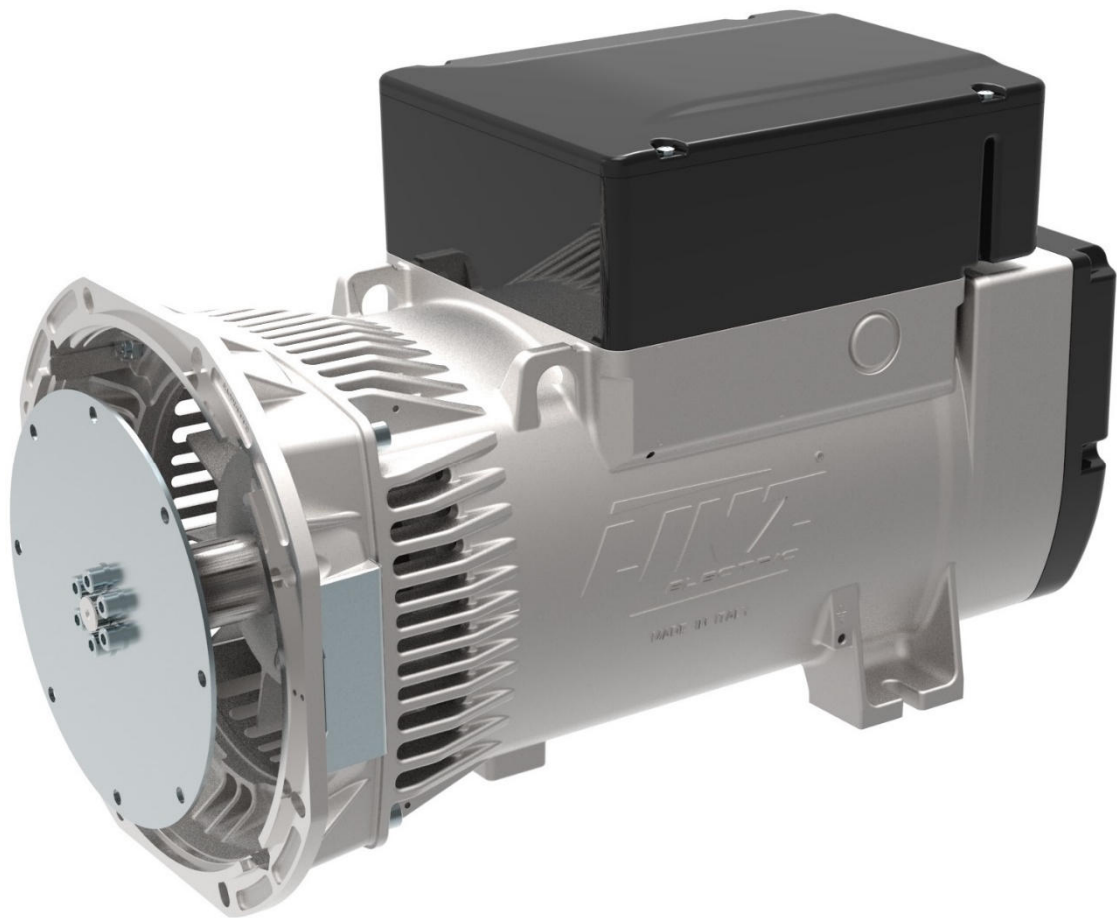


TECHNICAL DATA SHEET



**ALTERNATOR E1X13M E/2**

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

## E1X13M E/2

### COMMON DATA

Rated Power at 50Hz	kVA	22,0	
Rated Power at 60Hz	kVA	26,0	
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	4500	
Overload		110% of rated power for one hour in a cycle of 6 hours	
Air Flow Requirement	m <sup>3</sup> /min	6,1 at 50Hz	7,3 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	0,33 at 20°C
Rotor Winding Resistance	Ω	13,7 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 E/2

### ELECTRICAL DATA

Frequency		50Hz - 3000rpm					60Hz - 3600rpm				
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	14,3	22,0	22,0	22,0	18,0	15,0	23,0	25,0	26,0	26,0
	kW	11,44	17,6	17,6	17,6	14,4	12,0	18,4	20,0	20,8	20,8
Rated Power in Class F (105°C/40°C)	kVA	13,4	20,5	20,5	20,5	16,5	13,7	21,0	23,0	24,0	24,0
	kW	10,72	16,4	16,4	16,4	13,2	10,96	16,8	18,4	19,2	19,2
Rated Power Standby (150°C/40°C)	kVA	15,2	23,5	22,5	22,5	19,5	16,0	24,5	26,5	28,0	28,0
	kW	12,16	18,8	18,0	18,0	15,6	12,8	19,6	21,2	22,4	22,4
Rated Power Standby (163°C/27°C)	kVA	15,6	24,0	24,0	22,0	20,0	16,6	25,7	27,0	29,0	29,0
	kW	12,48	19,2	19,2	17,6	16,0	13,28	20,56	21,6	23,2	23,2

### EFFICIENCY IN CL. H

4/4			86,0%							86,2%
3/4			86,2%							86,4%
2/4			82,5%							82,7%
1/4			78,1%							78,4%

### REACTANCES AND TIME CONSTANTS

pcc		0,40								
X <sub>d</sub>	- dir. axis synchronous	460%	415%	386%	281%		491%	475%	452%	415%
X' <sub>d</sub>	- dir. axis transient	35,5%	32,0%	29,7%	21,6%		37,9%	36,6%	34,8%	32,0%
X'' <sub>d</sub>	- dir. axis subtransient	11,6%	10,5%	9,8%	7,1%		12,4%	12,0%	11,4%	10,5%
X <sub>q</sub>	- quad. axis reactance	277%	250%	232%	169%		296%	286%	272%	250%
T' <sub>do</sub>	- O.C. field time constant						410ms			
T' <sub>d</sub>	- Transient time constant						32ms			
T'' <sub>d</sub>	- Sub-transient time constant						8,8ms			

### MECHANICAL DATA

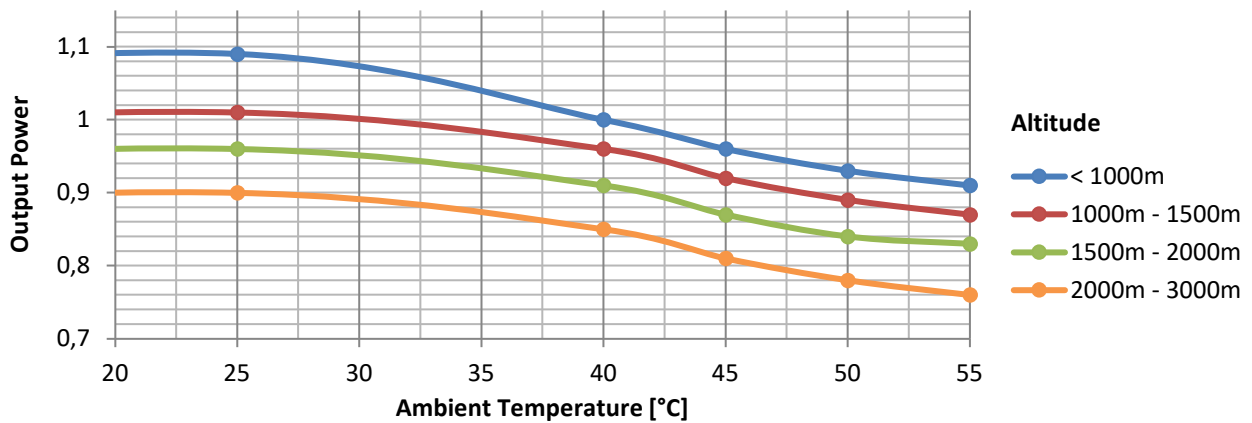
Bearing non drive end				6305-2Z-C3
Bearing drive end (B3/B14 form)				6208-2Z-C3
Weight of generator	in B2	kg		101,0
	in B3/B14	kg		96,9
	in B3/B9	kg		\

# E1X13M E/2

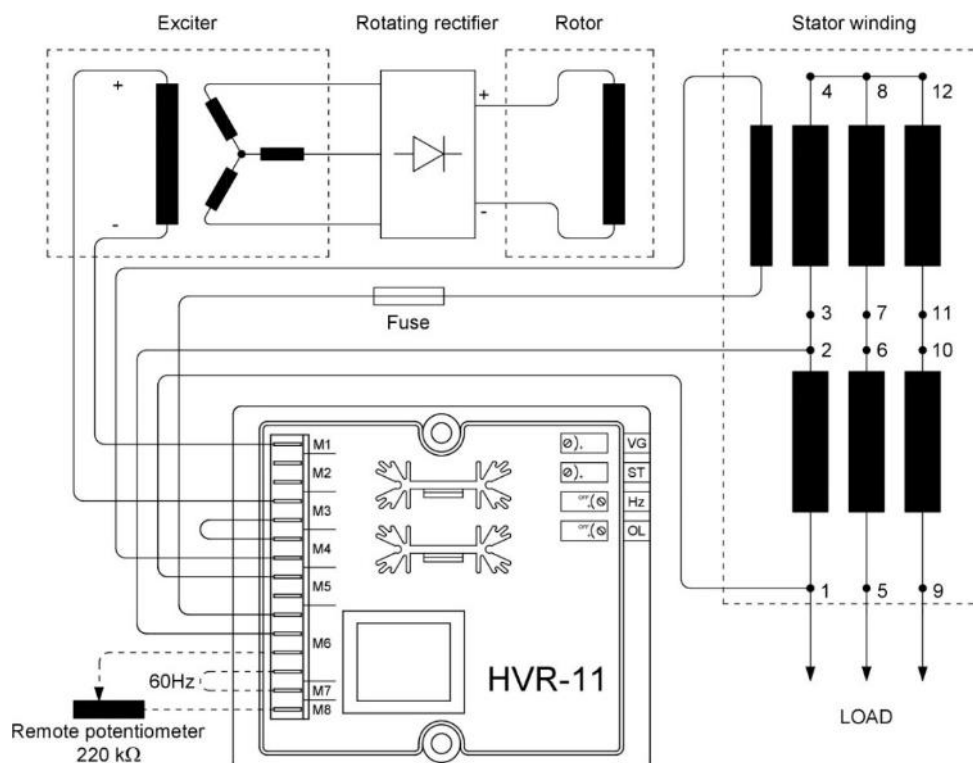
## MOMENT OF INERZIA

B3/B9	kg·m <sup>2</sup>	\
SAE 7½	kg·m <sup>2</sup>	0,092
B2	kg·m <sup>2</sup>	0,091

## DERATING CURVES



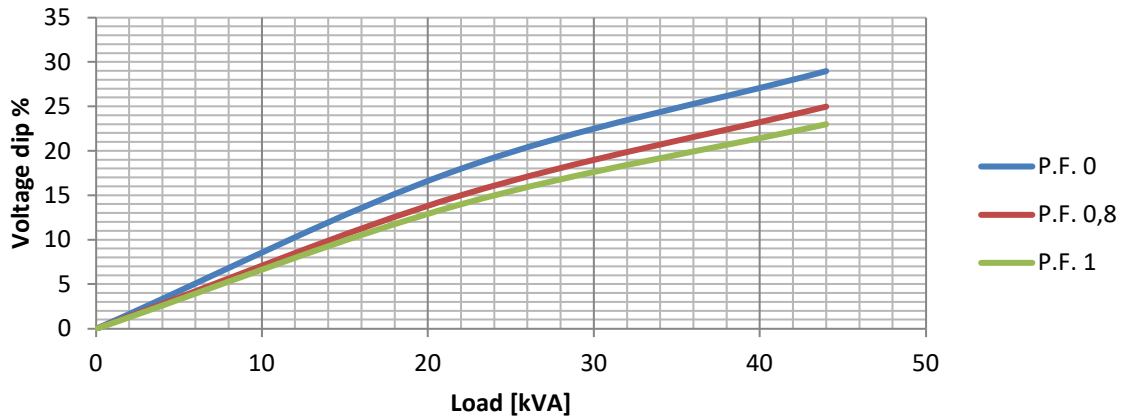
## WIRING DIAGRAM



# E1X13M E/2

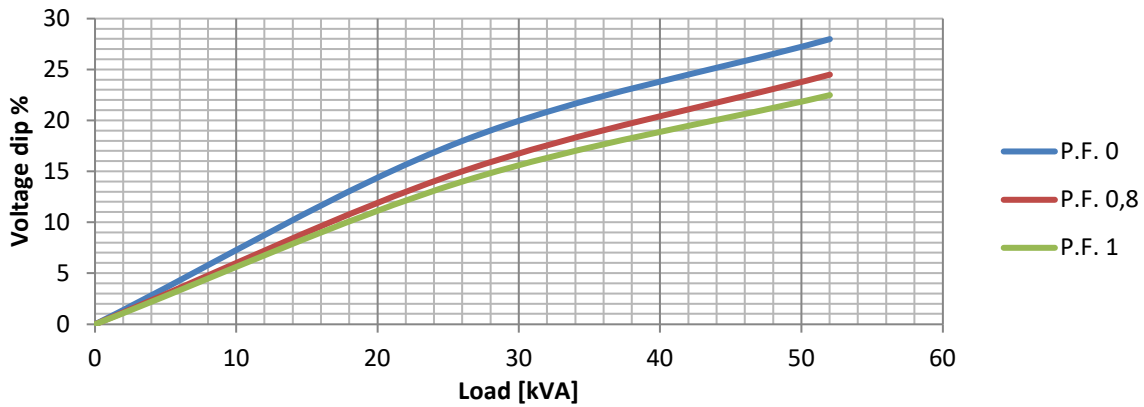
## TRANSIENT VOLTAGE VARIATION 50Hz

### Transient Voltage Variation @ 50Hz



## TRANSIENT VOLTAGE VARIATION 60Hz

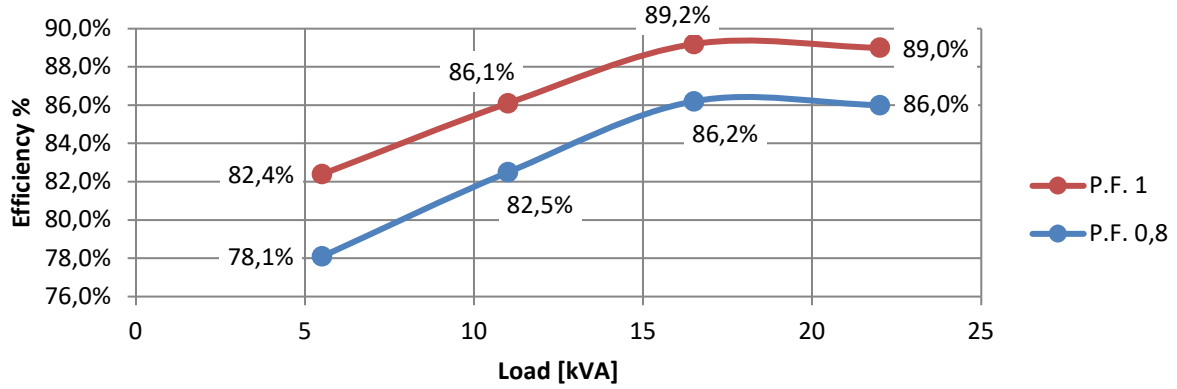
### Transient Voltage Variation @ 60Hz



# E1X13M E/2

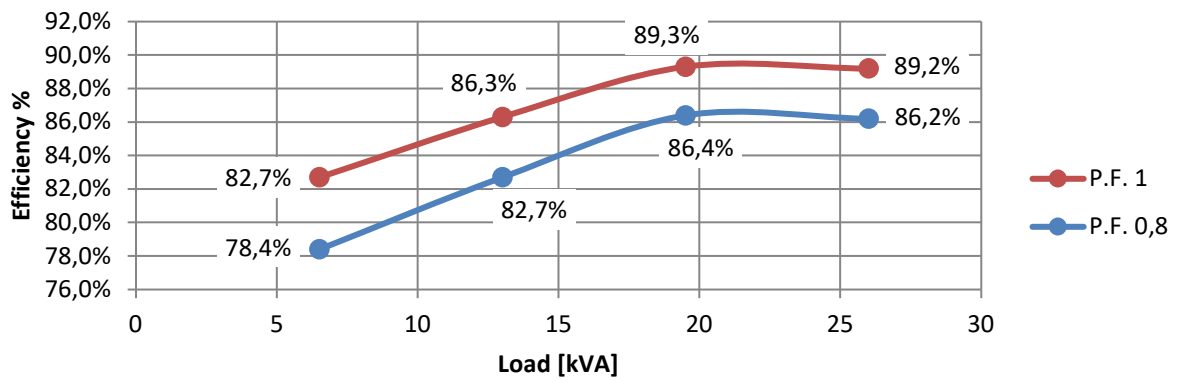
## EFFICIENCY 50Hz

### Efficiency Curves @ 50Hz



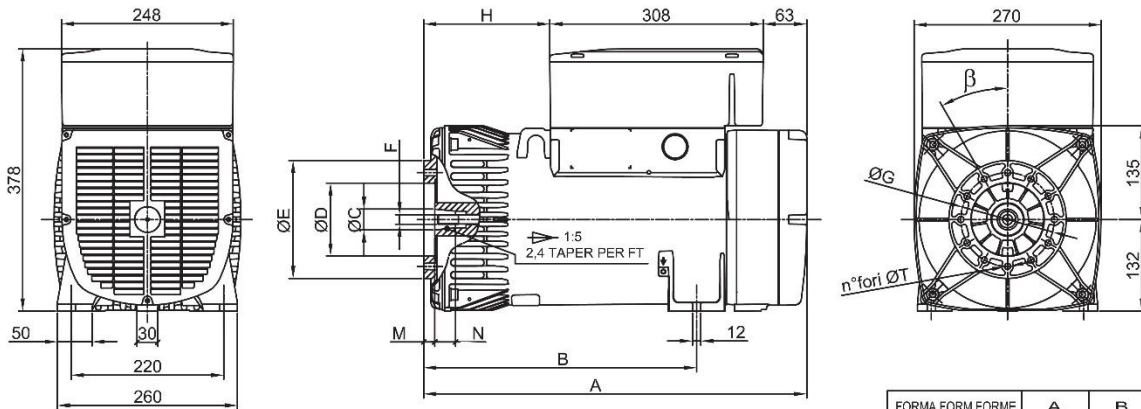
## EFFICIENCY 60Hz

### Efficiency Curves @ 60Hz



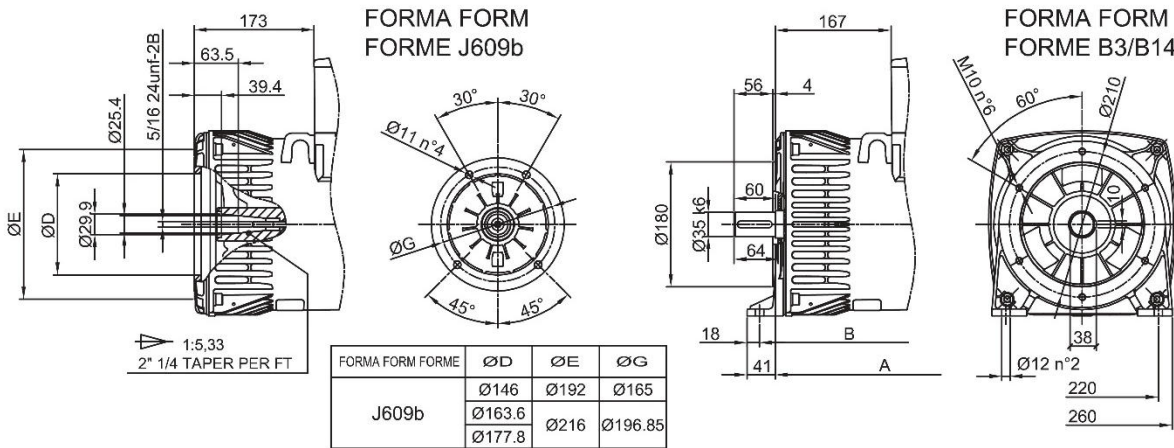
# E1X13M E/2

## FORMA FORM FORME B3/B9



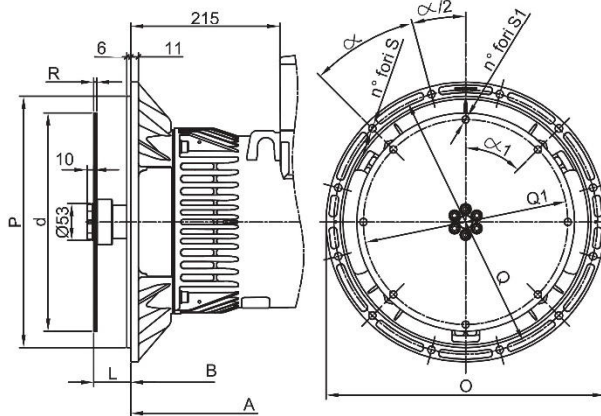
FORMA FORM FORME	ØC	ØD	ØE	F	ØG	H	M	N	n°fori	ØT	β
cono Ø30	Ø30	Ø105	Ø170	M14x1.5	Ø135	182	16	30	12	Ø9	30°
cono Ø38	Ø38	Ø125	Ø185	M18x1.5	Ø150	173	5	30	4	Ø11	β/2 45°

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



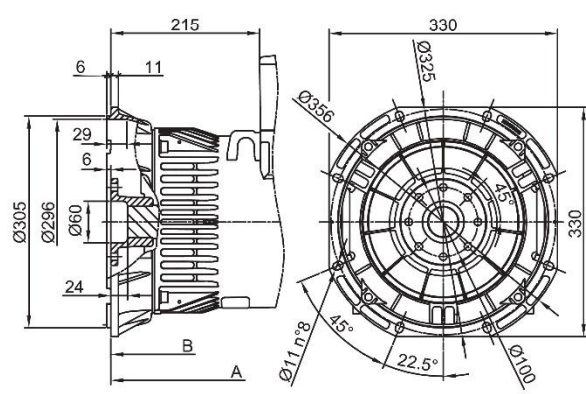
FORMA FORM FORME	ØD	ØE	ØG
J609b	Ø146	Ø192	Ø165
	Ø163.6	Ø216	Ø196.85
	Ø177.8		

## FORMA FORM FORME MD35



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

## FORMA FORM FORME LOMBARDINI STD



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°	