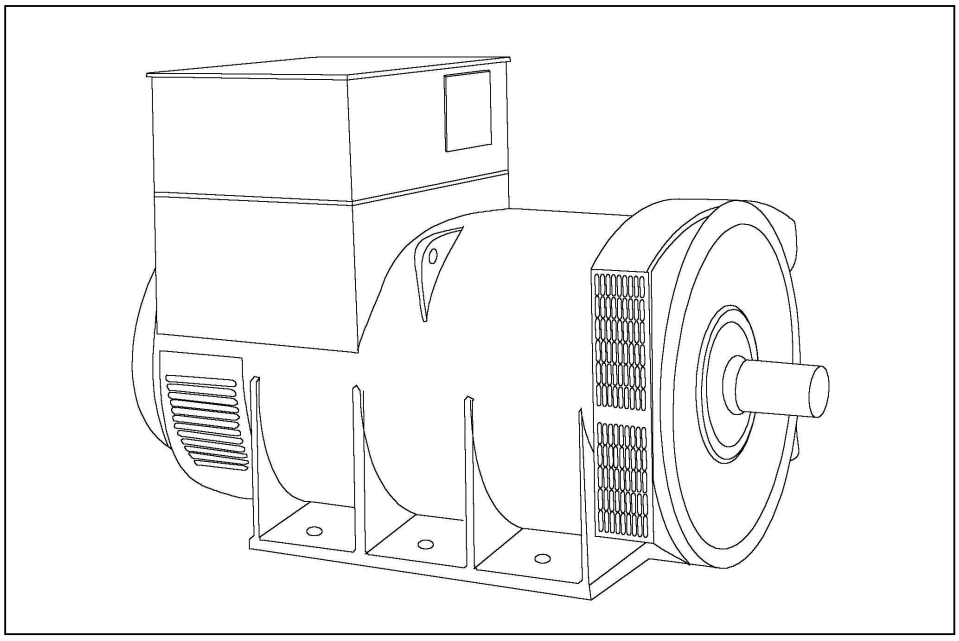
STAMFORD®

HCI634W - Technical Data Sheet



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.

HCI634W

WINDING 311/ 312

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CONTROL SYSTEM	SEPERATELY EXCITED BY P.M.G		
AVR	MX 341	MX 321	
VOLTAGE REGULATION	+/-1 %	+/- 0.5 %	WITH 4% ENGINE GOVERNING.
SUSTAINED SHORT CIRCUIT	REFER TO SHORT CIRCUIT CURVES (page 7)		

INSULATION SYSTETM	CLASS H							
PROTECTION	IP23 STANDARD							
RATED POWER FACTOR	0.8							
STATOR WINDING	DOUBLE LAYER LAP							
WINDING PITCH	TWO THIRD							
WINDING LEADS	6 (Wdg 312) , 12 (Wdg 311)							
MAIN STATOR RESISTANCE	0.00325 Ohms PER PHASE AT 22 ^{0}C,STAR CONNECTED							
MAIN ROTOR RESISTANCE	1.78 Ohms at 22 ^{0}C							
EXCITER STATOR RESISTANCE	17.4 Ohms at 22 ^{0}C							
EXCITER ROTOR RESISTANCE	0.08 Ohms PER PHASE AT 22 ^{0}C							
R.F.I SUPPRESSION	BS EN 61000-6-2 & BS EN 61000-6-4,VDE 0875G,VDE 0875N, Ref to factory for others							
WAVE FORM DISTORTION	NO LOAD < 1.5% NON-DISTORTING BALANCE LINEAR LOAD <5%							
MAXIMUM OVER SPEED	2250 Rev/ Min							
BEARING DRIVE END	BALL 6224- 2RS (ISO)							
BEARING NON-DRIVE END	BALL 6317-2RS (ISO)							
	1 BEARING				2 BEARING			
WEIGHT COMP.GENERATOR	1963				1969			
WEIGHT WOUND STATOR	814				768			
WEIGHT WOUND ROTOR	934				934			
WR^2 INERTIA.	18.37				17.82			
SHIPPING WEIGHTS in a crate	2250				2248			
PACKING CRATE SIZE	194 X 105 X 154 (cms)				194 X 105 X 154 (cms)			
	50 HZ				60 HZ			
TELEPHONE INTEFERENCE	THF< 2%				TIF < 50			
COOLING AIR	1.614 m^3/sec				1.961 m^3/sec			
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 F0R REACTANCE VALUES	750	750	750	750	815	850	860	875
Xd DIR AXIS SYNCHRONOUS	2.60	2.35	2.18	1.94	3.05	2.84	2.63	2.46
X'd DIR AXIS TRANSIENT	0.17	0.15	0.14	0.12	0.20	0.18	0.17	0.16
X"d DIR AXIS SUB TRANSIENT	0.13	0.12	0.11	0.10	0.15	0.14	0.13	0.12
X'q QUAD AXIS TRANSIENT	1.67	1.51	1.40	1.25	1.96	1.82	1.69	1.58
X"q QUAD AXIS SUBTRANSIENT	0.25	0.23	0.21	0.19	0.29	0.27	0.25	0.24
XL LEAKAGE REACTANCE	0.11	0.10	0.09	0.08	0.13	0.12	0.11	0.10
X2 NEGATIVE SEQUENCE	0.19	0.17	0.16	0.14	0.22	0.21	0.19	0.18
X0 ZERO SEQUENCE	0.02	0.02	0.02	0.02	0.03	0.03	0.02	0.02
REACTANCES ARE SATURATED VALUES AND ARE PER UNIT AT RATINGS AND VOLTAGE INDICATED								
T'd TRANSIENT TIME CONSTANT	0.101s							
T"d SUB TRANSIENT TIME CONSTANT	0.012s							
T'do O.C FIELD TIME COONSTANT	2.82s							
Ta ARMATURE TIME CONSTANT	0.023s							
SHORT CIRCUIT RATIO	1/Xd							

50 Hz

HCI634W
Winding 311/ 312

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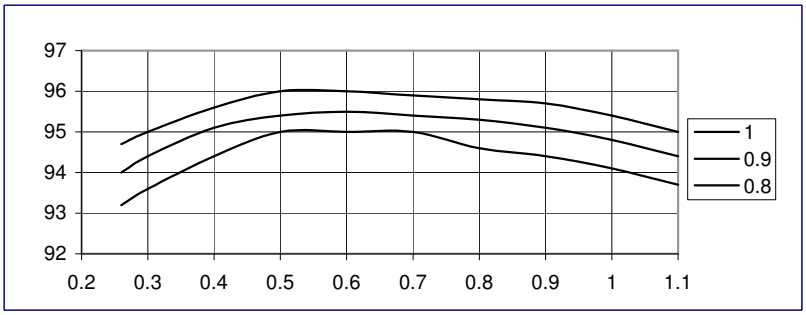
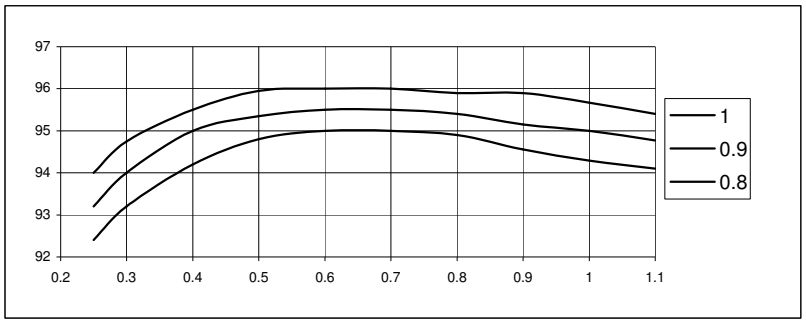
THREE PHASE EFFICIENCY CURVES

380 V



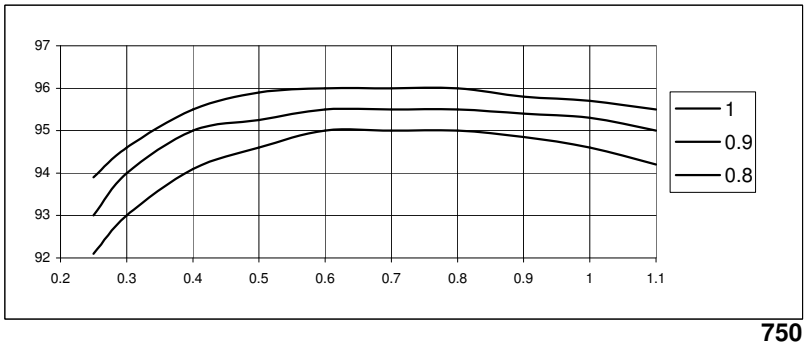
750 KVA

400 V



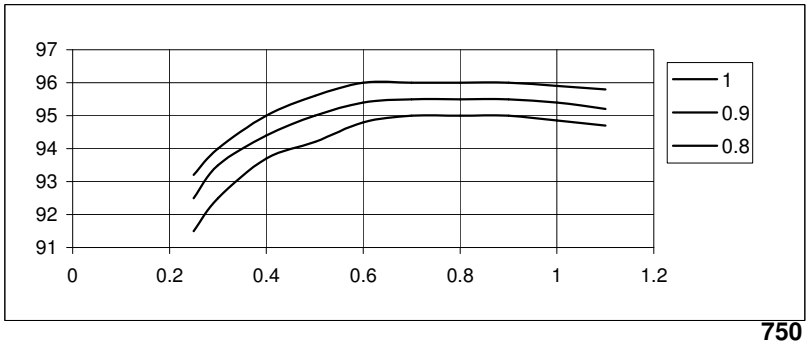
750 KVA

415 V



750 KVA

440 V



750 KVA

60 Hz

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Winding 311/ 312

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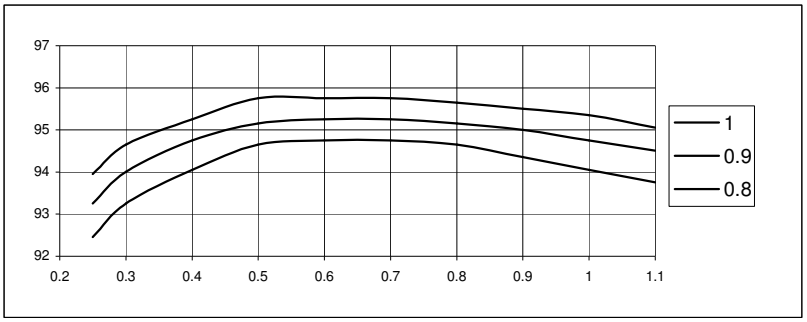
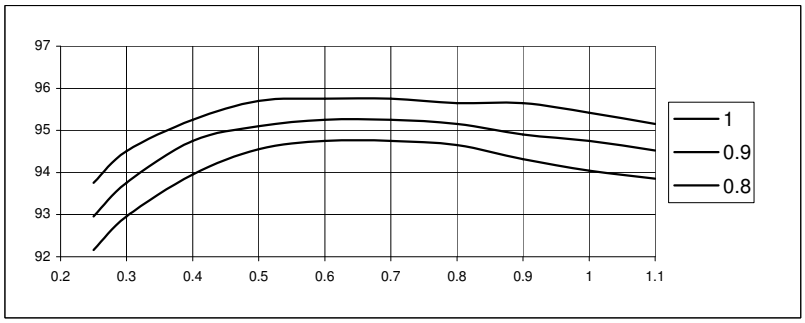
THREE PHASE EFFICIENCY CURVES

416 V



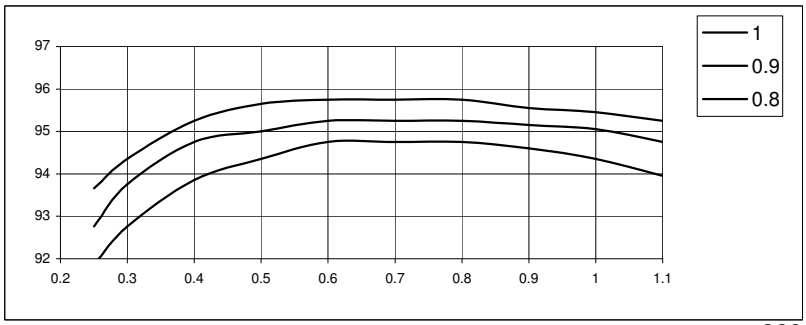
815 KVA

440 V



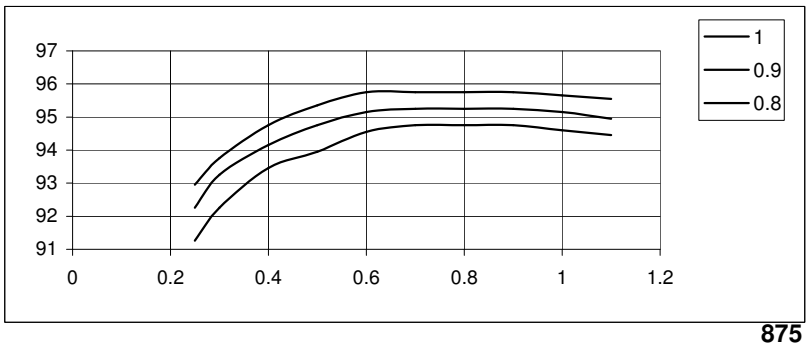
850 KVA

460 V



860 KVA

480 V



875 KVA

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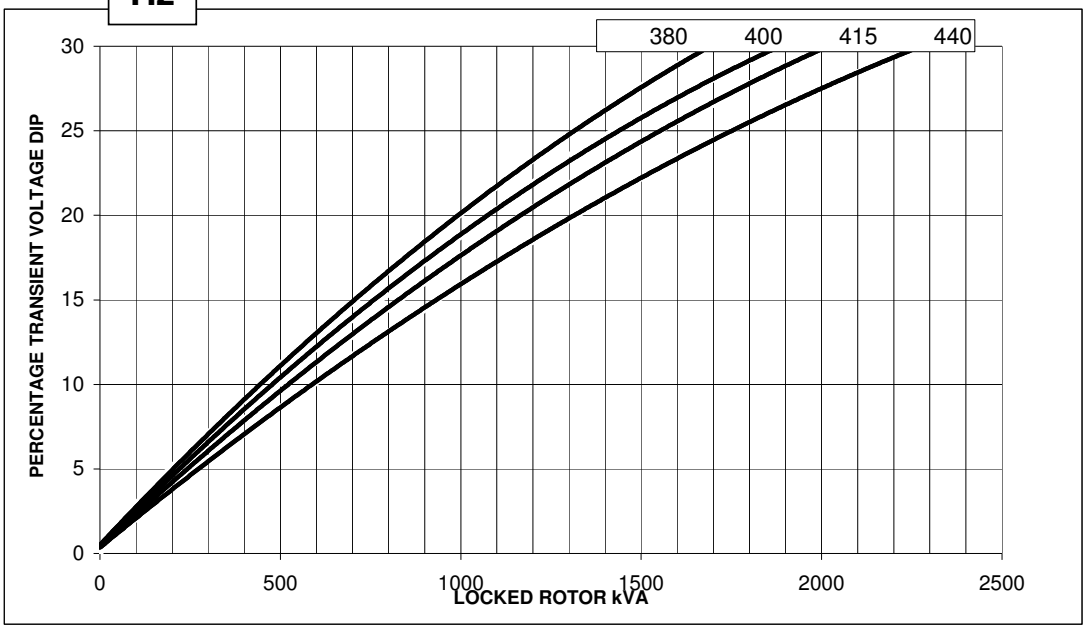
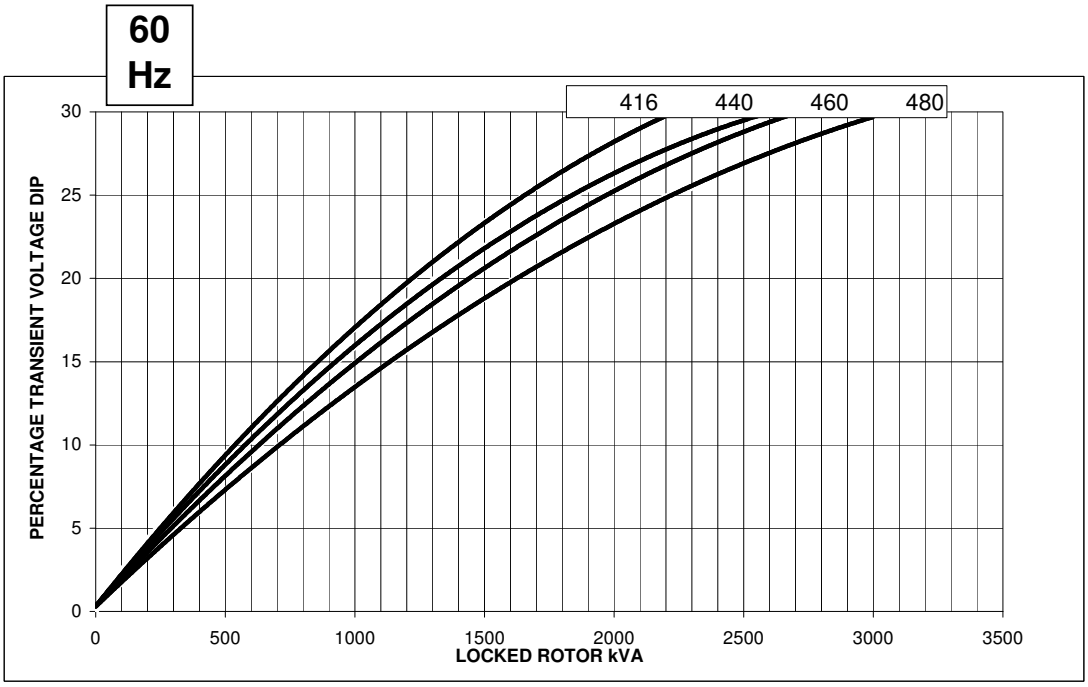
50 Hz

Locked Rotor Motor Starting Curve

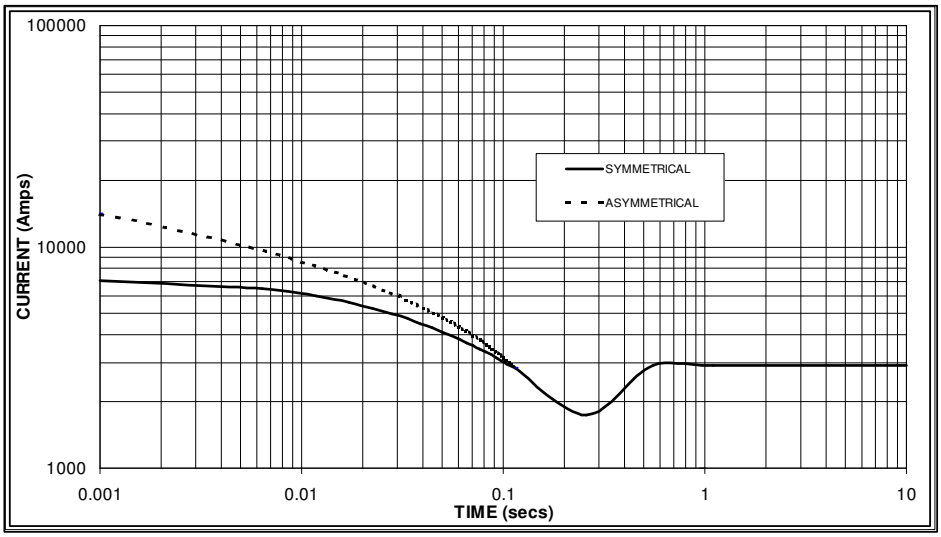


60 Hz



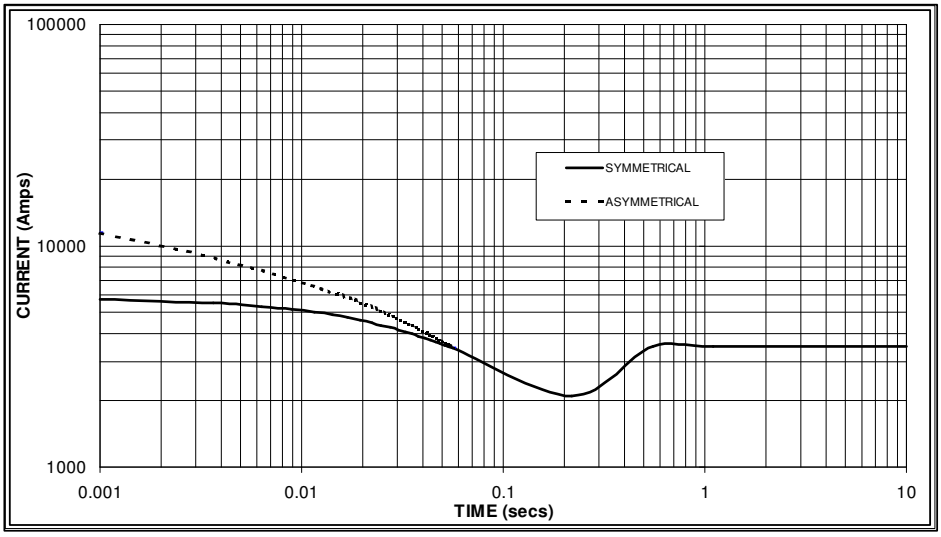
Three-phase Short Circuit Decrement Curve. No-load Excitation at Rated Speed
Based on star (wye) connection.

50 Hz



Sustained Short Circuit = 2,900 Amps

60 Hz



Sustained Short Circuit = 3,500 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 1.07	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

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Winding 311 /312 0.8 Power Factor

RATINGS

Class - Temp Rise		Cont. F - 105/40℃				Cont. H - 125/40℃			
50Hz	Star (V)	380	400	415	440	380	400	415	440
	Delta (V)	220	230	240	254	220	230	240	254
	kVA	637	683	683	683	750	750	750	750
	kW	510	546	546	546	600	600	600	600
	Efficiency (%)	94.6	94.7	94.8	95.0	94.0	94.2	94.6	94.8
	kW Input	538.7	577.0	576.4	575.2	638.3	636.9	634.2	632.9

60Hz	Star (V)	416	440	460	480	416	440	460	480
	Delta (V)	240	254	266	277	240	254	266	277
	kVA	747	779	788	802	815	850	860	875
	kW	598	623	630	642	652	680	688	700
	Efficiency (%)	94.3	94.4	94.7	94.8	94.0	94.1	94.3	94.6
	kW Input	633.7	660.2	665.7	676.8	693.6	723.0	729.6	740.0

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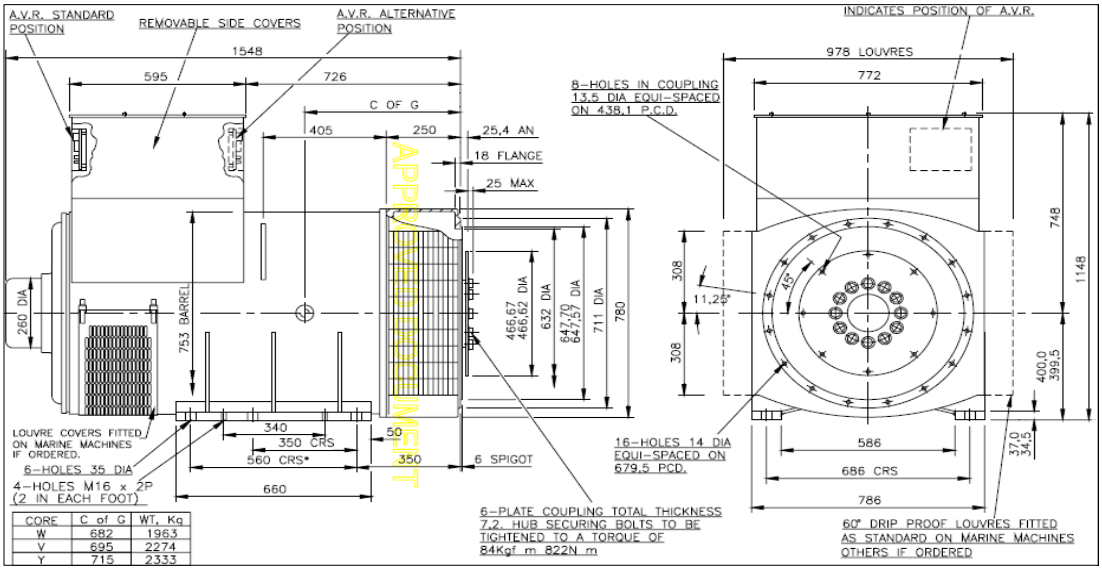
Winding 311 /312 0.8 Power Factor

DIMENSIONS

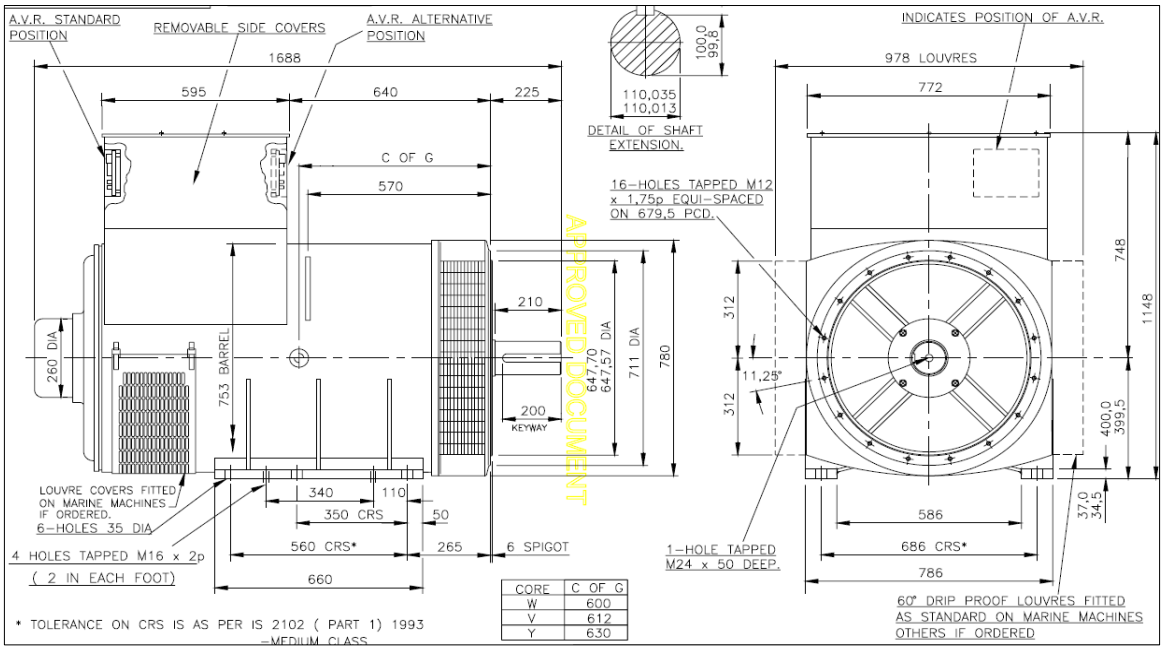
SINGLE BEARING



CORE	C of G	WT. Kg
W	682	1963
V	695	2274
Y	715	2333

SAE	14	18
AN	25.4	15.87

DOUBLE BEARING



CORE	C OF G
W	600
V	612
Y	630

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