ROTANODE™
E7100X

Rotating Anode X-ray Tube Assembly

- High speed rotating anode X-ray tube assembly for high energy radiographic operations.
- For the purpose of general diagnostic X-ray procedures.
- This tube has foci 1.2 and 0.6, and is available for a maximum tube voltage 150 kV.
- This tube housing assembly has specially processed rhenium-tungsten faced molybdenum target of 100 mm diameter anode disc and is accommodated with IEC60526 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) ..... See rating charts

	180 Hz	60 Hz	50 Hz
Large Focus	100 kW	59 kW	55.5 kW
Small Focus	40 kW	24 kW	21.5 kW

Nominal Radiographic Anode Input Power:

	180 Hz	60 Hz	50 Hz
Large Focus	80 kW	48 kW	44 kW
Small Focus	30 kW	18 kW	17 kW

Motor Ratings:

Stator: XS-AG

		Starting		Running	
Driven Frequency	[Hz]	180	60	180	60
Input Power	[W]	2800	800	200	50
Voltage [3) 5)]	[V]	352	155	80	38
Current [4)]	[A]	9.6	10.2	3.0	2.2
Min. Speed Up [1) 7)]	[s]	1.2	0.8	-	-
Capacitor	[μF]	6	44	6	44
Min. Braking [2) 7)]	[s]	3.0 (DC 80V)			

Note 1) 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.
2) To be applied for high speed rotation.
3) Applied voltage between common and main terminal.
4) Common current.
5) The every applied voltage must be never exceeded 110% of the above specification.
6) No more than two high speed starts per minute are permissible.
7) The speed-up time is 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 ..... 9.4 Ω
Common-Auxiliary Winding ..... 28.3 Ω

Resistance between Housing and Low Voltage Terminals ..... Minimum 2 MΩ
Normal Operating Range of the Housing Temperature ..... 16 ~ 75 °C
Mode of Operation ..... Intermittent

Mechanical:

Dimensions ..... See dimensional outline
Overall Length ..... 496 mm
Maximum Diameter ..... 195 mm

Target:

Anode Angle ..... 12 degrees
Diameter ..... 100 mm
Construction ..... Rhenium-Tungsten faced Molybdenum

Permanent Filtration ..... 1.1 mm Al / 75 kV IEC60522:1999
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.) ..... 24 kg
High Voltage Receptacle ..... To meet the requirements of IEC60526 Corrigendum1:2010
Cooling Method ..... Natural or forced air
Tube Housing Model Number XH-112V

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:
- Large Focus ..... 1000 mA
- Small Focus ..... 500 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) ..... 12.8 ~ 17.2 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 ..... 240 W (335 HU/s)
(Fluoroscopic, Radiographic or mixed exposure)
Thermal Characteristics:
- Anode Heat Content ..... 210 kJ (300 kHU)
- Maximum Anode Heat Dissipation ..... 710 W (1000 HU/s)
- X-ray Tube Assembly Heat Content ..... 1070 kJ (1508 kHU)
- Nominal Continuous Input Power:
  - Without Air-circulator ..... 215 W (18 kHU/min)

Environmental Limits

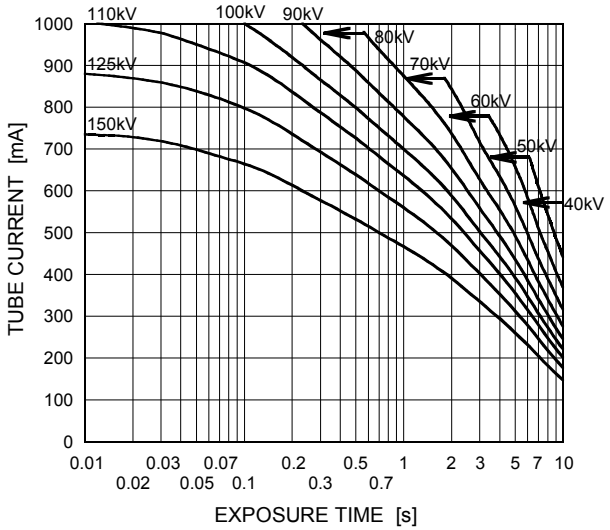
Operating Limits:
- Temperature ..... 10 ~ 40 °C
- Humidity ..... 30 ~ 85 %
  (No condensation)
- Atmospheric Pressure ..... 70 ~ 106 kPa

Shipping and Storage Limits:
- Temperature ..... -20 ~ 70 °C
- Humidity ..... 20 ~ 90 %
  (No condensation)
- Atmospheric Pressure ..... 50 ~ 106 kPa

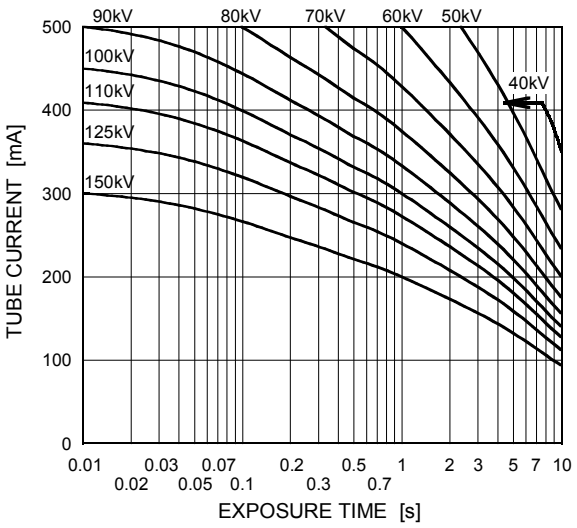
Maximum Rating Charts
(Absolute Maximum Rating Charts)

Conditions: Tube Voltage
Constant potential high-voltage generator
Stator Power Frequency 180Hz

Nominal Focal Spot Value: 1.2 ■



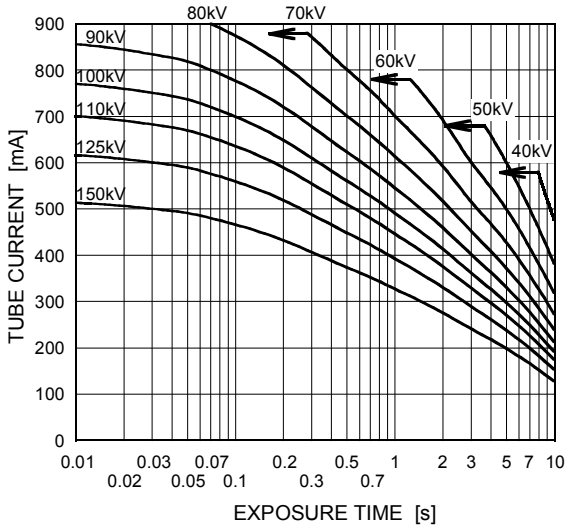
Nominal Focal Spot Value: 0.6 ▣



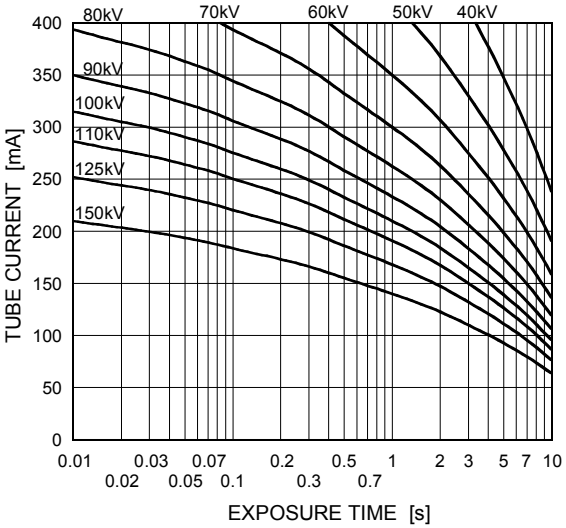
Maximum Rating Charts
(Spot-Film Rating Charts)

Conditions: Tube Voltage
Constant potential high-voltage generator
Stator Power Frequency 180Hz

Nominal Focal Spot Value: 1.2 ■



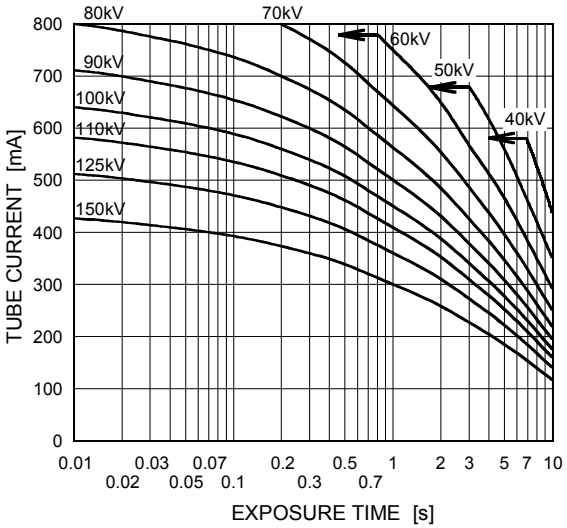
Nominal Focal Spot Value: 0.6 ▣



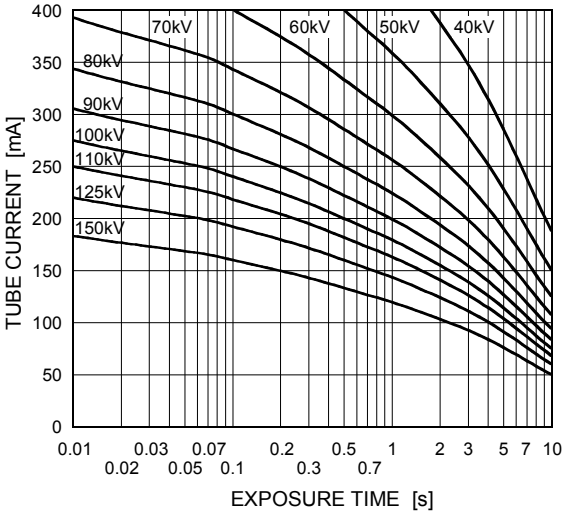
Maximum Rating Charts
(Absolute Maximum Rating Charts)

Conditions: Tube Voltage
Constant potential high-voltage generator
Stator Power Frequency 60Hz

Nominal Focal Spot Value: 1.2 ■



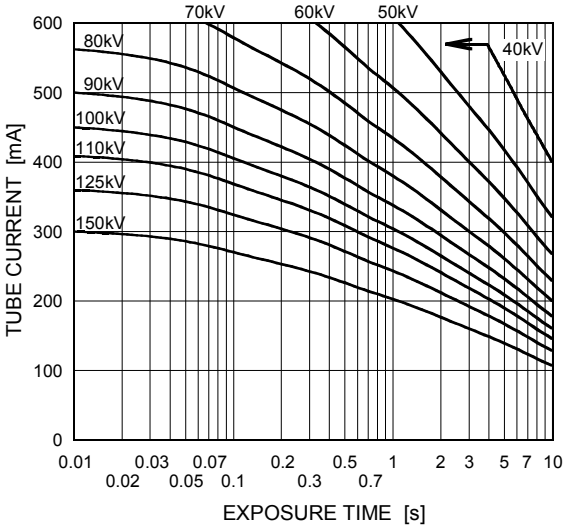
Nominal Focal Spot Value: 0.6 ▣



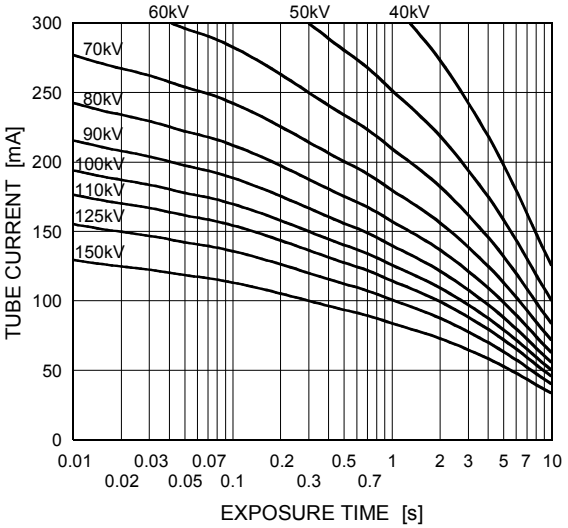
Maximum Rating Charts
(Spot-Film Rating Charts)

Conditions: Tube Voltage
Constant potential high-voltage generator
Stator Power Frequency 60Hz

Nominal Focal Spot Value: 1.2 ■



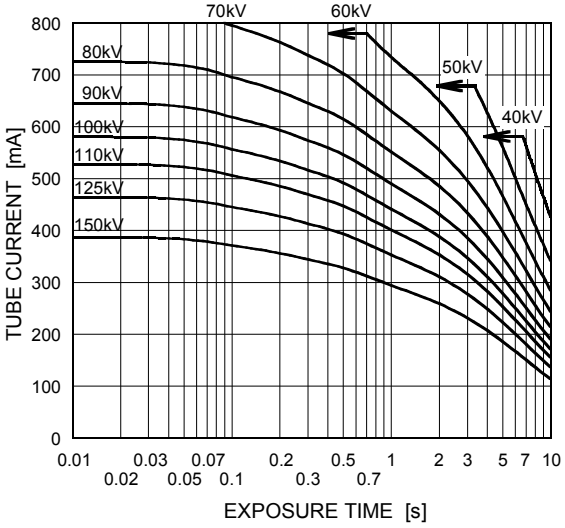
Nominal Focal Spot Value: 0.6 ▣



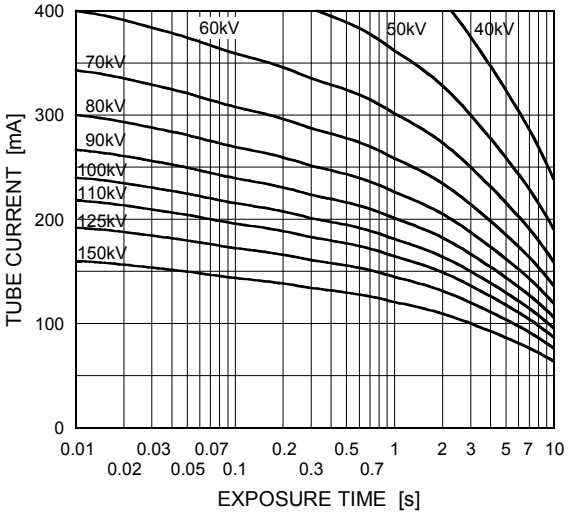
Maximum Rating Charts
(Absolute Maximum Rating Charts)

Conditions: Tube Voltage
Constant potential high-voltage generator
Stator Power Frequency 50Hz

Nominal Focal Spot Value: 1.2 ■



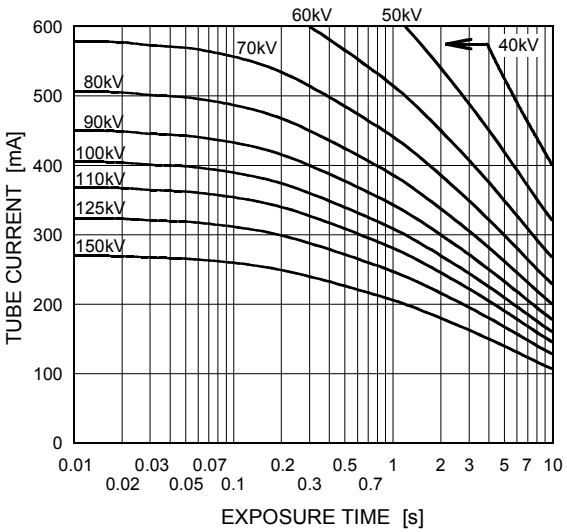
Nominal Focal Spot Value: 0.6 ▣



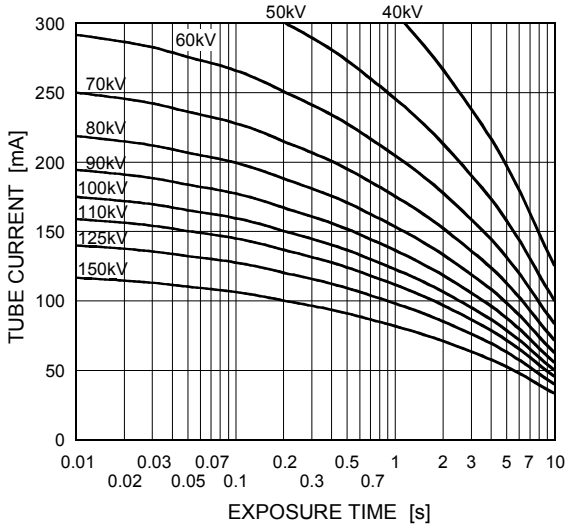
Maximum Rating Charts
(Spot-Film Rating Charts)

Conditions: Tube Voltage
Constant potential high-voltage generator
Stator Power Frequency 50Hz

Nominal Focal Spot Value: 1.2 ■



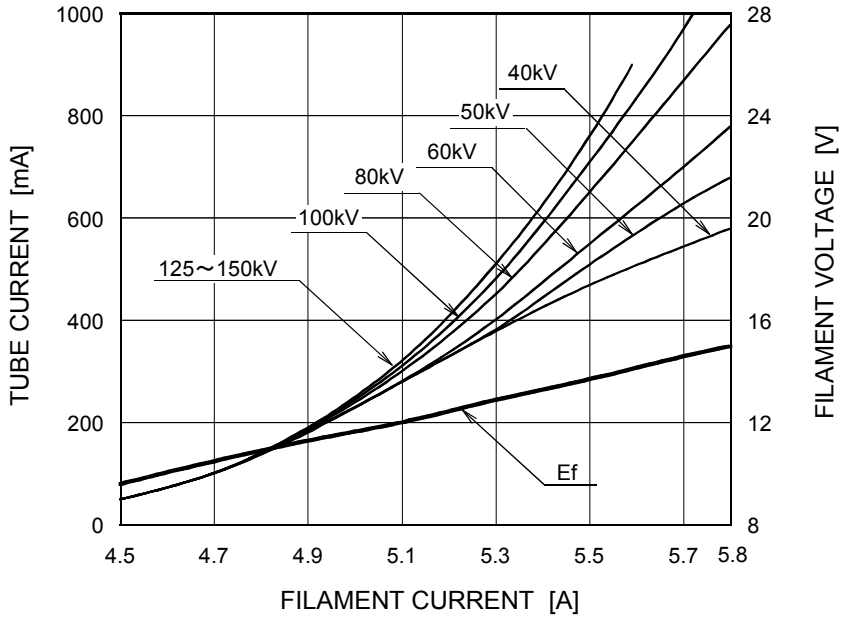
Nominal Focal Spot Value: 0.6 ▣



Emission & Filament Characteristics

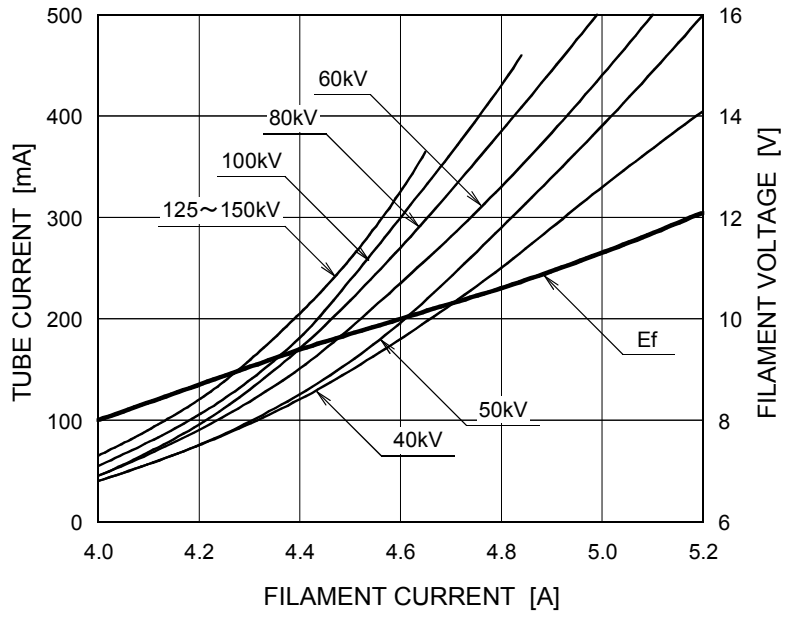
Constant potential high-voltage generator

Nominal Focal Spot Value: 1.2 ■



For Reference Only

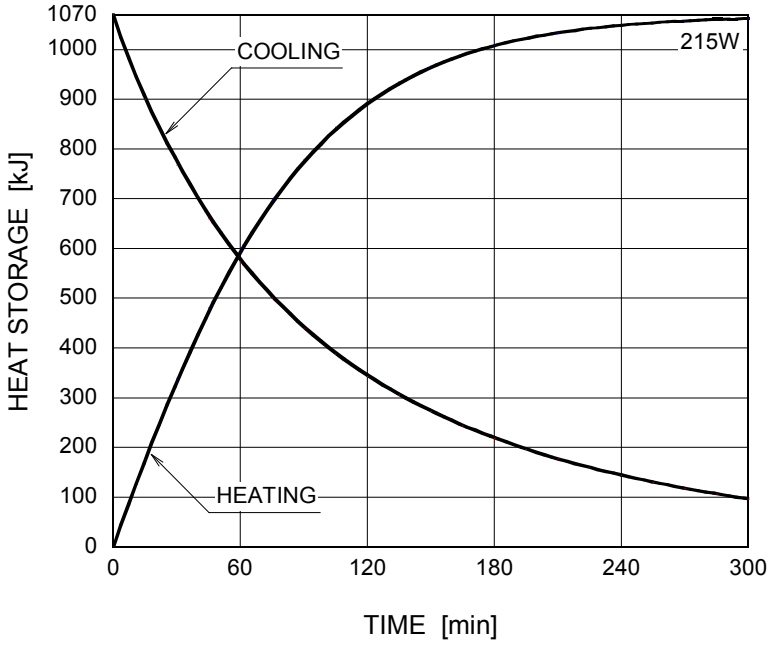
Nominal Focal Spot Value: 0.6 ▣



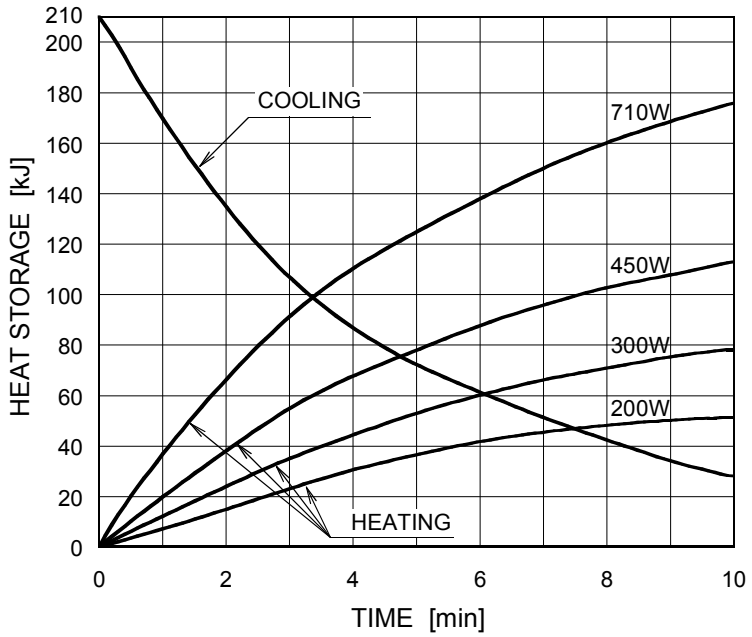
For Reference Only

Thermal Characteristics

X-ray Tube Assembly Heating / Cooling Curve



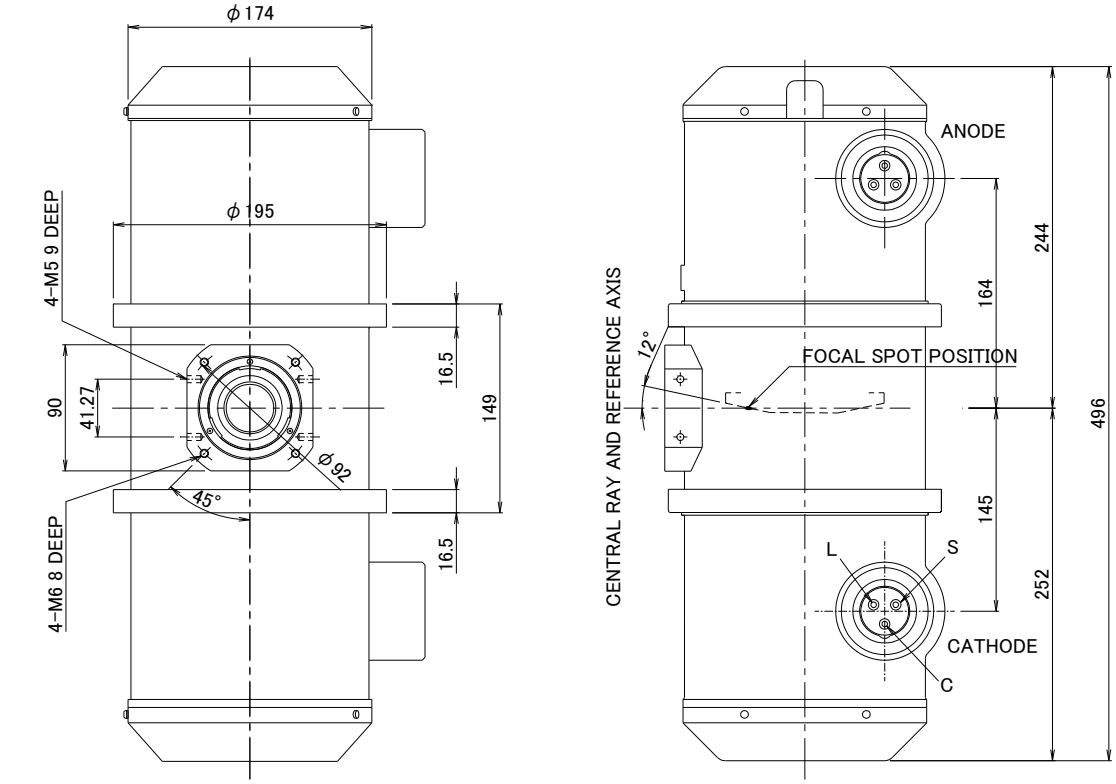
Anode Heating / Cooling Curve

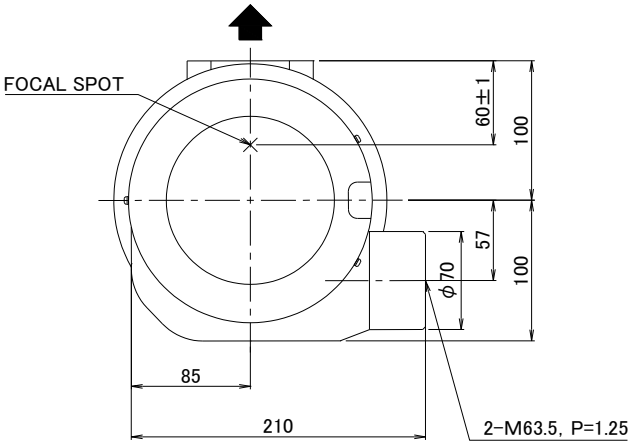


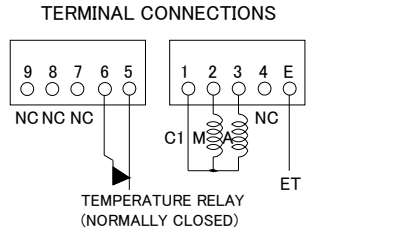
The heating curves are showing examples of average input power to the anode in operation.

Dimensional Outline

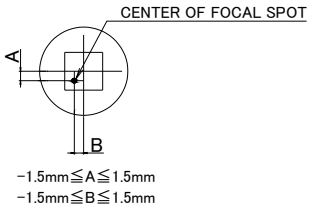
Unit: mm







Note) Do not connect termial 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

CANON ELECTRON TUBES & DEVICES CO., LTD.
Marketing Engineering Group, Sales Department
1385, Shimoishigami, Otawara-shi, Tochigi 324-8550, Japan
Tel: +81-287-26-6666 Fax: +81-287-26-6060
https://etd.canon

PE-E7100X 2018-11