

16.3 Dimensional drawings

In this chapter you can find the dimensions of the geared motors.

There is a dimensional drawing for every possible shaft/housing design, each with the tables for gear unit dimensions, motor dimensions and geared motor dimensions.

Dimensions can exceed the specifications of ISO 2768-mK due to casting tolerances or accumulation of individual tolerances.

We reserve the right to make dimensional changes due to ongoing technical development.

You can download 3D models of our standard drives at <https://configurator.stoeber.de/en-US/>.

Combination options and the dimensions of forced ventilated geared motors can also be found at <https://configurator.stoeber.de/en-US/>.

Tolerances

Axis height in accordance with DIN 747	Tolerance
Up to 50 mm	-0.4 mm
Up to 250 mm	-0.5 mm
Up to 630 mm	-0.6 mm

Solid shaft	Tolerance
Shaft $\varnothing$ fit ≤ 50 mm	DIN 748-1, ISO k6
Shaft $\varnothing$ fit > 50 mm	DIN 748-1, ISO m6
Feather keys	DIN 6885-1, high form A

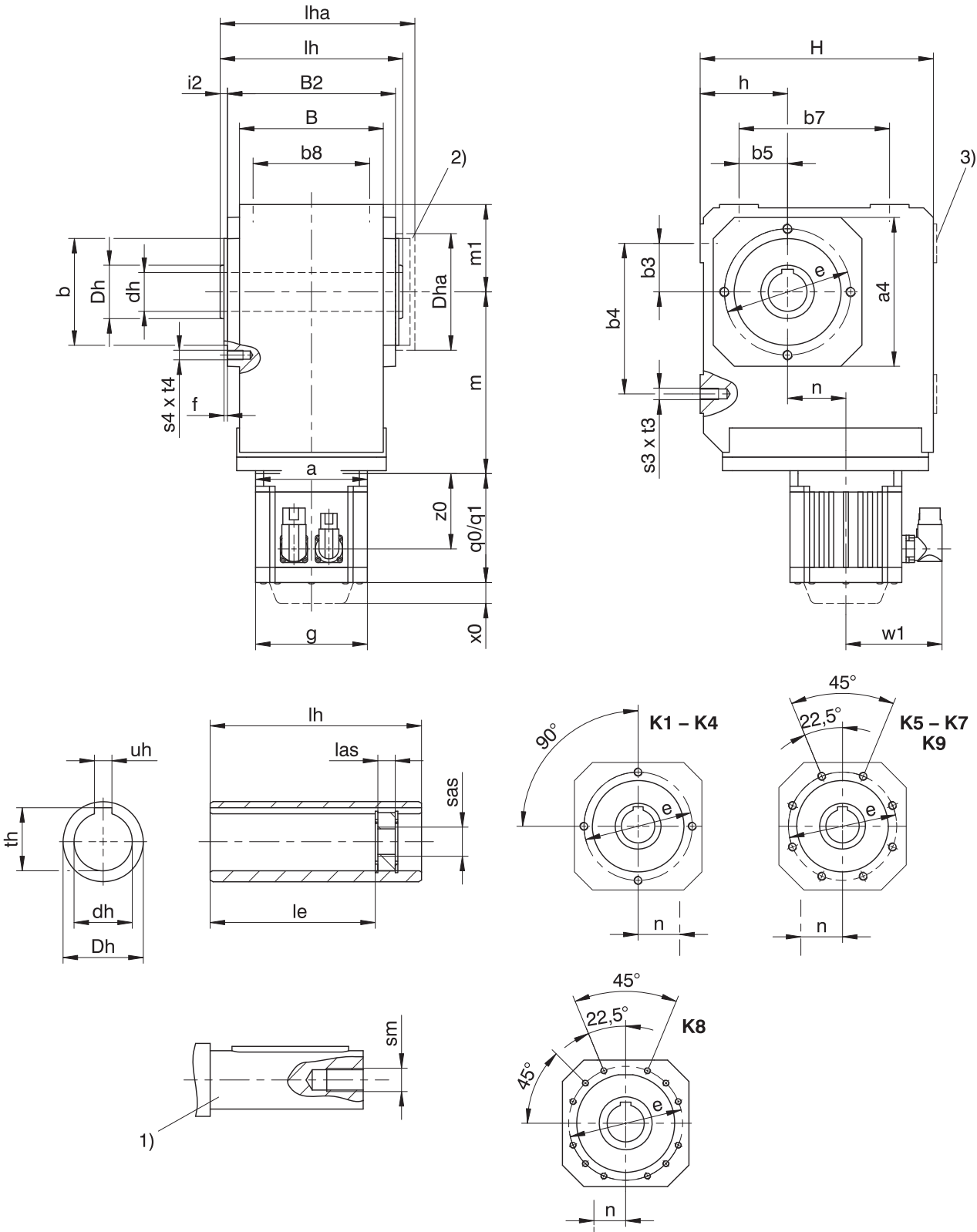
Hollow shaft	Tolerance
Hollow shaft hole fit	ISO H7
Feather keys	DIN 6885-1, high form K1 $\varnothing$ 30: DIN 6885-3, low form

Flange	Pilot tolerance
Up to 300 mm	ISO j6
Starting at 350 mm	ISO h6

Centering holes in solid shafts in accordance with DIN 332-2, DR shape

Thread size	M4	M5	M6	M8	M10	M12	M16	M20	M24
Thread depth [mm]	10	12.5	16	19	22	28	36	42	50

16.3.1 A shaft design (hollow shaft), G housing design (pitch circle diameter)



- | | | | |
|----|---|----|--|
| q0 | Applies to motors without brake. | q1 | Applies to motors with brake. |
| x0 | Applies to encoders using an optical measuring method | w1 | Different for the One Cable Solution (OCS), see the chapter 17.4 |
| 1) | The length of the machine shaft must be at least $2.2 \times \varnothing d_h$ and the length of the feather key must be at least $2 \times \varnothing d_h$. | 2) | Cover (optional) |
| 3) | Only for K1 (other sizes on request) | | |

Dimensions of gear units

Type	□a4	Øb	b3	b4	b5	b7	b8	B	B2	Ødh	ØDh	Dha	Øe	f	h	H	i2	le	lh	las	lha	m1	s3	s4	sm	sas	t3	t4	th	uh
K1	105	75 _{j6}	30	90	30	90	70	90	106	20 ^{H7}	40	□105	90	3.0	60	160	7.0	98.0	120	12	127.0	60	M8	M8	M6	M8	13	13	22.8	6 ^{JS9}
K1	105	75 _{j6}	30	90	30	90	70	90	106	25 ^{H7}	40	□105	90	3.0	60	160	7.0	98.0	120	12	127.0	60	M8	M8	M10	M12	13	13	28.3	8 ^{JS9}
K1	105	75 _{j6}	30	90	30	90	70	90	106	30 ^{H7}	40	□105	90	3.0	60	160	7.0	93.5	120	12	127.0	60	M8	M8	M10	M12	13	13	32.0	8 ^{JS9}
K2	116	82 _{j6}	35	115	35	115	90	115	134	30 ^{H7}	45	□116	100	3.0	65	190	7.0	121.5	148	12	156.0	65	M10	M8	M10	M12	16	13	33.3	8 ^{JS9}
K3	132	95 _{j6}	40	130	40	130	105	130	146	35 ^{H7}	50	□132	115	3.0	75	213	7.0	125.0	160	12	168.0	75	M10	M8	M12	M16	16	13	38.3	10 ^{JS9}
K4	152	110 _{j6}	50	155	50	155	120	148	173	40 ^{H7}	55	□152	130	3.5	90	240	7.5	157.0	188	12	197.5	90	M12	M10	M16	M20	19	16	43.3	12 ^{JS9}
K5	145	110 _{j6}	40	140	100	140	125	160	185	50 ^{H7}	65	□145	130	3.5	160	260	7.5	164.0	200	12	209.5	100	M16	M10	M16	M20	26	16	53.8	14 ^{JS9}
K6	180	140 _{j6}	50	160	110	160	130	168	200	50 ^{H7}	70	Ø183	165	3.5	190	310	7.5	179.0	215	12	224.5	120	M16	M10	M16	M20	26	16	53.8	14 ^{JS9}
K7	195	155 _{j6}	55	180	125	180	145	190	226	60 ^{H7}	85	Ø205	185	3.5	212	342	8.0	214.0	242	12	252.0	125	M20	M12	M20	M24	33	19	64.4	18 ^{JS9}
K8	226	185 _{j6}	75	240	165	240	185	235	282	70 ^{H7}	100	Ø184	215	4.0	265	410	9.0	263.0	300	20	311.0	145	M24	M12	M20	M24	38	19	74.9	20 ^{JS9}
K9	280	230 _{j6}	95	280	185	280	225	285	330	90 ^{H7}	120	Ø230	265	5.0	315	495	10.0	302.0	350	26	361.0	180	M30	M16	M24	M30	48	26	95.4	25 ^{JS9}

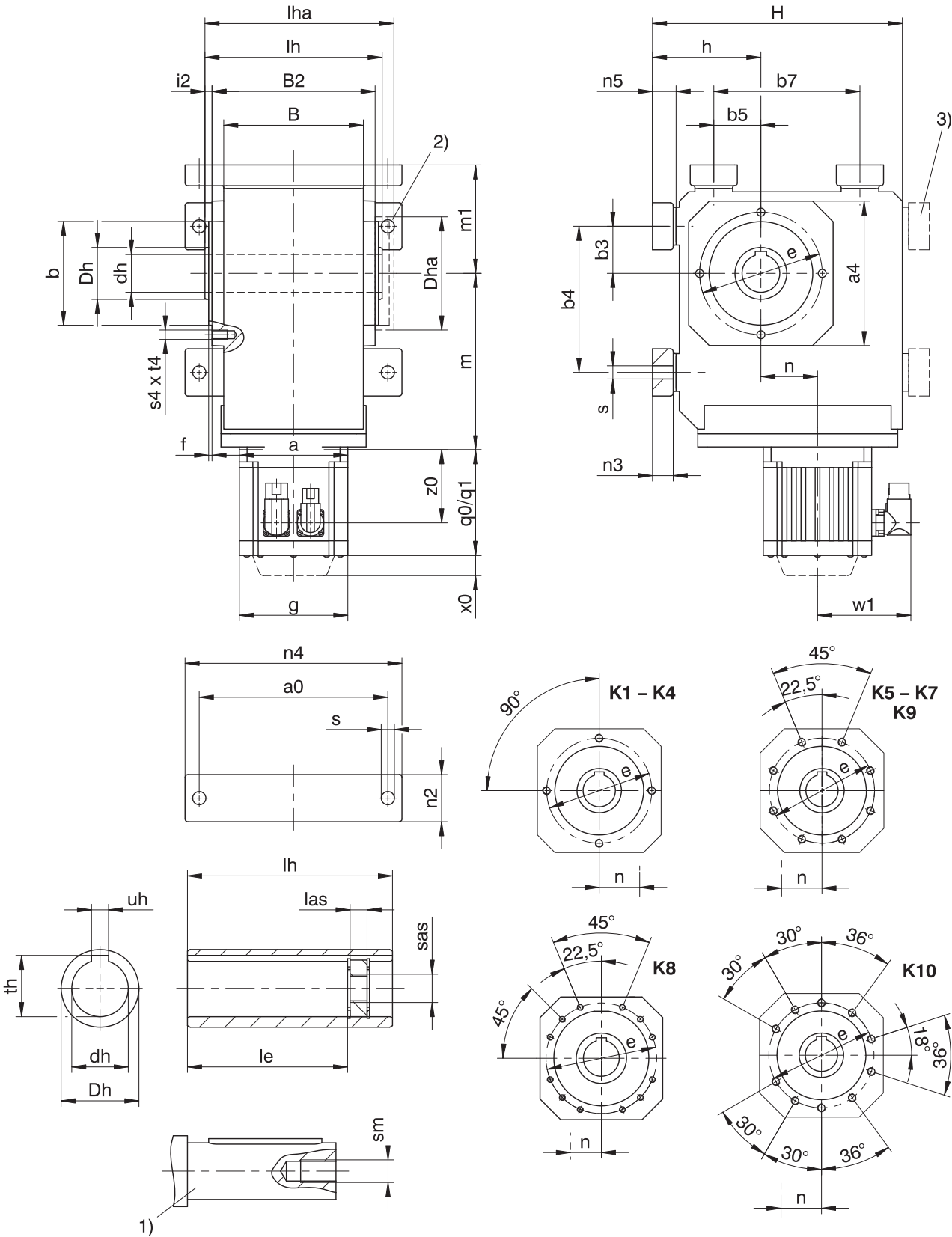
Dimensions of motors

Type	□g	q0	q1	w1	x0	z0
EZ301U	72	114.0	154.0	55.5	21	78.5
EZ302U	72	136.0	176.0	55.5	21	100.5
EZ303U	72	158.0	198.0	55.5	21	122.5
EZ401U	98	118.5	167.0	91.0	22	76.5
EZ402U	98	143.5	192.0	91.0	22	101.5
EZ404U	98	193.5	242.0	91.0	22	151.5
EZ501U	115	112.0	166.5	100.0	22	77.5
EZ502U	115	137.0	191.5	100.0	22	102.5
EZ503U	115	162.0	216.5	100.0	22	127.5
EZ505U	115	212.0	266.5	100.0	22	177.5
EZ701U	145	125.0	184.0	115.0	22	87.0
EZ702U	145	150.0	209.0	115.0	22	112.0
EZ703U	145	175.0	234.0	115.0	22	137.0
EZ705U	145	230.0	289.0	134.0	22	188.0
EZ802U	190	232.5	309.5	156.5	22	178.5
EZ803U	190	273.5	350.5	156.5	22	219.5
EZ805U	190	355.5	432.5	156.5	22	301.5

Dimensions of geared motors

Type	EZ3			EZ4			EZ5			EZ7			EZ8		
	a	m	n	a	m	n	a	m	n	a	m	n	a	m	n
K102	□72	124	36.0	□98	124	36.0	□115	128	36.0	□145	130	36.0	–	–	–
K202	□72	143	46.0	□98	143	46.0	□115	147	46.0	□145	149	46.0	–	–	–
K203	Ø140	180	46.0	Ø140	180	46.0	–	–	–	–	–	–	–	–	–
K302	Ø140	163	52.5	Ø140	163	52.5	□115	167	52.5	□145	169	52.5	–	–	–
K303	Ø140	200	52.5	Ø140	200	52.5	Ø160	210	16.0	–	–	–	–	–	–
K402	–	–	–	–	–	–	Ø160	187	60.0	□145	189	60.0	□190	192	60.0
K403	Ø140	220	60.0	Ø140	220	60.0	Ø160	230	23.0	–	–	–	–	–	–
K513	–	–	–	–	–	–	Ø160	172	15.0	□145	174	15.0	□190	177	15.0
K514	–	–	–	–	–	–	Ø160	215	15.0	–	–	–	–	–	–
K613	–	–	–	–	–	–	Ø160	191	18.0	Ø200	193	18.0	□190	196	18.0
K614	–	–	–	–	–	–	Ø160	234	18.0	–	–	–	–	–	–
K713	–	–	–	–	–	–	–	–	–	Ø200	221	20.0	□190	224	20.0
K714	–	–	–	–	–	–	Ø160	263	20.0	Ø200	283	20.0	–	–	–
K813	–	–	–	–	–	–	–	–	–	Ø200	247	24.0	Ø250	249	24.0
K814	–	–	–	–	–	–	–	–	–	Ø200	308	24.0	Ø250	320	5.0
K913	–	–	–	–	–	–	–	–	–	–	–	–	Ø250	294	25.0
K914	–	–	–	–	–	–	–	–	–	Ø200	353	25.0	Ø250	365	25.0

16.3.2 A shaft design (hollow shaft), NG housing design (base + pitch circle diameter)



q0	Applies to motors without brake.	q1	Applies to motors with brake.
x0	Applies to encoders using an optical measuring method	w1	Different for the One Cable Solution (OCS), see the chapter 17.4
1)	The length of the machine shaft must be at least 2.2 x $\varnothing d_h$ and the length of the feather key must be at least 2 x $\varnothing d_h$.	2)	Cover (optional)
3)	Only for K1 (other sizes on request)		

Dimensions of gear units

Type	a0	□a4	Øb	b3	b4	b5	b7	B	B2	Ødh	ØDh	Dha	Øe	f	h	H	i2	le	lh	las	lha	m1	n2	n3	n4	n5	Øs	s4	sm	sas	t4	th	uh
K1	115	105	75 _{j6}	30	90	30	90	90	106	20 ^{H7}	40	□105	90	3.0	75	175	7.0	98.0	120	12	127.0	75	30	13	140	15	9.0	M8	M6	M8	13	22.8	6 ^{JS9}
K1	115	105	75 _{j6}	30	90	30	90	90	106	25 ^{H7}	40	□105	90	3.0	75	175	7.0	98.0	120	12	127.0	75	30	13	140	15	9.0	M8	M10	M12	13	28.3	8 ^{JS9}
K1	115	105	75 _{j6}	30	90	30	90	90	106	30 ^{H7}	40	□105	90	3.0	75	175	7.0	93.5	120	12	127.0	75	30	13	140	15	9.0	M8	M10	M12	13	32.0	8 ^{JS9}
K2	155	116	82 _{j6}	35	115	35	115	115	134	30 ^{H7}	45	□116	100	3.0	88	213	7.0	121.5	148	12	156.0	88	40	20	185	23	11.0	M8	M10	M12	13	33.3	8 ^{JS9}
K3	170	132	95 _{j6}	40	130	40	130	130	146	35 ^{H7}	50	□132	115	3.0	98	236	7.0	125.0	160	12	168.0	98	45	20	200	23	11.0	M8	M12	M16	13	38.3	10 ^{JS9}
K4	200	152	110 _{j6}	50	155	50	155	148	173	40 ^{H7}	55	□152	130	3.5	115	265	7.5	157.0	188	12	197.5	115	50	22	230	25	14.0	M10	M16	M20	16	43.3	12 ^{JS9}
K5	200	145	110 _{j6}	40	140	100	140	160	185	50 ^{H7}	65	□145	130	3.5	190	290	7.5	164.0	200	12	209.5	130	60	27	240	30	18.0	M10	M16	M20	16	53.8	14 ^{JS9}
K6	210	180	140 _{j6}	50	160	110	160	168	200	50 ^{H7}	70	Ø183	165	3.5	220	340	7.5	179.0	215	12	224.5	150	65	27	250	30	18.5	M10	M16	M20	16	53.8	14 ^{JS9}
K7	241	195	155 _{j6}	55	180	125	180	190	226	60 ^{H7}	85	Ø205	185	3.5	250	380	8.0	214.0	242	12	252.0	163	70	35	290	38	23.0	M12	M20	M24	19	64.4	18 ^{JS9}
K8	300	226	185 _{j6}	75	240	165	240	235	282	70 ^{H7}	100	Ø184	215	4.0	310	455	9.0	263.0	300	20	311.0	190	85	41	360	45	27.0	M12	M20	M24	19	74.9	20 ^{JS9}
K9	360	280	230 _{j6}	95	280	185	280	285	330	90 ^{H7}	120	Ø230	265	5.0	365	545	10.0	302.0	350	26	361.0	230	95	46	430	50	31.0	M16	M24	M30	26	95.4	25 ^{JS9}
K10	330	340	250 _{h6}	115	350	265	420	400	356	100 ^{H7}	130	Ø200	300	20.0	420	636	27.0	361.0	410	26	441.0	270	120	–	400	45	39.0	M20	M24	M30	33	106.4	28 ^{JS9}

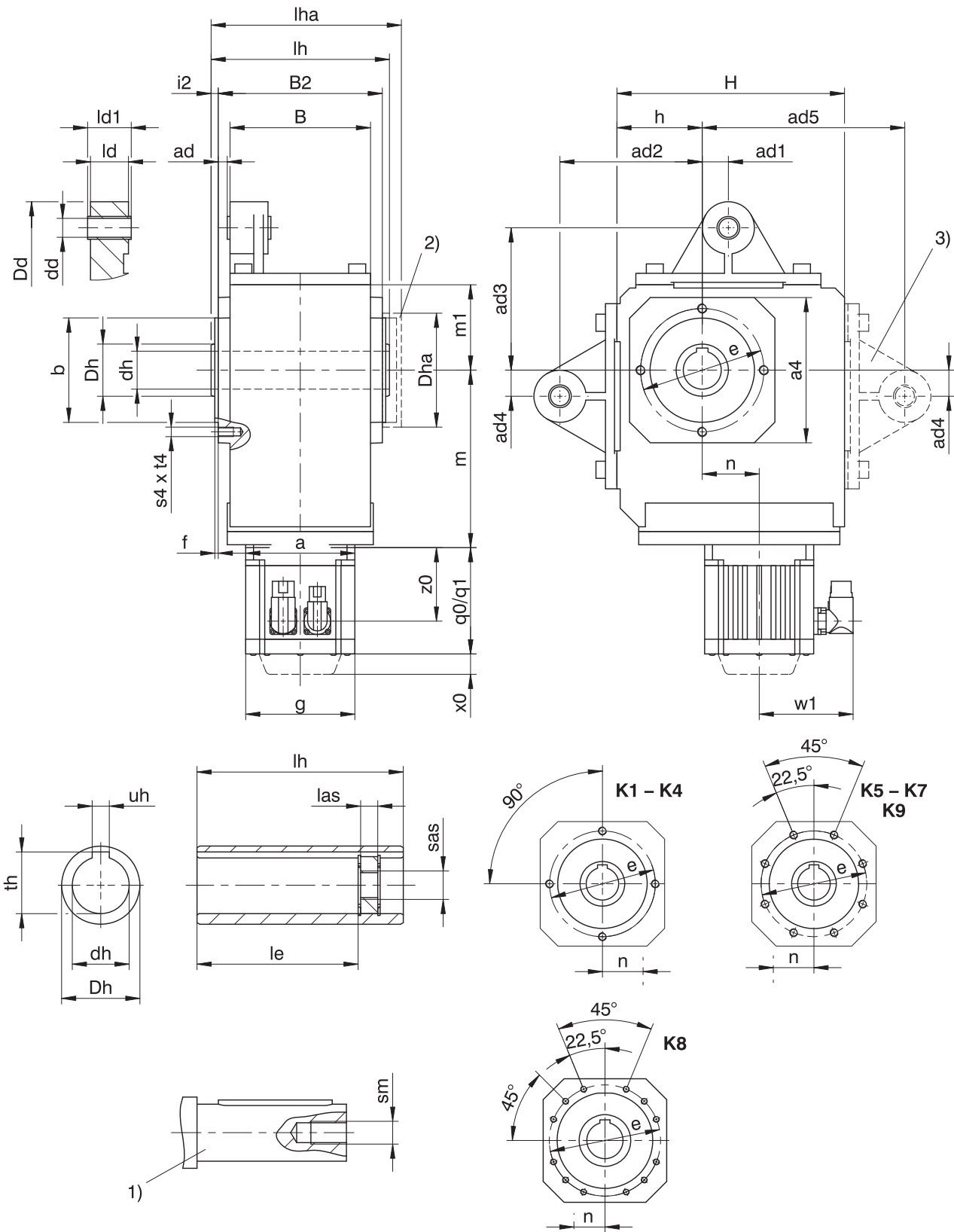
Dimensions of motors

Type	□g	q0	q1	w1	x0	z0
EZ301U	72	114.0	154.0	55.5	21	78.5
EZ302U	72	136.0	176.0	55.5	21	100.5
EZ303U	72	158.0	198.0	55.5	21	122.5
EZ401U	98	118.5	167.0	91.0	22	76.5
EZ402U	98	143.5	192.0	91.0	22	101.5
EZ404U	98	193.5	242.0	91.0	22	151.5
EZ501U	115	112.0	166.5	100.0	22	77.5
EZ502U	115	137.0	191.5	100.0	22	102.5
EZ503U	115	162.0	216.5	100.0	22	127.5
EZ505U	115	212.0	266.5	100.0	22	177.5
EZ701U	145	125.0	184.0	115.0	22	87.0
EZ702U	145	150.0	209.0	115.0	22	112.0
EZ703U	145	175.0	234.0	115.0	22	137.0
EZ705U	145	230.0	289.0	134.0	22	188.0
EZ802U	190	232.5	309.5	156.5	22	178.5
EZ803U	190	273.5	350.5	156.5	22	219.5
EZ805U	190	355.5	432.5	156.5	22	301.5

Dimensions of geared motors

Type	EZ3			EZ4			EZ5			EZ7			EZ8		
	a	m	n	a	m	n	a	m	n	a	m	n	a	m	n
K102	□72	124	36.0	□98	124	36.0	□115	128	36.0	□145	130	36.0	–	–	–
K202	□72	143	46.0	□98	143	46.0	□115	147	46.0	□145	149	46.0	–	–	–
K203	Ø140	180	46.0	Ø140	180	46.0	–	–	–	–	–	–	–	–	–
K302	Ø140	163	52.5	Ø140	163	52.5	□115	167	52.5	□145	169	52.5	–	–	–
K303	Ø140	200	52.5	Ø140	200	52.5	Ø160	210	16.0	–	–	–	–	–	–
K402	–	–	–	–	–	–	Ø160	187	60.0	□145	189	60.0	□190	192	60.0
K403	Ø140	220	60.0	Ø140	220	60.0	Ø160	230	23.0	–	–	–	–	–	–
K513	–	–	–	–	–	–	Ø160	172	15.0	□145	174	15.0	□190	177	15.0
K514	–	–	–	–	–	–	Ø160	215	15.0	–	–	–	–	–	–
K613	–	–	–	–	–	–	Ø160	191	18.0	Ø200	193	18.0	□190	196	18.0
K614	–	–	–	–	–	–	Ø160	234	18.0	–	–	–	–	–	–
K713	–	–	–	–	–	–	–	–	–	Ø200	221	20.0	□190	224	20.0
K714	–	–	–	–	–	–	Ø160	263	20.0	Ø200	283	20.0	–	–	–
K813	–	–	–	–	–	–	–	–	–	Ø200	247	24.0	Ø250	249	24.0
K814	–	–	–	–	–	–	–	–	–	Ø200	308	24.0	Ø250	320	5.0
K913	–	–	–	–	–	–	–	–	–	–	–	–	Ø250	294	25.0
K914	–	–	–	–	–	–	–	–	–	Ø200	353	25.0	Ø250	365	25.0
K1014	–	–	–	–	–	–	–	–	–	–	–	–	Ø250	450	28.0

16.3.3 A shaft design (hollow shaft), GD housing design (pitch circle diameter + torque arm bracket)



q0 Applies to motors without brake.

x0 Applies to encoders using an optical measuring method

1) The length of the machine shaft must be at least 2.2 x $\varnothing dh$ and the length of the feather key must be at least 2 x $\varnothing dh$.

q1 Applies to motors with brake.

w1 Different for the One Cable Solution (OCS), see the chapter [17.4](#)

2) Cover (optional)

3) Only for K1 (other sizes on request)

– If you brace the gear units without the torque arm brackets provided by the manufacturer for this purpose, the dimensions for ad2 and ad3 must meet the specified value.

Dimensions of gear units

Type	□a4	ad	ad1	ad2	ad3	ad4	ad5	Øb	B	B2	Ødd	Ødh	ØDd	ØDh	Dha	Øe	f
K1	105	6.0	15.0	90	90	15.0	130	75 _{j6}	90	106	12 ^{H9}	20 ^{H7}	43	40	□105	90	3.0
K1	105	6.0	15.0	90	90	15.0	130	75 _{j6}	90	106	12 ^{H9}	25 ^{H7}	43	40	□105	90	3.0
K1	105	6.0	15.0	90	90	15.0	130	75 _{j6}	90	106	12 ^{H9}	30 ^{H7}	43	40	□105	90	3.0
K2	116	6.5	22.5	100	100	22.5	–	82 _{j6}	115	134	16 ^{H9}	30 ^{H7}	45	45	□116	100	3.0
K3	132	5.0	25.0	120	120	25.0	–	95 _{j6}	130	146	16 ^{H9}	35 ^{H7}	45	50	□132	115	3.0
K4	152	9.5	27.5	150	150	27.5	–	110 _{j6}	148	173	20 ^{H9}	40 ^{H7}	55	55	□152	130	3.5
K5	145	9.5	30.0	250	190	30.0	–	110 _{j6}	160	185	20 ^{H9}	50 ^{H7}	58	65	□145	130	3.5
K6	180	13.0	30.0	250	180	30.0	–	140 _{j6}	168	200	20 ^{H9}	50 ^{H7}	58	70	Ø183	165	3.5
K7	195	15.0	35.0	300	213	35.0	–	155 _{j6}	190	226	20 ^{H9}	60 ^{H7}	68	85	Ø205	185	3.5
K8	226	17.0	45.0	350	230	45.0	–	185 _{j6}	235	282	24 ^{H9}	70 ^{H7}	72	100	Ø184	215	4.0
K9	280	16.0	45.0	450	315	45.0	–	230 _{j6}	285	330	24 ^{H9}	90 ^{H7}	75	120	Ø230	265	5.0

Dimensions of gear units

Type	h	H	i2	ld	ld1	le	lh	las	lha	m1	s4	sm	sas	t4	th	uh
K1	60	160	7.0	24	28	98.0	120	12	127.0	60	M8	M6	M8	13	22.8	6 ^{JS9}
K1	60	160	7.0	24	28	98.0	120	12	127.0	60	M8	M10	M12	13	28.3	8 ^{JS9}
K1	60	160	7.0	24	28	93.5	120	12	127.0	60	M8	M10	M12	13	32.0	8 ^{JS9}
K2	65	190	7.0	32	38	121.5	148	12	156.0	65	M8	M10	M12	13	33.3	8 ^{JS9}
K3	75	213	7.0	32	38	125.0	160	12	168.0	75	M8	M12	M16	13	38.3	10 ^{JS9}
K4	90	240	7.5	40	46	157.0	188	12	197.5	90	M10	M16	M20	16	43.3	12 ^{JS9}
K5	160	260	7.5	40	46	164.0	200	12	209.5	100	M10	M16	M20	16	53.8	14 ^{JS9}
K6	190	310	7.5	40	46	179.0	215	12	224.5	120	M10	M16	M20	16	53.8	14 ^{JS9}
K7	212	342	8.0	64	70	214.0	242	12	252.0	125	M12	M20	M24	19	64.4	18 ^{JS9}
K8	265	410	9.0	102	115	263.0	300	20	311.0	145	M12	M20	M24	19	74.9	20 ^{JS9}
K9	315	495	10.0	102	115	302.0	350	26	361.0	180	M16	M24	M30	26	95.4	25 ^{JS9}

Dimensions of motors

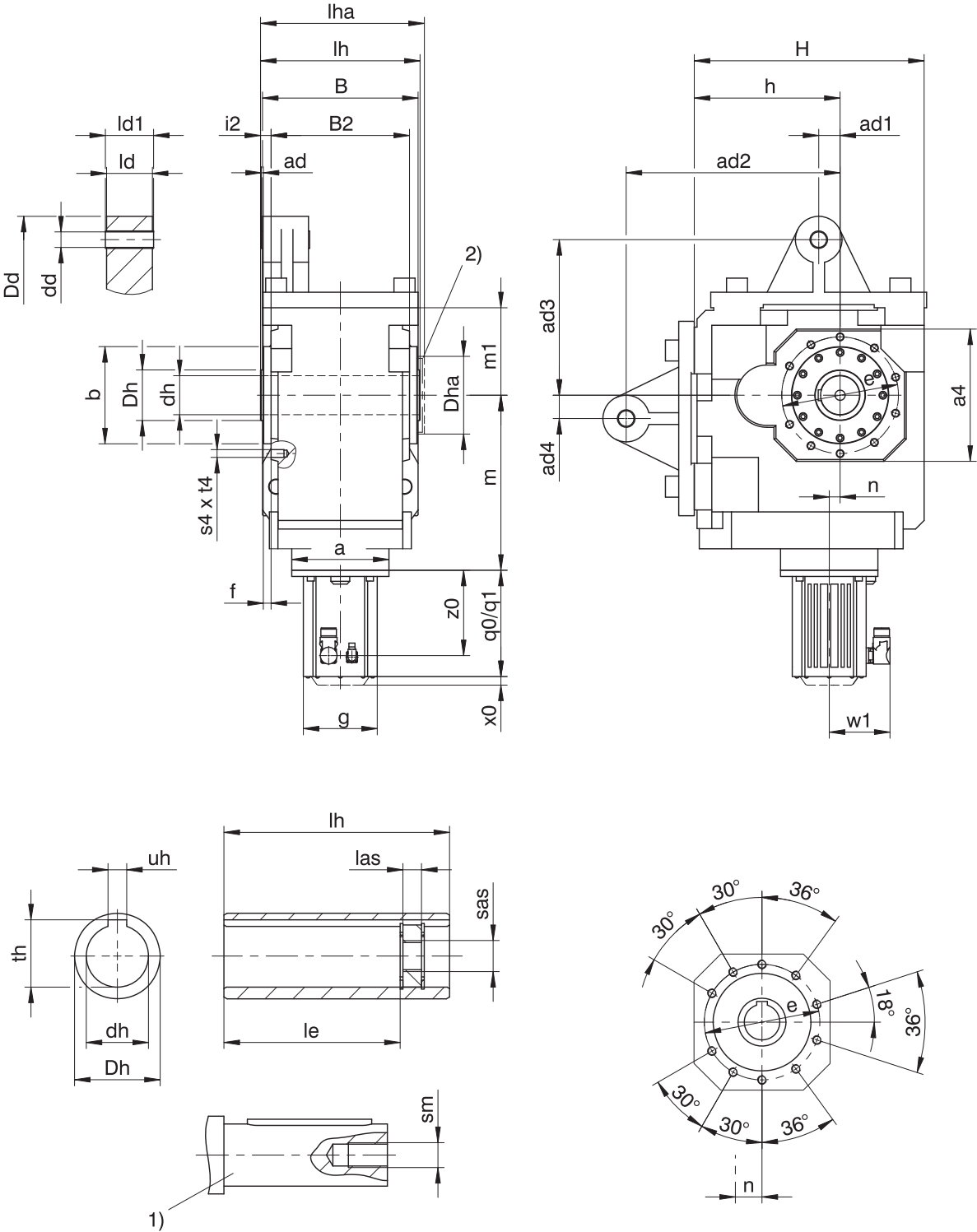
Type	□g	q0	q1	w1	x0	z0
EZ301U	72	114.0	154.0	55.5	21	78.5
EZ302U	72	136.0	176.0	55.5	21	100.5
EZ303U	72	158.0	198.0	55.5	21	122.5
EZ401U	98	118.5	167.0	91.0	22	76.5
EZ402U	98	143.5	192.0	91.0	22	101.5
EZ404U	98	193.5	242.0	91.0	22	151.5
EZ501U	115	112.0	166.5	100.0	22	77.5
EZ502U	115	137.0	191.5	100.0	22	102.5
EZ503U	115	162.0	216.5	100.0	22	127.5
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EZ701U	145	125.0	184.0	115.0	22	87.0
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EZ802U	190	232.5	309.5	156.5	22	178.5
EZ803U	190	273.5	350.5	156.5	22	219.5
EZ805U	190	355.5	432.5	156.5	22	301.5

The dimensions a, m and n can be found on the next page.

Dimensions of geared motors

Type	EZ3			EZ4			EZ5			EZ7			EZ8		
	a	m	n	a	m	n	a	m	n	a	m	n	a	m	n
K102	□72	124	36.0	□98	124	36.0	□115	128	36.0	□145	130	36.0	–	–	–
K202	□72	143	46.0	□98	143	46.0	□115	147	46.0	□145	149	46.0	–	–	–
K203	Ø140	180	46.0	Ø140	180	46.0	–	–	–	–	–	–	–	–	–
K302	Ø140	163	52.5	Ø140	163	52.5	□115	167	52.5	□145	169	52.5	–	–	–
K303	Ø140	200	52.5	Ø140	200	52.5	Ø160	210	16.0	–	–	–	–	–	–
K402	–	–	–	–	–	–	Ø160	187	60.0	□145	189	60.0	□190	192	60.0
K403	Ø140	220	60.0	Ø140	220	60.0	Ø160	230	23.0	–	–	–	–	–	–
K513	–	–	–	–	–	–	Ø160	172	15.0	□145	174	15.0	□190	177	15.0
K514	–	–	–	–	–	–	Ø160	215	15.0	–	–	–	–	–	–
K613	–	–	–	–	–	–	Ø160	191	18.0	Ø200	193	18.0	□190	196	18.0
K614	–	–	–	–	–	–	Ø160	234	18.0	–	–	–	–	–	–
K713	–	–	–	–	–	–	–	–	–	Ø200	221	20.0	□190	224	20.0
K714	–	–	–	–	–	–	Ø160	263	20.0	Ø200	283	20.0	–	–	–
K813	–	–	–	–	–	–	–	–	–	Ø200	247	24.0	Ø250	249	24.0
K814	–	–	–	–	–	–	–	–	–	Ø200	308	24.0	Ø250	320	5.0
K913	–	–	–	–	–	–	–	–	–	–	–	–	Ø250	294	25.0
K914	–	–	–	–	–	–	–	–	–	Ø200	353	25.0	Ø250	365	25.0

16.3.4 A shaft design (hollow shaft), NGD housing design (foot + pitch circle diameter + torque arm bracket)



q0 Applies to motors without brake.

x0 Applies to encoders using an optical measuring method.

1) The length of the machine shaft must be at least $2.2 \times \varnothing dh$ and the length of the feather key must be at least $2 \times \varnothing dh$.

– If you brace the gear units without the torque arm brackets provided by the manufacturer for this purpose, the dimensions for ad_2 and ad_3 must meet the specified value.

q1 Applies to motors with brake.

w1 Different for the One Cable Solution (OCS), see the chapter [17.4](#)

2) Cover (optional)

Dimensions of gear units

Type	$\square a_4$	ad	ad1	ad2	ad3	ad4	$\varnothing b$	B	B2	$\varnothing dd$	$\varnothing dh$	$\varnothing Dd$	$\varnothing Dh$	Dha	$\varnothing e$	f
K10	340	5	60	550	400	55	250 _{h6}	400	356	40 ^{H9}	100 ^{H7}	120	130	$\varnothing 200$	300	20

Dimensions of gear units

Type	h	H	i2	ld	ld1	le	lh	las	lha	m1	s4	sm	sas	t4	th	uh
K10	375	591	27	118	124	361	410	26	441	225	M20	M24	M30	33	106.4	28 ^{JS9}

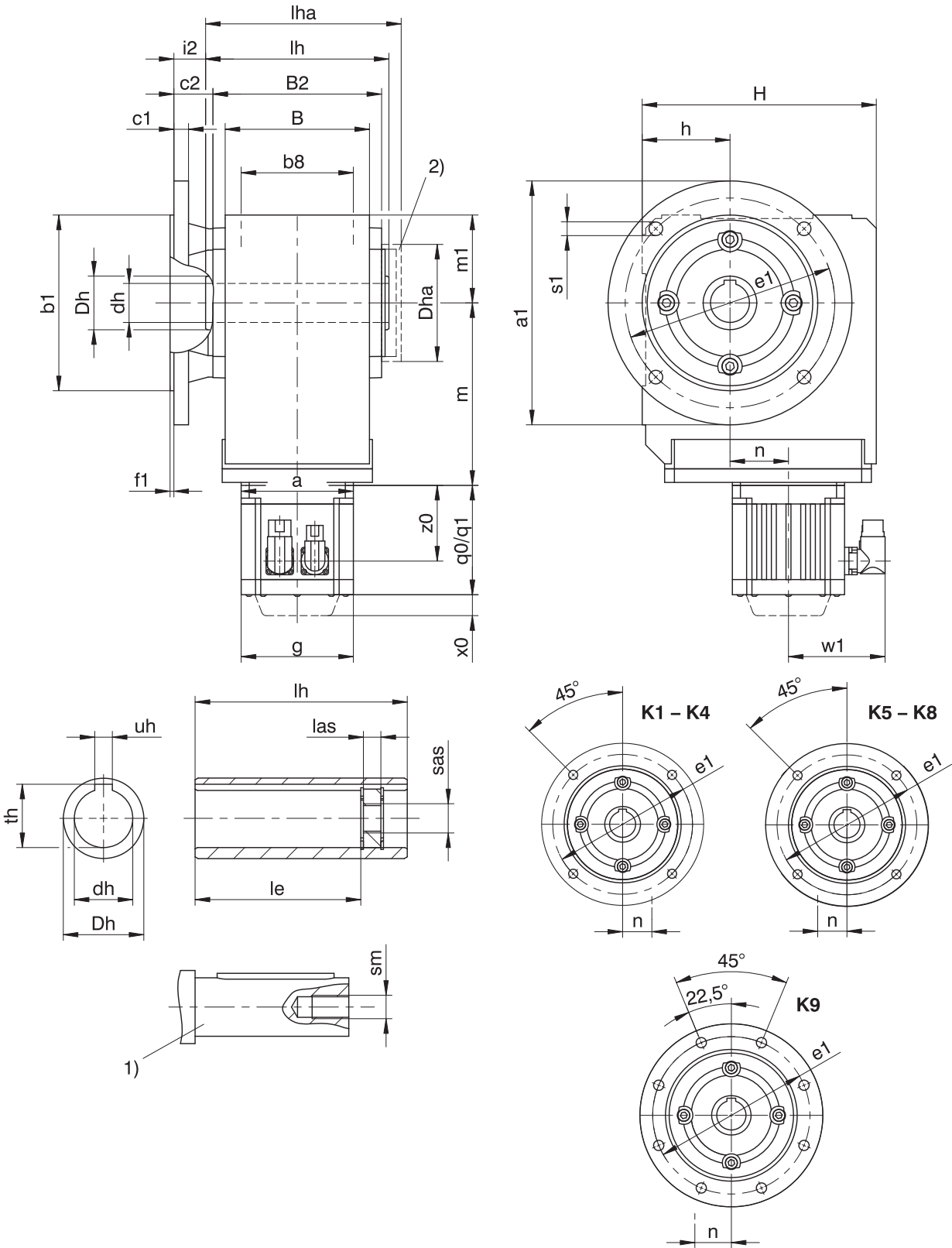
Dimensions of motors

Type	$\square g$	q0	q1	w1	x0	z0
EZ802U	190	232.5	309.5	156.5	22	178.5
EZ803U	190	273.5	350.5	156.5	22	219.5
EZ805U	190	355.5	432.5	156.5	22	301.5

Dimensions of geared motors

Type	EZ8		
	a	m	n
K1014	$\varnothing 250$	450	28.0

16.3.5 A shaft design (hollow shaft), F housing design (round flange)



q0	Applies to motors without brake.	q1	Applies to motors with brake.
x0	Applies to encoders using an optical measuring method	w1	Different for the One Cable Solution (OCS), see the chapter 17.4
1)	The length of the machine shaft must be at least 2.2 x $\varnothing d_h$ and the length of the feather key must be at least 2 x $\varnothing d_h$.	2)	Cover (optional)

Dimensions of gear units

Type	Øa1	Øb1	b8	B	B2	c1	c2	Ødh	ØDh	Dha	Øe1	f1	h	H	i2	le	lh	las	lha	m1	Øs1	sm	sas	th	uh
K1	160	110 _{j6}	70	90	106	10	32.0	20 ^{H7}	40	□105	130	3.5	60	160	25.0	98.0	120	12	127.0	60	9	M6	M8	22.8	6 ^{JS9}
K1	160	110 _{j6}	70	90	106	10	32.0	25 ^{H7}	40	□105	130	3.5	60	160	25.0	98.0	120	12	127.0	60	9	M10	M12	28.3	8 ^{JS9}
K1	160	110 _{j6}	70	90	106	10	32.0	30 ^{H7}	40	□105	130	3.5	60	160	25.0	93.5	120	12	127.0	60	9	M10	M12	32.0	8 ^{JS9}
K2	200	130 _{j6}	90	115	134	12	32.0	30 ^{H7}	45	□116	165	3.5	65	190	25.0	121.5	148	12	156.0	65	11	M10	M12	33.3	8 ^{JS9}
K3	200	130 _{j6}	105	130	146	14	38.0	35 ^{H7}	50	□132	165	3.5	75	213	31.0	125.0	160	12	168.0	75	11	M12	M16	38.3	10 ^{JS9}
K4	250	180 _{j6}	120	148	173	15	40.0	40 ^{H7}	55	□152	215	4.0	90	240	32.5	157.0	188	12	197.5	90	14	M16	M20	43.3	12 ^{JS9}
K5	250	180 _{j6}	125	160	185	15	39.5	50 ^{H7}	65	□145	215	4.0	160	260	32.0	164.0	200	12	209.5	100	14	M16	M20	53.8	14 ^{JS9}
K6	300	230 _{j6}	130	168	200	17	36.0	50 ^{H7}	70	Ø183	265	4.0	190	310	28.5	179.0	215	12	224.5	120	14	M16	M20	53.8	14 ^{JS9}
K7	350	250 _{h6}	145	190	226	18	44.0	60 ^{H7}	85	Ø205	300	5.0	212	342	36.0	214.0	242	12	252.0	125	18	M20	M24	64.4	18 ^{JS9}
K8	400	300 _{h6}	185	235	282	20	45.0	70 ^{H7}	100	Ø184	350	5.0	265	410	36.0	263.0	300	20	311.0	145	18	M20	M24	74.9	20 ^{JS9}
K9	450	350 _{h6}	225	285	330	23	50.0	90 ^{H7}	120	Ø230	400	5.0	315	495	40.0	302.0	350	26	361.0	180	18	M24	M30	95.4	25 ^{JS9}

Dimensions of additional round flanges

Type	Øa1	Øb1	c1	Øe1	f1	Øs1
K1	140	95 _{j6}	10	115	3.0	9
K2	160	110 _{j6}	12	130	3.5	9
K3	160	110 _{j6}	14	130	3.5	9
K3	250	180 _{j6}	14	215	4.0	14
K8	350	250 _{h6}	18	300	5.0	18
K8	450	350 _{h6}	20	400	5.0	18

Dimensions of motors

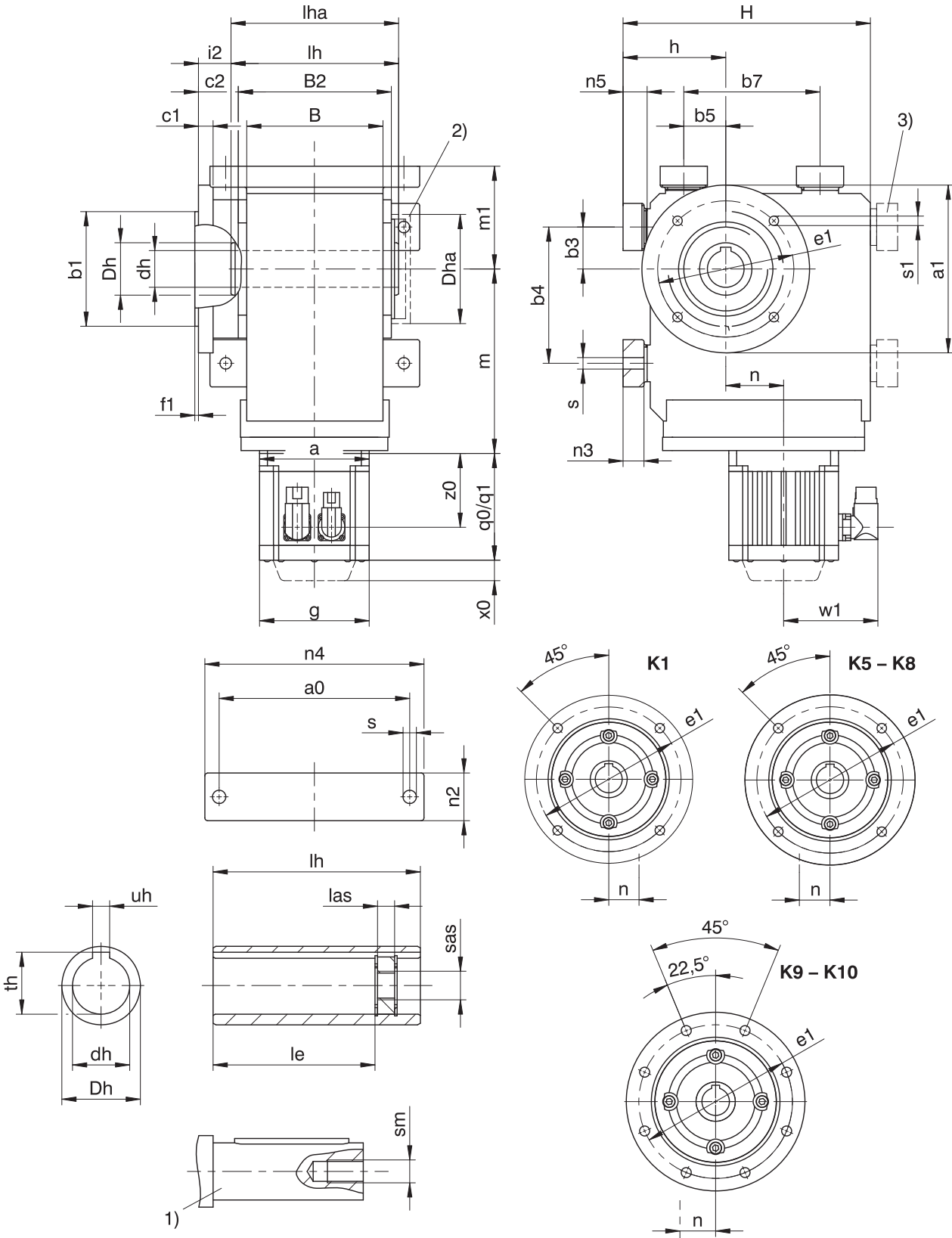
Type	□g	q0	q1	w1	x0	z0
EZ301U	72	114.0	154.0	55.5	21	78.5
EZ302U	72	136.0	176.0	55.5	21	100.5
EZ303U	72	158.0	198.0	55.5	21	122.5
EZ401U	98	118.5	167.0	91.0	22	76.5
EZ402U	98	143.5	192.0	91.0	22	101.5
EZ404U	98	193.5	242.0	91.0	22	151.5
EZ501U	115	112.0	166.5	100.0	22	77.5
EZ502U	115	137.0	191.5	100.0	22	102.5
EZ503U	115	162.0	216.5	100.0	22	127.5
EZ505U	115	212.0	266.5	100.0	22	177.5
EZ701U	145	125.0	184.0	115.0	22	87.0
EZ702U	145	150.0	209.0	115.0	22	112.0
EZ703U	145	175.0	234.0	115.0	22	137.0
EZ705U	145	230.0	289.0	134.0	22	188.0
EZ802U	190	232.5	309.5	156.5	22	178.5
EZ803U	190	273.5	350.5	156.5	22	219.5
EZ805U	190	355.5	432.5	156.5	22	301.5

The dimensions a, m and n can be found on the next page.

Dimensions of geared motors

Type	EZ3			EZ4			EZ5			EZ7			EZ8		
	a	m	n	a	m	n	a	m	n	a	m	n	a	m	n
K102	□72	124	36.0	□98	124	36.0	□115	128	36.0	□145	130	36.0	–	–	–
K202	□72	143	46.0	□98	143	46.0	□115	147	46.0	□145	149	46.0	–	–	–
K203	Ø140	180	46.0	Ø140	180	46.0	–	–	–	–	–	–	–	–	–
K302	Ø140	163	52.5	Ø140	163	52.5	□115	167	52.5	□145	169	52.5	–	–	–
K303	Ø140	200	52.5	Ø140	200	52.5	Ø160	210	16.0	–	–	–	–	–	–
K402	–	–	–	–	–	–	Ø160	187	60.0	□145	189	60.0	□190	192	60.0
K403	Ø140	220	60.0	Ø140	220	60.0	Ø160	230	23.0	–	–	–	–	–	–
K513	–	–	–	–	–	–	Ø160	172	15.0	□145	174	15.0	□190	177	15.0
K514	–	–	–	–	–	–	Ø160	215	15.0	–	–	–	–	–	–
K613	–	–	–	–	–	–	Ø160	191	18.0	Ø200	193	18.0	□190	196	18.0
K614	–	–	–	–	–	–	Ø160	234	18.0	–	–	–	–	–	–
K713	–	–	–	–	–	–	–	–	–	Ø200	221	20.0	□190	224	20.0
K714	–	–	–	–	–	–	Ø160	263	20.0	Ø200	283	20.0	–	–	–
K813	–	–	–	–	–	–	–	–	–	Ø200	247	24.0	Ø250	249	24.0
K814	–	–	–	–	–	–	–	–	–	Ø200	308	24.0	Ø250	320	5.0
K913	–	–	–	–	–	–	–	–	–	–	–	–	Ø250	294	25.0
K914	–	–	–	–	–	–	–	–	–	Ø200	353	25.0	Ø250	365	25.0

16.3.6 A shaft design (hollow shaft), NF housing design (base + round flange)



q0 Applies to motors without brake.

x0 Applies to encoders using an optical measuring method

q1 Applies to motors with brake.

w1 Different for the One Cable Solution (OCS), see the chapter [17.4](#)

1) The length of the machine shaft must be at least 2.2 x $\varnothing d_h$ and the length of the feather key must be at least 2 x $\varnothing d_h$.

2) Cover (optional)

3) Only for K1 (other sizes on request)

Dimensions of gear units

Type	a0	Øa1	Øb1	b3	b4	b5	b7	B	B2	c1	c2	Ødh	ØDh	Dha	Øe1	f1	h
K1	115	160	110 _β	30	90	30	90	90	106	10	32.0	20 ^{H7}	40	□105	130	3.5	75
K1	115	160	110 _β	30	90	30	90	90	106	10	32.0	25 ^{H7}	40	□105	130	3.5	75
K1	115	160	110 _β	30	90	30	90	90	106	10	32.0	30 ^{H7}	40	□105	130	3.5	75
K5	200	250	180 _β	40	140	100	140	160	185	15	39.5	50 ^{H7}	65	□145	215	4.0	190
K6	210	300	230 _β	50	160	110	160	168	200	17	36.0	50 ^{H7}	70	Ø183	265	4.0	220
K7	241	350	250 _{h6}	55	180	125	180	190	226	18	44.0	60 ^{H7}	85	Ø205	300	5.0	250
K8	300	400	300 _{h6}	75	240	165	240	235	282	20	45.0	70 ^{H7}	100	Ø184	350	5.0	310
K9	360	450	350 _{h6}	95	280	185	280	285	330	23	50.0	90 ^{H7}	120	Ø230	400	5.0	365
K10	330	550	450 _{h6}	115	350	265	420	400	356	25	78.0	100 ^{H7}	130	Ø200	500	5.0	420

Dimensions of gear units

Type	H	i2	le	lh	las	lha	m1	n2	n3	n4	n5	Øs	Øs1	sm	sas	th	uh
K1	175	25.0	98.0	120	12	127.0	75	30	13	140	15	9.0	9	M6	M8	22.8	6 ^{JS9}
K1	175	25.0	98.0	120	12	127.0	75	30	13	140	15	9.0	9	M10	M12	28.3	8 ^{JS9}
K1	175	25.0	93.5	120	12	127.0	75	30	13	140	15	9.0	9	M10	M12	32.0	8 ^{JS9}
K5	290	32.0	164.0	200	12	209.5	130	60	27	240	30	18.0	14	M16	M20	53.8	14 ^{JS9}
K6	340	28.5	179.0	215	12	224.5	150	65	27	250	30	18.5	14	M16	M20	53.8	14 ^{JS9}
K7	380	36.0	214.0	242	12	252.0	163	70	35	290	38	23.0	18	M20	M24	64.4	18 ^{JS9}
K8	455	36.0	263.0	300	20	311.0	190	85	41	360	45	27.0	18	M20	M24	74.9	20 ^{JS9}
K9	545	40.0	302.0	350	26	361.0	230	95	46	430	50	31.0	18	M24	M30	95.4	25 ^{JS9}
K10	636	51.0	361.0	410	26	441.0	270	120	–	400	45	39.0	18	M24	M30	106.4	28 ^{JS9}

Dimensions of additional round flanges

Type	Øa1	Øb1	c1	Øe1	f1	Øs1
K1	140	95 _β	10	115	3.0	9
K8	350	250 _{h6}	18	300	5.0	18
K8	450	350 _{h6}	20	400	5.0	18

Dimensions of motors

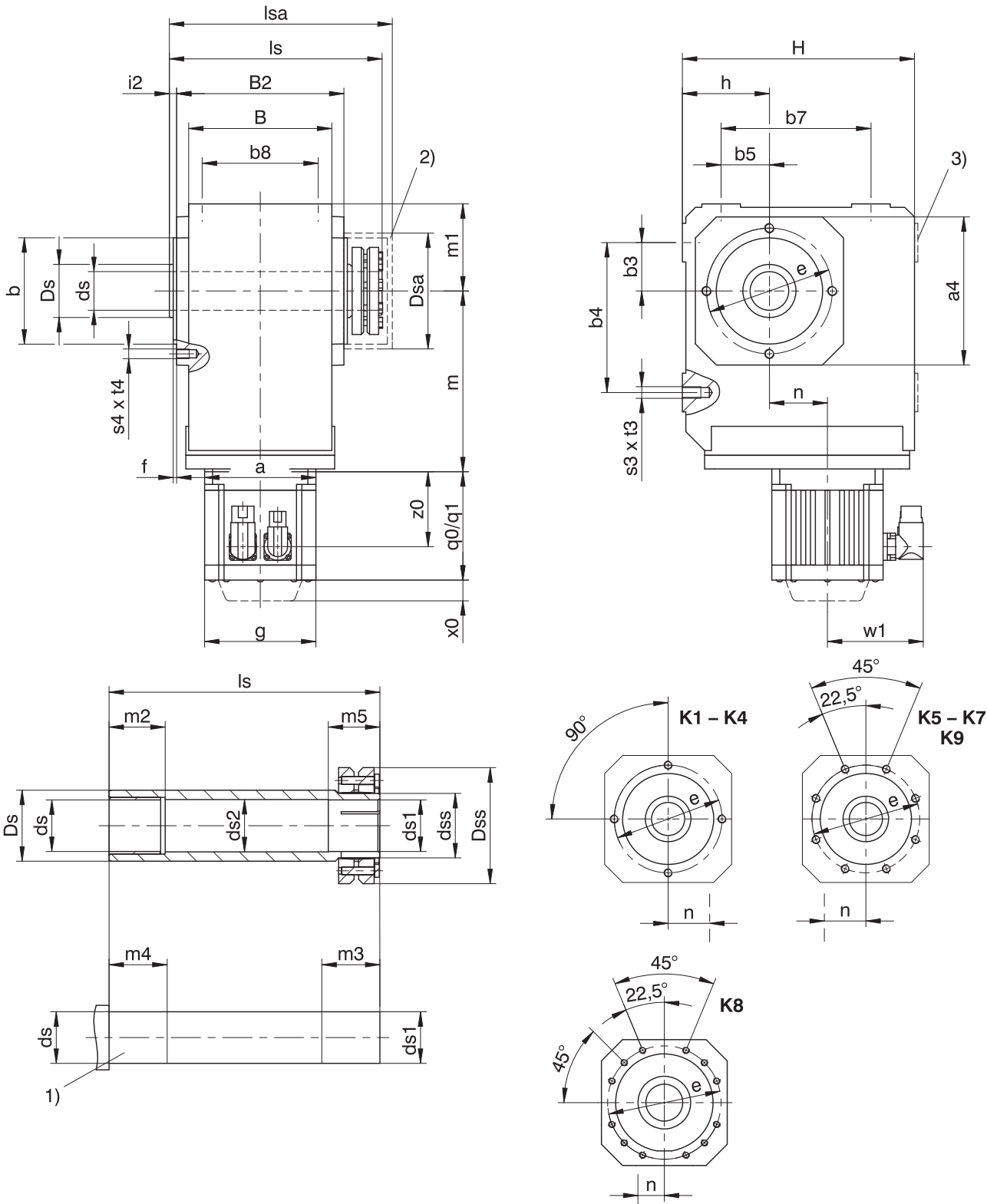
Type	□g	q0	q1	w1	x0	z0
EZ301U	72	114.0	154.0	55.5	21	78.5
EZ302U	72	136.0	176.0	55.5	21	100.5
EZ303U	72	158.0	198.0	55.5	21	122.5
EZ401U	98	118.5	167.0	91.0	22	76.5
EZ402U	98	143.5	192.0	91.0	22	101.5
EZ404U	98	193.5	242.0	91.0	22	151.5
EZ501U	115	112.0	166.5	100.0	22	77.5
EZ502U	115	137.0	191.5	100.0	22	102.5
EZ503U	115	162.0	216.5	100.0	22	127.5
EZ505U	115	212.0	266.5	100.0	22	177.5
EZ701U	145	125.0	184.0	115.0	22	87.0
EZ702U	145	150.0	209.0	115.0	22	112.0
EZ703U	145	175.0	234.0	115.0	22	137.0
EZ705U	145	230.0	289.0	134.0	22	188.0
EZ802U	190	232.5	309.5	156.5	22	178.5
EZ803U	190	273.5	350.5	156.5	22	219.5
EZ805U	190	355.5	432.5	156.5	22	301.5

The dimensions a, m and n can be found on the next page.

Dimensions of geared motors

Type	EZ3			EZ4			EZ5			EZ7			EZ8		
	a	m	n	a	m	n	a	m	n	a	m	n	a	m	n
K102	□72	124	36.0	□98	124	36.0	□115	128	36.0	□145	130	36.0	–	–	–
K513	–	–	–	–	–	–	Ø160	172	15.0	□145	174	15.0	□190	177	15.0
K514	–	–	–	–	–	–	Ø160	215	15.0	–	–	–	–	–	–
K613	–	–	–	–	–	–	Ø160	191	18.0	Ø200	193	18.0	□190	196	18.0
K614	–	–	–	–	–	–	Ø160	234	18.0	–	–	–	–	–	–
K713	–	–	–	–	–	–	–	–	–	Ø200	221	20.0	□190	224	20.0
K714	–	–	–	–	–	–	Ø160	263	20.0	Ø200	283	20.0	–	–	–
K813	–	–	–	–	–	–	–	–	–	Ø200	247	24.0	Ø250	249	24.0
K814	–	–	–	–	–	–	–	–	–	Ø200	308	24.0	Ø250	320	5.0
K913	–	–	–	–	–	–	–	–	–	–	–	–	Ø250	294	25.0
K914	–	–	–	–	–	–	–	–	–	Ø200	353	25.0	Ø250	365	25.0
K1014	–	–	–	–	–	–	–	–	–	–	–	–	Ø250	450	28.0

16.3.7 S shaft design (hollow shaft with shrink disk), G housing design (pitch circle diameter)



q0	Applies to motors without brake.	q1	Applies to motors with brake.
x0	Applies to encoders using an optical measuring method.	w1	Different for the One Cable Solution (OCS), see the chapter 17.4
1)	Machine shaft: The dimension l_s must meet or exceed the specified value.	2)	Cover (optional)
3)	Only for K1 (other sizes on request)		

Dimensions of gear units

Type	□a4	Øb	b3	b4	b5	b7	b8	B	B2	Øds	Øds1	Øds2	Ødss	ØDs	ØDsa	ØDss	Øe	f	h	H	i2	ls	lsa	m1	m2	m3	m4	m5	s3	s4	t3	t4
K1	105	75 _{j6}	30	90	30	90	70	90	106	25 _{h9}	25 _{h9} ^{H7}	25.5	30	40	80.0	60	90	3.0	60	160	7.0	149	163	60	20	34	25	29	M8	M8	13	13
K2	116	82 _{j6}	35	115	35	115	90	115	134	30 _{h9}	30 _{h9} ^{H7}	30.5	36	45	88.0	72	100	3.0	65	190	7.0	178	193	65	25	39	30	34	M10	M8	16	13
K3	132	95 _{j6}	40	130	40	130	105	130	146	35 _{h9}	35 _{h9} ^{H7}	35.5	44	50	101.0	80	115	3.0	75	213	7.0	190	206	75	30	39	35	34	M10	M8	16	13
K4	152	110 _{j6}	50	155	50	155	120	148	173	40 _{h9}	40 _{h9} ^{H7}	40.5	50	55	114.0	88	130	3.5	90	240	7.5	220	243	90	40	39	45	34	M12	M10	19	16
K5	145	110 _{j6}	40	140	100	140	125	160	185	50 _{h9}	50 _{h9} ^{H7}	50.5	62	65	116.0	106	130	3.5	160	260	7.5	237	254	100	40	44	45	39	M16	M10	26	16
K6	180	140 _{j6}	50	160	110	160	130	168	200	50 _{h9}	50 _{h9} ^{H7}	50.5	62	70	128.0	106	165	3.5	190	310	7.5	254	276	120	40	45	45	40	M16	M10	26	16
K7	195	155 _{h6}	55	180	125	180	145	190	226	60 _{h6}	60 _{h6} ^{H7}	62.0	75	85	161.5	138	185	3.5	212	342	8.0	278	314	125	40	45	45	40	M20	M12	33	19
K8	226	185 _{h6}	75	240	165	240	185	235	282	70 _{h6}	70 _{h6} ^{H7}	72.0	90	100	193.0	155	215	4.0	265	410	9.0	352	378	145	50	60	60	50	M24	M12	38	19
K9	280	230 _{h6}	95	280	185	280	225	285	330	90 _{h6}	90 _{h6} ^{H7}	92.0	120	120	244.0	200	265	5.0	315	495	10.0	418	428	180	60	70	70	60	M30	M16	48	26

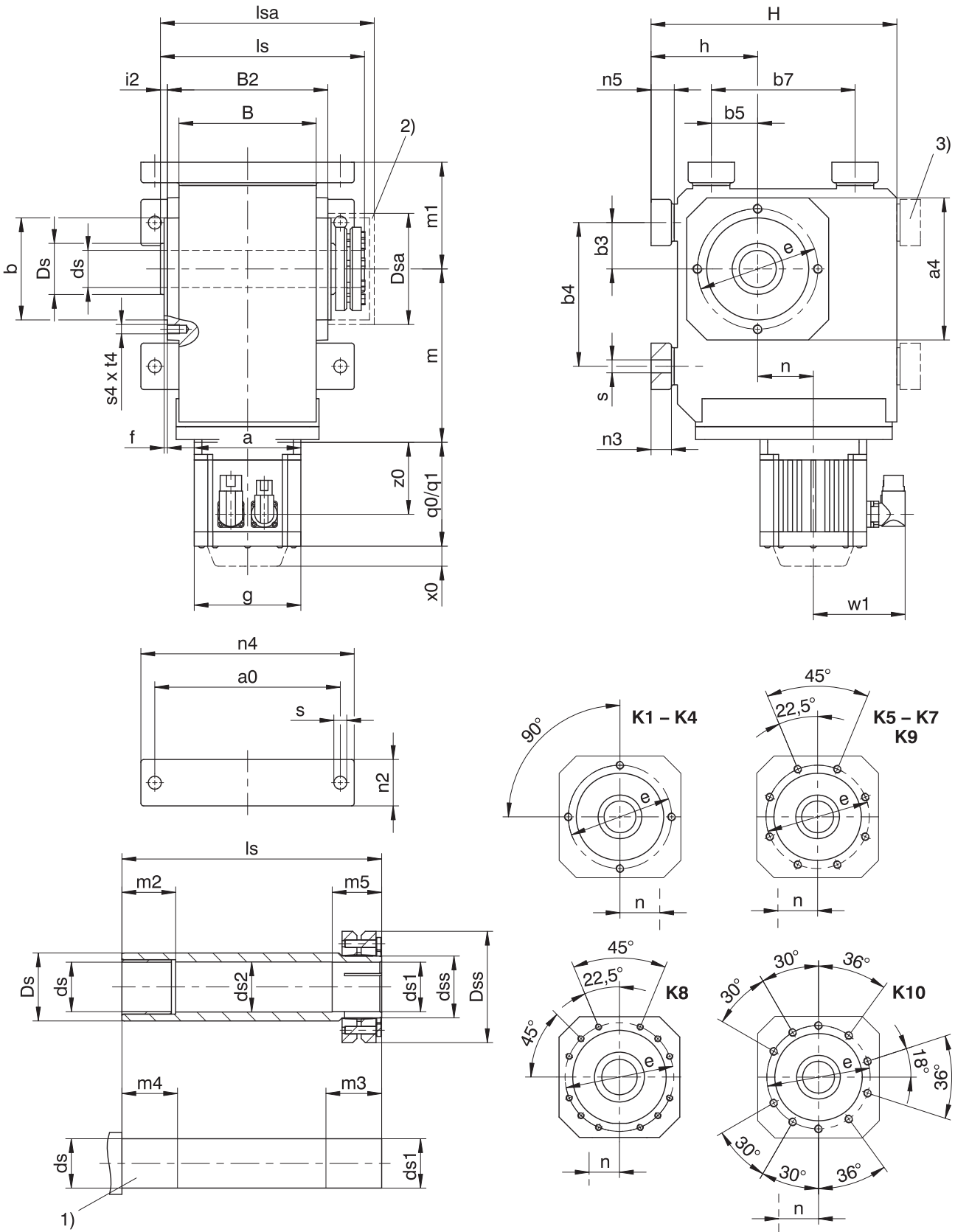
Dimensions of motors

Type	□g	q0	q1	w1	x0	z0
EZ301U	72	114.0	154.0	55.5	21	78.5
EZ302U	72	136.0	176.0	55.5	21	100.5
EZ303U	72	158.0	198.0	55.5	21	122.5
EZ401U	98	118.5	167.0	91.0	22	76.5
EZ402U	98	143.5	192.0	91.0	22	101.5
EZ404U	98	193.5	242.0	91.0	22	151.5
EZ501U	115	112.0	166.5	100.0	22	77.5
EZ502U	115	137.0	191.5	100.0	22	102.5
EZ503U	115	162.0	216.5	100.0	22	127.5
EZ505U	115	212.0	266.5	100.0	22	177.5
EZ701U	145	125.0	184.0	115.0	22	87.0
EZ702U	145	150.0	209.0	115.0	22	112.0
EZ703U	145	175.0	234.0	115.0	22	137.0
EZ705U	145	230.0	289.0	134.0	22	188.0
EZ802U	190	232.5	309.5	156.5	22	178.5
EZ803U	190	273.5	350.5	156.5	22	219.5
EZ805U	190	355.5	432.5	156.5	22	301.5

Dimensions of geared motors

Type	EZ3			EZ4			EZ5			EZ7			EZ8		
	a	m	n	a	m	n	a	m	n	a	m	n	a	m	n
K102	□72	124	36.0	□98	124	36.0	□115	128	36.0	□145	130	36.0	–	–	–
K202	□72	143	46.0	□98	143	46.0	□115	147	46.0	□145	149	46.0	–	–	–
K203	Ø140	180	46.0	Ø140	180	46.0	–	–	–	–	–	–	–	–	–
K302	Ø140	163	52.5	Ø140	163	52.5	□115	167	52.5	□145	169	52.5	–	–	–
K303	Ø140	200	52.5	Ø140	200	52.5	Ø160	210	16.0	–	–	–	–	–	–
K402	–	–	–	–	–	–	Ø160	187	60.0	□145	189	60.0	□190	192	60.0
K403	Ø140	220	60.0	Ø140	220	60.0	Ø160	230	23.0	–	–	–	–	–	–
K513	–	–	–	–	–	–	Ø160	172	15.0	□145	174	15.0	□190	177	15.0
K514	–	–	–	–	–	–	Ø160	215	15.0	–	–	–	–	–	–
K613	–	–	–	–	–	–	Ø160	191	18.0	Ø200	193	18.0	□190	196	18.0
K614	–	–	–	–	–	–	Ø160	234	18.0	–	–	–	–	–	–
K713	–	–	–	–	–	–	–	–	–	Ø200	221	20.0	□190	224	20.0
K714	–	–	–	–	–	–	Ø160	263	20.0	Ø200	283	20.0	–	–	–
K813	–	–	–	–	–	–	–	–	–	Ø200	247	24.0	Ø250	249	24.0
K814	–	–	–	–	–	–	–	–	–	Ø200	308	24.0	Ø250	320	5.0
K913	–	–	–	–	–	–	–	–	–	–	–	–	Ø250	294	25.0
K914	–	–	–	–	–	–	–	–	–	Ø200	353	25.0	Ø250	365	25.0

16.3.8 S shaft design (hollow shaft with shrink disk), NG housing design (base + pitch circle diameter)



q0 Applies to motors without brake.

x0 Applies to encoders using an optical measuring method.

1) Machine shaft: The dimension l_s must meet or exceed the specified value.

3) Only for K1 (other sizes on request)

q1 Applies to motors with brake.

w1 Different for the One Cable Solution (OCS), see the chapter [17.4](#)

2) Cover (optional)

Dimensions of gear units

Type	a0	a4	Øb	b3	b4	b5	b7	B	B2	Øds	Øds1	Øds2	Ødss	ØDs	ØDsa
K1	115	105	75 _{j6}	30	90	30	90	90	106	25 _{h9}	25 _{h9} ^{H7}	25.5	30	40	80.0
K2	155	116	82 _{j6}	35	115	35	115	115	134	30 _{h9}	30 _{h9} ^{H7}	30.5	36	45	88.0
K3	170	132	95 _{j6}	40	130	40	130	130	146	35 _{h9}	35 _{h9} ^{H7}	35.5	44	50	101.0
K4	200	152	110 _{j6}	50	155	50	155	148	173	40 _{h9}	40 _{h9} ^{H7}	40.5	50	55	114.0
K5	200	145	110 _{j6}	40	140	100	140	160	185	50 _{h9}	50 _{h9} ^{H7}	50.5	62	65	116.0
K6	210	180	140 _{j6}	50	160	110	160	168	200	50 _{h9}	50 _{h9} ^{H7}	50.5	62	70	128.0
K7	241	195	155 _{j6}	55	180	125	180	190	226	60 _{h6}	60 _{h6} ^{H7}	62.0	75	85	161.5
K8	300	226	185 _{j6}	75	240	165	240	235	282	70 _{h6}	70 _{h6} ^{H7}	72.0	90	100	193.0
K9	360	280	230 _{j6}	95	280	185	280	285	330	90 _{h6}	90 _{h6} ^{H7}	92.0	120	120	244.0
K10	330	340	250 _{h6}	115	350	265	420	400	356	100 _{h6}	100 _{h6} ^{H7}	102.0	130	130	274.0

Dimensions of gear units

Type	ØDss	Øe	f	h	H	i2	ls	lsa	m1	m2	m3	m4	m5	n2	n3	n4	n5	Øs	s4	t4
K1	60	90	3.0	75	175	7.0	149	163	75	20	34	25	29	30	13	140	15	9.0	M8	13
K2	72	100	3.0	88	213	7.0	178	193	88	25	39	30	34	40	20	185	23	11.0	M8	13
K3	80	115	3.0	98	236	7.0	190	206	98	30	39	35	34	45	20	200	23	11.0	M8	13
K4	88	130	3.5	115	265	7.5	220	243	115	40	39	45	34	50	22	230	25	14.0	M10	16
K5	106	130	3.5	190	290	7.5	237	254	130	40	44	45	39	60	27	240	30	18.0	M10	16
K6	106	165	3.5	220	340	7.5	254	276	150	40	45	45	40	65	27	250	30	18.5	M10	16
K7	138	185	3.5	250	380	8.0	278	314	163	40	45	45	40	70	35	290	38	23.0	M12	19
K8	155	215	4.0	310	455	9.0	352	378	190	50	60	60	50	85	41	360	45	27.0	M12	19
K9	200	265	5.0	365	545	10.0	418	428	230	60	70	70	60	95	46	430	50	31.0	M16	26
K10	215	300	20.0	420	636	27.0	483	497	270	60	80	70	70	120	–	400	45	39.0	M20	33

Dimensions of motors

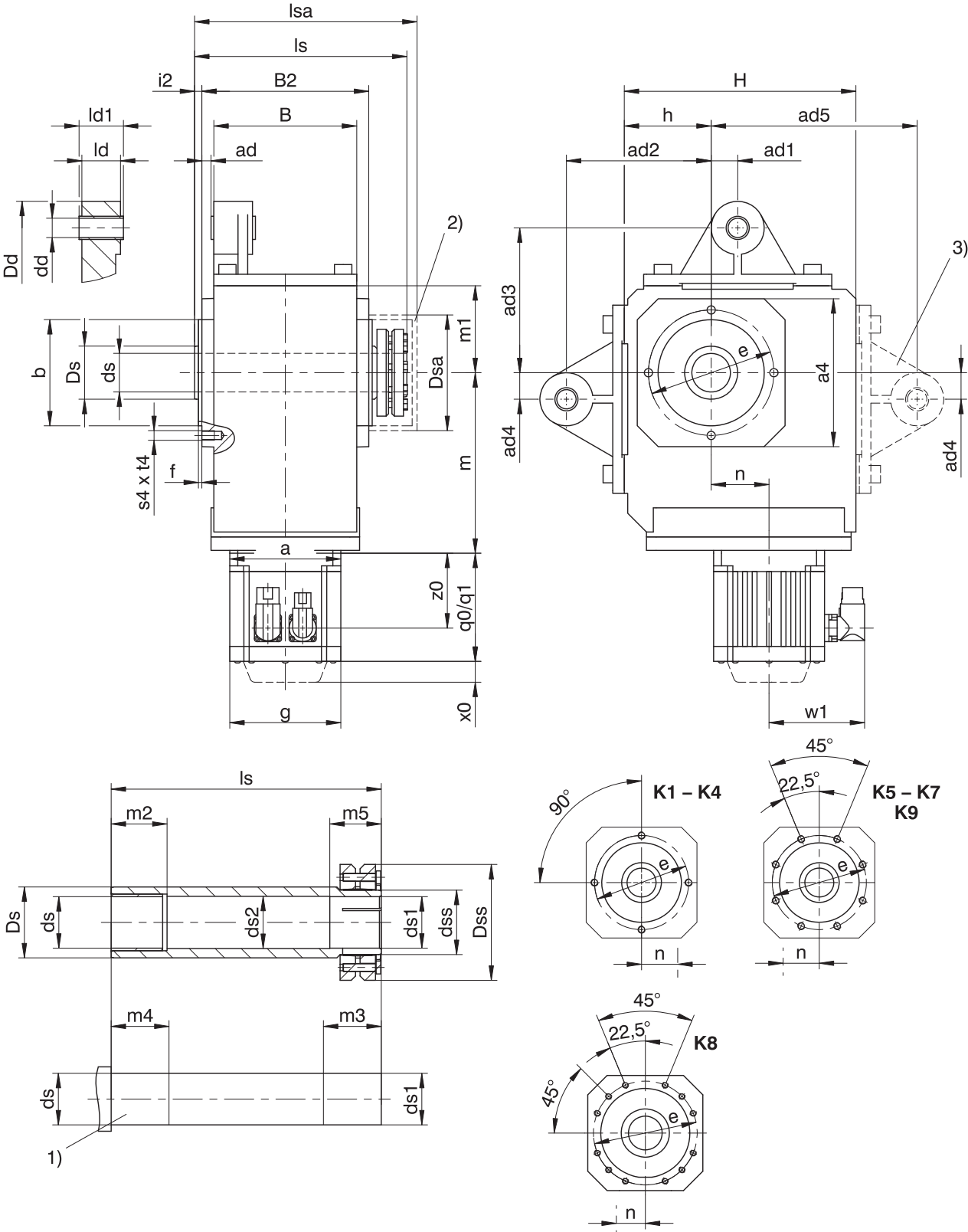
Type	□g	q0	q1	w1	x0	z0
EZ301U	72	114.0	154.0	55.5	21	78.5
EZ302U	72	136.0	176.0	55.5	21	100.5
EZ303U	72	158.0	198.0	55.5	21	122.5
EZ401U	98	118.5	167.0	91.0	22	76.5
EZ402U	98	143.5	192.0	91.0	22	101.5
EZ404U	98	193.5	242.0	91.0	22	151.5
EZ501U	115	112.0	166.5	100.0	22	77.5
EZ502U	115	137.0	191.5	100.0	22	102.5
EZ503U	115	162.0	216.5	100.0	22	127.5
EZ505U	115	212.0	266.5	100.0	22	177.5
EZ701U	145	125.0	184.0	115.0	22	87.0
EZ702U	145	150.0	209.0	115.0	22	112.0
EZ703U	145	175.0	234.0	115.0	22	137.0
EZ705U	145	230.0	289.0	134.0	22	188.0
EZ802U	190	232.5	309.5	156.5	22	178.5
EZ803U	190	273.5	350.5	156.5	22	219.5
EZ805U	190	355.5	432.5	156.5	22	301.5

The dimensions a, m and n can be found on the next page.

Dimensions of geared motors

Type	EZ3			EZ4			EZ5			EZ7			EZ8		
	a	m	n	a	m	n	a	m	n	a	m	n	a	m	n
K102	□72	124	36.0	□98	124	36.0	□115	128	36.0	□145	130	36.0	–	–	–
K202	□72	143	46.0	□98	143	46.0	□115	147	46.0	□145	149	46.0	–	–	–
K203	Ø140	180	46.0	Ø140	180	46.0	–	–	–	–	–	–	–	–	–
K302	Ø140	163	52.5	Ø140	163	52.5	□115	167	52.5	□145	169	52.5	–	–	–
K303	Ø140	200	52.5	Ø140	200	52.5	Ø160	210	16.0	–	–	–	–	–	–
K402	–	–	–	–	–	–	Ø160	187	60.0	□145	189	60.0	□190	192	60.0
K403	Ø140	220	60.0	Ø140	220	60.0	Ø160	230	23.0	–	–	–	–	–	–
K513	–	–	–	–	–	–	Ø160	172	15.0	□145	174	15.0	□190	177	15.0
K514	–	–	–	–	–	–	Ø160	215	15.0	–	–	–	–	–	–
K613	–	–	–	–	–	–	Ø160	191	18.0	Ø200	193	18.0	□190	196	18.0
K614	–	–	–	–	–	–	Ø160	234	18.0	–	–	–	–	–	–
K713	–	–	–	–	–	–	–	–	–	Ø200	221	20.0	□190	224	20.0
K714	–	–	–	–	–	–	Ø160	263	20.0	Ø200	283	20.0	–	–	–
K813	–	–	–	–	–	–	–	–	–	Ø200	247	24.0	Ø250	249	24.0
K814	–	–	–	–	–	–	–	–	–	Ø200	308	24.0	Ø250	320	5.0
K913	–	–	–	–	–	–	–	–	–	–	–	–	Ø250	294	25.0
K914	–	–	–	–	–	–	–	–	–	Ø200	353	25.0	Ø250	365	25.0
K1014	–	–	–	–	–	–	–	–	–	–	–	–	Ø250	450	28.0

16.3.9 S shaft design (hollow shaft with shrink ring), GD housing design (pitch circle diameter + torque arm bracket)



q0 Applies to motors without brake.

x0 Applies to encoders using an optical measuring method.

1) Machine shaft: The dimension l_s must meet or exceed the specified value.

3) Only for K1 (other sizes on request)

q1 Applies to motors with brake.

w1 Different for the One Cable Solution (OCS), see the chapter [17.4](#)

Cover (optional)

- If you brace the gear units without the torque arm brackets provided by the manufacturer for this purpose, the dimensions for ad_2 and ad_3 must meet the specified value.

Dimensions of gear units

Type	□a4	ad	ad1	ad2	ad3	ad4	ad5	Øb	B	B2	Ødd	Øds	Øds1	Øds2	Ødss	ØDd	ØDs	ØDsa
K1	105	6.0	15.0	90	90	15.0	130	75 _{j6}	90	106	12 ^{H9}	25 _{h9}	25 _{h9} ^{H7}	25.5	30	43	40	80.0
K2	116	6.5	22.5	100	100	22.5	—	82 _{j6}	115	134	16 ^{H9}	30 _{h9}	30 _{h9} ^{H7}	30.5	36	45	45	88.0
K3	132	5.0	25.0	120	120	25.0	—	95 _{j6}	130	146	16 ^{H9}	35 _{h9}	35 _{h9} ^{H7}	35.5	44	45	50	101.0
K4	152	9.5	27.5	150	150	27.5	—	110 _{j6}	148	173	20 ^{H9}	40 _{h9}	40 _{h9} ^{H7}	40.5	50	55	55	114.0
K5	145	9.5	30.0	250	190	30.0	—	110 _{j6}	160	185	20 ^{H9}	50 _{h9}	50 _{h9} ^{H7}	50.5	62	58	65	116.0
K6	180	13.0	30.0	250	180	30.0	—	140 _{j6}	168	200	20 ^{H9}	50 _{h9}	50 _{h9} ^{H7}	50.5	62	58	70	128.0
K7	195	15.0	35.0	300	213	35.0	—	155 _{h6}	190	226	20 ^{H9}	60 _{h6}	60 _{h6} ^{H7}	62.0	75	68	85	161.5
K8	226	17.0	45.0	350	230	45.0	—	185 _{h6}	235	282	24 ^{H9}	70 _{h6}	70 _{h6} ^{H7}	72.0	90	72	100	193.0
K9	280	16.0	45.0	450	315	45.0	—	230 _{h6}	285	330	24 ^{H9}	90 _{h6}	90 _{h6} ^{H7}	92.0	120	75	120	244.0

Dimensions of gear units

Type	ØDss	Øe	f	h	H	i2	ld	ld1	ls	lsa	m1	m2	m3	m4	m5	s4	t4
K1	60	90	3.0	60	160	7.0	24	28	149	163	60	20	34	25	29	M8	13
K2	72	100	3.0	65	190	7.0	32	38	178	193	65	25	39	30	34	M8	13
K3	80	115	3.0	75	213	7.0	32	38	190	206	75	30	39	35	34	M8	13
K4	88	130	3.5	90	240	7.5	40	46	220	243	90	40	39	45	34	M10	16
K5	106	130	3.5	160	260	7.5	40	46	237	254	100	40	44	45	39	M10	16
K6	106	165	3.5	190	310	7.5	40	46	254	276	120	40	45	45	40	M10	16
K7	138	185	3.5	212	342	8.0	64	70	278	314	125	40	45	45	40	M12	19
K8	155	215	4.0	265	410	9.0	102	115	352	378	145	50	60	60	50	M12	19
K9	200	265	5.0	315	495	10.0	102	115	418	428	180	60	70	70	60	M16	26

Dimensions of motors

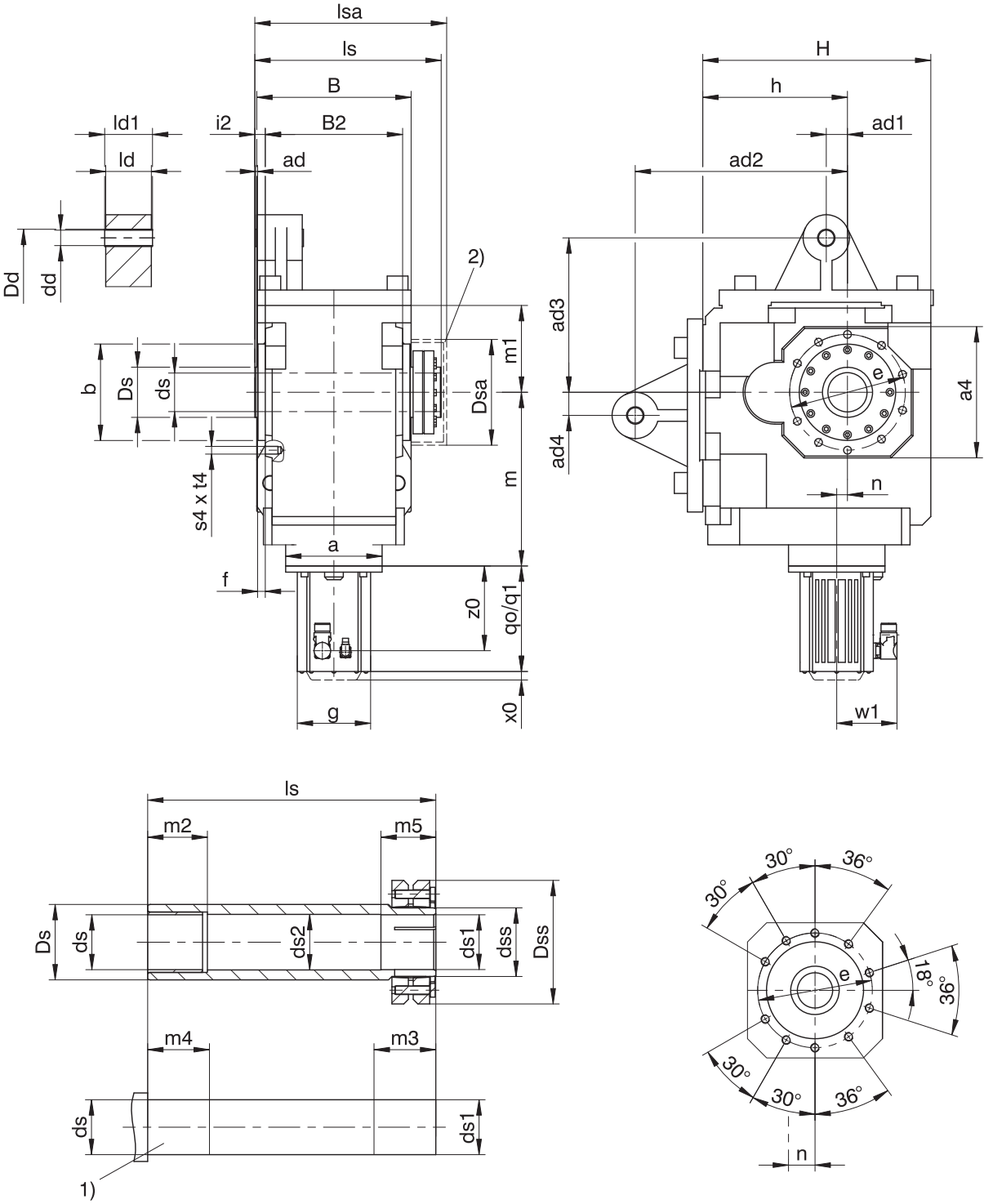
Type	□g	q0	q1	w1	x0	z0
EZ301U	72	114.0	154.0	55.5	21	78.5
EZ302U	72	136.0	176.0	55.5	21	100.5
EZ303U	72	158.0	198.0	55.5	21	122.5
EZ401U	98	118.5	167.0	91.0	22	76.5
EZ402U	98	143.5	192.0	91.0	22	101.5
EZ404U	98	193.5	242.0	91.0	22	151.5
EZ501U	115	112.0	166.5	100.0	22	77.5
EZ502U	115	137.0	191.5	100.0	22	102.5
EZ503U	115	162.0	216.5	100.0	22	127.5
EZ505U	115	212.0	266.5	100.0	22	177.5
EZ701U	145	125.0	184.0	115.0	22	87.0
EZ702U	145	150.0	209.0	115.0	22	112.0
EZ703U	145	175.0	234.0	115.0	22	137.0
EZ705U	145	230.0	289.0	134.0	22	188.0
EZ802U	190	232.5	309.5	156.5	22	178.5
EZ803U	190	273.5	350.5	156.5	22	219.5
EZ805U	190	355.5	432.5	156.5	22	301.5

The dimensions a, m and n can be found on the next page.

Dimensions of geared motors

Type	EZ3			EZ4			EZ5			EZ7			EZ8		
	a	m	n	a	m	n	a	m	n	a	m	n	a	m	n
K102	□72	124	36.0	□98	124	36.0	□115	128	36.0	□145	130	36.0	–	–	–
K202	□72	143	46.0	□98	143	46.0	□115	147	46.0	□145	149	46.0	–	–	–
K203	Ø140	180	46.0	Ø140	180	46.0	–	–	–	–	–	–	–	–	–
K302	Ø140	163	52.5	Ø140	163	52.5	□115	167	52.5	□145	169	52.5	–	–	–
K303	Ø140	200	52.5	Ø140	200	52.5	Ø160	210	16.0	–	–	–	–	–	–
K402	–	–	–	–	–	–	Ø160	187	60.0	□145	189	60.0	□190	192	60.0
K403	Ø140	220	60.0	Ø140	220	60.0	Ø160	230	23.0	–	–	–	–	–	–
K513	–	–	–	–	–	–	Ø160	172	15.0	□145	174	15.0	□190	177	15.0
K514	–	–	–	–	–	–	Ø160	215	15.0	–	–	–	–	–	–
K613	–	–	–	–	–	–	Ø160	191	18.0	Ø200	193	18.0	□190	196	18.0
K614	–	–	–	–	–	–	Ø160	234	18.0	–	–	–	–	–	–
K713	–	–	–	–	–	–	–	–	–	Ø200	221	20.0	□190	224	20.0
K714	–	–	–	–	–	–	Ø160	263	20.0	Ø200	283	20.0	–	–	–
K813	–	–	–	–	–	–	–	–	–	Ø200	247	24.0	Ø250	249	24.0
K814	–	–	–	–	–	–	–	–	–	Ø200	308	24.0	Ø250	320	5.0
K913	–	–	–	–	–	–	–	–	–	–	–	–	Ø250	294	25.0
K914	–	–	–	–	–	–	–	–	–	Ø200	353	25.0	Ø250	365	25.0

16.3.10 S shaft design (hollow shaft with shrink ring), NGD housing design (foot + pitch circle diameter + torque arm bracket)



- | | | | |
|----|--|----|--|
| q0 | Applies to motors without brake. | q1 | Applies to motors with brake. |
| x0 | Applies to encoders using an optical measuring method. | w1 | Different for the One Cable Solution (OCS), see the chapter 17.4 |
| 1) | Machine shaft: The dimension ls must meet or exceed the specified value. | 2) | Cover (optional) |
| - | If you brace the gear units without the torque arm brackets provided by the manufacturer for this purpose, the dimensions for ad2 and ad3 must meet the specified value. | | |

Dimensions of gear units

Type	□a4	ad	ad1	ad2	ad3	ad4	Øb	B	B2	Ødd	Øds	Øds1	Øds2	Ødss	ØDd	ØDs	ØDsa
K10	340	5	55	550	400	60	250 _{h6}	400	356	40 ^{H9}	100 _{h6}	100 _{h6} ^{H7}	102	130	120	130	274

Dimensions of gear units

Type	ØDss	Øe	f	h	H	i2	ld	ld1	ls	lsa	m1	m2	m3	m4	m5	s4	t4
K10	215	300	20	375	591	27	118	124	483	497	225	60	80	70	70	M20	33

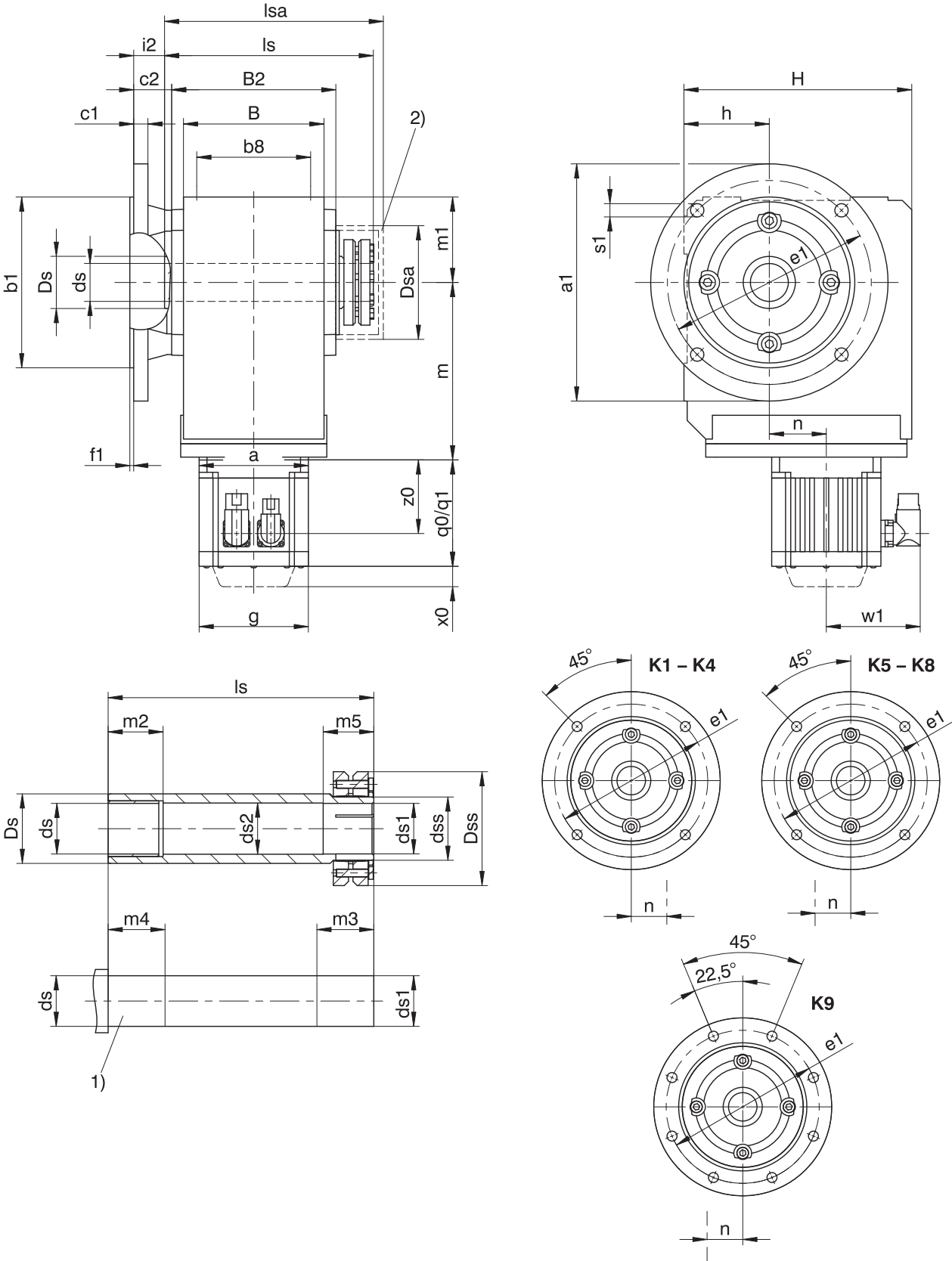
Dimensions of motors

Type	□g	q0	q1	w1	x0	z0
EZ802U	190	232.5	309.5	156.5	22	178.5
EZ803U	190	273.5	350.5	156.5	22	219.5
EZ805U	190	355.5	432.5	156.5	22	301.5

Dimensions of geared motors

Type	EZ8		
	a	m	n
K1014	Ø250	450	28.0

16.3.11 S shaft design (hollow shaft with shrink disk), F housing design (round flange)



- | | | | |
|----|---|----|--|
| q0 | Applies to motors without brake. | q1 | Applies to motors with brake. |
| x0 | Applies to encoders using an optical measuring method. | w1 | Different for the One Cable Solution (OCS), see the chapter 17.4 |
| 1) | Machine shaft: The dimension l_s must meet or exceed the specified value. | 2) | Cover (optional) |

Dimensions of gear units

Type	Øa1	Øb1	b8	B	B2	c1	c2	Øds	Øds1	Øds2	Ødss	ØDs	ØDsa	ØDss	Øe1	f1	h	H	i2	ls	lsa	m1	m2	m3	m4	m5	Øs1
K1	160	110 _{js}	70	90	106	10	32.0	25 _{h9}	25 _{h9} ^{H7}	25.5	30	40	80.0	60	130	3.5	60	160	25.0	149	163	60	20	34	25	29	9
K2	200	130 _{js}	90	115	134	12	32.0	30 _{h9}	30 _{h9} ^{H7}	30.5	36	45	88.0	72	165	3.5	65	190	25.0	178	193	65	25	39	30	34	11
K3	200	130 _{js}	105	130	146	14	38.0	35 _{h9}	35 _{h9} ^{H7}	35.5	44	50	101.0	80	165	3.5	75	213	31.0	190	206	75	30	39	35	34	11
K4	250	180 _{js}	120	148	173	15	40.0	40 _{h9}	40 _{h9} ^{H7}	40.5	50	55	114.0	88	215	4.0	90	240	32.5	220	243	90	40	39	45	34	14
K5	250	180 _{js}	125	160	185	15	39.5	50 _{h9}	50 _{h9} ^{H7}	50.5	62	65	116.0	106	215	4.0	160	260	32.0	237	254	100	40	44	45	39	14
K6	300	230 _{js}	130	168	200	17	36.0	50 _{h9}	50 _{h9} ^{H7}	50.5	62	70	128.0	106	265	4.0	190	310	28.5	254	276	120	40	45	45	40	14
K7	350	250 _{h6}	145	190	226	18	44.0	60 _{h6}	60 _{h6} ^{H7}	62.0	75	85	161.5	138	300	5.0	212	342	36.0	278	314	125	40	45	45	40	18
K8	400	300 _{h6}	185	235	282	20	45.0	70 _{h6}	70 _{h6} ^{H7}	72.0	90	100	193.0	155	350	5.0	265	410	36.0	352	378	145	50	60	60	50	18
K9	450	350 _{h6}	225	285	330	23	50.0	90 _{h6}	90 _{h6} ^{H7}	92.0	120	120	244.0	200	400	5.0	315	495	40.0	418	428	180	60	70	70	60	18

Dimensions of additional round flanges

Type	Øa1	Øb1	c1	Øe1	f1	Øs1
K1	140	95 _{js}	10	115	3.0	9
K2	160	110 _{js}	12	130	3.5	9
K3	160	110 _{js}	14	130	3.5	9
K3	250	180 _{js}	14	215	4.0	14
K8	350	250 _{h6}	18	300	5.0	18
K8	450	350 _{h6}	20	400	5.0	18

Dimensions of motors

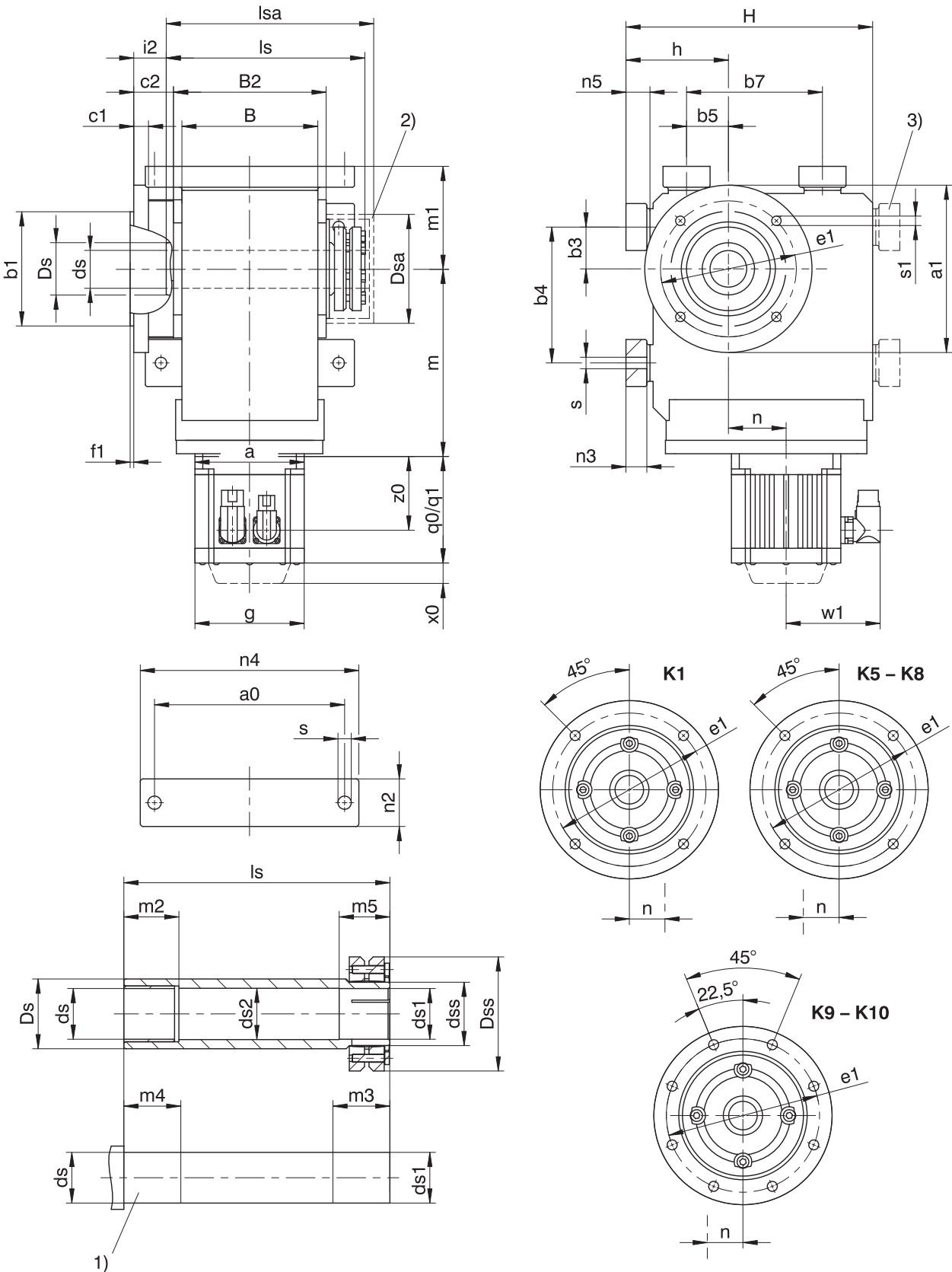
Type	□g	q0	q1	w1	x0	z0
EZ301U	72	114.0	154.0	55.5	21	78.5
EZ302U	72	136.0	176.0	55.5	21	100.5
EZ303U	72	158.0	198.0	55.5	21	122.5
EZ401U	98	118.5	167.0	91.0	22	76.5
EZ402U	98	143.5	192.0	91.0	22	101.5
EZ404U	98	193.5	242.0	91.0	22	151.5
EZ501U	115	112.0	166.5	100.0	22	77.5
EZ502U	115	137.0	191.5	100.0	22	102.5
EZ503U	115	162.0	216.5	100.0	22	127.5
EZ505U	115	212.0	266.5	100.0	22	177.5
EZ701U	145	125.0	184.0	115.0	22	87.0
EZ702U	145	150.0	209.0	115.0	22	112.0
EZ703U	145	175.0	234.0	115.0	22	137.0
EZ705U	145	230.0	289.0	134.0	22	188.0
EZ802U	190	232.5	309.5	156.5	22	178.5
EZ803U	190	273.5	350.5	156.5	22	219.5
EZ805U	190	355.5	432.5	156.5	22	301.5

The dimensions a, m and n can be found on the next page.

Dimensions of geared motors

Type	EZ3			EZ4			EZ5			EZ7			EZ8		
	a	m	n	a	m	n	a	m	n	a	m	n	a	m	n
K102	□72	124	36.0	□98	124	36.0	□115	128	36.0	□145	130	36.0	–	–	–
K202	□72	143	46.0	□98	143	46.0	□115	147	46.0	□145	149	46.0	–	–	–
K203	Ø140	180	46.0	Ø140	180	46.0	–	–	–	–	–	–	–	–	–
K302	Ø140	163	52.5	Ø140	163	52.5	□115	167	52.5	□145	169	52.5	–	–	–
K303	Ø140	200	52.5	Ø140	200	52.5	Ø160	210	16.0	–	–	–	–	–	–
K402	–	–	–	–	–	–	Ø160	187	60.0	□145	189	60.0	□190	192	60.0
K403	Ø140	220	60.0	Ø140	220	60.0	Ø160	230	23.0	–	–	–	–	–	–
K513	–	–	–	–	–	–	Ø160	172	15.0	□145	174	15.0	□190	177	15.0
K514	–	–	–	–	–	–	Ø160	215	15.0	–	–	–	–	–	–
K613	–	–	–	–	–	–	Ø160	191	18.0	Ø200	193	18.0	□190	196	18.0
K614	–	–	–	–	–	–	Ø160	234	18.0	–	–	–	–	–	–
K713	–	–	–	–	–	–	–	–	–	Ø200	221	20.0	□190	224	20.0
K714	–	–	–	–	–	–	Ø160	263	20.0	Ø200	283	20.0	–	–	–
K813	–	–	–	–	–	–	–	–	–	Ø200	247	24.0	Ø250	249	24.0
K814	–	–	–	–	–	–	–	–	–	Ø200	308	24.0	Ø250	320	5.0
K913	–	–	–	–	–	–	–	–	–	–	–	–	Ø250	294	25.0
K914	–	–	–	–	–	–	–	–	–	Ø200	353	25.0	Ø250	365	25.0

16.3.12 S shaft design (hollow shaft with shrink disk), NF housing design (base + round flange)



q0 Applies to motors without brake.

x0 Applies to encoders using an optical measuring method.

1) Machine shaft: The dimension l_s must meet or exceed the specified value.

3) Only for K1 (other sizes on request)

q1 Applies to motors with brake.

w1 Different for the One Cable Solution (OCS), see the chapter [17.4](#)

Cover (optional)

Dimensions of gear units

Type	a0	Øa1	Øb1	b3	b4	b5	b7	B	B2	c1	Øds	Øds1	Øds2	Ødss	ØDs	ØDsa	ØDss
K1	115	160	110 _{j6}	30	90	30	90	90	106	10	25 _{h9}	25 _{h9} ^{H7}	25.5	30	40	80.0	60
K5	200	250	180 _{j6}	40	140	100	140	160	185	15	50 _{h9}	50 _{h9} ^{H7}	50.5	62	65	116.0	106
K6	210	300	230 _{j6}	50	160	110	160	168	200	17	50 _{h9}	50 _{h9} ^{H7}	50.5	62	70	128.0	106
K7	241	350	250 _{h6}	55	180	125	180	190	226	18	60 _{h6}	60 _{h6} ^{H7}	62.0	75	85	161.5	138
K8	300	400	300 _{h6}	75	240	165	240	235	282	20	70 _{h6}	70 _{h6} ^{H7}	72.0	90	100	193.0	155
K9	360	450	350 _{h6}	95	280	185	280	285	330	23	90 _{h6}	90 _{h6} ^{H7}	92.0	120	120	244.0	200
K10	330	550	450 _{h6}	115	350	265	420	400	356	25	100 _{h6}	100 _{h6} ^{H7}	102.0	130	130	274.0	215

Dimensions of gear units

Type	Øe1	f1	h	H	i2	ls	lsa	m1	m2	m3	m4	m5	n2	n3	n4	n5	Øs	Øs1
K1	130	3.5	75	175	25.0	149	163	75	20	34	25	29	30	13	140	15	9.0	9
K5	215	4.0	190	290	32.0	237	254	130	40	44	45	39	60	27	240	30	18.0	14
K6	265	4.0	220	340	28.5	254	276	150	40	45	45	40	65	27	250	30	18.5	14
K7	300	5.0	250	380	36.0	278	314	163	40	45	45	40	70	35	290	38	23.0	18
K8	350	5.0	310	455	36.0	352	378	190	50	60	60	50	85	41	360	45	27.0	18
K9	400	5.0	365	545	40.0	418	428	230	60	70	70	60	95	46	430	50	31.0	18
K10	500	5.0	420	636	51.0	483	497	270	60	80	70	70	120	—	400	45	39.0	18

Dimensions of additional round flanges

Type	Øa1	Øb1	c1	Øe1	f1	Øs1
K1	140	95 _{j6}	10	115	3.0	9
K8	350	250 _{h6}	18	300	5.0	18
K8	450	350 _{h6}	20	400	5.0	18

Dimensions of motors

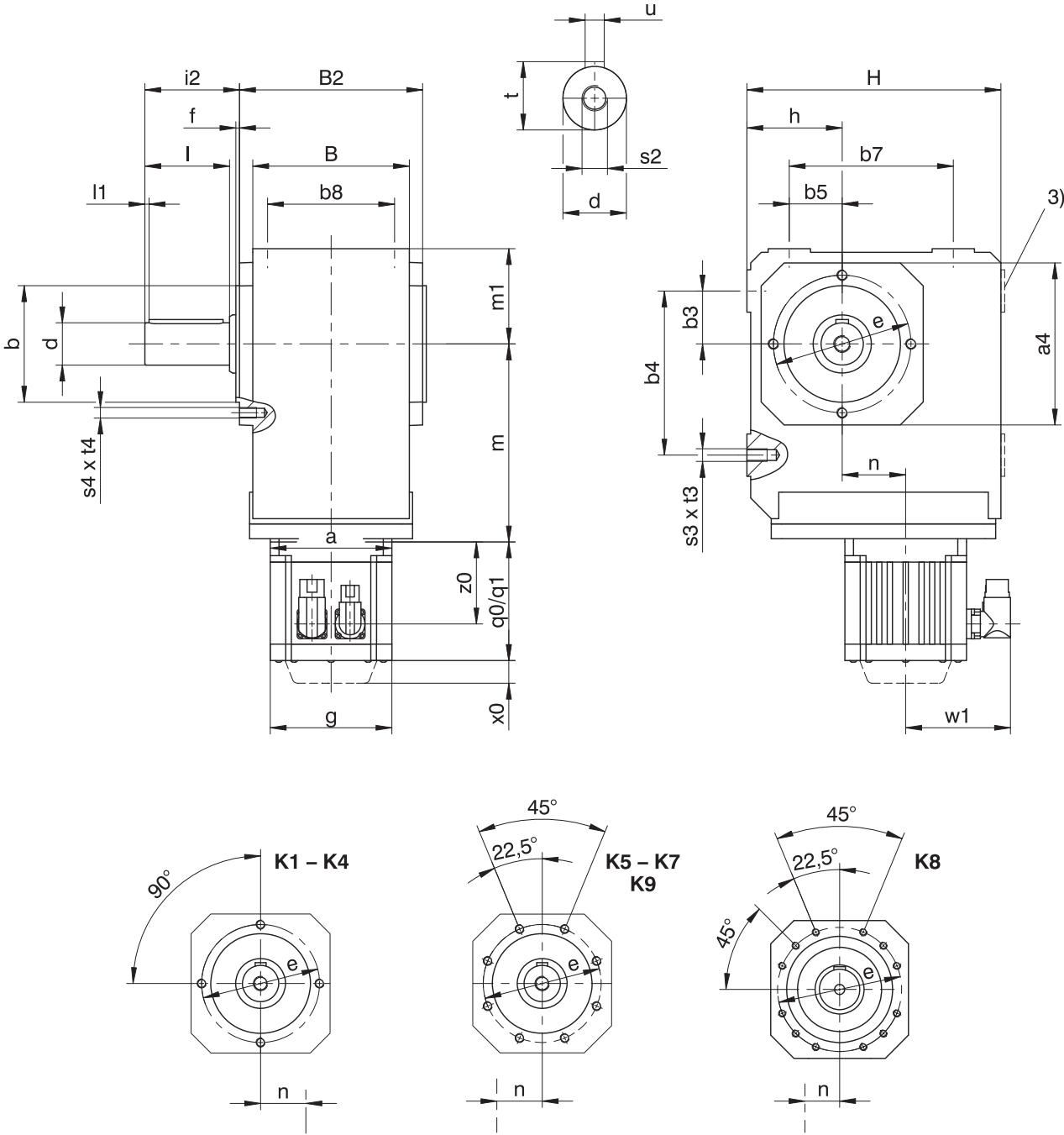
Type	□g	q0	q1	w1	x0	z0
EZ301U	72	114.0	154.0	55.5	21	78.5
EZ302U	72	136.0	176.0	55.5	21	100.5
EZ303U	72	158.0	198.0	55.5	21	122.5
EZ401U	98	118.5	167.0	91.0	22	76.5
EZ402U	98	143.5	192.0	91.0	22	101.5
EZ404U	98	193.5	242.0	91.0	22	151.5
EZ501U	115	112.0	166.5	100.0	22	77.5
EZ502U	115	137.0	191.5	100.0	22	102.5
EZ503U	115	162.0	216.5	100.0	22	127.5
EZ505U	115	212.0	266.5	100.0	22	177.5
EZ701U	145	125.0	184.0	115.0	22	87.0
EZ702U	145	150.0	209.0	115.0	22	112.0
EZ703U	145	175.0	234.0	115.0	22	137.0
EZ705U	145	230.0	289.0	134.0	22	188.0
EZ802U	190	232.5	309.5	156.5	22	178.5
EZ803U	190	273.5	350.5	156.5	22	219.5
EZ805U	190	355.5	432.5	156.5	22	301.5

The dimensions a, m and n can be found on the next page.

Dimensions of geared motors

Type	EZ3			EZ4			EZ5			EZ7			EZ8		
	a	m	n	a	m	n	a	m	n	a	m	n	a	m	n
K102	□72	124	36.0	□98	124	36.0	□115	128	36.0	□145	130	36.0	–	–	–
K513	–	–	–	–	–	–	Ø160	172	15.0	□145	174	15.0	□190	177	15.0
K514	–	–	–	–	–	–	Ø160	215	15.0	–	–	–	–	–	–
K613	–	–	–	–	–	–	Ø160	191	18.0	Ø200	193	18.0	□190	196	18.0
K614	–	–	–	–	–	–	Ø160	234	18.0	–	–	–	–	–	–
K713	–	–	–	–	–	–	–	–	–	Ø200	221	20.0	□190	224	20.0
K714	–	–	–	–	–	–	Ø160	263	20.0	Ø200	283	20.0	–	–	–
K813	–	–	–	–	–	–	–	–	–	Ø200	247	24.0	Ø250	249	24.0
K814	–	–	–	–	–	–	–	–	–	Ø200	308	24.0	Ø250	320	5.0
K913	–	–	–	–	–	–	–	–	–	–	–	–	Ø250	294	25.0
K914	–	–	–	–	–	–	–	–	–	Ø200	353	25.0	Ø250	365	25.0
K1014	–	–	–	–	–	–	–	–	–	–	–	–	Ø250	450	28.0

16.3.13 V shaft design (solid shaft), G housing design (pitch circle diameter)



q0 Applies to motors without brake.

x0 Applies to encoders using an optical measuring method.

3) Only for K1 (other sizes on request)

– K1 – K9: Solid shaft on both sides available.

q1 Applies to motors with brake.

w1 Different for the One Cable Solution (OCS), see the chapter [17.4](#)

– K1 – K4: Solid shaft without feather key available, on request starting at K5.

Dimensions of gear units

Type	□a4	Øb	b3	b4	b5	b7	b8	B	B2	Ød	Øe	f	h	H	i2	l	l1	m1	s2	s3	s4	t	t3	t4	u
K1	105	75 ₆	30	90	30	90	70	90	106	25 ₆	90	3.0	60	160	62.0	50	4	60	M10	M8	M8	28.0	13	13	A8×7×40
K2	116	82 ₆	35	115	35	115	90	115	134	30 ₆	100	3.0	65	190	68.0	60	4	65	M10	M10	M8	33.0	16	13	A8×7×50
K3	132	95 ₆	40	130	40	130	105	130	146	30 ₆	115	3.0	75	213	69.0	60	4	75	M10	M10	M8	33.0	16	13	A8×7×50
K4	152	110 ₆	50	155	50	155	120	148	173	40 ₆	130	3.5	90	240	89.5	80	4	90	M16	M12	M10	43.0	19	16	A12×8×70
K5	145	110 ₆	40	140	100	140	125	160	185	45 ₆	130	3.5	160	260	129.5	90	4	100	M16	M16	M10	48.5	26	16	A14×9×80
K6	180	140 ₆	50	160	110	160	130	168	200	50 ₆	165	3.5	190	310	136.0	100	4	120	M16	M16	M10	53.5	26	16	A14×9×90
K7	195	155 ₆	55	180	125	180	145	190	226	60 ₆	185	3.5	212	342	164.0	120	4	125	M20	M20	M12	64.0	33	19	A18×11×110
K8	226	185 ₆	75	240	165	240	185	235	282	70 ₆	215	4.0	265	410	185.0	140	5	145	M20	M24	M12	74.5	38	19	A20×12×125
K9	280	230 ₆	95	280	185	280	225	285	330	90 ₆	265	5.0	315	495	220.0	170	8	180	M24	M30	M16	95.0	48	26	A25×14×140

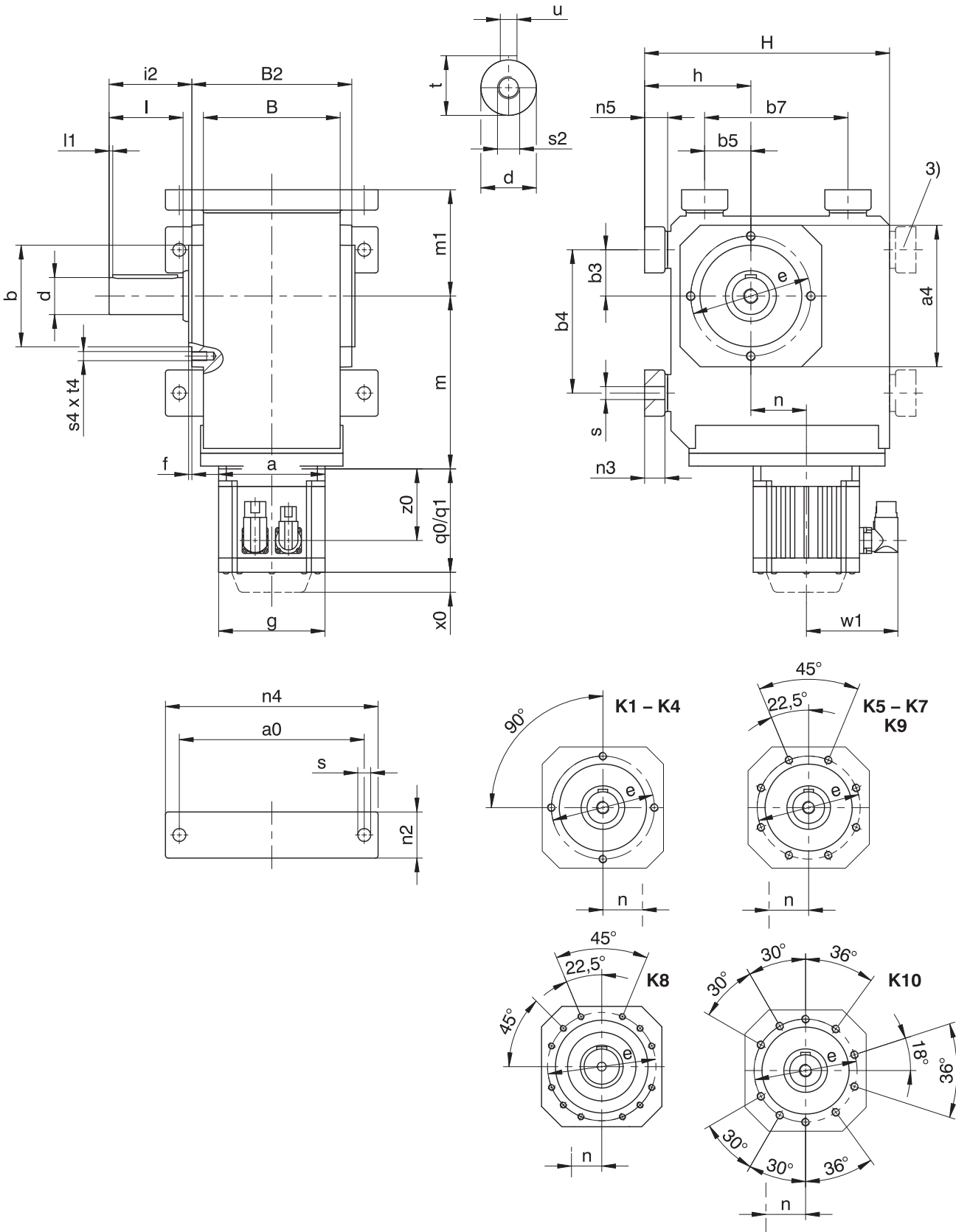
Dimensions of motors

Type	□g	q0	q1	w1	x0	z0
EZ301U	72	114.0	154.0	55.5	21	78.5
EZ302U	72	136.0	176.0	55.5	21	100.5
EZ303U	72	158.0	198.0	55.5	21	122.5
EZ401U	98	118.5	167.0	91.0	22	76.5
EZ402U	98	143.5	192.0	91.0	22	101.5
EZ404U	98	193.5	242.0	91.0	22	151.5
EZ501U	115	112.0	166.5	100.0	22	77.5
EZ502U	115	137.0	191.5	100.0	22	102.5
EZ503U	115	162.0	216.5	100.0	22	127.5
EZ505U	115	212.0	266.5	100.0	22	177.5
EZ701U	145	125.0	184.0	115.0	22	87.0
EZ702U	145	150.0	209.0	115.0	22	112.0
EZ703U	145	175.0	234.0	115.0	22	137.0
EZ705U	145	230.0	289.0	134.0	22	188.0
EZ802U	190	232.5	309.5	156.5	22	178.5
EZ803U	190	273.5	350.5	156.5	22	219.5
EZ805U	190	355.5	432.5	156.5	22	301.5

Dimensions of geared motors

Type	EZ3			EZ4			EZ5			EZ7			EZ8		
	a	m	n	a	m	n	a	m	n	a	m	n	a	m	n
K102	□72	124	36.0	□98	124	36.0	□115	128	36.0	□145	130	36.0	–	–	–
K202	□72	143	46.0	□98	143	46.0	□115	147	46.0	□145	149	46.0	–	–	–
K203	Ø140	180	46.0	Ø140	180	46.0	–	–	–	–	–	–	–	–	–
K302	Ø140	163	52.5	Ø140	163	52.5	□115	167	52.5	□145	169	52.5	–	–	–
K303	Ø140	200	52.5	Ø140	200	52.5	Ø160	210	16.0	–	–	–	–	–	–
K402	–	–	–	–	–	–	Ø160	187	60.0	□145	189	60.0	□190	192	60.0
K403	Ø140	220	60.0	Ø140	220	60.0	Ø160	230	23.0	–	–	–	–	–	–
K513	–	–	–	–	–	–	Ø160	172	15.0	□145	174	15.0	□190	177	15.0
K514	–	–	–	–	–	–	Ø160	215	15.0	–	–	–	–	–	–
K613	–	–	–	–	–	–	Ø160	191	18.0	Ø200	193	18.0	□190	196	18.0
K614	–	–	–	–	–	–	Ø160	234	18.0	–	–	–	–	–	–
K713	–	–	–	–	–	–	–	–	–	Ø200	221	20.0	□190	224	20.0
K714	–	–	–	–	–	–	Ø160	263	20.0	Ø200	283	20.0	–	–	–
K813	–	–	–	–	–	–	–	–	–	Ø200	247	24.0	Ø250	249	24.0
K814	–	–	–	–	–	–	–	–	–	Ø200	308	24.0	Ø250	320	5.0
K913	–	–	–	–	–	–	–	–	–	–	–	–	Ø250	294	25.0
K914	–	–	–	–	–	–	–	–	–	Ø200	353	25.0	Ø250	365	25.0

16.3.14 V shaft design (solid shaft), NG housing design (base + pitch circle diameter)



- | | | | |
|----|--|----|--|
| q0 | Applies to motors without brake. | q1 | Applies to motors with brake. |
| x0 | Applies to encoders using an optical measuring method. | w1 | Different for the One Cable Solution (OCS), see the chapter 17.4 |
| 3) | Only for K1 (other sizes on request) | - | K1 - K4: Solid shaft without feather key available, on request starting at K5. |
| - | K1 - K10: Solid shaft on both sides available. | | |

Dimensions of gear units

Type	a0	□a4	Øb	b3	b4	b5	b7	B	B2	Ød	Øe	f	h	H	i2	l	l1	m1	n2	n3	n4	n5	Øs	s2	s4	t	t4	u
K1	115	105	75 _{j6}	30	90	30	90	90	106	25 _{k6}	90	3.0	75	175	62.0	50	4	75	30	13	140	15	9.0	M10	M8	28.0	13	A8×7×40
K2	155	116	82 _{j6}	35	115	35	115	115	134	30 _{k6}	100	3.0	88	213	68.0	60	4	88	40	20	185	23	11.0	M10	M8	33.0	13	A8×7×50
K3	170	132	95 _{j6}	40	130	40	130	130	146	30 _{k6}	115	3.0	98	236	69.0	60	4	98	45	20	200	23	11.0	M10	M8	33.0	13	A8×7×50
K4	200	152	110 _{j6}	50	155	50	155	148	173	40 _{k6}	130	3.5	115	265	89.5	80	4	115	50	22	230	25	14.0	M16	M10	43.0	16	A12×8×70
K5	200	145	110 _{j6}	40	140	100	140	160	185	45 _{k6}	130	3.5	190	290	129.5	90	4	130	60	27	240	30	18.0	M16	M10	48.5	16	A14×9×80
K6	210	180	140 _{j6}	50	160	110	160	168	200	50 _{k6}	165	3.5	220	340	136.0	100	4	150	65	27	250	30	18.5	M16	M10	53.5	16	A14×9×90
K7	241	195	155 _{j6}	55	180	125	180	190	226	60 _{m6}	185	3.5	250	380	164.0	120	4	163	70	35	290	38	23.0	M20	M12	64.0	19	A18×11×110
K8	300	226	185 _{j6}	75	240	165	240	235	282	70 _{m6}	215	4.0	310	455	185.0	140	5	190	85	41	360	45	27.0	M20	M12	74.5	19	A20×12×125
K9	360	280	230 _{j6}	95	280	185	280	285	330	90 _{m6}	265	5.0	365	545	220.0	170	8	230	95	46	430	50	31.0	M24	M16	95.0	26	A25×14×140
K10	330	340	250 _{m6}	115	350	265	420	400	356	110 _{m6}	300	20.0	420	636	240.0	210	15	270	120	–	400	45	39.0	M24	M20	116.0	33	A28×16×180

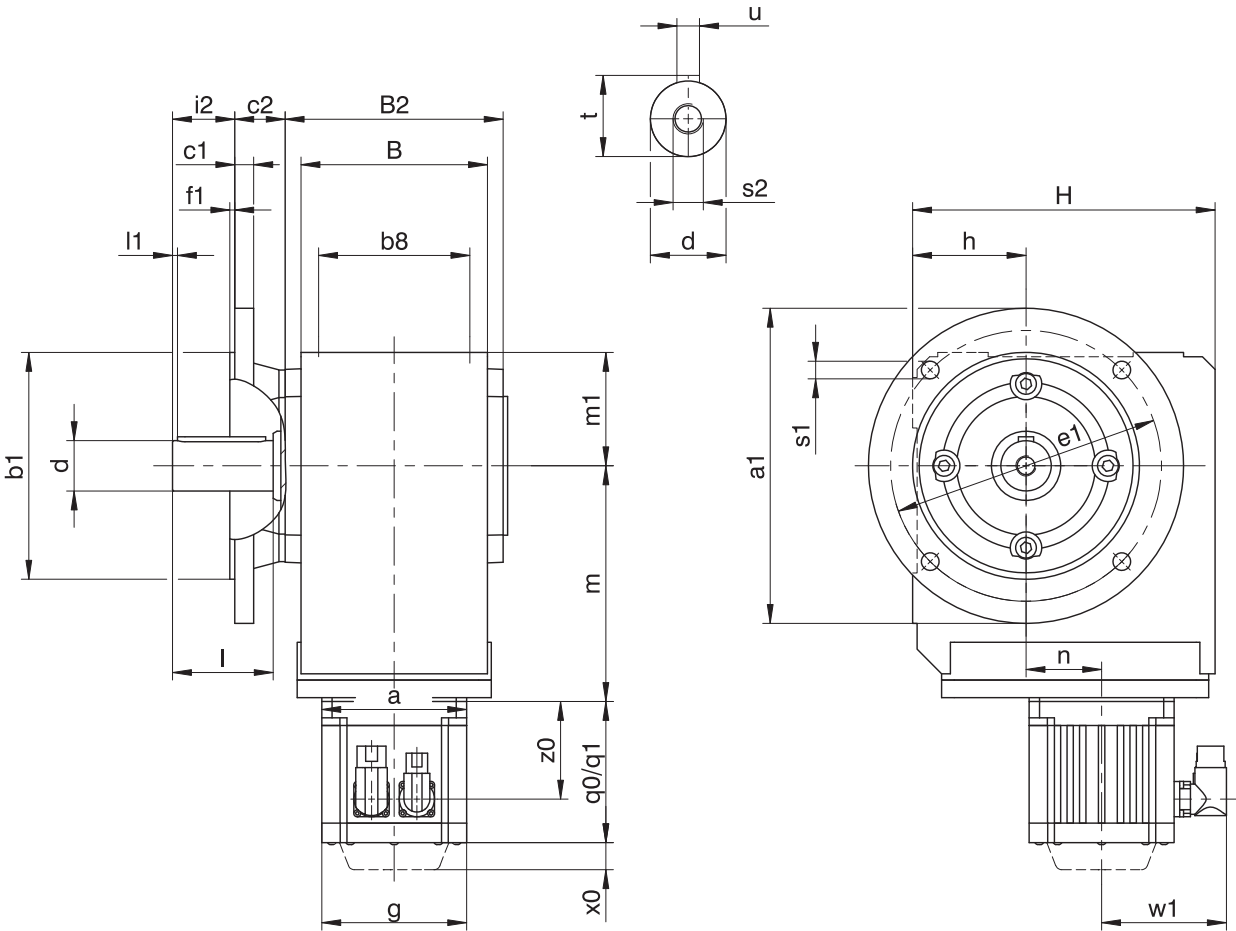
Dimensions of motors

Type	□g	q0	q1	w1	x0	z0
EZ301U	72	114.0	154.0	55.5	21	78.5
EZ302U	72	136.0	176.0	55.5	21	100.5
EZ303U	72	158.0	198.0	55.5	21	122.5
EZ401U	98	118.5	167.0	91.0	22	76.5
EZ402U	98	143.5	192.0	91.0	22	101.5
EZ404U	98	193.5	242.0	91.0	22	151.5
EZ501U	115	112.0	166.5	100.0	22	77.5
EZ502U	115	137.0	191.5	100.0	22	102.5
EZ503U	115	162.0	216.5	100.0	22	127.5
EZ505U	115	212.0	266.5	100.0	22	177.5
EZ701U	145	125.0	184.0	115.0	22	87.0
EZ702U	145	150.0	209.0	115.0	22	112.0
EZ703U	145	175.0	234.0	115.0	22	137.0
EZ705U	145	230.0	289.0	134.0	22	188.0
EZ802U	190	232.5	309.5	156.5	22	178.5
EZ803U	190	273.5	350.5	156.5	22	219.5
EZ805U	190	355.5	432.5	156.5	22	301.5

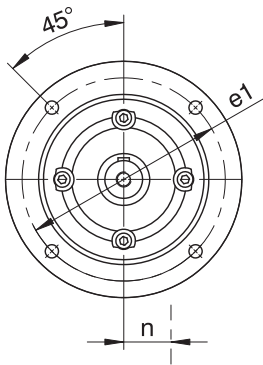
Dimensions of geared motors

Type	EZ3			EZ4			EZ5			EZ7			EZ8		
	a	m	n	a	m	n	a	m	n	a	m	n	a	m	n
K102	□72	124	36.0	□98	124	36.0	□115	128	36.0	□145	130	36.0	–	–	–
K202	□72	143	46.0	□98	143	46.0	□115	147	46.0	□145	149	46.0	–	–	–
K203	Ø140	180	46.0	Ø140	180	46.0	–	–	–	–	–	–	–	–	–
K302	Ø140	163	52.5	Ø140	163	52.5	□115	167	52.5	□145	169	52.5	–	–	–
K303	Ø140	200	52.5	Ø140	200	52.5	Ø160	210	16.0	–	–	–	–	–	–
K402	–	–	–	–	–	–	Ø160	187	60.0	□145	189	60.0	□190	192	60.0
K403	Ø140	220	60.0	Ø140	220	60.0	Ø160	230	23.0	–	–	–	–	–	–
K513	–	–	–	–	–	–	Ø160	172	15.0	□145	174	15.0	□190	177	15.0
K514	–	–	–	–	–	–	Ø160	215	15.0	–	–	–	–	–	–
K613	–	–	–	–	–	–	Ø160	191	18.0	Ø200	193	18.0	□190	196	18.0
K614	–	–	–	–	–	–	Ø160	234	18.0	–	–	–	–	–	–
K713	–	–	–	–	–	–	–	–	–	Ø200	221	20.0	□190	224	20.0
K714	–	–	–	–	–	–	Ø160	263	20.0	Ø200	283	20.0	–	–	–
K813	–	–	–	–	–	–	–	–	–	Ø200	247	24.0	Ø250	249	24.0
K814	–	–	–	–	–	–	–	–	–	Ø200	308	24.0	Ø250	320	5.0
K913	–	–	–	–	–	–	–	–	–	–	–	–	Ø250	294	25.0
K914	–	–	–	–	–	–	–	–	–	Ø200	353	25.0	Ø250	365	25.0
K1014	–	–	–	–	–	–	–	–	–	–	–	–	Ø250	450	28.0

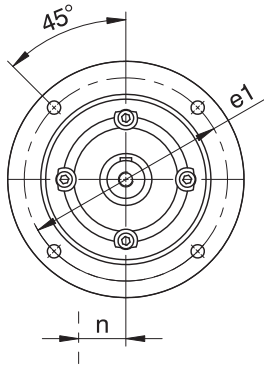
16.3.15 V shaft design (solid shaft), F housing design (round flange)



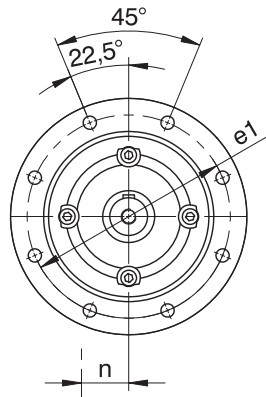
K1 – K4



K5 – K8



K9



- q0 Applies to motors without brake.

x0 Applies to encoders using an optical measuring method.
- q1 Applies to motors with brake.

w1 Different for the One Cable Solution (OCS), see the chapter [17.4](#)
- K1 – K4: Solid shaft without feather key available, on request starting at K5.
- K1 – K9: Solid shaft on both sides available.

Dimensions of gear units

Type	Øa1	Øb1	b8	B	B2	c1	c2	Ød	Øe1	f1	h	H	i2	l	l1	m1	Øs1	s2	t	u
K1	160	110 ₆	70	90	106	10	32.0	25 ₆	130	3.5	60	160	30.0	50	4	60	9	M10	28.0	A8×7×40
K2	200	130 ₆	90	115	134	12	32.0	30 ₆	165	3.5	65	190	36.0	60	4	65	11	M10	33.0	A8×7×50
K3	200	130 ₆	105	130	146	14	38.0	30 ₆	165	3.5	75	213	31.0	60	4	75	11	M10	33.0	A8×7×50
K4	250	180 ₆	120	148	173	15	40.0	40 ₆	215	4.0	90	240	49.5	80	4	90	14	M16	43.0	A12×8×70
K5	250	180 ₆	125	160	185	15	39.5	45 ₆	215	4.0	160	260	90.0	90	4	100	14	M16	48.5	A14×9×80
K6	300	230 ₆	130	168	200	17	36.0	50 ₆	265	4.0	190	310	100.0	100	4	120	14	M16	53.5	A14×9×90
K7	350	250 ₆	145	190	226	18	44.0	60 ₆	300	5.0	212	342	120.0	120	4	125	18	M20	64.0	A18×11×110
K8	400	300 ₆	185	235	282	20	45.0	70 ₆	350	5.0	265	410	140.0	140	5	145	18	M20	74.5	A20×12×125
K9	450	350 ₆	225	285	330	23	50.0	90 ₆	400	5.0	315	495	170.0	170	8	180	18	M24	95.0	A25×14×140

Dimensions of additional round flanges

Type	Øa1	Øb1	c1	Øe1	f1	Øs1
K1	140	95 ₆	10	115	3.0	9
K2	160	110 ₆	12	130	3.5	9
K3	160	110 ₆	14	130	3.5	9
K3	250	180 ₆	14	215	4.0	14
K8	350	250 ₆	18	300	5.0	18
K8	450	350 ₆	20	400	5.0	18

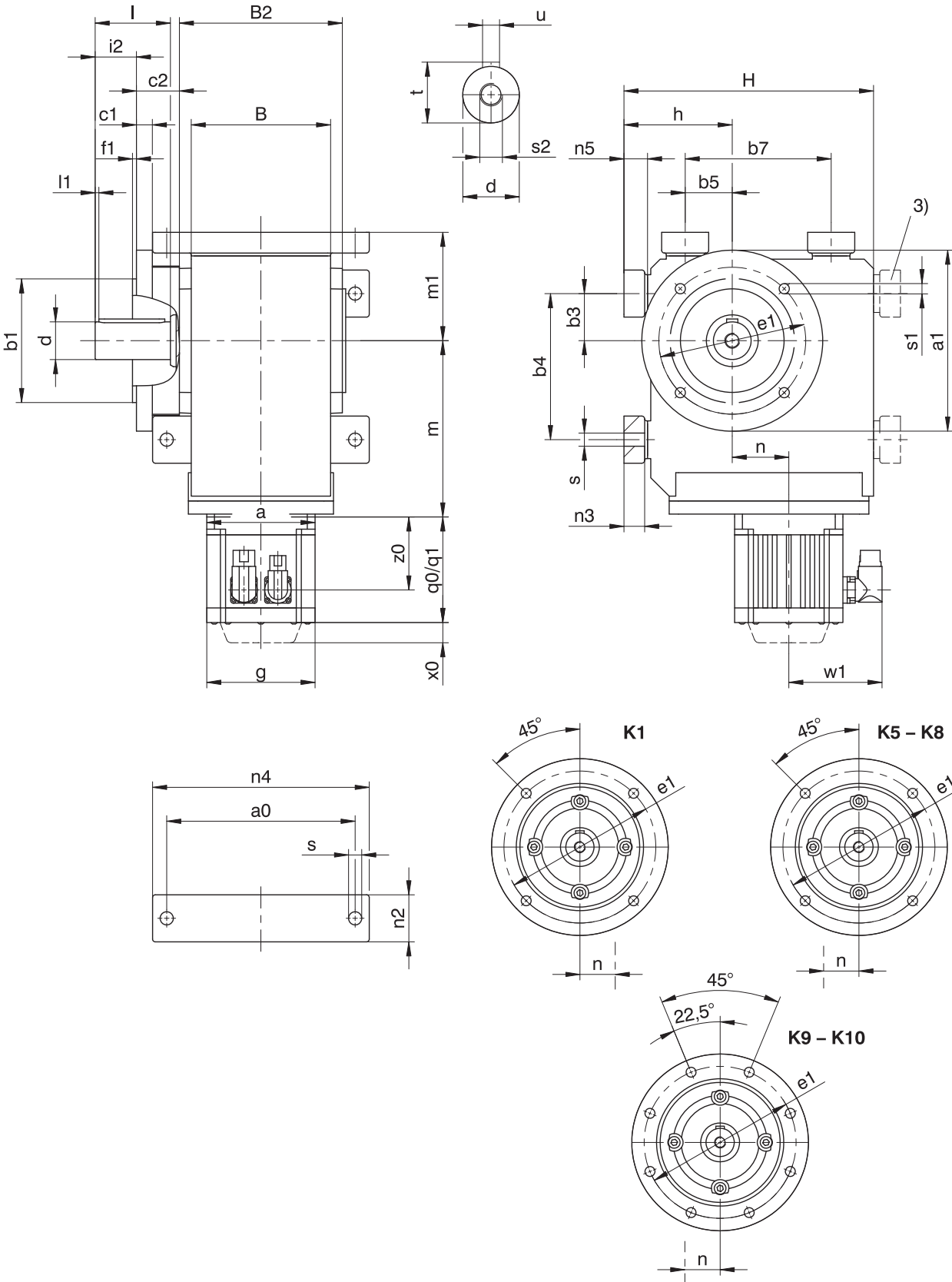
Dimensions of motors

Type	□g	q0	q1	w1	x0	z0
EZ301U	72	114.0	154.0	55.5	21	78.5
EZ302U	72	136.0	176.0	55.5	21	100.5
EZ303U	72	158.0	198.0	55.5	21	122.5
EZ401U	98	118.5	167.0	91.0	22	76.5
EZ402U	98	143.5	192.0	91.0	22	101.5
EZ404U	98	193.5	242.0	91.0	22	151.5
EZ501U	115	112.0	166.5	100.0	22	77.5
EZ502U	115	137.0	191.5	100.0	22	102.5
EZ503U	115	162.0	216.5	100.0	22	127.5
EZ505U	115	212.0	266.5	100.0	22	177.5
EZ701U	145	125.0	184.0	115.0	22	87.0
EZ702U	145	150.0	209.0	115.0	22	112.0
EZ703U	145	175.0	234.0	115.0	22	137.0
EZ705U	145	230.0	289.0	134.0	22	188.0
EZ802U	190	232.5	309.5	156.5	22	178.5
EZ803U	190	273.5	350.5	156.5	22	219.5
EZ805U	190	355.5	432.5	156.5	22	301.5

Dimensions of geared motors

Type	EZ3			EZ4			EZ5			EZ7			EZ8		
	a	m	n	a	m	n	a	m	n	a	m	n	a	m	n
K102	□72	124	36.0	□98	124	36.0	□115	128	36.0	□145	130	36.0	–	–	–
K202	□72	143	46.0	□98	143	46.0	□115	147	46.0	□145	149	46.0	–	–	–
K203	Ø140	180	46.0	Ø140	180	46.0	–	–	–	–	–	–	–	–	–
K302	Ø140	163	52.5	Ø140	163	52.5	□115	167	52.5	□145	169	52.5	–	–	–
K303	Ø140	200	52.5	Ø140	200	52.5	Ø160	210	16.0	–	–	–	–	–	–
K402	–	–	–	–	–	–	Ø160	187	60.0	□145	189	60.0	□190	192	60.0
K403	Ø140	220	60.0	Ø140	220	60.0	Ø160	230	23.0	–	–	–	–	–	–
K513	–	–	–	–	–	–	Ø160	172	15.0	□145	174	15.0	□190	177	15.0
K514	–	–	–	–	–	–	Ø160	215	15.0	–	–	–	–	–	–
K613	–	–	–	–	–	–	Ø160	191	18.0	Ø200	193	18.0	□190	196	18.0
K614	–	–	–	–	–	–	Ø160	234	18.0	–	–	–	–	–	–
K713	–	–	–	–	–	–	–	–	–	Ø200	221	20.0	□190	224	20.0
K714	–	–	–	–	–	–	Ø160	263	20.0	Ø200	283	20.0	–	–	–
K813	–	–	–	–	–	–	–	–	–	Ø200	247	24.0	Ø250	249	24.0
K814	–	–	–	–	–	–	–	–	–	Ø200	308	24.0	Ø250	320	5.0
K913	–	–	–	–	–	–	–	–	–	–	–	–	Ø250	294	25.0
K914	–	–	–	–	–	–	–	–	–	Ø200	353	25.0	Ø250	365	25.0

16.3.16 V shaft design (solid shaft), NF housing design (base + round flange)



q0	Applies to motors without brake.	q1	Applies to motors with brake.
x0	Applies to encoders using an optical measuring method.	w1	Different for the One Cable Solution (OCS), see the chapter 17.4
3)	Only for K1 (other sizes on request)	-	K1 – K4: Solid shaft without feather key available, on request starting at K5.
-	K1 – K10: Solid shaft on both sides available.		

Dimensions of gear units

Type	a0	Øa1	Øb1	b3	b4	b5	b7	B	B2	c1	c2	Ød	Øe1	f1	h	H	i2	l	l1	m1	n2	n3	n4	n5	Øs	Øs1	s2	t	u
K1	115	160	110 _{j6}	30	90	30	90	90	106	10	32.0	25 _{k6}	130	3.5	75	175	30.0	50	4	75	30	13	140	15	9.0	9	M10	28.0	A8×7×40
K5	200	250	180 _{j6}	40	140	100	140	160	185	15	39.5	45 _{k6}	215	4.0	190	290	90.0	90	4	130	60	27	240	30	18.0	14	M16	48.5	A14×9×80
K6	210	300	230 _{j6}	50	160	110	160	168	200	17	36.0	50 _{k6}	265	4.0	220	340	100.0	100	4	150	65	27	250	30	18.5	14	M16	53.5	A14×9×90
K7	241	350	250 _{h6}	55	180	125	180	190	226	18	44.0	60 _{m6}	300	5.0	250	380	120.0	120	4	163	70	35	290	38	23.0	18	M20	64.0	A18×11×110
K8	300	400	300 _{h6}	75	240	165	240	235	282	20	45.0	70 _{m6}	350	5.0	310	455	140.0	140	5	190	85	41	360	45	27.0	18	M20	74.5	A20×12×125
K9	360	450	350 _{h6}	95	280	185	280	285	330	23	50.0	90 _{m6}	400	5.0	365	545	170.0	170	8	230	95	46	430	50	31.0	18	M24	95.0	A25×14×140
K10	330	550	450 _{h6}	115	350	265	420	400	356	25	78.0	110 _{m6}	500	5.0	420	636	210.0	210	15	270	120	–	400	45	39.0	18	M24	116.0	A28×16×180

Dimensions of additional round flanges

Type	Øa1	Øb1	c1	Øe1	f1	Øs1
K1	140	95 _{j6}	10	115	3.0	9
K8	350	250 _{h6}	18	300	5.0	18
K8	450	350 _{h6}	20	400	5.0	18

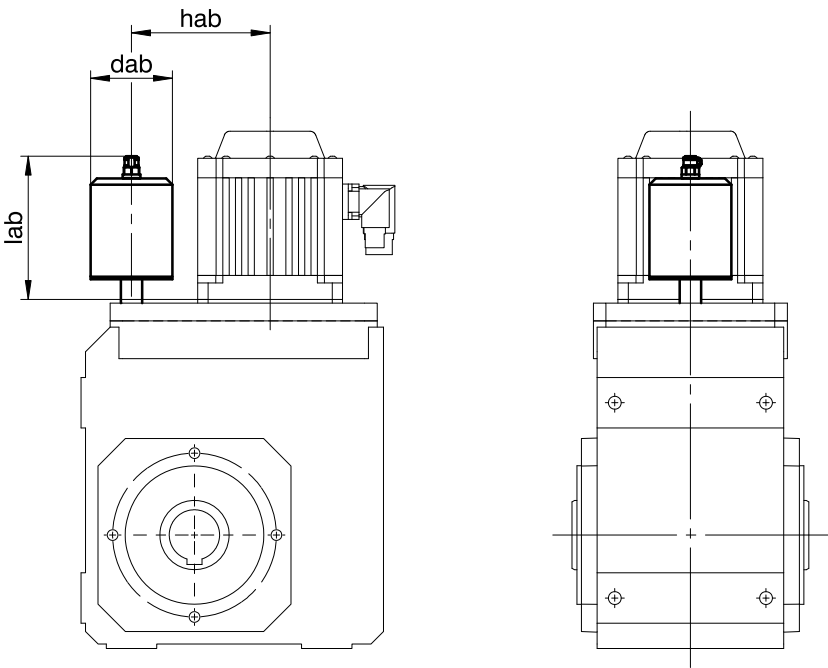
Dimensions of motors

Type	□g	q0	q1	w1	x0	z0
EZ301U	72	114.0	154.0	55.5	21	78.5
EZ302U	72	136.0	176.0	55.5	21	100.5
EZ303U	72	158.0	198.0	55.5	21	122.5
EZ401U	98	118.5	167.0	91.0	22	76.5
EZ402U	98	143.5	192.0	91.0	22	101.5
EZ404U	98	193.5	242.0	91.0	22	151.5
EZ501U	115	112.0	166.5	100.0	22	77.5
EZ502U	115	137.0	191.5	100.0	22	102.5
EZ503U	115	162.0	216.5	100.0	22	127.5
EZ505U	115	212.0	266.5	100.0	22	177.5
EZ701U	145	125.0	184.0	115.0	22	87.0
EZ702U	145	150.0	209.0	115.0	22	112.0
EZ703U	145	175.0	234.0	115.0	22	137.0
EZ705U	145	230.0	289.0	134.0	22	188.0
EZ802U	190	232.5	309.5	156.5	22	178.5
EZ803U	190	273.5	350.5	156.5	22	219.5
EZ805U	190	355.5	432.5	156.5	22	301.5

Dimensions of geared motors

Type	EZ3			EZ4			EZ5			EZ7			EZ8		
	a	m	n	a	m	n	a	m	n	a	m	n	a	m	n
K102	□72	124	36.0	□98	124	36.0	□115	128	36.0	□145	130	36.0	–	–	–
K513	–	–	–	–	–	–	Ø160	172	15.0	□145	174	15.0	□190	177	15.0
K514	–	–	–	–	–	–	Ø160	215	15.0	–	–	–	–	–	–
K613	–	–	–	–	–	–	Ø160	191	18.0	Ø200	193	18.0	□190	196	18.0
K614	–	–	–	–	–	–	Ø160	234	18.0	–	–	–	–	–	–
K713	–	–	–	–	–	–	–	–	–	Ø200	221	20.0	□190	224	20.0
K714	–	–	–	–	–	–	Ø160	263	20.0	Ø200	283	20.0	–	–	–
K813	–	–	–	–	–	–	–	–	–	Ø200	247	24.0	Ø250	249	24.0
K814	–	–	–	–	–	–	–	–	–	Ø200	308	24.0	Ø250	320	5.0
K913	–	–	–	–	–	–	–	–	–	–	–	–	Ø250	294	25.0
K914	–	–	–	–	–	–	–	–	–	Ø200	353	25.0	Ø250	365	25.0
K1014	–	–	–	–	–	–	–	–	–	–	–	–	Ø250	450	28.0

16.3.17 Oil expansion tank



Dimensions

Type	EZ5			EZ7			EZ8		
	dab	hab	lab	dab	hab	lab	dab	hab	lab
K513	65	122.0	113.5	65	122.0	113.5	65	170.0	163.5
K613	65	148.5	116.5	65	148.5	116.5	65	150.5	111.5
K713	–	–	–	65	170.0	114.5	65	170.0	112.0
K813	–	–	–	73	205.0	129.5	73	205.0	129.5
K913	–	–	–	–	–	–	73	255.0	129.5

More information can be found in Chapter [16.6.4](#)

16.4 Type designation

This chapter shows you an explanation of the type designation with the associated options.

Additional ordering information not included in the type designation can be found at the end of the chapter.

Example code

K	4	0	2	A	G	0560	EZ501U
---	---	---	---	---	---	------	--------

Explanation

Code	Designation	Design
K	Type	Helical bevel gear unit
4	Size	4 (example)
0	Generation	Generation 0
1		Generation 1
2	Stages	Two-stage
3		Three-stage
4		Four-stage
A	Shaft	Hollow shaft with keyway
S		Hollow shaft with shrink ring
V		Solid shaft
G	Housing	Pitch circle diameter
F		Round flange
NG		Foot + pitch circle diameter
NF		Foot + round flange
GD		Pitch circle diameter + torque arm bracket
NGD		Foot + pitch circle diameter + torque arm bracket
0560	Transmission ratio (i x 10 rounded)	i = 55.71 (example)
EZ501U	Motor	EZ synchronous servo motor

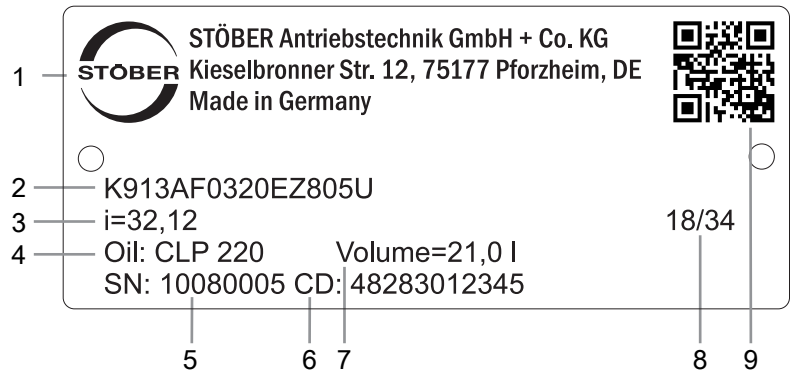
To complete the type designation, also specify the following in your order:

- A detailed type designation of the motor, see the chapter [▶ 17](#)
- Mounting position, see the chapter [▶ 16.5.5](#)
- Attachment of solid shaft: gear unit side 3 or 4; solid shaft on both sides
- Attachment of hollow shaft with keyway: entry side 3 or 4
- Attachment of hollow shaft with shrink ring: shrink ring on gear unit side 3 or 4
- Attachment of foot plates: gear unit side 1 or 5 (for K1, also on gear side 2)
- Attachment of flange: gear unit side 3 or 4
- Pitch circle diameter: gear unit side 3 or 4
- Attachment of torque arm bracket: torque arm bracket on gear unit side 1 or 5 (for K1, also on gear unit side 2), eye on gear unit side 3 or 4
- Position of the plug connectors, see the chapter [▶ 16.5.7](#)
- Oil expansion tank (option, recommended for gear units in mounting position EL5), see the chapter [▶ 16.6.4](#)
- Backlash: Standard/class II/class I. Backlash class II and class I for an additional charge.

For an explanation of the gear unit sides, see the chapter [▶ 16.5.5](#).

16.4.1 Nameplate

An example gear unit nameplate is explained in the figure below.



Code	Designation
1	Name of manufacturer
2	Type designation
3	Gear ratio of the gear unit
4	Lubricant specification
5	Serial number of the gear unit
6	Customer-specific data
7	Lubricant fill volume
8	Date of manufacture (year/calendar week)
9	QR code (link to product information)

16.4.1.1 Supporting documents

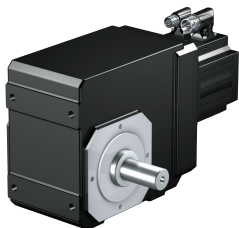
You can view or download supporting documents for the product by reading off the serial number on the nameplate of the product and entering it at the following address online:
<https://id.stober.com>

Alternatively, you can use a suitable mobile device to scan in the QR code on the nameplate of the product in order to be linked to the supporting documents.

16.5 Product description

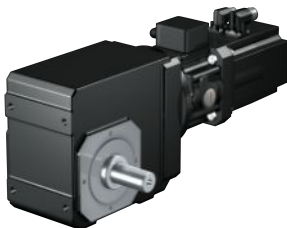
16.5.1 Input options

EZ synchronous servo motor



Catalog ID 442437_en

MB motor adapter + EZ synchronous servo motor



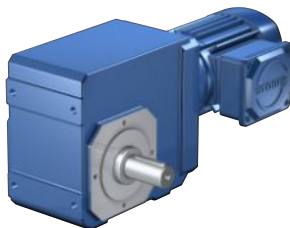
Catalog ID 443311_en

LM Lean motor



Catalog ID 443016_en

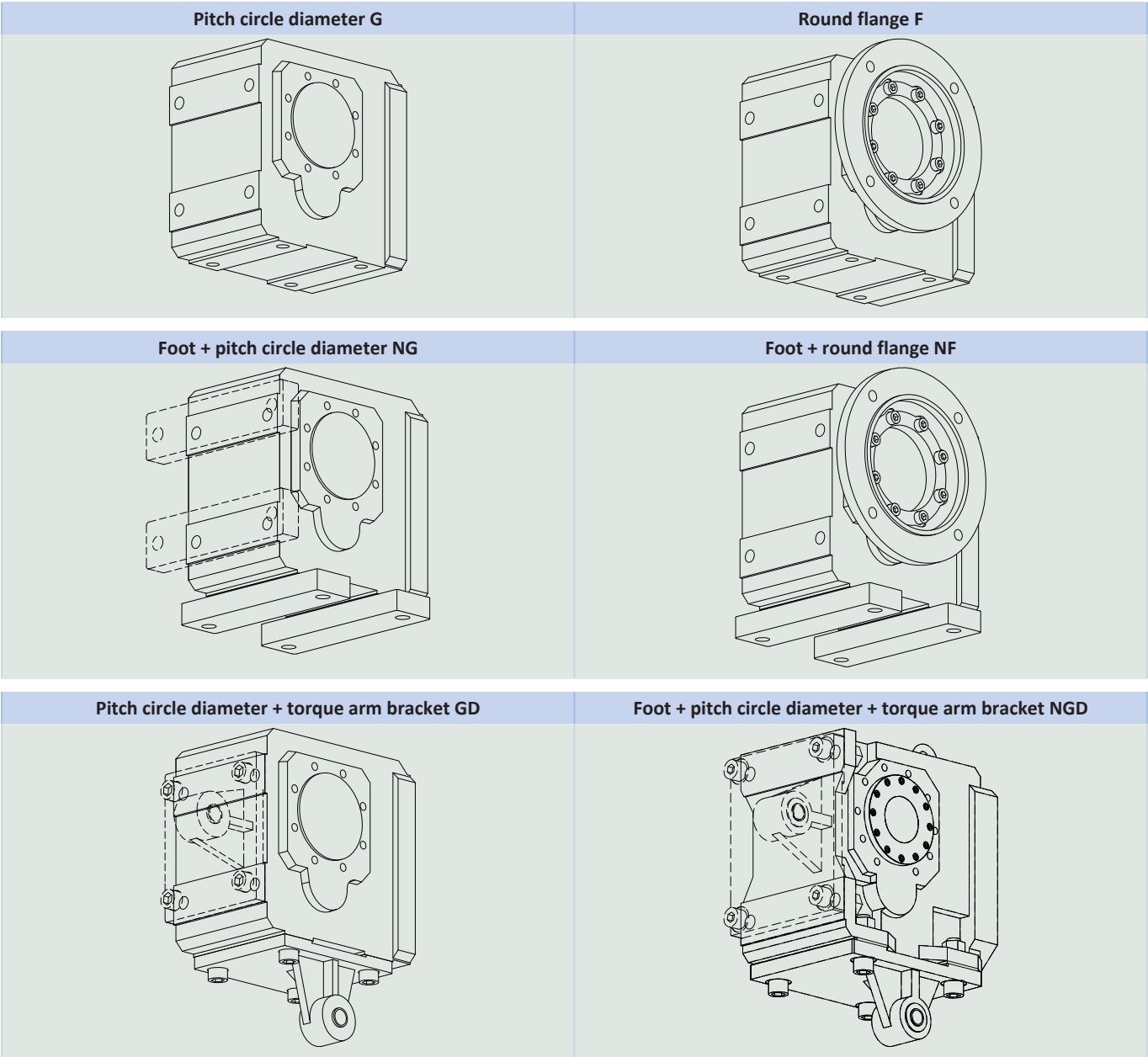
Asynchronous motor



Catalog ID 443136_en

The corresponding catalogs can be found at <http://www.stoeber.de/en/downloads/>
Enter the ID of the catalog in the Search term field.

16.5.2 Housing design



	G	F	NG	NF	GD	NGD
K1	✓	✓	✓	✓	✓	–
K2	✓	✓	✓	–	✓	–
K3	✓	✓	✓	–	✓	–
K4	✓	✓	✓	–	✓	–
K5	✓	✓	✓	✓	✓	–
K6	✓	✓	✓	✓	✓	–
K7	✓	✓	✓	✓	✓	–
K8	✓	✓	✓	✓	✓	–
K9	✓	✓	✓	✓	✓	–
K10	–	–	✓	✓	–	✓

16.5.3 Combinatorial shaft/housing design

	Housing design						
Shaft design	Code	G	F	NG	NF	GD	NGD
Hollow shaft with keyway	A	AG	AF	ANG	ANF	AGD	ANGD
Hollow shaft with shrink ring	S	SG	SF	SNG	SNF	SGD	SNGD
Solid shaft ¹⁾	V	VG	VF	VNG	VNF	–	–

¹⁾ Gear units in sizes K1 – K10 come with a solid shaft with feather key as standard. Gear units in sizes K1 – K4 can be ordered with the option of a solid shaft without feather key. Only upon request starting at size K5.

16.5.4 Installation conditions

Hollow shaft

The hollow shaft hole tolerance is ISO H7. The tolerance of the machine shaft must be ISO k6.

Take care to align the machine shaft with the gear unit hollow shaft when attaching the gear unit.

Maximum deviation ≤ 0.03 mm.

For simpler assembly and disassembly of the machine shaft, the hollow shafts are equipped with a spiral groove (as a grease deposit).

A hardened, threaded keeper plate is included in the scope of delivery. You also have the option to order the hollow shaft without a keeper plate.

Hollow shaft with shrink ring

The tolerance of the hollow shaft hole is ISO H7.

The machine shaft must be executed as follows:

Gear unit type	Tolerance
K1 to K6	ISO h9
K7 to K10	ISO h6

Select a material for the machine shaft with a permitted surface pressure of $p \geq 325$ N/mm².

Possible materials:

- C45E +QT
- 42CrMo4

Fastening the gear units on the machine side using the pitch circle diameter

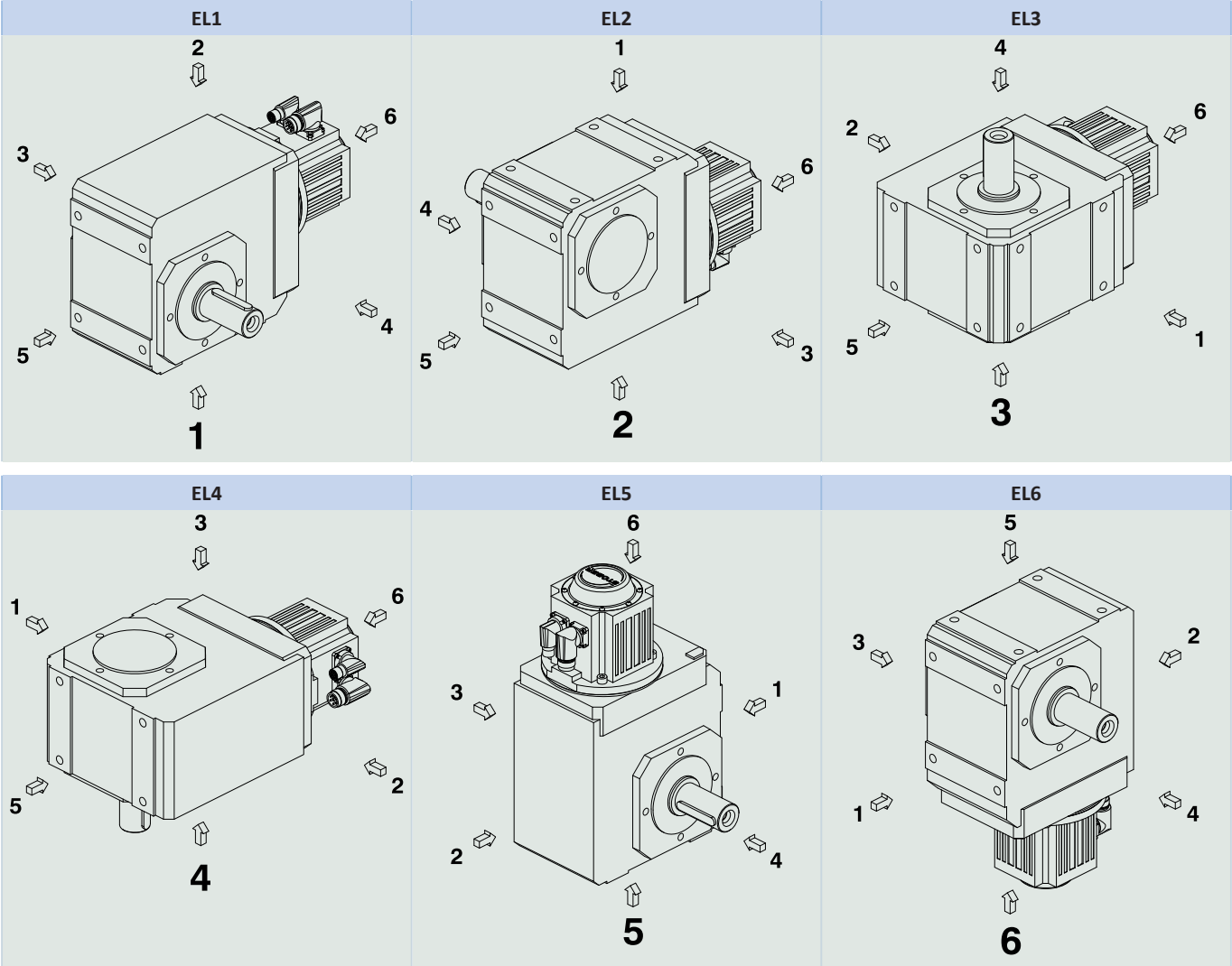
The specified torques and forces only apply when gear units are fastened on the machine side using screws of strength class 10.9. In addition, the gear housings must be adjusted at the pilot. The machine-side fit must be H7.

16.5.5 Mounting positions

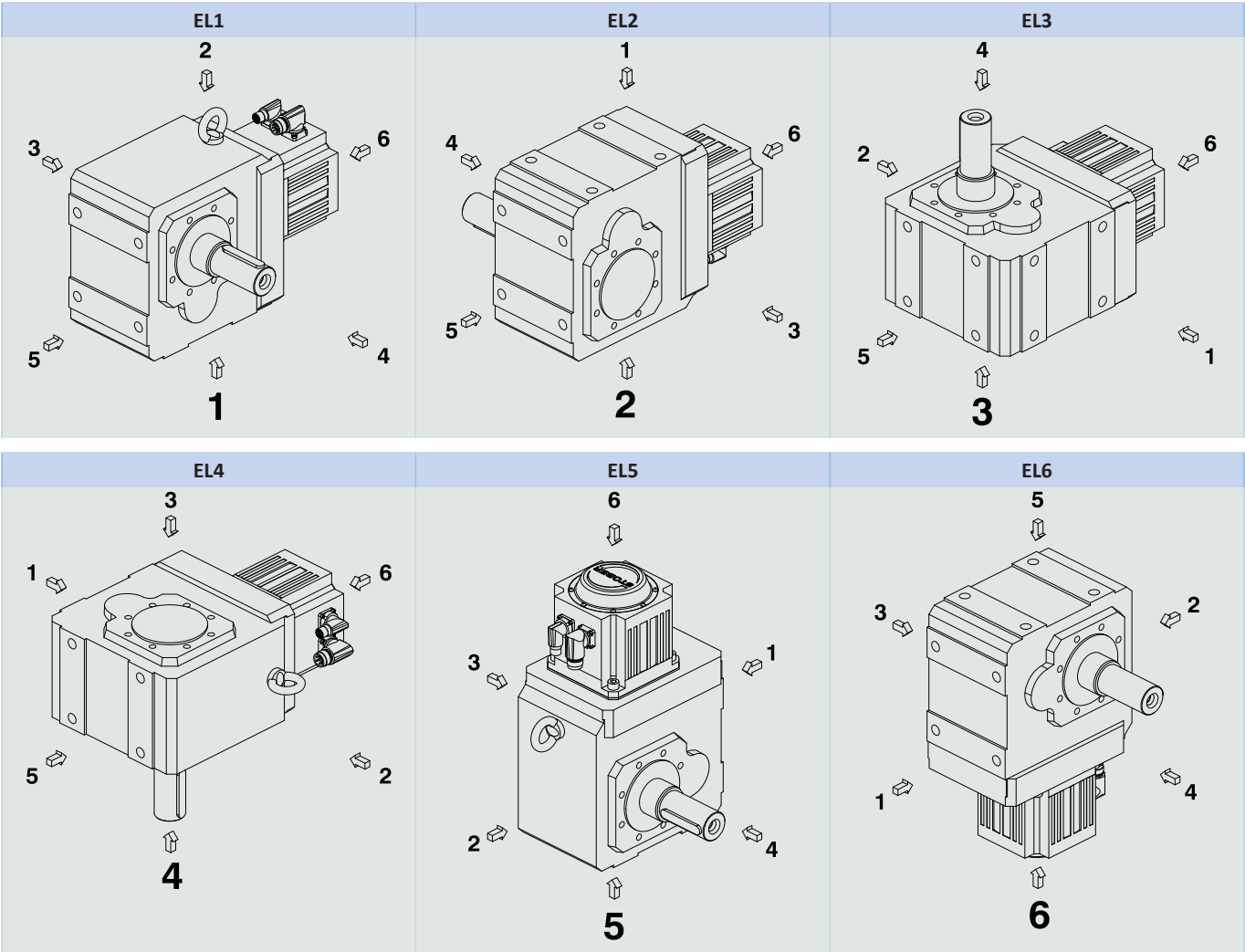
The following table shows the standard mounting positions.

The numbers identify the gear unit sides. The mounting position is defined by the gear side facing downwards.

Mounting positions for gear unit sizes K1 – K4



Mounting positions for gear unit sizes K5 – K10



Since the lubricant filling volume of the gear unit depends on the mounting position, the mounting position must be specified when ordering.

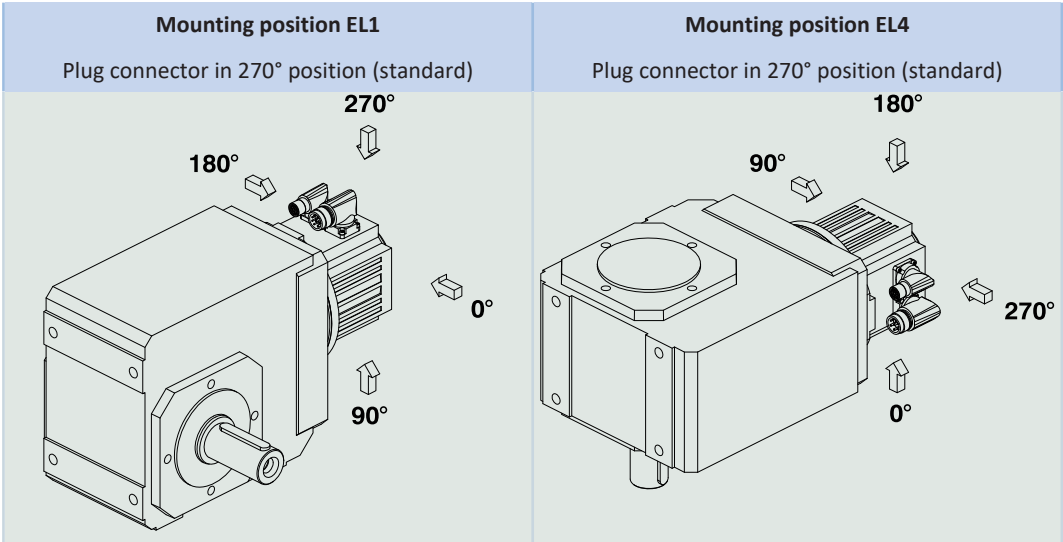
16.5.6 Lubricants

STOBER fills the gear units with the amount and type of lubricant specified on the nameplate. The filling volume and the structure of the gear units depend on the mounting position.

Only install the gear units in the intended mounting position! Reposition the gear units only after consulting STOBER. Otherwise, STOBER assumes no liability for the gear units.

You will receive lubricants for use in the food industry upon request.

16.5.7 Position of the plug connectors



Indicate variations for your geared motor in the order.

Note that the plug connector position rotates along with the geared motor if the geared motor is in another mounting position.

16.5.8 Other product features

Feature	Value
Max. permitted gear unit temperature (on the surface of the gear unit)	≤ 80 °C
Paint	Black RAL 9005
Explosion-proof design in accordance with (ATEX) Directive 2014/34/EU (optional)	Not available
Efficiency:	
η _{get} two-stage	97%
η _{get} three-stage	96%
η _{get} four-stage	94%
Protection class: ¹	
Gear unit	IP65
Motor	IP56, optionally IP66

16.5.9 Maintenance

The instructions for maintenance can be found in the operating manual, ID 443027_en, at <http://www.stoeber.de/en/downloads/>. Enter the ID of the documentation in the Search... field.

Ventilation

Air release valves are fitted as a standard feature and independently of installation position for gear unit sizes K5 to K10.

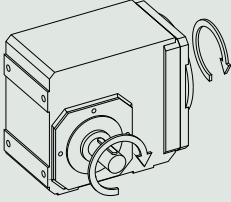
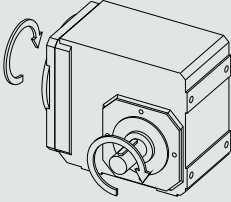
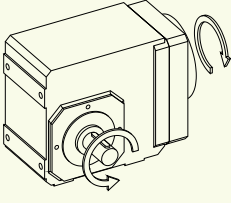
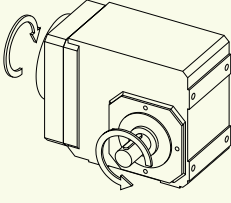
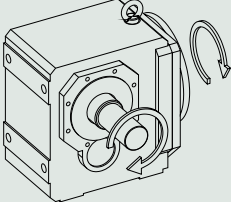
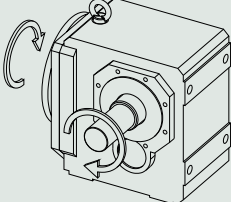
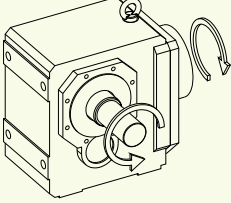
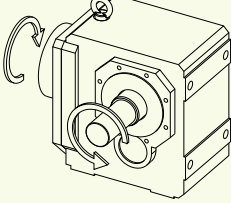
For the position and dimensions of the air release valve, refer to the 3D model.

Download the 3D model at <https://configurator.stoeber.de/en-US/>.

¹ Observe the protection class of all the components.

16.5.10 Direction of rotation

Solid shaft (V), solid shaft on both sides (V), hollow shaft with keyway (A)

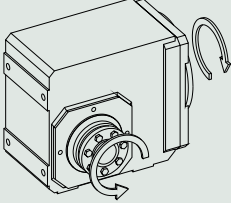
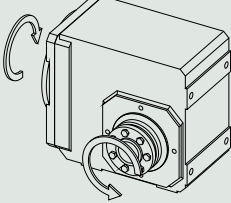
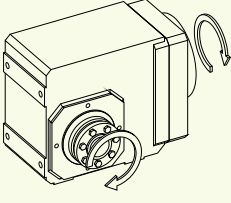
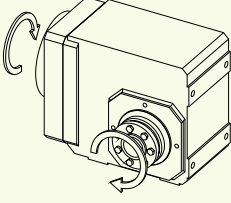
Type	Output side 4	Output side 3
K102 – K402		
K203 – K403		
K513 – K1013		
K514 – K1014		

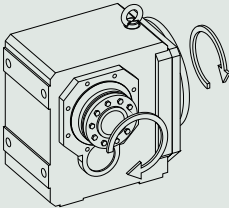
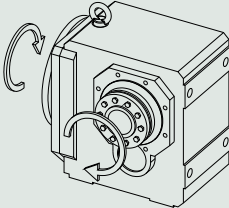
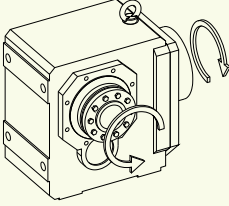
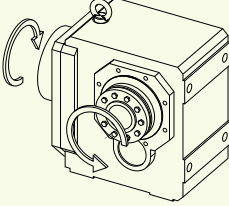
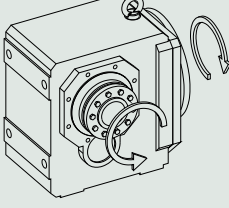
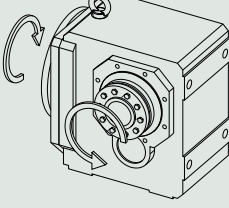
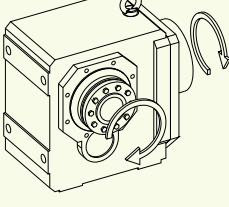
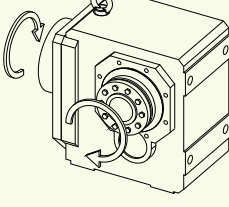
The specified directions of rotation also apply to gear units with hollow shaft (A) if the entry side of the machine shaft corresponds to the side of the solid shaft that is shown.

The direction of rotation for the shaft design of a solid shaft on both sides corresponds to the direction of rotation for output side 4.

The pictures show mounting position EL1.

Hollow shaft with shrink ring (S)

Type	Shrink ring side 4	Shrink ring side 3
K102 – K402		
K203 – K403		

Type	Shrink ring side 4	Shrink ring side 3
K513 – K813		
K514 – K814		
K913 – K1013		
K914 – K1014		

The pictures show mounting position EL1.

16.6 Project configuration

Project your drives using our SERVOnsoft designing software. Download SERVOnsoft for free at <https://www.stoeber.de/en/ServoSoft>.

It is the most convenient and reliable method of drive selection, as the entire torque/speed curve of the application is displayed and evaluated here in the curve of the geared motor.

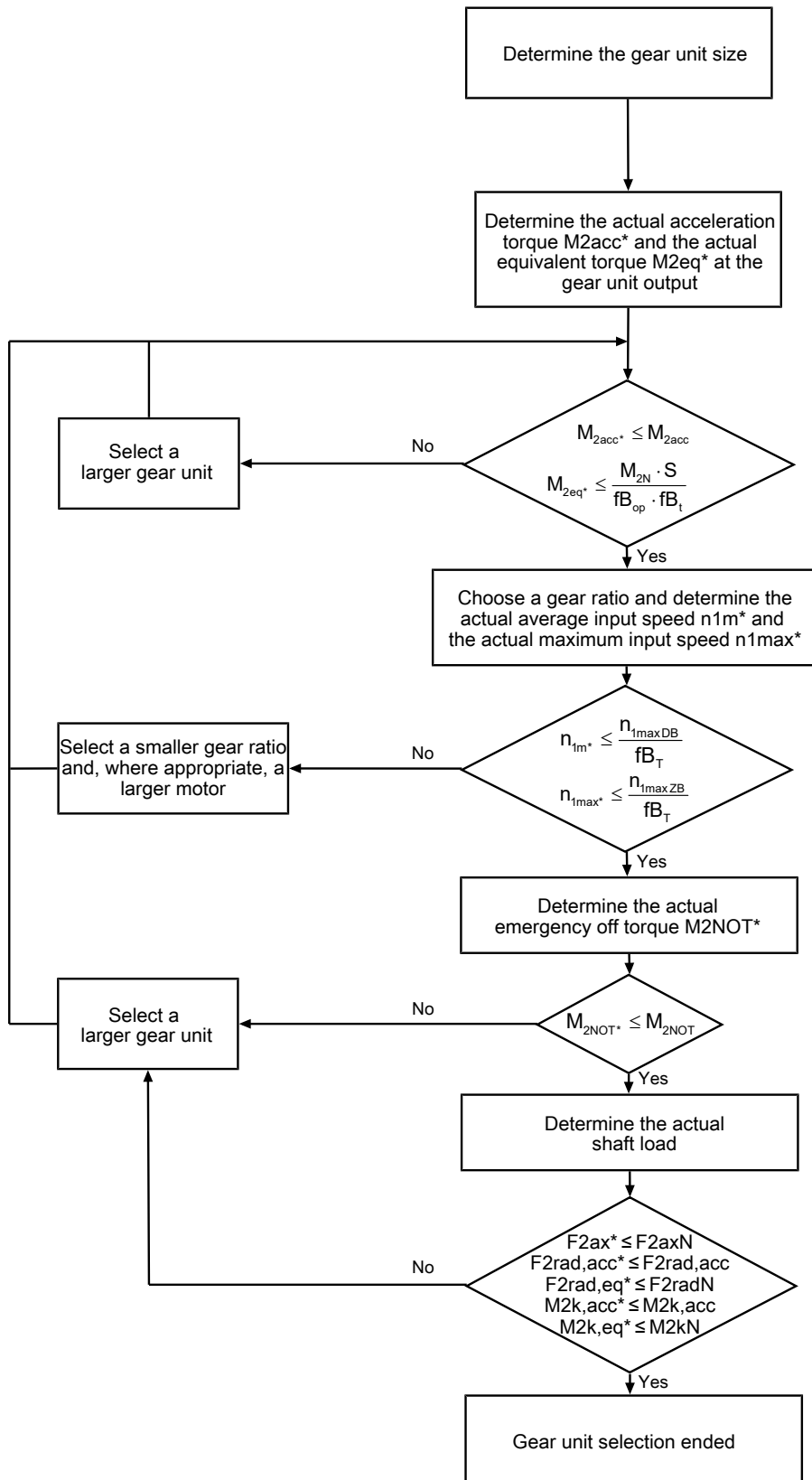
In this chapter, only limit values for specific operating points can be taken into consideration for manual drive selection.

An explanation of the formula symbols can be found in Chapter [▶ 20.1](#).

The formula symbols for values actually present in the application are marked with *.

16.6.1 Drive selection

Drive selection for gear units

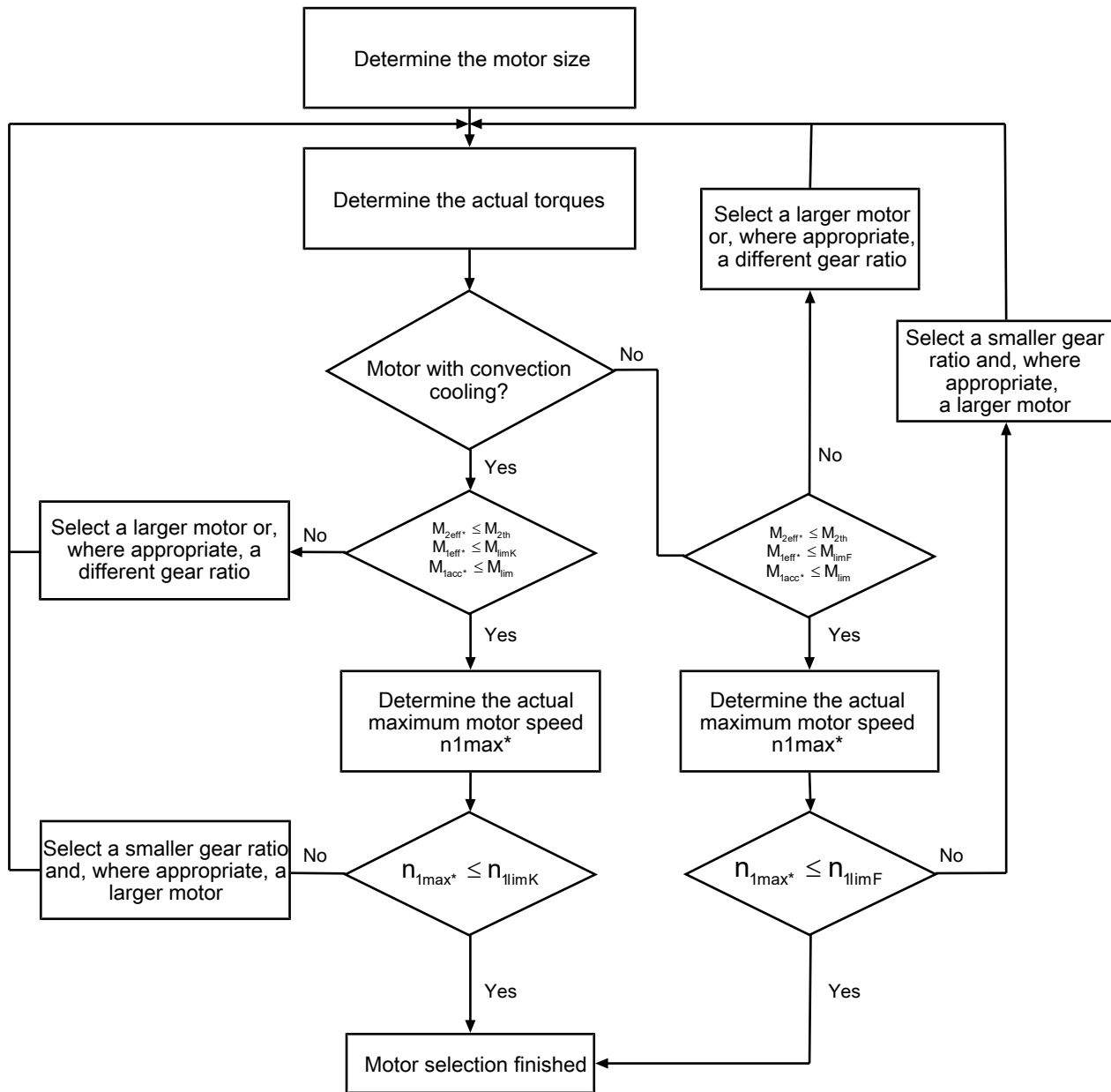


Calculate the forces and tilting torques in the chapter Permitted shaft loads.

Refer to the selection tables for the values for i , n_{1maxDB} , n_{1maxZB} , M_{2acc} , M_{2NOT} , M_{2N} and S .

The values for f_{BT} , f_{Bop} and f_{Bt} can be found in the corresponding tables in this chapter.

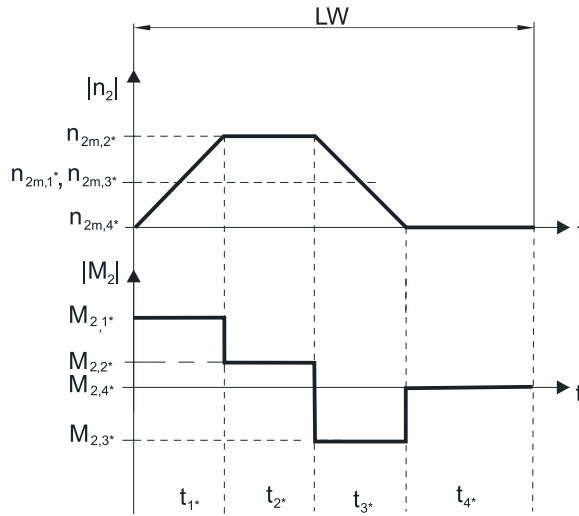
Drive selection for motors



The value for M_{lim} , M_{limK} , M_{limF} , n_{limK} and n_{limF} can be found in the motor characteristic curve in the chapter [► 17.3]. Note the size, nominal speed n_N and cooling type of the motor.

Example of cyclic operation

The following calculations are based on a representation of the power taken from the output based in accordance with the following example:

**Calculation of the actual maximum acceleration torques**

$$M_{2acc^*} = J_{tot} \cdot \frac{\Delta n_2}{9,55 \cdot \Delta t} + M_{L^*}$$

$$M_{1acc^*} = \frac{M_{2acc^*}}{i \cdot \eta_{get}} + J_1 \cdot \frac{\Delta n_1}{9,55 \cdot \Delta t}$$

Calculation of the actual average input speed

$$n_{1m^*} = n_{2m^*} \cdot i$$

$$n_{2m^*} = \frac{|n_{2m,1^*}| \cdot t_{1^*} + \dots + |n_{2m,n^*}| \cdot t_{n^*}}{t_{1^*} + \dots + t_{n^*}}$$

If $t_{1^*} + \dots + t_{3^*} \geq 6$ min, calculate n_{2m^*} without the rest phase t_{4^*} .

The values for the ratio i can be found in the selection tables.

Calculation of the actual effective torque

$$M_{2eff^*} = \sqrt{\frac{t_{1^*} \cdot M_{2,1^*}^2 + \dots + t_{n^*} \cdot M_{2,n^*}^2}{t_{1^*} + \dots + t_{n^*}}}$$

Calculation of the actual emergency-off torque

$$M_{2NOT^*} = J_{tot} \cdot \frac{\Delta n_2}{9,55 \cdot \Delta t} + M_{L^*}$$

Calculation of the actual equivalent torque

$$M_{2eq^*} = \sqrt[3]{\frac{|n_{2m,1^*}| \cdot t_{1^*} \cdot M_{2,1^*}^3 + \dots + |n_{2m,n^*}| \cdot t_{n^*} \cdot M_{2,n^*}^3}{|n_{2m,1^*}| \cdot t_{1^*} + \dots + |n_{2m,n^*}| \cdot t_{n^*}}}$$

Calculation of the thermal limit torque

Calculate the thermal limit torque M_{2th} for a duty cycle $ED_{10} > 50\%$ and the actual average input speed n_{1m^*} .
(At $K_{mot,th} \leq 0$ you must reduce the average input speed n_{1m^*} accordingly or select another geared motor size.)

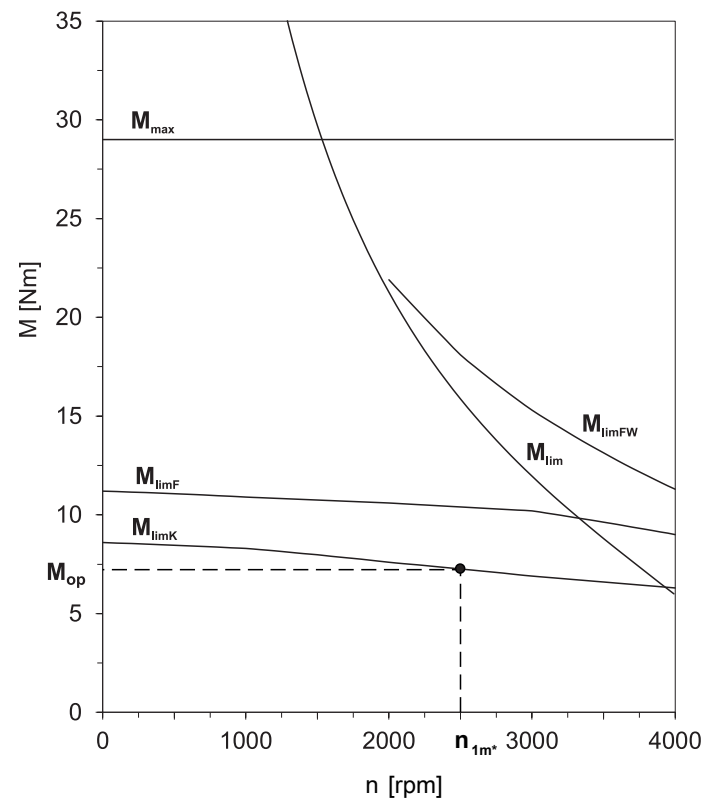
$$M_{2th} = M_{op} \cdot i \cdot K_{mot,th}$$

$$K_{mot,th} = 0,95 - \frac{a_{th}}{1000} \cdot athEL \cdot fB_T \cdot \left(\frac{n_{1m^*}}{1000} \right)^2$$

The values for i and a_{th} can be found in the selection tables.

The values for a_{thEL} and fB_T can be found in the corresponding tables in this chapter.

The value for the torque of the motor at operating point M_{op} with the determined average input speed n_{1m*} can be found in the motor characteristic curve in the chapter [\[17.3 \]](#). Note the size, nominal speed n_N and cooling type of the motor. The figure below shows an example of reading the torque M_{op} of a motor with convection cooling at the operating point.



Operating factors

Parameter a_{thEL}

Mounting position		a_{thEL}
EL1, 2		1.0
EL3, 4, 5, 6		1.1

Operating mode		fB_{op}
Uniform continuous operation		1.00
Cyclic operation		1.25
Reversing load cyclic operation		1.40

Run time		fB_t
Daily runtime ≤ 8 h		1.00
Daily runtime ≤ 16 h		1.15
Daily runtime ≤ 24 h		1.20

Temperature		fB_T
Motor cooling	Surrounding temperature	
Motor with forced ventilation	≤ 20 °C	0.9
	≤ 30 °C	1.0
	≤ 40 °C	1.15
Motor with convection cooling	≤ 20 °C	1.0
	≤ 30 °C	1.1
	≤ 40 °C	1.25

Notes

- The maximum permitted gear unit temperature (see the "Other product features" chapter) must not be exceeded. Doing so may result in damage to the geared motor.

- For braking from full speed (for example when the power fails or when setting up the machine), note the permitted gear unit torques (M_{2acc} , M_{2NOT}) in the selection tables.

16.6.2 Permitted shaft loads for the output shaft

The values specified in the tables apply to the permitted shaft loads:

- For shaft dimensions in accordance with the catalog
- For output speeds $n_{2m^*} \leq 20$ rpm ($F_{2axN} = F_{2ax20}$; $F_{2radN} = F_{2rad20}$; $M_{2kN} = M_{2k20}$)
- Only if radial forces on the gear unit are stabilized by its pilots for the pitch circle diameter and flange housing design

16.6.2.1 V shaft design

Permitted shaft loads for V shaft design (solid shaft)

Type	z_2 [mm]	F_{2ax20} [N]	F_{2rad20} [N]	$F_{2rad,acc}$ [N]	M_{2k20} [Nm]	$M_{2k,acc}$ [Nm]
K1	40.0	1900	5000	5000	325	325
K2	42.0	2100	6000	6000	430	430
K3	45.0	2400	7000	7000	525	525
K4	52.0	3500	11200	11200	1050	1050
K5	72.0	3500	13450	13450	1580	1580
K6	72.0	4000	16000	16000	1960	1960
K7	85.0	5500	22000	22000	3200	3200
K8	60.0	7250	29000	29000	3800	3800
K9	87.0	16500	65000	65000	11200	11200
K10	84.0	25000	80000	80000	15200	15200

Reduced values apply in the case of a V shaft design (solid shaft) in conjunction with an NF housing design (foot + round flange):

Type	z_2 [mm]	F_{2ax20} [N]	F_{2rad20} [N]	$F_{2rad,acc}$ [N]	M_{2k20} [Nm]	$M_{2k,acc}$ [Nm]
K10	132.0	25000	64000	64000	15200	15200

For the V solid shaft design on both sides, the values for F_{2rad20} and M_{2k20} must be multiplied by a factor of 0.7.

For other output speeds, download diagrams at <https://configurator.stoeber.de/en-US/>.

The following applies to output speeds $n_{2m^*} > 20$ rpm:

$$F_{2axN} = \frac{F_{2ax20}}{\sqrt[3]{\frac{n_{2m^*}}{20 \text{ rpm}}}} \quad F_{2radN} = \frac{F_{2rad20}}{\sqrt[3]{\frac{n_{2m^*}}{20 \text{ rpm}}}} \quad M_{2kN} = \frac{M_{2k20}}{\sqrt[3]{\frac{n_{2m^*}}{20 \text{ rpm}}}}$$

The values for F_{2ax20} , F_{2rad20} and M_{2k20} can be found in the table "Permitted shaft loads" in this chapter.

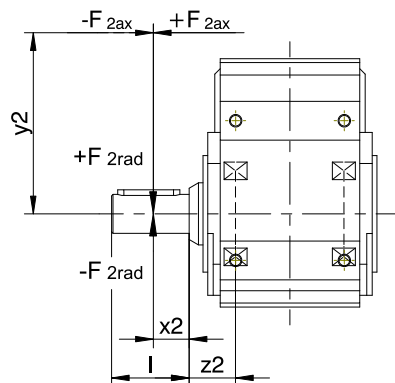


Fig. 1: Force application points for solid shaft

The specified values for F_{2rad20} and $F_{2rad,acc}$ refer to an application of force at the center of the output shaft: $x_2 = l/2$.

Shaft dimensions can be found in the "Dimensional drawings" chapter.

The following applies to other force application points:

$$M_{2k,acc*} = \frac{2 \cdot F_{2ax*} \cdot y_2 + F_{2rad,acc*} \cdot (x_2 + z_2)}{1000}$$

For applications with multiple axial and/or radial forces, you must add the forces as vectors.

In the event of EMERGENCY OFF operation (max. 1000 load changes), you can multiply the permitted forces and torques for F_{2ax20} , F_{2rad20} and M_{2k20} by a factor of two.

Also note the calculation for equivalent values:

$$M_{2k,eq*} = \sqrt[3]{\frac{|n_{2m,1*}| \cdot t_{1*} \cdot |M_{2k,acc,1*}|^3 + \dots + |n_{2m,n*}| \cdot t_{n*} \cdot |M_{2k,acc,n*}|^3}{|n_{2m,1*}| \cdot t_{1*} + \dots + |n_{2m,n*}| \cdot t_{n*}}}$$

$$F_{2rad,eq*} = \sqrt[3]{\frac{|n_{2m,1*}| \cdot t_{1*} \cdot |F_{2rad,acc,1*}|^3 + \dots + |n_{2m,n*}| \cdot t_{n*} \cdot |F_{2rad,acc,n*}|^3}{|n_{2m,1*}| \cdot t_{1*} + \dots + |n_{2m,n*}| \cdot t_{n*}}}$$

16.6.2.2 A and S shaft design

Permitted shaft loads for A shaft design (hollow shaft with keyway)

Type	z_2 [mm]	F_{2ax20} [N]	F_{2rad20} [N]	$F_{2rad,acc}$ [N]	M_{2k20} [Nm]	$M_{2k,acc}$ [Nm]
K1	40.0	1900	5000	5000	240	240
K2	42.0	2100	6000	6000	310	310
K3	45.0	2400	7000	7000	380	380
K4	52.0	3500	11200	11200	740	740
K5	39.0	2500	13450	13450	1000	1000
K6	42.0	3000	16000	16000	1300	1300
K7	45.0	4100	22000	22000	2100	2100
K8	50.0	5300	29000	29000	2600	2600
K9	56.0	7000	65000	65000	3600	3600
K10	56.0	9000	80000	80000	5000	5000

Permitted shaft loads for S shaft design (hollow shaft with shrink ring)

Type	z_2 [mm]	F_{2ax20} [N]	F_{2rad20} [N]	$F_{2rad,acc}$ [N]	M_{2k20} [Nm]	$M_{2k,acc}$ [Nm]
K1	40.0	1900	5000	5000	240	240
K2	42.0	2100	6000	6000	310	310
K3	45.0	2400	7000	7000	380	380
K4	52.0	3500	11200	11200	740	740
K5	39.0	2500	13450	13450	1000	1000
K6	42.0	3000	16000	16000	1300	1300
K7	45.0	4100	22000	22000	2100	2100
K8	50.0	5300	29000	29000	2600	2600
K9	56.0	7000	65000	65000	3600	3600
K10	56.0	9000	80000	80000	5000	5000

For other output speeds, download diagrams at <https://configurator.stoeber.de/en-US/>.

The following applies to output speeds $n_{2m*} > 20$ rpm:

$$F_{2axN} = \frac{F_{2ax20}}{\sqrt[3]{\frac{n_{2m*}}{20 \text{ rpm}}}} \quad F_{2radN} = \frac{F_{2rad20}}{\sqrt[3]{\frac{n_{2m*}}{20 \text{ rpm}}}} \quad M_{2kN} = \frac{M_{2k20}}{\sqrt[3]{\frac{n_{2m*}}{20 \text{ rpm}}}}$$

The values for F_{2ax20} , F_{2rad20} and M_{2k20} can be found in the table "Permitted shaft loads" in this chapter.

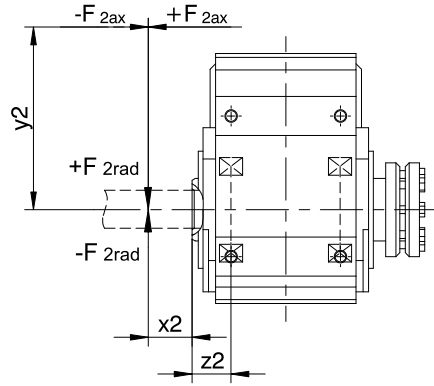


Fig. 2: Force application points for hollow shaft

You can determine the permitted radial forces from the permitted tilting torque M_{2kN} and $M_{2k,acc}$. The actual radial forces may not exceed the permitted radial forces. The permitted radial forces pertain to the shaft end ($x_2 = 0$).

$$M_{2k,acc} = \frac{2 \cdot F_{2ax} \cdot y_2 + F_{2rad,acc} \cdot (x_2 + z_2)}{1000}$$

For applications with multiple axial and/or radial forces, you must add the forces as vectors.

In the event of EMERGENCY OFF operation (max. 1000 load changes), you can multiply the permitted forces and torques for F_{2ax20} , F_{2rad20} and M_{2k20} by a factor of two.

Also note the calculation for equivalent values:

$$M_{2k,eq} = \sqrt[3]{\frac{|n_{2m,1}| \cdot t_{1*} \cdot |M_{2k,acc,1}|^3 + \dots + |n_{2m,n}| \cdot t_{n*} \cdot |M_{2k,acc,n}|^3}{|n_{2m,1}| \cdot t_{1*} + \dots + |n_{2m,n}| \cdot t_{n*}}}$$

$$F_{2rad,eq} = \sqrt[3]{\frac{|n_{2m,1}| \cdot t_{1*} \cdot |F_{2rad,acc,1}|^3 + \dots + |n_{2m,n}| \cdot t_{n*} \cdot |F_{2rad,acc,n}|^3}{|n_{2m,1}| \cdot t_{1*} + \dots + |n_{2m,n}| \cdot t_{n*}}}$$

16.6.3 Radial shaft seal rings

Leak-proofness

Our gear units are equipped with high-quality radial shaft seal rings and checked for leaks. However, a leak cannot be fully ruled out over the length of use of a gear unit. If you use a gear unit with goods incompatible with the lubricant, you must take measures to prevent direct contact with the gear unit lubricant in case of a leak.

16.6.4 Oil expansion tank

The gear units have a higher fill level in mounting position EL5. The oil expansion tank prevents oil from escaping out of the gear unit.

Notes

- We recommend using an oil expansion tank in mounting position EL5 (additional cost) for fast running gear units with an input speed $n_1 > 1750$ rpm and gear ratios $i < 20$.
- It is not possible to use an oil expansion tank if the plug connector is at 90°!
- The oil expansion tank can only be used with certain sizes; see the chapter [▶ 16.3.17](#)

16.7 Additional documentation

Additional documentation related to the product can be found at

<http://www.stoeber.de/en/downloads/>

Enter the ID of the documentation in the Search term field.

Documentation	ID
Operating manual gear units, geared motors K	443364_en