 18, 16, 14, 12, 11, 10 mA
		mAs	0.5 to 800 mAs
			Set from the following 65 positions. (500 mAs upper limit for AEC radiography.) 0.50, 0.56, 0.63, 0.71, 0.80, 0.90, 1.0, 1.1, 1.25, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10, 11, 12.5, 14, 16, 18, 20, 22, 25, 28, 32, 36, 40, 45, 50, 56, 63, 71, 80, 90, 100, 110, 125, 140, 160, 180, 200, 220, 250, 280, 320, 360, 400, 450, 500, 560, 630, 710, 800 mAs
		Time	0.001 to 10 sec
Set from the following 81 positions. (Cannot be set with an mAs value below 0.5 or above 800 mAs. 500 mAs upper limit for AEC radiography.) 1.0, 1.1, 1.2, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10, 11, 12, 14, 16, 18, 20, 22, 25, 28, 32, 36, 40, 45, 50, 56, 63, 71, 80, 90, 100, 110, 125, 140, 160, 180, 200, 220, 250, 280, 320, 360, 400, 450, 500, 560, 630, 710, 800, 900 ms, 1.0, 1.1, 1.2, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10 sec			
Radiography programs		Advanced anatomical program method, offering up to 245 types of user-created radiography conditions.	
Display method		Display of radiography conditions, etc. Sub-display of related information	
Setting method		Sheet key	
Self-diagnostic functions		Display, Sub-display	

Item		Specifications
Nominal supply voltage (50/60 Hz)	400 V system	3-phase: 200/220/240/380/400/415/440/480 VAC
	200 V system	Single-phase: 200/220/240 VAC
	Factor depending on the waveform	1.00
Power input		3-phase AC: 80 kVA Single-phase AC: 95 kVA
Rated output		50 kW (100 kV, 500 mA) Product of tube voltage and max. current that can flow in 0.1 s at 100 kV tube voltage
Short-time rating ^{*3}		150 kV 320 mA, 125 kV 400 mA, 100 kV 500 mA, 80 kV 630 mA
Nominal max. tube voltage and max. tube current that can flow at nominal max. tube voltage ^{*2}		Short-time rating: 150 kV 320 mA Long-time rating: 125 kV 9 mA
Max. tube current and max. tube voltage to achieve max. tube current ^{*3}		Short-time rating: 80 kV 630 mA Long-time rating: 125 kV 9 mA
Tube voltage and tube current combination for max. electrical output ^{*3}		Short-time rating: 80 kV 630 mA Long-time rating: 125 kV 9 mA
Min. tube current time product		0.5 mAs
Long-time rating ^{*3}		125 kV 9 mA
Nominal min. exposure time (AEC radiography)		3 ms
Dimensions	Operation panel	W308 × D82 × H345 mm
	Control cabinet	W700 × D400 × H1830 mm
Mass	Operation panel	2.0 kg
	Control cabinet	240 kg

*1: Max. of 7 techniques and 3 tables can be used. If the extended radiographic option is used, a total of 4 tables can be used.

*2: Setting range differs according to the X-ray tube type.

*3: Limited according to the X-ray tube type.

*4: The various conditions are as follows (conform to IEC-standards):

Tube voltage (within ± 8 %), Tube current (within ± 20 %)
mAs within ± (10 % + 0.2 mAs), Time within ± (10 % + 1 ms)

D150VC-41 and GSC-2002S

Item		Specifications	
Radiography technique ^{*1}		General radiography, Bucky radiography, auto-changer radiography	
Number of connectable X-ray tubes		1 tube	
Setting range ^{*2 *3 *4}	Radiography	Tube voltage	40 to 150 kV
		Tube current	10 to 800 mA
			Any 12 of the following positions permitted by the X-ray tube can be used for each focus: 800,710,650, 560, 500, 450, 400, 360, 320, 280, 250, 220, 200, 180, 160, 140, 125, 110, 100, 90, 80, 71, 63, 56, 50, 45, 40, 36, 32, 28, 25, 22, 20, 18, 16, 14, 12, 11, 10 mA
		mAs	0.5 to 800 mAs
			Set from the following 65 positions. (500 mAs upper limit for AEC radiography.) 0.50, 0.56, 0.63, 0.71, 0.80, 0.90, 1.0, 1.1, 1.25, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10, 11, 12.5, 14, 16, 18, 20, 22, 25, 28, 32, 36, 40, 45, 50, 56, 63, 71, 80, 90, 100, 110, 125, 140, 160, 180, 200, 220, 250, 280, 320, 360, 400, 450, 500, 560, 630, 710, 800 mAs
		Time	0.001 to 10 sec
Set from the following 81 positions. (Cannot be set with an mAs value below 0.5 or above 800 mAs. 500 mAs upper limit for AEC radiography.) 1.0, 1.1, 1.2, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10, 11, 12, 14, 16, 18, 20, 22, 25, 28, 32, 36, 40, 45, 50, 56, 63, 71, 80, 90, 100, 110, 125, 140, 160, 180, 200, 220, 250, 280, 320, 360, 400, 450, 500, 560, 630, 710, 800, 900 ms, 1.0, 1.1, 1.2, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10 sec			
Radiography programs		Advanced anatomical program method, offering up to 245 types of user-created radiography conditions.	
Display method		Display of radiography conditions, etc. Sub-display of related information	
Setting method		Sheet key	
Self-diagnostic functions		Display, Sub-display	

Item		Specifications
Nominal supply voltage (50/60 Hz)	400 V system	3-phase: 380/400/415/440/480 VAC
	200 V system	3-phase: 200/220/240 VAC
	Factor depending on the waveform	1.00
Power input		3-phase AC: 120 kVA
Rated output		65 kW (100 kV, 650 mA) Product of tube voltage and max. current that can flow in 0.1 s at 100 kV tube voltage
Short-time rating *3		150 kV 400 mA, 125 kV 500 mA, 100 kV 650 mA, 80 kV 800 mA
Nominal max. tube voltage and max. tube current that can flow at nominal max. tube voltage*3		Short-time rating: 150 kV 400 mA Long-time rating: 125 kV 9 mA
Max. tube current and max. tube voltage to achieve max. tube current *3		Short-time rating: 80 kV 800 mA Long-time rating: 125 kV 9 mA
Tube voltage and tube current combination for max. electrical output*3		Short-time rating: 100 kV 650 mA Long-time rating: 125 kV 9 mA
Min. tube current time product		0.5 mAs
Long-time rating *3		125 kV 9 mA
Nominal min. exposure time (AEC radiography)		3 ms
Dimensions	Operation panel	W308 × D82 × H345 mm
	Control cabinet	W700 × D400 × H1830 mm
Mass	Operation panel	2.0 kg
	Control cabinet	250 kg

*1: Max. of 7 techniques and 3 tables can be used. If the extended radiographic option is used, a total of 4 tables can be used.

*2: Setting range differs according to the X-ray tube type.

*3: Limited according to the X-ray tube type.

*4: The various conditions are as follows (conform to IEC-standards):

Tube voltage (within ± 8 %), Tube current (within ± 20 %)
mAs within ± (10 % + 0.2 mAs), Time within ± (10 % + 1 ms)

Options (common to X-ray high voltage generator)

Item	Specifications	
Phototimer (AEC) radiography	Combination with the following receiver permits phototimer (AEC) radiography. The following types can be used: <ol style="list-style-type: none"> ① Xe detector-type phototimer receiver (SPT-XD Series, etc.) ② Phototimer receiver inside the FPD (CXDI-720C Wireless, etc.) Permitted combination: up to three receivers of type ①. Type ② cannot be used for Bucky radiography. Type ② cannot be combined with GSC-2002S.	
B-40/L-40/V-40 Communication Unit	Permits communication of radiographic conditions with other DR system, etc.	
High Speed Rotation Starter SA-60	Supply voltage	Single-phase: 200 V, 208 V, 220 V, 230 V, 240 V (for power and control circuits)
	Maximum power consumption	7.5 kVA
	Frequency	50/60 Hz
	Supply capacity	5 kVA
	Permitted voltage range	±10 %
	Grounding	Grounding resistance: less than 100 Ω
	Dimensions	520 (W) × 400 (H) × 470 (D)
	Mass	50 kg
Other options	Starter Option Dose calculation unit option Auto Transformer option Illumination option ^{*1} Illumination Hand Switch option ^{*1} Extended radiographic option ^{*2}	

*1: For UD150L-40E/F

*2: For UD150L-40E

3.6.2 X-Ray Tube Support

■ CH-200

Item		Specifications	
Max, allowable weight of suspension		47 kg	
Balancing system		Spring-balancing type	
Ceiling fixture	Rail	Fixed rail of 4 m or 5.5 m length	
		Moving rail of 2 m, 2.6 m or 3.3 m length	
	Cabling	Cable hose	Cabling in the longitudinal and transversal directions using cable hoses
		Cable bear (Option)	Cabling in the longitudinal and transversal directions using cable bears
Movement of X-ray Tube Support	Vertical	160 cm	Electro-magnetic lock Lock pin mechanism can be skipped when moving at a speed higher than 25 cm/s.* ²
	Longitudinal	295 cm* ¹	
	Transversal	140 cm* ¹	
Rotation of X-ray tube support	Around vertical axis	± 180°* ³ Stops at every 90° angle. The equipment can be fixed at an intended angle with the electro-magnetic lock.	
	Around horizontal axis	– 180° to + 120° Stop at 0° and ± 90° angle. The equipment can be fixed at an intended angle with the electro-magnetic lock. Lock pin mechanism can be skipped when rotating at a speed higher than 80°/s.	
Indication	FFD (Focus-Film-distance)	3 digits, Digital display, Unit: cm (1 cm increment) or inch (0.5 inch increments)	
	X-ray tube angle	3 digits, Digital display, Unit: deg	
Display range	SID	50 to 999 cm	
	Rotation angle	Ceiling tube support mount position	(Unit: deg) (+: clockwise, –: counterclockwise)
		Upper left	0 to +120, 0 to –180
		Lower left	0 to +120, 0 to –180
		Upper right (Standard)	0 to +180, 0 to –120
Lower right	0 to +180, 0 to –120		

Item		Specifications
Tracking unit (Option)	Vertical tracking	X-ray tube assembly tracks the center of the X-ray field of the Bucky of X-ray radiography stand. Tracking reference position: Top reference, center reference, bottom reference
	Horizontal tracking	X-ray tube assembly moves to keep FFD constant for X-ray radiography table.
Tomography (Option)	Angle	8°, 20°, 30°, 40°
	Speed	Maximum 40°/sec
	Layer height	0 - 25 cm over tabletop
Tracking Switch kit (Option)	Irradiation field	Size types: Inches or cm, vertical and horizontal dimensions interchangeable <ul style="list-style-type: none"> When the size types are inches 17×17, 17×14, 14×14, 14×11, 12×10, 10×8, 17×7^{*4} When the size types are cm 43×43, 43×35, 35×35, 40×30, 30×24, 24×18, 43×18^{*4}
	Radiography reference position ^{*4}	Top reference, center reference, bottom reference
	Tracking operation	In conformity with the tracking function
Bucky tracking (Option)	Bucky tracking function	Bucky of X-ray radiography table tracks X-ray tube assembly.
Option for YSF-300	Operation of the table top of YSF-300	Joystick switch for operating the table top of YSF-300.
Power assist (Option)	Power assist function	Enables the X-ray tube support to be moved easily.
Auto positioning (Option)	Auto positioning function	X-ray tube assembly moves to the registered position automatically by using the remote controller.
Long view unit (Option)	Long view radiography function	Performs the operations required for long view radiography in combination with the X-ray radiography table or X-ray radiography stand.

Item		Specifications
Dongle unit (option)	Exposure field size selection function	Switches the exposure field to a size smaller than the cassette size used for the X-ray radiography stand or table. Size types: Inches or cm, vertical and horizontal dimensions interchangeable <ul style="list-style-type: none"> When the size types are inches 17×17, 17×14, 14×14, 14×11, 12×10, 10×8, 17×7, 16×12, 9.5×9.5 When the size types are cm 43×43, 43×35, 35×35, 40×30, 30×24, 24×18, 43×18, 35×30, 24×24
	Patient information display function	Displays the patient information on the touch panel.
	Long view radiography function by one press of exposure button	Holding down the exposure button once completes the entire exposure of long view radiography.
	Energy subtraction radiography function	Performs the operations required for energy subtraction radiography.
	Tomosynthesis radiography function	Performs the operations required for tomosynthesis radiography.
	Serial radiography function	Operations required for serial radiography can be performed when combined with certain radiography equipment.
Tube support (option) ^{*5}	Front mount	Tube support of standard type with control panel attached to the front of the X-ray tube unit.
	Rear mount ^{*6}	Tube support of type with control panel attached to the opposite side of the X-ray tube unit. Eases operations when X-ray tube support is installed against the wall of the examination room.
	Low ceiling type	Tube support of front mount type with X-ray tube unit attached 150 mm higher. Maintains SID in supine position radiography in examination rooms with low ceilings.
	Front mount L	Tube support of front mount type with X-ray tube unit attached 80 mm lower. Eases positioning by preventing interference between the lower edge of the tube support and the tabletop during lateral radiography using the radiography table.
Control cabinet	Dimension	W500 × D400 × H506 mm
	Weight	50 kg
Installation requirement	Standard height of ceiling	286 cm ^{*7}
	Installation area	A square of 250 cm × 450 cm or more, with door opening of 60 cm width.
	Gross mass (Weight)	250 kg ^{*8}
	Power supply	Supplied from the control cabinet

- *1: In the case of a 4 m fixed rail and a 2 m moving rail. For rails of other dimensions, refer to [Table 3.2](#). In optional tomography radiography and optional auto positioning, the longitudinal travel distance is 10 cm shorter.
- *2: This is available in the longitudinal and transversal directions only when equipped with a position detecting mechanism.
- *3: - 90° to + 30° for Low-ceiling type
- *4: Can be set when the equipment is combined with certain X-ray radiography stands only.
- *5: Additions and changes to the tube support option offer ways to maintain operability when the layout of the examination room has changed.
- *6: Power assist, auto positioning and long view radiography are not available on a rear mount support type.
- *7: The ceiling height of 286 cm satisfies the specification of the X-ray tube support; but the height can be less than this dimension but the vertical travel range may be restricted.
- *8: In the case of a 4 m fixed rail and a 2 m moving rail.

Table 3.2 Length of Rail and Moving Range of Device (Unit: m)

Rail		Moving Range of Device	
Fixed Rail	Moving Rail	Longitudinal	Transversal
4	2	2.95	1.4
4	2.6	2.95	2.0
4	3.3	2.95	2.7
5.5	2	4.45	1.4
5.5	2.6	4.45	2.0
5.5	3.3	4.45	2.7

■ CH-200M (Ceiling Suspension Type)

Item		Description	
Max, allowable mass of suspension		39 kg	
Balancing system		Spring-balancing type	
Ceiling fixture	Rail	Fixed rail of 4 m or 5.5 m length	
		Moving rail of 2 m, 2.6 m or 3.3 m length	
	Cabling	Cable hose	Cabling in the longitudinal and transversal directions using cable hoses
		Cable bear (Option)	Cabling in the longitudinal and transversal directions using cable bears
Movement of X-ray tube assembly	Vertical	160 cm	Electro-magnetic lock
	Longitudinal	295 cm ^{*1}	Lock pin mechanism can be skipped when moving at a speed higher than 25 cm/s. ^{*2}
	Transversal	140 cm ^{*1}	
Rotation of X-ray tube assembly	Around vertical axis	± 180° ^{*3} Stops at every 90° angle. The equipment can be fixed at an intended angle with the electro-magnetic lock.	
	Around horizontal axis	-180° to +120° Stops at 0°, ± 90° and -180° The equipment can be fixed at an intended angle with the electro-magnetic lock. Lock pin mechanism can be skipped when rotating at a speed higher than 110°/s.	
Display range	SID (Option)	0 to 999 cm	
	Rotation angle	Ceiling tube support mount position	(Unit: °) (+: clockwise, -: counterclockwise)
		Upper left	0 to +120, 0 to -180
		Lower left	0 to +120, 0 to -180
		Upper right (Standard)	0 to +120, 0 to -180
		Lower right	0 to +120, 0 to -180
Tracking unit (Option)	Vertical tracking	X-ray tube assembly tracks the center of the X-ray field of the Bucky of Shimadzu's stand or other manufacturer's stand. Tracking reference position: Top reference, Center reference	
	Horizontal tracking	X-ray tube assembly moves to keep FFD constant for Shimadzu's table or other manufacturer's table.	
Tracking Switch kit (Option)	Irradiation field	Size types: Inches or cm, vertical and horizontal dimensions interchangeable When the size types are inches 17×17, 17×14, 14×14, 14×11, 12×10, 10×8, 17×7 ^{*4} When the size types are cm 43×43, 43×35, 35×35, 40×30, 30×24, 24×18, 43×18 ^{*4}	
	Radiography reference position ^{*4}	Top reference, Center reference	
	Tracking operation	In conformity with the tracking function	

Item		Description
Tube support (option) ^{*5}	Front mount	Tube support of standard type with control panel attached to the front of the X-ray tube unit.
	Rear mount	Tube support of type with control panel attached to the opposite side of the X-ray tube unit. Eases operations when the ceiling tube support is installed against the wall of the examination room.
	Low ceiling type	Tube support of front mount type with X-ray tube unit attached 150 mm higher. Maintains SID in supine position radiography in examination rooms with low ceilings.
	Front mount L	Tube support of front mount type with X-ray tube unit attached 80 mm lower. Eases positioning by preventing interference between the lower edge of the tube support and the tabletop during lateral radiography using the radiography table.
Installation requirement	Standard height of ceiling	286 cm ^{*6}
	Installation area	A square of 250 cm × 450 cm or more, with door opening of 60 cm width.
	Gross mass	250 kg
	Power supply	Single phase AC100 V, 0.7 kVA, Max. 1.4 Ω, 50/60 Hz

*1: In the case of a 4 m fixed rail and a 2 m moving rail. For rails of other dimensions, refer to [Table 3.3](#).

*2: This is available in the longitudinal and transversal directions only when equipped with a position detecting mechanism.

*3: -90° to +30° for Low-ceiling type

*4: Can be set when the equipment is combined with certain X-ray radiography stands only.

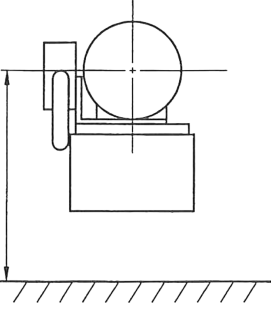
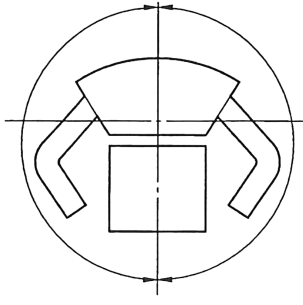
*5: Additions and changes to the tube support option offer ways to maintain operability when the layout of the examination room has changed.

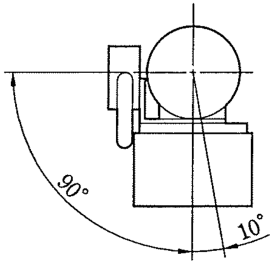
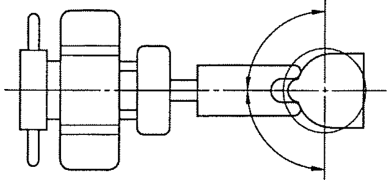
*6: The ceiling height of 286 cm satisfies the specification of the CH-200M (The recommended ceiling height for Low-ceiling type is 271 cm.); but the height can be less than this dimension but the vertical travel range may be restricted.

Table 3.3 Length of the rail and the moving range of device (Unit: m)

Rail		Moving range of device	
Fixed rail	Moving rail	Longitudinal	Transversal
4	2	2.95	1.4
4	2.6	2.95	2.0
4	3.3	2.95	2.7
5.5	2	4.45	1.4
5.5	2.6	4.45	2.0
5.5	3.3	4.45	2.7

FH-20HR, FH-20HS, FH-21HR, FH-21HS (Floor Mounted Type)

Item		Specifications
The maximum suspended mass		About 35 kg
Balancing method		counterbalance
Movements of X-ray tube unit	Vertical travel (distance between the focus and the floor)	About 400 - 1950 mm: continuously variable
	Operation	Manual, Electromagnetic brake
		
	longitudinal travel (along the guide rail)	About 2500 mm: continuously variable
	Operation	Manual, Electromagnetic brake
	Lateral travel (along the arm)	About 250: continuously variable
	Operation	Manual, Electromagnetic brake
	Rotation around horizontal axis	±180 degrees: continuously variable
Operation	Manual, Electromagnetic brake, click stop at three points, -90 degrees, 0 degree, +90 degrees	
Display	The tilt indicator on the control panel shows the tilt angle of the X-ray tube unit at intervals of 5 degrees.	
		

Item		Specifications	
Movements of X-ray tube unit	Rotation of X-ray tube unit (longer axis)	About 90 degrees upward: continuously variable About 10 degrees downward	
		Operation	Manual, Manual lock (with SHIMADZU X-ray tube unit)
		Display	The scale plate attached to the X-ray tube unit indicates the rotation angle of the X-ray tube unit at intervals of 5 degrees (with SHIMADZU X-ray tube unit).
	Rotation around vertical axis (For FH-20HR and FH-21HR)	About ±90 degrees	
Control Panel		Operation	Manual: click stop at three points, -90 degrees, 0 degree, +90 degrees
		Control panel of FH-20HR, FH-20HS, FH-21HR and FH-21HS Contents (1) Lock release switch for vertical movement..... 1 (2) Lock/Release switch for vertical movement of X-ray tube unit (for about 5 seconds) 1 (3) Lock release switch for longitudinal movement 1 (4) Lock release switch for lateral movement 1 (5) Lock release switch for tilt of X-ray tube unit..... 1 (6) Tilt indicator of X-ray tube unit 1 (7) Center stop mode switch 1 (8) Simultaneous lock/release switch for (1), (3), and (4)..... 1 (9) Rotation lock handle of X-ray tube unit (For SHIMADZU X-ray tube unit)..... 1 (10) Lock/Release knob for rotation around vertical axis (For FH-20HR and FH-21HS)..... 1	

Item		Specifications
Installation	Outside dimensions	FH-20HR: In accordance with Dimension 503-06196 FH-20HS: In accordance with Dimension 503-06218 FH-21HR: In accordance with Dimension 503-06197 FH-21HS: In accordance with Dimension 503-06212
	Floor space necessary for installation (mm)	About 1600W × 3600L
	Ceiling height necessary for installation (mm)	FH-20HR, FH-20HS: About 2300 or higher FH-21HR, FH-21HS: About 2350 - 2900
	Guide rail length (mm)	FH-20HR, FH-20HS: About 3500 (two floor rails) FH-21HR, FH-21HS: About 3500 (one floor rail, one ceiling rail)
	Mass	About 140 kg (except X-ray tube unit and collimator)
	Power supply	AC100 V, 0.3 kVA, 50/60 Hz

3.6.3 X-Ray Tube Unit

The specifications of the typical X-ray tube units are as follows:

0.6/1.2P326D-150

Item		Specifications	
Nominal X-ray tube Voltage IEC 60613:2010	Fluoroscopy	125 kV	
	Radiography	150 kV	
X-ray tube assembly	Max. heat content	1100 kJ (1600 kHU)	
	Nominal continuous input power IEC 60613:2010	470 W (660 HU/s) (with fan), 235 W (330 HU/s) (without fan)	
X-ray tube	Max. anode heat content	424 kJ (600 kHU)	
	Max. anode heat dissipation rate	2000 W (2820 HU/s)	
	Max. continuous heat dissipation rate	300 W (420 HU/s)	
	Continuous anode input power IEC 60613:2010	100 W (Repetition of radiographic exposure)	
Nominal focal spot value IEC 60336		0.6	1.2
Measuring method of focal spot size		Slit camera	
X-ray tube max. Fluoroscopic load (10min.)	Anode stationary	355 W (500 HU/s)	425 W (600 HU/s)
	Anode rotating	425 W (600 HU/s)	425 W (600 HU/s)
Nominal anode input power (0.1 sec, 180 Hz)		38 kW	96 kW
Nominal radiographic anode input power IEC 60613:2010		38 kW	96 kW
Max. filament voltage		12.5 V	18.4 V
Max. filament current* ¹		5.6 A	5.6 A
Anode Target	Material	Rhenium-tungsten faced molybdenum	
	Angle/diameter	12°/100 mm	
Anode rotation* ²		Direction of anode rotation is counter-clockwise as viewed from the cathode side, and R.P.M as follows. 9700 min. ⁻¹ (R.P.M.) at 180 Hz	
Minimum total filtration IEC 60601-2-28:2017		1.7 mm Al/75 kV (Including added filter* ³)	

Item		Specifications
Permanent filtration ^{*4}	IEC 60601-2-28:2017	1.0 mm Al/75 kV IEC 60522:1999 (without added filter)
	JIS Z 4751-2-28:2008 (IEC 60601-2-28:1993)	Min. 1.5 mm Al at 70kV ^{*5} (Including added filter)
Leakage radiation ^{*6} IEC 60601-1-3:2008+A1:2013		Leakage radiation in hour from the X-ray tube assembly and collimator is less than 0.87 mGy at a distance of 1 meter from the focal spot. However, leakage radiation in an hour from the collimator is less than 0.30 mGy.
X-ray radiation field		430 mm × 430 mm (at distance of 1000mm from focal spot)
IEC classification IEC 60601-1:2005+A1:2012		CLASS I
Mass ^{*7}		22 kg
High voltage connector		IEC 60526 type

- *1: This value is the maximum value usable in tube current adjustment, and its limit in usual use is less than 5.2 A for both 0.6 mm focus and 1.2 mm focus.
- *2: This apparatus shall be used in combination with Shimadzu's starter SA-42. The recommended frequency of input power to the stator is less than once a minute.
- *3: Added filter
Added filter (3 pieces of 0.3 mm Al filter, Min. 0.7 mm Al equivalent considering the tolerance of thickness) is inserted in X-ray port. It should not be removed in any case to attain specified total filtration.
- *4: Inherent filtration of X-ray tube is min. 0.7 mm Al.
- *5: This value is including the added filter. Total filtration is stated as permanent filtration according to JIS Z 4751-2-28:2008 which is the IDT standard to IEC 60601-2-28:1993.

*6: Leakage radiation dose measuring condition

(1) 125 kV, 425 W continuous

Actual leakage radiation dose measuring condition: 125 kV 125 W continuous

Maximum leakage radiation dose measuring condition: 125 kV 425 W continuous

Maximum leakage radiation value is calculated as follows.

(Maximum leakage radiation value)

= (425 W/125 W) × (Measured leakage radiation on actual condition)

= 3.4 × (Measured leakage radiation on actual condition)

(2) Repetition of radiographic load so as to become average load of 100 W at 150kV

Actual measuring condition: 150 kV 100 mA 0.1sec 5 times

Maximum measuring condition: 150 kV 100 mA 0.1 sec 240 times/hour (100 W)

Maximum leakage radiation value is calculated as follows.

(Maximum leakage radiation value)

= (240 times/5 times) × (Measured leakage radiation on actual condition)

= 48 × (Measured leakage radiation on actual condition)

(3) Unit

$0.87\text{mGy} = 2.58 \times 10^{-5}\text{C/kg} = 100\text{mR}$

*7: Mass of option parts

Support ring: 1.2 kg, Fan: 0.5 kg

0.6/1.2P366D-150

Item		Specifications	
Nominal X-ray tube voltage IEC 60613:2010	Fluoroscopy	125 kV	
	Radiography	150 kV	
X-ray tube assembly	Max. heat content	1100 kJ (1600 kHU)	
	Nominal continuous input power IEC 60613:2010	470 W (660 HU/s) (with fan), 235 W (330 HU/s) (without fan)	
X-ray tube	Max. anode heat content	424 kJ (600 kHU)	
	Max. anode heat dissipation rate	2000 W (2820 HU/s)	
	Max. continuous heat dissipation rate	300 W (420 HU/s)	
	Continuous anode input power IEC 60613:2010	100 W (Repetition of radiographic exposure)	
Nominal focal spot value IEC 60336		0.6	1.2
Measuring method of focal spot size		Slit camera	
X-ray tube max. Fluoroscopic load (10min.)	Anode stationary	355 W (500 HU/s)	425 W (600 HU/s)
	Anode rotating	425 W (600 HU/s)	425 W (600 HU/s)
Nominal anode input power (0.1 sec, 180 Hz)		24 kW	65 kW
Nominal radiographic anode input power IEC 60613:2010		24 kW	65 kW
Max. filament voltage		7.6 V	12.1 V
Max. filament current ^{*1}		5.6 A	5.6 A
Anode target	Material	Rhenium-tungsten faced molybdenum	
	Angle/ diameter	16°/100 mm	
Anode rotation ^{*2}		Direction of anode rotation is counter-clockwise as viewed from the cathode side, and R.P.M as follows. 9700 min. ⁻¹ (R.P.M.) at 180 Hz	
Minimum total filtration IEC 60601-2-28:2017		1.7 mm Al/75 kV (Including added filter ^{*3})	
Permanent filtration ^{*4}	IEC 60601-2-28:2017	1.0 mm Al/75 kV IEC 60522:1999 (without added filter)	
	JIS Z 4751-2-28:2008 (IEC 60601-2-28:1993)	Min. 1.5 mm Al at 70 kV ^{*5} (Including added filter)	

Item	Specifications
Leakage radiation *6 IEC 60601-1-3:2008+A1:2013	Leakage radiation in hour from the X-ray tube assembly and collimator is less than 0.87 mGy at a distance of 1 meter from the focal spot. However, leakage radiation in an hour from the collimator is less than 0.30mGy.
X-ray radiation field	350 mm × 350 mm (at distance of 650 mm from focal spot)
IEC classification IEC 60601-1:2005	CLASS I
Mass *7	22 kg
High voltage connector	IEC 60526 type

*1: This value is the maximum value usable in tube current adjustment, and its limit in usual use is less than 5.2 A for both 0.6 mm focus and 1.2 mm focus.

*2: This apparatus shall be used in combination with Shimadzu's starter SA-42. The recommended frequency of input power to the stator is less than once a minute.

*3: Added filter

Added filter (3 pieces of 0.3 mm Al filter, Min. 0.7 mm Al equivalent considering the tolerance of thickness) is inserted in X-ray port. It should not be removed in any case to attain specified total filtration.

*4: Inherent filtration of X-ray tube is min. 0.7 mm Al.

*5: This value is including the added filter. Total filtration is stated as permanent filtration according to JIS Z 4751-2-28:2008 which is the IDT standard to IEC 60601-2-28:1993.

*6: Leakage radiation dose measuring condition

(1) 125 kV, 425 W continuous

Actual leakage radiation dose measuring condition: 125 kV 125 W continuous

Maximum leakage radiation dose measuring condition: 125 kV 425 W continuous

Maximum leakage radiation value is calculated as follows.

(Maximum leakage radiation value)

= (425 W/125 W) × (Measured leakage radiation on actual condition)

= 3.4 × (Measured leakage radiation on actual condition)

(2) Repetition of radiographic load so as to become average load of 100 W at 150 kV

Actual measuring condition: 150 kV 100 mA 0.1sec 5times

Maximum measuring condition: 150 kV 100 mA 0.1sec 240 times/hour (100 W)

Maximum leakage radiation value is calculated as follows.

(Maximum leakage radiation value)

= (240 times/5 times) × (Measured leakage radiation on actual condition)

= 48 × (Measured leakage radiation on actual condition)

(3) Unit

$0.87\text{mGy} = 2.58 \times 10^{-5}\text{C/kg} = 100\text{mR}$

*7: Mass of option parts

Support ring: 1.2 kg, Fan: 0.5 kg

0.6/1.2P324DK-125

Item		Specifications	
Nominal X-ray tube Voltage IEC 60613:2010	Fluoroscopy	125 kV	
	Radiography	150 kV	
X-ray tube assembly	Max. heat content	1100 kJ (1600 kHU)	
	Nominal continuous input power IEC 60613:2010	470 W (660 HU/s) (with fan), 235 W (330 HU/s) (without fan)	
X-ray tube	Max. anode heat content	280 kJ (400 kHU)	
	Max. anode heat dissipation rate	1600 W (2200 HU/s)	
	Max. continuous heat dissipation rate	300 W (420 HU/s)	
	Continuous anode input power IEC 60613:2010	100 W (Repetition of radiographic exposure)	
Nominal focal spot value IEC 60336		0.6	1.2
Measuring method of focal spot size		Slit camera	
X-ray tube max. Fluoroscopic load (10min.)	Anode stationary	355 W (500 HU/s)	425 W (600 HU/s)
	Anode rotating	425 W (600 HU/s)	425 W (600 HU/s)
Nominal anode input power (0.1 sec, 180 Hz)		38 kW	92 kW
Nominal radiographic anode input power IEC 60613:2010		38 kW	92 kW
Max. filament voltage		12.5 V	18.4 V
Max. filament current ^{*1}		5.6 A	5.6 A
Anode Target	Material	Rhenium-tungsten faced molybdenum	
	Angle/diameter	12°/100 mm	
Anode rotation ^{*2}		Direction of anode rotation is counter-clockwise as viewed from the cathode side, and R.P.M as follows. 2700 min. ⁻¹ (R.P.M.) at 50 Hz 3200 min. ⁻¹ (R.P.M.) at 60 Hz 9700 min. ⁻¹ (R.P.M.) at 180 Hz	
Minimum total filtration IEC 60601-2-28:2010		1.7 mm Al/75 kV ^{*3} (Including added filter)	
Permanent filtration ^{*4, 6}	IEC 60601-2-28:2010	1.0 mm Al/75 kV IEC 60522:1999 (without added filter)	
	JIS Z 4751-2-28:2008 (IEC 60601-2-28:1993)	Min. 1.5 mm Al at 70kV ^{*5} (Including added filter)	

Item	Specifications
Leakage radiation* ⁷ IEC 60601-1-3:2008	Leakage radiation in hour from the X-ray tube assembly and collimator is less than 0.87 mGy at a distance of 1 meter from the focal spot. However, leakage radiation in an hour from the collimator is less than 0.30 mGy.
X-ray radiation field	350 mm × 350 mm (at distance of 1000mm from focal spot)
IEC classification IEC 60601-1:2005	CLASS I
Mass* ⁸	21 kg
High voltage connector	IEC 60526 type

*1: This value is the maximum value usable in tube current adjustment, and its limit in usual use is less than 5.2 A for both 0.6 mm focus and 1.2 mm focus.

*2: This apparatus shall be used in combination with Shimadzu's starter SA-60. The recommended frequency of input power to the stator is less than once a minute.

*3: Added filter

Added filter (3 pieces of 0.3 mm Al filter, Min. 0.7 mm Al equivalent considering the tolerance of thickness) is inserted in X-ray port. It should not be removed in any case to attain specified total filtration.

*4: Inherent filtration of X-ray tube is min. 0.7 mm Al.

*5: This value is including the added filter. Total filtration is stated as permanent filtration according to JIS Z 4751-2-28:2008 which is the IDT standard to IEC 60601-2-28:1993.

*6: Two statements of permanent filtration are marked on X-ray tube assembly shipped to CE marking area in order to meet the both standards.

*7: Leakage radiation dose measuring condition

(1) 125 kV, 425 W continuous

Actual leakage radiation dose measuring condition: 125 kV 125 W continuous

Maximum leakage radiation dose measuring condition: 125 kV 425 W continuous

Maximum leakage radiation value is calculated as follows.

(Maximum leakage radiation value)

= (425 W/125 W) × (Measured leakage radiation on actual condition)

= 3.4 × (Measured leakage radiation on actual condition)

(2) Repetition of radiographic load so as to become average load of 100 W at 150kV

Actual measuring condition: 150 kV 100 mA 0.1sec 5 times

Maximum measuring condition: 150 kV 100 mA 0.1 sec 240 times/hour (100 W)

Maximum leakage radiation value is calculated as follows.

(Maximum leakage radiation value)

= (240 times/5 times) × (Measured leakage radiation on actual condition)

= 48 × (Measured leakage radiation on actual condition)

(3) Unit

$0.87\text{mGy} = 2.58 \times 10^{-5}\text{C/kg} = 100\text{mR}$

*8: Mass of option parts

Support ring: 1.2 kg, Fan: 0.5 kg

0.6/1.2P364DK-125

Item		Specifications	
Nominal X-ray tube voltage IEC 60613:2010	Fluoroscopy	125 kV	
	Radiography	150 kV	
X-ray tube assembly	Max. heat content	1100 kJ (1600 kHU)	
	Nominal continuous input power IEC 60613:2010	470 W (660 HU/s) (with fan), 235 W (330 HU/s) (without fan)	
X-ray tube	Max. anode heat content	280 kJ (400 kHU)	
	Max. anode heat dissipation rate	1600 W (2200 HU/s)	
	Max. continuous heat dissipation rate	300 W (420 HU/s)	
	Continuous anode input power IEC 60613:2010	100 W (Repetition of radiographic exposure)	
Nominal focal spot value IEC 60336		0.6	1.2
Measuring method of focal spot size		Slit camera	
X-ray tube max. Fluoroscopic load (10min.)	Anode stationary	355 W (500 HU/s)	425 W (600 HU/s)
	Anode rotating	425 W (600 HU/s)	425 W (600 HU/s)
Nominal anode input power (0.1 sec, 180 Hz)		24 kW	65 kW
Nominal radiographic anode input power IEC 60613:2010		24 kW	65 kW
Max. filament voltage		7.6 V	12.1 V
Max. filament current ^{*1}		5.6 A	5.6 A
Anode target	Material	Rhenium-tungsten faced molybdenum	
	Angle/ diameter	16°/100 mm	
Anode rotation ^{*2}		Direction of anode rotation is counter-clockwise as viewed from the cathode side, and R.P.M as follows. 2700 min. ⁻¹ (R.P.M.) at 50 Hz 3200 min. ⁻¹ (R.P.M.) at 60 Hz 9700 min. ⁻¹ (R.P.M.) at 180 Hz	
Minimum total filtration IEC 60601-2-28:2010		1.7 mm Al/75 kV (Including added filter ^{*3})	
Permanent filtration ^{*4,6}	IEC 60601-2-28:2010	1.0 mm Al/75 kV IEC 60522:1999 (without added filter)	
	JIS Z 4751-2-28:2008 (IEC 60601-2-28:1993)	Min. 1.5 mm Al at 70 kV ^{*5} (Including added filter)	

Item	Specifications
Leakage radiation ^{*7} IEC 60601-1-3:2008	Leakage radiation in hour from the X-ray tube assembly and collimator is less than 0.87 mGy at a distance of 1 meter from the focal spot. However, leakage radiation in an hour from the collimator is less than 0.30mGy.
X-ray radiation field	350 mm × 350 mm (at distance of 1000 mm from focal spot)
IEC classification IEC 60601-1:2005	CLASS I
Mass ^{*8}	21 kg
High voltage connector	IEC 60526 type

- *1: This value is the maximum value usable in tube current adjustment, and its limit in usual use is less than 5.2 A for both 0.6 mm focus and 1.2 mm focus.
- *2: This apparatus shall be used in combination with Shimadzu's starter SA-60. The recommended frequency of input power to the stator is less than once a minute.
- *3: Added filter
Added filter (3 pieces of 0.3 mm Al filter, Min. 0.7 mm Al equivalent considering the tolerance of thickness) is inserted in X-ray port. It should not be removed in any case to attain specified total filtration.
- *4: Inherent filtration of X-ray tube is min. 0.7 mm Al.
- *5: This value is including the added filter. Total filtration is stated as permanent filtration according to JIS Z 4751-2-28:2008 which is the IDT standard to IEC 60601-2-28:1993.
- *6: Two statements of permanent filtration are marked on X-ray tube assembly shipped to CE marking area in order to meet the both standards.
- *7: Leakage radiation dose measuring condition
- (1) 125 kV, 425 W continuous
Actual leakage radiation dose measuring condition: 125 kV 125 W continuous
Maximum leakage radiation dose measuring condition: 125 kV 425 W continuous
Maximum leakage radiation value is calculated as follows.
(Maximum leakage radiation value)
= (425 W/125 W) × (Measured leakage radiation on actual condition)
= 3.4 × (Measured leakage radiation on actual condition)
- (2) Repetition of radiographic load so as to become average load of 100 W at 150 kV
Actual measuring condition: 150 kV 100 mA 0.1sec 5times
Maximum measuring condition: 150 kV 100 mA 0.1sec 240 times/hour (100 W)
Maximum leakage radiation value is calculated as follows.
(Maximum leakage radiation value)
= (240 times/5 times) × (Measured leakage radiation on actual condition)
= 48 × (Measured leakage radiation on actual condition)
- (3) Unit
0.87mGy = 2.58×10^{-5} C/kg = 100mR
- *8: Mass of option parts
Support ring: 1.2 kg, Fan: 0.5 kg

0.6/1.2P324DK-85

Item		Specifications	
Nominal X-ray tube voltage IEC 60613:2010	Fluoroscopy	125 kV	
	Radiography	150 kV	
X-ray tube assembly	Max. heat content	1100 kJ (1600 kHU)	
	Nominal continuous input power IEC 60613:2010	470 W (660 HU/s) (with fan), 235 W (330 HU/s) (without fan)	
X-ray tube	Max. anode heat content	280 kJ (400 kHU)	
	Max. anode heat dissipation rate	1600 W (2200 HU/s)	
	Max. continuous heat dissipation rate	300 W (420 HU/s)	
	Continuous anode input power IEC 60613:2010	100 W (Repetition of radiographic exposure)	
Nominal focal spot value IEC 60336		0.6	1.2
Measuring method of focal spot size		Slit camera	
X-ray tube max. Fluoroscopic load (10min.)	Anode stationary	355 W (500 HU/s)	425 W (600 HU/s)
	Anode rotating	425 W (600 HU/s)	425 W (600 HU/s)
Nominal anode input power (0.1 sec, 180 Hz)		38 kW	92 kW
Nominal radiographic anode input power IEC 60613:2010		38 kW	92 kW
Max. filament voltage		12.5 V	18.4 V
Max. filament current ^{*1}		5.6 A	5.6 A
Anode target	Material	Rhenium-tungsten faced molybdenum	
	Angle/diameter	12°/100 mm	
Anode rotation ^{*2}		Direction of anode rotation is counter-clockwise as viewed from the cathode side, and R.P.M as follows. 2700 min. ⁻¹ (R.P.M.) at 50 Hz 3200 min. ⁻¹ (R.P.M.) at 60 Hz 9700 min. ⁻¹ (R.P.M.) at 180 Hz	
Minimum total filtration IEC 60601-2-28:2010		1.7 mm Al/75 kV (Including added filter ^{*3})	
Permanent filtration ^{*4} .	IEC 60601-2-28:2010	1.0 mm Al/75 kV IEC 60522:1999 (without added filter)	
	JIS Z 4751-2-28:2008 (IEC 60601-2-28:1993)	Min. 1.5 mm Al at 70 kV ^{*5} (Including added filter)	

Item	Specifications
Leakage radiation ^{*6} IEC 60601-1-3:2008	Leakage radiation in hour from the X-ray tube assembly and collimator is less than 0.87 mGy at a distance of 1 meter from the focal spot. However, leakage radiation in an hour from the collimator is less than 0.30 mGy.
X-ray radiation field	350 mm × 350 mm (at distance of 1000 mm from focal spot)
IEC classification IEC 60601-1:2005	CLASS I
Mass ^{*7}	21 kg
High voltage connector	IEC 60526 type

*1: This value is the maximum value usable in tube current adjustment, and its limit in usual use is less than 5.2 A for both 0.6 mm focus and 1.2 mm focus.

*2: This apparatus shall be used in combination with Shimadzu's starter. The recommended frequency of input power to the stator is less than once a minute.

*3: Added filter

Added filter (3 pieces of 0.3 mm Al filter, Min. 0.7 mm Al equivalent considering the tolerance of thickness) is inserted in X-ray port. It should not be removed in any case to attain specified total filtration.

*4: Inherent filtration of X-ray tube is min. 0.7 mm Al.

*5: This value is including the added filter. Total filtration is stated as permanent filtration according to JIS Z 4751-2-28:2008 which is the IDT standard to IEC 60601-2-28:1993.

*6: Leakage radiation dose measuring condition

(1) 125 kV, 425 W continuous

Actual leakage radiation dose measuring condition: 125 kV 125 W continuous

Maximum leakage radiation dose measuring condition: 125 kV 425 W continuous

Maximum leakage radiation value is calculated as follows.

(Maximum leakage radiation value)

= (425 W/125 W) × (Measured leakage radiation on actual condition)

= 3.4 × (Measured leakage radiation on actual condition)

(2) Repetition of radiographic load so as to become average load of 100W at 150kV

Actual measuring condition: 150 kV 100 mA 0.1 sec 5 times

Maximum measuring condition: 150 kV 100 mA 0.1 sec 240 times/hour (100 W)

Maximum leakage radiation value is calculated as follows.

(Maximum leakage radiation value)

= (240 times/5 times) × (Measured leakage radiation on actual condition)

= 48 × (Measured leakage radiation on actual condition)

(3) Unit

0.87 mGy = 2.58×10^{-5} C/kg = 100 mR

*7: Mass of option parts

Support ring: 1.2 kg, Fan: 0.5 kg

0.6/1.2P364DK-85

Item		Specifications	
Nominal X-ray tube voltage IEC 60613:2010	Fluoroscopy	125 kV	
	Radiography	150 kV	
X-ray tube assembly	Max. heat content	1100 kJ (1600 kHU)	
	Nominal continuous input power IEC 60613:2010	470 W (660 HU/s) (with fan), 235 W (330 HU/s) (without fan)	
X-ray tube	Max. anode heat content	280 kJ (400 kHU)	
	Max. anode heat dissipation rate	1600 W (2200 HU/s)	
	Max. continuous heat dissipation rate	300 W (420 HU/s)	
	Continuous anode input power IEC 60613:2010	100 W (Repetition of radiographic exposure)	
Nominal focal spot value IEC 60336		0.6	1.2
Measuring method of focal spot size		Slit camera	
X-ray tube max. Fluoroscopic load (10min.)	Anode stationary	355 W (500 HU/s)	425 W (600 HU/s)
	Anode rotating	425 W (600 HU/s)	425 W (600 HU/s)
Nominal anode input power (0.1 sec, 180 Hz)		24 kW	65 kW
Nominal radiographic anode input power IEC 60613:2010		24 kW	65 kW
Max. filament voltage		7.6 V	12.1 V
Max. filament current ^{*1}		5.6 A	5.6 A
Anode Target	Material	Rhenium-tungsten faced molybdenum	
	Angle/ diameter	16°/100 mm	
Anode rotation ^{*2}		Direction of anode rotation is counter-clockwise as viewed from the cathode side, and R.P.M as follows. 2700 min. ⁻¹ (R.P.M.) at 50 Hz 3200 min. ⁻¹ (R.P.M.) at 60 Hz 9700 min. ⁻¹ (R.P.M.) at 180 Hz	
Minimum total filtration IEC 60601-2-28:2010		1.7 mm Al/75 kV (Including added filter ^{*3})	
Permanent filtration ^{*4,6}	IEC 60601-2-28:2010	1.0 mm Al/75 kV IEC 60522:1999 (without added filter)	
	JIS Z 4751-2-28:2008 (IEC 60601-2-28:1993)	Min. 1.5 mm Al at 70 kV ^{*5} (Including added filter)	

Item	Specifications
Leakage radiation *7 IEC 60601-1-3:2008	Leakage radiation in hour from the X-ray tube assembly and collimator is less than 0.87mGy at a distance of 1 meter from the focal spot. However, leakage radiation in an hour from the collimator is less than 0.30mGy.
X-ray radiation field	350 mm × 350 mm (at distance of 1000mm from focal spot)
IEC classification IEC 60601-1:2005	CLASS I
Mass *8	21 kg
High voltage connector	IEC 60526 type

- *1: This value is the maximum value usable in tube current adjustment, and its limit in usual use is less than 5.2 A for both 0.6 mm focus and 1.2 mm focus.
- *2: This apparatus shall be used in combination with Shimadzu's starter. The recommended frequency of input power to the stator is less than once a minute.
- *3: Added filter
Added filter (3 pieces of 0.3 mm Al filter, Min. 0.7 mmAl equivalent considering the tolerance of thickness) is inserted in X-ray port. It should not be removed in any case to attain specified total filtration.
- *4: Inherent filtration of X-ray tube is min. 0.7 mm Al.
- *5: This value is including the added filter. Total filtration is stated as permanent filtration according to JIS Z 4751-2-28:2008 which is the IDT standard to IEC 60601-2-28:1993.
- *6: Two statements of permanent filtration are marked on X-ray tube assembly shipped to CE marking area in order to meet the both standards.
- *7: Leakage radiation dose measuring condition
- (1) 125 kV, 425 W continuous
Actual leakage radiation dose measuring condition: 125 kV 125 W continuous
Maximum leakage radiation dose measuring condition: 125 kV 425 W continuous
Maximum leakage radiation value is calculated as follows.
(Maximum leakage radiation value)
= (425 W/125 W) × (Measured leakage radiation on actual condition)
= 3.4 × (Measured leakage radiation on actual condition)
- (2) Repetition of radiographic load so as to become average load of 100 W at 150 kV
Actual measuring condition: 150 kV 100 mA 0.1 sec 5 times
Maximum measuring condition: 150 kV 100 mA 0.1 sec 240 times/hour (100 W)
Maximum leakage radiation value is calculated as follows.
(Maximum leakage radiation value)
= (240 times/5 times) × (Measured leakage radiation on actual condition)
= 48 × (Measured leakage radiation on actual condition)
- (3) Unit
 $0.87\text{mGy} = 2.58 \times 10^{-5}\text{C/kg} = 100\text{mR}$
- *8: Mass of option parts
Support ring: 1.2 kg, Fan: 0.5 kg

0.6/1.2P164DK-85

Item		Specifications	
Nominal X-ray tube voltage IEC 60613:2010	Fluoroscopy	125 kV	
	Radiography	150 kV	
X-ray tube assembly	Max. heat content	1100 kJ (1600 kHU)	
	Nominal continuous input power IEC 60613:2010	470 W (660 HU/s) (with fan), 235 W (330 HU/s) (without fan)	
X-ray tube	Max. anode heat content	280 kJ (400 kHU)	
	Max. anode heat dissipation rate	1600 W (2200 HU/s)	
	Max. continuous heat dissipation rate	300 W (420 HU/s)	
	Continuous anode input power IEC 60613:2010	100 W (Repetition of radiographic exposure)	
Nominal focal spot value IEC 60336		0.6	1.2
Measuring method of focal spot size		Slit camera	
X-ray tube max. Fluoroscopic load (10min.)	Anode stationary	355 W (500 HU/s)	425 W (600 HU/s)
	Anode rotating	425 W (600 HU/s)	425 W (600 HU/s)
Nominal anode input power (0.1 sec)	50 Hz (164DK)	12.7 kW	34.3 kW
	60 Hz (164DK)	13.8 kW	37.3 kW
	180 Hz (364DK)	24 kW	65 kW
Nominal radiographic anode input power (180 Hz) IEC 60613:2010	50 Hz (164DK)	12.7 kW	34.3 kW
	60 Hz (164DK)	13.8 kW	37.3 kW
	180 Hz (364DK)	24 kW	65 kW
Max. filament voltage		7.6 V	12.1 V
Max. filament current* ¹		5.6 A	5.6 A
Anode Target	Material	Rhenium-tungsten faced molybdenum	
	Angle/diameter	16°/100 mm	
Anode rotation* ²		Direction of anode rotation is counter-clockwise as viewed from the cathode side, and R.P.M as follows. 2700 min. ⁻¹ (R.P.M.) at 50 Hz 3200 min. ⁻¹ (R.P.M.) at 60 Hz 9700 min. ⁻¹ (R.P.M.) at 180 Hz	
Minimum total filtration IEC 60601-2-28:2017		1.7 mm Al/75 kV (Including added filter* ³)	
Permanent filtration * ⁴	IEC 60601-2-28:2017	1.0 mm Al/75 kV IEC 60522:1999 (without added filter)	
	JIS Z 4751-2-28:2008 (IEC 60601-2-28:1993)	Min. 1.5 mm Al at 70 kV * ⁵ (Including added filter)	

Item	Specifications
Leakage radiation *6 IEC 60601-1-3:2008+A1:2013	Leakage radiation in hour from the X-ray tube assembly and collimator is less than 0.87mGy at a distance of 1 meter from the focal spot. However, leakage radiation in an hour from the collimator is less than 0.30mGy.
X-ray radiation field	350 mm × 350 mm (at distance of 650 mm from focal spot)
IEC classification IEC 60601-1:2005+A1:2012	CLASS I
Mass *7	21 kg
High voltage connector	IEC 60526 type

*1: This value is the maximum value usable in tube current adjustment, and its limit in usual use is less than 5.2 A for both 0.6 mm focus and 1.2 mm focus.

*2: The recommended frequency of input power to the stator is less than once a minute.

*3: Added filter

Added filter (3 pieces of 0.3 mm Al filter, Min. 0.7 mmAl equivalent considering the tolerance of thickness) is inserted in X-ray port. It should not be removed in any case to attain specified total filtration.

*4: Inherent filtration of X-ray tube is min. 0.7 mm Al.

*5: This value is including the added filter. Total filtration is stated as permanent filtration according to JIS Z 4751-2-28:2008 which is the IDT standard to IEC 60601-2-28:1993.

*6: Leakage radiation dose measuring condition

(1) 125 kV, 425 W continuous

Actual leakage radiation dose measuring condition: 125 kV 125 W continuous

Maximum leakage radiation dose measuring condition: 125 kV 425 W continuous

Maximum leakage radiation value is calculated as follows.

(Maximum leakage radiation value)

= (425 W/125 W) × (Measured leakage radiation on actual condition)

= 3.4 × (Measured leakage radiation on actual condition)

(2) Repetition of radiographic load so as to become average load of 100 W at 150 kV

Actual measuring condition: 150 kV 100 mA 0.1 sec 5 times

Maximum measuring condition: 150 kV 100 mA 0.1 sec 240 times/hour (100 W)

Maximum leakage radiation value is calculated as follows.

(Maximum leakage radiation value)

= (240 times/5 times) × (Measured leakage radiation on actual condition)

= 48 × (Measured leakage radiation on actual condition)

(3) Unit

$0.87\text{mGy} = 2.58 \times 10^{-5}\text{C/kg} = 100\text{mR}$

*7: Mass of option parts

Support ring: 1.2 kg, Fan: 0.5 kg

0.6/1.2P323DK-85

Item		Specifications	
Nominal X-ray tube voltage IEC 60613:2010	Fluoroscopy	125 kV	
	Radiography	150 kV	
X-ray tube assembly	Max. heat content	1100 kJ (1600 kHU)	
	Nominal continuous input power IEC 60613:2010	470 W (660 HU/s) (with fan), 235 W (330 HU/s) (without fan)	
X-ray tube	Max. anode heat content	210 kJ (300 kHU)	
	Max. anode heat dissipation rate	1200 W (1690 HU/s)	
	Max. continuous heat dissipation rate	250 W (350 HU/s)	
	Continuous anode input power IEC 60613:2010	100 W (Repetition of radiographic exposure)	
Nominal focal spot value IEC 60336		0.6	1.2
Measuring method of focal spot size		Slit camera	
X-ray tube max. Fluoroscopic load (10min.)	Anode stationary	200 W (280 HU/s)	355 W (500 HU/s)
	Anode rotating	355 W (500 HU/s)	425 W (600 HU/s)
Nominal anode input power (0.1 sec, 180 Hz)		38 kW	92 kW
Nominal radiographic anode input power IEC 60613:2010		38 kW	92 kW
Max. filament voltage		12.5 V	18.4 V
Max. filament current ^{*1}		5.6 A	5.6 A
Anode Target	Material	Rhenium-tungsten faced molybdenum	
	Angle/ diameter	12°/100 mm	
Anode rotation ^{*2}		Direction of anode rotation is counter-clockwise as viewed from the cathode side, and R.P.M as follows. 2700 min. ⁻¹ (R.P.M.) at 50 Hz 3200 min. ⁻¹ (R.P.M.) at 60 Hz 9700 min. ⁻¹ (R.P.M.) at 180 Hz	
Minimum total filtration IEC 60601-2-28:2017		1.7 mm Al/75 kV (Including added filter ^{*3})	
Permanent filtration ^{*4}	IEC 60601-2-28:2017	1.0 mm Al/75 kV IEC 60522:1999 (without added filter)	
	JIS Z 4751-2-28:2008 (IEC 60601-2-28:1993)	Min. 1.5 mm Al at 70 kV ^{*5} (Including added filter)	

Item	Specifications
Leakage radiation *6 IEC 60601-1-3:2008+A1:2013	Leakage radiation in hour from the X-ray tube assembly and collimator is less than 0.87mGy at a distance of 1 meter from the focal spot. However, leakage radiation in an hour from the collimator is less than 0.30mGy.
X-ray radiation field	350 mm × 350 mm (at distance of 1000 mm from focal spot)
IEC classification IEC 60601-1:2005+A1:2012	CLASS I
Mass *7	21 kg
High voltage connector	IEC 60526 type

*1: This value is the maximum value usable in tube current adjustment, and its limit in usual use is less than 5.2 A for both 0.6 mm focus and 1.2 mm focus.

*2: The recommended frequency of input power to the stator is less than once a minute.

*3: Added filter

Added filter (3 pieces of 0.3 mm Al filter, Min. 0.7 mmAl equivalent considering the tolerance of thickness) is inserted in X-ray port. It should not be removed in any case to attain specified total filtration.

*4: Inherent filtration of X-ray tube is min. 0.7 mm Al.

*5: This value is including the added filter. Total filtration is stated as permanent filtration according to JIS Z 4751-2-28:2008 which is the IDT standard to IEC 60601-2-28:1993.

*6: Leakage radiation dose measuring condition

(1) 125 kV, 425 W continuous

Actual leakage radiation dose measuring condition: 125 kV 125 W continuous

Maximum leakage radiation dose measuring condition: 125 kV 425 W continuous

Maximum leakage radiation value is calculated as follows.

(Maximum leakage radiation value)

= (425 W/125 W) × (Measured leakage radiation on actual condition)

= 3.4 × (Measured leakage radiation on actual condition)

(2) Repetition of radiographic load so as to become average load of 100 W at 150 kV

Actual measuring condition: 150 kV 100 mA 0.1 sec 5 times

Maximum measuring condition: 150 kV 100 mA 0.1 sec 240 times/hour (100 W)

Maximum leakage radiation value is calculated as follows.

(Maximum leakage radiation value)

= (240 times/5 times) × (Measured leakage radiation on actual condition)

= 48 × (Measured leakage radiation on actual condition)

(3) Unit

$0.87\text{mGy} = 2.58 \times 10^{-5}\text{C/kg} = 100\text{mR}$

*7: Mass of option parts

Support ring: 1.2 kg, Fan: 0.5 kg

0.6/1.2P38DE-85

Item		Specifications	
Nominal X-ray tube voltage IEC 60613:2010	Fluoroscopy	125 kV	
	Radiography	150 kV	
X-ray tube assembly	Max. heat content	1100 kJ (1600 kHU)	
	Nominal continuous input power IEC 60613:2010	470 W (660 HU/s) (with fan), 235 W (330 HU/s) (without fan)	
X-ray tube	Max. anode heat content	140 kJ (200 kHU)	
	Max. anode heat dissipation rate	640 W (900 HU/s)	
	Max. continuous heat dissipation rate	210 W (300 HU/s)	
	Continuous anode input power IEC 60613:2010	100 W (Repetition of radiographic exposure)	
Nominal focal spot value IEC 60336		0.6	1.2
Measuring method of focal spot size		Slit camera	
X-ray tube max. Fluoroscopic load (10min.)	Anode stationary	355 W (500 HU/s)	425 W (600 HU/s)
	Anode rotating	425 W (600 HU/s)	425 W (600 HU/s)
Nominal anode input power (0.1 sec, 180Hz)		37 kW	85 kW
Nominal radiographic anode input power (180Hz) IEC 60613:2010		37 kW	85 kW
Max. filament voltage		12.5 V	18.4 V
Max. filament current ^{*1}		5.6 A	5.6 A
Anode target	Material	Rhenium-tungsten faced molybdenum	
	Angle/ diameter	12°/100 mm	
Anode rotation ^{*2}		Direction of anode rotation is counter-clockwise as viewed from the cathode side, and R.P.M as follows. 2700 min. ⁻¹ (R.P.M.) at 50 Hz 3200 min. ⁻¹ (R.P.M.) at 60 Hz 9700 min. ⁻¹ (R.P.M.) at 180 Hz	
Minimum total filtration IEC 60601-2-28:2010		1.7 mm Al/75 kV (Including added filter ^{*3})	
Permanent filtration ^{*4,6}	IEC 60601-2-28:2010	1.0 mm Al/75 kV IEC 60522:1999 (without added filter)	
	JIS Z 4751-2-28:2008 (IEC 60601-2-28:1993)	Min. 1.5 mm Al at 70 kV ^{*5} (Including added filter)	
Leakage radiation ^{*7} IEC 60601-1-3:2008		Leakage radiation in hour from the X-ray tube assembly and collimator is less than 0.87mGy at a distance of 1 meter from the focal spot. However, leakage radiation in an hour from the collimator is less than 0.30 mGy.	

Item	Specifications
X-ray radiation field	350 mm × 350 mm (at distance of 1000 mm from focal spot)
IEC classification IEC 60601-1:2005	CLASS I
Mass ^{*8}	21 kg
High voltage connector	IEC 60526 type

- *1: This value is the maximum value usable in tube current adjustment, and its limit in usual use is less than 5.2 A for both 0.6 mm focus and 1.2 mm focus.
- *2: This apparatus shall be used in combination with Shimadzu's starter. The recommended frequency of input power to the stator is less than once a minute.
- *3: Added filter
Added filter (3 pieces of 0.3 mm Al filter, Min. 0.7 mmAl equivalent considering the tolerance of thickness) is inserted in X-ray port. It should not be removed in any case to attain specified total filtration.
- *4: Inherent filtration of X-ray tube is min. 0.7 mm Al.
- *5: This value is including the added filter. Total filtration is stated as permanent filtration according to JIS Z 4751-2-28:2008 which is the IDT standard to IEC 60601-2-28:1993
- *6: Two statements of permanent filtration are marked on X-ray tube assembly shipped to CE marking area in order to meet the both standards.
- *7: Leakage radiation dose measuring condition
- (1) 125 kV, 425 W continuous
Actual leakage radiation dose measuring condition: 125 kV 125 W continuous
Maximum leakage radiation dose measuring condition: 125 kV 425 W continuous
Maximum leakage radiation value is calculated as follows.
(Maximum leakage radiation value)
= (425 W/125 W) × (Measured leakage radiation on actual condition)
= 3.4 × (Measured leakage radiation on actual condition)
- (2) Repetition of radiographic load so as to become average load of 100 W at 150 kV
Actual measuring condition: 150 kV 100 mA 0.1sec 5 times
Maximum measuring condition: 150 kV 100 mA 0.1sec 240 times/hour (100 W)
Maximum leakage radiation value is calculated as follows.
(Maximum leakage radiation value)
= (240 times/5 times) × (Measured leakage radiation on actual condition)
= 48 × (Measured leakage radiation on actual condition)
- (3) Unit
 $0.87\text{mGy} = 2.58 \times 10^{-5}\text{C/kg} = 100\text{mR}$
- *8: Mass of option parts
Support ring: 1.2 kg, Fan: 0.5 kg

0.6/1.2P18DE-85

Item		Specifications	
Nominal X-ray tube voltage IEC 60613:2010	Fluoroscopy	125 kV	
	Radiography	150 kV	
X-ray tube assembly	Max. heat content	1100 kJ (1600 kHU)	
	Nominal continuous input power IEC 60613:2010	470 W (660 HU/s) (with fan), 235 W (330 HU/s) (without fan)	
X-ray tube	Max. anode heat content	140 kJ (200 kHU)	
	Max. anode heat dissipation rate	640 W (900 HU/s)	
	Max. continuous heat dissipation rate	210 W (300 HU/s)	
	Continuous anode input power IEC 60613:2010	100 W (Repetition of radiographic exposure)	
Nominal focal spot value IEC 60336		0.6	1.2
Measuring method of focal spot size		Slit camera	
X-ray tube max. Fluoroscopic load (10min.)	Anode stationary	355 W (500 HU/s)	425 W (600 HU/s)
	Anode rotating	425 W (600 HU/s)	425 W (600 HU/s)
Nominal anode input power (0.1 sec)	50 Hz (18DE)	18 kW	48 kW
	60 Hz (18DE)	21 kW	53 kW
	180 Hz (38DE)	37 kW	85 kW
Nominal radiographic anode input power (180 Hz) IEC 60613:2010	50 Hz (18DE)	18 kW	48 kW
	60 Hz (18DE)	21 kW	53 kW
	180 Hz (38DE)	37 kW	85 kW
Max. filament voltage		12.5 V	18.4 V
Max. filament current* ¹		5.6 A	5.6 A
Anode Target	Material	Rhenium-tungsten faced molybdenum	
	Angle/diameter	12°/100 mm	
Anode rotation* ²		Direction of anode rotation is counter-clockwise as viewed from the cathode side, and R.P.M as follows. 2700 min. ⁻¹ (R.P.M.) at 50 Hz 3200 min. ⁻¹ (R.P.M.) at 60 Hz 9700 min. ⁻¹ (R.P.M.) at 180 Hz	
Minimum total filtration IEC 60601-2-28:2017		1.7 mm Al/75 kV (Including added filter* ³)	
Permanent filtration * ⁴	IEC 60601-2-28:2017	1.0 mm Al/75 kV IEC 60522:1999 (without added filter)	
	JIS Z 4751-2-28:2008 (IEC 60601-2-28:1993)	Min. 1.5 mm Al at 70 kV * ⁵ (Including added filter)	

Item	Specifications
Leakage radiation *6 IEC 60601-1-3:2008+A1:2013	Leakage radiation in hour from the X-ray tube assembly and collimator is less than 0.87mGy at a distance of 1 meter from the focal spot. However, leakage radiation in an hour from the collimator is less than 0.30mGy.
X-ray radiation field	350 mm × 350 mm (at distance of 1000 mm from focal spot)
IEC classification IEC 60601-1:2005+A1:2012	CLASS I
Mass *7	21 kg
High voltage connector	IEC 60526 type

*1: This value is the maximum value usable in tube current adjustment, and its limit in usual use is less than 5.2 A for both 0.6 mm focus and 1.2 mm focus.

*2: The recommended frequency of input power to the stator is less than once a minute.

*3: Added filter

Added filter (3 pieces of 0.3 mm Al filter, Min. 0.7 mmAl equivalent considering the tolerance of thickness) is inserted in X-ray port. It should not be removed in any case to attain specified total filtration.

*4: Inherent filtration of X-ray tube is min. 0.7 mm Al.

*5: This value is including the added filter. Total filtration is stated as permanent filtration according to JIS Z 4751-2-28:2008 which is the IDT standard to IEC 60601-2-28:1993.

*6: Leakage radiation dose measuring condition

(1) 125 kV, 425 W continuous

Actual leakage radiation dose measuring condition: 125 kV 125 W continuous

Maximum leakage radiation dose measuring condition: 125 kV 425 W continuous

Maximum leakage radiation value is calculated as follows.

(Maximum leakage radiation value)

= (425 W/125 W) × (Measured leakage radiation on actual condition)

= 3.4 × (Measured leakage radiation on actual condition)

(2) Repetition of radiographic load so as to become average load of 100 W at 150 kV

Actual measuring condition: 150 kV 100 mA 0.1sec 5 times

Maximum measuring condition: 150 kV 100 mA 0.1sec 240 times/hour (100 W)

Maximum leakage radiation value is calculated as follows.

(Maximum leakage radiation value)

= (240 times/5 times) × (Measured leakage radiation on actual condition)

= 48 × (Measured leakage radiation on actual condition)

(3) Unit

$0.87\text{mGy} = 2.58 \times 10^{-5}\text{C/kg} = 100\text{mR}$

*7: Mass of option parts

Support ring: 1.2 kg, Fan: 0.5 kg

0.6/1.2P33DK-85

Item		Specifications	
Nominal X-ray tube voltage IEC 60613:2010	Fluoroscopy	125 kV	
	Radiography	150 kV	
X-ray tube assembly	Max. heat content	1100 kJ (1600 kHU)	
	Nominal continuous input power IEC 60613:2010	470 W (660 HU/s) (with fan), 235 W (330 HU/s) (without fan)	
X-ray tube	Max. anode heat content	140 kJ (200 kHU)	
	Max. anode heat dissipation rate	640 W (900 HU/s)	
	Max. continuous heat dissipation rate	210 W (300 HU/s)	
	Continuous anode input power IEC 60613:2010	100 W (Repetition of radiographic exposure)	
Nominal focal spot value IEC 60336		0.6	1.2
Measuring method of focal spot size		Slit camera	
X-ray tube max. Fluoroscopic load (10min.)	Anode stationary	285W (400HU/s)	425W (600HU/s)
	Anode rotating	355W (500HU/s)	425W (600HU/s)
Nominal anode input power (0.1 sec, 180Hz)		24 kW	65 kW
Nominal radiographic anode input power (180Hz) IEC 60613:2010		24 kW	65 kW
Max. filament voltage		7.6 V	12.1 V
Max. filament current ^{*1}		5.6 A	5.6 A
Anode target	Material	Rhenium-tungsten faced molybdenum	
	Angle/ diameter	16°/100 mm	
Anode rotation ^{*2}		Direction of anode rotation is counter-clockwise as viewed from the cathode side, and R.P.M as follows. 2700 min. ⁻¹ (R.P.M.) at 50 Hz 3200 min. ⁻¹ (R.P.M.) at 60 Hz 9700 min. ⁻¹ (R.P.M.) at 180 Hz	
Minimum total filtration IEC 60601-2-28:2010		1.7 mm Al/75 kV (Including added filter ^{*3})	
Permanent filtration ^{*4,6}	IEC 60601-2-28:2010	1.0 mm Al/75 kV IEC 60522:1999 (without added filter)	
	JIS Z 4751-2-28:2008 (IEC 60601-2-28:1993)	Min. 1.5 mm Al at 70 kV ^{*5} (Including added filter)	

Item	Specifications
Leakage radiation *7 IEC 60601-1-3:2008	Leakage radiation in hour from the X-ray tube assembly and collimator is less than 0.87 mGy at a distance of 1 meter from the focal spot. However, leakage radiation in an hour from the collimator is less than 0.30 mGy.
X-ray radiation field	350 mm × 350 mm (at distance of 1000 mm from focal spot)
IEC classification IEC 60601-1:2005	CLASS I
Mass *8	21 kg
High voltage connector	IEC 60526 type

*1: This value is the maximum value usable in tube current adjustment, and its limit in usual use is less than 5.2 A for both 0.6 mm focus and 1.2 mm focus.

*2: This apparatus shall be used in combination with Shimadzu's starter. The recommended frequency of input power to the stator is less than once a minute.

*3: Added filter

Added filter (3 pieces of 0.3mm Al filter, Min. 0.7mmAl equivalent considering the tolerance of thickness) is inserted in X-ray port. It should not be removed in any case to attain specified total filtration.

*4: Inherent filtration of X-ray tube is min. 0.7 mm Al.

*5: This value is including the added filter. Total filtration is stated as permanent filtration according to JIS Z 4751-2-28:2008 which is the IDT standard to IEC 60601-2-28:1993.

*6: Two statements of permanent filtration are marked on X-ray tube assembly shipped to CE marking area in order to meet the both standards.

*7: Leakage radiation dose measuring condition

(1) 125 kV, 425 W continuous

Actual leakage radiation dose measuring condition: 125 kV 125 W continuous

Maximum leakage radiation dose measuring condition: 125 kV 425 W continuous

Maximum leakage radiation value is calculated as follows.

(Maximum leakage radiation value)

= (425 W/125 W) × (Measured leakage radiation on actual condition)

= 3.4 × (Measured leakage radiation on actual condition)

(2) Repetition of radiographic load so as to become average load of 100W at 150kV

Actual measuring condition: 150 kV 100 mA 0.1sec 5 times

Maximum measuring condition: 150 kV 100 mA 0.1 sec 240 times/hour (100 W)

Maximum leakage radiation value is calculated as follows.

(Maximum leakage radiation value)

= (240 times/5 times) × (Measured leakage radiation on actual condition)

= 48 × (Measured leakage radiation on actual condition)

(3) Unit

$$0.87\text{mGy} = 2.58 \times 10^{-5} \text{C/kg} = 100\text{mR}$$

*8: Mass of option parts

Support ring: 1.2 kg, Fan: 0.5 kg

0.6/1.2P13DK-85

Item		Specifications	
Nominal X-ray tube voltage IEC 60613:2010	Fluoroscopy	125 kV	
	Radiography	150 kV	
X-ray tube assembly	Max. heat content	1100 kJ (1600 kHU)	
	Nominal continuous input power IEC 60613:2010	470 W (660 HU/s) (with fan), 235 W (330 HU/s) (without fan)	
X-ray tube	Max. anode heat content	140 kJ (200 kHU)	
	Max. anode heat dissipation rate	640 W (900 HU/s)	
	Max. continuous heat dissipation rate	210 W (300 HU/s)	
	Continuous anode input power IEC 60613:2010	100 W (Repetition of radiographic exposure)	
Nominal focal spot value IEC 60336		0.6	1.2
Measuring method of focal spot size		Slit camera	
X-ray tube max. Fluoroscopic load (10min.)	Anode stationary	285 W (400 HU/s)	425 W (600 HU/s)
	Anode rotating	355 W (500 HU/s)	425 W (600 HU/s)
Nominal anode input power (0.1 sec)	50 Hz (13DK)	12.5 kW	34.5 kW
	60 Hz (13DK)	14 kW	37.5 kW
	180 Hz (33DK)	24 kW	65 kW
Nominal radiographic anode input power IEC 60613:2010	50 Hz (13DK)	12.5 kW	34.5 kW
	60 Hz (13DK)	14 kW	37.5 kW
	180 Hz (33DK)	24 kW	65 kW
Max. filament voltage		7.6 V	12.1 V
Max. filament current* ¹		5.6 A	5.6 A
Anode Target	Material	Rhenium-tungsten faced molybdenum	
	Angle/diameter	16°/100 mm	
Anode rotation* ²		Direction of anode rotation is counter-clockwise as viewed from the cathode side, and R.P.M as follows. 2700 min. ⁻¹ (R.P.M.) at 50 Hz 3200 min. ⁻¹ (R.P.M.) at 60 Hz 9700 min. ⁻¹ (R.P.M.) at 180 Hz	
Minimum total filtration IEC 60601-2-28:2017		1.7 mm Al/75 kV (Including added filter* ³)	
Permanent filtration* ⁴	IEC 60601-2-28:2017	1.0 mm Al/75 kV IEC 60522:1999 (without added filter)	
	JIS Z 4751-2-28:2008 (IEC 60601-2-28:1993)	Min. 1.5 mm Al at 70 kV* ⁵ (Including added filter)	

Item	Specifications
Leakage radiation *6 IEC 60601-1-3:2008+A1:2013	Leakage radiation in hour from the X-ray tube assembly and collimator is less than 0.87mGy at a distance of 1 meter from the focal spot. However, leakage radiation in an hour from the collimator is less than 0.30mGy.
X-ray radiation field	350 mm × 350 mm (at distance of 650 mm from focal spot)
IEC classification IEC 60601-1:2005+A1:2012	CLASS I
Mass *7	21 kg
High voltage connector	IEC 60526 type

*1: This value is the maximum value usable in tube current adjustment, and its limit in usual use is less than 5.2 A for both 0.6 mm focus and 1.2 mm focus.

*2: The recommended frequency of input power to the stator is less than once a minute.

*3: Added filter

Added filter (3 pieces of 0.3 mm Al filter, Min. 0.7 mmAl equivalent considering the tolerance of thickness) is inserted in X-ray port. It should not be removed in any case to attain specified total filtration.

*4: Inherent filtration of X-ray tube is min. 0.7 mm Al.

*5: This value is including the added filter. Total filtration is stated as permanent filtration according to JIS Z 4751-2-28:2008 which is the IDT standard to IEC 60601-2-28:1993

*6: Leakage radiation dose measuring condition

(1) 125 kV, 425 W continuous

Actual leakage radiation dose measuring condition: 125 kV 125 W continuous

Maximum leakage radiation dose measuring condition: 125 kV 425 W continuous

Maximum leakage radiation value is calculated as follows.

(Maximum leakage radiation value)

= (425 W/125 W) × (Measured leakage radiation on actual condition)

= 3.4 × (Measured leakage radiation on actual condition)

(2) Repetition of radiographic load so as to become average load of 100 W at 150 kV

Actual measuring condition: 150 kV 100 mA 0.1sec 5 times

Maximum measuring condition: 150 kV 100 mA 0.1sec 240 times/hour (100 W)

Maximum leakage radiation value is calculated as follows.

(Maximum leakage radiation value)

= (240 times/5 times) × (Measured leakage radiation on actual condition)

= 48 × (Measured leakage radiation on actual condition)

(3) Unit

$0.87\text{mGy} = 2.58 \times 10^{-5}\text{C/kg} = 100\text{mR}$

*7: Mass of option parts

Support ring: 1.2 kg, Fan: 0.5 kg

1/2P18DK-85

Item		Specifications	
Nominal X-ray tube voltage IEC 60613:2010	Fluoroscopy	125 kV	
	Radiography	150 kV	
X-ray tube assembly	Max. heat content	1100 kJ (1600 kHU)	
	Nominal continuous input power IEC 60613:2010	470 W (660 HU/s) (with fan), 235 W (330 HU/s) (without fan)	
X-ray tube	Max. anode heat content	140 kJ (200 kHU)	
	Max. anode heat dissipation rate	640 W (900 HU/s)	
	Max. continuous heat dissipation rate	210 W (300 HU/s)	
	Continuous anode input power IEC 60613:2010	100 W (Repetition of radiographic exposure)	
Nominal focal spot value IEC 60336		1	2
Measuring method of focal spot size		Slit camera	
X-ray tube max. Fluoroscopic load (10min.)	Anode stationary	355 W (500 HU/s)	425 W (600 HU/s)
	Anode rotating	425 W (600 HU/s)	425 W (600 HU/s)
Nominal anode input power (0.1 sec, 180 Hz)	50 Hz	35 kW	69 kW
	60 Hz	39 kW	75 kW
Nominal radiographic anode input power IEC 60613:2010	50 Hz	35 kW	69 kW
	60 Hz	39 kW	75 kW
Max. filament voltage		14.0 V	17.5 V
Max. filament current ^{*1}		5.6 A	5.6 A
Anode Target	Material	Rhenium-tungsten faced molybdenum	
	Angle/diameter	12°/100 mm	
Anode rotation ^{*2}		Direction of anode rotation is counter-clockwise as viewed from the cathode side, and R.P.M as follows. 2700 min. ⁻¹ (R.P.M.) at 50 Hz 3200 min. ⁻¹ (R.P.M.) at 60 Hz	
Minimum total filtration IEC 60601-2-28:2017		1.7 mm Al/75 kV (Including added filter ^{*3})	
Permanent filtration ^{*4}	IEC 60601-2-28:2017	1.0 mm Al/75 kV IEC 60522:1999 (without added filter)	
	JIS Z 4751-2-28:2008 (IEC 60601-2-28:1993)	Min. 1.5 mm Al at 70 kV ^{*5} (Including added filter)	

Item	Specifications
Leakage radiation *6 IEC 60601-1-3:2008+A1:2013	Leakage radiation in hour from the X-ray tube assembly and collimator is less than 0.87mGy at a distance of 1 meter from the focal spot. However, leakage radiation in an hour from the collimator is less than 0.30mGy.
X-ray radiation field	350 mm × 350 mm (at distance of 1000 mm from focal spot)
IEC classification IEC 60601-1:2005+A1:2012	CLASS I
Mass *7	21 kg
High voltage connector	IEC 60526 type

*1: This value is the maximum value usable in tube current adjustment, and its limit in usual use is less than 5.2 A for both 1.0 mm focus and 2.0 mm focus.

*2: The recommended frequency of input power to the stator is less than once a minute.

*3: Added filter

Added filter (3 pieces of 0.3 mm Al filter, Min. 0.7 mmAl equivalent considering the tolerance of thickness) is inserted in X-ray port. It should not be removed in any case to attain specified total filtration.

*4: Inherent filtration of X-ray tube is min. 0.7 mm Al.

*5: This value is including the added filter. Total filtration is stated as permanent filtration according to JIS Z 4751-2-28:2008 which is the IDT standard to IEC 60601-2-28:1993

*6: Leakage radiation dose measuring condition

(1) 125 kV, 425 W continuous

Actual leakage radiation dose measuring condition: 125 kV 125 W continuous

Maximum leakage radiation dose measuring condition: 125 kV 425 W continuous

Maximum leakage radiation value is calculated as follows.

(Maximum leakage radiation value)

= (425 W/125 W) × (Measured leakage radiation on actual condition)

= 3.4 × (Measured leakage radiation on actual condition)

(2) Repetition of radiographic load so as to become average load of 100 W at 150 kV

Actual measuring condition: 150 kV 100 mA 0.1sec 5 times

Maximum measuring condition: 150 kV 100 mA 0.1sec 240 times/hour (100 W)

Maximum leakage radiation value is calculated as follows.

(Maximum leakage radiation value)

= (240 times/5 times) × (Measured leakage radiation on actual condition)

= 48 × (Measured leakage radiation on actual condition)

(3) Unit

$0.87\text{mGy} = 2.58 \times 10^{-5}\text{C/kg} = 100\text{mR}$

*7: Mass of option parts

Support ring: 1.2 kg, Fan: 0.5 kg

1/2P13DK-85

Item		Specifications	
Nominal X-ray tube voltage IEC 60613:2010	Fluoroscopy	125 kV	
	Radiography	150 kV	
X-ray tube assembly	Max. heat content	1100 kJ (1600 kHU)	
	Nominal continuous input power IEC 60613:2010	470 W (660 HU/s) (with fan), 235 W (330 HU/s) (without fan)	
X-ray tube	Max. anode heat content	140 kJ (200 kHU)	
	Max. anode heat dissipation rate	640 W (900 HU/s)	
	Max. continuous heat dissipation rate	210 W (300 HU/s)	
	Continuous anode input power IEC 60613:2010	100 W (Repetition of radiographic exposure)	
Nominal focal spot value IEC 60336		1	2
Measuring method of focal spot size		Slit camera	
X-ray tube max. Fluoroscopic load (10min.)	Anode stationary	285 W (400 HU/s)	425 W (600 HU/s)
	Anode rotating	355 W (500 HU/s)	425 W (600 HU/s)
Nominal anode input power (0.1 sec, 180 Hz)	50 Hz	27.5 kW	64 kW
	60 Hz	30 kW	70 kW
Nominal radiographic anode input power IEC 60613:2010	50 Hz	27.5 kW	64 kW
	60 Hz	30 kW	70 kW
Max. filament voltage		11.5 V	15.0 V
Max. filament current ^{*1}		5.6 A	5.6 A
Anode Target	Material	Rhenium-tungsten faced molybdenum	
	Angle/diameter	16°/100 mm	
Anode rotation ^{*2}		Direction of anode rotation is counter-clockwise as viewed from the cathode side, and R.P.M as follows. 2700 min. ⁻¹ (R.P.M.) at 50 Hz 3200 min. ⁻¹ (R.P.M.) at 60 Hz	
Minimum total filtration IEC 60601-2-28:2017		1.7 mm Al/75 kV (Including added filter ^{*3})	
Permanent filtration ^{*4}	IEC 60601-2-28:2017	1.0 mm Al/75 kV IEC 60522:1999 (without added filter)	
	JIS Z 4751-2-28:2008 (IEC 60601-2-28:1993)	Min. 1.5 mm Al at 70 kV ^{*5} (Including added filter)	

Item	Specifications
Leakage radiation *6 IEC 60601-1-3:2008+A1:2013	Leakage radiation in hour from the X-ray tube assembly and collimator is less than 0.87mGy at a distance of 1 meter from the focal spot. However, leakage radiation in an hour from the collimator is less than 0.30mGy.
X-ray radiation field	350 mm × 350 mm (at distance of 650 mm from focal spot)
IEC classification IEC 60601-1:2005+A1:2012	CLASS I
Mass *7	21 kg
High voltage connector	IEC 60526 type

*1: This value is the maximum value usable in tube current adjustment, and its limit in usual use is less than 5.2 A for both 1.0 mm focus and 2.0 mm focus.

*2: The recommended frequency of input power to the stator is less than once a minute.

*3: Added filter

Added filter (3 pieces of 0.3 mm Al filter, Min. 0.7 mmAl equivalent considering the tolerance of thickness) is inserted in X-ray port. It should not be removed in any case to attain specified total filtration.

*4: Inherent filtration of X-ray tube is min. 0.7 mm Al.

*5: This value is including the added filter. Total filtration is stated as permanent filtration according to JIS Z 4751-2-28:2008 which is the IDT standard to IEC 60601-2-28:1993

*6: Leakage radiation dose measuring condition

(1) 125 kV, 425 W continuous

Actual leakage radiation dose measuring condition: 125 kV 125 W continuous

Maximum leakage radiation dose measuring condition: 125 kV 425 W continuous

Maximum leakage radiation value is calculated as follows.

(Maximum leakage radiation value)

= (425 W/125 W) × (Measured leakage radiation on actual condition)

= 3.4 × (Measured leakage radiation on actual condition)

(2) Repetition of radiographic load so as to become average load of 100 W at 150 kV

Actual measuring condition: 150 kV 100 mA 0.1sec 5 times

Maximum measuring condition: 150 kV 100 mA 0.1sec 240 times/hour (100 W)

Maximum leakage radiation value is calculated as follows.

(Maximum leakage radiation value)

= (240 times/5 times) × (Measured leakage radiation on actual condition)

= 48 × (Measured leakage radiation on actual condition)

(3) Unit

$0.87\text{mGy} = 2.58 \times 10^{-5}\text{C/kg} = 100\text{mR}$

*7: Mass of option parts

Support ring: 1.2 kg, Fan: 0.5 kg

Maximum Rating based on Combination of X-ray High Voltage Generator and X-ray Tube Unit

The following table shows the maximum rating based on the combination of X-ray high voltage generator and X-ray tube unit, for the standard system A or B.

- ① Available X-ray tube unit
- ② Anode rotation
- ③ Nominal max. tube voltage and max. tube current that can flow at nominal max. tube voltage
- ④ Max. tube current and max. tube voltage to achieve max. tube current
- ⑤ Tube voltage and tube current combination for max. electrical output
- ⑥ Nominal max. power (kW)
- ⑦ Max. power that can be set for 1.0s

Combination of UD150B-40/D150BC-40/D150BC-41 and each tube unit

①	②	③	④	⑤	⑥	⑦	
						Large focus	Small focus
0.6/1.2P326D-150	180 Hz	150 kV 500 mA	100 kV 800 mA	100 kV 800 mA	80	47.9	25.6
0.6/1.2P366D-150	180 Hz	150 kV 360 mA	92 kV 630 mA	116 kV 500 mA	58	38.4	14.8
0.6/1.2P324DK-125	180 Hz	150 kV 500 mA	100 kV 800 mA	100 kV 800 mA	80	48.5	26.0
0.6/1.2P364DK-125	180 Hz	150 kV 360 mA	92 kV 630 mA	146 kV 400 mA	58.4	38.6	14.9
0.6/1.2P324DK-85	180 Hz	150 kV 500 mA	100 kV 800 mA	100 kV 800 mA	80	48.5	26.0
0.6/1.2P364DK-85	180 Hz	150 kV 360 mA	92 kV 630 mA	146 kV 400 mA	58.4	38.6	14.9
0.6/1.2P164DK-85	60 Hz	150 kV 220 mA	83 kV 400 mA	119 kV 280 mA	33.3	23.6	9.4
	50 Hz	150 kV 200 mA	76 kV 400 mA	95 kV 320 mA	30.4	22.6	9.0
0.6/1.2P323DK-85	180 Hz	150 kV 500 mA	100 kV 800 mA	100 kV 800 mA	80	48.5	26.0
0.6/1.2P38DE-85	180 Hz	150 kV 500 mA	95 kV 800 mA	95 kV 800 mA	76	35.5	18.2
0.6/1.2P18DE-85	60 Hz	150 kV 280 mA	94 kV 500 mA	118 kV 400 mA	47.2	24.9	12.1
	50 Hz	150 kV 280 mA	85 kV 500 mA	134 kV 320 mA	42.9	23.9	11.6
0.6/1.2P33DK-85	180 Hz	150 kV 360 mA	92 kV 630 mA	117 kV 500 mA	58.5	35.4	14.8

①	②	③	④	⑤	⑥	⑦	
						Large focus	Small focus
0.6/1.2P13DK-85	60 Hz	150 kV 220 mA	84 kV 400 mA	120 kV 280 mA	33.6	23.6	9.4
	50 Hz	150 kV 200 mA	76 kV 400 mA	85 kV 360 mA	30.6	22.6	9.0
1/2P18DK-85	60 Hz	150 kV 450 mA	107 kV 630 mA	150 kV 450 mA	67.5	37.7	21.5
	50 Hz	150 kV 400 mA	97 kV 630 mA	136 kV 450 mA	61.2	36.1	20.6
1/2P13DK-85	60 Hz	150 kV 400 mA	99 kV 630 mA	112 kV 560 mA	62.7	31.0	16.1
	50 Hz	150 kV 360 mA	90 kV 630 mA	102 kV 560 mA	57.1	29.8	15.5

Combination of UD150V-40/D150VC-40/D150VC-41 and each tube unit

①	②	③	④	⑤	⑥	⑦	
						Large focus	Small focus
0.6/1.2P326D-150	180 Hz	150 kV 400 mA	100 kV 650 mA	100 kV 650 mA	65	47.9	25.6
0.6/1.2P366D-150	180 Hz	150 kV 360 mA	89 kV 650 mA	116 kV 500 mA	58	38.4	14.8
0.6/1.2P324DK-125	180 Hz	150 kV 400 mA	100 kV 650 mA	100 kV 650 mA	65	48.5	26.0
0.6/1.2P364DK-125	180 Hz	150 kV 360 mA	89 kV 650 mA	146 kV 400 mA	58.4	38.6	14.9
0.6/1.2P324DK-85	180 Hz	150 kV 400 mA	100 kV 650 mA	100 kV 650 mA	65	48.5	26.0
0.6/1.2P364DK-85	180 Hz	150 kV 360 mA	89 kV 650 mA	146 kV 400 mA	58.4	38.6	14.9
0.6/1.2P164DK-85	60 Hz	150 kV 220 mA	83 kV 400 mA	119 kV 280 mA	33.3	23.6	9.4
	50 Hz	150 kV 200 mA	76 kV 400 mA	95 kV 320 mA	30.4	22.6	9.0
0.6/1.2P323DK-85	180 Hz	150 kV 400 mA	100 kV 650 mA	100 kV 650 mA	65	48.5	26.0
0.6/1.2P38DE-85	180 Hz	150 kV 400 mA	100 kV 650 mA	100 kV 650 mA	65	35.5	18.2
0.6/1.2P18DE-85	60 Hz	150 kV 280 mA	94 kV 500 mA	118 kV 400 mA	47.2	24.9	12.1
	50 Hz	150 kV 280 mA	85 kV 500 mA	134 kV 320 mA	42.9	23.9	11.6
0.6/1.2P33DK-85	180 Hz	150 kV 360 mA	90 kV 650 mA	117 kV 500 mA	58.5	35.4	14.8
0.6/1.2P13DK-85	60 Hz	150 kV 220 mA	84 kV 400 mA	120 kV 280 mA	33.6	23.6	9.4
	50 Hz	150 kV 200 mA	76 kV 400 mA	85 kV 360 mA	30.6	22.6	9.0
1/2P18DK-85	60 Hz	150 kV 400 mA	100 kV 650 mA	100 kV 650 mA	65	37.7	21.5
	50 Hz	150 kV 400 mA	94 kV 650 mA	136 kV 450 mA	61.2	36.1	20.6
1/2P13DK-85	60 Hz	150 kV 400 mA	96 kV 650 mA	112 kV 560 mA	62.7	31.0	16.1
	50 Hz	150 kV 360 mA	87 kV 650 mA	102 kV 560 mA	57.1	29.8	15.5

3

Combination of UD150L-40/D150LC-40/D150LC-41 and each tube unit

①	②	③	④	⑤	⑥	⑦	
						Large focus	Small focus
0.6/1.2P326D-150	180 Hz	150 kV 320 mA	80 kV 630 mA	80 kV 630 mA	50	47.9	25.6
0.6/1.2P366D-150	180 Hz	150 kV 320 mA	80 kV 630 mA	80 kV 630 mA	50	38.4	14.8
0.6/1.2P324DK-125	180 Hz	150 kV 320 mA	80 kV 630 mA	80 kV 630 mA	50	48.5	26.0
0.6/1.2P364DK-125	180 Hz	150 kV 320 mA	80 kV 630 mA	80 kV 630 mA	50	38.6	14.9
0.6/1.2P324DK-85	180 Hz	150 kV 320 mA	80 kV 630 mA	80 kV 630 mA	50	48.5	26.0
0.6/1.2P364DK-85	180 Hz	150 kV 320 mA	80 kV 630 mA	80 kV 630 mA	50	38.6	14.9
0.6/1.2P164DK-85	60 Hz	150 kV 220 mA	83 kV 400 mA	119 kV 280 mA	33.3	23.6	9.4
	50 Hz	150 kV 200 mA	76 kV 400 mA	95 kV 320 mA	30.4	22.6	9.0
0.6/1.2P323DK-85	180 Hz	150 kV 320 mA	80 kV 630 mA	80 kV 630 mA	50	48.5	26.0
0.6/1.2P38DE-85	180 Hz	150 kV 320 mA	80 kV 630 mA	80 kV 630 mA	50	35.5	18.2
0.6/1.2P18DE-85	60 Hz	150 kV 280 mA	94 kV 500 mA	118 kV 400 mA	47.2	24.9	12.1
	50 Hz	150 kV 280 mA	85 kV 500 mA	134 kV 320 mA	42.9	23.9	11.6
0.6/1.2P33DK-85	180 Hz	150 kV 320 mA	80 kV 630 mA	80 kV 630 mA	50	35.4	14.8
0.6/1.2P13DK-85	60 Hz	150 kV 220 mA	84 kV 400 mA	120 kV 280 mA	33.6	23.6	9.4
	50 Hz	150 kV 200 mA	76 kV 400 mA	85 kV 360 mA	30.6	22.6	9.0
1/2P18DK-85	60 Hz	150 kV 320 mA	80 kV 630 mA	80 kV 630 mA	50	37.7	21.5
	50 Hz	150 kV 320 mA	80 kV 630 mA	80 kV 630 mA	50	36.1	20.6
1/2P13DK-85	60 Hz	150 kV 320 mA	80 kV 630 mA	80 kV 630 mA	50	31.0	16.1
	50 Hz	150 kV 320 mA	80 kV 630 mA	80 kV 630 mA	50	29.8	15.5

■ Time to complete radiography preparation when Shimadzu starter and X-ray tube unit are combined

The table below lists the time (sec) to complete the radiography preparation when a Shimadzu starter and X-ray tube unit are combined in Standard System A/B.

	SA-60	SA-42UD	SA-4UD
0.6/1.2P326D-150	-	0.8 ^{*1} (3.5)	-
0.6/1.2P366D-150	-	0.8 ^{*1} (3.5)	-
0.6/1.2P324DK-125	1.0	-	-
0.6/1.2P364DK-125	1.0	-	-
0.6/1.2P324DK-85	1.6	2.5	-
0.6/1.2P364DK-85	1.6	2.5	-
0.6/1.2P164DK-85	1.6	1.4	1.6
0.6/1.2P323DK-85	1.6	2.5	-
0.6/1.2P38DE-85	1.6	2.5	-
0.6/1.2P18DE-85	1.6	1.4	1.6
0.6/1.2P33DK-85	1.6	2.5	-
0.6/1.2P13DK-85	1.6	1.4	1.6
1/2P18DK-85	1.6	1.4	1.6
1/2P13DK-85	1.6	1.4	1.6

*1: Obtained with the high-speed rotation maintaining function. The value in parenthesis is the time when the function is disabled.

3.6.4 Collimator

■ R-300

Item		Specifications
Max. voltage used for applicable X-ray tube		150 kV
Irradiation field	Rectangular irradiation field H-leaves and V-leaves (SID 100 cm)	Max.: 523 × 523 mm Min.: 0 × 0 mm Shape formed by overlapping of leaves
Light field	Average illumination	160 lx or more (when SID is 100 cm)
	Time lamp stays on	Continuously for 5 to 30 seconds (automatically turns off, time set at installation)
	Lamp	LED lamp
	Adjustment mechanism	Provided
	Discrepancy between light field and actual irradiation field	Within 2% of the SID (adjusted on shipment from the factory)
Filtration	Inherent filtration	1.1 mm Al eq / 75 kV.
	Auto-filter	Cu 0, 0.1, 0.2, 0.3 mm The X-ray filter can be switched in accordance with the radiography conditions set on the X-ray high voltage generator.
Pb equivalency of leaves	Shielding leaves (H-leaves and V-leaves)	3 mm Pb eq.
	Middle leaves	2 mm Pb eq.
Leaves driving method		Stepping motor drive
Distance between the focus and fitting face		60 mm
External Dimensions		W231 × D317 × H259 mm
Mass		Approx. 10 kg
Power Supply		24 VDC, 150 VA
Turning Mechanism		±45°

R-20J

Item		Specifications
Max. applicable X-ray tube potential		150 kVp
Field	Shape	Rectangular
	Max. field	430 × 430 mm (as of SID 1 m)
	Min. field	0 × 0 mm (leaves overlapped)
Light field	Average illumination	Over 160 lx (as of SID 1 m)
	Contrast ratio of edge	Over 4
	Accuracy	2% of SID in use
	Display of center	Black cross lines
		Centerline for Bucky
	Type of lamp	LED lamp
Illuminating period	30 seconds, with automatic turn-off time switch	
Field size indication	SID indicated	1, 1.5, 2 m
	Dimensions indicated	20 (8), 23 (9), 25 (10), 28 (11), 30 (12), 36 (14), 43 (17) cm (in.)
Drive of leaves		Manual
Pb equivalent of front leaf		3 mm Pb (middle leaf: 2 mm Pb)
Filtration	Min. inherent filtration	1.0 mm Al. eq / 75 kV.
	Added filter	0.5 mm Al. eq. (Added filter Al 0.5 mm, one)
Mounting dimension (Focus to fit surface distance)		59 mm
External Dimensions		W224 × D271 × H221 mm
Mass		Approx. 6 kg
Power supply		AC 12 V, 100 VA, 50/60 Hz or DC 24 V, 100 VA

■ Options (common to collimator)

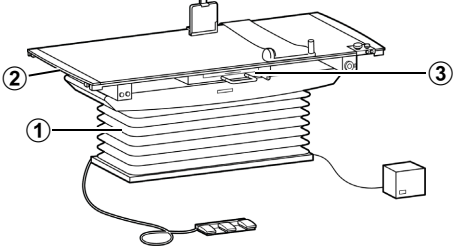
Item	Specifications
Line marker	Used to align the center positions of the Bucky and the equipment, and to set the radiography position for long view radiography.
Detent	Allows easy positioning and rotation of the collimator with a click action every 45 degrees.
Dose calculation unit* ¹	Calculates the X-ray radiation dosage applied to the patient's skin surface during radiography based on the distance between the patient's skin surface and the X-ray tube unit focal spot, and the set radiography conditions.
Area Dosimeter Unit	This is a unit used for calculating dose area product values.
Filter AL0.5 + CU0.1* ²	Added filter Al 0.5 mm + Cu 0.1 mm

*1: For R-300

*2: For R-20J

3.6.5 X-Ray Radiography Table

BK-120

Item	Specifications	
Construction: ① Main Body ② Floating Tabletop Assembly ③ Bucky		
Main Body	Size of tabletop (width × length)	810 mm × 2050 mm Flat tabletop
	Material of tabletop	Select from: acrylic, CFRP
	Attenuation equivalent for table	0.7 mmAl. or less (CFRP tabletop) 1.7 mmAl. or less (acrylic tabletop)
	Longitudinal move	Operation: Manual operation (Type A) ± 425 mm (Type B) ± 225 mm
	Lateral move	Operation: Manual operation ± 125 mm
	Lock of the tabletop	By permanent electromagnetic lock (of type to be released when activated). Operation: By foot switch. (The following matter can be selected by push button) Lock of the lateral move.
	Vertical moving range	550 mm Operation: Electric (by deadman's foot switch)
	Distance between tabletop and floor	355 to 905 mm (The tabletop stop once at about 700 mm.)*1
	Distance between tabletop and detector plane	80 mm
Maximum allowable load	160 kg (uniformly-distributed load on tabletop)	

Item		Specifications		
Bucky*2	Application cassette/ FPD size	FPD rotation tray • 14 × 17 inch/35 × 43 cm sized FPD Portrait or landscape orientation is available by turning the FPD 90° in the tray		
		1717 tray • 17 × 17 inch/43 × 43 cm sized FPD		
		HC tray • Handy type model FPD (DR-ID 911SE) • FPD (DR-ID 1201SE/DR-ID 1211SE/DR-ID 1831SE/DR-ID 1811SE) in a size of 14 × 17 inch/35 × 43 cm can be installed using an adapter (option).		
		Cassette tray • cm : 18 × 24, 24 × 24, 24 × 30, 30 × 40, 35 × 35 35 × 43, 43 × 43 • inch: 8 × 10, 9.5 × 9.5, 10 × 12, 11 × 14, 14 × 14 14 × 17, 17 × 17 Portrait or landscape orientation		
	Radiography reference position	Center position		
	Bucky moving distance	(Type A) 400 (± 200) mm (Type B) 800 (± 400) mm		
	X-ray grid (It functions as a moving grid*3 or a fixed grid.)	Size	438 mm × 479 mm	
		Intermediate material	AL	
Grid density, Grid ratio		34 lines/cm, 8:1 40 lines/cm, 8:1 40 lines/cm, 10:1 40 lines/cm, 12:1 52 lines/cm, 8:1 52 lines/cm, 12:1 60 lines/cm, 8:1 60 lines/cm, 10:1 60 lines/cm, 12:1 80 lines/cm, 10:1 80 lines/cm, 12:1		
Mounting/removing grid	Possible			

Item		Specifications
Installation Conditions	Outer dimension	Refer to Dimensions
	Required space for installation	Length × Depth = 5000 mm × 3500 mm (to combine with the X-ray support device)
	Total mass	(Type A) 320 kg (Type B) 330 kg
	Power supply	Supplied from the control cabinet Single phase, 200/220/230/240 V 1.4 kVA 50/60Hz (Supplied from the distribution board)
	Power Supply Impedance	2.8 Ω or less

- *1: When installing, the stop position can be adjusted within a height range of approx. 600 mm to 700 mm.
- *2: The tabletop rail will appear at the edge of a radiography image if the tabletop is moved 90 mm or more in the transversal direction. Position the tabletop in the center when performing radiography.
- *3: When radiography is performed without an object for time (40 msec or less), some stripes may appear.

■ **BK-200**

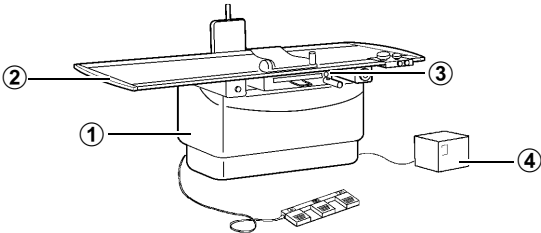
Item	Specifications	
Construction: ① Main Frame ② Floating Tabletop Assembly ③ Bucky		
Main Body	Size of Tabletop (width × length)	810 mm × 2350 mm Flat tabletop
	Material of tabletop	Select from: Wooden, CFRP
	Attenuation equivalent for table	0.7 mmAl. or less (CFRP tabletop) 1.7 mmAl. or less (woody tabletop)
	Longitudinal movement	Operation: Manual operation (Type A) ± 575 mm (Type B) ± 375 mm
	Lateral movement	Operation: Manual operation ± 125 mm
	Lock of the tabletop	By permanent electromagnetic lock (of type to be released when achieved) Operation by foot switch (The following matter can be selected by push button.) Lock of the lateral move.
	Vertical moving range	315 mm Operation by electric (by deadman's foot switch)
	Distance between tabletop and floor	535 to 850 mm (The tabletop stops once at about 700 mm.) *1
	Distance between tabletop and detector plane	80 mm
Maximum allowable load	295 kg (uniform load on tabletop)	

Item		Specifications		
Bucky* ²	Application cassette/FPD size	FPD rotation tray <ul style="list-style-type: none"> 14 × 17 inch/35 × 43 cm sized FPD Portrait or landscape orientation is available by turning the FPD 90° in the tray		
		1717 tray <ul style="list-style-type: none"> 17 × 17 inch/43 × 43 cm sized FPD 		
		HC tray <ul style="list-style-type: none"> Handy type model FPD (DR-ID 911SE) FPD (DR-ID 1201SE/DR-ID 1211SE/DR-ID 1831SE/DR-ID 1811SE) in a size of 14 × 17 inch/35 × 43 cm can be installed using an adapter (option). 		
		Cassette tray <ul style="list-style-type: none"> cm : 18 × 24, 24 × 24, 24 × 30, 30 × 40, 35 × 35 35 × 43, 43 × 43 inch: 8 × 10, 9.5 × 9.5, 10 × 12, 11 × 14, 14 × 14 14 × 17, 17 × 17 Portrait or landscape orientation		
	Radiography reference position	Center position		
	Bucky moving distance	(Type A) 400 (± 200) mm (Type B) 800 (± 400) mm		
	X-ray grid (It functions as a moving grid* ³ or a fixed grid.)	Size	438 mm × 479 mm	
		Intermediate material	AL	
Grid density, Grid ratio		34 lines/cm, 8:1		
		40 lines/cm, 8:1 40 lines/cm, 10:1 40 lines/cm, 12:1 52 lines/cm, 8:1 52 lines/cm, 12:1 60 lines/cm, 8:1 60 lines/cm, 10:1 60 lines/cm, 12:1 80 lines/cm, 10:1 80 lines/cm, 12:1		
Mounting/removing grid	Possible			

Item		Specifications
Installation Conditions	Outer dimension	Refer to Dimensions
	Required space for installation	Length × Depth = 5000 mm × 3500 mm (to combine with the X-ray support device)
	Top mass	(Type A) 320 kg (Type B) 330 kg
	Power Supply	Supplied from the control cabinet Single phase, 200/220/230/240 V 1.4 kVA 50/60Hz (Supplied from the distribution board)
	Power Supply Impedance	2.8 Ω or less

- *1: When installing, the stop position can be adjusted within a height range of approx. 600 mm to 700 mm.
- *2: The tabletop rail will appear at the edge of a radiography image if the tabletop is moved 90 mm or more in the transversal direction. Position the tabletop in the center when performing radiography.
- *3: When radiography is performed without an object for time (40 msec or less), some stripes may appear.

BK-120MK

Item	Specifications	
Construction: ① Main Body ② Floating Tabletop Assembly ③ Bucky ④ Transformer unit		
Main Body	Size of tabletop (width × length)	Approx. 810 mm × 2350 mm Flat tabletop
	Material of tabletop	Select from: Wooden, acrylic, CFRP
	Longitudinal move	Operation: Manual operation 1100 mm
	Lateral move	Operation: Manual operation ± 125 mm
	Lock of the tabletop	By permanent electromagnetic lock (of type to be released when activated). Operation: By foot switch. (The following matter can be selected by push button) Lock of the lateral move.
	Vertical moving range	315 mm Operation: Electric (by deadman's foot switch)
	Distance between tabletop and floor	Approx. 535 to 850 mm (The tabletop stop once at about 700 mm)* ¹
	Distance between tabletop and detector plane	73 mm
	Maximum allowable load	200 kg (uniformly-distributed load on tabletop)* ²
	Attenuation equivalent for table	0.7 mmAl. or less (CFRP tabletop) 1.7 mmAl. or less (except CFRP tabletop)

Item		Specifications		
Bucky* ³	Application cassette/ FPD size	FPD rotation tray • 14 × 17 inch/35 × 43 cm sized FPD Portrait or landscape orientation is available by turning the FPD 90° in the tray		
		Cassette tray • cm: max. 43 × 43 to min. 18 × 24 • inch: max. 17 × 17 to min. 6 1/2 × 8 1/2 Portrait or landscape orientation		
	Radiography reference position	Center position		
	Bucky moving distance	380 (± 190) mm		
	X-ray grid (It functions as a moving grid* ⁴ or a fixed grid.)	Size	438 mm × 479 mm	
		Intermediate material	AL	
Grid density, Grid ratio		34 lines/cm, 8:1 40 lines/cm, 10:1 52 lines/cm, 8:1 52 lines/cm, 12:1 60 lines/cm, 10:1 60 lines/cm, 12:1		
Mounting/removing grid	Possible			
Installation Conditions	Outer dimension	Refer to Dimensions		
	Required space for installation	Length × Depth = 5000 mm × 3500 mm (to combine with the X-ray support device)		
	Total mass	320 kg		
	Power supply	Single phase, 100 VAC 0.1 kVA 50/60 Hz Single phase, 200, 220, 230, 240 VAC 1 kVA 50/60 Hz (Supplied from the distribution board)		

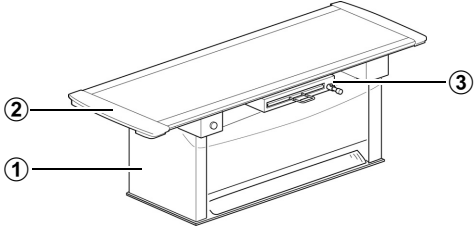
*1: When installing, the stop position can be adjusted within a height range of approx. 600 mm to 700 mm.

*2: When the acrylic tabletop is used, the maximum allowable load is 160 kg.

*3: The tabletop rail will appear at the edge of a radiography image if the tabletop is moved 90 mm or more in the transversal direction. Position the tabletop in the center when performing radiography.

*4: When radiography is performed without an object for time (40 msec or less), some stripes may appear.

BK-12HK

Item	Specifications	
Construction ① Main Body ② Floating Tabletop Assembly ③ Bucky		
Main Body	Size of tabletop (width × length)	Approx. 810 mm × 2350 mm Flat tabletop
	Material of tabletop	Select from: Wooden, acrylic, CFRP
	Longitudinal move	Operation: Manual operation 1100 mm
	Lateral move	Operation: Manual operation ± 125 mm
	Lock of the tabletop	By permanent electromagnetic lock (of type to be released when activated). Operation: By foot switch. (The following matter can be selected by push button) Lock of the lateral move.
	Distance between tabletop and floor	700 mm
	Distance between tabletop and detector plane	73 mm
	Maximum allowable load	200 kg (uniformly-distributed load on tabletop)* ¹
	Attenuation equivalent for table	0.7 mmAl. or less (CFRP tabletop) 1.7 mmAl. or less (except CFRP tabletop)

Item		Specifications		
Bucky*2	Application cassette/FPD size	FPD rotation tray • 14 × 17 inch/35 × 43 cm sized FPD Portrait or landscape orientation is available by turning the FPD 90° in the tray		
		Cassette tray • cm: max. 35 × 43 to min. 18 × 24 • inch: max. 14 × 17 to min. 6 1/2 × 8 1/2 Portrait or landscape orientation		
	Radiography reference position	Center position		
	Bucky moving distance	380 (± 190) mm		
	X-ray grid (It functions as a moving grid*3 or a fixed grid.)	Size	438 mm × 479 mm	
		Intermediate material	AL	
Grid density, Grid ratio:		34 lines/cm, 8:1 40 lines/cm, 10:1 52 lines/cm, 8:1 52 lines/cm, 12:1 60 lines/cm, 10:1 60 lines/cm, 12:1		
Mounting/removing grid	Possible			
Installation Conditions	Outer dimension	Refer to Dimensions		
	Required space for installation	Length × Depth = 5000 mm × 3500 mm (to combine with the X-ray support device)		
	Total mass	120 kg		
	Power supply	Single phase, 100 V, 0.1 kVA, 50/60 Hz		

*1: When the acrylic tabletop is used, the maximum allowable load is 160 kg.

*2: The tabletop rail will appear at the edge of a radiography image if the tabletop is moved 90 mm or more in the transversal direction. Position the tabletop in the center when performing radiography.

*3: When radiography is performed without an object for time (40 msec or less), some stripes may appear.

Options (common to X-ray Radiography Table)

Item	Specifications
Compression belt	Mounted to the sides of the tabletop to secure the radiography region of the patient's body.
Side cassette holder	Mounted to the side of the tabletop to hold a cassette during lateral radiography. The following two types are available. <ul style="list-style-type: none"> • Can hold a cassette up to 14 inches/35 cm in vertical size. • Can hold a cassette and a grid up to 17 inches/43 cm in vertical size.
Grip switch	Mounted to the side of the tabletop to operate the floating tabletop without using the foot switch.
CFRP tabletop	This tabletop is made of CFRP (Carbon Fiber Reinforced Plastic).
Acrylic tabletop	This table is made of transparent acrylic plate.
Tracking device (BK-120/BK-200)	The following functions are available when combined with the X-ray tube support CH-200. <ul style="list-style-type: none"> • Maintains a constant distance between the X-ray tube and the tabletop or a cassette set in the Bucky of the X-ray radiography table. • The size of irradiation field is automatically adjusted.
Tracking device (BK-120M/BK-120MK)	The following functions are available when combined with the X-ray tube support CH-200M. <ul style="list-style-type: none"> • Maintains a constant distance between the X-ray tube and a cassette set in the Bucky of the X-ray radiography table.
Bucky tracking driver *1	Incorporated into the tabletop elevator, this unit drives the Bucky electrically. When this option is selected, Bucky tracking radiography is available if the X-ray tube support CH-200 is combined.
Hand grip	Mounted to the side of the tabletop for the patient to grasp, to keep the patient's posture stable.
Drip hanger	Mounted to the side of the tabletop to suspend an infusion bottle.
Additional foot switch *2	This switch to use for moving the tabletop up/down or longitudinally and transversally by manual. Either kick type foot switch (rear) or additional foot switch can be installed for BK-200.
Kick type foot switch (rear) *3	Mounted to the rear of the main body to move the tabletop up/down or to unlock the tabletop when moving it by manual. Either kick type foot switch (rear) or additional foot switch can be installed.
FPD adapter	When combined with DR-ID 900, this adapter to use for setting the FPD (14 × 17 inch / 35 × 43 cm) to the FPD tray of handy type model.

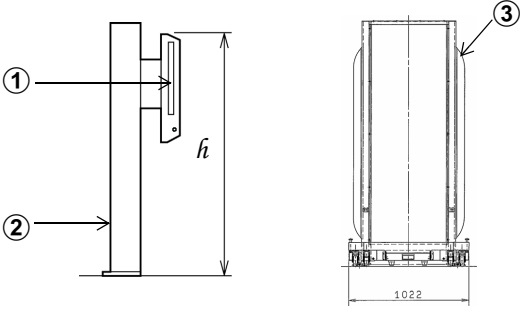
*1: For BK-120 and BK-200

*2: For BK-120MK, BK-120 and BK-200

*3: For BK-200

3.6.6 X-Ray Radiography Stand

BR-120

Item	Specifications	
<p>Construction</p> <ul style="list-style-type: none"> ① Bucky ② Stand ③ Patient stand for long view radiography (included with long view detection option) 		
Bucky	Distance between Bucky gnathal hub and floor surface	$h = 627 (643) - 2127 (2143)$ mm (Manual operation) $h = 655 (671) - 2097 (2113)$ mm (Motor-driven operation) (Figures in parentheses are dimensions when mounted on a base plate)
	Operation	Manual or motor drive (option) Electromagnetic lock provided is released while power is supplied.
	Distance between Bucky gnathal hub and detector plane center	247 mm
	Distance between Bucky front face and detector plane	40 mm

Item		Specifications			
Bucky	Application cassette/FPD size	FPD rotation tray <ul style="list-style-type: none"> 14 × 17 inch/35 × 43 cm sized FPD Portrait or landscape orientation is available by turning the FPD 90° in the tray			
		1717 tray <ul style="list-style-type: none"> 17 × 17 inch/43 × 43 cm sized FPD 			
		HC tray <ul style="list-style-type: none"> Handy type model FPD (DR-ID 911SE) 			
		Cassette tray <ul style="list-style-type: none"> inch: 8 × 10, 9.5 × 9.5, 10 × 12, 11 × 14, 14 × 14, 14 × 17, 17 × 17 cm: 18 × 24, 24 × 24, 24 × 30, 35 × 35, 35 × 43, 43 × 43 Portrait or landscape orientation			
	Radiography reference position	FPD rotation tray <ul style="list-style-type: none"> Center reference Top reference 			
		Cassette tray <ul style="list-style-type: none"> Center reference Top reference or bottom reference (only for the cassettes/FPDs of 14" (height) × 17" (width) (35 cm (height) × 43 cm (width))) 			
	X-ray grid (It functions as a moving grid*1 or a fixed grid.)	Dimensions	438 mm × 479 mm		
		Intermediate material	AL		
		Grid density, Grid ratio	34 lines/cm	8:1	
			40 lines/cm	10:1	
40 lines/cm			12:1		
52 lines/cm			8:1		
52 lines/cm			12:1		
60 lines/cm			10:1		
60 lines/cm	12:1				
80 lines/cm	8:1				
80 lines/cm	12:1				
80 lines/cm	10:1				
Mounting/removing grid	Possible				
Attenuation equivalent for front panel	0.63 mmAl or less				

Item		Specifications
Installation conditions	Outer dimension	Refer to Dimensions
	Required space	L650 × D400 mm
	Required ceiling height	2350 mm or more
	Mass	Standard: Approx. 120 kg When motor drive/long view detection option installed: Approx. 145 kg Patient stand for long view radiography (option): Approx. 70 kg
	Power Supply	Single phase, 100 V, 0.2 kVA, 50/60 Hz (Supplied from X-ray high voltage generator)

*1: When radiography is performed without an object for time (40 msec or less), some stripes may appear.

BR-120T

Item	Specifications	
Construction ① Bucky ② Stand ③ Patient stand for long view radiography (included with long view detection option)		
Bucky	Distance between Bucky gnathal hub and floor surface	$h_1 = 627 (643) - 2127 (2143)$ mm (Manual operation) $h_1 = 655 (671) - 2097 (2113)$ mm (Motor-driven operation) $h_2 = 540 (556) - 2040 (2056)$ mm (Manual operation) $h_2 = 568 (584) - 2020 (2026)$ mm (Motor-driven operation) (Figures in parentheses are dimensions when mounted on a base plate)
	Operation	Manual or motor drive (option) Electromagnetic lock provided is released while power is supplied.
	Distance between Bucky gnathal hub and detector plane center	247 mm
	Distance between Bucky front face and detector plane	40 mm
	Bucky tilting angle (manual operation)	$-20^\circ, 0^\circ$ (vertical), $15^\circ, 30^\circ, 45^\circ, 60^\circ, 75^\circ, 90^\circ$ (horizontal)

Item		Specifications			
Bucky	Application cassette/FPD size	FPD rotation tray <ul style="list-style-type: none"> 14 × 17 inch/35 × 43 cm sized FPD Portrait or landscape orientation is available by turning the FPD 90° in the tray			
		1717 tray <ul style="list-style-type: none"> 17 × 17 inch/43 × 43 cm sized FPD 			
		HC tray <ul style="list-style-type: none"> Handy type model FPD (DR-ID 911SE) 			
		Cassette tray <ul style="list-style-type: none"> inch: 8 × 10, 9.5 × 9.5, 10 × 12, 11 × 14, 14 × 14, 14 × 17, 17 × 17 cm: 18 × 24, 24 × 24, 24 × 30, 35 × 35, 35 × 43, 43 × 43 Portrait or landscape orientation			
	Radiography reference position	FPD rotation tray <ul style="list-style-type: none"> Center reference Top reference 			
		Cassette tray <ul style="list-style-type: none"> Center reference Top reference or bottom reference (only for the cassettes/FPDs of 14" (height) × 17" (width) (35 cm (height) × 43 cm (width))) 			
	X-ray grid (It functions as a moving grid*1 or a fixed grid.)	Dimensions	438 mm × 479 mm		
		Intermediate material	AL		
		Grid density, Grid ratio	34 lines/cm	8:1	
			40 lines/cm	10:1	
40 lines/cm			12:1		
52 lines/cm			8:1		
52 lines/cm			12:1		
60 lines/cm			10:1		
60 lines/cm	12:1				
80 lines/cm	12:1				
80 lines/cm	10:1				
Mounting/removing grid	Possible				
Attenuation equivalent for front panel	0.63 mmAl or less				

Item		Specifications
Installation conditions	Outer dimension	Refer to Dimensions
	Required space	L650 × D700 mm
	Required ceiling height	2350 mm or more
	Mass	Standard: Approx. 160 kg When motor drive/long view detection option installed: Approx. 185 kg Patient stand for long view radiography (option): Approx. 70 kg
	Power Supply	Single phase, 100 V, 0.2 kVA, 50/60 Hz (Supplied from X-ray high voltage generator)

*1: When radiography is performed without an object for time (40 msec or less), some stripes may appear.



BR-120M

Item		Specifications
Construction ① Bucky ② Stand		
Bucky	Operation	By manual. Electromagnetic lock provided is released while power is supplied.
	Distance between Bucky gnathal hub and floor surface	$h = 627 - 2127$ mm
	Distance between Bucky gnathal hub and detector plane top (Upper reference)	32 mm
	Distance between Bucky gnathal hub and detector plane center (Center reference)	247 mm
	Distance between Bucky front face and detector plane	33.5 mm

Item		Specifications			
Bucky	Application cassette/FPD size	FPD rotation tray <ul style="list-style-type: none"> 14 × 17 inch/35 × 43 cm sized FPD Portrait or landscape orientation is available by turning the FPD 90° in the tray			
		Cassette tray <ul style="list-style-type: none"> inch: 6 1/2 × 8 1/2, 8 × 10, 10 × 12, 11 × 14, 14 × 14, 14 × 17, 17 × 17 cm: 18 × 24, 24 × 30, 30 × 40, 35 × 35, 35 × 43, 43 × 43 Portrait or landscape orientation			
	Radiography reference position	FPD rotation tray <ul style="list-style-type: none"> Center reference Top reference 			
		Cassette tray <ul style="list-style-type: none"> Center reference Top reference or bottom reference (only for the cassettes/FPDs of 14" (height) × 17" (width) (35 cm (height) × 43 cm (width))) 			
	X-ray grid (It functions as a moving grid* ¹ or a fixed grid.)	Dimensions	438 mm × 479 mm		
		Intermediate material	AL		
		Grid density, Grid ratio	34 lines/cm	8:1	
			40 lines/cm	10:1	
			40 lines/cm	12:1	
			52 lines/cm	8:1	
52 lines/cm	12:1				
60 lines/cm	10:1				
60 lines/cm	12:1				
Mounting/removing grid	Possible				
Attenuation equivalent for front panel	0.63 mmAl or Less				
Installation conditions	Outer dimension	Refer to Dimensions			
	Required space	L650 × D400 mm			
	Required ceiling height	2350 mm or more			
	Mass	Approx. 120 kg			
	Power Supply	Single phase, 100V, 0.2 kVA, 50/60 Hz (Supplied from X-ray high voltage generator)			

*1: When radiography is performed without an object for time (40 msec or less), some stripes may appear.

Options (common to X-ray radiography stand)

Item	Specifications
Hand grip	Hand grip supports the attitude of a patient.
Cassette holder	Cassette unit is attached on bucky and holds a cassette (longitudinal direction: max. 43 cm/17 inches) and grid plate. Cassette holder is used to general radiography with cassette not bucky.
Base plate	Base plate is installed when the equipment cannot be mounted in the standard holes.
Front radiography handle	Front radiography handle supports the attitude of a patient.
Servo tracking device ^{*1}	The following functions are available when combined with the X-ray tube support CH-200. <ul style="list-style-type: none"> The radiography height of the X-ray tube unit is controlled to track the height of the cassette set in the Bucky on the X-ray radiography stand (top reference, center reference or bottom reference). Automatic collimator for radiography radiation field operates automatically.
Servo tracking device ^{*2}	The following functions are available when combined with the X-ray tube support CH-200M. <ul style="list-style-type: none"> The radiography height of the X-ray tube unit is controlled to track the height of the cassette set in the Bucky on the X-ray radiography stand (top reference or center reference).
Stop switch ^{*1}	When the optional tracking device is installed, use this switch in an emergency to stop the tracking operation with the X-ray tube support.
Both side operation	With this option, vertical movement of the bucky can be controlled from both right and left sides of the stand unit. When a servo tracking device is mounted, the control button for tracking operation with the X-ray tube support as well as an emergency stop switch are incorporated.
Compression belt	This belt fixes the radiography area of a patient on the Bucky.
Handy switch unit ^{*1}	The automatic collimator is controlled by handy switch unit.
CFRP cover ^{*1}	This is a cover made of CFRP (Carbon Fiber Reinforced Plastic) to be mounted to the front of the Bucky.
Foot switch (electrically driven) ^{*1}	The  (up) switch and  (down) switch are used to move the Bucky vertically.
Patient stand ^{*1}	To be used for long view radiography. A compression belt for patient stand (option) can be used to hold the patient in position.
	Maximum allowable load: 295 kg Attenuation equivalent: 0.3 mmAl or less
Hand grip for patient stand ^{*1}	Supports the posture of the patient when he/she is resting on the patient stand.
Compression belt for patient stand	This belt fixes the radiography area of a patient on the patient stand.

Item	Specifications
Wall mounting option*2	This option fixes the upper part of the column to the wall. Use this option when it is difficult to secure the equipment only by fixing it to the floor.


*1: For BR-120 and BR-120T

*2: For BR-120M only

3.6.7 Digital Radiography System

3

DR-ID 900

 NOTE
<p>For detail, refer to the operation manual of Digital Radiography System DR-ID 900.</p>

Console

Item	Specifications
Standard Software	<ul style="list-style-type: none"> • DICOM Connection Software <ul style="list-style-type: none"> • Basic Grayscale Print Management • Media Storage • Image Processing Software <ul style="list-style-type: none"> • Multi-objective Frequency Processing • Grid Removal Processing • Shuttering Processing • Gradation Processing • Dynamic Range Control Processing • Tomographic Artifact Suppression Processing • Flexible Noise Control • Function Software <ul style="list-style-type: none"> • Retake Analysis Software

Item	Specifications
Software Option	<ul style="list-style-type: none"> • DICOM Connection Software <ul style="list-style-type: none"> • Modality Worklist Management (MWM) • Modality Worklist Management Patient Information (MWMPI) • Modality Performed Procedure Step (MPPS) • Storage Commitment • Image Processing Software <ul style="list-style-type: none"> • Virtual Grid • Dynamic Visualization II • Function Software <ul style="list-style-type: none"> • Precise Enlargement Function • Free Layout Print • Quality Control Software • Body Movement Detection for General Radiography • PDI Software • Radiography Function Software <ul style="list-style-type: none"> • Auto-Image Composition • Tomosynthesis • Energy Subtraction • Communication Software <ul style="list-style-type: none"> • Integrated Display of Patient Information • Simple Ordering • Remote Image Display • Remote Desktop* • Referral Viewing Function • Network Image Retrieval • Smart Controller* • General RIS Browser • External Image Processing Unit Link Software
Hardware Option	<ul style="list-style-type: none"> • Input Device <ul style="list-style-type: none"> • Magnetic card reader • Barcode reader (Wired Type) • Main Monitor <ul style="list-style-type: none"> • 17 inch color touch panel monitor (1280 × 1024) • 21.3 inch color monitor (1600 × 1200) • Second Monitor <ul style="list-style-type: none"> • 21.3 inch color monitor (1200 × 1600) • 21.3 inch monochrome monitor (1200 × 1600) • 21.3 inch color monitor (1536 × 2048) • 21.3 inch monochrome monitor (1536 × 2048) <p>(In case of a dual-monitor environment, 21.3-inch color monitor (1600 × 1200) cannot be used as a main monitor.)</p> <ul style="list-style-type: none"> • External Image Processing Unit <ul style="list-style-type: none"> • EX-Mobile
The Number of Images Stored	<ul style="list-style-type: none"> • Image storage area: 80 GB <ul style="list-style-type: none"> DR Image: Approx.4000 images (17" × 17", 20 MB/image) Approx.10000 images (24 cm × 30 cm, 8 MB/image)

Item		Specifications
Storage Device Output		<ul style="list-style-type: none"> CR Image Storage, Private CR Storage DX Storage for Presentation, DX Storage for Processing
Film Output		<ul style="list-style-type: none"> Print format one-image output, two-image output, four-image output Printable film size 14" × 17", 14" × 14", B4, 10" × 12" and 8" × 10" (The printable film size differs depending on the image recorder unit.)
Dimensions/ Mass	Console	Dimensions: W95 mm × H270 mm × D303 mm Weight: 5.3 kg (Without keyboard and mouse)
	Main monitor	<ul style="list-style-type: none"> 17 inch monitor Dimensions: W392 mm × H411 mm × D157 mm Weight: 6.7 kg 21.3 inch monitor Dimensions : W361 mm × H510.5 ~ 600.5 mm × D267 mm Weight : 8.2 kg
	Second monitor	<ul style="list-style-type: none"> 21.3 Inch Monitor (monochrome) Dimensions : W376 mm × H520 mm ~ 599 mm × D245.5 mm Weight : 10.2 kg 21.3 Inch Monitor (color, 1200×1600) Dimensions : W361 mm × H510.5 ~ 600.5 mm × D267 mm Weight : 8.2 kg 21.3 Inch Monitor (color, 1536 × 2048) Dimensions : W341.3 mm × H481.5 ~ 571.5 mm × D200 mm Weight : 8.0 kg

*: Not sold in the US and CANADA

FPD

Item	Specifications
Scintillator	<ul style="list-style-type: none"> • CsI DR-ID 911SE/DR-ID 1211SE/DR-ID 1212SE/ DR-ID 1213SE/DR-ID 1811SE/DR-ID 1812SE/ DR-ID 1814SE • GOS DR-ID 1201SE/DR-ID 1202SE/DR-ID 1831SE/ DR-ID 1832SE
Exposure Size (Effective Area)	<ul style="list-style-type: none"> • DR-ID 911SE 422.4 mm × 422.4 mm • DR-ID 1201SE/ DR-ID 1211SE/DR-ID 1831SE/ DR-ID 1811SE 425.4 mm × 350.4 mm • DR-ID 1202SE/ DR-ID 1212SE/DR-ID 1832SE/ DR-ID 1812SE 425.4 mm × 424.8 mm • DR-ID 1213SE/DR-ID 1814SE 288 mm × 230.4 mm
Number of Pixels	<ul style="list-style-type: none"> • DR-ID 911SE 2816 × 2816 pixels • DR-ID 1201SE/DR-ID 1211SE/DR-ID 1831SE/ DR-ID 1811SE 2336 × 2836 pixels • DR-ID 1202SE/ DR-ID 1212SE/DR-ID 1832SE/ DR-ID 1812SE 2832 × 2836 pixels • DR-ID 1213SE/DR-ID 1814SE 1536 × 1920 pixels
Image Reading	Reading grayscale level: 16 bits/pixel Pixel size: 150 μm
Time to display image	<ul style="list-style-type: none"> • DR-ID 911SE <ul style="list-style-type: none"> • Standard mode Preview: less than 2 sec (wired/wireless) Processed image: less than 6 sec (wired) less than 8 sec (wireless) • High-speed mode Preview: less than 2 sec (wired/wireless) Processed image: less than 4 sec (wired) less than 7 sec (wireless) • DR-ID 1201SE/DR-ID 1211SE/DR-ID 1202SE/ DR-ID 1212SE/DR-ID 1831SE/DR-ID 1832SE/ DR-ID 1811SE/DR-ID 1812SE Preview: less than 2 sec (wired/wireless) Processed image: less than 7 sec (wired) less than 9 sec (wireless) • DR-ID 1213SE/DR-ID 1814SE Preview: less than 2 sec (wired/wireless) Processed image: less than 6 sec (wired) less than 7.5 sec (wireless)

Item	Specifications
Exposure interval	<ul style="list-style-type: none">• DR-ID 911SE<ul style="list-style-type: none">• Standard mode<ul style="list-style-type: none">less than 8 sec (wired)less than 9 sec (wireless)• High-speed mode<ul style="list-style-type: none">less than 6 sec (wired)less than 9 sec (wireless)• DR-ID 1201SE/DR-ID 1202SE/DR-ID 1211SE/ DR-ID 1212SE/DR-ID 1831SE/DR-ID 1832SE/ DR-ID 1811SE/DR-ID 1812SE<ul style="list-style-type: none">• High-speed mode<ul style="list-style-type: none">less than 9 sec (wired)less than 11 sec (wireless)• DR-ID 1213SE/DR-ID 1814SE<ul style="list-style-type: none">• High-speed mode<ul style="list-style-type: none">less than 9 sec (wired)less than 9 sec (wireless)

Item	Specifications
<p>Battery Specifications</p>	<ul style="list-style-type: none"> • DR-ID 911SE <ul style="list-style-type: none"> • Charging time Battery charger: Approx. 3 hours or less Charging a SE main unit: Approx. 10 hours • DR-ID 1201SE/DR-ID 1202SE/DR-ID 1211SE/ DR-ID 1212SE <ul style="list-style-type: none"> • Battery run time: Standby Approx. 4 h (Sleep mode: Approx. 7.5 h) (Extra Sleep mode: Approx. 36 h) *Measurement Condition for Standby Wireless connection / New battery / Full charge / Normal temperature • Battery run time: Continuous operation Approx. 3 h (Approx. 200 exposures) *Measurement Condition for Continuous operation Wireless connection / New battery / Full charge / Normal temperature • Charging time Battery charger: Approx. 3 hours or less Charging a SE main unit: Approx. 4 hours or less • DR-ID 1213SE <ul style="list-style-type: none"> • Battery run time: Standby Approx. 4 h (Sleep mode: Approx. 8h) (Extra Sleep mode: Approx. 48 h) *Measurement Condition for Standby Wireless connection / New battery / Full charge / Normal temperature • Battery run time: Continuous operation Approx. 3.5 h (Approx. 200 exposures) *Measurement Condition for Continuous operation Wireless connection / New battery / Full charge / Normal temperature • Charging time Battery charger: Approx. 3 hours or less Charging a SE main unit: Approx. 4 hours or less • DR-ID 1831SE/DR-ID 1832SE/DR-ID 1811SE/ DR-ID 1812SE/DR-ID 1814SE <ul style="list-style-type: none"> • Battery run time: Standby "Standard battery" Sleep mode: Approx. 8 h Extra Sleep mode: Approx. 20 h "Lightweight battery" Sleep mode: Approx. 6.5 h Extra Sleep mode: Approx. 16 h *Measurement Condition for Standby Wireless connection / storage time: mode1 / New battery / Full charge / Normal temperature

Item	Specifications
Battery Specifications	<ul style="list-style-type: none"> • Battery run time: Continuous operation "Standard battery" Approx. 5 h (Approx. 90 exposures / 2.5h and Sleep mode) "Lightweight battery" Approx. 4 h (Approx. 90 exposures / 2.5h and Sleep mode) *Measurement Condition for Continuous operation Wireless connection / New battery / Full charge / Normal temperature *It depends on the reading conditions. • Charging time Battery charger: Approx. 3 hours or less
Withstand Load	<ul style="list-style-type: none"> • DR-ID 911SE <ul style="list-style-type: none"> • Spot load: 160 kg / ϕ40 mm, • Surface load: 310 kg • DR-ID 1201SE/DR-ID 1202SE/DR-ID 1211SE/ DR-ID 1212SE/DR-ID 1213SE/DR-ID 1831SE/ DR-ID 1832SE/DR-ID 1811SE/DR-ID 1812SE/ DR-ID 1814SE <ul style="list-style-type: none"> • Spot load: 160 kg (1570 N) / ϕ40 mm • Surface load: 310 kg (3040 N)
Water proof	<ul style="list-style-type: none"> • DR-ID 1201SE/DR-ID 1202SE/DR-ID 1211SE/ DR-ID 1212SE/DR-ID 1213SE Conforming to IPX6* • DR-ID 1831SE/DR-ID 1832SE/DR-ID 1811SE/ DR-ID 1812SE/DR-ID 1814SE Conforming to IP56* <p>* The IPX Waterproof Specification, specified by the International Electrotechnical Commission, indicates waterproof/drip-proof performance on instruments and equipment. Because of product characteristics, these effects cannot always be guaranteed into the future.</p>
Number of connectable panels	<p>Up to five Flat Panel Sensors (DR-ID 911SE, DR-ID 12XXSE, DR-ID 18XXSE) can be connected to a DR-ID 900 and can be used simultaneously.</p> <p>* Up to four Flat Panel Sensors can be connected to one DR-ID 900MP in wired connection simultaneously. But, Up to two Flat Panel Sensors each (two DR-ID 911SE and two DR-ID 12XXSE and two DR-ID 18XXSE respectively) can be connected to one DR-ID 900MP in wired connection.</p>

Item	Specifications
External Dimensions	<ul style="list-style-type: none"> DR-ID 911SE W465 mm × H18 mm × D517 mm DR-ID 1201SE/DR-ID 1211SE/DR-ID 1831SE/ DR-ID 1811SE W460 mm × H15 mm × D384 mm DR-ID 1202SE/DR-ID 1212SE/DR-ID 1832SE/ DR-ID 1812SE W460 mm × H15 mm × D460 mm DR-ID 1213SE W328 mm × H15 mm × D268 mm DR-ID 1814SE W333 mm × H15 mm × D282 mm
Mass	<ul style="list-style-type: none"> DR-ID 911SE: 4.5 kg DR-ID 1201SE: 2.5 kg DR-ID 1202SE: 3.1 kg DR-ID 1211SE: 2.6 kg DR-ID 1212SE: 3.2 kg DR-ID 1213SE: 1.5 kg *including the battery pack (0.24 kg) weight. DR-ID 1831SE : 1.8 kg DR-ID 1832SE : 2.1 kg DR-ID 1811SE : 2.2 kg DR-ID 1812SE : 2.6 kg DR-ID 1814SE : 1.4 kg *excluding the battery pack (Standard: 0.22 kg, Lightweight: 0.18 kg) weight.
Memory exposure mode	<ul style="list-style-type: none"> DR-ID 1201SE/DR-ID 1202SE/DR-ID 1211SE/ DR-ID 1212SE/DR-ID 1831SE/DR-ID 1832SE/ DR-ID 1811SE/DR-ID 1812SE Maximum Storage: 100 images DR-ID 1213SE/DR-ID 1814SE Maximum Storage: 200 images
Option	<ul style="list-style-type: none"> Battery Pack (DR-ID 911SE) Battery Charger (DR-ID 911SE) Wired cable (DR-ID 911SE) Battery pack (DR-ID 12XX) Battery pack (DR-ID 18XX) Lightweight battery pack (DR-ID 18XX) Battery Charger (DR-ID 12XX, DR-ID 18XX) Wired cable (DR-ID 12XX, DR-ID 18XX) Docking stand (DR-ID 12XX, DR-ID 18XX) Battery Charger upgrade kit (DR-ID 12XX, DR-ID 18XX)

Operation Environment

Item	Examination Room	Operation Room
Ambient temperature	15 °C to 30 °C	10 °C to 35 °C
Relative humidity	15 % to 80 % (non condensing)	20 % to 80 % (non condensing)
Atmospheric pressure	700 hPa to 1060 hPa	

Transportation and Storage Environment

Wireless Communications

Item	FPD/Power Supply Unit		Except FPD/Power Supply Unit
	Except Battery Pack	Battery Pack	
Temperature	-30 to 50 °C (no freezing)	-20 to 50 °C (no freezing)	-40 to 65 °C (no freezing)
Humidity	10 to 90 % (non condensing)	10 to 80 % (non condensing)	5 to 95 % (non condensing)
Air pressure	700 to 1060 hPa		

When using the FPD, a wireless connection can be established between the wireless module incorporated into the FPD and the wireless access point.

Wireless communication is established based on the IEEE 802.11n LAN standard.

- DR-ID 911SE

Item	Frequency Range	BandWidth	Modulation	Output Watts
IEEE 802.11n	5180 MHz to 5240 MHz	20 MHz / 40 MHz	OFDM	Max: +13.89 dBm
	5500 MHz to 5700 MHz			

- DR-ID 1201SE/DR-ID 1202SE/DR-ID 1211SE/DR-ID 1212SE/DR-ID 1213SE

Item	Frequency Range	BandWidth	Modulation	Output Watts
IEEE 802.11n	2412 MHz to 2472 MHz	20 MHz	OFDM	Max: +27.5 dBm
	5180 MHz to 5320 MHz	20 MHz / 40 MHz		Max: +17.0 dBm
	5500 MHz to 5700 MHz			
	5745 MHz to 5825 MHz			

- DR-ID 1831SE/DR-ID 1832SE/DR-ID 1811SE/DR-ID 1812SE/DR-ID 1814SE

Item	Frequency Range	BandWidth	Modulation	Output Watts
IEEE 802.11n	2412 MHz to 2472 MHz	20 MHz	OFDM	Max: +20.5 dBm
	2422 MHz to 2462 MHz	40 MHz		
IEEE 802.11n IEEE 802.11ac	5180 MHz to 5825 MHz	20 MHz		Max: +13.5 dBm
	5190 MHz to 5795 MHz	40 MHz		

■ Combined with CXDI



NOTE

For detail, refer to the operation manual of Digital Radiography System CXDI.

Operation Environment

Item	Specifications
Ambient temperature	5 °C to 35 °C
Relative humidity	30 % to 80 % (non condensing)
Atmospheric pressure	700 hPa to 1060 hPa

Transportation and Storage Environment

Item	Specifications
Ambient temperature	-30 °C to 50 °C
Relative humidity	10 % to 95 % (non condensing)
Atmospheric pressure	700 hPa to 1060 hPa

■ Combined with AeroDR



NOTE

For detail, refer to the operation manual of Digital Radiography System AeroDR.

Operation Environment

Item	SKR 3000	AeroDR SYSTEM/ AeroDR SYSTEM 2
Ambient temperature	10 °C to 35 °C	10 °C to 30 °C
Relative humidity	35 % to 85 % (non condensing)	35 % to 80 % (non condensing)
Atmospheric pressure	700 hPa to 1060 hPa	

Transportation and Storage Environment

Item	Specifications
Ambient temperature	-20 °C to 50 °C (However, performance warranty period when storing at 50°C is 6 months after packing.)
Relative humidity	20 % to 90 % (non condensing)
Atmospheric pressure	700 hPa to 1060 hPa

■ Combined with VXvue



NOTE

For detail, refer to the operation manual of Digital Radiography System VXvue.

Operation Environment

Item	Specifications
Ambient temperature	0 °C to 40 °C
Relative humidity	5 % to 90 % (non condensing)
Atmospheric pressure	700 hPa to 1060 hPa

Transportation and Storage Environment

Item	Specifications
Ambient temperature	-15 °C to 55 °C
Relative humidity	5 % to 90 % (non condensing)
Atmospheric pressure	500 hPa to 1060 hPa

3.6.8 Image Processing Workstation

Side Station RAD

Item		Specifications
Display	Display monitor	19 inch monitor
	Matrix of display	1280 × 1024
LI output	Interface	DICOM Print supported
Network transmission	Interface	DICOM Storage supported
	Format	DX, CR, RF
Dimensions/Mass	Monitor	Dimensions: W422.5 mm × H363 to 530 mm × D256 mm Weight: Approx. 8.1 kg
	Console PC	Dimensions: W169 mm × H445 mm × D432 mm or W160 mm × H427 mm × D450 mm
The Number of Images Stored	Image storage area	160 GB
	Number of images recorded	30000 Frames or more (1440 × 1440, 5 MB/image)
Reconstruction method	Standard	FBP, SA
	Option	T-smart (Iteration)

3

3.6.9 System Options

Item	Details
2nd Rack	Cabinet that stores the control cabinet of X-ray tube support, X-ray radiography table, and high speed rotation starter.
Remote maintenance function	Function that enables remote maintenance.

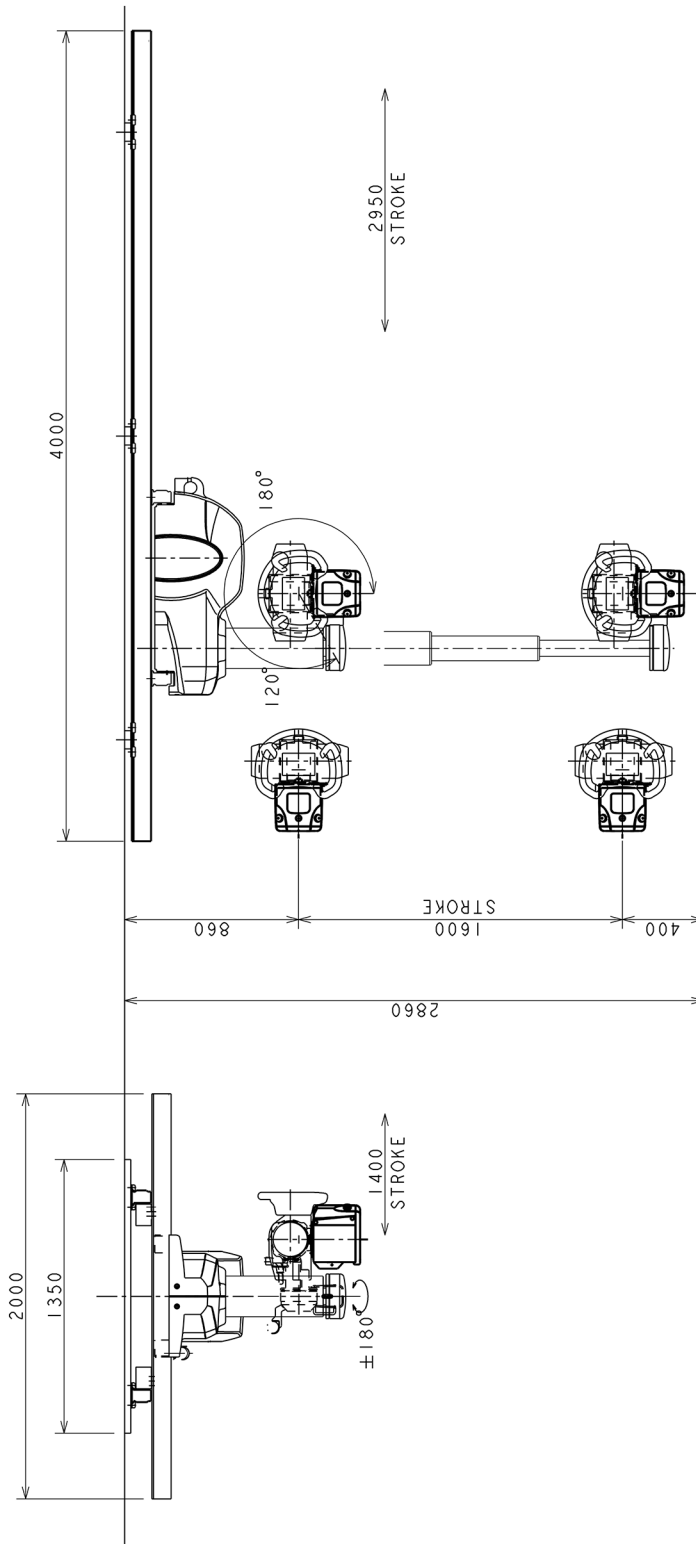
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4

Dimensions

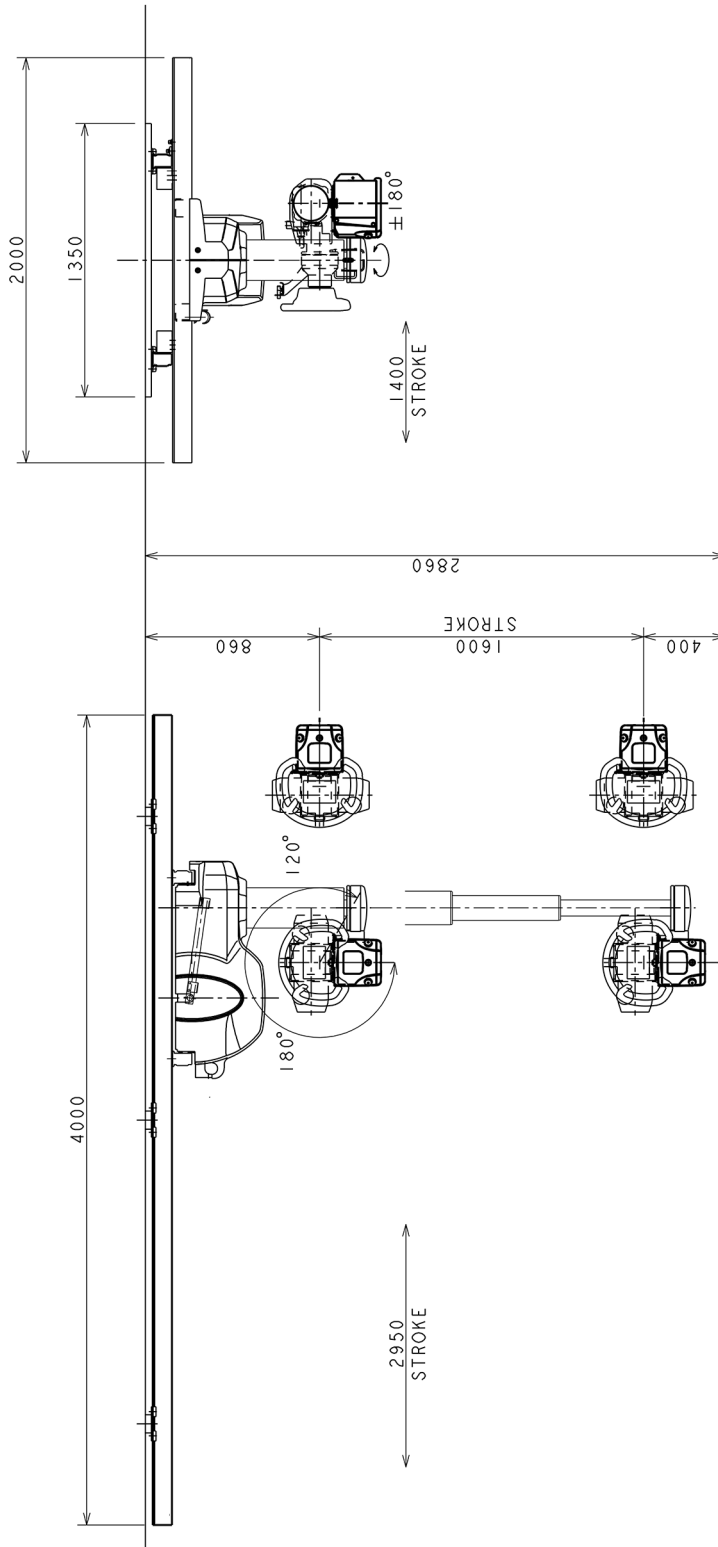
4.1 X-Ray Tube Support

4.1.1 CH-200/CH-200M



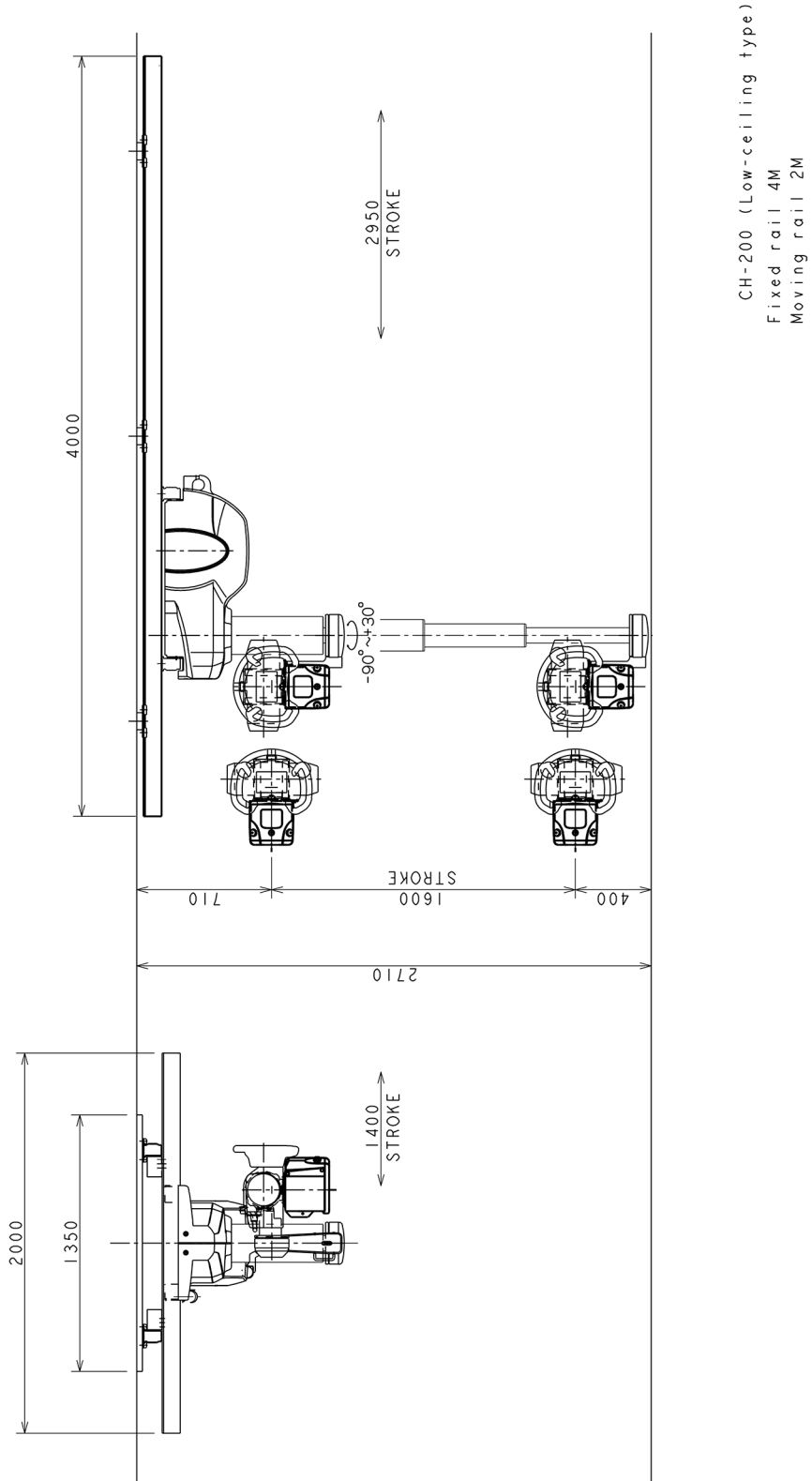
CH-200
Fixed rail 4M
Moving rail 2M

4.1.3 CH-200/CH-200M (Rear mount type)

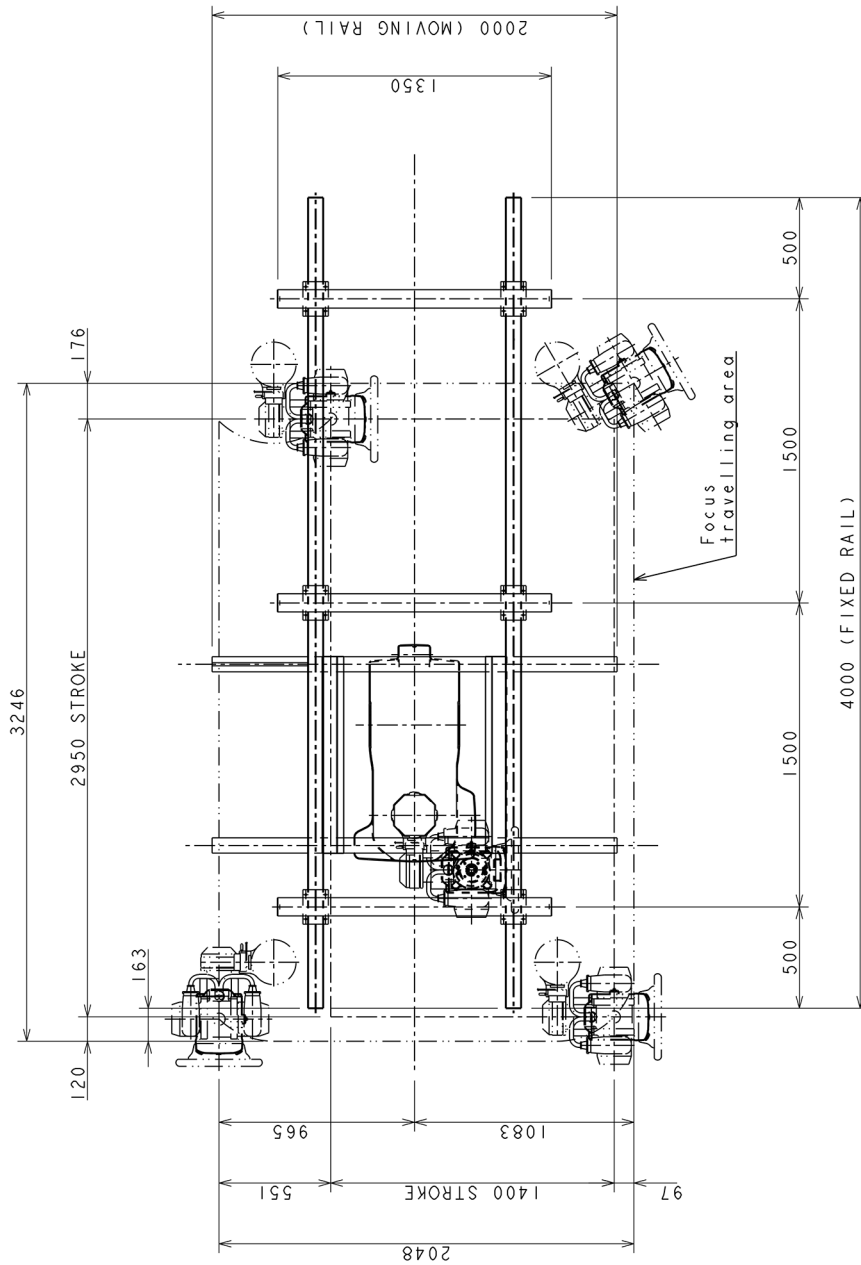


CH-200 (Rear mount type)
 Fixed rail 4M
 Moving rail 2M

4.1.5 CH-200/CH-200M (Low-Ceiling Type)

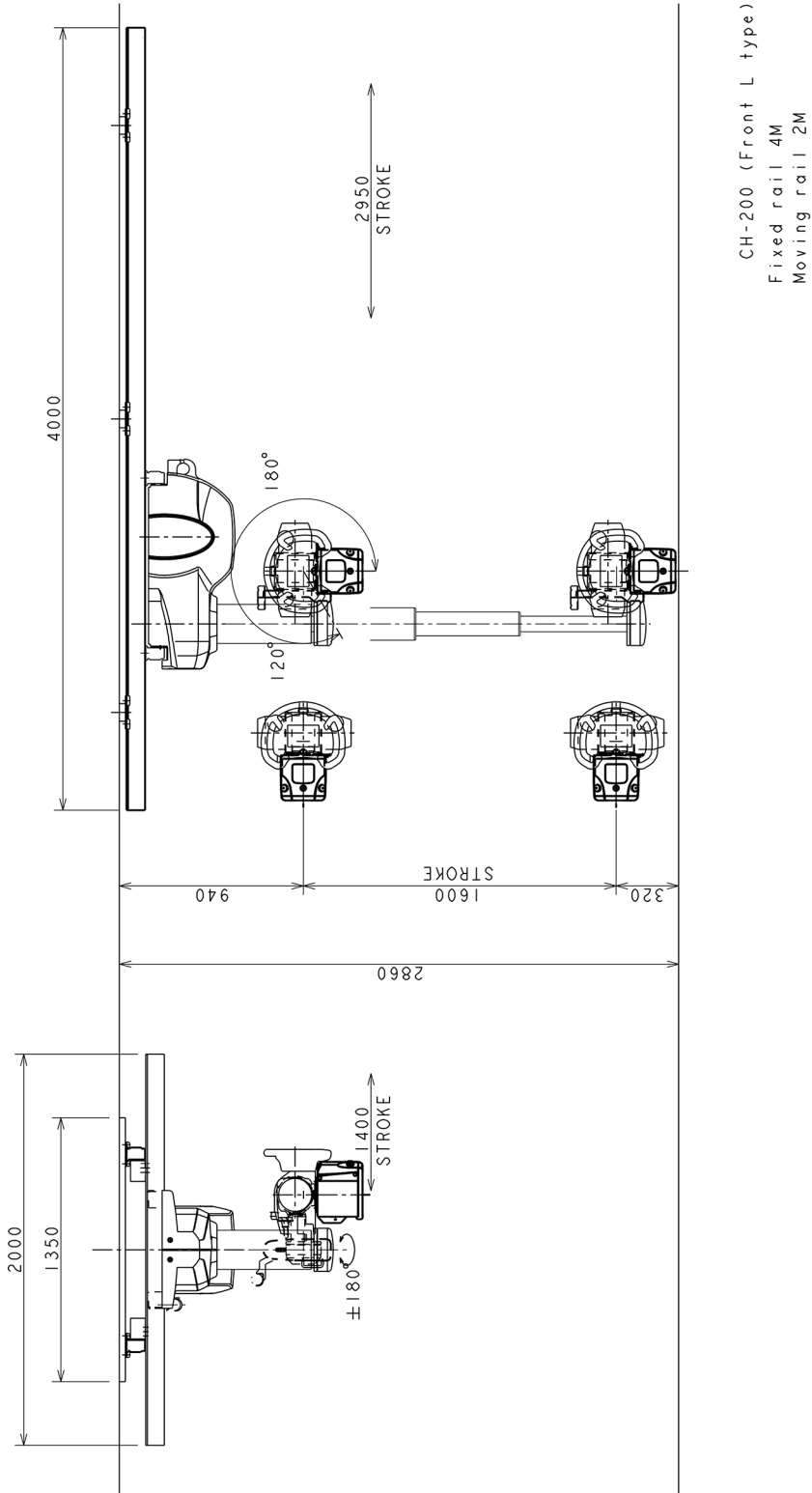


4.1.6 CH-200/CH-200M (Moving Range of Low-Ceiling Type)

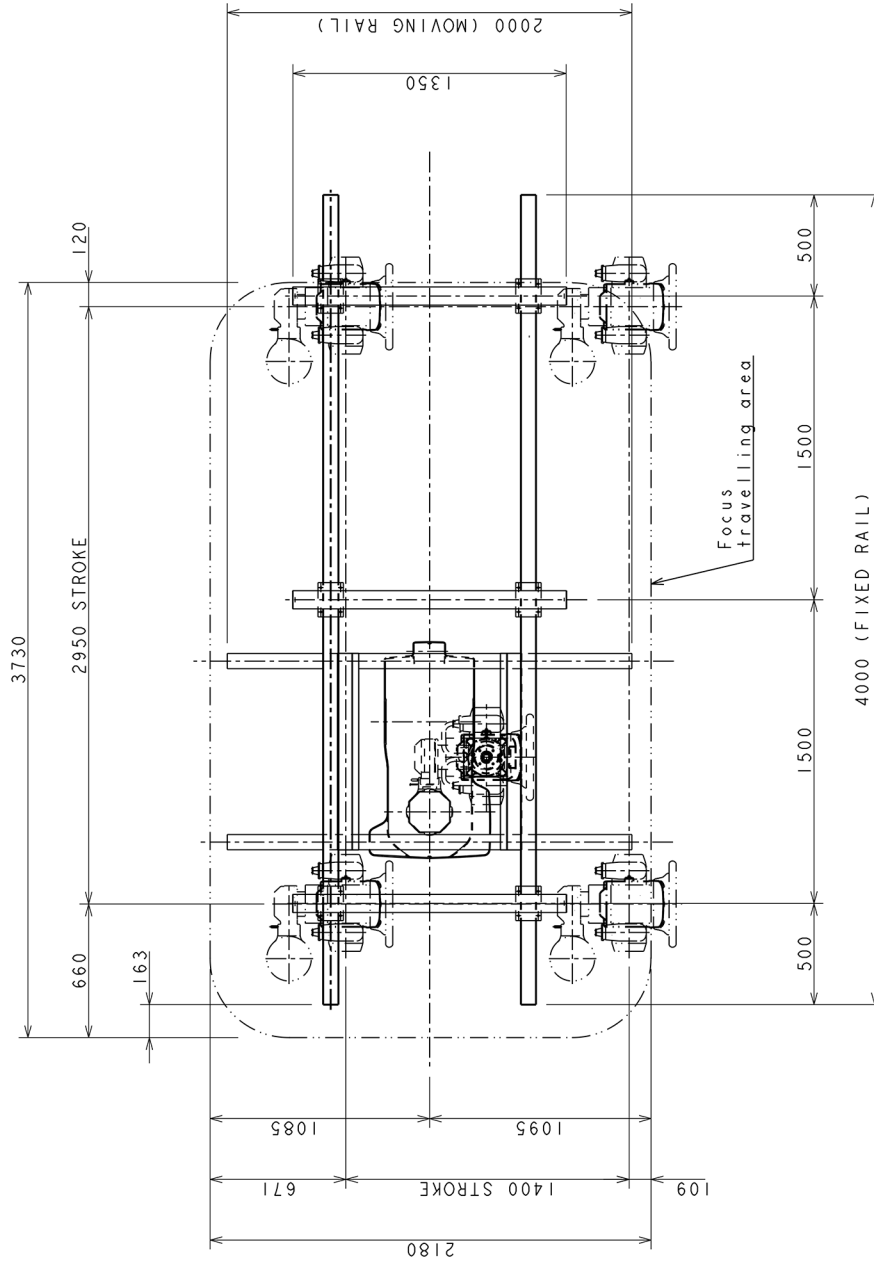


CH-200 (Moving range of low-ceiling type)
 Fixed rail 4M
 Moving rail 2M

4.1.7 CH-200/CH-200M (Front L Type)

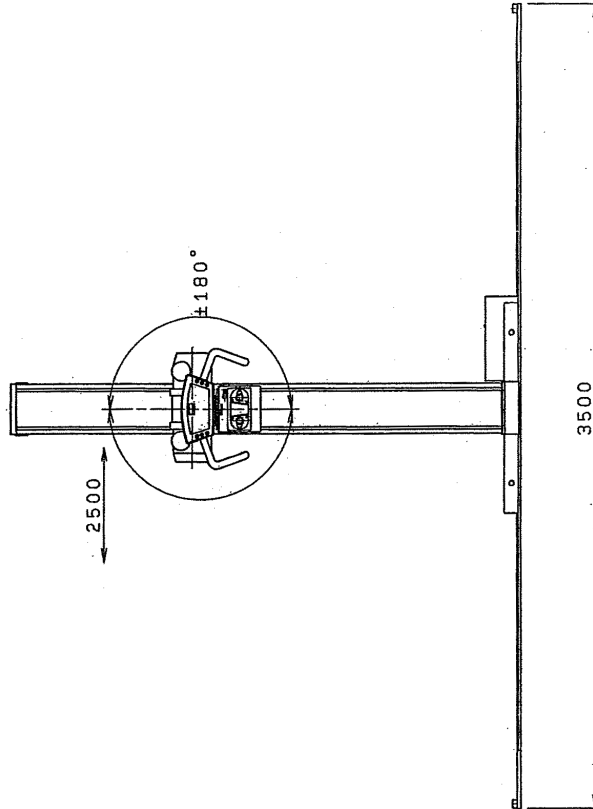
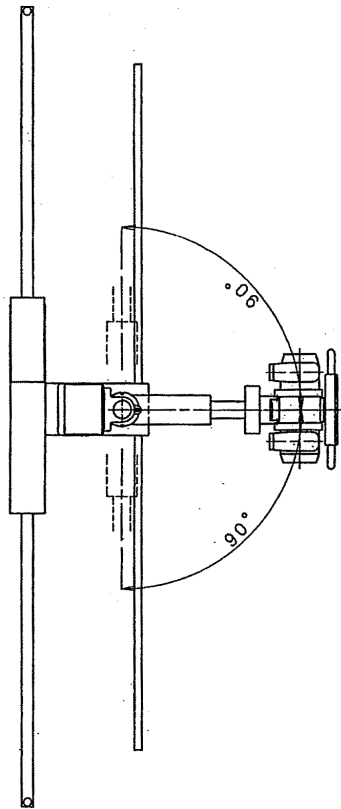


4.1.8 CH-200/CH-200M (Moving Range of Front L Type)

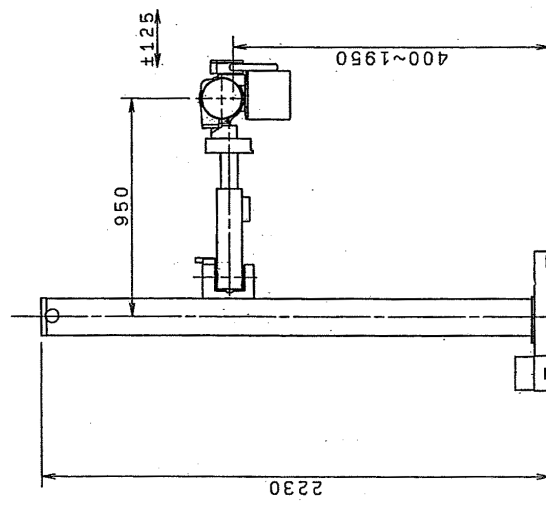


CH-200 (Moving range of front L type)
 Fixed rail 4M
 Moving rail 2M

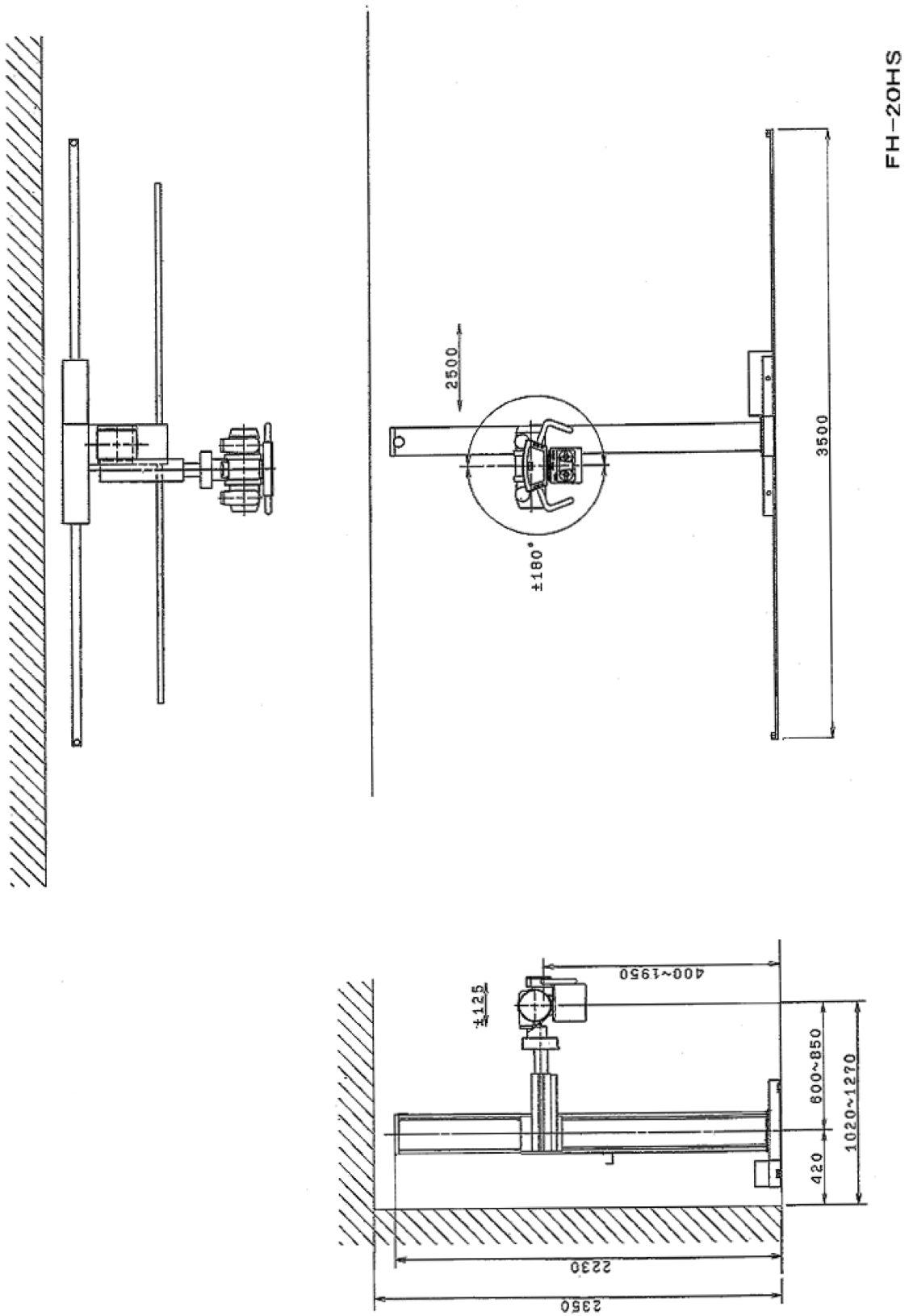
4.1.9 FH-20HR



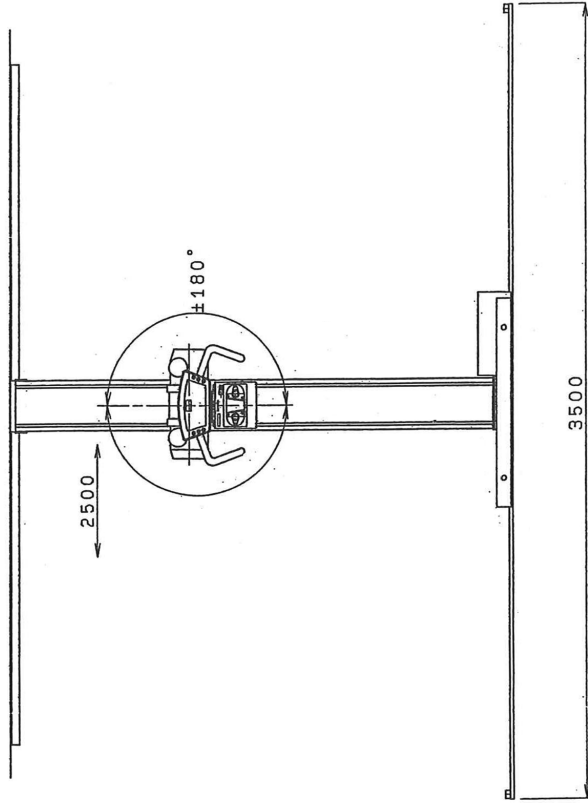
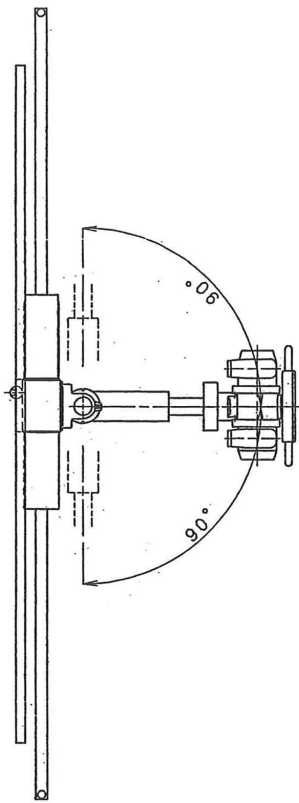
FH-20HR



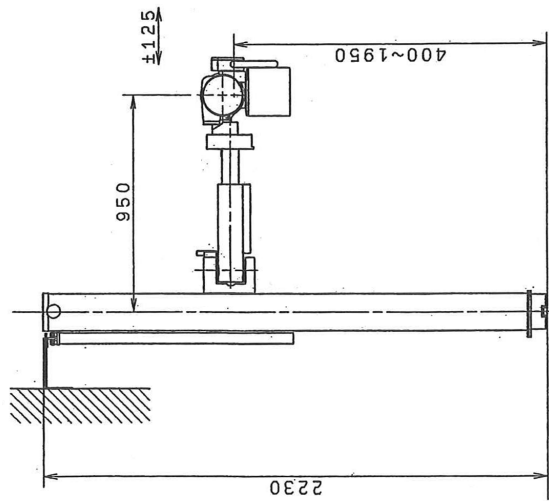
4.1.10 FH-20HS



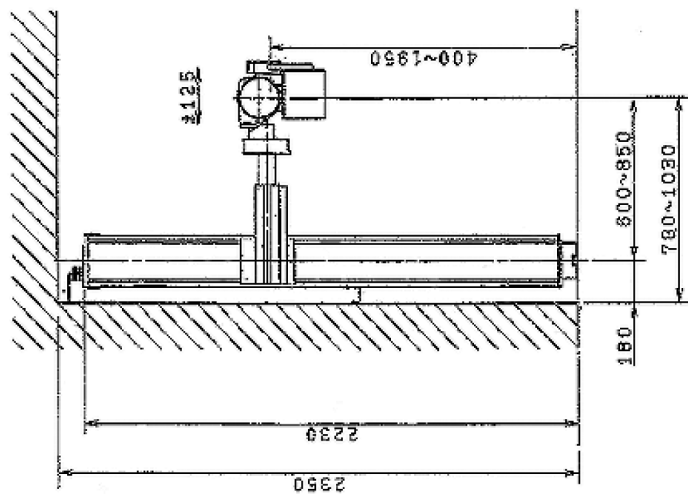
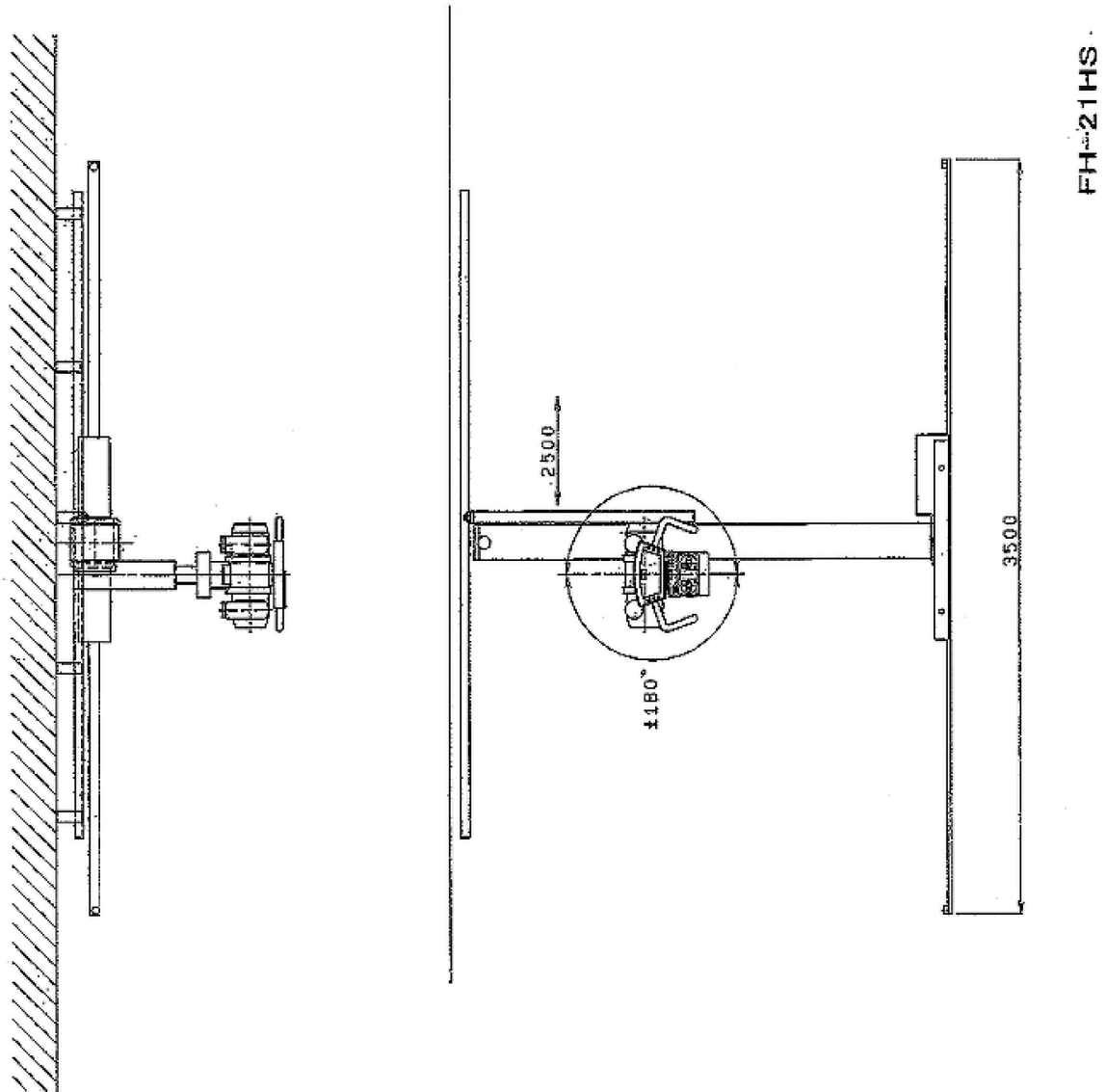
4.1.11 FH-21HR



FH-21HR

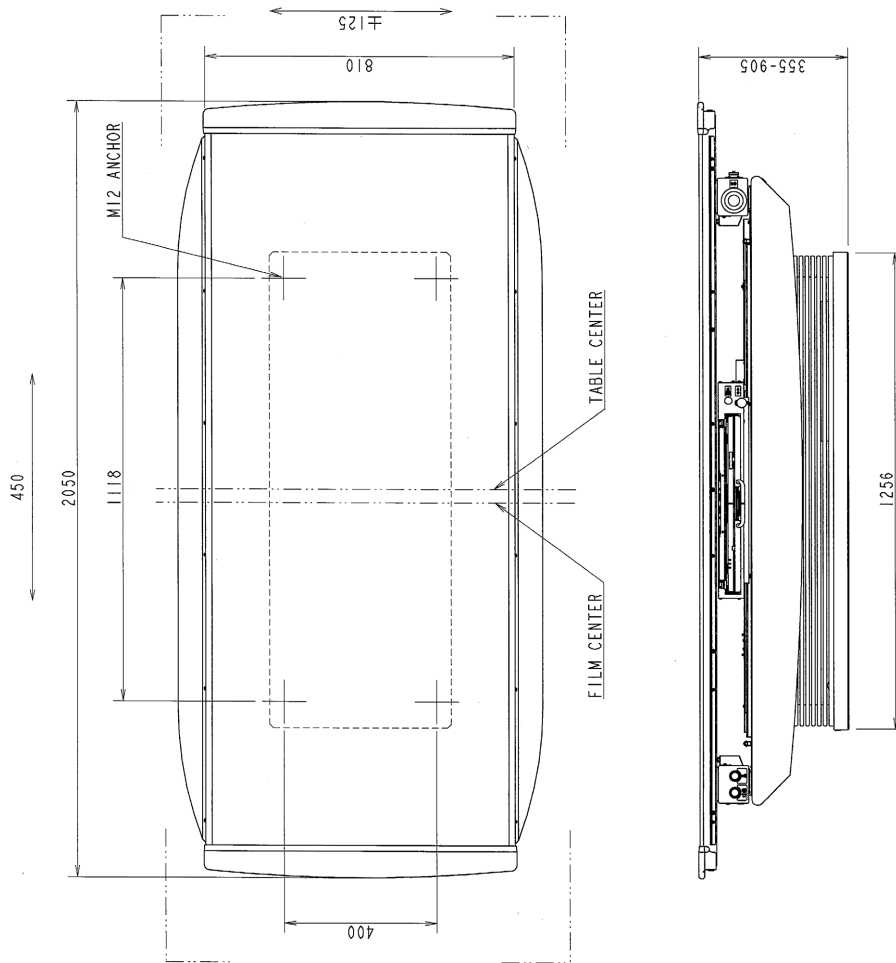


4.1.12 FH-21HS



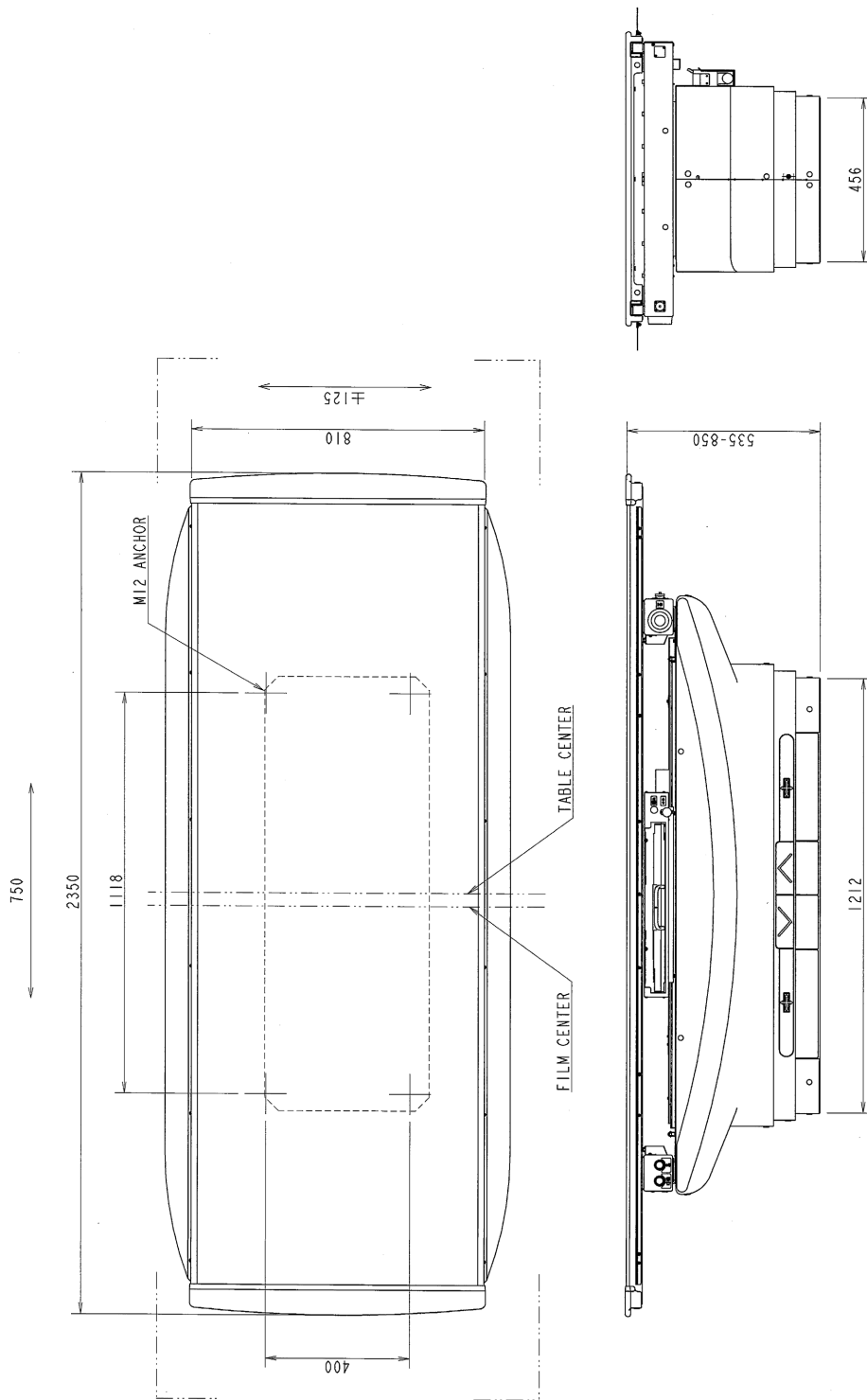
4.2 X-Ray Radiography Table

4.2.1 BK-120



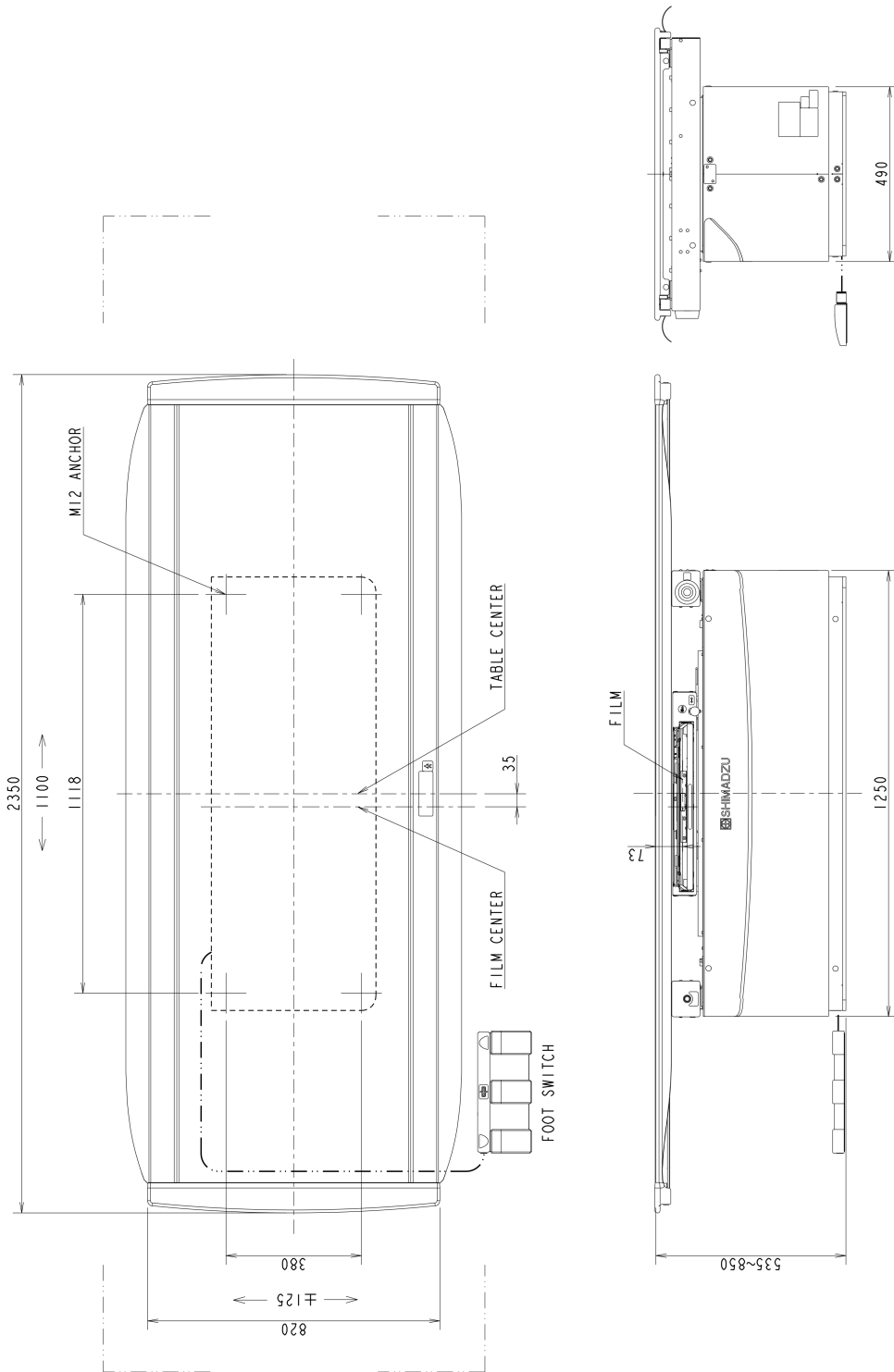
BK-120

4.2.2 BK-200

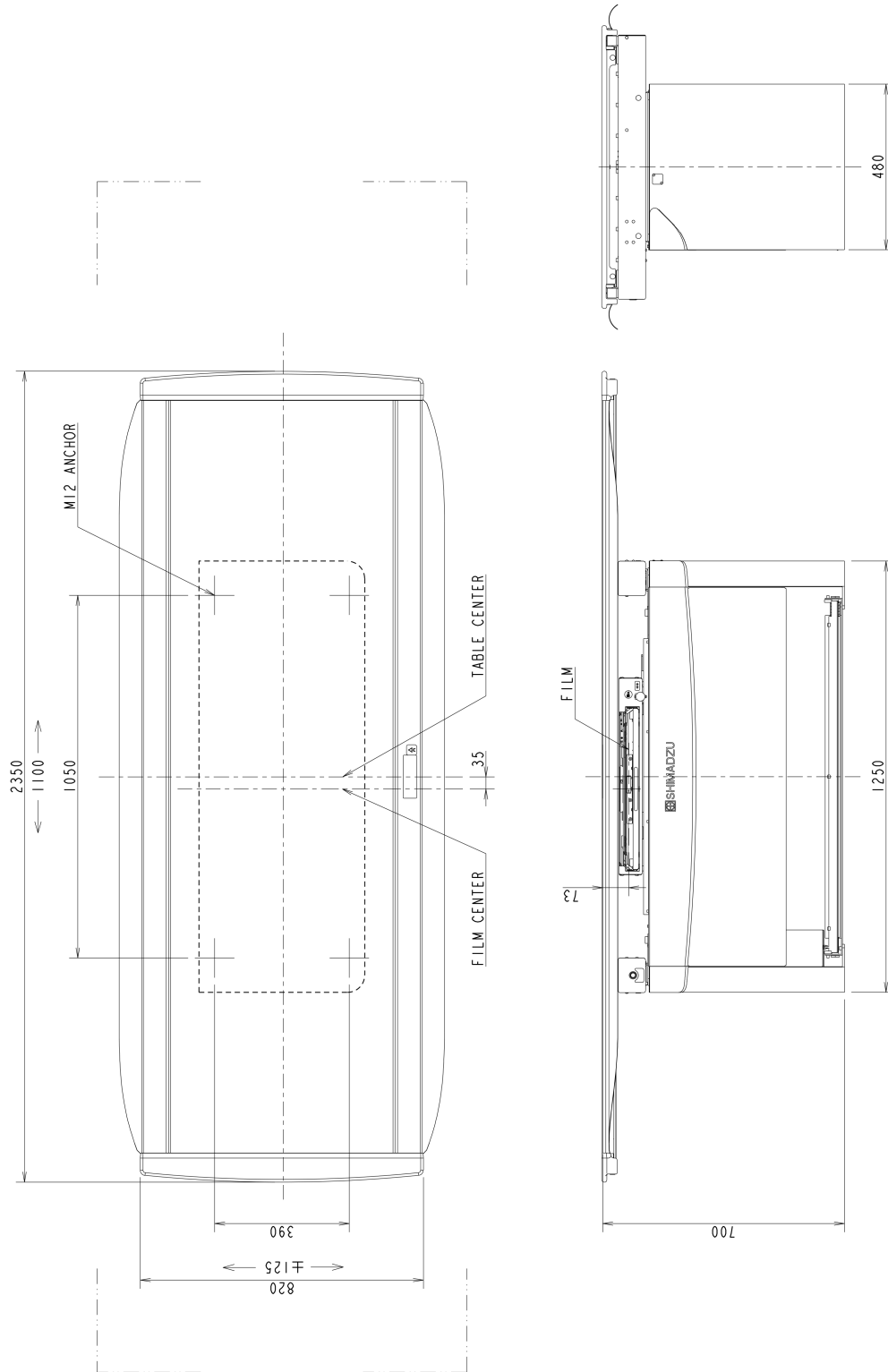


BK-200

4.2.3 BK-120MK

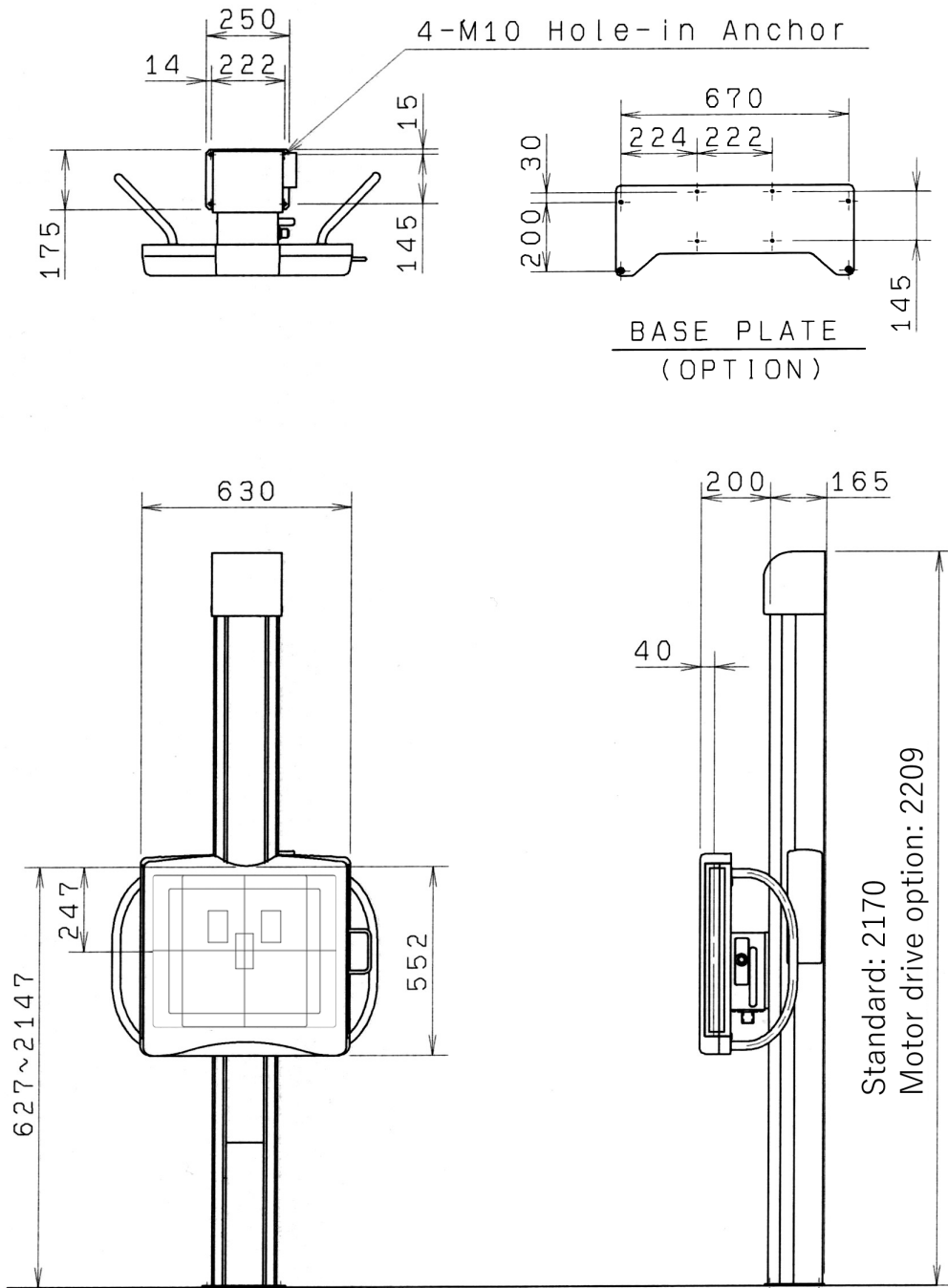


4.2.4 BK-12HK

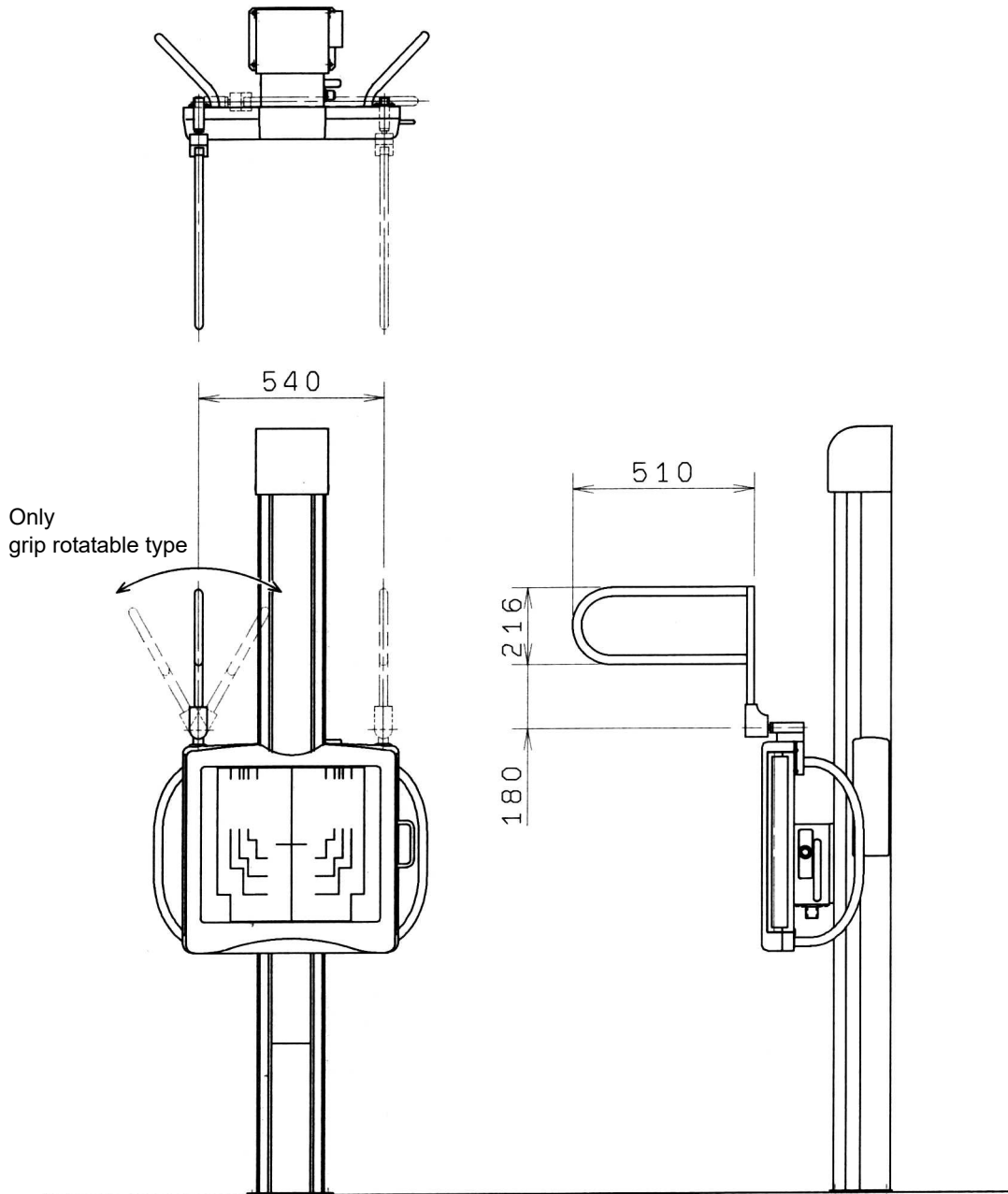


4.3 X-Ray Radiography Stand

4.3.1 BR-120

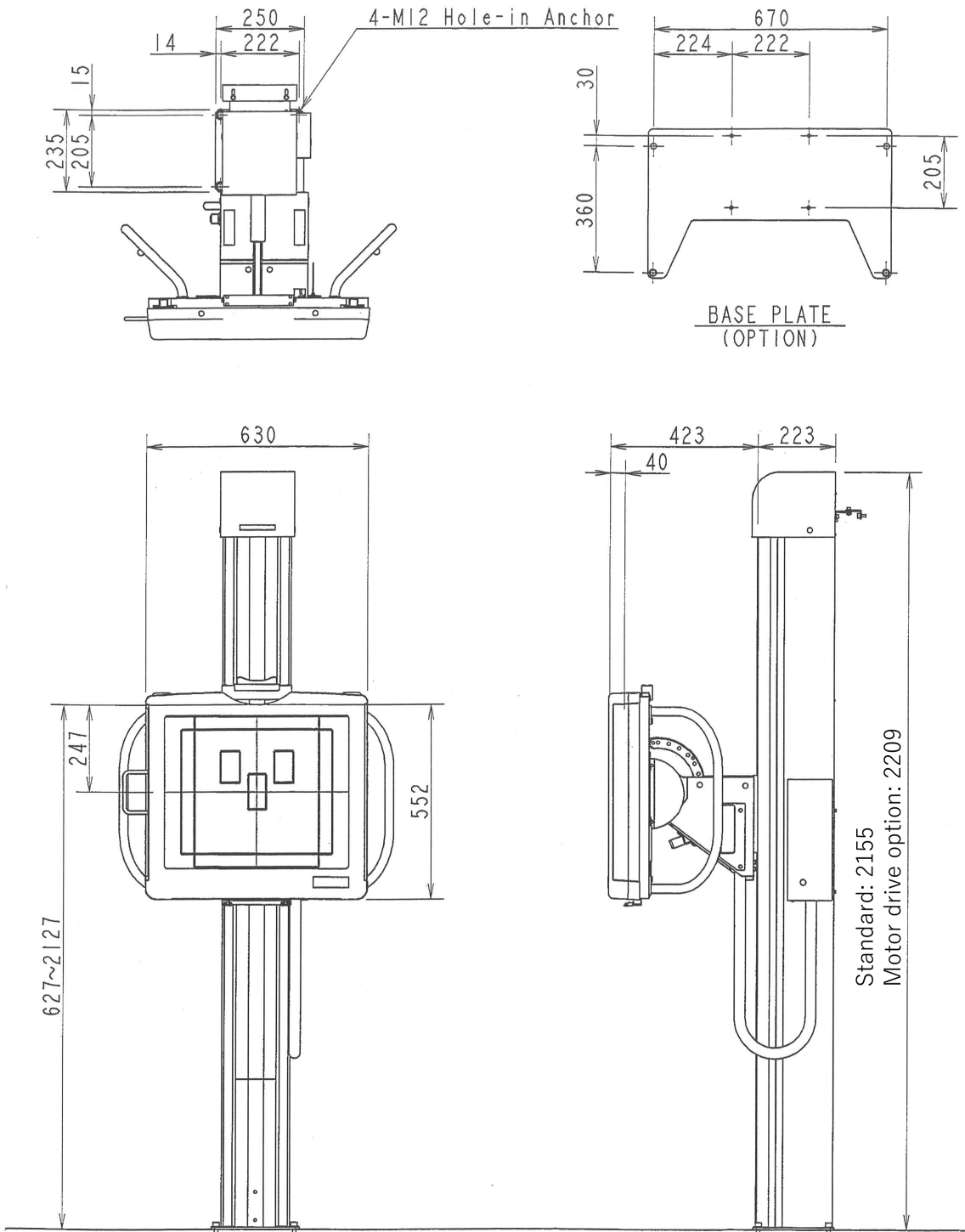


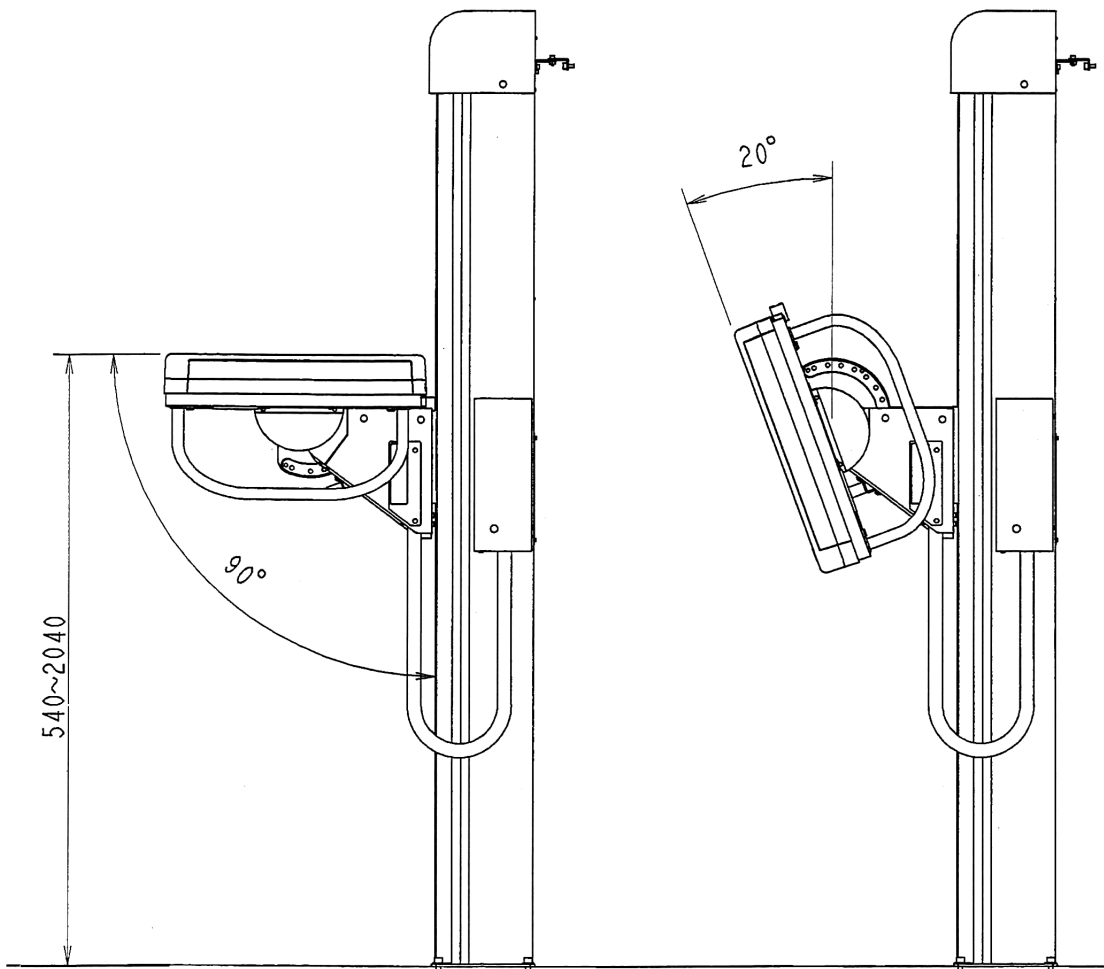
1 : 20
BR-120

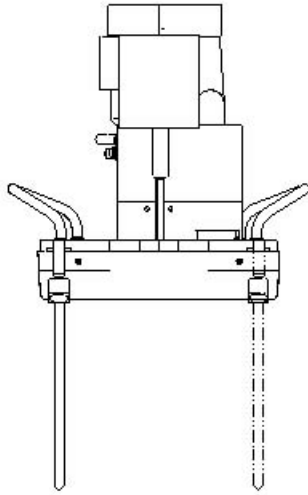


1 : 20
HAND GRIP
(OPTION)

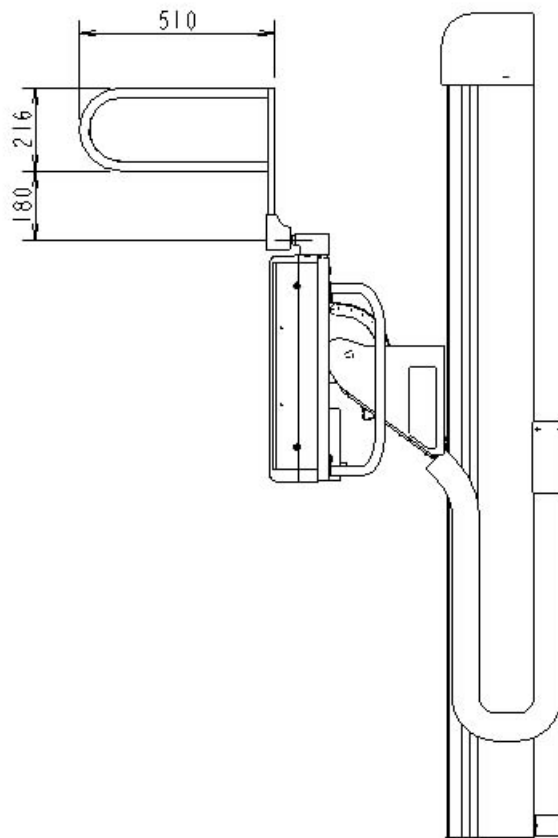
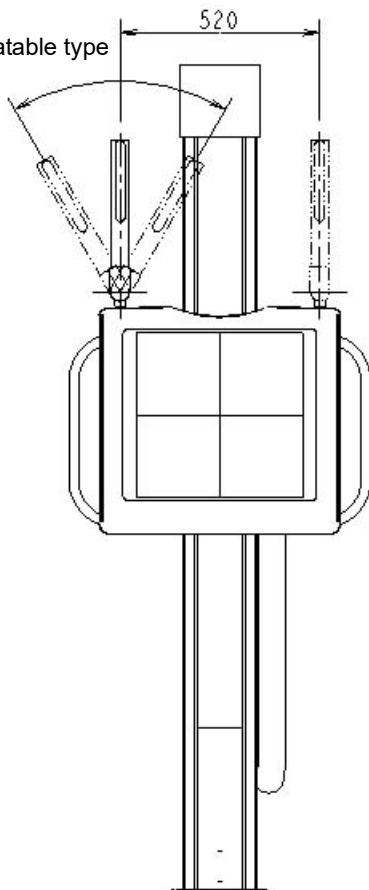
4.3.2 BR-120T



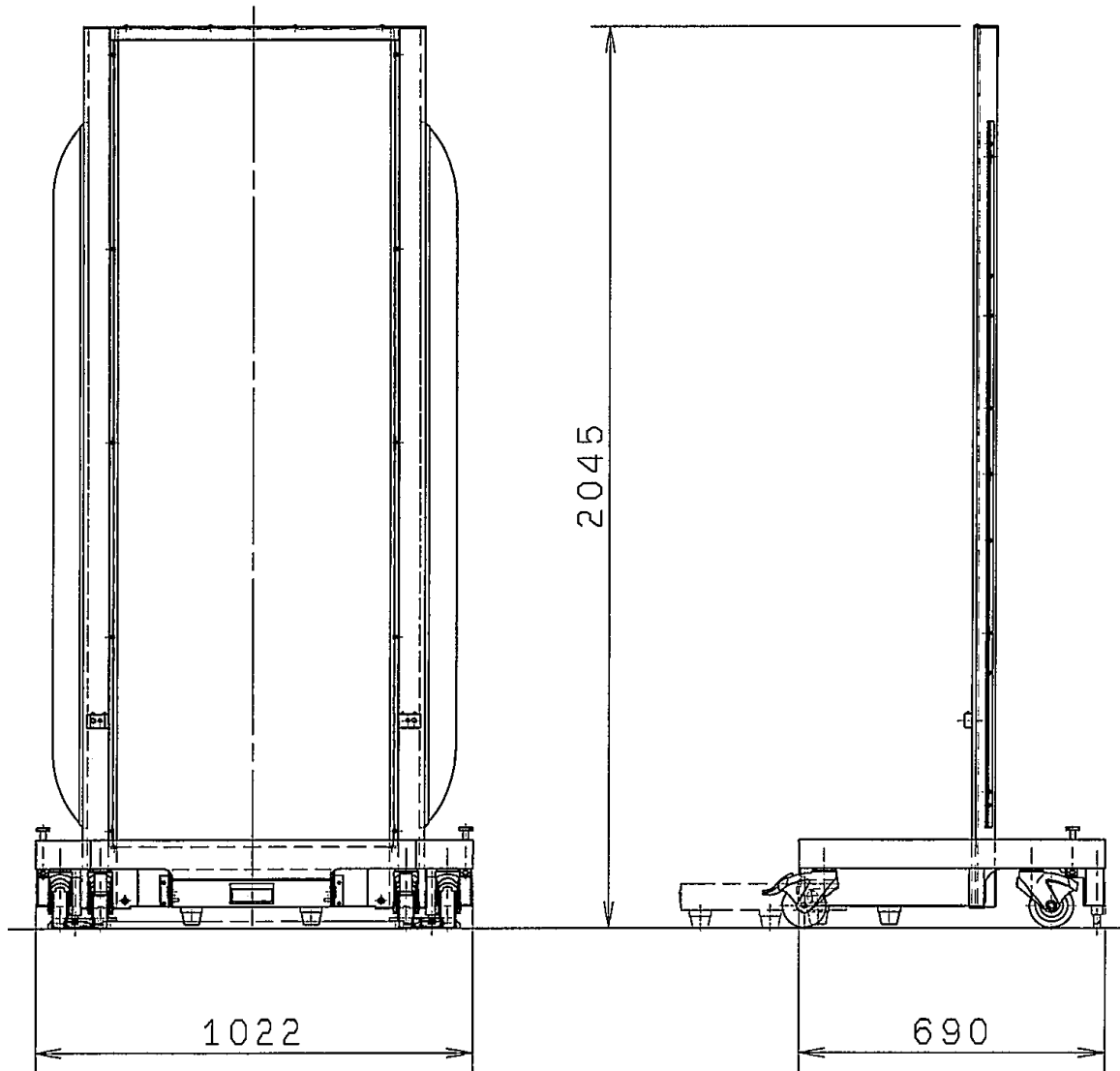




Only
grip rotatable type

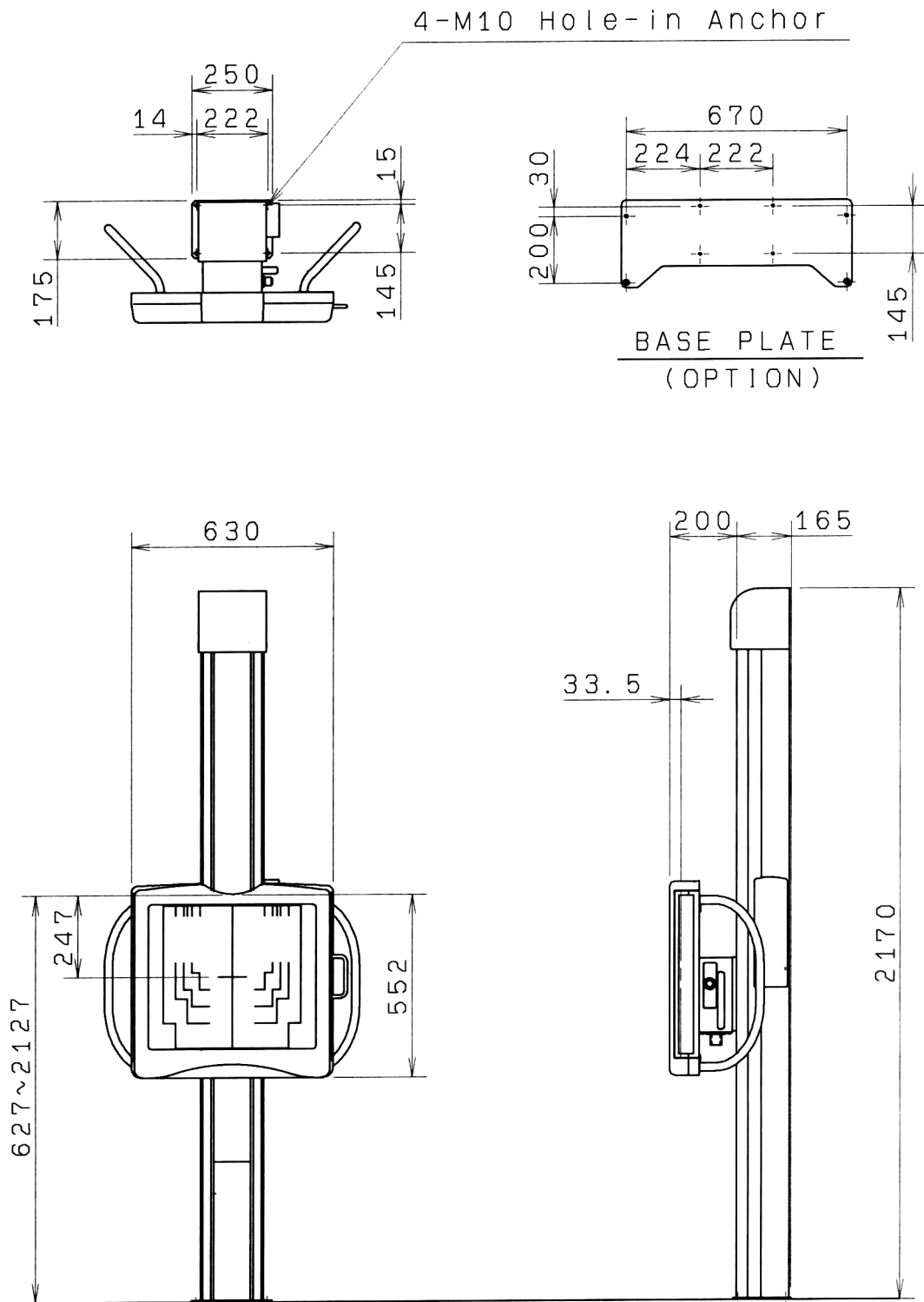


4.3.3 Patient Stand (Common for BR-120/BR-120T)



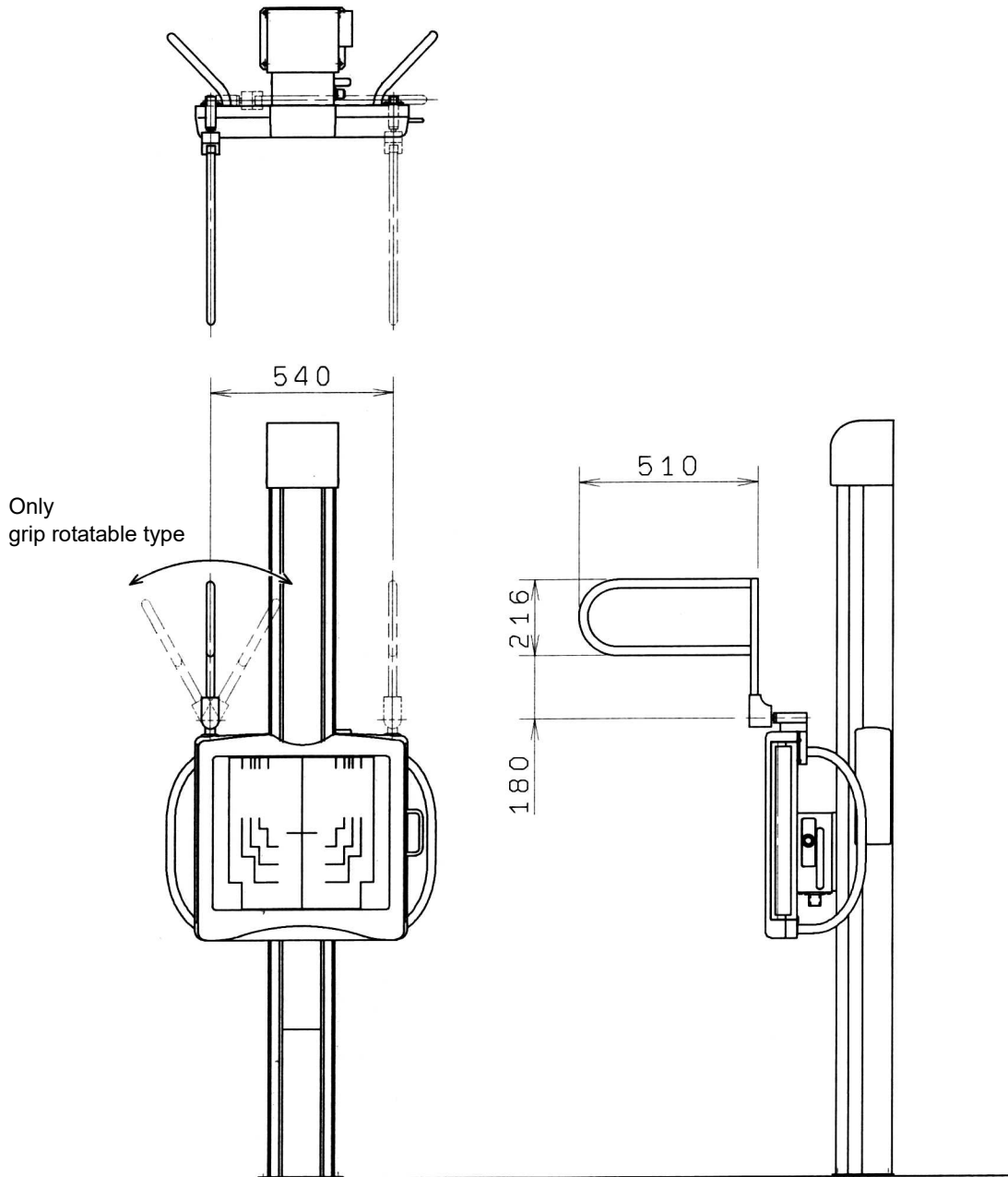
4

4.3.4 BR-120M



1 : 20
BR-120M

Hand Grip (Option)



1 : 20
HAND GRIP
(OPTION)

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