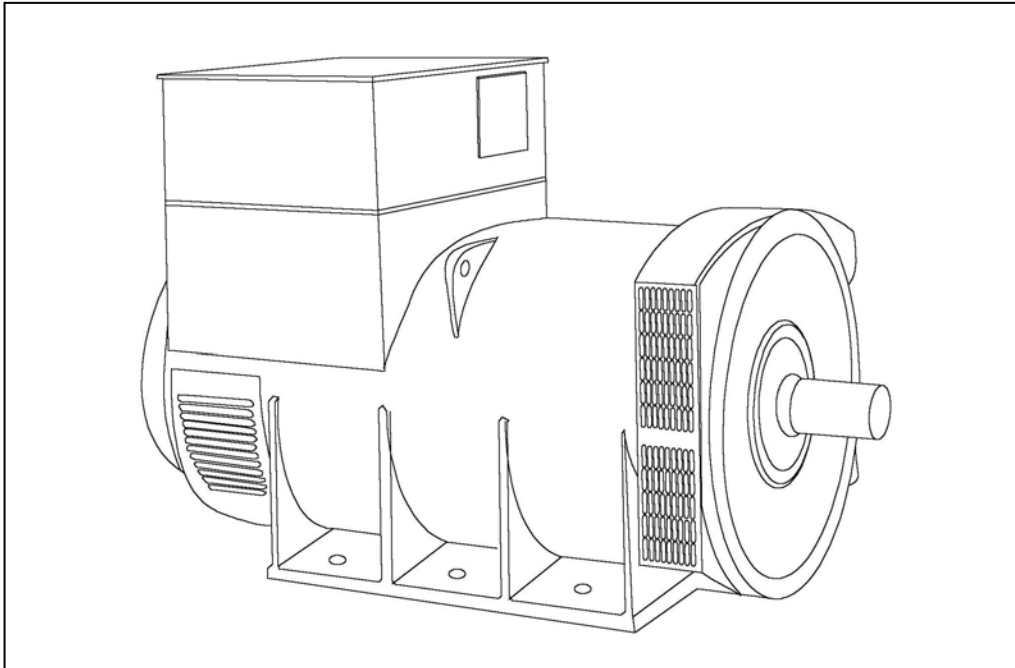


HCI734E - Technical Data Sheet



HCI734E

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.

HCI734E
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)		

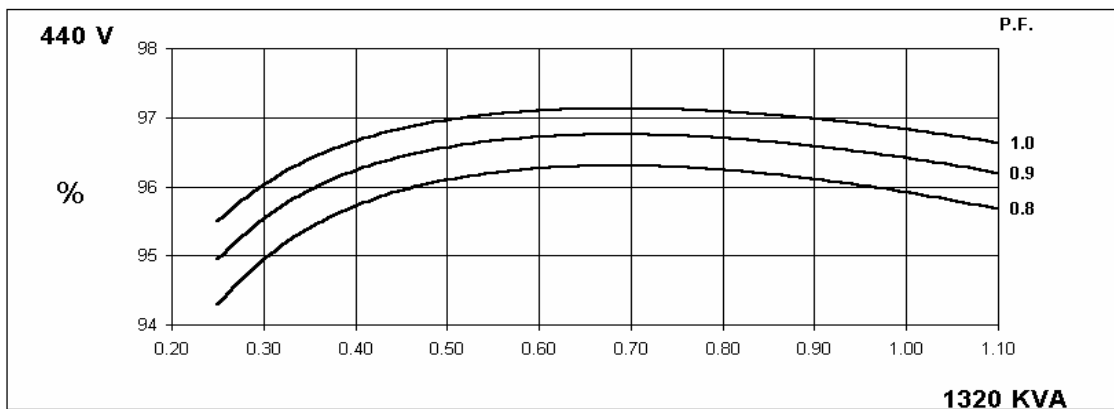
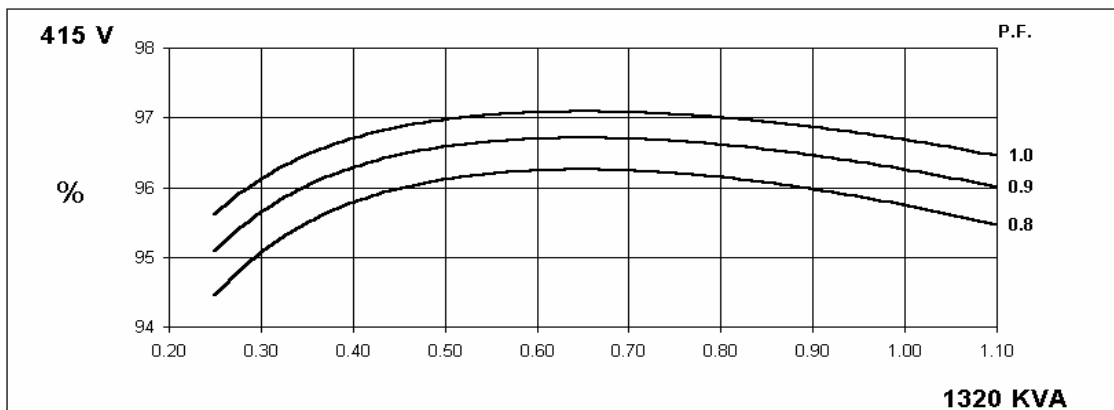
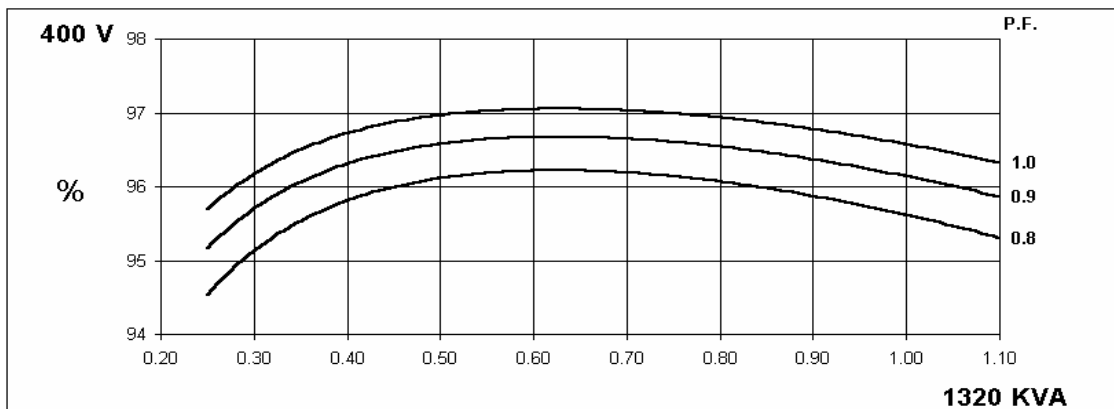
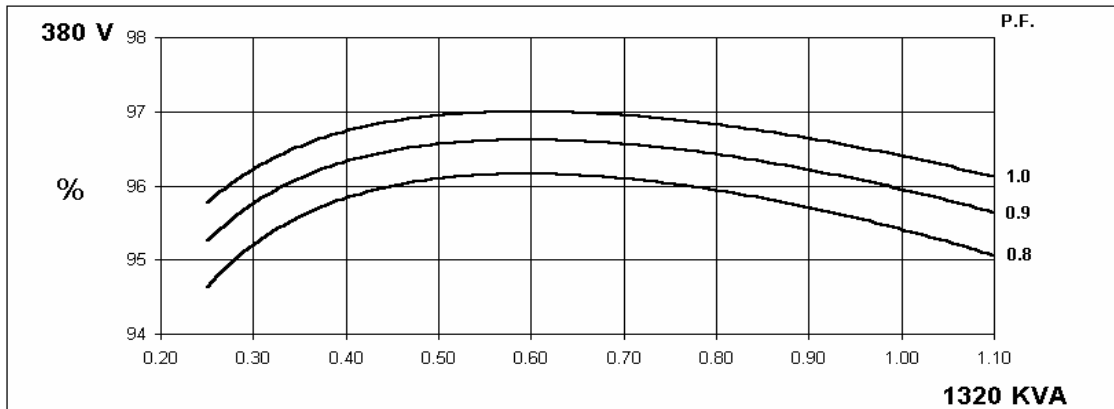
INSULATION SYSTEM	CLASS H							
PROTECTION	IP23							
RATED POWER FACTOR	0.8							
STATOR WINDING	DOUBLE LAYER LAP							
WINDING PITCH	TWO THIRDS							
WINDING LEADS	6							
STATOR WDG. RESISTANCE	0.0016 Ohms PER PHASE AT 22°C STAR CONNECTED							
ROTOR WDG. RESISTANCE	1.27 Ohms at 22°C							
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	2746 kg				2816 kg			
WEIGHT WOUND STATOR	1387 kg				1387 kg			
WEIGHT WOUND ROTOR	1129 kg				1066 kg			
WR ² INERTIA	33.0084 kgm ²				32.0076 kgm ²			
SHIPPING WEIGHTS in a crate	2819kg				2885kg			
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 ³ /sec 5600 cfm				3.17 m ³ /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	1320	1320	1320	1320	1500	1550	1588	1625
X _d DIR. AXIS SYNCHRONOUS	3.08	2.78	2.58	2.30	3.55	3.28	3.08	2.89
X' _d DIR. AXIS TRANSIENT	0.27	0.24	0.22	0.20	0.28	0.26	0.24	0.23
X'' _d DIR. AXIS SUBTRANSIENT	0.19	0.17	0.16	0.14	0.21	0.19	0.18	0.17
X _q QUAD. AXIS REACTANCE	2.27	2.05	1.90	1.69	2.63	2.43	2.28	2.14
X'' _q QUAD. AXIS SUBTRANSIENT	0.23	0.21	0.20	0.17	0.27	0.25	0.23	0.22
X _L LEAKAGE REACTANCE	0.04	0.04	0.04	0.03	0.05	0.05	0.04	0.04
X ₂ NEGATIVE SEQUENCE	0.22	0.20	0.19	0.17	0.26	0.24	0.22	0.21
X ₀ 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' _d TRANSIENT TIME CONST.	0.29s							
T'' _d SUB-TRANSTIME CONST.	0.03s							
T' _{do} O.C. FIELD TIME CONST.	2.98s							
T _a ARMATURE TIME CONST.	0.05s							
SHORT CIRCUIT RATIO	1/X _d							

**50
Hz**

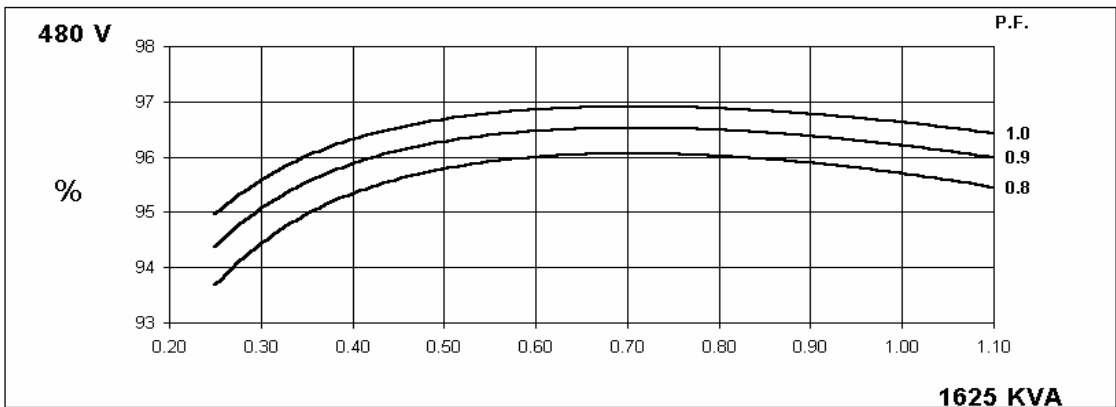
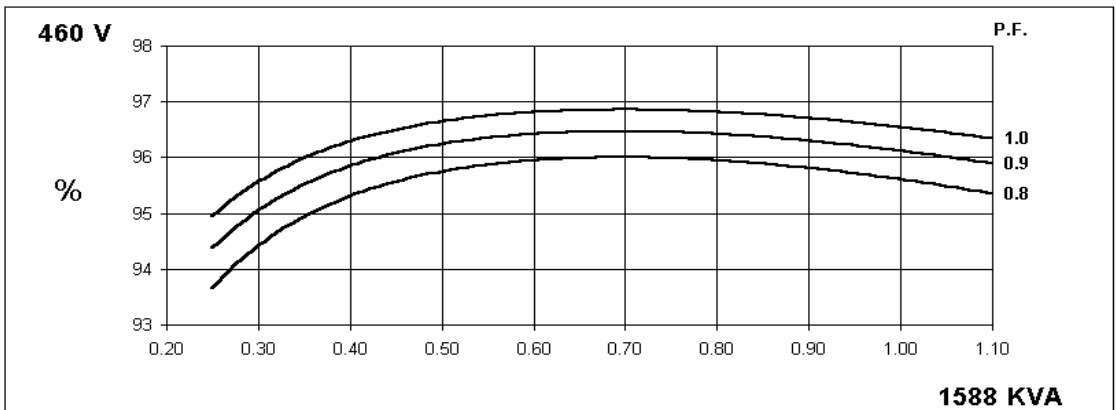
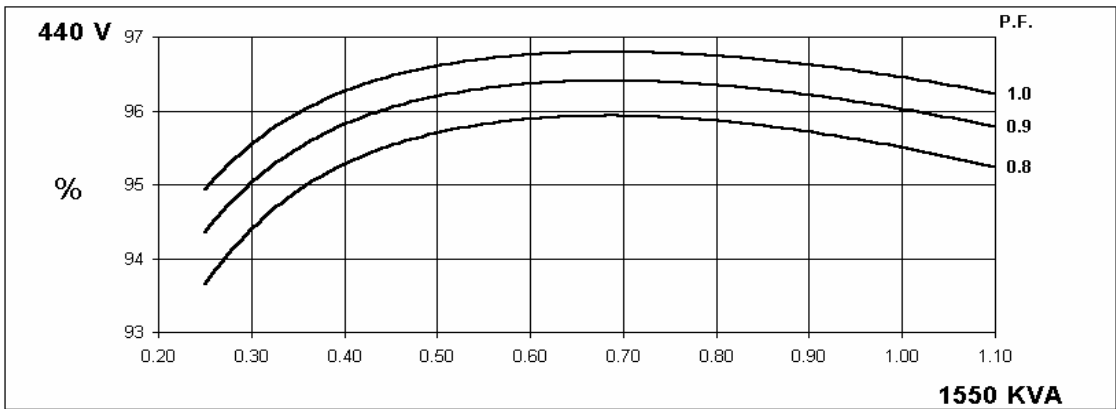
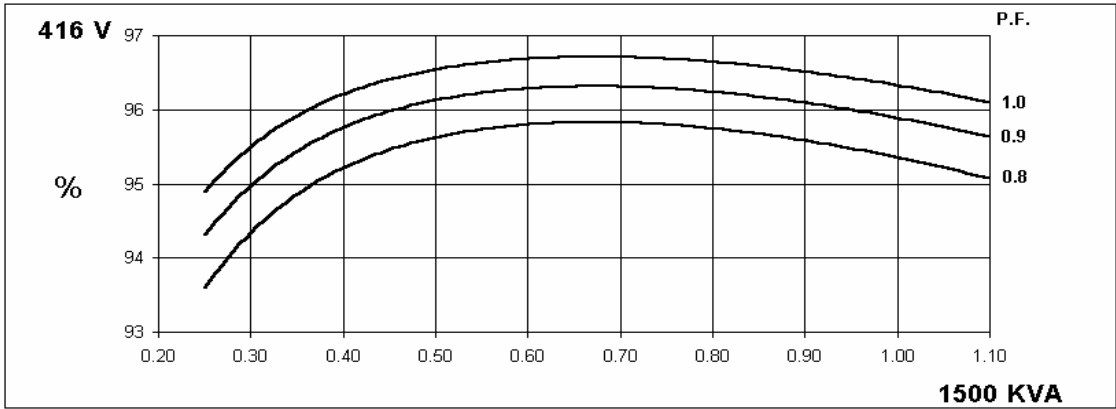
HCI734E
Winding 312



THREE PHASE EFFICIENCY CURVES



THREE PHASE EFFICIENCY CURVES

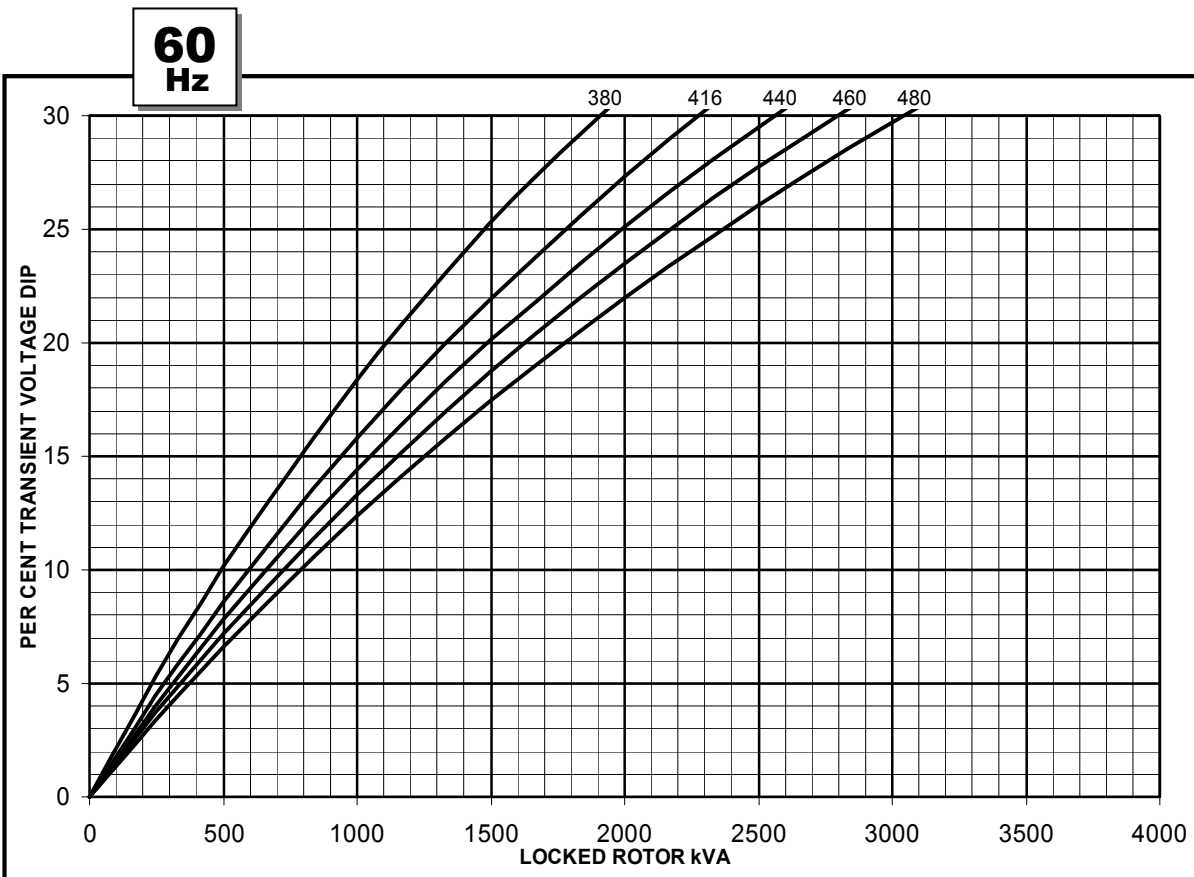
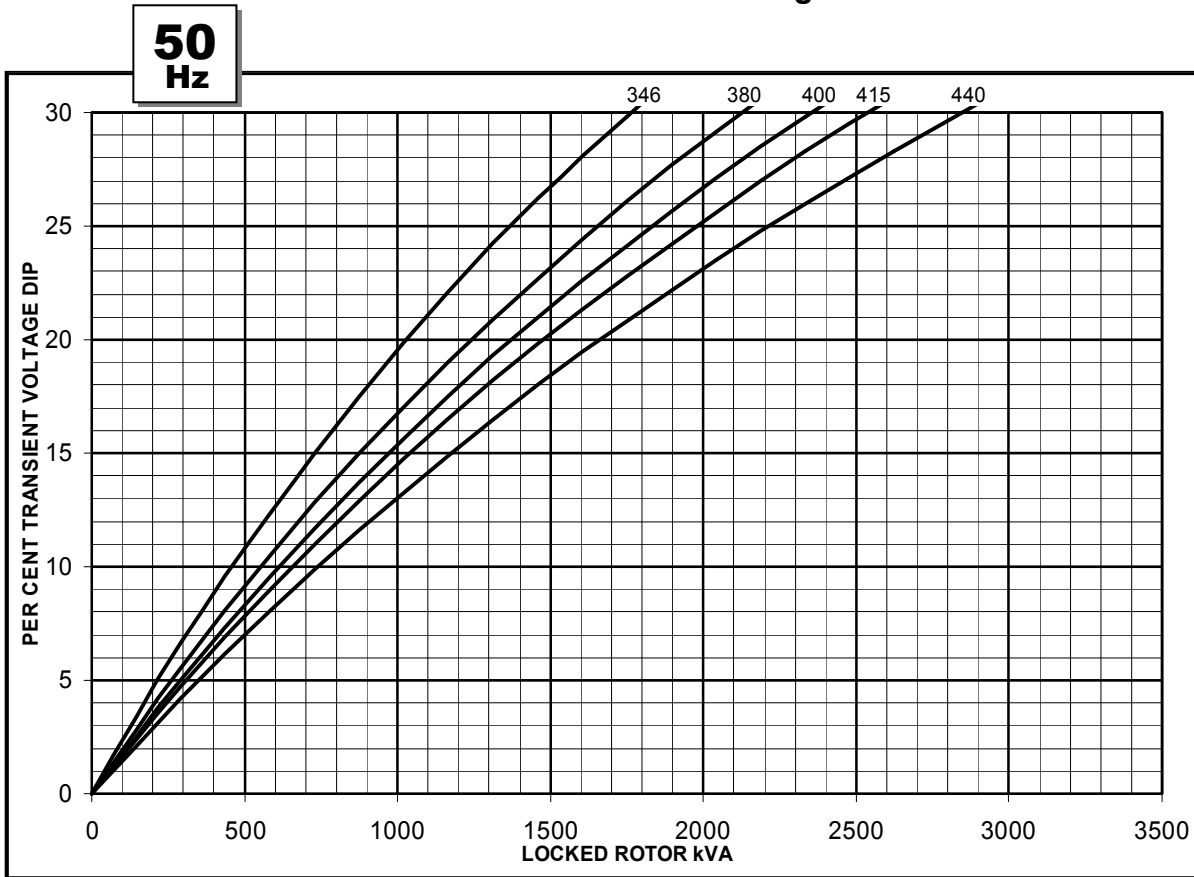


HCI734E

Winding 312

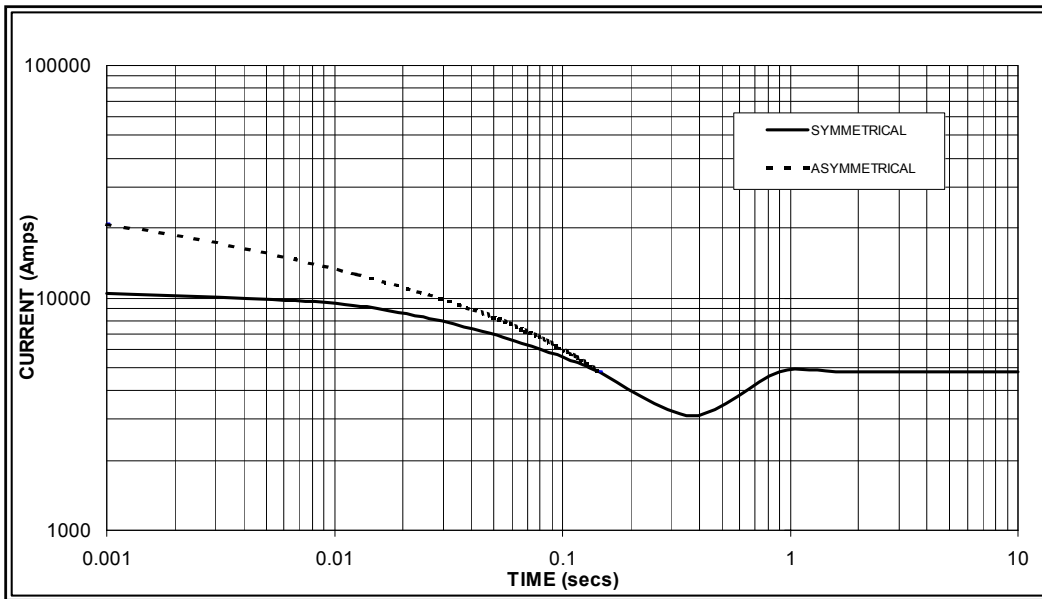


Locked Rotor Motor Starting Curve



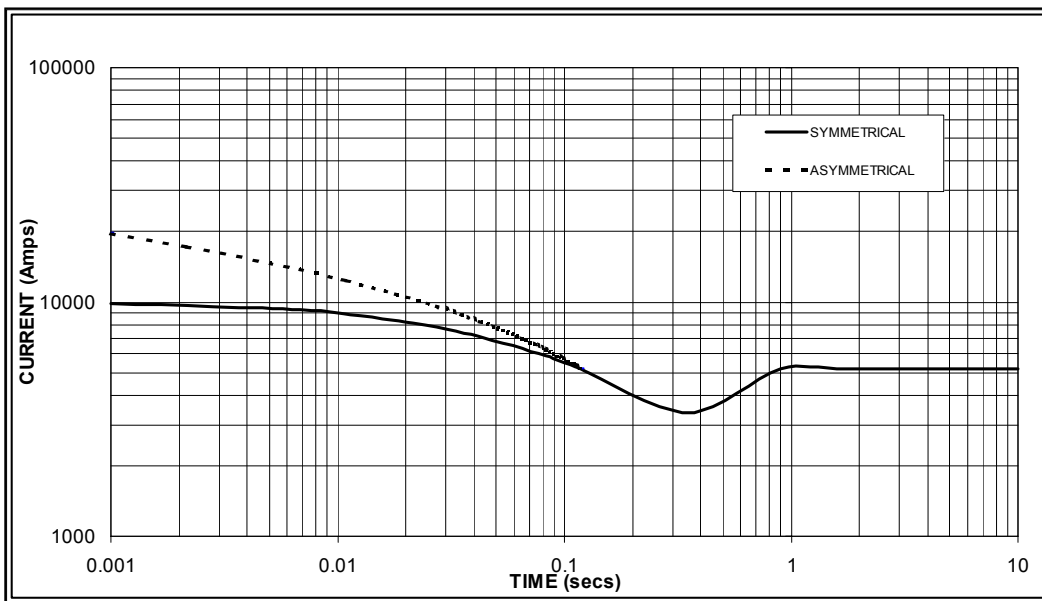
**Three-phase Short Circuit Decrement Curve. No-load Excitation at Rated Speed
Based on star (wye) connection.**

**50
Hz**



Sustained Short Circuit = 4,800 Amps

**60
Hz**



Sustained Short Circuit = 5,200 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.

HCI734E

Winding 312 / 0.8 Power Factor

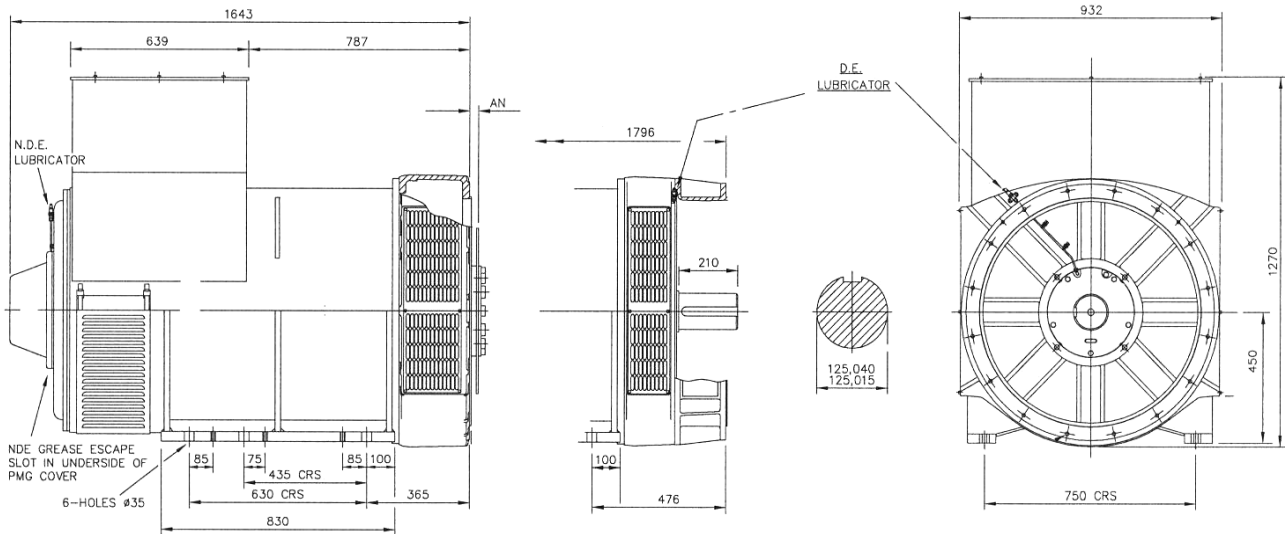


RATINGS

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	380	400	415	440
	kVA	1215	1215	1215	1215	1320	1320	1320	1320	1400	1400	1400	1400	1440	1440	1440	1440
	kW	972	972	972	972	1056	1056	1056	1056	1120	1120	1120	1120	1152	1152	1152	1152
	Efficiency (%)	95.7	95.8	95.9	96.1	95.4	95.6	95.7	95.9	95.2	95.4	95.6	95.8	95.1	95.3	95.5	95.7
	kW Input	1016	1015	1014	1011	1107	1105	1103	1101	1176	1174	1172	1169	1211	1209	1206	1204

60Hz	Star (V)	416	440	460	480	416	440	460	480	416	440	460	480	416	440	460	480
	kVA	1375	1425	1463	1500	1500	1550	1588	1625	1588	1638	1675	1719	1650	1700	1738	1775
	kW	1100	1140	1170	1200	1200	1240	1270	1300	1270	1310	1340	1375	1320	1360	1390	1420
	Efficiency (%)	95.6	95.7	95.8	95.9	95.4	95.5	95.6	95.7	95.2	95.4	95.5	95.6	95.1	95.2	95.4	95.5
	kW Input	1151	1191	1222	1251	1258	1298	1329	1358	1334	1374	1403	1438	1388	1429	1457	1487

DIMENSIONS



SAE	14	18	21	24
AN	25.4	15.87	0	0



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