

MODEL**FG29A400****WINDING****R1**

REF: FG29A400R1-0 JAN 2019

WINDING DETAILS

Code	R1	Insulation class	H
Phase	3	Leads	12
Pole number	4	Pitch	2/3

MECHANICAL DETAILS

Standard protection	IP21
Overspeed	rpm 2250
Air flow 50Hz/60Hz	m ³ /s 0.25/0.30

EXCITATION DETAILS

Excitation system	SHUNT	PMG
AVR model	GRT7-TH4E	IVR
Sustained short-circuit current	-	300:10s
Steady state voltage regulation	+/- 0.5 %	+/- 0.25 %

WAVEFORM

<i>Line voltage on no load or balanced linear rated load</i>	
Total harmonic content THC	< 3 %
Telephone influence factor TIF (NEMA)	< 50 %
Telephone harmonic factor THF (IEC)	< 2 %

LINE VOLTAGE

Frequency / speed		50Hz / 1500rpm			60Hz / 1800rpm				
Series star	V	380	400	415	380	416	440	460	480
Series delta	V	220	230	240	220	240	254	266	277
Parallel star	V	190	200	208	190	208	220	230	240

RATING*Power factor 0.8, Altitude <=1000m*

Class H rise BR	125/40	kVA	475	500	500	494	538	563	588	606
		kW	380	400	400	395	430	450	470	485
Class H rise PR	150/40	kVA	523	550	550	519	564	591	618	636
		kW	418	440	440	415	451	473	494	509
Class H rise PR	163/27	kVA	546	575	575	543	591	619	646	668
		kW	437	460	460	434	473	495	517	534
Class F rise BR	105/40	kVA	428	450	450	444	484	506	529	546
		kW	342	360	360	356	387	405	423	437

EFFICIENCIES*Power factor 0.8*

110%	Class H BR	%	94.0	94.1	95.7	95.1	95.4	95.6	95.7	95.8
100%	Class H BR	%	94.4	94.5	96.0	95.4	95.7	95.8	96.0	96.1
75%	Class H BR	%	95.2	95.2	96.5	95.9	96.1	96.2	96.3	96.4
50%	Class H BR	%	94.9	95.0	96.0	95.4	95.6	95.7	95.8	95.8
25%	Class H BR	%	93.3	93.3	94.4	93.6	93.7	93.8	93.8	93.9

CHARACTERISTIC PARAMETERS*Reactance base class H BR rating*

K _{cc}	Short-circuit ratio		0.31	0.34	0.34	0.22	0.25	0.27	0.28	0.31
X _d	D-Axis synchronous reactance (unsaturated)	pu	4.06	3.86	3.58	5.07	4.60	4.30	4.11	3.90
X' _d	D-Axis transient reactance (saturated)	pu	0.14	0.13	0.12	0.17	0.16	0.15	0.14	0.13
X'' _d	D-Axis sub-transient reactance (saturated)	pu	0.125	0.118	0.110	0.156	0.142	0.132	0.126	0.120
X _q	Q-Axis synchronous reactance (unsaturated)	pu	1.79	1.70	1.58	2.24	2.03	1.90	1.82	1.72
X'' _q	Q-Axis sub-transient reactance (saturated)	pu	0.191	0.182	0.169	0.240	0.218	0.204	0.195	0.184
X ₂	Negative-sequence reactance (saturated)	pu	0.159	0.151	0.140	0.200	0.180	0.170	0.160	0.150
X ₀	Zero-sequence reactance (independent)	pu	0.008	0.008	0.007	0.010	0.009	0.008	0.008	0.008
T' _d	D-Axis transient time constant	ms		84				84		
T'' _d	D-Axis sub-transient time constant	ms		3				3		
T' _{do}	D-Axis open-circuit time constant	ms		2487				2487		
T _a	Armature time constant	ms		20				19		

EXCITATION VOLTAGE AND CURRENT

No load excitation voltage	V	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
No load excitation current	A	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Class H BR excitation voltage	V	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
Class H BR excitation current	A	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50

WINDING RESISTANCE*At 20 ° C*

Stator line-to-line (Series Star)	Ω	0.010			Exciter field			Ω	9.86
Main field	Ω	0.88							

According to: IEC 60034-1 & 22, 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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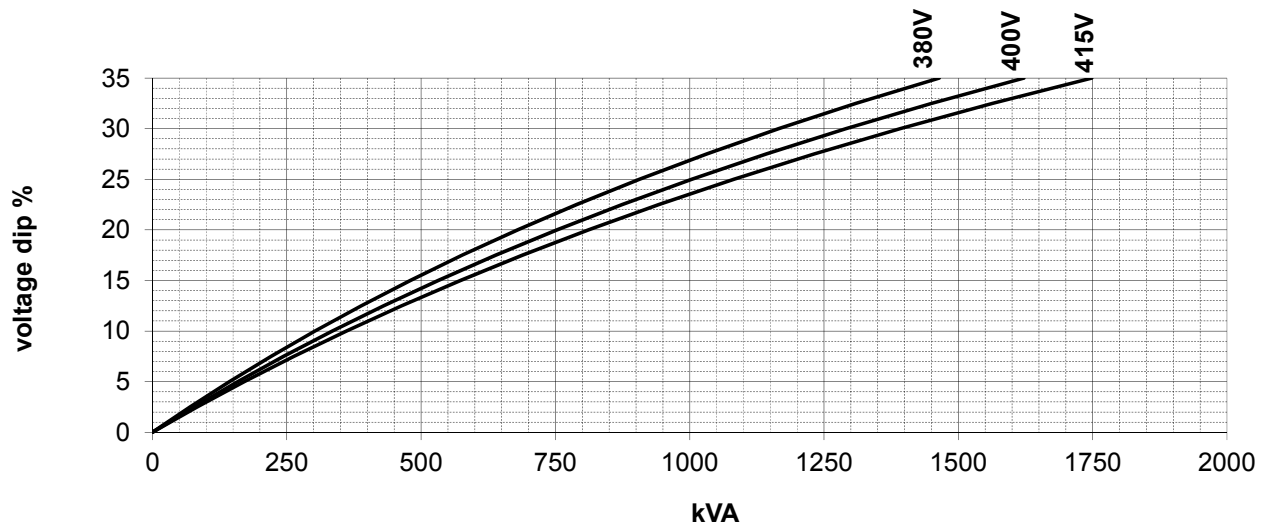


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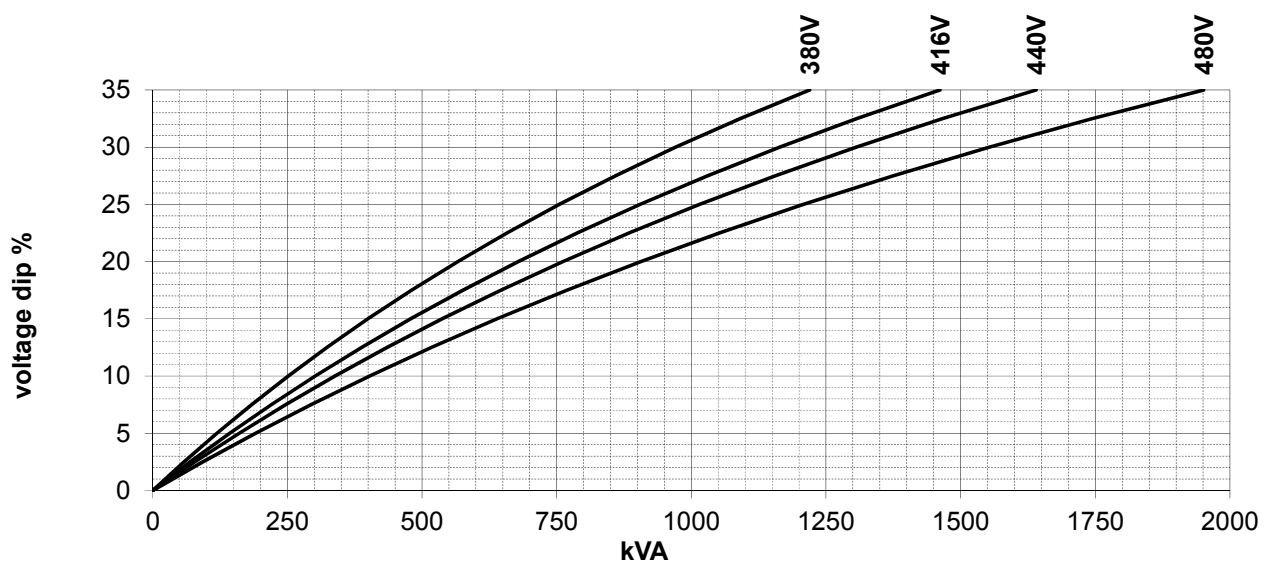
LOCKED ROTOR MOTOR STARTING CURVES

Power factor 0.6

50 Hz



60 Hz



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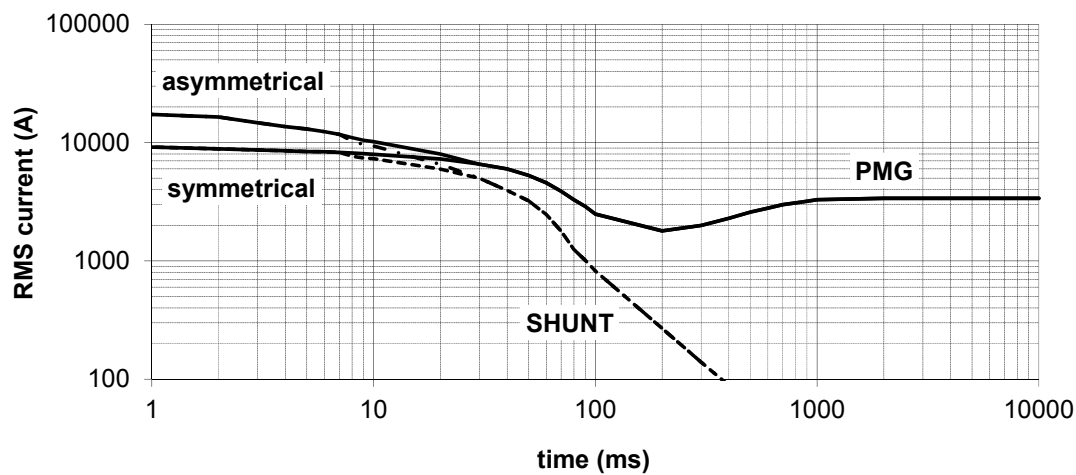
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THREE PHASE - SHORT CIRCUIT DECREMENT CURVES

No-load excitation at rated speed

400V 50Hz, 480V 60Hz

Series Star



Multiplication Factors

50Hz Voltages

380 400 415

Multiplication Factor

0.95 1.00 1.04

Apply factor up to $2 \times T_d$, remainder of curve unchanged

60Hz Voltages

380 416 440 460 480

Multiplication Factor

0.79 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 the complete curve

According to: IEC 60034-1 & 22, BS 4999/5000, NEMA MG 1-33

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