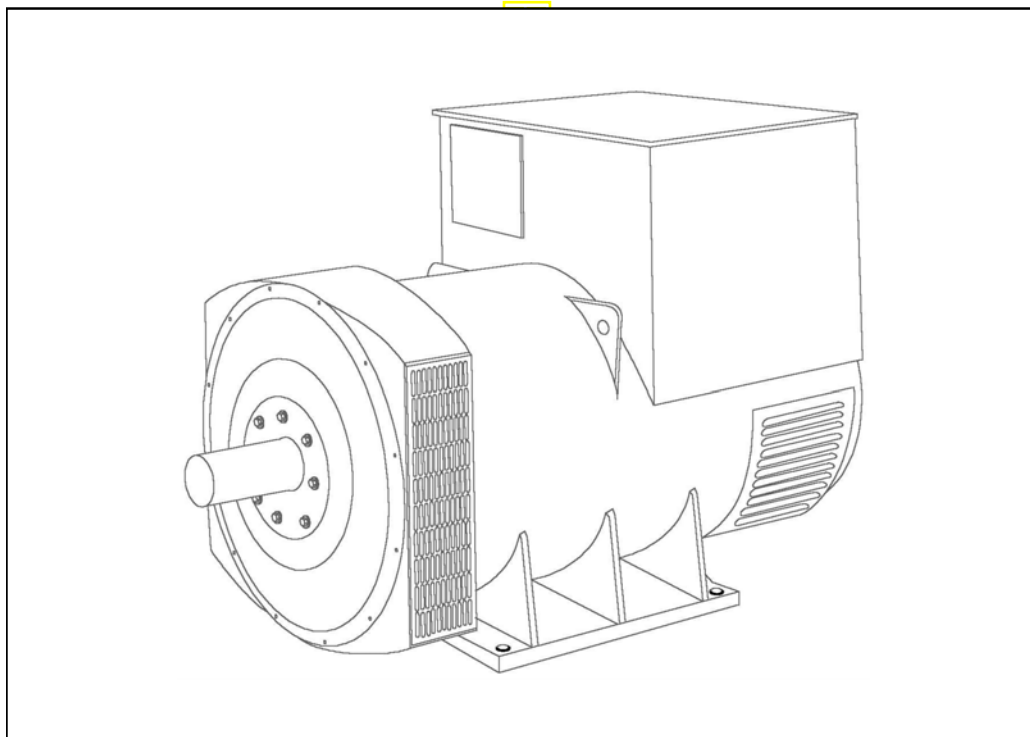


STAMFORD®

HCI636H - Winding 07

Technical  Data Sheet



HCI636H

SPECIFICATIONS & OPTIONS

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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 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 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

HC636H WINDING 07

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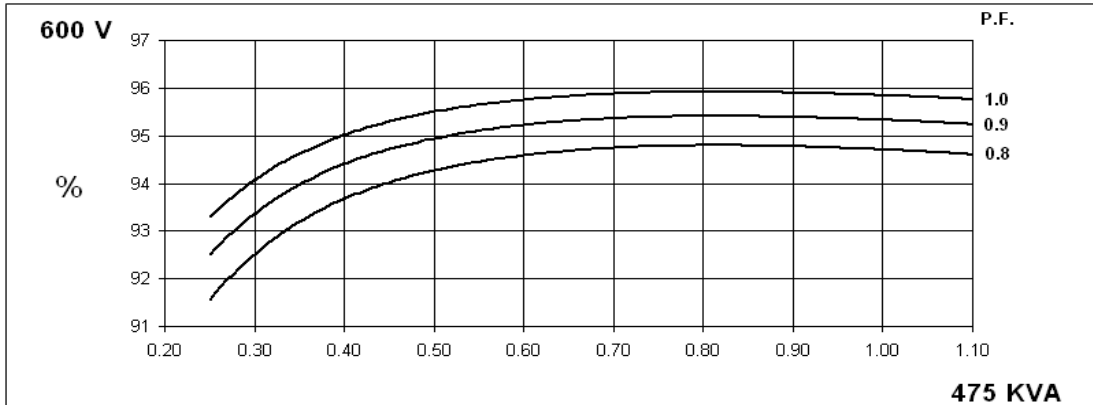
CONTROL SYSTEM	SEPARATELY EXCITED BY P.M.G.	
A.V.R.	MX321	
VOLTAGE REGULATION	± 0.5 %	With 4% ENGINE GOVERNING
SUSTAINED SHORT CIRCUIT	REFER TO SHORT CIRCUIT DECREMENT CURVES (page 5)	

INSULATION SYSTEM	CLASS H	
PROTECTION	IP23	
RATED POWER FACTOR	0.8	
STATOR WINDING	DOUBLE LAYER LAP	
WINDING PITCH	TWO THIRDS	
WINDING LEADS	6	
MAIN STATOR RESISTANCE	0.0102 Ohms PER PHASE AT 22°C STAR CONNECTED	
MAIN ROTOR RESISTANCE	1.27 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 & 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	1500 Rev/Min	
BEARING DRIVE END	BALL. 6224 C3	
BEARING NON-DRIVE END	BALL. 6317 C3	
	1 BEARING	2 BEARING
WEIGHT COMP. GENERATOR	1880 kg	1848 kg
WEIGHT WOUND STATOR	779 kg	720 kg
WEIGHT WOUND ROTOR	786 kg	742 kg
WR ² INERTIA	19.4923 kgm ²	18.8858 kgm ²
SHIPPING WEIGHTS in a crate	1940kg	1908kg
PACKING CRATE SIZE	183 x 92 x 140(cm)	183 x 92 x 140(cm)
TELEPHONE INTERFERENCE	THF<2%	TIF<50
COOLING AIR	1.961 m ³ /sec 4156 cfm	
VOLTAGE STAR	600V	
kVA BASE RATING FOR REACTANCE VALUES	475	
X _d DIR. AXIS SYNCHRONOUS	1.91	
X' _d DIR. AXIS TRANSIENT	0.19	
X'' _d DIR. AXIS SUBTRANSIENT	0.15	
X _q QUAD. AXIS REACTANCE	1.19	
X'' _q QUAD. AXIS SUBTRANSIENT	0.16	
X _L LEAKAGE REACTANCE	0.07	
X ₂ NEGATIVE SEQUENCE	0.16	
X ₀ ZERO SEQUENCE	0.11	
REACTANCES ARE SATURATED	VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED	
T' _d TRANSIENT TIME CONST.	0.12s	
T'' _d SUB-TRANSTIME CONST.	0.016s	
T' _{do} O.C. FIELD TIME CONST.	1.05s	
T _a ARMATURE TIME CONST.	0.033s	
SHORT CIRCUIT RATIO	1/X _d	

HC636H
Winding 07

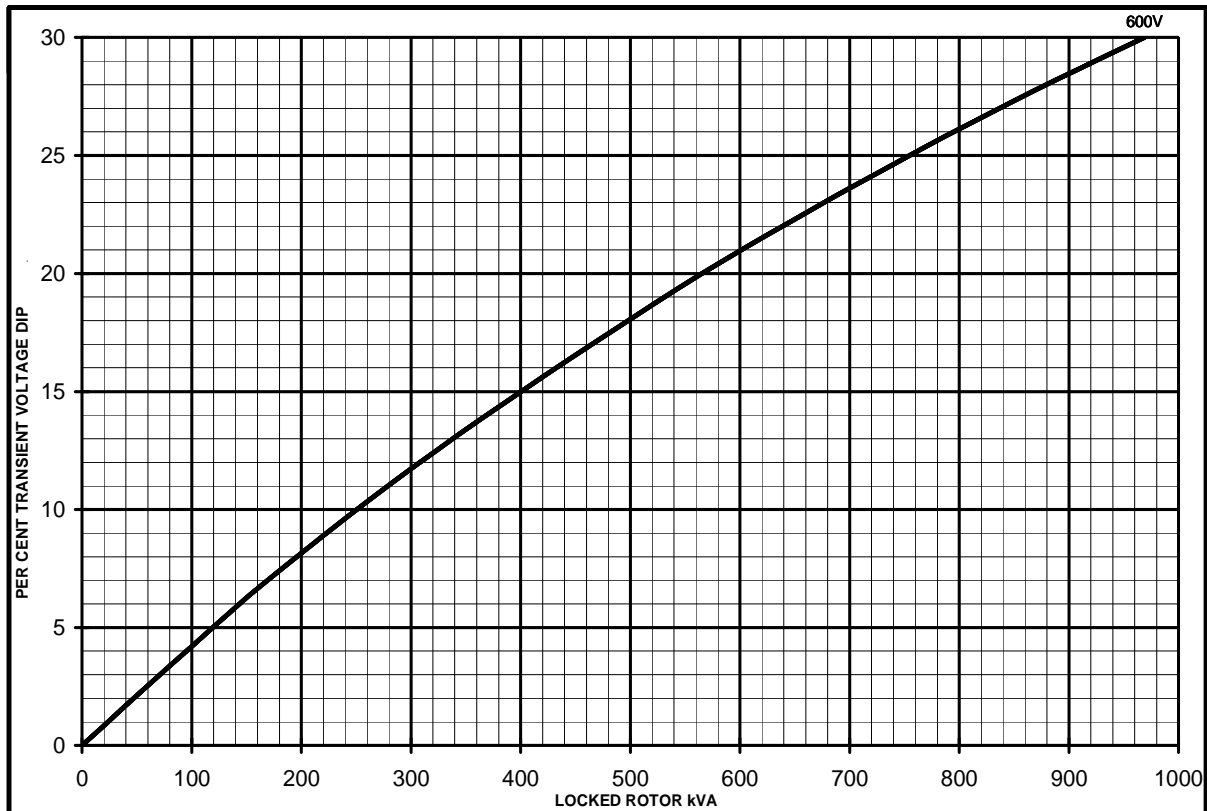
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THREE PHASE EFFICIENCY CURVES



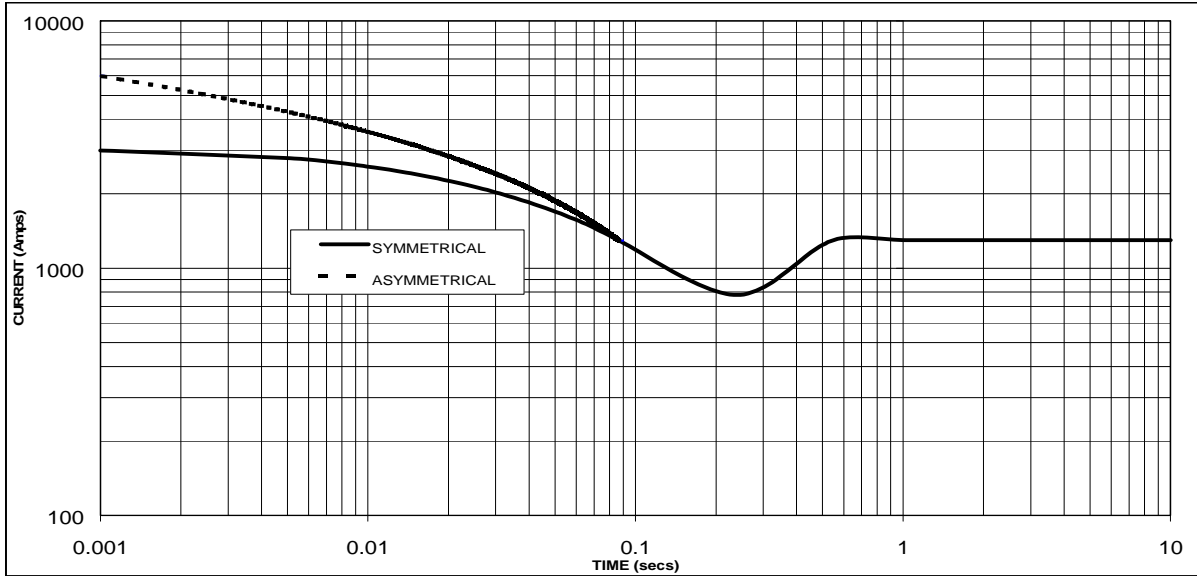
IPROVID

Locked Rotor Motor Starting Curve



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



Sustained Short Circuit = 1,300 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 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

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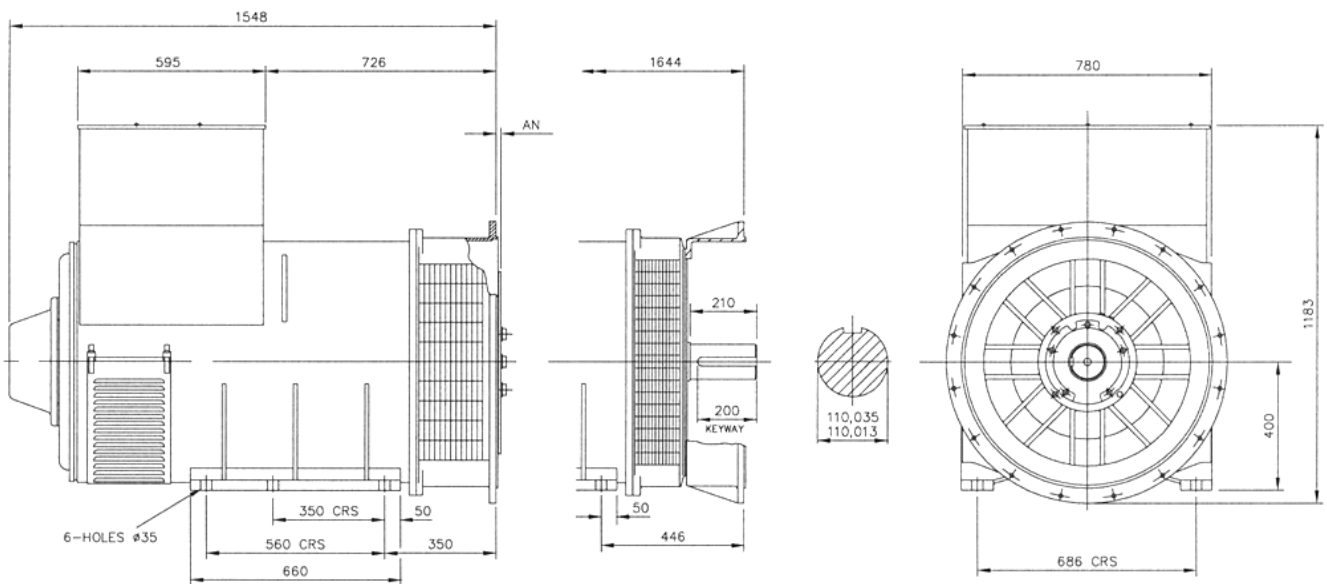
Winding 07 / 0.8 Power Factor

RATINGS

Class - Temp Rise	Cont. F - 105/40°C	Cont. H - 125/40°C	Standby - 150/40°C	Standby - 163/27°C
60Hz Star (V)	600	600	600	600
kVA	438	475	494	508
kW	350	380	395	406
Efficiency (%)	94.8	94.7	94.7	94.6
kW Input	370	401	417	429

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DIMENSIONS



SAE	14	18	21	24
AN	25.4	15.87	0	0

APPROVED DOCUMENT

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