

GENERATOR DATA**APRIL 04, 2019**For Help Desk Phone Numbers [Click here](#)**Selected Model**

Engine: 3516 **Generator Frame:** 697 **Genset Rating (kW):** 1300.0 **Line Voltage:** 480
Fuel: Diesel **Generator Arrangement:** 1441814 **Genset Rating (kVA):** 1625.0 **Phase Voltage:** 277
Frequency: 60 **Excitation Type:** Permanent Magnet **Pwr. Factor:** 0.8 **Rated Current:** 1954.6
Duty: CONTINUOUS **Connection:** SERIES STAR **Application:** EPG **Status:** Current

Version: 41205 /42191 /41771 /11090

Spec Information

Generator Specification			Generator Efficiency		
Frame: 697	Type: SR4B	No. of Bearings: 1	Per Unit Load	kW	Efficiency %
Winding Type: FORM WOUND		Flywheel: 21.0	0.25	325.0	91.8
Connection: SERIES STAR		Housing: 00	0.5	650.0	94.5
Phases: 3	No. of Leads: 6		0.75	975.0	95.1
Poles: 4	Wires per Lead: 8		1.0	1300.0	95.0
Sync Speed: 1800	Generator Pitch: 0.7333		1.1	1430.0	94.9

Reactances	Per Unit	Ohms
SUBTRANSIENT - DIRECT AXIS X''_d	0.2179	0.0309
SUBTRANSIENT - QUADRATURE AXIS X''_q	0.4429	0.0628
TRANSIENT - SATURATED X'_d	0.2990	0.0424
SYNCHRONOUS - DIRECT AXIS X_d	3.7797	0.5359
SYNCHRONOUS - QUADRATURE AXIS X_q	1.8937	0.2685
NEGATIVE SEQUENCE X_2	0.3301	0.0468
ZERO SEQUENCE X_0	0.1065	0.0151

Time Constants	Seconds
OPEN CIRCUIT TRANSIENT - DIRECT AXIS T'_{d0}	3.9660
SHORT CIRCUIT TRANSIENT - DIRECT AXIS T'_d	0.3135
OPEN CIRCUIT SUBTRANSIENT - DIRECT AXIS T''_{d0}	0.0074
SHORT CIRCUIT SUBTRANSIENT - DIRECT AXIS T''_d	0.0066
OPEN CIRCUIT SUBTRANSIENT - QUADRATURE AXIS T''_{q0}	0.0136
SHORT CIRCUIT SUBTRANSIENT - QUADRATURE AXIS T''_q	0.0122
EXCITER TIME CONSTANT T_e	0.2225
ARMATURE SHORT CIRCUIT T_a	0.0874

Short Circuit Ratio: 0.32	Stator Resistance = 0.0023 Ohms	Field Resistance = 1.666 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%	Excitation voltage: 5.4 Volts	30.53 Volts	Volts
Waveform deviation line - line, no load: less than	3.0%	Excitation current 1.42 Amps	6.61 Amps	Amps
Telephone influence factor: less than	100			

Selected Model

Engine: 3516 **Generator Frame:** 697 **Genset Rating (kW):** 1300.0 **Line Voltage:** 480
Fuel: Diesel **Generator Arrangement:** 1441814 **Genset Rating (kVA):** 1625.0 **Phase Voltage:** 277
Frequency: 60 **Excitation Type:** Permanent Magnet **Pwr. Factor:** 0.8 **Rated Current:** 1954.6
Duty: CONTINUOUS **Connection:** SERIES STAR **Application:** EPG **Status:** Current

Version: 41205 /42191 /41771 /11090

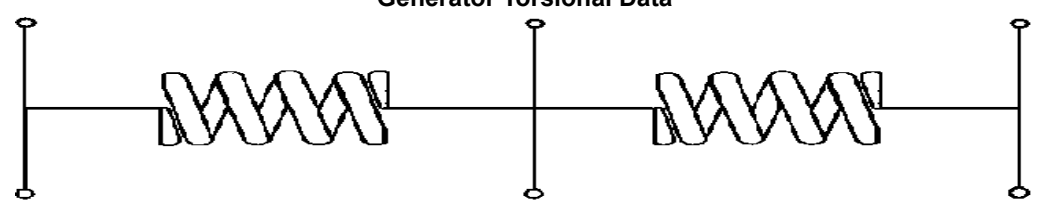
Generator Mechanical Information

Center of Gravity		
Dimension X	-883.4 mm	-34.8 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 = 3581 kg 7,895 LB	* Rotor WT = 1233 kg 2,718 LB	* Stator WT = 2347 kg 5,174 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
23.3 LB IN. s ²	207.1 MLB IN./rad	6.2 IN.	253.7 LB IN. s ²	31.9 MLB IN./rad	3.8 IN.	1.6 LB IN. s ²
2.634 N m s ²	23.4 MN m/rad	157.5 mm	28.66 N m s ²	3.6 MN m/rad	96.5 mm	0.186 N m s ²
Total J						
278.6 LB IN. s ²						
31.48 N m s ²						

Selected Model

Engine: 3516	Generator Frame: 697	Genset Rating (kW): 1300.0	Line Voltage: 480
Fuel: Diesel	Generator Arrangement: 1441814	Genset Rating (kVA): 1625.0	Phase Voltage: 277
Frequency: 60	Excitation Type: Permanent Magnet	Pwr. Factor: 0.8	Rated Current: 1954.6
Duty: CONTINUOUS	Connection: SERIES STAR	Application: EPG	Status: Current

Version: 41205 /42191 /41771 /11090

Generator Cooling Requirements - Temperature - Insulation Data	
Cooling Requirements:	Temperature Data: (Ambient 40 °C)
Heat Dissipated: 68.4 kW	Stator Rise: 105.0 °C
Air Flow: 184.2 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	1411.0 kVA
F BR -105/40	1700.0 kVA
H BR - 125/40	1875.0 kVA
F PR - 130/40	1875.0 kVA

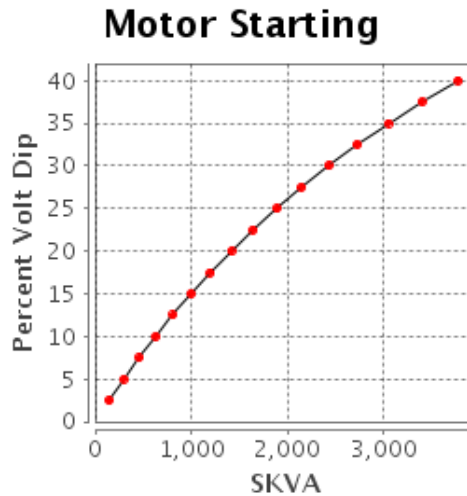
Selected Model

Engine: 3516	Generator Frame: 697	Genset Rating (kW): 1300.0	Line Voltage: 480
Fuel: Diesel	Generator Arrangement: 1441814	Genset Rating (kVA): 1625.0	Phase Voltage: 277
Frequency: 60	Excitation Type: Permanent Magnet	Pwr. Factor: 0.8	Rated Current: 1954.6
Duty: CONTINUOUS	Connection: SERIES STAR	Application: EPG	Status: Current

Version: 41205 /42191 /41771 /11090

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

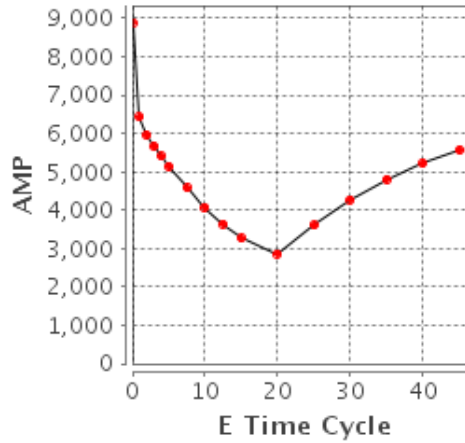
SKVA	Percent Volt Dip
145	2.5
298	5.0
459	7.5
630	10.0
810	12.5
1,000	15.0
1,202	17.5
1,417	20.0
1,645	22.5
1,889	25.0
2,149	27.5
2,429	30.0
2,728	32.5
3,051	35.0
3,400	37.5
3,778	40.0



Current Decrement Data

Current Decrement

E Time Cycle	AMP
0.0	8,892
1.0	6,427
2.0	5,956
3.0	5,664
4.0	5,400
5.0	5,150
7.5	4,580
10.0	4,081
12.5	3,645
15.0	3,262
20.0	2,868
25.0	3,606
30.0	4,278
35.0	4,806
40.0	5,221
45.0	5,565



Instantaneous 3 Phase Fault Current: 8892 Amps

Instantaneous Line - Line Fault Current: 6127 Amps

Instantaneous Line - Neutral Fault Current: 8884 Amps

Selected Model

Engine: 3516

Generator Frame: 697

Genset Rating (kW): 1300.0

Line Voltage: 480

Fuel: Diesel

Generator Arrangement: 1441814

Genset Rating (kVA): 1625.0

Phase Voltage: 277

Frequency: 60

Excitation Type: Permanent Magnet

Pwr. Factor: 0.8

Rated Current: 1954.6

Duty: CONTINUOUS

Connection: SERIES STAR

Application: EPG

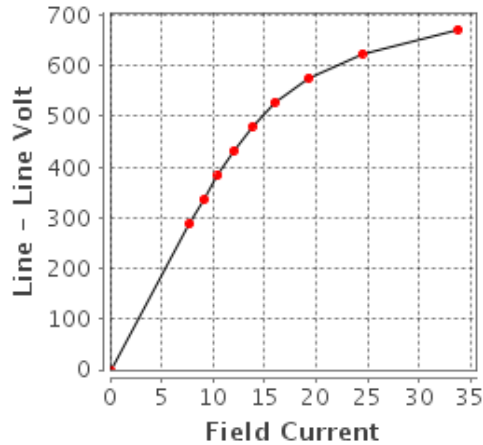
Status: Current

Version: 41205 /42191 /41771 /11090

Generator Output Characteristic Curves
Open Circuit Curve

Open Circuit

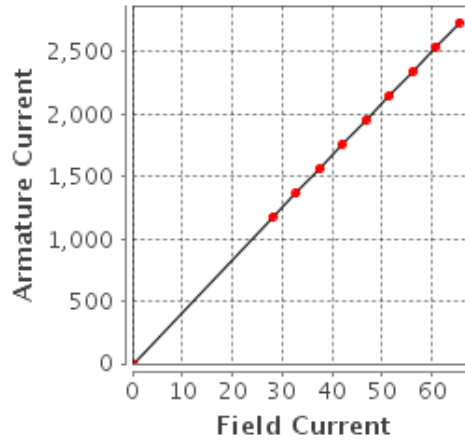
Field Current	Line - Line Volt
0.0	0
7.7	288
9.1	336
10.5	384
12.0	432
13.8	480
16.0	528
19.3	576
24.5	624
33.8	672



Short Circuit Curve

Short Circuit

Field Current	Armature Current
0.0	0
28.0	1,173
32.7	1,368
37.4	1,564
42.0	1,759
46.7	1,955
51.4	2,150
56.1	2,345
60.7	2,541
65.4	2,736



Selected Model

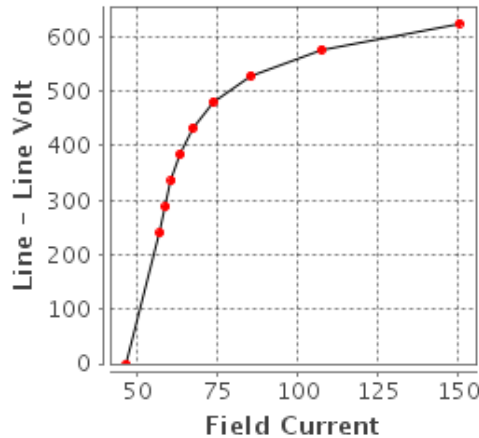
Engine: 3516	Generator Frame: 697	Genset Rating (kW): 1300.0	Line Voltage: 480
Fuel: Diesel	Generator Arrangement: 1441814	Genset Rating (kVA): 1625.0	Phase Voltage: 277
Frequency: 60	Excitation Type: Permanent Magnet	Pwr. Factor: 0.8	Rated Current: 1954.6
Duty: CONTINUOUS	Connection: SERIES STAR	Application: EPG	Status: Current

Version: 41205 /42191 /41771 /11090

Generator Output Characteristic Curves
Zero Power Factor Curve

Zero Power

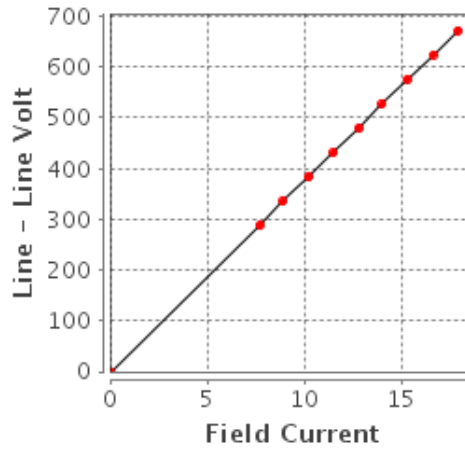
Field Current	Line - Line Volt
46.7	0
57.1	240
58.8	288
60.7	336
63.4	384
67.3	432
73.7	480
85.4	528
107.5	576
150.3	624



Air Gap Curve

Air Gap

Field Current	Line - Line Volt
0.0	0
7.7	288
8.9	336
10.2	384
11.5	432
12.8	480
14.0	528
15.3	576
16.6	624
17.9	672

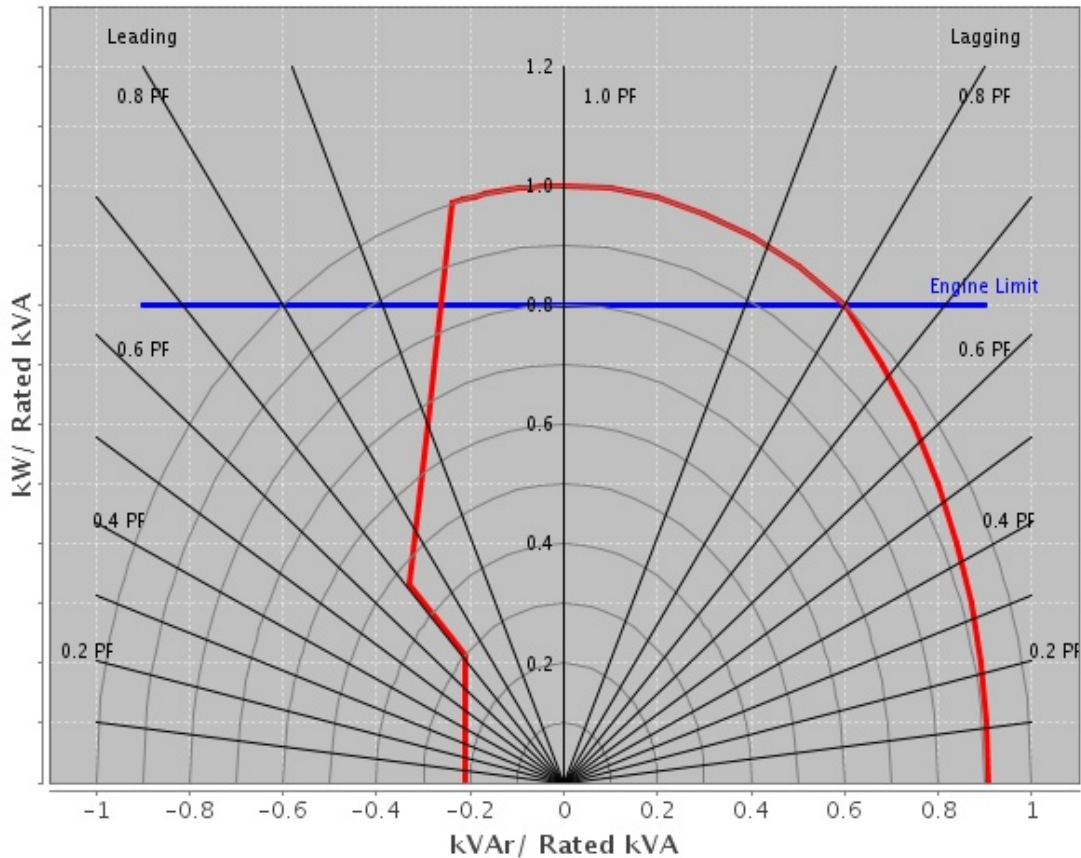


Selected Model

Engine: 3516 **Generator Frame:** 697 **Genset Rating (kW):** 1300.0 **Line Voltage:** 480
Fuel: Diesel **Generator Arrangement:** 1441814 **Genset Rating (kVA):** 1625.0 **Phase Voltage:** 277
Frequency: 60 **Excitation Type:** Permanent Magnet **Pwr. Factor:** 0.8 **Rated Current:** 1954.6
Duty: CONTINUOUS **Connection:** SERIES STAR **Application:** EPG **Status:** Current

Version: 41205 /42191 /41771 /11090

**Reactive Capability Curve
Operating Chart**



Selected Model

Engine: 3516	Generator Frame: 697	Genset Rating (kW): 1300.0	Line Voltage: 480
Fuel: Diesel	Generator Arrangement: 1441814	Genset Rating (kVA): 1625.0	Phase Voltage: 277
Frequency: 60	Excitation Type: Permanent Magnet	Pwr. Factor: 0.8	Rated Current: 1954.6
Duty: CONTINUOUS	Connection: SERIES STAR	Application: EPG	Status: Current

Version: 41205 /42191 /41771 /11090

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.

Caterpillar Confidential: **Green**

Content Owner: Commercial Processes Division

Web Master(s): [PSG Web Based Systems Support](#)

Current Date: 4/4/2019, 8:51:14 AM

© Caterpillar Inc. 2019 All Rights Reserved.

[Data Privacy Statement](#).