



M13

CONT 11 kVA



THREE-PHASE SYNCHRONOUS GENERATOR

Datasheet for 4 poles -50Hz @ 1500rpm/ 60Hz @ 1800rpm

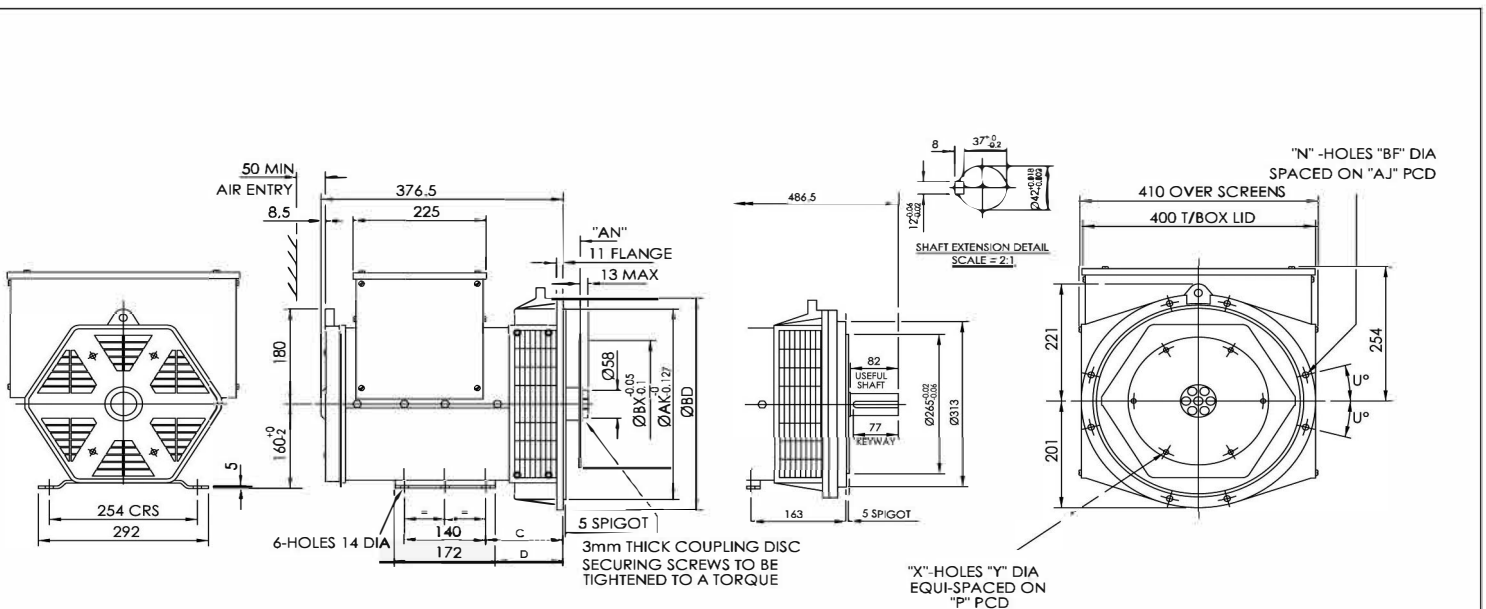
Ambient Temperature	40 °C	Method of Cooling				Air cooling			
Temperature Rise	125 °C	Direction of Rotation				Clockwise			
Insulation Class	H	Maximum Over-speed				2250r/min			
Power Factor	0.8	Degree of Protection / Enclosure				IP23			
Excitation	Brushless	Altitude				1000m			
Winding Pitch	2/3	Stator winding				DLL			
Pole	4	Number of Terminal				12			
Duty	S1- Continuous	Rotor				With damping cage			
Waveform	TIF<50				THF<2%				
Waveform distortion	BS EN 61000-6-2&BS EN 61000-6-4,VDE 0875G,VDE0874N								
Radio interference	Noload<1.5%,Non-distorting balanced linear load<5%								
AVR MODEL AVR	Standard	Selection				PMG			
	SX460	AS440	KRS440						
Voltage Regulation - in steady state condition	±1.0	±1.0	±1.0						
Short Circuit Current Capacity	Control does not sustain a short circuit current								
Electrical Characteristic									
Frequency	Hz	50				60			
Voltage (series star) Y	V	380/220	400/231	415/240	440/254	416/240	440/254	460/266	480/277
Voltage (parallel star) YY	V	190/110	200/115	208/120	220/127	208/120	220/127	230/133	240/138
Voltage (series delta) Δ	V	220	230	240	254	240	254	266	277
Rated power at Class H (125 °C) temperature rise	kVA	11	11	11	8.5	13	13.8	13.8	13.8
	kW	8.8	8.8	8.8	6.8	10.4	11.0	11.0	11.0
Efficiency at Class H (P.F.=0.8)	4/4%	78.8	79.3	80	80.2	79	79	79.7	80.1
	3/4%	81.8	82	82	82.4	81.7	82	82.1	82.5
	2/4%	83	83	83	82.9	82.9	83	83	83
Efficiency at Class H (P.F.=1.0)	4/4%	83	83.6	84	84.6	83	83	83.7	84.1
	3/4%	85.5	85.9	86	86.2	85.3	85.5	85.9	86.1
	2/4%	86.5	86.7	86.8	86.6	86.2	86.5	86.5	86.6
Reactances (%) at Class H									
Direct axis synchronous reactance unsaturated	Xd	1.969	1.777	1.651	1.901	2.33	2.211	2.023	1.858
Direct axis transient reactance saturated	X'd	0.201	0.181	0.168	0.194	0.237	0.225	0.206	0.189
Direct axis subtransient reactance saturated	X''d	0.125	0.113	0.105	0.12	0.148	0.14	0.128	0.118
Quadrature axis synchronous reactance unsaturated	Xq	0.978	0.883	0.82	0.945	1.158	1.098	1.005	0.923
Quadrature axis subtransient reactance saturated	X''q	0.225	0.203	0.189	0.217	0.266	0.252	0.231	0.212
Leakage reactance	X1	0.079	0.071	0.066	0.076	0.093	0.088	0.081	0.074
Negative sequence reactance saturated	X2	0.188	0.17	0.158	0.181	0.223	0.212	0.194	0.178
Zero sequence reactance unsaturated	X0	0.085	0.077	0.072	0.083	0.102	0.096	0.088	0.081
Short-circuit ratio	Kcc	0.5079	0.5627	0.6057	0.5260	0.4292	0.4523	0.4943	0.5382
Short-circuit transient time constant (sec.)	T'd	0.014							
Subtransient time constant (sec.)	T''d	0.0035							
Open circuit time constant (sec.)	T'do	0.25							
Armature time constant (sec.)	Ta	0.0045							
Stator Winding Resistance (20°C)	ohm	1.012							
Rotor Winding Resistance (20°C)	ohm	0.48							
Exciter Stator Resistance (20°C)	ohm	19							
Exciter Rotor Phase resistance	ohm	0.13							
No load excitation current	io (A)	0.56	0.62	0.64	0.62	0.55	0.57	0.62	0.65
Full load excitation current	ic(A)	1.95	1.9	1.95	1.9	1.88	1.9	1.92	1.92
Cooling air requirement	m ³ /sec	0.071m ³ /s 150cfm				0.09m ³ /s 191cfm			
Mechanical Characteristic									
Configuration	Single Bearing				Double Bearing				
Type of Construction	B2-SAE				IM B34				
Total Weight - kgs	93				100				
Weight wound stator - kgs	26				26				
Weight wound rotor - kgs	28				29				
Inertia (J) [kgm ²]	0.1027kgm ²				0.1027kgm ³				
Drive end bearing / Lubrication					BALL.6309-2RS(ISO)				
Non-drive end bearing / Lubrication					BALL.6306-2RS(ISO)				
Packing crate size (cm)	49X45X58				58X45X57				

Winding 311 / 0.8 Power Factor

RATINGS

Class - Temp Rise		Cont. F - 105/40°C				Cont. H - 125/40°C				Standby - 150/40°C				Standby - 163/27°C			
50 Hz	Series Star (V)	380	400	415	440	380	400	415	440	380	400	415	440	380	400	415	440
	Parallel Star (V)	190	200	208	220	190	200	208	220	190	200	208	220	190	200	208	220
	Series Delta (V)	220	230	240	254	220	230	240	254	220	230	240	254	220	230	240	254
	kVA	10.0	10.0	10.0	7.7	11.0	11.0	11.0	8.5	N/A				N/A			
kW	8.0	8.0	8.0	6.2	8.8	8.8	8.8	6.8									
Efficiency (%)	79.9	80.5	80.8	81.3	78.7	79.4	79.8	80.4									
kW Input	10.0	9.9	9.9	9.8	11.2	11.1	11.0	10.9									
60 Hz	Series Star (V)	416	440	460	480	416	440	460	480	416	440	460	480	416	440	460	480
	Parallel Star (V)	208	220	230	240	208	220	230	240	208	220	230	240	208	220	230	240
	Delta (V)	240	254	266	277	240	254	266	277	240	254	266	277	240	254	266	277
	kVA	12.0	12.5	12.5	12.5	13.0	13.8	13.8	13.8	N/A				N/A			
kW	9.6	10.0	10.0	10.0	10.4	11.0	11.0	11.0									
Efficiency (%)	79.9	80.3	80.8	81.2	79.0	79.1	79.7	80.2									
kW Input	12.0	12.5	12.4	12.3	13.2	14.0	13.9	13.8									

DIMENSIONS



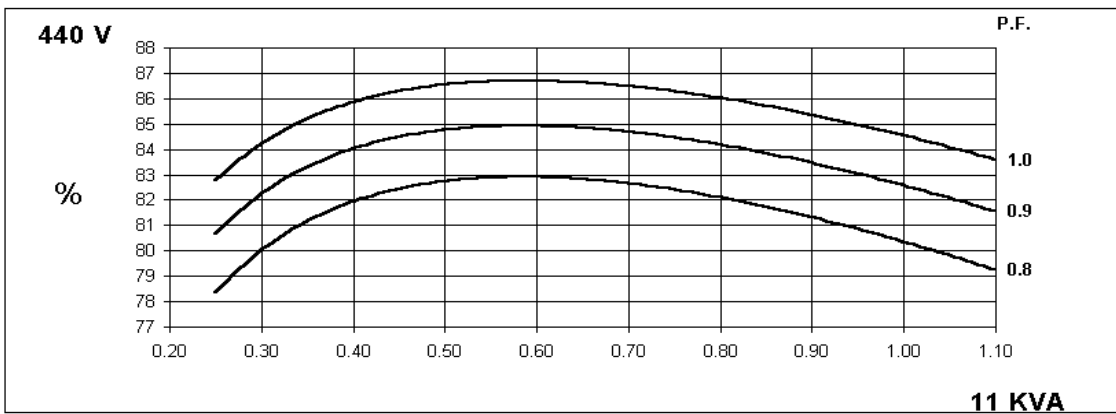
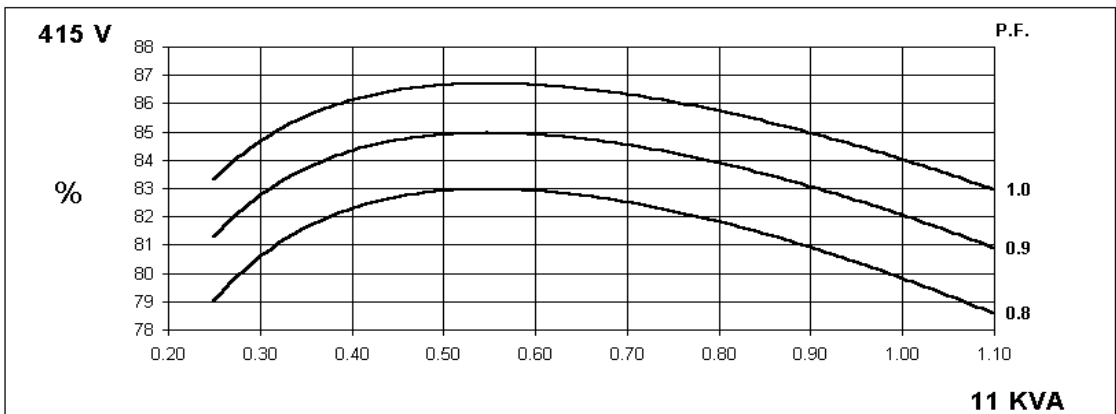
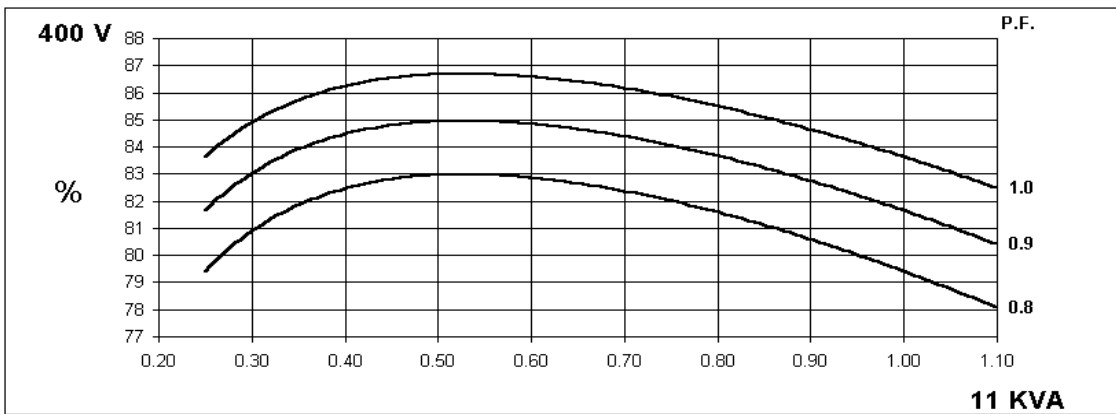
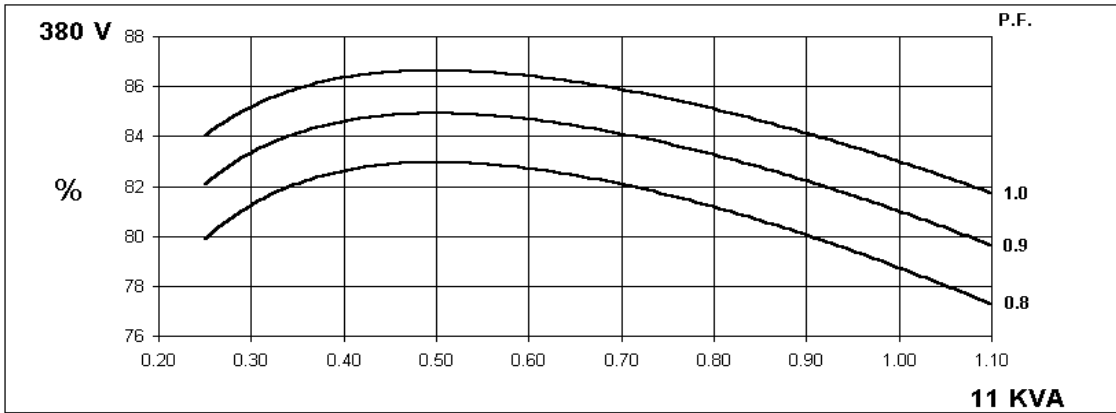
FLANGE(mm)								
	BD	AK	AJ	U ^o	BF	n	C	D
SAE5	356	314.32	333.38	22.5	11	8	133	117
SAE4	402	361.95	381	15	11	8	133	117
SAE3	451	409.58	428.62	15	11	8	145	129
SAE2	489	447.68	466.72	15	11	12	172	156

COUPLING DISC						
SAE	BX	P	X	Y	AN	
11.5	352.42	333.38	8	11	39.6	
10	314.32	295.28	8	11	53.8	
8	263.52	244.48	6	11	62	
7.5	241.3	222.25	8	9	30.2	
6.5	215.9	200.02	6	9	30.2	

				1:1
				A2
VER	MOD	DRW	Date	mm
Design	APP			
CHK	Date	2018.01		

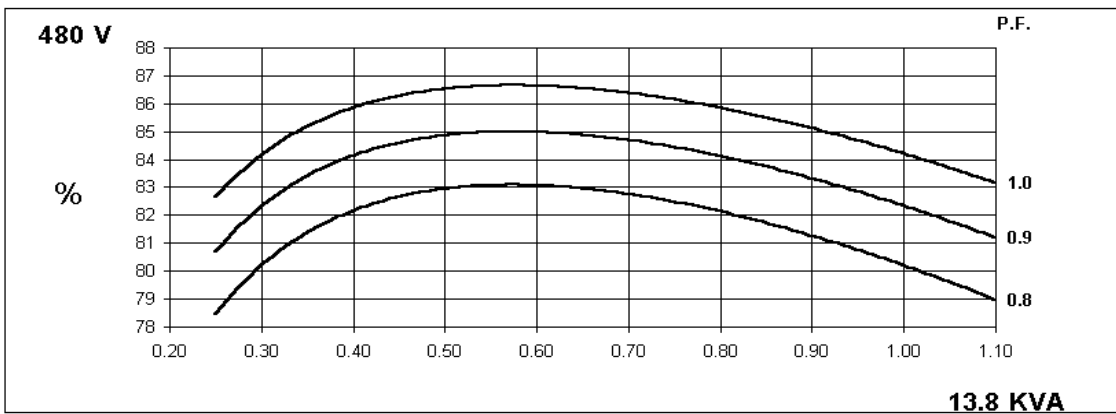
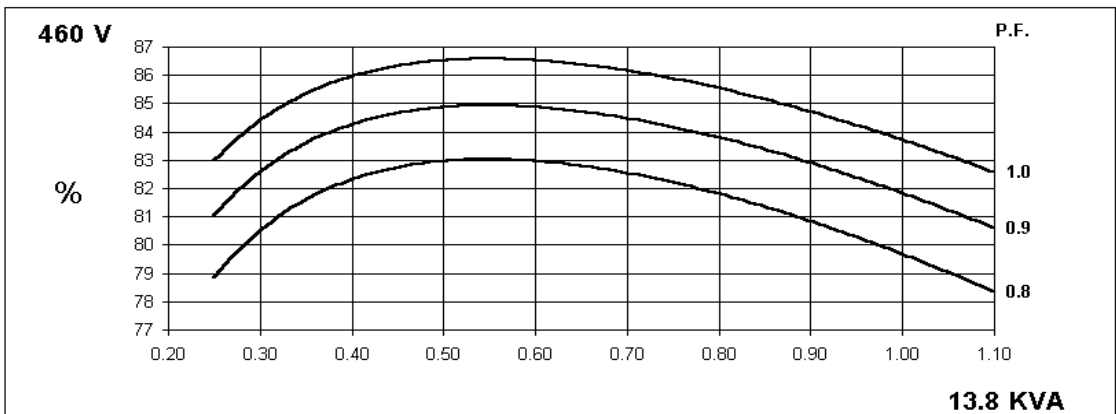
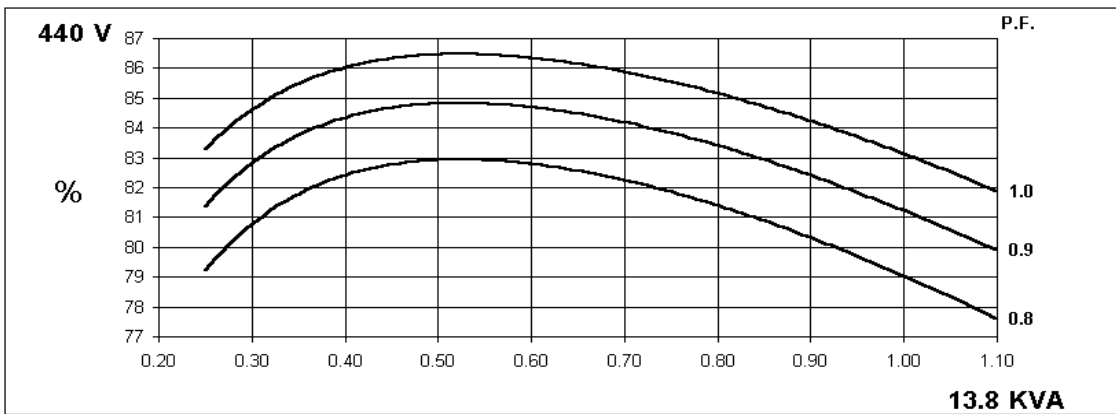
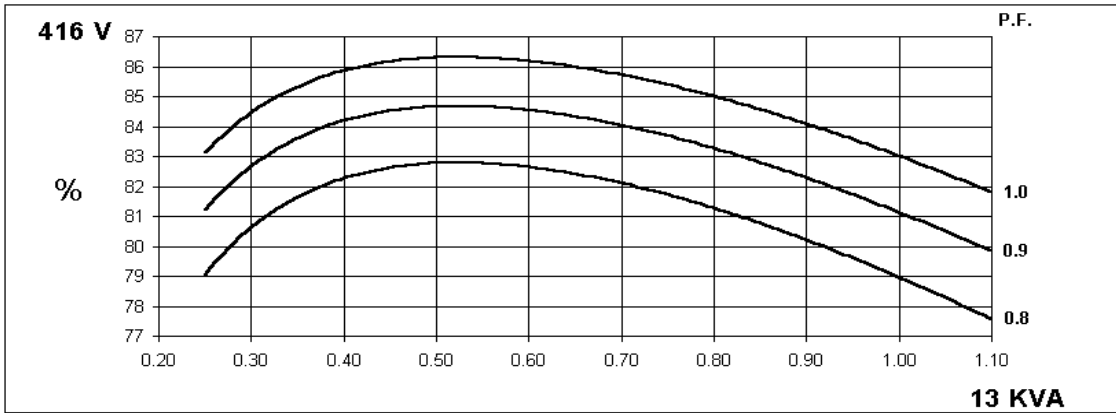
**50
Hz**

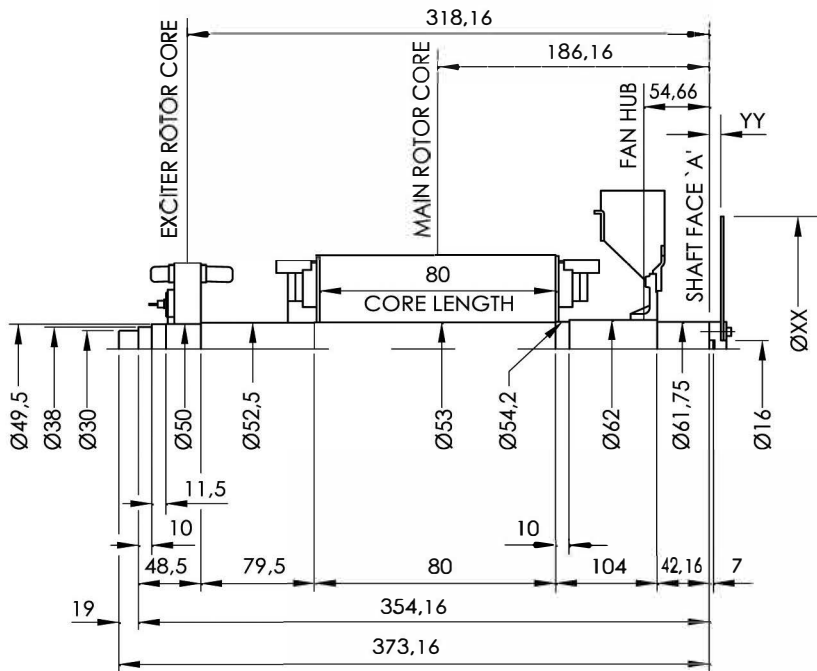
THREE PHASE EFFICIENCY CURVES



**60
Hz**

THREE PHASE EFFICIENCY CURVES

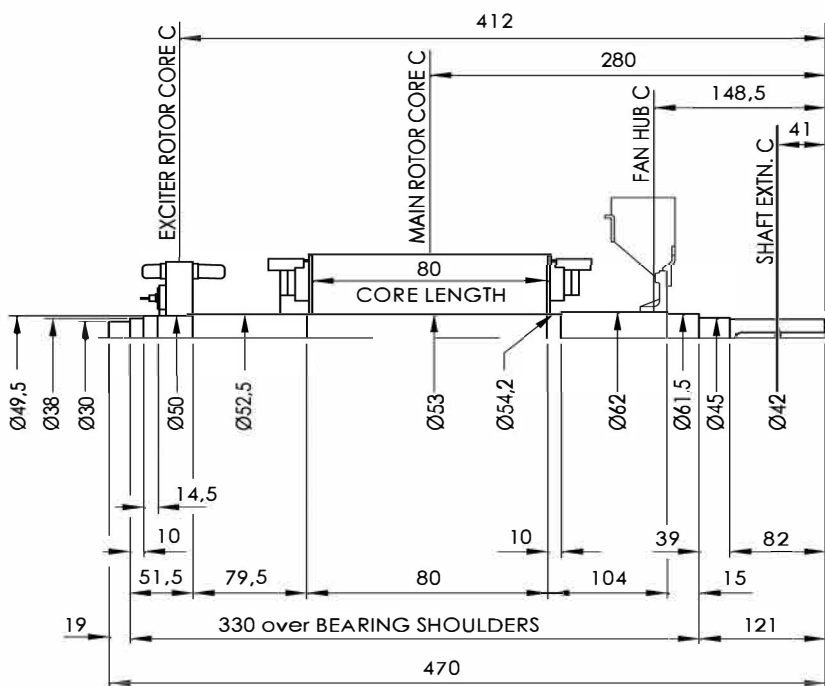




COMPONENT	Wt kg	J kgm ²
EX. ROTOR	4,300	0,0170
MAIN ROTOR	15,910	0,0768
FAN	0,744	0,0061
SHAFT	6,921	0,0028
TOTAL	27,875	0,1027

ADAPTOR SAE No.	COUPLING SAE No.	COUPLING DIMENSIONS		COUPLING ASSEMBLY WEIGHT kg	COUPLING DISC J kgm ²
		XX	YY		
6	7½	241,2	31,7	1,810	0,0078
4/5	7½	241,2	0	1,071	0,0078
4/5	8	263	31,7	2,018	0,0111
4	10	314	23,8	2,377	0,0225
3	10	314	35,8	2,657	0,0225
3	1½	352	21,5	2,793	0,0356

VER	MOD	DRW	Date	1:1
Design		APP		
CHK		Date	2018.01	



COMPONENT	Wt kg	J kgm ²
EX. ROTOR	4,300	0,0170
MAIN ROTOR	15,910	0,0768
FAN	0,744	0,0061
SHAFT	7,704	0,0028
TOTAL	28,658	0,1027

VER	MOD	DRW	Date	1:1
Design		APP		
CHK		Date	2018.01	

