

FRAME 7224L**WINDING 6S****MODELS LL7224L / LL7234L**

REF: F7204LW6S-0 JAN 2017

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 ³ /s -

EXCITATION DETAILS

Excitation system	AREP/PMG
AVR model	R450M
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	<4%
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	rise	BR	125/40	150/40	163/27	105/40	kVA	830	835	830	730	830	870	905	960	1000	1045
Class H	rise	BR	125/40	150/40	163/27	105/40	kVA	830	835	830	730	830	870	905	960	1000	1045
							kW	664	668	664	584	664	696	724	768	800	836
Class H	rise	PR	150/40	163/27			kVA	880	885	880	774	880	922	959	1018	1060	1108
							kW	704	708	704	619	704	738	767	814	848	886
Class H	rise	PR	163/27				kVA	915	920	915	805	915	960	1000	1060	1100	1150
							kW	732	736	732	644	732	768	800	848	880	920
Class F	rise	BR	105/40				kVA	755	760	755	664	755	792	824	874	910	951
							kW	604	608	604	531	604	633	659	699	728	761

EFFICIENCIES *Power factor 0.8*

Efficiency	Class	rise	BR	%	94.6	94.8	94.8	95.1	93.8	94.1	94.2	94.4	94.6	94.7
110%	Class H	BR		%	94.6	94.8	94.8	95.1	93.8	94.1	94.2	94.4	94.6	94.7
100%	Class H	BR		%	94.8	95.0	95.0	95.3	94.1	94.3	94.5	94.7	94.8	94.9
75%	Class H	BR		%	95.2	95.4	95.4	95.4	94.6	94.8	95.0	95.1	95.2	95.3
50%	Class H	BR		%	95.5	95.5	95.5	95.1	94.7	94.9	95.0	95.1	95.2	95.2
25%	Class H	BR		%	94.4	94.2	94.0	92.8	93.0	93.1	93.2	93.3	93.4	93.3

CHARACTERISTIC PARAMETERS *Reactance base class H BR rating*

Parameter	Description	Unit	0.31	0.35	0.37	0.48	0.21	0.23	0.24	0.26	0.29	0.33
K _c	Short-circuit ratio		0.31	0.35	0.37	0.48	0.21	0.23	0.24	0.26	0.29	0.33
X _d	D-Axis synchronous reactance (unsaturated)	pu	3.82	3.47	3.20	2.51	4.58	4.34	4.17	3.95	3.77	3.62
X' _d	D-Axis transient reactance (saturated)	pu	0.19	0.17	0.16	0.12	0.22	0.21	0.20	0.19	0.18	0.18
X'' _d	D-Axis sub-transient reactance (saturated)	pu	0.149	0.135	0.125	0.098	0.179	0.169	0.163	0.154	0.147	0.141
X _q	Q-Axis synchronous reactance (unsaturated)	pu	2.29	2.08	1.92	1.50	2.75	2.60	2.50	2.37	2.26	2.17
X'' _q	Q-Axis sub-transient reactance (saturated)	pu	0.167	0.152	0.140	0.110	0.201	0.190	0.183	0.173	0.165	0.158
X ₂	Negative-sequence reactance (saturated)	pu	0.158	0.144	0.133	0.104	0.190	0.180	0.173	0.164	0.156	0.150
X ₀	Zero-sequence reactance (independent)	pu	0.007	0.006	0.006	0.004	0.008	0.008	0.007	0.007	0.007	0.006
T' _d	D-Axis transient time constant	ms		100					100			
T'' _d	D-Axis sub-transient time constant	ms		10					10			
T' _{do}	D-Axis open-circuit time constant	ms		2048					2048			
T _a	Armature time constant	ms		15					15			
T _r	Voltage recovery time	ms		< 3000					< 3000			

EXCITATION VOLTAGE AND CURRENT

Parameter	Unit	12.5	13.7	15.0	17.7	9.5	10.1	10.7	11.7	12.6	13.7
No load excitation voltage	V	12.5	13.7	15.0	17.7	9.5	10.1	10.7	11.7	12.6	13.7
No load excitation current	A	0.79	0.87	0.95	1.12	0.60	0.64	0.68	0.74	0.80	0.87
Class H BR excitation voltage	V	57.5	57.2	57.0	52.7	53.1	53.5	54.3	55.6	56.7	58.3
Class H BR excitation current	A	3.64	3.62	3.61	3.34	3.36	3.39	3.44	3.52	3.59	3.69

WINDING RESISTANCE *At 20°C*

Parameter	Unit	0.0030	Exciter field	Ω	15.79
Stator line-to-line (series star)	Ω	0.0030	Exciter field	Ω	15.79
Main field	Ω	0.44			

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.

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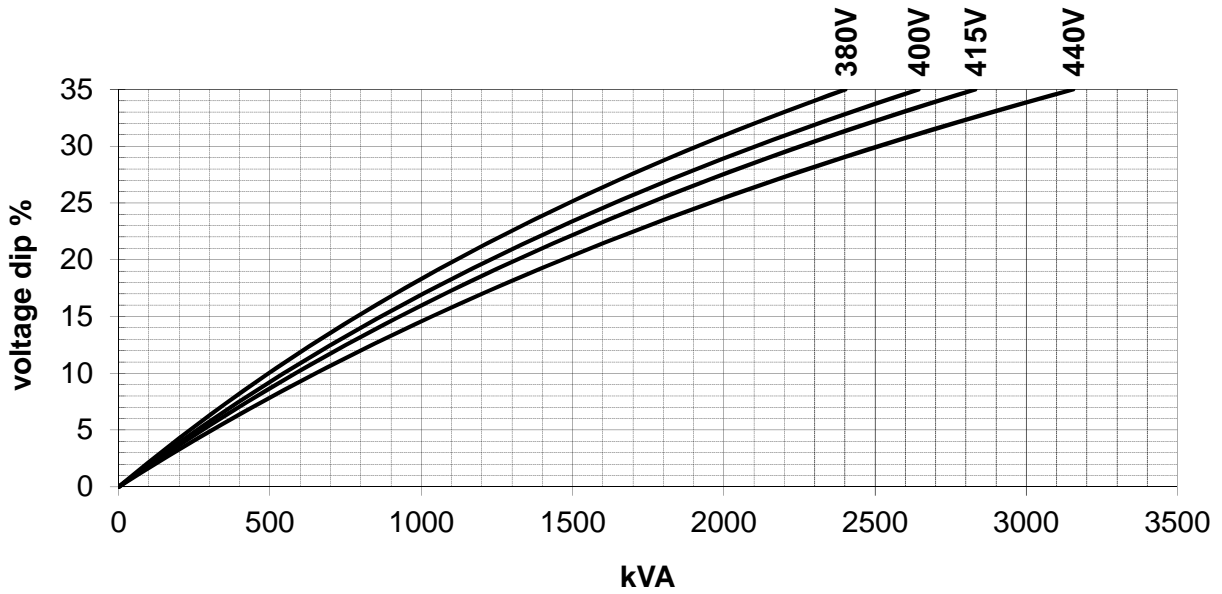
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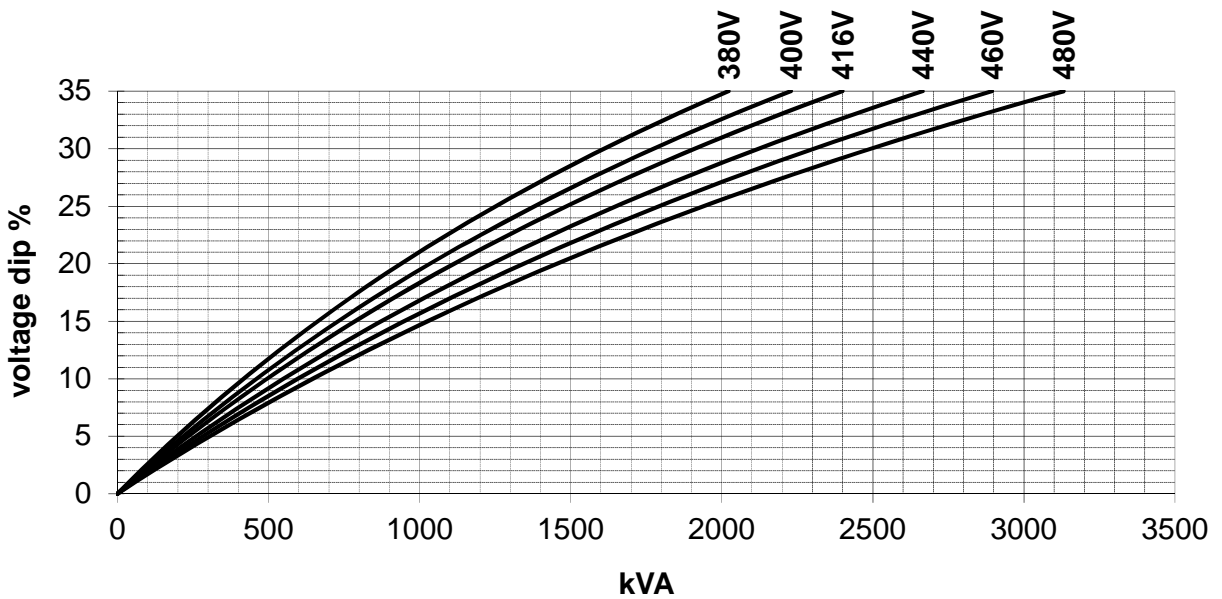
LOCKED ROTOR MOTOR STARTING CURVES

Power factor 0.6

50 Hz AREP / PMG



60 Hz AREP / PMG



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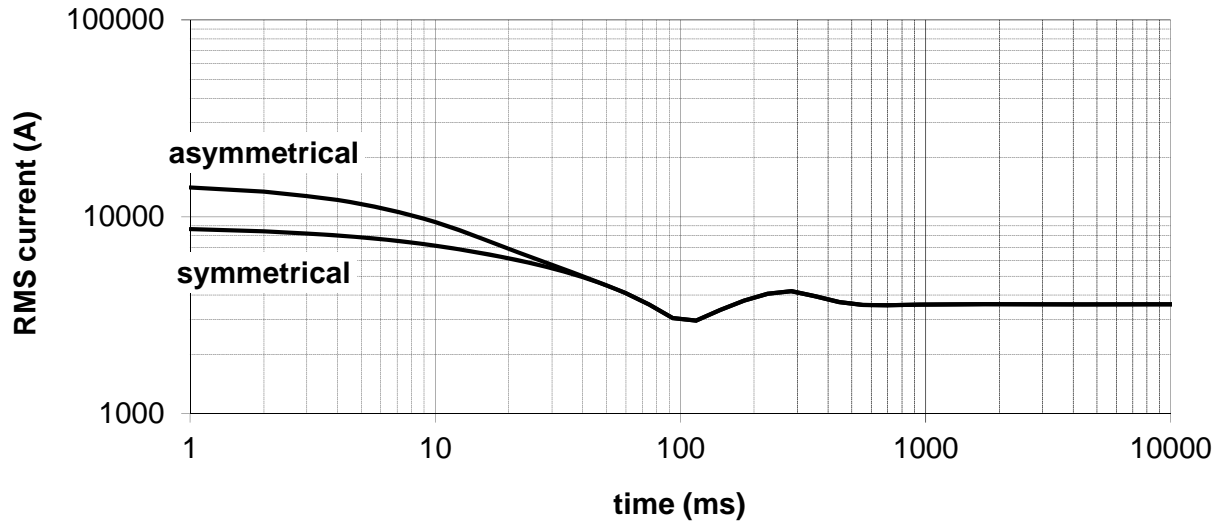
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THREE-PHASE SHORT-CIRCUIT DECREMENT CURVES

No-load excitation at rated speed

400V 50Hz, 480V 60Hz

Star



Multiplication Factors

50Hz Voltages

380 400 415 440

Multiplication Factor

0.95 1.00 1.04 1.10

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

60Hz Voltages

380 400 416 440 460 480

Multiplication Factor

0.79 0.83 0.87 0.92 0.96 1.00

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

Winding Connection

Star Delta

Multiplication Factor

1.00 1.73

Apply factor to the complete curve

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