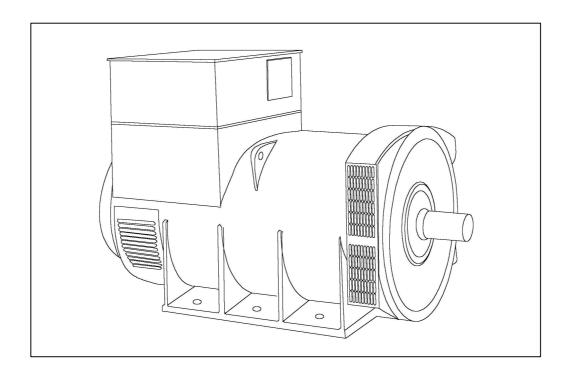


# HCI636G - Technical Data Sheet



## **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.



# **WINDING 312**

CONTROL SYSTEM	SEPARATEI	EPARATELY 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)					

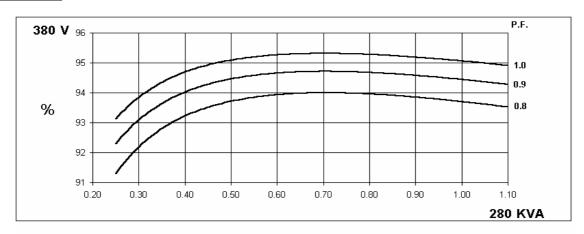
PROTECTION   IP23   RATED POWER FACTOR   0.8   STATOR WINDING   DOUBLE LAYER LAP   WINDING LEADS   6   STATOR WID, RESISTANCE   0.009 Ohms PER PHASE AT 22°C STAR CONNECTED   ROTOR WID, RESISTANCE   1.12 Ohms at 22°C   EXCITER RATOR RESISTANCE   1.17 Ohms at 22°C   EXCITER RATOR RESISTANCE   1.10 hms per PHASE AT 22°C STAR CONNECTED   ROTOR WID, RESISTANCE   1.10 hms per PHASE AT 22°C STAR CONNECTED   ROTOR WID, RESISTANCE   1.10 hms per PHASE AT 22°C   EXCITER RATOR RESISTANCE   1.10 hms per PHASE AT 22°C   EXCITER RATOR RESISTANCE   0.10 hms per PHASE AT 22°C   EXCITER ROTOR RESISTANCE   0.10 hms per PHASE AT 22°C   EXCITER ROTOR RESISTANCE   0.10 hms per PHASE AT 22°C   EXCITER ROTOR RESISTANCE   0.10 hms per PHASE AT 22°C   EXCITER ROTOR RESISTANCE   0.10 hms per PHASE AT 22°C   EXCITER ROTOR RESISTANCE   0.10 hms per PHASE AT 22°C   EXCITER ROTOR RESISTANCE   0.10 hms per PHASE AT 22°C   EXCITER ROTOR RESISTANCE   0.10 hms per PHASE AT 22°C   EXCITER ROTOR RESISTANCE   0.10 hms per PHASE AT 22°C   EXCITER ROTOR RESISTANCE   0.10 hms per PHASE AT 22°C   EXCITER ROTOR RESISTANCE   0.10 hms per PHASE AT 22°C   EXCITER ROTOR RESISTANCE   0.10 hms per PHASE AT 22°C   EXCITER ROTOR RESISTANCE   0.10 hms per PHASE AT 22°C   EXCITER ROTOR RESISTANCE   0.10 hms per PHASE AT 22°C   EXCITER ROTOR RESISTANCE   0.10 hms per PHASE AT 22°C   EXCITER ROTOR RESISTANCE   0.10 hms per PHASE AT 22°C   EXCITER ROTOR PHASE AT 22°C   0.10 hms per PHASE AT 22°C   EXCITER ROTOR PHASE AT 22°C   0.10 hms per PHASE AT 22°C   EXCITER ROTOR PHASE AT 22°C   0.10 hms per PHASE AT 22°C   EXCITER ROTOR PHASE AT 22°C   0.10 hms per PHASE AT 22°C   EXCITER ROTOR PHASE AT 22°C   0.10 hms per PHASE AT 22°C   EXCITER ROTOR PHASE AT 22°C   0.10 hms per PHASE AT 22°C   EXCITER ROTOR PHASE AT 22°C   0.10 hms per PHASE AT 22°C   EXCITER ROTOR PHASE AT 22°C   0.10 hms per PHASE AT 22°C   EXCITER ROTOR PHASE AT 22°C   0.10 hms per PHASE AT 22°C   EXCITER ROTOR PHASE AT 22°C   0.10 hms per PHASE AT 22°C   EXCITER ROTOR PHASE AT 22°C   0.10 hms per PHAS	INSULATION SYSTEM				CLAS	SS H					
STATOR WINDING   DOUBLE LAYER LAP	PROTECTION	IP23									
WINDING PITCH WINDING LEADS 6 STATOR WOG. RESISTANCE ROTOR WOG. RESISTANCE ROTOR WOG. RESISTANCE EXCITER RATOR RESISTANCE EXCITER RATOR RESISTANCE EXCITER RATOR RESISTANCE  EXCITER RATOR RESISTANCE  EXCITER RATOR RESISTANCE  EXCITER RATOR RESISTANCE  EXCITER RATOR RESISTANCE  EXCITER RATOR RESISTANCE  EXCITER RATOR RESISTANCE  EXCITER RATOR RESISTANCE  EXCITER RATOR RESISTANCE  EXCITER RATOR RESISTANCE  EXCITER RATOR RESISTANCE  EXCITER RATOR RESISTANCE  EXCITER RATOR RESISTANCE  EXCITER RATOR RESISTANCE  EXCITER RATOR RESISTANCE  EXCITER RATOR RESISTANCE  ISON REPRHASE AT 22°C  EXCITER RATOR RESISTANCE  ISON ROPER PHASE AT 22°C  EXCITER RATOR RESISTANCE  ISON REPRHASE AT 22°C  ISON REPRHASE AT 22°C  ISON REPRHASE AT 22°C  EXCITER RATOR LOOK SING REPRHASE AT 22°C  ISON REP	RATED POWER FACTOR	0.8									
### WINDING LEADS   6	STATOR WINDING	DOUBLE LAYER LAP									
STATOR WDG. RESISTANCE	WINDING PITCH	TWO THIRDS									
1.12 Ohms at 22°C	WINDING LEADS										
1.12 Ohms at 22°C	STATOR WDG. RESISTANCE		i i								
EXCITER STATOR RESISTANCE  EXCITER ROTOR RESISTANCE  R.F.I. SUPPRESSION  BS EN 61000-6-2 & BS EN 61000-6-4 VDE 0875G, VDE 0875M, refer to factory for others  WAVEPORM DISTORTION  NO LOAD < 1.5% NON-DISTORTING BALANCED LINEAR LOAD < 5.0%  MAXIMUM OVERSPEED  BEARING DRIVE END  BEARING DRIVE END  BEARING DRIVE END  BEARING SOME SEARING  WEIGHT COMP. GENERATOR  1673 kg  1641 kg  WEIGHT WOUND STATOR  588 kg  536 kg  WEIGHT WOUND DROTOR  674 kg  1630 kg  WRI INERTIA  15.4763 kgm²  14.9328 kgm²  SHIPPING WEIGHTS in a crate  1733kg  1701kg  PACKING CRATE SIZE  183 x 92 x 140(cm)  50 Hz  160 Hz  TELEPHONE INTERFERENCE  THF-2%  TIF-50  COOLING AIR  VOLTAGE STAR  380/220  400/231  415/240  440/254  440/254  440/254  460/277  VALTAGE DELTA  220  230  240  254  240  254  266  277  VAN ABASE RATING FOR REACTANCE  VALUES  VAL											
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 BALANCED LINEAR LOAD < 5.0%  MAXIMUM OVERSPEED  BEARING DRIVE END  BEARING NON-DRIVE END  BEARING NON-DRIVE END  BEARING NON-DRIVE END  BEARING NON-DRIVE END  1673 kg  1641 kg  WEIGHT COMP. GENERATOR  1674 kg  WEIGHT WOUND STATOR  674 kg  630 kg  WEIGHT WOUND ROTOR  674 kg  60 hz  TIF-50  TOTH kg  PACKING CRATE SIZE  183 x 92 x 140(cm)  183 x 92 x 140(cm)  183 x 92 x 140(cm)  TELEPHONE INTERFERENCE  THF<2%  TIF-50  COOLING AIR  1.614 m²/sec 3420 cfm  VOLTAGE STAR  380/220  400/231  415/240  440/254											
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  BEARING DRIVE END  BEARING NON-DRIVE END  BEARING 2 BEARING  WEIGHT COMP, GENERATOR  WEIGHT WOUND STATOR  674 kg  630 kg  WEIGHT WOUND ROTOR  674 kg  630 kg  170				0.1			°C				
WAVEFORM DISTORTION         NO LOAD < 1.5% NON-DISTORTING BALANCED LINEAR LOAD < 5.0%           MAXIMUM OVERSPEED         1500 Rev/Min           BEARING DRIVE END         BALL. 6224 (ISO)           BEARING NON-DRIVE END         BALL. 6317 (ISO)           WEIGHT COMP, GENERATOR         1673 kg         1641 kg           WEIGHT WOUND STATOR         588 kg         536 kg           WEIGHT WOUND ROTOR         674 kg         630 kg           WR' INERTIA         15.4763 kgm²         14.9328 kgm²           SHIPPING WEIGHTS in a crate         1733kg         1701kg           PACKING CRATE SIZE         183 x 92 x 140(cm)         183 x 92 x 140(cm)           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         460/266         480/277           KVA BASE RATING FOR REACTANCE VALUES         280         280         280         331         350         350           Xd DIR. AXIS SYNCHRONOUS         1.91         1.72         1.60         1.42         2.25         2.13         1.95         1.77           Xd DIR. AXIS SUBTRANSIENT         0.19         0.17		D0 F1									
MAXIMUM OVERSPEED   1500 Rev/Min   BALL. 6224 (ISO)		BS EI			•	*			thers		
BEARING DRIVE END  BEARING NON-DRIVE END  BEARING  1 BEARING  1 BEARING  1 BEARING  1 BEARING  1 BEARING  1 BEARING  WEIGHT COMP. GENERATOR  1 1673 kg  1 1641 kg  WEIGHT WOUND STATOR  588 kg  536 kg  WEIGHT WOUND ROTOR  674 kg  630 kg  WR* INERTIA  15.4763 kgm²  14.9328 kgm²  51701kg  PACKING CRATE SIZE  183 x 92 x 140(cm)  50 Hz  TELEPHONE INTERFERENCE  THF<2%  TIF<50  COOLING AIR  VOLTAGE STAR  380/220  400/231  415/240  440/254  416/240  440/254  416/240  440/254  4460/266  480/277  VOLTAGE DELTA  220  230  240  254  240  254  240  254  266  277  KVAB BASE RATING FOR REACTANCE  280  280  280  280  280  331  350  350  350  Xd DIR. AXIS SYNCHRONOUS  1.91  1.72  1.60  1.42  2.25  2.13  1.95  1.79  Xd DIR. AXIS SYNCHRONOUS  1.91  1.72  1.60  1.42  2.25  2.13  1.95  1.79  Xd DIR. AXIS SYNCHRONOUS  1.91  1.72  1.60  1.42  2.25  2.13  1.95  1.79  Xd DIR. AXIS SYNCHRONOUS  1.91  1.72  1.60  1.42  2.25  2.13  1.95  1.79  Xd DIR. AXIS SYNCHRONOUS  1.91  1.72  1.60  1.42  2.25  2.13  1.95  1.79  Xd DIR. AXIS SYNCHRONOUS  1.91  1.72  1.60  1.42  2.25  2.13  1.95  1.79  Xd DIR. AXIS SYNCHRONOUS  1.91  1.72  1.60  1.40  0.13  0.12  0.11  0.16  0.15  XL QUAD. AXIS REACTANCE  1.31  1.18  1.10  0.98  1.51  1.43  1.13  1.12  X*q QUAD. AXIS REACTANCE  0.08  0.07  0.07  0.06  0.09  0.09  0.08  0.07  XA NEGATIVE SEQUENCE  0.16  0.14  0.13  0.12  0.11  0.15  0.14  0.15  XL LEAKAGE REACTANCE  0.08  0.07  XA PEACTANCES ARE SATURATED  VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED  T'd TRANSIENT TIME CONST.  17d SUBTRANSITIME CONST.  0.098s  Ta ARMATURE TIME CONST.  0.097s	WAVEFORM DISTORTION		NO LOAD <	< 1.5% NON-	DISTORTING	BALANCED	LINEAR LO	AD < 5.0%			
BARING NON-DRIVE END    1 BEARING   2 BEARING	MAXIMUM OVERSPEED				1500 R	ev/Min					
Table	BEARING DRIVE END				BALL. 62	24 (ISO)					
WEIGHT COMP. GENERATOR	BEARING NON-DRIVE END				BALL. 63	17 (ISO)					
WEIGHT WOUND STATOR         588 kg         636 kg           WEIGHT WOUND ROTOR         674 kg         630 kg           WR³ INERTIA         15.4763 kgm²         14.9328 kgm²           SHIPPING WEIGHTS in a crate         1733kg         1701kg           PACKING CRATE SIZE         183 x 92 x 140(cm)         183 x 92 x 140(cm)           FOR INTERFERENCE         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           VALUES         280         280         280         331         350         350         350           VALUES         340 DIR. AXIS SYNCHRONOUS         1.91         1.72         1.60         1.42         2.25         2.13         1.95         1.79           X'd DIR. AXIS SYNCHRONOUS         1.91         1.72         1.60         0.14         0.23         0.21         0.20         0.18           X'd DIR. AXIS SUBTRANSIENT         0.19			1 BEA	ARING			2 BEA	RING			
WEIGHT WOUND ROTOR         674 kg         630 kg           WR² INERTIA         15.4763 kgm²         14.9328 kgm²           SHIPPING WEIGHTS in a crate         1733kg         1701kg           PACKING CRATE SIZE         183 x 92 x 140(cm)         183 x 92 x 140(cm)           TELEPHONE INTERFERENCE         TIF<50	WEIGHT COMP. GENERATOR		167	3 kg		1641 kg					
WR³ INERTIA         15.4763 kgm²         14.9328 kgm²           SHIPPING WEIGHTS in a crate         1733kg         1701kg           PACKING CRATE SIZE         183 x 92 x 140(cm)         183 x 92 x 140(cm)           FOR PACKING CRATE SIZE         183 x 92 x 140(cm)         183 x 92 x 140(cm)           TELEPHONE INTERFERENCE         THF<2%	WEIGHT WOUND STATOR		588	3 kg		536 kg					
SHIPPING WEIGHTS in a crate 1733kg 1701kg  PACKING CRATE SIZE 183 x 92 x 140(cm) 183 x 92 x 140(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 280 280 280 280 331 350 350 350  Xd DIR. AXIS SYNCHRONOUS 1.91 1.72 1.60 1.42 2.25 2.13 1.95 1.79  X'd DIR. AXIS SYNCHRONOUS 1.91 0.17 0.16 0.14 0.23 0.21 0.20 0.18  X"d DIR. AXIS SUBTRANSIENT 0.14 0.13 0.12 0.11 0.16 0.15 0.14 0.13  Xq QUAD. AXIS REACTANCE 1.31 1.18 1.10 0.98 1.51 1.43 1.31 1.20  X"q QUAD. AXIS SUBTRANSIENT 0.17 0.15 0.14 0.12 0.19 0.18 0.16 0.15  X L LEAKAGE REACTANCE 0.08 0.07 0.07 0.06 0.09 0.09 0.08 0.07  X2 NEGATIVE SEQUENCE 0.16 0.14 0.13 0.12 0.19 0.18 0.16 0.15  X0 ZERO SEQUENCE 0.11 0.10 0.09 0.08 0.13 0.12 0.11 0.10  REACTANCES ARE SATURATED VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED  T'd TRANSIENT TIME CONST. 0.988  Ta ARMATURE TIME CONST. 0.027s	WEIGHT WOUND ROTOR		674	1 kg		630 kg					
SHIPPING WEIGHTS in a crate 1733kg 1701kg  PACKING CRATE SIZE 183 x 92 x 140(cm) 183 x 92 x 140(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 280 280 280 280 331 350 350 350  Xd DIR. AXIS SYNCHRONOUS 1.91 1.72 1.60 1.42 2.25 2.13 1.95 1.79  X'd DIR. AXIS SYNCHRONOUS 1.91 0.17 0.16 0.14 0.23 0.21 0.20 0.18  X"d DIR. AXIS SUBTRANSIENT 0.14 0.13 0.12 0.11 0.16 0.15 0.14 0.13  Xq QUAD. AXIS REACTANCE 1.31 1.18 1.10 0.98 1.51 1.43 1.31 1.20  X"q QUAD. AXIS SUBTRANSIENT 0.17 0.15 0.14 0.12 0.19 0.18 0.16 0.15  X L LEAKAGE REACTANCE 0.08 0.07 0.07 0.06 0.09 0.09 0.08 0.07  X2 NEGATIVE SEQUENCE 0.16 0.14 0.13 0.12 0.19 0.18 0.16 0.15  X0 ZERO SEQUENCE 0.11 0.10 0.09 0.08 0.13 0.12 0.11 0.10  REACTANCES ARE SATURATED VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED  T'd TRANSIENT TIME CONST. 0.988  Ta ARMATURE TIME CONST. 0.027s	WR² INERTIA		15.476	3 kam²		14.9328 kgm²					
PACKING CRATE SIZE  183 x 92 x 140(cm)  50 Hz  TELEPHONE INTERFERENCE  THF<2%  TIF<50  COOLING AIR  1.614 m³/sec 3420 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  380/280 280 280 331 350 350 350  Xd DIR. AXIS SYNCHRONOUS  1.91 1.72 1.60 1.42 2.25 2.13 1.95 1.79  X'd DIR. AXIS SYNCHRONOUS  1.91 1.72 1.60 0.14 0.23 0.21 0.20 0.18  X"d DIR. AXIS SUBTRANSIENT  0.19 0.17 0.16 0.14 0.23 0.21 0.20 0.18  X"d DIR. AXIS SUBTRANSIENT  0.14 0.13 0.12 0.11 0.16 0.15 0.14 0.13  Xq QUAD. AXIS SUBTRANSIENT  0.17 0.15 0.14 0.12 0.19 0.18 0.16 0.15  X'q QUAD. AXIS SUBTRANSIENT  0.17 0.15 0.14 0.12 0.19 0.18 0.16 0.15  X LEAKAGE REACTANCE  0.08 0.07 0.07 0.06 0.09 0.09 0.08 0.07  X2 NEGATIVE SEQUENCE  0.16 0.14 0.13 0.12 0.19 0.18 0.16 0.15  Xo ZERO SEQUENCE  0.16 0.14 0.13 0.12 0.19 0.18 0.16 0.15  Tod TRANSIENT TIME CONST.  0.016s  Tod O.C. FIELD TIME CONST.  Tod SARMATURE TIME CONST.  0.027s	SHIPPING WEIGHTS in a crate										
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 280 280 280 280 331 350 350 350  Xd DIR. AXIS SYNCHRONOUS 1.91 1.72 1.60 1.42 2.25 2.13 1.95 1.79  X'd DIR. AXIS TRANSIENT 0.19 0.17 0.16 0.14 0.23 0.21 0.20 0.18  X'd DIR. AXIS SUBTRANSIENT 0.14 0.13 0.12 0.11 0.16 0.15 0.14 0.13  X'q QUAD. AXIS REACTANCE 1.31 1.18 1.10 0.98 1.51 1.43 1.31 1.20  X''q QUAD. AXIS SUBTRANSIENT 0.17 0.15 0.14 0.12 0.19 0.18 0.16 0.15  XL LEAKAGE REACTANCE 0.08 0.07 0.07 0.06 0.09 0.09 0.08 0.07  X2 NEGATIVE SEQUENCE 0.16 0.14 0.13 0.12 0.19 0.18 0.16 0.15  Xo ZERO SEQUENCE 0.11 0.10 0.09 0.08 0.13 0.12 0.11 0.10  REACTANCES ARE SATURATED VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED  T'd TRANSIENT TIME CONST. 0.98s T'd SUB-TRANSTIME CONST. 0.98s Ta ARMATURE TIME CONST. 0.0027s	PACKING CRATE SIZE	· · · · · · · · · · · · · · · · · · ·									
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 280 280 280 280 331 350 350 350  Xd DIR. AXIS SYNCHRONOUS 1.91 1.72 1.60 1.42 2.25 2.13 1.95 1.79  X'd DIR. AXIS TRANSIENT 0.19 0.17 0.16 0.14 0.23 0.21 0.20 0.18  X'd DIR. AXIS SUBTRANSIENT 0.14 0.13 0.12 0.11 0.16 0.15 0.14 0.13  X'q QUAD. AXIS REACTANCE 1.31 1.18 1.10 0.98 1.51 1.43 1.31 1.20  X''q QUAD. AXIS SUBTRANSIENT 0.17 0.15 0.14 0.12 0.19 0.18 0.16 0.15  XL LEAKAGE REACTANCE 0.08 0.07 0.07 0.06 0.09 0.09 0.08 0.07  X2 NEGATIVE SEQUENCE 0.16 0.14 0.13 0.12 0.19 0.18 0.16 0.15  Xo ZERO SEQUENCE 0.11 0.10 0.09 0.08 0.13 0.12 0.11 0.10  REACTANCES ARE SATURATED VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED  T'd TRANSIENT TIME CONST. 0.98s T'd SUB-TRANSTIME CONST. 0.98s Ta ARMATURE TIME CONST. 0.0027s			50	Hz			60	Hz			
1.614 m³/sec 3420 cfm	TELEPHONE INTERFERENCE										
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 280 280 280 280 331 350 350  Xd DIR. AXIS SYNCHRONOUS 1.91 1.72 1.60 1.42 2.25 2.13 1.95 1.79  X'd DIR. AXIS TRANSIENT 0.19 0.17 0.16 0.14 0.23 0.21 0.20 0.18  X"d DIR. AXIS SUBTRANSIENT 0.14 0.13 0.12 0.11 0.16 0.15 0.14 0.13  Xq QUAD. AXIS REACTANCE 1.31 1.18 1.10 0.98 1.51 1.43 1.31 1.20  X"q QUAD. AXIS SUBTRANSIENT 0.17 0.15 0.14 0.12 0.19 0.18 0.16 0.15  XL LEAKAGE REACTANCE 0.08 0.07 0.07 0.06 0.09 0.09 0.08 0.07  X2 NEGATIVE SEQUENCE 0.16 0.14 0.13 0.12 0.19 0.18 0.16 0.15  X0 ZERO SEQUENCE 0.11 0.10 0.09 0.08 0.13 0.12 0.11 0.10  REACTANCES ARE SATURATED VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED  T'd TRANSIENT TIME CONST. 0.12s  T'd SUB-TRANSTIME CONST. 0.98s  Ta ARMATURE TIME CONST. 0.027s											
VOLTAGE DELTA         220         230         240         254         240         254         266         277           kVA BASE RATING FOR REACTANCE VALUES         280         280         280         280         331         350         350         350           Xd DIR. AXIS SYNCHRONOUS         1.91         1.72         1.60         1.42         2.25         2.13         1.95         1.79           X'd DIR. AXIS SYNCHRONOUS         1.91         0.17         0.16         0.14         0.23         0.21         0.20         0.18           X'd DIR. AXIS SYNCHRONOUS         1.91         0.17         0.16         0.14         0.23         0.21         0.20         0.18           X'd DIR. AXIS SYNCHRONOUS         1.91         0.17         0.16         0.14         0.23         0.21         0.20         0.18           X'd DIR. AXIS SYNCHRONOUS         1.91         0.17         0.16         0.14         0.23         0.21         0.20         0.18           X'd DIR. AXIS SYNCHRONOUS         1.91         0.11         0.13         0.12         0.11         0.13         0.12         0.11         0.13         0.12         0.19         0.18         0.13         0.12         0.13         0.		380/220			440/254	416/240	440/254	460/266	480/277		
KVA BASE RATING FOR REACTANCE VALUES         280         280         280         280         331         350         350         350           Xd DIR. AXIS SYNCHRONOUS         1.91         1.72         1.60         1.42         2.25         2.13         1.95         1.79           X'd DIR. AXIS TRANSIENT         0.19         0.17         0.16         0.14         0.23         0.21         0.20         0.18           X"d DIR. AXIS SUBTRANSIENT         0.14         0.13         0.12         0.11         0.16         0.15         0.14         0.13           Xq QUAD. AXIS REACTANCE         1.31         1.18         1.10         0.98         1.51         1.43         1.31         1.20           X"q QUAD. AXIS SUBTRANSIENT         0.17         0.15         0.14         0.12         0.19         0.18         0.16         0.15           XL LEAKAGE REACTANCE         0.08         0.07         0.07         0.06         0.09         0.09         0.08         0.07           X2 NEGATIVE SEQUENCE         0.16         0.14         0.13         0.12         0.19         0.18         0.16         0.15           X0 ZERO SEQUENCE         0.11         0.10         0.09         0.08         0.13 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>266</td> <td></td>								266			
Xd DIR. AXIS SYNCHRONOUS       1.91       1.72       1.60       1.42       2.25       2.13       1.95       1.79         X'd DIR. AXIS TRANSIENT       0.19       0.17       0.16       0.14       0.23       0.21       0.20       0.18         X"d DIR. AXIS SUBTRANSIENT       0.14       0.13       0.12       0.11       0.16       0.15       0.14       0.13         Xq QUAD. AXIS REACTANCE       1.31       1.18       1.10       0.98       1.51       1.43       1.31       1.20         X"q QUAD. AXIS SUBTRANSIENT       0.17       0.15       0.14       0.12       0.19       0.18       0.16       0.15         XL LEAKAGE REACTANCE       0.08       0.07       0.07       0.06       0.09       0.09       0.08       0.07         X2 NEGATIVE SEQUENCE       0.16       0.14       0.13       0.12       0.19       0.18       0.16       0.15         X0 ZERO SEQUENCE       0.11       0.10       0.09       0.08       0.13       0.12       0.11       0.10         T'd SUB-TRANSIME CONST.       0.12s         T'd SUB-TRANSTIME CONST.       0.06s         T'd SUB-TRANSTIME CONST.       0.06s	kVA BASE RATING FOR REACTANCE										
X"d DIR. AXIS SUBTRANSIENT       0.14       0.13       0.12       0.11       0.16       0.15       0.14       0.13         Xq QUAD. AXIS REACTANCE       1.31       1.18       1.10       0.98       1.51       1.43       1.31       1.20         X"q QUAD. AXIS SUBTRANSIENT       0.17       0.15       0.14       0.12       0.19       0.18       0.16       0.15         XL LEAKAGE REACTANCE       0.08       0.07       0.07       0.06       0.09       0.09       0.08       0.07         X2 NEGATIVE SEQUENCE       0.16       0.14       0.13       0.12       0.19       0.18       0.16       0.15         X0 ZERO SEQUENCE       0.11       0.10       0.09       0.08       0.13       0.12       0.11       0.10         REACTANCES ARE SATURATED       VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED         T'd TRANSIENT TIME CONST.       0.12s         T'd SUB-TRANSTIME CONST.       0.098s         T'do O.C. FIELD TIME CONST.       0.098s         Ta ARMATURE TIME CONST.       0.027s		1.91	1.72	1.60	1.42	2.25	2.13	1.95	1.79		
Xq QUAD. AXIS REACTANCE       1.31       1.18       1.10       0.98       1.51       1.43       1.31       1.20         X"q QUAD. AXIS SUBTRANSIENT       0.17       0.15       0.14       0.12       0.19       0.18       0.16       0.15         XL LEAKAGE REACTANCE       0.08       0.07       0.07       0.06       0.09       0.09       0.08       0.07         X2 NEGATIVE SEQUENCE       0.16       0.14       0.13       0.12       0.19       0.18       0.16       0.15         X0 ZERO SEQUENCE       0.11       0.10       0.09       0.08       0.13       0.12       0.11       0.10         REACTANCES ARE SATURATED       VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED         T'd TRANSIENT TIME CONST.       0.12s         T"d SUB-TRANSTIME CONST.       0.016s         T'do O.C. FIELD TIME CONST.       0.98s         Ta ARMATURE TIME CONST.       0.027s	X'd DIR. AXIS TRANSIENT	0.19	0.17	0.16	0.14	0.23	0.21	0.20	0.18		
X"q QUAD. AXIS SUBTRANSIENT       0.17       0.15       0.14       0.12       0.19       0.18       0.16       0.15         XL LEAKAGE REACTANCE       0.08       0.07       0.07       0.06       0.09       0.09       0.08       0.07         X2 NEGATIVE SEQUENCE       0.16       0.14       0.13       0.12       0.19       0.18       0.16       0.15         X0 ZERO SEQUENCE       0.11       0.10       0.09       0.08       0.13       0.12       0.11       0.10         REACTANCES ARE SATURATED       VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED         T'd TRANSIENT TIME CONST.       0.12s         T''d SUB-TRANSTIME CONST.       0.016s         T''do O.C. FIELD TIME CONST.       0.98s         Ta ARMATURE TIME CONST.       0.027s	X"d DIR. AXIS SUBTRANSIENT	0.14	0.13	0.12	0.11	0.16	0.15	0.14	0.13		
XL LEAKAGE REACTANCE         0.08         0.07         0.07         0.06         0.09         0.09         0.08         0.07           X2 NEGATIVE SEQUENCE         0.16         0.14         0.13         0.12         0.19         0.18         0.16         0.15           X0 ZERO SEQUENCE         0.11         0.10         0.09         0.08         0.13         0.12         0.11         0.10           REACTANCES ARE SATURATED         VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED           T'd TRANSIENT TIME CONST.         0.12s         0.016s           T''d SUB-TRANSTIME CONST.         0.016s         0.098s           T''do O.C. FIELD TIME CONST.         0.027s         0.027s	Xq QUAD. AXIS REACTANCE	1.31	1.18	1.10	0.98	1.51	1.43	1.31	1.20		
X2 NEGATIVE SEQUENCE       0.16       0.14       0.13       0.12       0.19       0.18       0.16       0.15         X0 ZERO SEQUENCE       0.11       0.10       0.09       0.08       0.13       0.12       0.11       0.10         REACTANCES ARE SATURATED       VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED         T'd TRANSIENT TIME CONST.       0.12s         T'd SUB-TRANSTIME CONST.       0.016s         T'do O.C. FIELD TIME CONST.       0.98s         Ta ARMATURE TIME CONST.       0.027s	X"q QUAD. AXIS SUBTRANSIENT	0.17	0.15	0.14	0.12	0.19	0.18	0.16	0.15		
Xo ZERO SEQUENCE         0.11         0.10         0.09         0.08         0.13         0.12         0.11         0.10           REACTANCES ARE SATURATED         VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED           T'd TRANSIENT TIME CONST.         0.12s           T'd SUB-TRANSTIME CONST.         0.016s           T'do O.C. FIELD TIME CONST.         0.98s           Ta ARMATURE TIME CONST.         0.027s	XL LEAKAGE REACTANCE	0.08	0.07	0.07	0.06	0.09	0.09	0.08	0.07		
REACTANCES ARE SATURATED  T'd TRANSIENT TIME CONST.  T'd SUB-TRANSTIME CONST.  O.016s  T'do O.C. FIELD TIME CONST.  0.98s  Ta ARMATURE TIME CONST.  0.027s	X2 NEGATIVE SEQUENCE	0.16	0.14	0.13	0.12	0.19	0.18	0.16	0.15		
T'd TRANSIENT TIME CONST.       0.12s         T''d SUB-TRANSTIME CONST.       0.016s         T'do O.C. FIELD TIME CONST.       0.98s         Ta ARMATURE TIME CONST.       0.027s	X <sub>0</sub> ZERO SEQUENCE	Xo ZERO SEQUENCE         0.11         0.10         0.09         0.08         0.13         0.12         0.11         0.1									
T"d SUB-TRANSTIME CONST.         0.016s           T'do O.C. FIELD TIME CONST.         0.98s           Ta ARMATURE TIME CONST.         0.027s	REACTANCES ARE SATURAT	ED	V	/ALUES ARE	PER UNIT A	T RATING AN	ND VOLTAGE	INDICATED	)		
T'do O.C. FIELD TIME CONST. 0.98s  Ta ARMATURE TIME CONST. 0.027s	T'd TRANSIENT TIME CONST.	·		<u> </u>	0.1	2s	<u> </u>	<u> </u>			
Ta ARMATURE TIME CONST. 0.027s											
(CHALLER 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Ta ARMATURE TIME CONST. SHORT CIRCUIT RATIO										

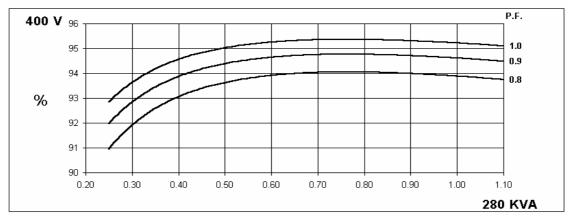
50 Hz

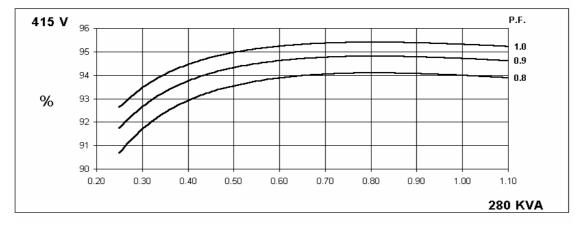
# HCI636G Winding 312

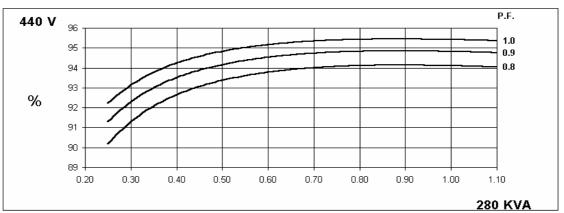


## THREE PHASE EFFICIENCY CURVES







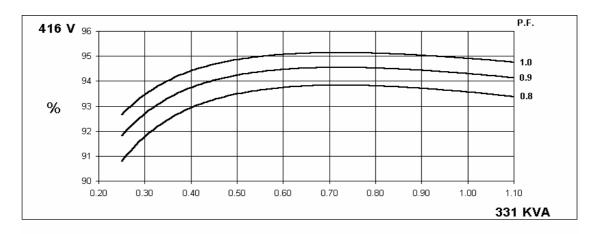


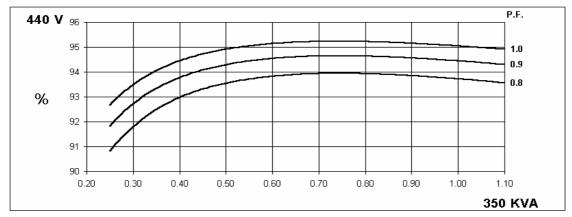


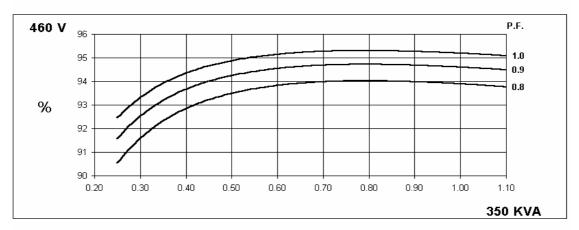
# **HCI636G** Winding 312

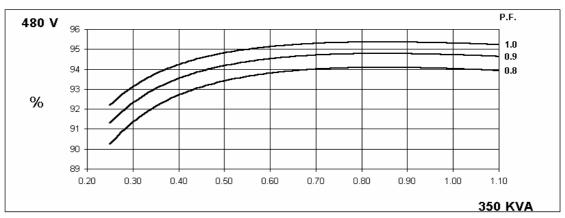
60 Hz

## THREE PHASE EFFICIENCY CURVES





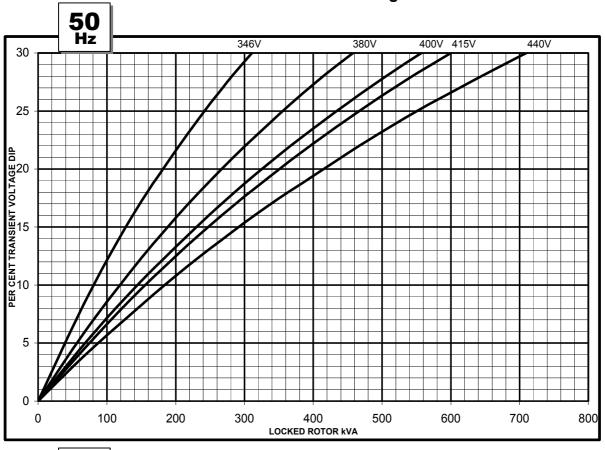




# HCI636G Winding 312



## **Locked Rotor Motor Starting Curve**

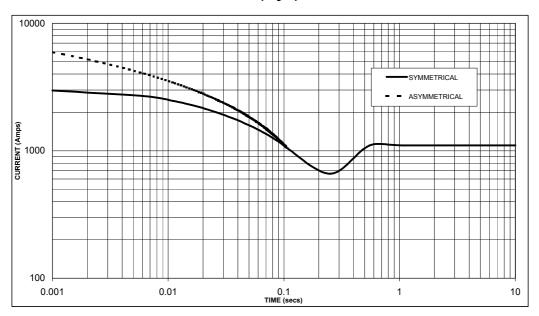






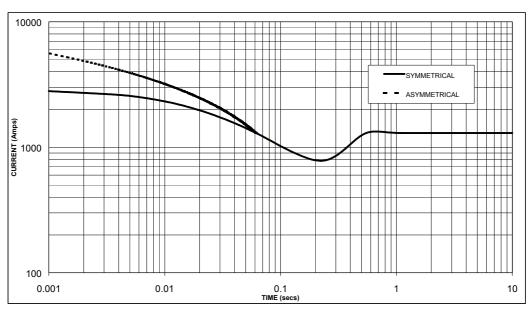
# Three-phase Short Circuit Decrement Curve. No-load Excitation at Rated Speed Based on star (wye) connection.





Sustained Short Circuit = 1,100 Amps





Sustained Short Circuit = 1,300 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 :

50	Hz	60	Hz
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

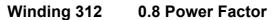
The following multiplication factor should be used to convert the values calculated in accordance with NOTE 1 to those applicable to the various types of short circuit:

	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 Delta connection multiply the Curve current value by 1.732

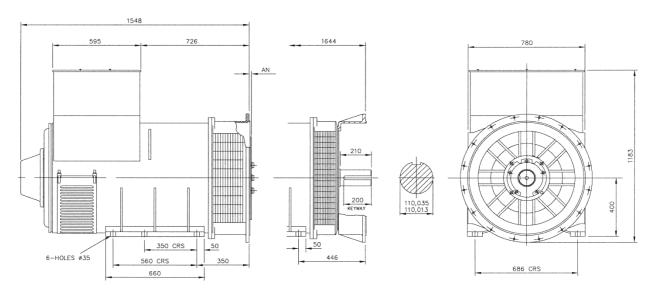




## **RATINGS**

Clas	ss - Temp Rise	С	ont. F -	105/40	°C	Co	ont. H -	125/40	°C	Sta	andby -	150/40	°C	Sta	andby -	163/27	°C
<b>50</b> Hz	Star (V)	380	400	415	440	380	400	415	440	380	400	415	440	380	400	415	440
00112	Delta (V)	220	230	240	254	220	230	240	254	220	230	240	254	220	230	240	254
	kVA	260	260	260	260	280	280	280	280	291	291	291	291	300	300	300	300
	kW	208	208	208	208	224	224	224	224	233	233	233	233	240	240	240	240
	Efficiency (%)	93.8	94.0	94.1	94.1	93.7	93.9	94.0	94.1	93.6	93.8	94.0	94.1	93.6	93.8	93.9	94.1
	kW Input	222	221	221	221	239	239	238	238	249	248	248	247	256	256	256	255
						T				T				1			
<b>60</b> Hz	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	306	325	325	325	331	350	350	350	344	364	364	364	354	375	375	375
	kW	245	260	260	260	265	280	280	280	275	291	291	291	283	300	300	300
	Efficiency (%)	93.7	93.8	94.0	94.1	93.6	93.7	93.9	94.0	93.5	93.7	93.8	94.0	93.4	93.6	93.8	94.0

## **DIMENSIONS**





SAE	14	18	21	24
AN	25.4	15.87	0	0

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kW Input