



**M1815**

CONT 1650 kVA



### 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	
	MX341B	MX321	PMG 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	5750A		

#### Electrical Characteristic

Frequency 频率	Hz	50				60			
		380/220	400/231	415/240	440/254	416/240	440/254	460/266	480/277
Voltage ( series star ) 电压 Y	V	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
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 额定功率在H(125 °C)温升	kVA	1615	1650	1650	1620	1815	1935	1975	2015
	kW	1292	1320	1320	1296	1452	1548	1580	1612
Efficiency at Class H (P.F.=0.8) 绝缘等级H (P.F.=0.8) 效率	4/4%	96.1	96.1	96.2	96.3	96	96.1	96.1	96.2
	3/4%	96.5	96.6	96.7	96.7	96.3	96.4	96.4	96.4
	2/4%	96.4	96.4	96.4	96.3	96.1	96.1	96.1	96.2
Efficiency at Class H (P.F.=1.0) 绝缘等级H (P.F.=1.0) 效率	4/4%	97	97	97.1	97.3	96.9	97	97	97.1
	3/4%	97.3	97.3	97.4	97.4	97.1	97.2	97.2	97.3
	2/4%	97.2	97.2	97.2	97.2	96.9	97	97	97

#### Reactances (%) at Class H 绝缘等级H考核时的电抗

		3.12	2.88	2.67	2.33	3.75	3.57	3.33	3.12
Direct axis synchronous reactance unsaturated 直轴同步电抗	X <sub>d</sub>	0.19	0.18	0.16	0.14	0.23	0.22	0.2	0.19
Direct axis transient reactance saturated 直轴瞬态电抗	X' <sub>d</sub>	0.14	0.13	0.12	0.11	0.17	0.16	0.15	0.14
Direct axis subtransient reactance saturated 直轴瞬变电抗	X'' <sub>d</sub>	2.01	1.85	1.72	1.5	2.41	2.3	2.15	2.01
Quadrature axis synchronous reactance unsaturated 交轴同步电抗	X <sub>q</sub>	0.28	0.26	0.24	0.21	0.34	0.32	0.3	0.28
Quadrature axis subtransient reactance saturated 交轴起始瞬态电抗	X'' <sub>q</sub>	0.04	0.03	0.03	0.03	0.04	0.04	0.04	0.04
Leakage reactance 漏抗	X <sub>l</sub>	0.2	0.18	0.17	0.15	0.24	0.23	0.21	0.2
Negative sequence reactance saturated 负序电抗饱和	X <sub>2</sub>	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.02
Zero sequence reactance unsaturated 零序电抗不饱和	X <sub>0</sub>	0.3205	0.3472	0.3745	0.4292	0.2667	0.2801	0.3003	0.3205
Short-circuit ratio 短路比	K <sub>cc</sub>								

Short-circuit transient time constant (sec.) 瞬变时间常数 (秒)	T' <sub>d</sub>	0.137							
Subtransient time constant (sec.) 超瞬变时间常数 (秒。)	T'' <sub>d</sub>	0.01							
Open circuit time constant (sec.) 开路时间常数	T' <sub>do</sub>	2.25							
Armature time constant (sec.) 电枢时间常数	T <sub>a</sub>	0.02							
Stator Winding Resistance (20°C) 定子绕组电阻(20°C)	ohm	0.00114							
Rotor Winding Resistance (20°C) 转子绕组电阻(20°C)	ohm	1.51							
Exciter Stator Resistance (20°C) 励磁机定子电阻(20°C)	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	3.6	3.2	3.4	3.3	3.4	3.5
Cooling air requirement 空气冷却要求	m <sup>3</sup> /sec	2.69m <sup>3</sup> /s 5200cfm				3.45m <sup>3</sup> /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	3275	3225
Weight wound stator - kgs 定子重量-公斤	1600	1600
Weight wound rotor - kgs 转子重量-公斤	1383	1321
Inertia (J) [kgm <sup>2</sup> ] 转动惯量 (J) [kgm <sup>2</sup> ]	41.2206kgm <sup>2</sup>	40.2197kgm <sup>2</sup>
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)	215X101X159	

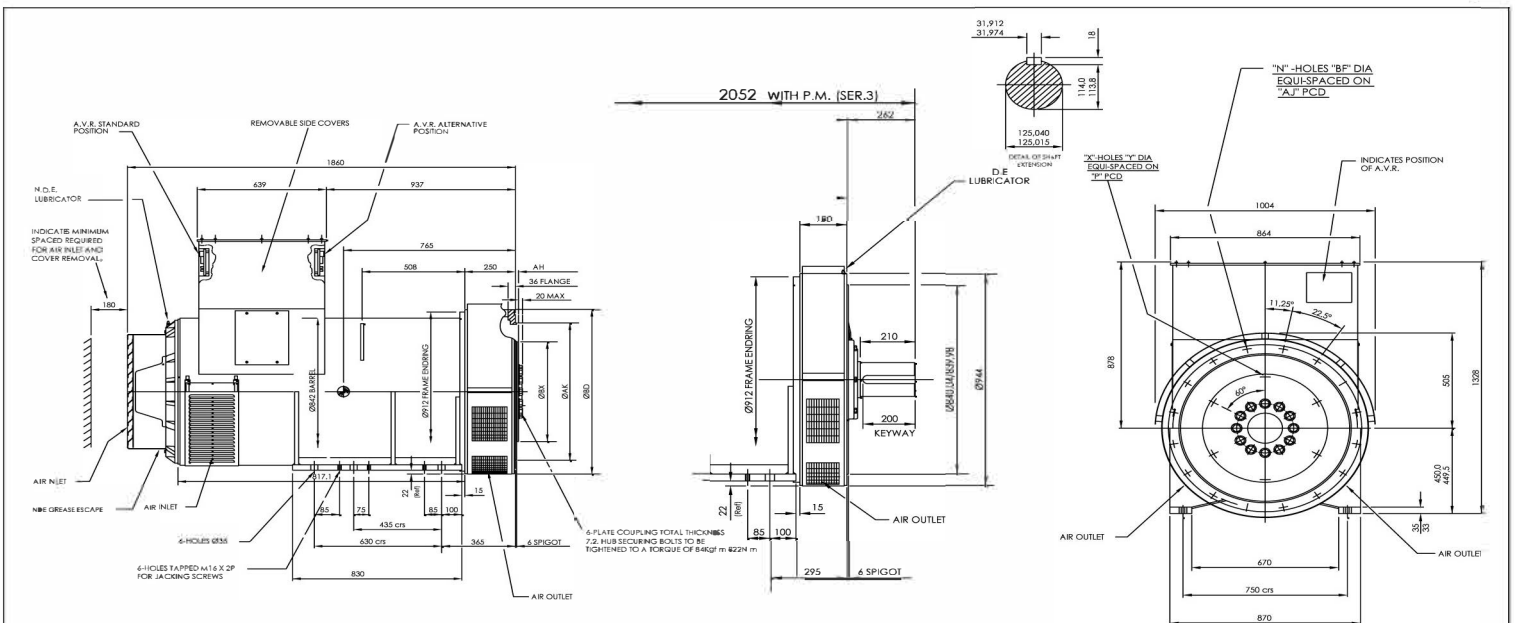
# Winding 312 / 0.8 Power Factor

## RATINGS

Class - Temp Rise		Cont. F - 105/40°C				Cont. H - 125/40°C				Standby - 150/40°C				Standby - 163/27°C			
<b>50Hz</b>	Star (V)	380	400	415	440	380	400	415	440	380	400	415	440	380	400	415	440
	kVA	1500	1540	1540	1505	1615	1650	1650	1620	1675	1720	1720	1685	1715	1770	1770	1735
	kW	1200	1232	1232	1204	1292	1320	1320	1296	1340	1376	1376	1348	1372	1416	1416	1388
	Efficiency (%)	96.2	96.3	96.4	96.5	96.1	96.2	96.3	96.4	96.0	96.1	96.2	96.3	95.9	96.0	96.1	96.3
	kW Input	1247	1279	1278	1248	1344	1372	1371	1344	1396	1432	1430	1400	1431	1475	1473	1441

<b>60Hz</b>	Star (V)	416	440	460	480	416	440	460	480	416	440	460	480	416	440	460	480
	kVA	1690	1800	1840	1875	1815	1935	1975	2015	1890	2015	2055	2100	1940	2070	2115	2160
	kW	1352	1440	1472	1500	1452	1548	1580	1612	1512	1612	1644	1680	1552	1656	1692	1728
	Efficiency (%)	96.2	96.2	96.3	96.4	96.1	96.1	96.2	96.3	96.0	96.0	96.1	96.2	95.9	96.0	96.1	96.1
	kW Input	1405	1497	1529	1556	1511	1611	1642	1674	1575	1679	1711	1746	1618	1725	1761	1798

## 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

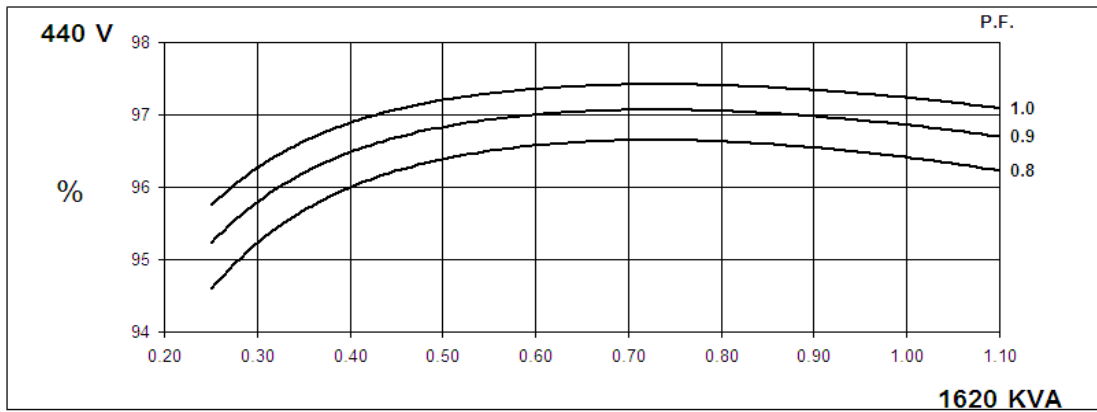
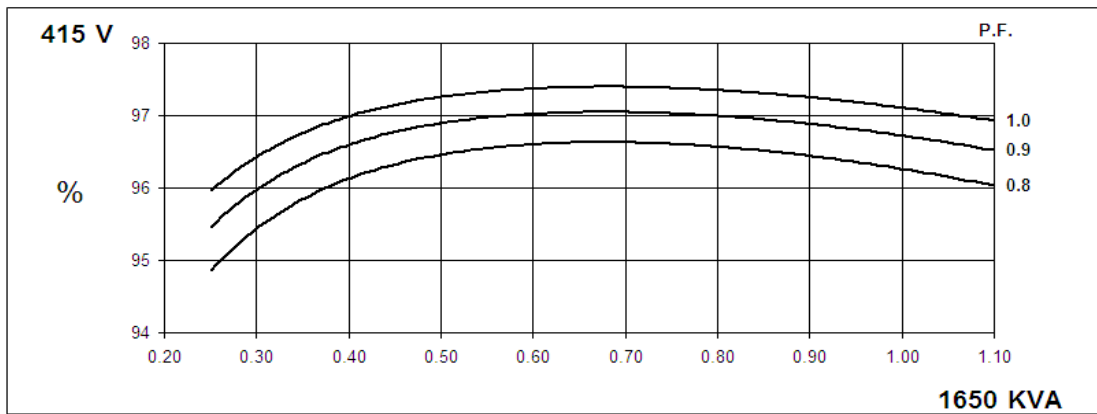
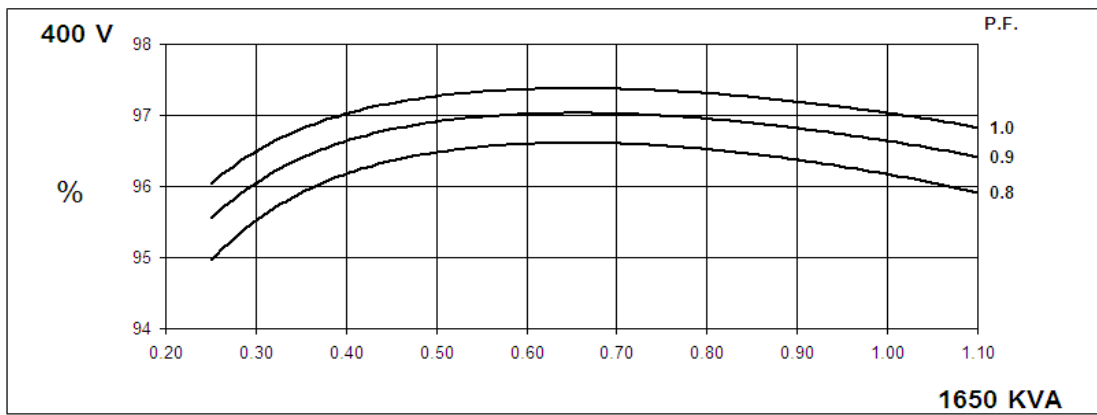
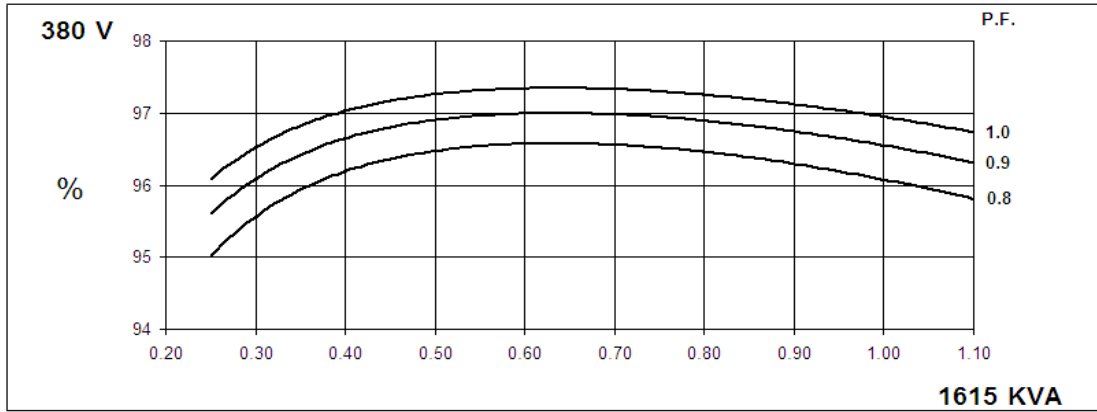
FLANGE (mm)						
SAE	BD	AK	AJ	U°	BF	n
SAE1	553	511.18	530.22	15	12.7	12
SAE1/2	648	584.20	619.12	15	14	12
SAE0	711	647.70	679.45	11.25	14	16
SAE00	882	787.40	850.90	11.25	14	16

VER	MOD	DRW	Date	1:1
Design	A.P.P			A2
CHK	Date	2018/01		mm

50  
Hz

### Winding 312

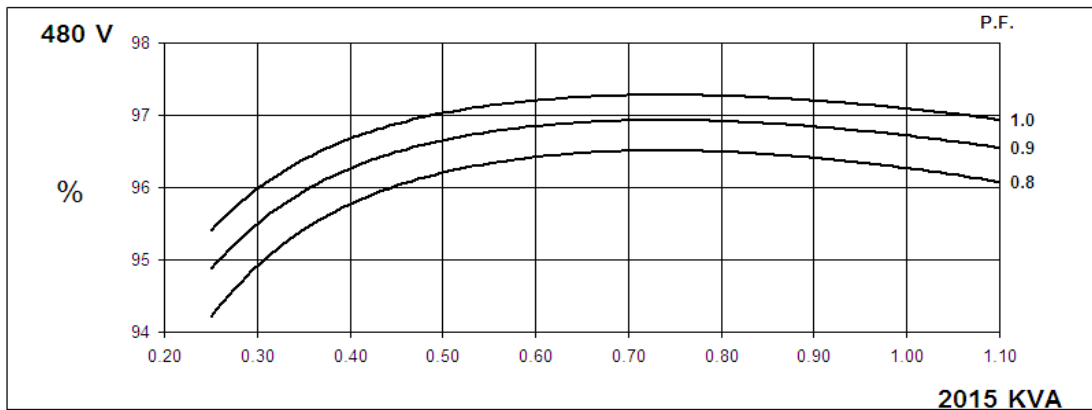
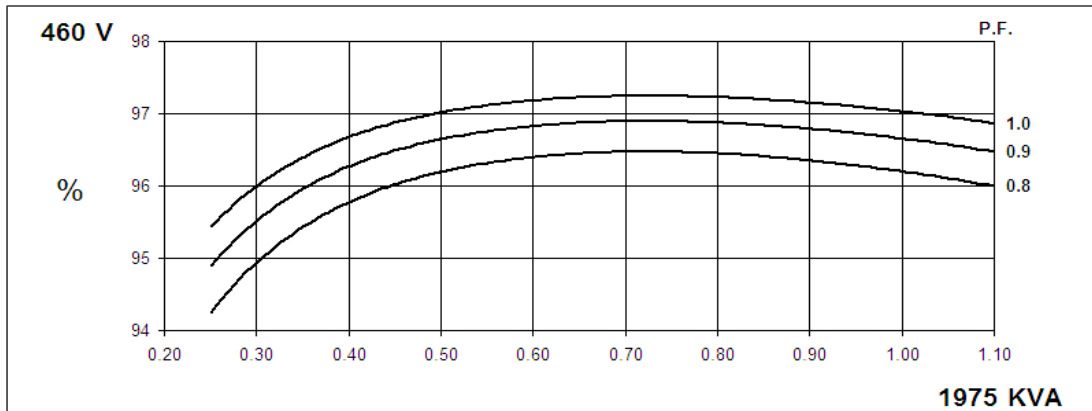
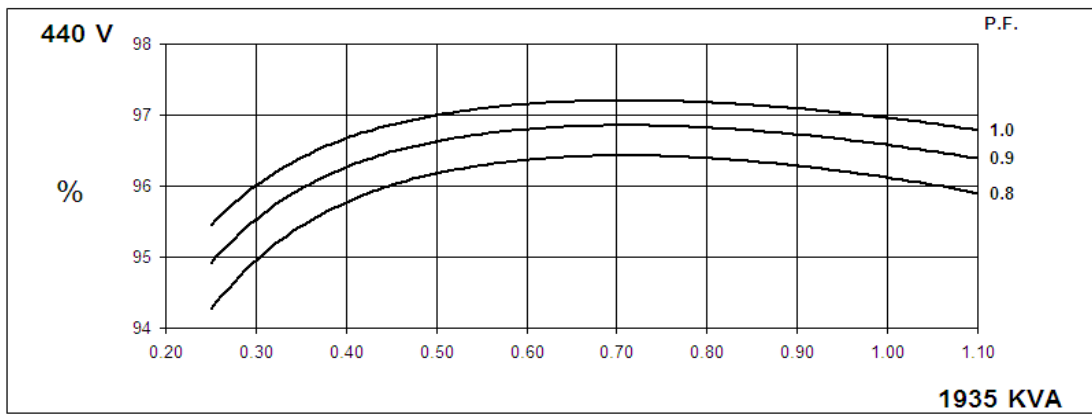
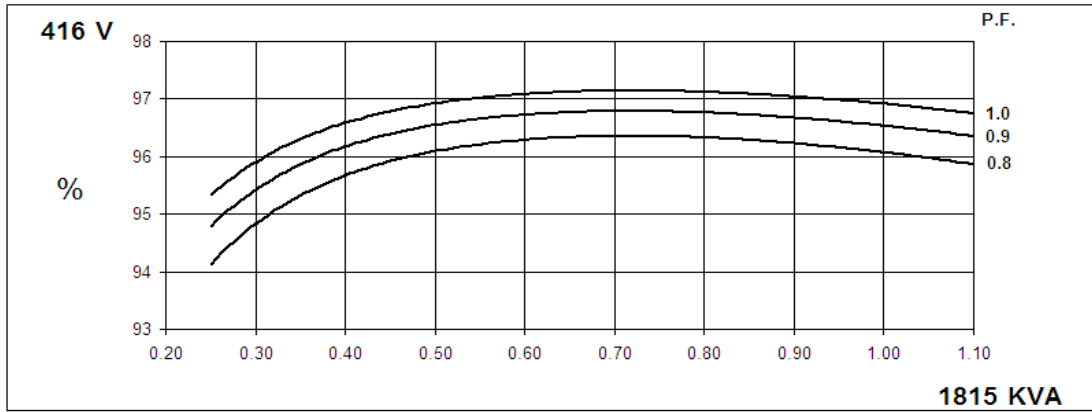
### THREE PHASE EFFICIENCY CURVES



60  
Hz

### Winding 312

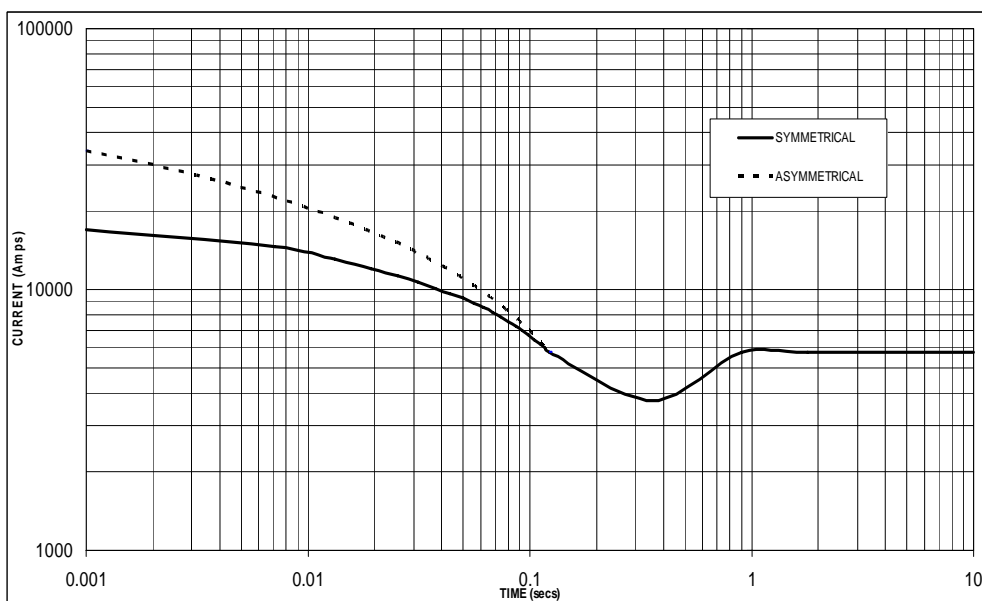
### THREE PHASE EFFICIENCY CURVES



## Winding 312

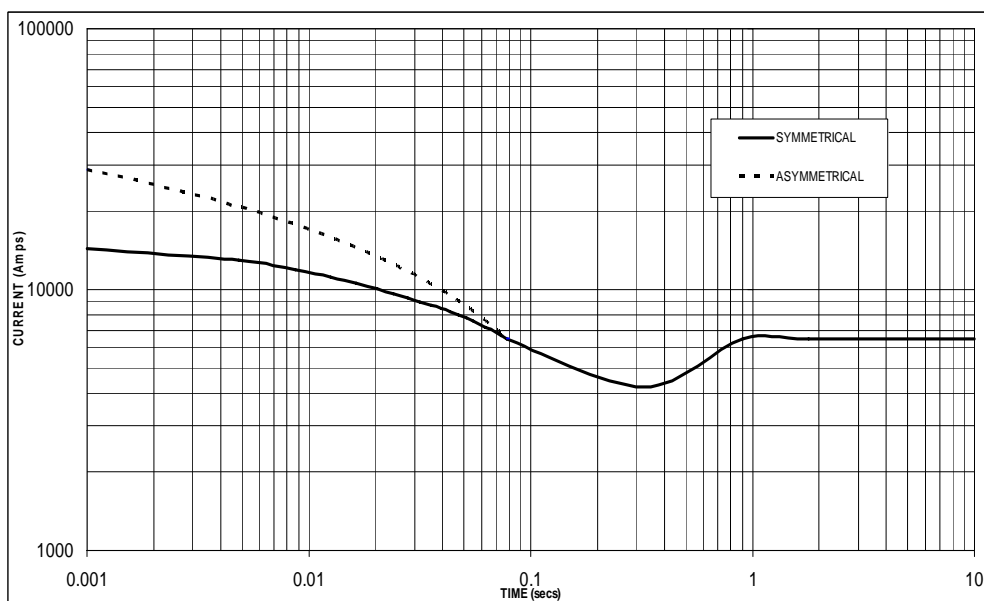
### Three-phase Short Circuit Decrement Curve. No-load Excitation at Rated Speed Based on star (wye) connection.

50  
Hz



Sustained Short Circuit = 5,750 Amps

60  
Hz



Sustained Short Circuit = 6,500 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**

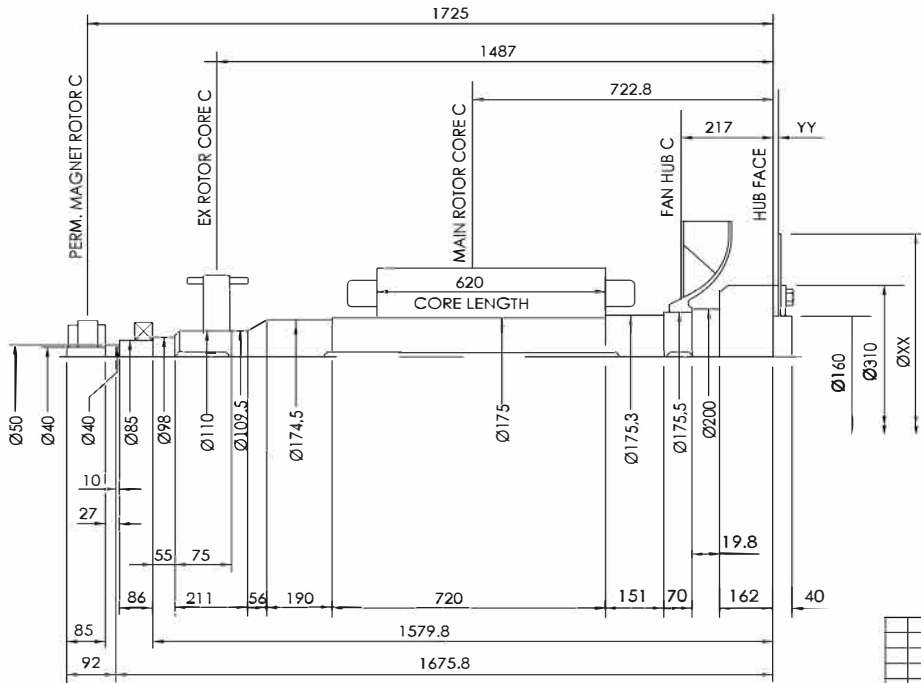
The following multiplication factor should be used to convert the values calculated in accordance with NOTE 1 to those applicable to the various types of short circuit :

	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 <sup>2</sup>
EX. ROTOR	51.6	0,859
MAIN ROTOR	945.359	36.7607
FAN	28.8	1.652
SHAFT	288.406	1.0724
HUB	53.533	0,8846
P.M.EX.ROTOR	6.97	0.019
P.M. STUB SHAFT	0.929	0,0003
TOTAL	1375.597	41.248

COUPLING SAE No	COUPLING DIMEN's		COUPLING ASSEMBLY WEIGHT kg	COUPLING DISC J kgm <sup>2</sup>
	XX	YY		
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			
CHK		Date	2018.01		mm

