



**DATA SHEET DIESEL
GENERATOR SET** 

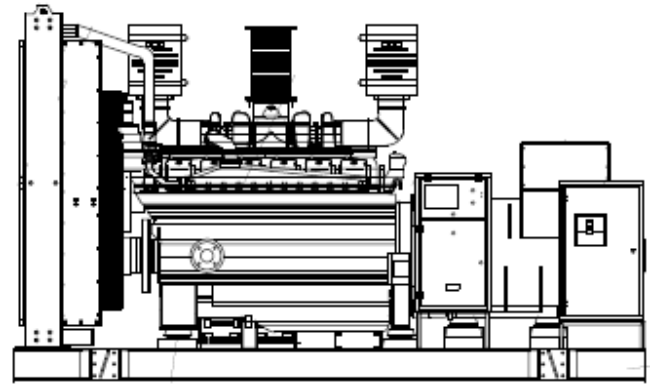
GSBD21000S-UL



► Model

GSBD21000S-UL

ENGINE BRAND	»	BAUDOIN
ENGINE MODEL	»	12M33G8D2/6
ALTERNATOR BRAND	»	STAMFORD
GENERATOR CONTROLLER	»	DSE 7310



► GENSET RATING

ENGINE	ALTERNATOR	VOLTAGE	PH	Hz	STANDBY POWER		POWER FACTOR	CURRENT
		V			kW	KVA		A
	HCI634K/S6L1D-F4	208/120	3	60	1000	1250	0.8	3473
12M33G8D2/6	HCI634K/S6L1D-F4	480/277	3	60	1000	1250	0.8	1505
	S6L1D-E4	600/346	3	60	1000	1250	0.8	1204

► Certifications



Standby Power. Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Fuel Stop power in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

► ENGINE FEATURES

» BRAND _____	► BAUDOQUIN
» MODEL _____	► 12M33G8D2/6
» EXHAUST EMISSIONS _____	► TIER 2
» RPM _____	► 1800
» STANDBY RATING kWm _____	► 1120
» STANDBY RATING bhp _____	► 1502
» PRIME RATING kWm _____	► 1007
» PRIME RATING bhp _____	► 1350
» NUMBER OF CYLINDERS _____	► 12
» ASPIRATION _____	► TURBOCHARGED AND AFTERCOOLED
» DISPLACEMENT in ³ _____	► 1781.9
» ENGINE AIR FLOW CFM (m ³ /min) _____	► 3722
» GOVERNOR TYPE _____	► ELECTRONIC
» CONTROL VOLTAGE v _____	► 24
» BORE/STROKE, in (_____	► 5.9X7.28(150X185)
» COOLANT CAPACITY WITHOUT RADIATOR gal _____	► 21.92
» OIL CAPACITY, TOTAL gal _____	► 42.26

► FUEL CONSUMPTION

STANDBY POWER		
LOAD	GAL/hr	L/hr
100%	75.26	284.9
75%	50.56	191.4
50%	35.30	134
25%	20.34	77

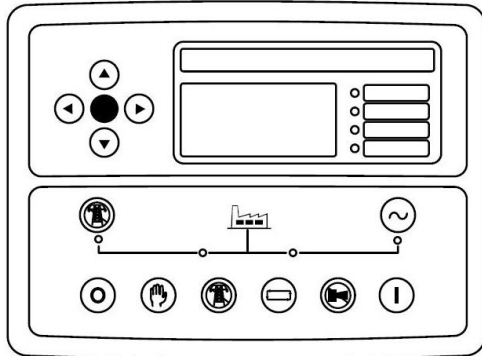
► ALTERNATOR FEATURES

» BRAND _____	► STAMFORD
» MODEL _____	► S6L1D-E4 / HCI 643K / S6L1D-F4
» FREQUENCY _____	► 60 Hz
» PHASES _____	► 3
» WINDING LEADS _____	► 6/12
» INSULATION SYSTEM _____	► H CLASS
» CONTROL SYSTEM _____	► SEPARATELY EXCITED BY P.M.G.
» PROTECTION _____	► IP23
» POWER FACTOR _____	► 0.8
» COOLING AIR CFM _____	►
» VOLTAGE REGULATION (%) _____	► +-0.5

► GENERATOR CONTROLLER

» MODEL

DEEP SEA 7310



The DSE7310 MKII is an Auto Start Control Module and the DSE7320MKII is an Auto Mains (Utility) Failure Control Module suitable for a wide variety of single, diesel or gas, gen-set applications.

Monitoring an extensive number of engine parameters, the modules will display warnings, shutdown and engine status information on the back-lit LCD screen, illuminated LEDs, remote PC and via SMS text alerts (with external modem). The DSE7320 MKII will also monitor the mains (utility) supply. The modules include USB, RS232 and RS485 ports as well as dedicated DSENet@ terminals for system expansion.

KEY FEATURES

- 4-Line back-lit LCD text display
- Multiple Display Languages
- Five key menu navigation
- LCD alarm indication
- DSENet expansion compatibility
- Internal PLC editor
- Protections disable feature
- Fully configurable via PC using USB, RS232 & RS485 communication
- Front panel configuration with PIN protection
- Power save mode
- 3 phase generator sensing and protection
- 3 phase mains (utility) sensing and protection (DSE7320 MKII only)
- Automatic load transfer control (DSE7320 MKII only)
- Generator current and power monitoring (kW, kvar, kVA, pf)
- Mains current and power monitoring (kW, kvar, kVA, pf) (DSE7320 MKII only)
- kW and kvar overload and reverse power alarms

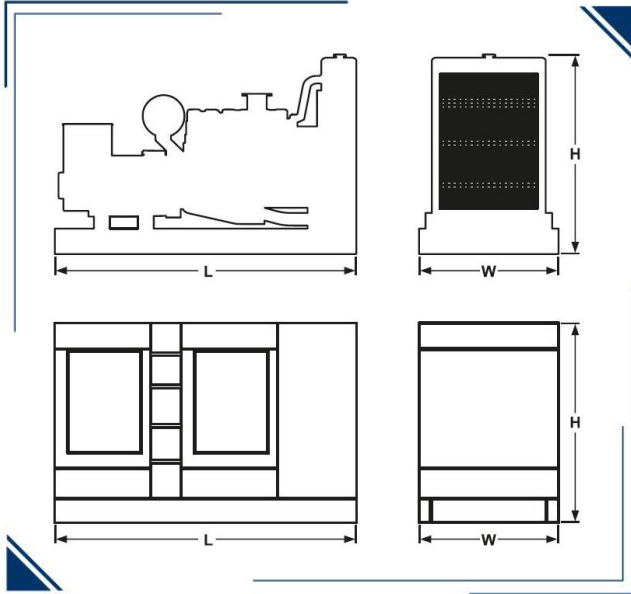
- Over current protection
- Unbalanced load protection
- Independent earth fault protection
- Breaker control via fascia buttons
- Fuel and start outputs configurable when using CAN
- 6 configurable DC outputs
- 2 configurable volt-free relay outputs
- 6 configurable analogue/digital inputs
- Support for 0 V to 10 V & 4 mA to 20 mA sensors
- 8 configurable digital inputs
- Configurable 5 stage dummy load and load shedding outputs
- CAN, MPU and alternator frequency speed sensing in one variant
- Real time clock
- Manual and automatic fuel pump control
- Engine pre-heat and post-heat functions
- Engine run-time scheduler
- Engine idle control for starting & stopping
- Fuel usage monitor and low fuel level alarms
- Simultaneous use of RS232 and RS485 communication ports
- True dual mutual standby using RS232 or RS485 for accurate engine hours balancing.
- MODBUS RTU support with configurable MODBUS pages.
- Advanced SMS messaging (additional external modem required)
- Start & stop capability via SMS messaging
- 3 configurable maintenance alarms
- Compatible with a wide range of CAN engines, including tier 4 engine support

- Uses DSE Configuration Suite PC Software for simplified configuration
- Licence-free PC software
- IP65 rating (with supplied gasket) offers increased resistance to water ingress
- Modules can be integrated into building management systems (BMS) using MODBUS RTU

KEY BENEFITS

- Automatically transfers between mains (utility) and generator (DSE7320 MKII only) for convenience.
- Hours counter provides accurate information for monitoring and maintenance periods
- User-friendly set-up and button layout for ease of use
- Multiple parameters are monitored & displayed simultaneously for full visibility
- The module can be configured to suit a wide range of applications for user flexibility
- PLC editor allows user configurable functions to meet user specific application requirements.

► DIMENSIONS AND WEIGHT



OPEN GENSET					
DIMENSION	Length (L)	Width (W)	Height (H)	Weight	Noise Level
	IN			Lbs	dB
	187	89	101		
ENCLOSED GENSET LEVEL 2					
DIMENSION	Length (L)	Width (W)	Height (H)	Weight	Noise Level
	IN			Lbs	dB
	276	96	119		

► ACOUSTIC ENCLOSURE

Acoustic enclosure designed and manufactured with 14 gauge carbon steel sheet, polyurethane acoustic coating, access and air expulsion to avoid gas accumulation, drainage system to avoid liquid accumulation. Electrostatic painting for extended life. We have options for enclosures in aluminum or stainless steel

► STANDARD FEATURES & ACCESSORIES

<input checked="" type="checkbox"/>	DSE 9470 Battery Charger	<input checked="" type="checkbox"/>	Emergency Stop Button
<input checked="" type="checkbox"/>	Battery and Battery Rack	<input checked="" type="checkbox"/>	Flex Fuel Lines
<input checked="" type="checkbox"/>	ABB Main Line Circuit Breaker	<input checked="" type="checkbox"/>	Protection Covers for Rotating Parts
<input checked="" type="checkbox"/>	MX321AVR	<input checked="" type="checkbox"/>	Exhaust Insulation Cover
<input checked="" type="checkbox"/>	Hotstart Pre heater RMP-CSM10602-000	<input checked="" type="checkbox"/>	Anti Vibration Pads between Engine/Alternator & Base Frame
<input checked="" type="checkbox"/>	Residential Grade Silencer Open Unit	<input checked="" type="checkbox"/>	Operation and Maintenance manuals
<input checked="" type="checkbox"/>	Critical Grade Silencer Inside Enclosure	<input checked="" type="checkbox"/>	24 Months /1000 hours Limited Standby Warranty



▶ OPTIONAL ACCESSORIES

Paralleling Adder (DSE8610 & Motorized Breaker)	Enclosure AC light and On/Off Switch
120V GFCI Receptacle	Enclosure DC light and On/Off Switch
240V Receptacle	Enclosure space Heater (1500w/120v)
Alternator Strip Heater	Load Center / Distribution Board (100 A, 12 Breaker)
Battery Blanket Heater	Load Center / Distribution Board (200 A, 8 Breaker)
Battery Disconnect Switch	AVR UPGRADE
Battery Pad Heater	Oil Pan Heater
Battery Restraint	Relay - 10A Common Alarm
Control Panel Heater	Relay - 10A Run Relay
DSE2157 Output Module (8 dry contacts)	Remote E-Stop- Breaker Glass Type / Nema 3R
DSE2520 Remote Display Module	Remote E-Stop- Breaker Glass Type / Nema 4X
DSE2548 Remote Annunciator (16 light)	Remote E-Stop- Flush Mount
DSE2548 Remote Annunciator (24 light)	Remote E-Stop- Surface Mount
DSE2548 Remote Annunciator (8 light)	Remote E-Stop- Visual/ Plastic Hinged Cover
DSE890 3G GATEWAY	Spring Isolator- Non Seismic (ACE 121 Series) <small>SKIRT NOT INCLUDED</small>
GSM/GPS ANTENNA 3M RG-174, GSM-SMA(M), GPS-SMA(F)	Spring Isolator- Seismic/Restraint (ACE 821 Series) <small>SKIRT NOT INCLUDED</small>
DSE9641 10A Battery Charger	Voltage Adjust Rheostat
DSE9470 10A Battery Charger	Automatic Transfer Switch


▶ OPTIONAL UL142 SUB BASE TANK

	24 hr	48 hr	72 hr
Fuel Capacity (gal)	1900	3700	
Dimensions (L/W/H) in			
Weight lb			



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	Model :	12M33G8D2/6	Date :	30/11/22
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Ratings

RPM	Gross Engine Output				Net Engine Output			
	PRP		ESP		PRP		ESP	
	kWm	BHP	kWm	BHP	kWm	BHP	kWm	BHP
1800	1007 *	1350 *	1120	1502	950 *	1275 *	1063	1426


1 kWm = 1,34102 BHP

When the engine is used with a cooling system using an electrically driven fan, net engine output data may change and quoted figures should be used for reference only

Basic data

Engine model	12M33G8D2/6
N° of Cylinders / Valves	12 / 48
Cylinders arrangement	At Vee
Bore x Stroke (mm)	150 x 185
Displacement (L)	39.2
Thermodynamic Cycle	Diesel 4 stroke
Firing Order	A1-B2-A5-B4-A3-B1-A6-B5-A2-B3-A4-B6
Mean Piston Speed (m/s)	11.1
BMEP @ ESP (Bar)	19.05
Cooling System	Liquid (water + 50% antifreeze)
Injection System	Direct
Fuel System	High Pressure Common Rail
Aspiration	Turbocharged and Aftercooled
Compression ratio	15 : 1
Flywheel housing	SAE 0
Flywheel	18"
Rotation Viewed from Flywheel...	Counterclockwise
Allowed static bending moment of the flywheel housing...../	/
N° of teeth on flywheel ring gear	194
Inertia of flywheel (kg•m ²)	7.18
Inertia of crankshaft (kg•m ²)	4.52
Emission standard	EPA Tier2
Overall Dimensions with radiator (Length x Width x Height) (mm)	3525×2241.5×2243
Engine dry weight without radiator and without radiator pipes (kg)	3590
Engine dry weight with radiator and radiator pipes (kg)	4575
Engine wet weight with radiator (includes oil, coolant) (kg)	5024

* The indicated PRP Power is for reference only. This engine is designed for emergency standby power (ESP) applications only.

	Model :	12M33G8D2/6	Date :	30/11/22
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Air intake system

Air intake temperature rise (°C)	≤ 5
Air intake restriction clean filter (mBar)	≤ 30
Air intake restriction dirty filter (mBar)	≤ 65
Recommended air flow @ PRP (m³/min)	100.4
Recommended air flow @ ESP (m³/min)	105.4
Min. diameter of intake pipe (mm)	160

Aftercooling system

Aftercooler system type	Air to Air
Max. intake temperature @ 25°C ambient temperature (°C)	55
Max. difference between intake temperature and ambient temperature (°C)	30
Max. intake pressure drop of aftercooler (mBar)	120

Lubrication system


Oil capacity Low / High (L)	117 / 155
Oil pressure in normal condition idle speed (Bar)	≥ 2
Oil pressure in normal condition at 1800 Rpm @ PRP (Bar)	4 - 6.5
Lowest oil pressure alarm (shutdown) (Bar)	2
High Oil Pressure Warning	10
Max. oil temperature (°C)	105
Oil flow at 1800 Rpm (L/min)	≥ 392
Oil fuel consumption ratio based on engine fuel consumption data	≤ 0.3 %
Total system capacity (including filters) (L)	160

Heat balance test data (with ambient temperature 31.5 °C)

Total heat dissipation @ ESP (kJ/s)	1735.2
- Heat Rejection to Jacket Water @ ESP (kJ/s)	436.3
- Heat Rejection to AfterCooler @ ESP (kJ/s)	328.0
- Radiated Heat to Ambient @ ESP (kJ/s)	43.8
- Heat Rejected to Exhaust @ ESP (kJ/s)	927.1

Exhaust system

Max. exhaust back pressure (mBar)	75
Max. exhaust temperature before turbocharger (°C)	700
Max. exhaust temperature after turbocharger (°C)	550
Exhaust flow @ PRP (m³/min)	285.1
Exhaust flow @ ESP (m³/min)	304.2
Min. diameter of exhaust pipe (mm)	220
Max. bending moment of exhaust gas exit flange (Nm)	10

	Model :	12M33G8D2/6	Date :	30/11/22
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Cooling system with standard radiator

System designed for ambient temperature up to (°C) ¹	50
Radiator type	Mechanical
Fan type	Belt driven pusher
Min. inside diameter of coolant outlet pipe (mm)	84
Coolant capacity of radiator and pipes (L)	220
Coolant alarm (shutdown) temperature (°C)	108
Thermostat opening temperature / full open temperature (°C)	80 / 92
Max. additional restriction for external cooling circuit (Bar)	0.44
Coolant capacity of the engine (L)	83
Cooling fan airflow (m ³ /min)*	2100
Fan absorbed power (kW)	55
Additional restriction (for reference) - Duct allowance (Pa)	100

* Air flow figure assumes the presence of the standard radiator provided, taking into consideration the backpressure caused

Fuel system

Governor	ECU
Governor steady state speed stability at constant load (ISO 8528-5 Class G3) ²	≤ +/- 0.5 %
Max. restriction at fuel inlet (Bar)	0.5
Max. pressure at fuel inlet (Bar)	0.5
Max. fuel return restriction (Bar)	0.2
Max. fuel inlet temperature (°C)	50
Fuel supply flow (L/hr)	1900
Min. internal diameter of inlet pipe (mm)	19
Min. internal diameter of return pipe (mm)	19


Electrical system

Electrical system voltage (negative to ground) (Vdc)	24
Starter power (kW)	2 x 8.5
Battery charger current (A)	55
Battery charger absorbed power (kW)	1.6
Max. electric resistance of starting circuit (Ω)	0.008
Min. sectional area of wire (mm ²)	95
Min. cold start temperature without auxiliary starting device (°C) ³	- 5
Min. cold start temperature with auxiliary starting device (°C) ³	- 10

¹ The indicated value is based on the AOT value of 50°C for an engine tested at 100% of the ESP Power, reflecting temperature in an open condition, without an enclosure or container, without any airflow obstruction in the front of the radiator, without air recirculation, with free exhaust gas exit and with the engine thermostatic valve in its full open condition, without a closing plate present. The reference air restriction is equal to 50Pa. For the equivalent ATB (Air-to-Boil) performance in a customer or project basis, please consult Baudouin Application Engineering.

² This refers only to the frequency response of the engine and should not be confused with the performance class of the Generator Set, which is subject to additional contributing factors such as alternator selection and control settings.

³ Engines used in emergency standby application or applications that require immediate start under load, they must be equipped with coolant heaters. Baudouin recommend heaters installation to be executed by providing constant coolant circulation across all the engine components. Two heaters are required for V-type engines, one per each side.

	Model :	12M33G8D2/6	Date :	30/11/22
	PowerKit Engine Datasheet		Page :	4 / 4

Noise

Diesel engine noise (Acoustic power level) (dB(A))	118.9
Noise - upper side (dB(A))	100.7
Noise - right side (view from flywheel) (dB(A))	102.0
Noise - left side (view from flywheel) (dB(A))	102.8
Noise – front (radiator) side (dB(A))	101.4
Noise – rear (flywheel) side (dB(A))	101.5

Notes :

- Noise test made at 100% of the ESP power, at 1 mt. distance, on engine without radiator, without cooling fan and without silencer.
- Noise test refers to ISO 6798 norm : “Reciprocating internal combustion engines. Measurement of emitted airborne noise. Engineering method and survey method”.

Fuel consumption

Rating	gr/kWh	L/hr
100% ESP	212.1	284.9
100% PRP	213.5	254.9
75% PRP	212.9	191.4
50% PRP	223.5	134.0
25% PRP	256.7	77.0
Fuel consumption tolerance +/- 5%		

Notes:

This engine is designed for ESP (Emergency Standby) applications only, the values shown above at PRP levels refer to the Referenced Power (1007 kWm).

Ratings definitions

Emergency Standby Power (ESP)

Emergency Standby Power is the maximum power available for a varying load for the duration of a main power network failure. The average load factor over 24 hours of operation should not exceed 70% of the engine’s ESP power rating. Typical operational hours of the engine is 200 hours per year, with a maximum usage of 500 hours per year. This includes an annual maximum of 25 hours per year at the ESP power rating. No overload capability is allowed. The engine is not to be used for sustained utility paralleling applications.

Prime Power (PRP)

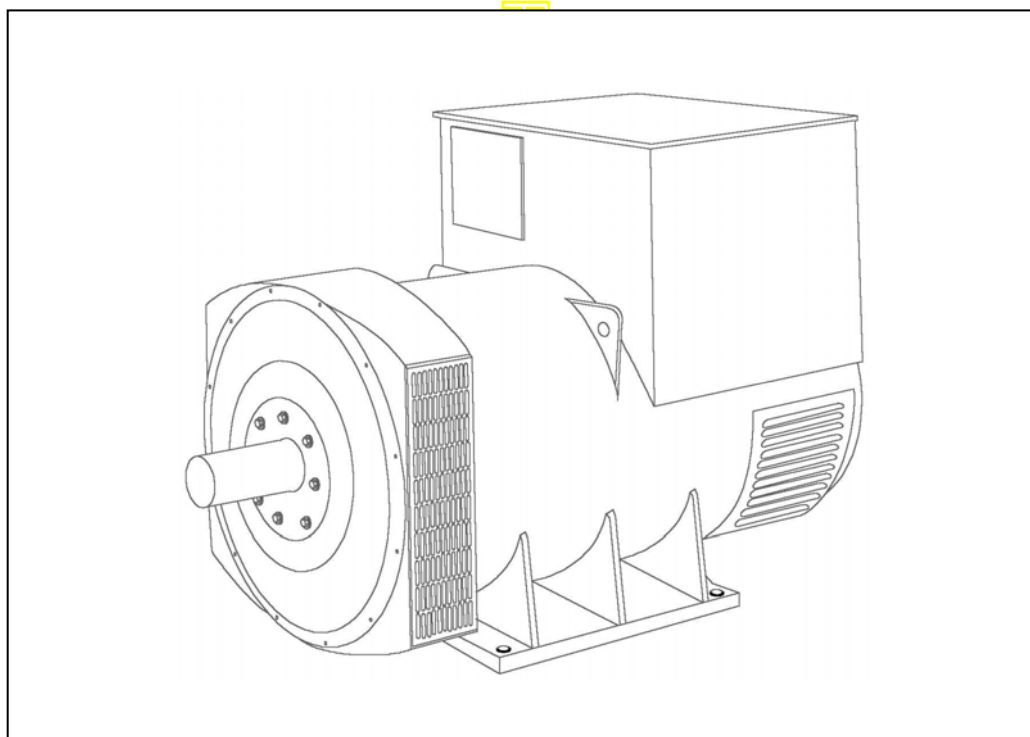
Prime Power is the maximum power available for unlimited hours of usage in a variable load application. The average load factor should not exceed 70% of the engine’s PRP power rating during any 24 hour period. An overload capability of 10% is available, however, this is limited to 1 hour within every 12 hour period.

- All ratings are based on operating conditions under ISO 8528-1, ISO 3046, DIN6271. Performance tolerance of $\pm 5\%$.
- Test conditions : 100 kPa, 25°C air inlet temperature, relative humidity of 30%, with fuel density 0.84 kg/L. Derating may be required for conditions outside these; please contact the factory for details.
- Power output curves are based on the engine operating with fuel system, water pump and lubricating oil pump; not included are battery charging alternator, fan and optional equipment.

STAMFORD[®]

HCI634K - Winding 311 and 312

Technical  Data Sheet



HCI634K

SPECIFICATIONS & OPTIONS

WINDING 311 and 312

STAMFORD

STANDARDS

Stamford industrial generators meet the requirements of BS EN 60034 and the relevant section of other international standards such as BS5000, VDE 0530, NEMA MG1-32, IEC34, CSA C22.2-100, AS1359. Other standards and certifications can be considered on request.

VOLTAGE REGULATORS

MX321 AVR - STANDARD

This sophisticated Automatic Voltage Regulator (AVR) is incorporated into the Stamford Permanent Magnet Generator (PMG) system and is fitted as standard to generators of this type.

The PMG provides power via the AVR to the main exciter, giving a source of constant excitation power independent of generator output. The main exciter output is then fed to the main rotor, through a full wave bridge, protected by a surge suppressor. The AVR has in-built protection against sustained over-excitation, caused by internal or external faults. This de-excites the machine after a minimum of 5 seconds.

Over voltage protection is built-in and short circuit current level adjustments is an optional facility.

WINDINGS & ELECTRICAL PERFORMANCE

All generator stators are wound to 2/3 pitch. This eliminates triplen (3rd, 9th, 15th ...) harmonics on the voltage waveform and is found to be the optimum design for trouble-free supply of non-linear loads. The 2/3 pitch design avoids excessive neutral currents sometimes seen with higher winding pitches, when in parallel with the mains. A fully connected damper winding reduces oscillations during paralleling. This winding, with the 2/3 pitch and carefully selected pole and tooth designs, ensures very low waveform distortion.

TERMINALS & TERMINAL BOX

Standard generators feature a main stator with either 6 ends (Winding 312) or 12 ends (Winding 311) brought out to the terminals, which are mounted on the frame at the non-drive end of the generator. A sheet steel terminal box contains the AVR and provides ample space for the customers' wiring and gland arrangements. It has removable panels for easy access.

SHAFT & KEYS

All generator rotors are dynamically balanced to better than BS6861:Part 1 Grade 2.5 for minimum vibration in operation. Two bearing generators are balanced with a half key.

INSULATION/IMPREGNATION

The insulation system is class 'H'.

All wound components are impregnated with materials and processes designed specifically to provide the high build required for static windings and the high mechanical strength required for rotating components.

QUALITY ASSURANCE

Generators are manufactured using production procedures having a quality assurance level to BS EN ISO 9001.

The stated voltage regulation may not be maintained in the presence of certain radio transmitted signals. Any change in performance will fall within the limits of Criteria 'B' of EN 61000-6-2:2001. At no time will the steady-state voltage regulation exceed 2%.

DE RATES

All values tabulated on page 8 are subject to the following reductions

5% when air inlet filters are fitted.

10% when IP44 Filters are fitted.

3% for every 500 metres by which the operating altitude exceeds 1000 metres above mean sea level.

3% for every 5°C by which the operational ambient temperature exceeds 40°C.

Note: Requirement for operating in an ambient exceeding 60°C must be referred to the factory.

NB Continuous development of our products entitles us to change specification details without notice, therefore they must not be regarded as binding.

Front cover drawing typical of product range.

APPROVED DOCUMENT

WINDING 311 and 312

CONTROL SYSTEM	SEPARATELY EXCITED BY P.M.G.	
A.V.R.	MX321	
VOLTAGE REGULATION	± 0.5 %	With 4% ENGINE GOVERNING
SUSTAINED SHORT CIRCUIT	REFER TO SHORT CIRCUIT DECREMENT CURVES (page 7)	

INSULATION SYSTEM	CLASS H
PROTECTION	IP23
RATED POWER FACTOR	0.8
STATOR WINDING	DOUBLE LAYER LAP
WINDING PITCH	TWO THIRDS
WINDING LEADS	6 (Wdg 312) or 12 (Wdg 311)
STATOR WDG. RESISTANCE	0.002 Ohms PER PHASE AT 22°C STAR CONNECTED
ROTOR WDG. RESISTANCE	2.36 Ohms at 22°C
EXCITER STATOR RESISTANCE	17 Ohms at 22°C
EXCITER ROTOR RESISTANCE	0.079 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 DRIVE END	BALL. 6224 (ISO)
BEARING NON-DRIVE END	BALL. 6317 (ISO)

	1 BEARING				2 BEARING			
WEIGHT COMP. GENERATOR	2541 kg				2581 kg			
WEIGHT WOUND STATOR	1294 kg				1294 kg			
WEIGHT WOUND ROTOR	1093 kg				1048 kg			
WR ² INERTIA	26.5295 kgm ²				25.9823 kgm ²			
SHIPPING WEIGHTS in a crate	2601kg				2622kg			
PACKING CRATE SIZE	194 x 92 x 147(cm)				194 x 92 x 147(cm)			
	50 Hz				60 Hz			
TELEPHONE INTERFERENCE	THF<2%				TIF<50			
COOLING AIR	1.614 m ³ /sec 3420 cfm				1.961 m ³ /sec 4156 cfm			
VOLTAGE 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 DELTA	220	230	240	254	240	254	266	277
kVA BASE RATING FOR REACTANCE VALUES	1110	1135	1110	1110	1275	1338	1388	1438
X _d DIR. AXIS SYNCHRONOUS	2.78	2.57	2.33	2.08	3.20	3.00	2.85	2.71
X' _d DIR. AXIS TRANSIENT	0.22	0.20	0.18	0.16	0.26	0.24	0.23	0.22
X'' _d DIR. AXIS SUBTRANSIENT	0.15	0.14	0.13	0.11	0.18	0.17	0.16	0.15
X _q QUAD. AXIS REACTANCE	1.63	1.50	1.36	1.21	1.88	1.76	1.67	1.59
X' _q QUAD. AXIS SUBTRANSIENT	0.23	0.21	0.19	0.17	0.27	0.25	0.24	0.23
X _L LEAKAGE REACTANCE	0.08	0.07	0.06	0.06	0.09	0.08	0.08	0.07
X ₂ NEGATIVE SEQUENCE	0.22	0.20	0.18	0.16	0.26	0.24	0.23	0.22
X ₀ ZERO SEQUENCE	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03

REACTANCES ARE SATURATED

VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED

T' _d TRANSIENT TIME CONST.	0.185
T'' _d SUB-TRANSTIME CONST.	0.025
T' _{do} O.C. FIELD TIME CONST.	3.4
T _a ARMATURE TIME CONST.	0.049
SHORT CIRCUIT RATIO	1/X _d

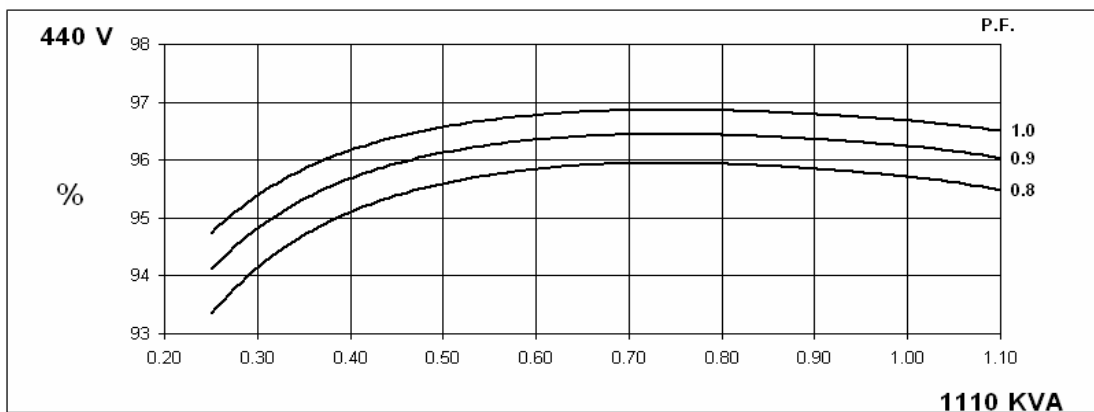
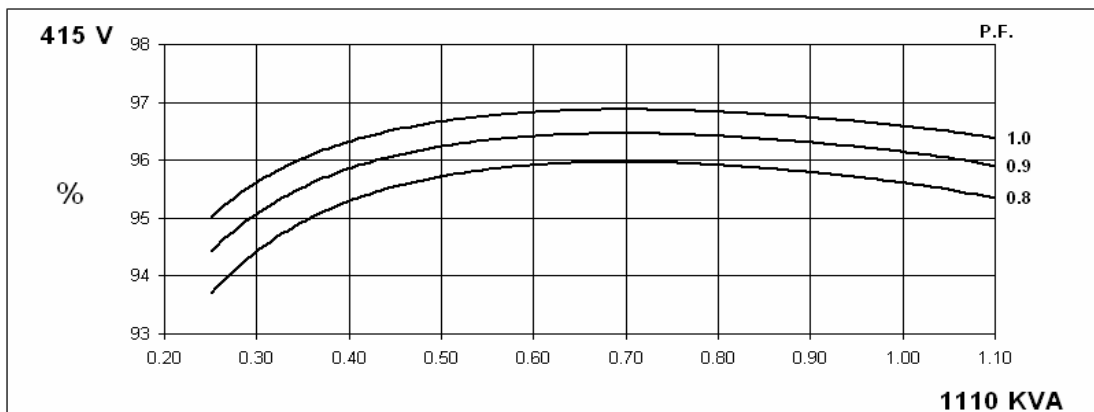
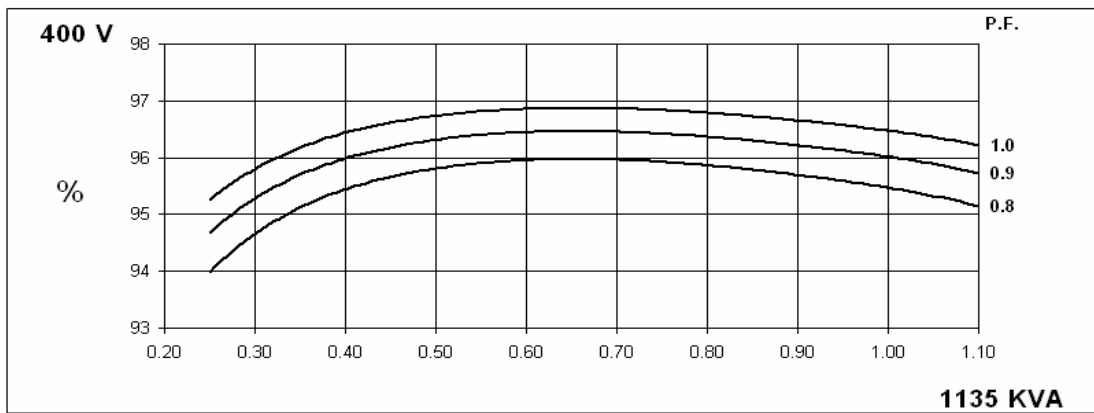
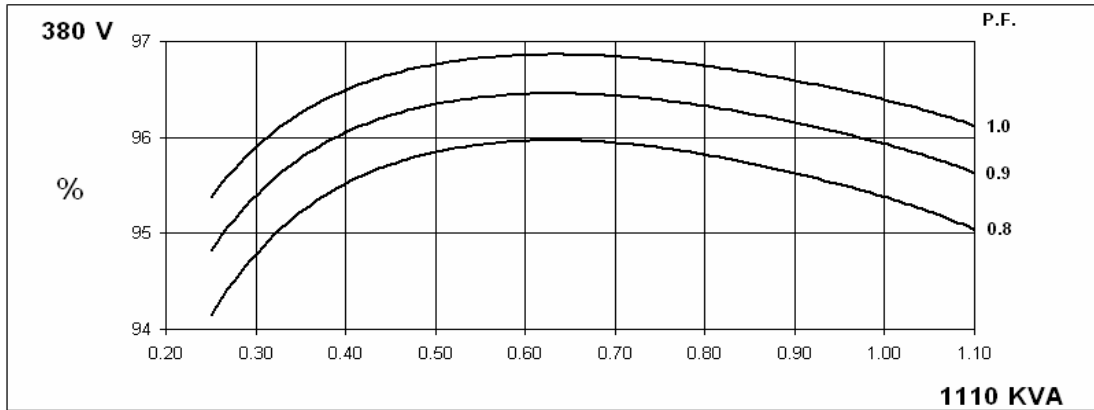
(*) Parallel Star connection only available with Wdg 311

50
Hz

HCI634K
WINDING 311 and 312

STAMFORD

THREE PHASE EFFICIENCY CURVES

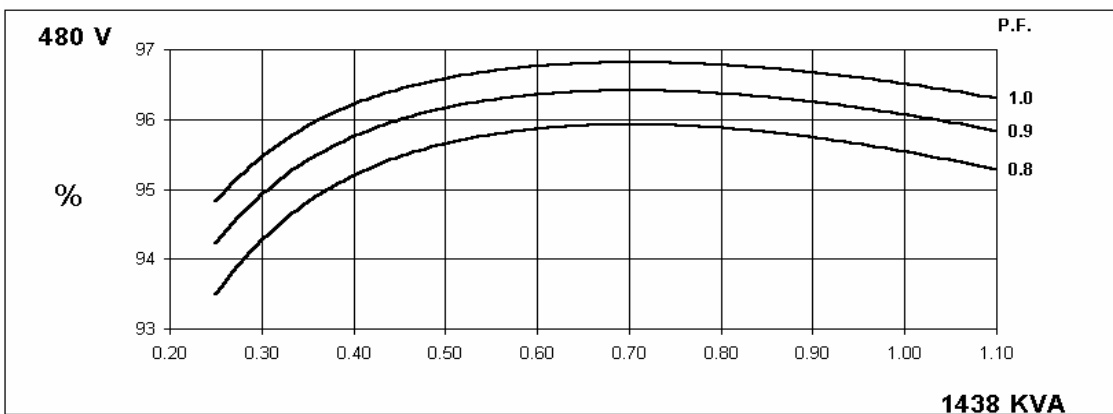
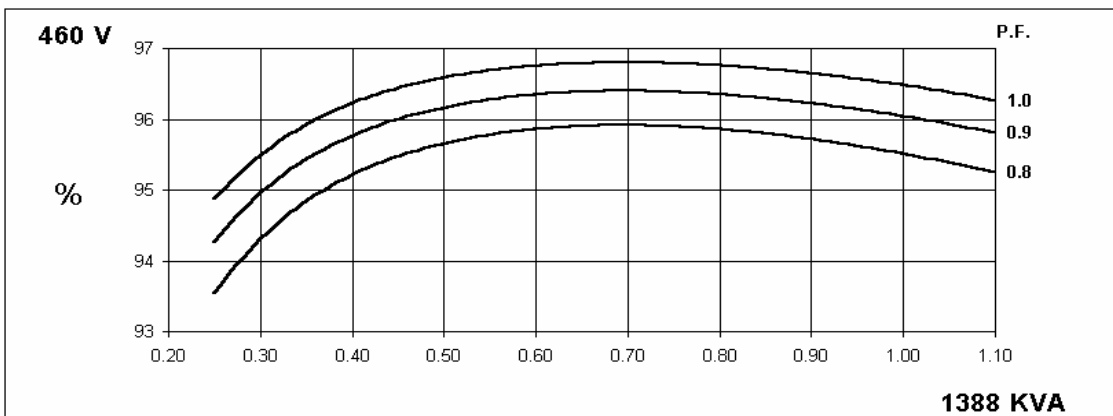
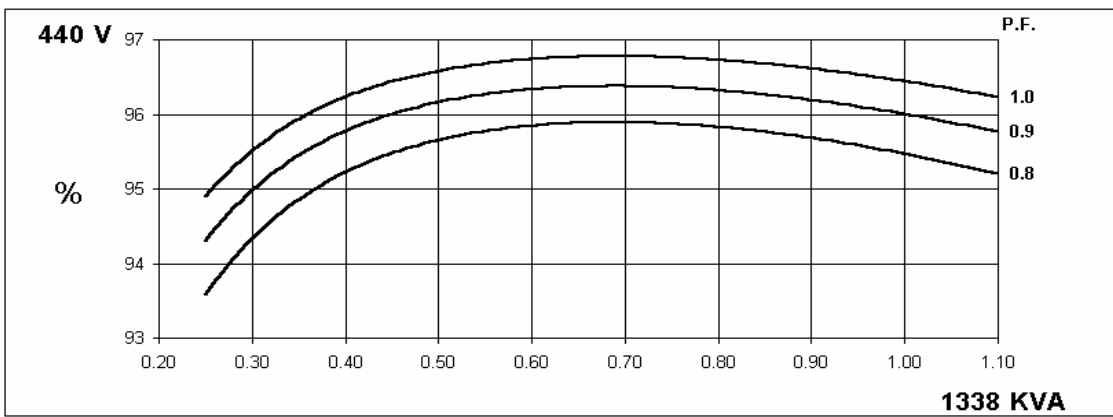
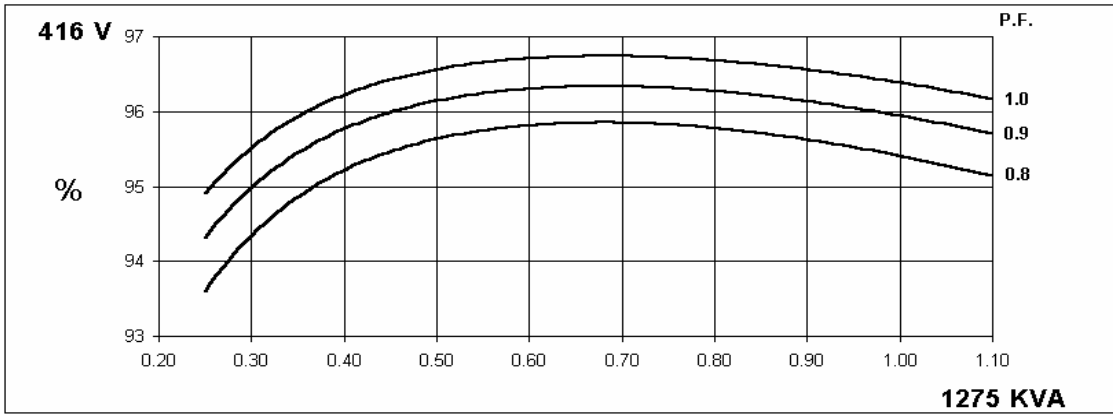


60
Hz

HCI634K
WINDING 311 and 312

STAMFORD

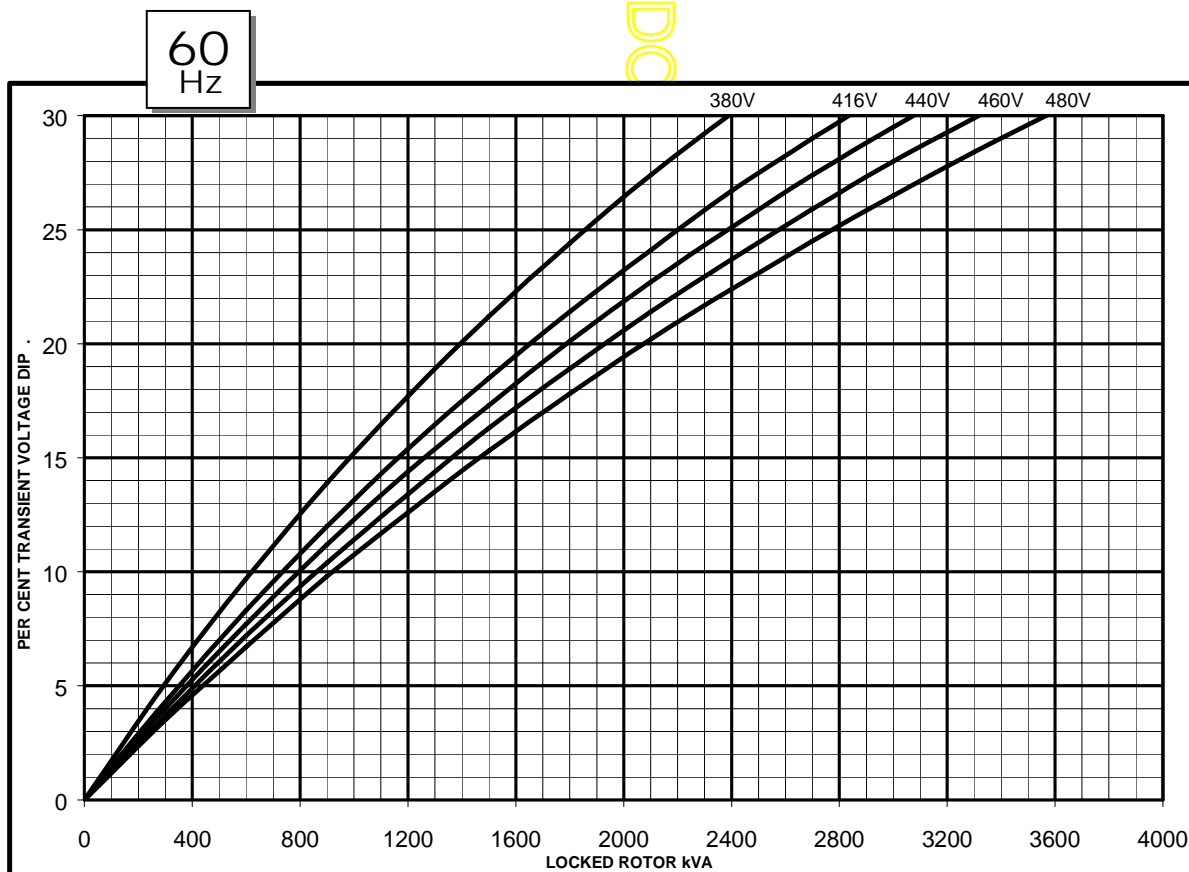
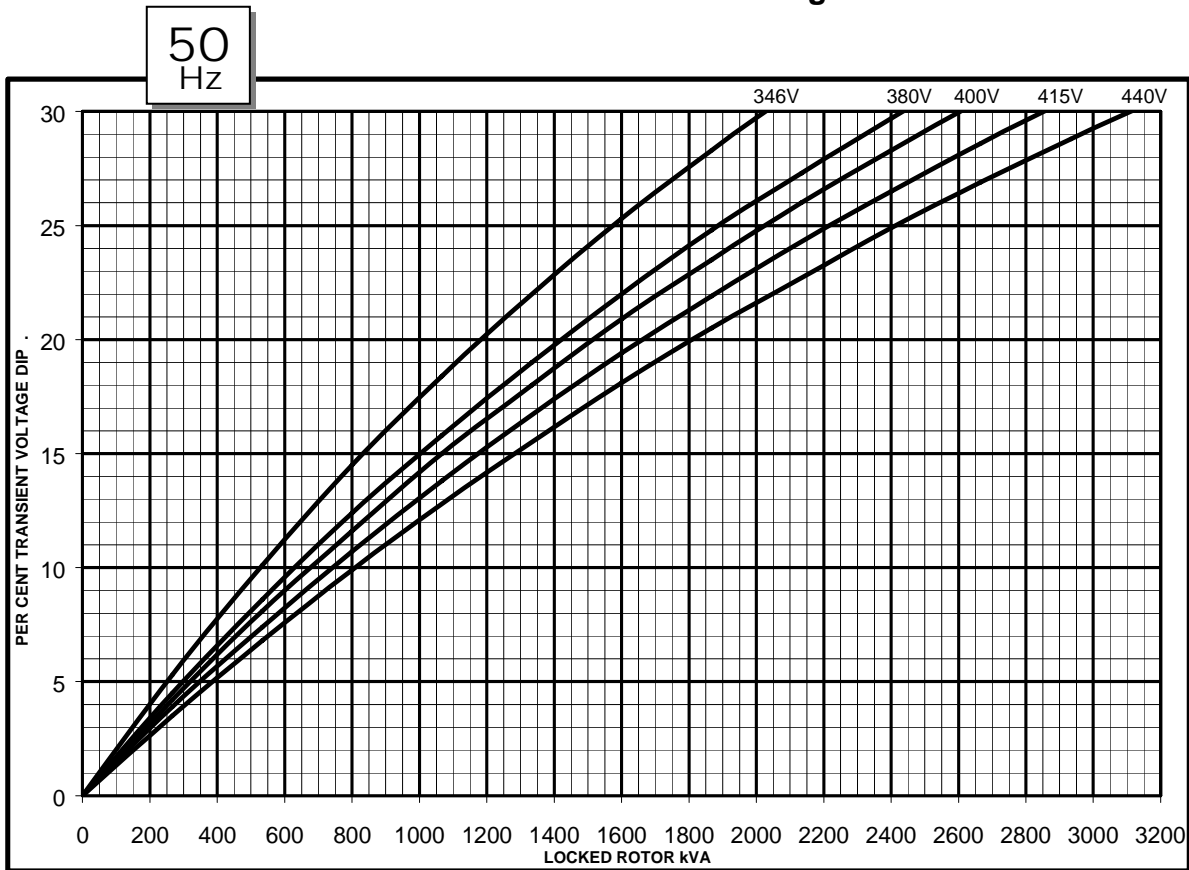
THREE PHASE EFFICIENCY CURVES



HCI634K
WINDING 311 and 312

STAMFORD

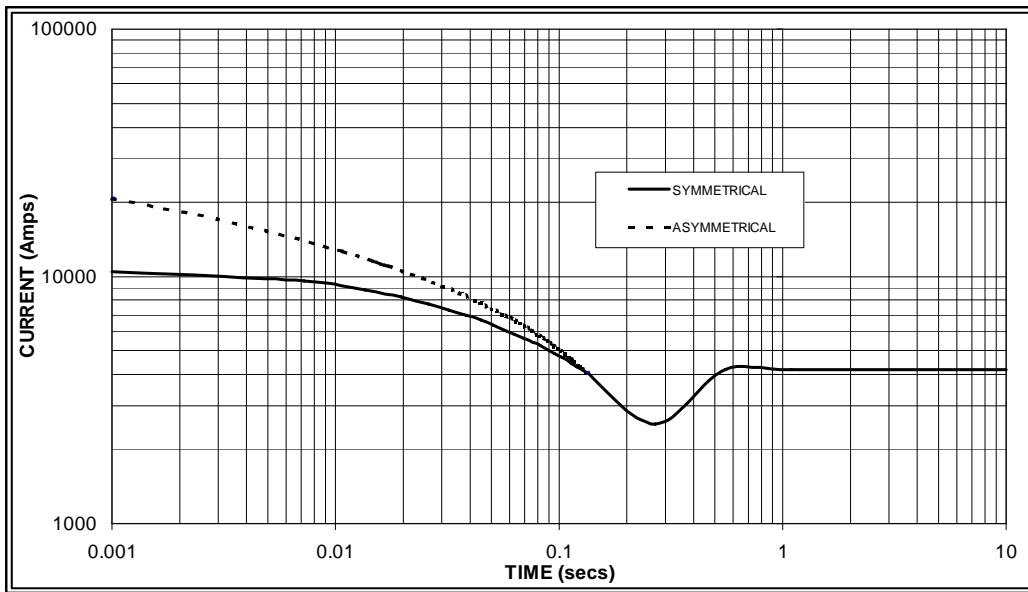
Locked Rotor Motor Starting Curve



WINDING 311 and 312

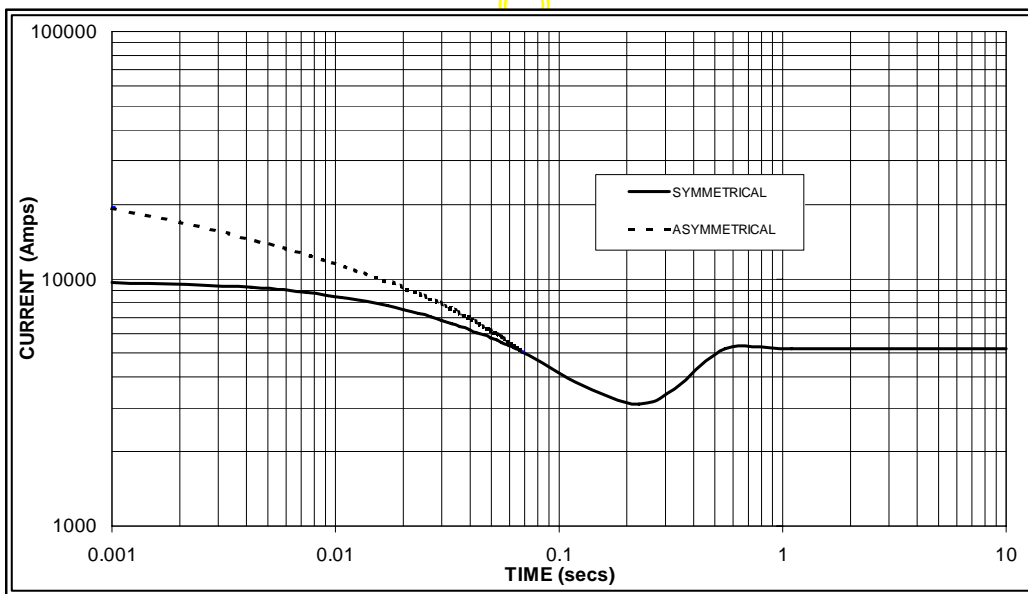
**Three-phase Short Circuit Decrement Curve. No-load Excitation at Rated Speed
Based on star (wye) connection.**

**50
Hz**



Sustained Short Circuit = 4,200 Amps

**60
Hz**



Sustained Short Circuit = 5,200 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 Delta connection multiply the Curve current value by 1.732

HCI634K

Winding 311 and 312 0.8 Power Factor

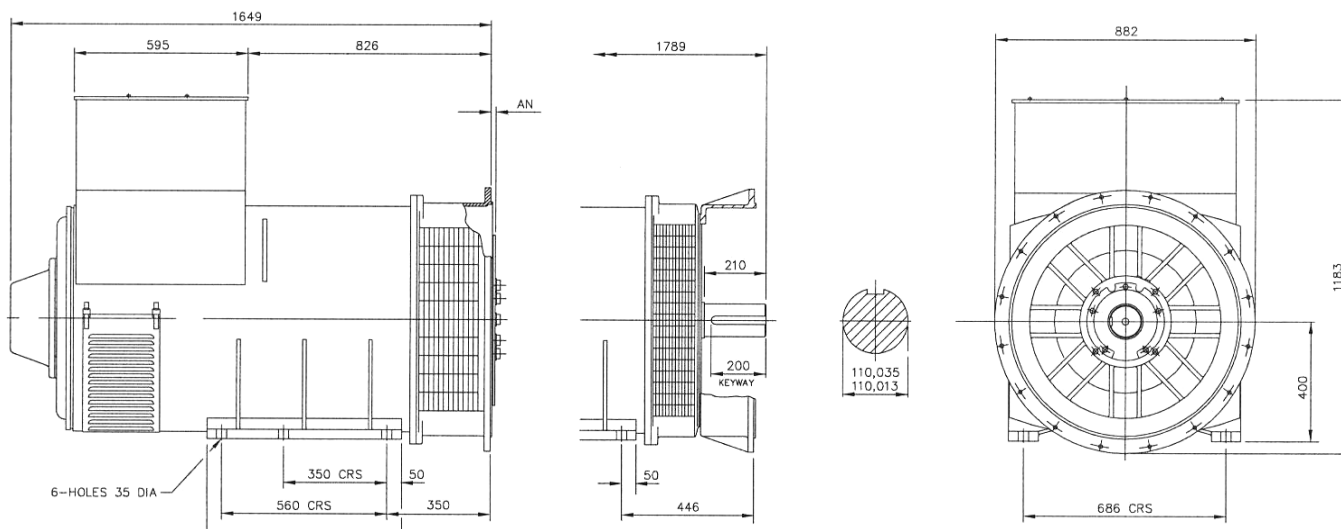
RATINGS

Class - Temp Rise	Cont. F - 105/40°C				Cont. H - 125/40°C				Standby - 150/40°C				Standby - 163/27°C				
50Hz	Star (V)	380	400	415	440	380	400	415	440	380	400	415	440	380	400	415	440
	Parallel Star (V) *	180	200	208	220	180	200	208	220	180	200	208	220	180	200	208	220
	Delta (V)	220	230	240	254	220	230	240	254	220	230	240	254	220	230	240	254
kVA	1000	1018	1000	1000	1110	1135	1110	1110	1180	1190	1180	1180	1220	1230	1220	1220	
kW	800	814	800	800	888	904	888	888	944	952	944	944	976	984	976	976	
Efficiency (%)	95.6	95.7	95.8	95.9	95.4	95.5	95.6	95.7	95.2	95.3	95.5	95.6	95.1	95.2	95.4	95.5	
kW Input	837	851	835	834	931	951	929	928	992	999	988	987	1026	1034	1023	1022	

60Hz	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	1188	1238	1275	1313	1275	1338	1388	1438	1350	1413	1469	1525	1400	1463	1519	1575	
kW	950	990	1020	1050	1020	1070	1110	1150	1080	1130	1175	1220	1120	1170	1215	1260	
Efficiency (%)	95.6	95.6	95.7	95.7	95.4	95.5	95.5	95.5	95.3	95.3	95.4	95.4	95.1	95.2	95.3	95.3	
kW Input	994	1036	1066	1098	1069	1121	1163	1205	1133	1186	1232	1279	1178	1229	1275	1322	

* Parallel Star only available with Wdg 311

DIMENSIONS



SAE	14	18	21	24
AN	25.4	15.87	0	0

APPROVED DOCUMENT

STAMFORD

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CERTIFICATE OF COMPLIANCE

Certificate Number UL-US-2345744-0
Report Reference AU6440-20231107
Date 10-Nov-2023

Issued to: IGSA S A DE C V
PROLONGACION PASEO DE LA REFORMA # 2977
COL CUAJIMALPA
MEXICO, Mexico 05000
Mexico

This is to certify that representative samples of FTSR - Engine Generators
See Addendum Page for Product Designation(s).

Have been evaluated by UL in accordance with the Standard(s) indicated on this Certificate.

Standard(s) for Safety: UL 2200, 2nd Ed., Issue Date: 2012-06-01, Revision Date: 2015-07-29

Additional Information: See the UL Online Certifications Directory at <https://iq.ulprospector.com> for additional information

This Certificate of Compliance indicates that representative samples of the product described in the certification report have met the requirements for UL certification. It does not provide authorization to apply the UL Mark. Only the Authorization Page that references the Follow-Up Services Procedure for ongoing surveillance provides authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Certification Mark on the product.

Deborah Jennings-Conner

Deborah Jennings-Conner, VP Regulatory Services

UL LLC

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CERTIFICATE OF COMPLIANCE

Certificate Number UL-US-2345744-0
Report Reference AU6440-20231107
Date 10-Nov-2023

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements

Model	Category Description
GSBD00700S, GSBD00700L, GSBD00700LT GSBD00700W	Engine Generators
GSBD00800S, GSBD00800L, GSBD00800LT GSBD00800W	Engine Generators
GSBD01000S, GSBD01000L, GSBD01000W	Engine Generators
GSBD01300S, GSBD01300L, GSBD01300W	Engine Generators
GSBD01500S, GSBD01500L, GSBD01500W	Engine Generators
GSBD01700S, GSBD01700L, GSBD01700W, GSBD01750S, GSBD01750L	Engine Generators
GSBD01800S, GSBD01800L	Engine Generators
GSBD02000S, GSBD02000L	Engine Generators
GSBD02300S, GSBD02300L	Engine Generators
GSBD02500S, GSBD02500L	Engine Generators
GSBD02640S, GSBD02640L	Engine Generators
GSBD02800S, GSBD02800L	Engine Generators
GSBD03000S, GSBD03000L	Engine Generators
GSBD03300S, GSBD03300L	Engine Generators
GSBD30600S, GSBD30600L, GSBD30600LT GSBD30600W	Engine Generators
GSBD30633S, GSBD30633L, GSBD30633LT GSBD30633W	Engine Generators
GSBD30644S, GSBD30644L, GSBD30644LT GSBD30644W	Engine Generators

Deborah Jennings-Conner

Deborah Jennings-Conner, VP Regulatory Services

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CERTIFICATE OF COMPLIANCE

Certificate Number UL-CA-2339551-0
Report Reference AU6440-20231107
Date 10-Nov-2023

Issued to: IGSA S A DE C V
PROLONGACION PASEO DE LA REFORMA # 2977
COL CUAJIMALPA
MEXICO, Mexico 05000
Mexico

This is to certify that representative samples of FTSR7 - Engine Generators Certified for Canada
See Addendum Page for Product Designation(s).

Have been evaluated by UL in accordance with the Standard(s) indicated on this Certificate.


Standard(s) for Safety: CSA C22.2 No. 14, Edition 13, Issue Date 2018-03, Revision Date 2022-06

Additional Information: See the UL Online Certifications Directory at <https://iq.ulprospector.com> for additional information

This Certificate of Compliance indicates that representative samples of the product described in the certification report have met the requirements for UL certification. It does not provide authorization to apply the UL Mark. Only the Authorization Page that references the Follow-Up Services Procedure for ongoing surveillance provides authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Certification Mark on the product.


Deborah Jennings-Conner, VP Regulatory Services

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CERTIFICATE OF COMPLIANCE

Certificate Number UL-CA-2339551-0
Report Reference AU6440-20231107
Date 10-Nov-2023

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements

Model	Category Description
GSBD00700S, GSBD00700L, GSBD00700LT GSBD00700W	Engine Generators
GSBD00800S, GSBD00800L, GSBD00800LT GSBD00800W	Engine Generators
GSBD01000S, GSBD01000L, GSBD01000W	Engine Generators
GSBD01300S, GSBD01300L, GSBD01300W	Engine Generators
GSBD01500S, GSBD01500L, GSBD01500W	Engine Generators
GSBD01700S, GSBD01700L, GSBD01700W, GSBD01750S, GSBD01750L	Engine Generators
GSBD01800S, GSBD01800L	Engine Generators
GSBD02000S, GSBD02000L	Engine Generators
GSBD02300S, GSBD02300L	Engine Generators
GSBD02500S, GSBD02500L	Engine Generators
GSBD02640S, GSBD02640L	Engine Generators
GSBD02800S, GSBD02800L	Engine Generators
GSBD03000S, GSBD03000L	Engine Generators
GSBD03300S, GSBD03300L	Engine Generators
GSBD30600S, GSBD30600L, GSBD30600LT GSBD30600W	Engine Generators
GSBD30633S, GSBD30633L, GSBD30633LT GSBD30633W	Engine Generators
GSBD30644S, GSBD30644L, GSBD30644LT GSBD30644W	Engine Generators

Deborah Jennings-Conner
Deborah Jennings-Conner, VP Regulatory Services



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CERTIFICATE OF COMPLIANCE

Certificate Number MH63698
Report Reference MH63698-20200103
Issue Date 2020-JANUARY-08

Issued to: IGSA S A DE C V
PROLONGACION PASEO DE LA REFORMA 2977
COL CUAJIMALPA
05000 MEXICO
DF MEXICO

This certificate confirms that representative samples of SPECIAL-PURPOSE TANKS
Secondary Containment Generator Base Tanks

Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.

Standard(s) for Safety: UL 142, STANDARD FOR STEEL ABOVEGROUND TANKS FOR FLAMMABLE AND COMBUSTIBLE LIQUIDS.
UL 142A STANDARD FOR SPECIAL PURPOSE ABOVEGROUND TANKS FOR SPECIFIC FLAMMABLE OR COMBUSTIBLE LIQUIDS.
CAN/ULC S601, STANDARD FOR SHOP FABRICATED STEEL ABOVEGROUND TANKS FOR FLAMMABLE AND COMBUSTIBLE LIQUIDS.

Additional Information: See the UL Online Certifications Directory at <https://iq.ulprospector.com> for additional information.

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Bruce Mahrenholz, Director North American Certification Program
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