

**FRAME FGL30020 WINDING 6S**



**MODELS FGL30020**

REF: FGL30020W6S-1 SEP 2020

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

MECHANICAL DETAILS		
Standard protection		IP23
Overspeed	rpm	2250
Air flow 50Hz/60Hz	m <sup>3</sup> /s	0.25 / 0.3

EXCITATION DETAILS			
Excitation system	<b>SHUNT</b>	<b>PMG</b>	
AVR model	R120	R180	
Sustained short-circuit current	-	270%:5s	
Steady state voltage regulation	±1.0%	±1.0%	

WAVEFORM	
<i>Line voltage on no load or balanced linear rated load</i>	
Total harmonic content THC	< 2.0%
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	V	50Hz / 1500rpm				60Hz / 1800rpm					
		380	400	415	440	380	400	416	440	460	480
Star											

RATING <i>Power factor 0.8, Altitude &lt;=1000m</i>												
Class H rise BR	125/40	kVA	85	85	85	75	84	88	92	98	102	106
		kW	68	68	68	60	67	70	74	78	82	85
Class H rise PR	150/40	kVA	90	90	90	80	89	93	98	104	108	112
		kW	72	72	72	64	71	75	78	83	86	90
Class H rise PR	163/27	kVA	94	94	94	83	92	97	101	108	112	117
		kW	75	75	75	66	74	77	81	86	90	93
Class F rise BR	105/40	kVA	77	77	77	68	76	80	84	89	93	97
		kW	62	62	62	55	61	64	67	71	74	77

EFFICIENCIES <i>Power factor 0.8</i>												
110%	Class H BR	%	89.4	89.3	88.8	87.4	90.2	90.4	90.5	90.5	90.4	90.1
100%	Class H BR	%	90.0	89.8	89.3	87.7	90.6	90.8	90.9	90.9	90.8	90.4
75%	Class H BR	%	91.1	90.7	90.0	87.8	91.5	91.6	91.7	91.6	91.4	91.0
50%	Class H BR	%	91.5	90.8	89.9	86.6	91.7	91.7	91.7	91.6	91.2	90.7
25%	Class H BR	%	89.5	88.1	86.5	80.8	89.3	89.2	89.1	88.7	88.1	87.2

CHARACTERISTIC PARAMETERS <i>Reactance base class H BR rating</i>												
K <sub>c</sub>	Short-circuit ratio		0.35	0.46	0.57	0.97	0.23	0.26	0.28	0.32	0.37	0.44
X <sub>d</sub>	D-Axis synchronous reactance (unsaturated)	pu	3.97	3.58	3.33	2.61	4.70	4.45	4.30	4.09	3.90	3.72
X' <sub>d</sub>	D-Axis transient reactance (saturated)	pu	0.16	0.14	0.13	0.11	0.19	0.18	0.17	0.17	0.16	0.15
X'' <sub>d</sub>	D-Axis sub-transient reactance (saturated)	pu	0.096	0.087	0.081	0.063	0.114	0.108	0.104	0.099	0.094	0.090
X <sub>q</sub>	Q-Axis synchronous reactance (unsaturated)	pu	2.02	1.83	1.70	1.33	2.40	2.27	2.19	2.09	1.99	1.90
X'' <sub>q</sub>	Q-Axis sub-transient reactance (saturated)	pu	0.217	0.195	0.182	0.143	0.257	0.243	0.235	0.223	0.213	0.203
X <sub>2</sub>	Negative-sequence reactance (saturated)	pu	0.156	0.141	0.131	0.103	0.185	0.175	0.169	0.161	0.154	0.147
X <sub>0</sub>	Zero-sequence reactance (independent)	pu	0.007	0.006	0.006	0.004	0.008	0.007	0.007	0.007	0.007	0.006
T' <sub>d</sub>	D-Axis transient time constant	ms		100					100			
T'' <sub>d</sub>	D-Axis sub-transient time constant	ms		10					10			
T' <sub>do</sub>	D-Axis open-circuit time constant	ms		2475					2475			
T <sub>a</sub>	Armature time constant	ms		15					15			
T <sub>r</sub>	Voltage recovery time	ms		< 500					< 500			

EXCITATION VOLTAGE AND CURRENT											
No load excitation voltage	V	8.0	9.8	11.7	16.4	5.1	5.7	6.2	7.1	8.3	9.8
No load excitation current	A	0.69	0.84	1.00	1.41	0.44	0.49	0.53	0.61	0.71	0.84
Class H BR excitation voltage	V	34.4	36.6	39.8	44.4	27.5	28.2	29.1	31.0	33.0	36.0
Class H BR excitation current	A	2.95	3.14	3.42	3.81	2.36	2.42	2.50	2.66	2.83	3.09

WINDING RESISTANCE <i>At 20°C</i>											
Stator line-to-line (series star)	Ω	0.135									
Main field	Ω	2.07									
						Exciter field - Shunt				Ω	11.7

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.  
 Manufactured for FG Wilson by Leroy Somer - Nidec.

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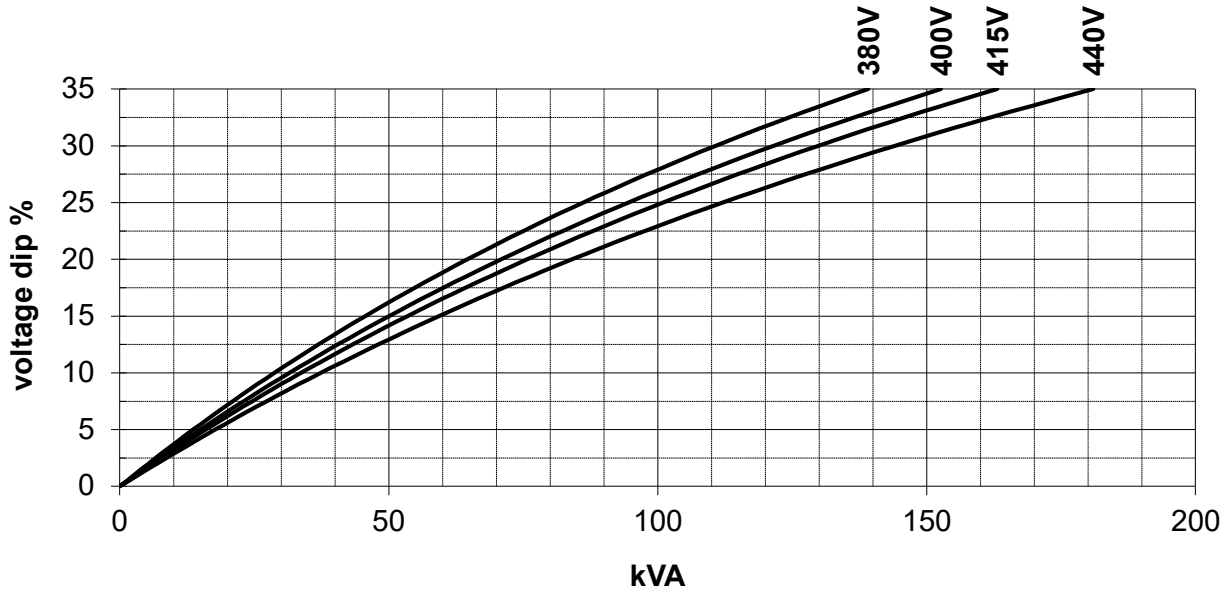
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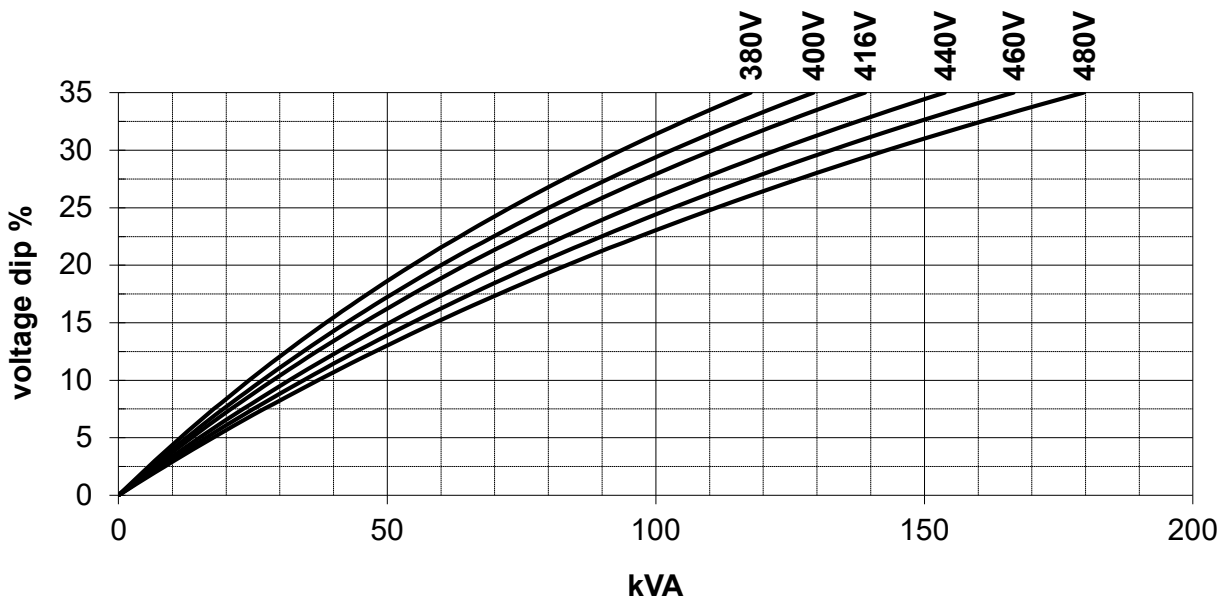
**LOCKED ROTOR MOTOR STARTING CURVES**

*Power factor 0.6*

**50 Hz SHUNT**



**60 Hz SHUNT**



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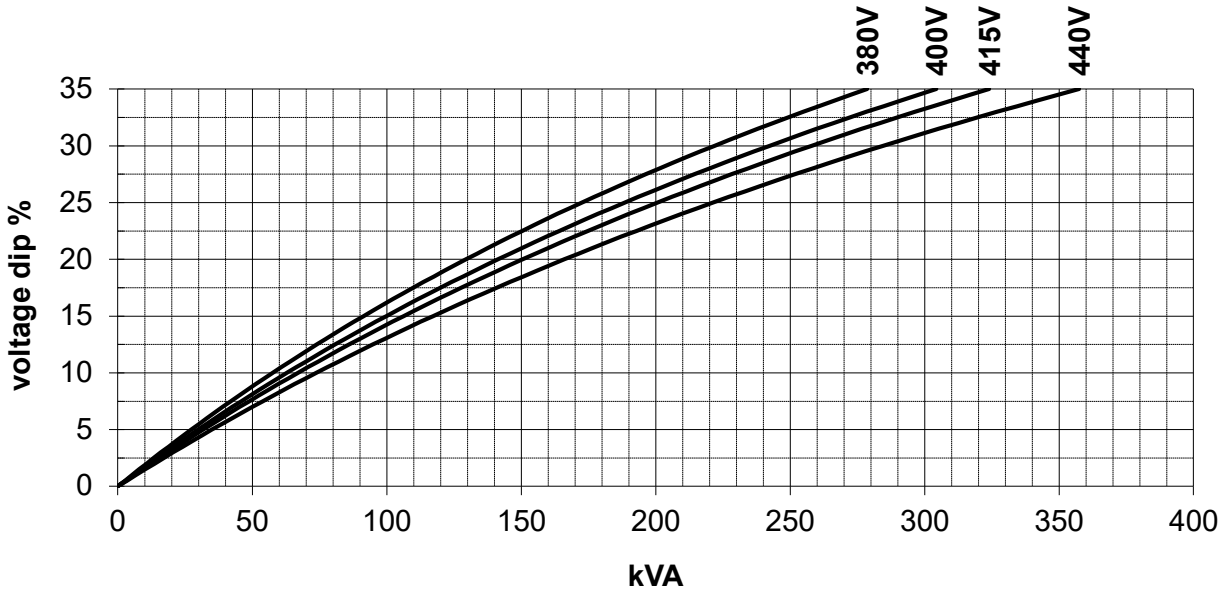
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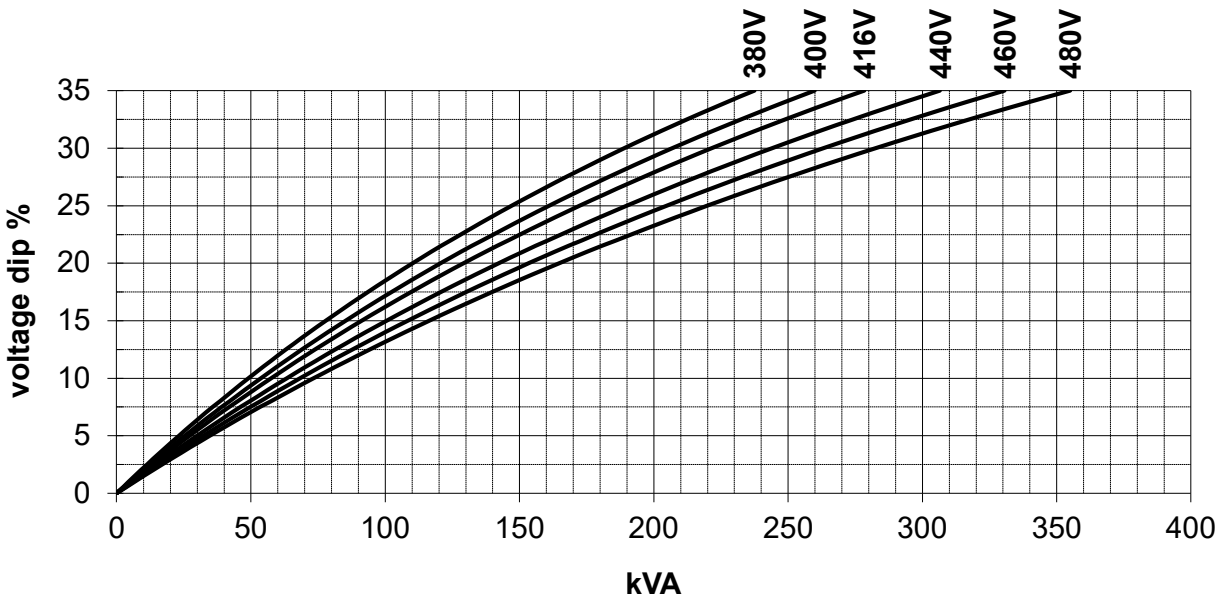
**LOCKED ROTOR MOTOR STARTING CURVES**

*Power factor 0.6*

**50 Hz PMG**



**60 Hz PMG**



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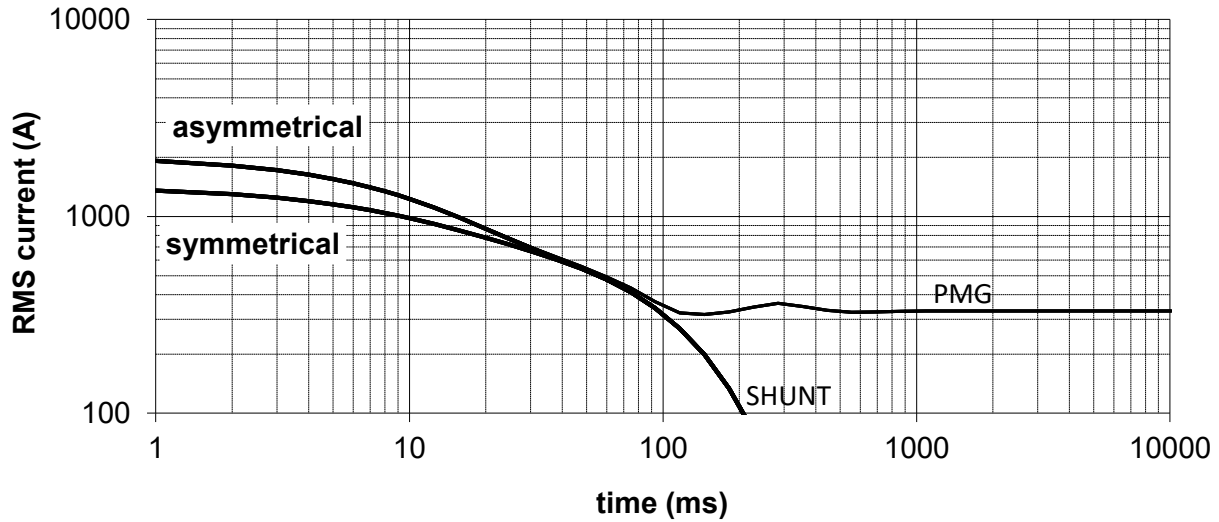
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**THREE-PHASE SHORT-CIRCUIT DECREMENT CURVES**

*No-load excitation at rated speed*

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

*Series star*



**Multiplication Factors**

<b>50Hz Voltages</b>	<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*

<b>60Hz Voltages</b>	<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*

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