TAIYO ELECTRIC CO.,LTD.

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GUNMA FACTORY
APPROVED TO ISO9001

GIFU FACTORY
APPROVED TO ISO9001

Please note: Continuous development of our products entitles us to change the specification details without notice.

01-4 KBS30

TAIYO BRUSHLESS AC GENERATOR

LX-H SERIES

200 THROUGH 2500kVA

FEATURES OF LX-H SERIES

- EXCELLENT ELECTRICAL CHARACTERISTICS CAPABLE OF CORRESPONDING TO NON-LINEAR LOAD
- SUSTAINED SHORT CIRCUIT CAPABILITY
- EXCELLENT INSULATION WITH A HIGH PERFORMANCE
- HIGHLY RELIABLE AND STABLE
- EASY MAINTENANCE AND INSPECTION
- MULTI-FUNCTIONAL MODEL SUITABLE FOR ITS PURPOSE AND USE

c UL us UL Recognized component (E208578)
Electrical Insulation Systems

Dependable, high quality power.

TAIYO ELECTRIC CO.,LTD.

STANDARD SPECIFICATIONS

- **Type** : Self ventilated
- **Excitation** : Brushless
- **Ratings** : Continuous / Standby
- **Frequency** : 50 Hz and 60 Hz
- **No. of pole** : 4 – pole
- **Insulation** : Class H
- **No. of phase** : 3
- **No. of wire** : 4
- **Power factor** : 80 % (lagging)
- **Coupling** : SAE adaptor and Coupling
- **Ambient Temp** : 40℃
- **Altitude** : 1000 m
- **Applicable Standards** : IEC, BS, NEMA

(Any other specifications are available on customers' request)

OPTIONS (extra cost)

· Parts for parallel operation
*· Space heater

*· Search coil (Pt.100 ohm) for Model 77A ~ 87E

*· Thermocouple for Model 53B ~ 61B

(Note : The asterisk * Must be specified at time of ordering)

STANDARD VOLTAGE SELECTION TABLE

Winding Connection	Hz	Voltage				Model
3 Phase 4 Wire Series Star	60	480/277	460/266	440/254	416/240	53B~87E
	50	415/240	400/231	380/219	–	
3 Phase 4 Wire Parallel Star	60	240/139	230/133	220/127	208/120	53B~53E
	50	208/120	200/115	190/110	–	
3 Phase 4 Wire Series Delta	50	230	–	–	–	

POWER RATING — 3 Phase 4 Pole

MODEL	60Hz/1800min^{-1} 416V				60Hz/1800min^{-1} 480V			
	CONTINUOUS DUTY CLASS H RISE (125℃)		STANDBY DUTY CLASS H RISE (150℃)		CONTINUOUS DUTY CLASS H RISE (125℃)		STANDBY DUTY CLASS H RISE (150℃)	
	kVA	kW	kVA	kW	kVA	kW	kVA	kW
53B	244	195	263	210	263	210	282	225
53C	288	230	307	245	325	260	344	275
53D	350	280	375	300	388	310	413	330
53E	457	365	482	385	482	385	507	405
61A	588	470	625	500	625	500	650	520
61B	688	550	732	585	738	590	782	625
77A	875	700	925	740	1000	800	1063	850
77B	1050	840	1119	895	1213	970	1288	1030
77C	1388	1110	1475	1180	1469	1175	1563	1250
87A	1525	1220	1625	1300	1650	1320	1750	1400
87B	1707	1365	1813	1450	1838	1470	1950	1560
87C	1907	1525	2025	1620	2063	1650	2188	1750
87D	1950	1560	2063	1650	2213	1770	2350	1880
87E	2107	1685	2238	1790	2425	1940	2575	2060

MODEL	50Hz/1500min^{-1} 380V				50Hz/1500min^{-1} 415V			
	CONTINUOUS DUTY CLASS H RISE (125℃)		STANDBY DUTY CLASS H RISE (150℃)		CONTINUOUS DUTY CLASS H RISE (125℃)		STANDBY DUTY CLASS H RISE (150℃)	
	kVA	kW	kVA	kW	kVA	kW	kVA	kW
53B	200	160	219	175	213	170	232	185
53C	250	200	269	215	263	210	282	225
53D	307	245	332	265	319	255	344	275
53E	382	305	407	325	394	315	419	335
61A	469	375	500	400	482	385	513	410
61B	563	450	600	480	575	460	613	490
77A	763	610	813	650	800	640	850	680
77B	950	760	1013	810	1000	800	1063	850
77C	1138	910	1213	970	1200	960	1275	1020
87A	1288	1030	1363	1090	1350	1080	1432	1145
87B	1432	1145	1519	1215	1500	1200	1588	1270
87C	1594	1275	1700	1360	1675	1340	1782	1425
87D	1738	1390	1850	1480	1825	1460	1938	1550
87E	1907	1525	2032	1625	2000	1600	2125	1700

ELECTRICAL CHARACTERISTICS AND PERFORMANCE

VOLTAGE REGULATION

Regulation is ±1.0% of the rated voltage over the entire range from no-load to full load. Voltage adjust rheostat provides ±5% adjustment of the rated voltage.

WAVE FORM

Specially designed generators produce an excellent wave form limiting total distortion factor to 3% when no-load or 3-phase balanced linear load.

RESPONSE

The instantaneous voltage regulation within 30%, when load (100% impedance) corresponding to 100% (power factor below 0.4) of the rated current is suddenly give to A.C. Generator which is operating with no-load at the rated frequency.

VOLTAGE STABILITY

The steady state voltage stability remains within ±0.25% of rated voltage.

THF AND TIF FACTORS

All generators have a THF better than 2% and a TIF 50% or less.

INSULATION

The main rotor and stator of the generator are insulated by standard materials of the superior class H.

RADIO INTERFERENCE

Radio interference suppression is well under commercial standards.

PHASE SEQUENCE

Phase sequence is T1-T2-T3 (U-V-W) for counterclockwise rotation viewed from the anti-coupling side.

UNDER-SPEED PROTECTION

V/Hz voltage regulator provides under-speed protection circuit, which protects the regulator and the generator at less than rated operational speed.

ROTOR SPEED

The rotor is dynamically balanced upto 25% over speed.

OVER LOAD

The generator is capable of carrying a 2-hour overload of 10% rated current in 24-hour operation.

PARALLEL OPERATION

Damper windings provides stable parallel operation and minimizes damping current losses. It also limits increase of 3rd harmonic voltage with increase in load.
The generator also resists against 20% of negative phase current.

SUSTAINED SHORT CIRCUIT CAPABILITY

LX-H excitation system will sustain a short circuit current in the order of 300% at 60Hz, 250% at 50Hz or more full load current to operate protective devices during fault conditions.

MECHANICAL CONSTRUCTION

STATOR

The stator frame is fabricated with mild steel plate or cast iron of round construction, of which, is designed to provide rigidity and strength so as to resist excessive mechanical and electrical shocks.

ROTOR

The rotor shaft is made of high quality carbon steel, and is designed and manufactured to be mechanically durable. The rotor has a salient pole revolving field type with the main field core made of high quality silicon steel plates. The field core elements, exciter rotor, rotary rectifier, PMG rotor and cooling fan are integrated above the same shaft.

BEARING

For the bearing of the anti-coupling side, high precision ball or roller bearing is used, and the oil supply method differs depending on the bearing size.
Model : 53B ~ 53E
Ball bearing, double seal type
(grease enclosed type)
Model : 61A ~ 77C
Ball bearing, open type
(grease replacement type)
Model : 87A ~ 87E
Roller bearing, open type
(grease replacement type)

VENTILATION

Cooling air is provided by the cooling fan of the rotor through suction ports to exhaust outlet comply with IC 01 of IEC.

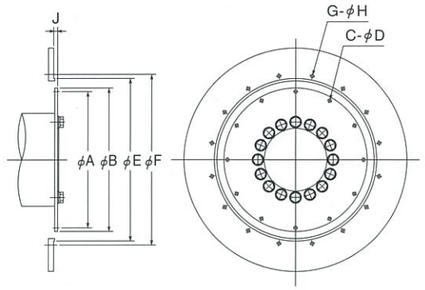
RECONNECTABLE LEAD WIRES

4, 10 or 12 lead wires available.
It enables to use at various voltage.

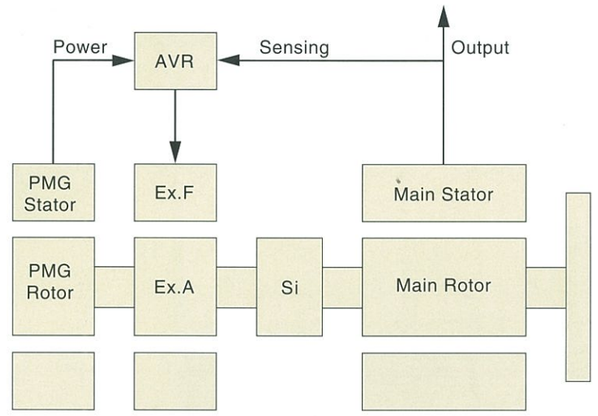
SAE ADAPTORS AND COUPLINGS DETAILS

(mm)

SAE COUPLING SIZE	A	B	C	D	E	F	G	H	J
#00-21	641.4	673.1	12	18	787.4	850.9	16	14	0.0
#0-18	542.9	571.5	12	18	647.7	679.5	16	14	15.7
#0-14	438.2	466.7	8	14	647.7	679.5	16	14	25.4
#1-14	438.2	466.7	8	14	511.2	530.2	12	13	25.4



EXCITATION SYSTEM



AVR : Automatic Voltage Regulator
Ex.F : Exciter Field
Ex.A : Exciter Armature
Si : Rotating rectifier

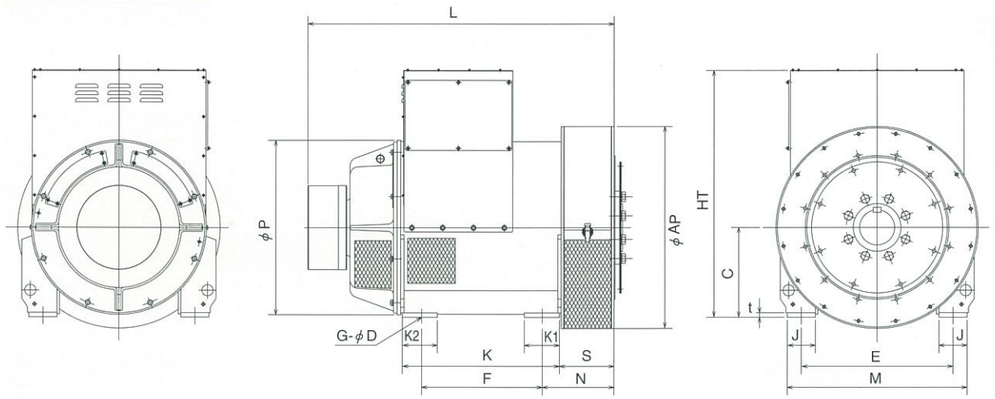
Excitation system for LX-H series have AVR which supply excitation current to the Exciter field. The power for this AVR is supplied by PMG and controlled by the sensing input diverged from the generator output.
After DC power was supplied to exciter field, output from exciter armature is supplied to main field coils through the 3-phase bridge rotary rectifier.

AVR : Automatic Voltage Regulator
Ex.F : Exciter Field
Ex.F : Exciter Armature
Si : Rotating rectifier
PMG : Permanent Magnetic Generator

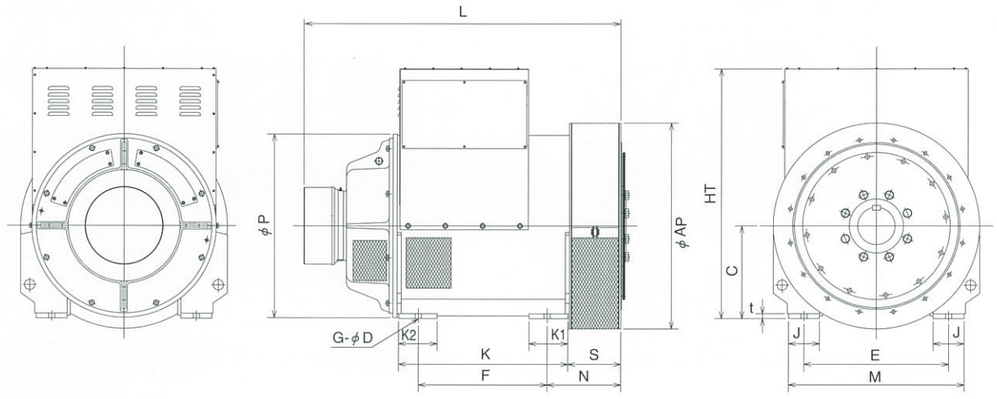
*Any other excitation system available.

DIMENSIONS LX-H SERIES

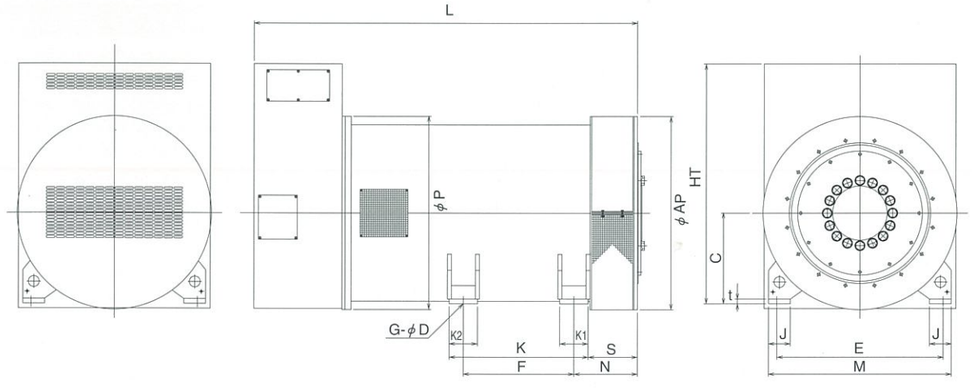
53B~53E



61A~61B



77A~87E



Dimensions and weigh are approximate only.

BURUSHLESS A.C. GENERATOR LX-H SERIES

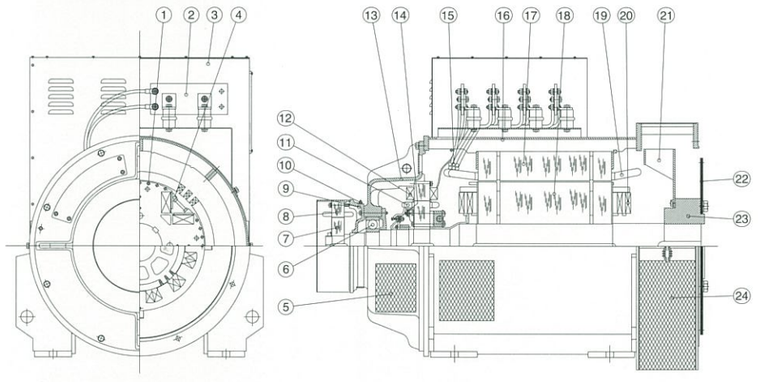
DIMENSIONS

(mm)

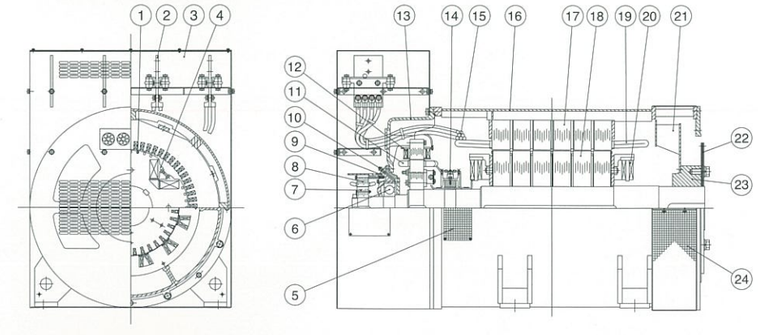
MODEL	SAE COUPLING SIZE	L	M	C	E	J	t	N	F	S	K	K1	K2	AP	P	HT	G	D	MASS (kg)
53B	#1-14	968	640	320	540	100	16	262	300	201	430	125	125	720	622	880	4	24	790
53C	#1-14	1048	640	320	540	100	16	262	380	201	510	125	125	720	622	880	4	24	940
53D	#1-14	1098	640	320	540	100	16	262	430	201	560	125	125	720	622	880	4	24	1030
53E	#0-18	1236	640	320	540	100	16	245	585	184	715	125	125	720	622	880	4	24	1230
61A	#0-18	1220	680	360	560	120	19	275	500	195	657	150	150	800	714	970	4	24	1460
61B	#0-18	1287	680	360	560	120	19	275	565	195	724	150	150	800	714	970	4	24	1630
77A	#0-18	1474	838	393.7	762	100	19.7	292.1	508	220	650	130	130	890	880	1088.7	4	21	2560
77B	#0-18	1584	838	393.7	762	100	19.7	292.1	508	220	650	130	130	890	880	1088.7	4	21	2930
77C	#00-21	1692	838	482.6	762	100	22.6	304.8	584.2	238	715	130	130	890	880	1177.6	4	31	3190
87A	#00-21	1884	838	482.6	762	100	22.6	304.8	939.8	235	1075	130	130	1000	994	1292.6	4	31	3730
87B	#00-21	1994	838	482.6	762	100	22.6	304.8	939.8	235	1075	130	130	1000	994	1292.6	4	31	4200
87C	#00-21	1994	838	482.6	762	100	22.6	304.8	939.8	235	1075	130	130	1000	994	1292.6	4	31	4200
87D	#00-21	2084	838	482.6	762	100	22.6	304.8	939.8	235	1075	130	130	1000	994	1292.6	4	31	4630
87E	#00-21	2084	838	482.6	762	100	22.6	304.8	939.8	235	1075	130	130	1000	994	1292.6	4	31	4630

GENERAL LOCATIONS

53B~61B



77A~87E



No.	NAME OF PARTS.
1.	DAMPER BAR
2.	TERMINAL BAR
3.	TERMINAL BOX
4.	COIL SUPPORTER
5.	VENTILATION COVER
6.	BEARING
7.	PMG ROTOR
8.	PMG STATOR
9.	BEARING SHIELD
10.	GREASE NIPPLE
11.	ARMATURE COIL FOR EXCITER
12.	FIELD COIL FOR EXCITER
13.	END BRACKET
14.	ROTATING RECTIFIER
15.	LEAD WIRE
16.	FRAME
17.	STATOR CORE
18.	ROTOR CORE
19.	STATOR COIL
20.	ROTOR COIL
21.	FAN
22.	COUPLING PLATE
23.	COUPLING BOSS
24.	VENTILATION COVER