

FRAME FGL20070 WINDING 6S



MODELS FGL20070

REF: FGL20070W6S-1 AUG 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 ³ /s	0.1 / 0.13

EXCITATION DETAILS			
Excitation system	SHUNT	PMG	
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		50Hz / 1500rpm				60Hz / 1800rpm					
Star	V	380	400	415	440	380	400	416	440	460	480

RATING <i>Power factor 0.8, Altitude <=1000m</i>												
Class H rise BR	125/40	kVA	48	50	50	43	52	54	57	60	63	63
		kW	38	40	40	34	41	43	45	48	50	50
Class H rise PR	150/40	kVA	50	53	53	46	55	57	60	63	66	66
		kW	40	42	42	36	44	46	48	50	53	53
Class H rise PR	163/27	kVA	52	55	55	47	57	59	62	66	69	69
		kW	42	44	44	38	45	48	50	52	55	55
Class F rise BR	105/40	kVA	43	46	46	39	47	49	51	54	57	57
		kW	35	36	36	31	38	39	41	43	46	46

EFFICIENCIES <i>Power factor 0.8</i>												
110%	Class H BR	%	89.0	89.0	89.0	89.4	88.6	89.0	89.1	89.4	89.4	89.7
100%	Class H BR	%	89.5	89.5	89.5	89.6	89.2	89.5	89.7	89.9	89.9	90.1
75%	Class H BR	%	90.7	90.6	90.4	89.8	90.5	90.8	90.8	91.0	90.9	90.9
50%	Class H BR	%	91.2	90.9	90.6	89.0	91.3	91.4	91.4	91.4	91.2	91.0
25%	Class H BR	%	89.4	88.7	87.8	84.2	89.8	89.7	89.6	89.3	88.9	88.1

CHARACTERISTIC PARAMETERS <i>Reactance base class H BR rating</i>												
K _c	Short-circuit ratio		0.37	0.40	0.46	0.68	0.26	0.28	0.29	0.32	0.34	0.39
X _d	D-Axis synchronous reactance (unsaturated)	pu	2.99	2.84	2.64	2.02	3.89	3.69	3.57	3.36	3.23	2.96
X' _d	D-Axis transient reactance (saturated)	pu	0.15	0.14	0.13	0.10	0.19	0.18	0.18	0.17	0.16	0.15
X'' _d	D-Axis sub-transient reactance (saturated)	pu	0.076	0.072	0.067	0.051	0.098	0.093	0.090	0.085	0.082	0.075
X _q	Q-Axis synchronous reactance (unsaturated)	pu	1.51	1.44	1.34	1.02	1.97	1.86	1.80	1.70	1.63	1.50
X'' _q	Q-Axis sub-transient reactance (saturated)	pu	0.105	0.100	0.093	0.071	0.137	0.130	0.125	0.118	0.113	0.104
X ₂	Negative-sequence reactance (saturated)	pu	0.092	0.088	0.081	0.062	0.120	0.113	0.110	0.103	0.099	0.091
X ₀	Zero-sequence reactance (independent)	pu	0.006	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		50						50		
T'' _d	D-Axis sub-transient time constant	ms		5						5		
T' _{do}	D-Axis open-circuit time constant	ms		999						999		
T _a	Armature time constant	ms		8						8		
T _r	Voltage recovery time	ms		< 500						< 500		

EXCITATION VOLTAGE AND CURRENT											
No load excitation voltage	V	7.8	9.4	9.4	12.5	6.3	6.3	7.8	7.8	7.8	9.4
No load excitation current	A	0.50	0.60	0.60	0.80	0.40	0.40	0.50	0.50	0.50	0.60
Class H BR excitation voltage	V	34.4	37.5	37.5	34.4	32.8	32.8	34.4	34.4	36.0	36.0
Class H BR excitation current	A	2.20	2.40	2.40	2.20	2.10	2.10	2.20	2.20	2.30	2.30

WINDING RESISTANCE <i>At 20°C</i>					
Stator line-to-line (series star)	Ω	0.227	Exciter field - Shunt	Ω	15.6
Main field	Ω	0.87			

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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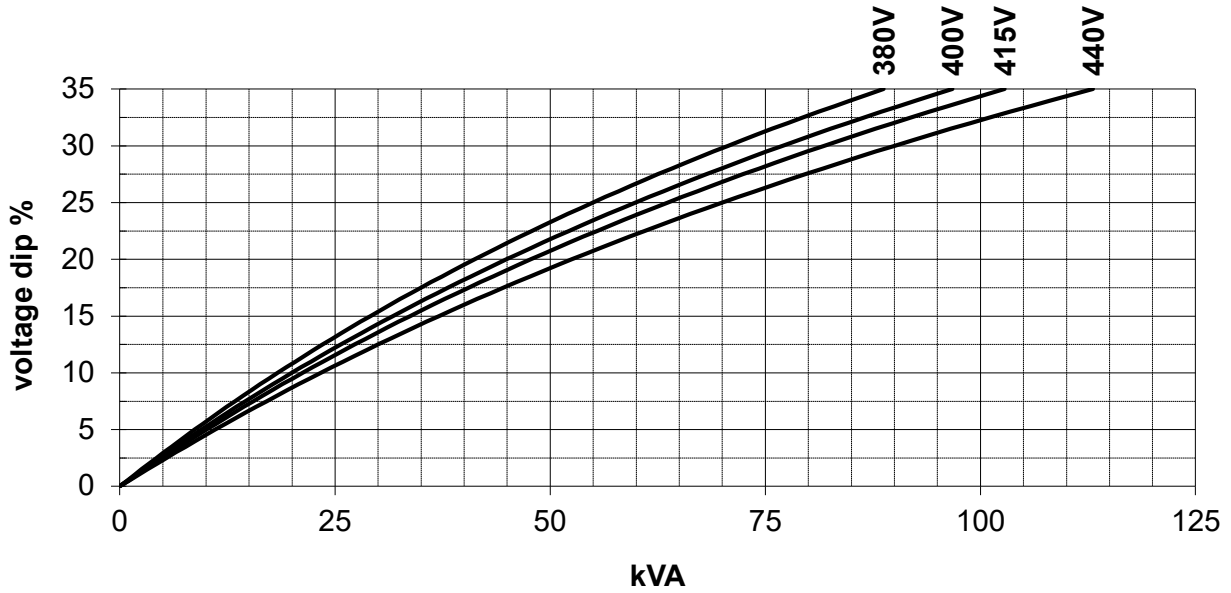
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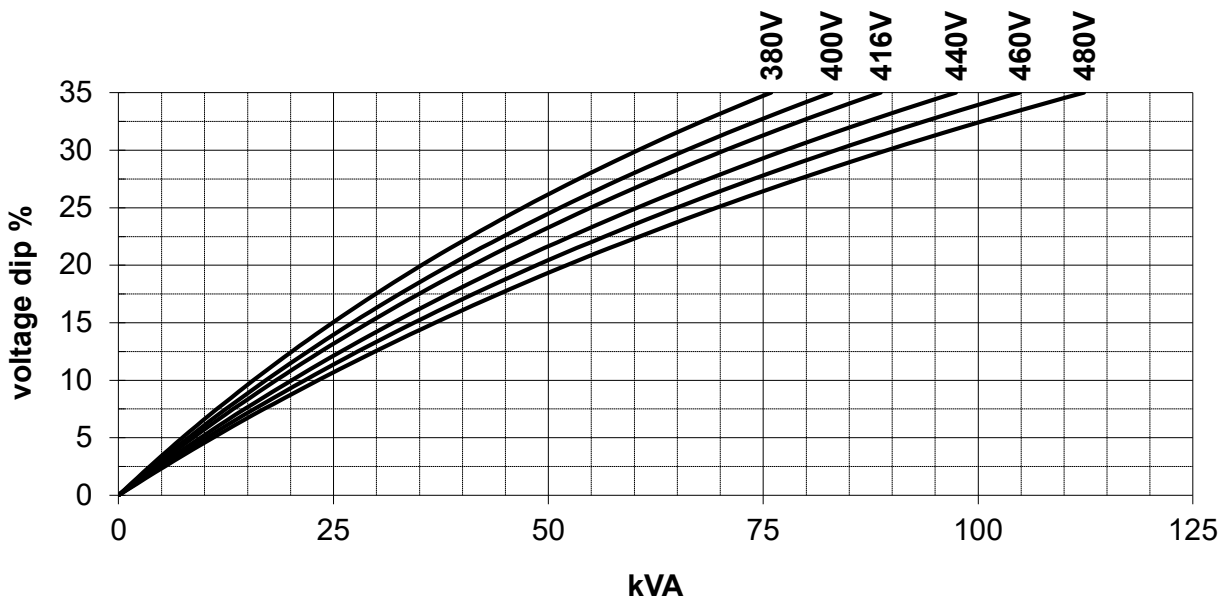
LOCKED ROTOR MOTOR STARTING CURVES

Power factor 0.6

50 Hz SHUNT



60 Hz SHUNT



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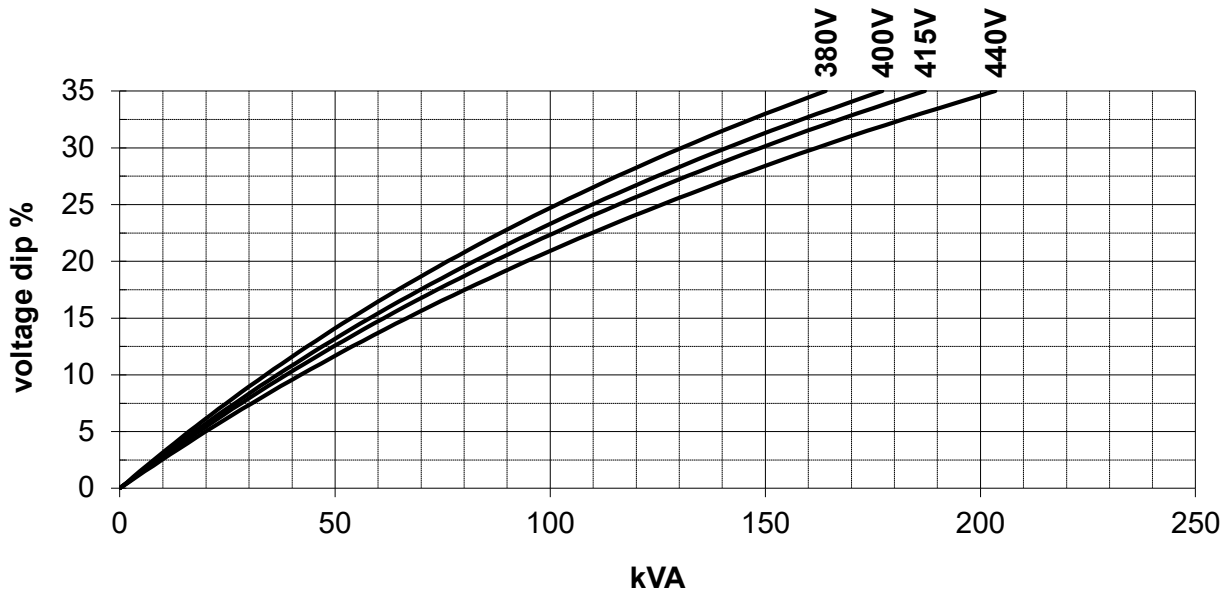
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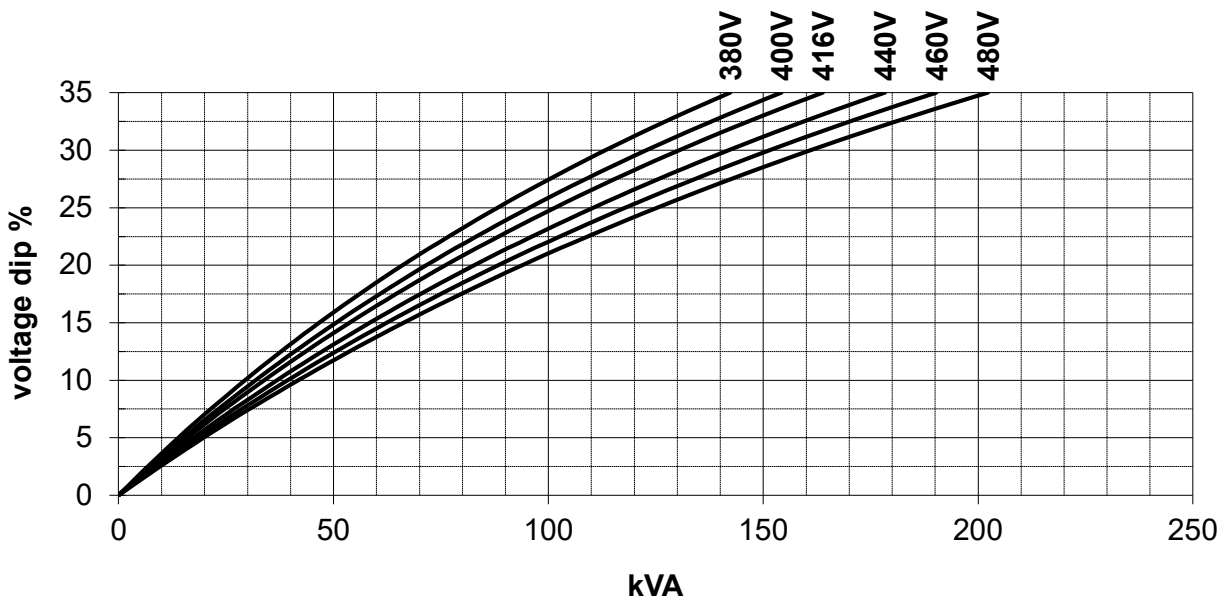
LOCKED ROTOR MOTOR STARTING CURVES

Power factor 0.6

50 Hz PMG



60 Hz PMG



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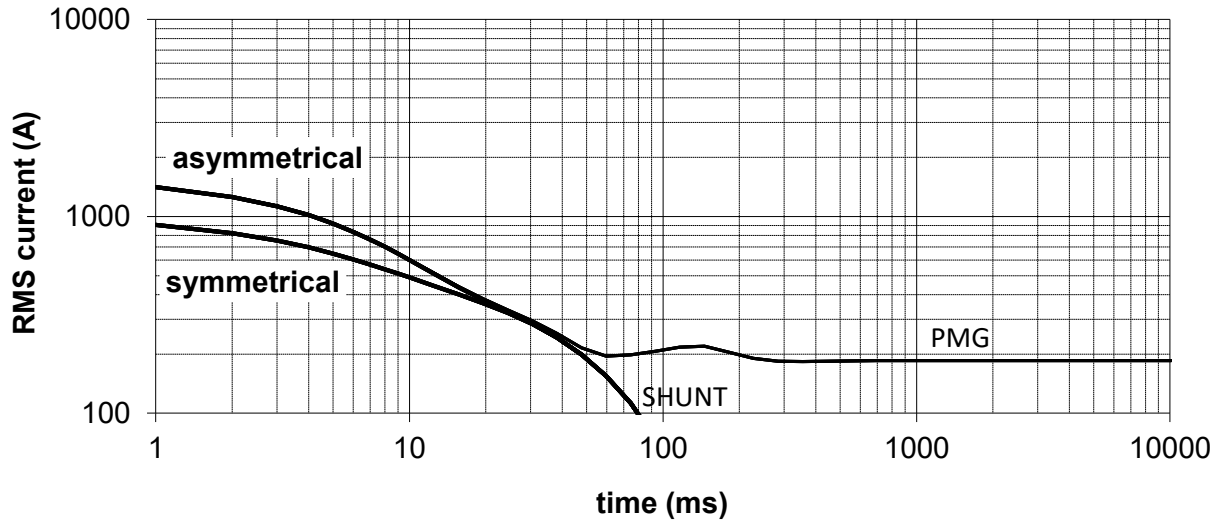
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THREE-PHASE SHORT-CIRCUIT DECREMENT CURVES

No-load excitation at rated speed

400V 50Hz, 480V 60Hz

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

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