



# 技术规格/Technical Data Sheet

E-40 HF IMD/XR04

## MONOBLOCK E-40 HF IMD/XR04

编码 / CODE: **30.04.002.002**

S/N: **HF**

IEC601-1: **Class I Type B**

**IMD/XR04 X-RAY TUBE**

编码 / CODE: **61.18.013.002**

S/N:

小焦点 / SMALL FILAMENT: **0.6 mm**

大焦点 / LARGE FILAMENT: **1.5 mm**

灯丝电源 / FILAMENT POWER SUPPLY: **400 Hz**



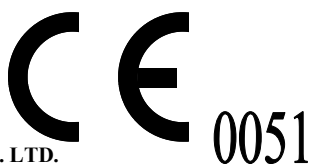
## 注意/ CAUTION

如果3个月未使用时，请按照如下条件进行老练:

- 1- 从40 kV到110kV (每挡10kV) , 1 mA, 5 秒透视, 5 秒停止; 完成后休息1分钟
- 2- 90 kV, 5 mA, 15秒透视 + 5分钟休息; 110 kV, 5 mA, 15秒透视 + 5分钟休息  
如出现不稳定, 停止操作, 休息5分钟, 然后从第一步开始重新进行。

WHEN NOT USED, AFTER 3 MONTH PERIOD, PROCEED TO INSERT RESTORATION FOLLOWING THIS CHART:

- 1- FLUORO: FROM 40 kV to 110kV(step 10kV), 1 mA, 5 SEC ON + 5 SEC OFF; PAUSE 5 MIN
- 2- 90 kV, 5 mA, 15 sec. ON + 5 min. OFF; 110 kV, 5 mA, 15 SEC ON + 5 min OFF  
IF INSTABILITIES OCCUR, PLEASE STOP THE PROCESS, WAIT 5 MINUTES AND RESUME THE PROCEDURE FROM THE BEGINNING.



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# Technical Data Sheet/技术规格



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## X射线管组件 / X-Ray Tube Assembly

### IMD MONOBLOCK MOD. E-40 HF IMD/XR04

#### 40 kHz高压发生装置 / HIGH VOLTAGE GENERATOR 40 kHz

热镀锡板外壳 / THERMO TIN-PLATED	
最大功率 / MAXIMUM POWER (100 kV - 35 mA)	3.5 kW
最高管电压 / MAXIMUM VOLTAGE TO X-RAY TUBE	110 kV
阴极对地 / CATHODE TO GROUND	55 kV
阳极对地 / ANODE TO GROUND	55 kV
最大管电流 / MAXIMUM CURRENT TO X-RAY TUBE	80 mA
最大功率时纹波 / RIPPLE AT MAXIMUM POWER	< 1 %
TEMPO DI SALITA KV A POTENZA MAX/kV RISE TIME TO MAXIMUM POWER	< 1 ms

#### X射线管组件性能 / X-RAY TUBE ASSEMBLY PERFORMANCE

请参照所使用的X射线管的功率曲线/IN ACCORDANCE WITH X-RAY TUBE RATING CHARTS.

#### 管组件特性 / FEATURES OF THE SHEATH

80 kV下的最小固有滤过 <sup>(1)</sup> INHERENT FILTRATION MINIMUM <sup>(1)</sup> @ 80 kV	2 mm Al
外形尺寸(参见附图) / DIMENSIONS (CF. FIGURE)	
重量/ WEIGHT	14.1 kg

#### 热性能参数 / THERMAL CHARACTERISTICS

热容量 / THERMAL CAPACITY	500 kJ
热保护 / THERMAL SAFETY	60 °C ± 3 °C
热保护开关 (常闭) / THERMAL SWITCH (NORMALLY CLOSED)	
膨胀鼓 / RUBBER LUNG	0.3 dm <sup>3</sup>
连续散热功率 (60kV, 1mA) CONTINUOUS THERMAL DISSIPATION (60kV,1mA)	60 W
外壳最高温度 / MAXIMUM SHEATH TEMPERATURE	60 °C

#### 灯丝电源 / FILAMENT POWER SUPPLY

IMD 400Hz灯丝板 / IMD 400 HZ CARD OR EQUIVALENT	
最大输入电流 (有效值) / MAXIMUM INPUT CURRENT (RMS)	900 mA

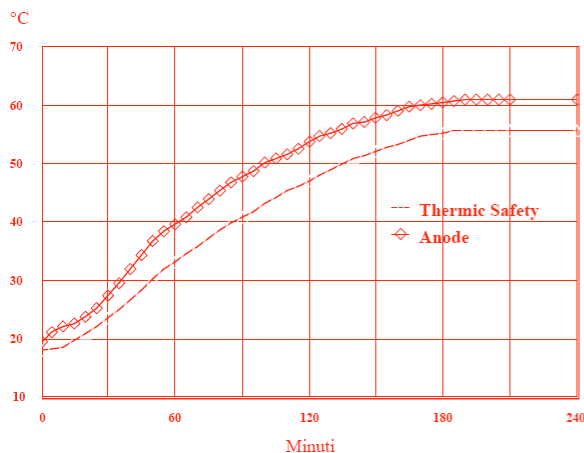


高压变压器电源 / H.V. TRANSFORMER POWER SUPPLY	
IMD逆变器E-9040-5 HF/ IMD INVERTER E-9040-5 HF	
工作频率 / OPERATING FREQUENCY	20 kHz
最高峰值输入电压 (X和Y之间) MAXIMUM INPUT PEAK VOLTAGE (X AND Y CONNECTIONS)	350 V
最大峰值输入电流 (约为) MAXIMUM INPUT PEAK CURRENT (APPROX.)	130 A
输出信号 / OUTPUT SIGNALS	
kV+ (模拟信号 / ANALOG SIGNAL)	0 ÷ 5,5 V
kV- (模拟信号 / ANALOG SIGNAL)	0 ÷ 5,5 V
mA+ AND mA- (模拟信号 / ANALOG SIGNAL)	0 ÷ 80 mA
热保护 - 常闭 - (逻辑信号) THERMAL SECURITY - NORMALLY CLOSED - (LOGICAL SIGNAL)	

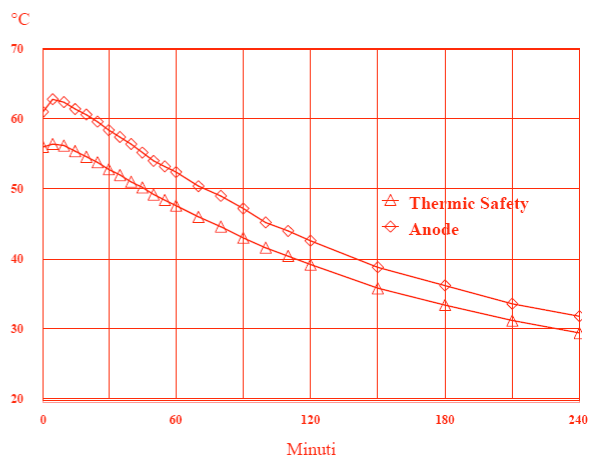
(1) 符合USA N.C.P.R. - PART 33的要求 / IN ACCORDANCE WITH : USA N.C.P.R. - PART 33

泄漏辐射 / LEAKAGE RADIATION	
在透视模式下 (110kV-3mA), 泄漏辐射小于1 mGy/小时, 符合 IEC 601-1-3 (PAR. 29.204). <i>LESS THAN 1 mGy IN ONE HOUR (110 kV -3MA) IN FLUOROSCOPY MODE ACCORDING TO IEC 601-1-3 APPLICABLE STANDARD (PAR. 29.204)</i>	

**升温曲线**  
**HEATING CURVE (60 kV, 1 mA)**



**冷却曲线**  
**COOLING CURVE**



## X射线管参数 / Insert Data

**X-RAY TUBE MOD. IMD/XR04**

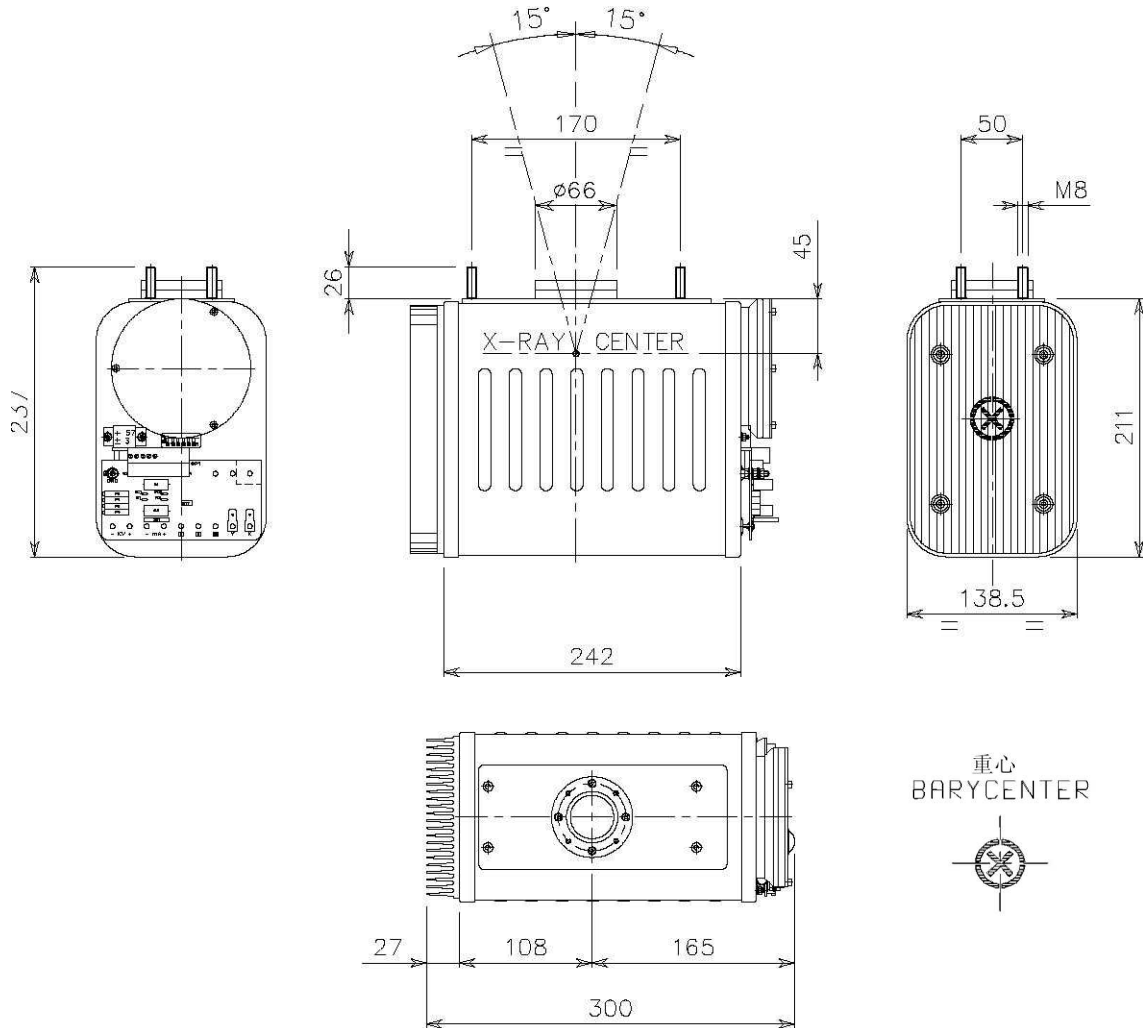
详细信息请参见X射线管技术资料  
FOR INFORMATION CF. TUBE TECHNICAL DATA SHEET

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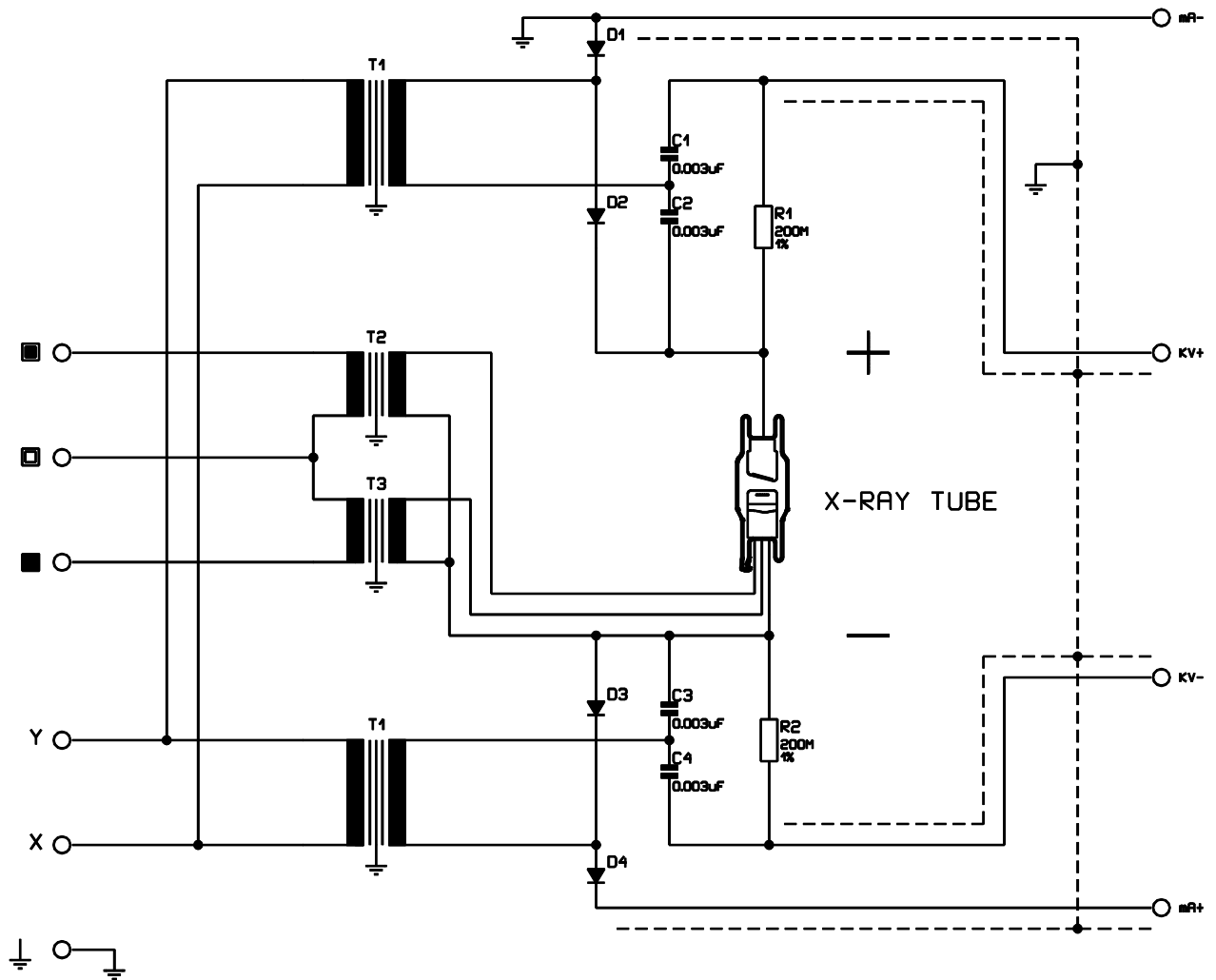
# Technical Data Sheet/技术规格

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组合机头尺寸/ MONOBLOCK DIMENSIONS

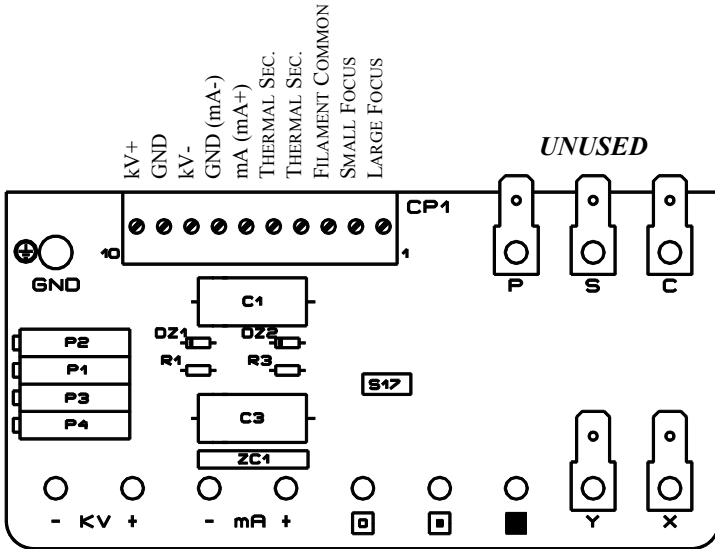


组合机头原理图 / MONOBLOCK ELECTRIC DIAGRAM

# Technical Data Sheet/技术规格



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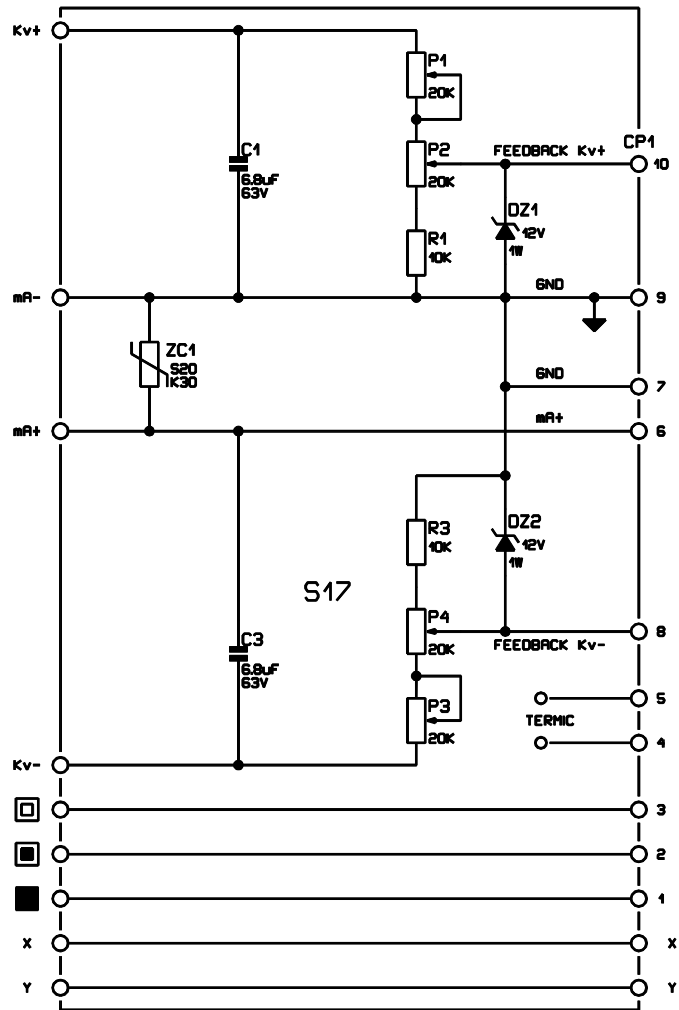


选项: 2片铝片(厚度为1mm), 铅圈(厚度为2 mm) 41/20及卡圈

Optionals: 2 disks of aluminium (thickness 1mm), 41/20 o 41/25 lead washer (thickness 2 mm) and seeger.

S17 Card  
Wiring Harness

S17板接线图





# 危险因素

恰当的使用X射线组合机头和遵守安全操作规程是制造商和使用者的责任。制造商提供有关产品的资料及其可能存在的风险，但是它对销售之后用户操作及使用的安全程序不承担任何责任。X射线组合机头寿命是有限的，并且会出现偶发的故障和性能下降。请遵守使用说明正确使用组合机头。

**任何使用组合机头或者装有组合机头装置的人员，应该注意保护自己不受射线侵害。**

**不要在不满足本资料提供的技术参数环境中或不满足制造商说明的条件下使用组合机头。**

### 组合机头使用的危险

#### 高压

所有组合机头都在高压条件下工作，该电压足以使人受到电击致死。设备在设计时应考虑到将操作者有效保护起来，避免与设备的直接接触。如需直接接触，应切断所有电源并将电容的电放掉。

#### 管球的爆裂

所有管球的内部均为真空。玻璃外壳有可能意外破裂造成管球的爆裂，使玻璃碎片飞出。处理时带安全眼镜（或面罩）、穿厚衣服并戴手套以保护自己。

#### X射线辐射

组合机头会根据加载量不同而产生不同剂量的X射线（参见产品使用说明书）。使用者应采用适当措施屏蔽。警告标识“射线 危害”不应被拿掉直至操作人员采取屏蔽措施保护自己。屏蔽措施应符合相关标准要求，一旦对此产生疑问，应立刻咨询该领域专业人士。

#### 热油

组合机头使用时，X射线管球阳极端会聚集大量热能，热量传递到组合机头内部的油里，然后会散到组合机头外壳周围。不正确地使用组合机头可能会在高温时导致组合机头外壳破损、漏油，导致烫伤。要注意避开。

#### 贮存和保管

为了保证产品的正常使用，建议贮存和使用本产品时满足如下环境要求：

湿度				温度				气压			
使用		贮存		使用		贮存		使用		贮存	
min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
30%	75%	10%	90%	10 °C	40 °C	-20 °C	70 °C	500hPa	1600hPa	500hPa	1600hPa



在抛弃含有绝缘油和/或铅的组合机头时应采取适当处理以符合所有适用的欧盟法规以及当地的法规要求。

建议将失效的产品返回原生产厂或者交给当地恰当的机构以保证正确的处理。



# Hazards

PROPER USE AND SAFE OPERATING PRACTICES WITH RESPECT TO X-RAY MONOBLOCK GENERATORS ARE RESPONSIBILITY OF EQUIPMENT MANUFACTURERS AND USERS OF SUCH DEVICES. THE MANUFACTURER PROVIDES INFORMATION ON ITS PRODUCTS AND ASSOCIATED HAZARDS, BUT IT ASSUMES NO RESPONSIBILITY FOR AFTER-SALE OPERATING AND SAFETY PRACTICES. LIMITED LIFE, RANDOM FAILURE AND PERFORMANCE REDUCTION ARE INHERENT CHARACTERISTICS OF X-RAY MONOBLOCK GENERATORS. APPROPRIATE SAFE OPERATING PRACTICES SHOULD BE EMPLOYED.

**ALL PERSON WHO WORK WITH MONOBLOCK OR EQUIPMENT WHICH UTILIZES SUCH DEVICES MUST TAKE PRECAUTIONS TO PROTECT THEMSELVES AGAINST RADIATION EXPOSURE AND POSSIBLE SERIOUS BODILY INJURY.**

**DO NOT OPERATE THIS MONOBLOCK EXCEPT IN ACCORDANCE WITH INFORMATION INCLUDED IN THIS TECHNICAL DATA SHEET, THESE PRECAUTIONS, AND ANY ADDITIONAL INFORMATION PROVIDED BY THE MONOBLOCK MANUFACTURER AND/OR COMPETENT SAFETY AUTHORITIES.**

## X-RAY MONOBLOCK GENERATOR HAZARDS

### HIGH VOLTAGE

All X-Ray Monoblock Generators operate at voltages high enough to kill through electrical shock. Equipment designed should prevent personnel contact with high voltages. When direct access to the Monoblock is required, the primary circuits should be disabled and capacitors discharged.

### X-RAY RADIATION

This Device produces X-Ray radiation that varies in quantity and energy level, depending upon the voltage and current used when energizing it. Refer to the operating instructions for the equipment. Operating personnel must be protected by appropriate shielding. X-Ray Caution signs or labels must be permanently attached to equipment directing operating personnel never to operate this device without X-Ray shielding. Shielding should be in accordance with applicable Norms. If there is any doubt as to the adequacy of shielding, an expert in this field should be contacted to perform an X-Ray survey.

### STORAGE AND CONSERVATION

To guarantee the maintenance of integrity of the product is advised to use or to conserve the system in environments that respect the following climatic factors us.

Humidity				Temperature				Atmospheric pressure			
Use		Storage		Use		Storage		Use		Storage	
min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
30%	75%	10%	90%	10 °C	40 °C	-20 °C	70 °C	500hPa	1600hPa	500hPa	1600hPa



**PRECAUTION SHOULD BE TAKEN IN THE DISPOSAL OF X-RAY MONOBLOCK GENERATORS CONTAINING DIELECTRICAL OIL AND/OR LEAD IN ORDER TO COMPLY WITH ALL APPLICABLE EUROPEAN LAWS AND REGULATIONS. IT IS RECOMMENDED THAT FAILED DEVICES BE RETURNED TO THE MANUFACTURER OR AN APPROPRIATE FACILITY TO ENSURE PROPER HANDLING.**

### GLASS EXPLOSION

All X-Ray tubes are pumped to very high vacuum; those incorporating glass are subject to accidental breakage. Breakage will result in an implosion followed immediately by an explosion, yielding flying glass fragments. When handling, safety glasses (or face shield), heavy clothing, and leather gloves should be worn for protection.

### HOT OIL

Extreme heat occurs in the anode portion of the X-Ray tube during operation. This heat is radiated to the dielectric oil inside the Monoblock. This heat is then conducted through the Monoblock and radiated to the air. Misuse of the Monoblock can result in a rupture of the housing causing hot oil to escape, potentially resulting in scalds or burns. Take precautions to avoid such rupture or contact.



## 组合机头上使用的符号 / SYMBOLISM UPON MONOBLOCK

	<p>固有滤过 <i>Inherent filtration</i></p>
	<p>请查看技术文件 <i>Consult The Technical Documentation</i></p>
	<p>电子及电气设备废弃物 WEEE Waste Electrical and Electronic Equipments</p>
	<p>电离辐射 <i>X Ray emission</i></p>
	<p>大焦点 <i>Large focus</i></p>
	<p>小焦点 <i>Small focus</i></p>
	<p>保护接地 <i>Protective earth (Ground)</i></p>
	<p>制造商 <i>Manufacturer</i></p>