maranello alternator

M44

CONT 40 kVA

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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	IP22
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		
	KR620	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	40	42.5	40	35	47.3	50	50	50
	kW	32.0	34.0	32.0	28.0	37.8	40.0	40.0	40.0
Efficiency at Class H (P.F.=0.8)	4/4%	86.7	86.6	87.1	87.6	86.8	86.9	87	87.4
	3/4%	88.2	88.2	88.6	88.7	88.1	88.2	88.4	88.7
	2/4%	88.7	88.7	88.3	88.1	88.2	88.2	88.3	88.1
Efficiency at Class H (P.F.=1.0)	4/4%	89.5	89.5	90	90.2	89.3	89.5	89.9	90
	3/4%	90.9	90.9	91	91	90.7	90.9	91	91
	2/4%	91.1	91.1	91	90.9	90.9	90.9	90.9	90.9
Reactances (%) at Class H									
Direct axis synchronous reactance unsaturated	Xd	2.139	2.051	1.793	1.823	2.431	2.297	2.101	1.93
Direct axis transient reactance saturated	X'd	0.163	0.156	0.136	0.138	0.185	0.175	0.16	0.147
Direct axis subtransient reactance saturated	X"d	0.089	0.085	0.074	0.075	0.101	0.095	0.087	0.08
Quadrature axis synchronous reactance unsaturated	Xq	1.032	0.99	0.866	0.88	1.174	1.109	1.015	0.932
Quadrature axis subtransient reactance saturated	X"q	0.18	0.173	0.151	0.154	0.205	0.194	0.177	0.163
Leakage reactance	X1	0.067	0.064	0.056	0.057	0.076	0.071	0.065	0.06
Negative sequence reactance saturated	X2	0.136	0.13	0.114	0.115	0.154	0.145	0.133	0.122
Zero sequence reactance unsaturated	X0	0.033	0.032	0.028	0.029	0.038	0.036	0.033	0.03
Short-circuit ratio	Kcc	0.4675	0.4876	0.5577	0.5485	0.4114	0.4354	0.4760	0.5181
Short-circuit transient time constant (sec.)	T'd	0.025							
Subtransient time constant (sec.)	T"d	0.016							
Open circuit time constant (sec.)	T'do	0.59							
Armature time constant (sec.)	Tα	0.0105							
Stator Winding Resistance (20℃)	ohm	0.148							
Rotor Winding Resistance (20℃)	ohm	0.95							
Exciter Stator Resistance (20℃)	ohm	24							
Exciter Rotor Phase resistance	ohm	0.12							
No load excitation current	io (A)	0.6	0.62	0.64	0.62	0.55	0.57	0.63	0.65
Full load excitation current	ic(A)	2	2.2	2.3	2	2	2.2	2.3	2.3
Cooling air requirement	m^3/sec	0.095m3/s 200cfm				0.119m3/s 250cfm			

Mechanical Characteristic

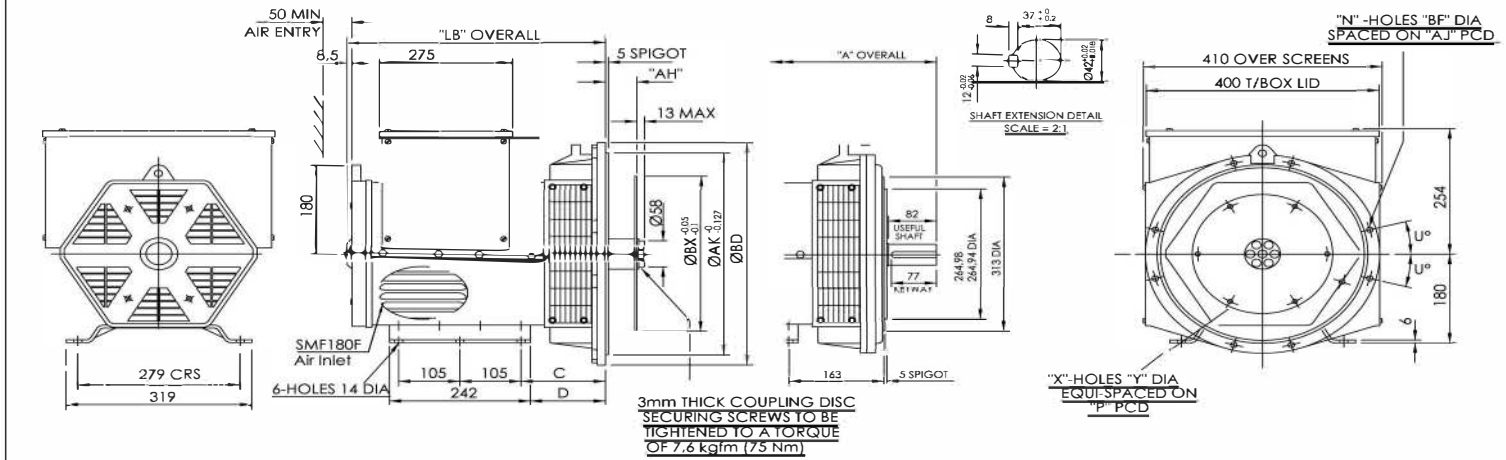
Configuration	Single Bearing	Double Bearing
Type of Construction	B2-SAE	IM B34
Total Weight - kgs	199	204
Weight wound stator - kgs	75	75
Weight wound rotor - kgs	77.15	73.95
Inertia (J) [kgm2]	0.2978kgm2	0.2921kgm3
Drive end bearing / Lubrication		BALL.6309-2RS(ISO)
Non-drive end bearing / Lubrication	BALL.6306-2RS(ISO)	BALL.6306-3RS(ISO)
Packing crate size（cm）	70X49X70	80X50X70

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	36.7	39.0	36.7	32.1	40.0	42.5	40.0	35.0	N/A				N/A			
	kW	29.4	31.2	29.4	25.7	32.0	34.0	32.0	28.0								
	Efficiency (%)	87.3	87.3	87.8	88.1	86.7	86.6	87.3	87.6								
	kW Input	33.6	35.7	33.4	33.3	36.9	39.3	36.7	36.5								
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
	Series Delta (V)	240	254	266	277	240	254	266	277	240	254	266	277	240	254	266	277
	kVA	47.3	50.0	50.0	50.0	47.3	50.0	50.0	50.0	N/A				N/A			
	kW	37.8	40.0	40.0	40.0	37.8	40.0	40.0	40.0								
	Efficiency (%)	86.7	86.8	87.2	87.5	86.7	86.8	87.2	87.5								
	kW Input	43.6	46.1	45.9	45.7	43.6	46.1	45.9	45.7								

DIMENSIONS



DIMENSIONS(mm)			WEIGHE
SAE	TYPE	LB	KG
SAE 4/5	QYI 184ES	431	114
	QYI 184E	431	130
	QYI 184F	521	147
	QYI 184G	521	169
	QYI 184H	581	183
	QYI 184J	581	194

COUPLING DISC					
SAE	BX	P	X	Y	AH
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

DIMENSIONS(mm)			WEIGHE	2-BRG
SAE	TYPE	LB	kg	A
SAE 2	QYI 184H	620.5	183	703.5
	QYI 184J	620.5	194	703.5
SAE 3	QYI 184H	593	185	
	QYI 184J	593	195	

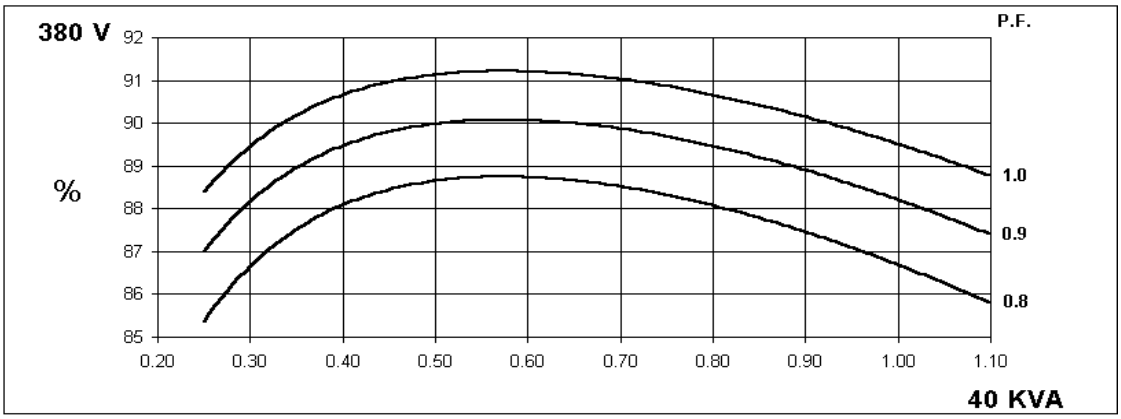
FLANGE(mm)								
	BD	AK	AJ	U°	BF	n	C	D
SAE5	356	314.32	333.38	22.5	11	8	133	117
SAE4	402	361.95	381	15	11	8	133	117
SAE3	451	409.58	428.62	15	11	8	145	129
SAE2	489	447.68	466.72	15	11	12	172	156

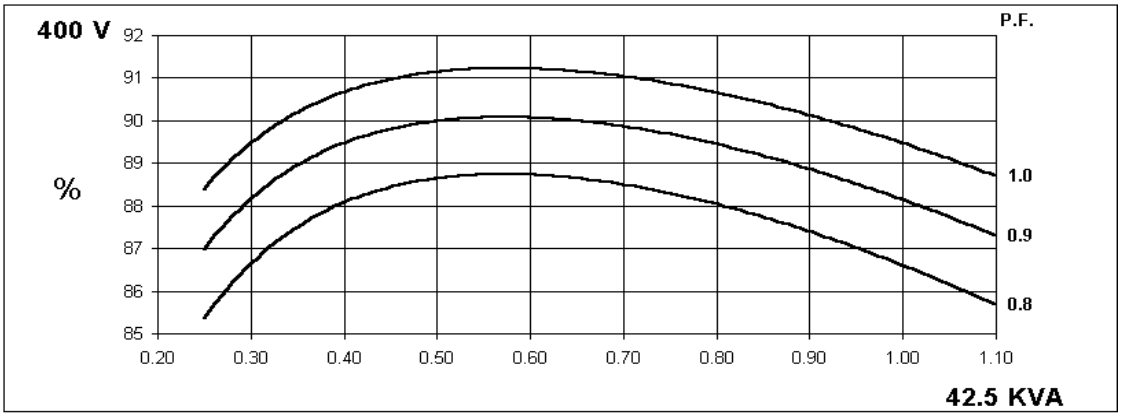
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						A2
VER	MOD	DRW	Date			
Design		APP				mm
CHK		Date	2018.8.1			

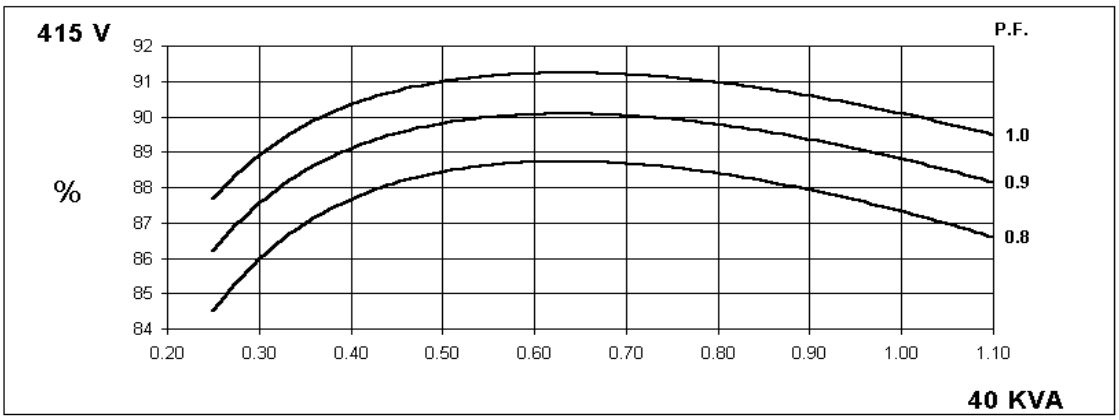
50 Hz

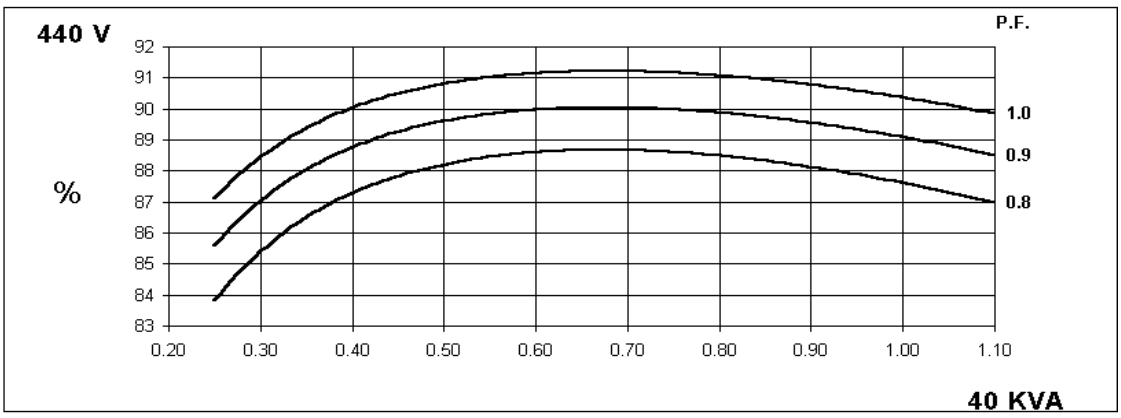
Winding 311

THREE PHASE EFFICIENCY CURVES





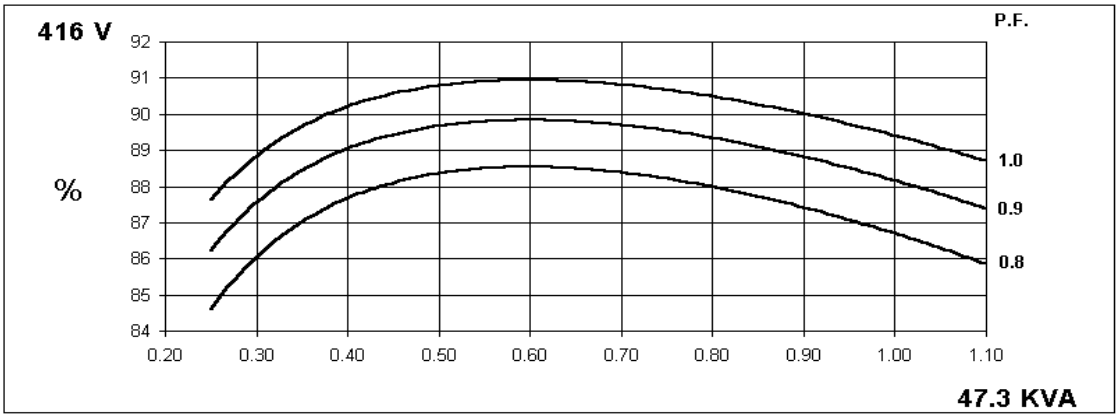


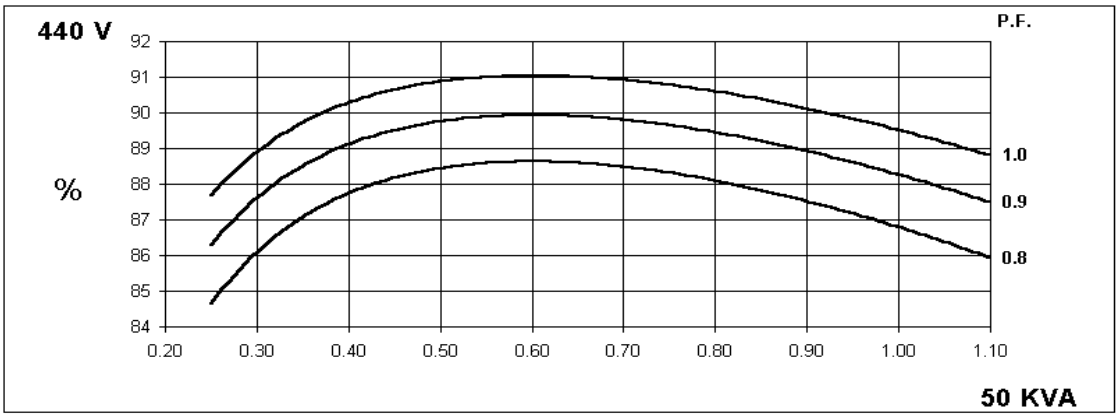


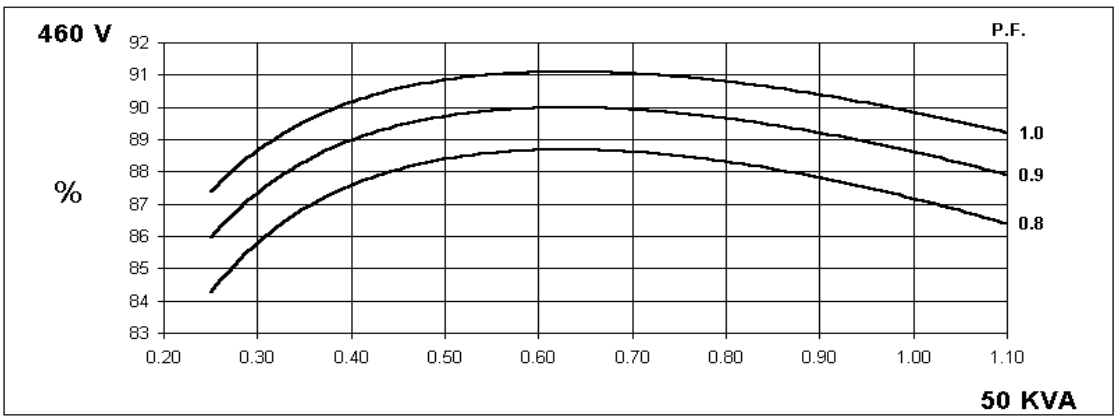
Winding 311

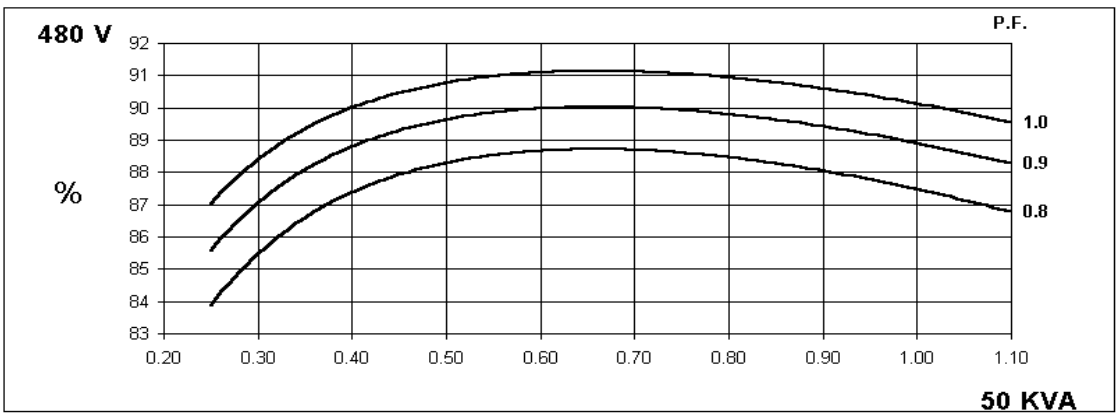
THREE PHASE EFFICIENCY CURVES

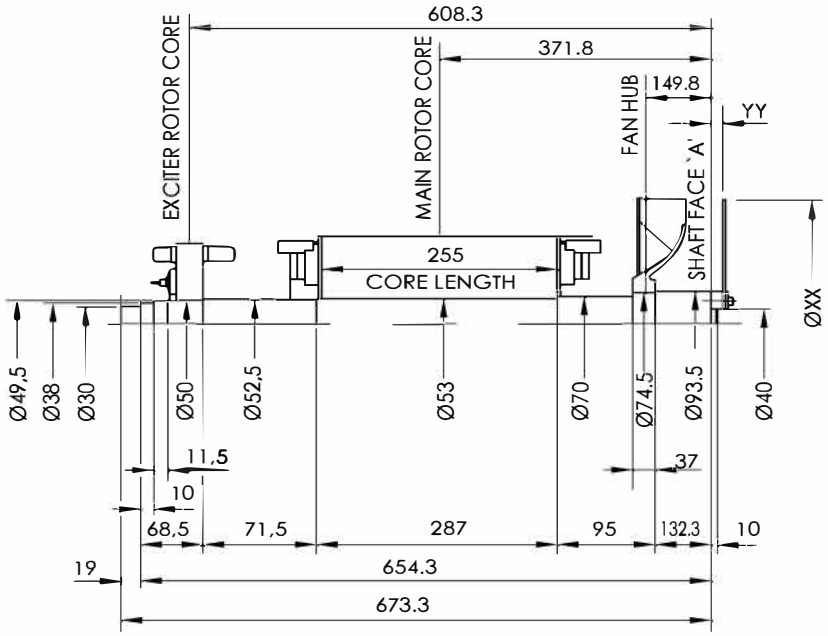
60 Hz







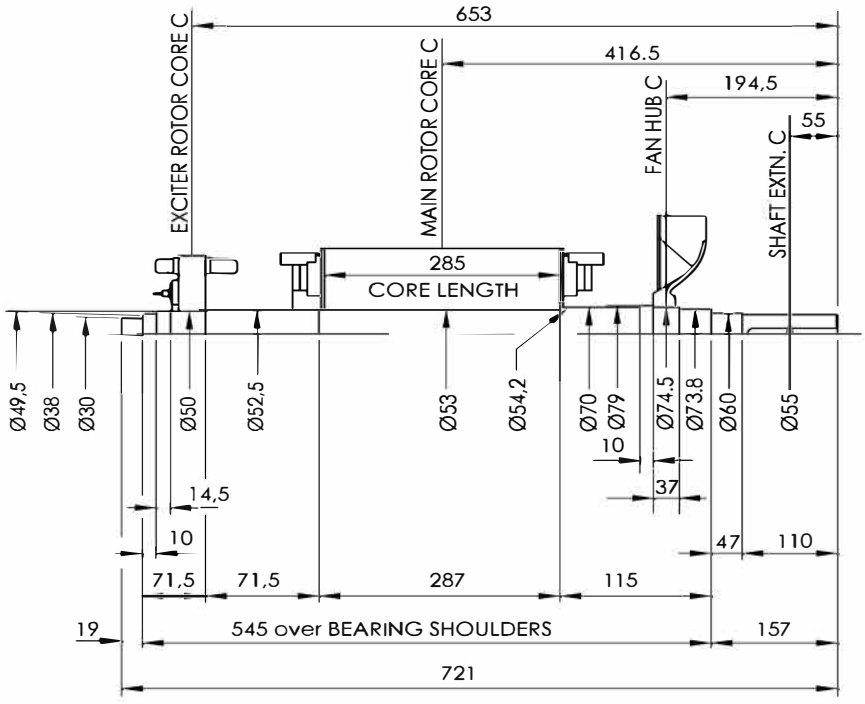




COMPONENT	Wt kg	J kgm²
EX.ROTOR	7.425	0,0287
MAIN ROTOR	50.430	0,2307
FAN	1.920	0,0265
SHAFT	17.376	0,0119
TOTAL	77.151	0,2978

ADAPTOR SAE No.	COUPLING SAE No.	COUPLING DIMENSIONS XX	COUPLING DIMENSIONS YY	COUPLING ASSEMBLY WEIGHT kg	COUPLING DISC J kgm²
4	10	314	14.3	1.43	0,0180
3	1 ½	352	0	1.86	0,0284

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



COMPONENT	Wt kg	J kgm²
EX. ROTOR	7.425	0,0287
MAIN ROTOR	50.43	0,2307
FAN	1.920	0,0265
SHAFT	14.170	0,0062
TOTAL	73.945	0,2921

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



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