

**CATERPILLAR INC.**  
**LAFAYETTE POWER SYSTEMS**  
**Generator Specifications**

Spec. No: **C047-7923**

Model: **C047-7923**

Printed: 4/23/2004  
Page 1/2

**\*\*\*\*\* Specifications \*\*\*\*\***

Poles **4**  
Excitation: **PMG**  
Pitch: **0.8333**  
Connection: **Wye**  
Max Overspeed (60 sec) **125%**  
Number of Bearings **Two**  
Number of Leads **Six**  
Number of Terminals **Four**

**\*\*\*\*\* Ratings \*\*\*\*\***

Power **1500** EkW  
K.V.A. **1875**  
P.f. **0.8**  
Voltage-L.L. **208** V  
Voltage-L.N. **120** V  
Current-L.L. **5204** A  
Frequency **60** Hz  
Speed **1800** RPM

**\*\*\*\*\* Efficiency and Heat Dissipation \*\*\*\*\***

(As per NEMA and IEC at 95°C)

Load PU	Kilowatts	Efficiency	Heat Rejection
0.25	<b>375.0</b>	<b>86.2%</b>	<b>204899</b> BTU/hr
0.50	<b>750.0</b>	<b>92.1%</b>	<b>219566</b> BTU/hr
0.75	<b>1125.0</b>	<b>94.1%</b>	<b>240742</b> BTU/hr
1.00	<b>1500.0</b>	<b>94.9%</b>	<b>275126</b> BTU/hr

**\*\*\*\*\* Temperature & Insulation Data \*\*\*\*\***

Ambient Temperature **50°C**  
Temperature Rise **80°C**  
Insulation Class **F**  
Insulation Resistance **100** Megaohms  
(as shipped) (at 40 °C )

**\*\*\*\*\* Fault Currents \*\*\*\*\***

Instantaneous 3-Ø symmetrical fault current **25265** Amps  
Instantaneous L-N symmetrical fault current **30980** Amps  
Instantaneous L-L symmetrical fault current **22094** Amps

**\*\*\*\*\* Exciter Armature Data \*\*\*\*\***

(at full load, 0.8 p.f.)  
Voltage **86.3** V  
Current **126.4** A

**\*\*\*\*\* Time Constants \*\*\*\*\***

OC Transient - Direct Axis **T'DO** **4.286** Sec  
SC Transient - Direct Axis **T'D** **0.684** Sec  
OC Subtransient - Direct Axis **T'DO** **0.043** Sec  
SC Subtransient - Direct Axis **T"D** **0.039** Sec  
OC Subtransient - Quadrature Axis **T"QO** **0.021** Sec  
SC Subtransient - Quadrature Axis **T"Q** **0.004** Sec  
Armature SC **TA** **0.090** Sec

**\*\*\*\*\* Resistances \*\*\*\*\***

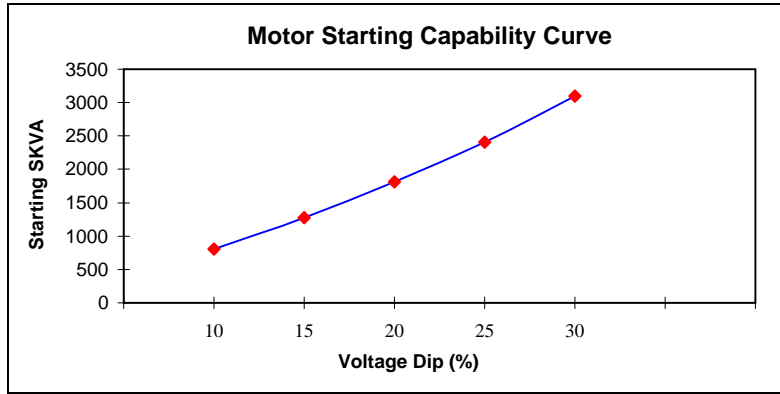
Base Impedence **0.023** ohms  
Stator (at 25 °C) **0.000** ohms  
Field (at 25 °C) **0.71** ohms  
Zero Sequence R0 **0.00** ohms  
Positive Sequence R1 **0.00** ohms  
Short Circuit Ratio **0.70**

**\*\*\*\*\* Reactances \*\*\*\*\***

		Saturated		Unsaturated	
		Per Unit	Ohms	Per Unit	Ohms
Subtransient - Direct Axis	<b>X"D</b>	<b>0.206</b>	<b>0.0</b>	<b>0.243</b>	<b>0.0</b>
Subtransient - Quadrature Axis	<b>X"Q</b>	<b>0.198</b>	<b>0.0</b>	<b>0.233</b>	<b>0.0</b>
Transient - Direct Axis	<b>X'D</b>	<b>0.228</b>	<b>0.0</b>	<b>0.259</b>	<b>0.0</b>
Transient Quadrature Axis	<b>X'Q</b>	<b>0.859</b>	<b>0.0</b>	<b>1.026</b>	<b>0.0</b>
Synchronous - Direct Axis	<b>XD</b>	<b>1.429</b>	<b>0.0</b>	<b>1.707</b>	<b>0.0</b>
Synchronous - Quadrature Axis	<b>XQ</b>	<b>0.859</b>	<b>0.0</b>	<b>1.026</b>	<b>0.0</b>
Negative Sequence	<b>X2</b>	<b>0.202</b>	<b>0.0</b>	<b>0.238</b>	<b>0.0</b>
Zero Sequence	<b>X0</b>	<b>0.096</b>	<b>0.0</b>	<b>0.113</b>	<b>0.0</b>

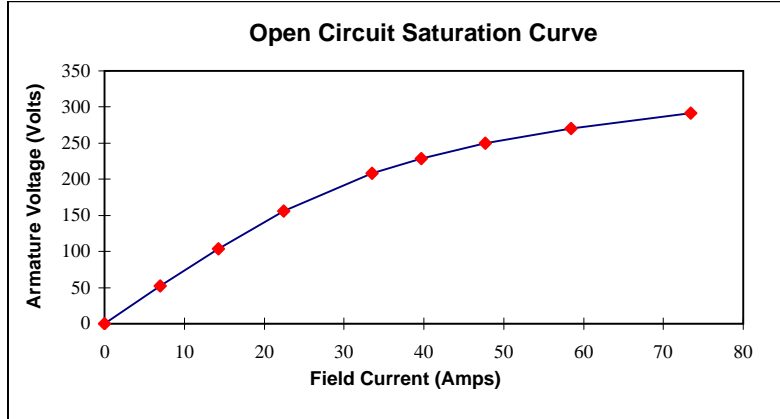
\*\*\*\*\* Motor Starting Capability Data \*\*\*\*\*

Voltage Dip (%)	Starting SKVA
10	803.4
15	1276
20	1807.7
25	2410.3
30	3099



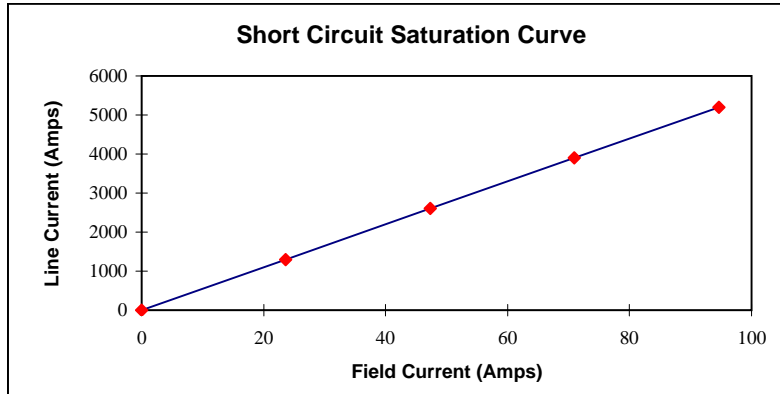
\*\*\*\*\* Open Circuit Saturation Data \*\*\*\*\*

Field Current (Amps)	Armature Voltage (Volts)
0.0	0
7.0	52
14.2	104
22.5	156
33.5	208
39.7	229
47.7	250
58.5	270
73.4	291



\*\*\*\*\* Short Circuit Saturation Data \*\*\*\*\*

Field Current (Amps)	Line Current (Amps)
0.0	0.0
23.7	1301.1
47.3	2602.2
71.0	3903.4
94.6	5204.5



\*\*\*\*\* Current Decrement Data \*\*\*\*\*

Elapsed Time (Cycles)	Current Decrement (Amps)
0	25265
5	20925
10	18712
15	16958
20	15614
25	15614
30	15614
35	15614
40	15614
45	15614

