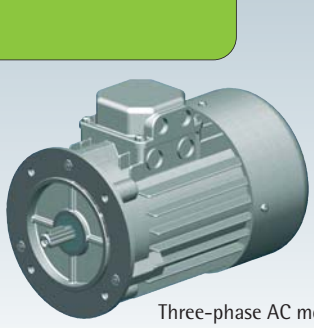
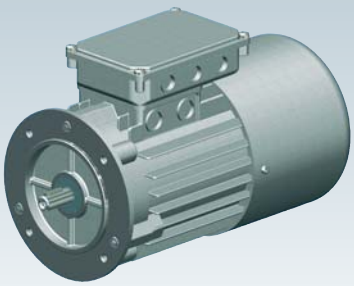
Overview



Three-phase AC motor



Three-phase AC motor with brake

Three-phase AC motors, three-phase AC motors with brakes

Standard three-phase motors (asynchronous)
No-load speed~1500 rpm (other speeds on request)
230/400 V Δ 50 Hz, S1 or S3-75%, ISO F
Three-phase AC motors: IP 55
Three-phase AC motors with brakes: IP 54

Voltage ranges
220 - 240 V Δ 50 Hz
380 - 415 V Δ 50 Hz
380 - 415 V Y 50 Hz
660 - 690 V Y 50 Hz

Frame size	Power	Rated speed	Rated torque	Rated current at 400 V	for direct-on-line starting		Breakdown torque to rated torque	Moment of inertia J	Efficiency (at 100% load)	Power factor (at 100% load)	Weight without brake	Weight with brake
					Starting current to rated current	Starting torque to rated torque						
IEC	kW	rpm	Nm	A	I_A/I_N	M_A/M_N	M_K/M_N	approx. kgm²	η %	cos	approx. kg	approx. kg
56	0.09	1300	0.66	0.35	2.5	1.8	2.0	0.0002	50.0	0.76	2.7	4.0
63	0.18	1330	1.30	0.65	2.3	1.9	1.9	0.0003	58.0	0.70	4.1	6.0
63	0.25*	1340	1.81	0.94	2.2	1.7	2.5	0.0004	60.0	0.76	4.2	6.5
71	0.37	1360	2.60	1.2	2.8	2.0	2.0	0.0008	63.0	0.70	6.0	8.0
71	0.75*	1370	5.33	2.1	2.9	2.1	2.4	0.0012	69.0	0.78	8.3	10.3
80	0.75	1410	5.10	2.0	4.5	2.2	2.8	0.0020	70.0	0.70	9.3	13.0
80	1.5*	1390	10.4	3.4	4.1	3.2	3.2	0.0026	72.0	0.70	11.5	15.2
90L	1.5	1410	10.3	3.7	4.9	3.0	3.0	0.0032	79.0	0.74	14.4	18.0
90L	2.2*	1400	15.2	5.2	4.5	2.7	2.7	0.0039	78.0	0.81	17.5	21.1
100L	2.2	1420	14.8	5.3	4.0	2.3	2.7	0.0046	83.0	0.74	19.2	25.5
100L	3.0	1410	20.3	6.7	3.9	2.3	2.5	0.0056	82.0	0.79	22.4	28.0
100L	4.0*	1420	27.0	8.9	4.0	2.2	2.2	0.0065	81.0	0.82	26.3	31.9
112M	4.0	1440	27.0	9.4	3.3	2.5	2.9	0.0133	83.0	0.75	30.4	38.0
112M	5.5*	1440	36.4	11.7	3.9	2.1	2.3	0.0139	84.0	0.83	33.0	40.6
132S	5.5	1440	36.0	12.0	5.8	3.0	3.0	0.0224	83.0	0.80	41.9	56.0
132M	7.5	1440	50.0	15.4	6.8	3.1	3.1	0.0293	86.0	0.82	51.0	66.0
132M	11*	1445	73.1	24.5	8.2	3.5	3.5	0.0458	83.0	0.80	74.0	89.0
160M	11	1460	72.1	20.7	7.6	2.1	2.4	0.0832	89.1	0.86	101.0	111.0
160L	15	1460	96.2	29.2	7.1	2.4	2.6	0.1506	89.4	0.83	110.0	120.0
180M	18.5	1465	119.0	34.3	7.1	2.3	2.6	0.1773	90.4	0.86	135.0	150.0
180L	22	1475	142.0	41.1	6.9	2.4	2.6	0.2936	90.9	0.85	145.0	160.0
200L	30	1475	190.0	54.0	6.6	2.1	2.3	0.6345	92.1	0.87	230.0	253.0
225S	37	1470	238.0	64.7	7.0	2.3	2.5	0.3251	92.8	0.89	338.0	361.0
225M	45	1470	286.0	77.9	7.4	2.3	2.4	0.7866	92.6	0.90	358.0	381.0
250M	55	1465	359.0	94.0	7.5	2.6	2.6	0.9483	93.4	0.90	482.0	517.0
250ML	75	1480	484.0	134.0	6.3	1.2	2.2	0.9988	94.0	0.80	535.0	570.0
280S	75	1475	476.0	136.0	6.8	2.1	2.5	1.8495	93.5	0.85	591.0	631.0
280M	90	1485	591.0	167.0	8.3	2.5	2.9	2.2306	93.6	0.85	662.0	702.0
280ML	110	1480	710.0	190.0	6.9	2.7	3.1	2.6800	94.0	0.89	750.0	790.0
315S	110	1485	709.0	199.0	7.5	2.3	2.5	2.8136	93.9	0.85	867.0	940.0
315M	132	1480	830.0	229.0	7.5	2.4	2.6	3.3435	94.7	0.88	990.0	1063.0
315M	160	1485	1040.0	277.0	7.3	2.7	2.7	3.3435	94.7	0.88	1003.0	1076.0
315M	200	1485	1277.0	349.0	7.6	2.4	2.6	3.3435	95.0	0.87	1003.0	1076.0
355M	250	1475	1619.0	432.0	7.5	2.4	2.5	5.8740	95.0	0.88	1380.0	1490.0
355M	315	1485	2024.0	542.0	6.9	2.5	2.6	6.8900	95.3	0.88	1600.0	1790.0

*Power is higher than the IEC standard (progressive)

Sizes 63 to 132 available on short lead times
Sizes 160 to 355 available on request

CAUTION:
Overdimensioning the motor power risks overstressing other components.
The effects must be considered not only under load but also for the no-load case.

We supply motor brakes as standard for a connection voltage of 230V AC, operating voltage 205 V DC, with bridge rectifiers.

Ordering example:

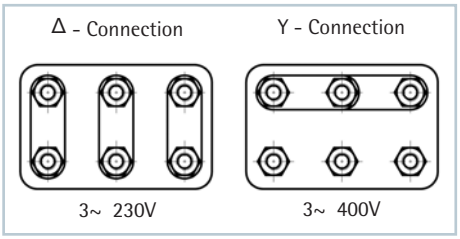
90-P4-1.5-B5-B-2W

- Size
- Number of poles - speed 4-pole = 1500 rpm
- Power [kW]
- Design
- with brake (if required)
- with a second shaft end (if required)

Three-phase AC motors, general information

Connection arrangement
The motors usually have a terminal board with 6 terminals and a protective earth terminal in the terminal box. The stator winding can be switched into star or delta connection using the connection links.
Star/delta starting is not suitable for screw jack systems because full torque is required immediately on starting.

For motor windings 230/400V (example)



Operating voltage 230V delta:
Motor windings 230/400V

Operating voltage 400V delta:
Motor windings 400/660V

Direction of rotating
Motors can be arranged for either direction of rotation When the line phases L1, L2, L3 are connected to the motor terminals U1, V1 W1, the direction of rotation is clockwise
Swapping over two of the supply lines reverses the direction of rotation.

Speeds
Three-phase AC motors have different rotational speeds depending on the number of poles. Generally we recommend our standard motor with 1500 rpm (4 poles).
Other numbers of poles are available on request. Pole-changing motors allow a choice of 2 different rotational speeds.

Speed (50 Hz)	Number of poles
3000	2
1500	4 (= preferred type)
1000	6
750	8
500	12

Geared motors
Geared motors are available for particular projects on request.

Operation with frequency converters
Especially for larger screw jacks and systems, we recommend the use of a frequency converter to achieve smooth start-up and brake ramps. This minimizes start-up noise and extends the service life of the gearbox.

When operating with a frequency converter, remember that if the motor is to be operated for extended periods at frequencies less than 25 Hz, its fan must be driven separately. This is necessary to ensure adequate motor cooling.

When operating a braked motor with a frequency converter, a separate actuation line for the brake must be provided via the frequency converter.

Braked motor
We recommend using a braked motor to minimise the overrun time of the system. Where a screw jack is fitted with a ball screw or a double-pitch screw, a braked motor is absolutely essential. We supply motor brakes as standard for a connection voltage of 230V AC / operating voltage 205V DC, with bridge rectifiers.
Other connection voltages (24V DC, 400V AC, 500V AC) are available on request.

Temperature monitoring
Generally we do not supply temperature monitoring because screw jack duty cycles are normally quite low or the motor is adequately dimensioned.
Temperature control thermal resistor (PTC) or bimetal (TKÖ) is available on request.

Some types are available ex stock with thermal resistor (PTC).

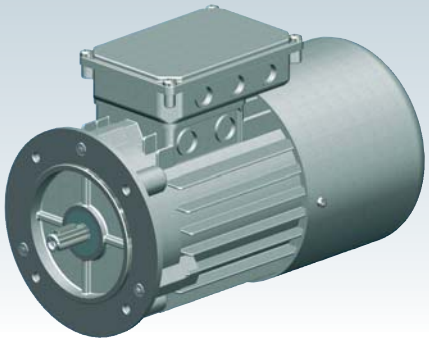
Permanent-magnet DC motors

24V DC, IP 54, with terminal box

Frame size IEC	Power [P]	Speed [rpm]	Rated torque*** [Nm]	Starting torque [Nm]	Voltage [V]	Rated current [A]	Motor length (without shaft)	Weight [kg]
Ø53	60W	3000	0.17	1.4	24V DC	2.9	128	1.2
56, B14C Ø80	85W	1500**	0.53	1.5	24V DC	4.5	149*	2.7
56, B14C Ø80	165W	1500**	1.0	3.0	24V DC	8.8	196*	4.3
56, B14C Ø80	250W	1500**	1.6	4.5	24V DC	13.5	241*	5.6

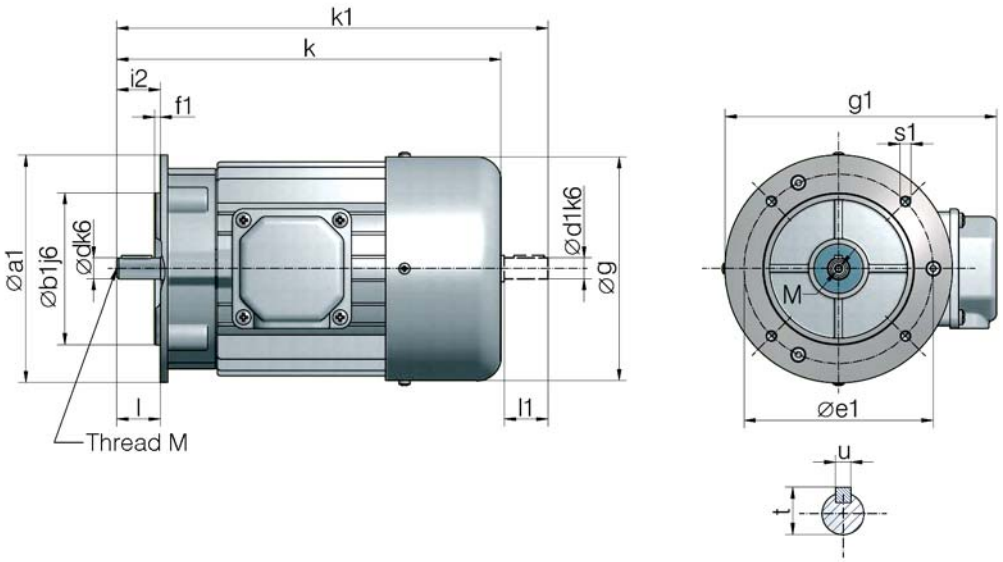
*Optional brake available (24V DC, 13W, 2 Nm, 1.1 kg), + 44 mm length
** 3000 rpm motor available on request, torque remains the same
*** Short-term operation at twice the torque is possible

Other sizes available on request



Three-phase AC motors, three-phase AC motors with brakes, flange profile B14B, large flange

B14: Flange with internal thread
B: Large flange



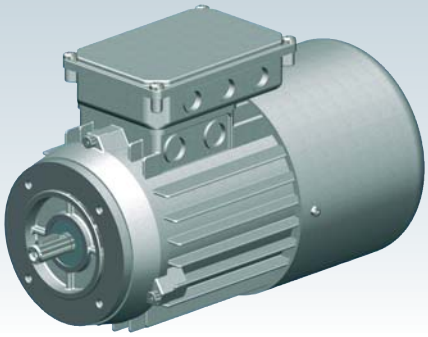
We reserve the right to change the dimensions without changing the motor designation.

Size	a1	b1	e1	f1	g	i2	s1	d	l	t	u
63	120	80	100	3.0	125	23	M6	11	23	12.5	4
71	140	95	115	3.0	141	30	M8	14	30	16.0	5
80	160	110	130	3.5	159	40	M8	19	40	21.5	6
90	160	110	130	3.5	179	50	M8	24	50	27.0	8
100	200	130	165	3.5	199	60	M10	28	60	31.0	8
112	200	130	165	3.5	223	60	M10	28	60	31.0	8

These dimensions are standardised and thus always remain the same.

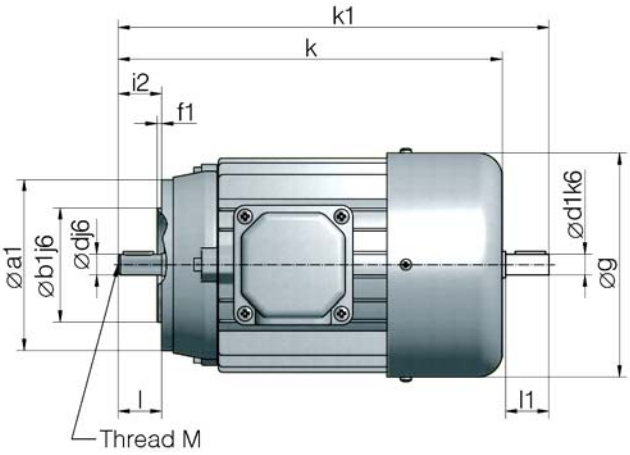
		without brake				with brake	with brake and second shaft end					
Size	kW (4-pole)	k	k1	d1	l1	k	k	k1	d1	l1	q1	M
63	0.18	212	238	11	23	261	261	285	9	20	172	4
63	0.25	212	238	11	23	239	261	285	9	20	172	4
71	0.37	248	281	14	30	263	295	325	11	23	188	5
71	0.75	248	281	14	30	263	295	325	11	23	188	5
80	0.75	277	315	19	40	310	330	375	19	40	211	6
80	1.5	277	315	19	40	310	330	375	19	40	211	6
90	1.5	329	378	24	50	390	390	432	19	40	227	8
90	2.2	329	378	24	50	348	390	432	19	40	227	8
100	3.0	369	429	28	60	451	433	487	24	50	248	10
100	4.0	369	429	28	60	451	433	487	24	50	248	10
112	5.5	391	448	28	60	456	456	511	24	50	266	10

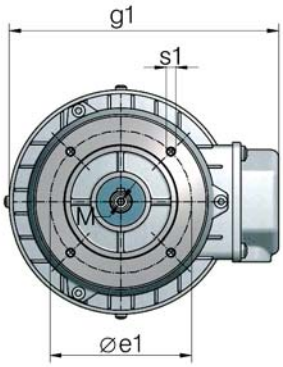
These dimensions are our standard (4-pole), but may vary in individual cases.

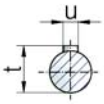


Three-phase AC motors, three-phase AC motors with brakes, flange profile B14C, small flange

B14: Flange with internal thread
C: Small flange







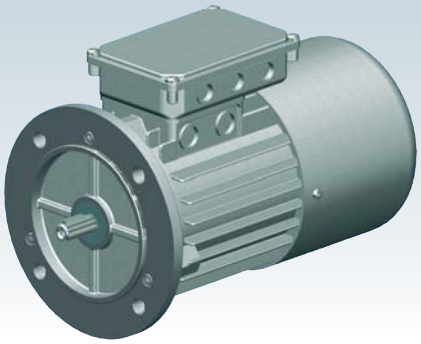
We reserve the right to change the dimensions without changing the motor designation.

Size	a1	b1	e1	f1	g	i2	s1	d	l	t	u
56	80	50	65	2.5	110	20	M5	9	20	10.2	3
63	90	60	75	2.5	125	23	M5	11	23	12.5	4
71	105	70	85	2.5	141	30	M6	14	30	16.0	5
80	120	80	100	3.0	159	40	M6	19	40	21.5	6
90	140	95	115	3.0	179	50	M8	24	50	27.0	8
100	160	110	130	3.5	199	60	M8	28	60	31.0	8
112	160	110	130	3.5	223	60	M8	28	60	31.0	8
132	200	130	165	4.0	258	80	M10	38	80	41.0	10

These dimensions are standardised and thus always remain the same.

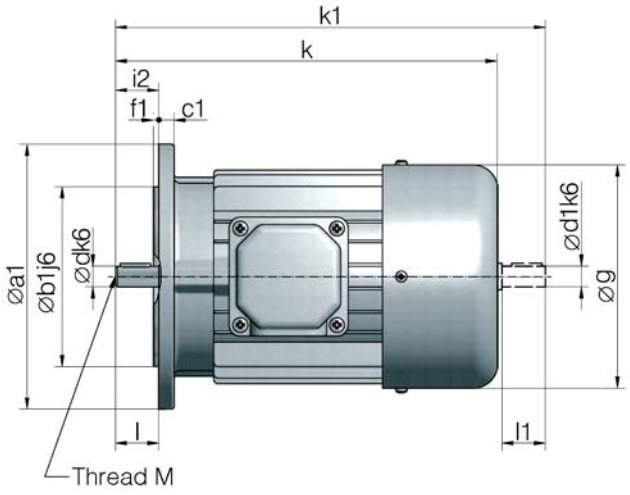
	kW	without brake				with brake	with brake and second shaft end					
Size	(4-pole)	k	k1	d1	l1	k	k	k1	d1	l1	g1	M
56	0.09	189	212	9	20	243	243	-	-	-	161	4
63	0.18	212	238	11	23	261	261	285	9	20	172	4
63	0.25	212	238	11	23	239	261	285	9	20	172	4
71	0.37	248	281	14	30	263	295	325	11	23	188	5
71	0.75	248	281	14	30	263	295	325	11	23	188	5
80	0.75	277	315	19	40	310	330	375	19	40	211	6
80	1.5	277	315	19	40	310	330	375	19	40	211	6
90	1.5	329	378	24	50	390	390	432	19	40	227	8
90	2.2	329	378	24	50	348	390	432	19	40	227	8
100	3.0	369	429	28	60	451	433	487	24	50	248	10
100	4.0	369	429	28	60	451	433	487	24	50	248	10
112	5.5	391	448	28	60	456	456	511	24	50	266	10
132	7.5	490	570	38	80	585	-	-	-	-	326	12

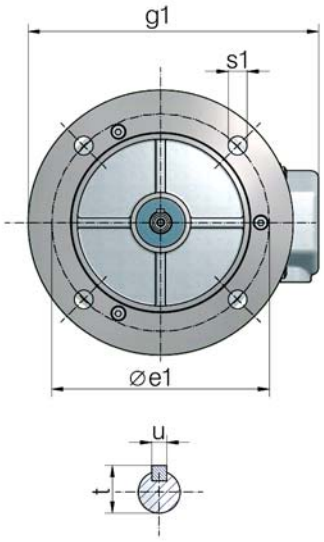
These dimensions are our standard (4-pole), but may vary in individual cases.



Three-phase AC motors, three-phase AC motors with brakes, flange profile B5

B5: Flange with through holes





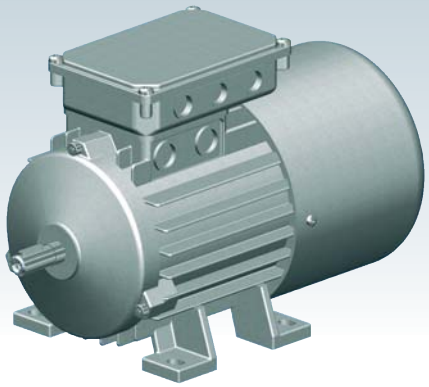
We reserve the right to change the dimensions without changing the motor designation.

Size	a1	b1	c1	e1	f1	g	i2	s1	d	l	t	u
63	140	95	5	115	3.0	125	23	9.5	11	23	12.5	4
71	160	110	7	130	3.5	141	30	9.5	14	30	16.0	5
80	200	130	8	165	3.5	159	40	11.5	19	40	21.5	6
90	200	130	8	165	3.5	179	50	11.5	24	50	27.0	8
100	250	180	10	215	4.0	199	60	14	28	60	31.0	8
112	250	180	10	215	4.0	223	60	14	28	60	31.0	8

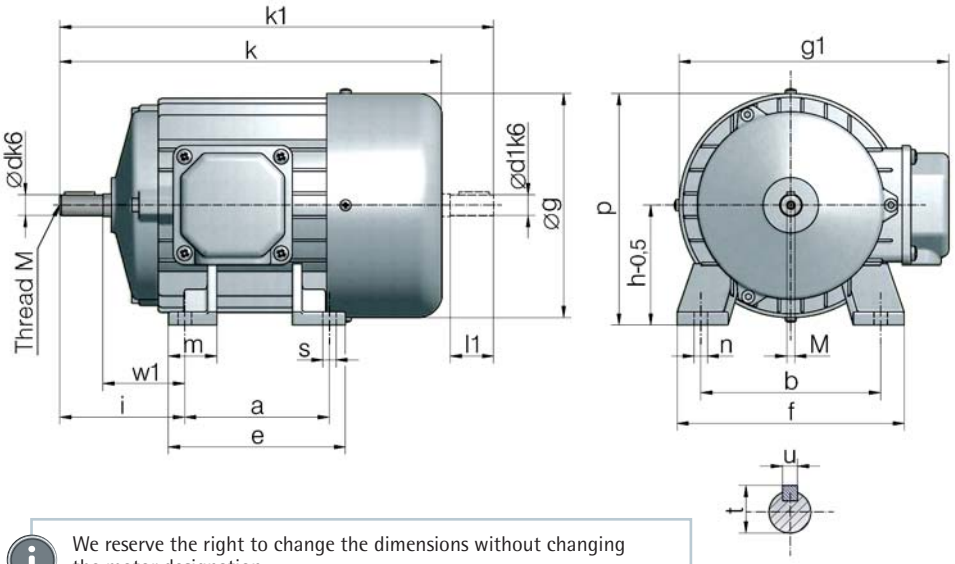
These dimensions are standardised and thus always remain the same.

		without brake				with brake	with brake and second shaft end					
Size	kW	k	k1	d1	l1	k	k	k1	d1	l1	g1	M
63	0.18	212	238	11	23	261	261	285	9	20	172	4
63	0.25	212	238	11	23	239	261	285	9	20	172	4
71	0.37	248	281	14	30	263	295	325	11	23	188	5
71	0.75	248	281	14	30	263	295	325	11	23	188	5
80	0.75	277	315	19	40	310	330	375	19	40	211	6
80	1.5	277	315	19	40	310	330	375	19	40	211	6
90	1.5	329	378	24	50	390	390	432	19	40	227	8
90	2.2	329	378	24	50	348	390	432	19	40	227	8
100	3.0	369	429	28	60	451	433	487	24	50	248	10
100	4.0	369	429	28	60	451	433	487	24	50	248	10
112	5.5	391	448	28	60	456	456	511	24	50	266	10

These dimensions are our standard (4-pole), but may vary in individual cases.



Three-phase AC motors, three-phase AC motors with brakes, pedestal mounted type B3



For this type, we can supply a flanged motor (e.g.: B14) with additional pedestal mounts fitted.
This version is generally available on a shorter lead time. The dimensions remain the same.

Please specify the terminal box position (top, right or left when looking at the motor shaft). If not otherwise specified, we deliver up to size 112 with the box on top and from size 132 with it on the right.

4

We reserve the right to change the dimensions without changing the motor designation.

Size	a	b	g	h	i	p*	s	n	w1	d	l	t	u
63	80	100	125	63	63	126	7	11	40	11	23	12.5	4
71	90	112	141	71	75	142	7	7	45	14	30	16.0	5
80	100	125	159	80	90	160	9	17	50	19	40	21.5	6
90	125	140	179	90	106	180	9	17	56	24	50	27.0	8
100	140	160	199	100	123	200	12	20	63	28	60	31.0	8
112	140	190	223	112	130	224	12	21	70	28	60	31.0	8
132S	140	216	262	132	169	264	12	-	89	38	80	41.0	10
132M	178	216	262	132	169	264	12	-	89	38	80	41.0	10
160M	210	254	318	160	218	320	14	-	108	42	110	45.0	12
160L	254	254	318	160	218	320	14	-	108	42	110	45.0	12
180M	241	279	358	180	231	360	14	-	121	48	110	51.5	14
180L	279	279	358	180	231	360	14	-	121	48	110	51.5	14
200L	305	318	398	200	243	400	19	-	133	55	110	59.0	16

These dimensions are standardised and thus always remain the same.
* The height g1 is for top-mounted terminal boxes

		without brake				with brake	with brake and second shaft end								
Size	kW	k	k1	d1	l1	k	k	k1	d1	l1	c	e	f	g1	M
63	0.18	212	238	11	23	261	261	285	9	20	10	105	120	172	4
63	0.25	212	238	11	23	239	261	285	9	20	10	105	120	172	4
71	0.37	248	281	14	30	263	295	325	11	23	11	108	136	188	5
71	0.75	248	281	14	30	263	295	325	11	23	11	108	136	188	5
80	0.75	277	315	19	40	310	330	375	19	40	11	125	154	211	6
80	1.5	277	315	19	40	310	330	375	19	40	11	125	154	211	6
90	1.5	329	378	24	50	390	390	432	19	40	13	155	174	227	8
90	2.2	329	378	24	50	348	390	432	19	40	13	155	174	227	8
100	3.0	369	429	28	60	451	433	487	24	50	14	175	192	248	10
100	4.0	369	429	28	60	451	433	487	24	50	14	175	192	248	10
112	5.5	391	448	28	60	456	456	511	24	50	14	175	224	266	10
132S	5.5	452	-	-	-	547	-	-	-	-	16	180	256	326	12
132M	7.5	490	-	-	-	585	-	-	-	-	16	219	256	326	12
160M	11.0	608	-	-	-	-	-	-	-	-	23	264	320	395	16
160L	15.0	652	-	-	-	-	-	-	-	-	23	306	320	395	16

These dimensions are our standard (4-pole), but may vary in individual cases.