

## THREE-PHASE SYNCHRONOUS GENERATOR MJB 160 MB 4

**4 POLES**

**50 Hz-1500 min<sup>-1</sup> / 60 Hz-1800 min<sup>-1</sup>**

CONTINUOUS DUTY

<b>AMBIENT TEMPERATURE</b>	<b>40°C</b>			<b>WINDING DATA</b>	
<b>TEMPERATURE RISE</b>	<b>H</b>			Winding code	<b>M0</b>
<b>INSULATION CLASS</b>	<b>H</b>			Number of leads	<b>12</b>
<b>POWER FACTOR</b>	<b>0,8</b>			Winding pitch	<b>2/3</b>

FREQUENCY	Hz	50				60					
<b>VOLTAGE</b>	Star series	V	380	400	415	440	380	416	440	460	480
	Star parallel		190	200	208	220	190	208	220	230	240
<b>RATING</b>		kVA	30,9	32,0	32,0	32,0	33,1	35,2	38,4	38,4	40,0
		kW	24,7	25,6	25,6	25,6	26,5	28,2	30,7	30,7	32,0
<b>EFFICIENCY (%) @ 0,8 p.f.</b>	4/4		87,4	88,3	87,9	87,7	87,2	87,8	88,3	88,8	89,1
	3/4		89,2	89,8	89,3	89,3	89,1	89,4	89,8	90,3	90,7
	2/4		90,3	90,6	89,9	90,1	90,3	90,5	90,6	90,8	91,0
<b>EFFICIENCY (%) @ 1,0 p.f.</b>	4/4		89,9	90,6	90,3	90,1	89,7	90,2	90,6	91,1	91,3
	3/4		91,3	91,8	91,5	91,4	91,2	91,5	91,9	92,2	92,6
	2/4		92,2	92,5	92,0	92,1	92,3	92,4	92,5	92,7	92,8
<b>SHORT CIRCUIT RATIO</b>			0,43	0,46	0,50	0,56	0,33	0,38	0,39	0,42	0,44
<b>REACTANCES (%)</b>											
Direct axis synchronous	xd		260	245	230	200	335	300	290	265	255
Quadrature axis synchronous	xq		145	135	125	110	185	165	160	145	140
Direct axis transient	x'd		22,0	20,5	19,0	16,9	28,2	25,0	24,4	22,3	21,4
Direct axis subtransient	x''d		10,5	9,8	9,1	8,1	13,5	12,0	11,7	10,7	10,2
Quadrature axis subtransient	x''q		12,4	11,6	10,8	9,6	15,9	14,2	13,8	12,6	12,1
Negative sequence	x <sub>2</sub>		11,5	10,7	9,9	8,8	14,7	13,1	12,7	11,7	11,1
Zero sequence	x <sub>0</sub>		1,5	1,4	1,3	1,2	1,9	1,7	1,7	1,5	1,5

### TIME CONSTANTS [s]

Open circuit (T <sup>do</sup> )	0,66	Subtransient (T <sup>d</sup> )	0,008
Transient (T <sup>d</sup> )	0,045	Armature (T <sub>a</sub> )	0,007

### MECHANICAL CHARACTERISTICS

D-end bearing/Lubrication	6310 2RS C3 / Prelubricated
N-end bearing/Lubrication	6309 2RS C3 / Prelubricated
Weight (IM B34) [kg]	175
Inertia (J) (IM B34) [kgm <sup>2</sup> ]	0,170
Overspeed [min <sup>-1</sup> ]	2250
Method of cooling	IC 01
Cooling air required [m <sup>3</sup> /s] @ 50/60 Hz	0,11 / 0,14
Degree of protection	IP 23
Type of construction available	B2 - SAE / IM B34
Direction of rotation	CW

### OTHER DATA

Phase resistance [Ω] @ 20 °C - Star series	0,33
Overloads	10% for 1 hour
3-phase short circuit current	≥ 300% (3 I <sub>n</sub> )
Voltage regulation accuracy	+/- 1 % (in steady state condition, speed from -2% to +5%, p.f. from 0,8 to 1)
Radio interference	EN 55011 Class B Group 1
Wave form THF	< 2%
Total harmonic content	< 2% (at no load)

### STANDARDS

IEC 60034-1; CEI 2-3; BS 4999-5000; VDE 0530; NF 51-100,111; OVE M-10, NEMA MG 1.22.

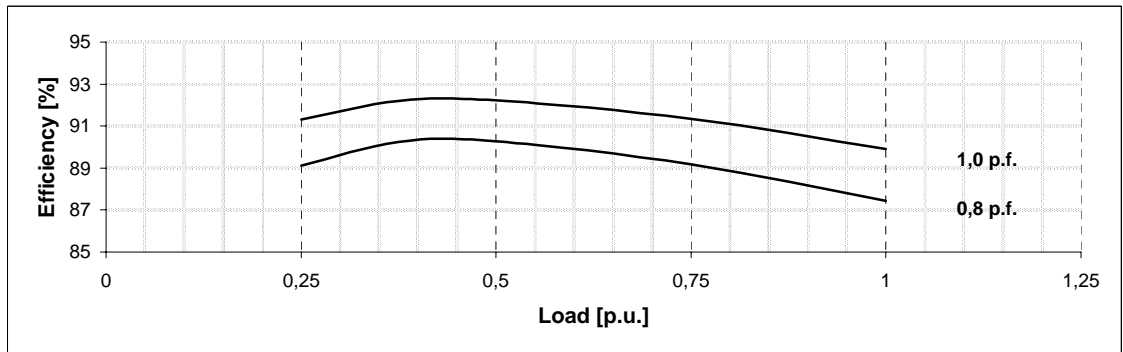
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**THREE-PHASE SYNCHRONOUS GENERATOR**  
**MJB 160 MB 4**

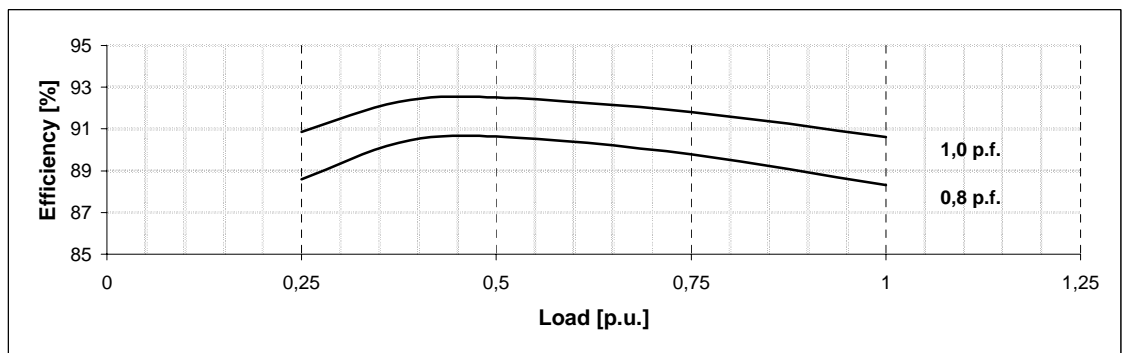
**Typical efficiency curves**

**50 Hz - 1500 min<sup>-1</sup>**

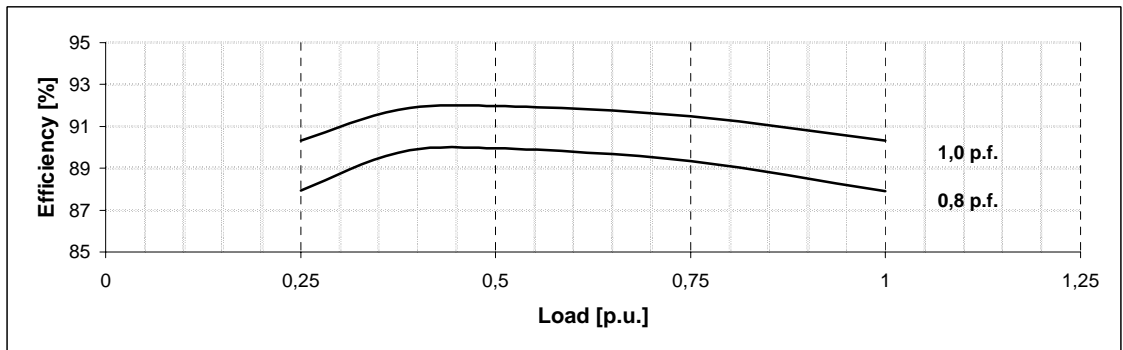
**380 V**



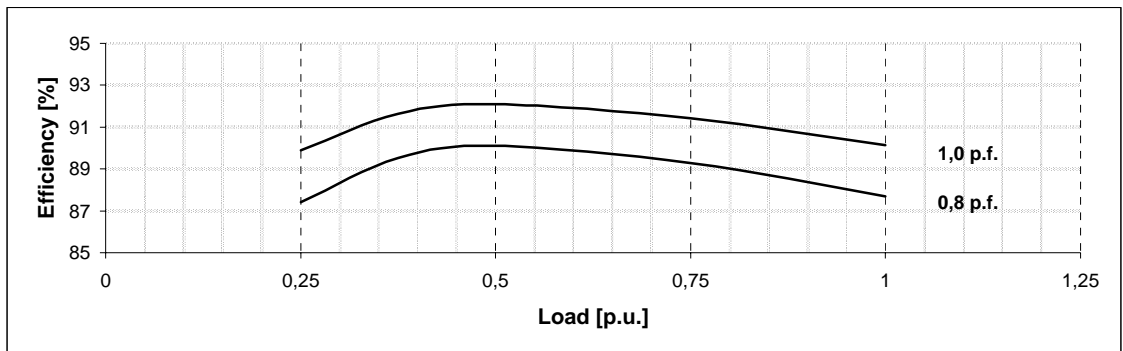
**400 V**



**415 V**



**440 V**



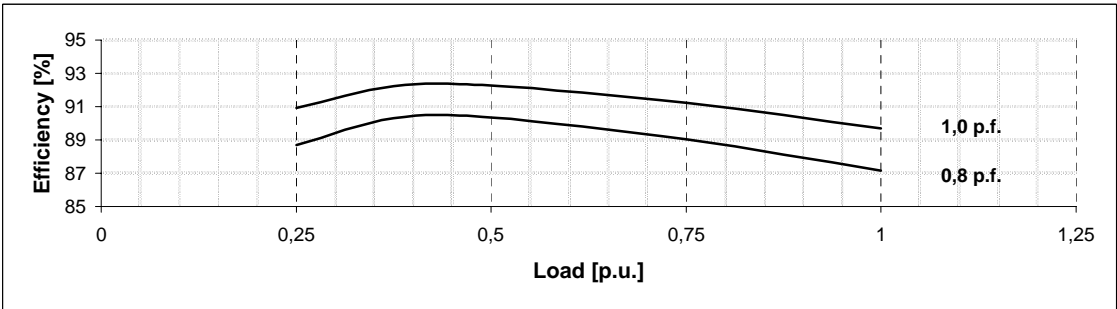
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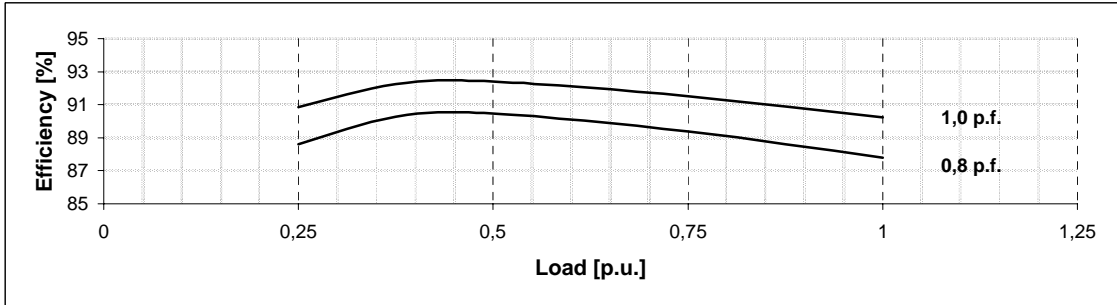
**Typical efficiency curves**

**60 Hz - 1800 min<sup>-1</sup>**

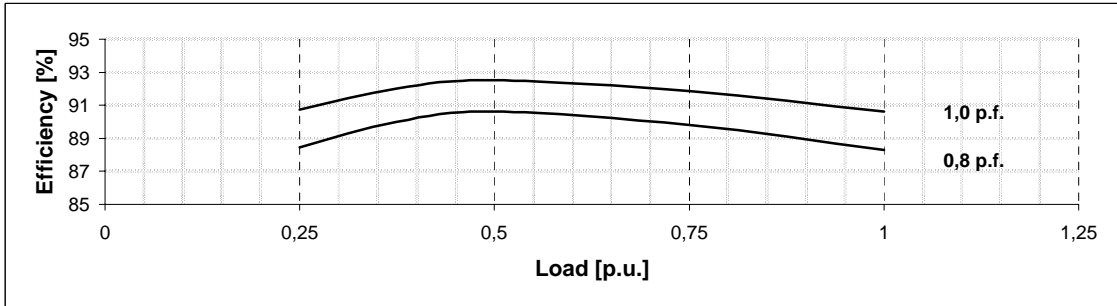
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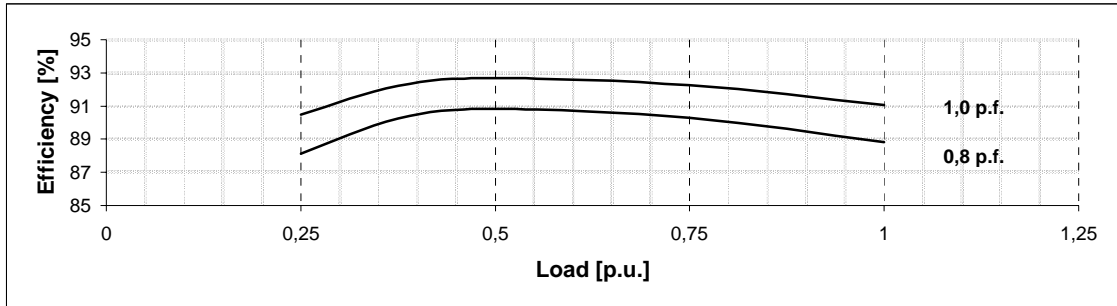
**416 V**



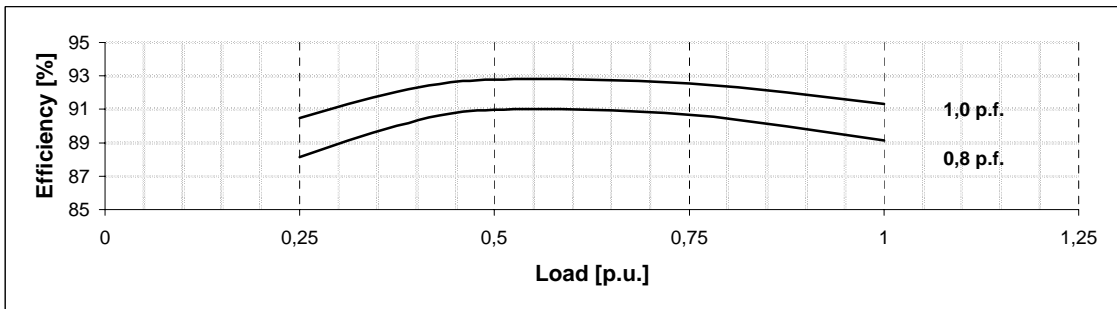
**440 V**



**460 V**



**480 V**

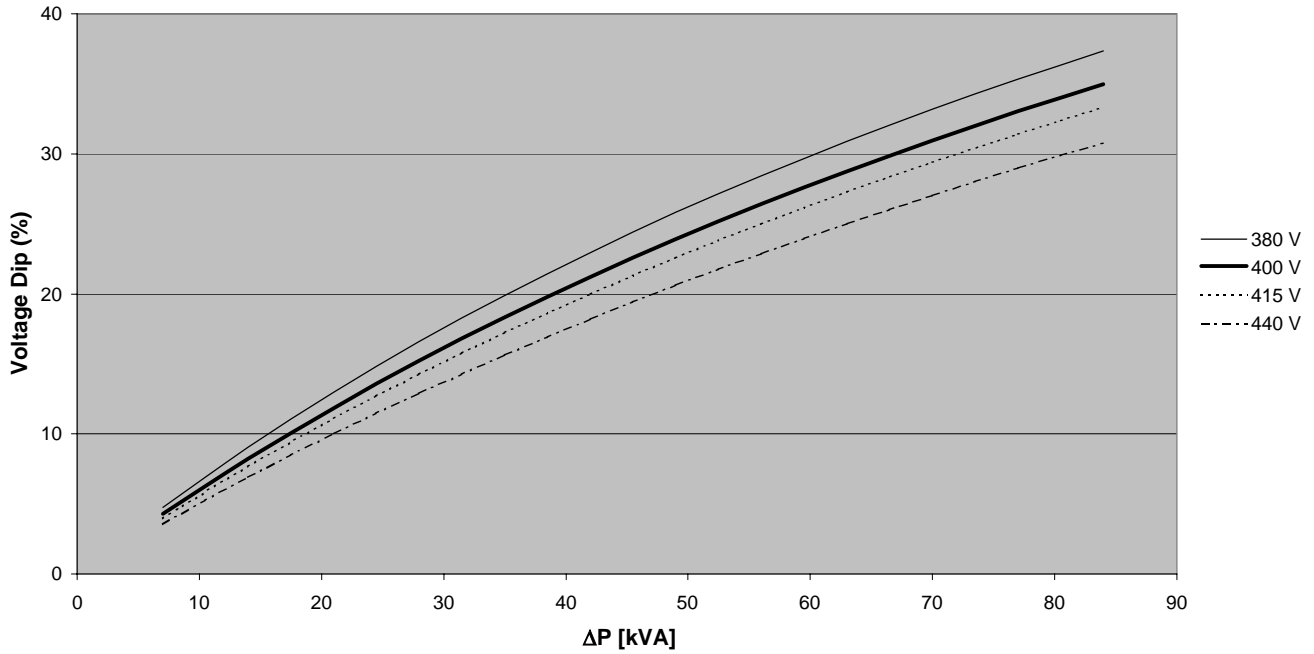


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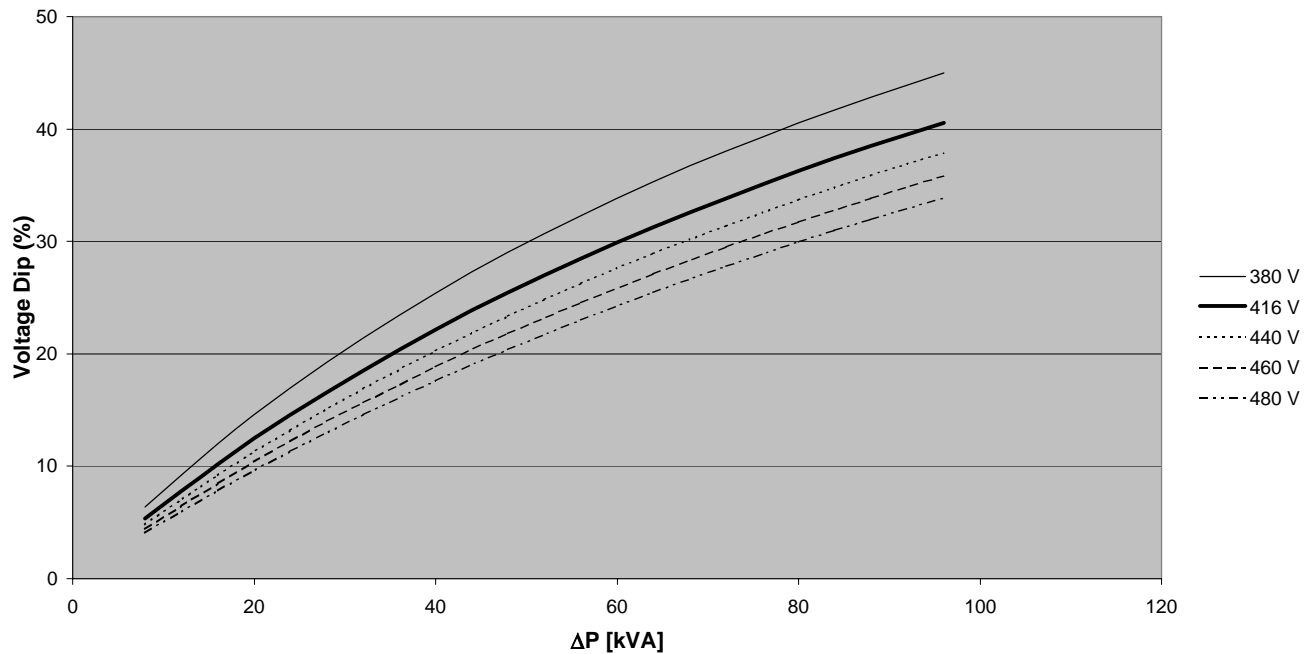
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**Locked rotor motor starting curves (\*)**

**50 Hz - 1500 min<sup>-1</sup>**



**60 Hz - 1800 min<sup>-1</sup>**



$$\Delta P = P_n \times (I_s / I_n) / (\cos\phi_n \times \eta_n)$$

(\*): A coefficient of 0,85 must be applied to the voltage dip if the load has a power factor equal or greater than 0,9

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