

## ALTERNATOR

# SMF270 Range

\_ Rev.H \_

### APPLICATION AND STANDARDS

Widely used for homes, small shops and offices as a prime power supply or backup

Comply with standards of IEC60034,NEMA MG1-22,IS08528,CSA C22.2-100, VDE 0530, GB755

### ELECTRICAL FEATURES

The high efficiency semiconductors of the AVR ensure positive build-up from initial low levels of residual voltage.

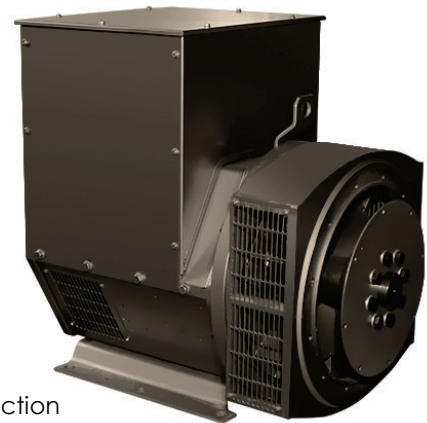
12 leads, achieve a variety of voltage output

High efficiency and strong motor start ability

Be capable of running at overload up to 10% for 1 hour every 12 hours.

The "ARAP" - Auxiliary Regulation Adopted Principle is optional

Variety of excitation and voltage regulation system to meet different loads.



### MECHANICAL FEATURES

Be protected to IP23, and IP44 is optional

Sealed for life bearings

Both single bearing and double bearing configurations are available

Steel sheet terminal box, which provides enough space for customer's reconnection

The rotor is dynamically balanced according to ISO 1940. A half-key balanced for double bearings.

### INSULATION AND IMPREGNATION

H class insulation

The VPI (Vacuum Pressure Impregnation) equipped to ensure the electrical insulation and mechanical strength.

The "Anti-Harsh" winding is optional to meet the needs of harsh environment

### COMMON DATA

INSULATION	ALTITUDE	OVERSPEED	PROTECTION	LEADS	PITCH	AVR	VOLTAGE REGULATION	WAVEFORM DISTORTION	TIF	THF
H/H	<=1000m	2250 rpm	IP23	12	2/3	SX460	± 1%	<1.5% NO LOAD	<50	<2%

### RATING TABLE

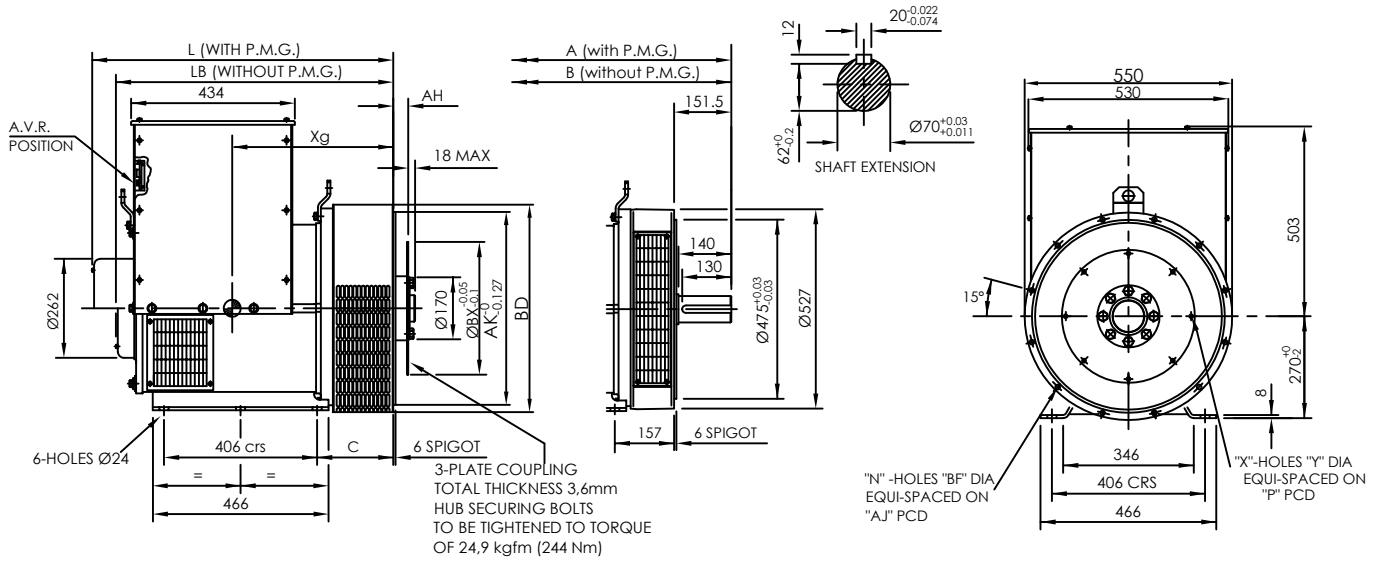
H CLASS	50Hz/1500RPM/PF 0.8							60Hz/1800RPM/PF 0.8														
	125°C/40°C PRIME POWER				163°C/27°C Standby		Effi.	125°C/40°C PRIME POWER				163°C/27°C Standby		Effi.								
SERIES STAR	380	400	415	440	400	400	416	440	460	480	480	480										
PARALLEL STAR	190	200	208	220	200	200	208	220	230	240	240	240										
SERIES DELTA	220	230	240	254	230	230	240	254	266	277	277	277										
RATING	kVA	kW	kVA	kW	kVA	kW	kVA	kW	kVA	kW	%	kVA	kW	kVA	kW	kVA	kW	kVA	kW	kVA	kW	%
SMF270B	100	80.0	100	80.0	100	80.0	N/A	N/A	112	89.6	90.4	112	89.6	118	94.4	118	94.4	126	101	139	111	89.2
SMF270CS	113	90.0	113	90.0	113	90.0	N/A	N/A	124	98.8	91.0	124	98.8	130	104	130	104	138	110	151	120	91.0
SMF270C	125	100	125	100	125	100	N/A	N/A	135	108	91.0	134	107	141	113	141	113	150	120	162	130	90.9
SMF270D	140	112	140	112	140	112	N/A	N/A	152	122	92.1	162	130	162	130	168	134	180	144	195	156	91.2
SMF270ES	150	120	150	120	150	120	N/A	N/A	161	129	92.3	171	137	175	140	175	140	189	151	204	163	91.5
SMF270E	163	130	163	130	163	130	N/A	N/A	178	142	92.3	184	147	193	154	193	154	209	167	220	176	91.4
SMF270F	180	144	180	144	180	144	N/A	N/A	194	155	92.5	205	164	219	175	219	175	231	185	250	200	92.1
SMF270GS	188	150	188	150	188	150	N/A	N/A	206	165	93.3	208	166	221	177	221	177	235	188	260	208	92.5
SMF270G	200	160	200	160	200	160	N/A	N/A	224	179	93.4	240	192	246	197	246	197	258	206	282	226	92.4
SMF270H	230	184	230	184	230	184	N/A	N/A	262	210	92.7	270	216	282	226	295	236	302	242	327	262	92.5
SMF270J	250	200	250	200	250	200	N/A	N/A	275	220	92.7	294	235	300	240	315	252	315	252	345	276	93.2

**REACTANCE-TIME CONSTANT(s) H CLASS**

**SMF270 B/CS/C/D/ES/E/F/GS/G**

60Hz @ 480V		SMF270B	SMF270CS	SMF270C	SMF270D	SMF270ES	SMF270E	SMF270F	SMF270GS	SMF270G
Xd	Direct axis synchro. reactance unsaturated	2.31	2.1	2.1	2.24	2.15	2.15	2.07	2.03	2.03
X'd	Direct axis transient reactance saturated	0.199	0.18	0.18	0.2	0.18	0.18	0.19	0.18	0.18
X''d	Direct axis sub transient reactance saturated	0.13	0.12	0.12	0.13	0.12	0.12	0.12	0.11	0.11
Xq	Quadra. Axis synchro. reactance unsaturated	1.31	1.26	1.26	1.42	1.3	1.3	1.26	1.24	1.24
X''q	Quadra. Axis sub transient reactance saturated	0.19	0.18	0.18	0.18	0.17	0.17	0.16	0.16	0.16
X2	Negative sequence reactance unsaturated	0.16	0.15	0.15	0.16	0.14	0.14	0.13	0.13	0.13
Xo	Zero sequence reactance unsaturated	0.1	0.09	0.09	0.09	0.09	0.09	0.08	0.08	0.08
T'd	Short-Circuit transient time constant	0.027s	0.03s	0.03s	0.032s	0.034s	0.034s	0.038s	0.041s	0.041s
T''d	Sub transient time constant	0.001s	0.01s	0.01s	0.01s	0.011s	0.011s	0.012s	0.012s	0.012s
T'do	Open circuit time constant	0.78s	0.82s	0.82s	0.83s	0.89s	0.89s	0.96s	1.11s	1.11s
Ta	Armature time constant	0.007s	0.0073s	0.0073s	0.0017s	0.009s	0.009s	0.01s	0.012s	0.012s
Kcc	Short circuit ratio	0.433	0.476	0.476	0.446	0.465	0.465	0.483	0.493	0.493

**OUTLINE DRAWING**



**DATA TABLE - DOUBLE BEARING**

Dimension (mm)	Double BRG		Weight		Packing
	A	B	Net(kg)	Gross(kg)	L x W x H (mm)
Model					
SMF270B	905	842	385	420	1100×680×980
SMF270CS	905	842	400	435	1100×680×980
SMF270C	905	842	410	445	1100×680×980
SMF270D	1025	962	448	483	1100×680×980
SMF270ES	1025	962	471	506	1100×680×980
SMF270E	1025	962	493	528	1100×680×980
SMF270F	1070	1007	528	563	1100×680×980
SMF270GS	1070	1007	531	566	1100×680×980
SMF270G	1070	1007	564	599	1100×680×980

**DATA TABLE- SINGLE BEARING**

Dimension (mm)	SAE 1			SAE 2/3			662		Packing
	LB	L	Xg	LB	L	Xg	Net(kg)	Gross(kg)	L x W x H (mm)
Model									
SMF270B	750	813	365	736	799	353	357	382	1100×680×980
SMF270CS	750	813	375	736	799	363	370	395	1100×680×980
SMF270C	750	813	375	736	799	363	381	406	1100×680×980
SMF270D	865	928	390	851	914	378	420	445	1100×680×980
SMF270ES	865	928	415	851	914	403	443	468	1100×680×980
SMF270E	865	928	415	851	914	403	465	490	1100×680×980
SMF270F	915	978	435	901	964	423	500	525	1100×680×980
SMF270GS	915	978	435	901	964	423	503	528	1100×680×980
SMF270G	915	978	435	901	964	423	536	561	1100×680×980

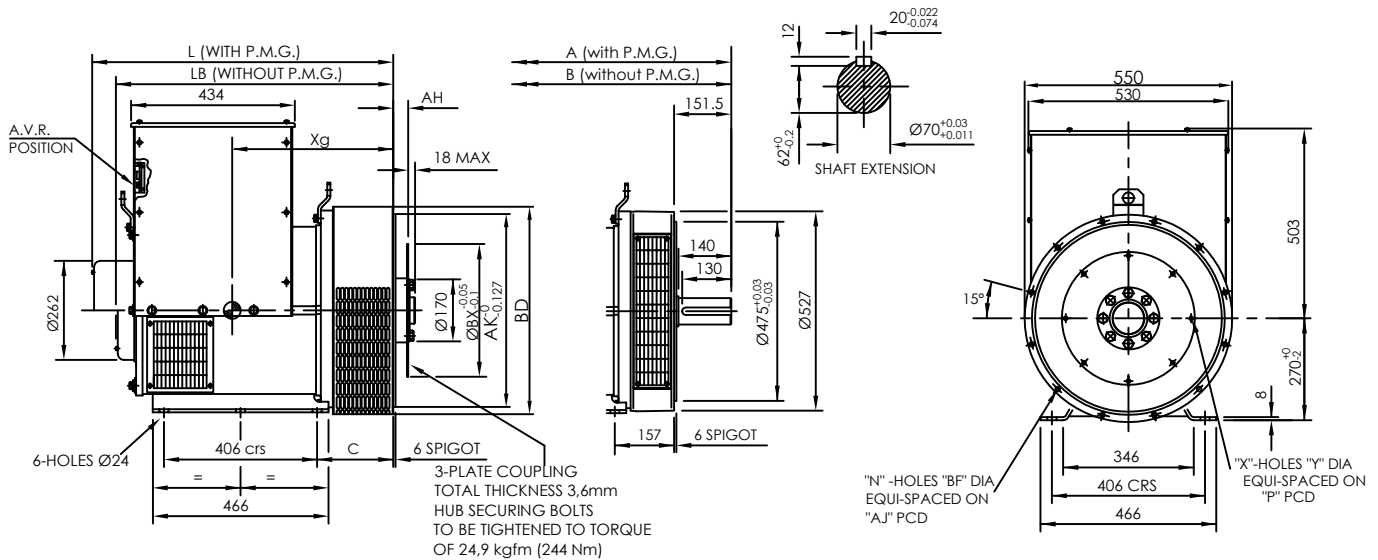
Flange (mm)							Disc(mm)					
SAE#	BD	AK	AJ	BF	N	C	SAE#	BX	P	X	Y	AH
SAE 3	530	409.58	428.62	11	12	202	14	466.72	438.15	8	13.5	25.4
SAE 2	530	447.68	466.72	11	12	202	11.5	352.42	333.38	8	11	39.6
SAE 1	560	511.18	530.22	14	12	216	10	314.32	295.28	8	11	53.8

REACTANCE-TIME CONSTANT(s) H CLASS

SMF270 H/J

60Hz @ 480V		SMF270H	SMF270J						
Xd	Direct axis synchro. reactance unsaturated	2.21	2.53						
X'd	Direct axis transient reactance saturated	0.14	0.12						
X''d	Direct axis sub transient reactance saturated	0.09	0.08						
Xq	Quadra. Axis synchro. reactance unsaturated	1.11	1.15						
X''q	Quadra. Axis sub transient reactance saturated	0.116	0.141						
X2	Negative sequence reactance unsaturated	0.101	0.106						
Xo	Zero sequence reactance unsaturated	0.06	0.04						
Td	Short-Circuit transient time constant	0.044s	0.048s						
T'd	Sub transient time constant	0.014s	0.02s						
Tdo	Open circuit time constant	1.2s	1.25s						
Ta	Armature time constant	0.025s	0.02s						
Kcc	Short circuit ratio	0.452	0.395						

OUTLINE DRAWING



DATA TABLE - DOUBLE BEARING

Dimension (mm)	Double BRG		Weight		Packing
	A	B	Net(kg)	Gross(kg)	L x W x H (mm)
Model					
SMF270H	1237	1174	613	648	1300×680×980
SMF270J	1237	1174	662	697	1300×680×980

DATA TABLE - SINGLE BEARING

SMF270B	SAE 1			SAE 2/3			Weight		Packing
	LB	L	Xg	LB	L	Xg	Net(kg)	Gross(kg)	L x W x H (mm)
Model									
SMF270H	1000	1063	425	986	1049	453	585	610	1200×680×980
SMF270J	1000	1063	440	986	1049	473	634	659	1200×680×980

Flange (mm)						Disc(mm)					
SAE#	BD	AK	AJ	BF	N	SAE#	BX	P	X	Y	AH
SAE 3	530	409.58	428.62	11	12	14	466.72	438.15	8	13.5	25.4
SAE 2	530	447.68	466.72	11	10	12	352.42	333.38	8	11	39.6
SAE 1	553	511.18	530.22	14	10	10	314.32	295.28	8	11	53.8