S0L1-L - Technical Data Sheet

Standards

Stamford industrial alternators meet the requirements of IEC EN 60034 and the relevant section of other international standards such as BS5000, VDE 0530, NEMA MG1-32, IEC34, CSA C22.2-100 and AS1359. Other standards and certifications can be considered on request.

Quality Assurance

Alternators are manufactured using production procedures having a quality assurance level to BS EN ISO 9001.

Excitation and Voltage Regulators

Excitation System	
AVR Type	**AVR Power**
VITA01	Self-Excited
Voltage Regulation	± 0.5%
No Load Excitation Voltage (V)	7.3 V
Full Load Excitation Voltage (V)	39.9 V

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Electrical Data	
Insulation System	Class H
Stator Winding	Double Layer Concentric
Winding Pitch	Two Thirds
Winding Leads	12
Winding Number	17
Number of Poles	4
IP Rating	IP23
RFI Suppression	EN 61000-6-2 & EN 61000-6-4, refer to factory for others
Waveform Distortion	NO LOAD < 2.5% NON-DISTORTING BALANCED LINEAR LOAD < 5.0%
Short Circuit Ratio	1/Xd
Steady State X/R Ratio	N/A
	60 Hz
Telephone Interference	TIF<75
Voltage Series Star	600
Voltage Parallel Star	300
Voltage Series Delta	346
kVA Base Rating (Class H)	15.6
Saturated Values in Per Unit at Base Ratings and Voltages	
Xd Dir. Axis Synchronous	2.071
X'd Dir. Axis Transient	0.117
X"d Dir. Axis Subtransient	0.108
Xq Quad. Axis Reactance	1.351
X"q Quad. Axis Subtransient	0.196
XL Stator Leakage Reactance	0.070
X2 Negative Sequence Reactance	0.212
X0 Zero Sequence Reactance	0.013
Unsaturated Values in Per Unit at Base Ratings and Voltages	
Xd Dir. Axis Synchronous	2.485
X'd Dir. Axis Transient	0.135
X"d Dir. Axis Subtransient	0.126
Xq Quad. Axis Reactance	1.392
X"q Quad. Axis Subtransient	0.235
XL Stator Leakage Reactance	0.079
X2 Negative Sequence Reactance	0.254
X0 Zero Sequence Reactance	0.015
Time Constants (Seconds)	
T'd TRANSIENT TIME CONST.	0.013
T''d SUB-TRANSTIME CONST.	0.001
T'do O.C. FIELD TIME CONST.	0.375
Ta ARMATURE TIME CONST.	0.005

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Resistances in Ohms (Ω) at 22°C	
Stator Winding Resistance (Ra)	1.222 Ω per phase series star connected
Rotor Winding Resistance (Rf)	0.466 Ω
Exciter Stator Winding Resistance	17.638 Ω
Exciter Rotor Winding Resistance	0.101 Ω per phase
Positive Sequence Resistance (R1)	1.528 Ω
Negative Sequence Resistance (R2)	1.76 Ω
Zero Sequence Resistance (R0)	1.528 Ω
Aux Winding Resistance	N/A

Mechanical data

Cooling Air	0.07 m³/sec	
Shaft and Keys	All alternator rotors are dynamically balanced to better than BS6861: Part 1 Grade 2.5 for minimum vibration in operation.	
Bearing	1 Bearing	2 Bearing
Weight Complete Alternator	85 kg	98 kg
Weight Wound Stator	32.5 kg	32.5 kg
Weight Wound Rotor	29.3 kg	28 kg
Moment of Inertia	0.0706 kgm2	0.0709 kgm2
Shipping weight in a Crate	124 kg	136 kg
Packing Crate Size	930X590X760 mm	930X590X760 mm
Maximum Over Speed	2250 RPM for two minutes	
Bearing Drive End	-	BALL. 6309-2RS (ISO)
Bearing Non-Drive End	Ball Bearing, 6305-2RS1	Ball Bearing, 6305-2RS1

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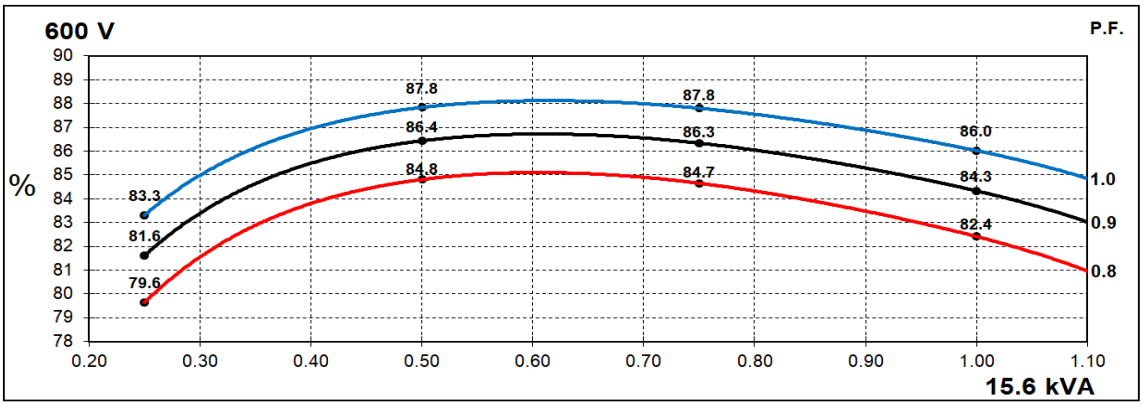
Three Phase Efficiency Curves

60Hz Curves



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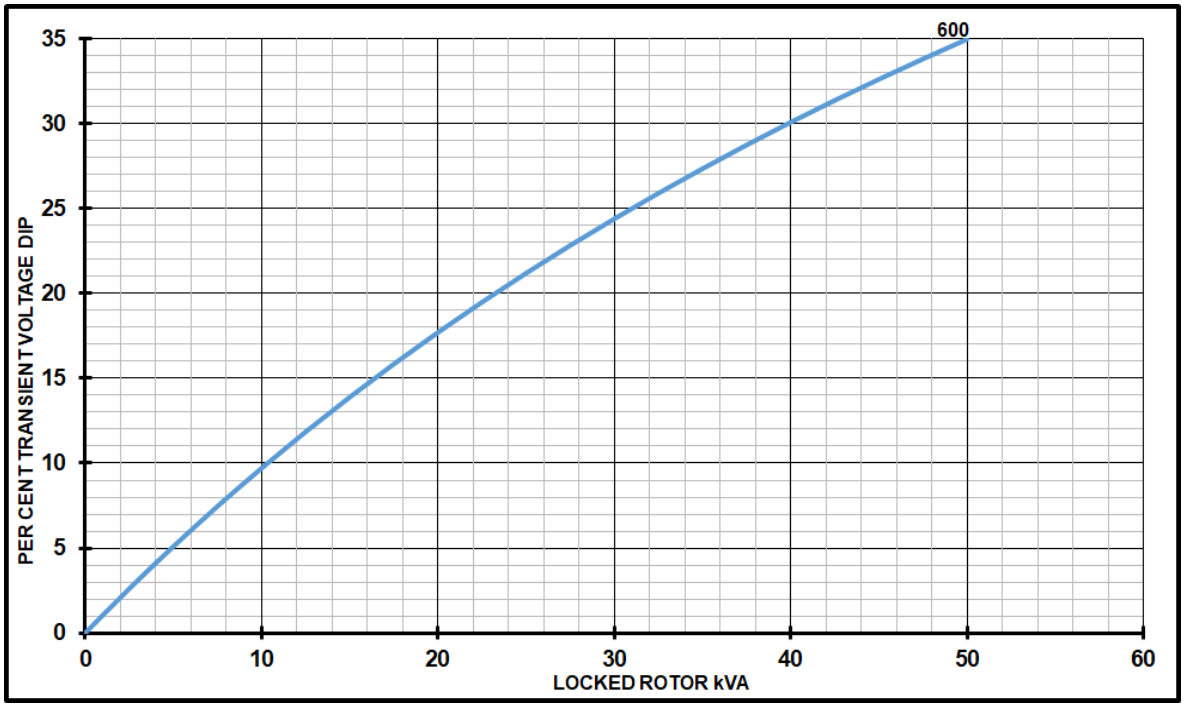
Locked Rotor Motor Starting Curves

60Hz



Transient Voltage Dip Scaling Factor	
Lagging PF	Scaling Factor
<= 0.4	1.00
0.5	0.95
0.6	0.90
0.7	0.86
0.8	0.83
0.9	0.75
0.95	0.70
1	0.65

Transient Voltage Rise Scaling Factor	
Lagging PF	Scaling Factor
<= 0.4	1.25
0.5	1.20
0.6	1.15
± 0.5%	1.10
> 0.7	1.00

Note: To determine % Transient Voltage Dip or Rise at various PF, multiply the % Voltage Dip from the curve directly by the scaling factor.

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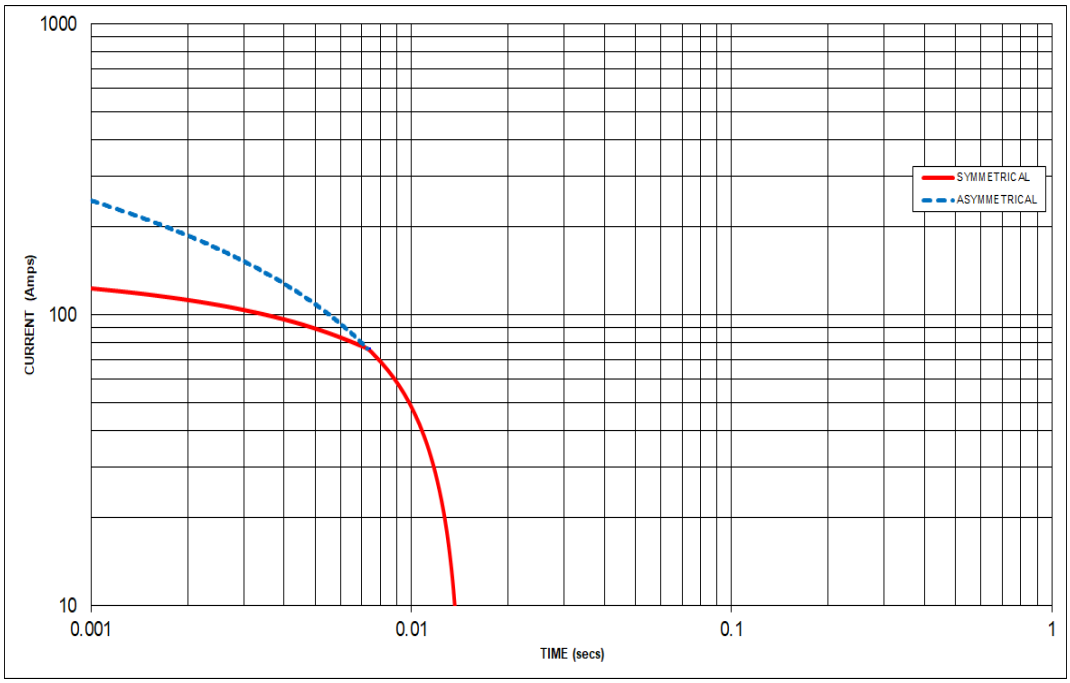
Three-phase Short Circuit Decrement Curve

Winding 17 (no Auxiliary winding) will not provide sustained short circuit capability.

60Hz



Note 1
The following multiplication factors should be used to adjust the values from curve between time 0.001 seconds and the minimum current point in respect of nominal operating voltage :

50Hz		60Hz	
Voltage	Factor	Voltage	Factor
-	-	600V	X 1.00
-	-	-	-
-	-	-	-
-	-	-	-

The sustained current value is constant irrespective of voltage level

Note 2
The following multiplication factor should be used to convert the values calculated in accordance with NOTE 1 to those applicable to the various types of short circuit :

	3-phase	2-phase L-L	1-phase L-N
Instantaneous	x 1.00	x 0.87	x 1.30
Minimum	x 1.00	x 1.80	x 3.20
Sustained	N/A	N/A	N/A
Max. sustained duration	10 sec.	5 sec.	2 sec.

All other times are unchanged

Note 3
Curves are drawn for Star connected machines under no-load excitation at rated speeds. For other connection the following multipliers should be applied to current values as shown :
Parallel Star = Curve current value X 2
Series Delta = Curve current value X 1.732

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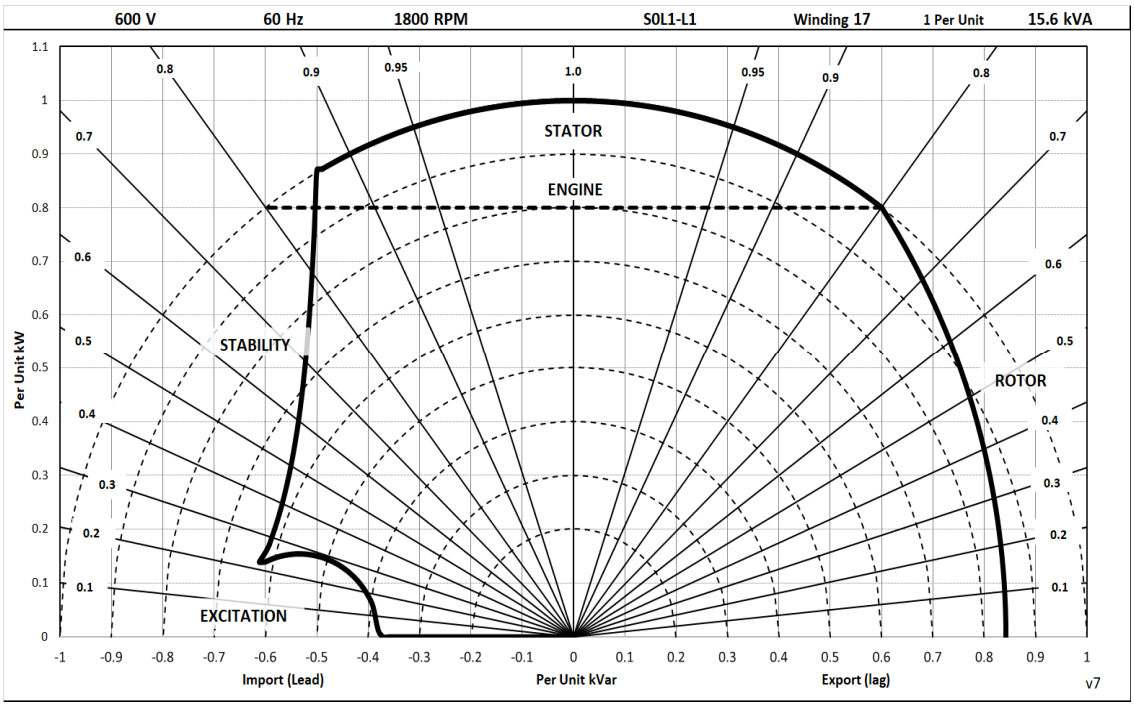
Typical Alternator Operating Charts

600V/60Hz



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RATINGS AT 0.8 POWER FACTOR

	Class - Temp Rise	Standby - 163/27℃	Standby - 150/40℃	Cont. H - 125/40℃	Cont. F - 105/40℃
50 Hz	Series Star (V)	N/A	N/A	N/A	N/A
	Parallel Star (V)				
	Series Delta (V)				
	kVA	N/A	N/A	N/A	N/A
	kW				
	Efficiency (%)				
	kW Input				

60 Hz	Series Star (V)	600	600	600	600
	Parallel Star (V)	300	300	300	300
	Series Delta (V)	346	346	346	346
	kVA	17.0	16.4	15.6	14.0
	kW	13.6	13.1	12.5	11.2
	Efficiency (%)	81.2	81.7	82.4	83.5
	kW Input	16.7	16.1	15.1	13.4

De-Rates

All values tabulated above are subject to the following reductions:

- 3% for every 500 meters by which the operating altitude exceeds 1000 meters above mean sea level
- 3% for every 5℃ by which the operational ambient temperature exceeds 40℃
- For any other operating conditions impacting the cooling circuit please refer to applications

Note: Requirement for operating in an ambient exceeding 60℃ and altitude exceeding 4000 meters must be referred to applications.

Dimensional and Torsional Drawing

For dimensional and torsional information please refer to the alternator General Arrangement and rotor drawings available on our website (http://stamford-avk.com/)

Note: Continuous development of our products means that the information contained in our data sheets can change without notice, and specifications should always be confirmed with Cummins Generator Technologies prior to purchase.

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