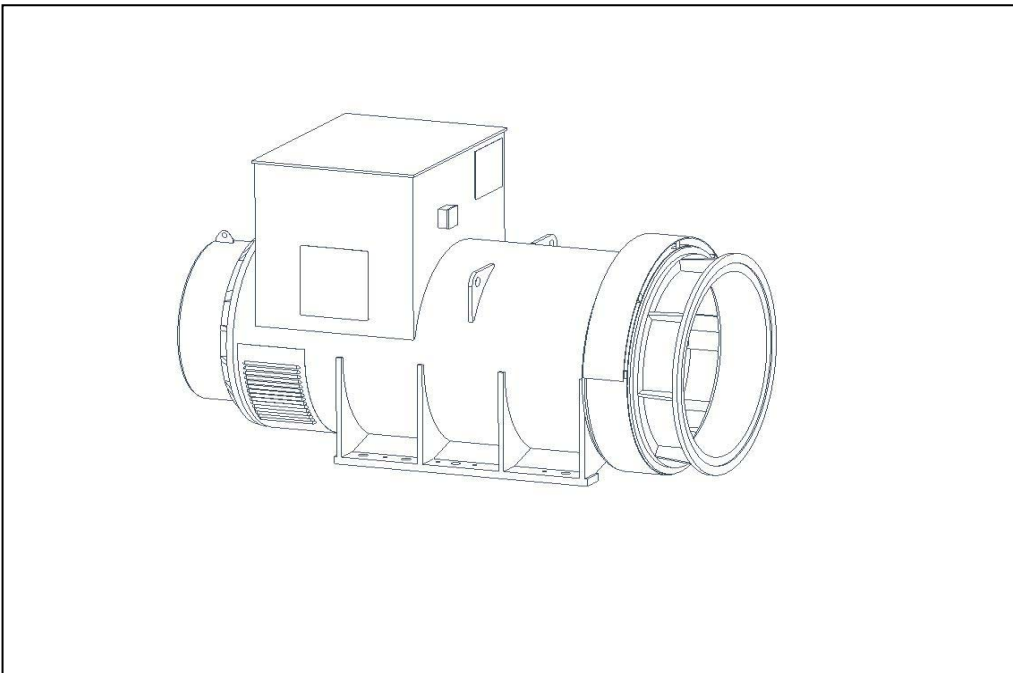


HCI734J - Technical Data Sheet



HC1734J

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.

HCI734J
WINDING 312

CONTROL SYSTEM	SEPARATELY 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)		

INSULATION SYSTEM	CLASS H
PROTECTION	IP23
RATED POWER FACTOR	0.8
STATOR WINDING	DOUBLE LAYER LAP
WINDING PITCH	TWO THIRDS
WINDING LEADS	6
STATOR WDG. RESISTANCE	0.00082 Ohms PER PHASE AT 22°C STAR CONNECTED
ROTOR WDG. RESISTANCE	1.87 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. 6232 (ISO)
BEARING NON-DRIVE END	BALL. 6319 (ISO)

	1 BEARING				2 BEARING			
WEIGHT COMP. GENERATOR	4010 kg				4100 kg			
WEIGHT WOUND STATOR	2100 kg				2100 kg			
WEIGHT WOUND ROTOR	1679 kg				1635 kg			
WR ² INERTIA	52.8436 kgm ²				51.9266 kgm ²			
SHIPPING WEIGHTS in a crate	Gross weight - 4085 kg				Gross weight - 4168 kg			
PACKING CRATE SIZE	Packing case size (cm) - 216 x 105 x 154				Packing case size (cm) - 216 x 105 x 154			
	50 Hz				60 Hz			
TELEPHONE INTERFERENCE	THF<2%				TIF<50			
COOLING AIR	2.75 m ³ /sec 5827 cfm				3.5 m ³ /sec 7417 cfm			
VOLTAGE STAR	380/220	400/231	415/240	440/254	416/240	440/254	460/266	480/277
kVA BASE RATING FOR REACTANCE VALUES	2080	2150	2150	1955	2275	2406	2515	2625
X _d DIR. AXIS SYNCHRONOUS	3.60	3.36	3.12	2.53	3.95	3.73	3.57	3.42
X' _d DIR. AXIS TRANSIENT	0.20	0.19	0.18	0.14	0.22	0.21	0.20	0.19
X'' _d DIR. AXIS SUBTRANSIENT	0.14	0.13	0.12	0.10	0.16	0.15	0.15	0.14
X _q QUAD. AXIS REACTANCE	2.33	2.17	2.02	1.63	2.55	2.41	2.31	2.21
X'' _q QUAD. AXIS SUBTRANSIENT	0.26	0.24	0.22	0.18	0.28	0.26	0.25	0.24
X _L LEAKAGE REACTANCE	0.08	0.07	0.07	0.05	0.09	0.09	0.08	0.08
X ₂ NEGATIVE SEQUENCE	0.21	0.20	0.19	0.15	0.23	0.22	0.21	0.20
X ₀ ZERO SEQUENCE	0.03	0.03	0.03	0.02	0.05	0.04	0.04	0.04

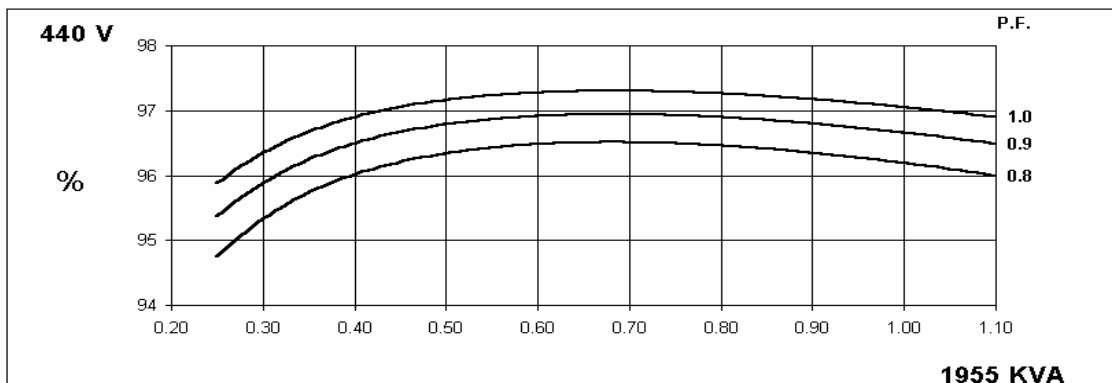
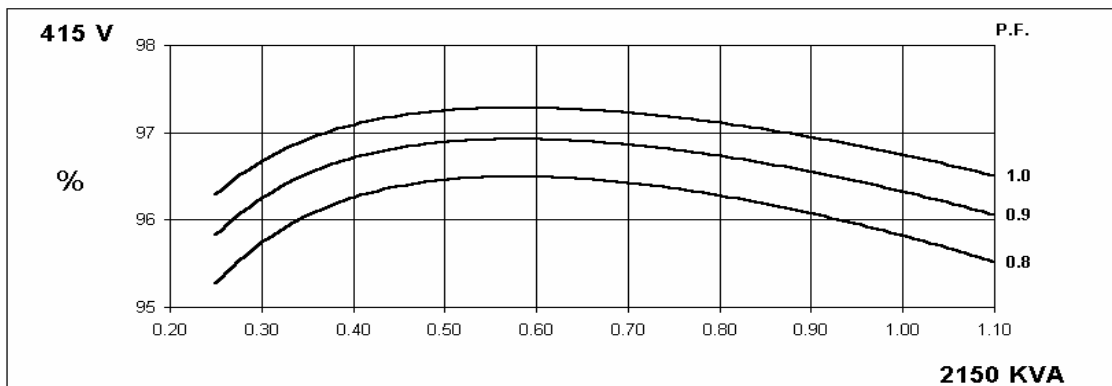
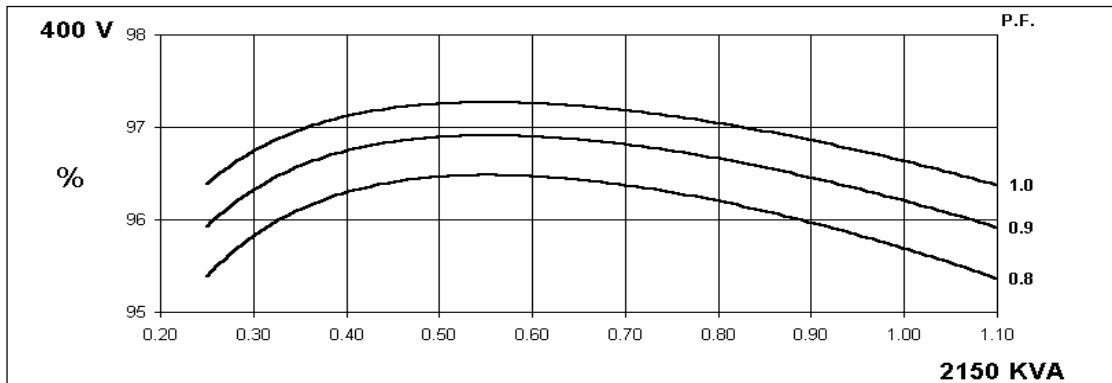
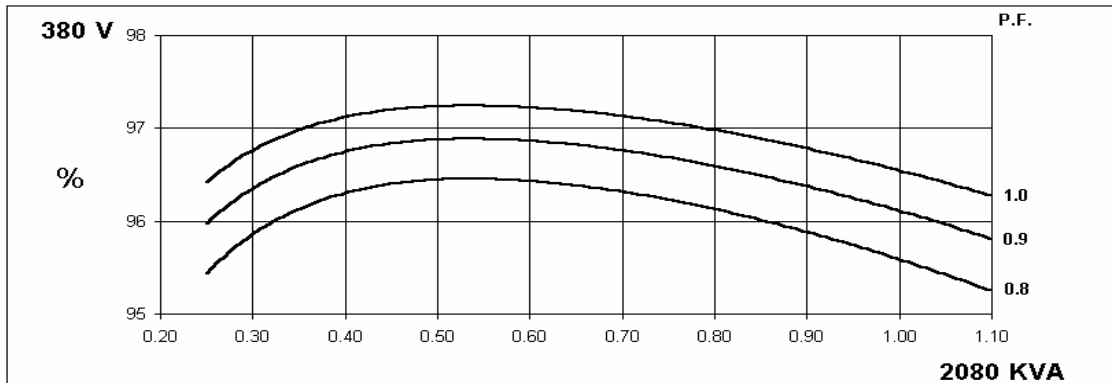
REACTANCES ARE SATURATED		VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED	
T' _d TRANSIENT TIME CONST.	0.18s		
T'' _d SUB-TRANSTIME CONST.	0.014s		
T' _{do} O.C. FIELD TIME CONST.	3.4s		
T _a ARMATURE TIME CONST.	0.063s		
SHORT CIRCUIT RATIO	1/X _d		

**50
Hz**

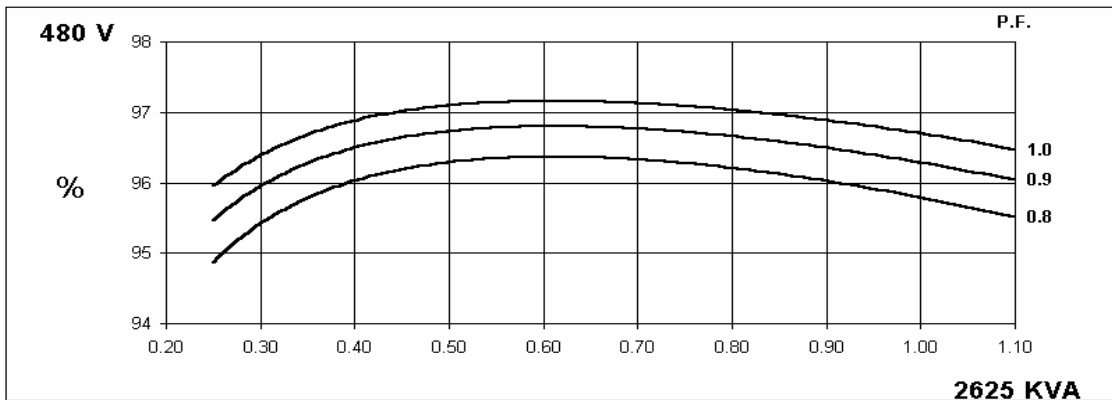
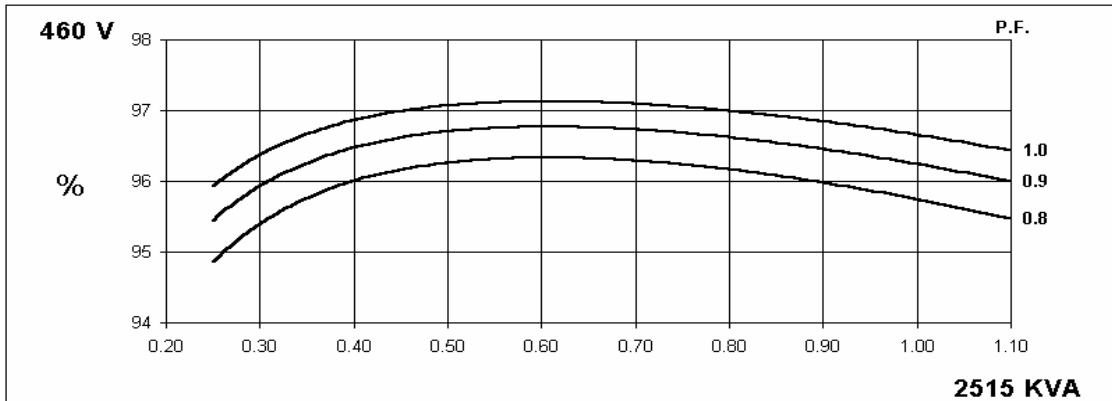
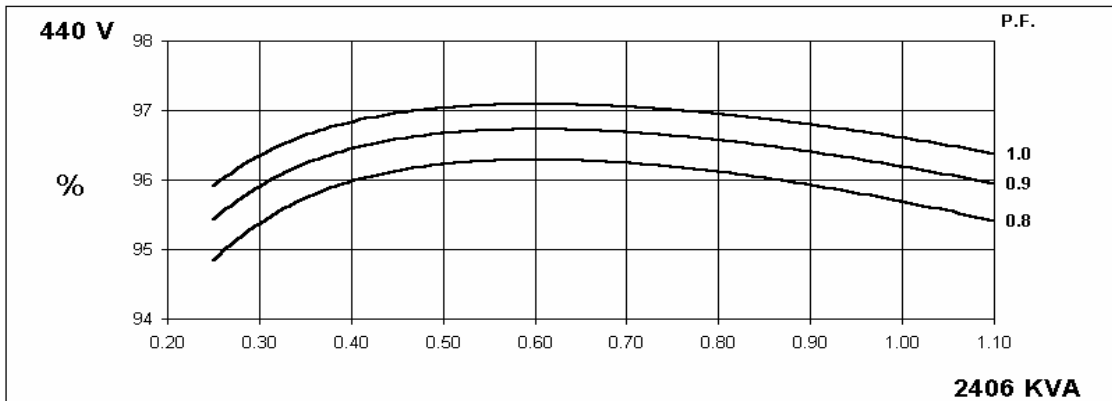
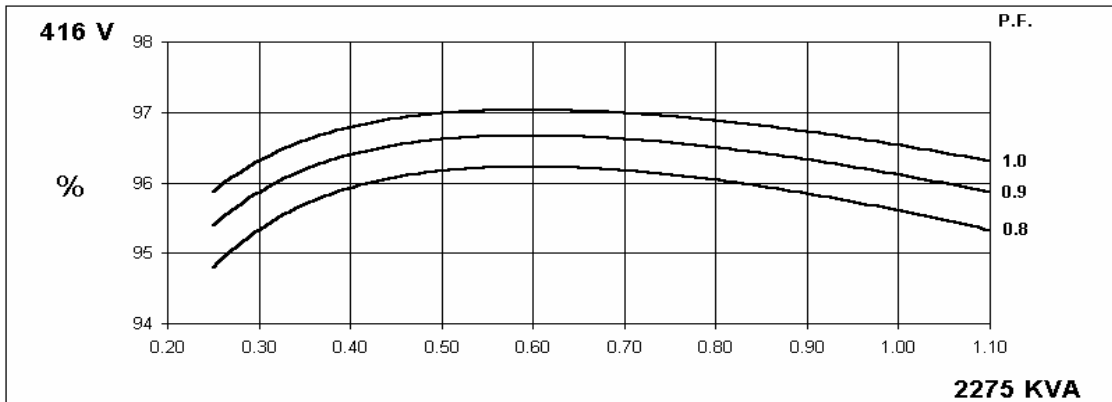
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Winding 312



THREE PHASE EFFICIENCY CURVES



THREE PHASE EFFICIENCY CURVES

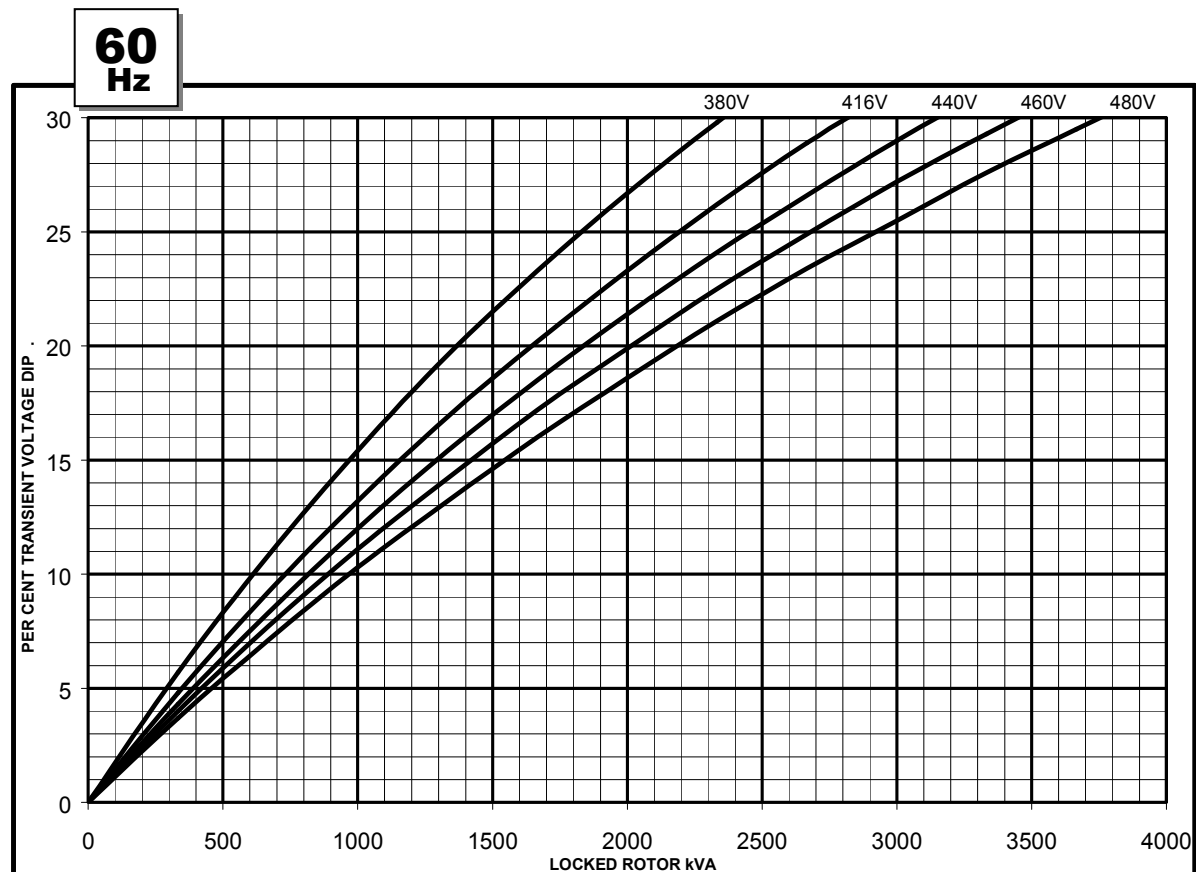
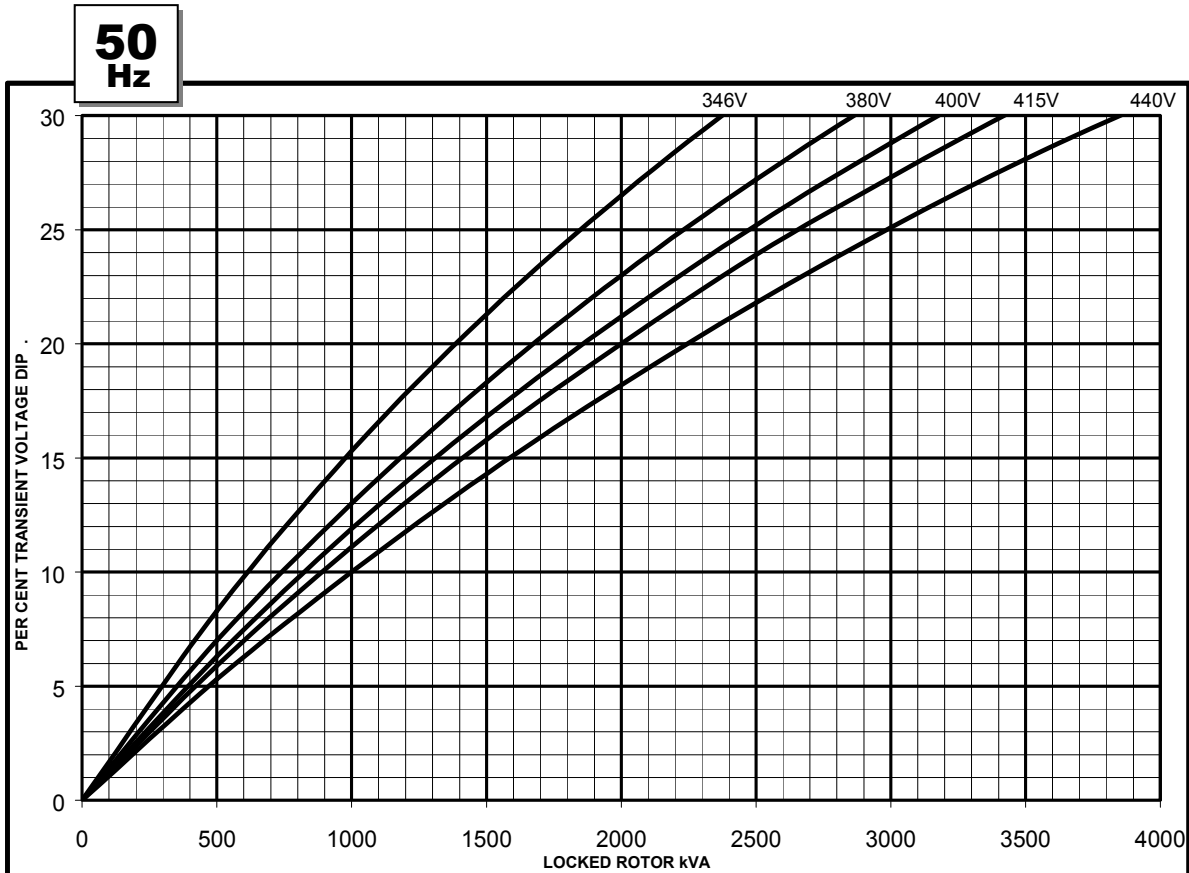


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Winding 312

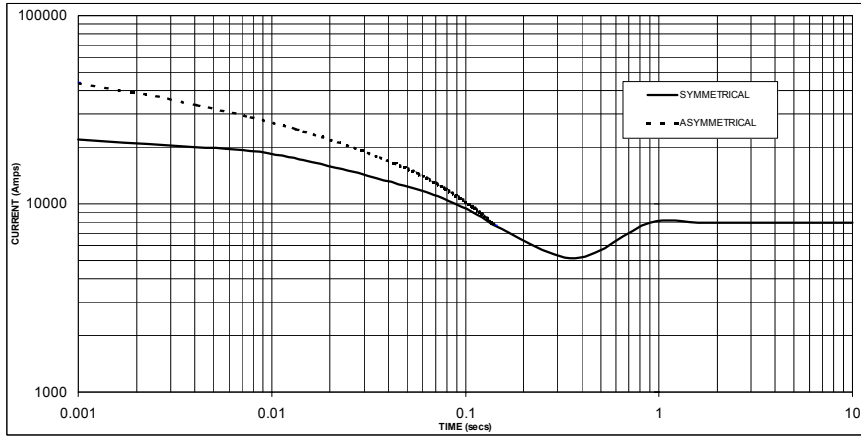


Locked Rotor Motor Starting Curve



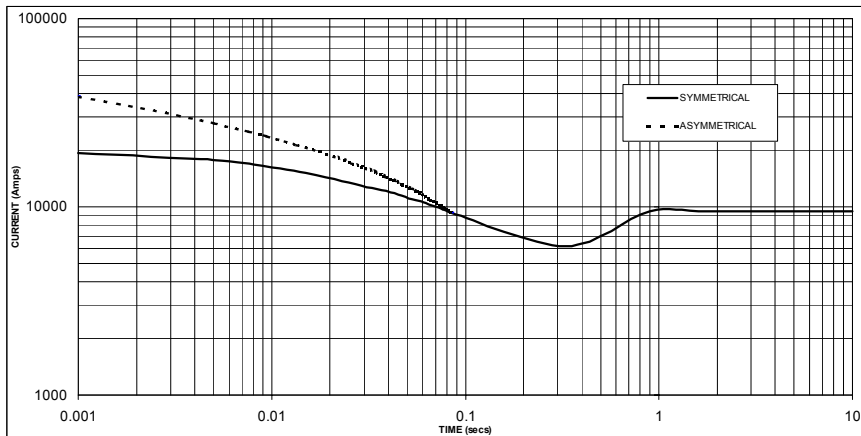
**Three-phase Short Circuit Decrement Curve. No-load Excitation at Rated Speed
Based on star (wye) connection.**

**50
Hz**



Sustained Short Circuit = 7,900 Amps

**60
Hz**



Sustained Short Circuit = 9,471 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
380	X 1.00	416v	X 1.00
400	X 1.06	440v	X 1.06
415	X 1.10	460v	X 1.10
440	X 1.15	480v	X 1.15

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.

HCI734J

Winding 312 / 0.8 Power Factor

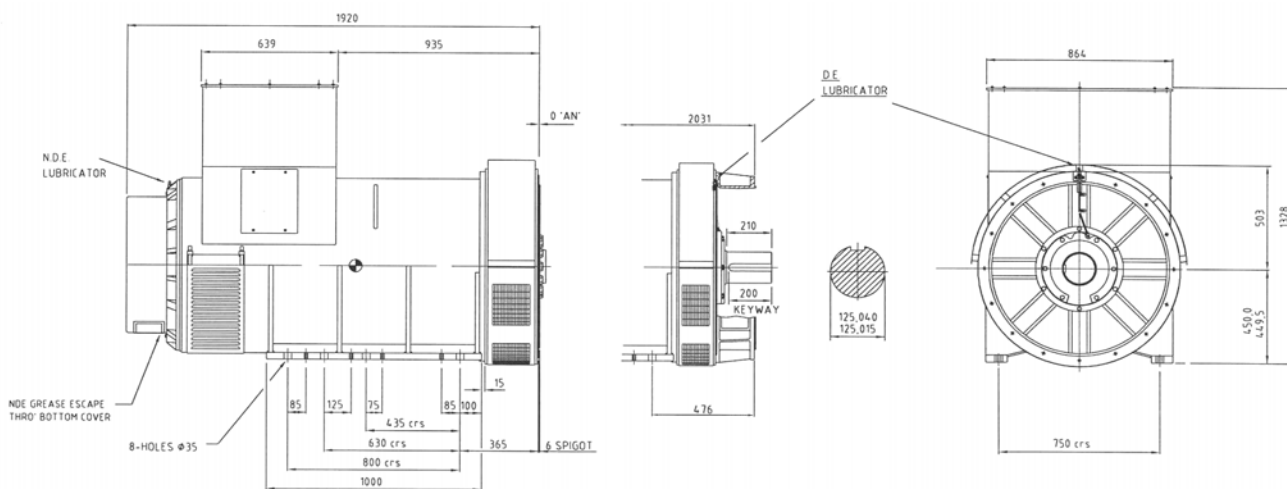


RATINGS

Class - Temp Rise		Cont. F - 105/40°C				Cont. H - 125/40°C				Standby - 150/40°C				Standby - 163/27°C			
50Hz	Star (V)	380	400	415	440	380	400	415	440	380	400	415	440	380	400	415	440
	kVA	1906	1971	1971	1792	2080	2150	2150	1955	2180	2280	2280	2072	2280	2350	2350	2215
	kW	1525	1577	1577	1434	1664	1720	1720	1564	1744	1824	1824	1658	1824	1880	1880	1772
	Efficiency (%)	95.8	95.9	96.0	96.3	95.6	95.7	95.8	96.2	95.4	95.5	95.6	96.1	95.3	95.4	95.5	95.9
	kW Input	1592	1644	1643	1489	1741	1797	1795	1626	1828	1910	1908	1725	1914	1971	1969	1848

60Hz	Star (V)	416	440	460	480	416	440	460	480	416	440	460	480	416	440	460	480
	kVA	2085	2206	2305	2406	2275	2406	2515	2625	2410	2549	2665	2781	2486	2630	2749	2869
	kW	1668	1765	1844	1925	1820	1925	2012	2100	1928	2039	2132	2225	1989	2104	2199	2295
	Efficiency (%)	95.8	95.9	95.9	96.0	95.6	95.7	95.7	95.8	95.4	95.5	95.6	95.6	95.3	95.4	95.5	95.5
	kW Input	1741	1840	1923	2005	1904	2011	2102	2192	2021	2135	2230	2327	2087	2205	2303	2403

DIMENSIONS



COUPLING DISK	AN
SAE 18	15,87
SAE 21	0



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