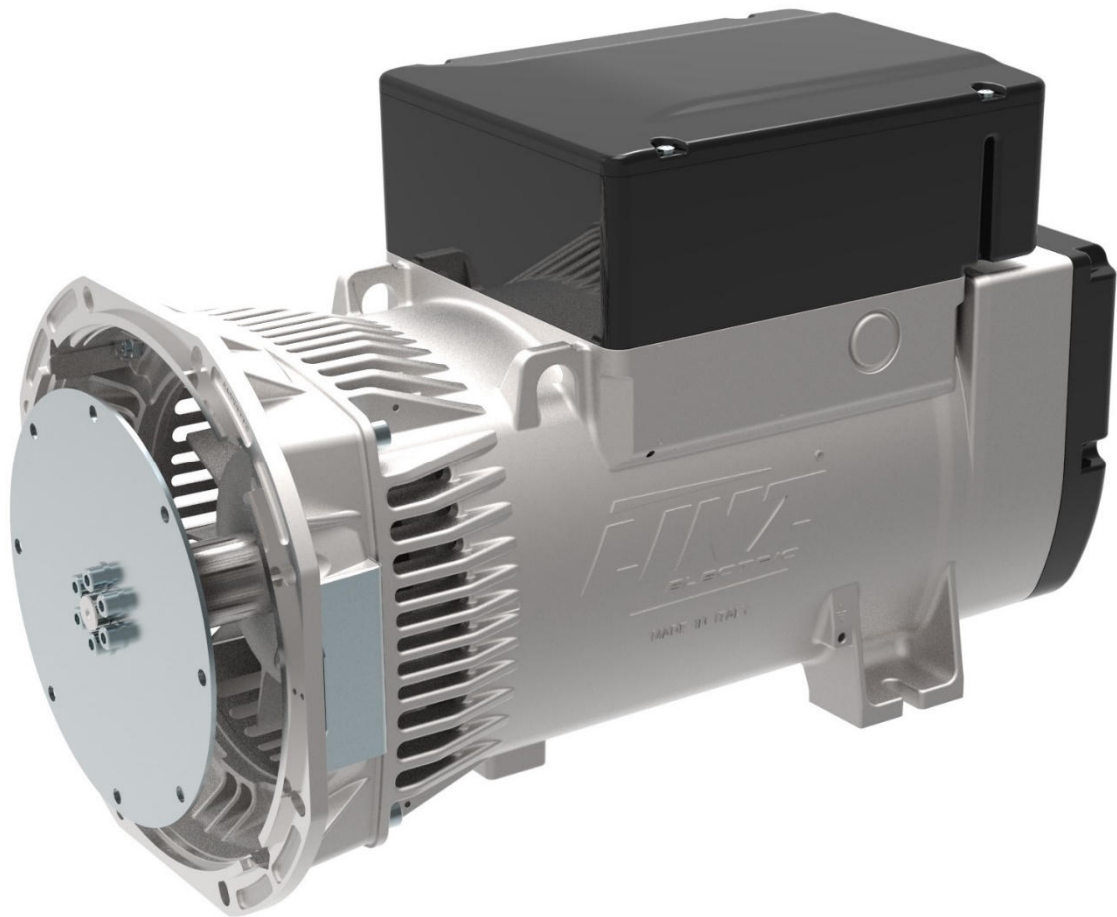


TECHNICAL DATA SHEET



**ALTERNATOR E1X13M E/4**

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

## E1X13M E/4

### COMMON DATA

Rated Power at 50Hz	kVA	14,0	
Rated Power at 60Hz	kVA	17,0	
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	4,0 at 50Hz	4,7 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	0,69 at 20°C
Rotor Winding Resistance	Ω	9,46 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>	0,57
Excitation at full load	A <sub>dc</sub>	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 E/4

### ELECTRICAL DATA

Frequency		50Hz - 1500rpm					60Hz - 1800rpm				
Voltage	V	Double Delta	Series High Wye Parallel Low Wye			Double Delta	Series High Wye Parallel Low Wye				
		115/230	380/220 190/110	400/230 200/115	415/240 208/120	440/254 220/127	120/240	415/240 208/120	440/254 220/127	460/266 230/133	480/277 240/154
Rated Power in Class H (125°C/40°C)	kVA	9,5	14,0	14,0	14,0	12,0	10,5	14,0	16,5	17,0	17,0
	kW	7,6	11,2	11,2	11,2	9,6	8,4	11,2	13,2	13,6	13,6
Rated Power in Class F (105°C/40°C)	kVA	8,7	13,0	13,0	13,0	10,5	9,6	13,0	15,0	15,5	15,5
	kW	6,96	10,4	10,4	10,4	8,4	7,68	10,4	12,0	12,4	12,4
Rated Power Standby (150°C/40°C)	kVA	10,2	15,0	15,0	15,0	13,0	11,5	14,5	17,5	18,0	18,0
	kW	8,16	12,0	12,0	12,0	10,4	9,2	11,6	14,0	14,4	14,4
Rated Power Standby (163°C/27°C)	kVA	10,5	15,5	15,5	15,5	13,5	11,8	15,0	18,0	18,6	18,6
	kW	8,4	12,4	12,4	12,4	10,8	9,44	12,0	14,4	14,88	14,88

### EFFICIENCY IN CL. H

4/4		85,5%								86,0%
3/4		86,0%								86,2%
2/4		83,8%								84,2%
1/4		79,0%								82,1%

### REACTANCES AND TIME CONSTANTS

pcc		0,80								
X <sub>d</sub>	- dir. axis synchronous	268%	242%	225%	171%		267%	280%	264%	242%
X' <sub>d</sub>	- dir. axis transient	21,1%	19,0%	17,7%	13,5%		20,9%	21,9%	20,7%	19,0%
X'' <sub>d</sub>	- dir. axis subtransient	8,1%	7,3%	6,8%	5,2%		8,0%	8,4%	7,9%	7,3%
X <sub>q</sub>	- quad. axis reactance	150%	135%	125%	96%		149%	156%	147%	135%
T' <sub>do</sub>	- O.C. field time constant	394ms								
T' <sub>d</sub>	- Transient time constant	31ms								
T'' <sub>d</sub>	- Sub-transient time constant	6ms								

### MECHANICAL DATA

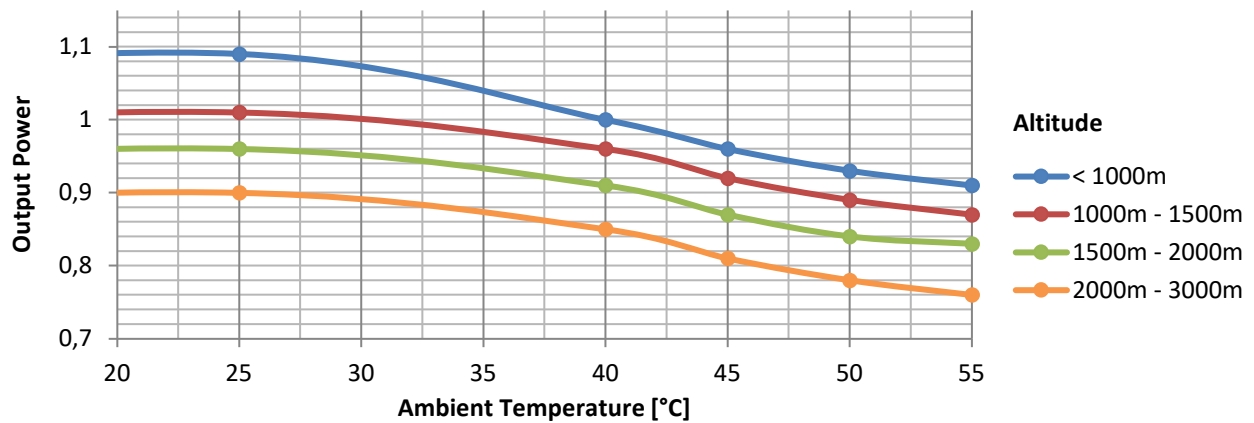
Bearing non drive end			6305-2Z-C3
Bearing drive end (B3/B14 form)			6208-2Z-C3
Weight of generator	in B2	kg	96
	in B3/B14	kg	91,9
	in B3/B9	kg	\

# E1X13M E/4

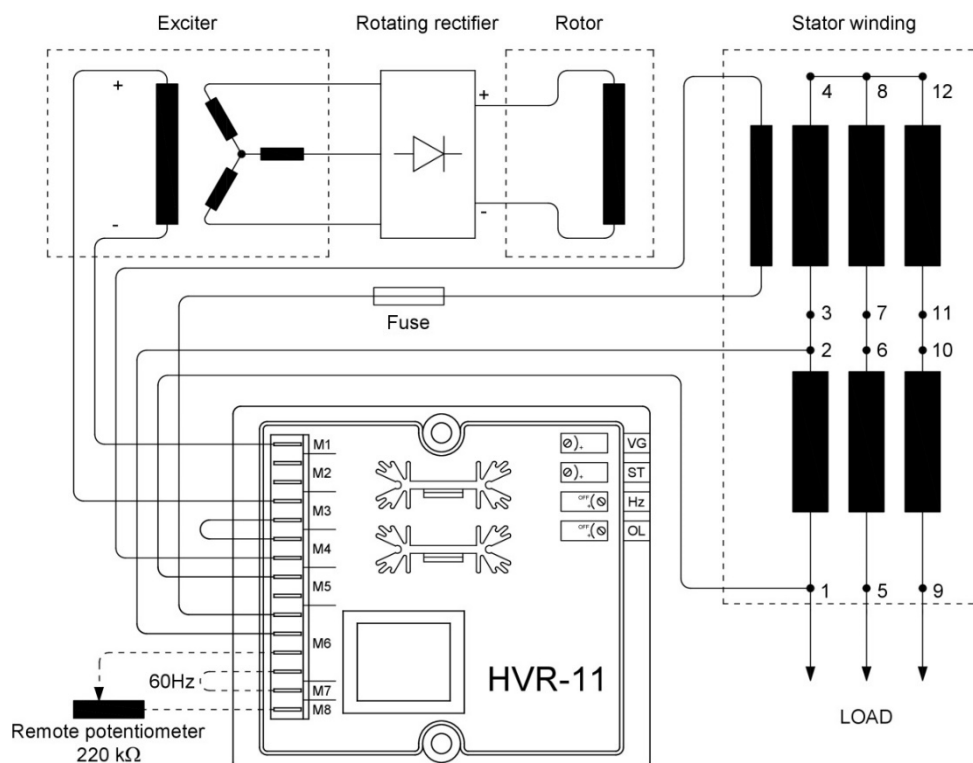
## MOMENT OF INERZIA

B3/B9	kg·m <sup>2</sup>	\
SAE 7½	kg·m <sup>2</sup>	0,091
B2	kg·m <sup>2</sup>	0,088

## DERATING CURVES



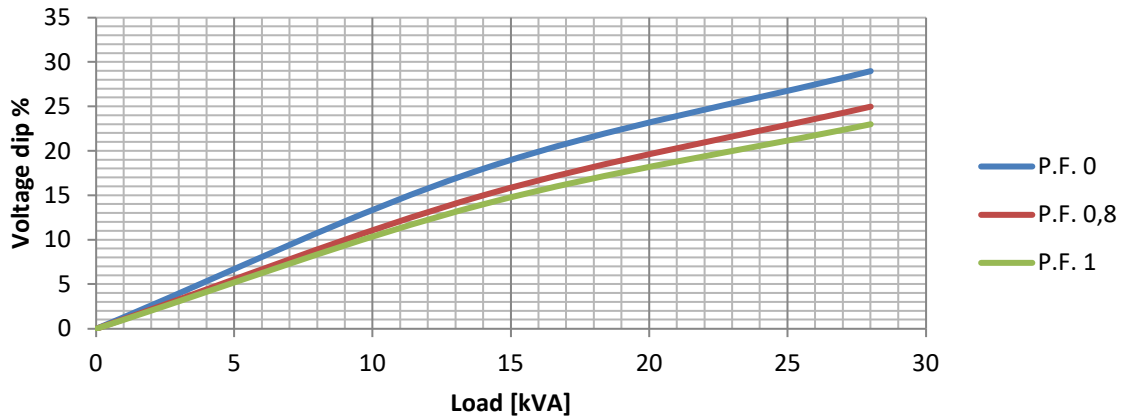
## WIRING DIAGRAM



# E1X13M E/4

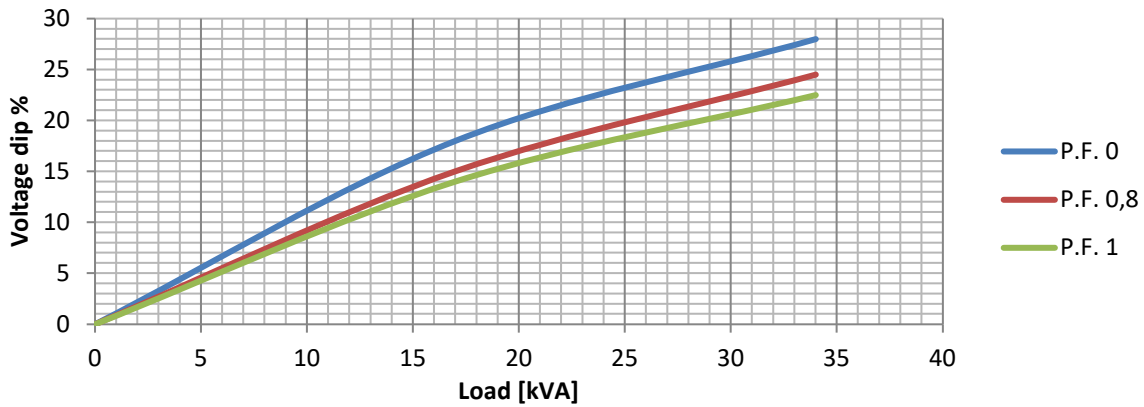
## TRANSIENT VOLTAGE VARIATION 50Hz

### Transient Voltage Variation @ 50Hz



## TRANSIENT VOLTAGE VARIATION 60Hz

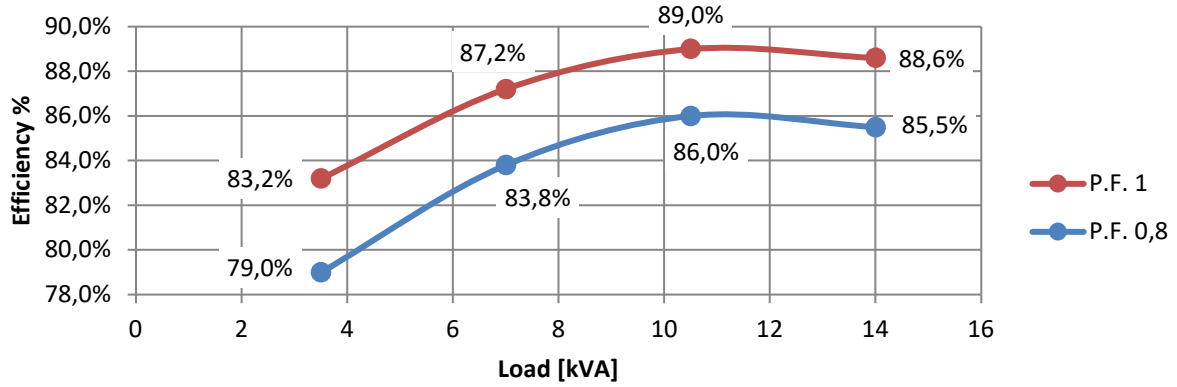
### Transient Voltage Variation @ 60Hz



# E1X13M E/4

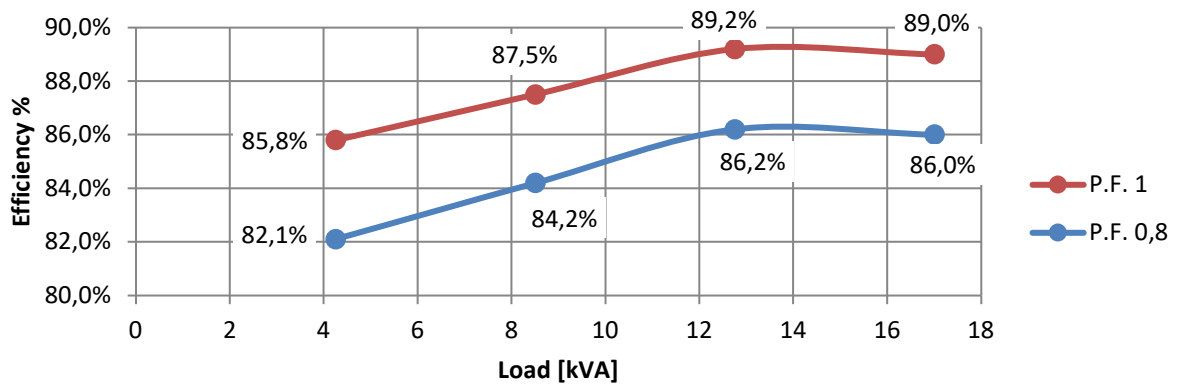
## EFFICIENCY 50Hz

### Efficiency Curves @ 50Hz



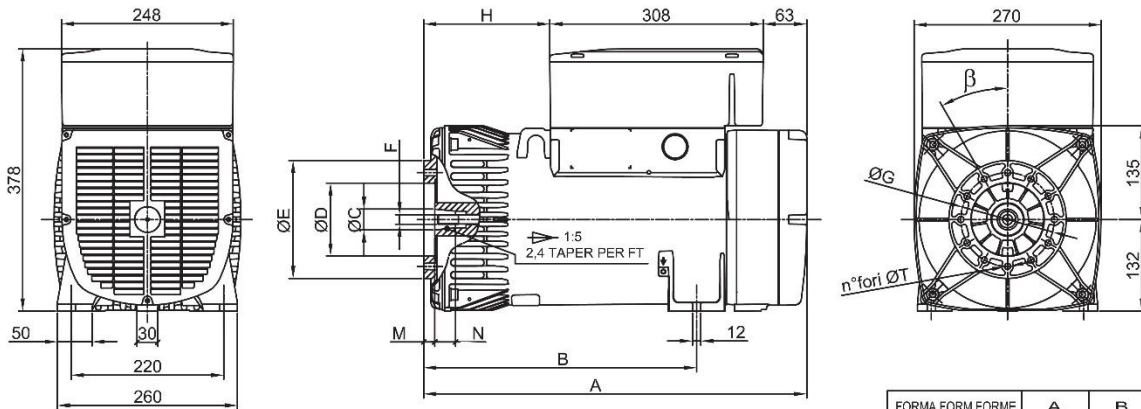
## EFFICIENCY 60Hz

### Efficiency Curves @ 60Hz



# E1X13M E/4

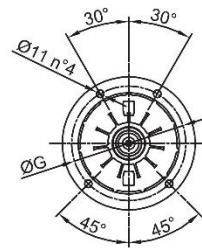
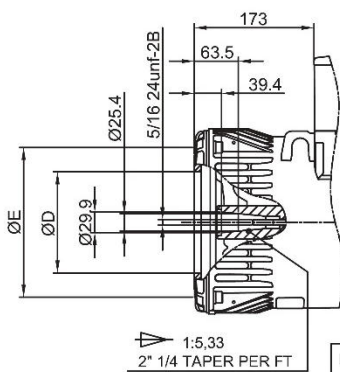
FORMA FORM FORME B3/B9



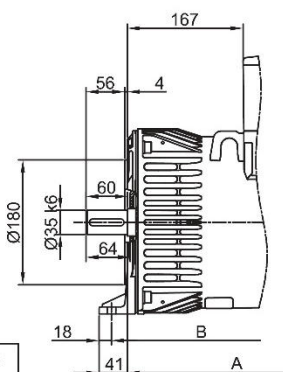
FORMA FORM FORME	ØC	ØD	ØE	F	ØG	H	M	N	n°fori	ØT	β
cono Ø30	Ø30	Ø105	Ø170	M14x1.5	Ø135	182	16	30	12	Ø9	30°
cono Ø38	Ø38	Ø125	Ø185	M18x1.5	Ø150	173	5	30	4	Ø11	β/2 45°

FORMA FORM FORME	A	B
B3B9 cono Ø30	553	394
B3B9 c.Ø38-J609b	544	385
B3/B14	538	402
MD35 - LOMB. STD	586	427

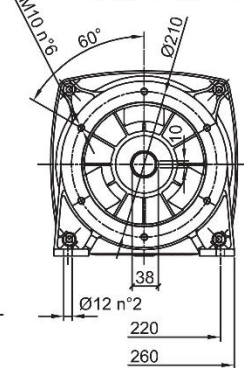
FORMA FORM FORME J609b



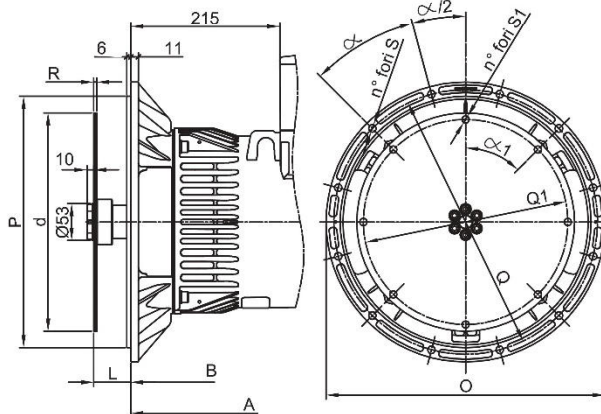
FORMA FORM FORME	ØD	ØE	ØG
J609b	Ø146	Ø192	Ø165
	Ø163.6	Ø216	Ø196.85
	Ø177.8		



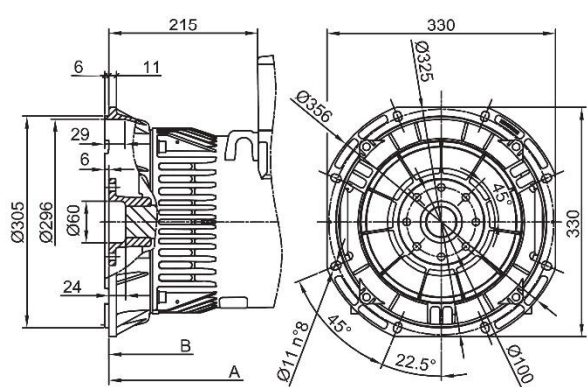
FORMA FORM FORME B3/B14



FORMA FORM FORME MD35



FORMA FORM FORME LOMBARDINI STD



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

SAE N.	GIUNTI A DISCO - DISC COUPLING - ACC. DISQUE						
	L	d	Q1	n. fori	S1	α/1	R
6 1/2	30.2	215.9	200	6	9	60°	3
7 1/2	30.2	241.3	222.25	8	9	45°	
8	62	263.52	244.47	6	10.5	60°	4.5
10	53.8	314.32	295.27	8	10.5	45°	
11 1/2	39.6	352.42	333.37	8	10.5	45°	