

GENERATOR DATA

(AT400240)-ENGINE (BAA126422A)-CEM

NOVEMBER 09, 2022

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Selected Model

Engine: 3516 **Generator Frame:** 1647 **Genset Rating (kW):** 2250.0 **Line Voltage:** 480
Fuel: Diesel **Generator Arrangement:** 2523862 **Genset Rating (kVA):** 2812.0 **Phase Voltage:** 277
Frequency: 60 **Excitation Type:** Internal Excitation **Pwr. Factor:** 0.8 **Rated Current:** 3382.3
Duty: STANDBY **Connection:** SERIES STAR **Application:** EPG **Status:** Current

Version: 41205 /40931 /38910 /6326

Spec Information

Generator Specification		Generator Efficiency			
Frame: 1647	Type: SR5	No. of Bearings: 1	Per Unit Load	kW	Efficiency %
Winding Type: RANDOM WOUND	Flywheel: 21.0		0.25	562.5	93.3
Connection: SERIES STAR	Housing: 00		0.5	1125.0	95.5
Phases: 3	No. of Leads: 6		0.75	1687.5	95.8
Poles: 4	Wires per Lead: 4		1.0	2250.0	95.7
Sync Speed: 1800	Generator Pitch: 0.6667				

Reactances	Per Unit	Ohms
SUBTRANSIENT - DIRECT AXIS X'_d	0.1343	0.0110
SUBTRANSIENT - QUADRATURE AXIS X''_q	0.1685	0.0138
TRANSIENT - SATURATED X'_d	0.2588	0.0212
SYNCHRONOUS - DIRECT AXIS X_d	3.4863	0.2856
SYNCHRONOUS - QUADRATURE AXIS X_q	2.0923	0.1714
NEGATIVE SEQUENCE X_2	0.1526	0.0125
ZERO SEQUENCE X_0	0.0317	0.0026

Time Constants	Seconds
OPEN CIRCUIT TRANSIENT - DIRECT AXIS T'_{d0}	2.9100
SHORT CIRCUIT TRANSIENT - DIRECT AXIS T'_d	0.2540
OPEN CIRCUIT SUBTRANSIENT - DIRECT AXIS T''_{d0}	0.0460
SHORT CIRCUIT SUBTRANSIENT - DIRECT AXIS T''_d	0.0240
OPEN CIRCUIT SUBTRANSIENT - QUADRATURE AXIS T''_{q0}	0.2320
SHORT CIRCUIT SUBTRANSIENT - QUADRATURE AXIS T''_q	0.0220
EXCITER TIME CONSTANT T_e	0.0940
ARMATURE SHORT CIRCUIT T_a	0.0450

Short Circuit Ratio: 0.36	Stator Resistance = 0.0013 Ohms	Field Resistance = 0.5 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:	12.0 Volts	54.43 Volts Volts
Waveform deviation line - line, no load: less than	2.0%	Excitation current	1.2 Amps	4.48 Amps Amps
Telephone influence factor: less than	50			

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Generator Mechanical Information

Center of Gravity		
Dimension X	-786.0 mm	-30.9 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 = 3945 kg	* Rotor WT = 1644 kg	* Stator WT = 2380 kg
8,697 LB	3,624 LB	5,247 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	280.6 MLB IN./rad	8.9 IN.	361.1 LB IN. s ²	137.2 MLB IN./rad	5.5 IN.	8.4 LB IN. s ²
7.05 N m s ²	31.7 MN m/rad	225.0 mm	40.8 N m s ²	15.5 MN m/rad	140.0 mm	0.95 N m s ²
			Total J			
			431.9 LB IN. s ²			
			48.8 N m s ²			

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

Cooling Requirements:		Temperature Data: (Ambient 40 °C)	
Heat Dissipated: 101.1 kW		Stator Rise:	150.0 °C
Air Flow: 168.0 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:	60 Hz
Line to Line Voltage:	480 Volts
B BR 80/40	2150.0 kVA
F BR -105/40	2446.0 kVA
H BR - 125/40	2688.0 kVA
F PR - 130/40	2688.0 kVA
H PR - 150/40	2849.0 kVA
H PR27 - 163/27	2956.8 kVA

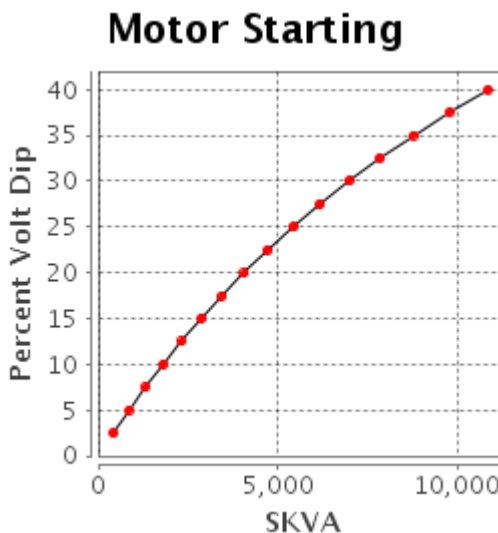
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**Starting Capability & Current Decrement
Motor Starting Capability (0.4 pf)**

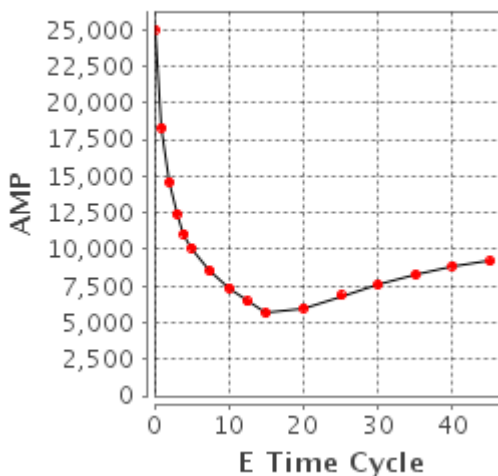
SKVA	Percent Volt Dip
417	2.5
857	5.0
1,320	7.5
1,809	10.0
2,326	12.5
2,873	15.0
3,454	17.5
4,070	20.0
4,727	22.5
5,427	25.0
6,175	27.5
6,978	30.0
7,839	32.5
8,767	35.0
9,769	37.5
10,854	40.0



Current Decrement Data

E Time Cycle	AMP
0.0	25,011
1.0	18,316
2.0	14,600
3.0	12,437
4.0	11,069
5.0	10,116
7.5	8,520
10.0	7,372
12.5	6,435
15.0	5,646
20.0	5,999
25.0	6,839
30.0	7,603
35.0	8,280
40.0	8,887
45.0	9,183

Current Decrement



Instantaneous 3 Phase Fault Current: 25011 Amps

Instantaneous Line - Line Fault Current: 20334 Amps

Instantaneous Line - Neutral Fault Current: 31665 Amps

Selected Model

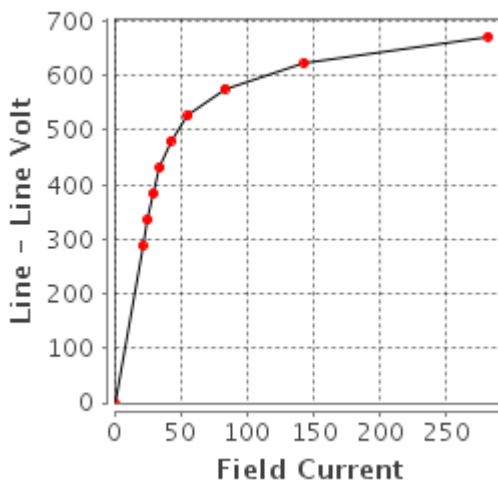
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**Generator Output Characteristic Curves
Open Circuit Curve**

Open Circuit

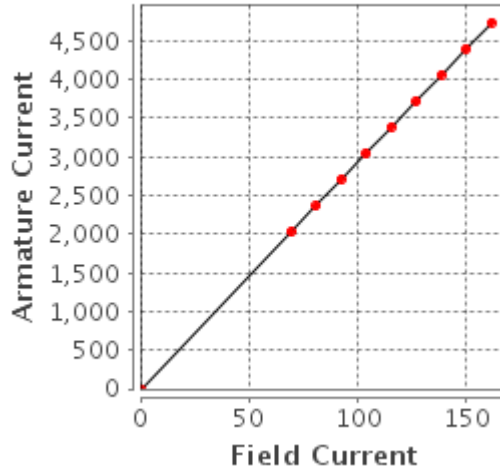
Field Current	Line - Line Volt
0.0	0
21.2	288
25.0	336
29.3	384
34.5	432
42.2	480
55.7	528
83.0	576
143.1	624
281.3	672



Short Circuit Curve

Short Circuit

Field Current	Armature Current
0.0	0
69.2	2,030
80.7	2,368
92.3	2,706
103.8	3,045
115.3	3,383
126.9	3,721
138.4	4,059
149.9	4,398
161.5	4,736



Selected Model

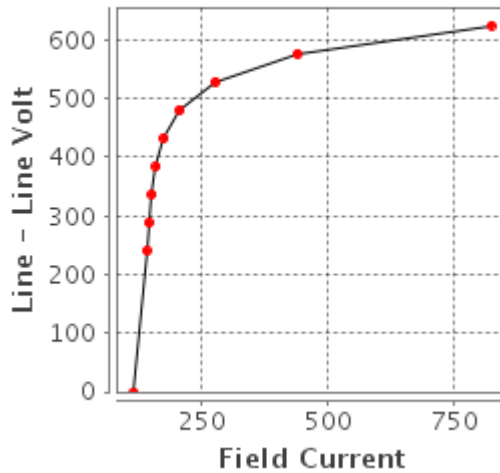
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Generator Output Characteristic Curves
Zero Power Factor Curve

Zero Power

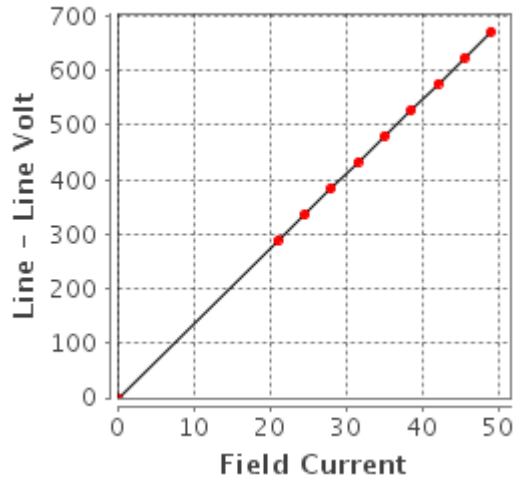
Field Current	Line - Line Volt
115.3	0
140.3	240
144.7	288
150.4	336
158.9	384
174.3	432
205.9	480
276.5	528
439.7	576
823.4	624



Air Gap Curve

Air Gap

Field Current	Line - Line Volt
0.0	0
21.0	288
24.5	336
28.0	384
31.5	432
35.0	480
38.5	528
42.0	576
45.5	624
49.0	672

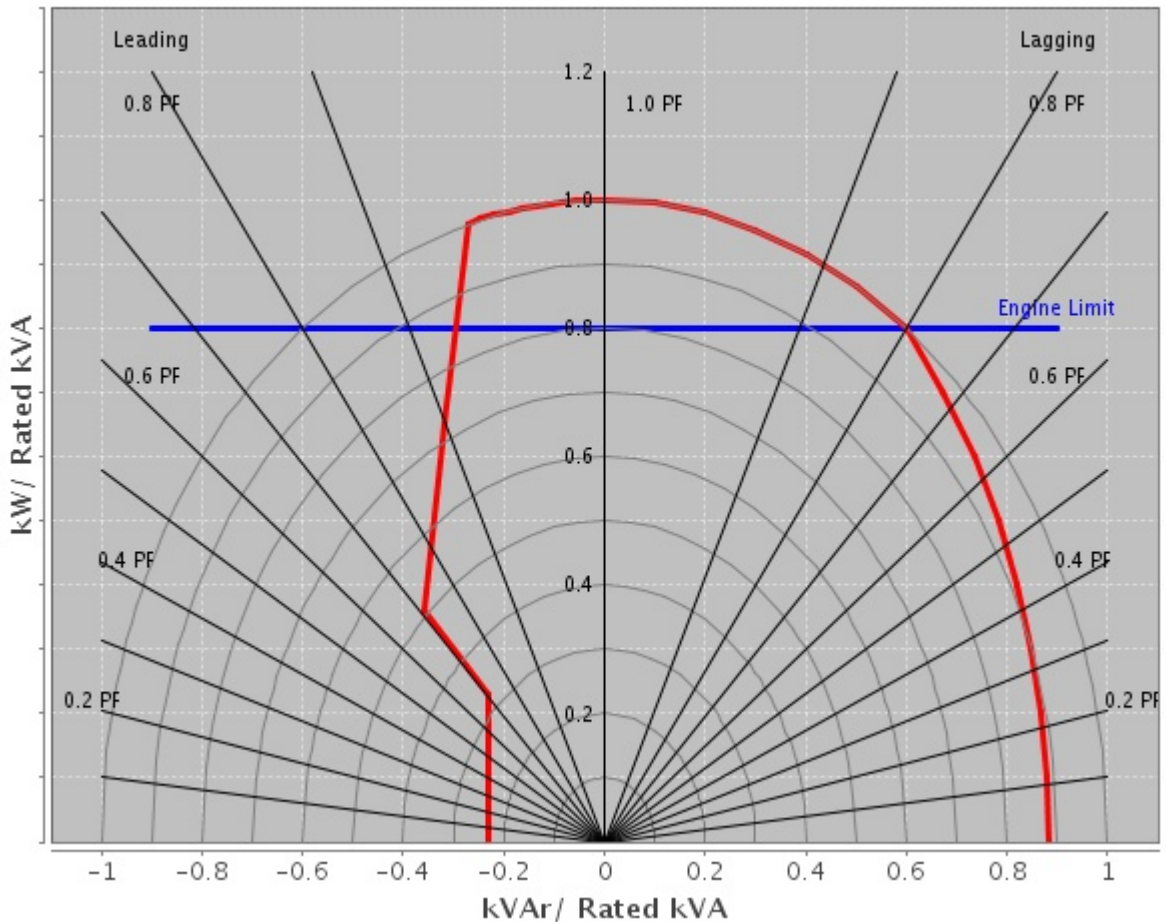


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Reactive Capability Curve Operating Chart



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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 and
limits.

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