



Materials certificate 2.1

M3GP 160-250

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Materials used in M3GP 160-250

1. Frame

Standard SFS-EN 1561

Material as minimum quality EN-GJL-200

Mechanical data (EN-GJL-200 / GRS 200) acc. to SFS-EN 1561

Modulus of elasticity	88 kN/mm ²
Tensile strength	200 N/mm ²
Bending strength	290 N/mm ²
Shear strength	230 N/mm ²
Strength of bending change	90 N/mm ²
Heat expansion coefficient (20...200 °C)	11,7 µm/(m·K)
Conductivity (at 200 °C)	49,0 W/(m·K)

2. Endshield and flangeshield

Standards SFS-EN 1561
SFS-EN 1563

Materials:

Cast iron, EN-GJL-200, sizes 160-250 and GP/HP/BP 280-450, see item 1 (Frame)

Mechanical data (EN-GJL-250 / GRS 250) acc. to SFS-EN 1561

Modulus of elasticity	103 kN/mm ²
Tensile strength	250 N/mm ²
Bending strength	340 N/mm ²
Shear strength	290 N/mm ²
Strength of bending change	120 N/mm ²
Heat expansion coefficient (20...200 °C)	11,7 µm/(m·K)
Conductivity (at 200 °C)	47,5 W/(m·K)

Mechanical data (EN-GJS-400 / GRP 400) acc. to SFS-EN 1563

Modulus of elasticity	169 kN/mm ²
Tensile strength	400 N/mm ²
Bending strength	780 N/mm ²
Shear strength	360 N/mm ²
Strength of bending change	180 N/mm ²
Heat expansion coefficient (20...400 °C)	12,5 µm/(m·K)
Conductivity (at 300 °C)	36,2 W/(m·K)

3. Bearing covers

Standard	SFS-EN 1561
Material	Cast iron, EN-GJL-200, see item 1 (Frame)

4. Rotor

Rotor material is cast aluminium.

Aluminium AI 99.5

Amount of impurities	max 0,5 %
Content of Ti+V+Cr+Mn	max 0,025 %
Composition	Fe/Si ≥ 2/1
A boron-loaded metal is used	

Electric conductance measured by the eddy-current method (Sigmatest):
The best value of the cut bar surface has to be 34 MS/m (m/Ω mm²) (Siemens = 1S = 1/Ω)

5. Stator

Winding:
Electric copper wire grade 2 enamelled

6. Bushing

resin for bushings
Two component epoxy paste adhesive ARALDITE 2014 (AW 139/XB 5323).

7. Terminal box

Standard	SFS-EN 1561
Material	Cast iron, EN-GJL-200, sizes 80-250 and JP 280-400, see item 1 (Frame)

(the terminal box consists of a frame, a cover and eventually an intermediate plate)

8. Terminal board

terminal board insulation material:

CTI according to Standard IEC 60112 ed.4

Keripol RW/PBG 814 for sizes 80 – 250, CTI > 600V, group I

9. Shaft

Standards	SFS-EN 10025 DIN 17100, St 52-3 SS 2172 BS 4360, 50 C NF, E 36-3 GOST, St 5 sp 3
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Material	Steel, S355J0, S355J2G3
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Mechanical data (S355J0 / Fe 52 C and S355J2G3 / Fe 52 D)

Yield strength	355 N/mm ²
Tensile strength	510 N/mm ²
Impact strength	27 J

10. Screws

Standards for screw dimensions	DIN 933 / SFS-ISO 4017 DIN 912 / SFS-EN ISO 4762
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Materials:	(A4)	Stainless steel, according to ISO 3506-1
	(8.8)	Carbon steel, according to SFS-ISO 898-1

Mechanical data	(A4-80)	According to ISO 3506-1
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Stress at 0,2% permanent strain	min.	600 N/mm ²
Tensile strength	min.	800 N/mm ²
Elongation after fracture	min.	0,3d mm

(A4-70)

Stress at 0,2% permanent strain	min.	450 N/mm ²
Tensile strength	min.	700 N/mm ²
Elongation after fracture	min.	0,4d mm

(8.8) According to SFS-ISO 898-1

Stress at 0,2% permanent strain	min.	640 N/mm ²	d ≤ 16 mm
Tensile strength	min.	800 N/mm ²	d ≤ 16 mm
Elongation after fracture	min.	12	d ≤ 16 mm

11. Fan

Material: Glass fibre reinforced polypropylene, e.g. Polypropylene homopolymer with 20% or 25% glass fiber fillers , (e.g. Hostacom, PPH GF5020 or similar)

12. Fan cover

Material Hot galvanized steel sheet, acc. to SFS-EN 10142
(e.g. Racold)

13. Sealings

terminal box sealing material:
Neoprene cellular rubber (e.g. CNA) (as band /cord or plate)
shaft sealing material:
Nitrile rubber (e.g. NBR 70) or

14. Key

Material Steel SFS-EN 10025 E335
SFS EN 10038 2C35