

## THREE-PHASE SYNCHRONOUS GENERATOR

# MJB 225 MA 4

**4 POLES**

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

**CONTINUOUS DUTY**

| AMBIENT TEMPERATURE<br>TEMPERATURE RISE<br>INSULATION CLASS<br>POWER FACTOR |                              | 40°C<br>H<br>H<br>0,8 |      |      |      |      |      |      |      |      |      |      |      |      | WINDING DATA<br>Winding code<br>Number of leads<br>Winding pitch | M0<br>12<br>2/3 |
|-----------------------------------------------------------------------------|------------------------------|-----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------------------------------------------------------------------|-----------------|
| FREQUENCY                                                                   |                              | Hz                    | 50   |      |      |      |      |      | 60   |      |      |      |      |      |                                                                  |                 |
| VOLTAGE                                                                     | Star series<br>Star parallel | V                     | 380  | 400  | 415  | 440  | 440  | 440  | 380  | 416  | 440  | 460  | 460  | 480  |                                                                  |                 |
| RATING                                                                      |                              | kVA<br>kW             | 190  | 200  | 208  | 220  | 220  | 220  | 190  | 208  | 220  | 230  | 230  | 240  |                                                                  |                 |
| EFFICIENCY (%) @ 0,8 p.f.                                                   |                              | 100<br>80             | 105  | 105  | 105  | 105  | 105  | 105  | 110  | 121  | 126  | 131  | 131  | 131  |                                                                  |                 |
| EFFICIENCY (%) @ 1,0 p.f.                                                   |                              | 4/4                   | 91,3 | 91,8 | 91,7 | 91,5 | 91,1 | 91,4 | 91,9 | 92,2 | 92,2 | 92,6 | 92,6 | 92,6 |                                                                  |                 |
|                                                                             |                              | 3/4                   | 92,1 | 92,4 | 92,3 | 92,2 | 92,2 | 92,5 | 92,7 | 92,9 | 93,1 | 93,1 | 93,2 | 93,2 |                                                                  |                 |
|                                                                             |                              | 2/4                   | 92,5 | 92,6 | 92,5 | 92,5 | 92,6 | 92,8 | 93,0 | 93,1 | 93,1 | 93,2 | 93,2 | 93,2 |                                                                  |                 |
|                                                                             |                              | 4/4                   | 93,1 | 93,5 | 93,4 | 93,2 | 92,9 | 93,1 | 93,6 | 93,8 | 94,1 | 94,1 | 94,1 | 94,1 |                                                                  |                 |
|                                                                             |                              | 3/4                   | 93,7 | 93,9 | 93,8 | 93,8 | 93,8 | 94,0 | 94,2 | 94,4 | 94,5 | 94,5 | 94,5 | 94,5 |                                                                  |                 |
|                                                                             |                              | 2/4                   | 94,0 | 94,1 | 94,1 | 94,0 | 94,1 | 94,3 | 94,5 | 94,5 | 94,5 | 94,6 | 94,6 | 94,6 |                                                                  |                 |
| SHORT CIRCUIT RATIO                                                         |                              |                       | 0,38 | 0,40 | 0,43 | 0,48 | 0,29 | 0,31 | 0,34 | 0,35 | 0,38 | 0,38 | 0,38 | 0,38 |                                                                  |                 |
| REACTANCES (%)                                                              |                              | xd                    | 290  | 275  | 255  | 225  | 385  | 350  | 325  | 310  | 285  | 285  | 285  | 285  |                                                                  |                 |
|                                                                             |                              | xq                    | 160  | 150  | 140  | 125  | 210  | 190  | 180  | 170  | 155  | 155  | 155  | 155  |                                                                  |                 |
|                                                                             |                              | xd                    | 22,1 | 21,0 | 19,5 | 17,4 | 29,3 | 26,8 | 25,0 | 23,8 | 21,9 | 21,9 | 21,9 | 21,9 |                                                                  |                 |
|                                                                             |                              | x"d                   | 10,4 | 9,9  | 9,2  | 8,2  | 13,8 | 12,6 | 11,8 | 11,2 | 10,3 | 10,3 | 10,3 | 10,3 |                                                                  |                 |
|                                                                             |                              | x"q                   | 11,5 | 10,9 | 10,1 | 9,0  | 15,2 | 13,9 | 13,0 | 12,4 | 11,4 | 11,4 | 11,4 | 11,4 |                                                                  |                 |
|                                                                             |                              | x <sub>2</sub>        | 10,9 | 10,4 | 9,7  | 8,6  | 14,5 | 13,3 | 12,4 | 11,8 | 10,8 | 10,8 | 10,8 | 10,8 |                                                                  |                 |
|                                                                             |                              | x <sub>0</sub>        | 2,3  | 2,2  | 2,0  | 1,8  | 3,1  | 2,8  | 2,6  | 2,5  | 2,3  | 2,3  | 2,3  | 2,3  |                                                                  |                 |

| TIME CONSTANTS [s]                                  |  | 0,95 Subtransient (T" <sub>d</sub> )<br>0,078 Armature (T <sub>a</sub> ) | 0,006<br>0,006 |
|-----------------------------------------------------|--|--------------------------------------------------------------------------|----------------|
| <b>MECHANICAL CHARACTERISTICS</b>                   |  |                                                                          |                |
| D-end bearing/Lubrication                           |  | 6215 2RS C3 / Prelubricated                                              |                |
| N-end bearing/Lubrication                           |  | 6311 2RS C3 / Prelubricated                                              |                |
| Weight (IM B34) [kg]                                |  | 390                                                                      |                |
| Inertia (J) (IM B34) [kgm <sup>2</sup> ]            |  | 0,789                                                                    |                |
| Overspeed [min <sup>-1</sup> ]                      |  | 2250                                                                     |                |
| Method of cooling                                   |  | IC 01                                                                    |                |
| Cooling air required [m <sup>3</sup> /s] @ 50/60 Hz |  | 0,31 / 0,39                                                              |                |
| Degree of protection                                |  | IP 23                                                                    |                |
| Type of construction available                      |  | B2 - SAE / IM B34                                                        |                |
| Direction of rotation                               |  | CW                                                                       |                |

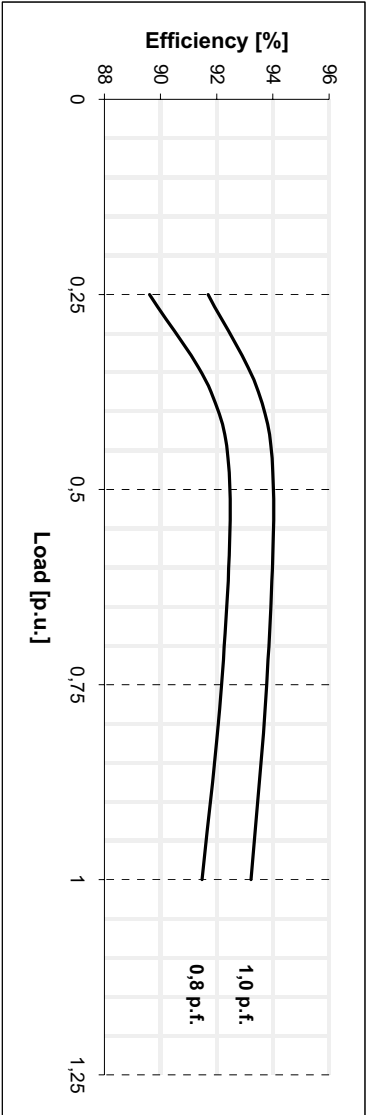
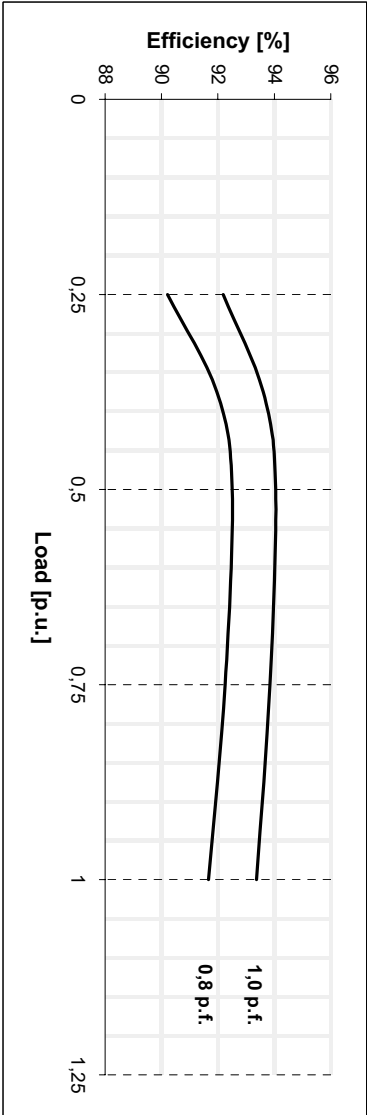
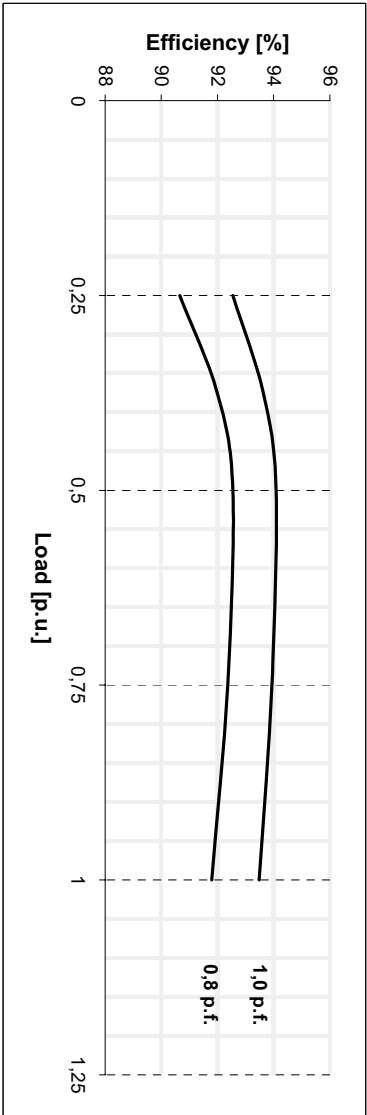
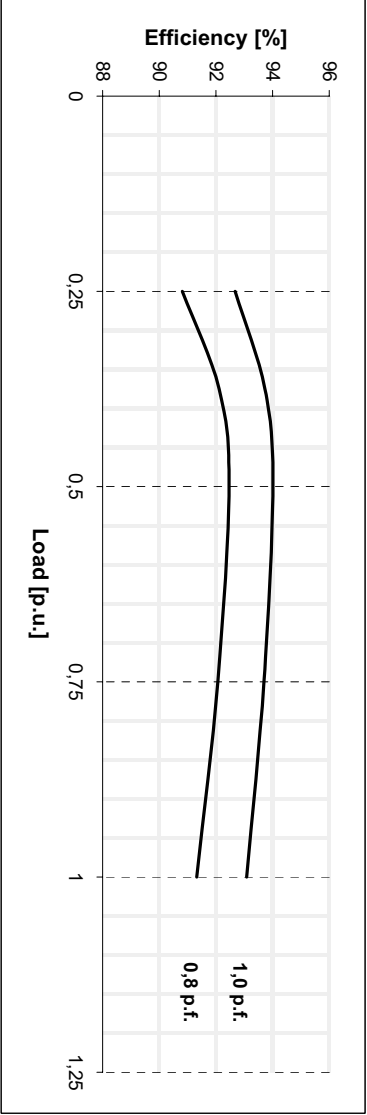
| OTHER DATA                                 |  | 0,075                                                                               |
|--------------------------------------------|--|-------------------------------------------------------------------------------------|
| Phase resistance [Ω] @ 20 °C - Star series |  | 10% for 1 hour                                                                      |
| Overloads                                  |  | >= 300% (3 I <sub>n</sub> )                                                         |
| 3-phase short circuit current              |  | +/- 0,5 % (in steady state condition,<br>speed from -2% to +5%, p.f. from 0,8 to 1) |
| Voltage regulation accuracy                |  |                                                                                     |
| 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. |  |

THREE-PHASE SYNCHRONOUS GENERATOR  
**MJB 225 MA 4**

Typical efficiency curves

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

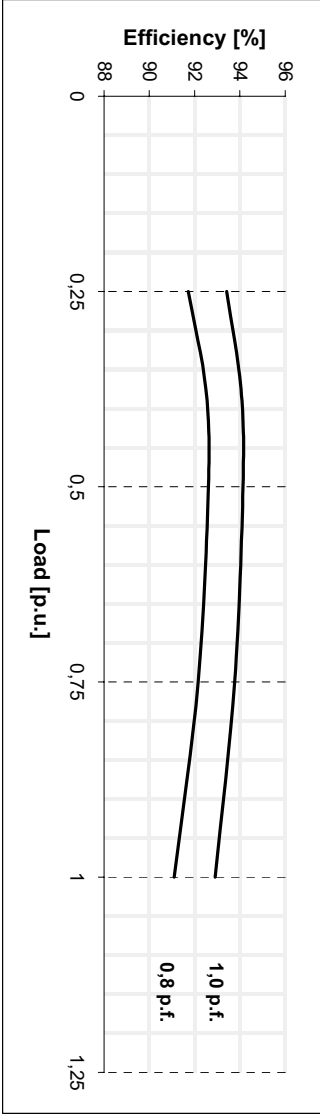


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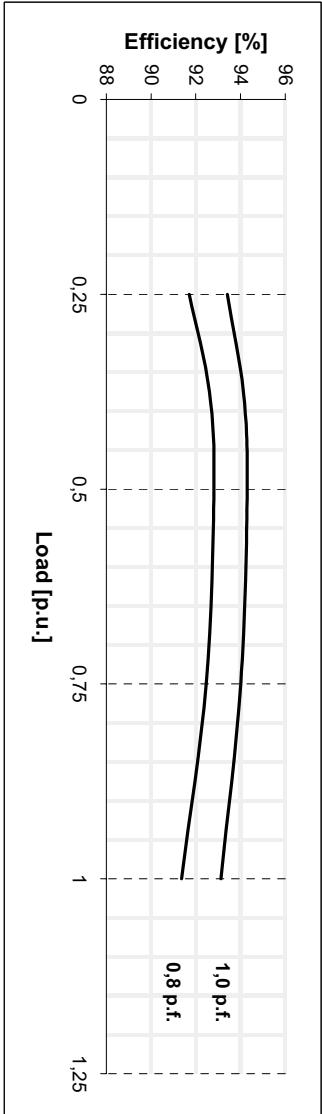
Typical efficiency curves

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

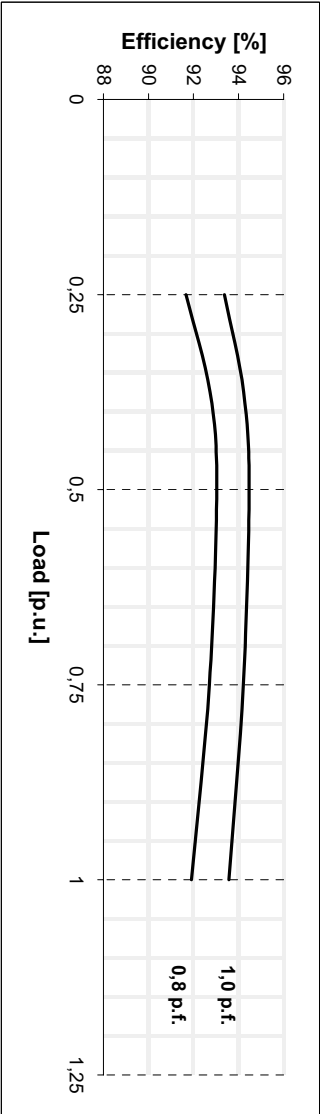
380 V



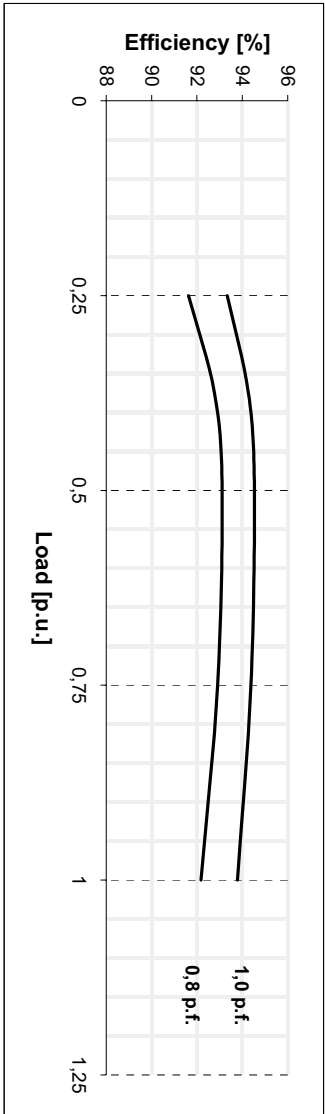
416 V



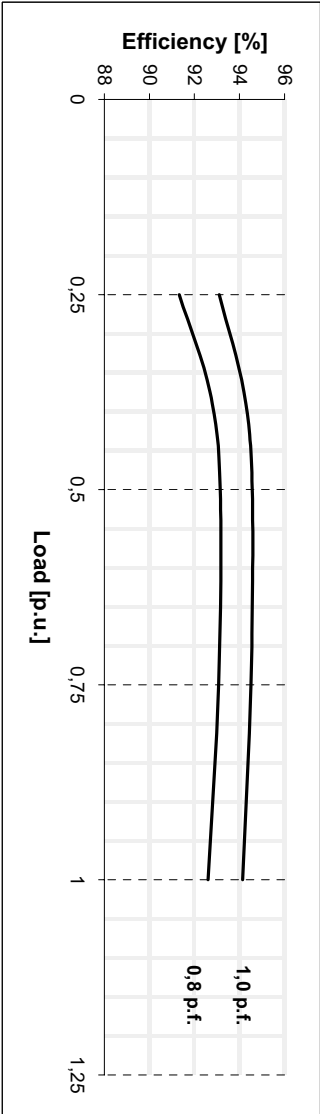
440 V



460 V



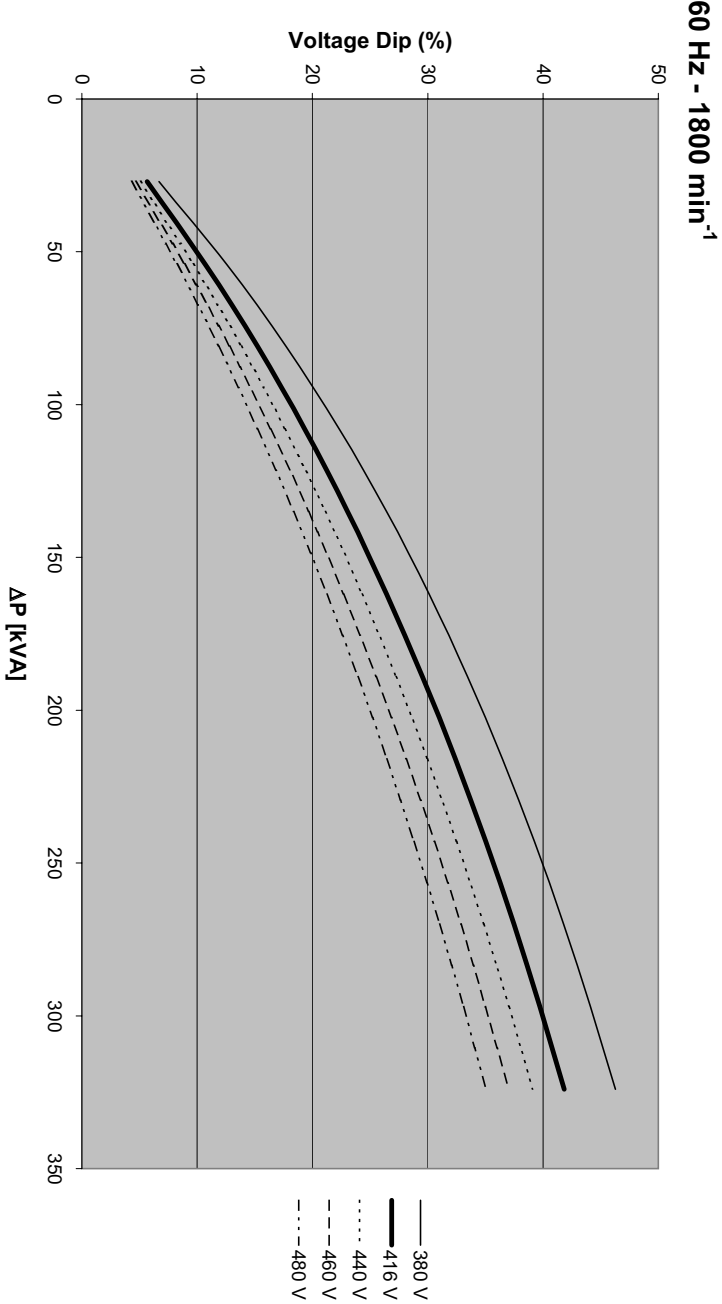
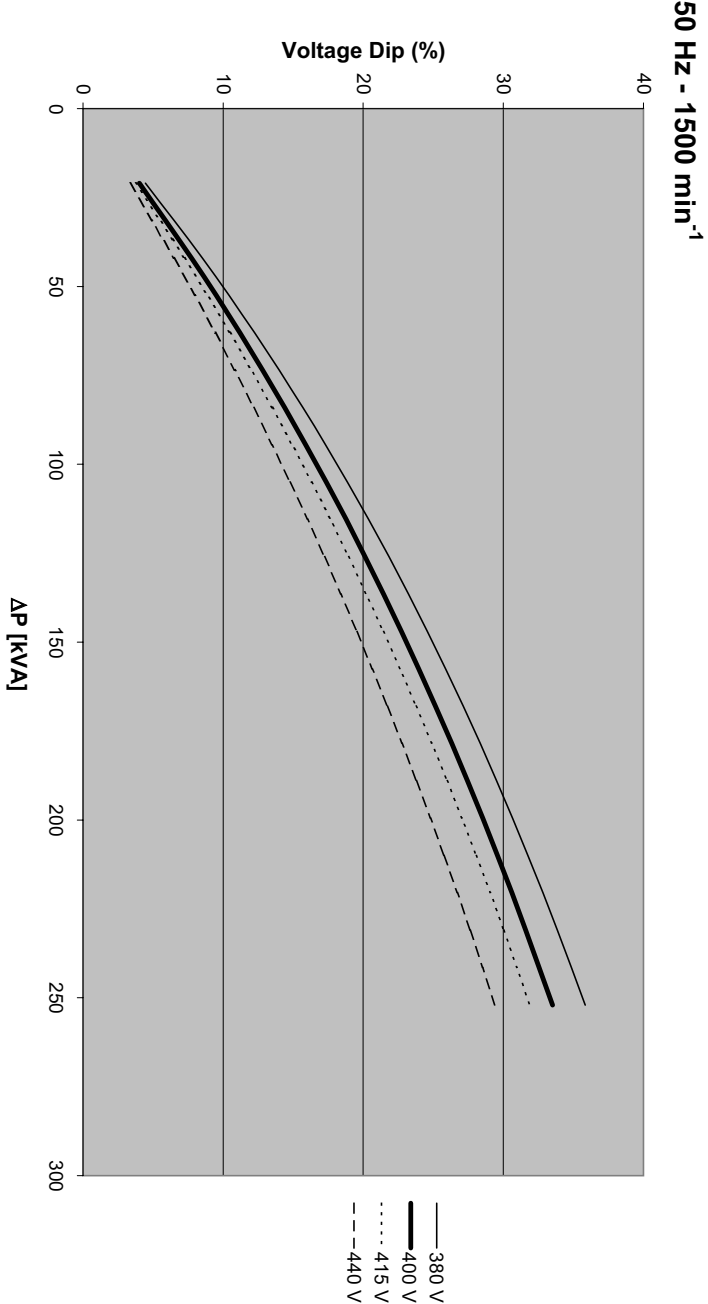
480 V



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Locked rotor motor starting curves (\*)



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

(\*): A coefficient of 0,85 must be applied to the voltage dip if the load has a power factor equal or greater than 0,8.

Data and Technical Specification are subject to change in order to update or improve the products, without prior notice