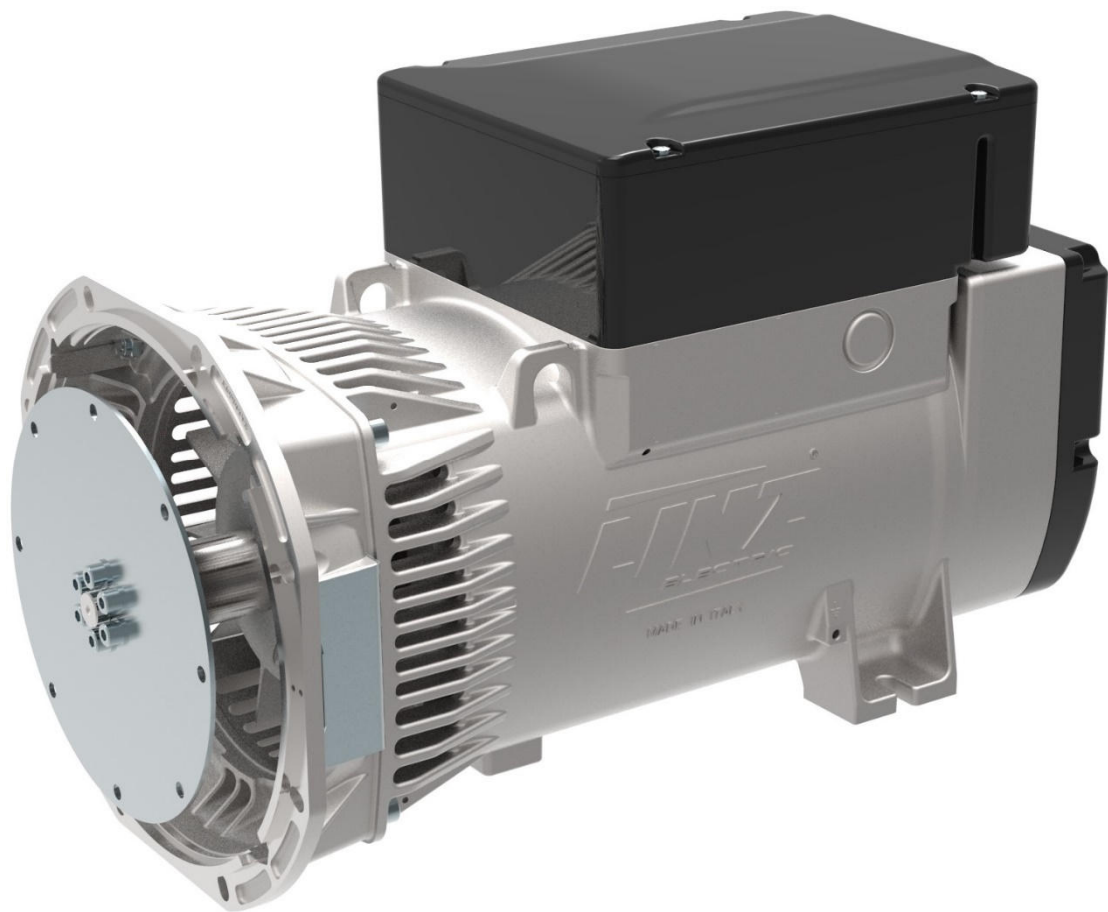


TECHNICAL DATA SHEET



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 ³ /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	A _{dc}	0,58
Excitation at full load	A _{dc}	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	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	480/277 240/138
Rated Power in Class H (125°C/40°C)	kVA	10,5	16,0	16,0	15,5	14,0	11,2	17,0	18,5	19,0	19,0
	kW	8,4	12,8	12,8	12,4	11,2	8,96	13,6	14,8	15,2	15,2
Rated Power in Class F (105°C/40°C)	kVA	9,6	14,6	14,6	14,2	12,0	10,5	15,5	17,0	17,5	17,5
	kW	7,68	11,68	11,68	11,36	9,6	8,4	12,4	13,6	14,0	14,0
Rated Power Standby (150°C/40°C)	kVA	11,5	17,5	17,5	17,0	15,0	12,0	18,5	20,0	21,0	21,0
	kW	9,2	14,0	14,0	13,6	12,0	9,6	14,8	16,0	16,8	16,8
Rated Power Standby (163°C/27°C)	kVA	12,0	18,0	18,0	17,5	15,5	12,5	19,0	20,5	21,5	21,5
	kW	9,6	14,4	14,4	14,0	12,4	10,0	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 _d	- dir. axis synchronous	288%	260%	234%	188%		311%	301%	283%	260%
X' _d	- dir. axis transient	22,2%	20,0%	18,0%	14,5%		23,9%	23,2%	21,8%	20,0%
X'' _d	- dir. axis subtransient	8,5%	7,7%	6,9%	5,6%		9,2%	8,9%	8,4%	7,7%
X _q	- quad. axis reactance	155%	140%	126%	101%		168%	162%	152%	140%
T' _{do}	- O.C. field time constant	402ms								
T' _d	- Transient time constant	31ms								
T'' _d	- Sub-transient time constant	6ms								

MECHANICAL DATA

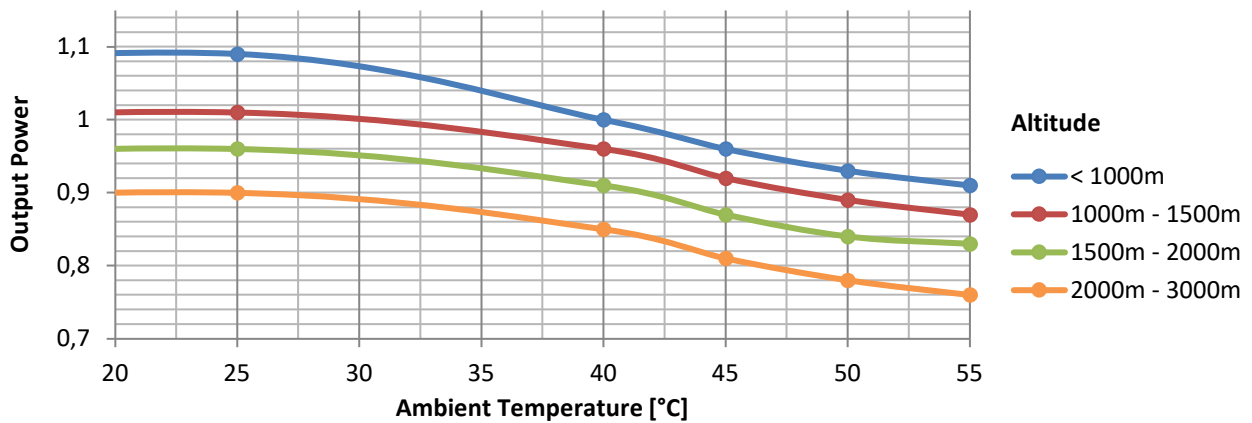
Bearing non drive end				6305-2Z-C3
Bearing drive end (B3/B14 form)				6208-2Z-C3
Weight of generator	in B2	kg		100
	in B3/B14	kg		95,9
	in B3/B9	kg		\

E1X13M F/4

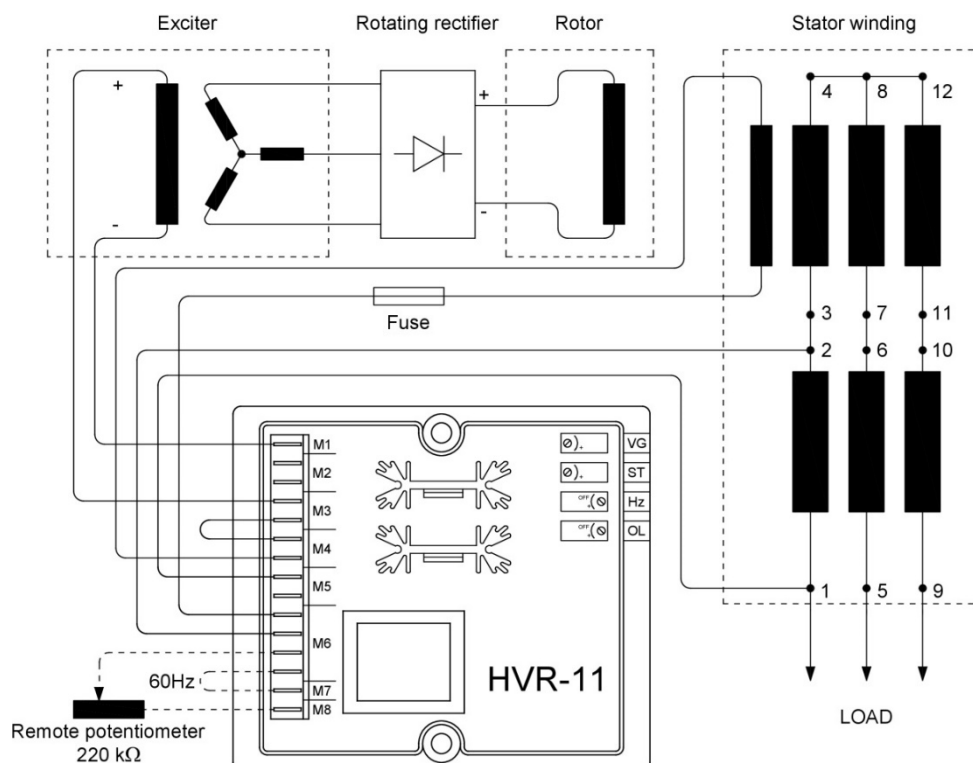
MOMENT OF INERZIA

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

DERATING CURVES



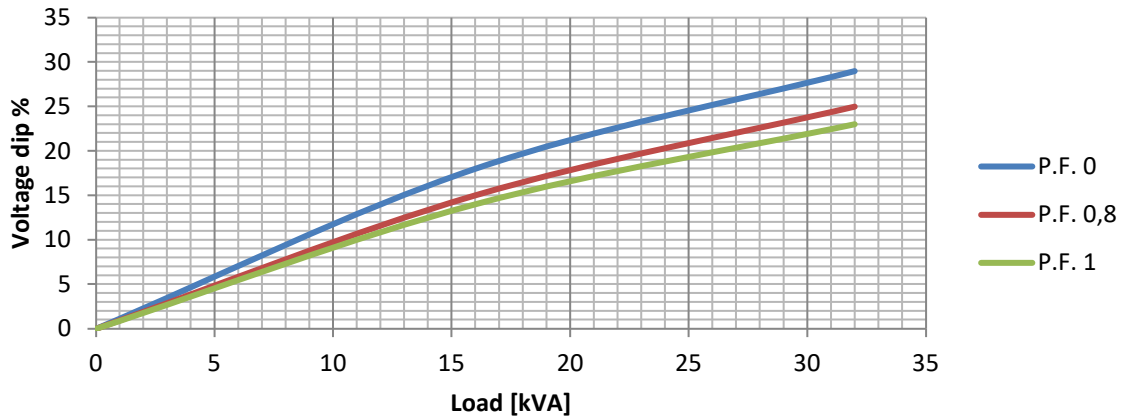
WIRING DIAGRAM



E1X13M F/4

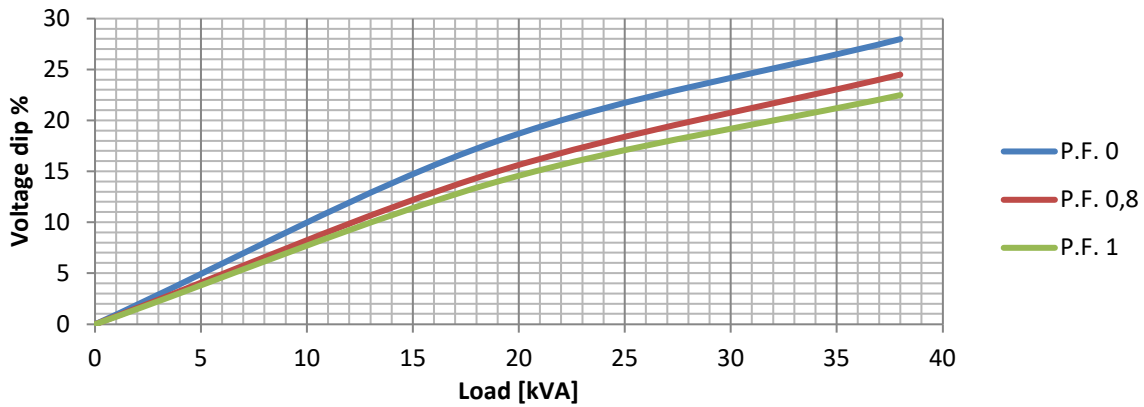
TRANSIENT VOLTAGE VARIATION 50Hz

Transient Voltage Variation @ 50Hz



TRANSIENT VOLTAGE VARIATION 60Hz

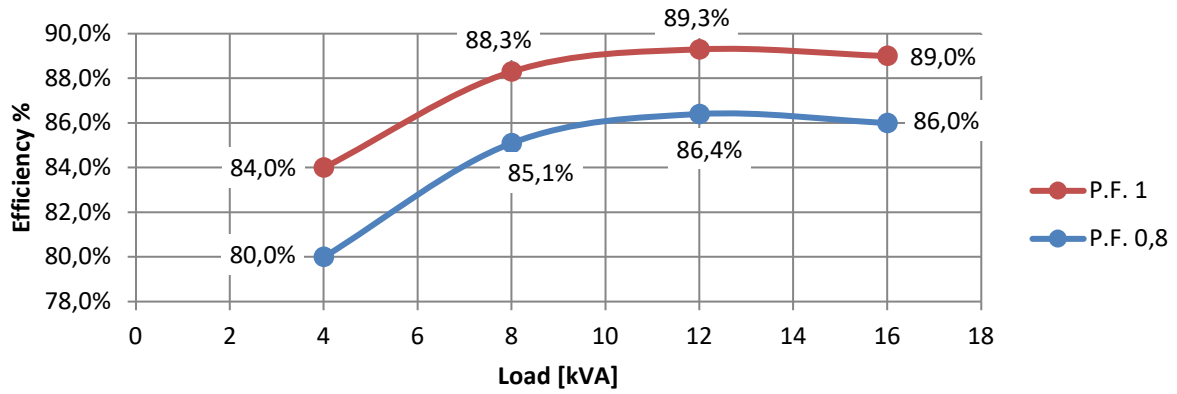
Transient Voltage Variation @ 60Hz



E1X13M F/4

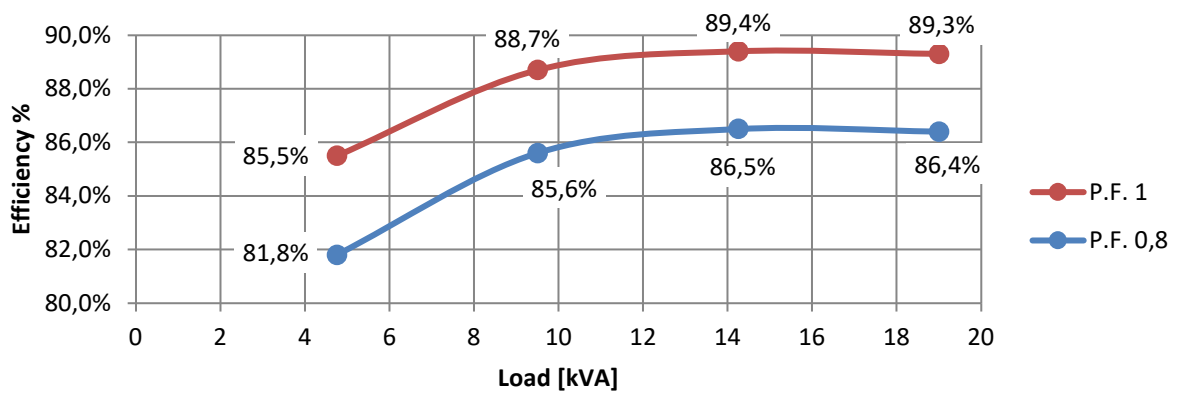
EFFICIENCY 50Hz

Efficiency Curves @ 50Hz



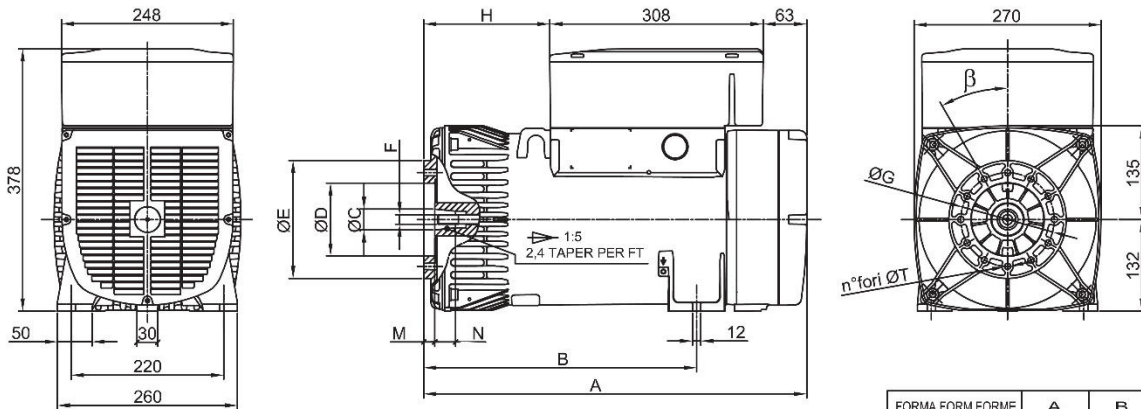
EFFICIENCY 60Hz

Efficiency Curves @ 60Hz



E1X13M F/4

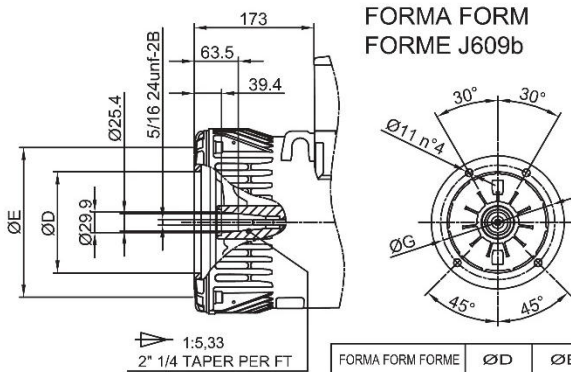
FORMA FORM FORME B3/B9



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°

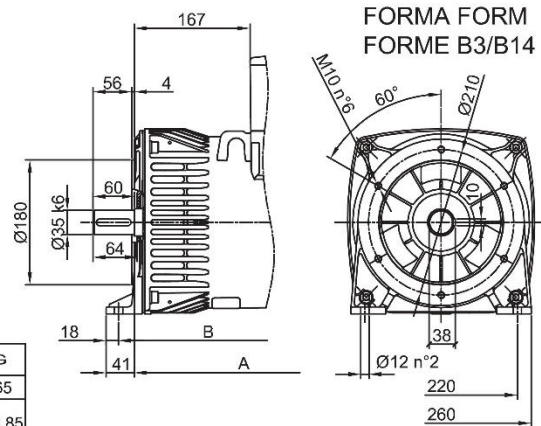
FORMA FORM FORME	A	B
B3B9 cono Ø30	553	394
B3B9 c.Ø38-J609b	544	385
B3/B14	538	402
MD35 - LOMB. STD	586	427

FORMA FORM FORME J609b

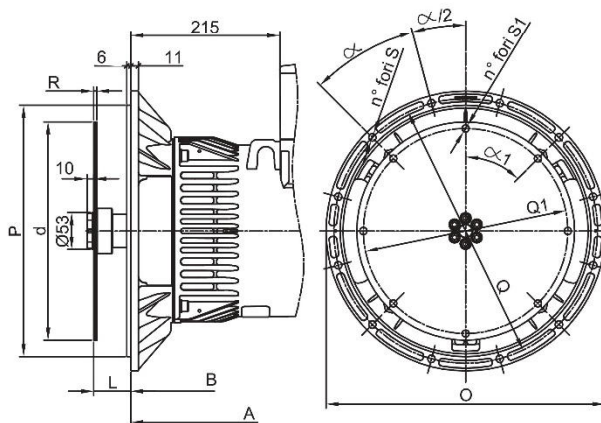


FORMA FORM FORME	ØD	ØE	ØG
J609b	Ø146	Ø192	Ø165
	Ø163.6	Ø216	Ø196.85
	Ø177.8		

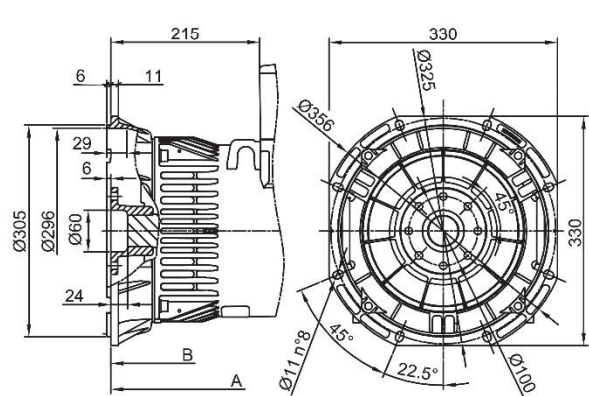
FORMA FORM FORME B3/B14



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	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	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°	