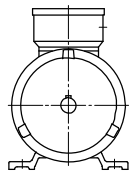
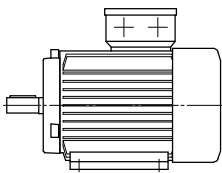
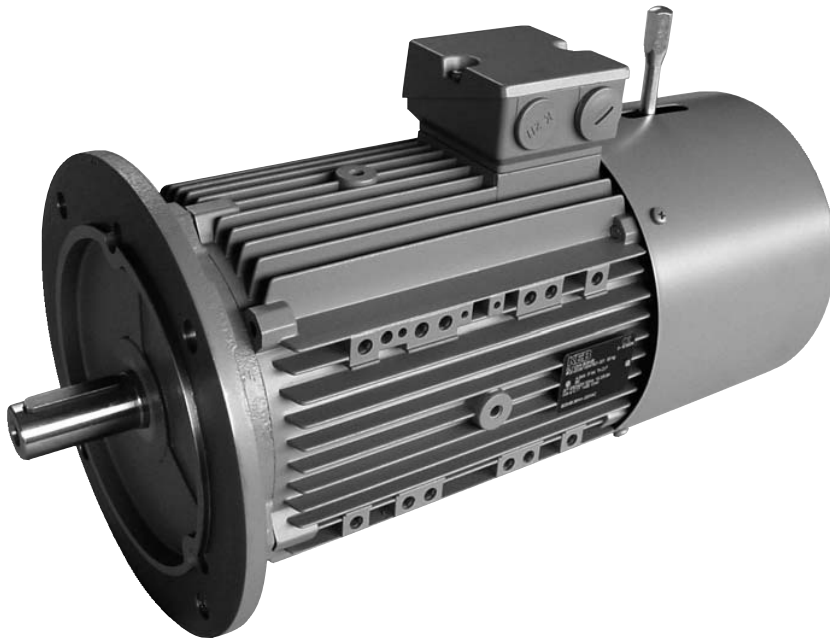
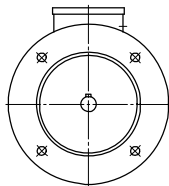
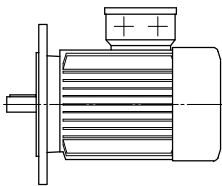


Three phase motors

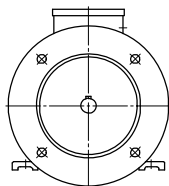
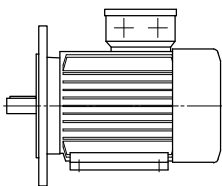
KEB



Foot mounted version
Example: DM80G4 – B3



Flange mounted version
Example: DA132M4 – B5



Foot-flange mounted version
Example: DM90S4 – B3/B5

Three phase motors



Technical characteristics

The motors correspond to the following standards:

DIN EN 60034	Rotating electrical machines, rating and performance.
IEC60072	Totally enclosed fan-cooled motors with squirrel cage, fixing dimensions and allocation of rating.
DIN42948	Mounting flanges for electrical machines

In the standard version the motors have insulation class F. Insulation class H is available.

Voltage/Frequency

DM63 .. DM112	DA132 .. DA225
<ul style="list-style-type: none"> 230/400V Δ/Y 50Hz 220-240/380-420V Δ/Y 50/60Hz 275/480 V Δ/Y 60 Hz *) 230/460V 60 Hz 	<ul style="list-style-type: none"> 230/400V Δ/Y 50Hz 220-240/380-420V Δ/Y 50/60Hz 275/480 V Δ/Y 60Hz *) 230/460V 60Hz
400/690 V Δ/Y 50 Hz 380-420/660-690 V Δ/Y 50 oder 60 Hz 480V 60Hz *)	<ul style="list-style-type: none"> 400/690 V Δ/Y 50 Hz 380-420/660-690 V Δ/Y 50/60Hz 480V 60Hz *)
290/500 V Δ/Y 50Hz 200V 50Hz / 220V 60Hz	500V Δ 50Hz 200V 50Hz / 220V 60Hz

• Standard voltages

*) Power and speed are increased by about 20%.

Different voltages and frequencies are available.

Motor Power Pn

The values given in the tables are valid for the following conditions:

- Duty cycle S1
- Maximum ambient temperature +40°C
- Installation altitude up to 1000m above mean sea level

The available motor power for different conditions is calculated as follows: $P = P_n \cdot f_s \cdot f_t \cdot f_h$

Factor fs for different duty type

Duty type		fs
S1	Continuous duty. Operation with constant load. The motor reaches the thermal equilibrium.	1.0
S2-10min	Short term duty. Operation with constant load followed by a stop. During the stop the motor returns to the ambient temperature. Described by the duration of the load period in min.	1.4
S2-30min		1.25
S2-60min		1.1
S3-15%ED	Intermittent periodic duty. Operation with a sequence of identical cycles including a time of operation with constant load and a stop. Described by the cyclic duration factor in %.	1.4
S3-25%ED		1.3
S3-40%ED		1.2
S3-60%ED		1.1
S4 .. S10	Intermittent periodic duty. The start or stop phase of the motor is effecting the temperature raise. More data of the duty cycle are necessary.	On request

Factor ft for different ambient temperature θ

θ ≤ 40°C	ft=1.0
40°C < θ ≤ 50°C	ft=0.87
50°C < θ ≤ 60°C	ft=0.75

Factor fh for different altitude h

h ≤ 1000m	fh=1.0
1000m < h ≤ 2000m	fh=0.95
2000m < h ≤ 3000m	fh=0.87
3000m < h ≤ 4000m	fh=0.80

Three phase motors



Type of protection IP

IP	1. Code number Protection against foreign objects	2. Code number Protection against water
0	Not protected	Not protected
1	Protected against solid foreign objects ≥ 50 mm and larger	Protected against dripping water
2	Protected against solid foreign objects ≥ 12 mm and larger	Protected against dripping water if the housing is tilted by up to 15°
3	Protected against solid foreign objects ≥ 2.5 mm and larger	Protected against spraying water
4	Protected against solid foreign objects ≥ 1 mm and larger	Protected against splash water
5	Protected against dust	Protected against water jets
6	Dust-proof	Protected against powerful water jets
7		Protected against intermittent immersion in water
8		Protected against sustained immersion in water

In the standard version the motors have protection IP55 (braked motors IP54).

With the option "Dust and water protected" the motors are IP65. Motors with higher protection standard on request.

Permissible Radial Forces for the Output Shaft

Motor	Output shaft dxl [mm]	K1 [mm]	F_{R1} [N]			
			3000 1/min	1500 1/min	1000 1/min	750 1/min
DM63	11x23	187	330	410	470	520
DM71	14x30	158	330	410	470	520
DM80	19x40	201	550	690	790	870
DM90	24x50	240.5	600	760	870	960
DM100	28x60	287	830	1040	1190	1310
DM112	28x60	318	1210	1520	1740	1920
DA132	38x80	368.5	1330	1670	1910	2100
DA160	42x110	495	1430	1800	2060	2270
DA180	48x110	540.5	2260	2840	3250	3580
DA200	55x110	590.5	2260	2840	3250	3580
DA225	60x140	665.5	3980	5010	5730	6310

For selection condition formulas, see page 6/7

Three phase motors



Three phase motors 4 pole

Motor	Pn [kW]	n1 [1/min]	In (400V)	cos φ	η [%]	Ma/Mn	Ia/In	Mk/Mn	JE [kgcm ²]	~kg	Brake
DM63K4	0.12	1380	0.47	0.61	61.3	2.1	3.0	2.4	2.1	3.5	B02
DM63G4	0.18	1380	0.67	0.66	58.2	1.8	2.7	2.0	2.8	4	B02
DM71K4	0.25	1410	0.79	0.64	71.4	2.5	4.3	2.9	5.6	5.5	B02
DM71G4	0.37	1410	1.00	0.71	75.5	2.5	4.6	2.8	7.3	6.5	B02
DM80K4	0.55	1405	1.40	0.74	77.4	2.5	4.8	2.6	12.8	8.5	B03/B02
DM80G4	0.75	1410	1.85	0.74	79.6	2.5	5	2.7	16.5	10	B03/B02
DM90S4	1.1	1415	2.80	0.72	78.8	2.6	4.7	2.8	23.5	12	B04/B03
DM90L4	1.5	1410	3.50	0.78	78.7	2.4	4.5	2.6	31.3	15	B04/B03
DM100L4	2.2	1410	5.2	0.76	81.0	2.0	4.3	2.4	45	20	B05/B04
DM100LX4	3	1410	7.0	0.75	82.6	2.3	4.4	2.5	60	23	B05/B04
DM112M4	4	1425	8.3	0.82	85.3	2.4	5.6	2.7	119	29	B06/B05
DA132S4	5.5	1450	11.3	0.82	86.0	2.6	7.4	3.3	143	47	B07/B06
DA132M4	7.5	1450	15.2	0.82	87.2	2.6	7.6	3.3	190	56	B07/B06
DA160MS4	9.2	1470	17.5	0.87	88.5	1.9	6.9	3.0	513	76	B08/B07
DA160M4	11	1470	21.0	0.85	89.2	2.4	7.6	3.3	580	82	B08/B07
DA160L4	15	1470	27.8	0.86	90.5	2.5	8.2	3.5	780	103	B09/B08
DA180M4	18.5	1475	35.0	0.84	91.0	2.5	7.2	3.2	1600	125	B09/B08
DA180L4	22	1475	42.0	0.83	91.5	2.8	7.6	3.4	1800	140	B10/B09
DA200L4	30	1475	55	0.85	92.0	2.7	7.9	3.3	2580	180	B10/B09
DA225S4	37	1470	68	0.85	92.5	2.8	8.4	3.5	2700	310	B10/B09
DA225M4	45	1475	81	0.87	92.5	2.9	8.0	3.0	3240	340	B10/B09

Pn	Nominal power
n1	Nominal speed
In	Nominal current
cos φ	Power factor
η	Efficiency
Ma/Mn	Relative starting torque
Ia/In	Relative starting current
Mk/Mn	Relative pull-out torque
JE	Inertia

Motor options



B - Brake COMBISTOP

- spring-set twin-disc safety brake
- asbestos-free friction linings
- Protection standard: IP54
- connection via contacts in terminal box
- adjustment provision for wear of friction linings without dismantling
- torque reduction possible
- Standard voltages: 230VAC, 400VAC, 24VDC

Options:

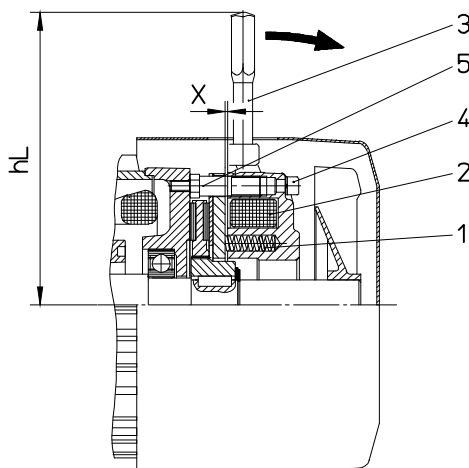
- Manual brake release MB
 - CSA approved version
 - Corrosion-proof version
 - Quick-acting rectifier „Powerbox“ for switch cabinet mounting
- Depending on the type of application, this rectifier improves the off period, or the on period, or the service life of the brake before readjustment of the air gap is required.

Mode of Operation

The brake is released by direct-current excitation of the brake coil (2) or by a manual release unit MB (3) which can be attached as an option.

Braking is achieved in power off condition by means of spring force (1).

The adjusting screws (5) are used to adjust the nominal air gap (X) in case of wear.



Technical Data

Brake	Mbr [Nm]	Mbred [Nm]		JB [kgcm ²]	P20 [W]	t2 [ms]	t11~ [ms]	t11= [ms]	WR0.1 [J*10 ^{^6}]	WRmax [J*10 ^{^3}]	X [mm]	Xn [mm]	hL [mm]	~kg
B02	5	2.5	1.5	0.3	25	40	70	10	7.5	5.3	0.2	0.4	106	1.4
B03	10	7.5	5	0.7	30	55	100	15	12.5	7.5	0.2	0.5	114	2.0
B04	20	15	10	6	1.4	30	90	180	19.1	18	0.2	0.6	128	3.6
B05	36	27	18	11	3.5	48	110	220	28.0	28	0.2	0.6	168	5.7
B06	70	53	35	21	5.6	62	240	260	28.8	38	0.3	1.0	176	9.1
B07	100	75	50	30	16	65	220	400	35.7	49	0.3	1.0	225	15
B08	150	113	75	45	30	75	320	700	44.2	56	0.4	1.2	235	24
B09	250	188	125	75	75	80	350	900	69.0	78	0.4	1.2	256	34
B10	500	375	250	150	210	130	400	1400	80.0	100	0.5	1.5	335	49

Mbr	Static braking torque after completed run-in phase
Mbred	possible reduced brake torques
JB	Inertia
P20	Excitation rating at 20°C
t2	Release time, time from connecting the current to the beginning of torque decrease
t11~	Engagement delay time for AC side switching (Fig. 1,3)
t11=	Engagement delay time for DC side switching (Fig. 2)
WR0.1	friction work until 0.1mm abrasion
WRmax	permissible friction work for emergency stop from 3000 1/min (B08..B10 - 1500 1/min)
X	Nominal clearance
Xn	Clearance, at which a readjustment is recommended

The specified switching times apply to nominal clearance and nominal torque. It relates to average values and depends on the type of rectification and coil temperature.

Motor options



Electrical Connection

Figure 1: AC side switching

- The brake is switched independent from the motor voltage, Engagement delay time $t_{11\sim}$
- Suitable for operation with frequency inverter

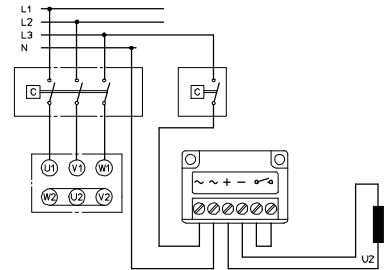


Figure 2: DC side switching

- The switching of the brake on AC and DC side leads to faster Engagement delay times $t_{11=}$.

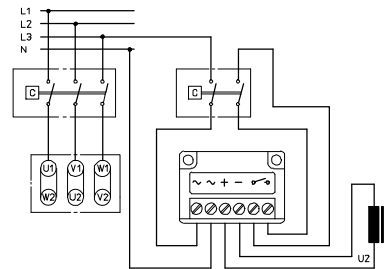
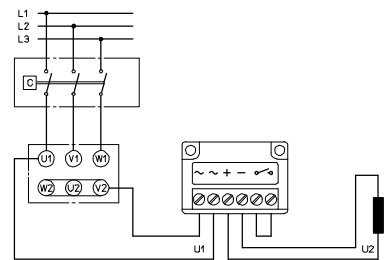


Figure 3: Brake ready for connection

- Voltage supply from motor terminal board.
- The brake is switched together with the motor voltage, Engagement delay time $t_{11\sim}$
- In comparison to Figure 1 the connection to the brake is made within the motor terminal box
- Not suitable for frequency inverter operation and for pole changing motors with separate windings



RS - Backstop

The mechanical backstop RS prevents the reverse motion of the drive when the motor is switched off.

Specify the direction of rotation of the motor or geared motor when ordering.

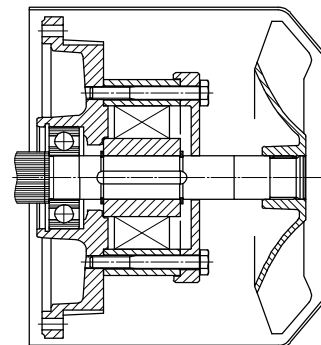
For Helical worm geared motors S and Helical bevel geared motors K, the position of mounting face has to be specified.

The backstop applies for ambient temperatures of $-40..+60^{\circ}\text{C}$.

Motor	Nominal locking torque	
	1) [Nm]	2) n_{\min} [1/min]
DM63 RS, DM71 RS	16.9	875
DM80 RS .. DM112 RS	150	875
DA132 RS, DA160 RS	562	720
DA180 RS, DA200 RS	1025	610

1) maximum locking torque = 2^* nominal locking torque

2) the continuous operating speed shall not be lower than the minimum allowable overrunning speed



Motor options



F - Forced ventilation

In the standard version a forced ventilation is supplied with the following specification:

- Radial or axial air inlet
- Protection standard IP 66
- Standard voltages
 - DM63 .. DA200: 1 ~ 220 – 277 V, 50/60 Hz
 - 3 ~ 220 V Δ – 500 V Y 50/60 Hz
- The connection is in a extra terminal box mounted on the fan cowl.

Motor	I_F [A]	
	3 ~ 230/400V 50Hz	1 ~ 230V 50Hz
DM63 .. DM100	0.23 / 0.13	0.23
DM112 .. DA132	0.24 / 0.14	0.27
DA160 .. DA200	0.59 / 0.35	0.84

I_F Rated current of forced ventilation

Motor protection

The following motor protection can be supplied:

- TW - PTC thermistor sensor
- TS - Thermorelay (closed)

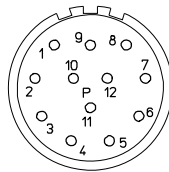
I - Incremental encoder

Standard version

Pulses/Rev.	1024
Signals	A, /A, B, /B, 0, /0
Interface	RS422 (TTL)
Supply voltage	5VDC ± 5%
Current consumption	40mA / max. 90mA
Permissible load / channel	± 20 mA
Protection standard	IP65

The encoder is mounted under the motor fan cowl for added protection

Signal connector 12pole



Counterplug optional

Pin	Signal
10	0V
11	0V Sensor
12	+5V
2	+5V Sensor
5	A
6	/A
8	B
1	/B
3	0
4	/0

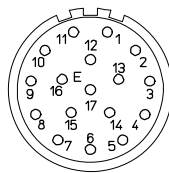
EAM - Absolute encoder multiturn

Standard version

Resolution singleturn	13bit
Resolution multiturn	12bit (4096 rev)
Code type	SSI-Gray-Code
Sin/Cos-periods	2048ppr 1Vpp
Supply voltage	5VDC ± 5%
Current consumption	max. 70mA
Permissible load / channel	± 20 mA
Protection standard	IP65
Encoder system position	
KEB F5-Multi	ec02 = 0

The encoder is mounted under the motor fan cowl for added protection

Signal connector 17pole



Counterplug optional

Pin	Signal
10	0V
7	+5V
8	clock
9	/clock
14	data
17	/data
1	set
2	dir
15	A
16	/A
12	B
13	/B

Motor options

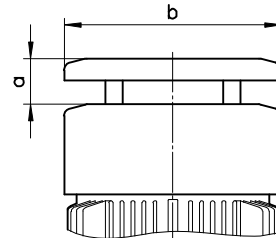


Protection cowl

The protection cowl prevents the penetration of foreign objects or liquids when the motor is mounted in vertical position.

Motor	a	b
DM63	25	126
DM71	25	126
DM80	25	160
DM90	25	160
DM100	25	200
DM112	25	200
DA132	42	230
DA160	43	240/338 1)
DA180..DA225	43	240/338 1)

1) Dimension for forced ventilation

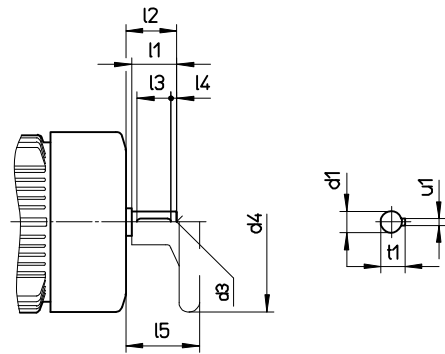


Second shaft end WE2 and handwheel

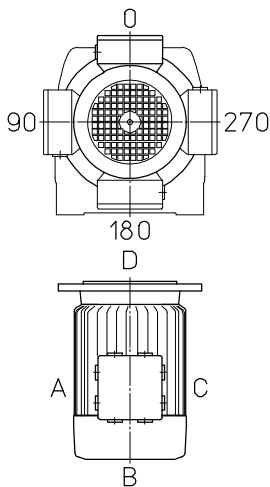
The second shaft end can be used for fixing a handwheel or for radial force free transmission of the motor torque.

If radial forces apply to the second shaft end, please consult the manufacturer.

	d1	l1	t1	u1	l2	l3	l4	d3	d4	l5
DM63	11	23	12.5	4	28	18	2.5	M4	100	46
DM71	14	30	16	5	35	25	2.5	M5	100	52
DM80	14	30	16	5	35	25	2.5	M5	100	52
DM90	19	40	21.5	6	45	32	4	M6	160	66
DM100	24	50	27	8	55	40	5	M8	160	75
DM112	24	50	27	8	55	40	5	M8	160	75
DA132	32	80	35	10	85	70	5	M12	225	108
DA160	38	80	41	10	90	70	5	M12	225	113
DA180										
DA200	42	110	45	12	120	100	5	M16	280	144
DA225										



Position of terminal box



Example: 270C is for terminal box at 270 cable lead in at C

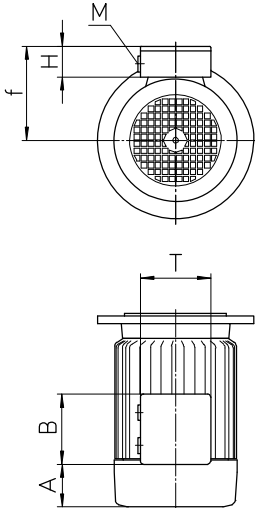
The position of other motor options (manual brake release, connection of forced ventilation, connection of encoder) is specified with the same method, independently, if different from position of terminal box.

Example: 90A, Manual brake release 270

Motor options



Dimensions of terminal box



	A normal	B	T	H	f	M normal	M Brake or TW / TS	M Brake and TW / TS
DM63	76.5	100	100	42.5	109	1xM20	2xM20	2xM20+1xM16
DM71	90	100	100	42.5	119	1xM20	2xM20	2xM20+1xM16
DM80	97	115	115	55	140.5	1xM25	2xM25	2xM25+1xM16
DM90S	110	115	115	55	144	1xM25	2xM25	2xM25+1xM16
DM90L	135	115	115	55	144	1xM25	2xM25	2xM25+1xM16
DM100	157	115	115	55	155	1xM25	2xM25	2xM25+1xM16
DM112	172	115	115	55	165	1xM25	2xM25	2xM25+1xM16
DA132	143.5	142	117	62	188	2xM32	2xM32	2xM32+1xM16
DA160	107.5	140	140	90	250	2xM40	2xM40	2xM40+1xM16
DA180	205	226	230	121	291	2xM40	2xM40	2xM40+1xM16
DA200	230	226	230	121	291	2xM40	2xM40	2xM40+1xM16

More Motor Options

The following motor options are available on request.

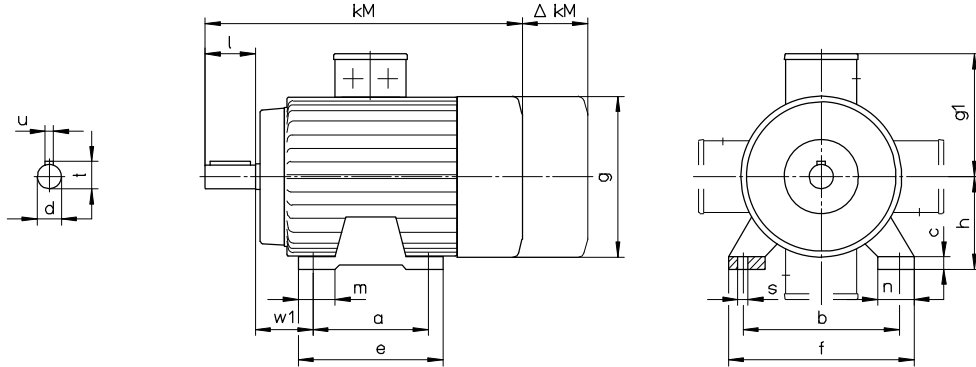
- Number of poles: 2 pole; 6 pole; 8 pole
- Pole changing motors
4/2 pole; 8/4 pole; 8/2 pole; 6/2 pole; 12/2 pole; 6/4 pole
- Single phase motors, 0.12..1.5 kW
with service capacitor and increased resistance rotor Ma / Mn ca. 0.8
- Reluctance motors, 0.25..1.5 kW, 4 pole
The output speed of these motors is 1500 1/min and independent from the load (up to the nominal torque).
- Explosion proof motor in accordance with ATEX, for use in zone 1, 2, 21, or 22
- Flame proof Motor EExd
- motors with noise reduced brake or with double brake

Three phase motors

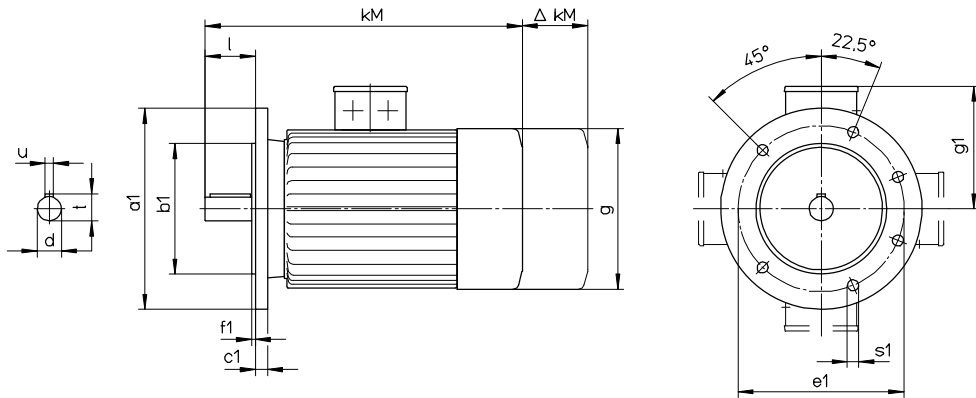
Dimensions



B3 - Foot mounted version



B5 - Flange mounted version

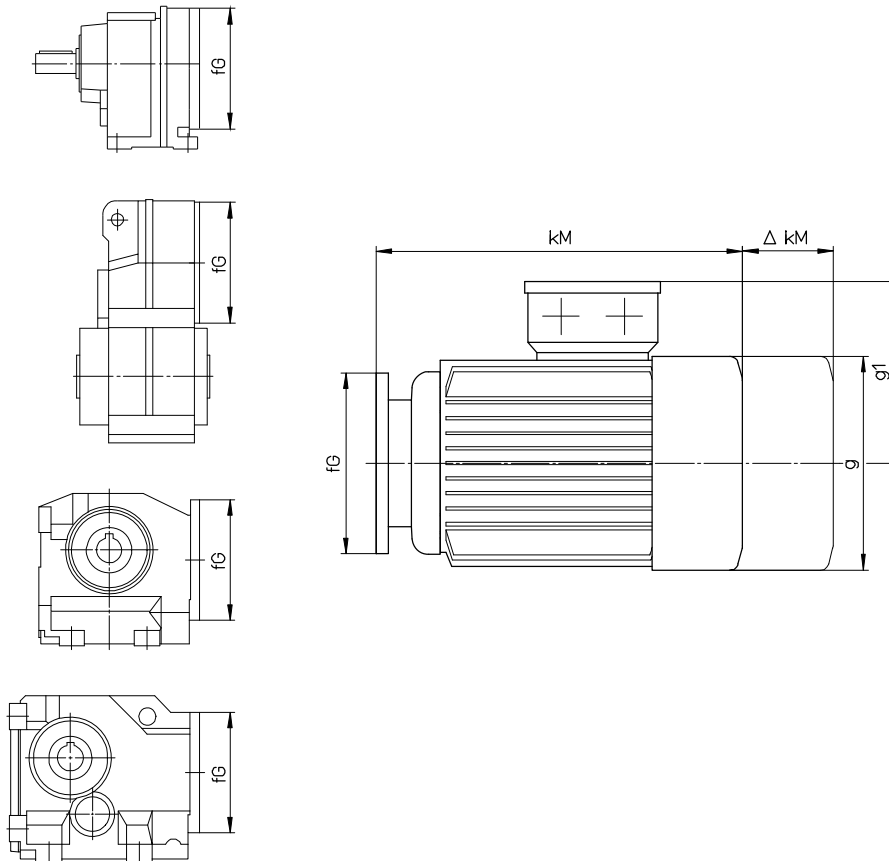


Motor	DM63	DM71	DM80	DM90S/L	DM100	DM112	DA132S/M	DA160M/L	DA180M/L	DA200	DA225S/M
a	80	90	100	100/125	140	140	140/178	210/254	241/279	305	286/311
b	100	112	125	140	160	190	216	254	279	318	356
c	10	12	14	15	15	15	18	22	20	27	35
e	105	108	125	130/155	175	177	180/218	260/304	300/340	380	341/366
f	120	136	154	174	192	224	256	320	352	403	440
h	63	71	80	90	100	112	132	160	180	200	225
m	27	25	28	30/32	32	34	50	62	75	95	70
n	20	27	27	32	32	43	55	69	74	100	108.5
w1	40	45	50	56	63	70	89	108	121	133	149
s	Ø7	Ø8	Ø10	Ø10	Ø12	Ø12	Ø12	Ø14	Ø14	Ø18	Ø18
a1	140	160	200	200	250	250	300	350	350	400	450
b1	95	110	130	130	180	180	230	250	250	300	350
c1	10.5	10	10	11	14.5	15	12	13	13	15	16
e1	115	130	165	165	215	215	265	300	300	350	400
f1	3	3.5	3.5	3.5	4	4	4	5	5	5	5
s1	4xØ10	4xØ10	4xØ11	4xØ12	4xØ14	4xØ14	4xØ14	4xØ18	4xØ18	4xØ18	8xØ18
d	11	14	19	24	28	28	38	42	48	55	60
l	23	30	40	50	60	60	80	110	110	110	140
u	4	5	6	8	8	8	10	12	14	16	18
t	12.5	16	21.5	27	31	31	41	45	51.5	59	64
g	123	138	156	176	194	218	245	311	356	356	356
g1	109	119	140	144	155	165	188	250	291	291	299
kM	210.5	242	273.5	300.5/325.5	365	382.5	485	627	688	738	768/828
ΔkM1	59	56	65	74	91	96	99	120	139	139	139
ΔkM2	115	120	130	129	139	149	156	176	199	199	199
ΔkM3	181	182	192	198	205	215	216	286	294	294	294
ΔkM4	91	87	87	98	101	96	98	151	154	139	139

Three phase motors

Dimensions

KEB



Motor	DM63	DM71	DM80	DM90S/L	DM100	DM112	DA132	DA160	DA180	DA200	DA225S/M		
g	123	138	156	176	194	218	245	311	356	356	356		
g1	109	119	140	144	155	165	188	250	291	291	299	fG	Gear unit
kM	202	228	251									105	G0, S0
	201	228	250	266.5/291.5								120	G1, S1, F2, K2
	198	224	247	261.5/286.5	319	343						140	G2, S2, F3, K3
	198.5	223.5	247.5	262/287	319	342	435					160	G3, S3, F4, K4
		220	243	259.5/284.5	314	337.5	431.5	539.5				200	G4, S4, F5, K5
			238	254.5/279.5	308	332.5	428	532	589	639		250	G5, F6, K6
				247.5/272.5	304	325.5	421	526	583	633		300	G6, F7, K7
					299	320.5	413	522	577.5	627.5	627.5/687.5	350	G7, F8, K8
							396.5	503.5	560.5	610.5	610.5/670.5	400	G8, K9
							491.5	548	598	598/658	450	G9	
ΔkM1	59	56	65	74	91	96	99	120	139	139	139		
ΔkM2	115	120	130	129	139	149	156	176	199	199	199		
ΔkM3	181	182	192	198	205	215	216	286	294	294	294		
ΔkM4	91	87	87	98	101	96	98	151	154	154	154		

kM + ΔkM1	B or I or EAM(DM90..DA225) or RS
kM + ΔkM2	B I or B EAM or EAM(DM63..DM80)
kM + ΔkM3	F I or B F or B F I or F EAM or B F EAM
kM + ΔkM4	F

B Brake
 F Forced ventilation
 I Incremental encoder
 EAM Absolute encoder multiturn
 RS Backstop