

**X-RAY TUBE**

**DF-151      DF-151R**  
**DF-151S    DF-151SR**  
**DF-151SB   DF-151SBR**

**Stationary Anode X-ray Tube**

- ◆ Especially designed for mobile type surgical X-ray TV apparatus.
- ◆ Provided with an insulation cylinder (DF-151S / DF-151SR) and lead cylinder. (DF-151SB / DF-151SBR).
- ◆ These tubes have focus 1.5 and 0.5 foci and are available for maximum tube voltage 110 kV.
- ◆ Installed in the same enclosure with the high voltage transformer.



**General Data**

**Electrical:**

Circuit:

High Voltage Generator .....	Constant Potential High-Voltage Generator
Grounding .....	Center-Grounded
Nominal X-ray Tube Voltage .....	110 kV
Nominal Focal Spot Value:	
Large Focus .....	1.5
Small Focus .....	0.5
Nominal Anode Input Power (at 1.0s):	
Large Focus .....	3200 W
Small Focus .....	680 W
Nominal Radiographic Anode Input Power:	
Large Focus.....	3300 W
Small Focus.....	705 W
Exposure Duty Cycle:	
Large Focus .....	1:40
Small Focus .....	1:20

(Exposure Time : interval time)

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**Mechanical:**

Dimensions:

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

Target:

Anode Angle ..... 16 degrees  
 Material ..... Tungsten

Inherent Filtration ..... At least 0.8 mm Al at 75 kV

X-ray Coverage ..... 430 × 430 mm at SID 909 mm

Weight:

DF-151 ..... Approx. 430 g  
 DF-151R ..... Approx. 550 g  
 DF-151S ..... Approx. 550 g  
 DF-151SB ..... Approx. 1100 g  
 DF-151SR ..... Approx. 680 g  
 DF-151SBR ..... Approx. 1250 g

Cooling Method ..... Oil immersed (60°C Max.) and convection oil cooling.

Tube Holding:

DF-151 / DF-151R ..... Holding the glass envelope of the anode end and cathode end,  
 or the screw of the anode shank.  
 DF-151S / DF-151SR ..... Holding the insulation cylinder.  
 DF-151SB / DF-151SBR ..... Holding the insulation cylinder or the lead cylinder.

**Absolute Maximum and Minimum Ratings**  
**(At any time, these values must not be exceeded.)**

Maximum X-ray Tube Voltage .....	110 kV
Between Anode (or Cathode) and Ground .....	55 kV
Minimum X-ray Tube Voltage .....	40 kV
Maximum X-ray Tube Current:	
Large Focus .....	60 mA
Small Focus .....	15 mA
Maximum Filament Current:	
Large Focus .....	4.3 A
Small Focus .....	3.1 A
Filament Voltage (At Maximum Filament Current):	
Large Focus .....	5.0 ~ 6.4 V
Small Focus .....	3.5 ~ 4.9 V
Filament Frequency Limits .....	DC or AC (Sine Wave) 0 ~ 20 kHz
Thermal Characteristics:	
Anode Heat Content:	
DF-151 / DF-151S / DF-151SB .....	28 kJ
DF-151R / DF-151SR / DF-151SBR .....	35.5 kJ
Maximum Anode Heat Dissipation Rate:	
DF-151/DF-151S / DF-151SB .....	265 W
DF-151R / DF-151SR / DF-151SBR .....	600 W
Maximum Radiographic Exposure Time .....	10 s
Maximum Fluoroscopic Duration:	
DF-151R / DF-151SR / DF-151SBR .....	600 W - 20 minutes

## Environmental Limits

Operating Limits (in dielectric oil):

Oil Temperature ..... 10 ~ 60°C  
Oil Pressure ..... 70 ~ 140 kPa

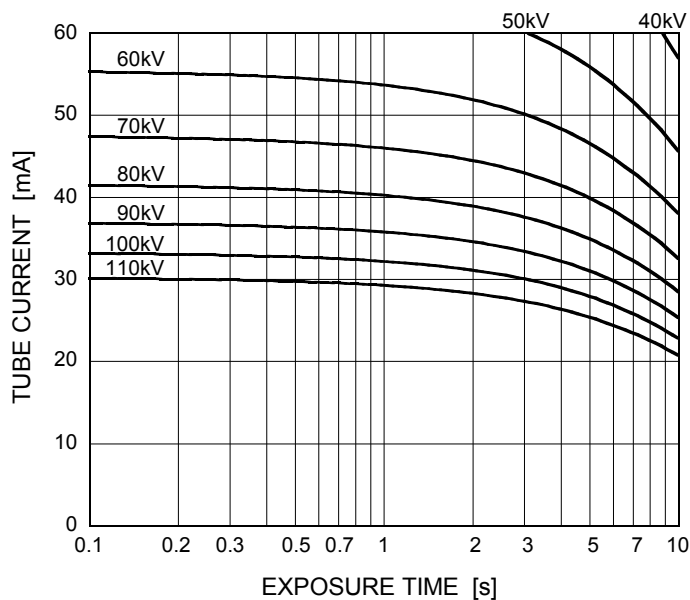
Shipping and Storage Limits:

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

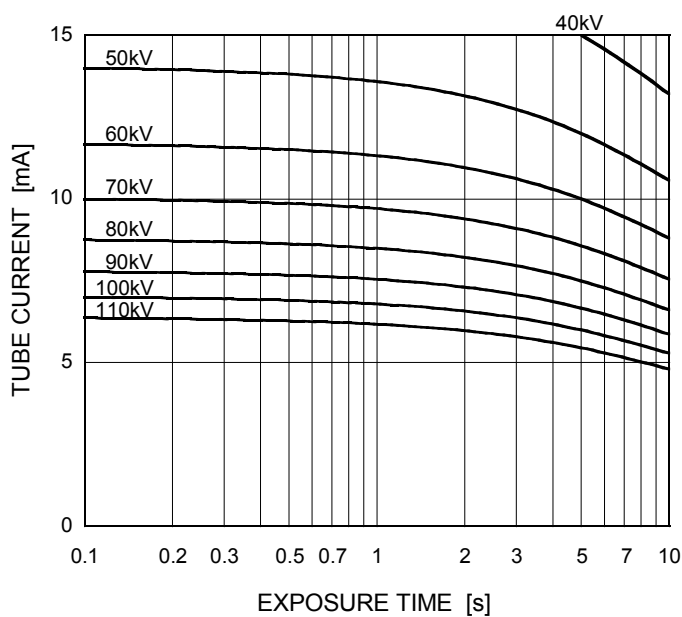
## Maximum Rating Charts (Absolute maximum rating charts)

Constant Potential High-Voltage Generator

Nominal Focal Spot Value: 1.5 ■



Nominal Focal Spot Value: 0.5 □

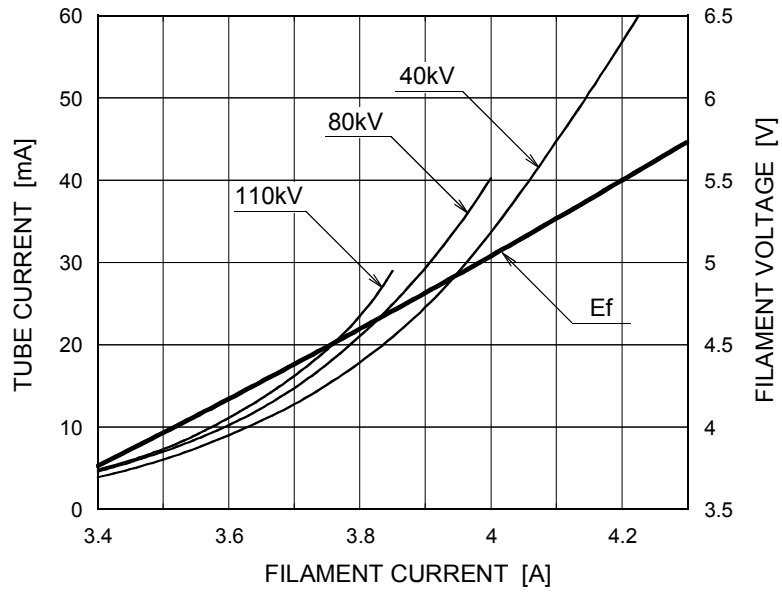


Note) Regarding R type (DF-151R/ DF-151SR/DF-151SBR), the maximum rating is referred to fluoroscopic power (600W) whenever the maximum rating is less than the fluoroscopic power.

## Emission & Filament Characteristics

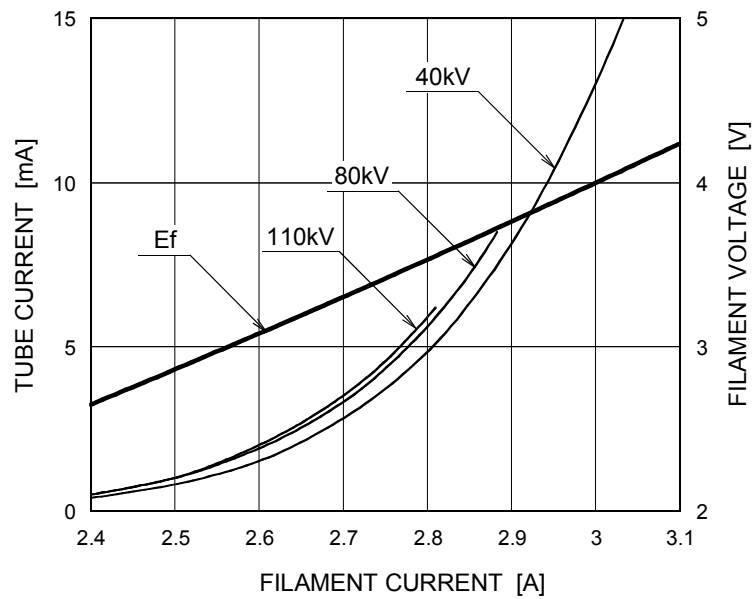
Constant Potential High-Voltage Generator

Nominal Focal Spot Value: 1.5 ■



This graph indicates typical characteristics.

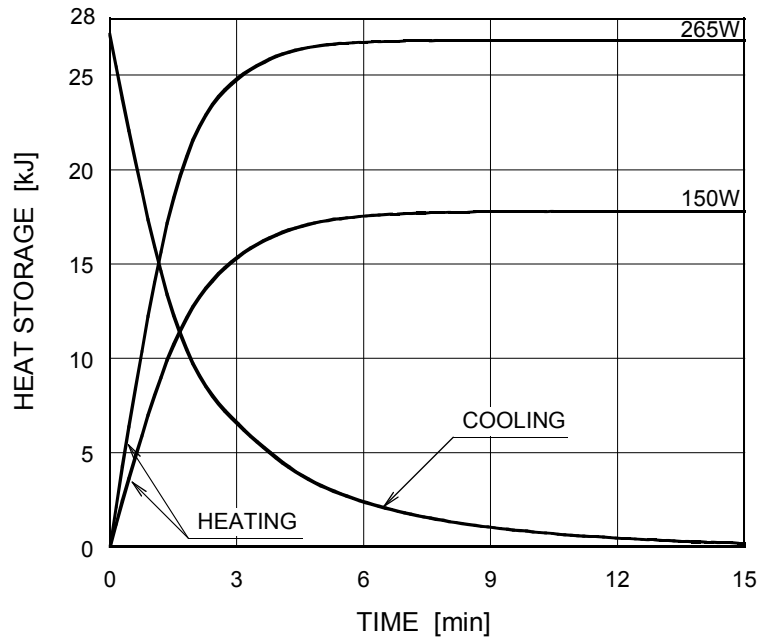
Nominal Focal Spot Value: 0.5 □



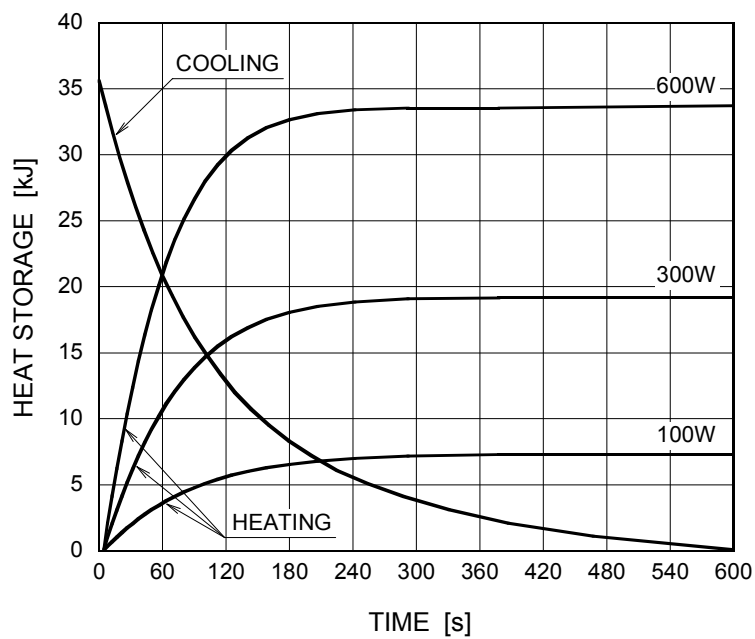
This graph indicates typical characteristics.

## Anode Heating / Cooling Curve

DF-151 / DF-151S / DF-151SB

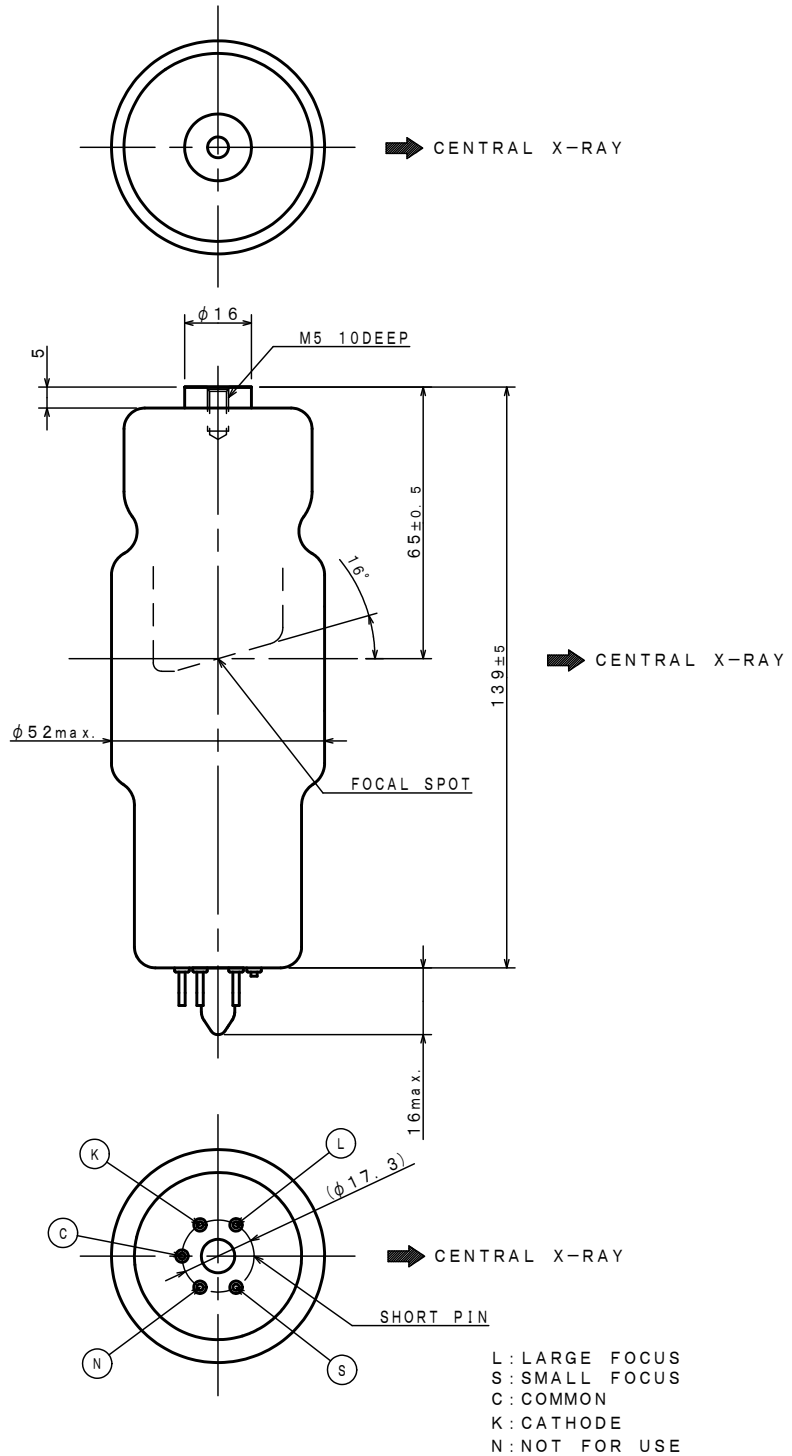


DF-151R / DF-151SR / DF-151SBR



### Dimensional Outline of DF-151

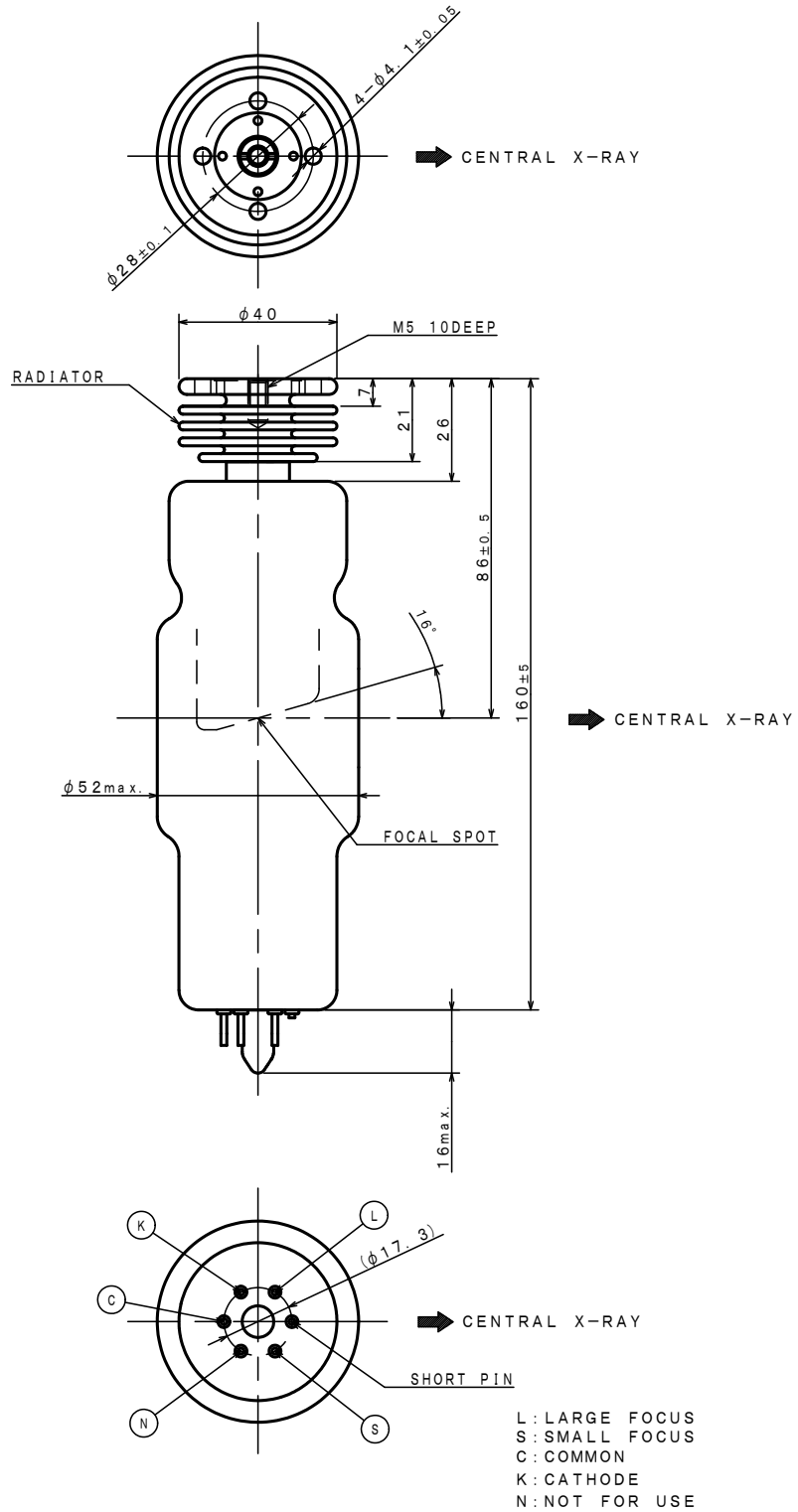
Unit: mm





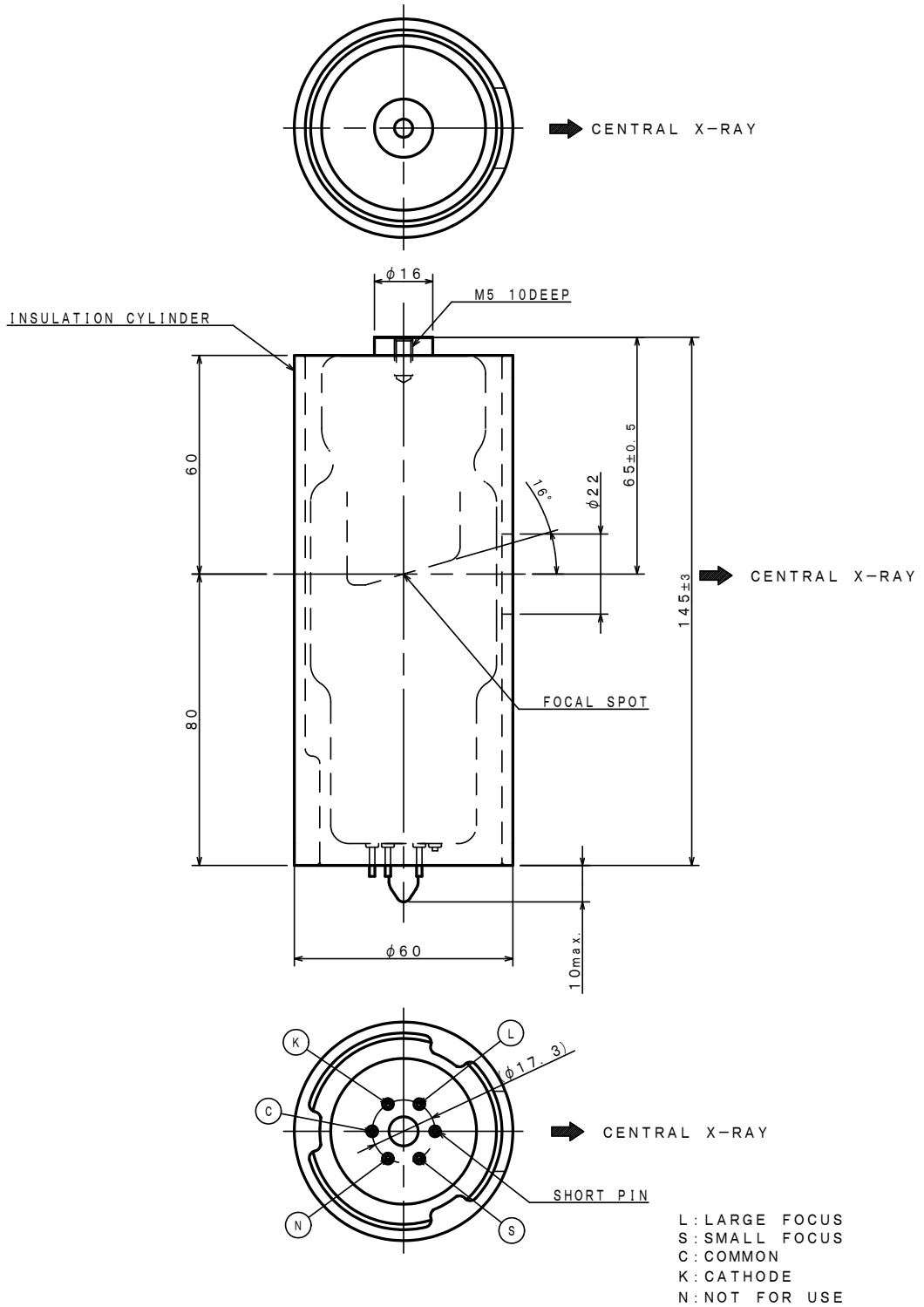
### Dimensional Outline of DF-151R

Unit: mm



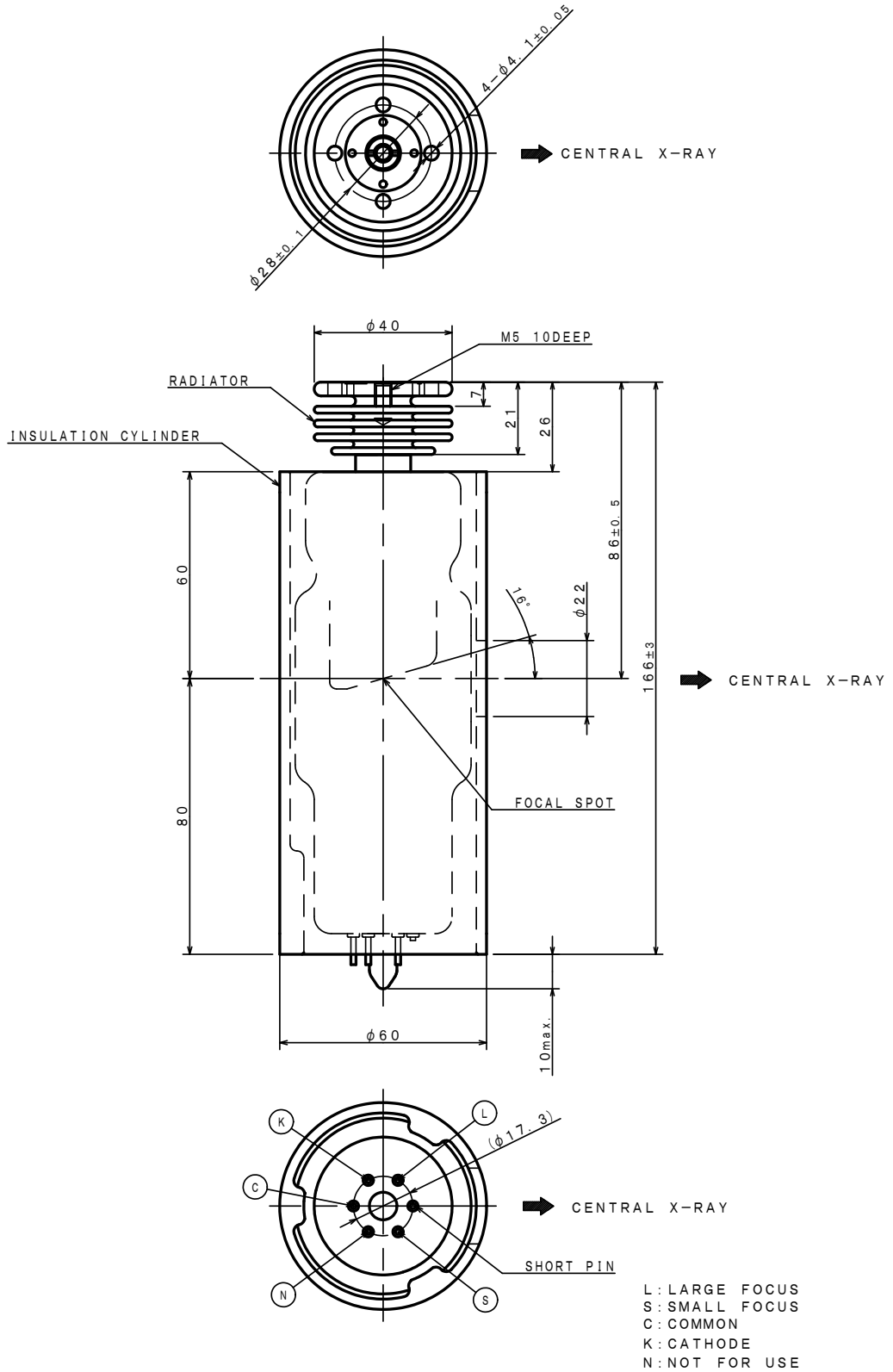
### Dimensional Outline of DF-151S

Unit: mm



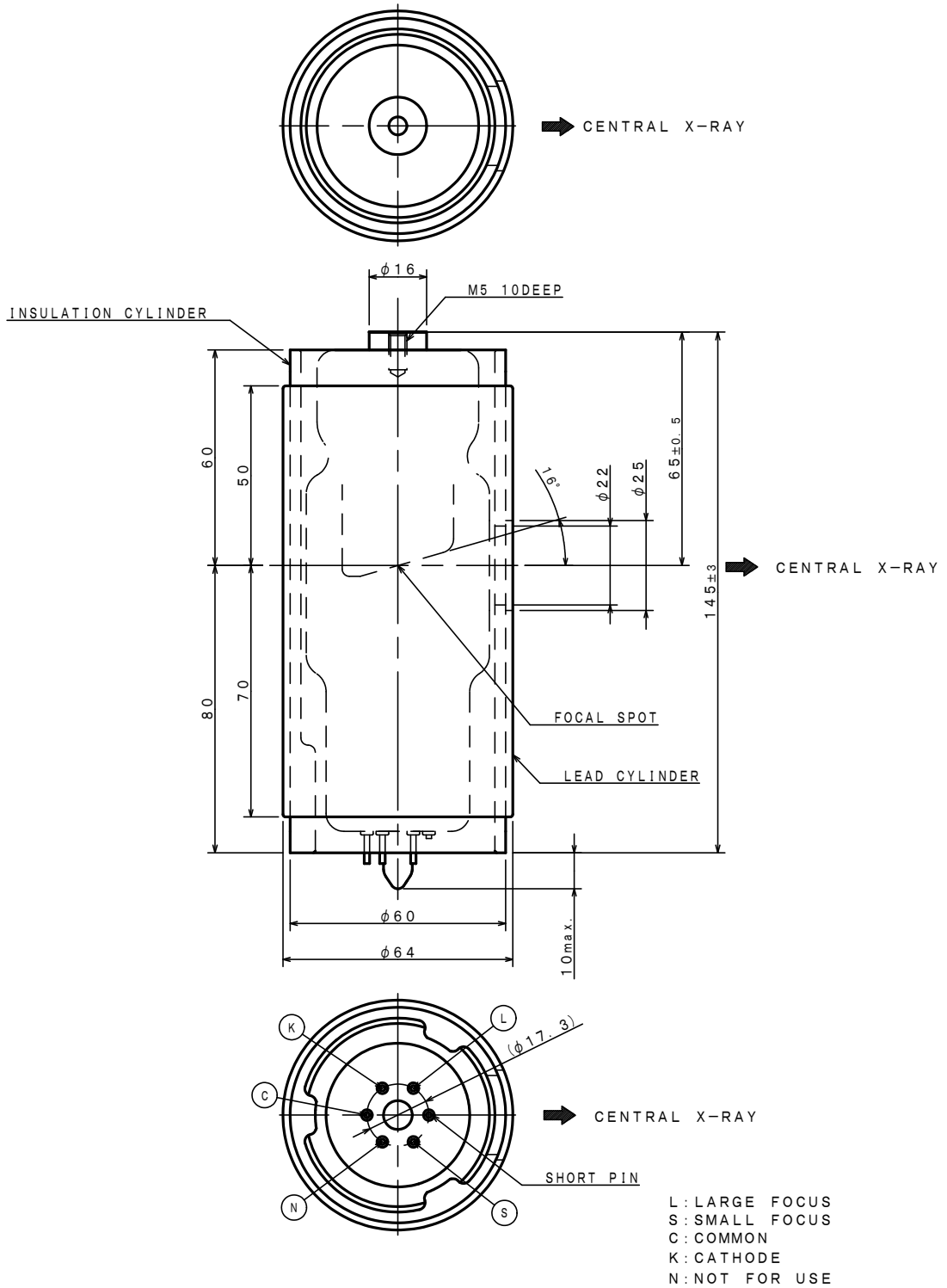
### Dimensional Outline of DF-151SR

Unit: mm



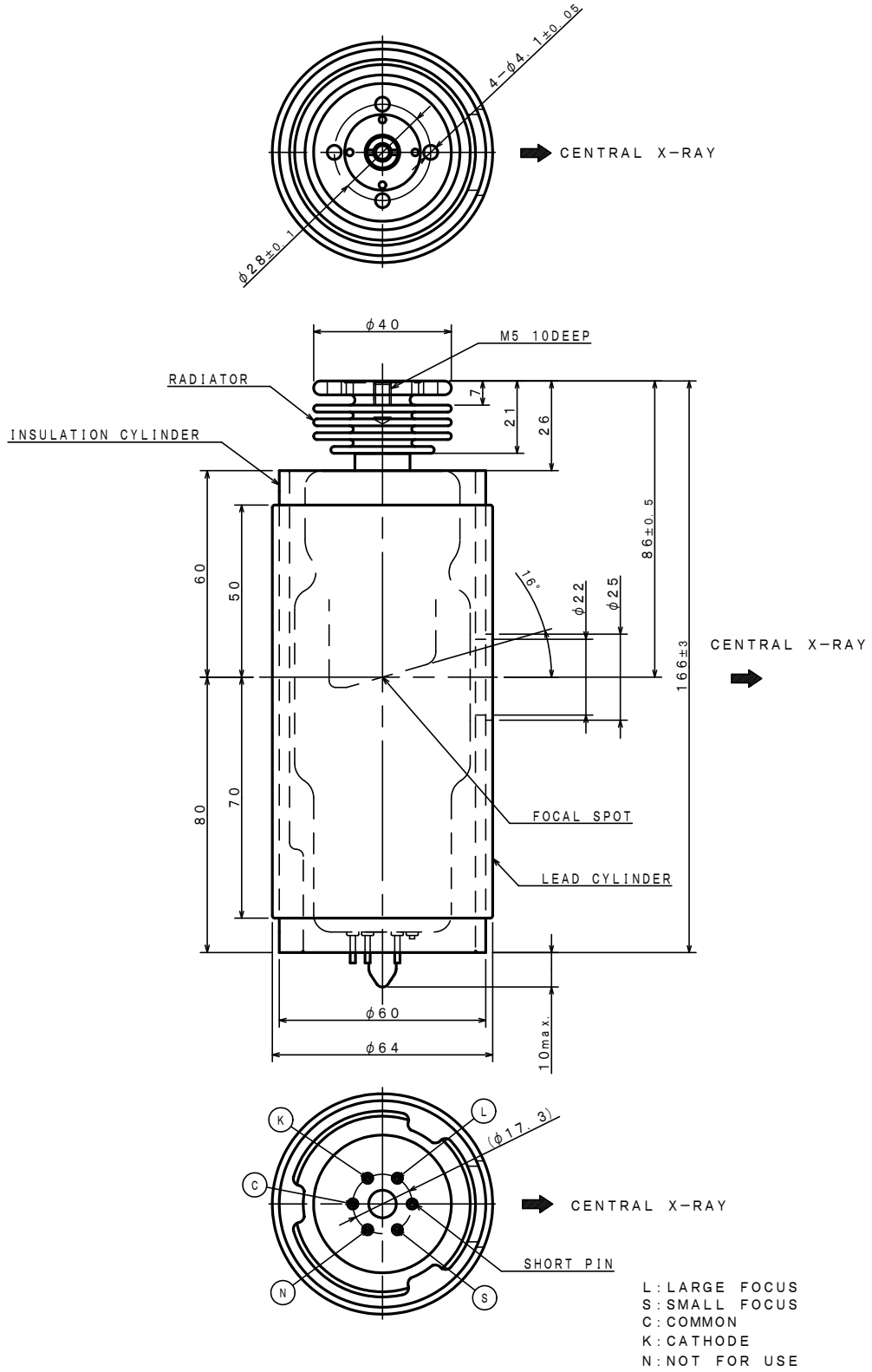
### Dimensional Outline of DF-151SB

Unit: mm



### Dimensional Outline of DF-151SBR

Unit: mm





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