

# **Radioflex**

Portable Industrial X-ray Inspection Apparatus

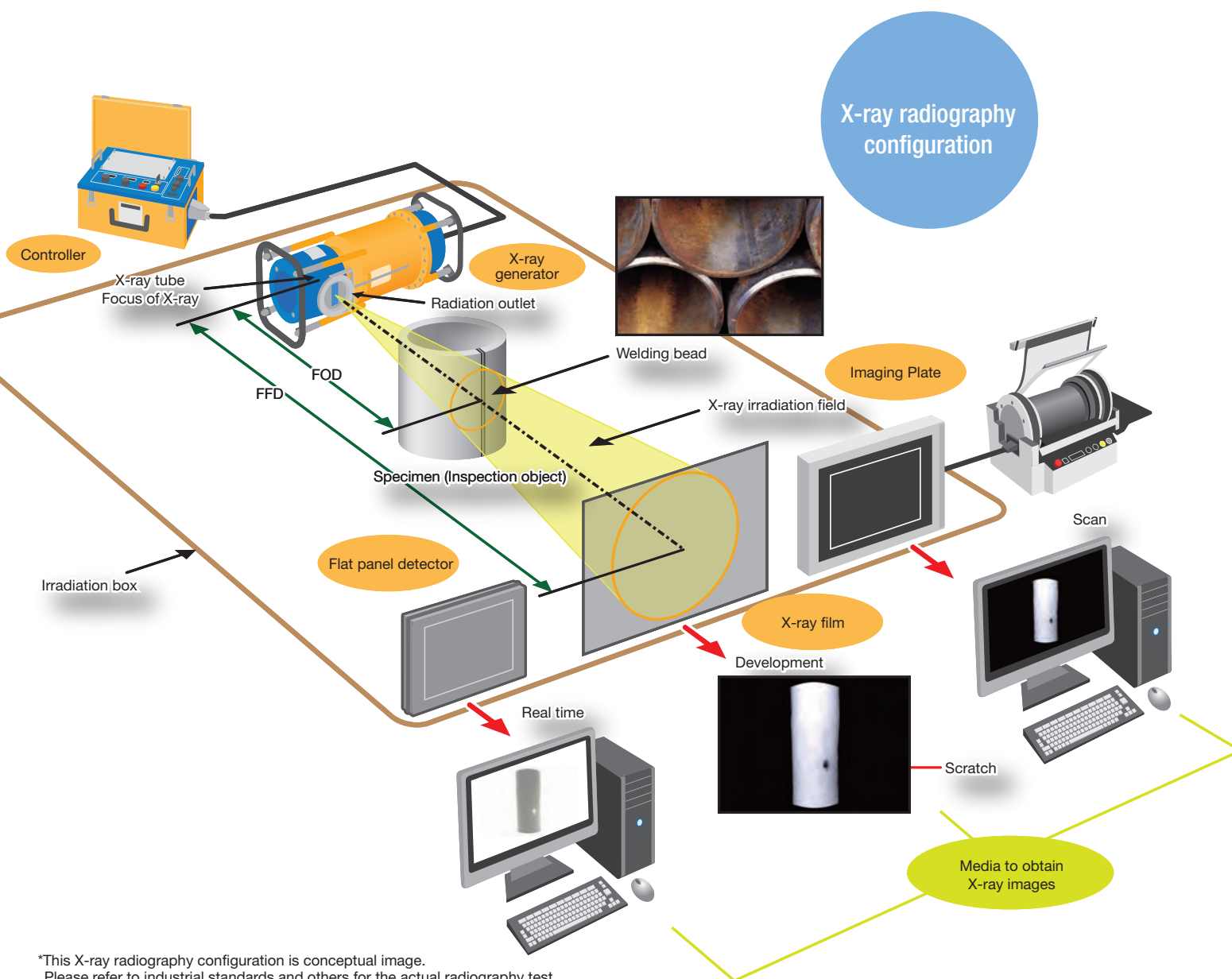




# New feature of X-ray imaging environment with enhanced operability and safety

# Radioflex

## X-ray radiography configuration



\*This X-ray radiography configuration is conceptual image.  
Please refer to industrial standards and others for the actual radiography test.

"Radioflex" series are the most reliable portable X-ray inspection apparatus.

We meet your various needs of non-destructive inspection, such as inspections of pipes at various plant, building maintenance, cement core at building, welding of light alloy and connection of synthetic resin.

## Simple operation based on direct settings\*

The rotary encoder setting for X-ray tube voltage and exposure time enables easy adjustment of optimal exposure condition.

\*RF-EGM2 Series, RF-300M2F

## Reduced operating time with optimum aging mode\*

Automatic aging mode will start when 8 hours have passed after the last stop. Unnecessary aging times are eliminated because the current kV setting is used for the aging.

\*RF-EGM2 Series: Max voltage is used for automatic aging when stop period exceeds 30 days.

## Power-saving mode enables use in limited-power environments\*

New feature enables switch from standard-power (STD) to power-saving mode (LOW) when power supply capacity is limited.

\*RF-EGM2 Series

## Safe operation assured by a variety of safety functions

Various safety functions provide inspections with reassurance.

- Safety key-switch
- Interlock mechanism
- Buzzer alarm function

## System configuration

X-ray generator, controller, accessories, remote controller (with 20m cable)  
Please refer to page 6 for the details of accessories.

\*RF-EGM2 series







## Portable Industrial X-ray Inspection Apparatus

### Radioflex RF-EGM2 Series

RF-EGM2 is the best X-ray solution for field testing because of its excellent operability and robustness.

Focus  
on  
fields

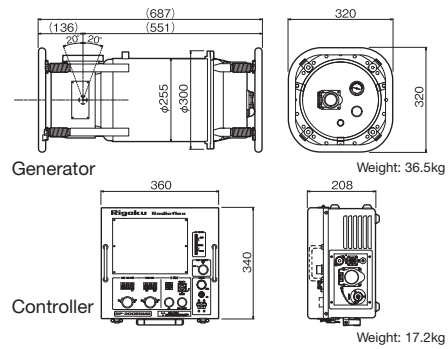
Robustness,  
Easy operation

Low  
to  
High  
power

Various selections from  
tube voltage among  
100kV-300kV

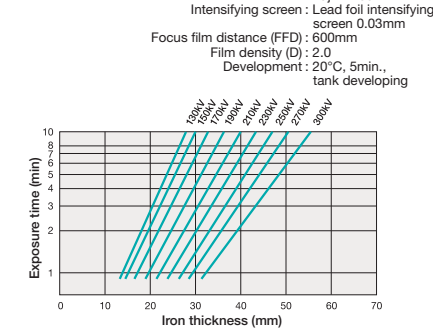
### RF-300EGM2

Unit: mm



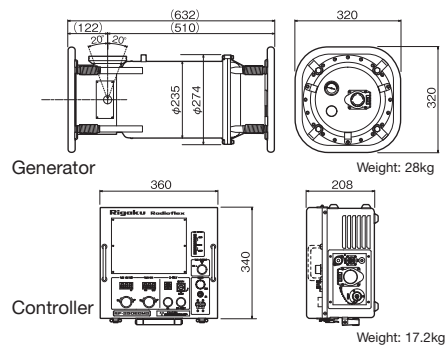
Tube Voltage	130-300kV in steps of 2kV
Tube Current	(STD mode) 5mA (at 160kV or more) (LOW mode) $\approx$ 4mA (at 160kV or more)
Duty cycle	100% (10min. -10°C to +45°C)
X-ray tube	Ceramic X-ray tube Focal spot size (nominal) 2.5mm $\times$ 2.5mm
Inherent filter	Aluminum 2mm + Beryllium 1mm
Dimensions	Generator 320(W) $\times$ 320(D) $\times$ 687(H)mm Controller 360(W) $\times$ 340(D) $\times$ 208(H)mm
Weight	Generator 36.5kg Controller 17.2kg
Power supply	Single phase AC 190V-240V 50/60Hz
Power consumption	(STD mode) 4.1kVA (LOW mode) 3.0kVA
Generator insulation	SF6 insulation gas
Generator cooling	Forced air cooling by radiator

#### Reference exposure chart



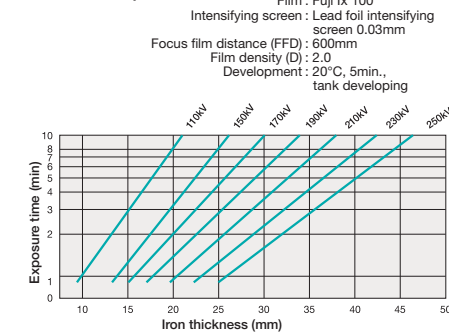
### RF-250EGM2

Unit: mm



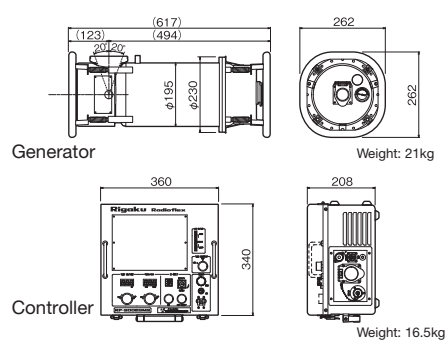
Tube Voltage	110-250kV in steps of 2kV
Tube Current	(STD mode) 5mA (at 140kV or more) (LOW mode) $\approx$ 4mA (at 140kV or more)
Duty cycle	100% (10min. -10°C to +45°C)
X-ray tube	Ceramic X-ray tube Focal spot size (nominal) 2.0mm $\times$ 2.0mm
Inherent filter	Aluminum 2mm + Beryllium 1mm
Dimensions	Generator 320(W) $\times$ 320(D) $\times$ 632(H)mm Controller 360(W) $\times$ 340(D) $\times$ 208(H)mm
Weight	Generator 28.0kg Controller 17.2kg
Power supply	Single phase AC 190V-240V 50/60Hz
Power consumption	(STD mode) 3.7kVA (LOW mode) 2.8kVA
Generator insulation	SF6 insulation gas
Generator cooling	Forced air cooling by radiator

#### Reference exposure chart



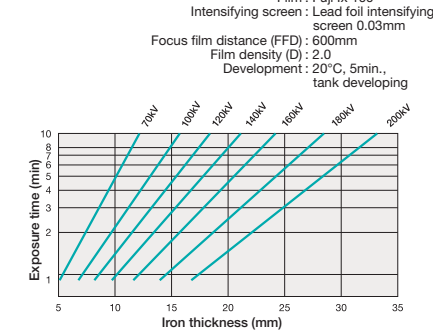
### RF-200EGM2

Unit: mm

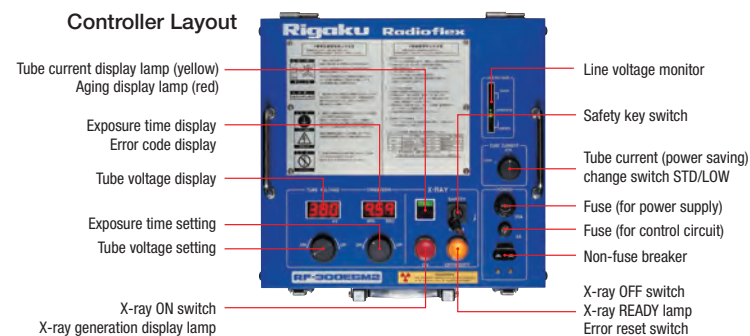


Tube Voltage	70-200kV in steps of 2kV
Tube Current	(STD mode) 5mA (at 90kV or more) (LOW mode) $\approx$ 4mA (at 90kV or more)
Duty cycle	100% (10min. -10°C to +45°C)
X-ray tube	Ceramic X-ray tube Focal spot size (nominal) 2.0mm $\times$ 2.0mm
Inherent filter	Aluminum 2mm + Beryllium 1mm
Dimensions	Generator 262(W) $\times$ 262(D) $\times$ 617(H)mm Controller 360(W) $\times$ 340(D) $\times$ 208(H)mm
Weight	Generator 21.0kg Controller 16.5kg
Power supply	Single phase AC 190V-240V 50/60Hz
Power consumption	(STD mode) 3.1kVA (LOW mode) 2.4kVA
Generator insulation	SF6 insulation gas
Generator cooling	Forced air cooling by radiator

#### Reference exposure chart



#### Controller Layout



#### Main Functions/Specifications of Controller

Function	Specification
Timer display (Error display)	•Digital: 1 sec, -9 mins, 59 secs. (1-second steps) •Error code displayed when error occurs •Waiting time displayed when X-ray generation halted (optional)
Auto-aging	•Required aging time: Automatic setting for long and short halt
Safety circuits	•Safety key switch •Output terminal for door interlock •Output terminal for X-ray generation warning •Pre-warning buzzer function before X-ray generation (optional)
Power saving mode	•Tube current selection switch (STD mode, LOW mode)
Others	•Time-up buzzer •Line voltage monitor •Remote controller (optional)



## Portable Industrial X-ray Inspection Apparatus

### Radioflex RF-200SPS

RF-200SPS is optimum X-ray radiographic tool for on-site inspection especially located in a narrow area or at a high place.

Focus  
on  
fields

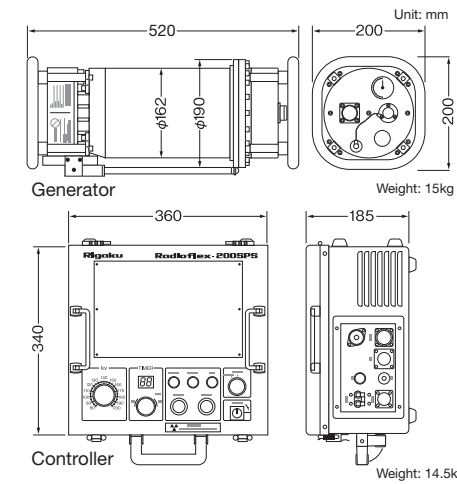
Robustness,  
Easy operation

Compact  
&  
Light  
weight

Excellent workability at  
tough testing environment

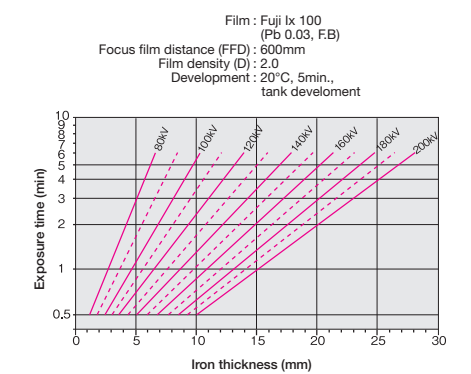
### RF-200SPS

Unit: mm



Tube Voltage	80-200kV
Tube Current	3mA fix
Duty cycle	100% (6min. -10°C to +40°C)
X-ray tube	Ceramic X-ray tube Focal spot size (nominal) 2.0mm $\times$ 2.0mm
Inherent filter	Aluminum 2mm + Beryllium 1mm
Dimensions	Generator 200(W) $\times$ 200(D) $\times$ 520(H)mm Controller 360(W) $\times$ 340(D) $\times$ 185(H)mm
Weight	Generator 15kg Controller 14.5kg
Power supply	Single phase AC 190-240V 50/60Hz
Power consumption	1kVA
Generator insulation	SF6 insulation gas
Generator cooling	Forced air cooling by radiator

#### Reference exposure chart



#### Made to order

### RF-100GSB

Tube Voltage	20-100kV 20-50kV in steps of 2.5kV 50kV-100kV in steps of 5kV
Tube Current	5mA
Duty cycle	100% (6min. -10°C to +40°C)
X-ray tube	Glass X-ray tube Focal spot size (nominal) 1.5mm $\times$ 1.5mm
Inherent filter	-
Dimensions	Generator 262(W) $\times$ 262(D) $\times$ 570(H)mm Controller 425(W) $\times$ 380(D) $\times$ 245(H)mm
Weight	Generator 22kg Controller 21.5kg
Power supply	Single phase AC 190V-240V 50/60Hz
Power consumption	1.0kVA
Generator insulation	SF6 insulation gas
Generator cooling	Forced air cooling by radiator





## Panoramic Type Portable X-ray Unit

# Radioflex RF-300M2F

RF-300M2F is a panoramic portable unit with flat target.  
It works effectively for inspection of circumferential weld for large dia. steel pipe.

**Panoramic  
Radiation**

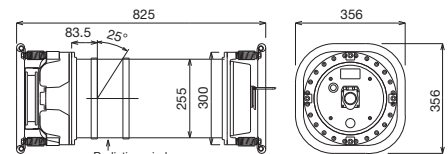
Inspection of large dia.  
steelpipe welds

**Focus  
on  
fields**

Robustness,  
Easy operation

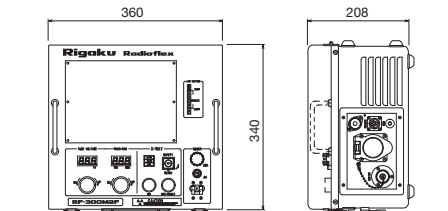
## RF-300M2F

Unit: mm



Generator

Weight: 55.5kg



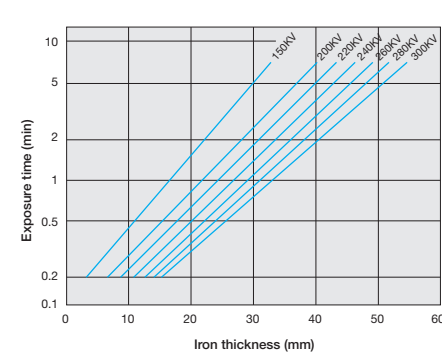
Controller

Weight: 17.2kg

Tube Voltage	150-300kV in steps of 2kV
Tube Current	5mA
Duty cycle	100% (6min. -10°C to +40°C)
X-ray tube	Glass X-ray tube Focal spot size (nominal) 2.5mm×2.5mm
Inherent filter	Aluminum 2.5mm (case) + Copper1mm (tube)
Dimensions	Generator 356(W)×356(D)×825(H)mm Controller 360(W)×340(D)×208(H)mm
Weight	Generator 50.2kg without the cover for directional 55.5 kg with the cover for directional Controller 17.2kg
Power supply	Single phase AC 190V-240V 50/60Hz
Power consumption	4kVA
Generator insulation	SF6 insulation gas
Generator cooling	Forced air cooling by radiator

### Reference exposure chart

Film : Fuji Ix 100  
Intensifying screen : Lead foil intensifying screen 0.03×2 (front bag)  
Focus film distance (FFD) : 600mm  
Film density (D) : 2.0  
Development : 20°C, 5min, tank development



## Related products

### CR-1012 (mobile type imaging plate scanner)

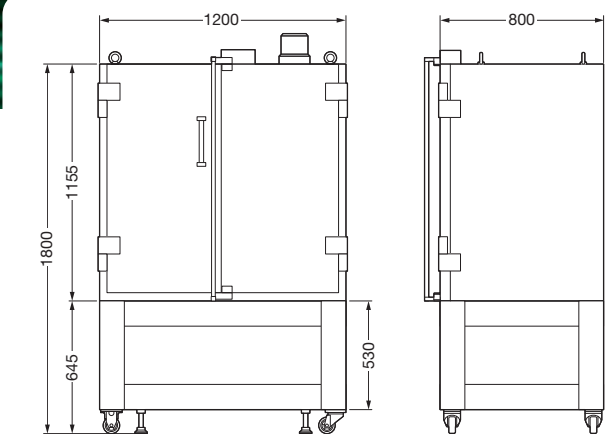


CR-1012 is a scanner for imaging plates, for industrial X-ray inspection apparatus. Its compact size and light weight make it highly mobile. It does not need a PC in order to scan images. Simple operation, and no chemicals required, reduces load on operators and the environment in field operations.

### Specifications

Reading pitch	100μm, 50μm, 25μm* (*Windows7 only)
Output format	DICOM (16 bit), BMP (8bit RGB)
Effective max reading size	244×295mm (IP size: 252×303mm)
Reading time	90sec@100μm, 164sec@50μm (in case of IP size 252×303mm)
Unit size	480(W)×360(D)×390(H)mm
Weight	35kg
Power supply	AC 120V ±10% 0.5kW or AC 220V ±10% 0.5kW
Option	Carrying case, IP holder, IP, Cassette

### Irradiation Box



Unit: mm

The irradiation box is designed for safe and reliable X-ray radiography testing. Various sizes are available on request, to meet customer requirements.

### Specifications

X-ray leakage	Shield capability: 1μSv/h or less
Standard features	Interlock with door switch of X-ray controller Electro-magnetic lock Lighting inside box Casters for mobility, adjuster bolts for fixing (may not be fitted in some cases, owing to box shape, weight, etc.)
Options	X-ray generation indicator lamp

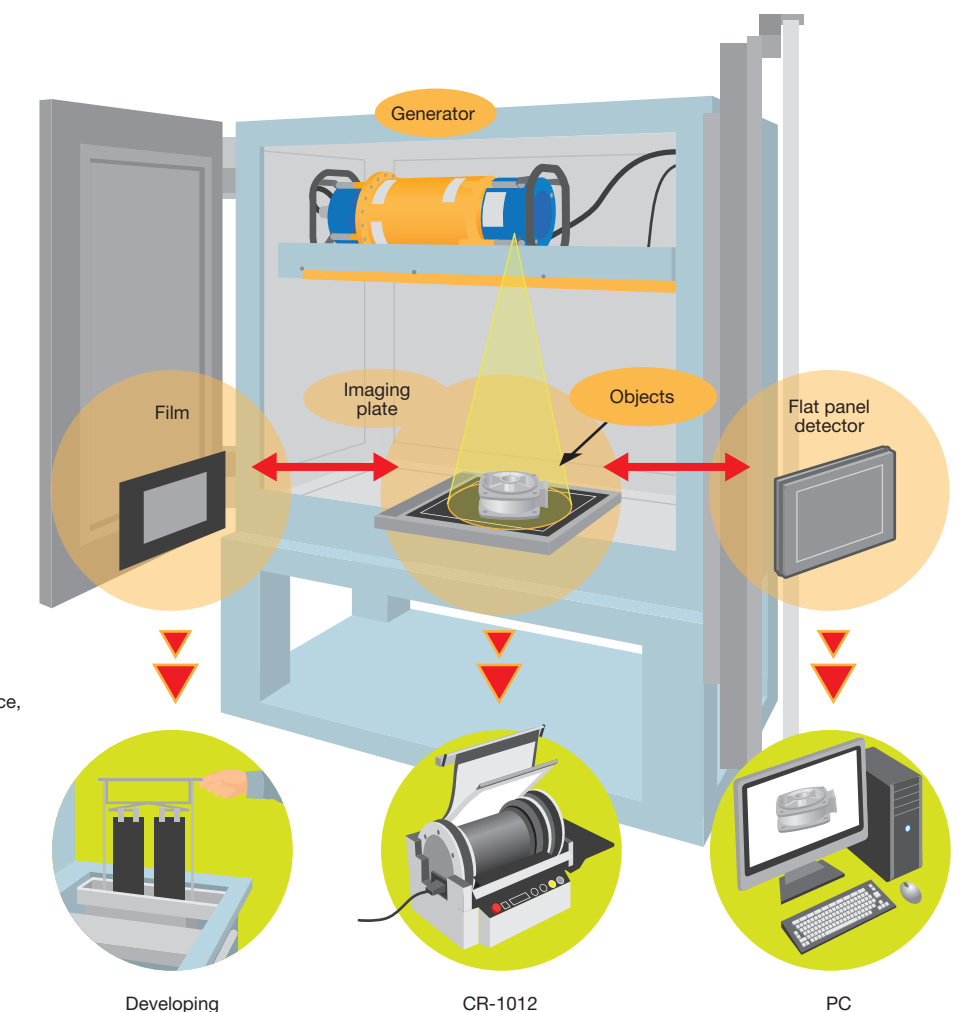
\*Size of irradiation box can be customized depending on purpose and space, etc.

## Accessories

	RF-EGM2 Series	RF-200SPS	RF-100GSB (made to order)	RF-300M2F
Power cable	1pc. (3-pin plug attached, 20m long)	1pc. (3-pin plug attached, 20m long)	1pc. (3-pin plug attached, 20m long)	1pc. (3-pin plug attached, 20m long)
Low-voltage cable	1pc. (9-pin plug attached, 20m long)	1pc. (10-pin plug attached, 20m long)	1pc. (9-pin plug attached, 20m long)	1pc. (9-pin plug attached, 20m long)
Spare fuse	25A 2pcs. (10.3mmφ×38mm) 2A 2pcs. (6.4mmφ×30mm)	2A 2pcs. (6.4mmφ×30mm)	10A 2pcs. (10.3φ×38mm) 2A 2pcs. (6.4φ×30mm) 1A 1pcs. (6.4φ×30mm)	25A 2pcs. (10.3mmφ×38mm) 2A 2pcs. (6.4mmφ×30mm)
Spare lamp	—	3pcs. (mA, Ready, X-Ray)	3pcs.	—
Interlock key	2pcs.	2pcs.	—	2pcs.
Grounding rod	Option	Option	Option	Option
X-ray generation indication lamp (External connection type)	Option (3m cable attached)	1set (3m cable attached)	1set (3m cable attached)	1set (15m cable attached)
X-ray generation indication lamp (Embedded type)	1pc.	—	—	—
X-ray direction indicator	1 set (X-ray focus-to-film distance 600mm type)	1 set (X-ray focus-to-film distance 600mm type) (Option except Japan)	1 set (X-ray focus-to-film distance 600mm type)	1 set (X-ray focus-to-film distance 600mm type)
Unidirectional radiation cover	—	—	—	1pc.
Slit	RF-200EGM2: Lead plate, 104mmφ×t3.5mm Window 26×63mm 1pc Lead plate, 104mmφ×t3.5mm Window 54×63mm 1pc RF-250EGM2: Lead plate, 104mmφ×t6mm Window 28×71mm 1pc Lead plate, 104mmφ×t6mm Window 61×71mm 1pc RF-300EGM2: Lead plate, 113mmφ×t10mm Window 26×74mm 1pc Lead plate, 113mmφ×t10mm Window 63×74mm 1pc	—	Lead, 76mmφ×t3.0mm Window 20×40mm Lead, 76mmφ×t3.0mm Window 40×40mm	—

\*Radiation port cover is included only for RF-100GSB

## System image



Customized systems are proposed, based on customer needs, by selecting optimum X-ray source, detection media and sample stage, to suit the purpose and applications.

### System setting example

X-ray source	100kV-300kV
Detect medium	Film, IP FPD
Sample stage	X-Y, X-Y-Z
Irradiation box	Various size and shield capacity

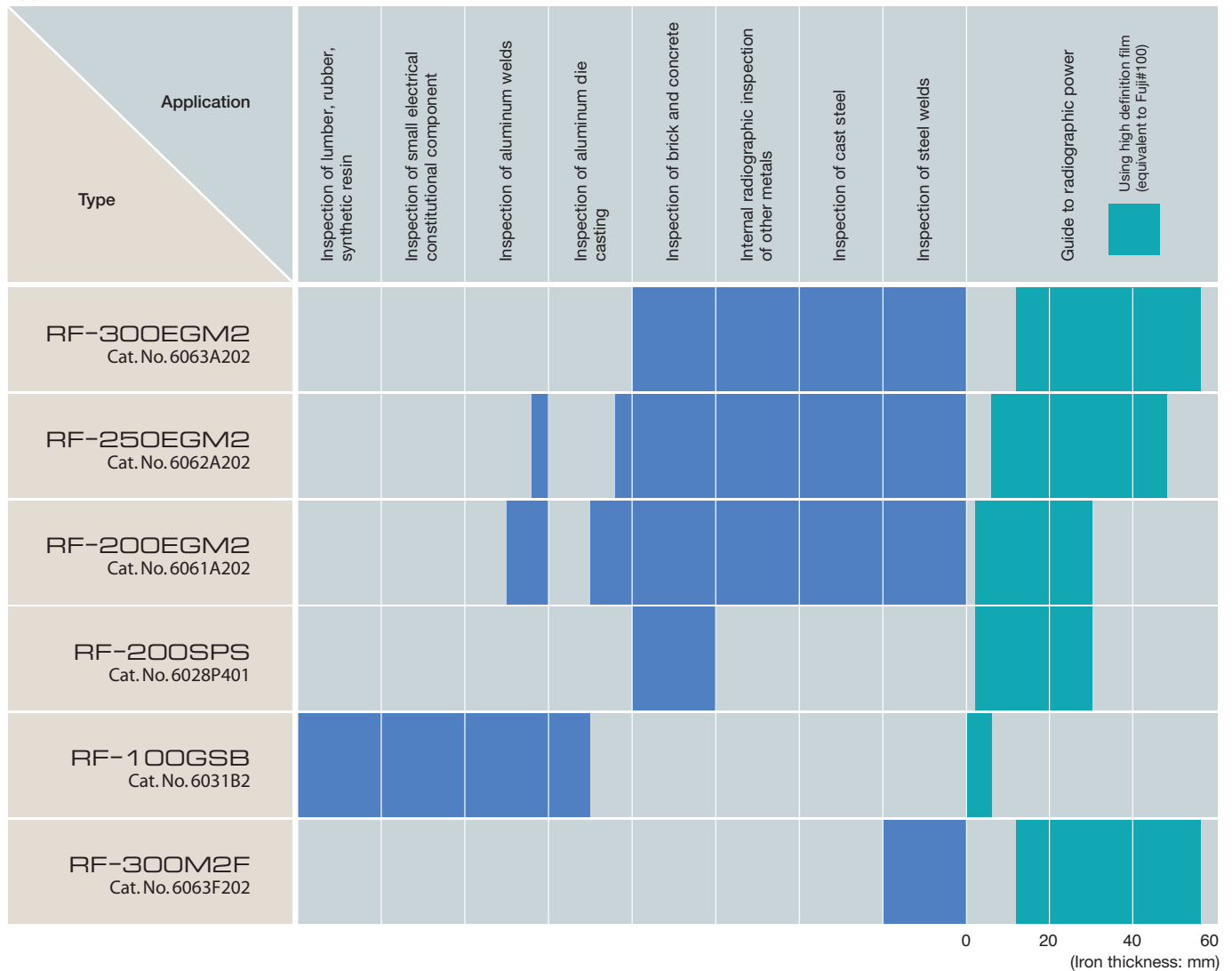
Developing

CR-1012

PC

# Radioflex

Application of each model



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