

TECHNICAL DATA SHEET



**ALTERNATOR E1X13M F/4**

*Three-Phase brushless synchronous alternator with AVR - 4 poles*

## E1X13M F/4

### COMMON DATA

Rated Power at 50Hz	kVA	16,0	
Rated Power at 60Hz	kVA	19,0	
Rated Power Factor		0,8	
Nominal Temperature	°C	40	
Control System		self-excited	
Execution		brushless	
Regulation Type		AVR	
Insulation Class		H	
Protection		IP21	
Maximum Over speed	rpm	2250	
Overload		110% of rated power for one hour in a cycle of 6 hours	
Air Flow Requirement	m <sup>3</sup> /min	4,5 at 50Hz	5,1 at 60Hz
R.F.I. Suppression		Standard EN55011	

### REGULATION DATA

AVR	HVR11	HVR30
Sensing	single-phase	three-phase
Voltage Regulation	±1%	±1%
Sustained Short Circuit	> 300% of rated current	

### WINDING DATA

Stator Winding		Double layer with auxiliary winding
Rotor Winding		with damping cage
Winding Pitch		2/3
Number of Leads of Stator		12
Stator Winding Resistance	Ω	0,64 at 20°C
Rotor Winding Resistance	Ω	9,86 at 20°C
Exciter Stator Resistance	Ω	16,5 at 20°C
Exciter Rotor Resistance	Ω	2,15 at 20°C
THD at full load		<3%
THD at no load		<3%
Excitation at no load	Adc	0,58
Excitation at full load	Adc	1,63

### STANDARD

References	EN60034-1 ISO8528-3 EN55011
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### ON REQUEST

UL 1446, Systems of Insulating Materials - General CSA-C22.2 No. 0, Appendix B, General Requirements - Canadian Electrical Code, Part I  
 CAN/CSA - C22.2 No. 100-14 (R2009) Motors and Generators, UL1004-1 2nd ed. Rotating Electrical Machines - General Requirements, UL1004-4 2nd ed. Electric Generators

## E1X13M F/4

### ELECTRICAL DATA

Frequency		50Hz - 1500rpm				60Hz - 1800rpm			
Voltage Series Star	V	<b>380/220</b>	<b>400/230</b>	<b>415/240</b>	<b>440/254</b>	<b>415/240</b>	<b>440/254</b>	<b>460/266</b>	<b>480/277</b>
Rated Power in Class H (125°C/40°C)	kVA	16,0	16,0	15,5	14,0	17,0	18,5	19,0	19,0
	kW	12,8	12,8	12,4	11,2	13,6	14,8	15,2	15,2
Rated Power in Class F (105°C/40°C)	kVA	14,6	14,6	14,2	12,0	15,5	17,0	17,5	17,5
	kW	11,68	11,68	11,36	9,6	12,4	13,6	14,0	14,0
Rated Power Standby (150°C/40°C)	kVA	17,5	17,5	17,0	15,0	18,5	20,0	21,0	21,0
	kW	14,0	14,0	13,6	12,0	14,8	16,0	16,8	16,8
Rated Power Standby (163°C/27°C)	kVA	18,0	18,0	17,5	15,5	19,0	20,5	21,5	21,5
	kW	14,4	14,4	14,0	12,4	15,2	16,4	17,2	17,2

### EFFICIENCY IN CL. H

4/4		86,0%						86,4%
3/4		86,4%						86,5%
2/4		85,1%						85,6%
1/4		80,0%						81,8%

### REACTANCES AND TIME CONSTANTS

pcc		0,76							
X <sub>d</sub>	- dir. axis synchronous	288%	260%	234%	188%	311%	301%	283%	260%
X' <sub>d</sub>	- dir. axis transient	22,2%	20,0%	18,0%	14,5%	23,9%	23,2%	21,8%	20,0%
X'' <sub>d</sub>	- dir. axis subtransient	8,5%	7,7%	6,9%	5,6%	9,2%	8,9%	8,4%	7,7%
X <sub>q</sub>	- quad. axis reactance	155%	140%	126%	101%	168%	162%	152%	140%
T' <sub>do</sub>	- O.C. field time constant	402ms							
T' <sub>d</sub>	- Transient time constant	31ms							
T'' <sub>d</sub>	- Sub-transient time constant	6ms							

### MECHANICAL DATA

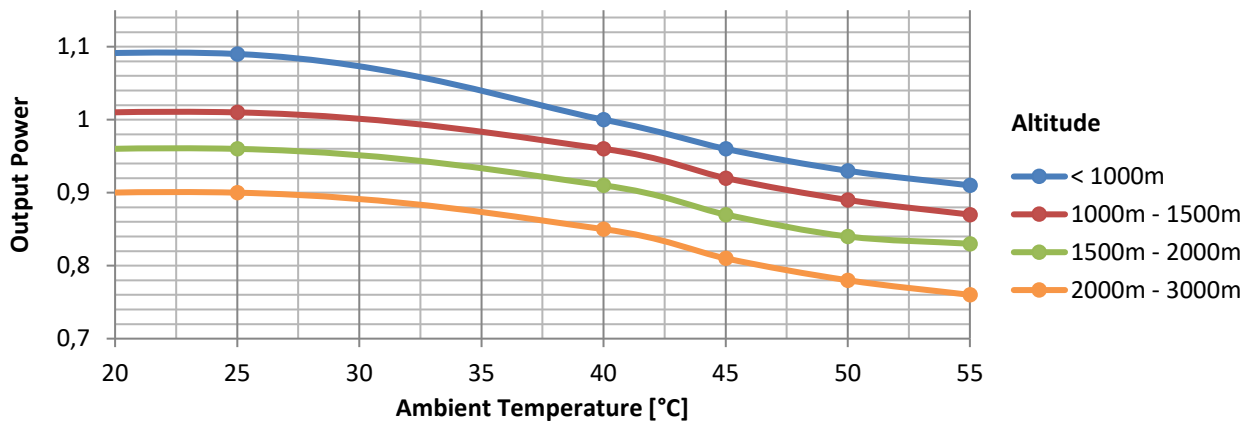
Bearing non drive end		6305-2Z-C3	
Bearing drive end (B3/B14 form)		6208-2Z-C3	
Weight of generator	in B2	kg	100
	in B3/B14	kg	95,9
	in B3/B9	kg	\

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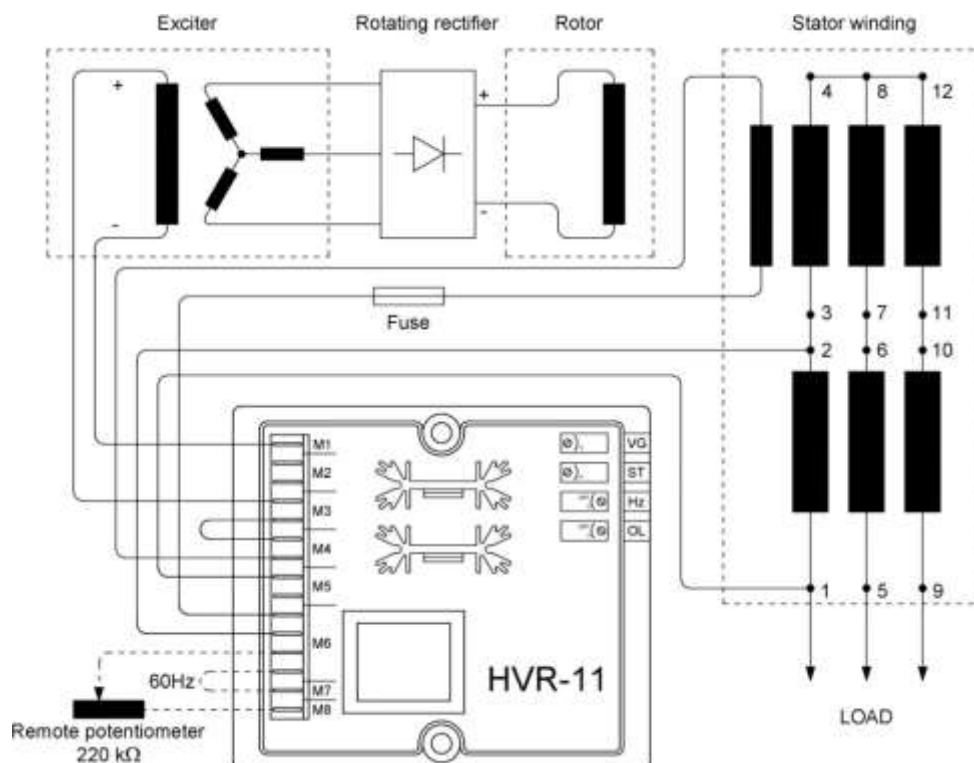
## MOMENT OF INERZIA

B3/B9	kg·m <sup>2</sup>	\
SAE 7½	kg·m <sup>2</sup>	0,094
B2	kg·m <sup>2</sup>	0,091

## DERATING CURVES



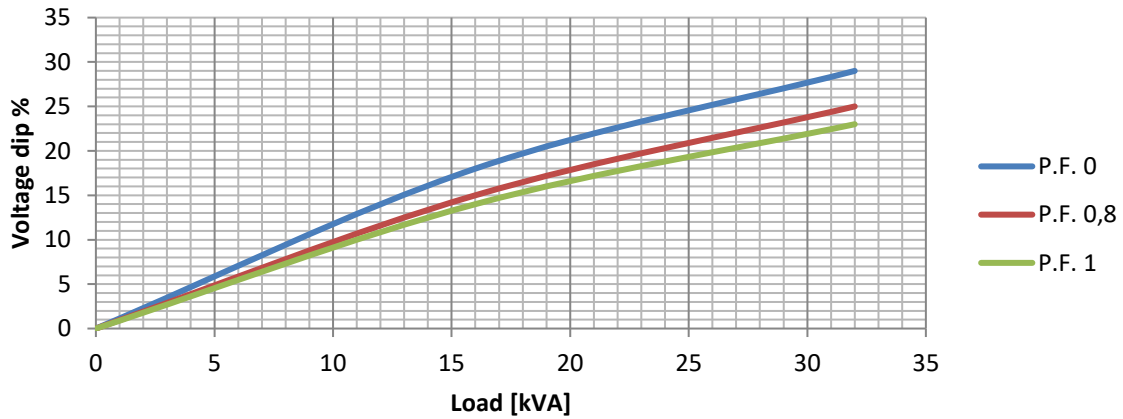
## WIRING DIAGRAM



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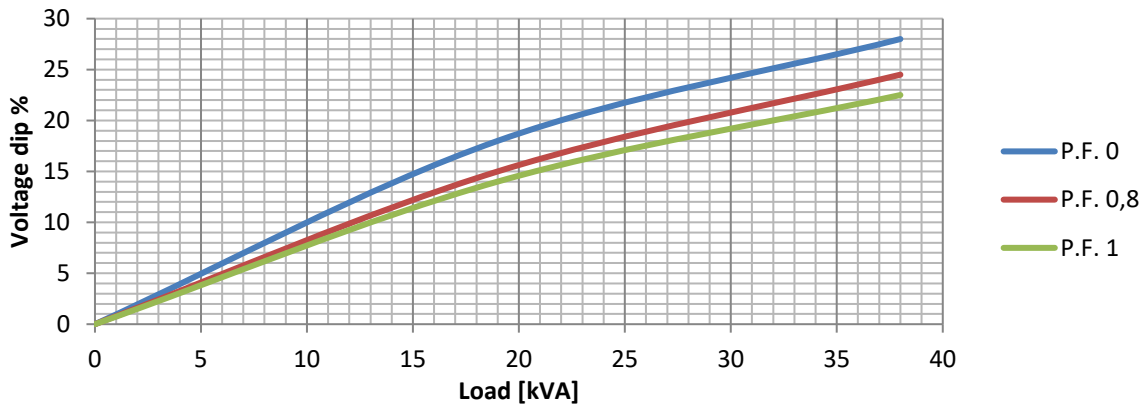
## TRANSIENT VOLTAGE VARIATION 50Hz

### Transient Voltage Variation @ 50Hz



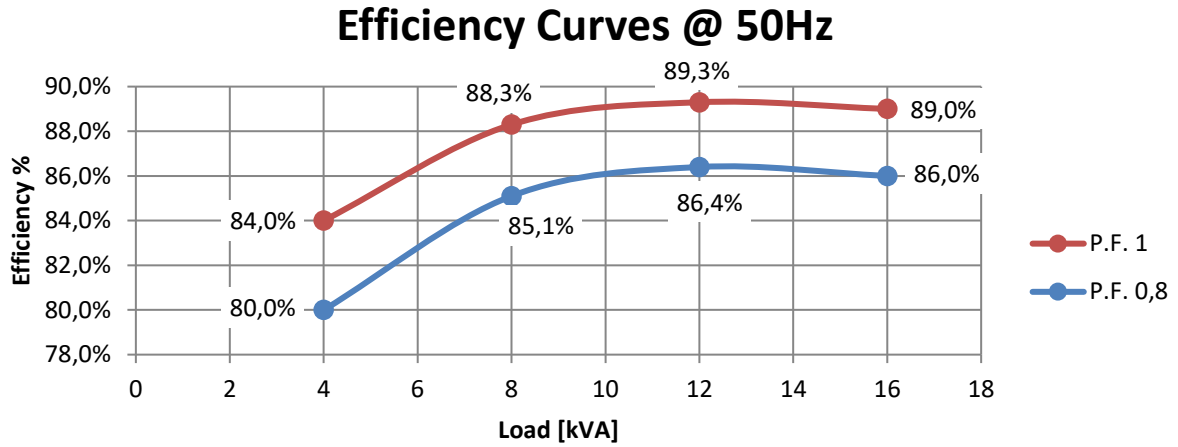
## TRANSIENT VOLTAGE VARIATION 60Hz

### Transient Voltage Variation @ 60Hz

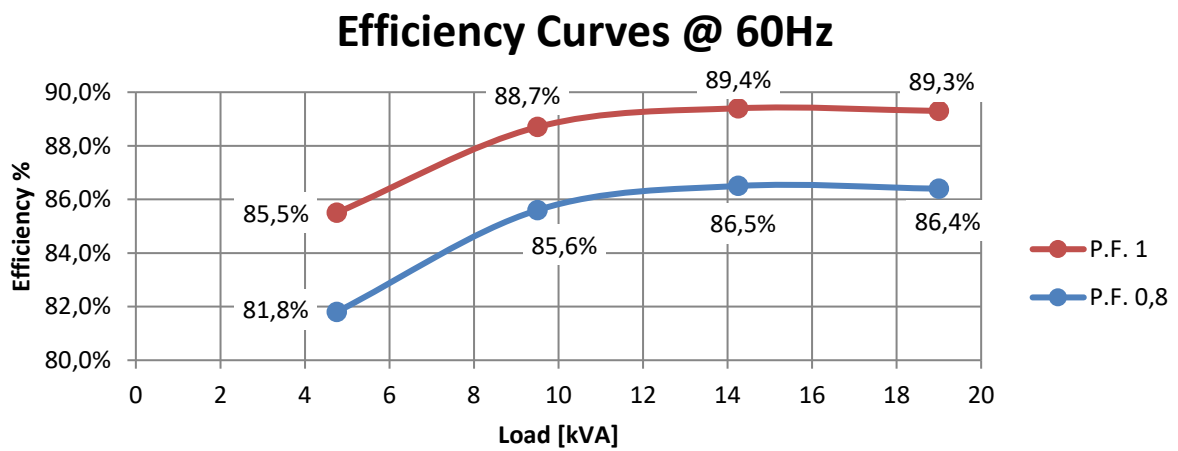


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## EFFICIENCY 50Hz

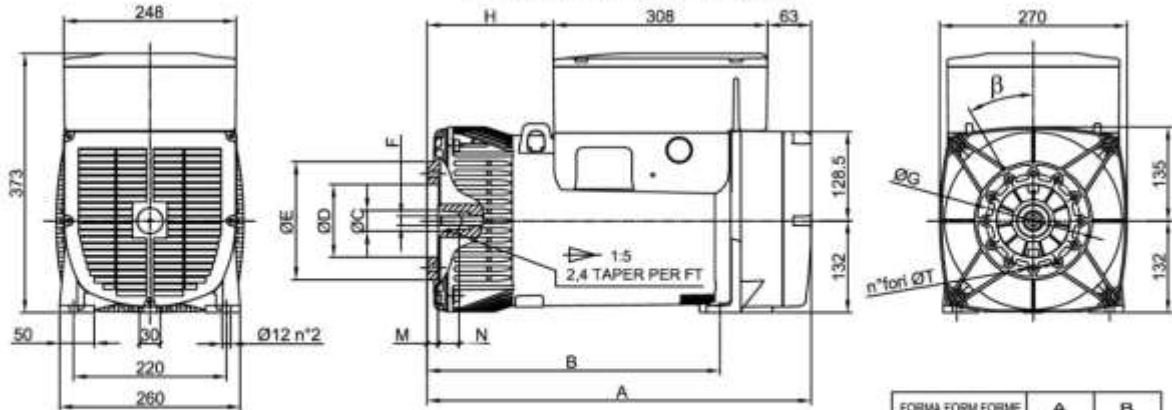


## EFFICIENCY 60Hz



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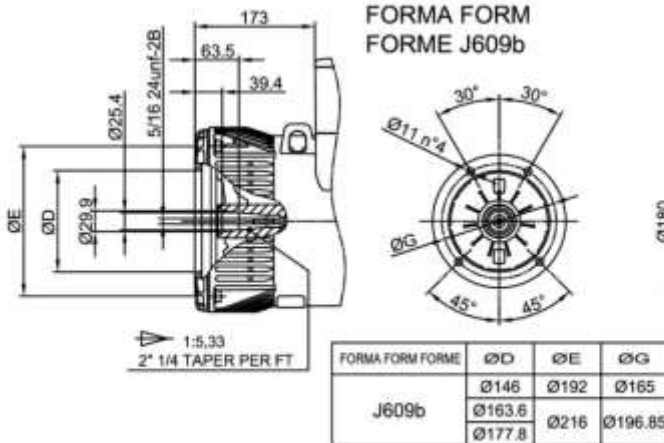
## FORMA FORM FORME B3/B9



FORMA FORM FORME	ØC	ØD	ØE	F	ØG	H	M	N	n°fori	ØT	β
cono Ø30	Ø30	Ø105	Ø170	M14x1.5	Ø135	182	16	30	12	Ø9	30°
cono Ø38	Ø38	Ø125	Ø185	M18x1.5	Ø150	173	5	30	4	Ø11	β/2 45°

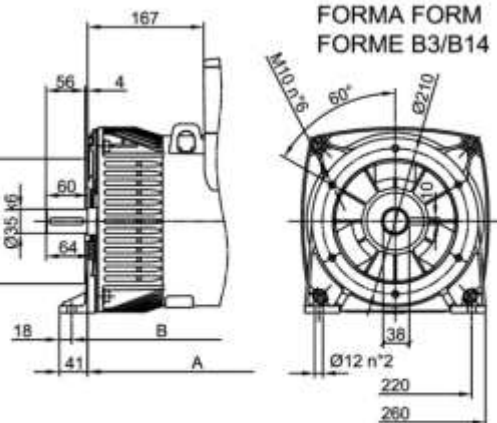
FORMA FORM FORME	A	B
B3B9 cono Ø30	553	422
B3B9 c. Ø38-J609b	544	413
B3/B14	538	430
MD35 - LOMB. STD	586	455

## FORMA FORM FORME J609b

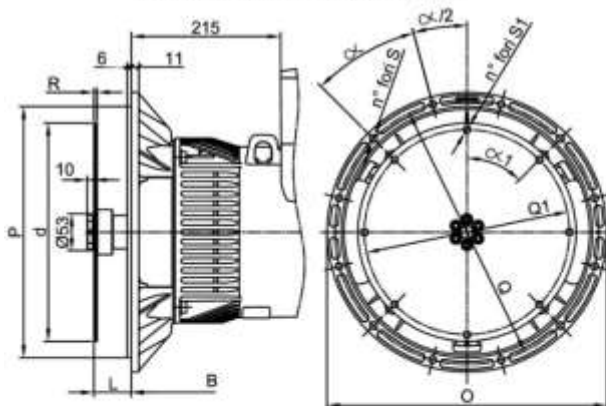


FORMA FORM FORME	ØD	ØE	ØG
J609b	Ø146	Ø192	Ø165
	Ø163.6	Ø216	Ø196.85
	Ø177.8		

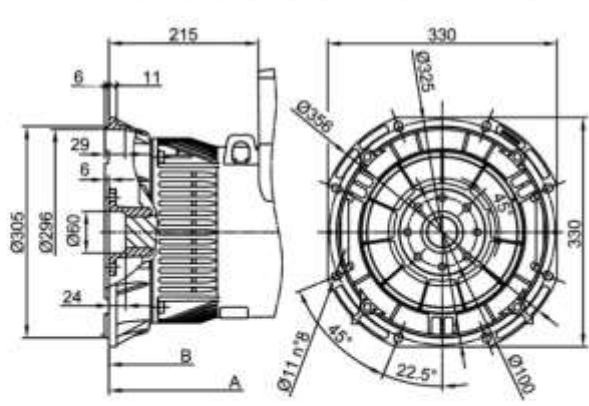
## FORMA FORM FORME B3/B14



## FORMA FORM FORME MD35



## FORMA FORM FORME LOMBARDINI STD



SAE	FLANGIE - BRIDE - FLANGE						
	N.	O	P	Q	n. fori	S	α
5	356	314.3	333.4	8	8	11	45°
4	403	362	381	12	11		30
3	451	409.6	428.6	12			30

SAE	GIUNTI A DISCO - DISC COUPLING - ACC. DISQUE						
	N	L	d	Q1	n. fori	S1	α1
6 1/2	30.2	215.9	200	6	9	80°	3
7 1/2	30.2	241.3	222.25	8	9	45°	
B	62	263.52	244.47	6	10.5	60	
10	53.8	314.32	296.27	8	10.5	45°	4.5
11 1/2	39.6	352.42	333.37	8	10.5	45°	