

**MODEL****FG33A500****WINDING****R16**

REF: FG33A500R16-0 JAN 2019

**WINDING DETAILS**

Code	R16	Insulation class	H
Phase	3	Leads	6
Pole number	4	Pitch	2/3

**MECHANICAL DETAILS**

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

**EXCITATION DETAILS**

Excitation system	<b>SHUNT</b>	<b>PMG</b>
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					
<b>Series star</b>	<b>V</b>	<b>380</b>	<b>400</b>	<b>415</b>	<b>380</b>	<b>416</b>	<b>440</b>	<b>460</b>	<b>480</b>
Series delta	V	220	230	240	220	240	254	266	277

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

<b>Class H rise BR</b>	<b>125/40</b>	<b>kVA</b>	<b>594</b>	<b>625</b>	<b>625</b>	<b>640</b>	<b>688</b>	<b>719</b>	<b>750</b>	<b>775</b>
		<i>kW</i>	475	500	500	512	550	575	600	620
<b>Class H rise PR</b>	<b>150/40</b>	<b>kVA</b>	<b>653</b>	<b>688</b>	<b>688</b>	<b>671</b>	<b>721</b>	<b>755</b>	<b>788</b>	<b>814</b>
		<i>kW</i>	523	550	550	537	577	604	630	651
<b>Class H rise PR</b>	<b>163/27</b>	<b>kVA</b>	<b>683</b>	<b>719</b>	<b>719</b>	<b>704</b>	<b>756</b>	<b>791</b>	<b>825</b>	<b>853</b>
		<i>kW</i>	546	575	575	563	605	633	660	682
<b>Class F rise BR</b>	<b>105/40</b>	<b>kVA</b>	<b>534</b>	<b>563</b>	<b>563</b>	<b>576</b>	<b>619</b>	<b>647</b>	<b>675</b>	<b>698</b>
		<i>kW</i>	428	450	450	461	495	518	540	558

**EFFICIENCIES***Power factor 0.8*

<b>110% Class H BR</b>	%	94.3	94.4	94.5	94.0	94.4	94.6	94.7	94.8
<b>100% Class H BR</b>	%	94.7	94.8	94.9	94.4	94.7	94.9	95.0	95.1
<b>75% Class H BR</b>	%	95.3	95.4	95.5	95.0	95.3	95.4	95.5	95.5
<b>50% Class H BR</b>	%	95.2	95.2	95.4	94.8	95.0	95.1	95.2	95.2
<b>25% Class H BR</b>	%	93.5	93.5	93.7	93.0	93.1	93.1	93.2	93.2

**CHARACTERISTIC PARAMETERS***Reactance base class H BR rating*

$K_{cc}$	Short-circuit ratio		0.40	0.44	0.50	0.29	0.33	0.36	0.39	0.43
$X_d$	D-Axis synchronous reactance (unsaturated)	pu	2.88	2.74	2.55	3.73	3.34	3.12	2.98	2.83
$X'_d$	D-Axis transient reactance (saturated)	pu	0.14	0.13	0.12	0.18	0.16	0.15	0.14	0.13
$X''_d$	D-Axis sub-transient reactance (saturated)	pu	0.108	0.102	0.095	0.139	0.125	0.117	0.111	0.106
$X_q$	Q-Axis synchronous reactance (unsaturated)	pu	1.28	1.22	1.13	1.66	1.49	1.39	1.33	1.26
$X''_q$	Q-Axis sub-transient reactance (saturated)	pu	0.148	0.140	0.130	0.191	0.171	0.160	0.153	0.145
$X_2$	Negative-sequence reactance (saturated)	pu	0.130	0.120	0.110	0.170	0.150	0.140	0.130	0.130
$X_0$	Zero-sequence reactance (independent)	pu	0.006	0.006	0.006	0.008	0.007	0.007	0.006	0.006
$T'_d$	D-Axis transient time constant	ms		90				90		
$T''_d$	D-Axis sub-transient time constant	ms		3				3		
$T'_{do}$	D-Axis open-circuit time constant	ms		1900				1900		
$T_a$	Armature time constant	ms		18				18		

**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
No load excitation current	A	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Class H BR excitation voltage	V	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0
Class H BR excitation current	A	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00

**WINDING RESISTANCE***At 20° C*

Stator line-to-line (Series Star)	Ω	0.009		Exciter field	Ω	10.64
Main field	Ω	1.04				

According to: IEC 60034-1 &amp; 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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**WINDING R16**

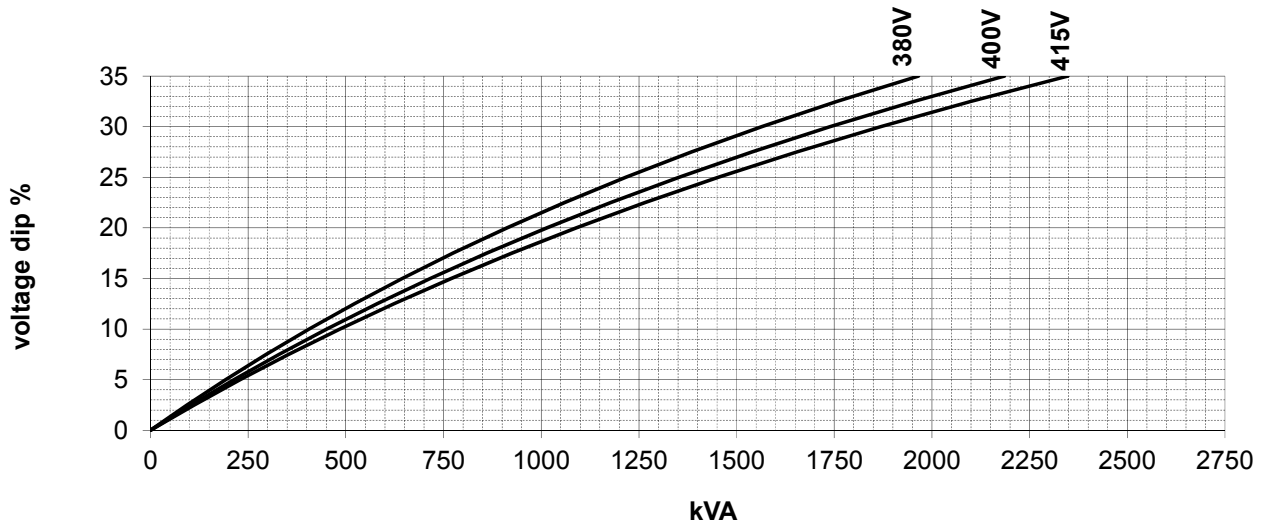


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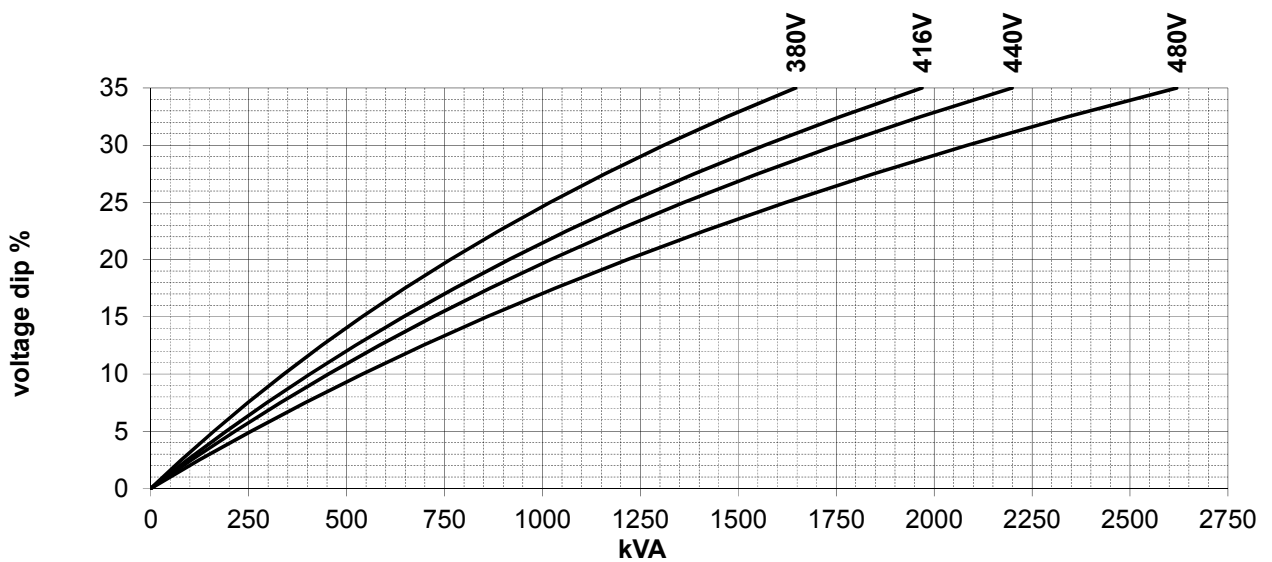
**LOCKED ROTOR MOTOR STARTING CURVES**

Power factor 0.6

**50 Hz**



**60 Hz**



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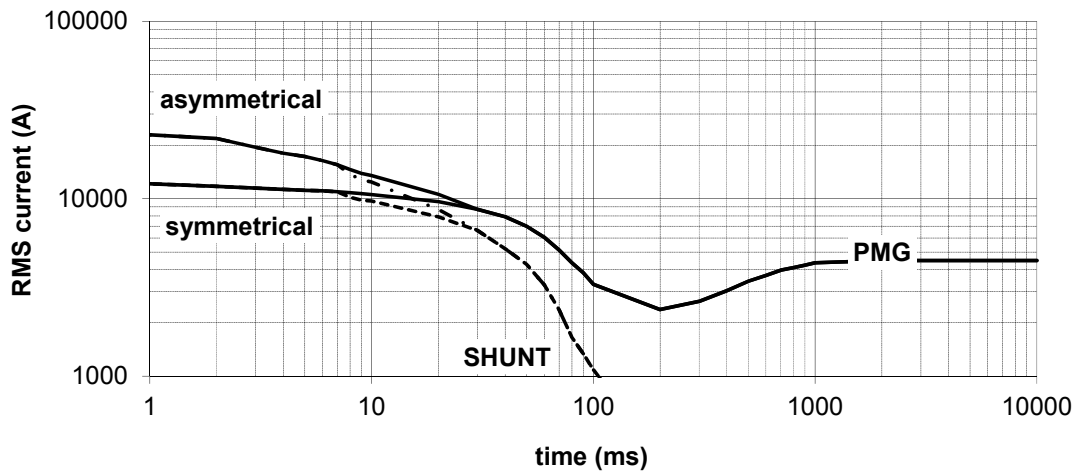
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THREE PHASE - SHORT CIRCUIT DECREMENT CURVES

No-load excitation at rated speed

400V 50Hz, 480V 60Hz

Series Star



Multiplication Factors

<b>50Hz Voltages</b>	380	400	415
Multiplication Factor	0.95	1.00	1.04

Apply factor up to 2xT'd, remainder of curve unchanged

<b>60Hz Voltages</b>	380	416	440	460	480
Multiplication Factor	0.79	0.87	0.92	0.96	1.00

Apply factor up to 2xT'd, remainder of curve unchanged

<b>Winding Connection</b>	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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