

( 0 ژنراتور ) ( ٠-٨ ٠٠٠٠ )

Standby		Prime		دیزل ژنراتور
KW	KVA	KW	KVA	
176	140	160	128	



---

### موتور دیزل

Manufacturer	IVECO	تولید کننده
Type	TM <sub>3</sub> A	تیپ
Number of cylinders	6	تعداد سیلندر ها
Cylinder arrangement	inline	آرایش سیلندر ها
Displacement , Liters	6.7	جا به جایی
Bore × Stroke , mm	104X132	قطر سیلندر × کورس پیستون

---

### ژنراتور

Manufacturer	Stamford	تولید کننده
Type	UCI274F	تیپ
Frequency, Hz	50	فرکانس
Speed, Rpm	1500	سرعت
Voltage, V	380	ولتاژ
Excitation	Brushless	سیستم تمریک
Stator windings	12	سیم پیچ استاتور
Rotor	with damping cage	روتور
Over speed, Rpm	2250	مداکثر سرعت مجاز
Short circuit current	0,40	جریان اتصال کوتاه
Insulation class	H	کلاس عایق
Protection class	IP 23	کلاس حفاظتی
Cooling air volume,m <sup>3</sup> / sec	19,3	دبی هوای فنک کننده

# TM3A

152 kW@1500 rpm

165 kW@1800 rpm

EU 2002/88/EC

## Specifications

Thermodynamic cycle	Diesel 4 stroke		
Air intake	TAA		
Arrangement	6, in line		
Bore x Stroke	mm	104 x 132	
Total displacement	l	6.7	
Valves per cylinder	2		
Injection system	direct		
Speed governor	mechanical		
Cooling system	liquid (water + 50% Paraflu11)		
Flywheel housing/flywheel	type	SAE3 / 11" 1/2	
Flywheel rotation	CCW		
Lube oil specifications	ACEA E3-E5		
Lube oil consumption	<0.1% of fuel consumption		
Fuel specifications	EN 590		
Oil and filters intervals for replacement	hours	600	
Fuel consumption at:	rpm	1500	1800
	100% load l/h (g/kWh)	36.0 (212.7)	40.0 (217.5)
	80% load l/h (g/kWh)	29.0 (213.8)	32.0 (220.4)
	50% load l/h (g/kWh)	18.0 (215.0)	21.0 (224.7)
Coolant capacity: engine only	l	~10.5	
	engine+radiator	l	~25.5
ATB (without canopy)	°C	55	
<b>No remote cooling radiator allowed</b>			
Lube oil total system capacity including pipes, filters etc.	l	~17.2	
Electrical system	12Vcc		
Starting batteries: recommended capacity	Ah	1x100	
Discharge current (EN 50342)	A	650	
Cold starting: without air preheating	°C	-10	
	with air preheating	°C	-25

## Performances

Ratings <sup>1</sup>		1500 rpm		1800 rpm	
		PRIME	STAND-BY	PRIME	STAND-BY
Rated Output <sup>2</sup>	kWm	138	152	150	165

1) Ratings in accordance with ISO 8528. For duty at temperature over 40°C and/or altitude over 1000 meters must be considered a power derating factor. Contact the FPT sales organization.

2) Net power at flywheel available after 50 hours running with a ±3% tolerance.

**PRIME POWER:** The prime power is the maximum power available with varying loads for an unlimited number of hours. The average power output during a 24h period of operation must not exceed 80% of the declared prime power between the prescribed maintenance intervals and at standard environmental conditions. A 10% overload is permissible for 1 hour every 12 hours of operation.

**STAND-BY POWER:** The stand-by power is the maximum power available for a period of 500 hours/year with a mean load factor of 90% of the declared stand-by power. No kind of overloads is permissible for this use.

**CONTINUOUS POWER:** Contact the FPT sales organization.

## Standard configuration

FPT engine N67 TM3A equipped with:

- Mounted radiator incorporating air-to-air charge cooler
- Mounted belt driven pusher fan
- Fan guard
- Mounted air filter with replaceable cartridges
- Fuel filter
- Primary fuel filter/water separator
- Replaceable oil filter
- Front engine mounting brackets
- Flywheel housing SAE3 and flywheel 11" 1/2
- Re-directable exhaust gas elbow
- Recircled oil breather system
- Oil dipstick
- HWT and LOP sensors
- 12Vdc electrical system
- User's handbook

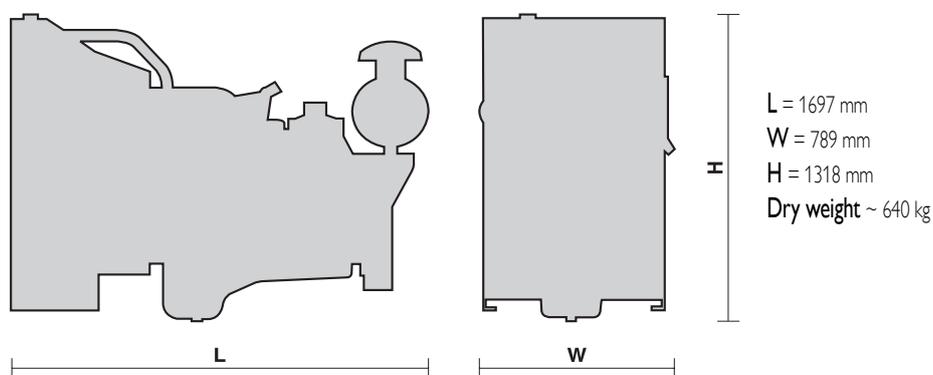
THE ENGINE IS SUPPLIED WITHOUT LIQUIDS

## Optional equipment:

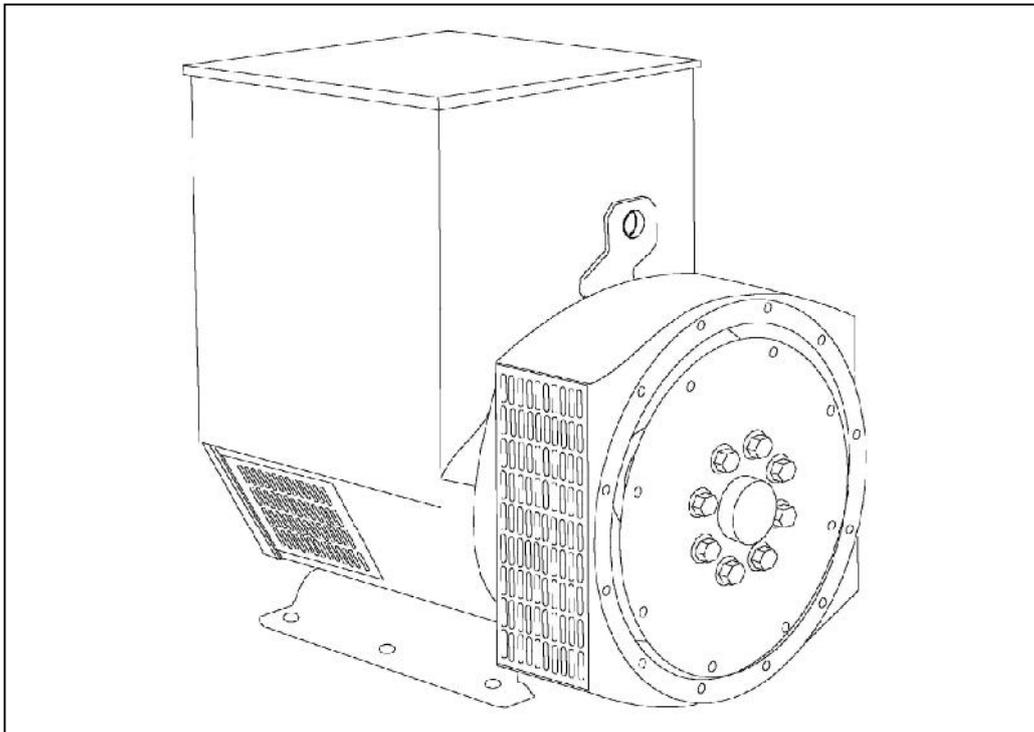
On request the engine can be supplied with:

- Oil drain pump
- Oil drain valve
- 120/230 Volt water jacket heater
- WT and OP sensors for gauges
- Low water level sensor
- Turbo and exhaust gas guards
- Exhaust gas flexible joint
- 24Vdc electrical system

## Overall dimensions:



**UCI274F - Technical Data Sheet**



# UCI274F

## 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

#### SX460 AVR - STANDARD

With this self excited control system the main stator supplies power via the Automatic Voltage Regulator (AVR) to the exciter stator. The high efficiency semiconductors 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. This rectifier is protected by a surge suppressor against surges caused, for example, by short circuit.

#### SX440 AVR

With this self-excited system the main stator provides power via the 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.

#### SX421AVR

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.*

## UCI274F WINDING 311

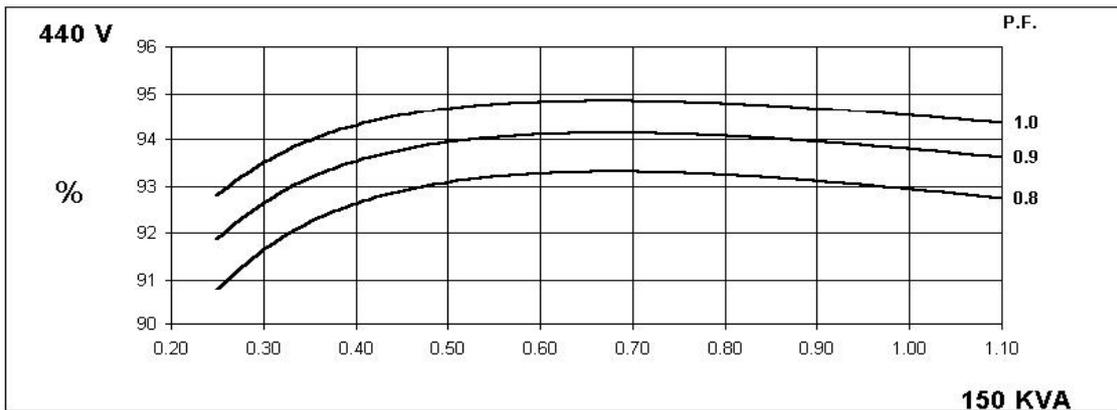
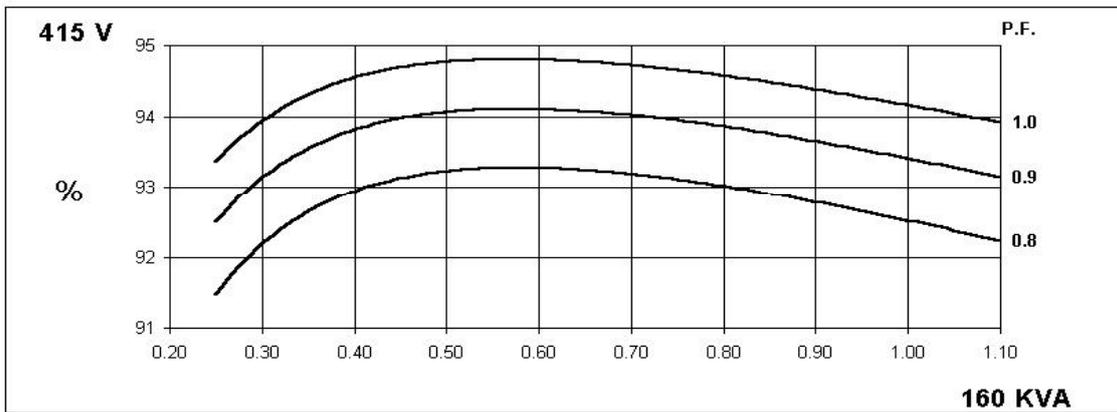
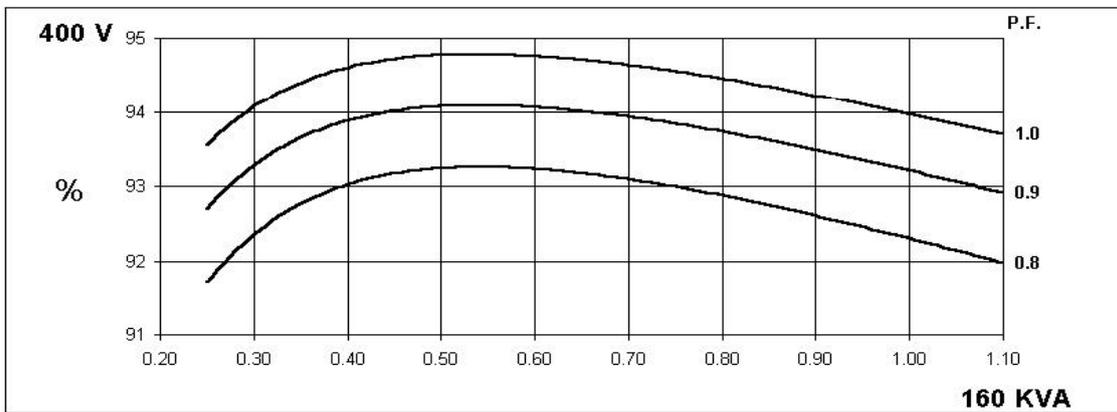
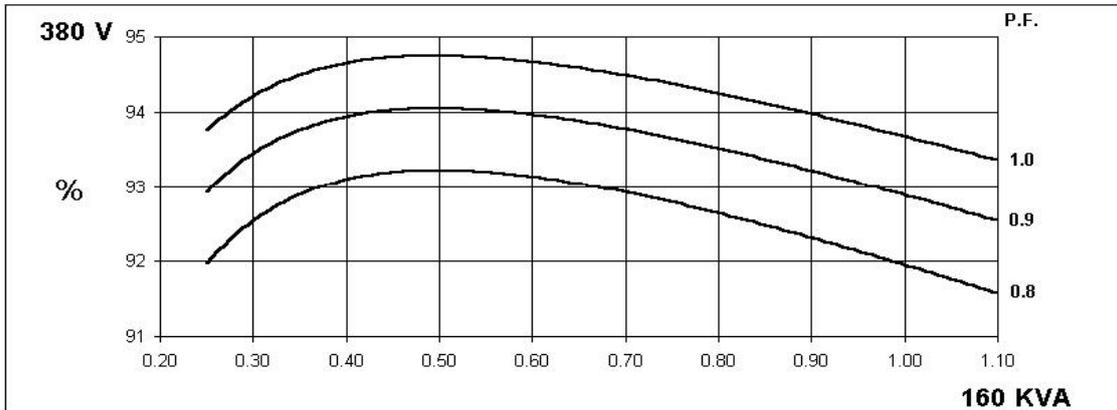
CONTROL SYSTEM		SEPARATELY EXCITED BY P.M.G.							
A.V.R.		MX321	MX341						
VOLTAGE REGULATION		± 0.5 %	± 1.0 %	With 4% ENGINE GOVERNING					
SUSTAINED SHORT CIRCUIT		REFER TO SHORT CIRCUIT DECREMENT CURVES (page 7)							
CONTROL SYSTEM		SELF EXCITED							
A.V.R.		SX460	SX440	SX421					
VOLTAGE REGULATION		± 1.5 %	± 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 CONCENTRIC							
WINDING PITCH		TWO THIRDS							
WINDING LEADS		12							
STATOR WDG. RESISTANCE		0.024 Ohms PER PHASE AT 22°C SERIES STAR CONNECTED							
ROTOR WDG. RESISTANCE		1.52 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. 6315-2RS (ISO)							
BEARING NON-DRIVE END		BALL. 6310-2RS (ISO)							
		1 BEARING				2 BEARING			
WEIGHT COMP. GENERATOR		530 kg				545 kg			
WEIGHT WOUND STATOR		200 kg				200 kg			
WEIGHT WOUND ROTOR		188.67 kg				177.71 kg			
WR <sup>2</sup> INERTIA		1.555 kgm <sup>2</sup>				1.5044 kgm <sup>2</sup>			
SHIPPING WEIGHTS in a crate		563 kg				577 kg			
PACKING CRATE SIZE		105 x 67 x 103(cm)				123 x 67 x 103(cm)			
		50 Hz				60 Hz			
TELEPHONE INTERFERENCE		THF<2%				TIF<50			
COOLING AIR		0.514 m <sup>3</sup> /sec 1090 cfm				0.617 m <sup>3</sup> /sec 1308 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		160	160	160	n/a	181.3	190	190	206.3
Xd DIR. AXIS SYNCHRONOUS		2.24	2.02	1.88	-	2.53	2.37	2.17	2.16
X'd DIR. AXIS TRANSIENT		0.19	0.17	0.16	-	0.21	0.20	0.18	0.18
X''d DIR. AXIS SUBTRANSIENT		0.13	0.12	0.11	-	0.14	0.13	0.12	0.12
Xq QUAD. AXIS REACTANCE		1.38	1.25	1.16	-	1.53	1.43	1.31	1.31
X''q QUAD. AXIS SUBTRANSIENT		0.17	0.15	0.14	-	0.20	0.19	0.17	0.17
X <sub>L</sub> LEAKAGE REACTANCE		0.07	0.06	0.06	-	0.09	0.08	0.08	0.08
X <sub>2</sub> NEGATIVE SEQUENCE		0.14	0.13	0.12	-	0.16	0.15	0.14	0.14
X <sub>0</sub> ZERO SEQUENCE		0.08	0.08	0.07	-	0.10	0.09	0.09	0.09
REACTANCES ARE SATURATED		VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED							
T'd TRANSIENT TIME CONST.		0.035 s							
T''d SUB-TRANSIME CONST.		0.011 s							
T'do O.C. FIELD TIME CONST.		0.9 s							
T <sub>a</sub> ARMATURE TIME CONST.		0.009 s							
SHORT CIRCUIT RATIO		1/Xd							

**50  
Hz**

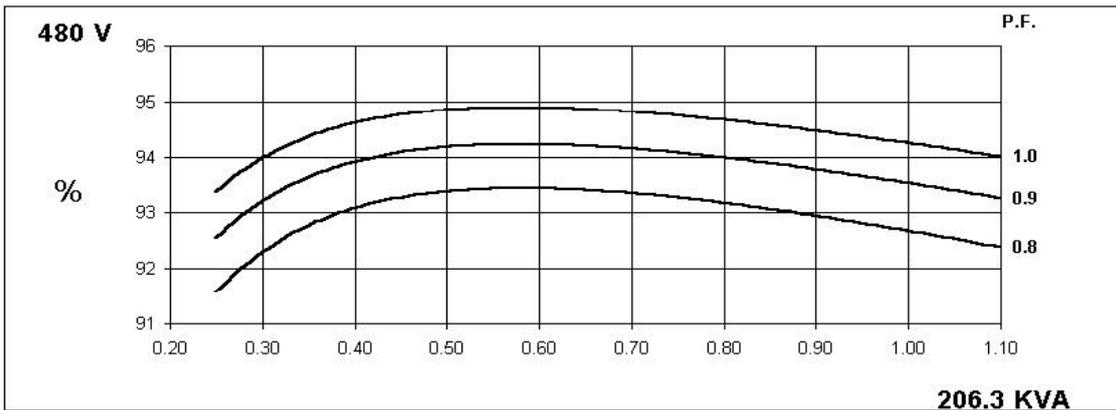
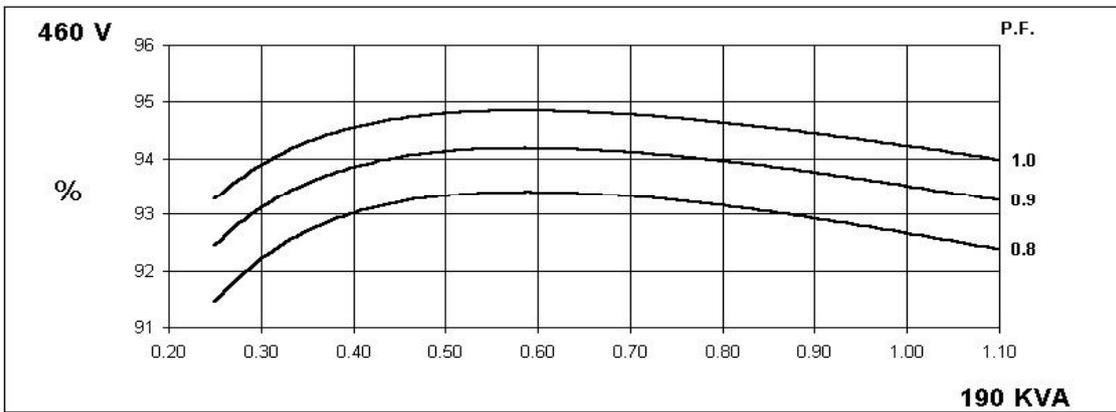
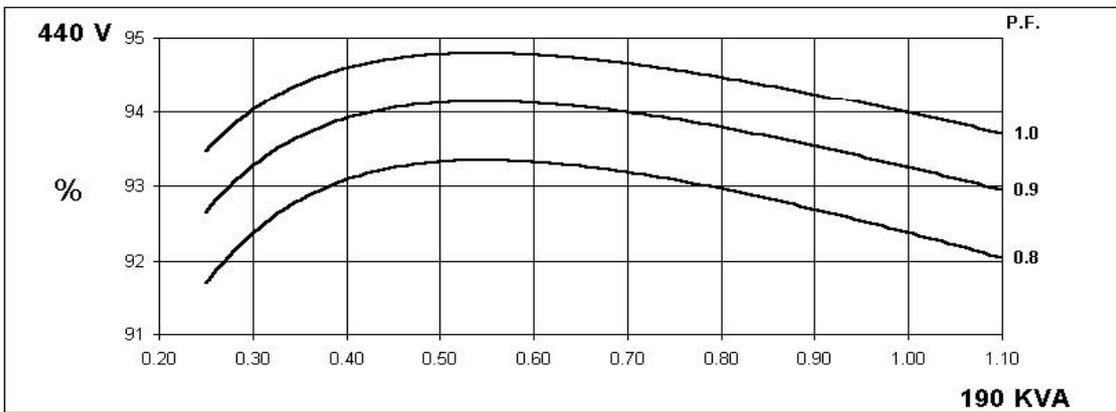
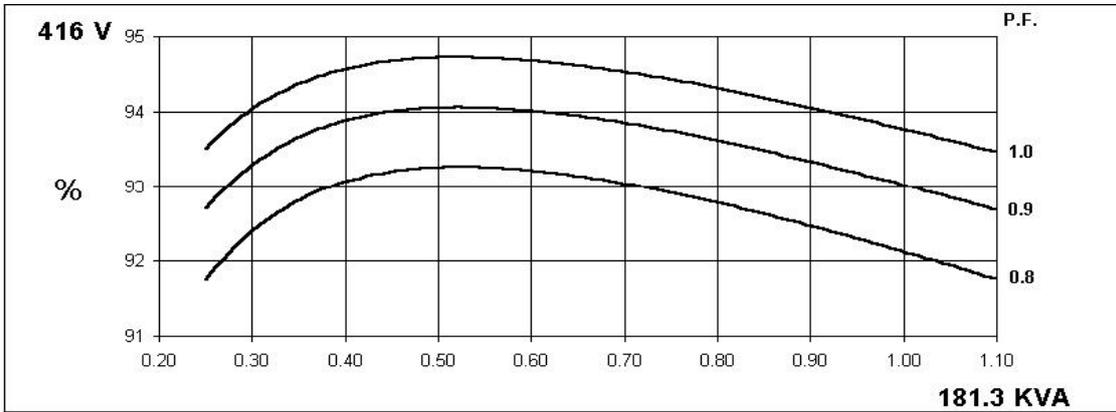
**UCI274F**  
Winding 311



**THREE PHASE EFFICIENCY CURVES**



**THREE PHASE EFFICIENCY CURVES**



# UCI274F

Winding 311

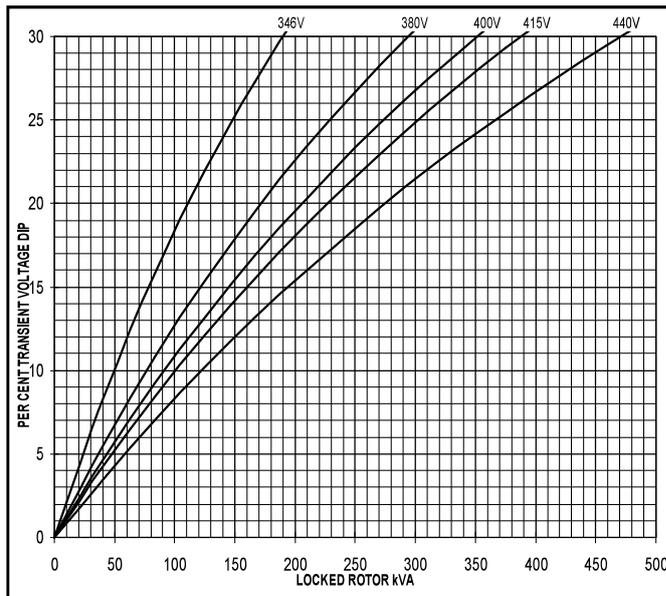
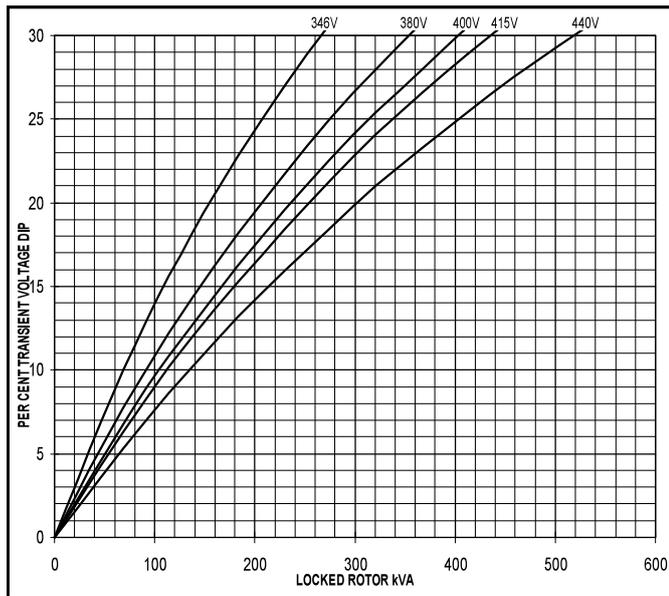


## Locked Rotor Motor Starting Curve

50 Hz

MX

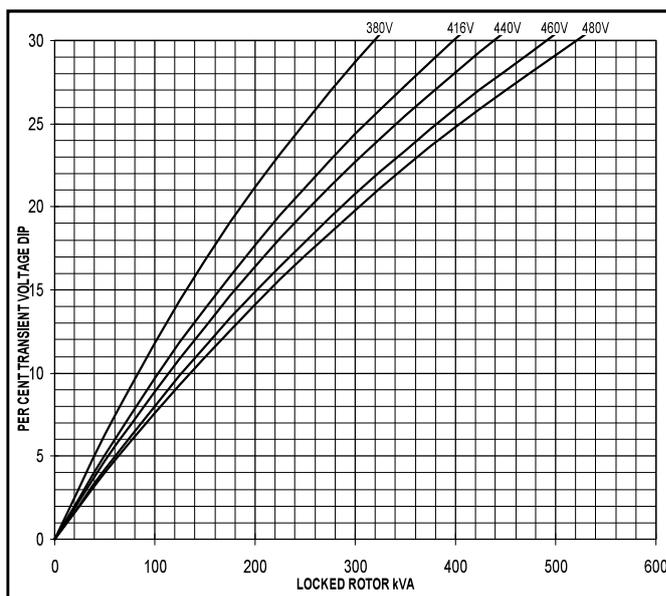
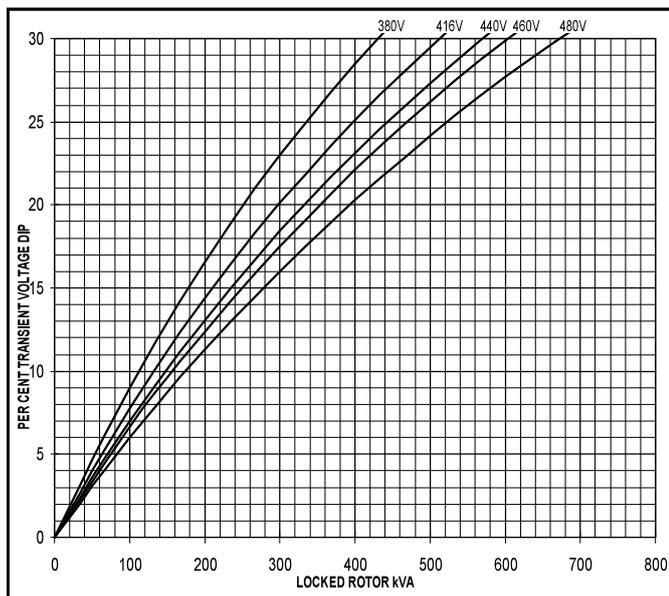
SX



60 Hz

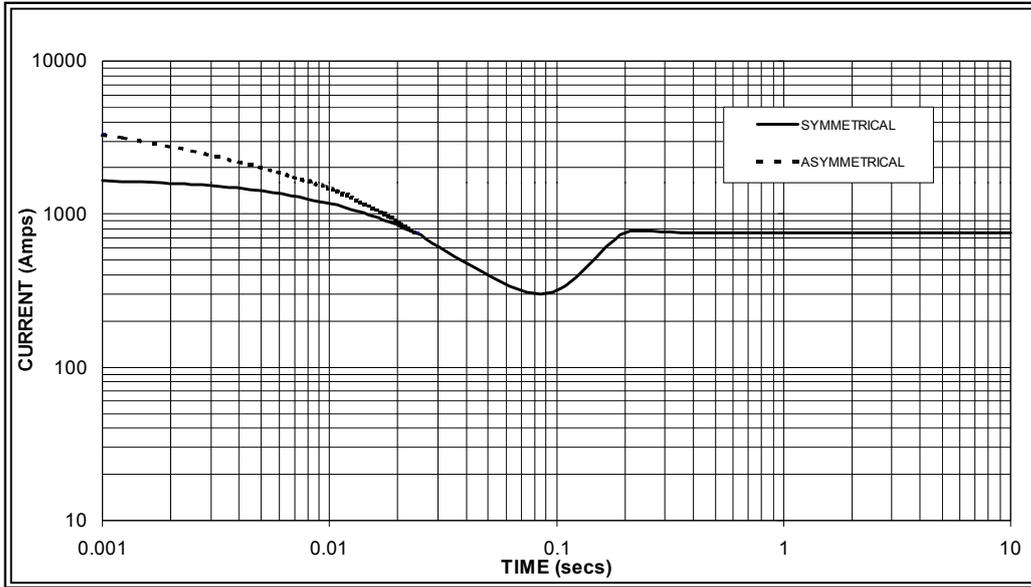
MX

SX



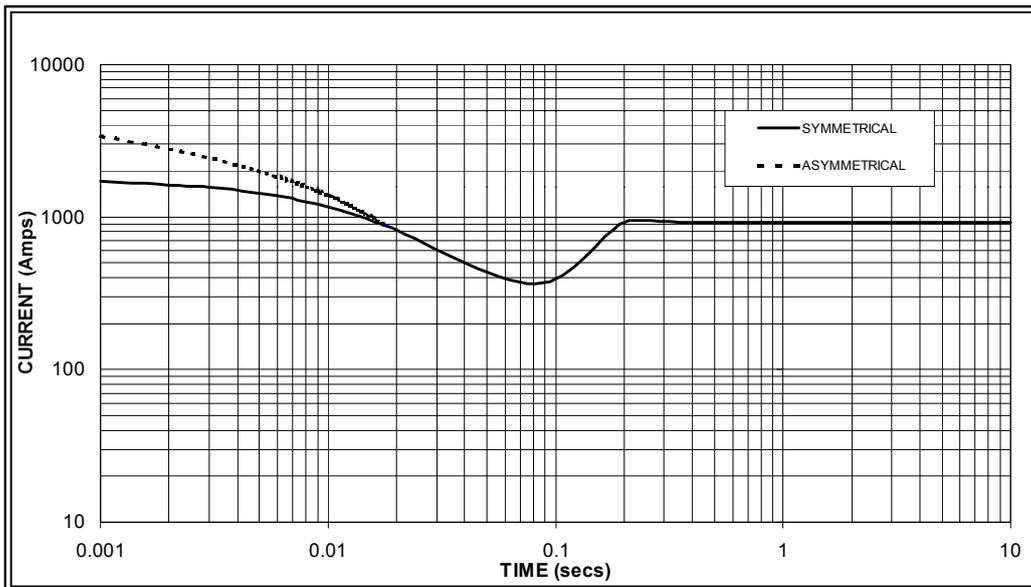
**Three-phase Short Circuit Decrement Curve. No-load Excitation at Rated Speed  
Based on star (wye) connection.**

**50  
Hz**



Sustained Short Circuit = 750 Amps

**60  
Hz**



Sustained Short Circuit = 920 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. 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

# UCI274F

## Winding 311 / 0.8 Power Factor

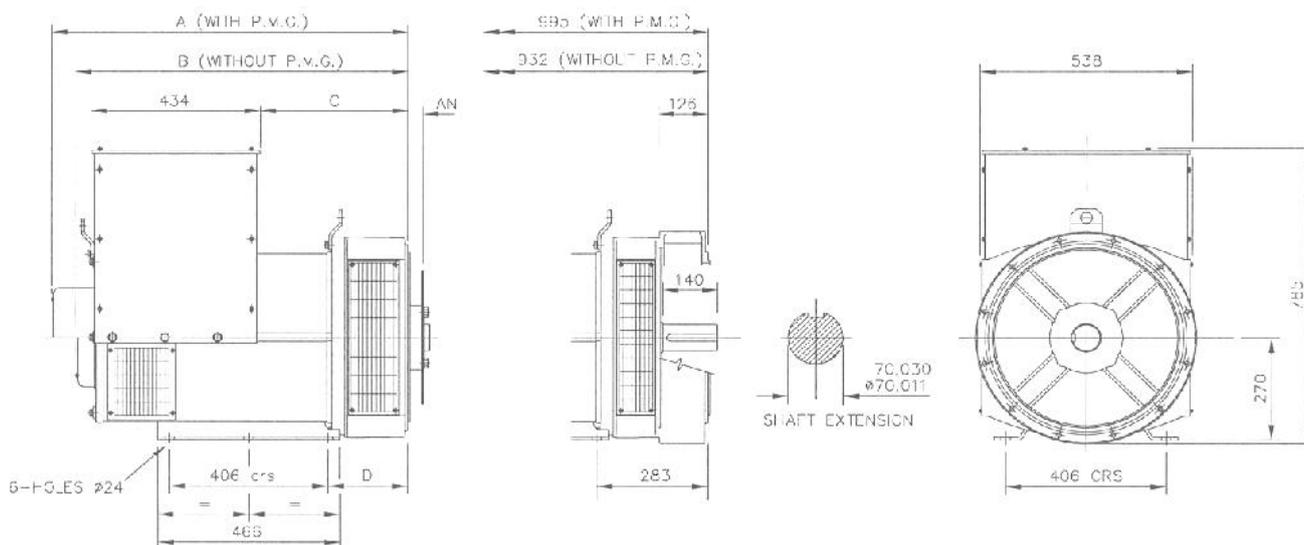


### RATINGS

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	145.0	145.0	145.0	n/a	160.0	160.0	160.0	n/a	170.0	170.0	170.0	n/a	175.0	175.0	175.0	n/a	
kW	116.0	116.0	116.0	n/a	128.0	128.0	128.0	n/a	136.0	136.0	136.0	n/a	140.0	140.0	140.0	n/a	
Efficiency (%)	92.3	92.6	92.8	n/a	92.0	92.3	92.5	n/a	91.7	92.1	92.3	n/a	91.6	92.0	92.2	n/a	
kW Input	125.7	125.3	125.0	n/a	139.1	138.7	138.4	n/a	148.3	147.7	147.3	n/a	152.8	152.2	151.8	n/a	

<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
	Series Delta (V)	240	254	266	277	240	254	266	277	240	254	266	277	240	254	266	277
kVA	162.5	172.5	172.5	187.5	181.3	190.0	190.0	206.3	187.5	200.0	200.0	212.5	192.5	206.3	206.3	218.8	
kW	130.0	138.0	138.0	150.0	145.0	152.0	152.0	165.0	150.0	160.0	160.0	170.0	154.0	165.0	165.0	175.0	
Efficiency (%)	92.5	92.7	92.9	92.9	92.1	92.4	92.7	92.7	92.0	92.2	92.5	92.6	91.9	92.1	92.4	92.5	
kW Input	140.5	148.9	148.5	161.5	157.5	164.5	164.0	178.0	163.0	173.5	173.0	183.6	167.6	179.2	178.6	189.2	

### DIMENSIONS



SINGLE BEARING ADAPTORS				
ADAPTOR	A	B	C	D
SAE 1	928,3	853,3	389,3	216,3
SAE 2	914	851	375	202
SAE 3	914	851	375	202

COUPLING DISCS	
DISC	AN
SAE 10	53,98
SAE 11,5	39,68
SAE 14	25,40



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)