

**ROTANODE™**

**E7252X  
E7252FX  
E7252GX**

## 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 is 74 mm diameter and has an improved coating to increase thermal emissivity.
- ◆ 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  
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 ..... | 75 kW  | 44.6 kW | 40.6 kW |
| Small Focus ..... | 27 kW  | 16 kW   | 14.2 kW |

Nominal Radiographic Anode Input Power:

|                   | 180 Hz | 60 Hz | 50 Hz   |
|-------------------|--------|-------|---------|
| Large Focus ..... | 70 kW  | 40 kW | 37 kW   |
| Small Focus ..... | 27 kW  | 16 kW | 14.2 kW |

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Motor Ratings:<sup>1)</sup>

## Stator: XS-AL

|                                    | Starting          |     | Running           |     |
|------------------------------------|-------------------|-----|-------------------|-----|
| Driven Frequency [Hz]              | 180 <sup>2)</sup> | 60  | 180 <sup>2)</sup> | 60  |
| Input Power [W]                    | 1100              | 910 | 83                | 83  |
| Voltage <sup>4) 6)</sup> [V]       | 220               | 130 | 60                | 40  |
| Current <sup>5)</sup> [A]          | 5.7               | 7.8 | 1.6               | 2.3 |
| Min. Speed Up <sup>2) 8)</sup> [s] | 1.2               | 0.8 | -                 | -   |
| Capacitor [ $\mu$ F]               | 6                 | 44  | 6                 | 44  |
| Min. Braking <sup>3) 8)</sup> [s]  | 3 / 90 V (DC)     |     |                   |     |

## Stator Resistance:

Common - Main Winding ..... 9.4  $\Omega$ Common - Auxiliary Winding ..... 28.3  $\Omega$ 

## Stator: XS-RA

|                                    | Starting          |       | Running           |       |
|------------------------------------|-------------------|-------|-------------------|-------|
| Driven Frequency [Hz]              | 180 <sup>2)</sup> | 50/60 | 180 <sup>2)</sup> | 50/60 |
| Input Power [W]                    | 2300              | 1450  | 300               | 80    |
| Voltage <sup>4) 6)</sup> [V]       | 460               | 240   | 130               | 58    |
| Current <sup>5)</sup> [A]          | 5.4               | 6.5   | 2.0               | 1.5   |
| Min. Speed Up <sup>2) 8)</sup> [s] | 1.0               | 0.6   | -                 | -     |
| Capacitor [ $\mu$ F]               | 3                 | 24    | 3                 | 24    |
| Min. Braking <sup>3) 8)</sup> [s]  | 1.5 / 90 V (DC)   |       |                   |       |

## Stator Resistance:

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

Note 1) To be obtained with AID starter Model 60/180.

2) The speed up time from normal speed to high speed is 2/3 times of the specified speed up time from 0 to high speed, which is described on motor rating table.

3) To be applied for high speed rotation.

4) Applied voltage between common and main terminal.

5) Common current.

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

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

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

## Anode Speed:

180 Hz ..... Minimum 9700 min<sup>-1</sup>60 Hz ..... Minimum 3200 min<sup>-1</sup>50 Hz ..... Minimum 2700 min<sup>-1</sup>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 ..... 476 mm  
 Maximum Diameter ..... 152.4 mm

**Target:**

Anode Angle ..... 12 degrees  
 Diameter ..... 74 mm  
 Construction ..... Rhenium-Tungsten faced Molybdenum

**Filtration:**

Permanent Filtration ..... 0.9 mm Al / 75 kV IEC60522:1999  
 Available Additional Filter combination (0.4 - 1.5 mm) ..... Maximum 2.4 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.) ..... 18 kg  
 High Voltage Receptacle ..... To meet the requirements of IEC60526 Corrigendum1:2010  
 Cooling Method ..... Natural or Forced air

**Tube Housing Model Number:**

E7252X ..... XH-106V  
 E7252FX ..... XH-181  
 E7252GX ..... XH-180

**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 .....                           | 400 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) ..... | 6.3 ~ 8.5 V      |
| Filament Frequency Limits .....                       | 0 ~ 25 kHz       |
| Continuous Anode Input Power .....                    | 120 W (169 HU/s) |
| (Fluoroscopic, Radiographic or mixed exposure)        |                  |

Thermal Characteristics:

|                                        |                    |
|----------------------------------------|--------------------|
| Anode Heat Content .....               | 210 kJ (300 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 .....           | 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

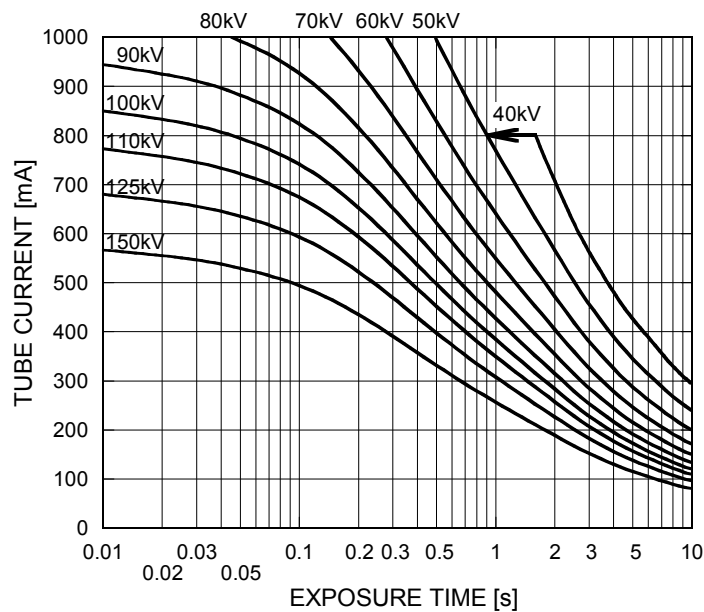
Humidity ..... 20 ~ 90 %  
(No condensation)

Atmospheric Pressure ..... 50 ~ 106 kPa

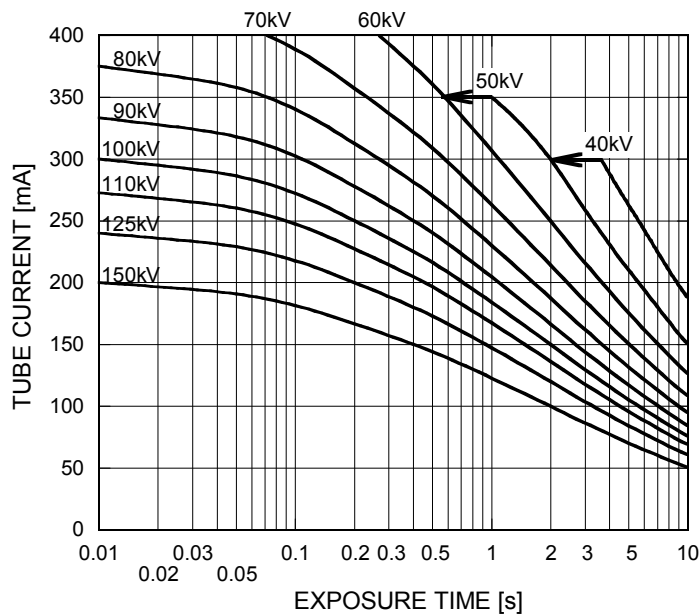
## Maximum Rating Charts (Absolute Maximum Rating Charts)

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

Nominal Focal Spot Value: 1.2 ■



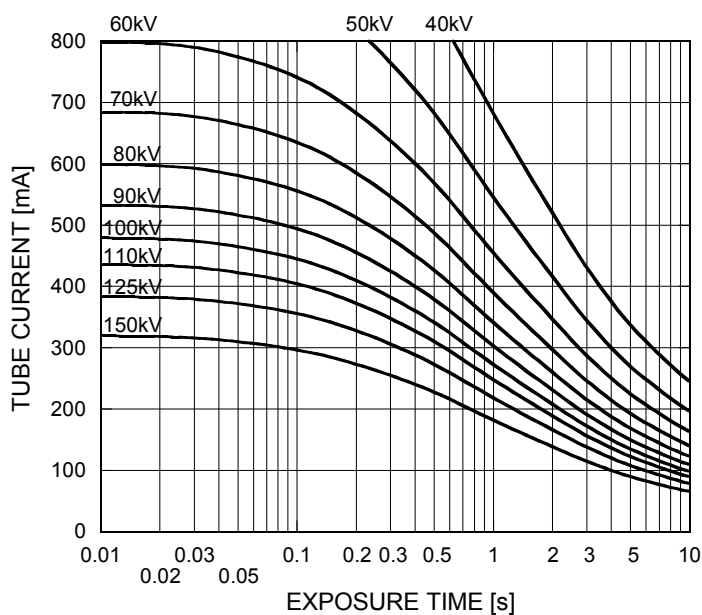
Nominal Focal Spot Value: 0.6 □



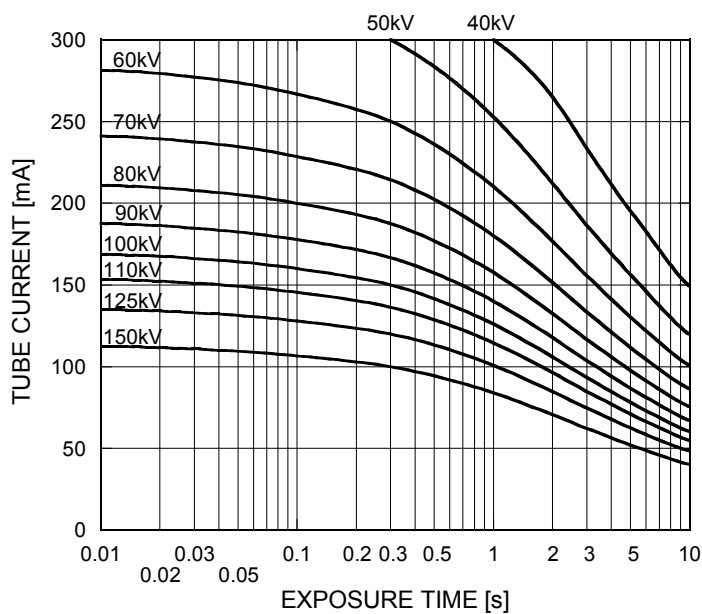
## Maximum Rating Charts (Absolute Maximum Rating Charts)

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

Nominal Focal Spot Value: 1.2 ■



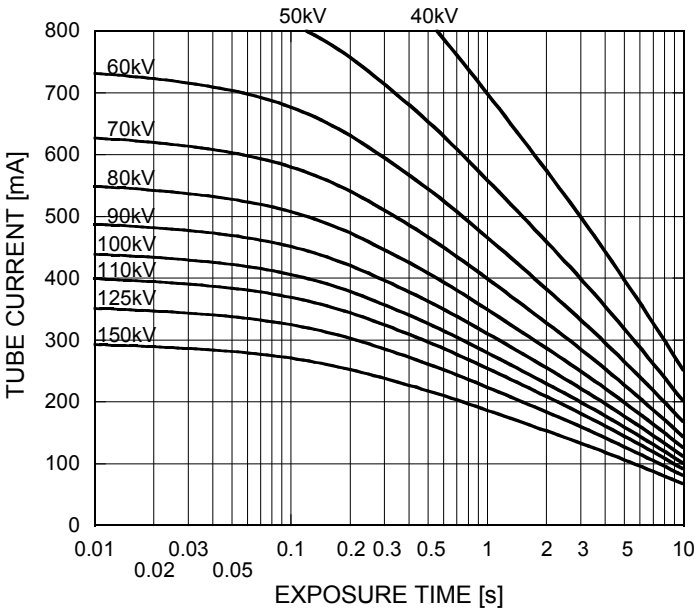
Nominal Focal Spot Value: 0.6 □



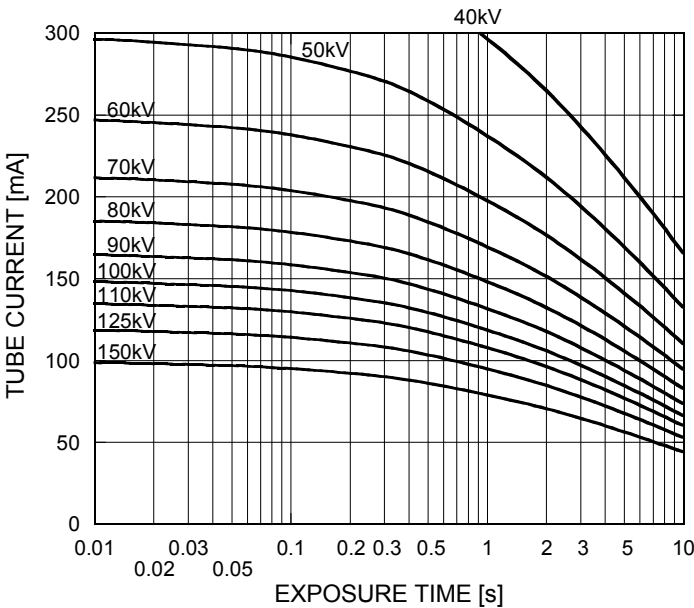
## Maximum Rating Charts (Absolute Maximum Rating Charts)

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 □

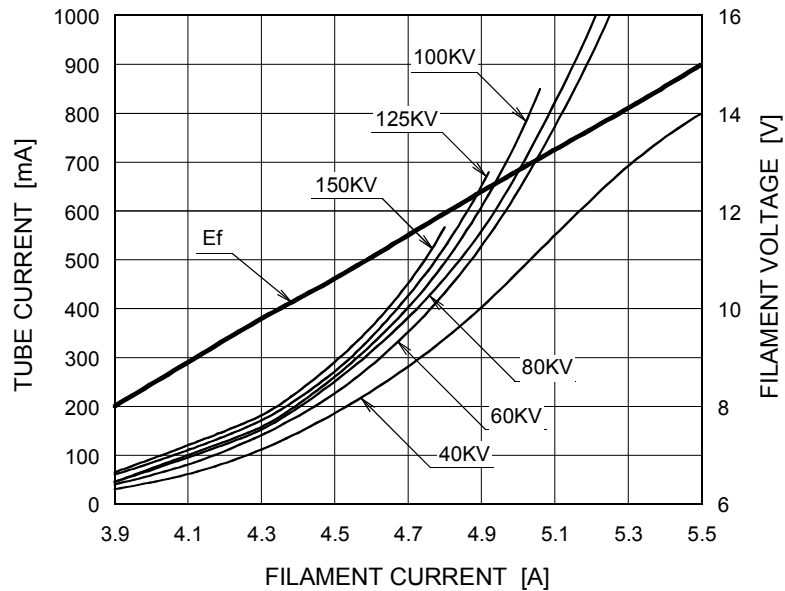




## Emission & Filament Characteristics

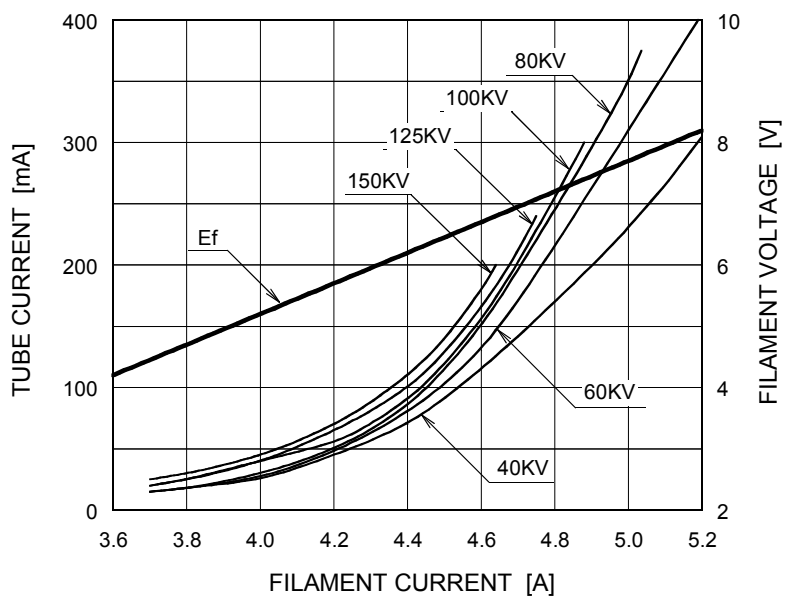
Constant Potential High-Voltage Generator

Nominal Focal Spot Value: 1.2 ■



For Reference Only

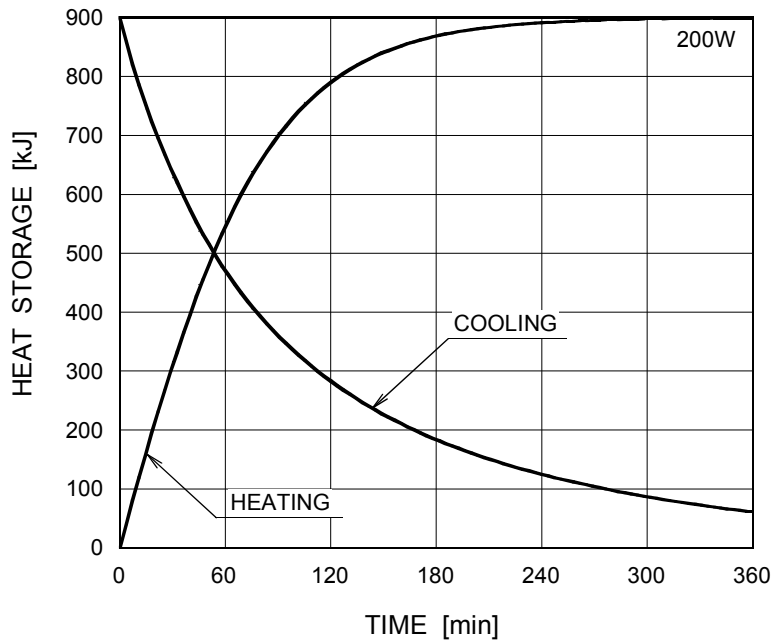
Nominal Focal Spot Value: 0.6 □



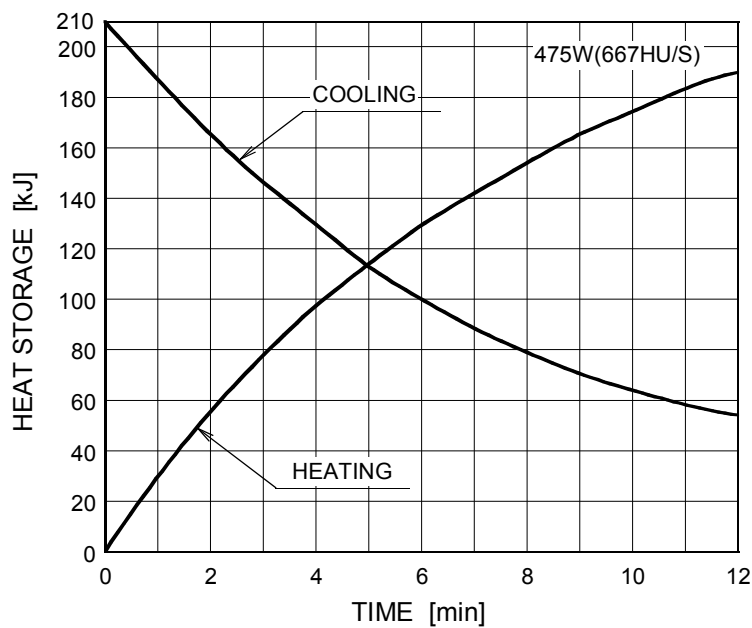
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## Thermal Characteristics

X-ray Tube Assembly Heating / Cooling Curve



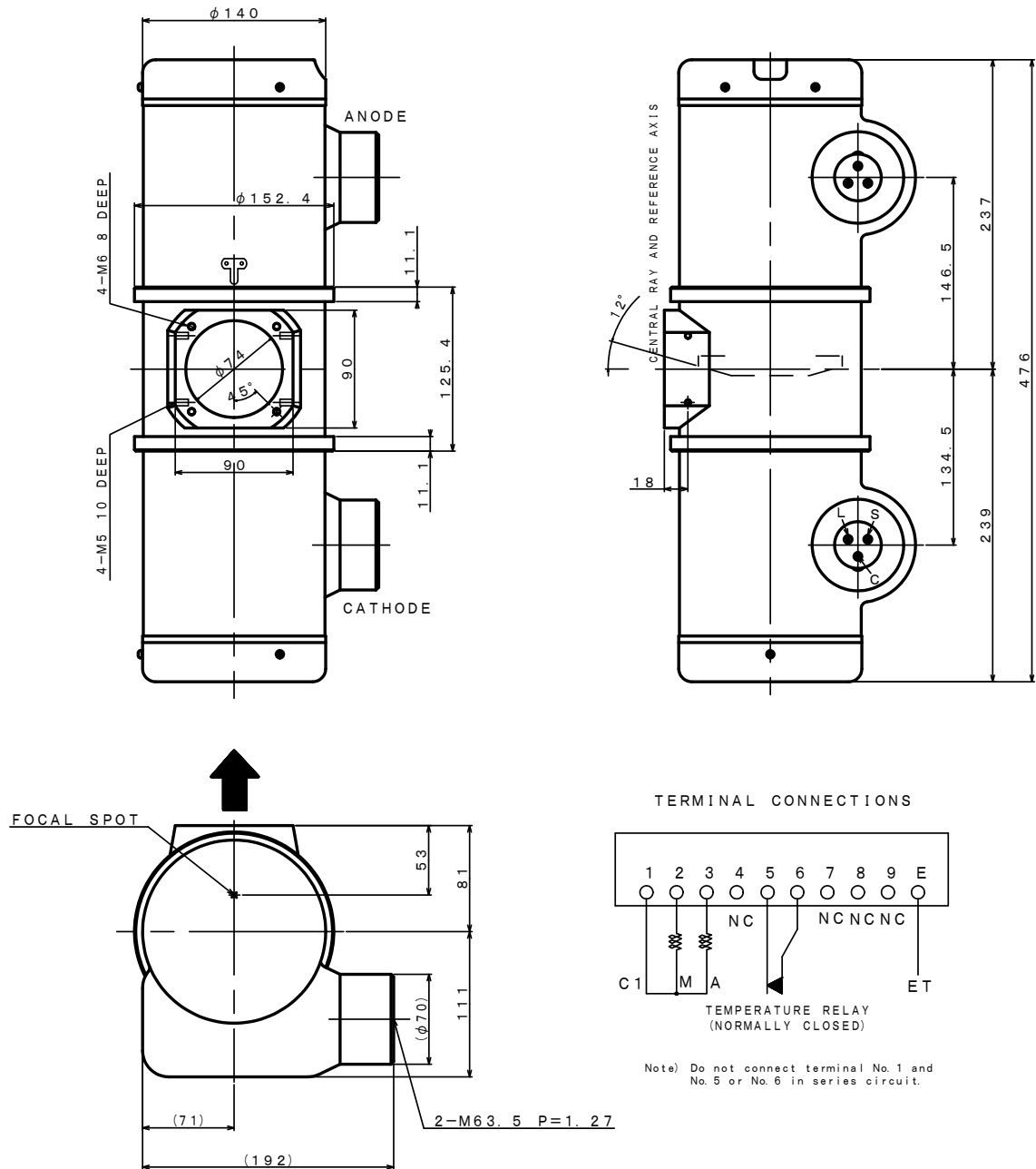
Anode Heating / Cooling Curve



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

## Dimensional Outline of E7252X

Unit mm



### EXPLANATION OF SYMBOLS

#### CATHODE TERMINAL

C : COMMON

L : LARGE FOCUS

S : SMALL FOCUS

#### TERMINAL CONNECTIONS

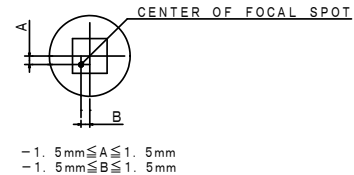
C1: COMMON

M : MAIN WINDING OF THE STATOR

A : AUX. WINDING OF THE STATOR

NC: NON-CONNECTION

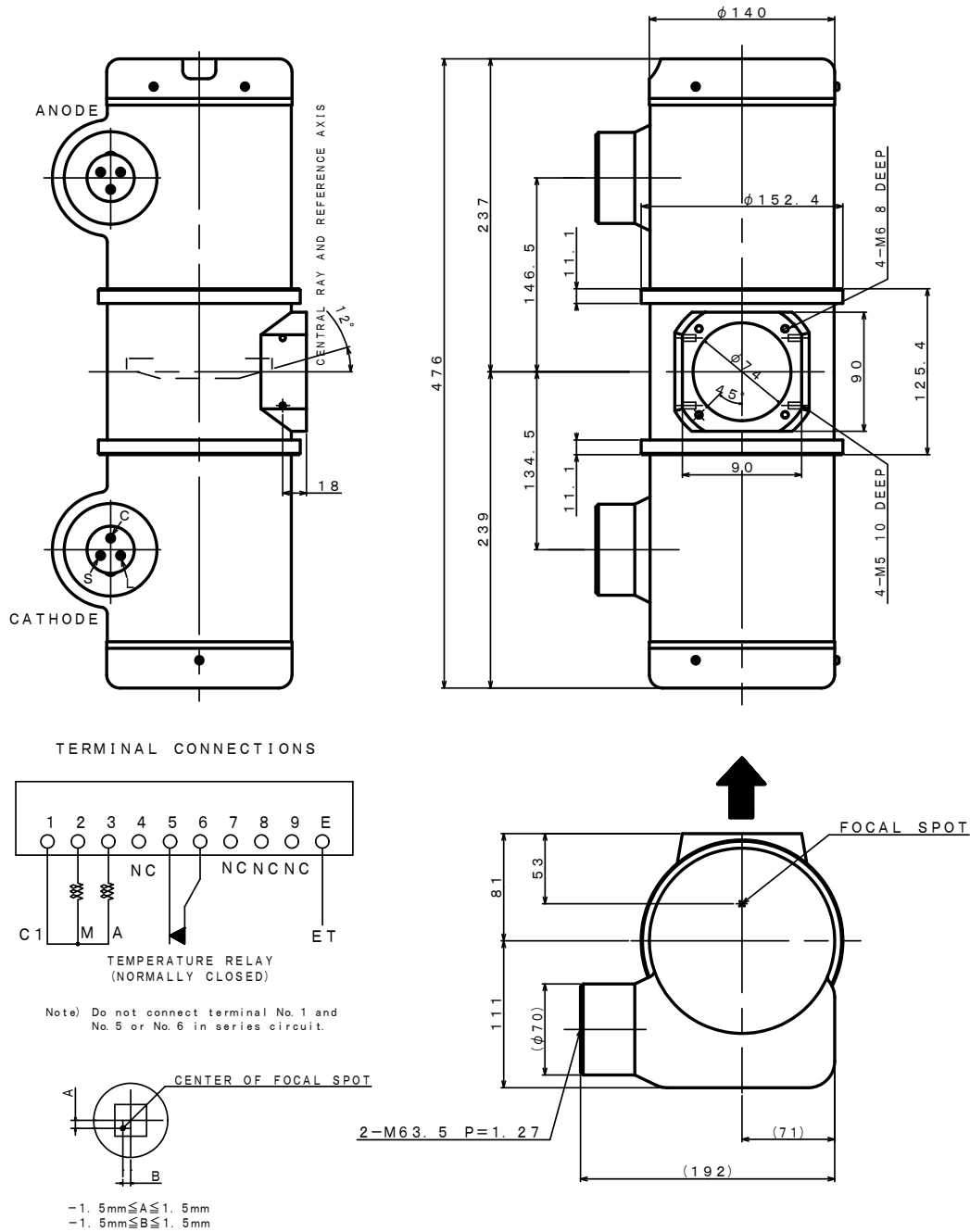
ET: EARTH TERMINAL



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

# Dimensional Outline of E7252FX

Unit mm



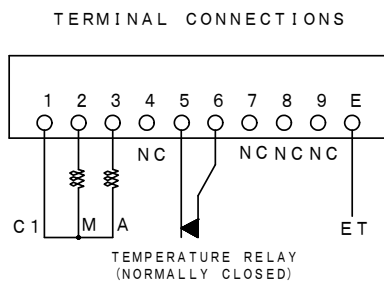
EXPLANATION OF SYMBOLS  
CATHODE TERMINAL  
C : COMMON  
L : LARGE FOCUS  
S : SMALL FOCUS

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

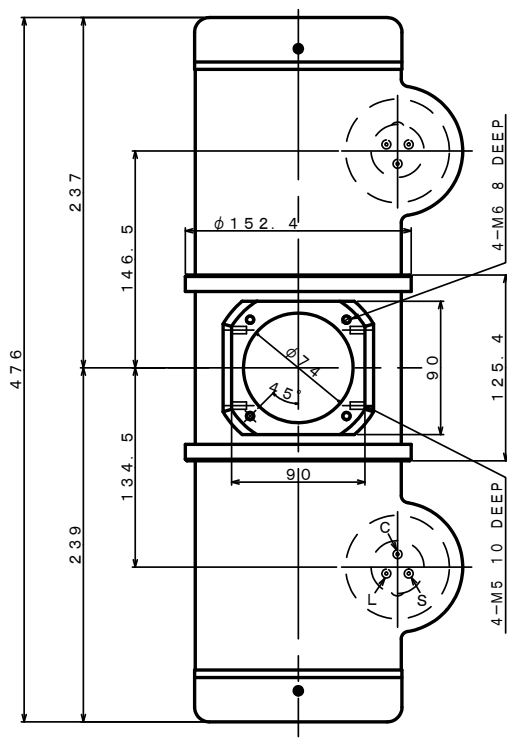
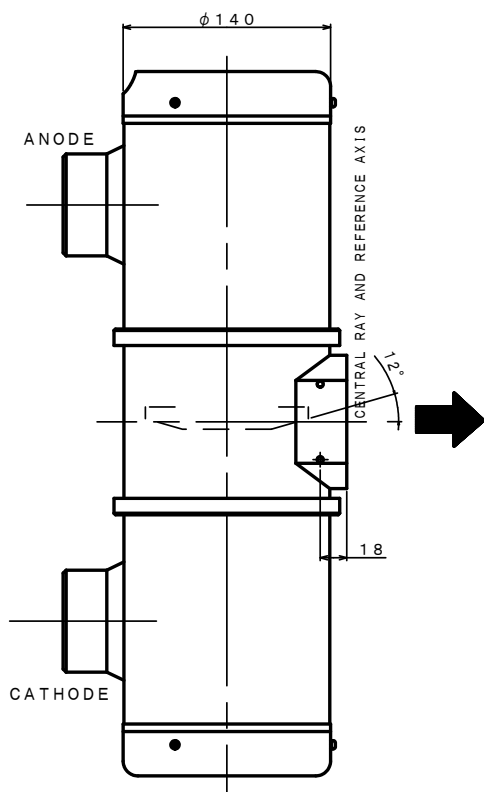
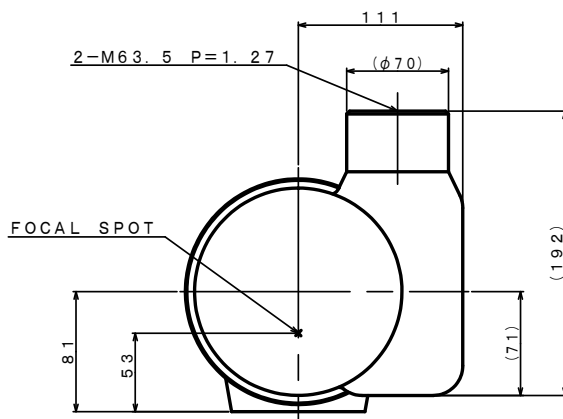
↑: CENTRAL X-RAY  
ANODE & CATHODE TERMINAL  
: IEC60526 TYPE

## Dimensional Outline of E7252GX

Unit mm



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



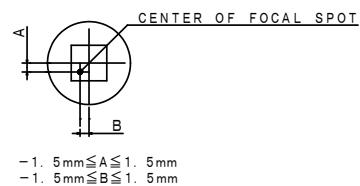
### EXPLANATION OF SYMBOLS

#### 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



- ↑: 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>.

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