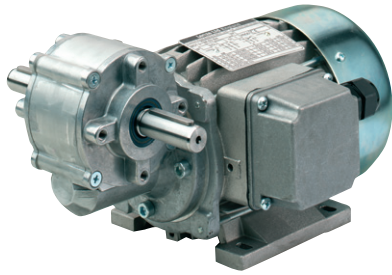


motors and dc drives

ac geared motors



Lenze fhp worm geared motors

page 321

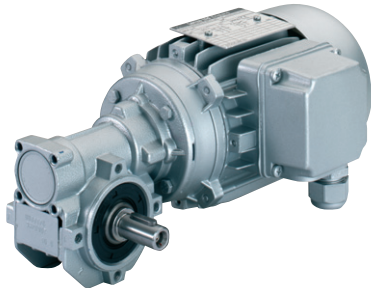
A stock range of single and three phase motors from 45W to 270W. Options of brake motors and new hollow shaft gearboxes



SDS/SPL planetary geared motors

page 328

Inverter optimised SDS flux vector motors with SPL low cost planetary gearheads for compact in-line variable speed drives, 240-600W



SW aluminium worm geared ***page 330***

High performance aluminium gearboxes with 1 phase, 3 phase and brake motors, 90W to 4kW

dc geared motors



Permanent magnet worm geared

page 340

Types 171 and 121 geared motors available for 24V or 180V supply from 40 to 370W

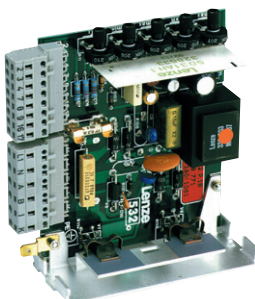


Permanent magnet planetary

page 346

Lenze permanent magnet motors with planetary gearboxes for compact in-line drives, 55 to 600W

dc drives



Dc drives

page 349

Lenze dc drives for 1Q, 2Q or 4Q operation, 0.36 to 110kW

MOTORS & SMALL
GEARED MOTORS

General information on Stockline ac motors:

WORKING CONDITIONS

Humidity

The electrical equipment must be able to function with a relative humidity between 30 and 95% (without condensation).

Damaging effects of occasional condensation must be avoided by adequate equipment design or, if necessary, by additional measures (for example, built-in heating or air-conditioning equipment, drainage holes).

Altitude and Temperature:

The powers indicated are intended for regular use at altitudes below 1000m above sea level and a room temperature between +5°C and +40°C for motors having a rated power below 0.6 kW, or between -15°C and 40°C for motors having a rated power equal to or greater than 0.6 kW. For running conditions other than those specified (higher altitude and/or temperature), the characteristics figures vary according to the coefficient shown in the graph.

Derating of self-cooled motors

Self-cooled motors without forced ventilation from blowers require derating if they run continuously at lower speeds. The table below suggests derating factors for 2 and 4 pole motors according to the operating frequency range.

Frequency range (Hz)	50-25	50-16	50-10	50-5	50-2.5
Derating factor	1	0.83	0.71	0.66	0.55

Example

For a 0.37kW motor operated over a range 50-5Hz, the derated motor power is: $0.37 \times 0.66 = 0.24\text{kW}$

NOTE: where forced ventilation blowers are fitted, derating is unnecessary.

Options:

Tropicalisation

A highly efficient protection treatment is carried out for the motors to be used in tropical climate. With a high degree of humidity or particularly severe environmental conditions the windings are coated with high quality glycerophthalic paint with excellent coverage and protective characteristics.

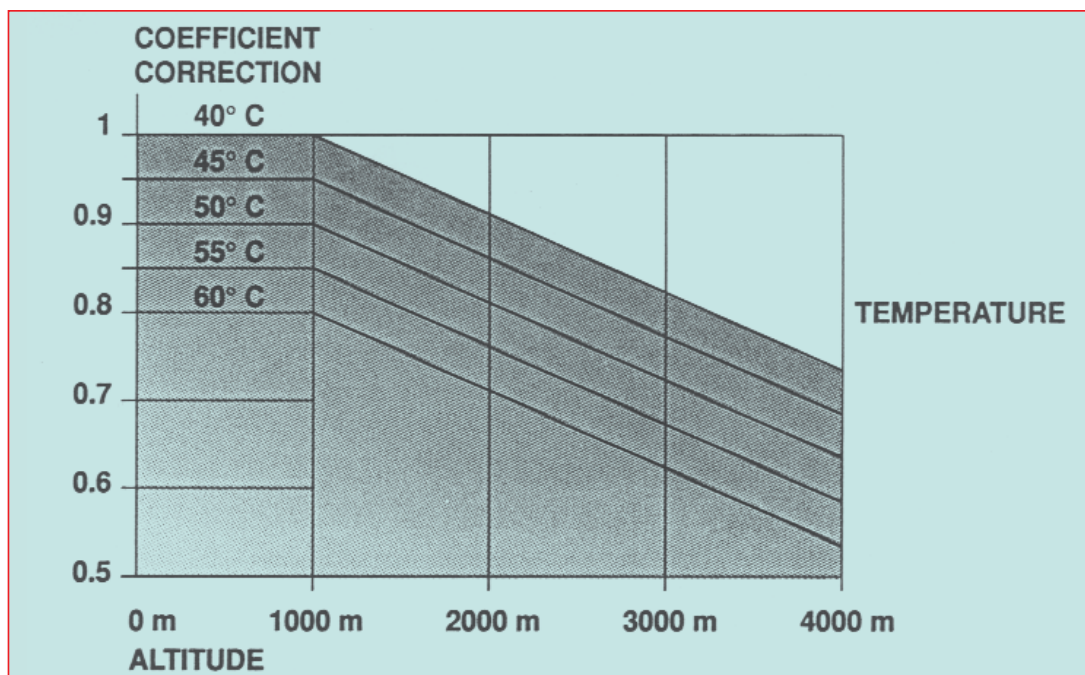
Anti-condensation heaters

Anti-condensation heaters can be fitted to motors on request. They are securely fitted to the windings overhang. The connections are located on a separate terminal block inside the terminal box, with a supply of 240 or 110 volts single phase.

Thermistor protection

Used to provide thermal protection in the event of poor ventilation and motor overheating, these are terminated in the terminal box and must be connected in the control circuit as a safety cut-out. They are PTC (Positive Temperature Coefficient) with a trip temperature of 130°C.

There are many more options for the individual motors. These can be found in the relevant motor sections.



Three-phase motors – 45W to 9.3kW

IP55 enclosure

Class F insulation

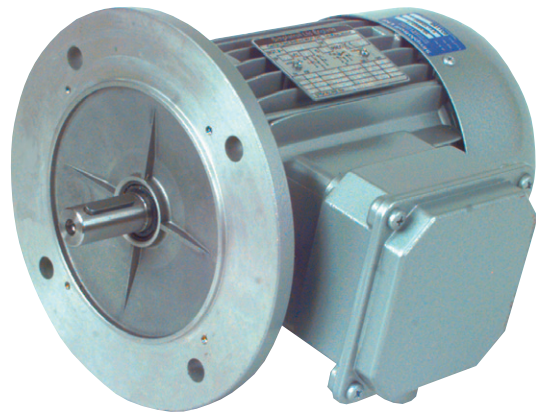
Shaft oil seal and oil tight flange

Closed end keyway and key

Tapped shaft end

130° temperature switch fitted as standard

Wide voltage range



This range of Stockline three phase a.c. motors conform to IEC dimensions in all respects. For the face mounted models a number of dimensional options are available.

Construction

Strong ribbed die-cast aluminium alloy casing and end shields. Sheet metal fan cowl. Plastic fan blade. European-made shielded ball bearings are used. Large terminal box for easy connection. Rotor dynamically balanced. Insulation impregnated class F. Class H wire used.

Shaft tolerances are j6 up to 29 mm diameter and k6 for 30 to 48 mm. Keys are supplied fitted in secure closed end keyways up to 132 frame.

Shaft ends centre tapped for easy fitting and securing of drive components.

Enclosure

IP55 enclosure ensures protection of internal moving parts against harmful effect of dust deposits. It also ensures protection from water jets from any direction.

Mounting configuration

B3 foot mounting motors feature cast aluminium feet that are integral with the motor body. Alternative terminal box positions can be supplied only to order. Specify looking from the motor shaft end, terminal box on top, or to the left hand side.

B14 face mounting motors are defined by 'C' face dimensions, for example a 71 frame motor that is C105 has dimension C = 105 mm. This configuration gives a motor to gearbox connection that is more compact than flange mounted B5. However there is not a single standard and more than one 'C' dimension may be encountered on a single frame size.

This is particularly the case on frame sizes 80 and 90. Beyond frame size 112 B5 mounting is used in preference to B14.

B5 flange mounting is normally used with one single flange size per motor frame size. B5 flanges make a physically larger connection than B14, however the B5 dimensions are more common from 132 frame and upwards.

Power

The powers stated are for S1 (continuous) operation at less than 1000 m above sea level and a maximum ambient temperature not exceeding 40°C, *see facing page*.

For other duty cycles details are available on request.

Voltage

Standard motors are designed to accept a wide range of voltages at 50Hz or 60Hz.

230V $\pm 10\%$ or 400V $\pm 10\%$ at 3 phase 50Hz

266V $\pm 10\%$ or 460V $\pm 10\%$ at 3 phase 60Hz

Starting at 4kW motors (also 132 frame 6 and 8 pole motors), windings are 400/692V to suit star/delta starting.

This gives a softer start with lower currents as 400V is initially connected to the 692V winding.

Operation at 60Hz

The full load speeds shown increase by 20%. If the applied voltage is also increased in proportion to frequency, the output power rises by 15%.

At the lower end of the voltage range at 60Hz, the rated torque drops typically by 17% along with a reduction in starting torque of 30%. Rated power remains the same.

Other motor speeds and pole changing motors

In addition to the motors listed we can also supply motors, 2/4, 4/6, 4/8, 2/6, 6/8, 2/8 and 2/12 pole changing motors.

Special designs

We are happy to supply special flanges, shafts, second shaft ends and any unusual designs that you may require. Please contact our technical department for an enquiry form.

Three-phase motors – 45W to 9.3kW

2 pole motors – 3000 r/min

Power kW	Load speed r/min	Values at 50 Hz			Frame size	Stockline numbers			
		Nominal torque Nm	Amps at full load			B3 foot mounted	B14 face mounted	Face diameter	B5 flange mounted
			230V	400V					
0.09	2830	0.31	0.73	0.42	56A2	Y1-412 407	Y1-394 582	C80	Y1-412 395
0.13	2720	0.46	0.83	0.48	56B2	Y1-412 387	Y1-394 574	C80	Y1-412 360
0.18	2820	0.66	1.23	0.71	63A2	Y1-412 344	Y1-394 566	C90	Y1-412 352
0.25	2800	0.88	1.35	0.74	63B2	Y1-412 29X	Y1-355 163	C90	Y1-412 301
0.37	2880	1.1	2.25	1.2	71A2	Y1-353 465	Y1-100 930	C105	Y1-352 965
0.55	2860	1.8	3.46	1.9	71B2	Y1-353 473	Y1-145 848	C105	Y1-352 973
0.75	2890	2.56	3.11	2.0	80A2	Y1-353 481	Y1-410 078	C120	Y1-161 639
0.75	2890	2.56	3.11	2.0	80A2	–	Y1-352 981	C160	–
1.1	2860	3.75	4.68	3.0	80B2	Y1-353 49X	Y1-408 430	C120	Y1-110 951
1.1	2860	3.75	4.68	3.0	80B2	–	Y1-352 99X	C160	–
1.5	2800	5.2	6.41	3.9	90S2	Y1-353 51X	Y1-188 525	C140	Y1-119 512
1.5	2800	5.2	6.41	3.9	90S2	–	Y1-137 821	C160	–
2.2	2860	7.5	9.53	5.4	90L2	Y1-353 528	Y1-408 449	C140	Y1-147 964
2.2	2860	7.5	9.53	5.4	90L2	–	Y1-353 004	C160	–
3.0	2860	11.0	12.47	7.2	100A2	Y1-442 435	Y1-364 128	C160	Y1-364 136
4.0	2920	13.5	–	9.9	112A2	Y1-815 22X	Y1-815 289	C160	Y1-815 297
5.5	2870	18.5	–	12.8	132S2	Y1-815 246	–	–	Y1-815 309
7.5	2920	25.0	–	17.0	132L2	Y1-815 254	–	–	Y1-815 317

4 pole motors – 1500 r/min

Power kW	Load speed r/min	Values at 50 Hz			Frame size	Stockline numbers			
		Nominal torque Nm	Amps at full load			B3 foot mounted	B14 face mounted	Face diameter	B5 flange mounted
			230V	400V					
0.045	1340	0.30	0.55	0.32	50L4	–	Y1-395 208	C80	–
0.09	1380	0.66	0.78	0.45	56B4	Y1-339 652	Y1-47 077	C80	Y1-353 012
0.13	1390	0.90	1.19	0.64	63A4	Y1-353 280	Y1-47 034	C90	Y1-353 020
0.18	1400	1.3	1.47	0.80	63B4	Y1-353 299	Y1-296 990	C90	Y1-353 039
0.25	1400	1.7	1.56	0.9	71A4	Y1-353 272	Y1-120 842	C105	Y1-72 425
0.37	1400	2.5	2.08	1.2	71B4	Y1-353 300	Y1-119 441	C105	Y1-103 05X
0.55	1410	3.8	2.95	1.7	80A4	Y1-353 319	Y1-396 970	C120	Y1-121 011
0.55	1410	3.8	2.95	1.7	80A4	–	Y1-352 800	C160	–
0.75	1420	5.0	3.46	2.0	80B4	Y1-353 264	Y1-150 803	C120	Y1-72 492
0.75	1420	5.0	3.46	2.0	80B4	–	Y1-93 56X	C160	–
1.1	1400	7.5	5.2	3.2	90S4	Y1-353 327	Y1-396 989	C140	Y1-115 730
1.1	1400	7.5	5.2	3.2	90S4	–	Y1-96 257	C160	–
1.5	1400	10.0	6.60	4.2	90L4	Y1-353 406	Y1-181 662	C140	Y1-117 108
1.5	1400	10.0	6.60	4.2	90L4	–	Y1-93 578	C160	–
1.8	1400	12.5	7.97	4.8	90M4	Y1-353 335	Y1-396 997	C140	Y1-332 111
1.8	1400	12.5	7.97	4.8	90M4	–	Y1-332 103	C160	–
2.2	1430	14.8	9.87	5.9	100A4	Y1-353 343	Y1-129 123	C160	Y1-148 385
3.0	1440	20.4	12.7	7.2	100B4	Y1-353 351	Y1-137 848	C160	Y1-92 885
4.0	1430	27	–	9.3	112A4	Y1-815 175	Y1-815 35X	C160	Y1-815 368
5.2	1400	36	–	11.0	112B4	Y1-815 191	Y1-781 20X	C160	Y1-815 376
5.5	1440	37	–	13.5	132S4	Y1-815 325	–	–	Y1-815 392
7.5	1440	49	–	16.0	132L4	Y1-815 333	–	–	Y1-781 218
9.3	1450	61	–	21.5	132L4	Y1-815 341	–	–	Y1-781 226

Larger powers available on request.

Stockline numbers in black – leadtime normally two weeks

Three-phase motors – 45W to 9.3kW

6 pole motors – 1000 r/min									
Power kW	Load speed r/min	Values at 50 Hz				Stockline numbers			
		Nominal torque Nm	Amps at full load		Frame size	B3 foot mounted	B14 face mounted	Face diameter	B5 flange mounted
			230V	400V					
0.09	820	1.0	0.86	0.5	63A6	Y1-94 985	Y1-95 016	C90	Y1-95 024
0.12	880	1.3	1.21	0.6	63B6	Y1-296 781	Y1-95 008	C90	Y1-95 040
0.18	900	1.9	1.47	0.7	71A6	Y1-94 969	Y1-99 433	C105	Y1-95 12X
0.25	900	2.7	1.90	1.1	71B6	Y1-353 536	Y1-103 975	C105	Y1-124 230
0.37	920	3.9	2.13	1.1	80A6	Y1-353 544	Y1-148 961	C120	Y1-149 567
0.37	920	3.9	2.13	1.1	80A6	–	Y1-149 583	C160	–
0.55	920	5.6	3.47	2.0	80B6	Y1-353 552	Y1-410 094	C120	Y1-131 828
0.55	920	5.6	3.47	2.0	80B6	–	Y1-114 918	C160	–
0.75	930	7.6	4.3	2.6	90S6	Y1-443 152	Y1-496 689	C140	Y1-496 709
0.75	930	7.6	4.3	2.6	90S6	–	Y1-496 697	C160	–
1.1	920	11.5	5.9	3.3	90L6	Y1-353 560	Y1-410 106	C140	Y1-112 432
1.1	920	11.5	5.9	3.3	90L6	–	Y1-149 575	C160	–
1.5	920	16.0	7.6	4.2	100A6	Y1-353 579	Y1-186 73X	C160	Y1-353 047
2.2	940	22.9	12.1	7.0	112A6	Y1-353 587	Y1-72 58X	C160	Y1-353 055
3.0	950	30.0	–	8.0	132S6	Y1-815 50X	–	–	Y1-815 534
4.0	950	40.0	–	9.4	132L6	Y1-815 518	–	–	Y1-815 542
5.5	940	57.0	–	13.0	132M6	Y1-815 526	–	–	Y1-815 569

8 pole motors – 750 r/min									
Power kW	Load speed r/min	Values at 50 Hz				Stockline numbers			
		Nominal torque Nm	Amps at full load		Frame size	B3 foot mounted	B14 face mounted	Face diameter	B5 flange mounted
			230V	400V					
0.09	690	1.55	1.14	0.61	71A8	Y1-160 560	Y1-513 009	C105	Y1-160 579
0.12	700	1.8	1.59	0.96	71B8	Y1-16 05X	Y1-105 882	C105	Y1-160 690
0.18	670	2.68	1.61	0.92	80A8	Y1-161 028	Y1-513 017	C120	Y1-162 120
0.25	690	3.54	2.08	1.2	80B8	Y1-165 725	Y1-513 025	C120	Y1-138 427
0.37	690	5.20	3.12	1.8	90S8	Y1-167 013	Y1-513 033	C140	Y1-513 652
0.37	690	5.20	3.12	1.8	90S8	–	Y1-513 041	C160	–
0.55	690	7.57	3.98	2.3	90L8	Y1-513 478	Y1-513 05X	C140	Y1-156 43X
0.75	690	10.2	4.5	2.6	100A8	Y1-511 962	Y1-513 076	C160	Y1-167 048
1.1	690	15.8	7.3	4.1	100B8	Y1-179 150	Y1-513 084	C160	Y1-147 396
1.5	660	22.50	7.8	4.5	112A8	Y1-121 070	Y1-513 092	C160	Y1-173 993
2.2	690	31.37	–	6.8	132S8	Y1-815 577	–	–	Y1-815 593
3.0	700	41.7	–	8.7	132L8	Y1-815 585	–	–	Y1-815 605

Stockline numbers in black – leadtime normally two weeks

See also...

Ordering example

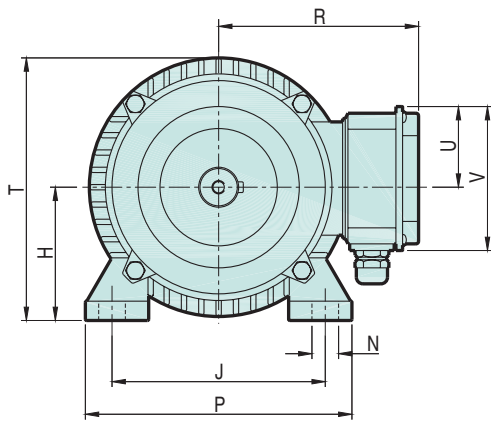
(5) off three phase motors, 3.0 kW, 2860 r/min, B3 foot mounted, 230/400 ± 10%/3/50.

Stockline No. **Y1-442 435**

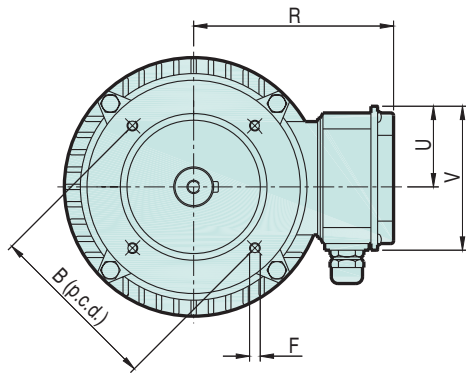
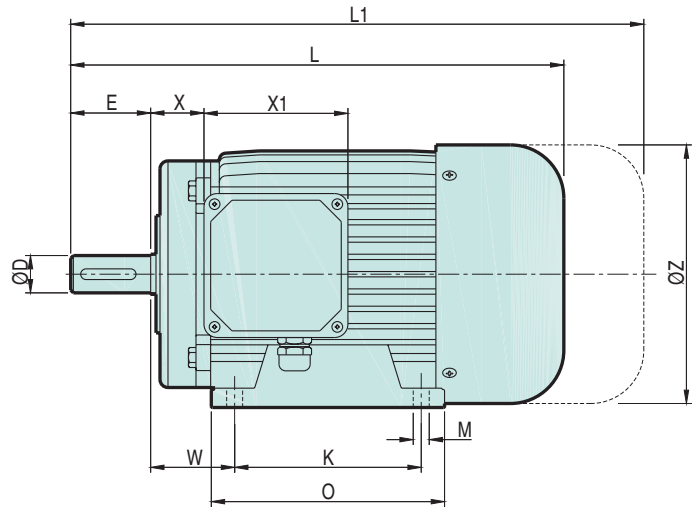
Inverter variable speed drives – [Page 80](#)

70 Hz technology – [Page 136](#)

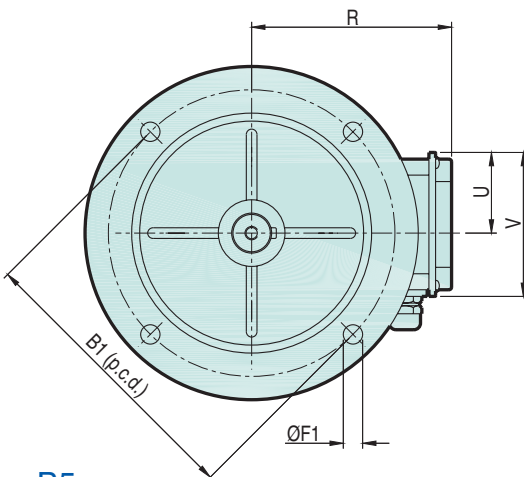
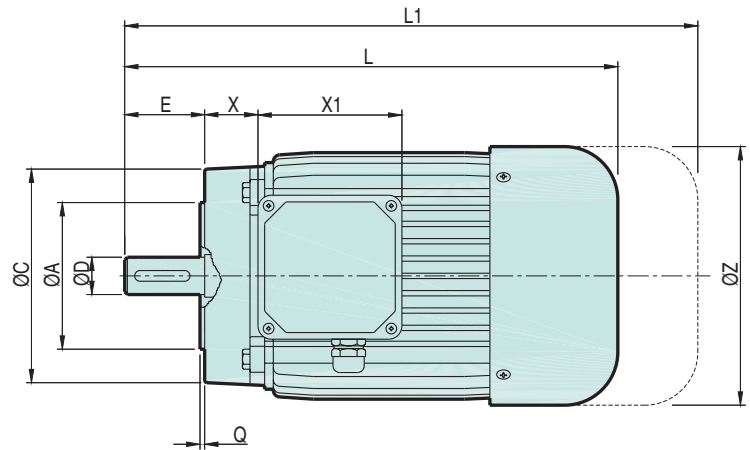
Flexible couplings – [Section 8](#)



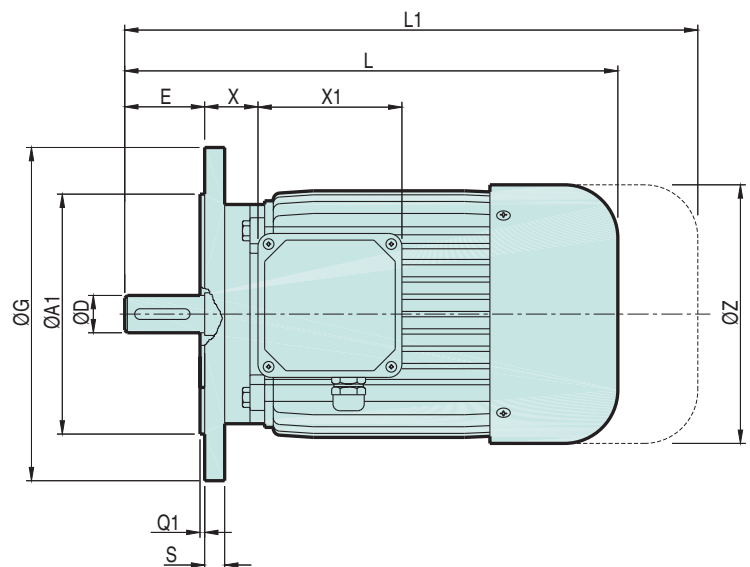
B3



B14



B5



Shafts to ISO tolerance j6 up to 29 mm, then k6.
Keyways to BS4235.
Tapped shaft ends to DIN 332

Brake motors

See following pages 294-5.

Dimensions are identical except motor length is L_1 instead of L .

Frame size	A	A ₁	B ₁	D	E	F ₁	G	H	J	M	N	P	Q ₁	R	U	V	X	X ₁
50L	See B14 dimensions	–	–	9	20	–	–	–	–	–	–	–	–	80	32	64	25	64
56		80	100	9	20	7	120	56	90	6	11	108	3	110	58	74	30	74
63		95	115	11	23	10	140	63	100	7	12	120	3	115	58	92	25	92
71		110	130	14	30	10	160	71	112	7	12	136	3.5	124	52	92	25	92
80		130	165	19	40	12	200	80	125	9.5	17.5	154	3.5	141	60	108	30	108
90		130	165	24	50	12	200	90	140	9.5	17.5	174	3.5	146	60	108	33	108
100		180	215	28	60	14.5	250	100	160	11.2	21	192	4	157	60	108	40	108
112		180	215	28	60	14.5	250	112	190	11.2	21	226	4	170	60	108	45	108
132		230	265	38	80	14.5	300	132	216	11.2	21	260	4	195	61	122	50	122

Frame size	K	L	L ₁	O	S	T	W	Z	Weight kg
50L	–	163	202	–	–	–	–	98	2.5
56	71	187	213	90	9	110	36	110	3.2
63	80	216	238	105	10	125	40	123	4.6
71	90	245	276	108	10	139	45	138	6.3
80	100	275	317	125	10	157	50	156	11.0
90S	100	300	342	130	10	177	56	176	12.5
90L	125	325	366	155	10	177	56	176	15.2
100	140	365	430	175	15	196	63	194	22
112	140	385	466	175	15	220	70	220	29
132S	140	460	540	180	18	260	89	256	45
132L/M	178	490	580	218	18	260	89	256	56

B14 face dimensions

B14 face diameter	Motor frame sizes	A	B	C	F	Q
C80	50	50	65	80	M5	2
C80	56	50	65	80	M5	2
C90	63	60	75	90	M5	2
C105	71	70	85	105	M6	2.5
C120	80, 90	80	100	120	M6	3
C140	80, 90	95	115	140	M8	3
C160	80, 90 100, 112	110	130	160	M8	3.5

Blowers for three phase motors

- Choice of single and three phase
- With separate terminal box
- Low cost
- Ex-stock delivery
- IP55 (on three phase version)

When motors are driven by frequency controllers, consideration should be given to motor cooling. If continued operation at a setting below 25Hz is envisaged, either the motor must be de-rated, or a separately driven blower must be fitted. Two pole blowers are better cooling while 4 pole gives quieter operation. The following blowers can be fitted in our workshop, adding dimension L₃ to the motor length.

Terminal box glands

Aluminium terminal boxes are enclosed to IP65. They are fitted with one cable gland although a second can be fitted.

Frame size	Gland size
50	M16x1.5
56 -112	M20x1.5
132 -160	M32x1.5

Ordering example

(6) off three phase motors 1.5 kW, 1400 r/min, frame size IEC 90, B14 face mounting, C160, 230/400/3/50.

Stockline No. Y1-93 578

Frame size	L ₃	Cowl diameter (inside)	Blower Single Phase 230V/1/50/60 Hz						Blower Three Phase 400V/3/50/60 Hz		
			2 pole IP44			4 pole IP44			2 pole IP55		
			I (A)	P (W)	Stockline No.	I (A)	P (W)	Stockline No.	I (A)	P (W)	Stockline No.
63	112	121	0.57	18	Y1-830 817	0.18	5	Y1-528 838	–	–	–
71	120	136	0.57	18	Y1-770 99X	0.18	5	Y1-107 059	–	–	–
80	122	154	0.57	18	Y1-792 402	0.18	5	Y1-117 010	0.26	90	Y1-821 599
90	130	174	0.66	18	Y1-791 831	0.20	5	Y1-129 210	0.26	90	Y1-821 600
100	133	192	0.66	18	Y1-780 27X	0.20	5	Y1-135 772	0.26	90	Y1-821 619
112	140	216	–	–	–	0.30	10	Y1-135 914	0.26	90	Y1-821 635
132	148	255	–	–	–	0.30	10	Y1-135 973	0.26	90	Y1-821 651

A.C. motors with spring applied electro-magnetic release brake

Supplied complete with rectifier and wired for a.c. switching

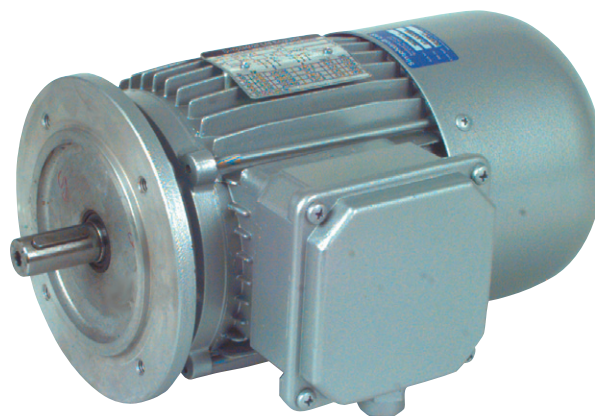
Motor enclosure IP55, class F with oil seal and tapped shaft end

Brake enclosure equivalent IP54

**Wide voltage range: 230/400±10%/3/50
266/460±10%/3/60**

Delivery from stock

Options: manual release; adjustable brake torque; IP65 brake kit; motor blower



The motor

Construction

Strong ribbed die-cast aluminium alloy casing and end shields. Sheet metal fan cowl. Plastic fan blade. European-made shielded ball bearings are used. Large terminal box for easy connection. Rotor dynamically balanced. Insulation impregnated class F. Class H wire used.

Shaft tolerances are j6 up to 29mm diameter and k6 for 30 to 48mm. Keys are supplied fitted in secure closed end keyways up to 132 frame.

Shaft ends centre tapped for easy fitting and securing of drive components.

Enclosure

IP55 enclosure ensures protection of internal moving parts against harmful effect of dust deposits. It also ensures protection from water jets from any direction.

Power

The powers stated are for S1 (continuous) operation at less than 1000m above sea level and a maximum ambient temperature not exceeding 40°C, [see page 288](#).

For other duty cycles details are available on request.

Voltage

Standard motors are designed to accept a wide range of voltages at 50Hz or 60Hz.

230V ±10% or 400V ±10% at 3 phase 50Hz

266V ±10% or 460V ±10% at 3 phase 60Hz

Starting at 4kW motors (also 132 frame 6 and 8 pole motors), windings are 400/692V to suit star/delta starting.

This gives a softer start with lower currents as 400V is initially connected to the 692V winding.

Operation at 60Hz

The full load speeds shown increase by 20%. If the applied voltage is also increased in proportion to frequency, the output power rises by 15%.

At the lower end of the voltage range at 60Hz, the rated torque drops typically by 17% along with a reduction in starting torque of 30%. Rated power remains the same.

[Dimensions page 292](#)

The brake

Design

The Lenze BFK458 spring applied brake is known worldwide for reliability and long life. It is particularly robust and is suitable for arduous duties.

The brake engages when power is interrupted. Whilst the motor runs, electrical power is supplied to the brake coil which releases the brake. When the coil is de-energised either in normal operation or a supply failure, multiple springs generate a reliable stopping torque.

Materials used are corrosion-resistant and stresses in critical parts are low to minimise the possibility of mechanical failure. Fast brake engagement times are typically in the range 15 to 65ms.

Brake switching

As standard, these brakes have a 205Vdc coil supplied from the motor terminals through a rectifier fitted in the terminal box. Therefore the brake is energised and released when the motor is running.

The rectifier can be powered and switched separately from 240Vac. This is essential for frequency inverter applications and 24Vdc brake coils can be specified if required.

Hoists, lifts and cranes

For gravity driven loads, the brake should be switched separately on the dc side of the rectifier. We recommend a separate rectifier be put in the control panel with a relay switching the 205Vdc circuit.

240V input – ask for B5-62700

415V input – ask for B5-77681

For brake sizes 06 and 08 ask for a 'metal rotor'

Manual brake release

Available on all brake sizes, specify the Stockline number and we will supply it assembled to the brake.

Torque adjustment

On request, brakes can be supplied with different torque settings, typically in a range ±50% of nominal.

Wear adjustment

Should brake wear adjustment become necessary, it can be done simply and quickly without removing the brake.

Power kW	Load speed r/min	Nominal torque Nm	Brake size BFK458	Brake torque Nm	Frame size	Stockline numbers			
						B3 foot mounted	B14 face mounted	Face diameter	B5 flange mounted
2 pole motors – 3000 r/min									
0.37	2880	1.1	06	4	71A2	Y5-350 254	Y5-350 246	C105	Y5-350 262
0.55	2860	1.8	06	4	71B2	Y5-350 289	Y5-350 526	C105	Y5-350 751
0.75	2890	2.56	08	8	80A2	Y5-350 317	Y5-505 506	C120	Y5-350 76X
0.75	2890	2.56	08	8	80A2	–	Y5-350 534	C160	–
1.1	2890	3.75	08	8	80B2	Y5-350 325	Y5-505 522	C120	Y5-350 778
1.1	2890	3.75	08	8	80B2	–	Y5-350 550	C160	–
1.5	2800	5.2	10	16	90S2	Y5-350 333	Y5-505 549	C140	Y5-350 786
1.5	2800	5.2	10	16	90S2	–	Y5-350 569	C160	–
2.2	2860	7.5	10	16	90L2	Y5-350 341	Y5-505 59X	C140	Y5-350 794
2.2	2860	7.5	10	16	90L2	–	Y5-350 585	C160	–
3.0	2860	11.0	12	32	100A2	Y5-952 84	Y5-204 648	C160	Y5-709 87
4.0	2920	13.5	12	32	112A2	Y5-195 587	Y5-205 026	C160	Y5-195 690
5.5	2810	17.9	14	60	132S2	Y5-196 340	–	–	Y5-201 130
7.5	2920	25.0	14	60	132L2	Y5-201 149	–	–	Y5-204 63X
4 pole motors – 1500 r/min									
0.09	1380	0.66	05**	2	56B4	–	Y5-337 481	C80	–
0.13	1390	0.90	06	4	63A4	–	Y5-213 531	C90	Y5-521 967
0.18	1400	1.3	06	4	63B4	Y5-384 099	Y5-376 064	C90	Y5-506 187
0.25	1400	1.7	06	4	71A4	Y5-350 35X	Y5-350 593*	C105	Y5-350 806
0.37	1400	2.5	06	4	71B4	Y5-350 368	Y5-350 605*	C105	Y5-350 814
0.55	1410	3.8	08	8	80A4	Y5-350 376	Y5-406 428	C120	Y5-350 822
0.55	1410	3.8	08	8	80A4	–	Y5-350 621*	C160	–
0.75	1420	5.0	08	8	80B4	Y5-350 384	Y5-406 436	C120	Y5-350 830
0.75	1420	5.0	08	8	80B4	–	Y5-350 63X*	C160	–
1.1	1400	7.5	10	16	90S4	Y5-350 392	Y5-480 944	C140	Y5-350 857
1.1	1400	7.5	10	16	90S4	–	Y5-350 648	C160	–
1.5	1400	10.0	10	16	90L4	Y5-350 404	Y5-406 452*	C140	Y5-350 865
1.5	1400	10.0	10	16	90L4	–	Y5-350 656	C160	–
1.8	1400	12.5	10	16	90M4	–	Y5-505 557	C140	Y5-505 581
1.8	1400	12.5	10	16	90M4	–	Y5-505 565	C160	–
2.2	1430	14.8	12	32	100A4	Y5-350 412	Y5-350 664	C160	Y5-350 873
3.0	1440	20.4	12	32	100B4	Y5-350 420	Y5-350 672	C160	Y5-350 89X
4.0	1430	27	12	32	112A4	Y5-350 439	Y5-350 680	C160	Y5-350 901
5.5	1450	37	14	60	132S4	Y5-350 447	–	–	Y5-350 270
7.5	1450	49	14	60	132L4	Y5-350 455	–	–	Y5-350 91X
9.3	1450	61	14	60	132L4	Y5-437 670	–	–	Y5-505 61X
6 pole motors – 1000 r/min									
0.18	900	1.9	06	4	71A6	Y5-377 317	Y5-160 449	C105	Y5-376 257
0.25	900	2.7	06	4	71B6	Y5-37 29X	Y5-469 853	C105	Y5-339 802
0.37	920	3.9	08	8	80A6	Y5-38 175	Y5-38 053	C120	Y5-381 67
0.37	920	3.9	08	8	80A6	–	Y5-381 622	C160	–
0.55	920	5.6	08	8	80B6	Y5-350 463	Y5-505 494	C120	Y5-351 164
0.55	920	5.6	08	8	80B6	–	Y5-350 699	C160	–
0.75	930	7.6	10	16	90S6	Y5-350 48X	Y5-505 514	C140	Y5-351 172
0.75	930	7.6	10	16	90S6	–	Y5-350 700	C160	–
1.1	920	11.5	10	16	90L6	Y5-350 498	Y5-505 530	C140	Y5-351 180
1.1	920	11.5	10	16	90L6	–	Y5-350 719	C160	–
1.5	920	16.0	12	32	100A6	Y5-350 50X	Y5-350 727	C160	Y5-351 199
2.2	940	22.9	12	32	112A6	Y5-350 518	Y5-350 735	C160	Y5-351 200
3.0	950	30.0	14	60	132S6	Y5-38 183	–	–	Y5-135 259
4.0	950	40.0	14	60	132L6	Y5-38 191	–	–	Y5-444 681

MOTORS & SMALL GEARED MOTORS

All items shaded in blue are normally available from stock, in black normally two weeks leadtime

Dimensions page 292

* Popular model built for stock complete with 205V coil for same day despatch. ** Fitted with brake type BFK457

Single phase motors – permanent capacitor 0.045 – 2.2kW

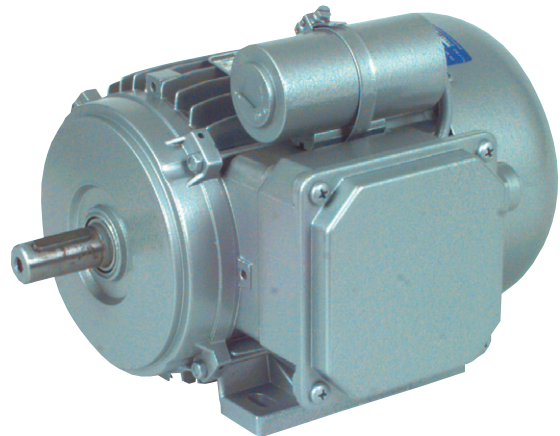
Simple and low cost

IEC standard frame sizes

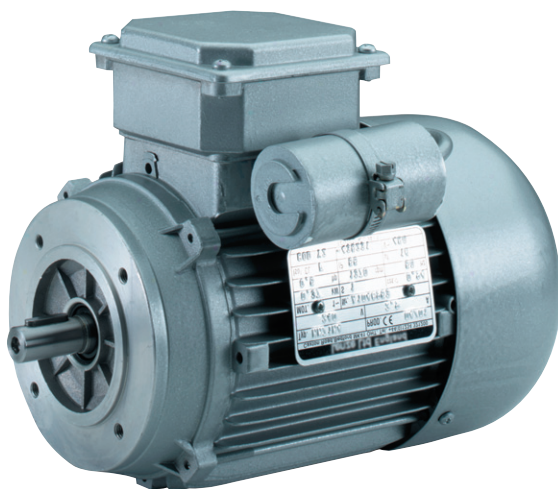
Supply 240/1/50, 220/1/50 on request

IP55, class F insulation, oil seal, tapped shaft end

This standard range of permanent capacitor single phase motors offers economical solutions for applications where high starting torque is not required, for example fans and other equipment that does not need to start against a heavy load.



Single phase motors – high starting torque 0.18 – 2.2kW



Cap start/cap run motors

IEC standard frame sizes with B14 face mounting

130-300% starting torque

220-240/1/50Hz supply

Fitted with IP55 centrifugal switch

These single phase motors achieve high starting torque through separate start and run capacitors. A centrifugal switch (IP55 current switch below 71 frame) automatically changes between the two capacitors.

Ordering example

(10) off 0.18 kW permanent capacitor single phase motors, 240/1/50, B14 mounting, 4 pole, 1360 r/min.

Stockline No. Y2-281 973

Other options – details on request

- Brake motors
- 110V windings, also 50/60 Hz windings
- Special shafts, extended rear shaft
- Stainless steel shafts for mixers

Ordering example

(5) off 0.75 kW cap start/cap run single phase motors, 240/1/50, B14 mount, C160, 1500 r/min

Stockline No. Y2-181 638

- Cap start/cap run with current switching for shorter overall length
- 6-pole 1000 r/min models
- B3/B5 and B3/B14 mountings
- Other voltages and special dimensions

Single phase motors

Selections

2 pole motors – 3000 r/min

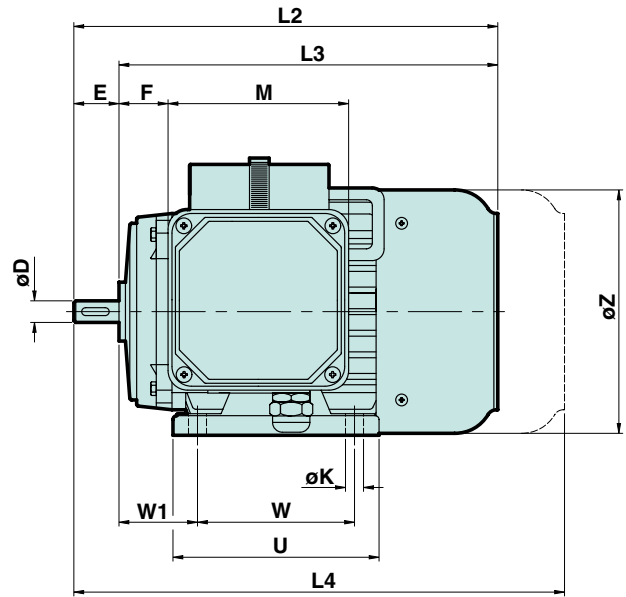
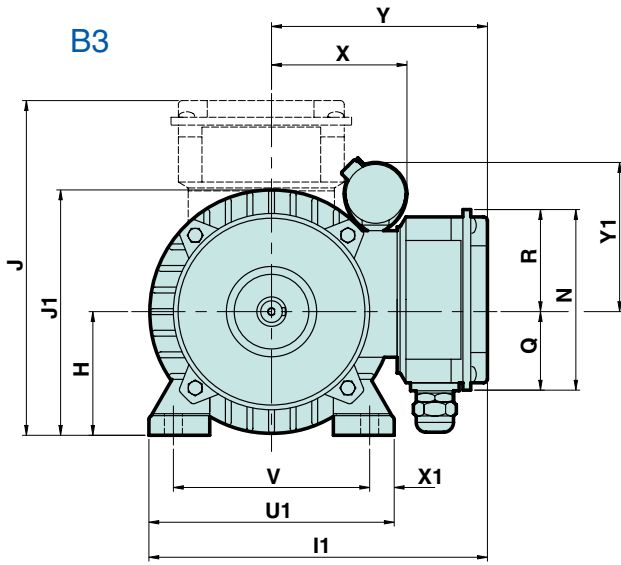
	Power kW	Load speed r/min	Nominal torque Nm	% starting torque	Full load current at 230V	Frame size	Stockline numbers			
							B3 foot mounted	B14 face mounted	Face dia.	B5 flange mounted
Permanent capacitor	0.06	2720	0.22	88	0.6	50L	–	Y2-388 536	C80	Y2-388 544
	0.075	2680	0.45	80	1.1	56	Y2-388 729	Y2-137 734	C80	Y2-388 615
	0.18	2900	0.63	80	1.3	63	Y2-388 737	Y2-388 753	C90	Y2-388 824
	0.24	2820	0.88	130	2.3	63	Y2-490 102	Y2-234 231	C90	Y2-516 114
	0.37	2850	1.31	100	3.2	71	Y2-833 906	Y2-388 903	C105	Y2-388 911
	0.55	2800	2.0	70	4.5	71	Y2-241 601	Y2-435 152	C105	Y2-229 138
	0.75	2860	2.57	97	5.7	80	Y2-389 115	Y2-389 01X	C120	Y2-491 394
	0.75	2860	2.57	97	5.7	80	–	Y2-435 160	C160	–
	1.1	2840	3.93	72	8.6	90S	Y2-493 522	Y2-389 210	C140	Y2-391 923
	1.1	2840	3.93	72	8.6	90S	–	Y2-389 123	C160	–
	1.5	2840	5.40	73	10.5	90L	Y2-494 152	Y2-391 907	C140	Y2-506 11X
	1.5	2840	5.40	73	10.5	90L	–	Y2-435 195	C160	–
2.2	2820	7.77	84	15	100	Y2-494 187	Y2-435 179	C160	Y2-494 179	
High start torque	0.18	2830	0.61	250	1.3	63	Y2-424 970	Y2-448 159	90	Y2-421 873
	0.24	2770	0.85	210	2.3	63	Y2-429 583	Y2-371 46X	90	Y2-468 087
	0.37	2850	1.27	300	3.2	71	Y2-488 453	Y2-429 382	100	Y2-494 999
	0.55	2730	2.00	220	4.5	71	Y2-495 15X	Y2-368 249	105	Y2-495 003
	0.75	2800	2.57	290	5.7	80	Y2-495 298	Y2-495 133	120	Y2-495 141
	0.75	2800	2.57	290	5.7	80	–	Y2-368 395	160	–
	1.1	2800	3.93	200	8.6	90S	Y2-495 866	Y2-495 369	140	Y2-495 71X
	1.1	2800	3.93	200	8.6	90S	–	Y2-495 30X	160	–
	1.5	2800	5.2	180	10.5	90L	Y2-60 599	Y2-495 448	140	Y2-495 728
	1.5	2800	5.2	180	10.5	90L	–	Y2-368 431	160	–
2.2	2830	7.5	200	15	100	Y2-93 377	Y2-368 474	160	Y2-93 405	

4 pole motors – 1500 r/min

	Power kW	Load speed r/min	Nominal torque Nm	% starting torque	Full load current at 230V	Frame size	Stockline numbers			
							B3 foot mounted	B14 face mounted	Face dia.	B5 flange mounted
Permanent capacitor	0.045	1380	0.31	95	0.82	50L	–	Y2-514 980	C80	–
	0.075	1370	0.63	70	0.9	56	Y2-488 287	Y2-285 885	C80	Y2-514 720
	0.11	1420	0.73	90	1.1	63	Y2-247 680	Y2-473 889	C90	Y2-386 042
	0.18	1360	1.31	60	1.5	63	Y2-480 254	Y2-281 973	C90	Y2-386 637
	0.30	1380	2.15	90	2.5	71	Y2-284 506	Y2-285 396	C105	Y2-386 645
	0.37	1370	2.67	70	3.0	71	Y2-283 793	Y2-435 231	C105	Y2-10 222
	0.60	1400	4.0	68	4.6	80	Y2-453 236	Y2-386 069	C120	Y2-388 248
	0.60	1400	4.0	68	4.6	80	–	Y2-388 49X	C160	–
	0.75	1370	5.2	65	5.6	80	Y2-425 375	Y2-500 309	C120	Y2-386 653
	0.75	1370	5.2	65	5.6	80	–	Y2-435 24X	C160	–
	1.1	1380	7.9	65	8.5	90S	Y2-336 090	Y2-473 968	C140	Y2-388 264
	1.1	1380	7.9	65	8.5	90S	–	Y2-348 030	C160	–
	1.5	1390	10.7	65	11	90L	Y2-346 864	Y2-119 780	C140	Y2-482 669
	1.5	1390	10.7	65	11	90L	–	Y2-435 266	C160	–
	2.2	1380	15.32	60	17	100	Y2-347 226	Y2-435 274	C160	Y2-334 384
High start torque	0.18	1360	1.31	130	1.5	63	Y2-98 26X	Y2-371 451	C90	Y2-390 603
	0.30	1380	2.1	230	2.5	71	Y2-19 461	Y2-120 274	C105	Y2-98 227
	0.37	1370	2.67	250	3.0	71	Y2-518 947	Y2-352 066	C105	Y2-98 39X
	0.60	1400	4.0	210	4.6	80	Y2-526 490	Y2-418 163	C120	Y2-526 510
	0.60	1400	4.0	210	4.6	80	–	Y2-377 727	C160	–
	0.75	1370	5.2	170	5.6	80	Y2-526 529	Y2-119 843	C120	Y2-526 537
	0.75	1370	5.2	170	5.6	80	–	Y2-181 638	C160	–
	1.1	1380	7.9	280	8.5	90S	Y2-526 545	Y2-411 162	C140	Y2-526 553
	1.1	1380	7.9	280	8.5	90S	–	Y2-377 743	C160	–
	1.5	1390	10.7	210	11	90L	Y2-526 561	Y2-119 17X	C140	Y2-526 588
1.5	1390	10.7	210	11	90L	–	Y2-32 372	C160	–	
2.2	1380	15.32	220	17	100	Y2-526 596	Y2-368 458	C160	Y2-526 608	

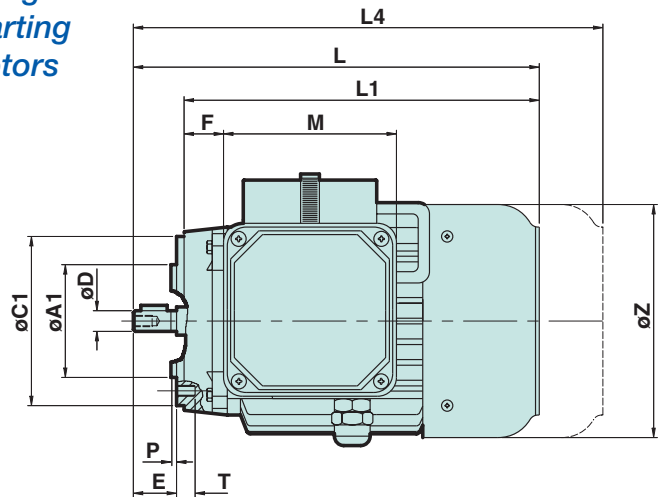
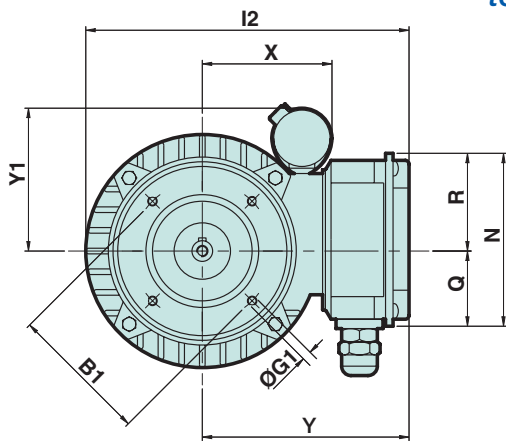
Non-stock items in black – speak to our Engineers with your delivery requirements

MOTORS & SMALL GEARED MOTORS

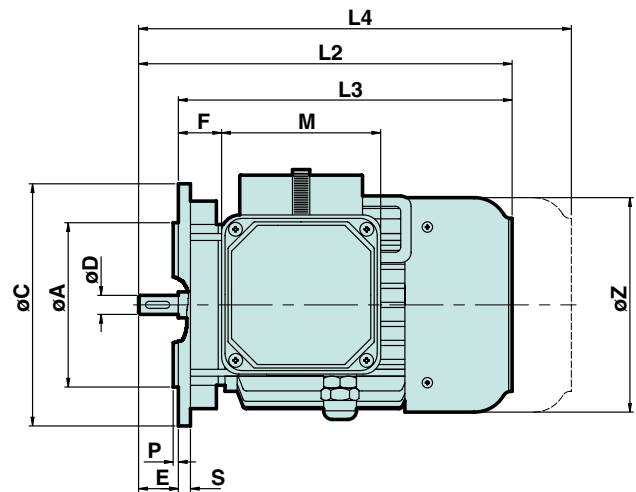
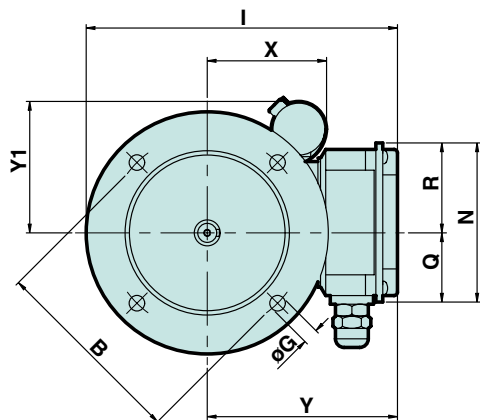


Dimension L4 gives the length for high starting torque motors

B14



B5



MOTORS & SMALL GEARED MOTORS

Frame size	A	A ₁	B	B ₁	C	C ₁	D	E	F	G	G ₁	H	I	I ₁	I ₂	J	J ₁	K	L	L ₁	L ₂
50	–	50	–	65	–	80	9	20	25	–	M5	50	–	–	128	–	–	–	163	143	–
56	80	50	100	65	120	80	9	20	30	7	M5	56	170	162	165	166	110	6	187	167	187
63	95	60	115	75	140	90	11	23	25	10	M5	63	185	175	176	178	125	7	216	193	216
71	110	70	130	85	160	105	14	30	25	10	M6	71	204	192	192	195	139	7	245	215	245
80	130	80	165	100	200	120	19	40	30	12	M6	80	241	218	218	221	157	9.5	275	235	275
90S	130	95	165	115	200	140	24	50	33	12	M8	90	246	233	233	236	177	9.5	300	250	300
90L	130	95	165	115	200	140	24	50	33	12	M8	90	246	233	233	236	177	9.5	325	275	325
100	180	110	215	130	250	160	28	60	40	14.5	M8	100	282	252	253	257	196	11.2	365	305	365

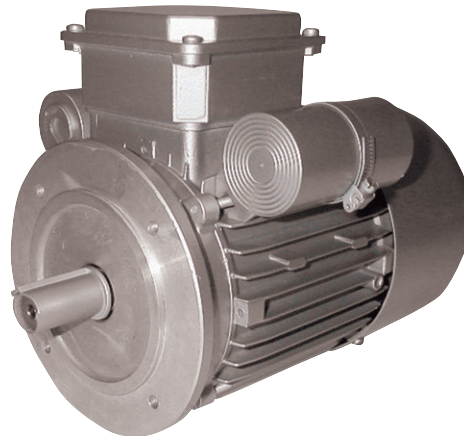
Frame size	L ₃	L ₄ *	M	N	P	Q	R	S	T	U	U ₁	V	W	W ₁	X	X ₁	Y	Y ₁	Z
50	–	–	64	64	–	32	32	–	7	–	–	–	–	–	–	–	80	70	98
56	167	–	74	74	3	34	58	9	8.5	90	108	90	71	36	60	9	110	75	110
63	193	216	92	92	3	34	58	10	9	105	120	100	80	40	75	10	115	90	123
71	215	276	92	92	3.5	40	52	10	12	108	136	112	90	45	80	12	124	90	138
80	235	317	108	108	3.5	48	60	10	12	125	154	125	100	50	100	14.5	141	95	156
90S	250	342	108	108	3.5	48	60	10	15	130	174	140	100	56	105	17	146	100	176
90L	275	366	108	108	3.5	48	60	10	15	155	174	140	125	56	105	17	146	100	176
100	305	430	108	108	4	48	60	15	16.5	175	192	160	140	63	115	16	157	120	194

* High starting torque motors

These capacitor start/capacitor run motors are fitted with a centrifugal switch which increases the motor length.

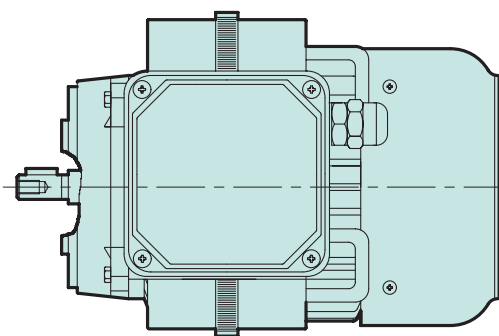
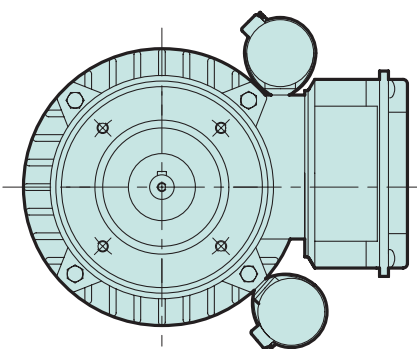
Use dimension L₄

Also a second capacitor is fitted to the side of the terminal box, dimensions being the same as the first capacitor.



Frame size	Weight kg
50	2.1
56	3.0
63	4.6
71	7.1
80	11.3
90S	14
90L	16.7
100	20.2

Capacitor details



Ordering example

(10) off 0.18 kW permanent capacitor single phase motors, 240/1/50, B14 mounting, 4 pole 1360 r/min.

Stockline No. **Y2-281 973**

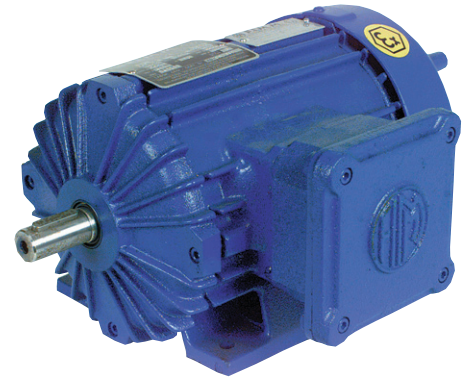
Other options

- B35 foot and flange mounting
- 220V windings, also 60 Hz
- Stainless steel shafts for mixers
- Low level terminal box
- Terminal box with switch

Flameproof motors to ATEX specification

90 – 45 kW

This range of Flameproof motors from FIMM are available in foot, face and flange mounting designs. Powers up to 45kW are available, together with 2 speed, single phase and inverter rated models, and brake motors.



Constructed to ATEX standards

Increased safety terminals as standard

IP65 enclosure

T5 temperature class

PTC thermistor fitted as standard

Class F insulation

Brake motors also available

Construction

Body and end covers are made of high strength cast iron. Metal fan and cowl are fitted as standard. European-made shielded ball bearings used as standard. Cable inlets in the terminal box can be rotated to feed cable from any one of four directions. All motors have tapped shaft end, closed end keyway and key fitted as standard, for easy fitting and securing of drive components.

Increased safety terminals

To further increase the specification of the motors at no extra charge, we include special increased safety terminals as standard. These terminals include special insulating material which ensures that the mechanical and electrical characteristics remain the same over long periods of time. The terminals are also sited at specified distances to eliminate the possibility of arcing.

Temperature classes

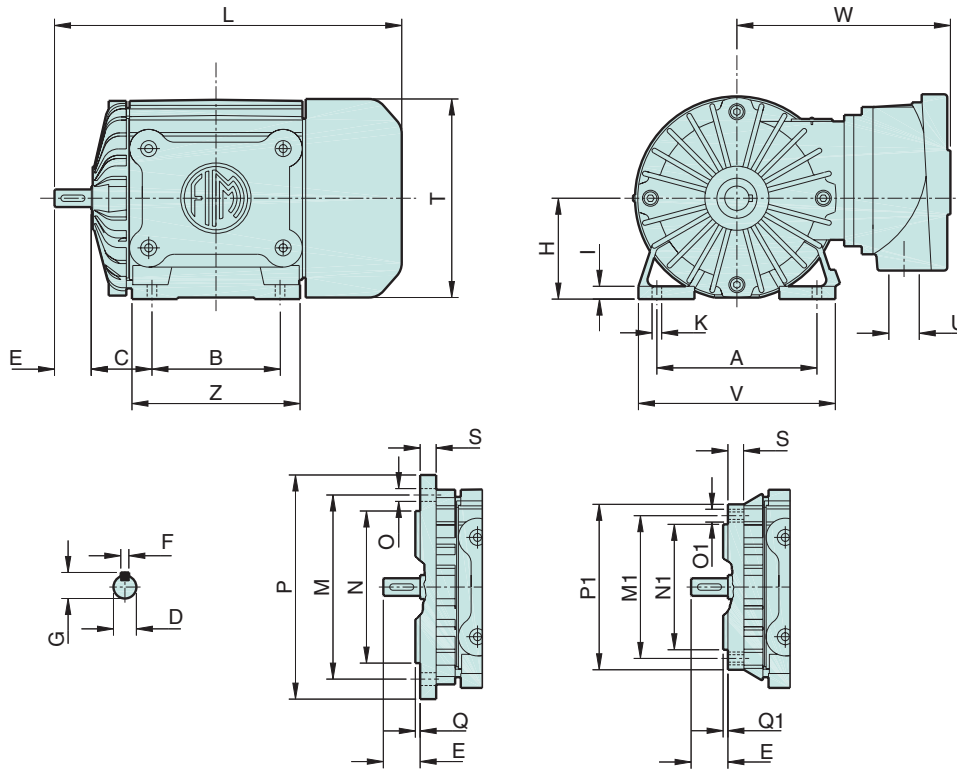
Flameproof motors working in potentially explosive atmospheres, must have a surface temperature lower than the minimum ignition temperature of the explosive mixture in the area.

GENELEC rules have fixed a range of temperature classes as shown in the table below. Our standard is T5.

Temp. class	Max. surface temp. in °C
T1	450
T2	300
T3	200
T4	135
T5	100
T6	85

MOTORS & SMALL GEARED MOTORS

2 pole – 3000 r/min					4 pole – 1500 r/min					6 pole – 1000 r/min				
Power kW	Load speed r/min	Nominal torque Nm	Amps at full load 415V	Frame size	Power kW	Load speed r/min	Nominal torque Nm	Amps at full load 415V	Frame size	Power kW	Load speed r/min	Nominal torque Nm	Amps at full load 415V	Frame size
0.18	2740	0.63	0.65	2PE63A	0.12	1330	0.86	0.48	4PE63A	0.09	890	0.97	0.4	6PE63A
0.25	2750	0.87	0.83	2PE63B	0.18	1340	1.28	0.61	4PE63B	0.12	900	1.27	0.5	6PE63B
0.37	2820	1.25	1.01	2PE71A	0.25	1370	1.75	0.81	4PE71A	0.15	900	1.6	0.57	6PE71A
0.55	2820	1.9	1.33	2PE71B	0.37	1370	2.58	1.01	4PE71B	0.25	900	2.65	0.77	6PE71B
0.75	2830	2.5	1.79	2PE80A	0.55	1380	3.8	1.38	4PE80A	0.37	910	3.9	1.12	6PE80A
1.1	2830	3.7	2.29	2PE80B	0.75	1390	5.1	1.78	4PE80B	0.55	910	5.8	1.45	6PE80B
1.5	2840	5	3.21	2PE90A	1.1	1390	7.56	2.66	4PE90A	0.75	920	7.8	2	6PE90A
2.2	2840	7.4	4.95	2PE90B	1.5	1400	10	3.39	4PE90B	1.1	920	11.5	3	6PE90B
3.0	2850	10	5.77	2PE100B	2.2	1400	15	4.95	4PE100A	1.5	930	15.4	3.3	6PE100B
4.0	2870	13.3	7.69	2PE112	3.0	1410	20	6.23	4PE100B	2.2	935	22.5	5	6PE112
5.5	2900	18	9.89	2PE132C	4.0	1420	27	7.87	4PE112	3.0	940	30.5	6.7	6PE132C
7.5	2900	25	13.36	2PE132M	5.5	1430	36.8	10.80	4PE132M	4.0	940	40.5	9.2	6PE132M
10	2900	33	18.76	2PE132L	7.5	1440	50	14.28	4PE132L	5.5	940	57	12.8	6PE132L
11	2920	36	19.49	2PE160C	11	1440	73	21.60	4PE160M	7.5	945	76	16.8	6PE160M
15	2920	49	25.81	2PE160M	15	1450	99	28.37	4PE160L	11	945	111	21.5	6PE160L
18.5	2920	60	32.94	2PE160L	18.5	1460	121	34.32	4PE180A	15	950	150	27.8	6PE180B
22	2940	71	38.71	2PE180A	22	1470	143	39.35	4PE180B	18.5	960	184	34	6PE200A
30	2950	97	51.24	2PE200A	30	1470	195	49.87	4PE200B	22	960	219	40.5	6PE200B
37	2950	120	65.43	2PE200B	37	1475	240	63.14	4PE225A	30	960	298	54	6PE225B
45	2960	145	74.58	2PE225B	45	1475	295	75.95	4PE225B					



Frame size	A	B	C	D ¹	E	F	G	H	I	K	L	M	M ₁	N	N ₁
63	100	80	40	11	23	4	12.5	63	9	7	213	115	75	95	60
71	112	90	45	14	30	5	16	71	9	7	243	130	85	110	70
80	125	100	50	19	40	6	21.5	80	10	9	292	165	100/130	130	80/110
90	140	125	56	24	50	8	27	90	10	9	322	165	115	130	95
100	160	140	63	28	60	8	31	100	10	12	375	215	130	180	110
112	190	140	70	28	60	8	31	112	13	12	410	215	130	180	110
132C-M	216	140	89	38	80	10	41.5	132	15	12	492	265	-	230	-
132L	216	178	89	38	80	10	41.5	132	15	12	517	265	-	230	-
160C-M	254	210	108	42	110	12	45.5	160	20	14	593	300	-	250	-
160L	254	254	108	42	110	12	45.5	160	20	14	637	300	-	250	-
180A	279	241	121	48	110	14	52	180	22	14	649.5	300	-	250	-
180B	279	279	121	48	110	14	52	180	22	14	687.5	300	-	250	-
200	318	305	133	55	110	16	60	200	28	18	766	350	-	300	-
225A	356	286	149	60	140	18	64	225	30	18	824	400	-	350	-
225B ^⑤	356	311	149	55	110	16	59	225	30	18	794	400	-	350	-
225B	356	311	149	60	140	18	64	225	30	18	824	400	-	350	-

Frame size	O ²	O ₁ ³	P	P ₁	Q	Q ₁	S	T	U ⁴	V	W	Z	Weight kg
63	8	M5	140	90	3	2.5	10	127	1/2" Gas-UNI 6125	125	133	105	11
71	9.5	M6	160	105	3.5	2.5	10	144	1/2" Gas-UNI 6125	136	142	115	16
80	11.5	M6/M8	200	120/160	3.5	3	12	162	1/2" Gas-UNI 6125	157	150	130	20
90	11.5	M8	200	140	3.5	3	12	176	3/4" Gas-UNI 6125	176	169	155	29
100	14	M8	250	160	3.5	3.5	12	202	3/4" Gas-UNI 6125	196	176	172	38
112	14	M8	250	160	4	3.5	16	230	1" Gas-UNI 6125	234	211	182	64
132C-M	14	-	300	-	4	-	19	260	1" Gas-UNI 6125	260	250	186	86
132L	14	-	300	-	4	-	19	260	1" Gas-UNI 6125	260	250	227	98
160C-M	18	-	350	-	5	-	20	322	1 1/4" Gas-UNI 6125	304	272	258	150
160L	18	-	350	-	5	-	20	322	1 1/4" Gas-UNI 6125	304	272	305	170
180A	18	-	350	-	5	-	15	360	2" Gas-UNI 6125	352	362	284	220
180B	18	-	350	-	5	-	15	360	2" Gas-UNI 6125	352	362	325	245
200	18	-	400	-	5	-	15	400	2" Gas-UNI 6125	384	377	355	280
225A	18	-	450	-	5	-	16	426	2" Gas-UNI 6125	426	400	370	340
225B ^⑤	18	-	450	-	5	-	16	426	2" Gas-UNI 6125	426	400	370	380
225B	18	-	450	-	5	-	16	426	2" Gas-UNI 6125	426	400	370	380

① tolerance j6 to 28 mm, k6 from 38 to 48 mm, m6 above 48 mm
 ② 4 holes to frame 200, 8 holes on frame 225 ③ 4 off

④ threads to GAS-UNI 6125
 ⑤ 2 pole only, for other poles use line below

A.C. motors for inverter drives

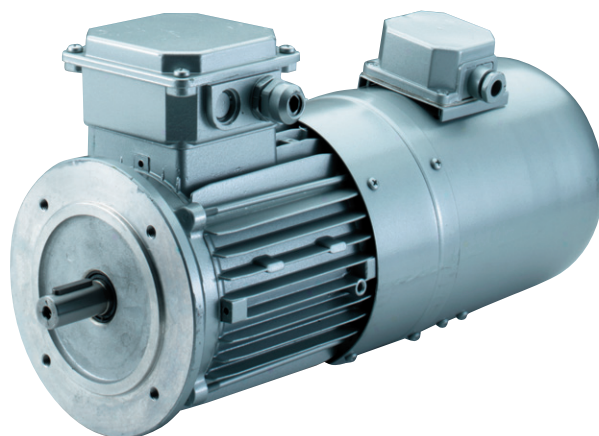
Motors and brake motors with blowers and encoders for wide torque range and precise speed control

2 & 4 pole motors, frames 63 to 160

Foot, face and flange mountings

Suitable for use with Lenze Global and other vector drives

Ex-stock range



Motors

Stockline a.c. motors are built to a high standard for long life.

- Aluminium alloy casing, steel cowls
- Enclosure IP55 with class F insulation
- 130° thermal switch in the windings
- Closed end keyway and tapped shaft end

Other motor specifications such as different voltages, shaft or frame dimensions can be considered. Send us your enquiry.

Blowers

Cowl mounted blowers are fitted to all selections to extend the operating speed range below 20Hz with continuous duty. Blowers have their own terminal box and supply is: 220-240/1/50.

Three phase blowers from frame size 80 and above are available on request. IP55 enclosure is possible.

This series of motors are fitted with 2 pole blowers up to 100 frame and 4 pole versions above 100 frame size.

[See page 293 for blowers data.](#)

Blower enclosure is to IP44.

	Power kW	Frame size	Values at 50Hz		Full load speed	Current at 50Hz A		Power factor cos Ψ	Efficiency %
			Nominal torque Nm	Max torque Nm		230V	400V		
2 pole motors 2800 r/min	0.37	71	1.1	4.18	2880	2.2	1.2	0.70	67
	0.75	80	2.6	8.5	2880	3.1	2.0	0.87	70
	1.5	90S	5.2	16.6	2800	6.4	3.9	0.86	74
	2.2	90L	7.6	27.4	2860	9.5	5.5	0.82	76
	3.0	100	11	31.9	2860	12.5	7.2	0.88	78
	4.0	112	13.5	40.5	2920	17.1	9.9	0.79	79
	5.5	132S	18.5	44.4	2870	22.2	12.8	0.87	75
	7.5	132L	25	73	2920	29.4	17	0.83	86
	11.0	160S	36	104	2900	41.5	24	0.82	84
	15.0	160S	49	147	2930	55.4	32	0.83	87
4 pole motors 1400 r/min	0.18	63	1.29	4.06	1400	1.47	0.85	0.62	60
	0.37	71	2.56	7.2	1400	2.07	1.2	0.70	67
	0.75	80	5.1	16.3	1420	3.46	2.0	0.76	74
	1.5	90L	10.0	29.7	1400	6.58	4.2	0.78	72
	2.2	100	14.9	44	1430	9.9	5.9	0.77	75
	3.0	100	20.4	59.2	1440	12.6	7.3	0.79	81
	4.0	112	27.6	80	1430	15.4	9.3	0.83	81
	5.5	132S	37.6	101	1440	23.4	13.5	0.80	82
	7.5	132L	50	150	1440	29.4	16	0.80	86
	11.0	160S	71	149	1450	41.6	24	0.80	86
	15.0	160L	98	230	1460	57.2	31	0.81	89

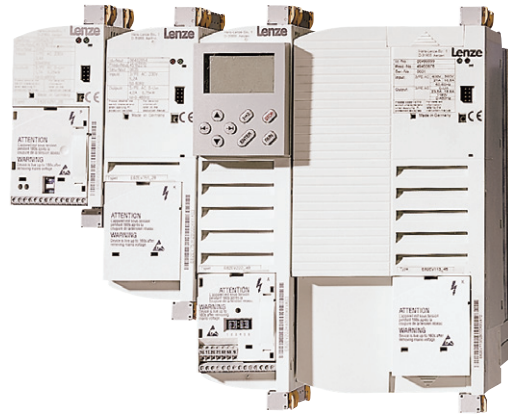
A.C. motors for inverter drives

Encoders

The series 260 high voltage line driver encoder is offered for motor applications, [details on page 453](#).

- **Stockline No. W6-784 051**, 1024 pulses/revolution
- Outputs A \bar{A} B \bar{B} Z \bar{Z} up to 20 mA per channel
- Input voltage 4.75 to 28V

Other models and further technical data available on request.



Lenze Global inverters

Brakes

The Lenze spring applied brake is fitted where specified. This is suitable for both holding and dynamic stopping duties. Coil voltage is 24V d.c.

Frame size	Brake size	Brake torque (Nm)	Brake coil power (W)
63 & 71	06	4	20
80	08	8	25
90	10	16	30
100	12	32	40
112	12	32	40
132	14	60	50
160	18	150	85

Other options

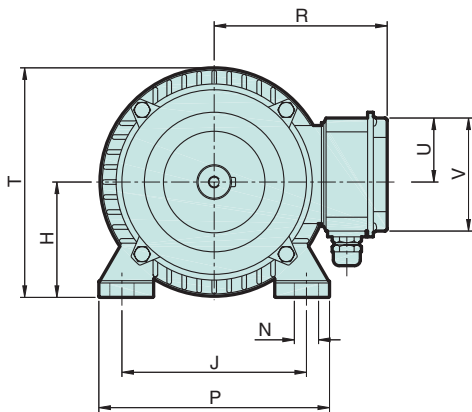
- A.C. rectified or d.c. tachos
- Encoders with other pulse rates
- Other motor speeds and voltages
- Other brake voltages
- Hand release for brake

Details on request

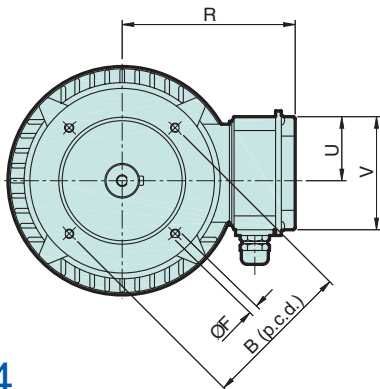
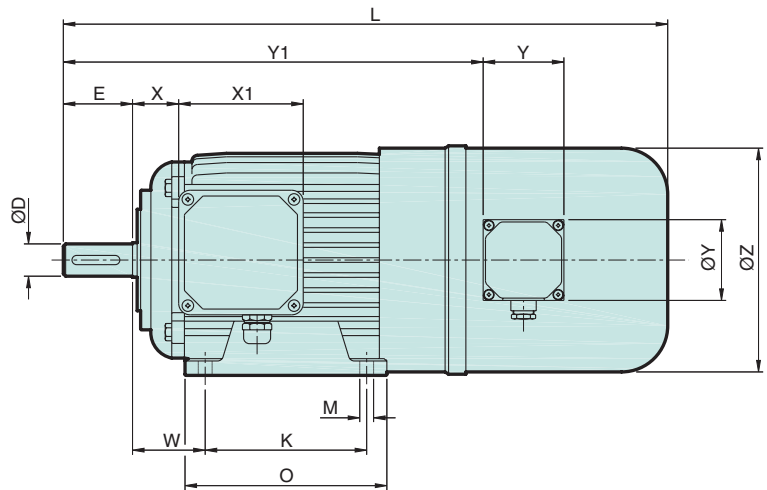
A brake hand release is optional and other coil voltages can be supplied, usually 180 or 205V d.c.

	Power kW	Frame size	Face diameter	ENCODER + BLOWER			ENCODER + BRAKE + BLOWER		
				B3	B14	B5	B3	B14	B5
2 pole motors 2800 r/min	0.37	71	C105	Y4-344 539	Y4-344 362	Y4-589 43	Y4-365 499	Y4-367 304	Y4-637 71X
	0.75	80	C120	Y4-344 547	Y4-637 69X	Y4-344 650	Y4-365 500	Y4-367 564	Y4-637 728
	0.75	80	C160	-	Y4-344 389	-	-	Y4-368 44	-
	1.5	90S	C140	Y4-532 331	Y4-394 791	Y4-532 358	Y4-365 519	Y4-368 79	Y4-637 736
	1.5	90S	C160	-	Y4-344 677	-	-	Y4-369 07	-
	2.2	90L	C140	Y4-344 571	Y4-637 701	Y4-515 054	Y4-365 535	Y4-370 576	Y4-637 744
	2.2	90L	C160	-	Y4-344 618	-	-	Y4-374 670	-
	3.0	100	C160	Y4-344 58X	Y4-344 433	Y4-515 070	Y4-365 543	Y4-374 689	Y4-637 752
	4.0	112	C160	Y4-344 598	Y4-344 468	Y4-344 484	Y4-365 551	Y4-374 697	Y4-637 760
	5.5	132S	-	Y4-394 13X	-	Y4-394 148	Y4-365 56X	-	Y4-374 709
	7.5	132L	-	Y4-344 504	-	Y4-344 492	Y4-365 578	-	Y4-376 100
	11.0	160S	-	Y4-647 363	-	Y4-647 398	Y4-647 418	-	Y4-647 434
	15.0	160S	-	Y4-647 38X	-	Y4-647 40X	Y4-647 426	-	Y4-647 442
	4 pole motors 1400 r/min	0.18	63	C90	Y4-637 586	Y4-536 314	-	Y4-637 594	Y4-637 56X
0.37		71	C105	Y4-591 47	Y4-499 07X	Y4-637 606	Y4-713 22	Y4-499 613	Y4-637 910
0.75		80	C120	Y4-592 93	Y4-499 108	Y4-637 630	Y4-731 26	Y4-499 63X	Y4-544 436
0.75		80	C160	-	Y4-499 116	-	-	Y4-499 656	-
1.5		90L	C140	Y4-604 0X	Y4-499 140	Y4-530 956	Y4-294 66	Y4-499 794	Y4-610 239
1.5		90L	C160	-	Y4-499 159	-	-	Y4-499 806	-
2.2		100	C160	Y4-530 93X	Y4-499 183	Y4-530 913	Y4-294 82	Y4-499 830	Y4-637 665
3.0		100	C160	Y4-598 37	Y4-499 191	Y4-637 649	Y4-302 80	Y4-499 849	Y4-637 673
4.0		112	C160	Y4-629 95	Y4-499 203	Y4-637 657	Y4-305 87	Y4-499 857	Y4-637 681
5.5		132S	-	Y4-152 055	-	Y4-499 22X	Y4-365 472	-	Y4-499 873
7.5		132L	-	Y4-549 258	-	Y4-499 238	Y4-530 893	-	Y4-499 881
11.0		160S	-	Y4-394 227	-	Y4-394 278	Y4-394 156	-	Y4-394 172
15.0		160L	-	Y4-394 314	-	Y4-394 322	Y4-394 200	-	Y4-394 180

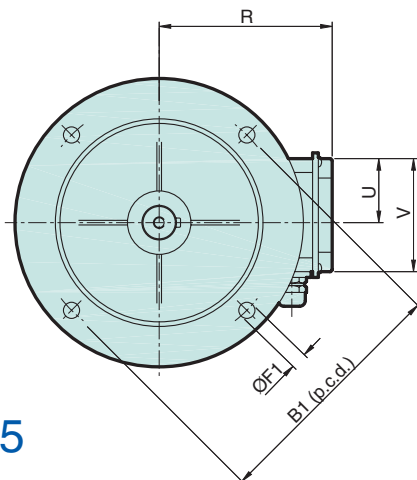
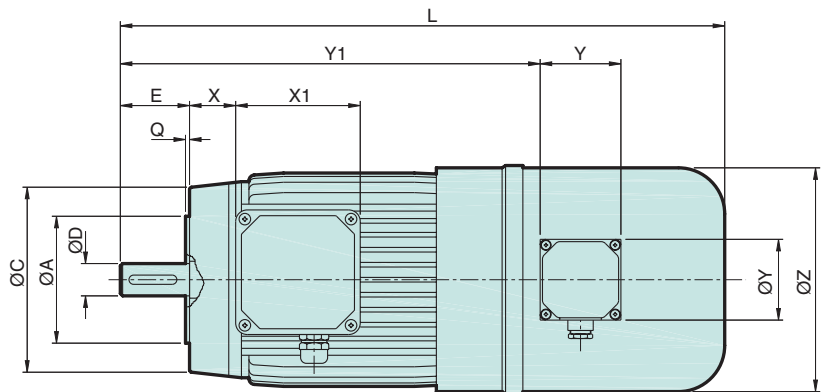
All non-stock items with black Stockline numbers are normally available on 3 weeks delivery. Speak to our Product Engineers if you need a shorter leadtime.



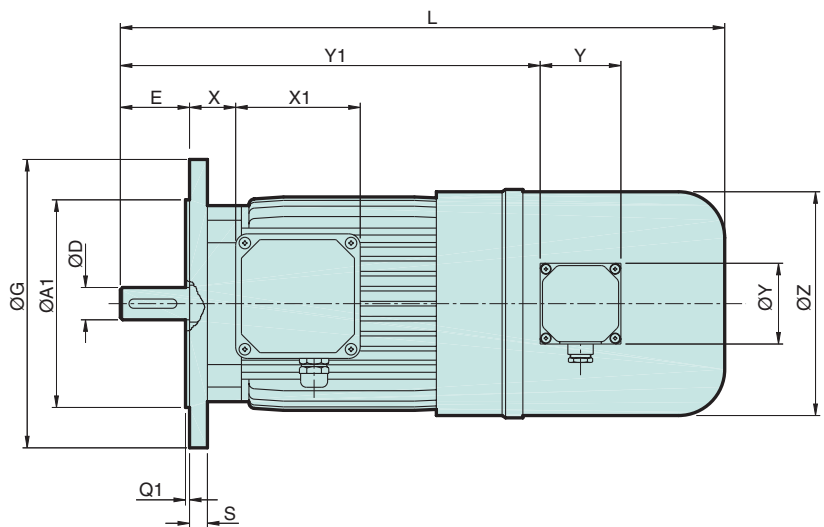
B3



B14



B5



Shafts to ISO tolerance j6 up to 29mm, then k6.
Keyways to BS4235.
Tapped shaft ends to DIN 332

Frame size	A	A ₁	B ₁	D	E	F ₁	G	H	J	øM	N	P	Q ₁	R	U	V	X	X ₁
63	See B14 dimensions	95	115	11	23	10	140	63	100	7	12	120	3	115	58	92	25	92
71		110	130	14	30	10	160	71	112	7	12	136	3.5	124	52	92	25	92
80		130	165	19	40	12	200	80	125	9.5	17.5	154	3.5	141	60	108	30	108
90		130	165	24	50	12	200	90	140	9.5	17.5	174	3.5	146	60	108	33	108
100		180	215	28	60	14.5	250	100	160	11.2	21	192	4	157	60	108	40	108
112		180	215	28	60	14.5	250	112	190	11.2	21	226	4	169	60	108	45	108
132		230	265	38	80	14.5	300	132	216	11.2	21	260	4	195	61	122	50	122
160		250	300	42	110	18.5	350	160	254	13	23	318	5	232	86	172	90	185

Frame size	K	L	O	S	T	W	Z	Y	Y ₁	Weight kg
63	80	440	105	10	125	40	123	71	294	4.4
71	90	420	108	10	139	45	138	71	258	7.5
80	100	457	125	10	157	50	156	71	296	12.2
90S	100	489	130	10	177	56	176	71	320	15.4
90L	125	514	155	10	177	56	176	71	345	18
100	140	560	175	15	196	63	194	71	379	26.5
112	140	603	175	15	220	70	220	71	417	47
132S	140	672	180	18	260	89	256	71	470	52
132L/M	178	702	218	18	260	89	256	71	500	62
160S	210	848	260	14	315	108	310	71	656	80
160L	254	892	304	14	315	108	310	71	700	95

B14 face dimensions

Frame size	Face diameter	A	B	C	F	Q
63	C90	60	75	90	M5	2
71	C105	70	85	105	M6	2.5
80	C120	80	100	120	M6	3
80	C160	110	130	160	M8	3.5
90	C140	95	115	140	M8	3
90	C160	110	130	160	M8	3.5
100	C160	110	130	160	M8	3.5
112	C160	110	130	160	M8	3.5

Blower details are located on page 293

Motor ratings

Long supply cables will increase the voltage amplitude and can effect the motor winding insulation. Our motor ratings are based on:

Peak voltage 1400V max

Max $dv/dt \leq 5kV/\mu s$

SDS inverter-optimised motors

75 - 600W

The SDS is a new range of 3 phase asynchronous motors optimised for use with frequency inverters such as the Lenze vector range. The SDS motors take up a position between standard 3 phase asynchronous and servo, both in terms of performance and cost.

For inverter use only



Four sizes 75 to 600W

Rated torques 0.27 to 1.9Nm

Constant torque speed range 10:1

Compact dimensions, smooth body

Low noise, no fan cooling

IP54 enclosure, class F insulation

Ambient temperature range -20 to +40°C

Supply

Motors can be connected for either 225V or 390V supply from inverters. Rated speed is 100Hz and the V/F code on the inverter must be set accordingly.

Max. voltage amplitude 1500V, $dv/dt \leq 5kV/\mu s$

Extended speed range

Closed loop operation with encoder or resolver feedback to a servo inverter can achieve a speed range of 1000:1 plus controllable torque at zero speed. SDS motors can be supplied with encoders or resolvers and the Lenze 9300 servo inverters give maximum performance. Ask for details.

MOTORS & SMALL GEARED MOTORS

Motor type	SDS 047-22	SDS 056-22	SDS063-22	SDS063-32
Rated power	75W	240W	400W	600W
Rated torque	0.27Nm	0.81Nm	1.35Nm	1.9Nm
Rated current	0.9 (230V only)	1.3/0.86A	2.1/1.23A	3.0/1.74A
Rated speed	2700 r/min	2790 r/min	2800 r/min	2800 r/min
Power factor	0.5	0.714	0.70	0.70
Maximum speed	6000 r/min	6000 r/min	6000 r/min	6000 r/min
Standstill torque	0.26Nm	1.0Nm	1.5Nm	2.4Nm
Continuous standstill current		1.45/0.84A	2.23/1.29A	3.36/1.94A
Maximum torque	1.4NM	3.2Nm	5Nm	6/10Nm
Moment of inertia	0.41kgcm ²	1.404 kgcm ²	2.796 kgcm ²	4.21 kgcm ²
Max radial force: middle of shaft	350	560N	650N	650N
Max. axial force	750	430N	510N	510N
Surface temperature	up to 140°C	up to 140°C	up to 140°C	up to 140°C

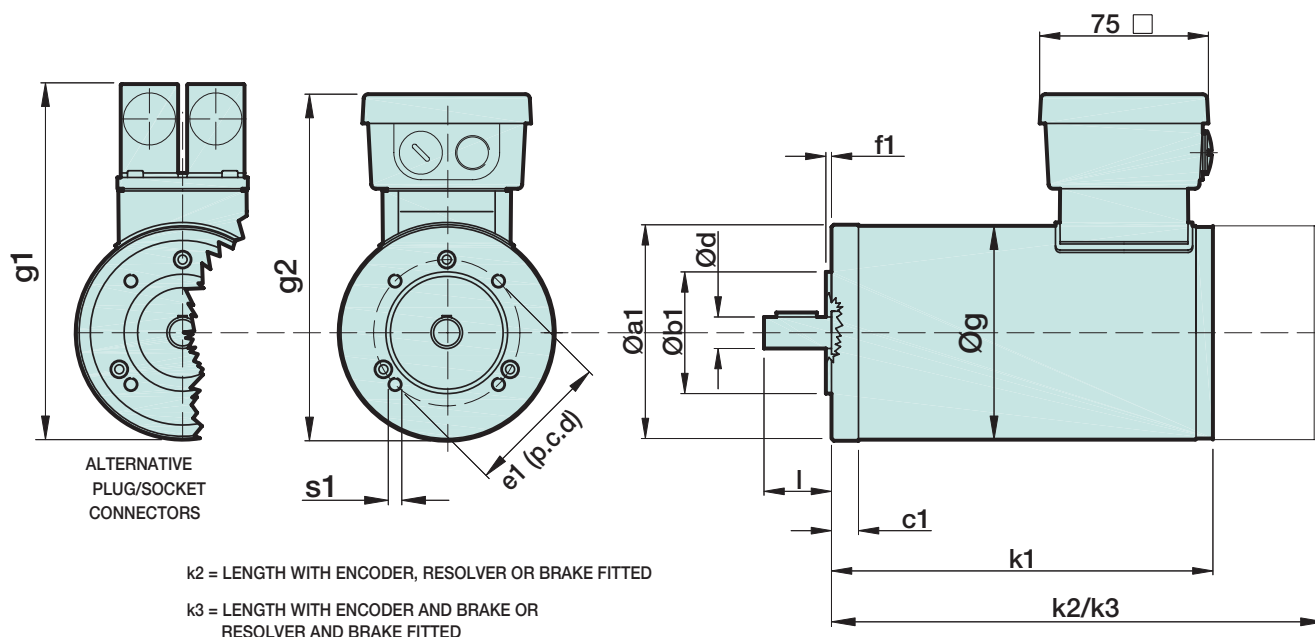
Stockline selections

Motor voltage	24V brake	Temp. sensor	Open/closed loop	Suitable drives	Feedback	Connection (Power & signal)	Stockline Nos			
							SDS 047-22	SDS 056-22	SDS 063-22	SDS 063-32
225/390V 225/390V	x ✓	NC Klixon	open	8200 vector	-	terminal box	P1-453 295 P1-133 096	P1-918 7X P1-943 643	P1-267 509 P1-972 071	P1-325 675 P1-932 388
390V 390V	x ✓	KTY	closed	9300 servo	Resolver	sockets	on request	P1-942 670 P1-243 342	P1-945 664 P1-945 672	P1-243 318 P1-243 334
390V 390V	x ✓	KTY	closed	9300 servo/ vector	2048 ppr TTL 5V encoder	sockets	on request	P1-954 992 P1-243 369	P1-243 30X P1-951 450	P1-244 228 P1-243 350
225V 225V	x ✓	NC Klixon	closed	8200 vector*	512 ppr HTL encoder	sockets	on request	P1-244 496 P1-958 494	P1-244 516 P1-937 384	P1-958 581 P1-958 478

Stockline numbers in black – delivery time on request

Also available – SDS with 8200 motec inverter, details on request.

* Vector inverter requires application I/O. For use with standard I/O specify a 100 ppr encoder.



Keyways to BS4235

Size	Power W	Frame size	a1	b ₁ j7	c1	d k6	e1	f1	g	g1	g2	k1	k2	k3	l	s1	Weight
SDS047-22	75	IEC56C80	79	50	12	9	65	2.5	75	101	134	144	188	232	20	M5	4.0
SDS056-22	240	IEC63C90	89	60	12	11	75	2.5	85	151	146	163	207	261	23	M5	5.5
SDS063-22	400	IEC71C105	104	70	12	14	85	2.5	95	163	158	168	214	263	30	M6	6.7
SDS063-32	600	IEC71C105	104	70	12	14	85	2.5	95	163	158	208	254	303	30	M6	7.5

Geared motors

- SDS combined with SPL planetary gearboxes, outputs 23 to 754 r/min and torques up to 120Nm, [see page 328](#).
- SDS combined with G-motion gearboxes, helical, helical worm, helical bevel and bevel, for speeds between 8 and 820 r/min and output torques 3-264Nm, [see page 176](#).
- SDS with type SSN40 aluminium worm boxes, all powers and gear ratios 6.75 to 60, details on request.

Drives

- See page 74 for our 8200 vector inverters. Inverter ratings should be 0.25/0.55/0.75kW for these motors.
- 9300 servo drives are on page 20.
- 9300 vector drives are on page 90.

Other options

- Motors fitted with motec terminal box inverter for a complete high performance drive that is IP54.
- IP55 enclosure.
- KTY83-110 temperature monitoring.
- Other brake voltages.
- Other encoder pulse rates.

Cables

The basic motor and brake motor for open loop control are supplied with terminal boxes, with plug & socket connections an option. All closed loop combinations use plug & socket connectors. Suitable cables are listed below.

Ordering example

Qty 3 Stockline No. **PI-918 7X**
 SDS 056-22 inverter motors,
 240W, 2790 r/min, rated 100Hz.

Cable length	Power cable (motor/brake)	Resolver cable with temp. sensor	Encoder cable with temp. sensor	
			9300	8200
2m	19-615 034	19-615 042	19-831 656	19-244 437
5m	19-561 425	19-561 539	19-831 672	19-244 445
10m	19-564 017	19-567 516	19-795 936	19-244 453

Lenze permanent magnet d.c. motors

55W – 600W

Series 13.120.□□

High efficiency with performance similar to dc shunt motors

Compact smooth casing, enclosed to IP54

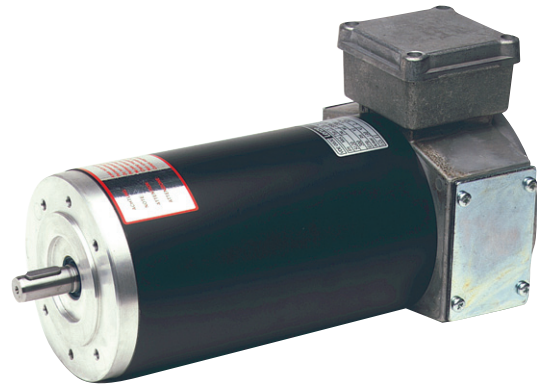
Ideal for battery powered mobile applications

Self-cooling over full variable speed range

Good overloading characteristics

B14 face mounting

Failsafe brakes, dc tachogenerators and encoders available on some models



General description

Armatures are finely balanced and mounted in substantial rolling bearings. Generously dimensioned commutators are connected to the armature windings by mechanical staking. The motors are totally enclosed to IP54 – cooling specification category IC00 – and are ideal for areas where cooling fan turbulence cannot be tolerated. The brush gear and commutator can be inspected through removable inspection covers in the non-drive end casting.

Lenze permanent magnet motors type 13.120 are characterised by the following features:

- Good power-to-size ratio
- Minor speed loss under load (high copper fill factor)
- Very smooth rotation control due to skewed armature
- Good starting behaviour
- Adjustable brush yoke for the adjustment of the neutral zone according to the load (optimising the commutation for each direction)
- Rigid mechanical design

MOTORS & SMALL
GEARED MOTORS

Type	Power W	Speed r/min	Torque Nm		Armature voltage V	Rated current A	Max. current A	Armature resistance Ω	Armature inductance mH	Connection	Stockline numbers
			F _F =1	F _F =1.4							
13.120.35	55	3000	0.17	0.12	180	0.5	5.5	63	98	cable	P3-100 547
13.120.45 IEC 56	110	3000	0.35	0.25	180	0.86	6	27.5	52	cable	P3-281 886
		3000	0.35	0.25	24	6.7	44	0.47	1.4	cable	P3-349 28X
13.120.55 IEC 56	200	3000	0.64	0.46	180	1.4	9	9.8	31.5	T.box	P3-295 19X
13.120.65 IEC 71	180	1500	1.18	0.84	90	2.5	12	3.7	22.5	cable	P3-103 758
	185	1500	1.18	0.84	180	1.35	6.2	16.1	84	cable	P3-68 432
	370	3000	1.18	0.84	90	4.8	22	0.96	5.3	cable	P3-329 51X
	370	3000	1.18	0.84	180	2.5	11.2	4.6	25	cable	P3-76 266
	370	3000	1.18	0.84	24	20.2	90	0.09	0.4	T. box	P3-380 424
13.120.75 IEC 71	600	3000	1.91	1.36	180	4.5	20	1.9	9	T. box	P3-73 098
	300	1500	1.91	1.36	180	2.2	11.5	7.7	60	T. box	P3-73 08X

Combi-shaft motors: prepared for brake, tacho or encoder

13.120.35	55	3000	0.17	0.14	180	0.5	5.5	63	98	cable	P3-257 17X
13.120.55 IEC 56	200	3000	0.64	0.53	180	1.4	9.0	9.8	31.5	cable	P3-345 595
13.120.65 IEC 63	370	3000	1.18	0.98	180	2.4	11.0	4.6	25	cable	P3-257 188
13.120.65 IEC 71	370	3000	1.18	0.98	180	2.4	11.0	4.6	25	T.box	P3-213 219
13.120.75 IEC 71	600	3000	1.91	1.59	160	4.5	20	1.9	9	T.box	P3-85 369

These motors can be supplied fitted with Lenze spring applied brakes, tachogenerators type TD3 and KTD3, and encoders. Contact our motor department at Bedford.

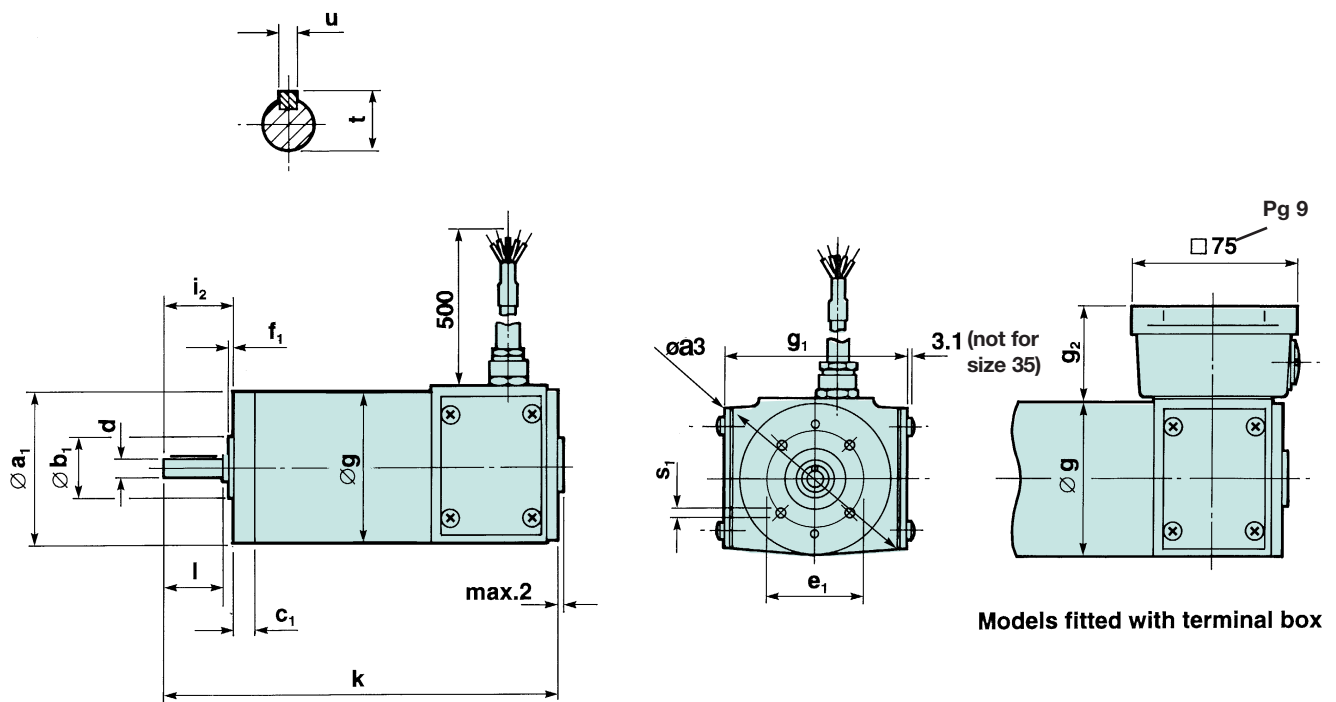
Controllers

Motors above 110W require devices to limit the armature current below the I_{max} figure stated. A controller or other current limiting device should be chosen for this duty. The Lenze type 530 thyristor controllers suit motors with 90 or 180V armatures, [see page 349](#).

The form factor of the chosen motor controller combination should match the demands of the application. Rated current is stated for a form factor of 1, i.e. pure d.c. Nominal torque is shown with a form factor of 1.4 suiting thyristor controllers. Additional inductance is required to meet this value. We recommend chokes are used, otherwise reduce the output torques by a further 20% if running continuously.

Details of our range of armature chokes are given on page 319.

Dimensions



MOTORS & SMALL GEARED MOTORS

Size	Frame size	Mounting	a_1	a_3	b_1	c_1	d	e_1	f_1	g	g_1	g_2	i_2	k	l	s_1	t	u	Weight kg
35	-	B14	50.5	79	28	8	7h6	40	2.5	54	62	-	33.5	172	31	M4	-	-	1.4
45	IEC56	B14 C80	80	107	50	12	9k6	65	2.5	70	84.5	45	22.5	179	20	M5	10.2	3	2.4
55	IEC56	B14 C80	80	115	50	17	9k6	65	2.5	80	95	45	22.5	213	20	M5	10.2	3	3.7
65	IEC63	B14 C90	90	140	60	18.5	11k6	75	2.5	98	115	45	25.5	259.5	23	M5	12.5	4	8
65	IEC71	B14 C105	105	140	70	16.5	14k6	85	2.5	98	115	45	32.5	266.5	30	M6	16	5	8
75	IEC71	B14 C105	110	154	70	14.5	14k6	85	2.5	110	132	46	32.5	288	30	M6	16	5	10.2

Ordering example

(6) off Lenze PM motor type 13.120.65, 370W 3000 r/min 180V size 65, IEC 71-B14.

Stockline No. **P3-76 266**

Options

- Other voltages and speeds
- Protection to IP55
- Tacho and brake
- Foot mounting B3

C range d.c. motors

0.37kW – 11kW

Ribbed body construction: good heat dissipation

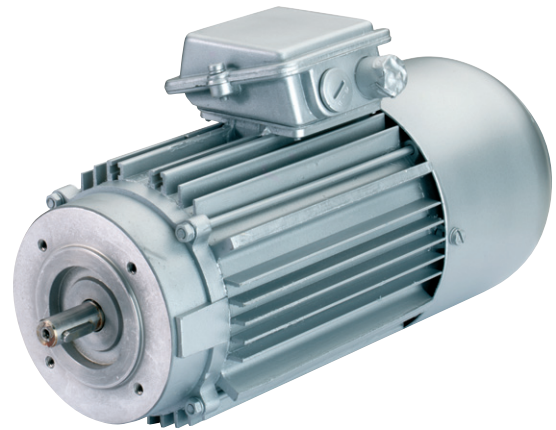
IP54 enclosure standard, class F insulation

Smooth running at low speeds due to fully laminated design with skewed armature

Large number of commutator segments: longer brush life

Options with a.c. or d.c. tacho or failsafe brakes

Smooth body versions are available on request



Types CPR – permanent magnet

Types C – shunt wound

The Stockline C-range of d.c. motors is very versatile with powers up to 11.0 kW, covering most industrial machinery needs and especially where there are space restrictions. The motor housings are made from aluminium extruded profile sections or from aluminium die castings.

Powers

The powers are stated for continuous operation at a cooling air temperature not exceeding 40°C and a current form factor not exceeding 1.05. For other conditions apply the following derating factors. If several factors apply, multiply together to arrive at the available motor power.

Temperature		Altitude		Form factor	
T(°C)	%P	h(m)	%P	FF	%P
45	95	2000	92	1.15	91
50	90	3000	83	1.25	84
55	83	4000	77	1.35	77
60	77	5000	67	1.45	72

The use of armature chokes is recommended to improve the operating form factor, see [page 319](#).

Speeds and speed range

The speeds are toleranced $\pm 5\%$ from nominal in accordance with IEC rules.

Self cooled shunt motors with fan blades allow a 10:1 speed range for constant torque applications. For lower speeds (up to 50:1 speed range) the blower option must be used.

Forced ventilation blowers

These are designed for connection to either a.c. 1 phase or a.c. 3 phase supplies multi-voltage, 50 or 60 Hz.

Tachos

The a.c. rectified tacho TD3 allows $\pm 1\%$ speed holding with a suitable controller with 100 r/min min. speed. For more accurate speed holding, lower speeds and 4Q operations select the d.c. tachogenerator KTD3 [see page 459](#).

Other options and models available

- Enclosure IP55
- Other brake voltages
- Brake hand release
- Foot (B3) or flange (B5) mountings
- Encoders
- Oil seal on drive shaft

Temperature

D.C. shunt motors are fitted with a normally closed temperature switch operating at 130°C winding temperature which we recommend to wire into the control circuit.

Capacity 2.5A a.c.

Caution: The switch will reset when cooling down.

The permanent magnet motors are not fitted with a temperature switch as standard but are available on request.

Brakes

Brake motors are fitted with the series 458 Lenze spring applied brake. Unless otherwise specified, brakes are supplied with a 205V d.c. coil and a bridge rectifier for 240V a.c. supply.

Frame size	71	90	100	112	132
Brake size	06/08	08	08	10	14
Brake torque Nm	4/8	8	8	16	60

Hand release option on request. A brake dust seal can be fitted.

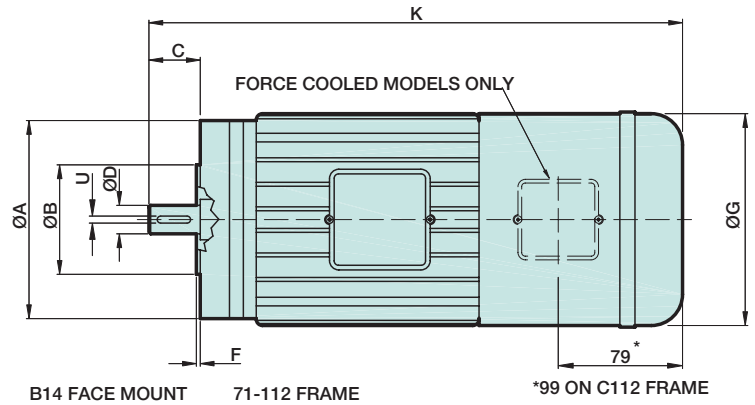
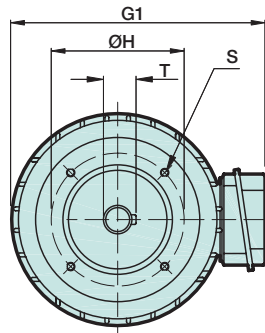
Encoders

Please state your requirements. A large number of stock options exist.

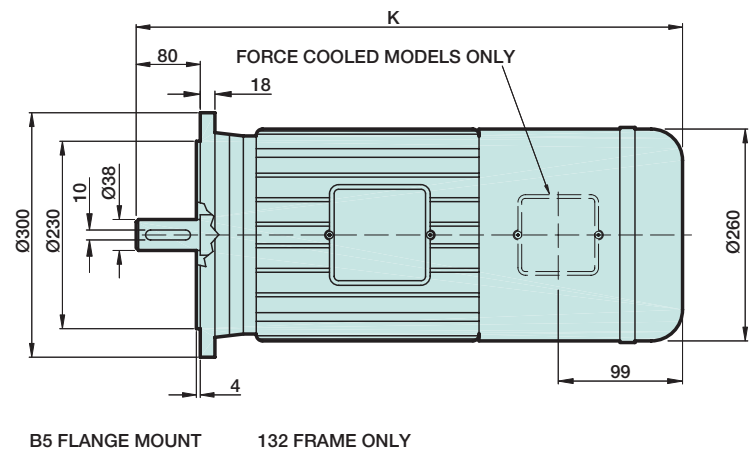
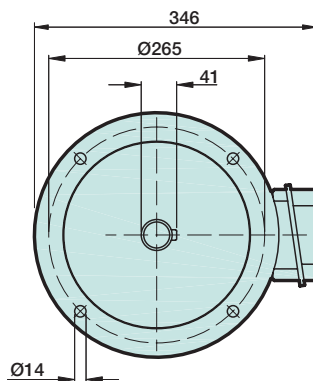
C range d.c. motors

0.37 – 11kW

**B14 face mount
71-112 frame**



**B5 flange mount
132 frame only**



Frame size	A	B	C	D	F	G	G ₁	H	Dimension K for model							S	T	U	Weight kg	
									E	ETD	EB ETG	F	FTD	FB FTG	FTDB					FTGB
CPR 71S	105	70	30	14	2.5	140	185	85	302	330	350	-	-	-	-	-	M6	16	5	10
CPR 71M/L	105	70	30	14	2.5	140	185	85	377	405	425	-	-	-	-	-	M6	16	5	13
C 71L	105	70	30	14	2.5	140	185	85	332	360	380	440	470	490	-	-	M6	16	5	14
CPR 90L	160	110	50	24	3.5	180	222	130	473	503	528	-	-	-	-	-	M8	27	8	24
C 90E	160	110	50	24	3.5	180	222	130	448	478	503	552	580	600	648	668	M8	27	8	23
C 100L	160	110	60	28	3.5	196	238	130	477	512	537	587	615	635	683	703	M8	31	8	30
C 112S/L	160	110	60	28	3.5	220	270	130	480	495	540	587	614	644	693	713	M8	30.9	8	44
C 132L	-	-	80	38	-	-	-	-	603	650	674	701	796	816	841	876	-	41	10	84

*99 on 112 S/L frame

Ordering example

(3) off Stockline permanent magnet motors type CPR71L rated at 1.0kW, 3000 r/min, 180VA, B14 C105 mountings with d.c. tachometer 20V/1000 r/min.

Stockline No. L8-504 497

Type CPR

Permanent magnet motors with 180V armature windings, 24V available on request.

Type C

Shunt wound motors with separate armature and field windings.

MOTORS & SMALL GEARED MOTORS

B14 mounted (frame 132 = B5)

Power kW frame	Speed r/min	V _A /I _A V _F /I _F	Armature inductance mH	Stockline numbers				F blower only
				E fan only	ETD fan with a.c. tachometer	ETG fan with d.c. tachometer	EB fan with brake	
0.37 CPR71S	2000	180/2.5 PM	80	L8-504 001	L8-504 01X	L8-504 028	L8-504 036	-
0.37 C71L	3000	180/2.9 210/0.3	40	L8-264 941	L8-249 417	L8-267 14X	L8-267 158	L8-390 000
0.55 CPR71M	2000	180/3.8 PM	45	L8-504 123	L8-504 131	L8-504 158	L8-504 166	-
0.75 CPR71L	2000	180/5.0 PM	35	L8-504 411	L8-504 42X	L8-504 438	L8-504 446	-
1.0 CPR71L	3000	180/6.6 PM	20	L8-504 470	L8-504 489	L8-504 497	L8-504 509	-
1.7 CPR90L	2000	180/11.3 PM	5.7	L8-505 198	L8-505 20X	L8-505 218	L8-505 226	-
2.2 CPR90L	3000	180/14.3 PM	3.7	L8-498 72X	L8-368 675	L8-368 683	L8-368 691	-
2.2 C90E	3000	180/15.2 210/0.84	3.3	L8-374 603	L8-374 611	L8-429 768	L8-34 204	L8-423 756
2.6 C100L	3000	260/11.8 210/0.54	5	L8-34 945	L8-35 019	L8-53 281/8 wks	L8-62 053/8 wks	L8-424 185
3.0 C112S	3000	260/14 210/0.5	7.9	L8-423 492	L8-423 504/8 wks	L8-423 555/8 wks	L8-423 563/8 wks	L8-424 327/8 wks
4.5 C112L	3000	260/20.4 360/0.32	4	L8-375 513	L8-375 505	L8-375 493	L8-423 571	L8-423 780/8 wks
4.5 C112L	3000	440/12.4 360/0.32	9.8	L8-423 843/8 wks	L8-423 851/8 wks	L8-423 86X/8 wks	L8-423 878/8 wks	L8-423 799/8 wks
5.5 C132L	1500	440/15 360/0.44	10	-	-	-	-	L8-423 082/8 wks
7.5 C132L	2200	260/37 210/0.85	3.6	-	-	-	-	L8-424 422/8 wks
11 C132L	3000	440/28 360/0.44	3.6	-	-	-	-	L8-424 457/8 wks

MOTORS & SMALL
GEARED MOTORS

Suitable controllers

For 1Q/180 V armatures

Lenze 531	2A	K1-456 463
Lenze 532	2A	K1-456 22X
Lenze 533	4A	K1-456 211
Lenze 534	8/12A	K1-456 420

See page 349

Type CPR

Permanent magnet motors with 180V armature windings, 24V available on request.

Type C

Shunt wound motors with separate armature and field windings.

These self cooled motors, cooling style IC0141 have their fan blade rotating at armature speed. Speed range at constant torque is limited to 10:1 for the shunt motors and 100:1 for the permanent magnet motors when they are driven from a suitable controller.

PM = Permanent Magnet Field

Motors are B14 mounted except for 132 frame which is B5.
Stockline numbers for alternative mountings on request.

C range d.c. motors

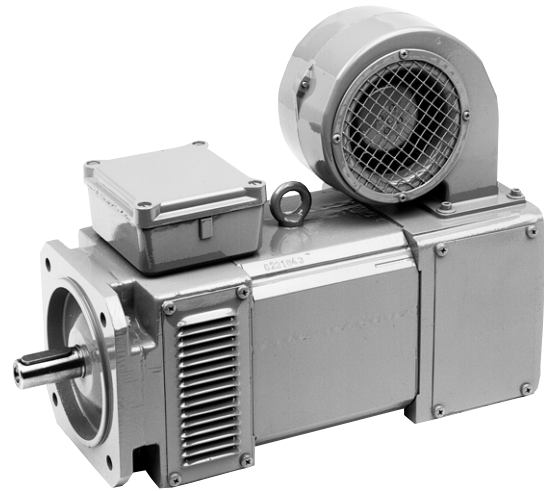
Forced ventilation models (IC 0641)

B14 mounted (frame 132 = B5)

Power kW frame	Stockline numbers					Brushes	Oil seals
	FTD blower with a.c. tacho	FTG blower with d.c. tacho	FB blower with brake	FTDB blower with brake & a.c. tacho	FTGB blower with brake & d.c. tacho		
0.37 CPR71S	-	-	-	-	-		
0.37 C71L	L8-371 896	L8-371 908	L8-415 949	-	-		
0.55 CPR71M	-	-	-	-	-		
0.75 CPR71L	-	-	-	-	-	2 x S8-262 545	T9-91 557
1.0 CPR71L	-	-	-	-	-		
1.7 CPR90L	-	-	-	-	-		
2.2 CPR90L	-	-	-	-	-	4 x S8-236 88X	T9-77 657
2.2 C90E	L8-374 638	L8-374 646	L8-423 827	L8-374 654	L8-374 662		
2.6 C100L	L8-424 193	L8-424 205	L8-424 213	L8-424 23X	L8-424 248/6 wks	4 x S8-214 074	
3.0 C112S	L8-424 335/6 wks	L8-424 343/6 wks	L8-424 351/6 wks	L8-424 36X/6 wks	L8-424 378/6 wks		
4.5 C112L	L8-375 485	L8-375 477	L8-424 386/8 wks	L8-375 469/6 wks	L8-96 545/6 wks	4 x S8-214 066	T9-91 707
4.5 C112L	L8-397 08X/8 wks	L8-385 333/8 wks	L8-424 394/6 wks	L8-424 406/6 wks	L8-424 414/6 wks		
5.5 C132L	-	L8-376 143/8 wks	L8-423 074/8 wks	L8-376 16X/8 wks	L8-376 186/8 wks	S8-214 031	T9-91 652
7.5 C132L	L8-424 430/8 wks	L8-424 449/8 wks	-	-	-		
11.0 C132L	L8-376 135/8 wks	L8-376 151/8 wks	L8-424 690/8 wks	L8-376 178/8 wks	L8-376 194/8 wks		

These forced ventilated motors, cooling style IC0641 have a separately driven blower forcing cooling air along their surface. The speed range is usually limited by the controller. For long periods of running at speeds below 6 r/min the torque should be reduced to avoid localised commutator overheating.

- Axially welded and laminated frame**
- Commutating poles and “shaped” pole tips**
- Skewed armature**
- Large number of commutator segments**
- Four-pole design**
- Armature balanced with half key to DIN/ISO 8821 “N”**
- Insulation class F (155°C), enclosure IP23**
- Radial blower and normally closed over temperature switch**
- IEC and DIN mounting dimensions**
- Easy to fit options: tachogenerators, incremental encoders, electromagnetic brakes and filter kits**
- Choice of blower mounting positions**
- Can be connected to Lenze gearboxes**
- Other voltages and speeds on request**



Motors are painted with grey primer as standard

General description

By forced air ventilation through the motor frame and machining the internal air paths, high power for frame size is achieved. Rotor and stator are fully laminated, which ensures low eddy current losses.

The four-pole design with commutating poles, and special arrangements of the main poles for suppression of armature reaction, ensures spark-free commutation and long operating life of the carbon brushes, even for increased starting and braking torques. Smooth running, even at low speeds, is ensured by skewed armatures and low commutation voltage. The terminal box, normally mounted on top (except for size 160 when it is on the right viewed from front) allows access for all motor connections and is threaded to accept standard glands. The radial external blowers can be mounted on the sides, as well as axially via special plates and ducts.

The enamelled wire quality corresponds to insulation class “H”, in order to increase life.

Higher enclosures up to IP44, filter air inlet and air flow surveillance can be fitted as options.

Tachogenerators

DC or AC tachogenerators can be selected depending on the application. For low speeds and four quadrant operation, the DC tachogenerator, type KTD3-2, is required. The AC tachogenerator, type TD3, only supplies an accurate speed signal at speeds above 50r/min. However, it is less costly, has no brushes and is therefore chosen for many applications. Tachogenerators are also available in different voltage. Please ask for details.

Brakes

For holding applications, the Lenze spring applied brake is ideal and can be mounted on the back of the GFQ motors. The standard brake voltage is 205V d.c. Other brake voltages are available on request. A full wave bridge rectifier (230V A.C./205V d.c.) is supplied loose with the motor. When d.c. switching is used, a spark suppressor should also be fitted. Ask for details.

Motor type	Brake size	Torque Nm
80	10	16
100	12	32
112	16	80
132	18	150
160	20	240

A higher torque brake can also be supplied, details on request

Terminal box

The standard terminal box position is on top, except for size 160 when it is on the right, viewed from the output shaft end. It can be turned through 4x90° to suit cable entry.

Oil seals

When an open gearbox is fitted to the GFQ motor, it is advisable to use an oil seal. This is also advisable with enclosed gearboxes when the motor is situated below the gearbox. It is advisable for this part to be fitted by us.

Lenze GFQU square d.c. motors

Performance data

Motor type	Power kW	Speed r/min	Armature voltage V	Max. field weaken. speed r/min	Max. mech speed r/min	Armature current A	Armature max current A	Armature inductance mH	Armature resistance Ω	Field voltage V	Field current A	Inertia kgm ²	Weight kg	
GFQU 80-22	2.1	1150	280	1400	4500	10.5	21.0	31.0	6.73	360	0.8	0.0087	36	
	3.5	1900	420	2300										
	3.9	2100	460	2500										
	3.5	1900	280	2300	4500	16.1	32.2	13.8	2.88	360	0.8	0.0087	36	
	5.7	3000	420	3600										
	6.2	3350	460	4000										
3.3	1800	170	2700	4500	25.7	50.0	5.4	1.13	210	1.2	0.0087	36		
6.0	3250	280	3900											
GFQU 100-22	4.7	1200	280	1800	4500	21.2	42.5	13.4	2.15	360	1.4	0.0237	65	
	7.6	1950	420	2350										
	8.4	2150	460	2600										
	6.4	1700	280	2550	4500	27.5	55.0	7.3	1.226	360	1.4	0.0237	65	
	10.2	2700	420	3250										
	11.2	2950	460	3550										
	7.3	1950	280	2900	4500	30.9	62.0	5.9	0.954	360	1.4	0.0237	65	
	11.4	3050	420	3650										
	12.5	3350	460	4000										
	12.1	3250	280	4500	4500	49.0	98.0	2.3	0.808	360	1.4	0.0237	65	
	GFQU 112-22	9.0	1150	280	1750	4000	40.0	80.0	7.6	1.2	360	2.2	0.0475	115
		14.5	1900	420	2300									
16.0		2100	460	2500										
15.9		2050	280	3050	4000	60.0	120.0	3.0	0.443	360	2.2	0.0475	115	
24.8		3200	420	3850										
27.1		3500	460	4000										
18.4	1150	280	1725	4000	78.8	160.0	4.7	0.470	360	2.2	0.1120	170		
29.1	1800	420	2150											
32.1	2000	460	2400											
24.4	1450	280	2150	4000	101.0	200.0	3.0	0.289	360	2.2	0.1120	170		
38.0	2300	420	2750											
41.8	2550	460	3050											
29.9	2050	280	3050	4000	120.0	240.0	1.7	0.171	360	2.2	0.1120	170		
46.0	3150	420	3800											
50.4	3450	460	4000											
GFQU 160-22	82.0	2800	420	3350	3600	215.0	430.0	1.2	0.099	360	4	0.2452	250	
	90.6	3100	460	3600										
GFQU 160-32	56.0	1600	420	1900	3600	149.0	300.0	2.9	0.206	360	4	0.32	285	
	62.0	1800	460	2150										
	79.0	2200	420	2650	3600	207.0	410.0	1.6	0.115	360	4	0.32	285	
	86.2	2400	460	2900										

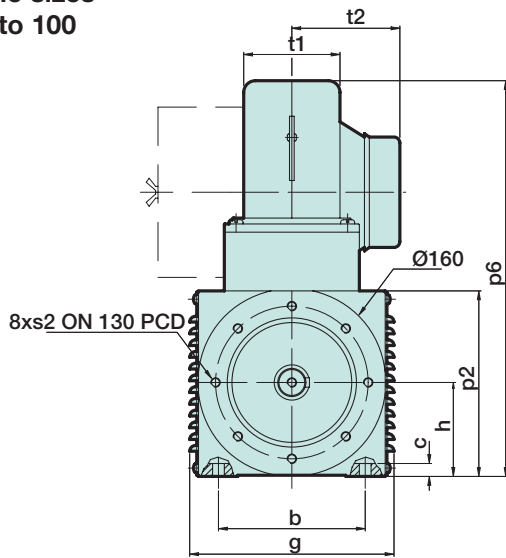
N.B. Motors are supplied with nameplates showing the highest power, speed and voltage ratings. Should your name plate requirements be different to this, please specify when ordering.

Ordering example

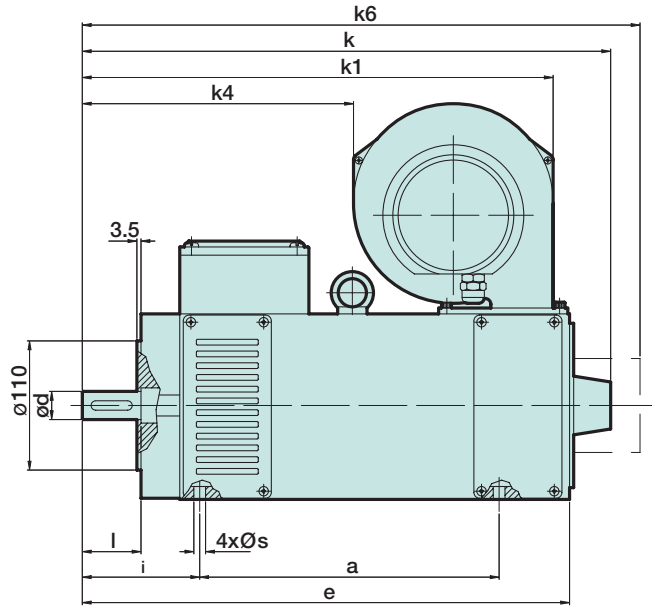
(3) off motor type GFQU 100-22, 12.5 kW, 3350 r/min, 460 VA, 360 VF, foot and flange mounted B34 fitted with D.C. tachogenerator

Stockline No. **L9-395 563**

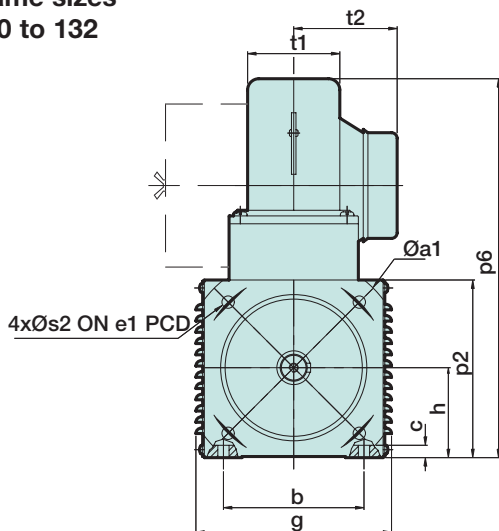
Frame sizes
80 to 100



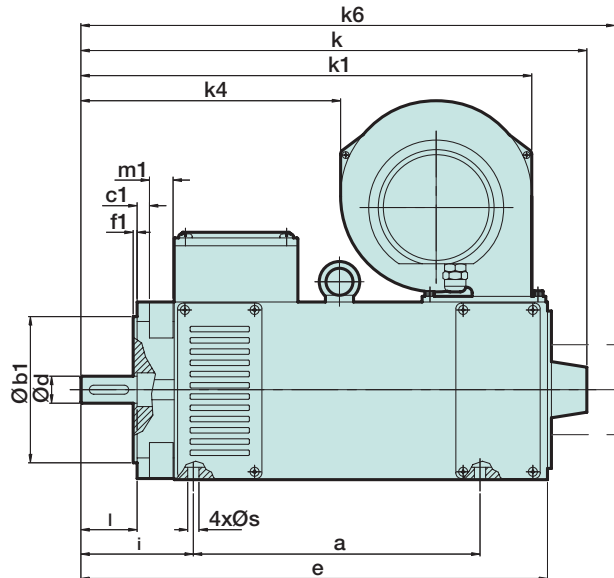
Foot and face mounting (B34)



Frame sizes
80 to 132

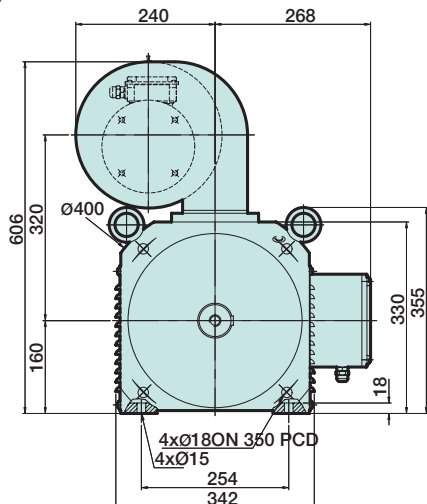


Foot and flange mounting (B35)

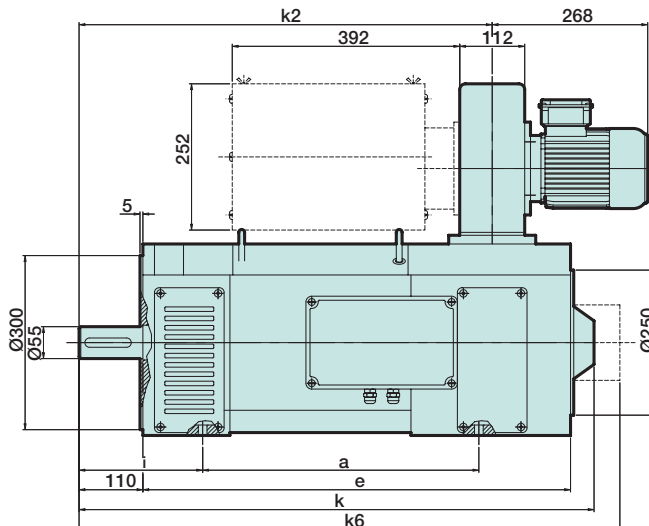


MOTORS & SMALL
GEARED MOTORS

Frame size
160



Foot and flange
mounting (B35)



Lenze GFQU d.c. motors

Frame sizes 80-132

Motor type	a	a ₁	b	b ₁	c	c ₁	d k ₆	e ₁	f ₁	g	h	i	k	k ₆ ¹	k ₆ ²	k ₆ ³	k ₆ ⁴	k ₆ ⁵	l	p ₂	p ₆	s	s ₂
GFQU 80-22	255	200	125	130	11	11	24	165	3.5	174	80	100	467	459	475	555	547	633	50	158	335	9.5	11
GFQU/K 100-22	295	250	160	180	14	11	28	215	4	212	100	123	520	512	528	608	600	686	60	198	375	11.5	14
GFQU 112-22	385	300	190	230	16	12	38	265	4	235	112	150	660	652	668	786	778	864	80	222	451	11.5	14
GFQU 132-32	460	300	215	230	18	12	38	265	4	275	132	169	760	752	768	886	878	964	80	262	525	14	14

Additional dimensions 160 frame

Motor type	a	e	k	k ₂	k ₆ ¹	k ₆ ²	k ₆ ³	k ₆ ⁴	k ₆ ⁵
GFQU 160-22	476	737	864	712	889	905	993	1018	1104
GFQU/K 160-32	556	817	944	792	969	985	1073	1098	1184

Blowers

The wide voltage band blowers for 50/60 Hz should cover most applications, but other blower voltages are available on request. The standard mounting position for the blower on a GFQ motor is on top, 'Position A'. Alternatively, it may be mounted on either side of the motor, if required. If so, an additional sealing plate for the normal opening and an adaptor plate for the side opening are necessary. Please state the mounting position required.

Airflow detector

Used to monitor the cooling air flow through the motor and can be supplied for different voltages.

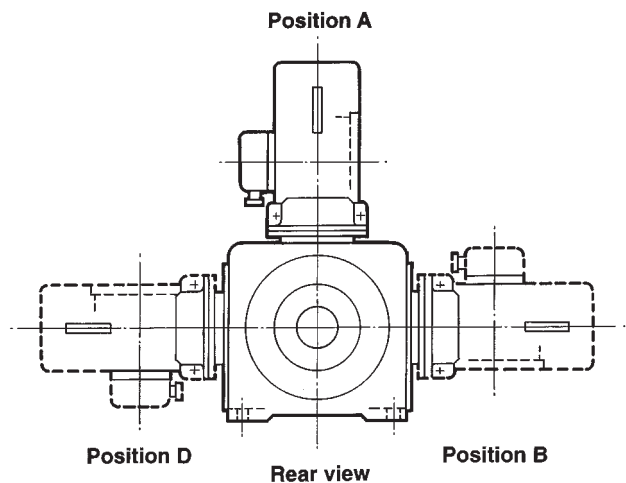
We can fit it to the blower if it is ordered at the same time as the motor.

Voltage	Stockline No. (with fitting kit)
24V d.c.	L1-158 836
110V a.c.	L1-160 49X
240V a.c.	L1-183 72X

Motor length k₆ varies according to options selected for tachos and brakes as described on the following pages.

Keyways to BS4235.

Tapped shaft ends to DIN 748 T3.



In addition, the blower can be turned through 180° so that the air intake faces the other way.

Filters

Specify filter cage and mat where the environment is dusty. This will be fitted to your motor.

Stockline numbers in black – delivery time on request

GFQU motor size	Brush quantity per motor	Brush dimensions	Maximum current A	Carbon brushes	One pair of adaptor plates (for side mounting blowers)	Filter cage and mat	Mat only
80-22	4	8x16x25	16:1	S8-370 210	L1-144 098	L1-213 357	L1-95 66X
100-22	4/8	10x16x25	30.9	S8-157 21X	L1-375 312	L1-213 357	L1-95 66X
112-22	8	10x16x25	67	S8-536 582	L1-112 302	L1-126 330	L1-169 767
132-32	8	10x20x32	90	S8-106 157	L1-143 981	L1-137 01X	L1-169 775
	8	12.5x20x32*	90-120	S8-203 230			
160-32	8	12.5x20x32	>120	S8-223 859	-	L1-410 969	L1-410 985
	12	12.5x25x32	66-207	S8-411 024			
	12	12.5x25x32*	149	S8-960 13	-		

* Marked 'zw'

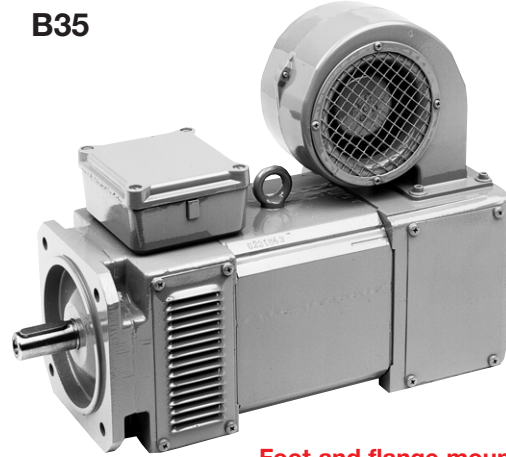
Lenze GFQU square d.c. motors

B34



Foot and face mounting

B35



Foot and flange mounting

MOTORS & SMALL GEARED MOTORS

Motor overall length dimension				k	k ₆ ¹	k ₆ ²	k ₆ ³	k ₆ ⁴	k ₆ ⁵
Motor type	Power kW	Speed r/min	Armature voltage V	Motor with blower only	with AC tacho 30V/1000 rpm & blower	with DC tacho 20V/1000 rpm & blower	with brake & blower	with AC tacho, brake & blower	with DC tacho, brake & blower
GFQU 80-22 B34	2.1	1150	280						
	3.5	1900	420	L9-201 646	L9-398 888	L9-382 287	L9-401 988	L9-402 106	L9-402 228
	3.9	2100	460						
	3.5	1900	280						
	5.7	3000	420	L9-383 067	L9-398 139	L9-395 161	L9-401 996	L9-402 114	L9-402 236
	6.2	3350	460						
GFQU 100-22 B34	3.3	1800	170						
	6.0	3250	280	L9-382 21X	L9-398 076	L9-395 129	L9-500 203	L9-500 211	L9-500 22X
	4.7	1200	280						
	7.6	1950	420	L9-155 09X	L9-398 549	L9-395 713	L9-402 019	L9-402 130	L9-402 252
	8.4	2150	460						
	6.4	1700	280						
GFQU 112-22 B35	10.2	2700	420	L9-387 650	L9-398 435	L9-395 634	L9-402 027	L9-402 149	L9-402 260
	11.2	2950	460						
	7.3	1950	280						
	11.4	3050	420	L9-371 242	L9-398 380	L9-395 563	L9-402 035	L9-402 157	L9-402 279
	12.5	3350	460						
	9.0	1150	280						
GFQU 132-32 B35	14.5	1900	420	L9-381 902	L9-398 845	L9-396 587	L9-399 65X	L9-399 885	L9-401 594
	16.0	2100	460						
	15.9	2050	280						
	24.8	3200	420	L9-378 724	L9-398 837	L9-396 544	L9-399 668	L9-399 893	L9-401 606
	27.1	3500	460						
	18.4	1150	280						
GFQU 160-22 B35	29.1	1800	420	L9-339 234	L9-398 87X	L9-396 883	L9-399 676	L9-399 921	L9-401 614
	32.1	2000	460						
	24.4	1450	280						
	38.0	2300	420	L9-346 793	L9-398 861	L9-396 867	L9-399 684	L9-399 93X	L9-401 622
	41.8	2550	460						
	29.9	2050	280						
GFQU 160-32 B35	46.0	3150	420	L9-387 468	L9-398 853	L9-396 840	L9-399 692	L9-399 956	L9-401 630
	50.4	3450	460						
	82.0	2800	420	L9-252 508	L9-398 924	L9-398 916	L9-399 704	L9-399 964	L9-401 657
	90.6	3100	460						
	56.0	1600	420	L9-251 728	L9-398 975	L9-398 967	L9-399 712	L9-399 972	L9-401 665
	62.0	1800	460						
GFQU 160-32 B35	79.0	2200	420	L9-282 666	L9-399 022	L9-398 991	L9-399 720	L9-399 980	L9-401 673
	86.2	2400	460						

Stockline numbers in black – delivery times on request

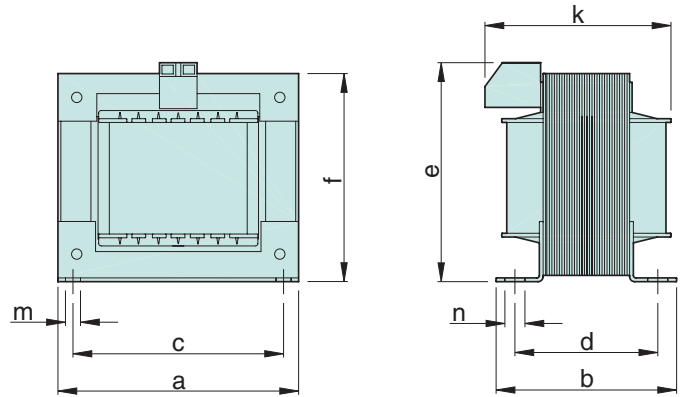
d.c. motor chokes

This range of iron cored armature chokes for improving the form factor of any thyristor controller, thus reducing losses and increasing the effective output of the motor.

In order to obtain the rated capability from d.c. motors, they must be fed from d.c. In all cases where thyristor rectifier controllers fed from single phase supply are employed, the output is not pure d.c. The output in this situation contains a ripple component which reduces the effective value of current by a factor called the 'form factor'. In practical applications the range of values for form factor is between 1.6 and 1.1. For example if by calculation or measurement the FF of a particular arrangement is 1.35, and if the motor rating is 1.5kW the maximum available continuous power would be $1.5/1.35 = 1.1\text{kW}$.

Insufficient armature inductance also causes an increase in brush sparking and increased brush wear.

Three-phase controllers do not usually need any additional armature chokes, due to the improved output of such a drive.



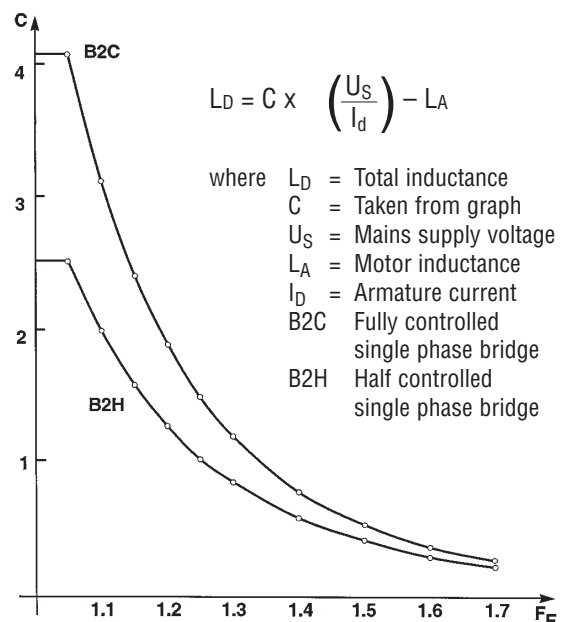
Current A	Inductance mH	a	b	c	d	e	f	k	m	n	Weight kg	Stockline No.
0.5/1.6	200/100	77	56	54	45	86	67	75	5	10	0.96	K4-152 859
4	25	77	97	54	53	80	50	105	5	10	1.2	K4-116 214
4.4	40	96	97	54	53	80	50	105	5	10	3	K4-53 301
6	24	96	97	84	60	95	90	105	5	8	3	K4-30 10X
6	40	116	112	100	75	115	110	120	5	8	4.5	K4-229 879
10	15	116	112	100	75	115	110	120	5	8	4.3	K4-75 171
10	40	164	135	140	90	150	150	150	6	12	10.0	K4-30 118
16	25	192	140	155	94	175	175	160	6	12	14	K4-106 228
18	12	136	140	105	110	125	110	160	6	12	9	K4-322 890
22	7	136	127	105	98	125	110	150	6	12	7.5	K4-30 134
22	15	192	140	155	94	175	175	160	6	12	15	K4-109 577
25	25	230	165	195	107	205	205	180	6	12	23	K4-63 00X
42	4	136	127	105	98	125	110	150	8	12	9	K4-98 933

MOTORS & SMALL GEARED MOTORS

Selection

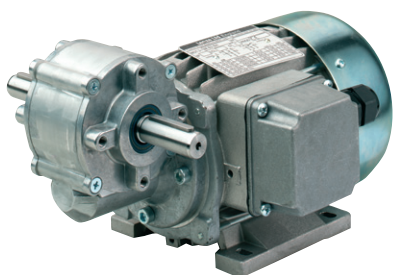
The total armature inductance can be calculated from the formula.

1. Divide motor rated power by actual required power (motor selection should have chosen a motor having a larger than actual required power rating)
e.g. $F_F = 2.2/1.8 = 1.22$ (1.8kW required, 2.2kW selected)
2. 'Look up' value of 'C' on graph above for the type of controller to be used i.e., B2H for 530, 470 series.
3. Insert values into formula
i.e. $L_D = 1.1 \left(\frac{240}{17.4} \right) - 2.6 = 12.4 \text{ mH @ } 17.44\text{A}$
4. Select a suitable choke (**K4-322 890** 12mH @ 18A) or re-calculate selecting another motor. Do not 'overcurrent' a motor because the heat generated by the increase in current goes up by the square of current i.e. 20% over-current leads to 44% more power to be dissipated in the armature which may cause the armature temperature to rise above safe limits.



Note: A much larger choke is not recommended because it will slow down the response of the drive system.

ac geared motors



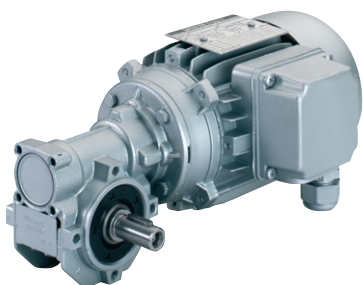
Series M & MM worm geared **page 321**

Single and three phase ac motors and brake motors from 45 to 270W. Options of foot, flange or new hollow shaft mounting. Availability from stock.



Type SDS/SPL **page 328**

Inverter optimised SDS motors available from 240 to 600W with Lenze planetary gearboxes for output speeds 23 to 757 r/min. Compact and efficient geared motors.



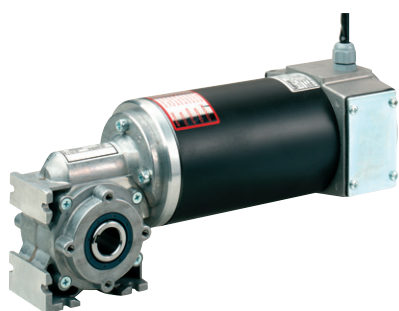
SW aluminium worm geared **page 330**

Ac worm geared motors from 90W to 4kW. Cost effective and with a 15000 hour design life. wide range of stock options including 1 phase, 3 phase and brake motors, gearbox shafts, feet and flanges.



Type 171 **page 340**

Compact and cost effective dc permanent magnet worm geared motors, available for 24 or 180V supply with powers 40 to 105W, output torques up to 5Nm.



Type 121 **page 341**

Lenze permanent magnet dc motors with worm gearboxes in flange, foot or hollow shaft configurations. Powers from 55 to 370W, supply voltages 24 or 180V.



Type LPM/SPL **page 346**

Lenze smooth bodied p.m. motors with Lenze type SPL planetary gearboxes available from stock for powers 55 to 600W, rated output speeds 24 to 811 r/min.

dc geared motors

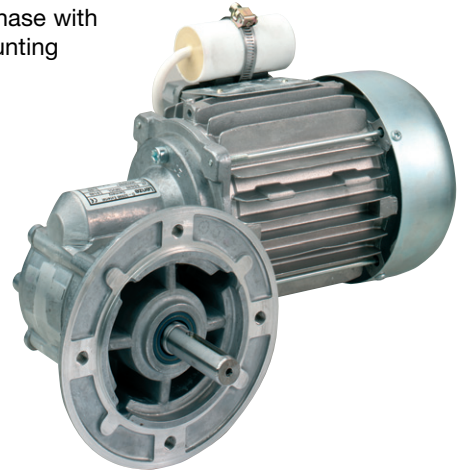
MOTORS & SMALL
GEARED MOTORS

FHP a.c. worm geared motors

45W to 270W

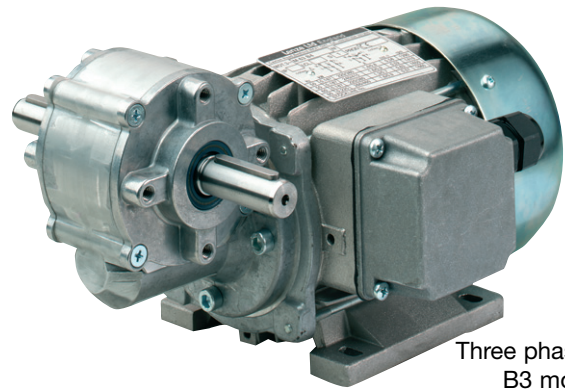
- Rugged motors with adaptable worm gearbox**
- Compact design**
- Foot (B3), Face (B14) and Hollow Shaft mounting**
- Three phase 230/400V $\pm 10\%$ -50Hz
also 255/440V $\pm 10\%$ -60Hz**
- Single phase 220-240V - 50Hz**
- No maintenance**
- IP55 protection standard**
- Comprehensive range of output speeds
(others available on request)**
- Thermal cut-out (Klixon) standard**

Single phase with B14 mounting



General description

The motors are constructed from high quality robust light alloy requiring no maintenance. Rotors are finely balanced and mounted in substantial rolling bearings. The steel worm and bronze wheel are accurately machined to give minimum noise and wear whilst transmitting high load torques. The gearbox is lubricated at assembly and requires no further attention during the life of the geared unit. The large terminal box has six terminals. The motors are enclosed to IP 55 and are fan cooled incorporating metal fan cowls.



Three phase with B3 mounting

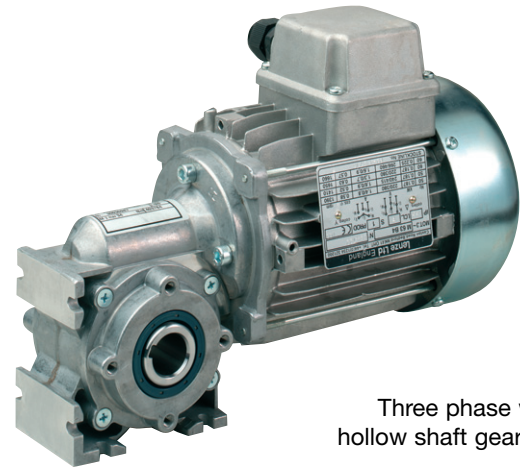
Gearbox shaft loadings

Axial and radial forces on the gearbox output shafts must be limited to those shown below.

Gearbox size	Maximum force (N)			Axial
	B3	Radial B14	H/S	
25	63	80	-	50
31	200*	200	300	300
40	300*	600	-	400

Note: Both axial and radial forces must not be applied together at their maximum values.

*Double shaft B3 models should have the load shared between the two shafts.



Three phase with hollow shaft gearbox

Operating factors

Shocks to drive	none	medium	strong
Operating factor f_1	1	1.2	1.5
Frequency of starts	10/h	60/h	360/h
Starting factor f_2	1	1.1	1.2
Duty cycle ED	<40%	<70%	<100%
Duty cycle factor f_3	0.77	0.88	1.0

Ordering example – single phase

Qty 10 off single phase worm geared motors 150W, 138 r/min, foot mounting (B3), 220 – 240/1/150, handing 3A.

Stockline No. **P5-151 520**

Options

- Other voltages and speeds
- a.c. or d.c. tachos, encoders and brakes can be fitted to certain models
- Alternative terminal box position (B3)
- Single phase capacitor start/capacitor run models for increased starting torque
- Blower: only available for MM63 and M63
Single phase: 220-240V/1/50-60Hz, 0.18A recommended to use when running the three phase motor with an inverter at lower speeds (below approx. 600 r/min motor speed)

Stockline No. **Y1-528 838**

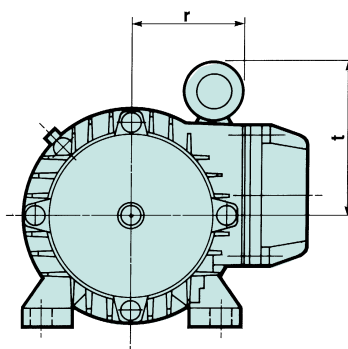
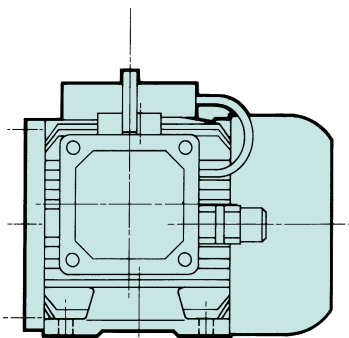
MOTORS & SMALL GEARED MOTORS

Gearbox output speed r/min	Ratio i	Torque Nm	Stockline numbers for geared motors		
			Foot mounting (B3) Gearbox design 1, 2 or 3 *	Face mounting (B14) Gearbox design 2 *	Hollow shaft Gearbox design 3 *
45W MM50L4					1ph
1380 r/min; 0.53A; gearbox size 25					
23	60	5.6+	P5-576 075	P5-579 95X	-
27	50	5.6+	P5-578 404	P5-579 968	-
34	40	5.3	P5-578 498	P5-579 976	-
46	30	4.5	P5-579 909	P5-580 033	-
69	20	3.6	P5-601 826	P5-601 893	-
92	15	3.0	P5-601 842	P5-601 913	-
138	10	2.2	P5-601 850	P5-601 93X	-
172	8	1.9	P5-601 869	P5-601 956	-
276	5	1.3	P5-601 877	P5-601 964	-
60W MM50L2					1ph
2700 r/min; 0.64A; gearbox size 25					
45	60	4.2	P5-579 759	P5-579 984	-
54	50	3.8	P5-579 862	P5-579 992	-
68	40	3.6	P5-579 870	P5-580 009	-
90	30	3.1	P5-579 889	P5-580 017	-
135	20	2.5	P5-579 897	P5-580 025	-
180	15	2.0	P5-579 917	P5-580 041	-
270	10	1.5	P5-579 925	P5-580 05X	-
338	8	1.3	P5-579 933	P5-580 068	-
540	5	0.9	P5-579 941	P5-580 084	-
75W MM56B4					1ph
1340 r/min; 0.8A; gearbox size 31					
13	100	12.3+	P5-141 392	P5-142 992	P5-143 417
18	75	12.3+	P5-141 404	P5-143 275	P5-144 378
24	55	14.1	P5-141 526	P5-143 283	P5-144 560
27	50	11.2	P5-141 569	P5-143 370	P5-144 816
35	38	11.0	P5-141 585	P5-143 843	P5-144 903
45	30	8.8	P5-142 381	P5-143 851	P5-144 938
54	25	7.6	P5-142 582	P5-143 886	P5-144 946
67	20	7.1	P5-142 637	P5-143 894	P5-144 954
89	15	5.7	P5-142 724	P5-144 063	P5-144 962
134	10	4.0	P5-142 846	P5-144 10X	P5-145 821
191	7	3.0	P5-142 854	P5-144 118	P5-146 269
268	5	2.2	P5-142 941	P5-144 193	P5-146 321

+ Limited by gearbox

* Please make sure you state the required gearbox handing when ordering. See page 327

Capacitor arrangement 1ph B3 & B14



Frame size	r	t
MM50	65	75
MM56	70	85
MM63	75	90

Gearbox output speed r/min	Ratio i	Torque Nm	Stockline numbers for geared motors		
			Foot mounting (B3) Gearbox design 1, 2 or 3 *	Face mounting (B14) Gearbox design 2 *	Hollow shaft Gearbox design 3 *
135W MM56B2 1ph					
2700 r/min; 1.6A; gearbox size 31					
27	100	11.0+	<i>P5-146 565</i>	<i>P5-148 176</i>	<i>P5-149 62X</i>
36	75	11.0+	<i>P5-146 774</i>	<i>P5-148 239</i>	<i>P5-149 697</i>
49	55	13.7	<i>P5-146 829</i>	<i>P5-148 543</i>	<i>P5-150 227</i>
54	50	11.0	<i>P5-146 87X</i>	<i>P5-148 815</i>	<i>P5-150 531</i>
71	38	10.3	<i>P5-146 916</i>	<i>P5-148 996</i>	<i>P5-150 897</i>
90	30	8.5	<i>P5-147 030</i>	<i>P5-149 06X</i>	<i>P5-150 992</i>
108	25	7.3	<i>P5-147 160</i>	<i>P5-149 165</i>	<i>P5-151 137</i>
135	20	6.6	<i>P5-147 388</i>	<i>P5-149 181</i>	<i>P5-151 188</i>
180	15	5.3	<i>P5-147 475</i>	<i>P5-149 366</i>	<i>P5-151 275</i>
270	10	3.7	<i>P5-147 597</i>	<i>P5-149 410</i>	<i>P5-151 283</i>
386	7	2.8	<i>P5-147 692</i>	<i>P5-149 540</i>	<i>P5-151 291</i>
540	5	2.0	<i>P5-148 15X</i>	<i>P5-149 603</i>	<i>P5-151 311</i>
150W MM63B4 1ph					
1380 r/min; 1.37A; gearbox size 40					
17	80	26.8+	<i>P5-151 389</i>	<i>P5-152 51X</i>	<i>P5-153 229</i>
23	60	21.0	<i>P5-151 409</i>	<i>P5-152 729</i>	<i>P5-153 237</i>
28	50	26.0	<i>P5-151 417</i>	<i>P5-152 761</i>	<i>P5-153 245</i>
35	40	21.6	<i>P5-151 433</i>	<i>P5-153 036</i>	<i>P5-153 253</i>
46	30	18.4	<i>P5-151 441</i>	<i>P5-153 044</i>	<i>P5-153 261</i>
55	25	15.6	<i>P5-151 468</i>	<i>P5-153 052</i>	<i>P5-153 27X</i>
69	20	14.1	<i>P5-151 492</i>	<i>P5-153 060</i>	<i>P5-153 316</i>
92	15	11.1	<i>P5-151 512</i>	<i>P5-153 087</i>	<i>P5-153 324</i>
138	10	8.2	<i>P5-151 520</i>	<i>P5-153 123</i>	<i>P5-153 340</i>
204	6.75	5.7	<i>P5-151 547</i>	<i>P5-153 210</i>	<i>P5-153 359</i>
240W MM63B2 1ph					
2820 r/min; 2.4A; gearbox size 40					
35	80	24.0+	<i>P5-153 383</i>	<i>P5-153 497</i>	<i>P5-153 655</i>
47	60	18.5	<i>P5-153 391</i>	<i>P5-153 509</i>	<i>P5-153 68X</i>
56	50	21.9	<i>P5-153 403</i>	<i>P5-153 517</i>	<i>P5-153 698</i>
71	40	18.2	<i>P5-153 42X</i>	<i>P5-153 541</i>	<i>P5-153 70X</i>
94	30	15.1	<i>P5-153 438</i>	<i>P5-153 55X</i>	<i>P5-153 718</i>
113	25	13.0	<i>P5-153 446</i>	<i>P5-153 576</i>	<i>P5-153 726</i>
141	20	11.5	<i>P5-153 454</i>	<i>P5-153 604</i>	<i>P5-153 734</i>
188	15	9.0	<i>P5-153 462</i>	<i>P5-153 612</i>	<i>P5-153 742</i>
282	10	6.6	<i>P5-153 470</i>	<i>P5-153 620</i>	<i>P5-153 750</i>
418	6.75	4.6	<i>P5-153 489</i>	<i>P5-153 647</i>	<i>P5-153 769</i>

+ Limited by gearbox

N.B. Axial and radial forces on the gearbox output shafts must be limited to those shown on [page 321](#)

* Please make sure you state the required gearbox handing when ordering. [See page 327](#)

Single phase units

The stated torque is developed with the RUN capacitor permanently connected. The starting torque may be as low as 70% of this figure. With an additional START capacitor connected in parallel with the RUN capacitor, the starting

torque is increased to approximately 130% of the stated torque. This additional capacitor must be disconnected once the motor is running. Details supplied on request.

Gearbox output speed r/min	Ratio i	Torque Nm	Geared motors			Geared brake motors		
			Foot mounting (B3) Gearbox design 1, 2 or 3 *	Face mounting (B14) Gearbox design 2 *	Hollow shaft Gearbox design 3 *	Foot mounting (B3) Gearbox design 1, 2 or 3 *	Gearbox design Gearbox design 2 *	Hollow shaft Gearbox design 3 *
45W M50L4								
1340 r/min; 0.32A @ 400V, 0.55A @ 230V; gearbox size 25								3ph
22	60	5.6+	P5-602 117	P5-602 204	-			
27	50	5.8	P5-602 125	P5-602 212	-			
33	40	5.5	P5-602 133	P5-602 220	-			
44	30	4.6	P5-602 141	P5-602 239	-			
67	20	3.7	P5-602 15X	P5-602 247	-			
89	15	3.1	P5-602 168	P5-602 255	-			
134	10	2.3	P5-602 176	P5-602 263	-			
167	8	1.9	P5-602 184	P5-602 271	-			
268	5	1.3	P5-602 192	P5-602 28X	-			
60W M50L2								
2750 r/min; 0.25A @ 400V, 0.43A @ 230V; gearbox size 25								3ph
46	60	4.1	P5-602 298	P5-602 385	-			
55	50	3.8	P5-602 30X	P5-602 393	-			
69	40	3.6	P5-602 318	P5-602 405	-			
92	30	3.0	P5-602 326	P5-602 413	-			
138	20	2.4	P5-602 334	P5-602 421	-			
183	15	2.0	P5-602 342	P5-602 43X	-			
275	10	1.5	P5-602 350	P5-602 448	-			
344	8	1.3	P5-602 369	P5-602 456	-			
550	5	0.9	P5-602 377	P5-602 464	-			
90W M56A4								
1370 r/min; 0.45A @ 400V, 0.78A @ 230V; gearbox size 31								3ph
14	100	12.3+	P5-120 022	P5-123 686	P5-124 395	P5-125 061	P5-125 412	P5-125 928
18	75	12.3+	P5-120 081	P5-123 757	P5-124 431	P5-125 116	P5-125 420	P5-125 944
25	55	16.6	P5-120 440	P5-123 781	P5-124 510	P5-125 140	P5-125 447	P5-125 960
27	50	13.2	P5-120 905	P5-123 81X	P5-124 529	P5-125 159	P5-125 534	P5-125 979
36	38	12.9	P5-121 038	P5-123 879	P5-124 833	P5-125 203	P5-125 593	P5-125 164
46	30	10.4	P5-121 212	P5-123 895	P5-124 841	P5-125 246	P5-125 648	P5-126 180
55	25	8.9	P5-121 220	P5-123 974	P5-124 85X	P5-125 254	P5-125 680	P5-126 199
69	20	8.3	P5-121 480	P5-124 099	P5-124 876	P5-125 297	P5-125 719	P5-126 200
91	15	6.7	P5-121 500	P5-124 135	P5-124 884	P5-125 325	P5-125 727	P5-126 219
137	10	4.7	P5-121 622	P5-124 265	P5-124 892	P5-125 341	P5-125 735	P5-126 227
196	7	3.6	P5-122 62X	P5-124 281	P5-124 904	P5-125 376	P5-125 822	P5-126 235
274	5	2.6	P5-123 38X	P5-124 379	P5-125 053	P5-125 384	P5-125 830	P5-126 278
150W M56B2								
2800 r/min; 0.43A @ 400V, 0.83A @ 230V; gearbox size 31								3ph
28	100	11+	P5-126 322	P5-127 756	P5-129 517	P5-131 564	P5-132 44X	P5-133 317
37	75	11+	P5-126 67X	P5-127 772	P5-129 856	P5-131 694	P5-132 458	P5-133 325
51	55	14.6	P5-126 732	P5-128 221	P5-130 019	P5-131 765	P5-132 466	P5-133 384
56	50	11.8	P5-126 740	P5-128 36X	P5-130 027	P5-132 048	P5-132 510	P5-133 392
74	38	11.1	P5-126 775	P5-128 473	P5-130 086	P5-132 064	P5-132 553	P5-133 455
93	30	9.1	P5-126 783	P5-128 501	P5-130 094	P5-132 16X	P5-132 608	P5-133 463
112	25	7.8	P5-126 854	P5-128 682	P5-130 106	P5-132 178	P5-132 659	P5-133 471
140	20	7.1	P5-126 862	P5-128 840	P5-130 122	P5-132 265	P5-132 683	P5-133 48X
187	15	5.7	P5-126 968	P5-128 903	P5-130 307	P5-132 387	P5-132 833	P5-133 498
280	10	3.9	P5-127 102	P5-129 052	P5-130 898	P5-132 415	P5-132 912	P5-133 50X
400	7	3.0	P5-127 216	P5-129 182	P5-130 90X	P5-132 423	P5-132 939	P5-133 518
560	5	2.2	P5-127 370	P5-129 391	P5-131 024	P5-132 431	P5-133 108	P5-133 526

AVAILABLE ON REQUEST

AVAILABLE ON REQUEST

MOTORS & SMALL GEARED MOTORS

+ Limited by gearbox
 N.B. Axial and radial forces on the gearbox output shafts must be limited to those shown on page 321
 * Please make sure you state the required gearbox handing when ordering. See page 327

Gearbox output speed r/min	Ratio i	Torque Nm	Geared motors			Geared brake motors		
			Foot mounting (B3) Gearbox design 1, 2 or 3 *	Face mounting (B14) Gearbox design 2 *	Hollow shaft Gearbox design 3 *	Foot mounting (B3) Gearbox design 1, 2 or 3 *	Gearbox design 2 *	Hollow shaft Gearbox design 3 *

185W M63B4 3ph

1370 r/min; 0.85A @ 400V, 1.47A @ 230V; gearbox size 40

17	80	26.8+	P5-133 534	P5-134 093	P5-134 306	P5-134 54X	P5-134 740	P5-134 933
23	60	25.7+	P5-133 542	P5-134 105	P5-134 349	P5-134 558	P5-134 767	P5-134 941
27	50	32.2	P5-133 550	P5-134 113	P5-134 365	P5-134 566	P5-134 775	P5-135 346
34	40	26.8	P5-133 648	P5-134 121	P5-134 39X	P5-134 574	P5-134 783	P5-135 721
46	30	22.8	P5-133 987	P5-134 172	P5-134 41X	P5-134 582	P5-134 803	P5-136 004
55	25	19.3	P5-134 00X	P5-134 199	P5-134 436	P5-134 590	P5-134 854	P5-136 055
69	20	17.5	P5-134 018	P5-134 235	P5-134 479	P5-134 610	P5-134 862	P5-136 063
91	15	13.7	P5-134 050	P5-134 243	P5-134 487	P5-134 629	P5-134 870	P5-136 36X
137	10	10.2	P5-134 077	P5-134 251	P5-134 515	P5-134 696	P5-134 889	P5-136 378
203	6.75	7.1	P5-134 085	P5-134 26X	P5-134 523	P5-134 732	P5-134 925	P5-136 394

270W M63B2 3ph

2800 r/min; 0.76A @ 400V, 1.32A @ 230V; gearbox size 40

35	80	24.0+	P5-137 517	P5-139 905	P5-140 529	P5-140 703	P5-141 053	P5-141 203
47	60	21.0	P5-137 525	P5-139 921	P5-140 537	P5-140 746	P5-141 07X	P5-141 211
56	50	24.9	P5-137 533	P5-139 93X	P5-140 545	P5-140 770	P5-141 088	P5-141 22X
70	40	20.6	P5-137 671	P5-140 064	P5-140 596	P5-140 841	P5-141 096	P5-141 238
93	30	17.1	P5-137 698	P5-140 080	P5-140 608	P5-140 876	P5-141 116	P5-141 246
112	25	14.7	P5-137 742	P5-140 135	P5-140 616	P5-140 971	P5-141 132	P5-141 254
140	20	13.1	P5-137 83X	P5-140 143	P5-140 624	P5-140 998	P5-141 159	P5-141 262
187	15	10.2	P5-137 880	P5-140 151	P5-140 632	P5-141 002	P5-141 167	P5-141 270
280	10	7.5	P5-138 198	P5-140 194	P5-140 667	P5-141 010	P5-141 175	P5-141 317
415	6.75	5.2	P5-138 435	P5-140 407	P5-140 691	P5-141 045	P5-141 183	P5-141 384

+ Limited by gearbox

N.B. Axial and radial forces on the gearbox output shafts must be limited to those shown on page 321

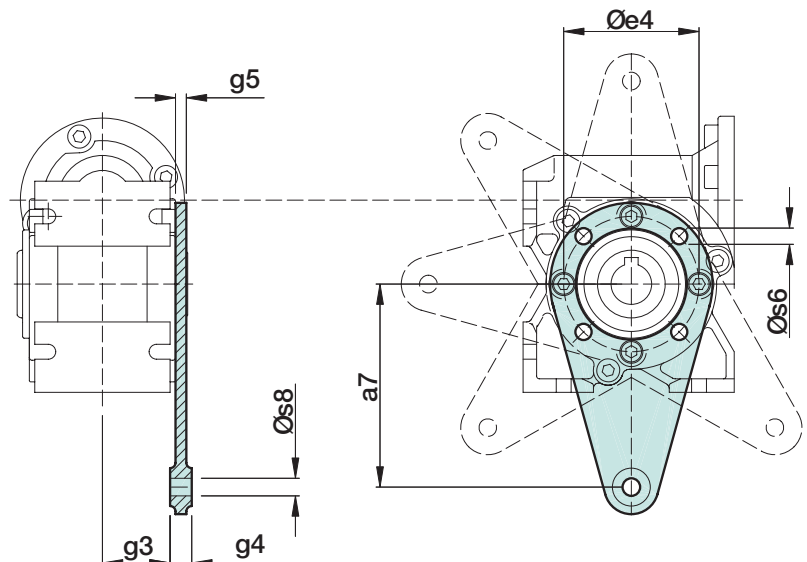
* Please make sure you state the required gearbox handing when ordering. See page 327

Torque arm

Optional torque arm for hollow shaft gearboxes. Supplied loose with fixing screws the torque arm can be fitted to either side of the hollow shaft gearbox in any of six positions.

Gearbox size	Stockline No.
31	P4-643 54
40	P4-643 11

Gearbox size	a7	e4	g3	g4	g5	s6	s8
31	75	50	27	4	4	6	6.5
40	85	65	35	14	4	7	8



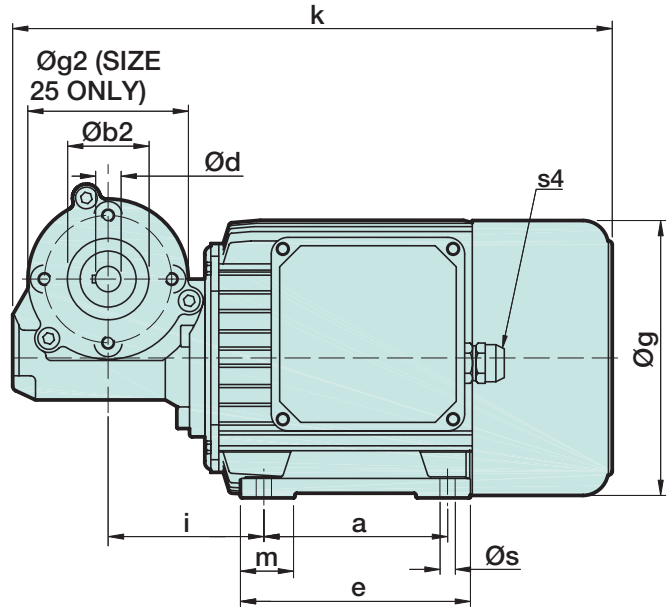
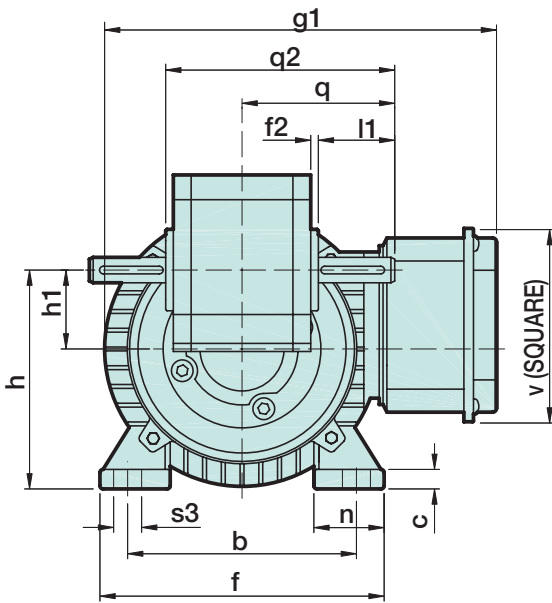
Series M & MM

Dimensions

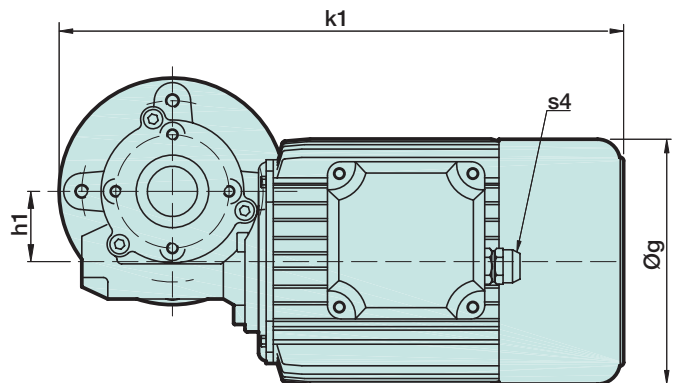
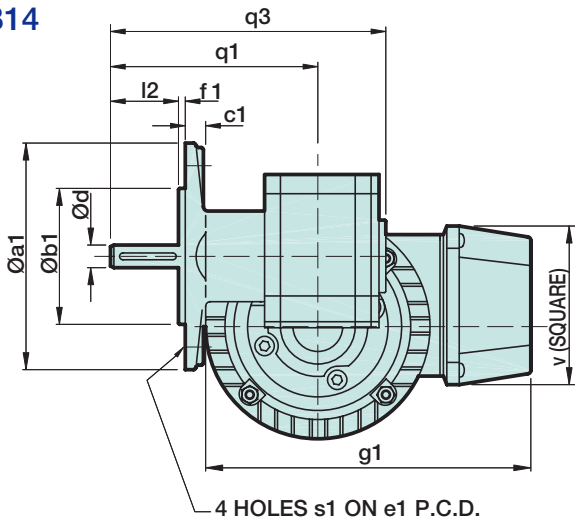
Single and three phase

B3

Alternate models with feet on the gearbox are available on six weeks delivery

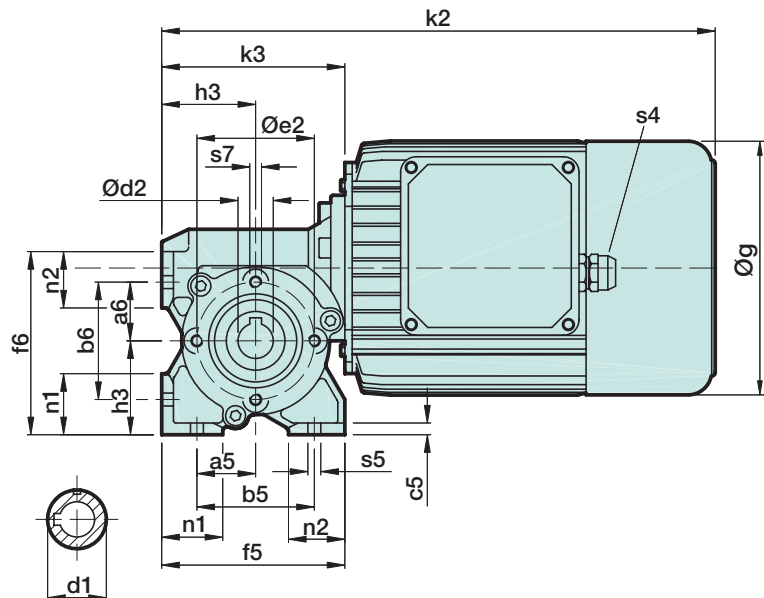
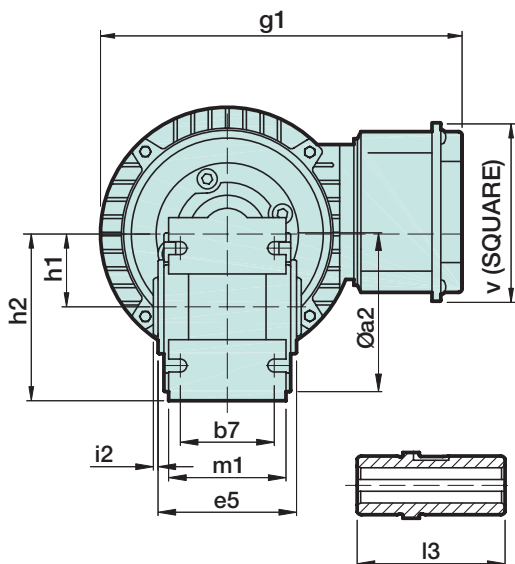


B14



MOTORS & SMALL GEARED MOTORS

Hollow shaft



B3

Model – Gearbox size	a	b	b ₂	c	d h6	e	f	f ₂	g	g ₁ *	g ₂	h	h ₁	i
MM50/M50-25	60	75	28 h11	2	9	78	94	7	98	125	62	75	25	48.5
MM56/M56-31	71	90	32 h8	9	10	90	112	3	110	148	–	87	31	61
MM63/M63-40	80	100	44 h10	10.8	15	105	125	3	123	162	–	103	40	70

Model – Gearbox size	k	l*	l ₁	m	n	q	q ₂	s	s ₃	s ₄	v*	Approx. weight kg
MM50/M50-25	205	–	27	19	19	50	73	6	6	Pg9	56	2.7
MM56/M56-31	235	20	30	22	26.5	60	90	6	11	Pg11	70	3.8
MM63/M63-40	258	27	43	26	30	83	123	7	12	Pg11	70	6.0

B14

Model – Gearbox size	a ₁	b ₁ j7	c ₁	d h6	e ₁	f ₁	g	g ₁ *	h ₁	k ₁	l*	l ₂	q ₁	q ₃	s ₁	s ₄	v*	Approx. Weight kg
MM50/M50-25	80	50	8	9	65	3	98	125	25	215	–	28	81	104	M5	Pg9	56	2.7
MM56/M56-31	100	60	9	10	80	3	110	148	31	246.5	20	30	91.5	121.5	M6	Pg11	70	3.8
MM63/M63-40	140	95	10	15	115	3	123	162	40	289.5	27	50	128	168	M8	Pg11	70	6.0

Hollow shaft

Model – Gearbox size	a ₂	a ₅	a ₆	b ₅	b ₆	b ₇	c ₅	d ₁	d ₂ H7	e ₂	e ₅	f ₅	f ₆	g	g ₁ *	h ₁
MM56/M56-31	–	25	25	50	50	40	5	25	15	50	54	78	78	110	148	31
MM63/M63-40	77	30	30	60	60	50	6	30	20	65	80	90	90	123	162	40

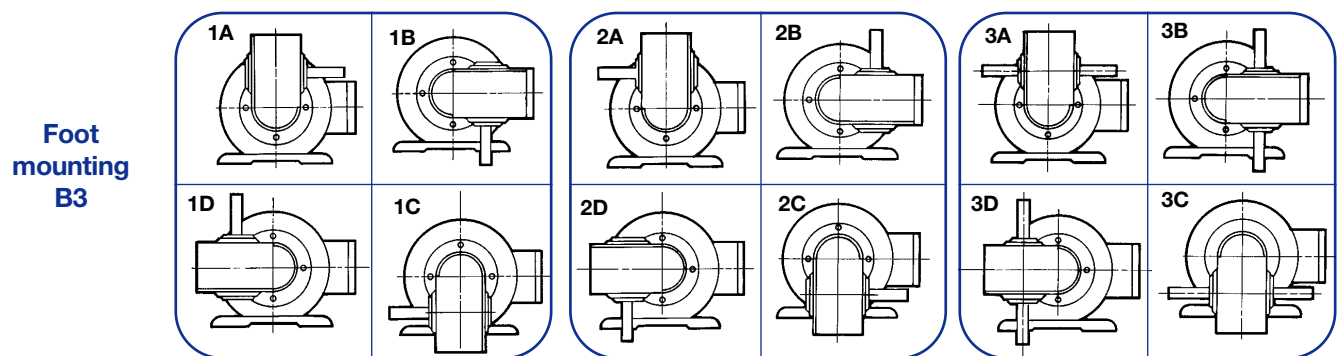
Model – Gearbox size	h ₂	h ₃	i ₂	k ₂	k ₃	l ₃	m ₁	n ₁	n ₂	s ₄	s ₅	s ₇	v*	Approx. Weight kg
MM56/M56-31	71	40	4.5	236.5	78	63	50	26	24	Pg11	5.5	M5	70	3.8
MM63/M63-40	88	48	1.5	267.5	96	83	59	30	24	Pg11	5.5	M6	70	6.0

* Brake motors – l is the extra length, dimension g₁ increases by 10mm and v becomes 92

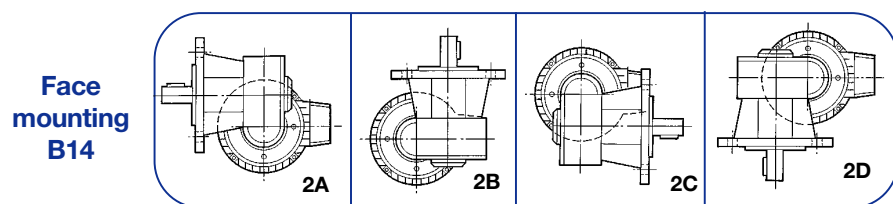
Shaft keys and keyways to BS4235 (DIN 6885/1)

Gearbox designs and handings

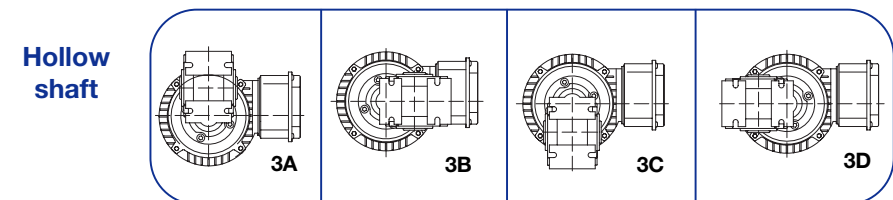
When ordering specify the gearbox handing required from the tables below.



Foot mounting
B3



Face mounting
B14



Hollow shaft

All B14 geared motors have design 2 gearboxes. Positions possible depend on geared motor size and are shown below.

Size	Single phase			Three phase			
	2A	2B	2C	2A	2B	2C	2D
45.2	✓	✓	✓	✓	✓	✓	✓
55.3	✓	x	x	✓	✓	x	✓
65.5	✓	x	x	✓	✓	✓	x

B14 gearbox output shafts are keywayed to BS4235 (DIN 6885/1)

See also the torque arm on page 325

Type SDS/SPL planetary geared motors

240-600W

This range combines the inverter optimised SDS flux vector motors with the SPL low cost planetary gearheads. It is ideal where compact and in-line variable speed drives are required. Those Stockline selections feature motors without feedback for open loop control. On request, motors with feedback, as on page 306, can be substituted. Where low output backlash is required, ask for a gearhead with higher specification.

For inverter use only



- Powers 240 to 600W**
- Outputs 23 to 757 r/min, up to 120Nm**
- Asynchronous motors inverter optimised for 2800 r/min, 100Hz**
- 10:1 speed range with vector inverters**
- Self-cooled without fan**
- Compact smooth-bodied planetary gearboxes**

Motors

Lenze motors are designed for maximum performance with inverter drives such as the Lenze vector range. They can be connected to either a 225V or 390V supply. Rated speed is 100Hz and the V/F code on the inverter must be set accordingly.

- IP54 enclosed, insulation class F.
- IC00 cooling category, without a fan, low noise.
- Suits ambients -15 to +40°C.
- Temperature switch (Klixon) fitted as standard.
- Maximum voltage amplitude 1500V, dv/dt ≥ 5kV/μs.

Motor rated currents at 225V (Delta connection):
 240W - 1.3A 400W - 2.1A 600W - 3.0A

Further SDS motor information is available on [page 306](#).

Inverters

Matched inverters for full torque operation over a 10:1 speed range without feedback are available from the Lenze vector range.

240W use vector 0.25kW

400W use vector 0.55kW

600W use vector 0.75kW

Further information is available on our inverter pages. Extended performance including 1000:1 speed range and full torque down to zero speed is possible using the Lenze 9321/9322 servo inverters and resolver feedback.

Ordering example

Qty 5 Stockline No. **N6-284 18X** SDS/SPL planetary geared motors, 240W, 28 r/min.

Gearboxes

The SPL gearheads are constructed in steel and they are lubricated for life with Kluber EASOFLAX grease. Gearbox efficiencies are:

- 1 stage 80%
- 2 stage 75%
- 3 stage 70%

Axial and radial loads

Maximum loads calculated at the mid point of the output shaft are:

Motor power		Axial force (N)	Radial force (N)
240W	1 stage	50	240
	2 stage	70	360
	3 stage	120	520
400 & 600W	1 stage	80	400
	2 stage	120	600
	3 stage	200	1000

Options

Other readily available options are:

- motors with encoder or resolver feedback
- motors with spring applied brakes for dynamic stopping and holding duties
- combinations of encoder/resolver and brake
- motor connection by plugs and sockets
- higher specification gearboxes for reduced backlash and reversing applications
- motors with integrated inverter into the terminal box
- IP55 enclosure
- KTY 83-110 temperature monitoring

For further information on the SDS motors and options available see [page 306](#).

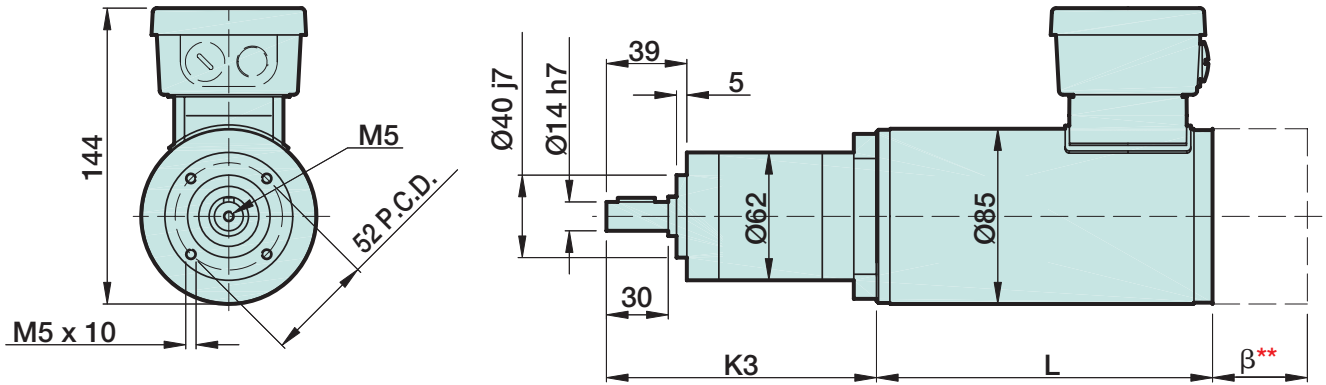
MOTORS & SMALL GEARED MOTORS

Type SDS/SPL

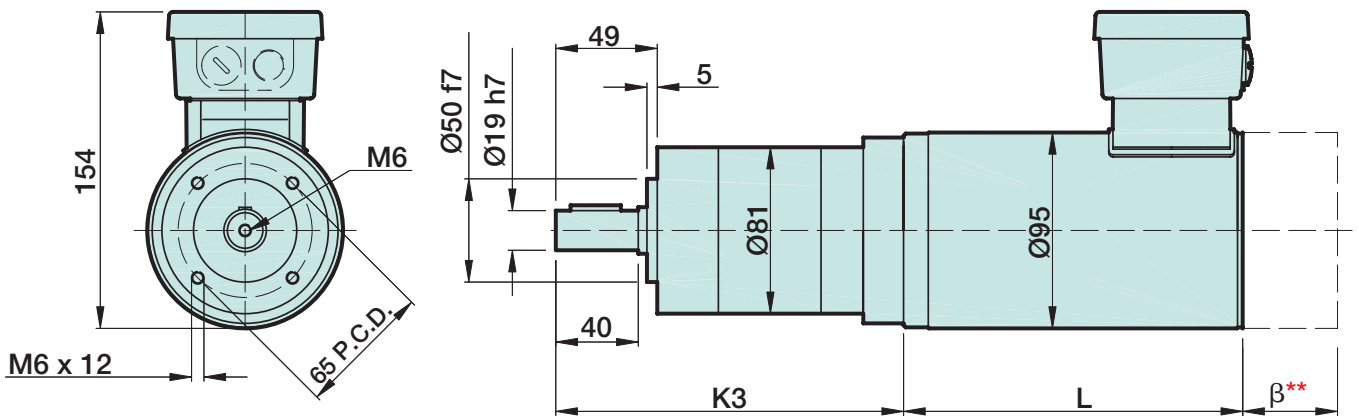
Output speed r/min	Gear ratio i	Number of stages	240W		400W		600W	
			Output torque Nm	Stockline No.	Output torque Nm	Stockline No.	Output torque Nm	Stockline No.
757	3.7	1	2.4	N6-274 36X	4.0	N6-285 625	5.62	N6-285 869
204	13.73	2	8.3	N6-337 36X	13.9	N6-285 720	19.6	N6-285 913
112	25.01		15.1	N6-276 967	25.3	N6-285 739	35.6	N6-285 921
80	34.97		21.2	N6-271 439	35.4	N6-285 755	49.8	N6-285 999
61	45.56		25*	N6-283 316	46.1	N6-285 763	60*	N6-286 011
55	50.89	3	28.8	N6-283 769	48.1	N6-285-771	67.7	N6-286 02X
39	71.16		40.3	N6-284 084	67.2	N6-285 78X	94.6	N6-286 038
28	99.5		50*	N6-284 18X	94.0	N6-285 850	120*	N6-286 054
23	123.97		50*	N6-284 285	117.2	N6-285 834	120*	N6-286 070

*Limited by gearbox capacity. On request the 240W motor can be fitted with a bigger gearbox.

240W



400 and 600W



** Extra length, if encoder, resolve or brake fitted $\beta=46$, if encoder/resolver and brake fitted $\beta=98$.

		240W	400W	600W
Dimension k3	1 stage	115	151	151
	2 stage	131	172	172
	3 stage	147	194	194
Dimension	L	163	168	208
Weight kg	1 stage	6.3	8.8	10.2
	2 stage	6.7	9.5	10.9
	3 stage	7.1	10.2	11.6

A range of 1 phase geared motors, 3 phase geared and brake motors that combines flexibility, economy and long life.

- 7 sizes of gearbox for torques up to 647Nm**
- Output speeds from 15 to 280 r/min**
- High torques from quality gearbox construction**
- Long life with design rating of 15000 hours**
- Single phase models with high starting torques**
- Three phase with standard or braked motors**

Other features

- smooth casing in aluminium minimises dirt traps
- maintenance-free, filled for life with synthetic oil AGIP TELIUM VSF (equivalent Shell TIVELA SC320)
- mount in any position (*but see comment on page 336*)
- geared motors supplied in silver grey finish
- hollow shaft mounting, optional torque arm, output flange, or feet (options supplied loose)
- single- and double-ended shafts available, also hollow shaft end cover
- special long life shaft seals

Motor speeds

- SW gearboxes suit inputs up to 3000 r/min with inverter operation or 2 pole motors
- standard selections feature 4 pole and 6 pole motors

Helical worm geared motors

Addition of a helical stage results in every economical geared motors with output speeds in the range 3-19 r/min, plus ex-stock delivery. The helical worm models type PC-SW are available on the Stockline CD or on our website.



Inverter variable speed



smd



8200 motec

SW geared motors can be supplied with matching Lenz inverters.

- smd inverters – low cost compact and simple to use. Ideal for conveyors and individual speed adjustable drives. Single and three phase models.
- 8200 vector – combining high performance with PID processing and fieldbus communications, 8200 vector is available to 2.2kW single phase and 0.55 to 4kW with 3 phase supply.
- 8200 motec – terminal box inverters with IP55 enclosure and all the features of 8200 vector. Saves on panel space, cabling and installation time. Supply 1 phase 180-264V, 0.25-0.37kW Supply 3 phase 320-550V, 0.55-4.0kW

MOTORS & SMALL GEARED MOTORS

Radial loads

• Where belts, sprockets or gears are fitted to the optional gearbox output shafts, consideration of radial loads is required. This depends on the transmitted torque and the type/size of transmission element where:

$$\text{Radial load} = 2000 \cdot \frac{M_2 \cdot fz}{dw}$$

where M_2 = output torque in Nm
 dw = effective diameter of sprocket or gear
 fz = factor for type of element

- Gears $fz = 1.1$
- Chainwheels $fz = 1.4$
- V belts $fz = 1.7$
- Flatbelts $fz = 2.5$

Gear ratio	Gearbox size						
	30	40	50	63	75	90	105
5	597	1149	1577	-	-	-	-
10	752	1447	1987	2597	3065	3391	4285
20	948	1824	2503	3272	3862	4273	5399
30	1085	2087	2865	3745	4421	4891	6181
50	1286	2475	3397	4440	5241	5799	7328
60	1367	2630	3610	4719	5569	6163	7787

Gearbox radial load capacity in N based on input speed of 1400 r/min. Higher speeds reduce load capacity.

- radial load capacities are rated for forces acting halfway along the output shaft. For other load positions the capacities should be adjusted.

SW aluminium worm geared motors

Motors

- Stockline 3 phase motors are enclosed to IP55 with class F insulation. Voltage range:
230/400 ±10%/3/50
255/440 ±10%/3/60
Operation at 60 Hz changes speeds and torque data, ask for details.
- Stockline 3 phase brake motors are as above except with the Lenze BFK458 spring applied brake for holding and dynamic duties.
Speak to us for manual release and for switching with inverter drives.
- Stockline 1 phase high starting torque motors are of cap start/cap run design with enclosure to IP55 and suiting voltages 220/240 1/50.
- also available on request are other voltages, permanent capacitor, flameproof, d.c., servo, other speeds, and motors with tachos or encoders.

Service factors

- SW gearboxes are rated for 15 000 hours operation with service factor = 1. On request we can calculate life for different loads.
- service factors to suit different applications can be calculated from the tables below:

Type of load	hours running per day			
	<2	2-8	9-16	>16
Uniform	0.8	1	1.25	1.5
Medium shock	1	1.25	1.5	1.8
Heavy shock	1.25	1.5	2	2.4

	number of starts per hours				
	<10	10-30	31-60	61-120	>120
1	1.15	1.2	1.3	1.5	

Ordering

Data required:

- quantity and type description
- motor and gearbox types
- Stockline number
- terminal box position
- optional extras with Stockline numbers

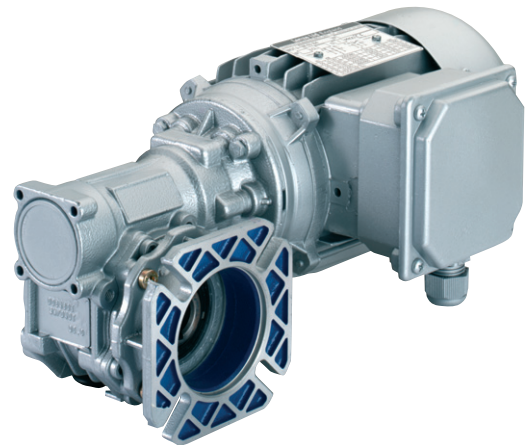
LOWER SPEEDS

NEW PC-SW helical worm range

SW aluminium gearboxes are now available with an additional stage making the PC-SW range of helical worm geared motors.

- lower output speeds 3-19 r/min
- motor powers 90W to 750W
- output torques up to 516Nm

[View the product range](#)



Other gearbox options

Available on request:

- alternative hollow shaft sizes:

gearbox size	40	50	63	75	90	105
standard bore (mm)	18	25	25	28	35	42
alternative bore(mm)	19	24	28	35	38	-

Output shafts for alternative bores not available.

- free shaft input and second worm shaft output
- double worm gearbox assemblies for output speeds down to 1 r/min or lower

Gearbox efficiency

- running efficiencies are achieved after a short period or running-in
- typical efficiency figures vary with the gear ratio

i = 5 - 10	η ≥ 80%
i = 15 - 40	η = 60 - 80%
i = 50 - 60	η = 50 - 70%

Smaller sizes have efficiencies lower in the stated loads. More accurate data is available on request.

- starting efficiencies are lower by about 25%, i.e. 80% efficiency becomes 55%.

Ordering example

- 5 off SW 40/71 - 4/30-18
- 3 phase motor 0.25 kW
- Stockline no. **G5-834 221**
- terminal box position 2
- with feet **G4-238 616**
single shaft **G4-885 631**
shaft cover **G4-885 528**

SW aluminium worm geared motors

MOTORS & SMALL GEARED MOTORS

Speed r/min	Torque Nm	Gearbox service factor	Ratio	Type description	3 phase	3 phase braked	1 phase
90W							
280	2.7	6.7	5	SW30/56-4/5-14	G5-321 538	G5-321 676	
187	3.9	4.6	7.5	SW30/56-4/7-14	G5-321 52X	G5-321 668	
140	5.0	3.6	10	SW30/56-4/10-14	G5-321 503	G5-287 390	
94	7.1	2.5	15	SW30/56-4/15-14	G5-321 483	G5-321 609	
70	9.0	2.0	20	SW30/56-4/20-14	G5-321 475	G5-321 597	
56	10	2.0	25	SW30/56-4/25-14	G5-321 467	G5-321 589	
47	12	1.7	30	SW30/56-4/30-14	G5-321 459	G5-321 570	Not available
35	14	1.2	40	SW30/56-4/40-14	G5-321 440	G5-321 562	
30	17	1.2	30	SW30/63-6/30-14	G5-832 452		
30	19	2.6	30	SW40/63-6/30-18	G5-834 071		
22	21	1.0	40	SW30/63-6/40-14	G5-834 118		
22	24	1.9	40	SW40/63-6/40-18	G5-834 300		
18	27	1.5	50	SW40/63-6/50-18	G5-834 319		
15	31	1.3	60	SW40/63-6/60-18	G5-834 280		
130W							
280	4	5.1	5	SW30/63-4/5-14	G5-879 628	G5-879 486	
187	5	3.4	7.5	SW30/63-4/7-14	G5-879 636	G5-879 494	
140	7	2.7	10	SW30/63-4/10-14	G5-879 644	G5-879 506	
94	9	1.9	15	SW30/63-4/15-14	G5-879 652	G5-879 514	
70	12	1.5	20	SW30/63-4/20-14	G5-879 660	G5-879 522	
56	14	1.5	25	SW30/63-4/25-14	G5-879 679	G5-879 530	
47	16	1.3	30	SW30/63-4/30-14	G5-879 687	G5-879 549	Not available
47	17	2.6	30	SW40/63-4/30-18	G5-879 695	G5-879 557	
35	21	1.9	40	SW40/63-4/40-18	G5-832 515	G5-840 314	
28	25	1.5	50	SW40/63-4/50-18	G5-833 878	G5-840 330	
23	28	1.3	60	SW40/63-4/60-18	G5-833 973	G5-840 349	
23	29	2.3	60	SW50/63-4/60-25	G5-879 707	G5-879 565	
15	42	1.7	60	SW50/63-6/60-25	G5-879 731	G5-879 59X	
180W							
280	5	3.4	5	SW30/63-4/5-14	G5-129 951	G5-143 082	G5-118 696
187	8	2.3	7.5	SW30/63-4/7-14	G5-129 96X	G5-144 012	G5-128 883
140	10	1.8	10	SW30/63-4/10-14	G5-132 273	G5-144 205	G5-128 938
94	14	1.3	15	SW30/63-4/15-14	G5-132 884	G5-145 123	G5-129 25
70	18	1.0	20	SW30/63-4/20-14	G5-132 892	G5-145 245	G5-129 848
70	19	2.0	20	SW40/63-4/20-18	G5-335 077	G5-111 59X	G5-111 695
56	21	1.0	25	SW30/63-4/25-14	G5-135 634	G5-145 60	G5-132 281
56	23	1.7	25	SW40/63-4/25-18	G5-338 671	G5-111 679	G5-116 360
47	26	1.7	30	SW40/63-4/30-18	G5-834 047	G5-840 156	G5-835 332
35	32	1.3	40	SW40/63-4/40-18	G5-834 063	G5-840 251	G5-912 18
28	38	1.0	50	SW40/63-4/50-18	G5-834 08X	G5-840 286	G5-835 375
28	39	1.9	50	SW50/63-4/50-25	G5-135 756	G5-158 686	G5-835 391
24	43	1.6	60	SW50/63-4/60-25	G5-834 10X	G5-840 294	G5-835 403
18	56	1.4	50	SW50/71-6/50-25	G5-138 18X	G5-151 642	-
15	63	1.1	60	SW50/71-6/60-25	G5-142 602	G5-156 519	-

SW aluminium worm geared motors

Speed r/min	Torque Nm	Gearbox service factor	Ratio	Type description	3 phase	3 phase braked	1 phase
0.25kW							
280	8	4.5	5	SW40/71-4/5-18	G5-834 126	G5-840 452	
187	11	3.6	7.5	SW40/71-4/7-18	G5-834 142	G5-840 479	
140	14	2.8	10	SW40/71-4/10-18	G5-834 169	G5-840 495	
94	21	1.9	15	SW40/71-4/15-18	G5-834 185	G5-840 515	
70	27	1.5	20	SW40/71-4/20-18	G5-834 213	G5-840 531	
56	32	1.2	25	SW40/71-4/25-18	G5-226 818	G5-238 273	
56	32	2.2	25	SW50/71-4/25-25	G5-228 051	G5-840 574	Not available
47	36	1.3	30	SW40/71-4/30-18	G5-834 221	G5-840 558	
47	37	2.3	30	SW50/71-4/30-25	G5-834 256	G5-840 590	
35	46	1.7	40	SW50/71-4/40-25	G5-229 091	G5-840 582	
28	54	1.4	50	SW50/71-4/50-25	G5-834 272	G5-840 602	
24	60	1.1	60	SW50/71-4/60-25	G5-834 299	G5-840 629	
24	63	2.0	60	SW63/71-4/60-25	G5-231 753	G5-237 450	
0.37kW							
280	11	3.0	5	SW40/71-4/5-18	G5-834 343	G5-840 67X	G7-835 411
187	16	2.4	7.5	SW40/71-4/7-18	G5-834 36X	G5-840 696	G5-835 438
140	21	1.9	10	SW40/71-4/10-18	G5-834 386	G5-840 716	G5-835 454
94	31	1.3	15	SW40/71-4/15-18	G5-834 406	G5-840 732	G5-835 470
94	31	2.4	15	SW50/71-4/15-25	G5-834 414	G5-840 767	G5-133 439
70	39	1.0	20	SW40/71-4/20-18	G5-834 430	G5-840 759	G5-835 497
70	40	1.8	20	SW50/71-4/20-25	G5-834 481	G5-840 791	G5-135 642
56	48	1.5	25	SW50/71-4/25-25	G5-834 449	G5-840 775	G5-136 970
47	55	1.5	30	SW50/71-4/30-25	G5-834 457	G5-840 783	G5-835 525
35	68	1.1	40	SW50/71-4/40-25	G5-834 473	G5-840 803	G5-835 541
35	71	2.1	40	SW63/71-4/40-25	G5-83451X	G5-840 740	G5-139 633
28	83	1.6	50	SW63/71-4/50-25	G5-834 501	G5-840 862	G5-142 39X
24	94	1.4	60	SW63/71-4/60-25	G5-834 536	G5-840 838	G5-835 576
18	120	1.2	50	SW63/80-6/50-25	G5-834 552	G5-840 889	-
15	137	1.0	60	SW63/80-6/60-25	G5-834 544	G5-840 870	-
15	144	1.5	60	SW75/80-6/60-28	G5-240 96X	G5-246 005	-
0.55kW							
280	17	3.7	5	SW50/80-4/5-25	G5-834 579	G5-840 897	G5-293 440
187	25	2.9	7.5	SW50/80-4/7-25	G5-834 595	G5-840 925	G5-293 842
140	32	2.2	10	SW50/80-4/10-25	G5-834 615	G5-840 95X	G5-295 37
94	46	1.6	15	SW50/80-4/15-25	G5-834 666	G5-840 976	G5-295 445
70	59	1.2	20	SW50/80-4/20-25	G5-834 682	G5-840 984	G5-295 453
70	61	2.2	20	SW63/80-4/20-25	G5-834 710	G5-841 007	G5-295 75X
56	71	1.0	25	SW50/80-4/25-25	G5-834 690	G5-840 992	G5-296 398
56	73	1.8	25	SW63/80-4/25-25	G5-834 737	G5-841 031	G5-297 632
47	81	1.0	30	SW50/80-4/30-25	G5-834 702	G5-841 015	G5-298 672
47	83	1.9	30	SW63/80-4/30-25	G5-834 753	G5-841 04X	G5-300 63
35	105	1.4	40	SW63/80-4/40-25	G5-834 77X	G5-841 023	G5-311 58
28	124	1.1	50	SW63/80-4/50-25	G5-834 832	G5-841 082	G5-320 33
28	129	1.6	50	SW75/80-4/50-28	G5-246 616	G5-841 058	G5-321 55
23	146	1.4	60	SW75/80-4/60-28	G5-248 077	G5-841 074	G5-324 19
15	224	1.6	60	SW90/80-6/60-35	G5-252 839	G5-257 153	-

SW aluminium worm geared motors

MOTORS & SMALL GEARED MOTORS

Speed r/min	Torque Nm	Gearbox service factor	Ratio	Type description	3 phase	3 phase braked	1 phase
0.75kW							
280	23	2.7	5	SW50/80-4/5-25	G5-834 867	G5-841 129	G5-835 655
187	34	2.1	7.5	SW50/80-4/7-25	G5-834 883	G5-841 145	G5-835 68X
140	44	1.6	10	SW50/80-4/10-25	G5-834 903	G5-841 161	G5-835 70X
94	63	1.2	15	SW50/80-4/15-25	G5-834 92X	G5-841 188	G5-835 726
94	64	1.2	15	SW63/80-4/15-25	G5-834 911	G5-841 196	G5-157 725
70	83	1.6	20	SW63/80-4/20-25	G5-834 946	G5-841 208	G5-158 915
56	100	1.3	25	SW63/80-4/25-25	G5-834 938	G5-841 216	G5-188 742
56	102	2.0	25	SW75/80-4/25-28	G5-834 962	G5-841 346	G5-189 478
47	114	1.4	30	SW63/80-4/30-25	G5-834 954	G5-841 32X	G5-835 769
47	117	2.0	30	SW75/80-4/30-28	G5-834 989	G5-841 362	G5-189 916
35	143	1.0	40	SW63/80-4/40-25	G5-834 970	G5-841 338	G5-835 785
35	147	1.5	40	SW75/80-4/40-28	G5-261 398	G5-841 354	G5-189 924
28	177	1.2	50	SW75/80-4/50-28	G5-835 001	G5-264 085	G5-194 338
28	184	1.8	50	SW90/80-4/50-35	G5-261 966	G5-264 105	G5-195 481
23	200	1.0	60	SW75/80-4/60-28	G5-834 997	G5-264 251	G5-198 47
23	212	1.5	60	SW90/80-4/60-35	G5-262 683	G5-264 26X	G5-198 78X
15	306	1.1	60	SW90/90-6/60-35	G5-264 077	G5-264 294	-
1.1kW							
187	50	2.6	7.5	SW63/90S-4/7-25	G5-835 01X	G5-841 370	G5-835 864
140	65	2.0	10	SW63/90S-4/10-25	G5-835 028	G5-841 389	G5-835 880
94	93	1.5	15	SW63/90S-4/15-25	G5-835 036	G5-841 397	G5-835 900
70	122	1.1	20	SW63/90S-4/20-25	G5-835 044	G5-841 409	G5-835 927
70	123	1.7	20	SW75/90S-4/20-28	G5-835 052	G5-841 417	G5-207 16
56	150	1.3	25	SW75/90S-4/25-28	G5-835 060	G5-841 425	G5-216 462
47	167	1.0	30	SW63/90S-4/30-25	G5-835 079	G5-841 433	G5-835 951
47	171	1.3	30	SW75/90S-4/30-28	G5-835 087	G5-841 441	G5-217 285
35	216	1.0	40	SW75/90S-4/40-28	G5-835 095	G5-841 45X	G5-217 644
35	225	1.6	40	SW90/90S-4/40-35	G5-835 107	G5-841 468	G5-218 964
28	270	1.3	50	SW90/90S-4/50-35	G5-835 115	G5-841 476	G5-224 718
23	311	1.0	60	SW90/90S-4/60-35	G5-835 123	G5-841 484	G5-225 723
18	397	1.0	50	SW90/90L-6/50-35	G5-264 574	G5-264 637	-
1.5kW							
187	68	1.9	7.5	SW63/90L-4/7-25	G5-835 131	G5-841 504	G5-835 994
140	89	1.5	10	SW63/90L-4/10-25	G5-835 14X	G5-841 512	G5-836 017
94	127	1.1	15	SW63/90L-4/15-25	G5-835 158	G5-841 520	G5-836 033
94	130	1.5	15	SW75/90L-4/15-28	G5-835 166	G5-841 539	G5-228 733
70	168	1.3	20	SW75/90L-4/20-28	G5-835 174	G5-841 547	G5-235 247
70	172	2.1	20	SW90/90L-4/20-35	G5-835 182	G5-841 555	G5-238 797
56	205	1.0	25	SW75/90L-4/25-28	G5-835 190	G5-841 563	G5-239 471
56	210	1.6	25	SW90/90L-4/25-35	G5-835 202	G5-841 571	G5-244 51
47	233	1.0	30	SW75/90L-4/30-28	G5-835 229	G5-841 598	G5-247 881
47	239	1.7	30	SW90/90L-4/30-35	G5-835 237	G5-841 60X	G5-249 705
35	307	1.2	40	SW90/90L-4/40-35	G5-267 462	G5-267 517	G5-251 421
30	358	1.3	30	SW90/100-6/30-35	G5-267 470	G5-268 46X	-

SW aluminium worm geared motors

Speed r/min	Torque Nm	Gearbox service factor	Ratio	Type description	3 phase	3 phase braked	1 phase
1.8kW							
187	81	1.6	7.5	SW63/90L-4/7-25	G5-835 210	G5-841 618	
140	107	1.2	10	SW63/90L-4/10-25	G5-835 245	G5-841 626	
140	108	1.8	10	SW75/90L-4/10-28	G5-835 253	G5-841 634	
93	157	1.3	15	SW75/90L-4/15-28	G5-835 261	G5-841 642	
70	201	1.0	20	SW75/90L-4/20-28	G5-835 27X	G5-841 650	On request
70	206	1.7	20	SW90/90L-4/20-35	G5-835 288	G5-841 685	
56	252	1.4	25	SW90/90L-4/25-35	G5-835 296	G5-841 669	
47	287	1.4	30	SW90/90L-4/30-35	G5-835 308	G5-841 677	
35	368	1.0	40	SW90/90L-4/40-35	G5-105 003	G5-120 826	
2.2kW							
187	100	1.8	7.5	SW75/100-4/7-28	G5-269 7X	G5-268 478	G5-341 281
140	132	1.5	10	SW75/100-4/10-28	G5-270 021	G5-268 557	G5-345 77X
93	191	1.0	15	SW75/100-4/15-28	G5-270 072	G5-268 896	G5-345 788
93	194	1.9	15	SW90/100-4/15-35	G5-270 249	G5-268 932	G5-346 001
70	252	1.4	20	SW90/100-4/20-35	G5-270 588	G5-268 975	G5-349 464
56	308	1.1	25	SW90/100-4/25-35	G5-271 037	G5-269 006	G5-351 349
56	315	1.9	25	SW105/100-4/25-42	G5-964 808	G5-964 816	G5-965 079
47	351	1.2	30	SW90/100-4/30-35	G5-271 159	G5-269 633	G5-353 623
47	356	1.8	30	SW105/100-4/30-42	G5-964 832	G5-964 840	G5-965 087
35	468	1.3	40	SW105/100-4/40-42	G5-964 867	G5-964 970	G5-965 095
28	563	1.1	50	SW105/100-4/50-42	G5-964 875	G5-964 989	G5-965 107
3.0kW							
187	137	1.4	7.5	SW75/100-4/7-28	G5-271 167	G5-282 169	-
140	180	1.1	10	SW75/100-4/10-28	G5-276 97	G5-282 867	-
140	182	1.7	10	SW90/100-4/10-35	G5-278 184	G5-283 612	-
93	264	1.4	15	SW90/100-4/15-35	G5-278 421	G5-283 750	-
70	344	1.0	20	SW90/100-4/20-35	G5-281 153	G5-283 864	-
70	348	1.6	20	SW105/100-4/20-42	G5-964 883	G5-964 997	-
56	430	1.4	25	SW105/100-4/25-42	G5-964 891	G5-965 001	-
47	485	1.3	30	SW105/100-4/30-42	G5-964 911	G5-965 01X	-
35	638	1.0	40	SW105/100-4/40-42	G5-964 92X	G5-965 028	-
4.0kW							
187	184	1.6	7.5	SW90/112-4/7-35	G5-964 702	G5-964 710	-
140	243	1.3	10	SW90/112-4/10-35	G5-964 729	G5-964 737	-
93	352	1.6	15	SW105/112-4/15-42	G5-964 938	G5-965 036	-
70	464	1.2	20	SW105/112-4/20-42	G5-964 946	G5-965 044	-
56	573	1.0	25	SW105/112-4/25-42	G5-964 954	G5-965 052	-
47	647	1.0	30	SW105/112-4/30-42	G5-964 962	G5-965 060	-

LOWER SPEEDS

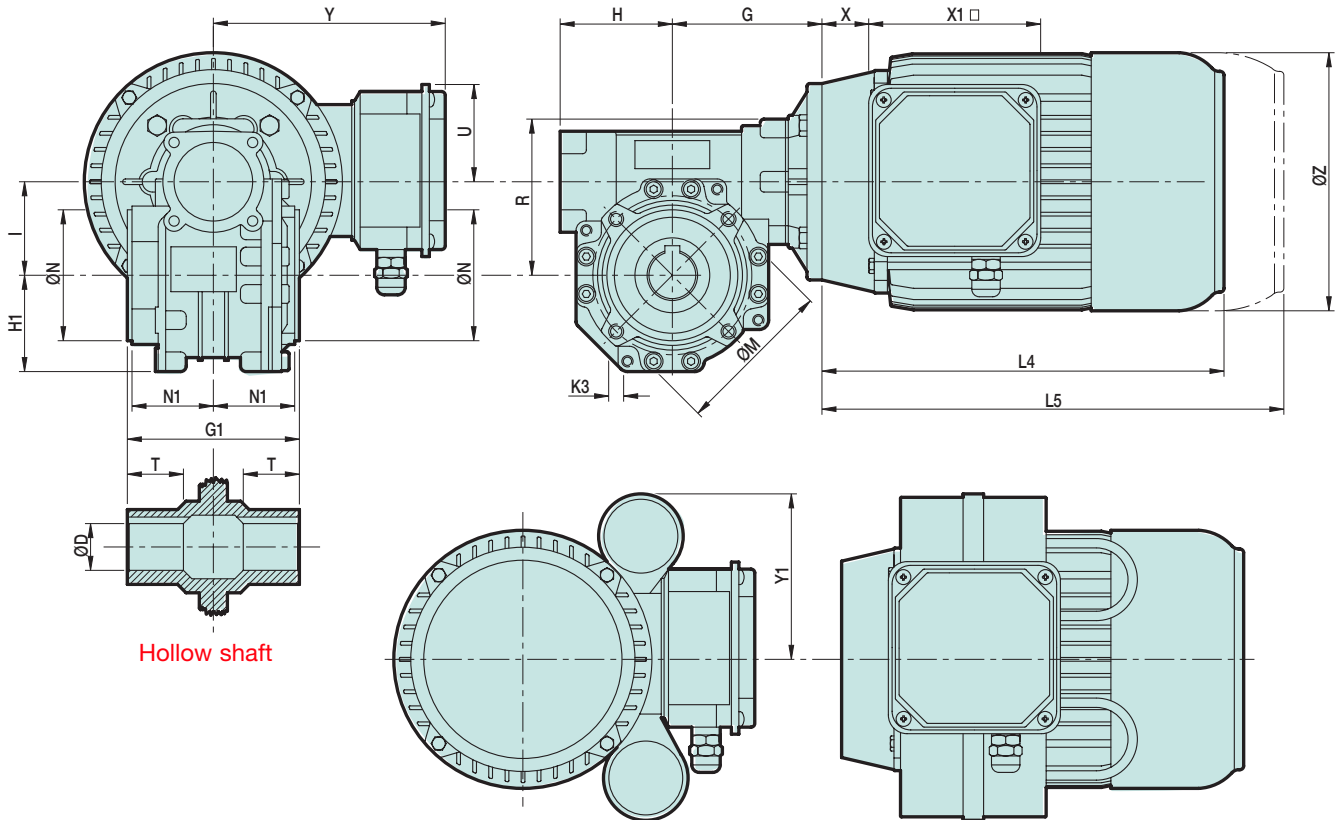
NEW PC-SW helical worm range

SW aluminium gearboxes are now available with an additional stage making the PC-SW range of helical worm geared motors.

- lower output speeds 3-18 r/min
- motor powers 90W to 750W
- output torques up to 516Nm

[View the product range](#)

SW aluminium worm geared motors



Hollow shaft

Single phase motor – capacitor details

MOTORS & SMALL GEARED MOTORS

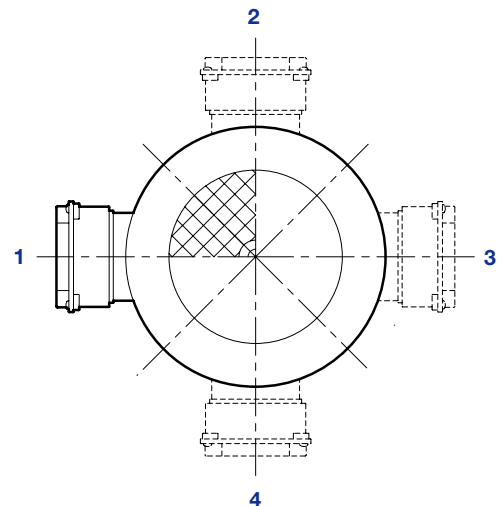
Gearbox size	D H8	G	G1	H	H1	I	K3	M	N h8	N1	R	T	Weight gearbox only
30	14	55	63	40	38	30	M6x11(4)**	65	55	29	57	21	1.1
40	18(19)*	70	78	50	42	40	M6x10(4)	75	60	36.5	70	26	2.1
50	25(24)*	80	92	60	52	50	M8x10(4)	85	70	43.5	84	30	3.0
63	25(28)*	95	112	72	66	63	M8x14(8)	95	80	53	102	36	5.6
75	28(35)*	112.5	120	86	80	75	M8x16(8)	115	95	57	117	40	8.1
90	35(38)*	129.5	140	103	97	90	M10x18(8)	130	110	67	133	45	11.7
105	42	160	155	127.5	115	110	M10x18(8)	165	130	74	166	50	26

*Alternative hollow shaft option, available on request. ** 4 off holes K3 are on vertical and horizontal axes.

Motor frame	L4	L5**	u	x	x1	y	y1	z	Weight kg motor only
56	167	193	58	30	92	110	75	110	3.2
63	193	215	58	25	92	115	90	123	4.7
71	215	246	52	25	92	124	90	138	7.5
80	235	277	60	30	108	141	95	156	12.2
90S	250	292	60	33	108	146	90	176	16.7
90L	275	316	60	33	108	146	90	176	18
100	305	370	60	40	108	157	135	194	26.5
112	325	406	60	45	108	170	-	220	29

** L5 is length for brake motor

Motor terminal box positions



As viewed from rear of motor, position 1 is standard

Mounting positions

SW worm geared motors are supplied lubricated for life with synthetic oil, AGIP TELIUM VSF320. They can be mounted in any position, except

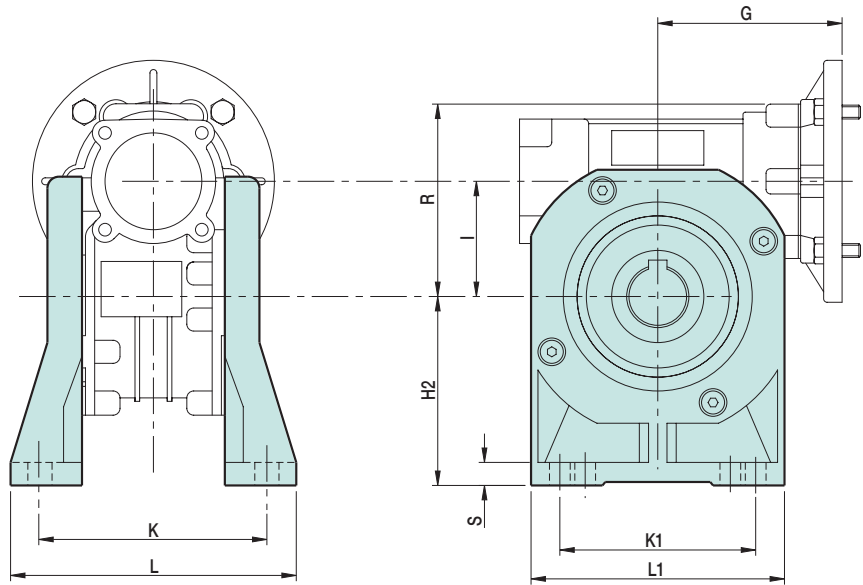
sizes 75 to 105 with motor vertical > ask us for a change of oil fill

SW aluminium worm geared motors

Feet

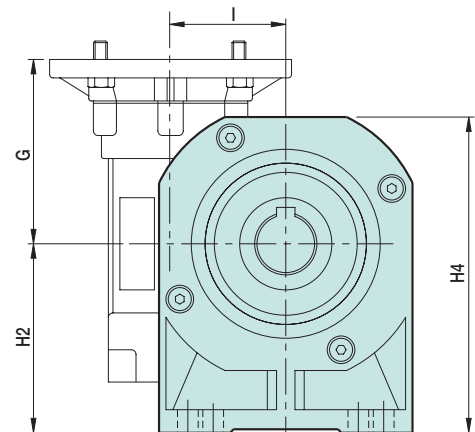
SW gearbox feet are supplied loose complete with fixing screws.

They can be fitted in any of three positions. With the wormshaft below, note that the gearbox body is sometimes below the feet.



Conventional B3 foot mounting

Gearbox size	G	H2	H4	H6	K	K1
30	55	55	97	1.2	66	50xø6.5
40	70	72	117	-2	81	52xø8.5
50	80	82	137	2	98.5	63xø8.5
63	95	100	170	2	111	95xø10.5
75	112.5	115	196	2	115	120xø11
90	129.5	142	242	-9	146(140)	140xø11
105	160	172	293.5	-6	181(160)	200xø13



Mounting with wormshaft vertical

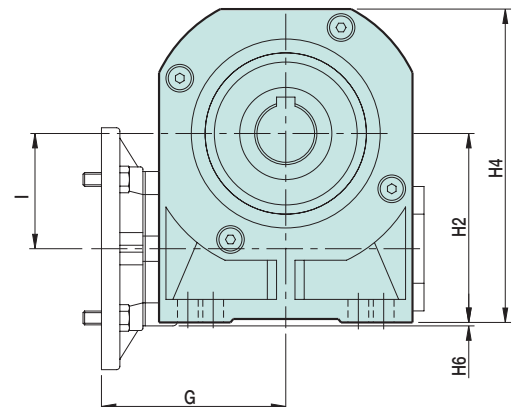
Gearbox size	I	L	L1	R	S	Stockline No. for pair of feet
30	30	80	80	57	7	G4-885 098
40	40	98	90	70	9	G4-238 616
50	50	124	110	81	10	G4-238 640
63	63	138	140	102	10	G4-885 142
75	75	142	160	117	12	G4-885 150
90	90	180	200	133	14	G4-885 169
105	110	208	250	166	20	G4-964 615

Ordering example

3 off SW75/90L-4/15-28, 3 phase brake motor 1.8kW

Stockline No. **G5-841 642**

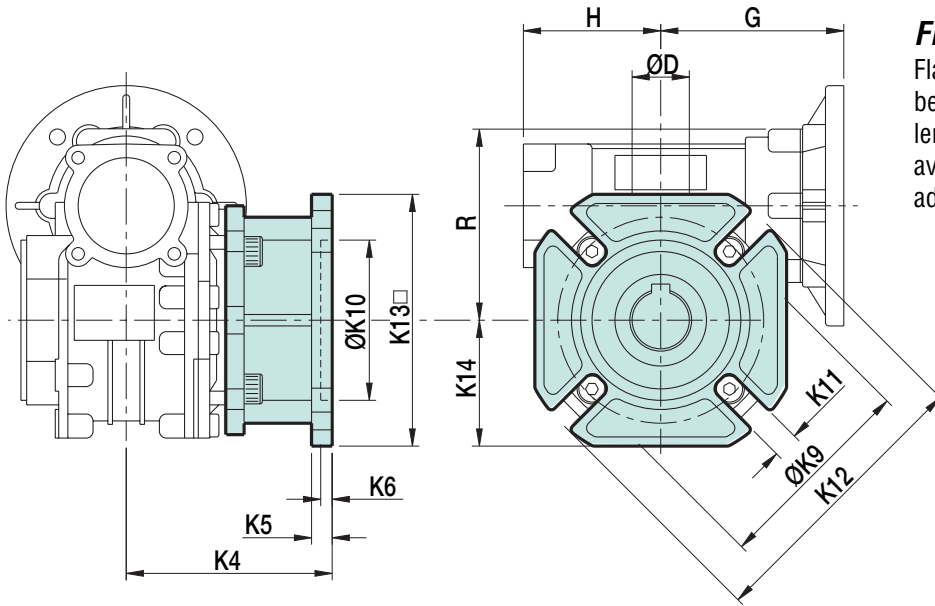
Terminal box position 1, with feet **G4-885 150**



Mounting with worm shaft below (observe dimension H6)

MOTORS & SMALL GEARED MOTORS

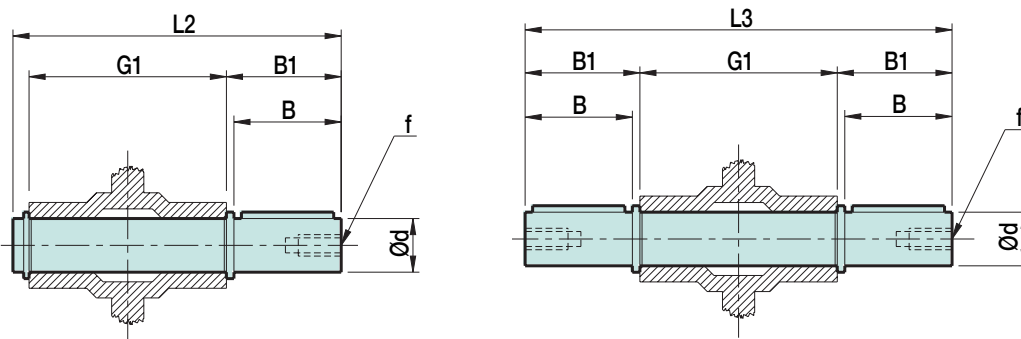
SW aluminium worm geared motors



Flanges

Flanges are supplied loose and can be fitted to either side. Two flange lengths, long and short, are available. See previous pages for additional dimensions.

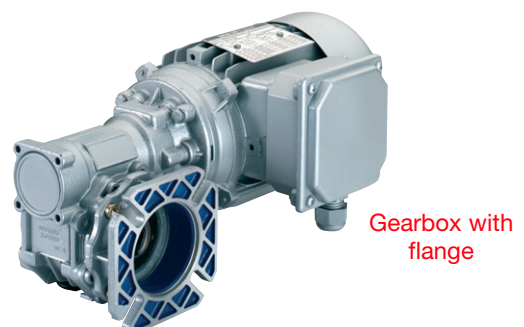
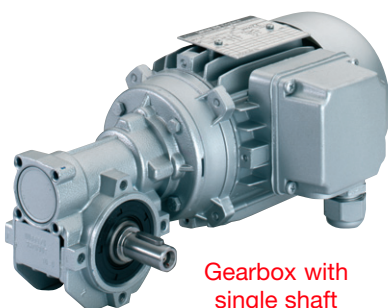
Gearbox size	K5	K6	K9	K10 H8	K11 (4 off)	K12	K13	K14	Stockline Nos.			
									K4	short	K4 long	
30	6	4	68	50	6.5	80	70	35	54.5	G4-885 682	-	-
40	7	4	75	60	9	110	95	47.5	67	G4-238 596	97	G4-885 729
50	9	5	85	70	11	125	110	55	90	G4-238 608	120	G4-885 737
63	10	6	150	115	11	180	142	71	82	G4-885 690	112	G4-885 745
75	13	6	165	130	14	200	170	85	111	G4-885 702	-	-
90	13	6	175	152	14	210	200	100	111	G4-885 710	-	-
105	15	6	230	170	ø14(8off)	230	260	130	131	G4-965 123	-	-



Shafts

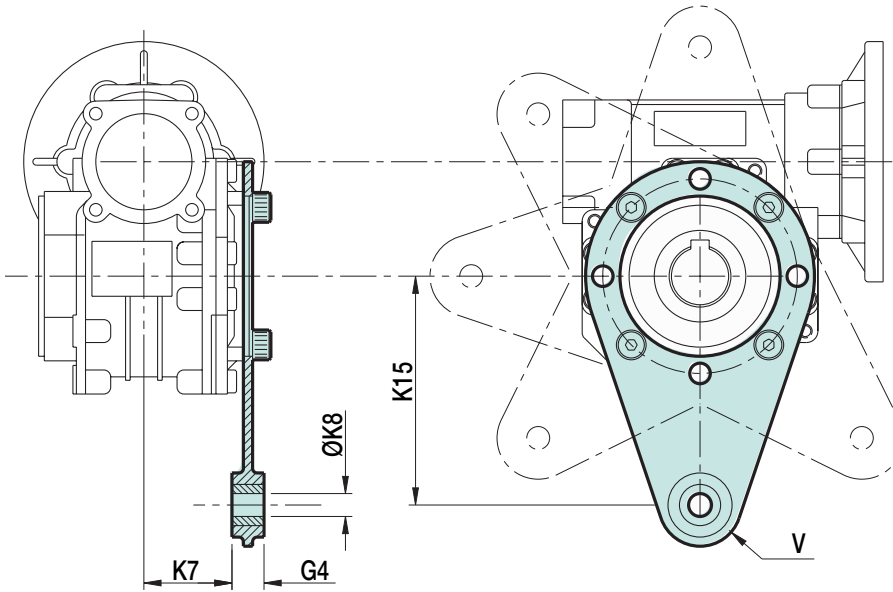
Single and double male shafts are supplied loose with keys, circlips and washers.

Gearbox size	d	B	B1	G1	f	L2	L3	Stockline Nos.	
								single	double
30	14g6	30	32.5	63	M6	102	128	G4-885 623	G4-885 587
40	18h6	40	43	78	M6	128	164	G4-885 631	G4-238 553
50	25h6	50	53.5	92	M10	153	199	G4-885 64X	G4-238 561
63	25h6	50	53.5	112	M10	173	219	G4-885 658	G4-885 595
75	28h6	60	63.5	120	M10	192	247	G4-885 666	G4-885 607
90	35h6	80	84.5	140	M12	234	309	G4-885 674	G4-885 615
105	42h6	80	84.5	155	M16	249	324	G4-965 14X	G4-965 166



MOTORS & SMALL GEARED MOTORS

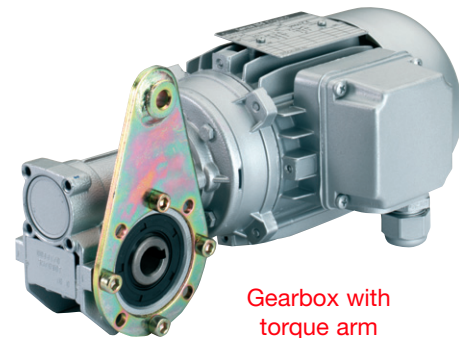
SW aluminium worm geared motors



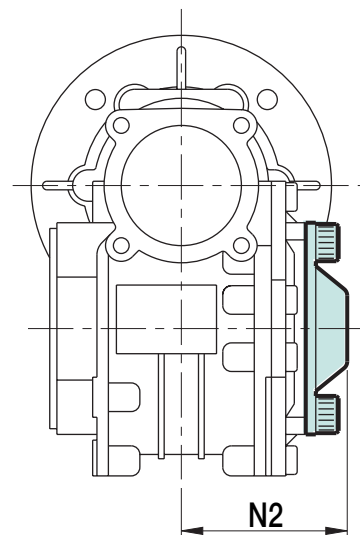
Torque arms

Supplied loose with fixing bolts, the torque arm can be fitted to either side of the gearbox and in any of six positions.

Gearbox size	G4	K7	K8	K15	V	Stockline No.
30	14	24	8	85	15	G4-885 473
40	14	31.5	10	100	18	G4-238 57X
50	14	38.5	10	100	18	G4-238 588
63	14	49	10	150	18	G4-885 481
75	25	47.5	20	200	30	G4-885 49X
90	25	57.5	20	200	30	G4-885 501
105	30	62	25	250	35	G4-965 174



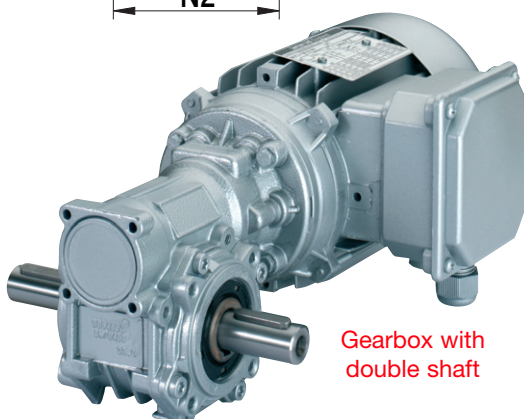
Gearbox with torque arm



Shaft covers

These covers fit to either side of the gearbox.

Gearbox size	N2	Stockline No.
30	38	G4-885 51X
40	50	G4-885 528
50	58	G4-885 536
63	69	G4-885 544
75	74	G4-885 552
90	86	G4-885 579
105	94	G4-965 182



Gearbox with double shaft



Gearbox with feet

Lenze d.c. permanent magnet light duty worm geared motors

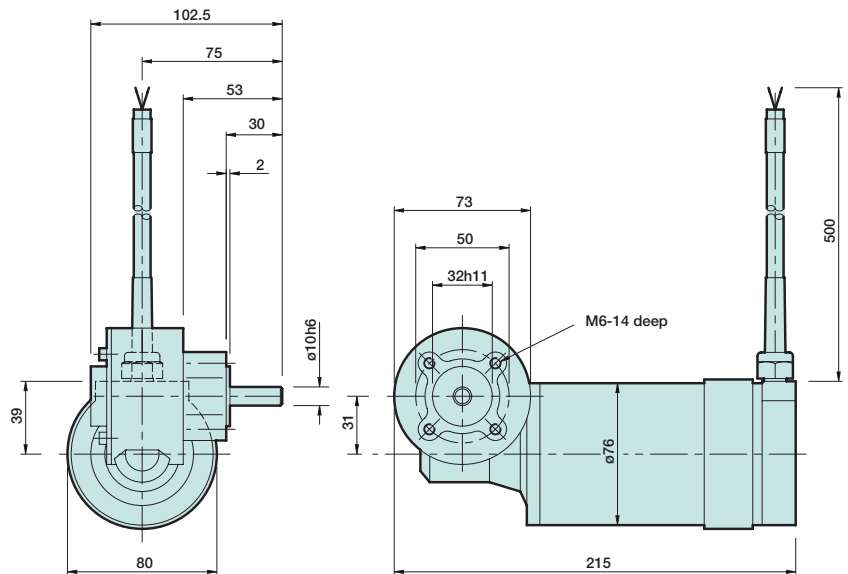
Type 171

Compact design
Totally enclosed construction (IP55)
Rigid mounting position B14
Sealed for life reduction gearbox
Long brush life
Minimal maintenance
Good safety margin against demagnetisation
Simple 4-point gearbox mounting
180V and 24V



General description

The light duty worm geared motor type 13.171.52 is very compact. The permanent magnet motor is designed to withstand direct connection to its rated voltage without demagnetisation. The worm gearbox and motor front shield are one rigid construction. This is a space saving low cost design. Nine standard speeds between 26 r/min and 400 r/min are available. The gearboxes are lubricated for life.



Technical data

Output speed r/min	Output torque Nm	Gearbox ratio	Motor speed r/min	24 V d.c.			180 V d.c.			Weight kg
				Motor current	Motor power	Stockline number	Motor current	Motor power	Stockline number	
26	5	57	1500	2.9	40	P3-290 64X	0.32	40	P3-290 386	2.6
35			2000	3.2	55	P3-290 658	0.44	55	P3-290 394	
53			3000	4.4	75	P3-290 729	0.61	80	P3-290 457	
75	3.4	20	1500	2.9	40	P3-290 867	0.32	40	P3-290 49X	2.6
100			2000	3.2	55	P3-290 883	0.44	55	P3-290 579	
150			3000	4.4	75	P3-290 903	0.61	80	P3-290 587	
200	1.8	10	2000	3.2	55	P3-290 911	0.44	55	P3-290 607	2.6
300			3000	4.4	75	P3-290 92X	0.61	80	P3-290 623	
400			4000	5.8	100	P3-290 938	0.84	105	P3-290 631	

Stockline numbers in black – delivery time on request

Recommended choke for 180V motors **K4-152859**, see page 319.

Ordering example

(10) off d.c. permanent magnet light duty worm geared motors, 180V, 75 r/min

Stockline No. **P3-290 49X**

Rugged motors/gearboxes

IP54 enclosure

Sealed for life worm gearboxes

Minimal maintenance

Self cooled – no fan

Lightweight/high power

Foot (B3), face (B14) and hollow shaft mounting

24V and 180V models

Compact smooth casing

General description

The high quality, robust light alloy and steel casing requires no maintenance.

Armatures are finely balanced and mounted in substantial rolling bearings. Generously dimensioned commutators are connected to the armature windings by hot staking.

The steel worms and the bronze wheels of the gearboxes are accurately machined to run together with the minimum of noise and wear whilst transmitting high load torques.

The gearbox is filled with grease at assembly and requires no further attention during the life of the geared unit.

The motors are totally enclosed to IP 54 – cooling specification category IC00 – and are ideal for areas where cooling fan turbulence cannot be tolerated. Thermal cutout switches are fitted as standard.

The brush gear and commutator can be inspected through removable inspection covers in the non-drive end casting.

Controllers

All the 180V d.c. motors on these pages can be used with the thyristor controller types 530.

For models above 110W, suitable measures must be taken to limit the armature current to I_{max} in order to prevent demagnetisation. This can be achieved by using a controller.

Controller details see page 349.

Gearbox shaft loadings

Axial and radial forces on the gearbox output shafts must be limited to those shown below.

Gearbox size	Maximum force (N)			Axial
	B3	Radial B14	H/S	
25	63	80	–	50
31	200*	200	300	300
40	300*	600	–	400

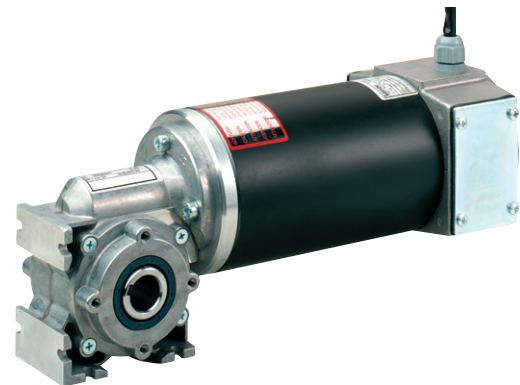
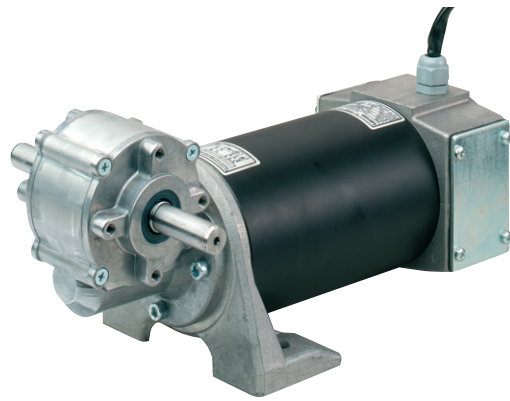
Note: Both axial and radial forces must not be applied together at their maximum values.

* Double shaft B3 models must have the load shared between the two shafts.

Ordering example

(10) off Lenze p.m. worm geared motors 200W, 600 r/min, face mounting (B14), 180V, handing 2A.

Stockline No. **N4-168 700**



Form factors

The motor rated powers are stated for pure d.c. (form factor 1). The torques of the 180V are shown for form factors 1 and 1.4. When selecting the motor power or the torque, it must be considered that in continuous operation the rated power must be reduced according to the controller used so that the motor is not excessively heated.

Examples for form factors in practical operations

FF	Current source
1.4 to 1.8	Thyristor controller
1.2 to 1.4	Thyristor controller with armature choke
1.3	20kHz chopper transistor controller
1.05 to 1.1	Chopper with d.c. link capacitor
1.05	Three phase rectifier bridge
1.0	Battery

Armature chokes: See page 319

200W Geared motors

IMPORTANT NOTE

The 200W geared motors now use the size 31 gearbox. For spares of the old size 55.4 geared motors using size 35 gearboxes, please refer to Bedford.

Options

- Protection to IP55
- Tacho and brake
- Some 90V models available
- Terminal box (not 55W model)

Type 121 pm worm geared motors 24V

55W – 370W

Gearbox output speed r/min	Ratio i	Torque Nm FF = 1.0	Stockline numbers for geared motors		
			Foot mounting (B3) Gearbox design 1, 2 or 3 *	Face mounting (B14) Gearbox design 2 *	Hollow shaft Gearbox design 3 *
55W					24V
3000 r/min 24 VA – 4 A maximum pulse current 41A gearbox size 25					
50	60	3.5	<i>N4-116 892</i>	<i>N4-47 811</i>	–
60	50	3.2	<i>N4-117 656</i>	<i>N4-46 979</i>	–
75	40	3.0	<i>N4-144 702</i>	<i>N4-47 838</i>	–
100	30	2.5	<i>N4-152 753</i>	<i>N4-47 82X</i>	–
150	20	2.0	<i>N4-159 963</i>	<i>N4-47 846</i>	–
200	15	1.7	<i>N4-101 938</i>	<i>N4-47 862</i>	–
300	10	1.3	<i>N4-104 869</i>	<i>N4-47 889</i>	–
375	8	1.1	<i>N4-105 393</i>	<i>N4-47 870</i>	–
600	5	0.7	<i>N4-114 812</i>	<i>N4-47 917</i>	–
110W					24V
3000 r/min 24 VA – 6.7 A maximum pulse current 44A gearbox size 31					
30	100	11.0+	<i>N4-153 777</i>	<i>N4-156 622</i>	<i>N4-158 268</i>
40	75	9.5	<i>N4-155 424</i>	<i>N4-157 47X</i>	<i>N4-158 513</i>
55	55	10.0	<i>N4-155 503</i>	<i>N4-157 654</i>	<i>N4-158 966</i>
60	50	8.1	<i>N4-155 511</i>	<i>N4-157 717</i>	<i>N4-159 080</i>
79	38	7.6	<i>N4-155 684</i>	<i>N4-157 733</i>	<i>N4-159 16X</i>
100	30	6.2	<i>N4-155 93X</i>	<i>N4-157 75X</i>	<i>N4-159 214</i>
120	25	5.3	<i>N4-156 02X</i>	<i>N4-158 008</i>	<i>N4-159 29X</i>
150	20	4.8	<i>N4-156 038</i>	<i>N4-158 016</i>	<i>N4-159 387</i>
200	15	3.9	<i>N4-156 109</i>	<i>N4-158 032</i>	<i>N4-159 415</i>
300	10	2.7	<i>N4-156 176</i>	<i>N4-158 075</i>	<i>N4-159 423</i>
429	7	2.0	<i>N4-156 334</i>	<i>N4-158 083</i>	<i>N4-159 746</i>
600	5	1.5	<i>N4-156 578</i>	<i>N4-158 189</i>	<i>N4-159 797</i>
200W					24V
3000 r/min 24 VA – 11.8 A maximum pulse current 71A gearbox size 31					
30	100	11.0+	<i>N4-163 609</i>	<i>N4-166 442</i>	<i>N4-166 580</i>
40	75	11.0+	<i>N4-165 847</i>	<i>N4-166 450</i>	<i>N4-166 599</i>
55	55	15.0+	<i>N4-165 926</i>	<i>N4-166 469</i>	<i>N4-166 619</i>
60	50	13.0+	<i>N4-165 934</i>	<i>N4-166 477</i>	<i>N4-166 635</i>
79	38	13.8	<i>N4-165 969</i>	<i>N4-166 485</i>	<i>N4-166 66X</i>
100	30	11.3	<i>N4-166 008</i>	<i>N4-166 505</i>	<i>N4-166 686</i>
120	25	9.7	<i>N4-166 304</i>	<i>N4-166 513</i>	<i>N4-166 694</i>
150	20	8.8	<i>N4-166 355</i>	<i>N4-166 521</i>	<i>N4-166 706</i>
200	15	7.1	<i>N4-166 371</i>	<i>N4-166 53X</i>	<i>N4-166 730</i>
300	10	4.9	<i>N4-166 398</i>	<i>N4-166 548</i>	<i>N4-166 757</i>
429	7	3.7	<i>N4-166 40X</i>	<i>N4-166 556</i>	<i>N4-166 773</i>
600	5	2.7	<i>N4-166 426</i>	<i>N4-166 564</i>	<i>N4-166 801</i>
370W					24V
3000 r/min 24 VA – 20.2 A maximum pulse current 90A gearbox size 40					
38	80	24.0+	<i>N4-168 857</i>	<i>N4-169 00X</i>	<i>N4-169 148</i>
50	60	23.0+	<i>N4-168 865</i>	<i>N4-169 018</i>	<i>N4-169 156</i>
60	50	31.8	<i>N4-168 873</i>	<i>N4-169 026</i>	<i>N4-169 164</i>
75	40	26.4	<i>N4-168 881</i>	<i>N4-169 050</i>	<i>N4-169 172</i>
100	30	21.9	<i>N4-168 901</i>	<i>N4-169 069</i>	<i>N4-169 199</i>
120	25	18.8	<i>N4-168 91X</i>	<i>N4-169 085</i>	<i>N4-169 200</i>
150	20	16.7	<i>N4-168 928</i>	<i>N4-169 105</i>	<i>N4-169 219</i>
200	15	13.1	<i>N4-168 936</i>	<i>N4-169 113</i>	<i>N4-169 227</i>
300	10	9.5	<i>N4-168 960</i>	<i>N4-169 121</i>	<i>N4-169 235</i>
444	6.75	6.7	<i>N4-168 987</i>	<i>N4-169 13X</i>	<i>N4-169 243</i>

Type 121 pm worm geared motors 180V

55W – 370W

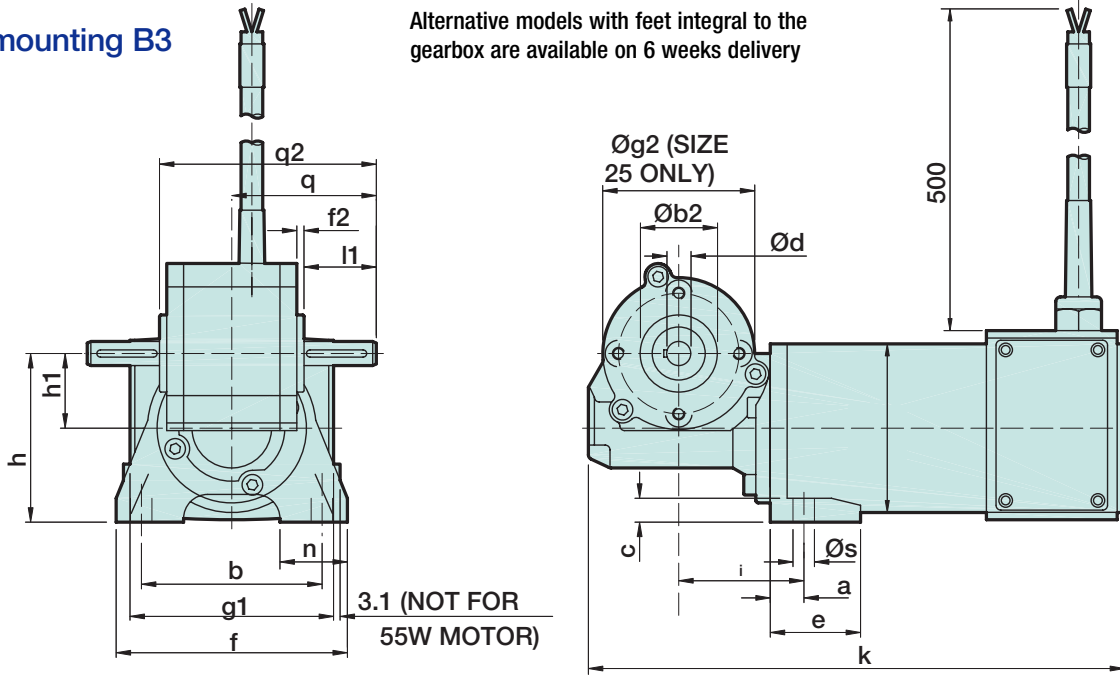
Gearbox output speed r/min	Ratio i	Max continuous torque Nm		Stockline numbers for geared motors		
		FF=1.0	FF=1.4**	Foot mounting (B3) Gearbox design 1, 2 or 3 *	Face mounting (B14) Gearbox design 2 *	Hollow shaft Gearbox design 3 *
180V		55W		Recommended choke K4-152859 see page 319		
3000 r/min		180 VA – 0.5 A		maximum pulse current 5.5A		
50	60	3.5	2.5	<i>N4-369 76X</i>	<i>N4-151 677</i>	–
60	50	3.2	2.3	<i>N4-455 789</i>	<i>N4-191 640</i>	–
75	40	3.0	2.1	<i>N4-455 797</i>	<i>N4-151 685</i>	–
100	30	2.5	1.8	<i>N4-455 809</i>	<i>N4-151 693</i>	–
150	20	2.0	1.4	<i>N4-455 817</i>	<i>N4-151 705</i>	–
200	15	1.7	1.2	<i>N4-455 825</i>	<i>N4-151 713</i>	–
300	10	1.3	0.9	<i>N4-455 833</i>	<i>N4-151 721</i>	–
375	8	1.1	0.8	<i>N4-455 841</i>	<i>N4-151 73X</i>	–
600	5	0.7	0.5	<i>N4-455 85X</i>	<i>N4-151 748</i>	–
180V		110W		Recommended choke K4-152859 see page 319		
3000 r/min		180 VA – 0.86 A		maximum pulse current 6A		
30	100	11.0+	9.5	<i>N4-159 85X</i>	<i>N4-160 64X</i>	<i>N4-161 647</i>
40	75	9.5	6.8	<i>N4-160 020</i>	<i>N4-160 702</i>	<i>N4-161 663</i>
55	55	10.0	7.2	<i>N4-160 039</i>	<i>N4-160 710</i>	<i>N4-161 70X</i>
60	50	8.1	5.8	<i>N4-160 213</i>	<i>N4-160 946</i>	<i>N4-161 726</i>
79	38	7.6	5.4	<i>N4-160 280</i>	<i>N4-160 970</i>	<i>N4-161 734</i>
100	30	6.2	4.4	<i>N4-160 343</i>	<i>N4-161 095</i>	<i>N4-161 821</i>
120	25	5.3	3.8	<i>N4-160 430</i>	<i>N4-161 107</i>	<i>N4-161 951</i>
150	20	4.8	3.5	<i>N4-160 457</i>	<i>N4-161 324</i>	<i>N4-162 033</i>
200	15	3.9	2.8	<i>N4-160 481</i>	<i>N4-161 359</i>	<i>N4-162 041</i>
300	10	2.7	1.9	<i>N4-160 51X</i>	<i>N4-161 517</i>	<i>N4-162 05X</i>
429	7	2.0	1.5	<i>N4-160 528</i>	<i>N4-161 525</i>	<i>N4-162 652</i>
600	5	1.5	1.1	<i>N4-160 631</i>	<i>N4-161 533</i>	<i>N4-162 679</i>
180V		200W		Recommended choke K4-152859 see page 319		
3000 r/min		180 VA – 1.4 A		maximum pulse current 9A		
30	100	11.0+	11.0+	<i>N4-166 81X</i>	<i>N4-168 569</i>	<i>N4-168 719</i>
40	75	11.0+	11.0+	<i>N4-166 836</i>	<i>N4-168 585</i>	<i>N4-168 727</i>
55	55	15.0+	13.0	<i>N4-166 852</i>	<i>N4-168 593</i>	<i>N4-168 735</i>
60	50	13.0+	10.5	<i>N4-166 860</i>	<i>N4-168 605</i>	<i>N4-168 743</i>
79	38	13.8	9.9	<i>N4-166 887</i>	<i>N4-168 621</i>	<i>N4-168 751</i>
100	30	11.3	8.0	<i>N4-166 915</i>	<i>N4-168 63X</i>	<i>N4-168 76X</i>
120	25	9.7	6.9	<i>N4-167 072</i>	<i>N4-168 648</i>	<i>N4-168 778</i>
150	20	8.8	6.3	<i>N4-167 151</i>	<i>N4-168 656</i>	<i>N4-168 786</i>
200	15	7.1	5.0	<i>N4-167 178</i>	<i>N4-168 664</i>	<i>N4-168 794</i>
300	10	4.9	3.5	<i>N4-167 474</i>	<i>N4-168 672</i>	<i>N4-168 814</i>
429	7	3.7	2.6	<i>N4-168 542</i>	<i>N4-168 699</i>	<i>N4-168 822</i>
600	5	2.7	1.9	<i>N4-168 550</i>	<i>N4-168 700</i>	<i>N4-168 830</i>
180V		370W		Recommended choke K4-53301 see page 319		
3000 r/min		180 VA – 2.5 A		maximum pulse current 11.2A		
38	80	24.0+	24.0+	<i>N4-169 251</i>	<i>N4-169 357</i>	<i>N4-169 452</i>
50	60	23.0+	19.2	<i>N4-169 26X</i>	<i>N4-169 365</i>	<i>N4-169 460</i>
60	50	31.8	22.7	<i>N4-169 278</i>	<i>N4-169 373</i>	<i>N4-169 495</i>
75	40	26.4	18.8	<i>N4-169 286</i>	<i>N4-169 381</i>	<i>N4-169 558</i>
100	30	21.9	15.6	<i>N4-169 294</i>	<i>N4-169 39X</i>	<i>N4-169 653</i>
120	25	18.8	13.5	<i>N4-169 306</i>	<i>N4-169 401</i>	<i>N4-169 897</i>
150	20	16.7	11.9	<i>N4-169 314</i>	<i>N4-169 41X</i>	<i>N4-170 017</i>
200	15	13.1	9.3	<i>N4-169 322</i>	<i>N4-169 428</i>	<i>N4-170 033</i>
300	10	9.5	6.8	<i>N4-169 330</i>	<i>N4-169 436</i>	<i>N4-170 041</i>
444	6.75	6.7	4.8	<i>N4-169 349</i>	<i>N4-169 444</i>	<i>N4-170 076</i>

+ Limited by gearbox. ** FF=1.4 when thyristor controller is used with a suitable armature choke.
 • Please state the required gearbox handing when ordering, see page 345.

Type 121 pm worm geared motors

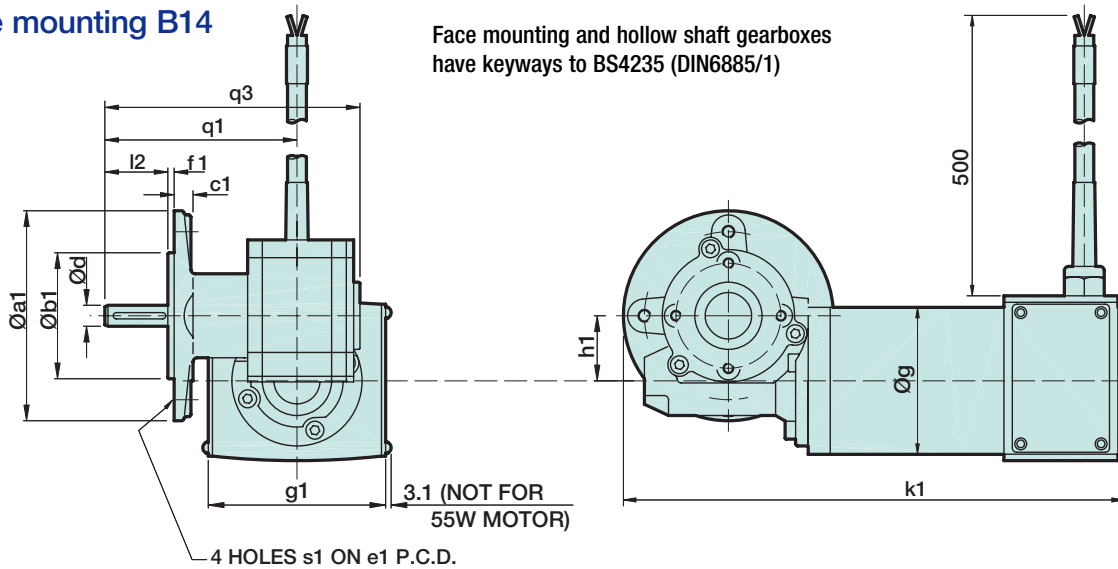
Foot mounting B3

Alternative models with feet integral to the gearbox are available on 6 weeks delivery



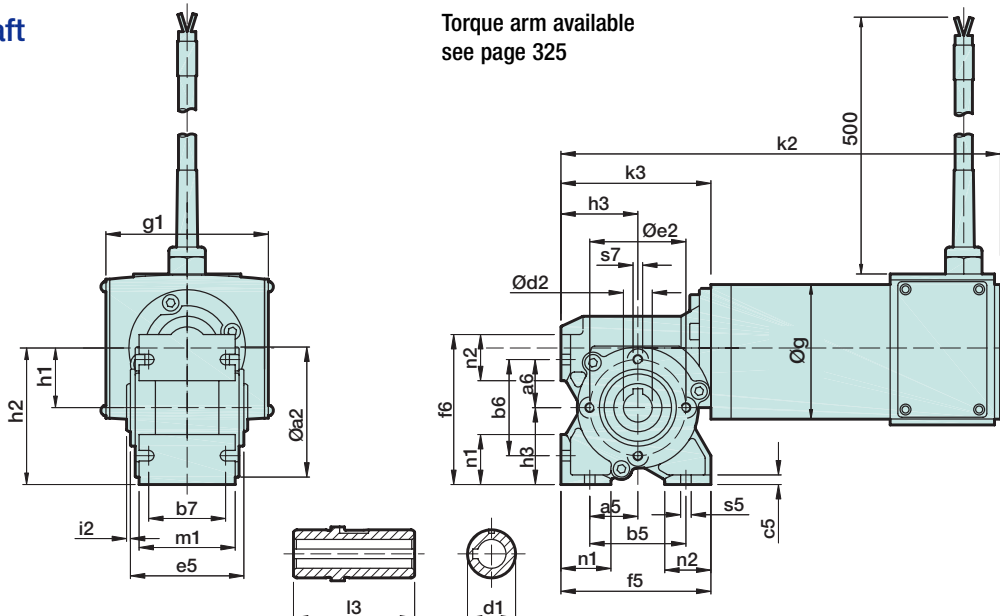
Face mounting B14

Face mounting and hollow shaft gearboxes have keyways to BS4235 (DIN6885/1)



Hollow shaft

Torque arm available see page 325



MOTORS & SMALL GEARED MOTORS

Type 121 pm worm geared motors

Foot mounting B3

Motor power W/ gearbox size	a	b	b ₂	c	d h6	e	f	f ₂	g	g ₁	g ₂	h	h ₁	i	k	l ₁	n	q	q ₂	s	Approx weight kg
55/25	15.5	55	28h11	8	9	24.5	71	7	54	62	62	57	25	46.5	200	27	20	50	73	5.5	1.95
110/31	19.5	75	32h8	11	10	40.5	96	3	70	84.5	-	76	31	57.5	232	30	28	60	90	5.5	3.1
200/31	30	90	32h8	13	10	60.5	112	3	80	95	-	87	31	68	265	30	34	60	90	6.5	4.4
370/40	34	100	44h11	15	15	67.5	137	3	98	115	-	103	40	82	327	43	42	83	123	9	9.6

Face mounting B14

Motor power W/ gearbox size	a ₁	b ₁ j7	c ₁	d* h6	e ₁	f ₁	g	g ₁	h ₁	k ₁	l ₂	q ₁	q ₃	s ₁	Approx weight kg
55/25	80	50	8	9	65	3	54	62	25	209.5	28	81	104	M5	1.95
110/31	100	60	9	10	80	3	70	84.5	31	242	30	91.5	121.5	M6	3.2
200/31	100	60	9	10	80	3	80	95	31	275	30	91.5	121.5	M6	4.5
370/40	140	95	10	15	115	3	98	115	40	349	50	128	168	M8	9.8

* shaft key to BS 4235 (DIN 6885/1)

Hollow shaft

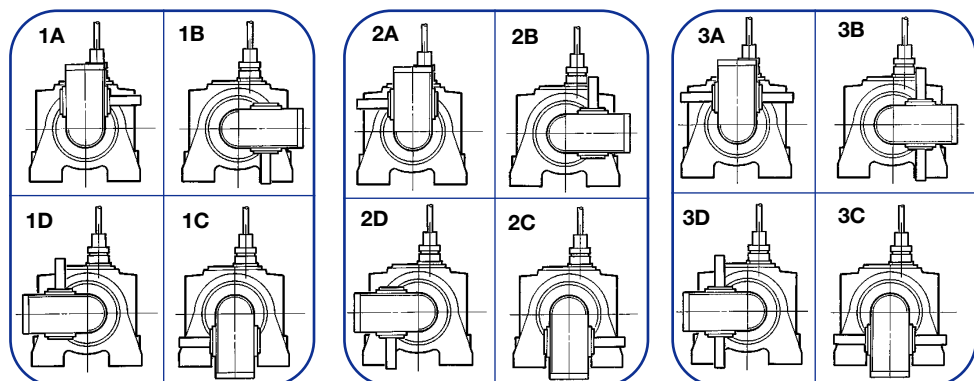
Motor power W/ Gearbox size	a ₂	a ₅	a ₆	b ₅	b ₆	b ₇	c ₅	d ₁	d ₂ * H7	e ₂	e ₅	f ₅	f ₆	g	g ₁	h ₁	h ₂	h ₃
110/31	-	25	25	50	50	40	5	25	15	50	54	78	78	70	84.5	31	71	40
200/31	-	25	25	50	50	40	5	25	15	50	54	78	78	80	95	31	71	40
370/40	77	30	30	60	60	50	6	30	20	65	80	90	90	98	115	40	88	48

Motor power W/ Gearbox size	i ₂	k ₂	k ₃	l ₃	m ₁	n ₁	n ₂	S ₅	S ₇	Approx weight kg
110/31	4.5	232	78	63	50	26	24	5.5	M5	3.1
200/31	4.5	265	78	63	50	26	24	5.5	M5	4.4
370/40	1.5	327	96	83	59	30	24	5.5	M6	9.5

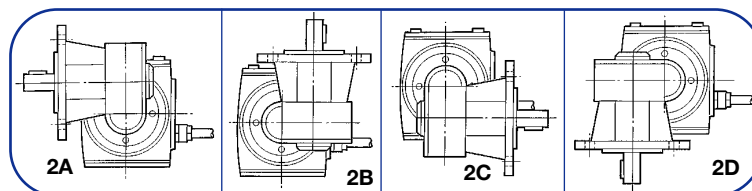
Gearbox designs and handings

When ordering specify the gearbox handing required from tables below.

Foot mounting B3

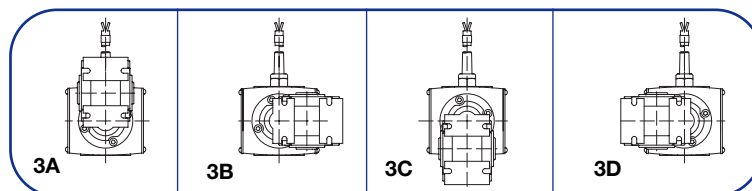


Face mounting B14



Face mounted gearboxes can be positioned in four ways relative to the motor cable.

Hollow shaft



Hollow shaft gearboxes can be assembled with the motor cable in four positions relative to the gearbox.

Lenze Type LPM/SPL planetary permanent magnet geared motors

55-600W

These geared motors combine the Lenze 13.120 series permanent magnet smooth bodied motors with the SPL low cost planetary gearheads. They form a compact in-line unit well suited to dc variable speed drives.

Powers 55W to 600W

Outputs 18 to 811 r/min, up to 120 Nm

Reliable and efficient motor design

Self-cooled without fan

Compact smooth-bodied planetary gearhead



Motors

The motors are totally enclosed to IP54 – cooling specification category IC00 – and are ideal for areas where cooling fan turbulence cannot be tolerated. Thermal cut-out switches are fitted as standard. The brush gear and commutator can be inspected through removable inspection covers in the non-drive end casting.

The high quality, robust light alloy and steel casing requires no maintenance.

Armatures are finely balanced and mounted in substantial rolling bearings. Generously dimensioned commutators are connected to the armature windings by hot staking.

Form factors

The motor rated powers are stated for pure d.c. (form factor 1). The torques of the 180V motors are shown for form factors 1 and 1.4. When selecting the motor power or the torque, it must be considered that in continuous operation the rated power must be reduced according to the controller used so that the motor is not excessively heated. Examples for form factors in practical operations:

FF	Current source
1.4 to 1.8	Thyristor controller
1.2 to 1.4	Thyristor controller with armature choke
1.3	20kHz chopper transistor controller
1.05 to 1.1	Chopper with d.c. link capacitor
1.05	Three phase rectifier bridge
1.0	Battery

Ordering example

(2) off LPM/SPL planetary geared motors, 200W, 66 r/min, 180V armature.

Stockline No. N2-289 904

Gearboxes

Lenze planetary gearboxes are constructed in steel.

Efficiencies are:

1 stage 80% 2 stage 75% 3 stage 70%

For applications where the drive reverses we recommend you discuss details with our engineers. Higher precision planetary gearboxes with reduced backlash are available if required.

SPL gearboxes are lubricated for life with grease type Kluber Easoflax Topax MB52.

Axial and radial loads

Maximum forces calculated as the midpoint of the output shaft are:

Motor power		Axial force (N)	Radial force (N)
55W	1 stage	50	160
	2 stage	80	230
	3 stage	110	300
110W	1 stage	60	200
	2 stage	100	320
	3 stage	150	450
200W	1 stage	50	240
	2 stage	70	360
	3 stage	120	520
370W	1 stage	80	400
	2 stage	120	600
	3 stage	200	1000

Other options

- Motors enclosure to IP55
- Motors with brakes or tachos
- Motors with 90V armatures
- Motors with terminal boxes

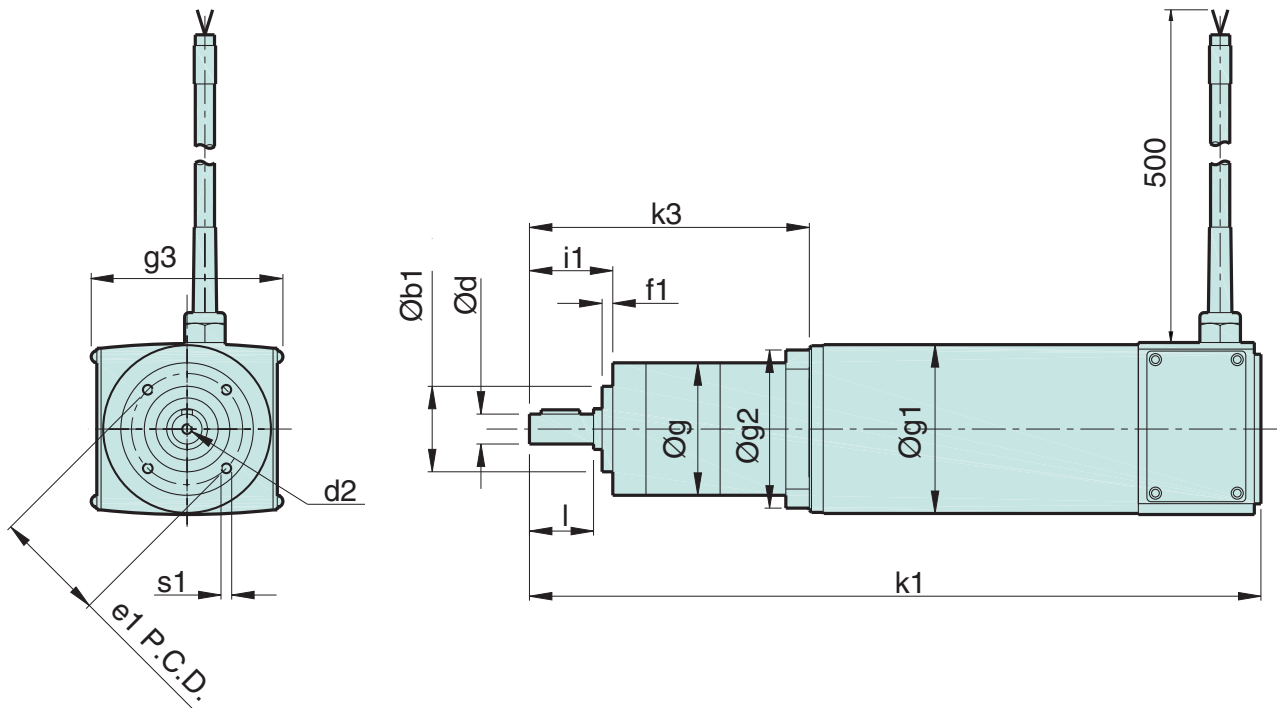
Details on request

Type LPM/SPL

Output speed r/min	Gear ratio i	No. of stages	24V motors		180V motors		
			Rated torque Nm	Stockline No.	Rated torques Nm FF=1.0	FF=1.4	Stockline No.
55W 24V rated 4A, max pulse current 41A 180V rated 0.5A, max pulse current 5.5A							
811	3.7	1	0.52	N5-292 33X	0.52	0.37	N5-292 18X
444	6.75		0.95	N5-292 348	0.95	0.68	N5-292 198
218	13.73	2	1.8	N5-292 356	1.8	1.3	N5-292 20X
120	25.01		3.3	N5-292 372	3.3	2.3	N5-292 250
66	45.56		6.0	N5-292 380	6.0	4.3	N5-292 269
59	50.89	3	6.2	N5-292 399	6.2	4.4	N5-292 293
32	92.7		11.4	N5-292 400	11.4	8.1	N5-292 305
18	168.84		15*	N5-292 427	15*	14.8	N5-292 313
10	307.54		15*	N5-292 435	15*	15*	N5-292 321
110W 24V rated 6.9A, max pulse current 44A 180V rated 0.86A, max pulse current 6A							
811	3.7	1	1.0	N5-287 323	1.0	0.74	N5-287 165
218	13.73	2	3.6	N5-289 703	3.6	2.6	N5-287 157
120	25.01		6.6	N5-289 711	6.6	4.7	N5-130 820
66	45.56		12.0	N5-289 738	12.0	8.5	N5-287 149
59	50.89	3	12.5	N5-289 746	12.5	8.9	N5-287 173
32	92.7		22.7	N5-289 754	22.7	16.2	N5-287 307
18	168.84		25*	N5-289 762	25*	25*	N5-287 315
200W 24V rated 11.8A, max pulse current 71A 180V rated 1.4A, max pulse current 9A							
811	3.7	1	1.9	N5-291 095	1.9	1.36	N5-289 809
218	13.73	2	6.6	N5-291 107	6.6	4.7	N5-289 833
120	25.01		12	N5-291 115	12	8.6	N5-289 868
86	34.97		18.2	N5-291 131	18.2	13	N5-289 884
66	45.56		20.4	N5-291 158	20.4	14.6	N5-289 904
59	50.89	3	22.8	N5-291 166	22.8	16.3	N5-289 920
42	71.16		31.8	N5-291 174	31.8	22.7	N5-289 939
30	99.5		44.5	N5-291 190	44.5	31.8	N5-289 947
24	123.97		50*	N5-291 202	50*	39.5	N5-289 963
370W 24V rated 20.2A, max pulse current 90A 180V rated 2.5A, max pulse current 11.2A							
811	3.7	1	3.5	N5-291 210	3.5	2.5	N5-290 970
218	13.73	2	12.1	N5-291 229	12.1	8.7	N5-291 001
120	25.01		22.1	N5-291 237	22.1	15.8	N5-291 028
86	34.97		30.9	N5-291 261	30.9	22.1	N5-291 036
66	45.56		40.3	N5-291 27X	40.3	28.8	N5-291 044
59	50.89	3	42.0	N5-291 296	42.0	30.0	N5-291 052
42	71.16		58.8	N5-291 308	58.8	42.0	N5-291 060
30	99.5		82.2	N5-291 332	82.2	58.7	N5-291 079
24	123.97		102	N5-291 359	102	72.9	N5-291 087
540W 24V rated 27A, max pulse current 130A 600W 180V rated 4.5A, max pulse current 20A							
811	3.7	1	5.0	N5-292 033	5.7	4.0	N5-291 880
218	13.73	2	17.5	N5-292 041	19.7	14.0	N5-291 899
120	25.01		31.9	N5-292 05X	35.8	25.4	N5-291 900
86	34.97		44.6	N5-292 076	50.1	35.6	N5-291 927
66	45.56		58.1	N5-292 068	60*	46.4	N5-291 935
59	50.89	3	60.6	N5-292 084	68	48.6	N5-291 943
42	71.16		84.7	N5-292 092	95	68	N5-291 951
30	99.5		118	N5-292 120	120*	94	N5-291 96X
24	123.97		120*	N5-292 139	120*	118	N5-292 025

* Limited by gearbox torque capacity

Type LPM/SPL



Keyways to BS4235

Power	Gearbox stages	b ₁ j7	d h7	d ₂	e1	f ₁	g	g ₁	g ₂	g ₃	i1	k ₁	k ₃	l	s	Wt kg
55W	1											223	84			1.8
	2	25	8	M3	32	2	42	54	52	62	25	236	97	22.2	M4	1.9
	3	(h10)	(g6)									249	110		x10	2.1
110W	1											257	99			3.4
	2	32	12	M4	40	3	52	70	80	91	25	271	113	20.8	M5	3.6
	3											285	127		x10	3.8
200W	1											308	115			4.6
	2	40	14	M5	52	5	62	80	80	101	39	324	131	30	M5	5.0
	3											340	147		x10	5.4
370W	1											381	144			10.1
	2	50	19	M6	65	5	81	98	90	121	49	402	165	40	M6	10.8
	3											424	187		x12	11.5
540/ 600W	1											409	151			12.6
	2	50	19	M6	65	5	81	110	105	138	49	431	173	40	M6	13.3
	3											452	194		x12	14.0

Chokes

We recommend chokes to improve the form factor for 180V motors.

Motor power	Choke Stockline No.
55-200W	K4-152 859
370W	K4-533 01
600W	K4-301 0X

See page 319 for choke details.

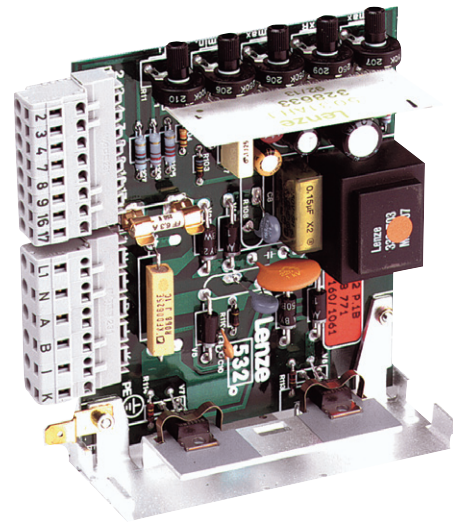
Controllers

Lenze controllers of the series 530 are suitable, see [facing page](#).

Lenze 1Q thyristor controller type 530

0.36 – 2.0kW

- Space saving single board construction
- Din rail mountable
- Plug and socket connector system
- Armature voltage feedback with I x R compensation of tachogenerator feedback
- Surface mount technology on ceramic control circuit
- Mains supply condition surveillance
- Interference immunity by design
- 531P 'plug-in' compatible with 431 type



The 530 series of 1Q D.C. motor controllers cover the power range 0.36kW to 2.0kW. Suitable for use with permanent magnet or shunt wound field motors. The 530 series provides an excellent low cost compact solution for multi-motor applications. Small footprint and din rail mounting kit means easy fixing in control panel applications. The 531P is a 'Plug-in' replacement for the 431 type but differs in that it uses the RFR (close to run) whereas the old 431 used RSP.

Technical data

Mains supply voltage	190–265/110–132V a.c. L ₁ – N
Armature output voltage	0 – 180 V d.c.
Field supply voltage	0.9 x L ₁ – N
Master set value voltage	0 – 10 V d.c.
Tachogenerator voltage	10 – 120 V d.c.
Operating temperature range	0 – 45°C
Mains chokes are recommended, a quotation is available on request.	

Technical data

Type	Output power P _{el} /kW	Output current P _A /A	Stockline No.
532	0.36	2	K1-456 22X
533	0.72	4	K1-456 211
534	1.3/2.0	8/12	K1-456 420
531P	0.36	2	K1-456 463

Accessories – DIN rail kit

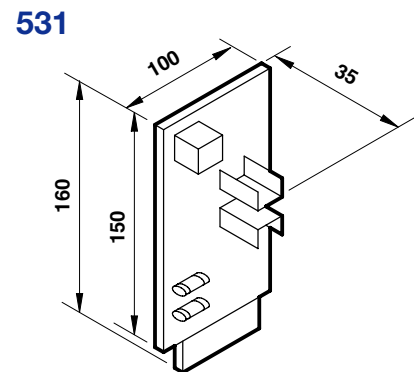
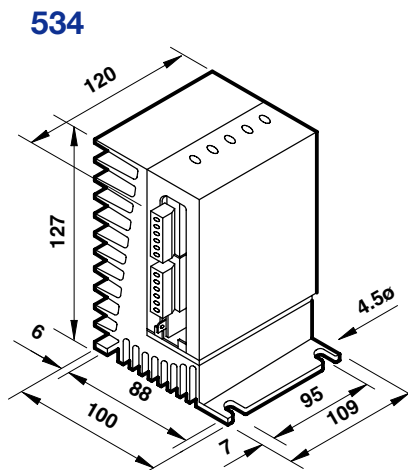
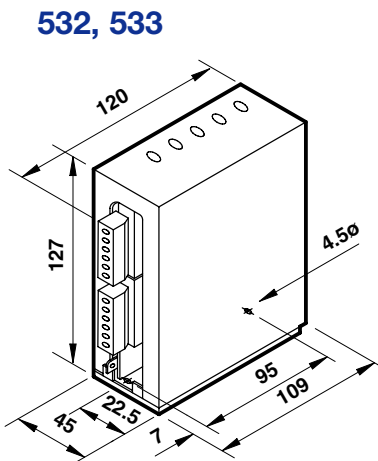
532/3	K1-199 456
534	K1-199 464
Connector system and guide rails	K1-115 493

Ordering example

(1) off controller type 532
 (1) off Din rail clip

Stockline No. **K1-456 22X**
 Stockline No. **K1-199 456**

Dimensions

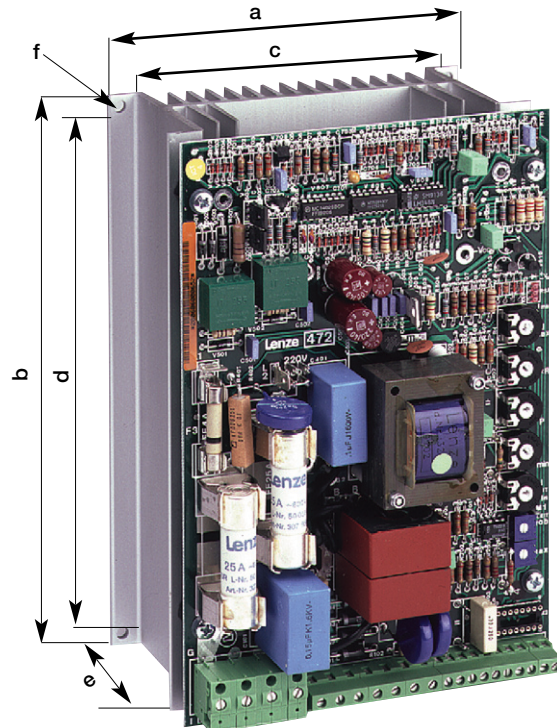


MOTORS & SMALL GEARED MOTORS

Lenze 1Q thyristor controller type 470

1.3 – 7kW

- Isolated control electronics
- Pulse series firing
- Operating condition via LED indicators
- Excellent interference margin
- IxR compensation for speed adjustment in armature feedback
- Tacho-feedback for speed control
- Trimmers: minimum, maximum speed; master voltage adaption; current limitation; IxR compensation; response
- Operational integrity by on-board supply surveillance



The Lenze controllers 471...473 are suitable for the operation of DC shunt wound motors in the power range from 1.3 to 7kW. The mechanical design shows self-ventilated compact unit with isolated semi-conductor modules in the power stage. The complete control electronics is mounted on a plug-in type control board.

Dimensions

Type	a	b	c	d	e	f
471E	150	220	135	210	70	4.8
472E	150	220	140	210	135	4.8
473E	240	160	224	140	145	7

Technical data

Master set value	10-180 V d.c.
N_{max} setting range	25 – 100%
Set value potentiometer	10 kΩ linear
Ambient temperature range	0 – 45°C
Field output	$0.9 \times U_{L1 - L2} (N)$

Mains chokes are recommended, [details on request](#).

Fuses

Type	Stockline No.	Fuseholder Stockline No.
471 FF16A 10 x 38	K4-65 595 (x2)	Incorporated mains fusing
472 FF25A 14 x 51	K4-67 025 (x2)	
473 FF40A 22 x 58	K4-29 998 (x2)	K4-31 639 (x2)

Controller type	Controller output power P_{ei}/kW	Controller output current I_n/A	Mains voltage 50 ... 60 Hz U/V	Armature voltage UA/V	Weight kg	Stockline No.
471	1.3	8.0	L1-N 190 ... 265 ±0%	180	1.2	K1-66 900
472	2.5 4.0	16.0	L1-N 330 ... 460 0%	180 260	2.1	K1-76 006
473	7.0	27.0		260	2.8	K1-66 986

For controller type	Mains choke Stockline No.
471	H6-301 26
472, 473	H6-301 77

Ordering example

- (2) off controllers, type 472 **Stockline No. K1-76 006**
- (5) off spare mains fuses **Stockline No. K1-67 025**
- (2) off mains choke 472 **Stockline No. K4-301 77**

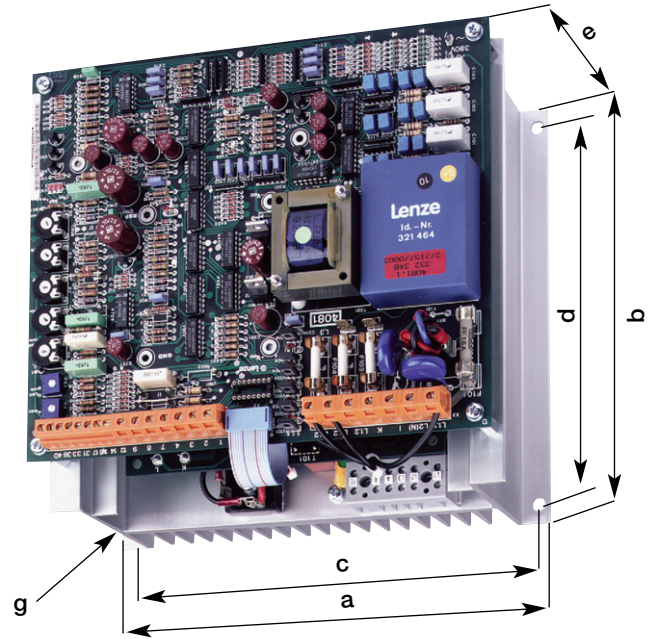
MOTORS & SMALL GEARED MOTORS

Lenze 1Q thyristor controller type 480

10 – 110kW

- Potential free heatsink
- Isolated control electronics in tacho generator feedback
- Self synchronisation for 50/60 Hz operation
- Phase-fired output circuit
- Pulse-fired output circuit
- Surveillance of internal supplies
- Adaptive speed and current amplifiers
- Option boards: for improved speed range; P.I.D.; motor/drive supervision
- Operational integrity by on-board supply surveillance

This established analogue range of thyristor controllers comprises of five standard models with output power to 110kW. The very fast response of both the speed and torque control circuit gives servo-like performance from a d.c. system.



Dimensions

Wt Type	Controllers						kg
	a	b	c	d	e	g	
481	240	220	225	200	170	7	4.5
482	240	300	225	280	170	7	5.5
483	285	380	271	235	190	7	8.5
484	285	465	271	310	190	7	10.5
485	285	535	271	380	230	7	13

Technical data

Controller type	Output power P_{el}/kW	Output current P_A/A	Stockline No.
481	10	23	K1-102 028
482	22	50	K1-102 036
483	44	100	K1-102 044
484	88	200	K1-102 052
485	110	250	K1-112 057

Stockline numbers in black – delivery times on request

Technical data

- Mains supply voltage: 340 – 460 V a.c.
 L_1, L_2, L_3
- Armature output voltage: 440 V d.c.
- Field supply voltage: $0.9 \times L_1 - L_2 (N)$
- Master set value voltage: 10 – 180 V d.c.
- Tachogenerator voltage: 10 – 180 V d.c.
- Operating temperature range: 0 – 45°C
- Mains chokes are recommended, [details on request](#).

Fuses A/mm	Stockline No.
FF25A/14 x 51 (x3)	K4-670 25
FF50A/22 x 57 (x3)	K4-300 04
FF100A/00.80 (x3)	K4-300 47
FF200A/00.80 (x3)	K4-138 112
FF315A/00.80 (x3)	K4-348 065

Ordering example

- (1) off controllers, type 483 **Stockline No. K1-102 044**
- (5) off spare mains fuses **Stockline No. K4-300 47**

MOTORS & SMALL GEARED MOTORS