

ROTANODE™  
E7843X C E 0197

**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.
- ◆ This tube has foci 1.2 and 0.6, and is available for a maximum tube voltage 150 kV.
- ◆ Accommodated with IEC60526 type high-voltage cable receptacles.



**General Data**

**IEC Classification (IEC60601-1:2005) ..... Class I ME EQUIPMENT**

**Electrical:**

Circuit:

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

Nominal X-ray Tube Voltage (IEC60613:2010):

Radiographic ..... 150 kV

Nominal Focal Spot Value (IEC60336:2005):

Large Focus ..... 1.2

Small Focus ..... 0.6

Nominal Anode Input Power (at 0.1s) ..... See rating charts

Constant potential

50Hz 60 Hz

Large Focus ..... 46 kW 50 kW

Small Focus ..... 20 kW 22 kW

Nominal Radiographic Anode Input Power (IEC60613:2010):

50Hz 60 Hz

Large Focus ..... 42 kW 46 kW

Small Focus ..... 16 kW 17 kW

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## Motor Ratings:

Stator: XS-BA

Driven Frequency [Hz]	Starting				Running	
	50		60		50	60
Input Power [W]	600	2000	520	1700	150	130
Voltage <sup>1)3)</sup> [V]	120	220	120	220	50-60	50-60
Current <sup>2)</sup> [A]	3.5~5.5	6.7~8.4	3.5~5.0	5.8~7.5	1.7~2.4	1.4~2.1
Min. Speed Up <sup>4)</sup> [s]	2.2	0.8	2.2	0.8	-	-
Capacitor [ $\mu$ F]	43		30		43	30

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:

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

## Stator Resistance:

Common-Main Winding ..... 18.0  $\Omega$ Common-Auxiliary Winding..... 47.5  $\Omega$ 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 requirements of IEC60526 Corrigendum1:2010

Cooling Method ..... Natural or forced air

Tube Housing Model Number ..... XH-121

## Absolute Maximum and Minimum Ratings

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

Maximum X-ray Tube Voltage (IEC60613:2010):	
Radiographic .....	150 kV
Between Anode (or Cathode) and Ground .....	75 kV
Minimum X-ray Tube Voltage .....	40 kV
Maximum X-ray Tube Current (IEC60613:2010) ..... See rating charts	
Large Focus .....	760 mA
Small Focus .....	370 mA
Maximum Filament Current:	
Large Focus .....	5.0 A
Small Focus .....	4.7 A
Filament Voltage:	
Large Focus (At maximum filament current 5.0 A) .....	12.4 ~ 17.0 V
Small Focus (At maximum filament current 4.7 A) .....	6.5 ~ 8.9 V
Filament Frequency Limits .....	0 ~ 25 kHz
Continuous Anode Input Power (IEC60613:2010).....	60 W (85 HU/s)
(Repeated radiographic exposure)	
Thermal Characteristics:	
Anode Heat Content .....	111 kJ (150 kHU)
Maximum Anode Heat Dissipation .....	475 W (667 HU/s)
X-ray Tube Assembly Heat Content .....	900 kJ (1250 kHU)
Nominal Continuous Input Power (IEC60613:2010):	
Without Air-circulator .....	180 W (15 kHU/min)

## Environmental Limits

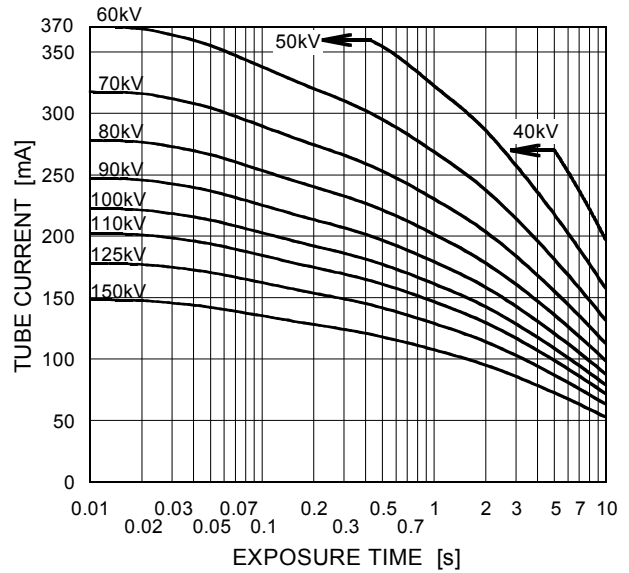
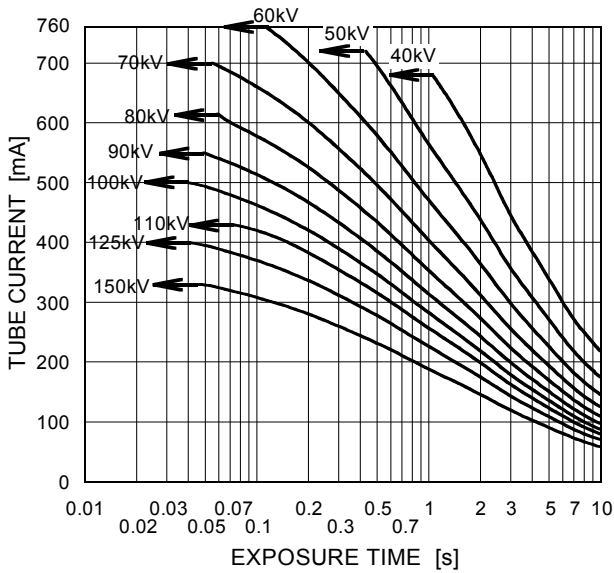
Operating Limits:	
Temperature .....	10 ~ 40 °C
Humidity .....	30 ~ 85 %
	(No condensation)
Atmospheric Pressure .....	70 ~ 106 kPa
Shipping and Storage Limits:	
Temperature .....	-20 ~ 70 °C
Humidity .....	20 ~ 90 %
	(No condensation)
Atmospheric Pressure .....	50 ~ 106 kPa

## Maximum Rating Charts (Absolute Maximum Rating Charts)

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

Nominal Focal Spot Value: 1.2 ■

Nominal Focal Spot Value: 0.6 □

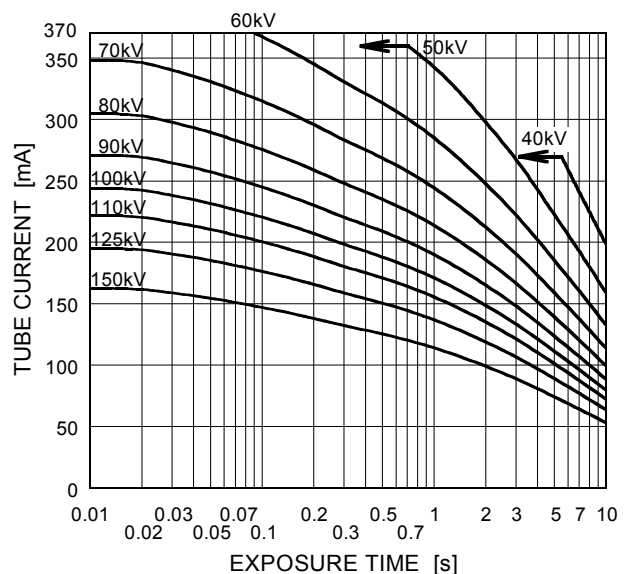
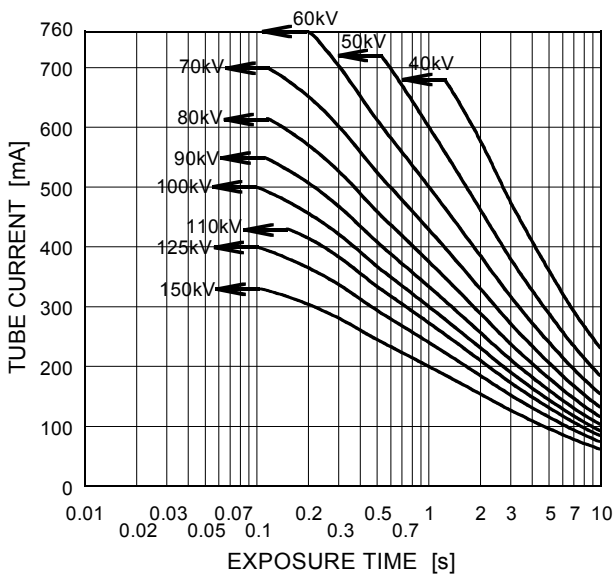


Refer to IEC60613:2010

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

Nominal Focal Spot Value: 1.2 ■

Nominal Focal Spot Value: 0.6 □

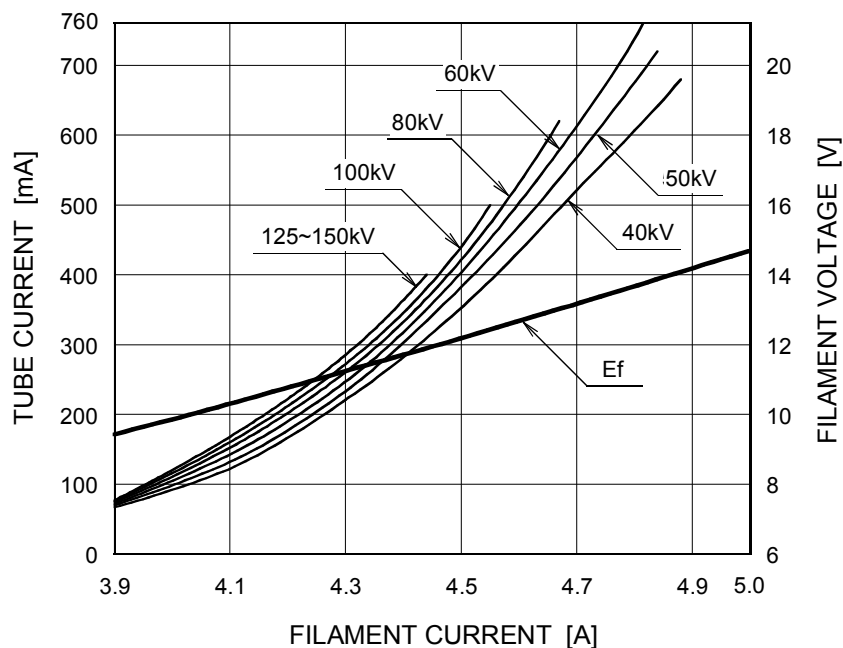


Refer to IEC60613:2010

## Emission & Filament Characteristics

Constant Potential High-Voltage Generator

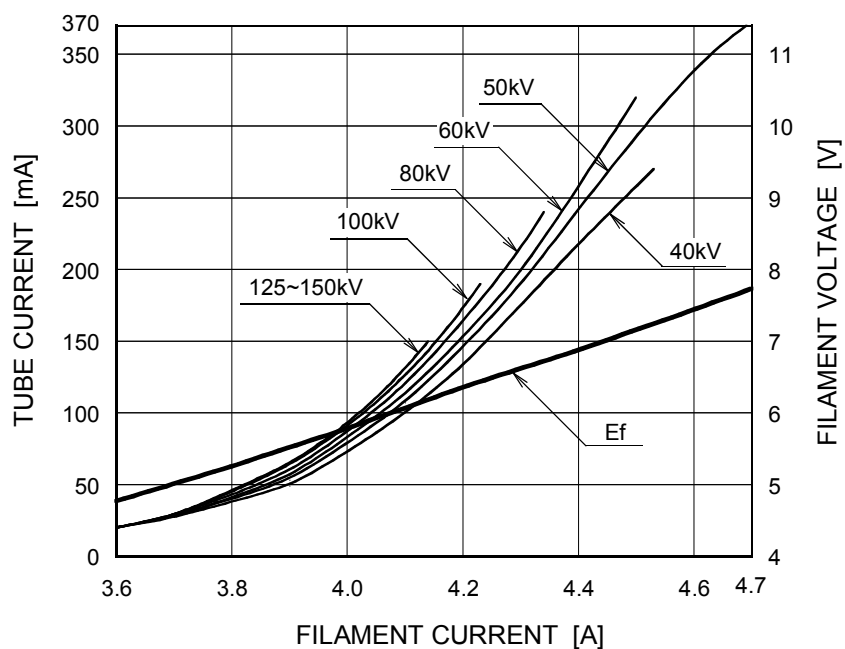
Nominal Focal Spot Value: 1.2 ■



Note1) For Reference Only

Note2) Refer to IEC60613:2010

Nominal Focal Spot Value: 0.6 □

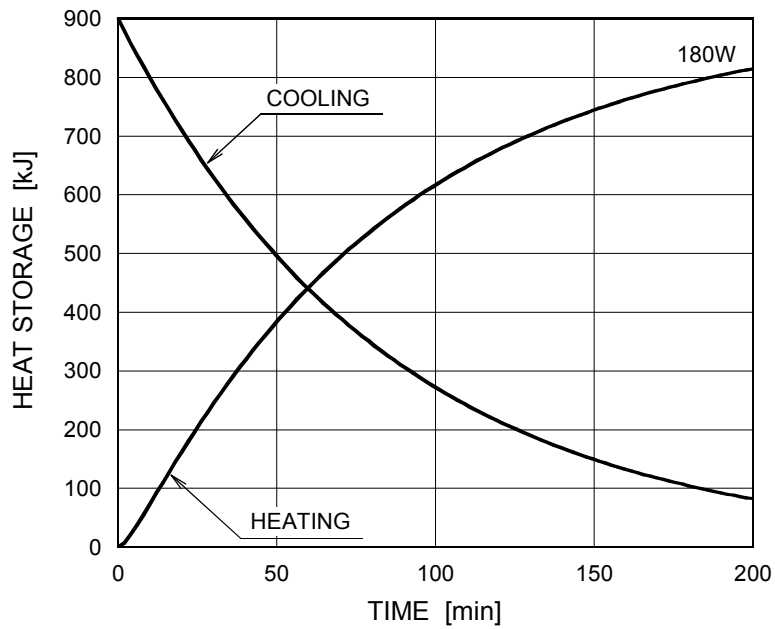


Note1) For Reference Only

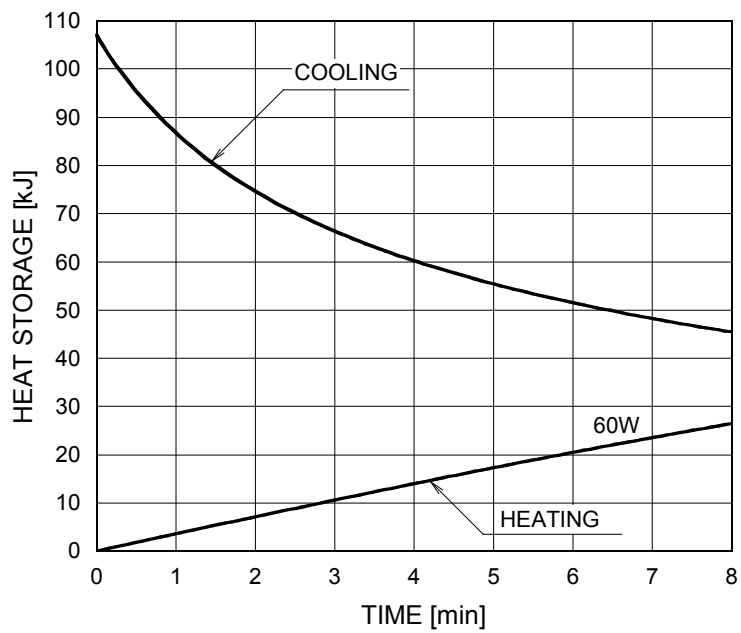
Note2) Refer to IEC60613:2010

## Thermal Characteristics

X-ray Tube Assembly Heating / Cooling Curve

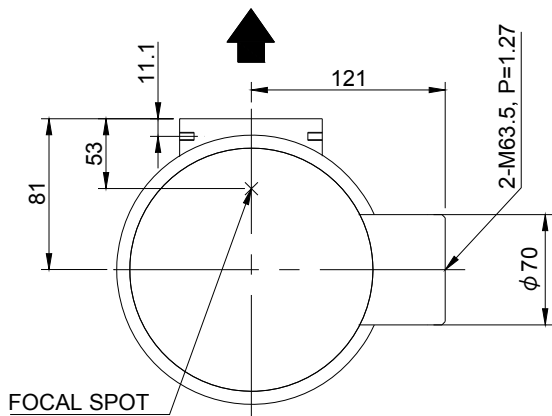
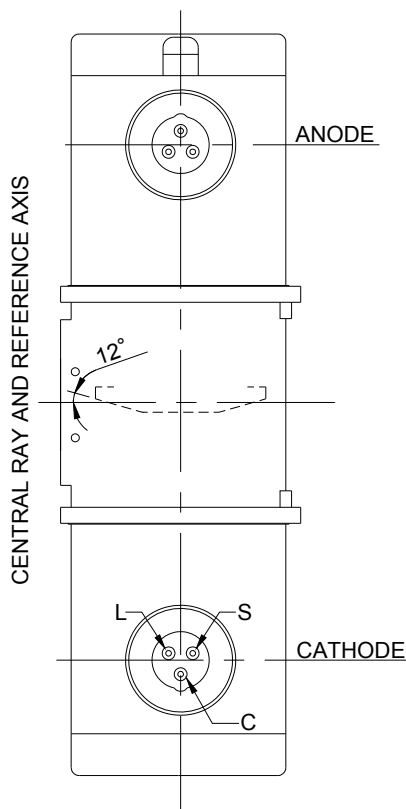
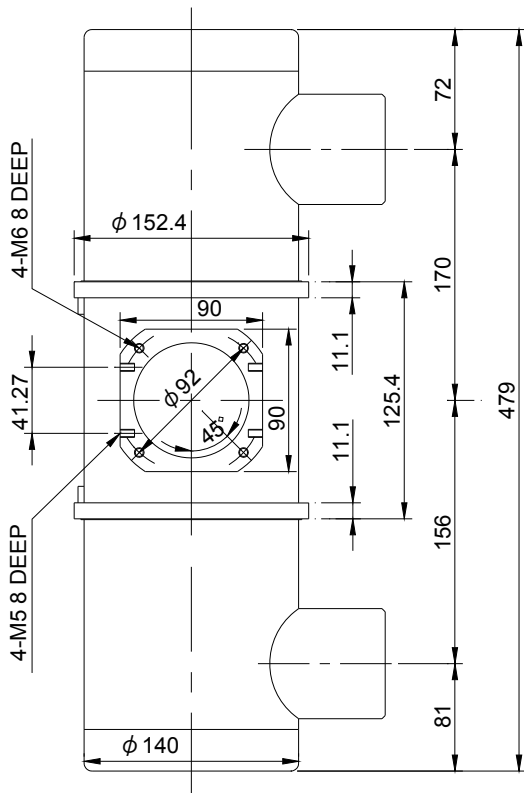


Anode Heating / Cooling Curve



### Dimensional Outline

Unit mm



**EXPLANATION OF SYMBOLS**

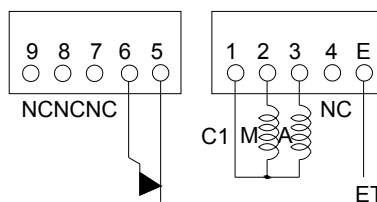
**CATHODE TERMINAL**

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

**TERMINAL CONNECTIONS**

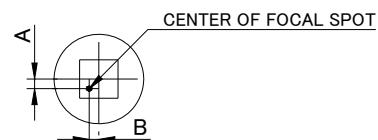
- C1 : COMMON
- M : MAIN WINDING OF THE STATOR
- A : AUX. WINDING OF THE STATOR
- NC : NON-CONNECTION
- ET : EARTH TERMINAL

**TERMINAL CONNECTIONS**



TEMPERATURE RELAY (NORMALLY CLOSED)

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



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

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

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· Toshiba Electron Tubes & Devices Co., Ltd. meets internationally recognized Standards for Quality Management System ISO9001, ISO13485.