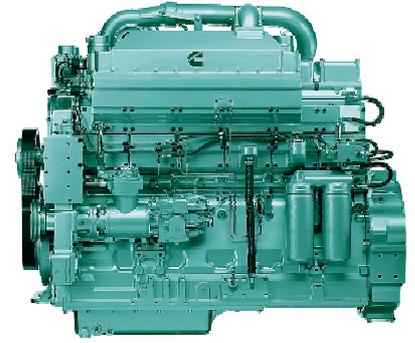


# KTA19-G4



> Specification sheet



Our energy working for you.™

## Description

The KTA19-Series benefits from years of technical development and improvement to bring customers an innovative and future proof diesel engine that keeps pace with ever changing generator set requirements.

Recognised globally for its performance under even the most severe climatic conditions, the KTA19-Series is widely acknowledged as the most robust and cost-effective diesel engine in its power range for the generator set market.



This engine has been built to comply with CE certification.

This engine has been designed in facilities certified to ISO9001 and manufactured in facilities certified to ISO9001 or ISO9002.



## Features

**Turbocharger** – Cummins Turbo technologies (CTT) exhaust gas driven turbocharger mounted at top of engine.

**Fuel System** – Cummins PT™ self-adjusting system. Integral dual flyweight governor provides overspeed protection independent of main governor.

**Aftercooler** – Large capacity aftercooler results in cooler, denser intake air for more efficient combustion and reduced internal stresses for longer life.

**Cylinder Block** – Alloy cast iron with removable wet liners. Cross bolt support to main bearing cap provides extra strength and stability.

**Service and Support** - G-Drive products are backed by an uncompromising level of technical support and after sales service, delivered through a world class service network.

## 1500 rpm (50 Hz Ratings)

Gross Engine Output			Net Engine Output			Typical Generator Set Output					
Standby	Prime	Base	Standby	Prime	Base	Standby (ESP)		Prime (PRP)		Base (COP)	
kWm/BHP			kWm/BHP			kWe	kVA	kWe	kVA	kWe	kVA
504/675	488/600	355/475	479/642	428/573	335/449	440	550	400	500	315	393

## 1800 rpm (60 Hz Ratings)

Gross Engine Output			Net Engine Output			Typical Generator Set Output					
Standby	Prime	Base	Standby	Prime	Base	Standby (ESP)		Prime (PRP)		Base (COP)	
kWm/BHP			kWm/BHP			kWe	kVA	kWe	kVA	kWe	kVA
563/755	507/680	429/575	520/697	470/630	392/525	500	625	455	569	368	460

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[www.cumminsgdrive.com](http://www.cumminsgdrive.com)

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## General Engine Data

Type	4 cycle, in-line, Turbo Charged
Bore mm	159
Stroke mm	159
Displacement Litre	18.9 litre
Cylinder Block	Cast iron, 6 cylinder
Battery Charging Alternator	35A
Starting Voltage	24V
Fuel System	Direct injection
Fuel Filter	Spin-on fuel filters with water separator
Lube Oil Filter Type(s)	Spin-on full flow filter
Lube Oil Capacity (l)	50
Flywheel Dimensions	SAE 0

## Coolpac Performance Data

Cooling System Design	Jacket Water After Cooled
Coolant Ratio	50% ethylene glycol; 50% water
Coolant Capacity (l)	Engine only – not applicable
Limiting Ambient Temp (°C)**	
Fan Power (kWm)	
Cooling System Air Flow (m <sup>3</sup> /s)**	
Air Cleaner Type	Dry replaceable element with restriction indicator

\*\*@ 13 mm H<sub>2</sub>O

## Weight & Dimensions

Length	Width	Height	Weight (dry)
mm	mm	mm	kg
1859	868	1728	1855

## Fuel Consumption 1500 rpm (50 Hz)

%	kWm	BHP	L/ph	US gal/ph
<b>Standby Power</b>				
100	504	675	121	31.9
<b>Prime Power</b>				
100	448	600	107	28.4
75	336	450	82	21.6
50	224	300	57	14.9
25	112	150	30	8.1
<b>Continuous Power</b>				
100	355	475	86	22.8

## Fuel Consumption 1800 rpm (60 Hz)

%	kWm	BHP	L/ph	US gal/ph
<b>Standby Power</b>				
100	563	755	136	35.9
<b>Prime Power</b>				
100	507	680	122	32.3
75	380	510	94	24.8
50	254	340	65	17
25	127	170	36	9.6
<b>Continuous Power</b>				
100	429	575	104	27.3

## Cummins G-Drive Engines

### Asia Pacific

10 Toh Guan Road  
#07-01  
TT International Tradepark  
Singapore 608838  
Phone 65 6417 2388  
Fax 65 6417 2399

### Europe, CIS, Middle

**East and Africa**  
Manston Park Columbus Ave  
Manston Ramsgate  
Kent CT12 5BF, UK  
Phone 44 1843 255000  
Fax 44 1843 255902

### Latin America

Rua Jati, 310, Cumbica  
Guarulhos, SP 07180-900  
Brazil  
Phone 55 11 2186 4552  
Fax 55 11 2186 4729

### Mexico

Cummins S. de R.L. de C.V.  
Eje 122 No. 200 Zona Industrial  
San Luis Potosi, S.L.P. 78090  
Mexico  
Phone 52 444 870 6700  
Fax 52 444 870 6811

### North America

1400 73rd Avenue N.E.  
Minneapolis, MN 55432  
USA  
Phone 1 763 574 5000  
USA Toll-free 1 877 769 7669  
Fax 1 763 574 5298

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[www.cumminsgdrive.com](http://www.cumminsgdrive.com)

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## Ratings Definitions

### Emergency Standby Power (ESP):

Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Fuel Stop power in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

### Limited-Time Running Power (LTP):

Applicable for supplying power to a constant electrical load for limited hours. Limited-Time Running Power (LTP) is in accordance with ISO 8528.

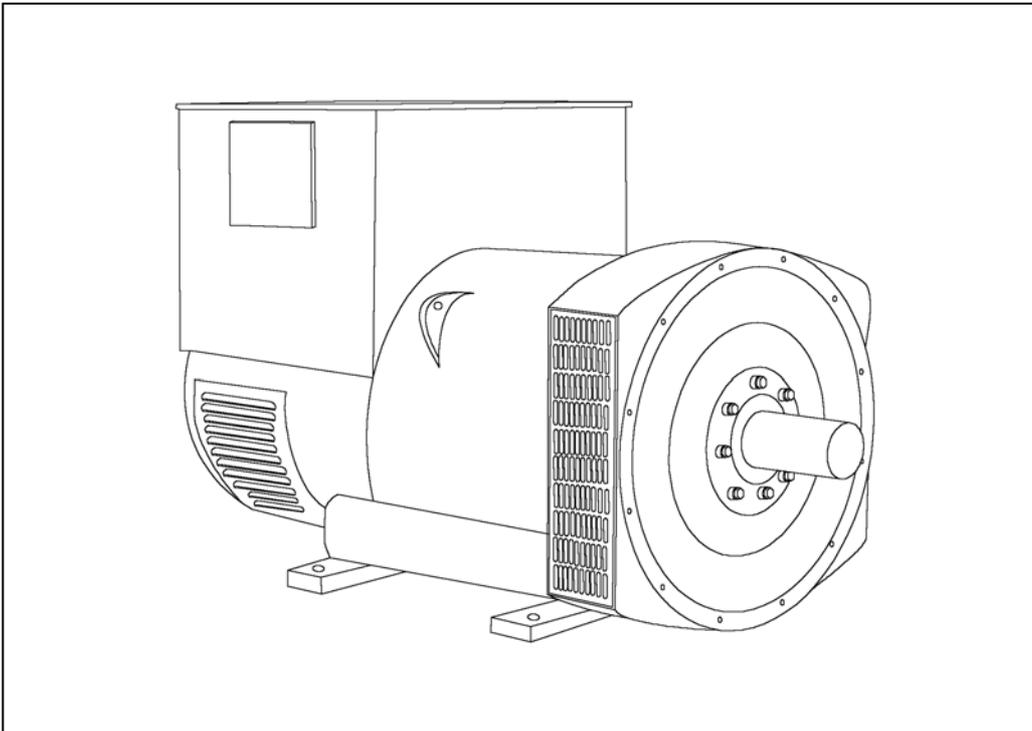
### Prime Power (PRP):

Applicable for supplying power to varying electrical load for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528. Ten percent overload capability is available in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

### Base Load (Continuous) Power (COP):

Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous Power (COP) in accordance with ISO 8528, ISO 3046, AS 2789, DIN6271 and BS 5514.

## HCI 534D/544D - Technical Data Sheet



# HCI534D/544D

## 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

#### SX440 AVR - STANDARD

With this self-excited system the main stator provides power via the Automatic Voltage Regulator (AVR) to the exciter stator. The high efficiency semi-conductors of the AVR ensure positive build-up from initial low levels of residual voltage.

The exciter rotor output is fed to the main rotor through a three-phase full-wave bridge rectifier. The rectifier is protected by a surge suppressor against surges caused, for example, by short circuit or out-of-phase paralleling.

The SX440 will support a range of electronic accessories, including a 'droop' Current Transformer (CT) to permit parallel operation with other ac generators.

If 3-phase sensing is required with the self-excited system, the SX421 AVR must be used.

#### SX421 AVR

This AVR also operates in a self-excited system. It combines all the features of the SX440 with, additionally, three-phase rms sensing for improved regulation and performance. Over voltage protection is provided via a separate circuit breaker. An engine relief load acceptance feature is built in as standard.

#### MX341 AVR

This sophisticated AVR is incorporated into the Stamford Permanent Magnet Generator (PMG) control system.

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.

An engine relief load acceptance feature can enable full load to be applied to the generator in a single step.

If three-phase sensing is required with the PMG system the MX321 AVR must be used.

We recommend three-phase sensing for applications with greatly unbalanced or highly non-linear loads.

#### MX321 AVR

The most sophisticated of all our AVRs combines all the features of the MX341 with, additionally, three-phase rms sensing, for improved regulation and performance.

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 are 3-phase reconnectable with 12 ends brought out to the terminals, which are mounted on a cover 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.*

**HCI534D/544D**

**WINDING 311**

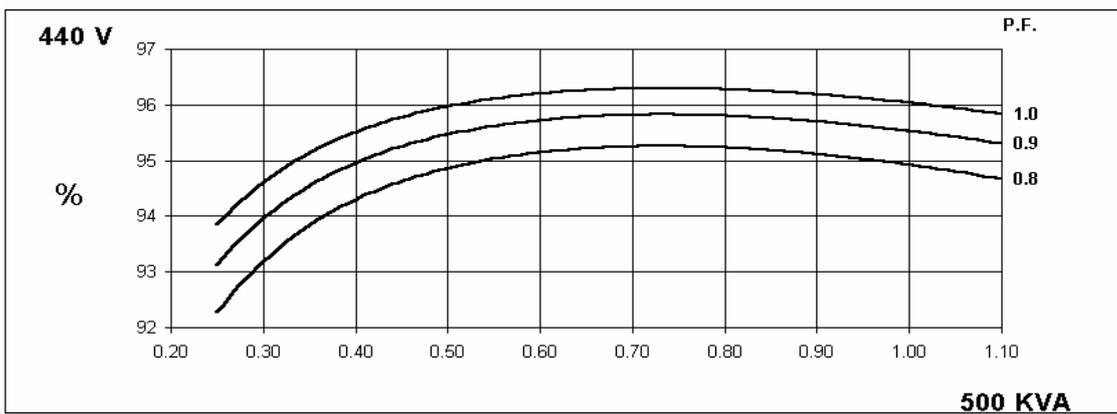
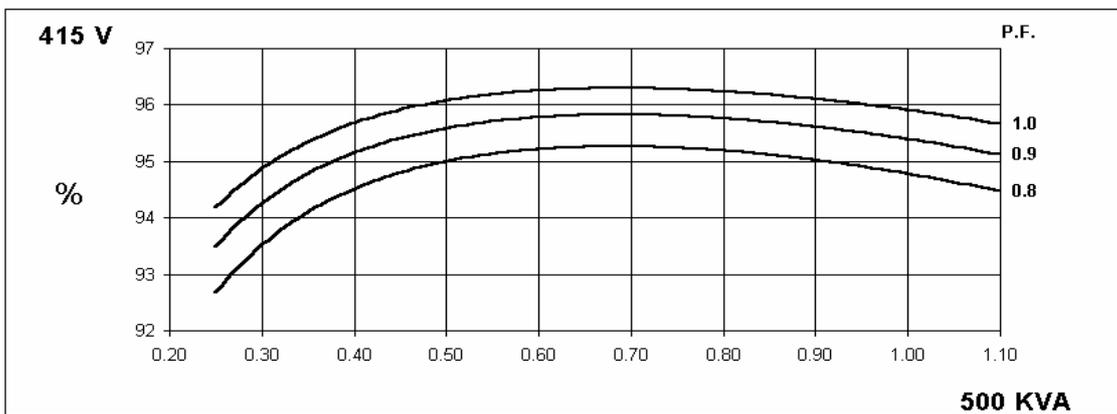
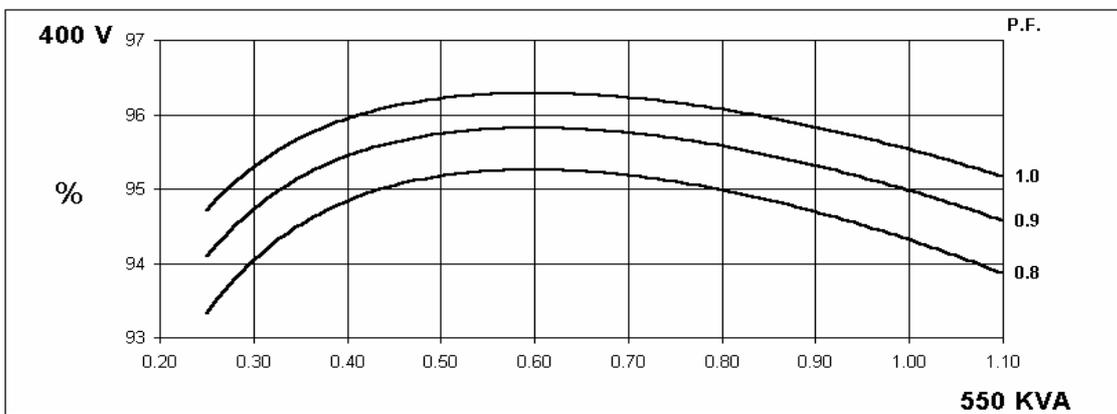
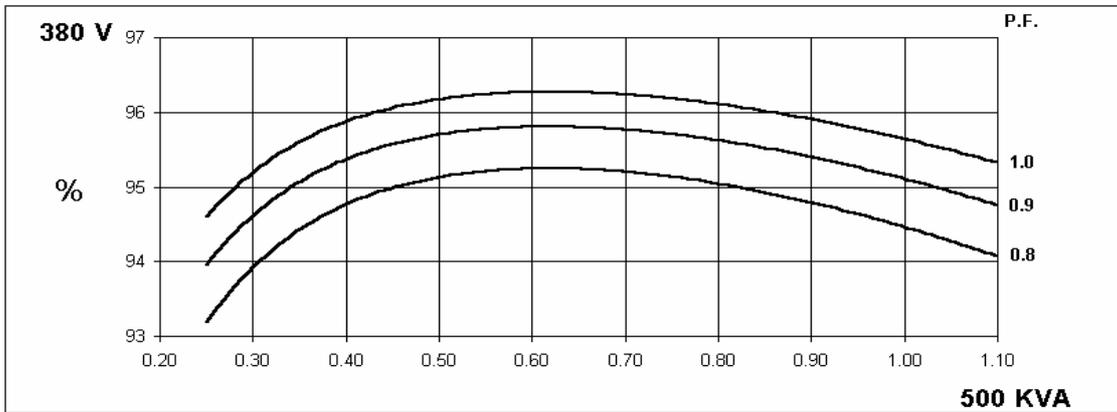
CONTROL SYSTEM	SEPARATELY EXCITED BY P.M.G.							
A.V.R.	MX321	MX341						
VOLTAGE REGULATION	± 0.5 %	± 1.0 %	With 4% ENGINE GOVERNING					
SUSTAINED SHORT CIRCUIT	REFER TO SHORT CIRCUIT DECREMENT CURVES (page 7)							
CONTROL SYSTEM	SELF EXCITED							
A.V.R.	SX440	SX421						
VOLTAGE REGULATION	± 1.0 %	± 0.5 %	With 4% ENGINE GOVERNING					
SUSTAINED SHORT CIRCUIT	SERIES 4 CONTROL DOES NOT SUSTAIN A SHORT CIRCUIT CURRENT							
INSULATION SYSTEM	CLASS H							
PROTECTION	IP23							
RATED POWER FACTOR	0.8							
STATOR WINDING	DOUBLE LAYER LAP							
WINDING PITCH	TWO THIRDS							
WINDING LEADS	12							
STATOR WDG. RESISTANCE	0.005 Ohms PER PHASE AT 22°C SERIES STAR CONNECTED							
ROTOR WDG. RESISTANCE	1.77 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. 6220 (ISO)							
BEARING NON-DRIVE END	BALL. 6314 (ISO)							
	1 BEARING				2 BEARING			
WEIGHT COMP. GENERATOR	1393 kg				1395 kg			
WEIGHT WOUND STATOR	657 kg				657 kg			
WEIGHT WOUND ROTOR	563 kg				535 kg			
WR <sup>2</sup> INERTIA	8.0068 kgm <sup>2</sup>				7.7289 kgm <sup>2</sup>			
SHIPPING WEIGHTS in a crate	1485 kg				1485 kg			
PACKING CRATE SIZE	166 x 87 x 124(cm)				166 x 87 x 124(cm)			
	50 Hz				60 Hz			
TELEPHONE INTERFERENCE	THF<2%				TIF<50			
COOLING AIR	1.035 m <sup>3</sup> /sec 2202 cfm				1.312 m <sup>3</sup> /sec 2780 cfm			
VOLTAGE SERIES STAR	380/220	400/231	415/240	440/254	416/240	440/254	460/266	480/277
VOLTAGE PARALLEL STAR	190/110	200/115	208/120	220/127	208/120	220/127	230/133	240/138
VOLTAGE SERIES DELTA	220/110	230/115	240/120	254/127	240/120	254/127	266/133	277/138
KVA BASE RATING FOR REACTANCE VALUES	500	500	500	500	575	594	625	644
X <sub>d</sub> DIR. AXIS SYNCHRONOUS	3.02	2.72	2.53	2.25	3.52	3.25	3.13	2.96
X' <sub>d</sub> DIR. AXIS TRANSIENT	0.16	0.14	0.13	0.12	0.17	0.16	0.15	0.14
X'' <sub>d</sub> DIR. AXIS SUBTRANSIENT	0.11	0.10	0.09	0.08	0.12	0.11	0.11	0.10
X <sub>q</sub> QUAD. AXIS REACTANCE	2.48	2.24	2.08	1.85	2.87	2.65	2.55	2.41
X'' <sub>q</sub> QUAD. AXIS SUBTRANSIENT	0.27	0.25	0.23	0.20	0.31	0.29	0.28	0.26
X <sub>L</sub> LEAKAGE REACTANCE	0.05	0.04	0.04	0.04	0.06	0.06	0.05	0.05
X <sub>2</sub> NEGATIVE SEQUENCE	0.19	0.17	0.16	0.14	0.22	0.20	0.20	0.19
X <sub>0</sub> ZERO SEQUENCE	0.10	0.09	0.08	0.07	0.10	0.09	0.09	0.08
REACTANCES ARE SATURATED VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED								
T' <sub>d</sub> TRANSIENT TIME CONST.	0.08s							
T'' <sub>d</sub> SUB-TRANSTIME CONST.	0.012s							
T' <sub>do</sub> O.C. FIELD TIME CONST.	2.2s							
T <sub>a</sub> ARMATURE TIME CONST.	0.018s							
SHORT CIRCUIT RATIO	1/X <sub>d</sub>							

**50  
Hz**

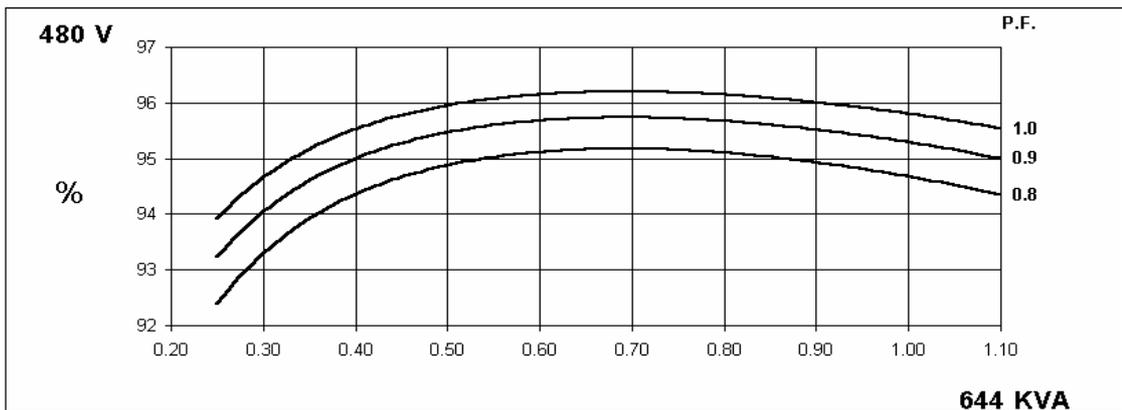
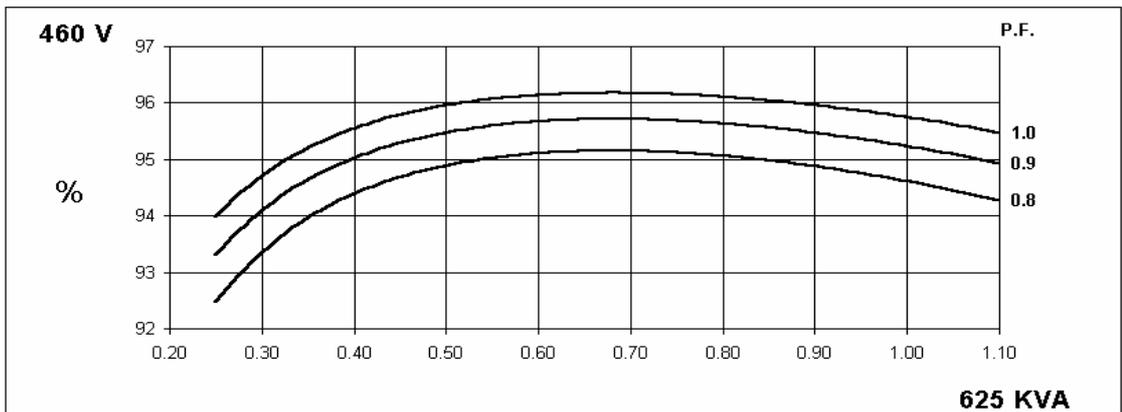
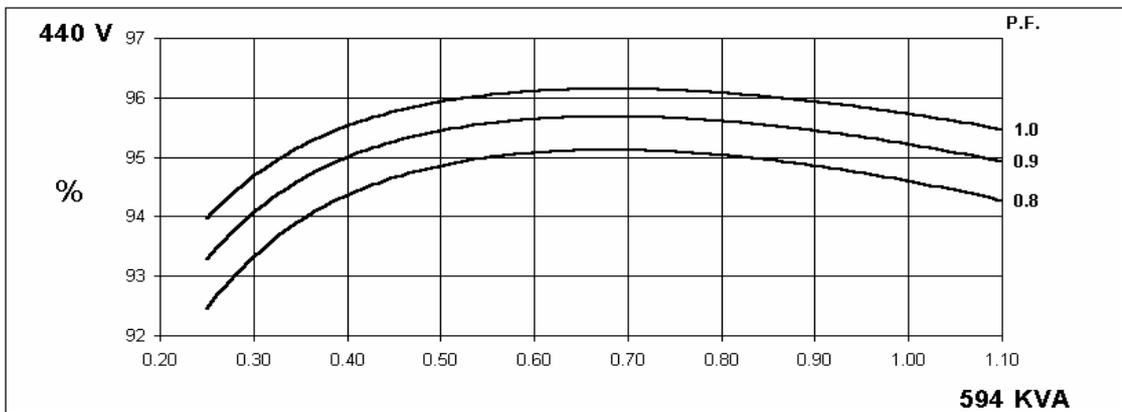
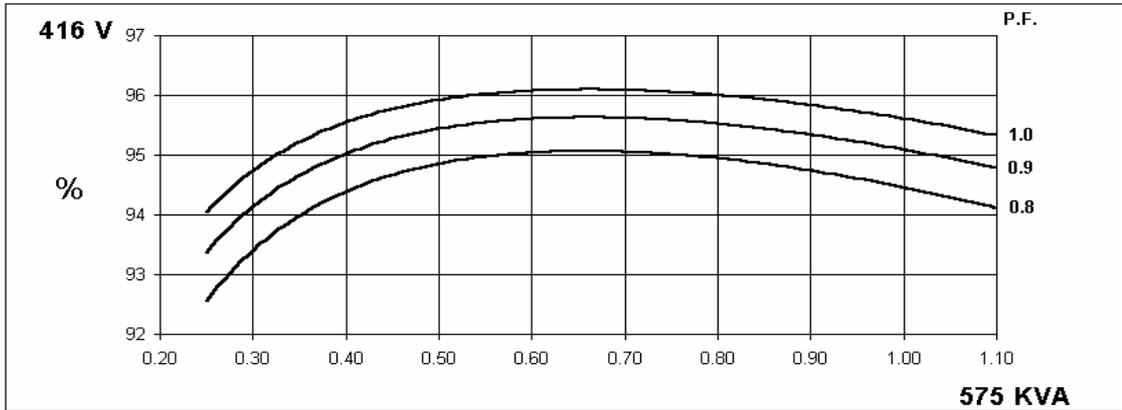
**HCI534D/544D**  
Winding 311



**THREE PHASE EFFICIENCY CURVES**



**THREE PHASE EFFICIENCY CURVES**



# HCI534D/544D

Winding 311

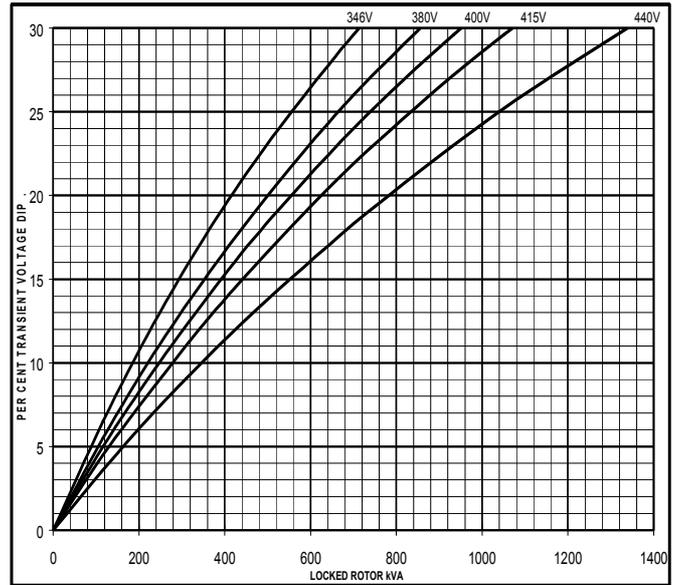
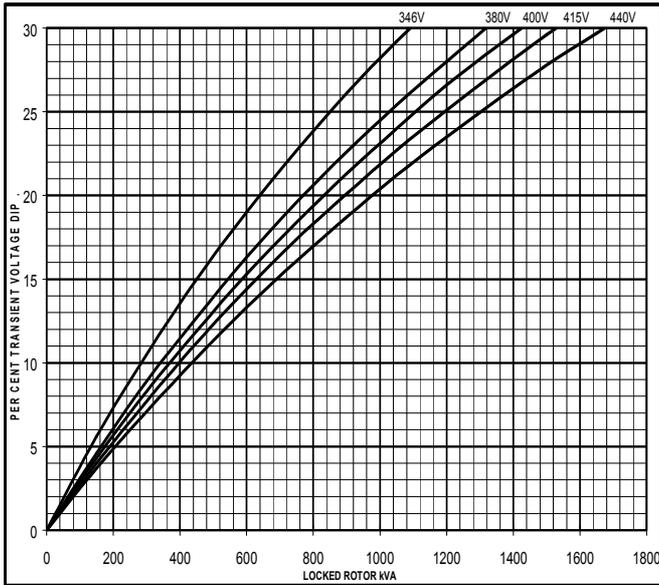


## Locked Rotor Motor Starting Curve

**50  
Hz**

**MX**

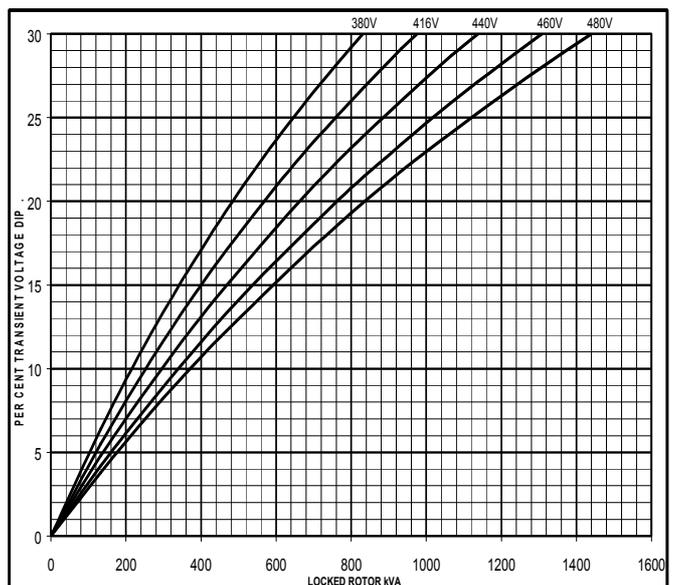
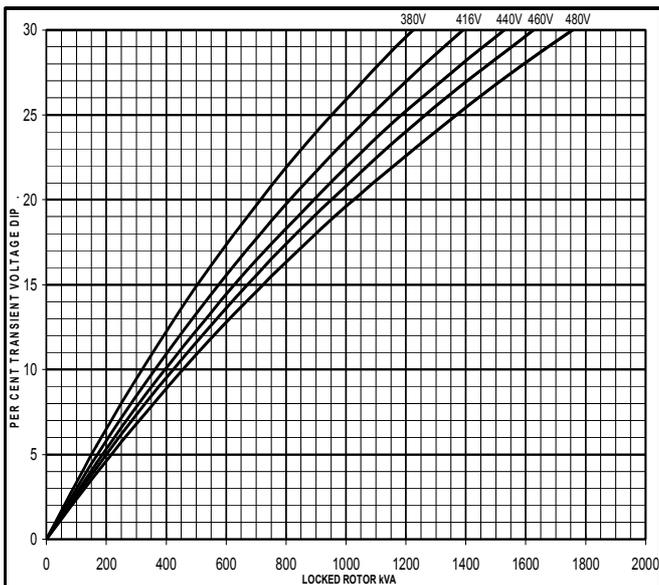
**SX**



**60  
Hz**

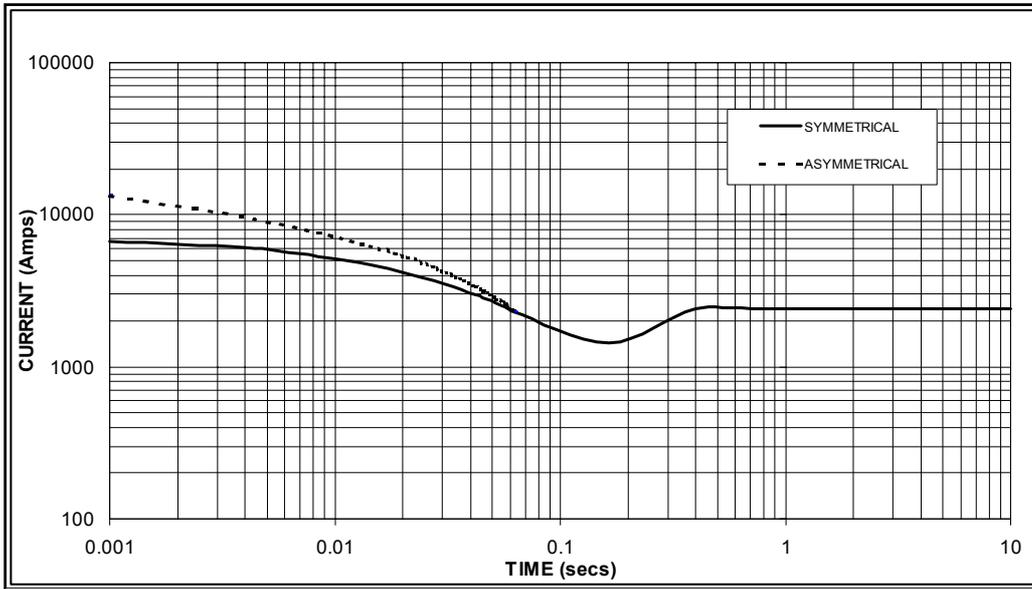
**MX**

**SX**



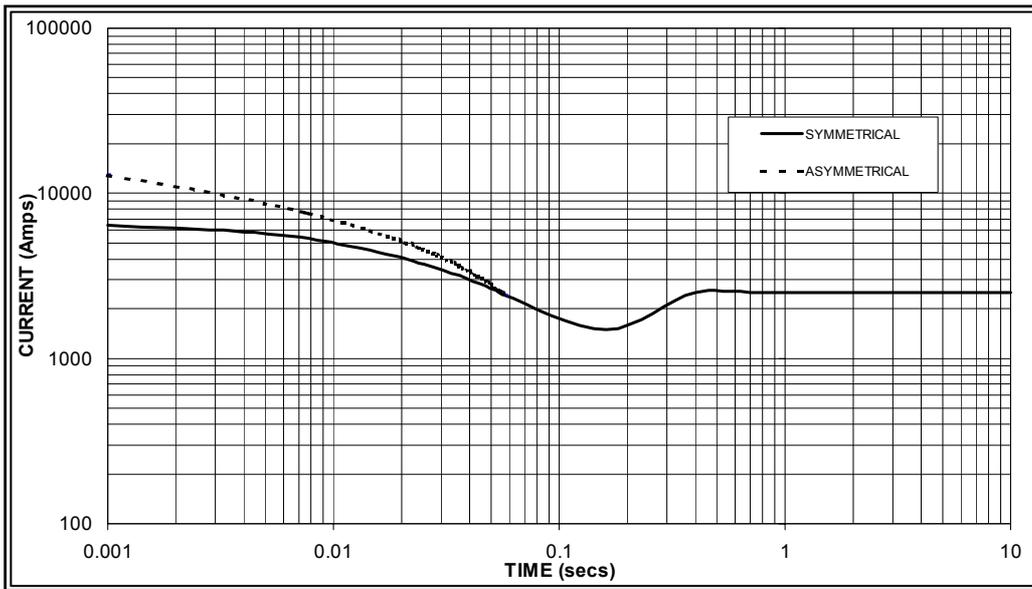
**Three-phase Short Circuit Decrement Curve. No-load Excitation at Rated Speed  
Based on star (wye) connection.**

**50  
Hz**



Sustained Short Circuit = 2,400 Amps

**60  
Hz**



Sustained Short Circuit = 2,500 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 1.06	440v	X 1.06
415v	X 1.09	460v	X 1.12
440v	X 1.12	480v	X 1.20

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. For other connection the following multipliers should be applied to current values as shown :

Parallel Star = Curve current value X 2

Series Delta = Curve current value X 1.732

# HCI534D/544D

## Winding 311      0.8 Power Factor

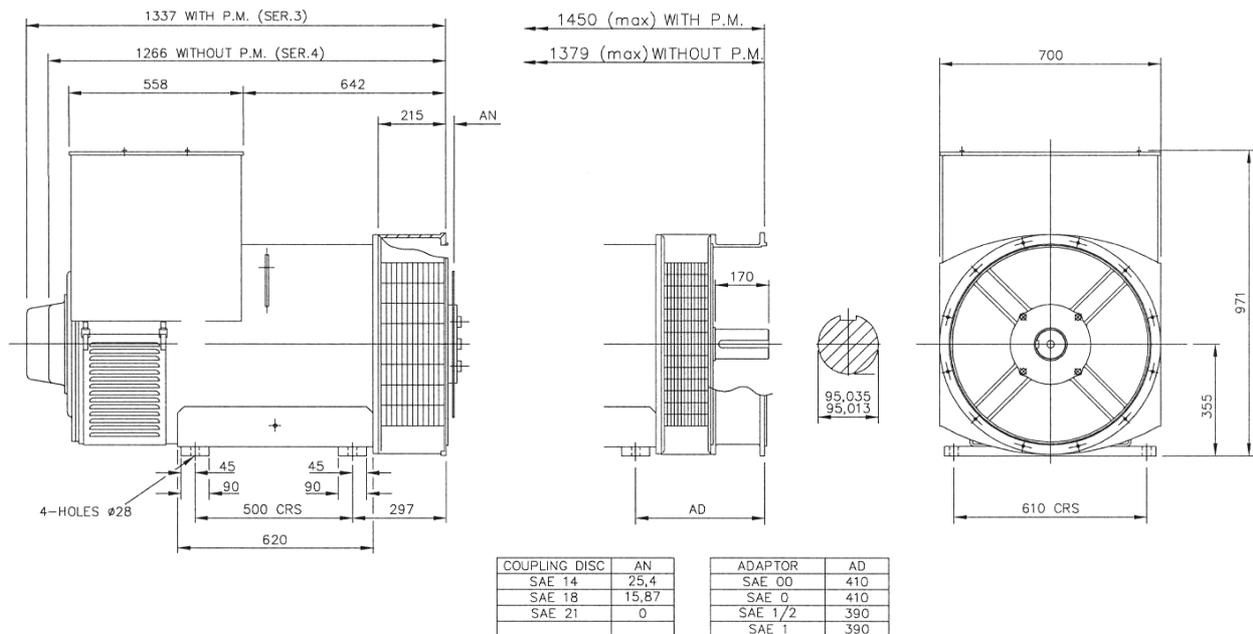


### RATINGS

Class - Temp Rise	Cont. F - 105/40°C				Cont. H - 125/40°C				Standby - 150/40°C				Standby - 163/27°C				
<b>50 Hz</b>	Series Star (V)	380	400	415	440	380	400	415	440	380	400	415	440	380	400	415	440
	Parallel Star (V)	190	200	208	220	190	200	208	220	190	200	208	220	190	200	208	220
	Series Delta (V)	220	230	240	254	220	230	240	254	220	230	240	254	220	230	240	254
kVA	450	495	450	450	500	550	500	500	515	575	515	515	530	590	530	530	
kW	360	396	360	360	400	440	400	400	412	460	412	412	424	472	424	424	
Efficiency (%)	94.8	94.7	95.0	95.1	94.5	94.3	94.8	94.9	94.4	94.1	94.7	94.9	94.2	94.0	94.6	94.8	
kW Input	380	418	379	379	423	467	422	421	436	489	435	434	450	502	448	447	

<b>60 Hz</b>	Series Star (V)	416	440	460	480	416	440	460	480	416	440	460	480	416	440	460	480
	Parallel Star (V)	208	220	230	240	208	220	230	240	208	220	230	240	208	220	230	240
	Delta (V)	240	254	266	277	240	254	266	277	240	254	266	277	240	254	266	277
kVA	519	538	563	588	575	594	625	644	588	625	655	675	606	644	673	694	
kW	415	430	450	470	460	475	500	515	470	500	524	540	485	515	538	555	
Efficiency (%)	94.7	94.8	94.9	94.9	94.5	94.6	94.6	94.7	94.4	94.4	94.5	94.5	94.3	94.3	94.4	94.4	
kW Input	438	454	475	496	487	502	529	544	498	530	554	571	514	546	570	588	

### DIMENSIONS



**PO Box 17 • Barnack Road • Stamford • Lincolnshire • PE9 2NB**  
**Tel: 00 44 (0)1780 484000 • Fax: 00 44 (0)1780 484100**  
**Website: [www.newage-avkseg.com](http://www.newage-avkseg.com)**