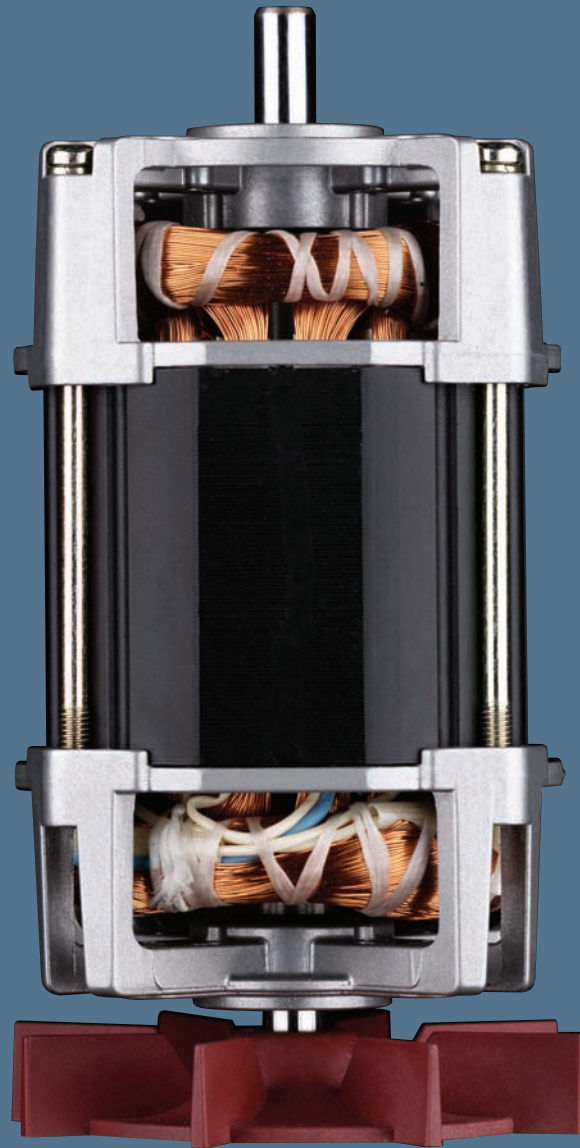


AC motors

Shaded-pole motors	137
Capacitor motors	140
Gear motors	144





Technical information

EM Shaded-pole motors are of asymmetrical design, have two poles and feature a squirrel-cage rotor. Motors of this type have a simple, sturdy design, they are self-starting, require no maintenance and create no interference.

KM Capacitor motors are two- or four-pole single-phase motors with squirrel-cage rotors. Their winding is two-stranded and they have an auxiliary winding connected via capacitor.

Bearings

High quality sintered calotte sleeve bearings with a lubricant depot are used, suitable for ambient temperatures from approx. 0 to 60°C. Time-tested bearing systems are also available for lower or higher temperatures.

With high axial and / or radial stresses, e.g. with vertical shaft positions, belt drive systems, etc., a bearing design suitable for the required service life will be needed. Ball bearings may also be used for series EM30. Ball bearings are standard for capacitor motors.

Direction of rotation

The standard direction of rotation is clockwise, viewed onto drive shaft. Versions with counter-clockwise rotation are also possible.

For capacitor motors in standard version, the main and auxiliary windings are symmetrical so that operation in both directions is possible without difference in power.

Rated data (power, torque)

The catalogue data refer to permanent operation S1 at rated voltage and frequency. Power may be increased by using a higher insulation class or for temporary operating mode S2.

Voltage / Frequency

Rated voltage: 230 V, 50 Hz.

In principle, adjustments to other voltages and frequencies are possible. Motors designed for 50 Hz can generally also be used at 60 Hz with the same voltage (see diagram). As a result of the different speed / torque ratio thus created, however, perfect operation can only be established by testing the actual unit. Constructive measures such as changing the rotor material, cage ring height and induction can adjust the load curve to the requirements in specific cases.

Electrical connection

Shaded-pole motors: As standard with plug-in lugs, stranded-wire connection on request.
Capacitor motors: 3 leads.

Insulation structure

Structure according to EN 60335 (VDE700). Design to meet foreign regulations (UL, CSA, etc.) is also possible.

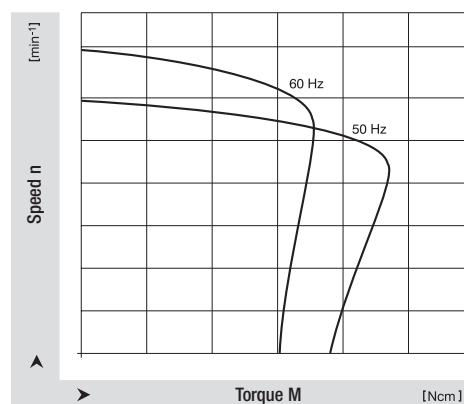
Standard for shaded-pole motors: Insulation class B (EN / VDE), protection type IP 00, protection class I.

Insulation systems for higher insulation classes (F, H) and protection class II are available for many motors.

Capacitor motors: Insulation class F, protection type IP 00 / IP 20, protection class I.

Non-standard operation

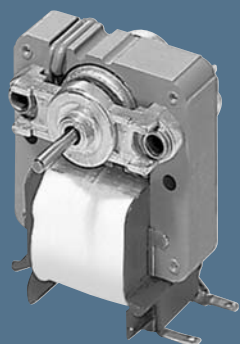
Motors which may suffer excessive temperatures within the unit in the event of a malfunction (e.g. locked rotor), must be secured by direct action (impedance protection, temperature-overload protector) or by safety devices in the unit itself. As a standard, capacitor motors are supplied with temperature overload protector (TOP).



Load characteristic of a shaded-pole motor designed for 50 Hz, operated at 60 Hz, with identical voltage.

Shaded-pole motors

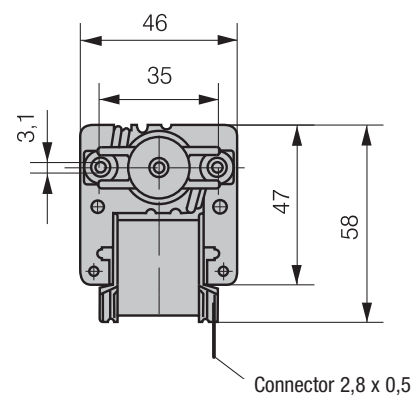
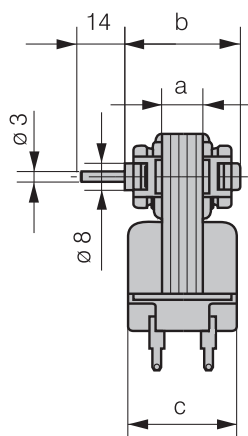
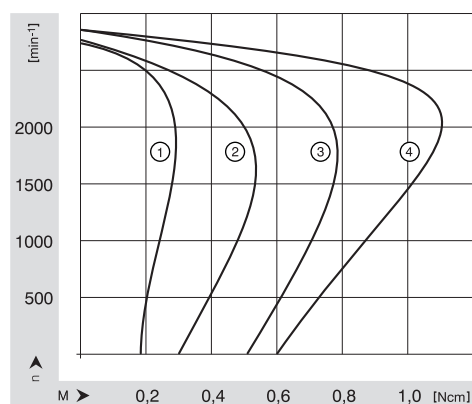
EM 21



Standard version:

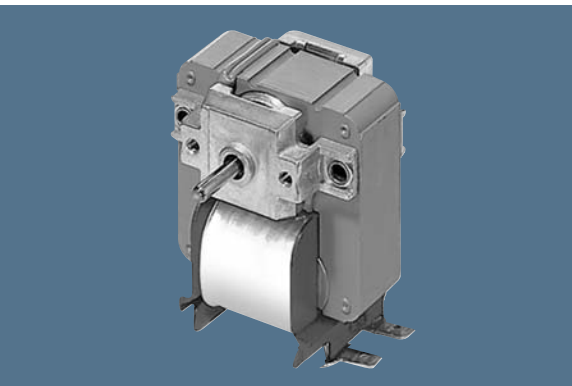
- Direction of rotation clockwise
- Mounting position with horizontal shaft
- Mode of operation S1
- Sintered sleeve bearings with additional lubricant depot
- Permissible ambient temperature 0 – 60° C.

Nominal data	Output power	Input power	Nominal voltage	Frequency	Nominal speed	Nominal current	Rated torque	Mass	Dimensions (mm)			Curve
	W	W	V	Hz	rpm	mA	Ncm	kg	a	b	c	
EM 2108	0,6	6,2	230	50	2100	60	0,28	0,20	8	31	24	1
EM 2112	1,0	9,5	230	50	2200	90	0,46	0,25	12	35	32	2
EM 2118	1,5	12,0	230	50	2300	100	0,7	0,32	18	41	38	3
EM 2124	2,0	13,5	230	50	2350	120	1,0	0,40	24	47	44	4



Shaded-pole motors

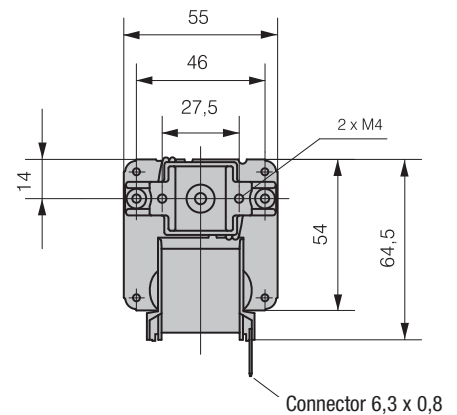
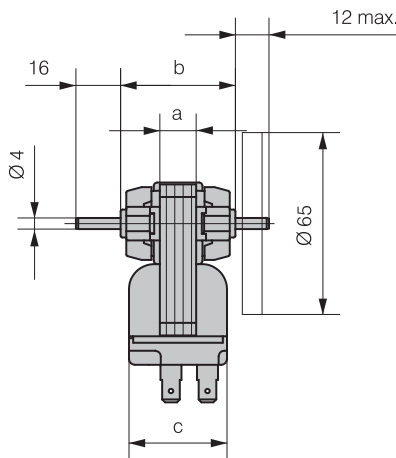
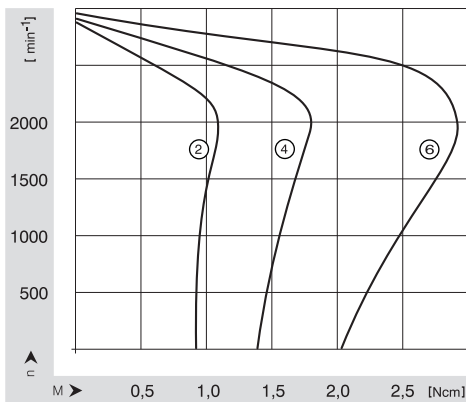
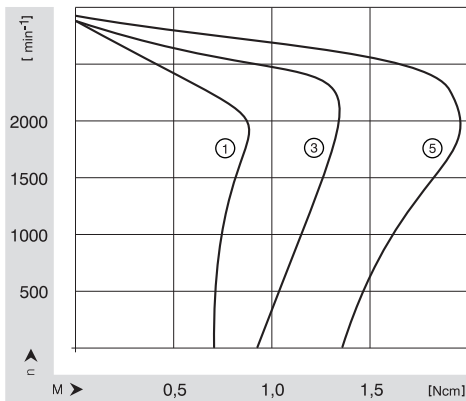
EM 25



Standard version:

- Direction of rotation clockwise
- Mounting position with horizontal shaft
- Mode of operation S1
- Sintered sleeve bearings with additional lubricant depot
- Permissible ambient temperature 0 – 60° C.

Nominal data	Output power	Input power	Nominal voltage	Frequency	Nominal speed	Nominal current	Rated torque	With/without cooling blades	Mass	Dimensions (mm)			Curve
	W	W	V	Hz	rpm	mA	Ncm		kg	a	b	c	
EM 2513	1,4	14	230	50	2300	135	0,55	without	0,40	13	42	35	1
EM 2513	1,8	16	230	50	2500	185	0,70	with	0,40	13	42	35	2
EM 2518	2,7	16	230	50	2500	150	1,05	without	0,50	18	47	40	3
EM 2518	3,7	23	230	50	2500	260	1,45	with	0,50	18	47	40	4
EM 2524	4,0	22	230	50	2600	200	1,55	without	0,60	24	53	46	5
EM 2524	6,2	30	230	50	2500	350	2,40	with	0,60	24	53	46	6

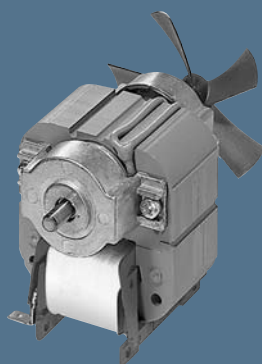


Shaded-pole motors

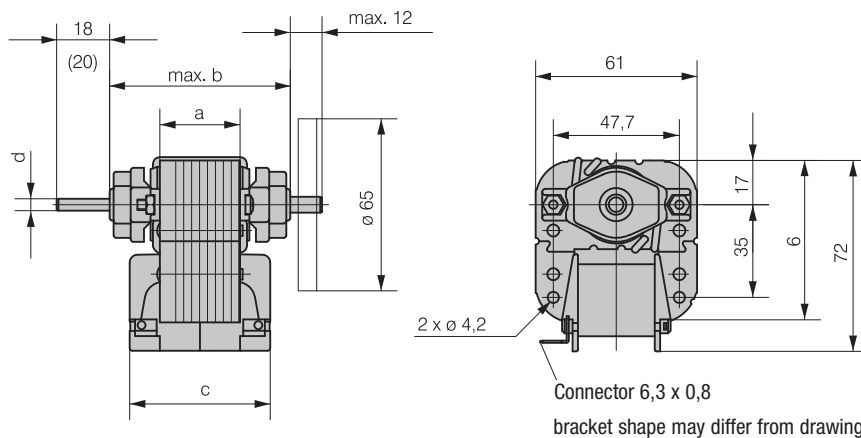
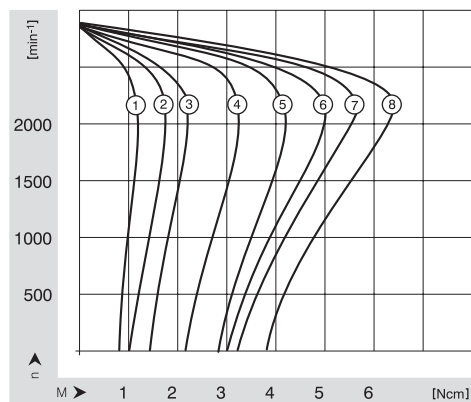
EM 30

Standard version:

- Direction of rotation clockwise
- Mounting position with horizontal shaft
- Mode of operation S1
- Sintered sleeve bearings with additional lubricant depot
- Permissible ambient temperature 0 – 60° C.



Nominal data	Output power	Input power	Nominal voltage	Frequency	Nominal speed	Nominal current	Rated torque	with/without cooling blades	Mass	Dimensions (mm)				Curve
	W	W	V	Hz	rpm	mA	Ncm		kg	a	b	c	d	
EM 3015	1,9	12	230	50	2600	120	0,7	without	0,50	15	53	37	4,5	1
EM 3020	2,8	16	230	50	2600	150	1,05	without	0,70	20	58	42	4,5	2
EM 3020	5,6	38	230	50	2600	380	2,1	with	0,70	20	58	42	4,5	3
EM 3025	4,0	22	230	50	2600	200	1,5	without	0,80	25	63	47	4,5	4
EM 3025	7,5	46	230	50	2600	440	2,8	with	0,80	25	63	47	4,5	5
EM 3030	8,3	50	230	50	2600	460	3,1	with	0,90	30	69	52	6,0	6
EM 3038	11,0	54	230	50	2600	480	3,9	with	1,20	38	76	60	6,0	7
EM 3045	12,0	56	230	50	2600	500	4,3	with	1,30	45	84	67	6,0	8



Capacitor motors

KM 40 IP00

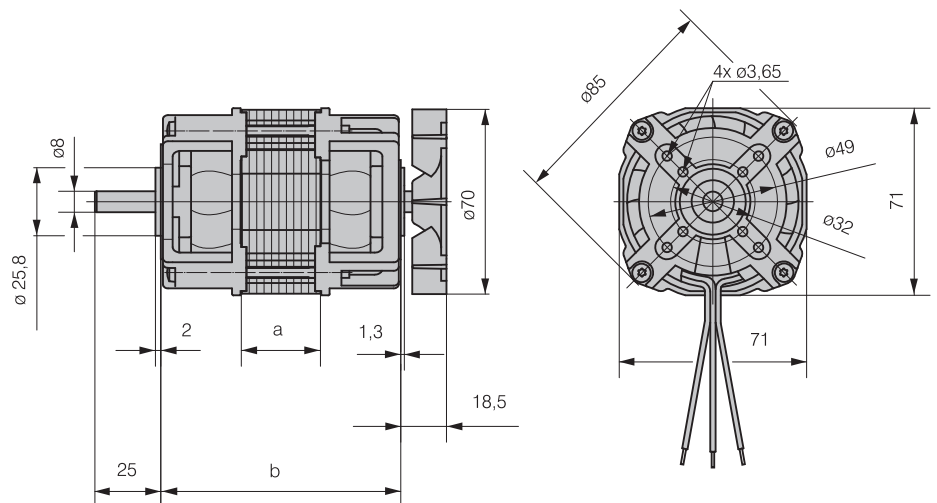
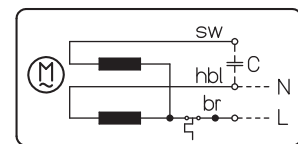
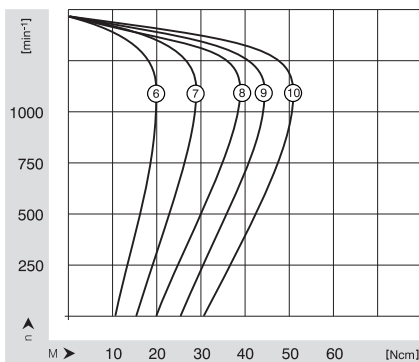
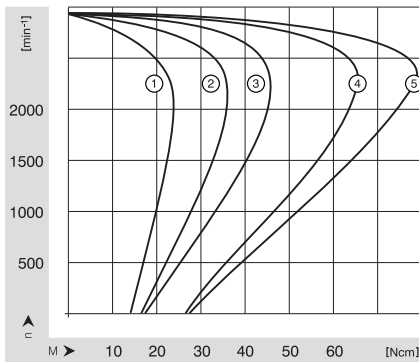
Standard version:

- Direction of rotation clockwise (see connection diagram)
symmetric winding, also suitable for counter-clockwise rotation
- Continuous operation S1
- Ball bearings
- Insulation class F(VDE/EN)



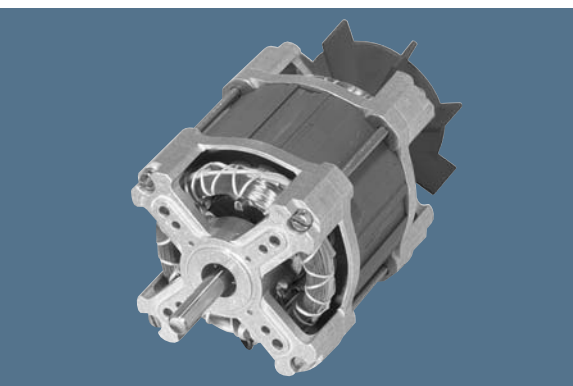
Nominal data	Number of poles	Output power	Input power	Nominal voltage	Frequency	Nominal speed	Nominal current	Rated torque	Capacitor	Mass	Dimensions (mm)		Curve
Type		W	W	V	Hz	rpm	mA	Ncm	$\mu\text{F}^*)$	kg	a	b	
KM 4020/2-..	2	45,0	115	230	50	2600	490	16	3,5	1,0	20	82	1
KM 4030/2-..	2	67,0	142	230	50	2700	620	23	4,0	1,4	30	92	2
KM 4040/2-..	2	100,0	190	230	50	2700	820	36	5,0	1,6	40	102	3
KM 4050/2-..	2	138,0	230	230	50	2700	970	47	7,0	1,8	50	112	4
KM 4060/2-..	2	176,0	275	230	50	2700	1200	62	7,0	2,0	60	122	5
KM 4020/4-..	4	19,5	72	230	50	1300	330	14	2,0	1,0	20	82	6
KM 4030/4-..	4	31,0	84	230	50	1300	380	22	2,5	1,4	30	92	7
KM 4040/4-..	4	38,0	93	230	50	1350	420	26	3,0	1,6	40	102	8
KM 4050/4-..	4	44,0	104	230	50	1350	470	31	3,5	1,8	50	112	9
KM 4060/4-..	4	49,0	112	230	50	1350	500	34	4,0	2,0	60	122	10

*) not supplied



Capacitor motors

KM 43 IP00

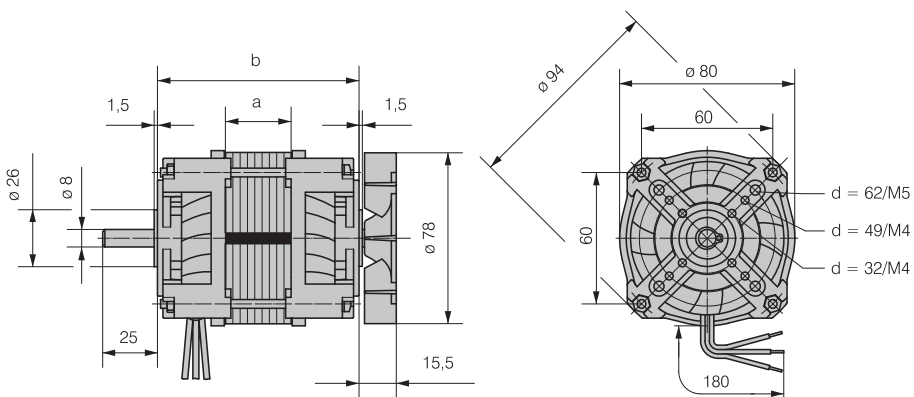
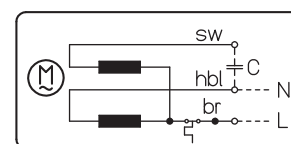
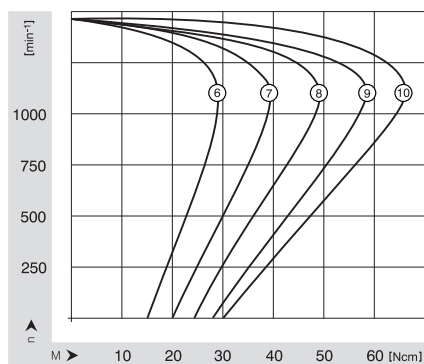
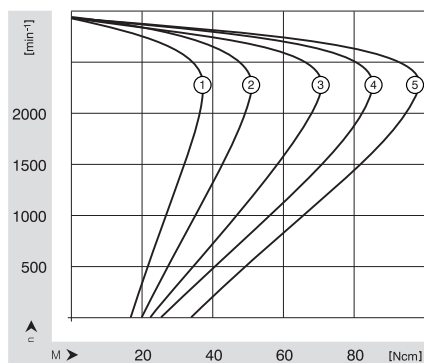


Standard version:

- Direction of rotation clockwise (see connection diagram)
symmetric winding, also suitable for counter-clockwise rotation
- Continuous operation S1
- Ball bearings
- Insulation class F(VDE/EN)

Nominal data	Number of poles	Output power	Input power	Nominal voltage	Frequency	Nominal speed	Nominal current	Rated torque	Capacitor	Mass	Dimensions (mm)		Curve
Type		W	W	V	Hz	rpm	mA	Ncm	μF*)	kg	a	b	
KM 4320/2-3..	2	58	150	230	50	2650	690	20	4,0	1,2	20	83	1
KM 4330/2-3..	2	90	190	230	50	2700	900	31	5,0	1,5	30	93	2
KM 4340/2-3..	2	105	285	230	50	2750	850	38	7,0	1,8	40	103	3
KM 4350/2-3..	2	165	260	230	50	2750	1150	57	8,0	2,2	50	113	4
KM 4360/2-3..	2	180	275	230	50	2750	1200	62	9,0	2,5	60	123	5
KM 4320/4-3..	4	27	85	230	50	1300	380	20	2,5	1,1	20	83	6
KM 4330/4-3..	4	39	100	230	50	1300	440	28	3,0	1,4	30	93	7
KM 4340/4-3..	4	46	105	230	50	1350	460	33	3,5	1,8	40	103	8
KM 4350/4-3..	4	51	115	230	50	1350	500	36	4,0	2,1	50	113	9
KM 4360/4-3..	4	67	145	230	50	1350	620	47	4,5	2,4	60	123	10

*) not supplied



Capacitor motors

KM 43 IP20

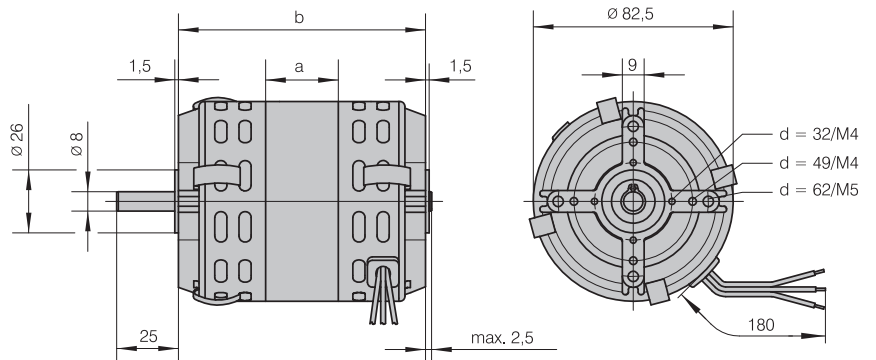
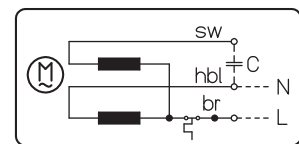
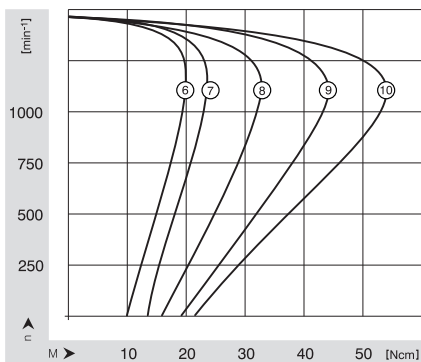
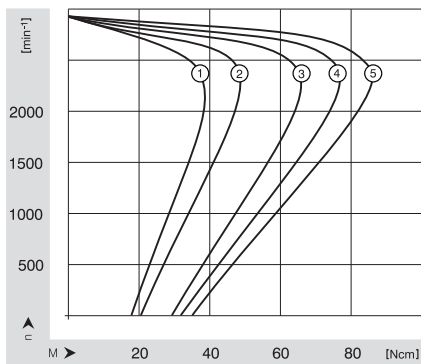
Standard version:

- Direction of rotation clockwise (see connection diagram)
symmetric winding, also suitable for counter-clockwise rotation
- Continuous operation S1
- Ball bearings
- Insulation class F(VDE/EN)



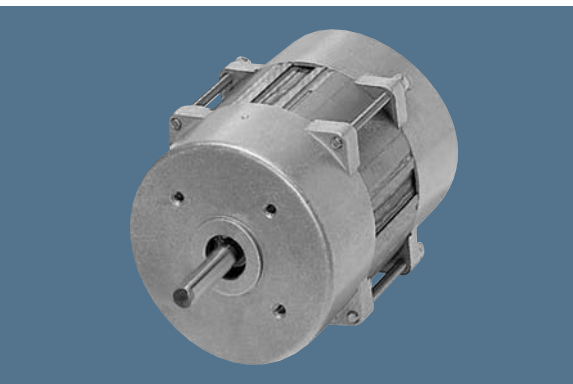
Nominal data	Number of poles	Output power	Input power	Nominal voltage	Frequency	Nominal speed	Nominal current	Rated torque	Capacitor	Mass	Dimensions (mm)		Curve
Type		W	W	V	Hz	rpm	mA	Ncm	$\mu F^*)$	kg	a	b	
KM 4320/2-1..	2	64	135	230	50	2650	600	23	4,0	1,3	20	93	1
KM 4330/2-1..	2	100	180	230	50	2700	800	36	5,0	1,6	30	103	2
KM 4340/2-1..	2	105	190	230	50	2750	1000	40	7,0	1,9	40	113	3
KM 4350/2-1..	2	155	245	230	50	2750	1100	55	8,0	2,3	50	123	4
KM 4360/2-1..	2	165	255	230	50	2750	1150	67	9,0	2,6	60	133	5
KM 4320/4-1..	4	23	70	230	50	1300	350	17	2,5	1,2	20	93	6
KM 4330/4-1..	4	27	65	230	50	1300	280	20	3,0	1,5	30	103	7
KM 4340/4-1..	4	35	85	230	50	1350	350	25	3,5	1,8	40	113	8
KM 4350/4-1..	4	47	100	230	50	1350	430	33	4,0	2,2	50	123	9
KM 4360/4-1..	4	49	110	230	50	1350	500	35	4,5	2,5	60	133	10

*) not supplied



Capacitor motors

KM 43 closed

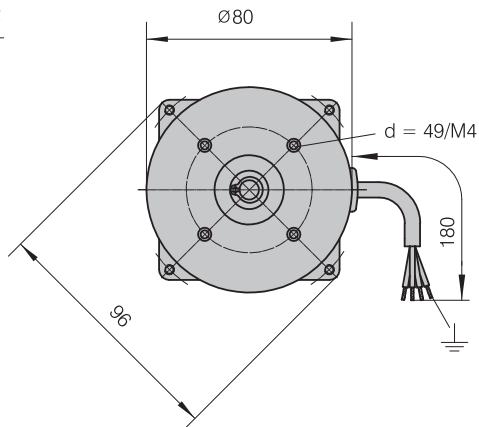
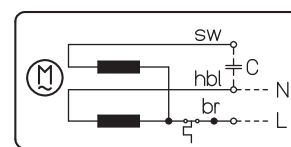
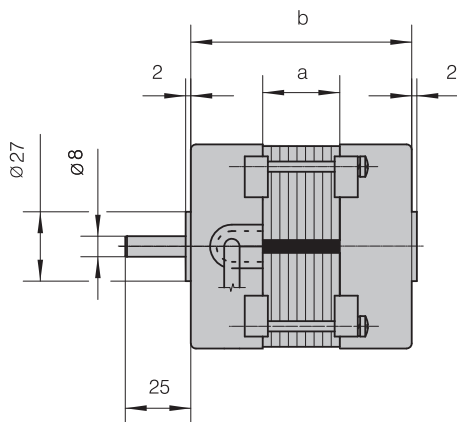
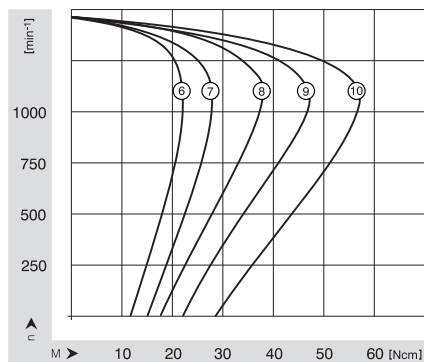
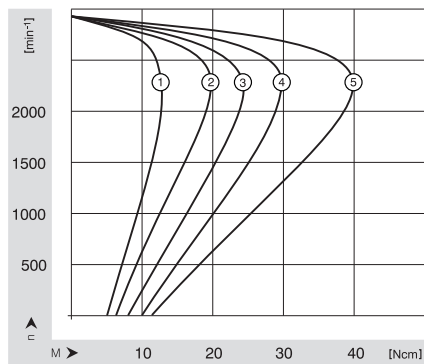


Standard version:

- Direction of rotation clockwise (see connection diagram)
symmetric winding, also suitable for counter-clockwise rotation
- Continuous operation S1
- Ball bearings
- Insulation class F(VDE/EN)

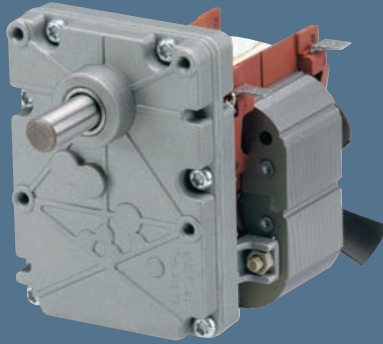
Nominal data	Number of poles	Output power	Input power	Nominal voltage	Frequency	Nominal speed	Nominal current	Rated torque	Capacitor	Mass	Dimensions (mm)		Curve
Type		W	W	V	Hz	rpm	mA	Ncm	µF*)	kg	a	b	
KM 4320/2-2..	2	26	55	230	50	2650	230	9	1,4	1,2	20	77	1
KM 4330/2-2..	2	32	70	230	50	2700	260	11	1,6	1,5	30	87	2
KM 4340/2-2..	2	42	80	230	50	2750	320	14	2,0	1,8	40	97	3
KM 4350/2-2..	2	56	100	230	50	2750	380	19	2,5	2,1	50	107	4
KM 4360/2-2..	2	77	120	230	50	2750	530	27	2,5	2,4	60	117	5
KM 4320/4-2..	4	12	35	230	50	1300	140	8	1,0	1,1	20	77	6
KM 4330/4-2..	4	17	40	230	50	1300	170	12	1,2	1,4	30	87	7
KM 4340/4-2..	4	18	45	230	50	1350	200	13	1,4	1,8	40	97	8
KM 4350/4-2..	4	22	50	230	50	1350	220	16	1,6	2,1	50	107	9
KM 4360/4-2..	4	28	70	230	50	1350	290	20	1,8	2,4	60	117	10

*) not supplied



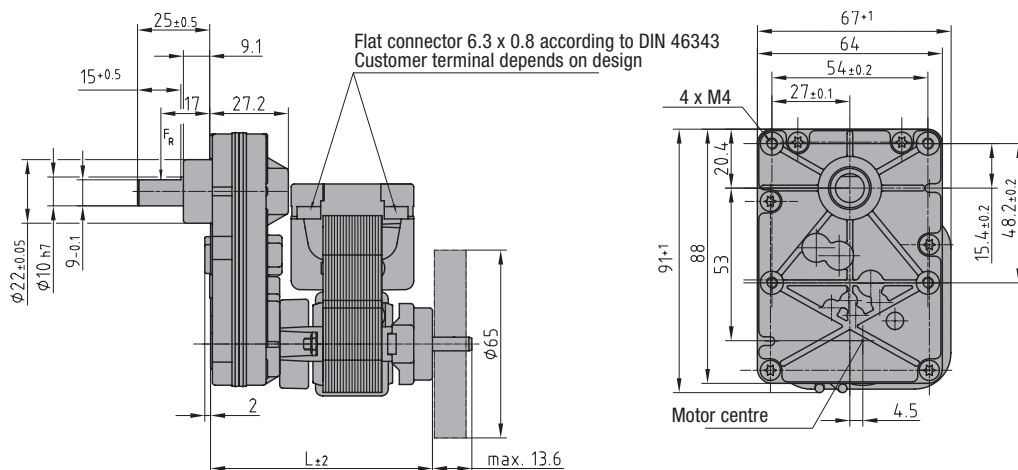
Gear motors

Gtg 78



- Shaded-pole motor
- Spur gear unit with die-cast zinc housing
- Max. permitted radial load 150 N
- Max. permitted axial load 50 N
- Lifetime lubrication
- Expected service life: 5000 h
- Noise-optimized input stage
- Gearbox output shaft: slide/needle bearing
- S1 operation at ambient temperatures up to 50 °C

Nominal data		Nominal voltage	Frequency	Reduction	Drive torque	Output speed	Output power	Nominal current	Weight	Length
Order number	Motor	V	Hz	i/No. of stages	M _{ab} (NM)	n _{ab} (rpm)	P _{ab} (W)	I (A)	m (kg)	L (mm)
78.3.3045.F20	EM3045	230	50	38,6 / 3	1,1	67,3	7,8	0,5	1,5	102
78.3.3045.F21	EM3045	230	50	65,2 / 3	1,5	39,9	6,3	0,5	1,5	102
78.3.3045.F22	EM3045	230	50	82,8 / 3	2,3	31,4	7,6	0,5	1,5	102
78.3.3045.F23	EM3045	230	50	106,1 / 3	2,6	24,5	6,7	0,5	1,5	102
78.3.3045.F24	EM3045	230	50	140,8 / 3	3,2	18,5	6,2	0,5	1,5	102
78.4.3030.F25	EM3030	230	50	191,9 / 4	3,8	13,5	5,4	0,46	1,1	87
78.4.3030.F26	EM3030	230	50	252,6 / 4	5,1	10,3	5,4	0,46	1,1	87
78.4.3030.F27	EM3030	230	50	315,7 / 4	6,3	8,24	5,4	0,46	1,1	87
78.5.3030.F28	EM3030	230	50	408,4 / 5	6	6,37	4	0,46	1,1	87
78.5.3030.F29	EM3030	230	50	737,4 / 5	6,3	3,53	2,3	0,46	1,1	87
78.5.3030.F40	EM3030	230	50	408,4 / 5	7,4	6,37	4,9	0,46	1,1	87
78.5.3030.F41	EM3030	230	50	737,4 / 5	12,5	3,53	4,6	0,46	1,1	87
78.5.3020.F30	EM3020	230	50	976 / 5	6,3	2,66	1,8	0,15	0,9	77
78.5.3020.F31	EM3020	230	50	1266,1 / 5	7	2,05	1,5	0,15	0,9	77
78.5.3020.F32	EM3020	230	50	1648,6 / 5	7,1	1,58	1,2	0,15	0,9	77
78.5.3020.F33	EM3020	230	50	2135,9 / 5	7,3	1,22	0,9	0,15	0,9	77
78.5.3020.F42	EM3020	230	50	976 / 5	11,9	2,66	3,3	0,15	0,9	77
78.5.3020.F43	EM3020	230	50	1266,1 / 5	13	2,05	2,8	0,15	0,9	77
78.5.3020.F44	EM3020	230	50	1648,6 / 5	14	1,58	2,3	0,15	0,9	77
78.5.3020.F45	EM3020	230	50	2135,9 / 5	15	1,22	1,9	0,15	0,9	77



Gear motors

Gtg 85



- Capacitor motor
- Spur gear unit with die-cast zinc housing
- Max. permitted radial load 150 N
- Max. permitted axial load 50 N
- Lifetime lubrication
- Expected service life: 5000 h
- Noise-optimized input stage
- Gearbox output shaft: sleeve bearings on both sides
- S1 operation at ambient temperatures up to 50 °C

Nominal data		Nominal voltage	Frequency	Reduction	Drive torque	Output speed	Output power	Nominal-current	Capacitor	Weight	Length
Order number	Motor	V	Hz	i/No. of stages	M _{as} (NM)	n _{as} (rpm)	P _{as} (W)	I (A)		m (kg)	L (mm)
85.3.4050.2.F01	KM4050-2	230	50	8,2 / 3	1,5	335	52	0,68	5µF/400 V	2,1	139
85.3.4050.2.F02	KM4050-2	230	50	12,3 / 3	2,2	224	52	0,68	5µF/400 V	2,1	139
85.3.4050.2.F03	KM4050-2	230	50	18 / 3	3,3	153	52	0,68	5µF/400 V	2,1	139
85.3.4050.2.F04	KM4050-2	230	50	27,6 / 3	5	99,6	52	0,68	5µF/400 V	2,1	139
85.3.4050.2.F05	KM4050-2	230	50	40,3 / 3	7,3	68,2	52	0,68	5µF/400 V	2,1	139
85.3.4050.2.F06	KM4050-2	230	50	64 / 3	11,7	43	52	0,68	5µF/400 V	2,1	139
85.3.4050.2.F07	KM4050-2	230	50	101,8 / 3	18,6	27	52	0,68	5µF/400 V	2,1	139
85.3.4050.2.F08	KM4050-2	230	50	136,5 / 3	24,9	20,1	52	0,68	5µF/400 V	2,1	139
85.3.4050.2.F09	KM4050-2	230	50	189 / 3	25	14,6	38	0,68	5µF/400 V	2,1	139
85.4.4030.F10	KM4030-2	230	50	303,6 / 4	27,7	9,06	26	0,38	3,5µF/400 V	1,7	119
85.4.4030.F11	KM4030-2	230	50	454 / 4	30	6,06	19	0,38	3,5µF/400 V	1,7	119
85.4.4030.F12	KM4030-2	230	50	687 / 4	30	4	13	0,38	3,5µF/400 V	1,7	119
85.5.4030.F13	KM4030-2	230	50	1028,7 / 4	30	2,67	8,4	0,38	3,5µF/400 V	1,7	119

