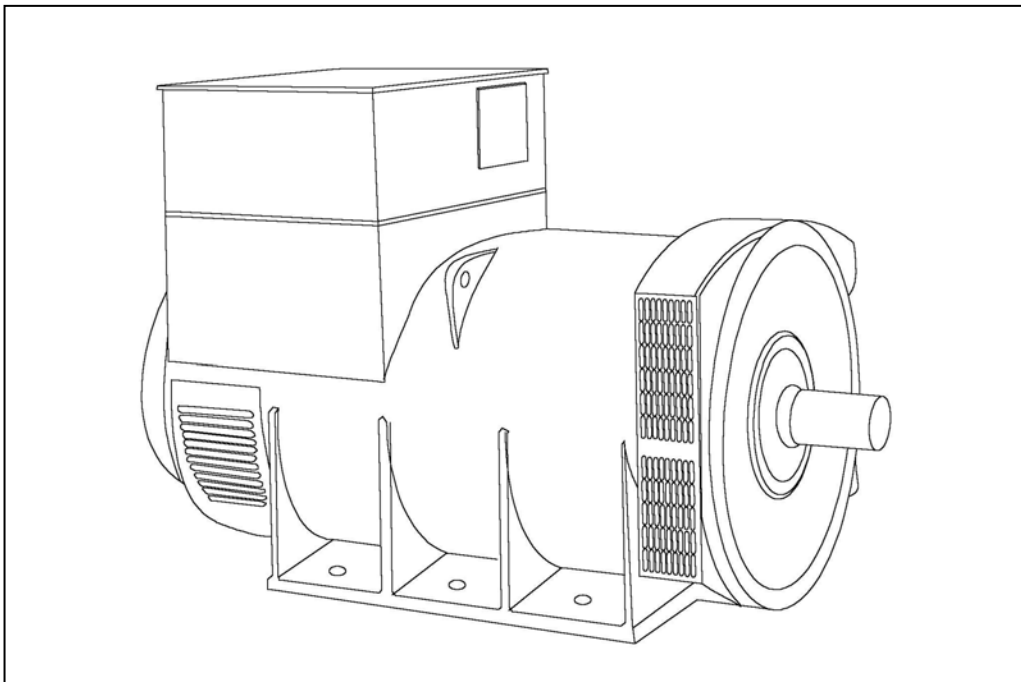


**HCI734G** - Technical Data Sheet



# HCI734G

## SPECIFICATIONS & OPTIONS



### STANDARDS

Newage 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%.

*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.*

**HCI734G**  
**WINDING 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
STATOR WDG. RESISTANCE	0.00093 Ohms PER PHASE AT 22°C STAR CONNECTED
ROTOR WDG. RESISTANCE	1.65 Ohms 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. 6228 (ISO)
BEARING NON-DRIVE END	BALL. 6319 (ISO)

	1 BEARING				2 BEARING			
WEIGHT COMP. GENERATOR	3541 kg				3635 kg			
WEIGHT WOUND STATOR	1852 kg				1852 kg			
WEIGHT WOUND ROTOR	1494 kg				1431 kg			
WR <sup>2</sup> INERTIA	45.5872 kgm <sup>2</sup>				44.5864 kgm <sup>2</sup>			
SHIPPING WEIGHTS in a crate	3614kg				3704kg			
PACKING CRATE SIZE	216 x 105 x 154 (cm)				216 x 105 x 154 (cm)			
	50 Hz				60 Hz			
TELEPHONE INTERFERENCE	THF<2%				TIF<50			
COOLING AIR	2.64 m <sup>3</sup> /sec 5600 cfm				3.17 m <sup>3</sup> /sec 6720 cfm			
VOLTAGE STAR	380/220	400/231	415/240	440/254	416/240	440/254	460/266	480/277
KVA BASE RATING FOR REACTANCE VALUES	1800	1800	1800	1800	2063	2163	2213	2281
X <sub>d</sub> DIR. AXIS SYNCHRONOUS	2.84	2.56	2.38	2.12	3.29	3.08	2.88	2.73
X' <sub>d</sub> DIR. AXIS TRANSIENT	0.23	0.21	0.20	0.17	0.25	0.24	0.22	0.21
X'' <sub>d</sub> DIR. AXIS SUBTRANSIENT	0.17	0.15	0.14	0.12	0.19	0.18	0.17	0.16
X <sub>q</sub> QUAD. AXIS REACTANCE	2.11	1.90	1.77	1.57	2.43	2.28	2.13	2.02
X'' <sub>q</sub> QUAD. AXIS SUBTRANSIENT	0.31	0.28	0.26	0.23	0.35	0.33	0.31	0.29
X <sub>l</sub> LEAKAGE REACTANCE	0.08	0.07	0.07	0.06	0.08	0.08	0.07	0.07
X <sub>2</sub> NEGATIVE SEQUENCE	0.27	0.24	0.22	0.20	0.29	0.27	0.25	0.24
X <sub>0</sub> ZERO SEQUENCE	0.03	0.03	0.03	0.02	0.04	0.03	0.03	0.03

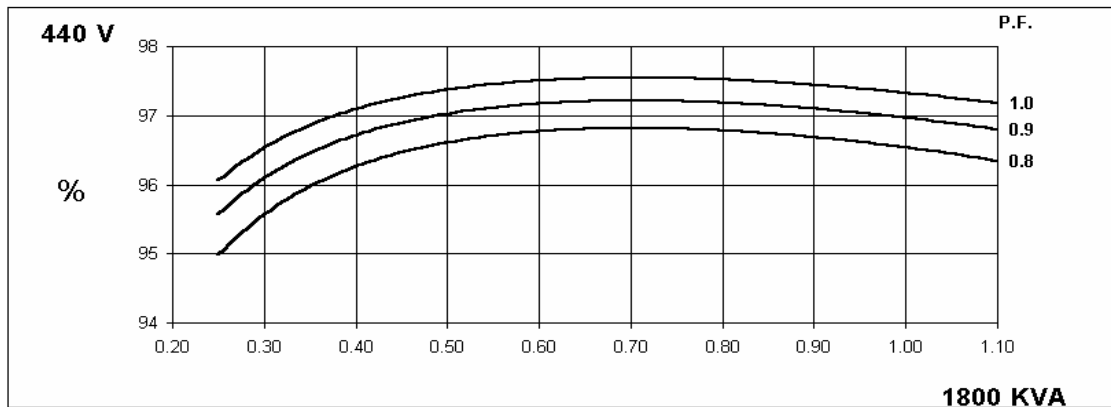
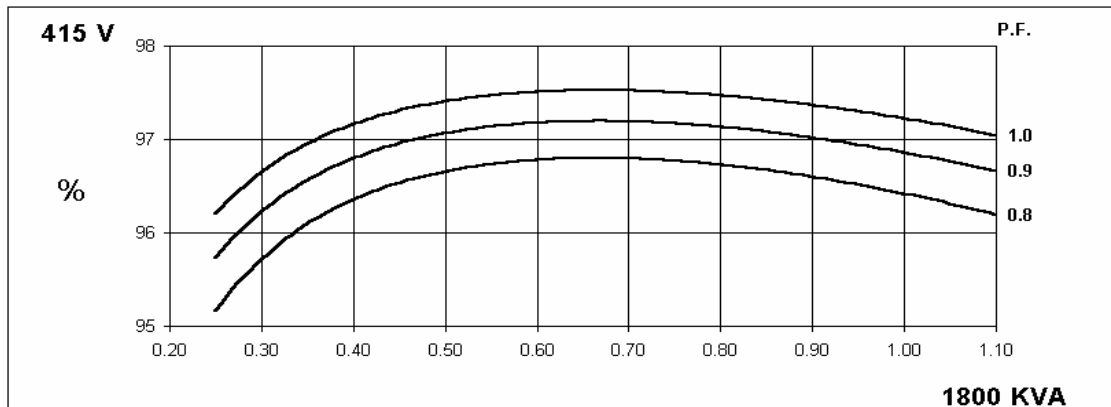
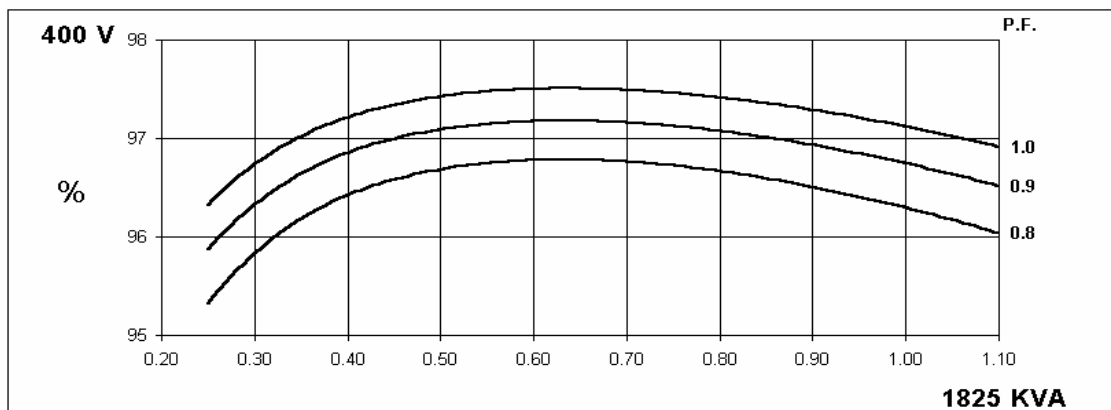
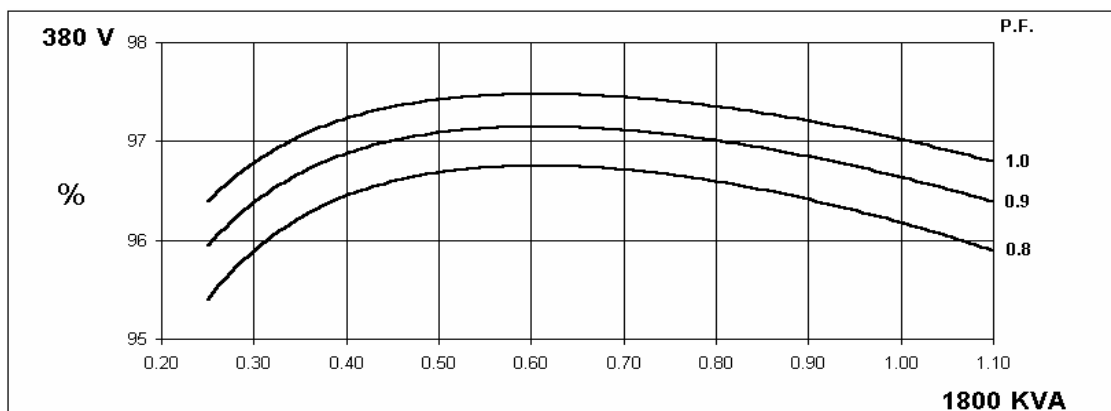
REACTANCES ARE SATURATED		VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED	
T' <sub>d</sub> TRANSIENT TIME CONST.	0.33s		
T'' <sub>d</sub> SUB-TRANSTIME CONST.	0.03s		
T' <sub>do</sub> O.C. FIELD TIME CONST.	3.41s		
T <sub>a</sub> ARMATURE TIME CONST.	0.08s		
SHORT CIRCUIT RATIO	1/X <sub>d</sub>		

**50  
Hz**

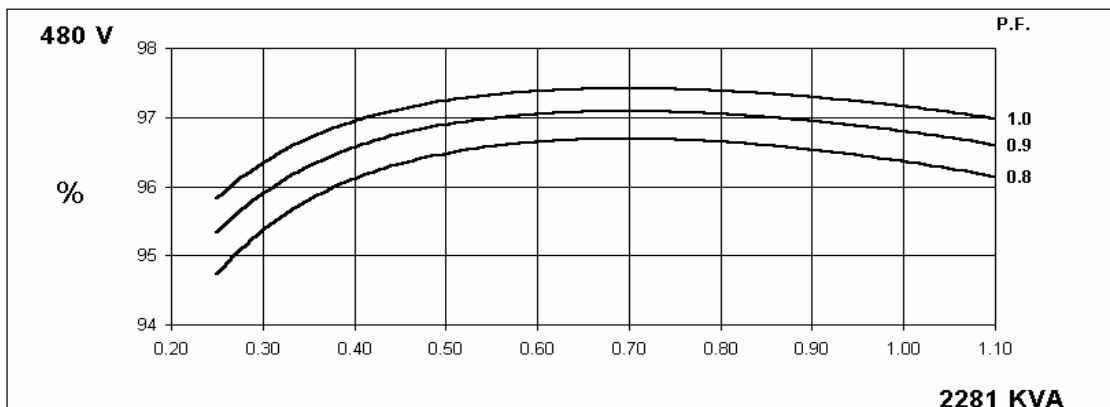
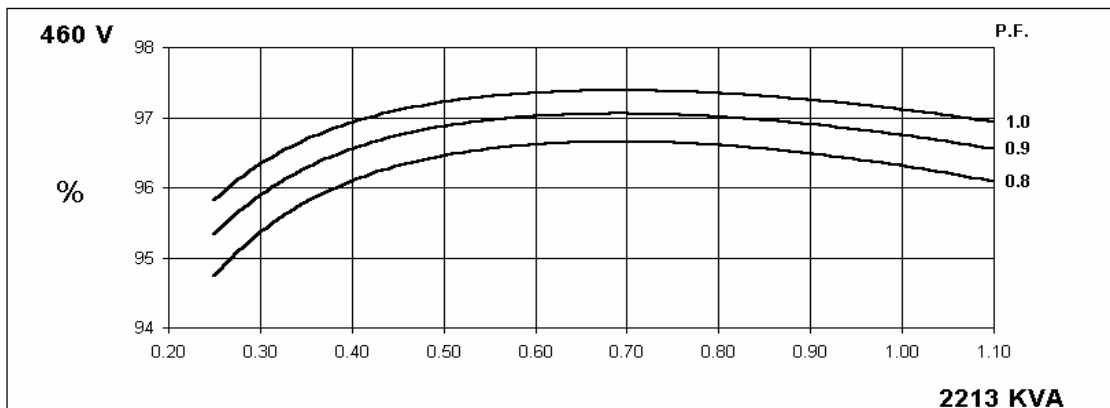
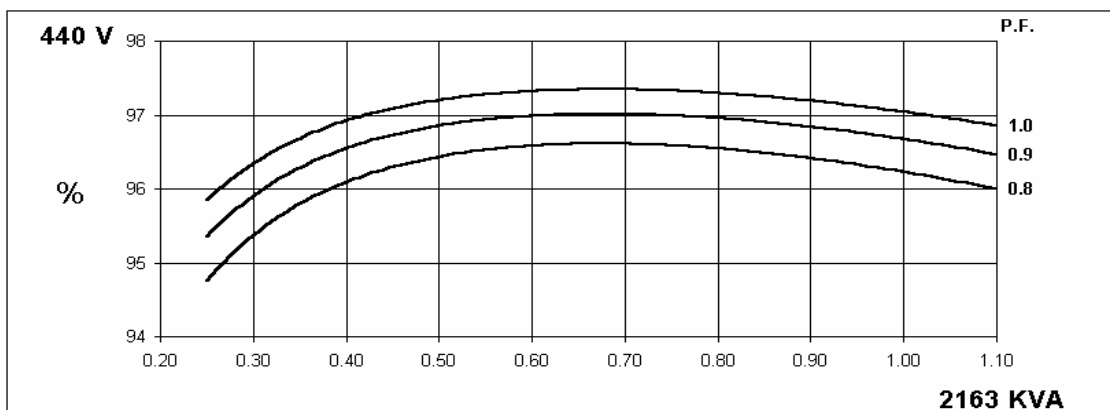
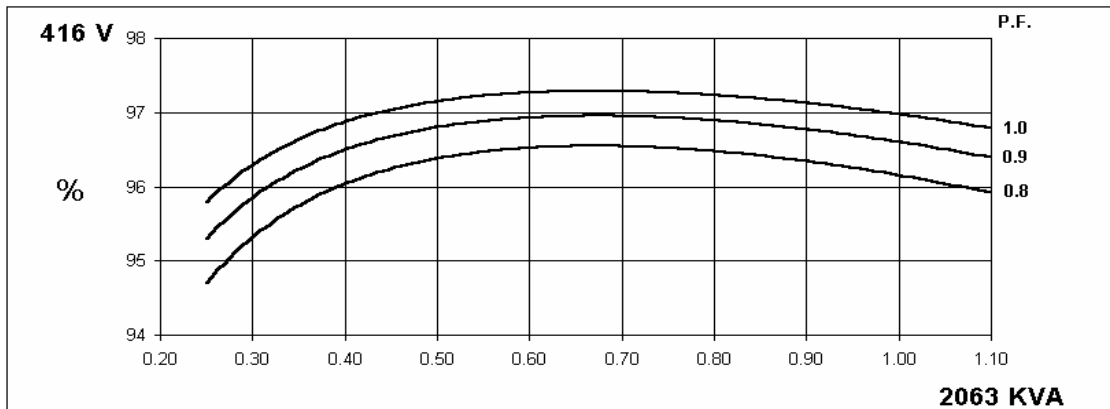
**HCI734G**  
Winding 312



**THREE PHASE EFFICIENCY CURVES**



**THREE PHASE EFFICIENCY CURVES**

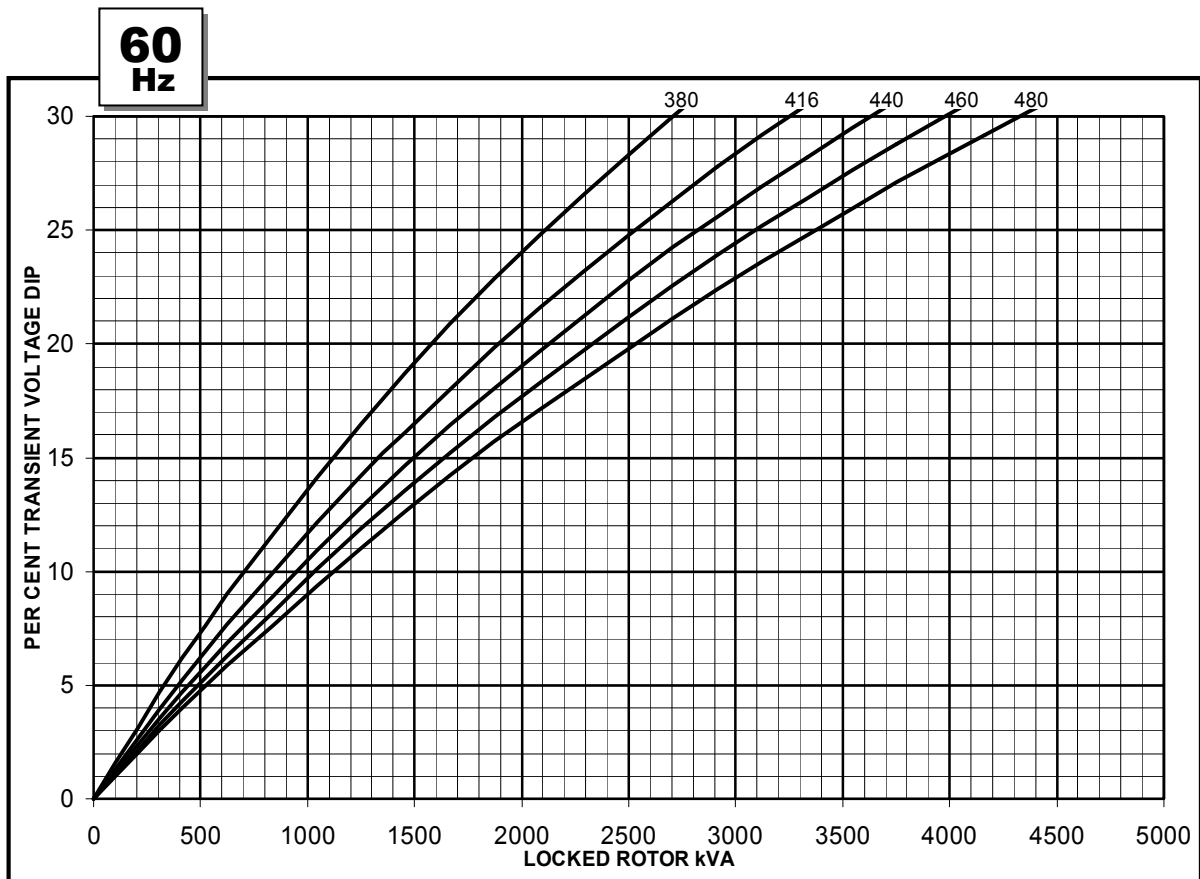
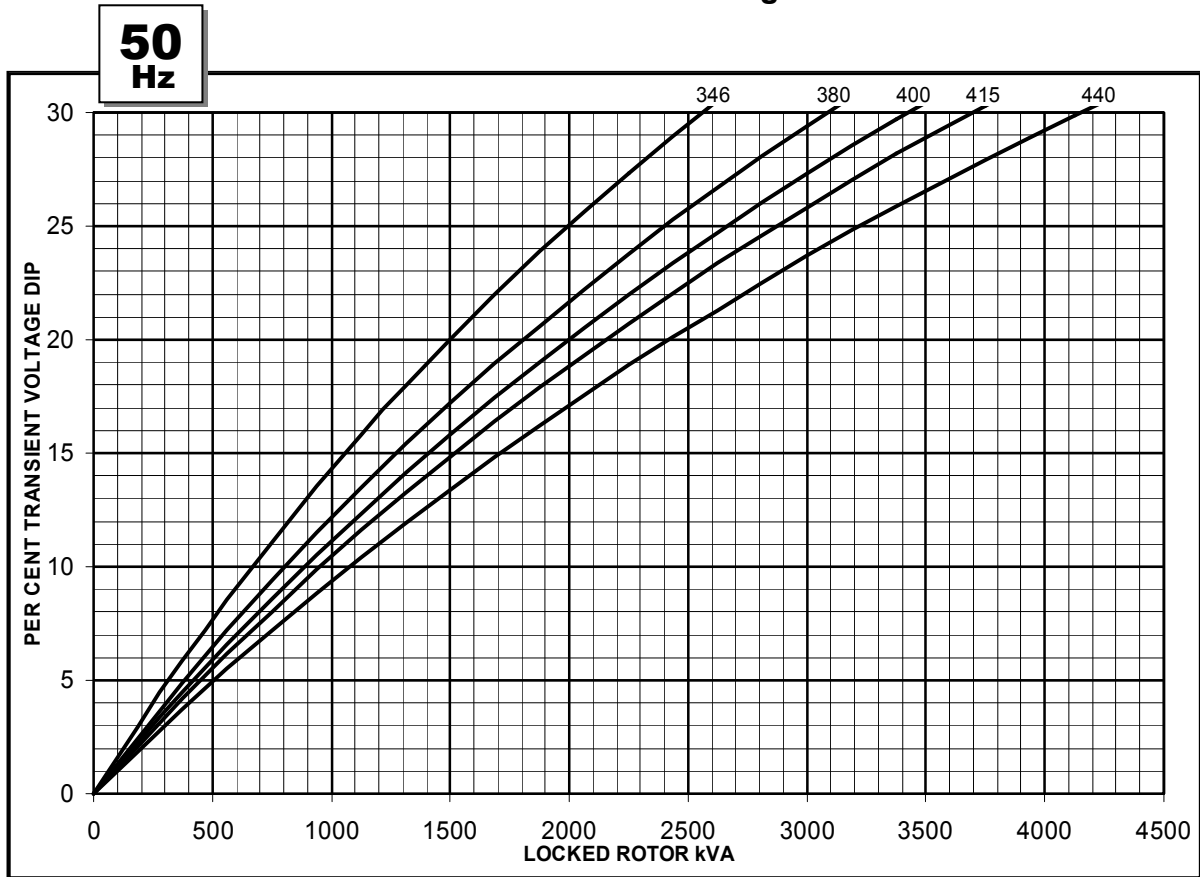


# HCI734G

Winding 312

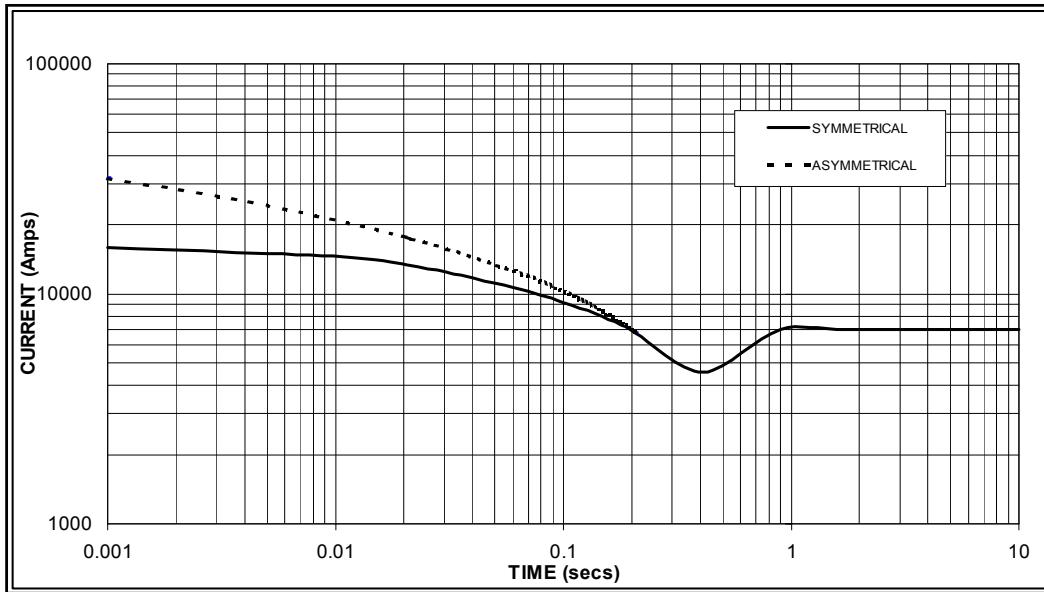


## Locked Rotor Motor Starting Curve



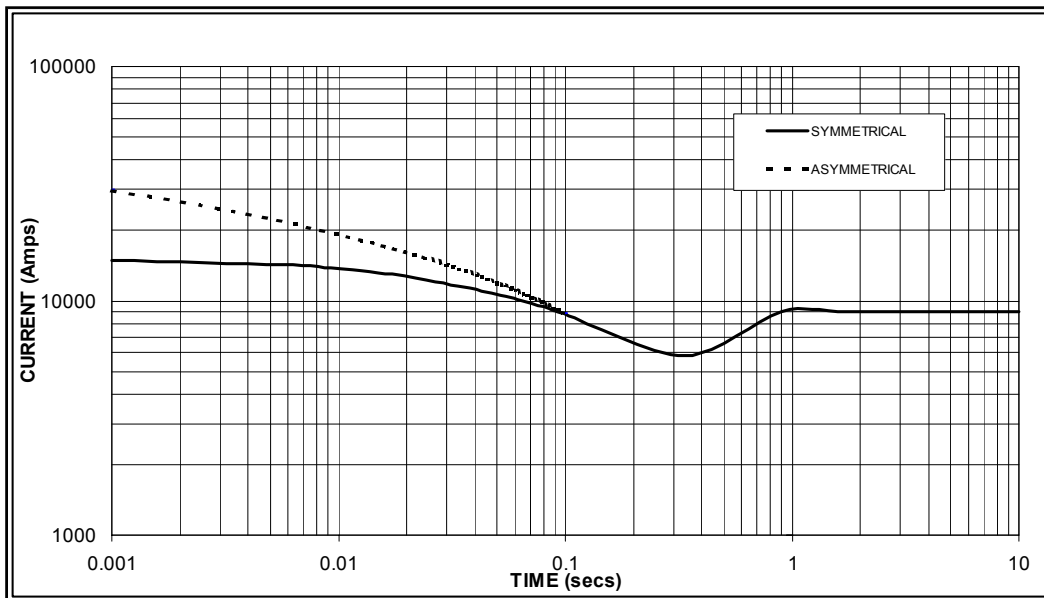
**Three-phase Short Circuit Decrement Curve. No-load Excitation at Rated Speed  
Based on Star (wye) connection.**

**50  
Hz**



Sustained Short Circuit = 7,000 Amps

**60  
Hz**



Sustained Short Circuit = 9,000 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 1.05	440v	x 1.06
415v	x 1.09	460v	x 1.10
440v	x 1.16	480v	x 1.15

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.

# HCI734G

Winding 312 / 0.8 Power Factor

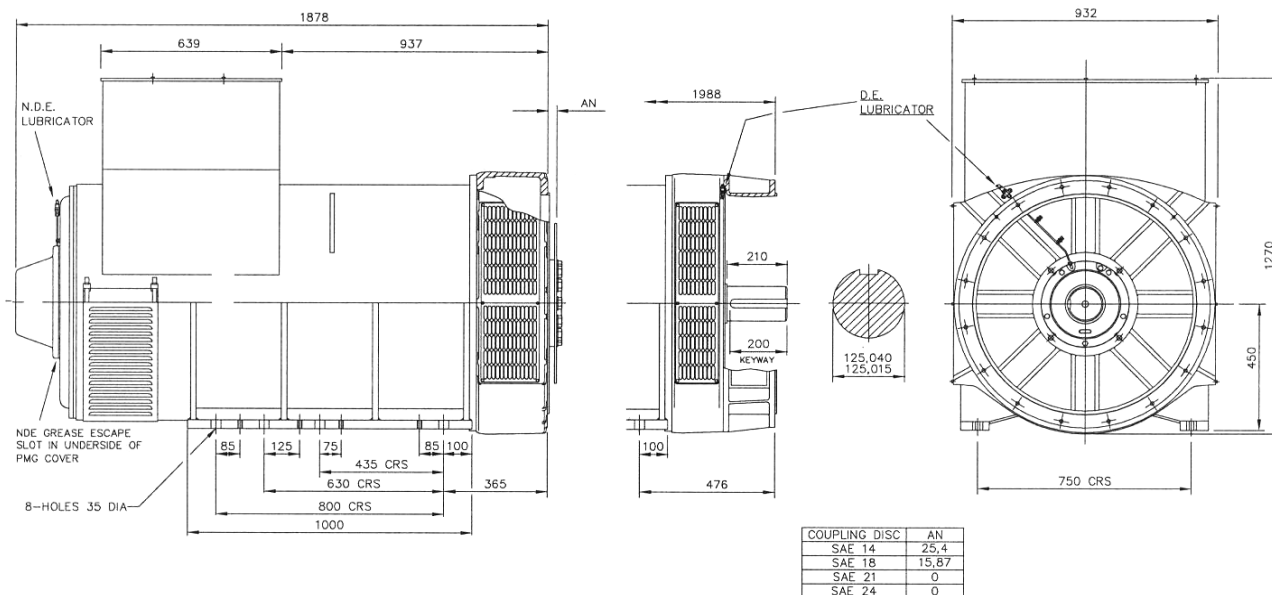


## RATINGS

Class - Temp Rise		Cont. F - 105/40°C				Cont. H - 125/40°C				Standby - 150/40°C				Standby - 163/27°C			
<b>50Hz</b>	Star (V)	380	400	415	440	380	400	415	440	380	400	415	440	380	400	415	440
	kVA	1675	1700	1675	1675	1800	1825	1800	1800	1860	1885	1860	1860	1930	1955	1930	1930
	kW	1340	1360	1340	1340	1440	1460	1440	1440	1488	1508	1488	1488	1544	1564	1544	1544
	Efficiency (%)	96.3	96.4	96.6	96.6	96.2	96.3	96.4	96.5	96.1	96.2	96.4	96.5	96.0	96.1	96.3	96.4
	kW Input	1391	1411	1387	1387	1497	1516	1494	1492	1548	1568	1544	1542	1608	1627	1603	1602

<b>60Hz</b>	Star (V)	416	440	460	480	416	440	460	480	416	440	460	480	416	440	460	480
	kVA	1900	1988	2038	2100	2063	2163	2213	2281	2175	2281	2338	2413	2250	2344	2413	2500
	kW	1520	1590	1630	1680	1650	1730	1770	1825	1740	1825	1870	1930	1800	1875	1930	2000
	Efficiency (%)	96.3	96.4	96.5	96.5	96.2	96.2	96.3	96.4	96.0	96.1	96.2	96.2	95.9	96.0	96.1	96.2
	kW Input	1578	1650	1690	1741	1716	1799	1838	1893	1813	1899	1944	2007	1877	1953	2009	2079

## DIMENSIONS



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