

GENERATOR DATA

(AT400240)-ENGINE (BAA126422A)-CEM

NOVEMBER 07, 2023

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Selected Model

Engine: C18 Generator Frame: LC6134G Genset Rating (kW): 455.0 Line Voltage: 480
Fuel: Diesel Generator Arrangement: 4183907 Genset Rating (kVA): 568.75 Phase Voltage: 277
Frequency: 60 Excitation Type: Permanent Magnet Pwr. Factor: 0.8 Rated Current: 684.1
Duty: PRIME Connection: SERIES STAR Application: EPG Status: Current

Version: 41764 /40476 /42244 /16823

Spec Information

Generator Specification		Generator Efficiency			
Frame: LC6134G	Type: LC	No. of Bearings: 1	Per Unit Load	kW	Efficiency %
Winding Type: RANDOM WOUND		Flywheel: 14.0	0.25	113.8	91.8
Connection: SERIES STAR		Housing: 1	0.5	227.5	94.3
Phases: 3		No. of Leads: 12	0.75	341.3	94.9
Poles: 4		Wires per Lead: 2	1.0	455.0	94.7
Sync Speed: 1800		Generator Pitch: 0.6667	1.1	500.5	94.6

Reactances	Per Unit	Ohms
SUBTRANSIENT - DIRECT AXIS X''_d	0.1108	0.0449
SUBTRANSIENT - QUADRATURE AXIS X''_q	0.1461	0.0592
TRANSIENT - SATURATED X'_d	0.1575	0.0638
SYNCHRONOUS - DIRECT AXIS X_d	3.1015	1.2564
SYNCHRONOUS - QUADRATURE AXIS X_q	1.8603	0.7536
NEGATIVE SEQUENCE X_2	0.1284	0.0520
ZERO SEQUENCE X_0	0.0086	0.0035

Time Constants	Seconds
OPEN CIRCUIT TRANSIENT - DIRECT AXIS T'_{d0}	1.9580
SHORT CIRCUIT TRANSIENT - DIRECT AXIS T'_d	0.1000
OPEN CIRCUIT SUBTRANSIENT - DIRECT AXIS T''_{d0}	0.0130
SHORT CIRCUIT SUBTRANSIENT - DIRECT AXIS T''_d	0.0100
OPEN CIRCUIT SUBTRANSIENT - QUADRATURE AXIS T''_{q0}	0.1270
SHORT CIRCUIT SUBTRANSIENT - QUADRATURE AXIS T''_q	0.0100
EXCITER TIME CONSTANT T_e	0.0300
ARMATURE SHORT CIRCUIT T_a	0.0150

Short Circuit Ratio: 0.37	Stator Resistance = 0.0095 Ohms	Field Resistance = 1.0266 Ohms
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Voltage Regulation		Generator Excitation			
Voltage level adjustment: +/-	5.0%	No Load	Full Load, (rated) pf		
Voltage regulation, steady state: +/-	0.5%		Series	Parallel	
Voltage regulation with 3% speed change: +/-	0.5%	Excitation voltage:	8.67 Volts	39.93 Volts	Volts
Waveform deviation line - line, no load: less than	2.0%	Excitation current	0.85 Amps	3.22 Amps	Amps
Telephone influence factor: less than	50				

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Generator Mechanical Information

Center of Gravity		
Dimension X	-514.0 mm	-20.2 IN.
Dimension Y	0.0 mm	0.0 IN.
Dimension Z	0.0 mm	0.0 IN.

- "X" is measured from driven end of generator and parallel to rotor. Towards engine fan is positive. See General Information for details
- "Y" is measured vertically from rotor center line. Up is positive.
- "Z" is measured to left and right of rotor center line. To the right is positive.

Generator WT = 1309 kg * Rotor WT = 514 kg * Stator WT = 795 kg
 2,886 LB 1,133 LB 1,753 LB

Rotor Balance = 0.0508 mm deflection PTP
 Overspeed Capacity = 125% of synchronous speed

Generator Torsional Data

J1 = Coupling and Fan

K1 = Shaft Stiffness between J1 + J2 (Diameter 1)

J2 = Rotor

TOTAL J = J1 + J2 + J3

J3 = Exciter End

K2 = Shaft Stiffness between J2 + J3 (Diameter 2)

J1	K1	Min Shaft Dia 1	J2	K2	Min Shaft Dia 2	J3
17.1 LB IN. s ²	47.9 MLB IN./rad	4.5 IN.	53.1 LB IN. s ²	38.5 MLB IN./rad	4.3 IN.	1.5 LB IN. s ²
1.93 N m s ²	5.41 MN m/rad	115.0 mm	6.0 N m s ²	4.35 MN m/rad	110.0 mm	0.17 N m s ²
			Total J			
			71.7 LB IN. s ²			
			8.1 N m s ²			

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Generator Cooling Requirements - Temperature - Insulation Data		
Cooling Requirements:		Temperature Data: (Ambient 40 °C)
Heat Dissipated: 25.5 kW		Stator Rise: 105.0 °C
Air Flow: 66.0 m ³ /min		Rotor Rise: 105.0 °C
Insulation Class: H		
Insulation Reg. as shipped: 100.0 MΩ minimum at 40 °C		
Thermal Limits of Generator		
Frequency:	60 Hz	
Line to Line Voltage:	480 Volts	
B BR 80/40	552.0 kVA	
F BR -105/40	627.9 kVA	
H BR - 125/40	690.0 kVA	
F PR - 130/40	690.0 kVA	
H PR - 150/40	731.4 kVA	
H PR27 - 163/27	759.0 kVA	

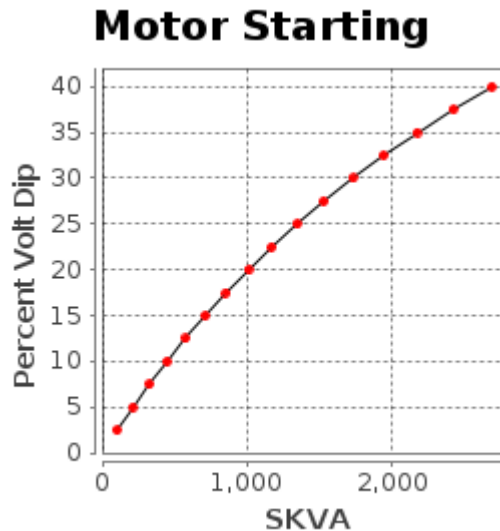
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Starting Capability & Current Decrement Motor Starting Capability (0.6 pf)

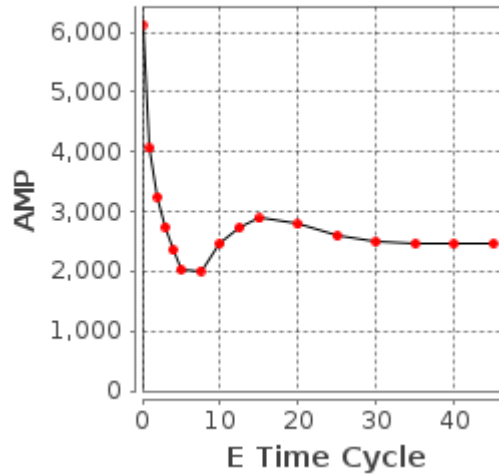
SKVA	Percent Volt Dip
103	2.5
212	5.0
327	7.5
448	10.0
576	12.5
712	15.0
856	17.5
1,009	20.0
1,171	22.5
1,345	25.0
1,530	27.5
1,729	30.0
1,942	32.5
2,172	35.0
2,421	37.5
2,689	40.0



Current Decrement Data

E Time Cycle	AMP
0.0	6,130
1.0	4,058
2.0	3,248
3.0	2,745
4.0	2,355
5.0	2,031
7.5	2,008
10.0	2,466
12.5	2,734
15.0	2,884
20.0	2,791
25.0	2,597
30.0	2,498
35.0	2,466
40.0	2,462
45.0	2,467

Current Decrement



Instantaneous 3 Phase Fault Current: 6130 Amps

Instantaneous Line - Line Fault Current: 4924 Amps

Instantaneous Line - Neutral Fault Current: 8233 Amps

Selected Model

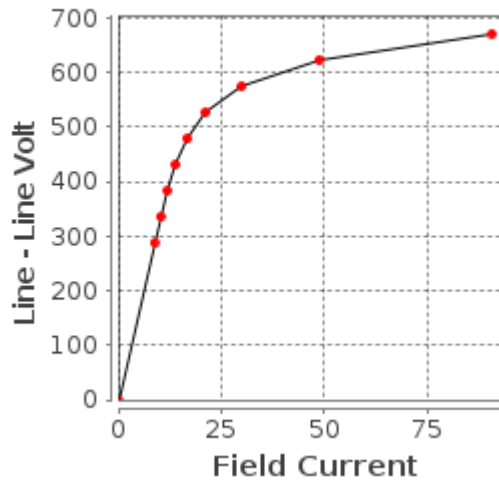
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**Generator Output Characteristic Curves
Open Circuit Curve**

Open Circuit

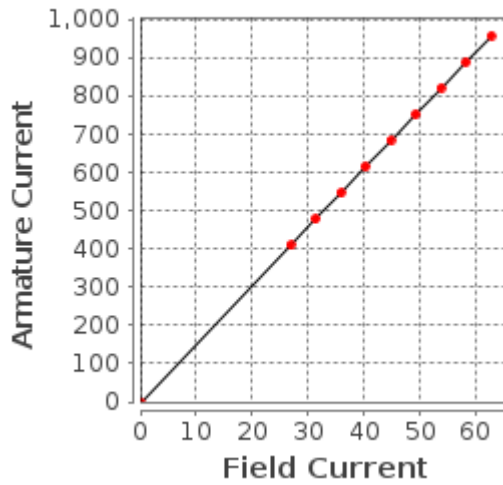
Field Current	Line - Line Volt
0.0	0
8.8	288
10.3	336
12.0	384
14.0	432
16.8	480
21.3	528
30.1	576
48.8	624
90.8	672



Short Circuit Curve

Short Circuit

Field Current	Armature Current
0.0	0
26.9	410
31.4	479
35.9	547
40.3	616
44.8	684
49.3	753
53.8	821
58.3	889
62.8	958



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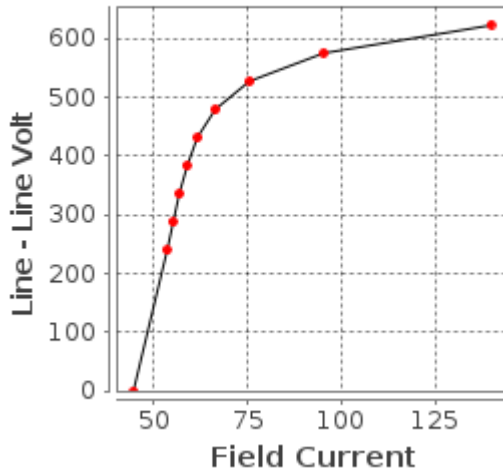
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**Generator Output Characteristic Curves
Zero Power Factor Curve**

Zero Power

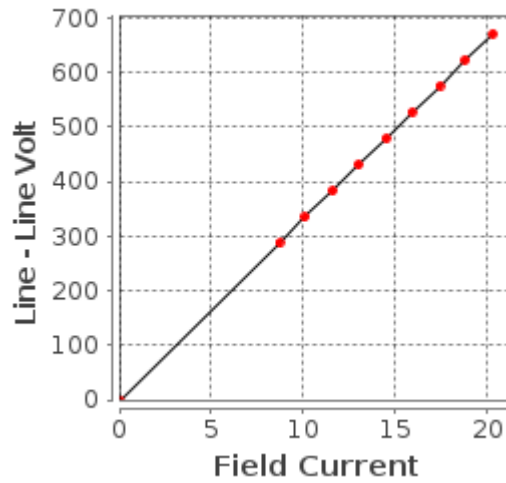
Field Current	Line - Line Volt
44.8	0
53.6	240
55.2	288
56.9	336
58.9	384
61.8	432
66.5	480
75.7	528
95.4	576
139.8	624



Air Gap Curve

Air Gap

Field Current	Line - Line Volt
0.0	0
8.7	288
10.1	336
11.6	384
13.0	432
14.5	480
15.9	528
17.4	576
18.8	624
20.3	672

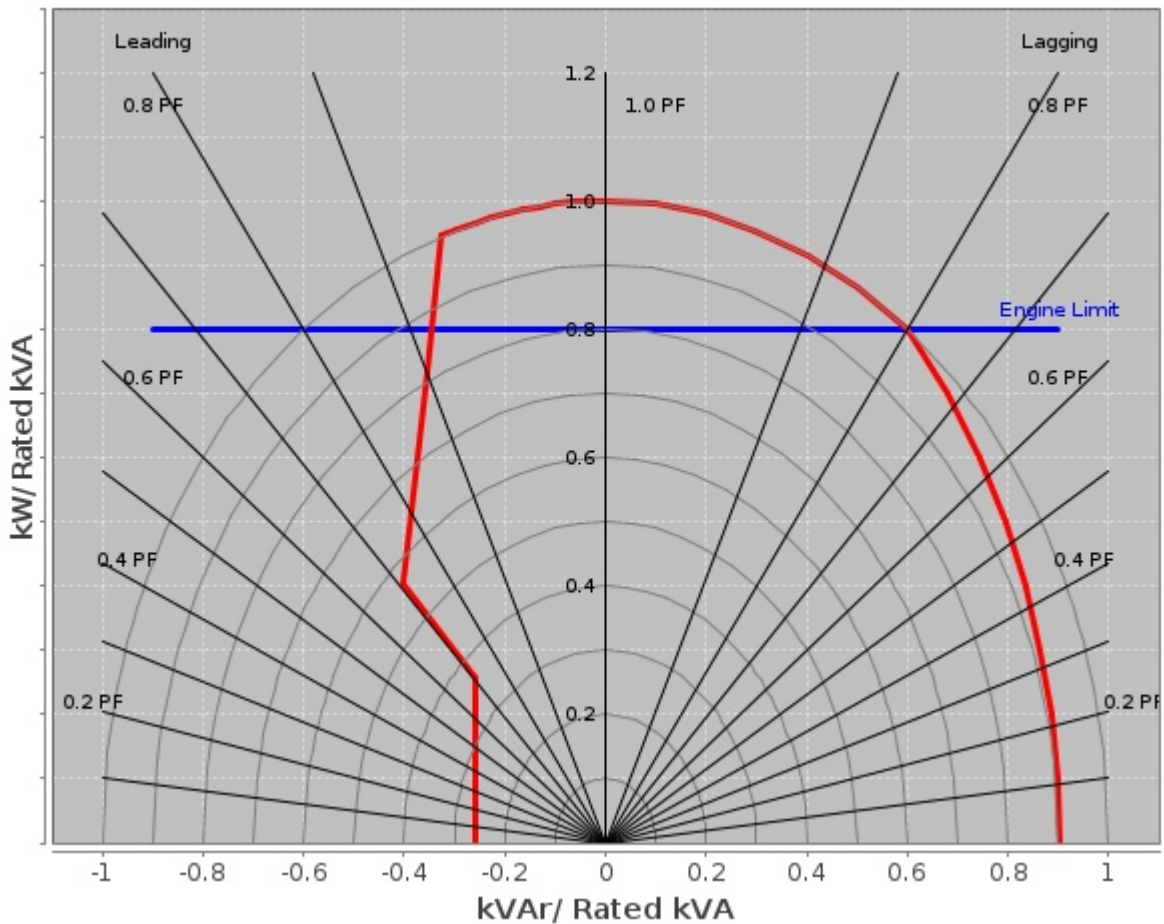


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Reactive Capability Curve Operating Chart



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General Information

GENERATOR INFORMATION (DM7809)

Coastal Insulation Protection - System 4

1.Motor Starting

Motor starting curves are obtained in accordance with IEC60034, and are displayed at 0.6 power factor.

2.Voltage Dip

Prediction of the generator synchronous voltage dip can be made by consulting the plot for the voltage dip value that corresponds to the desired motor starting kVA value.

3.Definitions

A)Generator Keys

Frame: abbreviation of generator frame size

Freq: frequency in hertz.

PP/SB: prime/standby duty respectively

Volts: line - line terminal voltage

kW: rating in electrical kilo watts

Model: engine sales model

B)Generator Temperature Rise

The indicated temperature rises are the IEC/NEMA limits for standby or prime power applications. The quoted rise figures are maximum limits only and are not necessarily indicative of the actual temperature rise of a given machine winding.

C)Centre of Gravity

The specified centre of gravity is for the generator only. For single bearing, and two bearing close coupled generators, the center of gravity is measured from the generator/engine flywheel-housing interface and from the centreline of the rotor shaft.

For two bearing, standalone generators, the center of gravity is measured from the end of the rotor shaft and from the centerline of the rotor shaft.

D)Generator Current Decrement Curves

The generator current decrement curve indicates the generator armature current arising from a symmetrical three-phase fault at the generator terminals. Generators equipped with AREP or PMG excitation systems will sustain 300% of rated armature current for 10 seconds.

E)Generator Efficiency Curves

The efficiency curve is displayed for the generator only under the given conditions of rating, voltage, frequency and power factor. This is not the overall generating set efficiency curve.

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