4000 Series 4008-30TAG3 ElectropaK

1055 kWm @ 1500 rpm net standby power

The Perkins® 4000 Series is a family of 6, 8, 12 and 16 cylinder diesel engines, designed to address today's uncompromising demands within the power generation industry with particular aim at the standby market sector.

Developed from a proven engine range that offers superior performance and reliability.

The 4008-30TAG3 is a turbocharged and air-to-air charge cooled, 8 cylinder diesel engine offered in an engine only confirgration. Its premium features and design provide economic and durable operation as well as an exceptional power to weight ratio, excellent load acceptance and improved gaseous emissions, plus the overall performance and reliability characteristics essential to the power generation market.

Specification		
Number of cylinders	8 vertical in-line	
Bore and stroke	160 x 190 mm	6.3 x 7.5 in
Displacement	30.561 litres	1865 in^3
Aspiration	Turbocharged and air to air charge cooled	
Cycle	4 stroke	
Combustion system	Direct injection	
Compression ratio	13.6:1	
Rotation	Anti-clockwise, viewed from flywheel end	
Total lubricating capacity	153 litres	40.4 US gal
Cooling system	Water-cooled	
Total coolant capacity	48 litres	12.7 US gal

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Perkins®

THE HEART OF EVERY GREAT MACHINE

4000 Series 4008-30TAG3 ElectropaK

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Features and benefits

Dependable power

- Individual 4 valve cylinder heads giving optimised gas flows
- Unit fuel injectors ensure ultra fine fuel atomisation and hence controlled rapid combustion
- Commonality of components with other engines in the 4000 Series family for reduced stocking levels
- Capable emissions of 1/2 TA Luft (1986)

Low operating costs

- Oil change service intervals are set at 500 hours as standard
- Designed to provide low cost of ownership, simple maintenance and reduced downtime
- Class leading warranty
  Prime power - 12 months unlimited hours. For engines that operate less than 6,000 hours the warranty is available for two years or until the application reaches 6,000 hours (whichever is sooner).
  Standby power - three years or 1,500 hours (whichever is sooner).
  See Perkins Warranty Policy for further details
- Perkins Platinum Protection - comprehensive cover from as little as 5 percent* of the cost of your engine
  Talk to your local distributor or visit www.perkins.com/platinum protection for more details

World class product support

- Our experienced global network of distributors and dealers, fully trained engine experts deliver total service support around the clock, 365 days a year. They have a comprehensive suite of web based tools at their disposal, covering technical information, parts identification and ordering systems, all dedicated to maximising the productivity of your engine
- Perkins actively pursues product support excellence by insisting our distribution network invest in their territory to provide customers with a consistent quality of support across the globe
- Throughout the entire life of a Perkins engine, we provide access to genuine parts giving 100% reassurance that you receive the very best in terms of quality for lowest possible cost, wherever your Perkins powered machine is operating in the world
  To find your local distributor: www.perkins.com/distributor

*Terms and conditions apply

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Technical information

Air inlet system

- Mounted air filter and turbocharger

Fuel system

- Direct fuel injection system with fuel lift pump
- Digital governing to ISO 8528-5 Class G2 with isochronous capability
- Full flow spin-on filters

Lubrication system

- Wet full aluminium sump with filler and dipstick
- Full flow spin-on oil filters

Cooling system

- Twin thermostats
- System designed for ambient temperatures of up to 50°C

Electrical equipment

- 24V starter motor and 24V alternator with integral regulator and DC output
- Turbine inlet temperature protection
- High coolant temperature protection switch
- Low oil pressure protection switch

Flywheel and housing

- Flywheel to SAE J620 Size 18
- SAE 0 flywheel housing

Optional equipment

- 4 metre wiring harness
- Secondary electric start
- Immersion heater
- Single exhaust outlet pipe
- Exhaust counter flanges
- Temperate radiator kit

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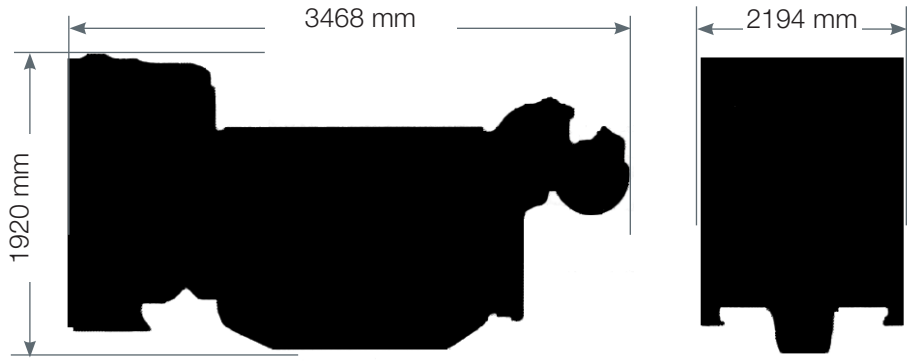

Engine package weights and dimensions		
Length (including air cleaner)	3468 mm	137 in
Width	2194 mm	86 in
Height	1920 mm	76 in
Weight (dry)	4217 kg	9297 lb

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THE HEART OF EVERY GREAT MACHINE

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1055 kWm @ 1500 rpm net standby power

Speed rpm	Type of operation	Typical generator output		Engine power (Net)	
		kVA	kWe	kWm	hp
1500	Baseload power	950	760	800	1073
	Prime power	1125	900	947	1270
	Stand-by power	1250	1000	1055	1408

Percent of prime power	Fuel consumption at 1500 rpm g/kWh	Fuel consumption at 1500 rpm l/hr
Standby power	210	269
Prime power	206	244
75%	202	188
50%	204	120

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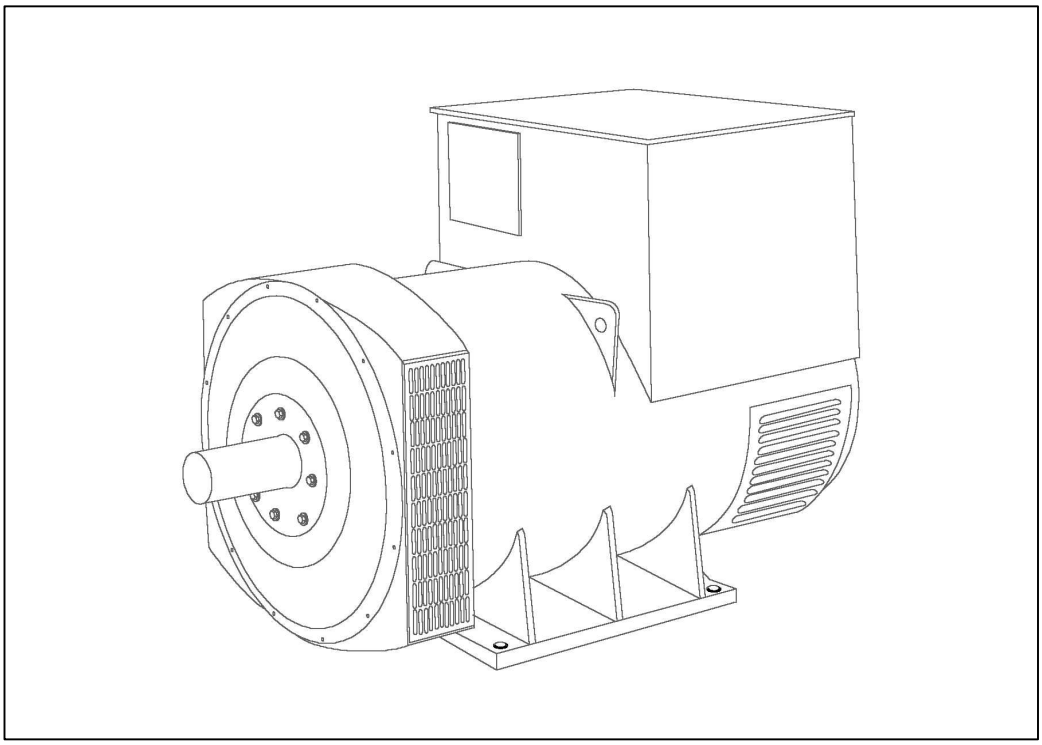
THE HEART OF EVERY GREAT MACHINE

STAMFORD
power generation

HCI634K - Technical Data Sheet



HCI634K
SPECIFICATIONS & OPTIONS

STAMFORD
power generation

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.

STAMFORD
power generation

HCI634K

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	0.002 Ohms PER PHASE AT 22°C STAR CONNECTED							
ROTOR WDG. RESISTANCE	2.36 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	2541 kg				2581 kg			
WEIGHT WOUND STATOR	1294 kg				1294 kg			
WEIGHT WOUND ROTOR	1093 kg				1048 kg			
WR² INERTIA	26.5295 kgm^2				25.9823 kgm^2			
SHIPPING WEIGHTS in a crate	2601kg				2622kg			
PACKING CRATE SIZE	194 x 92 x 147(cm)				194 x 92 x 147(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	1110	1110	1110	1110	1275	1338	1388	1438
Xd DIR. AXIS SYNCHRONOUS	2.78	2.51	2.33	2.07	3.20	3.00	2.85	2.71
X'd DIR. AXIS TRANSIENT	0.22	0.20	0.19	0.17	0.26	0.24	0.23	0.22
X"d DIR. AXIS SUBTRANSIENT	0.16	0.14	0.13	0.12	0.18	0.17	0.16	0.15
Xq QUAD. AXIS REACTANCE	1.63	1.47	1.37	1.21	1.88	1.76	1.67	1.59
X"q QUAD. AXIS SUBTRANSIENT	0.23	0.21	0.20	0.17	0.27	0.25	0.24	0.23
X_L LEAKAGE REACTANCE	0.08	0.07	0.06	0.06	0.09	0.08	0.08	0.07
X_2 NEGATIVE SEQUENCE	0.22	0.20	0.19	0.17	0.26	0.24	0.23	0.22
X_0 ZERO SEQUENCE	0.03	0.02	0.02	0.02	0.03	0.03	0.03	0.03
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.	3.4							
Ta ARMATURE TIME CONST.	0.049							
SHORT CIRCUIT RATIO	1/Xd							

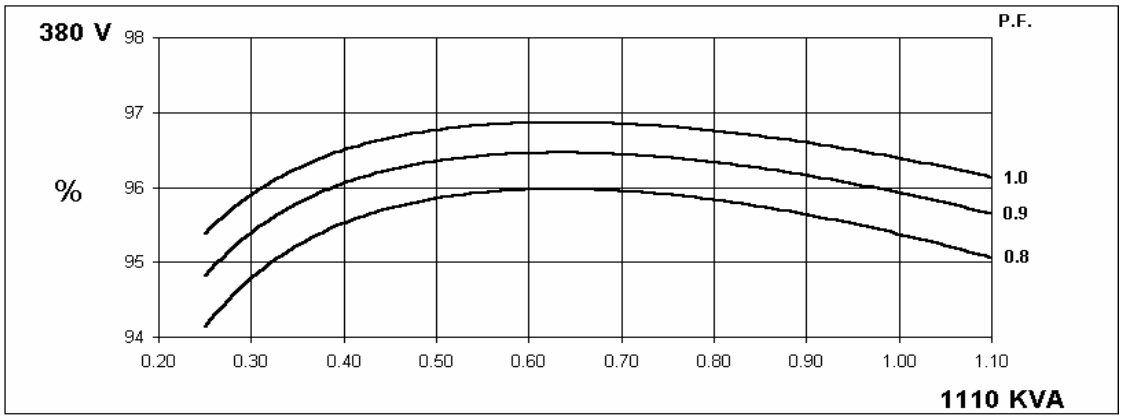
50 Hz

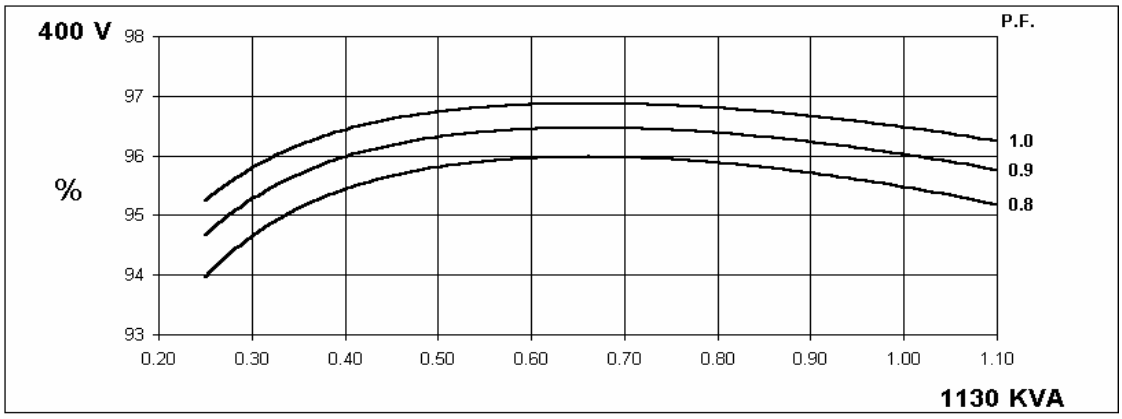
HCI634K

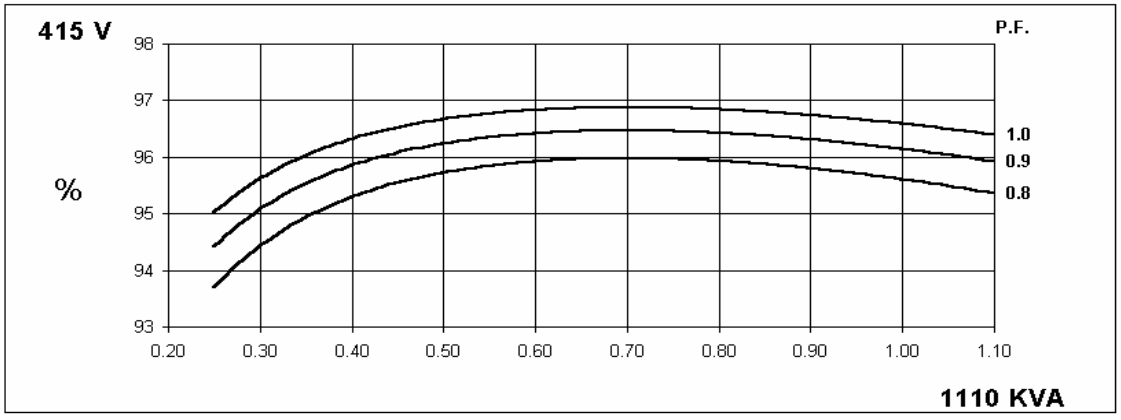
Winding 312

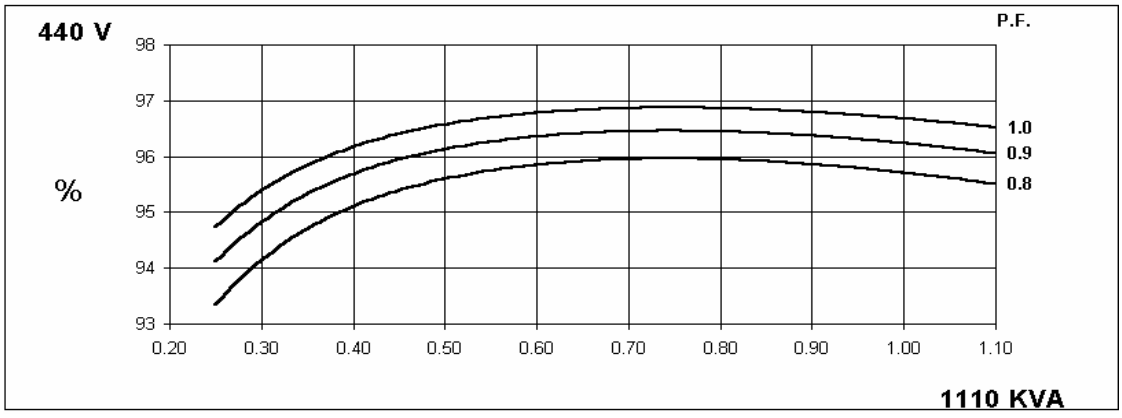
STAMFORD power generation

THREE PHASE EFFICIENCY CURVES









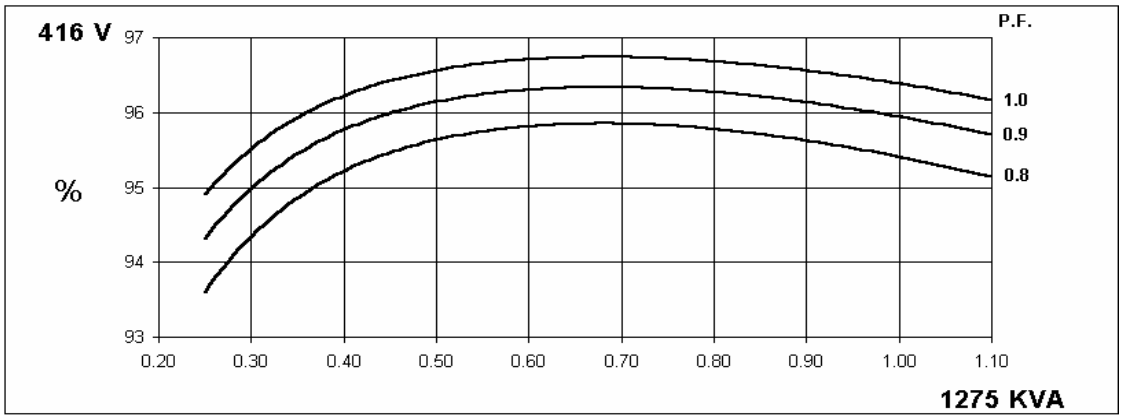
STAMFORD
power generation

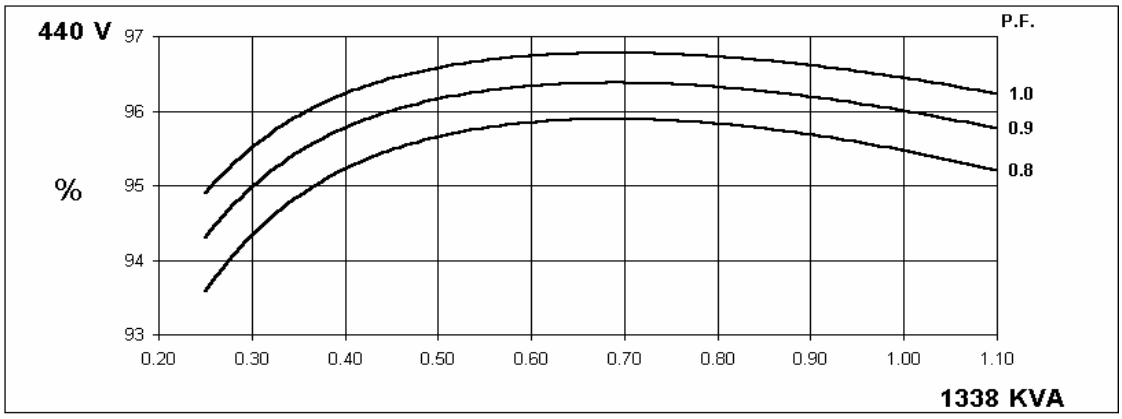
HCI634K

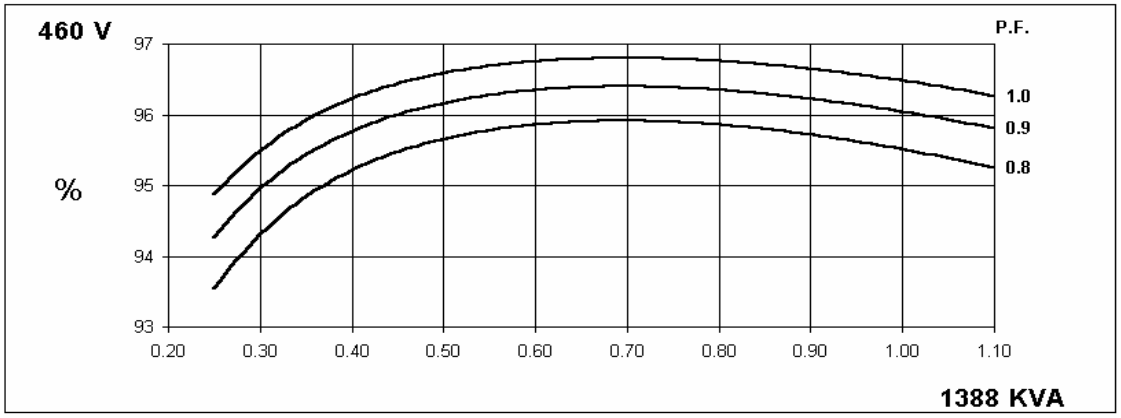
Winding 312

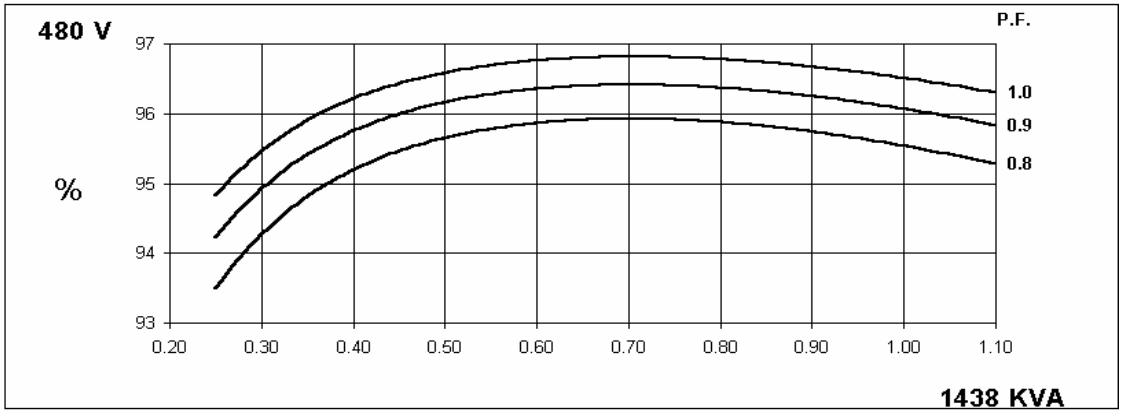
60 Hz

THREE PHASE EFFICIENCY CURVES







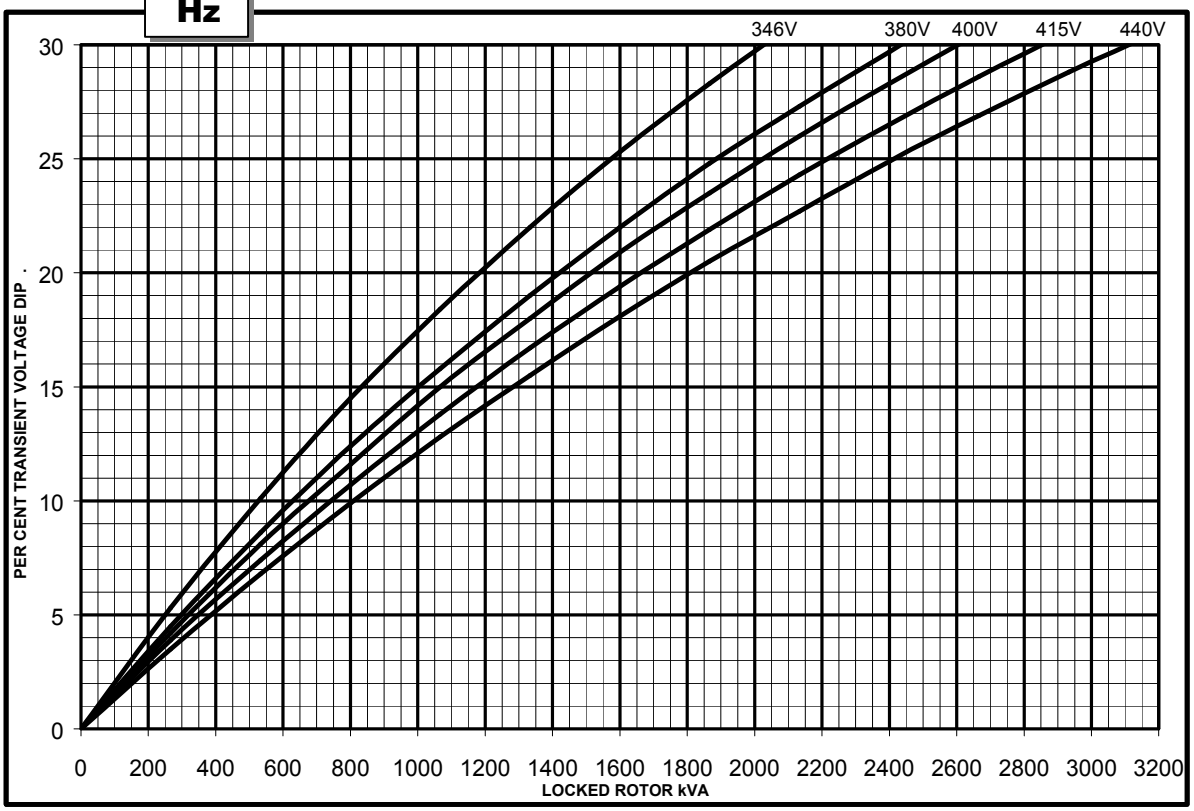


HCI634K

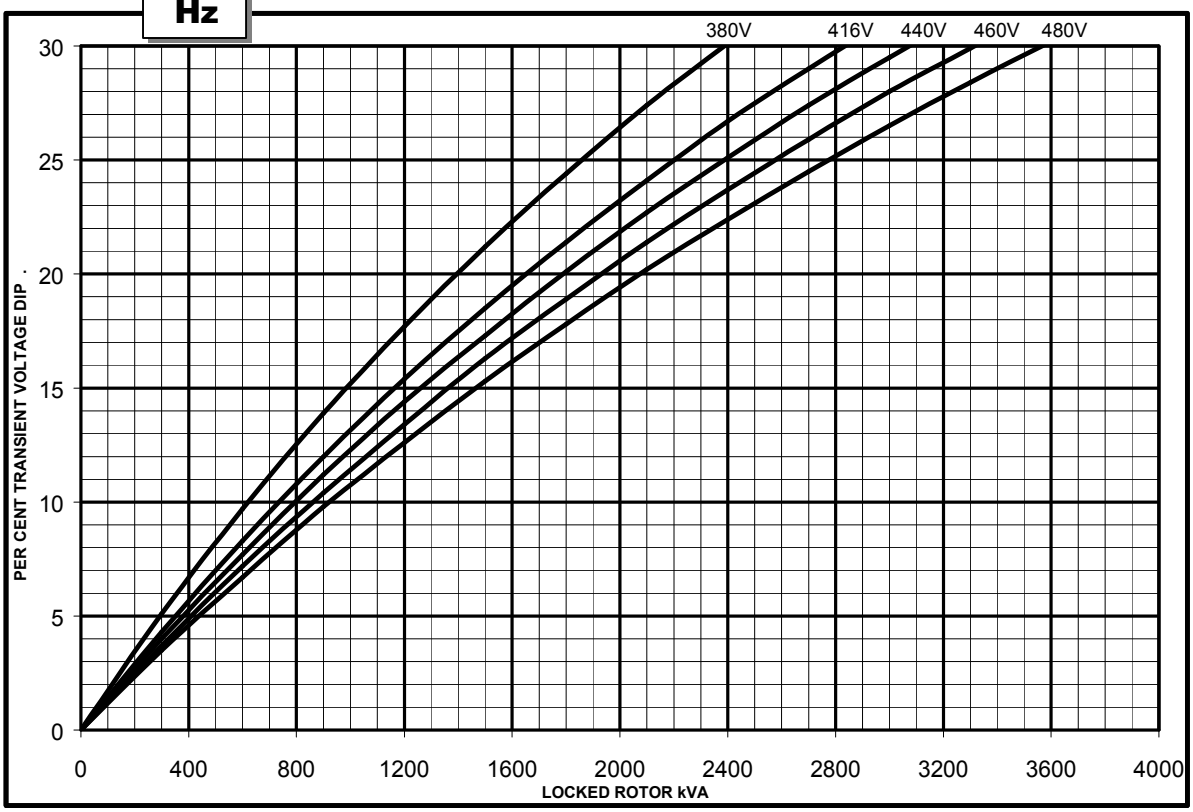
Winding 312

Locked Rotor Motor Starting Curve

50 Hz

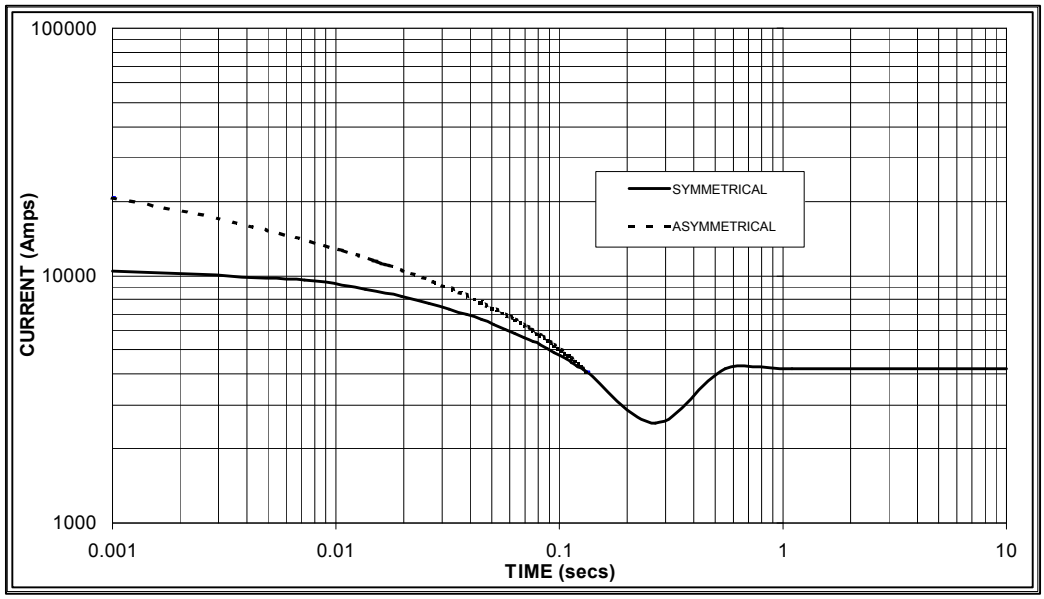


60 Hz



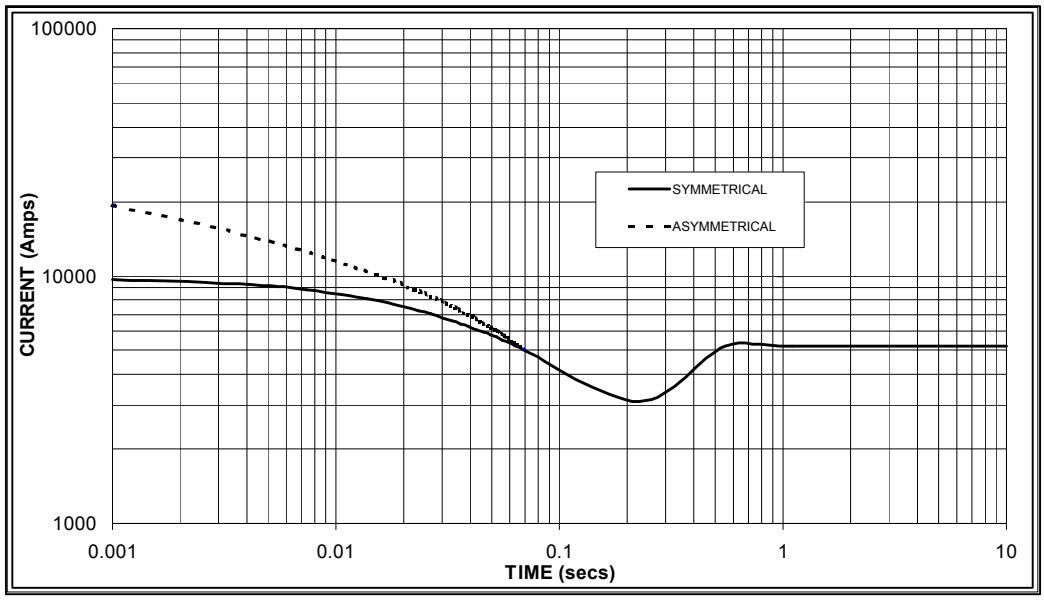
Three-phase Short Circuit Decrement Curve. No-load Excitation at Rated Speed
Based on star (wye) connection.

50 Hz



Sustained Short Circuit = 4,200 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 1.07	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.

HCI634K

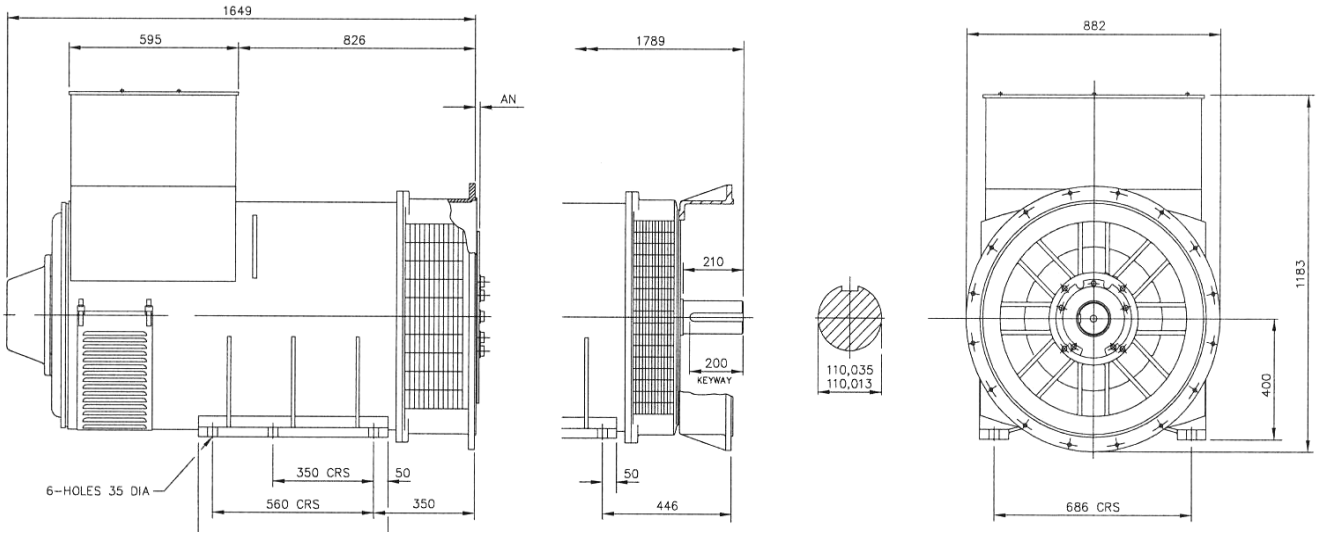
Winding 312 0.8 Power Factor

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
	Delta (V)	220	230	240	254	220	230	240	254	220	230	240	254	220	230	240	254
kVA		1000	1018	1000	1000	1110	1130	1110	1110	1180	1190	1180	1180	1220	1230	1220	1220
kW		800	814	800	800	888	904	888	888	944	952	944	944	976	984	976	976
Efficiency (%)		95.6	95.7	95.8	95.9	95.4	95.5	95.6	95.7	95.2	95.3	95.5	95.6	95.1	95.2	95.4	95.5
kW Input		837	851	835	834	931	947	929	928	992	999	988	987	1026	1034	1023	1022

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		1188	1238	1275	1313	1275	1338	1388	1438	1350	1413	1469	1525	1400	1463	1519	1575
kW		950	990	1020	1050	1020	1070	1110	1150	1080	1130	1175	1220	1120	1170	1215	1260
Efficiency (%)		95.6	95.6	95.7	95.7	95.4	95.5	95.5	95.5	95.3	95.3	95.4	95.4	95.1	95.2	95.3	95.3
kW Input		994	1036	1066	1098	1069	1121	1163	1205	1133	1186	1232	1279	1178	1229	1275	1322

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