EG-60 Assembly

Industrial X-Ray Tube

Product Description

The EG-60 series of beryllium window X-Ray tubes are designed for use as radiation sources in energy-dispersive fluorescence analysis systems.

These various versions of tubes differ in beryllium window thickness - as indicated by the presence of a suffix (see SPECIFICATION - Inherent Filtration).

A variety of target materials are available (see SPECIFICATION). These tubes can operate at voltages as low as 5 kVcp.

The X-Ray beam is perpendicular to the target, providing a very uniform cone of radiation over a wide angle. This feature allows short focal spot-to-sample distances.

Maximum X-Ray intensity is achieved by use of a thin beryllium window which is the only element of inherent filtration.

The cathode is designed for operation at ground potential:
- eliminating the need for a highly insulated filament transformer; and
- eliminating electron bombardment of the beryllium window and the resultant heating.

The X-ray window is located at the end of the tube, and the X-ray beam is projected along the longitudinal axis of the tube.

SPECIFICATIONS

Maximum Voltage: 60 kV

Target Angle: 90° from central ray

Anode Dissipation:
400 watts (maximum) continuous operation
300 watts intermittent operation

Focal Spot: Round focal spot approximately 8mm in diameter

Filament Characteristics:
3.3 volts, maximum
8.8 amperes, maximum
(except as limited by maximum power capability)
SEE EMISSION CHART

Note (1) The high-voltage circuit should contain at least 1 ohm of added resistance for each volt of maximum operating voltage.
Note (2) All tubes incorporate a ceramic cathode insulator which make them compatible for use in helium spectrometers.

Maximum Bulk Oil Temperature: 150°F (65°C)

Weight: Approximately 29 lb. (13.6 kg)

Envelope: (Insert)
Concentric metal cathode ring surrounding a beryllium X-ray window, and a glass section to support and insulate the anode.

Anode:
Copper with target attached as specified below.

Standard Target Materials:
Molybdenum (Mo), Rhodium (Rh), Platinum (Pt), Titanium (Ti), Palladium (Pd)

Cathode:
Circular tungsten filament concentric with axis of anode and X-ray window.

Cooling Method:
Oil to Air Heat Exchanger

Insulating Medium:
Oil with minimum dielectric strength of 30 kV rms per 0.1inch, as measured by ASTM Standard Test No. D-877

Radiation Characteristics		
Tube Type	Inherent Filtration Beryllium Window Thickness	RadiationCone (Unshadowed)
EG-60J	.003 [.076] mm	23°

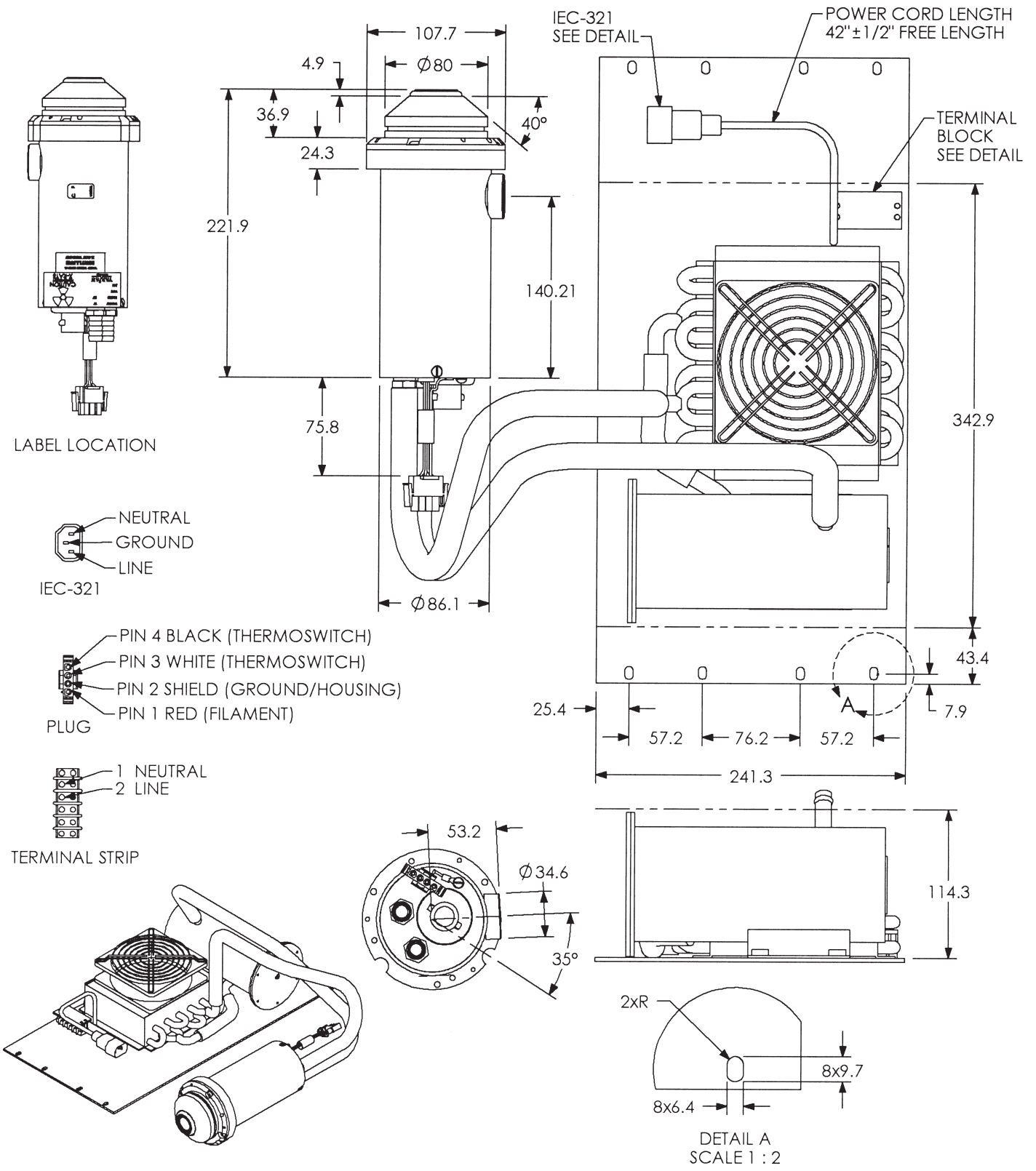
⚠ Warning

Beryllium windows permit a very high level of long wavelength X-radiation to pass through, which can cause injury to humans.

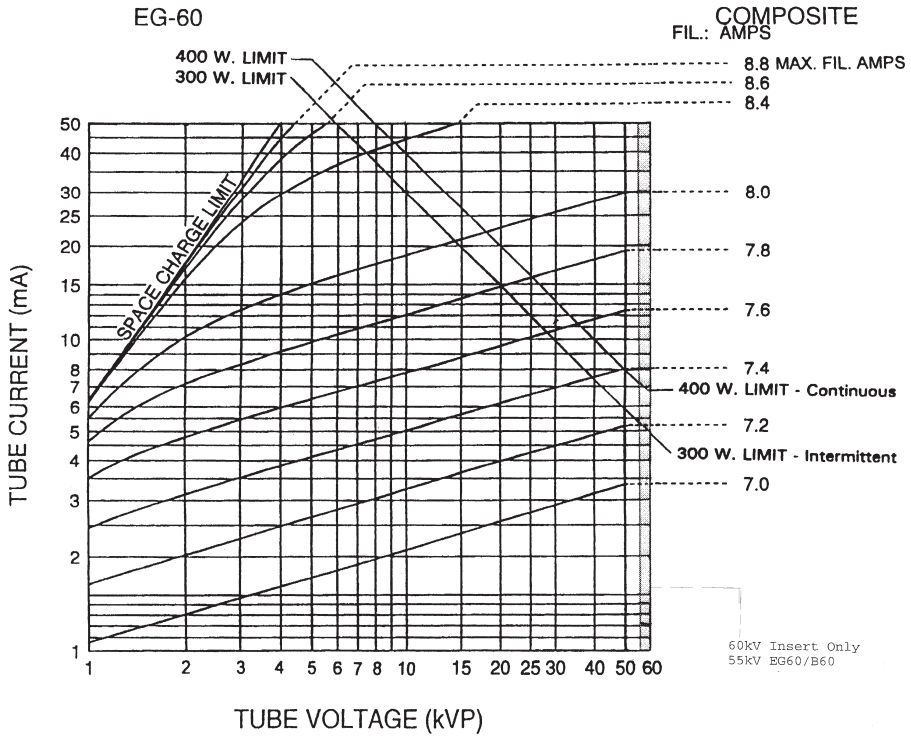
Injury may occur from even very short exposures to the primary X-ray beam.

Note: The radiation dosage rate cannot be accurately measured with conventional radiation measurement instruments. Radiation intensity in each installation will vary, and calibration must include the effects of long wavelength X-radiation.

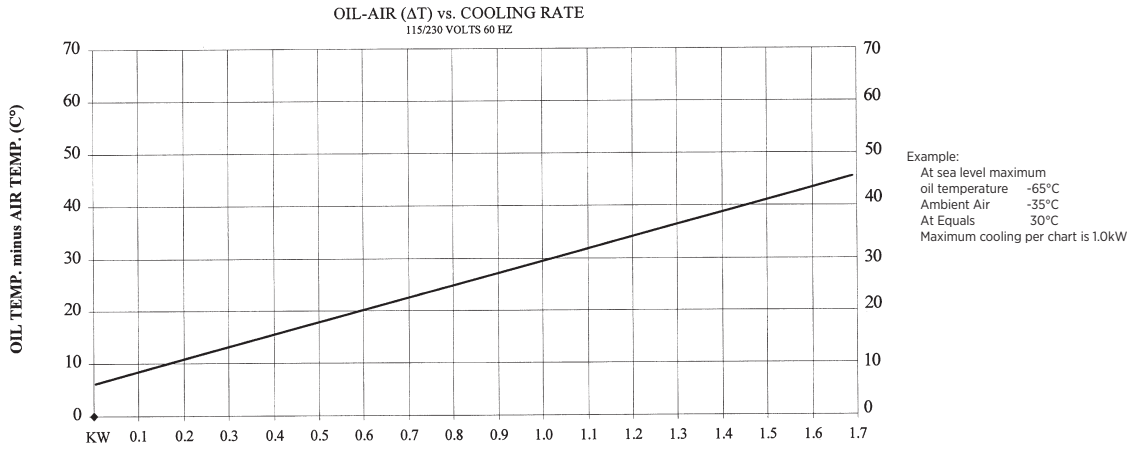
Tube Outline Drawing



FILAMENT EMISSION



COOLING CHARACTERISTICS WITH HE-60/61 HEAT EXCHANGER



Example:
At sea level maximum
oil temperature -65°C
Ambient Air -35°C
At Equals 30°C
Maximum cooling per chart is 1.0kW

Salt Lake City, UT 1-801-972-5000
Charleston, SC 1-843-767-3005
www.varexiimaging.com

Manufactured by Varex Imaging Corporation

Specifications subject to change without notice.