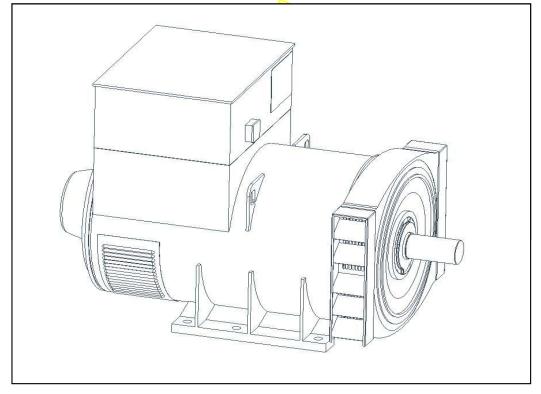


HCM636K - Winding 07

Technical Data Sheet



HCM636K SPECIFICATIONS & OPTIONS



STANDARDS

Marine generators may be certified to Lloyds, DnV, Bureau Veritas, ABS, Germanischer-Lloyd or RINA. 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 adjustment 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 6 ends⁻ 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 6 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 50 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.

HCM636K



WINDING 07

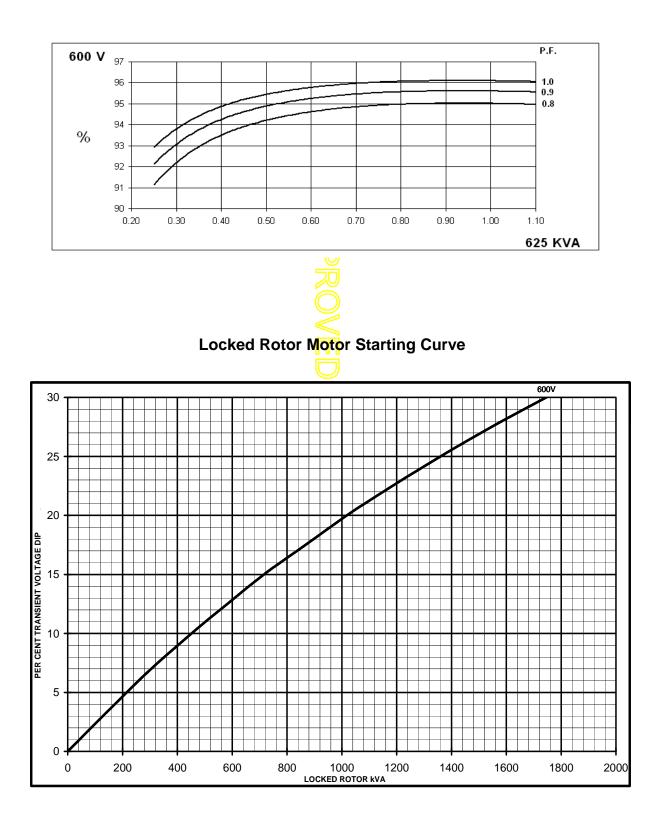
	0-0.0.7-				
CONTROL SYSTEM	SEPARATE	LY EXCITED BY P.N	1.G.		
A.V.R.	MX321				
VOLTAGE REGULATION	± 0.5 %	With 4% ENGINE G	GOVERNING		
SUSTAINED SHORT CIRCUIT	REFER TO	SHORT CIRCUIT DE	ECREMENT CURVE	S (page 5)	
INSULATION SYSTEM			CLAS	SH	
PROTECTION	IP23				
RATED POWER FACTOR			0.8	3	
STATOR WINDING	DOUBLE LAYER LAP				
WINDING PITCH	TWO THIRDS				
WINDING LEADS	6				
STATOR WDG. RESISTANCE	0.0055 Ohms PER PHASE AT 22°C STAR CONNECTED				
ROTOR WDG. RESISTANCE			1.67 Ohms	at 22°C	
EXCITER STATOR RESISTANCE	17 Ohms at 22°C				
EXCITER ROTOR RESISTANCE	0.05 Ohms PER PHASE AT 22°C				
R.F.I. SUPPRESSION	BS EN 61000-6-2 & BSEN 61000-6-4, VDE 0875G, VDE 0875N. refer to factory for others				
WAVEFORM DISTORTION	501			BALANCED LINEAR LOAD < 5.0%	
MAXIMUM OVERSPEED			1500 Re		
BEARING DRIVE END		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	BALL. 622		
BEARING NON-DRIVE END		Q	BALL. 63	· · · ·	
BEARING NON-DRIVE END		1 BEARING	BALL. 03	2 BEARING	
WEIGHT COMP. GENERATOR		2307 kg		2276 kg	
WEIGHT WOUND STATOR		1078 kg		1008 kg	
WEIGHT WOUND ROTOR		1025 kg		1005 kg	
WR ² INERTIA		27.7814 kgm ²	2	27.2379 kgm ²	
SHIPPING WEIGHTS in a crate		2367kg		2336kg	
PACKING CRATE SIZE		194 x 92 x 147(c	m)	194 x 92 x 147(cm)	
TELEPHONE INTERFERENCE		THF 2%	,	TIF<50	
COOLING AIR		<u> </u>	1.961 m ³ /sec	: 4156 cfm	
VOLTAGE STAR	600V				
VOLTAGE DELTA		\leq	346	Ŵ	
kVA BASE RATING FOR REACTANCE VALUES			62	5	
Xd DIR. AXIS SYNCHRONOUS		Z	1.4	7	
X'd DIR. AXIS TRANSIENT			0.1	5	
X"d DIR. AXIS SUBTRANSIENT			0.1	2	
Xq QUAD. AXIS REACTANCE	0.92				
X"q QUAD. AXIS SUBTRANSIENT	0.13				
XL LEAKAGE REACTANCE	0.05				
X2 NEGATIVE SEQUENCE	0.13				
X0ZERO SEQUENCE	0.08				
REACTANCES ARE SATURAT	ED	VALUES	S ARE PER UNIT A	FRATING AND VOLTAGE INDICATED	
T'd TRANSIENT TIME CONST.			0.12	2s	
T"d SUB-TRANSTIME CONST.	0.016s				
T'do O.C. FIELD TIME CONST.	1.15s				
Ta ARMATURE TIME CONST.	0.04s				
SHORT CIRCUIT RATIO			1/X	d	

STAMFORD

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THREE PHASE EFFICIENCY CURVES

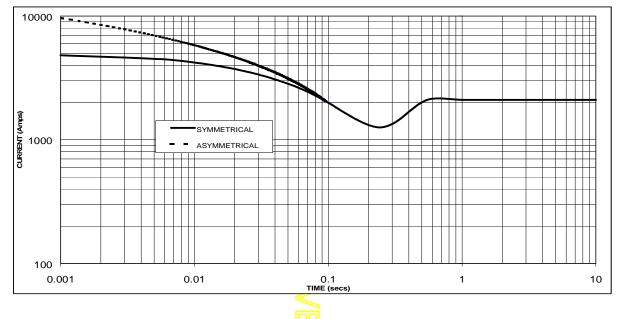




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Winding 07

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



Sustained Short Circuit = 2,100 Amps

Note

The following multiplication factor should be used to convert the values from curve for the various types of short circuit :

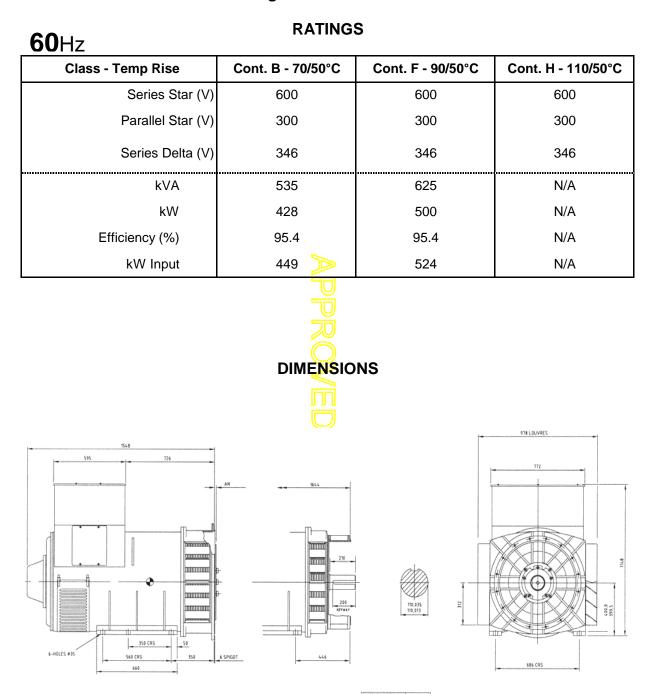
	3-phase	2-phase L-L	1-phase L-N
Instantaneous	x <mark>1.00</mark>	x 0.87	x 1.30
Minimum	x 1.00	x 1.80	x 3.20
Sustained	x <mark>1.00</mark>	x 1.50	x 2.50
Max. sustained duration	10 sec.	5 sec.	2 sec.

All other times are unchanged

HCM636K



Winding 07 / 0.8 Power Factor



COUPLING DISC	AN
SAE 14	25,4
SAE 18	15,87
SAE 21	0
SAE 24	0





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