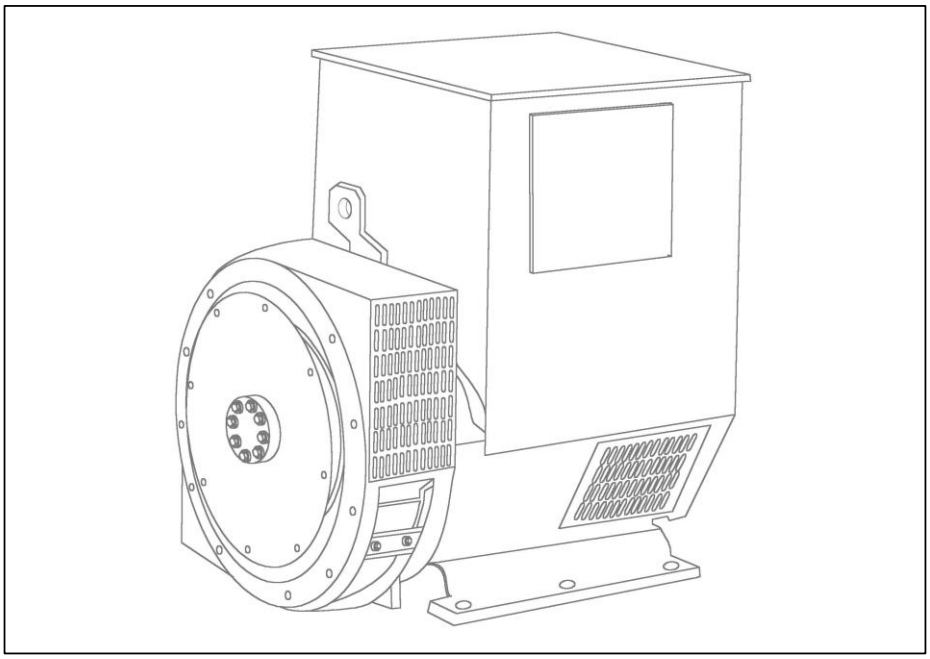
WANTONG power generation

THREE-PHASE SYNCHRONOUS GENERATOR

WT-274J - Winding 311

Technical Data Sheet



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WT-274J

THREE-PHASE SYNCHRONOUS GENERATOR

CONTROL SYSTEM SER.4	SELF EXCITED		
A.V.R.	SX460	AS440	
VOLTAGE REGULATION	± 1.0 %	± 1.0 %	With 4% ENGINE GOVERNING
SUSTAINED SHORT CIRCUIT	SERIES 4 CONTROL DOES NOT SUSTAIN A SHORT CIRCUIT CURRENT		

INSULATION SYSTEM	CLASS H							
PROTECTION	IP23							
RATED POWER FACTOR	0.8							
STATOR WINDING	DOUBLE LAYER CONCENTRIC							
WINDING PITCH	TWO THIRDS							
WINDING LEADS	12							
STATOR WDG. RESISTANCE	0.0126 Ohms PER PHASE AT 22°C SERIES STAR CONNECTED							
ROTOR WDG. RESISTANCE	2.08 Ohms at 22°C							
EXCITER STATOR RESISTANCE	20 Ohms at 22°C							
EXCITER ROTOR RESISTANCE	0.091 Ohms PER PHASE AT 22°C							
R.F.I. SUPPRESSION	BS EN 61000-6-2 & BS EN 61000-6-4,VDE 0875G, VDE 0875N. refer to factory for others							
WAVEFORM DISTORTION	NO LOAD < 1.5% NON-DISTORTING BALANCED LINEAR LOAD < 5.0%							
MAXIMUM OVERSPEED	2250 Rev/Min							
BEARING NON-DRIVE END	BALL. 6310-2RS (ISO)							
WEIGHT COMP. GENERATOR	727 kg							
WEIGHT WOUND STATOR	304 kg							
WEIGHT WOUND ROTOR	271.9 kg							
WR² INERTIA	2.3744 kgm^2							
SHIPPING WEIGHTS in a crate	740 kg							
PACKING CRATE SIZE	123 x 67 x 103 (cm)							
	50 Hz				60 Hz			
TELEPHONE INTERFERENCE	THF<2%				TIF<50			
COOLING AIR	0.58 m³/sec 1230 cfm				0.69 m³/sec 1463 cfm			
VOLTAGE SERIES STAR	380/220	400/231	415/240	440/254	416/240	440/254	460/266	480/277
VOLTAGE PARALLEL STAR	190/110	200/115	208/120	220/127	208/120	220/127	230/133	240/138
VOLTAGE SERIES DELTA	220/110	230/115	240/120	254/127	240/120	254/127	266/133	277/138
kVA BASE RATING FOR REACTANCE VALUES	230	230	230	N/A	269	281	294	300
Xd DIR. AXIS SYNCHRONOUS	1.939	1.750	1.626	-	2.651	2.475	2.370	2.221
X'd DIR. AXIS TRANSIENT	0.103	0.093	0.086	-	0.164	0.153	0.147	0.137
X"d DIR. AXIS SUBTRANSIENT	0.070	0.064	0.059	-	0.096	0.090	0.086	0.080
Xq QUAD. AXIS REACTANCE	0.886	0.800	0.743	-	1.206	1.126	1.078	1.010
X"q QUAD. AXIS SUBTRANSIENT	0.163	0.147	0.137	-	0.138	0.129	0.123	0.116
X_L LEAKAGE REACTANCE	0.062	0.056	0.052	-	0.081	0.076	0.072	0.068
X_2 NEGATIVE SEQUENCE	0.117	0.105	0.098	-	0.117	0.109	0.105	0.098
X_0 ZERO SEQUENCE	0.044	0.040	0.037	-	0.048	0.045	0.043	0.040
REACTANCES ARE SATURATED	VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED							
T'd TRANSIENT TIME CONST.	0.045 s							
T"d SUB-TRANSTIME CONST.	0.015 s							
T'do O.C. FIELD TIME CONST.	1.27 s							
Ta ARMATURE TIME CONST.	0.03 s							
SHORT CIRCUIT RATIO	1/Xd							

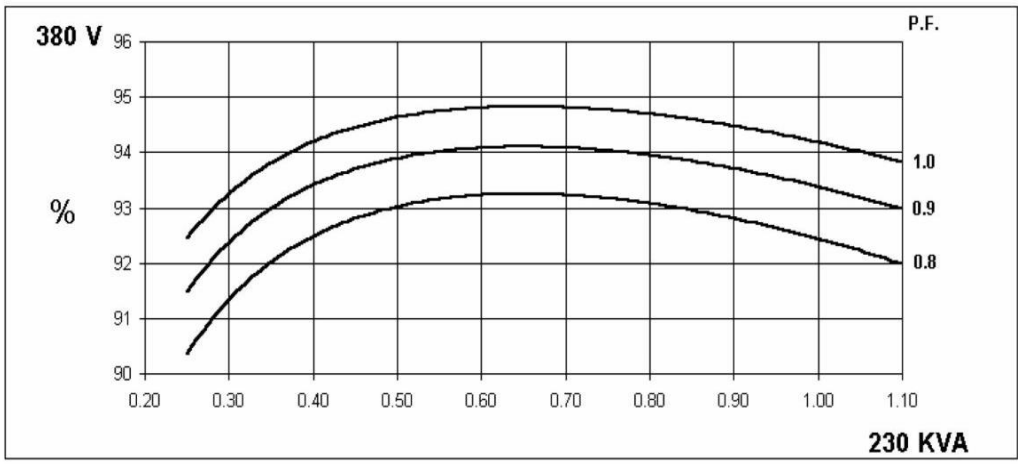
RATINGS

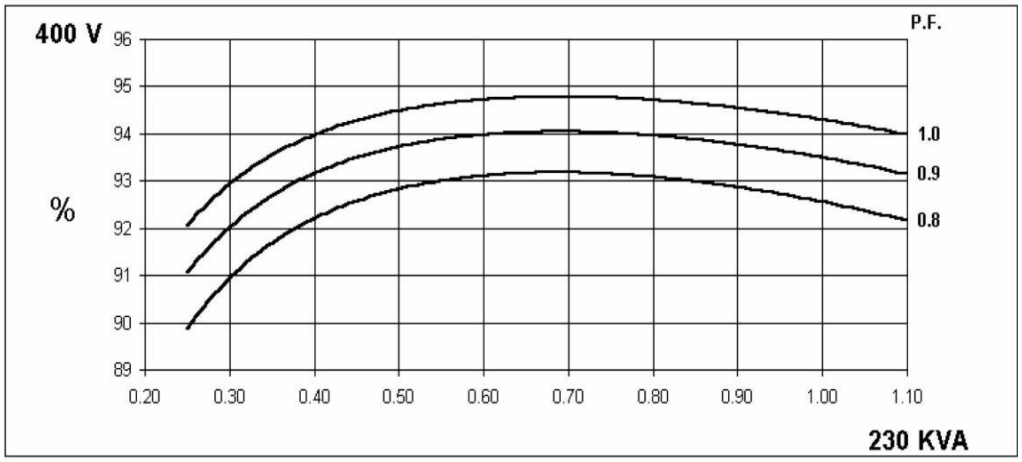
	Class - Temp Rise	Cont. H - 125/40°C				Standby - 163/27°C			
50 Hz	Series Star (V)	380	400	415	440	380	400	415	440
	Parallel Star (V)	190	200	208	220	190	200	208	220
	Series Delta (V)	220	230	240	254	220	230	240	254
	kVA	230	230	230	N/A	260	260	260	N/A
	kW	184	184	184	N/A	208	208	208	N/A
	Efficiency (%)	92.4	92.6	92.6	N/A	91.8	92.0	92.1	N/A
	kW Input	199.1	198.7	198.7	N/A	226.6	226.1	225.8	N/A

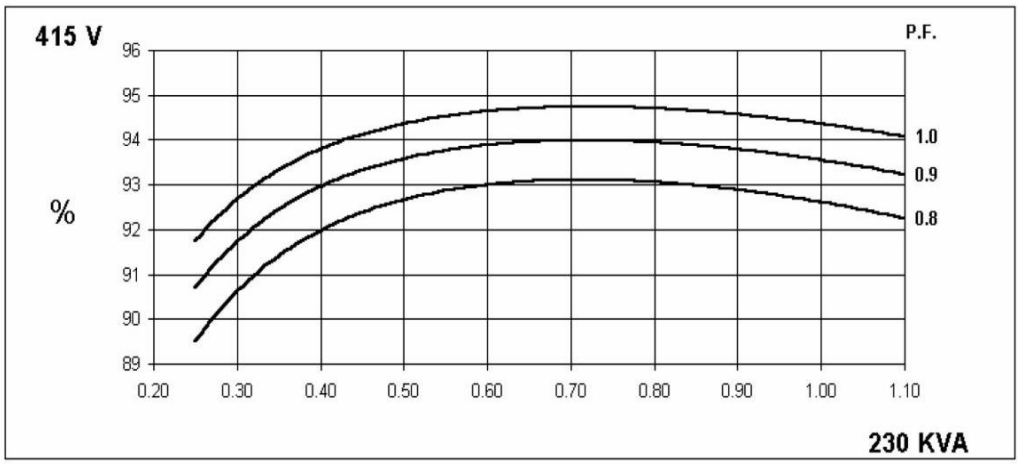
60 Hz	Series Star (V)	416	440	460	480	416	440	460	480
	Parallel Star (V)	208	220	230	240	208	220	230	240
	Series Delta (V)	240	254	266	277	240	254	266	277
	kVA	269	281	294	300	294	306	319	325
	kW	215.2	224.8	235.2	240.0	235.2	244.8	255.2	260.0
	Efficiency (%)	92.8	92.8	92.7	92.8	92.4	92.4	92.4	92.4
	kW Input	231.9	242.2	253.7	258.6	254.5	264.9	276.2	281.4

THREE PHASE EFFICIENCY CURVES

50 Hz

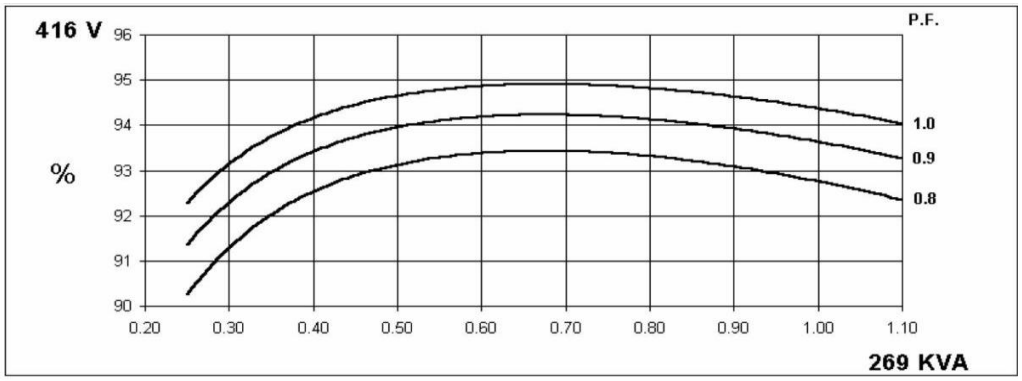


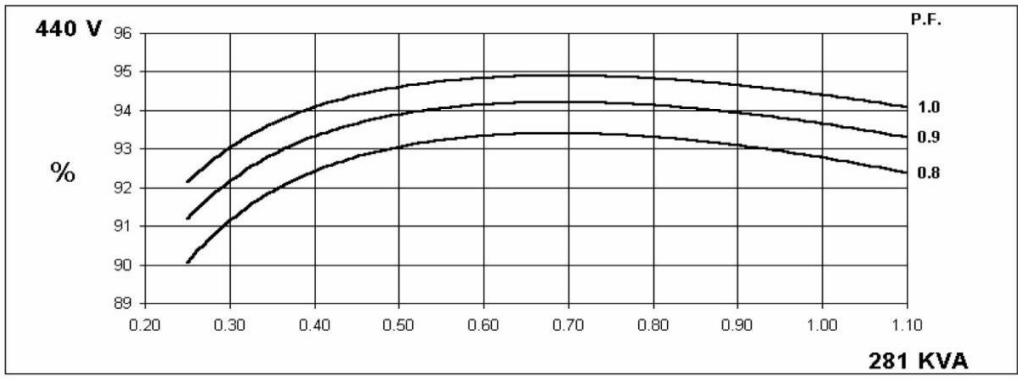


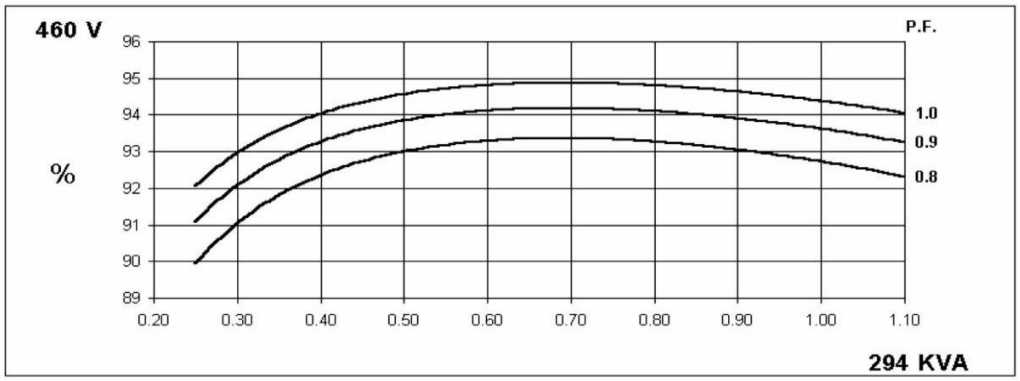


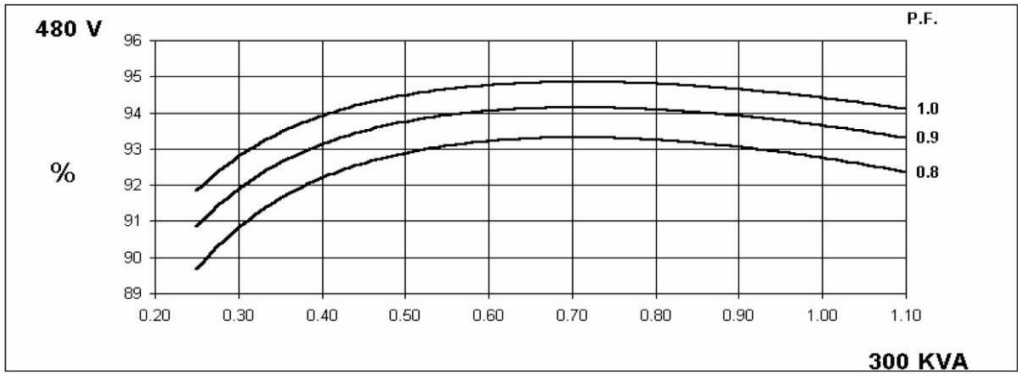
THREE PHASE EFFICIENCY CURVES

60 Hz





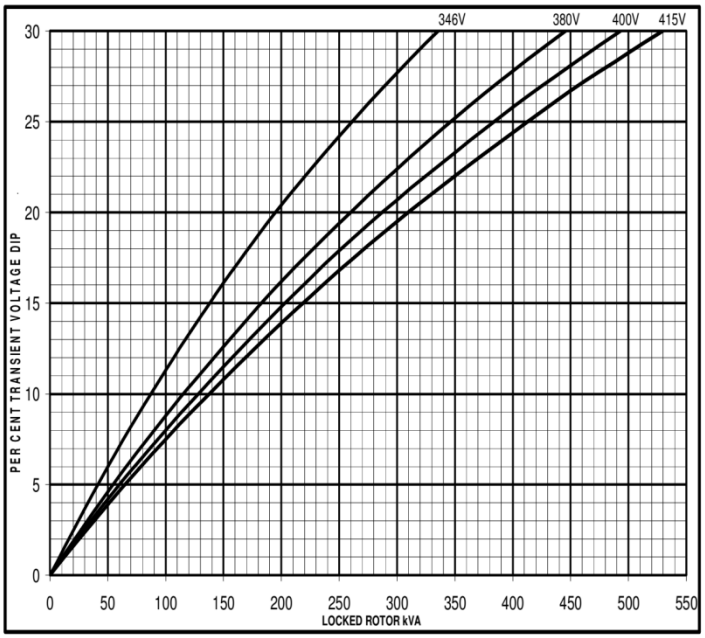




50 Hz

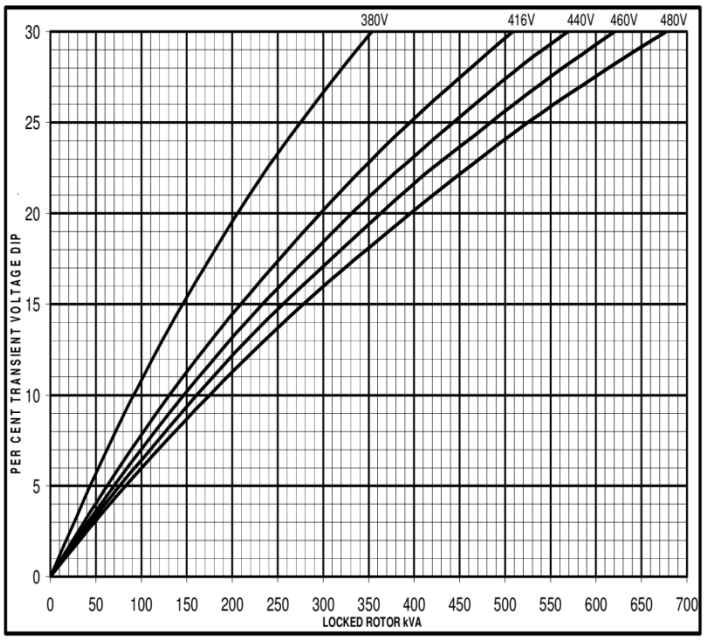
LOCKED ROTOR MOTOR STARTING CURVE

SX



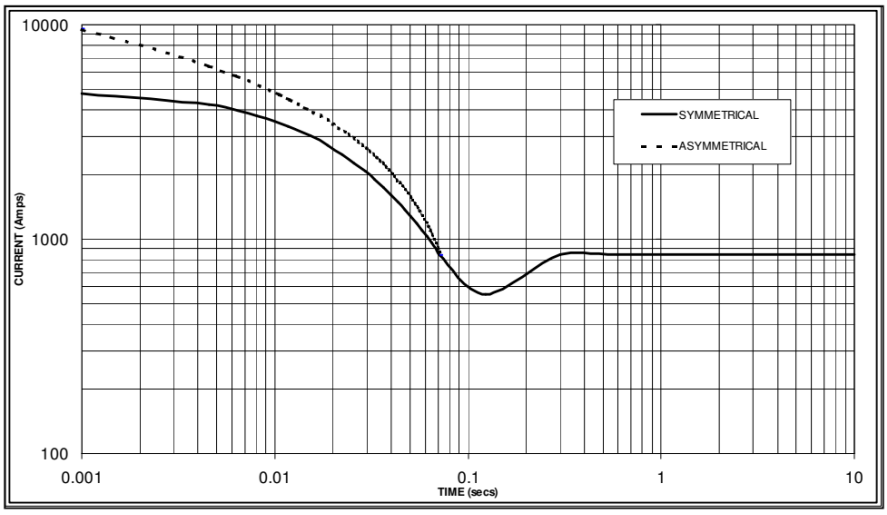
60 Hz

SX



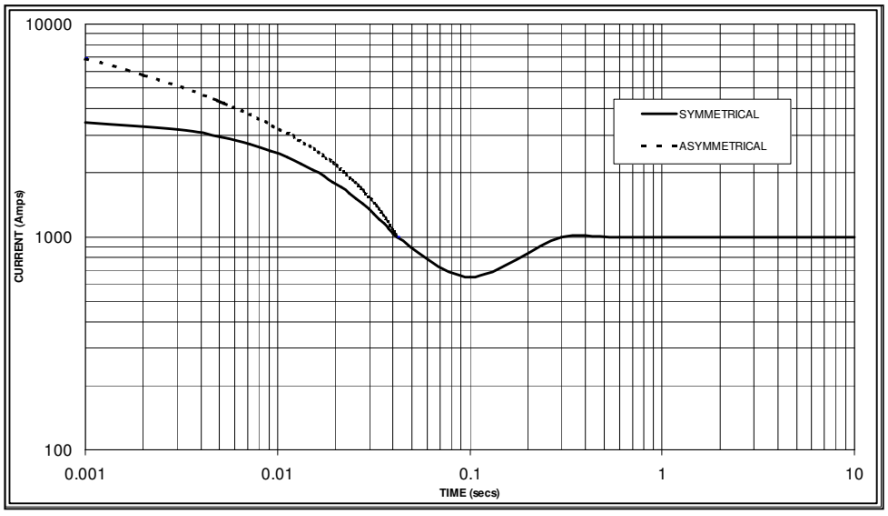
THREE-PHASE SHORT CIRCUIT DECREMENT CURVE. NO-LOAD EXCITATION AT RATED SPEED BASED ON STAR (WYE) CONNECTION.

50 Hz



Sustained Short Circuit = 850 Amps

60 Hz



Sustained Short Circuit = 1,000 Amps

Note 2

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 1.07
415v	X 1.10	460v	X 1.12
		480v	X 1.16

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 :

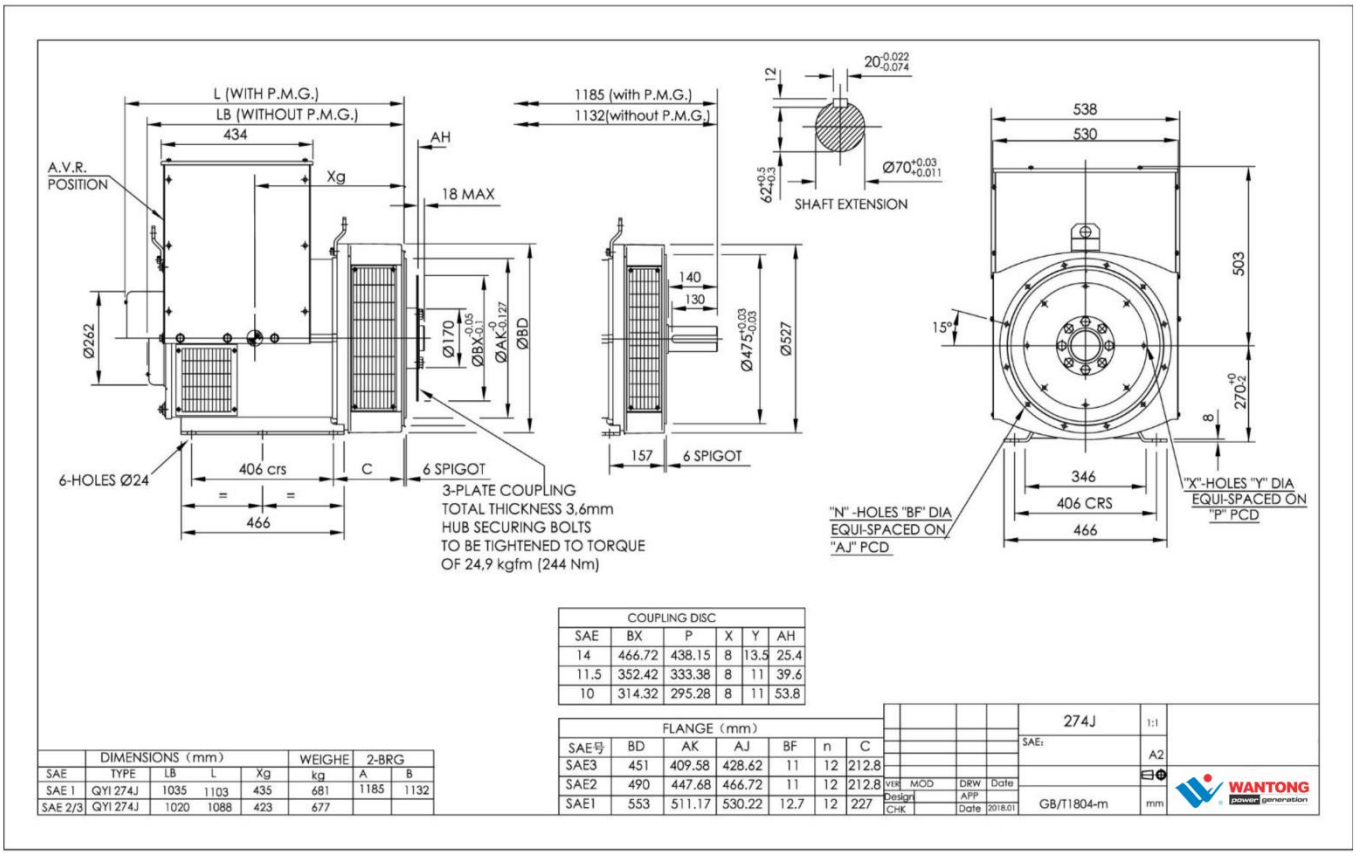
	3-phase	2-phase L-L	1-phase L-N
Instantaneous	x 1.00	x 0.87	x 1.30
Minimum	x 1.00	x 1.80	x 3.20
Sustained	x 1.00	x 1.50	x 2.50
Max. sustained duration	10 sec.	5 sec.	2 sec.

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:

DIMENSIONS



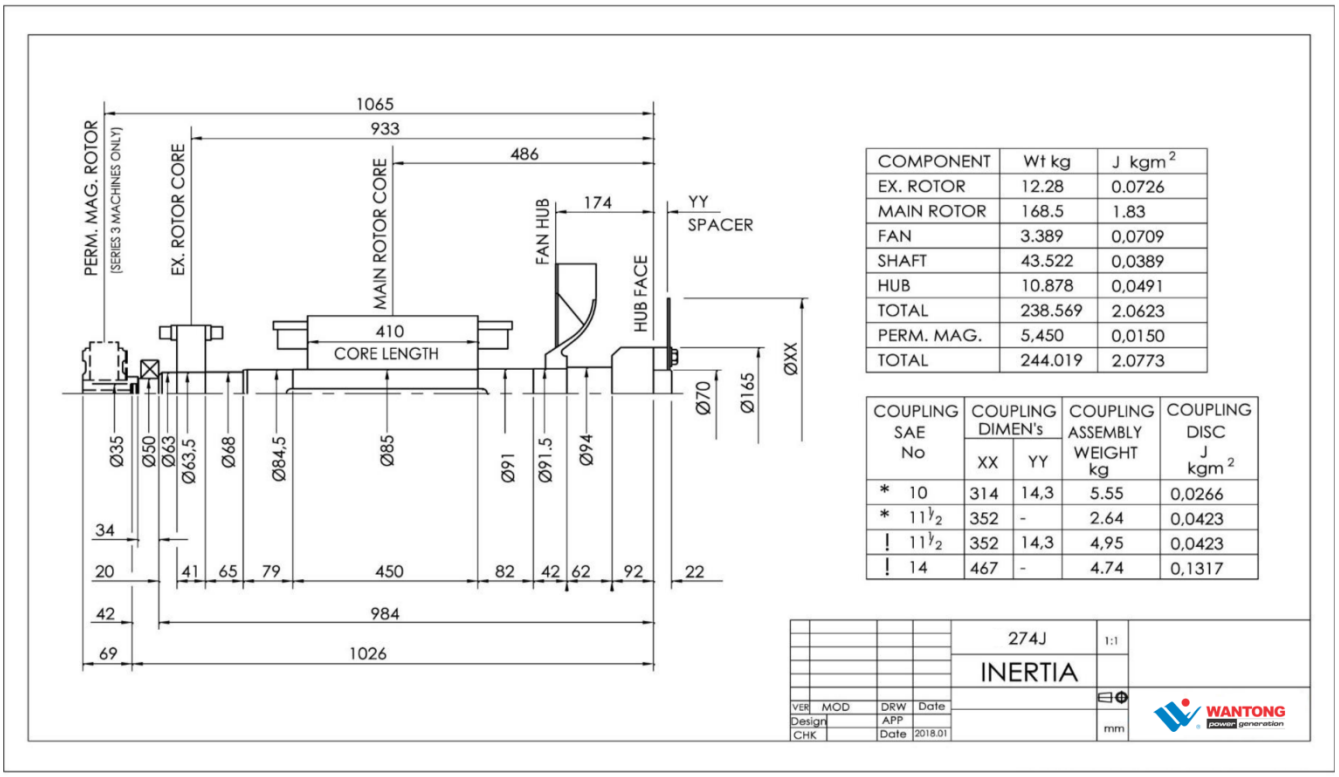
COUPLING DISC					
SAE	BX	P	X	Y	AH
14	466.72	438.15	8	13.5	25.4
11.5	352.42	333.38	8	11	39.6
10	314.32	295.28	8	11	53.8

FLANGE (mm)						
SAE号	BD	AK	AJ	BF	n	C
SAE3	451	409.58	428.62	11	12	212.8
SAE2	490	447.68	466.72	11	12	212.8
SAE1	553	511.17	530.22	12.7	12	227

	DIMENSIONS (mm)				WEIGHE	2-BRG	
SAE	TYPE	LB	L	Xg	kg	A	B
SAE 1	QYI 274J	1035	1103	435	681	1185	1132
SAE 2/3	QYI 274J	1020	1088	423	677		

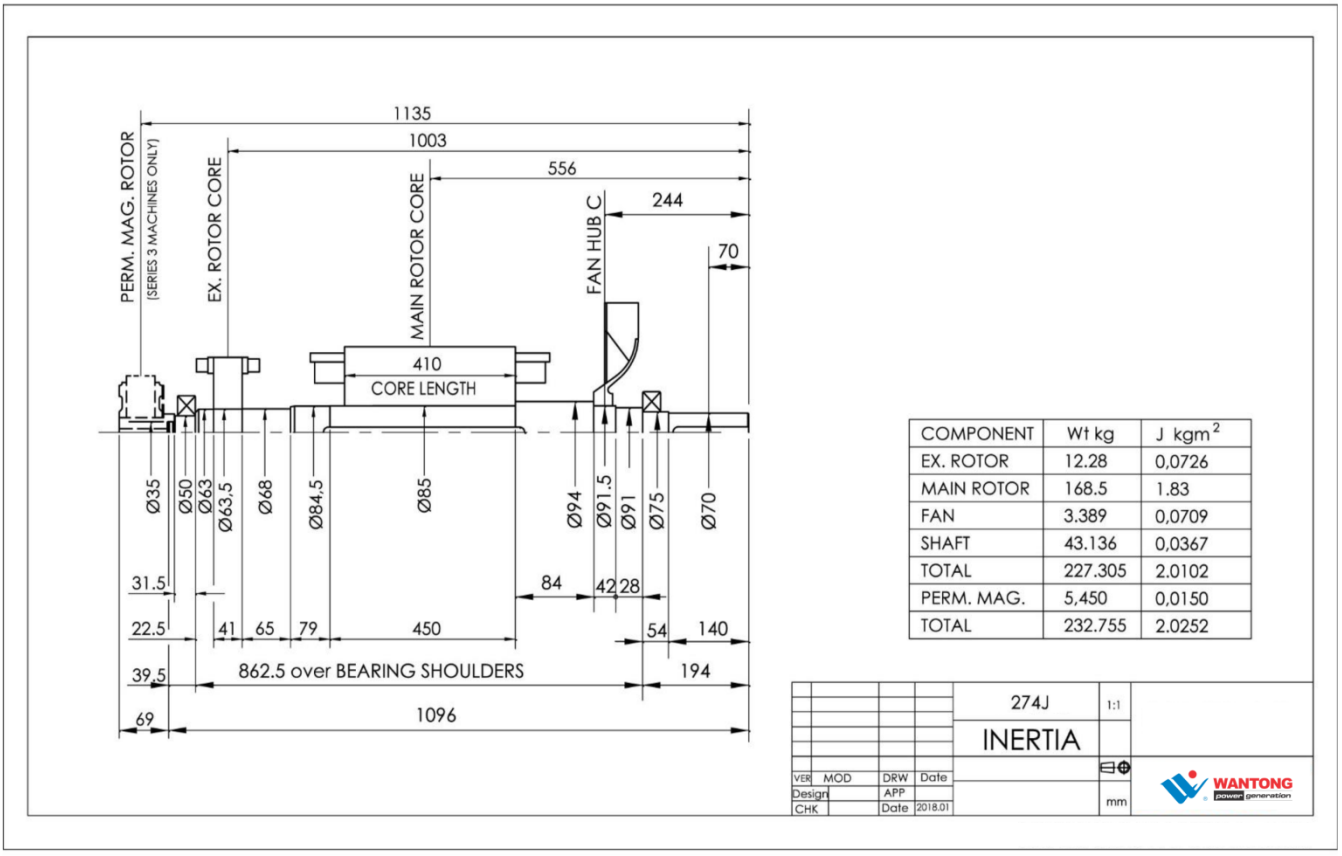
| | | | | | |

INERTIA



COMPONENT	Wt kg	J kgm^2
EX. ROTOR	12.28	0.0726
MAIN ROTOR	168.5	1.83
FAN	3.389	0,0709
SHAFT	43.522	0,0389
HUB	10.878	0,0491
TOTAL	238.569	2.0623
PERM. MAG.	5,450	0,0150
TOTAL	244.019	2.0773

COUPLING SAE No	COUPLING DIMEN's XX	COUPLING DIMEN's YY	COUPLING ASSEMBLY WEIGHT kg	COUPLING DISC J kgm^2
* 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



COMPONENT	Wt kg	J kgm^2
EX. ROTOR	12.28	0,0726
MAIN ROTOR	168.5	1.83
FAN	3.389	0,0709
SHAFT	43.136	0,0367
TOTAL	227.305	2.0102
PERM. MAG.	5,450	0,0150
TOTAL	232.755	2.0252

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