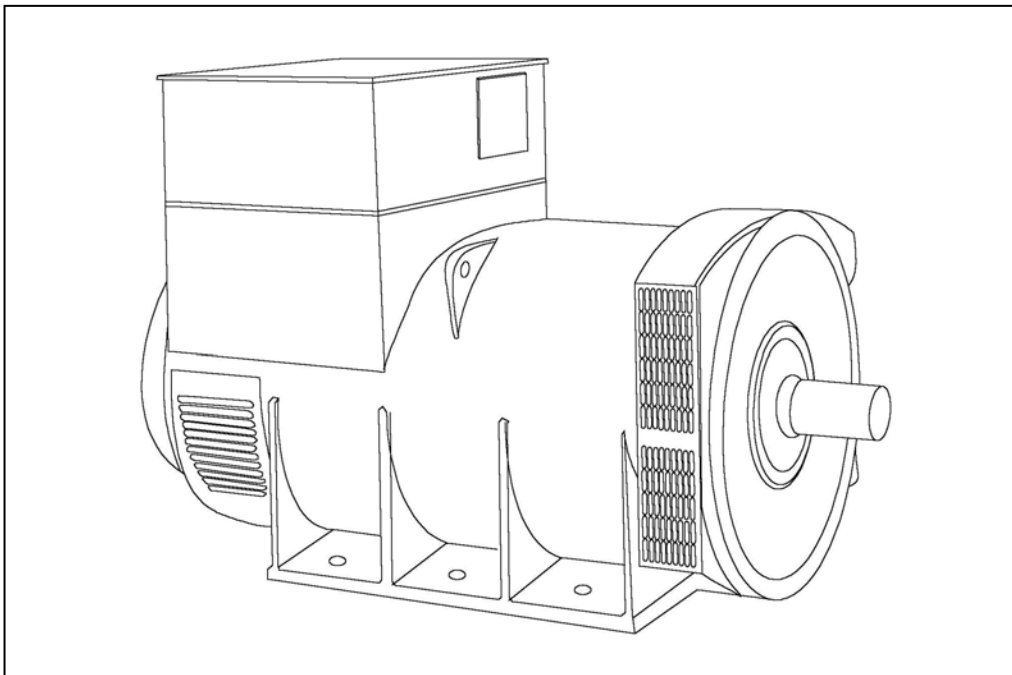


**HCI734F - Technical Data Sheet**



# HC1734F

## 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.*

**HCI734F**  
**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)		

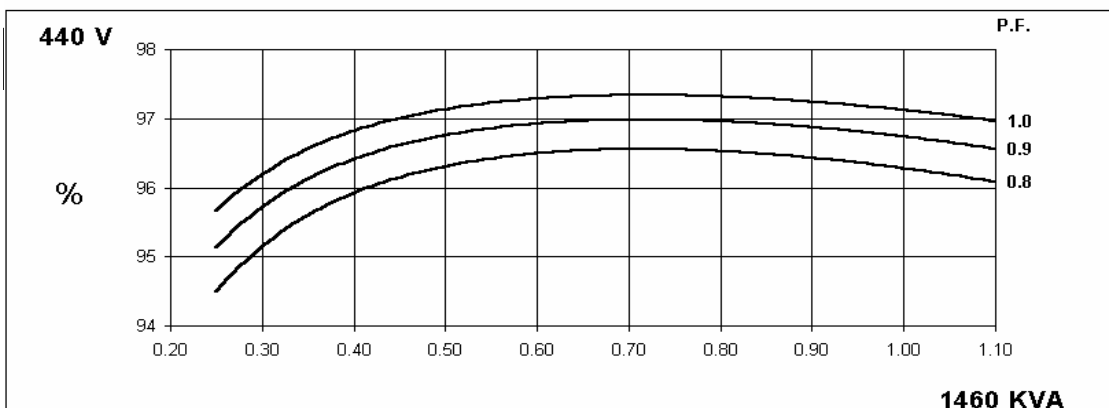
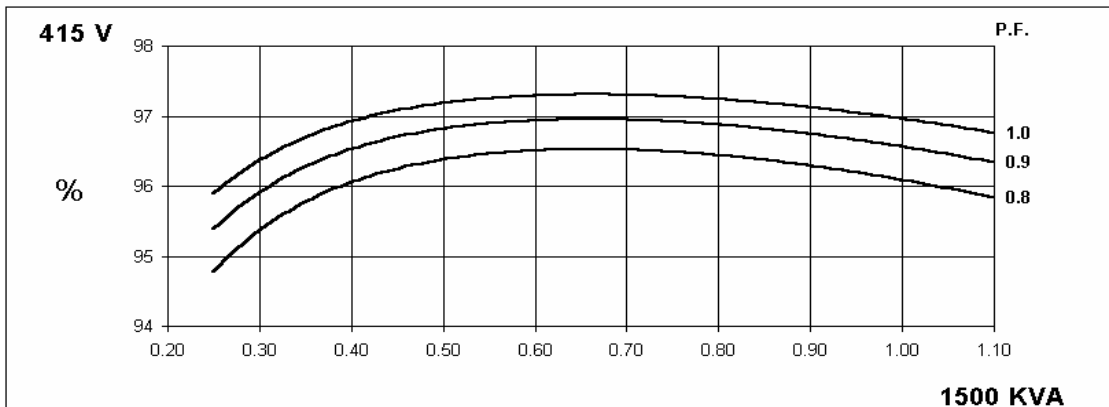
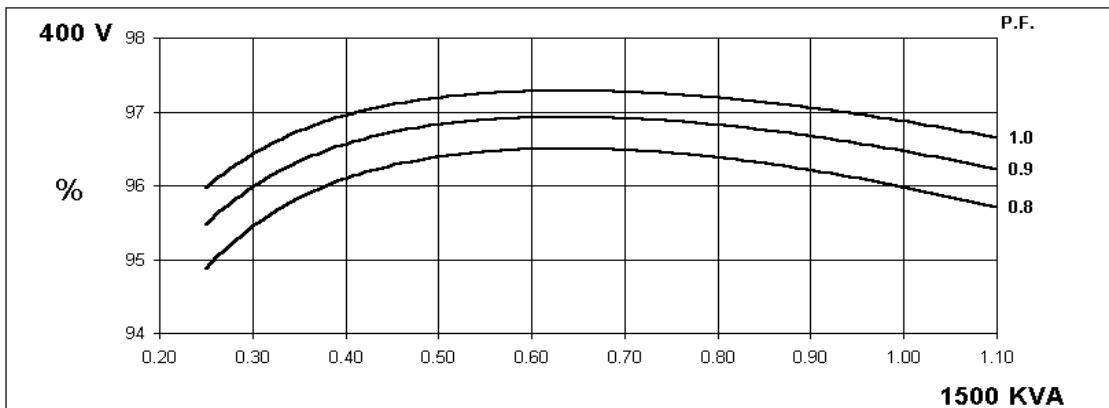
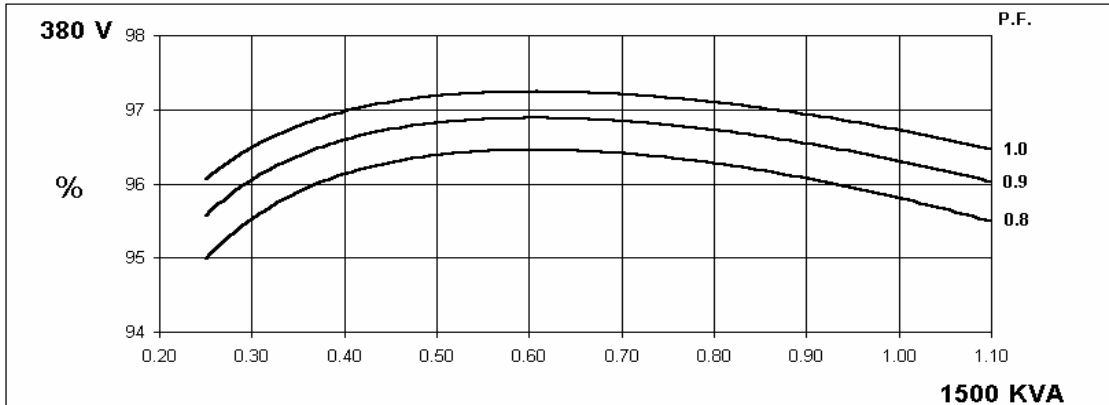
INSULATION SYSTEM	CLASS H							
PROTECTION	IP23							
RATED POWER FACTOR	0.8							
STATOR WINDING	DOUBLE LAYER LAP							
WINDING PITCH	TWO THIRDS							
WINDING LEADS	6							
STATOR WDG. RESISTANCE	0.00126 Ohms PER PHASE AT 22°C STAR CONNECTED							
ROTOR WDG. RESISTANCE	1.41 Ohms at 22°C							
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	2982 kg				3070 kg			
WEIGHT WOUND STATOR	1541 kg				1541 kg			
WEIGHT WOUND ROTOR	1244 kg				1181 kg			
WR <sup>2</sup> INERTIA	37.4934 kgm <sup>2</sup>				36.4926 kgm <sup>2</sup>			
SHIPPING WEIGHTS in a crate	3054kg				3130kg			
PACKING CRATE SIZE	194 x 105 x 154(cm)				194 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	1500	1500	1500	1460	1688	1775	1825	1875
X <sub>d</sub> DIR. AXIS SYNCHRONOUS	3.05	2.75	2.55	2.21	3.44	3.23	3.04	2.87
X' <sub>d</sub> DIR. AXIS TRANSIENT	0.25	0.23	0.21	0.19	0.26	0.25	0.23	0.22
X'' <sub>d</sub> DIR. AXIS SUBTRANSIENT	0.18	0.16	0.15	0.13	0.19	0.18	0.17	0.16
X <sub>q</sub> QUAD. AXIS REACTANCE	2.26	2.04	1.90	1.64	2.55	2.40	2.26	2.13
X'' <sub>q</sub> QUAD. AXIS SUBTRANSIENT	0.28	0.25	0.23	0.20	0.29	0.27	0.25	0.24
X <sub>L</sub> LEAKAGE REACTANCE	0.06	0.05	0.05	0.04	0.07	0.07	0.06	0.06
X <sub>2</sub> NEGATIVE SEQUENCE	0.25	0.23	0.21	0.19	0.26	0.25	0.23	0.22
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.	0.3s							
T'' <sub>d</sub> SUB-TRANSTIME CONST.	0.03s							
T' <sub>do</sub> O.C. FIELD TIME CONST.	3.16s							
T <sub>a</sub> ARMATURE TIME CONST.	0.066s							
SHORT CIRCUIT RATIO	1/X <sub>d</sub>							

**50  
Hz**

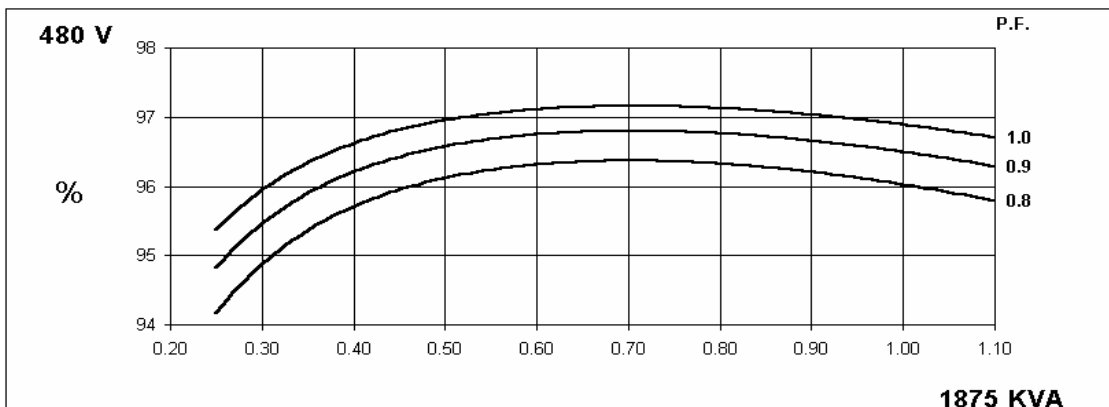
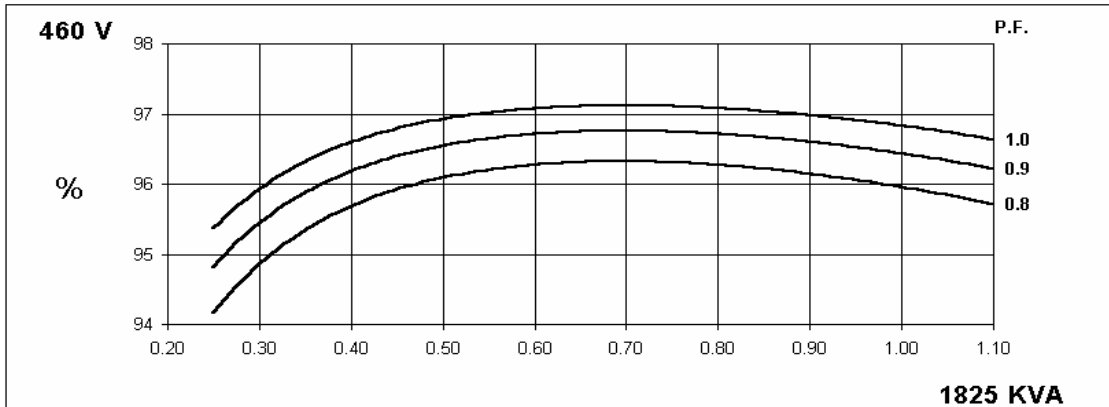
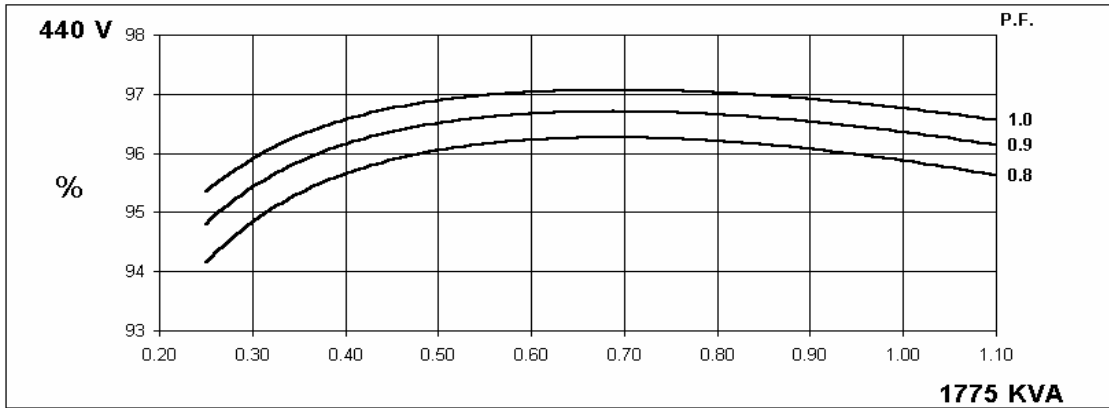
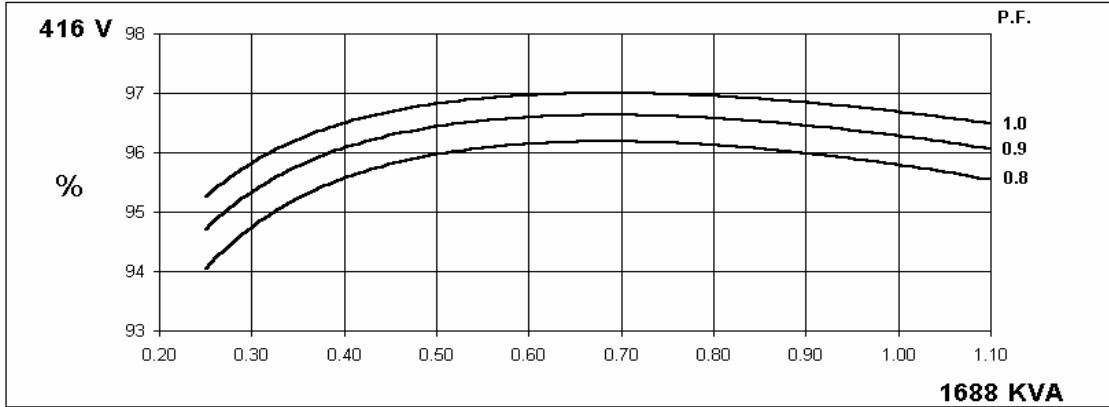
**HCI734F**  
Winding 312



**THREE PHASE EFFICIENCY CURVES**



**THREE PHASE EFFICIENCY CURVES**

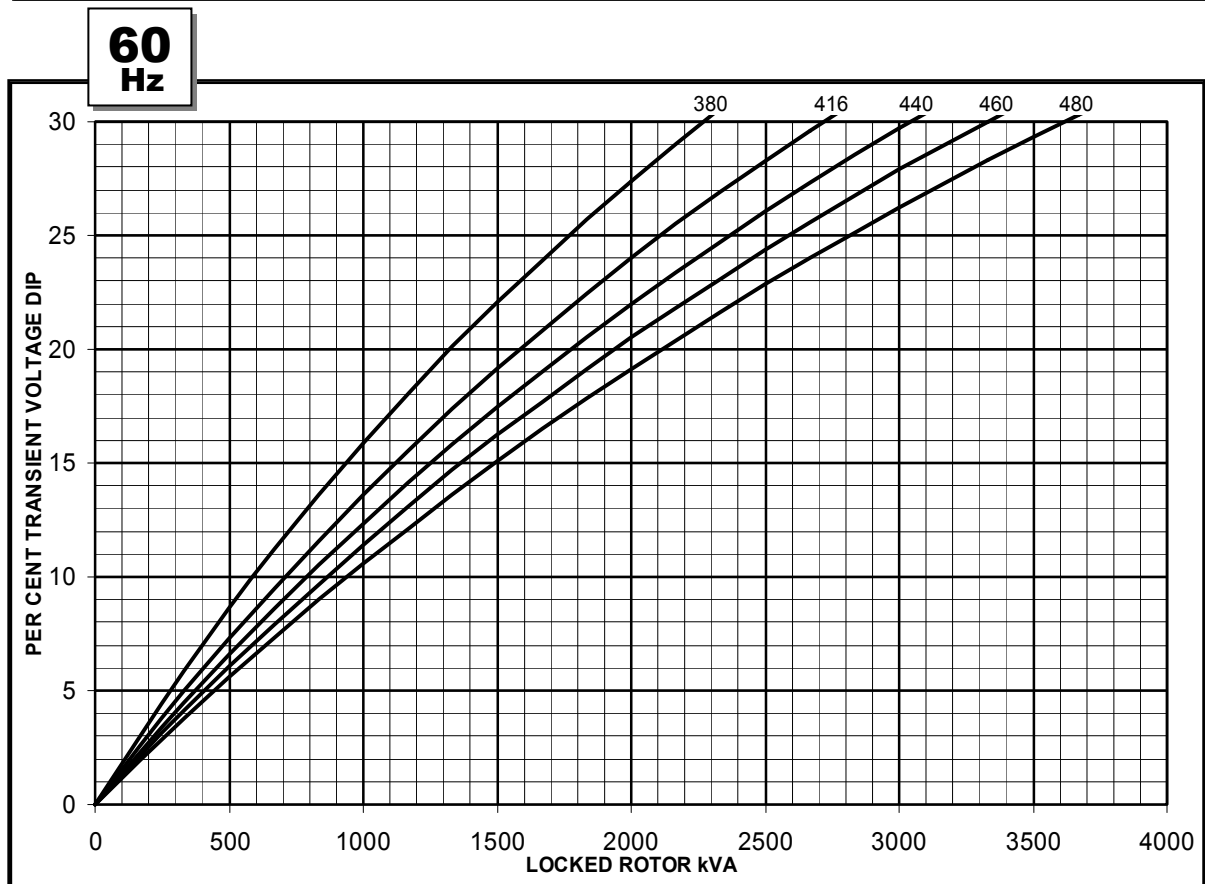
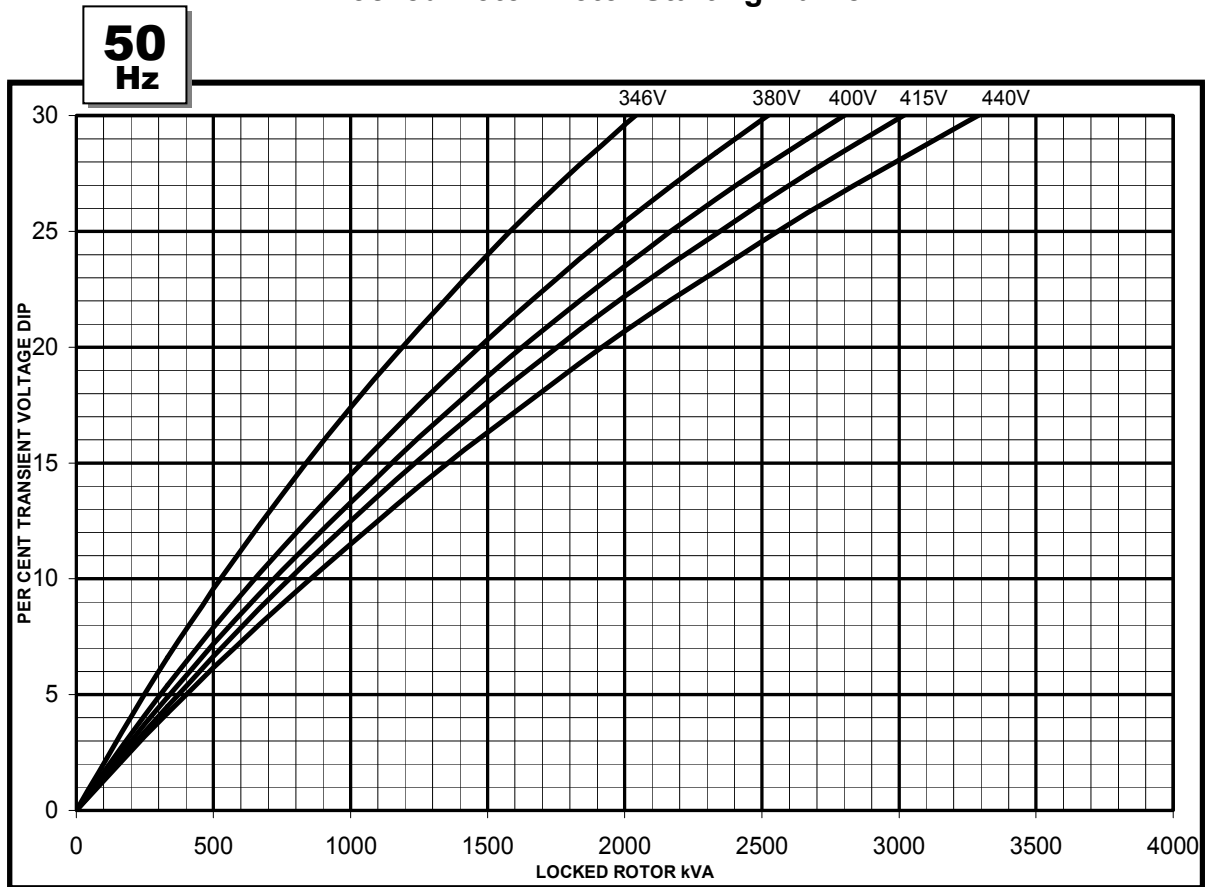


# HCI734F

## Winding 312

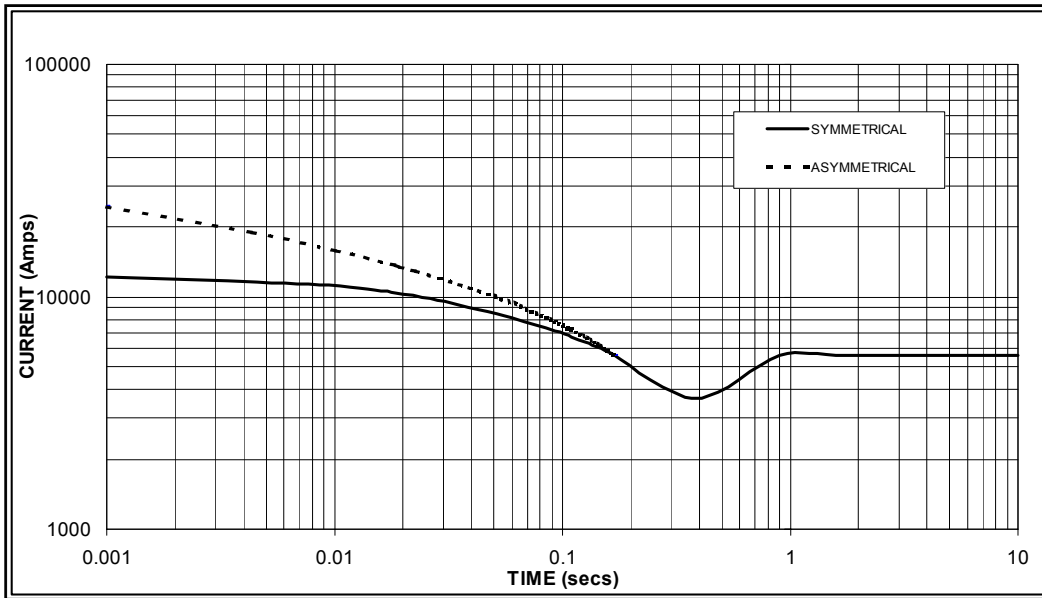


### Locked Rotor Motor Starting Curve



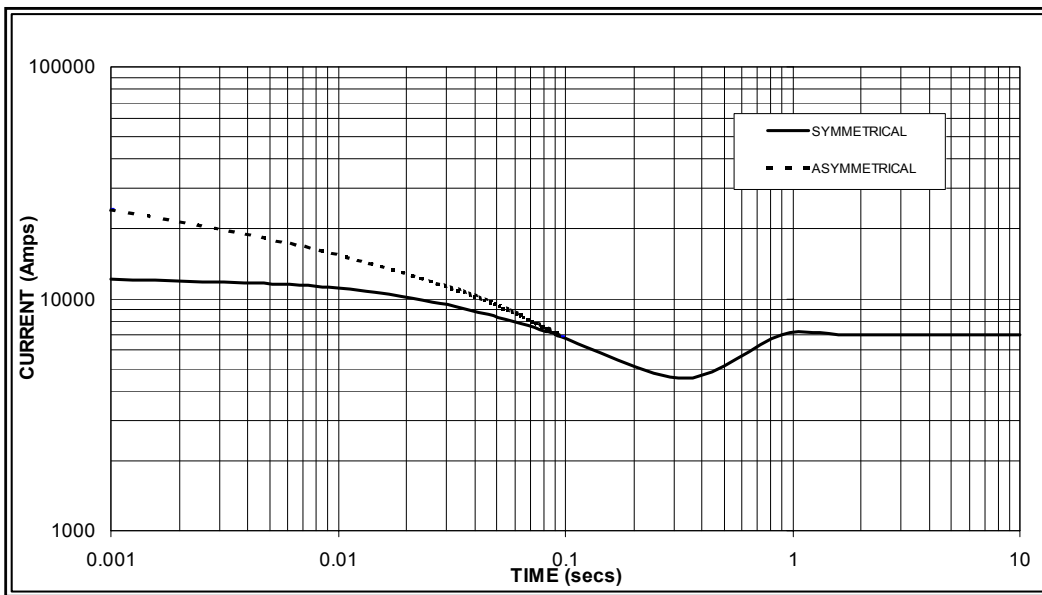
**Three-phase Short Circuit Decrement Curve. No-load Excitation at Rated Speed  
Based on star (wye) connection.**

**50  
Hz**



Sustained Short Circuit = 5,600 Amps

**60  
Hz**



Sustained Short Circuit = 7,000 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
380	x 1.00	416v	x 1.00
400	x 1.05	440v	x 1.06
415	x 1.09	460v	x 1.10
440	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.

# HCI734F

Winding 312 / 0.8 Power Factor

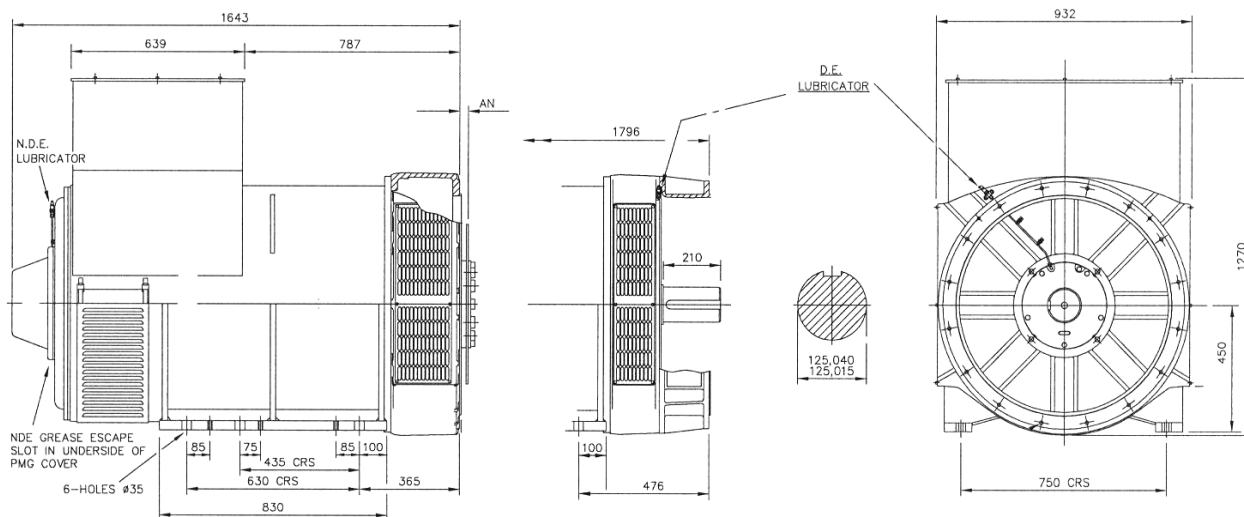


## RATINGS

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	1375	1375	1375	1330	1500	1500	1500	1460	1580	1580	1580	1580	1630	1630	1630	1590
	kW	1100	1100	1100	1064	1200	1200	1200	1168	1264	1264	1264	1264	1304	1304	1304	1272
	Efficiency (%)	96.0	96.2	96.3	96.4	95.8	96.0	96.1	96.3	95.6	95.8	96.0	96.1	95.5	95.7	95.9	96.1
	kW Input	1146	1143	1142	1104	1253	1250	1249	1213	1322	1319	1317	1315	1365	1363	1360	1324

<b>60Hz</b>	Star (V)	416	440	460	480	416	440	460	480	416	440	460	480	416	440	460	480
	kVA	1563	1625	1688	1750	1688	1775	1825	1875	1750	1875	1938	1988	1813	1925	2000	2063
		1250	1300	1350	1400	1350	1420	1460	1500	1400	1500	1550	1590	1450	1540	1600	1650
	Efficiency (%)	95.9	96.0	96.1	96.2	95.8	95.9	96.0	96.0	95.7	95.7	95.8	95.9	95.6	95.7	95.7	95.8
	kW Input	1304	1354	1405	1455	1410	1481	1521	1563	1463	1567	1618	1658	1517	1609	1672	1723

## DIMENSIONS



SAE	14	18	21	24
AN	25.4	15.87	0	0



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