

### S0L2-U - 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	
<b>AVR Type</b>	<b>AVR Power</b>
VITA01	Self-Excited / Aux winding
Voltage Regulation	$\pm 0.5\%$
No Load Excitation Voltage (V)	13 V
Full Load Excitation Voltage (V)	51 V

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## S0L2-U Winding 05 / 705

Electrical Data		
Insulation System	Class H	
Stator Winding	Double Layer Concentric	
Winding Pitch	Two Thirds	
Winding Leads	4	
Winding Number	05 / 705	
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	4.2	
	50 Hz	
Telephone Interference	THF<2%	
Voltage Series	230	230
Power Factor	0.8	1.0
kVA Base Rating (Class H)	20	21.6
Saturated Values in Per Unit at Base Ratings and Voltages		
Xd Dir. Axis Synchronous	1.389	1.500
X'd Dir. Axis Transient	0.135	0.146
X''d Dir. Axis Subtransient	0.123	0.133
Xq Quad. Axis Reactance	1.011	1.092
X''q Quad. Axis Subtransient	0.181	0.195
XL Stator Leakage Reactance	0.076	0.082
X2 Negative Sequence Reactance	0.241	0.260
X0 Zero Sequence Reactance	0.087	0.094
Unsaturated Values in Per Unit at Base Ratings and Voltages		
Xd Dir. Axis Synchronous	1.847	1.995
X'd Dir. Axis Transient	0.155	0.168
X''d Dir. Axis Subtransient	0.144	0.155
Xq Quad. Axis Reactance	1.041	1.125
X''q Quad. Axis Subtransient	0.217	0.235
XL Stator Leakage Reactance	0.086	0.093
X2 Negative Sequence Reactance	0.289	0.312
X0 Zero Sequence Reactance	0.102	0.110
Time Constants (Seconds)		
T'd TRANSIENT TIME CONST.	0.033	
T''d SUB-TRANSTIME CONST.	0.002	
T'do O.C. FIELD TIME CONST.	0.617	
Ta ARMATURE TIME CONST.	0.015	

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## S0L2-U Winding 05 / 705

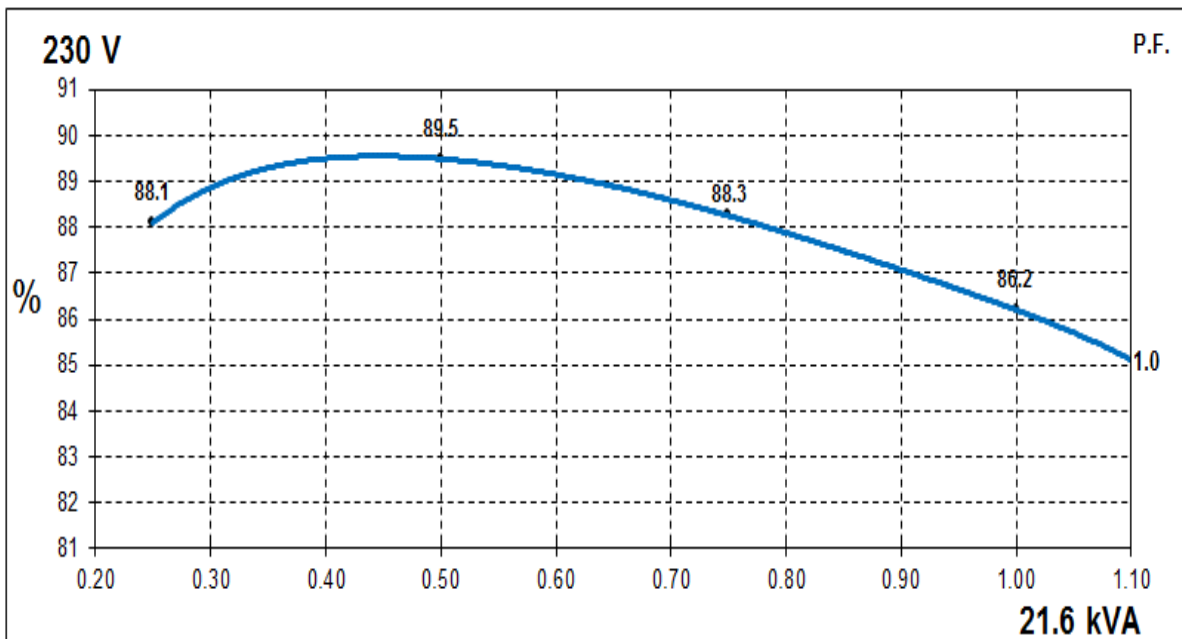
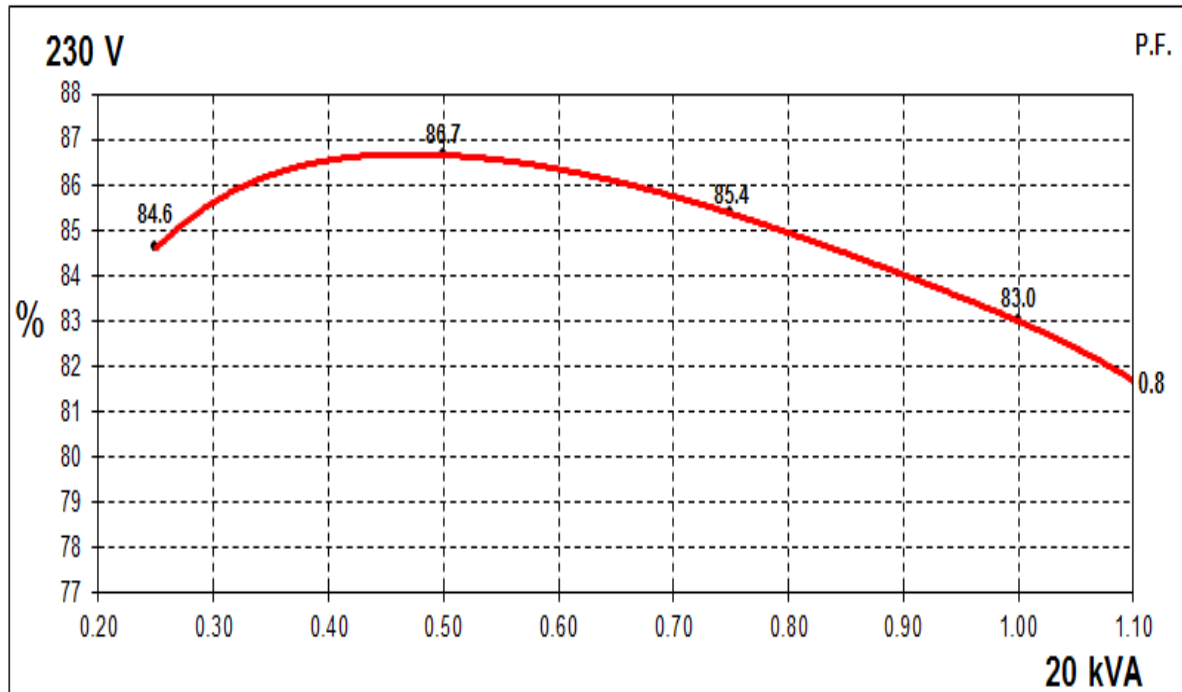
Resistances in Ohms (Ω) at 22 <sup>o</sup> C		
Stator Winding Resistance (Ra)	0.112 Ω per phase series connected	
Rotor Winding Resistance (Rf)	0.889 Ω	
Exciter Stator Winding Resistance	16.126 Ω	
Exciter Rotor Winding Resistance	0.110 Ω per phase	
Positive Sequence Resistance (R1)	0.14 Ω	
Negative Sequence Resistance (R2)	0.161 Ω	
Zero Sequence Resistance (R0)	0.14 Ω	
Aux Winding Resistance (with winding 705 only)	3.729 Ω	
Mechanical data		
Cooling Air	0.105 m³/sec (50Hz)	
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	140 kg	152 kg
Weight Wound Stator	59.5 kg	59.5 kg
Weight Wound Rotor	54.6 kg	52.6 kg
Moment of Inertia	0.1852 kgm2	0.1855 kgm2
Shipping weight in a Crate	178 kg	191 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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## Single Phase Efficiency Curves

### 50Hz Curves

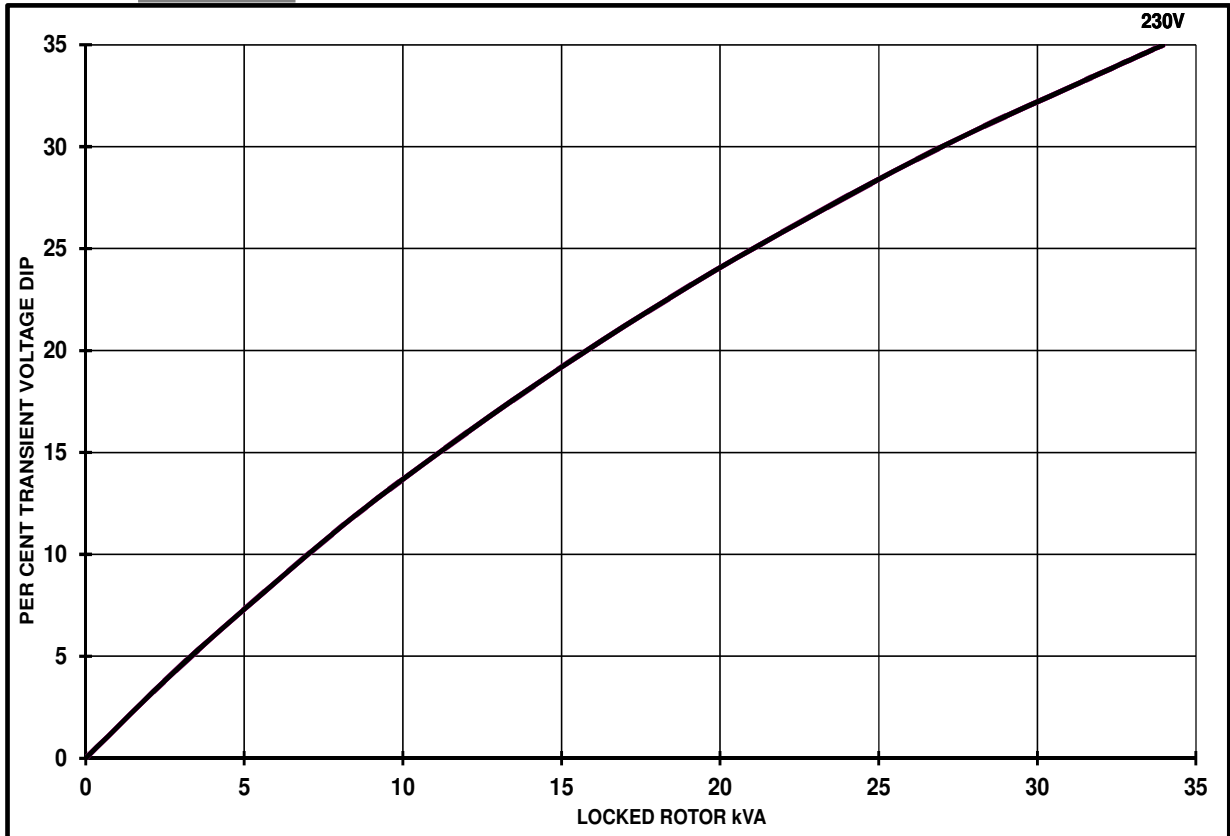


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## Locked Rotor Motor Starting Curves

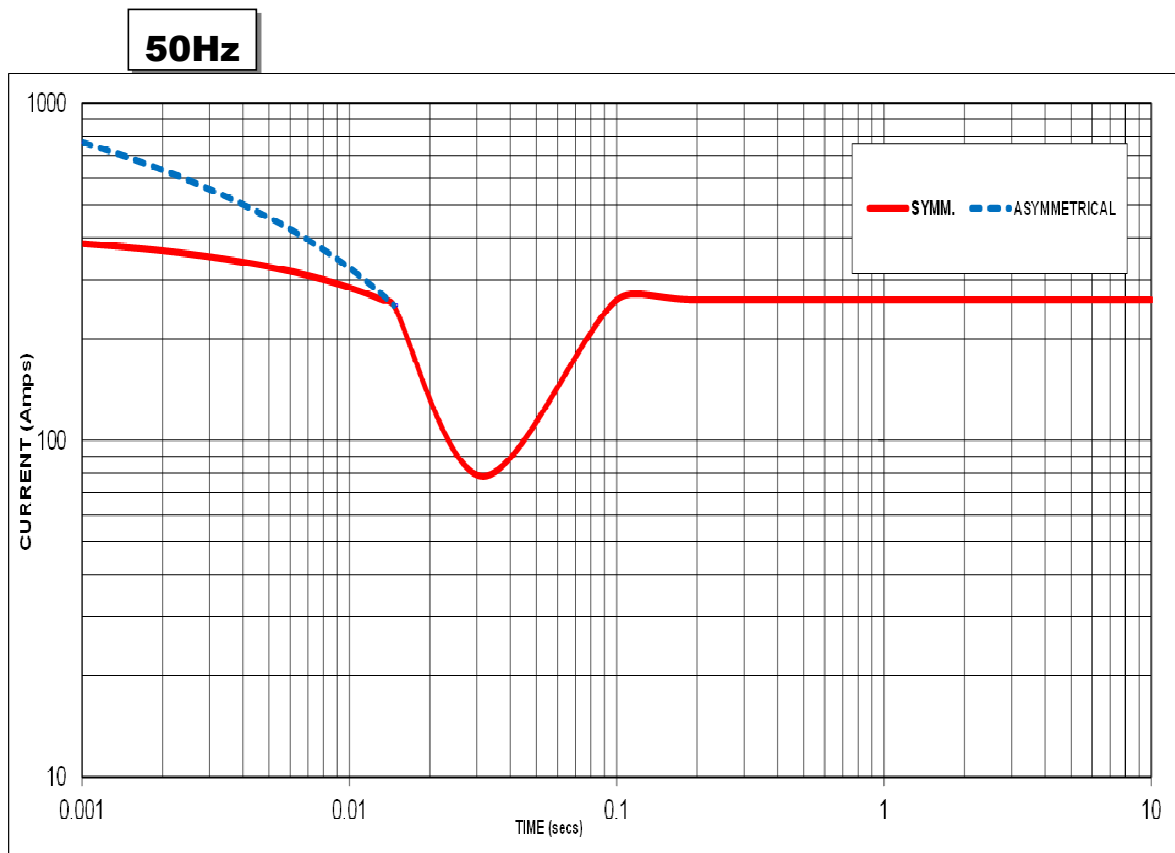
50Hz



Transient Voltage Dip Scaling Factor		Transient Voltage Rise Scaling Factor
PF	Factor	For voltage rise multiply voltage dip by 1.25
< 0.5	1.00	
0.5	0.97	
0.6	0.93	
0.7	0.90	
0.8	0.85	
0.9	0.83	
1.0	0.80	

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S0L2-U Winding 05 / 705  
Short Circuit Decrement Curve

*Note: Applicable only for Winding 705 ( Auxiliary winding).  
Winding 05 (no Auxiliary winding) will not provide sustained short circuit capability.*

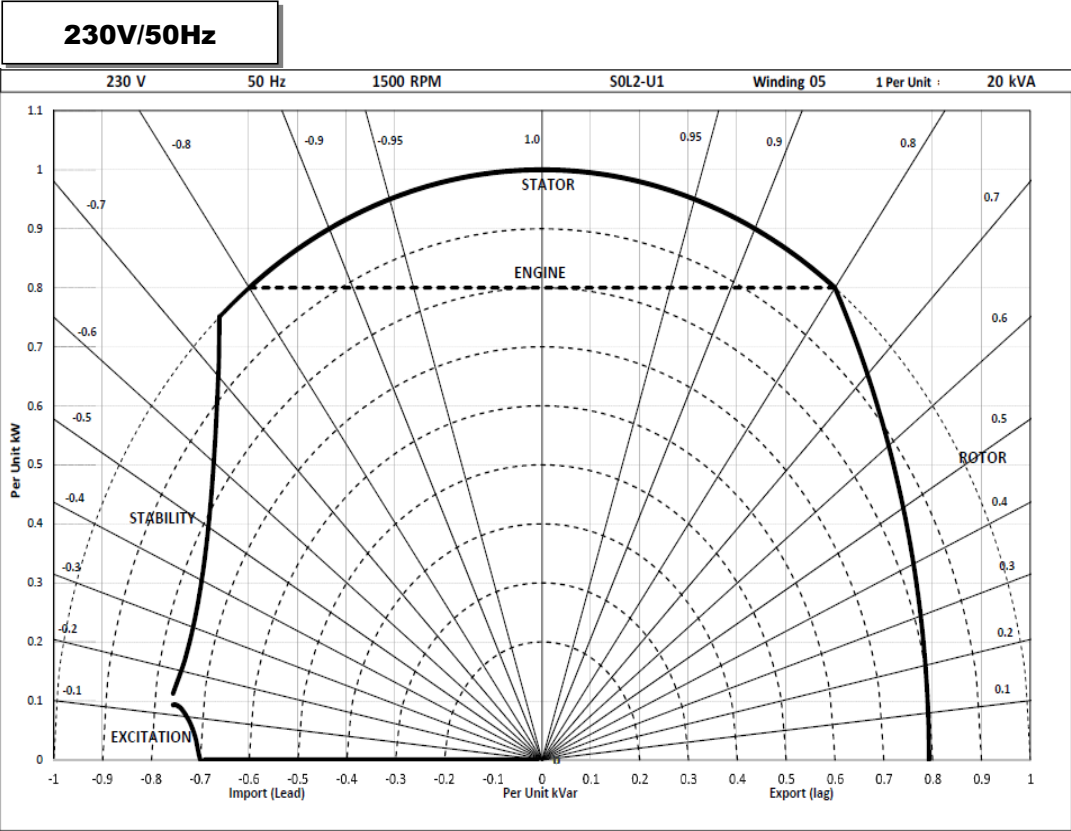


Sustained Short Circuit = 261 Amps

This alternator is capable of achieving a balanced 300% sustained short circuit for up to 10 seconds.

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S0L2-U Winding 05 / 705

Typical Alternator Operating Chart



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## S0L2-U Winding 05 / 705

### RATINGS AT 0.8/1.0 POWER FACTOR

Class - Temp Rise		Standby - 163/27°C		Standby - 150/40°C		Cont. H - 125/40°C		Cont. F - 105/40°C	
<b>50</b> <b>Hz</b>	Series (V)	230	230	230	230	230	230	230	230
	Power Factor	0.8	1.0	0.8	1.0	0.8	1.0	0.8	1.0
	kVA	22.0	23.8	21.3	23.0	20.0	21.6	18.2	19.7
	kW	17.6	23.8	17.0	23.0	16.0	21.6	14.6	19.7
	Efficiency (%)	81.7	85.1	82.1	85.5	83.0	86.2	83.9	87.0
	kW Input	21.5	28.0	20.8	26.9	19.3	25.1	17.4	22.6

#### 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°C by which the operational ambient temperature exceeds 40°C
- For any other operating conditions impacting the cooling circuit please refer to applications

Note: Requirement for operating in an ambient exceeding 60°C 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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