

# FRAME 1114D

# WINDING 6



**MODELS** LL1114D/LL1124D

REF: F1114DW6-1 FEB 2016

WINDING DETAILS			
Code	6	Insulation class	H
Phase	3	Leads	12
Pole number	4	Pitch	2/3

MECHANICAL DETAILS			
Standard protection			IP23
Overspeed		rpm	2250
Air flow 50Hz/60Hz		m <sup>3</sup> /s	0.06/0.072

EXCITATION DETAILS			
Excitation system	<b>SHUNT</b>	<b>AREP</b>	
AVR model	R220	R438	
Sustained short-circuit current	-	300:10s	
Steady state voltage regulation	±0.5%	±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 <i>No overvoltage tolerance for 440V 50Hz excitation level</i>											
Frequency / speed		50Hz / 1500rpm					60Hz / 1800rpm				
Series star	V	380	400	415	440	380	400	416	440	460	480
Series delta	V	220	230	240		220	230	240			
Parallel star	V		200	208	220		200	208	220	230	240

RATING <i>Power factor 0.8, Altitude &lt;=1000m</i>												
Class	Rating	kVA	13.0	13.0	13.0	11.5	15.8	16.0	16.3	16.3	16.3	16.3
Class H rise BR	125/40	kVA	13.0	13.0	13.0	11.5	15.8	16.0	16.3	16.3	16.3	16.3
		kW	10.4	10.4	10.4	9.2	12.6	12.8	13.0	13.0	13.0	13.0
Class H rise PR	150/40	kVA	13.8	13.8	13.8	12.2	16.7	17.0	17.2	17.2	17.2	17.2
		kW	11.0	11.0	11.0	9.8	13.4	13.6	13.8	13.8	13.8	13.8
Class H rise PR	163/27	kVA	14.3	14.3	14.3	12.7	17.4	17.6	17.9	17.9	17.9	17.9
		kW	11.4	11.4	11.4	10.1	13.9	14.1	14.3	14.3	14.3	14.3
Class F rise BR	105/40	kVA	11.8	11.8	11.8	10.5	14.4	14.6	14.8	14.8	14.8	14.8
		kW	9.5	9.5	9.5	8.4	11.5	11.6	11.8	11.8	11.8	11.8

EFFICIENCIES <i>Power factor 0.8</i>												
110%	Class H BR	%	82.4	82.5	82.3	81.9	81.5	82.4	82.7	83.5	83.8	83.8
100%	Class H BR	%	83.2	83.3	83.0	82.5	82.5	83.3	83.6	84.2	84.4	84.4
75%	Class H BR	%	85.0	84.8	84.4	83.1	84.6	85.2	85.3	85.7	85.7	85.5
50%	Class H BR	%	85.7	85.2	84.6	82.3	86.0	86.2	86.3	86.2	86.0	85.5
25%	Class H BR	%	82.9	81.7	80.5	76.2	84.3	84.0	83.8	83.0	82.3	81.3

CHARACTERISTIC PARAMETERS <i>Reactance base class H BR rating</i>												
K <sub>c</sub>	Short-circuit ratio		0.47	0.56	0.63	0.90	0.30	0.33	0.35	0.41	0.47	0.53
X <sub>d</sub>	D-Axis synchronous reactance (unsaturated)	pu	2.40	2.17	2.02	1.59	3.51	3.20	3.01	2.69	2.46	2.26
X' <sub>d</sub>	D-Axis transient reactance (saturated)	pu	0.25	0.22	0.21	0.16	0.36	0.33	0.31	0.28	0.25	0.23
X'' <sub>d</sub>	D-Axis sub-transient reactance (saturated)	pu	0.124	0.112	0.104	0.082	0.181	0.166	0.155	0.139	0.127	0.117
X <sub>q</sub>	Q-Axis synchronous reactance (unsaturated)	pu	1.44	1.30	1.21	0.95	2.10	1.92	1.80	1.61	1.47	1.35
X'' <sub>q</sub>	Q-Axis sub-transient reactance (saturated)	pu	0.234	0.211	0.196	0.154	0.341	0.312	0.293	0.262	0.240	0.220
X <sub>2</sub>	Negative-sequence reactance (saturated)	pu	0.179	0.162	0.150	0.118	0.261	0.239	0.224	0.200	0.183	0.168
X <sub>0</sub>	Zero-sequence reactance (independent)	pu	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
T' <sub>d</sub>	D-Axis transient time constant	ms		74						74		
T'' <sub>d</sub>	D-Axis sub-transient time constant	ms		7.4						7.4		
T' <sub>do</sub>	D-Axis open-circuit time constant	ms		716						716		
T <sub>a</sub>	Armature time constant	ms		11.1						11.1		
T <sub>r</sub>	Voltage recovery time	ms		< 300						< 300		

EXCITATION VOLTAGE AND CURRENT											
No load excitation voltage	V	9.5	10.6	11.5	13.8	7.2	7.7	8.1	8.8	9.7	10.6
No load excitation current	A	0.77	0.86	0.94	1.12	0.59	0.63	0.66	0.72	0.79	0.86
Class H BR excitation voltage	V	30.8	31.5	32.6	32.8	31.9	31.5	31.7	31.5	31.7	32.4
Class H BR excitation current	A	2.50	2.56	2.65	2.67	2.59	2.56	2.58	2.56	2.58	2.63

WINDING RESISTANCE <i>At 20°C</i>												
Stator line-to-line (series star)	Ω	1.310								Exciter field - Shunt	Ω	12.3
Main field	Ω	2.96								Exciter field - AREP	Ω	6.6

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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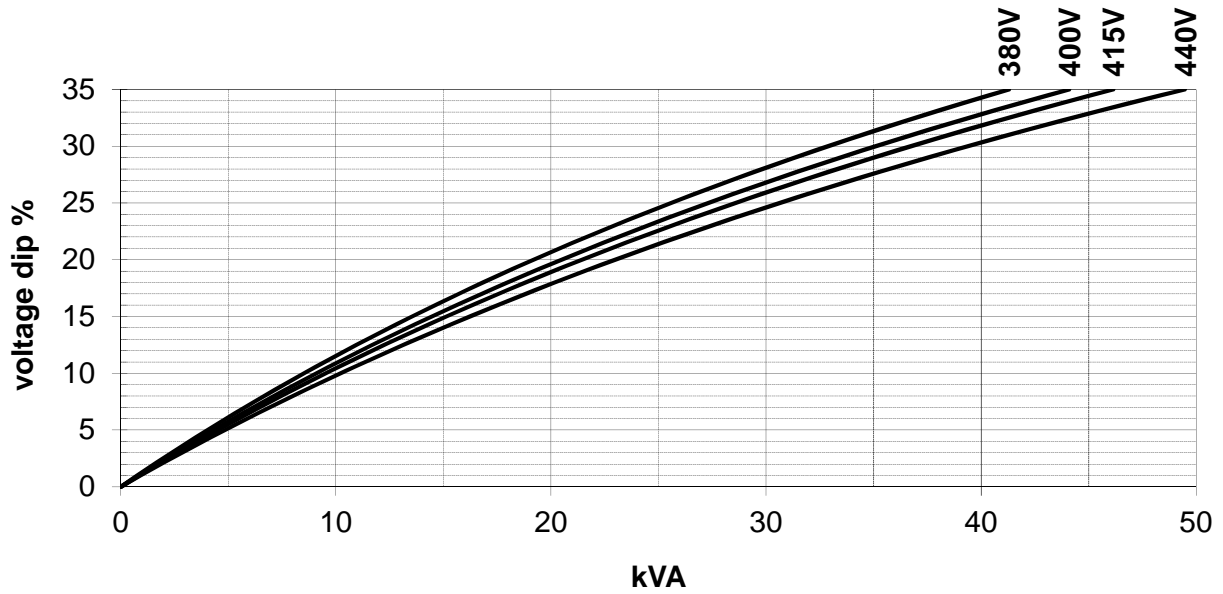
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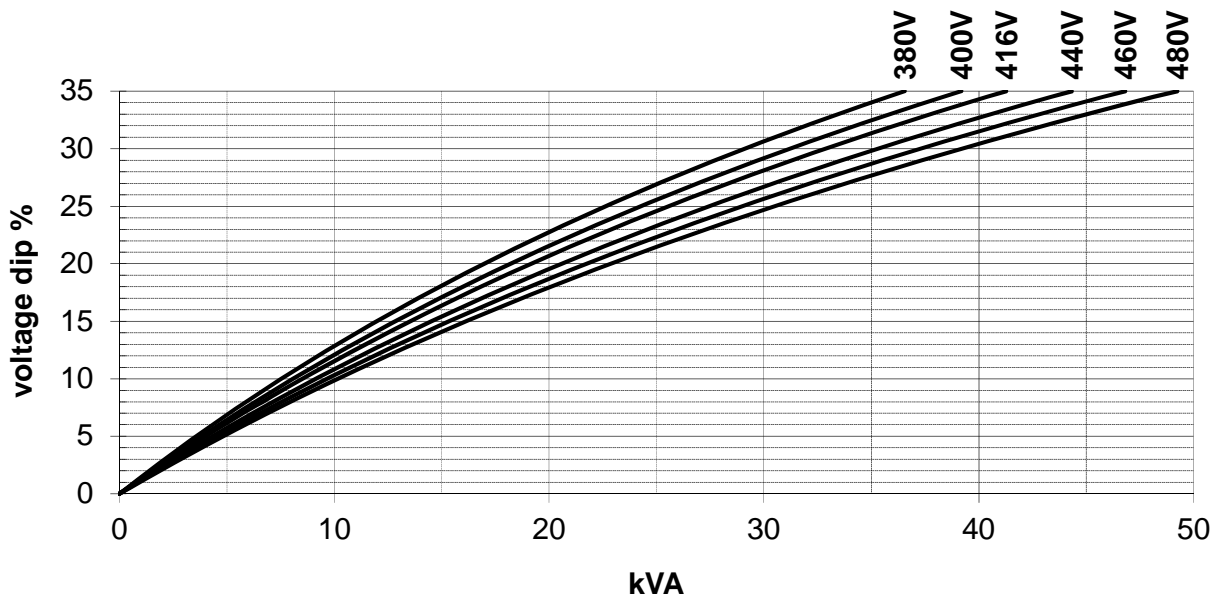
**LOCKED ROTOR MOTOR STARTING CURVES**

*Power factor 0.6*

**50 Hz SHUNT/AREP**



**60 Hz SHUNT/AREP**



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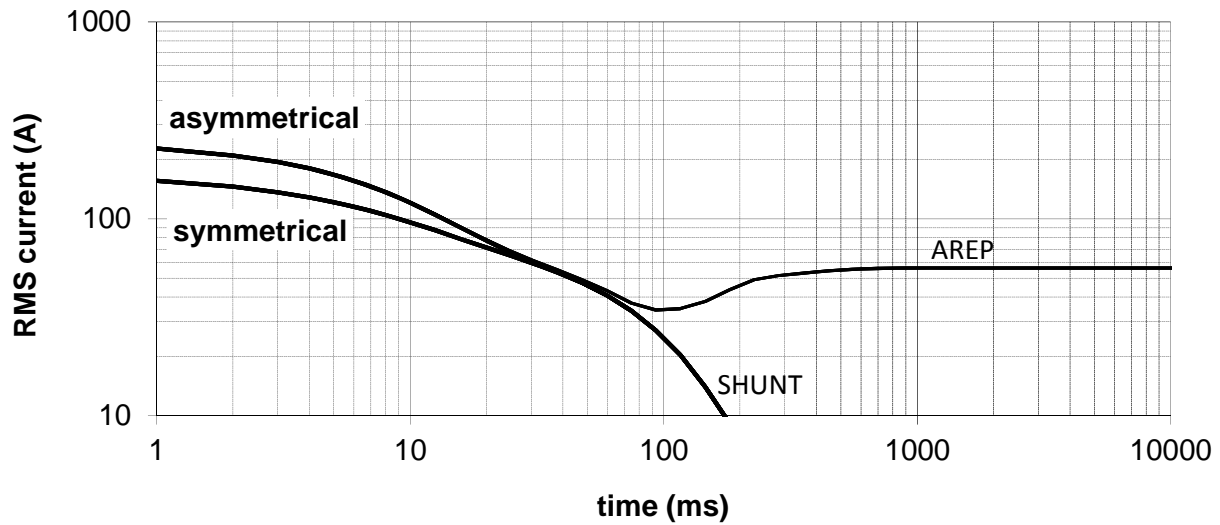
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**THREE-PHASE SHORT-CIRCUIT DECREMENT CURVES**

*No-load excitation at rated speed*

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

*Series 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	Series Star	Parallel Star	Series Delta
Multiplication Factor	1.00	2.00	1.73

*Apply factor to the complete curve*

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