

FRAME

FGL50070

WINDING

6



MODELS

FGL50070

REF: FGL50070W6-2 DEC 2020

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 ³ /s 0.48 / 0.50

EXCITATION DETAILS

	SHUNT	PMG
Excitation system	R150	R180
AVR model	-	270%:5s
Sustained short-circuit current	-	±0.5%
Steady state voltage regulation	±0.8%	±0.5%

WAVEFORM

<i>Line voltage on no load</i>	
Total harmonic content THC	< 2.5%
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					
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

Power factor 0.8, Altitude <=1000m

Class H rise BR	125/40	kVA	350	365	365	347	347	365	380	402	420	438
		kW	280	292	292	278	277	292	304	321	336	350
Class H rise PR	150/40	kVA	371	387	387	368	368	387	402	426	445	464
		kW	297	310	310	294	294	310	322	340	356	371
Class H rise PR	163/27	kVA	385	402	402	382	382	402	418	442	462	482
		kW	308	321	321	305	305	321	334	353	369	385
Class F rise BR	105/40	kVA	319	332	332	316	316	332	345	365	382	399
		kW	255	266	266	253	252	266	276	292	306	319

EFFICIENCIES

Power factor 0.8

110% Class H BR	%	93.0	93.1	93.2	93.3	92.9	93.1	93.3	93.4	93.5	93.6
100% Class H BR	%	93.4	93.4	93.5	93.4	93.2	93.4	93.5	93.7	93.8	93.8
75% Class H BR	%	94.0	94.0	94.0	93.6	93.9	94.0	94.1	94.2	94.2	94.2
50% Class H BR	%	94.3	94.2	93.9	93.1	94.0	94.1	94.1	94.1	94.1	94.0
25% Class H BR	%	92.9	92.5	91.9	90.1	92.2	92.2	92.2	92.0	91.9	91.6

CHARACTERISTIC PARAMETERS

Reactance base class H BR rating

K _c	Short-circuit ratio		0.36	0.41	0.48	0.66	0.26	0.29	0.30	0.34	0.37	0.42
X _d	D-Axis synchronous reactance (unsaturated)	pu	3.23	3.04	2.82	2.39	3.84	3.64	3.50	3.31	3.17	3.04
X' _d	D-Axis transient reactance (saturated)	pu	0.15	0.15	0.13	0.11	0.18	0.17	0.17	0.16	0.15	0.15
X'' _d	D-Axis sub-transient reactance (saturated)	pu	0.123	0.116	0.108	0.091	0.147	0.139	0.134	0.127	0.121	0.116
X _q	Q-Axis synchronous reactance (unsaturated)	pu	1.65	1.55	1.44	1.22	1.96	1.86	1.79	1.69	1.62	1.55
X'' _q	Q-Axis sub-transient reactance (saturated)	pu	0.151	0.142	0.132	0.112	0.180	0.171	0.164	0.155	0.148	0.142
X ₂	Negative-sequence reactance (saturated)	pu	0.137	0.129	0.120	0.101	0.163	0.155	0.149	0.141	0.135	0.129
X ₀	Zero-sequence reactance (independent)	pu	0.006	0.006	0.006	0.005	0.008	0.007	0.007	0.007	0.006	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		2094						2094		
T _a	Armature time constant	ms		15						15		
T _r	Voltage recovery time	ms		< 500						< 500		

EXCITATION VOLTAGE AND CURRENT

No load excitation voltage	V	11.1	12.6	14.0	17.3	8.1	8.8	9.3	10.3	11.3	12.6
No load excitation current	A	0.94	1.06	1.18	1.46	0.68	0.74	0.78	0.87	0.95	1.06
Class H BR excitation voltage	V	41.5	43.1	43.6	44.4	37.4	38.0	38.5	39.6	40.7	42.2
Class H BR excitation current	A	3.50	3.63	3.68	3.74	3.15	3.20	3.25	3.34	3.43	3.56

WINDING RESISTANCE

At 20°C

Stator line-to-line (series star)	Ω	0.018	Exciter field - Shunt				Ω	11.9
Main field	Ω	0.76						

According to: IEC 60034, NEMA MG 1.32-33, ISO 8528-3, CSA C22.2, VDE0875G/N and EN55011

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.

FRAME FGL50070 WINDING 6



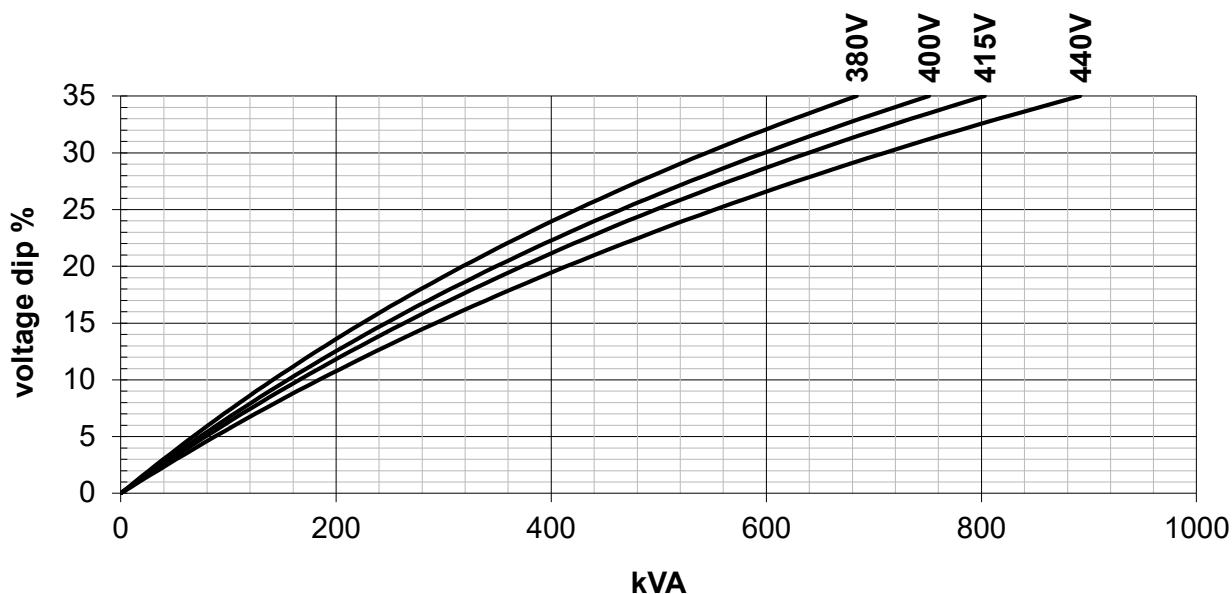
MODELS FGL50070

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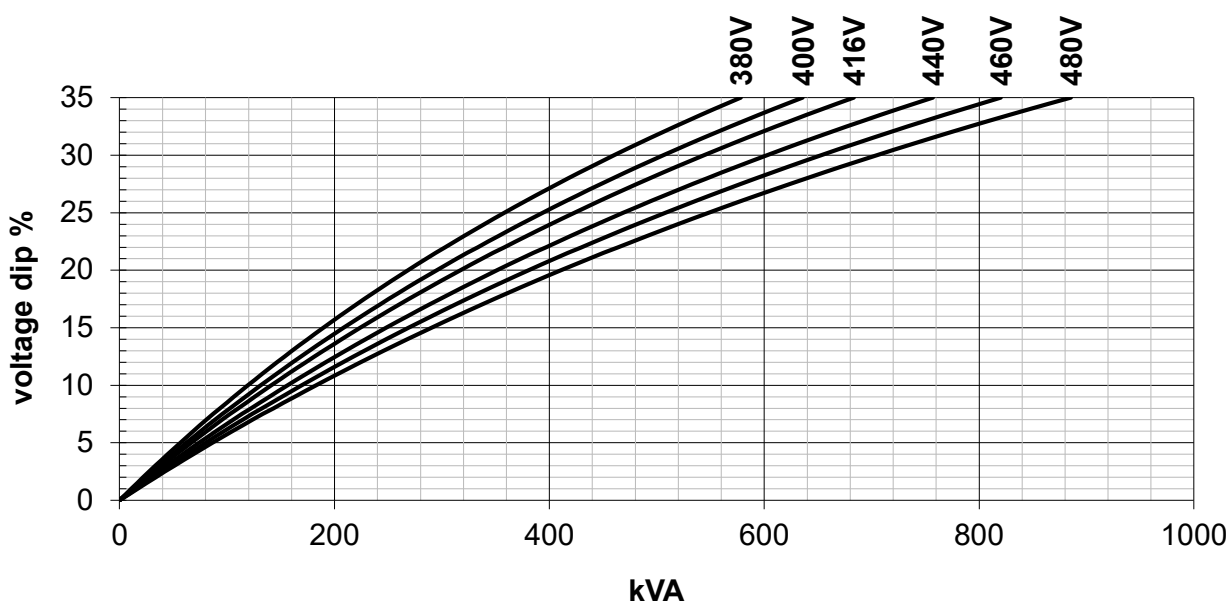
LOCKED ROTOR MOTOR STARTING CURVES

Power factor 0.6

50 Hz SHUNT



60 Hz SHUNT



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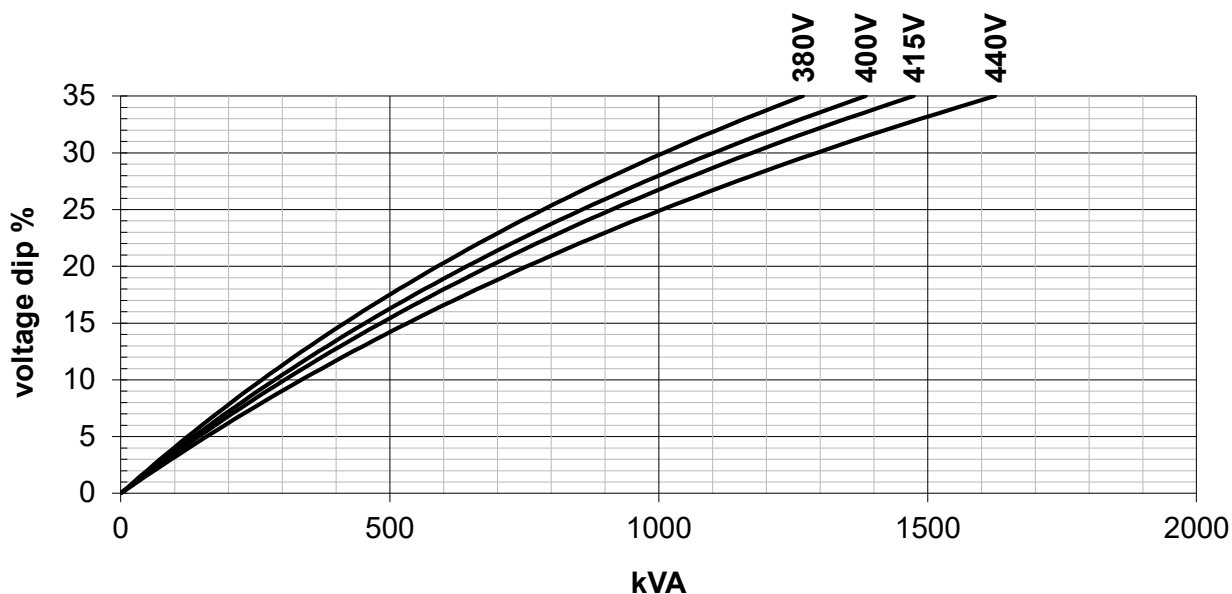
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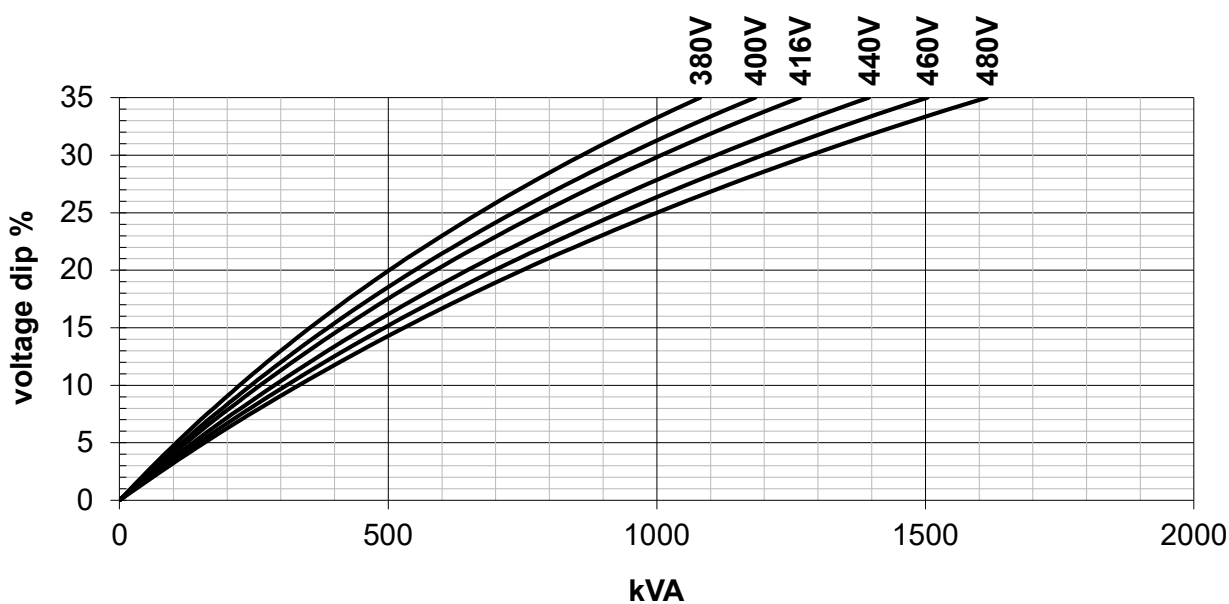
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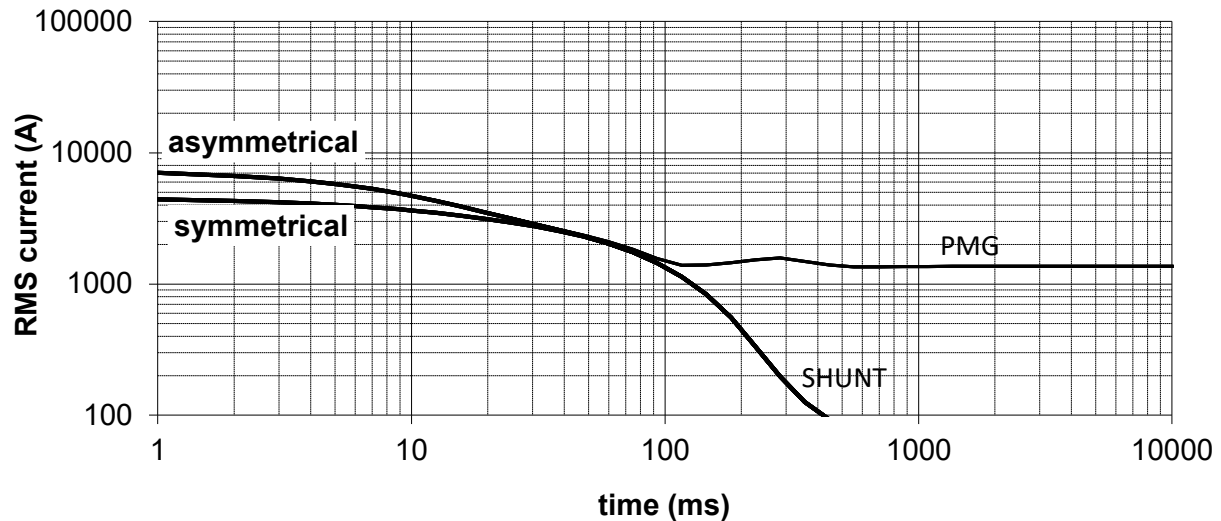
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THREE-PHASE SHORT-CIRCUIT DECREMENT CURVES

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 $2 \times T'd$, 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 $2 \times T'd$, remainder of curve unchanged

Winding Connection	Series Star	Parallel Star	Series Delta
Multiplication Factor	1.00	2.00	1.73

Apply factor to complete the curve

According to: IEC 60034, NEMA MG 1.32-33, ISO 8528-3, CSA C22.2, VDE0875G/N and EN55011

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