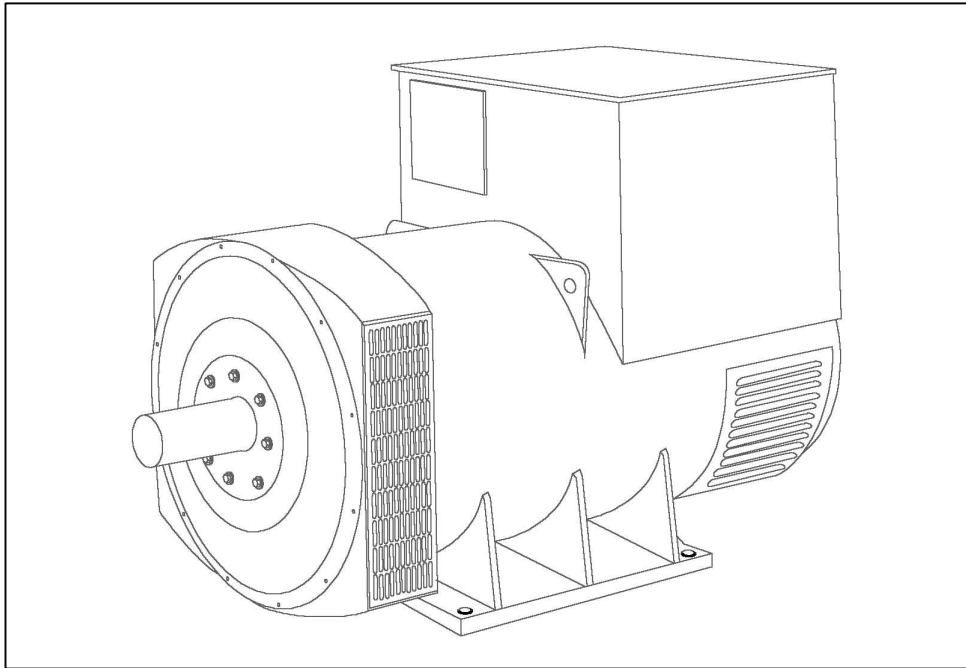


HCI634H - Technical Data Sheet



HCI634H

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.

HCI634H

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	0.003 Ohms PER PHASE AT 22°C STAR CONNECTED		
ROTOR WDG. RESISTANCE	1.88 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	2117 kg		2145 kg	
WEIGHT WOUND STATOR	1010 kg		1010 kg	
WEIGHT WOUND ROTOR	866 kg		821 kg	
WR ² INERTIA	20.0438 kgm ²		19.4965 kgm ²	
SHIPPING WEIGHTS in a crate	2173kg		2180kg	
PACKING CRATE SIZE	183 x 92 x 140(cm)		183 x 92 x 140(cm)	

	50 Hz				60 Hz			
TELEPHONE INTERFERENCE	THF<2%				TIF<50			
COOLING AIR	1.614 m³/sec 3420 cfm				1.961 m³/sec 4156 cfm			
VOLTAGE STAR	380/220	400/231	415/240	440/254	416/240	440/254	460/266	480/277
VOLTAGE DELTA	220	230	240	254	240	254	266	277
kVA BASE RATING FOR REACTANCE VALUES	910	910	910	875	1025	1063	1075	1125
Xd DIR. AXIS SYNCHRONOUS	2.99	2.70	2.51	2.15	3.37	3.13	2.89	2.78
X'd DIR. AXIS TRANSIENT	0.25	0.23	0.21	0.18	0.29	0.27	0.25	0.24
X''d DIR. AXIS SUBTRANSIENT	0.18	0.16	0.15	0.13	0.19	0.18	0.17	0.16
Xq QUAD. AXIS REACTANCE	1.77	1.60	1.49	1.27	2.00	1.86	1.72	1.65
X''q QUAD. AXIS SUBTRANSIENT	0.19	0.17	0.16	0.14	0.22	0.20	0.19	0.18
Xl LEAKAGE REACTANCE	0.09	0.08	0.07	0.06	0.10	0.09	0.08	0.08
X ₂ NEGATIVE SEQUENCE	0.20	0.18	0.17	0.14	0.23	0.21	0.20	0.19
X ₀ ZERO SEQUENCE	0.03	0.02	0.02	0.02	0.03	0.03	0.02	0.02

REACTANCES ARE SATURATED

VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED

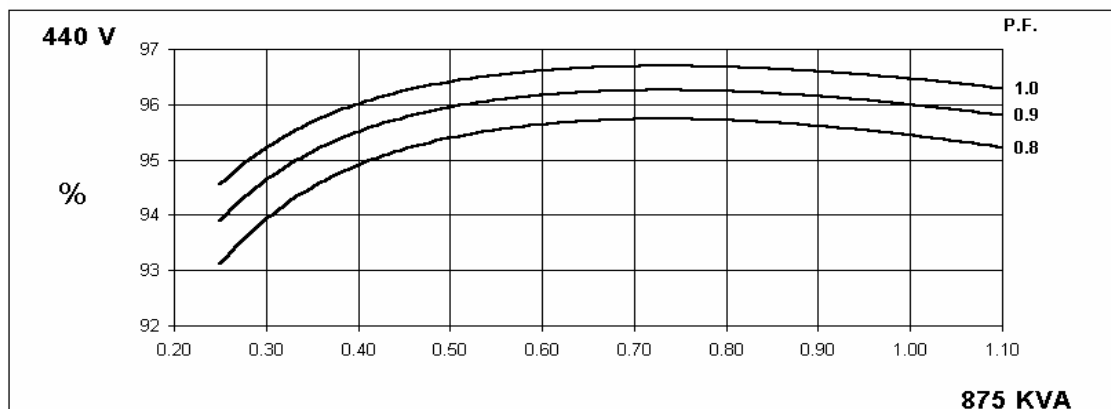
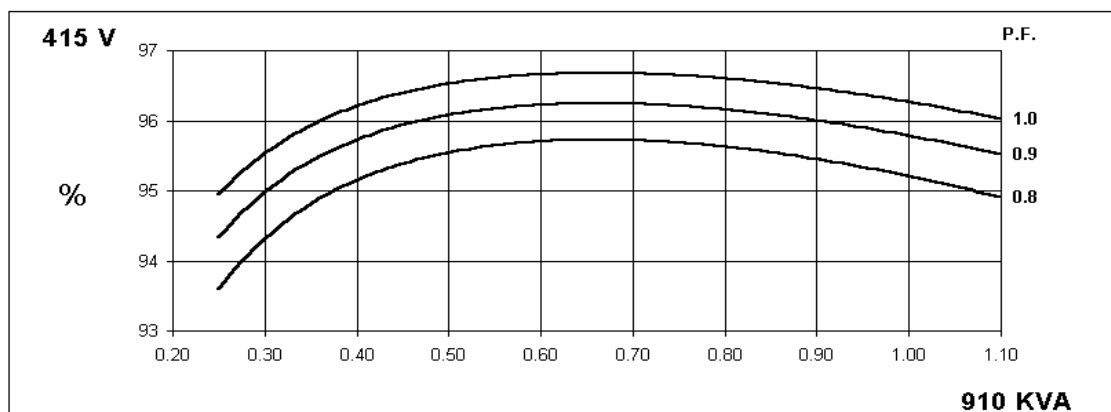
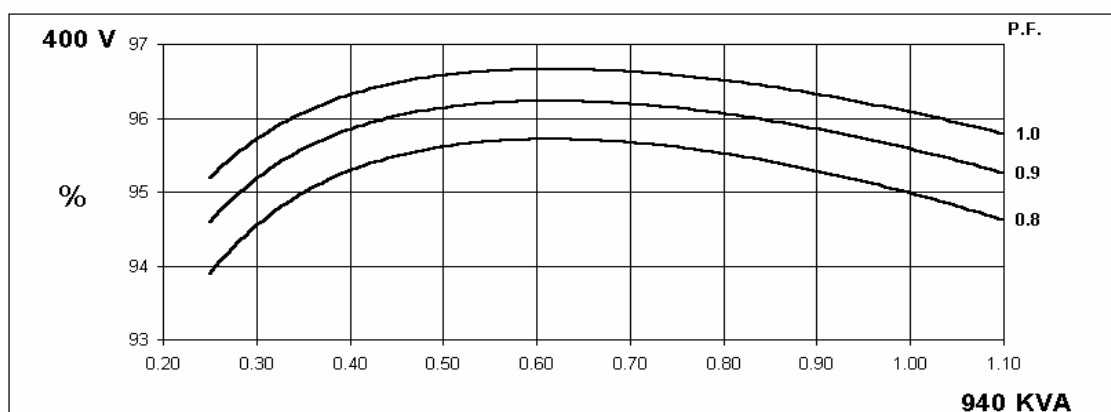
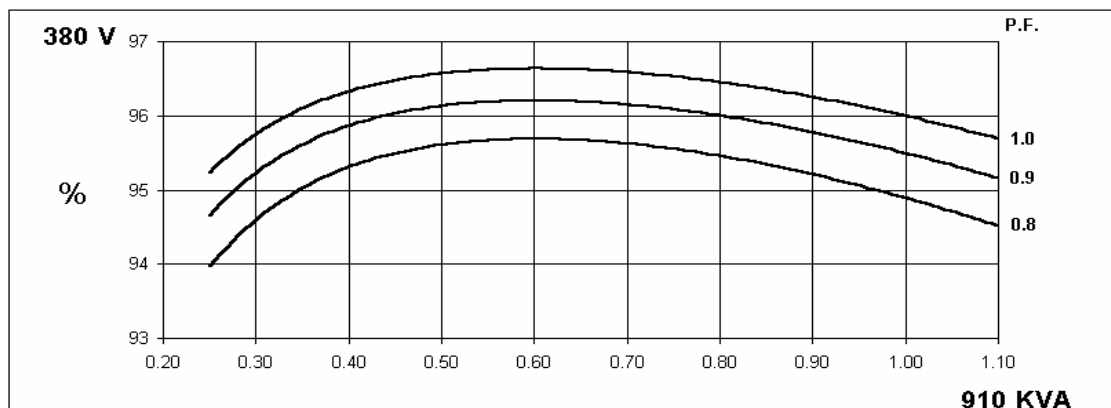
T'd TRANSIENT TIME CONST.	0.185
T''d SUB-TRANSTIME CONST.	0.025
T'do O.C. FIELD TIME CONST.	2.44
Ta ARMATURE TIME CONST.	0.04
SHORT CIRCUIT RATIO	1/Xd

**50
Hz**

HCI634H
Winding 312

STAMFORD
power generation

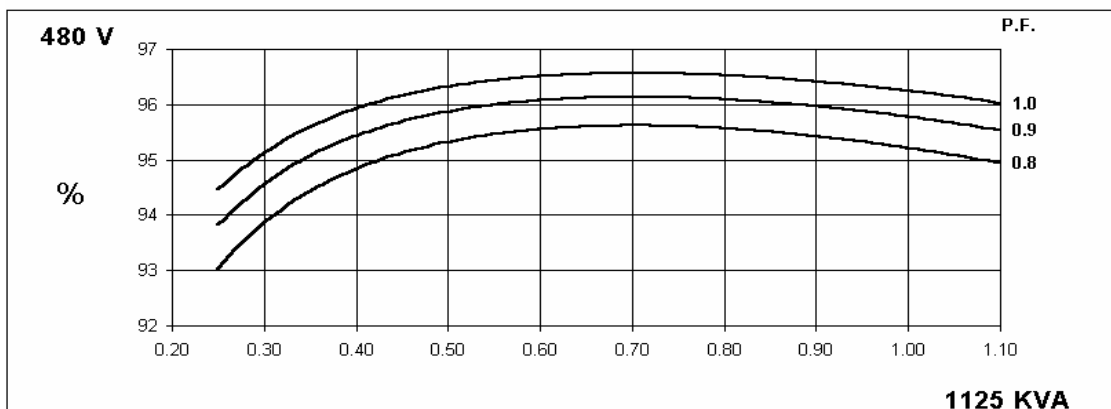
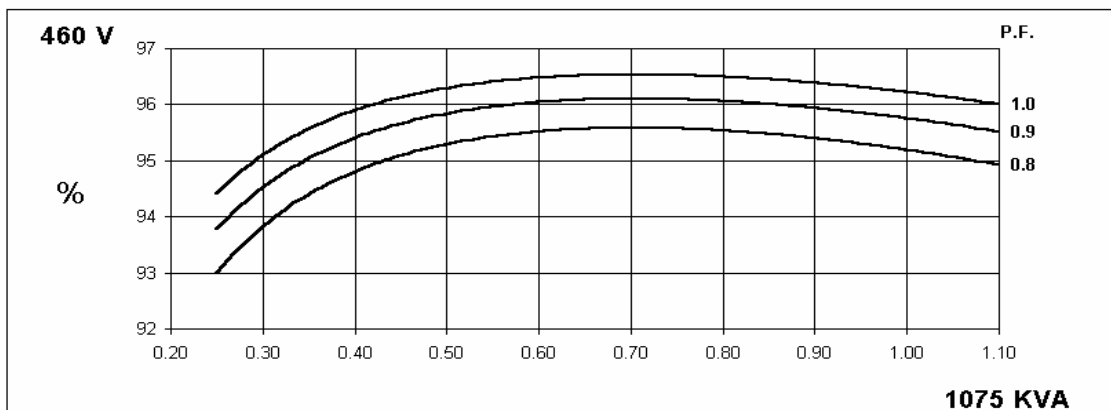
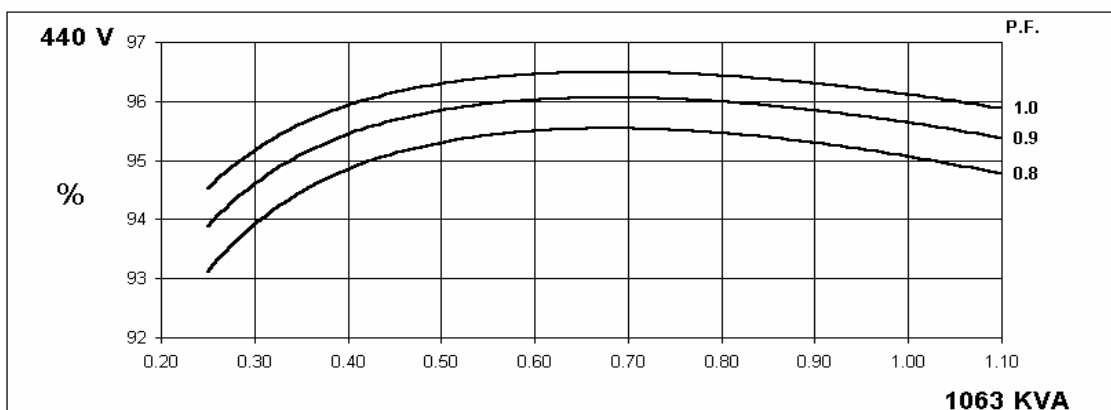
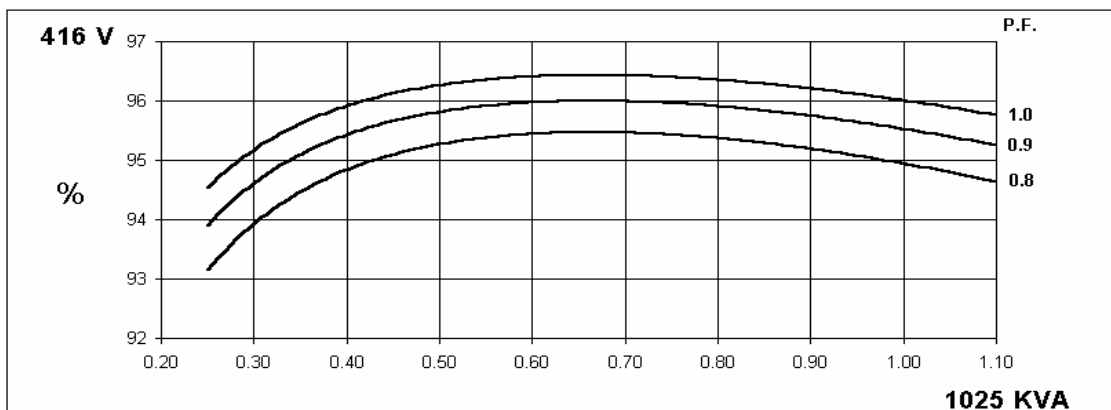
THREE PHASE EFFICIENCY CURVES



HCI634H Winding 312

**60
Hz**

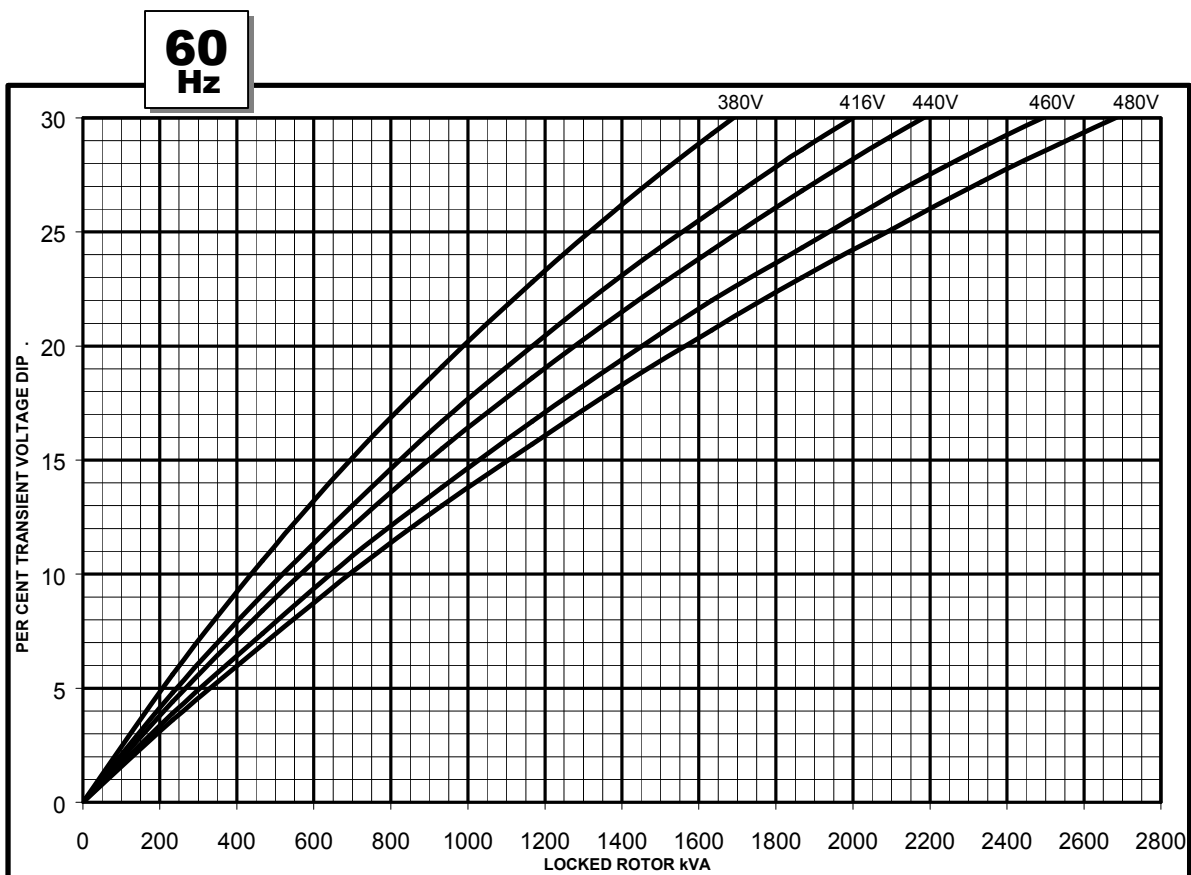
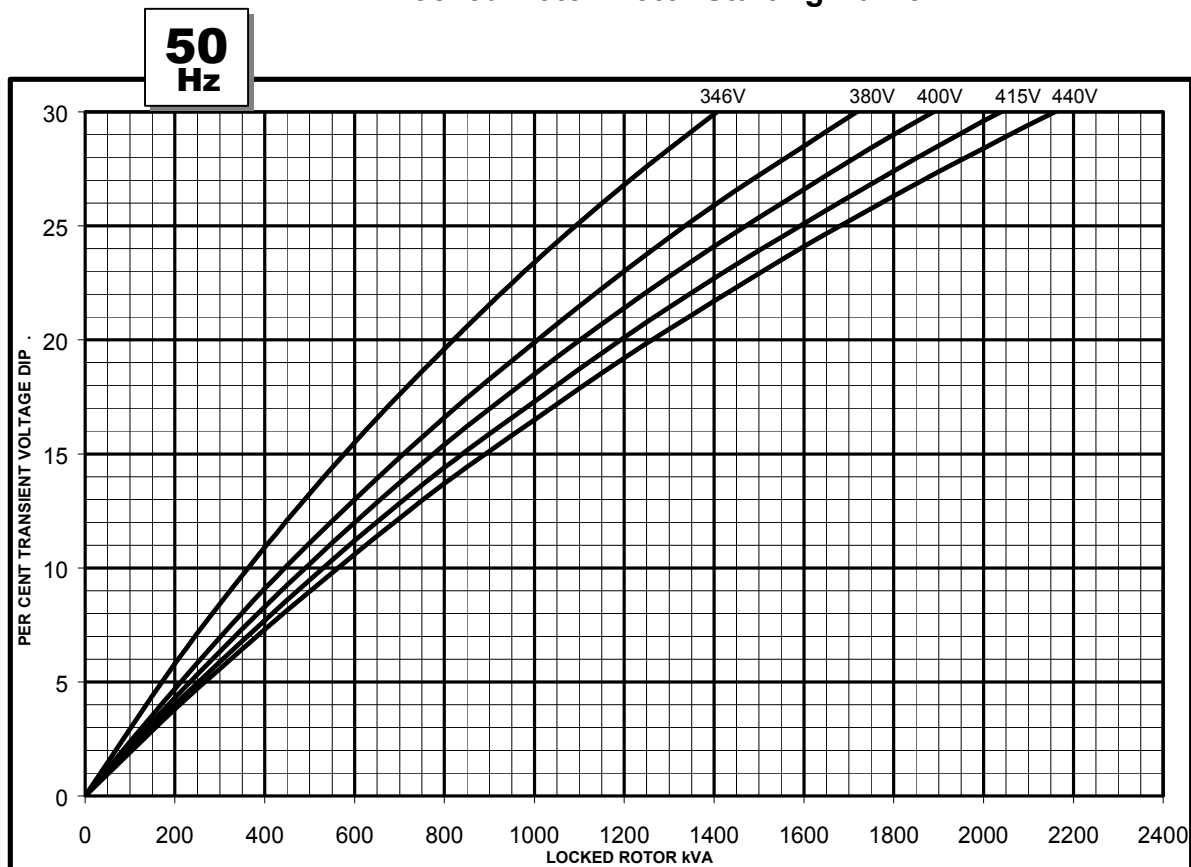
THREE PHASE EFFICIENCY CURVES



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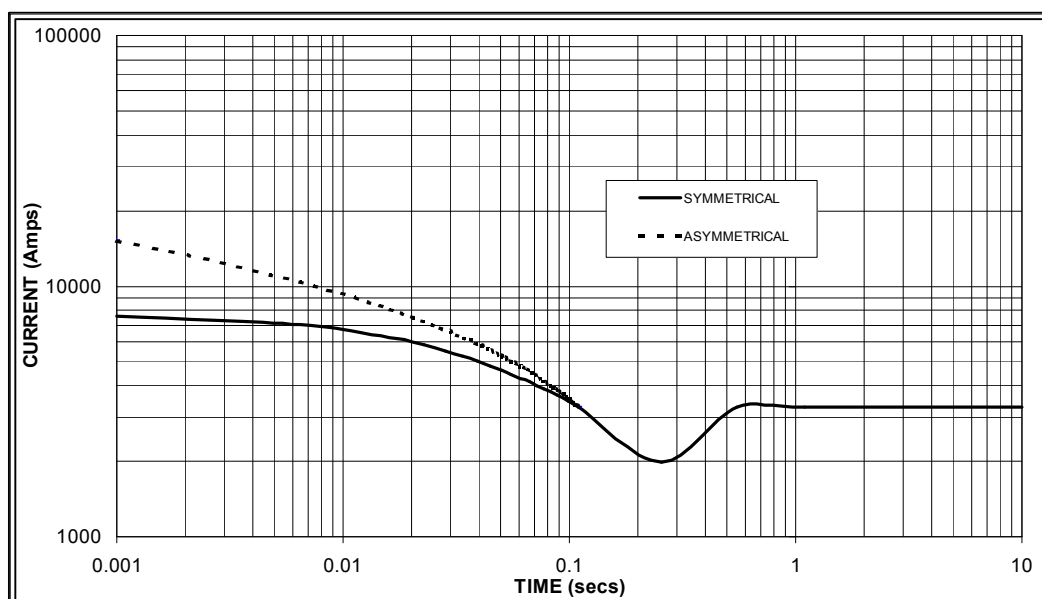
Winding 312

Locked Rotor Motor Starting Curve



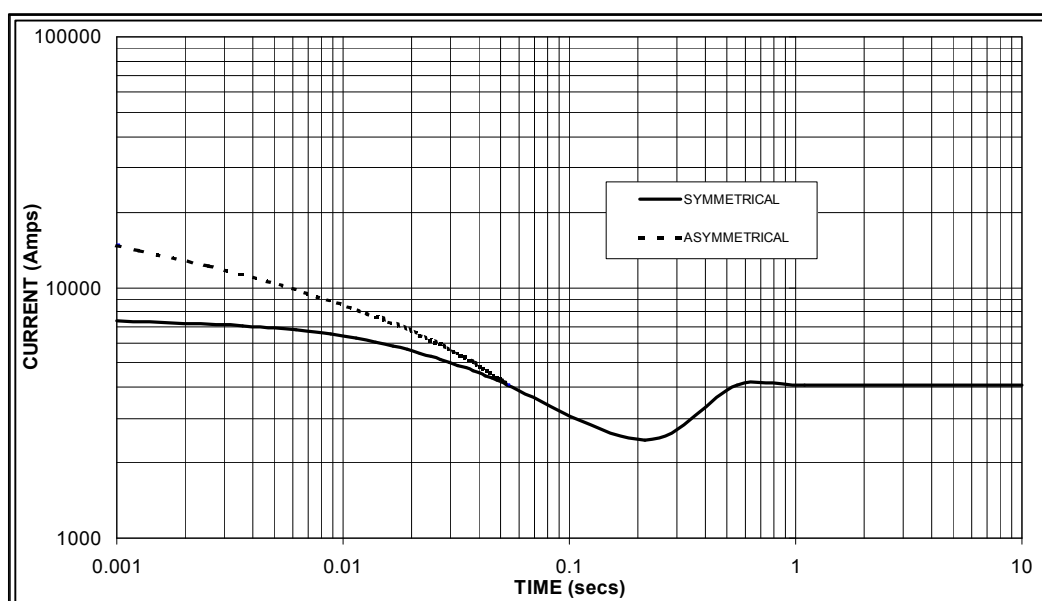
**Three-phase Short Circuit Decrement Curve. No-load Excitation at Rated Speed
Based on star (wye) connection.**

**50
Hz**



Sustained Short Circuit = 3,300 Amps

**60
Hz**



Sustained Short Circuit = 4,000 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 1.07	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.

HCI634H

Winding 312 0.8 Power Factor

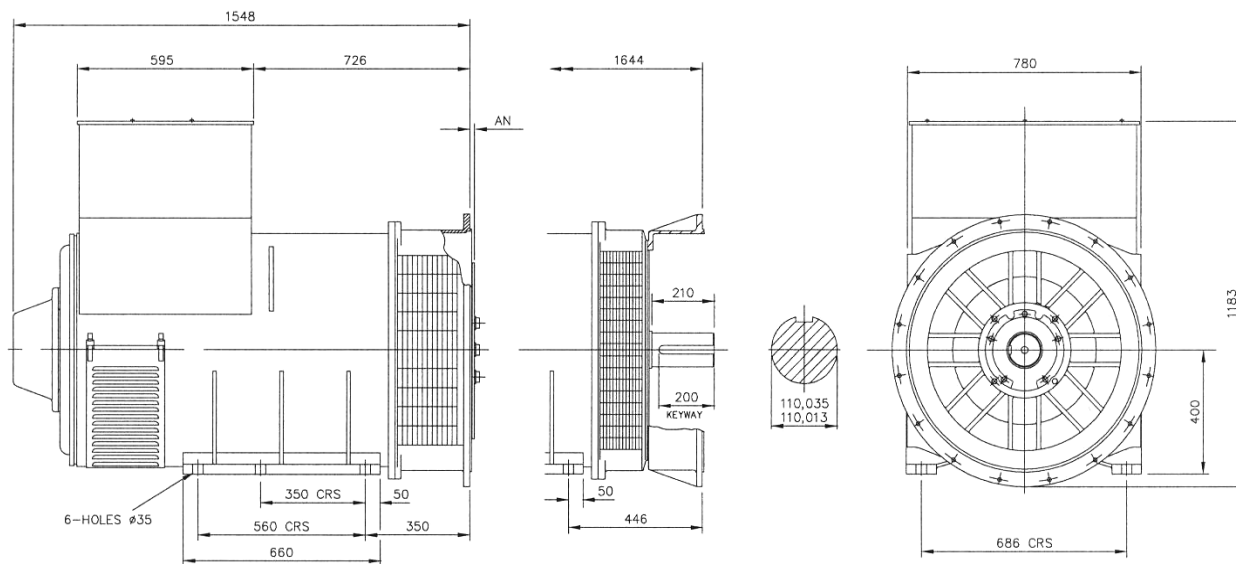


RATINGS

Class - Temp Rise	Cont. F - 105/40°C	Cont. H - 125/40°C	Standby - 150/40°C	Standby - 163/27°C
50Hz	Star (V)	380 400 415 440	380 400 415 440	380 400 415 440
	Delta (V)	220 230 240 254	220 230 240 254	220 230 240 254
	kVA	830 860 830 800	910 940 910 875	960 980 960 920
	kW	664 688 664 640	728 752 728 700	768 784 768 736
	Efficiency (%)	95.2 95.3 95.4 95.6	94.9 95.0 95.2 95.4	94.7 94.8 95.1 95.3
	kW Input	697 722 696 669	767 792 765 734	811 827 808 772

60Hz	Star (V)	416 440 460 480	416 440 460 480	416 440 460 480	416 440 460 480
	Delta (V)	240 254 266 277	240 254 266 277	240 254 266 277	240 254 266 277
	kVA	913 963 1000 1025	1025 1063 1075 1125	1088 1125 1138 1188	1125 1163 1175 1219
	kW	730 770 800 820	820 850 860 900	870 900 910 950	900 930 940 975
	Efficiency (%)	95.2 95.3 95.3 95.4	94.9 95.1 95.2 95.2	94.8 94.9 95.0 95.1	94.6 94.8 94.9 95.0
	kW Input	767 808 839 860	864 894 903 945	918 948 958 999	951 981 991 1027

DIMENSIONS



SAE	14	18	21	24
AN	25.4	15.87	0	0

Barnack Road • Stamford • Lincolnshire • PE9 2NB
Tel: 00 44 (0)1780 484000 • Fax: 00 44 (0)1780 484100
Website: www.newage-avkseg.com