

GENERATOR DATA

JUNE 13, 2017

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Selected Model			
Engine: 3516	Generator Frame: 806	Genset Rating (kW): 1500.0	Line Voltage: 480
Fuel: Diesel	Generator Arrangement: 613093	Genset Rating (kVA): 1875.0	Phase Voltage: 277
Frequency: 60	Excitation Type: Permanent Magnet	Pwr. Factor: 0.8	Rated Current: 2255.3
Duty: STANDBY	Connection: SERIES STAR	Application: EPG	Status: Current

Version: 41205 /40310 /38285 /630

Generator Specification			Generator Efficiency		
Frame: 806	Type: SR4	No. of Bearings: 1	Per Unit Load	kW	Efficiency %
Winding Type: FORM WOUND	Flywheel: 521.0		0.25	375.0	93.3
Connection: SERIES STAR	Housing: 00		0.5	750.0	95.7
Phases: 3	No. of Leads: 6		0.75	1125.0	96.1
Poles: 4	Wires per Lead: 8		1.0	1500.0	96.1
Sync Speed: 1800	Generator Pitch: 0.6667				

Reactances	Per Unit	Ohms
SUBTRANSIENT - DIRECT AXIS X _d	0.1636	0.0201
SUBTRANSIENT - QUADRATURE AXIS X _q	0.1538	0.0189
TRANSIENT - SATURATED X _d	0.2531	0.0311
SYNCHRONOUS - DIRECT AXIS X _d	3.0811	0.3786
SYNCHRONOUS - QUADRATURE AXIS X _q	1.4811	0.1820
NEGATIVE SEQUENCE X ₂	0.1587	0.0195
ZERO SEQUENCE X ₀	0.0073	0.0009

Time Constants	Seconds
OPEN CIRCUIT TRANSIENT - DIRECT AXIS T _{do}	4.3210
SHORT CIRCUIT TRANSIENT - DIRECT AXIS T _d	0.3545
OPEN CIRCUIT SUBTRANSIENT - DIRECT AXIS T _{do}	0.0076
SHORT CIRCUIT SUBTRANSIENT - DIRECT AXIS T _d	0.0063
OPEN CIRCUIT SUBTRANSIENT - QUADRATURE AXIS T _{qo}	0.0058
SHORT CIRCUIT SUBTRANSIENT - QUADRATURE AXIS T _q	0.0050
EXCITER TIME CONSTANT T _c	0.1120
ARMATURE SHORT CIRCUIT T _a	0.0379

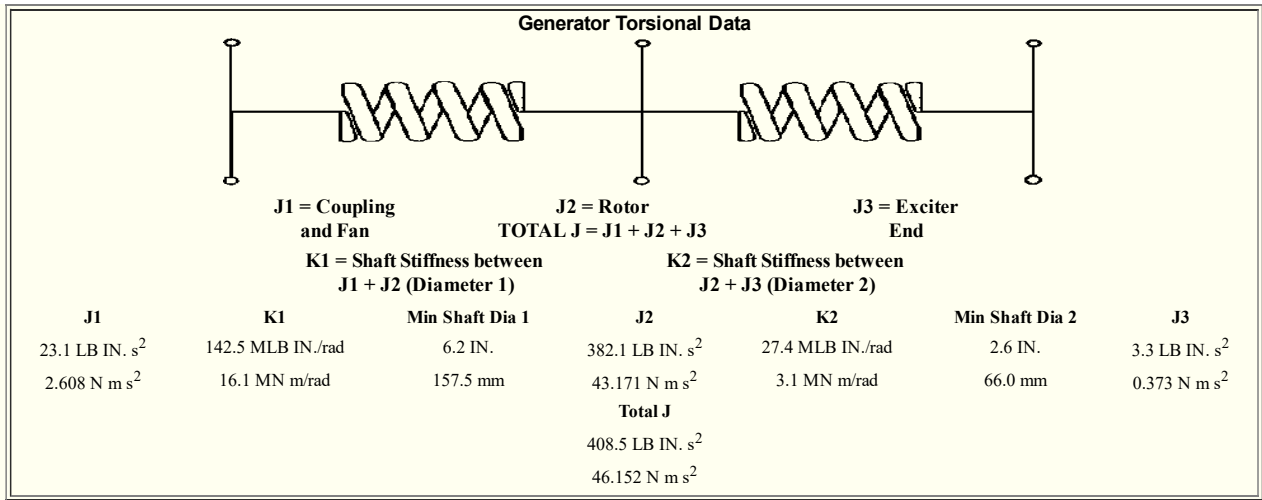
Short Circuit Ratio: 0.41	Stator Resistance = 0.0025 Ohms	Field Resistance = 0.765 Ohms
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Voltage Regulation		Generator Excitation		
Voltage level adjustment: +/-	5.0%	No Load	Full Load, (rated) pf	
Voltage regulation, steady state: +/-	0.5%		Series	Parallel
Voltage regulation with 3% speed change: +/-	0.5%	Excitation voltage:	9.36 Volts	45.59 Volts
Waveform deviation line - line, no load: less than	5.0%	Excitation current	2.45 Amps	9.82 Amps
Telephone influence factor: less than	50			

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Generator Mechanical Information		
Center of Gravity		
Dimension X	-881.4 mm	-34.7 IN.
Dimension Y	0.0 mm	0.0 IN.
Dimension Z	0.0 mm	0.0 IN.
<ul style="list-style-type: none"> "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 = 3427 kg * Rotor WT = 1315 kg * Stator WT = 2112 kg 7,555 LB 2,899 LB 4,656 LB		
Rotor Balance = 0.0508 mm deflection PTP Overspeed Capacity = 150% of synchronous speed		



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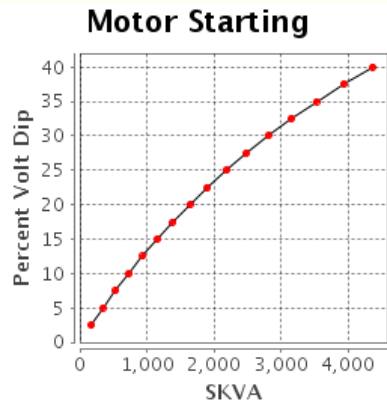
Generator Cooling Requirements - Temperature - Insulation Data	
Cooling Requirements:	Temperature Data: (Ambient 40 °C)
Heat Dissipated: 60.9 kW	Stator Rise: 130.0 °C
Air Flow: 0.0 m ³ /min	Rotor Rise: 130.0 °C
Insulation Class: H	
Insulation Reg. as shipped: 100.0 MΩ minimum at 40 °C	
Thermal Limits of Generator	
Frequency:	60 Hz
Line to Line Voltage:	480 Volts
B BR 80/40	1411.0 kVA
F BR -105/40	1700.0 kVA
H BR - 125/40	1875.0 kVA
F PR - 130/40	1875.0 kVA

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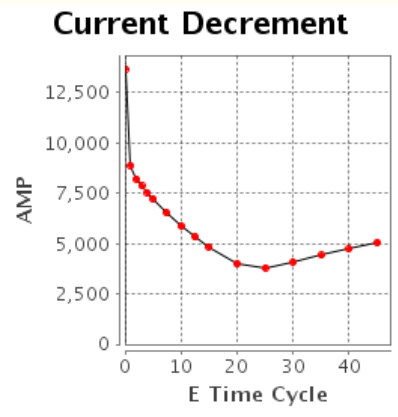
Starting Capability & Current Decrement Motor Starting Capability (0.4 pf)

SKVA	Percent Volt Dip
168	2.5
344	5.0
530	7.5
727	10.0
935	12.5
1,155	15.0
1,388	17.5
1,636	20.0
1,899	22.5
2,181	25.0
2,482	27.5
2,804	30.0
3,150	32.5
3,523	35.0
3,926	37.5
4,362	40.0



Current Decrement Data

E Time Cycle	AMP
0.0	13,683
1.0	8,898
2.0	8,221
3.0	7,860
4.0	7,536
5.0	7,227
7.5	6,518
10.0	5,887
12.5	5,327
15.0	4,828
20.0	3,991
25.0	3,801
30.0	4,083
35.0	4,419
40.0	4,743
45.0	5,048



Instantaneous 3 Phase Fault Current: 13683 Amps

Instantaneous Line - Line Fault Current: 12023 Amps

Instantaneous Line - Neutral Fault Current: 20367 Amps

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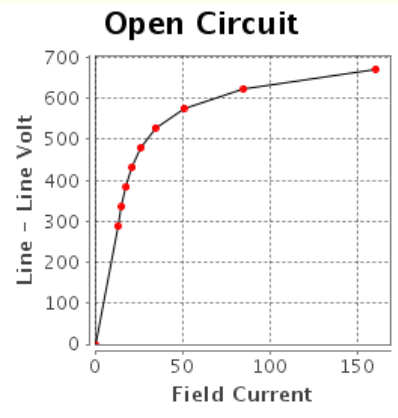
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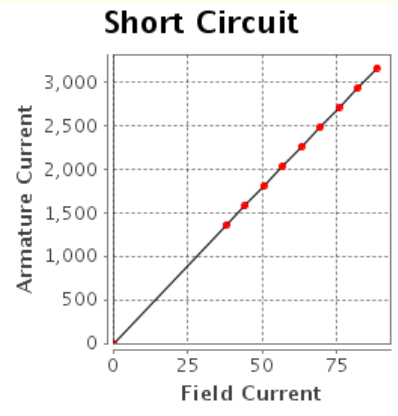
Generator Output Characteristic Curves
 Open Circuit Curve

Field Current	Line - Line Volt
0.0	0
13.0	288
15.4	336
18.0	384
21.4	432
26.2	480
34.5	528
50.8	576
85.1	624
160.5	672



Short Circuit Curve

Field Current	Armature Current
0.0	0
37.9	1,353
44.3	1,579
50.6	1,804
56.9	2,030
63.2	2,255
69.5	2,481
75.9	2,706
82.2	2,932
88.5	3,157



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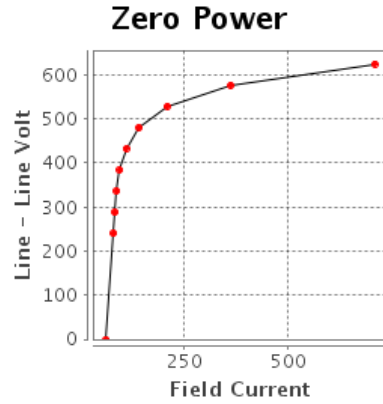
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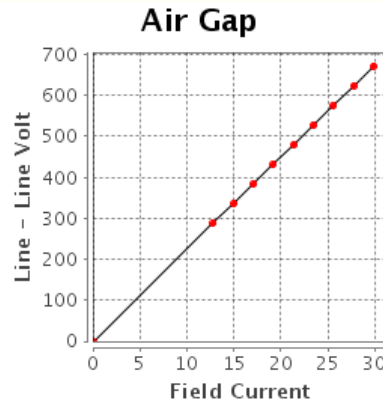
Zero Power Factor Curve

Field Current	Line - Line Volt
63.2	0
80.1	240
83.3	288
88.0	336
95.7	384
110.5	432
141.5	480
209.5	528
362.0	576
706.7	624



Air Gap Curve

Field Current	Line - Line Volt
0.0	0
12.8	288
15.0	336
17.1	384
19.2	432
21.4	480
23.5	528
25.6	576
27.8	624
29.9	672



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Reactive Capability Curve

[Click to view Chart](#)

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General Information

DM7823 Caterpillar SR4 Generators (50 Hz, 60 Hz)
 Data for 360, 440, 580, 680 and 800 frames Caterpillar SR4 generators built by Leroy Somer - USA (and predecessors).

Refer to DM7821 for explanation of all generator data in Technical Marketing Information (TMI) except generator efficiency for which the explanation is given below.

GENERATOR EFFICIENCY

Generator efficiency is the percentage of engine flywheel (or other prime mover) power that is converted into electrical output. The generator efficiency shown is calculated by the summation of all losses method, and is determined in accordance with the IEC Standard 60034. The efficiency considers only the generator. There is no consideration of engine or parasitic losses here.

