

ROTANODE™

**E7254X
E7254FX
E7254GX**

Rotating Anode X-ray Tube Assembly

- ◆ High speed rotating anode X-ray tube assembly for high energy radiographic and cine-fluoroscopic operations.
- ◆ The heavy anode is constructed with specially processed Rhenium-tungsten faced molybdenum target which have an improved coating to increase thermal emissivity.
- ◆ These tubes have foci 1.2 and 0.6, and are available for a maximum tube voltage 150kV.
- ◆ Accommodated with IEC60526 type high-voltage cable receptacles.



General Data

IEC Classification (IEC60601-1:2005+A1:2012) Class I ME EQUIPMENT

Electrical:

Circuit:

High Voltage Generator Constant Potential High-Voltage Generator
 Grounding Center-grounded

Nominal X-ray Tube Voltage:

Radiographic 150 kV
 Fluoroscopic 125 kV

Nominal Focal Spot Value:

Large Focus 1.2
 Small Focus 0.6

Nominal Anode Input Power (at 0.1s):

	180 Hz	60 Hz	50 Hz
Large Focus	102 kW	60 kW	55 kW
Small Focus	40 kW	23 kW	21.5 kW

Nominal Radiographic Anode Input Power:

	180 Hz	60 Hz	50 Hz
Large Focus	82 kW	47 kW	43 kW
Small Focus	32 kW	18 kW	17 kW

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 ★The information contained herein may be changed without prior notice. It is therefore, advisable to contact to CETD before processing with the design of equipment incorporating this product.

Motor Ratings:

Stator: XS-RB

		Starting		Running	
Driven Frequency	[Hz]	180	60	180	60
Input Power	[W]	3500	1520	90	80
Voltage ^{2) 4)}	[V]	490	300	165	160
Current ³⁾	[A]	9.0	7.6	1.3	1.1
Min. Speed Up ⁶⁾	[s]	2.0	1.0	-	-
Capacitor	[μ F]	6	30	6	30
Min. Braking ^{2) 6)}	[s]	2.5 s / 300 V (DC)			

Note: 1) To be applied for high speed rotation.

2) Applied voltage between common and main terminal.

3) Common current.

4) The every applied voltage must be never exceeded 110% of the above specification.

5) No more than two high speed starts per minute are permissible.

6) The speed-up and braking time are allowed up to 110% of the above specification.

Anode Speed:

180 Hz	Minimum 9700 min ⁻¹
60 Hz	Minimum 3200 min ⁻¹
50 Hz	Minimum 2700 min ⁻¹

Stator Resistance:

Common-Main Winding	20.2 Ω
Common-Auxiliary Winding	38.0 Ω
Resistance between Housing and Low Voltage Terminals	Minimum 2 M Ω
Normal Operating Range of the Housing Temperature	16 ~ 75 °C
Thermal Switch	Normally Closed
Open	75 ~ 85 °C
Closed	45 ~ 65 °C
Mode of Operation	Intermittent

Mechanical:

Dimensions	See dimensional outline
Overall Length	463 mm
Maximum Diameter	172 mm
Target:	
Anode Angle	12 degrees
Diameter	100 mm
Construction	Rhenium-Tungsten faced molybdenum
Filtration:	
Permanent Filtration	0.8 mm Al / 75 kV IEC60522:1999
Available Additional Filter combination (0.4 - 1.5 mm)	Maximum 2.3 mm Al / 75 kV
Radiation Protection (In accordance with IEC60601-1-3:2008):	
Leakage Technique Factor	150 kV, 5 mA
X-ray Coverage	430 × 430 mm at SID 1000 mm
Weight (Approx.)	20 kg
High Voltage Receptacle	To meet the requirements of IEC60526 Corrigendum1:2010
Cooling Method	Natural or forced air
Tube Housing Model Number	XH-157

Absolute Maximum and Minimum Ratings

(At any time, these values must not be exceeded.)

Maximum X-ray Tube Voltage:

Radiographic	150 kV
Fluoroscopic	125 kV

Between Anode (or Cathode) and Ground 75 kV

Minimum X-ray Tube Voltage 40 kV

Maximum X-ray Tube Current See rating charts

Large Focus 1000 mA

Small Focus 500 mA

Maximum Filament Current:

Large Focus 5.5 A

Small Focus 5.2 A

Filament Voltage:

Large Focus (At maximum filament current 5.5 A) 12.7 ~ 17.1 V

Small Focus (At maximum filament current 5.2 A) 7.0 ~ 9.4 V

Filament Frequency Limits 0 ~ 25 kHz

Continuous Anode Input Power 300 W (423 HU/s)

(Fluoroscopic, Radiographic or mixed exposure)

Thermal Characteristics:

Anode Heat Content 285 kJ (400 kHU)

Maximum Anode Heat Dissipation 1180 W (1664 HU/s)

X-ray Tube Assembly Heat Content 950 kJ (1339 kHU)

Nominal Continuous Input Power:

Without Air-circulator 200 W (16 kHU/min)

Environmental Limits

Operating Limits:

Temperature 10 ~ 40 °C

Humidity 30 ~ 85 %

(No condensation)

Atmospheric Pressure 70 ~ 106 kPa

Shipping and Storage Limits:

Temperature -20 ~ 70 °C

Humidity 20 ~ 90 %

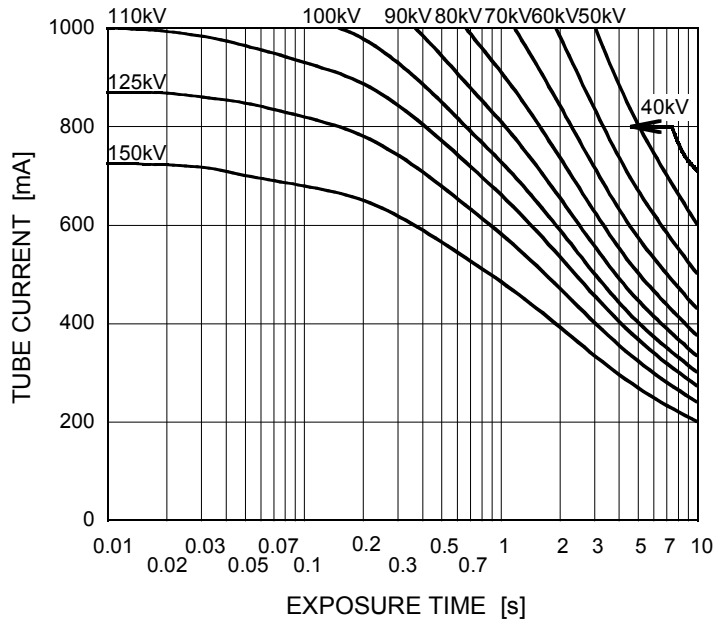
(No condensation)

Atmospheric Pressure 50 ~ 106 kPa

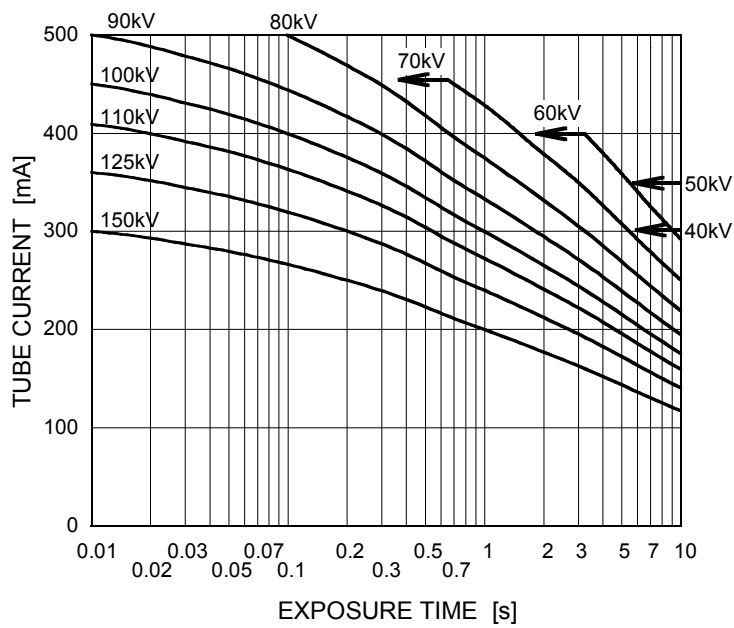
Maximum Rating Charts (Absolute Maximum Rating Charts)

Conditions: Tube Voltage
Constant Potential High-Voltage Generator
Stator Power Frequency 180 Hz

Nominal Focal Spot Value: 1.2 ■



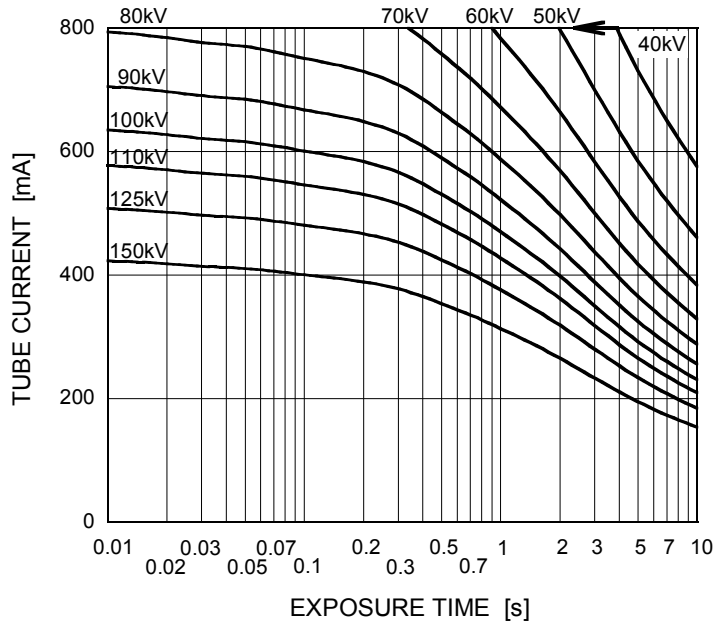
Nominal Focal Spot Value: 0.6 □



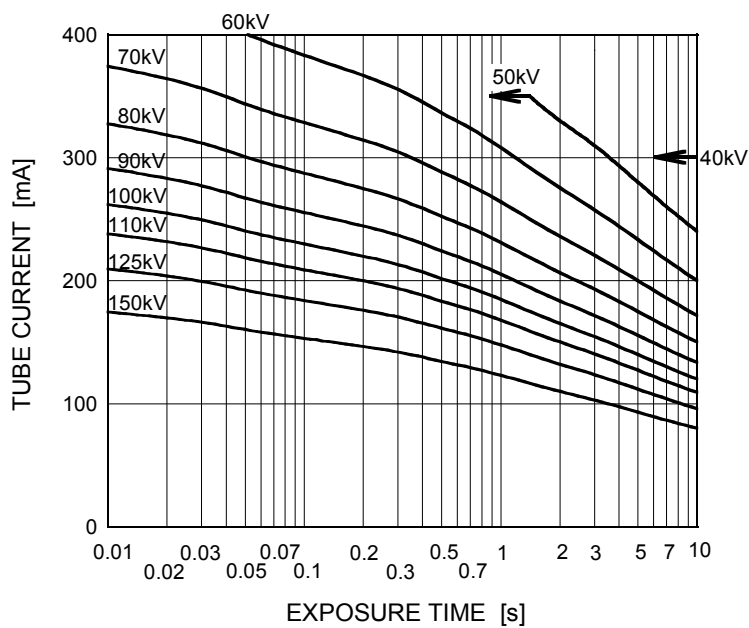
Maximum Rating Charts (Absolute Maximum Rating Charts)

Conditions: Tube Voltage
Constant Potential High-Voltage Generator
Stator Power Frequency 60 Hz

Nominal Focal Spot Value: 1.2 ■



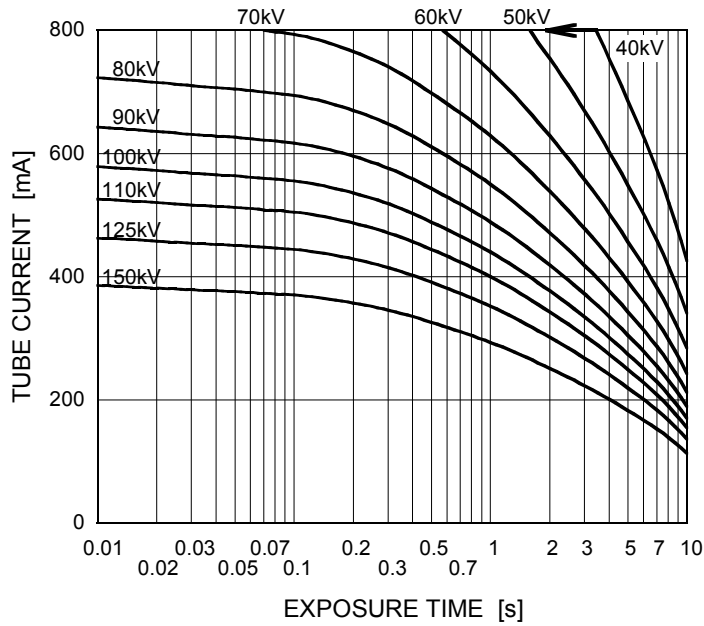
Nominal Focal Spot Value: 0.6 □



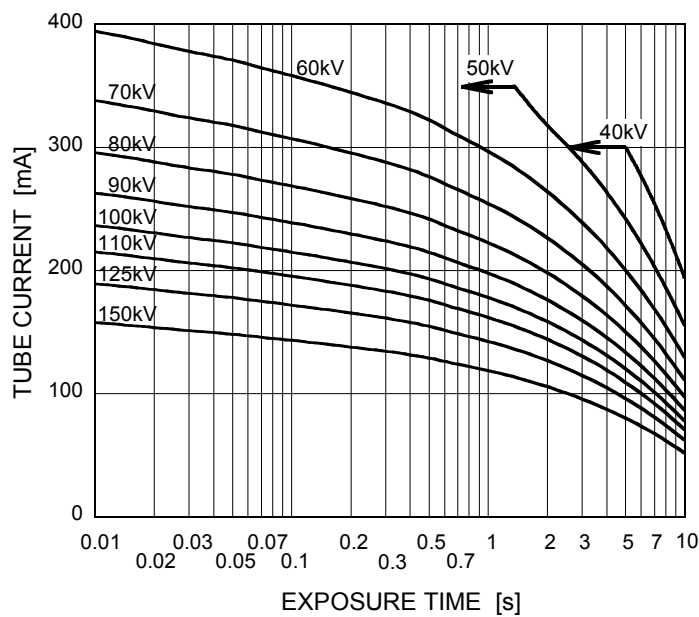
Maximum Rating Charts (Absolute Maximum Rating Charts)

Conditions: Tube Voltage
Constant Potential High-Voltage Generator
Stator Power Frequency 50 Hz

Nominal Focal Spot Value: 1.2 ■



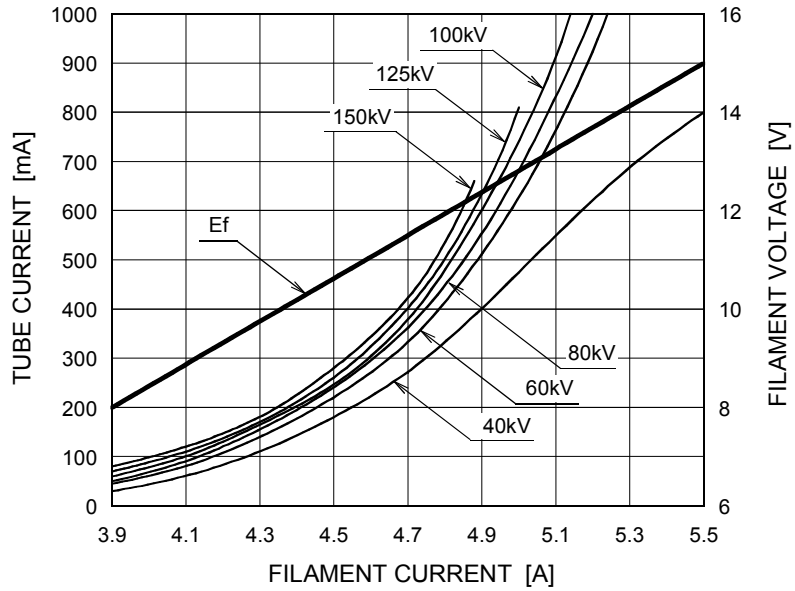
Nominal Focal Spot Value: 0.6 □



Emission & Filament Characteristics

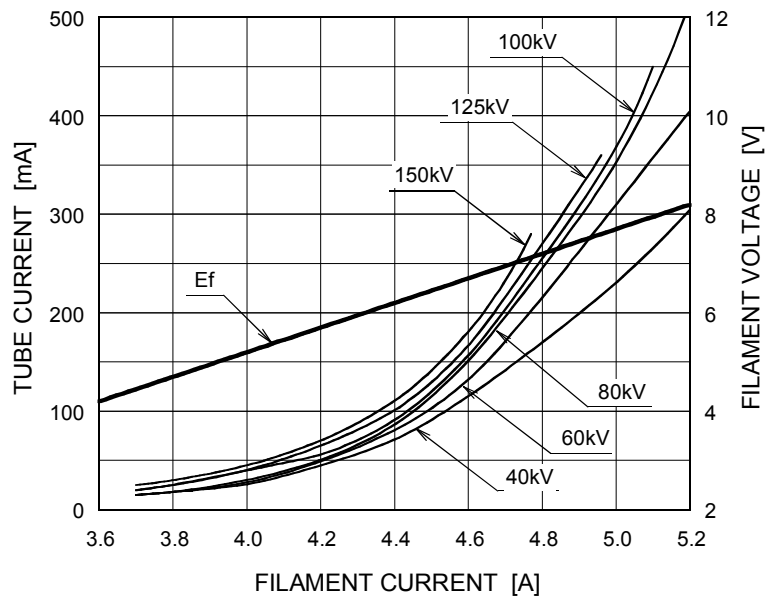
Constant Potential High-Voltage Generator

Nominal Focal Spot Value: 1.2 ■



For Reference Only

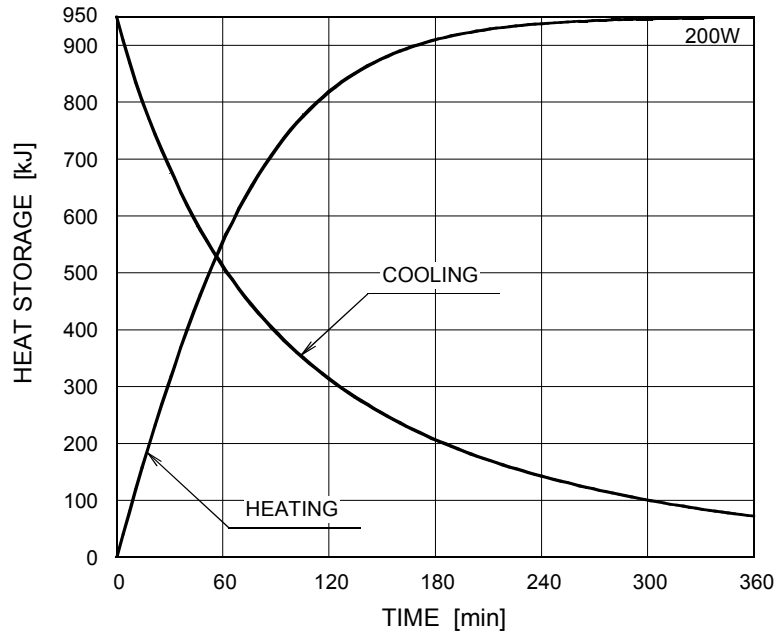
Nominal Focal Spot Value: 0.6 □



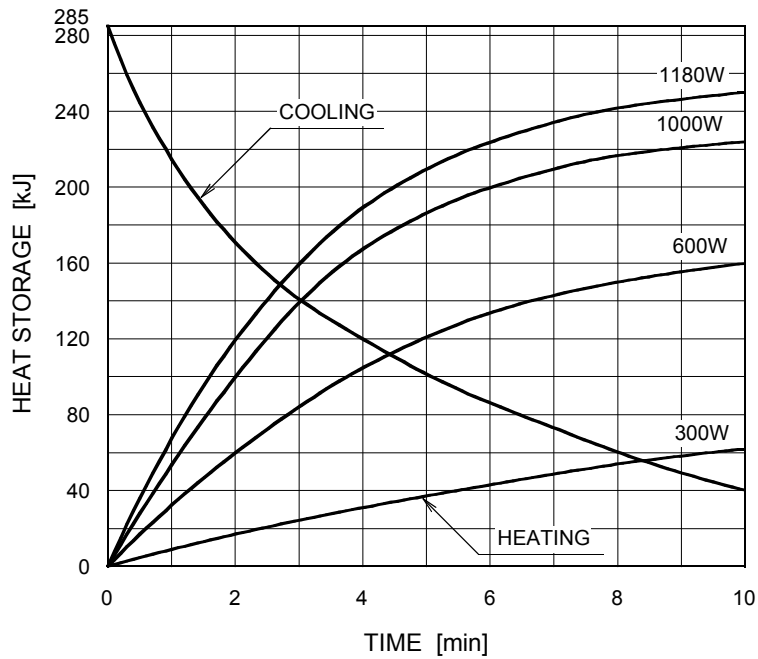
For Reference Only

Thermal Characteristics

X-ray Tube Assembly Heating / Cooling Curve



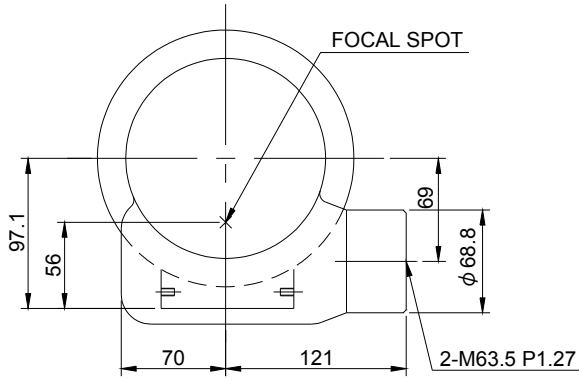
Anode Heating / Cooling Curve



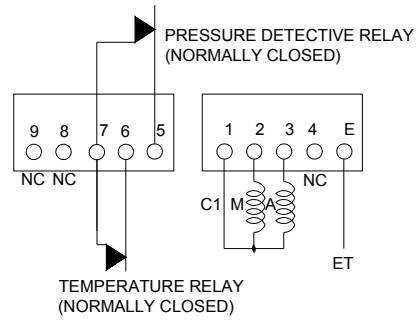
The heating curves are showing examples of average input power to the anode in operation.

Dimensional Outline of E7254X

Unit mm

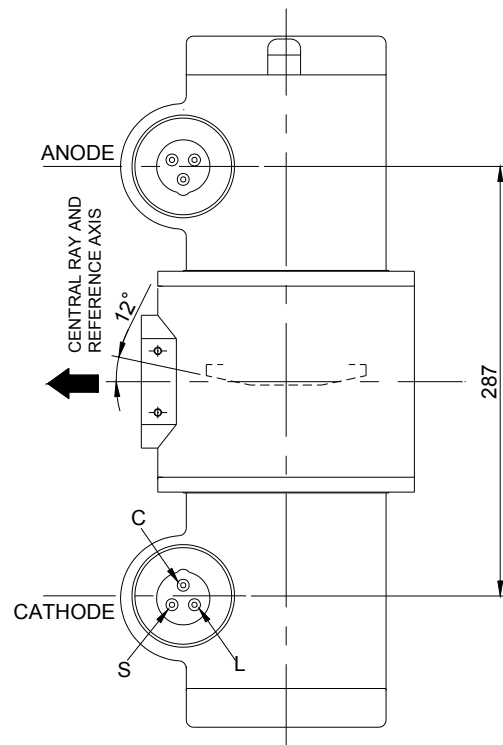
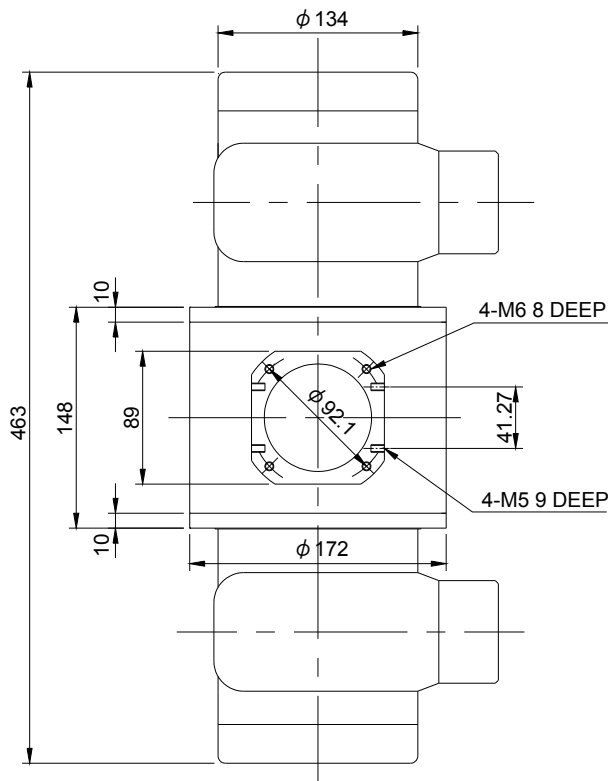


TERMINAL CONNECTIONS



Note

- 1) Make an input-power protection circuit with the terminals No.5 and No.6.
- 2) Do not connect terminal No.1 and No.5 or 6 in series circuit.



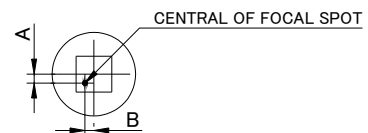
EXPLANATION OF SYMBOLS

CATHODE TERMINAL

- C : COMMON
- L : LARGE FOCUS
- S : SMALL FOCUS

TERMINAL CONNECTIONS

- C1 : COMMON
- M : MAIN WINDING OF THE STATOR
- A : AUX. WINDING OF THE STATOR
- NC : NON-CONNECTION
- ET : EARTH TERMINAL



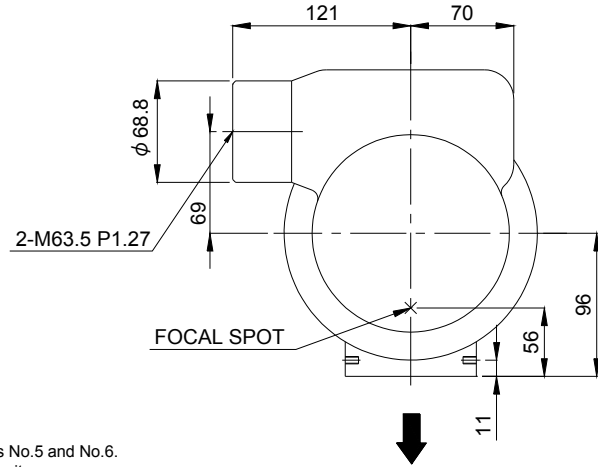
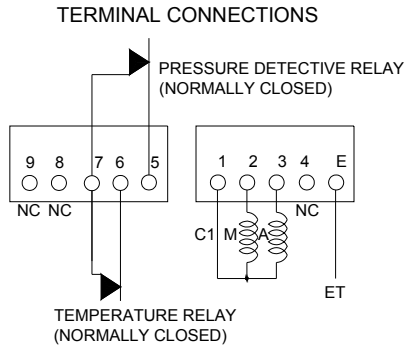
$$-1.5\text{mm} \leq A \leq 1.5\text{mm}$$

$$-1.5\text{mm} \leq B \leq 1.5\text{mm}$$

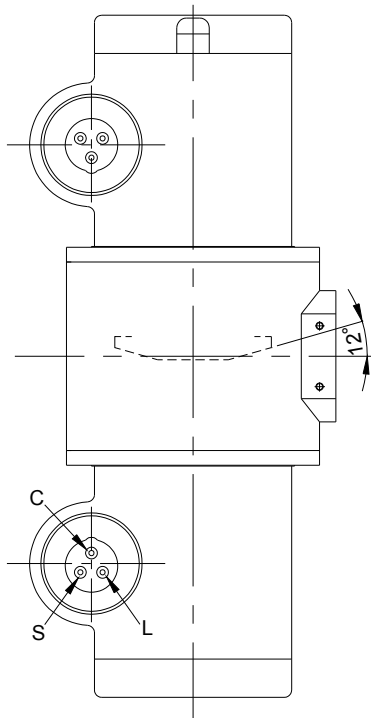
- ▲ : CENTRAL X-RAY ANODE & CATHODE TERMINAL : IEC60526 TYPE

Dimensional Outline of E7254FX

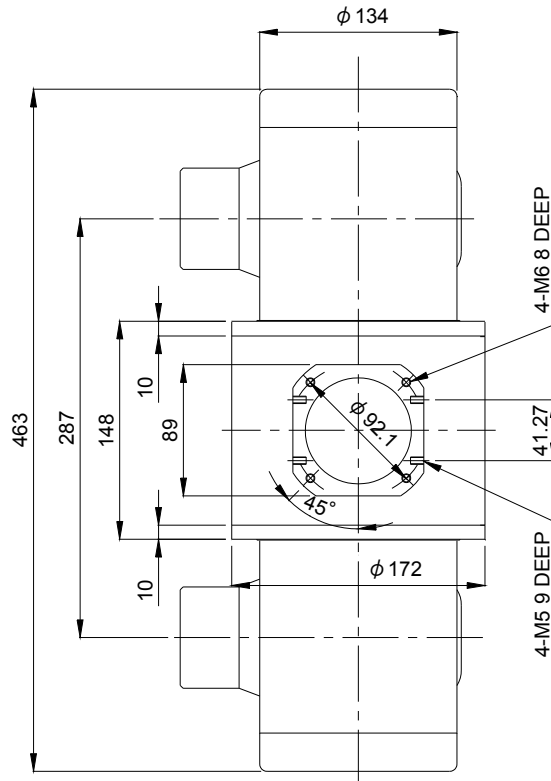
Unit mm



- Note**
- 1) Make an input-power protection circuit with the terminals No.5 and No.6.
 - 2) Do not connect terminal No.1 and No.5 or 6 in series circuit.



CENTRAL RAY AND REFERENCE AXIS



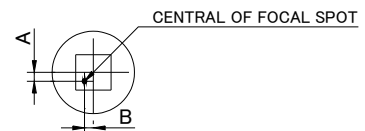
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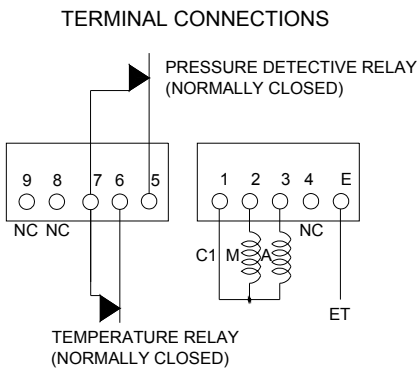


- 1.5mm ≤ A ≤ 1.5mm
- 1.5mm ≤ B ≤ 1.5mm

- ▲ : CENTRAL X-RAY ANODE & CATHODE TERMINAL : IEC60526 TYPE

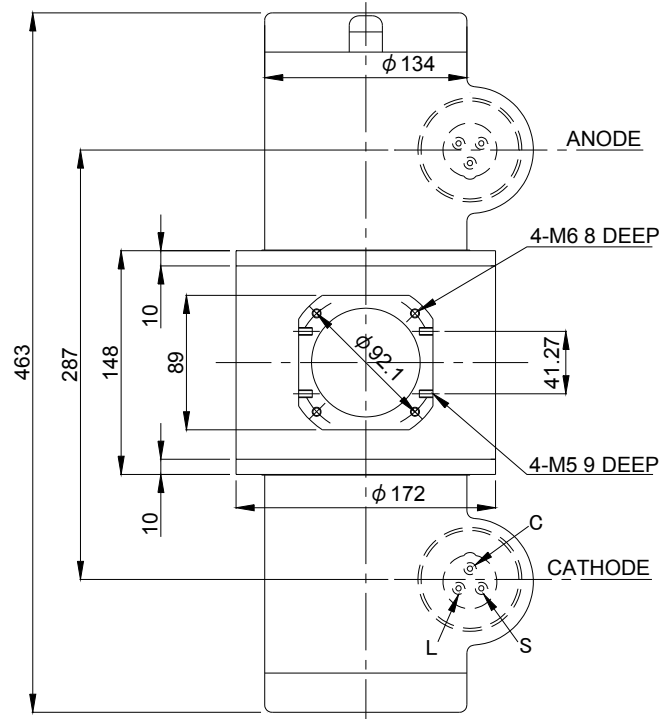
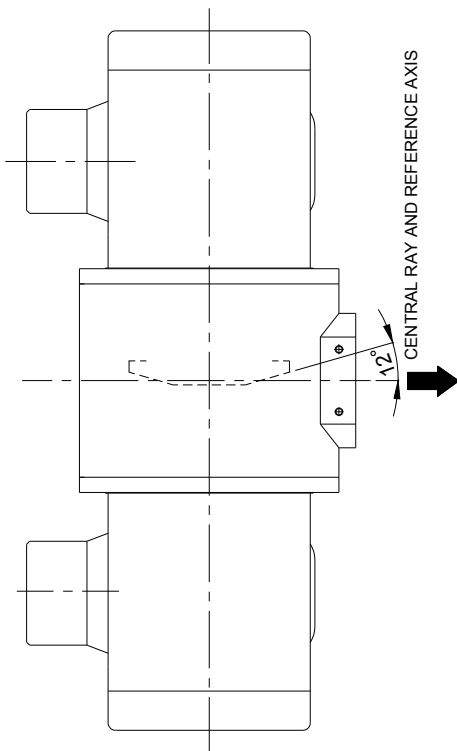
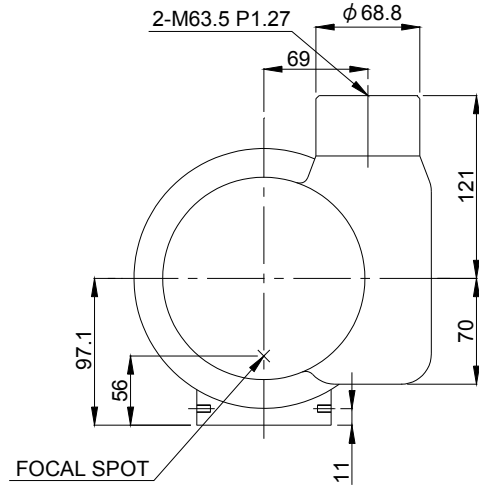
Dimensional Outline of E7254GX

Unit mm



Note

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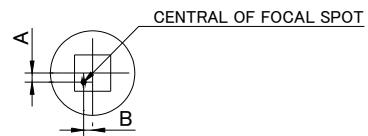
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- $-1.5\text{mm} \leq A \leq 1.5\text{mm}$
- $-1.5\text{mm} \leq B \leq 1.5\text{mm}$

- ▲ : CENTRAL X-RAY
- ANODE & CATHODE TERMINAL : IEC60526 TYPE



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·Canon Electron Tubes & Devices Co., Ltd. has been certified to meet all the requirements of Quality Management Systems ISO9001 and ISO13485.
Product scope is referred to the following URL. <https://etd.canon/eng/company/quality.htm>.