



TA225-120N

THREE-PHASE SYNCHRONOUS ALTERNATOR

CONT 140 kVA

50 Hz / 60 Hz

Rated output at 400 V / 50 Hz, Class H (125/40 °C) continuous

THREE-PHASE SYNCHRONOUS GENERATOR

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

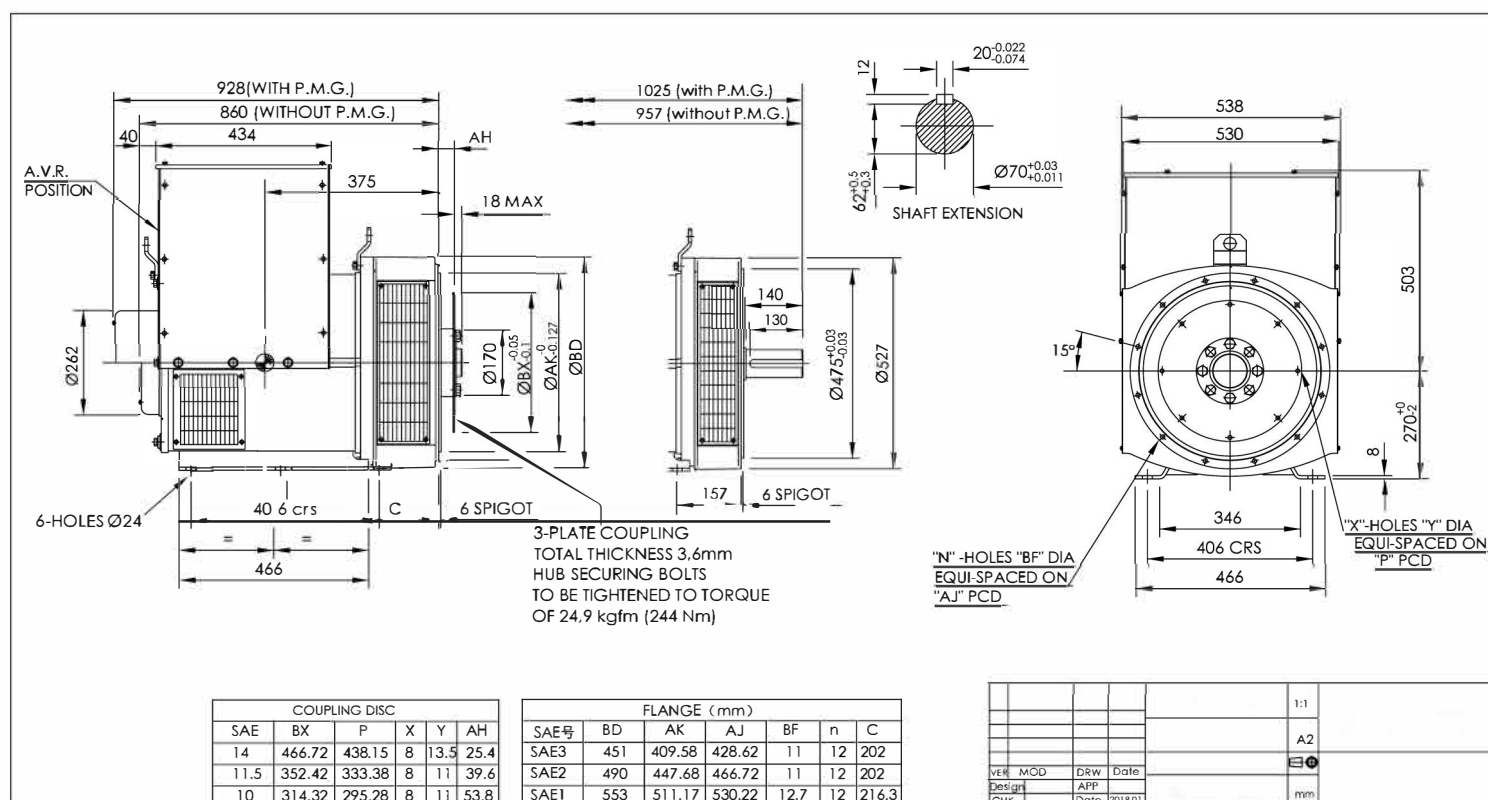
Ambient Temperature	40 °C	Method of Cooling				Air cooling				
Temperature Rise	125 °C	Direction of Rotation				Clockwise				
Insulation Class	H	Maximum Over-speed				2250r/min				
Power Factor	0.8	Degree of Protection / Enclosure				IP23				
Excitation	Brushless	Altitude				1000m				
Winding Pitch	2/3	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					630A				
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	140	140	140	N/A	160	167.5	167.5	178.8	
	kW	112.0	112.0	112.0	N/A	128.0	134.0	134.0	143.0	
Efficiency at Class H (P.F.=0.8)	4/4%	91.2	91.7	92	N/A	91.3	91.7	92	92.1	
	3/4%	92.2	92.5	92.7	N/A	92.3	92.6	92.7	92.8	
	2/4%	92.8	92.9	92.9	N/A	92.9	93	93	93	
Efficiency at Class H (P.F.=1.0)	4/4%	93.1	93.5	93.7	N/A	93.1	93.4	93.7	93.8	
	3/4%	94	94.2	94.3	N/A	94	94.1	94.3	94.4	
	2/4%	94.5	94.5	94.6	N/A	94.3	94.5	94.6	94.6	
Reactances (%) at Class H										
Direct axis synchronous reactance unsaturated	Xd	2.34	2.11	1.96	N/A	2.68	2.51	2.29	2.25	
Direct axis transient reactance saturated	X'd	0.21	0.19	0.18	N/A	0.25	0.23	0.21	0.21	
Direct axis subtransient reactance saturated	X''d	0.14	0.13	0.12	N/A	0.17	0.16	0.15	0.14	
Quadrature axis synchronous reactance unsaturated	Xq	1.53	1.38	1.28	N/A	1.74	1.63	1.49	1.46	
Quadrature axis subtransient reactance saturated	X''q	0.18	0.16	0.15	N/A	0.22	0.21	0.19	0.18	
Leakage reactance	X1	0.08	0.08	0.07	N/A	0.09	0.08	0.08	0.08	
Negative sequence reactance saturated	X2	0.16	0.14	0.13	N/A	0.19	0.18	0.16	0.16	
Zero sequence reactance unsaturated	X0	0.1	0.09	0.08	N/A	0.11	0.1	0.09	0.09	
Short-circuit ratio	Kcc	0.4274	0.4739	0.5102	N/A	0.3731	0.3984	0.4367	0.4444	
Short-circuit transient time constant (sec.)	T'd	0.032								
Subtransient time constant (sec.)	T''d	0.01								
Open circuit time constant (sec.)	T'do	0.85								
Armature time constant (sec.)	Ta	0.007								
Stator Winding Resistance (20℃)	ohm	0.0337								
Rotor Winding Resistance (20℃)	ohm	1.4								
Exciter Stator Resistance (20℃)	ohm	20								
Exciter Rotor Phase resistance	ohm	0.091								
No load excitation current	io (A)	0.5	0.52	0.6	N/A	0.5	0.51	0.52	0.53	
Full load excitation current	ic(A)	2.4	2.4	2.5	N/A	2.4	2.4	2.5	2.5	
Cooling air requirement	m³/sec	0.514m3/s 1090cfm				0.617m3/s 1308cfm				
Mechanical Characteristic										
Configuration	Single Bearing				Double Bearing					
Type of Construction	B2-SAE				IM B34					
Total Weight - kgs	460				447					
Weight wound stator - kgs	172				172					
Weight wound rotor - kgs	167.51				156.55					
Inertia (J) [kgm2]	1.3271kgm2				1.2765kgm2					
Drive end bearing / Lubrication					BALL.6315-2RS(ISO)					
Non-drive end bearing / Lubrication	BALL.6310-2RS(ISO)				BALL.6310-2RS(ISO)					
Packing crate size (cm)	98X63X94				104X63X94					

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	125.0	125.0	125.0	N/A	140.0	140.0	140.0	N/A	145.0	145.0	145.0	N/A	150.0	150.0	150.0	N/A
	kW	100.0	100.0	100.0	N/A	112.0	112.0	112.0	N/A	116.0	116.0	116.0	N/A	120.0	120.0	120.0	N/A
	Efficiency (%)	91.7	92.1	92.3	N/A	91.3	91.7	92.0	N/A	91.1	91.6	91.8	N/A	91.0	91.4	91.7	N/A
	kW Input	109.1	108.6	108.3	N/A	122.7	122.1	121.7	N/A	127.3	126.6	126.4	N/A	131.9	131.3	130.9	N/A
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	140.0	143.8	143.8	160.0	160.0	167.5	167.5	178.8	170.0	175.0	175.0	187.5	175.0	181.3	181.3	193.8
	kW	112.0	115.0	115.0	128.0	128.0	134.0	134.0	143.0	136.0	140.0	140.0	150.0	140.0	145.0	145.0	155.0
	Efficiency (%)	91.9	92.2	92.5	92.5	91.4	91.7	92.1	92.1	91.2	91.5	91.9	92.0	91.0	91.4	91.8	91.9
	kW Input	121.9	124.8	124.4	138.4	140.0	146.1	145.5	155.3	149.1	153.0	152.3	163.0	153.8	158.7	158.0	168.7

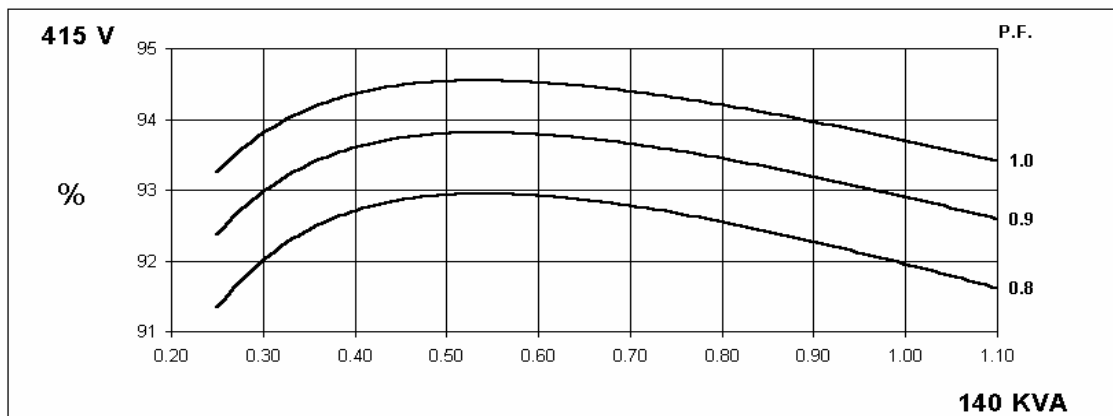
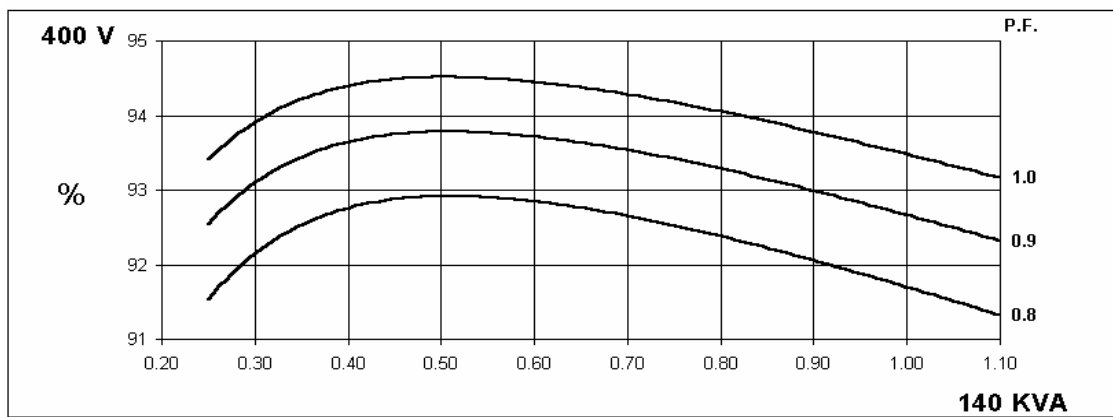
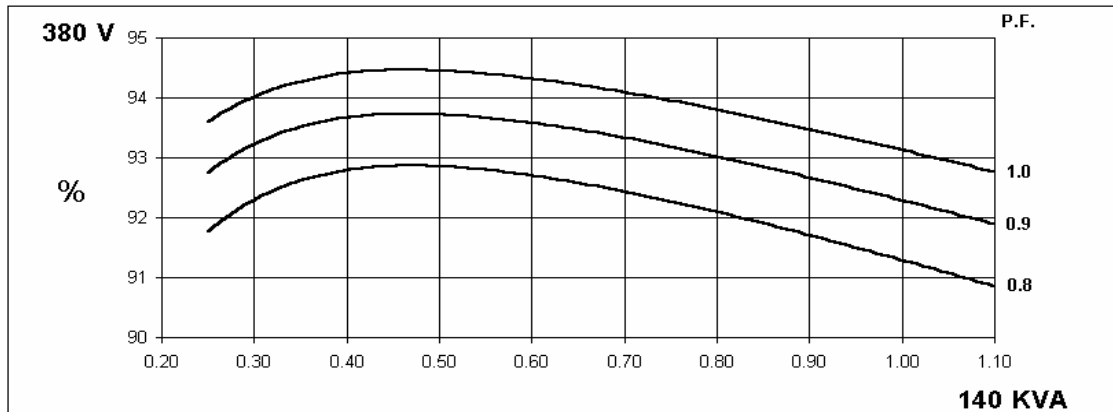
DIMENSIONS



50
Hz

Winding 311

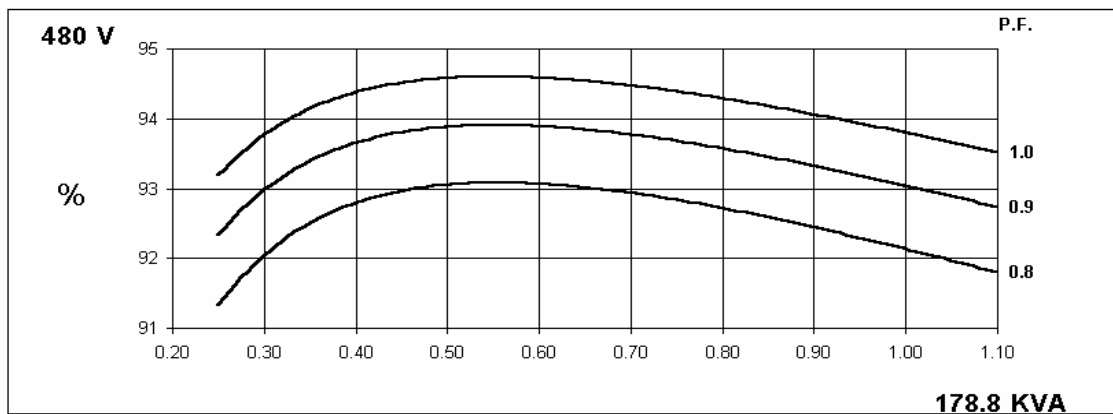
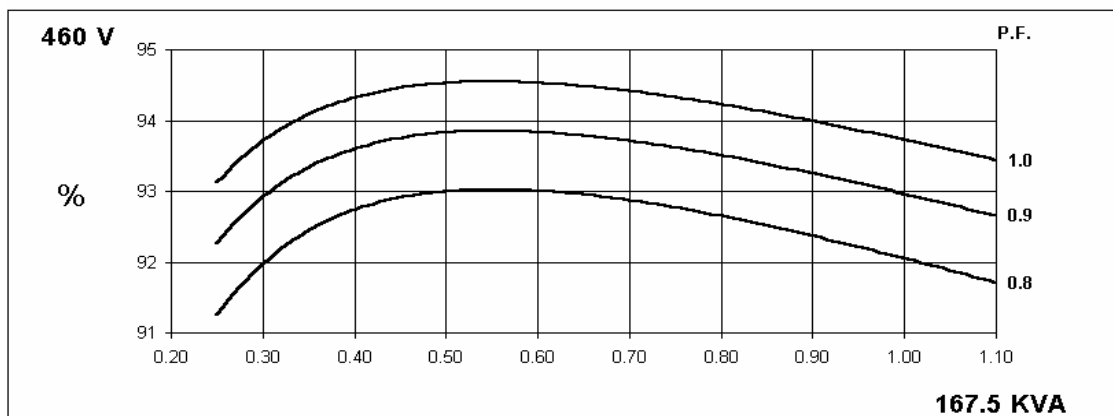
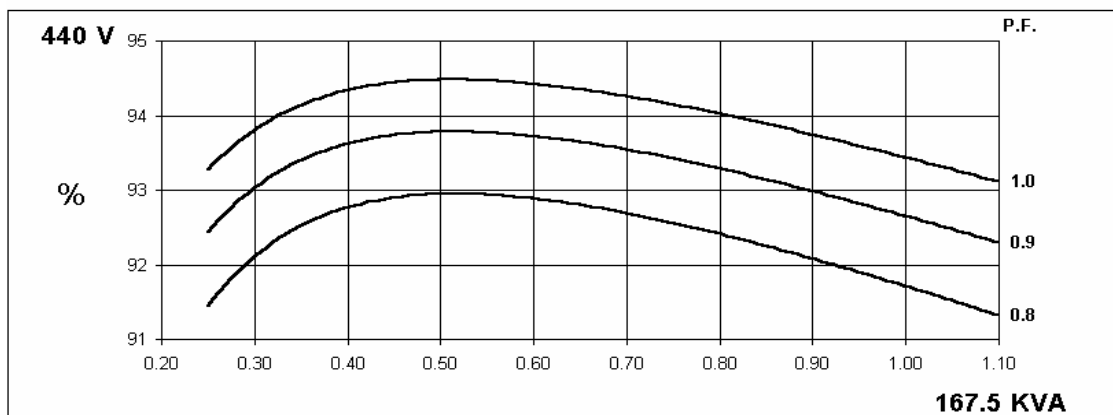
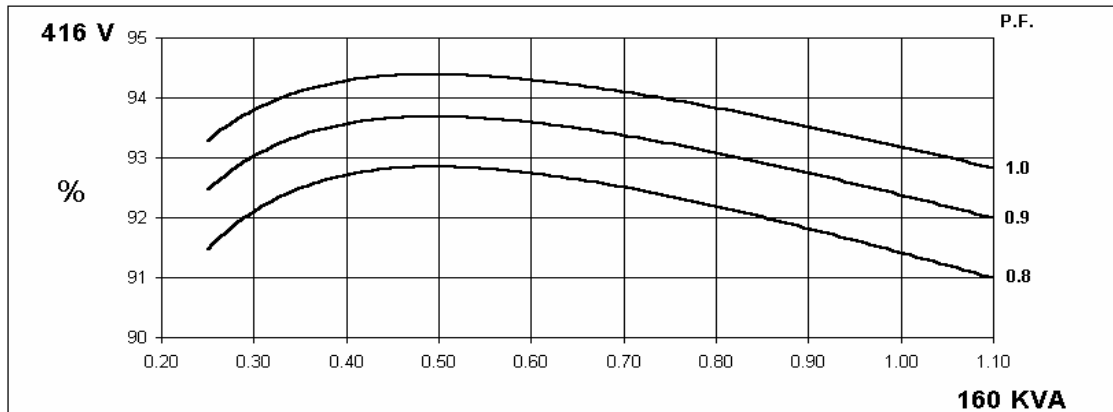
THREE PHASE EFFICIENCY CURVES



60
Hz

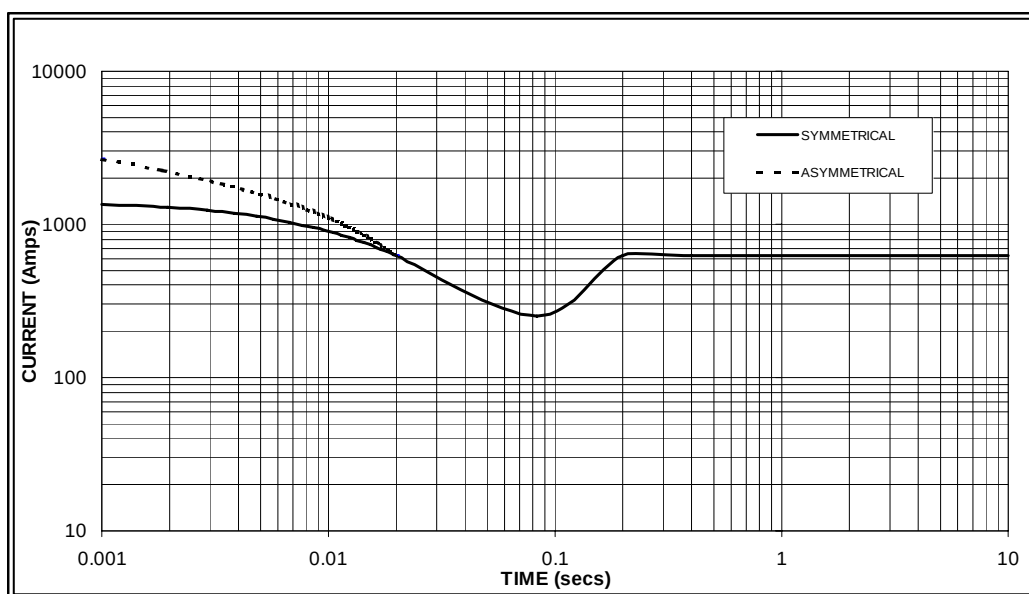
Winding 311

THREE PHASE EFFICIENCY CURVES



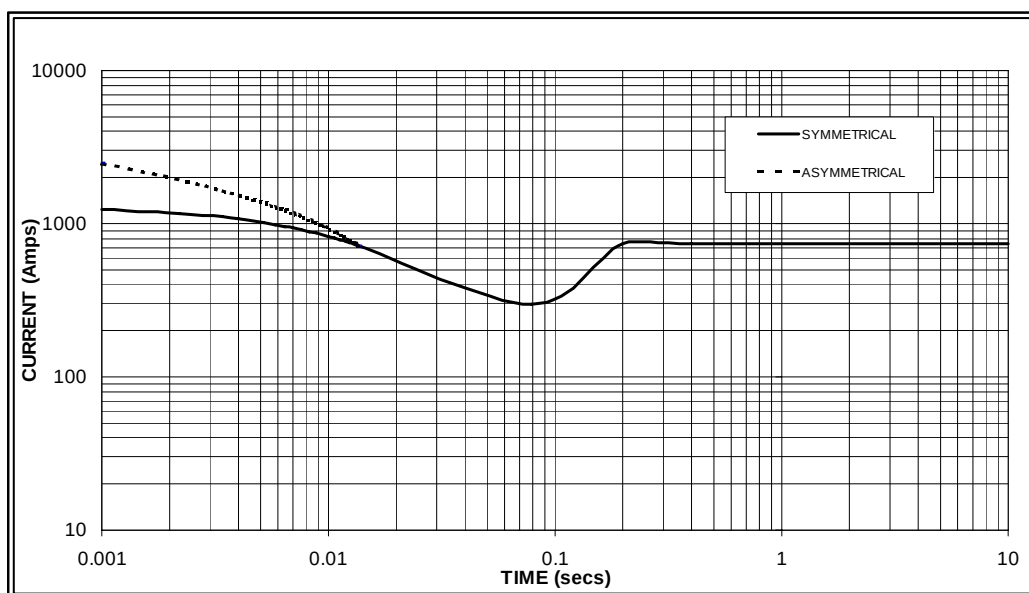
Three-phase Short Circuit Decrement Curve. No-load Excitation at Rated Speed Based on star (wye) connection.

50
Hz



Sustained Short Circuit = 630 Amps

60
Hz



Sustained Short Circuit = 740 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
		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.

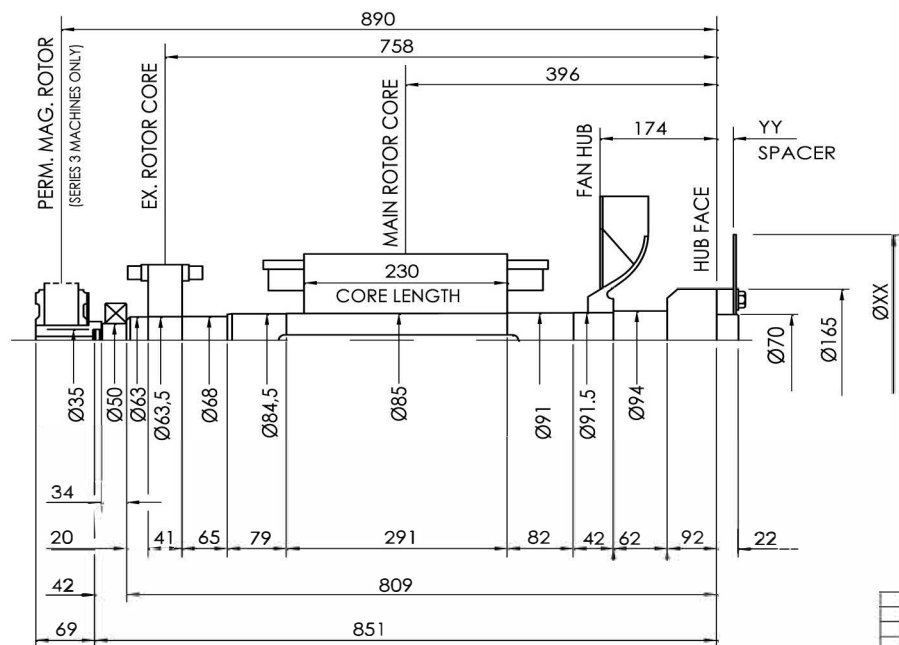
All other times are unchanged

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

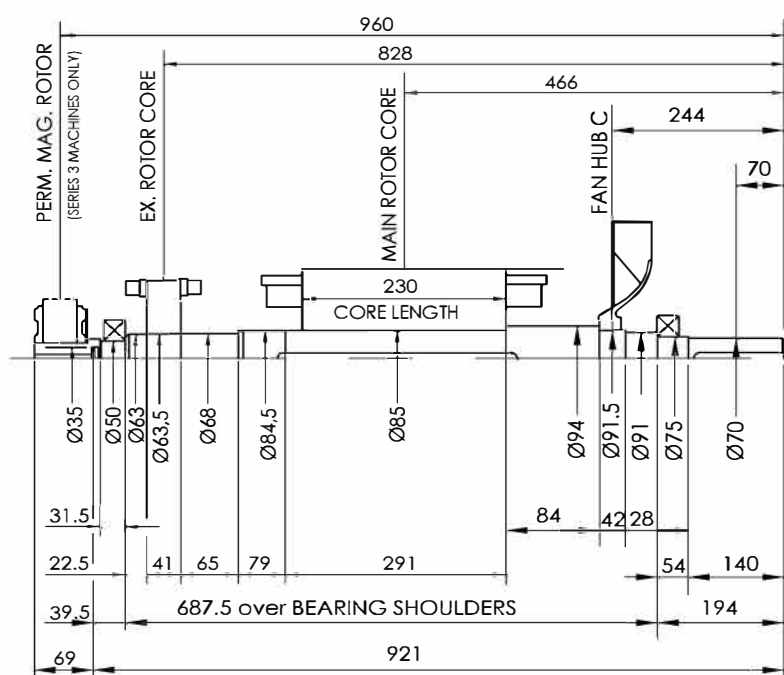
Series Delta = Curve current value X 1.732



COMPONENT	Wt kg	J kgm ²
EX. ROTOR	12.28	0.0726
MAIN ROTOR	99.79	1.088
FAN	3.389	0.0709
SHAFT	35.726	0.0315
HUB	10.878	0.0491
TOTAL	162.063	1.3121
PERM. MAG.	5,450	0.0150
TOTAL	167.513	1.3271

COUPLING SAE No	COUPLING DIMEN's		COUPLING ASSEMBLY WEIGHT kg	COUPLING DISC J kgm ²
	XX	YY		
* 10	314	14,3	5.55	0,0266
* 11½	352	-	2.64	0,0423
! 11½	352	14,3	4.95	0,0423
! 14	467	-	4.74	0,1317

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



COMPONENT	Wt kg	J kgm ²
EX. ROTOR	12.28	0.0726
MAIN ROTOR	99.79	1.088
FAN	3.389	0.0709
SHAFT	35.642	0.03
TOTAL	151.101	1.2615
PERM. MAG.	5,450	0.0150
TOTAL	156.551	1.2765

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



TEREX
DIESEL