

**FRAME 9124H****WINDING 6S****MODELS LL9124H / LL9134H**

REF: F9104HW6S-1 APRIL 2010

**WINDING DETAILS**

Code	6S	Insulation class	H
Phase	3	Leads	6
Pole number	4	Pitch	2/3

**MECHANICAL DETAILS**

Standard protection		IP23
Overspeed	rpm	2250
Air flow 50Hz/60Hz	m <sup>3</sup> /s	2.50 / 2.80

**EXCITATION DETAILS**

Excitation system	<b>AREP/PMG</b>
AVR model	R449
Sustained short-circuit current	300%:10s
Steady state voltage regulation	±0.5%

**WAVEFORM**

<i>Line voltage on no load or balanced linear rated load</i>	
Total harmonic content THC	<2.5%
Telephone influence factor TIF (NEMA)	<50
Telephone harmonic factor THF (IEC)	<2%

**LINE VOLTAGE***No overvoltage tolerance for 440V 50Hz excitation level*

Frequency / speed	V	50Hz / 1500rpm				60Hz / 1800rpm					
		380	400	415	440	380	400	416	440	460	480
Star	V	380	400	415	440	380	400	416	440	460	480
Delta	V	220	230	240		220	230	240			

**RATING***Power factor 0.8, Altitude <=1000m*

Class	Rating	kVA	2000	2000	2000	1890	1900	2000	2080	2200	2300	2400
Class H rise BR	125/40	kVA	2000	2000	2000	1890	1900	2000	2080	2200	2300	2400
		kW	1600	1600	1600	1512	1520	1600	1664	1760	1840	1920
Class H rise PR	150/40	kVA	2120	2120	2120	2003	2014	2120	2205	2332	2438	2544
		kW	1696	1696	1696	1603	1611	1696	1764	1866	1950	2035
Class H rise PR	163/27	kVA	2200	2200	2200	2080	2090	2200	2290	2420	2530	2640
		kW	1760	1760	1760	1664	1672	1760	1832	1936	2024	2112
Class F rise BR	105/40	kVA	1800	1800	1800	1700	1710	1800	1870	1980	2070	2160
		kW	1440	1440	1440	1360	1368	1440	1496	1584	1656	1728

**EFFICIENCIES***Power factor 0.8*

Efficiency	Class	%	95.3	95.5	95.6	95.7	94.8	95.0	95.1	95.2	95.3	95.4
110%	Class H BR	%	95.3	95.5	95.6	95.7	94.8	95.0	95.1	95.2	95.3	95.4
100%	Class H BR	%	95.5	95.7	95.8	95.9	95.0	95.2	95.3	95.4	95.5	95.5
75%	Class H BR	%	96.0	96.1	96.1	96.1	95.3	95.5	95.5	95.6	95.7	95.7
50%	Class H BR	%	96.2	96.1	96.1	95.8	95.2	95.3	95.3	95.4	95.4	95.5
25%	Class H BR	%	95.0	94.8	94.6	93.9	93.1	93.2	93.3	93.3	93.3	93.3

**CHARACTERISTIC PARAMETERS***Reactance base class H BR rating*

Parameter	Description	Unit	0.30	0.36	0.42	0.57	0.23	0.25	0.27	0.29	0.32	0.36
K <sub>c</sub>	Short-circuit ratio		0.30	0.36	0.42	0.57	0.23	0.25	0.27	0.29	0.32	0.36
X <sub>d</sub>	D-Axis synchronous reactance (unsaturated)	pu	3.85	3.48	3.23	2.71	4.39	4.17	4.01	3.79	3.63	3.48
X' <sub>d</sub>	D-Axis transient reactance (saturated)	pu	0.29	0.26	0.24	0.20	0.33	0.31	0.30	0.29	0.27	0.26
X'' <sub>d</sub>	D-Axis sub-transient reactance (saturated)	pu	0.151	0.136	0.126	0.106	0.172	0.163	0.157	0.149	0.142	0.136
X <sub>q</sub>	Q-Axis synchronous reactance (unsaturated)	pu	2.31	2.08	1.93	1.63	2.63	2.50	2.40	2.27	2.17	2.08
X'' <sub>q</sub>	Q-Axis sub-transient reactance (saturated)	pu	0.188	0.170	0.158	0.133	0.215	0.204	0.196	0.185	0.177	0.170
X <sub>2</sub>	Negative-sequence reactance (saturated)	pu	0.170	0.154	0.143	0.120	0.194	0.184	0.177	0.168	0.160	0.154
X <sub>0</sub>	Zero-sequence reactance (independent)	pu	0.035	0.032	0.030	0.025	0.040	0.038	0.037	0.035	0.033	0.032
T' <sub>d</sub>	D-Axis transient time constant	ms		245						245		
T'' <sub>d</sub>	D-Axis sub-transient time constant	ms		23						23		
T' <sub>do</sub>	D-Axis open-circuit time constant	ms		2770						2770		
T <sub>a</sub>	Armature time constant	ms		41						41		
T <sub>r</sub>	Voltage recovery time	ms		< 500						< 500		

**EXCITATION VOLTAGE AND CURRENT**

Parameter	Unit	12.4	13.8	15.6	19.3	9.2	9.7	10.1	11.5	12.4	13.8
No load excitation voltage	V	12.4	13.8	15.6	19.3	9.2	9.7	10.1	11.5	12.4	13.8
No load excitation current	A	1.35	1.50	1.70	2.10	1.00	1.05	1.10	1.25	1.35	1.50
Class H BR excitation voltage	V	54.7	55.2	55.7	56.6	46.0	46.9	48.8	51.5	52.4	54.3
Class H BR excitation current	A	5.95	6.00	6.05	6.15	5.00	5.10	5.30	5.60	5.70	5.90

**WINDING RESISTANCE***At 20°C*

Parameter	Unit	0.0016	Exciter field	Ω	9.20
Stator line-to-line (series star)	Ω	0.0016	Exciter field	Ω	9.20
Main field	Ω	0.450			

According to: IEC 60034, UTE NFC51.111, VDE 0530, BS 4999/5000, NEMA MG 1-33

Values quoted are typical. In line with our policy of continuous improvement, we reserve the right to change specification without notice.

**FRAME 9124H**

**WINDING 6S**



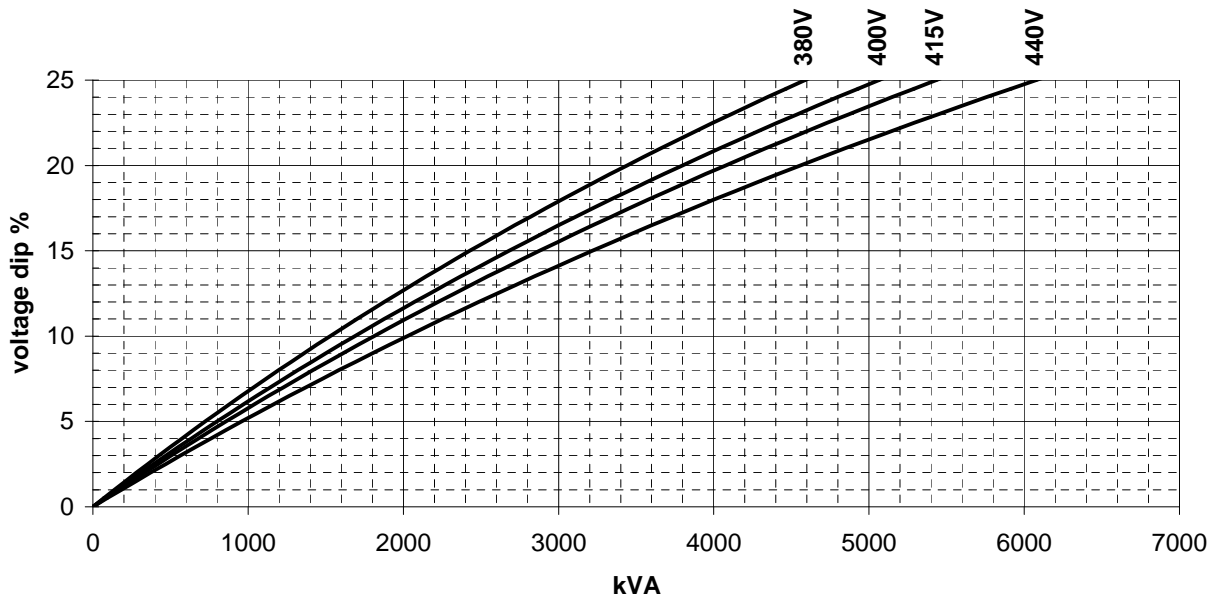
**MODELS LL9124H / LL9134H**

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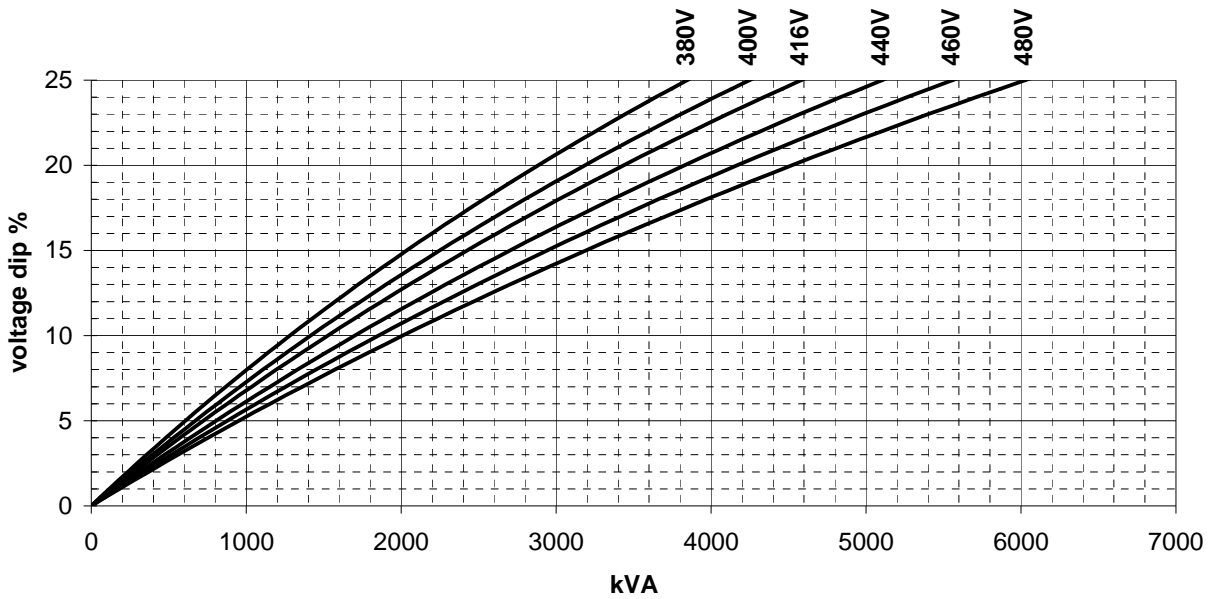
**LOCKED ROTOR MOTOR STARTING CURVES**

*Power factor 0.4*

**50 Hz AREP / PMG**



**60 Hz AREP / PMG**



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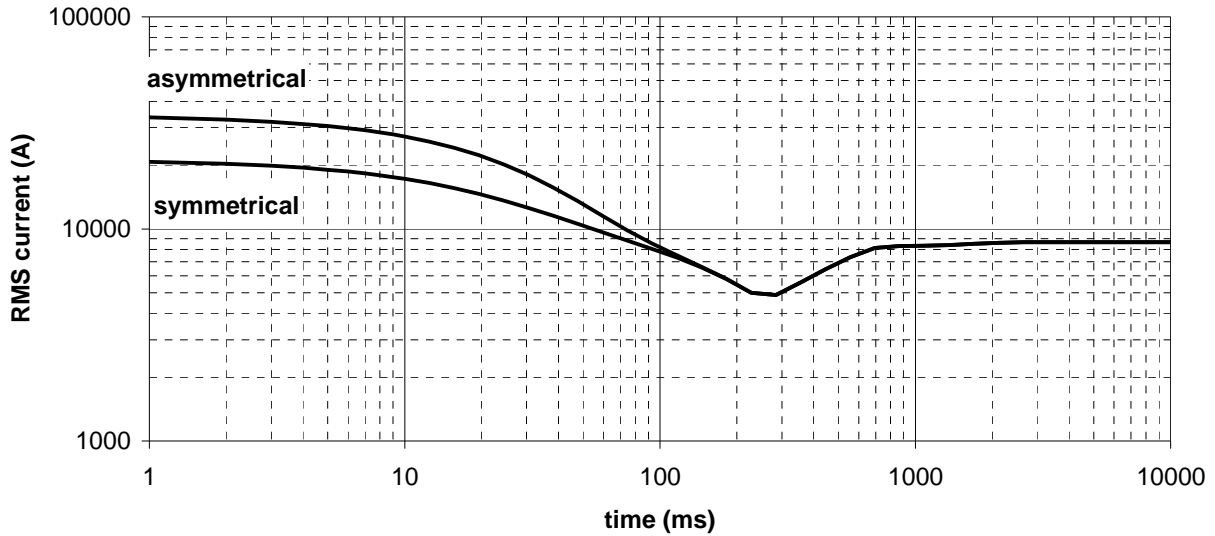
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**THREE-PHASE SHORT-CIRCUIT DECREMENT CURVES**

*No-load excitation at rated speed*

**400V 50Hz, 480V 60Hz**

*Star*



**Multiplication Factors**

**50Hz Voltages**

	<b>380</b>	<b>400</b>	<b>415</b>	<b>440</b>
<b>Multiplication Factor</b>	0.95	1.00	1.04	1.10

*Apply factor up to 2xT'd, remainder of curve unchanged*

**60Hz Voltages**

	<b>380</b>	<b>400</b>	<b>416</b>	<b>440</b>	<b>460</b>	<b>480</b>
<b>Multiplication Factor</b>	0.79	0.83	0.87	0.92	0.96	1.00

*Apply factor up to 2xT'd, remainder of curve unchanged*

**Winding Connection**

	<b>Star</b>	<b>Delta</b>
<b>Multiplication Factor</b>	1.00	1.73

*Apply factor to the complete curve*

According to: IEC 60034, UTE NFC51.111, VDE 0530, BS 4999/5000, NEMA MG 1-33

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