



TA180-40N2

THREE-PHASE SYNCHRONOUS ALTERNATOR

CONT 60 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 ℃	Method of Cooling			Air cooling	
Temperature Rise	125 ℃	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			260A		

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	60	60	60	45	67.5	70	72.5	75
	kW	48.0	48.0	48.0	36.0	54.0	56.0	58.0	60.0
Efficiency at Class H (P.F.=0.8)	4/4%	88.2	88.8	89	90.1	88.9	89.1	89.4	89.6
	3/4%	89.5	89.8	90	90.2	90	90.1	90.4	90.5
	2/4%	90.3	90.3	90.4	90	90.9	90.9	91	91
Efficiency at Class H (P.F.=1.0)	4/4%	90.9	91.2	91.5	92.5	91.1	91.5	91.8	92
	3/4%	91.9	92.1	92.3	92.7	92.1	92.4	92.6	92.8
	2/4%	92.7	92.8	92.8	92.4	92.9	93	93	93

Reactances (%) at Class H

Direct axis synchronous reactance unsaturated	Xd	2.48	2.24	2.08	1.39	3	2.78	2.64	2.5
Direct axis transient reactance saturated	X'd	0.19	0.17	0.16	0.11	0.22	0.2	0.19	0.18
Direct axis subtransient reactance saturated	X''d	0.13	0.12	0.11	0.07	0.15	0.14	0.13	0.13
Quadrature axis synchronous reactance unsaturated	Xq	1.13	1.02	0.95	0.63	1.38	1.28	1.21	1.15
Quadrature axis subtransient reactance saturated	X''q	0.14	0.13	0.12	0.08	0.14	0.13	0.12	0.12
Leakage reactance	X1	0.08	0.08	0.07	0.05	0.09	0.08	0.08	0.08
Negative sequence reactance saturated	X2	0.13	0.12	0.11	0.07	0.14	0.13	0.12	0.12
Zero sequence reactance unsaturated	X0	0.11	0.1	0.09	0.06	0.09	0.08	0.08	0.08
Short-circuit ratio	Kcc	0.4032	0.4464	0.4808	0.7194	0.3333	0.3597	0.3788	0.4000

Short-circuit transient time constant (sec.)	T'd	0.029							
Subtransient time constant (sec.)	T''d	0.008							
Open circuit time constant (sec.)	T'do	0.7							
Armature time constant (sec.)	Ta	0.0065							
Stator Winding Resistance (20 °C)	ohm	0.101							
Rotor Winding Resistance (20 °C)	ohm	0.69							
Exciter Stator Resistance (20 °C)	ohm	20							
Exciter Rotor Phase resistance	ohm	0.08							
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	m ³ /sec	0.216m3/s 458cfm				0.281m3/s 595cfm			

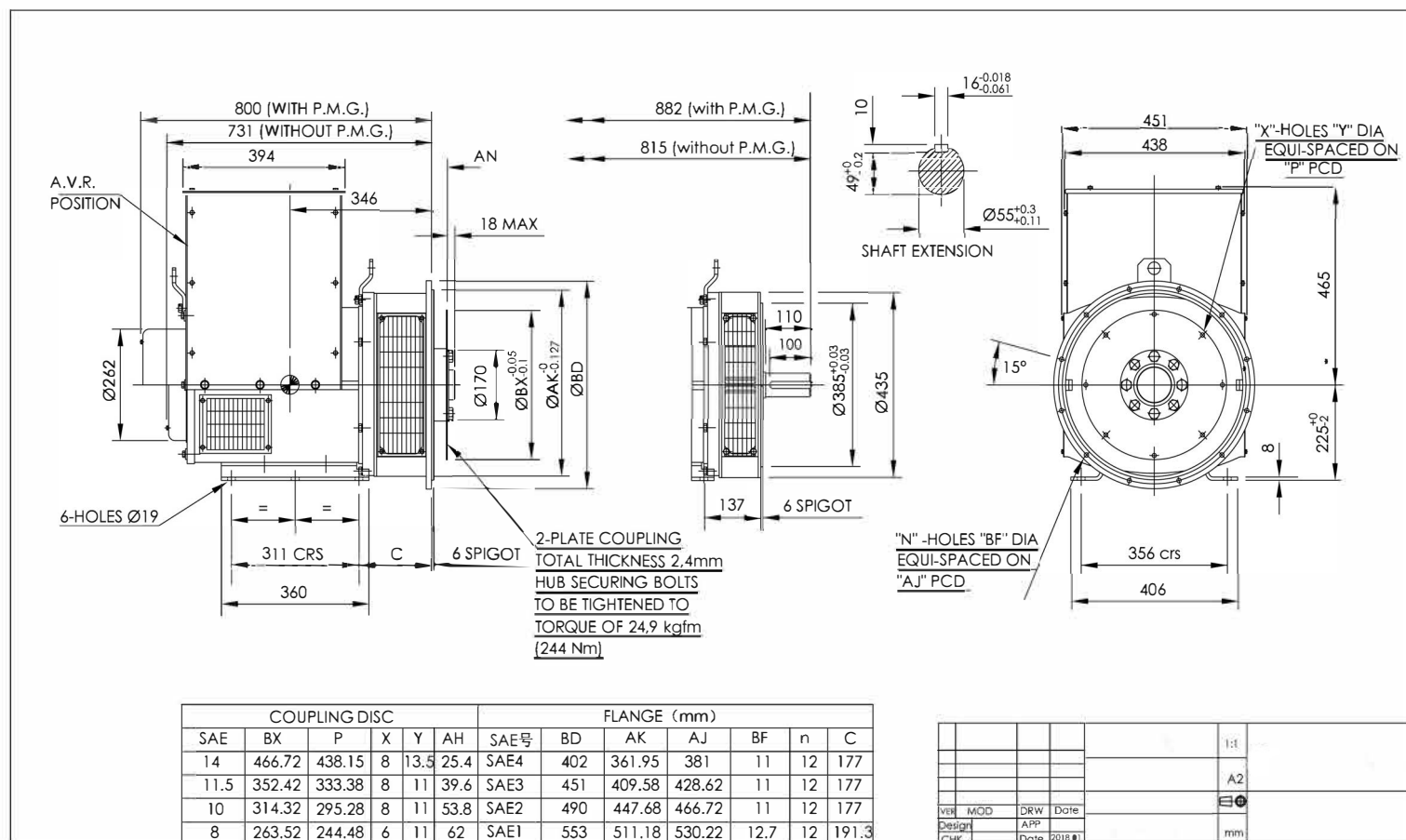
Mechanical Characteristic

Configuration	Single Bearing			Double Bearing		
Type of Construction	B2-SAE			IM B34		
Total Weight - kgs	277			268		
Weight wound stator - kgs	98			98		
Weight wound rotor - kgs	95.89			87.52		
Inertia (J) [kgm2]	0.4999kgm2			0.4682kgm2		
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)	86X55X84			86X49X84		

RATINGS

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	62.5	65.0	65.0	68.0	67.5	70.0	72.5	75.0	70.0	73.8	73.8	78.8	72.5	75.0	75.0	80.0
	kW	50.0	52.0	52.0	54.4	54.0	56.0	58.0	60.0	56.0	59.0	59.0	63.0	58.0	60.0	60.0	64.0
	Efficiency (%)	89.2	89.5	89.9	90.0	88.8	89.2	89.4	89.6	88.6	88.9	89.3	89.4	88.4	88.8	89.3	89.3
	kW Input	56.1	58.1	57.8	60.4	60.8	62.8	64.9	67.0	63.2	66.4	66.1	70.5	65.6	67.6	67.2	71.7

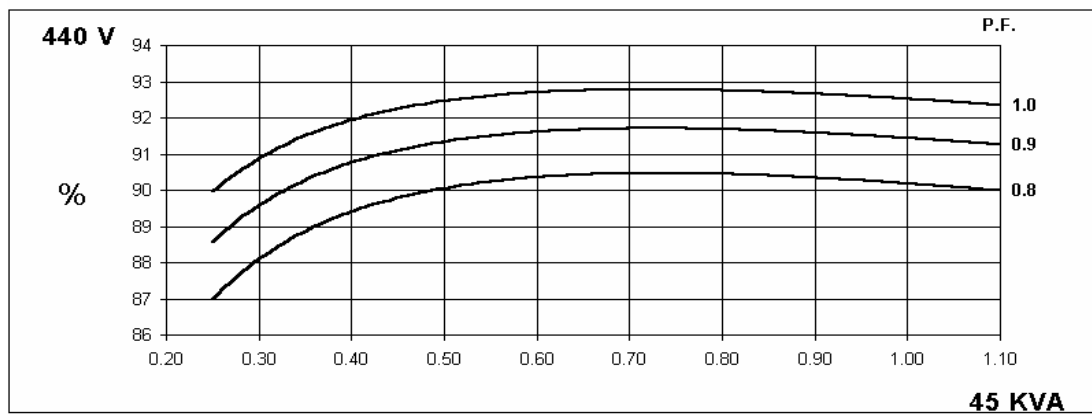
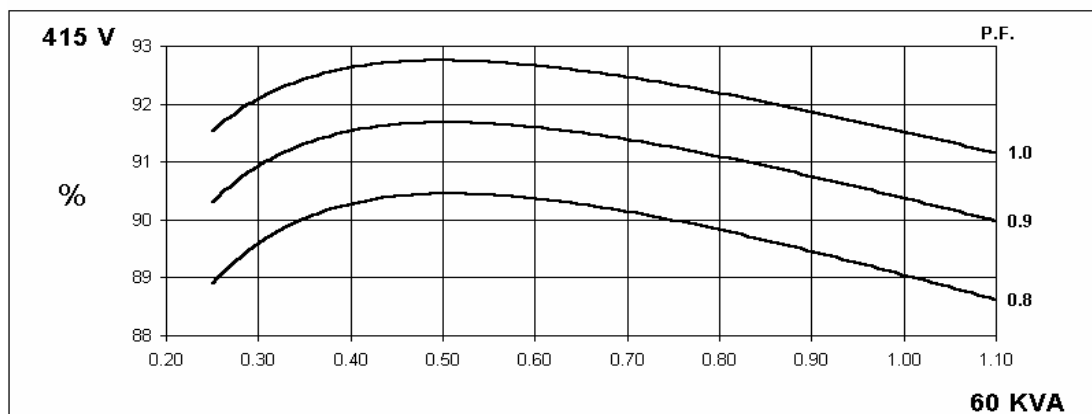
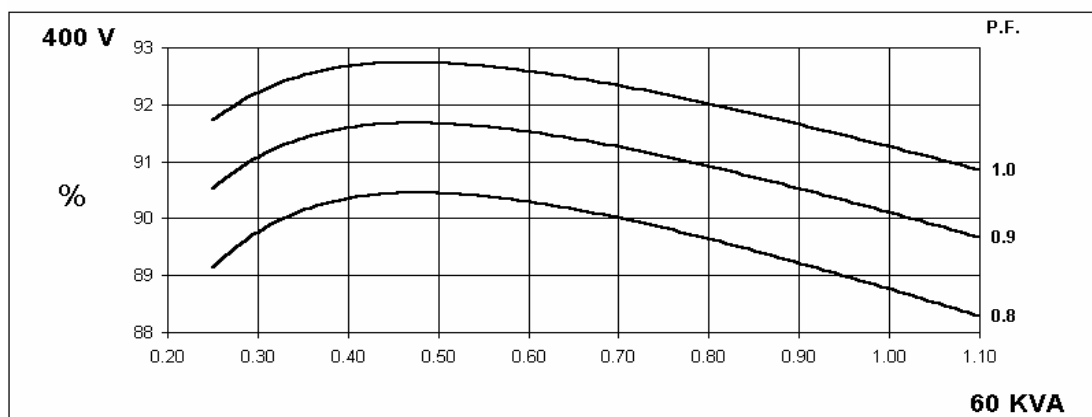
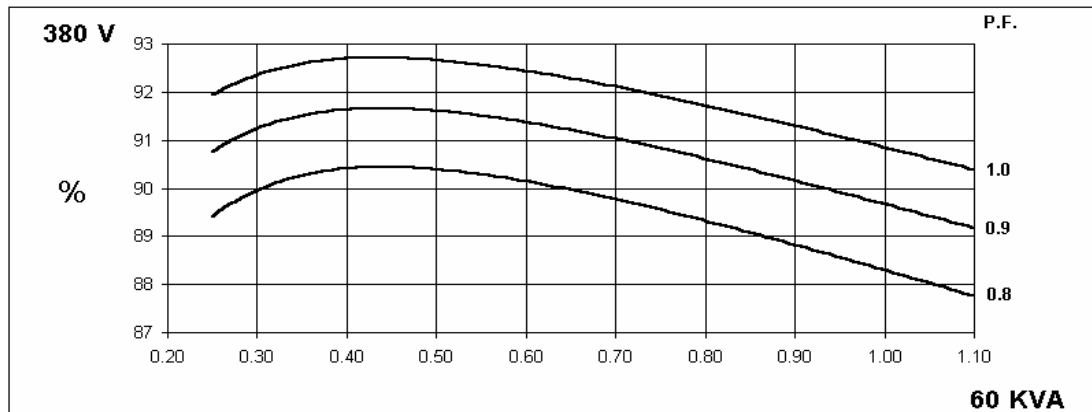
DIMENSIONS



50
Hz

Winding 311

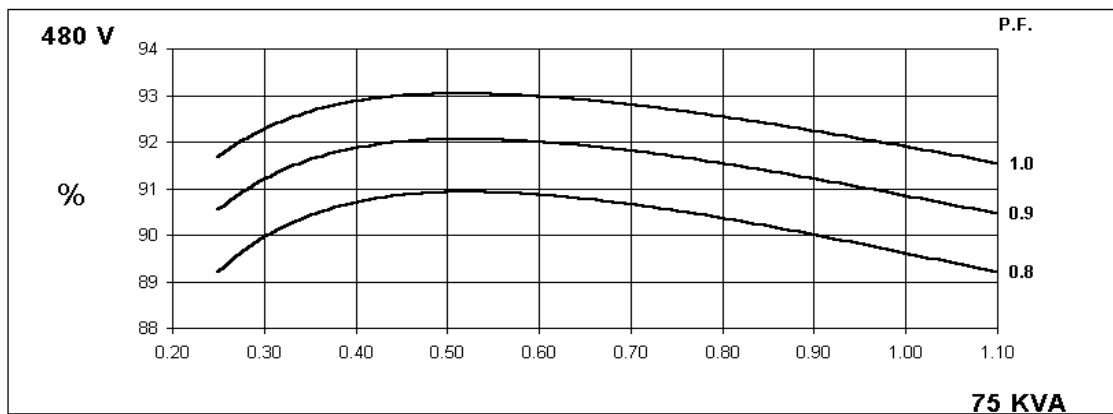
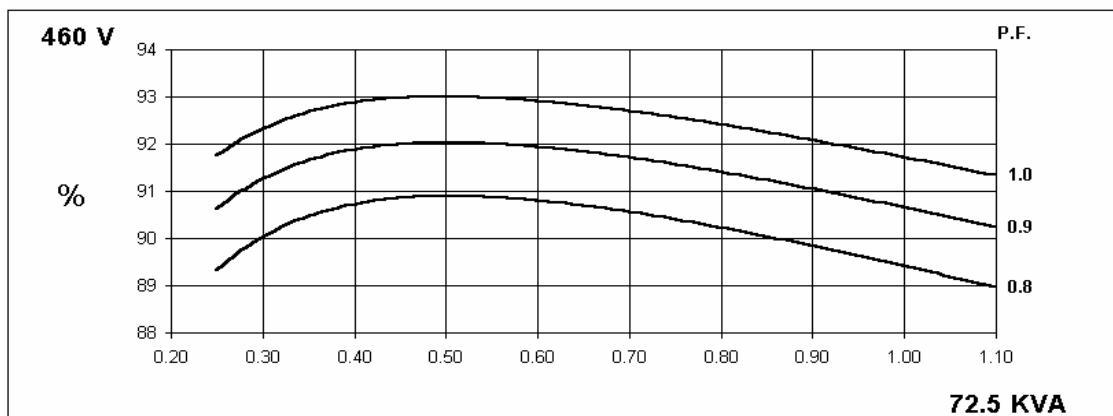
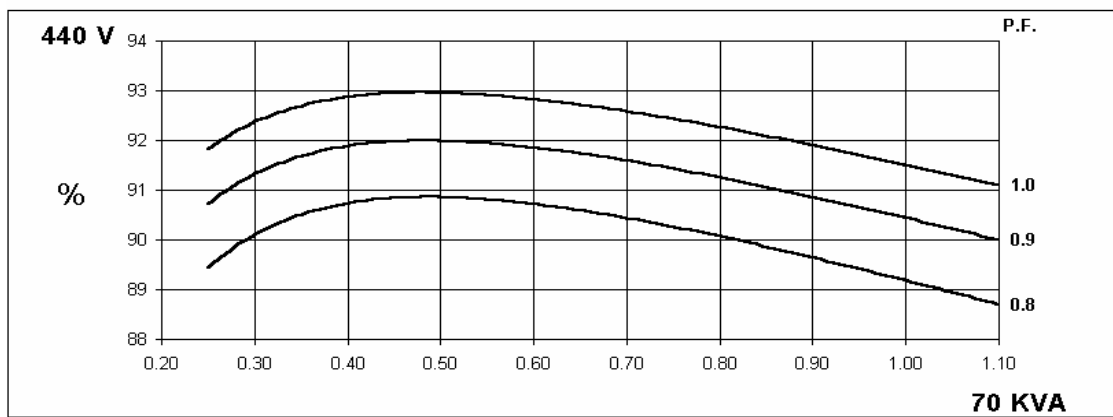
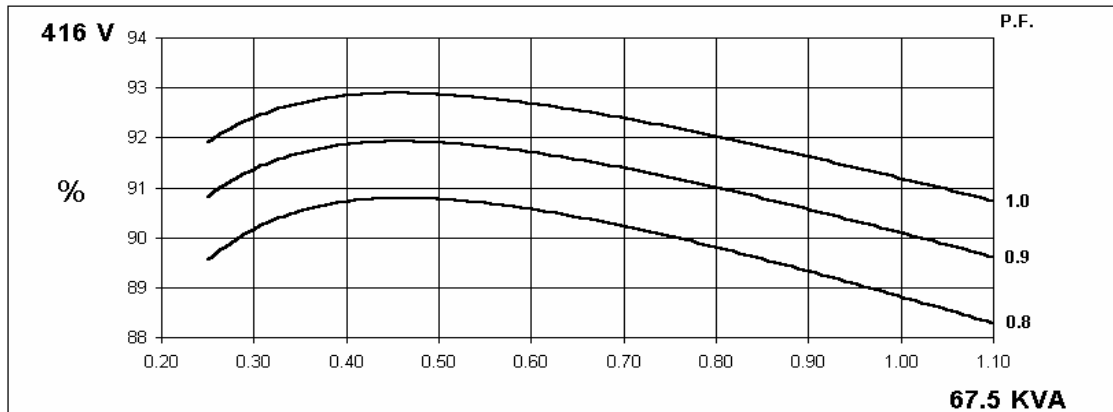
THREE PHASE EFFICIENCY CURVES



60
Hz

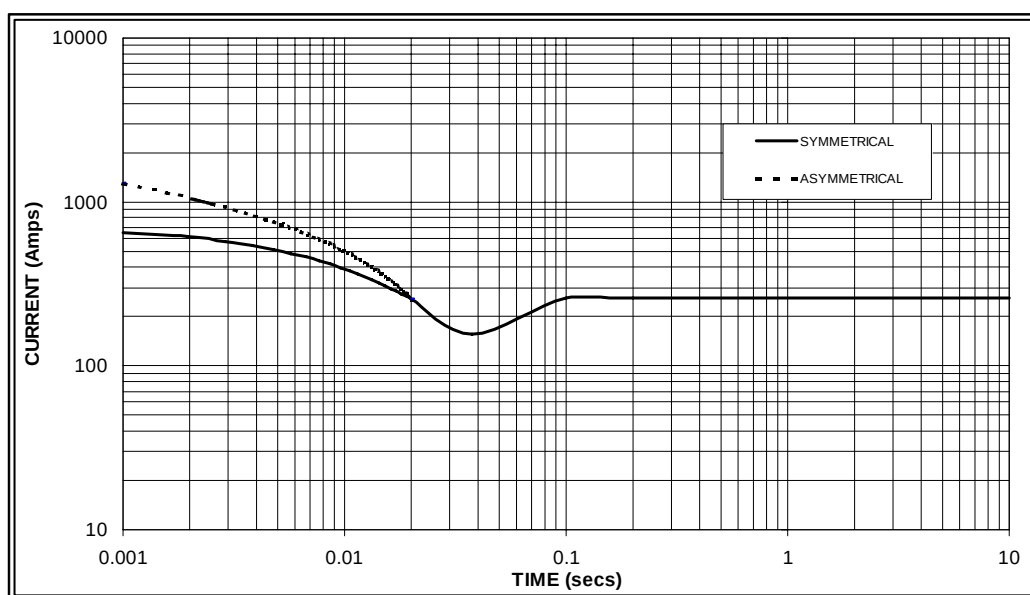
Winding 311

THREE PHASE EFFICIENCY CURVES



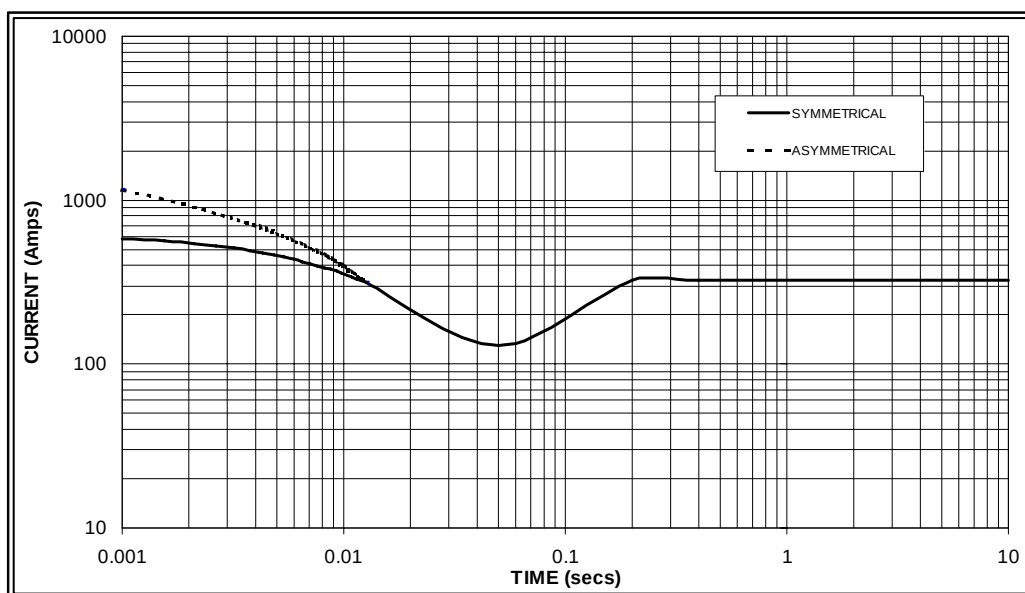
Three-phase Short Circuit Decrement Curve. No-load Excitation at Rated Speed Based on star (wye) connection.

50
Hz



Sustained Short Circuit = 260 Amps

60
Hz



Sustained Short Circuit = 325 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.

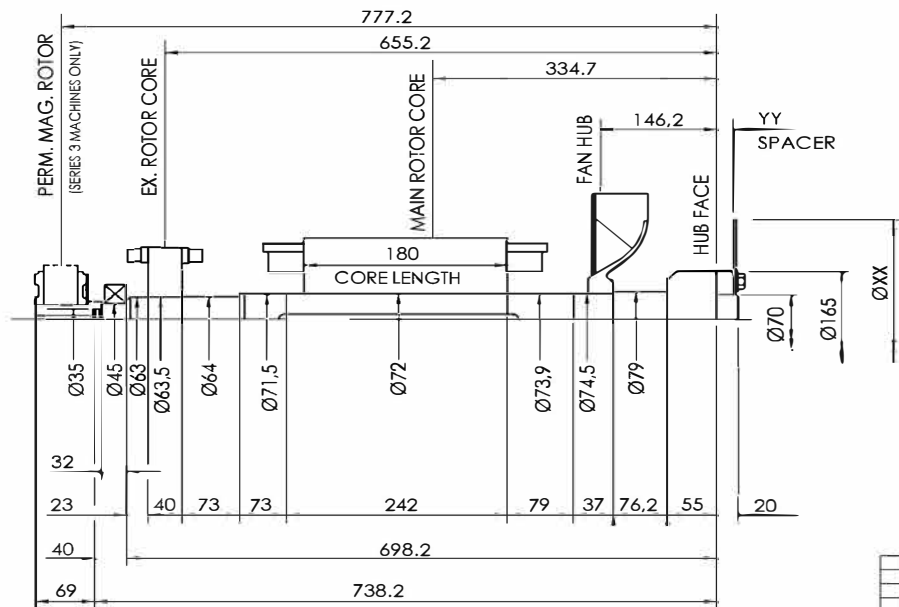
All other times are unchanged

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

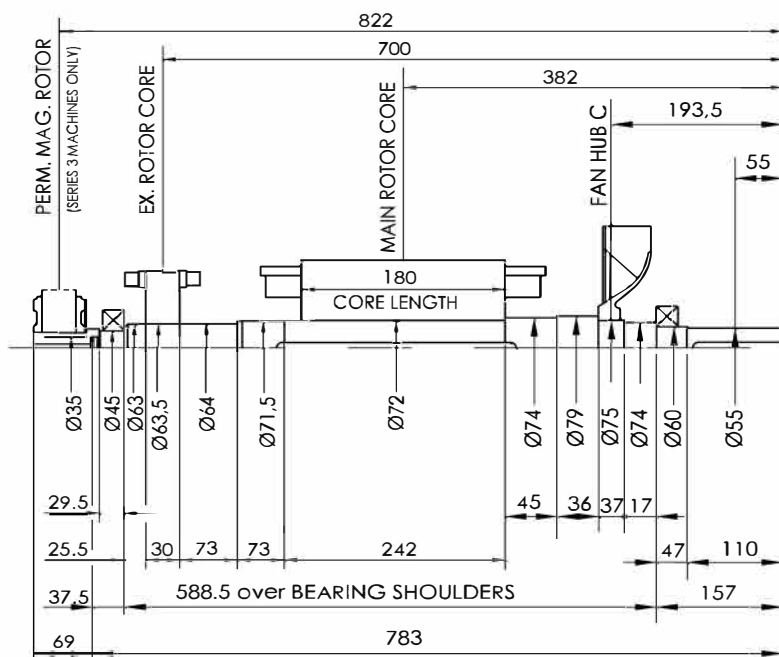
Series Delta = Curve current value X 1.732



COMPONENT	Wt kg	J kgm ²
EX. ROTOR	8.490	0,0508
MAIN ROTOR	49.670	0,3621
FAN	1,940	0,0271
SHAFT	23.247	0,0149
HUB	7.093	0,0300
TOTAL	90.440	0,4849
PERM. MAG.	5.450	0,0150
TOTAL	95.89	0,4999

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
* 11½	352	-	1,76	0,0282
! 11½	352	14,3	4,07	0,0282
! 14	467	-	3,16	0,0878

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



COMPONENT	Wt kg	J kgm ²
EX. ROTOR	8.49	0,0508
MAIN ROTOR	49.67	0,3621
FAN	1,940	0,0271
SHAFT	21.971	0,0132
TOTAL	82.071	0,4532
PERM. MAG.	5.450	0,0150
TOTAL	87.521	0,4682

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



TEREX
DIESEL

TEREX ALTERNATOR | TA180-40N2 | CONT 60 kVA (400 V / 50 Hz, Class H)

Deri OSB District, Tanen Street, Deri OSB Site No. 8, Tuzla, Istanbul
+90 216 634 34 06 | info@terexdiesel.com | www.terexdiesel.com