

8 Helical geared motors

C

8.1 Overview

Compact helical geared motors

Features

Power density	★☆☆☆☆
Backlash	★★★★☆
Price category	€
Shaft load	★★★★☆
Smooth operation	★★★★☆
Torsional stiffness	★★★★☆
Mass moment of inertia	★★★★★
Helical gearing	✓
Maintenance-free (C0 – C5)	✓
FKM seal ring at the input	✓
Reinforced output bearing	✓ (on request)
Compact and dynamic due to direct motor attachment	✓

Key: ★☆☆☆☆ good | ★★★★★ excellent
 € Economy | €€€€€ Premium

Technical data

i	2 – 178
M_{2acc}	8.7 – 4140 Nm
$\Delta\phi_2$	10 – 20 arcmin
η_{get}	≤ 97 %

8.2 Selection tables

The technical data specified in the selection tables applies to:

- Installation altitudes up to 1000 m above sea level
- Surrounding temperatures from 0 °C to 40 °C
- Drives with convection-cooled motors
- Weight specification for installation position EL1, housing design N

An explanation of the formula symbols can be found in the Chapter [▶ 15.1](#).

n_{2N}	M_{2N}	$M_{2,0}$	a_{th}	S	Type	M_{2acc}	M_{2NOT}	i	i_{exakt}	n_{1maxDB} EL1,2,3,4	n_{1maxDB} EL5,6	n_{1maxDB}	J_1	$\Delta\phi_2$	C_2	m
[rpm]	[Nm]	[Nm]				[Nm]	[Nm]			[rpm]	[rpm]	[rpm]	[10 ⁻⁴ kgm ²]	[arcmin]	[Nm/ arcmin]	[kg]
C0 ($n_{1N} = 3000$ rpm, $M_{2acc,max} = 72$ Nm)																
120	56	60	3.3	1.1	C002_0250 LM401U	72	120	24.97	899/36	4000	4000	6000	1.7	16	1.6	10
129	52	56	3.2	1.2	C002_0230 LM401U	65	120	23.21	325/14	4000	4000	6000	1.7	16	1.6	10
145	46	50	3.0	1.3	C002_0210 LM401U	72	120	20.71	145/7	4000	4000	6000	1.7	16	1.6	10
171	39	42	2.8	1.5	C002_0175 LM401U	65	120	17.53	3575/204	4000	4000	6000	1.8	16	1.6	10
192	35	38	2.6	1.7	C002_0155 LM401U	68	110	15.64	1595/102	4000	4000	6000	1.8	16	1.6	10
192	68	70	5.2	0.88	C002_0155 LM402U	72	120	15.64	1595/102	4000	4000	6000	3.1	16	1.6	12
213	31	34	2.5	1.9	C002_0140 LM401U	62	100	14.08	169/12	4000	4000	6000	1.8	16	1.6	10
213	61	63	4.9	0.98	C002_0140 LM402U	65	120	14.08	169/12	4000	4000	6000	3.2	16	1.6	12
239	28	30	2.4	2.1	C002_0125 LM401U	55	91	12.57	377/30	4000	4000	6000	1.8	16	1.6	10
239	55	57	4.6	1.1	C002_0125 LM402U	72	120	12.57	377/30	4000	4000	6000	3.2	16	1.6	12
260	26	28	2.3	2.3	C002_0115 LM401U	50	84	11.54	3185/276	3700	3600	6000	1.9	16	1.6	10
260	50	52	4.6	1.2	C002_0115 LM402U	65	120	11.54	3185/276	3700	3600	6000	3.2	16	1.6	12
291	23	25	2.3	2.4	C002_0105 LM401U	45	75	10.30	1421/138	3700	3600	6000	1.9	16	1.6	10
291	45	46	4.5	1.2	C002_0105 LM402U	72	120	10.30	1421/138	3700	3600	6000	3.2	16	1.6	12
291	61	63	6.1	0.92	C002_0105 LM403U	72	120	10.30	1421/138	3700	3600	6000	4.5	16	1.6	14
325	21	22	2.3	2.6	C002_0092 LM401U	40	67	9.228	1495/162	3700	3600	6000	1.9	16	1.6	10
325	40	42	4.4	1.3	C002_0092 LM402U	65	120	9.228	1495/162	3700	3600	6000	3.3	16	1.6	12
325	55	56	6.0	0.99	C002_0092 LM403U	65	120	9.228	1495/162	3700	3600	6000	4.6	16	1.6	14
364	18	20	2.2	2.6	C002_0082 LM401U	36	60	8.235	667/81	3700	3600	6000	1.9	16	1.6	10
364	36	37	4.3	1.4	C002_0082 LM402U	72	120	8.235	667/81	3700	3600	6000	3.3	16	1.6	12
364	49	50	5.9	1.1	C002_0082 LM403U	72	120	8.235	667/81	3700	3600	6000	4.6	16	1.6	14
389	17	19	2.6	2.5	C002_0077 LM401U	34	53	7.714	54/7	4000	4000	6000	1.8	20	1.3	10
389	34	35	5.1	1.3	C002_0077 LM402U	65	110	7.714	54/7	4000	4000	6000	3.1	20	1.3	12
389	46	47	6.9	0.94	C002_0077 LM403U	65	110	7.714	54/7	4000	4000	6000	4.4	20	1.3	14
476	14	15	2.5	2.6	C002_0063 LM401U	28	46	6.300	2035/323	4000	4000	6000	1.8	20	1.3	10
476	28	28	4.9	1.5	C002_0063 LM402U	59	110	6.300	2035/323	4000	4000	6000	3.2	20	1.3	12
476	37	38	6.7	1.1	C002_0063 LM403U	65	110	6.300	2035/323	4000	4000	6000	4.5	20	1.3	14
515	13	14	2.5	2.6	C002_0058 LM401U	25	42	5.824	99/17	4000	4000	6000	1.8	20	1.3	10
515	25	26	4.8	1.5	C002_0058 LM402U	55	110	5.824	99/17	4000	4000	6000	3.2	20	1.3	12
515	35	36	6.6	1.1	C002_0058 LM403U	65	110	5.824	99/17	4000	4000	6000	4.5	20	1.3	14
593	11	12	2.4	2.6	C002_0051 LM401U	22	37	5.063	481/95	4000	4000	6000	1.9	20	1.3	10
593	22	23	4.7	1.7	C002_0051 LM402U	48	110	5.063	481/95	4000	4000	6000	3.2	20	1.3	12
593	30	31	6.4	1.2	C002_0051 LM403U	63	110	5.063	481/95	4000	4000	6000	4.5	20	1.3	14
593	46	49	9.8	0.82	C002_0051 LM503U	65	110	5.063	481/95	4000	4000	6000	11	20	1.3	17
641	10	11	2.4	2.6	C002_0047 LM401U	20	34	4.680	117/25	4000	4000	6000	1.9	20	1.3	10
641	20	21	4.7	1.8	C002_0047 LM402U	44	110	4.680	117/25	4000	4000	6000	3.2	20	1.3	12
641	28	29	6.3	1.3	C002_0047 LM403U	58	110	4.680	117/25	4000	4000	6000	4.5	20	1.3	14
641	42	45	9.7	0.86	C002_0047 LM503U	65	110	4.680	117/25	4000	4000	6000	11	20	1.3	17
723	9.3	10	2.3	2.6	C002_0041 LM401U	18	30	4.149	1813/437	3700	3600	6000	1.9	20	1.3	10
723	18	19	4.6	1.9	C002_0041 LM402U	39	110	4.149	1813/437	3700	3600	6000	3.3	20	1.3	12
723	25	25	6.2	1.4	C002_0041 LM403U	52	110	4.149	1813/437	3700	3600	6000	4.6	20	1.3	14
723	38	40	9.5	0.93	C002_0041 LM503U	65	110	4.149	1813/437	3700	3600	6000	11	20	1.3	17
782	8.6	9.2	2.3	2.6	C002_0038 LM401U	17	28	3.835	441/115	3700	3600	6000	1.9	20	1.3	10
782	17	17	4.5	2.0	C002_0038 LM402U	36	110	3.835	441/115	3700	3600	6000	3.3	20	1.3	12
782	23	23	6.1	1.5	C002_0038 LM403U	48	110	3.835	441/115	3700	3600	6000	4.6	20	1.3	14
782	35	37	9.3	0.98	C002_0038 LM503U	65	110	3.835	441/115	3700	3600	6000	11	20	1.3	17
904	7.4	8.0	2.2	2.6	C002_0033 LM401U	15	24	3.318	1702/513	3700	3600	6000	2.0	20	1.3	10
904	14	15	4.4	2.2	C002_0033 LM402U	31	97	3.318	1702/513	3700	3600	6000	3.4	20	1.3	12
904	20	20	6.0	1.7	C002_0033 LM403U	41	97	3.318	1702/513	3700	3600	6000	4.7	20	1.3	14
904	30	32	9.1	1.1	C002_0033 LM503U	62	97	3.318	1702/513	3700	3600	6000	11	20	1.3	17
978	6.8	7.4	2.2	2.6	C002_0031 LM401U	13	22	3.067	46/15	3700	3600	6000	2.0	20	1.3	10
978	13	14	4.3	2.4	C002_0031 LM402U	29	89	3.067	46/15	3700	3600	6000	3.4	20	1.3	12
978	18	19	5.9	1.7	C002_0031 LM403U	38	89	3.067	46/15	3700	3600	6000	4.7	20	1.3	14
978	28	29	9.0	1.1	C002_0031 LM503U	60	89	3.067	46/15	3700	3600	6000	11	20	1.3	17

8.2 Selection tables 8 C helical geared motors

n_{2N}	M_{2N}	$M_{2,0}$	a_{th}	S	Type	M_{2acc}	M_{2NOT}	i	i_{exakt}	n_{1maxDB} EL1,2,3,4	n_{1maxDB} EL5,6	n_{1maxDB}	J_1	$\Delta\varphi_2$	C_2	m
[rpm]	[Nm]	[Nm]				[Nm]	[Nm]			[rpm]	[rpm]	[rpm]	[10 ⁻⁴ kgm ²]	[arcmin]	[Nm/ arcmin]	[kg]
C0 ($n_{1N} = 3000$ rpm, $M_{2acc,max} = 72$ Nm)																
1083	12	12	4.3	2.5	C002_0028 LM402U	26	81	2.769	36/13	3500	3000	6000	3.4	20	1.3	12
1083	16	17	5.8	1.9	C002_0028 LM403U	34	81	2.769	36/13	3500	3000	6000	4.7	20	1.3	14
1083	25	27	8.8	1.2	C002_0028 LM503U	55	81	2.769	36/13	3500	3000	6000	11	20	1.3	17
1083	36	41	13	0.85	C002_0028 LM505U	58	81	2.769	36/13	3500	3000	6000	17	20	1.3	21
1502	4.5	4.8	2.1	2.6	C002_0020 LM401U	8.7	15	1.997	1480/741	3500	3000	6000	2.4	20	1.3	10
1502	8.7	9.0	4.0	3.2	C002_0020 LM402U	19	58	1.997	1480/741	3500	3000	6000	3.8	20	1.3	12
1502	12	12	5.5	2.3	C002_0020 LM403U	25	58	1.997	1480/741	3500	3000	6000	5.1	20	1.3	14
1502	18	19	8.4	1.5	C002_0020 LM503U	39	58	1.997	1480/741	3500	3000	6000	11	20	1.3	17
1502	26	30	12	1.1	C002_0020 LM505U	46	58	1.997	1480/741	3500	3000	6000	17	20	1.3	21
C1 ($n_{1N} = 3000$ rpm, $M_{2acc,max} = 140$ Nm)																
53	126	136	2.8	0.95	C102_0560 LM401U	140	240	56.36	620/11	4000	3900	6000	1.7	15	3.9	15
60	111	120	2.6	1.1	C102_0500 LM401U	140	240	49.94	899/18	4000	3900	6000	1.7	15	3.9	15
64	105	113	2.5	1.1	C102_0470 LM401U	140	240	46.91	516/11	4000	3900	6000	1.7	15	3.9	15
72	93	100	2.4	1.3	C102_0420 LM401U	140	230	41.57	1247/30	4000	3900	6000	1.7	15	3.9	15
86	78	84	2.2	1.5	C102_0350 LM401U	140	220	35.07	2700/77	4000	3900	6000	1.8	15	3.9	15
97	69	75	2.1	1.7	C102_0310 LM401U	140	190	31.07	435/14	4000	3900	6000	1.8	15	3.9	15
106	124	128	3.9	0.97	C102_0280 LM402U	140	240	28.36	312/11	4000	3900	6000	3.2	15	3.9	17
119	110	113	3.6	1.1	C102_0250 LM402U	140	240	25.13	377/15	4000	3900	6000	3.2	15	3.9	17
128	52	57	1.8	2.3	C102_0240 LM401U	100	170	23.52	1035/44	4000	3900	6000	1.9	15	3.9	15
128	103	106	3.5	1.2	C102_0240 LM402U	140	240	23.52	1035/44	4000	3900	6000	3.2	15	3.9	17
144	47	50	1.7	2.6	C102_0210 LM401U	91	150	20.84	667/32	4000	3900	6000	1.9	15	3.9	15
144	91	94	3.3	1.3	C102_0210 LM402U	140	240	20.84	667/32	4000	3900	6000	3.2	15	3.9	17
144	124	127	4.5	0.97	C102_0210 LM403U	140	240	20.84	667/32	4000	3900	6000	4.5	15	3.9	19
169	40	43	1.6	2.6	C102_0175 LM401U	78	130	17.73	195/11	3800	3500	6000	2.0	15	3.9	15
169	77	80	3.1	1.6	C102_0175 LM402U	140	240	17.73	195/11	3800	3500	6000	3.3	15	3.9	17
169	105	108	4.2	1.1	C102_0175 LM403U	140	240	17.73	195/11	3800	3500	6000	4.6	15	3.9	19
191	35	38	1.5	2.6	C102_0155 LM401U	69	110	15.71	377/24	3800	3500	6000	2.0	15	3.9	15
191	69	71	2.9	1.8	C102_0155 LM402U	140	240	15.71	377/24	3800	3500	6000	3.3	15	3.9	17
191	93	96	3.9	1.3	C102_0155 LM403U	140	240	15.71	377/24	3800	3500	6000	4.6	15	3.9	19
213	61	63	2.7	2.0	C102_0140 LM402U	130	240	14.06	2010/143	3800	3500	6000	3.4	15	3.9	17
213	83	86	3.7	1.4	C102_0140 LM403U	140	240	14.06	2010/143	3800	3500	6000	4.7	15	3.9	19
213	127	135	5.7	0.94	C102_0140 LM503U	140	240	14.06	2010/143	3800	3500	6000	11	15	3.9	21
241	54	56	2.6	2.2	C102_0125 LM402U	120	240	12.46	1943/156	3800	3500	6000	3.4	15	3.9	17
241	74	76	3.5	1.6	C102_0125 LM403U	140	240	12.46	1943/156	3800	3500	6000	4.7	15	3.9	19
241	113	119	5.3	1.1	C102_0125 LM503U	140	240	12.46	1943/156	3800	3500	6000	11	15	3.9	21
256	26	28	1.3	2.6	C102_0115 LM401U	51	85	11.72	1160/99	3600	3100	6000	2.2	15	3.9	15
256	51	53	2.6	2.3	C102_0115 LM402U	110	240	11.72	1160/99	3600	3100	6000	3.5	15	3.9	17
256	70	71	3.5	1.7	C102_0115 LM403U	140	240	11.72	1160/99	3600	3100	6000	4.8	15	3.9	19
256	106	112	5.3	1.1	C102_0115 LM503U	140	240	11.72	1160/99	3600	3100	6000	11	15	3.9	21
289	23	25	1.3	2.6	C102_0105 LM401U	45	76	10.38	841/81	3600	3100	6000	2.2	15	3.9	15
289	45	47	2.5	2.5	C102_0105 LM402U	98	240	10.38	841/81	3600	3100	6000	3.6	15	3.9	17
289	62	63	3.4	1.8	C102_0105 LM403U	130	240	10.38	841/81	3600	3100	6000	4.9	15	3.9	19
289	94	100	5.2	1.2	C102_0105 LM503U	140	240	10.38	841/81	3600	3100	6000	11	15	3.9	21
322	41	42	2.5	2.7	C102_0093 LM402U	88	240	9.326	3180/341	3600	3100	6000	3.7	15	3.9	17
322	55	57	3.3	2.0	C102_0093 LM403U	120	240	9.326	3180/341	3600	3100	6000	5.0	15	3.9	19
322	84	89	5.1	1.3	C102_0093 LM503U	140	240	9.326	3180/341	3600	3100	6000	11	15	3.9	21
322	122	138	7.4	0.89	C102_0093 LM505U	140	240	9.326	3180/341	3600	3100	6000	17	15	3.9	26
363	36	37	2.4	2.9	C102_0083 LM402U	78	240	8.263	1537/186	3600	3100	6000	3.7	15	3.9	17
363	49	50	3.3	2.1	C102_0083 LM403U	100	240	8.263	1537/186	3600	3100	6000	5.0	15	3.9	19
363	75	79	5.0	1.4	C102_0083 LM503U	140	240	8.263	1537/186	3600	3100	6000	11	15	3.9	21
363	108	123	7.2	0.96	C102_0083 LM505U	140	240	8.263	1537/186	3600	3100	6000	17	15	3.9	26
385	17	19	1.4	2.6	C102_0078 LM401U	34	57	7.796	3243/416	4000	3900	6000	1.9	18	3.1	15
385	34	35	2.8	2.5	C102_0078 LM402U	73	210	7.796	3243/416	4000	3900	6000	3.3	18	3.1	17
385	46	48	3.8	1.9	C102_0078 LM403U	97	210	7.796	3243/416	4000	3900	6000	4.6	18	3.1	19
385	71	75	5.8	1.2	C102_0078 LM503U	130	210	7.796	3243/416	4000	3900	6000	11	18	3.1	21
385	102	116	8.4	0.85	C102_0078 LM505U	130	210	7.796	3243/416	4000	3900	6000	17	18	3.1	26
473	14	15	1.4	2.6	C102_0063 LM401U	28	46	6.338	507/80	3800	3500	6000	2.1	18	3.1	15
473	28	29	2.7	2.9	C102_0063 LM402U	60	180	6.338	507/80	3800	3500	6000	3.4	18	3.1	17
473	38	39	3.7	2.1	C102_0063 LM403U	79	180	6.338	507/80	3800	3500	6000	4.7	18	3.1	19
473	57	61	5.6	1.4	C102_0063 LM503U	130	180	6.338	507/80	3800	3500	6000	11	18	3.1	21
473	83	94	8.2	0.97	C102_0063 LM505U	130	180	6.338	507/80	3800	3500	6000	17	18	3.1	26
511	13	14	1.4	2.6	C102_0059 LM401U	26	43	5.875	47/8	3800	3500	6000	2.1	18	3.1	15
511	26	26	2.7	3.1	C102_0059 LM402U	55	170	5.875	47/8	3800	3500	6000	3.4	18	3.1	17
511	35	36	3.7	2.3	C102_0059 LM403U	73	170	5.875	47/8	3800	3500	6000	4.7	18	3.1	19

n_{2N}	M_{2N}	$M_{2,0}$	a_{th}	S	Type	M_{2acc}	M_{2NOT}	i	i_{exakt}	n_{1maxDB} EL1,2,3,4	n_{1maxDB} EL5,6	n_{1maxDB}	J_1	$\Delta\varphi_2$	C_2	m
[rpm]	[Nm]	[Nm]				[Nm]	[Nm]			[rpm]	[rpm]	[rpm]	[10 ⁻⁴ kgm ²]	[arcmin]	[Nm/ arcmin]	[kg]
C1 ($n_{1N} = 3000$ rpm, $M_{2acc,max} = 140$ Nm)																
511	53	56	5.6	1.5	C102_0059 LM503U	120	170	5.875	47/8	3800	3500	6000	11	18	3.1	21
511	77	87	8.1	1.0	C102_0059 LM505U	130	170	5.875	47/8	3800	3500	6000	17	18	3.1	26
597	22	23	2.6	3.4	C102_0050 LM402U	47	150	5.025	201/40	3800	3500	6000	3.5	18	3.1	17
597	30	31	3.6	2.5	C102_0050 LM403U	63	150	5.025	201/40	3800	3500	6000	4.8	18	3.1	19
597	45	48	5.4	1.6	C102_0050 LM503U	99	150	5.025	201/40	3800	3500	6000	11	18	3.1	21
597	66	75	7.9	1.1	C102_0050 LM505U	120	150	5.025	201/40	3800	3500	6000	17	18	3.1	26
644	20	21	2.6	3.6	C102_0047 LM402U	44	140	4.658	3149/676	3800	3500	6000	3.6	18	3.1	17
644	28	28	3.5	2.6	C102_0047 LM403U	58	140	4.658	3149/676	3800	3500	6000	4.9	18	3.1	19
644	42	45	5.4	1.7	C102_0047 LM503U	92	140	4.658	3149/676	3800	3500	6000	11	18	3.1	21
644	61	69	7.8	1.2	C102_0047 LM505U	110	140	4.658	3149/676	3800	3500	6000	17	18	3.1	26
644	89	98	11	0.82	C102_0047 LM704U	130	220	4.658	3149/676	3800	3500	6000	37	18	3.1	32
716	9.3	10	1.3	2.6	C102_0042 LM401U	18	30	4.189	377/90	3600	3100	6000	2.4	18	3.1	15
716	18	19	2.5	3.8	C102_0042 LM402U	39	120	4.189	377/90	3600	3100	6000	3.7	18	3.1	17
716	25	26	3.5	2.8	C102_0042 LM403U	52	120	4.189	377/90	3600	3100	6000	5.0	18	3.1	19
716	38	40	5.3	1.9	C102_0042 LM503U	83	120	4.189	377/90	3600	3100	6000	11	18	3.1	21
716	55	62	7.6	1.3	C102_0042 LM505U	98	120	4.189	377/90	3600	3100	6000	17	18	3.1	26
716	80	88	11	0.88	C102_0042 LM704U	130	220	4.189	377/90	3600	3100	6000	37	18	3.1	32
773	8.7	9.3	1.3	2.6	C102_0039 LM401U	17	28	3.883	1363/351	3600	3100	6000	2.4	18	3.1	15
773	17	17	2.5	4.0	C102_0039 LM402U	37	110	3.883	1363/351	3600	3100	6000	3.7	18	3.1	17
773	23	24	3.4	3.0	C102_0039 LM403U	48	110	3.883	1363/351	3600	3100	6000	5.0	18	3.1	19
773	35	37	5.2	2.0	C102_0039 LM503U	77	110	3.883	1363/351	3600	3100	6000	11	18	3.1	21
773	51	58	7.5	1.3	C102_0039 LM505U	90	110	3.883	1363/351	3600	3100	6000	17	18	3.1	26
773	74	82	11	0.93	C102_0039 LM704U	130	220	3.883	1363/351	3600	3100	6000	37	18	3.1	32
900	15	15	2.4	4.5	C102_0033 LM402U	31	97	3.334	2067/620	3600	3100	6000	4.0	18	3.1	17
900	20	20	3.3	3.3	C102_0033 LM403U	41	97	3.334	2067/620	3600	3100	6000	5.3	18	3.1	19
900	30	32	5.1	2.2	C102_0033 LM503U	66	97	3.334	2067/620	3600	3100	6000	11	18	3.1	21
900	44	49	7.3	1.5	C102_0033 LM505U	78	97	3.334	2067/620	3600	3100	6000	18	18	3.1	26
900	63	70	11	1.0	C102_0033 LM704U	120	220	3.334	2067/620	3600	3100	6000	37	18	3.1	32
971	13	14	2.4	4.7	C102_0031 LM402U	29	90	3.091	2491/806	3600	3100	6000	4.0	18	3.1	17
971	18	19	3.3	3.5	C102_0031 LM403U	38	90	3.091	2491/806	3600	3100	6000	5.3	18	3.1	19
971	28	30	5.0	2.3	C102_0031 LM503U	61	90	3.091	2491/806	3600	3100	6000	11	18	3.1	21
971	40	46	7.2	1.6	C102_0031 LM505U	72	90	3.091	2491/806	3600	3100	6000	18	18	3.1	26
971	59	65	11	1.1	C102_0031 LM704U	120	220	3.091	2491/806	3600	3100	6000	37	18	3.1	32
971	77	90	14	0.82	C102_0031 LM706U	120	220	3.091	2491/806	3600	3100	6000	55	18	3.1	39
1162	49	54	10	1.2	C102_0026 LM704U	100	190	2.582	1911/740	3100	2600	5000	38	18	3.1	32
1162	65	75	13	0.93	C102_0026 LM706U	110	190	2.582	1911/740	3100	2600	5000	55	18	3.1	39
1253	46	50	10	1.3	C102_0024 LM704U	96	170	2.394	2303/962	3100	2600	5000	38	18	3.1	32
1253	60	69	13	0.98	C102_0024 LM706U	110	170	2.394	2303/962	3100	2600	5000	55	18	3.1	39
1378	13	13	3.1	3.9	C102_0022 LM403U	27	63	2.177	468/215	3100	2600	5000	6.1	18	3.1	19
1378	20	21	4.7	2.6	C102_0022 LM503U	43	63	2.177	468/215	3100	2600	5000	12	18	3.1	21
1378	29	32	6.8	1.8	C102_0022 LM505U	51	63	2.177	468/215	3100	2600	5000	19	18	3.1	26
1378	41	46	9.9	1.4	C102_0022 LM704U	87	160	2.177	468/215	3100	2600	5000	38	18	3.1	32
1378	54	63	13	1.0	C102_0022 LM706U	110	160	2.177	468/215	3100	2600	5000	56	18	3.1	39
1487	12	12	3.1	3.9	C102_0020 LM403U	25	59	2.018	1128/559	3100	2600	5000	6.2	18	3.1	19
1487	18	19	4.7	2.6	C102_0020 LM503U	40	59	2.018	1128/559	3100	2600	5000	12	18	3.1	21
1487	26	30	6.7	1.8	C102_0020 LM505U	47	59	2.018	1128/559	3100	2600	5000	19	18	3.1	26
1487	38	42	9.8	1.4	C102_0020 LM704U	81	150	2.018	1128/559	3100	2600	5000	38	18	3.1	32
1487	51	59	13	1.1	C102_0020 LM706U	100	150	2.018	1128/559	3100	2600	5000	56	18	3.1	39
C2 ($n_{1N} = 3000$ rpm, $M_{2acc,max} = 230$ Nm)																
32	203	219	2.3	0.98	C203_0920 LM401U	230	400	92.40	29939/324	4000	3900	6000	1.7	14	8.3	24
37	177	191	2.2	1.1	C203_0810 LM401U	230	400	80.62	11609/144	4000	3900	6000	1.7	14	8.3	24
43	157	169	2.1	1.3	C202_0700 LM401U	230	310	70.32	7595/108	4000	3900	6000	1.7	14	8.3	19
49	137	148	2.1	1.4	C202_0610 LM401U	220	270	61.35	2945/48	4000	3900	6000	1.7	14	8.3	19
61	215	222	3.4	0.93	C202_0490 LM402U	230	400	49.23	1083/22	4000	3900	6000	3.1	14	8.3	21
64	204	211	3.3	0.98	C202_0470 LM402U	230	400	46.82	2107/45	4000	3900	6000	3.2	14	8.3	21
73	178	184	3.1	1.1	C202_0410 LM402U	230	400	40.85	817/20	4000	3900	6000	3.2	14	8.3	21
85	154	158	2.8	1.3	C202_0350 LM402U	230	400	35.18	1372/39	4000	3900	6000	3.2	14	8.3	21
85	209	215	3.9	0.96	C202_0350 LM403U	230	400	35.18	1372/39	4000	3900	6000	4.5	14	8.3	23
98	134	138	2.7	1.5	C202_0310 LM402U	230	400	30.69	399/13	4000	3900	6000	3.2	14	8.3	21
98	182	187	3.6	1.1	C202_0310 LM403U	230	400	30.69	399/13	4000	3900	6000	4.5	14	8.3	23
106	123	127	2.6	1.6	C202_0280 LM402U	230	400	28.24	4067/144	4000	3900	6000	3.3	14	8.3	21
106	168	172	3.5	1.2	C202_0280 LM403U	230	400	28.24	4067/144	4000	3900	6000	4.6	14	8.3	23
122	108	111	2.4	1.9	C202_0250 LM402U	230	400	24.64	1577/64	4000	3900	6000	3.3	14	8.3	21
122	146	150	3.2	1.4	C202_0250 LM403U	230	400	24.64	1577/64	4000	3900	6000	4.6	14	8.3	23

8.2 Selection tables 8 C helical geared motors

n _{2N}	M _{2N}	M _{2,0}	a _{th}	S	Type	M _{2acc}	M _{2NOT}	i	i _{exakt}	n _{1maxDB} EL1,2,3,4	n _{1maxDB} EL5,6	n _{1maxDB}	J ₁	Δφ ₂	C ₂	m
[rpm]	[Nm]	[Nm]				[Nm]	[Nm]			[rpm]	[rpm]	[rpm]	[10 ⁻⁴ kgm ²]	[arcmin]	[Nm/ arcmin]	[kg]
C2 (n_{1N} = 3000 rpm, M_{2acc,max} = 230 Nm)																
127	103	106	2.3	1.9	C202_0240 LM402U	220	400	23.59	637/27	4000	3900	6000	3.4	14	8.3	21
127	140	144	3.2	1.4	C202_0240 LM403U	230	400	23.59	637/27	4000	3900	6000	4.7	14	8.3	23
127	214	226	4.8	0.94	C202_0240 LM503U	230	400	23.59	637/27	4000	3900	6000	11	14	8.3	25
146	90	93	2.2	2.2	C202_0210 LM402U	190	400	20.58	247/12	4000	3900	6000	3.4	14	8.3	21
146	122	126	3.0	1.6	C202_0210 LM403U	230	400	20.58	247/12	4000	3900	6000	4.7	14	8.3	23
146	186	197	4.5	1.1	C202_0210 LM503U	230	400	20.58	247/12	4000	3900	6000	11	14	8.3	25
171	76	79	2.0	2.6	C202_0175 LM402U	160	400	17.52	3626/207	3700	3500	5500	3.6	14	8.3	21
171	104	107	2.7	1.9	C202_0175 LM403U	220	400	17.52	3626/207	3700	3500	5500	4.9	14	8.3	23
171	159	168	4.2	1.3	C202_0175 LM503U	230	400	17.52	3626/207	3700	3500	5500	11	14	8.3	25
196	67	69	1.9	3.0	C202_0155 LM402U	140	400	15.28	703/46	3700	3500	5500	3.7	14	8.3	21
196	91	93	2.6	2.2	C202_0155 LM403U	190	400	15.28	703/46	3700	3500	5500	5.0	14	8.3	23
196	138	147	3.9	1.4	C202_0155 LM503U	230	400	15.28	703/46	3700	3500	5500	11	14	8.3	25
196	200	227	5.6	1.0	C202_0155 LM505U	230	400	15.28	703/46	3700	3500	5500	17	14	8.3	30
213	62	64	1.8	3.2	C202_0140 LM402U	130	400	14.12	3430/243	3700	3500	5500	3.9	14	8.3	21
213	84	86	2.5	2.4	C202_0140 LM403U	180	400	14.12	3430/243	3700	3500	5500	5.2	14	8.3	23
213	128	135	3.7	1.6	C202_0140 LM503U	230	400	14.12	3430/243	3700	3500	5500	11	14	8.3	25
213	185	209	5.4	1.1	C202_0140 LM505U	230	400	14.12	3430/243	3700	3500	5500	18	14	8.3	30
244	54	55	1.7	3.6	C202_0125 LM402U	120	360	12.32	665/54	3700	3500	5500	3.9	14	8.3	21
244	73	75	2.3	2.7	C202_0125 LM403U	150	360	12.32	665/54	3700	3500	5500	5.2	14	8.3	23
244	111	118	3.6	1.8	C202_0125 LM503U	230	360	12.32	665/54	3700	3500	5500	11	14	8.3	25
244	161	183	5.2	1.2	C202_0125 LM505U	230	360	12.32	665/54	3700	3500	5500	18	14	8.3	30
255	51	53	1.7	3.8	C202_0120 LM402U	110	340	11.76	294/25	3500	3100	5000	4.1	14	8.3	21
255	70	72	2.3	2.8	C202_0120 LM403U	150	340	11.76	294/25	3500	3100	5000	5.4	14	8.3	23
255	106	113	3.5	1.8	C202_0120 LM503U	230	340	11.76	294/25	3500	3100	5000	11	14	8.3	25
255	154	175	5.1	1.3	C202_0120 LM505U	230	340	11.76	294/25	3500	3100	5000	18	14	8.3	30
292	45	46	1.7	4.1	C202_0105 LM402U	97	300	10.26	513/50	3500	3100	5000	4.2	14	8.3	21
292	61	63	2.3	3.0	C202_0105 LM403U	130	300	10.26	513/50	3500	3100	5000	5.5	14	8.3	23
292	93	98	3.5	2.0	C202_0105 LM503U	200	300	10.26	513/50	3500	3100	5000	12	14	8.3	25
292	134	152	5.0	1.4	C202_0105 LM505U	230	300	10.26	513/50	3500	3100	5000	18	14	8.3	30
292	195	216	7.3	0.94	C202_0105 LM704U	230	400	10.26	513/50	3500	3100	5000	38	14	8.3	36
320	178	198	7.2	1.0	C202_0094 LM704U	230	400	9.387	2450/261	3500	3100	5000	38	14	8.3	36
366	156	172	7.0	1.1	C202_0082 LM704U	230	400	8.190	475/58	3500	3100	5000	38	14	8.3	36
385	34	35	2.0	3.9	C202_0078 LM402U	73	220	7.800	39/5	4000	3900	6000	3.5	17	6.0	21
385	46	48	2.8	2.9	C202_0078 LM403U	97	220	7.800	39/5	4000	3900	6000	4.8	17	6.0	23
385	71	75	4.2	1.9	C202_0078 LM503U	150	220	7.800	39/5	4000	3900	6000	11	17	6.0	25
385	102	116	6.1	1.3	C202_0078 LM505U	170	220	7.800	39/5	4000	3900	6000	17	17	6.0	30
385	148	164	8.8	0.89	C202_0078 LM704U	200	350	7.800	39/5	4000	3900	6000	37	17	6.0	36
477	27	28	2.0	4.5	C202_0063 LM402U	59	180	6.295	3330/529	3700	3500	5500	3.8	17	6.0	21
477	37	38	2.7	3.3	C202_0063 LM403U	78	180	6.295	3330/529	3700	3500	5500	5.1	17	6.0	23
477	57	60	4.1	2.2	C202_0063 LM503U	120	180	6.295	3330/529	3700	3500	5500	11	17	6.0	25
477	82	93	5.9	1.5	C202_0063 LM505U	150	180	6.295	3330/529	3700	3500	5500	18	17	6.0	30
477	120	133	8.5	1.0	C202_0063 LM704U	200	350	6.295	3330/529	3700	3500	5500	37	17	6.0	36
518	25	26	1.9	4.7	C202_0058 LM402U	54	170	5.791	666/115	3700	3500	5500	3.8	17	6.0	21
518	34	35	2.6	3.5	C202_0058 LM403U	72	170	5.791	666/115	3700	3500	5500	5.1	17	6.0	23
518	52	56	4.0	2.3	C202_0058 LM503U	110	170	5.791	666/115	3700	3500	5500	11	17	6.0	25
518	76	86	5.8	1.6	C202_0058 LM505U	130	170	5.791	666/115	3700	3500	5500	18	17	6.0	30
518	110	122	8.4	1.1	C202_0058 LM704U	200	350	5.791	666/115	3700	3500	5500	37	17	6.0	36
518	145	168	11	0.83	C202_0058 LM706U	200	350	5.791	666/115	3700	3500	5500	55	17	6.0	43
591	30	31	2.6	3.8	C202_0051 LM403U	63	150	5.072	350/69	3700	3500	5500	5.4	17	6.0	23
591	46	49	3.9	2.5	C202_0051 LM503U	100	150	5.072	350/69	3700	3500	5500	11	17	6.0	25
591	66	75	5.7	1.7	C202_0051 LM505U	120	150	5.072	350/69	3700	3500	5500	18	17	6.0	30
591	96	107	8.2	1.2	C202_0051 LM704U	200	350	5.072	350/69	3700	3500	5500	38	17	6.0	36
591	127	147	11	0.90	C202_0051 LM706U	200	350	5.072	350/69	3700	3500	5500	55	17	6.0	43
643	28	28	2.5	3.9	C202_0047 LM403U	58	140	4.667	14/3	3700	3500	5500	5.4	17	6.0	23
643	42	45	3.9	2.6	C202_0047 LM503U	92	140	4.667	14/3	3700	3500	5500	11	17	6.0	25
643	61	69	5.6	1.8	C202_0047 LM505U	110	140	4.667	14/3	3700	3500	5500	18	17	6.0	30
643	89	98	8.1	1.3	C202_0047 LM704U	190	340	4.667	14/3	3700	3500	5500	38	17	6.0	36
643	117	135	11	0.95	C202_0047 LM706U	200	340	4.667	14/3	3700	3500	5500	55	17	6.0	43
710	25	26	2.5	3.9	C202_0042 LM403U	53	120	4.226	486/115	3500	3100	5000	5.8	17	6.0	23
710	38	41	3.8	2.6	C202_0042 LM503U	84	120	4.226	486/115	3500	3100	5000	12	17	6.0	25
710	55	63	5.5	1.8	C202_0042 LM505U	98	120	4.226	486/115	3500	3100	5000	18	17	6.0	30
710	80	89	8.0	1.3	C202_0042 LM704U	170	310	4.226	486/115	3500	3100	5000	38	17	6.0	36
710	106	123	11	1.0	C202_0042 LM706U	200	310	4.226	486/115	3500	3100	5000	55	17	6.0	43
772	23	24	2.5	3.9	C202_0039 LM403U	48	110	3.888	486/125	3500	3100	5000	5.8	17	6.0	23

n_{2N}	M_{2N}	$M_{2,0}$	a_{th}	S	Type	M_{2acc}	M_{2NOT}	i	i_{exakt}	n_{1maxDB} EL1,2,3,4	n_{1maxDB} EL5,6	n_{1maxDB}	J_1	$\Delta\varphi_2$	C_2	m
[rpm]	[Nm]	[Nm]				[Nm]	[Nm]			[rpm]	[rpm]	[rpm]	[10 ⁻⁴ kgm ²]	[arcmin]	[Nm/arcmin]	[kg]
C2 ($n_{1N} = 3000 \text{ rpm}$, $M_{2acc,max} = 230 \text{ Nm}$)																
772	35	37	3.7	2.6	C202_0039 LM503U	77	110	3.888	486/125	3500	3100	5000	12	17	6.0	25
772	51	58	5.4	1.8	C202_0039 LM505U	91	110	3.888	486/125	3500	3100	5000	18	17	6.0	30
772	74	82	7.9	1.4	C202_0039 LM704U	160	280	3.888	486/125	3500	3100	5000	38	17	6.0	36
772	97	113	10	1.1	C202_0039 LM706U	200	280	3.888	486/125	3500	3100	5000	55	17	6.0	43
889	64	71	7.7	1.6	C202_0034 LM704U	130	250	3.373	2250/667	3500	3100	5000	38	17	6.0	36
889	84	98	10	1.2	C202_0034 LM706U	190	250	3.373	2250/667	3500	3100	5000	56	17	6.0	43
967	59	65	7.6	1.6	C202_0031 LM704U	120	230	3.103	90/29	3500	3100	5000	39	17	6.0	36
967	78	90	10	1.3	C202_0031 LM706U	180	230	3.103	90/29	3500	3100	5000	56	17	6.0	43
1115	51	57	7.4	1.8	C202_0027 LM704U	110	200	2.690	495/184	3000	2600	4500	39	17	6.0	36
1115	67	78	9.7	1.4	C202_0027 LM706U	160	200	2.690	495/184	3000	2600	4500	57	17	6.0	43
1212	47	52	7.3	1.9	C202_0025 LM704U	99	180	2.475	99/40	3000	2600	4500	39	17	6.0	36
1212	62	72	9.6	1.5	C202_0025 LM706U	140	180	2.475	99/40	3000	2600	4500	57	17	6.0	43
1374	42	46	7.1	2.1	C202_0022 LM704U	87	160	2.184	2160/989	3000	2600	4500	40	17	6.0	36
1374	55	63	9.4	1.6	C202_0022 LM706U	130	160	2.184	2160/989	3000	2600	4500	58	17	6.0	43
1493	38	42	7.0	2.2	C202_0020 LM704U	80	150	2.009	432/215	3000	2600	4500	40	17	6.0	36
1493	50	58	9.3	1.7	C202_0020 LM706U	120	150	2.009	432/215	3000	2600	4500	58	17	6.0	43
C3 ($n_{1N} = 3000 \text{ rpm}$, $M_{2acc,max} = 400 \text{ Nm}$)																
22	302	325	1.8	1.2	C303_1370 LM401U	350	700	137.2	59267/432	3800	3500	5500	1.7	13	8.7	29
27	241	260	1.6	1.5	C303_1100 LM401U	350	700	109.6	94705/864	3800	3500	5500	1.8	13	8.7	29
33	202	218	1.4	1.7	C303_0920 LM401U	350	590	91.93	39715/432	3800	3500	5500	1.8	13	8.7	29
37	179	193	1.4	2.0	C303_0810 LM401U	350	520	81.47	1222/15	3800	3500	5500	1.8	13	8.7	29
37	350	361	2.7	1.0	C303_0810 LM402U	400	520	81.47	1222/15	3800	3500	5500	3.1	13	8.7	30
73	374	397	4.0	0.94	C302_0410 LM503U	400	700	41.35	2688/65	3800	3500	5500	11	13	8.7	31
86	317	336	3.7	1.1	C302_0350 LM503U	350	700	35.03	1261/36	3800	3500	5500	11	13	8.7	31
97	281	298	3.5	1.2	C302_0310 LM503U	400	700	31.04	776/25	3800	3500	5500	11	13	8.7	31
107	253	268	3.3	1.4	C302_0280 LM503U	350	700	27.99	2015/72	3800	3500	5500	11	13	8.7	31
121	224	238	3.1	1.6	C302_0250 LM503U	400	670	24.80	124/5	3800	3500	5500	11	13	8.7	31
121	325	368	4.5	1.1	C302_0250 LM505U	400	670	24.80	124/5	3800	3500	5500	17	13	8.7	35
128	212	225	3.0	1.6	C302_0230 LM503U	350	680	23.47	845/36	3800	3500	5500	11	13	8.7	31
128	307	348	4.3	1.1	C302_0230 LM505U	350	680	23.47	845/36	3800	3500	5500	17	13	8.7	35
144	188	200	2.8	1.9	C302_0210 LM503U	400	610	20.80	104/5	3800	3500	5500	11	13	8.7	31
144	272	309	4.1	1.3	C302_0210 LM505U	400	610	20.80	104/5	3800	3500	5500	17	13	8.7	35
193	296	327	5.5	1.1	C302_0155 LM704U	400	700	15.54	544/35	3500	3100	5000	38	13	8.7	41
214	266	295	5.4	1.2	C302_0140 LM704U	350	700	13.99	2015/144	3500	3100	5000	38	13	8.7	41
242	236	261	5.3	1.3	C302_0125 LM704U	400	700	12.40	62/5	3500	3100	5000	38	13	8.7	41
242	310	360	6.9	0.98	C302_0125 LM706U	400	700	12.40	62/5	3500	3100	5000	55	13	8.7	48
258	221	244	5.2	1.4	C302_0115 LM704U	350	700	11.61	325/28	3200	2800	4500	38	13	8.7	41
258	290	337	6.9	1.0	C302_0115 LM706U	350	700	11.61	325/28	3200	2800	4500	56	13	8.7	48
292	196	217	5.1	1.5	C302_0105 LM704U	400	700	10.29	72/7	3200	2800	4500	38	13	8.7	41
292	257	298	6.7	1.1	C302_0105 LM706U	400	700	10.29	72/7	3200	2800	4500	56	13	8.7	48
322	177	196	5.0	1.6	C302_0093 LM704U	350	680	9.310	3575/384	3200	2800	4500	39	13	8.7	41
322	233	270	6.6	1.2	C302_0093 LM706U	350	680	9.310	3575/384	3200	2800	4500	56	13	8.7	48
364	157	174	4.9	1.7	C302_0083 LM704U	330	600	8.250	33/4	3200	2800	4500	39	13	8.7	41
364	206	239	6.5	1.3	C302_0083 LM706U	400	600	8.250	33/4	3200	2800	4500	56	13	8.7	48
383	71	75	2.8	2.6	C302_0078 LM503U	150	230	7.841	494/63	3800	3500	5500	11	16	7.1	31
383	103	116	4.1	1.8	C302_0078 LM505U	180	230	7.841	494/63	3800	3500	5500	18	16	7.1	35
383	149	165	5.9	1.5	C302_0078 LM704U	310	470	7.841	494/63	3800	3500	5500	37	16	7.1	41
383	196	227	7.8	1.1	C302_0078 LM706U	330	470	7.841	494/63	3800	3500	5500	55	16	7.1	48
475	120	133	5.7	1.7	C302_0063 LM704U	250	430	6.314	221/35	3500	3100	5000	38	16	7.1	41
475	158	183	7.5	1.3	C302_0063 LM706U	330	430	6.314	221/35	3500	3100	5000	55	16	7.1	48
512	111	123	5.6	1.8	C302_0059 LM704U	230	400	5.859	2584/441	3500	3100	5000	38	16	7.1	41
512	147	170	7.4	1.3	C302_0059 LM706U	320	400	5.859	2584/441	3500	3100	5000	55	16	7.1	48
595	96	106	5.5	2.0	C302_0050 LM704U	200	370	5.038	403/80	3500	3100	5000	38	16	7.1	41
595	126	146	7.2	1.5	C302_0050 LM706U	290	370	5.038	403/80	3500	3100	5000	56	16	7.1	48
642	89	98	5.4	2.1	C302_0047 LM704U	190	340	4.675	589/126	3500	3100	5000	38	16	7.1	41
642	117	136	7.1	1.6	C302_0047 LM706U	270	340	4.675	589/126	3500	3100	5000	56	16	7.1	48
718	79	88	5.3	2.2	C302_0042 LM704U	170	300	4.179	117/28	3200	2800	4500	39	16	7.1	41
718	105	121	7.0	1.7	C302_0042 LM706U	240	300	4.179	117/28	3200	2800	4500	56	16	7.1	48
774	74	82	5.2	2.3	C302_0039 LM704U	150	280	3.878	190/49	3200	2800	4500	39	16	7.1	41
774	97	112	6.9	1.8	C302_0039 LM706U	230	280	3.878	190/49	3200	2800	4500	56	16	7.1	48
895	64	71	5.1	2.6	C302_0034 LM704U	130	240	3.352	429/128	3200	2800	4500	40	16	7.1	41
895	84	97	6.7	1.9	C302_0034 LM706U	200	240	3.352	429/128	3200	2800	4500	57	16	7.1	48
965	59	65	5.1	2.7	C302_0031 LM704U	120	230	3.110	1045/336	3200	2800	4500	40	16	7.1	41
965	78	90	6.6	2.0	C302_0031 LM706U	180	230	3.110	1045/336	3200	2800	4500	57	16	7.1	48

8.2 Selection tables 8 C helical geared motors

n _{2N}	M _{2N}	M _{2,0}	a _{th}	S	Type	M _{2acc}	M _{2NOT}	i	i _{exakt}	n _{1maxDB} EL1,2,3,4	n _{1maxDB} EL5,6	n _{1maxDB}	J ₁	Δφ ₂	C ₂	m
[rpm]	[Nm]	[Nm]				[Nm]	[Nm]			[rpm]	[rpm]	[rpm]	[10 ⁻⁴ kgm ²]	[arcmin]	[Nm/arcmin]	[kg]
C4 (n_{1N} = 3000 rpm, M_{2acc,max} = 600 Nm)																
48	566	600	3.7	0.89	C402_0630 LM503U	600	960	62.52	8127/130	3500	3200	5000	11	12	22	41
53	508	538	3.2	1.1	C402_0560 LM503U	550	1040	56.10	9425/168	3500	3200	5000	11	12	22	41
60	454	482	3.0	1.2	C402_0500 LM503U	600	930	50.19	1305/26	3500	3200	5000	11	12	22	41
64	422	448	2.9	1.3	C402_0470 LM503U	550	930	46.67	140/3	3500	3200	5000	11	12	22	41
72	378	401	2.8	1.5	C402_0420 LM503U	600	840	41.75	7056/169	3500	3200	5000	11	12	22	41
86	315	334	2.5	1.7	C402_0350 LM503U	550	790	34.82	975/28	3500	3200	5000	11	12	22	41
86	456	517	3.7	1.2	C402_0350 LM505U	550	790	34.82	975/28	3500	3200	5000	18	12	22	45
96	282	299	2.4	2.0	C402_0310 LM503U	570	710	31.15	405/13	3500	3200	5000	11	12	22	41
96	408	462	3.5	1.3	C402_0310 LM505U	570	710	31.15	405/13	3500	3200	5000	18	12	22	45
120	474	525	4.5	1.2	C402_0250 LM704U	600	1100	24.92	324/13	3500	3200	5000	38	12	22	51
128	444	492	4.3	1.2	C402_0230 LM704U	550	1100	23.36	1495/64	3500	3200	5000	38	12	22	51
144	397	440	4.1	1.4	C402_0210 LM704U	600	1100	20.90	4347/208	3500	3200	5000	38	12	22	51
170	335	371	3.8	1.6	C402_0175 LM704U	550	1100	17.60	845/48	3300	2800	4500	39	12	22	51
170	441	511	5.0	1.2	C402_0175 LM706U	550	1100	17.60	845/48	3300	2800	4500	56	12	22	58
190	299	332	3.6	1.8	C402_0160 LM704U	600	1070	15.75	63/4	3300	2800	4500	39	12	22	51
190	394	457	4.7	1.4	C402_0160 LM706U	600	1070	15.75	63/4	3300	2800	4500	56	12	22	58
214	266	295	3.5	2.0	C402_0140 LM704U	550	1020	13.99	2015/144	3300	2800	4500	40	12	22	51
214	350	406	4.6	1.5	C402_0140 LM706U	550	1020	13.99	2015/144	3300	2800	4500	57	12	22	58
240	238	264	3.4	2.2	C402_0125 LM704U	500	910	12.52	651/52	3300	2800	4500	40	12	22	51
240	313	363	4.5	1.6	C402_0125 LM706U	600	910	12.52	651/52	3300	2800	4500	57	12	22	58
258	221	245	3.4	2.3	C402_0115 LM704U	460	850	11.64	1885/162	2900	2500	4000	41	12	22	51
258	291	337	4.4	1.7	C402_0115 LM706U	550	850	11.64	1885/162	2900	2500	4000	58	12	22	58
288	198	219	3.3	2.4	C402_0105 LM704U	420	760	10.41	406/39	2900	2500	4000	41	12	22	51
288	261	302	4.3	1.9	C402_0105 LM706U	600	760	10.41	406/39	2900	2500	4000	58	12	22	58
384	149	165	4.4	2.1	C402_0078 LM704U	310	450	7.816	2001/256	3500	3200	5000	39	15	17	51
384	196	227	5.8	1.6	C402_0078 LM706U	360	450	7.816	2001/256	3500	3200	5000	56	15	17	58
509	112	124	4.2	2.6	C402_0059 LM704U	240	400	5.891	377/64	3300	2800	4500	40	15	17	51
509	147	171	5.5	1.9	C402_0059 LM706U	320	400	5.891	377/64	3300	2800	4500	57	15	17	58
641	89	99	4.0	3.0	C402_0047 LM704U	190	340	4.682	899/192	3300	2800	4500	41	15	17	51
641	117	136	5.3	2.3	C402_0047 LM706U	270	340	4.682	899/192	3300	2800	4500	58	15	17	58
770	74	82	3.9	3.1	C402_0039 LM704U	160	280	3.894	841/216	2900	2500	4000	42	15	17	51
770	97	113	5.1	2.3	C402_0039 LM706U	230	280	3.894	841/216	2900	2500	4000	60	15	17	58
C5 (n_{1N} = 3000 rpm, M_{2acc,max} = 920 Nm)																
33	806	854	3.0	0.99	C503_0900 LM503U	850	1490	90.32	8671/96	3400	3000	4500	11	12	23	56
37	719	762	2.8	1.1	C503_0810 LM503U	920	1330	80.60	19343/240	3400	3000	4500	11	12	23	56
43	633	671	2.7	1.3	C502_0700 LM503U	850	1210	69.97	10075/144	3400	3000	4500	11	12	23	52
48	565	599	2.8	1.3	C502_0620 LM503U	860	1080	62.43	4495/72	3400	3000	4500	11	12	23	52
54	505	536	2.4	1.6	C502_0560 LM503U	850	1120	55.83	335/6	3400	3000	4500	11	12	23	52
54	731	829	3.4	1.1	C502_0560 LM505U	850	1120	55.83	335/6	3400	3000	4500	17	12	23	57
60	451	478	2.2	1.8	C502_0500 LM503U	800	1000	49.82	1943/39	3400	3000	4500	11	12	23	52
60	652	739	3.2	1.2	C502_0500 LM505U	800	1000	49.82	1943/39	3400	3000	4500	17	12	23	57
72	793	877	4.3	1.0	C502_0420 LM704U	920	1600	41.69	667/16	3400	3000	4500	37	12	23	63
86	665	737	3.9	1.2	C502_0350 LM704U	850	1600	35.00	35/1	3400	3000	4500	38	12	23	63
96	594	657	3.7	1.3	C502_0310 LM704U	920	1520	31.23	406/13	3400	3000	4500	38	12	23	63
96	782	906	4.9	1.0	C502_0310 LM706U	920	1520	31.23	406/13	3400	3000	4500	55	12	23	70
107	534	591	3.5	1.5	C502_0280 LM704U	850	1600	28.10	5395/192	3400	3000	4500	39	12	23	63
107	703	815	4.6	1.1	C502_0280 LM706U	850	1600	28.10	5395/192	3400	3000	4500	56	12	23	70
120	477	528	3.3	1.7	C502_0250 LM704U	920	1440	25.07	2407/96	3400	3000	4500	39	12	23	63
120	627	727	4.4	1.3	C502_0250 LM706U	920	1440	25.07	2407/96	3400	3000	4500	56	12	23	70
128	444	492	3.2	1.8	C502_0230 LM704U	850	1490	23.36	1495/64	3400	3000	4500	39	12	23	63
128	585	677	4.2	1.4	C502_0230 LM706U	850	1490	23.36	1495/64	3400	3000	4500	57	12	23	70
144	396	439	3.0	2.0	C502_0210 LM704U	830	1330	20.84	667/32	3400	3000	4500	40	12	23	63
144	522	605	4.0	1.5	C502_0210 LM706U	920	1330	20.84	667/32	3400	3000	4500	57	12	23	70
215	265	293	2.5	3.0	C502_0140 LM704U	560	1010	13.93	195/14	3100	2700	4000	43	12	23	63
215	349	404	3.3	2.3	C502_0140 LM706U	810	1010	13.93	195/14	3100	2700	4000	60	12	23	70
241	236	262	2.4	3.1	C502_0125 LM704U	500	900	12.43	87/7	3100	2700	4000	43	12	23	63
241	311	360	3.2	2.3	C502_0125 LM706U	720	900	12.43	87/7	3100	2700	4000	60	12	23	70
386	148	163	3.0	2.7	C502_0078 LM704U	310	500	7.763	621/80	3400	3000	4500	40	14	21	63
386	194	225	4.0	2.0	C502_0078 LM706U	400	500	7.763	621/80	3400	3000	4500	58	14	21	70
648	88	97	2.8	3.1	C502_0046 LM704U	180	340	4.629	162/35	3100	2700	4000	45	14	21	63
648	116	134	3.7	2.3	C502_0046 LM706U	270	340	4.629	162/35	3100	2700	4000	62	14	21	70
C6 (n_{1N} = 3000 rpm, M_{2acc,max} = 1650 Nm)																
22	1203	1275	2.4	1.1	C613_1350 LM503U	1380	1720	134.8	15776/117	3200	2900	4000	11	10	74	76
28	946	1003	2.2	1.3	C613_1060 LM503U	1280	1600	106.1	3712/35	3200	2900	4000	11	10	74	76

n_{2N}	M_{2N}	$M_{2,0}$	a_{th}	S	Type	M_{2acc}	M_{2NOT}	i	i_{exakt}	n_{1maxDB} EL1,2,3,4	n_{1maxDB} EL5,6	n_{1maxDB}	J_1	$\Delta\varphi_2$	C_2	m
[rpm]	[Nm]	[Nm]				[Nm]	[Nm]			[rpm]	[rpm]	[rpm]	[10 ⁻⁴ kgm ²]	[arcmin]	[Nm/ arcmin]	[kg]
C6 ($n_{1N} = 3000$ rpm, $M_{2acc,max} = 1650$ Nm)																
39	1439	1593	3.4	1.0	C613_0770 LM704U	1650	2560	76.80	8601/112	3200	2900	4000	37	10	74	86
40	676	717	2.6	1.3	C613_0760 LM503U	910	1140	75.81	5307/70	3200	2900	4000	11	10	74	76
47	1189	1317	3.2	1.2	C613_0630 LM704U	1650	2290	63.46	48739/768	3200	2900	4000	37	10	74	86
54	1048	1160	3.3	1.2	C612_0550 LM704U	1380	2240	55.11	496/9	3200	2900	4000	38	10	74	78
61	923	1022	3.1	1.4	C613_0490 LM704U	1550	1940	49.28	31537/640	3200	2900	4000	38	10	74	86
61	1215	1409	4.1	1.1	C613_0490 LM706U	1550	1940	49.28	31537/640	3200	2900	4000	55	10	74	94
66	862	954	3.0	1.5	C612_0450 LM704U	1380	2010	45.33	136/3	3200	2900	4000	39	10	74	78
66	1135	1315	3.9	1.1	C612_0450 LM706U	1380	2010	45.33	136/3	3200	2900	4000	56	10	74	85
76	749	829	2.9	1.6	C612_0390 LM704U	1280	1600	39.40	1891/48	3200	2900	4000	38	10	74	78
76	986	1143	3.9	1.2	C612_0390 LM706U	1280	1600	39.40	1891/48	3200	2900	4000	55	10	74	85
86	663	734	2.6	2.0	C612_0350 LM704U	1380	1720	34.87	1360/39	3200	2900	4000	40	10	74	78
86	873	1011	3.4	1.5	C612_0350 LM706U	1380	1720	34.87	1360/39	3200	2900	4000	57	10	74	85
93	616	682	2.2	1.9	C612_0320 LM704U	1150	1430	32.41	1037/32	3200	2900	4000	39	10	74	78
93	811	940	2.9	1.4	C612_0320 LM706U	1150	1430	32.41	1037/32	3200	2900	4000	56	10	74	85
109	521	577	2.3	2.4	C612_0270 LM704U	1100	1600	27.43	192/7	3200	2900	4000	42	10	74	78
109	686	796	3.0	1.9	C612_0270 LM706U	1280	1600	27.43	192/7	3200	2900	4000	59	10	74	85
120	474	525	2.1	2.1	C612_0250 LM704U	980	1230	24.93	5185/208	3200	2900	4000	40	10	74	78
120	624	723	2.8	1.6	C612_0250 LM706U	980	1230	24.93	5185/208	3200	2900	4000	57	10	74	85
153	373	413	2.1	2.4	C612_0195 LM704U	780	1140	19.61	549/28	3200	2900	4000	42	10	74	78
153	491	569	2.7	1.9	C612_0195 LM706U	910	1140	19.61	549/28	3200	2900	4000	59	10	74	85
C7 ($n_{1N} = 3000$ rpm, $M_{2acc,max} = 2530$ Nm)																
30	1858	2057	3.2	1.0	C713_0990 LM704U	2530	3170	99.14	6345/64	3100	2900	3600	37	10	122	126
37	1517	1680	3.1	1.2	C713_0810 LM704U	2260	2820	80.97	20727/256	3100	2900	3600	38	10	122	126
43	1322	1464	2.5	1.5	C712_0700 LM704U	2120	2650	69.55	765/11	3100	2900	3600	39	10	122	113
43	1740	2017	3.3	1.1	C712_0700 LM706U	2120	2650	69.55	765/11	3100	2900	3600	56	10	122	120
53	1080	1196	2.3	1.8	C712_0570 LM704U	1910	2390	56.82	625/11	3100	2900	3600	40	10	122	113
53	1422	1648	3.0	1.3	C712_0570 LM706U	1910	2390	56.82	625/11	3100	2900	3600	57	10	122	120
73	780	863	1.9	1.8	C712_0410 LM704U	1380	1730	41.02	2625/64	3100	2900	3600	40	10	122	113
73	1026	1190	2.4	1.3	C712_0410 LM706U	1380	1730	41.02	2625/64	3100	2900	3600	57	10	122	120
86	667	738	1.8	2.3	C712_0350 LM704U	1400	1960	35.07	2700/77	3100	2900	3600	44	10	122	113
86	878	1017	2.4	1.8	C712_0350 LM706U	1570	1960	35.07	2700/77	3100	2900	3600	61	10	122	120
119	481	533	1.4	2.3	C712_0250 LM704U	1010	1410	25.31	405/16	3100	2900	3600	44	10	122	113
119	633	734	1.8	1.8	C712_0250 LM706U	1130	1410	25.31	405/16	3100	2900	3600	62	10	122	120
C8 ($n_{1N} = 3000$ rpm, $M_{2acc,max} = 4140$ Nm)																
17	3342	3700	2.7	0.95	C813_1780 LM704U	4140	5250	178.4	6956/39	2900	2700	3400	38	10	204	185
22	2593	2871	2.5	1.2	C813_1380 LM704U	3720	4650	138.4	2491/18	2900	2700	3400	38	10	204	185
28	2016	2232	2.3	1.4	C813_1080 LM704U	3370	4210	107.6	4841/45	2900	2700	3400	39	10	204	185
28	2653	3075	3.0	1.1	C813_1080 LM706U	3370	4210	107.6	4841/45	2900	2700	3400	56	10	204	193
33	1702	1884	2.2	1.6	C813_0910 LM704U	2860	3570	90.82	18800/207	2900	2700	3400	39	10	204	185
33	2240	2596	2.9	1.2	C813_0910 LM706U	2860	3570	90.82	18800/207	2900	2700	3400	56	10	204	193
38	1487	1646	2.7	1.4	C813_0790 LM704U	2490	3110	79.34	285619/3600	2900	2700	3400	39	10	204	185
38	1957	2268	3.5	1.1	C813_0790 LM706U	2490	3110	79.34	285619/3600	2900	2700	3400	56	10	204	193

8.3 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 CAD models of our standard drives at <http://cad.stoeber.de>.

Combination options and the dimensions of forced ventilated geared motors can be found at <http://cad.stoeber.de>.

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

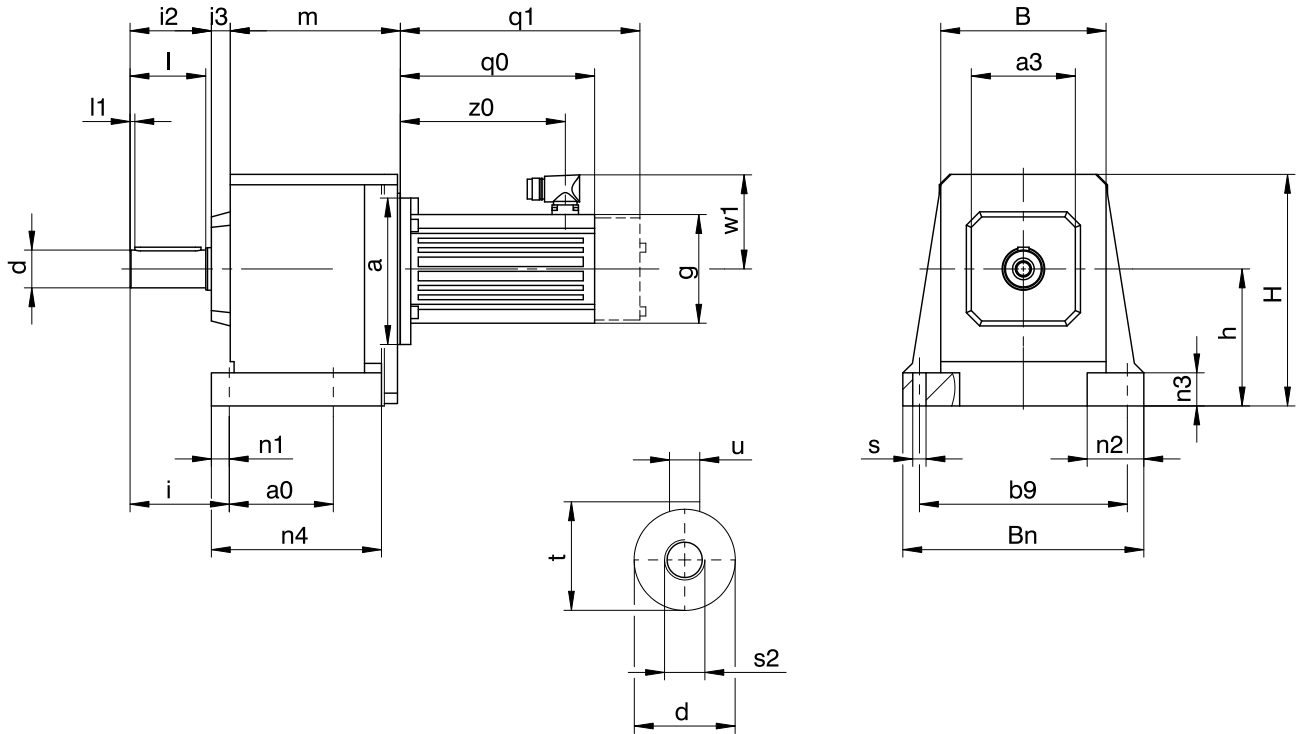
Solid shaft	Tolerance
Shaft \varnothing fit \leq 50 mm	DIN 748-1, ISO k6
Shaft \varnothing fit $>$ 50 mm	DIN 748-1, ISO m6
Feather keys	DIN 6885-1, high form A

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

8.3.1 Solid shaft design with feather key, N housing design (base)



q_0 Applies to motors without brake.

q_1 Applies to motors with brake.

Options: C0 – C5 also available with solid shaft without feather key; on request starting at C6.

Dimensions of gear units

Type	a_0	a_3	b_9	B	B_n	$\varnothing d$	h	H	i	i_2	i_3	l	l_1	n_1	n_2	n_3	n_4	$\varnothing s$	s_2	t	u
C0	62	60	110	92	132	20 _{k6}	82	144	55	44	13	40	3	11	35	20	95.0	7	M6	22.5	A6×6×32
C1	70	80	150	124	176	25 _{k6}	102	177	67	54	15	50	5	13	42	25	117.5	9	M10	28.0	A8×7×40
C2	85	95	170	138	200	30 _{k6}	115	195	79	65	21	60	5	14	50	30	134.5	11	M10	33.0	A8×7×50
C3	105	95	185	150	215	30 _{k6}	130	215	79	65	20	60	5	14	50	30	153.5	11	M10	33.0	A8×7×50
C4	110	110	220	175	255	40 _{k6}	145	245	105	86	20	80	5	19	60	35	180.0	14	M16	43.0	A12×8×70
C5	130	130	245	192	290	40 _{k6}	170	290	108	86	21	80	5	22	70	40	197.0	18	M16	43.0	A12×8×70
C6	215	177	245	225	300	50 _{k6}	200	315	130	106	47	100	5	25	75	40	265.0	18	M16	53.5	A14×9×90
C7	235	192	300	265	365	60 _{m6}	235	375	163	127	58	120	5	25	90	50	285.0	18	M20	64.0	A18×11×100
C8	300	223	340	310	435	70 _{m6}	290	450	190	148	70	140	5	29	95	55	360.0	22	M20	74.5	A20×12×125

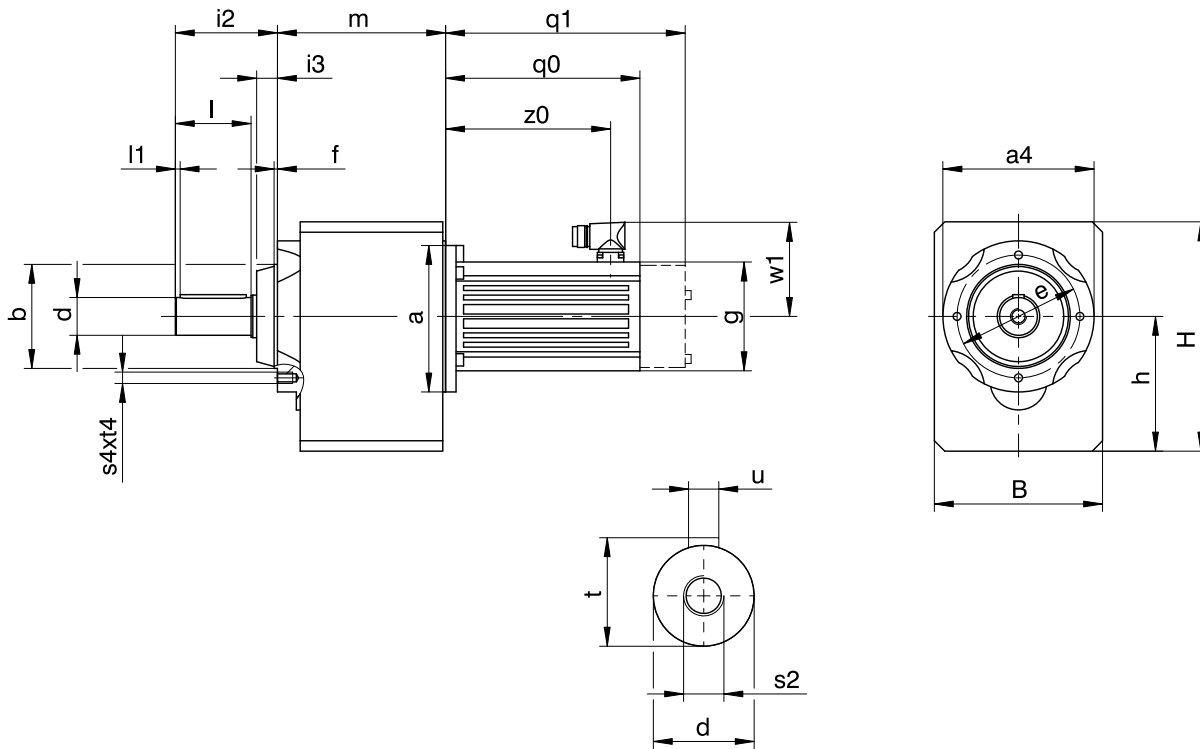
Dimensions of motors

Type	□g	q0	q1	w1	z0
LM401U	98	129.0	172.5	91	97
LM402U	98	168.0	211.5	91	136
LM403U	98	199.0	242.5	91	167
LM503U	115	205.5	253.5	100	175
LM505U	115	275.5	323.5	100	245
LM704U	145	259.5	318.5	115	227
LM706U	145	329.5	388.5	115	297

Dimensions of geared motors

Type	LM4		LM5		LM7	
	a	m	a	m	a	m
C002	□98	97.5	□115	101.5	–	–
C102	□98	118.0	□115	122.0	□145	124.0
C202	∅140	129.0	□115	133.0	□145	135.0
C203	∅140	166.0	–	–	–	–
C302	–	–	∅160	152.5	□145	154.5
C303	∅140	185.5	–	–	–	–
C402	–	–	∅160	180.0	□145	182.0
C502	–	–	∅160	200.0	∅200	202.0
C503	–	–	∅160	243.0	–	–
C612	–	–	–	–	∅200	180.0
C613	–	–	∅160	222.0	∅200	242.0
C712	–	–	–	–	∅200	201.0
C713	–	–	–	–	∅200	262.0
C813	–	–	–	–	∅200	296.0

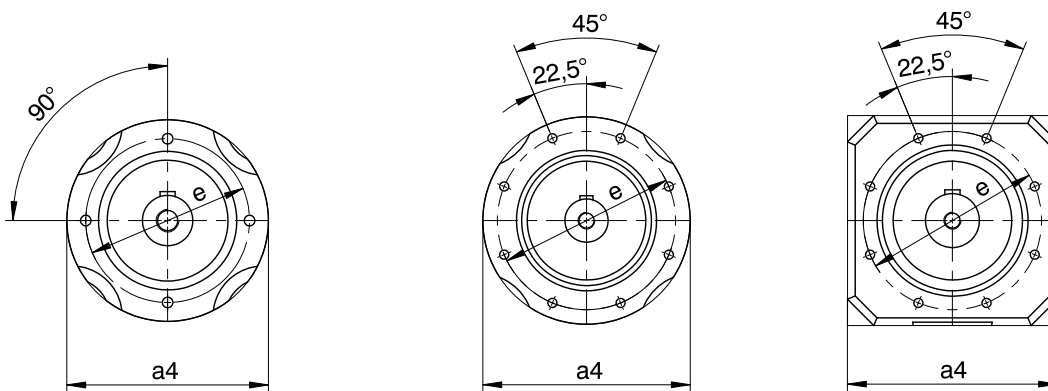
8.3.2 Solid shaft design with feather key, G housing design (pitch circle diameter)



C0-C4

C5

C6-C8



q0 Applies to motors without brake.

q1 Applies to motors with brake.

Options: C0 – C5 also available with solid shaft without feather key; on request starting at C6.

Dimensions of gear units

Type	a4	Øb	B	Ød	Øe	f	h	H	i2	i3	l	l1	s2	s4	t	t4	u
C0	Ø87	55 _{j6}	97	20 _{k6}	75	3.0	79.0	141.0	58	14	40	3	M6	M6	22.5	10	A6×6×32
C1	Ø120	80 _{j6}	130	25 _{k6}	100	3.0	100.0	175.0	71	17	50	5	M10	M6	28.0	13	A8×7×40
C2	Ø140	95 _{j6}	142	30 _{k6}	115	3.0	112.0	192.0	87	22	60	5	M10	M8	33.0	13	A8×7×50
C3	Ø140	95 _{j6}	154	30 _{k6}	115	3.0	127.0	212.0	87	22	60	5	M10	M8	33.0	13	A8×7×50
C4	Ø160	110 _{j6}	178	40 _{k6}	130	3.5	142.5	242.5	108	22	80	5	M16	M10	43.0	16	A12×8×70
C5	Ø192	130 _{j6}	195	40 _{k6}	165	3.5	166.0	286.0	109	23	80	5	M16	M10	43.0	16	A12×8×70
C6	□180	140 _{j6}	225	50 _{k6}	165	5.0	195.0	310.0	136	30	100	5	M16	M10	53.5	16	A14×9×90
C7	□195	155 _{j6}	265	60 _{m6}	185	8.0	231.0	371.0	164	37	120	5	M20	M12	64.0	19	A18×11×100
C8	□226	185 _{j6}	310	70 _{m6}	215	5.0	285.0	445.0	185	37	140	5	M20	M12	74.5	19	A20×12×125

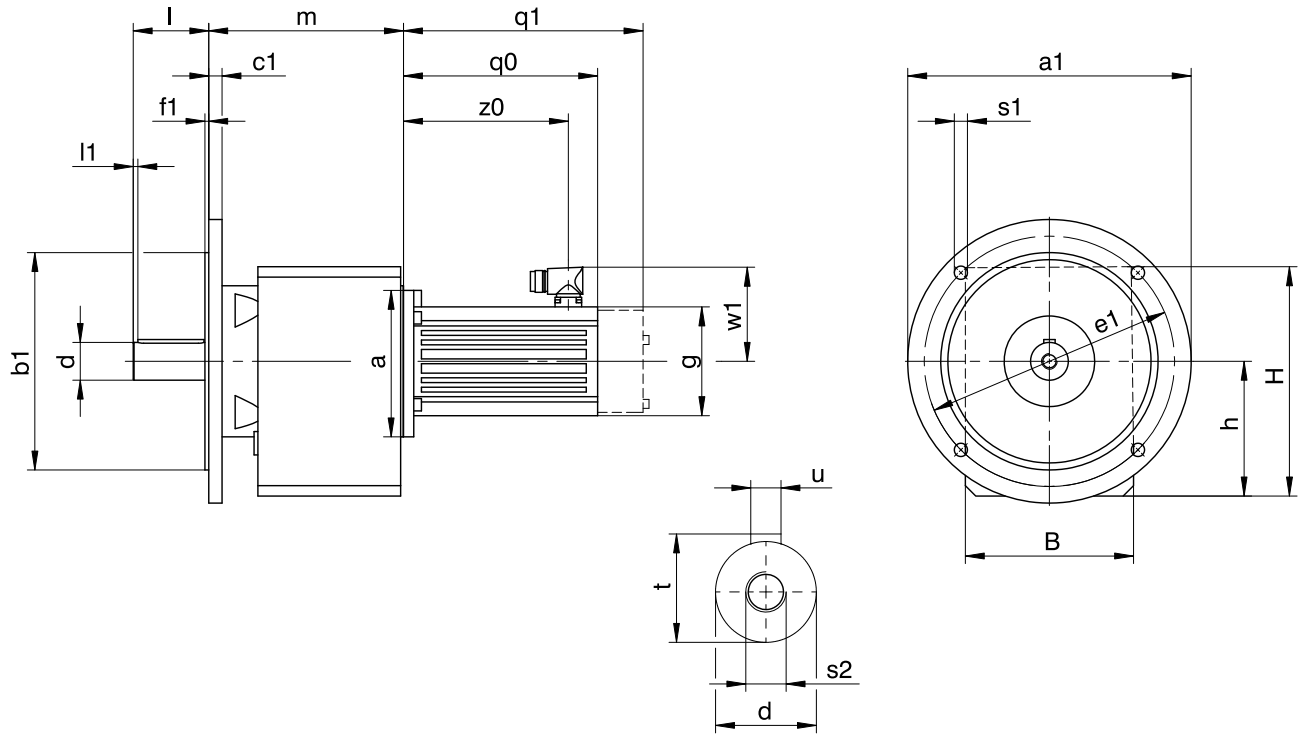
Dimensions of motors

Type	□g	q0	q1	w1	z0
LM401U	98	129.0	172.5	91	97
LM402U	98	168.0	211.5	91	136
LM403U	98	199.0	242.5	91	167
LM503U	115	205.5	253.5	100	175
LM505U	115	275.5	323.5	100	245
LM704U	145	259.5	318.5	115	227
LM706U	145	329.5	388.5	115	297

Dimensions of geared motors

Type	LM4		LM5		LM7	
	a	m	a	m	a	m
C002	□98	96	□115	100	–	–
C102	□98	116	□115	120	□145	122
C202	∅140	128	□115	132	□145	134
C203	∅140	165	–	–	–	–
C302	–	–	∅160	151	□145	153
C303	∅140	184	–	–	–	–
C402	–	–	∅160	178	□145	180
C502	–	–	∅160	198	∅200	200
C503	–	–	∅160	241	–	–
C612	–	–	–	–	∅200	197
C613	–	–	∅160	239	∅200	259
C712	–	–	–	–	∅200	222
C713	–	–	–	–	∅200	283
C813	–	–	–	–	∅200	329

8.3.3 Solid shaft design with feather key, F housing design (round flange)



q_0 Applies to motors without brake.

q_1 Applies to motors with brake.

Options: C0 – C5 also available with solid shaft without feather key; on request starting at C6.

Dimensions of gear units

Type	$\varnothing a_1$	$\varnothing b_1$	B	c_1	$\varnothing d$	$\varnothing e_1$	f_1	h	H	l	l_1	$\varnothing s_1$	s2	t	u
C0	160	110 _{j6}	97	10	20 _{j6}	130	3.0	79.0	141.0	40	3	9	M6	22.5	A6×6×32
C1	200	130 _{j6}	130	12	25 _{j6}	165	3.5	100.0	175.0	50	5	11	M10	28.0	A8×7×40
C2	200	130 _{j6}	142	12	30 _{j6}	165	3.5	112.0	192.0	60	5	11	M10	33.0	A8×7×50
C3	250	180 _{j6}	154	12	30 _{j6}	215	4.0	127.0	212.0	60	5	14	M10	33.0	A8×7×50
C4	250	180 _{j6}	178	14	40 _{j6}	215	4.0	142.5	242.5	80	5	14	M16	43.0	A12×8×70
C5	300	230 _{j6}	195	16	40 _{j6}	265	4.0	166.0	286.0	80	5	14	M16	43.0	A12×8×70
C6	300	230 _{j6}	225	17	50 _{j6}	265	4.0	195.0	310.0	100	5	14	M16	53.5	A14×9×90
C7	350	250 _{h6}	265	18	60 _{m6}	300	5.0	231.0	371.0	120	5	18	M20	64.0	A18×11×100
C8	400	300 _{h6}	310	20	70 _{m6}	350	5.0	285.0	445.0	140	5	18	M20	74.5	A20×12×125

Dimensions of additional round flanges

Type	$\varnothing a_1$	$\varnothing b_1$	c_1	$\varnothing e_1$	f_1	$\varnothing s_1$
C0	120	80 _{j6}	10	100	3.0	7
C0	140	95 _{j6}	10	115	3.0	9
C1	140	95 _{j6}	8	115	3.5	9
C1	160	110 _{j6}	10	130	3.5	9
C2	160	110 _{j6}	10	130	3.5	9
C2	250	180 _{j6}	12	215	4.0	14
C3	160	110 _{j6}	10	130	3.5	9
C3	200	130 _{j6}	12	165	3.5	11
C4	200	130 _{j6}	14	165	3.5	11
C4	300	230 _{j6}	14	265	4.0	14
C5	250	180 _{j6}	14	215	4.0	14
C8	350	250 _{h6}	18	300	5.0	18
C8	450	350 _{h6}	20	400	5.0	18

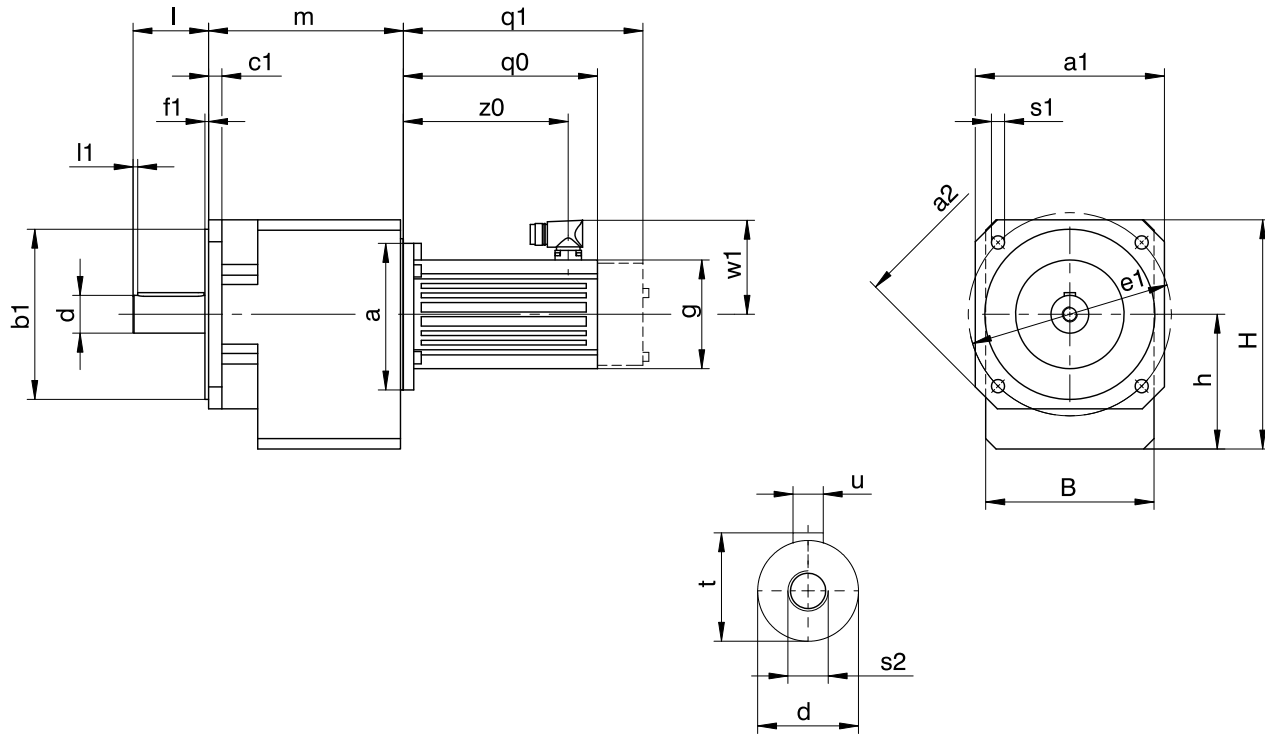
Dimensions of motors

Type	□g	q0	q1	w1	z0
LM401U	98	129.0	172.5	91	97
LM402U	98	168.0	211.5	91	136
LM403U	98	199.0	242.5	91	167
LM503U	115	205.5	253.5	100	175
LM505U	115	275.5	323.5	100	245
LM704U	145	259.5	318.5	115	227
LM706U	145	329.5	388.5	115	297

Dimensions of geared motors

Type	LM4		LM5		LM7	
	a	m	a	m	a	m
C002	□98	114	□115	118	–	–
C102	□98	137	□115	141	□145	143
C202	∅140	155	□115	159	□145	161
C203	∅140	192	–	–	–	–
C302	–	–	∅160	178	□145	180
C303	∅140	211	–	–	–	–
C402	–	–	∅160	206	□145	208
C502	–	–	∅160	227	∅200	229
C503	–	–	∅160	270	–	–
C612	–	–	–	–	∅200	233
C613	–	–	∅160	275	∅200	295
C712	–	–	–	–	∅200	266
C713	–	–	–	–	∅200	327
C813	–	–	–	–	∅200	374

8.3.4 Solid shaft design with feather key, Q housing design (square flange)



q_0 Applies to motors without brake.

q_1 Applies to motors with brake.

Options: C0 – C5 also available with solid shaft without feather key; on request starting at C6.

Dimensions of gear units

Type	$\square a_1$	$\square a_2$	$\varnothing b_1$	B	c_1	$\varnothing d$	$\varnothing e_1$	f_1	h	H	l	l_1	$\varnothing s_1$	s2	t	u
C0	124	160	110 _{f6}	97	9	20 _{k6}	130	3.0	79.0	141.0	40	3	9	M6	22.5	A6×6×32
C1	145	192	130 _{f6}	130	11	25 _{k6}	165	3.5	100.0	175.0	50	5	11	M10	28.0	A8×7×40
C2	145	192	130 _{f6}	142	11	30 _{k6}	165	3.5	112.0	192.0	60	5	11	M10	33.0	A8×7×50
C3	200	250	180 _{f6}	154	14	30 _{k6}	215	4.0	127.0	212.0	60	5	14	M10	33.0	A8×7×50
C4	200	250	180 _{f6}	178	14	40 _{k6}	215	4.0	142.5	242.5	80	5	14	M16	43.0	A12×8×70

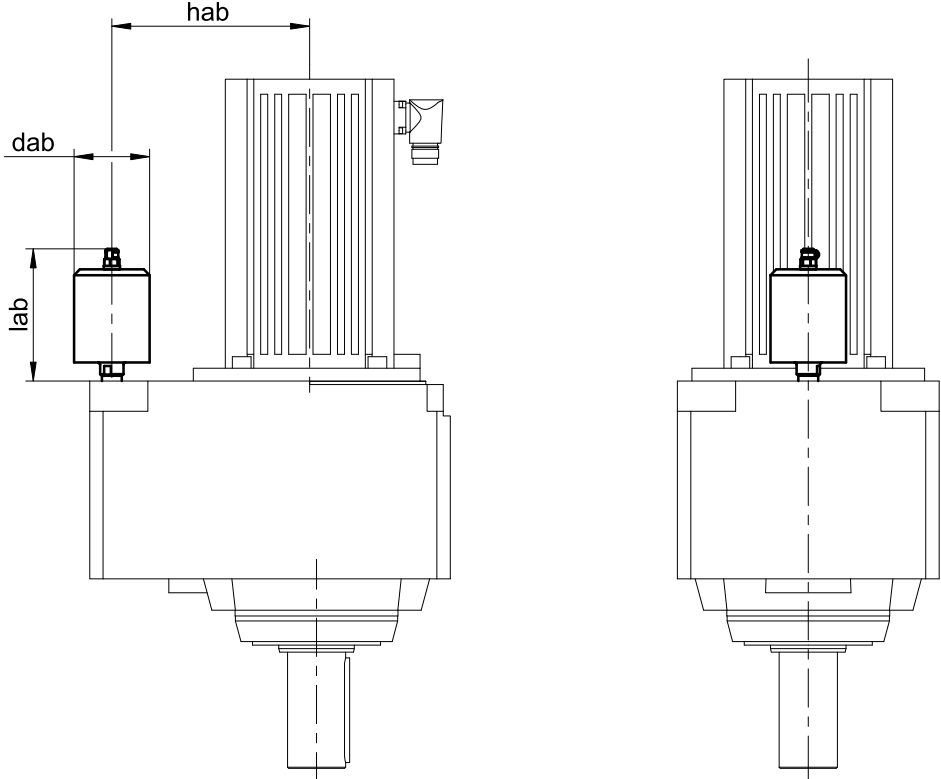
Dimensions of motors

Type	$\square g$	q_0	q_1	w_1	z_0
LM401U	98	129.0	172.5	91	97
LM402U	98	168.0	211.5	91	136
LM403U	98	199.0	242.5	91	167
LM503U	115	205.5	253.5	100	175
LM505U	115	275.5	323.5	100	245
LM704U	145	259.5	318.5	115	227
LM706U	145	329.5	388.5	115	297

Dimensions of geared motors

Type	LM4		LM5		LM7	
	a	m	a	m	a	m
C002	$\square 98$	114	$\square 115$	118	–	–
C102	$\square 98$	137	$\square 115$	141	$\square 145$	143
C202	$\varnothing 140$	155	$\square 115$	159	$\square 145$	161
C203	$\varnothing 140$	192	–	–	–	–
C302	–	–	$\varnothing 160$	178	$\square 145$	180
C303	$\varnothing 140$	211	–	–	–	–
C402	–	–	$\varnothing 160$	206	$\square 145$	208

8.3.5 Oil expansion tank



Dimensions

Type	LM7		
	dab	hab	lab
C612	65	170	114.5
C712	73	205	129.5

More information can be found in Chapter [8.6.4](#)

8.4 Type designation

In this chapter, you can find 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.

Sample code

C	2	0	2	N	0280	LM403U
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Explanation

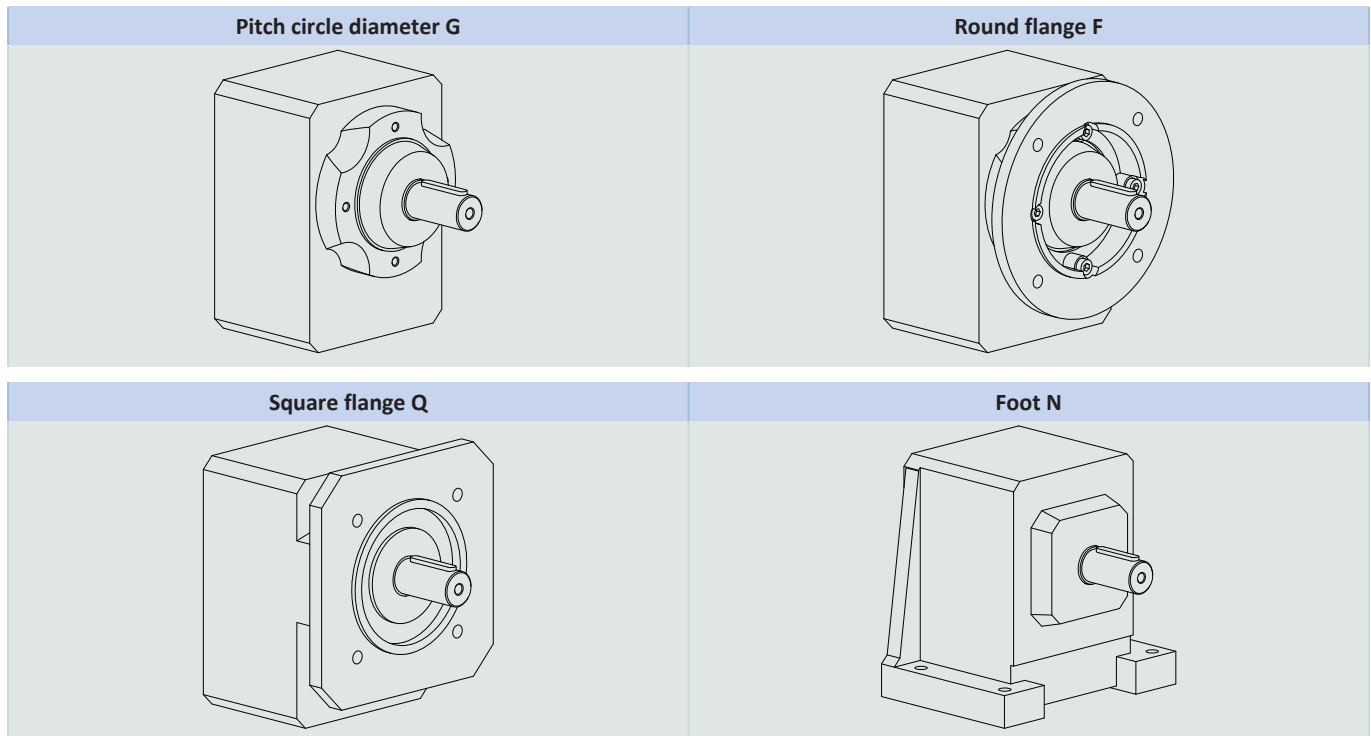
Code	Designation	Design
C	Type	Helical gear unit
2	Size	2 (example)
0	Generation	Generation 0
1		Generation 1
2	Stages	Two-stage
3		Three-stage
G	Housing	Pitch circle diameter
F		Round flange
Q		Square flange
N		Foot
0280	Transmission ratio (i x 10)	i = 28 (example)
LM403U	Motor	LM Lean motor

In order to complete the type designation, also specify:

- A detailed type designation of the motor, see Chapter [\[▶ 2\]](#)
- The installation position, see the chapter [\[▶ 8.5.4\]](#)
- The position of the plug connector, see the chapter [\[▶ 8.5.6\]](#)
- Oil expansion tank (recommended for gear units in installation position EL5), see the chapter [\[▶ 8.6.4\]](#)
- Standard or reinforced output bearing

8.5 Product description

8.5.1 Housing design



	G	F	Q	N
C0	✓	✓	✓	✓
C1	✓	✓	✓	✓
C2	✓	✓	✓	✓
C3	✓	✓	✓	✓
C4	✓	✓	✓	✓
C5	✓	✓	–	✓
C6	✓	✓	–	✓
C7	✓	✓	–	✓
C8	✓	✓	–	✓
C9	✓	✓	–	✓

8.5.2 Shaft design

Gear units in sizes C0 – C9 come standard with a solid shaft with feather key.

Gear units in sizes C0 – C5 can be ordered with the option of a solid shaft without feather key. Only upon request starting at size C6.

8.5.3 Installation conditions

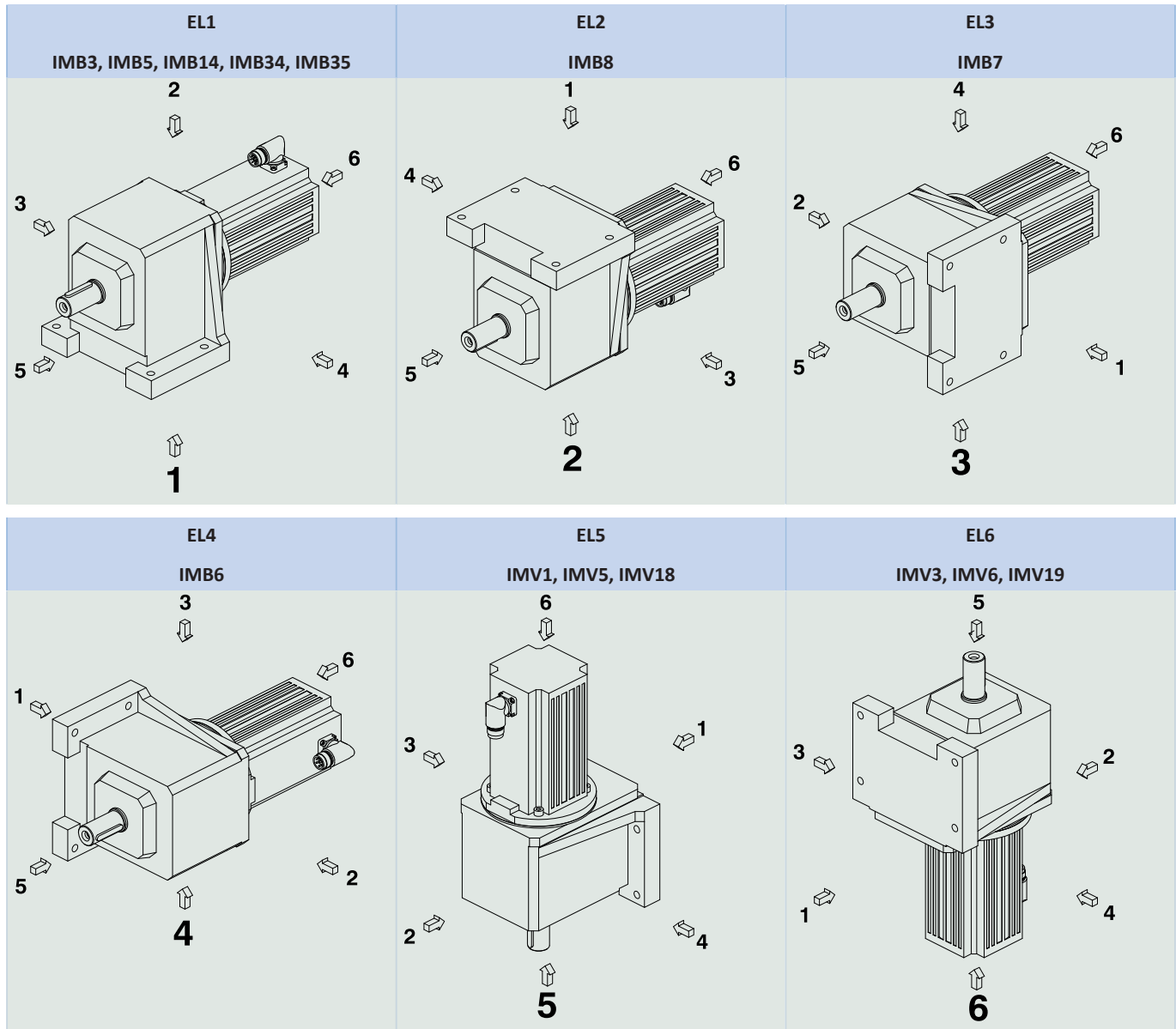
Attaching the gear unit on the machine side using the pitch circle diameter

The specified torques and forces only apply when attaching gear units at the machine side using screws of quality 10.9. In addition, the gear housing must be adjusted at the pilot (H7).

8.5.4 Installation positions

The following table shows the standard installation positions.

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



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

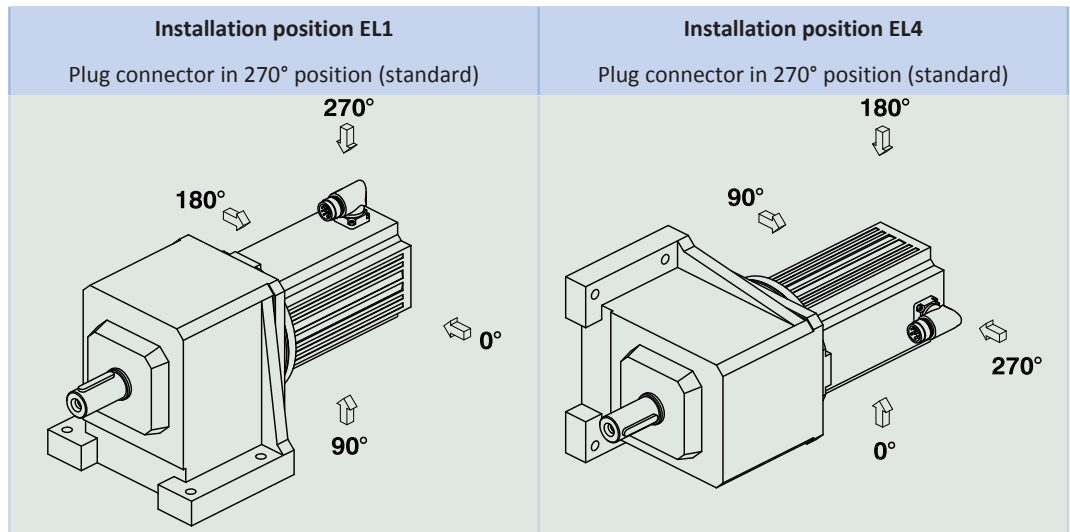
8.5.5 Lubricants

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 installation position.

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

Lubricant filling quantities for gear units, document ID 441871, can be found online at <http://www.stober.de>

8.5.6 Position of the plug connector



Indicate variations for your geared motor in the purchase order.

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

8.5.7 Other product features

Feature	Value
Max. permitted gear unit temperature (on the surface of the gear unit)	≤ 80 °C
Paint	Black RAL 9005
(ATEX) Directive 2014/34/EU	Not suitable
Protection class: ¹	
Gear unit	IP65
Motor	IP56, optionally IP66

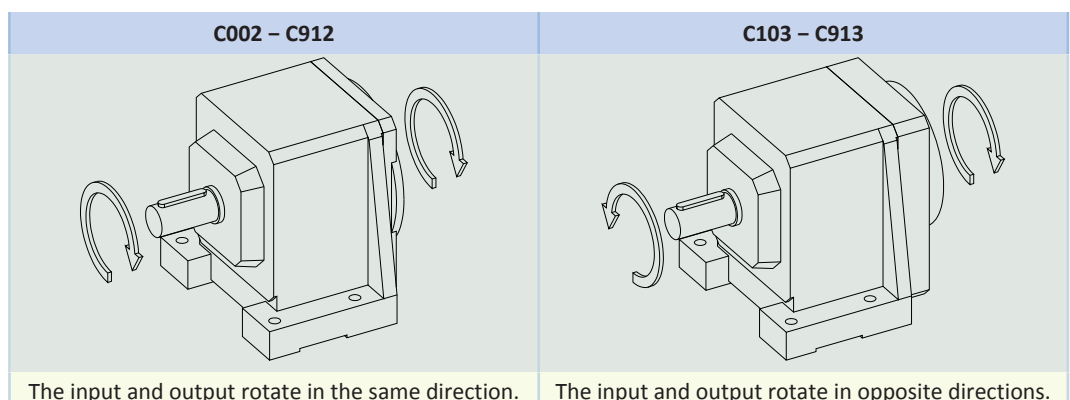
8.5.8 Maintenance

The instructions for maintenance can be found in the operating manual, ID 443027_en, at <http://www.stoeber.de/en/download>.

Ventilation

Air release valves are fitted as a standard feature for gear unit sizes C6 to C9.

8.5.9 Direction of rotation



The pictures show installation position EL1.

¹Observe the protection class of all the components.

8.6 Project configuration

Project your drives using our SERVOnsoft designing software. You can receive SERVOnsoft for free from your adviser at one of our sales centers. Observe the limit conditions in this chapter to ensure a safe design for your drives.

An explanation of the formula symbols can be found in Chapter Symbols in formulas.

8.6.1 Calculation of the operating point

Check the following conditions for operating points other than the nominal point M_{2N} specified in the selection tables.

For installation positions EL1, EL2, EL3, EL4:

$$n_{1m^*} \leq \frac{n_{1\max DBEL1,2,3,4}}{fB_T}$$

For installation positions EL5, EL6:

$$n_{1m^*} \leq \frac{n_{1\max DBEL5,6}}{fB_T}$$

For all installation positions:

$$n_{1\max^*} \leq \frac{n_{1\max ZB}}{fB_T}$$

$$M_{2\text{eff}^*} \leq M_{2\text{th}}$$

$$M_{2\text{acc}^*} \leq M_{2\text{acc}}$$

$$M_{2\text{NOT}^*} \leq M_{2\text{NOT}}$$

$$M_{2\text{eq}^*} \leq M_{2N} \cdot \frac{S}{fB_{\text{op}} \cdot fB_t}$$

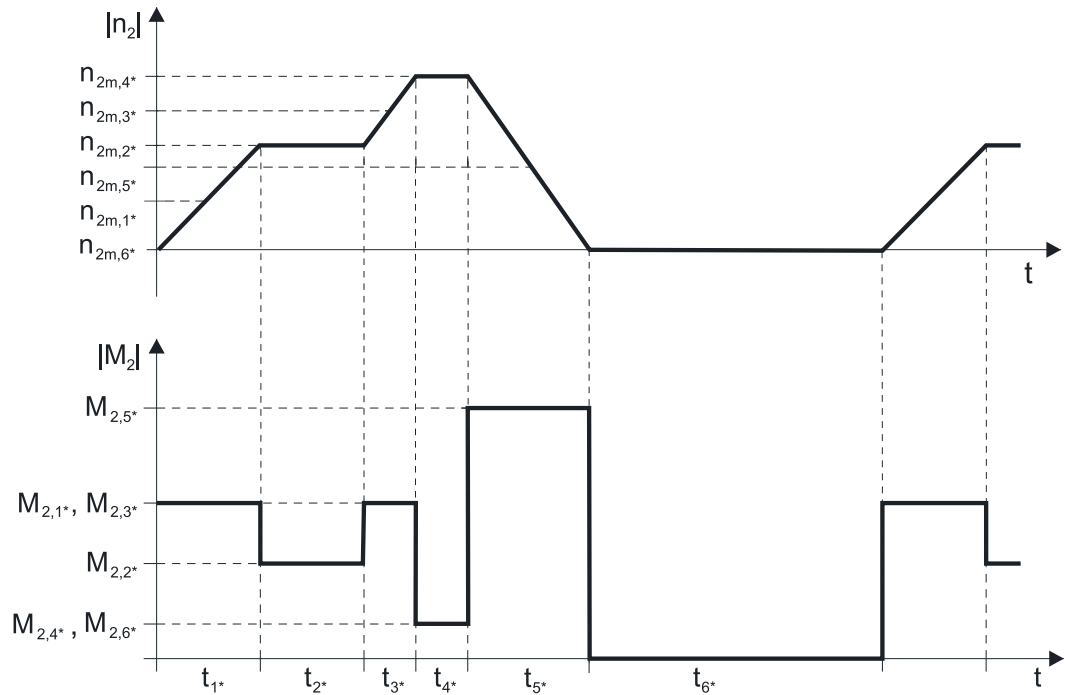
Refer to the selection table for the values for $n_{1\max DBEL1,2,3,4}$ and $n_{1\max DBEL5,6}$, $n_{1\max ZB}$, $M_{2\text{acc}}$, $M_{2\text{NOT}}$, M_{2N} and S .

The values for fB_T , fB_{op} and fB_t can be found in the corresponding tables in this chapter.

Calculate the thermal limit torque $M_{2\text{th}}$ for a duty cycle > 50%.

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 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 $t_{1*} + \dots + t_{5*} \geq 20$ min, calculate n_{2m*} without the rest phase t_{6*} .

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 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 $ED_{20} > 50\%$ 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.)

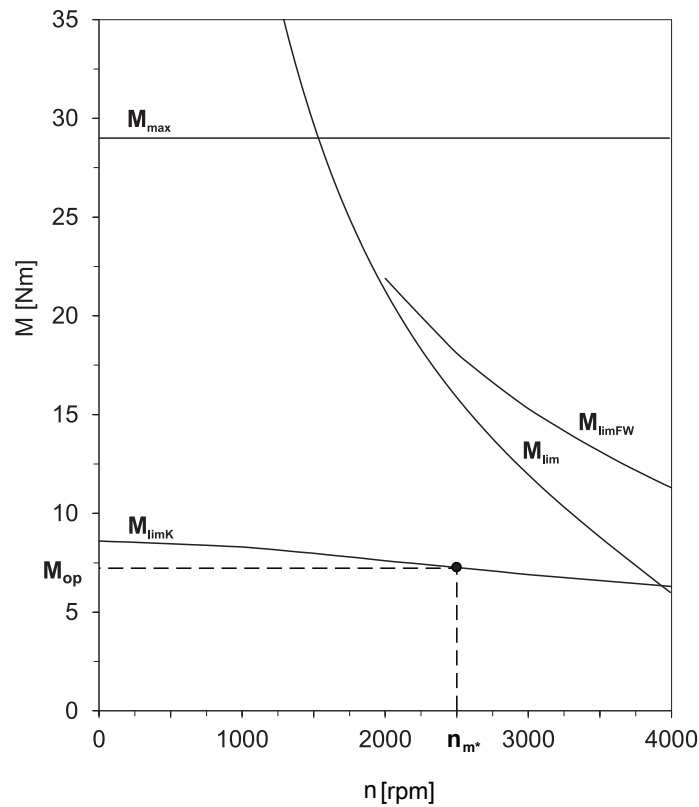
$$M_{2th} = M_{op} \cdot i \cdot K_{mot,th}$$

$$K_{mot,th} = 0,95 - \frac{a_{th}}{1000} \cdot athEL \cdot fB_T \cdot \left(\frac{n_{1m*}}{1000}\right)^3$$

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

The values for fB_T can be found in the corresponding table 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 curve of Chapter [2.3](#). Note the size and nominal speed n_N 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}

Installation position		a_{thEL}
EL1, 2, 5, 6		1.0
EL3, 4		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 run time ≤ 8 h		1.00
Daily run time ≤ 16 h		1.15
Daily run time ≤ 24 h		1.20
Temperature		fB_T
Motor cooling	Surrounding temperature	
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.

8.6.2 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 (housing, flange shaft)

Permitted shaft loads

Type	z_2 [mm]	F_{2ax20} [N]	F_{2rad20} [N]	M_{2k20} [Nm]
C0	20.0	500	1900	80
C1	30.0	850	3400	190
C2	30.0	1050	4200	260
C3	30.0	1400	5650	350
C4	35.0	2400	9700	750
C5	42.0	3000	11000	900
C6	40.0	4000	16000	1500
C7	45.0	5500	22000	2400
C8	50.0	7500	30000	3700
C9	55.0	9500	37000	5200

For other output speeds, download diagrams at <http://products.stoeber.de>.

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.

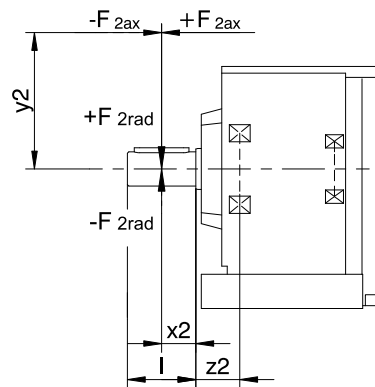


Fig. 1: Force application points

The specified values for F_{2rad20} are based on application of force at the middle 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:

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

$$F_{2rad^*} \leq F_{2radN}$$

$$F_{2ax^*} \leq F_{2axN}$$

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.

8.6.3 Radial shaft seal rings

Leak-proofness

Our gear units are equipped with high-quality radial shaft seal rings and checked for leak-proofness. 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.

8.6.4 Oil expansion tank

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

Notes

- We recommend using an oil expansion tank in installation 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 [▶ 8.3.5](#)

8.7 Additional documentation

Additional documentation related to the product can be found at <http://www.stoeber.de/en/download>

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

Documentation	ID
Operating manual for C/F/K/S gear units and gear motors	443027_en
Lubricant filling quantities for gear units	441871