

Stationary Anode X-ray Tube

- ◆ Especially designed for C-arm equipment and available for nominal tube voltage with DC generator.
- ◆ This tube has focus 1.5 and 0.6 foci and is available for maximum tube voltage 110 kV.
- ◆ Installed in the same enclosure with the high voltage transformer.
- ◆ 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).....	110 kV
Nominal Focal Spot Value (IEC60613:2010):	
Large Focus.....	1.5
Small Focus.....	0.6
Nominal Anode Input Power (at 0.1s)	
Large Focus.....	4000 W
Small Focus.....	1300 W
Exposure Duty Cycle	
Large Focus	1:60
Small Focus	1:60
	(Exposure time : interval time)

Mechanical:

Dimensions

Overall Length.....	See dimensional outline
Maximum Diameter	See dimensional outline

Target:

Anode Angle(IEC/TR 60788:2004).....	12 degrees
Material	Tungsten
Inherent Filtration (IEC 60522:1999)	Min. 0.65 mm Al / 75 kV
Weight (Approx.)	
KL25-0.6/1.5-110.....	0.4 kg
KL25R-0.6/1.5-110.....	0.5 kg
KL25SB-0.6/1.5-110.....	1.0 kg
KL25SBR-0.6/1.5-110.....	1.1 kg
X-ray Coverage	430×430 mm at SID 909 mm
Cooling Method.....	Oil immersed (60°C Max.) and convection oil cooling
Tube Holding	Holding the glass envelope of the anode end and cathode end or the screw of the anode shank.

Absolute Maximum and Minimum Ratings

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

Maximum X-ray Tube Voltage (IEC60613:2010)	110 kV
Minimum X-ray Tube Voltage.....	40 kV
Maximum X-ray Tube Current (IEC60613:2010)	
Large Focus	80 mA
Small Focus	26 mA
Maximum Filament Current	
Large Focus	4.5 A
Small Focus	4.2 A
Filament Voltage (At maximum filament current)	
Large Focus	7.0 ~ 8.0 V
Small Focus	3.8 ~ 4.9 V
Thermal Characteristics:	
Anode Heat Content (IEC60613:2010)	
KL25/KL25SB.....	30 kJ (42 kHU)
KL25R/KL25SBR.....	40 kJ (56 kHU)
Maximum Anode Heat Dissipation (IEC60613:2010)	
KL25/KL25SB.....	275 W
KL25R/KL25SBR.....	600 W
Wire length.....	100 mm

Environmental Limits

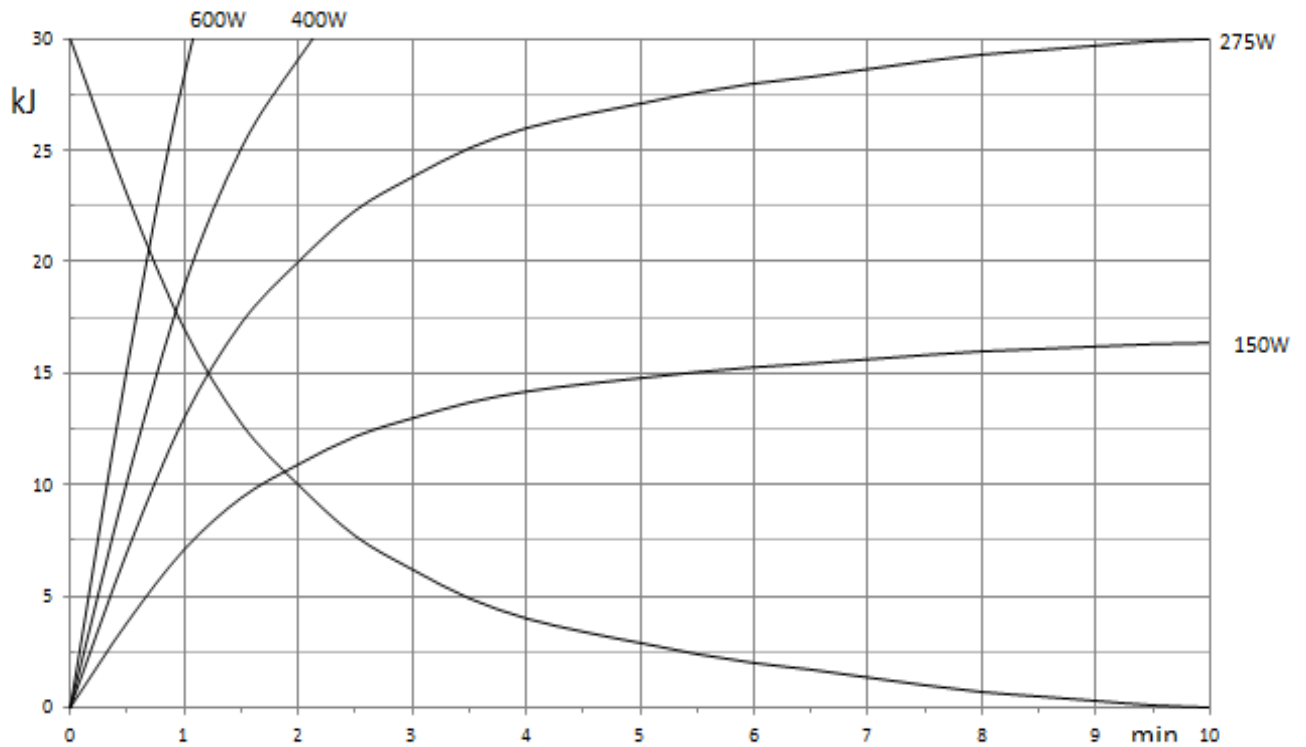
Operating Limits (in dielectric oil):

Oil Temperature	10 ~ 60 °C
Oil Pressure	70 ~ 106 kPa

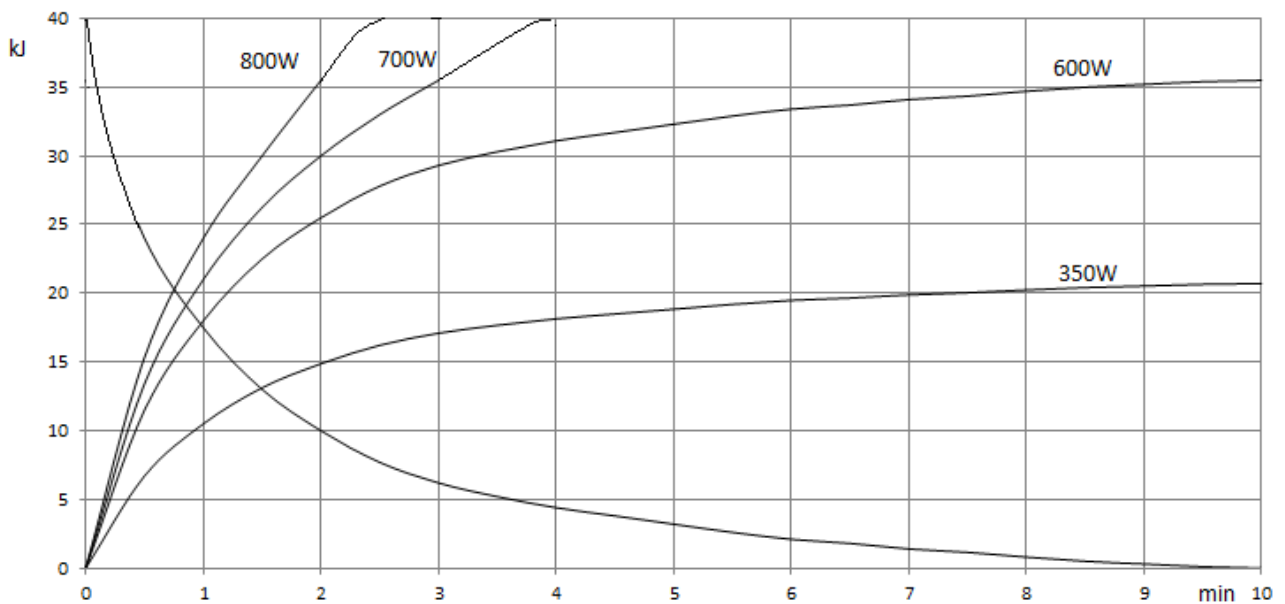
Shipping and Storage Limits:

Temperature	-40~ 70 °C
Humidity	10 ~ 90 %
	(No condensation)
Atmospheric Pressure	50 ~ 106 kPa

Anode thermal characteristics

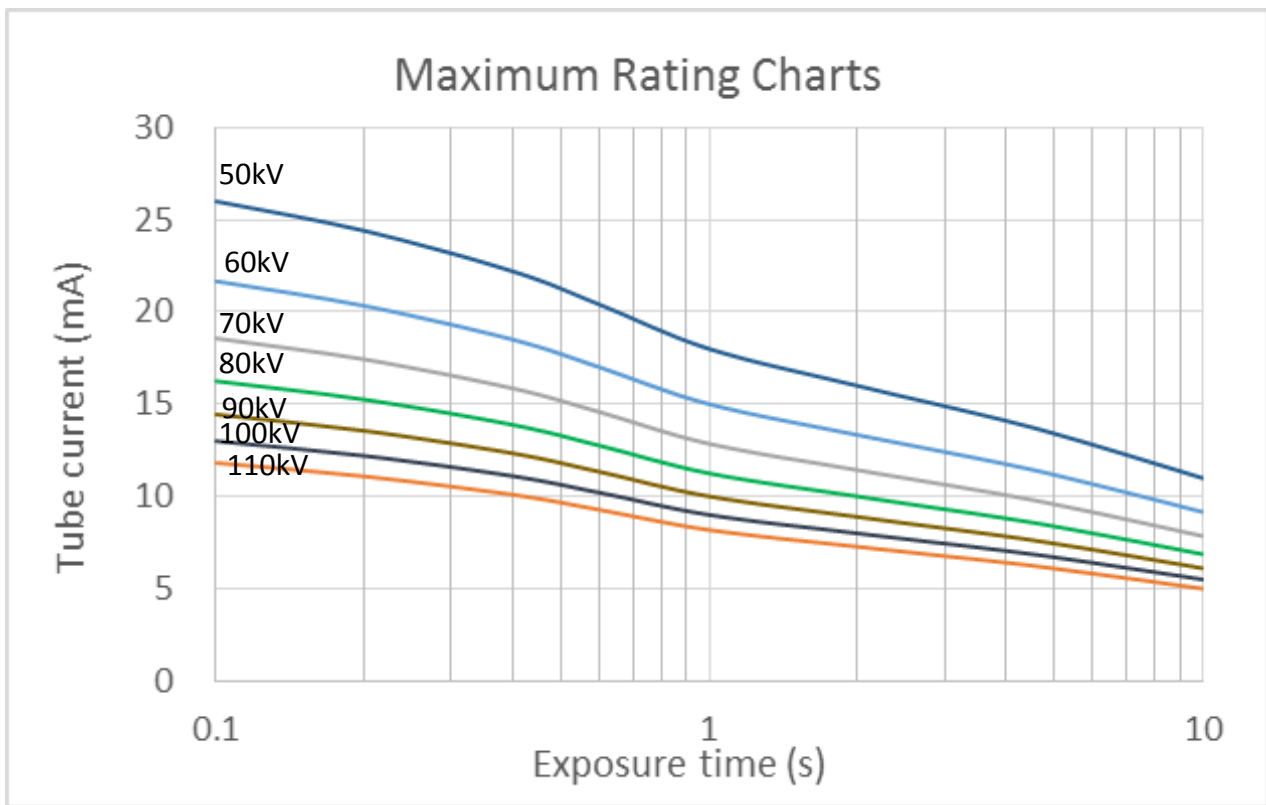


KL25-0.6/1.5-110, KL25SB-0.6/1.5-110

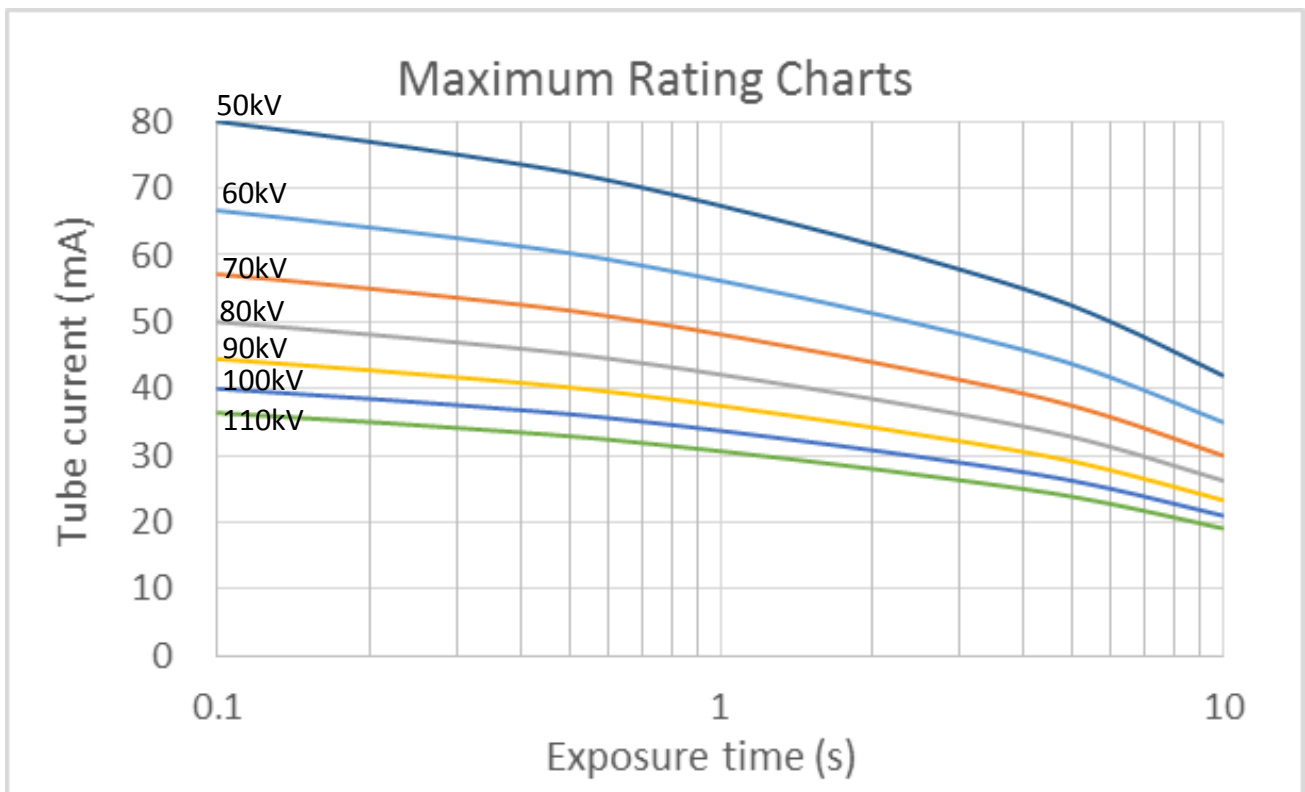


KL25R-0.6/1.5-110, KL25SBR-0.6/1.5-110

Maximum rating charts (Absolute maximum rating charts)

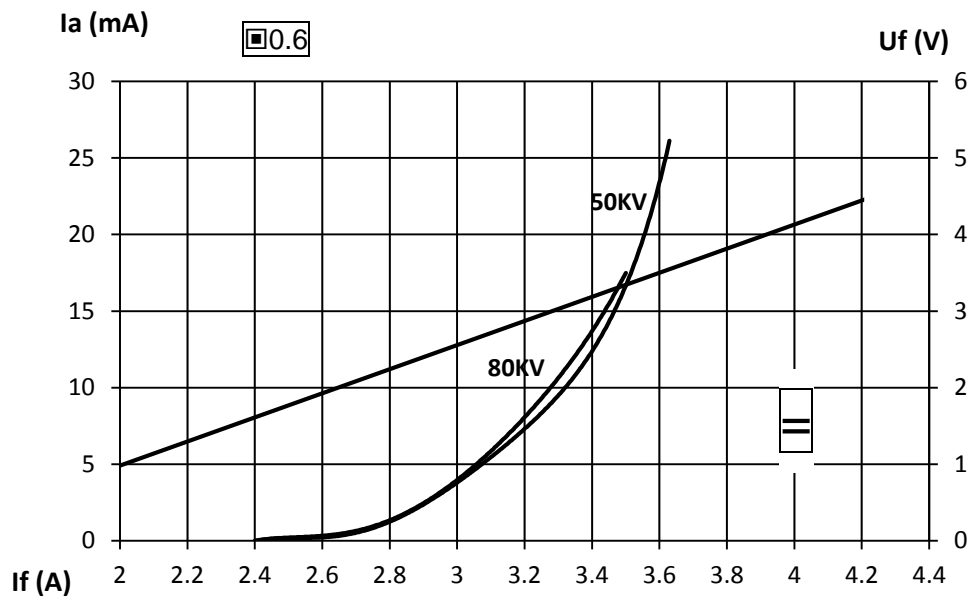


Small focus

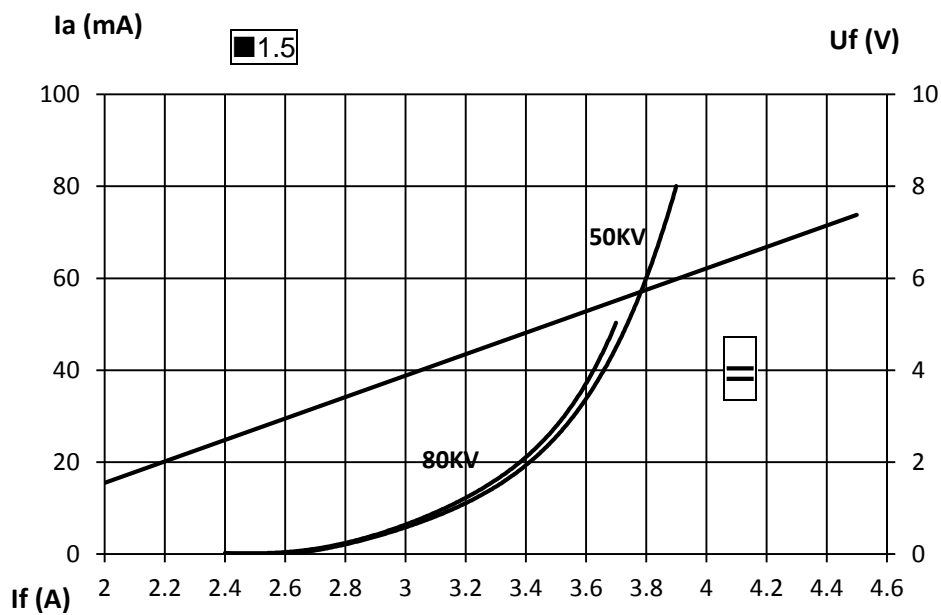


Large focus

Emission characteristics



Small Focal Spot



Large Focal Spot

Maintaining seasoning schedule

Prior to usage, season the tube in accordance with the seasoning schedule given below until the required tube voltage is attained. Example given – needs to revise by the manufacturer and specified in the data sheet of the part:

Seasoning schedule for idle period (more than 6 months)
Circuit: DC (Center grounded)

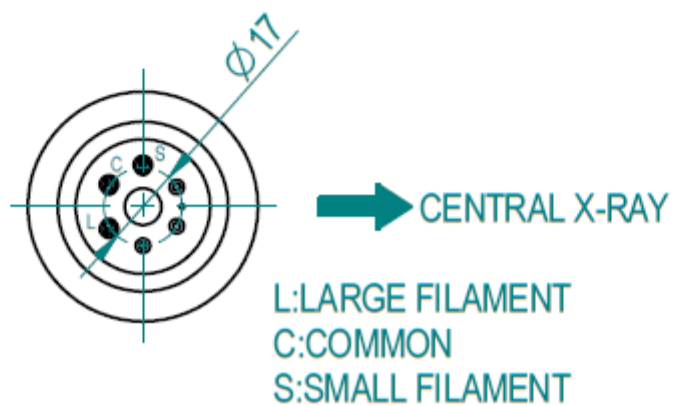
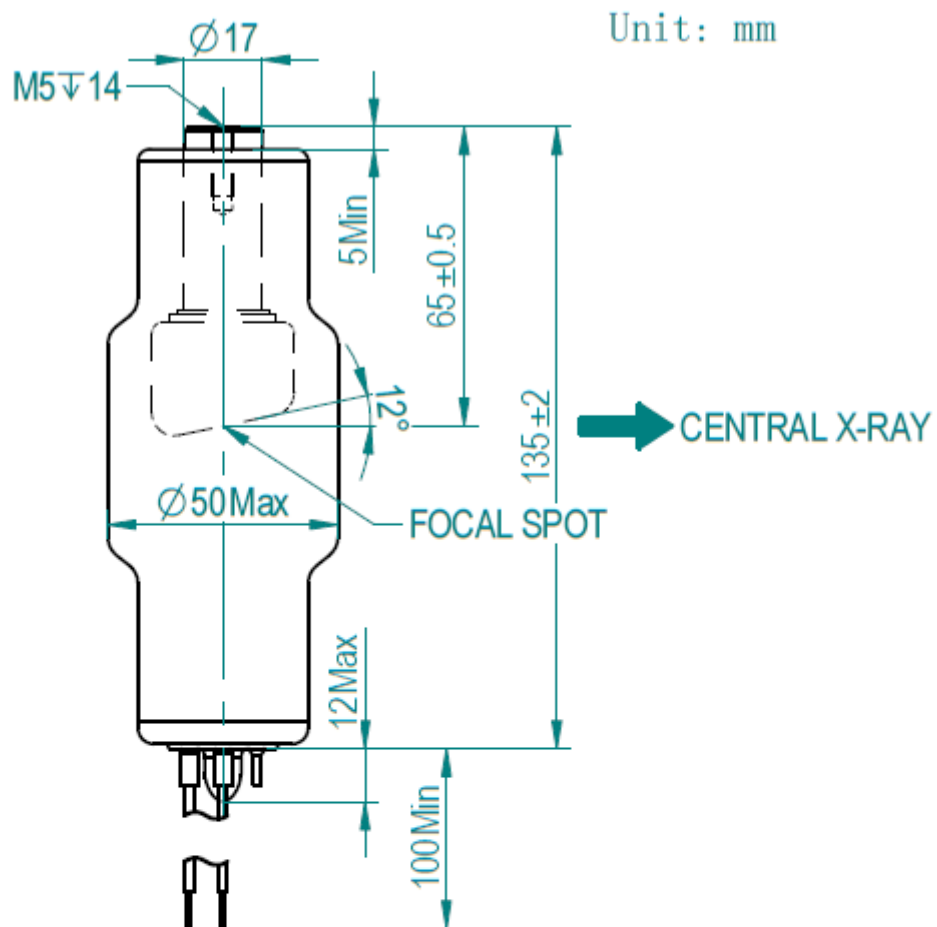
Tube Voltage [kV]	Tube Current [mA]	Exp. Time [s]	Interval Time [s]	Cycles
80	15	1	30	5
100	15	1	30	5
110	15	1	30	5

When the tube current is unstable in seasoning, immediately switch off the tube voltage and after an interval of 5 minutes or more, increase the tube voltage gradually from the low voltage while making sure that the tube current is stable.

The withstand voltage performance of the tube unit will be lowered as the exposure time and the number of operation increase. Stain-like impact traces might appear on the x-ray tube target surface by slight discharge in the course of the seasoning. These phenomena are one process to recover the withstanding voltage performance at that time.

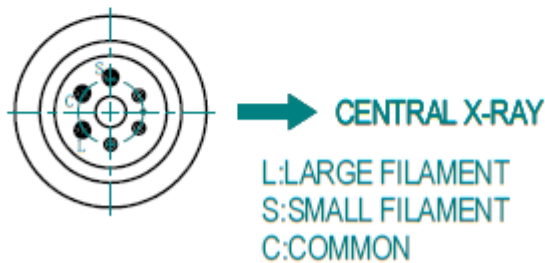
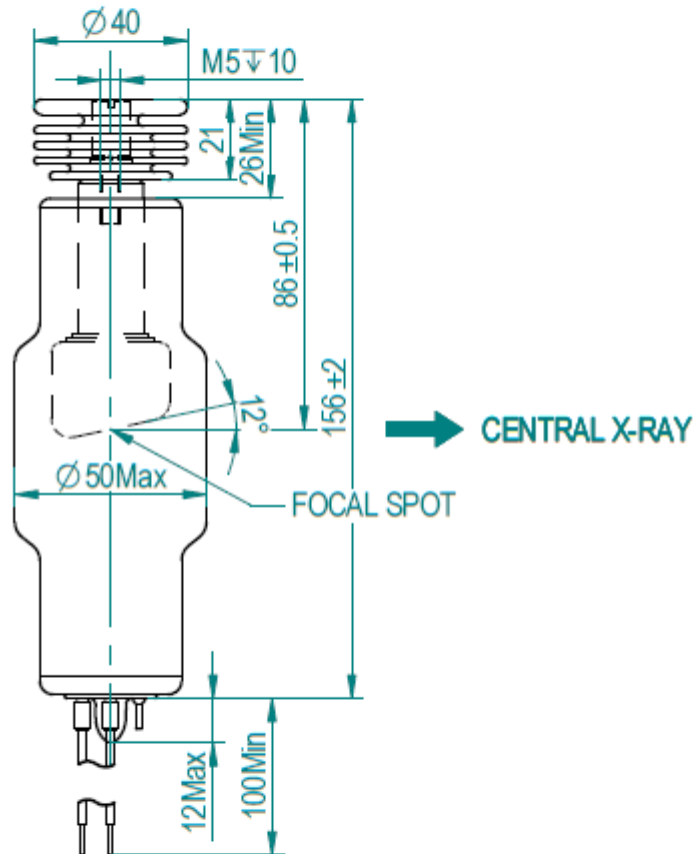
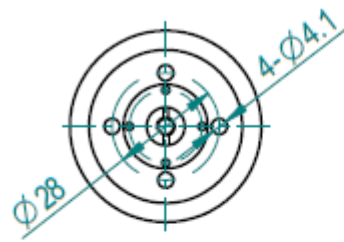
Therefore, if it is in stable operation at the maximum tube voltage of seasoning subsequent to them, the tube unit can be used without any interference to its electrical performance which in use.

X-Ray Tube Dimensional Drawings - KL25-0.6/1.5-110 Series



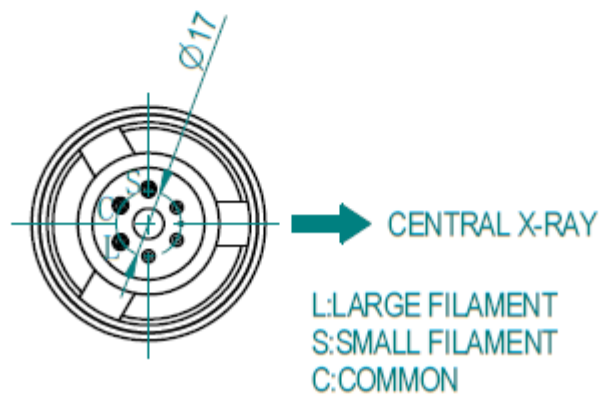
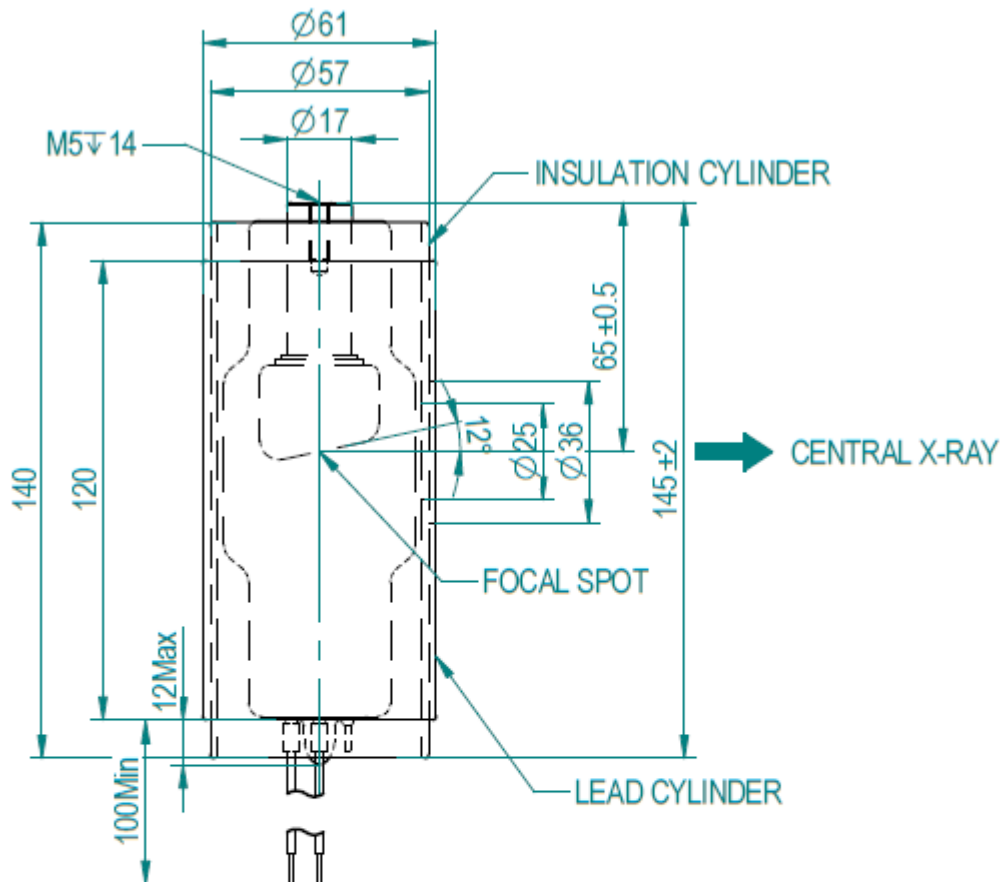
KL25-0.6/1.5-110

Unit:mm

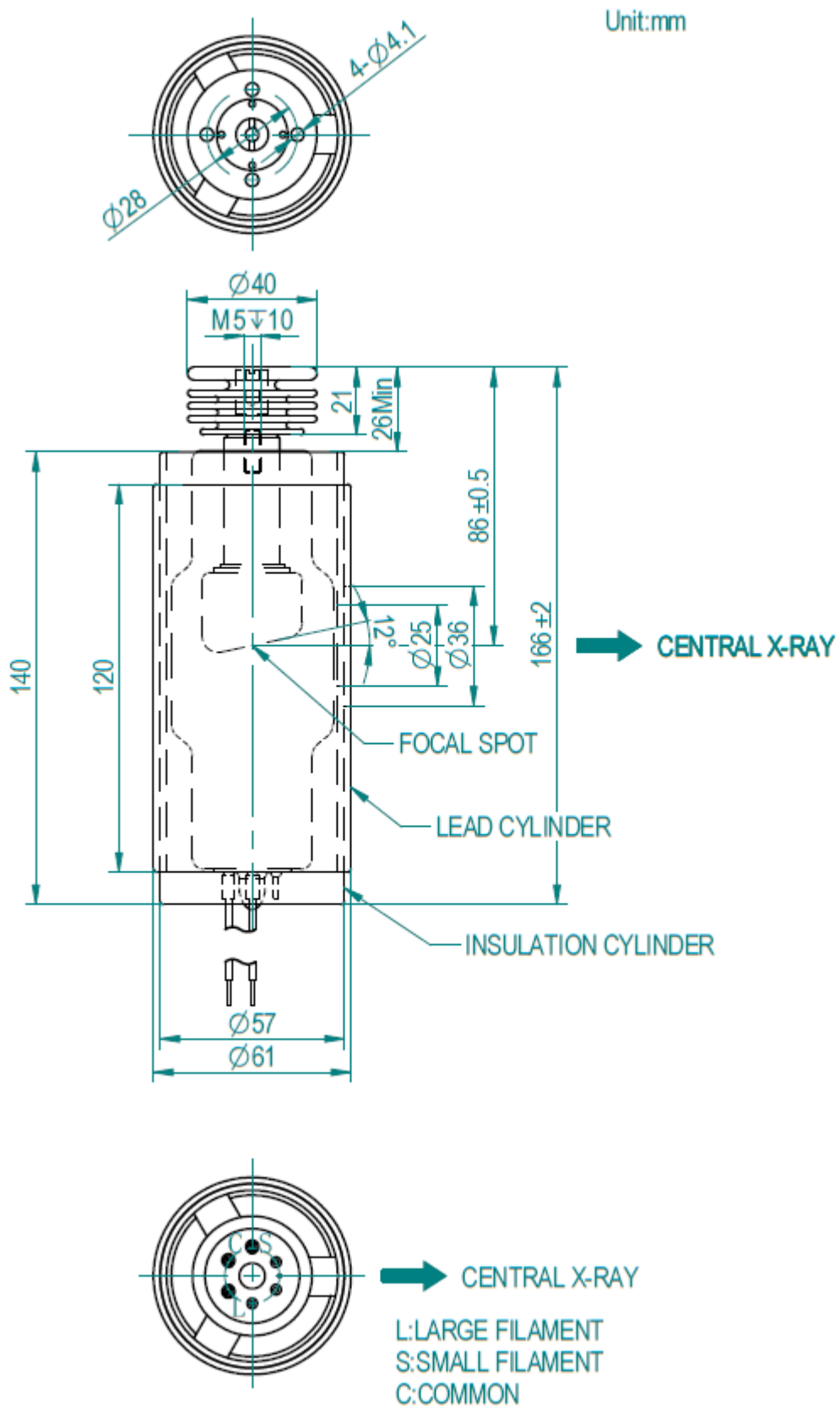


KL25R-0.6/1.5-110

Unit: mm



KL25SB-0.6/1.5-110



KL25SBR-0.6/1.5-110

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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