



Practice the spirit of
China's space industry



EXCLUSIVE INNOVATION



GOOD QUALITY OF CHINA'S SPACE
INDUSTRY



MILITARY CENTRAL ENTERPRISE



SCAN ME

PRODUCT MANUAL

NAVIGATOR KAL

CREATED IN CHINA
SUBVERSION IS ONLY FOR
TRANSCENDENCE



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KWISE

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CATALOGUE

From China's space industry

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Exclusive Innovation · Subversive Upgrade

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Good quality of China's space industry

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INTRODUCTION OF CASIC



01/ World Top 500 Military Central Enterprise

CASIC is a strategic, high-tech, innovative, state-owned enterprise with strong technical foundation and innovation capability. As one of the world's top 500 companies and among the top 100 global defense companies, CASIC is the backbone of space industry of China, and a leader in the development of China's industrial informatization.

02/ Scientific Research Strength First-class Base

CASIC owns 19 national key laboratories or engineering technology centers, and 28 science & technology innovation platforms; it owns 22 subsidiary units and holds shares of 8 listed companies, with about 500 enterprises & institutions.

03/ Artisan's Heart Excellent Quality

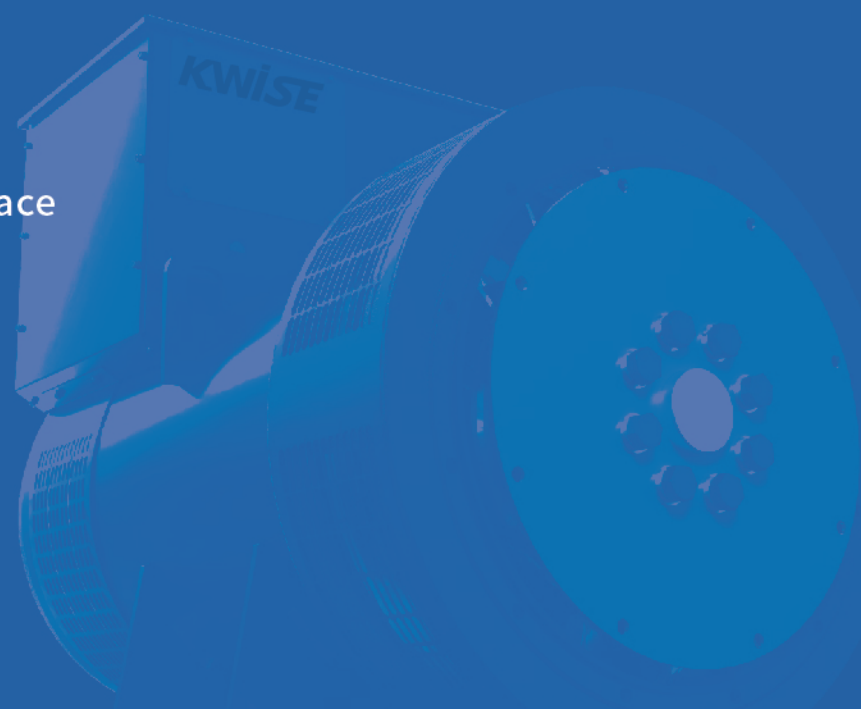
Since its establishment more than 60 years ago, the company has established a complete R&D and production system for air-defense missile weapon system, cruise missile weapon system and ballistic missile weapon system, as well as solid launch vehicles, and space technology products. Covering all ranges of "land, sea, air, space, network and electromagnetism", CASIC has formed an overall competence of operation in land, sea and air battles under complicated battlefield circumstances.

INTRODUCTION OF KWISE

01/ The spirit of China's space industry

02/ Specialized in Brand Strong Background

03/ Space Quality Military Standards



Aerospace Kwise Electric (Fuzhou) Co., LTD. tertiary unit. It is a professional generator manufacturer integrating R&D, production, sales and service.



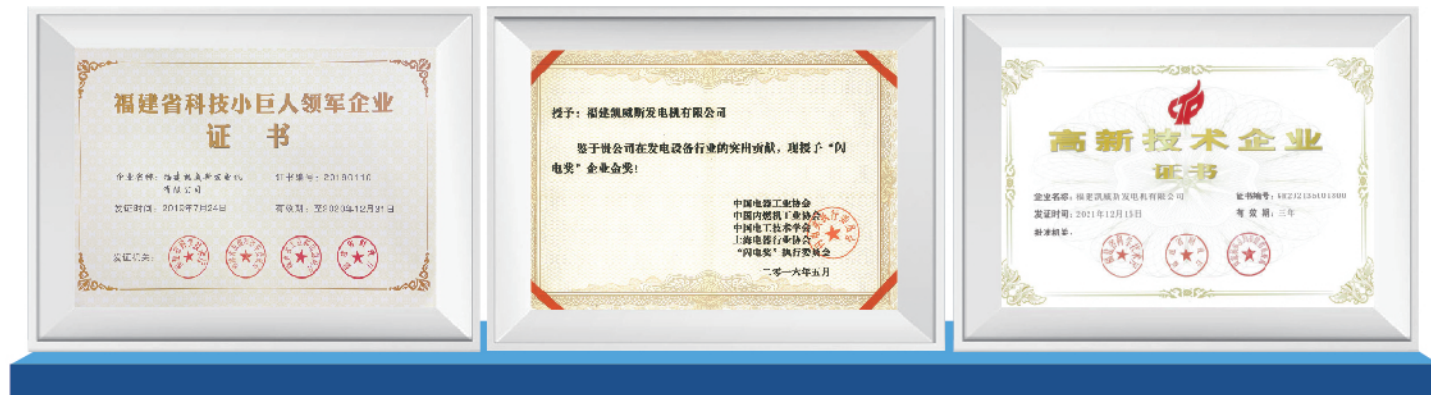
We have been producing professional generators since 1955, with a history of more than 60 years. We are the earliest manufacturer of professional generators in New China. So far, it has more than 30,000 square meters of workshops and advanced manufacturing equipment.



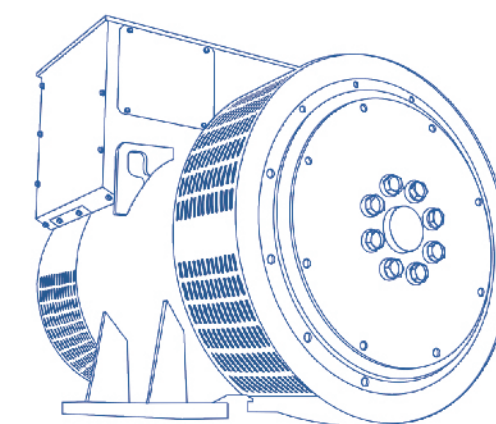
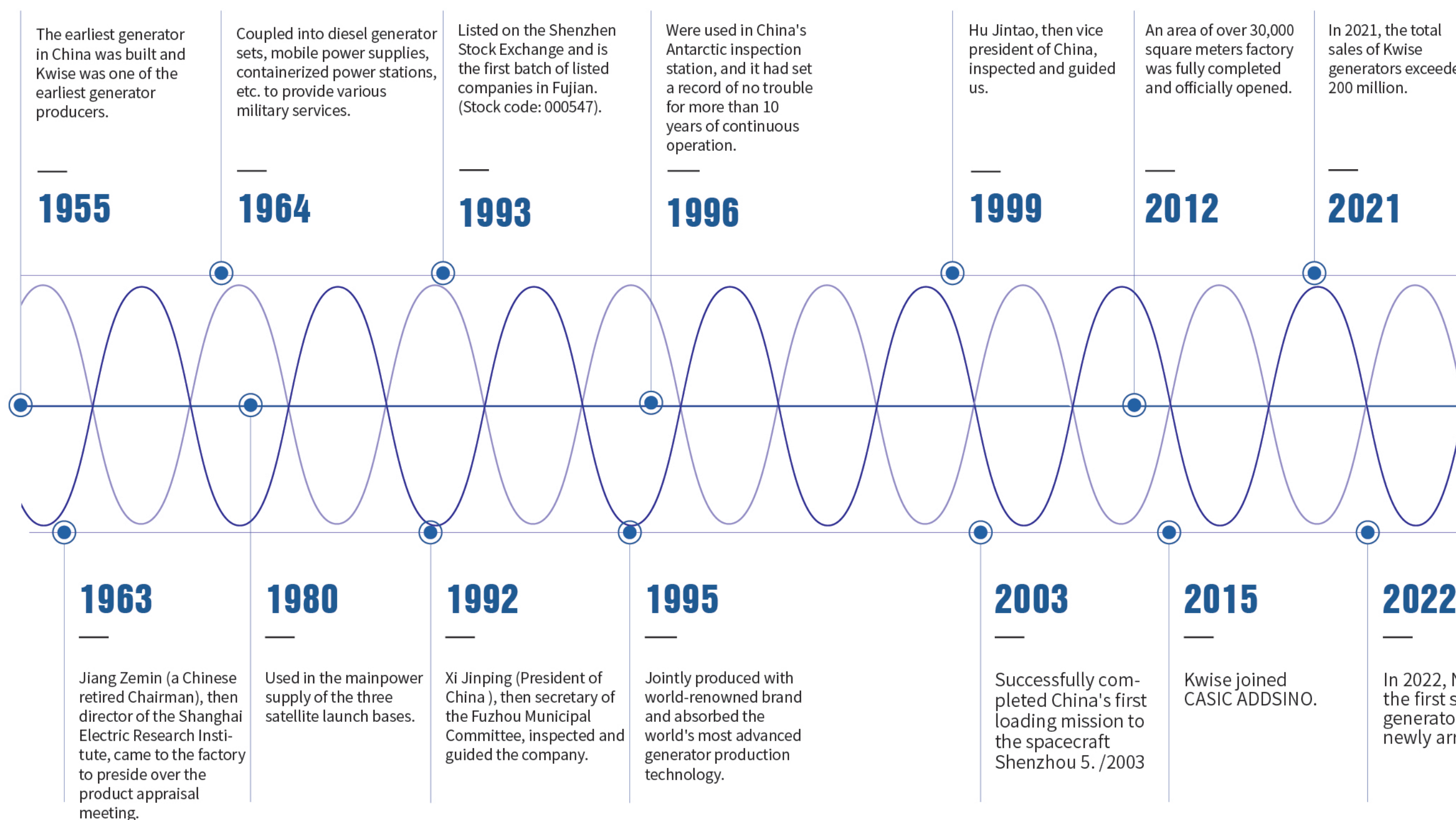
In 1963, we began to support a large number of power generating equipments such as diesel generator sets, mobile power station, and containerized power stations to all military. Also has been selected as the main power supply of China's three satellite launch bases, the Antarctic Zhongshan Station and the Shenzhou spacecraft series due to its superior performance.

KWISE · KAL

OUR HONOR



OUR HISTORY



ABOUT FEATURES



Stator core lamination and auto-welding



Stator CNC winding



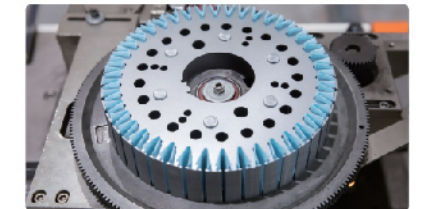
Stator coil inserting



Rotor CNC winding



Rotor test



Excitation rotor automatic insert machine



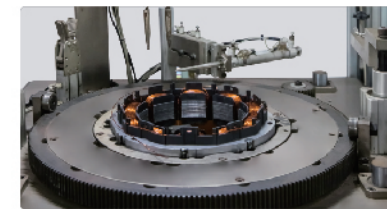
Stator test



Rotor core lamination



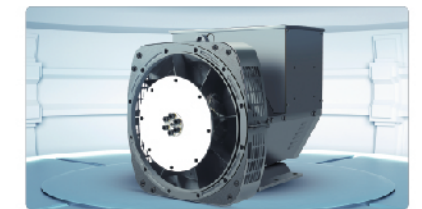
Rotor core welding



Automatic winding of exciter



Exciter test



VACUUM PRESSURE IMPREGNATION



THREE-PROOF PAINT TREATMENT



PRESS-FIT



DYNAMIC BALANCE TEST



ASSEMBLE



FACTORY TEST



COLOR-SPRAY



COMPLETED

PRODUCT CHARACTERISTICS

Rating definition

Introduction: This catalogue is a summary of ratings for the range at the most common voltages. For other special voltages, please consult us.

Continuous rating S1/40°C IEC 60034-1 definition:

Running at constant load limited to the insulation class; permissible overload 1h every 12 hours.

Stand-by rating 40°C:

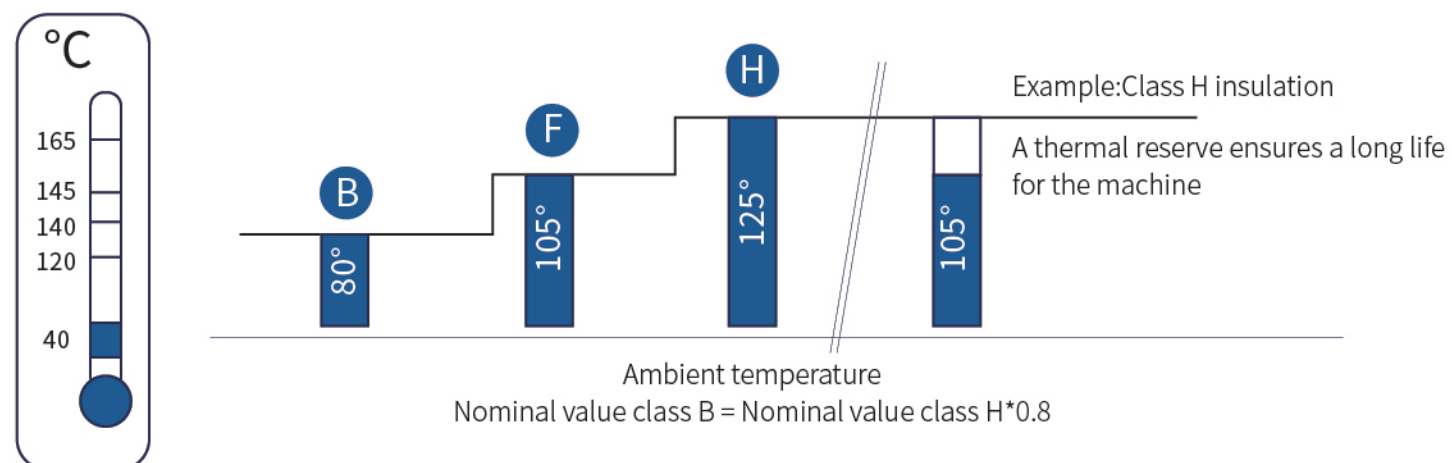
Running at constant load without overload, for a limited duration of maximum 500hour/year, with a permissible increase of the temperature rise above class H.

Stand-by rating 27°C:

Same conditions than stand-by duty 40°C but with a lower ambient temperature(27°C), it allows to increase the rating and temperature rise accordingly.

Such as: S1/40°C=100kW, Standby/40°C=105kW, Standby/27°C=110kW.

Insulation class and temperature rise



Derating

Correction power = rated power × correction factor

The standard operating environment of the generator is: the ambient temperature does not exceed 40 °C, the altitude does not exceed 1000m, and the correction factor exceeds the following table:

Ambient temperature						
Altitude	25°C	40°C	45°C	50°C	55°C	60°C (*)
0-1000M	1.05	1	0.97	0.94	0.91	0.88
1001-1500M	1.01	0.97	0.94	0.91	0.88	0.85
1501-2000M	0.98	0.94	0.91	0.88	0.86	0.83
2001-2500M	0.95	0.91	0.88	0.86	0.83	0.8
2501-3000M	0.92	0.88	0.85	0.83	0.8	0.77
3001-3500M	0.89	0.85	0.82	0.8	0.77	0.75
3501-4000M	0.86	0.82	0.8	0.77	0.75	0.72

The output power is reduced by 3 % when the ambient temperature exceeds 5 degrees and 3 % when the altitude exceeds 500 meters.

Power factor					
Lagging power factor	1.0	0.9	0.8	0.7	0.6
Factor	1.0	1.0	1.0	0.92	0.85

Use External AVR if ambient temperature ≥56°C

Windings

Various 2/3 pitch windings according to the required voltage and frequency.

- Standard winding: B31; B32
- Optional winding: T22; T38; T44; T50/T52; T55/T60; T66/T69
- Single-phase winding: D51; D61 (dedicated single-phase windings)

五、General features

5.1 Compliance with internationally recognized standards

The 4 Pole Alternators are in compliance to the main domestic and international standards and regulations: GB755, BS5000, IEC60034, VDE0530, CSAC 22.2n°100-14, NEMA MG-1.22 Alternators' manufacturing, design and mark are carried out in the environment of ISO9001.

5.2 Electrical features

Automatic Voltage Regulator:

Kwise 4 Pole Alternators are fitted with reliable and performant AVR, adapted to excitation systems, powered by transistors and fulfilling perfect regulation. Each generator model with different excitation systems, detailed list.

Excitation systems:

Short circuit capacity: Two excitation systems meet different requirements.
 A) Self-Excitation system, without short-circuit capacity
 B) PMG, with a short-circuit capacity of 3 times of the nominal current for 10 seconds.

Alternator	164	184	224	274	314	354	404	454
Self-excitation/ 12 wires (3 Phase to 1 Phase)	SX460	SX460	SX460	SX460	SX440	--	--	--
Self-excitation (only for 1 Phase)	SX460F	SX460F	SX460F	--	--	--	--	--
Self-excitation (3 phase 12 wires)	SX460	SX460	SX460*	SX460*	SX440*	SX440*	SX440*	SX440*
Self-excitation (3 phase 6 wires)	--	--	SX460	SX460	KR440	KR440	KR440	KR440
PMG (3 phase 12 wires)	--	--	MX341*	MX341*	MX341*	MX341*	MX341*	MX341*
PMG (3 phase 6 wires)	--	--	MX341B*	MX341B*	MX341B*	MX341B*	MX341B*	MX341B*

*Option:

AVR used in parallel system: SX440, KR440, AS440, MX341B, MX341, MX321

Transient features: Transient voltage dip for 60% rated current at 0.4 power factor is less than 15%. Recovery time for a 15% transient voltage dip is less than 1.5s.

Parallel operation: All 4 pole alternators can operate in parallel with other alternators or with the mains, when they are equipped with the appropriate devices (AVR, current transformer...)

Overload acceptance: 4 pole alternators can be overloaded according to NEMA.

Single-phase operation: 4 pole alternators from 164 up to 314 can be reconnected for single phase use. The single phase rating is given in the various alternator data sheets. Alternators from 164 up to 224 can be supplied with a dedicated single phase winding.

Waveform: Total harmonic distortion (THD), at no load or linear load is less than 5% according to IEC. TIF according to NEMA is less than 50.

Frequency: 4 pole alternators may operate either 50Hz or 60Hz. The standard winding is suitable both for 50Hz and 60Hz. For dedicated windings, please refer to relevant table or consultation.

Power factor: 4 pole alternators are designed to operate between 0.8 and 1.0 power factor. A derating is necessary below 0.8 power factor (see derating table)

5.3 Mechanical features

Forms: 4 pole alternators can be provided in single bearing or double bearing configurations according to customer's requirements, as well as Engine adaptors and coupling discs which are fit for the major engines.

Balancing: All the rotors are dynamically balanced according to ISO1940. Double bearing rotors are balanced with a half key.

Insulation and protection: 4 pole alternators are class H insulated. The standard winding protection can accept up to 95% relative humidity and is suitable in the cabins. Specific added coatings can be proposed for harsh environments.

Enclosure: Standard enclosure is IP23.

Direction of rotation: 4 pole alternators from 164 up to 354 can operate in both directions; 404, 454 are only available for clockwise running. (according to the driving end).

Terminal box and connectors: 4 pole alternators have a large terminal box which allows easy access for connection of AVR or reconnection. Current transformers or other optional modules can be fitted within the box.

Bearings: Sealed for life bearings up to all kwise 4 pole alternator.

Overspeed: The maximum overspeed is 2250 RPM for the 4 pole alternator(1.25 times the 60Hz rated speed).

Mechanical structure: Steel frame. Aluminium, cast iron or steel housing and flanges depending on models.

MODEL AND SPECIFICATION

六、Accessories and options

- PMG(from KAL224)
- Engine adaptors for double bearing alternators
- Three-proofing lacquer (special protection process for winding in harsh environments)
- Air inlet filters(5% derating)
- Air outlet filters or deflectors(5% derating)
- Specific painting (according to customer requirements)
- Thermal protections for bearings
- Thermal protections for stator windings
- Anti condensation heaters
- Remote voltage potentiometers
- Current transformers for paralleling with other alternators
- Emergency kit (AVR + rotating rectifier + varistor)

七、Product description

The model number is defined as follows

For example: KAL224E2

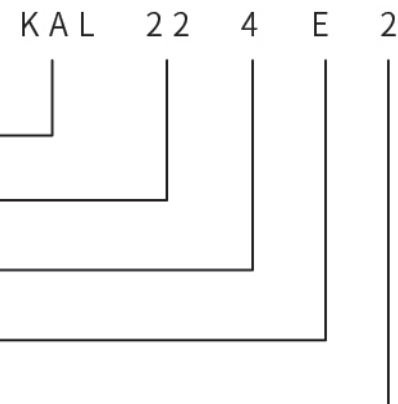
KAL: Kwise alternato

22: Frame code

4: Number of poles

E: Core length

2: Frame length



Model	Leads	3Phases/50Hz/400V/PF=0.8				3Phases/60Hz/480V/PF=0.8				INERTIA kgm ²	EFFICIENCY 50Hz 100% LOAD %	INERTIA 60Hz 100% LOAD %	WEIGHT 1-BRG kg
		Cont./40°C		Standby/27°C		Cont./40°C		Standby/27°C					
		kW	kVA	kW	kVA	kW	kVA	kW	kVA				
KAL164A1	12	6.5	8.1	7.3	9.1	7.8	9.8	8.6	10.7	0.091	78.8	79.6	75
KAL164B1	12	8.8	11	9.9	12.3	10.6	13.2	11.6	14.5	0.102	80.2	81.5	80
KAL164C2	12	10.8	13.5	12.1	15.1	13.0	16.2	14.3	17.8	0.113	81.4	82.5	86
KAL164D2	12	12.8	16	14.3	17.9	15.4	19.2	16.9	21.1	0.12	82	83.1	90
KAL164E2	12	14	17.5	15.7	19.6	16.8	21.0	18.5	23.1	0.129	82.4	83.4	97
KAL184A1	12	16	20	17.9	22.4	19.2	24.0	21.1	26.4	0.137	83.7	84.7	106
KAL184B1	12	18	22.5	20.2	25.2	21.6	27.0	23.8	29.7	0.155	84.2	85.2	116
KAL184C2	12	20	25	22.4	28	24.0	30.0	26.4	33.0	0.165	85.2	85.9	119
KAL184D2	12	22	27.5	24.6	30.8	26.4	33.0	29.0	36.3	0.184	85.8	86.7	125
KAL184E3	12	25	31.3	28	35	30.0	37.5	33.0	41.3	0.211	86.2	86.9	135
KAL184F4	12	28	35	31.4	39.2	33.6	42.0	37.0	46.2	0.246	86.7	87.3	155
KAL184G4	12	30	37.5	33.6	42	36.0	45.0	39.6	49.5	0.256	87.1	87.7	160
KAL184H5	12	32	40	35.8	44.8	38.4	48.0	42.2	52.8	0.266	87.6	88.2	168
KAL184K5	12	34	42.5	38.1	47.6	40.8	51.0	44.9	56.1	0.28	88	88.4	176
KAL224A1	6	32	40	36	45	38	48	42	53	0.342	88.3	89.9	206
KAL224B1	6	34	43	38	48	41	51	45	56	0.387	88.8	90.1	213
KAL224C1	6	40	50	45	56	48	60	53	66	0.394	89.3	90.8	226
KAL224D2	6	45	56	50	63	54	68	59	74	0.476	89.5	90.7	237
KAL224E2	6	50	63	56	70	60	75	66	83	0.496	90	91.3	253
KAL224F3	6	54	68	60	76	65	81	71	89	0.525	90	91.2	263
KAL224G3	6	58	73	65	81	70	87	77	96	0.57	91.2	92.3	275
KAL224H4	6	64	80	72	90	77	96	84	106	0.619	91.4	92.5	288
KAL224K4	6	68	85	76	95	82	102	90	112	0.655	91.4	92.7	302

Model	Leads	3Phases/50Hz/400V/PF=0.8				3Phases/60Hz/480V/PF=0.8				INERTIA kgm ²	EFFICIENCY 50Hz 100% LOAD %	INERTIA 60Hz 100% LOAD %	WEIGHT 1-BRG kg
		Cont./40°C		Standby/27°C		Cont./40°C		Standby/27°C					
		kW	kVA	kW	kVA	kW	kVA	kW	kVA				
KAL224L5	6	75	94	84	105	90	113	99	124	0.734	91.5	92.6	322
KAL224M5	6	80	100	90	112	96	120	106	132	0.769	91.5	92.4	341
KAL274A1	6	80	100	90	112	96	120	106	132	0.969	91.6	92.5	366
KAL274B2	6	90	113	101	126	108	135	119	149	1.147	91.8	92.6	384
KAL274C2	6	100	125	112	140	120	150	132	165	1.265	92.9	93.6	412
KAL274D3	6	112	140	125	157	134	168	148	185	1.281	92.7	93.3	445
KAL274E3	6	120	150	134	168	144	180	158	198	1.379	93	93.6	460
KAL274F4	6	128	160	143	179	154	192	169	211	1.439	93.1	93.6	476
KAL274G4	6	140	175	157	196	168	210	185	231	1.662	93.1	93.7	503
KAL274H5	6	150	188	168	210	180	225	198	248	1.704	93.4	93.9	518
KAL274K5	6	160	200	179	224	192	240	211	264	1.712	93.7	94.2	531
KAL274L6	6	180	225	202	252	216	270	238	297	2.277	93.9	94.5	588
KAL274M7	6	200	250	224	280	240	300	264	330	2.318	94.3	94.8	640
KAL314A1	6	200	250	224	280	240	300	264	330	3.469	94.1	94.3	660
KAL314B1	6	220	275	246	308	264	330	290	363	3.745	94.5	94.6	702
KAL314C2	6	240	300	269	336	288	360	317	396	3.941	94.4	94.4	741
KAL314D2	6	250	313	280	350	300	375	330	413	4.225	94.5	94.6	759
KAL314E2	6	260	325	291	364	312	390	343	429	4.206	94.5	94.6	721
KAL314F3	6	280	350	314	392	336	420	370	462	4.628	94.7	94.9	783
KAL314G3	6	300	375	336	420	360	450	396	495	4.962	94.7	94.9	801
KAL314H4	6	320	400	358	448	384	480	422	528	5.439	94.8	94.9	875
KAL314K5	6	360	450	403	504	432	540	475	594	6.071	94.9	94.7	983
KAL354A1	6	360	450	403	504	432	540	475	594	6.639	95	95.4	1073
KAL354B1	6	400	500	448	560	480	600	528	660	7.599	95.3	95.5	1096
KAL354C2	6	450	563	504	630	540	675	594	743	7.981	95.6	95.4	1146
KAL354D3	6	480	600	538	672	576	720	634	792	8.278	95.8	95.8	1175
KAL354E3	6	500	625	560	700	600	750	660	825	8.811	96	96.1	1224

Model	Leads	3Phases/50Hz/400V/PF=0.8				3Phases/60Hz/480V/PF=0.8				INERTIA kgm ²	EFFICIENCY 50Hz 100% LOAD %	INERTIA 60Hz 100% LOAD %	WEIGHT 1-BRG kg
		Cont./40°C		Standby/27°C		Cont./40°C		Standby/27°C					
		kW	kVA	kW	kVA	kW	kVA	kW	kVA				
KAL354F4	6	540	675	605	756	648	810	713	891	9.52	96.3	96.4	1349
KAL354G4	6	560	700	627	784	672	840	739	924	9.782	96.2	96.3	1349
KAL354H5	6	600	750	672	840	720	900	792	990	10.272	96.5	96.5	1416
KAL404A1	6	600	750	672	840	720	900	792	990	16.445	95	95.1	1736
KAL404B1	6	640	800	717	896	768	960	845	1056	16.837	95.2	95.4	1767
KAL404C2	6	728	910	815	1019	874	1092	961	1201	18.283	95.5	95.5	1854
KAL404D2	6	800	1000	896	1120	960	1200	1056	1320	19.945	95.8	95.9	2030
KAL404E3	6	900	1125	1008	1260	1080	1350	1188	1485	22.724	95.8	95.9	2105
KAL404F3	6	1000	1250	1120	1400	1200	1500	1320	1650	27.481	95.9	96	2221
KAL404G4	6	1100	1375	1232	1540	1320	1650	1452	1815	31.031	96.1	96	2522
KAL404H4	6	1200	1500	1344	1680	1440	1800	1584	1980	31.956	96.2	96.2	2612
KAL454A1	6	1120	1400	1254	1568	1344	1680	1478	1848	36.432	96	96.1	2668
KAL454B1	6	1250	1563	1400	1750	1500	1875	1650	2063	37.189	96.1	96.2	2854
KAL454C2	6	1350	1688	1512	1890	1620	2025	1782	2228	42.541	96.2	96.3	3085
KAL454D2	6	1520	1900	1702	2128	1824	2280	2006	2508	45.689	96.2	95.3	3140
KAL454E3	6	1650	2063	1848	2310	1980	2475	2178	2723	50.505	96.3	96.4	3471
KAL454F4	6	1800	2250	2016	2520	2160	2700	2376	2970	57.478	96.3	96.4	3804
KAL454G5	6	1900	2375	2128	2660	2280	2850	2508	3135	59.759	96.4	96.4	3825
KAL454H5	6	2000	2500	2240	2800	2400	3000	2640	3300	62.689	96.4	96.4	4566



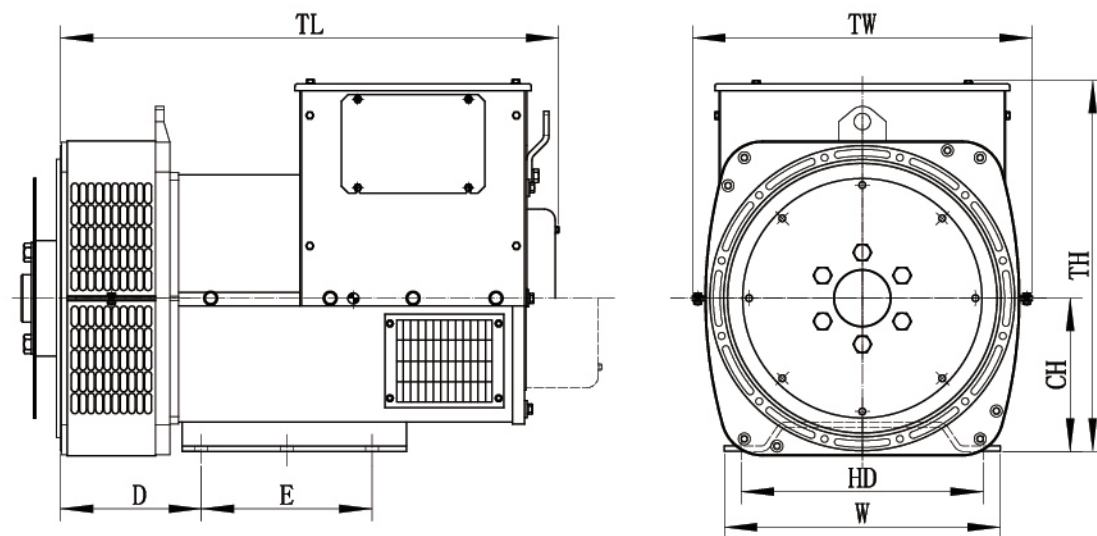
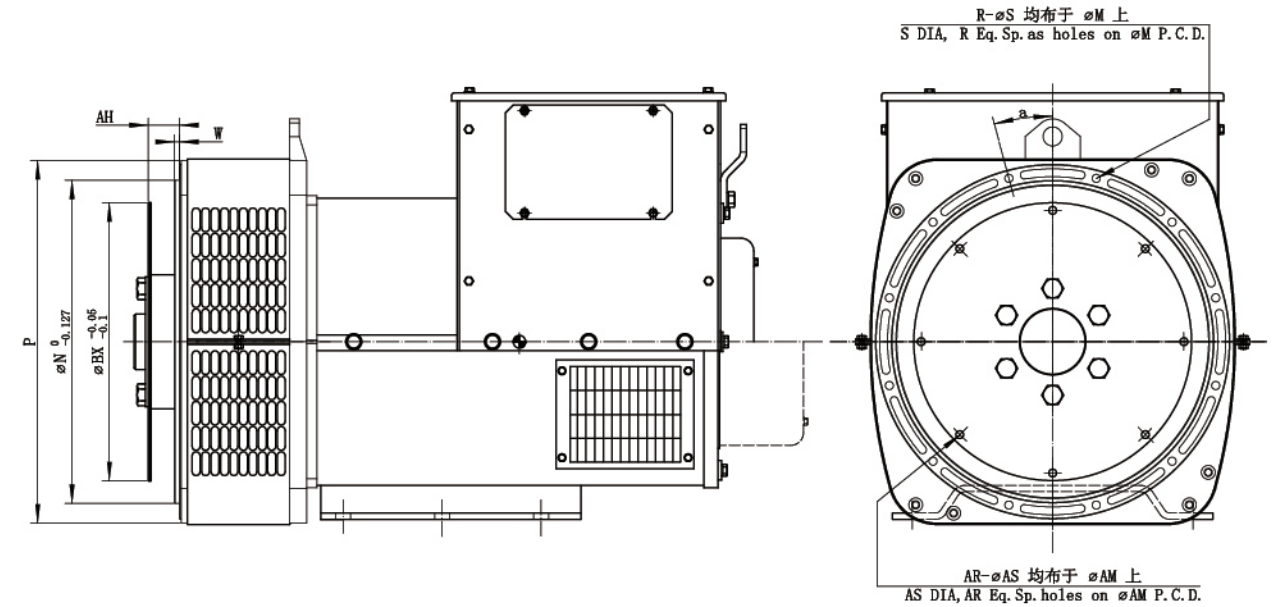
DIMENSION TABLE

Model	Rating Power		Voltage V	Single Bearing			Single Bearing Configuration				
	kW	kVA		SAE#	TL	D	TH	CH	W	HD	E
KAL164A1	6.5	8.1	400	4-7.5	360	133	414	160	292	254	140
KAL164B1	8.8	11	400	4-7.5	360	133	414	160	292	254	140
KAL164C2	10.8	13.5	400	4-7.5	404	133	414	160	292	254	140
KAL164D2	12.8	16	400	4-7.5	404	133	414	160	292	254	140
KAL164E2	14	17.5	400	4-7.5	404	133	414	160	292	254	140
KAL184A1	16	20	400	4-7.5	439	133	434	180	319	279	210
KAL184B1	18	22.5	400	4-7.5	439	133	434	180	319	279	210
KAL184C2	20	25	400	4-7.5	469	133	434	180	319	279	210
KAL184D2	22	27.5	400	4-7.5	469	133	434	180	319	279	210
KAL184E3	25	31.3	400	3-11.5	506	145	434	180	319	279	210
KAL184F4	28	35	400	3-11.5	546	145	434	180	319	279	210
KAL184G4	30	37.5	400	3-11.5	546	145	434	180	319	279	210
KAL184H5	32	40	400	3-11.5	586	145	434	180	319	279	210
KAL184K5	34	42.5	400	3-11.5	586	145	434	180	319	279	210
KAL224A1	32	40	400	3-11.5	591	204	546	225	406	356	251
KAL224B1	34	43	400	3-11.5	591	204	546	225	406	356	251
KAL224C1	40	50	400	3-11.5	591	204	546	225	406	356	251
KAL224D2	45	56	400	3-11.5	636	204	546	225	406	356	251
KAL224E2	50	63	400	3-11.5	636	204	546	225	406	356	251
KAL224F3	54	68	400	3-11.5	671	204	546	225	406	356	251
KAL224G3	58	73	400	3-11.5	671	204	546	225	406	356	251

Model	Rating Power		Voltage V	Single Bearing			Single Bearing Configuration				
	kW	kVA		SAE#	TL	D	TH	CH	W	HD	E
KAL224H4	64	80	400	3-11.5	716	1204	546	225	406	356	251
KAL224K4	68	85	400	3-11.5	716	204	546	225	406	356	251
KAL224L5	75	94	400	3-11.5	766	204	546	225	406	356	251
KAL224M5	80	100	400	3-11.5	766	204	546	225	406	356	251
KAL274A1	80	100	400	3-11.5	675	241	644	270	466	406	330
KAL274B2	90	113	400	3-11.5	715	241	644	270	466	406	330
KAL274C2	100	125	400	3-11.5	715	241	644	270	466	406	330
KAL274D3	112	140	400	3-11.5	756	241	644	270	466	406	330
KAL274E3	120	150	400	3-11.5	756	241	644	270	466	406	330
KAL274F4	128	160	400	3-11.5	796	241	644	270	466	406	330
KAL274G4	140	175	400	3-11.5	796	241	644	270	466	406	330
KAL274H5	150	188	400	2-11.5	836	241	644	270	466	406	330
KAL274K5	160	200	400	2-11.5	836	241	644	270	466	406	330
KAL274L6	180	225	400	1-14	910	255	644	270	466	406	330
KAL274M7	200	250	400	1-14	965	255	644	270	466	406	330
KAL314A1	200	250	400	1-14	886	232	818	315	578	508	457
KAL314B1	220	275	400	1-14	886	232	818	315	578	508	457
KAL314C2	240	300	400	1-14	936	232	818	315	578	508	457
KAL314D2	250	313	400	1-14	936	232	818	315	578	508	457
KAL314E2	260	325	400	1-14	936	232	818	315	578	508	457
KAL314F3	280	350	400	1-14	986	232	818	315	578	508	457
KAL314G3	300	375	400	1-14	986	232	818	315	578	508	457
KAL314H4	320	400	400	1-14	1021	232	818	315	578	508	457
KAL314K5	360	450	400	1-14	1081	232	818	315	578	508	457
KAL354A1	360	450	400	1-14	1037	297	834	355	710	610	500
KAL354B1	400	500	400	1-14	1037	297	834	355	710	610	500
KAL354C2	450	563	400	1-14	1092	297	834	355	710	610	500
KAL354D3	480	600	400	1-14	1137	297	834	355	710	610	500

Model	Rating Power		Voltage V	Single Bearing			Single Bearing Configuration				
	kW	kVA		SAE#	TL	D	TH	CH	W	HD	E
KAL354E3	500	625	400	1-14	1137	297	834	355	710	610	500
KAL354F4	540	675	400	0-18	1197	297	834	355	710	610	500
KAL354G4	560	700	400	0-18	1197	297	834	355	710	610	500
KAL354H5	600	750	400	0-18	1227	297	834	355	710	610	500
KAL404A1	600	750	400	0-18	1266	350	1052	400	786	686	350
KAL404B1	640	800	400	0-18	1266	350	1052	400	786	686	350
KAL404C2	728	910	400	0-18	1351	350	1052	400	786	686	350
KAL404D2	800	1000	400	0-18	1351	350	1052	400	786	686	350
KAL404E3	900	1125	400	0-18	1491	350	1052	400	786	686	350
KAL404F3	1000	1250	400	00-21	1491	350	1052	400	786	686	350
KAL404G4	1100	1375	400	00-21	1586	350	1052	400	786	686	350
KAL404H4	1200	1500	400	00-21	1586	350	1052	400	786	686	350
KAL454A1	1120	1400	400	00-21	1497	365	1150	450	870	750	435
KAL454B1	1250	1563	400	00-21	1497	365	1150	450	870	750	435
KAL454C2	1350	1688	400	00-21	1607	365	1150	450	870	750	435
KAL454D2	1520	1900	400	00-21	1607	365	1150	450	870	750	435
KAL454E3	1650	2063	400	00-21	1687	365	1150	450	870	750	435
KAL454F4	1800	2250	400	00-21	1767	365	1150	450	870	750	435
KAL454G5	1900	2375	400	00-21	1862	365	1150	450	870	750	435
KAL454H5	2000	2500	400	00-21	1862	365	1150	450	870	750	435

SAE DIMENSION TABLE



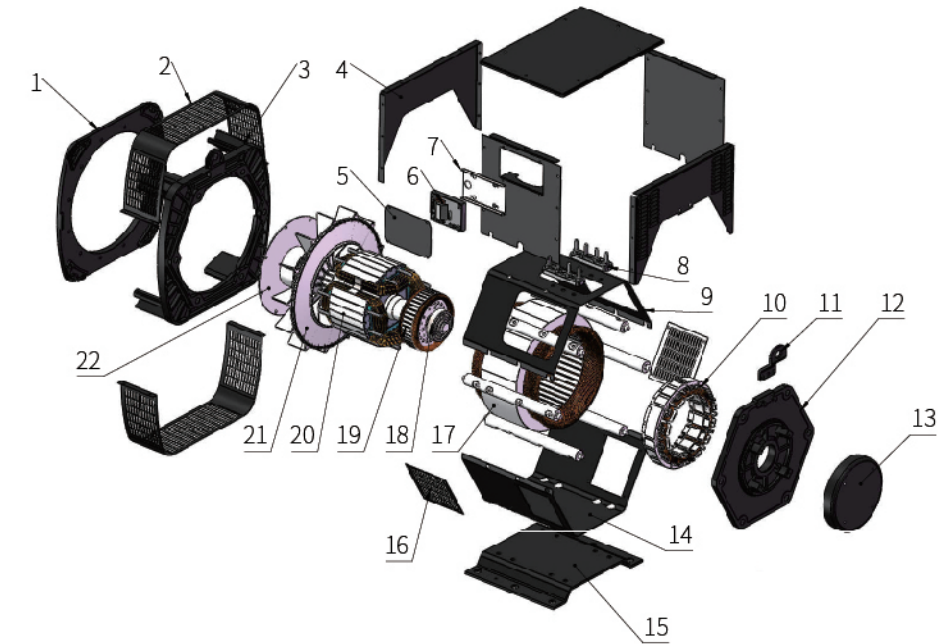
SAE	Coupling			
	ϕBX	AR- ϕAS	ϕAM	AH
#6.5	215.9	6- $\phi 9$	200.025	30.2
#7.5	241.3	8- $\phi 9$	222.25	30.2
#8	263.525	6- $\phi 11$	244.475	62
#10	314.325	8- $\phi 11$	295.3	53.8
#11.5	352.425	8- $\phi 11$	333.38	39.6
#14	466.725	8- $\phi 14$	438.15	25.4
#18	571.5	6- $\phi 17$	542.925	15.7
#21	673.1	12- $\phi 17$	641.35	0
#24	733.3	12- $\phi 21$	692	0

SAE	Adaptor					
	φP	φN	W	R-φS	φM	a°
#5	356	314.325	5	8-φ12	333.375	22.5°
#4	402	361.95	5	12-φ12	381	15°
#3	451,617	409.575	5	12-φ12	428.625	15°
#2	490,530,617	447.675	5	12-φ12	466.725	15°
#1	533,580,617,700	511.175	6	12-φ12	530.225	15°
#1/2	680,700,810	584.2	6	12-φ14	619.125	15°
#0	711,810,940	647.7	6	16-φ14	679.45	11.25°
#00	882,940	787.4	6	16-φ14	850.9	11.25°

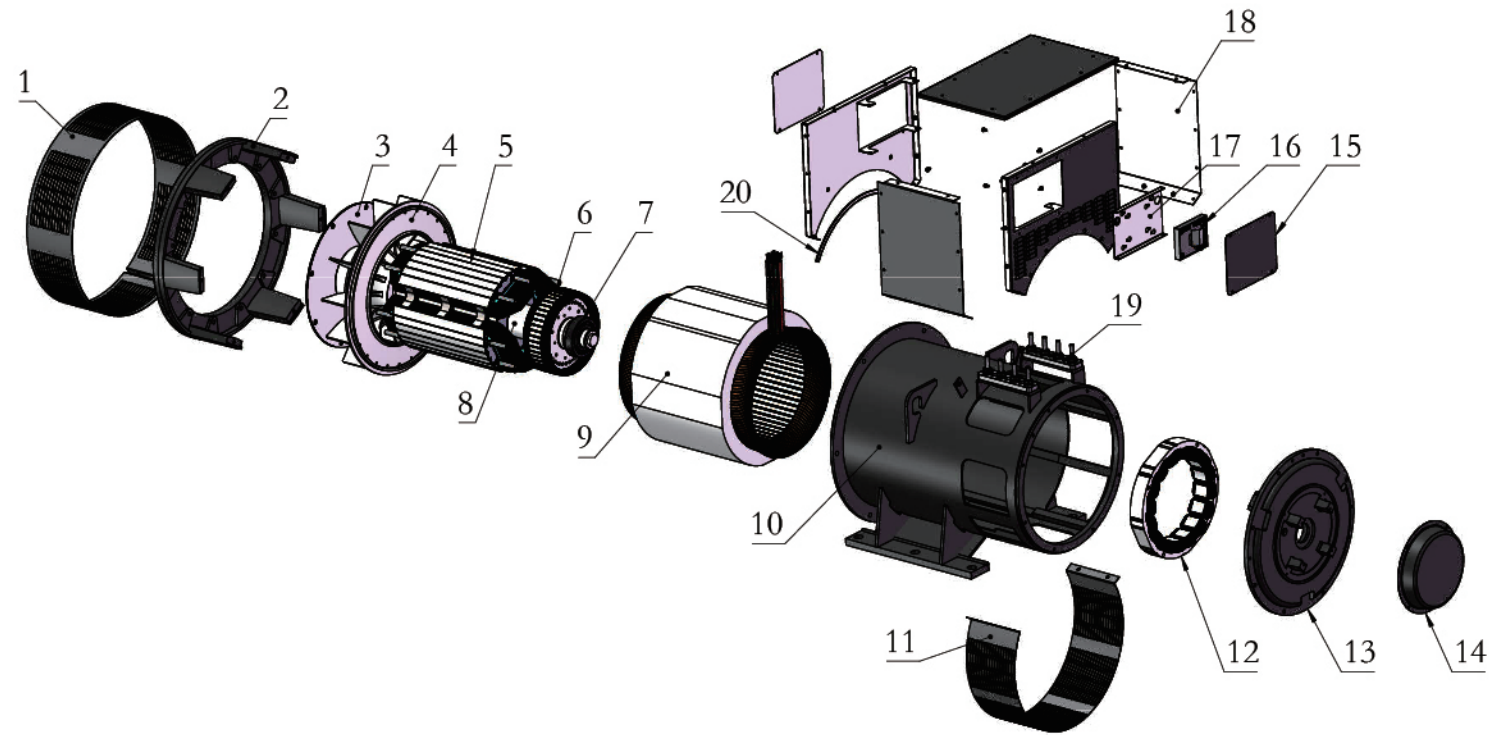
COUPLING ADAPTOR		#6.5	#7.5	#8	#10	#11.5
		215.9	241.3	263.525	314.325	352.425
#5	314.325	164/184	164/184			
#4	361.95	164/184	164/184/224	164/184/224	164/184/224	
#3	409.575			164/184/224	164/184/224/274	184/224/274
#2	447.675				184/224/274	184/224/274
AH		30.2	30.2	62	53.8	39.6

COUPLING ADAPTOR		#11.5	#14	#18	#21	#24
		352.425	466.725	571.5	673.1	733.3
#1	511.175	184/224/314	224/274/314/354			
#1/2	584.2		314/354			
#0	647.7		314/354	314/354/404/454		
#00	787.4			354/404/454	354/404/454	404/454
AH		39.6	25.4	15.7	0	0

EXPLODED VIEW



SERIAL NUMBER	NAME OF PARTS	SERIAL NUMBER	NAME OF PARTS
1	SAE LID	12	NON DRIVE-END BRACKET
2	DRIVE-END SCREEN	13	NON DRIVE-END COVER
3	END RING	14	LOWER CASING PLATE
4	TERMINAL BOX COMPONENTS	15	FOOT
5	AVR LID	16	NO DRIVE-END SCREEN
6	AVR	17	STATOR
7	AVR MOUNTING PANEL	18	BEARING
8	TERMINAL PLATE	19	EXCITER ROTOR
9	UPPER CASING PLATE	20	WINDING ROTOR
10	EXCITER STATOR	21	FAN
11	HANGERS	22	DRIVE-END DISCS



Subversion is only for
transcendence

SERIAL NUMBER	NAME OF PARTS	SERIAL NUMBER	NAME OF PARTS
1	DRIVE-END SCREEN	11	NO DRIVE-END SCREEN
2	DRIVE-END ADAPTOR	12	EXCITER STATOR
3	DRIVE-END DISCS	13	NON DRIVE-END BRACKET
4	FAN	14	NON DRIVE-END COVER
5	ROTOR	15	AVR LID
6	EXCITER ROTOR	16	AVR
7	BEARING	17	AVR MOUNTING PANEL
8	SHAFT	18	TERMINAL BOX COMPONENTS
9	WINDING STATOR	19	TERMINAL PLATE
10	ROUND BODY	20	RUBBER STRIP