

TECHNICAL DATA SHEET



**ALTERNATOR E1X13M D/2**

*Three-Phase brushless synchronous alternator with AVR - 2 poles*

## E1X13M D/2

### COMMON DATA

Rated Power at 50Hz	kVA	16,0	
Rated Power at 60Hz	kVA	19,5	
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	4500	
Overload		110% of rated power for one hour in a cycle of 6 hours	
Air Flow Requirement	m <sup>3</sup> /min	8,0 at 50Hz	9,6 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	0,43 at 20°C
Rotor Winding Resistance	Ω	12 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	A <sub>dc</sub>	0,14
Excitation at full load	A <sub>dc</sub>	1,06

### 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 D/2

### ELECTRICAL DATA

Frequency		50Hz - 3000rpm				60Hz - 3600rpm			
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	16,0	13,0	17,0	19,0	19,5	19,5
	kW	12,8	12,8	12,8	10,4	13,6	15,2	15,6	15,6
Rated Power in Class F (105°C/40°C)	kVA	14,7	14,7	14,7	12,0	15,5	17,4	18,0	18,0
	kW	11,76	11,76	11,76	9,6	12,4	13,92	14,4	14,4
Rated Power Standby (150°C/40°C)	kVA	17,4	17,4	17,4	13,8	18,2	20,5	21,0	21,0
	kW	13,92	13,92	13,92	11,04	14,56	16,4	16,8	16,8
Rated Power Standby (163°C/27°C)	kVA	18,0	18,0	17,0	14,2	19,0	21,0	22,0	22,0
	kW	14,4	14,4	13,6	11,36	15,2	16,8	17,6	17,6

### EFFICIENCY IN CL. H

4/4	85,0%							85,5%
3/4	85,3%							85,7%
2/4	81,6%							80,2%
1/4	77,3%							76,3%

### REACTANCES AND TIME CONSTANTS

pcc		0,42							
X <sub>d</sub>	- dir. axis synchronous	427%	385%	358%	259%	449%	446%	419%	385%
X' <sub>d</sub>	- dir. axis transient	33,2%	30,0%	27,9%	20,1%	35,0%	34,8%	32,7%	30,0%
X'' <sub>d</sub>	- dir. axis subtransient	11,1%	10,0%	9,3%	6,7%	11,7%	11,6%	10,9%	10,0%
X <sub>q</sub>	- quad. axis reactance	255%	230%	214%	154%	268%	267%	250%	230%
T' <sub>do</sub>	- O.C. field time constant	390ms							
T' <sub>d</sub>	- Transient time constant	30ms							
T'' <sub>d</sub>	- Sub-transient time constant	8,8ms							

### MECHANICAL DATA

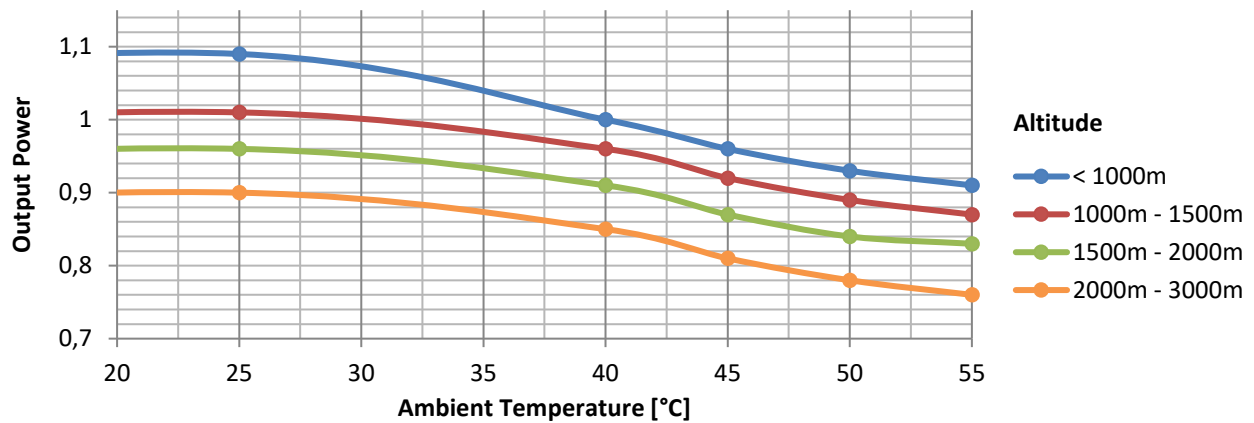
Bearing non drive end		6305-2Z-C3	
Bearing drive end (B3/B14 form)		6208-2Z-C3	
Weight of generator	in B2	kg	90,0
	in B3/B14	kg	85,9
	in B3/B9	kg	\

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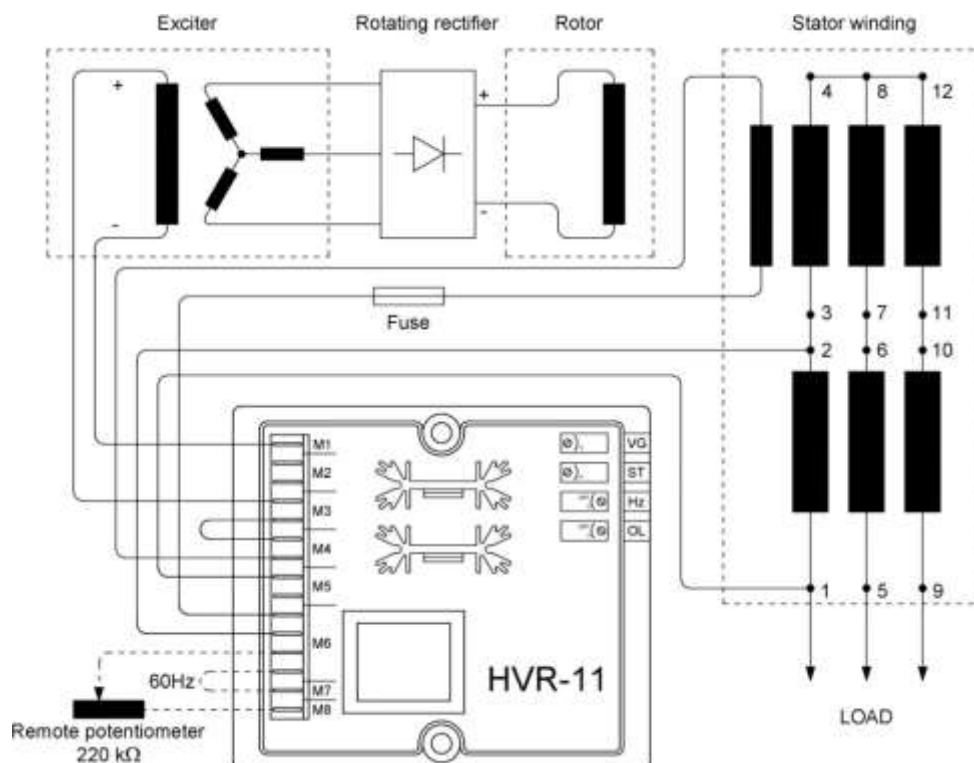
## MOMENT OF INERZIA

B3/B9	kg·m <sup>2</sup>	\
SAE 7½	kg·m <sup>2</sup>	0,082
B2	kg·m <sup>2</sup>	0,081

## DERATING CURVES



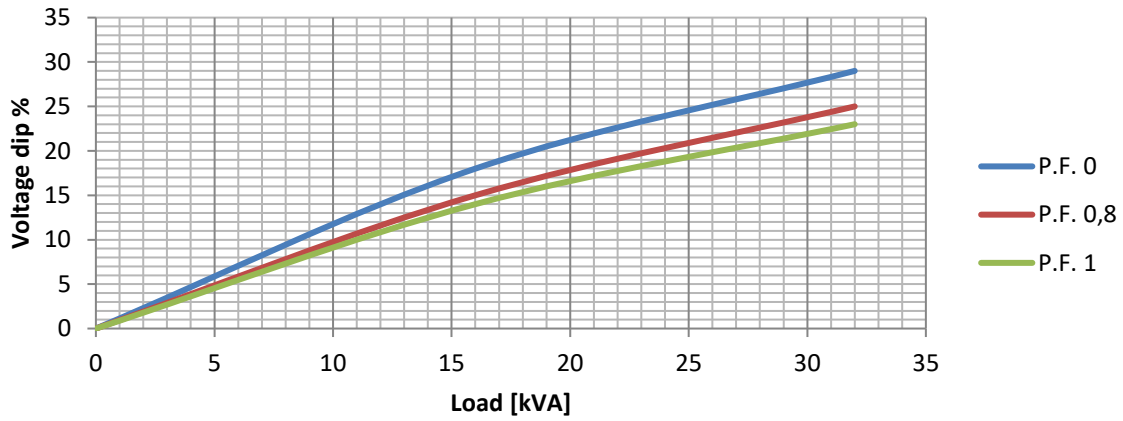
## WIRING DIAGRAM



# E1X13M D/2

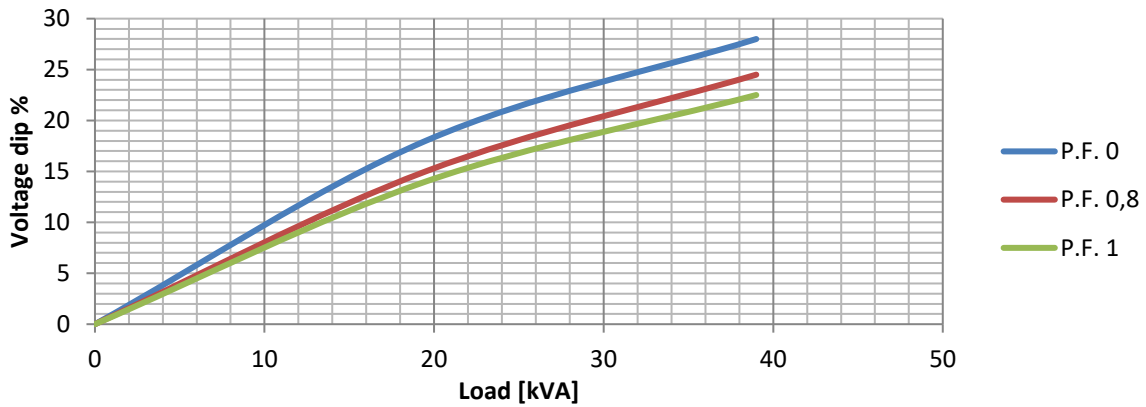
## TRANSIENT VOLTAGE VARIATION 50Hz

### Transient Voltage Variation @ 50Hz



## TRANSIENT VOLTAGE VARIATION 60Hz

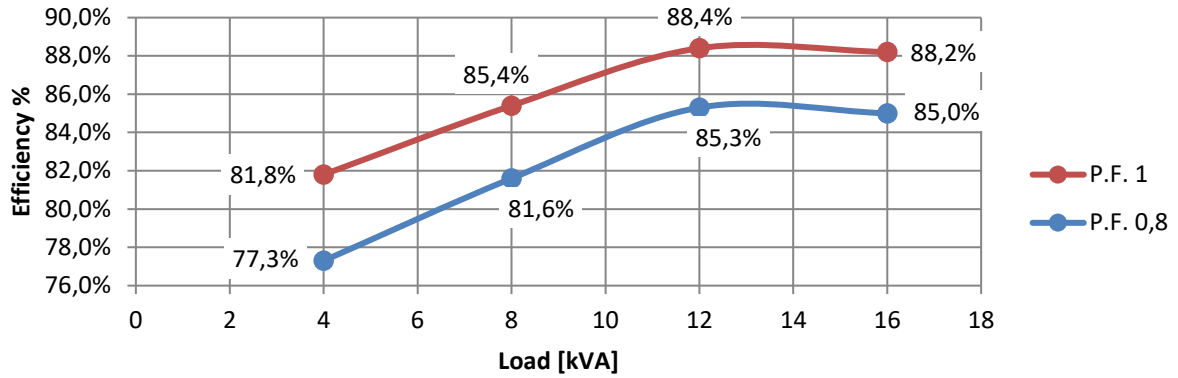
### Transient Voltage Variation @ 60Hz



# E1X13M D/2

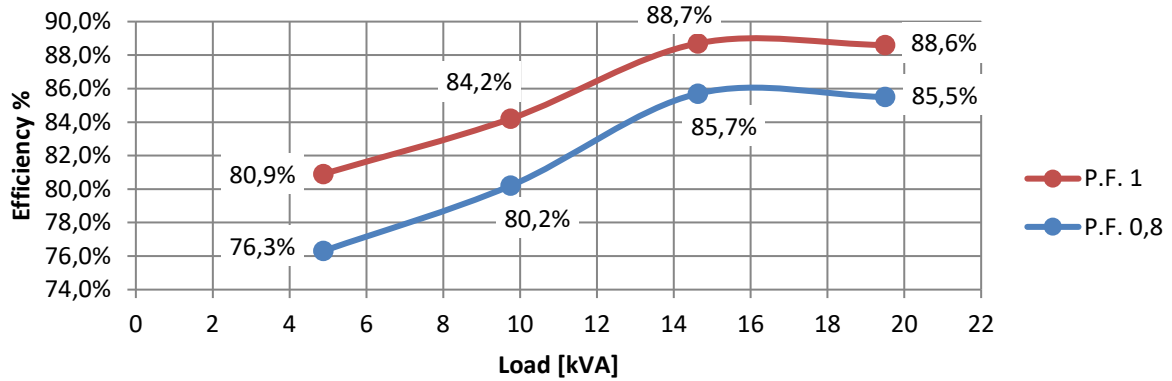
## EFFICIENCY 50Hz

### Efficiency Curves @ 50Hz



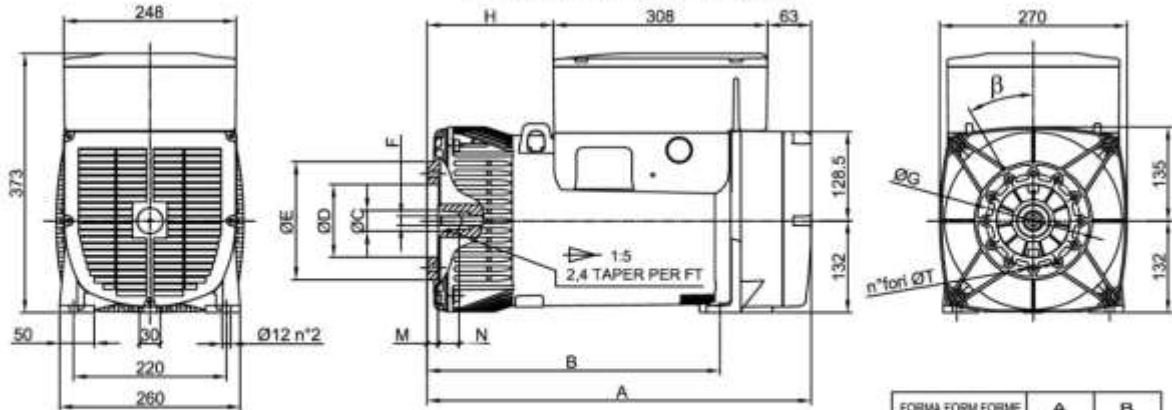
## EFFICIENCY 60Hz

### Efficiency Curves @ 60Hz



# E1X13M D/2

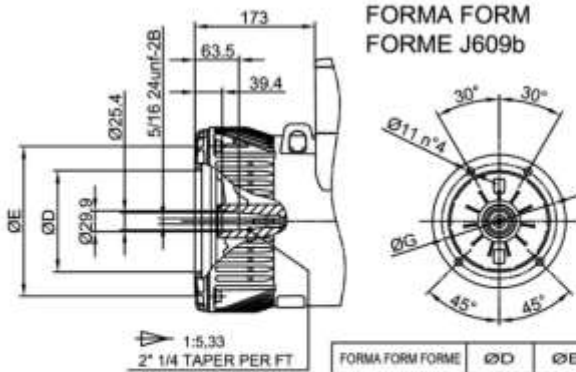
FORMA FORM FORME B3/B9



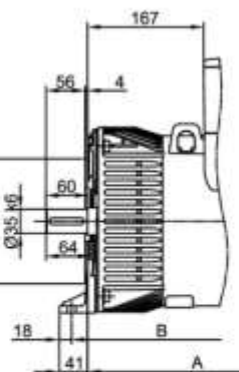
FORMA FORM FORME	ØC	ØD	ØE	F	ØG	H	M	N	n°fori	ØT	β
cono Ø30	Ø30	Ø105	Ø170	M14x1.5	Ø135	182	16	30	12	Ø9	30°
cono Ø38	Ø38	Ø125	Ø185	M18x1.5	Ø150	173	5	30	4	Ø11	β/2 45°

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

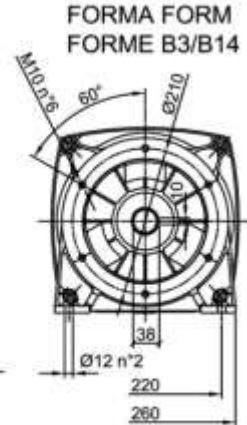
FORMA FORM FORME J609b



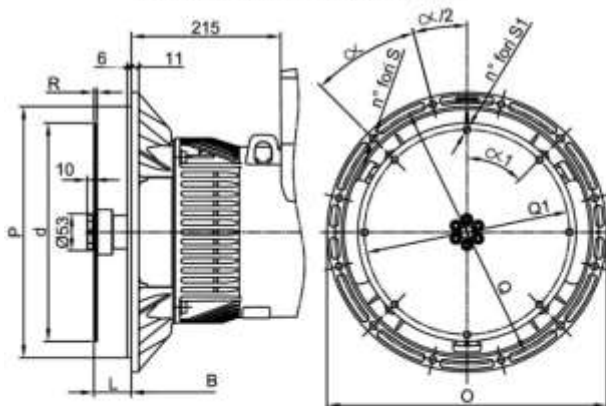
FORMA FORM FORME	ØD	ØE	ØG
J609b	Ø146	Ø192	Ø165
	Ø163.6	Ø216	Ø196.85
	Ø177.8		



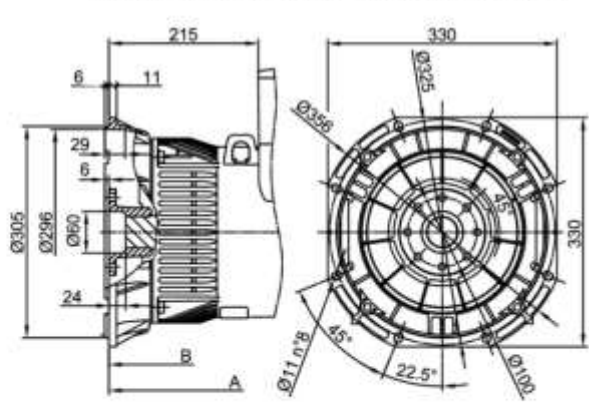
FORMA FORM FORME B3/B14



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	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	60°	
7 1/2	30.2	241.3	222.25	8	9	45°	3
B	62	263.52	244.47	6	10.5	60	
10	53.8	314.32	295.27	8	10.5	45°	4.5
11 1/2	39.6	352.42	333.37	8	10.5	45°	