

STAMFORD®

S0L2M-U 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)	55 V

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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	3.63	
	50 Hz	
Telephone Interference	THF<2%	
Voltage Series	230	230
Power Factor	0.8	1.0
kVA Base Rating (Class H)	17.7	19.1
Saturated Values in Per Unit at Base Ratings and Voltages		
Xd Dir. Axis Synchronous	1.229	1.326
X'd Dir. Axis Transient	0.119	0.129
X" d Dir. Axis Subtransient	0.109	0.117
Xq Quad. Axis Reactance	0.895	0.966
X" q Quad. Axis Subtransient	0.160	0.173
XL Stator Leakage Reactance	0.067	0.073
X2 Negative Sequence Reactance	0.213	0.230
X0 Zero Sequence Reactance	0.077	0.083
Unsaturated Values in Per Unit at Base Ratings and Voltages		
Xd Dir. Axis Synchronous	1.475	1.592
X'd Dir. Axis Transient	0.137	0.148
X" d Dir. Axis Subtransient	0.127	0.137
Xq Quad. Axis Reactance	0.922	0.994
X" q Quad. Axis Subtransient	0.192	0.207
XL Stator Leakage Reactance	0.076	0.082
X2 Negative Sequence Reactance	0.256	0.276
X0 Zero Sequence Reactance	0.090	0.097
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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Resistances in Ohms (Ω) at 22°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 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, 5	3, 4, 5, None
Weight Complete Alternator	141 kg	152 kg
Weight Wound Stator	59.5 kg	59.5 kg
Weight Wound Rotor	51.619 kg	52.619 kg
Moment of Inertia	0.1852 kgm ²	0.1855 kgm ²
Shipping weight in a Crate	178 kg	189 kg
Packing Crate Size	93 x 59 x 76 (cm)	93 x 59 x 76 (cm)
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

ES10462543, A.4, Released, Performance Specification, Page 4 of 9, System: cmipm.cummins.com Downloaded: 02-10-2025 11:50UTC
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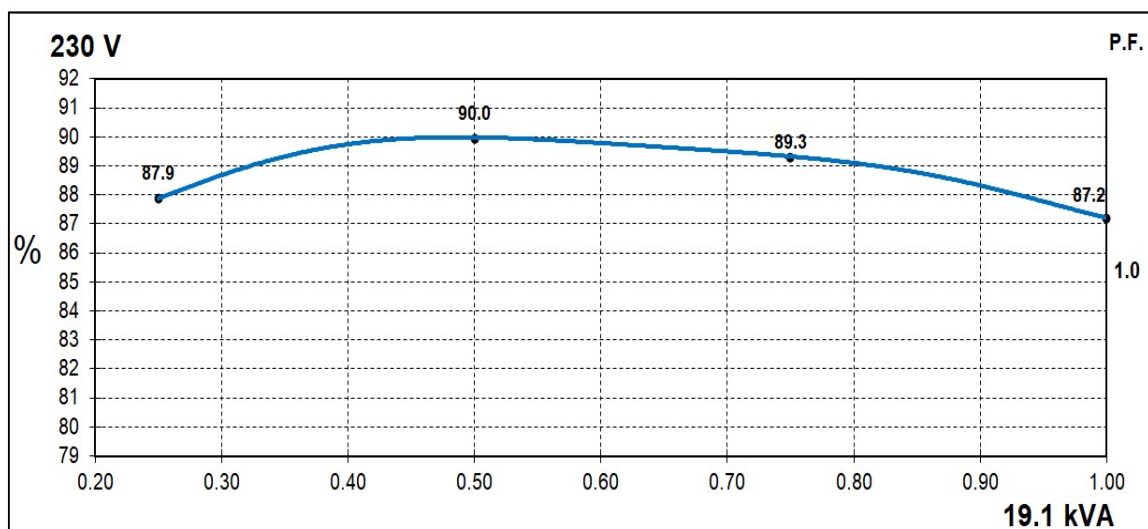
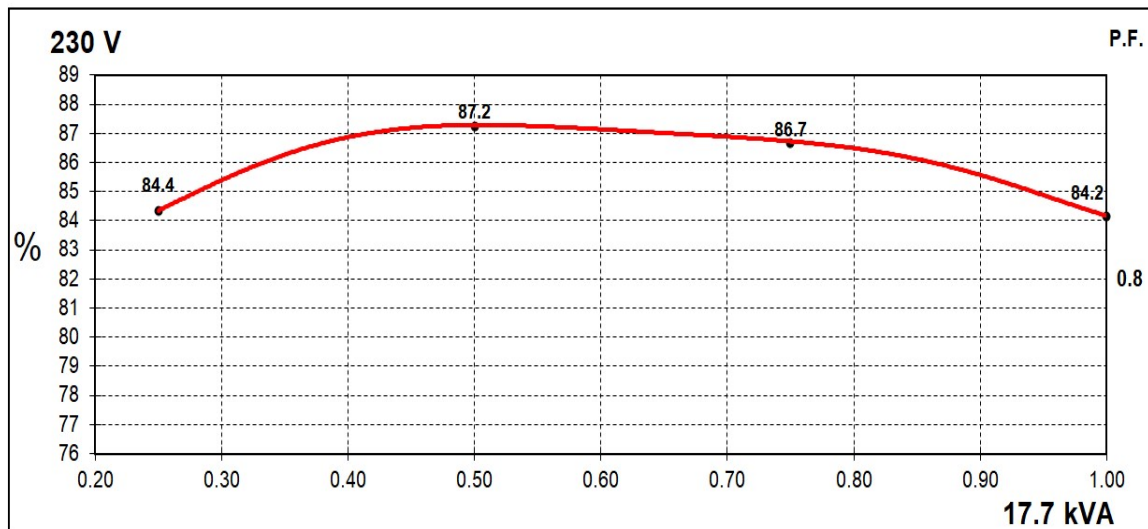
Cummins Data Classification: CUMMINS CONFIDENTIAL

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Single Phase Efficiency Curves

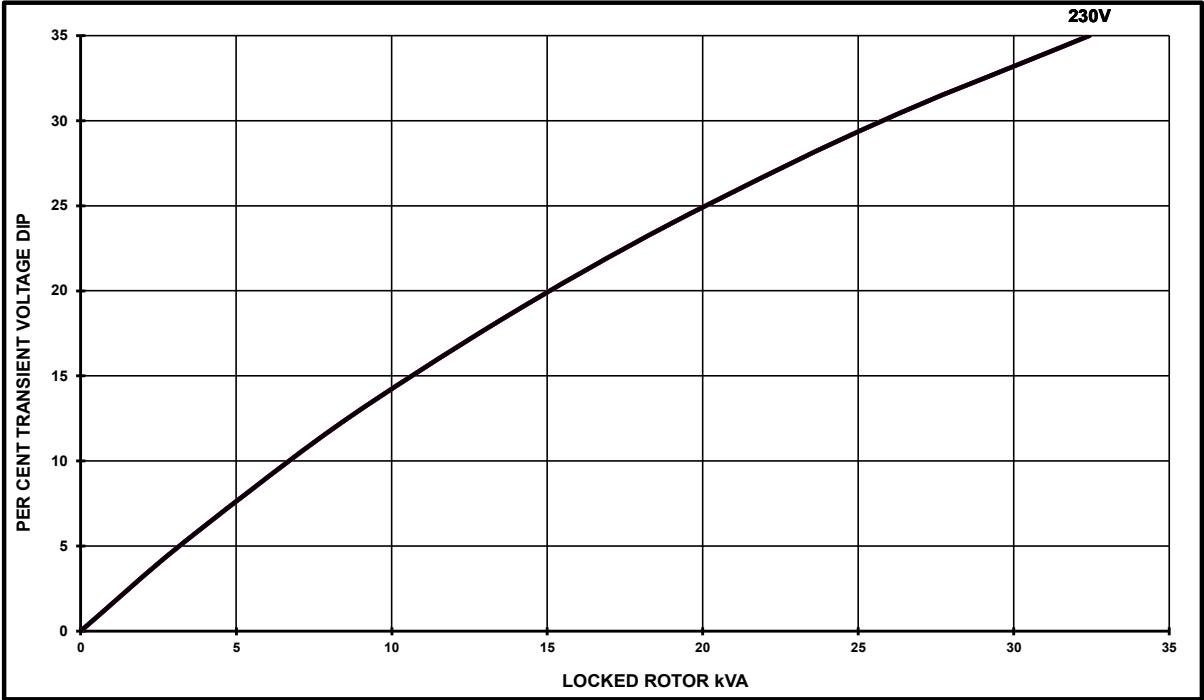
50Hz



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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	

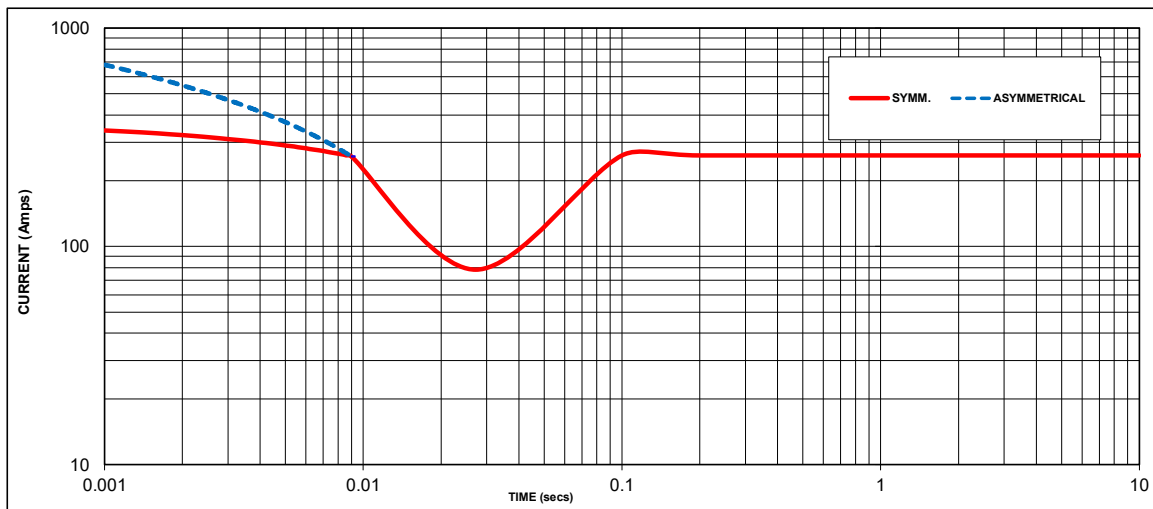
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Short Circuit Decrement Curve

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

50Hz



Sustained Short Circuit = 261 Amps

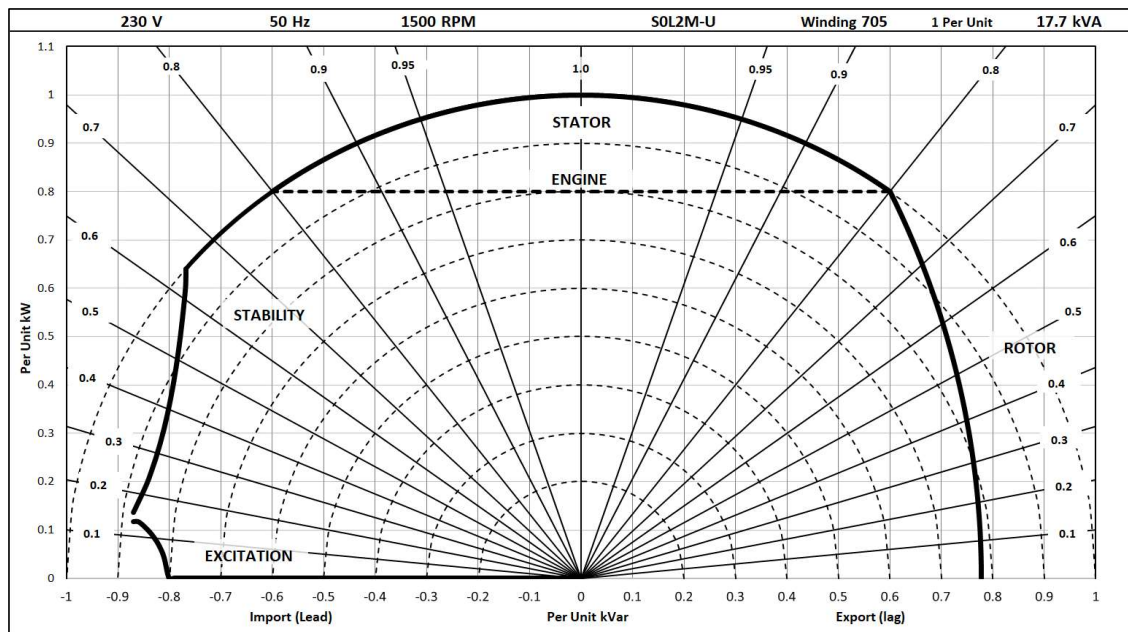
Note: The alternator is capable of delivering 300% short-circuit current for 10 seconds as per requirements specified by marine agencies.

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Typical Alternator Operating Chart

230V/50Hz



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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 Series (V)	230 230	230 230	230 230	230 230
Hz Power Factor	0.8 1.0	0.8 1.0	0.8 1.0	0.8 1.0
kVA	N/A N/A	17.7 19.1	16.0 17.3	14.1 15.3
kW	N/A N/A	14.2 19.1	12.8 17.3	11.3 15.3
Efficiency (%)	N/A N/A	84.2 87.2	85.5 85.6	86.5 86.6
kW Input	N/A N/A	16.8 21.9	15.0 20.2	13.0 17.7

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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