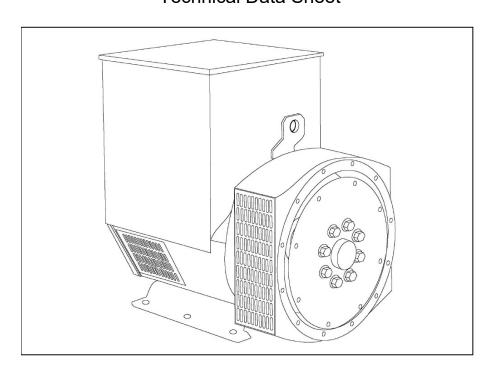
STAMFORD®

UCI274D - Winding 311 Single PhaseTechnical Data Sheet



UCI274D

STAMFORD

SPECIFICATIONS & OPTIONS

STANDARDS

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 - OBSOLETE

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.

AS440 AVR - STANDARD

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 AS440 will support a range of electronic accessories, including a 'droop' Current Transformer (CT) to permit parallel operation with other ac generators.

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.

MX321 AVR

The most sophisticated of all our AVRs combines all the features of the MX341 with, additionally, over voltage protection built-in and short circuit current level adjustments as 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 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%.

DE RATES

All values tabulated on page 8 are subject to the following reductions

5% when air inlet filters are fitted.

3% for every 500 metres by which the operating altitude exceeds 1000 metres above mean sea level.

3% for every 5°C by which the operational ambient temperature exceeds $40^{\circ}\text{C}.$

Note: Requirement for operating in an ambient exceeding 60°C must be referred to the factory.

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

UCI274D

WINDING 311 Single Phase

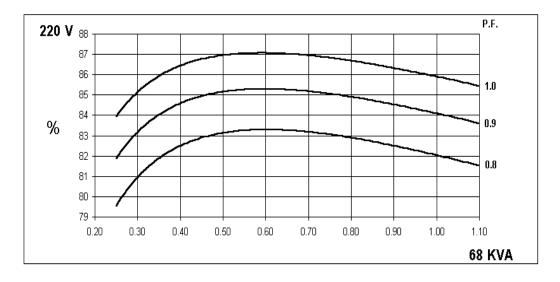
A.V.R. MX321 MX341 VOLTAGE REGULATION ± 0.5 % ± 1.0 % With 4% ENGINE GOVERNING SUSTAINED SHORT CIRCUIT DECREMENT CURVES (page 7) CONTROL SYSTEM SELF EXCITED A.V.R. SX460 AS440 VOLTAGE REGULATION ± 1.0 % ± 1.0 % With 4% ENGINE GOVERNING SUSTAINED SHORT CIRCUIT DECREMENT CURVES (page 7) VOLTAGE REGULATION ± 1.0 % ± 1.0 % With 4% ENGINE GOVERNING SUSTAINED SHORT CIRCUIT SERIES 4 CONTROL DOES NOT SUSTAIN A SHORT CIRCUIT CURRENT SUSTAINED SHORT CIRCUIT SERIES 4 CONTROL DOES NOT SUSTAIN A SHORT CIRCUIT CURRENT NOT SUSTAINED SHORT CIRCUIT CURRENT SERIES 4 CONTROL DOES NOT SUSTAIN A SHORT CIRCUIT CURRENT PROTECTION SUSTAINED SHORT CIRCUIT CURRENT TWO THIRDS STATOR WINDING DOUBLE LAYER CONCENTRIC TWO THIRDS STATOR WINDING PITCH TWO THIRDS STATOR WINDING PITCH TWO THIRDS STATOR WINDING RESISTANCE 0.029 Ohms at 22°C SUBJECT STATOR WINDING RESISTANCE 1.26 Ohms at 22°C SUBJECT STATOR WINDING RESISTANCE 2.0 Ohms at 22°C SUBJECT STATOR WINDING RESISTANCE 2.0 Ohms at 22°C SUBJECT STATOR WINDING SUBJECT STATOR WINDING SUBJECT S	CONTROL SYSTEM	SEPARATELY I	EXCITED BY P.	M.G.									
SUSTAINED SHORT CIRCUIT REFER TO SHORT CIRCUIT DECREMENT CURVES (page 7)	A.V.R.	MX321	MX341										
SUSTAINED SHORT CIRCUIT REFER TO SHORT CIRCUIT DECREMENT CURVES (page 7)	VOLTAGE REGULATION												
CONTROL SYSTEM													
A.V.R. SX460 AS440	COOTTAINED OFFICER CHICOTT				(1-1-4)								
VOLTAGE REGULATION ± 1.0 % ± 1.0 % With 4% ENGINE GOVERNING SUSTAINED SHORT CIRCUIT SERIES 4 CONTROL DOES NOT SUSTAIN A SHORT CIRCUIT CURRENT	CONTROL SYSTEM	SELF EXCITED											
SUSTAINED SHORT CIRCUIT SERIES 4 CONTROL DOES NOT SUSTAIN A SHORT CIRCUIT CURRENT	A.V.R.	SX460											
NSULATION SYSTEM	VOLTAGE REGULATION	± 1.0 %											
PROTECTION RATED POWER FACTOR 0.8 STATOR WINDING DOUBLE LAYER CONCENTRIC WINDING PITCH TWO THIRDS WINDING PITCH TWO THIRDS WINDING LEADS 12 STATOR WDG, RESISTANCE 0.029 Ohms AT 22°C DOUBLE DELTA CONNECTED ROTOR WDG, RESISTANCE 1.26 Ohms at 22°C EXCITER RATOR RESISTANCE EXCITER STATOR RESISTANCE 20 Ohms at 22°C EXCITER ROTOR RESISTANCE EXCITER ROTOR RESISTANCE 8 EN 61000-6-2 & 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 LINEAR LOAD < 5.0% WAVEFORM DISTORTION NO LOAD < 1.5% NON-DISTORTING LINEAR LOAD < 5.0% BEARING DRIVE END BEARING DRIVE END BEARING DRIVE END BEARING DRIVE END BEARING OND-DRIVE END BEARING OND-DRIVE END BEARING OND-DRIVE END BEARING OND-DRIVE END 1 BEARING WEIGHT WOUND STATOR 141 kg 141 kg 141 kg WEIGHT WOUND STATOR 149.37 kg 138.41 kg WR' INERTIA 1.1962 kgm² 1.1455 kgm² SHIPPING WEIGHTS in a crate 105 x 67 x 103(cm) 105 x 67 x 103 x 105	SUSTAINED SHORT CIRCUIT	SERIES 4 CON	SERIES 4 CONTROL DOES NOT SUSTAIN A SHORT CIRCUIT CURRENT										
RATED POWER FACTOR	INSULATION SYSTEM	CLASS H											
STATOR WINDING	PROTECTION												
WINDING PITCH TWO THIRDS WINDING LEADS 12 STATOR WOG. RESISTANCE 0.029 Ohms AT 22°C DOUBLE DELTA CONNECTED BOTOR WOG. RESISTANCE 1.26 Ohms at 22°C EXCITER STATOR RESISTANCE 20 Ohms at 22°C EXCITER ROTOR RESISTANCE 0.078 Ohms PER PHASE AT 22°C EXCITER ROTOR RESISTANCE 0.078 Ohms PER PHASE AT 22°C WAVEFORM DISTORTION NO LOAD < 1.5% NON-DISTORTING LINEAR LOAD < 5.0%	RATED POWER FACTOR			0	0.8								
WINDING PITCH TWO THIRDS WINDING LEADS 12 STATOR WOG. RESISTANCE 0.029 Ohms AT 22°C DOUBLE DELTA CONNECTED BOTOR WOG. RESISTANCE 1.26 Ohms at 22°C EXCITER STATOR RESISTANCE 20 Ohms at 22°C EXCITER ROTOR RESISTANCE 0.078 Ohms PER PHASE AT 22°C EXCITER ROTOR RESISTANCE 0.078 Ohms PER PHASE AT 22°C WAVEFORM DISTORTION NO LOAD < 1.5% NON-DISTORTING LINEAR LOAD < 5.0%	STATOR WINDING			DOUBLE LAYE	R CONCENTRIC								
WINDING LEADS 12													
STATOR WDG. RESISTANCE 0.029 Ohms AT 22°C DOUBLE DELTA CONNECTED													
ROTOR WDG. RESISTANCE EXCITER STATOR RESISTANCE EXCITER STATOR RESISTANCE EXCITER ROTOR RESISTANCE EXCITER ROTOR RESISTANCE 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 LINEAR LOAD < 5.0% MAXIMUM OVERSPEED 2250 Rev/Min BEARING DRIVE END BALL. 6315-2RS (ISO) BEARING NON-DRIVE END BEARING NON-DRIVE END BEARING QUAD A 11 kg WEIGHT COMP. GENERATOR 431 kg 450 kg WEIGHT WOUND STATOR 141 kg 141 kg 141 kg WEIGHT WOUND ROTOR 149.37 kg 11.455 kgm² 1.1455 kgm² 1.1455 kgm² 1.1455 kgm² 1.1590 kgm² 1.176 kg ELEPHONE INTERFERENCE COOLING AIR VOLTAGE DOUBLE DELTA 220/110 230/115 240/120 VOLTAGE DOUBLE DELTA 210/110 120 130 140 170 170 170 170 170 170 17			0 020 OF			NNECTED							
EXCITER STATOR RESISTANCE EXCITER ROTOR RESISTANCE EXCITER ROTOR RESISTANCE 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 LINEAR LOAD < 5.0% MAXIMUM OVERSPEED BEARING DRIVE END BEARING DRIVE END BEARING ORIVE END BEARING ON-DRIVE END BEAL 6316-2 BEARING END BEARING ON-DRIVE END BEARING ON-DRIVE			0.029 01			INNECTED							
EXCITER ROTOR RESISTANCE 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 LINEAR LOAD < 5.0% MAXIMUM OVERSPEED 2250 Rev/Min BEARING DRIVE END BEARING NON-DRIVE END BEARING NON-DRIVE END BEARING ON-DRIVE END BEALL 6310-28 BEARING BEARING ON-DRIVE END BEARING ON-DRIVE END BEALL 6310-28 BEARING BEARIN													
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 LINEAR LOAD < 5.0% MAXIMUM OVERSPEED 2250 Rev/Min BEARING DRIVE END BALL. 6315-2RS (ISO) BEARING NON-DRIVE END BEARING NON-DRIVE END BEARING OND-DRIVE END WEIGHT COMP. GENERATOR 431 kg 450 kg 450 kg WEIGHT WOUND STATOR 144 1 kg WEIGHT WOUND ROTOR 149.37 kg 138.41 kg 141 kg WEIGHT WOUND ROTOR 149.37 kg 138.41 kg 141 kg WEIGHT WOUND ROTOR 149.37 kg 138.41 kg 141 kg WEIGHT WOUND ROTOR 149.37 kg 138.41 kg 141 kg WEIGHT WOUND ROTOR 149.37 kg 138.41 kg 141 kg WEIGHT WOUND ROTOR 149.37 kg 138.41 kg 141 kg WEIGHT WOUND ROTOR 149.37 kg 138.41 kg 141 kg WEIGHT WOUND ROTOR 149.37 kg 138.41 kg 141 kg WEIGHT WOUND ROTOR 149.37 kg 138.41 kg 141 kg WEIGHT WOUND ROTOR 149.37 kg 138.41 kg 141 kg WEIGHT WOUND ROTOR 149.37 kg 138.41 kg 141 kg WEIGHT WOUND ROTOR 149.37 kg 138.41 kg 145 kg 158.41 kg 164													
WAVEFORM DISTORTION NO LOAD < 1.5% NON-DISTORTING LINEAR LOAD < 5.0% MAXIMUM OVERSPEED 2250 Rev/Min BEARING DRIVE END BALL. 6315-2RS (ISO) BEARING NON-DRIVE END BALL. 6310-2RS (ISO) BEARING NON-DRIVE END BALL. 6310-2RS (ISO) WEIGHT COMP. GENERATOR 431 kg 450 kg WEIGHT WOUND STATOR 141 kg 141 kg 141 kg WEIGHT WOUND ROTOR 149.37 kg 138.41 kg 145 kgm² WIF' INERTIA 1.1962 kgm² 1.1455 kgm² 5 HPPING WEIGHTS in a crate 458 kg 476 kg PACKING CRATE SIZE 105 x 67 x 103(cm) 105 x 67 x 103(cm) 105 x 67 x 103(cm) TELEPHONE INTERFERENCE THF-62% TIF-50 COOLING AIR VOLTAGE DOUBLE DELTA 220/110 230/115 240/120 220/110 230/115 240/120 VOLTAGE DOUBLE DELTA 220/110 230/115 240/120 220/110 230/115 240/120 VOLTAGE PARALLEL DELTA 110 115 120 110 115 120 VA JABASE RATING FOR REACTANCE VALUES 68 <td></td> <td></td> <td></td> <td>0.078 Ohms PEF</td> <td>R PHASE AT 22°0</td> <td><u> </u></td> <td></td>				0.078 Ohms PEF	R PHASE AT 22°0	<u> </u>							
MAXIMUM OVERSPEED 2250 Rev/Min BEARING DRIVE END BALL. 6315-2RS (ISO) BEARING NON-DRIVE END BALL. 6310-2RS (ISO) ### BAL	R.F.I. SUPPRESSION	BS EN 610	00-6-2 & BS EN	I 61000-6-4,VDE (0875G, VDE 0875	5N. refer to factor	ry for others						
BEARING DRIVE END BEARING NON-DRIVE END BEARING NON-DRIVE END BEARING WEIGHT COMP. GENERATOR A 31 kg WEIGHT WOUND STATOR BEARING BEARI	WAVEFORM DISTORTION		NO LOAD < 1.5% NON-DISTORTING LINEAR LOAD < 5.0%										
BEARING NON-DRIVE END 1 BEARING 1 BEARING 2 BEARING WEIGHT COMP, GENERATOR 431 kg WEIGHT WOUND STATOR 141 kg 141 kg WEIGHT WOUND ROTOR 149.37 kg 138.41 kg WR's INERTIA 1.1962 kgm² 1.1.455 kgm² SHIPPING WEIGHTS in a crate 458 kg 476 kg PACKING CRATE SIZE 105 x 67 x 103(cm) 105 x 67 x 10	MAXIMUM OVERSPEED		2250 Rev/Min										
1 BEARING	BEARING DRIVE END	BALL. 6315-2RS (ISO)											
WEIGHT COMP. GENERATOR 431 kg 450 kg WEIGHT WOUND STATOR 141 kg 141 kg WEIGHT WOUND ROTOR 149.37 kg 138.41 kg WR² INERTIA 1.1962 kgm² 1.1455 kgm² SHIPPING WEIGHTS in a crate 458 kg 476 kg PACKING CRATE SIZE 105 x 67 x 103(cm) 105 x 67 x 103(cm) FOLIZ 60 Hz 60 Hz TELEPHONE INTERFERENCE THF<2%	BEARING NON-DRIVE END	BALL. 6310-2RS (ISO)											
WEIGHT WOUND STATOR 141 kg 141 kg 141 kg WEIGHT WOUND ROTOR 149.37 kg 138.41 kg WR² INERTIA 1.1962 kgm² 1.1455 kgm² SHIPPING WEIGHTS in a crate 458 kg 476 kg PACKING CRATE SIZE 105 x 67 x 103(cm) 105 x 67 x 103(cm) FOR THE-2% 11F<50			1 BEARING			2 BEARING							
WEIGHT WOUND ROTOR 149.37 kg 138.41 kg WR² INERTIA 1.1962 kgm² 1.1455 kgm² SHIPPING WEIGHTS in a crate 458 kg 476 kg PACKING CRATE SIZE 105 x 67 x 103(cm) 105 x 67 x 103(cm) TELEPHONE INTERFERENCE THF<20													
WR² INERTIA 1.1962 kgm² 1.1455 kgm² SHIPPING WEIGHTS in a crate 458 kg 476 kg PACKING CRATE SIZE 105 x 67 x 103(cm) 105 x 67 x 103(cm) TELEPHONE INTERFERENCE THF<2%													
SHIPPING WEIGHTS in a crate													
PACKING CRATE SIZE 105 x 67 x 103(cm) 105 x 67 x 103(cm) 50 Hz 60 Hz TELEPHONE INTERFERENCE THF<2% TIF<50 COOLING AIR 0.514 m³/sec 1090 cfm 0.617 m³/sec 1308 cfm VOLTAGE DOUBLE DELTA 220/110 230/115 240/120 220/110 230/115 240/120 VOLTAGE PARALLEL DELTA 110 115 120 110 115 120 KVA BASE RATING FOR 68 68 68 72 75 78.8 REACTANCE VALUES 68 68 68 72 75 78.8 Xd DIR. AXIS SYNCHRONOUS 1.93 1.76 1.62 2.46 2.34 2.26 X'd DIR. AXIS SYNCHRONOUS 1.93 1.76 1.62 2.46 2.34 2.26 X'd DIR. AXIS SUBTRANSIENT 0.17 0.15 0.14 0.21 0.20 0.19 X"d DIR. AXIS SUBTRANSIENT 0.11 0.10 0.09 0.14 0.13 0.13 Xq QUAD. AXIS REACTANCE 1.24 1.13 1.04 1.45 1.38 1.33 X"q QUAD. AXIS SUBTRANSIENT 0.14 0.13 0.12 0.21 0.20 0.19 XL LEAKAGE REACTANCE 0.06 0.05 0.05 0.08 0.07 0.07 X2 NEGATIVE SEQUENCE 0.13 0.12 0.11 0.16 0.16 0.15 X0 ZERO SEQUENCE 0.07 0.07 0.07 0.06 0.10 0.09 0.09 REACTANCES ARE SATURATED VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED T'd SUB-TRANSITIME CONST. 0.055 s T'd SUB-TRANSITIME CONST. 0.85 s T'd ARMATURE TIME CONST. 0.85 s		· · · · · · · · · · · · · · · · · · ·											
TELEPHONE INTERFERENCE THF<2% TIF<50 COOLING AIR 0.514 m³/sec 1090 cfm 0.617 m³/sec 1308 cfm VOLTAGE DOUBLE DELTA 220/110 230/115 240/120 220/110 230/115 240/120 VOLTAGE PARALLEL DELTA 110 115 120 110 115 120 KVA BASE RATING FOR 68 68 68 72 75 78.8 REACTANCE VALUES 68 68 68 72 75 78.8 Xd DIR. AXIS SYNCHRONOUS 1.93 1.76 1.62 2.46 2.34 2.26 X'd DIR. AXIS SUBTRANSIENT 0.17 0.15 0.14 0.21 0.20 0.19 X"d DIR. AXIS SUBTRANSIENT 0.11 0.10 0.09 0.14 0.13 0.13 Xq QUAD. AXIS REACTANCE 1.24 1.13 1.04 1.45 1.38 1.33 X"q QUAD. AXIS SUBTRANSIENT 0.14 0.13 0.12 0.21 0.20 0.19 XL LEAKAGE REACTANCE 0.06 0.05 0.05 0.08 0.07 0.07 X2 NEGATIVE SEQUENCE 0.13 0.12 0.11 0.16 0.16 0.15 X0 ZERO SEQUENCE 0.07 0.07 0.06 0.10 0.09 0.09 REACTANCES ARE SATURATED VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED T'd SUB-TRANSTIME CONST. 0.0073 s		1		:m)	1		n)						
COOLING AIR 0.514 m³/sec 1090 cfm 0.617 m³/sec 1308 cfm VOLTAGE DOUBLE DELTA 220/110 230/115 240/120 220/110 230/115 240/120 VOLTAGE PARALLEL DELTA 110 115 120 110 115 120 kVA BASE RATING FOR REACTANCE VALUES 68 68 68 68 68 72 75 78.8 RATING SYNCHRONOUS 1.93 1.76 1.62 2.46 2.34 2.26 X'd DIR. AXIS SYNCHRONOUS 1.93 1.76 1.62 2.46 2.34 2.26 X'd DIR. AXIS TRANSIENT 0.17 0.15 0.14 0.21 0.20 0.19 X''d DIR. AXIS SUBTRANSIENT 0.11 0.10 0.09 0.14 0.13 0.13 Xq QUAD. AXIS REACTANCE 1.24 1.13 1.04 1.45 1.38 1.33 X''q QUAD. AXIS SUBTRANSIENT 0.14 0.13 0.12 0.21 0.20 0.19 XL LEAKAGE REACTANCE 0.06 0.05 0.05 0.08 0.07 0.07 X2 NEGATIVE SEQUENCE 0.13 0.12 0.11 0.16 0.16 0.15 X0 ZERO SEQUENCE 0.07 0.07 0.07 0.01 s T'd SUB-TRANSTIME CONST. 0.01 s T'd O.C. FIELD TIME CONST. 0.0073 s	THE STATE OF THE SIZE	1		,	` '								
VOLTAGE DOUBLE DELTA 220/110 230/115 240/120 220/110 230/115 240/120 VOLTAGE PARALLEL DELTA 110 115 120 110 115 120 kVA BASE RATING FOR REACTANCE VALUES 68 68 68 68 72 75 78.8 Xd DIR. AXIS SYNCHRONOUS 1.93 1.76 1.62 2.46 2.34 2.26 X'd DIR. AXIS TRANSIENT 0.17 0.15 0.14 0.21 0.20 0.19 X"d DIR. AXIS SUBTRANSIENT 0.11 0.10 0.09 0.14 0.13 0.13 X'q QUAD. AXIS SUBTRANSIENT 0.11 0.10 0.09 0.14 0.13 0.13 X"q QUAD. AXIS SUBTRANSIENT 0.14 0.13 0.12 0.21 0.20 0.19 XL LEAKAGE REACTANCE 0.06 0.05 0.05 0.08 0.07 0.07 X2 NEGATIVE SEQUENCE 0.13 0.12 0.11 0.16 0.16 0.15 X0 ZERO SEQUENCE 0.07 0.07	TELEPHONE INTERFERENCE		THF<2%			TIF<50							
VOLTAGE PARALLEL DELTA 110 115 120 110 115 120 kVA BASE RATING FOR REACTANCE VALUES 68 68 68 68 72 75 78.8 Xd DIR. AXIS SYNCHRONOUS 1.93 1.76 1.62 2.46 2.34 2.26 X'd DIR. AXIS TRANSIENT 0.17 0.15 0.14 0.21 0.20 0.19 X"d DIR. AXIS SUBTRANSIENT 0.11 0.10 0.09 0.14 0.13 0.13 X"q QUAD. AXIS REACTANCE 1.24 1.13 1.04 1.45 1.38 1.33 X"q QUAD. AXIS SUBTRANSIENT 0.14 0.13 0.12 0.21 0.20 0.19 XL LEAKAGE REACTANCE 0.06 0.05 0.05 0.08 0.07 0.07 X2 NEGATIVE SEQUENCE 0.13 0.12 0.11 0.16 0.15 X0 ZERO SEQUENCE 0.07 0.07 0.06 0.10 0.09 0.09 REACTANCES ARE SATURATED VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED	COOLING AIR	0.5	14 m³/sec 109) cfm	0.6	17 m³/sec 1308	cfm						
kVA BASE RATING FOR REACTANCE VALUES 68 68 68 68 72 75 78.8 Xd DIR. AXIS SYNCHRONOUS 1.93 1.76 1.62 2.46 2.34 2.26 X'd DIR. AXIS TRANSIENT 0.17 0.15 0.14 0.21 0.20 0.19 X"d DIR. AXIS SUBTRANSIENT 0.11 0.10 0.09 0.14 0.13 0.13 Xq QUAD. AXIS REACTANCE 1.24 1.13 1.04 1.45 1.38 1.33 X"q QUAD. AXIS SUBTRANSIENT 0.14 0.13 0.12 0.21 0.20 0.19 XL LEAKAGE REACTANCE 0.06 0.05 0.05 0.08 0.07 0.07 X2 NEGATIVE SEQUENCE 0.13 0.12 0.11 0.16 0.15 X0 ZERO SEQUENCE 0.07 0.07 0.06 0.10 0.09 0.09 REACTANCES ARE SATURATED VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED 0.01 s 0.01 s 0.01 s T'do O.C. FIELD TIME CONST. 0.05 s 0.85 s 0.00	VOLTAGE DOUBLE DELTA	220/110	230/115	240/120	220/110	230/115	240/120						
REACTANCE VALUES 68 68 68 72 75 78.8 Xd DIR. AXIS SYNCHRONOUS 1.93 1.76 1.62 2.46 2.34 2.26 X'd DIR. AXIS TRANSIENT 0.17 0.15 0.14 0.21 0.20 0.19 X"d DIR. AXIS SUBTRANSIENT 0.11 0.10 0.09 0.14 0.13 0.13 X"q QUAD. AXIS REACTANCE 1.24 1.13 1.04 1.45 1.38 1.33 X"q QUAD. AXIS SUBTRANSIENT 0.14 0.13 0.12 0.21 0.20 0.19 XL LEAKAGE REACTANCE 0.06 0.05 0.05 0.08 0.07 0.07 X2 NEGATIVE SEQUENCE 0.13 0.12 0.11 0.16 0.16 0.15 X0 ZERO SEQUENCE 0.07 0.07 0.06 0.10 0.09 0.09 REACTANCES ARE SATURATED VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED T'd SUB-TRANSTIME CONST. 0.01 s T'do O.C. FIELD TIME CONST. 0.05 0.0073 s		110	115	120	110	115	120						
Xd DIR. AXIS SYNCHRONOUS 1.93 1.76 1.62 2.46 2.34 2.26 X'd DIR. AXIS TRANSIENT 0.17 0.15 0.14 0.21 0.20 0.19 X"d DIR. AXIS SUBTRANSIENT 0.11 0.10 0.09 0.14 0.13 0.13 Xq QUAD. AXIS REACTANCE 1.24 1.13 1.04 1.45 1.38 1.33 X"q QUAD. AXIS SUBTRANSIENT 0.14 0.13 0.12 0.21 0.20 0.19 XL LEAKAGE REACTANCE 0.06 0.05 0.05 0.08 0.07 0.07 X2 NEGATIVE SEQUENCE 0.13 0.12 0.11 0.16 0.16 0.15 X0 ZERO SEQUENCE 0.07 0.07 0.06 0.10 0.09 0.09 REACTANCES ARE SATURATED VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED T"d SUB-TRANSTIME CONST. 0.031 s T"do O.C. FIELD TIME CONST. 0.85 s Ta ARMATURE TIME CONST. 0.0073 s		68	68	68	72	75	78.8						
X"d DIR. AXIS SUBTRANSIENT 0.11 0.10 0.09 0.14 0.13 0.13 Xq QUAD. AXIS REACTANCE 1.24 1.13 1.04 1.45 1.38 1.33 X"q QUAD. AXIS SUBTRANSIENT 0.14 0.13 0.12 0.21 0.20 0.19 XL LEAKAGE REACTANCE 0.06 0.05 0.05 0.08 0.07 0.07 X2 NEGATIVE SEQUENCE 0.13 0.12 0.11 0.16 0.16 0.15 X0 ZERO SEQUENCE 0.07 0.07 0.06 0.10 0.09 0.09 REACTANCES ARE SATURATED VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED T'd TRANSIENT TIME CONST. 0.031 s T'd SUB-TRANSTIME CONST. 0.01 s T'do O.C. FIELD TIME CONST. 0.85 s Ta ARMATURE TIME CONST. 0.0073 s		1.93	1.76	1.62	2.46	2.34	2.26						
Xq QUAD. AXIS REACTANCE 1.24 1.13 1.04 1.45 1.38 1.33 X"q QUAD. AXIS SUBTRANSIENT 0.14 0.13 0.12 0.21 0.20 0.19 XL LEAKAGE REACTANCE 0.06 0.05 0.05 0.08 0.07 0.07 X2 NEGATIVE SEQUENCE 0.13 0.12 0.11 0.16 0.16 0.15 X0 ZERO SEQUENCE 0.07 0.07 0.06 0.10 0.09 0.09 REACTANCES ARE SATURATED T'd TRANSIENT TIME CONST. 0.031 s T"d SUB-TRANSTIME CONST. 0.01 s T'do O.C. FIELD TIME CONST. 0.85 s Ta ARMATURE TIME CONST. 0.0073 s	X'd DIR. AXIS TRANSIENT	0.17	0.15	0.14	0.21	0.20	0.19						
X"q QUAD. AXIS SUBTRANSIENT 0.14 0.13 0.12 0.21 0.20 0.19 XL LEAKAGE REACTANCE 0.06 0.05 0.05 0.08 0.07 0.07 X2 NEGATIVE SEQUENCE 0.13 0.12 0.11 0.16 0.16 0.15 X0 ZERO SEQUENCE 0.07 0.07 0.06 0.10 0.09 0.09 REACTANCES ARE SATURATED T'd TRANSIENT TIME CONST. 0.031 s T"d SUB-TRANSTIME CONST. 0.01 s T'do O.C. FIELD TIME CONST. 0.85 s Ta ARMATURE TIME CONST. 0.0073 s	X"d DIR. AXIS SUBTRANSIENT	0.11	0.10	0.09	0.14	0.13	0.13						
XL LEAKAGE REACTANCE 0.06 0.05 0.05 0.08 0.07 0.07 X2 NEGATIVE SEQUENCE 0.13 0.12 0.11 0.16 0.16 0.15 X0 ZERO SEQUENCE 0.07 0.07 0.06 0.10 0.09 0.09 REACTANCES ARE SATURATED VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED T'd TRANSIENT TIME CONST. 0.031 s T'd SUB-TRANSTIME CONST. 0.01 s T'do O.C. FIELD TIME CONST. 0.85 s Ta ARMATURE TIME CONST. 0.0073 s	Xq QUAD. AXIS REACTANCE	1.24	1.13	1.04	1.45	1.38	1.33						
X2 NEGATIVE SEQUENCE 0.13 0.12 0.11 0.16 0.16 0.15 X0 ZERO SEQUENCE 0.07 0.07 0.06 0.10 0.09 0.09 REACTANCES ARE SATURATED VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED T'd TRANSIENT TIME CONST. 0.031 s T'd SUB-TRANSTIME CONST. 0.01 s T'do O.C. FIELD TIME CONST. 0.85 s Ta ARMATURE TIME CONST. 0.0073 s	X"q QUAD. AXIS SUBTRANSIENT	0.14	0.13	0.12	0.21	0.20	0.19						
X0ZERO SEQUENCE 0.07 0.07 0.06 0.10 0.09 0.09 REACTANCES ARE SATURATED VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED T'd TRANSIENT TIME CONST. 0.031 s T'd SUB-TRANSTIME CONST. 0.01 s T'do O.C. FIELD TIME CONST. 0.85 s Ta ARMATURE TIME CONST. 0.0073 s	XL LEAKAGE REACTANCE	0.06	0.05	0.05	0.08	0.07	0.07						
REACTANCES ARE SATURATED VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED T'd TRANSIENT TIME CONST. 0.031 s T'd SUB-TRANSTIME CONST. 0.01 s T'do O.C. FIELD TIME CONST. 0.85 s Ta ARMATURE TIME CONST. 0.0073 s	X2 NEGATIVE SEQUENCE	0.13	0.12	0.11	0.16	0.16	0.15						
T'd TRANSIENT TIME CONST. 0.031 s T"d SUB-TRANSTIME CONST. 0.01 s T'do O.C. FIELD TIME CONST. 0.85 s Ta ARMATURE TIME CONST. 0.0073 s													
T"d SUB-TRANSTIME CONST. 0.01 s T'do O.C. FIELD TIME CONST. 0.85 s Ta ARMATURE TIME CONST. 0.0073 s													
T'do O.C. FIELD TIME CONST. 0.85 s Ta ARMATURE TIME CONST. 0.0073 s													
Ta ARMATURE TIME CONST. 0.0073 s		1											
SHORT CIRCUIT RATIO 1/Xd		1											
	SHORT CIRCUIT RATIO	1/Xd											

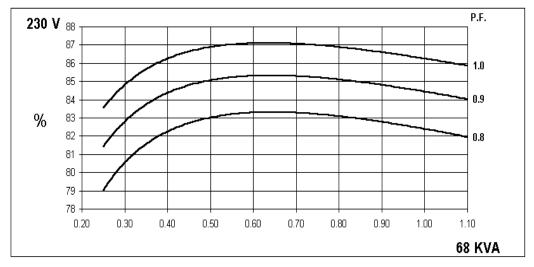


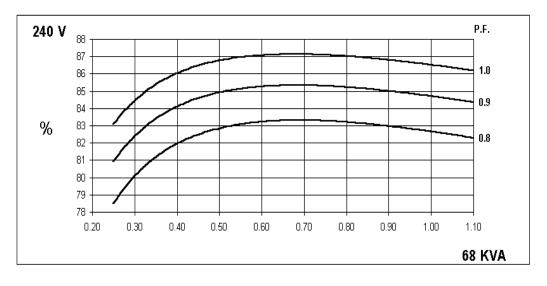


UCI274DWinding 311 Single Phase

SINGLE PHASE EFFICIENCY CURVES







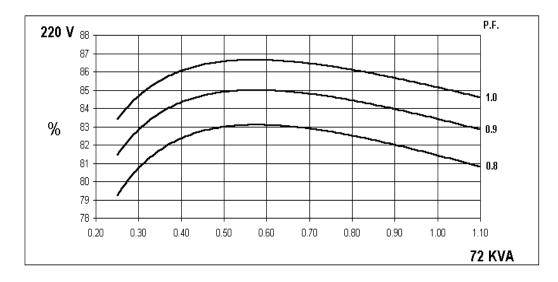
60 Hz

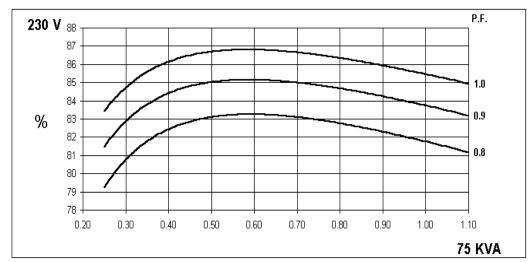
UCI274D

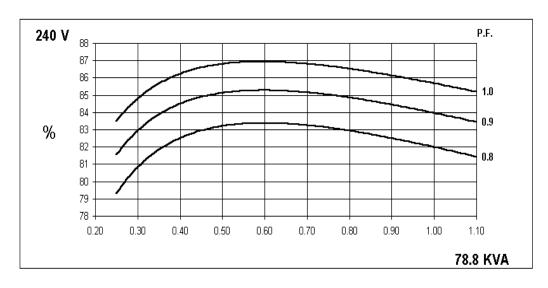
STAMFORD

Winding 311 Single Phase

SINGLE PHASE EFFICIENCY CURVES





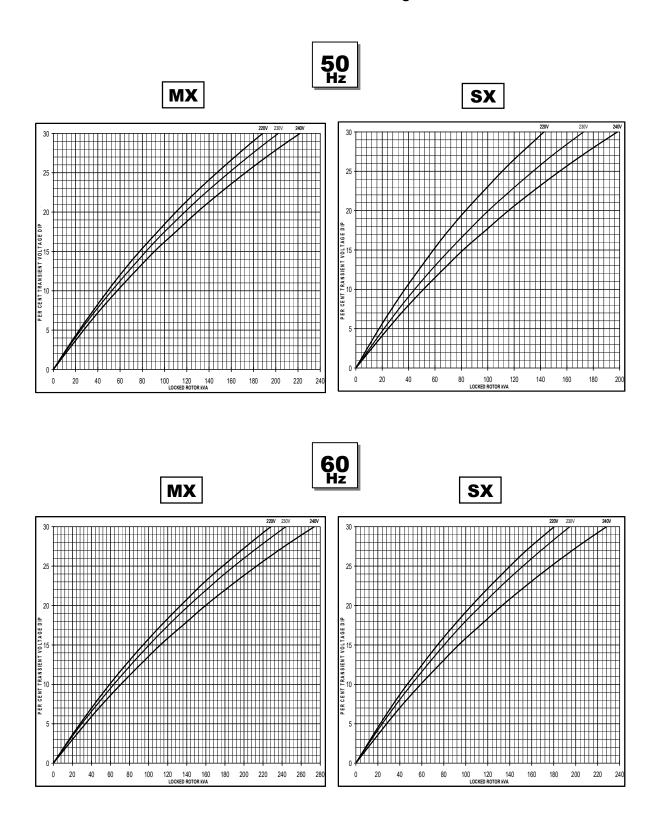


STAMFORD

UCI274D

Winding 311 Single Phase

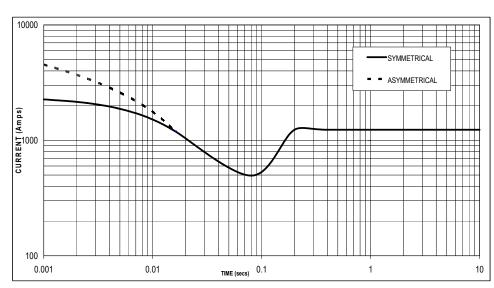
Locked Rotor Motor Starting Curve



Winding 311 Single Phase

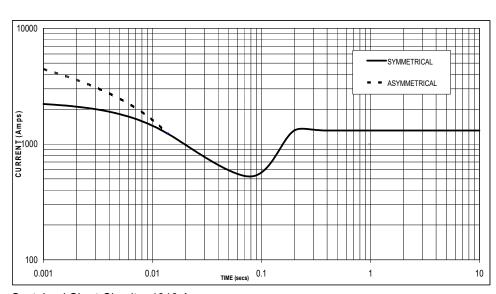
Single Phase Short Circuit Decrement Curve. No-load Excitation at Rated Speed Based on Double Delta connection.

50 Hz



Sustained Short Circuit = 1236 Amps

60 Hz



Sustained Short Circuit = 1310 Amps

Note

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 :

Voltage	Factor
220V	X 1.00
230V	X 1.05
240V	X 1.09

The sustained current value is constant irrespective of voltage level



UCI274D

Winding 311 Single Phase

RATINGS

	Class - Temp Rise	Cont. F - 105/40°C			Cont. H - 125/40°C			Cont. F - 105/40°C			Cont. H - 125/40°C		
	Class - Tellip Nise	0.8pf		0.8pf			1.0pf			1.0pf			
50	Double Delta (V)	220	230	240	220	230	240	220	230	240	220	230	240
Hz	Parallel Delta (V)	110	115	120	110	115	120	110	115	120	110	115	120
	kVA	60.0	60.0	60.0	68.0	68.0	68.0	60.0	60.0	60.0	68.0	68.0	68.0
	kW	48.0	48.0	48.0	54.4	54.4	54.4	60.0	60.0	60.0	68.0	68.0	68.0
	Efficiency (%)	82.3	82.6	82.9	81.7	82.1	82.4	86.1	86.4	86.7	85.6	86.0	86.3
	kW Input	58.3	58.1	57.9	66.6	66.3	66.0	69.7	69.4	69.2	79.4	79.1	78.8

	Class Town Disc	Cont. F - 105/40°C 0.8pf			Cont. H - 125/40°C			Cont. F - 105/40°C			Cont. H - 125/40°C		
	Class - Temp Rise				0.8pf			1.0pf			1.0pf		
60	Double Delta (V)	220	230	240	220	230	240	220	230	240	220	230	240
Hz	Parallel Delta (V)	110	115	120	110	115	120	110	115	120	110	115	120
	kVA	66.0	68.8	72.0	72.0	75.0	78.8	66.0	68.8	72.0	72.0	75.0	78.8
	kW	52.8	55.0	57.6	57.6	60.0	63.0	66.0	68.8	72.0	72.0	75.0	78.8
	Efficiency (%)	81.4	81.8	82.0	80.9	81.3	81.5	85.1	85.5	85.7	84.7	85.0	85.3
	kW Input	64.9	67.2	70.2	71.2	73.8	77.3	77.6	80.5	84.0	85.0	88.2	92.4

Dimensional and Torsional Drawing

For dimensional and torsional information please refer to the alternator General Arrangement and rotor drawings available on our website (http://stamford-avk.com/)

STAMFORD

www.stamford-avk.com

Copyright 2022, Cummins Generator Technologies Ltd, All Rights Reserved Stamford and AvK are registered trade marks of Cummins Generator Technologies Ltd Cummins and the Cummins logo are registered trade marks of Cummins Inc.