

GENERATOR DATA**APRIL 14, 2022****(AT400240)-ENGINE (BAA126422A)-CEM**For Help Desk Phone Numbers [Click here](#)**Selected Model**

Engine: 3520 **Generator Frame:** 868 **Genset Rating (kW):** 1600.0 **Line Voltage:** 480
Fuel: Natural Gas **Generator Arrangement:** 1586422 **Genset Rating (kVA):** 2000.0 **Phase Voltage:** 277
Frequency: 60 **Excitation Type:** Permanent Magnet **Pwr. Factor:** 0.8 **Rated Current:** 2405.6
Duty: CONTINUOUS **Connection:** SERIES STAR **Application:** EPG **Status:** Current

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Spec Information

Generator Specification			Generator Efficiency		
Frame: 868	Type: SR4B	No. of Bearings: 2	Per Unit Load	kW	Efficiency %
Winding Type: FORM WOUND			0.25	400.0	92.7
Flywheel: 21.0			0.5	800.0	95.4
Connection: SERIES STAR			0.75	1200.0	96.1
Housing: 00			1.0	1600.0	96.2
Phases: 3			1.1	1760.0	96.2
No. of Leads: 6					
Poles: 6					
Wires per Lead: 6					
Sync Speed: 1200					
Generator Pitch: 0.75					

Reactances	Per Unit	Ohms
SUBTRANSIENT - DIRECT AXIS X''_d	0.1563	0.0180
SUBTRANSIENT - QUADRATURE AXIS X''_q	0.1571	0.0181
TRANSIENT - SATURATED X'_d	0.2500	0.0288
SYNCHRONOUS - DIRECT AXIS X_d	1.9149	0.2206
SYNCHRONOUS - QUADRATURE AXIS X_q	1.0486	0.1208
NEGATIVE SEQUENCE X_2	0.1571	0.0181
ZERO SEQUENCE X_0	0.0538	0.0062

Time Constants	Seconds
OPEN CIRCUIT TRANSIENT - DIRECT AXIS T'_{d0}	3.6300
SHORT CIRCUIT TRANSIENT - DIRECT AXIS T'_d	0.4741
OPEN CIRCUIT SUBTRANSIENT - DIRECT AXIS T''_{d0}	0.0167
SHORT CIRCUIT SUBTRANSIENT - DIRECT AXIS T''_d	0.0122
OPEN CIRCUIT SUBTRANSIENT - QUADRATURE AXIS T''_{q0}	0.0113
SHORT CIRCUIT SUBTRANSIENT - QUADRATURE AXIS T''_q	0.0091
EXCITER TIME CONSTANT T_e	0.1889
ARMATURE SHORT CIRCUIT T_a	0.0459

Short Circuit Ratio: 0.63

Stator Resistance = 0.0019 Ohms

Field Resistance = 1.522 Ohms

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:	10.24 Volts	40.03 Volts Volts
Waveform deviation line - line, no load: less than	3.0%	Excitation current	3.2 Amps	10.29 Amps Amps
Telephone influence factor: less than	50			

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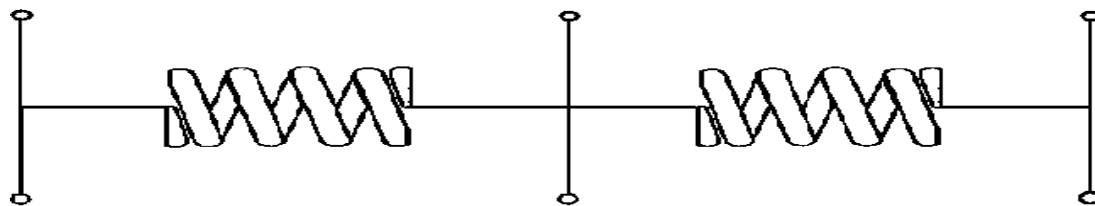
Generator Mechanical Information**Center of Gravity**

Dimension X	-1132.0 mm	-44.6 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 = 5413 kg * Rotor WT = 2156 kg * Stator WT = 3257 kg
 11,934 LB 4,753 LB 7,180 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	
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	
62.0 LB IN. s ²	54.9 MLB IN./rad	5.0 IN.	924.6 LB IN. s ²	53.1 MLB IN./rad	3.8 IN.	3.9 LB IN. s ²	
7.0 N m s ²	6.2 MN m/rad	127.0 mm	104.462 N m s ²	6.0 MN m/rad	96.5 mm	0.443 N m s ²	
Total J							
			990.4 LB IN. s ²				
			111.905 N m s ²				

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Generator Cooling Requirements - Temperature - Insulation Data			
Cooling Requirements:		Temperature Data: (Ambient 40 °C)	
Heat Dissipated:	63.2 kW	Stator Rise:	105.0 °C
Air Flow:	0.0 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	1660.0 kVA		
F BR -105/40	2000.0 kVA		
H BR - 125/40	2200.0 kVA		
F PR - 130/40	2200.0 kVA		

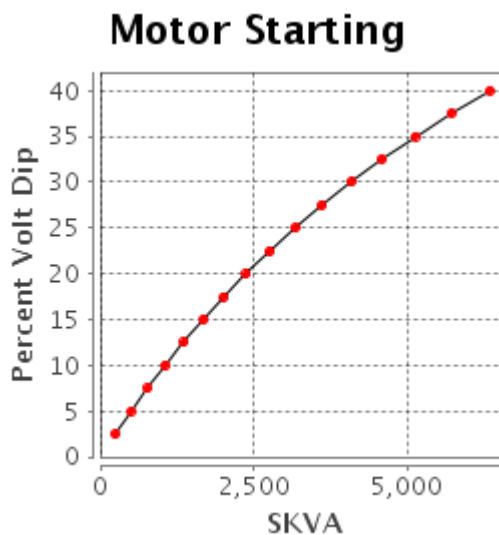
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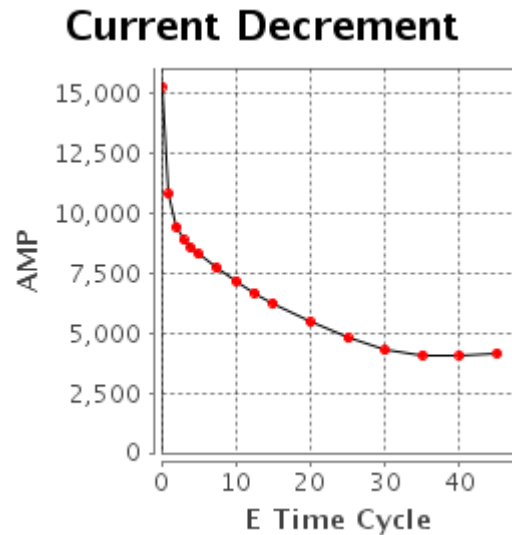
Starting Capability & Current Decrement Motor Starting Capability (0.4 pf)

SKVA	Percent Volt Dip
244	2.5
501	5.0
772	7.5
1,057	10.0
1,360	12.5
1,680	15.0
2,019	17.5
2,379	20.0
2,763	22.5
3,172	25.0
3,610	27.5
4,079	30.0
4,582	32.5
5,125	35.0
5,710	37.5
6,345	40.0



Current Decrement Data

E Time Cycle	AMP
0.0	15,305
1.0	10,805
2.0	9,434
3.0	8,888
4.0	8,561
5.0	8,295
7.5	7,707
10.0	7,173
12.5	6,685
15.0	6,238
20.0	5,453
25.0	4,794
30.0	4,276
35.0	4,081
40.0	4,067
45.0	4,156



Instantaneous 3 Phase Fault Current: 15305 Amps

Instantaneous Line - Line Fault Current: 13232 Amps

Instantaneous Line - Neutral Fault Current: 19568 Amps

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Duty: CONTINUOUS Connection: SERIES STAR

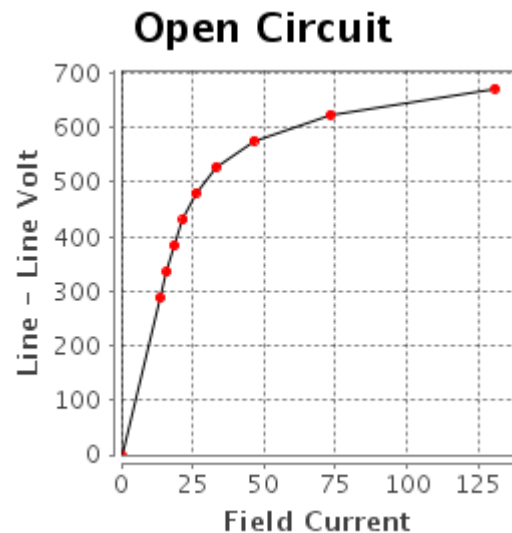
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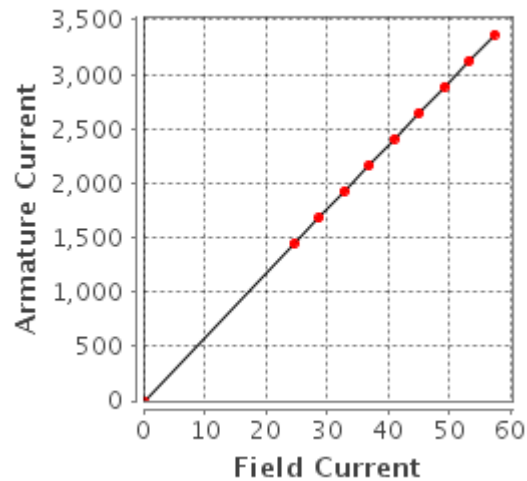
Generator Output Characteristic Curves
Open Circuit Curve

Field Current	Line - Line Volt
0.0	0
13.5	288
15.9	336
18.5	384
21.7	432
26.1	480
33.2	528
46.4	576
73.3	624
130.9	672



Short Circuit Curve**Short Circuit**

Field Current	Armature Current
0.0	0
24.6	1,443
28.7	1,684
32.8	1,925
36.9	2,165
41.0	2,406
45.1	2,646
49.2	2,887
53.3	3,127
57.4	3,368

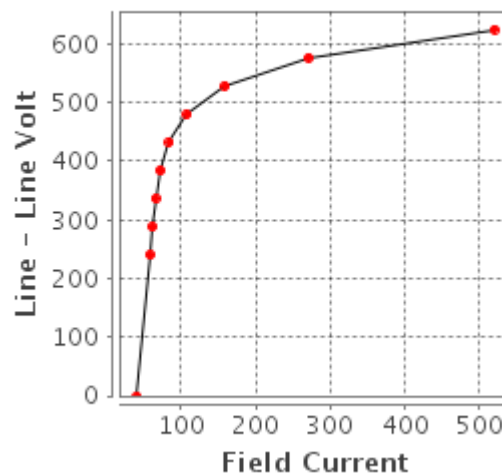
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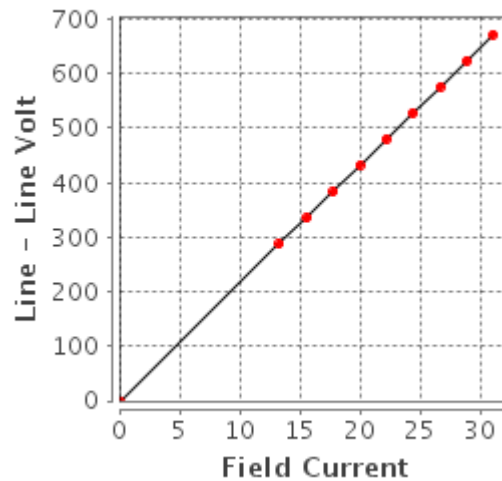
Generator Output Characteristic Curves
Zero Power Factor Curve
Zero Power

Field Current	Line - Line Volt
41.0	0
58.3	240
61.5	288
65.7	336
72.2	384
84.1	432
108.0	480
159.0	528
270.8	576
519.5	624



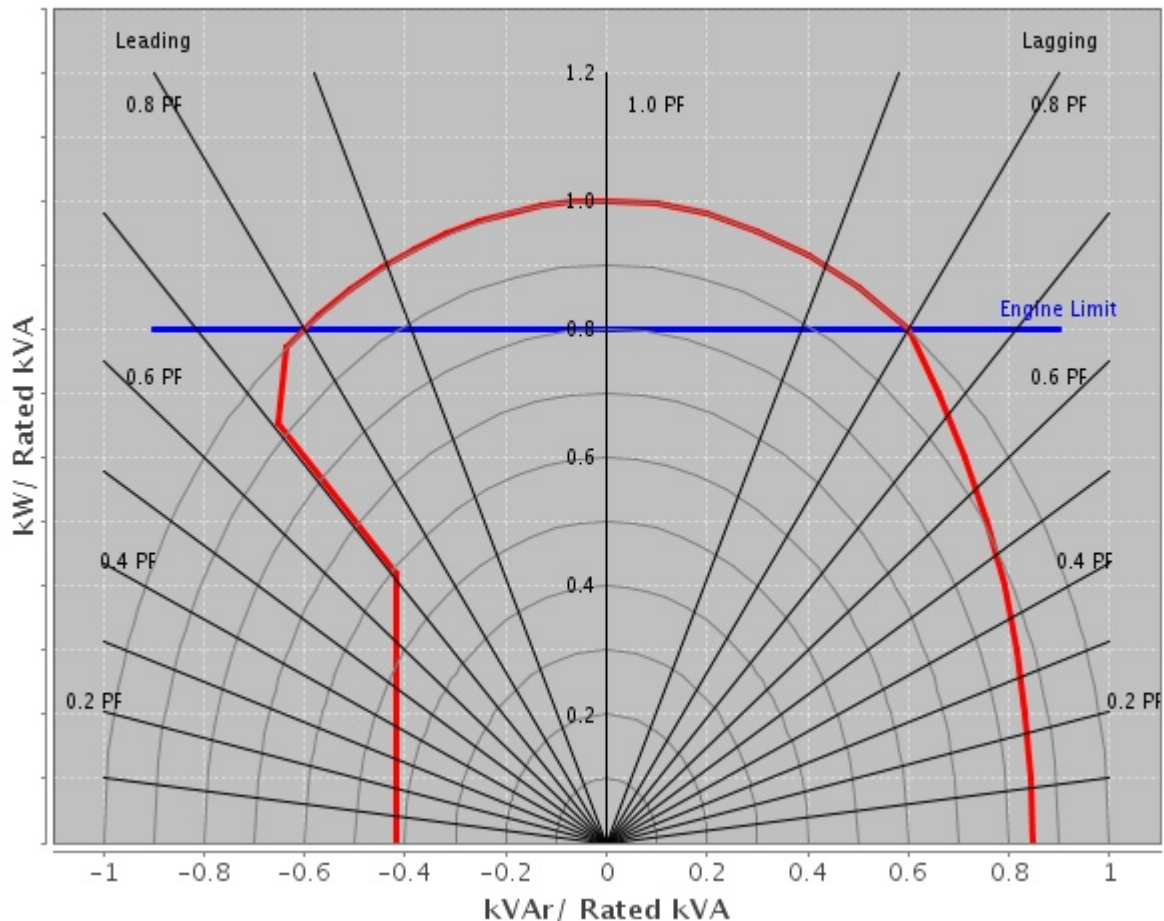
Air Gap Curve**Air Gap**

Field Current	Line - Line Volt
0.0	0
13.3	288
15.6	336
17.8	384
20.0	432
22.2	480
24.4	528
26.7	576
28.9	624
31.1	672

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Reactive Capability Curve**Operating Chart**

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General Information

DM7824 Caterpillar SR4B Generators (50 Hz, 60 Hz)
Data for 360s, 440s, 450s, 490, 590, 660, 690, 820 and 860 frames.
Caterpillar SR4B generators built by Leroy Somer-USA(& 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.

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