

GENERATOR DATA

AUGUST 28, 2020

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Selected Model

Engine: C13 **Generator Frame:** LC6134B **Genset Rating (kW):** 320.0 **Line Voltage:** 400
Fuel: Diesel **Generator Arrangement:** 3969606 **Genset Rating (kVA):** 400.0 **Phase Voltage:** 230
Frequency: 50 **Excitation Type:** Permanent Magnet **Pwr. Factor:** 0.8 **Rated Current:** 577.4
Duty: STANDBY **Connection:** SERIES STAR **Application:** EPG **Status:** Current

Version: 41764 /42159 /41291 /17226

Spec Information

Generator Specification			Generator Efficiency		
Frame: LC6134B	Type: LC	No. of Bearings: 1	Per Unit Load	kW	Efficiency %
Winding Type: RANDOM WOUND		Flywheel: 14.0	0.25	80.0	92.1
Connection: SERIES STAR		Housing: 1	0.5	160.0	93.9
Phases: 3		No. of Leads: 12	0.75	240.0	93.7
Poles: 4		Wires per Lead: 2	1.0	320.0	93.1
Sync Speed: 1500		Generator Pitch: 0.6667			

Reactances	Per Unit	Ohms
SUBTRANSIENT - DIRECT AXIS X'' _d	0.1480	0.0592
SUBTRANSIENT - QUADRATURE AXIS X'' _q	0.2005	0.0802
TRANSIENT - SATURATED X' _d	0.2115	0.0846
SYNCHRONOUS - DIRECT AXIS X _d	3.6750	1.4700
SYNCHRONOUS - QUADRATURE AXIS X _q	2.2050	0.8820
NEGATIVE SEQUENCE X ₂	0.1738	0.0695
ZERO SEQUENCE X ₀	0.0105	0.0042

Time Constants	Seconds
OPEN CIRCUIT TRANSIENT - DIRECT AXIS T' _{d0}	1.7380
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}	0.1100
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: 0.34	Stator Resistance = 0.0163 Ohms	Field Resistance = 0.768 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:	17.21 Volts	87.37 Volts Volts
Waveform deviation line - line, no load: less than	2.0%	Excitation current	1.0 Amps	4.18 Amps Amps
Telephone influence factor: less than	50			

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Generator Mechanical Information

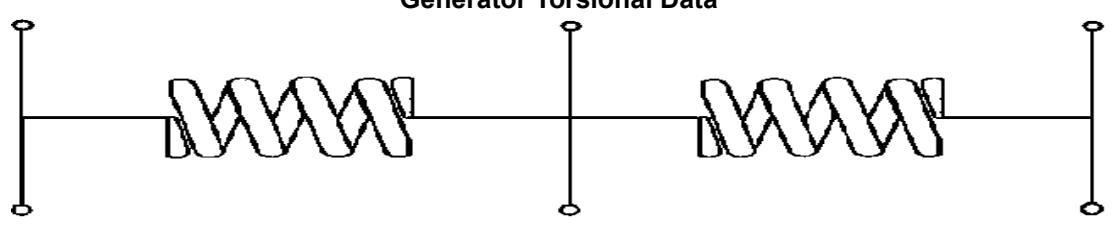
Center of Gravity		
Dimension X	-431.0 mm	-17.0 IN.
Dimension Y	0.0 mm	0.0 IN.
Dimension Z	0.0 mm	0.0 IN.

- "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 = 996 kg	* Rotor WT = 387 kg	* Stator WT = 609 kg
2,196 LB	853 LB	1,343 LB

Rotor Balance = 0.0508 mm deflection PTP
Overspeed Capacity = 150% of synchronous speed

Generator Torsional Data



J1 = Coupling and Fan **J2 = Rotor** **J3 = Exciter End**

TOTAL J = J1 + J2 + J3

K1 = Shaft Stiffness between J1 + J2 (Diameter 1) **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	55.5 MLB IN./rad	4.5 IN.	35.4 LB IN. s ²	40.8 MLB IN./rad	4.3 IN.	1.5 LB IN. s ²
1.93 N m s ²	6.27 MN m/rad	115.0 mm	4.0 N m s ²	4.61 MN m/rad	110.0 mm	0.17 N m s ²
			Total J			
			54.0 LB IN. s ²			
			6.1 N m s ²			

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Generator Cooling Requirements - Temperature - Insulation Data			
Cooling Requirements:		Temperature Data: (Ambient 40 °C)	
Heat Dissipated: 23.7 kW		Stator Rise:	150.0 °C
Air Flow: 54.0 m ³ /min		Rotor Rise:	150.0 °C
Insulation Class: H			
Insulation Reg. as shipped: 100.0 MΩ minimum at 40 °C			
Thermal Limits of Generator			
Frequency:	50 Hz		
Line to Line Voltage:	400 Volts		
B BR 80/40	304.0 kVA		
F BR -105/40	345.8 kVA		
H BR - 125/40	380.0 kVA		
F PR - 130/40	380.0 kVA		
H PR - 150/40	402.8 kVA		
H PR27 - 163/27	418.0 kVA		

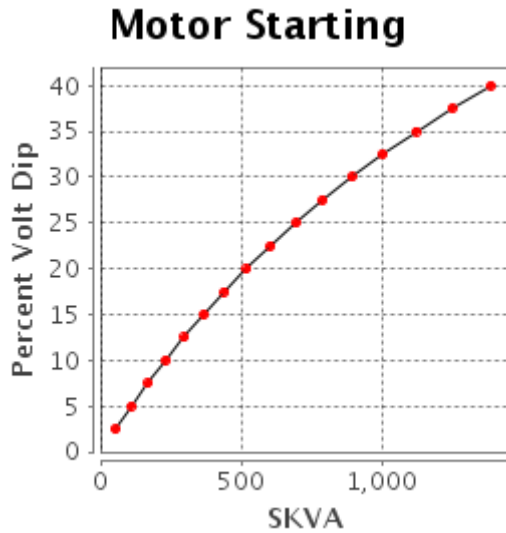
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**Starting Capability & Current Decrement
Motor Starting Capability (0.6 pf)**

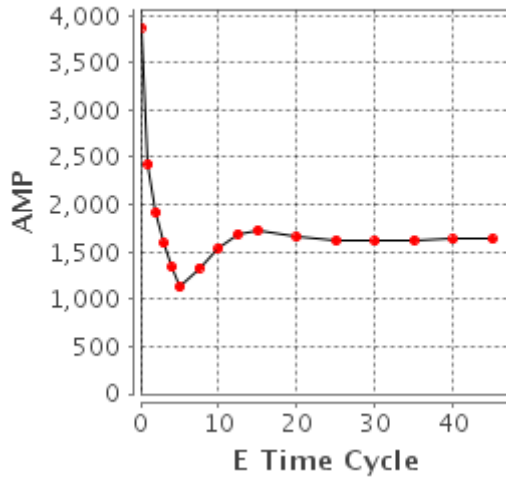
SKVA	Percent Volt Dip
53	2.5
110	5.0
169	7.5
232	10.0
298	12.5
368	15.0
442	17.5
521	20.0
606	22.5
695	25.0
791	27.5
894	30.0
1,004	32.5
1,123	35.0
1,251	37.5
1,390	40.0



Current Decrement Data

E Time Cycle	AMP
0.0	3,873
1.0	2,429
2.0	1,916
3.0	1,590
4.0	1,336
5.0	1,129
7.5	1,331
10.0	1,543
12.5	1,689
15.0	1,730
20.0	1,658
25.0	1,619
30.0	1,615
35.0	1,623
40.0	1,631
45.0	1,637

Current Decrement



Instantaneous 3 Phase Fault Current: 3873 Amps

Instantaneous Line - Line Fault Current: 3086 Amps

Instantaneous Line - Neutral Fault Current: 5176 Amps

Selected Model

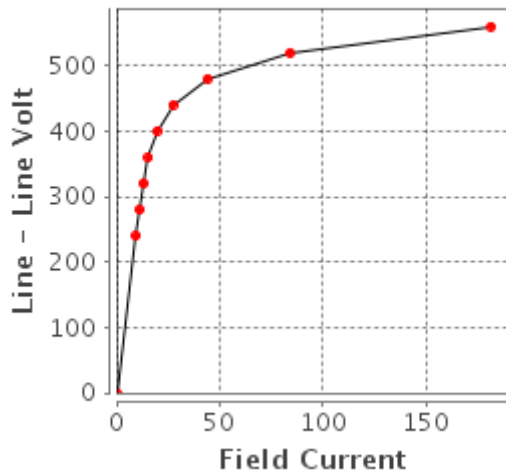
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**Generator Output Characteristic Curves
Open Circuit Curve**

Open Circuit

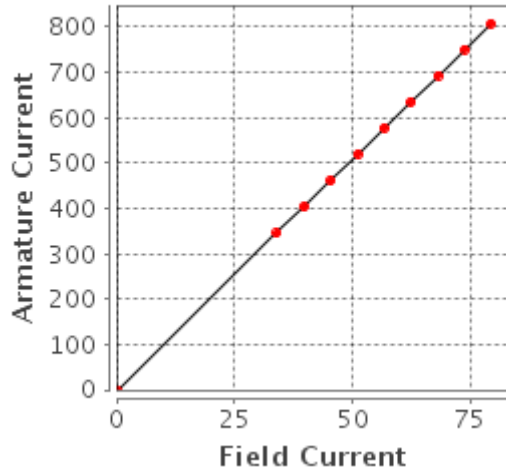
Field Current	Line - Line Volt
0.0	0
9.4	240
11.1	280
13.0	320
15.5	360
19.6	400
27.3	440
44.2	480
84.2	520
181.6	560



Short Circuit Curve

Short Circuit

Field Current	Armature Current
0.0	0
34.0	346
39.7	404
45.4	462
51.1	520
56.7	577
62.4	635
68.1	693
73.8	751
79.4	808



Selected Model

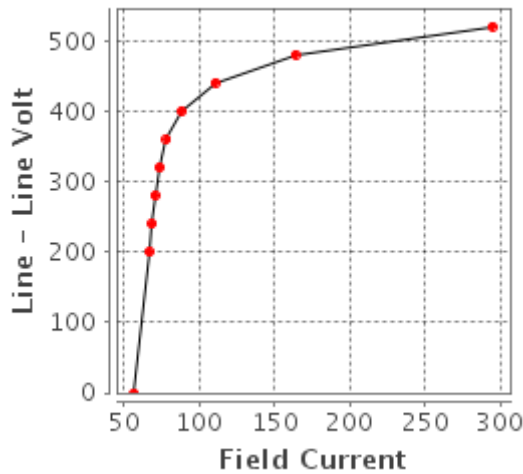
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Generator Output Characteristic Curves
Zero Power Factor Curve

Zero Power

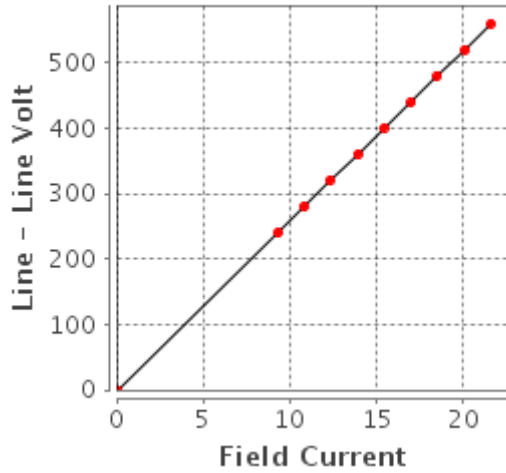
Field Current	Line - Line Volt
56.7	0
66.5	200
68.3	240
70.4	280
73.3	320
78.1	360
88.0	400
110.3	440
163.6	480
294.4	520



Air Gap Curve

Air Gap

Field Current	Line - Line Volt
0.0	0
9.3	240
10.8	280
12.3	320
13.9	360
15.4	400
17.0	440
18.5	480
20.1	520
21.6	560

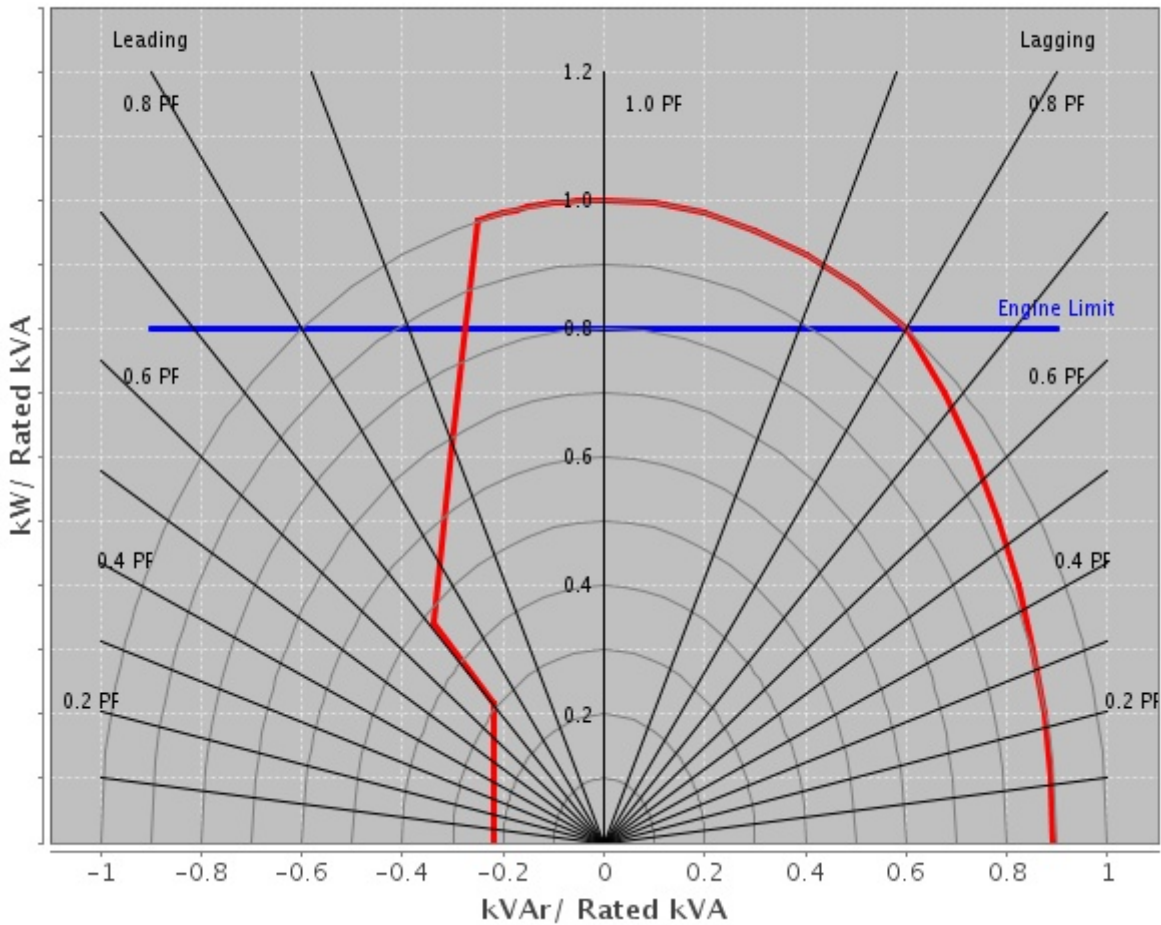


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Reactive Capability Curve Operating Chart



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General Information

GENERATOR INFORMATION (DM7900)

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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