

QYI224C

THREE-PHASE SYNCHRONOUS GENERATOR WINDING QY311 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		MX341B	MX321			
Voltage Regulation - in steady state condition	±1.0	±1.0		±1.0		±0.5	±0.5			
Short Circuit Current Capacity	Control does not sustain a short circuit current					190A				
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	42.5	42.5	42.5	30	50	52.5	52.5	55	
	kW	34.0	34.0	34.0	24.0	40.0	42.0	42.0	44.0	
Efficiency at Class H (P.F.=0.8)	4/4%	86.6	87	87.3	88.9	87	87.4	87.9	88	
	3/4%	88	88.2	88.4	89	88.4	88.7	89	89	
	2/4%	88.9	89	89	88.2	89.2	89.4	89.5	89.6	
Efficiency at Class H (P.F.=1.0)	4/4%	89.5	90	90.1	91.4	89.8	90	90.5	90.7	
	3/4%	90.7	91	91.1	91.8	91	91.1	91.5	91.7	
	2/4%	91.4	91.6	91.7	91.1	91.8	91.9	91.9	92	
Reactances (%) at Class H										
Direct axis synchronous reactance unsaturated	Xd	2.42	2.19	2.03	1.27	3.03	2.84	2.6	2.5	
Direct axis transient reactance saturated	X'd	0.19	0.17	0.16	0.1	0.22	0.21	0.19	0.18	
Direct axis subtransient reactance saturated	X''d	0.12	0.11	0.1	0.06	0.15	0.14	0.13	0.12	
Quadrature axis synchronous reactance unsaturated	Xq	1.12	1.01	0.94	0.59	1.4	1.31	1.2	1.16	
Quadrature axis subtransient reactance saturated	X''q	0.16	0.14	0.13	0.08	0.14	0.13	0.12	0.12	
Leakage reactance	Xl	0.08	0.08	0.07	0.04	0.1	0.09	0.09	0.08	
Negative sequence reactance saturated	X2	0.14	0.13	0.12	0.08	0.14	0.13	0.12	0.12	
Zero sequence reactance unsaturated	X0	0.1	0.09	0.08	0.05	0.1	0.09	0.09	0.08	
Short-circuit ratio	Kcc	0.4132	0.4566	0.4926	0.7874	0.3300	0.3521	0.3846	0.4000	
Short-circuit transient time constant (sec.)	T'd					0.025				
Subtransient time constant (sec.)	T''d					0.006				
Open circuit time constant (sec.)	T'do					0.65				
Armature time constant (sec.)	Ta					0.005				
Stator Winding Resistance (20℃)	ohm					0.181				
Rotor Winding Resistance (20℃)	ohm					0.59				
Exciter Stator Resistance (20℃)	ohm					21				
Exciter Rotor Phase resistance	ohm					0.07				
No load excitation current	io (A)	0.5	0.52	0.6	0.5	0.5	0.51	0.52	0.53	
Full load excitation current	ic(A)	1.8	1.8	1.9	1.8	1.8	1.8	1.9	1.9	
Cooling air requirement	m³/sec	0.216m3/s 458cfm				0.281m3/s 595cfm				
Mechanical Characteristic										
Configuration	Single Bearing				Double Bearing					
Type of Construction	B2-SAE				IM B34					
Total Weight - kgs	233				229					
Weight wound stator - kgs	71				71					
Weight wound rotor - kgs	78.95				70.58					
Inertia (J) [kgm2]	0.3987kgm2				0.3667kgm2					
Drive end bearing / Lubrication					BALL.6312-2RS(ISO)					
Non-drive end bearing / Lubrication	BALL.6309-2RS(ISO)				BALL.6309-2RS(ISO)					
Packing crate size (cm)	78X49X84				78X49X84					

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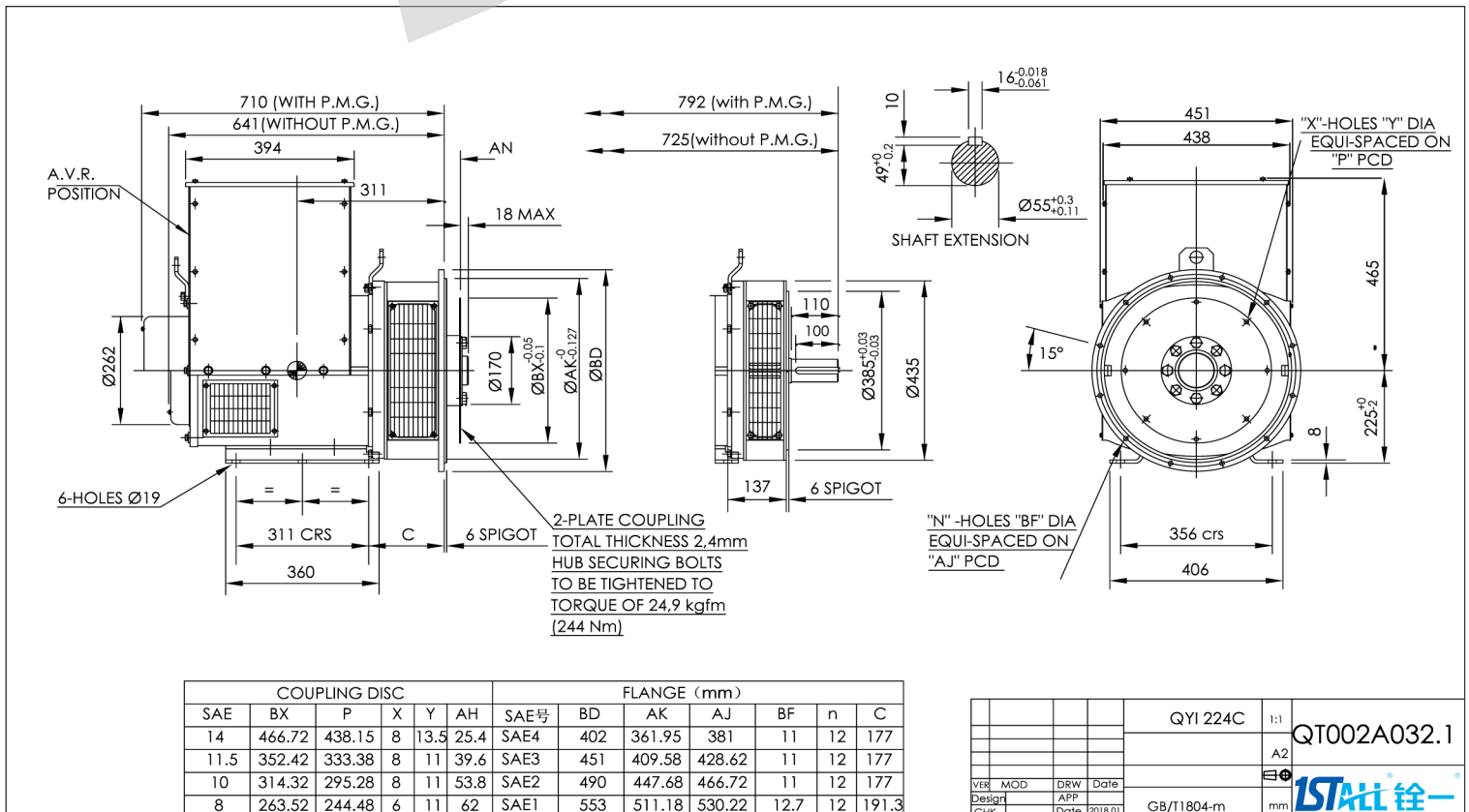
Winding 311 / 0.8 Power Factor

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		37.5	37.5	37.5	27.0	42.5	42.5	42.5	30.0	45.0	45.0	45.0	31.7	46.8	46.8	46.8	33.0
kW		30.0	30.0	30.0	21.6	34.0	34.0	34.0	24.0	36.0	36.0	36.0	25.4	37.4	37.4	37.4	26.4
Efficiency (%)		87.3	87.7	88.0	88.9	86.6	87.1	87.4	88.8	86.2	86.8	87.1	88.7	86.0	86.6	86.9	88.6
kW Input		34.4	34.2	34.1	24.3	39.3	39.0	38.9	27.0	41.8	41.5	41.3	28.6	43.5	43.2	43.1	29.8

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	45.0	46.3	46.3	48.0	50.0	52.5	52.5	55.0	53.1	55.0	55.0	58.1	55.0	56.3	56.3	60.0
	kW	36.0	37.0	37.0	38.4	40.0	42.0	42.0	44.0	42.5	44.0	44.0	46.5	44.0	45.0	45.0	48.0
	Efficiency (%)	87.7	88.1	88.4	88.6	87.1	87.5	87.9	88.1	86.7	87.2	87.7	87.8	86.5	87.1	87.5	87.6
	kW Input	41.0	42.0	41.9	43.3	45.9	48.0	47.8	49.9	49.0	50.5	50.2	52.9	50.9	51.7	51.5	54.8

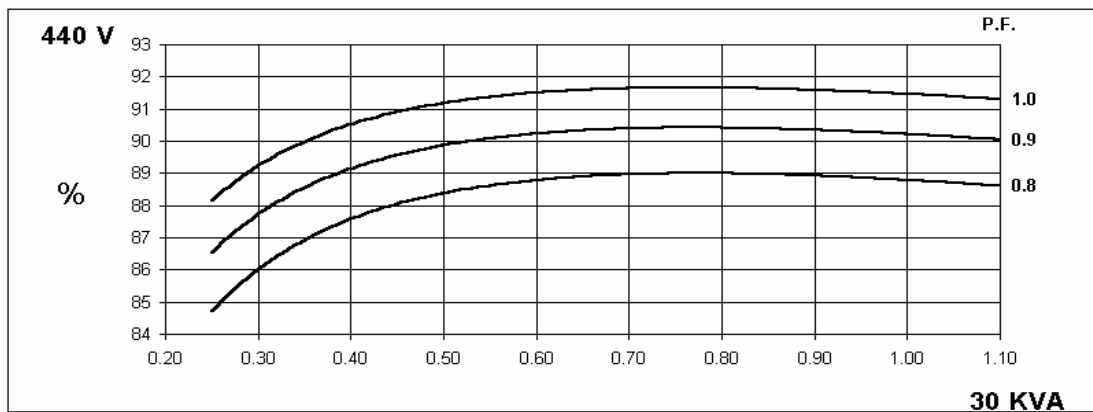
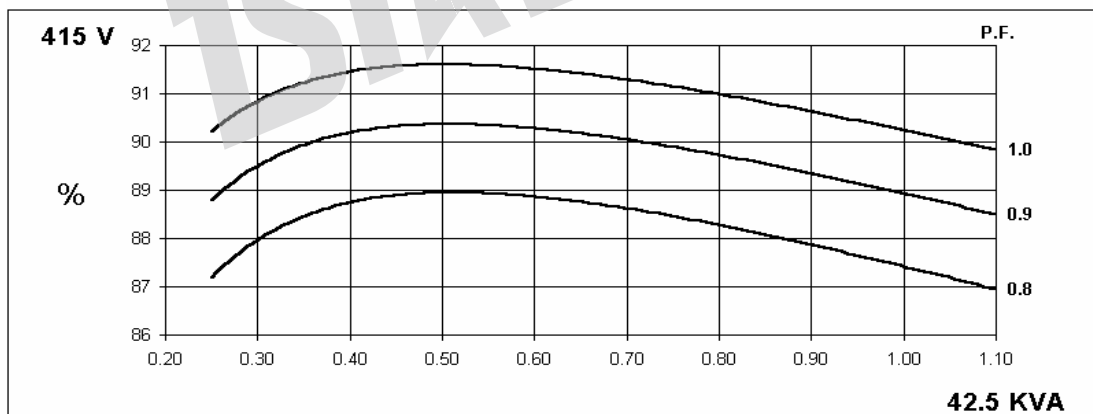
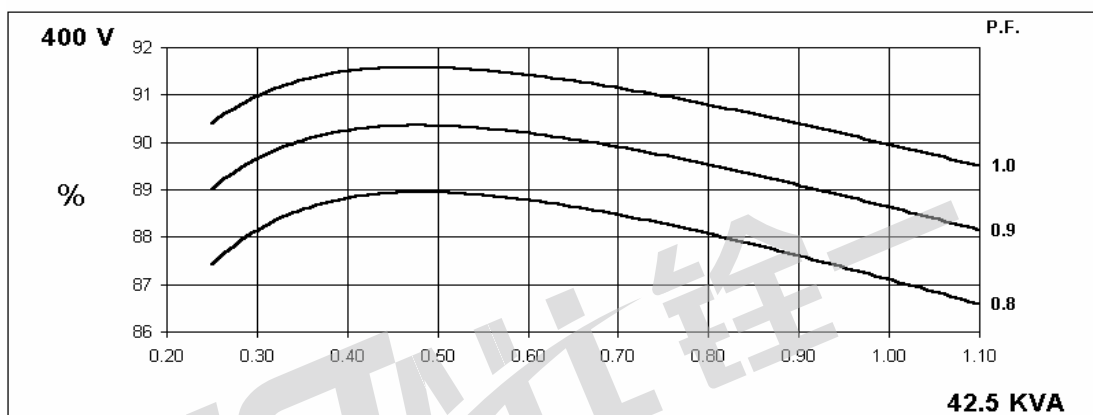
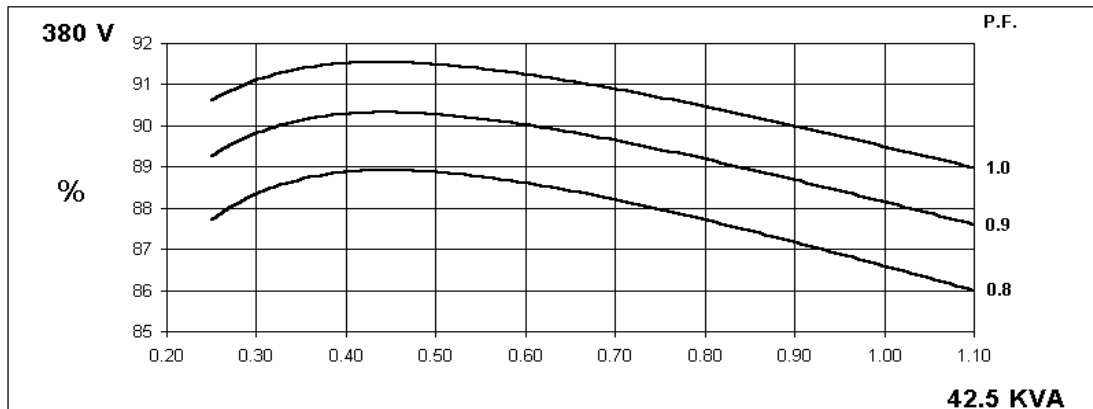
DIMENSIONS



50
Hz

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Winding 311

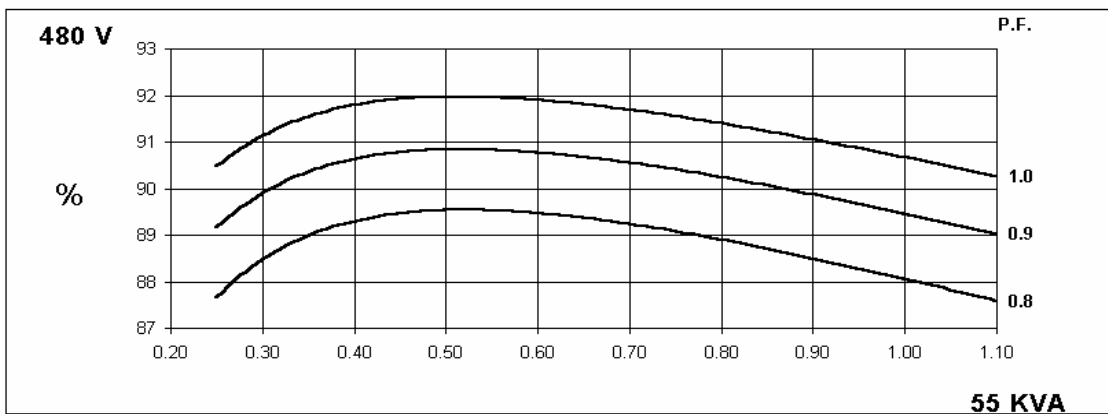
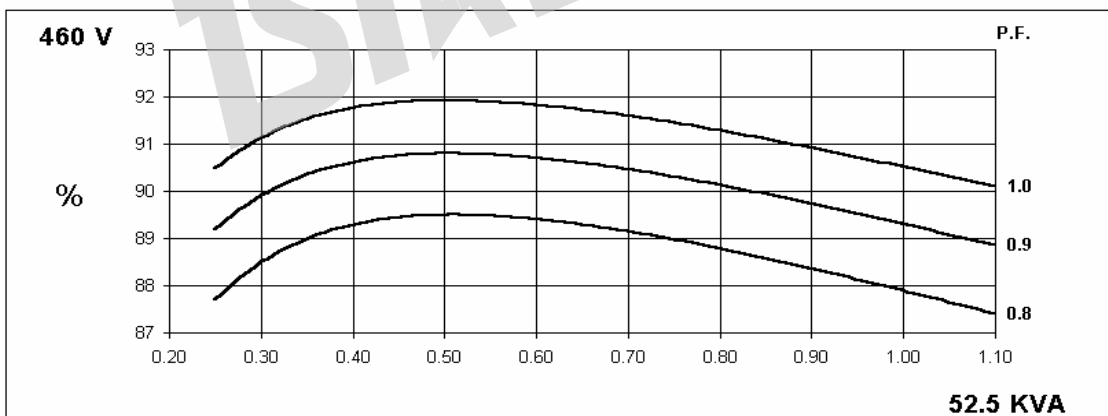
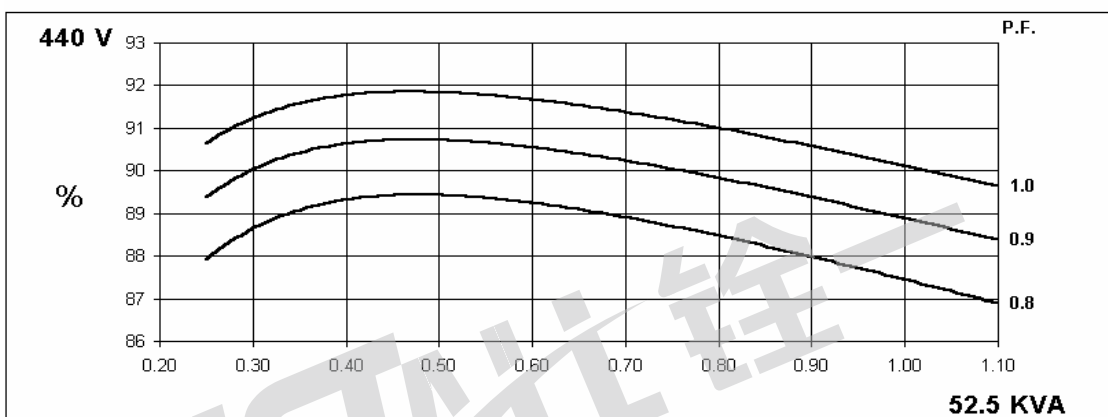
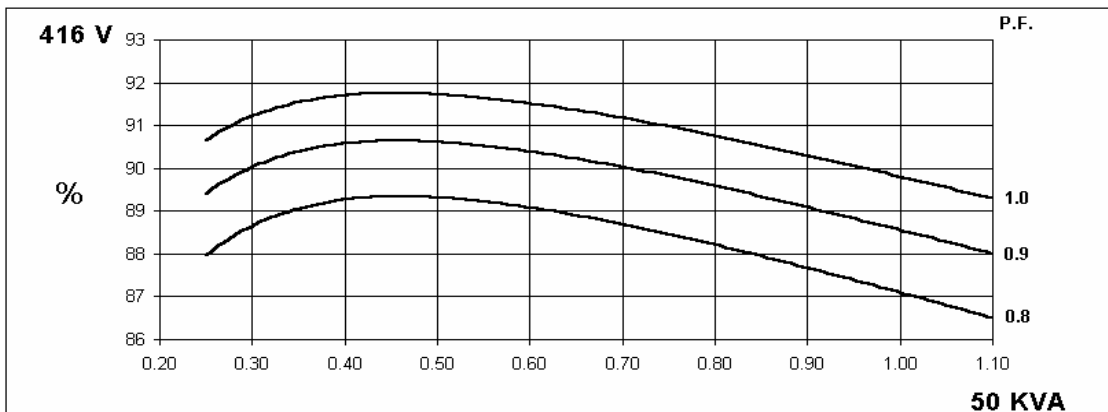
THREE PHASE EFFICIENCY CURVES



60
Hz

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Winding 311

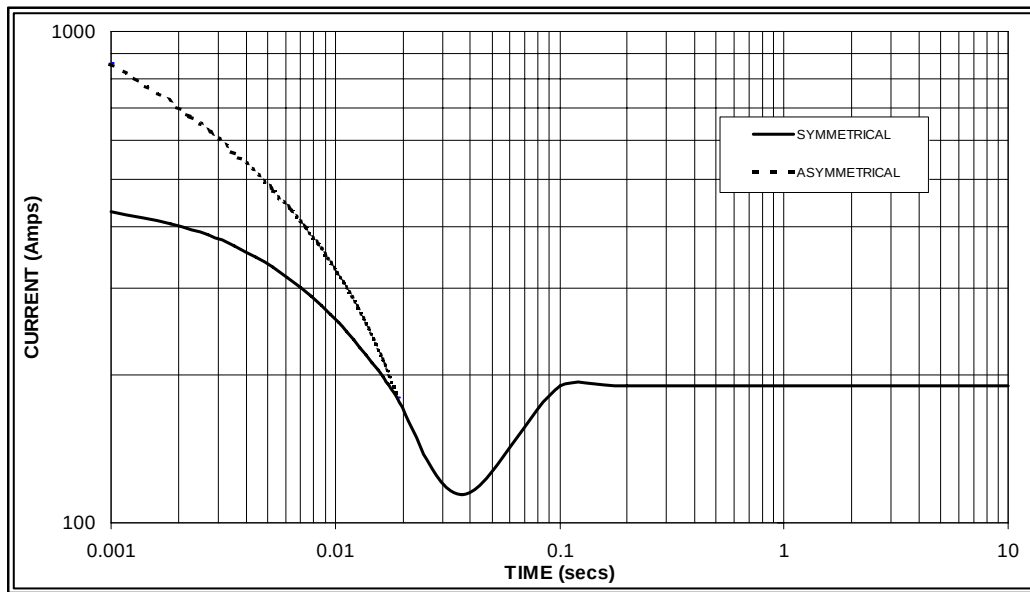
THREE PHASE EFFICIENCY CURVES



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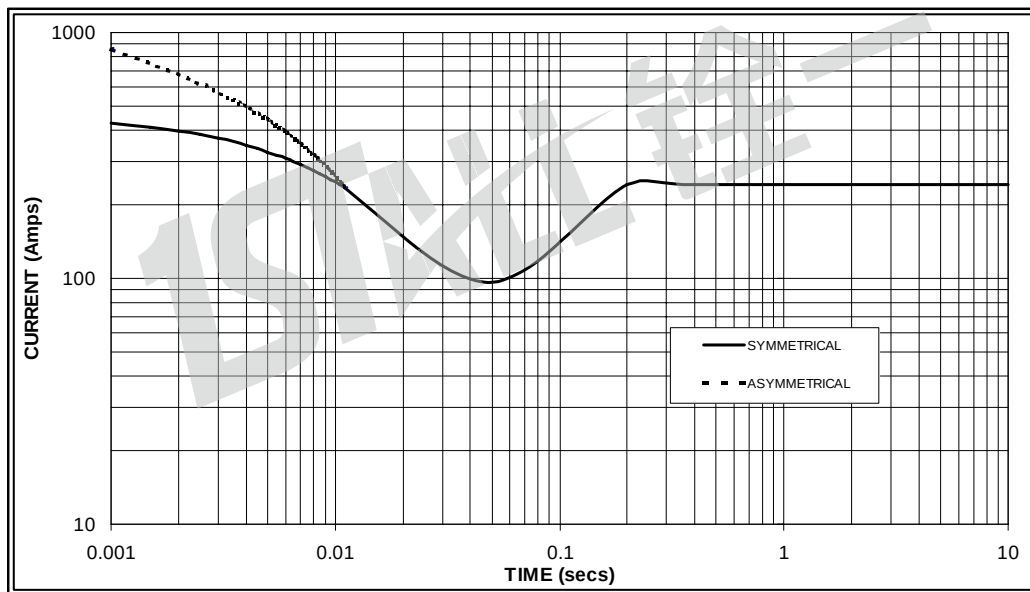
Three-phase Short Circuit Decrement Curve. No-load Excitation at Rated Speed Based on star (wye) connection.

50
Hz



Sustained Short Circuit = 190 Amps

60
Hz



Sustained Short Circuit = 240 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 1.07	440v	X 1.06
415v	X 1.12	460v	X 1.12
440v	X 1.18	480v	X 1.17

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. For other connection the following multipliers should be applied to current values as shown :

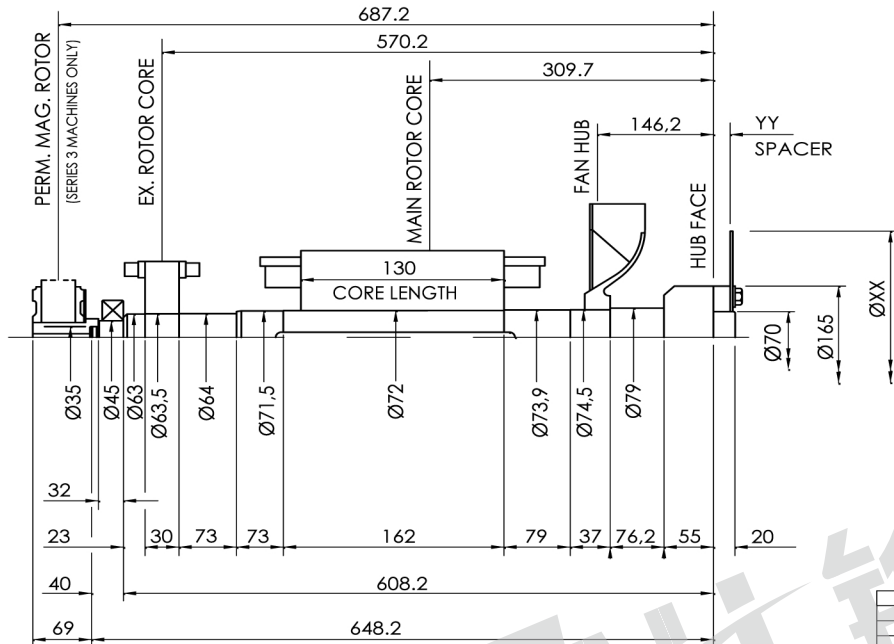
Parallel Star = Curve current value X 2

Series Delta = Curve current value X 1.732

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Winding 311

INERTIA



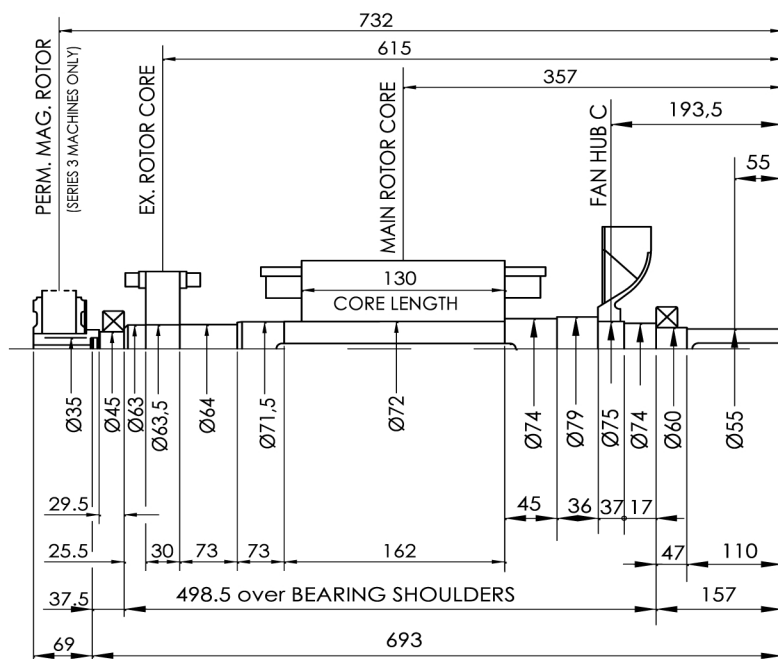
COMPONENT	Wt kg	J kgm ²
EX. ROTOR	6.570	0,0394
MAIN ROTOR	37.450	0,2740
FAN	1.940	0,0271
SHAFT	20.442	0,0132
HUB	7,093	0,0300
TOTAL	73.495	0,3837
PERM. MAG.	5,450	0,0150
TOTAL	78.945	0,3987

COUPLING SAE No	COUPLING DIMEN's		COUPLING ASSEMBLY WEIGHT kg	COUPLING DISC J kgm ²
	XX	YY		
* 8	263	22,2	4,43	0,0087
* 10	314	14,3	3,70	0,0178
* 11 1/2	352	-	1,76	0,0282
! 11 1/2	352	14,3	4,07	0,0282
! 14	467	-	3,16	0,0878

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					INERTIA		
VER	MOD	DRW	Date				
Design		APP				mm	
CHK		Date	2018.01				

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COMPONENT	Wt kg	J kgm ²
EX. ROTOR	6.570	0,0394
MAIN ROTOR	37.450	0,2740
FAN	1.940	0,0271
SHAFT	19.166	0,0114
TOTAL	65.126	0,3519
PERM. MAG.	5,450	0,0150
TOTAL	70.576	0,3667

				QYI 224C	1:1	OQY2010020
				INERTIA		
VER	MOD	DRW	Date			
Design		APP				
		Date	2018.01			
					mm	1STALL 铨一

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