X-Ray Generator Power Requirements

The following tables are a guide for pre-installation planning of electrical wiring and power distribution. For an in depth explanation of these specifications please see “Power Requirements Explained:” on page 5

For The ATC 850 (80 kW) Generator see Table 1 on page 2

For The ATC 650 (65 kW) Generator see Table 2 on page 2

For The ATC 725 (50 kW) Generator see Table 3 on page 3.

For The ATC 525 (40 kW) Generator see Table 4 on page 3.

For The Following Generator Types (30 kW) see Table 5 on page 4.

GX 525, MP500, AP500, ATC 525 (single phase), HF-30, HF-30 AP, RX 525

For UNIMATIC 325 D, see Table 6 on page 4.

For X-TEK 400 or VET TEK 400,see Table 7 on page 5

All Three Phase power configurations consist of three “hot” wires and one “earth ground”. A neutral connection is not required for *our* use of three phase.

Single Phase power configurations consist of three wires in one of the following combinations:

- one “hot” wire, one “return” (neutral) and one “earth ground”
- two “hot” wires and one “earth ground”

If any one of the requirements on these pages are not met, the x-ray generator output may not comply with the stringent regulations set forth by the FDA and/or state and local governments. Failure to follow these guidelines may also cause damage to the equipment and possibly void certain warranty claims.

NOTE: All power lines are required to be relatively free from spikes, glitches and interruptions.

Table 1: 80kW High Frequency Generators

Line Voltage	Dist. XFMR or Dedicated Energy Requirement	Minimum Copper Wire Size						Minimum Switch, Fuse or Breaker Rating	Maximum Momentary Current Draw
		Distance in Feet from Distribution Point to Disconnect Panel				Ground	Disconnect to Generator (15' max)		
		50 Ft (15m)	100 ft (30m)	150ft (45m)	200 Ft (60m)				
400 VAC 3 phase	100 kVA	#2	#00	#0000	250mcm	#4	#6	100 A	175 A
480 VAC 3 phase	100 kVA	#2	#00	#0000	250mcm	#4	#6	100 A	140 A

Table 2: 65kW High Frequency Generators

Line Voltage	Dist. XFMR or Dedicated Energy Requirement	Minimum Copper Wire Size						Minimum Switch, Fuse or Breaker Rating	Maximum Momentary Current Draw
		Distance in Feet from Distribution Point to Disconnect Panel				Ground	Disconnect to Generator (15' max)		
		50 Ft (15m)	100 ft (30m)	150ft (45m)	200 Ft (60m)				
400 VAC 3 phase	85 kVA	#2	#0	#000	#0000	#4	#6	100 A	150 A
480 VAC 3 phase	85 kVA	#2	#0	#000	#0000	#4	#6	100 A	120 A

Table 3: 50 Kilowatt, High Frequency Generators

Line Voltage	Dist. XFMR or Dedicated Energy Requirement	Minimum Copper Wire Size					Minimum Switch, Fuse or Breaker Rating	Maximum Momentary Current Draw
		Distance in Feet from Distribution Point to Disconnect Panel			Ground	Disconnect to Generator (15' max)		
		50'	100'	200'				
208 VAC 3 Phase	80 kVA	#00	250 MCM	N/A	#6	#2	150 A	280 A
240 VAC 3 Phase	80 kVA	#0	#0000	400 MCM	#6	#2	125 A	244 A
380 VAC 3 Phase	80 kVA	#4	#0	#000	#6	#2	100 A	160 A
480 VAC 3 Phase	80 kVA	#4	#2	#0	#6	#4	75 A	126 A

Table 4: 40 Kilowatt, High Frequency Generators

Line Voltage	Dist. XFMR or Dedicated Energy	Minimum Copper Wire Size					Minimum Switch, Fuse or Breaker Rating	Maximum Momentary Current Draw
		Distance in Feet from Distribution Point to Disconnect Panel			Ground	Disconnect to Generator (15' max)		
		50'	100'	200'				
208 VAC 3 Phase	65 kVA	#2	#00	#000	#6	#2	125 A	210 A
240 VAC 3 Phase	65 kVA	#2	#00	#000	#6	#2	100 A	190 A
380 VAC 3 Phase	65 kVA	#4	#0	#00	#6	#4	75 A	127 A
480 VAC 3 Phase	65 kVA	#4	#0	#00	#6	#4	60 A	105 A

Table 5: 30 Kilowatt, High Frequency X-ray Generators

Line Voltage	Dist. XFMR or Dedicated Energy	Minimum Copper Wire Size					Minimum Switch, Fuse or Breaker Rating	Maximum Momentary Current Draw
		Distance in Feet from Distribution Point to Disconnect Panel			Ground	disconnect to Generator (15' max)		
		50'	100'	200'				
208 VAC 1 Phase	50 kVA	#0	#000	300MCM	#6	#1	200 A	366 A
240 VAC 1 Phase	50 kVA	#1	#0	#000	#6	#1	150 A	293 A
277 VAC 1 Phase	50 kVA	#2	#1	#0	#6	#1	150 A	270 A
208 VAC 3 Phase	50 kVA	#4	#0	#00	#6	#2	100 A	152 A
240 VAC 3 Phase	50 kVA	#4	#0	#00	#6	#4	75 A	135 A
380 VAC 3 Phase	50 kVA	#6	#2	#0	#6	#6	75 A	98 A
480 VAC 3 Phase	50 kVA	#6	#4	#0	#6	#6	50 A	82 A

Table 6: Unimatic 325D X-ray Generators

Line Voltage	Dist. XFMR or Dedicated Energy	Minimum Copper Wire Size					Minimum Switch, Fuse or Breaker Rating	Maximum Momentary Current Draw
		Distance in Feet from Distribution Point to Disconnect Panel			Ground	Disconnect to Generator (15' max)		
		50'	100'	200'				
208 VAC 1 Phase	37.5 kVA	#2	#00	250 MCM	#8	#8	100 A	178 A
240 VAC 1 Phase	37.5 kVA	#2	#00	250 MCM	#8	#8	100 A	156 A

Table 7: X-Tek 400 and Vet-Tek 400 X-ray Generators

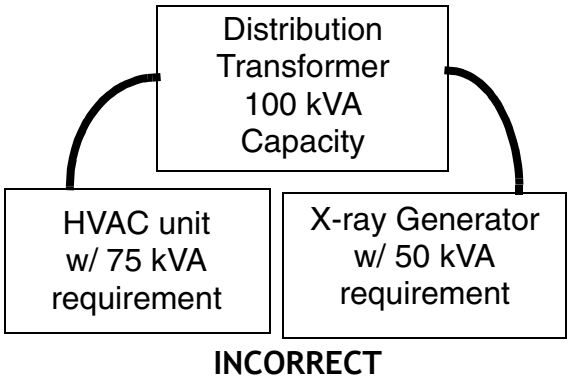
Line Voltage	Dist. XFMR or Dedicated Energy	Minimum Copper Wire Size					Minimum Switch, Fuse or Breaker Rating	Maximum Momentary Current Draw
		Distance in Feet from Distribution Point to Disconnect Panel			Ground	Disconnect to Generator (15' max)		
		50'	100'	200'				
208 VAC 1 Phase	40 kVA	#2	#00	250 MCM	#8	#8	100 A	190 A
240 VAC 1 Phase	40 kVA	#2	#00	250 MCM	#8	#8	100 A	167 A

Power Requirements Explained:

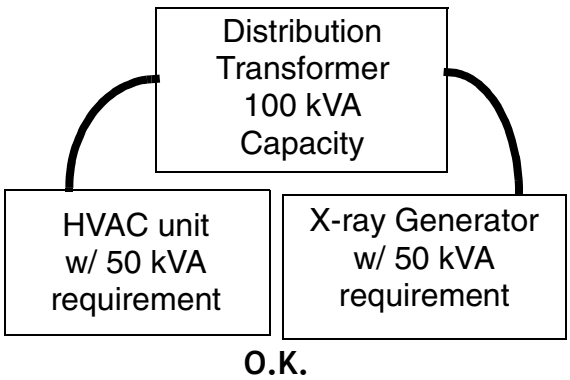
Key principles were used in developing these specifications. The following is an explanation of these principles and their associated specifications:

Dedicated Energy Requirement

This specification states the required portion of energy delivering capacity of a power distribution transformer that must be dedicated to the x-ray generator. It is acceptable for the power distribution transformer to supply power to other devices, as long as the total energy demand does not exceed its capacity. See the examples in the diagram below:



INCORRECT



O.K.

The dedicated energy requirement is usually greater than the output capability of the x-ray generator (remember, kW = kVA) and this is because of the instantaneous demand of an x-ray generator. This specification is designed to deliver full power to the x-ray generator within milliseconds!

Minimum Copper Wire Size

The main factor used in determining the wire size specification is impedance (the combined resistive and inductive properties of the wire) and *not* current carrying capacity. In other words, the reason the

wire must be so large is to keep the line impedance low. This is the reason that a smaller wire size can be used between the disconnect and the generator.

Note: Aluminum wire is not acceptable under any condition.

Minimum Switch, Fuse or Breaker Rating

The National Electrical Code requires the rating of these items to be **at least** 50% of the maximum momentary current draw at full load. The *maximum* switch, fuse, circuit breaker rating is limited by the current capacity of the wire (please follow local code) but cost and availability of larger devices usually prevents this specification from being exceeded.

NOTE: In some cases the specified wire size exceeds the connector size of a disconnect switch or circuit breaker. In this instance it is acceptable to use a gauge reducing terminal so that the wire can be connected.