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S1L2M-R Wdg. 705 - Technical Data Sheet

Standards

STAMFORD industrial alternators meet the requirements of the relevant parts of the IEC 60034 and the relevant sections of other international standards such as BS5000-3, ISO 8528-3, VDE 0530, NEMA MG1-32, CSA C22.2-100 and AS 60034. 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**
AS540	Aux winding
Voltage Regulation	± 1%
No Load Excitation Voltage (V)	13 V
Full Load Excitation Voltage (V)	39 V

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S1L2M-R Wdg. 705

Electrical Data		
Insulation System	Class H	
Stator Winding	Double Layer Concentric	
Winding Pitch	2/3	
Winding Leads	4	
Winding Number	705	
Number of Poles	4	
IP Rating	IP23	
RFI Suppression	BS EN 61000-6-2 & BS EN 61000-6-4,VDE 0875G, VDE 0875N. Refer to factory for others	
Waveform Distortion	NO LOAD < 2% NON-DISTORTING BALANCED LINEAR LOAD < 5.0%	
Short Circuit Ratio	1/Xd	
Steady State X/R Ratio	4.04	
	50 Hz	
Telephone Interference	THF<2%	
Voltage Series	230	230
Power Factor	0.8	1.0
kVA Base Rating (Class H)	26.6	28.7
Saturated Values in Per Unit at Base Ratings and Voltages		
Xd Dir. Axis Synchronous	0.881	0.951
X'd Dir. Axis Transient	0.109	0.118
X"d Dir. Axis Subtransient	0.090	0.098
Xq Quad. Axis Reactance	0.887	0.957
X"q Quad. Axis Subtransient	0.113	0.121
XL Stator Leakage Reactance	0.054	0.058
X2 Negative Sequence Reactance	0.148	0.160
X0 Zero Sequence Reactance	0.004	0.005
Unsaturated Values in Per Unit at Base Ratings and Voltages		
Xd Dir. Axis Synchronous	1.058	1.141
X'd Dir. Axis Transient	0.125	0.135
X"d Dir. Axis Subtransient	0.106	0.114
Xq Quad. Axis Reactance	0.913	0.985
X"q Quad. Axis Subtransient	0.135	0.146
XL Stator Leakage Reactance	0.061	0.066
X2 Negative Sequence Reactance	0.178	0.192
X0 Zero Sequence Reactance	0.005	0.006
Time Constants (Seconds)		
T'd TRANSIENT TIME CONST.	0.033	
T''d SUB-TRANSTIME CONST.	0.002	
T'do O.C. FIELD TIME CONST.	0.204	
Ta ARMATURE TIME CONST.	0.013	

STAMFORD

S1L2M-R Wdg. 705

Resistances in Ohms (Ω) at 22°C		
Stator Winding Resistance (Ra)	0.067 Ω per phase series connected	
Rotor Winding Resistance (Rf)	1.1 Ω	
Exciter Stator Winding Resistance	14.5 Ω	
Exciter Rotor Winding Resistance	0.205 Ω per phase	
Positive Sequence Resistance (R1)	0.084 Ω	
Negative Sequence Resistance (R2	0.096 Ω	
Zero Sequence Resistance (R0)	0.084 Ω	
Aux Winding Resistance (with winding 705 only)	2.61 Ω	
Mechanical data		
Cooling Air	0. 176 m³/sec (50Hz)	
Shaft and Keys	All alternator rotors are dynamically balanced to better than ISO 21940-11 Grade 2.5 for minimum vibration in operation. Two bearing generators are balanced with a half key.	
Bearing	1 Bearing	2 Bearing
SAE Adaptor	3, 4	3, 4, None
Weight Complete Alternator	219 kg	233 kg
Weight Wound Stator	85.08 kg	85.08 kg
Weight Wound Rotor	74.05 kg	76.08 kg
Moment of Inertia	0.3554 kgm^2	0.3561 kgm^2
Shipping weight in a Crate	247 kg	261 kg
Packing Crate Size	105 x 57 x 96 (cm)	105 x 57 x 96 (cm)
Maximum Over Speed	2250 RPM for two minutes	
Bearing Drive End	-	BALL. 6309-2RS (ISO)
Bearing Non-Drive End	Ball Bearing, 6306-2RS1	Ball Bearing, 6306-2RS1

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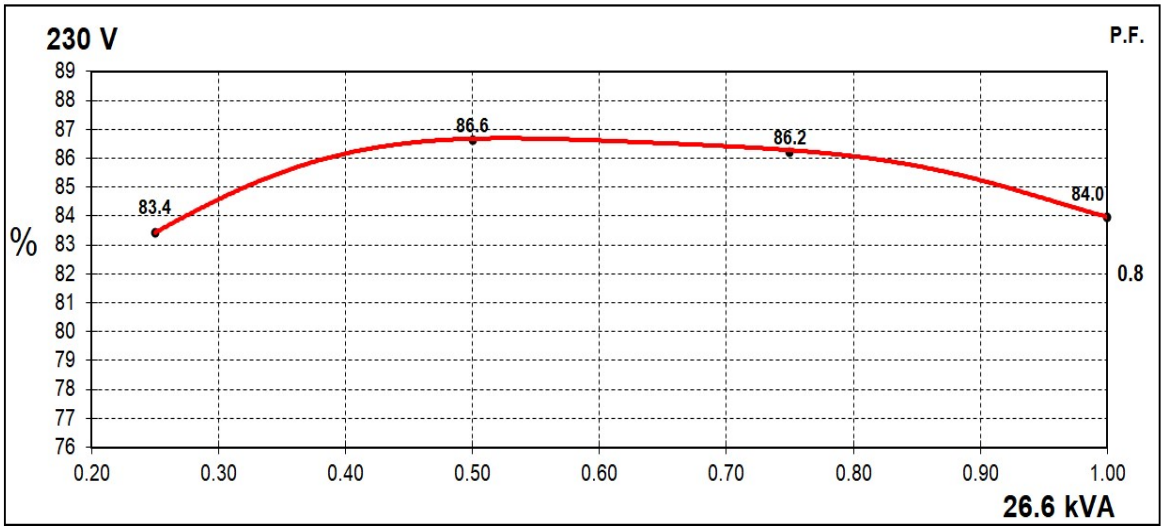
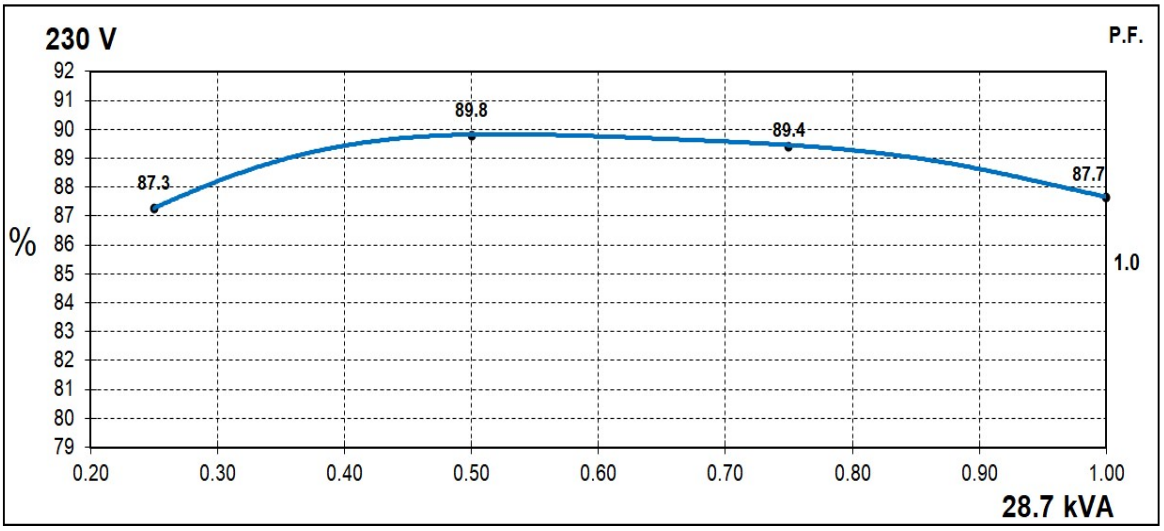
S1L2M-R Wdg. 705

Single Phase Efficiency Curves

50Hz





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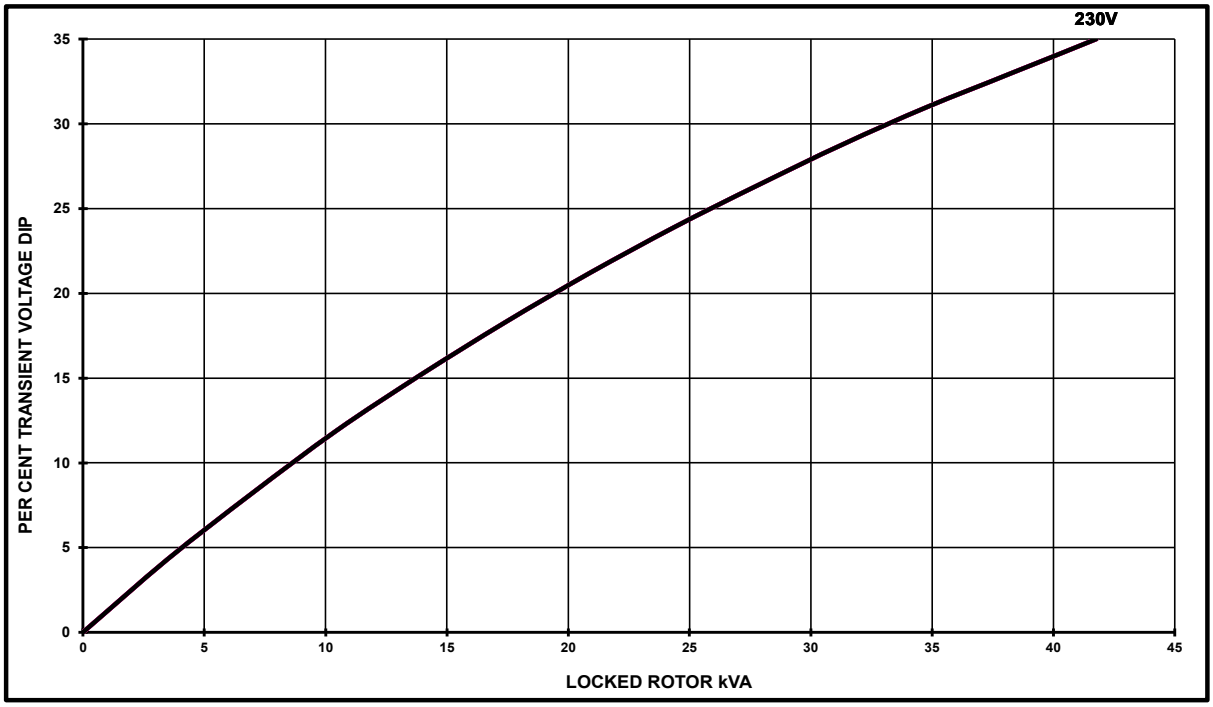
Locked Rotor Motor Starting Curves

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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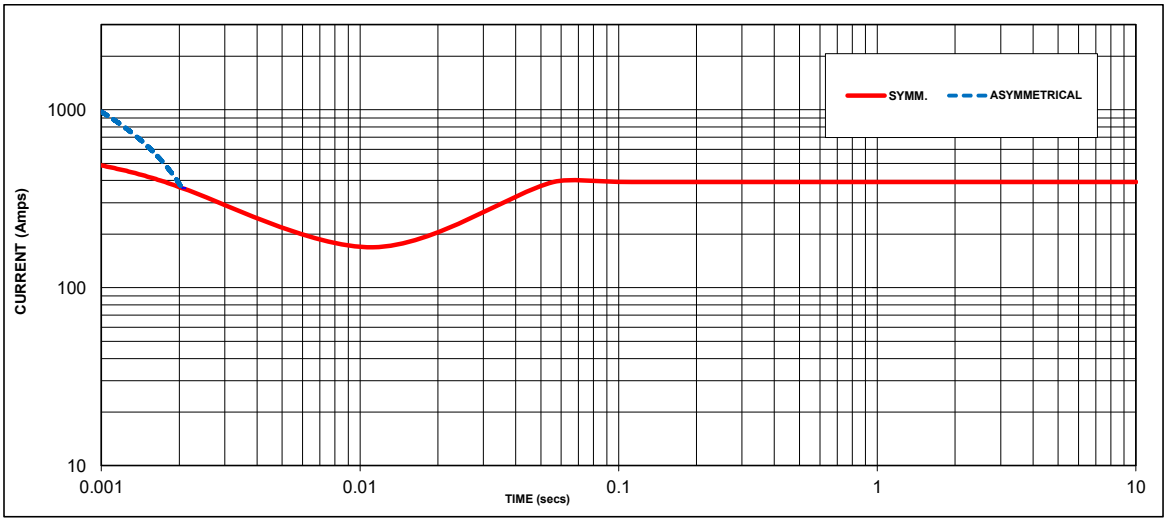
S1L2M-R Wdg. 705

Short Circuit Decrement Curve

Note: Applicable only for Winding 705 (Auxiliary winding).

50Hz



Sustained Short Circuit = 392 Amps

Note: The alternator is capable of delivering 300% short-circuit current for 10 seconds as per requirements specified by marine agencies.

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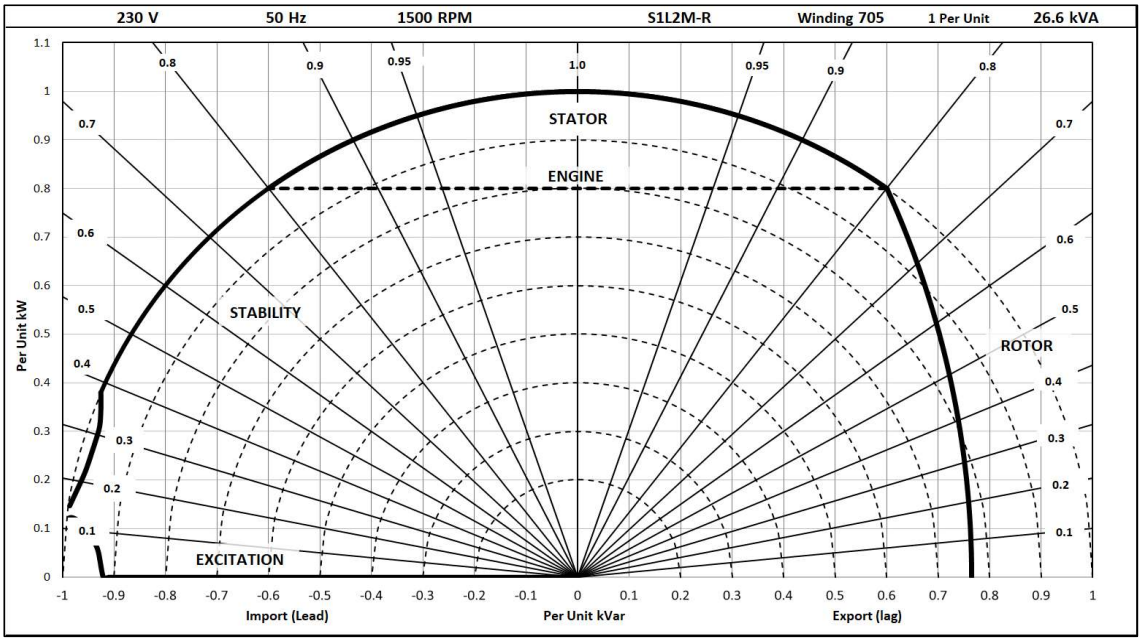
Typical Alternator Operating Chart

230V/50Hz



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S1L2M-R Wdg. 705

RATINGS AT 0.8/1.0 POWER FACTOR

	Class - Temp Rise	Standby		Cont. H - 110/50°C		Cont. F - 90/50°C		Cont. B - 70/50°C	
50 Hz	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	N/A	N/A	26.6	28.7	24.0	26.0	21.1	22.9
	kW	N/A	N/A	21.3	28.7	19.2	26.0	16.9	22.9
	Efficiency (%)	N/A	N/A	84.0	87.7	85.3	88.7	86.1	89.3
	kW Input	N/A	N/A	25.3	32.7	22.5	29.3	19.6	25.6

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 50°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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