

QYI314C

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	No load<1.5%,Non-distorting balanced linear load<5%													
AVR MODEL AVR	Standard		Selection			PMG								
	AS440		KRS440			MX341B		MX321						
Voltage Regulation - in steady state condition	± 1.0		± 1.0		± 0.5		± 0.5							
Short Circuit Current Capacity	Control does not sustain a short circuit current					1100A								
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	250	250	250	250	288	300	315	315					
	kW	200.0	200.0	200.0	200.0	230.4	240.0	252.0	252.0					
Efficiency at Class H (P.F.=0.8)	4/4%	92.4	92.8	93	93.2	92.5	92.7	92.8	93					
	3/4%	93.6	93.8	93.9	94	93.5	93.6	93.7	93.8					
	2/4%	94	94	94	93.9	93.7	93.8	93.8	93.8					
Efficiency at Class H (P.F.=1.0)	4/4%	94	94.3	94.5	94.7	94	94.2	94.2	94.4					
	3/4%	95	95.1	95.2	95.3	94.8	95	95	95.1					
	2/4%	95.3	95.2	95.3	95.2	95	95.1	95.2	95.1					
Reactances (%) at Class H														
Direct axis synchronous reactance unsaturated	Xd	3.15	2.84	2.64	2.35	3.77	3.51	3.37	3.1					
Direct axis transient reactance saturated	X'd	0.2	0.18	0.17	0.15	0.24	0.23	0.22	0.2					
Direct axis subtransient reactance saturated	X''d	0.14	0.13	0.12	0.11	0.16	0.15	0.14	0.13					
Quadrature axis synchronous reactance unsaturated	Xq	2.71	2.44	2.27	2.02	3.25	3.03	2.91	2.67					
Quadrature axis subtransient reactance saturated	X''q	0.39	0.36	0.33	0.29	0.43	0.4	0.39	0.36					
Leakage reactance	X1	0.1	0.09	0.08	0.07	0.1	0.09	0.09	0.08					
Negative sequence reactance saturated	X2	0.27	0.25	0.23	0.2	0.3	0.28	0.27	0.25					
Zero sequence reactance unsaturated	X0	0.1	0.09	0.08	0.07	0.1	0.09	0.09	0.08					
Short-circuit ratio	Kcc	0.3175	0.3521	0.3788	0.4255	0.2653	0.2849	0.2967	0.3226					
Short-circuit transient time constant (sec.)	T'd	0.08												
Subtransient time constant (sec.)	T''d	0.019												
Open circuit time constant (sec.)	T'do	1.7												
Armature time constant (sec.)	Tα	0.018												
Stator Winding Resistance (20°C)	ohm	0.0166												
Rotor Winding Resistance (20°C)	ohm	0.91												
Exciter Stator Resistance (20°C)	ohm	18												
Exciter Rotor Phase resistance	ohm	0.068												
No load excitation current	io (A)	0.5	0.52	0.6	0.6	0.5	0.51	0.6	0.6					
Full load excitation current	ic(A)	2.1	2.1	2.2	2.2	2.1	2.1	2.2	2.2					
Cooling air requirement	m³/sec	0.8m³/s 1700cfm				0.99m³/s 2100cfm								
Mechanical Characteristic														
Configuration	Single Bearing				Double Bearing									
Type of Construction	B2-SAE				IM B34									
Total Weight - kgs	800				789									
Weight wound stator - kgs	365				365									
Weight wound rotor - kgs	321				298									
Inertia (J) [kgm²]	3.5531kgm²				3.3543kgm²									
Drive end bearing / Lubrication	BALL.6317-2RS(ISO)				BALL.6314-2RS(ISO)									
Non-drive end bearing / Lubrication	BALL.6314-2RS(ISO)				BALL.6314-2RS(ISO)									
Packing crate size (cm)	122X70X104				133X70X104									

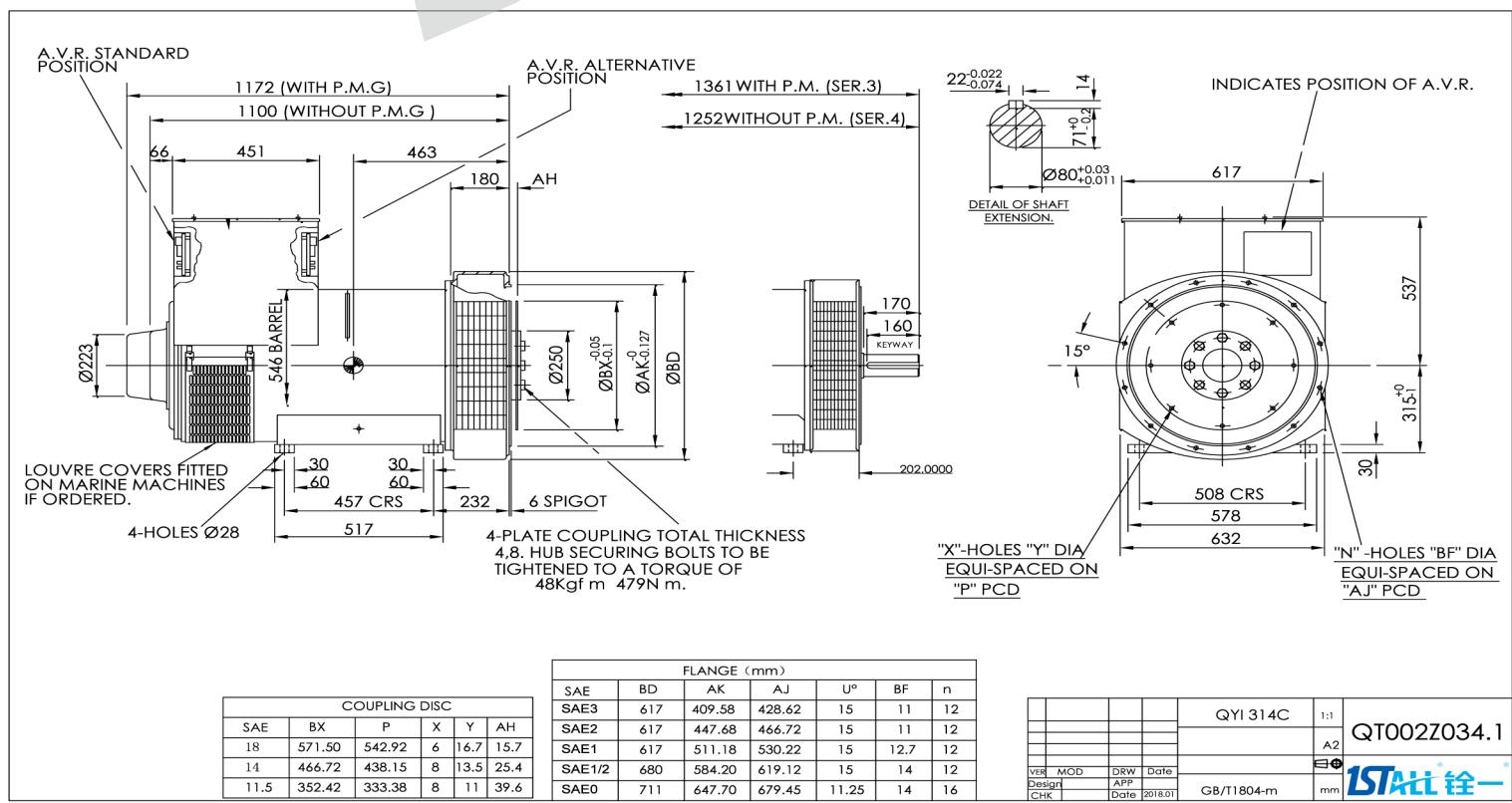
QYI314C

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	230	230	230	230	250	250	250	250	270	270	270	270	275	275	275	275
60 Hz	kW	184	184	184	184	200	200	200	200	216	216	216	216	220	220	220	220
	Efficiency (%)	92.9	93.2	93.3	93.6	92.5	92.8	93.0	93.3	92.0	92.3	92.6	92.9	91.8	92.2	92.5	92.8
	kW Input	198	197	197	197	216	216	215	214	235	234	233	233	240	239	238	237

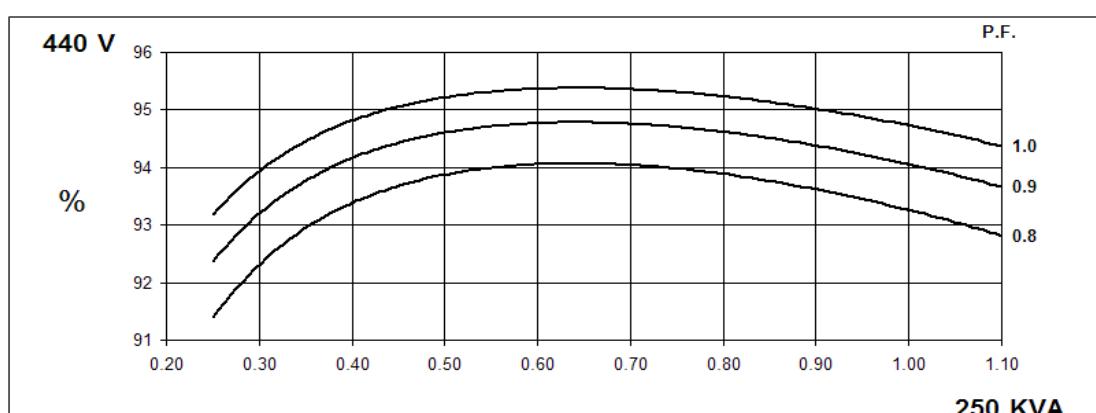
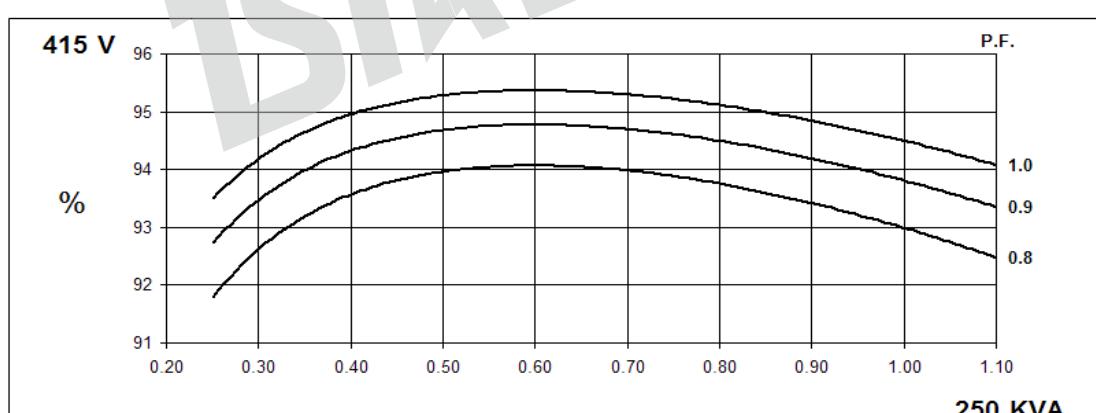
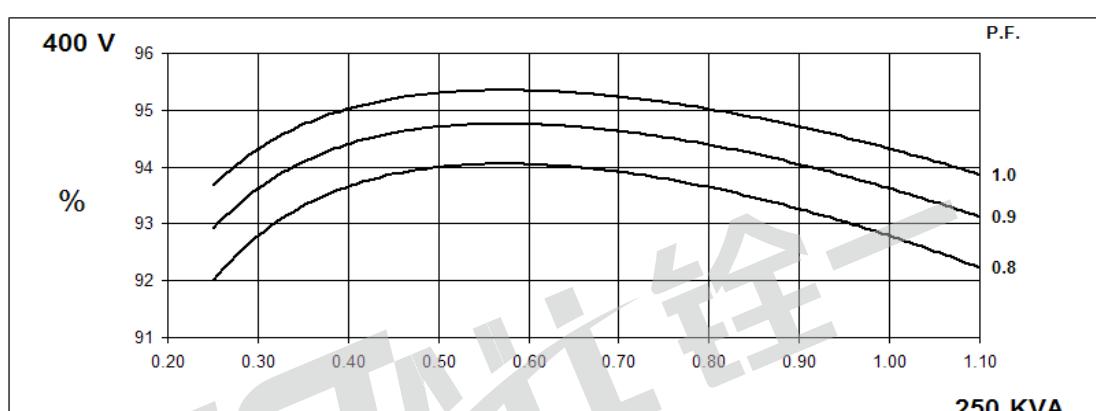
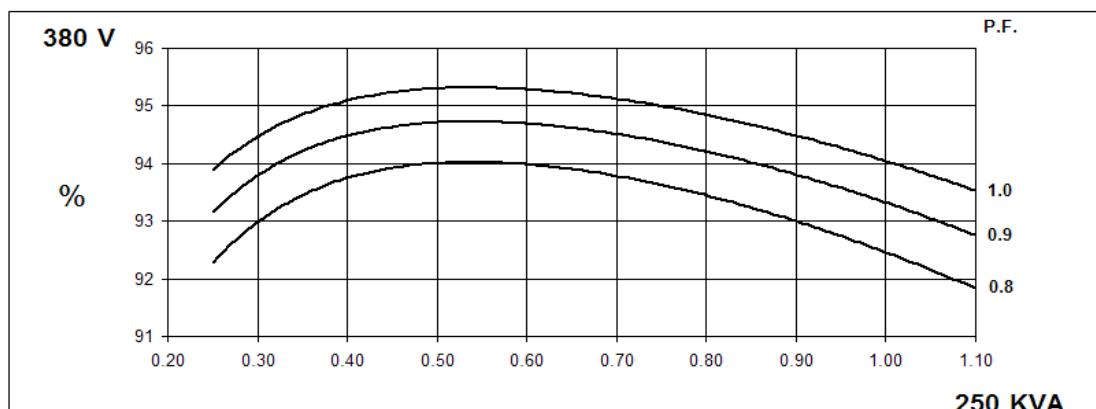
DIMENSIONS



50
Hz

QYI314C
Winding 311

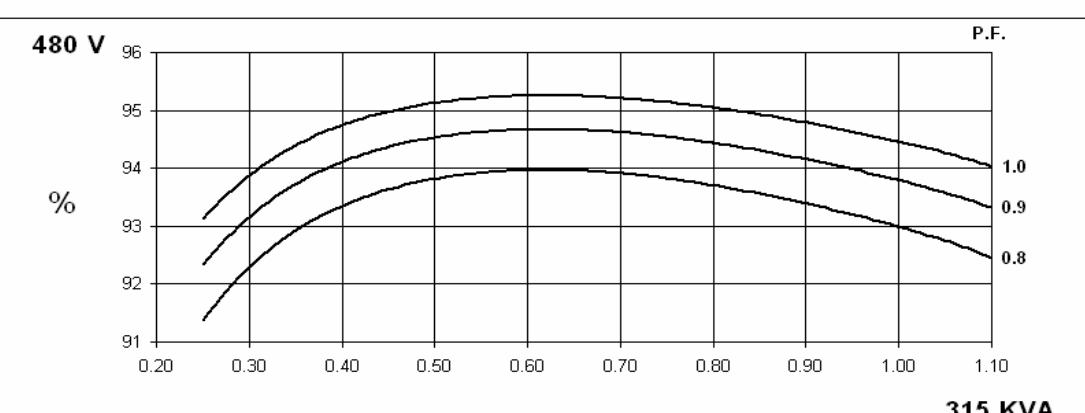
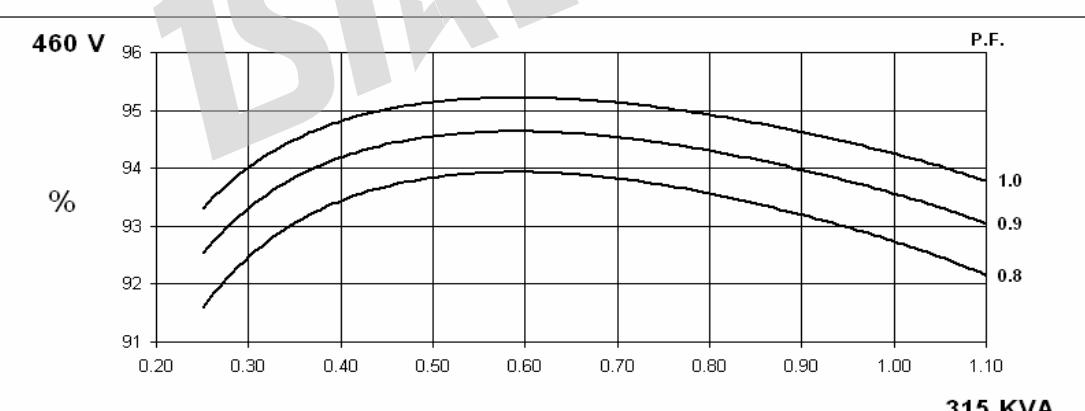
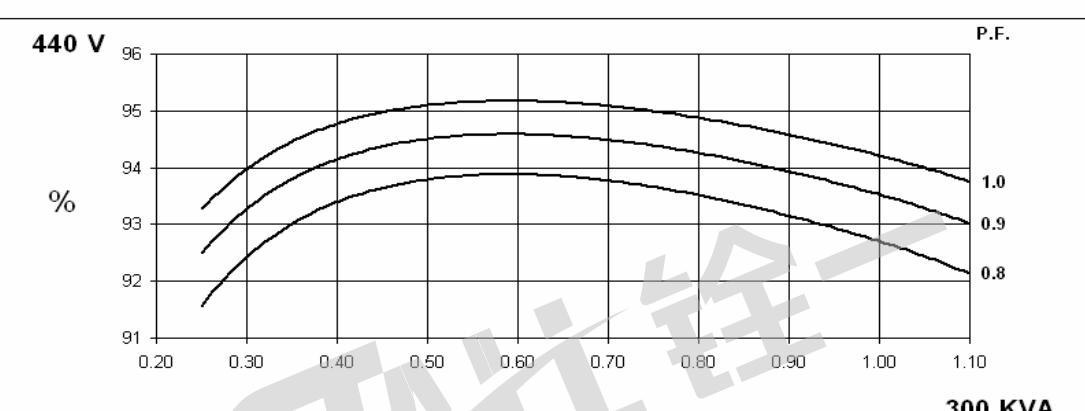
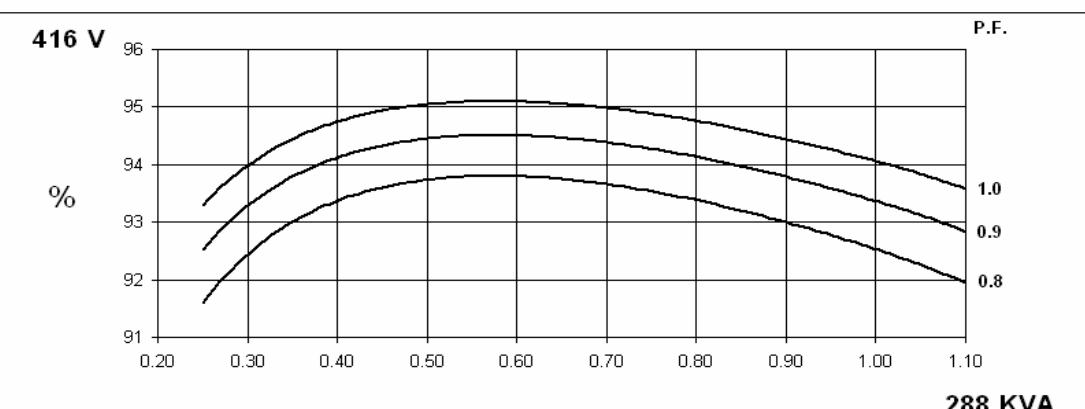
THREE PHASE EFFICIENCY CURVES



60
Hz

QYI314C
Winding 311

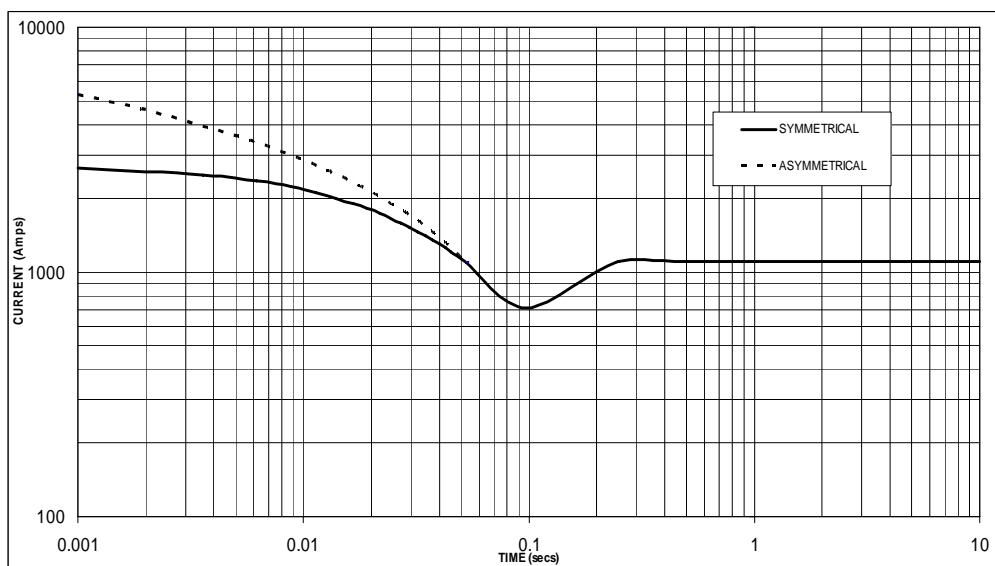
THREE PHASE EFFICIENCY CURVES



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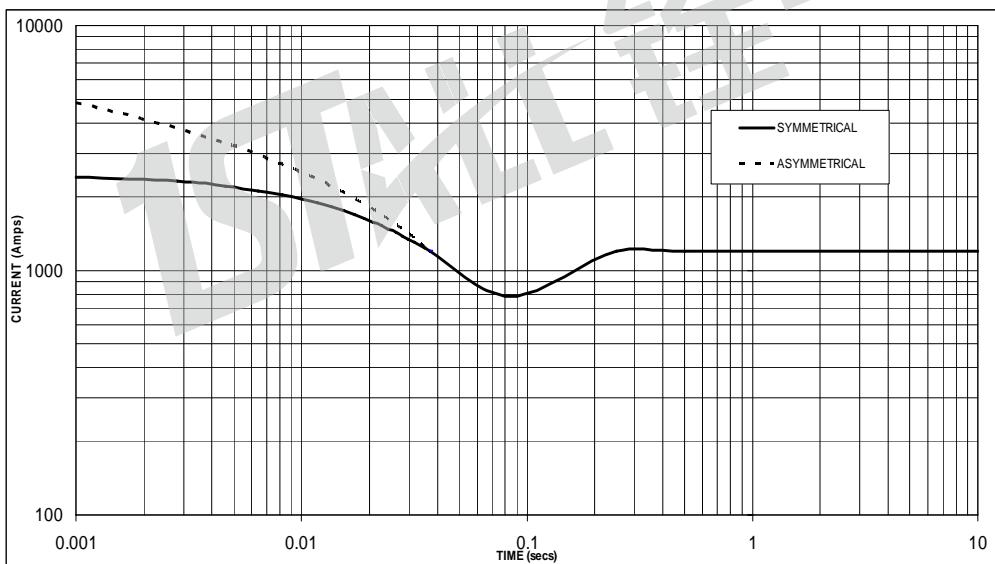
Three-phase Short Circuit Decrement Curve. No-load Excitation at Rated Speed Based on star (wye) connection.

50
Hz



Sustained Short Circuit = 1,100 Amps

60
Hz



Sustained Short Circuit = 1,200 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 :

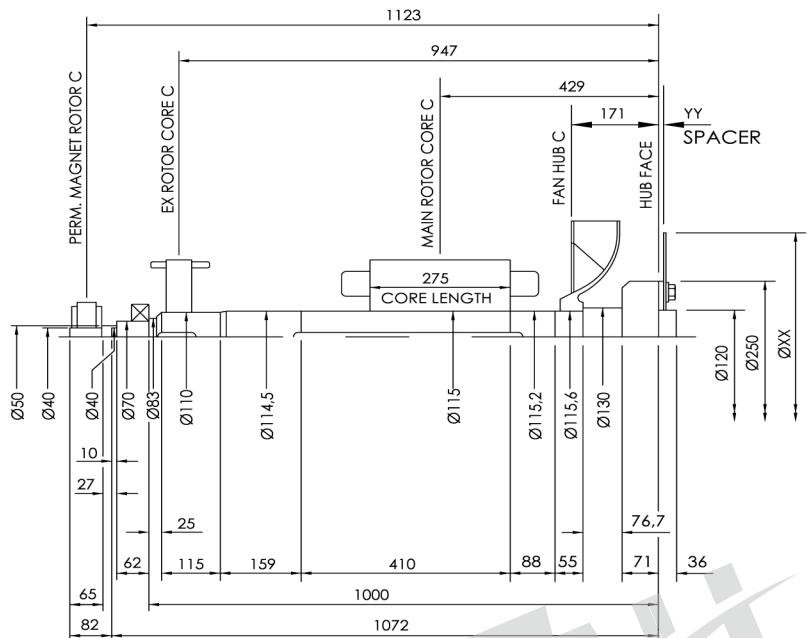
	3-phase	2-phase L-L	1-phase L-N
Instantaneous	x 1.00	x 0.87	x 1.30
Minimum	x 1.00	x 1.80	x 3.20
Sustained	x 1.00	x 1.50	x 2.50
Max. sustained duration	10 sec.	5 sec.	2 sec.

All other times are unchanged

Note 3

Curves are drawn for Star (Wye) connected machines. For other connection the following multipliers should be applied to current values as shown :

Parallel Star = Curve current value X 2

QYI314C**Winding 311****INERTIA**

COMPONENT	Wt kg	J kgm ²
EX. ROTOR	31,290	0,5100
MAIN ROTOR	172,090	2,4450
FAN	9,910	0,2630
SHAFT	87,191	0,1450
HUB	18,507	0,1779
TOTAL	318.988	3,5409
PERM. MAG.	5.215	0,0122
TOTAL	324,203	3,5531

COUPLING SAE No	COUPLING DIMEN's		COUPLING ASSEMBLY WEIGHT kg	COUPLING DISC J kgm ²
	XX	YY		
11,5	352	23,8	12,08	0,055
14	467	9,5	11,66	0,172
18	572	0,0	12,07	0,386

		QYI 314C	1:1	0QY201045
VER		DRW	Date	
Design		APP		
CHK		Date	2018.01	mm

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