

GENERATOR DATA**JULY 22, 2021****(AT400240)-ENGINE (BAA126422A)-CEM**For Help Desk Phone Numbers [Click here](#)**Selected Model**

Engine: C18 **Generator Frame:** 933 **Genset Rating (kW):** 410.0 **Line Voltage:** 400
Fuel: Diesel **Generator Arrangement:** 3930982 **Genset Rating (kVA):** 512.0 **Phase Voltage:** 230
Frequency: 50 **Excitation Type:** Permanent Magnet **Pwr. Factor:** 0.8 **Rated Current:** 739.0
Duty: PRIME **Connection:** SERIES STAR **Application:** MAR **Status:** Current

Version: 41205 /41946 /42837 /1227

Spec Information

Generator Specification			Generator Efficiency		
Frame: 933	Type: SRMP	No. of Bearings: 1	Per Unit Load	kW	Efficiency %
Winding Type: RANDOM WOUND		Flywheel: 18.0	0.25	102.5	91.7
Connection: SERIES STAR		Housing: 0	0.5	205.0	93.6
Phases: 3		No. of Leads: 12	0.75	307.5	94.0
Poles: 4		Wires per Lead: 2	1.0	410.0	93.6
Sync Speed: 1500		Generator Pitch: 0.6667	1.1	451.0	93.3

Reactances	Per Unit	Ohms
SUBTRANSIENT - DIRECT AXIS X''_d	0.1012	0.0316
SUBTRANSIENT - QUADRATURE AXIS X''_q	0.1163	0.0363
TRANSIENT - SATURATED X'_d	0.1268	0.0396
SYNCHRONOUS - DIRECT AXIS X_d	2.5881	0.8080
SYNCHRONOUS - QUADRATURE AXIS X_q	1.5535	0.4850
NEGATIVE SEQUENCE X_2	0.1089	0.0340
ZERO SEQUENCE X_0	0.0074	0.0023

Time Constants	Seconds
OPEN CIRCUIT TRANSIENT - DIRECT AXIS T'_{d0}	2.0390
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}	0.1330
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: 0.46

Stator Resistance = 0.0089 Ohms

Field Resistance = 0.357 Ohms

Voltage Regulation		Generator Excitation		
		No Load	Full Load, (rated) pf	
			Series	Parallel
Voltage level adjustment: +/-	5.0%			
Voltage regulation, steady state: +/-	0.5%			
Voltage regulation with 3% speed change: +/-	0.5%			
Waveform deviation line - line, no load: less than	2.0%	Excitation voltage: 9.96 Volts	39.16 Volts	Volts
Telephone influence factor: less than	50	Excitation current 0.83 Amps	2.68 Amps	Amps

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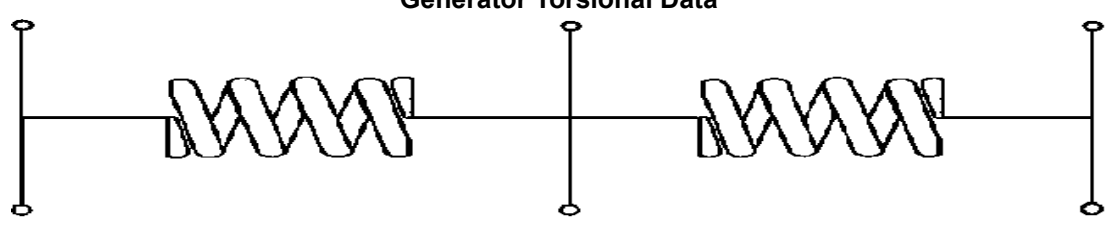
Generator Mechanical Information

Center of Gravity		
Dimension X	-643.0 mm	-25.3 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 = 1550 kg	* Rotor WT = 579 kg	* Stator WT = 971 kg
3,417 LB	1,276 LB	2,141 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
9.9 LB IN. s ²	74.4 MLB IN./rad	5.7 IN.	70.1 LB IN. s ²	73.3 MLB IN./rad	5.5 IN.	3.3 LB IN. s ²
1.12 N m s ²	8.41 MN m/rad	145.0 mm	7.92 N m s ²	8.28 MN m/rad	140.0 mm	0.37 N m s ²
Total J						
83.3 LB IN. s ²						
9.41 N m s ²						

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Generator Cooling Requirements - Temperature - Insulation Data	
Cooling Requirements:	Temperature Data: (Ambient 50 °C)
Heat Dissipated: 28.0 kW	Stator Rise: 90.0 °C
Air Flow: 60.0 m ³ /min	Rotor Rise: 90.0 °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
Marine 90/50	578.0 kVA

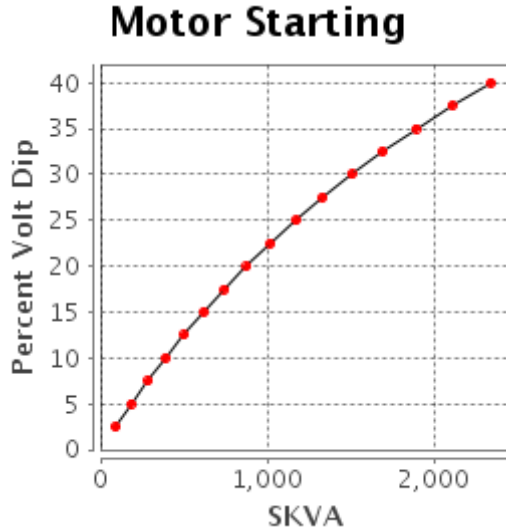
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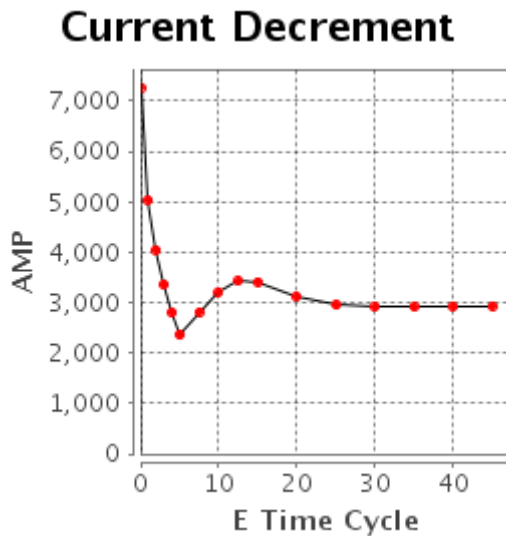
**Starting Capability & Current Decrement
Motor Starting Capability (0.4 pf)**

SKVA	Percent Volt Dip
90	2.5
185	5.0
285	7.5
390	10.0
501	12.5
619	15.0
744	17.5
877	20.0
1,019	22.5
1,170	25.0
1,331	27.5
1,504	30.0
1,690	32.5
1,890	35.0
2,106	37.5
2,340	40.0



Current Decrement Data

E Time Cycle	AMP
0.0	7,268
1.0	5,036
2.0	4,048
3.0	3,357
4.0	2,808
5.0	2,360
7.5	2,817
10.0	3,215
12.5	3,427
15.0	3,411
20.0	3,115
25.0	2,957
30.0	2,914
35.0	2,914
40.0	2,923
45.0	2,931



Instantaneous 3 Phase Fault Current: 7268 Amps

Instantaneous Line - Line Fault Current: 6064 Amps

Instantaneous Line - Neutral Fault Current: 10147 Amps

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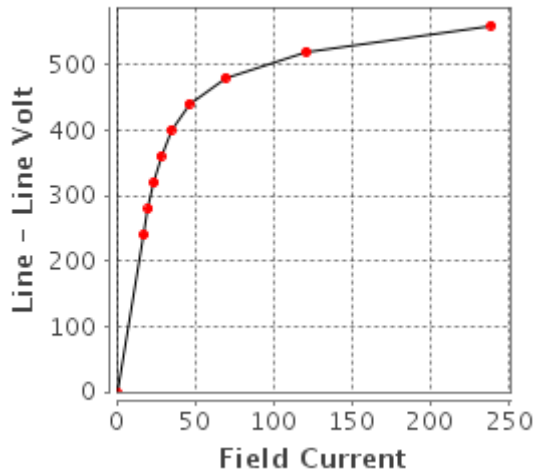
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Generator Output Characteristic Curves

Open Circuit Curve

Open Circuit

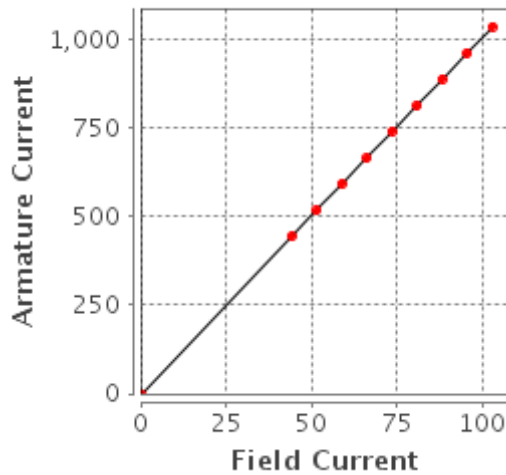
Field Current	Line - Line Volt
0.0	0
17.2	240
20.3	280
23.8	320
28.2	360
34.6	400
46.1	440
69.5	480
120.9	520
238.6	560



Short Circuit Curve

Short Circuit

Field Current	Armature Current
0.0	0
44.1	444
51.5	518
58.8	592
66.2	666
73.5	740
80.9	814
88.2	888
95.6	962
102.9	1,036



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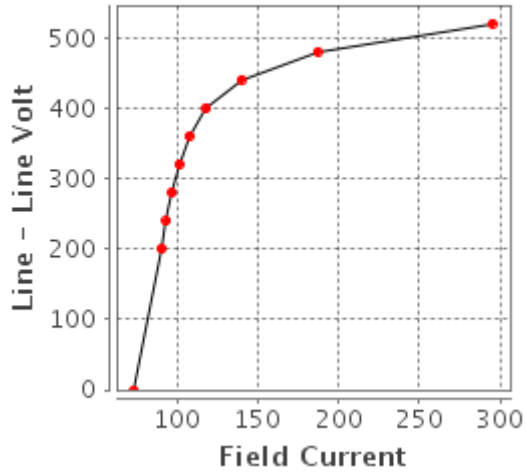
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Generator Output Characteristic Curves

Zero Power Factor Curve

Zero Power

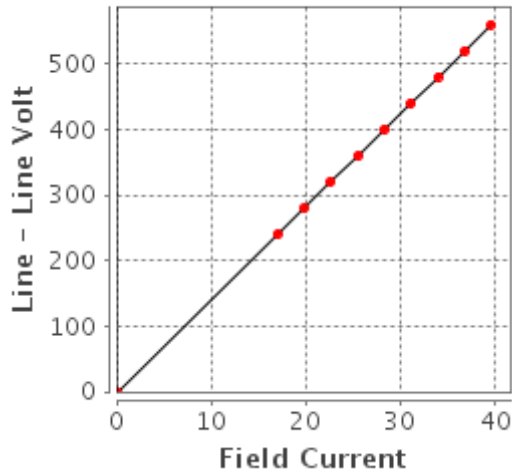
Field Current	Line - Line Volt
73.5	0
90.3	200
93.4	240
96.8	280
101.1	320
107.3	360
118.0	400
139.6	440
186.9	480
294.9	520



Air Gap Curve

Air Gap

Field Current	Line - Line Volt
0.0	0
17.0	240
19.8	280
22.6	320
25.5	360
28.3	400
31.1	440
34.0	480
36.8	520
39.6	560



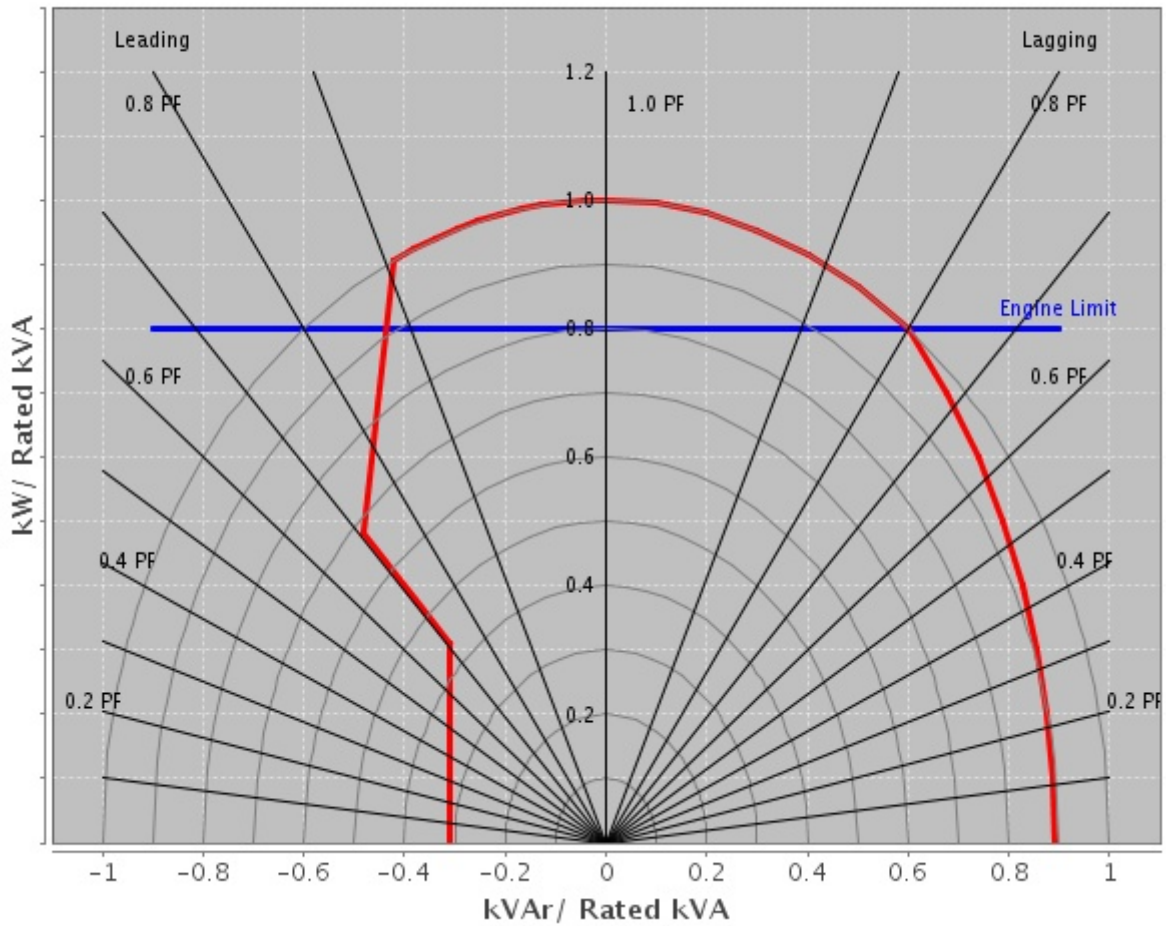
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Reactive Capability Curve

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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