

Rotating Anode X-Ray Tube
Tubes Radiogènes à Anode Tournante
Röntgenröhre mit rotierender Anode
Tubos de Rayos-X con Ánodo Giratorio

Large - Black
Grand - Noir
Gross - Schwarz
Largo - Negro

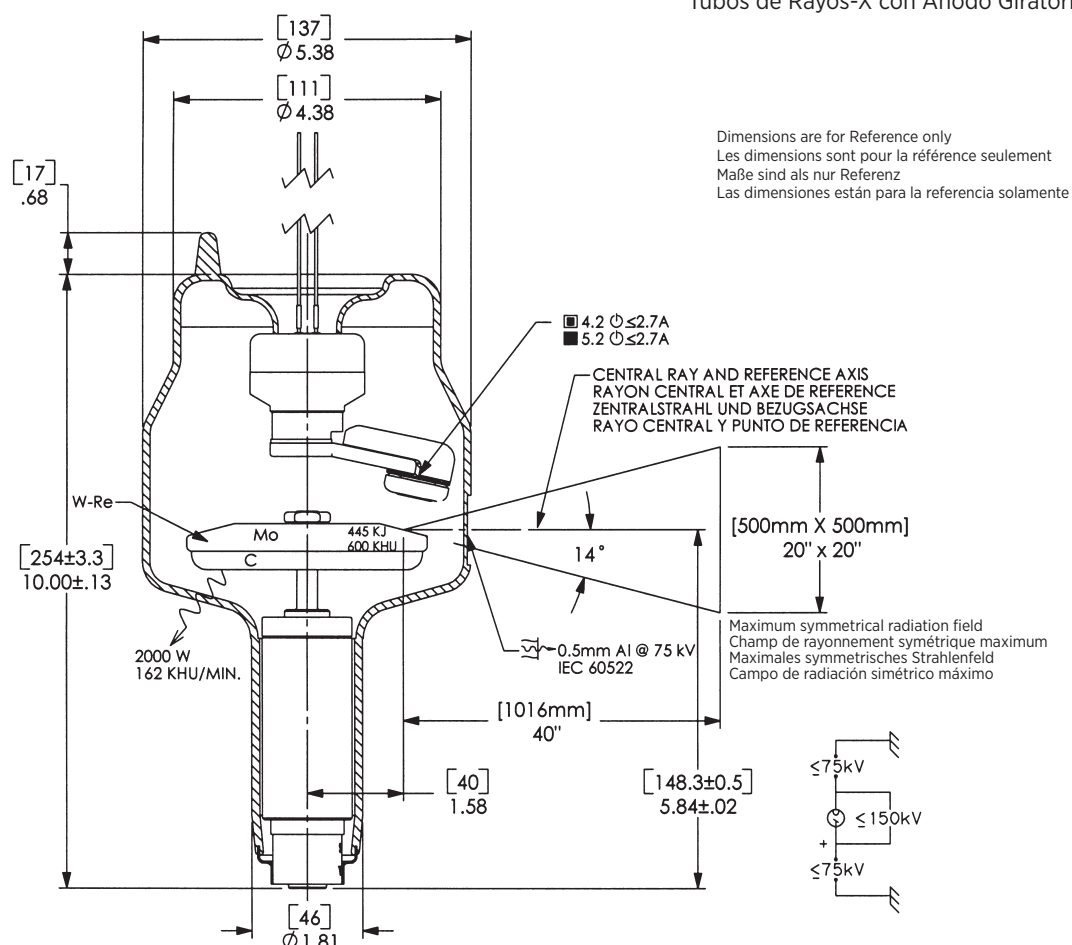
Small -White
Petit - Blanc
Klein - Weiss
Pequeño - Blanco

Stand - By
Attente
Bereit Stehen
En Espera

Frame or Chasis
Masse
Chassis
Soporte o Chasis

X-Ray Tube
Tube Radiogène
Röntgenröhre
Tubo de Rayos X

Radiation Filter or Filtration
Filtre de rayonnement
Filterung
Filtración de Radiación



Note: Document originally drafted in the English language.

Product Description

The G-242 is a 4.0" (102 mm) 150 kV, 445 kJ (600 kHU) maximum anode heat content, rotating anode insert. This insert is specifically designed for general radiographic, cineradiographic and fluoro/spotfilm procedures. The insert features a 14° rhenium-tungsten facing on molybdenum with a graphite backed target and is available with the following nominal focal spots:

0.4 - 0.8
IEC 60336

Nominal Anode Input Power

Small - 15 kW IEC 60613

Large - 45 kW IEC 60613

For the equivalent anode input power of 200 Watts

Description du Produit

Le tube G-242, à anode tournante de 102 mm, (4.0 pouces), 150 kV, avec une capacité calorifique maximale de 445 kJ (600 kUC) est à usage spécifique pour la radiographie de grande puissance, radiocinéma et pour la radio-fluorographie. L'insert de l'anode en Molybdène traitée, Rhénium - Tungstène, recouverte de graphite, est de 14°. Il est disponible avec les foyers suivants:

0.4 - 0.8
CEI 60336

Puissance anodique nominale de l'anode

Petit foyer - 15 kW CEI 60613

Grand foyer - 45 kW CEI 60613

Pour la puissance anodique d'équilibre thermique de 200 Watts

Produktbeschreibung

Die G-242 ist eine 4.0" (102 mm) Doppelfokus Drehanoden-Röntgenröhre, mit einer Anoden Wärmespeicherkapazität von 445 kJ (600 kHU) und einer max. Spannungsfestigkeit von 150 kV. Die Röhre wurde für stark frequentierte Aufnahmearbeitenplätze und für den Durchleuchtungs-kinobzw. Zielgerätebetrieb (1mm FFA) ausgelegt. Der rückseitig graphitbeschichtete Rhenium-Wolfram- und Molybdän Anodenteller besitzt einen Winkel von 14°. Folgende Brennfleckkombination ist lieferbar:

0.4 - 0.8
IEC 60336:

Nominale Anodenbezugsleistung

Klein - 15 kW IEC 60613

Gross - 45 kW IEC 60613

Gilt bei einer Äquivalent - Anodenleistung von 200 Watts

Descripción del Producto

El G-242 es un tubo de ánodo giratorio de 102 mm (4.0"), 150 kV, 445 kJ (600 kUC) diseñado específicamente para procedimientos generales en radiografía, cineradiográfica y fluoroscopia. El blanco emisor es una combinación de renio, tungsteno y molibdeno con grafito en la parte posterior con un rayo central de 14 grados. Disponible con las siguientes combinaciones de marcas focales:

0.4 - 0.8
IEC 60336

Potencia nominal de entrada del anodo

Foco fine - 15 kW IEC 60613

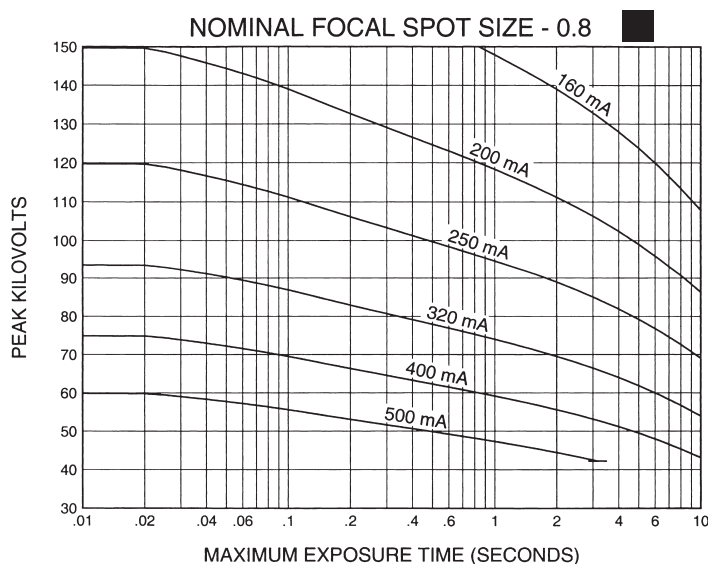
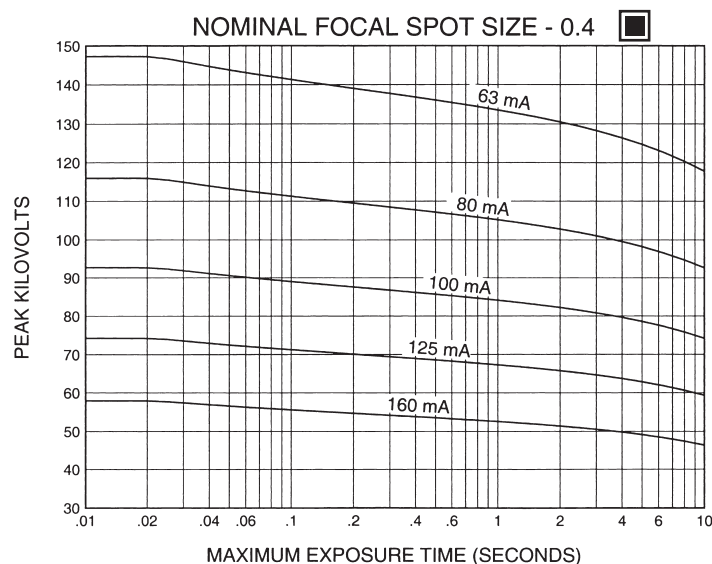
Foco grueso - 45 kW IEC 60613

Para una potencia equivalente del anodo de 200 Watts

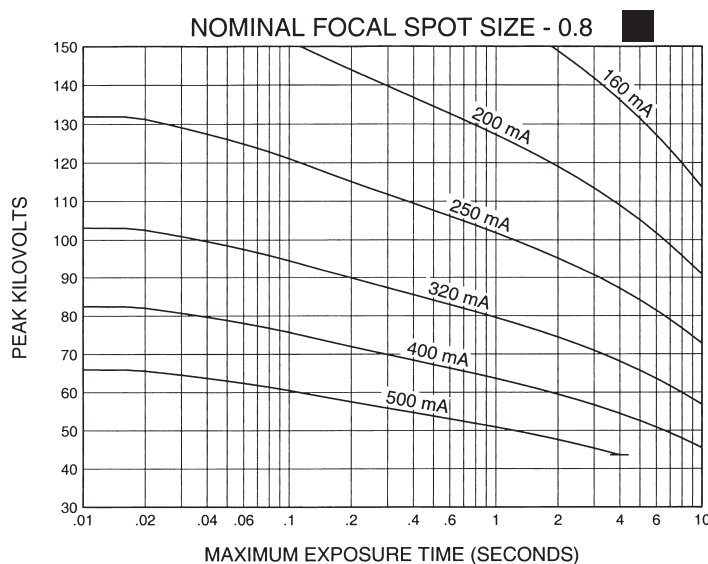
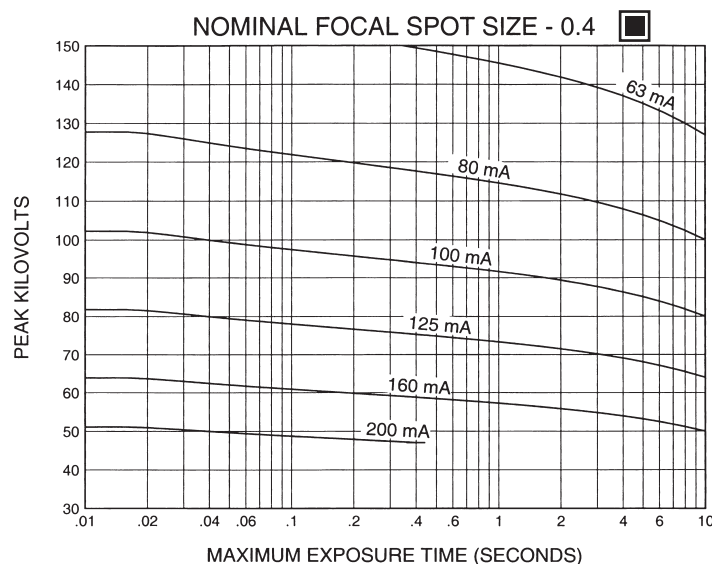
3 Ø Constant Potential

Single Load Ratings IEC 60613
Abaques de Charge pour Pose Unique CEI 60613
Brennfleck - Belastungskurven IEC 60613
Diagramas de Exposición Radiográfica IEC 60613

50 Hz



60 Hz



Nominal anode input power for the anode heat content 40%. IEC 60613

Puissance calorifique nominale de l'anode: 40%, CEI 60613

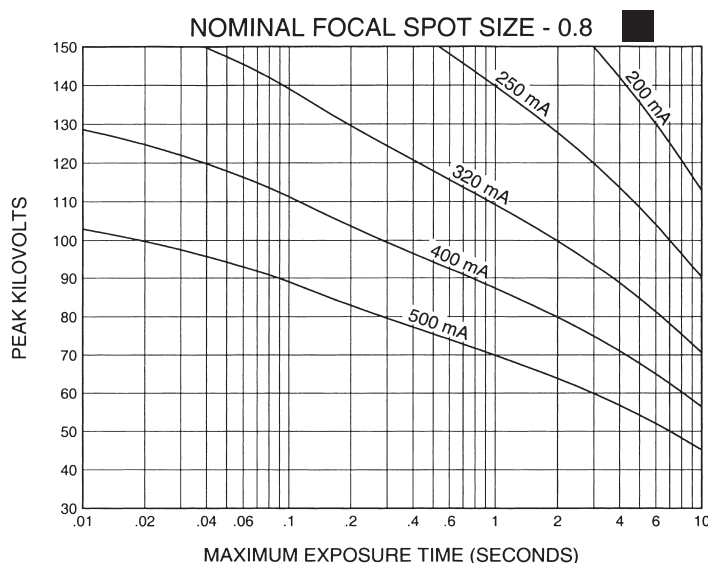
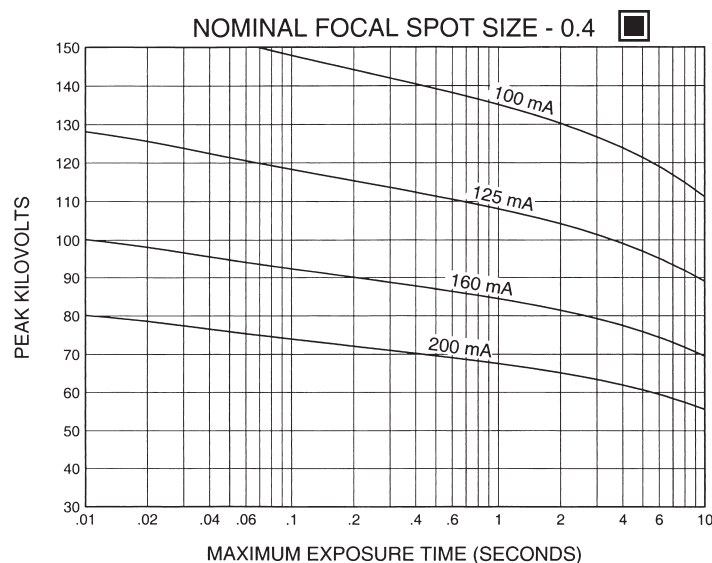
Thermische Anodenbezugsleistung bei einer Wärmespeicherung von 40%. IEC 60613

Aproximadamente el poder de penetración para obtener un almacenaje de calor del anodo de 40%. IEC 60613

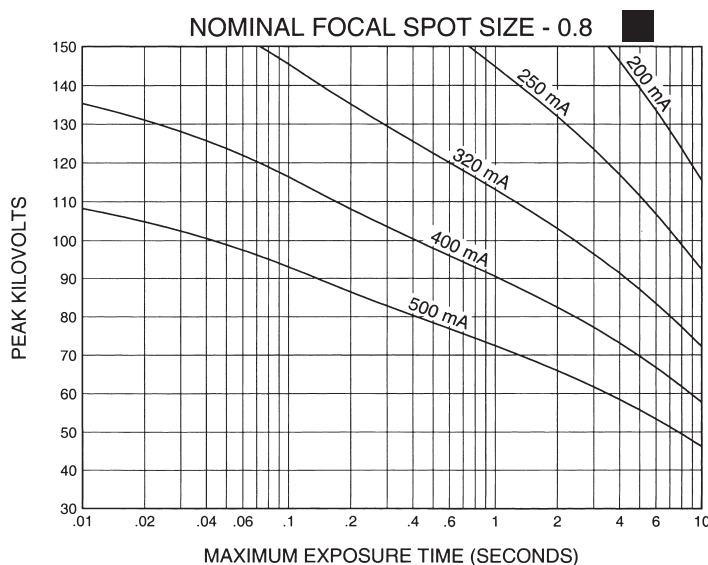
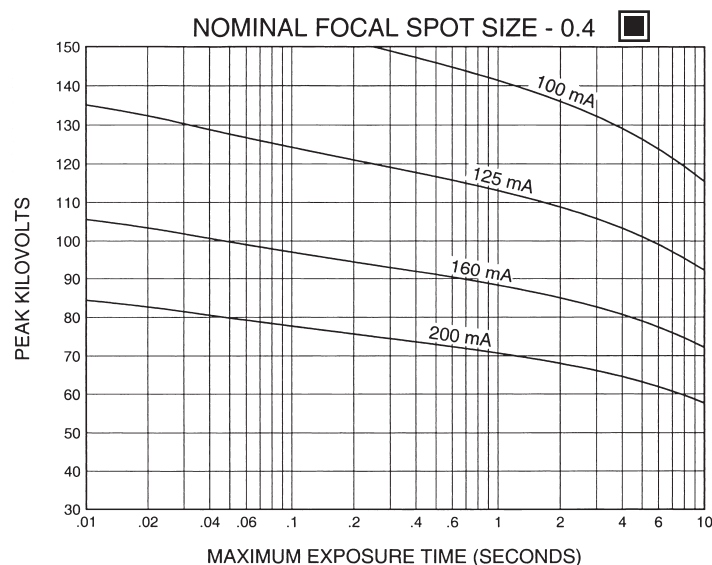
3 Ø Constant Potential

Single Load Ratings IEC 60613
Abaques de Charge pour Pose Unique CEI 60613
Brennfleck - Belastungskurven IEC 60613
Diagramas de Exposición Radiográfica IEC 60613

150 Hz



180 Hz



Nominal anode input power for the anode heat content 40%. IEC 60613

Puissance calorifique nominale de l'anode: 40%, CEI 60613

Thermische Anodenbezugsleistung bei einer Wärmespeicherung von 40%. IEC 60613

Aproximadamente el poder de penetración para obtener un almacenaje de calor del anodo de 40%. IEC 60613

CINERADIOGRAPHIC RATINGS

HOW TO USE CINERADIOGRAPHIC CHARTS

General: With the Cineradiographic rating chart we can determine the maximum allowable kW of the Cine pulse, or with a given kW determine maximum time in seconds the Cine run can progress.

The Most common way of using the charts is to determine maximum time of any expected Cine run and maximum duty factor. With a known duty factor and Cine run time kW can easily be determined.

Definition of Terms

Time in seconds: Total time of one Cine run, usually 5 to 12 seconds.

Duty Factor in Percent (DF%): Actual time during one second the x-ray tube is producing x-rays. If we select a 4 msec pulse width and 60 exposures per second the x-ray tube will be producing x-rays for a total of 240 msec each second or 24% of the time. The higher the DF number, the more load placed on the x-ray tube.

Peak Pulse Power: Peak energy in watts of any one Cine Pulse. Can be any combination of kV and mA allowed by Radiographic and Filament Emission curves.

Example: 80 kV at 400 mA equals

$$80,000 \text{ V} \times 0.4 \text{ A} = 32,000 \text{ W or } 32 \text{ kW}$$

USING THE CINE RATING CHARTS:

G-242 150/180 Hz 3 Phase 1.0 Focal Spot

Example: Determine maximum kW allowed with the following known factors:

Maximum Pulse Width 4 msec

Exposures per Second 60

Maximum Cine Run Time10 seconds

Calculate Duty Factor: (DF%)

$$\text{DF\%} = \frac{\text{Pulse Width (mSec)} \times \text{Frames per Second}}{10}$$

$$\text{DF\%} = \frac{4 \text{ msec} \times 60 \text{ exp/sec}}{10} = \frac{240}{10} = 24\%$$

Refer to Rating Chart G-242 150/180 Hz 3 Phase 0.8 Focal Spot:

At bottom of chart find 10 second line. Move vertically to intersection with 24% DF curve. Make a horizontal reference to left side of rating chart and note kW rating of 34 kW.

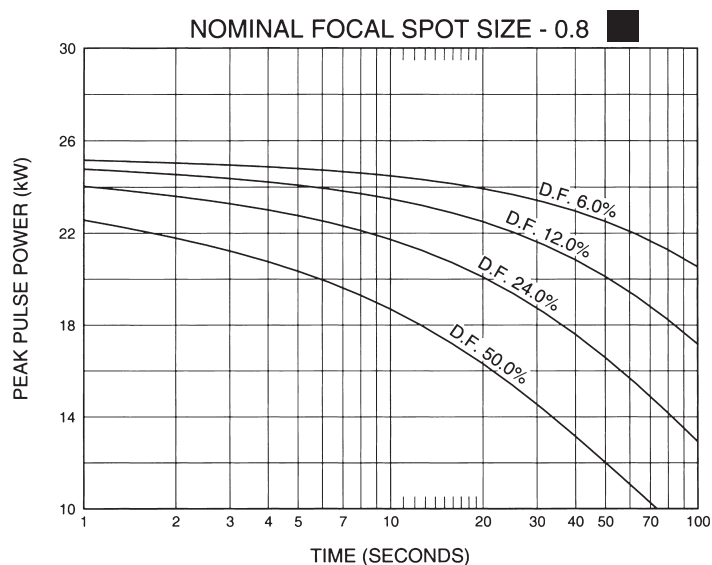
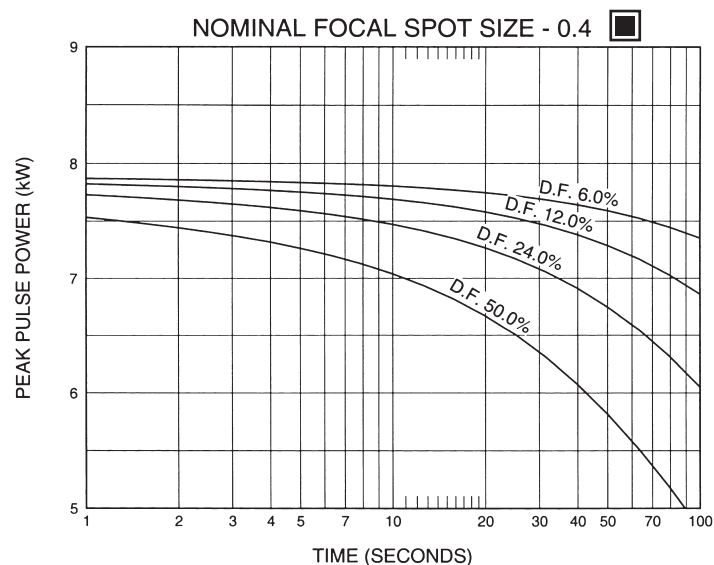
We now know each pulse during the cine run can have a maximum rating of 34 kW under conditions given in example.

kW = kV x mA. The kW of the exposure can be any combination of mA and kV allowed by the Radiographic and Filament Emission Charts.

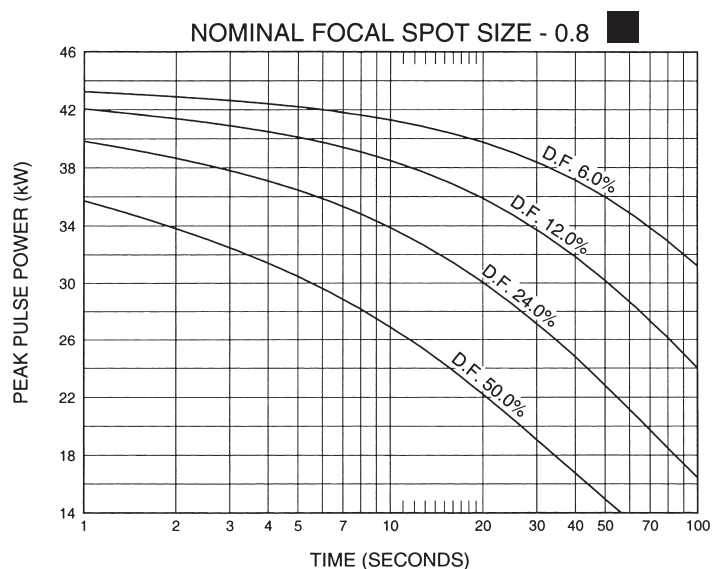
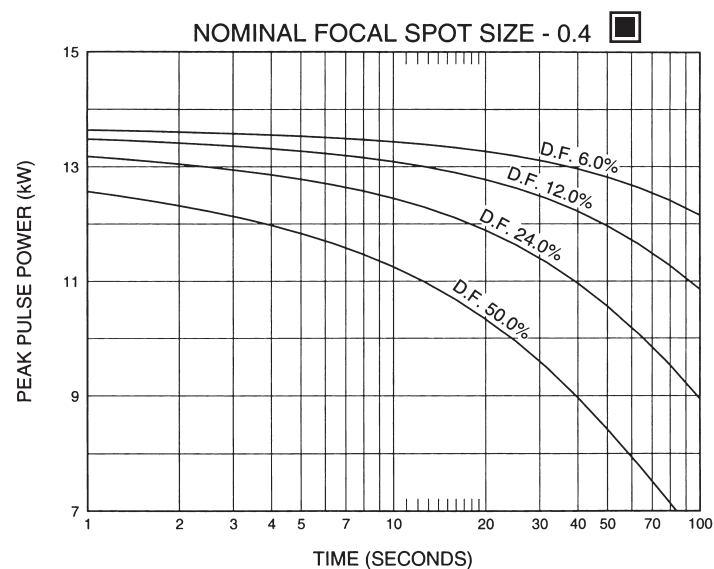
The Cine rating charts are usable to 100% anode heat storage. The start of Cine run should be below 70% anode heat storage. Exceeding 100% anode heat storage will cause anode track erosion with high risk of tube destruction.

3 Ø Constant Potential

50 Hz



150 Hz



Nominal anode input power for the
anode heat content 70%. IEC 60613

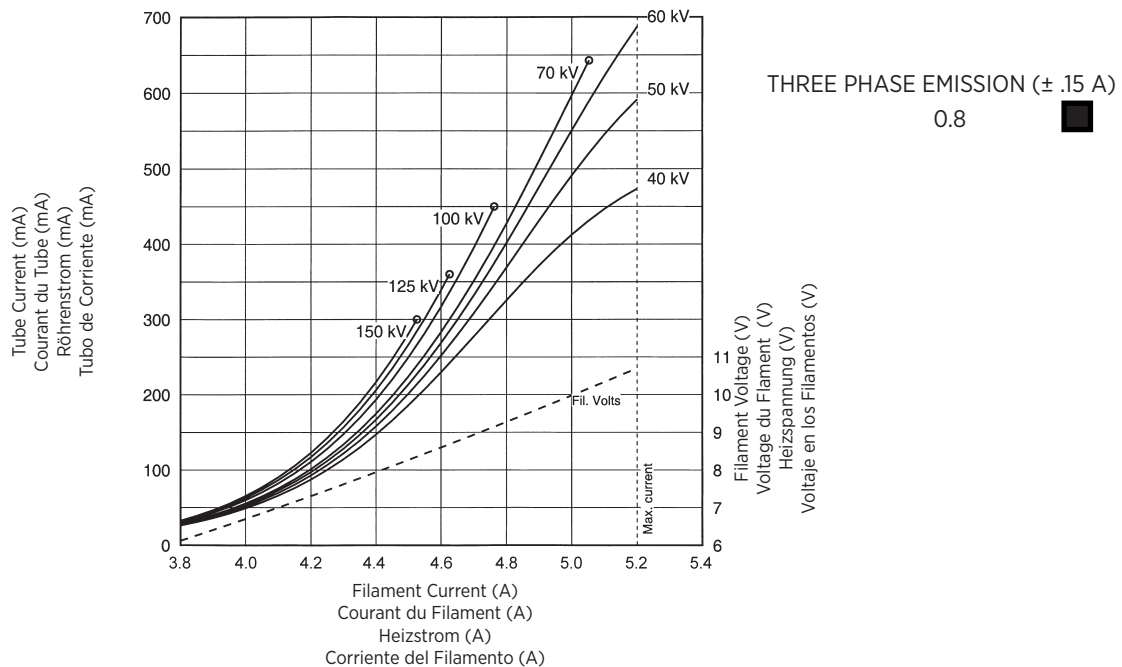
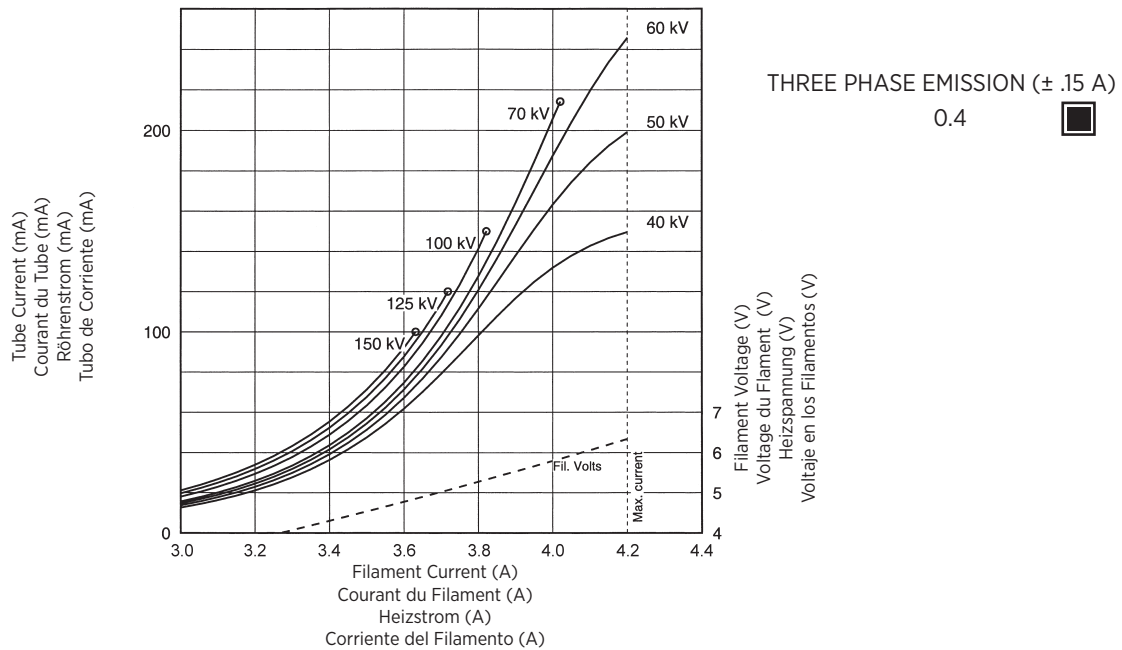
Puissance calorifique nominale de
l'anode: 70%, CEI 60613

Thermische Anodenbezugsleistung bei
einer Wärmespeicherung von 70%. IEC
60613

Aproximadamente el poder de
penetración para obtener un
almacenaje de calor del anodo de 70%.
IEC 60613

3 Ø Full Wave

Filament Emission Charts IEC 60613
 Abaques d' Émissions des Filaments CEI 60613
 Glühfadenemissionsdiagramm IEC 60613
 Curvas de Emisión de los Filamentos IEC 60613



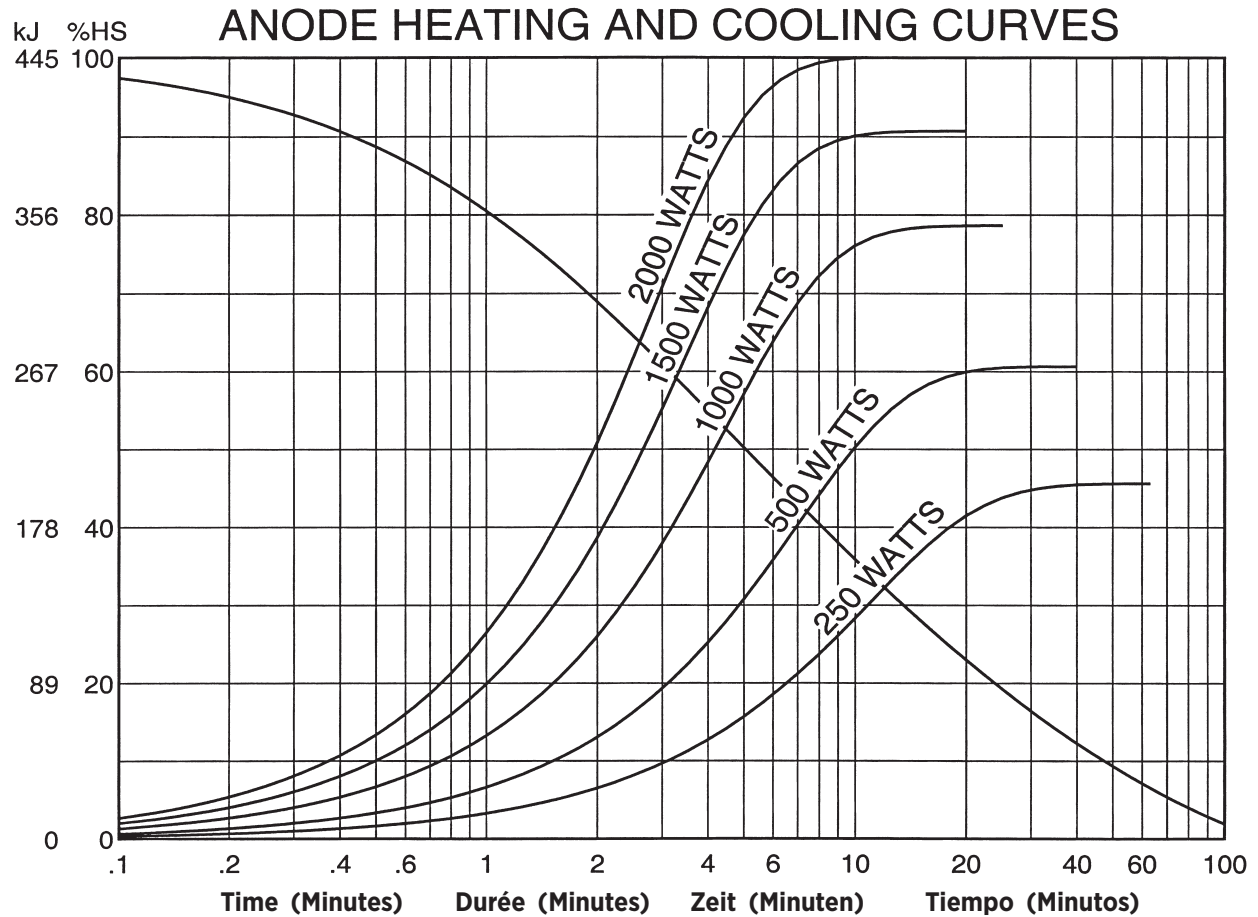
Note:
 When using these emission curves for trial exposures, refer to the power rating curves shown for maximum kV, tube emission, filament current, exposure time, and target speed.

Remarque:
 Lors de l'utilisation de ces abaques pour des expositions d'essai, référez-vous aux courbes maximales de kV, d'émission du filament, de temps d'exposition et de vitesse de rotation.

Anmerkung:
 Wenn Sie diese Emissionskurven für Testaufnahmen verwenden, beziehen Sie sich hierbei auf die entsprechenden Nennleistungskurven für max. kV-Werte, Röhrenemission, Heizstrom, und Anodendrehzahl.

Nota:
 Si utiliza estas curvas de emisión para exposiciones de prueba, refiérase a las curvas de gradación de potencia para el máximo de kV, tubo de emisión, corriente en los filamentos, tiempo de exposición, y a las curvas de velocidad del objetivo.

Anode Heating & Cooling Chart
 Abaques d' Échauffement et de Refroidissement de L'Anode
 Anoden Aufheiz - und Abkühl Kurven
 Curvas de Calentamiento y Enfriamiento del Anodo





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