maranello alternator

M1500

CONT 1400 kVA

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THREE-PHASE SYNCHRONOUS GENERATOR

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

Ambient Temperature环境温度	40°C	Method of Cooling 冷却方式	Air cooling风冷
Temperature Rise 温升	125°C	Direction of Rotation 旋转方向	Clockwise顺时针
Insulation Class 绝缘等级	H	Maximum Over-speed 最高转速	2250r/min
Power Factor功率因数	0.8	Degree of Protection / Enclosure 防护等级	IP23
Excitation 励磁方式	Brushless无刷	Altitude 海拔	1000m
Winding Pitch 绕组节距	2/3	Stator winding 定子绕组	双层叠绕绕组 DLL
Pole极数	4	Number of Terminal 终端数量	6
Duty工作制	S1- Continuous	Rotor 转子	With damping cage带阻尼
Waveform 电话干扰因数	TIF<50		THF<2%
Waveform distortion 波形畸变率	BS EN 61000-6-2&BS EN 61000-6-4,VDE 0875G,VDE0874N		
Radio interference 无线电干扰	Noload<1.5%,Non-distorting balanced linear load<5%		

AVR MODEL AVR型号	Standard 标配	Selection 选配		PMG		
	MX341B	MX321		MX341B	MX321	
Voltage Regulation - in steady state condition 电压调节	±0.5	±0.5		±0.5	±0.5	
Short Circuit Current Capacity 短路电流容量	4400A					

Electrical Characteristic

Frequency频率	Hz	50				60			
Voltage (series star)电压 Y	V	380/220	400/231	415/240	440/254	416/240	440/254	460/266	480/277
Voltage (parallel star)电压 YY	V	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Voltage (series delta)电压 Δ	V	220	230	240	254	240	254	266	277
Rated power at Class H (125° C) temperature rise	kVA	1360	1400	1400	1375	1525	1625	1655	1690
额定功率在H(125℃)温升	kW	1088	1120	1120	1100	1220	1300	1324	1352
Efficiency at Class H (P.F.=0.8)绝缘等级H (P.F.=0.8)效率	4/4%	94.8	94.9	95	95.2	94.8	94.9	95	95.1
	3/4%	95.7	95.8	95.9	96	95.5	95.6	95.7	95.8
	2/4%	95.7	95.7	95.7	95.7	95.2	95.3	95.3	95.3
Efficiency at Class H (P.F.=1.0)绝缘等级H (P.F.=1.0)效率	4/4%	96	96	96.1	96.2	96	96	96.1	96.1
	3/4%	96.7	96.8	96.8	96.9	96.4	96.5	96.6	96.7
	2/4%	96.7	96.7	96.7	96.6	96.2	96.3	96.3	96.3
Reactances (%) at Class H 绝缘等级H考核时的电抗									
Direct axis synchronous reactance unsaturated 直轴同步电抗	Xd	3.5	3.26	3.02	2.64	4.25	4.04	3.77	3.53
Direct axis transient reactance saturated 直轴瞬态电抗	X'd	0.21	0.2	0.18	0.16	0.26	0.25	0.23	0.22
Direct axis subtransient reactance saturated 直轴瞬变电抗	X"d	0.16	0.15	0.14	0.12	0.19	0.18	0.17	0.16
Quadrature axis synchronous reactance unsaturated 交轴同步电抗	Xq	2.26	2.1	1.95	1.7	2.74	2.61	2.43	2.28
Quadrature axis subtransient reactance saturated 交轴起始瞬态电抗	X"q	0.32	0.29	0.27	0.24	0.38	0.37	0.34	0.32
Leakage reactance漏抗	X1	0.04	0.04	0.03	0.03	0.05	0.05	0.04	0.04
Negative sequence reactance saturated负序电抗饱和	X2	0.22	0.21	0.19	0.17	0.27	0.26	0.24	0.23
Zero sequence reactance unsaturated 零序电抗不饱和	X0	0.03	0.03	0.02	0.02	0.03	0.03	0.03	0.03
Short-circuit ratio 短路比	Kcc	0.2857	0.3067	0.3311	0.3788	0.2353	0.2475	0.2653	0.2833

Short-circuit transient time constant (sec.)瞬变时间常数（秒）	T'd	0.13							
Subtransient time constant (sec.) 超瞬变时间常数（秒。）	T"d	0.01							
Open circuit time constant (sec.)开路时间常数	T'do	2.14							
Armature time constant (sec.)电枢时间常数	Tα	0.02							
Stator Winding Resistance (20℃)定子绕组电阻(20℃)	ohm	0.0016							
Rotor Winding Resistance (20℃)转子绕组电阻(20℃)	ohm	1.27							
Exciter Stator Resistance (20℃)励磁机定子电阻(20℃)	ohm	17.5							
Exciter Rotor Phase resistance 励磁机转子相电阻	ohm	0.063							
No load excitation current空载励磁电流	io (A)	0.6	0.63	0.71	0.65	0.56	0.6	0.62	0.63
Full load excitation current满载励磁电流	ic(A)	3.2	3.2	3.5	3.2	3.4	3.3	3.4	3.5
Cooling air requirement空气冷却要求	m^3/sec	2.69m3/s 5200cfm				3.45m3/s 7300cfm			

Mechanical Characteristic

Configuration 结构	Single Bearing 单轴承	Double Bearing 双轴承
Type of Construction 结构形式	B2-SAE	IM B34
Total Weight - kgs 总重量-公斤	2760	2710
Weight wound stator - kgs 定子重量-公斤	1306	1306
Weight wound rotor - kgs 转子重量-公斤	1139	1077
Inertia (J) [kgm2] 转动惯量（J）[kgm2）	32.7498kgm2	31.7489kgm2
Drive end bearing / Lubrication 驱动端轴承/润滑		BALL.6228-2RS(ISO)
Non-drive end bearing / Lubrication非驱动端轴承/润滑	BALL.6319-2RS(ISO)	BALL.6319-2RS(ISO)
Packing crate size 包装尺寸（cm）	186X105X149	205X101X159

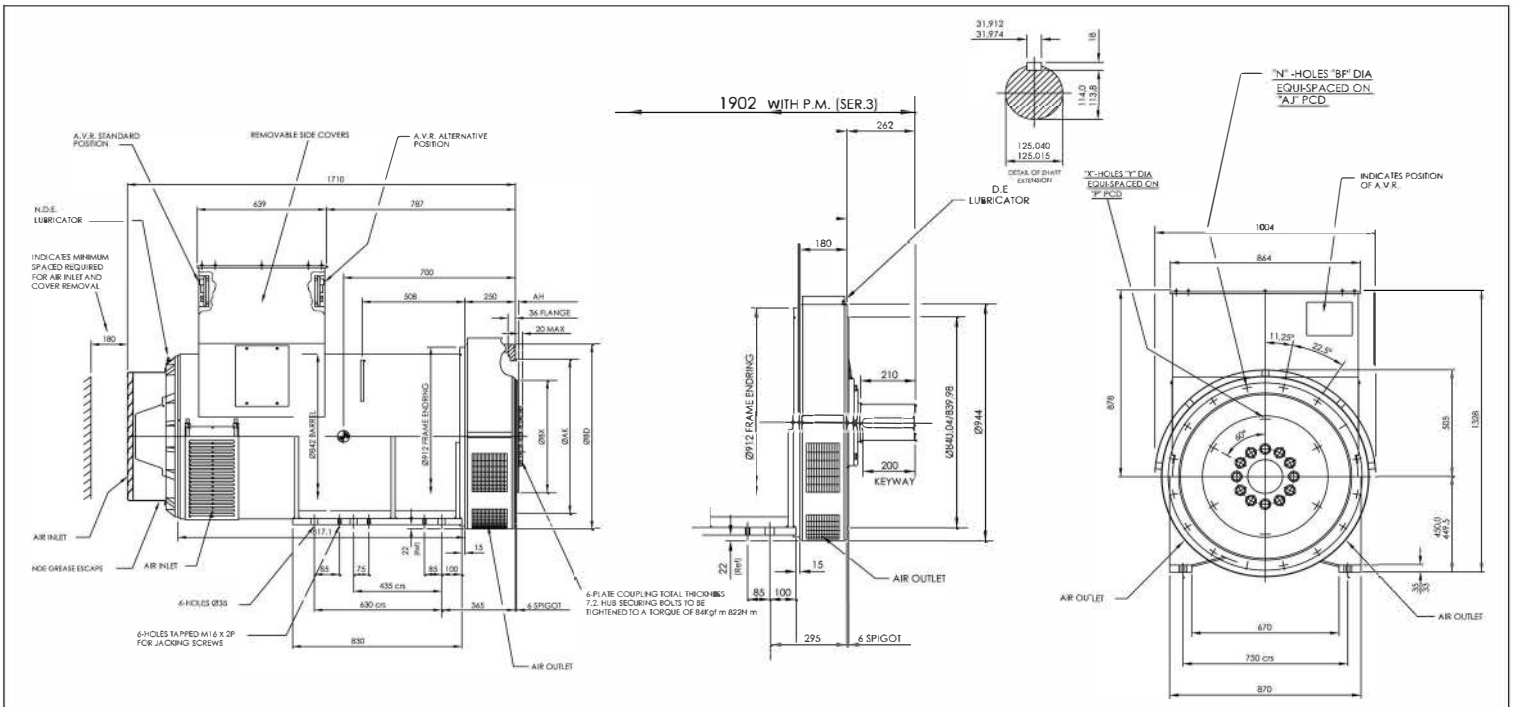
Winding 312 / 0.8 Power Factor

RATINGS

Class - Temp Rise		Cont. F - 105/40°C				Cont. H - 125/40°C				Standby - 150/40°C				Standby - 163/27°C			
50Hz	Star (V)	380	400	415	440	380	400	415	440	380	400	415	440	380	400	415	440
	kVA	1265	1305	1305	1280	1360	1400	1400	1375	1415	1460	1460	1430	1455	1500	1500	1470
	kW	1012	1044	1044	1024	1088	1120	1120	1100	1132	1168	1168	1144	1164	1200	1200	1176
	Efficiency (%)	95.1	95.2	95.3	95.5	94.8	94.9	95.1	95.3	94.7	94.8	94.9	95.2	94.6	94.7	94.9	95.1
	kW Input	1064	1097	1095	1072	1148	1180	1178	1154	1195	1232	1231	1202	1230	1267	1264	1237

60Hz	Star (V)	416	440	460	480	416	440	460	480	416	440	460	480	416	440	460	480
	kVA	1415	1510	1540	1575	1525	1625	1655	1690	1590	1690	1725	1760	1630	1740	1775	1810
	kW	1132	1208	1232	1260	1220	1300	1324	1352	1272	1352	1380	1408	1304	1392	1420	1448
	Efficiency (%)	95.0	95.1	95.2	95.3	94.8	94.9	95.0	95.1	94.7	94.8	94.9	95.0	94.6	94.7	94.8	94.9
	kW Input	1192	1270	1294	1322	1287	1370	1394	1422	1343	1426	1454	1482	1378	1470	1498	1526

DIMENSIONS



COUPLING DISC					
SAE	BX	P	X	Y	AH
24	733.375	692	12	20.7	0
21	673.10	641.35	12	16.7	0
18	571.50	542.92	6	16.7	15.7
14	466.72	438.15	8	13.5	25.4

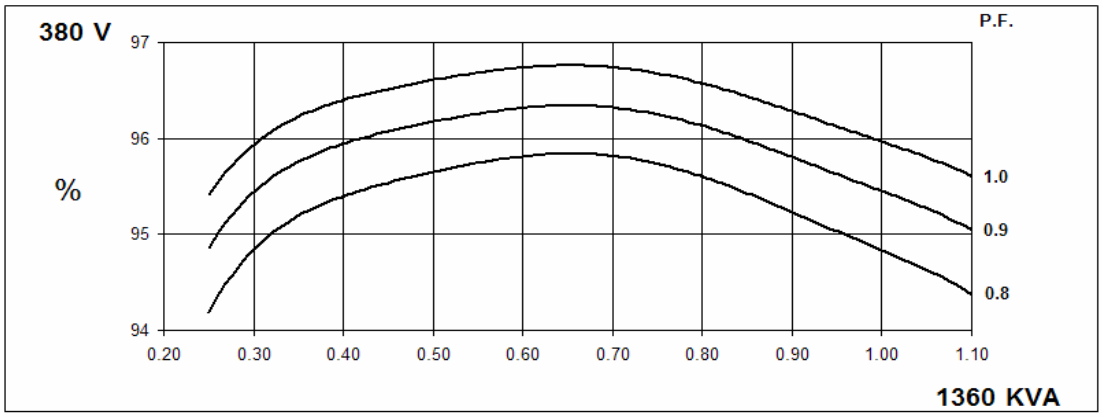
FLANGE (mm)						
SAE	BD	AK	AJ	U°	BF	n
SAE1	553	511.18	530.22	15	12.7	12
SAE1/2	648	584.20	619.12	15	14	12
SAE0	711	647.70	679.45	11.25	14	16
SAE00	882	787.40	850.90	11.25	14	16

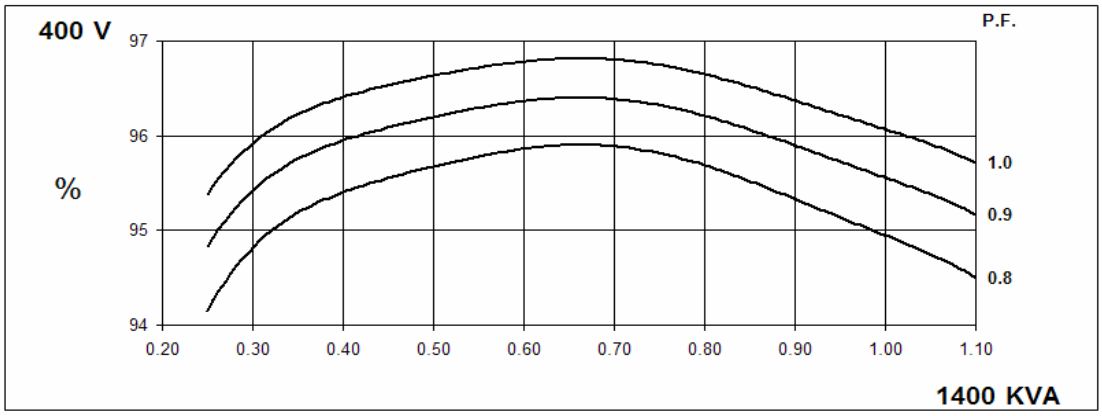
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Design		APP			mm
CHK		Date	2018.01		

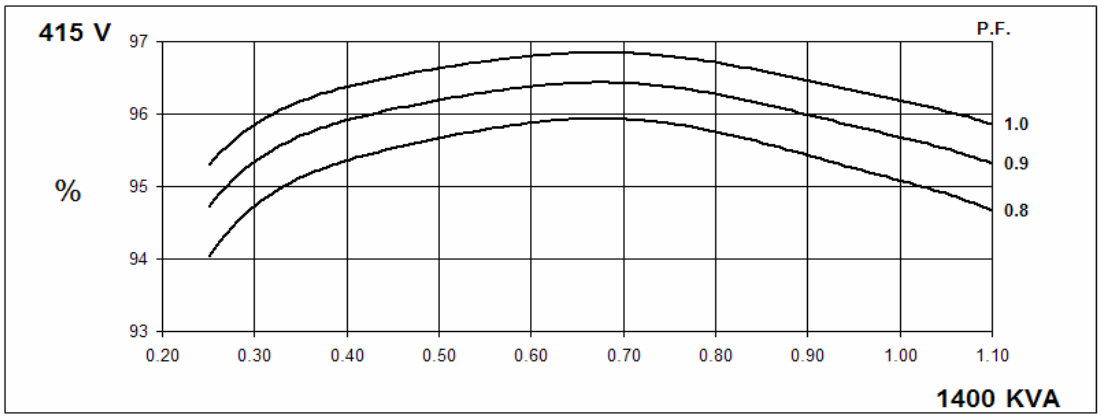
50 Hz

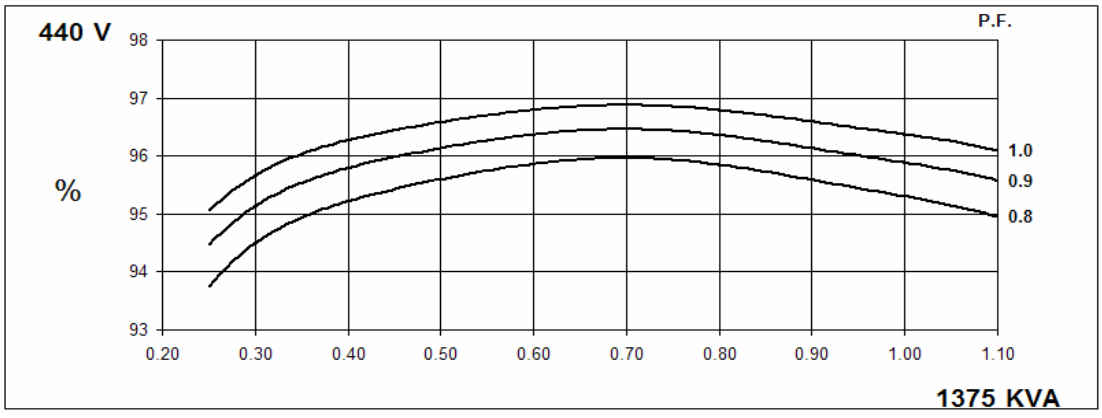
Winding 312

THREE PHASE EFFICIENCY CURVES



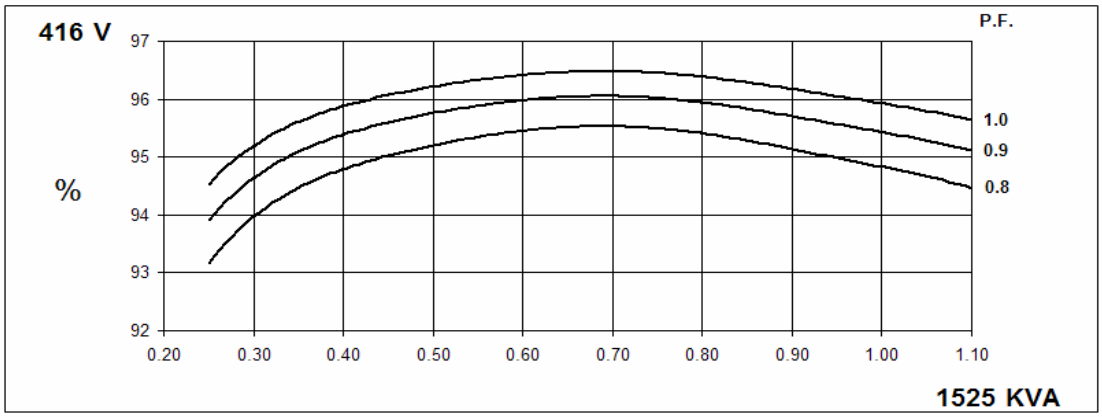


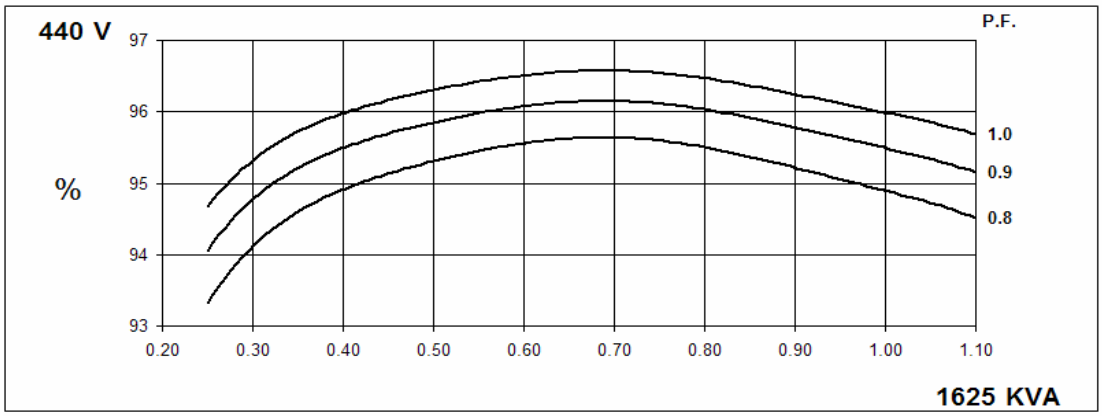


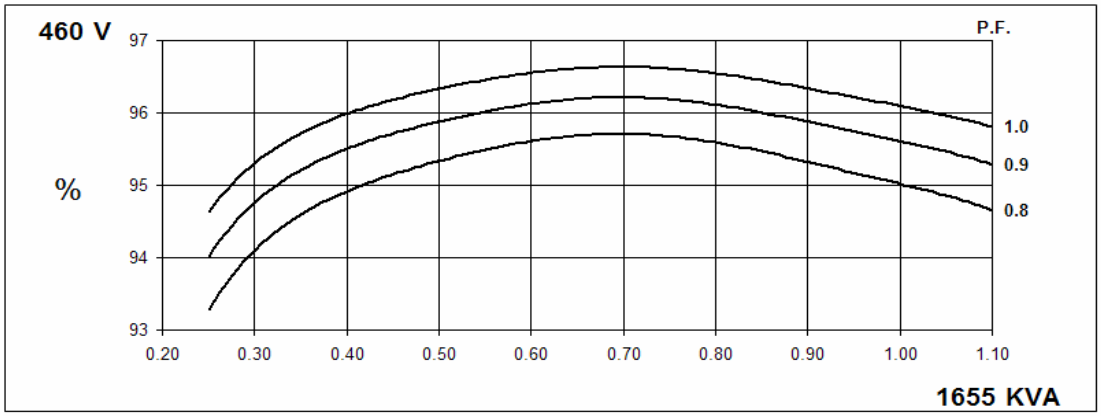


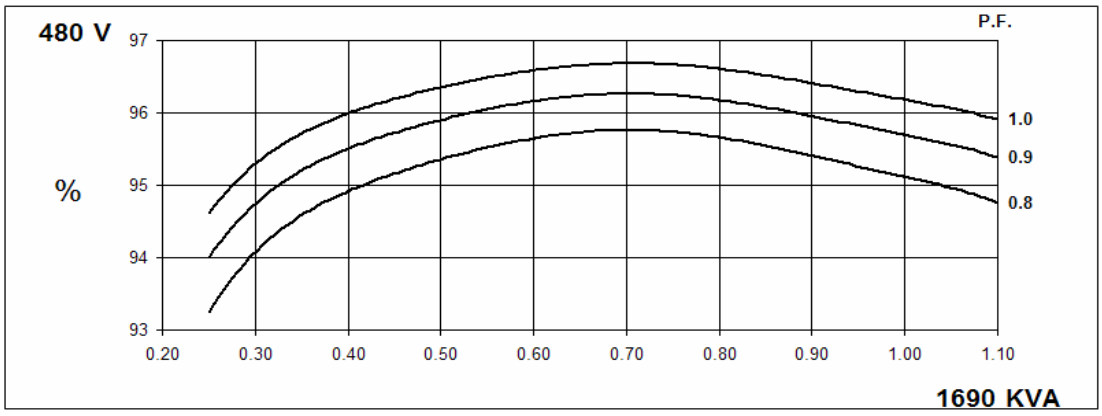
60 Hz

THREE PHASE EFFICIENCY CURVES



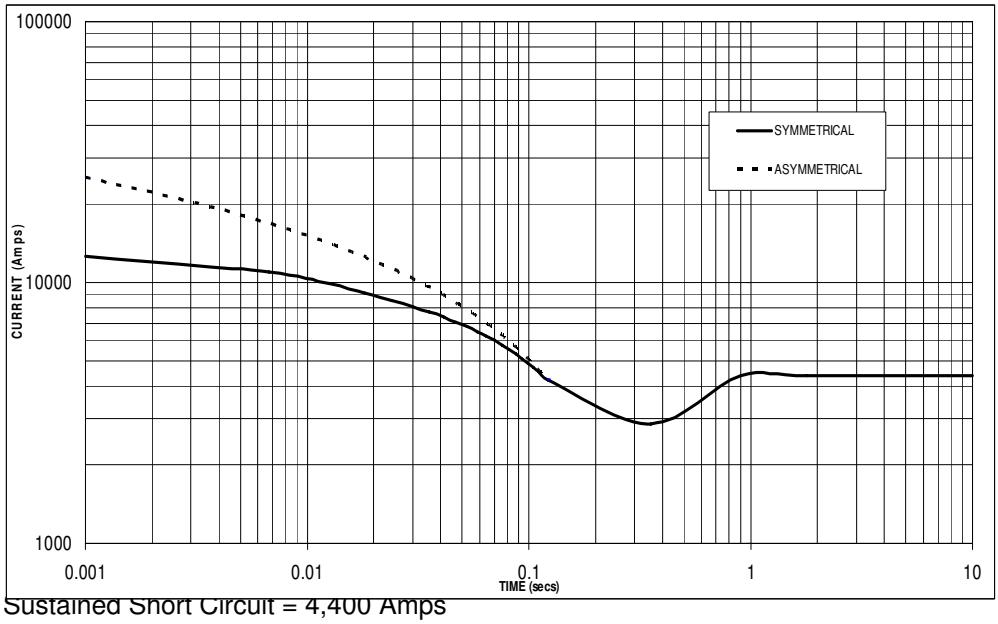






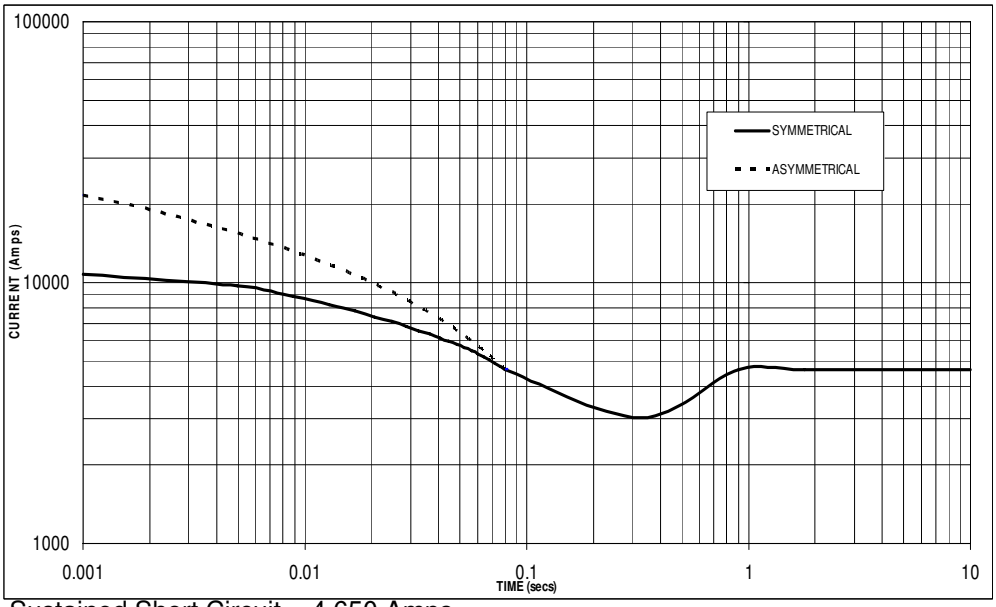
Three-phase Short Circuit Decrement Curve. No-load Excitation at Rated Speed
Based on star (wye) connection.

50 Hz



Sustained Short Circuit = 4,400 Amps

60 Hz



Sustained Short Circuit = 4,650 Amps

Note 1

The following multiplication factors should be used to adjust the values from curve between time 0.001 seconds and the minimum current point in respect of nominal operating voltage :

50Hz		60Hz	
Voltage	Factor	Voltage	Factor
380v	x 1.00	416v	x 1.00
400v	x 1.05	440v	x 1.06
415v	x 1.09	460v	x 1.10
440v	x 1.16	480v	x 1.15

The sustained current value is constant irrespective of voltage level

Note 2

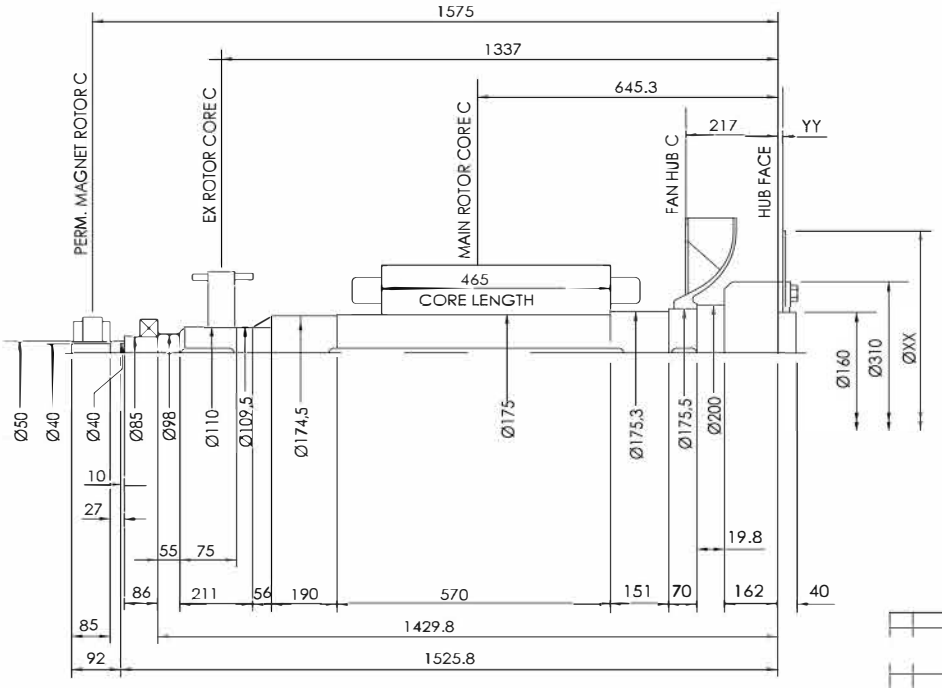
The following multiplication factor should be used to convert the values calculated in accordance with NOTE 1 to those applicable to the various types of short circuit :

	3-phase	2-phase L-L	1-phase L-N
Instantaneous	x 1.00	x 0.87	x 1.30
Minimum	x 1.00	x 1.80	x 3.20
Sustained	x 1.00	x 1.50	x 2.50
Max. sustained duration	10 sec.	5 sec.	2 sec.

All other times are unchanged

Note 3

Curves are drawn for Star (Wye) connected machines.



COMPONENT	Wt kg	J kgm^2
EX. ROTOR	51.6	0,859
MAIN ROTOR	729.193	28.3983
FAN	28.8	1.652
SHAFT	260.055	0,9638
HUB	53.533	0,8846
P.M.EX.ROTOR	6.97	0.019
P.M. STUB SHAFT	0.929	0,0003
TOTAL	1131.08	32.777

COUPLING SAE No	COUPLING DIMEN's XX	COUPLING DIMEN's YY	COUPLING ASSEMBLY WEIGHT kg	COUPLING DISC J kgm^2
18	572	16	24.5	0,59
21	673	0	23.1	1.135
24	733	0	26.84	1.598

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



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