FRAME 7224J WINDING 6S

MODELS LL7224J / LL7234J

REF: F7204JW6S-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

Line voltage on no load or balanced linear rated load

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		**50Hz / 1500rpm**				**60Hz / 1800rpm**					
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 H rise BR	**125/40**	**kVA**	**735**	**740**	**735**	**635**	**735**	**770**	**805**	**850**	**890**	**925**
		kW	*588*	*592*	*588*	*508*	*588*	*616*	*644*	*680*	*712*	*740*
Class H rise PR	**150/40**	**kVA**	**779**	**784**	**779**	**673**	**779**	**816**	**853**	**901**	**943**	**981**
		kW	*623*	*628*	*623*	*538*	*623*	*653*	*683*	*721*	*755*	*784*
Class H rise PR	**163/27**	**kVA**	**810**	**815**	**810**	**700**	**810**	**850**	**885**	**935**	**980**	**1020**
		kW	*648*	*652*	*648*	*560*	*648*	*680*	*708*	*748*	*784*	*816*
Class F rise BR	**105/40**	**kVA**	**669**	**673**	**669**	**578**	**669**	**701**	**733**	**774**	**810**	**842**
		kW	*535*	*539*	*535*	*462*	*535*	*561*	*586*	*619*	*648*	*673*

EFFICIENCIES

Power factor 0.8

110%	Class H BR	%	94.3	94.5	94.5	94.6	93.9	94.1	94.2	94.4	94.5	94.6
100%	Class H BR	%	94.5	94.7	94.7	94.7	94.1	94.3	94.4	94.6	94.7	94.7
75%	Class H BR	%	95.0	95.1	95.0	94.7	94.5	94.7	94.8	94.9	94.9	95.0
50%	Class H BR	%	95.1	95.0	94.9	94.0	94.4	94.5	94.6	94.7	94.7	94.7
25%	Class H BR	%	93.6	93.3	92.8	90.8	92.2	92.3	92.4	92.4	92.4	92.3

CHARACTERISTIC PARAMETERS

Reactance base class H BR rating

K_c	Short-circuit ratio		0.37	0.41	0.45	0.58	0.26	0.28	0.30	0.33	0.36	0.39
X_d	D-Axis synchronous reactance (unsaturated)	pu	3.21	2.92	2.69	2.07	3.86	3.65	3.52	3.33	3.19	3.04
X'_d	D-Axis transient reactance (saturated)	pu	0.16	0.14	0.13	0.10	0.19	0.18	0.17	0.16	0.16	0.15
X''_d	D-Axis sub-transient reactance (saturated)	pu	0.127	0.115	0.106	0.082	0.152	0.144	0.139	0.131	0.126	0.120
X_q	Q-Axis synchronous reactance (unsaturated)	pu	1.93	1.75	1.62	1.24	2.31	2.19	2.11	2.00	1.91	1.82
X''_q	Q-Axis sub-transient reactance (saturated)	pu	0.143	0.130	0.120	0.092	0.172	0.163	0.157	0.148	0.142	0.136
X_2	Negative-sequence reactance (saturated)	pu	0.135	0.123	0.113	0.087	0.162	0.153	0.148	0.140	0.134	0.128
X_0	Zero-sequence reactance (independent)	pu	0.003	0.003	0.003	0.002	0.004	0.003	0.003	0.003	0.003	0.003
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		2028				2028				
T_a	Armature time constant	ms		15				15				
T_r	Voltage recovery time	ms		< 3000				< 3000				

EXCITATION VOLTAGE AND CURRENT

No load excitation voltage	V	15.8	17.8	19.9	24.5	11.7	12.5	13.3	14.7	15.9	17.7
No load excitation current	A	1.00	1.13	1.26	1.55	0.74	0.79	0.84	0.93	1.01	1.12
Class H BR excitation voltage	V	60.9	61.7	62.8	60.6	55.1	55.7	57.0	58.6	60.5	63.0
Class H BR excitation current	A	3.86	3.91	3.98	3.84	3.49	3.53	3.61	3.71	3.83	3.99

WINDING RESISTANCE

At 20 °C

Stator line-to-line (series star)	Ω	0.0030		
Main field	Ω	0.37	Exciter field	Ω 15.79

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

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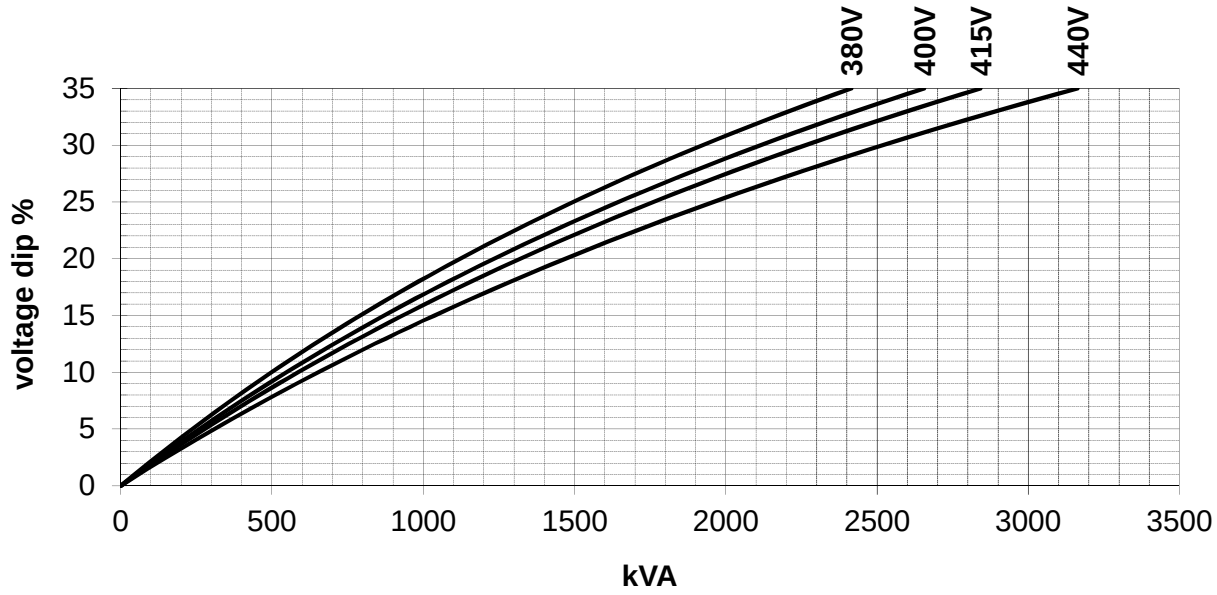
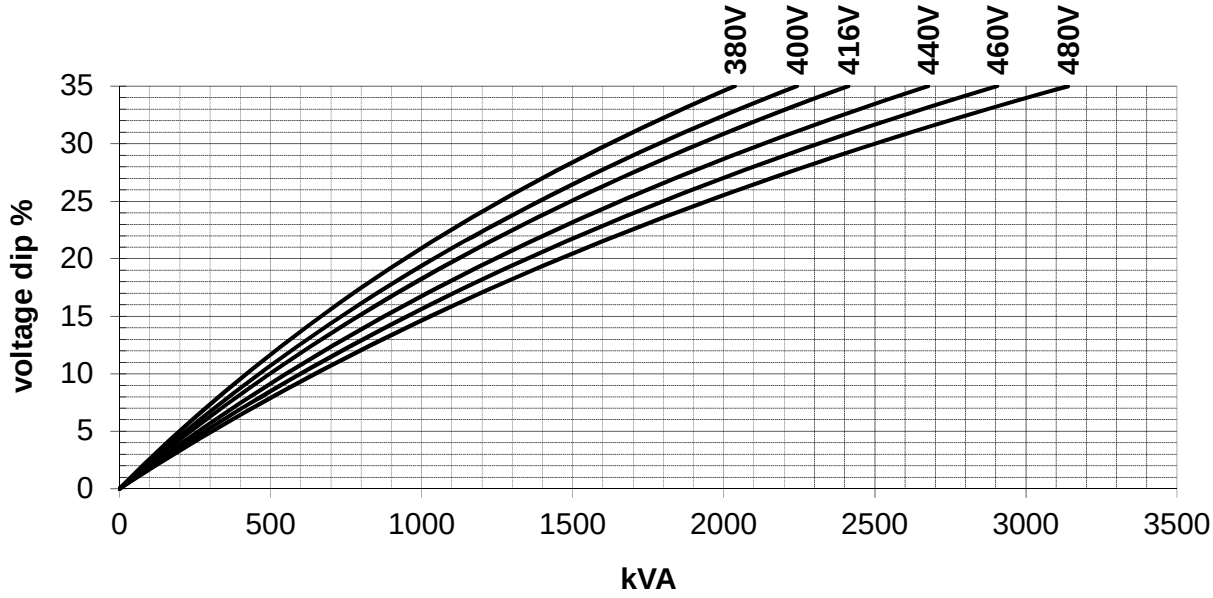
LOCKED ROTOR MOTOR STARTING CURVES

Power factor 0.6

50 Hz AREP / PMG



60 Hz AREP / PMG



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

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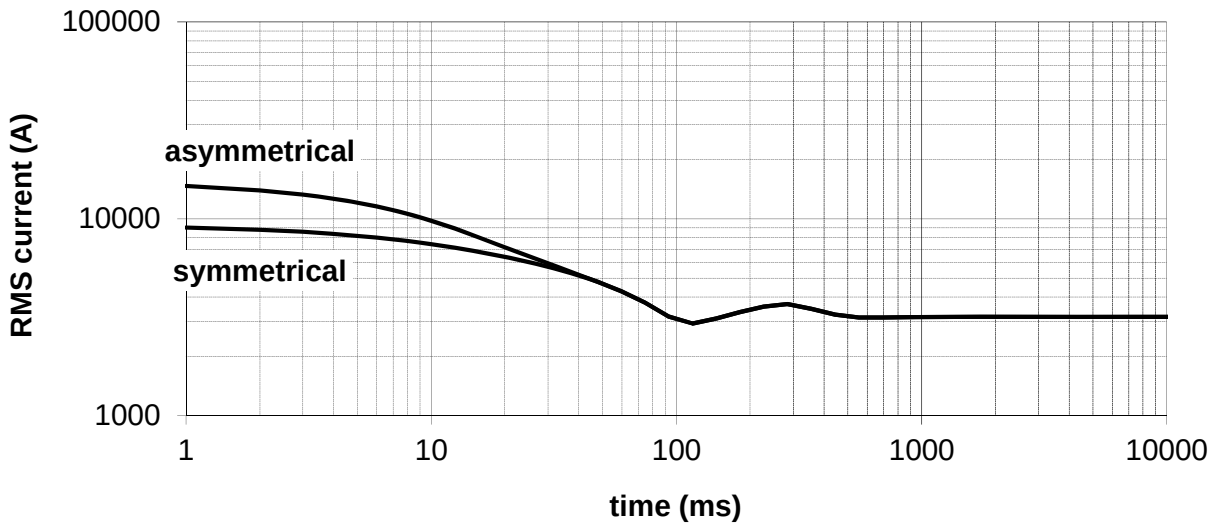
THREE-PHASE SHORT-CIRCUIT DECREMENT CURVES

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

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