



## **ALTERNATOR E1X13M D/2**

*three-phase brushless synchronous alternator with AVR - 2 poles*

Technical Data Sheet

## E1X13M D/2

### COMMON DATA

Rated Power at 50Hz	kVA	16	
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 Overspeed	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 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	0.43 at 20°C	
Rotor Winding Resistance	12 at 20°C	
Exciter Stator Resistance	16.5 at 20°C	
Exciter Rotor Resistance	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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## 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	16	16	13	17	19	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	15.5	17.4	18	18
	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	21
	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	18	17	14.2	19	21	22	22
	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
	in B3/B14	kg		85.9
	in B3/B9	kg		\

## E1X13M D/2

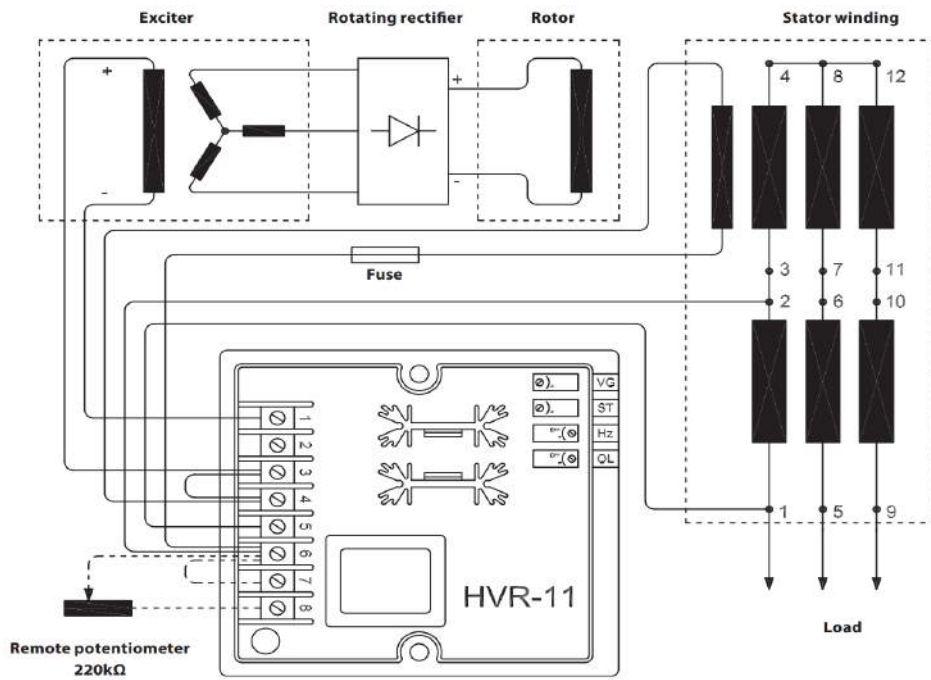
### MOMENT OF INERZIA

B3/B9	kg·m <sup>2</sup>	\
SAE 7½	kg·m <sup>2</sup>	0.082
B2	kg·m <sup>2</sup>	0.081

### POWER VARIATION ACCORDING TO TEMPERATURE AND ALTITUDE

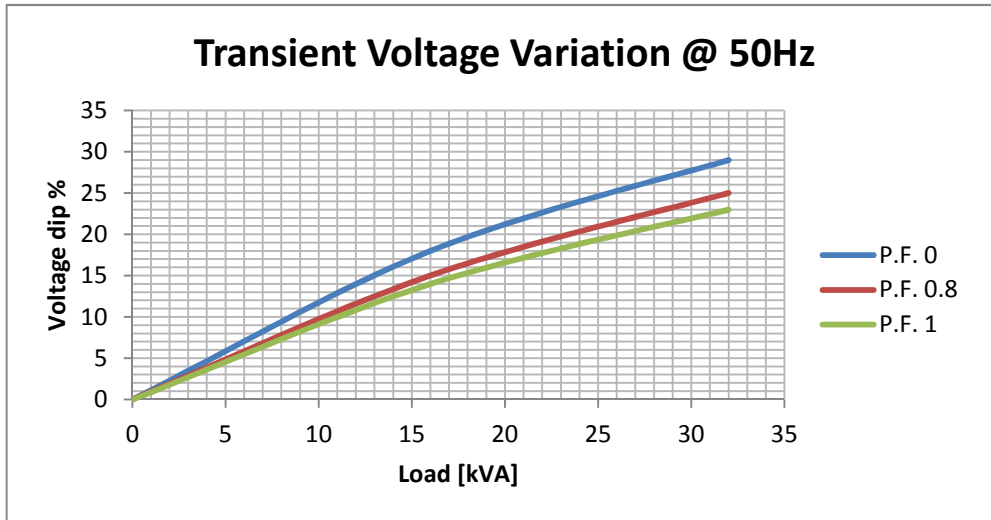
Altitude	Ambient temperature				
	25°C	40°C	45°C	50°C	55°C
< 1000m	1.09	1	0.96	0.93	0.91
1000m - 1500m	1.01	0.96	0.92	0.89	0.87
1500m - 2000m	0.96	0.91	0.87	0.84	0.83
2000m - 3000m	0.9	0.85	0.81	0.78	0.76

### WIRING DIAGRAM

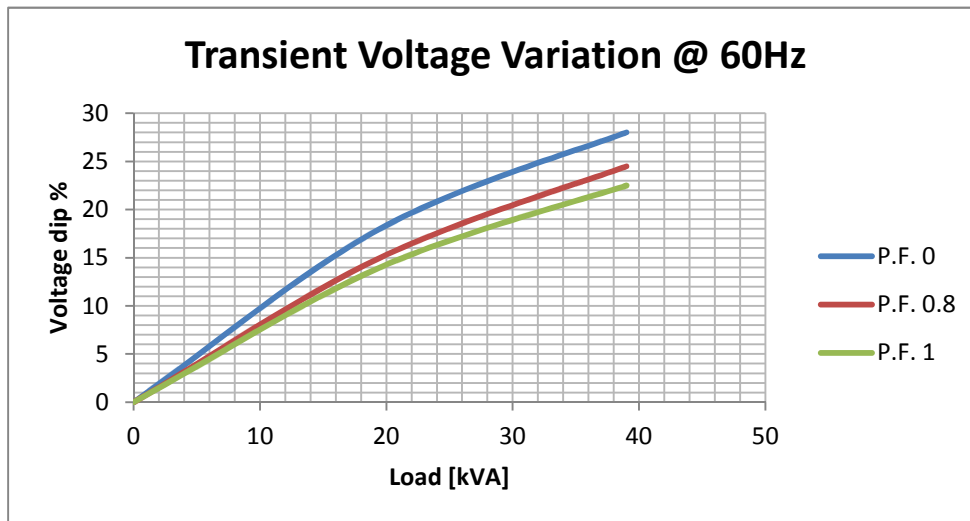


## E1X13M D/2

### TRANSIENT VOLTAGE VARIATION 50Hz

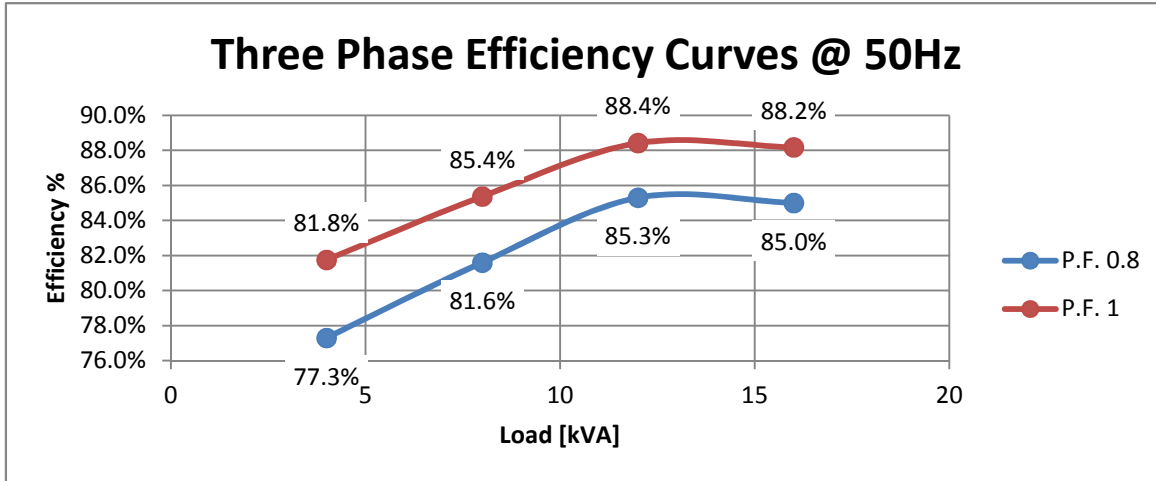


### TRANSIENT VOLTAGE VARIATION 60Hz

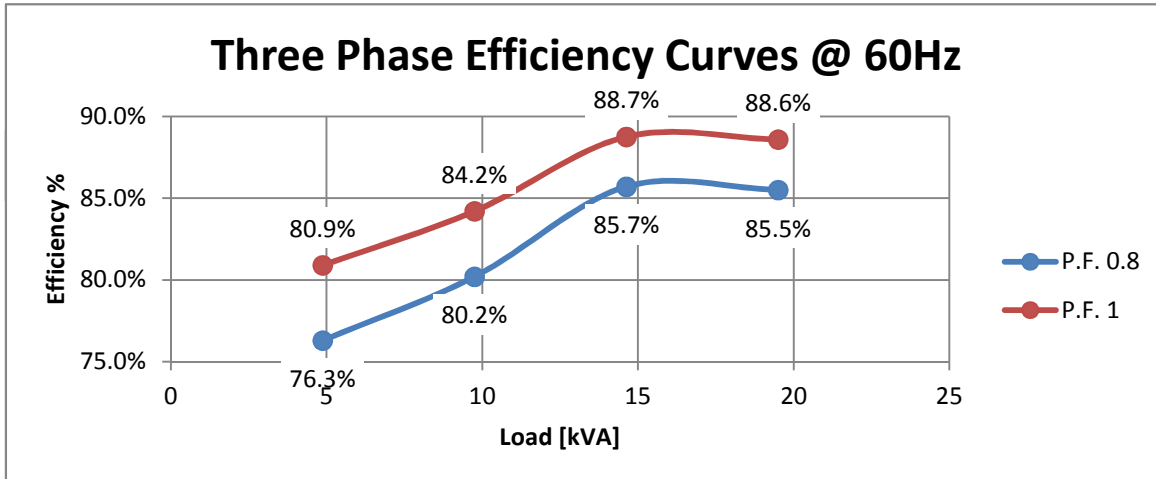


**E1X13M D/2**

**EFFICIENCY 50Hz**

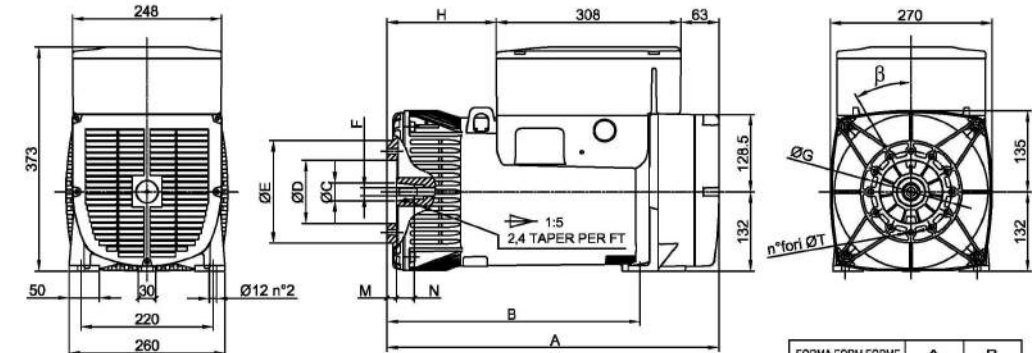


**EFFICIENCY 60Hz**



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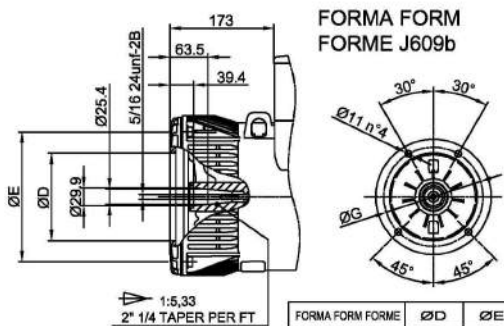
FORMA FORM FORME B3/B9



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°

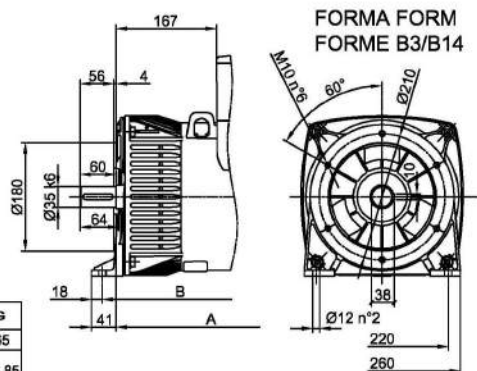
FORMA FORM FORME	A	B
B3B9 cono Ø30	553	422
B3B9 c.Ø38-J609b	544	413
B3/B14	538	430
MD35 - LOMB. STD	586	455

FORMA FORM FORME J609b

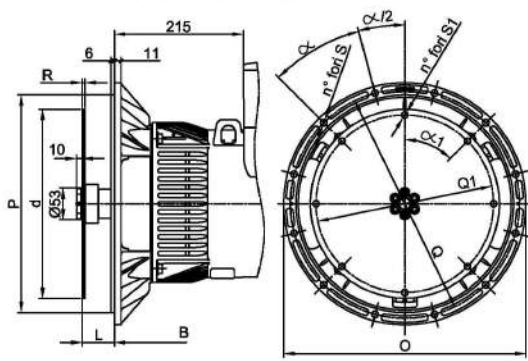


FORMA FORM FORME	ØD	ØE	ØG
J609b	Ø146	Ø192	Ø165
	Ø163.6	Ø216	Ø196.85
	Ø177.8		

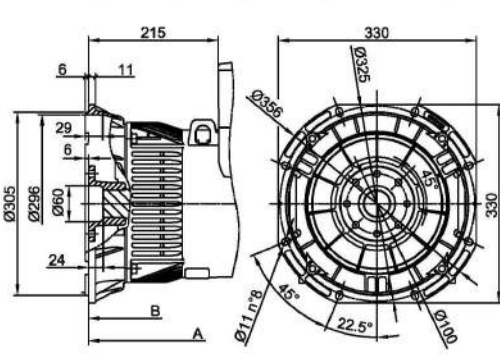
FORMA FORM FORME B3/B14



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	11	45°
4	403	362	381	12		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	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	283.52	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°	