

**ROTANODE™  
E7240X  
E7240FX**

**Rotating Anode X-ray Tube Assembly**

- ◆ Rotating anode X-ray tube assembly for the purpose of general diagnostic X-ray procedures.
- ◆ Specially processed Rhenium-tungsten faced molybdenum target of 74 mm diameter.
- ◆ These tubes have foci 1.2 and 0.6, and are available for a maximum tube voltage 150 kV.
- ◆ 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

Nominal Focal Spot Value:

Large Focus ..... 1.2  
 Small Focus ..... 0.6

Nominal Anode Input Power (at 0.1s):

	60 Hz	50 Hz
Large Focus .....	30 kW	29 kW
Small Focus .....	15 kW	14 kW

Nominal Radiographic Anode Input Power:

	60 Hz	50 Hz
Large Focus .....	30 kW	29 kW
Small Focus .....	15 kW	14 kW

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Motor Ratings:

Stator: XS-AV

Driven Frequency [Hz]	Starting		Running
	50/60		50/60
Input Power [W]	1050	270	43
Voltage <sup>1) 3)</sup> [V]	200	100	40
Current <sup>2)</sup> [A]	6.0	3.0	1.2
Min. Speed Up <sup>4)</sup> [s]	0.8	1.5	-
Capacitor [ $\mu$ F]	24	24	24

Note: 1) Applied voltage between common and main terminal.

2) Common current.

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

4) The speed-up time is allowed up to 110% of the above specification.

Anode Speed:

60 Hz ..... Minimum 3200 min<sup>-1</sup>  
 50 Hz ..... Minimum 2700 min<sup>-1</sup>

Stator Resistance:

Common-Main Winding ..... 27.5  $\Omega$   
 Common-Auxiliary Winding ..... 58.0  $\Omega$

Resistance between Housing and Low Voltage Terminals ..... Minimum 2 M $\Omega$

Normal Operating Range of the Housing Temperature ..... 16 ~ 75 °C

Mode of Operation ..... Intermittent

**Mechanical:**

Dimensions ..... See dimensional outline

Overall Length ..... 479 mm

Maximum Diameter ..... 152.4 mm

Target:

Anode Angle ..... 12 degrees

Diameter ..... 74 mm

Construction ..... Rhenium-Tungsten faced Molybdenum

Filtration:

Permanent Filtration ..... 1.3 mm Al / 75 kV IEC60522:1999

Available Additional Filter combination (0.4 - 1.5 mm) ..... Maximum 2.8 mm Al / 75 kV

Radiation Protection (In accordance with IEC60601-1-3:2008):

Leakage Technique Factor ..... 150 kV, 3.4 mA

X-ray Coverage ..... 430 × 430 mm at SID 1000 mm

Weight (Approx.) ..... 16 kg

High Voltage Receptacle ..... To meet the requirements of IEC60526 Corrigendum1:2010

Cooling Method ..... Natural or forced air

Tube Housing Model Number:

E7240X ..... XH-121

E7240FX ..... XH-126

## Absolute Maximum and Minimum Ratings (At any time, these values must not be exceeded.)

### Maximum X-ray Tube Voltage:

Radiographic .....	150 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 .....	500 mA
Small Focus .....	200 mA

### Maximum Filament Current:

Large Focus .....	5.8 A
Small Focus .....	5.2 A

### Filament Voltage:

Large Focus (At maximum filament current 5.8 A) .....	14.9 ~ 20.1 V
Small Focus (At maximum filament current 5.2 A) .....	10.2 ~ 13.8 V

Filament Frequency Limits ..... 0 ~ 25 kHz

Continuous Anode Input Power ..... 60 W (85 HU/s)

### Thermal Characteristics:

Anode Heat Content .....	100 kJ (140 kHU)
Maximum Anode Heat Dissipation .....	475 W (667 HU/s)
X-ray Tube Assembly Heat Content .....	900 kJ (1250 kHU)

### Nominal Continuous Input Power:

Without Air-circulator .....	180 W (15 kHU/min)
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## 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)

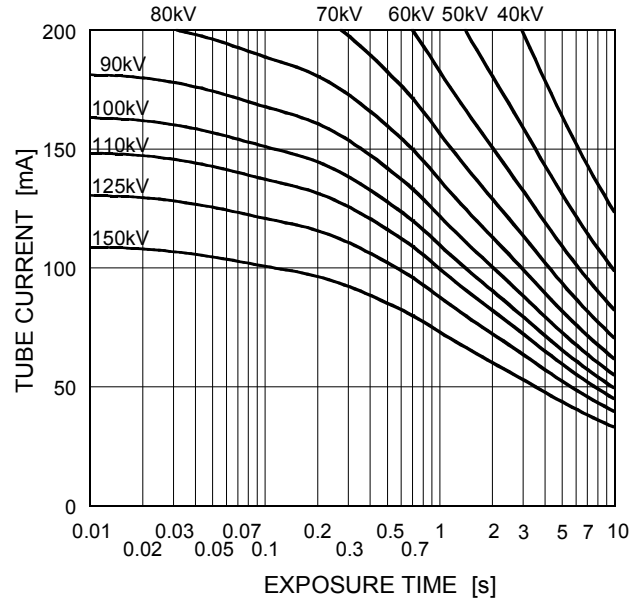
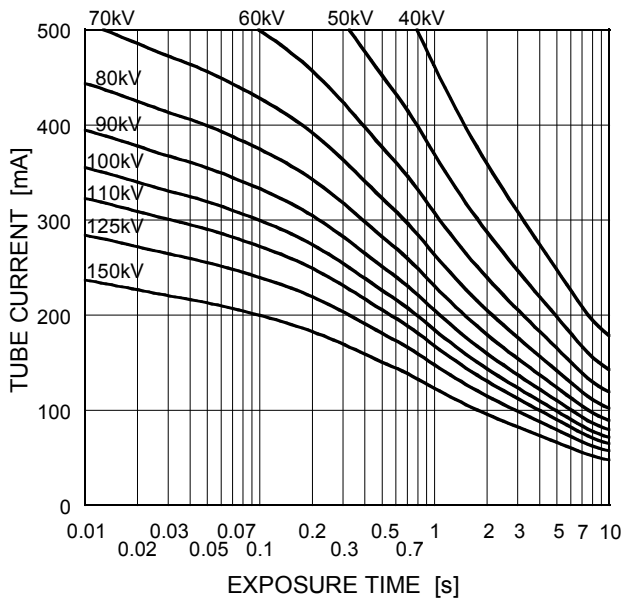
Atmospheric Pressure ..... 50 ~ 106 kPa

## Maximum Rating Charts (Absolute Maximum Rating Charts)

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

Nominal Focal Spot Value: 1.2 ■

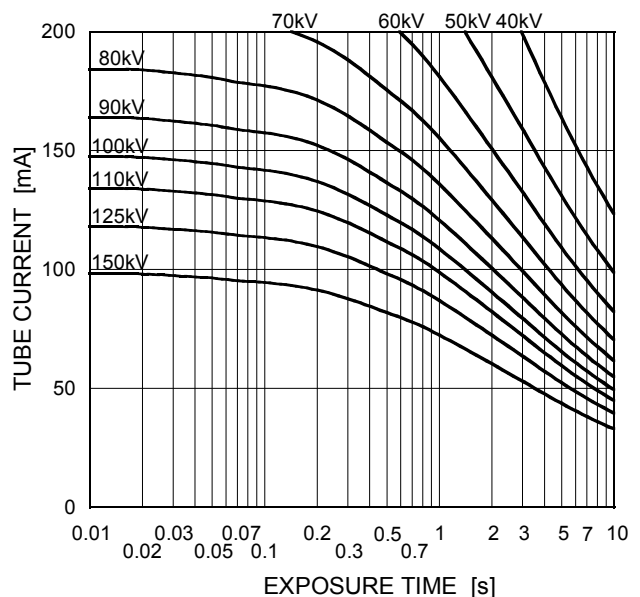
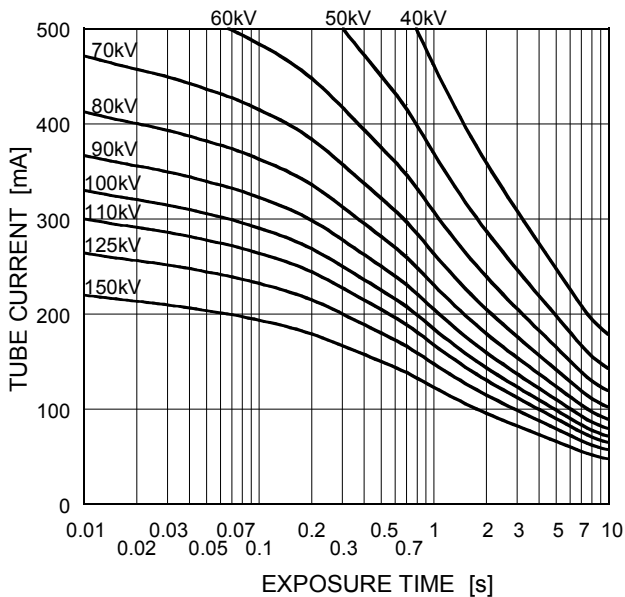
Nominal Focal Spot Value: 0.6 □



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

Nominal Focal Spot Value: 1.2 ■

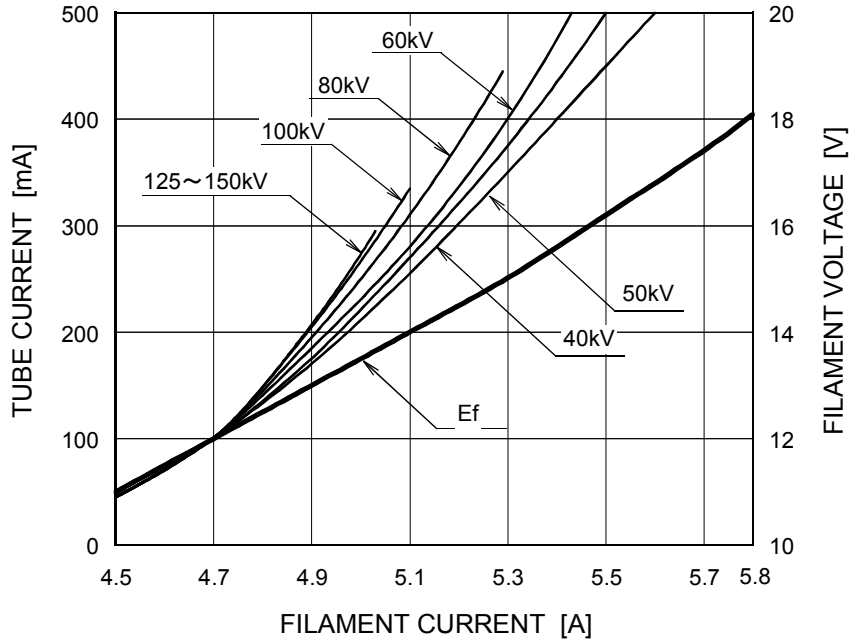
Nominal Focal Spot Value: 0.6 □



## Emission & Filament Characteristics

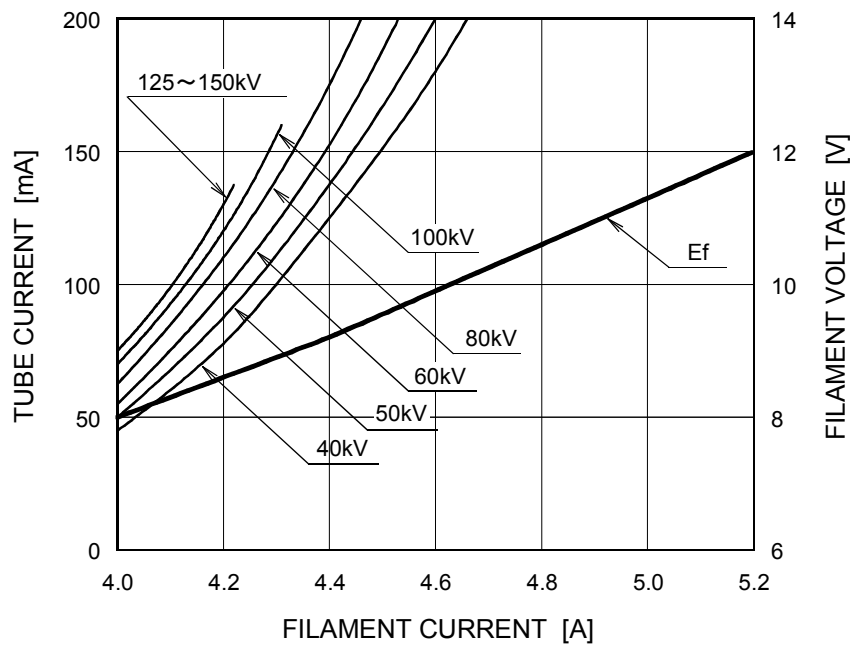
Constant Potential High-Voltage Generator

Nominal Focal Spot Value: 1.2 ■



For Reference Only

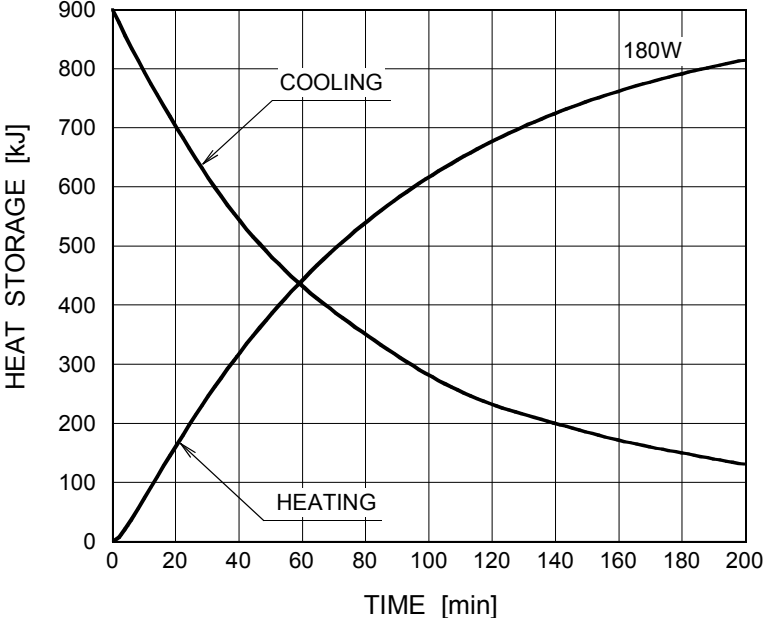
Nominal Focal Spot Value: 0.6 □



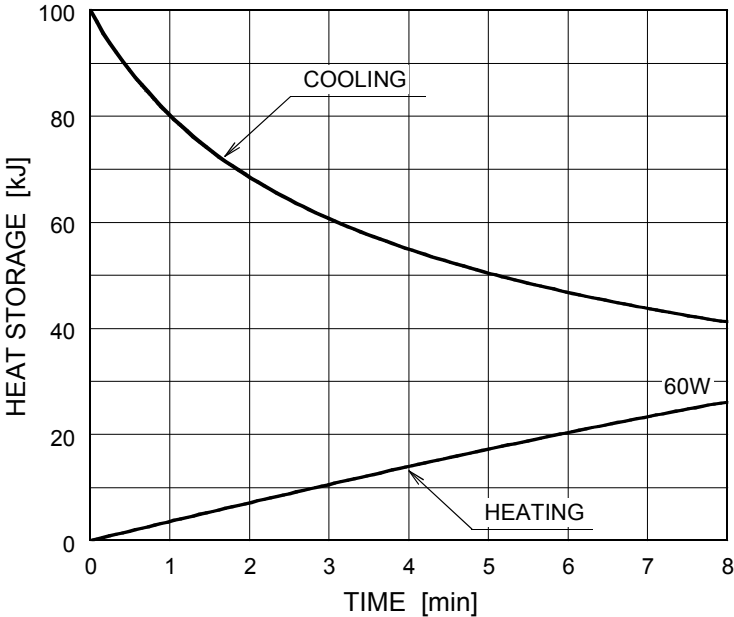
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### Thermal Characteristics

X-ray Tube Assembly Heating / Cooling Curve



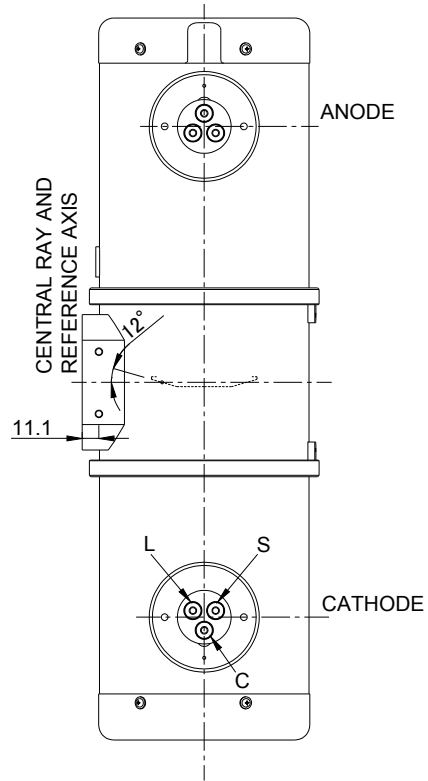
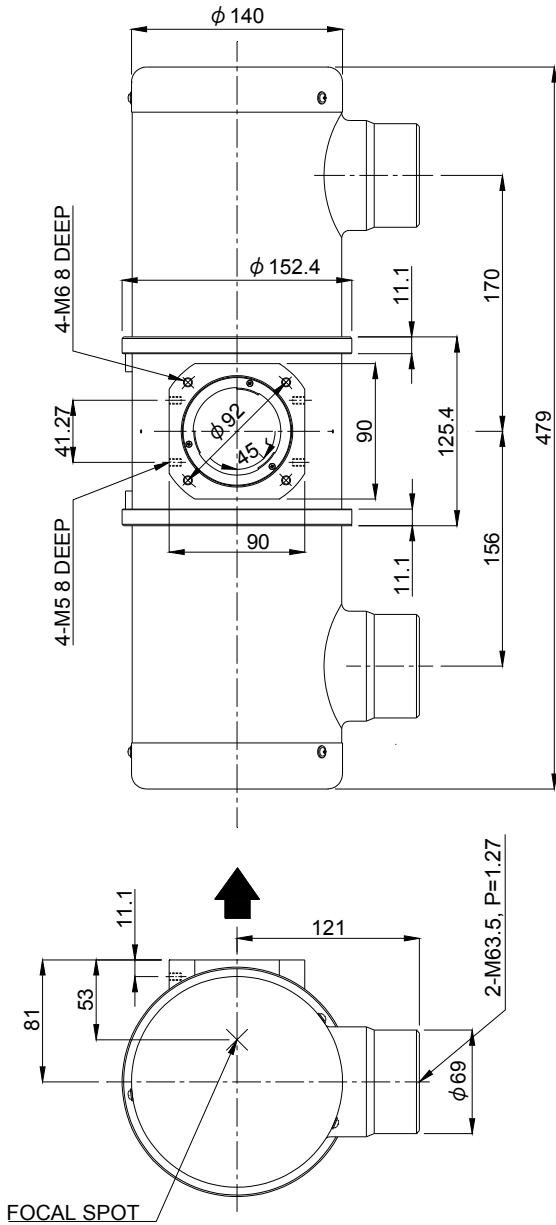
Anode Heating / Cooling Curve



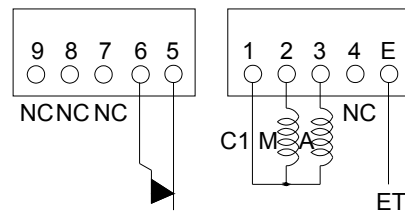
The heating curves are showing example of average input power to anode in operation.

### Dimensional Outline of E7240X

Unit mm



#### TERMINAL CONNECTIONS



TEMPERATURE RELAY (NORMALLY CLOSED)

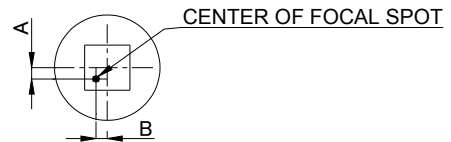
Note) Do not connect terminal No.1 and No.5 or 6 in series circuit.

#### 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



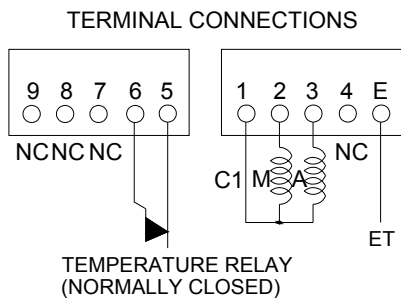
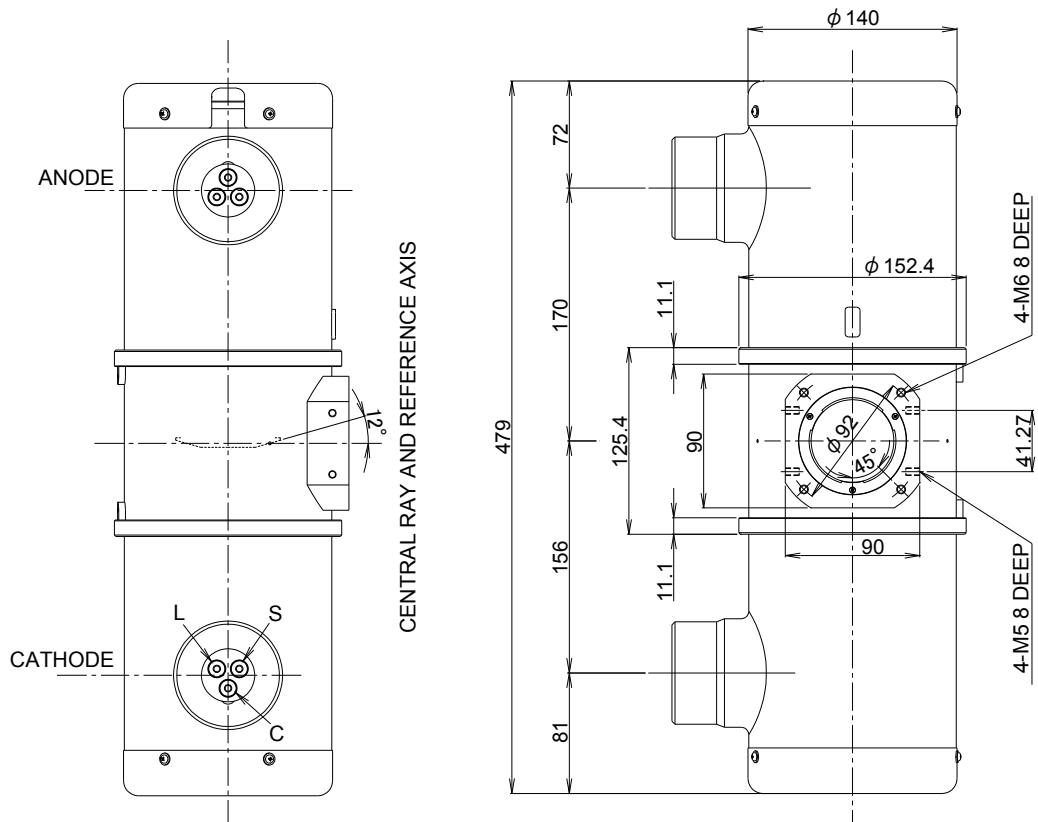
$-1.5\text{mm} \leq A \leq 1.5\text{mm}$   
 $-1.5\text{mm} \leq B \leq 1.5\text{mm}$

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



### Dimensional Outline of E7240FX

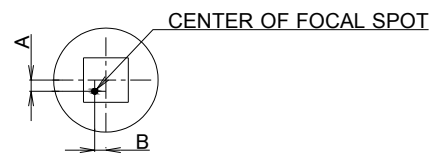
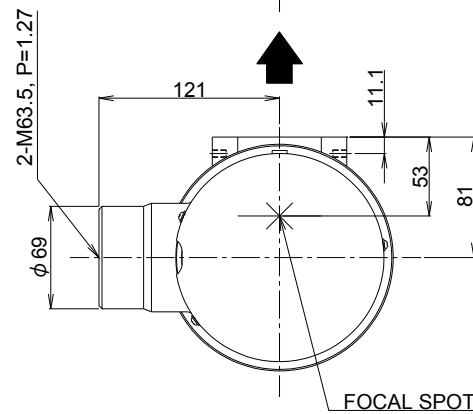
Unit mm



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



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·The head office of Canon Electron Tubes & Devices Co., Ltd. has been certified to meet all the requirements of Environmental Management System ISO14001.  
·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>.