Datasheet

RADII™
H1076X
H1076Y

Rotating Anode X-ray Tube Assembly

- The tube unit is so constructed that an X-ray tube is sealed in a diagnostic type protective tube housing of electric shockproof, radiation protection, etc.
- X-ray tube assembly with double-focus rotating anode X-ray tube H1076 is intended to be used for all routine diagnostic examinations with conventional or digital radiographic workstations of OEM (Original Equipment Manufacturer).
- Kailong product version adheres to IEC standards.

General Data

Safety Classification:

FDA ..... **I**

IEC60601-1:2005.....**IB**

Directive 93/42/EEC ..... **IIB**

Electrical:

Circuit:

High Voltage Generator.....Constant Potential High-Voltage Generator

Grounding..... Center-grounded

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

Radiographic.....125 kV

Fluoroscopic.....125 kV

Nominal Focal Spot Value (IEC60336:2005):

Large Focus.....1.5

Small Focus.....0.6

Nominal Anode Input Power (at 0.1s) :

	50 Hz	60 Hz
Large Focus	47 kW	50 kW
Small Focus	16.5 kW	18 kW

Stator Key Values:

One phase stator

	Starting		Running	
Driven Frequency [Hz]	50	60	50	60
Input Power [W]	1450	1450	80	80
Voltage * [V]	220	220	60	60
Current [A]	7.5	7.5	1.5	1.5
Min. Speed Up [s]	0.6	0.6	-	-
Capacitor [μf]	43	30	43	30

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

Stator Resistance:

Main Winding (P) – Common (C) ……18~22Ω

Shift Winding (S) – Common (C) …… 45~55Ω

Rotating speed:

50Hz …… Min. 2700 rpm

60Hz …… Min. 3200 rpm

Resistance between Housing and Low Voltage Terminals …… Min. 2 MΩ

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

Mode of Operation …….. Intermittent

Mechanical:

Dimensions……See dimensional outline

Overall Length……485 mm

Maximum Diameter……...153 mm

Target:

Anode Angle ..... 14 degrees

Diameter ..... 74 mm

Construction….....Rhenium-Tungsten faced Molybdenum

Filtration:

Permanent Filtration ..... 0.9 mm Al / 75 kV IEC60522:1999

Available Additional Filter combination (3×0.5 mm) …... Maximum 2.4 mm Al / 75 kV

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

Leakage Technique Factor .....125 kV, 2.9 mA

X-ray Coverage .....430×430 mm at SID 870 mm

Weight (Approx.) .....18 kg

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

Cooling Method……Natural or forced air

Absolute Maximum and Minimum Ratings

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

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

Radiographic …… 125 kV

Fluoroscopic …… 125 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……..……..……...800 mA

Small Focus……..……..……...300 mA

Maximum Filament Current:

Large Focus……...5.4 A

Small Focus……...5.3 A

Filament Voltage:

Large Focus (At maximum filament current 5.4 A)……..……...16~18 V

Small Focus (At maximum filament current 5.3 A)……..……6~8.5 V

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

Continuous Anode Input Power (IEC60613:2010)……..……120 W (169 HU/s)

(Fluoroscopic, repeated radiographic or mixed exposure)

Thermal Characteristics:

Anode Heat Content……142 kJ (200 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 ……..……180W (14.4 kHU/min)

Environmental Limits

Operating Limits:

Temperature.....10 ~ 60 °C

Humidity .....30 ~ 75 %

(No condensation)

Atmospheric Pressure ..... 70 ~ 106 kPa

Shipping and Storage Limits:

Temperature..... -20 ~ 70 °C

Humidity ..... 20 ~ 90 %

(No condensation)

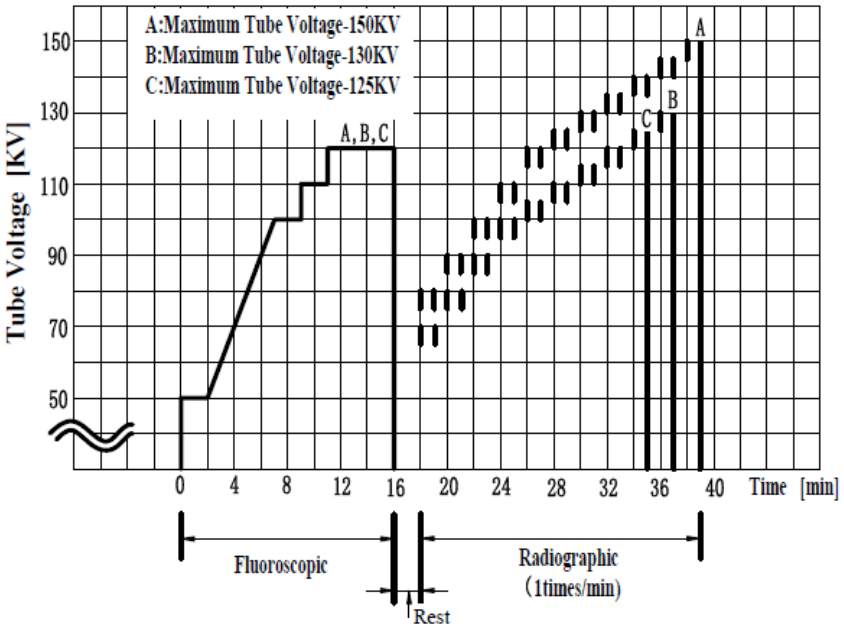
Atmospheric Pressure ..... 50 ~ 106 kPa

Recommended Seasoning Procedure for Long Period Unused Tube

In order to keep long term to use x-ray tube device without any failure, please make seasoning procedure before usage, and enough cooling after application.

Seasoning procedure

1. Before the initial start-up of the x-ray tubes or after extended idle time (more than 2 weeks), we suggest to make seasoning procedure. And when tubes become unstable, recommend make seasoning procedure according to below seasoning procedure table.
2. Ensure that adequate radiation safety precautions are taken to protect any existing image intensifier against radiation. In order to protect x-ray leakage radiation, please close the collimator which is assembled into the port window of x-ray source.
3. When the tube current becomes unstable during high voltage ramp up, it is necessary to reduce the high voltage to be sure the tube current become stable.
4. Seasoning procedure must be done by professional and safety knowledge people.



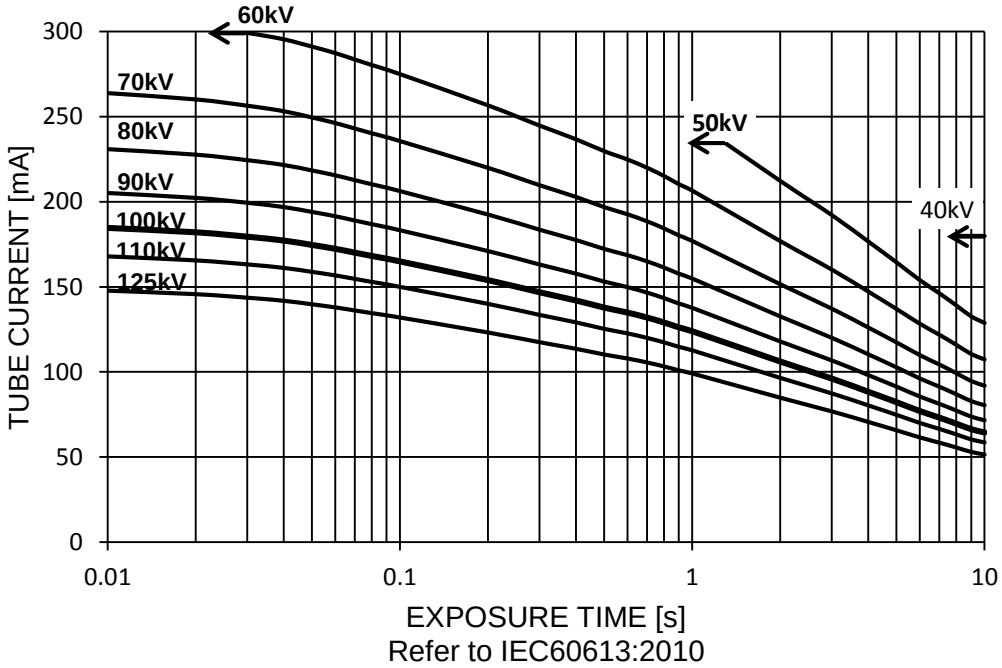
When tube current cannot be set 50% mA, the tube current should be set not excess 50% and nearest value which close to 50% value.

Maximum Rating Charts

(Absolute Maximum Rating Charts)

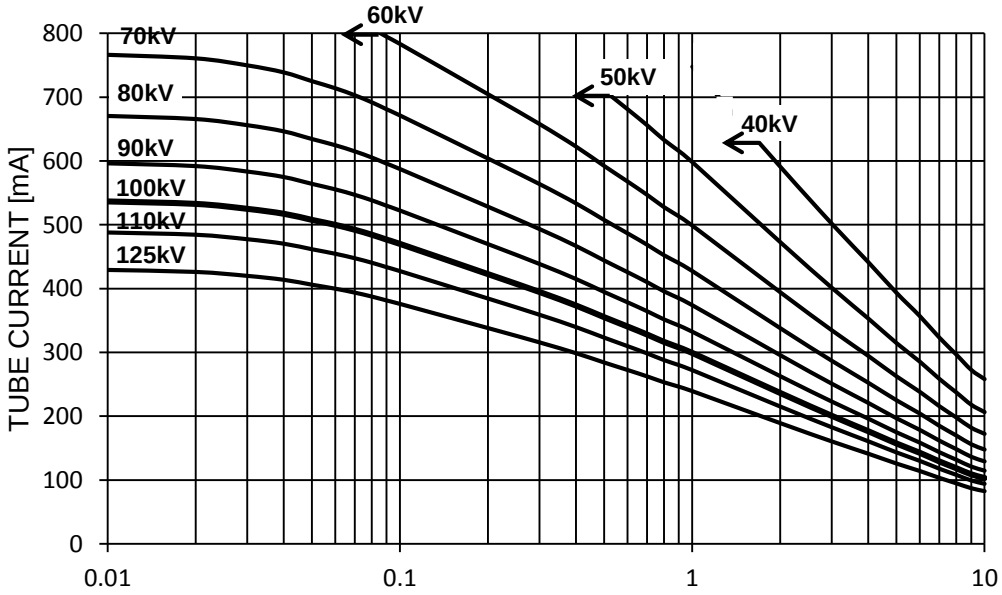
Conditions: Tube Voltage
Constant Potential High-Voltage Generator
Stator Power Frequency 50 Hz

Nominal Focal Spot: 0.6 ▣



Refer to IEC60613:2010

Nominal Focal Spot: 1.5 ■



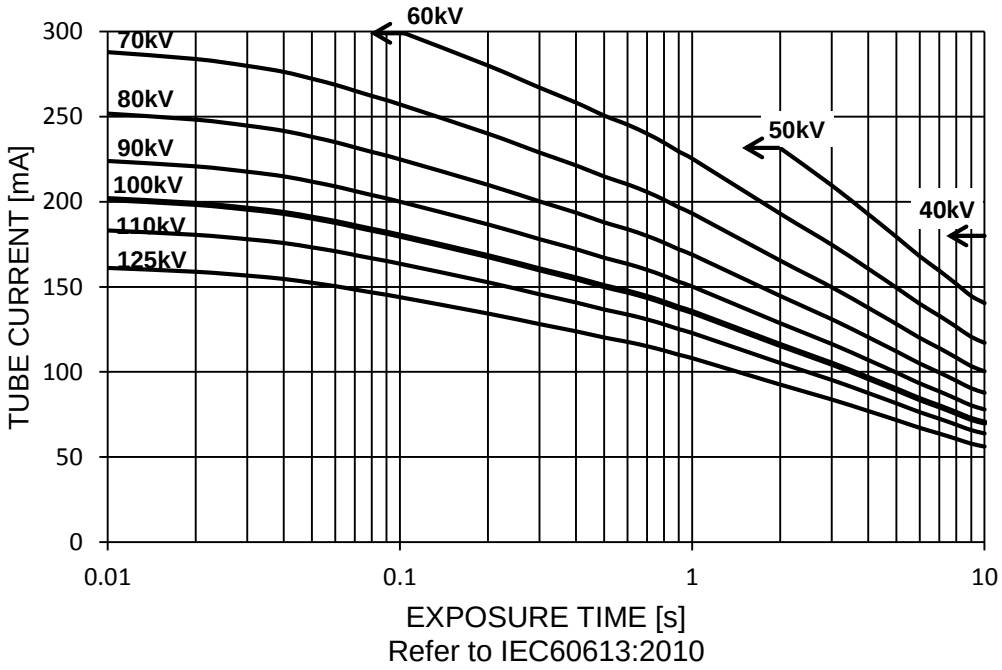
Refer to IEC60613:2010

Maximum Rating Charts

(Absolute Maximum Rating Charts)

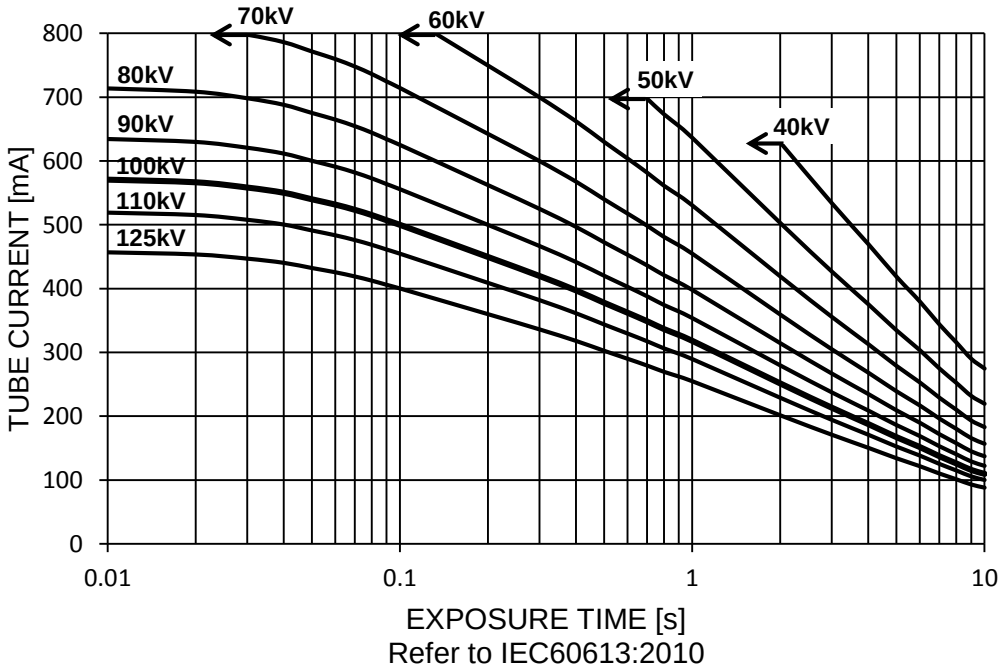
Conditions: Tube Voltage
Constant Potential High-Voltage Generator
Stator Power Frequency 60 Hz

Nominal Focal Spot: 0.6 ▣



Refer to IEC60613:2010

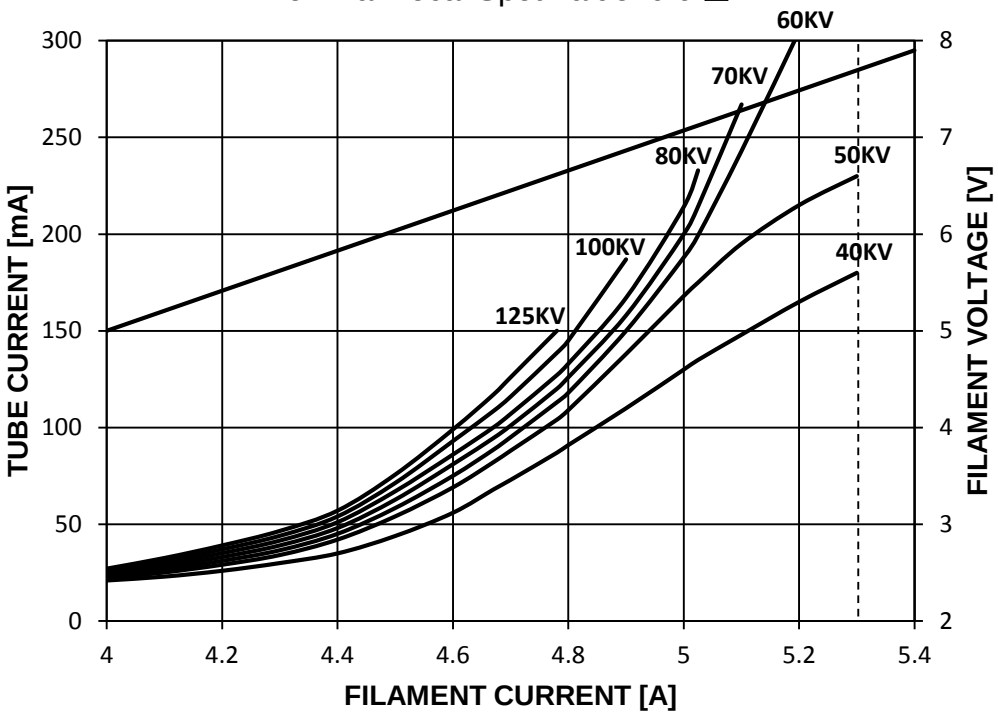
Nominal Focal Spot: 1.5 ■



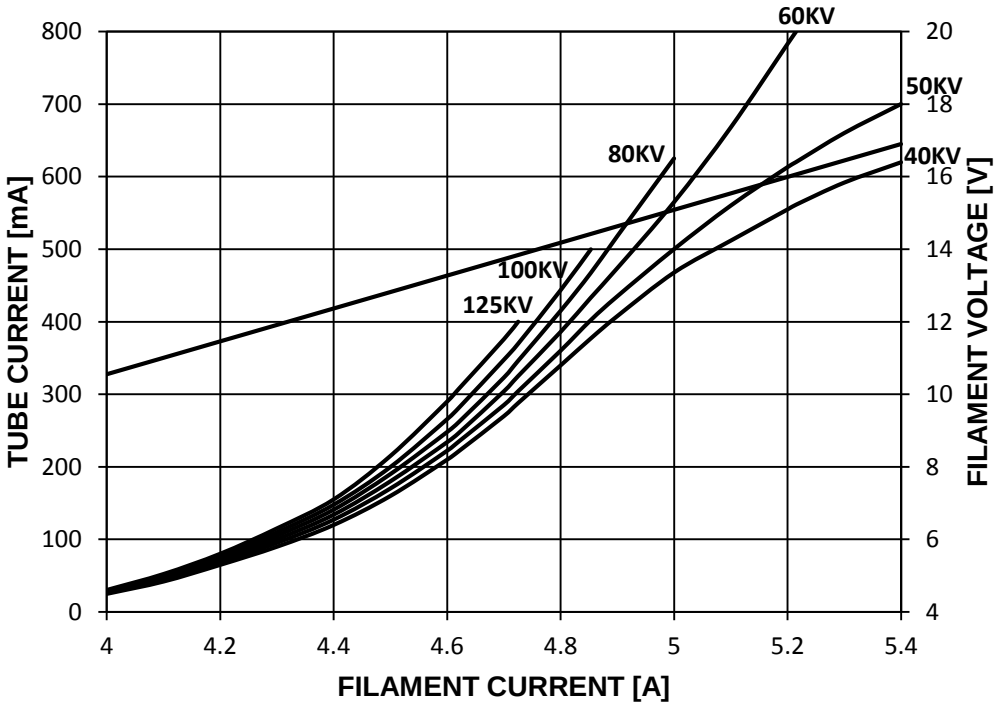
Refer to IEC60613:2010

Emission Curves of the Cathode

Constant Potential High-Voltage Generator
Nominal Focal Spot Value: 0.6 ▣

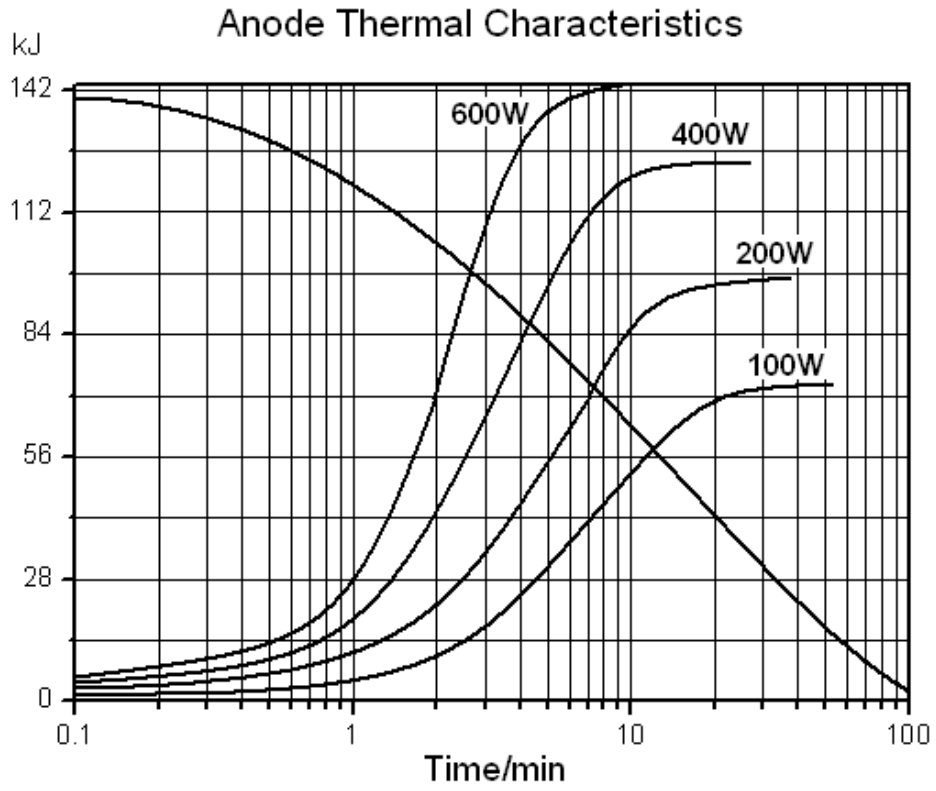


Constant Potential High-Voltage Generator
Nominal Focal Spot Value: 1.5 ■

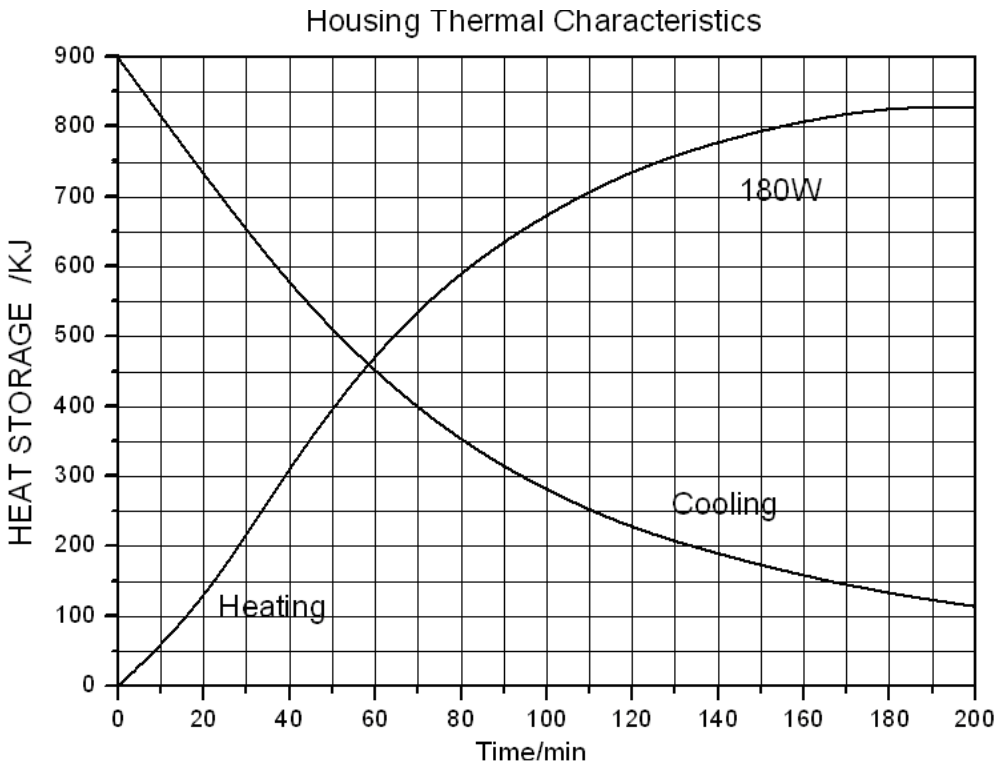


Thermal Characteristics

X-ray Tube Assembly Heating / Cooling Curve

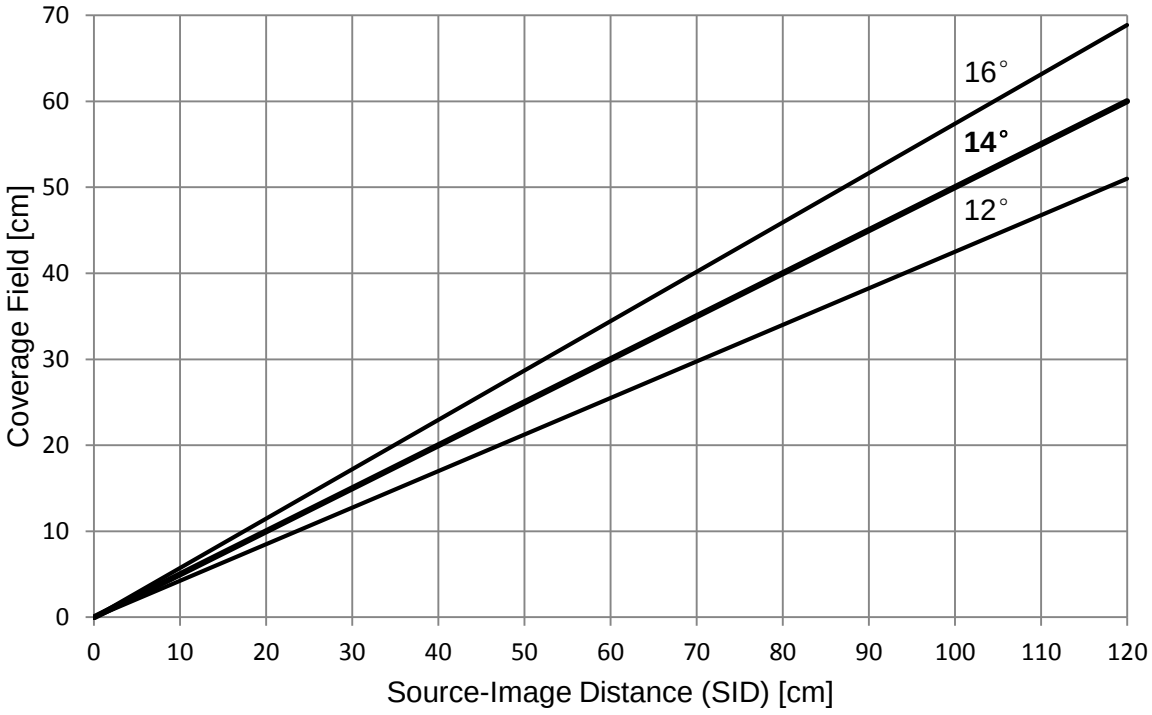


Heating and Cooling Curves of X-Ray Tube Assembly

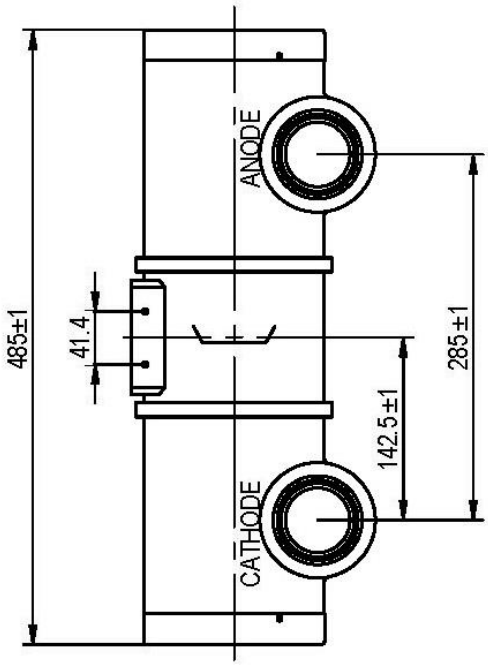


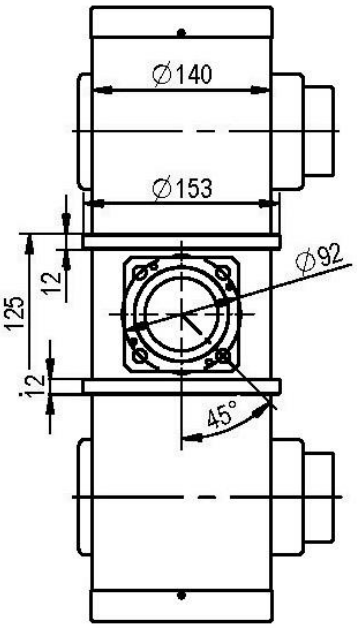
Maximum Radiation Field

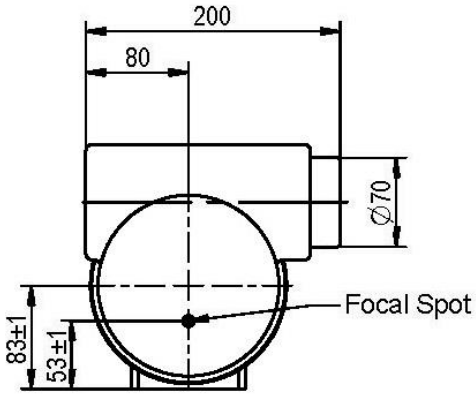
The field coverage depends on the source-image distance (SID) and the anode angle. For example field coverage of 430×430mm can be achieved at 870mm SID with this tube assembly (14° anode angle)



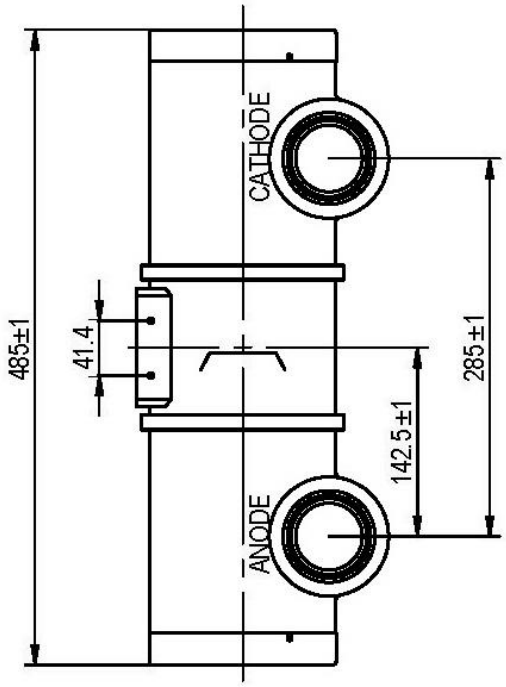
X-Ray Tube Assembly Dimensional Drawings - H1076X

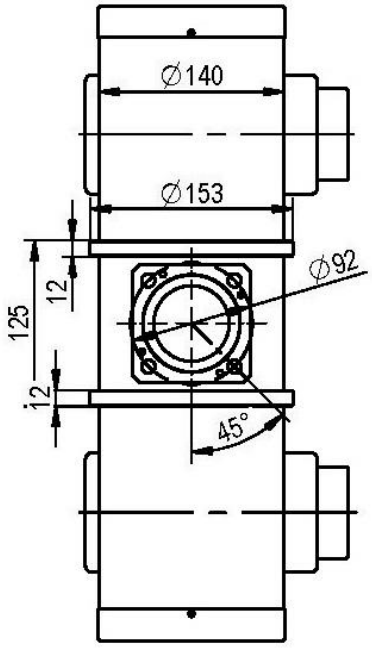


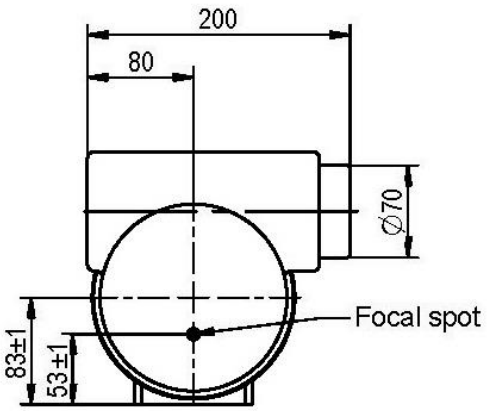




X-Ray Tube Assembly Dimensional Drawings - H1076Y







Cautions!!!

X-ray tube will emit X–ray when it is energized with high voltage, Special knowledge should be required and cautions need to be taken when handling it.

1. Only a qualified specialist with X-Ray tube knowledge should assemble, maintain and remove the tube. When mounting tube inserts adopt proper caution, in order to avoid glass bulb breaking and fragments projection. Please use protective gloves and glasses.
2. Tube insert connected to H.V. supply is a radiation source: be sure to take all necessary safety cautions.
3. Wash thoroughly with alcohol the external surface of tube insert (care of fire risk). Avoid contact of dirty surfaces with cleaned tube insert.
4. Clamp system inside housing or self-contained units must not mechanically stress the tube.
5. After installation, check the right working of the tube (no fluctuation of tube current nor crackling).
6. Comply with insert thermal parameters, planning and programming the exposure parameters and cooling pauses. Housing or self-contained units must be provided with an adequate thermic protection.
7. Voltages indicated in charts are valid for transformer supplied with ground center.
8. It is extremely important to observe the connection diagram and the grid resistor value. Any change could modify the dimensions of the focal spot, also varying diagnostic performances or overloading anode target.
9. Tube inserts contain environment polluting materials, particularly lead liner tubes. Please apply to qualified operator for waste disposal, according to local regulation requirements.
10. When any abnormalities are found during operation, immediately switch off the power supply and contact the service engineer.

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Notes

- This high vacuum product is produced according to state-of-the–art technology. To prevent implosion please handle with care and use protective devices, e.g. glasses!
- In the interest of complying with legal requirements concerning the environmental compatibility of our products (protection of natural resources, avoidance of waste) we endeavor to reuse components and to return them to the production cycle. We guarantee the functioning, quality and life of these components by taking extensive quality assurance measures, just as for factory-new components.

The Hangzhou Kailong Medical instruments Co., Ltd. is ISO 13485 certified, manufactures in accordance with the Quality System Regulations (QSR) as defined by the Food and Drug Administration (FDA) and endeavors to comply with legal requirements concerning the environmental compatibility of its products.

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