

GENERATOR DATA

(AT400240)-ENGINE (BAA126422A)-CEM

NOVEMBER 08, 2022

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Selected Model

Engine: 3516 **Generator Frame:** 1622 **Genset Rating (kW):** 1750.0 **Line Voltage:** 480
Fuel: Diesel **Generator Arrangement:** 2523932 **Genset Rating (kVA):** 2187.0 **Phase Voltage:** 277
Frequency: 60 **Excitation Type:** Permanent Magnet **Pwr. Factor:** 0.8 **Rated Current:** 2630.6
Duty: STANDBY **Connection:** SERIES STAR **Application:** EPG **Status:** Current

Version: 41205 /40304 /38360 /4104

Spec Information

Generator Specification			Generator Efficiency		
Frame: 1622	Type: SR5	No. of Bearings: 1	Per Unit Load	kW	Efficiency %
Winding Type: FORM WOUND Flywheel: 21.0			0.25	437.5	91.3
Connection: SERIES STAR Housing: 00			0.5	875.0	94.3
Phases: 3 No. of Leads: 6			0.75	1312.5	94.8
Poles: 4 Wires per Lead: 4			1.0	1750.0	94.7
Sync Speed: 1800 Generator Pitch: 0.6667					

Reactances	Per Unit	Ohms
SUBTRANSIENT - DIRECT AXIS X'_d	0.1405	0.0148
SUBTRANSIENT - QUADRATURE AXIS X''_q	0.1756	0.0185
TRANSIENT - SATURATED X'_d	0.2317	0.0244
SYNCHRONOUS - DIRECT AXIS X_d	2.3698	0.2496
SYNCHRONOUS - QUADRATURE AXIS X_q	1.4223	0.1498
NEGATIVE SEQUENCE X_2	0.1576	0.0166
ZERO SEQUENCE X_0	0.0332	0.0035

Time Constants	Seconds
OPEN CIRCUIT TRANSIENT - DIRECT AXIS T'_{d0}	1.6600
SHORT CIRCUIT TRANSIENT - DIRECT AXIS T'_d	0.1910
OPEN CIRCUIT SUBTRANSIENT - DIRECT AXIS T''_{d0}	0.0200
SHORT CIRCUIT SUBTRANSIENT - DIRECT AXIS T''_d	0.0120
OPEN CIRCUIT SUBTRANSIENT - QUADRATURE AXIS T''_{q0}	0.0760
SHORT CIRCUIT SUBTRANSIENT - QUADRATURE AXIS T''_q	0.0110
EXCITER TIME CONSTANT T_e	0.0940
ARMATURE SHORT CIRCUIT T_a	0.0300

Short Circuit Ratio: 0.49	Stator Resistance = 0.0024 Ohms	Field Resistance = 0.42 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:	16.0 Volts	59.56 Volts Volts
Waveform deviation line - line, no load: less than	2.0%	Excitation current	1.6 Amps	4.9 Amps Amps
Telephone influence factor: less than	50			

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Generator Mechanical Information

Center of Gravity		
Dimension X	-736.0 mm	-29.0 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 = 3545 kg	* Rotor WT = 1404 kg	* Stator WT = 1915 kg
7,815 LB	3,095 LB	4,222 LB

Rotor Balance = 0.0508 mm deflection PTP
Overspeed Capacity = 125% 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
62.4 LB IN. s ²	279.7 MLB IN./rad	8.9 IN.	284.1 LB IN. s ²	135.4 MLB IN./rad	5.5 IN.	8.4 LB IN. s ²
7.05 N m s ²	31.6 MN m/rad	225.0 mm	32.1 N m s ²	15.3 MN m/rad	140.0 mm	0.95 N m s ²
			Total J			
			354.9 LB IN. s ²			
			40.1 N m s ²			

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**Generator Cooling Requirements -
Temperature - Insulation Data**

Cooling Requirements:		Temperature Data: (Ambient 40 °C)	
Heat Dissipated: 97.9 kW		Stator Rise:	125.0 °C
Air Flow: 168.0 m ³ /min		Rotor Rise:	125.0 °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	1750.0 kVA
F BR -105/40	1991.0 kVA
H BR - 125/40	2188.0 kVA
F PR - 130/40	2188.0 kVA
H PR - 150/40	2319.0 kVA
H PR27 - 163/27	2406.8 kVA

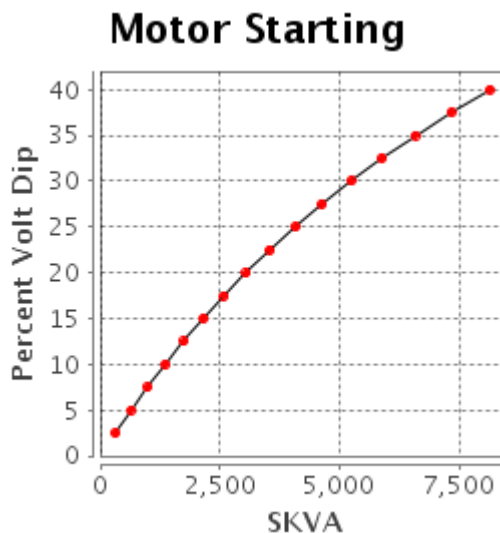
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**Starting Capability & Current Decrement
Motor Starting Capability (0.4 pf)**

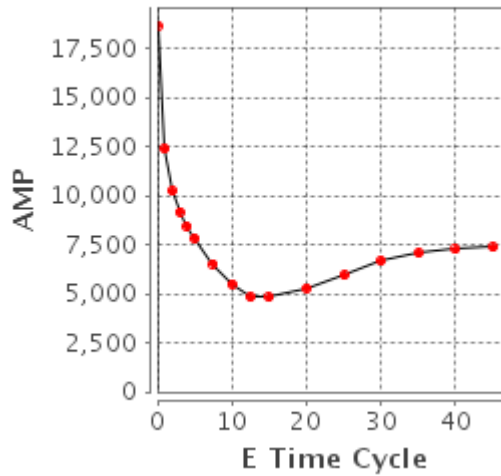
SKVA	Percent Volt Dip
313	2.5
643	5.0
991	7.5
1,358	10.0
1,746	12.5
2,157	15.0
2,593	17.5
3,056	20.0
3,549	22.5
4,075	25.0
4,637	27.5
5,239	30.0
5,886	32.5
6,583	35.0
7,335	37.5
8,150	40.0



Current Decrement Data

E Time Cycle	AMP
0.0	18,665
1.0	12,379
2.0	10,221
3.0	9,168
4.0	8,433
5.0	7,817
7.5	6,532
10.0	5,504
12.5	4,828
15.0	4,806
20.0	5,276
25.0	5,939
30.0	6,669
35.0	7,073
40.0	7,252
45.0	7,352

Current Decrement



Instantaneous 3 Phase Fault Current: 18665 Amps

Instantaneous Line - Line Fault Current: 15235 Amps

Instantaneous Line - Neutral Fault Current: 23750 Amps

Selected Model

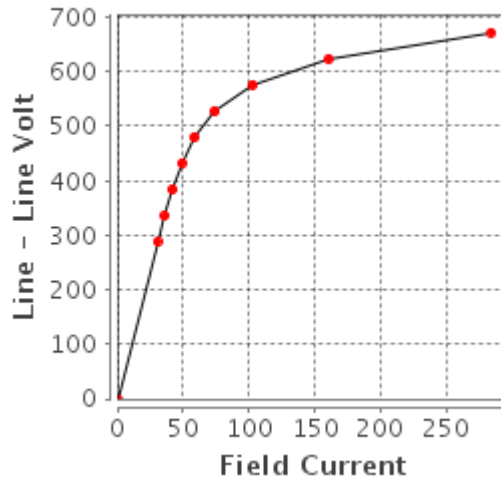
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**Generator Output Characteristic Curves
Open Circuit Curve**

Open Circuit

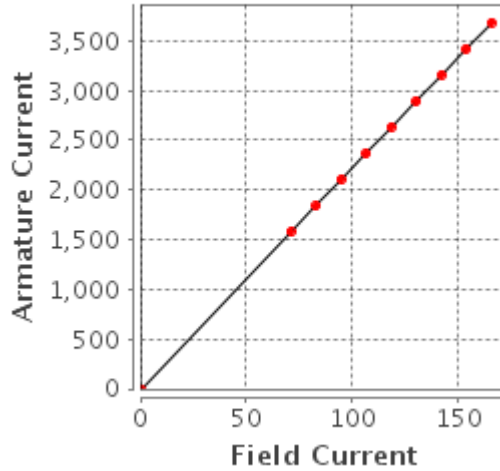
Field Current	Line - Line Volt
0.0	0
30.5	288
35.9	336
41.9	384
49.0	432
58.7	480
74.3	528
103.0	576
160.8	624
284.2	672



Short Circuit Curve

Short Circuit

Field Current	Armature Current
0.0	0
71.0	1,579
82.9	1,842
94.7	2,105
106.6	2,368
118.4	2,631
130.3	2,894
142.1	3,157
153.9	3,420
165.8	3,684



Selected Model

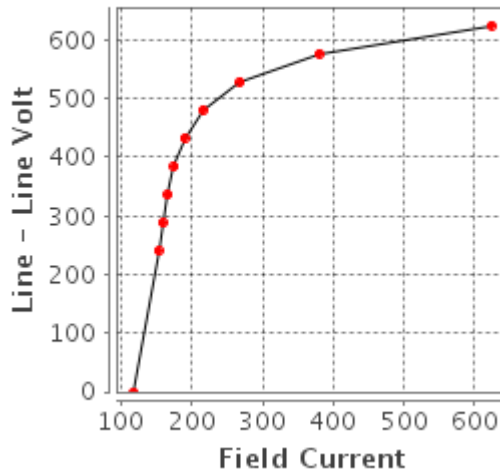
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**Generator Output Characteristic Curves
Zero Power Factor Curve**

Zero Power

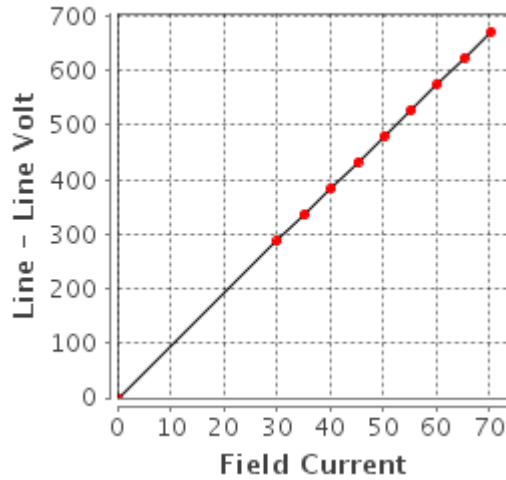
Field Current	Line - Line Volt
118.4	0
152.7	240
158.6	288
165.7	336
175.0	384
189.5	432
215.8	480
268.4	528
379.8	576
623.1	624



Air Gap Curve

Air Gap

Field Current	Line - Line Volt
0.0	0
30.1	288
35.1	336
40.2	384
45.2	432
50.2	480
55.2	528
60.2	576
65.3	624
70.3	672

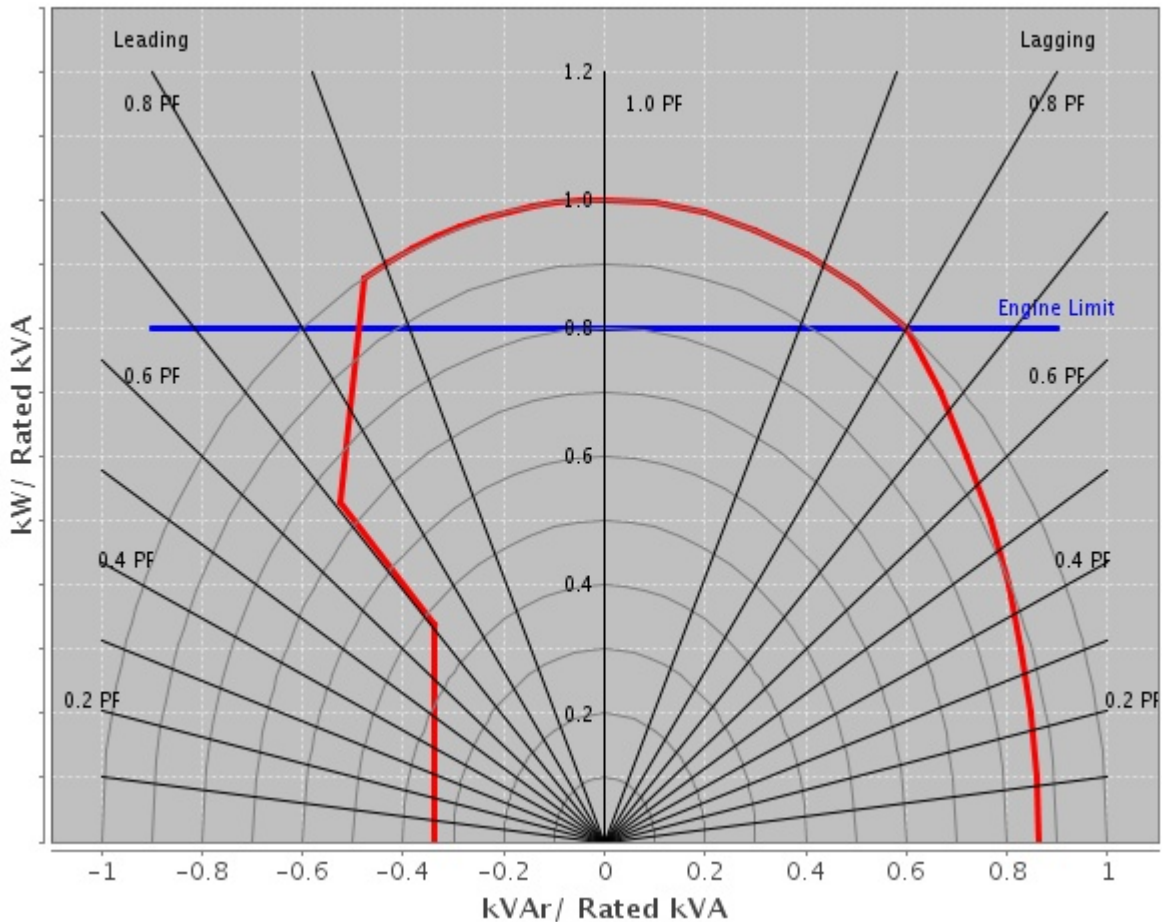


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Reactive Capability Curve Operating Chart



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General Information

DM7825 Caterpillar SR5 Generators (50 Hz, 60 Hz)
Data for 1400, 1600, 1700, 1800 and 1900 frames Caterpillar SR5
generators built by Leroy Somer - USA and Leroy Somer France.

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.

Refer to DM7829 for low and medium voltage protective setting values a
nd limits.

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