

TOSHIBA X-RAY TUBE
DF-151 DF-151R
DF-151S DF-151SB
DF-151SR 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
Exposure Duty Cycle:	
Large Focus	1:40
Small Focus	1:20

(Exposure Time : interval time)

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 50 kV
X-ray Coverage	430 × 430 mm at SID 909 mm

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 ★The information contained herein may be changed without prior notice. It is therefore advisable to contact TETD before proceeding with the design of equipment incorporating this product.

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-151SB / DF-151SR / DF-151SBR	Holding the insulation 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):

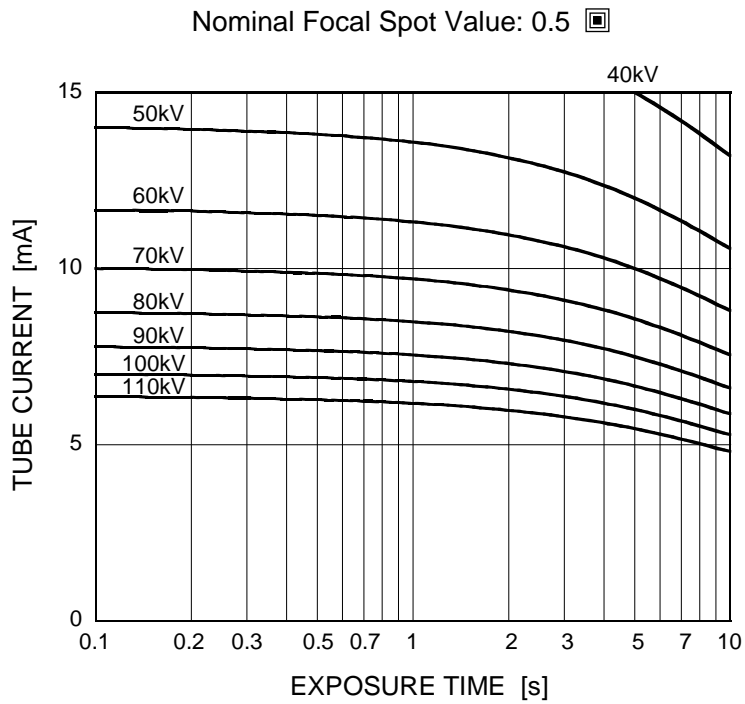
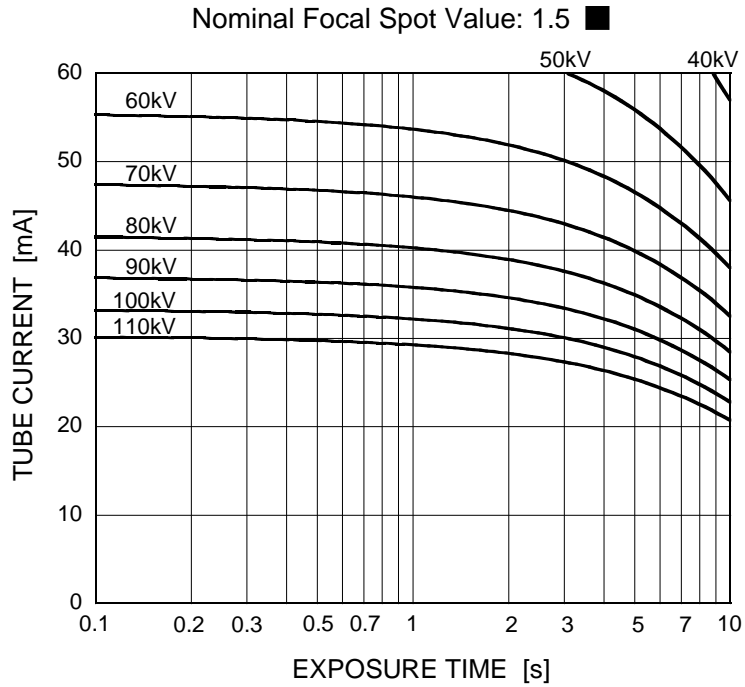
Oil Temperature	10 ~ 60°C
Oil Pressure	70 ~ 140 kPa

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)

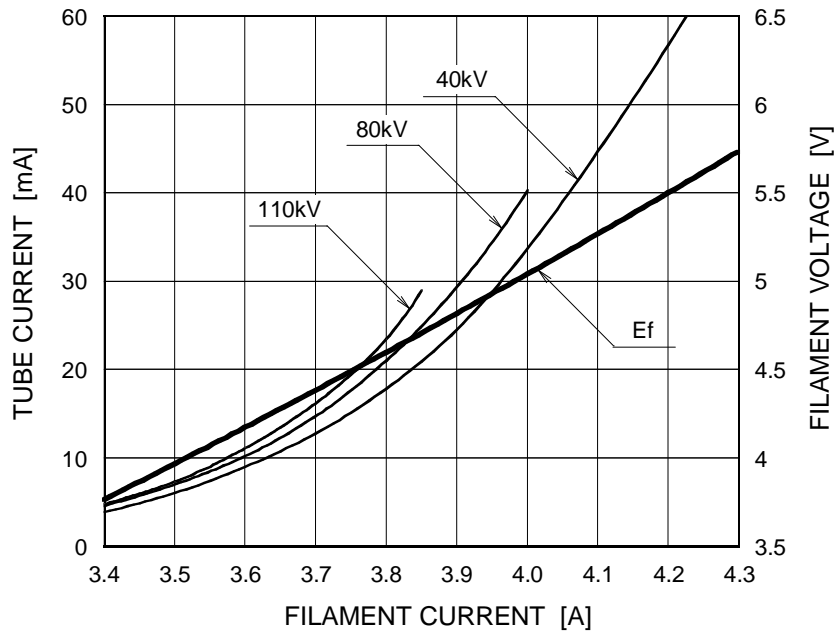
Constant Potential High-Voltage Generator



Emission & Filament Characteristics

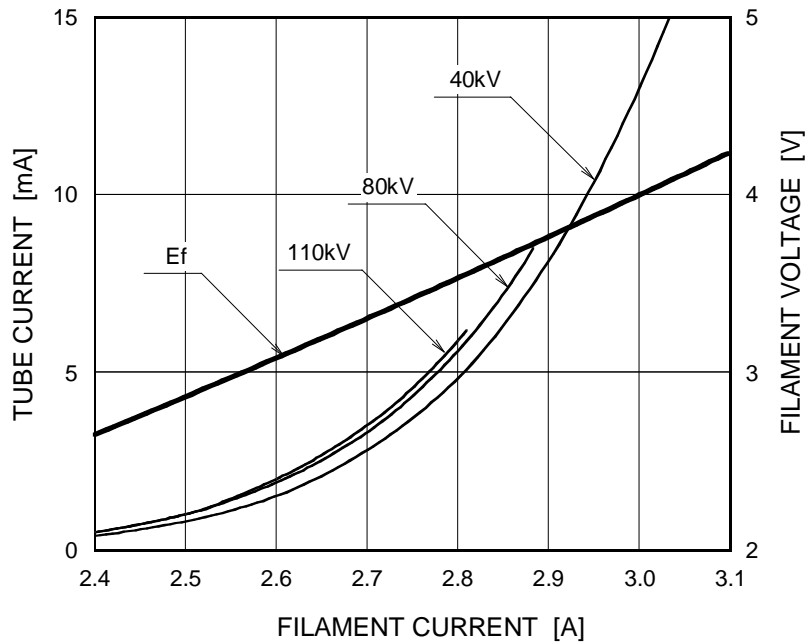
Constant Potential High-Voltage Generator

Nominal Focal Spot Value: 1.5 ■



Note: This graph indicates typical characteristics.

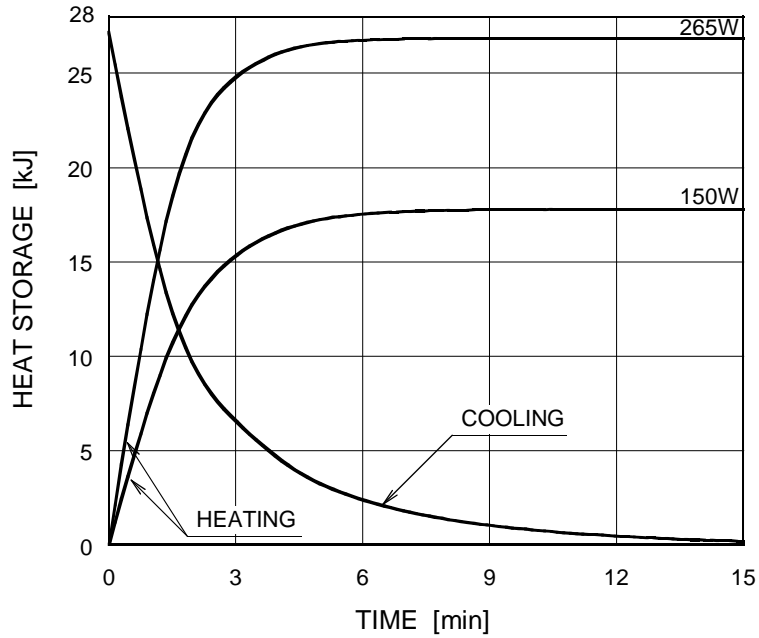
Nominal Focal Spot Value: 0.5 □



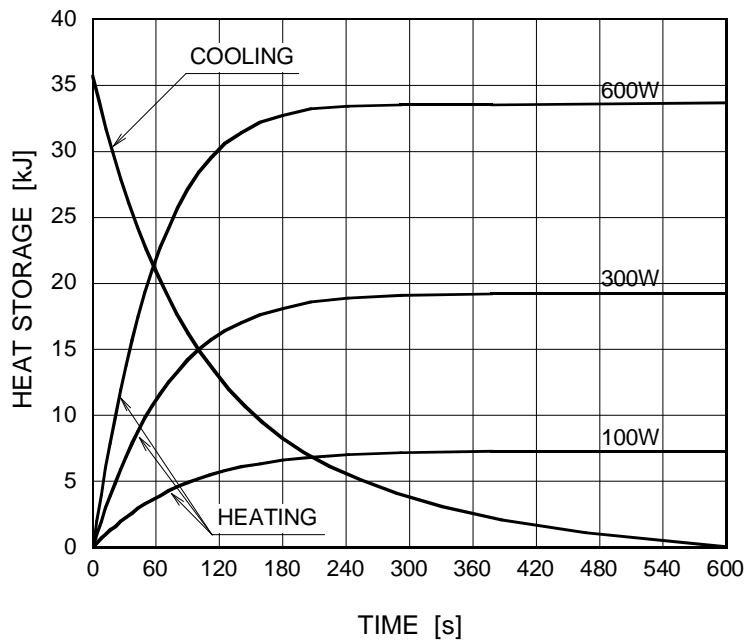
Note: This graph indicates typical characteristics.

Anode Heating / Cooling Curve

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

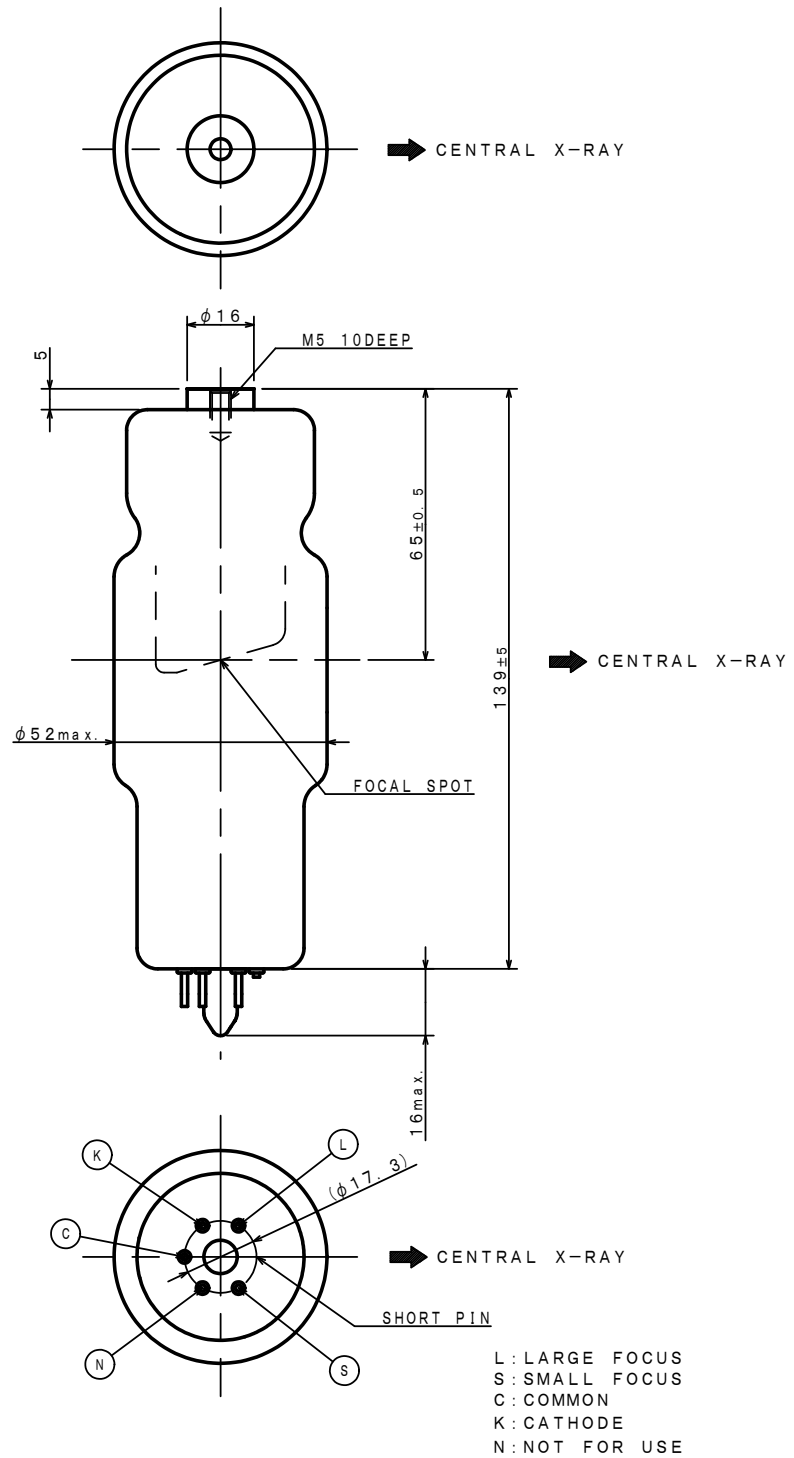


DF-151R / DF-151SR / DF-151SBR



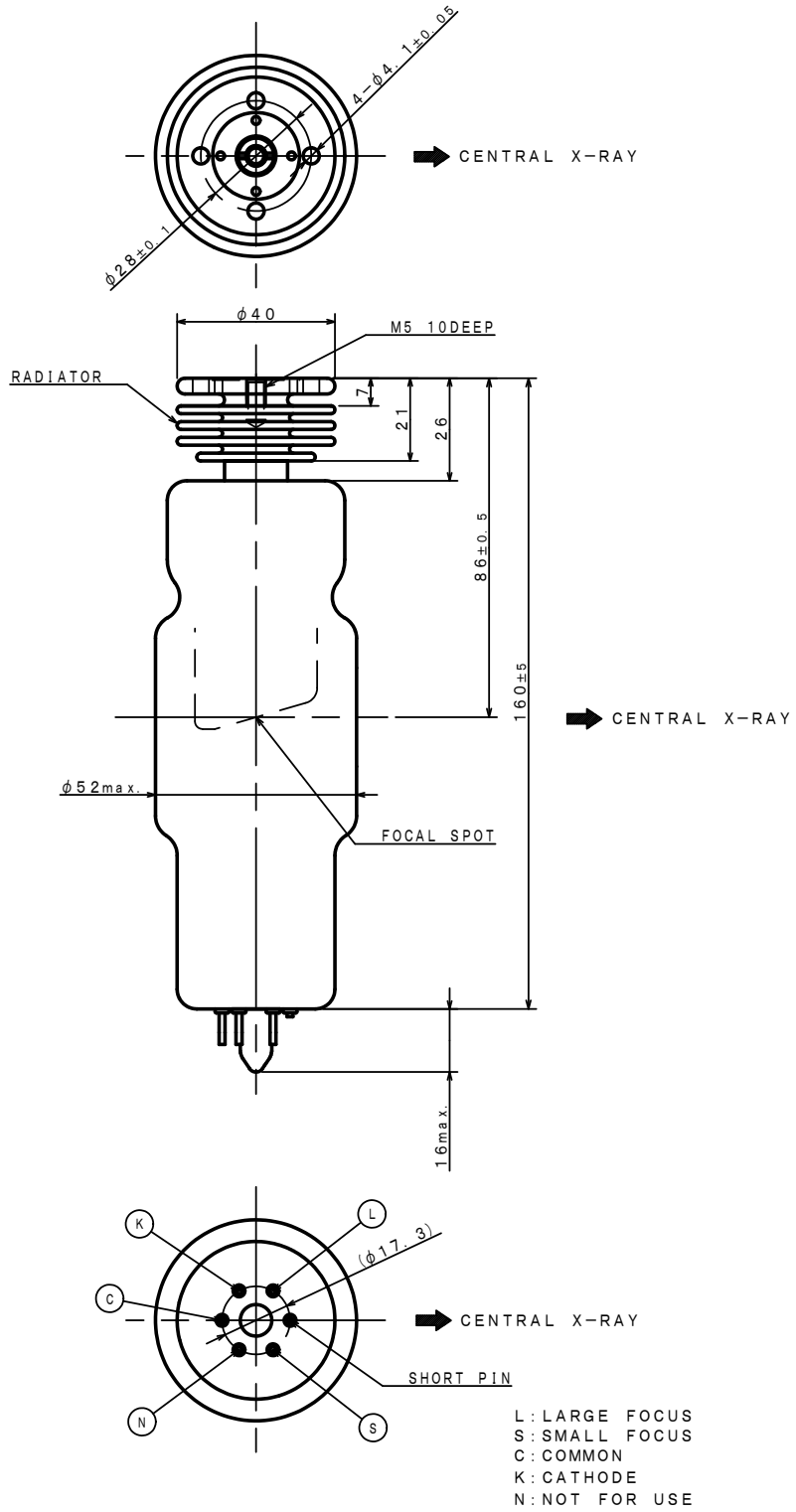
Dimensional Outline of DF-151

Unit: mm



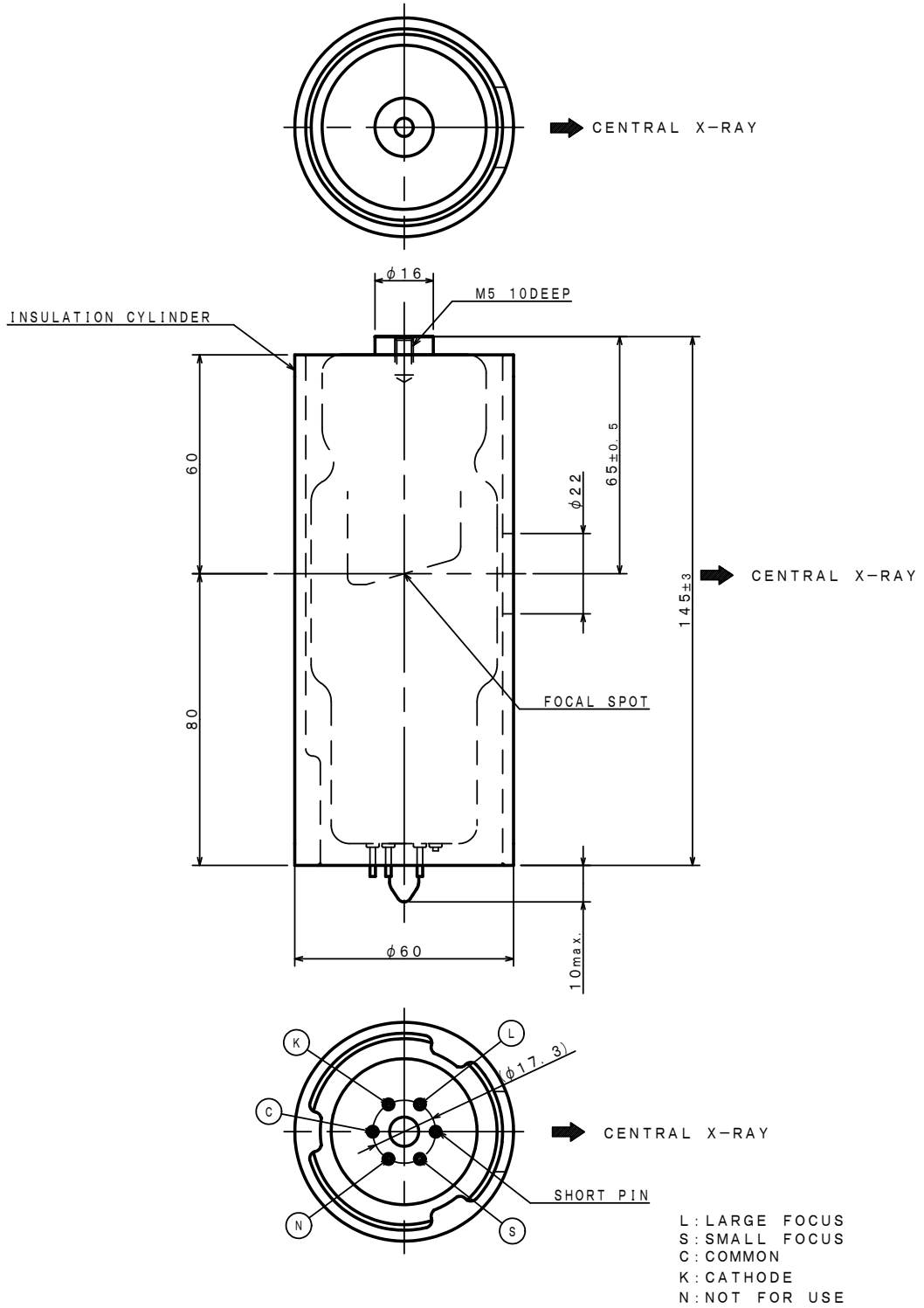
Dimensional Outline of DF-151R

Unit: mm



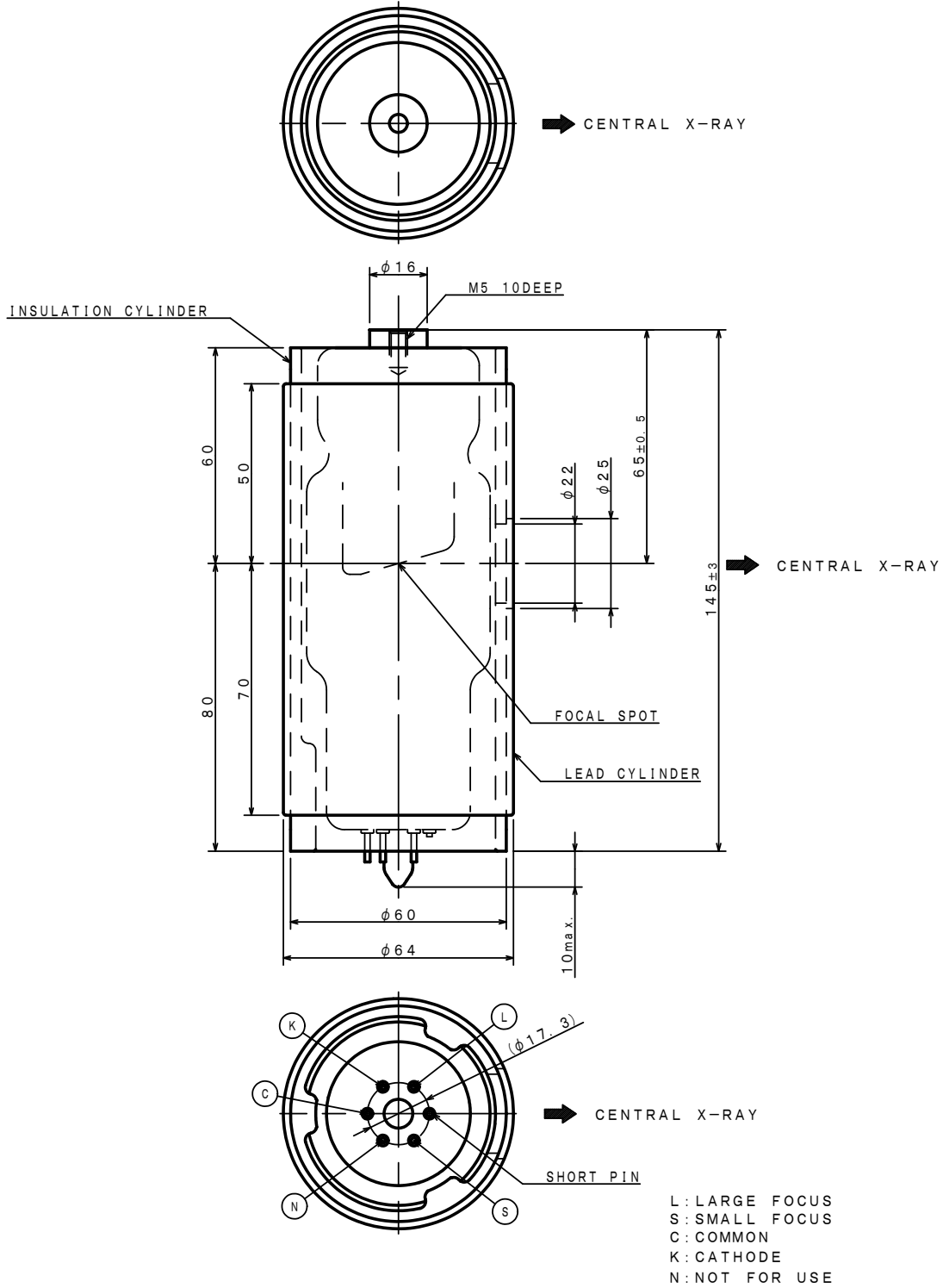
Dimensional Outline of DF-151S

Unit: mm



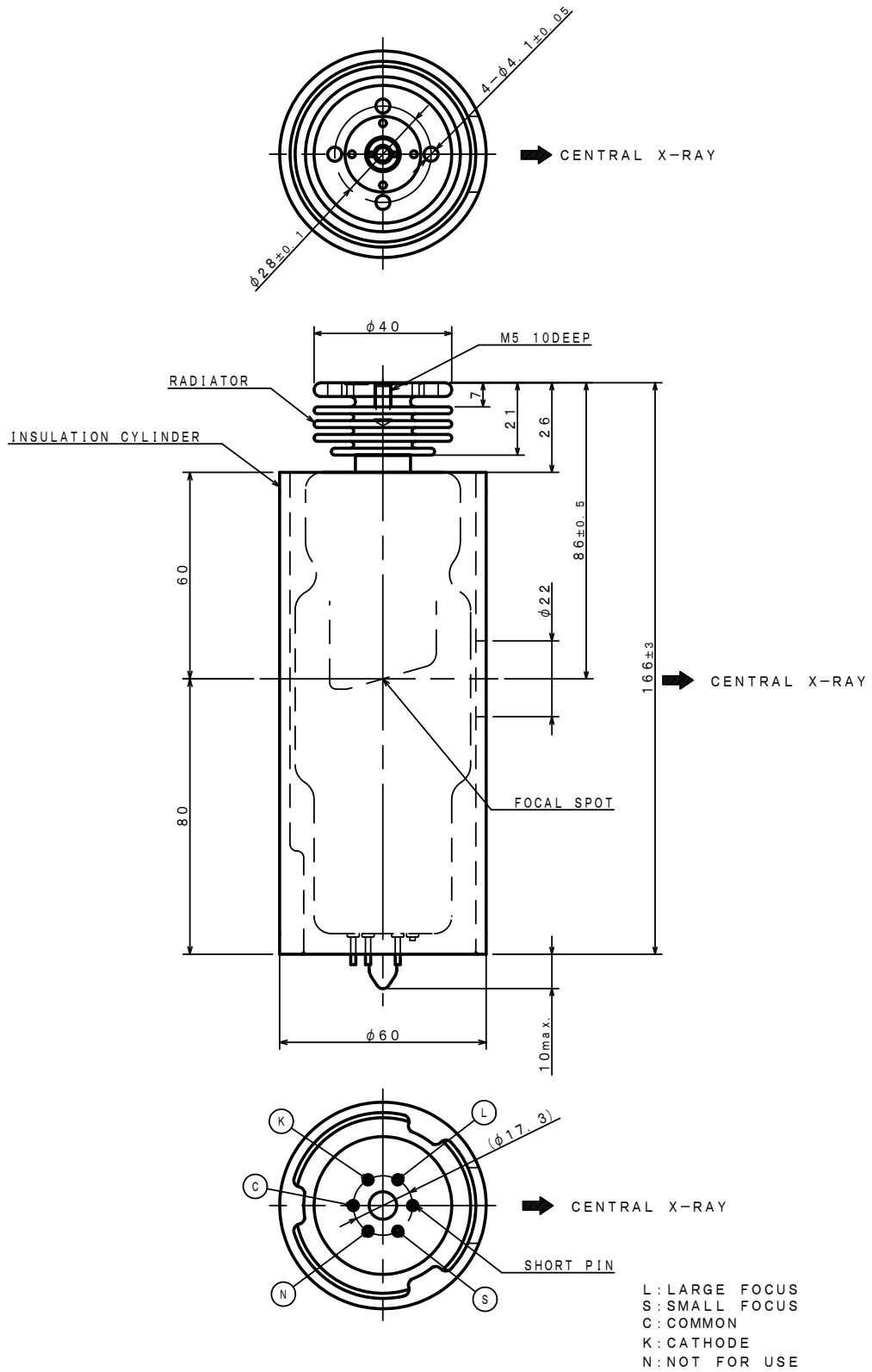
Dimensional Outline of DF-151SB

Unit: mm



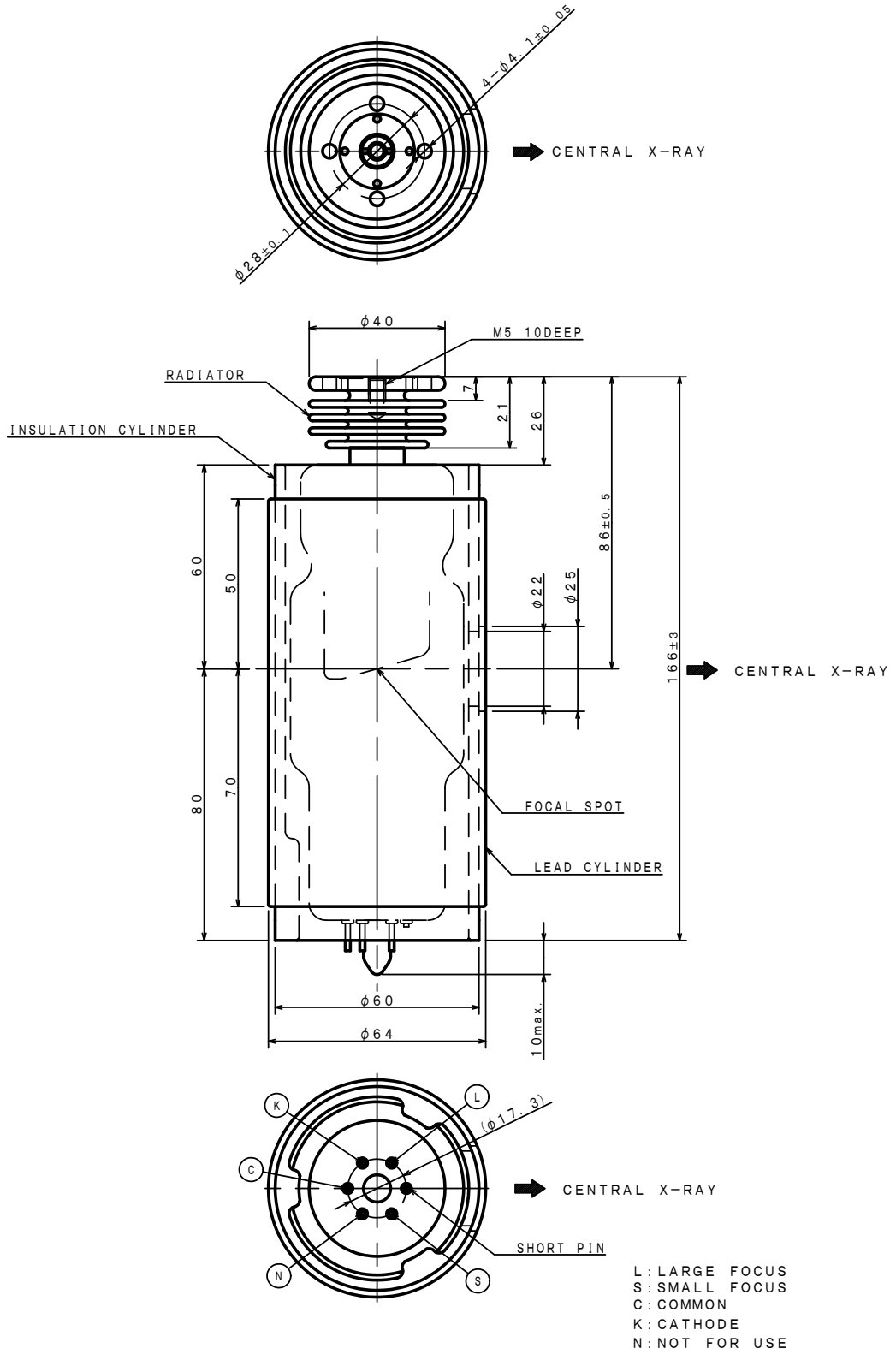
Dimensional Outline of DF-151SR

Unit: mm



Dimensional Outline of DF-151SBR

Unit: mm



OVERSEAS SUBSIDIARIES AND AFFILIATES

EU REPRESENTATIVE

·TOSHIBA ELECTRONICS EUROPE GMBH

HANSAALLEE 181 40549 DÜSSELDORF, GERMANY
PHONE +49 (211) 5296-107 FAX +49 (211) 5296-402

For Sales & Technical Services, please contact the following representative:

·TOSHIBA ELECTRONICS EUROPE GMBH

HANSAALLEE 181 40549 DÜSSELDORF, GERMANY
PHONE +49 (211) 5296-107 FAX +49 (211) 5296-402

·TOSHIBA AMERICA ELECTRONIC COMPONENTS, INC.

2150 EAST LAKE COOK ROAD, SUITE 310
BUFFALO GROVE, ILLINOIS 60089 USA
PHONE +1 (847) 484-2400 FAX +1 (847) 541-7287

·TOSHIBA ELECTRON DEVICES & MATERIALS (SHANGHAI) CO., LTD. (TEMS)

RM1606, SH-PLAZA,
No.336, XIZANG ROAD (MIDDLE), SHANGHAI, 200001, CHINA
PHONE +86 (21) 6361-0077 FAX +86 (21) 6351-5760

TOSHIBA ELECTRON TUBES & DEVICES CO., LTD.

(Product Development Engineering Department)

1385 SHIMOISHIGAMI, OTAWARA-SHI, TOCHIGI-KEN, 324-8550, JAPAN

PHONE: +81-287-26-6666 FAX: +81-287-26-6060

<http://www.toshiba-tetd.co.jp/>

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