DC motors

G-motion

Lenze

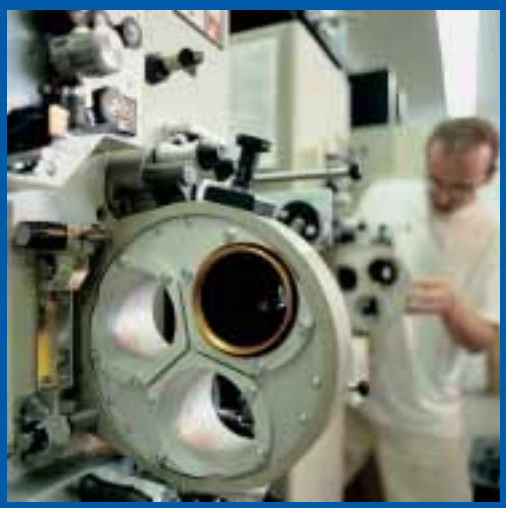
No matter which drive solution you imagine, we make your dreams come true.

True to our slogan (one stop shopping) we offer you a complete programme of electronic and mechanical drive systems which is distinguished by reliability and efficiency.

The scope of our programme includes frequency inverters, servo controllers, variable-speed drives, speed reduction gearboxes, motors, brakes, clutches, decentralised I/O and operator and display units.











Many well-known companies use Lenze products in various applications.

Product key for electrical machines

XXXXX XX XXX XX

Product group
M Motor

Current
D = Three-phase current
E = AC single phase current
G = DC current
U = Universal motor

Cooling/ventilation
F = External ventilation
E = Self-ventilation (speed-dependent)
S = Natural ventilation (no ventilation)

Design/enclosure
G = Smooth, round enclosure
Q = Smooth, square enclosure
R = Ribbed, round enclosure
V = Ribbed, square (oval) enclosure
E = Explosion-proof

Machine type
U = Uncompensated
K = Compensated
E = Increased safety (Ex) e
P = Permanent magnet motor
A = Asynchronous
S = Synchronous
D = Explosion-proof (Ex) d
F = Explosion-proof (Ex) p

Mountings
TA = Tacho, analog signal source
BR = Brake
RS = Resolver
IG = Incremental encoder (pulse encoder)
AG = Absolute value encoder
BS = Brake + resolver
BT = Brake + tacho
BA = Brake + absolute value encoder
BI = Brake + incremental encoder
BU = Brake, tacho and pulse encoder
TI = Tacho and pulse encoder
XX = no mountings

Size
Shaft height in mountings
B 3 032 – 400 according to LHM 7.00 01 03

Length according to LHM 7.00 00 15
0 = VS very short
1 = S short
2 = M middle
3 = L long
4 = VL very long

Pole pairs
1 = p = 1 (2p = 2- 2-pole)
2 = p = 2 (2p = 4- 4-pole)
3 = p = 3 (2p = 6- 6-pole)
9 = p = 9 (2p = 18- 18-pole)

DC motors compact with high power reserves

Lenze DC motors characteristically offer high performance together with exceptionally smooth running characteristics across a wide speed and torque setting range. They can be controlled with exceptional accuracy using our cost-effective DC speed controllers, and achieve speed control ranges > 1:1000 even in reversing duty – as well as with high starting currents – when used for example as a winder.

Reliable low-noise cooling systems and correspondingly designed commutation systems offer the ideal basis for the high power reserves which are required, for example, in dynamic positioning applications. The DC motors in the power band up to 90 kW and above are available as a modular system with various enclosures. Depending on the application, these motors can be combined with the optimum gearboxes, brakes or feedback systems. The design of the motors ensures long service life with minimal maintenance requirements and therefore represents an efficient and cost-effective choice of drive.

Lenze | An introduction

Lenze is the competent partner for your application. Lenze is not only a supplier for single components but also offers solutions for complete drive systems including planning, execution and commissioning.

Furthermore, a worldwide service and distribution network lets you engage a qualified customer advisory service and an after sales service that is fast and extensive.

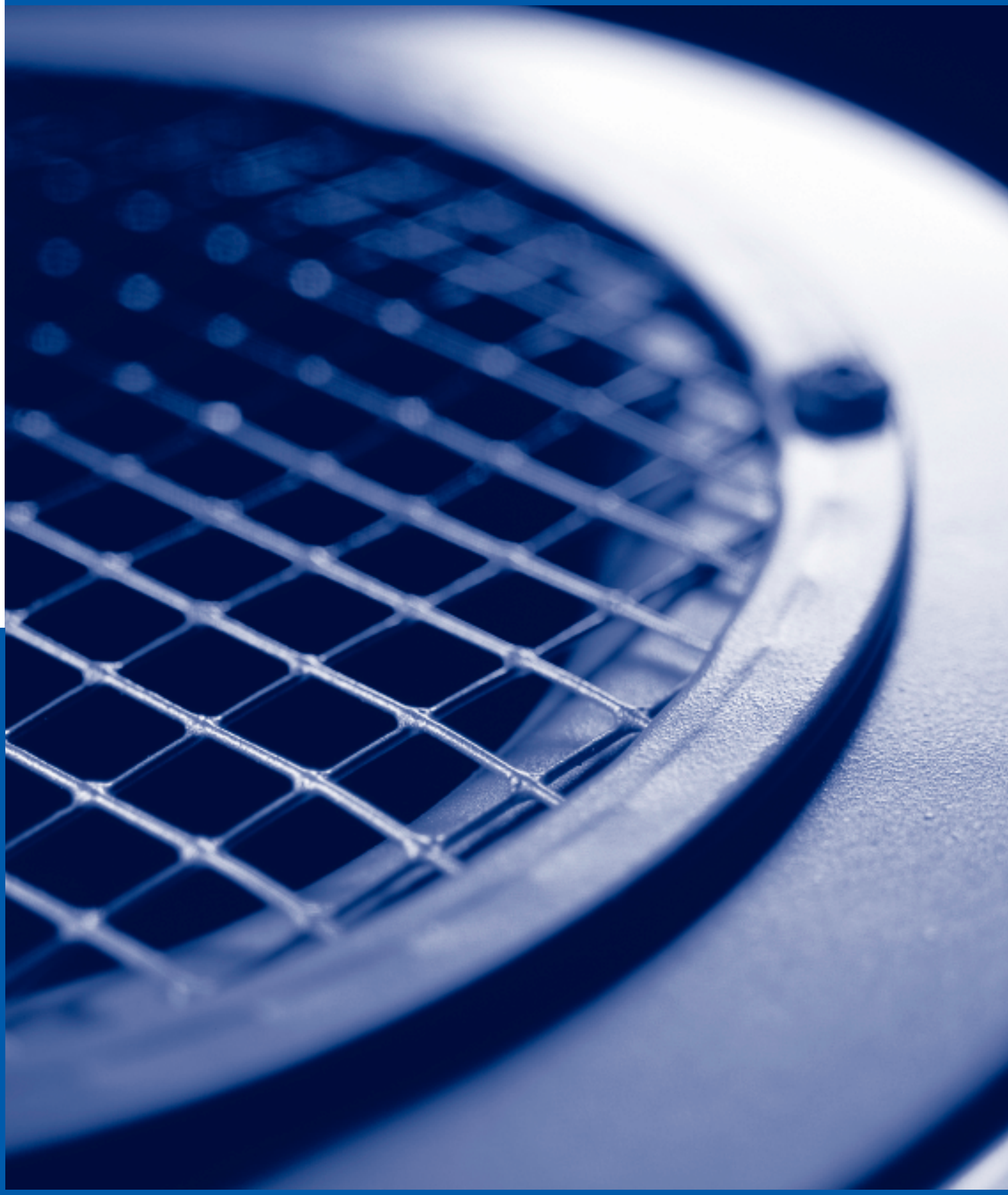
Our quality assurance system for design, production, sales and service is certified according to DIN ISO 9001 : 2000. Our environmental management system is also certified to DIN EN ISO 14001.
Our customers set the standards for measuring the quality of our products. Our task is to meet your requirements, since customer orientation is a Lenze principle demanding the best quality.

See for yourself.






A worldwide service –
Our team of experts provides reliable and professional assistance.



Contents | DC motors

MGFRK/MGFQU/MGFQK series

Insulation and impregnation
All motors are of temperature class F (permissible permanent temperature 155 °C) and are provided with a special impregnation of the windings.

Temperature monitoring
A normally closed bimetal switch that reacts at 155 °C is fitted as standard to all motors of the MGFRK, MGFQU and MGFQK series. Thermistors may also be fitted. This does, however, not ensure thermistor-type motor protection. Air flow monitors may be fitted to external radial blowers of the MGFQU and MGFQK series.

Fitting brakes and actual value encoders
On request, we can fit Lenze spring-operated brakes. As a standard we can also fit the following tachogenerators:

- Three-phase AC hollow shaft tachogenerator TD 3-30 V/1000 min-1;
- DC hollow shaft tachogenerator GT (GTF) 7.08 L/420 - 20 V/1000 min-1;
- Resolver
- Hollow shaft pulse encoder ITD 21

Ambient temperature TK and the influence on the rated power
Without special measures, temperatures between -20 °C and +40 °C are permissible.

T_K (°C)	30	40	45	50	55	60
P/P_N (%)	117	100	95	90	83	77

for MGFQK 160 / MGFQU 160

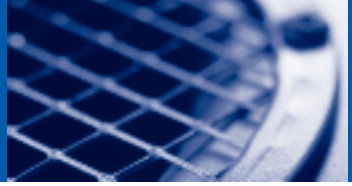
T_K (°C)	25	40	45	50	55	60
P/P_N (%)	100	83	78	74	68	64

Influence of the altitude h on the rated power

h (amsl)	1000	2000	3000	4000	5000
P/P_N (%)	100	92	83	77	67

Rated powers
The rated powers shown in the table are based on a form factor FF = 1.05.

For higher form factors, the output must be reduced. If a standard separately driven fan is fitted, a constant torque may be obtained to almost standstill. The maximum permissible load period under rated current during standstill is 30 s for the MGFRK series and 10 s for the MGFQU/MGFQK series.



MGFRK/MGFQU/MGFQK series

Field weakening
A field weakening range of 1:3 for MGFRK and MGFQK motors, and of 1:1.2–1:1.5 for MGFQU motors is generally possible with constant power. For mechanical reasons, however, the overspeed test speed must not be exceeded. Special designs for higher speeds and field weakening ranges can be provided.

Radio interference suppression
Radio interference suppression of the machine is almost ensured due to the symmetrically arranged auxiliary commutator windings and the spark-free commutation. Special measures can be taken to meet higher requirements.

Balancing
Balancing is done by half keys to DIN/ISO 8821 to vibration level "N" according to VDE 0530 T14. Level "S" is possible on request. The shaft end and the key correspond to DIN 748 and IEC recommendation 72.

Noise level
The noise level L_A, as per DIN 45635 rating curve A, is below the admissible noise level as per DIN 57530/VDE 0530.

Overload capacity
Over a range of up to 3 times the nominal current, the motors of the MGFRK and MGFQK series provided with a compensating winding keep to exact proportionality between current and torque. In this range, overload is always possible if the effective value of the overall current is not exceeded. Motors of the MGFQU series can provide 1.6 times the nominal torque for approx. 20 s. The current then increases to approximately 2x I_N.

Terminal box position
The standard terminal box position is "right" for the MGFRK series; "top" for the MGFQU and MGFQK series for the sizes 063-32 to 132-32, and "right" for the sizes 160-22 when viewed from the output shaft end.

Mountings
Standard for the MGFRK series are mountings IMB 3, IMB 5 and IMB 14, for the MGFQU and MGFQK series mountings IMB 35 or IMB 34 to DIN IEC 34 T7. Other mountings are possible. The ball bearings are rated for at least 20,000 operating hours under nominal load conditions. In the basic design, the motors are equipped with permanently greased ball bearings. For high radial shaft loads, cylindrical roller bearings are provided on the output side.

Pg screwings

Motor type	Motor terminal box		Fan terminal box	
	Quantity and dimension	max. cable Ø [mm]	Quantity and dimension	max. cable Ø [mm]
MGFRK 090-22 MGFRK 100-22 MGFRK 112-22	2xM25	16	1xM16	9
MGFRK 132-22 MGFRK 160-22	2xM40 / 2xM16	27 / 9		
MGFQK 063-32 MGFRU 080-22	2xM25	16	1xP_g 9	8
MGFQU 100-22 MGFQK 100-32 MGFQU 112-22	1xM40 / 1xM20 / 1xM16	27 / 13 / 9		
MGFQU 132-22	1xM50 / 1xM20 / 1xM16	35 / 13 / 9		
MGFQU/MGFQK 160-22 MGFQU/MGFQK 160-32	4xM40 / 2xM25	27 / 16	1xP_g 16	15

MGFRK series

Technical information
The DC motors of the MGFRK series represent the most modern motor construction, including: fully laminated stators and rotors allowing high speeds of current alternation with low losses and heat generation. Four-pole design with skewed armatures and many commutator segments ensures high torque and smooth running, down to near standstill. Compensating windings ensure low field distortion and excellent spark-free commutation together with the commutating poles. This is also true for high overload current (3 x I_N) and bad form factors when used with DC controllers, which ensure long life of the brushes. Mechanically, the motors consist of components for standard three-phase AC motors, enclosure IP 54.

The mounting dimensions to IEC 72 as well as DIN 42673 and DIN 42677 standards allow a direct connection with helical, worm and helical worm gearboxes of the Lenze product range and of other suppliers. The standard motor types MGFRK 090-160 are of enclosure IP 54, they are axially cooled temperature class F motors (enamelled wire quality corresponds to temperature class “H” which increases life) and have a normally closed thermal bimetal contact. Due to our modular design, many options can be provided. These comprise AC and DC tachogenerators, incremental encoders and brakes as well as combinations of these.

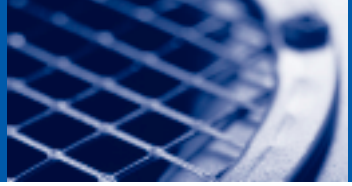
MGFRKBT 090-22 with brake and tachogenerator

MGFRK 090-22

Technical data

Data refers to: – Form factor – Enclosure – Cooling (forced ventilation) – Continuous operation – Insulation class	 F_F = 1.05 IP 54 IC 0541 S1 F
Total weight Inertia	m = 21 kg J = 0.004 kgm²
Field excitation	U_F = 210 V I_F = 0.60 A U_F = 360 V I_F = 0.32 A
A-side bearing B-side bearing	6205-2RSR-C3 6205-2RSR-C3
Carbon brushes	a) 6.3 x 12.5 x 20
Permissible shaft load for L/2 and n_N – reinforced bearing	F_r = 780 N F_a = 440 N F_{rr} = 2100 N
Fan variant	220-240 V, 50-60 Hz, 0.22 A 380-460 V, 50-60 Hz, 0.12 A
Cooling variant	IC 0641/0741
Cooling air volume Pressure drop	75 m³/h 36 Pa

P	Speed n at voltage				n_F	n_{Mech}	M	I_{AN}	I_{Amax}	L_A	R_a125°	Carbon brushes	
kW	min⁻¹				min⁻¹		Nm	A	A	mH	Ω	Quantity	Variant
	170 V	280 V	420 V	460 V									
0.33	–	550	–	–	1650	4500	5.5	2.3	7	156.2	54.38	4	a
0.65	–	–	1100	–	3300	4500	5.5	2.3	7	156.2	54.38	4	a
0.7	–	–	–	1250	3750	4500	5.5	2.3	7	156.2	54.38	4	a
0.2	350	–	–	–	1050	4500	5.6	3.0	9	99.5	34.95	4	a
0.5	–	800	–	–	2400	4500	5.6	3.0	9	99.5	34.95	4	a
0.9	–	–	1500	–	4500	4500	5.6	3.0	9	99.5	34.95	4	a
1.0	–	–	–	1650	4500	4500	5.6	3.0	9	99.5	34.95	4	a
0.27	480	–	–	–	1450	4500	5.7	3.5	10	70.5	23.35	4	a
0.6	–	1100	–	–	3300	4500	5.6	3.5	10	70.5	23.35	4	a
1.1	–	–	1900	–	4500	4500	5.5	3.5	10	70.5	23.35	4	a
1.2	–	–	–	2100	4500	4500	5.5	3.5	10	70.5	23.35	4	a
0.4	650	–	–	–	1950	4500	5.7	4.4	13	46.6	16.05	4	a
0.85	–	1450	–	–	4350	4500	5.7	4.4	13	46.6	16.05	4	a
1.4	–	–	2400	–	4500	4500	5.6	4.4	13	46.6	16.05	4	a
1.6	–	–	–	2700	4500	4500	5.6	4.4	13	46.6	16.05	4	a
0.5	**870**	**–**	**–**	**–**	2600	4500	5.9	5.3	16	33.2	11.52	4	a
1.1	**–**	**1800**	**–**	**–**	4500	4500	5.8	5.3	16	33.2	11.52	4	a
1.8	**–**	**–**	**2950**	**–**	4500	4500	5.7	5.3	16	33.2	11.52	4	a
2.0	**–**	**–**	**–**	**3300**	4500	4500	5.7	5.3	16	33.2	11.52	4	a
1.0	**1650**	**–**	**–**	**–**	4500	4500	5.8	8.3	25	14.1	4.53	4	a
1.8	**–**	**3050**	**–**	**–**	4500	4500	5.7	8.3	25	14.1	4.53	4	a
1.9	**3250**	**–**	**–**	**–**	4500	4500	5.7	14.5	44	4.6	1.48	4	a



MGFRK 100-22

Technical data

Data refers to: – Form factor – Enclosure – Cooling (forced ventilation) – Continuous operation – Insulation class	 F_F = 1.05 IP 54 IC 0541 S1 F
Total weight Inertia	m = 28 kg J = 0.0061 kgm²
Field excitation	U_F = 210 V I_F = 0.70 A U_F = 360 V I_F = 0.37 A
A-side bearing B-side bearing	6306-2RSR-C3 6206-2RSR-C3
Carbon brushes	a) 8 x 12.5 x 20
Permissible shaft load for L/2 and n_N – reinforced bearing	F_r = 1000 N F_a = 500 N F_{rr} = 2700 N
Fan variant	220-240 V, 50-60 Hz, 0.16 A 380-460 V, 50-60 Hz, 0.06 A
Cooling variant	IC 0641/0741
Cooling air volume Pressure drop	105 m³/h 41.4 Pa

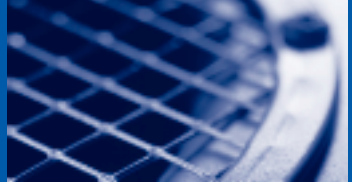
P	Speed n at voltage				n_F	n_{Mech}	M	I_{AN}	I_{Amax}	L_A	R_a125°	Carbon brushes	
kW	min⁻¹				min⁻¹		Nm	A	A	mH	Ω	Quantity	Variant
	170 V	280 V	420 V	460 V									
0.5	–	530	–	–	1600	4500	8.6	2.8	9	143.7	35.09	4	a
0.85	–	–	940	–	2800	4500	8.6	2.8	9	143.7	35.09	4	a
0.95	–	–	–	1050	3150	4500	8.6	2.8	9	143.7	35.09	4	a
0.35	350	–	–	–	1050	4500	8.7	3.7	12	80.8	19.6	4	a
0.7	–	800	–	–	2400	4500	8.5	3.7	12	80.8	19.6	4	a
1.2	–	–	1400	–	4050	4500	8.4	3.7	12	80.8	19.6	4	a
1.35	–	–	–	1550	4500	4500	8.4	3.7	12	80.8	19.6	4	a
0.55	600	–	–	–	1800	4500	8.5	5.0	15	43.8	10.7	4	a
1.1	–	1200	–	–	3600	4500	8.4	5.0	15	43.8	10.7	4	a
1.7	–	–	1900	–	4500	4500	8.2	5.0	15	43.8	10.7	4	a
1.9	–	–	–	2150	4500	4500	8.2	5.0	15	43.8	10.7	4	a
0.7	800	–	–	–	2400	4500	8.3	6.0	18	29.3	6.91	4	a
1.3	–	1500	–	–	4500	4500	8.2	6.0	18	29.3	6.91	4	a
2.1	–	–	2400	–	4500	4500	8.1	6.0	18	29.3	6.91	4	a
2.3	–	–	–	2700	4500	4500	8.1	6.0	18	29.3	6.91	4	a
0.85	900	–	–	–	2700	4500	8.6	7.0	21	22.6	5.7	4	a
1.5	–	1700	–	–	4500	4500	8.4	7.0	21	22.6	5.7	4	a
2.4	–	–	2750	–	4500	4500	8.3	7.0	21	22.6	5.7	4	a
2.7	–	–	–	3100	4500	4500	8.3	7.0	21	22.6	5.7	4	a
1.0	**1100**	**–**	**–**	**–**	3300	4500	8.4	7.9	24	17.7	4.25	4	a
1.85	**–**	**2100**	**–**	**–**	4500	4500	8.4	7.9	24	17.7	4.25	4	a
2.9	**–**	**–**	**3300**	**–**	4500	4500	8.3	7.9	24	17.7	4.25	4	a
3.1	**–**	**–**	**–**	**3600**	4500	4500	8.3	7.9	24	17.7	4.25	4	a
1.6	**1800**	**–**	**–**	**–**	4500	4500	8.9	12.3	36	7.7	1.84	4	a
2.85	**–**	**3200**	**–**	**–**	4500	4500	8.6	12.3	36	7.7	1.84	4	a
2.7	3000	–	–	–	4500	4500	8.6	18.6	56	3.2	0.755	4	a

MGFRK 112-22

Technical data

Data refers to: – Form factor – Enclosure – Cooling (forced ventilation) – Continuous operation – Insulation class	 F_F = 1.05 IP 54 IC 0541 S1 F
Total weight Inertia	m = 40 kg J = 0.0142 kgm²
Field excitation	U_F = 210 V I_F = 1.1 A U_F = 360 V I_F = 0.6 A
A-side bearing B-side bearing	6306-2RSR-C3 6206-2RSR-C3
Carbon brushes	a) 8 x 12.5 x 20 b) 8 x 10.0 x 20
Permissible shaft load for L/2 and n_N – reinforced bearing	F_r = 1500 N F_a = 500 N F_{rr} = 2800 N
Fan variant	220-240 V, 50-60 Hz, 0.30 A 380-460 V, 50-60 Hz, 0.15 A
Cooling variant	IC 0641/0741
Cooling air volume Pressure drop	150 m³/h 48 Pa

P	Speed n at voltage				n_F	n_{Mech}	M	I_{AN}	I_{Amax}	L_A	R_a125°	Carbon brushes	
kW	min⁻¹				min⁻¹		Nm	A	A	mH	Ω	Quantity	Variant
	170 V	280 V	420 V	460 V									
1.1	–	–	750	–	2250	4500	15.0	3.7	11	179.8	26.55	4	a
1.3	–	–	–	850	2550	4500	15.0	3.7	11	179.8	26.55	4	a
0.6	390	–	–	–	1200	4500	14.9	5.9	17	71.1	10.4	4	a
1.2	–	800	–	–	2400	4500	14.6	5.9	17	71.1	10.4	4	a
2.0	–	–	1300	–	3900	4500	14.5	5.9	17	71.1	10.4	4	a
2.2	–	–	–	1450	4350	4500	14.5	5.9	17	71.1	10.4	4	a
0.8	500	–	–	–	1500	4500	15.0	7.2	22	49.4	7.16	4	a
1.6	–	1000	–	–	3000	4500	14.9	7.2	22	49.4	7.16	4	a
2.5	–	–	1600	–	4500	4500	14.7	7.2	22	49.4	7.16	4	a
2.8	–	–	–	1800	4500	4500	14.6	7.2	22	49.4	7.16	4	a
1.1	700	–	–	–	2100	4500	15.1	9.0	27	31.6	4.72	4	a
2.0	–	1300	–	–	3900	4500	14.8	9.0	27	31.6	4.72	4	a
3.2	–	–	2050	–	4500	4500	14.7	9.0	27	31.6	4.72	4	a
3.5	–	–	–	2300	4500	4500	14.6	9.0	27	31.6	4.72	4	a
1.6	**1000**	**–**	**–**	**–**	3000	4500	15.5	12.4	38	17.8	2.55	4	a
2.9	**–**	**1850**	**–**	**–**	4500	4500	15.2	12.4	38	17.8	2.55	4	a
4.5	**–**	**–**	**2850**	**–**	4500	4500	15.0	12.4	38	17.8	2.55	4	a
4.9	**–**	**–**	**–**	**3200**	4500	4500	14.9	12.4	38	17.8	2.55	4	a
1.8	1150	–	–	–	3500	4500	15.0	13.6	41	14.2	2.0	4	a
3.2	–	2050	–	–	4500	4500	14.9	13.6	41	14.2	2.0	4	a
5.0	–	–	3200	–	4500	4500	14.7	13.6	41	14.2	2.0	4	a
5.5	–	–	–	3550	4500	4500	14.6	13.6	41	14.2	2.0	4	a
3.1	**2000**	**–**	**–**	**–**	4500	4500	14.8	22.0	66	5.5	0.55	8	b
5.3	**–**	**3450**	**–**	**–**	4500	4500	14.8	22.0	66	5.5	0.55	8	b



MGFRK 132-22

Technical data

Data refers to: – Form factor – Enclosure – Cooling (forced ventilation) – Continuous operation – Insulation class	 F_F = 1.05 IP 54 IC 0541 S1 F
Total weight Inertia	m = 84 kg J = 0.0411 kgm^2
Field excitation	U_F = 210 V I_F = 1.1 A U_F = 360 V I_F = 0.6 A
A-side bearing B-side bearing	6308-2RSR-C3 6208-2RSR-C3
Carbon brushes	a) 10 x 16 x 20 b) 10 x 12.5 x 20
Permissible shaft load for L/2 and n_N – reinforced bearing	F_r = 2200 N F_a = 1100 N F_{rr} = 4500 N
Fan variant	220-240 V, 50-60 Hz, 0.55 A 380-460 V, 50-60 Hz, 0.22 A
Cooling variant	IC 0641/0741
Cooling air volume Pressure drop	220 m^3/h 63 Pa

P	Speed n at voltage				n_F	n_{Mech}	M	I_{AN}	I_{Amax}	L_A	R_a125°	Carbon brushes	
kW	min^{-1}				min^{-1}		Nm	A	A	mH	Ω	Quantity	Variant
	280 V	420 V	460 V										
1.6	540	–	–	–	1600	4000	29.2	7.7	24	70.0	7.28	4	a
2.7	–	880	–	–	2650	4000	29.0	7.7	24	70.0	7.28	4	a
3.0	–	–	1000	–	3000	4000	29.0	7.7	24	70.0	7.28	4	a
3.1	930	–	–	–	2800	4000	31.5	13.5	40	27.3	2.82	4	a
4.9	–	1450	–	–	4000	4000	31.3	13.5	40	27.3	2.82	4	a
5.4	–	–	1600	–	4000	4000	31.2	13.5	40	27.3	2.82	4	a
4.0	1200	–	–	–	3600	4000	32.3	17.1	52	17.5	1.79	4	a
6.3	–	1900	–	–	4000	4000	32.0	17.1	52	17.5	1.79	4	a
6.9	–	–	2050	–	4000	4000	31.9	17.1	52	17.5	1.79	4	a
5.0	1450	–	–	–	4000	4000	32.5	20.7	62	13.9	1.23	4	a
7.7	–	2300	–	–	4000	4000	32.4	20.7	62	13.9	1.23	4	a
8.4	–	–	2500	–	4000	4000	31.9	20.7	62	13.9	1.23	4	a
6.2	**1850**	**–**	**–**	**–**	4000	4000	32.0	25.5	78	7.6	0.789	4	a
9.6	**–**	**2900**	**–**	**–**	4000	4000	31.6	25.5	78	7.6	0.789	4	a
10.6	**–**	**–**	**3200**	**–**	4000	4000	31.6	25.5	78	7.6	0.789	4	a
7.0	2150	–	–	–	4000	4000	31.5	28.6	86	6.1	0.60	8	b
10.7	–	3350	–	–	4000	4000	31.0	28.6	86	6.1	0.60	8	b
11.7	–	–	3650	–	4000	4000	30.8	28.6	86	6.1	0.60	8	b
10.2	3100	–	–	–	4000	4000	31.6	41.0	120	2.9	0.311	8	b

MGFRK 160-32

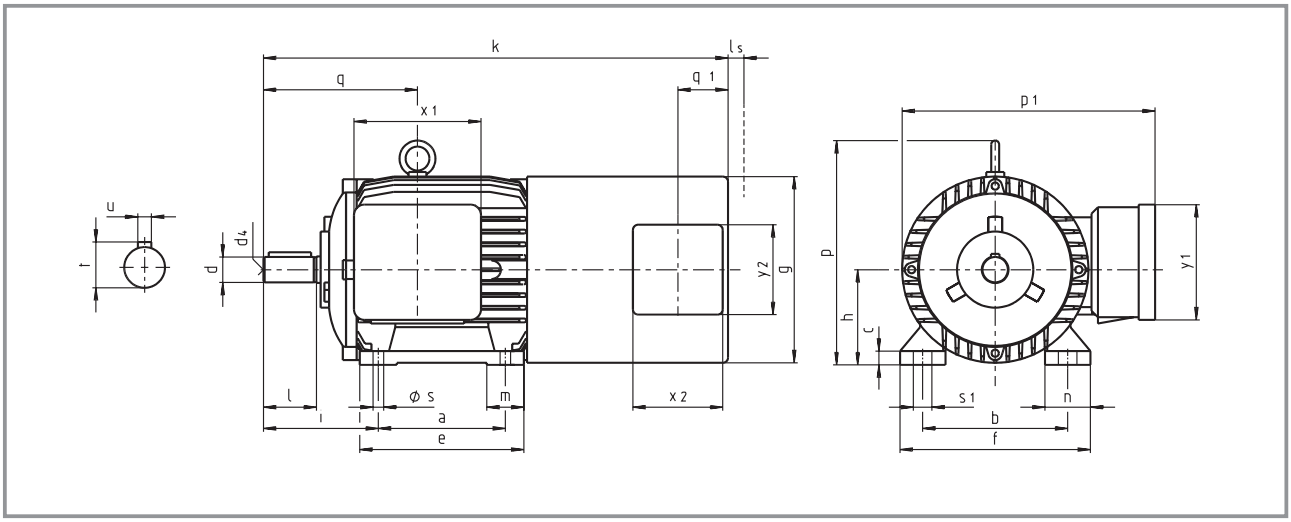
Technical data

Data refers to: – Form factor – Enclosure – Cooling (forced ventilation) – Continuous operation – Insulation class	 F_F = 1.05 IP 54 IC 0541 S1 F
Total weight Inertia	m = 172 kg J = 0,112 kgm^2
Field excitation	U_F = 210 V I_F = 2.2 A U_F = 360 V I_F = 1.2 A
A-side bearing B-side bearing	6310-2RSR-C3 6309-2RSR-C3
Carbon brushes	a) 10 x 16 x 32
Permissible shaft load for L/2 and n_N – reinforced bearing	F_r = 3000 N F_a = 1250 N F_{rr} = 5100 N
Fan variant	220-240 V, 50-60 Hz, 0.71 A 380-460 V, 50-60 Hz, 0.31 A
Cooling variant	IC 0641/0741
Cooling air volume Pressure drop	365 m^3/h 85 Pa

P	Speed n at voltage				n_F	n_{Mech}	M	I_{AN}	I_{Amax}	L_A	R_a125°	Carbon brushes	
kW	min^{-1}				min^{-1}		Nm	A	A	mH	Ω	Quantity	Variant
	280 V	420 V	460 V	–									
4.7	600	–	–	–	1800	4000	73.1	20.4	60	27.5	1.86	4	a
7.5	–	970	–	–	2900	4000	72.9	20.4	60	27.5	1.86	4	a
8.2	–	–	1100	–	3300	4000	72.8	20.4	60	27.5	1.86	4	a
7.1	900	–	–	–	2700	4000	73.0	29.4	88	13.1	0.88	4	a
11.1	–	1450	–	–	4000	4000	72.9	29.4	88	13.1	0.88	4	a
12.2	–	–	1600	–	4000	4000	72.5	29.4	88	13.1	0.88	4	a
9.5	1200	–	–	–	3600	4000	73.6	38.3	110	8.2	0.535	8	a
14.6	–	1900	–	–	4000	4000	73.3	38.3	110	8.2	0.535	8	a
16.0	–	–	2100	–	4000	4000	73.1	38.3	110	8.2	0.535	8	a
11.0	1450	–	–	–	4000	4000	73.7	44	130	5.9	0.40	8	a
16.8	–	2200	–	–	4000	4000	73.0	44	130	5.9	0.40	8	a
18.5	–	–	2450	–	4000	4000	73.0	44	130	5.9	0.40	8	a
13.4	**1750**	**–**	**–**	**–**	4000	4000	73.0	53.3	150	4.1	0.274	8	a
20.5	**–**	**2700**	**–**	**–**	4000	4000	72.5	53.3	150	4.1	0.274	8	a
22.2	**–**	**–**	**2950**	**–**	4000	4000	72.4	53.3	150	4.1	0.274	8	a
16.3	2200	–	–	–	4000	4000	70.2	64.4	190	2.6	0.188	8	a
24.8	–	3400	–	–	4000	4000	69.6	64.4	190	2.6	0.188	8	a
27.0	–	–	3700	–	4000	4000	69.4	64.4	190	2.6	0.188	8	a

MGFRK, IMB3 series

Dimensions



R.H.S. terminal box position (standard)
L.H.S. terminal box position possible (from MGFRK 132)
Shaft end to DIN 748T3
Key to DIN 6885, sheet 1
Dimensions to DIN (a, b, c...), IEC (B, A, HA...)
ls = service clearance

Motor type	a B	b A	c HA	e BB	f AB	h H	i –	m BA	n AA	p –	p_1 –	q –	x_1 –	y_1 –	s K	s_1 –
MGFRK 090-22	125	140	13	155	180	90	106	35	43	–	241	146	120	110	10	18
MGFRK 100-22	140	160	14	175	200	100	123	37.5	48	–	256	162	120	110	11	21
MGFRK 112-22	140	190	14	175	235	112	130	37.5	56	267	282	160	120	110	11	21
MGFRK 132-22	178	216	16	218	260	132	169	40	55	306	332	258	170	170	12	22
MGFRK 160-32	254	254	22	304	318	160	218	58	70	360	385	345	170	170	14	23

Motor type	d D	l E	t GA	u F	d_4 –	ls –	g AC	q_1 –	x_2 –	y_2 –	External fan	External fan
MGFRK 090-22	24	50	27	8	M8	100	176	48	85	85	A2E 170	A2D 170
MGFRK 100-22	28	60	31	8	M10	110	194	48	85	85	A2E 185	A2D 185
MGFRK 112-22	28	60	31	8	M10	110	218	48	85	85	A2E 210	A2D 210
MGFRK 132-22	38	80	41	10	M12	170	257	48	85	85	A2E 250	A2D 250
MGFRK 160-32	42	110	45	12	M16	200	309	48	85	85	A2E 300	A2D 300

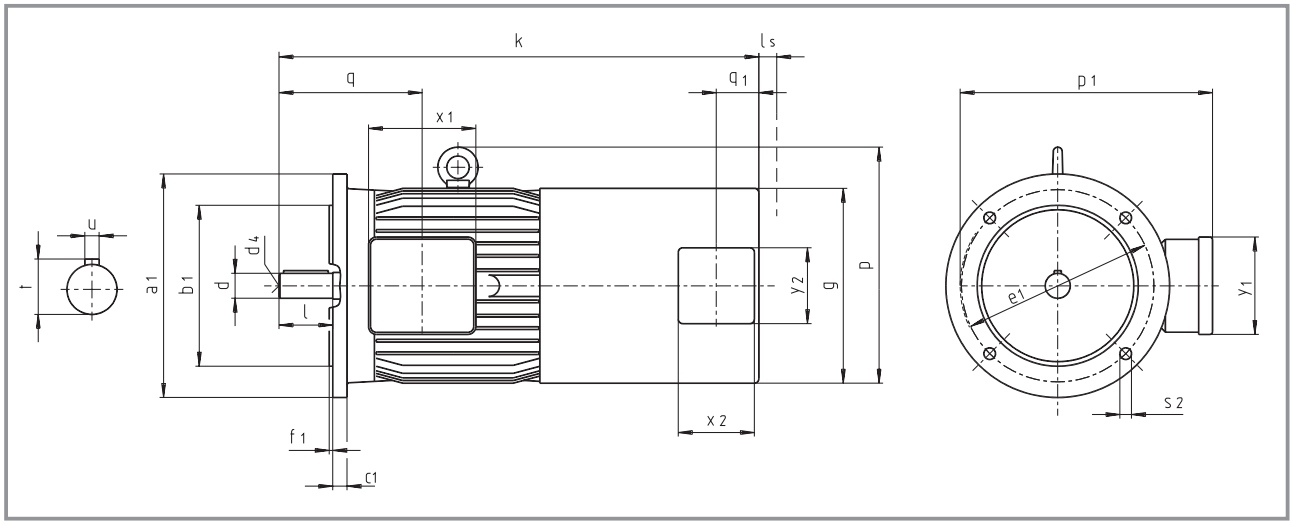
Motor type	Encoder						Brake BFK458-XXX		
	without	TD 3	GT7.08L/420	Resolver	ITD 21	FOG9D+GT7	08	10	12
MGFRK 090-22*	492	492	492	651	651	651	554	554	–
MGFRK 100-22*	536	536	536	697	697	697	597	597	–
MGFRK 112-22*	541	541	557	722	722	722	–	622	622
MGFRK 132-22*	713	713	713	810	810	910	–	–	810
MGFRK 160-32*	911	911	911	1021	1021	1073	–	–	–

Motor type	Brake BFK458-XXX				Brake BFK458-XXX + Encoder				
	14	16	18	20	TD 3	GTF7.08L/420	Resolver	ITD 21	FOG9D+GT7
MGFRK 090-22*	–	–	–	–	554	651	651	651	726
MGFRK 100-22*	–	–	–	–	597	697	697	697	772
MGFRK 112-22*	–	–	–	–	622	722	722	722	797
MGFRK 132-22*	810	810	–	–	810	910	910	910	987
MGFRK 160-32*	–	1021	1021	–	1021	1073	1073	1073	1148

*= Dimension k

MGFRK, IMB5 series

Dimensions



R.H.S. terminal box position (standard)
L.H.S. terminal box position possible (from MGFRK 132)
Shaft end to DIN 748T3
Key to DIN 6885, sheet 1
Dimensions to DIN (a, b, c...), IEC (B, A, HA...)
ls = service clearance

Motor type	a_1 P	b_1 N	c_1 LA	e_1 M	f_1 T	p –	p_1 –	q –	s_2 S	x_1 –	y_1 –	d D	l E	t GA	u F	d_4 –	ls –	g AC	q_1 –	x_2 –	y_2 –	External fan	External fan
MGFRK 090-22	200	130	11	165	3.5	–	241	146	11.5	120	110	24	50	27	8	M8	100	176	48	85	85	A2E 170	A2D 170
MGFRK 100-22	250	180	16	215	4	–	256	162	13	120	110	28	60	31	8	M10	110	194	48	85	85	A2E 185	A2D 185
MGFRK 112-22	250	180	16	215	4	264	282	160	13	120	110	28	60	31	8	M10	110	218	48	85	85	A2E 210	A2D 210
MGFRK 132-22	300	230	12	265	4	303	332	258	13	170	170	38	80	41	10	M12	170	257	48	85	85	A2E 250	A2D 250
MGFRK 160-32	350	250	13	300	5	355	385	345	18	170	170	42	110	45	12	M16	200	309	48	85	85	A2E 300	A2D 300

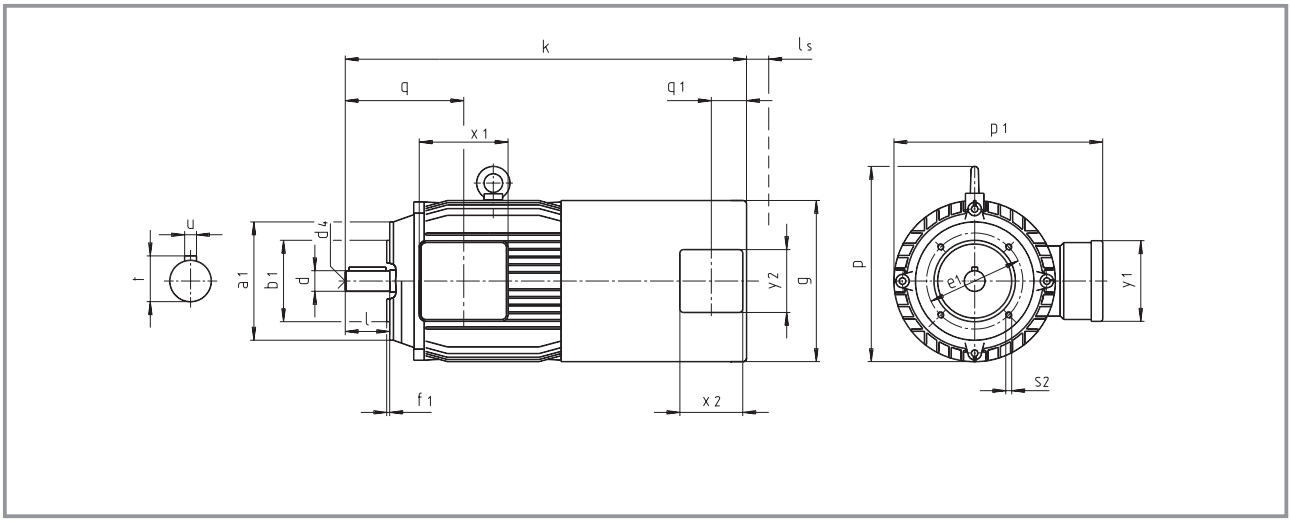
Motor type	Encoder						Brake BFK458-XXX		
	without	TD 3	GT7.08L/420	Resolver	ITD 21	FOG9D+GT7	08	10	12
MGFRK 090-22*	492	492	492	651	651	651	554	554	–
MGFRK 100-22*	536	536	536	697	697	697	597	597	–
MGFRK 112-22*	541	541	557	722	722	722	–	622	622
MGFRK 132-22*	713	713	713	810	810	910	–	–	810
MGFRK 160-32*	911	911	911	1021	1021	1073	–	–	–

Motor type	Brake BFK458-XXX				Brake BFK458-XXX + Encoder				
	14	16	18	20	TD3	GTF7.08L/420	Resolver	ITD 21	FOG9D+GT7
MGFRK 090-22*	–	–	–	–	554	651	651	651	726
MGFRK 100-22*	–	–	–	–	597	697	697	697	772
MGFRK 112-22*	–	–	–	–	622	722	722	722	797
MGFRK 132-22*	810	810	–	–	810	910	910	910	987
MGFRK 160-32*	–	1021	1021	–	1021	1073	1073	1073	1148

*= Dimension k

MGFRK, IMB14 series

Dimensions



R.H.S. terminal box position (standard)
L.H.S. terminal box position possible (from MGFRK 132)
Shaft end to DIN 748T3
Key to DIN 6885, sheet 1
Dimensions to DIN (a, b, c...), IEC (B, A, HA...)
ls = service clearance

Motor type	a_1 P	b_1 N	e_1 M	f_1 T	p –	p_1 –	q –	s_2 S	x_1 –	y_1 –	d D	l E	t GA	u F	d_4 –	ls –	g AC	q_1 –	x_2 –	y_2 –	External fan	External fan
MGFRK 090-22	140	95	115	3	–	241	146	M8	120	110	24	50	27	8	M8	100	176	48	85	85	A2E 170	A2D 170
	160	110	130	3.5				M8														
MGFRK 100-22	160	110	130	3.5	–	256	162	M8	120	110	28	60	31	8	M10	110	194	48	85	85	A2E 185	A2D 185
	200	130	165					M10														
MGFRK 112-22	160	110	130	3.5	264	282	160	M8	120	110	28	60	31	8	M10	110	218	48	85	85	A2E 210	A2D 210
	200	130	165					M10														
MGFRK 132-22	200	130	165	4	303	332	258	M10	170	170	38	80	41	10	M12	170	257	48	85	85	A2E 250	A2D 250

Motor type	Encoder						Brake BFK458-XXX		
	without	TD 3	GT7.08L/420	Resolver	ITD 21	FOG9D+GT7	08	10	12
MGFRK 090-22*	492	492	492	651	651	651	554	554	–
MGFRK 100-22*	536	536	536	697	697	697	597	597	–
MGFRK 112-22*	541	541	557	722	722	722	–	622	622
MGFRK 132-22*	713	713	713	810	810	910	–	–	810

Motor type	Brake BFK458-XXX				Brake BFK458-XXX + Encoder				
	14	16	18	20	TD 3	GTF7.08L/420	Resolver	ITD 21	FOG9D+GT7
MGFRK 090-22*	–	–	–	–	554	651	651	651	726
MGFRK 100-22*	–	–	–	–	597	697	697	697	772
MGFRK 112-22*	–	–	–	–	622	722	722	722	797
MGFRK 132-22*	810	810	–	–	810	910	910	910	987

*= Dimension k

MGFQU/MGFQK series

Technical information

DC motors with square cross section ensure a maximum output power with minimum dimensions and represent the state-of-the-art in the design of DC motors.

The fully laminated stator compacted by axial welding is held with additional rods and screwed to the end shields, thus forming a very compact and rigid unit. The four-pole design with commutator poles and special arrangements of the main poles for suppressing the armature reaction ensures a spark-free commutation and long operating life of the carbon brushes even for increased starting and braking torques. The MGFQK series has additional compensation and can also be operated spark-free at very high rated current (3 x I_N) and in the field weakening range. Smooth running even at low speeds is ensured by skewed armatures and low commutating voltage.

The motors have IEC or DIN mounting dimensions and can easily be connected to gearboxes of Lenze or any other brand.

Enclosure IP 23s is standard for all motors with top-mounted radial external fan, thermal bimetal contacts and temperature class F. The enamelled wire quality corresponds to temperature class "H" in order to increase life. Higher enclosures up to IPR 44, filter, air inlet and air flow monitoring can be fitted as an option.

From size 160 the motors can be supplied in enclosure IP 54 with air/air heat exchanger.

The radial external fans can also be mounted at the sides as well as axially via a special air inlet. The position of the terminal box is normally "on top" up to size 132 and "right" from size 160 when viewed from front.

The non-drive end shields are prepared to fit numerous actual value sources.

The modular design allows easy fitting of various options such as DC and AC tachogenerators, incremental encoders and spring-operated brakes.

MGFQU 080-22 IP 43s

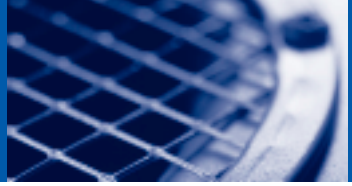
MGFQK 160-22 with air-to-air cooling

MGFQU 080-22

Technical data

Data refers to: – Form factor – Enclosure – Cooling (forced ventilation) – Continuous operation – Insulation class	 F_F = 1.05 IP 23s IC 06 S1 F
Total weight Inertia	m = 36 kg J = 0.0087 kgm²
Field excitation	U_F = 210 V I_F = 1.2 A U_F = 360 V I_F = 0.8 A
A-side bearing B-side bearing	6305-2RSR-C3 6205-2RSR-C3
Carbon brushes	a) 8 x 16 x 25
Permissible shaft load for L/2 and n_N – reinforced bearing	F_r = 1200 N F_a = 400 N F_{rr} = 1950 N
Fan variant	220–240 V, 50–60 Hz, 0.38 A 380–460 V, 50–60 Hz, 0.11 A
Cooling variant	IC 26 IC 17/37
Cooling air volume Pressure drop	80 m³/h 150 Pa

P	Speed n at voltage				n_F	n_{Mech}	M	I_{AN}	I_{Amax}	L_A	R_a125°	Carbon brushes	
kW	min⁻¹				min⁻¹		Nm	A	A	mH	Ω	Quantity	Variant
	170 V	280 V	420 V	460 V									
0.7	–	380	–	–	450	4500	17.9	5.2	10.4	123.8	27.3	4	a
1.4	–	–	750	–	900	4500	17.9	5.2	10.4	123.8	27.3	4	a
1.6	–	–	–	870	1050	4500	17.9	5.2	10.4	123.8	27.3	4	a
0.6	350	–	–	–	500	4500	17.8	8.4	16.8	48.4	10.74	4	a
1.5	–	830	–	–	1000	4500	17.7	8.4	16.8	48.4	10.74	4	a
2.7	–	–	1450	–	1750	4500	17.7	8.4	16.8	48.4	10.74	4	a
3.0	–	–	–	1600	1900	4500	17.7	8.4	16.8	48.4	10.74	4	a
1.0	530	–	–	–	800	4500	18.0	10.5	21.0	31.0	6.73	4	a
2.1	–	1150	–	–	1400	4500	18.0	10.5	21.0	31.0	6.73	4	a
3.5	–	–	1900	–	2300	4500	18.0	10.5	21.0	31.0	6.73	4	a
3.9	–	–	–	2100	2500	4500	17.9	10.5	21.0	31.0	6.73	4	a
1.4	770	–	–	–	1150	4500	17.6	13.3	26.0	19.4	4.24	4	a
2.8	–	1550	–	–	1850	4500	17.6	13.3	26.0	19.4	4.24	4	a
4.6	–	–	2500	–	3000	4500	17.4	13.3	26.0	19.4	4.24	4	a
5.1	–	–	–	2800	3350	4500	17.4	13.3	26.0	19.4	4.24	4	a
1.8	**1000**	**–**	**–**	**–**	1500	4500	18.3	16.1	32.2	13.8	2.88	4	a
3.5	**–**	**1900**	**–**	**–**	2300	4500	18.3	16.1	32.2	13.8	2.88	4	a
5.7	**–**	**–**	**3000**	**–**	3600	4500	18.1	16.1	32.2	13.8	2.88	4	a
6.2	**–**	**–**	**–**	**3350**	4000	4500	18.1	16.1	32.2	13.8	2.88	4	a
3.4	**1800**	**–**	**–**	**–**	2700	4500	18.3	25.7	50.0	5.4	1.13	4	a
6.0	**–**	**3250**	**–**	**–**	3900	4500	18.0	25.7	50.0	5.4	1.13	4	a
4.3	2850	–	–	–	4300	4500	14.4	30.7	60.0	2.7	0.55	4	a



MGFQU 100-22

Technical data

Data refers to: – Form factor – Enclosure – Cooling (forced ventilation) – Continuous operation – Insulation class	 F_F = 1.05 IP 23s IC 06 S1 F
Total weight Inertia	m = 65 kg J = 0.0237 kgm²
Field excitation	U_F = 210 V I_F = 2.4 A U_F = 360 V I_F = 1.3 A
A-side bearing B-side bearing	6306-2RSR-C3 6206-2RSR-C3
Carbon brushes	a) 10 x 16 x 25
Permissible shaft load for L/2 and n_N – reinforced bearing	F_r = 1600 N F_a = 580 N F_{rr} = 3100 N
Fan variant	220–240 V, 50–60 Hz, 0.39 A 380–460 V, 50–60 Hz, 0.11 A
Cooling variant	IC 26 IC 17/37
Cooling air volume Pressure drop	350 m³/h 250 Pa

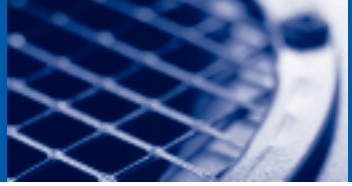
P	Speed n at voltage				n_F	n_{Mech}	M	I_{AN}	I_{Amax}	L_A	R_a125°	Carbon brushes	
kW	min⁻¹				min⁻¹		Nm	A	A	mH	Ω	Quantity	Variant
	280 V	420 V	460 V	–									
1.3	350	–	–	–	530	4500	35.7	8.0	16	83.7	14.11	4	a
2.4	–	650	–	–	800	4500	35.6	8.0	16	83.7	14.11	4	a
2.7	–	–	720	–	850	4500	35.0	8.0	16	83.7	14.11	4	a
2.2	600	–	–	–	900	4500	35.8	11.5	23	41.0	6.61	4	a
3.8	–	1000	–	–	1200	4500	35.7	11.5	23	41.0	6.61	4	a
4.3	–	–	1150	–	1400	4500	36.4	11.5	23	41.0	6.61	4	a
2.9	800	–	–	–	1200	4500	35.5	14.1	28	26.9	4.522	4	a
4.8	–	1300	–	–	1550	4500	35.3	14.1	28	26.9	4.522	4	a
5.4	–	–	1450	–	1750	4500	34.8	14.1	28	26.9	4.522	4	a
4.7	1200	–	–	–	1800	4500	37.4	21.2	42.5	13.4	2.15	4	a
7.6	–	1950	–	–	2350	4500	37.1	21.2	42.5	13.4	2.15	4	a
8.4	–	–	2150	–	2600	4500	37.1	21.2	42.5	13.4	2.15	4	a
5.8	1500	–	–	–	2250	4500	36.3	25.0	50	9.3	1.521	4	a
9.1	–	2400	–	–	2900	4500	36.1	25.0	50	9.3	1.521	4	a
10.0	–	–	2650	–	3200	4500	36.0	25.0	50	9.3	1.521	4	a
6.4	1700	–	–	–	2550	4500	36.3	27.5	55	7.3	1.226	4	a
10.2	–	2700	–	–	3250	4500	36.1	27.5	55	7.3	1.226	4	a
11.2	–	–	2950	–	3550	4500	35.9	27.5	55	7.3	1.226	4	a
7.3	**1950**	**–**	**–**	**–**	2900	4500	36.1	30.9	62	5.9	0.954	4	a
11.4	**–**	**3050**	**–**	**–**	3650	4500	35.7	30.9	62	5.9	0.954	4	a
12.5	**–**	**–**	**3350**	**–**	4000	4500	35.6	30.9	62	5.9	0.954	4	a
12.1	3250	–	–	–	4500	4500	35.7	49.0	98	2.3	0.808	8	a

MGFQU 112-22

Technical data

Data refers to: – Form factor – Enclosure – Cooling (forced ventilation) – Continuous operation – Insulation class	 F_F = 1.05 IP 23s IC 06 S1 F
Total weight Inertia	m = 115 kg J = 0.0475 kgm²
Field excitation	U_F = 210 V I_F = 3.4 A U_F = 360 V I_F = 2.2 A
A-side bearing B-side bearing	6308-2RSR-C3 6308-2RSR-C3
Carbon brushes	a) 10 x 16 x 25
Permissible shaft load for L/2 and n_N – reinforced bearing	F_r = 2300 N F_a = 1000 N F_{rr} = 4900 N
Fan variant	220–240 V, 50–60 Hz, 1.15 A 380–460 V, 50–60 Hz, 0.5 A
Cooling variant	IC 26 IC 17/37
Cooling air volume Pressure drop	670 m³/h 380 Pa

P	Speed n at voltage				n_F	n_{Mech}	M	I_{AN}	I_{Amax}	L_A	R_a125°	Carbon brushes	
kW	min⁻¹				min⁻¹		Nm	A	A	mH	Ω	Quantity	Variant
	280 V	420 V	460 V	–									
2.8	360	–	–	–	550	4000	75.4	17.4	35	43	6.37	4	a
5.2	–	660	–	–	800	4000	75.4	17.4	35	43	6.37	4	a
5.9	–	–	750	–	900	4000	75.3	17.4	35	43	6.37	4	a
4.5	570	–	–	–	850	4000	76.0	23.8	48	23	3.51	4	a
7.8	–	950	–	–	1150	4000	75.9	23.8	48	23	3.51	4	a
8.7	–	–	1100	–	1300	4000	75.8	23.8	48	23	3.51	4	a
5.9	790	–	–	–	1200	4000	71.4	28.5	57	14.4	2.34	8	a
9.8	–	1300	–	–	1550	4000	71.2	28.5	57	14.4	2.34	8	a
10.9	–	–	1450	–	1750	4000	71.2	28.5	57	14.4	2.34	8	a
9.0	1150	–	–	–	1750	4000	72.7	40.0	80	7.6	1.20	8	a
14.5	–	1900	–	–	2300	4000	72.5	40.0	80	7.6	1.20	8	a
16.0	–	–	2100	–	2500	4000	72.4	40.0	80	7.6	1.20	8	a
13.0	1650	–	–	–	2000	4000	74.9	55.0	110	4.3	0.646	8	a
20.5	–	2600	–	–	3100	4000	74.6	55.0	110	4.3	0.646	8	a
22.5	–	–	2900	–	3500	4000	74.5	55.0	110	4.3	0.646	8	a
15.9	**2050**	**–**	**–**	**–**	3050	4000	73.8	67.0	134	3.0	0.443	8	a
24.8	**–**	**3200**	**–**	**–**	3850	4000	73.5	67.0	134	3.0	0.443	8	a
27.1	**–**	**–**	**3500**	**–**	4000	4000	72.7	67.0	134	3.0	0.443	8	a



MGFQU 132-32

Technical data

Data refers to: – Form factor – Enclosure – Cooling (forced ventilation) – Continuous operation – Insulation class	 F_F = 1.05 IP 23s IC 06 S1 F
Total weight Inertia	m = 170 kg J = 0.1120 kgm²
Field excitation	U_F = 210 V I_F = 4.0 A U_F = 360 V I_F = 2.2 A
A-side bearing B-side bearing	6308-2RSR-C3 6308-2RSR-C3
Carbon brushes	a) 10 x 20 x 32 b) 12.5 x 20 x 32 ZW c) 12.5 x 20 x 32
Permissible shaft load for L/2 and n_N – reinforced bearing	F_r = 2300 N F_a = 1350 N F_{rr} = 4900 N
Fan variant	380–440 V, 50–60 Hz, 0.66 A 345–540 V, 50–60 Hz, 1.4 A
Cooling variant	IC 26 IC 17/37
Cooling air volume Pressure drop	1000 m³/h 450 Pa

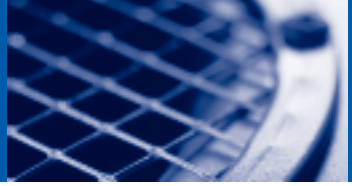
P	Speed n at voltage				n_F	n_{Mech}	M	I_{AN}	I_{Amax}	L_A	R_a125°	Carbon brushes	
kW	min⁻¹				min⁻¹		Nm	A	A	mH	Ω	Quantity	Variant
	280 V	420 V	460 V	–									
5.4	330	–	–	–	500	4000	156.4	30.4	61	31.8	3.17	8	a
9.5	–	590	–	–	700	4000	155.8	30.4	61	31.8	3.17	8	a
10.7	–	–	660	–	800	4000	155.7	30.4	61	31.8	3.17	8	a
10.6	650	–	–	–	980	4000	156.4	49.6	100	12.0	1.19	8	a
17.3	–	1050	–	–	1250	4000	156.0	49.6	100	12.0	1.19	8	a
19.2	–	–	1150	–	1400	4000	155.9	49.6	100	12.0	1.19	8	a
14.9	930	–	–	–	1400	4000	153.9	65.2	130	6.8	0.667	8	a
23.7	–	1500	–	–	1800	4000	153.4	65.2	130	6.8	0.667	8	a
26.2	–	–	1650	–	2000	4000	153.3	65.2	130	6.8	0.667	8	a
18.4	1150	–	–	–	1725	4000	154.8	78.8	160	4.7	0.470	8	a
29.1	–	1800	–	–	2150	4000	154.3	78.8	160	4.7	0.470	8	a
32.1	–	–	2000	–	2400	4000	154.1	78.8	160	4.7	0.470	8	a
24.4	1450	–	–	–	2150	4000	158.6	101	200	3.0	0.289	8	b
38.0	–	2300	–	–	2750	4000	157.9	101	200	3.0	0.289	8	b
41.8	–	–	2550	–	3050	4000	157.7	101	200	3.0	0.289	8	b
29.9	**2050**	–	–	–	3050	4000	139.3	120	240	1.7	0.171	8	c
46.0	–	**3150**	–	–	3800	4000	139.5	120	240	1.7	0.171	8	c
50.4	–	–	**3450**	–	4000	4000	139.5	120	240	1.7	0.171	8	c

MGFQU 160-22

Technical data

Data refers to: – Form factor – Enclosure – Cooling (forced ventilation) – Continuous operation – Insulation class	 F_F = 1.05 IP 23s IC 06 S1 F
Total weight Inertia	m = 250 kg J = 0.2452 kgm²
Field excitation	U_F = 210 V I_F = 6.7 A U_F = 360 V I_F = 4.0 A
A-side bearing B-side bearing	6312-2RSR-C3 6312-2RSR-C3
Carbon brushes	a) 12.5 x 25 x 32 b) 12.5 x 25 x 32 ZW
Permissible shaft load for L/2 and n_N – reinforced bearing	F_r = 4950 N F_a = 3580 N F_{rr} = 9700 N
Fan variant	345–540 V, 50–60 Hz, 1.4 A
Cooling variant	IC 26 IC 17/37
Cooling air volume Pressure drop	1300 m³/h 500 Pa

P	Speed n at voltage				n_F	n_{Mech}	M	I_{AN}	I_{Amax}	L_A	R_a125°	Carbon brushes	
kW	min⁻¹				min⁻¹		Nm	A	A	mH	Ω	Quantity	Variant
	420 V	460 V	–	–									
24.9	840	–	–	–	1000	3600	283	72,0	145	10.8	0.87	4	a
27.7	–	940	–	–	1100	3600	283	72,0	145	10.8	0.87	4	a
33.4	1100	–	–	–	1300	3600	290	93,3	187	6.5	0.525	8	a
37.0	–	1250	–	–	1500	3600	290	93,3	187	6.5	0.525	8	a
40.5	1300	–	–	–	1550	3600	290	111	220	4.8	0.384	8	a
44.8	–	1450	–	–	1750	3600	290	111	220	4.8	0.384	8	a
48.7	1600	–	–	–	1900	3600	288	131	262	3.3	0.268	8	a
53.8	–	1800	–	–	2150	3600	288	131	262	3.3	0.268	8	a
61.6	2050	–	–	–	2450	3600	283	163	325	2.1	0.171	12	b
68.0	–	2300	–	–	2750	3600	283	163	325	2.1	0.171	12	b
82.0	**2800**	**–**	**–**	**–**	3350	3600	279	215	430	1.2	0.099	12	a
90.6	**–**	**3100**	**–**	**–**	3600	3600	279	215	430	1.2	0.099	12	a



MGFQU 160-32

Technical data

Data refers to: – Form factor – Enclosure – Cooling (forced ventilation) – Continuous operation – Insulation class Ambient temperature at 40 °C power/torque derating	 F_F = 1.05 IP 23s IC 06 S1 F 25 °C 83%
Total weight Inertia	m = 285 kg J = 0.32 kgm²
Field excitation	U_F = 210 V I_F = 7 A U_F = 360 V I_F = 4 A
A-side bearing B-side bearing	6312-2RSR-C3 6312-2RSR-C3
Carbon brushes	a) 12.5 x 25 x 32 b) 12.5 x 25 x 32 ZW
Permissible shaft load for L/2 and n_N – reinforced bearing	F_r = 5050 N F_a = 3580 N F_{rr} = 9900 N
Fan variant	345–540 V, 50–60 Hz, 1.4 A
Cooling variant	IC 26 IC 17/37
Cooling air volume Pressure drop	1300 m³/h 500 Pa

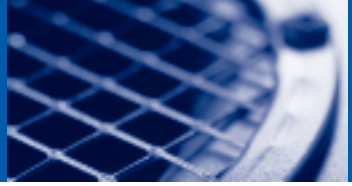
P	Speed n at voltage				n_F	n_{Mech}	M	I_{AN}	I_{Amax}	L_A	R_a125°	Carbon brushes	
kW	min⁻¹				min⁻¹		Nm	A	A	mH	Ω	Quantity	Variant
	420 V	460 V	–	–									
22.5 25.0	650 –	– 720	– –	– –	800 870	3600 3600	330 330	66 66	130 130	14.6 14.6	1.05 1.05	4 4	a a
30.4 33.8	870 –	– 950	– –	– –	1050 1150	3600 3600	334 334	85 85	170 170	8.9 8.9	0.63 0.63	8 8	a a
36.2 40.0	1050 –	– 1150	– –	– –	1250 1400	3600 3600	333 333	100 100	200 200	6.5 6.5	0.374 0.374	8 8	a a
43.8 48.4	1250 –	– 1400	– –	– –	1500 1700	3600 3600	329 329	119 119	240 240	4.5 4.5	0.324 0.324	8 8	a a
56.0 62.0	1600 –	– 1800	– –	– –	1900 2150	3600 3600	330 330	149 149	300 300	2.9 2.9	0.206 0.206	12 12	b b
79 **86.2**	**2200** **–**	**–** **2400**	**–** **–**	**–** **–**	2650 2900	3600 3600	343 343	207 207	410 410	1.6 1.6	0.115 0.115	12 12	a a

MGFQK 063-32

Technical data

Data refers to: – Form factor – Enclosure – Cooling (forced ventilation) – Continuous operation – Insulation class	 F_F = 1.05 IP 23s IC 06 S1 F
Total weight Inertia	m = 19 kg J = 0.0032 kgm²
Field excitation	U_F = 210 V I_F = 1.0 A U_F = 360 V I_F = 0.52 A
A-side bearing B-side bearing	6204-2RSR-C3 6204-2RSR-C3
Carbon brushes	a) 6.3 x 16 x 20
Permissible shaft load for L/2 and n_N – reinforced bearing	F_r = 750 N F_a = 400 N F_{rr} = 1100 N
Fan variant	220–240 V, 50–60 Hz, 0.39 A 380–460 V, 50–60 Hz, 0.11 A
Cooling variant	IC 26 IC 17/37
Cooling air volume Pressure drop	65 m³/h 70 Pa

P	Speed n at voltage				n_F	n_{Mech}	M	I_{AN}	I_{Amax}	L_A	R_a125°	Carbon brushes	
kW	min⁻¹				min⁻¹		Nm	A	A	mH	Ω	Quantity	Variant
	170 V	280 V	–	–									
0.33	400	–	–	–	1300	4500	7.0	5.3	15	57.5	19.4	4	a
0.85	–	1150	–	–	3450	4500	6.9	5.3	15	57.5	19.4	4	a
0.5	750	–	–	–	2250	4500	7.0	5.7	17	39.7	13.26	4	a
1.1	–	1650	–	–	4500	4500	6.9	5.7	17	39.7	13.26	4	a
0.75	1000	–	–	–	3000	4500	7.0	8.0	24	26.5	8.5	4	a
1.5	–	2100	–	–	4500	4500	6.9	8.0	24	26.5	8.5	4	a
1.0	1300	–	–	–	3900	4500	7.0	10.2	30	15.5	5.59	4	a
2.0	–	2700	–	–	4500	4500	7.0	10.2	30	15.5	5.59	4	a
1.3	**1700**	**–**	**–**	**–**	4500	4500	7.0	11.3	34	12.5	4.09	4	a
2.4	**–**	**3200**	**–**	**–**	4500	4500	7.0	11.3	34	12.5	4.09	4	a



MGFQK 100-32

Technical data

Data refers to: – Form factor – Enclosure – Cooling (forced ventilation) – Continuous operation – Insulation class	 F_F = 1.05 IP 23s IC 06 S1 F
Total weight Inertia	m = 63 kg J = 0.0170 kgm²
Field excitation	U_F = 210 V I_F = 1.6 A U_F = 360 V I_F = 0.86 A
A-side bearing B-side bearing	6306-2RSR-C3 6206-2RSR-C3
Carbon brushes	a) 10 x 12.5 x 25
Permissible shaft load for L/2 and n_N – reinforced bearing	F_r = 1600 N F_a = 580 N F_{rr} = 3100 N
Fan variant	220–240 V, 50–60 Hz, 0.76 A 380–460 V, 50–60 Hz, 0.25 A
Cooling variant	IC 26 IC 17/37
Cooling air volume Pressure drop	330 m³/h 290 Pa

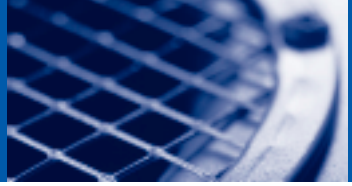
P	Speed n at voltage				n_F	n_{Mech}	M	I_{AN}	I_{Amax}	L_A	R_a125°	Carbon brushes	
kW	min⁻¹				min⁻¹		Nm	A	A	mH	Ω	Quantity	Variant
	280 V	420 V	460 V	–									
1.7	470	–	–	–	1400	4500	34.7	10.8	32	70.2	10.9	4	a
3.2	–	880	–	–	2650	4500	34.7	10.8	32	70.2	10.9	4	a
3.6	–	–	1000	–	3000	4500	34.6	10.8	32	70.2	10.9	4	a
3.2	850	–	–	–	2550	4500	34.7	17.6	53	31.2	4.79	4	a
5.5	–	1500	–	–	4500	4500	34.7	17.6	53	31.2	4.79	4	a
6.1	–	–	1650	–	4500	4500	34.6	17.6	53	31.2	4.79	4	a
4.0	1100	–	–	–	3300	4500	34.6	19.4	58	21.9	3.42	4	a
6.6	–	1850	–	–	4500	4500	34.4	19.4	58	21.9	3.42	4	a
7.4	–	–	2050	–	4500	4500	34.4	19.4	58	21.9	3.42	4	a
5.3	1450	–	–	–	4350	4500	34.5	26.0	78	13.7	2.19	4	a
8.5	–	2400	–	–	4500	4500	34.3	26.0	78	13.7	2.19	4	a
9.5	–	–	2650	–	4500	4500	34.2	26.0	78	13.7	2.19	4	a
6.6	**1850**	**–**	**–**	**–**	4500	4500	34.3	29.0	87	9.5	1.6	8	a
10.6	**–**	**3000**	**–**	**–**	4500	4500	34.1	29.0	87	9.5	1.6	8	a
11.6	**–**	**–**	**3250**	**–**	4500	4500	34.0	29.0	87	9.5	1.6	8	a
11.6	3300	–	–	–	4500	4500	33.8	48.0	144	3.5	0.554	8	a

MGFQK 160-22

Technical data

Data refers to: – Form factor – Enclosure – Cooling (forced ventilation) – Continuous operation – Insulation class	 F_F = 1.05 IP 23s IC 06 S1 F
Total weight Inertia	m = 250 kg J = 0.2452 kgm²
Field excitation	U_F = 210 V I_F = 6.2 A U_F = 360 V I_F = 3.5 A
A-side bearing B-side bearing	6312-2RSR-C3 6312-2RSR-C3
Carbon brushes	a) 12.5 x 25 x 32 b) 12.5 x 25 x 32 ZW
Permissible shaft load for L/2 and n_N – reinforced bearing	F_r = 4950 N F_a = 3580 N F_{rr} = 9700 N
Fan variant	345–540 V, 50–60 Hz, 1.4 A
Cooling variant	IC 26 IC 17/37 IC 0666
Cooling air volume Pressure drop	1300 m³/h 500 Pa

P	Speed n at voltage				n_F	n_{Mech}	M	I_{AN}	I_{Amax}	L_A	R_a125º	Carbon brushes	
kW	min^{-1}				min^{-1}		Nm	A	A	mH	Ω	Quantity	Variant
	420 V	460 V	–	–									
25.1 27.9	820 –	– 900	– –	– –	2450 2700	3600 3600	292 292	72 72	180 180	9.2 9.2	0.884 0.884	4 4	a a
33.7 37.3	1100 –	– 1200	– –	– –	3300 3600	3600 3600	295 295	93 93	232 232	5.6 5.6	0.50 0.50	8 8	a a
40.8 45.0	1300 –	– 1450	– –	– –	3600 3600	3600 3600	300 300	111 111	275 275	4.1 4.1	0.368 0.368	8 8	a a
49.2 54.4	1550 –	– 1750	– –	– –	3600 3600	3600 3600	298 298	132 132	330 330	2.8 2.8	0.260 0.260	8 8	a a
62.0 68.2	2000 –	– 2200	– –	– –	3600 3600	3600 3600	293 293	163 163	410 410	1.8 1.8	0.16 0.16	12 12	b b
83.0 **90.8**	**2750** –	**–** **3000**	**–** –	**–** –	3600 3600	3600 3600	289 289	215 215	540 540	1.0 1.0	0.09 0.09	12 12	a a



MGFQK 160-32

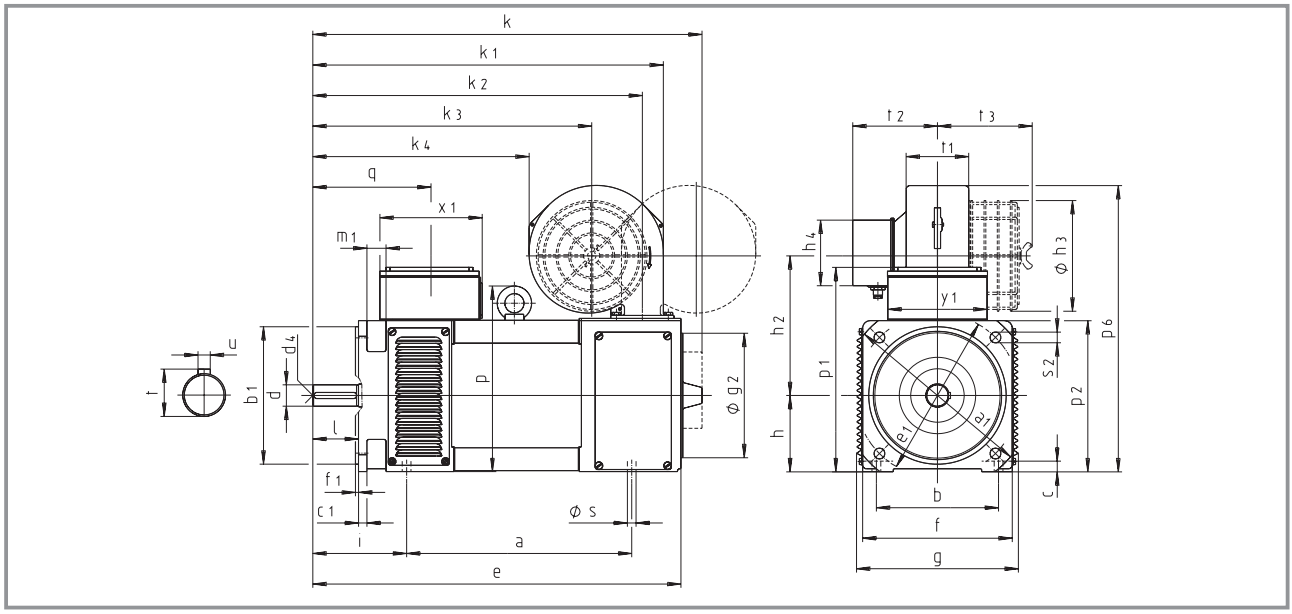
Technical data

Data refers to: – Form factor – Enclosure – Cooling (forced ventilation) – Continuous operation – Insulation class Ambient temperature at 40 °C power/torque derating	 F_F = 1.05 IP 23s IC 06 S1 F 25 °C 83%
Total weight Inertia	m = 285 kg J = 0.32 kgm^2
Field excitation	U_F = 210 V I_F = 6.2 A U_F = 360 V I_F = 3.6 A
A-side bearing B-side bearing	6312-2RSR-C3 6312-2RSR-C3
Carbon brushes	a) 12.5 x 25 x 32 b) 12.5 x 25 x 32 ZW
Permissible shaft load for L/2 and n_N – reinforced bearing	F_r = 5050 N F_a = 3580 N F_{rr} = 9900 N
Fan variant	345–540 V, 50–60 Hz, 1.4 A
Cooling variant	IC 26 IC 17/37 IC 0666
Cooling air volume Pressure drop	1300 m^3/h 500 Pa

P	Speed n at voltage				n_F	n_{Mech}	M	I_{AN}	I_{Amax}	L_A	R_a125°	Carbon brushes	
kW	min^{-1}				min^{-1}		Nm	A	A	mH	Ω	Quantity	Variant
	420 V	460 V	–	–									
22.6	630	–	–	–	1900	3600	343	66	165	12.4	1.0	4	a
25.2	–	700	–	–	2100	3600	343	66	165	12.4	1.0	4	a
30.8	850	–	–	–	2550	3600	347	86	215	7.5	0.597	8	a
34.1	–	940	–	–	2800	3600	347	86	215	7.5	0.597	8	a
36.5	1000	–	–	–	3000	3600	346	100	250	5.5	0.448	8	a
40.4	–	1100	–	–	3300	3600	346	100	250	5.5	0.448	8	a
44.1	1250	–	–	–	3600	3600	344	120	300	3.6	0.307	12	a
48.7	–	1350	–	–	3600	3600	344	120	300	3.6	0.307	12	a
56.2	1550	–	–	–	3600	3600	343	149	370	2.4	0.200	12	b
61.9	–	1700	–	–	3600	3600	343	149	370	2.4	0.200	12	b
79.3	**2100**	**–**	**–**	**–**	3600	3600	360	207	515	1.4	0.107	12	a
87.6	**–**	**2350**	**–**	**–**	3600	3600	356	207	515	1.4	0.107	12	a

MGFQU/MGFQK, IMB35 series

Dimensions



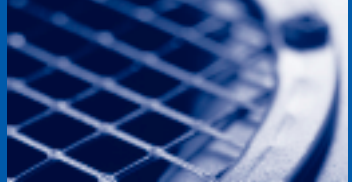
Terminal box position "on top" (standard)
Shaft end to DIN 748T3
Key to DIN 6885, sheet 1
Dimensions to DIN (a, b, c...), IEC (B, A, HA...)
** only in IMB5 design

Motor type	a B	a_1 P	b A	b_1 N	c HA	c_1 LA	e BB	e_1 M	f AB	f_1 T	g AC	g_2 –	h H	i –	k_2 –	m_1 –	p –	p_1 –	p_2 –	q –	s K
MGFQK 063-32**	–	200	–	130	–	10	–	165	150	3.5	141	–	75	–	361	20	–	202	150	125	–
MGFQU 080-22	255	200	125	130	11	11	350	165	159	3.5	174	140	80	100	385	21	194	220	158	138	9.5
MGFQU 100-22	295	250	160	180	14	11	382	215	196	4	212	163	100	123	432	25	243	290	198	155	11.5
MGFQK 100-32	295	250	160	180	14	11	382	215	196	4	212	163	100	123	420	25	248	290	198	155	11.5
MGFQU 112-22	385	300	190	230	16	12	504	265	220	4	235	198	112	150	555	25	267	314	222	157	11.5
MGFQU 132-32	460	300	215	230	18	12	604	265	260	4	275	238	132	169	643	25	315	366	262	202	14

Motor type	s_2 S	x_1 –	y_1 –	d D	l E	t GA	u F	d_4 –	h_2 –	h_3 –	h_4 –	k_1 –	k_3 –	k_4 –	p_6 –	t_1 –	t_2 –	t_3 –	External fan
MGFQK 063-32**	11	110	120	19	40	21.5	6	M6	145	145	94	389	295	213	315	82	111	124	G2E (D) 120
MGFQU 080-22	11	110	120	24	50	27	8	M8	160	145	94	413	319	237	339	82	111	124	G2E (D) 120
MGFQU 100-22	14	134	131	28	60	31	8	M10	180	145	94	460	366	284	379	82	111	124	G2E (D) 120
MGFQK 100-32	14	134	131	28	60	31	8	M10	201	185	94	467	326	219	447	100	97	141	G2E (D) 140
MGFQU 112-22	14	134	131	38	80	41	10	M12	213	185	94	602	461	354	451	100	97	141	G2E (D) 160
MGFQU 132-32	14	157	155	38	80	41	10	M12	250	185	94	700	542	420	525	92	113	137	G2D 180

Motor type	Encoder						Brake BFK460-XXX		
	without	TD 3	GT7.08L/420	Resolver	ITD 21	FOG9D+GT7	08	10	12
MGFQK 063-22*	451	443	459	483	483	572	509	–	–
MGFQU 080-22*	467	459	475	499	499	588	–	555	555
MGFQU 100-22*	520	512	528	552	552	641	–	–	608
MGFQK 100-32*	520	512	528	552	552	641	–	–	608
MGFQU 112-22*	660	652	668	692	692	770	–	–	–
MGFQU 132-32*	760	752	768	792	792	870	–	–	–

*= Dimension k

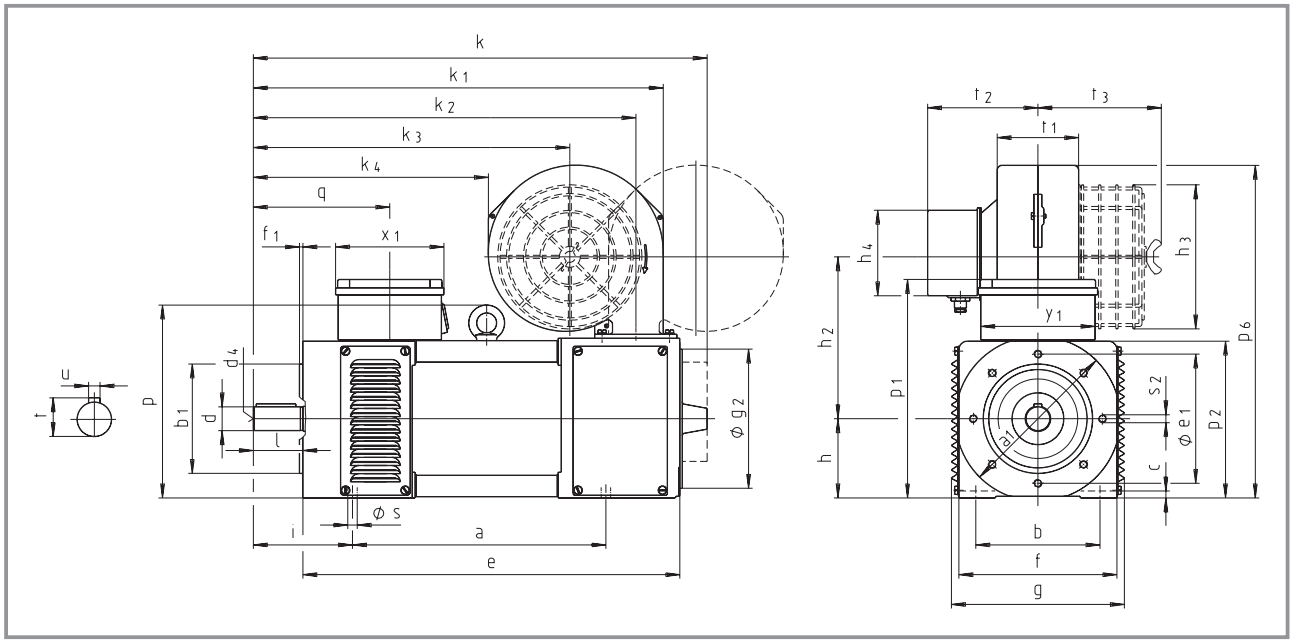


Motor type	Brake BFK460-XXX				Brake BFK460-XXX + Encoder				
	14	16	18	20	TD 3	GTF7.08L/420	Resolver	ITD 21	FOG9D+GT7
MGFQK 063-32*	–	–	–	–	501	587	541	541	619
MGFQU 080-22*	–	–	–	–	547	633	587	587	665
MGFQU 100-22*	608	–	–	–	600	686	640	640	718
MGFQK 100-32*	608	–	–	–	600	686	640	640	718
MGFQU 112-22*	–	786	786	–	778	864	818	818	896
MGFQU 132-32*	–	–	886	886	878	964	918	918	996

*= Dimension k

MGFQU/MGFQK, IMB34 series

Dimensions



Terminal box position "on top" (standard)
Shaft end to DIN 748T3
Key to DIN 6885, sheet 1
Dimensions to DIN (a, b, c...), IEC (B, A, HA...)

Motor type	a B	a_1 P	b A	b_1 N	c HA	e BB	e_1 M	f AB	f_1 T	g AC	g_2 –	h H	i –	k_2 –	p –	p_1 –	p_2 –	q –	s k	s_2 S
MGFQK 063-32	250	120	90	80	4	325	100	125	3	141	–	63	96	361	–	190	125	125	7	M6
		160		110			130		3.5											M8
MGFQU 080-22	255	160	125	110	11	350	130	159	3.5	174	140	80	100	385	194	220	158	138	9.5	M8
MGFQU 100-22	295	160	160	110	14	382	130	196	3.5	212	163	100	123	432	243	290	198	155	11.5	M8
MGFQK 100-32	295	160	160	110	14	382	130	196	3.5	212	163	100	123	420	248	290	198	155	11.5	M8

Motor type	x_1 –	y_1 –	d D	l E	t GA	u F	d_4 –	h_2 –	h_3 –	h_4 –	k_1 –	k_3 –	k_4 –	p_6 –	t_1 –	t_2 –	t_3 –	External fan
MGFQK 063-32	110	115	19	40	21.5	6	M6	145	145	94	389	295	213	315	82	111	124	G2E (D) 120
MGFQU 080-22	110	115	24	50	27	8	M8	160	145	94	413	319	237	339	82	111	124	G2E (D) 120
MGFQU 100-22	134	131	28	60	31	8	M10	180	145	94	460	366	284	379	82	111	124	G2E (D) 120
MGFQK 100-32	134	131	28	60	31	8	M10	201	185	94	467	326	219	447	100	97	141	G2E (D) 140

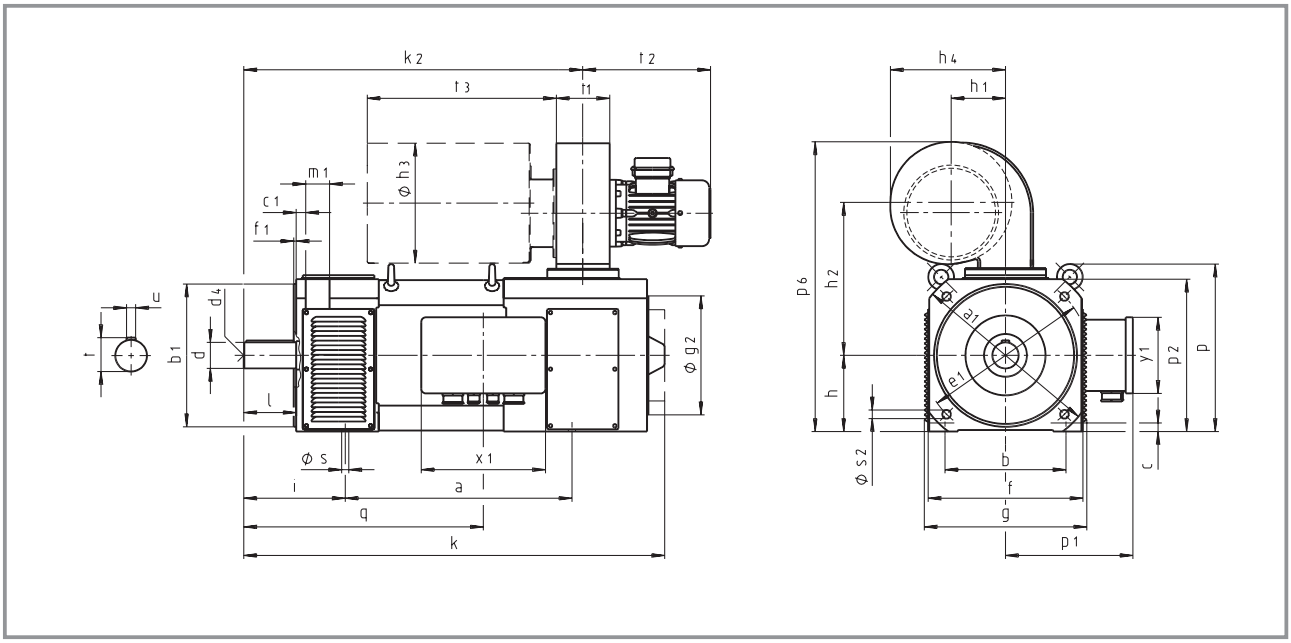
Motor type	Encoder						Brake BFK460-XXX		
	without	TD 3	GT7.08L/420	Resolver	ITD 21	FOG9D+GT7	08	10	12
MGFQK 063-32*	451	443	459	483	483	572	509	–	–
MGFQU 080-22*	467	459	475	499	499	588	–	555	555
MGFQU 100-22*	520	512	528	552	552	641	–	–	608
MGFQK 100-32*	520	512	528	552	552	641	–	–	608

Motor type	Brake BFK460-XXX				Brake BFK460-XXX + Encoder				
	14	16	18	20	TD 3	GTF7.08L/420	Resolver	ITD 21	FOG9D+GT7
MGFQK 063-32*	–	–	–	–	501	587	541	541	619
MGFQU 080-22*	–	–	–	–	547	633	587	587	665
MGFQU 100-22*	608	–	–	–	600	686	640	640	718
MGFQK 100-32*	608	–	–	–	600	686	640	640	718

*= Dimension k

MGFQU/MGFQK, IMB35 series

Dimensions



R.H.S. terminal box position (standard)
L.H.S. terminal box position possible
Shaft end to DIN 748T3
Key to DIN 6885, sheet 1
Dimensions to DIN (a, b, c...), IEC (B, A, HA...)

Motor type	a B	a_1 P	b A	b_1 N	c HA	c_1 LA	e BB	e_1 M	f AB	f_1 T	g AC	g_2 –	h H	i –	k_2 –	m_1 –	p –	p_1 –	p_2 –	q –
MGFQU 160-22	476	400	254	300	18	20	737	350	325	5	342	250	160	213	712	50	355	268	330	503
MGFQK 160-22																				
MGFQU 160-32	556	400	254	300	18	20	817	350	325	5	342	250	160	213	792	50	355	268	330	583
MGFQK 160-32																				

Motor type	s K	s_2 S	x_1 –	y_1 –	d D	l E	t GA	u F	d_4 –	h_1 –	h_2 –	h_3 –	h_4 –	p_6 –	t_1 –	t_2 –	t_3 –	External fan
MGFQU 160-22	15	18	261	160	55	110	59	16	M20	115	299	252	240	606	112	268	392	DNG6-35/S
MGFQK 160-22																		
MGFQU 160-32	15	18	261	160	55	110	59	16	M20	115	299	252	240	606	112	268	392	DNG6-35/S
MGFQK 160-32																		

Motor type	Encoder						Brake BFK460-XXX
	without	TD 3	GT7.08/420	Resolver	ITD 21	FOG9D+GT7	18
MGFQU 160-22*	864	889	905	929	929	1018	993
MGFQK 160-22*							
MGFQU 160-32*	944	969	985	1009	1009	1098	1073
MGFQK 160-32*							

Motor type	Brake BFK460-XXX		Brake BFK460-XXX + Encoder				
	20	25	TD 3	GT7.08/420	Resolver	ITD 21	FOG9D+GT7
MGFQU 160-22*	993	993	1018	1104	1058	1058	1136
MGFQK 160-22*							
MGFQU 160-32*	1073	1073	1098	1184	1138	1138	1216
MGFQK 160-32*							

*= Dimension k

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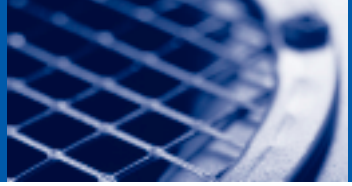

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