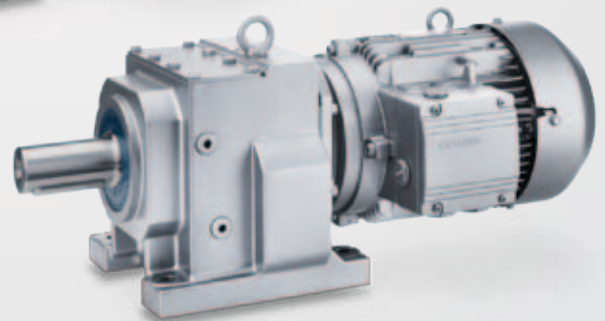
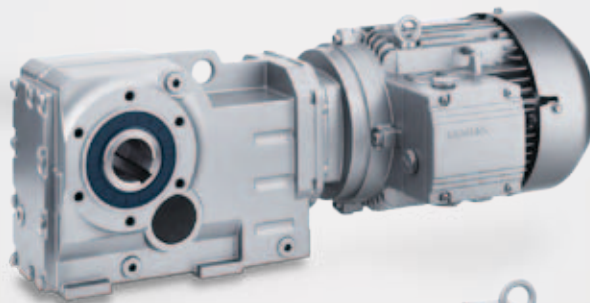
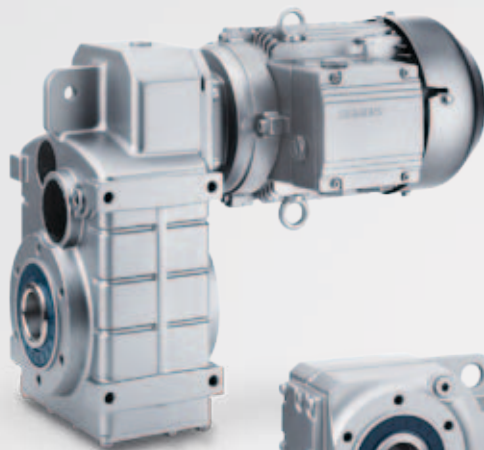


MOTOX Geared Motors

Catalog D 87.1 · 2011









MOTOX

Answers for industry.

SIEMENS

Related catalogs

<p>Low-Voltage Motors D 81.1 IEC Squirrel-Cage Motors</p> <p>E86060-K5581-A111-A3-7600</p>	
<p>FLENDER Standard Couplings MD 10.1</p> <p>E86060-K5710-A111-A3-7600</p>	
<p>SINAMICS G110, SINAMICS G120 D 11.1 Standard Inverters SINAMICS G110D, SINAMICS G120D Distributed Inverters</p> <p>E86060-K5511-A111-A6-7600</p>	
<p>SINAMICS G130 D 11 Drive Converter Chassis Units SINAMICS G150 Drive Converter Cabinet Units</p> <p>E86060-K5511-A101-A4-7600</p>	
<p>MICROMASTER DA 51.2 MICROMASTER 420/430/440 Inverters 0.12 kW to 250 kW</p> <p>E86060-K5151-A121-A6-7600</p>	
<p>MICROMASTER/COMBIMASTER DA 51.3 MICROMASTER 411 Inverter COMBIMASTER 411 Distributed Drive Solutions</p> <p>E86060-K5251-A131-A2-7600</p>	
<p>Industrial Communication IK PI Part 5: SIMATIC ET 200 Distributed I/O ET 200S FC Frequency converter</p> <p>E86060-K6710-A101-B6-7600</p>	
<p>AC NEMA & IEC Motors D81.2 Further details available on the Internet at: U.S./ Canada</p> <p>Only PDF http://www.sea.siemens.com/motors</p>	
<p>MOTOX Konfigurator MOTOX MOTOX Konfigurator Information / Configuration (CD)</p> <p>E86060-D5203-A100-A5-X100</p>	

Additional documentation

You will find all information material, such as brochures, catalogs, manuals and operating instructions for standard drive systems up-to-date on the Internet at the address:

<http://www.siemens.com/gearedmotors>

You can order the listed documentation or download it in common file formats (PDF, ZIP).

MOTOX Geared Motors

Catalog D 87.1 · 2011



The products and systems described in this catalog are manufactured/distributed under application of a certified quality management system in accordance with DIN EN ISO 9001 (Certified Registration No. DE-409908 QM08). The certificate is recognized by all IQNet countries.

Supersedes:
Catalogs D 87.1 · 2008 and 2010

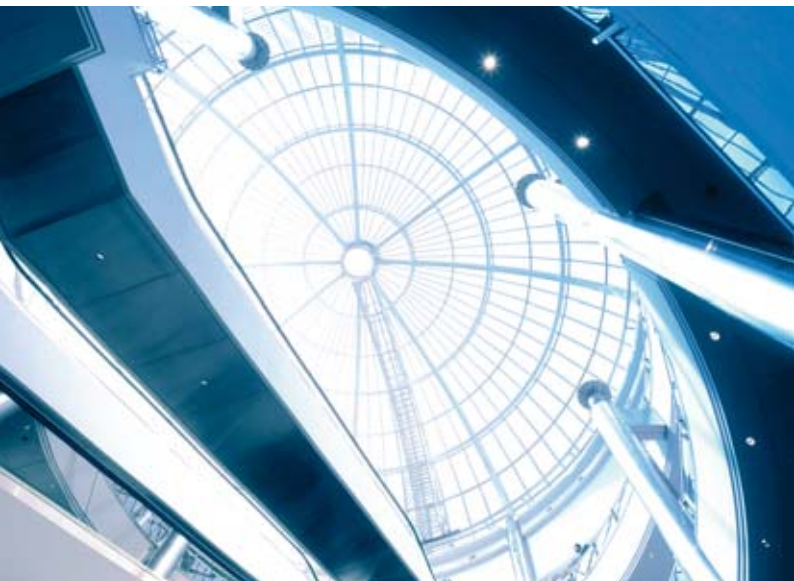
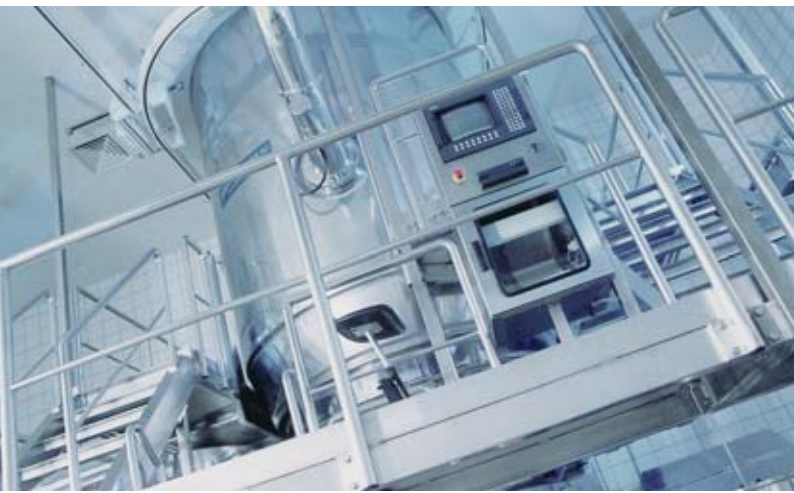
The products contained in this catalog can also be found in the electronic catalog MOTOX Configurator 7.4.

Order No.:
E86060-D5203-A100-A5-X100 (CD-ROM)

Please contact your local Siemens branch

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Parallel shaft geared motors	3
Bevel helical geared motors	4
Helical worm geared motors	5
Worm geared motors	6
Input units	7
Motors	8
Appendix	9





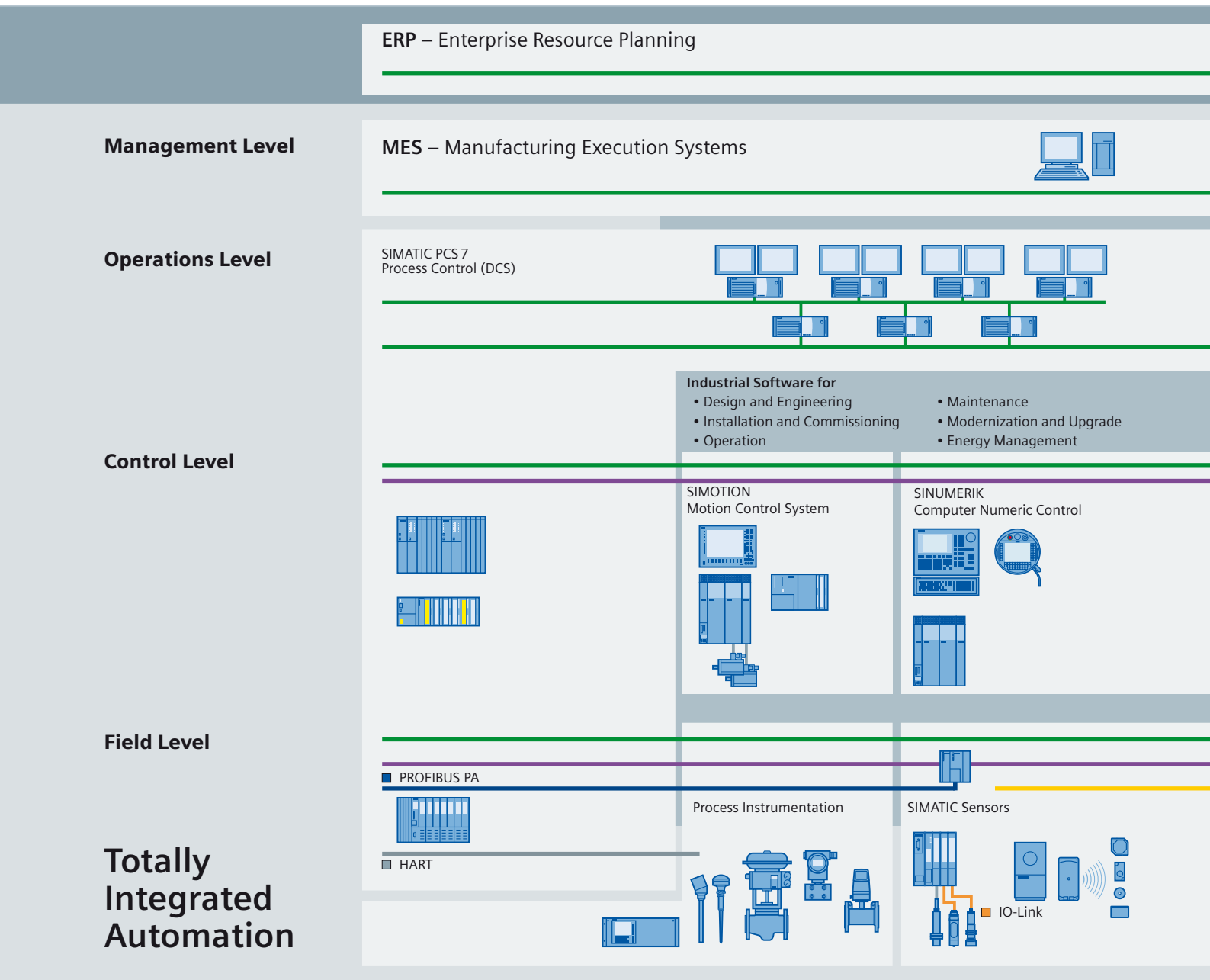
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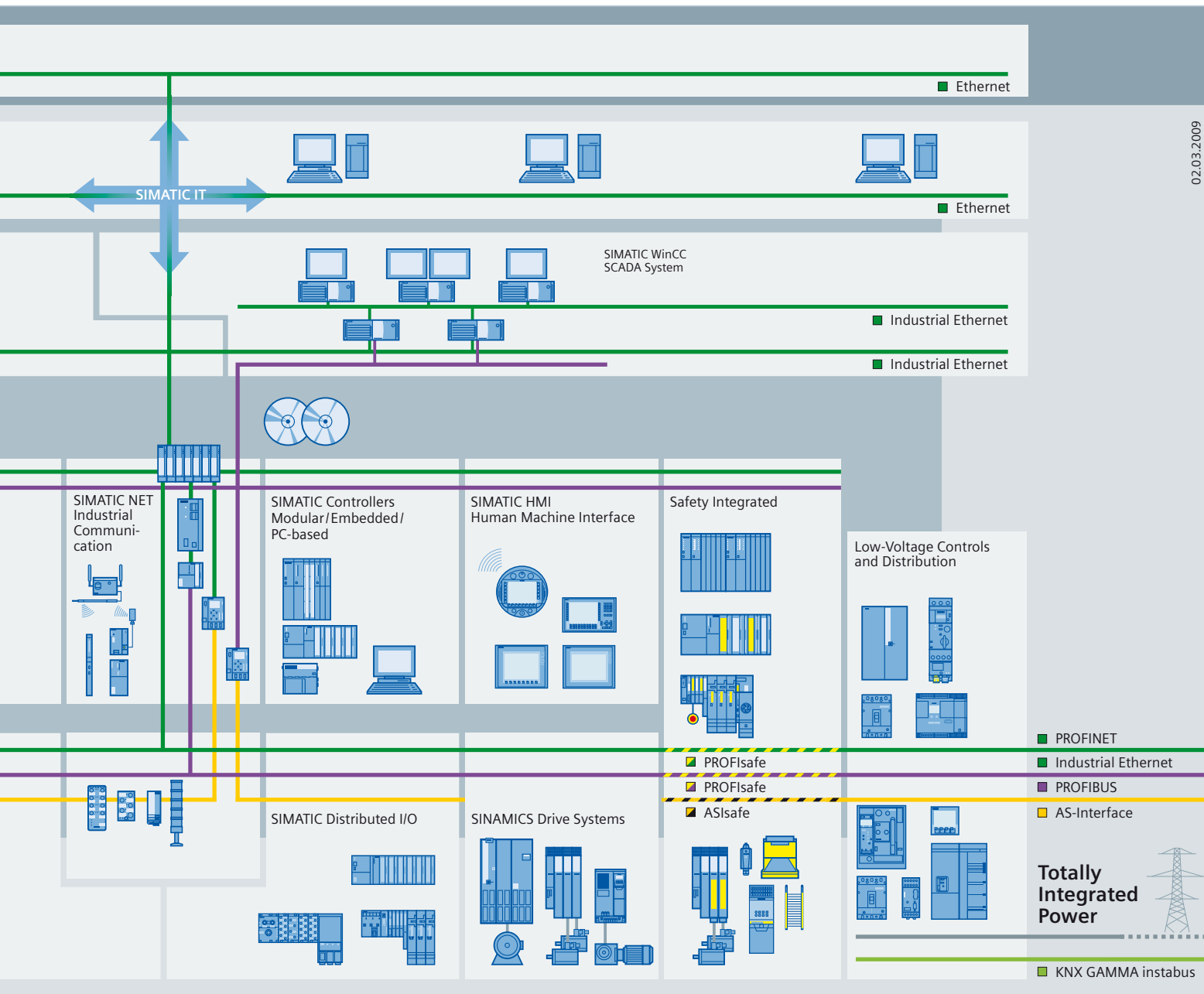
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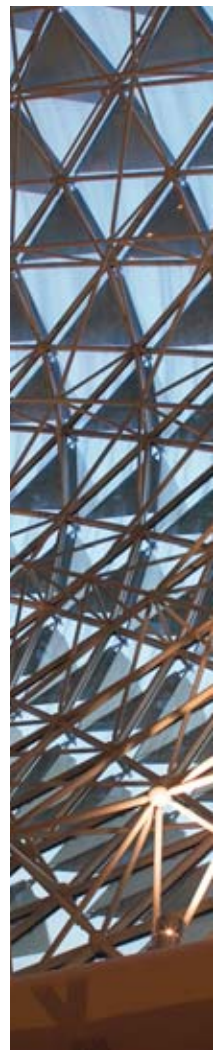


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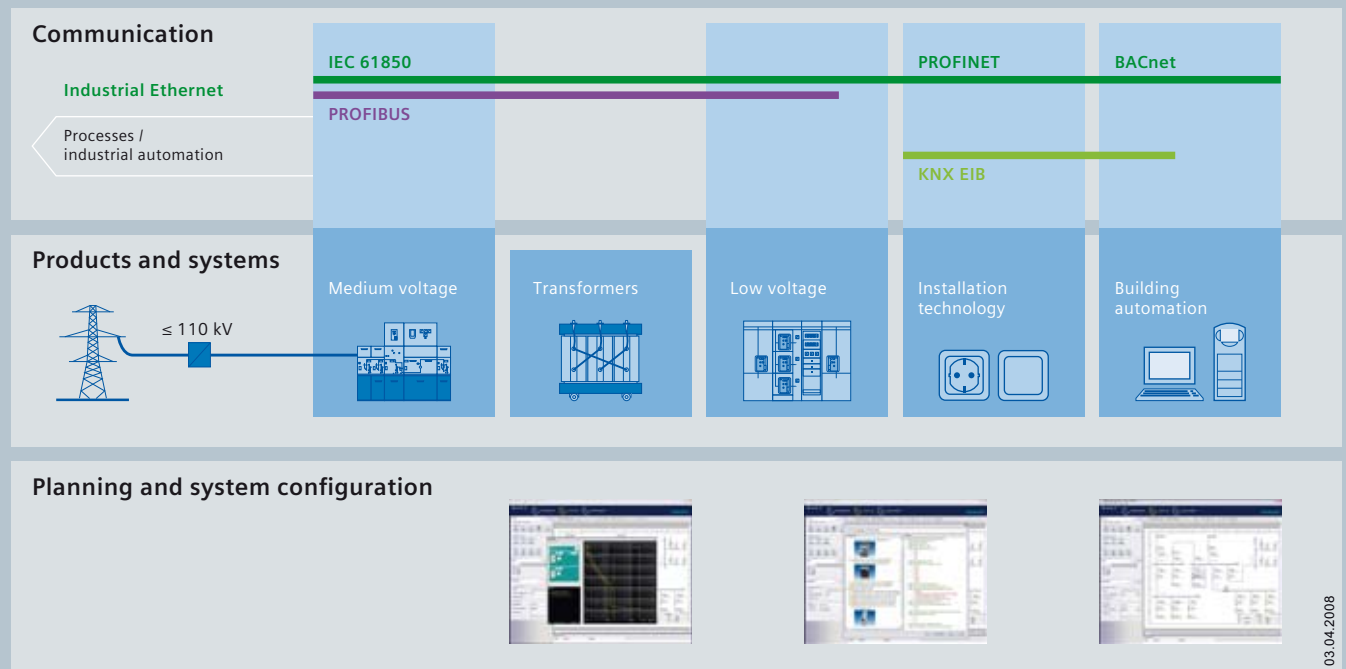
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www.siemens.com/industrymall



Selecting

Find your products in the structure tree, in the new "Bread-crum" navigation or with the integral search machine with expert functions. Electronic configurators are also integrated into the Mall. Enter the various characteristic values and the appropriate product will be displayed with the relevant order numbers. You can save configurations, load them and reset them to their initial status.

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Convinced? We look forward to your visit!

Introduction



Guide to selecting and ordering geared motors

- 1/2 Description of the range of geared motors
- 1/4 Guide to drive selection
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- 1/7 Determining the gearbox type in accordance with the power rating and output speed
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MOTOX Geared Motors

Introduction

Guide to selecting and ordering geared motors

1

Description of the range of geared motors

MOTOX geared motors are available in an almost infinite number of combinations for adaptation to a wide range of drive scenarios.

All geared motors can be supplied with a mounted brake.

All the usual additional components and variants are also offered.

Made-to-measure solutions for all kinds of drive technology tasks are achieved with different gearbox types (helical, parallel shaft, bevel helical, helical worm, and worm).

Electronic catalog

MOTOX Configurator (CD)

The MOTOX Configurator makes it easy to select the right geared motor, providing you with the correct geared motor order numbers, prices and relevant documentation.

Data sheets and dimension drawings can be created for the different products.

Product range

The printed catalog contains the basic selection of standard MOTOX geared motors. The MOTOX Configurator, however, contains practically all combinations of MOTOX geared motors which are theoretically possible. It also contains additional sector-specific applications, such as:

- Monorail conveyor drives
- Extruder geared motors
- Cooling tower drives
- Mixer and agitator geared motors

You can also use the electronic catalog to configure explosion-proof ATEX geared motors for zones 1, 2, 21, and 22.

The MOTOX Configurator can also be accessed online at:

www.siemens.com/gearedmotors.

Description of the range of geared motors (continued)



Helical geared motor D/Z

Helical geared motors and gearboxes

Torque	20 000 Nm
Power rating (50 Hz)	200 kW
Output speed (50 Hz)	0.05 ... 1 085 / min



Parallel shaft geared motor FD/FZ

Parallel shaft geared motors and gearboxes

Torque	34 000 Nm
Power rating (50 Hz)	200 kW
Output speed (50 Hz)	0.05 ... 738 / min



Bevel helical geared motor K

Bevel helical geared motors and gearboxes

Torque	20 000 Nm
Power rating (50 Hz)	200 kW
Output speed (50 Hz)	0.05 ... 403 / min



Helical worm geared motor C

Helical worm geared motors and gearboxes

Torque	1 590 Nm
Power rating (50 Hz)	9.2 kW
Output speed (50 Hz)	0.21 ... 149 / min



Worm geared motor S

Worm geared motors and gearboxes

Torque	116 Nm
Power rating (50 Hz)	1.1 kW
Output speed (50 Hz)	8.5 ... 566 / min

MOTOX Geared Motors

Introduction

Guide to selecting and ordering geared motors

1

Guide to drive selection

This "guide to drive selection" takes you to the geared motor you require in easy-to-follow steps.

1st step	Technical requirements of the geared motor -> see the "Configuring guide" section of this chapter
Determine the required product profile, the following are required:	Gearbox type
	Power rating
	Output speed
	Service factor
	Radial force
	Ambient temperature
2nd step	Preselection of the geared motor -> see subsequent pages
Determine the range of possible geared motors	Size of the gearbox and the motor in accordance with the power rating and output speed
3rd step	Detailed selection of the geared motor -> see the individual chapters for the different gearbox types
Determine the basic order number	Define the order number in accordance with the power / torque and output speed
	Add more details to the order number in accordance with the mounting type, shaft, and mounting position of the geared motor
	Define the order code for the mounting type / mounting position
4th step	Selection of motor options -> see chapter "Technical explanations and motor options"
Complete the order number	Add more details to the order number in accordance with the voltage and frequency
	Define additional components and the associated order codes

Order number code

The order number consists of a combination of digits and letters and is divided into three blocks linked with hyphens for a better overview,

e.g.:

2KJ1503-1CE13-1AE2-Z
+D06+M55

The first block (positions 1 to 7) identifies the gearbox type, the second (positions 8 to 12) codes the output shaft and the motor type and additional design characteristics are coded in the third block (positions 13 to 16).

Ordering data:

- Complete order number, with a **-Z** suffix, and order code(s) or plain text.
- If a quotation is available, please specify the quotation number in addition to the order number.
- When ordering a complete geared motor as a spare part, please specify the works serial number for the previously supplied geared motor as well as the order number.

Structure of the order number		Position	1	2	3	4	5	6	7	-	8	9	10	11	12	-	13	14	15	16	
MOTOX geared motors																					
1st to 5th positions: Digit, letter, letter, digit, digit	Helical gearbox E, 1-stage	2	K	J	1	0															
	Helical gearbox Z, 2-stage	2	K	J	1	1															
	Helical gearbox D, 3-stage	2	K	J	1	2															
	Parallel shaft gearbox FZ, 2-stage	2	K	J	1	3															
	Parallel shaft gearbox FD, 3-stage	2	K	J	1	4															
	Bevel helical gearboxes B and K	2	K	J	1	5															
	Helical worm gearbox C	2	K	J	1	6															
	Worm gearbox S	2	K	J	1	7															
6th and 7th positions: Digit, digit	Gearbox size																				
8th position: Digit	Output shaft																				
9th to 10th positions: Letter Letter	Motor size																				
11th position: Digit	Without motor Standard motor														0 1						
12th position: Digit	Motor generation														3						
13th position: Digit	Frequency, voltage																				
14th position: Letter	Foot-mounted design																			A	
	Foot / flange-mounted design																			B	
	Torque arm																			D	
	Extruder flange																			E	
	Flange-mounted design (A-type)																			F	
	Housing flange (C-type)																			H	
	Mixer flange																			M	
	Agitator flange																			R	
15th to 16th positions: Letter, digit	Transmission ratio																				
	Special order versions: • Coded: order code also required • Non-coded: plain text also required																			- Z	

MOTOX Geared Motors

Introduction

Guide to selecting and ordering geared motors

1

Order number code (continued)

Ordering example:

A bevel helical geared motor is required:

- Gearbox type / gearbox size K48
- Motor 0.37 kW, 4-pole with 50 Hz line frequency
- Output speed 13, transmission ratio $i = 107.47$
- Solid shaft V 30 x 60
- Mounting type / mounting position B3-00-A
- Terminal box position 1A

This results in the order number and order codes below:

Selection criteria	Requirements	Structure of the order number
Gearbox type	Bevel helical gearbox K, size 48	2KJ1503-■■■■■ - ■■■■
Output shaft	Solid shaft V 30 x 60	2KJ1503-1■■■■■ - ■■■■
Motor size	Size 71; 0.37 kW; 4-pole	2KJ1503-1 CE ■■■ - ■■■■
Motor type	Standard motor	2KJ1503-1CE 1 ■ - ■■■■
Motor generation	LA / LG	2KJ1503-1CE 13 - ■■■■
Frequency, line voltage	50 Hz, 220 ... 240 / 380 ... 420 V, D/Y (S100)	2KJ1503-1CE13- 1 ■■■
Mounting type	Foot-mounted design	2KJ1503-1CE13-1 A ■
Transmission ratio	$i = 107.47$	2KJ1503-1CE13-1A E2
Mounting position	B3-00-A	2KJ1503-1CE13-1AE2- Z+D06
Terminal box position	1A	2KJ1503-1CE13-1AE2-Z+D06+ M55

Determining the gearbox type in accordance with the power rating and output speed

Power rating P_{Motor} kW (50 Hz)	Output speed n_2 (50 Hz) rpm	Torque T_2 Nm	Gearbox ratio i_{tot}	For further information, see page
Helical geared motors E, D, and Z				
0.09	3.00 ... 6.7	285 ... 128.0	208.77 ... 133.57	2/8
0.12	0.05 ... 313.0	15 788 ... 3.7	28 260.00 ... 4.47	2/8 ... 2/11
0.18	0.06 ... 383.0	23 784 ... 4.5	24 996.00 ... 3.58	2/11 ... 2/15
0.25	0.08 ... 405.0	23 171 ... 5.9	16 361.00 ... 3.33	2/15 ... 2/19
0.37	0.12 ... 383.0	24 391 ... 9.2	11 066.00 ... 3.58	2/19 ... 2/22
0.55	0.20 ... 414.0	23 625 ... 13.0	7 008.00 ... 3.31	2/22 ... 2/26
0.75	0.27 ... 560.0	23 327 ... 13.0	5 107.00 ... 2.50	2/26 ... 2/30
1.1	0.40 ... 906.0	23 626 ... 12.0	3 580.00 ... 1.59	2/30 ... 2/34
1.5	0.54 ... 906.0	24 171 ... 16.0	2 666.00 ... 1.59	2/34 ... 2/39
2.2	0.85 ... 944.0	22 590 ... 22.0	1 682.00 ... 1.52	2/39 ... 2/44
3	1.10 ... 1 018.0	23 069 ... 28.0	1 255.00 ... 1.41	2/44 ... 2/49
4	1.60 ... 1 021.0	21 939 ... 37.0	896.00 ... 1.41	2/49 ... 2/54
5.5	1.90 ... 1 025.0	25 081 ... 51.0	746.00 ... 1.41	2/54 ... 2/59
7.5	2.70 ... 1 032.0	24 896 ... 69.0	546.00 ... 1.41	2/59 ... 2/59
9.2	5.70 ... 1 032.0	15 282 ... 85.0	253.08 ... 1.41	2/64 ... 2/67
11	4.40 ... 1 035.0	24 093 ... 101.0	243.82 ... 1.41	2/67 ... 2/70
15	6.00 ... 1 074.0	23 923 ... 133.0	243.82 ... 1.36	2/70 ... 2/74
18.5	7.10 ... 1 081.0	24 799 ... 163.0	206.34 ... 1.36	2/74 ... 2/77
22	9.60 ... 1 077.0	21 959 ... 195.0	153.12 ... 1.36	2/77 ... 2/80
30	12.10 ... 1 085.0	23 633 ... 264.0	121.67 ... 1.36	2/80 ... 2/83
37	14.60 ... 1 081.0	24 268 ... 327.0	100.96 ... 1.36	2/83 ... 2/85
45	18.30 ... 1 085.0	23 533 ... 396.0	80.77 ... 1.36	2/85 ... 2/88
55	21.00 ... 902.0	24 634 ... 582.0	69.41 ... 1.64	2/88 ... 2/89
75	35.00 ... 512.0	20 716 ... 1 399.0	42.95 ... 2.90	2/89 ... 2/91
90	35.00 ... 512.0	24 859 ... 1 678.0	42.95 ... 2.90	2/91 ... 2/92
110	88.00 ... 180.0	11 887 ... 5 852.0	16.86 ... 8.30	2/92
132	88.00 ... 179.0	14 312 ... 7 046.0	16.86 ... 8.30	2/92
160	88.00 ... 179.0	17 348 ... 8 540.0	16.86 ... 8.30	2/92
200	88.00 ... 180.0	21 612 ... 10 640.0	16.86 ... 8.30	2/92
Parallel shaft geared motors FZ and FD				
0.09	2.30 ... 4.7	367 ... 184.0	280.41 ... 191.34	3/6
0.12	0.05 ... 111	16 202 ... 10.0	29 000.00 ... 12.62	3/6 ... 3/9
0.18	0.05 ... 210	24 072 ... 8.2	25 299.00 ... 6.53	3/9 ... 3/12
0.25	0.09 ... 355	22 462 ... 6.7	15 519.00 ... 3.80	3/12 ... 3/15
0.37	0.13 ... 73	23 944 ... 49.0	10 863.00 ... 18.86	3/15 ... 3/15
0.55	0.19 ... 170	24 147 ... 31.0	7 163.00 ... 8.06	3/18 ... 3/20
0.75	0.28 ... 368	22 934 ... 19.0	5 021.00 ... 3.80	3/20 ... 3/23
1.1	0.38 ... 379	24 675 ... 28.0	3 739.00 ... 3.80	3/23 ... 3/26
1.5	0.61 ... 379	21 388 ... 38.0	2 359.00 ... 3.80	3/26 ... 3/26
2.2	0.82 ... 372	23 638 ... 56.0	1 760.00 ... 4.33	3/30 ... 3/33
3	1.2 ... 639	22 720 ... 45.0	1 236.00 ... 3.80	3/33 ... 3/33
4	1.4 ... 671	24 905 ... 57.0	1 030.00 ... 4.33	3/37 ... 3/39
5.5	2.4 ... 364	22 097 ... 144.0	403.86 ... 3.97	3/39 ... 3/42
7.5	3.0 ... 738	24 243 ... 97.0	403.86 ... 3.97	3/42 ... 3/45
9.2	4.9 ... 305	18 067 ... 288.0	299.20 ... 4.77	3/45 ... 3/47
11	3.0 ... 306	35 066 ... 343.0	299.20 ... 4.77	3/47 ... 3/49
15	3.5 ... 306	40 468 ... 468	248.85 ... 4.77	3/49 ... 3/51
18.5	4.5 ... 259	39 601 ... 683	242.01 ... 5.68	3/51 ... 3/53
22	5.5 ... 386	37 909 ... 545	242.01 ... 3.80	3/53 ... 3/55
30	6.7 ... 388	42 449 ... 738	218.54 ... 3.80	3/55 ... 3/56

MOTOX Geared Motors

Introduction

Guide to selecting and ordering geared motors

1

Determining the gearbox type in accordance with the power rating and output speed (continued)

Power rating P_{Motor} kW (50 Hz)	Output speed n_2 (50 Hz) rpm	Torque T_2 Nm	Gearbox ratio i_{tot}	For further information, see page
Parallel shaft geared motors FZ and FD				
37	8.4 ... 387	42 287 ... 913	175.92 ... 3.80	3/56 ... 3/58
45	11.0 ... 388	39 088 ... 1 106	134.16 ... 3.80	3/58 ... 3/59
55	14.8 ... 280	35 564 ... 1 874	100.21 ... 5.28	3/59 ... 3/59
75	18.5 ... 281	38 668 ... 2 547	80.17 ... 5.28	3/61
90	22.0 ... 281	39 878 ... 3 056	68.90 ... 5.28	3/61 ... 3/62
110	28.0 ... 179	37 832 ... 5 880	53.66 ... 8.34	3/62 ... 3/63
132	35.0 ... 178	36 188 ... 7 080	42.63 ... 8.34	3/63
160	38.0 ... 178	39 965 ... 8 581	38.84 ... 8.34	3/63
200	49.0 ... 179	38 777 ... 10 691	30.25 ... 8.34	3/63 ... 3/63
Bevel helical geared motors B and K				
0.09	3.70 ... 7.2	231 ... 120.0	179.13 ... 124.78	4/6
0.12	0.05 ... 187.0	16 836 ... 6.1	30 135.00 ... 7.49	4/6 ... 4/9
0.18	0.06 ... 277.0	23 014 ... 6.2	24 187.00 ... 4.94	4/9 ... 4/12
0.25	0.08 ... 378.0	24 007 ... 6.3	16 951.00 ... 3.57	4/12 ... 4/15
0.37	0.12 ... 93.0	24 723 ... 38.0	11 463.00 ... 14.75	4/15 ... 4/18
0.55	0.19 ... 300.0	24 353 ... 18.0	7 224.00 ... 4.56	4/18 ... 4/21
0.75	0.26 ... 392.0	24 688 ... 18.0	5 405.00 ... 3.57	4/21 ... 4/25
1.1	0.42 ... 403.0	22 504 ... 26.0	3 410.00 ... 3.57	4/25 ... 4/25
1.5	0.55 ... 403.0	23 582 ... 36.0	2 601.00 ... 3.57	4/29 ... 4/32
2.2	0.77 ... 374.0	25 008 ... 56.0	1 862.00 ... 3.84	4/32 ... 4/35
3	1.10 ... 402.0	23 639 ... 71.0	1 286.00 ... 3.57	4/35 ... 4/38
4	1.50 ... 255.0	23 702 ... 142.0	968.00 ... 5.36	4/38 ... 4/41
5.5	2.20 ... 270.0	22 492 ... 195.0	669.00 ... 5.36	4/41 ... 4/43
7.5	2.70 ... 271.0	24 988 ... 264.0	548.00 ... 5.36	4/43 ... 4/45
9.2	3.40 ... 263.0	24 013 ... 335.0	429.00 ... 5.54	4/45 ... 4/47
11	4.20 ... 264.0	25 035 ... 399.0	191.34 ... 5.54	4/47 ... 4/49
15	6.00 ... 264.0	23 790 ... 544.0	191.34 ... 5.54	4/49 ... 4/50
18.5	7.70 ... 207.0	22 997 ... 853.0	191.34 ... 7.10	4/50 ... 4/52
22	8.50 ... 303.0	24 779 ... 693.0	172.78 ... 4.83	4/52 ... 4/53
30	12.30 ... 305.0	23 340 ... 938.0	120.16 ... 4.83	4/53 ... 4/54
37	15.40 ... 304.0	22 951 ... 1 161.0	95.48 ... 4.83	4/54 ... 4/54
45	18.60 ... 305.0	23 084 ... 1 407.0	79.23 ... 4.83	4/56 ... 4/57
55	23.00 ... 306.0	22 493 ... 1 714.0	63.38 ... 4.83	4/57
75	35.00 ... 225.0	20 465 ... 3 188.0	42.43 ... 6.61	4/58
90	35.00 ... 225.0	24 558 ... 3 826.0	42.43 ... 6.61	4/58
110	76.00 ... 123.0	13 790 ... 8 531.0	19.56 ... 12.10	4/59
132	76.00 ... 123.0	16 604 ... 10 272.0	19.56 ... 12.10	4/59
160	76.00 ... 123.0	20 126 ... 12 450.0	19.56 ... 12.10	4/59
200	76.00 ... 123.0	25 074 ... 15 511.0	19.56 ... 12.10	4/59
Helical worm geared motors C				
0.09	2.00 ... 4	241 ... 125	320.67 ... 223.36	5/7
0.12	0.21 ... 55	1 913 ... 19	6 722.00 ... 25.28	5/7 ... 5/9
0.18	0.37 ... 54	1 885 ... 29	3 719.00 ... 25.28	5/9 ... 5/10
0.25	0.60 ... 53	1 782 ... 41	2 256.00 ... 25.28	5/10 ... 5/12
0.37	0.91 ... 54	1 918 ... 60	1 510.00 ... 25.28	5/12 ... 5/14
0.55	1.7 ... 68	1 870 ... 68	440.70 ... 20.31	5/14 ... 5/14
0.75	2.4 ... 145	1 969 ... 44	440.70 ... 9.67	5/15 ... 5/16
1.1	3.7 ... 149	1 983 ... 62	390.00 ... 9.67	5/16 ... 5/18
1.5	5.8 ... 149	1 779 ... 85	247.00 ... 9.67	5/18 ... 5/20
2.2	11.4 ... 148	1 355 ... 125	126.18 ... 9.67	5/20 ... 5/21

Determining the gearbox type in accordance with the power rating and output speed (continued)

Power rating P_{Motor} kW (50 Hz)	Output speed n_2 (50 Hz) rpm	Torque T_2 Nm	Gearbox ratio i_{tot}	For further information, see page
Helical worm geared motors C				
3	14.6 ... 148	1 668 ... 170	98.17 ... 9.67	5/21 ... 5/22
4	22.0 ... 149	1 482 ... 227	65.32 ... 9.67	5/22 ... 5/23
5.5	34.0 ... 130	1 302 ... 367	41.85 ... 11.15	5/23 ... 5/24
7.5	62.0 ... 130	992 ... 497	23.56 ... 11.15	5/24
9.2	109.0 ... 130	732 ... 609	13.39 ... 11.15	5/24
11	109.0 ... 131	872 ... 726	13.39 ... 11.15	5/24
Worm geared motors S				
0.09	8.5 ... 21.2	46.2 ... 23.5	100 ... 40	6/5
0.12	13.5 ... 270	40.3 ... 3.8	100 ... 5	6/5 ... 6/6
0.18	10.6 ... 564	82.0 ... 2.8	100 ... 5	6/6 ... 6/7
0.25	14.3 ... 566	94.9 ... 3.8	80 ... 5	6/7 ... 6/8
0.37	22.8 ... 548	90.9 ... 5.9	60 ... 5	6/8
0.55	46.5 ... 560	82.1 ... 8.6	30 ... 5	6/8
0.75	70.0 ... 574	81.9 ... 11.6	30 ... 5	6/9
1.1	143.0 ... 572	59.4 ... 17.0	20 ... 5	6/9

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Guide to selecting and ordering geared motors

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Determining the gearbox type in accordance with the max. torque, transmission ratio, and size

Max. gearbox torque Nm	Gearbox type	Order No.	Transmission ratio		For further information, see page
Helical gearbox E					
82	E38	2KJ1001	1.59 ...	9.33	2/93
170	E48	2KJ1002	1.52 ...	11.30	2/93
250	E68	2KJ1003	1.41 ...	12.40	2/94
450	E88	2KJ1004	1.71 ...	10.33	2/94
745	E108	2KJ1005	1.81 ...	5.46	2/95
1 000	E128	2KJ1006	1.36 ...	10.14	2/95
1 550	E148	2KJ1007	1.64 ...	13.67	2/95
Helical gearbox Z					
90	Z18	2KJ1100	3.58 ...	43.15	2/96
140	Z28	2KJ1101	3.33 ...	51.35	2/97
220	Z38	2KJ1102	4.77 ...	44.12	2/99
450	Z48	2KJ1103	4.28 ...	51.28	2/101
800	Z68	2KJ1104	3.49 ...	48.09	2/103
1 680	Z88	2KJ1105	3.11 ...	50.73	2/105
3 100	Z108	2KJ1106	3.42 ...	59.05	2/107
5 100	Z128	2KJ1107	3.07 ...	44.19	2/109
8 000	Z148	2KJ1108	4.44 ...	57.50	2/111
14 000	Z168	2KJ1110	4.46 ...	46.61	2/113
20 000	Z188	2KJ1111	8.30 ...	52.35	2/115
220	Z38 - Z28	2KJ1112	207.00 ...	1 258.00	2/98
220	Z38 - D28	2KJ1113	1 343.00 ...	5 905.00	2/98
Helical gearbox D					
90	D18	2KJ1200	32.26 ...	200.36	2/96
140	D28	2KJ1201	48.38 ...	241.05	2/97
220	D38	2KJ1202	30.74 ...	191.75	2/99
450	D48	2KJ1203	35.59 ...	208.77	2/101
800	D68	2KJ1204	37.80 ...	281.01	2/103
1 680	D88	2KJ1205	34.14 ...	300.41	2/105
3 100	D108	2KJ1206	42.61 ...	359.30	2/107
5 100	D128	2KJ1207	37.57 ...	268.16	2/109
8 000	D148	2KJ1208	34.15 ...	336.11	2/111
14 000	D168	2KJ1210	40.99 ...	341.61	2/113
20 000	D188	2KJ1211	42.95 ...	243.82	2/115
450	D48 - Z28	2KJ1212	223.00 ...	5 019.00	2/100
450	D48 - D28	2KJ1213	5 608.00 ...	27 940.00	2/100
800	D68 - Z28	2KJ1214	320.00 ...	7 548.00	2/102
800	D68 - D28	2KJ1215	8 422.00 ...	41 961.00	2/102
800	D88 - Z28	2KJ1218	341.00 ...	8 305.00	2/104
800	D88 - D28	2KJ1220	9 279.00 ...	46 233.00	2/104
3 100	D108 - Z38	2KJ1223	392.00 ...	15 853.00	2/106
3 100	D108 - D38	2KJ1224	15 280.00 ...	68 896.00	2/106
5 100	D128 - Z38	2KJ1225	1 280.00 ...	51 420.00	2/108
5 100	D128 - D38	2KJ1226	11 404.00 ...	51 420.00	2/108
5 100	D128 - Z48	2KJ1227	285.00 ...	1 271.00	2/108
8 000	D148 - Z38	2KJ1228	1 604.00 ...	14 830.00	2/110
8 000	D148 - D38	2KJ1230	14 294.00 ...	64 450.00	2/110
8 000	D148 - Z48	2KJ1231	398.00 ...	1 631.00	2/110
14 000	D168 - Z48	2KJ1232	1 463.00 ...	17 519.00	2/112
14 000	D168 - D48	2KJ1233	17 080 ...	71 317	2/112
14 000	D168 - Z68	2KJ1234	376 ...	1 226	2/112
20 000	D188 - Z48	2KJ1235	1 044 ...	12 504	2/114

Determining the gearbox type in accordance with the max. torque, transmission ratio, and size (continued)

Max. gearbox torque Nm	Gearbox type	Order No.	Transmission ratio	For further information, see page
Helical gearbox D				
20 000	D188 - D48	2KJ1236	12 191 ... 50 901	2/114
20 000	D188 - Z68	2KJ1237	322 ... 896	2/114
Parallel shaft gearbox FZ				
150	FZ28	2KJ1300	56.20 ... 280.00	3/65
290	FZ38B	2KJ1301	4.52 ... 56.72	3/67
540	FZ48B	2KJ1302	4.33 ... 60.71	3/69
1 000	FZ68B	2KJ1303	3.97 ... 61.17	3/71
1 900	FZ88B	2KJ1304	4.77 ... 64.58	3/73
3 400	FZ108B	2KJ1305	5.68 ... 64.21	3/75
6 100	FZ128B	2KJ1306	3.80 ... 56.42	3/77
9 000	FZ148B	2KJ1307	5.39 ... 68.23	3/79
14 000	FZ168B	2KJ1308	5.28 ... 53.48	3/81
20 000	FZ188B	2KJ1310	8.34 ... 52.63	3/83
32 681	FZ208	2KJ1311	9.01 ... 20.06	3/85
290	FZ38B - Z28	2KJ1313	303.00 ... 1 617.00	3/66
290	FZ38B - D28	2KJ1314	1 726.00 ... 7 591.00	3/66
Parallel shaft gearbox FD				
150	FD28	2KJ1400	3.80 ... 59.65	3/65
290	FD38B	2KJ1401	56.28 ... 280.41	3/67
540	FD48B	2KJ1402	43.09 ... 268.80	3/69
1 000	FD68B	2KJ1403	50.48 ... 296.18	3/71
1 900	FD88B	2KJ1404	54.47 ... 404.92	3/73
3 400	FD108B	2KJ1405	48.24 ... 424.49	3/75
6 100	FD128B	2KJ1406	53.13 ... 447.96	3/77
9 000	FD148B	2KJ1407	62.93 ... 449.21	3/79
14 000	FD168B	2KJ1408	41.85 ... 369.26	3/81
20 000	FD188B	2KJ1410	48.46 ... 403.86	3/83
34 000	FD208	2KJ1411	24.03 ... 242.01	3/85
540	FD48B - Z28	2KJ1413	299.00 ... 4 197.00	3/68
540	FD48B - D28	2KJ1414	4 480.00 ... 19 701.00	3/68
1 000	FD68B - Z28	2KJ1417	317.00 ... 4 454.00	3/70
1 000	FD68B - D28	2KJ1418	4 755.00 ... 39 638.00	3/70
1 900	FD88B - Z28	2KJ1422	461.00 ... 6 000.00	3/72
1 900	FD88B - D28	2KJ1423	6 703.00 ... 54 705.00	3/72
3 400	FD108B - Z38	2KJ1426	466.00 ... 15 230.00	3/74
3 400	FD108B - D38	2KJ1427	16 603.00 ... 66 190.00	3/74
6 100	FD128B - Z38	2KJ1428	1 970.00 ... 15 663.00	3/76
6 100	FD128B - D38	2KJ1430	17 075.00 ... 68 070.00	3/76
6 100	FD128B - Z48	2KJ1431	439.00 ... 1 504.00	3/76
9 000	FD148B - Z38	2KJ1432	1 757.00 ... 16 239.00	3/78
9 000	FD148B - D38	2KJ1433	17 704.00 ... 70 576.00	3/78
9 000	FD148B - Z48	2KJ1434	477.00 ... 1 634.00	3/78
14 000	FD168B - Z48	2KJ1435	1 337.00 ... 16 007.00	3/80
14 000	FD168B - D48	2KJ1436	17 454.00 ... 65 160.00	3/80
14 000	FD168B - Z68	2KJ1437	398.00 ... 1 298.00	3/82
20 000	FD188B - Z48	2KJ1438	1 465.00 ... 17 537.00	3/82
20 000	FD188B - D48	2KJ1440	19 122.00 ... 71 388.00	3/82
20 000	FD188B - Z68	2KJ1441	444.00 ... 1 449.00	3/82
34 000	FD208 - Z68	2KJ1442	766.00 ... 8 251.00	3/84
34 000	FD208 - D68	2KJ1443	9 924.00 ... 61 412.00	3/84
34 000	FD208 - Z88	2KJ1444	284.00 ... 694.00	3/84

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Determining the gearbox type in accordance with the max. torque, transmission ratio, and size (continued)

Max. gearbox torque Nm	Gearbox type	Order No.	Transmission ratio			For further information, see page
Bevel helical gearbox B and K						
130	B28	2KJ1500	3.57	...	57.53	4/60
250	B38	2KJ1501	3.84	...	65.69	4/61
250	K38	2KJ1502	5.65	...	179.13	4/63
450	K48	2KJ1503	7.22	...	169.53	4/65
820	K68	2KJ1504	5.36	...	243.72	4/67
1 650	K88	2KJ1505	5.54	...	302.68	4/69
3 000	K108	2KJ1506	7.68	...	307.24	4/71
4 700	K128	2KJ1507	7.10	...	295.38	4/73
8 000	K148	2KJ1508	4.83	...	306.08	4/75
13 500	K168	2KJ1510	6.61	...	287.95	4/77
20 000	K188	2KJ1511	12.10	...	191.34	4/79
250	K38 - Z28	2KJ1514	181.00	...	2 797.00	4/62
250	K38 - D28	2KJ1515	2 986.00	...	13 129.00	4/62
450	K48 - Z28	2KJ1516	181.00	...	2 798.00	4/64
450	K48 - D28	2KJ1517	2 987.00	...	13 135.00	4/64
820	K68 - Z28	2KJ1518	277.00	...	4 282.00	4/66
820	K68 - D28	2KJ1520	4 572.00	...	20 103.00	4/66
1 650	K88 - Z28	2KJ1523	344.00	...	5 309.00	4/68
1 650	K88 - D28	2KJ1524	5 667.00	...	24 920.00	4/68
3 000	K108 - Z38	2KJ1527	1 466.00	...	13 556.00	4/70
3 000	K108 - D38	2KJ1528	13 066.00	...	58 914.00	4/70
3 000	K108 - Z48	2KJ1530	301.00	...	1 343.00	4/70
4 700	K128 - Z38	2KJ1531	1 410.00	...	13 032.00	4/72
4 700	K128 - D38	2KJ1532	12 562.00	...	56 640.00	4/72
4 700	K128 - Z48	2KJ1533	313.00	...	1 400.00	4/72
8 000	K148 - Z38	2KJ1534	1 466.00	...	13 505.00	4/74
8 000	K148 - D38	2KJ1535	13 017.00	...	58 692.00	4/74
8 000	K148 - Z68	2KJ1536	296.00	...	1 392.00	4/74
13 500	K168 - Z48	2KJ1537	1 233.00	...	14 767.00	4/76
13 500	K168 - D48	2KJ1538	14 397.00	...	60 115.00	4/76
13 500	K168 - Z68	2KJ1540	317.00	...	1 033.00	4/76
20 000	K188 - Z68	2KJ1541	669.00	...	9 201.00	4/78
20 000	K188 - D68	2KJ1542	8 689.00	...	53 767.00	4/78
20 000	K188 - Z88	2KJ1543	225.00	...	669.00	4/78
Helical worm gearbox C						
118	C28	2KJ1600	25.28	...	372.00	5/25 ... 5/26
243	C38	2KJ1601	9.67	...	320.67	5/28 ... 5/30
387	C48	2KJ1602	9.67	...	320.67	5/32 ... 5/34
687	C68	2KJ1603	11.67	...	364.00	5/36 ... 5/38
1 590	C88	2KJ1604	11.15	...	440.70	5/40 ... 5/42
225	C38 - Z28	2KJ1605	324.00	...	4 222.00	5/27
222	C38 - D28	2KJ1606	4 717.00	...	23 503.00	5/27
369	C48 - Z28	2KJ1607	324.00	...	4 222.00	5/31
364	C48 - D28	2KJ1608	4 717.00	...	23 503.00	5/31
680	C68 - Z28	2KJ1610	398.00	...	5 066.00	5/35
675	C68 - D28	2KJ1611	5 661.00	...	28 203.00	5/35
1 590	C88 - Z28	2KJ1614	6 722.00	...	33 491.00	5/39
1 590	C88 - D28	2KJ1615	462.00	...	6 016.00	5/39
Worm gearbox S						
33	S08	2KJ1730	5	...	80	6/10 ... 6/10
64	S18	2KJ1731	5	...	80	6/10 ... 6/10
116	S28	2KJ1732	5	...	100	6/10 ... 6/10

Overview of "special versions"

Order code	Special version Designation	For further information, see page
Input units		
A00	Input unit A with free input shaft	7/3, 7/30
A03	Input unit K2 (coupling lantern) with flexible coupling for connecting an IEC motor	7/3, 7/20
A04	Input unit K4 (short coupling lantern) with clamp connection for connecting an IEC motor	7/3, 7/23
A07	Input unit KQ (lantern for servomotor) with zero-free, flexible coupling for connecting a servomotor (with feather key)	7/3, 7/28
A08	Input unit KQS attachment (lantern for servomotor) with zero-free, flexible coupling for connecting a servomotor (with plain shaft)	7/3, 7/28
A09	Input unit P with free input shaft and piggy back for connecting an IEC motor	7/3, 7/33
A10	Input unit PS with free input shaft, piggy back and protective belt cover	7/3
N61	Size index .2 for KQ/KQS coupling lantern for servomotor	7/3
N62	Size index .3 for KQ/KQS coupling lantern for servomotor	7/3
N63	Size index .4 for KQ/KQS coupling lantern for servomotor	7/3
Backstop in the input unit		
A15	Backstop X	7/18
Coupling types and input unit options		
A16	Flexible coupling	7/3
A17	Friction clutch	7/18
A18	Proximity switch	7/18
A19	Speed monitor	7/18
Piggy back position		
A22	3h	7/33
A23	9h	7/33
A24	12h	7/33
Brake type		
B00 to B66	Brake types according to size and braking torque	8/29 ... 8/30
Brake design		
C01	Enclosed brake	8/42
C02	Manual brake release lever	8/39
C03	Manual brake release lever with locking mechanism	8/39
C04	Microswitch for release monitoring	8/38
C06	Reduced-noise rotor-hub connection and wear-resistant friction lining	8/36
C09	Basic anti-corrosion protection	8/42
C10	Increased anti-corrosion protection	8/42
C11	Enclosed brake with condensation drain hole	8/42
Manual brake release lever position		
C26	1	8/39
C27	2	8/39
C28	3	8/39
C29	4	8/39
Brake control voltage		
C46 ... C70	Brake standard voltage	8/32
Mounting types / mounting positions		
D00 to E17	Geared motor mounting types and mounting positions	2/119 ... 2/129, 3/92 ... 3/95, 4/87 ... 4/91, 5/47 ... 5/49, 6/15
Torque arm figure		
G09	Figure 1	4/81, 5/44
G10	Figure 2	4/81, 5/44
Output shaft bearings		
G20	Radially reinforced output shaft bearings	2/133, 3/99, 4/95, 5/53

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Overview of "special versions" (continued)

Order code	Special version Designation	For further information, see page
Output sealing		
G22 + G31	Double radial shaft seal	2/132, 3/98, 4/94, 5/52
G23	Double sealing MSS1	2/132, 3/98, 4/94, 5/52
G24	Combination shaft sealing	2/132, 3/98, 4/94, 5/52
G25	High temperature resistant sealing	2/132, 3/98, 4/94, 5/52
Oil level control		
G34	Oil sight glass	2/130, 3/96, 4/93, 5/50
Gearbox ventilation		
G44	Vent filter	2/131, 3/97, 4/93, 5/51
G45	Pressure ventilation valve	2/131, 3/97, 4/93, 5/51
Oil drain		
G53	Magnetic oil drain plug	2/131, 3/97, 4/94, 5/51
G54	Oil drain valve, straight	2/131, 3/97, 4/94, 5/51
Hollow-shaft cover		
G60	Steel protection cover	3/99, 4/95, 5/52
G61	Steel protection cover (ATEX)	3/99, 4/95, 5/52
G62	Protection cover	3/99, 4/95, 5/52
G63	Protection cover (ATEX)	3/99, 4/95, 5/52
Backstop for bevel helical gearbox		
G72	Backstop (gearbox)	4/96
Options for gearbox output shafts		
G73	2nd shaft extension (output shaft on both sides)	4/96, 5/53, 6/16
Dry-well options for mixer and agitator drives		
G89	Dry-well design with sight glass	2/133, 3/100, 4/97
G90	Dry-well design with sensor	2/133, 3/100, 4/97
Reduced-backlash version		
G99	Reduced-backlash version	1/23, 2/93, 3/65, 4/62
Flange diameter		
H01 to H06	Flange diameter	2/118, 3/91, 4/86, 5/46, 6/14
Degree of protection		
K01	IP 55	8/8
K02	IP 56	8/8
K03	IP 65	8/8
Lubricants		
K06	CLP ISO VG 220 - Mineral oil	1/46, 2/130, 3/94, 4/92
K07	CLP ISO PG VG 220 - Synthetic oil	1/46, 2/130, 3/96, 4/92
K08	CLP ISO PG VG 460 - Synthetic oil	1/46, 2/130, 3/96, 4/92, 5/50, 6/16
K10	CLP ISO E VG 220 - Biologically degradable oil	1/46, 2/130, 3/96, 4/92, 5/50
K11	CLP ISO H1 VG 460 - Oil for use in the food industry	1/46, 2/130, 3/96, 4/92, 5/50, 6/16
K12	CLP ISO PAO VG 220 - Oil for low temperature usage	1/46, 2/130, 3/96, 4/92, 5/50
K13	CLP ISO PAO VG 68 - Oil for lowest temperature usage	1/46, 2/130, 3/96, 4/92
Long-term preservation		
K17	Long-term preservation up to 36 months	1/46
Direction of rotation of the output shaft (required with backstop)		
K18	Clockwise	1/43, 4/96
K19	Counterclockwise	1/43, 4/96
Rating plate and additional rating plates		
K26	Rating plate on stainless steel support plate	1/49
K41	2nd rating plate, enclosed separately	1/49
K68	2nd rating plate, mounted	1/49

Overview of "special versions" (continued)

Order code	Special version Designation	For further information, see page
Surface treatment		
L00	Unpainted	1/48
L01	Primed according to corrosion category C2 G	1/48
L02	Surface protection for normal environmental stress	1/47
L03	Surface protection for minimal environmental stress	1/47
L04	Surface protection for medium environmental stress	1/47
L05	Surface protection for extremely high environmental stress	1/47
L09	Primed according to corrosion category C4 G	1/48
L19	Special pre-treatment before painting	1/48
L20	Surface protection for high environmental stress	1/47
RAL colors		
L50	RAL 5015 Sky blue	1/48
L51	RAL 7011 Steel gray	1/48
L53	RAL 7031 Blue gray	1/48
L54	RAL 7035 Light gray	1/48
L55	RAL 7030 Stone gray	1/48
	Other colors can be selected by entering order code Y80 and plain text	1/48
Insulating material class		
M08	Temperature class 180 (H)	8/25
M09	Special insulation for inverter-fed operation up to 690 V	8/25
Thermal motor protection		
M10	PTC thermistor for disconnection	8/23
M11	PTC thermistor for warning and disconnection	8/23
M12	Winding thermostat for disconnection (WT)	8/23
M13	Winding thermostat for warning and disconnection for sizes 71 to 200 (WT)	8/23
M16	KTY 84-130 temperature sensor	8/24
Fan		
M21	Metal fan	8/9
M22	High inertia fan	8/9
M23	External fan	8/10
Anti-condensation heating		
M40	115 V supply voltage	8/24
M41	230 V supply voltage	8/24
Terminal box position		
M55 to M86	Location and position of the terminal box	8/11
ECOFAST motor plugs		
N04	ECOFAST motor plug HAN 10E (single-bracket lock)	8/18
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N06	ECOFAST motor plug HAN 10E, EMC design (single-bracket lock)	8/18
N07	ECOFAST motor plug HAN 10E with counterplug HAN 10B, EMC design (single-bracket lock)	8/18
Canopy		
N22	Canopy	8/8
Backstop on motor		
N23	Motor backstop	8/63
2nd shaft extension on motor		
N39	2nd shaft extension	8/64
Handwheel		
N40	Handwheel	8/65
Motor side B, can be retrofitted		
N48	Motor side B, can be retrofitted	8/2

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Overview of "special versions" (continued)

Order code	Special version Designation	For further information, see page
Additional feet		
N49	Additional feet	8/65
Designs in accordance with standards and specifications		
N30	Design in accordance with GOST-R	1/40, 8/3
N36	Design in accordance with CSA	1/40, 8/3
N37	Design in accordance with UL-R	1/40, 8/3
N38	Design in accordance with UL-R and CSA	1/40, 8/3
N65	Design in accordance with NEMA (electrical)	1/39, 8/3
N67	Design in accordance with CCC	1/40, 8/3
N69	Design in accordance with China Energy Efficiency Label	1/40, 8/3
Versions for special environmental conditions		
N41	Motor-internal anti-corrosion protection	8/19
Protection against humidity and acid		
N43	Increased protection against humidity and tropical climate	1/48
N44	Increased protection against acid and alkali	1/48
N54	Motor winding protection against humidity and acid	8/26
External earthing		
N53	External earthing	8/19
Motors prepared for encoder mounting		
N50	Encoder mounting prepared	8/60
Pole number of the motor		
P00	2-pole	8/68, 8/68, 8/96
P01	6-pole	8/70, 8/84, 8/70, 8/98, 8/102, 8/132, 8/136, 8/132, 8/136
P02	8-pole	8/72, 8/86, 8/104, 8/122, 8/128
P04	4/2-pole	8/74, 8/106
P08	8/4-pole	8/76, 8/78
P07	8/2-pole	8/80
Gateways EnDAT for absolute encoders		
Q02	Gateway EnDAT Profibus DP	8/63
Q03	Gateway EnDAT CANopen	8/63
Q04	Gateway EnDAT DeviceNET	8/63
Incremental encoder IN		
Q44	Rotary pulse encoder 1XP8032-20 (IN 1024 TTL with coupling socket)	8/51
Q45	Rotary pulse encoder 1XP8032-21 (IN 2048 TTL with coupling socket)	8/51
Q46	Rotary pulse encoder 1XP8032-22 (IN 512 TTL with coupling socket)	8/51
Q47	Rotary pulse encoder 1XP8032-10 (IN 1024 HTL with coupling socket)	8/51
Q48	Rotary pulse encoder 1XP8032-11 (IN 2048 HTL with coupling socket)	8/51
Q49	Rotary pulse encoder 1XP8032-12 (IN 512 HTL with coupling socket)	8/51
Q50	Rotary pulse encoder 1XP8012-20 (IN 1024 TTL with flange socket)	8/50
Q51	Rotary pulse encoder 1XP8012-21 (IN 2048 TTL with flange socket)	8/50
Q52	Rotary pulse encoder 1XP8012-22 (IN 512 TTL with flange socket)	8/50
Q53	Rotary pulse encoder 1XP8012-10 (IN 1024 HTL with flange socket)	8/50
Q54	Rotary pulse encoder 1XP8012-11 (IN 2048 HTL with flange socket)	8/50
Q55	Rotary pulse encoder 1XP8012-12 (IN 512 HTL with flange socket)	8/50
Q56	Rotary pulse encoder 1XP8022-20 (IN 1024 TTL with cable terminal box)	8/52
Q57	Rotary pulse encoder 1XP8022-21 (IN 2048 TTL with cable terminal box)	8/52
Q58	Rotary pulse encoder 1XP8022-22 (IN 512 TTL with cable terminal box)	8/52
Q59	Rotary pulse encoder 1XP8022-10 (IN 1024 HTL with cable terminal box)	8/52
Q60	Rotary pulse encoder 1XP8022-11 (IN 2048 HTL with cable terminal box)	8/52
Q61	Rotary pulse encoder 1XP8022-12 (IN 512 HTL with cable terminal box)	8/52

Overview of "special versions" (continued)

Order code	Special version Designation	For further information, see page
Cable terminal boxes for encoders 1XP8012, 1XP8032, 1XP8013, 1XP8023, 1XP8014 and 1XP8024		
Q62	Connector	8/61
Q69	Cable with connector and ferrules, 2 m	8/61
Q70	Cable with connector and ferrules, 8 m	8/61
Q71	Cable with connector and ferrules, 15 m	8/61
Q72	Cable with coupling socket, 2 m	8/62
Q73	Cable with coupling socket, 8 m	8/62
Q74	Cable with coupling socket, 15 m	8/62
Cable terminal boxes for encoders 1XP8022		
Q63	Cable with ferrules, 2 m	8/61
Q64	Cable with ferrules, 8 m	8/61
Q65	Cable with ferrules, 15 m	8/61
Q66	Cable with coupling socket, 2 m	8/62
Q67	Cable with coupling socket, 8 m	8/62
Q68	Cable with coupling socket, 15 m	8/62
Absolute encoder IA		
Q80	Absolute encoder 1XP8014-20 (IA SSI protocol with flange socket)	8/55
Q81	Absolute encoder 1XP8024-20 (IA SSI protocol cable with coupling socket)	8/55
Q82	Absolute encoder 1XP8014-10 (IA EnDAT protocol with flange socket)	8/55
Q83	Absolute encoder 1XP8024-10 (IA EnDAT protocol cable with coupling socket)	8/55
Resolver IR		
Q85	Resolver 1XP8013-10 (IR with flange socket)	8/54
Q86	Resolver 1XP8023-11 (IR cable with coupling socket)	8/54
Q87	Resolver 1XP8013-11 (IR with flange socket)	8/54
Q88	Resolver 1XP8023-10 (IR cable with coupling socket)	8/54
Rugged encoder		
Q92	Rotary pulse encoder LL Leine & Linde	8/57
Q93	Rotary pulse encoder HOG 9	8/58
Q94	Rotary pulse encoder HOG 10	8/59
Mechanical protection		
Q95	Encoder under cover	8/60

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Determining the drive data

Data relating to the machine to be driven (machine type, mass, input speed, speed range, etc.) is required in order to size the machine correctly. This data is then used to determine the required power rating, torque, and input speed of the geared motor. The correct drive can be selected based on its calculated power rating and speed.

Data required for selection

The following data is required in order to select the correct gearbox:

1. Type of driven machine
2. Daily operating time h
3. Required input power kW or required torque Nm
4. Required output speed n_2 of the geared motor rpm or gearbox ratio i
5. Operating voltage V and frequency Hz
6. Operating mode, number of startings, inverter-fed operation, type of startup
7. Moment of inertia J_{Load} kgm² of the driving machine reduced to the motor shaft
8. Type of power transmission on gearbox shafts (direct, coupling, belt, chain, gear wheel)
9. Radial force F_r N at the input shaft and direction of force with distance from the shaft shoulder to the point of application and axial force F_{ax} [N] with direction of force
10. Ambient temperature °C
11. Degree of protection
12. Mounting position
13. Required braking torque Nm
14. Any regulations (CSA, VIK, etc.)

Efficiency of the geared motor

The efficiency of the gearbox is determined by the gear teeth, rolling-contact bearing friction, and the shaft sealing rings, among other things. The starting efficiency also has to be taken into account, particularly as regards helical worm and worm gearboxes. Efficiency may be impaired at high input speeds, if a relatively large amount of oil is used (depending on mounting position), and during cold operation in low temperature ranges.

Helical, bevel helical, and parallel shaft gearboxes

MOTOX helical, parallel shaft, and bevel helical gearboxes are extremely efficient. As a rule, efficiencies of 98 % (1-stage), 96 % (2-stage), and 94 % (3-stage) can be assumed.

Helical worm and worm gearboxes

The gear teeth of the worm gearboxes lead to high sliding friction losses at high transmission ratios. Therefore, these gearboxes can be less efficient than other types. The efficiencies of the helical worm and worm gearboxes primarily depend on the transmission ratio in question.

With helical worm gearboxes, some of the transmission ratio is realized by the helical gear stage. In this way, higher degrees of efficiency can be achieved.

For further information see the chapter dealing with helical worm gearboxes.

Self-locking with worm gearboxes

In respect of restoring torques on worm gearboxes, the efficiency is considerably reduced in comparison to standard efficiency. The restoring efficiency can be calculated as follows: $\eta' = 2 - 1/\eta$. At a standard efficiency of $\eta \leq 0.5$, worm gearboxes are usually self-locking, which is determined by the particular lead angle of the worm gear teeth.

Self-locking only occurs with certain combinations of MOTOX gearboxes and is not always of benefit, as the associated loss of efficiency is then relatively high, which in turn requires increased motor power.

A worm gearbox is "self-locking while stationary" (static self-locking), if it is not possible to start from stationary when the worm wheel is driving.

A worm gearbox is "self-braking while running" (dynamic self-locking), if it is not possible to continue running when the worm wheel is driving while the gearbox is running – that is, if the running gearbox comes to a stop while the worm wheel is driving.

Shocks can neutralize self-locking.

A self-locking gearbox is, therefore, no substitute for a brake or backstop. If you want to use the self-locking braking effect for a technical purpose, please contact us.

Run-in phase for helical worm and worm gearboxes

The tooth flanks on new helical worm and worm gearboxes will not yet be fully smoothed, meaning that the friction angle will be greater and efficiency lower during initial operation. The higher the transmission ratio, the more pronounced the effect.

The run-in procedure should take approximately 24 hours of operation at full load. In most cases, the catalog values will then be reached.

Losses of splashing

With certain gearbox mounting positions, the first stage can become completely immersed in the gear lubricant. In the case of large gearboxes with a high input speed, particularly with vertical mounting positions, this may lead to increased losses of splashing, which must not be ignored. Please contact us if you want to use such gearboxes. If at all possible, you should choose horizontal mounting positions in order to keep losses of splashing to a minimum.

MOTOX Geared Motors

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Determining the required service factor

The operating conditions are crucial in determining the service factor and for selecting the geared motor. These conditions are taken into account with service factor f_B .

The gearbox size or rated gear torque and the resulting service factor are not standardized and depend on the manufacturer.

In standard operation, i.e. with a uniform load provided by the driving machine, small masses to be accelerated, and a low number of startings, the service factor of $f_B = 1$ can be selected.

For different operating conditions see the tables found under "Service factor". If the motor power and the gearbox output speed are known, a gearbox type is selected with a service factor that meets the following condition.

$$f_{Btot} \leq f_B$$

For drives operating under special conditions, e.g. frequent reversing, short-time or intermittent duty, abnormal temperature ratios, reversal braking, extreme or rotating transverse forces on the gear output shaft, etc. please contact us for advice on how to design the drive configuration.

The operating conditions can vary greatly. To determine the service factor, empirical values can be derived from the configuration of other similar applications. The driving machines can be assigned to three load groups according to their shock load. These groups can be assessed by means of their mass acceleration factor (m_{AF}).

In the case of high mass acceleration factors ($m_{AF} > 10$), a large amount of play in the transmission elements, or high transverse forces, unexpected additional loads may arise. Please contact us in such an event.

The mass acceleration factor m_{AF} is calculated as follows:

$$m_{AF} = \frac{J_{Load}}{(J_M + J_B + J_{add})}$$

All external moments of inertia are moments of inertia of the driving machine and the gearbox, which are to be reduced to the motor speed. In most cases the moment of inertia of the gearbox has no effect and can be ignored.

The calculation is made using the following formula:

$$J_{Load} = J_2 \cdot \left(\frac{n_2}{n_1}\right)^2 = \frac{J_2}{i^2}$$

Code	Description	Unit
f_{Btot}	Service factor of the driving machine	–
f_B	Service factor of the geared motor	–
m_{AF}	Mass acceleration factor	–
J_{Load}	All external moments of inertia (based on the motor shaft)	kgm ²
J_M	Moment of inertia of the motor	kgm ²
J_B	Moment of inertia of the brake	kgm ²
J_{add}	Additional moment of inertia (e.g. centrifugal mass or high inertia fan)	kgm ²
J_2	Moment of inertia based on the output speed of the gearbox	kgm ²
n_1	Input speed of the motor	rpm
n_2	Output speed of the gearbox	rpm
i	Gearbox ratio	–
DC	Relative duty cycle	%

Required service factor

Service factor for helical, parallel shaft, and bevel helical gearboxes

The service factor of the driving machine f_{Btot} is determined from the tables by taking the load classification, number of startings, and duration of service per day into account.

Contact our drive experts to check drive sizing in the case of high shock loads and, for example, high motor and braking torques that are greater than 2.5x the rated motor torque.

$$f_{Btot} = f_{B1}$$

Load classification for driving machines

Shock load	Driving machine
I Light shock loads	Mass acceleration factor ≤ 0.3 : Electric generators, belt conveyors, apron conveyors, screw conveyors, lightweight elevators, electric hoists, machine tool feed drives, turbo blowers, centrifugal compressors, mixers and agitators for uniform densities.
II Moderate shock loads	Mass acceleration factor ≤ 3 : Machine tool main drives, heavyweight elevators, turning tools, cranes, shaft ventilators, mixers and agitators for non-uniform densities, piston pumps with multiple cylinders, metering pumps.
III Heavy shock loads	Mass acceleration factor ≤ 10 : Punching presses, shears, rubber kneaders, machinery used in rolling mills and the iron and steel industry, mechanical shovels, heavyweight centrifuges, heavyweight metering pumps, rotary drilling rigs, briquetting presses, pug mills.

Service factors f_{B1} :

Daily operating duration	4 hours	8 hours			16 hours			24 hours				
		< 10	10 ... 200	> 200	< 10	10 ... 200	> 200	< 10	10 ... 200	> 200		
Starts ^{a)} / h												
Shock load I	0.8	0.9	1.0	0.9	1.0	1.1	1.0	1.1	1.2	1.2	1.3	1.5
II	1.0	1.1	1.3	1.1	1.2	1.3	1.2	1.4	1.5	1.4	1.5	1.6
III	1.3	1.4	1.5	1.4	1.5	1.6	1.5	1.6	1.7	1.6	1.7	1.8

^{a)} The number of startings is calculated from the sum of times it is switched on, braking operations, and changeovers.

Service factors for helical worm and worm gearboxes:

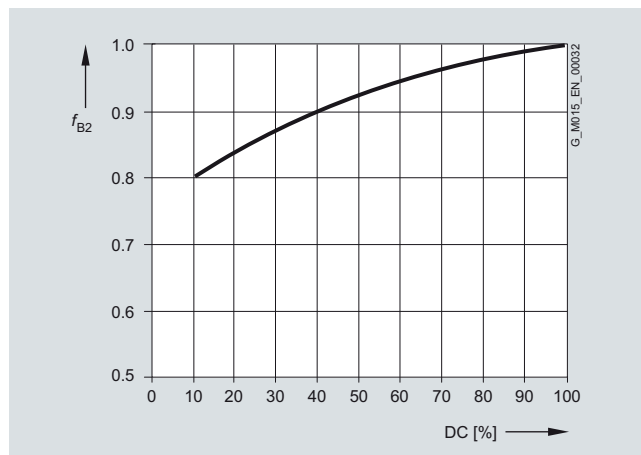
With worm gearboxes, two additional service factors are used, which take the duty cycle and ambient temperature into account. These additional factors can be determined from the graph opposite.

$$f_{Btot} = f_{B1} \cdot f_{B2} \cdot f_{B3}$$

In the standard version the gearboxes can operate at an ambient temperature of -20 °C to $+40\text{ °C}$.

In the case of a service factor $f_{B3} < 1$ for temperatures below 20 °C please contact us.

Service factor f_{B2} for short-time duty:



$$DC = \frac{\text{Loading time in min} / h}{60} \cdot 100$$

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Required service factor (continued)

Example worm gearbox:

Mass acceleration factor 2.5 (shock load II), runtime 15 hours per day (read off at 16 hours), and 70 starts / h gives a service factor of $f_{B1} = 1.4$ for service factor f_{B1} according to the table.

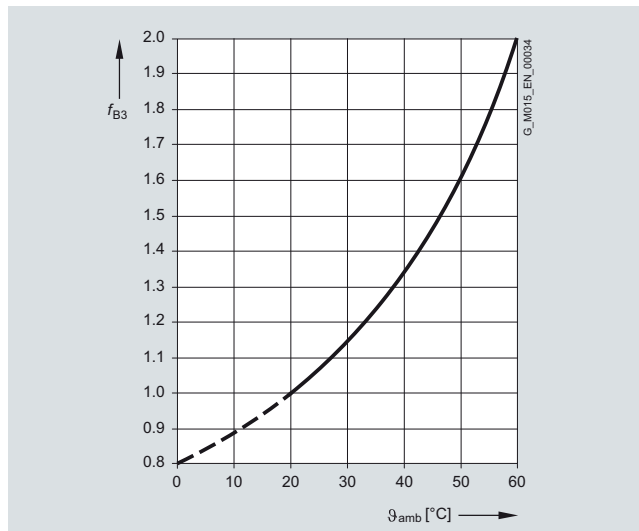
A load duration of 30 minutes per hour gives a duty cycle (DC) of 50 %. According to the diagram, this results in a service factor of $f_B = 0.94$ for service factor f_{B2} .

At an ambient temperature of $\vartheta_{amb} = 20\text{ °C}$, the diagram gives a service factor of $f_{B3} = 1.0$ for service factor f_{B3} .

So, the required service factor is

$$f_{Btot} = 1.4 \cdot 0.94 \cdot 1.0 = 1.32.$$

Service factor f_{B3} for the ambient temperature:



ϑ_{amb} = Ambient temperature

Maximum motor speed

At high motor speeds (>1.500 rpm) you will generally experience higher than average noise emissions and a lower than average bearing service life. This depends to a large extent on the transmission ratio and gearbox size in question. Furthermore, high speeds affect the thermal properties and service intervals of the gearbox.

The maximum input speed of the gearbox is usually 3.600 rpm. If you require higher speeds, please contact us.

Ambient temperature

In the standard version the gearboxes can operate at an ambient temperature of -20 °C to $+40\text{ °C}$, if the lubricant recommendations are kept. In the case of a few additional options the category temperatures must be checked.

Other temperature ranges -10 °C ... $+50\text{ °C}$ on request.

Required torque T_{2req}

If the drive data and the service factor are selected, the required output torque can be determined.

$$T_{2req} = \frac{9550 \cdot P_1}{n_2} \cdot f_{Btot}$$

Selection of the gearbox

The following conditions need to be observed:

$$P_1 > P_{req}$$

$$T_{2rated} > T_{2req}$$

$$f_B > f_{Btot}$$

$$T_2 > T_{req}$$

Code	Description	Unit
f_{Btot}	Service factor of the driving machine	–
f_B	Service factor of the geared motor	–
P_{2m}	Input power of the motor	kW
P_{req}	Required input power	kW
T_{req}	Required torque	Nm
T_2	Output torque of the geared motor	Nm
T_{2rated}	Nominal output torque of the geared motor	Nm
T_{2req}	Required output torque of the driving machine	Nm

Reduced-backlash gearbox version

Helical, parallel shaft and bevel-helical gearboxes are available on request in a reduced-backlash version. In the transmission table, the torsion angle (φ) is specified for the reduced-backlash version. If a value is not specified, this gearbox cannot be realized with reduced backlash.

A high degree of positioning accuracy is achieved with reduced-backlash gearboxes and the shock loads in the gearbox are reduced at load changeover. When a gearbox is used that has a certain amount of play, the relative position of the output shaft of the gearbox cannot be determined precisely because the

controller cannot detect whether the right or left flank of the tooth is engaged.

- Accurate positioning and repeatability
- Maintain position information in the case of a change of direction of rotation
- Reduced shock loading of the tooth flanks

Order code:

Reduced-backlash version **G99**

Permissible radial force

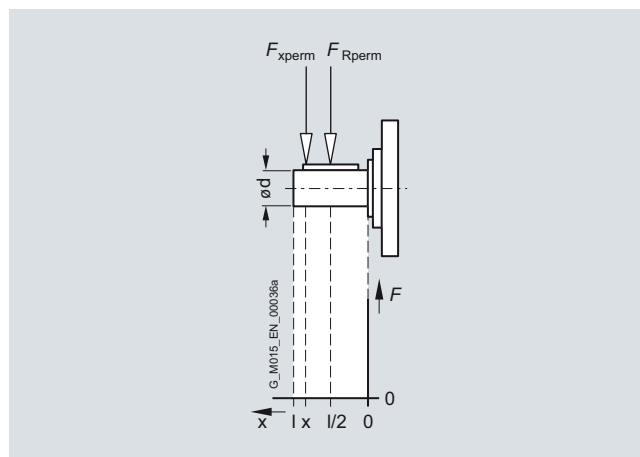
Available radial force

The available radial force F_{Ravail} at the shaft journals results from the available output torque of the geared motor T and the diameter d and type of the output element (e.g. sprocket wheel).

The type of output element determines factor C (see table below), by which the available radial force is to be increased.

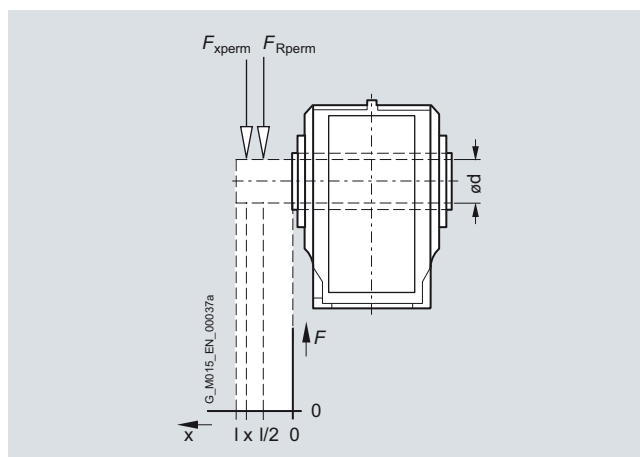
$$F_{Ravail} = 2000 \cdot \frac{T_2}{d} \cdot C$$

Code	Description	Unit
F_{Ravail}	Available radial force resulting from the output torque and the diameter of the output element	N
F_{Rperm}	Permissible radial force at the center of shaft extension	N
d	Diameter of the input element	mm
T_2	Output torque of the geared motor	Nm
F_{xperm1}	Permissible radial force, limited by the bearing service life, at a distance of x from the shaft shoulder	N
F_{xperm2}	Permissible radial force, limited by the shaft strength, at a distance of x from the shaft shoulder	N
C	Additional factor	–
b, d, l, y, z	Gearbox constants	mm
a	Gearbox constant	kNmm
F_{ax}	Axial force at d	N
α	Angle of action of the radial force	°



Factor C for the type of the transmission element

Transmission element	Design	C
Gear wheel	> 17 teeth	1.00
	≤ 17 teeth	1.15
Sprocket wheel	≥ 20 teeth	1.00
	14 – 19 teeth	1.25
	≤ 13 teeth	1.40
Toothed belt	Preload	1.50
V belt	Preload	2.00
Flat belt	Preload	2.50
Agitator / mixer	Rotating radial force	2.50



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Permissible radial force (continued)

Permissible radial force

The permissible radial force F_{Rperm} is determined by the required bearing service life, among other things. The nominal service life L_{h10} is determined in accordance with ISO 281. The bearing service life can be calculated for special operating conditions on request, based on the calculation procedure for the modified service life L_{na} .

Furthermore, the permissible radial force is determined by the housing and shaft strength of the gearbox. The selection tables specify the permissible radial force F_{Rperm} for the output shafts. These values refer to the point of load at the center of the shaft extension and are minimum values, which apply to the worst possible conditions in the gearbox (force angle, mounting position, direction of rotation).

Permissible radial force in accordance with bearing service life for all gearbox types:

$$F_{xperm1} = F_{Rperm} \cdot \frac{y}{(z + x)}$$

Permissible radial force in accordance with shaft strength for helical and worm gearboxes:

$$F_{xperm2} = \frac{a}{(b + x)}$$

Higher permissible radial forces

The permissible radial force load can be increased, taking the angle of force action α and the direction of rotation into account. Installing reinforced bearings also means that higher loads are permitted on the input shaft.

Permissible axial loads

If no transverse force load is present, an axial force F_{ax} (tension or compression) of around 50 % of the specified radial force with standard bearings can be achieved for gearbox sizes 18 to 148.

You can use our "Calculation of input shaft bearing arrangement" assistant in the MOTOX Configurator to calculate the permissible forces. Combined forces with an axial and a radial component can also be calculated. Please contact us in case of doubt.

The permissible radial forces are specified in the gearbox chapters.

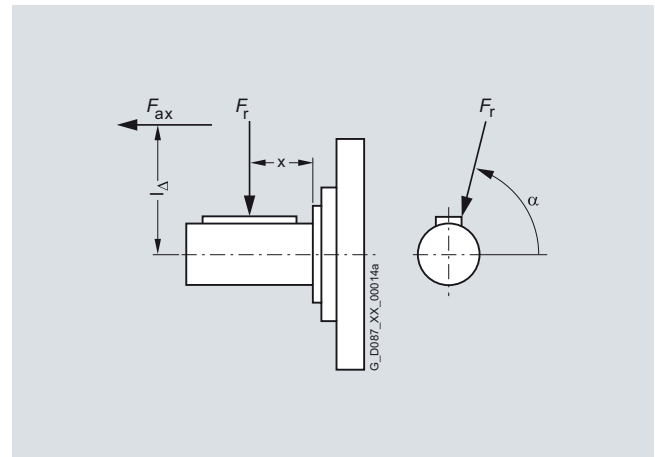
If the point of load is not at the center of the shaft extension, the permissible radial force must be calculated as follows: the smaller value of F_{xperm1} (bearing service life) and F_{xperm2} (shaft strength) is the permissible radial force. The calculation does not include additional axial forces.

If the direction of rotation of the output shaft and the additional axial forces are known, or the values in the table are insufficient, our drive experts have to perform the calculation. Our agitator and mixer drives allow you to achieve higher permissible radial forces. These drives are particularly well suited to large and rotating radial forces.

Permissible radial force in accordance with shaft strength for bevel helical, parallel shaft, and helical worm gearboxes:

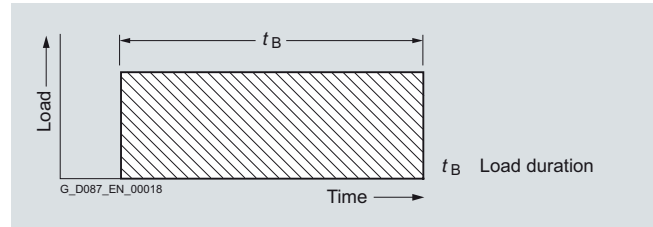
$$F_{xperm2} = \frac{a}{x}$$

The shaft strength only has to be calculated for solid shafts, with hollow shafts this step can be omitted.



Determining the operating mode

If no specifications are made in the power tables, the power ratings specified in the power tables apply to the **S1 operating mode** (continuous duty with constant load) according to EN 60034-1. The same regulation defines the groups of operating modes specified below:



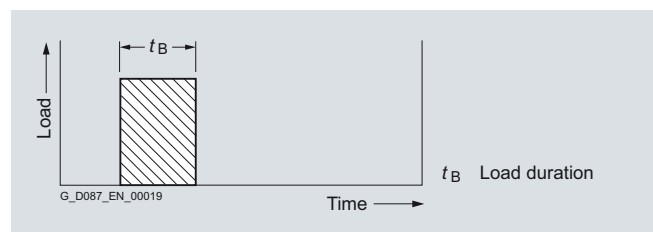
Operating mode S1 · Continuous duty

Operating modes in which starting and electrical braking **do not affect the overtemperature of the stator winding** of the motor:

Operating mode **S2**:

Short-time duty

Operating times of 10, 30, 60, and 90 min. are recommended. After each period of duty the motor remains at zero current until the winding has cooled down to the coolant temperature.

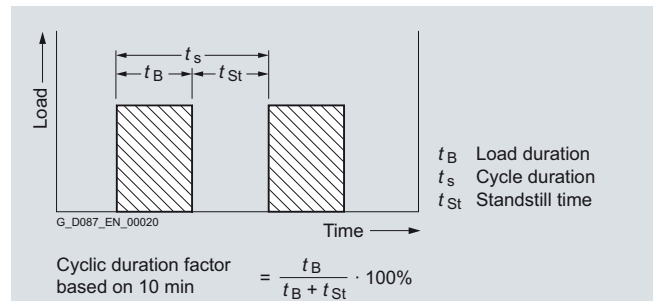


Operating mode S2 · Short-time duty

Operating mode **S3**:

Intermittent duty

Starting does not affect the temperature. Unless any agreement is made to the contrary, the cycle duration is 10 minutes. Values of 15 %, 25 %, 40 %, and 60 % are recommended for the cyclic duration factor.

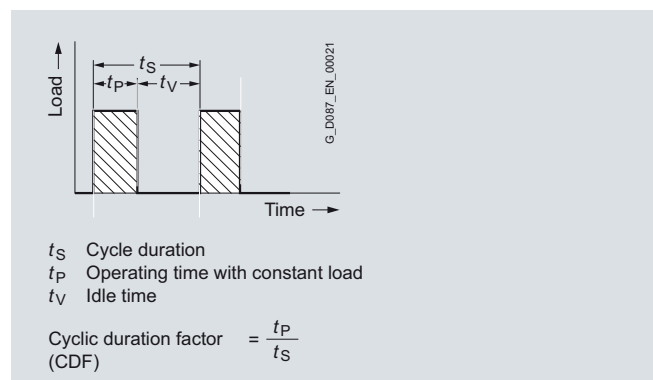


Operating mode S3 · Intermittent periodic duty

Operating mode **S6**:

Continuous duty with intermittent loading

Unless any agreement is made to the contrary, the cycle duration here is also 10 minutes. Values of 15 %, 25 %, 40 %, and 60 % are recommended for the load duration factor.



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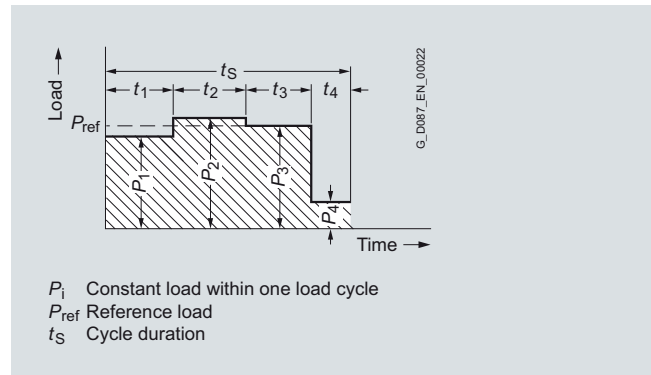
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Determining the operating mode (continued)

Operating mode **S10**:

Duty with discrete constant loads

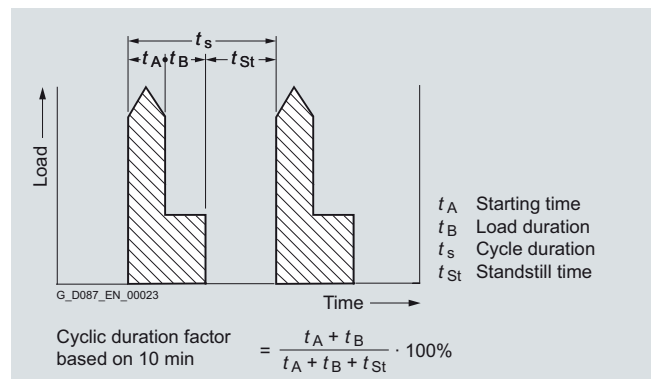
In this mode a maximum of four discrete loads are available, of which each load achieves the thermal steady state. A load of the same value as the one used in S1 operating mode should be selected for this operating mode.



Operating modes in which starting and braking have a corresponding **effect on the overtemperature of the stator winding and of the rotor cage**:

Operating mode **S4**:

Intermittent duty where starting affects the temperature



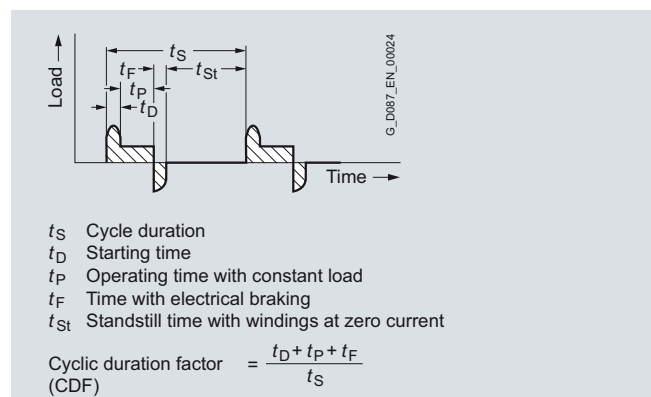
Operating mode S4 · Intermittent periodic duty with starting

Operating mode **S5**:

Intermittent duty where starting and braking affects the temperature

For the **S4** and **S5** operating modes, this code should be followed by the cyclic duration factor, the moment of inertia of the motor (J_M), and the moment of inertia of the load (J_{Load}), both based on the motor shaft.

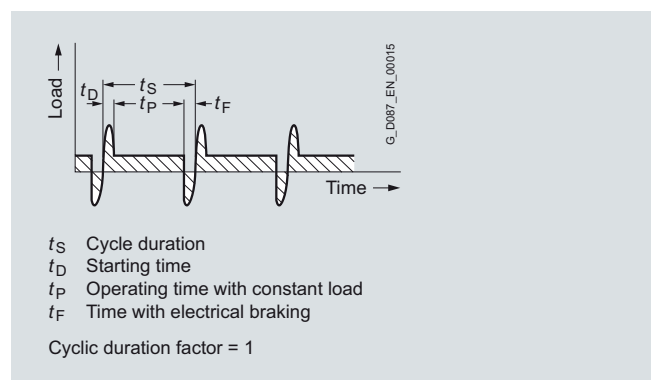
Unless any agreement is made to the contrary, the cycle duration here is also 10 minutes. Values of 15 %, 25 %, 40 %, and 60 % are recommended for the cyclic duration factor.



Operating mode **S7**:

Continuous-operation periodic duty with starting and braking

For the S7 and S8 operating modes, the moment of inertia of the load (J_{Load}) based on the motor shaft must be known.

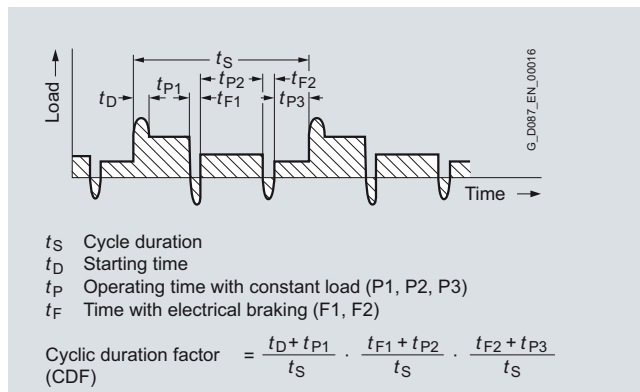


Determining the operating mode (continued)

Operating mode S8:

Continuous-operation duty with non-periodic load and speed variations (inverter-fed operation)

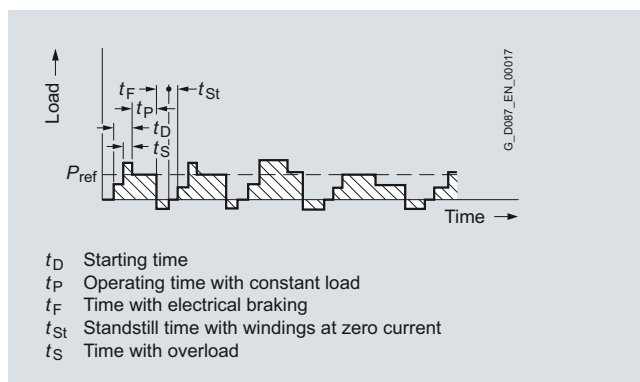
Most of the intermittent operating conditions which occur in real situations are a combination of the operating modes defined above. All operating conditions must be specified in order to accurately define a suitable motor.



Operating mode S9:

Continuous-operation duty with non-periodic load and speed variations (inverter-fed operation)

Most of the intermittent operating conditions which occur in real situations are a combination of the operating modes defined above. All operating conditions must be specified in order to accurately define a suitable motor.



Operating modes according to EN 60034 (IEC 60034-1)

Operating mode	Description	Information required	k_{DC}	
S1	Continuous duty with 100 % DC	–		
S2	Constant load for brief period, e.g. S2 - 30 min	Load duration	60 min	1.10
			30 min	1.20
			10 min	1.40
S3	Intermittent periodic duty without starting (cyclic operation), e.g. S3 - 40 %	Cyclic duration factor DC in % (based on 10 min)	60 %	1.10
			40 %	1.15
			25 %	1.30
			15 %	1.40
S4 ... S10	Intermittent periodic duty with starting	Cyclic duration factor DC in %, times switched on per hour, load torque, and moment of inertia The operating mode and motor power can be determined if the number of startings per hour, starting time, load duration, type of braking, braking time, idle time, cycle time, standstill time, and required power are specified.	On request	

According to the table below, the motor list powers can be converted to the lower duty cycle using the corresponding k_{DC} factors for the S1, S2, and S3 operating modes.

With enhanced performance, you should note that the breakdown torque ratio must not fall below 1.6.

$$\frac{T_{Bd}}{T_{DC}}$$

$$P_{DC} = P_{rated} \cdot k_{DC}$$

$$T_{DC} \sim T_{rated} \cdot k_{DC}$$

Code	Description	Unit
P_{DC}	Power rating for the new duty cycle	–
P_{rated}	Rated motor power	kW
k_{DC}	Factor for enhanced performance	kgm ²
T_{DC}	Torque for the new duty cycle	Nm
T_{Bd}	Breakdown torque	Nm
T_{rated}	Rated torque	Nm

MOTOX Geared Motors

Introduction

Configuring guide

1

Coolant temperature and site altitude

The rated power specified in the selection tables in section 8 applies to continuous duty (S1) or inverter-fed operation (S9) according to IEC 60034-1 at the corresponding rated frequency, a coolant temperature of 40 °C and a site altitude of 1.000 m above sea level. Please contact us if higher coolant temperatures are to be used. The table containing correction factors provides a rough idea of derating if conditions are different.

This results in a permissible motor power of:

$$P_{\text{perm}} = P_{\text{rated}} \cdot k_{\text{HT}}$$

If the permissible motor power is no longer adequate for the drive, a check should be performed as to whether or not the motor with the next higher rated power fulfills the requirements.

Code	Description	Unit
P_{perm}	Permissible motor power	kW
P_{rated}	Rated motor power	kW
k_{HT}	Factor for abnormal coolant temperature and site altitude	–

Factor k_{HT} for different site altitudes and / or coolant temperatures

Site altitude (SA) m	Coolant temperature (CT)					
	< 30 °C	30... 40 °C	45 °C	50 °C	55 °C	60 °C
1 000	1.07	1.00	0.96	0.92	0.87	0.82
1 500	1.04	0.97	0.93	0.89	0.84	0.79
2 000	1.00	0.94	0.90	0.86	0.82	0.77
2 500	0.96	0.90	0.86	0.83	0.78	0.74
3 000	0.92	0.86	0.82	0.79	0.75	0.70
3 500	0.88	0.82	0.79	0.75	0.71	0.67
4 000	0.82	0.77	0.74	0.71	0.67	0.63

Selecting the brake

MOTOX geared motors can be supplied with fail-safe spring-operated disk brakes in order to reduce the motor's follow-on time or to hold loads, for example. Our MODULOG modular system can be used to assign / attach several brake sizes to one motor size. See Chapter 8 for information on assigning brake sizes to motor sizes, and on possible brake options.

The following information is required in order to select and check the brake:

- Speed
- Load torque
- Moments of inertia
- Number of startings

Selecting the braking torque

The braking torque must be selected in accordance with the particular drive scenario. The following criteria are crucial when it comes to making this selection: static safety, required braking time, permissible deceleration rate, and possible braking distance and brake wear.

In principle the selection is made according to the formula:

$$T_{br} > T_x \cdot \frac{k}{\eta}$$

Where $k = 1.0 - 2.5$ is selected. As a general rule of thumb, the factor for horizontal motion is around 1.0 - 1.5 and for vertical motion around 2.0 - 2.5. However, the exact specification of the braking torque depends to a large extent on the particular operating conditions.

Operating time of the brake

The time it takes the motor to come to a standstill comprises the following components: the application time of the brake t_1 and the braking time t_{br} . The first is the time it takes the brake to reach 90 % of its braking torque. This time may be circuit- and actuation-dependent. This information is provided for each brake in Chapter 8. The braking time can be calculated as follows:

$$t_{br} = \frac{(J_M + J_{add} + J_x \cdot \eta) \cdot n_{br}}{9.55 \cdot (T_{br} \pm T_x \cdot \eta)} \quad [\text{s}]$$

If T_x supports the braking operation, T_x is positive, otherwise it is negative.

Braking distance and positioning accuracy

Braking distance s_{br} is the distance traveled by the driven machine during braking time t_{br} and application time t_1 . The formula below applies to horizontal motion and upward vertical motion. With linear motion, a positioning accuracy of around $\pm 15\%$ can be assumed. However, this can be heavily influenced by the condition of the brake.

$$s_{br} = v \cdot 100 \cdot (t_1 + 0.5 \cdot t_{br}) \quad [\text{mm}]$$

Braking energy per braking operation

The braking energy W per braking operation comprises the energy of the moments of inertia to be braked and the energy which must be applied in order to brake against a load torque:

$$W = \frac{T_{br}}{T_{br} \pm T_x \cdot \eta} \cdot \frac{(J_M + J_{perm} + J_x \cdot \eta) \cdot n_{br}^2}{182.5}$$

T_x is positive if the load torque is working against the braking torque (horizontal motion, upward vertical motion).

T_x is negative if it supports the braking operation (downward vertical motion).

The permissible operating energy Q_{perm} must be checked against the relevant number of startings using the "Permissible operating energy" diagram (see Chapter 8). This is of particular importance for emergency-stop circuits.

The ambient conditions and number of startings are also important. Our drive experts will be able to provide optimum brake sizing.

$$W < Q_{perm}$$

Code	Description	Unit
T_{br}	Rated braking torque	Nm
T_x	Load torque	Nm
k	Factor for taking operating conditions into account	kgm ²
η	Efficiency	%
t_{br}	Braking time	s
t_1	Application time of the brake	ms
J_{mot}	Moment of inertia of the motor	kgm ²
J_{add}	Additional moment of inertia (e.g. centrifugal mass or high inertia fan)	kgm ²
J_x	Reduced moment of inertia of the load	kgm ²
n_{br}	Braking speed	rpm
s_{br}	Braking distance	mm
W	Friction energy per braking operation	J
Q_{perm}	Permissible operating energy	J
L_{rated}	Service life of the brake lining until readjustment	h
$L_{ratedmax}$	Service life of the brake lining until replacement = total service life	h
v	Conveying speed	m/s
W_V	Friction energy until the brake is adjusted	MJ
W_{tot}	Friction energy until the brake lining is replaced	MJ
Z	Number of startings	1/h

Brake service life

The brake lining wears due to friction, which increases the air gap and the application time of the brake. The air gap can be readjusted. The friction lining should be replaced after it has been readjusted a certain number of times.

Service life of the brake lining until readjustment:

$$L_{rated} = \frac{W_V}{W \cdot Z}$$

Service life of the brake lining until replacement:

$$L_{ratedmax} = \frac{W_{tot}}{W \cdot Z}$$

MOTOX Geared Motors

Introduction

Special versions

1

Motors for inverter-fed operation

Selection of motors on the inverter

For selecting electrical drives on the inverter, the torque-speed response of the motors and the driving machine is important.

With inverter-fed operation, it is particularly important to pay attention to the torque limit curve. The torque of the driving machine must be smaller during continuous operation than the motor limit torque. The design of the motor depends to a large extent on the desired speed control range. In general, a range from 25 to 50 Hz is preferable.

The effectiveness of the self-ventilation is reduced with decreasing speed, which in turn also reduces the continuous output torque. Forced ventilation can be used to prevent the torque from decreasing.

The fan noise can increase at speeds that are higher than the rated speed of self-ventilated geared motors. Above the frequency limit, the continuous output torque decreases (field weakening).

Bearings and bearing currents

With operation with inverters, additional bearing currents can occur. They are mainly caused by the steep voltage rises which occur during switching. Without output filters, significant voltage variations can occur on the winding terminals. This phenomenon mainly occurs with larger machines.

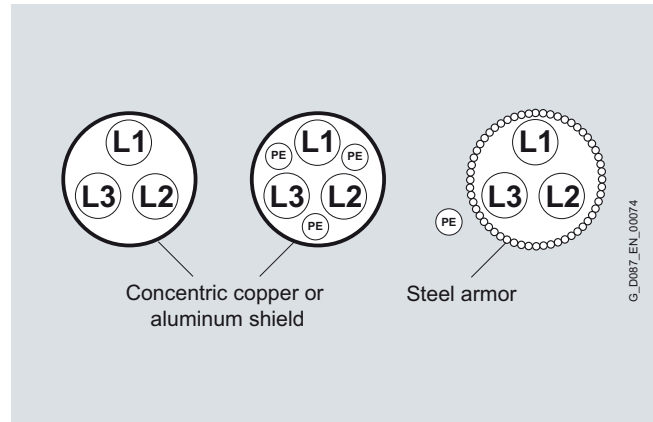
EMC-compliant installation of the drive system is a basic prerequisite for preventing premature bearing damage via bearing currents.

The most important measures for reducing bearing currents:

- Use of cables with a symmetrical cable cross-section,
- Use of grounding cables with low impedance in a large frequency range (0 Hz up to approximately 70 MHz), for example, plaited copper ribbon cables, HF litz wires,
- Separate HF equipotential-bonding cable between the motor housing and the driving machine,
- Separate HF equipotential-bonding cable between the motor housing and the inverter PE busbar,
- 360° HF contacting of the cable shield on the motor housing and the inverter PE busbar. This can be achieved using EMC cable glands at the motor end and EMC shield clips at the inverter end, for example,
- Use of motor reactors,
- Common-mode filters at the inverter output,
- Insulated motor bearing at the non-drive end.
Motors from size 280 are delivered with bearing insulation for inverter-fed operation.

Mechanical stress and grease lifetime

High speeds that exceed the rated speed and the resulting increased vibrations alter the mechanical running smoothness and the bearings are subjected to increased mechanical stress. This reduces the grease lifetime and the bearing service life. More detailed information is available on request.



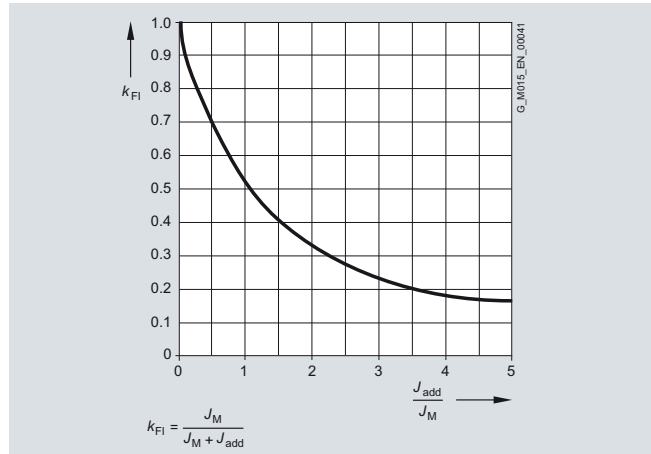
Determining the permissible number of startings Z_{perm}

A high number of startings means that the motor winding will be subject to a thermal load. The permissible no-load operating Z_0 for brake motors is specified in the no-load operating tables. The permissible number of startings Z_{perm} has to be determined for different operating cases. This value is influenced by the corresponding load torque, any additional moment of inertia, the power requirement, and the cyclic duration factor. These can be evaluated using the factors k_M , k_{FI} , and k_P .

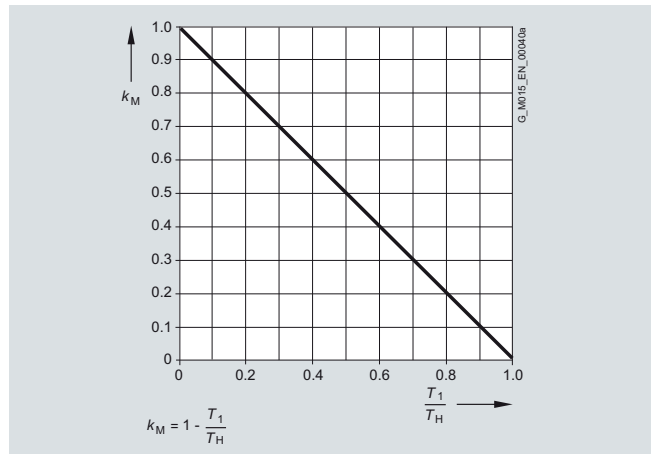
$$Z_{perm} = Z_0 \cdot k_M \cdot k_{FI} \cdot k_P$$

Code	Description	Unit
J_{mot}	Moment of inertia of the motor	kgm ²
J_{add}	Additional moment of inertia (e.g. centrifugal mass or high inertial fan)	kgm ²
k_M	Factor for taking the counter torque during acceleration into account	–
k_{FI}	Factor for taking the additional moment of inertia into account	–
k_P	Factor for taking the required power and duty cycle into account	–
T_{rated}	Rated torque of the motor	Nm
T_H	Acceleration torque of the motor	Nm
P_{rated}	Rated motor power	kW
Z_{perm}	Permissible number of startings	rph
Z_0	No-load operating from the list	rph

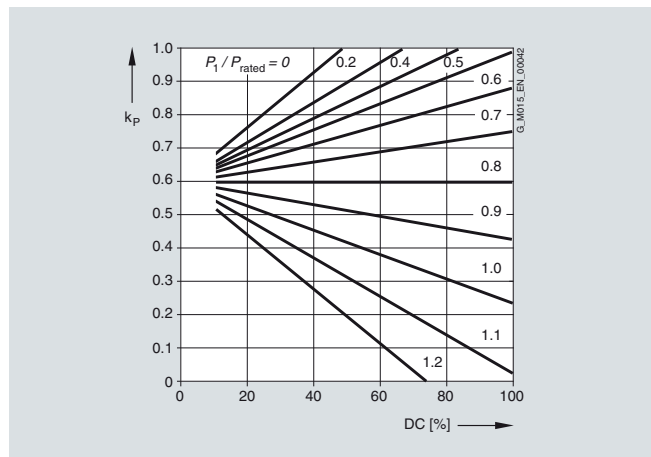
During operation at 60 Hz, the calculated permissible number of startings Z_{perm} must be reduced by 25 %. See the technical data for brakes found in Chapter 8 for the permissible number of startings during operation with function rectifiers.



Additional moment of inertia



Torque during acceleration



Required power and duty cycle

MOTOX Geared Motors

Introduction

Special versions

1

Checking the input torque for mounted units

Geared motors are usually integrated, i.e. they are mounted on the gearbox directly and the products are supplied as complete drives. Alternatively, the gearboxes can also be supplied with various input units for motor mounting. The criteria below must be taken into account, particularly for special motors.

Maximum input speed

We recommend that four-pole motors are mounted in order to achieve optimum gearbox service life. Higher input speeds can have an effect on bearing service life and the thermal properties of the gearbox, among other things. See the section titled "Maximum speed", page 1/22.

Permissible radial force of the input shaft

Input units A and P can be powered by a V belt drive, for example. This results in a radial load on the input shaft. The permissible radial forces are specified in the section titled "Input unit".

Maximum input torque

The input units are primarily designed for four-pole standard three-phase AC motors. Considerably higher motor torques, which are above the maximum permissible input torque, may occur with special motors.

First of all, the continuous torque $T_{1\text{mot}}$ of the motor and the permissible input torque of the input unit T_1 must be checked, along with the maximum torques (starting, breakdown, and braking). The torques for input units are specified in the section titled "Input unit". Please contact us if you have any questions.

$$T_{1\text{mot}} < T_1 = \frac{P_1 \cdot 9550}{n_1}$$

$$T_{1\text{max}} < 2.5 \cdot T_1$$

Code	Description	Unit
T_1	Permissible input torque of the input unit	Nm
T_{rated}	Rated torque of the motor	Nm
$T_{1\text{max}}$	Temporarily permissible max. input torque of the input unit	Nm
n_1	Input speed of the motor	rpm
P_1	Input power of the motor	kW

Overview of drive sizing data

Code	Description	Unit
a	Gearbox constant	kNmm
b, d, l, y, z	Gearbox constants	mm
C	Factor	–
d	Diameter of the input element	mm
DC	Cyclic duration factor (CDF)	%
f_{Btot}	Service factor of the driving machine	–
f_B	Service factor of the geared motor	–
F_{ax}	Axial force at d	N
F_r	Radial force at the output shaft	N
F_{Ravail}	Available radial force resulting from the output torque and the diameter of the output element	N
F_{Rperm}	Permissible radial force at the center of shaft extension (l/2)	N
F_{xperm1}	Permissible radial force, limited by the bearing service life, at a distance of x from the shaft shoulder	N
F_{xperm2}	Permissible radial force, limited by the shaft strength, at a distance of x from the shaft shoulder	N
i	Gearbox ratio	–
J_2	Moment of inertia based on the output speed of the gearbox	kgm ²
J_B	Moment of inertia of the brake	kgm ²
J_{Load}	All external moments of inertia (based on the motor shaft)	kgm ²
J_M	Moment of inertia of the motor	kgm ²
J_x	Reduced moment of inertia of the load	kgm ²
J_{add}	Additional moment of inertia (e.g. centrifugal mass or high inertia fan)	kgm ²
J_{Fan}	Centrifugal mass fan of handwheel	kgm ²
k	Factor for taking operating conditions into account	–
k_{DC}	Factor for enhanced performance	–
k_{FI}	Factor for taking the additional moment of inertia into account	–
k_{HT}	Factor for abnormal coolant temperature and site altitude	–
k_M	Factor for taking the counter torque during acceleration into account	–
k_P	Factor for taking the required power and duty cycle into account	–
L_{rated}	Service life of the brake lining until readjustment	h
$L_{ratedmax}$	Service life of the brake lining until replacement	h
m_{AF}	Mass acceleration factor	–
n_1	Input speed of the gearbox	rpm
n_2	Output speed of the gearbox	rpm
n_{br}	Braking speed	rpm

Code	Description	Unit
P_{2m}	Input power of the motor	kW
P_2	Output power of the gearbox	kW
P_{DC}	Power rating for the new duty cycle	kW
P_{req}	Required input power	kW
P_{rated}	Rated motor power	kW
P_{perm}	Permissible motor power	kW
Q_{perm}	Permissible operating energy	J
r	Radius of the output element	m
s_{br}	Braking distance	m
t_1	Application time of the brake	ms
t_{br}	Braking time	s
T_1	Permissible input torque of the input unit	Nm
T_{rated}	Rated torque of the motor	Nm
T_{1max}	Temporarily permissible max. input torque of the input unit	Nm
T_2	Output torque of the geared motor	Nm
T_{2req}	Required output torque of the driving machine	Nm
T_{2rated}	Nominal output torque of the geared motor	Nm
T_{br}	Rated braking torque	Nm
T_{DC}	Torque for the new duty cycle	Nm
T_{req}	Required torque	Nm
T_H	Acceleration torque of the motor	Nm
T_{Bd}	Breakdown torque	Nm
T_{rated}	Nominal torque	Nm
T_{avail}	Available torque of the geared motor	Nm
T_x	Load torque	Nm
v	Conveying speed	m/s
W	Friction energy per braking operation	J
W_{tot}	Friction energy until the brake lining is replaced	MJ
W_V	Friction energy until the brake is adjusted	MJ
Z	Number of startings	1/h
Z_{perm}	Permissible number of startings	1/h
Z_0	No-load operating from the list	1/h
α	Angle of action of the radial force	°
η	Efficiency	%
ϑ_{amb}	Ambient temperature	°C

MOTOX Geared Motors

Introduction

General technical data

1

Important drive technology variables

SI unit Variable	Abbreviation		Unit abbreviation		Designation or conversion rate ^{*)}
	SI	Previously	SI	Previously	
Length (distance)	l	L, s	m	m	1 km = 1.000 m
Area	A	F	m ²	m ²	1 m ² = 100 dm ²
Volume	V	V	m ³	m ³	1 m ³ = 1.000 dm ³ 1 dm ³ = 1 l
Plane angle	α, β, γ	α, β, γ	rad	Degrees °	1 rad = 1 m/m 1 L = π/2 rad 1° = π/180 rad
Rotation angle	φ	φ		Degrees °	1' = 1°/60; 1'' = 1'/60
Time					1 min = 60 s 1 h = 60 min
Time range	t	t	s	s	1 d = 24 h
Duration					1 a = 24 h
Frequency	f	f	Hz	1/s	1 Hz = 1/s
Speed	n	n	rpm	rev/min	Revolutions per minute
Velocity	v	v	m/s	m/s	1 km/h = $\frac{1}{3.6}$ m/s
Acceleration	a	b	m/s ²	m/s ²	g = 9.81 m/s ²
Free-fall acceleration	g	g			
Angular velocity	ω	Ω	rad/s	1/s	
Angular acceleration	α	ξ	rad/s ²	1/s ²	
Mass	m	m	kg	kg	1
Density		d	kg/dm ³	kg/dm ³	10 ³
Force	F	P, K	N	kp	9.81 1 N = 1 kg · 1 m/s ²
Weight force	G	G			
Pressure	p	p	Pa		1 Pa = 1 N/m ²
			N/m ²	kp/cm ²	9.81 · 10 ⁴
Mechanical tension	σ	σ	N/mm ²	kp/mm ²	9.81
Work	W	A		kpm	9.81
Energy	W	E	J	kcal	4.187
Quantity of heat	Q	Q			1 J = 1 Nm = 1 Ws
Force torque		M _t			9.81
Torque	T	M _d	Nm	kpm	1 Nm = 1 J
Bending torque		M _b			
Power rating	P	N	W	PS	735.5; 1 W = 1 J/s = 1 Nm/s = $\frac{\text{kgm}^2}{\text{s}^3}$
Moment of inertia	J	θ	kgm ²	kpm ²	9.81

^{*)} The numerical value of a variable in previously used units multiplied by the conversion rate gives the numerical value of the variable in the SI unit.

Conversion between kW and hp:

$$1 \text{ kW} = 1.34102 \text{ hp}$$

$$1 \text{ hp} = 0.745700 \text{ kW}$$

$$1 \text{ hp} = 1.01387 \text{ PS}$$

hp = horse power (US)

PS = Pferdestärke

Important drive technology variables (continued)

Variable	SI unit		Unit abbreviation		Designation or conversion rate ^{*)}
	Abbreviation	Previously	SI	Previously	
Dynamic viscosity	η	η	Pa · s	P	10^{-1}
Kinematic viscosity	ν	ν	m ² /s	St	10^{-4}
Electrical current intensity	I	I	A	A	1 A = 1 W/V = 1 V/ Ω
Electrical voltage	U	U	V	V	1 V = 1 W/A
Electrical resistance	R	R	Ω	Ω	1 Ω = 1 V/A = 1/S
Electrical conductance	G	G	S	S	1 S = 1/ Ω
Electrical capacitance	C	C	F	F	1 F = 1 C/V
Electric charge	Q	Q	C	C	1 C = 1 A · s
Inductance	L	L	H	H	1 H = 1 Vs/A
Magnetic flux density Induction	B	B	T	G	10^4 1 T = 1 Wb/m ²
Magnetic field strength	H	H	A/m	A/m	
Magnetic flux	ϕ	ϕ	Wb	M	10^8 1 Wb = 1 V · s
Temperature	T(°)	t	K(°C)	°C	0 K = -273.15 °C

^{*)} The numerical value of a variable in previously used units multiplied by the conversion rate gives the numerical value of the variable in the SI unit.

MOTOX Geared Motors

Introduction

General technical data

1

Overview

MOTOX geared motors are available in an almost infinite number of combinations for adaptation to a wide range of drive scenarios. All the usual additional components and variants are also offered.

Made-to-measure solutions for all kinds of drive technology tasks are achieved with different gearbox types (helical, parallel shaft, bevel helical, helical worm, and worm), combined with motors by means of modular mounting technology.

Designs in accordance with standards and specifications

New efficiency classes and efficiencies according to IEC 60034-30:2008 and IEC 60034-2-1:2007

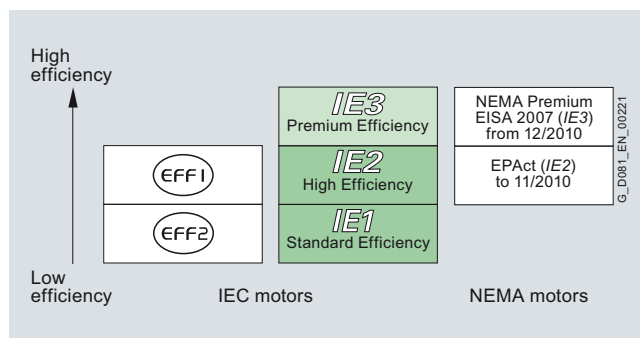
New efficiency classes according to IEC 60034-30:2008

Different energy efficiency standards exist worldwide for asynchronous motors. To promote international harmonization, the international standard IEC 60034-30:2008 (Rotating electrical machines – Part 30: Efficiency classes of single-speed, three-phase, cage-induction motors (IE code)) was created. This groups low-voltage asynchronous motors into new efficiency classes (valid since October 2008). The efficiencies of IEC 60034-30:2008 are based on losses determined in accordance with the IEC 60034-2-1:2007 standard. This has been valid since November 2007 and will replace the previous standard IEC 60034-2:1996 as of November 2010. The supplementary losses are now measured and no longer added as a percentage.

New standard classes for efficiencies

A new nomenclature applies to the new efficiency classes (IE = International Efficiency):

- IE1 (Standard Efficiency)
- IE2 (High Efficiency)
- IE3 (Premium Efficiency)



New efficiency classes

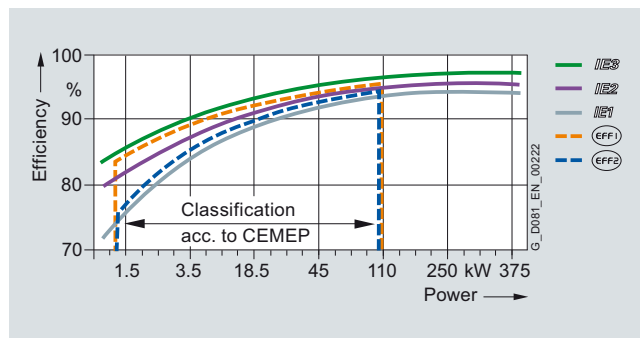
New measuring method according to IEC 60034-2-1:2007

With the new measuring method, the supplementary losses are no longer applied as a percentage (0.5 %), but instead they are determined with measurements (IEC 60034-2-1: 2007). The nominal efficiencies are therefore reduced from EFF1 to IE2 and from EFF2 to IE1, even though there have been no technical or physical changes to the motors.

Previously: $P_{LL} = 0.5 \% \text{ of } P_{\text{added}}$

Now: $P_{LL} = \text{individual measurement}$

P_{LL} = load-dependent supplementary losses.



IE1 to IE3 efficiencies 4-pole 50 Hz

The following table shows examples of the efficiency values according to the new and old loss calculating methods.

	EFF measuring method (incl. percentage losses) EN / IEC 60034-2:1996 50 Hz	Losses determined according to IEC 60034-2:2007 50 Hz	Losses determined according to IEC 60034-2:2007 60 Hz
5.5 kW 4-pole	89.2 %	87.7 %	89.5 %
45 kW 4-pole	93.9 %	93.1 %	93.6 %
110 kW 4-pole	Not defined	94.5 %	95.0 %

Background information

The EuP directive (Energy Using Products) is implemented in the national laws of EU member countries. The framework conditions for the European directives have already been agreed. EU directive 2005/32/EC (= EuP directive) is based on IEC 60034-30:2008 with regard to the minimum efficiency values.

This directive is implemented in Germany in the form of the so-called "Energiebetriebene-Produkte-Gesetz" (EBPG - Energy Using Products Directive).

Designs in accordance with standards and specifications (continued)

The most important changes at a glance:

	CEMEP voluntary EU agreement	NEMA	EuP directive based on IEC 60034-30:2008 standard EuP = Energy Using Products
Description	Voluntary agreement between the EU commission and the European sector committee of manufacturers of electrical machines (CEMEP)	The current legislature in USA/CAN/MX also governs efficiencies	The EuP directive must be implemented in national law in all EU countries. The determination of losses, and therefore of efficiency classes, is based on IEC 60034-2-1:2007
Number of poles	2, 4	2, 4, 6	2, 4, 6
Performance range	1.1 – 90 kW	0.75 – 150 kW	0.75 – 375 kW
Level	Standard – EFF3 Enhanced efficiency – EFF2 Highly efficient – EFF1	High Efficiency NEMA Premium	Standard Efficiency – IE1 High Efficiency – IE2 Premium Efficiency – IE3
Voltage	400 V, 50 Hz	230 / 460 V, 60 Hz	< 1000 V, 50 / 60 Hz
Degree of protection	IP5X	Open + closed motors	All
Motors with brake	NO	YES	In agreement
Geared motors	NO	NO	YES
Ex motors	NO	YES	EuP directive – NO IEC 60034-30 – YES (but explosion protection always has a higher priority)
Law	Voluntary agreement; will be replaced on implementation of the national measures.	Up to 11/2010 EPACT (IE2) From 12/2010 EISA 2007 Premium (IE3) minimum efficiency	IEC 60034-30 standard, valid since October 2008, EuP

For more information on EuP:

- Excluded: Explosion-proof motors according to ATEX, brake motors, smoke-extraction motors
- Deadline 16 June 2011: IE2 minimum efficiency for motors from 0.75 kW to 375 kW
- Deadline 01 January 2015: IE3 minimum efficiency for motors from 7.5 kW to 375 kW or a combination of IE2 motor and frequency converter
- Deadline 01 January 2017: IE3 minimum efficiency for all motors from 0.75 kW to 375 kW or a combination of IE2 motor and frequency converter

Abbreviations

CEMEP – Comité Européen de Constructeurs de Machines Électriques et d'Électronique de Puissance (European sector committee of manufacturers of electrical machines)

EISA 2007 – Energy Independence and Security Act of 2007

EPACT – Energy Policy Act

NEMA – National Electrical Manufacturers Association

IEC – International Electrotechnical Commission

IE – International Efficiency

What will change?

The rating plates of the motors will be adapted to the new technical data and their clarity and readability will be enhanced (for examples, see page 1/38).

For motors up to frame size 315 L, this means:

- Nominal efficiencies in accordance with the IEC 60034-30 standard are specified regardless of the actual efficiency, i.e. in accordance with the standardized performance classes such as 7.5 kW, 11 kW and 15 kW, nominal efficiencies only will be offered in accordance with efficiency class IE1 and IE2.
- The rated currents have been adapted in accordance with the new efficiencies. The motor rated currents will increase minimally (by up to 3 %).
- There is no need for a voltage range to be specified on the new rating plates. The rated voltages only are specified.

Note: The transition period for adjustment of mains voltages with increased tolerances within the EU expired on January 1, 2008. Since then the permissible mains tolerances are 230 / 400 V ±10 %, 50 Hz and 400 / 690 V ±10 %, 50 Hz.

Summary

The standard motor series LA and LG will be converted to the new efficiency designations "IE1" and "IE2" in accordance with IEC 60034-30:2008. The order numbers will remain unchanged.

This affects all motors that were previously designated with "EFF2" and "EFF1" as well as the motor types that have been added due to the IEC 60034-30:2008 efficiency standard:

- 2-pole, 4-pole and 6-pole motors (only "single-speed motors", not pole-changing motors and not 8-pole motors)
- Output range from 0.75 kW to 375 kW

A detailed presentation of the affected motors, including their frame sizes, can be found in the overview tables in the separate catalog parts under "Orientation" in the "Selection and ordering data". The changed technical data is also listed here.

MOTOX Geared Motors

Introduction


General technical data

1

Designs in accordance with standards and specifications (continued)

Example of rating plate

Due to the IE changeover, the affected motors will be equipped with new rating plates complete with the new technical data.

SIEMENS		CE IEC60034		SIEMENS		1	2
KAF108-LA160L4-L150/100GH		FDU1001/8999999 nnn					
2KJ1506-5JR13-2FD1-Z				254kg			
IP55		(IM) H-01-A					
G. 6.2L	OIL CLP PG VG220	i=12.9					
50Hz		113/min 60Hz		136/min			
1266Nm		fB=1.5 1264Nm		fB=1.5			
3-Mot.	ThCl.155(F)	TP-PTC	 100Nm	190-240V AC			
50Hz	400/690V	D/Y	60Hz	460V Y			
29/16.74A	cosPhi 0.84		28.6A	cosPhi 0.87			
15kW IE1-90%	1460/min	15kW		1755/min			

3							
4							
5							
6							
7							
8							
9	10	11	12				
13			14 17				18
15			16 19				20
21	22	23	24	25	26		
27		28	29 35				37
30			31 38		36		39
32	33		34 40	41			42

- 1 CE marking or, if required, other marking
- 2 Standard taken as a basis
- 3 Type - Type of construction - Size
- 4 Order No.
- 5 Serial No.
- 6 Weight m [kg]
- 7 Degree of protection acc. to IEC 60034-5 and IEC 60529
- 8 Mounting position (IM)
- 9 Oil quantity [l] main gearbox / intermediate gearbox + extruder flange
- 10 Kind of oil
- 11 Oil viscosity ISO VG Class acc. to DIN 51519 / ISO 3448
- 12 Total transmission ratio i

Frequency 1

- 13 Rated frequency f [Hz]
- 14 Speed at the output n_2 [rpm]
- 15 Torque at the output T_2 [Nm]
- 16 Service factor f_B

Frequency 2

- 17 Rated frequency f [Hz]
- 18 Speed at the output n_2 [rpm]
- 19 Torque at the output T_2 [Nm]
- 20 Service factor f_B

Motor data

- 21 Phase number and kind of current of the motor
- 22 Temperature class Th.Cl.
- 23 Motor protection (TP)
- 24 Symbols (IEC 60617-2): = Brake
- 25 Braking torque T_{br} [Nm]
- 26 Brake supply voltage U [V]

Frequency 1

- 27 Rated frequency f [Hz]
- 28 Rated voltage / rated voltage range U [V]
- 29 Circuit, graphical symbol acc. to DIN EN 60617 T6 / IEC 60617-6
- 30 Rated current I [A]
- 31 Power factor $\cos \varphi$
- 32 Rated power P [kW], operating mode (if \neq S1)
- 33 Designation of the efficiency class acc. to IEC 60034-30
- 34 Rated speed n_1 [rpm]

Frequency 2

- 35 Rated frequency f [Hz]
- 36 Rated voltage / rated voltage range U [V]
- 37 Rated current I [A]
- 38 Power factor $\cos \varphi$
- 39 Circuit, graphical symbol acc. to DIN EN 60617 T6 / IEC 60617-6
- 40 Rated power P [kW], operating mode (if \neq S1)
- 41 Designation of the efficiency class
- 42 Rated speed n_1 [rpm]

Designs in accordance with standards and specifications (continued)

Minimum efficiencies required by law

In 1997, an act was passed in the USA to define minimum efficiencies for low-voltage three-phase AC motors (EPACT = Energy Policy Act). An act is in force in Canada that is largely identical, although it is based on different verification methods. The efficiency is verified for these motors for the USA using IEEE 112, Test Method B and for Canada using CSA-C390. Apart from a few exceptions, all low-voltage three-phase AC motors exported to the USA or Canada must comply with the legal efficiency requirements.

The law demands minimum efficiency levels for motors with a voltage of 230 and 460 V at 60 Hz, in the power range 1 to 200 hp (0.75 to 160 kW) with 2, 4, and 6 poles. Explosion-proof motors must also be included. The EPACT efficiency requirements exclude, for example:

- Motors whose size power classification does not correspond with the standard series according to NEMA MG1-12.
- Flange-mounting motors without feet
- Brake motors
- Inverter-fed motors
- Motors with design letter C and higher.

For more information on EPACT:

www.eren.doe.gov/

Special requirements for the USA: Energy Policy Act

The act lays down that the nominal efficiency at full load and a "CC" number (Compliance Certification) must be included on the rating plate.

The "CC" number is issued by the US Department of Energy (DOE).

The following information is stamped on the rating plate of EPACT motors which must be marked by law:

Nominal efficiency (service factor SF 1.15), design letter, code letter, CONT, CC no. CC 032A (Siemens), and NEMA MG1-12.

Special requirements for Canada: CSA – Energy Efficiency Verification

These motors fulfill the minimum efficiency requirements laid down by the CSA standard C390. These motors can be ordered and feature the CSA-E mark on their rating plates.



NEMA – National Electrical Manufacturing Association

Data on the rating plate:

Rated voltage range, design letter, code letter, CONT, and NEMA MG1-12.

Order code:

Design in accordance with NEMA **N65**

UL-R – Underwriters Laboratories Inc. listing

The motors are listed for up to 600 V by Underwriters Laboratories Inc. ("Recognition Mark" = R/C).

Motor voltages up to 600 V are certified in accordance with UL.

"UL Recognition Mark" is included on the rating plate of the motor.



In addition, the motor is designed to meet the NEMA MG1-12 electrical standard and includes the following data on the rating plate:

Rated voltage, nominal efficiency, design letter, code letter, CONT, and NEMA MG1-12.

Externally or internally mounted components such as:

- Motor protection
- Heating element
- External fan unit
- Brake
- Encoder
- Plug connection

are UL-R/C, CSA, or C-US listed or used by manufacturers in accordance with regulations.

UL-R/C cable glands must be used for cable entry.

Order code:

Design in accordance with UL-R **N37**

MOTOX Geared Motors

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Designs in accordance with standards and specifications (continued)

CSA – Canadian Standard Association

Motors are approved for up to 690 V in accordance with the Canadian regulations of the "Canadian Standard Association" (CSA). Externally or internally mounted components which are used are listed by CSA or are used by manufacturers in accordance with regulations. The CSA mark and the rated voltage are included on the rating plate.



When energy-saving motors are ordered, they also include the CSA-E mark on the rating plate.



Order code:

Design in accordance with CSA **N36**

UL-R and CSA approval

UL-R approval and CSA approval can also be ordered together for the motors.

Order code:

Design in accordance with UL-R and CSA **N38**

CCC – China Compulsory Certification

"Small power motors" which are exported to China must be certified up to a rated power of:

2-pole: ≤ 2.2 kW

4-pole: ≤ 1.1 kW

6-pole: ≤ 0.75 kW

8-pole: ≤ 0.55 kW

The **LA motors which must be certified** are certified by the CQC (China Quality Cert. Center). When one of these motors is ordered, the logo "CCC (Safety Mark)" is included on the rating plate and the packaging.



Notes:

Chinese customs checks the need for certification of imported products by means of the commodity code.

The following do not need to be certified:

- Motors imported to China which have already been installed in a machine
- Repair parts

Order code:

Design in accordance with CCC **N67**

CEEL – China Energy Efficiency Label

In June 2008 China introduced mandatory energy efficiency labeling for electric motors.

Since September 1, 2008, when the transition period expired, the applicable electrical motors could only be imported and sold in China with a valid "China Energy Efficiency Label".

The motor must be labeled with the "China Energy Efficiency Label" sticker, which states the efficiency class.

Apart from the Energy Label sticker (dimensions 80 x 54 mm) the efficiency must also be stated on the rating plate.

The labeling requirements apply to 2, 4 and 6-pole motors with a line frequency of 50 Hz and rated voltages of up to 690 V.

Efficiency classes 2 and 3 apply here to motors with a rated power of 0.55 kW to 315 kW and efficiency class 1 applies to motors with a rated power from 3 kW to 315 kW.

Order code:

Design in accordance with China Energy Efficiency Label **K69**

GOST-R conformity



The following gearboxes can be supplied, certified according to GOST-R:

- Helical gearboxes
- Bevel helical gearboxes
- Parallel shaft gearboxes
- Helical worm gearboxes
- Worm gearboxes
- CAVEX worm gearboxes

Order code:

Design in accordance with GOST **N30**

VIK version

For a VIK version, select an IEC motor from Catalog D 81.1 that can be mounted on gearboxes with an input unit K2 or K4.

Explosion protection as per ATEX

In the European market ATEX Directive 94/9/EC applies to all types of equipment used in potentially explosive atmospheres - which include geared motors. It became mandatory on July 1, 2003 and has unrestricted validity for the use of all geared motors within the European Union. Other countries too have now complied with this regulation.

Helical gearboxes, parallel shaft gearboxes, bevel helical gearboxes, and helical worm gearboxes are available to comply with this Directive. A wide range of gearbox and motor designs and sizes are approved for zones 1, 2 (gases) and zones 21 and 22 (dusts).

Ex-atmosphere / Zone		Category	Frequency
G (gas and steam)	D (dust)		
0	20	1	Continuously or long-term
1	21	2	Intermittent
2	22	3	Rarely or briefly

MOTOX geared motors can be provided for categories 2 and 3.

Use in explosive atmospheres caused by gases is permissible for temperature classes T1 to T4. With use in explosive atmospheres caused by dust, the maximum temperature of 120 °C must be taken into consideration for the gearbox. An oil level sensor can be integrated for monitoring in inaccessible areas.

Motors are available in the following protection types: flameproof enclosure (Exd), flameproof enclosure and terminal box with increased safety (Exde), increased safety (Exe), and non sparking (ExnA) as well as motors for dust explosion protection.

The motors are mounted on the gearbox with an input unit K4 or K2.

MOTOX Geared Motors

Introduction

General technical data

1

Standards

The motors comply with all applicable international (IEC), European (EN, CENELEC), and national (DIN/VDE) standards:

IEC	EN / HD	DIN / VDE	Title
IEC 60027-4	EN 60027-4	DIN EN 60027-4	Letter symbols for electrical engineering, part 4: Rotating electrical machines
IEC 60034-1	EN 60034-1	DIN EN 60034-1 VDE 0530-1	Rotating electrical machines: - Rating and performance
IEC 60034-2-1	EN 60034-2-1	DIN EN 60034-2-1 VDE 0530-2-1	- Standard methods for determining losses and efficiency from tests (excluding machines for traction vehicles) (IEC 60034-2-1:2007); German version EN 60034-2-1:2007
IEC 60034-5	EN 60034-5	DIN EN 60034-5 VDE 0530-5	- Degrees of protection provided by integral design of rotating electrical machines (IP code) - Classification
IEC 60034-6	EN 60034-6	DIN EN 60034-6 VDE 0530-6	- Methods of cooling (IC code)
IEC 60034-7	EN 60034-7	DIN EN 60034-7 VDE 0530-7	- Classification of types of construction, mounting arrangements and terminal box position (IM code)
IEC 60034-8	EN 60034-8	DIN EN 60034-8 VDE 0530-8	- Terminal markings and direction of rotation
IEC 60034-9	EN 60034-9	DIN EN 60034-9 VDE 0530-9	- Noise limits
IEC 60034-12	EN 60034-12	DIN EN 60034-12 VDE 0530-12	- Starting performance of three-phase cage induction motors except for pole-changing motors
IEC 60034-14	EN 60034-14	DIN EN 60034-14 VDE 0530-14	- Mechanical vibration of certain machines with shaft heights 56 mm and higher
IEC TS 60034-17	–	DIN VDE 0530-17	- Cage induction motors when fed from converters - Application guide
IEC 60038	HD 472	DIN IEC 60038	IEC standard voltages
–	EN 50347	DIN EN 50347	General purpose three-phase induction motors having standard dimensions and outputs - Sizes 56 to 315 and flange sizes 65 to 740
IEC 60085	EN 60085	DIN EN 60085	Electrical insulation, thermal evaluation and designation
IEC 60445	EN 60445	DIN EN 60445 VDE 0197	Identification of equipment terminals and conductor terminations
IEC 60529	EN 60529	DIN EN 60529 VDE 0470-1	Degrees of protection provided by enclosures (IP code)
–	EN 50262	DIN EN 50262 VDE 0619	Cable glands for electrical installations
–	–	DIN 42925	Terminal box cable entries for three-phase cage induction motors at rated voltages from 400 V to 690 V

The main dimensions of all gearboxes comply with the following DIN standards:

DIN 747	Shaft heights for machines	DIN 6885-1	Drive-type fastenings without taper action; feather key, slots, high format
DIN 748-1	Cylindrical shaft extensions; dimensions, nominal torques	DIN 332-2	Center holes in shaft ends
DIN 42955	Concentricity of shaft extensions, concentricity and axial eccentricity of mounting flange		

Fits

Flange form A, C:

$$b1 \leq \varnothing 230 = j6$$

$$b1 > \varnothing 230 = h6$$

Drive-side shaft extension:

$$d1 < \varnothing 55 = k6$$

$$d1 \geq \varnothing 55 = m6$$

See the dimension drawings for other fits.

Degrees of protection

The geared motors are supplied with IP55 to standard IEC 60034-5. For higher degrees of protection for motors, see Chapter 8 "Motor degrees of protection".

Direction of rotation of geared motors

The geared motors are configured so the motor shaft rotates clockwise (IEC 60034-8).

The direction of rotation of the gearbox output shaft can be reversed by swapping two external connection wires on the motor.

Specifying the direction of rotation for geared motors and gearboxes with backstop

It is necessary to specify the desired direction of rotation of the output shaft when ordering a gearbox with backstop. The direction of rotation is determined by the front view of the output shaft (shaft end face). With parallel shaft, bevel helical, and helical worm gearboxes, it is again necessary to specify the side on which the output shaft is located, i.e. either "Output side A" or "Output side B". The output side is defined by specifying the mounting position.

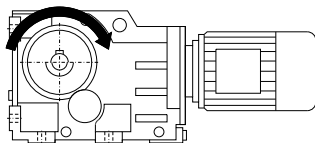
Direction of rotation of the geared motor when viewing the output shaft

Output shaft direction of rotation order codes:

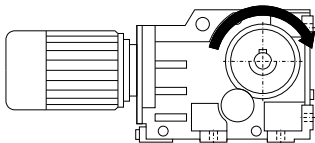
Clockwise **K18**

Counterclockwise **K19**

Clockwise

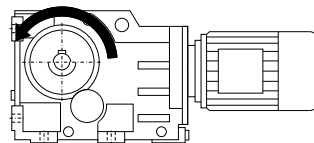


Output side A

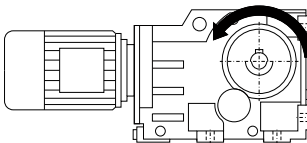


Output side B

Counterclockwise



Output side A



Output side B

Gearbox	Size	Gear stages	Front view	Output shaft direction of rotation	Input shaft direction of rotation
Z	38 ... 188	2	Output shaft	Clockwise	Clockwise
				Counterclockwise	Counterclockwise
D	38 ... 188	3	Output shaft	Clockwise	Counterclockwise
				Counterclockwise	Clockwise
FZ	38B ... 188B, 208	2	Drive end of output shaft	Clockwise	Clockwise
				Counterclockwise	Counterclockwise
FD	38B ... 188B, 208	3	Drive end of output shaft	Clockwise	Counterclockwise
				Counterclockwise	Clockwise
C	38 ... 88	2	Drive end of output shaft	Clockwise	Clockwise
				Counterclockwise	Counterclockwise
B	28 ... 38	2	Drive end of output shaft	Clockwise	Clockwise
				Counterclockwise	Counterclockwise
K	38 ... 88	3	Drive end of output shaft	Clockwise	Counterclockwise
				Counterclockwise	Clockwise
K	108 ... 188	3	Drive end of output shaft	Clockwise	Clockwise
				Counterclockwise	Counterclockwise
K	38 ... 188	3	Non-drive end of output shaft	Clockwise	Counterclockwise
				Counterclockwise	Clockwise

MOTOX Geared Motors

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Power ratings and torques

The specified power ratings and torques refer to standard versions, mounting positions B3../B5../H01 and other comparable mounting positions, whereby the first stage is not completely immersed in oil. Normal ambient conditions and standard lubrication are also required.

Speeds

The specified output speeds are guide values, rounded to the first decimal place. You can use the rated motor speed and the gearbox speed to calculate the rated drive speed.

Please note that the actual output speed will depend on the motor load and the power supply conditions.

Noise

Noise emitted by the motors during mains operation

Noise is measured in accordance with ISO 1680 in a dead room. The noise level is specified as A-weighted measuring surface sound pressure level L_{pA} in dB (A). This value is the spatial average value of the sound pressure levels measured at the measuring surface. The measuring surface is a cube 1 m away from the surface of the motor. The sound power level is also specified as L_{WA} in dB (A).

The values specified in the motor selection tables apply to the motor without gearbox at 50 Hz (see the selection and ordering data in the corresponding sections of the catalog).

The tolerance is +3 dB. At 60 Hz, the values are approximately 4 dB (A) higher. Please enquire about noise levels for pole-changing motors, geared motors, and inverter-fed motors.

Noise emitted by the geared motors

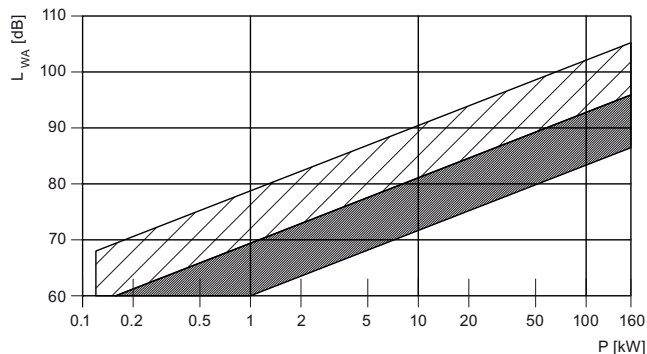
The geared motors do not exceed the permissible noise levels defined for gearboxes in VDI guideline 2159 and for motors in IEC 60034-9.

The values L_{pA} and L_S increase in each case by a general average of 3-5 dB (A) for geared motors as compared to motors without gears.

However, there is a strong correlation between noise level and:

- gear design
- speed and transmission ratios
- mounting positions
- other influencing factors

Precise data is available on request.



Weight of geared motors

The weight data contained in the dimension drawings are averaged values and do not take account of oil. The weights vary according to the gearbox design and size. The oil quantity depends on the mounting position.

The exact weight of the drive will be specified on the order confirmation.

Three-phase AC motors

Three-phase AC motors are designed to be perfectly coordinated with the gearbox system and can be supplied with or without a brake.

The motor series covers sizes 63 to 315.

The power ratings of the 2-, 4-, 6-, 8-, 8/2-, 8/4-, and 4/2-pole motors are classified in accordance with IEC. Pole-changing design with pole number 6/4 is available on request.

The housings of motors up to size 160 are made from high-quality aluminum alloy. Housings for sizes 180 and above are made from gray cast iron.

Brakes

The motors can be supplied with spring-operated disk brakes. These are double-disk brakes, which are spring-operated at zero current. (Safety brake)

The torque can be set within certain limits for every brake size.

Lubricants

All gearboxes are filled with lubricant at the factory. The lubricants used meet the requirements of DIN 51502. The gearboxes are filled with varying oil quantities (see operating instructions and rating plate) depending on their mounting position. If no specifications are made to the contrary, the standard lubricant is used.

Required quality of gear lubricants

The oils used in the MOTOX gearboxes are subject to stringent quality control. For MOTOX gearboxes, only CLP-quality oils are approved which contain ingredients to DIN 51517-3 for improvement of corrosion protection, resistance to ageing, and which reduce wear in mixed-friction areas. The scuffing resistance in the FZG test to DIN 51354-2 must comply with stage 12 or higher under A/8.3/90 test conditions. In the FE-8 rolling bearing test to DIN 51817 rolling element wear must be under 30 mg and cage wear under 100 mg under D-7.5/80-80 test conditions.

In addition, the lubricants must meet the following quality requirements demanded by FLENDER:

- Sufficiently high gray-staining resistance in accordance with FVA 54 gray-staining test
- Low degree of foaming with less than 15 % foam formation in the FLENDER foam test
- Suitable for the elastomer material used in the radial shaft sealing of gearboxes
- Compatible with residues of corrosion-protection agent and run-in oils
- Compatible with the paints used by Siemens in the gearbox interiors
- Compatible with liquid sealing between bolted-joint surfaces.

For a list of approved oils from different manufacturers please refer to the Operating Instructions BA 7300.

Furthermore, for use in worm gearboxes:

Low wear, high pitting resistance, and high efficiency (low temperature) in the cylindrical worm gearbox test.

For a list of approved oils from different manufacturers please refer to the Operating Instructions BA 7303.

MOTOX Geared Motors

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1

Lubricants (continued)

Lubricants for helical gearboxes E / D / Z, parallel shaft gearbox F, bevel helical gearbox K:

Area of application	Ambient temperature ¹⁾			DIN 51 502 designation	Order code
Standard oils					
Standard temperature	-10	...	+40 °C	CLP ISO VG220	K06
Improved oil service life	-20	...	+50 °C	CLP ISO PG VG220	K07
High temperature usage	0	...	+60 °C	CLP ISO PG VG460	K08
Low temperature usage	-40	...	+40 °C	CLP ISO PAO VG220	²⁾
Lowest temperature usage	-40	...	+10 °C	CLP ISO PAO VG68	²⁾
Physiologically safe oils (for use in the food industry) in acc. with NSF (USDA)-H1					
Standard temperature	-30	...	+40 °C	CLP ISO H1 VG460	K11
Biologically degradable oils					
Standard temperature	-20	...	+40 °C	CLP ISO E VG220	K10

¹⁾ Recommended

²⁾ On request

Lubricants for bevel helical gearbox B and helical worm gearbox C:

Area of application	Ambient temperature ¹⁾			DIN 51 502 designation	Order code
Standard oils					
Standard temperature	0	...	+60 °C	CLP ISO PG VG460	K08
Low temperature usage	-20	...	+50 °C	CLP ISO PG VG220	K07
Lowest temperature usage	-40	...	+40 °C	CLP ISO PAO VG220	²⁾
Physiologically safe oils (for use in the food industry) in acc. with NSF (USDA)-H1					
Standard temperature	-30	...	+40 °C	CLP ISO H1 VG460	K11
Biologically degradable oils					
Standard temperature	-20	...	+40 °C	CLP ISO E VG220	K10

¹⁾ Recommended

²⁾ On request

Lubricants for worm gearbox S:

Area of application	Ambient temperature ¹⁾			DIN 51 502 designation	Order code
Standard oils					
Standard temperature	0	...	+60 °C	CLP ISO PG VG460	K08
Lowest temperature usage	-40	...	+40 °C	CLP ISO PAO VG 220	²⁾
Physiologically safe oils (for use in the food industry) in acc. with NSF (USDA)-H1					
Standard temperature	-30	...	+50 °C	CLP ISO H1 VG460	K11

¹⁾ Recommended

²⁾ On request

The ambient temperatures are applicable for gearboxes in standard operation. The data is based on our experience with standard applications. The oil sump temperature is a decisive factor for the service life of the lubricant and depends to a large extent on the gearbox type, gearbox size, transmission ratio, mounting position, input speed, and operating mode.

The standard gearbox version can be used in the range -20 °C to +40°C. Operation outside this range requires a variety of measures. Please contact us.

The data on usage in high, low, and lowest temperature ranges only refers to the lubricant.

It may be necessary to take other design measures. Please contact us.

With low ambient temperatures, critical startup characteristics need to be taken into account.

With higher ambient temperatures (> 40 °C), the permissible oil sump temperature must not be exceeded. Please contact us if you require your drive to be thermally tested.

Long-term preservation

Helical gearboxes, parallel shaft gearboxes, bevel helical gearboxes, and helical worm gearboxes can be delivered with a long-term preservation of up to 36 months. The free shaft extensions, sealing elements, and flanges are coated with a protective layer of grease. The gearbox is completely filled with oil for long-term preservation.

See the operating instructions for information on storage and commissioning.

Order code:

Long-term preservation up to 36 months **K17**

Surface treatment

We offer 5 high-quality paint systems in different hues to protect drives against corrosion and external influences.

Our corrosion protection range is available in accordance with the corrosion categories of the DIN EN ISO 12944-2 standard.

Geared motors of size 38 and above are painted in RAL 5015 (sky blue) as standard according to corrosion category C1. This ensures that they are protected against corrosion for installation

Overview of surface treatment

in interior areas. Gearboxes of size 08,18 and 28 with an aluminum housing are supplied unpainted as standard.

For transport, the bare parts are coated with anti-corrosion paint which will last for a limited amount of time.

Corrosion category	Order code	Paint system	Hue	Description
Surface protection for normal environmental stress				
C1	L02	1-component water-based coating	Standard: 5015 On request: RAL 1003, 1007, 1012, 1018, 1023, 2000, 2004, 3000, 5007, 5009, 5010, 5012, 6011, 6018, 7001, 7011, 7016, 7030, 7031, 7032, 7035, 9005, 9006, 9010	<ul style="list-style-type: none"> Indoor installation Heated buildings with neutral atmospheres Resistance to greases and some resistance to mineral oils, aliphatic solvents Standard paint finish
Surface protection for minimal environmental stress				
C2	L03	2-component polyurethane primer 2-component polyurethane top coat	Standard: RAL 7031 On request: RAL 1003, 1012, 1018, 1023, 2004, 3000, 5002, 5007, 5009, 5010, 5012, 5015, 6011, 6018, 7000, 7001, 7011, 7030, 7032, 7035, 9005, 9006, 9010, 9011, 9016	<ul style="list-style-type: none"> Indoor and outdoor installation Unheated buildings with condensation, production areas with low humidity, e. g. warehouses and sports facilities Atmospheres with little contamination, mostly rural areas Resistant to greases, mineral oils and sulfuric acid (10 %), caustic soda (10 %) and some resistance to aliphatic solvents
Surface protection for medium environmental stress				
C3	L04	2-component polyurethane primer 2-component polyurethane top coat	Standard: RAL 7031 On request: RAL 1003, 1012, 1018, 1023, 2004, 3000, 5002, 5007, 5009, 5010, 5012, 5015, 6011, 6018, 7000, 7001, 7011, 7016, 7030, 7031, 7032, 7035, 9005, 9006, 9010, 9011, 9016	<ul style="list-style-type: none"> Indoor and outdoor installation Production areas with high levels of humidity and some air pollution, e. g. plants for food manufacturing, dairies, laundries and breweries Urban and industrial atmospheres, moderate contamination from sulfur dioxide, coastal areas with low salt levels Resistant to greases, mineral oils, aliphatic solvents, sulfuric acid (10 %), caustic soda (10 %)
Surface protection for high environmental stress				
C4	L20	2-component epoxy zinc phosphate primer 2-component polyurethane top coat	Standard: RAL 7031 On request: RAL 1003, 1012, 1018, 1023, 2004, 3000, 5002, 5007, 5009, 5010, 5012, 5015, 6011, 6018, 7000, 7001, 7011, 7016, 7030, 7031, 7032, 7035, 9005, 9006, 9010, 9011, 9016	<ul style="list-style-type: none"> Indoor and outdoor installation Chemical plants, swimming pools, wastewater treatment plants, electroplating shops, and boathouses above seawater Industrial areas and coastal areas with moderate salt levels Resistant to greases, mineral oils, aliphatic solvents, sulfuric acid (10 %), caustic soda (10 %)
Surface protection for extremely high environmental stress				
C5	L05	2-component epoxy zinc phosphate primer 2-component epoxy iron mica 2-component polyurethane top coat	Standard: RAL 7031 On request: RAL 1003, 1012, 1018, 1023, 2004, 3000, 5002, 5007, 5009, 5010, 5012, 5015, 6011, 6018, 7000, 7001, 7011, 7016, 7030, 7031, 7032, 7035, 9005, 9006, 9010, 9011, 9016	<ul style="list-style-type: none"> Indoor and outdoor installation Buildings and areas with almost constant condensation and with heavy pollution, e. g. malt factories and aseptic areas Industrial areas with high humidity and aggressive atmosphere, coastal areas and offshore environments with high salt levels Resistant to greases, mineral oils, aliphatic solvents, sulfuric acid (10 %), caustic soda (20 %)

MOTOX Geared Motors

Introduction

General technical data

Surface treatment (continued)

Corrosion category	Order code	Paint system	Hue	Description
Primed according to corrosion category C2 G				Repaintability with *)
C2 G	L01	2-component polyurethane primer		• 2-component polyurethane paint, 2-component epoxide paint and acid hardening paint, 2-component acrylic paint
Primed according to corrosion category C4 G				Repaintability with *)
C4 G	L09	2-component epoxy zinc phosphate primer		• 2-component polyurethane paint, 2-component epoxide paint and acid hardening paint, 2-component acrylic paint
Unpainted				Repaintability with *)
C1 G	L00			• Plastic paint, synthetic resin paint, oil paint, 2-component polyurethane paint, 2-component epoxide paint
Special pre-treatment before painting				
	L19			• For special requirements for the surface treatment and priming of drives, especially as a primer and intermediate coating for surface protection under severe environmental stress

* Note:
Information about repaintability is not a guarantee of the quality of the paint product purchased from your supplier. Only the paint manufacturer is liable for the quality and compatibility.

Order codes for RAL colors:

5015 Sky blue (standard)	L50
7011 Steel gray	L51
7031 Blue gray	L53
7035 Light gray	L54
7030 Stone gray	L55

The colors listed above can be specified using order code Y80 and the RAL color code in plain text.

Example: Reseda green (RAL6011)

Order code: **Y80**

Plain text: **Y80*RAL @ 6011***

Increased protection against humidity and tropical climate

Increased protection against humidity and tropical climate can be supplied as an option for (geared) motors of frame sizes 71 to 200L. This version is designed for humidity in the range from 30 to 60 g water per m³ air depending on the temperature (see page 8/26). This version comprises a surface treatment for corrosion category C2 (**L03**), increased humidity and acid protection for the winding (**N54**), motor-internal corrosion protection (**N41**) and temperature class (155) F.

Combination with increased acid and alkali protection is not possible.

If function expansions (brakes, backstop, encoder systems) are required on the motor, consultation with the manufacturer is necessary beforehand.

Increased protection against humidity and tropical climate is not possible together with worm geared motors S.

Order code:

Increased protection against humidity and tropical climate

N43

Increased protection against acid and alkali

Increased protection against acid and alkali can be supplied as an option for (geared) motors of frame sizes 71 to 200L. This version is suitable for city and industrial atmospheres with moderate pollution with sulfur dioxide, coastal areas with low salt levels and aggressive atmospheres with up to 1 % concentrations of acids or alkalis. This version comprises a surface treatment for corrosion category C3 (**L04**), increased humidity and acid protection for the winding (**N54**), motor-internal corrosion protection (**N41**), temperature class (155) F and pressure ventilation in the gearbox (**G45**).

Combination with increased humidity and tropical climate protection is not possible.

If function expansions (brakes, backstop, encoder systems) are required on the motor, consultation with the manufacturer is necessary beforehand.

Increased protection against acid and alkali is not possible together with worm geared motors S.

Order code:

Increased protection against acid and alkali

N44

Rating plate

The rating plates of the gearboxes or geared motors are made of coated aluminum foil. They are covered by a special adhesive foil which gives them permanent resistance to ultraviolet rays and a variety of other substances (oils, greases, salt water, cleaning agents, etc.).

The adhesives and materials have been specially selected to ensure reliable adhesion and good legibility for the service life of the product, even when it is operated at the boundaries of the permissible temperature range (-40 °C ... +155 °C).

In accordance with DIN EN 60034-1, the total weight (as of approximately 30 kg) is specified on the rating plate for all geared motors.

Rating plate on stainless steel support plate

For geared motors with motors up to and including size 200, the rating plate can also be attached to a stainless steel support plate.

Order code:

Rating plate on stainless steel support plate **K26**

2nd rating plate enclosed separately

An additional rating plate can be supplied as a separately enclosed item for all gearboxes and geared motors.

Order code:

2nd rating plate, enclosed separately **K41**

2nd rating plate mounted

On request, the 2nd rating plate can be supplied mounted to the motor for geared motors with motors up to and including size 200.

Order code:

2nd rating plate, mounted **K68**

The rating plate is labeled in international format as standard.

For geared motors with motors up to and including size 200, the rating plate is mounted on an aluminum support plate which is attached to the motor.

In the case of gearboxes without motor and geared motors with motor of size 225 to 315, the rating plate is attached to the gearbox housing.

Motors of \geq size 225 also have a rating plate with the motor data.

Example of a rating plate:

SIEMENS		IEC60034	
KAF108-LA160L4-L150/100GH		FDU1001/8999999 nnn	
2KJ1506-5JR13-2FD1-Z		(IM) H-01-A	
IP55		254kg	
G. 6.2L	OIL CLP PG VG220	i=12.9	
50Hz		113/min	60Hz
1266Nm		fB=1.5	1264Nm
			136/min
			fB=1.5
3-Mot.	ThCl.155(F)	TP-PTC	100Nm
50Hz	400/690V	D/Y	60Hz
29/16.74A	cosPhi 0.84		28.6A
15kW IE1-90%		1460/min	15kW
			190-240V AC
			460V Y
			cosPhi 0.87
			1755/min

Documentation

The geared motors are supplied with the following documentation as standard:

- Commissioning guide (paper) English/German
- Manual Collection (on CD) with all operating instructions in Czech, Dutch, English, French, German, Italian, Russian, Spanish, and Swedish.

The following documents are optionally available:

- Circuit diagram of motor
- Certificate of compliance with the order EN 10204-2.1 and works test certificate EN 10204-2.2 for the geared motor on request
- Works test certificate EN 10204-2.2 for the material on request
- Works test certificate EN 10204-3.1 for the gearbox, tests carried out on:
 - Output shaft diameter
 - The concentricity of the output shaft
 - The concentricity of input shaft (for solo gearboxes only, input units A and P)
 - The input shaft diameter (for solo gearboxes only, input units A and P)
 - Noise (subjective evaluation)
 - The concentricity of the input shaft (for solo gearboxes only)
- Works test certificate EN 10204-3.1 for motors, tests carried out on:
 - The 3 no-load currents of the 3 phases
 - The power loss during no-load operation
 - The no-load speed.

MOTOX Geared Motors

Introduction

Notes

1

Parallel shaft geared motors



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MOTOX Geared Motors

Parallel shaft geared motors

Orientation

Overview



MOTOX parallel shaft gearboxes are part of the MOTOX modular system. With helical, bevel helical, helical worm, or variable speed gearboxes and three-phase AC motors with or without brakes, this system covers all possible drive combinations, right up to electronic variable speed drives.

MOTOX parallel shaft gearboxes are designed for continuous duty. The gearbox housings made of gray cast iron or aluminium are developed in 3D CAD and have an optimized structure in terms of rigidity and vibration absorption. Radial shaft seals with dust-protection lips prevent oil from leaking out of the housing and dust and water from entering it. The tooth flanks are ground or honed so that they are convex and corrected in terms of the profile. Optimum running smoothness is achieved thanks to the gear wheels' helical teeth. The output shaft is parallel to the input shaft on 2-stage and 3-stage gearboxes.

MOTOX parallel shaft gearboxes are available in 2-stage and 3-stage designs. Standard series gearboxes can be supplied for attaching in any position. The gearboxes are available in a solid-shaft or hollow-shaft design with a feather key connection, shrink disk connection, or splined shaft.

Overview (continued)

The parallel shaft gearboxes are designated as follows:

Gearbox type:

F Parallel shaft gearbox

Transmission stage **Z** 2-stage
D 3-stage

Type:

Shaft (-) Solid shaft
A Hollow shaft

Mounting (-) Foot-mounted design
F Flange-mounted design (A-type)
Z Housing flange (C-type)
D Torque arm
M Mixer flange
E Extruder flange

Connections (-) Feather key
S Shrink disk
T Hollow shaft with splined shaft

Special features **W** Reduced-backlash version

Type of intermediate gearbox:

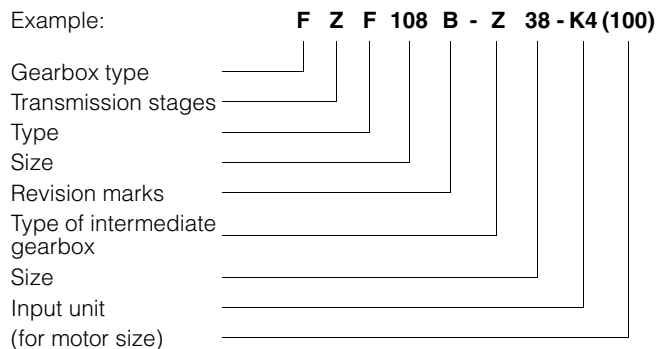
(-) Helical gearbox

Transmission stage **Z** 2-stage
D 3-stage

Input unit:

- K2** Coupling lantern with flexible coupling for connecting an IEC motor
- K2TC** Coupling lantern with flexible coupling for connecting a NEMA motor ¹⁾
- K4** Short coupling lantern with clamp connection for connecting an IEC motor
- K5** Short coupling lantern with clamp connection for connecting a NEMA motor ¹⁾
- KQ** Lantern for servomotor with feather key and zero-backlash flexible coupling for connecting a servomotor
- KQS** Lantern for servomotor without feather key and zero-backlash flexible coupling for connecting a servomotor
- A** Input unit with free input shaft
- A5** Input unit with free input shaft (NEMA design) ¹⁾
- P** Input unit with free input shaft and piggy back for connecting an IEC motor
- P5** Input unit with free input shaft and piggy back for connecting a NEMA motor ¹⁾
- PS** Input unit with free input shaft and piggy back with protection cover

Example:



The series currently comprises 10 gearbox sizes.

The basic designs available are 2- and 3-stage gearboxes.

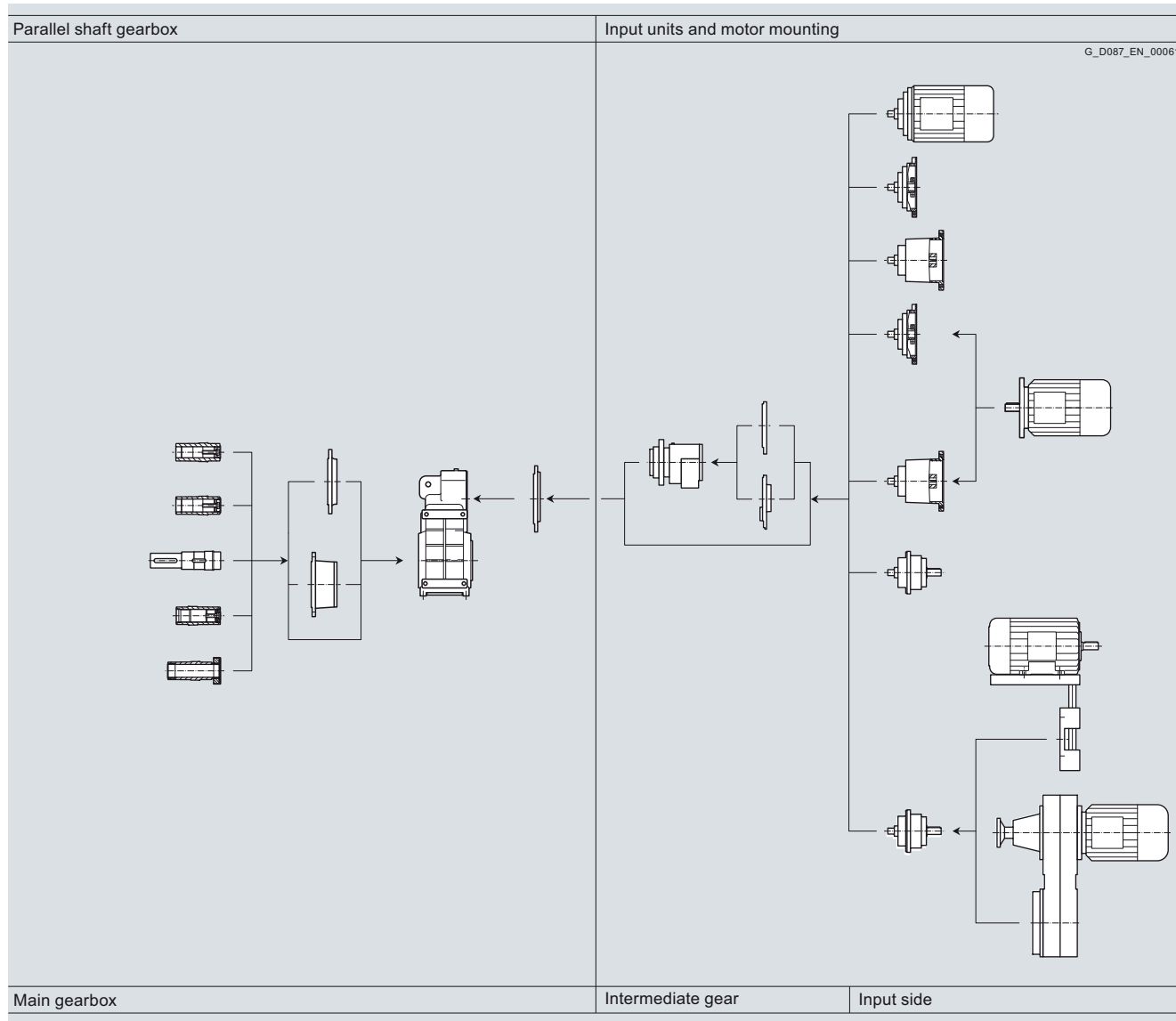
¹⁾ These designs can be selected from our MOTOX Configurator electronic catalog.

MOTOX Geared Motors

Parallel shaft geared motors

Orientation

Modular system



Use

MOTOX parallel shaft gearboxes are the ideal solution when space is at a premium, thanks to their compact, well-shaped structures.

The variety of output shafts – hollow or solid – and the range of mounting options available, which allow the device to be used as a shaft-mounted gearbox with a torque arm, or as a foot- or

flange-mounted design, enable you to achieve exactly the right solution, at the right price.

Parallel shaft gearboxes are extremely efficient. They are very economical, thanks to their low price and low maintenance requirements.

Oil quantities

The oil quantities corresponding to the applicable mounting positions are specified in the operating instructions and on the rating plate.

Permissible radial force F_{Rperm}

2-stage and 3-stage parallel shaft gearbox – standard bearing arrangement

Gearbox type	d mm	l mm	y mm	z mm	a kNm	F_{Rperm} in N with $x = l/2$ for output speeds n_2 in rpm Direction of rotation when viewing the output shaft	F_{Rperm} in N with $x = l/2$ for output speeds n_2 in rpm							
							≤ 16	≤ 25	≤ 40	≤ 63	≤ 100	≤ 160	≤ 250	≤ 400
F.F28	25	50	128.5	104	115	Left	4 600	4 600	4 150	3 330	2 730	2 350	1 840	1 780
						Right	4 600	4 600	3 950	3 120	2 520	2 160	1 650	1 650
F.F38B	25	50	146.0	121	131	Left	5 246	5 246	4 810	4 020	2 980	2 870	2 590	2 480
						Right	5 246	5 246	4 360	3 610	2 500	2 480	2 450	2 370
F.F48B	30	60	176.0	146	245	Left	8 154	8 060	6 640	5 270	4 840	4 530	4 070	3 770
						Right	8 150	7 500	6 080	4 720	4 400	4 280	3 900	3 650
F.F68B	40	80	213.0	173	357	Left	8 927	7 680	6 160	5 050	3 710	3 930	3 710	3 650
						Right	8 927	6 830	5 310	4 200	2 860	3 290	3 300	3 440
F.F88B	50	100	262.0	212	741	Left	14 825	13 420	10 040	8 310	7 020	6 590	6 320	6 130
						Right	14 340	12 360	8 740	7 010	5 800	5 960	5 920	5 800
F.F108B	60	120	298.0	238	1 100	Left	17 930	13 620	10 750	8 190	6 070	6 610	6 840	7 080
						Right	15 860	11 550	8 680	6 120	4 040	4 960	5 780	6 390
F.F128B	70	140	371.5	302	1 786	Left	25 516	19 950	15 710	10 270	9 120	10 890	10 860	10 360
						Right	23 190	17 570	13 530	7 900	6 740	9 300	9 920	9 810
F.F148B	90	170	434.0	349	2 241	Left	23 390	17 850	13 190	8 530	9 840	11 680	11 800	11 660
						Right	20 390	14 850	10 180	5 620	7 380	10 030	10 530	10 830
F.F168B	110	210	517.5	413	4 814	Left	35 450	27 240	20 850	13 740	12 970	17 210	16 400	16 450
						Right	31 510	23 300	17 200	9 800	9 280	15 230	14 590	15 330
F.F188B	120	210	538.0	433	11 898	Left	113 314	113 314	113 314	106 120	88 810	78 120	76 850	–
						Right	113 314	113 314	113 314	102 690	84 350	75 050	74 100	–
F.F208	160	250	622.0	497	18 750	Left	150 000	150 000	150 000	150 000	143 760	127 130	121 290	–
						Right	150 000	150 000	150 000	150 000	135 990	120 310	114 800	–
			598.0	493										

2-stage and 3-stage parallel shaft gearbox – reinforced bearing arrangement

Gearbox type	d mm	l mm	y mm	z mm	a kNm	F_{Rperm} in N with $x = l/2$ for output speeds n_2 in rpm Direction of rotation when viewing the output shaft	F_{Rperm} in N with $x = l/2$ for output speeds n_2 in rpm							
							≤ 16	≤ 25	≤ 40	≤ 63	≤ 100	≤ 160	≤ 250	≤ 400
F.F68B	40	80	213.0	173	546	Left	13 643	13 643	13 643	13 643	13 643	13 260	11 920	10 620
						Right	13 643	13 643	13 643	13 643	13 230	12 690	11 540	10 390
F.F88B	50	100	262.0	212	1 171	Left	23 411	23 411	23 411	23 411	23 411	21 180	19 050	18 130
						Right	23 411	23 411	23 411	23 411	22 960	20 520	18 620	17 790
F.F108B	60	120	298.0	238	1 723	Left	28 718	28 718	28 718	28 718	28 718	26 040	24 150	23 420
						Right	28 718	28 718	28 718	28 718	26 590	24 740	23 300	22 680
F.F128B	70	140	371.5	302	2 514	Left	35 921	35 921	35 921	35 921	35 921	35 921	35 921	34 420
						Right	35 921	35 921	35 921	35 921	35 921	35 921	35 921	33 830
F.F148B	90	170	434.0	349	5 737	Left	67 493	67 493	67 300	55 150	52 240	46 910	44 010	41 380
						Right	67 493	67 493	64 110	52 070	50 180	45 380	42 870	40 510
F.F168B	110	210	517.5	413	9 566	Left	91 102	91 102	91 102	87 720	78 620	71 650	65 350	62 000
						Right	91 102	91 102	91 102	83 520	75 920	69 990	63 850	60 810
F.F188B	120	210	538.0	433	11 898	Left	113 314	113 314	113 314	106 120	88 810	78 120	76 850	–
						Right	113 314	113 314	113 314	102 690	84 350	75 050	74 100	–
F.F208	160	250	622.0	497	18 750	Left	150 000	150 000	150 000	150 000	150 000	150 000	150 000	–
						Right	150 000	150 000	150 000	150 000	150 000	150 000	150 000	–
			598.0	493										

The values in the table apply to the worst-case scenario. The output shaft bearing arrangement can be calculated using our MOTOX Configurator electronic catalog.

See Chapter 1 of the configuring guide for more information on calculating the permissible radial force.

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data

The selection tables show the most common variants and combinations. Other combinations can be selected using our MOTOX Configurator or made available on request.

At an identical power rating and output speed, priority is given in the selection tables to 4-pole geared motors.

At the available transmission ratios, they cover the majority of output speeds.

Due to their prevalence, 4-pole geared motors are easily available, with short delivery times and at a low cost. They also feature a favorable size / power ratio.

Power rating P_{Motor} kW (50 Hz)	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight *) kg	
0.09	FD.48B-LA71M8							
	2.3	367	1.5	268.8	★ 2KJ1402 - ■CE13 - ■■S1	P02	27	
	2.6	326	1.7	238.65	2KJ1402 - ■CE13 - ■■R1	P02	27	
	3.0	285	1.9	209.23	★ 2KJ1402 - ■CE13 - ■■Q1	P02	27	
	FD.38B-LA71M8							
	2.6	330	0.88	241.91	★ 2KJ1401 - ■CE13 - ■■M1	P02	20	
	3.0	284	1.0	207.83	2KJ1401 - ■CE13 - ■■L1	P02	20	
	FD.38B-LA71B6							
	3.2	269	1.1	280.41	2KJ1401 - ■CB13 - ■■N1	P01	20	
	3.7	232	1.2	241.91	★ 2KJ1401 - ■CB13 - ■■M1	P01	20	
	4.3	200	1.5	207.83	2KJ1401 - ■CB13 - ■■L1	P01	20	
	4.7	184	1.6	191.34	★ 2KJ1401 - ■CB13 - ■■K1	P01	20	
	0.12	FD.188B-D48-LA71B4						
		0.05	15 668	1.3	28 045	★ 2KJ1440 - ■CB13 - ■■E1		638
		0.06	12 819	1.6	22 946	★ 2KJ1440 - ■CB13 - ■■C1		638
0.06		14 134	1.4	25 299	2KJ1440 - ■CB13 - ■■D1		638	
0.07		10 683	1.9	19 122	★ 2KJ1440 - ■CB13 - ■■A1		638	
0.07		11 680	1.7	20 906	2KJ1440 - ■CB13 - ■■B1		638	
FD.188B-Z48-LA71B4								
0.08		10 013	2.0	17 537	2KJ1438 - ■CB13 - ■■A2		638	
FD.168B-D48-LA71B4								
0.05		16 202	0.86	29 000	2KJ1436 - ■CB13 - ■■F1		455	
0.06		12 901	1.1	23 093	2KJ1436 - ■CB13 - ■■D1		455	
0.06		14 302	0.98	25 599	★ 2KJ1436 - ■CB13 - ■■E1		455	
0.07		10 661	1.3	19 083	2KJ1436 - ■CB13 - ■■B1		455	
0.07		11 701	1.2	20 944	★ 2KJ1436 - ■CB13 - ■■C1		455	
0.08		9 751	1.4	17 454	★ 2KJ1436 - ■CB13 - ■■A1		455	
FD.168B-Z48-LA71B4								
0.09		9 139	1.5	16 007	2KJ1435 - ■CB13 - ■■A2		454	
0.10		8 088	1.7	14 165	★ 2KJ1435 - ■CB13 - ■■X1		454	
0.11		7 353	1.9	12 878	2KJ1435 - ■CB13 - ■■W1		454	
FD.148B-D38-LA71B4								
0.07		10 870	0.83	19 456	2KJ1433 - ■CB13 - ■■B1		288	
0.08		9 891	0.91	17 704	★ 2KJ1433 - ■CB13 - ■■A1		288	
FD.148B-Z38-LA71B4								
0.09		9 272	0.97	16 239	★ 2KJ1432 - ■CB13 - ■■W1		287	
0.10	8 245	1.1	14 441	2KJ1432 - ■CB13 - ■■V1		287		
0.11	7 152	1.3	12 527	★ 2KJ1432 - ■CB13 - ■■U1		287		

★ Preferred transmission ratio

Shaft designs, see page 3/89

Frequency and voltage, see page 8/20

Gearbox housing mounting position, see page 3/92

*) For mounting type B5-01

1, 2, 3, 5, 6 or 9

1 to 9

A, D, E, F, H or M

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
0.12	FD.148B-Z38-LA71B4						
	0.12	6 683	1.3	11 705	2KJ1432 - ■CB13 - ■■T1		287
	0.14	5 878	1.5	10 295	★ 2KJ1432 - ■CB13 - ■■S1		287
	0.16	5 148	1.7	9 016	2KJ1432 - ■CB13 - ■■R1		287
	0.18	4 553	2.0	7 975	★ 2KJ1432 - ■CB13 - ■■Q1		287
	FD.128B-Z38-LA71B4						
	0.12	6 445	0.95	11 289	2KJ1428 - ■CB13 - ■■T1		197
	0.12	6 899	0.88	12 083	★ 2KJ1428 - ■CB13 - ■■U1		197
	0.14	5 669	1.1	9 929	★ 2KJ1428 - ■CB13 - ■■S1		197
	0.16	4 965	1.2	8 696	2KJ1428 - ■CB13 - ■■R1		197
	0.18	4 391	1.4	7 691	★ 2KJ1428 - ■CB13 - ■■Q1		197
	0.20	3 980	1.5	6 971	2KJ1428 - ■CB13 - ■■P1		197
0.23	3 513	1.7	6 153	★ 2KJ1428 - ■CB13 - ■■N1		197	
0.25	3 169	1.9	5 551	2KJ1428 - ■CB13 - ■■M1		197	
FD.108B-Z38-LA71B4							
0.19	4 270	0.80	7 479	★ 2KJ1426 - ■CB13 - ■■F2		122	
0.21	3 870	0.88	6 778	2KJ1426 - ■CB13 - ■■E2		122	
0.23	3 416	1.0	5 983	★ 2KJ1426 - ■CB13 - ■■D2		122	
0.26	3 081	1.1	5 397	2KJ1426 - ■CB13 - ■■C2		122	
0.29	2 795	1.2	4 895	★ 2KJ1426 - ■CB13 - ■■B2		122	
0.31	2 546	1.3	4 460	2KJ1426 - ■CB13 - ■■A2		122	
0.34	2 329	1.5	4 079	★ 2KJ1426 - ■CB13 - ■■X1		122	
0.38	2 083	1.6	3 648	2KJ1426 - ■CB13 - ■■W1		122	
0.42	1 912	1.8	3 349	★ 2KJ1426 - ■CB13 - ■■V1		122	
0.46	1 724	2.0	3 019	2KJ1426 - ■CB13 - ■■U1		122	
FD.88B-Z28-LA71B4							
0.34	2 386	0.8	4 179	2KJ1422 - ■CB13 - ■■W1		73	
0.38	2 118	0.9	3 709	★ 2KJ1422 - ■CB13 - ■■V1		73	
0.43	1 856	1.0	3 251	2KJ1422 - ■CB13 - ■■U1		73	
0.49	1 632	1.2	2 858	★ 2KJ1422 - ■CB13 - ■■T1		73	
0.54	1 474	1.3	2 582	2KJ1422 - ■CB13 - ■■S1		73	
0.62	1 285	1.5	2 250	★ 2KJ1422 - ■CB13 - ■■R1		73	
0.69	1 154	1.6	2 021	2KJ1422 - ■CB13 - ■■Q1		73	
0.77	1 041	1.8	1 824	★ 2KJ1422 - ■CB13 - ■■P1		73	
0.85	944	2.0	1 654	2KJ1422 - ■CB13 - ■■N1		73	
FD.68B-Z28-LA71B4							
0.69	1 162	0.86	2 035	2KJ1417 - ■CB13 - ■■T1		43	
0.78	1 021	0.98	1 789	★ 2KJ1417 - ■CB13 - ■■S1		43	
0.87	923	1.1	1 616	2KJ1417 - ■CB13 - ■■R1		43	
0.99	804	1.2	1 408	★ 2KJ1417 - ■CB13 - ■■Q1		43	
1.1	722	1.4	1 265	2KJ1417 - ■CB13 - ■■P1		43	
1.2	652	1.5	1 142	★ 2KJ1417 - ■CB13 - ■■N1		43	
1.4	592	1.7	1 036	2KJ1417 - ■CB13 - ■■M1		43	
1.5	538	1.9	942	★ 2KJ1417 - ■CB13 - ■■L1		43	

★ Preferred transmission ratio

Shaft designs, see page 3/89 ————— 1, 2, 3, 5, 6 or 9

Frequency and voltage, see page 8/20 ————— 1 to 9

Gearbox housing mounting position, see page 3/92 ————— A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
0.12	FD.68B-LA71MB8						
	2.2	526	1.9	296.18	★	2KJ1403 - ■CB13 - ■■S1	P02 43
	FD.48B-Z28-LA71B4						
	1.3	614	0.88	1 076	★	2KJ1413 - ■CB13 - ■■N1	29
	1.4	557	0.97	976		2KJ1413 - ■CB13 - ■■M1	29
	1.6	507	1.1	888	★	2KJ1413 - ■CB13 - ■■L1	29
	1.8	448	1.2	785		2KJ1413 - ■CB13 - ■■K1	29
	1.9	414	1.3	725	★	2KJ1413 - ■CB13 - ■■J1	29
	2.2	356	1.5	624		2KJ1413 - ■CB13 - ■■H1	29
	FD.48B-LA71MB8						
	2.4	478	1.1	268.8	★	2KJ1402 - ■CF13 - ■■S1	P02 27
	2.7	424	1.3	238.65		2KJ1402 - ■CF13 - ■■R1	P02 27
	3.1	372	1.5	209.23	★	2KJ1402 - ■CF13 - ■■Q1	P02 27
	FD.48B-LA71C6						
	3.2	358	1.5	268.8	★	2KJ1402 - ■CC13 - ■■S1	P01 27
	3.6	318	1.7	238.65		2KJ1402 - ■CC13 - ■■R1	P01 27
	4.1	279	1.9	209.23	★	2KJ1402 - ■CC13 - ■■Q1	P01 27
	FZ.38B-Z28-LA71B4						
	2.4	339	0.86	587		2KJ1313 - ■CB13 - ■■G1	22
	FD.38B-LA71C6						
	3.6	322	0.9	241.91	★	2KJ1401 - ■CC13 - ■■M1	P01 20
	4.1	277	1.0	207.83		2KJ1401 - ■CC13 - ■■L1	P01 20
	4.5	255	1.1	191.34	★	2KJ1401 - ■CC13 - ■■K1	P01 20
	FD.38B-LA71B4						
	5.0	230	1.3	280.41		2KJ1401 - ■CB13 - ■■N1	20
	5.8	198	1.5	241.91	★	2KJ1401 - ■CB13 - ■■M1	20
	6.7	170	1.7	207.83		2KJ1401 - ■CB13 - ■■L1	20
	7.3	157	1.9	191.34	★	2KJ1401 - ■CB13 - ■■K1	20
8.0	142	2.0	173.94		2KJ1401 - ■CB13 - ■■J1	20	
FD.28-LA71B4							
6.7	170	0.88	207.53		2KJ1400 - ■CB13 - ■■L1	11	
7.3	156	0.96	191.06	★	2KJ1400 - ■CB13 - ■■K1	11	
8.1	142	1.1	173.69		2KJ1400 - ■CB13 - ■■J1	11	
9.1	126	1.2	153.74	★	2KJ1400 - ■CB13 - ■■H1	11	
10.9	105	1.4	128.77		2KJ1400 - ■CB13 - ■■G1	11	
12.8	90	1.7	109.79	★	2KJ1400 - ■CB13 - ■■F1	11	
15.0	76	2.0	93.32	★	2KJ1400 - ■CB13 - ■■E1	11	
17.3	66	2.3	81.1		2KJ1400 - ■CB13 - ■■D1	11	
19.8	58	2.6	70.59	★	2KJ1400 - ■CB13 - ■■C1	11	
22	52	2.9	63.68		2KJ1400 - ■CB13 - ■■B1	11	
25	46	3.3	56.2		2KJ1400 - ■CB13 - ■■A1	11	
FZ.28-LA71B4							
24	49	3.1	59.65		2KJ1300 - ■CB13 - ■■C2	11	
28	41	3.6	50.3	★	2KJ1300 - ■CB13 - ■■B2	11	

★ Preferred transmission ratio

Shaft designs, see page 3/89

1, 2, 3, 5, 6 or 9

Frequency and voltage, see page 8/20

1 to 9

Gearbox housing mounting position, see page 3/92

A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
0.12	FZ.28-LA71B4						
	31	37	4.1	44.66	2KJ1300 - ■CB13 - ■■A2		11
	36	32	4.7	39.15	★ 2KJ1300 - ■CB13 - ■■X1		11
	40	29	5.2	35.04	2KJ1300 - ■CB13 - ■■W1		11
	45	26	5.9	31.1	★ 2KJ1300 - ■CB13 - ■■V1		11
	51	22	6.7	27.25	2KJ1300 - ■CB13 - ■■U1		11
	58	20	7.6	23.96	★ 2KJ1300 - ■CB13 - ■■T1		11
	65	18	8.5	21.64	2KJ1300 - ■CB13 - ■■S1		11
	74	15	9.7	18.86	★ 2KJ1300 - ■CB13 - ■■R1		11
	83	14	10.8	16.94	2KJ1300 - ■CB13 - ■■Q1		11
	92	12	12.0	15.29	★ 2KJ1300 - ■CB13 - ■■P1		11
	101	11	13.2	13.87	2KJ1300 - ■CB13 - ■■N1		11
111	10	14.3	12.62	★ 2KJ1300 - ■CB13 - ■■M1		11	
0.18	FD.188B-D48-LA71C4						
	0.05	24 072	0.83	25 299	2KJ1440 - ■CC13 - ■■D1		638
	0.06	21 833	0.92	22 946	★ 2KJ1440 - ■CC13 - ■■C1		638
	0.07	18 195	1.1	19 122	★ 2KJ1440 - ■CC13 - ■■A1		638
	0.07	19 892	1.0	20 906	2KJ1440 - ■CC13 - ■■B1		638
	FD.188B-Z48-LA71C4						
	0.08	17 053	1.2	17 537	2KJ1438 - ■CC13 - ■■A2		638
	0.09	15 091	1.3	15 519	★ 2KJ1438 - ■CC13 - ■■X1		638
	0.10	13 719	1.5	14 108	2KJ1438 - ■CC13 - ■■W1		638
	0.11	12 325	1.6	12 674	★ 2KJ1438 - ■CC13 - ■■V1		638
	0.13	10 563	1.9	10 863	2KJ1438 - ■CC13 - ■■U1		638
	FD.168B-D48-LA71C4						
	0.08	16 608	0.84	17 454	★ 2KJ1436 - ■CC13 - ■■A1		455
	FD.168B-Z48-LA71C4						
	0.09	15 566	0.90	16 007	2KJ1435 - ■CC13 - ■■A2		454
	0.10	13 774	1.0	14 165	★ 2KJ1435 - ■CC13 - ■■X1		454
	0.11	12 523	1.1	12 878	2KJ1435 - ■CC13 - ■■W1		454
	0.12	11 249	1.2	11 568	★ 2KJ1435 - ■CC13 - ■■V1		454
	0.14	9 643	1.5	9 916	2KJ1435 - ■CC13 - ■■U1		454
	0.15	8 724	1.6	8 971	★ 2KJ1435 - ■CC13 - ■■T1		454
	0.16	8 053	1.7	8 281	2KJ1435 - ■CC13 - ■■S1		454
	0.19	7 002	2.0	7 201	★ 2KJ1435 - ■CC13 - ■■R1		454
	FD.148B-Z38-LA71C4						
	0.13	10 011	0.9	10 295	★ 2KJ1432 - ■CC13 - ■■S1		287
	0.15	8 767	1.0	9 016	2KJ1432 - ■CC13 - ■■R1		287
	0.17	7 755	1.2	7 975	★ 2KJ1432 - ■CC13 - ■■Q1		287
	0.19	7 028	1.3	7 227	2KJ1432 - ■CC13 - ■■P1		287
	0.22	6 204	1.5	6 380	★ 2KJ1432 - ■CC13 - ■■N1		287
	0.24	5 596	1.6	5 755	2KJ1432 - ■CC13 - ■■M1		287
	0.26	5 076	1.8	5 220	★ 2KJ1432 - ■CC13 - ■■L1		287
	0.29	4 25	1.9	4 756	2KJ1432 - ■CC13 - ■■K1		287

★ Preferred transmission ratio

Shaft designs, see page 3/89

Frequency and voltage, see page 8/20

Gearbox housing mounting position, see page 3/92

*) For mounting type B5-01

1, 2, 3, 5, 6 or 9

1 to 9

A, D, E, F, H or M

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg	
0.18	FD.128B-Z38-LA71C4							
	0.18	7 479	0.82	7 691	★	2KJ1428 - CC13 - Q1	197	
	0.20	6 779	0.9	6 971		2KJ1428 - CC13 - P1	197	
	0.22	5 983	1.0	6 153	★	2KJ1428 - CC13 - N1	197	
	0.25	5 398	1.1	5 551		2KJ1428 - CC13 - M1	197	
	0.27	4 895	1.2	5 034	★	2KJ1428 - CC13 - L1	197	
	0.30	4 461	1.4	4 587		2KJ1428 - CC13 - K1	197	
	0.33	4 079	1.5	4 195	★	2KJ1428 - CC13 - J1	197	
	0.36	3 648	1.7	3 751		2KJ1428 - CC13 - H1	197	
	0.40	3 350	1.8	3 445	★	2KJ1428 - CC13 - G1	197	
0.44	3 019	2.0	3 105		2KJ1428 - CC13 - F1	197		
	FD.108B-Z38-LA71C4							
	0.34	3 967	0.86	4 079	★	2KJ1426 - CC13 - X1	122	
	0.38	3 547	0.96	3 648		2KJ1426 - CC13 - W1	122	
	0.41	3 257	1.0	3 349	★	2KJ1426 - CC13 - V1	122	
	0.45	2 936	1.2	3 019		2KJ1426 - CC13 - U1	122	
	0.53	2 524	1.3	2 596	★	2KJ1426 - CC13 - T1	122	
	0.59	2 251	1.5	2 315		2KJ1426 - CC13 - S1	122	
	0.64	2 067	1.6	2 126	★	2KJ1426 - CC13 - R1	122	
	0.72	1 863	1.8	1 916		2KJ1426 - CC13 - Q1	122	
		FD.88B-Z28-LA71C4						
0.61		2 188	0.87	2 250	★	2KJ1422 - CC13 - R1	73	
0.68		1 965	0.97	2 021		2KJ1422 - CC13 - Q1	73	
0.75		1 774	1.1	1 824	★	2KJ1422 - CC13 - P1	73	
0.83		1 608	1.2	1 654		2KJ1422 - CC13 - N1	73	
0.91		1 464	1.3	1 505	★	2KJ1422 - CC13 - M1	73	
1.0		1 294	1.5	1 331		2KJ1422 - CC13 - L1	73	
1.1		1 195	1.6	1 229	★	2KJ1422 - CC13 - K1	73	
1.3		1 029	1.8	1 058		2KJ1422 - CC13 - J1	73	
1.4		935	2.0	962	★	2KJ1422 - CC13 - H1	73	
	FD.88B-LA80S8							
1.7	1 031	1.8	404.92		2KJ1404 - DB13 - V1	P02	78	
	FD.68B-Z28-LA71C4							
	1.1	1 230	0.81	1 265		2KJ1417 - CC13 - P1	43	
	1.2	1 111	0.90	1 142	★	2KJ1417 - CC13 - N1	43	
	1.3	1 007	0.99	1 036		2KJ1417 - CC13 - M1	43	
	1.5	916	1.1	942	★	2KJ1417 - CC13 - L1	43	
	1.6	810	1.2	833		2KJ1417 - CC13 - K1	43	
	1.8	748	1.3	769	★	2KJ1417 - CC13 - J1	43	
	2.1	644	1.6	662		2KJ1417 - CC13 - H1	43	
		FD.68B-LA80S8						
2.3		754	1.3	296.18	★	2KJ1403 - DB13 - S1	P02	47
2.6		671	1.5	263.39		2KJ1403 - DB13 - R1	P02	47

★ Preferred transmission ratio

Shaft designs, see page 3/89

1, 2, 3, 5, 6 or 9

Frequency and voltage, see page 8/20

1 to 9

Gearbox housing mounting position, see page 3/92

A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
0.18	FD.68B-LA71S6						
	2.9	599	1.7	296.18	★ 2KJ1403 - ■CD13 - ■■S1	P01	43
	3.2	533	1.9	263.39	2KJ1403 - ■CD13 - ■■R1	P01	43
	FD.48B-Z28-LA71C4						
	2.2	607	0.89	624	2KJ1413 - ■CC13 - ■■H1		29
	FD.48B-LA80S8						
	2.8	608	0.89	238.65	2KJ1402 - ■DB13 - ■■R1	P02	31
	FD.48B-LA71S6						
	3.2	544	0.99	268.8	★ 2KJ1402 - ■CD13 - ■■S1	P01	27
	3.6	483	1.1	238.65	2KJ1402 - ■CD13 - ■■R1	P01	27
	4.1	423	1.3	209.23	★ 2KJ1402 - ■CD13 - ■■Q1	P01	27
	4.5	379	1.4	187.24	2KJ1402 - ■CD13 - ■■P1	P01	27
	FD.48B-LA71C4						
	5.1	337	1.6	268.8	★ 2KJ1402 - ■CC13 - ■■S1		27
	5.7	299	1.8	238.65	2KJ1402 - ■CC13 - ■■R1		27
	6.5	263	2.1	209.23	★ 2KJ1402 - ■CC13 - ■■Q1		27
	FD.38B-LA71C4						
	4.9	352	0.82	280.41	2KJ1401 - ■CC13 - ■■N1		20
	5.7	304	0.96	241.91	★ 2KJ1401 - ■CC13 - ■■M1		20
	6.6	261	1.1	207.83	2KJ1401 - ■CC13 - ■■L1		20
	7.2	240	1.2	191.34	★ 2KJ1401 - ■CC13 - ■■K1		20
	7.9	218	1.3	173.94	2KJ1401 - ■CC13 - ■■J1		20
	8.9	193	1.5	153.96	★ 2KJ1401 - ■CC13 - ■■H1		20
	10.6	162	1.8	128.95	2KJ1401 - ■CC13 - ■■G1		20
	12.5	138	2.1	109.95	★ 2KJ1401 - ■CC13 - ■■F1		20
	FD.28-LA71C4						
	10.6	162	0.93	128.77	2KJ1400 - ■CC13 - ■■G1		11
	12.5	138	1.1	109.79	★ 2KJ1400 - ■CC13 - ■■F1		11
	14.7	117	1.3	93.32	★ 2KJ1400 - ■CC13 - ■■E1		11
	16.9	102	1.5	81.1	2KJ1400 - ■CC13 - ■■D1		11
19.4	89	1.7	70.59	★ 2KJ1400 - ■CC13 - ■■C1		11	
22	80	1.9	63.68	2KJ1400 - ■CC13 - ■■B1		11	
24	70	2.1	56.2	2KJ1400 - ■CC13 - ■■A1		11	
FZ.28-LA71C4							
23	75	2.0	59.65	2KJ1300 - ■CC13 - ■■C2		11	
27	63	2.4	50.3	★ 2KJ1300 - ■CC13 - ■■B2		11	
31	56	2.7	44.66	2KJ1300 - ■CC13 - ■■A2		11	
35	49	3.1	39.15	★ 2KJ1300 - ■CC13 - ■■X1		11	
39	44	3.4	35.04	2KJ1300 - ■CC13 - ■■W1		11	
44	39	3.8	31.1	★ 2KJ1300 - ■CC13 - ■■V1		11	
50	34	4.4	27.25	2KJ1300 - ■CC13 - ■■U1		11	
57	30	5.0	23.96	★ 2KJ1300 - ■CC13 - ■■T1		11	
63	27	5.5	21.64	2KJ1300 - ■CC13 - ■■S1		11	
73	24	6.3	18.86	★ 2KJ1300 - ■CC13 - ■■R1		11	

★ Preferred transmission ratio

Shaft designs, see page 3/89

Frequency and voltage, see page 8/20

Gearbox housing mounting position, see page 3/92

*) For mounting type B5-01

1, 2, 3, 5, 6 or 9

1 to 9

A, D, E, F, H or M

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
0.18	FZ.28-LA71C4						
	81	21	7.1	16.94	2KJ1300 - ■ CC13 - ■■ Q1		11
	90	19	7.8	15.29 ★	2KJ1300 - ■ CC13 - ■■ P1		11
	99	17	8.6	13.87	2KJ1300 - ■ CC13 - ■■ N1		11
	109	16	9.3	12.62 ★	2KJ1300 - ■ CC13 - ■■ M1		11
	123	14	10.1	11.16	2KJ1300 - ■ CC13 - ■■ L1		11
	133	13	10.7	10.3 ★	2KJ1300 - ■ CC13 - ■■ K1		11
	154	11	11.8	8.87	2KJ1300 - ■ CC13 - ■■ J1		11
	170	10	12.6	8.06 ★	2KJ1300 - ■ CC13 - ■■ H1		11
	190	9	13.9	7.2 ★	2KJ1300 - ■ CC13 - ■■ G1		11
210	8.2	14.9	6.53	2KJ1300 - ■ CC13 - ■■ F1		11	
0.25	FD.188B-Z48-LA71S4						
	0.09	22 462	0.89	15 519	★	2KJ1438 - ■ CD13 - ■■ X1	638
	0.10	20 419	0.98	14 108		2KJ1438 - ■ CD13 - ■■ W1	638
	0.11	18 344	1.1	12 674	★	2KJ1438 - ■ CD13 - ■■ V1	638
	0.12	15 723	1.3	10 863		2KJ1438 - ■ CD13 - ■■ U1	638
	0.14	14 226	1.4	9 829	★	2KJ1438 - ■ CD13 - ■■ T1	638
	0.15	13 132	1.5	9 073		2KJ1438 - ■ CD13 - ■■ S1	638
	0.17	11 418	1.8	7 889	★	2KJ1438 - ■ CD13 - ■■ R1	638
	0.19	10 367	1.9	7 163		2KJ1438 - ■ CD13 - ■■ Q1	638
	FD.168B-Z48-LA71S4						
	0.12	16 743	0.84	11 568	★	2KJ1435 - ■ CD13 - ■■ V1	454
	0.14	14 352	0.98	9 916		2KJ1435 - ■ CD13 - ■■ U1	454
	0.15	12 984	1.1	8 971	★	2KJ1435 - ■ CD13 - ■■ T1	454
	0.16	11 986	1.2	8 281		2KJ1435 - ■ CD13 - ■■ S1	454
	0.19	10 422	1.3	7 201	★	2KJ1435 - ■ CD13 - ■■ R1	454
	0.21	9 463	1.5	6 538		2KJ1435 - ■ CD13 - ■■ Q1	454
	0.23	8 641	1.6	5 970	★	2KJ1435 - ■ CD13 - ■■ P1	454
	0.25	7 927	1.8	5 477		2KJ1435 - ■ CD13 - ■■ N1	454
	0.27	7 303	1.9	5 046	★	2KJ1435 - ■ CD13 - ■■ M1	454
	FD.148B-Z38-LA71S4						
0.19	10 460	0.86	7 227		2KJ1432 - ■ CD13 - ■■ P1	287	
0.21	9 234	0.97	6 380	★	2KJ1432 - ■ CD13 - ■■ N1	287	
0.24	8 330	1.1	5 755		2KJ1432 - ■ CD13 - ■■ M1	287	
0.26	7 555	1.2	5 220	★	2KJ1432 - ■ CD13 - ■■ L1	287	
0.28	6 884	1.3	4 756		2KJ1432 - ■ CD13 - ■■ K1	287	
0.31	6 296	1.4	4 350	★	2KJ1432 - ■ CD13 - ■■ J1	287	
0.35	5 629	1.6	3 889		2KJ1432 - ■ CD13 - ■■ H1	287	
0.38	5 169	1.7	3 571	★	2KJ1432 - ■ CD13 - ■■ G1	287	
0.42	4 659	1.9	3 219		2KJ1432 - ■ CD13 - ■■ F1	287	
FD.128B-Z38-LA71S4							
0.27	7 286	0.84	5 034	★	2KJ1428 - ■ CD13 - ■■ L1	197	
0.29	6 639	0.92	4 587		2KJ1428 - ■ CD13 - ■■ K1	197	
0.32	6 072	1.0	4 195	★	2KJ1428 - ■ CD13 - ■■ J1	197	

★ Preferred transmission ratio

Shaft designs, see page 3/89 ————— 1, 2, 3, 5, 6 or 9

Frequency and voltage, see page 8/20 ————— 1 to 9

Gearbox housing mounting position, see page 3/92 ————— A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
0.25	FD.128B-Z38-LA71S4						
	0.36	5 429	1.1	3 751	2KJ1428 - ■CD13 - ■■H1		197
	0.39	4 986	1.2	3 445	★ 2KJ1428 - ■CD13 - ■■G1		197
	0.44	4 494	1.4	3 105	2KJ1428 - ■CD13 - ■■F1		197
	0.51	3 864	1.6	2 670	★ 2KJ1428 - ■CD13 - ■■E1		197
	0.57	3 446	1.8	2 381	2KJ1428 - ■CD13 - ■■D1		197
	0.62	3 164	1.9	2 186	★ 2KJ1428 - ■CD13 - ■■C1		197
	FD.108B-Z38-LA71S4						
	0.52	3 757	0.9	2 596	★ 2KJ1426 - ■CD13 - ■■T1		122
	0.58	3 351	1.0	2 315	2KJ1426 - ■CD13 - ■■S1		122
	0.64	3 077	1.1	2 126	★ 2KJ1426 - ■CD13 - ■■R1		122
	0.70	2 773	1.2	1 916	2KJ1426 - ■CD13 - ■■Q1		122
	0.82	2 384	1.4	1 647	★ 2KJ1426 - ■CD13 - ■■P1		122
	0.88	2 209	1.5	1 526	2KJ1426 - ■CD13 - ■■N1		122
	0.98	2 003	1.7	1 384	★ 2KJ1426 - ■CD13 - ■■M1		122
	1.1	1 825	1.9	1 261	2KJ1426 - ■CD13 - ■■L1		122
	1.2	1 669	2.0	1 153	★ 2KJ1426 - ■CD13 - ■■K1		122
	FD.88B-Z28-LA71S4						
	0.9	2 178	0.87	1 505	★ 2KJ1422 - ■CD13 - ■■M1		73
	1.0	1 926	0.99	1 331	2KJ1422 - ■CD13 - ■■L1		73
	1.1	1 779	1.1	1 229	★ 2KJ1422 - ■CD13 - ■■K1		73
	1.3	1 531	1.2	1 058	2KJ1422 - ■CD13 - ■■J1		73
	1.4	1 392	1.4	962	★ 2KJ1422 - ■CD13 - ■■H1		73
	1.5	1 265	1.5	874	★ 2KJ1422 - ■CD13 - ■■G1		73
FD.88B-LA80M8							
1.7	1 411	1.3	404.92	2KJ1404 - ■DC13 - ■■V1	P02	78	
1.9	1 249	1.5	358.33	★ 2KJ1404 - ■DC13 - ■■U1	P02	78	
FD.88B-LA71M6							
2.1	1 124	1.7	404.92	2KJ1404 - ■CE13 - ■■V1	P01	74	
2.4	995	1.9	358.33	★ 2KJ1404 - ■CE13 - ■■U1	P01	74	
FD.68B-Z28-LA71S4							
1.6	1 206	0.83	833	2KJ1417 - ■CD13 - ■■K1		43	
1.8	1 113	0.9	769	★ 2KJ1417 - ■CD13 - ■■J1		43	
2.0	958	1.0	662	2KJ1417 - ■CD13 - ■■H1		43	
FD.68B-LA80M8							
2.3	1 032	0.97	296.18	★ 2KJ1403 - ■DC13 - ■■S1	P02	47	
2.6	918	1.1	263.39	2KJ1403 - ■DC13 - ■■R1	P02	47	
FD.68B-LA71M6							
2.9	822	1.2	296.18	★ 2KJ1403 - ■CE13 - ■■S1	P01	43	
3.3	731	1.4	263.39	2KJ1403 - ■CE13 - ■■R1	P01	43	
3.8	634	1.6	228.48	★ 2KJ1403 - ■CE13 - ■■Q1	P01	43	
4.0	593	1.7	213.48	2KJ1403 - ■CE13 - ■■P1	P01	43	

★ Preferred transmission ratio

Shaft designs, see page 3/89

Frequency and voltage, see page 8/20

Gearbox housing mounting position, see page 3/92

*) For mounting type B5-01

1, 2, 3, 5, 6 or 9

1 to 9

A, D, E, F, H or M

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
0.25	FD.68B-LA71S4						
	4.6	524	1.9	296.18	★	2KJ1403 - ■CD13 - ■■S1	43
	5.1	466	2.1	263.39		2KJ1403 - ■CD13 - ■■R1	43
	FD.48B-LA71M6						
	3.6	663	0.82	238.65		2KJ1402 - ■CE13 - ■■R1	P01
	4.1	581	0.93	209.23	★	2KJ1402 - ■CE13 - ■■Q1	P01
	4.6	520	1.0	187.24		2KJ1402 - ■CE13 - ■■P1	P01
	FD.48B-LA71S4						
	5.0	475	1.1	268.8	★	2KJ1402 - ■CD13 - ■■S1	27
	5.7	422	1.3	238.65		2KJ1402 - ■CD13 - ■■R1	27
	6.5	370	1.5	209.23	★	2KJ1402 - ■CD13 - ■■Q1	27
	7.2	331	1.6	187.24		2KJ1402 - ■CD13 - ■■P1	27
	8.1	294	1.8	166.19	★	2KJ1402 - ■CD13 - ■■N1	27
	9.3	258	2.1	145.63		2KJ1402 - ■CD13 - ■■M1	27
	FD.38B-LA71S4						
	7.1	338	0.86	191.34	★	2KJ1401 - ■CD13 - ■■K1	20
	7.8	308	0.94	173.94		2KJ1401 - ■CD13 - ■■J1	20
	8.8	272	1.1	153.96	★	2KJ1401 - ■CD13 - ■■H1	20
	10.5	228	1.3	128.95		2KJ1401 - ■CD13 - ■■G1	20
	12.3	194	1.5	109.95	★	2KJ1401 - ■CD13 - ■■F1	20
	14.4	165	1.8	93.46		2KJ1401 - ■CD13 - ■■E1	20
	16.6	144	2.0	81.22	★	2KJ1401 - ■CD13 - ■■D1	20
	19.1	125	2.3	70.7		2KJ1401 - ■CD13 - ■■C1	20
		FZ.38B-LA71S4					
24		100	2.1	56.72	★	2KJ1301 - ■CD13 - ■■B2	19
	FD.28-LA71S4						
	14.5	165	0.91	93.32	★	2KJ1400 - ■CD13 - ■■E1	11
	16.6	143	1.0	81.1		2KJ1400 - ■CD13 - ■■D1	11
	19.1	125	1.2	70.59	★	2KJ1400 - ■CD13 - ■■C1	11
	21	113	1.3	63.68		2KJ1400 - ■CD13 - ■■B1	11
	24	99	1.5	56.2		2KJ1400 - ■CD13 - ■■A1	11
	FZ.28-LA71S4						
	23	105	1.4	59.65		2KJ1300 - ■CD13 - ■■C2	11
	27	89	1.7	50.3	★	2KJ1300 - ■CD13 - ■■B2	11
	30	79	1.9	44.66		2KJ1300 - ■CD13 - ■■A2	11
	34	69	2.2	39.15	★	2KJ1300 - ■CD13 - ■■X1	11
	38	62	2.4	35.04		2KJ1300 - ■CD13 - ■■W1	11
	43	55	2.7	31.1	★	2KJ1300 - ■CD13 - ■■V1	11
	50	48	3.1	27.25		2KJ1300 - ■CD13 - ■■U1	11
	56	42	3.5	23.96	★	2KJ1300 - ■CD13 - ■■T1	11
	62	38	3.9	21.64		2KJ1300 - ■CD13 - ■■S1	11
	72	33	4.5	18.86	★	2KJ1300 - ■CD13 - ■■R1	11
	80	30	5.0	16.94		2KJ1300 - ■CD13 - ■■Q1	11
88	27	5.5	15.29	★	2KJ1300 - ■CD13 - ■■P1	11	

★ Preferred transmission ratio

Shaft designs, see page 3/89

1, 2, 3, 5, 6 or 9

Frequency and voltage, see page 8/20

1 to 9

Gearbox housing mounting position, see page 3/92

A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
0.25	FZ.28-LA71S4						
	97	24	6.1	13.87	2KJ1300 - CD13 - N1		11
	107	22	6.6	12.62	★ 2KJ1300 - CD13 - M1		11
	121	20	7.2	11.16	2KJ1300 - CD13 - L1		11
	131	18	7.6	10.3	★ 2KJ1300 - CD13 - K1		11
	152	16	8.4	8.87	2KJ1300 - CD13 - J1		11
	167	14	8.9	8.06	★ 2KJ1300 - CD13 - H1		11
	188	13	9.9	7.2	★ 2KJ1300 - CD13 - G1		11
	207	12	10.6	6.53	2KJ1300 - CD13 - F1		11
	227	10	11.2	5.94	★ 2KJ1300 - CD13 - E1		11
	257	9.3	12.0	5.25	2KJ1300 - CD13 - D1		11
	278	8.6	12.8	4.85	★ 2KJ1300 - CD13 - C1		11
	323	7.4	13.4	4.18	2KJ1300 - CD13 - B1		11
	355	6.7	14.3	3.8	★ 2KJ1300 - CD13 - A1		11
0.37	FD.188B-Z48-LA71M4						
	0.13	23 944	0.84	10 863	2KJ1438 - CE13 - U1		638
	0.14	21 665	0.92	9 829	★ 2KJ1438 - CE13 - T1		638
	0.15	19 998	1.0	9 073	2KJ1438 - CE13 - S1		638
	0.17	17 389	1.2	7 889	★ 2KJ1438 - CE13 - R1		638
	0.19	15 788	1.3	7 163	2KJ1438 - CE13 - Q1		638
	0.21	14 415	1.4	6 540	★ 2KJ1438 - CE13 - P1		638
	0.23	13 227	1.5	6 001	2KJ1438 - CE13 - N1		638
	0.25	12 187	1.6	5 529	★ 2KJ1438 - CE13 - M1		638
	0.27	11 067	1.8	5 021	2KJ1438 - CE13 - L1		638
	0.30	10 082	2.0	4 574	★ 2KJ1438 - CE13 - K1		638
	FD.168B-Z48-LA71M4						
	0.19	15 872	0.88	7 201	★ 2KJ1435 - CE13 - R1		454
	0.21	14 411	0.97	6 538	2KJ1435 - CE13 - Q1		454
	0.23	13 159	1.1	5 970	★ 2KJ1435 - CE13 - P1		454
	0.25	12 072	1.2	5 477	2KJ1435 - CE13 - N1		454
	0.27	11 122	1.3	5 046	★ 2KJ1435 - CE13 - M1		454
	0.30	10 102	1.4	4 583	2KJ1435 - CE13 - L1		454
	0.33	9 202	1.5	4 175	★ 2KJ1435 - CE13 - K1		454
	0.36	8 431	1.7	3 825	2KJ1435 - CE13 - J1		454
0.40	7 523	1.9	3 413	★ 2KJ1435 - CE13 - H1		454	
FD.148B-Z38-LA71M4							
0.29	10 483	0.86	4 756	2KJ1432 - CE13 - K1		287	
0.32	9 588	0.94	4 350	★ 2KJ1432 - CE13 - J1		287	
0.35	8 572	1.0	3 889	2KJ1432 - CE13 - H1		287	
0.38	7 871	1.1	3 571	★ 2KJ1432 - CE13 - G1		287	
0.43	7 095	1.3	3 219	2KJ1432 - CE13 - F1		287	
0.50	6 101	1.5	2 768	★ 2KJ1432 - CE13 - E1		287	
0.56	5 440	1.7	2 468	2KJ1432 - CE13 - D1		287	
0.60	4 995	1.8	2 266	★ 2KJ1432 - CE13 - C1		287	

★ Preferred transmission ratio

Shaft designs, see page 3/89 ————— 1, 2, 3, 5, 6 or 9

Frequency and voltage, see page 8/20 ————— 1 to 9

Gearbox housing mounting position, see page 3/92 ————— A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
0.37	FD.148B-Z38-LA71M4						
	0.67	4 503	2.0	2 043	2KJ1432 - ■CE13 - ■■B1		287
	FD.128B-Z38-LA71M4						
	0.40	7 593	0.80	3 445	★ 2KJ1428 - ■CE13 - ■■G1		197
	0.44	6 844	0.89	3 105	2KJ1428 - ■CE13 - ■■F1		197
	0.51	5 885	1.0	2 670	★ 2KJ1428 - ■CE13 - ■■E1		197
	0.57	5 248	1.2	2 381	2KJ1428 - ■CE13 - ■■D1		197
	0.63	4 818	1.3	2 186	★ 2KJ1428 - ■CE13 - ■■C1		197
	0.70	4 342	1.4	1 970	2KJ1428 - ■CE13 - ■■B1		197
	0.81	3 734	1.6	1 694	★ 2KJ1428 - ■CE13 - ■■A1		197
	FD.128B-Z48-LA71M4						
	0.91	3 315	1.8	1 504	2KJ1431 - ■CE13 - ■■L1		206
1.0	3 020	2.0	1 370	★ 2KJ1431 - ■CE13 - ■■K1		206	
	FD.108B-Z38-LA71M4						
	0.72	4 223	0.81	1 916	2KJ1426 - ■CE13 - ■■Q1		122
	0.83	3 630	0.94	1 647	★ 2KJ1426 - ■CE13 - ■■P1		122
	0.90	3 364	1.0	1 526	2KJ1426 - ■CE13 - ■■N1		122
	0.99	3 051	1.1	1 384	★ 2KJ1426 - ■CE13 - ■■M1		122
	1.1	2 779	1.2	1 261	2KJ1426 - ■CE13 - ■■L1		122
	1.2	2 541	1.3	1 153	★ 2KJ1426 - ■CE13 - ■■K1		122
	1.3	2 272	1.5	1 031	2KJ1426 - ■CE13 - ■■J1		122
1.4	2 087	1.6	947	★ 2KJ1426 - ■CE13 - ■■H1		122	
	FD.108B-LA90SA8						
	1.6	2 222	1.5	424.49	★ 2KJ1405 - ■EB13 - ■■V1	P02	128
	1.8	2 004	1.7	382.79	2KJ1405 - ■EB13 - ■■U1	P02	128
2.0	1 807	1.9	345.19	★ 2KJ1405 - ■EB13 - ■■T1	P02	128	
	FD.88B-Z28-LA71M4						
	1.3	2 332	0.81	1 058	2KJ1422 - ■CE13 - ■■J1		73
	1.4	2 120	0.90	962	★ 2KJ1422 - ■CE13 - ■■H1		73
1.6	1 926	0.99	874	★ 2KJ1422 - ■CE13 - ■■G1		73	
	FD.88B-LA90SA8						
1.9	1 876	1.0	358.33	★ 2KJ1404 - ■EB13 - ■■U1	P02	81	
	FD.88B-LA80S6						
	2.3	1 555	1.2	404.92	2KJ1404 - ■DB13 - ■■V1	P01	78
	2.6	1 376	1.4	358.33	★ 2KJ1404 - ■DB13 - ■■U1	P01	78
	2.8	1 251	1.5	325.76	2KJ1404 - ■DB13 - ■■T1	P01	78
3.1	1 124	1.7	292.64	★ 2KJ1404 - ■DB13 - ■■S1	P01	78	
	FD.88B-LA71M4						
3.4	1 044	1.8	404.92	2KJ1404 - ■CE13 - ■■V1		74	
	FD.68B-LA80S6						
	3.1	1 138	0.88	296.18	★ 2KJ1403 - ■DB13 - ■■S1	P01	47
	3.5	1 012	0.99	263.39	2KJ1403 - ■DB13 - ■■R1	P01	47
	4.0	878	1.1	228.48	★ 2KJ1403 - ■DB13 - ■■Q1	P01	47
4.3	820	1.2	213.48	2KJ1403 - ■DB13 - ■■P1	P01	47	

★ Preferred transmission ratio

Shaft designs, see page 3/89

1, 2, 3, 5, 6 or 9

Frequency and voltage, see page 8/20

1 to 9

Gearbox housing mounting position, see page 3/92

A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
0.37	FD.68B-LA71M4						
	4.6	764	1.3	296.18	★	2KJ1403 - ■CE13 - ■■S1	43
	5.2	679	1.5	263.39		2KJ1403 - ■CE13 - ■■R1	43
	6.0	589	1.7	228.48	★	2KJ1403 - ■CE13 - ■■Q1	43
	6.4	551	1.8	213.48		2KJ1403 - ■CE13 - ■■P1	43
	7.3	484	2.1	187.76	★	2KJ1403 - ■CE13 - ■■N1	43
	FD.48B-LA71M4						
	5.7	616	0.88	238.65		2KJ1402 - ■CE13 - ■■R1	27
	6.5	540	1.0	209.23	★	2KJ1402 - ■CE13 - ■■Q1	27
	7.3	483	1.1	187.24		2KJ1402 - ■CE13 - ■■P1	27
	8.2	429	1.3	166.19	★	2KJ1402 - ■CE13 - ■■N1	27
	9.4	376	1.4	145.63		2KJ1402 - ■CE13 - ■■M1	27
	10.7	330	1.6	128.04	★	2KJ1402 - ■CE13 - ■■L1	27
	11.8	298	1.8	115.68		2KJ1402 - ■CE13 - ■■K1	27
	13.6	260	2.1	100.8	★	2KJ1402 - ■CE13 - ■■J1	27
	FD.38B-LA71M4						
	10.6	333	0.87	128.95		2KJ1401 - ■CE13 - ■■G1	20
	12.5	284	1.0	109.95	★	2KJ1401 - ■CE13 - ■■F1	20
	14.7	241	1.2	93.46	★	2KJ1401 - ■CE13 - ■■E1	20
	16.9	209	1.4	81.22		2KJ1401 - ■CE13 - ■■D1	20
	19.4	182	1.6	70.7	★	2KJ1401 - ■CE13 - ■■C1	20
	22	164	1.8	63.77		2KJ1401 - ■CE13 - ■■B1	20
	24	145	2.0	56.28		2KJ1401 - ■CE13 - ■■A1	20
	FZ.38B-LA71M4						
	24	146	1.4	56.72	★	2KJ1301 - ■CE13 - ■■B2	19
	27	130	1.8	50.44		2KJ1301 - ■CE13 - ■■A2	19
	31	113	2.2	43.75	★	2KJ1301 - ■CE13 - ■■X1	19
34	105	2.6	40.88		2KJ1301 - ■CE13 - ■■W1	19	
FD.28-LA71M4							
19.4	182	0.82	70.59	★	2KJ1400 - ■CE13 - ■■C1	11	
22	164	0.91	63.68		2KJ1400 - ■CE13 - ■■B1	11	
24	145	1.0	56.2		2KJ1400 - ■CE13 - ■■A1	11	
FZ.28-LA71M4							
23	154	0.97	59.65		2KJ1300 - ■CE13 - ■■C2	11	
27	130	1.2	50.3	★	2KJ1300 - ■CE13 - ■■B2	11	
31	115	1.3	44.66		2KJ1300 - ■CE13 - ■■A2	11	
35	101	1.5	39.15	★	2KJ1300 - ■CE13 - ■■X1	11	
39	90	1.7	35.04		2KJ1300 - ■CE13 - ■■W1	11	
44	80	1.9	31.1	★	2KJ1300 - ■CE13 - ■■V1	11	
50	70	2.1	27.25		2KJ1300 - ■CE13 - ■■U1	11	
57	62	2.4	23.96	★	2KJ1300 - ■CE13 - ■■T1	11	
63	56	2.7	21.64		2KJ1300 - ■CE13 - ■■S1	11	
73	49	3.1	18.86	★	2KJ1300 - ■CE13 - ■■R1	11	

★ Preferred transmission ratio

Shaft designs, see page 3/89

Frequency and voltage, see page 8/20

Gearbox housing mounting position, see page 3/92

*) For mounting type B5-01

1, 2, 3, 5, 6 or 9

1 to 9

A, D, E, F, H or M

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
0.55	FD.188B-Z48-LA71ZMP4						
	0.19	24 147	0.83	7 163	2KJ1438 - ■CG13 - ■■Q1		638
	0.21	22 047	0.91	6 540	★ 2KJ1438 - ■CG13 - ■■P1		638
	0.23	20 230	0.99	6 001	2KJ1438 - ■CG13 - ■■N1		638
	0.25	18 639	1.1	5 529	★ 2KJ1438 - ■CG13 - ■■M1		638
	0.27	16 926	1.2	5 021	2KJ1438 - ■CG13 - ■■L1		638
	0.30	15 419	1.3	4 574	★ 2KJ1438 - ■CG13 - ■■K1		638
	0.33	14 125	1.4	4 190	2KJ1438 - ■CG13 - ■■J1		638
	0.37	12 604	1.6	3 739	★ 2KJ1438 - ■CG13 - ■■H1		638
	FD.168B-Z48-LA71ZMP4						
	0.27	17 010	0.82	5 046	★ 2KJ1435 - ■CG13 - ■■M1		454
	0.30	15 450	0.91	4 583	2KJ1435 - ■CG13 - ■■L1		454
	0.33	14 074	0.99	4 175	★ 2KJ1435 - ■CG13 - ■■K1		454
	0.36	12 894	1.1	3 825	2KJ1435 - ■CG13 - ■■J1		454
	0.40	11 505	1.2	3 413	★ 2KJ1435 - ■CG13 - ■■H1		454
	0.65	7 143	2.0	2 119	★ 2KJ1435 - ■CG13 - ■■D1		454
	FD.148B-Z48-LA71ZMP4						
	0.84	5 508	1.6	1 634	2KJ1434 - ■CG13 - ■■K1		296
	0.92	5 020	1.8	1 489	★ 2KJ1434 - ■CG13 - ■■J1		296
	1.0	4 598	2.0	1 364	2KJ1434 - ■CG13 - ■■H1		296
	FD.148B-Z38-LA71ZMP4						
	0.43	10 852	0.83	3 219	2KJ1432 - ■CG13 - ■■F1		287
	0.50	9 331	0.96	2 768	★ 2KJ1432 - ■CG13 - ■■E1		287
	0.56	8 320	1.1	2 468	2KJ1432 - ■CG13 - ■■D1		287
	0.60	7 639	1.2	2 266	★ 2KJ1432 - ■CG13 - ■■C1		287
	0.67	6 887	1.3	2 043	2KJ1432 - ■CG13 - ■■B1		287
	0.78	5 923	1.5	1 757	★ 2KJ1432 - ■CG13 - ■■A1		287
	FD.128B-Z48-LA71ZMP4						
	0.91	5 070	1.2	1 504	2KJ1431 - ■CG13 - ■■L1		206
	1.0	4 618	1.3	1 370	★ 2KJ1431 - ■CG13 - ■■K1		206
	1.1	4 231	1.4	1 255	2KJ1431 - ■CG13 - ■■J1		206
	1.2	3 776	1.6	1 120	★ 2KJ1431 - ■CG13 - ■■H1		206
FD.128B-Z38-LA71ZMP4							
0.63	7 369	0.83	2 186	★ 2KJ1428 - ■CG13 - ■■C1		197	
0.70	6 641	0.92	1 970	2KJ1428 - ■CG13 - ■■B1		197	
0.81	5 711	1.1	1 694	★ 2KJ1428 - ■CG13 - ■■A1		197	
FD.128B-LA90LA8							
1.5	3 486	1.7	447.96	2KJ1406 - ■EE13 - ■■V1	P02	212	
1.7	3 155	1.9	405.47	★ 2KJ1406 - ■EE13 - ■■U1	P02	212	
FD.108B-Z38-LA71ZMP4							
1.1	4 251	0.80	1 261	2KJ1426 - ■CG13 - ■■L1		122	
1.2	3 887	0.87	1 153	★ 2KJ1426 - ■CG13 - ■■K1		122	
1.3	3 476	0.98	1 031	2KJ1426 - ■CG13 - ■■J1		122	
1.4	3 192	1.1	947	★ 2KJ1426 - ■CG13 - ■■H1		122	

★ Preferred transmission ratio

Shaft designs, see page 3/89

Frequency and voltage, see page 8/20

Gearbox housing mounting position, see page 3/92

*) For mounting type B5-01

1, 2, 3, 5, 6 or 9

1 to 9

A, D, E, F, H or M

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg	
0.55	FD.108B-LA90LA8							
	1.6	3 303	1.0	424.49	★	2KJ1405 - ■EE13 - ■■V1	P02	131
	1.8	2 979	1.1	382.79		2KJ1405 - ■EE13 - ■■U1	P02	131
	2.0	2 686	1.3	345.19	★	2KJ1405 - ■EE13 - ■■T1	P02	131
	FD.108B-LA80M6							
	2.1	2 450	1.4	424.49	★	2KJ1405 - ■DC13 - ■■V1	P01	125
	2.4	2 209	1.5	382.79		2KJ1405 - ■DC13 - ■■U1	P01	125
	2.6	1 992	1.7	345.19	★	2KJ1405 - ■DC13 - ■■T1	P01	125
	3.0	1 742	2.0	301.88		2KJ1405 - ■DC13 - ■■S1	P01	125
	FD.88B-LA80M6							
	2.2	2 337	0.81	404.92		2KJ1404 - ■DC13 - ■■V1	P01	78
	2.5	2 068	0.92	358.33	★	2KJ1404 - ■DC13 - ■■U1	P01	78
	2.8	1 880	1.0	325.76		2KJ1404 - ■DC13 - ■■T1	P01	78
	3.1	1 689	1.1	292.64	★	2KJ1404 - ■DC13 - ■■S1	P01	78
	FD.88B-LA71ZMP4							
	3.4	1 552	1.2	404.92		2KJ1404 - ■CG13 - ■■V1		74
	3.8	1 374	1.4	358.33	★	2KJ1404 - ■CG13 - ■■U1		74
	4.2	1 249	1.5	325.76		2KJ1404 - ■CG13 - ■■T1		74
	4.7	1 122	1.7	292.64	★	2KJ1404 - ■CG13 - ■■S1		74
	5.5	962	2.0	250.83		2KJ1404 - ■CG13 - ■■R1		74
	FD.68B-LA80M6							
	4.3	1 232	0.81	213.48		2KJ1403 - ■DC13 - ■■P1	P01	47
	FD.68B-LA71ZMP4							
	4.6	1 136	0.88	296.18	★	2KJ1403 - ■CG13 - ■■S1		43
	5.2	1 010	0.99	263.39		2KJ1403 - ■CG13 - ■■R1		43
	6.0	876	1.1	228.48	★	2KJ1403 - ■CG13 - ■■Q1		43
	6.4	818	1.2	213.48		2KJ1403 - ■CG13 - ■■P1		43
	7.3	720	1.4	187.76	★	2KJ1403 - ■CG13 - ■■N1		43
	8.3	630	1.6	164.44		2KJ1403 - ■CG13 - ■■M1		43
	9.4	558	1.8	145.44	★	2KJ1403 - ■CG13 - ■■L1		43
	10.4	505	2.0	131.82		2KJ1403 - ■CG13 - ■■K1		43
	11.8	446	2.2	116.36	★	2KJ1403 - ■CG13 - ■■J1		43
	FD.48B-LA71ZMP4							
8.2	637	0.85	166.19	★	2KJ1402 - ■CG13 - ■■N1		27	
9.4	558	0.97	145.63		2KJ1402 - ■CG13 - ■■M1		27	
10.7	491	1.1	128.04	★	2KJ1402 - ■CG13 - ■■L1		27	
11.8	444	1.2	115.68		2KJ1402 - ■CG13 - ■■K1		27	
13.6	386	1.4	100.8	★	2KJ1402 - ■CG13 - ■■J1		27	
15.1	347	1.6	90.53		2KJ1402 - ■CG13 - ■■H1		27	
16.8	313	1.7	81.73	★	2KJ1402 - ■CG13 - ■■G1		27	
18.5	284	1.9	74.1		2KJ1402 - ■CG13 - ■■F1		27	
20	259	2.1	67.43	★	2KJ1402 - ■CG13 - ■■E1		27	
23	229	2.4	59.62		2KJ1402 - ■CG13 - ■■D1		27	

★ Preferred transmission ratio

Shaft designs, see page 3/89

1, 2, 3, 5, 6 or 9

Frequency and voltage, see page 8/20

1 to 9

Gearbox housing mounting position, see page 3/92

A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
0.55	FZ.48B-LA71ZMP4						
	23	233	1.7	60.71	★	2KJ1302 - ■CG13 - ■■B2	27
	25	212	2.4	55.19		2KJ1302 - ■CG13 - ■■A2	27
	FD.38B-LA71ZMP4						
	14.7	358	0.81	93.46	★	2KJ1401 - ■CG13 - ■■E1	20
	16.9	311	0.93	81.22		2KJ1401 - ■CG13 - ■■D1	20
	19.4	271	1.1	70.7	★	2KJ1401 - ■CG13 - ■■C1	20
	22	244	1.2	63.77		2KJ1401 - ■CG13 - ■■B1	20
	24	216	1.3	56.28		2KJ1401 - ■CG13 - ■■A1	20
	FZ.38B-LA71ZMP4						
	24	217	0.97	56.72	★	2KJ1301 - ■CG13 - ■■B2	19
	27	193	1.2	50.44		2KJ1301 - ■CG13 - ■■A2	19
	31	168	1.5	43.75	★	2KJ1301 - ■CG13 - ■■X1	19
	34	157	1.8	40.88		2KJ1301 - ■CG13 - ■■W1	19
	38	138	2.1	35.96	★	2KJ1301 - ■CG13 - ■■V1	19
	44	121	2.4	31.49		2KJ1301 - ■CG13 - ■■U1	19
	49	107	2.7	27.85	★	2KJ1301 - ■CG13 - ■■T1	19
	FZ.28-LA71ZMP4						
	31	171	0.88	44.66		2KJ1300 - ■CG13 - ■■A2	11
	35	150	1.0	39.15	★	2KJ1300 - ■CG13 - ■■X1	11
	39	134	1.1	35.04		2KJ1300 - ■CG13 - ■■W1	11
	44	119	1.3	31.1	★	2KJ1300 - ■CG13 - ■■V1	11
	50	104	1.4	27.25		2KJ1300 - ■CG13 - ■■U1	11
	57	92	1.6	23.96	★	2KJ1300 - ■CG13 - ■■T1	11
	63	83	1.8	21.64		2KJ1300 - ■CG13 - ■■S1	11
	73	72	2.1	18.86	★	2KJ1300 - ■CG13 - ■■R1	11
	81	65	2.3	16.94		2KJ1300 - ■CG13 - ■■Q1	11
90	59	2.6	15.29	★	2KJ1300 - ■CG13 - ■■P1	11	
99	53	2.8	13.87		2KJ1300 - ■CG13 - ■■N1	11	
109	48	3.1	12.62	★	2KJ1300 - ■CG13 - ■■M1	11	
123	43	3.3	11.16		2KJ1300 - ■CG13 - ■■L1	11	
133	40	3.5	10.3	★	2KJ1300 - ■CG13 - ■■K1	11	
154	34	3.9	8.87		2KJ1300 - ■CG13 - ■■J1	11	
170	31	4.1	8.06	★	2KJ1300 - ■CG13 - ■■H1	11	
0.75	FD.188B-Z48-LA80ZMB4E						
	0.28	22 934	0.87	5 021		2KJ1438 - ■DE13 - ■■L1	642
	0.31	20 892	0.96	4 574	★	2KJ1438 - ■DE13 - ■■K1	642
	0.33	19 138	1.0	4 190		2KJ1438 - ■DE13 - ■■J1	642
	0.37	17 078	1.2	3 739	★	2KJ1438 - ■DE13 - ■■H1	642
	0.42	15 242	1.3	3 337		2KJ1438 - ■DE13 - ■■G1	642
	0.49	12 945	1.5	2 834		2KJ1438 - ■DE13 - ■■F1	642
	0.59	10 775	1.9	2 359	★	2KJ1438 - ■DE13 - ■■E1	642
	0.60	10 606	1.9	2 322	★	2KJ1438 - ■DE13 - ■■D1	642

★ Preferred transmission ratio

Shaft designs, see page 3/89

1, 2, 3, 5, 6 or 9

Frequency and voltage, see page 8/20

1 to 9

Gearbox housing mounting position, see page 3/92

A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
0.75	FD.168B-Z48-LA80ZMB4E						
	0.37	17 471	0.80	3 825	2KJ1435 - DE13 - J1		458
	0.41	15 589	0.90	3 413	★ 2KJ1435 - DE13 - H1		458
	0.46	13 913	1.0	3 046	2KJ1435 - DE13 - G1		458
	0.54	11 816	1.2	2 587	2KJ1435 - DE13 - F1		458
	0.65	9 834	1.4	2 153	★ 2KJ1435 - DE13 - E1		458
	0.66	9 679	1.4	2 119	★ 2KJ1435 - DE13 - D1		458
	0.74	8 637	1.6	1 891	2KJ1435 - DE13 - C1		458
	0.87	7 336	1.9	1 606	2KJ1435 - DE13 - B1		458
	FD.148B-Z38-LA80ZMB4E						
	0.57	11 273	0.80	2 468	2KJ1432 - DE13 - D1		291
	0.62	10 350	0.87	2 266	★ 2KJ1432 - DE13 - C1		291
	0.68	9 332	0.96	2 043	2KJ1432 - DE13 - B1		291
	0.80	8 025	1.1	1 757	★ 2KJ1432 - DE13 - A1		291
	FD.148B-Z48-LA80ZMB4E						
	0.86	7 464	1.2	1 634	2KJ1434 - DE13 - K1		300
	0.94	6 801	1.3	1 489	★ 2KJ1434 - DE13 - J1		300
	1.0	6 230	1.4	1 364	2KJ1434 - DE13 - H1		300
	1.2	5 559	1.6	1 217	★ 2KJ1434 - DE13 - G1		300
	1.3	4 960	1.8	1 086	2KJ1434 - DE13 - F1		300
	FD.148B-LA100LA8						
	1.5	4 732	1.9	449.21	★ 2KJ1407 - FB13 - U1	P02	316
	FD.128B-Z48-LA80ZMB4E						
	0.93	6 870	0.89	1 504	2KJ1431 - DE13 - L1		210
	1.0	6 258	0.97	1 370	★ 2KJ1431 - DE13 - K1		210
	1.1	5 732	1.1	1 255	2KJ1431 - DE13 - J1		210
	1.2	5 116	1.2	1 120	★ 2KJ1431 - DE13 - H1		210
	1.4	4 563	1.3	999	2KJ1431 - DE13 - G1		210
	FD.128B-LA100LA8						
	1.9	3 739	1.6	354.99	2KJ1406 - FB13 - T1	P02	220
	FD.128B-LA90SB6E						
	2.1	3 469	1.8	447.96	2KJ1406 - ED13 - V1	P01	209
	2.3	3 140	1.9	405.47	★ 2KJ1406 - ED13 - U1	P01	209
	FD.108B-LA90SB6E						
	2.2	3 287	1.0	424.49	★ 2KJ1405 - ED13 - V1	P01	128
	2.4	2 964	1.1	382.79	2KJ1405 - ED13 - U1	P01	128
	2.7	2 673	1.3	345.19	★ 2KJ1405 - ED13 - T1	P01	128
	3.1	2 338	1.5	301.88	2KJ1405 - ED13 - S1	P01	128
	FD.108B-LA80ZMB4E						
	3.3	2 172	1.6	424.49	★ 2KJ1405 - DE13 - V1		125
	3.7	1 958	1.7	382.79	2KJ1405 - DE13 - U1		125
	4.1	1 766	1.9	345.19	★ 2KJ1405 - DE13 - T1		125
	FD.88B-LA90SB6E						
	3.2	2 266	0.84	292.64	★ 2KJ1404 - ED13 - S1	P01	81

★ Preferred transmission ratio

Shaft designs, see page 3/89

Frequency and voltage, see page 8/20

Gearbox housing mounting position, see page 3/92

*) For mounting type B5-01

1, 2, 3, 5, 6 or 9

1 to 9

A, D, E, F, H or M

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
0.75	FD.88B-LA80ZMB4E						
	3.5	2 072	0.92	404.92	2KJ1404 - ■DE13 - ■■V1		78
	3.9	1 833	1.0	358.33	★ 2KJ1404 - ■DE13 - ■■U1		78
	4.3	1 667	1.1	325.76	2KJ1404 - ■DE13 - ■■T1		78
	4.8	1 497	1.3	292.64	★ 2KJ1404 - ■DE13 - ■■S1		78
	5.6	1 283	1.5	250.83	2KJ1404 - ■DE13 - ■■R1		78
	6.2	1 161	1.6	226.94	★ 2KJ1404 - ■DE13 - ■■P1		78
	6.7	1 072	1.8	209.49	2KJ1404 - ■DE13 - ■■N1		78
	7.7	932	2.0	182.15	★ 2KJ1404 - ■DE13 - ■■M1		78
	FD.68B-LA80ZMB4E						
	6.1	1 169	0.86	228.48	★ 2KJ1403 - ■DE13 - ■■Q1		47
	6.6	1 092	0.92	213.48	2KJ1403 - ■DE13 - ■■P1		47
	7.5	961	1.0	187.76	★ 2KJ1403 - ■DE13 - ■■N1		47
	8.5	841	1.2	164.44	2KJ1403 - ■DE13 - ■■M1		47
	9.6	744	1.3	145.44	★ 2KJ1403 - ■DE13 - ■■L1		47
	10.6	674	1.5	131.82	2KJ1403 - ■DE13 - ■■K1		47
	12.0	595	1.7	116.36	★ 2KJ1403 - ■DE13 - ■■J1		47
	13.3	537	1.9	104.96	2KJ1403 - ■DE13 - ■■H1		47
	14.7	487	2.1	95.2	★ 2KJ1403 - ■DE13 - ■■G1		47
	16.1	444	2.3	86.74	2KJ1403 - ■DE13 - ■■F1		47
	FD.48B-LA80ZMB4E						
	10.9	655	0.82	128.04	★ 2KJ1402 - ■DE13 - ■■L1		31
	12.1	592	0.91	115.68	2KJ1402 - ■DE13 - ■■K1		31
	13.9	516	1.0	100.8	★ 2KJ1402 - ■DE13 - ■■J1		31
	15.5	463	1.2	90.53	2KJ1402 - ■DE13 - ■■H1		31
	17.1	418	1.3	81.73	★ 2KJ1402 - ■DE13 - ■■G1		31
	18.9	379	1.4	74.1	2KJ1402 - ■DE13 - ■■F1		31
	21	345	1.6	67.43	★ 2KJ1402 - ■DE13 - ■■E1		31
	24	305	1.8	59.62	2KJ1402 - ■DE13 - ■■D1		31
	25	282	1.9	55.06	★ 2KJ1402 - ■DE13 - ■■C1		31
	30	243	2.2	47.4	2KJ1402 - ■DE13 - ■■B1		31
	32	220	2.4	43.09	★ 2KJ1402 - ■DE13 - ■■A1		31
	FZ.48B-LA80ZMB4E						
	23	311	1.3	60.71	★ 2KJ1302 - ■DE13 - ■■B2		31
	25	282	1.8	55.19	2KJ1302 - ■DE13 - ■■A2		31
	28	254	2.1	49.58	★ 2KJ1302 - ■DE13 - ■■X1		31
	33	217	2.5	42.5	2KJ1302 - ■DE13 - ■■W1		31
	FD.38B-LA80ZMB4E						
	19.8	362	0.80	70.7	★ 2KJ1401 - ■DE13 - ■■C1		24
	22	326	0.89	63.77	2KJ1401 - ■DE13 - ■■B1		24
	25	288	1.0	56.28	2KJ1401 - ■DE13 - ■■A1		24
	FZ.38B-LA80ZMB4E						
	28	258	0.89	50.44	2KJ1301 - ■DE13 - ■■A2		23
	32	224	1.1	43.75	★ 2KJ1301 - ■DE13 - ■■X1		23

★ Preferred transmission ratio

Shaft designs, see page 3/89

Frequency and voltage, see page 8/20

Gearbox housing mounting position, see page 3/92

*) For mounting type B5-01

1, 2, 3, 5, 6 or 9

1 to 9

A, D, E, F, H or M

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
0.75	FZ.38B-LA80ZMB4E						
	34	209	1.3	40.88	2KJ1301 - DE13 - W1		23
	39	184	1.6	35.96	★ 2KJ1301 - DE13 - V1		23
	44	161	1.8	31.49	2KJ1301 - DE13 - U1		23
	50	142	2.0	27.85	★ 2KJ1301 - DE13 - T1		23
	56	129	2.2	25.24	2KJ1301 - DE13 - S1		23
	63	114	2.5	22.28	★ 2KJ1301 - DE13 - R1		23
	70	103	2.8	20.1	2KJ1301 - DE13 - Q1		23
	77	93	3.1	18.23	★ 2KJ1301 - DE13 - P1		23
	FZ.28-LA80ZMB4E						
	40	179	0.84	35.04	2KJ1300 - DE13 - W1		15
	45	159	0.94	31.1	★ 2KJ1300 - DE13 - V1		15
	51	139	1.1	27.25	2KJ1300 - DE13 - U1		15
	58	123	1.2	23.96	★ 2KJ1300 - DE13 - T1		15
	65	111	1.4	21.64	2KJ1300 - DE13 - S1		15
	74	96	1.6	18.86	★ 2KJ1300 - DE13 - R1		15
	83	87	1.7	16.94	2KJ1300 - DE13 - Q1		15
	92	78	1.9	15.29	★ 2KJ1300 - DE13 - P1		15
	101	71	2.1	13.87	2KJ1300 - DE13 - N1		15
	111	65	2.3	12.62	★ 2KJ1300 - DE13 - M1		15
	125	57	2.5	11.16	2KJ1300 - DE13 - L1		15
	136	53	2.6	10.3	★ 2KJ1300 - DE13 - K1		15
	158	45	2.9	8.87	2KJ1300 - DE13 - J1		15
	174	41	3.1	8.06	★ 2KJ1300 - DE13 - H1		15
	194	37	3.4	7.2	★ 2KJ1300 - DE13 - G1		15
	214	33	3.7	6.53	2KJ1300 - DE13 - F1		15
	236	30	3.9	5.94	★ 2KJ1300 - DE13 - E1		15
	267	27	4.1	5.25	2KJ1300 - DE13 - D1		15
289	25	4.4	4.85	★ 2KJ1300 - DE13 - C1		15	
335	21	4.6	4.18	2KJ1300 - DE13 - B1		15	
368	19	4.9	3.8	★ 2KJ1300 - DE13 - A1		15	
1.1	FD.188B-Z48-LA90SB4E						
	0.38	24 675	0.81	3 739	★ 2KJ1438 - EM13 - H1		645
	0.43	22 022	0.91	3 337	2KJ1438 - EM13 - G1		645
	0.51	18 703	1.1	2 834	2KJ1438 - EM13 - F1		645
	0.61	15 568	1.3	2 359	★ 2KJ1438 - EM13 - E1		645
	0.62	15 324	1.3	2 322	★ 2KJ1438 - EM13 - D1		645
	0.70	13 674	1.5	2 072	2KJ1438 - EM13 - C1		645
	0.82	11 615	1.7	1 760	2KJ1438 - EM13 - B1		645
	FD.168B-Z48-LA90SB4E						
	0.56	17 073	0.82	2 587	2KJ1435 - EM13 - F1		461
	0.67	14 209	0.99	2 153	★ 2KJ1435 - EM13 - E1		461
	0.68	13 984	1.0	2 119	★ 2KJ1435 - EM13 - D1		461
	0.76	12 480	1.1	1 891	2KJ1435 - EM13 - C1		461

★ Preferred transmission ratio

Shaft designs, see page 3/89 ————— 1, 2, 3, 5, 6 or 9

Frequency and voltage, see page 8/20 ————— 1 to 9

Gearbox housing mounting position, see page 3/92 ————— A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
1.1							
FD.168B-Z48-LA90SB4E							
0.9	10 599	1.3	1 606	2KJ1435 - EM13 - B1		461	
1.1	8 823	1.6	1 337	★ 2KJ1435 - EM13 - A1		461	
FD.168B-Z68-LA90SB4E							
1.1	8 566	1.6	1 298	2KJ1437 - EM13 - H1		478	
1.3	7 312	1.9	1 108	★ 2KJ1437 - EM13 - G1		478	
FD.148B-Z48-LA90SB4E							
0.88	10 783	0.83	1 634	2KJ1434 - EM13 - K1		303	
0.97	9 827	0.92	1 489	★ 2KJ1434 - EM13 - J1		303	
1.1	9 002	1.0	1 364	2KJ1434 - EM13 - H1		303	
1.2	8 032	1.1	1 217	★ 2KJ1434 - EM13 - G1		303	
1.3	7 167	1.3	1 086	2KJ1434 - EM13 - F1		303	
FD.148B-LA100L8							
1.5	6 940	1.3	449.21	★ 2KJ1407 - FL13 - U1	P02	316	
1.7	6 364	1.4	411.98	2KJ1407 - FL13 - T1	P02	316	
1.8	5 686	1.6	368.06	★ 2KJ1407 - FL13 - S1	P02	316	
2.0	5 207	1.7	337.07	2KJ1407 - FL13 - R1	P02	316	
FD.128B-Z48-LA90SB4E							
1.3	7 391	0.83	1 120	★ 2KJ1431 - EM13 - H1		213	
1.4	6 593	0.93	999	2KJ1431 - EM13 - G1		213	
FD.128B-LA100L8							
1.9	5 484	1.1	354.99	2KJ1406 - FL13 - T1	P02	220	
FD.128B-LA90ZLD6E							
2.1	5 006	1.2	447.96	2KJ1406 - EQ13 - V1	P01	212	
2.3	4 531	1.3	405.47	★ 2KJ1406 - EQ13 - U1	P01	212	
2.6	3 967	1.5	354.99	2KJ1406 - EQ13 - T1	P01	212	
2.9	3 579	1.7	320.24	★ 2KJ1406 - EQ13 - S1	P01	212	
FD.128B-LA90SB4E							
3.2	3 268	1.9	447.96	2KJ1406 - EM13 - V1		209	
FD.108B-LA90ZLD6E							
2.7	3 858	0.88	345.19	★ 2KJ1405 - EQ13 - T1	P01	131	
3.1	3 374	1.0	301.88	2KJ1405 - EQ13 - S1	P01	131	
FD.108B-LA90SB4E							
3.4	3 097	1.1	424.49	★ 2KJ1405 - EM13 - V1		128	
3.8	2 793	1.2	382.79	2KJ1405 - EM13 - U1		128	
4.2	2 518	1.4	345.19	★ 2KJ1405 - EM13 - T1		128	
4.8	2 202	1.5	301.88	2KJ1405 - EM13 - S1		128	
5.3	1 977	1.7	271.01	★ 2KJ1405 - EM13 - R1		128	
5.8	1 806	1.9	247.53	2KJ1405 - EM13 - Q1		128	
6.6	1 602	2.1	219.66	★ 2KJ1405 - EM13 - P1		128	
FD.88B-LA90SB4E							
4.4	2 376	0.8	325.76	2KJ1404 - EM13 - T1		81	
4.9	2 135	0.89	292.64	★ 2KJ1404 - EM13 - S1		81	
5.7	1 830	1.0	250.83	2KJ1404 - EM13 - R1		81	

★ Preferred transmission ratio

Shaft designs, see page 3/89

1, 2, 3, 5, 6 or 9

Frequency and voltage, see page 8/20

1 to 9

Gearbox housing mounting position, see page 3/92

A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
1.1							
FD.88B-LA90SB4E							
	6.3	1 656	1.1	226.94	★ 2KJ1404 - ■EM13 - ■■P1		81
	6.9	1 528	1.2	209.49	2KJ1404 - ■EM13 - ■■N1		81
	7.9	1 329	1.4	182.15	★ 2KJ1404 - ■EM13 - ■■M1		81
	8.7	1 206	1.6	165.38	2KJ1404 - ■EM13 - ■■L1		81
	9.5	1 102	1.7	151.01	★ 2KJ1404 - ■EM13 - ■■K1		81
	10.4	1 011	1.9	138.56	2KJ1404 - ■EM13 - ■■J1		81
	11.3	931	2.0	127.66	★ 2KJ1404 - ■EM13 - ■■H1		81
	12.4	846	2.2	115.93	2KJ1404 - ■EM13 - ■■G1		81
FD.68B-LA90SB4E							
	8.8	1 200	0.83	164.44	2KJ1403 - ■EM13 - ■■M1		50
	9.9	1 061	0.94	145.44	★ 2KJ1403 - ■EM13 - ■■L1		50
	10.9	962	1.0	131.82	2KJ1403 - ■EM13 - ■■K1		50
	12.4	849	1.2	116.36	★ 2KJ1403 - ■EM13 - ■■J1		50
	13.7	766	1.3	104.96	2KJ1403 - ■EM13 - ■■H1		50
	15.1	694	1.4	95.2	★ 2KJ1403 - ■EM13 - ■■G1		50
	16.6	633	1.6	86.74	2KJ1403 - ■EM13 - ■■F1		50
	18.2	579	1.7	79.33	★ 2KJ1403 - ■EM13 - ■■E1		50
	20	517	1.9	70.93	2KJ1403 - ■EM13 - ■■D1		50
	22	475	2.1	65.14	★ 2KJ1403 - ■EM13 - ■■C1		50
	24	428	2.3	58.71	2KJ1403 - ■EM13 - ■■B1		50
FZ.68B-LA90SB4E							
	24	446	1.9	61.17	★ 2KJ1303 - ■EM13 - ■■B2		49
FD.48B-LA90SB4E							
	15.9	660	0.82	90.53	2KJ1402 - ■EM13 - ■■H1		34
	17.6	596	0.91	81.73	★ 2KJ1402 - ■EM13 - ■■G1		34
	19.4	541	1.0	74.1	2KJ1402 - ■EM13 - ■■F1		34
	21	492	1.1	67.43	★ 2KJ1402 - ■EM13 - ■■E1		34
	24	435	1.2	59.62	2KJ1402 - ■EM13 - ■■D1		34
	26	402	1.3	55.06	★ 2KJ1402 - ■EM13 - ■■C1		34
	30	346	1.6	47.4	2KJ1402 - ■EM13 - ■■B1		34
	33	314	1.7	43.09	★ 2KJ1402 - ■EM13 - ■■A1		34
FZ.48B-LA90SB4E							
	24	443	0.90	60.71	★ 2KJ1302 - ■EM13 - ■■B2		34
	26	403	1.2	55.19	2KJ1302 - ■EM13 - ■■A2		34
	29	362	1.5	49.58	★ 2KJ1302 - ■EM13 - ■■X1		34
	34	310	1.7	42.5	2KJ1302 - ■EM13 - ■■W1		34
	38	280	1.9	38.45	★ 2KJ1302 - ■EM13 - ■■V1		34
	41	259	2.1	35.49	2KJ1302 - ■EM13 - ■■U1		34
	47	225	2.4	30.86	★ 2KJ1302 - ■EM13 - ■■T1		34
	51	204	2.6	28.02	2KJ1302 - ■EM13 - ■■S1		34
	56	187	2.9	25.59	★ 2KJ1302 - ■EM13 - ■■R1		34
FZ.38B-LA90SB4E							
	35	298	0.92	40.88	2KJ1301 - ■EM13 - ■■W1		26

★ Preferred transmission ratio

Shaft designs, see page 3/89

Frequency and voltage, see page 8/20

Gearbox housing mounting position, see page 3/92

*) For mounting type B5-01

1, 2, 3, 5, 6 or 9

1 to 9

A, D, E, F, H or M

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
1.1	FZ.38B-LA90SB4E						
	40	262	1.1	35.96	★	2KJ1301 - EM13 - V1	26
	46	230	1.3	31.49		2KJ1301 - EM13 - U1	26
	52	203	1.4	27.85	★	2KJ1301 - EM13 - T1	26
	57	184	1.6	25.24		2KJ1301 - EM13 - S1	26
	65	163	1.8	22.28	★	2KJ1301 - EM13 - R1	26
	72	147	2.0	20.1		2KJ1301 - EM13 - Q1	26
	79	133	2.2	18.23	★	2KJ1301 - EM13 - P1	26
	87	121	2.4	16.61		2KJ1301 - EM13 - N1	26
	95	111	2.6	15.19	★	2KJ1301 - EM13 - M1	26
	106	99	2.9	13.58		2KJ1301 - EM13 - L1	26
	115	91	3.2	12.47	★	2KJ1301 - EM13 - K1	26
	128	82	3.5	11.24		2KJ1301 - EM13 - J1	26
	1.1	FZ.28-LA90SB4E					
60		175	0.86	23.96	★	2KJ1300 - EM13 - T1	18
66		158	0.95	21.64		2KJ1300 - EM13 - S1	18
76		138	1.1	18.86	★	2KJ1300 - EM13 - R1	18
85		124	1.2	16.94		2KJ1300 - EM13 - Q1	18
94		112	1.3	15.29	★	2KJ1300 - EM13 - P1	18
104		101	1.5	13.87		2KJ1300 - EM13 - N1	18
114		92	1.6	12.62	★	2KJ1300 - EM13 - M1	18
129		81	1.7	11.16		2KJ1300 - EM13 - L1	18
140		75	1.8	10.3	★	2KJ1300 - EM13 - K1	18
162		65	2.0	8.87		2KJ1300 - EM13 - J1	18
179		59	2.2	8.06	★	2KJ1300 - EM13 - H1	18
200		52	2.4	7.2	★	2KJ1300 - EM13 - G1	18
221		48	2.6	6.53		2KJ1300 - EM13 - F1	18
242		43	2.7	5.94	★	2KJ1300 - EM13 - E1	18
274		38	2.9	5.25		2KJ1300 - EM13 - D1	18
297		35	3.1	4.85	★	2KJ1300 - EM13 - C1	18
344		30	3.2	4.18		2KJ1300 - EM13 - B1	18
379		28	3.5	3.8	★	2KJ1300 - EM13 - A1	18
1.5	FD.188B-Z48-LA90ZLB4E						
	0.61	21 388	0.94	2 359	★	2KJ1438 - EQ13 - E1	648
	0.62	21 052	0.95	2 322	★	2KJ1438 - EQ13 - D1	648
	0.70	18 786	1.1	2 072		2KJ1438 - EQ13 - C1	648
	0.82	15 957	1.3	1 760		2KJ1438 - EQ13 - B1	648
	0.98	13 282	1.5	1 465	★	2KJ1438 - EQ13 - A1	648
1.5	FD.188B-Z68-LA90ZLB4E						
	0.99	13 137	1.5	1 449		2KJ1441 - EQ13 - H1	665
	1.2	11 206	1.8	1 236	★	2KJ1441 - EQ13 - G1	665
1.5	FD.168B-Z48-LA90ZLB4E						
	0.76	17 145	0.82	1 891		2KJ1435 - EQ13 - C1	464
	0.90	14 561	0.96	1 606		2KJ1435 - EQ13 - B1	464

★ Preferred transmission ratio

Shaft designs, see page 3/89 ————— 1, 2, 3, 5, 6 or 9

Frequency and voltage, see page 8/20 ————— 1 to 9

Gearbox housing mounting position, see page 3/92 ————— A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
1.5	FD.168B-Z48-LA90ZLB4E						
	1.1	12 122	1.2	1 337	★ 2KJ1435 - ■EQ13 - ■■A1		464
	FD.168B-Z68-LA90ZLB4E						
	1.1	11 768	1.2	1 298	2KJ1437 - ■EQ13 - ■■H1		481
	1.3	10 046	1.4	1 108	★ 2KJ1437 - ■EQ13 - ■■G1		481
	FD.148B-Z48-LA90ZLB4E						
	1.2	11 034	0.82	1 217	★ 2KJ1434 - ■EQ13 - ■■G1		306
	1.3	9 846	0.91	1 086	2KJ1434 - ■EQ13 - ■■F1		306
	FD.148B-LA112M8						
	1.6	9 128	0.99	449.21	★ 2KJ1407 - ■GG13 - ■■U1	P02	323
	1.7	8 371	1.1	411.98	2KJ1407 - ■GG13 - ■■T1	P02	323
	1.9	7 479	1.2	368.06	★ 2KJ1407 - ■GG13 - ■■S1	P02	323
	FD.148B-LA100ZLP6E						
	2.1	6 882	1.3	449.21	★ 2KJ1407 - ■FM13 - ■■U1	P01	316
	2.3	6 312	1.4	411.98	2KJ1407 - ■FM13 - ■■T1	P01	316
	2.5	5 639	1.6	368.06	★ 2KJ1407 - ■FM13 - ■■S1	P01	316
	2.8	5 164	1.7	337.07	2KJ1407 - ■FM13 - ■■R1	P01	316
	3.0	4 757	1.9	310.51	★ 2KJ1407 - ■FM13 - ■■Q1	P01	316
	FD.128B-LA100ZLP6E						
	2.6	5 439	1.1	354.99	2KJ1406 - ■FM13 - ■■T1	P01	220
	2.9	4 906	1.2	320.24	★ 2KJ1406 - ■FM13 - ■■S1	P01	220
	FD.128B-LA90ZLB4E						
	3.2	4 456	1.4	447.96	2KJ1406 - ■EQ13 - ■■V1		212
	3.6	4 034	1.5	405.47	★ 2KJ1406 - ■EQ13 - ■■U1		212
	4.1	3 531	1.7	354.99	2KJ1406 - ■EQ13 - ■■T1		212
	4.5	3 186	1.9	320.24	★ 2KJ1406 - ■EQ13 - ■■S1		212
	FD.108B-LA90ZLB4E						
	3.4	4 223	0.81	424.49	★ 2KJ1405 - ■EQ13 - ■■V1		131
	3.8	3 808	0.89	382.79	2KJ1405 - ■EQ13 - ■■U1		131
	4.2	3 434	0.99	345.19	★ 2KJ1405 - ■EQ13 - ■■T1		131
	4.8	3 003	1.1	301.88	2KJ1405 - ■EQ13 - ■■S1		131
	5.3	2 696	1.3	271.01	★ 2KJ1405 - ■EQ13 - ■■R1		131
	5.8	2 462	1.4	247.53	2KJ1405 - ■EQ13 - ■■Q1		131
	6.6	2 185	1.6	219.66	★ 2KJ1405 - ■EQ13 - ■■P1		131
	7.1	2 017	1.7	202.77	2KJ1405 - ■EQ13 - ■■N1		131
	7.9	1 824	1.9	183.39	★ 2KJ1405 - ■EQ13 - ■■M1		131
	8.5	1 680	2.0	168.88	2KJ1405 - ■EQ13 - ■■L1		131
	FD.88B-LA90ZLB4E						
	6.3	2 258	0.84	226.94	★ 2KJ1404 - ■EQ13 - ■■P1		84
	6.9	2 084	0.91	209.49	2KJ1404 - ■EQ13 - ■■N1		84
	7.9	1 812	1.0	182.15	★ 2KJ1404 - ■EQ13 - ■■M1		84
	8.7	1 645	1.2	165.38	2KJ1404 - ■EQ13 - ■■L1		84
	9.5	1 502	1.3	151.01	★ 2KJ1404 - ■EQ13 - ■■K1		84
	10.4	1 378	1.4	138.56	2KJ1404 - ■EQ13 - ■■J1		84

★ Preferred transmission ratio

Shaft designs, see page 3/89

1, 2, 3, 5, 6 or 9

Frequency and voltage, see page 8/20

1 to 9

Gearbox housing mounting position, see page 3/92

A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
1.5	FD.88B-LA90ZLB4E						
	11.3	1 270	1.5	127.66	★	2KJ1404 - ■EQ13 - ■■H1	84
	12.4	1 153	1.6	115.93		2KJ1404 - ■EQ13 - ■■G1	84
	13.6	1 051	1.8	105.61	★	2KJ1404 - ■EQ13 - ■■F1	84
	14.9	962	2.0	96.75		2KJ1404 - ■EQ13 - ■■E1	84
	16.7	859	2.2	86.33	★	2KJ1404 - ■EQ13 - ■■D1	84
	FD.68B-LA90ZLB4E						
	12.4	1 158	0.86	116.36	★	2KJ1403 - ■EQ13 - ■■J1	53
	13.7	1 044	0.96	104.96		2KJ1403 - ■EQ13 - ■■H1	53
	15.1	947	1.1	95.2	★	2KJ1403 - ■EQ13 - ■■G1	53
	16.6	863	1.2	86.74		2KJ1403 - ■EQ13 - ■■F1	53
	18.2	789	1.3	79.33	★	2KJ1403 - ■EQ13 - ■■E1	53
	20	706	1.4	70.93		2KJ1403 - ■EQ13 - ■■D1	53
	22	648	1.5	65.14	★	2KJ1403 - ■EQ13 - ■■C1	53
	24	584	1.7	58.71		2KJ1403 - ■EQ13 - ■■B1	53
	28	502	2.0	50.48	★	2KJ1403 - ■EQ13 - ■■A1	53
	FZ.68B-LA90ZLB4E						
	24	609	1.4	61.17	★	2KJ1303 - ■EQ13 - ■■B2	52
	27	532	1.9	53.5		2KJ1303 - ■EQ13 - ■■A2	52
30	478	2.1	48.03	★	2KJ1303 - ■EQ13 - ■■X1	52	
33	436	2.3	43.87		2KJ1303 - ■EQ13 - ■■V1	52	
37	387	2.6	38.93	★	2KJ1303 - ■EQ13 - ■■U1	52	
FD.48B-LA90ZLB4E							
21	671	0.81	67.43	★	2KJ1402 - ■EQ13 - ■■E1	37	
24	593	0.91	59.62		2KJ1402 - ■EQ13 - ■■D1	37	
26	548	0.99	55.06	★	2KJ1402 - ■EQ13 - ■■C1	37	
30	472	1.1	47.4		2KJ1402 - ■EQ13 - ■■B1	37	
33	429	1.3	43.09	★	2KJ1402 - ■EQ13 - ■■A1	37	
FZ.48B-LA90ZLB4E							
26	549	0.91	55.19		2KJ1302 - ■EQ13 - ■■A2	37	
29	493	1.1	49.58	★	2KJ1302 - ■EQ13 - ■■X1	37	
34	423	1.3	42.5		2KJ1302 - ■EQ13 - ■■W1	37	
38	382	1.4	38.45	★	2KJ1302 - ■EQ13 - ■■V1	37	
41	353	1.5	35.49		2KJ1302 - ■EQ13 - ■■U1	37	
47	307	1.8	30.86	★	2KJ1302 - ■EQ13 - ■■T1	37	
51	279	1.9	28.02		2KJ1302 - ■EQ13 - ■■S1	37	
56	255	2.1	25.59	★	2KJ1302 - ■EQ13 - ■■R1	37	
61	234	2.3	23.48		2KJ1302 - ■EQ13 - ■■Q1	37	
67	215	2.5	21.63	★	2KJ1302 - ■EQ13 - ■■P1	37	
73	195	2.8	19.64		2KJ1302 - ■EQ13 - ■■N1	37	
80	178	3.0	17.89	★	2KJ1302 - ■EQ13 - ■■M1	37	
88	163	3.3	16.39		2KJ1302 - ■EQ13 - ■■L1	37	

★ Preferred transmission ratio

Shaft designs, see page 3/89

Frequency and voltage, see page 8/20

Gearbox housing mounting position, see page 3/92

*) For mounting type B5-01

1, 2, 3, 5, 6 or 9

1 to 9

A, D, E, F, H or M

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
1.5	FZ.38B-LA90ZLB4E						
	40	358	0.81	35.96	★ 2KJ1301 - ■EQ13 - ■■V1		29
	46	313	0.93	31.49	2KJ1301 - ■EQ13 - ■■U1		29
	52	277	1.0	27.85	★ 2KJ1301 - ■EQ13 - ■■T1		29
	57	251	1.2	25.24	2KJ1301 - ■EQ13 - ■■S1		29
	65	222	1.3	22.28	★ 2KJ1301 - ■EQ13 - ■■R1		29
	72	200	1.5	20.1	2KJ1301 - ■EQ13 - ■■Q1		29
	79	181	1.6	18.23	★ 2KJ1301 - ■EQ13 - ■■P1		29
	87	165	1.8	16.61	2KJ1301 - ■EQ13 - ■■N1		29
	95	151	1.9	15.19	★ 2KJ1301 - ■EQ13 - ■■M1		29
	106	135	2.1	13.58	2KJ1301 - ■EQ13 - ■■L1		29
	115	124	2.3	12.47	★ 2KJ1301 - ■EQ13 - ■■K1		29
	128	112	2.6	11.24	2KJ1301 - ■EQ13 - ■■J1		29
	149	96	3.0	9.67	★ 2KJ1301 - ■EQ13 - ■■H1		29
	169	85	3.4	8.52	★ 2KJ1301 - ■EQ13 - ■■G1		29
	186	77	3.8	7.76	2KJ1301 - ■EQ13 - ■■F1		29
	203	71	4.1	7.1	★ 2KJ1301 - ■EQ13 - ■■E1		29
	227	63	4.4	6.35	2KJ1301 - ■EQ13 - ■■D1		29
	247	58	4.7	5.83	★ 2KJ1301 - ■EQ13 - ■■C1		29
	274	52	4.8	5.25	2KJ1301 - ■EQ13 - ■■B1		29
319	45	5.1	4.52	★ 2KJ1301 - ■EQ13 - ■■A1		29	
FZ.38B-LA90SB2E							
159	90	3.2	18.23	★ 2KJ1301 - ■EM13 - ■■P1	P00	26	
174	82	3.5	16.61	2KJ1301 - ■EM13 - ■■N1	P00	26	
190	75	3.9	15.19	★ 2KJ1301 - ■EM13 - ■■M1	P00	26	
213	67	4.3	13.58	2KJ1301 - ■EM13 - ■■L1	P00	26	
FZ.28-LA90ZLB4E							
76	188	0.80	18.86	★ 2KJ1300 - ■EQ13 - ■■R1		21	
85	169	0.89	16.94	2KJ1300 - ■EQ13 - ■■Q1		21	
94	152	0.99	15.29	★ 2KJ1300 - ■EQ13 - ■■P1		21	
104	138	1.1	13.87	2KJ1300 - ■EQ13 - ■■N1		21	
114	126	1.2	12.62	★ 2KJ1300 - ■EQ13 - ■■M1		21	
129	111	1.3	11.16	2KJ1300 - ■EQ13 - ■■L1		21	
140	102	1.3	10.3	★ 2KJ1300 - ■EQ13 - ■■K1		21	
162	88	1.5	8.87	2KJ1300 - ■EQ13 - ■■J1		21	
179	80	1.6	8.06	★ 2KJ1300 - ■EQ13 - ■■H1		21	
200	72	1.8	7.2	★ 2KJ1300 - ■EQ13 - ■■G1		21	
221	65	1.9	6.53	2KJ1300 - ■EQ13 - ■■F1		21	
242	59	2.0	5.94	★ 2KJ1300 - ■EQ13 - ■■E1		21	
274	52	2.1	5.25	2KJ1300 - ■EQ13 - ■■D1		21	
297	48	2.3	4.85	★ 2KJ1300 - ■EQ13 - ■■C1		21	
344	42	2.4	4.18	2KJ1300 - ■EQ13 - ■■B1		21	
379	38	2.5	3.8	★ 2KJ1300 - ■EQ13 - ■■A1		21	

★ Preferred transmission ratio

Shaft designs, see page 3/89

1, 2, 3, 5, 6 or 9

Frequency and voltage, see page 8/20

1 to 9

Gearbox housing mounting position, see page 3/92

A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
2.2	FD.188B-Z48-LA100ZLP4E						
	0.82	23 638	0.85	1 760	2KJ1438 - FM13 - B1		656
	0.98	19676	1.0	1 465	★ 2KJ1438 - FM13 - A1		656
	FD.188B-Z68-LA100ZLP4E						
	0.99	19 461	1.0	1 449	2KJ1441 - FM13 - H1		673
	1.2	16 600	1.2	1 236	★ 2KJ1441 - FM13 - G1		673
	1.4	13 833	1.4	1 030	2KJ1441 - FM13 - F1		673
	FD.188B-LA132S8						
	1.7	12 122	1.6	403.86	★ 2KJ1410 - HE13 - U1	P02	676
	1.9	11 121	1.8	370.52	2KJ1410 - HE13 - T1	P02	676
	2.0	10 263	1.9	341.94	★ 2KJ1410 - HE13 - S1	P02	676
	FD.168B-Z68-LA100ZLP4E						
	1.1	17 433	0.80	1 298	2KJ1437 - FM13 - H1		489
	1.3	14 881	0.94	1 108	★ 2KJ1437 - FM13 - G1		489
	1.6	12 396	1.1	923	2KJ1437 - FM13 - F1		489
	FD.168B-LA132S8						
	1.9	11 083	1.3	369.26	★ 2KJ1408 - HE13 - V1	P02	495
	2.1	10 160	1.4	338.49	2KJ1408 - HE13 - U1	P02	495
	2.2	9 368	1.5	312.12	★ 2KJ1408 - HE13 - T1	P02	495
	2.4	8 682	1.6	289.26	2KJ1408 - HE13 - S1	P02	495
	2.5	8 255	1.7	275.03	★ 2KJ1408 - HE13 - R1	P02	495
	FD.148B-LA132S8						
	1.9	11 047	0.81	368.06	★ 2KJ1407 - HE13 - S1	P02	333
	FD.148B-LA112ZMP6E						
	2.1	9 883	0.91	449.21	★ 2KJ1407 - GJ13 - U1	P01	323
	2.3	9 064	0.99	411.98	2KJ1407 - GJ13 - T1	P01	323
	2.6	8 097	1.1	368.06	★ 2KJ1407 - GJ13 - S1	P01	323
	2.8	7 416	1.2	337.07	2KJ1407 - GJ13 - R1	P01	323
	3.1	6 831	1.3	310.51	★ 2KJ1407 - GJ13 - Q1	P01	323
	FD.148B-LA100ZLP4E						
	3.2	6 577	1.4	449.21	★ 2KJ1407 - FM13 - U1		316
	3.5	6 032	1.5	411.98	2KJ1407 - FM13 - T1		316
	3.9	5 389	1.7	368.06	★ 2KJ1407 - FM13 - S1		316
	4.3	4 935	1.8	337.07	2KJ1407 - FM13 - R1		316
	4.6	4 546	2.0	310.51	★ 2KJ1407 - FM13 - Q1		316
	5.0	4 209	2.1	287.49	2KJ1407 - FM13 - P1		316
	FD.128B-LA112ZMP6E						
	3.0	7 045	0.87	320.24	★ 2KJ1406 - GJ13 - S1	P01	227
	FD.128B-LA100ZLP4E						
	4.0	5 197	1.2	354.99	2KJ1406 - FM13 - T1		220
	4.5	4 689	1.3	320.24	★ 2KJ1406 - FM13 - S1		220
	4.9	4 293	1.4	293.22	2KJ1406 - FM13 - R1		220
	5.5	3 819	1.6	260.84	★ 2KJ1406 - FM13 - Q1		220
	6	3 490	1.7	238.39	2KJ1406 - FM13 - P1		220

★ Preferred transmission ratio

Shaft designs, see page 3/89

Frequency and voltage, see page 8/20

Gearbox housing mounting position, see page 3/92

*) For mounting type B5-01

1, 2, 3, 5, 6 or 9

1 to 9

A, D, E, F, H or M

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
2.2	FD.128B-LA100ZLP4E						
	6.5	3 209	1.9	219.15	★	2KJ1406 - ■ FM13 - ■■ N1	220
	7.1	2 965	2.1	202.48		2KJ1406 - ■ FM13 - ■■ M1	220
	FD.108B-LA100ZLP4E						
	5.3	3 968	0.86	271.01	★	2KJ1405 - ■ FM13 - ■■ R1	139
	5.8	3 624	0.94	247.53		2KJ1405 - ■ FM13 - ■■ Q1	139
	6.5	3 216	1.1	219.66	★	2KJ1405 - ■ FM13 - ■■ P1	139
	7.1	2 969	1.1	202.77		2KJ1405 - ■ FM13 - ■■ N1	139
	7.8	2 685	1.3	183.39	★	2KJ1405 - ■ FM13 - ■■ M1	139
	8.5	2 473	1.4	168.88		2KJ1405 - ■ FM13 - ■■ L1	139
	9.2	2 287	1.5	156.19	★	2KJ1405 - ■ FM13 - ■■ K1	139
	9.9	2 123	1.6	144.99		2KJ1405 - ■ FM13 - ■■ J1	139
	11.2	1 873	1.8	127.92	★	2KJ1405 - ■ FM13 - ■■ H1	139
	12.1	1 729	2.0	118.11		2KJ1405 - ■ FM13 - ■■ G1	139
	13.6	1 549	2.2	105.81	★	2KJ1405 - ■ FM13 - ■■ F1	139
	FD.88B-LA100ZLP4E						
	9.5	2 211	0.86	151.01	★	2KJ1404 - ■ FM13 - ■■ K1	92
	10.4	2 029	0.94	138.56		2KJ1404 - ■ FM13 - ■■ J1	92
	11.2	1 869	1.0	127.66	★	2KJ1404 - ■ FM13 - ■■ H1	92
	12.4	1 697	1.1	115.93		2KJ1404 - ■ FM13 - ■■ G1	92
	13.6	1 546	1.2	105.61	★	2KJ1404 - ■ FM13 - ■■ F1	92
	14.8	1 417	1.3	96.75		2KJ1404 - ■ FM13 - ■■ E1	92
	16.6	1 264	1.5	86.33	★	2KJ1404 - ■ FM13 - ■■ D1	92
	18.6	1 128	1.7	77.04		2KJ1404 - ■ FM13 - ■■ C1	92
	22	958	2.0	65.43		2KJ1404 - ■ FM13 - ■■ B1	92
	26	798	2.4	54.47	★	2KJ1404 - ■ FM13 - ■■ A1	92
	FZ.88B-LA100ZLP4E						
	22	946	2.0	64.58	★	2KJ1304 - ■ FM13 - ■■ X1	91
	24	866	2.2	59.13		2KJ1304 - ■ FM13 - ■■ W1	91
	27	770	2.5	52.6	★	2KJ1304 - ■ FM13 - ■■ V1	91
	FD.68B-LA100ZLP4E						
	18.1	1 161	0.86	79.33	★	2KJ1403 - ■ FM13 - ■■ E1	61
	20	1 038	0.96	70.93		2KJ1403 - ■ FM13 - ■■ D1	61
	22	954	1.0	65.14	★	2KJ1403 - ■ FM13 - ■■ C1	61
	24	860	1.2	58.71		2KJ1403 - ■ FM13 - ■■ B1	61
	28	739	1.4	50.48	★	2KJ1403 - ■ FM13 - ■■ A1	61
	FZ.68B-LA100ZLP4E						
	27	783	1.3	53.5		2KJ1303 - ■ FM13 - ■■ A2	60
	30	703	1.4	48.03	★	2KJ1303 - ■ FM13 - ■■ X1	60
	33	642	1.6	43.87		2KJ1303 - ■ FM13 - ■■ V1	60
	37	570	1.8	38.93	★	2KJ1303 - ■ FM13 - ■■ U1	60
	40	526	1.9	35.93		2KJ1303 - ■ FM13 - ■■ T1	60
	44	476	2.1	32.5	★	2KJ1303 - ■ FM13 - ■■ S1	60
	48	438	2.3	29.93		2KJ1303 - ■ FM13 - ■■ R1	60

★ Preferred transmission ratio

Shaft designs, see page 3/89

1, 2, 3, 5, 6 or 9

Frequency and voltage, see page 8/20

1 to 9

Gearbox housing mounting position, see page 3/92

A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
2.2	FZ.68B-LA100ZLP4E						
	52	405	2.5	27.68	★	2KJ1303 - ■ FM13 - ■■ Q1	60
	56	376	2.7	25.69		2KJ1303 - ■ FM13 - ■■ P1	60
	63	332	3.0	22.67	★	2KJ1303 - ■ FM13 - ■■ N1	60
	FD.48B-LA100ZLP4E						
	33	631	0.86	43.09	★	2KJ1402 - ■ FM13 - ■■ A1	45
	FZ.48B-LA100ZLP4E						
	34	622	0.87	42.5		2KJ1302 - ■ FM13 - ■■ W1	45
	37	563	0.96	38.45	★	2KJ1302 - ■ FM13 - ■■ V1	45
	40	520	1.0	35.49		2KJ1302 - ■ FM13 - ■■ U1	45
	46	452	1.2	30.86	★	2KJ1302 - ■ FM13 - ■■ T1	45
	51	410	1.3	28.02		2KJ1302 - ■ FM13 - ■■ S1	45
	56	375	1.4	25.59	★	2KJ1302 - ■ FM13 - ■■ R1	45
	61	344	1.6	23.48		2KJ1302 - ■ FM13 - ■■ Q1	45
	66	317	1.7	21.63	★	2KJ1302 - ■ FM13 - ■■ P1	45
	73	288	1.9	19.64		2KJ1302 - ■ FM13 - ■■ N1	45
	80	262	2.1	17.89	★	2KJ1302 - ■ FM13 - ■■ M1	45
	88	240	2.3	16.39		2KJ1302 - ■ FM13 - ■■ L1	45
	98	214	2.5	14.63	★	2KJ1302 - ■ FM13 - ■■ K1	45
	110	191	2.8	13.05		2KJ1302 - ■ FM13 - ■■ J1	45
	129	162	3.3	11.09		2KJ1302 - ■ FM13 - ■■ H1	45
	155	135	3.9	9.23	★	2KJ1302 - ■ FM13 - ■■ G1	45
	171	123	4.2	8.39	★	2KJ1302 - ■ FM13 - ■■ F1	45
	187	112	4.2	7.68		2KJ1302 - ■ FM13 - ■■ E1	45
	209	100	4.4	6.86	★	2KJ1302 - ■ FM13 - ■■ D1	45
	234	90	4.5	6.12		2KJ1302 - ■ FM13 - ■■ C1	45
	331	63	5.1	4.33	★	2KJ1302 - ■ FM13 - ■■ A1	45
	FZ.38B-LA100ZLP4E						
	64	326	0.89	22.28	★	2KJ1301 - ■ FM13 - ■■ R1	37
	71	294	0.99	20.1		2KJ1301 - ■ FM13 - ■■ Q1	37
	79	267	1.1	18.23	★	2KJ1301 - ■ FM13 - ■■ P1	37
	86	243	1.2	16.61		2KJ1301 - ■ FM13 - ■■ N1	37
	94	222	1.3	15.19	★	2KJ1301 - ■ FM13 - ■■ M1	37
	106	199	1.5	13.58		2KJ1301 - ■ FM13 - ■■ L1	37
	115	183	1.6	12.47	★	2KJ1301 - ■ FM13 - ■■ K1	37
	128	165	1.8	11.24		2KJ1301 - ■ FM13 - ■■ J1	37
	148	142	2.0	9.67	★	2KJ1301 - ■ FM13 - ■■ H1	37
	168	125	2.3	8.52	★	2KJ1301 - ■ FM13 - ■■ G1	37
	185	114	2.6	7.76		2KJ1301 - ■ FM13 - ■■ F1	37
	202	104	2.8	7.1	★	2KJ1301 - ■ FM13 - ■■ E1	37
	226	93	3.0	6.35		2KJ1301 - ■ FM13 - ■■ D1	37
	246	85	3.2	5.83	★	2KJ1301 - ■ FM13 - ■■ C1	37
	273	77	3.3	5.25		2KJ1301 - ■ FM13 - ■■ B1	37
	317	66	3.4	4.52	★	2KJ1301 - ■ FM13 - ■■ A1	37

★ Preferred transmission ratio

Shaft designs, see page 3/89

1, 2, 3, 5, 6 or 9

Frequency and voltage, see page 8/20

1 to 9

Gearbox housing mounting position, see page 3/92

A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
2.2	FZ.38B-LA90ZLB2E						
	159	133	2.2	18.23	★ 2KJ1301 - ■EQ13 - ■■P1	P00	29
	174	121	2.4	16.61	2KJ1301 - ■EQ13 - ■■N1	P00	29
	190	110	2.6	15.19	★ 2KJ1301 - ■EQ13 - ■■M1	P00	29
	213	99	2.9	13.58	2KJ1301 - ■EQ13 - ■■L1	P00	29
	232	91	3.2	12.47	★ 2KJ1301 - ■EQ13 - ■■K1	P00	29
	257	82	3.5	11.24	2KJ1301 - ■EQ13 - ■■J1	P00	29
	299	70	4.1	9.67	★ 2KJ1301 - ■EQ13 - ■■H1	P00	29
	339	62	4.7	8.52	★ 2KJ1301 - ■EQ13 - ■■G1	P00	29
	372	56	5.1	7.76	2KJ1301 - ■EQ13 - ■■F1	P00	29
3	FD.188B-Z68-LA100ZLD4E						
	1.2	22 720	0.88	1236	★ 2KJ1441 - ■FP13 - ■■G1		673
	1.4	18 933	1.1	1030	2KJ1441 - ■FP13 - ■■F1		673
	FD.188B-LA132MA8						
	1.7	16 529	1.2	403.86	★ 2KJ1410 - ■HG13 - ■■U1	P02	684
	1.9	15 165	1.3	370.52	2KJ1410 - ■HG13 - ■■T1	P02	684
	2.0	13 995	1.4	341.94	★ 2KJ1410 - ■HG13 - ■■S1	P02	684
	2.2	12 982	1.5	317.18	2KJ1410 - ■HG13 - ■■R1	P02	684
	2.3	12 246	1.6	299.2	★ 2KJ1410 - ■HG13 - ■■Q1	P02	684
	FD.188B-LA132SB6E						
	2.4	12 180	1.6	403.86	★ 2KJ1410 - ■HF13 - ■■U1	P01	684
	2.6	11 174	1.8	370.52	2KJ1410 - ■HF13 - ■■T1	P01	684
	2.8	10 312	1.9	341.94	★ 2KJ1410 - ■HF13 - ■■S1	P01	684
	FD.168B-Z68-LA100ZLD4E						
	1.6	16 967	0.83	923	2KJ1437 - ■FP13 - ■■F1		489
	FD.168B-LA132MA8						
	1.9	15 113	0.93	369.26	★ 2KJ1408 - ■HG13 - ■■V1	P02	503
	2.1	13 854	1.0	338.49	2KJ1408 - ■HG13 - ■■U1	P02	503
	2.2	12 775	1.1	312.12	★ 2KJ1408 - ■HG13 - ■■T1	P02	503
	2.4	11 839	1.2	289.26	2KJ1408 - ■HG13 - ■■S1	P02	503
	2.5	11 257	1.2	275.03	★ 2KJ1408 - ■HG13 - ■■R1	P02	503
	FD.168B-LA132SB6E						
	2.6	11 136	1.3	369.26	★ 2KJ1408 - ■HF13 - ■■V1	P01	503
	2.8	10 208	1.4	338.49	2KJ1408 - ■HF13 - ■■U1	P01	503
	3.0	9 413	1.5	312.12	★ 2KJ1408 - ■HF13 - ■■T1	P01	503
	3.3	8 723	1.6	289.26	2KJ1408 - ■HF13 - ■■S1	P01	503
	3.5	8 294	1.7	275.03	★ 2KJ1408 - ■HF13 - ■■R1	P01	503
	3.7	7 752	1.8	257.04	2KJ1408 - ■HF13 - ■■Q1	P01	503
	FD.148B-LA132SB6E						
	2.6	11 100	0.81	368.06	★ 2KJ1407 - ■HF13 - ■■S1	P01	341
	2.8	10 165	0.89	337.07	2KJ1407 - ■HF13 - ■■R1	P01	341
	3.1	9 364	0.96	310.51	★ 2KJ1407 - ■HF13 - ■■Q1	P01	341
	FD.148B-LA100ZLD4E						
	3.2	8 969	1.0	449.21	★ 2KJ1407 - ■FP13 - ■■U1		316

★ Preferred transmission ratio

Shaft designs, see page 3/89

1, 2, 3, 5, 6 or 9

Frequency and voltage, see page 8/20

1 to 9

Gearbox housing mounting position, see page 3/92

A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
3	FD.148B-LA100ZLD4E						
	3.5	8 225	1.1	411.98	2KJ1407 - ■FP13 - ■■T1		316
	3.9	7 348	1.2	368.06	★ 2KJ1407 - ■FP13 - ■■S1		316
	4.3	6 730	1.3	337.07	2KJ1407 - ■FP13 - ■■R1		316
	4.6	6 199	1.5	310.51	★ 2KJ1407 - ■FP13 - ■■Q1		316
	5.0	5 740	1.6	287.49	2KJ1407 - ■FP13 - ■■P1		316
	5.4	5 338	1.7	267.35	★ 2KJ1407 - ■FP13 - ■■N1		316
	5.7	4 983	1.8	249.58	2KJ1407 - ■FP13 - ■■M1		316
	6.4	4 458	2.0	223.31	★ 2KJ1407 - ■FP13 - ■■L1		316
	FD.128B-LA100ZLD4E						
	4.0	7 087	0.86	354.99	2KJ1406 - ■FP13 - ■■T1		220
	4.5	6 394	0.95	320.24	★ 2KJ1406 - ■FP13 - ■■S1		220
	4.9	5 854	1.0	293.22	2KJ1406 - ■FP13 - ■■R1		220
	5.5	5 208	1.2	260.84	★ 2KJ1406 - ■FP13 - ■■Q1		220
	6.0	4 759	1.3	238.39	2KJ1406 - ■FP13 - ■■P1		220
	6.5	4 375	1.4	219.15	★ 2KJ1406 - ■FP13 - ■■N1		220
	7.1	4 043	1.5	202.48	2KJ1406 - ■FP13 - ■■M1		220
	7.6	3 751	1.6	187.88	★ 2KJ1406 - ■FP13 - ■■L1		220
	8.2	3 494	1.7	175.01	2KJ1406 - ■FP13 - ■■K1		220
	FD.108B-LA100ZLD4E						
	7.1	4 048	0.84	202.77	2KJ1405 - ■FP13 - ■■N1		139
	7.8	3 661	0.93	183.39	★ 2KJ1405 - ■FP13 - ■■M1		139
	8.5	3 372	1.0	168.88	2KJ1405 - ■FP13 - ■■L1		139
	9.2	3 118	1.1	156.19	★ 2KJ1405 - ■FP13 - ■■K1		139
	9.9	2 895	1.2	144.99	2KJ1405 - ■FP13 - ■■J1		139
	11.2	2 554	1.3	127.92	★ 2KJ1405 - ■FP13 - ■■H1		139
	12.1	2 358	1.4	118.11	2KJ1405 - ■FP13 - ■■G1		139
	13.6	2 113	1.6	105.81	★ 2KJ1405 - ■FP13 - ■■F1		139
	14.7	1 948	1.7	97.57	2KJ1405 - ■FP13 - ■■E1		139
	FZ.108B-LA100ZLD4E						
	22	1 282	2.3	64.21	★ 2KJ1305 - ■FP13 - ■■A2		138
	FD.88B-LA100ZLD4E						
	12.4	2 315	0.82	115.93	2KJ1404 - ■FP13 - ■■G1		92
	13.6	2 109	0.90	105.61	★ 2KJ1404 - ■FP13 - ■■F1		92
	14.8	1 932	0.98	96.75	2KJ1404 - ■FP13 - ■■E1		92
	16.6	1 724	1.1	86.33	★ 2KJ1404 - ■FP13 - ■■D1		92
	18.6	1 538	1.2	77.04	2KJ1404 - ■FP13 - ■■C1		92
	22	1 306	1.5	65.43	2KJ1404 - ■FP13 - ■■B1		92
	26	1 088	1.7	54.47	★ 2KJ1404 - ■FP13 - ■■A1		92
	FZ.88B-LA100ZLD4E						
	22	1289	1.5	64.58	★ 2KJ1304 - ■FP13 - ■■X1		91

★ Preferred transmission ratio

Shaft designs, see page 3/89

1, 2, 3, 5, 6 or 9

Frequency and voltage, see page 8/20

1 to 9

Gearbox housing mounting position, see page 3/92

A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
3	FZ.88B-LA100ZLD4E						
	24	1 181	1.6	59.13	2KJ1304 - ■FP13 - ■■W1		91
	27	1 050	1.8	52.6 ★	2KJ1304 - ■FP13 - ■■V1		91
	30	959	2.0	48.03	2KJ1304 - ■FP13 - ■■U1		91
	32	882	2.2	44.2 ★	2KJ1304 - ■FP13 - ■■T1		91
	35	815	2.3	40.83	2KJ1304 - ■FP13 - ■■S1		91
	38	756	2.5	37.89 ★	2KJ1304 - ■FP13 - ■■R1		91
	41	705	2.7	35.29	2KJ1304 - ■FP13 - ■■Q1		91
	FD.68B-LA100ZLD4E						
	24	1 172	0.85	58.71	2KJ1403 - ■FP13 - ■■B1		61
	28	1 008	0.99	50.48 ★	2KJ1403 - ■FP13 - ■■A1		61
	FZ.68B-LA100ZLD4E						
	27	1 068	0.94	53.5	2KJ1303 - ■FP13 - ■■A2		60
	30	959	1.0	48.03 ★	2KJ1303 - ■FP13 - ■■X1		60
	33	876	1.1	43.87	2KJ1303 - ■FP13 - ■■V1		60
	37	777	1.3	38.93 ★	2KJ1303 - ■FP13 - ■■U1		60
	40	717	1.4	35.93	2KJ1303 - ■FP13 - ■■T1		60
	44	649	1.5	32.5 ★	2KJ1303 - ■FP13 - ■■S1		60
	48	598	1.7	29.93	2KJ1303 - ■FP13 - ■■R1		60
	52	553	1.8	27.68 ★	2KJ1303 - ■FP13 - ■■Q1		60
	56	513	1.9	25.69	2KJ1303 - ■FP13 - ■■P1		60
	63	453	2.2	22.67 ★	2KJ1303 - ■FP13 - ■■N1		60
	69	418	2.4	20.93	2KJ1303 - ■FP13 - ■■M1		60
	76	374	2.7	18.75 ★	2KJ1303 - ■FP13 - ■■L1		60
	83	345	2.9	17.29	2KJ1303 - ■FP13 - ■■K1		60
	99	290	3.5	14.51	2KJ1303 - ■FP13 - ■■J1		60
	FZ.48B-LA100ZLD4E						
	46	616	0.88	30.86 ★	2KJ1302 - ■FP13 - ■■T1		45
	51	559	0.97	28.02	2KJ1302 - ■FP13 - ■■S1		45
	56	511	1.1	25.59 ★	2KJ1302 - ■FP13 - ■■R1		45
	61	469	1.2	23.48	2KJ1302 - ■FP13 - ■■Q1		45
	66	432	1.3	21.63 ★	2KJ1302 - ■FP13 - ■■P1		45
	73	392	1.4	19.64	2KJ1302 - ■FP13 - ■■N1		45
80	357	1.5	17.89 ★	2KJ1302 - ■FP13 - ■■M1		45	
88	327	1.7	16.39	2KJ1302 - ■FP13 - ■■L1		45	
98	292	1.8	14.63 ★	2KJ1302 - ■FP13 - ■■K1		45	
110	261	2.1	13.05	2KJ1302 - ■FP13 - ■■J1		45	
129	221	2.4	11.09	2KJ1302 - ■FP13 - ■■H1		45	
155	184	2.9	9.23 ★	2KJ1302 - ■FP13 - ■■G1		45	
171	168	3.0	8.39 ★	2KJ1302 - ■FP13 - ■■F1		45	
187	153	3.0	7.68	2KJ1302 - ■FP13 - ■■E1		45	
209	137	3.2	6.86 ★	2KJ1302 - ■FP13 - ■■D1		45	
234	122	3.3	6.12	2KJ1302 - ■FP13 - ■■C1		45	
276	104	3.6	5.2	2KJ1302 - ■FP13 - ■■B1		45	
3	331	86	3.8	4.33 ★	2KJ1302 - ■FP13 - ■■A1		45

★ Preferred transmission ratio

Shaft designs, see page 3/89

Frequency and voltage, see page 8/20

Gearbox housing mounting position, see page 3/92

*) For mounting type B5-01

1, 2, 3, 5, 6 or 9

1 to 9

A, D, E, F, H or M

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg	
3	FZ.48B-LA100ZLB2E							
	162	177	3.0	17.89	★	2KJ1302 - FM13 - M1	P00	45
	176	162	3.3	16.39		2KJ1302 - FM13 - L1	P00	45
	198	145	3.7	14.63	★	2KJ1302 - FM13 - K1	P00	45
	221	129	4.2	13.05		2KJ1302 - FM13 - J1	P00	45
	FZ.38B-LA100ZLD4E							
	79	364	0.80	18.23	★	2KJ1301 - FP13 - P1		37
	86	332	0.87	16.61		2KJ1301 - FP13 - N1		37
	94	303	0.96	15.19	★	2KJ1301 - FP13 - M1		37
	106	271	1.1	13.58		2KJ1301 - FP13 - L1		37
	115	249	1.2	12.47	★	2KJ1301 - FP13 - K1		37
	128	224	1.3	11.24		2KJ1301 - FP13 - J1		37
	148	193	1.5	9.67	★	2KJ1301 - FP13 - H1		37
	168	170	1.7	8.52	★	2KJ1301 - FP13 - G1		37
	185	155	1.9	7.76		2KJ1301 - FP13 - F1		37
	202	142	2.0	7.1	★	2KJ1301 - FP13 - E1		37
	226	127	2.2	6.35		2KJ1301 - FP13 - D1		37
	246	116	2.4	5.83	★	2KJ1301 - FP13 - C1		37
	273	105	2.4	5.25		2KJ1301 - FP13 - B1		37
	317	90	2.5	4.52	★	2KJ1301 - FP13 - A1		37
	FZ.38B-LA100ZLB2E							
	159	181	1.6	18.23	★	2KJ1301 - FM13 - P1	P00	37
	174	165	1.8	16.61		2KJ1301 - FM13 - N1	P00	37
	190	151	1.9	15.19	★	2KJ1301 - FM13 - M1	P00	37
	213	135	2.2	13.58		2KJ1301 - FM13 - L1	P00	37
	232	124	2.3	12.47	★	2KJ1301 - FM13 - K1	P00	37
	257	111	2.6	11.24		2KJ1301 - FM13 - J1	P00	37
	299	96	3.0	9.67	★	2KJ1301 - FM13 - H1	P00	37
	339	84	3.4	8.52	★	2KJ1301 - FM13 - G1	P00	37
	372	77	3.8	7.76		2KJ1301 - FM13 - F1	P00	37
	407	70	4.1	7.1	★	2KJ1301 - FM13 - E1	P00	37
	455	63	4.4	6.35		2KJ1301 - FM13 - D1	P00	37
	496	58	4.8	5.83	★	2KJ1301 - FM13 - C1	P00	37
	550	52	4.9	5.25		2KJ1301 - FM13 - B1	P00	37
	639	45	5.1	4.52	★	2KJ1301 - FM13 - A1	P00	37
	FZ.28-LA100ZLD4E							
	199	144	0.88	7.2	★	2KJ1300 - FP13 - G1		29
	220	130	0.94	6.53		2KJ1300 - FP13 - F1		29
	242	119	0.99	5.94	★	2KJ1300 - FP13 - E1		29
	273	105	1.1	5.25		2KJ1300 - FP13 - D1		29
	296	97	1.1	4.85	★	2KJ1300 - FP13 - C1		29
	343	84	1.2	4.18		2KJ1300 - FP13 - B1		29
	378	76	1.3	3.8	★	2KJ1300 - FP13 - A1		29

★ Preferred transmission ratio

Shaft designs, see page 3/89

1, 2, 3, 5, 6 or 9

Frequency and voltage, see page 8/20

1 to 9

Gearbox housing mounting position, see page 3/92

A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
4	FD.188B-Z68-LA112ZMP4						
	1.4	24 905	0.80	1 030	2KJ1441 - GJ13 - F1		680
	FD.188B-LA132ZMB6E						
	2.4	16 239	1.2	403.86	★ 2KJ1410 - HJ13 - U1	P01	684
	2.6	14 899	1.3	370.52	2KJ1410 - HJ13 - T1	P01	684
	2.8	13 750	1.5	341.94	★ 2KJ1410 - HJ13 - S1	P01	684
	3.0	12 754	1.6	317.18	2KJ1410 - HJ13 - R1	P01	684
	3.2	12 031	1.7	299.2	★ 2KJ1410 - HJ13 - Q1	P01	684
	3.4	11 253	1.8	279.86	2KJ1410 - HJ13 - P1	P01	684
	FD.168B-LA132ZMB6E						
	2.6	14 848	0.94	369.26	★ 2KJ1408 - HJ13 - V1	P01	503
	2.8	13 611	1.0	338.49	2KJ1408 - HJ13 - U1	P01	503
	3.0	12 551	1.1	312.12	★ 2KJ1408 - HJ13 - T1	P01	503
	3.3	11 631	1.2	289.26	2KJ1408 - HJ13 - S1	P01	503
	3.5	11 059	1.3	275.03	★ 2KJ1408 - HJ13 - R1	P01	503
	3.7	10 336	1.4	257.04	2KJ1408 - HJ13 - Q1	P01	503
	FD.148B-LA112ZMP4E						
	3.5	10 929	0.82	411.98	2KJ1407 - GJ13 - T1		323
	3.9	9 764	0.92	368.06	★ 2KJ1407 - GJ13 - S1		323
	4.3	8 942	1.0	337.07	2KJ1407 - GJ13 - R1		323
	4.6	8 237	1.1	310.51	★ 2KJ1407 - GJ13 - Q1		323
	5.0	7 626	1.2	287.49	2KJ1407 - GJ13 - P1		323
	5.4	7 092	1.3	267.35	★ 2KJ1407 - GJ13 - N1		323
	5.8	6 621	1.4	249.58	2KJ1407 - GJ13 - M1		323
	6.4	5 924	1.5	223.31	★ 2KJ1407 - GJ13 - L1		323
	7.0	5 489	1.6	206.93	2KJ1407 - GJ13 - K1		323
	7.6	5 032	1.8	189.69	★ 2KJ1407 - GJ13 - J1		323
	8.3	4 613	2.0	173.89	2KJ1407 - GJ13 - H1		323
	FD.128B-LA112ZMP4E						
	5.5	6 920	0.88	260.84	★ 2KJ1406 - GJ13 - Q1		227
	6.0	6 324	0.96	238.39	2KJ1406 - GJ13 - P1		227
	6.6	5 814	1.0	219.15	★ 2KJ1406 - GJ13 - N1		227
	7.1	5 371	1.1	202.48	2KJ1406 - GJ13 - M1		227
	7.7	4 984	1.2	187.88	★ 2KJ1406 - GJ13 - L1		227
	8.2	4 643	1.3	175.01	2KJ1406 - GJ13 - K1		227
	9.1	4 197	1.5	158.22	★ 2KJ1406 - GJ13 - J1		227
	9.9	3 864	1.6	145.66	2KJ1406 - GJ13 - H1		227
	11.0	3 475	1.8	131.01	★ 2KJ1406 - GJ13 - G1		227
	11.9	3 206	1.9	120.87	2KJ1406 - GJ13 - F1		227
	14.1	2 717	2.2	102.41	2KJ1406 - GJ13 - E1		227

★ Preferred transmission ratio

Shaft designs, see page 3/89

Frequency and voltage, see page 8/20

Gearbox housing mounting position, see page 3/92

*) For mounting type B5-01

1, 2, 3, 5, 6 or 9

1 to 9

A, D, E, F, H or M

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
4	FD.108B-LA112ZMP4E						
	9.2	4 143	0.82	156.19	★	2KJ1405 - ■GJ13 - ■■K1	146
	9.9	3 846	0.88	144.99		2KJ1405 - ■GJ13 - ■■J1	146
	11.3	3 393	1.0	127.92	★	2KJ1405 - ■GJ13 - ■■H1	146
	12.2	3 133	1.1	118.11		2KJ1405 - ■GJ13 - ■■G1	146
	13.6	2 807	1.2	105.81	★	2KJ1405 - ■GJ13 - ■■F1	146
	14.8	2 588	1.3	97.57		2KJ1405 - ■GJ13 - ■■E1	146
	17.6	2 172	1.6	81.86		2KJ1405 - ■GJ13 - ■■D1	146
	21	1 853	1.8	69.84	★	2KJ1405 - ■GJ13 - ■■C1	146
	25	1 544	2.2	58.2		2KJ1405 - ■GJ13 - ■■B1	146
	FZ.108B-LA112ZMP4E						
	22	1 703	1.8	64.21	★	2KJ1305 - ■GJ13 - ■■A2	145
	24	1 560	1.9	58.8		2KJ1305 - ■GJ13 - ■■X1	145
	27	1 437	2.4	54.17	★	2KJ1305 - ■GJ13 - ■■W1	145
	FD.88B-LA112ZMP4E						
	16.7	2 290	0.83	86.33	★	2KJ1404 - ■GJ13 - ■■D1	99
	18.7	2 044	0.93	77.04		2KJ1404 - ■GJ13 - ■■C1	99
	22	1 736	1.1	65.43		2KJ1404 - ■GJ13 - ■■B1	99
	26	1 445	1.3	54.47	★	2KJ1404 - ■GJ13 - ■■A1	99
	FZ.88B-LA112ZMP4E						
	22	1 713	1.1	64.58	★	2KJ1304 - ■GJ13 - ■■X1	98
	24	1 569	1.2	59.13		2KJ1304 - ■GJ13 - ■■W1	98
	27	1 395	1.4	52.6	★	2KJ1304 - ■GJ13 - ■■V1	98
	30	1 274	1.5	48.03		2KJ1304 - ■GJ13 - ■■U1	98
	33	1 173	1.6	44.2	★	2KJ1304 - ■GJ13 - ■■T1	98
	35	1 083	1.8	40.83		2KJ1304 - ■GJ13 - ■■S1	98
	38	1 005	1.9	37.89	★	2KJ1304 - ■GJ13 - ■■R1	98
	41	936	2.0	35.29		2KJ1304 - ■GJ13 - ■■Q1	98
	45	847	2.2	31.91	★	2KJ1304 - ■GJ13 - ■■P1	98
	49	779	2.4	29.38		2KJ1304 - ■GJ13 - ■■N1	98
	54	701	2.7	26.42	★	2KJ1304 - ■GJ13 - ■■M1	98
59	647	2.9	24.38		2KJ1304 - ■GJ13 - ■■L1	98	
	FZ.68B-LA112ZMP4E						
	33	1 164	0.86	43.87		2KJ1303 - ■GJ13 - ■■V1	67
	37	1 033	0.97	38.93	★	2KJ1303 - ■GJ13 - ■■U1	67
	40	953	1.0	35.93		2KJ1303 - ■GJ13 - ■■T1	67
	44	862	1.2	32.5	★	2KJ1303 - ■GJ13 - ■■S1	67
	48	794	1.3	29.93		2KJ1303 - ■GJ13 - ■■R1	67
	52	734	1.4	27.68	★	2KJ1303 - ■GJ13 - ■■Q1	67
	56	681	1.5	25.69		2KJ1303 - ■GJ13 - ■■P1	67
	64	601	1.7	22.67	★	2KJ1303 - ■GJ13 - ■■N1	67
	69	555	1.8	20.93		2KJ1303 - ■GJ13 - ■■M1	67
77	497	2.0	18.75	★	2KJ1303 - ■GJ13 - ■■L1	67	
83	459	2.2	17.29		2KJ1303 - ■GJ13 - ■■K1	67	

★ Preferred transmission ratio

Shaft designs, see page 3/89

Frequency and voltage, see page 8/20

Gearbox housing mounting position, see page 3/92

*) For mounting type B5-01

1, 2, 3, 5, 6 or 9

1 to 9

A, D, E, F, H or M

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
4	FZ.68B-LA112ZMP4E						
	99	385	2.6	14.51	2KJ1303 - GJ13 - J1		67
	116	328	3.0	12.38	★ 2KJ1303 - GJ13 - H1		67
	140	274	3.7	10.31	2KJ1303 - GJ13 - G1		67
	179	213	4.2	8.03	2KJ1303 - GJ13 - E1		67
	FZ.48B-LA112ZMP4E						
	56	679	0.8	25.59	★ 2KJ1302 - GJ13 - R1		52
	61	623	0.87	23.48	2KJ1302 - GJ13 - Q1		52
	67	574	0.94	21.63	★ 2KJ1302 - GJ13 - P1		52
	73	521	1.0	19.64	2KJ1302 - GJ13 - N1		52
	80	475	1.1	17.89	★ 2KJ1302 - GJ13 - M1		52
	88	435	1.2	16.39	2KJ1302 - GJ13 - L1		52
	98	388	1.4	14.63	★ 2KJ1302 - GJ13 - K1		52
	110	346	1.6	13.05	2KJ1302 - GJ13 - J1		52
	130	294	1.8	11.09	2KJ1302 - GJ13 - H1		52
	156	245	2.1	9.23	★ 2KJ1302 - GJ13 - G1		52
172	223	2.3	8.39	★ 2KJ1302 - GJ13 - F1		52	
188	204	2.3	7.68	2KJ1302 - GJ13 - E1		52	
210	182	2.4	6.86	★ 2KJ1302 - GJ13 - D1		52	
235	162	2.5	6.12	2KJ1302 - GJ13 - C1		52	
277	138	2.7	5.2	2KJ1302 - GJ13 - B1		52	
333	115	2.8	4.33	★ 2KJ1302 - GJ13 - A1		52	
FZ.48B-LA112ZMP2E							
162	235	2.3	17.89	★ 2KJ1302 - GJ13 - M1	P00	52	
177	216	2.5	16.39	2KJ1302 - GJ13 - L1	P00	52	
199	192	2.8	14.63	★ 2KJ1302 - GJ13 - K1	P00	52	
223	172	3.1	13.05	2KJ1302 - GJ13 - J1	P00	52	
262	146	3.7	11.09	2KJ1302 - GJ13 - H1	P00	52	
315	121	4.3	9.23	★ 2KJ1302 - GJ13 - G1	P00	52	
346	110	4.6	8.39	★ 2KJ1302 - GJ13 - F1	P00	52	
378	101	4.6	7.68	2KJ1302 - GJ13 - E1	P00	52	
423	90	4.9	6.86	★ 2KJ1302 - GJ13 - D1	P00	52	
475	80	5.0	6.12	2KJ1302 - GJ13 - C1	P00	52	
559	68	5.5	5.2	2KJ1302 - GJ13 - B1	P00	52	
671	57	5.7	4.33	★ 2KJ1302 - GJ13 - A1	P00	52	
5.5	FD.208-LA160MB8						
	2.9	17 904	1.9	242.01	2KJ1411 - JF13 - T1	P02	1123
	FD.188B-LA132ZMD6E						
	2.4	22 097	0.91	403.86	★ 2KJ1410 - HK13 - U1	P01	684
	2.6	20 272	0.99	370.52	2KJ1410 - HK13 - T1	P01	684
	2.8	18 709	1.1	341.94	★ 2KJ1410 - HK13 - S1	P01	684
	3.0	17 354	1.2	317.18	2KJ1410 - HK13 - R1	P01	684
	3.2	16 370	1.2	299.2	★ 2KJ1410 - HK13 - Q1	P01	684
	3.4	15 312	1.3	279.86	2KJ1410 - HK13 - P1	P01	684

★ Preferred transmission ratio

Shaft designs, see page 3/89 — 1, 2, 3, 5, 6 or 9

Frequency and voltage, see page 8/20 — 1 to 9

Gearbox housing mounting position, see page 3/92 — A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg	
5.5	FD.188B-LA132SP4E							
	3.6	14 680	1.4	403.86	★	2KJ1410 - ■HG13 - ■■U1	684	
	3.9	13 468	1.5	370.52		2KJ1410 - ■HG13 - ■■T1	684	
	4.2	12 429	1.6	341.94	★	2KJ1410 - ■HG13 - ■■S1	684	
	4.6	11 529	1.7	317.18		2KJ1410 - ■HG13 - ■■R1	684	
	4.8	10 876	1.8	299.2	★	2KJ1410 - ■HG13 - ■■Q1	684	
	5.2	10 173	2.0	279.86		2KJ1410 - ■HG13 - ■■P1	684	
	FD.168B-LA132ZMD6E							
	3.1	17 077	0.82	312.12	★	2KJ1408 - ■HK13 - ■■T1	P01	503
	3.3	15 826	0.88	289.26		2KJ1408 - ■HK13 - ■■S1	P01	503
	3.5	15 048	0.93	275.03	★	2KJ1408 - ■HK13 - ■■R1	P01	503
	3.7	14 064	1.0	257.04		2KJ1408 - ■HK13 - ■■Q1	P01	503
	FD.168B-LA132SP4E							
	3.9	13 422	1.0	369.26	★	2KJ1408 - ■HG13 - ■■V1		503
	4.3	12 304	1.1	338.49		2KJ1408 - ■HG13 - ■■U1		503
	4.6	11 345	1.2	312.12	★	2KJ1408 - ■HG13 - ■■T1		503
	5.0	10 514	1.3	289.26		2KJ1408 - ■HG13 - ■■S1		503
	5.3	9 997	1.4	275.03	★	2KJ1408 - ■HG13 - ■■R1		503
	5.6	9 343	1.5	257.04		2KJ1408 - ■HG13 - ■■Q1		503
	6.4	8 242	1.7	226.74	★	2KJ1408 - ■HG13 - ■■P1		503
	6.8	7 774	1.8	213.87		2KJ1408 - ■HG13 - ■■N1		503
	7.5	6 966	2.0	191.63	★	2KJ1408 - ■HG13 - ■■M1		503
	FD.148B-LA132SP4E							
	4.7	11 287	0.80	310.51	★	2KJ1407 - ■HG13 - ■■Q1		341
	5.0	10 450	0.86	287.49		2KJ1407 - ■HG13 - ■■P1		341
	5.4	9 718	0.93	267.35	★	2KJ1407 - ■HG13 - ■■N1		341
	5.8	9 072	0.99	249.58		2KJ1407 - ■HG13 - ■■M1		341
6.5	8 117	1.1	223.31	★	2KJ1407 - ■HG13 - ■■L1		341	
7.0	7 522	1.2	206.93		2KJ1407 - ■HG13 - ■■K1		341	
7.6	6 895	1.3	189.69	★	2KJ1407 - ■HG13 - ■■J1		341	
8.3	6 321	1.4	173.89		2KJ1407 - ■HG13 - ■■H1		341	
9.8	5 386	1.7	148.18		2KJ1407 - ■HG13 - ■■G1		341	
11.1	4 753	1.9	130.76	★	2KJ1407 - ■HG13 - ■■F1		341	
13.0	4 045	2.2	111.29		2KJ1407 - ■HG13 - ■■E1		341	
FZ.148B-LA132SP4E								
21	2 480	2.3	68.23		2KJ1307 - ■HG13 - ■■V1		333	
FD.128B-LA132SP4E								
7.1	7 360	0.83	202.48		2KJ1406 - ■HG13 - ■■M1		245	
7.7	6 829	0.89	187.88	★	2KJ1406 - ■HG13 - ■■L1		245	
8.3	6 362	0.96	175.01		2KJ1406 - ■HG13 - ■■K1		245	
9.1	5 751	1.1	158.22	★	2KJ1406 - ■HG13 - ■■J1		245	
9.9	5 295	1.2	145.66		2KJ1406 - ■HG13 - ■■H1		245	
11.0	4 762	1.3	131.01	★	2KJ1406 - ■HG13 - ■■G1		245	
12.0	4 394	1.4	120.87		2KJ1406 - ■HG13 - ■■F1		245	

★ Preferred transmission ratio

Shaft designs, see page 3/89

Frequency and voltage, see page 8/20

Gearbox housing mounting position, see page 3/92

*) For mounting type B5-01

1, 2, 3, 5, 6 or 9

1 to 9

A, D, E, F, H or M

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
5.5	FD.128B-LA132SP4E						
	14.1	3 723	1.6	102.41	2KJ1406 - ■ HG13 - ■■ E1		245
	16.2	3 244	1.9	89.25 ★	2KJ1406 - ■ HG13 - ■■ D1		245
	19.0	2 760	2.2	75.93	2KJ1406 - ■ HG13 - ■■ C1		245
	FZ.128B-LA132SP4E						
	26	2 051	2.1	56.42 ★	2KJ1306 - ■ HG13 - ■■ A2		241
	28	1 901	2.4	52.29	2KJ1306 - ■ HG13 - ■■ X1		241
	FD.108B-LA132SP4E						
	13.7	3 846	0.88	105.81 ★	2KJ1405 - ■ HG13 - ■■ F1		164
	14.8	3 547	0.96	97.57	2KJ1405 - ■ HG13 - ■■ E1		164
	17.7	2 976	1.1	81.86	2KJ1405 - ■ HG13 - ■■ D1		164
	21	2 539	1.3	69.84 ★	2KJ1405 - ■ HG13 - ■■ C1		164
	25	2 116	1.6	58.2	2KJ1405 - ■ HG13 - ■■ B1		164
	30	1 753	1.9	48.24 ★	2KJ1405 - ■ HG13 - ■■ A1		164
	FZ.108B-LA132SP4E						
	22	2 334	1.3	64.21 ★	2KJ1305 - ■ HG13 - ■■ A2		163
	25	2 137	1.4	58.8	2KJ1305 - ■ HG13 - ■■ X1		163
	27	1 969	1.7	54.17 ★	2KJ1305 - ■ HG13 - ■■ W1		163
	29	1 823	1.9	50.15	2KJ1305 - ■ HG13 - ■■ V1		163
	31	1 695	2.0	46.64 ★	2KJ1305 - ■ HG13 - ■■ U1		163
	33	1 583	2.1	43.54	2KJ1305 - ■ HG13 - ■■ T1		163
	37	1 416	2.4	38.95 ★	2KJ1305 - ■ HG13 - ■■ S1		163
	40	1 312	2.6	36.1	2KJ1305 - ■ HG13 - ■■ R1		163
	FD.88B-LA132SP4E						
22	2 378	0.80	65.43	2KJ1404 - ■ HG13 - ■■ B1		117	
26	1 980	0.96	54.47 ★	2KJ1404 - ■ HG13 - ■■ A1		117	
FZ.88B-LA132SP4E							
28	1 912	0.99	52.6 ★	2KJ1304 - ■ HG13 - ■■ V1		116	
30	1 746	1.1	48.03	2KJ1304 - ■ HG13 - ■■ U1		116	
33	1 607	1.2	44.2 ★	2KJ1304 - ■ HG13 - ■■ T1		116	
35	1 484	1.3	40.83	2KJ1304 - ■ HG13 - ■■ S1		116	
38	1 377	1.4	37.89 ★	2KJ1304 - ■ HG13 - ■■ R1		116	
41	1 283	1.5	35.29	2KJ1304 - ■ HG13 - ■■ Q1		116	
45	1 160	1.6	31.91 ★	2KJ1304 - ■ HG13 - ■■ P1		116	
49	1 068	1.8	29.38	2KJ1304 - ■ HG13 - ■■ N1		116	
55	960	2.0	26.42 ★	2KJ1304 - ■ HG13 - ■■ M1		116	
59	886	2.1	24.38	2KJ1304 - ■ HG13 - ■■ L1		116	
70	751	2.5	20.65	2KJ1304 - ■ HG13 - ■■ K1		116	
80	654	2.9	18 ★	2KJ1304 - ■ HG13 - ■■ J1		116	
94	557	3.4	15.31	2KJ1304 - ■ HG13 - ■■ H1		116	
FZ.68B-LA132SP4E							
44	1 181	0.85	32.5 ★	2KJ1303 - ■ HG13 - ■■ S1		85	
48	1 088	0.92	29.93	2KJ1303 - ■ HG13 - ■■ R1		85	
52	1 006	0.99	27.68 ★	2KJ1303 - ■ HG13 - ■■ Q1		85	

★ Preferred transmission ratio

Shaft designs, see page 3/89

1, 2, 3, 5, 6 or 9

Frequency and voltage, see page 8/20

1 to 9

Gearbox housing mounting position, see page 3/92

A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
5.5							
FZ.68B-LA132SP4E							
56		934	1.1	25.69	2KJ1303 - ■ HG13 - ■■ P1		85
64		824	1.2	22.67 ★	2KJ1303 - ■ HG13 - ■■ N1		85
69		761	1.3	20.93	2KJ1303 - ■ HG13 - ■■ M1		85
77		682	1.5	18.75 ★	2KJ1303 - ■ HG13 - ■■ L1		85
84		628	1.6	17.29	2KJ1303 - ■ HG13 - ■■ K1		85
100		527	1.9	14.51	2KJ1303 - ■ HG13 - ■■ J1		85
117		450	2.2	12.38 ★	2KJ1303 - ■ HG13 - ■■ H1		85
140		375	2.7	10.31	2KJ1303 - ■ HG13 - ■■ G1		85
169		311	3.2	8.55 ★	2KJ1303 - ■ HG13 - ■■ F1		85
180		292	3.1	8.03	2KJ1303 - ■ HG13 - ■■ E1		85
214		245	3.4	6.74	2KJ1303 - ■ HG13 - ■■ D1		85
251		209	3.6	5.75 ★	2KJ1303 - ■ HG13 - ■■ C1		85
302		174	3.9	4.79	2KJ1303 - ■ HG13 - ■■ B1		85
364		144	4.1	3.97 ★	2KJ1303 - ■ HG13 - ■■ A1		85
FZ.68B-LA132SB2E							
156		336	3.0	18.75 ★	2KJ1303 - ■ HF13 - ■■ L1	P00	77
169		310	3.2	17.29	2KJ1303 - ■ HF13 - ■■ K1	P00	77
202		260	3.8	14.51	2KJ1303 - ■ HF13 - ■■ J1	P00	77
237		222	4.5	12.38 ★	2KJ1303 - ■ HF13 - ■■ H1	P00	77
7.5							
FD.208-LA160LB8							
3.0		24 243	1.4	242.01	2KJ1411 - ■ JJ13 - ■■ T1	P02	1 135
3.3		21 892	1.6	218.54	2KJ1411 - ■ JJ13 - ■■ S1	P02	1 135
3.5		20 517	1.7	204.81	2KJ1411 - ■ JJ13 - ■■ R1	P02	1 135
FD.208-LA160MD6E							
4.0		17 963	1.9	242.01	2KJ1411 - ■ JJ13 - ■■ T1	P01	1 135
FD.188B-LA160MD6E							
3.2		22 207	0.90	299.2 ★	2KJ1410 - ■ JJ13 - ■■ Q1	P01	720
3.4		20 772	0.96	279.86	2KJ1410 - ■ JJ13 - ■■ P1	P01	720
FD.188B-LA132ZMP4E							
3.6		19 881	1.0	403.86 ★	2KJ1410 - ■ HK13 - ■■ U1		684
3.9		18 240	1.1	370.52	2KJ1410 - ■ HK13 - ■■ T1		684
4.3		16 833	1.2	341.94 ★	2KJ1410 - ■ HK13 - ■■ S1		684
4.6		15 614	1.3	317.18	2KJ1410 - ■ HK13 - ■■ R1		684
4.9		14 729	1.4	299.2 ★	2KJ1410 - ■ HK13 - ■■ Q1		684
5.2		13 777	1.5	279.86	2KJ1410 - ■ HK13 - ■■ P1		684
5.8		12 250	1.6	248.85 ★	2KJ1410 - ■ HK13 - ■■ N1		684
6.2		11 565	1.7	234.93	2KJ1410 - ■ HK13 - ■■ M1		684
6.9		10 381	1.9	210.89 ★	2KJ1410 - ■ HK13 - ■■ L1		684
7.5		9 528	2.1	193.56	2KJ1410 - ■ HK13 - ■■ K1		684
FD.168B-LA132ZMP4E							
4.3		16 663	0.84	338.49	2KJ1408 - ■ HK13 - ■■ U1		503
4.7		15 365	0.91	312.12 ★	2KJ1408 - ■ HK13 - ■■ T1		503
5.0		14 239	0.98	289.26	2KJ1408 - ■ HK13 - ■■ S1		503

★ Preferred transmission ratio

Shaft designs, see page 3/89 ————— 1, 2, 3, 5, 6 or 9

Frequency and voltage, see page 8/20 ————— 1 to 9

Gearbox housing mounting position, see page 3/92 ————— A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
7.5	FD.168B-LA132ZMP4E						
	5.3	13 539	1.0	275.03	★	2KJ1408 - ■HK13 - ■■R1	503
	5.7	12 653	1.1	257.04		2KJ1408 - ■HK13 - ■■Q1	503
	6.4	11 162	1.3	226.74	★	2KJ1408 - ■HK13 - ■■P1	503
	6.8	10 528	1.3	213.87		2KJ1408 - ■HK13 - ■■N1	503
	7.6	9 433	1.5	191.63	★	2KJ1408 - ■HK13 - ■■M1	503
	8.2	8 710	1.6	176.94		2KJ1408 - ■HK13 - ■■L1	503
	9.6	7 442	1.9	151.18		2KJ1408 - ■HK13 - ■■K1	503
	10.6	6 726	2.1	136.63	★	2KJ1408 - ■HK13 - ■■J1	503
	11.1	6 480	2.2	131.64		2KJ1408 - ■HK13 - ■■H1	503
		FD.148B-LA132ZMP4E					
6.5		10 993	0.82	223.31	★	2KJ1407 - ■HK13 - ■■L1	341
7.0		10 187	0.88	206.93		2KJ1407 - ■HK13 - ■■K1	341
7.7		9 338	0.96	189.69	★	2KJ1407 - ■HK13 - ■■J1	341
8.4		8 560	1.1	173.89		2KJ1407 - ■HK13 - ■■H1	341
9.8		7 294	1.2	148.18		2KJ1407 - ■HK13 - ■■G1	341
11.1		6 437	1.4	130.76	★	2KJ1407 - ■HK13 - ■■F1	341
13.1		5 478	1.6	111.29		2KJ1407 - ■HK13 - ■■E1	341
15.1		4 747	1.9	96.43	★	2KJ1407 - ■HK13 - ■■D1	341
17.9		3 995	2.3	81.15	★	2KJ1407 - ■HK13 - ■■C1	341
	FZ.148B-LA132ZMP4E						
	21	3 359	1.7	68.23		2KJ1307 - ■HK13 - ■■V1	333
	23	3 169	2.1	64.37	★	2KJ1307 - ■HK13 - ■■U1	333
	24	2 964	2.4	60.21		2KJ1307 - ■HK13 - ■■T1	333
	FD.128B-LA132ZMP4E						
	10.0	7 170	0.85	145.66		2KJ1406 - ■HK13 - ■■H1	245
	11.1	6 449	0.95	131.01	★	2KJ1406 - ■HK13 - ■■G1	245
	12.0	5 950	1.0	120.87		2KJ1406 - ■HK13 - ■■F1	245
	14.2	5 041	1.2	102.41		2KJ1406 - ■HK13 - ■■E1	245
	16.3	4 393	1.4	89.25	★	2KJ1406 - ■HK13 - ■■D1	245
	19.2	3 738	1.6	75.93		2KJ1406 - ■HK13 - ■■C1	245
	22	3 190	1.9	64.8	★	2KJ1406 - ■HK13 - ■■B1	245
	27	2 615	2.3	53.13	★	2KJ1406 - ■HK13 - ■■A1	245
	FZ.128B-LA132ZMP4E						
	26	2 777	1.5	56.42	★	2KJ1306 - ■HK13 - ■■A2	241
	28	2 574	1.8	52.29		2KJ1306 - ■HK13 - ■■X1	241
	29	2 447	2.0	49.71	★	2KJ1306 - ■HK13 - ■■W1	241
	31	2 287	2.3	46.46		2KJ1306 - ■HK13 - ■■V1	241
	FD.108B-LA132ZMP4E						
	17.8	4 030	0.84	81.86		2KJ1405 - ■HK13 - ■■D1	164
	21	3 438	0.99	69.84	★	2KJ1405 - ■HK13 - ■■C1	164
	25	2 865	1.2	58.2		2KJ1405 - ■HK13 - ■■B1	164
	30	2 375	1.4	48.24	★	2KJ1405 - ■HK13 - ■■A1	164

★ Preferred transmission ratio

Shaft designs, see page 3/89

Frequency and voltage, see page 8/20

Gearbox housing mounting position, see page 3/92

*) For mounting type B5-01

1, 2, 3, 5, 6 or 9

1 to 9

A, D, E, F, H or M

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
7.5	FZ.108B-LA132ZMP4E						
	23	3 161	0.95	64.21	★	2KJ1305 - ■ HK13 - ■■ A2	163
	25	2 895	1.0	58.8		2KJ1305 - ■ HK13 - ■■ X1	163
	27	2 667	1.3	54.17	★	2KJ1305 - ■ HK13 - ■■ W1	163
	29	2 469	1.4	50.15		2KJ1305 - ■ HK13 - ■■ V1	163
	31	2 296	1.5	46.64	★	2KJ1305 - ■ HK13 - ■■ U1	163
	33	2 143	1.6	43.54		2KJ1305 - ■ HK13 - ■■ T1	163
	37	1 917	1.8	38.95	★	2KJ1305 - ■ HK13 - ■■ S1	163
	40	1 777	1.9	36.1		2KJ1305 - ■ HK13 - ■■ R1	163
	44	1 629	2.1	33.09	★	2KJ1305 - ■ HK13 - ■■ Q1	163
	48	1 493	2.3	30.33		2KJ1305 - ■ HK13 - ■■ P1	163
	56	1 273	2.7	25.85		2KJ1305 - ■ HK13 - ■■ N1	163
	64	1 123	3.0	22.81	★	2KJ1305 - ■ HK13 - ■■ M1	163
	FZ.88B-LA132ZMP4E						
	30	2 364	0.80	48.03		2KJ1304 - ■ HK13 - ■■ U1	116
	33	2 176	0.87	44.2	★	2KJ1304 - ■ HK13 - ■■ T1	116
	36	2 010	0.95	40.83		2KJ1304 - ■ HK13 - ■■ S1	116
	38	1 865	1.0	37.89	★	2KJ1304 - ■ HK13 - ■■ R1	116
	41	1 737	1.1	35.29		2KJ1304 - ■ HK13 - ■■ Q1	116
	46	1 571	1.2	31.91	★	2KJ1304 - ■ HK13 - ■■ P1	116
	50	1 446	1.3	29.38		2KJ1304 - ■ HK13 - ■■ N1	116
	55	1 301	1.5	26.42	★	2KJ1304 - ■ HK13 - ■■ M1	116
	60	1 200	1.6	24.38		2KJ1304 - ■ HK13 - ■■ L1	116
	70	1 017	1.9	20.65		2KJ1304 - ■ HK13 - ■■ K1	116
	81	886	2.1	18	★	2KJ1304 - ■ HK13 - ■■ J1	116
	95	754	2.5	15.31		2KJ1304 - ■ HK13 - ■■ H1	116
	111	643	3.0	13.07	★	2KJ1304 - ■ HK13 - ■■ G1	116
	136	527	3.6	10.71	★	2KJ1304 - ■ HK13 - ■■ F1	116
	158	452	3.7	9.19		2KJ1304 - ■ HK13 - ■■ E1	116
	182	394	3.9	8.01	★	2KJ1304 - ■ HK13 - ■■ D1	116
	213	336	4.3	6.82		2KJ1304 - ■ HK13 - ■■ C1	116
	250	286	4.7	5.82	★	2KJ1304 - ■ HK13 - ■■ B1	116
	FZ.68B-LA132ZMP4E						
	64	1 116	0.90	22.67	★	2KJ1303 - ■ HK13 - ■■ N1	85
	70	1 030	0.97	20.93		2KJ1303 - ■ HK13 - ■■ M1	85
	78	923	1.1	18.75	★	2KJ1303 - ■ HK13 - ■■ L1	85
84	851	1.2	17.29		2KJ1303 - ■ HK13 - ■■ K1	85	
100	714	1.4	14.51		2KJ1303 - ■ HK13 - ■■ J1	85	
118	609	1.6	12.38	★	2KJ1303 - ■ HK13 - ■■ H1	85	
141	508	2.0	10.31		2KJ1303 - ■ HK13 - ■■ G1	85	
170	421	2.4	8.55	★	2KJ1303 - ■ HK13 - ■■ F1	85	
181	395	2.3	8.03		2KJ1303 - ■ HK13 - ■■ E1	85	
216	332	2.5	6.74		2KJ1303 - ■ HK13 - ■■ D1	85	
253	283	2.7	5.75	★	2KJ1303 - ■ HK13 - ■■ C1	85	

★ Preferred transmission ratio

Shaft designs, see page 3/89

1, 2, 3, 5, 6 or 9

Frequency and voltage, see page 8/20

1 to 9

Gearbox housing mounting position, see page 3/92

A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
7.5	FZ.68B-LA132ZMP4E						
	304	236	2.9	4.79	2KJ1303 - ■HK13 - ■■B1		85
	366	195	3.0	3.97 ★	2KJ1303 - ■HK13 - ■■A1		85
	FZ.68B-LA132ZSD2E						
	156	458	2.2	18.75 ★	2KJ1303 - ■HJ13 - ■■L1	P00	85
	169	423	2.4	17.29	2KJ1303 - ■HJ13 - ■■K1	P00	85
	202	355	2.8	14.51	2KJ1303 - ■HJ13 - ■■J1	P00	85
	237	303	3.3	12.38 ★	2KJ1303 - ■HJ13 - ■■H1	P00	85
	284	252	4.0	10.31	2KJ1303 - ■HJ13 - ■■G1	P00	85
	343	209	4.8	8.55 ★	2KJ1303 - ■HJ13 - ■■F1	P00	85
	365	196	4.6	8.03	2KJ1303 - ■HJ13 - ■■E1	P00	85
	435	165	5.1	6.74	2KJ1303 - ■HJ13 - ■■D1	P00	85
	510	141	5.4	5.75 ★	2KJ1303 - ■HJ13 - ■■C1	P00	85
	612	117	5.8	4.79	2KJ1303 - ■HJ13 - ■■B1	P00	85
738	97	6.1	3.97 ★	2KJ1303 - ■HJ13 - ■■A1	P00	85	
9.2	FD.188B-LA160MB4E						
	4.9	18 067	1.1	299.2 ★	2KJ1410 - ■JP13 - ■■Q1		708
	5.2	16 899	1.2	279.86	2KJ1410 - ■JP13 - ■■P1		708
	5.8	15 027	1.3	248.85 ★	2KJ1410 - ■JP13 - ■■N1		708
	6.2	14 186	1.4	234.93	2KJ1410 - ■JP13 - ■■M1		708
	6.9	12 735	1.6	210.89 ★	2KJ1410 - ■JP13 - ■■L1		708
	7.5	11 688	1.7	193.56	2KJ1410 - ■JP13 - ■■K1		708
	8.7	10 086	2.0	167.03	2KJ1410 - ■JP13 - ■■J1		708
	FD.168B-LA160MB4E						
	5.3	16 608	0.84	275.03 ★	2KJ1408 - ■JP13 - ■■R1		527
	5.7	15 521	0.9	257.04	2KJ1408 - ■JP13 - ■■Q1		527
	6.4	13 692	1.0	226.74 ★	2KJ1408 - ■JP13 - ■■P1		527
	6.8	12 915	1.1	213.87	2KJ1408 - ■JP13 - ■■N1		527
	7.6	11 572	1.2	191.63 ★	2KJ1408 - ■JP13 - ■■M1		527
	8.2	10 685	1.3	176.94	2KJ1408 - ■JP13 - ■■L1		527
	9.6	9 129	1.5	151.18	2KJ1408 - ■JP13 - ■■K1		527
	10.6	8 250	1.7	136.63 ★	2KJ1408 - ■JP13 - ■■J1		527
	11.1	7 949	1.8	131.64	2KJ1408 - ■JP13 - ■■H1		527
	12.8	6 875	2.0	113.86	2KJ1408 - ■JP13 - ■■G1		527
	FD.148B-LA160MB4E						
	8.4	10 500	0.86	173.89	2KJ1407 - ■JP13 - ■■H1		365
	9.8	8 948	1.0	148.18	2KJ1407 - ■JP13 - ■■G1		365
	11.1	7 896	1.1	130.76 ★	2KJ1407 - ■JP13 - ■■F1		365
	13.1	6 720	1.3	111.29	2KJ1407 - ■JP13 - ■■E1		365
	15.1	5 823	1.5	96.43 ★	2KJ1407 - ■JP13 - ■■D1		365
	17.9	4 900	1.8	81.15 ★	2KJ1407 - ■JP13 - ■■C1		365
	19.9	4 421	2.0	73.22	2KJ1407 - ■JP13 - ■■B1		365
	23	3 800	2.4	62.93 ★	2KJ1407 - ■JP13 - ■■A1		365

★ Preferred transmission ratio

Shaft designs, see page 3/89

1, 2, 3, 5, 6 or 9

Frequency and voltage, see page 8/20

1 to 9

Gearbox housing mounting position, see page 3/92

A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
9.2	FZ.148B-LA160MB4E						
	23	3 887	1.7	64.37	★	2KJ1307 - JP13 - U1	357
	24	3 636	1.9	60.21		2KJ1307 - JP13 - T1	357
	27	3 232	2.5	53.53	★	2KJ1307 - JP13 - S1	357
	FD.128B-LA160MB4E						
	12.0	7 299	0.84	120.87		2KJ1406 - JP13 - F1	269
	14.2	6 184	0.99	102.41		2KJ1406 - JP13 - E1	269
	16.3	5 389	1.1	89.25	★	2KJ1406 - JP13 - D1	269
	19.2	4 585	1.3	75.93		2KJ1406 - JP13 - C1	269
	22	3 913	1.6	64.8	★	2KJ1406 - JP13 - B1	269
	27	3 208	1.9	53.13	★	2KJ1406 - JP13 - A1	269
	FZ.128B-LA160MB4E						
	29	3 002	1.6	49.71	★	2KJ1306 - JP13 - W1	265
	31	2 805	1.8	46.46		2KJ1306 - JP13 - V1	265
	36	2 475	2.3	40.99	★	2KJ1306 - JP13 - U1	265
	38	2 334	2.6	38.66		2KJ1306 - JP13 - T1	265
	FD.108B-LA160MB4E						
	21	4 217	0.81	69.84	★	2KJ1405 - JP13 - C1	188
	25	3 514	0.97	58.2		2KJ1405 - JP13 - B1	188
	30	2 913	1.2	48.24	★	2KJ1405 - JP13 - A1	188
	FZ.108B-LA160MB4E						
	31	2 816	1.2	46.64	★	2KJ1305 - JP13 - U1	187
	33	2 629	1.3	43.54		2KJ1305 - JP13 - T1	187
	37	2 352	1.4	38.95	★	2KJ1305 - JP13 - S1	187
	40	2 180	1.6	36.1		2KJ1305 - JP13 - R1	187
	44	1 998	1.7	33.09	★	2KJ1305 - JP13 - Q1	187
	48	1 831	1.9	30.33		2KJ1305 - JP13 - P1	187
56	1 561	2.2	25.85		2KJ1305 - JP13 - N1	187	
64	1 377	2.5	22.81	★	2KJ1305 - JP13 - M1	187	
75	1 172	2.9	19.41		2KJ1305 - JP13 - L1	187	
86	1 016	3.3	16.82	★	2KJ1305 - JP13 - K1	187	
FZ.88B-LA160MB4E							
38	2 288	0.83	37.89	★	2KJ1304 - JP13 - R1	140	
41	2 131	0.89	35.29		2KJ1304 - JP13 - Q1	140	
46	1 927	0.99	31.91	★	2KJ1304 - JP13 - P1	140	
50	1 774	1.1	29.38		2KJ1304 - JP13 - N1	140	
55	1 595	1.2	26.42	★	2KJ1304 - JP13 - M1	140	
60	1 472	1.3	24.38		2KJ1304 - JP13 - L1	140	
70	1 247	1.5	20.65		2KJ1304 - JP13 - K1	140	
81	1 087	1.7	18	★	2KJ1304 - JP13 - J1	140	
95	924	2.1	15.31		2KJ1304 - JP13 - H1	140	
111	789	2.4	13.07	★	2KJ1304 - JP13 - G1	140	
136	647	2.9	10.71	★	2KJ1304 - JP13 - F1	140	
158	555	3.0	9.19		2KJ1304 - JP13 - E1	140	

★ Preferred transmission ratio

Shaft designs, see page 3/89

1, 2, 3, 5, 6 or 9

Frequency and voltage, see page 8/20

1 to 9

Gearbox housing mounting position, see page 3/92

A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg	
9.2	FZ.88B-LA160MB4E							
	182	484	3.2	8.01	★	2KJ1304 - JP13 - D1	140	
	213	412	3.5	6.82		2KJ1304 - JP13 - C1	140	
	250	351	3.8	5.82	★	2KJ1304 - JP13 - B1	140	
	305	288	4.2	4.77	★	2KJ1304 - JP13 - A1	140	
11	FD.208-LG180LA8							
	3.0	35 066	0.97	242.01		2KJ1411 - KM13 - T1	P02	1 205
	3.3	31 666	1.1	218.54		2KJ1411 - KM13 - S1	P02	1 205
	3.5	29 676	1.1	204.81		2KJ1411 - KM13 - R1	P02	1 205
	FD.208-LA160ZLP6E							
	4.0	26 482	1.3	242.01		2KJ1411 - JT13 - T1	P01	1 135
	4.4	23 914	1.4	218.54		2KJ1411 - JT13 - S1	P01	1 135
	4.7	22 412	1.5	204.81		2KJ1411 - JT13 - R1	P01	1 135
	5.5	19 250	1.8	175.92	★	2KJ1411 - JT13 - Q1	P01	1 135
	FD.208-LA160MP4E							
	6.0	17 413	2.0	242.01		2KJ1411 - JQ13 - T1		1 123
	FD.188B-LA160MP4E							
	4.9	21 528	0.93	299.2	★	2KJ1410 - JQ13 - Q1		708
	5.2	20 137	0.99	279.86		2KJ1410 - JQ13 - P1		708
	5.9	17 905	1.1	248.85	★	2KJ1410 - JQ13 - N1		708
	6.2	16 904	1.2	234.93		2KJ1410 - JQ13 - M1		708
	6.9	15 174	1.3	210.89	★	2KJ1410 - JQ13 - L1		708
	7.5	13 927	1.4	193.56		2KJ1410 - JQ13 - K1		708
	8.7	12 018	1.7	167.03		2KJ1410 - JQ13 - J1		708
	10.0	10 513	1.9	146.11		2KJ1410 - JQ13 - H1		708
	11.5	9 143	2.2	127.07		2KJ1410 - JQ13 - G1		708
	FD.168B-LA160MP4E							
	6.4	16 314	0.86	226.74	★	2KJ1408 - JQ13 - P1		527
	6.8	15 388	0.91	213.87		2KJ1408 - JQ13 - N1		527
	7.6	13 788	1.0	191.63	★	2KJ1408 - JQ13 - M1		527
	8.3	12 731	1.1	176.94		2KJ1408 - JQ13 - L1		527
	9.7	10 878	1.3	151.18		2KJ1408 - JQ13 - K1		527
10.7	9 831	1.4	136.63	★	2KJ1408 - JQ13 - J1		527	
11.1	9 472	1.5	131.64		2KJ1408 - JQ13 - H1		527	
12.8	8 192	1.7	113.86		2KJ1408 - JQ13 - G1		527	
14.7	7 146	2.0	99.31	★	2KJ1408 - JQ13 - F1		527	
17.2	6 115	2.3	84.99	★	2KJ1408 - JQ13 - E1		527	
FZ.168B-LA160MP4E								
27	3 848	2.3	53.48		2KJ1308 - JQ13 - R1		510	
FD.148B-LA160MP4E								
9.9	10 662	0.84	148.18		2KJ1407 - JQ13 - G1		365	
11.2	9 408	0.96	130.76	★	2KJ1407 - JQ13 - F1		365	
13.1	8 008	1.1	111.29		2KJ1407 - JQ13 - E1		365	
15.1	6 938	1.3	96.43	★	2KJ1407 - JQ13 - D1		365	

★ Preferred transmission ratio

Shaft designs, see page 3/89 ————— 1, 2, 3, 5, 6 or 9

Frequency and voltage, see page 8/20 ————— 1 to 9

Gearbox housing mounting position, see page 3/92 ————— A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
11	FD.148B-LA160MP4E						
	18.0	5 839	1.5	81.15	★	2KJ1407 - ■ JQ13 - ■■ C1	365
	19.9	5 268	1.7	73.22		2KJ1407 - ■ JQ13 - ■■ B1	365
	23	4 528	2.0	62.93	★	2KJ1407 - ■ JQ13 - ■■ A1	365
	FZ.148B-LA160MP4E						
	23	4 632	1.4	64.37	★	2KJ1307 - ■ JQ13 - ■■ U1	357
	24	4 332	1.6	60.21		2KJ1307 - ■ JQ13 - ■■ T1	357
	27	3 852	2.1	53.53	★	2KJ1307 - ■ JQ13 - ■■ S1	357
	29	3 636	2.2	50.54		2KJ1307 - ■ JQ13 - ■■ R1	357
	FD.128B-LA160MP4E						
	14.3	7 369	0.83	102.41		2KJ1406 - ■ JQ13 - ■■ E1	269
16.4	6 422	0.95	89.25	★	2KJ1406 - ■ JQ13 - ■■ D1	269	
19.2	5 463	1.1	75.93		2KJ1406 - ■ JQ13 - ■■ C1	269	
22	4 662	1.3	64.8	★	2KJ1406 - ■ JQ13 - ■■ B1	269	
28	3 823	1.6	53.13	★	2KJ1406 - ■ JQ13 - ■■ A1	269	
FZ.128B-LA160MP4E							
29	3 577	1.4	49.71	★	2KJ1306 - ■ JQ13 - ■■ W1	265	
31	3 343	1.5	46.46		2KJ1306 - ■ JQ13 - ■■ V1	265	
36	2 949	1.9	40.99	★	2KJ1306 - ■ JQ13 - ■■ U1	265	
38	2 782	2.2	38.66		2KJ1306 - ■ JQ13 - ■■ T1	265	
42	2 492	2.4	34.64	★	2KJ1306 - ■ JQ13 - ■■ S1	265	
46	2 301	2.7	31.98		2KJ1306 - ■ JQ13 - ■■ R1	265	
FD.108B-LA160MP4E							
25	4 188	0.81	58.2		2KJ1405 - ■ JQ13 - ■■ B1	188	
30	3 471	0.98	48.24	★	2KJ1405 - ■ JQ13 - ■■ A1	188	
FZ.108B-LA160MP4E							
31	3 356	1.0	46.64	★	2KJ1305 - ■ JQ13 - ■■ U1	187	
34	3 133	1.1	43.54		2KJ1305 - ■ JQ13 - ■■ T1	187	
38	2 803	1.2	38.95	★	2KJ1305 - ■ JQ13 - ■■ S1	187	
40	2 597	1.3	36.1		2KJ1305 - ■ JQ13 - ■■ R1	187	
44	2 381	1.4	33.09	★	2KJ1305 - ■ JQ13 - ■■ Q1	187	
48	2 182	1.6	30.33		2KJ1305 - ■ JQ13 - ■■ P1	187	
56	1 860	1.8	25.85		2KJ1305 - ■ JQ13 - ■■ N1	187	
64	1 641	2.1	22.81	★	2KJ1305 - ■ JQ13 - ■■ M1	187	
75	1 397	2.4	19.41		2KJ1305 - ■ JQ13 - ■■ L1	187	
87	1 210	2.8	16.82	★	2KJ1305 - ■ JQ13 - ■■ K1	187	
103	1 019	3.2	14.16	★	2KJ1305 - ■ JQ13 - ■■ J1	187	
114	919	3.5	12.77		2KJ1305 - ■ JQ13 - ■■ H1	187	
FZ.88B-LA160MP4E							
46	2 296	0.83	31.91	★	2KJ1304 - ■ JQ13 - ■■ P1	140	
50	2 114	0.90	29.38		2KJ1304 - ■ JQ13 - ■■ N1	140	
55	1 901	1.0	26.42	★	2KJ1304 - ■ JQ13 - ■■ M1	140	
60	1 754	1.1	24.38		2KJ1304 - ■ JQ13 - ■■ L1	140	
71	1 486	1.3	20.65		2KJ1304 - ■ JQ13 - ■■ K1	140	

★ Preferred transmission ratio

Shaft designs, see page 3/89

1, 2, 3, 5, 6 or 9

Frequency and voltage, see page 8/20

1 to 9

Gearbox housing mounting position, see page 3/92

A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg	
11	FZ.88B-LA160MP4E							
	81	1 295	1.5	18	★	2KJ1304 - ■ JQ13 - ■■ J1	140	
	95	1 102	1.7	15.31		2KJ1304 - ■ JQ13 - ■■ H1	140	
	112	940	2.0	13.07	★	2KJ1304 - ■ JQ13 - ■■ G1	140	
	136	771	2.5	10.71	★	2KJ1304 - ■ JQ13 - ■■ F1	140	
	159	661	2.5	9.19		2KJ1304 - ■ JQ13 - ■■ E1	140	
	182	576	2.7	8.01	★	2KJ1304 - ■ JQ13 - ■■ D1	140	
	214	491	3.0	6.82		2KJ1304 - ■ JQ13 - ■■ C1	140	
	251	419	3.2	5.82	★	2KJ1304 - ■ JQ13 - ■■ B1	140	
306	343	3.5	4.77	★	2KJ1304 - ■ JQ13 - ■■ A1	140		
15	FD.208-LG200L8							
	3.5	40 468	0.84	204.81		2KJ1411 - ■ LL13 - ■■ R1	P02	1 255
	FD.208-LG180ZLB6E							
	4.0	35 557	0.96	242.01		2KJ1411 - ■ KP13 - ■■ T1	P01	1 205
	4.5	32 109	1.1	218.54		2KJ1411 - ■ KP13 - ■■ S1	P01	1 205
	4.8	30 091	1.1	204.81		2KJ1411 - ■ KP13 - ■■ R1	P01	1 205
	5.5	25 847	1.3	175.92	★	2KJ1411 - ■ KP13 - ■■ Q1	P01	1 205
	FD.208-LA160ZLP4E							
	6.0	23 745	1.4	242.01		2KJ1411 - ■ JT13 - ■■ T1		1 135
	6.7	21 442	1.6	218.54		2KJ1411 - ■ JT13 - ■■ S1		1 135
	7.1	20 095	1.7	204.81		2KJ1411 - ■ JT13 - ■■ R1		1 135
	8.3	17 261	2.0	175.92	★	2KJ1411 - ■ JT13 - ■■ Q1		1 135
	FD.188B-LA160ZLP4E							
	5.9	24 416	0.82	248.85	★	2KJ1410 - ■ JT13 - ■■ N1		720
	6.2	23 050	0.87	234.93		2KJ1410 - ■ JT13 - ■■ M1		720
	6.9	20 692	0.97	210.89	★	2KJ1410 - ■ JT13 - ■■ L1		720
	7.5	18 991	1.1	193.56		2KJ1410 - ■ JT13 - ■■ K1		720
	8.7	16 388	1.2	167.03		2KJ1410 - ■ JT13 - ■■ J1		720
	10.0	14 336	1.4	146.11		2KJ1410 - ■ JT13 - ■■ H1		720
	11.5	12 468	1.6	127.07		2KJ1410 - ■ JT13 - ■■ G1		720
	13.1	10 939	1.8	111.49	★	2KJ1410 - ■ JT13 - ■■ F1		720
	15.5	9 250	2.2	94.28	★	2KJ1410 - ■ JT13 - ■■ E1		720
	FD.168B-LA160ZLP4E							
	8.3	17 361	0.81	176.94		2KJ1408 - ■ JT13 - ■■ L1		539
	9.7	14 833	0.94	151.18		2KJ1408 - ■ JT13 - ■■ K1		539
	10.7	13 406	1.0	136.63	★	2KJ1408 - ■ JT13 - ■■ J1		539
	11.1	12 916	1.1	131.64		2KJ1408 - ■ JT13 - ■■ H1		539
12.8	11 172	1.3	113.86		2KJ1408 - ■ JT13 - ■■ G1		539	
14.7	9 744	1.4	99.31	★	2KJ1408 - ■ JT13 - ■■ F1		539	
17.2	8 339	1.7	84.99	★	2KJ1408 - ■ JT13 - ■■ E1		539	
19.2	7 469	1.9	76.12		2KJ1408 - ■ JT13 - ■■ D1		539	
23	6 326	2.2	64.47	★	2KJ1408 - ■ JT13 - ■■ C1		539	

★ Preferred transmission ratio

Shaft designs, see page 3/89

Frequency and voltage, see page 8/20

Gearbox housing mounting position, see page 3/92

*) For mounting type B5-01

1, 2, 3, 5, 6 or 9

1 to 9

A, D, E, F, H or M

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
15	FZ.168B-LA160ZLP4E						
	27	5 247	1.7	53.48	2KJ1308 - ■JT13 - ■■R1		522
	30	4 738	2.2	48.29	2KJ1308 - ■JT13 - ■■Q1		522
	FD.148B-LA160ZLP4E						
	13.1	10 919	0.82	111.29	2KJ1407 - ■JT13 - ■■E1		377
	15.1	9 461	0.95	96.43	★ 2KJ1407 - ■JT13 - ■■D1		377
	18.0	7 962	1.1	81.15	★ 2KJ1407 - ■JT13 - ■■C1		377
	19.9	7 184	1.3	73.22	2KJ1407 - ■JT13 - ■■B1		377
	23	6 174	1.5	62.93	★ 2KJ1407 - ■JT13 - ■■A1		377
	FZ.148B-LA160ZLP4E						
	23	6 316	1.0	64.37	★ 2KJ1307 - ■JT13 - ■■U1		369
	24	5 908	1.2	60.21	2KJ1307 - ■JT13 - ■■T1		369
	27	5 252	1.5	53.53	★ 2KJ1307 - ■JT13 - ■■S1		369
	29	4 959	1.6	50.54	2KJ1307 - ■JT13 - ■■R1		369
	32	4 452	2.0	45.37	★ 2KJ1307 - ■JT13 - ■■Q1		369
35	4 086	2.2	41.64	2KJ1307 - ■JT13 - ■■P1		369	
41	3 525	2.6	35.93	2KJ1307 - ■JT13 - ■■N1		369	
FD.128B-LA160ZLP4E							
19.2	7 450	0.82	75.93	2KJ1406 - ■JT13 - ■■C1		281	
22	6 358	0.96	64.8	★ 2KJ1406 - ■JT13 - ■■B1		281	
28	5 213	1.2	53.13	★ 2KJ1406 - ■JT13 - ■■A1		281	
FZ.128B-LA160ZLP4E							
29	4 877	1.0	49.71	★ 2KJ1306 - ■JT13 - ■■W1		277	
31	4 558	1.1	46.46	2KJ1306 - ■JT13 - ■■V1		277	
36	4 022	1.4	40.99	★ 2KJ1306 - ■JT13 - ■■U1		277	
38	3 793	1.6	38.66	2KJ1306 - ■JT13 - ■■T1		277	
42	3 399	1.8	34.64	★ 2KJ1306 - ■JT13 - ■■S1		277	
46	3 138	1.9	31.98	2KJ1306 - ■JT13 - ■■R1		277	
53	2 682	2.3	27.33	2KJ1306 - ■JT13 - ■■Q1		277	
59	2 423	2.5	24.7	★ 2KJ1306 - ■JT13 - ■■P1		277	
61	2 335	2.6	23.8	2KJ1306 - ■JT13 - ■■N1		277	
71	2 019	3.0	20.58	2KJ1306 - ■JT13 - ■■L1		277	
FZ.108B-LA160ZLP4E							
34	4 272	0.80	43.54	2KJ1305 - ■JT13 - ■■T1		199	
38	3 822	0.89	38.95	★ 2KJ1305 - ■JT13 - ■■S1		199	
40	3 542	0.96	36.1	2KJ1305 - ■JT13 - ■■R1		199	
44	3 247	1.0	33.09	★ 2KJ1305 - ■JT13 - ■■Q1		199	
48	2 976	1.1	30.33	2KJ1305 - ■JT13 - ■■P1		199	
56	2 536	1.3	25.85	2KJ1305 - ■JT13 - ■■N1		199	
64	2 238	1.5	22.81	★ 2KJ1305 - ■JT13 - ■■M1		199	
75	1 904	1.8	19.41	2KJ1305 - ■JT13 - ■■L1		199	
87	1 650	2.1	16.82	★ 2KJ1305 - ■JT13 - ■■K1		199	
103	1 389	2.4	14.16	★ 2KJ1305 - ■JT13 - ■■J1		199	
114	1 253	2.6	12.77	2KJ1305 - ■JT13 - ■■H1		199	

★ Preferred transmission ratio

Shaft designs, see page 3/89

1, 2, 3, 5, 6 or 9

Frequency and voltage, see page 8/20

1 to 9

Gearbox housing mounting position, see page 3/92

A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg		
15	FZ.108B-LA160ZLP4E								
	133	1 077	2.9	10.98	★	2KJ1305 - ■JT13 - ■■G1	199		
	145	985	3.4	10.04		2KJ1305 - ■JT13 - ■■F1	199		
	168	854	3.6	8.7	★	2KJ1305 - ■JT13 - ■■E1	199		
	199	718	4.0	7.32	★	2KJ1305 - ■JT13 - ■■D1	199		
	221	648	4.1	6.6		2KJ1305 - ■JT13 - ■■C1	199		
	257	557	4.3	5.68	★	2KJ1305 - ■JT13 - ■■B1	199		
	FZ.88B-LA160ZLP4E								
	71	2 026	0.94	20.65		2KJ1304 - ■JT13 - ■■K1	152		
	81	1 766	1.1	18	★	2KJ1304 - ■JT13 - ■■J1	152		
	95	1 502	1.3	15.31		2KJ1304 - ■JT13 - ■■H1	152		
	112	1 282	1.5	13.07	★	2KJ1304 - ■JT13 - ■■G1	152		
	136	1 051	1.8	10.71	★	2KJ1304 - ■JT13 - ■■F1	152		
	159	902	1.8	9.19		2KJ1304 - ■JT13 - ■■E1	152		
	182	786	2.0	8.01	★	2KJ1304 - ■JT13 - ■■D1	152		
	214	669	2.2	6.82		2KJ1304 - ■JT13 - ■■C1	152		
	251	571	2.4	5.82	★	2KJ1304 - ■JT13 - ■■B1	152		
	306	468	2.6	4.77	★	2KJ1304 - ■JT13 - ■■A1	152		
	18.5	FD.208-LG200L6E							
		4.5	39 601	0.86	218.54		2KJ1411 - ■LL13 - ■■S1	P01	1 255
		4.8	37 113	0.92	204.81		2KJ1411 - ■LL13 - ■■R1	P01	1 255
		5.5	31 878	1.1	175.92	★	2KJ1411 - ■LL13 - ■■Q1	P01	1 255
		FD.208-LG180ZMB4E							
		6.1	29 086	1.2	242.01		2KJ1411 - ■KL13 - ■■T1		1 190
		6.7	26 266	1.3	218.54		2KJ1411 - ■KL13 - ■■S1		1 190
		7.2	24 616	1.4	204.81		2KJ1411 - ■KL13 - ■■R1		1 190
8.4		21 143	1.6	175.92	★	2KJ1411 - ■KL13 - ■■Q1		1 190	
9.7		18 267	1.9	151.99		2KJ1411 - ■KL13 - ■■P1		1 190	
11.0		16 124	2.1	134.16		2KJ1411 - ■KL13 - ■■N1		1 190	
FD.188B-LG180ZMB4E									
7.6		23 263	0.86	193.56		2KJ1410 - ■KL13 - ■■K1		775	
8.8		20 075	1.0	167.03		2KJ1410 - ■KL13 - ■■J1		775	
10.1		17 561	1.1	146.11		2KJ1410 - ■KL13 - ■■H1		775	
11.6		15 272	1.3	127.07		2KJ1410 - ■KL13 - ■■G1		775	
13.2		13 400	1.5	111.49	★	2KJ1410 - ■KL13 - ■■F1		775	
15.6		11 331	1.8	94.28	★	2KJ1410 - ■KL13 - ■■E1		775	
17.2		10 281	1.9	85.54		2KJ1410 - ■KL13 - ■■D1		775	
19.7		8 964	2.2	74.58	★	2KJ1410 - ■KL13 - ■■C1		775	
FD.168B-LG180ZMB4E									
10.8		16 421	0.85	136.63	★	2KJ1408 - ■KL13 - ■■J1		594	
11.2		15 821	0.88	131.64		2KJ1408 - ■KL13 - ■■H1		594	
12.9		13 685	1.0	113.86		2KJ1408 - ■KL13 - ■■G1		594	
14.8		11 936	1.2	99.31	★	2KJ1408 - ■KL13 - ■■F1		594	
17.3		10 215	1.4	84.99	★	2KJ1408 - ■KL13 - ■■E1		594	

★ Preferred transmission ratio

Shaft designs, see page 3/89 ————— 1, 2, 3, 5, 6 or 9

Frequency and voltage, see page 8/20 ————— 1 to 9

Gearbox housing mounting position, see page 3/92 ————— A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
18.5	FD.168B-LG180ZMB4E						
	19.3	9 149	1.5	76.12	2KJ1408 - ■ KL13 - ■■ D1		594
	23	7 748	1.8	64.47	★ 2KJ1408 - ■ KL13 - ■■ C1		594
	26	6 692	2.1	55.68	2KJ1408 - ■ KL13 - ■■ B1		594
	FZ.168B-LG180ZMB4E						
	28	6 428	1.4	53.48	2KJ1308 - ■ KL13 - ■■ R1		577
	30	5 804	1.8	48.29	2KJ1308 - ■ KL13 - ■■ Q1		577
	32	5 438	2.1	45.25	2KJ1308 - ■ KL13 - ■■ P1		577
	FD.148B-LG180ZMB4E						
	18.1	9 753	0.92	81.15	★ 2KJ1407 - ■ KL13 - ■■ C1		432
	20	8 800	1.0	73.22	2KJ1407 - ■ KL13 - ■■ B1		432
	23	7 563	1.2	62.93	★ 2KJ1407 - ■ KL13 - ■■ A1		432
	FZ.148B-LG180ZMB4E						
	28	6 434	1.2	53.53	★ 2KJ1307 - ■ KL13 - ■■ S1		424
	29	6 074	1.3	50.54	2KJ1307 - ■ KL13 - ■■ R1		424
	32	5 453	1.6	45.37	★ 2KJ1307 - ■ KL13 - ■■ Q1		424
	35	5 005	1.8	41.64	2KJ1307 - ■ KL13 - ■■ P1		424
	41	4 318	2.1	35.93	2KJ1307 - ■ KL13 - ■■ N1		424
	47	3 777	2.4	31.43	2KJ1307 - ■ KL13 - ■■ M1		424
	54	3 286	2.7	27.34	2KJ1307 - ■ KL13 - ■■ L1		424
	FD.128B-LG180ZMB4E						
	28	6 386	0.96	53.13	★ 2KJ1406 - ■ KL13 - ■■ A1		336
	FZ.128B-LG180ZMB4E						
	36	4 926	1.2	40.99	★ 2KJ1306 - ■ KL13 - ■■ U1		332
	38	4 646	1.3	38.66	2KJ1306 - ■ KL13 - ■■ T1		332
	42	4 163	1.5	34.64	★ 2KJ1306 - ■ KL13 - ■■ S1		332
	46	3 844	1.6	31.98	2KJ1306 - ■ KL13 - ■■ R1		332
54	3 285	1.9	27.33	2KJ1306 - ■ KL13 - ■■ Q1		332	
60	2 969	2.1	24.7	★ 2KJ1306 - ■ KL13 - ■■ P1		332	
62	2 860	2.1	23.8	2KJ1306 - ■ KL13 - ■■ N1		332	
71	2 473	2.5	20.58	2KJ1306 - ■ KL13 - ■■ L1		332	
82	2 157	2.8	17.95	★ 2KJ1306 - ■ KL13 - ■■ K1		332	
96	1 846	3.2	15.36	★ 2KJ1306 - ■ KL13 - ■■ J1		332	
107	1 654	3.4	13.76	2KJ1306 - ■ KL13 - ■■ H1		332	
126	1 400	3.8	11.65	★ 2KJ1306 - ■ KL13 - ■■ G1		332	
213	830	4.3	6.91	2KJ1306 - ■ KL13 - ■■ D1		332	
251	703	4.7	5.85	★ 2KJ1306 - ■ KL13 - ■■ C1		332	
FZ.108B-LG180ZMB4E							
44	3 977	0.85	33.09	★ 2KJ1305 - ■ KL13 - ■■ Q1		254	
48	3 645	0.93	30.33	2KJ1305 - ■ KL13 - ■■ P1		254	
57	3 107	1.1	25.85	2KJ1305 - ■ KL13 - ■■ N1		254	
64	2 741	1.2	22.81	★ 2KJ1305 - ■ KL13 - ■■ M1		254	
76	2 333	1.5	19.41	2KJ1305 - ■ KL13 - ■■ L1		254	
87	2 022	1.7	16.82	★ 2KJ1305 - ■ KL13 - ■■ K1		254	

★ Preferred transmission ratio

Shaft designs, see page 3/89

1, 2, 3, 5, 6 or 9

Frequency and voltage, see page 8/20

1 to 9

Gearbox housing mounting position, see page 3/92

A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight *) kg
18.5	FZ.108B-LG180ZMB4E						
	104	1 702	1.9	14.16	★	2KJ1305 - ■ KL13 - ■■ J1	254
	115	1 535	2.1	12.77		2KJ1305 - ■ KL13 - ■■ H1	254
	134	1 320	2.4	10.98	★	2KJ1305 - ■ KL13 - ■■ G1	254
	146	1 207	2.8	10.04		2KJ1305 - ■ KL13 - ■■ F1	254
	169	1 046	3.0	8.7	★	2KJ1305 - ■ KL13 - ■■ E1	254
	201	880	3.2	7.32	★	2KJ1305 - ■ KL13 - ■■ D1	254
	223	793	3.3	6.6		2KJ1305 - ■ KL13 - ■■ C1	254
	259	683	3.5	5.68	★	2KJ1305 - ■ KL13 - ■■ B1	254
22	FD.208-LG200ZLB6E						
	5.5	37 909	0.90	175.92	★	2KJ1411 - ■ LM13 - ■■ Q1 P01	1 255
	FD.208-LG180ZLB4E						
	6.1	34 707	0.98	242.01		2KJ1411 - ■ KP13 - ■■ T1	1 205
	6.7	31 341	1.1	218.54		2KJ1411 - ■ KP13 - ■■ S1	1 205
	7.2	29 372	1.2	204.81		2KJ1411 - ■ KP13 - ■■ R1	1 205
	8.3	25 229	1.3	175.92	★	2KJ1411 - ■ KP13 - ■■ Q1	1 205
	9.6	21 797	1.6	151.99		2KJ1411 - ■ KP13 - ■■ P1	1 205
	10.9	19 240	1.8	134.16		2KJ1411 - ■ KP13 - ■■ N1	1 205
	12.1	17 320	2.0	120.77	★	2KJ1411 - ■ KP13 - ■■ M1	1 205
	FD.188B-LG180ZLB4E						
	8.8	23 954	0.83	167.03		2KJ1410 - ■ KP13 - ■■ J1	790
	10.0	20 954	0.95	146.11		2KJ1410 - ■ KP13 - ■■ H1	790
	11.5	18 223	1.1	127.07		2KJ1410 - ■ KP13 - ■■ G1	790
	13.1	15 989	1.3	111.49	★	2KJ1410 - ■ KP13 - ■■ F1	790
	15.5	13 521	1.5	94.28	★	2KJ1410 - ■ KP13 - ■■ E1	790
	17.1	12 268	1.6	85.54		2KJ1410 - ■ KP13 - ■■ D1	790
	19.6	10 696	1.9	74.58	★	2KJ1410 - ■ KP13 - ■■ C1	790
	23	9 081	2.2	63.32		2KJ1410 - ■ KP13 - ■■ B1	790
	FZ.188B-LG180ZLB4E						
	28	7 548	2.2	52.63		2KJ1310 - ■ KP13 - ■■ P1	767
	30	6 951	2.4	48.47		2KJ1310 - ■ KP13 - ■■ N1	767
	FD.168B-LG180ZLB4E						
	12.9	16 329	0.86	113.86		2KJ1408 - ■ KP13 - ■■ G1	609
	14.8	14 242	0.98	99.31	★	2KJ1408 - ■ KP13 - ■■ F1	609
	17.2	12 189	1.1	84.99	★	2KJ1408 - ■ KP13 - ■■ E1	609
	19.2	10 917	1.3	76.12		2KJ1408 - ■ KP13 - ■■ D1	609
	23	9 246	1.5	64.47	★	2KJ1408 - ■ KP13 - ■■ C1	609
	26	7 985	1.8	55.68		2KJ1408 - ■ KP13 - ■■ B1	609
	35	6 002	2.3	41.85	★	2KJ1408 - ■ KP13 - ■■ A1	609
	FZ.168B-LG180ZLB4E						
	27	7 670	1.2	53.48		2KJ1308 - ■ KP13 - ■■ R1	592
	30	6 925	1.5	48.29		2KJ1308 - ■ KP13 - ■■ Q1	592
	32	6 489	1.8	45.25		2KJ1308 - ■ KP13 - ■■ P1	592
	38	5 574	2.3	38.87	★	2KJ1308 - ■ KP13 - ■■ N1	592
	44	4 816	2.7	33.58		2KJ1308 - ■ KP13 - ■■ M1	592

★ Preferred transmission ratio

Shaft designs, see page 3/89

1, 2, 3, 5, 6 or 9

Frequency and voltage, see page 8/20

1 to 9

Gearbox housing mounting position, see page 3/92

A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
22	FD.148B-LG180ZLB4E						
	20	10 501	0.86	73.22	2KJ1407 - ■ KP13 - ■■ B1		447
	23	9 025	1.0	62.93	★	2KJ1407 - ■ KP13 - ■■ A1	447
	FZ.148B-LG180ZLB4E						
	27	7 677	1.0	53.53	★	2KJ1307 - ■ KP13 - ■■ S1	439
	29	7 248	1.1	50.54		2KJ1307 - ■ KP13 - ■■ R1	439
	32	6 507	1.3	45.37	★	2KJ1307 - ■ KP13 - ■■ Q1	439
	35	5 972	1.5	41.64		2KJ1307 - ■ KP13 - ■■ P1	439
	41	5 153	1.7	35.93		2KJ1307 - ■ KP13 - ■■ N1	439
	47	4 507	2.0	31.43		2KJ1307 - ■ KP13 - ■■ M1	439
	54	3 921	2.3	27.34		2KJ1307 - ■ KP13 - ■■ L1	439
	61	3 439	2.6	23.98	★	2KJ1307 - ■ KP13 - ■■ K1	439
	72	2 908	3.1	20.28	★	2KJ1307 - ■ KP13 - ■■ J1	439
	FD.128B-LG180ZLB4E						
	28	7 620	0.80	53.13	★	2KJ1406 - ■ KP13 - ■■ A1	351
	FZ.128B-LG180ZLB4E						
	36	5 878	0.97	40.99	★	2KJ1306 - ■ KP13 - ■■ U1	347
	38	5 544	1.1	38.66		2KJ1306 - ■ KP13 - ■■ T1	347
	42	4 968	1.2	34.64	★	2KJ1306 - ■ KP13 - ■■ S1	347
	46	4 586	1.3	31.98		2KJ1306 - ■ KP13 - ■■ R1	347
	54	3 919	1.6	27.33		2KJ1306 - ■ KP13 - ■■ Q1	347
	59	3 542	1.7	24.7	★	2KJ1306 - ■ KP13 - ■■ P1	347
62	3 413	1.8	23.8		2KJ1306 - ■ KP13 - ■■ N1	347	
71	2 951	2.1	20.58		2KJ1306 - ■ KP13 - ■■ L1	347	
82	2 574	2.4	17.95	★	2KJ1306 - ■ KP13 - ■■ K1	347	
95	2 203	2.7	15.36	★	2KJ1306 - ■ KP13 - ■■ J1	347	
106	1 973	2.9	13.76		2KJ1306 - ■ KP13 - ■■ H1	347	
126	1 671	3.2	11.65	★	2KJ1306 - ■ KP13 - ■■ G1	347	
145	1 444	3.5	10.07		2KJ1306 - ■ KP13 - ■■ F1	347	
194	1 086	4.2	7.57	★	2KJ1306 - ■ KP13 - ■■ E1	347	
212	991	3.6	6.91		2KJ1306 - ■ KP13 - ■■ D1	347	
250	839	3.9	5.85	★	2KJ1306 - ■ KP13 - ■■ C1	347	
290	724	4.3	5.05		2KJ1306 - ■ KP13 - ■■ B1	347	
386	545	5.0	3.8	★	2KJ1306 - ■ KP13 - ■■ A1	347	
FZ.108B-LG180ZLB4E							
57	3 707	0.92	25.85		2KJ1305 - ■ KP13 - ■■ N1	269	
64	3 271	1.0	22.81	★	2KJ1305 - ■ KP13 - ■■ M1	269	
76	2 784	1.2	19.41		2KJ1305 - ■ KP13 - ■■ L1	269	
87	2 412	1.4	16.82	★	2KJ1305 - ■ KP13 - ■■ K1	269	
103	2 031	1.6	14.16	★	2KJ1305 - ■ KP13 - ■■ J1	269	
115	1 831	1.8	12.77		2KJ1305 - ■ KP13 - ■■ H1	269	
133	1 575	2.0	10.98	★	2KJ1305 - ■ KP13 - ■■ G1	269	
146	1 440	2.3	10.04		2KJ1305 - ■ KP13 - ■■ F1	269	
168	1 248	2.5	8.7	★	2KJ1305 - ■ KP13 - ■■ E1	269	

★ Preferred transmission ratio

Shaft designs, see page 3/89

Frequency and voltage, see page 8/20

Gearbox housing mounting position, see page 3/92

*) For mounting type B5-01

1, 2, 3, 5, 6 or 9

1 to 9

A, D, E, F, H or M

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
22	FZ.108B-LG180ZLB4E						
	200	1 050	2.7	7.32	★	2KJ1305 - ■ KP13 - ■■ D1	269
	222	947	2.8	6.6		2KJ1305 - ■ KP13 - ■■ C1	269
	258	815	3.0	5.68	★	2KJ1305 - ■ KP13 - ■■ B1	269
30	FD.208-LG200LB4E						
	6.7	42 449	0.80	218.54		2KJ1411 - ■ LM13 - ■■ S1	1 255
	7.2	39 782	0.85	204.81		2KJ1411 - ■ LM13 - ■■ R1	1 255
	8.4	34 170	1.0	175.92	★	2KJ1411 - ■ LM13 - ■■ Q1	1 255
	9.7	29 522	1.2	151.99		2KJ1411 - ■ LM13 - ■■ P1	1 255
	11.0	26 059	1.3	134.16		2KJ1411 - ■ LM13 - ■■ N1	1 255
	12.2	23 458	1.4	120.77	★	2KJ1411 - ■ LM13 - ■■ M1	1 255
	14.7	19 465	1.7	100.21	★	2KJ1411 - ■ LM13 - ■■ L1	1 255
	16.1	17 749	1.9	91.38		2KJ1411 - ■ LM13 - ■■ K1	1 255
	18.4	15 572	2.2	80.17	★	2KJ1411 - ■ LM13 - ■■ J1	1 255
	FD.188B-LG200LB4E						
	11.6	24 682	0.81	127.07		2KJ1410 - ■ LM13 - ■■ G1	840
	13.2	21 656	0.92	111.49	★	2KJ1410 - ■ LM13 - ■■ F1	840
	15.6	18 313	1.1	94.28	★	2KJ1410 - ■ LM13 - ■■ E1	840
	17.2	16 615	1.2	85.54		2KJ1410 - ■ LM13 - ■■ D1	840
	19.8	14 486	1.4	74.58	★	2KJ1410 - ■ LM13 - ■■ C1	840
	23	12 299	1.6	63.32		2KJ1410 - ■ LM13 - ■■ B1	840
	30	9 413	2.1	48.46	★	2KJ1410 - ■ LM13 - ■■ A1	840
FZ.188B-LG200LB4E							
28	10 223	1.6	52.63		2KJ1310 - ■ LM13 - ■■ P1	817	
30	9 415	1.8	48.47		2KJ1310 - ■ LM13 - ■■ N1	817	
35	8 172	2.1	42.07	★	2KJ1310 - ■ LM13 - ■■ M1	817	
40	7 202	2.4	37.08		2KJ1310 - ■ LM13 - ■■ L1	817	
FD.168B-LG200LB4E							
17.4	16 508	0.85	84.99	★	2KJ1408 - ■ LM13 - ■■ E1	659	
19.4	14 785	0.95	76.12		2KJ1408 - ■ LM13 - ■■ D1	659	
23	12 522	1.1	64.47	★	2KJ1408 - ■ LM13 - ■■ C1	659	
26	10 815	1.3	55.68		2KJ1408 - ■ LM13 - ■■ B1	659	
35	8 129	1.7	41.85	★	2KJ1408 - ■ LM13 - ■■ A1	659	
FZ.168B-LG200LB4E							
28	10 388	0.87	53.48		2KJ1308 - ■ LM13 - ■■ R1	642	
30	9 380	1.1	48.29		2KJ1308 - ■ LM13 - ■■ Q1	642	
33	8 789	1.3	45.25		2KJ1308 - ■ LM13 - ■■ P1	642	
38	7 550	1.7	38.87	★	2KJ1308 - ■ LM13 - ■■ N1	642	
44	6 522	2.0	33.58		2KJ1308 - ■ LM13 - ■■ M1	642	
50	5 757	2.4	29.64		2KJ1308 - ■ LM13 - ■■ L1	642	
55	5 182	2.7	26.68	★	2KJ1308 - ■ LM13 - ■■ K1	642	
FZ.148B-LG200LB4E							
29	9 817	0.81	50.54		2KJ1307 - ■ LM13 - ■■ R1	489	
32	8 813	0.99	45.37	★	2KJ1307 - ■ LM13 - ■■ Q1	489	

★ Preferred transmission ratio

Shaft designs, see page 3/89 ————— 1, 2, 3, 5, 6 or 9

Frequency and voltage, see page 8/20 ————— 1 to 9

Gearbox housing mounting position, see page 3/92 ————— A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg	
30	FZ.148B-LG200LB4E							
	35	8 088	1.1	41.64	2KJ1307 - LM13 - P1		489	
	41	6 979	1.3	35.93	2KJ1307 - LM13 - N1		489	
	47	6 105	1.5	31.43	2KJ1307 - LM13 - M1		489	
	54	5 310	1.7	27.34	2KJ1307 - LM13 - L1		489	
	62	4 658	1.9	23.98	★ 2KJ1307 - LM13 - K1		489	
	73	3 939	2.3	20.28	★ 2KJ1307 - LM13 - J1		489	
	80	3 574	2.5	18.4	2KJ1307 - LM13 - H1		489	
	92	3 116	2.9	16.04	★ 2KJ1307 - LM13 - G1		489	
	108	2 646	3.2	13.62	2KJ1307 - LM13 - F1		489	
	141	2 026	3.9	10.43	★ 2KJ1307 - LM13 - E1		489	
	155	1 847	3.6	9.51	2KJ1307 - LM13 - D1		489	
	178	1 610	3.9	8.29	★ 2KJ1307 - LM13 - C1		489	
	210	1 367	4.3	7.04	2KJ1307 - LM13 - B1		489	
	274	1 047	4.9	5.39	★ 2KJ1307 - LM13 - A1		489	
	37	FZ.128B-LG200LB4E						
		38	7 509	0.80	38.66	2KJ1306 - LM13 - T1		397
		43	6 728	0.91	34.64	★ 2KJ1306 - LM13 - S1		397
		46	6 212	0.98	31.98	2KJ1306 - LM13 - R1		397
		54	5 309	1.1	27.33	2KJ1306 - LM13 - Q1		397
60		4 798	1.3	24.7	★ 2KJ1306 - LM13 - P1		397	
62		4 623	1.3	23.8	2KJ1306 - LM13 - N1		397	
72		3 997	1.5	20.58	2KJ1306 - LM13 - L1		397	
82		3 487	1.7	17.95	★ 2KJ1306 - LM13 - K1		397	
96		2 983	2.0	15.36	★ 2KJ1306 - LM13 - J1		397	
107		2 673	2.1	13.76	2KJ1306 - LM13 - H1		397	
127		2 263	2.4	11.65	★ 2KJ1306 - LM13 - G1		397	
146		1 956	2.6	10.07	2KJ1306 - LM13 - F1		397	
195		1 470	3.1	7.57	★ 2KJ1306 - LM13 - E1		397	
213		1 342	2.7	6.91	2KJ1306 - LM13 - D1		397	
252		1 136	2.9	5.85	★ 2KJ1306 - LM13 - C1		397	
292		981	3.2	5.05	2KJ1306 - LM13 - B1		397	
388		738	3.7	3.8	★ 2KJ1306 - LM13 - A1		397	
37		FD.208-LG225S4E						
		8.4	42 287	0.80	175.92	★ 2KJ1411 - ME13 - Q1		1 335
	9.7	36 534	0.93	151.99	2KJ1411 - ME13 - P1		1 335	
	11.0	32 249	1.1	134.16	2KJ1411 - ME13 - N1		1 335	
	12.2	29 030	1.2	120.77	★ 2KJ1411 - ME13 - M1		1 335	
	14.7	24 088	1.4	100.21	★ 2KJ1411 - ME13 - L1		1 335	
	16.1	21 965	1.5	91.38	2KJ1411 - ME13 - K1		1 335	
	18.3	19 271	1.8	80.17	★ 2KJ1411 - ME13 - J1		1 335	
	21	16 562	2.1	68.9	2KJ1411 - ME13 - H1		1 335	
	37	FD.188B-LG225S4E						
15.6	22 662	0.88	94.28	★ 2KJ1410 - ME13 - E1		920		

★ Preferred transmission ratio

Shaft designs, see page 3/89 ————— 1, 2, 3, 5, 6 or 9

Frequency and voltage, see page 8/20 ————— 1 to 9

Gearbox housing mounting position, see page 3/92 ————— A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
37	FD.188B-LG225S4E						
	17.2	20 562	0.97	85.54	2KJ1410 - ■ME13 - ■■D1		920
	19.7	17 927	1.1	74.58 ★	2KJ1410 - ■ME13 - ■■C1		920
	23	15 220	1.3	63.32	2KJ1410 - ■ME13 - ■■B1		920
	30	11 649	1.7	48.46 ★	2KJ1410 - ■ME13 - ■■A1		920
	FZ.188B-LG225S4E						
	28	12 651	1.3	52.63	2KJ1310 - ■ME13 - ■■P1		897
	30	11 651	1.4	48.47	2KJ1310 - ■ME13 - ■■N1		897
	35	10 113	1.7	42.07 ★	2KJ1310 - ■ME13 - ■■M1		897
	40	8 913	2.0	37.08	2KJ1310 - ■ME13 - ■■L1		897
	45	7 822	2.4	32.54	2KJ1310 - ■ME13 - ■■K1		897
	50	7 050	2.8	29.33 ★	2KJ1310 - ■ME13 - ■■J1		897
	FD.168B-LG225S4E						
	23	15 497	0.90	64.47 ★	2KJ1408 - ■ME13 - ■■C1		739
	26	13 384	1.0	55.68	2KJ1408 - ■ME13 - ■■B1		739
	35	10 060	1.4	41.85 ★	2KJ1408 - ■ME13 - ■■A1		739
	FZ.168B-LG225S4E						
	30	11 608	0.90	48.29	2KJ1308 - ■ME13 - ■■Q1		722
	32	10 877	1.1	45.25	2KJ1308 - ■ME13 - ■■P1		722
	38	9 343	1.4	38.87 ★	2KJ1308 - ■ME13 - ■■N1		722
	44	8 072	1.6	33.58	2KJ1308 - ■ME13 - ■■M1		722
	50	7 125	2.0	29.64	2KJ1308 - ■ME13 - ■■L1		722
	55	6 413	2.2	26.68 ★	2KJ1308 - ■ME13 - ■■K1		722
	66	5 322	2.6	22.14 ★	2KJ1308 - ■ME13 - ■■J1		722
	73	4 853	2.9	20.19	2KJ1308 - ■ME13 - ■■H1		722
	83	4 257	3.3	17.71 ★	2KJ1308 - ■ME13 - ■■G1		722
	FZ.148B-LG225S4E						
	32	10 906	0.80	45.37 ★	2KJ1307 - ■ME13 - ■■Q1		569
	35	10 009	0.90	41.64	2KJ1307 - ■ME13 - ■■P1		569
	41	8 637	1.0	35.93	2KJ1307 - ■ME13 - ■■N1		569
	47	7 555	1.2	31.43	2KJ1307 - ■ME13 - ■■M1		569
	54	6 572	1.4	27.34	2KJ1307 - ■ME13 - ■■L1		569
	61	5 764	1.6	23.98 ★	2KJ1307 - ■ME13 - ■■K1		569
	72	4 875	1.8	20.28 ★	2KJ1307 - ■ME13 - ■■J1		569
	80	4 423	2.0	18.4	2KJ1307 - ■ME13 - ■■H1		569
	92	3 856	2.3	16.04 ★	2KJ1307 - ■ME13 - ■■G1		569
	108	3 274	2.6	13.62	2KJ1307 - ■ME13 - ■■F1		569
141	2 507	3.1	10.43 ★	2KJ1307 - ■ME13 - ■■E1		569	
155	2 286	2.9	9.51	2KJ1307 - ■ME13 - ■■D1		569	
177	1 993	3.1	8.29 ★	2KJ1307 - ■ME13 - ■■C1		569	
209	1 692	3.4	7.04	2KJ1307 - ■ME13 - ■■B1		569	
273	1 296	4.0	5.39 ★	2KJ1307 - ■ME13 - ■■A1		569	
FZ.128B-K4-LGI225S4E							
54	6 569	0.93	27.33	2KJ1306 - ■ME13 - ■■Q1		477	

★ Preferred transmission ratio

Shaft designs, see page 3/89

1, 2, 3, 5, 6 or 9

Frequency and voltage, see page 8/20

1 to 9

Gearbox housing mounting position, see page 3/92

A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight *) kg
37	FZ.128B-K4-LGI225S4E						
60	5 937	1.0	24.7	★	2KJ1306 - ■ME13 - ■■P1		477
62	5 721	1.1	23.8		2KJ1306 - ■ME13 - ■■N1		477
71	4 947	1.2	20.58		2KJ1306 - ■ME13 - ■■L1		477
82	4 315	1.4	17.95	★	2KJ1306 - ■ME13 - ■■K1		477
96	3 692	1.6	15.36	★	2KJ1306 - ■ME13 - ■■J1		477
107	3 308	1.7	13.76		2KJ1306 - ■ME13 - ■■H1		477
126	2 800	1.9	11.65	★	2KJ1306 - ■ME13 - ■■G1		477
146	2 421	2.1	10.07		2KJ1306 - ■ME13 - ■■F1		477
194	1 820	2.5	7.57	★	2KJ1306 - ■ME13 - ■■E1		477
213	1 661	2.2	6.91		2KJ1306 - ■ME13 - ■■D1		477
251	1 406	2.3	5.85	★	2KJ1306 - ■ME13 - ■■C1		477
291	1 214	2.6	5.05		2KJ1306 - ■ME13 - ■■B1		477
387	913	3.0	3.8	★	2KJ1306 - ■ME13 - ■■A1		477
45	FD.208-LG225ZM4E						
11.0	39 088	0.87	134.16		2KJ1411 - ■MU13 - ■■N1		1 335
12.2	35 187	0.97	120.77	★	2KJ1411 - ■MU13 - ■■M1		1 335
14.7	29 197	1.2	100.21	★	2KJ1411 - ■MU13 - ■■L1		1 335
16.1	26 624	1.3	91.38		2KJ1411 - ■MU13 - ■■K1		1 335
18.4	23 358	1.5	80.17	★	2KJ1411 - ■MU13 - ■■J1		1 335
21	20 074	1.7	68.9		2KJ1411 - ■MU13 - ■■H1		1 335
28	15 634	2.2	53.66		2KJ1411 - ■MU13 - ■■G1		1 335
FD.188B-LG225ZM4E							
17.2	24 923	0.80	85.54		2KJ1410 - ■MU13 - ■■D1		920
19.8	21 729	0.92	74.58	★	2KJ1410 - ■MU13 - ■■C1		920
23	18 449	1.1	63.32		2KJ1410 - ■MU13 - ■■B1		920
30	14 119	1.4	48.46	★	2KJ1410 - ■MU13 - ■■A1		920
FZ.188B-LG225ZM4E							
28	15 334	1.1	52.63		2KJ1310 - ■MU13 - ■■P1		897
30	14 122	1.2	48.47		2KJ1310 - ■MU13 - ■■N1		897
35	12 257	1.4	42.07	★	2KJ1310 - ■MU13 - ■■M1		897
40	10 803	1.6	37.08		2KJ1310 - ■MU13 - ■■L1		897
45	9 481	2.0	32.54		2KJ1310 - ■MU13 - ■■K1		897
50	8 545	2.3	29.33	★	2KJ1310 - ■MU13 - ■■J1		897
59	7 255	2.8	24.9	★	2KJ1310 - ■MU13 - ■■H1		897
64	6 739	3.0	23.13		2KJ1310 - ■MU13 - ■■G1		897
FD.168B-LG225ZM4E							
26	16 223	0.86	55.68		2KJ1408 - ■MU13 - ■■B1		739
35	12 193	1.1	41.85	★	2KJ1408 - ■MU13 - ■■A1		739
FZ.168B-LG225ZM4E							
33	13 184	0.87	45.25		2KJ1308 - ■MU13 - ■■P1		722
38	11 325	1.1	38.87	★	2KJ1308 - ■MU13 - ■■N1		722
44	9 784	1.3	33.58		2KJ1308 - ■MU13 - ■■M1		722
50	8 636	1.6	29.64		2KJ1308 - ■MU13 - ■■L1		722

★ Preferred transmission ratio

Shaft designs, see page 3/89 ————— 1, 2, 3, 5, 6 or 9

Frequency and voltage, see page 8/20 ————— 1 to 9

Gearbox housing mounting position, see page 3/92 ————— A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
45	FZ.168B-LG225ZM4E						
	55	7 773	1.8	26.68	★	2KJ1308 - ■MU13 - ■■K1	722
	67	6 451	2.2	22.14	★	2KJ1308 - ■MU13 - ■■J1	722
	73	5 882	2.4	20.19		2KJ1308 - ■MU13 - ■■H1	722
	83	5 160	2.7	17.71	★	2KJ1308 - ■MU13 - ■■G1	722
	97	4 434	3.2	15.22		2KJ1308 - ■MU13 - ■■F1	722
	FZ.148B-LG225ZM4E						
	41	10 468	0.86	35.93		2KJ1307 - ■MU13 - ■■N1	569
	47	9 157	0.98	31.43		2KJ1307 - ■MU13 - ■■M1	569
	54	7 966	1.1	27.34		2KJ1307 - ■MU13 - ■■L1	569
	62	6 987	1.3	23.98	★	2KJ1307 - ■MU13 - ■■K1	569
	73	5 909	1.5	20.28	★	2KJ1307 - ■MU13 - ■■J1	569
	80	5 361	1.7	18.4		2KJ1307 - ■MU13 - ■■H1	569
	92	4 673	1.9	16.04	★	2KJ1307 - ■MU13 - ■■G1	569
	108	3 968	2.1	13.62		2KJ1307 - ■MU13 - ■■F1	569
	141	3 039	2.6	10.43	★	2KJ1307 - ■MU13 - ■■E1	569
	155	2 771	2.4	9.51		2KJ1307 - ■MU13 - ■■D1	569
	178	2 415	2.6	8.29	★	2KJ1307 - ■MU13 - ■■C1	569
	210	2 051	2.8	7.04		2KJ1307 - ■MU13 - ■■B1	569
	274	1 570	3.3	5.39	★	2KJ1307 - ■MU13 - ■■A1	569
	FZ.128B-K4-LGI225ZM4E						
	60	7 188	0.85	24.7	★	2KJ1306 - ■MU13 - ■■P1	477
	62	6 926	0.88	23.8		2KJ1306 - ■MU13 - ■■N1	477
	72	5 989	1.0	20.58		2KJ1306 - ■MU13 - ■■L1	477
	82	5 223	1.2	17.95	★	2KJ1306 - ■MU13 - ■■K1	477
	96	4 470	1.3	15.36	★	2KJ1306 - ■MU13 - ■■J1	477
	107	4 004	1.4	13.76		2KJ1306 - ■MU13 - ■■H1	477
	127	3 390	1.6	11.65	★	2KJ1306 - ■MU13 - ■■G1	477
	146	2 930	1.7	10.07		2KJ1306 - ■MU13 - ■■F1	477
	195	2 203	2.1	7.57	★	2KJ1306 - ■MU13 - ■■E1	477
	213	2 011	1.8	6.91		2KJ1306 - ■MU13 - ■■D1	477
	252	1 702	1.9	5.85	★	2KJ1306 - ■MU13 - ■■C1	477
	292	1 470	2.1	5.05		2KJ1306 - ■MU13 - ■■B1	477
388	1 106	2.4	3.8	★	2KJ1306 - ■MU13 - ■■A1	477	
55	FD.208-LG250ZM4E						
	14.8	35 564	0.96	100.21	★	2KJ1411 - ■NN13 - ■■L1	1 425
	16.2	32 431	1.0	91.38		2KJ1411 - ■NN13 - ■■K1	1 425
	18.5	28 452	1.2	80.17	★	2KJ1411 - ■NN13 - ■■J1	1 425
	22	24 453	1.4	68.9		2KJ1411 - ■NN13 - ■■H1	1 425
	28	19 044	1.8	53.66		2KJ1411 - ■NN13 - ■■G1	1 425
	35	15 129	2.2	42.63	★	2KJ1411 - ■NN13 - ■■F1	1 425
	38	13 784	2.5	38.84		2KJ1411 - ■NN13 - ■■E1	1 425

★ Preferred transmission ratio

Shaft designs, see page 3/89

Frequency and voltage, see page 8/20

Gearbox housing mounting position, see page 3/92

1, 2, 3, 5, 6 or 9

1 to 9

A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
55	FD.188B-LG250ZM4E						
	23	22 472	0.89	63.32	2KJ1410 - ■NN13 - ■■B1		1 010
	30	17 198	1.2	48.46 ★	2KJ1410 - ■NN13 - ■■A1		1 010
	FZ.188B-LG250ZM4E						
	30	17 202	0.98	48.47	2KJ1310 - ■NN13 - ■■N1		987
	35	14 931	1.2	42.07 ★	2KJ1310 - ■NN13 - ■■M1		987
	40	13 160	1.3	37.08	2KJ1310 - ■NN13 - ■■L1		987
	46	11 548	1.6	32.54	2KJ1310 - ■NN13 - ■■K1		987
	50	10 409	1.9	29.33 ★	2KJ1310 - ■NN13 - ■■J1		987
	59	8 837	2.3	24.9 ★	2KJ1310 - ■NN13 - ■■H1		987
	64	8 209	2.4	23.13	2KJ1310 - ■NN13 - ■■G1		987
	74	7 052	2.8	19.87 ★	2KJ1310 - ■NN13 - ■■F1		987
	87	6 016	3.1	16.95	2KJ1310 - ■NN13 - ■■E1		987
	FD.168B-LG250ZM4E						
	35	14 853	0.94	41.85 ★	2KJ1408 - ■NN13 - ■■A1		829
	FZ.168B-LG250ZM4E						
	38	13 795	0.94	38.87 ★	2KJ1308 - ■NN13 - ■■N1		812
	44	11 917	1.1	33.58	2KJ1308 - ■NN13 - ■■M1		812
	50	10 519	1.3	29.64	2KJ1308 - ■NN13 - ■■L1		812
	56	9 469	1.5	26.68 ★	2KJ1308 - ■NN13 - ■■K1		812
	67	7 857	1.8	22.14 ★	2KJ1308 - ■NN13 - ■■J1		812
	73	7 165	2.0	20.19	2KJ1308 - ■NN13 - ■■H1		812
	84	6 285	2.2	17.71 ★	2KJ1308 - ■NN13 - ■■G1		812
	97	5 402	2.6	15.22	2KJ1308 - ■NN13 - ■■F1		812
	125	4 209	3.1	11.86 ★	2KJ1308 - ■NN13 - ■■E1		812
	157	3 343	3.6	9.42 ★	2KJ1308 - ■NN13 - ■■D1		812
	173	3 031	3.7	8.54	2KJ1308 - ■NN13 - ■■C1		812
	223	2 360	4.2	6.65 ★	2KJ1308 - ■NN13 - ■■B1		812
	280	1 874	4.6	5.28 ★	2KJ1308 - ■NN13 - ■■A1		812
	FZ.148B-K4-LGI250ZM4E						
	47	11 154	0.81	31.43	2KJ1307 - ■NN13 - ■■M1		659
	54	9 703	0.93	27.34	2KJ1307 - ■NN13 - ■■L1		659
	62	8 510	1.1	23.98 ★	2KJ1307 - ■NN13 - ■■K1		659
	73	7 197	1.3	20.28 ★	2KJ1307 - ■NN13 - ■■J1		659
	80	6 530	1.4	18.4	2KJ1307 - ■NN13 - ■■H1		659
	92	5 693	1.6	16.04 ★	2KJ1307 - ■NN13 - ■■G1		659
	109	4 834	1.8	13.62	2KJ1307 - ■NN13 - ■■F1		659
	142	3 702	2.1	10.43 ★	2KJ1307 - ■NN13 - ■■E1		659
	156	3 375	1.9	9.51	2KJ1307 - ■NN13 - ■■D1		659
	179	2 942	2.1	8.29 ★	2KJ1307 - ■NN13 - ■■C1		659
	210	2 498	2.3	7.04	2KJ1307 - ■NN13 - ■■B1		659
	275	1 913	2.7	5.39 ★	2KJ1307 - ■NN13 - ■■A1		659

★ Preferred transmission ratio

Shaft designs, see page 3/89

Frequency and voltage, see page 8/20

Gearbox housing mounting position, see page 3/92

*) For mounting type B5-01

1, 2, 3, 5, 6 or 9

1 to 9

A, D, E, F, H or M

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
75	FD.208-K4-LGI280S4E						
	18.5	38 668	0.88	80.17	★	2KJ1411 - PG13 - J1	1 550
	22	33 232	1.0	68.9		2KJ1411 - PG13 - H1	1 550
	28	25 881	1.3	53.66		2KJ1411 - PG13 - G1	1 550
	35	20 561	1.7	42.63	★	2KJ1411 - PG13 - F1	1 550
	38	18 733	1.8	38.84		2KJ1411 - PG13 - E1	1 550
	49	14 590	2.2	30.25	★	2KJ1411 - PG13 - D1	1 550
	62	11 590	2.6	24.03	★	2KJ1411 - PG13 - C1	1 550
	FD.188B-K4-LGI280S4E						
	31	23 373	0.86	48.46	★	2KJ1410 - PG13 - A1	1 135
	FZ.188B-K4-LGI280S4E						
	40	17 885	0.98	37.08		2KJ1310 - PG13 - L1	1 112
	46	15 695	1.2	32.54		2KJ1310 - PG13 - K1	1 112
	51	14 147	1.4	29.33	★	2KJ1310 - PG13 - J1	1 112
	60	12 010	1.7	24.9	★	2KJ1310 - PG13 - H1	1 112
	64	11 156	1.8	23.13		2KJ1310 - PG13 - G1	1 112
	75	9 584	2.1	19.87	★	2KJ1310 - PG13 - F1	1 112
	88	8 175	2.3	16.95		2KJ1310 - PG13 - E1	1 112
	111	6 439	2.7	13.35	★	2KJ1310 - PG13 - D1	1 112
	138	5 180	3.1	10.74	★	2KJ1310 - PG13 - C1	1 112
	159	4 505	3.3	9.34		2KJ1310 - PG13 - B1	1 112
	178	4 023	3.5	8.34		2KJ1310 - PG13 - A1	1 112
	FZ.168B-K4-LGI280S4E						
	44	16 196	0.80	33.58		2KJ1308 - PG13 - M1	937
	50	14 296	0.98	29.64		2KJ1308 - PG13 - L1	937
	56	12 868	1.1	26.68	★	2KJ1308 - PG13 - K1	937
	67	10 679	1.3	22.14	★	2KJ1308 - PG13 - J1	937
	74	9 738	1.4	20.19		2KJ1308 - PG13 - H1	937
	84	8 542	1.6	17.71	★	2KJ1308 - PG13 - G1	937
	98	7 341	1.9	15.22		2KJ1308 - PG13 - F1	937
	125	5 720	2.3	11.86	★	2KJ1308 - PG13 - E1	937
	158	4 543	2.7	9.42	★	2KJ1308 - PG13 - D1	937
	174	4 119	2.7	8.54		2KJ1308 - PG13 - C1	937
223	3 207	3.1	6.65	★	2KJ1308 - PG13 - B1	937	
281	2 547	3.4	5.28	★	2KJ1308 - PG13 - A1	937	
90	FD.208-K4-LGI280ZM4E						
	22	39 878	0.85	68.9		2KJ1411 - PW13 - H1	1 590
	28	31 058	1.1	53.66		2KJ1411 - PW13 - G1	1 590
	35	24 674	1.4	42.63	★	2KJ1411 - PW13 - F1	1 590
	38	22 480	1.5	38.84		2KJ1411 - PW13 - E1	1 590
	49	17 508	1.8	30.25	★	2KJ1411 - PW13 - D1	1 590
	62	13 908	2.1	24.03	★	2KJ1411 - PW13 - C1	1 590

★ Preferred transmission ratio

Shaft designs, see page 3/89

1, 2, 3, 5, 6 or 9

Frequency and voltage, see page 8/20

1 to 9

Gearbox housing mounting position, see page 3/92

A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg	
90	FZ.208-K4-LGI280ZM4E							
	74	11 610	2.8	20.06	2KJ1311 - ■PW13 - ■■H1		1 570	
	93	9 272	3.3	16.02 ★	2KJ1311 - ■PW13 - ■■G1		1 570	
	FZ.188B-K4-LGI280ZM4E							
	40	21 461	0.82	37.08	2KJ1310 - ■PW13 - ■■L1		1 152	
	46	18 834	0.98	32.54	2KJ1310 - ■PW13 - ■■K1		1 152	
	51	16 976	1.2	29.33 ★	2KJ1310 - ■PW13 - ■■J1		1 152	
	60	14 412	1.4	24.9 ★	2KJ1310 - ■PW13 - ■■H1		1 152	
	64	13 387	1.5	23.13	2KJ1310 - ■PW13 - ■■G1		1 152	
	75	11 501	1.7	19.87 ★	2KJ1310 - ■PW13 - ■■F1		1 152	
	88	9 810	1.9	16.95	2KJ1310 - ■PW13 - ■■E1		1 152	
	111	7 727	2.3	13.35 ★	2KJ1310 - ■PW13 - ■■D1		1 152	
	138	6 216	2.6	10.74 ★	2KJ1310 - ■PW13 - ■■C1		1 152	
	159	5 406	2.8	9.34	2KJ1310 - ■PW13 - ■■B1		1 152	
	178	4 827	2.9	8.34	2KJ1310 - ■PW13 - ■■A1		1 152	
	FZ.168B-K4-LGI280ZM4E							
	50	17 155	0.82	29.64	2KJ1308 - ■PW13 - ■■L1		977	
	56	15 442	0.91	26.68 ★	2KJ1308 - ■PW13 - ■■K1		977	
	67	12 814	1.1	22.14 ★	2KJ1308 - ■PW13 - ■■J1		977	
	74	11 686	1.2	20.19	2KJ1308 - ■PW13 - ■■H1		977	
	84	10 250	1.4	17.71 ★	2KJ1308 - ■PW13 - ■■G1		977	
	98	8 809	1.6	15.22	2KJ1308 - ■PW13 - ■■F1		977	
	125	6 864	1.9	11.86 ★	2KJ1308 - ■PW13 - ■■E1		977	
	158	5 452	2.2	9.42 ★	2KJ1308 - ■PW13 - ■■D1		977	
	174	4 943	2.3	8.54	2KJ1308 - ■PW13 - ■■C1		977	
	223	3 849	2.6	6.65 ★	2KJ1308 - ■PW13 - ■■B1		977	
	281	3 056	2.8	5.28 ★	2KJ1308 - ■PW13 - ■■A1		977	
	110	FD.208-K2-LGI315S4E						
		28	37 832	0.90	53.66	2KJ1411 - ■■QQ13 - ■■G1		1 770
		35	30 056	1.1	42.63 ★	2KJ1411 - ■■QQ13 - ■■F1		1 770
38		27 384	1.2	38.84	2KJ1411 - ■■QQ13 - ■■E1		1 770	
49		21 327	1.5	30.25 ★	2KJ1411 - ■■QQ13 - ■■D1		1 770	
62		16 942	1.8	24.03 ★	2KJ1411 - ■■QQ13 - ■■C1		1 770	
FZ.208-K2-LGI315S4E								
74		14 143	2.3	20.06	2KJ1311 - ■■QQ13 - ■■H1		1 750	
93		11 295	2.7	16.02 ★	2KJ1311 - ■■QQ13 - ■■G1		1 750	
114		9 229	3.1	13.09 ★	2KJ1311 - ■■QQ13 - ■■F1		1 750	
129		8 115	3.4	11.51	2KJ1311 - ■■QQ13 - ■■E1		1 750	
141		7 452	3.6	10.57	2KJ1311 - ■■QQ13 - ■■D1		1 750	
165		6 352	4.0	9.01	2KJ1311 - ■■QQ13 - ■■C1		1 750	
FZ.188B-K2-LGI315S4E								
88		11 950	1.6	16.95	2KJ1310 - ■■QQ13 - ■■E1		1 332	
112		9 412	1.9	13.35 ★	2KJ1310 - ■■QQ13 - ■■D1		1 332	
139		7 572	2.1	10.74 ★	2KJ1310 - ■■QQ13 - ■■C1		1 332	

★ Preferred transmission ratio

Shaft designs, see page 3/89 ————— 1, 2, 3, 5, 6 or 9

Frequency and voltage, see page 8/20 ————— 1 to 9

Gearbox housing mounting position, see page 3/92 ————— A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Geared motors up to 200 kW

Selection and ordering data (continued)

Power rating P_{Motor} kW	Output speed n_2 (50 Hz) rpm	Output torque T_2 Nm	Service factor f_B	Gearbox ratio i_{tot}	Order No.	Order code (No. of poles)	Weight ^{*)} kg
200	FZ.208-K2-LGI315ZLB4E						
	114	16 780	1.7	13.09	★	2KJ1311 - ■QV13 - ■■F1	2 045
	129	14 754	1.9	11.51		2KJ1311 - ■QV13 - ■■E1	2 045
	141	13 549	2.0	10.57		2KJ1311 - ■QV13 - ■■D1	2 045
	165	11 550	2.2	9.01		2KJ1311 - ■QV13 - ■■C1	2 045
	FZ.188B-K2-LGI315ZLB4E						
	88	21 728	0.86	16.95		2KJ1310 - ■QV13 - ■■E1	1 627
	112	17 113	1.0	13.35	★	2KJ1310 - ■QV13 - ■■D1	1 627
	139	13 767	1.2	10.74	★	2KJ1310 - ■QV13 - ■■C1	1 627
	160	11 973	1.3	9.34		2KJ1310 - ■QV13 - ■■B1	1 627
	179	10 691	1.3	8.34		2KJ1310 - ■QV13 - ■■A1	1 627

★ Preferred transmission ratio

Shaft designs, see page 3/89

Frequency and voltage, see page 8/20

Gearbox housing mounting position, see page 3/92

1, 2, 3, 5, 6 or 9

1 to 9

A, D, E, F, H or M

*) For mounting type B5-01

MOTOX Geared Motors

Parallel shaft geared motors

Transmission ratios and maximum torques

Selection and ordering data

Gearbox size	Ratio code	Transmission ratio	Output speed	Twisting angle ¹⁾	Nominal torque	Permissible input torque T_1 [Nm]																				
						2.5x the value is permissible for a brief period (e.g. motor starting torque)																				
Max. gearbox torque Nm	Order No 15th and 16th position	i_{tot}	n_2 (50 Hz) rpm	φ arcmin	T_{2N} ($f_B=1$) Nm	Motor size																				
						3	3	5	10	20	26	61	98	198	198	291	356	580	1290							
						63	71	80	90	100	112	132	160	180	200	225	250	280	315							
FD.28 150	N1	280.00	5.2	21	150	•																				
	M1	241.56 ★	6.0	21	150	•	•																			
	L1	207.53	7.0	21	150	•	•																			
	K1	191.06 ★	7.6	21	150	•	•	•																		
	J1	173.69	8.3	21	150	•	•	•																		
	H1	153.74 ★	9.4	21	150	•	•	•																		
	G1	128.77	11.3	21	150	•	•	•																		
	F1	109.79 ★	13.2	21	150	•	•	•																		
	E1	93.32 ★	15.5	21	150	•	•	•																		
	D1	81.10	17.9	22	150	•	•	•																		
	C1	70.59 ★	21.0	22	150	•	•	•																		
	B1	63.68	23.0	22	150	•	•	•																		
	A1	56.20	26.0	22	150	•	•	•																		
FZ.28 96 ... 150	C2	59.65	24	20	150	•																				
	B2	50.30 ★	29	20	150	•	•																			
	A2	44.66	32	20	150	•	•																			
	X1	39.15 ★	37	20	150	•	•	•																		
	W1	35.04	41	20	150	•	•	•																		
	V1	31.10 ★	47	20	150	•	•	•																		
	U1	27.25	53	20	150	•	•	•																		
	T1	23.96 ★	61	20	150	•	•	•																		
	S1	21.64	67	20	150	•	•	•	•																	
	R1	18.86 ★	77	20	150	•	•	•																		
	Q1	16.94	86	20	150	•	•	•																		
	P1	15.29 ★	95	21	150	•	•	•	•																	
	N1	13.87	105	21	150	•	•	•	•																	
	M1	12.62 ★	115	21	148	•	•	•	•																	
	L1	11.16	130	21	142	•	•	•	•																	
	K1	10.30 ★	141	21	138	•	•	•	•																	
	J1	8.87	163	22	131	•	•	•	•																	
	H1	8.06 ★	180	22	127	•	•	•	•																	
	G1	7.20 ★	201	27	126	•	•	•	•																	
	F1	6.53	222	28	122	•	•	•	•																	
E1	5.94 ★	244	28	118	•	•	•	•																		
D1	5.25	276	28	111	•	•	•	•																		
C1	4.85 ★	299	28	110	•	•	•	•																		
B1	4.18	347	29	99	•	•	•	•																		

★ Preferred transmission ratio

¹⁾ Twisting angle applies to reduced-backlash gearboxes.

In the case of gearboxes of size 28, only possible with integrated motor or input unit KQ and KQS.

Calculation of maximum output torque T_{2max} for gearboxes with input units:

$$T_{2max} = T_1 \times i_{tot}, \text{ if } T_{2max} \leq T_{2N}$$

If $T_{2max} \geq T_{2N}$ the max. output torque T_{2N} of the unit is the decisive factor.

MOTOX Geared Motors

Parallel shaft geared motors

Transmission ratios and maximum torques

Selection and ordering data (continued)

Gearbox size	Ratio code	Transmission ratio	Output speed	Twisting angle ²⁾	Nominal torque	Permissible input torque T_1 [Nm]														
						2.5x the value is permissible for a brief period (e.g. motor starting torque)														
Max. gearbox torque	Order No. 15th and 16th position	i_{tot}	n_2 (50 Hz) rpm	φ arcmin	T_{2N} ($f_B=1$) Nm	3	3	5	10	20	26	61	98	198	198	291	356	580	1290	
						Motor size														
Nm						63	71	80	90	100	112	132	160	180	200	225	250	280	315	
FZ.38B-D28 290	M1	7 591	0.18	–	290	•														
	L1	6 548	★ 0.21	–	290	•	•													
	K1	5 626		0.25	–	290	•	•												
	J1	5 179	★ 0.27	–	290	•	•	•												
	H1	4 709		0.30	–	290	•	•	•											
	G1	4 168	★ 0.34	–	290	•	•	•												
	F1	3 491		0.40	–	290	•	•	•											
	E1	2 976	★ 0.47	–	290	•	•	•												
	D1	2 530	★ 0.55	–	290	•	•	•												
	C1	2 199		0.64	–	290	•	•	•											
	B1	1 914	★ 0.73	–	290	•	•	•												
A1	1 726		0.81	–	290	•	•	•												
FZ.38B-Z28 290	Q1	1 617		0.87	–	290	•													
	P1	1 364	★ 1.00	–	290	•	•													
	N1	1 211		1.20	–	290	•	•												
	M1	1 061	★ 1.30	–	290	•	•	•												
	L1	950		1.50	–	290	•	•	•											
	K1	843	★ 1.70	–	290	•	•	•												
	J1	739		1.90	–	290	•	•	•											
	H1	650	★ 2.20	–	290	•	•	•												
	G1	587		2.40	–	290	•	•	•	•										
	F1	511	★ 2.70	–	290	•	•	•												
	E1	459		3.10	–	290	•	•	•											
	D1	415	★ 3.40	–	290	•	•	•	•											
	C1	376		3.70	–	290	•	•	•	•										
B1	342	★ 4.10	–	290	•	•	•	•												
A1	303		4.60	–	290	•	•	•	•											

★ Preferred transmission ratio

¹⁾ Only possible with integrated motor.

²⁾ Twisting angle applies to reduced-backlash gearboxes.

In the case of gearboxes of size 28, only possible with integrated motor or input unit KQ and KQS.

Calculation of maximum output torque T_{2max} for gearboxes with input unit.

$$T_{2max} = T_1 \times i_{tot}, \text{ if } T_{2max} \leq T_{2N}$$

If $T_{2max} \geq T_{2N}$ the max. output torque T_{2N} of the unit is the decisive factor.

MOTOX Geared Motors

Parallel shaft geared motors

Transmission ratios and maximum torques

Selection and ordering data (continued)

Gearbox size	Ratio code	Transmission ratio	Output speed	Twisting angle ²⁾	Nominal torque	Permissible input torque T_1 [Nm]															
						2.5x the value is permissible for a brief period (e.g. motor starting torque)															
Max. gearbox torque	Order No. 15th and 16th position	i_{tot}	n_2 (50 Hz) rpm	φ arcmin	T_{2N} ($f_B=1$) Nm	Motor size															
						3	3	5	10	20	26	61	98	198	198	291	356	580	1290		
Nm						63	71	80	90	100	112	132	160	180	200	225	250	280	315		
FD.38B 290	N1	280.41	5.2	20	290	•	•														
	M1	241.91 ★	6.0	20	290	•	•	•													
	L1	207.83	7.0	20	290	•	•	•													
	K1	191.34 ★	7.6	20	290	•	•	•	•												
	J1	173.94	8.3	20	290	•	•	•	•	•											
	H1	153.96 ★	9.4	20	290	•	•	•	•	•											
	G1	128.95	11.2	20	290	•	•	•	•	•											
	F1	109.95 ★	13.2	20	290	•	•	•	•	•											
	E1	93.46 ★	15.5	20	290	•	•	•	•	•											
	D1	81.22	17.9	20	290	•	•	•	•	•											
	C1	70.70 ★	21.0	20	290	•	•	•	•	•											
	B1	63.77	23.0	20	290	•	•	•	•	•											
	A1	56.28	26.0	20	290	•	•	•	•	•											
FZ.38B 210 ... 290	B2	56.72 ★	26	19	210	•	•	•													
	A2	50.44	29	19	230	•	•	•													
	X1	43.75 ★	33	19	250	•	•	•	•												
	W1	40.88	35	19	275	•	•	•	•	•											
	V1	35.96 ★	40	19	290	•	•	•	•	•											
	U1	31.49	46	19	290	•	•	•	•	•											
	T1	27.85 ★	52	19	290	•	•	•	•	•											
	S1	25.24	57	19	290	•	•	•	•	•											
	R1	22.28 ★	65	19	290	•	•	•	•	•											
	Q1	20.10	72	20	290	•	•	•	•	•											
	P1	18.23 ★	80	20	290	•	•	•	•	•											
	N1	16.61	87	20	290	•	•	•	•	•											
	M1	15.19 ★	95	20	290	•	•	•	•	•											
	L1	13.58	107	20	290	•	•	•	•	•											
	K1	12.47 ★	116	20	290	•	•	•	•	•											
	J1	11.24	129	20	290	•	•	•	•	•											
	H1	9.67 ★	150	20	290	•	•	•	•	•											
	G1	8.52 ★	170	20	290	•	•	•	•	•											
	F1	7.76	187	20	290	•	•	•	•	•											
	E1	7.10 ★	204	20	290	•	•	•	•	•											
D1	6.35	228	20	275	•	•	•	•	•												
C1	5.83 ★	249	20	275	•	•	•	•	•												
B1	5.25	276	20	253	•	•	•	•	•												
A1	4.52 ★	321	21	228	•	•	•	•	•												

★ Preferred transmission ratio

¹⁾ Only possible with integrated motor.

²⁾ Twisting angle applies to reduced-backlash gearboxes.

In the case of gearboxes of size 28, only possible with integrated motor or input unit KQ and KQS.

Calculation of maximum output torque T_{2max} for gearboxes with input unit.

$$T_{2max} = T_1 \times i_{tot}, \text{ if } T_{2max} \leq T_{2N}$$

If $T_{2max} \geq T_{2N}$ the max. output torque T_{2N} of the unit is the decisive factor.

MOTOX Geared Motors

Parallel shaft geared motors

Transmission ratios and maximum torques

Selection and ordering data (continued)

Gearbox size	Ratio code	Transmission ratio	Output speed	Twisting angle ²⁾	Nominal torque	Permissible input torque T_1 [Nm]														
						2.5x the value is permissible for a brief period (e.g. motor starting torque)														
Max. gearbox torque	Order No. 15th and 16th position	i_{tot}	n_2 (50 Hz) rpm	φ arcmin	T_{2N} ($f_B=1$) Nm	3	3	5	10	20	26	61	98	198	198	291	356	580	1290	
						Motor size														
Nm						63	71	80	90	100	112	132	160	180	200	225	250	280	315	
FD.48B-D28 540	M1	19 701	0.07	–	540	•														
	L1	16 996	★	0.08	540	•	•													
	K1	14 602		0.10	540	•	•													
	J1	13 443	★	0.10	540	•	•	•												
	H1	12 221		0.11	540	•	•	•												
	G1	10 817	★	0.13	540	•	•	•												
	F1	9 060		0.15	540	•	•	•												
	E1	7 725	★	0.18	540	•	•	•												
	D1	6 566	★	0.21	540	•	•	•												
	C1	5 706		0.25	540	•	•	•												
	B1	4 967	★	0.28	540	•	•	•												
	A1	4 480		0.31	540	•	•	•												
FD.48B-Z28 540	B2	4 197		0.33	540	•														
	A2	3 539	★	0.40	540	•	•													
	X1	3 142		0.45	540	•	•													
	W1	2 755	★	0.51	540	•	•	•												
	V1	2 465		0.57	540	•	•	•												
	U1	2 188	★	0.64	540	•	•	•												
	T1	1 918		0.73	540	•	•	•												
	S1	1 686	★	0.83	540	•	•	•												
	R1	1 523		0.92	540	•	•	•	•											
	Q1	1 327	★	1.10	540	•	•	•												
	P1	1 192		1.20	540	•	•	•												
	N1	1 076	★	1.30	540	•	•	•	•											
	M1	976		1.40	540	•	•	•	•											
	L1	888	★	1.60	540	•	•	•	•											
	K1	785		1.80	540	•	•	•	•											
	J1	725	★	1.90	540	•	•	•	•											
	H1	624		2.20	540	•	•	•	•											
	G1	567	★	2.50	540	•	•	•	•											
	F1	516	★	2.70	540	•	•	•	•											
	E1	468		3.00	540	•	•	•	•											
D1	426	★	3.30	540	•	•	•	•												
C1	376		3.70	540	•	•	•	•												
B1	347	★	4.00	540	•	•	•	•												
A1	299		4.70	540	•	•	•	•												

★ Preferred transmission ratio

¹⁾ Only possible with integrated motor.

²⁾ Twisting angle applies to reduced-backlash gearboxes.

In the case of gearboxes of size 28, only possible with integrated motor or input unit KQ and KQS.

Calculation of maximum output torque T_{2max} for gearboxes with input unit.

$$T_{2max} = T_1 \times i_{tot}, \text{ if } T_{2max} \leq T_{2N}$$

If $T_{2max} \geq T_{2N}$ the max. output torque T_{2N} of the unit is the decisive factor.

MOTOX Geared Motors

Parallel shaft geared motors

Transmission ratios and maximum torques

Selection and ordering data (continued)

Gearbox size	Ratio code	Transmission ratio	Output speed	Twisting angle ²⁾	Nominal torque	Permissible input torque T_1 [Nm]																
						2.5x the value is permissible for a brief period (e.g. motor starting torque)																
Max. gearbox torque	Order No. 15th and 16th position	i_{tot}	n_2 (50 Hz) rpm	φ arcmin	T_{2N} ($f_B=1$) Nm	Motor size																
						3	3	5	10	20	26	61	98	198	198	291	356	580	1290			
Nm						63	71	80	90	100	112	132	160	180	200	225	250	280	315			
FD.48B 540	S1	268.80 ★	5.4	12	540	•	•	•														
	R1	238.65	6.1	12	540	•	•	•														
	Q1	209.23 ★	6.9	12	540	•	•	•	•													
	P1	187.24	7.7	12	540	•	•	•	•													
	N1	166.19 ★	8.7	13	540	•	•	•	•													
	M1	145.63	10.0	13	540	•	•	•	•													
	L1	128.04 ★	11.3	13	540	•	•	•	•													
	K1	115.68	12.5	13	540	•	•	•	•													
	J1	100.80 ★	14.4	13	540	•	•	•	•													
	H1	90.53	16.0	13	540	•	•	•	•													
	G1	81.73 ★	17.7	13	540	•	•	•	•	•												
	F1	74.10	19.6	13	540	•	•	•	•	•												
	E1	67.43 ★	22.0	13	540	•	•	•	•	•												
	D1	59.62	24.0	13	540	•	•	•	•	•												
C1	55.06 ★	26.0	13	540	•	•	•	•	•													
B1	47.40	31.0	13	540	•	•	•	•	•													
A1	43.09 ★	34.0	13	540	•	•	•	•	•													
FZ.48B 325 ... 540	B2	60.71 ★	24	12	400	•	•	•	•													
	A2	55.19	26	12	500	•	•	•	•													
	X1	49.58 ★	29	12	540	•	•	•	•													
	W1	42.50	34	12	540	•	•	•	•	•												
	V1	38.45 ★	38	12	540	•	•	•	•	•	•											
	U1	35.49	41	12	540	•	•	•	•	•	•											
	T1	30.86 ★	47	12	540	•	•	•	•	•	•											
	S1	28.02	52	12	540	•	•	•	•	•	•											
	R1	25.59 ★	57	12	540	•	•	•	•	•	•											
	Q1	23.48	62	12	540	•	•	•	•	•	•											
	P1	21.63 ★	67	12	540	•	•	•	•	•	•											
	N1	19.64	74	12	540	•	•	•	•	•	•											
	M1	17.89 ★	81	12	540	•	•	•	•	•	•											
	L1	16.39	88	12	540	•	•	•	•	•	•											
	K1	14.63 ★	99	12	540	•	•	•	•	•	•											
	J1	13.05	111	13	540				•	•	•											
	H1	11.09	131	13	535				•	•	•											
	G1	9.23 ★	157	13	526				•	•	•											
	F1	8.39 ★	173	16	510	•	•	•	•	•	•											
	E1	7.68	189	16	467	•	•	•	•	•	•											
D1	6.86 ★	211	17	443	•	•	•	•	•	•												
C1	6.12	237	17	406				•	•	•												
B1	5.20	279	18	378				•	•	•												
A1	4.33 ★	335	19	325				•	•	•												

★ Preferred transmission ratio

¹⁾ Only possible with integrated motor.

²⁾ Twisting angle applies to reduced-backlash gearboxes.

In the case of gearboxes of size 28, only possible with integrated motor or input unit KQ and KQS.

Calculation of maximum output torque T_{2max} for gearboxes with input unit.

$$T_{2max} = T_1 \times i_{tot}, \text{ if } T_{2max} \leq T_{2N}$$

If $T_{2max} \geq T_{2N}$ the max. output torque T_{2N} of the unit is the decisive factor.

MOTOX Geared Motors

Parallel shaft geared motors

Transmission ratios and maximum torques

Selection and ordering data (continued)

Gearbox size	Ratio code	Transmission ratio	Output speed	Twisting angle ²⁾	Nominal torque	Permissible input torque T_1 [Nm]																
						2.5x the value is permissible for a brief period (e.g. motor starting torque)																
Max. gearbox torque	Order No. 15th and 16th position	i_{tot}	n_2 (50 Hz) rpm	ϕ arcmin	T_{2N} ($f_B=1$) Nm	Motor size																
						3	3	5	10	20	26	61	98	198	198	291	356	580	1290			
Nm						63	71	80	90	100	112	132	160	180	200	225	250	280	315			
FD.68B-D28 1 000	T1	39 638	0.04	–	1 000	•																
	S1	34 196	★	0.04	–	1 000	•	•														
	R1	29 378		0.05	–	1 000	•	•														
	Q1	27 047	★	0.05	–	1 000	•	•	•													
	P1	24 588		0.06	–	1 000	•	•	•													
	N1	21 763	★	0.06	–	1 000	•	•	•													
	M1	20 908		0.07	–	1 000	•															
	L1	18 038	★	0.08	–	1 000	•	•														
	K1	15 497	★	0.09	–	1 000	•	•														
	J1	14 267		0.10	–	1 000	•	•	•													
	H1	12 970	★	0.11	–	1 000	•	•	•													
	G1	11 480		0.12	–	1 000	•	•	•													
	F1	9 615		0.15	–	1 000	•	•	•													
	E1	8 198		0.17	–	1 000	•	•	•													
	D1	6 969		0.20	–	1 000	•	•	•													
	C1	6 056		0.23	–	1 000	•	•	•													
B1	5 271		0.27	–	1 000	•	•	•														
A1	4 755		0.29	–	1 000	•	•	•														
FD.68B-Z28 1 000	B2	4 454		0.31	–	1 000	•															
	A2	3 756	★	0.37	–	1 000	•	•														
	X1	3 335		0.42	–	1 000	•	•														
	W1	2 924	★	0.48	–	1 000	•	•	•													
	V1	2 916		0.54	–	1 000	•	•	•													
	U1	2 322	★	0.60	–	1 000	•	•	•													
	T1	2 035		0.69	–	1 000	•	•	•													
	S1	1 789	★	0.78	–	1 000	•	•	•													
	R1	1 616		0.87	–	1 000	•	•	•	•												
	Q1	1 408	★	0.99	–	1 000	•	•	•													
	P1	1 265		1.10	–	1 000	•	•	•													
	N1	1 142	★	1.20	–	1 000	•	•	•	•												
	M1	1 036		1.40	–	1 000	•	•	•	•												
	L1	942	★	1.50	–	1 000	•	•	•	•												
	K1	833		1.70	–	1 000	•	•	•	•												
	J1	769	★	1.80	–	1 000	•	•	•	•												
	H1	662		2.10	–	1 000	•	•	•	•												
	G1	602	★	2.30	–	1 000	•	•	•	•												
	F1	547	★	2.60	–	1 000	•	•	•	•												
	E1	496		2.80	–	1 000	•	•	•	•												
D1	452	★	3.10	–	1 000	•	•	•	•													
C1	399		3.50	–	1 000	•	•	•	•													
B1	369	★	3.80	–	1 000	•	•	•	•													
A1	317		4.40	–	1 000	•	•	•	•													

★ Preferred transmission ratio

1) Only possible with integrated motor.

2) Twisting angle applies to reduced-backlash gearboxes.

In the case of gearboxes of size 28, only possible with integrated motor or input unit KQ and QQS.

Calculation of maximum output torque T_{2max} for gearboxes with input unit.

$$T_{2max} = T_1 \times i_{tot}, \text{ if } T_{2max} \leq T_{2N}$$

If $T_{2max} \geq T_{2N}$ the max. output torque T_{2N} of the unit is the decisive factor.

MOTOX Geared Motors

Parallel shaft geared motors

Transmission ratios and maximum torques

Selection and ordering data (continued)

Gearbox size	Ratio code	Transmission ratio	Output speed	Twisting angle ²⁾	Nominal torque	Permissible input torque T_1 [Nm]													
						2.5x the value is permissible for a brief period (e.g. motor starting torque)													
Max. gearbox torque	Order No. 15th and 16th position	i_{tot}	n_2 (50 Hz) rpm	φ arcmin	T_{2N} ($f_B=1$) Nm	Motor size													
						3	3	5	10	20	26	61	98	198	198	291	356	580	1290
Nm						63	71	80	90	100	112	132	160	180	200	225	250	280	315
FD.68B 1 000	S1	296.18 ★	4.9	10.	1 000	•	•	•											
	R1	263.39	5.5	10	1 000	•	•	•											
	Q1	228.48 ★	6.3	10	1 000	•	•	•	•										
	P1	213.48	6.8	10	1 000	•	•	•	•										
	N1	187.76 ★	7.7	11	1 000	•	•	•	•										
	M1	164.44	8.8	11	1 000	•	•	•	•	•									
	L1	145.44 ★	10.0	11	1 000	•	•	•	•	•									
	K1	131.82	11.0	11	1 000	•	•	•	•	•									
	J1	116.36 ★	12.5	11	1 000	•	•	•	•	•									
	H1	104.96	13.8	11	1 000	•	•	•	•	•									
	G1	95.20 ★	15.2	11	1 000	•	•	•	•	•									
	F1	86.74	16.7	11	1 000	•	•	•	•	•									
	E1	79.33 ★	18.3	11	1 000	•	•	•	•	•									
	D1	70.93	20.0	11	1 000	•	•	•	•	•									
	C1	65.14 ★	22.0	11	1 000	•	•	•	•	•									
	B1	58.71	25.0	11	1 000	•	•	•	•	•									
A1	50.48 ★	29.0	11	1 000	•	•	•	•	•										
FZ.68B 589 ... 1 000	B2	61.17 ★	24	10	850			•	•										
	A2	53.50	27	10	1 000			•	•	•									
	X1	48.03 ★	30	10	1 000			•	•	•	•								
	V1	43.87	33	10	1 000			•	•	•	•								
	U1	38.93 ★	37	10	1 000			•	•	•	•	•							
	T1	35.93	40	10	1 000			•	•	•	•	•	•						
	S1	32.50 ★	45	10	1 000			•	•	•	•	•	•	•					
	R1	29.93	48	10	1 000			•	•	•	•	•	•	•	•				
	Q1	27.68 ★	52	10	1 000			•	•	•	•	•	•	•	•	•			
	P1	25.69	56	10	1 000			•	•	•	•	•	•	•	•	•	•		
	N1	22.67 ★	64	10	1 000			•	•	•	•	•	•	•	•	•	•	•	
	M1	20.93	69	10	1 000			•	•	•	•	•	•	•	•	•	•	•	
	L1	18.75 ★	77	10	1 000			•	•	•	•	•	•	•	•	•	•	•	
	K1	17.29	84	10	1 000			•	•	•	•	•	•	•	•	•	•	•	
	J1	14.51	100	10	1 000			•	•	•	•	•	•	•	•	•	•	•	
	H1	12.38 ★	117	11	1 000			•	•	•	•	•	•	•	•	•	•	•	
	G1	10.31	141	11	1 000			•	•	•	•	•	•	•	•	•	•	•	
	F1	8.55 ★	170	11	1 000			•	•	•	•	•	•	•	•	•	•	•	
	E1	8.03	181	15	897			•	•	•	•	•	•	•	•	•	•	•	
	D1	6.74	215	15	835			•	•	•	•	•	•	•	•	•	•	•	
C1	5.75 ★	252	16	755			•	•	•	•	•	•	•	•	•	•	•		
B1	4.79	303	16	682			•	•	•	•	•	•	•	•	•	•	•		
A1	3.97 ★	365	17	589			•	•	•	•	•	•	•	•	•	•	•		

★ Preferred transmission ratio

¹⁾ Only possible with integrated motor.

²⁾ Twisting angle applies to reduced-backlash gearboxes.

In the case of gearboxes of size 28, only possible with integrated motor or input unit KQ and KQS.

Calculation of maximum output torque T_{2max} for gearboxes with input unit.

$$T_{2max} = T_1 \times i_{tot}, \text{ if } T_{2max} \leq T_{2N}$$

If $T_{2max} \geq T_{2N}$ the max. output torque T_{2N} of the unit is the decisive factor.

MOTOX Geared Motors

Parallel shaft geared motors

Transmission ratios and maximum torques

Selection and ordering data (continued)

Gearbox size	Ratio code	Transmission ratio	Output speed	Twisting angle ²⁾	Nominal torque	Permissible input torque T_1 [Nm]													
						2.5x the value is permissible for a brief period (e.g. motor starting torque)													
Max. gearbox torque	Order No. 15th and 16th position	i_{tot}	n_2 (50 Hz) rpm	φ arcmin	T_{2N} ($f_B=1$) Nm	Motor size													
						3	3	5	10	20	26	61	98	198	198	291	356	580	1290
Nm						63	71	80	90	100	112	132	160	180	200	225	250	280	315
FD.88B-D28 1 900	T1	54 705	0.03	–	1 900	•													
	S1	47 195	★ 0.03	–	1 900	•	•												
	R1	40 546	0.03	–	1 900	•	•												
	Q1	37 328	★ 0.04	–	1 900	•	•	•											
	P1	33 935	0.04	–	1 900	•	•	•											
	N1	30 036	★ 0.05	–	1 900	•	•	•											
	M1	28 814	0.05	–	1 900	•	•												
	L1	24 755	★ 0.06	–	1 900	•	•												
	K1	22 790	★ 0.06	–	1 900	•	•	•											
	J1	20 718	0.07	–	1 900	•	•	•											
	H1	18 338	★ 0.08	–	1 900	•	•	•											
	G1	15 360	0.09	–	1 900	•	•	•											
	F1	13 096	★ 0.11	–	1 900	•	•	•											
	E1	11 132	★ 0.13	–	1 900	•	•	•											
	D1	9 674	0.14	–	1 900	•	•	•											
	C1	8 420	★ 0.17	–	1 900	•	•	•											
B1	7 595	0.18	–	1 900	•	•	•												
A1	6 703	0.21	–	1 900	•	•	•												
FD.88B-Z28 1 900	B2	6 000	★ 0.23	–	1 900	•	•												
	A2	5 327	0.26	–	1 900	•	•												
	X1	4 670	★ 0.30	–	1 900	•	•	•											
	W1	4 179	0.33	–	1 900	•	•	•											
	V1	3 709	★ 0.38	–	1 900	•	•	•											
	U1	3 251	0.43	–	1 900	•	•	•											
	T1	2 858	★ 0.49	–	1 900	•	•	•											
	S1	2 582	0.54	–	1 900	•	•	•	•										
	R1	2 250	★ 0.62	–	1 900	•	•	•											
	Q1	2 021	0.69	–	1 900	•	•	•											
	P1	1 824	★ 0.77	–	1 900	•	•	•	•										
	N1	1 654	0.85	–	1 900	•	•	•	•										
	M1	1 505	★ 0.93	–	1 900	•	•	•	•										
	L1	1 331	1.10	–	1 900	•	•	•	•										
	K1	1 229	★ 1.10	–	1 900	•	•	•	•										
	J1	1 058	1.30	–	1 900	•	•	•	•										
	H1	962	★ 1.50	–	1 900	•	•	•	•										
	G1	874	★ 1.60	–	1 900	•	•	•	•										
F1	793	1.80	–	1 900	•	•	•	•											
E1	721	★ 1.90	–	1 900	•	•	•	•											
D1	638	2.20	–	1 900	•	•	•	•											
C1	589	★ 2.40	–	1 900	•	•	•	•											
B1	507	2.80	–	1 900	•	•	•	•											
A1	461	★ 3.00	–	1 900	•	•	•	•											

★ Preferred transmission ratio

¹⁾ Only possible with integrated motor.

²⁾ Twisting angle applies to reduced-backlash gearboxes.

In the case of gearboxes of size 28, only possible with integrated motor or input unit KQ and KQS.

Calculation of maximum output torque T_{2max} for gearboxes with input unit.

$$T_{2max} = T_1 \times i_{tot}, \text{ if } T_{2max} \leq T_{2N}$$

If $T_{2max} \geq T_{2N}$ the max. output torque T_{2N} of the unit is the decisive factor.

MOTOX Geared Motors

Parallel shaft geared motors

Transmission ratios and maximum torques

Selection and ordering data (continued)

Gearbox size	Ratio code	Transmission ratio	Output speed	Twisting angle ²⁾	Nominal torque	Permissible input torque T_1 [Nm]													
						2.5x the value is permissible for a brief period (e.g. motor starting torque)													
Max. gearbox torque	Order No. 15th and 16th position	i_{tot}	n_2 (50 Hz) rpm	φ arcmin	T_{2N} ($f_B=1$) Nm	Motor size													
						3	3	5	10	20	26	61	98	198	198	291	356	580	1290
Nm						63	71	80	90	100	112	132	160	180	200	225	250	280	315
FD.88B 1 900	V1	404.92	3.6	9	1 900	•	•	•											
	U1	358.33 ★	4.0	9	1 900	•	•	•	•										
	T1	325.76	4.5	9	1 900	•	•	•	•										
	S1	292.64 ★	5.0	9	1 900	•	•	•	•										
	R1	250.83	5.8	9	1 900	•	•	•	•	•									
	P1	226.94 ★	6.4	9	1 900	•	•	•	•	•	•								
	N1	209.49	6.9	9	1 900	•	•	•	•	•	•								
	M1	182.15 ★	8.0	9	1 900	•	•	•	•	•	•	•							
	L1	165.38	8.8	9	1 900	•	•	•	•	•	•	•							
	K1	151.01 ★	9.6	9	1 900	•	•	•	•	•	•	•							
	J1	138.56	10.5	9	1 900	•	•	•	•	•	•	•							
	H1	127.66 ★	11.4	9	1 900	•	•	•	•	•	•	•							
	G1	115.93	12.5	9	1 900	•	•	•	•	•	•	•							
	F1	105.61 ★	13.7	9	1 900	•	•	•	•	•	•	•							
	E1	96.75	15.0	9	1 900	•	•	•	•	•	•	•							
	D1	86.33 ★	16.8	9	1 900	•	•	•	•	•	•	•							
	C1	77.04	18.8	9	1 900				•	•	•	•	•						
B1	65.43	22.0	9	1 900				•	•	•	•	•	•						
A1	54.47 ★	27.0	9	1 900				•	•	•	•	•	•						
FZ.88B 1 199 ... 1 900	X1	64.58 ★	22	8	1 900				•	•	•	•							
	W1	59.13	25	8	1 900				•	•	•	•							
	V1	52.60 ★	28	8	1 900				•	•	•	•	•						
	U1	48.08	30	8	1 900				•	•	•	•	•						
	T1	44.20 ★	33	8	1 900				•	•	•	•	•						
	S1	40.83	36	8	1 900				•	•	•	•	•						
	R1	37.89 ★	38	8	1 900				•	•	•	•	•	•					
	Q1	35.29	41	8	1 900				•	•	•	•	•	•					
	P1	31.91 ★	45	8	1 900				•	•	•	•	•	•					
	N1	29.38	49	8	1 900				•	•	•	•	•	•					
	M1	26.42 ★	55	8	1 900				•	•	•	•	•	•					
	L1	24.38	59	9	1 900				•	•	•	•	•	•					
	K1	20.65	70	9	1 900				•	•	•	•	•	•					
	J1	18.00 ★	81	9	1 900				•	•	•	•	•	•					
	H1	15.31	95	9	1 900					•	•	•	•	•					
	G1	13.07 ★	111	9	1 900					•	•	•	•	•					
	F1	10.71 ★	135	9	1 900					•	•	•	•	•					
E1	9.19	158	12	1 658					•	•	•	•	•						
D1	8.01 ★	181	12	1 548					•	•	•	•	•						
C1	6.82	213	13	1 454						•	•	•	•						
B1	5.82 ★	249	13	1 348						•	•	•	•						
A1	4.77 ★	304	13	1 199						•	•	•	•						

★ Preferred transmission ratio

¹⁾ Only possible with integrated motor.

²⁾ Twisting angle applies to reduced-backlash gearboxes.

In the case of gearboxes of size 28, only possible with integrated motor or input unit KQ and KQS.

Calculation of maximum output torque T_{2max} for gearboxes with input unit.

$$T_{2max} = T_1 \times i_{tot}, \text{ if } T_{2max} \leq T_{2N}$$

If $T_{2max} \geq T_{2N}$ the max. output torque T_{2N} of the unit is the decisive factor.

MOTOX Geared Motors

Parallel shaft geared motors

Transmission ratios and maximum torques

Selection and ordering data (continued)

Gearbox size	Ratio code	Transmission ratio	Output speed	Twisting angle ²⁾	Nominal torque	Permissible input torque T_1 [Nm]															
						2.5x the value is permissible for a brief period (e.g. motor starting torque)															
Max. gearbox torque	Order No. 15th and 16th position	i_{tot}	n_2 (50 Hz) rpm	ϕ arcmin	T_{2N} ($f_B=1$) Nm	Motor size															
						3	3	5	10	20	26	61	98	198	198	291	356	580	1290		
Nm						63	71	80	90	100	112	132	160	180	200	225	250	280	315		
FD.108B-D38 3 400	N1	66 190	★	0.02	–	3 400	•	•	•												
	M1	58 766		0.02	–	3 400	•	•	•												
	L1	51 521	★	0.03	–	3 400	•	•	•	•											
	K1	46 105		0.03	–	3 400	•	•	•	•											
	J1	40 922	★	0.04	–	3 400	•	•	•	•											
	H1	35 860		0.04	–	3 400	•	•	•	•											
	G1	31 530	★	0.05	–	3 400	•	•	•	•											
	F1	28 485		0.05	–	3 400	•	•	•	•											
	E1	24 821	★	0.06	–	3 400	•	•	•	•											
	D1	22 293		0.07	–	3 400	•	•	•	•											
	C1	20 125	★	0.07	–	3 400	•	•	•	•											
	B1	18 247		0.08	–	3 400	•	•	•	•											
A1	16 603	★	0.09	–	3 400	•	•	•	•												
FD.108B-Z38 3 400	M2	15 230	★	0.10	–	3 400	•	•	•												
	L2	13 544		0.11	–	3 400	•	•	•												
	K2	11 749	★	0.12	–	3 400	•	•	•	•											
	J2	10 977		0.13	–	3 400	•	•	•	•											
	H2	9 655	★	0.15	–	3 400	•	•	•	•											
	G2	8 456		0.17	–	3 400	•	•	•	•	•										
	F2	7 479	★	0.19	–	3 400	•	•	•	•	•										
	E2	6 778		0.21	–	3 400	•	•	•	•	•										
	D2	5 983	★	0.24	–	3 400	•	•	•	•	•										
	C2	5 397		0.27	–	3 400	•	•	•	•	•										
	B2	4 895	★	0.30	–	3 400	•	•	•	•	•										
	A2	4 460		0.33	–	3 400	•	•	•	•	•										
	X1	4 079	★	0.36	–	3 400	•	•	•	•	•										
	W1	3 648		0.40	–	3 400	•	•	•	•	•										
	V1	3 349	★	0.43	–	3 400	•	•	•	•	•										
	U1	3 019		0.48	–	3 400	•	•	•	•	•										
	T1	2 596	★	0.56	–	3 400	•	•	•	•	•										
	S1	2 315		0.63	–	3 400	•	•	•	•	•										
	R1	2 126	★	0.68	–	3 400	•	•	•	•	•										
	Q1	1 916		0.76	–	3 400	•	•	•	•	•										
	P1	1 647	★	0.88	–	3 400	•	•	•	•	•										
	N1	1 526		0.95	–	3 400	•	•	•	•	•										
	M1	1 384	★	1.00	–	3 400	•	•	•	•	•										
	L1	1 261		1.10	–	3 400	•	•	•	•	•										
	K1	1 153	★	1.30	–	3 400	•	•	•	•	•										
	J1	1 031		1.40	–	3 400	•	•	•	•	•										
	H1	947	★	1.50	–	3 400	•	•	•	•	•										
	G1	853		1.70	–	3 400	•	•	•	•	•										
F1	734	★	2.00	–	3 400	•	•	•	•	•											
E1	732	★	2.00	–	3 400	•	•	•	•	•											
D1	654		2.20	–	3 400	•	•	•	•	•											
C1	601	★	2.40	–	3 400	•	•	•	•	•											
B1	541		2.70	–	3 400	•	•	•	•	•											
A1	466	★	3.10	–	3 400	•	•	•	•	•											

★ Preferred transmission ratio

¹⁾ Only possible with integrated motor.

²⁾ Twisting angle applies to reduced-backlash gearboxes.

In the case of gearboxes of size 28, only possible with integrated motor or input unit KQ and KQS.

Calculation of maximum output torque T_{2max} for gearboxes with input unit.

$$T_{2max} = T_1 \times i_{tot}, \text{ if } T_{2max} \leq T_{2N}$$

If $T_{2max} \geq T_{2N}$ the max. output torque T_{2N} of the unit is the decisive factor.

MOTOX Geared Motors

Parallel shaft geared motors

Transmission ratios and maximum torques

Selection and ordering data (continued)

Gearbox size	Ratio code	Transmission ratio	Output speed	Twisting angle ²⁾	Nominal torque	Permissible input torque T_1 [Nm]													
						2.5x the value is permissible for a brief period (e.g. motor starting torque)													
Max. gearbox torque	Order No. 15th and 16th position	i_{tot}	n_2 (50 Hz) rpm	φ arcmin	T_{2N} ($f_B=1$) Nm	3	3	5	10	20	26	61	98	198	198	291	356	580	1290
						Motor size													
Nm						63	71	80	90	100	112	132	160	180	200	225	250	280	315
FD.108B 3 400	V1	424.49 ★	3.4	7	3 400			•	•										
	U1	382.79	3.8	7	3 400			•	•										
	T1	345.19 ★	4.2	7	3 400			•	•										
	S1	301.88	4.8	7	3 400			•	•	•									
	R1	271.01 ★	5.4	7	3 400			•	•	•	•								
	Q1	247.53	5.9	7	3 400			•	•	•	•								
	P1	219.66 ★	6.6	7	3 400			•	•	•	•	•							
	N1	202.77	7.2	7	3 400			•	•	•	•	•							
	M1	183.39 ★	7.9	7	3 400			•	•	•	•	•							
	L1	168.88	8.6	8	3 400			•	•	•	•	•							
	K1	156.19 ★	9.3	8	3 400			•	•	•	•	•	•						
	J1	144.99	10.0	8	3 400			•	•	•	•	•	•	•					
	H1	127.92 ★	11.3	8	3 400			•	•	•	•	•	•	•					
	G1	118.11	12.3	8	3 400			•	•	•	•	•	•	•					
	F1	105.81 ★	13.7	8	3 400			•	•	•	•	•	•	•	•				
	E1	97.57	14.9	8	3 400			•	•	•	•	•	•	•	•				
	D1	81.86	17.7	8	3 400			•	•	•	•	•	•	•	•				
C1	69.84 ★	21.0	8	3 400			•	•	•	•	•	•	•	•					
B1	58.20	25.0	8	3 400			•	•	•	•	•	•	•	•					
A1	48.24 ★	30.0	8	3 400			•	•	•	•	•	•	•	•					
FZ.108B 2 422 ... 3 400	A2	64.21 ★	23	7	3 000					•	•	•							
	X1	58.80	25	7	3 000					•	•	•							
	W1	54.17 ★	27	7	3 400					•	•	•							
	V1	50.15	29	7	3 400					•	•	•							
	U1	46.64 ★	31	7	3 400					•	•	•	•						
	T1	43.54	33	7	3 400					•	•	•	•						
	S1	38.95 ★	37	7	3 400					•	•	•	•	•	• ¹⁾				
	R1	36.10	40	7	3 400					•	•	•	•	•	•	• ¹⁾			
	Q1	33.09 ★	44	7	3 400					•	•	•	•	•	•	•	• ¹⁾		
	P1	30.33	48	7	3 400					•	•	•	•	•	•	•	•	• ¹⁾	
	N1	25.85	56	7	3 400					•	•	•	•	•	•	•	•	•	• ¹⁾
	M1	22.81 ★	64	7	3 400					•	•	•	•	•	•	•	•	•	• ¹⁾
	L1	19.41	75	7	3 400					•	•	•	•	•	•	•	•	•	• ¹⁾
	K1	16.82 ★	86	7	3 400					•	•	•	•	•	•	•	•	•	• ¹⁾
	J1	14.16 ★	102	7	3 304					•	•	•	•	•	•	•	•	•	• ¹⁾
	H1	12.77	114	7	3 249							•	•	•	•	•	•	•	• ¹⁾
	G1	10.98 ★	132	8	3 153							•	•	•	•	•	•	•	• ¹⁾
F1	10.04	144	10	3 374					•	•	•	•	•	•	•	•	•	• ¹⁾	
E1	8.70 ★	167	10	3 102					•	•	•	•	•	•	•	•	•	• ¹⁾	
D1	7.32 ★	198	10	2 853					•	•	•	•	•	•	•	•	•	• ¹⁾	
C1	6.60	220	10	2 651							•	•	•	•	•	•	•	• ¹⁾	
B1	5.68 ★	255	10	2 422							•	•	•	•	•	•	•	• ¹⁾	

★ Preferred transmission ratio

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2) Twisting angle applies to reduced-backlash gearboxes.

In the case of gearboxes of size 28, only possible with integrated motor or input unit KQ and KQS.

Calculation of maximum output torque T_{2max} for gearboxes with input unit.

$$T_{2max} = T_1 \times i_{tot}, \text{ if } T_{2max} \leq T_{2N}$$

If $T_{2max} \geq T_{2N}$ the max. output torque T_{2N} of the unit is the decisive factor.

MOTOX Geared Motors

Parallel shaft geared motors

Transmission ratios and maximum torques

Selection and ordering data (continued)

Gearbox size	Ratio code	Transmission ratio	Output speed	Twisting angle ²⁾	Nominal torque	Permissible input torque T_1 [Nm]													
						2.5x the value is permissible for a brief period (e.g. motor starting torque)													
Max. gearbox torque	Order No. 15th and 16th position	i_{tot}	n_2 (50 Hz) rpm	φ arcmin	T_{2N} ($f_B=1$) Nm	Motor size													
						3	3	5	10	20	26	61	98	198	198	291	356	580	1290
Nm						63	71	80	90	100	112	132	160	180	200	225	250	280	315
FD.128B-D38 6 100	N1	68 070	★	0.02	–	6 100	•	•	•										
	M1	60 435		0.02	–	6 100	•	•	•										
	L1	52 984	★	0.03	–	6 100	•	•	•	•									
	K1	47 415		0.03	–	6 100	•	•	•	•									
	J1	42 084	★	0.03	–	6 100	•	•	•	•									
	H1	36 878		0.04	–	6 100	•	•	•	•									
	G1	32 425	★	0.04	–	6 100	•	•	•	•									
	F1	29 294		0.05	–	6 100	•	•	•	•									
	E1	25 526	★	0.06	–	6 100	•	•	•	•									
	D1	22 926		0.06	–	6 100	•	•	•	•									
	C1	20 697	★	0.07	–	6 100	•	•	•	•									
B1	18 765		0.08	–	6 100	•	•	•	•										
A1	17 075	★	0.08	–	6 100	•	•	•	•										
FD.128B-Z38 6 100	W1	15 663	★	0.09	–	6 100	•	•	•										
	V1	13 928		0.10	–	6 100	•	•	•										
	U1	12 083	★	0.12	–	6 100	•	•	•	•									
	T1	11 289		0.13	–	6 100	•	•	•	•									
	S1	9 929	★	0.15	–	6 100	•	•	•	•									
	R1	8 696		0.17	–	6 100	•	•	•	•									
	Q1	7 691	★	0.19	–	6 100	•	•	•	•									
	P1	6 971		0.21	–	6 100	•	•	•	•									
	N1	6 153	★	0.24	–	6 100	•	•	•	•									
	M1	5 551		0.26	–	6 100	•	•	•	•									
	L1	5 034	★	0.29	–	6 100	•	•	•	•									
	K1	4 587		0.32	–	6 100	•	•	•	•									
	J1	4 195	★	0.35	–	6 100	•	•	•	•									
	H1	3 751		0.39	–	6 100	•	•	•	•									
	G1	3 445	★	0.42	–	6 100	•	•	•	•									
	F1	3 105		0.47	–	6 100	•	•	•	•									
	E1	2 670	★	0.54	–	6 100	•	•	•	•									
D1	2 381		0.61	–	6 100	•	•	•	•										
C1	2 186	★	0.66	–	6 100	•	•	•	•										
B1	1 970		0.74	–	6 100	•	•	•	•										
A1	1 694	★	0.86	–	6 100	•	•	•	•										
FD.128B-Z48 6 100	L1	1 504		0.96	–	6 100	•	•	•	•									
	K1	1 370	★	1.10	–	6 100	•	•	•	•									
	J1	1 255		1.20	–	6 100	•	•	•	•									
	H1	1 120	★	1.30	–	6 100	•	•	•	•									
	G1	999		1.50	–	6 100			•	•	•								
	F1	849		1.70	–	6 100			•	•	•								
	E1	706	★	2.10	–	6 100			•	•	•								
	D1	695	★	2.10	–	6 100	•	•	•	•	•								
	C1	620		2.30	–	6 100			•	•	•								
	B1	527		2.80	–	6 100			•	•	•								
A1	439	★	3.30	–	6 100			•	•	•									

★ Preferred transmission ratio

¹⁾ Only possible with integrated motor.²⁾ Twisting angle applies to reduced-backlash gearboxes.

In the case of gearboxes of size 28, only possible with integrated motor or input unit KQ and KQS.

Calculation of maximum output torque T_{2max} for gearboxes with input unit.

$$T_{2max} = T_1 \times i_{tot} \text{ if } T_{2max} \leq T_{2N}$$

If $T_{2max} \geq T_{2N}$ the max. output torque T_{2N} of the unit is the decisive factor.

MOTOX Geared Motors

Parallel shaft geared motors

Transmission ratios and maximum torques

Selection and ordering data (continued)

Gearbox size	Ratio code	Transmission ratio	Output speed	Twisting angle ²⁾	Nominal torque	Permissible input torque T_1 [Nm]																
						2.5x the value is permissible for a brief period (e.g. motor starting torque)																
Max. gearbox torque	Order No. 15th and 16th position	i_{tot}	n_2 (50 Hz) rpm	φ arcmin	T_{2N} ($f_B=1$) Nm	3	3	5	10	20	26	61	98	198	198	291	356	580	1290			
						Motor size																
Nm						63	71	80	90	100	112	132	160	180	200	225	250	280	315			
FD.128B 6 100	V1	447.96	3.2	7	6 100				*													
	U1	405.47 ★	3.6	7	6 100				*													
	T1	354.99	4.1	7	6 100				*	*												
	S1	320.24 ★	4.5	7	6 100				*	*	*											
	R1	293.22	4.9	7	6 100				*	*	*	*										
	Q1	260.84 ★	5.6	7	6 100				*	*	*	*	*									
	P1	238.39	6.1	7	6 100				*	*	*	*	*	*								
	N1	219.15 ★	6.6	7	6 100				*	*	*	*	*	*	*							
	M1	202.48	7.2	7	6 100				*	*	*	*	*	*	*	*						
	L1	187.88 ★	7.7	7	6 100				*	*	*	*	*	*	*	*	*					
	K1	175.01	8.3	7	6 100				*	*	*	*	*	*	*	*	*	*				
	J1	158.22 ★	9.2	7	6 100				*	*	*	*	*	*	*	*	*	*	*			
	H1	145.66	10.0	7	6 100				*	*	*	*	*	*	*	*	*	*	*	*		
	G1	131.01 ★	11.1	7	6 100				*	*	*	*	*	*	*	*	*	*	*	*	*	
	F1	120.87	12.0	7	6 100				*	*	*	*	*	*	*	*	*	*	*	*	*	*
	E1	102.41	14.2	7	6 100				*	*	*	*	*	*	*	*	*	*	*	*	*	*
	D1	89.25 ★	16.2	7	6 100				*	*	*	*	*	*	*	*	*	*	*	*	*	*
C1	75.93	19.1	7	6 100				*	*	*	*	*	*	*	*	*	*	*	*	*	*	
B1	64.80 ★	22.0	7	6 100				*	*	*	*	*	*	*	*	*	*	*	*	*	*	
A1	53.13 ★	27.0	7	6 100				*	*	*	*	*	*	*	*	*	*	*	*	*	*	
FZ.128B 2 703 ... 6 100	A2	56.42 ★	26	6	4 300					*	*											
	X1	52.29	28	6	4 600					*	*											
	W1	49.71 ★	29	6	4 900					*	*	*										
	V1	46.46	31	6	5 150					*	*	*	*									
	U1	40.99 ★	35	6	5 700					*	*	*	*	*								
	T1	38.66	38	6	6 000					*	*	*	*	*	*							
	S1	34.64 ★	42	6	6 100					*	*	*	*	*	*	*					1)	
	R1	31.98	45	7	6 100					*	*	*	*	*	*	*	*				1)	
	Q1	27.33	53	7	6 100					*	*	*	*	*	*	*	*	*			1)	
	P1	24.70 ★	59	7	6 100					*	*	*	*	*	*	*	*	*	*		1)	
	N1	23.80	61	7	6 100					*	*	*	*	*	*	*	*	*	*	*	1)	
	L1	20.58	70	7	6 100					*	*	*	*	*	*	*	*	*	*	*	1)	
	K1	17.95 ★	81	7	6 100					*	*	*	*	*	*	*	*	*	*	*	1)	
	J1	15.36 ★	94	7	5 847					*	*	*	*	*	*	*	*	*	*	*	1)	
	H1	13.76	105	7	5 640					*	*	*	*	*	*	*	*	*	*	*	1)	
	G1	11.65 ★	124	7	5 347					*	*	*	*	*	*	*	*	*	*	*	1)	
	F1	10.07	144	7	5 113					*	*	*	*	*	*	*	*	*	*	*	1)	
E1	7.57 ★	192	7	4 565					*	*	*	*	*	*	*	*	*	*	*	1)		
D1	6.91	210	9	3 592					*	*	*	*	*	*	*	*	*	*	*	1)		
C1	5.85 ★	248	10	3 301					*	*	*	*	*	*	*	*	*	*	*	1)		
B1	5.05	287	10	3 137					*	*	*	*	*	*	*	*	*	*	*	1)		
A1	3.80 ★	382	10	2 708					*	*	*	*	*	*	*	*	*	*	*	1)		

★ Preferred transmission ratio

1) Only possible with integrated motor.

2) Twisting angle applies to reduced-backlash gearboxes.

In the case of gearboxes of size 28, only possible with integrated motor or input unit KQ and KQS.

Calculation of maximum output torque T_{2max} for gearboxes with input unit.

$$T_{2max} = T_1 \times i_{tot}, \text{ if } T_{2max} \leq T_{2N}$$

If $T_{2max} \geq T_{2N}$ the max. output torque T_{2N} of the unit is the decisive factor.

MOTOX Geared Motors

Parallel shaft geared motors

Transmission ratios and maximum torques

Selection and ordering data (continued)

Gearbox size	Ratio code	Transmission ratio	Output speed	Twisting angle ²⁾	Nominal torque	Permissible input torque T_1 [Nm]													
						2.5x the value is permissible for a brief period (e.g. motor starting torque)													
Max. gearbox torque	Order No. 15th and 16th position	i_{tot}	n_2 (50 Hz) rpm	φ arcmin	T_{2N} ($f_B=1$) Nm	Motor size													
						3	3	5	10	20	26	61	98	198	198	291	356	580	1290
Nm						63	71	80	90	100	112	132	160	180	200	225	250	280	315
FD.148B-D38 9 000	N1	70 576	★	0.02	–	9 000	•	•	•										
	M1	62 660		0.02	–	9 000	•	•	•										
	L1	54 935	★	0.03	–	9 000	•	•	•	•									
	K1	49 161		0.03	–	9 000	•	•	•	•									
	J1	43 633	★	0.03	–	9 000	•	•	•	•									
	H1	38 236		0.04	–	9 000	•	•	•	•									
	G1	33 619	★	0.04	–	9 000	•	•	•	•									
	F1	30 373		0.05	–	9 000	•	•	•	•									
	E1	26 466	★	0.05	–	9 000	•	•	•	•									
	D1	23 770		0.06	–	9 000	•	•	•	•									
	C1	21 459	★	0.07	–	9 000	•	•	•	•									
B1	19 456		0.07	–	9 000	•	•	•	•										
A1	17 704	★	0.08	–	9 000	•	•	•	•										
FD.148B-Z38 9 000	W1	16 239	★	0.09	–	9 000	•	•	•										
	V1	14 441		0.10	–	9 000	•	•	•										
	U1	12 527	★	0.12	–	9 000	•	•	•	•									
	T1	11 705		0.12	–	9 000	•	•	•	•									
	S1	10 295	★	0.14	–	9 000	•	•	•	•									
	R1	9 016		0.16	–	9 000	•	•	•	•	•								
	Q1	7 975	★	0.18	–	9 000	•	•	•	•	•								
	P1	7 227		0.20	–	9 000	•	•	•	•	•								
	N1	6 380	★	0.23	–	9 000	•	•	•	•	•								
	M1	5 755		0.25	–	9 000	•	•	•	•	•								
	L1	5 220	★	0.28	–	9 000	•	•	•	•	•								
	K1	4 756		0.30	–	9 000	•	•	•	•	•								
	J1	4 350	★	0.33	–	9 000	•	•	•	•	•								
	H1	3 889		0.37	–	9 000	•	•	•	•	•								
	G1	3 571	★	0.41	–	9 000	•	•	•	•	•								
	F1	3 219		0.45	–	9 000	•	•	•	•	•								
	E1	2 768	★	0.52	–	9 000	•	•	•	•	•								
D1	2 468		0.59	–	9 000	•	•	•	•	•									
C1	2 266	★	0.64	–	9 000	•	•	•	•	•									
B1	2 043		0.71	–	9 000	•	•	•	•	•									
A1	1 757	★	0.83	–	9 000	•	•	•	•	•									
FD.148B-Z48 9 000	K1	1 634		0.89	–	9 000	•	•	•	•	•								
	J1	1 489	★	0.97	–	9 000	•	•	•	•	•								
	H1	1 364		1.10	–	9 000	•	•	•	•	•								
	G1	1 217	★	1.20	–	9 000	•	•	•	•	•								
	F1	1 086		1.30	–	9 000			•	•	•	•							
	E1	922		1.60	–	9 000			•	•	•	•							
	D1	768	★	1.90	–	9 000	•	•	•	•	•								
	C1	674		2.20	–	9 000			•	•	•	•							
	B1	573		2.50	–	9 000			•	•	•	•							
A1	477	★	3.00	–	9 000			•	•	•	•								

★ Preferred transmission ratio

1) Only possible with integrated motor.

2) Twisting angle applies to reduced-backlash gearboxes.

In the case of gearboxes of size 28, only possible with integrated motor or input unit KQ and KQS.

Calculation of maximum output torque T_{2max} for gearboxes with input unit.

$$T_{2max} = T_1 \times i_{tot}, \text{ if } T_{2max} \leq T_{2N}$$

If $T_{2max} \geq T_{2N}$ the max. output torque T_{2N} of the unit is the decisive factor.

MOTOX Geared Motors

Parallel shaft geared motors

Transmission ratios and maximum torques

Selection and ordering data (continued)

Gearbox size	Ratio code	Transmission ratio	Output speed	Twisting angle ²⁾	Nominal torque	Permissible input torque T_1 [Nm]													
						2.5x the value is permissible for a brief period (e.g. motor starting torque)													
Max. gearbox torque	Order No. 15th and 16th position	i_{tot}	n_2 (50 Hz) rpm	φ arcmin	T_{2N} ($f_B=1$) Nm	Motor size													
						3	3	5	10	20	26	61	98	198	198	291	356	580	1290
Nm						63	71	80	90	100	112	132	160	180	200	225	250	280	315
FD.148B 9 000	U1	449.21 ★	3.2	6	9 000					•	•								
	T1	411.98	3.5	6	9 000					•	•								
	S1	368.06 ★	3.9	6	9 000					•	•	•							
	R1	337.07	4.3	6	9 000					•	•	•							
	Q1	310.51 ★	4.7	6	9 000					•	•	•							
	P1	287.49	5.0	6	9 000					•	•	•							
	N1	267.35 ★	5.4	6	9 000					•	•	•	•						
	M1	249.58	5.8	6	9 000					•	•	•	•						
	L1	223.31 ★	6.5	6	9 000					•	•	•	•	•	•				
	K1	206.93	7.0	6	9 000					•	•	•	•	•	•				
	J1	189.69 ★	7.6	6	9 000					•	•	•	•	•	•	•			
	H1	173.89	8.3	6	9 000					•	•	•	•	•	•	•	•		
	G1	148.18	9.8	6	9 000					•	•	•	•	•	•	•	•		
	F1	130.76 ★	11.1	6	9 000					•	•	•	•	•	•	•	•		
	E1	111.29	13.0	6	9 000					•	•	•	•	•	•	•	•		
	D1	96.43 ★	15.0	6	9 000					•	•	•	•	•	•	•	•		
C1	81.15 ★	17.9	6	9 000					•	•	•	•	•	•	•	•			
B1	73.22	19.8	6	9 000							•	•	•	•	•	•			
A1	62.93 ★	23.0	6	9 000							•	•	•	•	•	•			
FZ.148B 5 124 ... 9 000	V1	68.23	21	5	5 600						•								
	U1	64.37 ★	23	5	6 500						•	•							
	T1	60.21	24	5	7 000						•	•							
	S1	53.53 ★	27	6	8 000						•	•	•	•					
	R1	50.54	29	6	8 000						•	•	•	•					
	Q1	45.37 ★	32	6	8 700						•	•	•	•	•				
	P1	41.64	35	6	9 000						•	•	•	•	•	•			
	N1	35.93	40	6	9 000						•	•	•	•	•	•	•	• ¹⁾	
	M1	31.43	46	6	9 000						•	•	•	•	•	•	•	• ¹⁾	
	L1	27.34	53	6	9 000						•	•	•	•	•	•	•	• ¹⁾	
	K1	23.98 ★	60	6	9 000						•	•	•	•	•	•	•	• ¹⁾	
	J1	20.28 ★	71	6	9 000						•	•	•	•	•	•	•	• ¹⁾	
	H1	18.40	79	6	9 000						•	•	•	•	•	•	•	• ¹⁾	
	G1	16.04 ★	90	6	9 000						•	•	•	•	•	•	•	• ¹⁾	
	F1	13.62	106	6	8 519							•	•	•	•	•	•	• ¹⁾	
	E1	10.43 ★	139	6	7 822							•	•	•	•	•	•	• ¹⁾	
D1	9.51	152	8	6 581							•	•	•	•	•	•	• ¹⁾		
C1	8.29 ★	175	9	6 204							•	•	•	•	•	•	• ¹⁾		
B1	7.04	206	9	5 820								•	•	•	•	•	• ¹⁾		
A1	5.39 ★	269	9	5 124								•	•	•	•	•	• ¹⁾		

★ Preferred transmission ratio

¹⁾ Only possible with integrated motor.

²⁾ Twisting angle applies to reduced-backlash gearboxes.

In the case of gearboxes of size 28, only possible with integrated motor or input unit KQ and KQS.

Calculation of maximum output torque T_{2max} for gearboxes with input unit.

$$T_{2max} = T_1 \times i_{tot}, \text{ if } T_{2max} \leq T_{2N}$$

If $T_{2max} \geq T_{2N}$ the max. output torque T_{2N} of the unit is the decisive factor.

MOTOX Geared Motors

Parallel shaft geared motors

Transmission ratios and maximum torques

Selection and ordering data (continued)

Gearbox size	Ratio code	Transmission ratio	Output speed	Twisting angle ²⁾	Nominal torque	Permissible input torque T_1 [Nm]													
						2.5x the value is permissible for a brief period (e.g. motor starting torque)													
Max. gearbox torque	Order No. 15th and 16th position	i_{tot}	n_2 (50 Hz) rpm	φ arcmin	T_{2N} ($f_B=1$) Nm	3	3	5	10	20	26	61	98	198	198	291	356	580	1290
						Motor size													
Nm						63	71	80	90	100	112	132	160	180	200	225	250	280	315
FD.168B-D48 14 000	N1	65 160	★	0.02	–	14 000	•	•	•										
	M1	57 946		0.03	–	14 000	•	•	•										
	L1	50 267	★	0.03	–	14 000	•	•	•	•									
	K1	46 966		0.03	–	14 000	•	•	•	•									
	J1	41 307	★	0.04	–	14 000	•	•	•	•									
	H1	36 177		0.04	–	14 000	•	•	•	•	•								
	G1	31 998	★	0.05	–	14 000	•	•	•	•	•								
	F1	29 000		0.05	–	14 000	•	•	•	•	•								
	E1	25 599	★	0.06	–	14 000	•	•	•	•	•								
	D1	23 093		0.06	–	14 000	•	•	•	•	•								
	C1	20 944	★	0.07	–	14 000	•	•	•	•	•								
	B1	19 083		0.08	–	14 000	•	•	•	•	•								
A1	17 454	★	0.08	–	14 000	•	•	•	•	•									
FD.168B-Z48 14 000	A2	16 007		0.09	–	14 000	•	•	•										
	X1	14 165	★	0.10	–	14 000	•	•	•	•									
	W1	12 878		0.11	–	14 000	•	•	•	•									
	V1	11 568	★	0.13	–	14 000	•	•	•	•									
	U1	9 916		0.15	–	14 000	•	•	•	•	•								
	T1	8 971	★	0.16	–	14 000	•	•	•	•	•								
	S1	8 281		0.18	–	14 000	•	•	•	•	•								
	R1	7 201	★	0.20	–	14 000	•	•	•	•	•								
	Q1	6 538		0.22	–	14 000	•	•	•	•	•								
	P1	5 970	★	0.24	–	14 000	•	•	•	•	•								
	N1	5 477		0.26	–	14 000	•	•	•	•	•								
	M1	5 046	★	0.29	–	14 000	•	•	•	•	•								
	L1	4 583		0.32	–	14 000	•	•	•	•	•								
	K1	4 175	★	0.35	–	14 000	•	•	•	•	•								
	J1	3 825		0.38	–	14 000	•	•	•	•	•								
	H1	3 413	★	0.42	–	14 000	•	•	•	•	•								
	G1	3 046		0.48	–	14 000			•	•	•	•							
	F1	2 587		0.56	–	14 000			•	•	•	•							
	E1	2 153	★	0.67	–	14 000			•	•	•	•							
	D1	2 119	★	0.68	–	14 000	•	•	•	•	•								
C1	1 891		0.77	–	14 000			•	•	•	•								
B1	1 606		0.90	–	14 000			•	•	•	•								
A1	1 337	★	1.10	–	14 000			•	•	•	•								
FD.168B-Z68 14 000	H1	1 298		1.1	–	14 000			•	•	•	•							
	G1	1 108	★	1.3	–	14 000			•	•	•	•							
	F1	923		1.6	–	14 000				•	•	•							
	E1	765	★	1.9	–	14 000				•	•	•							
	D1	675		2.1	–	14 000			•	•	•	•							
	C1	576	★	2.5	–	14 000			•	•	•	•							
	B1	480		3.0	–	14 000				•	•	•							
	A1	398	★	3.6	–	14 000				•	•	•							

★ Preferred transmission ratio

1) Only possible with integrated motor.

2) Twisting angle applies to reduced-backlash gearboxes.

In the case of gearboxes of size 28, only possible with integrated motor or input unit KQ and KQS.

Calculation of maximum output torque T_{2max} for gearboxes with input unit.

$$T_{2max} = T_1 \times i_{tot}, \text{ if } T_{2max} \leq T_{2N}$$

If $T_{2max} \geq T_{2N}$ the max. output torque T_{2N} of the unit is the decisive factor.

MOTOX Geared Motors

Parallel shaft geared motors

Transmission ratios and maximum torques

Selection and ordering data (continued)

Gearbox size	Ratio code	Transmission ratio	Output speed	Twisting angle ²⁾	Nominal torque	Permissible input torque T_1 [Nm]													
						2.5x the value is permissible for a brief period (e.g. motor starting torque)													
Max. gearbox torque	Order No. 15th and 16th position	i_{tot}	n_2 (50 Hz) rpm	φ arcmin	T_{2N} ($f_B=1$) Nm	Motor size													
						3	3	5	10	20	26	61	98	198	198	291	356	580	1290
Nm						63	71	80	90	100	112	132	160	180	200	225	250	280	315
FD.168B 14 000	V1	369.26 ★	3.9	6	14 000														
	U1	338.49	4.3	6	14 000														
	T1	312.12 ★	4.6	6	14 000														
	S1	289.26	5.0	6	14 000														
	R1	275.03 ★	5.3	6	14 000														
	Q1	257.04	5.6	6	14 000														
	P1	226.74 ★	6.4	6	14 000														
	N1	213.87	6.8	6	14 000														
	M1	191.63 ★	7.6	6	14 000														
	L1	176.94	8.2	6	14 000														
	K1	151.18	9.6	6	14 000														
	J1	136.63 ★	10.6	6	14 000														
	H1	131.64	11.0	6	14 000														
	G1	113.86	12.7	6	14 000														
	F1	99.31 ★	14.6	6	14 000														
	E1	84.99 ★	17.1	6	14 000														
	D1	76.12	19.0	6	14 000														
C1	64.47 ★	22.0	6	14 000															
B1	55.68	26.0	6	14 000															
A1	41.85 ★	35.0	6	14 000															
FZ.168B 8 683 ... 14 000	R1	53.48	27	5	9 000														
	Q1	48.29	30	6	10 500														
	P1	45.25	32	6	11 500														
	N1	38.87 ★	37	6	13 000														
	M1	33.58	43	6	13 000														
	L1	29.64	49	6	14 000														
	K1	26.68 ★	54	6	14 000														
	J1	22.14 ★	65	6	14 000														
	H1	20.19	72	6	14 000														
	G1	17.71 ★	82	6	14 000														
	F1	15.22	95	6	14 000														
	E1	11.86 ★	122	6	13 076														
	D1	9.42 ★	154	6	12 147														
	C1	8.54	170	7	11 257														
	B1	6.65 ★	218	8	10 011														
A1	5.28 ★	275	8	8 682															

★ Preferred transmission ratio

¹⁾ Only possible with integrated motor.

²⁾ Twisting angle applies to reduced-backlash gearboxes.

In the case of gearboxes of size 28, only possible with integrated motor or input unit KQ and KQS.

Calculation of maximum output torque T_{2max} for gearboxes with input unit.

$$T_{2max} = T_1 \times i_{tot}, \text{ if } T_{2max} \leq T_{2N}$$

If $T_{2max} \geq T_{2N}$ the max. output torque T_{2N} of the unit is the decisive factor.

MOTOX Geared Motors

Parallel shaft geared motors

Transmission ratios and maximum torques

Selection and ordering data (continued)

Gearbox size	Ratio code	Transmission ratio	Output speed	Twisting angle ²⁾	Nominal torque	Permissible input torque T_1 [Nm]													
						2.5x the value is permissible for a brief period (e.g. motor starting torque)													
Max. gearbox torque	Order No. 15th and 16th position	i_{tot}	n_2 (50 Hz) rpm	φ arcmin	T_{2N} ($f_B=1$) Nm	Motor size													
						3	3	5	10	20	26	61	98	198	198	291	356	580	1290
Nm						63	71	80	90	100	112	132	160	180	200	225	250	280	315
FD.188B-D48 20 000	N1	71 388	★	0.02	–	20 000	•	•	•										
	M1	63 484		0.02	–	20 000	•	•	•										
	L1	55 070	★	0.03	–	20 000	•	•	•	•									
	K1	51 455		0.03	–	20 000	•	•	•	•									
	J1	45 255	★	0.03	–	20 000	•	•	•	•									
	H1	39 634		0.04	–	20 000	•	•	•	•	•								
	G1	35 056	★	0.04	–	20 000	•	•	•	•	•								
	F1	31 771		0.05	–	20 000	•	•	•	•	•								
	E1	28 045	★	0.05	–	20 000	•	•	•	•	•								
	D1	25 299		0.06	–	20 000	•	•	•	•	•								
	C1	22 946	★	0.06	–	20 000	•	•	•	•	•								
	B1	20 906		0.07	–	20 000	•	•	•	•	•								
A1	19 122	★	0.08	–	20 000	•	•	•	•	•									
FD.188B-Z48 20 000	A2	17 537		0.08	–	20 000	•	•	•										
	X1	15 519	★	0.09	–	20 000	•	•	•	•									
	W1	14 108		0.10	–	20 000	•	•	•	•									
	V1	12 674	★	0.11	–	20 000	•	•	•	•									
	U1	10 863		0.13	–	20 000	•	•	•	•	•								
	T1	9 829	★	0.15	–	20 000	•	•	•	•	•								
	S1	9 073		0.16	–	20 000	•	•	•	•	•								
	R1	7 889	★	0.18	–	20 000	•	•	•	•	•								
	Q1	7 163		0.20	–	20 000	•	•	•	•	•								
	P1	6 540	★	0.22	–	20 000	•	•	•	•	•								
	N1	6 001		0.24	–	20 000	•	•	•	•	•								
	M1	5 529	★	0.26	–	20 000	•	•	•	•	•								
	L1	5 021		0.29	–	20 000	•	•	•	•	•								
	K1	4 574	★	0.32	–	20 000	•	•	•	•	•								
	J1	4 190		0.35	–	20 000	•	•	•	•	•								
	H1	3 739	★	0.39	–	20 000	•	•	•	•	•								
	G1	3 337		0.43	–	20 000			•	•	•	•							
	F1	2 834		0.51	–	20 000			•	•	•	•							
	E1	2 359	★	0.61	–	20 000			•	•	•	•							
	D1	2 322	★	0.62	–	20 000	•	•	•	•	•								
C1	2 072		0.70	–	20 000			•	•	•	•								
B1	1 760		0.82	–	20 000			•	•	•	•								
A1	1 465	★	0.99	–	20 000			•	•	•	•								
FD.188B-Z68 20 000	H1	1 449		1.0	–	20 000			•	•	•	•	•						
	G1	1 236	★	1.2	–	20 000			•	•	•	•	•						
	F1	1 030		1.4	–	20 000				•	•	•	•						
	E1	854	★	1.7	–	20 000					•	•	•						
	D1	754		1.9	–	20 000					•	•	•	•					
	C1	643	★	2.3	–	20 000					•	•	•	•					
	B1	536		2.7	–	20 000						•	•	•					
	A1	444	★	3.3	–	20 000							•	•	•				

★ Preferred transmission ratio

1) Only possible with integrated motor.

2) Twisting angle applies to reduced-backlash gearboxes.

In the case of gearboxes of size 28, only possible with integrated motor or input unit KQ and KQS.

Calculation of maximum output torque T_{2max} for gearboxes with input unit.

$$T_{2max} = T_1 \times i_{tot}, \text{ if } T_{2max} \leq T_{2N}$$

If $T_{2max} \geq T_{2N}$ the max. output torque T_{2N} of the unit is the decisive factor.

MOTOX Geared Motors

Parallel shaft geared motors

Transmission ratios and maximum torques

Selection and ordering data (continued)

Gearbox size	Ratio code	Transmission ratio	Output speed	Twisting angle ²⁾	Nominal torque	Permissible input torque T_1 [Nm]													
						2.5x the value is permissible for a brief period (e.g. motor starting torque)													
Max. gearbox torque	Order No. 15th and 16th position	i_{tot}	n_2 (50 Hz) rpm	φ arcmin	T_{2N} ($f_B=1$) Nm	Motor size													
						3	3	5	10	20	26	61	98	198	198	291	356	580	1290
Nm						63	71	80	90	100	112	132	160	180	200	225	250	280	315
FD.188B 20 000	U1	403.86 ★	3.6	6	20 000														
	T1	370.52	3.9	6	20 000														
	S1	341.94 ★	4.2	6	20 000														
	R1	317.18	4.6	6	20 000														
	Q1	299.20 ★	4.8	6	20 000														
	P1	279.86	5.2	6	20 000														
	N1	248.85 ★	5.8	6	20 000														
	M1	234.93	6.2	6	20 000														
	L1	210.89 ★	6.9	6	20 000														
	K1	193.56	7.5	6	20 000														
	J1	167.03	8.7	6	20 000														
	H1	146.11	9.9	6	20 000														
	G1	127.07	11.4	6	20 000														
	F1	111.49 ★	13.0	6	20 000														
	E1	94.28 ★	15.4	6	20 000														
	D1	85.54	17.0	6	20 000														
C1	74.58 ★	19.4	6	20 000															
B1	63.32	23.0	6	20 000															
A1	48.46 ★	30.0	6	20 000															
FZ.188B 14 190 ... 20 000	P1	52.63	28	5	16 580														
	N1	48.47	30	5	16 870														
	M1	42.07 ★	34	5	17 500														
	L1	37.08	39	5	17 510														
	K1	32.54	45	5	18 550														
	J1	29.33 ★	49	5	20 000														
	H1	24.90 ★	58	5	20 000														
	G1	23.13	63	5	20 000														
	F1	19.87 ★	73	5	19 790														
	E1	16.95	86	5	18 870														
	D1	13.35 ★	109	6	17 560														
	C1	10.74 ★	135	6	16 070														
	B1	9.34	155	6	14 990														
A1	8.34	174	6	14 190															

★ Preferred transmission ratio

¹⁾ Only possible with integrated motor.

²⁾ Twisting angle applies to reduced-backlash gearboxes.

In the case of gearboxes of size 28, only possible with integrated motor or input unit KQ and KQS.

Calculation of maximum output torque T_{2max} for gearboxes with input unit.

$$T_{2max} = T_1 \times i_{tot}, \text{ if } T_{2max} \leq T_{2N}$$

If $T_{2max} \geq T_{2N}$ the max. output torque T_{2N} of the unit is the decisive factor.

MOTOX Geared Motors

Parallel shaft geared motors

Transmission ratios and maximum torques

Selection and ordering data (continued)

Gearbox size	Ratio code	Transmission ratio	Output speed	Twisting angle ²⁾	Nominal torque	Permissible input torque T_1 [Nm]													
						2.5x the value is permissible for a brief period (e.g. motor starting torque)													
Max. gearbox torque	Order No. 15th and 16th position	i_{tot}	n_2 (50 Hz) rpm	φ arcmin	T_{2N} ($f_B=1$) Nm	3	3	5	10	20	26	61	98	198	198	291	356	580	1290
						Motor size													
Nm						63	71	80	90	100	112	132	160	180	200	225	250	280	315
FD.208-D68 34 000	V1	61 412	0.02	–	34 000	*	*												
	U1	54 347	0.03	–	34 000	*	*	*											
	T1	49 406	0.03	–	34 000	*	*	*											
	S1	44 383	0.03	–	34 000	*	*	*	*										
	R1	38 043	0.04	–	34 000	*	*	*	*	*									
	Q1	34 420	0.04	–	34 000	*	*	*	*	*	*								
	P1	31 772	0.04	–	34 000	*	*	*	*	*	*	*							
	N1	27 626	0.05	–	34 000	*	*	*	*	*	*	*	*						
	M1	25 083	0.06	–	34 000	*	*	*	*	*	*	*	*	*					
	L1	22 903	0.06	–	34 000	*	*	*	*	*	*	*	*	*	*				
	K1	21 014	0.07	–	34 000	*	*	*	*	*	*	*	*	*	*	*			
	J1	19 361	0.07	–	34 000	*	*	*	*	*	*	*	*	*	*	*	*		
	H1	17 583	0.08	–	34 000	*	*	*	*	*	*	*	*	*	*	*	*	*	
	G1	16 018	0.09	–	34 000	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	F1	14 674	0.10	–	34 000	*	*	*	*	*	*	*	*	*	*	*	*	*	*
E1	13 093	0.11	–	34 000	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
D1	11 685	0.12	–	34 000	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
C1	9 924	0.14	–	34 000	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
FD.208-Z68 34 000	X1	8 251	0.17	–	34 000		*	*	*	*	*								
	W1	7 536	0.19	–	34 000		*	*	*	*	*	*							
	V1	6 688	0.21	–	34 000		*	*	*	*	*	*	*						
	U1	6 173	0.23	–	34 000		*	*	*	*	*	*	*	*					
	T1	5 584	0.25	–	34 000		*	*	*	*	*	*	*	*	*				
	S1	5 142	0.27	–	34 000		*	*	*	*	*	*	*	*	*	*			
	R1	4 755	0.29	–	34 000		*	*	*	*	*	*	*	*	*	*	*		
	Q1	4 414	0.32	–	34 000		*	*	*	*	*	*	*	*	*	*	*	*	
	P1	3 895	0.36	–	34 000		*	*	*	*	*	*	*	*	*	*	*	*	*
	N1	3 596	0.39	–	34 000		*	*	*	*	*	*	*	*	*	*	*	*	*
	M1	3 222	0.43	–	34 000		*	*	*	*	*	*	*	*	*	*	*	*	*
	L1	2 970	0.47	–	34 000		*	*	*	*	*	*	*	*	*	*	*	*	*
	K1	2 492	0.56	–	34 000		*	*	*	*	*	*	*	*	*	*	*	*	*
	J1	2 126	0.66	–	34 000		*	*	*	*	*	*	*	*	*	*	*	*	*
	H1	1 772	0.79	–	34 000		*	*	*	*	*	*	*	*	*	*	*	*	*
	G1	1 469	0.95	–	34 000		*	*	*	*	*	*	*	*	*	*	*	*	*
	F1	1 296	1.08	–	34 000		*	*	*	*	*	*	*	*	*	*	*	*	*
E1	1 106	1.27	–	34 000		*	*	*	*	*	*	*	*	*	*	*	*	*	
D1	921	1.52	–	34 000		*	*	*	*	*	*	*	*	*	*	*	*	*	
C1	764	1.83	–	34 000		*	*	*	*	*	*	*	*	*	*	*	*	*	
FD.208-Z88 34 000	J1	694	2.02	–	34 000		*	*	*	*	*	*	*	*	*	*	*	*	
	H1	636	2.20	–	34 000		*	*	*	*	*	*	*	*	*	*	*	*	
	G1	543	2.58	–	34 000		*	*	*	*	*	*	*	*	*	*	*	*	
	F1	445	3.15	–	34 000		*	*	*	*	*	*	*	*	*	*	*	*	
	E1	406	3.45	–	34 000		*	*	*	*	*	*	*	*	*	*	*	*	
	D1	347	4.04	–	34 000		*	*	*	*	*	*	*	*	*	*	*	*	
C1	284	4.92	–	34 000		*	*	*	*	*	*	*	*	*	*	*	*		

★ Preferred transmission ratio

1) Only possible with integrated motor.

2) Twisting angle applies to reduced-backlash gearboxes.

In the case of gearboxes of size 28, only possible with integrated motor or input unit KQ and KQS.

Calculation of maximum output torque T_{2max} for gearboxes with input unit.

$$T_{2max} = T_1 \times i_{tot} \text{ if } T_{2max} \leq T_{2N}$$

If $T_{2max} \geq T_{2N}$ the max. output torque T_{2N} of the unit is the decisive factor.

MOTOX Geared Motors

Parallel shaft geared motors

Transmission ratios and maximum torques

Selection and ordering data (continued)

Gearbox size	Ratio code	Transmission ratio	Output speed	Twisting angle ²⁾	Nominal torque	Permissible input torque T_1 [Nm]													
						2.5x the value is permissible for a brief period (e.g. motor starting torque)													
Max. gearbox torque	Order No. 15th and 16th position	i_{tot}	n_2 (50 Hz) rpm	φ arcmin	T_{2N} ($f_B=1$) Nm	Motor size													
						3	3	5	10	20	26	61	98	198	198	291	356	580	1290
Nm						63	71	80	90	100	112	132	160	180	200	225	250	280	315
FD.208 29 901 ... 34 000	T1	242.01	6.1	5	34 000								*	*	*	*			
	S1	218.54	6.8	5	34 000								*	*	*	*	*		
	R1	204.81	7.2	5	34 000								*	*	*	*	*	*	
	Q1	175.92	8.4	5	34 000								*	*	*	*	*	*	*
	P1	151.99	9.7	5	34 000								*	*	*	*	*	*	*
	N1	134.16	11	5	34 000								*	*	*	*	*	*	*
	M1	120.77	12	5	34 000								*	*	*	*	*	*	*
	L1	100.21	15	5	34 000								*	*	*	*	*	*	*
	K1	91.38	16	5	34 000								*	*	*	*	*	*	*
	J1	80.17	18	5	34 000								*	*	*	*	*	*	*
	H1	68.90	21	5	34 000								*	*	*	*	*	*	*
	G1	53.66	28	5	34 000								*	*	*	*	*	*	*
	F1	42.63	35	5	34 000								*	*	*	*	*	*	*
	E1	38.84	38	5	34 000								*	*	*	*	*	*	*
	D1	30.25	49	6	32 038								*	*	*	*	*	*	*
C1	24.03	62	6	29 901								*	*	*	*	*	*	*	
FZ.208 25 469 ... 32 681	H1	20.06	74	5	32 681							*	*	*	*	*	*	*	
	G1	16.02	92	5	30 487							*	*	*	*	*	*	*	
	F1	13.09	113	5	28 634							*	*	*	*	*	*	*	
	E1	11.51	129	5	27 499							*	*	*	*	*	*	*	
	D1	10.57	140	5	26 785							*	*	*	*	*	*	*	
C1	9.01	164	5	25 469							*	*	*	*	*	*	*		

★ Preferred transmission ratio

¹⁾ Only possible with integrated motor.

²⁾ Twisting angle applies to reduced-backlash gearboxes.

In the case of gearboxes of size 28, only possible with integrated motor or input unit KQ and KQS.

Calculation of maximum output torque T_{2max} for gearboxes with input unit.

$$T_{2max} = T_1 \times i_{tot}, \text{ if } T_{2max} \leq T_{2N}$$

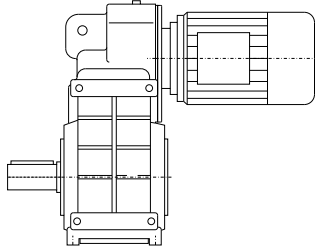
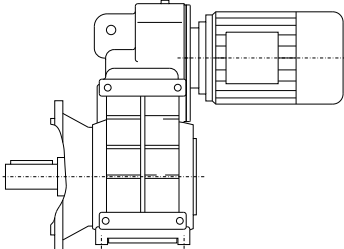
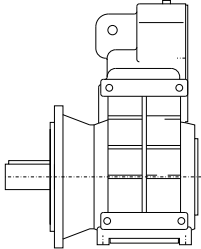
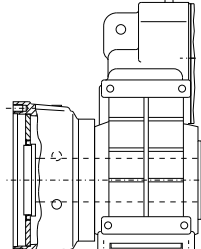
If $T_{2max} \geq T_{2N}$ the max. output torque T_{2N} of the unit is the decisive factor.

MOTOX Geared Motors

Parallel shaft geared motors

Mounting types

Selection and ordering data

Mounting type	Order No. 14th position	Code in type designation 3rd position for solid shaft, 4th position for hollow shaft	Representation
Foot-mounted design	A	-	
Housing flange (C-type)	H	Z	
Design with torque arm	D	D	
Flange-mounted design (A-type)	F	F	
Mixer flange	M	M	
Extruder flange	E	E	

3

Selection and ordering data (continued)

Parallel shaft gearbox with torque arm

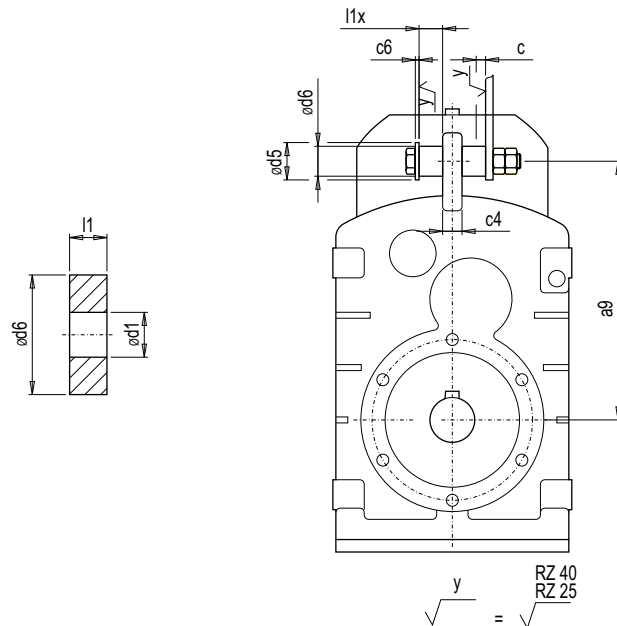
The rubber buffers (supplied loose) are used to flexibly support the gearbox on the housing plate provided. The rubber buffers are suitable for all mounting positions and can withstand temperatures of between -40 °C and $+80\text{ °C}$.

The rubber buffer must be stretched to the dimension $l1$ during installation.

Material: Natural rubber, hardness 70 ± 5 , Shore A.

Order No.: **D** in **14th position**

The shafts, mounting positions, and dimensions correspond to the design featuring a housing flange.



Gearbox type	a9	l1	l1x	d6	d1	d5	c6 _{min}	c4	c ^{*)}
F.28	140	15	14.0	30	10.5 + 0.5	40	2.0	10	1.8
F.38B	140	15	13.1	30	10.5 + 0.5	40	2.5	12	3.8
F.48B	185	20	18.2	40	12.5 + 0.5	50	3.0	12	3.7
F.68B	218	20	17.0	40	12.5 + 0.5	50	3.0	16	5.6
F.88B	278	30	27.2	60	21.0 + 0.5	75	4.0	20	5.0
F.108B	346	30	26.0	60	21.0 + 0.5	75	4.0	26	7.3
F.128B	395	40	35.8	80	25.0 + 0.5	100	6.0	30	8.0
F.148B	485	40	34.8	80	25.0 + 0.5	100	6.0	36	9.4
F.168B	550	50	46.2	120	31.0 + 0.5	140	8.0	50	6.2
F.188B	620	50	45.1	120	31.0 + 0.5	140	8.0	50	8.3

*) Spring compression at max. torque

MOTOX Geared Motors

Parallel shaft geared motors

Mounting types

Selection and ordering data (continued)

Parallel shaft gearbox with mixer flange, sizes 88 to 168

Heavy-duty design

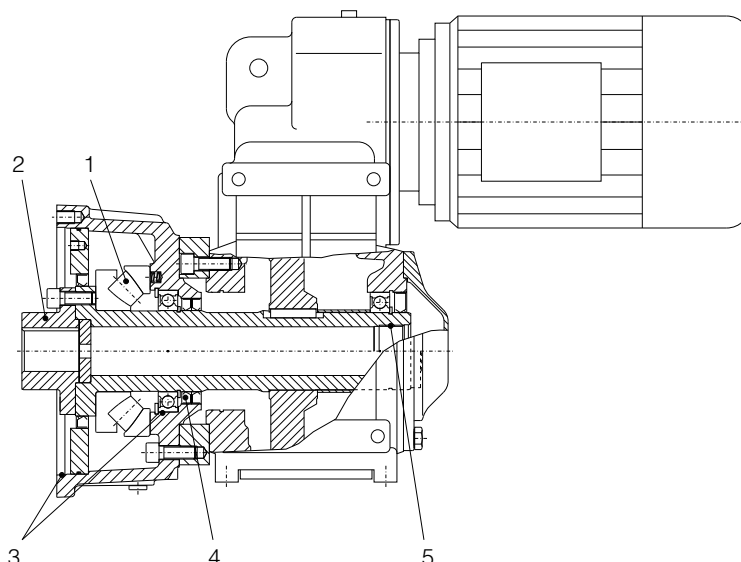
The mixer flange is fitted with a heavy-duty output bearing with a sizable bearing span for absorbing large radial and axial forces.

The optimized design ensures that no axial forces are transferred to the gearbox housing.

Bearing life can be calculated on request or using the MOTOX Configurator calculation program.

Parallel shaft gearbox with extruder flange, sizes 68 to 168

Gearboxes with an extruder flange are ideal for use in the extrusion industry, particularly in the low to medium performance range.



1. Large axial spherical roller bearing

294 series spherical roller bearing for heavy axial loads.

2. Simple, low-cost design

Flange hub supplied by customer, no grinding processes. Standard shaft-hub connection with feather key in acc. with DIN 6885/1.

3. Good radial eccentricity

Radial bearing hole and center hole created in one clamping operation and direction.

Area of application

Parallel shaft gearbox		F.AE 68B	F.AE 88B	F.AE 108B	F.AE 128B	F.AE 148B	F.AE 168B
Max. power	[kW]	9.2	15	30	45	55	90
Transmission ratio min./max.	[2-stage]	3.97 / 61.17	4.77 / 64.58	5.60 / 64.21	3.8 / 56.42	5.39 / 68.23	5.28 / 53.48
Max. torque	[Nm]	1 000	1 900	3 400	6 100	9 000	14 000
Max. axial forces	[kN]	65	105	180	260	400	580
Spherical roller bearing	[.]	29414E	29417E	29420E	29424E	29426E	29432E

4. Optimum lubrication

Extruder oil chamber separate from gearbox oil chamber.

5. Standard connection

Metric thread for supporting the extruder worm (worm pulled out from rear).

Selection and ordering data

Shaft design	Order No. 8th position	Order No. suffix	Shaft dimensions					
Parallel shaft gearbox FZ, 2-stage and FD, 3-stage, foot-mounted design								
Size			F.28	F.38B	F.48B	F.68B	F.88B	
Hollow shaft	5		H25 x 104 *)	H30 x 120 *)	H35 x 150 *)	H40 x 180 *)	H50 x 210 *)	
	6				H40 x 150	H45 x 180	H60 x 210	
Hollow shaft with shrink disk	9	H3A	H25 x 126 *)	H30 x 146 *)	H40 x 177	H50 x 209	H60 x 241	
	9	H3B		H30/31 x 146	H40/41 x 177	H50/51 x 209	H60/61 x 241	
	9	H3C			H35 x 177 *)	H40 x 209 *)	H50 x 241 *)	
	9	H3D				H40/42 x 209	H50/52 x 241	
Hollow shaft with splined shaft	9	H4A	N25x1.25x30x18x9H x 104	N35x1.25x30x26x9H x 120	N40x2x30x18x9H x 150	N50x2x30x24x9H x 180	N60x2x30x28x9H x 210	
Size			F.108B	F.128B	F.148B	F.168B	F.188B	F.208
Hollow shaft	5		H60 x 240 *)	H70 x 300 *)	H80 x 350	H100 x 410 *)	H120 x 500 *)	
	6		H70 x 240	H80 x 300	H90 x 350 *)	H110 x 410		
Hollow shaft with shrink disk	9	H3A	H70 x 280	H80 x 345	H95 x 404 *)	H105 x 483 *)	H125 x 580 *)	
	9	H3B	H70/71 x 280	H80/81 x 345	H95/96 x 404	H105/106 x 483		H145/146 x 728
	9	H3C	H65 x 280 *)	H75 x 345 *)				
	9	H3D	H65/66 x 280	H75/76 x 345				
Hollow shaft with splined shaft	9	H4A	N70x2x30x34x9H x 240	N80x3x30x25x9H x 300	N90x3x30x28x9H x 350	N110x3x30x35x9Hx410	N130x5x30x24x9H x 500	
Parallel shaft gearbox FZ.Z, 2-stage and FD.Z, 3-stage with housing flange								
Size			F..Z28	F..Z38B	F..Z48B	F..Z68B	F..Z88B	
Solid shaft with feather key	1		V25 x 50 *)	V25 x 50 *)	V30 x 60 *)	V40 x 80 *)	V50 x 100 *)	
	3			V35 x 70	V40 x 80	V50 x 100	V70 x 140	
	4					V35 x 70		
Hollow shaft	5		H25 x 104 *)	H30 x 120 *)	H35 x 150 *)	H40 x 180 *)	H50 x 210 *)	
	6				H40 x 150	H45 x 180	H60 x 210	
Hollow shaft with shrink disk	9	H3A	H25 x 126 *)	H30 x 146 *)	H40 x 177	H50 x 209	H60 x 241	
	9	H3B		H30/31 x 146	H40/41 x 177	H50/51 x 209	H60/61 x 241	
	9	H3C			H35 x 177 *)	H40 x 209 *)	H50 x 241 *)	
	9	H3D				H40/42 x 209	H50/52 x 241	
Hollow shaft with splined shaft	9	H4A	N25x1.25x30x18x9H x 104	N35x1.25x30x26x9H x 120	N40x2x30x18x9H x 150	N50x2x30x24x9H x 180	N60x2x30x28x9H x 210	
Size			F..Z108B	F..Z128B	F..Z148B	F..Z168B	F..Z188B	F.208
Solid shaft with feather key	1		V60 x 120 *)	V70 x 140 *)	V90 x 170 *)	V110 x 210 *)	V120 x 210 *)	V160 x 250 *)
	3		V80 x 170	V90 x 170	V100 x 210	V120 x 210	V140 x 250	
Hollow shaft	5		H60 x 240 *)	H70 x 300 *)	H80 x 350	H100 x 410	H120 x 500 *)	
	6		H70 x 240	H80 x 300	H90 x 350 *)	H110 x 410 *)		
Hollow shaft with shrink disk	9	H3A	H70 x 280	H80 x 345	H95 x 404 *)	H105 x 483 *)	H125 x 580 *)	
	9	H3B	H70/71 x 280	H80/81 x 345	H95/96 x 404	H105/106 x 483		H145/146 x 728
	9	H3C	H65 x 280 *)	H75 x 345 *)				
	9	H3D	H65/66 x 280	H75/76 x 345				
Hollow shaft with splined shaft	9	H4A	N70x2x30x34x9H x 240	N80x3x30x25x9H x 300	N90x3x30x28x9H x 350	N110x3x30x35x9H x 410	N130x5x30x24x9H x 500	

*) Preferred series

MOTOX Geared Motors

Parallel shaft geared motors

Shaft designs

Selection and ordering data (continued)

Shaft design	Order No. 8th position	Order No. suffix	Shaft dimensions				
Parallel shaft gearbox FZ.F, 2-stage and FD.F, 3-stage, flange-mounted design (A-type)							
Size			F..F28	F..F38B	F..F48B	F..F68B	F..F88B
Solid shaft with feather key	2		V25 x 50 (i2=l) *)	V25 x 50 (i2=l) *)	V30 x 60 (i2=l) *)	V40 x 80 (i2=l) *)	V50 x 100 (i2=l) *)
Hollow shaft	5		H25 x 104 *)	H30 x 120 *)	H35 x 150 *)	H40 x 180 *)	H50 x 210 *)
	6				H40 x 150	H45 x 180	H60 x 210
Hollow shaft with shrink disk	9	H3A	H25 x 126 *)	H30 x 146 *)	H40 x 177	H50 x 209	H60 x 241
	9	H3B		H30/31 x 146	H40/41 x 177	H50/51 x 209	H60/61 x 241
	9	H3C			H35 x 177 *)	H40 x 209 *)	H50 x 241 *)
	9	H3D				H40/42 x 209	H50/52 x 241
Hollow shaft with splined shaft	9	H4A	N25x1.25x30x18x9H x 104	N35x1.25x30x26x9H x 120	N40x2x30x18x9H x 150	N50x2x30x24x9H x 180	N60x2x30x28x9H x 210
Size			F..F108B	F..F128B	F..F148B	F..F168B	F..F188B
Solid shaft with feather key	2		V60 x 120 (i2=l) *)	V70 x 140 (i2=l) *)	V90 x 170 (i2=l) *)	V110 x 210 (i2=l) *)	V120 x 210 (i2=l) *)
Hollow shaft	5		H60 x 240 *)	H70 x 300 *)	H80 x 350	H100 x 410 *)	H120 x 500 *)
	6		H70 x 240	H80 x 300	H90 x 350 *)	H110 x 410	
Hollow shaft with shrink disk	9	H3A	H70 x 280	H80 x 345	H95 x 404 *)	H105 x 483 *)	H125 x 580 *)
	9	H3B	H70/71 x 280	H80/81 x 345	H95/96 x 404	H105/106 x 483	
	9	H3C	H65 x 280 *)	H75 x 345 *)			
	9	H3D	H65/66 x 280	H75/76 x 345			
Hollow shaft with splined shaft	9	H4A	N70x2x30x34x9H x 240	N80x3x30x25x9H x 300	N90x3x30x28x9H x 350	N110x3x30x35x9H x 410	N130x5x30x24x9H x 500

*) Preferred series

Shaft designs for parallel shaft gearbox with mixer flange

Shaft design	Order No. 8th position	Order No. suffix	Shaft dimensions				
Parallel shaft gearbox F..M, 2-stage and 3-stage							
Size			F..M88B	F..M108B	F..M128B	F..M148B	F..M168B
Solid shaft with feather key	3		V70 x 140	V80 x 170	V90 x 170	V100 x 210	V120 x 210
Hollow shaft	9	H2F	H60 x 321	H70 x 366	H80 x 456	H90 x 524	H110 x 609

Shaft designs for parallel shaft gearbox with extruder flange

Shaft design	Order No. 8th position	Order No. suffix	Shaft dimensions					
Parallel shaft gearbox F..E, 2-stage and 3-stage								
Size			F..AE68	F..AE88	F..AE108	F..AE128	F..AE148	F..AE168
Hollow shaft	9	H2A	H20 x 48	H30 x 58	H40 x 71	H45 x 87	H60 x 95	H70 x 105
	9	H2B	H25 x 48	H35 x 58	H45 x 71	H50 x 87	H70 x 95	H80 x 105
	9	H2C	H30 x 48 *)	H40 x 58 *)	H50 x 71 *)	H60 x 87 *)	H75 x 95 *)	H90 x 105 *)

*) Preferred series

MOTOX Geared Motors

Parallel shaft geared motors

Flange-mounted designs (A-type)

Selection and ordering data

Order code	Flange diameter									
Parallel shaft gearbox FZ.F, 2-stage										
Size	FZ.F28	FZ.F38B	FZ.F48B	FZ.F68B	FZ.F88B	FZ.F108B	FZ.F128B	FZ.F148B	FZ.F168B	FZ.F188B
H02	120	160	200	250	300	350		450		660
H03	160						450		550	
Parallel shaft gearbox FD.F, 3-stage										
Size	FD.F28	FD.F38B	FD.F48B	FD.F68B	FD.F88B	FD.F108B	FD.F128B	FD.F148B	FD.F168B	FD.F188B
H02	120	160	200	250	300	350		450		660
H03	160						450		550	

MOTOX Geared Motors

Parallel shaft geared motors

Mounting types and mounting positions

Selection and ordering data

The mounting type / mounting position must be specified when you place your order to ensure that the gearbox is supplied with the correct quantity of oil.





Please contact customer service to discuss the oil quantity if you wish to use a mounting position which is not shown here.

Position of the terminal box

The terminal box of the motor can be mounted in four different positions. See Chapter 8 for an accurate representation of the terminal box position and the corresponding order codes.

2-stage and 3-stage parallel shaft gearbox, foot-mounted design, flange-mounted design, and with housing flange

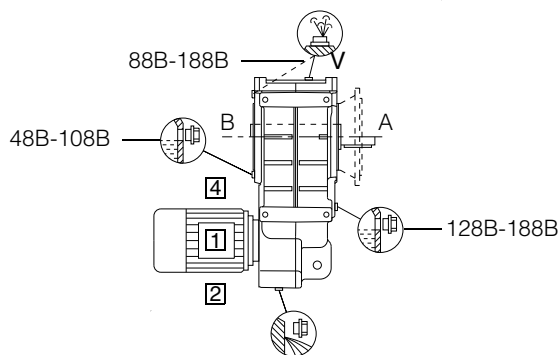
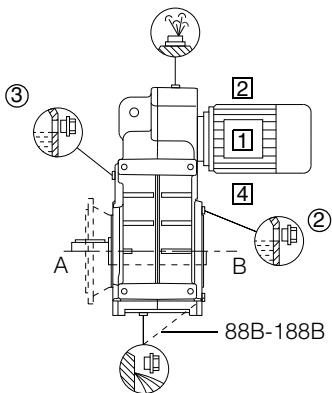
Oil control valves:

- Size 28: These types are lubricated for life. No ventilation, oil level, or drain plugs are present.
- Size 38B: V Oil inlet
- From size 48B up:  Oil level  Ventilation  Oil drain  Oil dipstick - - - alternative
- ② 2-stage gearbox ③ 3-stage gearbox * On opposite side A,B position of the customer's solid/plug-in shaft

1 ... 4 Position of the terminal box, see Chapter 8.

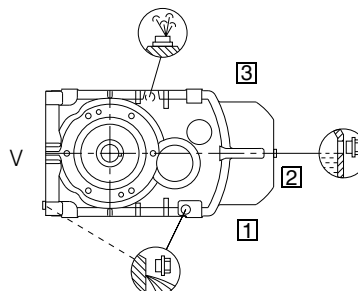
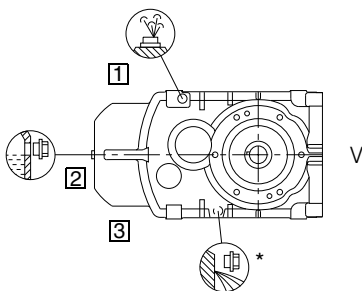
F,Z, F,F: B5-01 (IM B5-01) ¹⁾
 Order code (output side A): **D22**
 F,AZ, F,AF: H-01 ¹⁾
 Order code (output side A): **D76**

1) Standard mounting type
 F,Z, F,F: B5-03 (IM B5-03)
 Order code (output side A): **D32**
 F,AZ, F,AF: H-02
 Order code (output side A): **D78**



F,Z, F,F: B5-02 (IM B5-02)
 Order code (output side A): **D27**
 F,AZ, F,AF: H-03
 Order code (output side A): **D80**





F,Z, F,F: B5-00 (IM B5-00)
 Order code (output side A): **D18**
 F,AZ, F,AF: H-04
 Order code (output side A): **D82**



Selection and ordering data (continued)

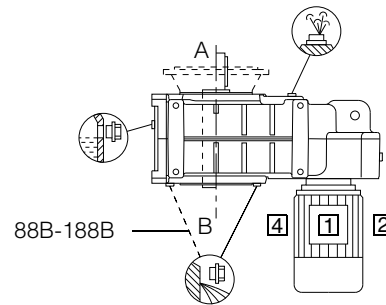
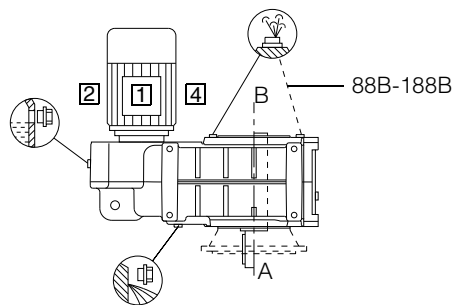
2-stage and 3-stage parallel shaft gearbox, foot-mounted design, flange-mounted design and with housing flange

Oil control valves:

- Size 28: These types are lubricated for life. No ventilation, oil level, or drain plugs are present.
- Size 38B: V Oil inlet
- From size 48B up:  Oil level  Ventilation  Oil drain  Oil dipstick - - - - Alternative
- ② 2-stage gearbox ③ 3-stage gearbox * On opposite side A,B position of the customer's solid/plug-in shaft
- ① ... ④ Position of the terminal box, see Chapter 8.

F.Z, F.F: V1-00 (IM V1-00)
Order code (output side A): **D90**
F.AZ, F.AF: H-05
Order code (output side A): **D84**

F.Z, F.F: V3-00 (IM V3-00)
Order code (output side A): **D98**
F.AZ, F.AF: H-06
Order code (output side A): **D86**



2-stage and 3-stage parallel shaft gearbox with mixer flange (FZ.M/FD.M)

Mounting positions correspond to those of standard gearboxes.

2-stage and 3-stage parallel shaft gearbox with extruder flange (FZAE/FDAE)

Mounting positions correspond to those of standard gearboxes with hollow shaft.

MOTOX Geared Motors

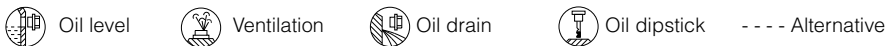
Parallel shaft geared motors

Mounting types and mounting positions

Selection and ordering data (continued)

2-stage and 3-stage parallel shaft gearbox, foot-mounted design, flange-mounted design, and with housing flange for size 208

Oil control valves:

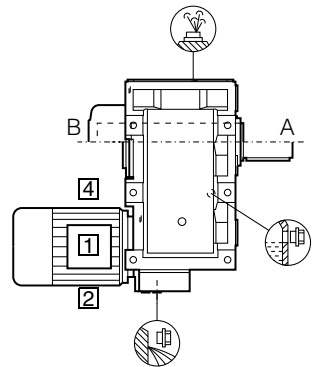
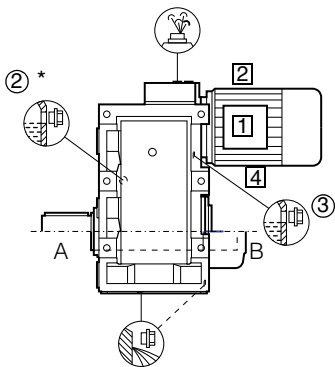


② 2-stage gearbox ③ 3-stage gearbox ④ Tandem gearbox * On opposite side A,B position of the customer's solid/plug-in shaft

1 ... 4 Position of the terminal box, see Chapter 8.

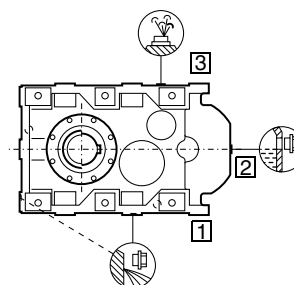
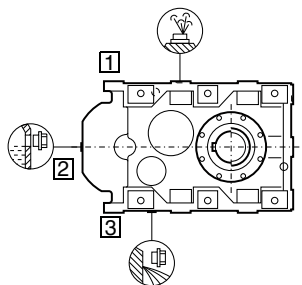
F.Z: B5-01 (IM B5-01) ¹⁾
 Order code (output side A): **D22**
 F.A.: H-01 ¹⁾
 Order code (output side A): **D76**

F.Z: B5-03 (IM B5-03)
 Order code (output side A): **D32**
 F.A.: H-02
 Order code (output side A): **D78**



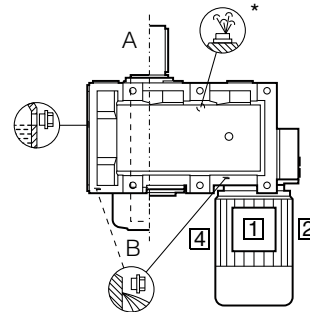
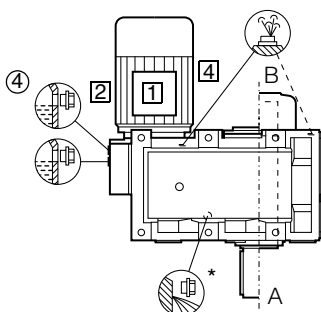
F.Z: B5-02 (IM B5-02)
 Order code (output side A): **D27**
 F.A.: H-03
 Order code (output side A): **D80**

F.Z: B5-00 (IM B5-00)
 Order code (output side A): **D18**
 F.A.: H-04
 Order code (output side A): **D82**



F.Z: V1-00 (IM V1-00)
 Order code (output side A): **D90**
 F.A.: H-05
 Order code (output side A): **D84**

F.Z: V3-00 (IM V3-00)
 Order code (output side A): **D98**
 F.A.: H-06
 Order code (output side A): **D86**



Selection and ordering data (continued)

Parallel shaft tandem gearbox

The mounting type / mounting position of the tandem gearbox corresponds to that of the main gearbox. The figures below are only designed to show the position of the oil control valves of the 2nd gearbox.

Note:

In a horizontal operating position the bulging part of the housing of the 2nd gearbox generally faces vertically downwards.

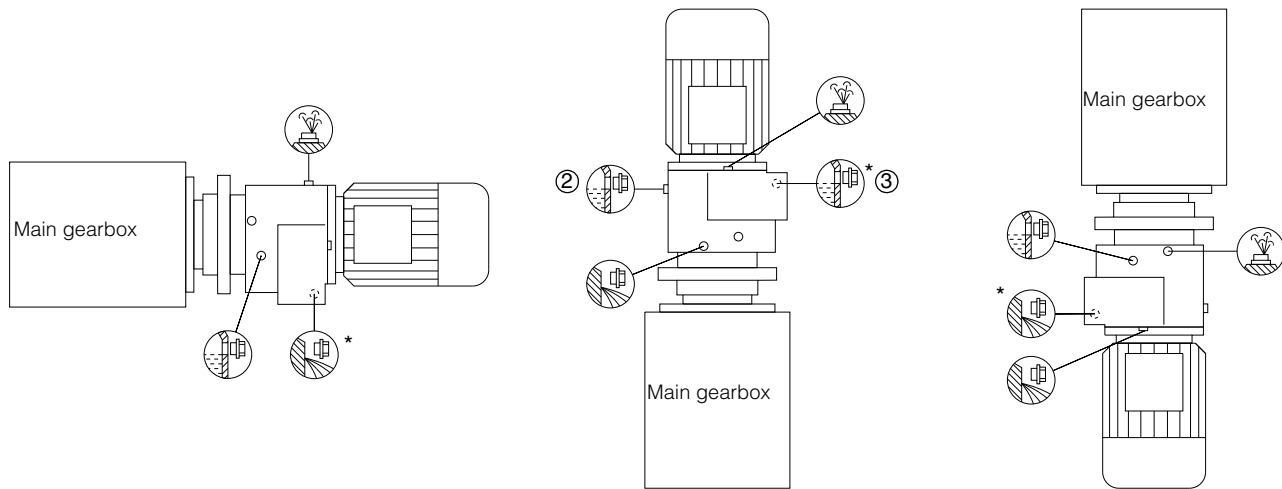
Oil control valves:

- Size 28/38 (2nd gearbox): These types are lubricated for life. No ventilation, oil level, or drain plugs are present.

- From size 48B up:  Oil level  Ventilation  Oil drain * On opposite side

② 2-stage gearbox

③ 3-stage gearbox



MOTOX Geared Motors

Parallel shaft geared motors

Special versions

Lubricants

Parallel shaft gearboxes are filled with mineral oil as standard.

If the gearbox is to be used in an application with special requirements, the lubricants listed in the table below can be used.

Area of application	Ambient temperature ¹⁾	DIN ISO designation	Order code
Standard oils			
Standard temperature	-10 ... +40 °C	CLP ISO VG220	K06
Improved oil service life	-20 ... +50 °C	CLP ISO PG VG220	K07
High temperature usage	0 ... +60 °C	CLP ISO PG VG460	K08
Low temperature usage	-40 ... +40 °C	CLP ISO PAO VG220	²⁾
Lowest temperature usage	-40 ... +10 °C	CLP ISO PAO VG68	²⁾
Physiologically safe oils (for use in the food industry) in acc. with NSF (USDA)-H1			
Standard temperature	-30 ... +40 °C	CLP ISO H1 VG460	K11
Biologically degradable oils			
Standard temperature	-20 ... +40 °C	CLP ISO E VG220	K10

¹⁾ Recommendation

²⁾ On request

Size 28 does not feature any ventilation, oil level, or drain plugs. The lubricant does not need to be changed, due to the low thermal load the gearbox is subjected to.

Parallel shaft gearboxes of size 38B have an oil screw; these gearboxes do not require ventilation or ventilation elements.

Gearboxes of sizes 48B to 188B are fitted with filler, oil level, and drain plugs as standard. The ventilation and vent filter, which is delivered loose, must be attached in place of the filler plug prior to startup.

Oil level control

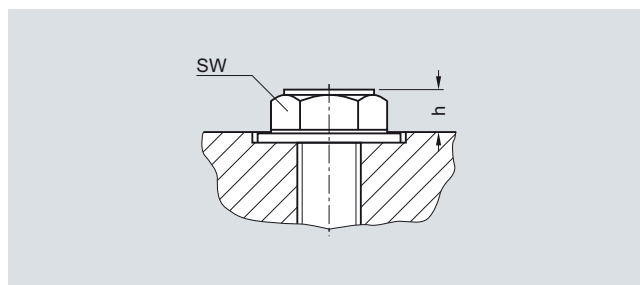
Oil sight glass

For size 48B and above, gearboxes can be equipped with a visual oil level indicator (oil sight glass) for most mounting types and mounting positions.

Order code:

Oil sight glass **G34**

Size	SW (Wrench width)	h
FD./FZ.48B ... FD./FZ.128B	19	8
FD./FZ.148B ... FD./FZ.188B	24	8
FD./FZ.208	32	11



Electrical oil level monitoring system

If required, the gearbox can be supplied with an electrical oil level monitoring system, which enables the oil level of the gearbox to be monitored remotely. The oil level is monitored by a capacitive sensor only when the gearbox starts up; it is not measured continuously.

Gearbox ventilation

The positions of the ventilation and ventilation elements can be seen on the mounting position diagrams.

If required, a pressure ventilation valve can be used for size 48B and above.

Vent filter:

Size	d	d1	c	h
FD./FZ.48B ... FD./FZ.128B	27	22	4.0	20.0
FD./FZ.148B ... FD./FZ.188B	32	32	4.0	24.0
FD./FZ.208	45	40	6.5	23.5

Pressure ventilation valve:

Size	SW (Wrench width)	d2	h1
FD./FZ.48B ... FD./FZ.128B	17	11	15.0
FD./FZ.148B ... FD./FZ.188B	24	11	14.0
FD./FZ.208	27	11	29.5

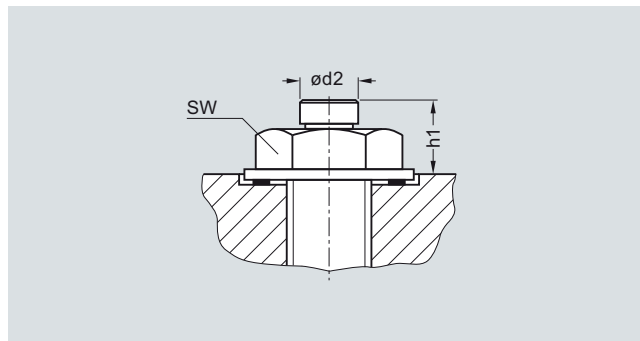
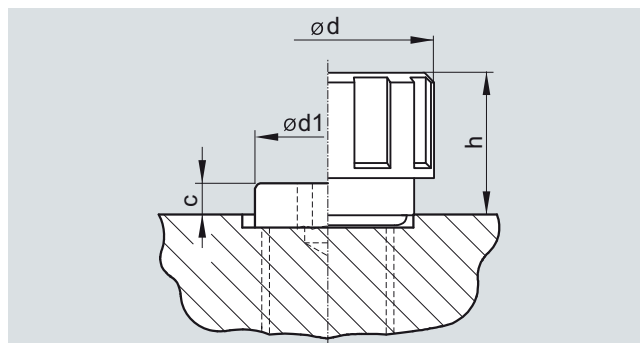
Order code:

Vent filter

G44

Pressure ventilation valve

G45



Oil drain

Magnetic oil drain plug

A magnetic oil drain plug for inserting in the oil drainage hole is available on request for parallel shaft gearboxes of size 48B and above. This serves to collect any grit contained in the gear lubricant.

Order code:

Magnetic oil drain plug **G53**

Oil drain valve

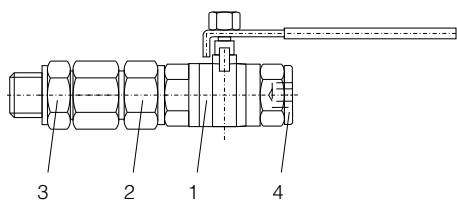
An oil drain valve is available on request for parallel shaft gearboxes of size 48B and above.

The oil drain valve may be designed as a complete unit featuring a screw plug, depending on the corresponding mounting position.

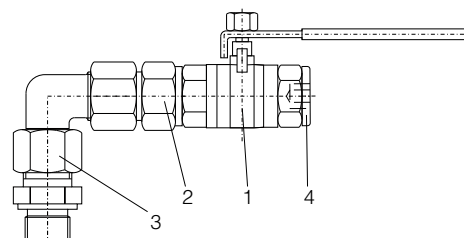
Order code:

Oil drain valve, straight **G54**

An angled oil drain valve is also available on request.



Item 1 Oil drain valve
Item 2 Screwed connection EGE
Item 3 Screwed connection GE
Item 4 Screw plug



Item 1 Oil drain valve
Item 2 Screwed connection EGE
Item 3 Screwed connection GE
Item 4 Screw plug

MOTOX Geared Motors

Parallel shaft geared motors

Special versions

Sealing

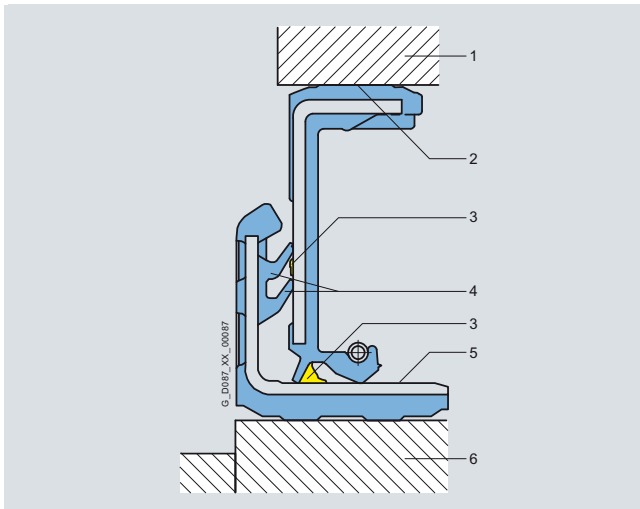
Combination shaft sealing

A combination shaft sealing, which helps to prevent oil from leaking, is available for parallel shaft gearboxes of sizes 38B to 168B.

A combination shaft sealing is particularly well suited to external use.

Order code:

Combination shaft sealing **G24**



- 1 • Housing
- 2 • Rubberized inner and outer diameter
- 3 • Grease filling prevents dry running of the sealing lips
- 4 • Additional sealing lips to protect against dirt
 - Decoupled sealing system prevents scoring of the shaft as a result of corrosion or dirt
- 5 • Protected running surface for radial shaft sealing ring
 - No damage when mounting
- 6 • Shaft

Double sealing

Double sealing is possible for parallel shaft gearboxes of sizes 28 and 188B. Double sealing is particularly well suited to external use.

Order code:

Double sealing MSS1 (size 28)

G23

Double radial shaft seal (sizes 188B)

G22+G31

High temperature resistant sealing

High temperature resistant sealings (Viton/fluorinated rubber) for high operating and ambient temperatures of +60 °C and above are available for parallel shaft gearboxes.

Order code:

High temperature resistant sealing **G25**

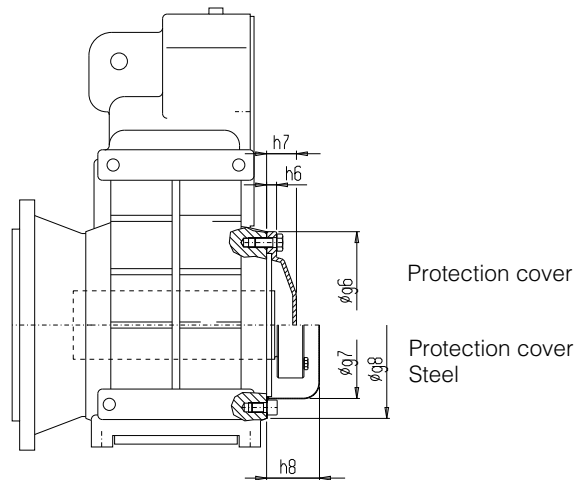
Hollow shaft cover (protection cover)

Gearboxes with hollow shaft are delivered with a plastic sealing cap as standard.

If required, they can be fitted with a fixed protection cover. Gearboxes of size 28 are fitted with a steel protection cover as standard.

The steel protection cover can only be used for gearboxes with hollow shaft and shrink disk.

For outdoor applications we recommend the ATEX versions.



F.A, F.AF, F.AZ, F.AS ¹⁾, F.AFS ¹⁾, F.AZS ¹⁾, F.AT, F.AFT, F.AZT

¹⁾ Only a steel protection cover is available for F.AS, F.ADS, F.AFS, and F.AZS

Order codes:

Protection cover	G62
Protection cover (ATEX)	G63
Steel protection cover	G60
Steel protection cover (ATEX)	G61

Gearbox type	Steel protection cover			Protection cover		
	g7	g8	h8	g6	h6	h7
F.28	58.0	102	33.5	–	–	–
F.38B	82.2	115	40.0	120	10	33
F.48B	99.0	130	44.0	132	10	33
F.68B	115.0	150	62.5	150	10	37
F.88B	137.0	190	70.0	190	13	50
F.108B	187.0	240	80.0	245	13	55
F.128B	233.0	292	85.0	295	16	48
F.148B	257.5	334	100.0	335	13	50
F.168B	309.5	390	129.5	400	13	50
F.188B	309.5	390	129.5	400	13	50
F.208	373.0	373	179.0	–	–	–

Radially reinforced output shaft bearings

The bearings of the MOTOX gearboxes are dimensioned such that they are strong enough to withstand most application cases.

However, the gearboxes can be fitted with a reinforced output shaft bearing arrangement for applications with particularly high radial forces.

Order code:

Radially reinforced output shaft bearings **G20**

MOTOX Geared Motors

Parallel shaft geared motors

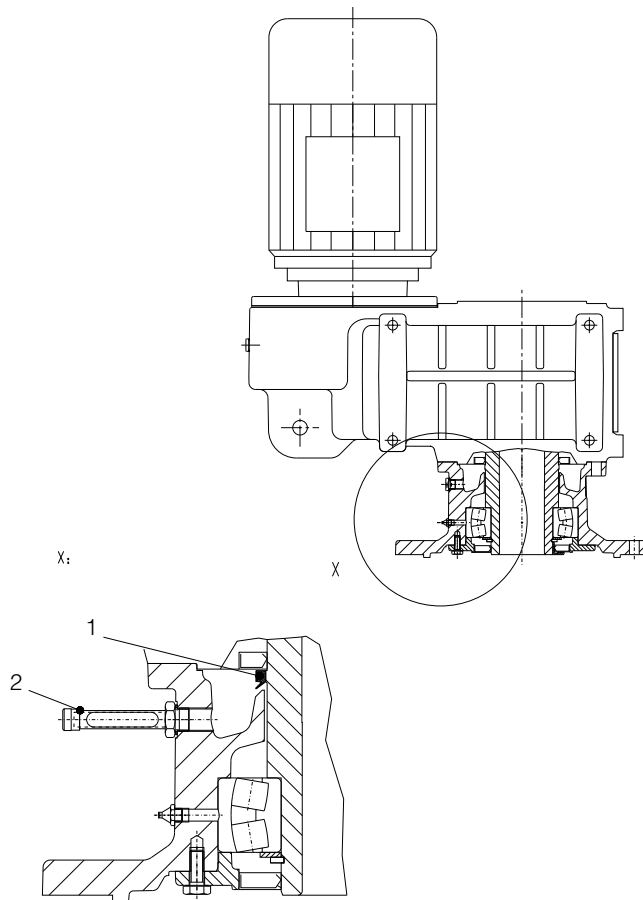
Special versions

Mixer flange in dry-well design

The agitator flange can be fitted with an additional "V" ring (1) in mounting position V1-00 in order to drain off any leak oil to a safety chamber and protect the equipment against the effects of leakages.

The oil can either be viewed through a sight glass, or its presence indicated by an electrical sensor (2).

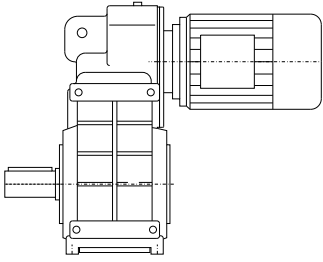
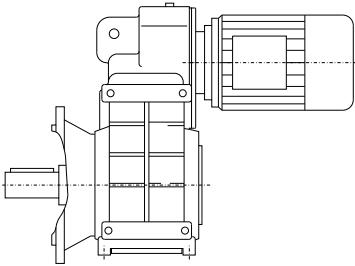
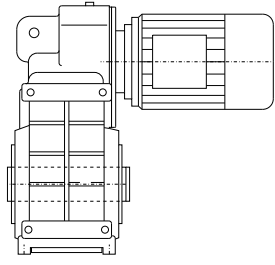
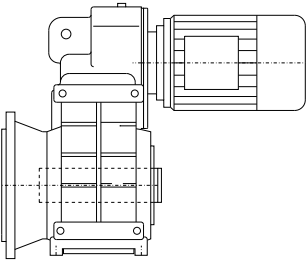
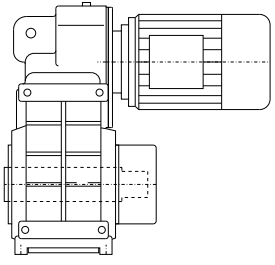
Order codes:
 Dry-well design with sight glass **G89**
 Dry-well design with sensor **G90**



Regreasing device for the mixer flange

The mixer gearbox can be fitted with a regreasing device on request.

Dimension drawing overview

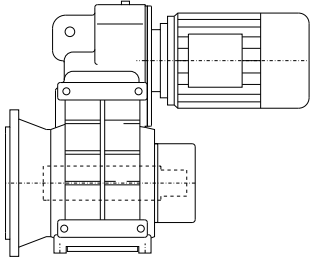
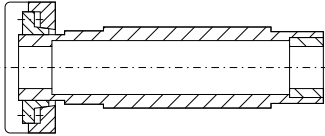
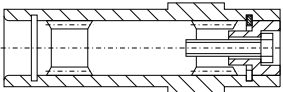
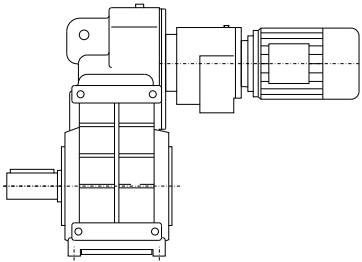
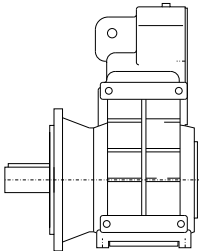
Representation	Gearbox type	Dimension drawing on page
	F.Z28	3/104
	F.Z38B	3/110
	F.Z48B	3/116
	F.Z68B	3/122
	F.Z88B	3/128
	F.Z108B	3/134
	F.Z128B	3/140
	F.Z148B	3/146
	F.Z168B	3/152
	F.Z188B	3/158
	F.Z208	3/164
		F.F28
F.F38B		3/111
F.F48B		3/117
F.F68B		3/123
F.F88B		3/129
F.F108B		3/135
F.F128B		3/141
F.F148B		3/147
F.F168B		3/153
F.F188B		3/159
	F.A28 / F.AZ28	3/106
	F.A38B / F.AZ38B	3/112
	F.A48B / F.AZ48B	3/118
	F.A68B / F.AZ68B	3/124
	F.A88B / F.AZ88B	3/130
	F.A108B / F.AZ108B	3/136
	F.A128B / F.AZ128B	3/142
	F.A148B / F.AZ148B	3/148
	F.A168B / F.AZ168B	3/154
	F.A188B / F.AZ188B	3/160
	F.AF28	3/107
	F.AF38B	3/113
	F.AF48B	3/119
	F.AF68B	3/125
	F.AF88B	3/131
	F.AF108B	3/137
	F.AF128B	3/143
	F.AF148B	3/149
	F.AF168B	3/155
	F.AF188B	3/161
	F.AS28 / F.AZS28	3/108
	F.AS38B / F.AZS38B	3/114
	F.AS48B / F.AZS48B	3/120
	F.AS68B / F.AZS68B	3/126
	F.AS88B / F.AZS88B	3/132
	F.AS108B / F.AZS108B	3/138
	F.AS128B / F.AZS128B	3/144
	F.AS148B / F.AZS148B	3/150
	F.AS168B / F.AZS168B	3/156
	F.AS188B / F.AZS188B	3/162
F.AS1208 / F.AZS208	3/165	

MOTOX Geared Motors

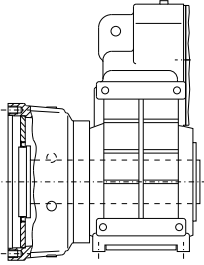
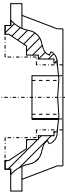
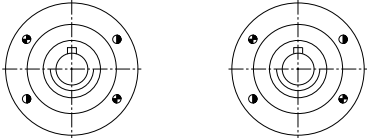
Parallel shaft geared motors

Dimensions

Dimension drawing overview (continued)

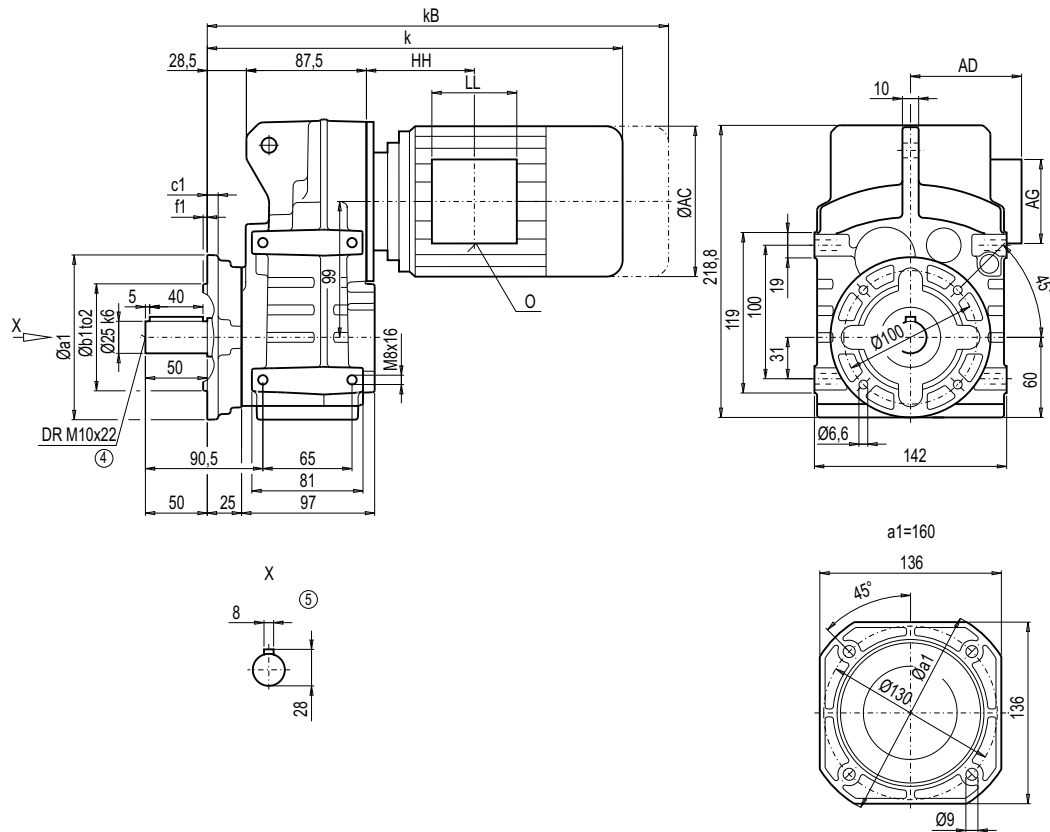
Representation	Gearbox type	Dimension drawing on page
	F.AFS28	3/109
	F.AFS38B	3/115
	F.AFS48B	3/121
	F.AFS68B	3/127
	F.AFS88B	3/133
	F.AFS108B	3/139
	F.AFS128B	3/145
	F.AFS148B	3/151
	F.AFS168B	3/157
	F.AFS188B	3/163
	F.A.S38B ... F.A.S188B	3/168
	F.A.T38B ... F.A.T188B	3/169
	F.38B-Z28 ... F.188B-Z68	3/170
	F.M88B ... F.M168B	3/174

Dimension drawing overview (continued)

Representation	Gearbox type	Dimension drawing on page
	F.E88B ... F.E168B	3/176
	Additional flange-mounted design	3/178
	Pin holes	3/179

Gearbox FDF/FZF28 (3- / 2-stage), flange-mounted design (A-type)

FF012



Flange	a1	b1	to2	c1	f1
A120	120	80	j6	8	3.0
A160	160	110	j6	9	3.5

Motor	F.F28								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDF28	FZF28
LA71	318.5	373.5	139.0	146	90	90	58.5	M20x1.5/M25x1.5	11	10
LA71Z	337.5	392.5	139.0	146	90	90	58.5	M20x1.5/M25x1.5	11	10
LA80	420.5	474.0	156.5	155	90	90	123.0	M20x1.5/M25x1.5	15	15
LA80Z	443.0	506.5	156.5	155	90	90	196.0	M20x1.5/M25x1.5	19	19
LA90S/L	415.5	486.5	174.0	163	90	90	87.0	M20x1.5/M25x1.5	20	20
LA90ZL	460.5	531.5	174.0	163	90	90	211.0	M20x1.5/M25x1.5	29	29
LA100L	497.5	578.5	195.0	168	120	120	163.5	2xM32x1.5	-	29
LA100ZL	567.5	648.5	195.0	168	120	120	295.5	2xM32x1.5	-	39

④ DIN 332

⑤ Feather key / keyway DIN 6885

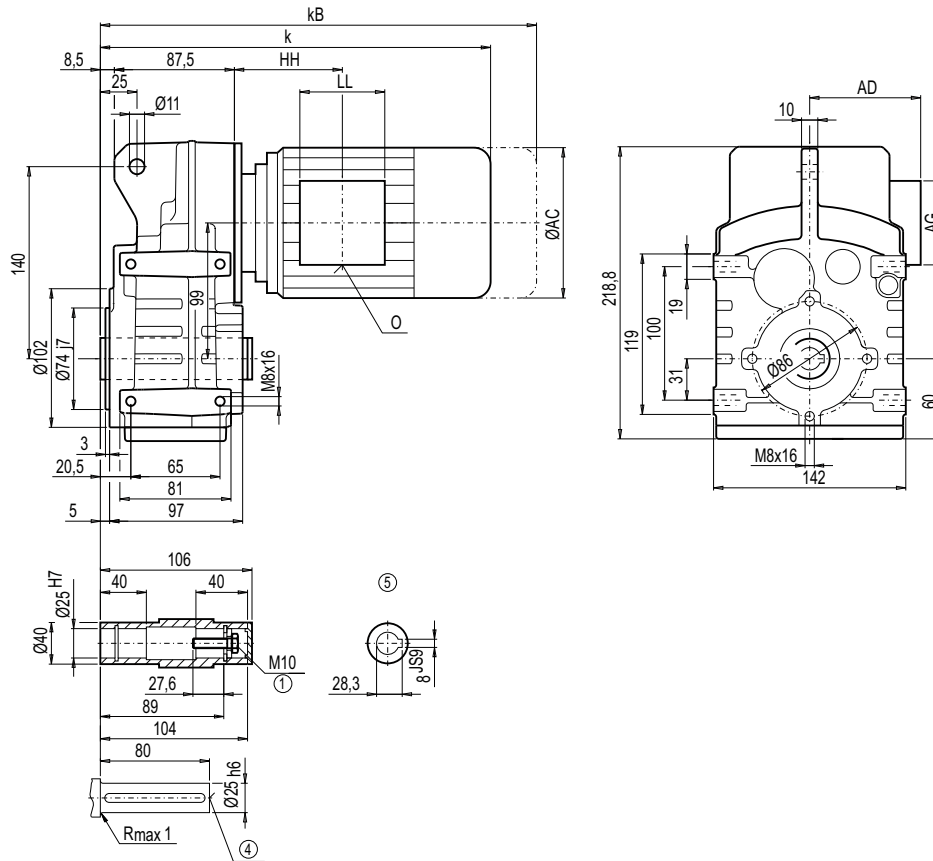
MOTOX Geared Motors

Parallel shaft geared motors

Dimensions

Gearbox FDA/FZA28, FDAZ/FZAZ28 (3- / 2-stage), housing-flange-mounted design (C-type)

FA012
FAZ012



Motor	F.A.28									Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDA.28	FZA.28	
LA71	299.5	354.5	139.0	146	90	90	58.5	M20x1.5/M25x1.5	10	9	
LA71Z	318.5	373.5	139.0	146	90	90	58.5	M20x1.5/M25x1.5	10	9	
LA80	401.5	465.0	156.5	155	90	90	123.0	M20x1.5/M25x1.5	15	15	
LA80Z	424.0	487.5	156.5	155	90	90	196.0	M20x1.5/M25x1.5	19	19	
LA90S/L	396.5	467.5	174.0	163	90	90	87.0	M20x1.5/M25x1.5	19	19	
LA90ZL	441.5	512.5	174.0	163	90	90	211.0	M20x1.5/M25x1.5	28	28	
LA100L	478.5	559.5	195.0	168	120	120	163.5	2xM32x1.5	-	28	
LA100ZL	548.5	629.5	195.0	168	120	120	295.5	2xM32x1.5	-	38	

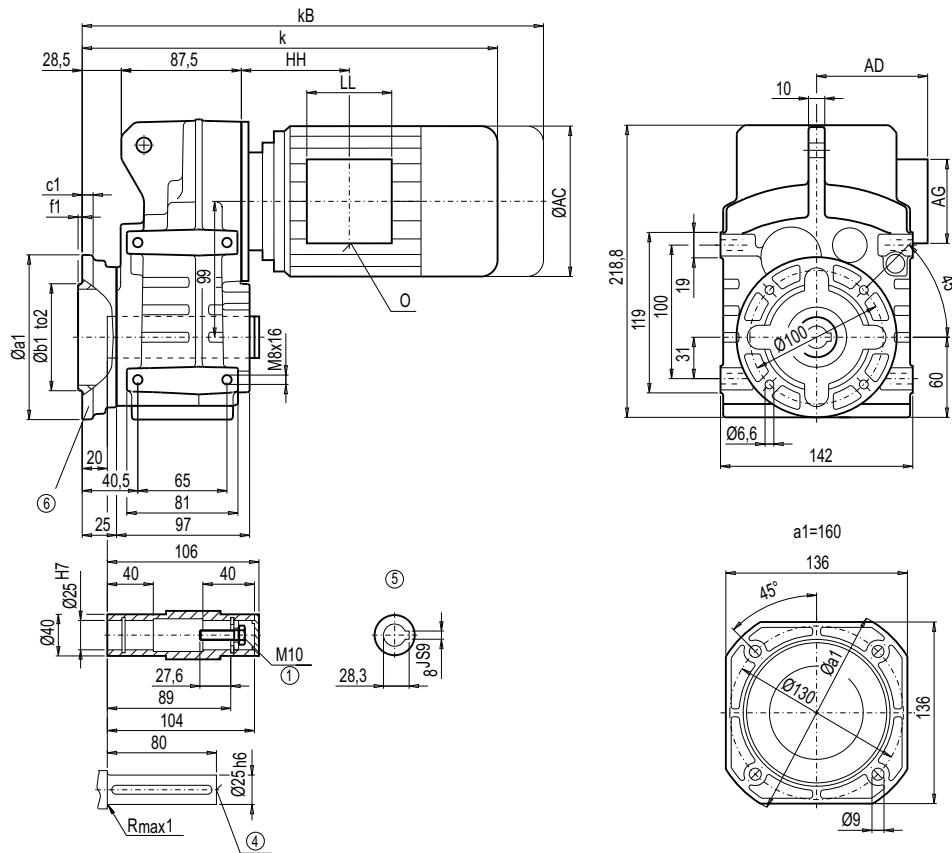
① DIN EN ISO 4017

④ DIN 332

⑤ Feather key / keyway DIN 6885

Gearbox FDAF/FZAF28 (3- / 2-stage), flange-mounted design

FAF012



Flange	a1	b1	to2	c1	f1
A120	120	80	j6	8	3.0
A160	160	110	j6	9	3.5

Motor	F.AF28								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDAF28	FZAF28
LA71	318.5	373.5	139.0	146	90	90	58.5	M20x1.5/M25x1.5	10	9
LA71Z	337.5	392.5	139.0	146	90	90	58.5	M20x1.5/M25x1.5	10	9
LA80	420.5	474.0	156.5	155	90	90	123.0	M20x1.5/M25x1.5	15	15
LA80Z	443.0	506.5	156.5	155	90	90	196.0	M20x1.5/M25x1.5	19	19
LA90S/L	415.5	486.5	174.0	163	90	90	87.0	M20x1.5/M25x1.5	19	19
LA90ZL	460.5	531.5	174.0	163	90	90	211.0	M20x1.5/M25x1.5	28	28
LA100L	497.5	578.5	195.0	168	120	120	163.5	2xM32x1.5	-	28
LA100ZL	567.5	648.5	195.0	168	120	120	295.5	2xM32x1.5	-	38

① DIN EN ISO 4017

④ DIN 332

⑤ Feather key / keyway DIN 6885

⑥ For note, see page 3/178

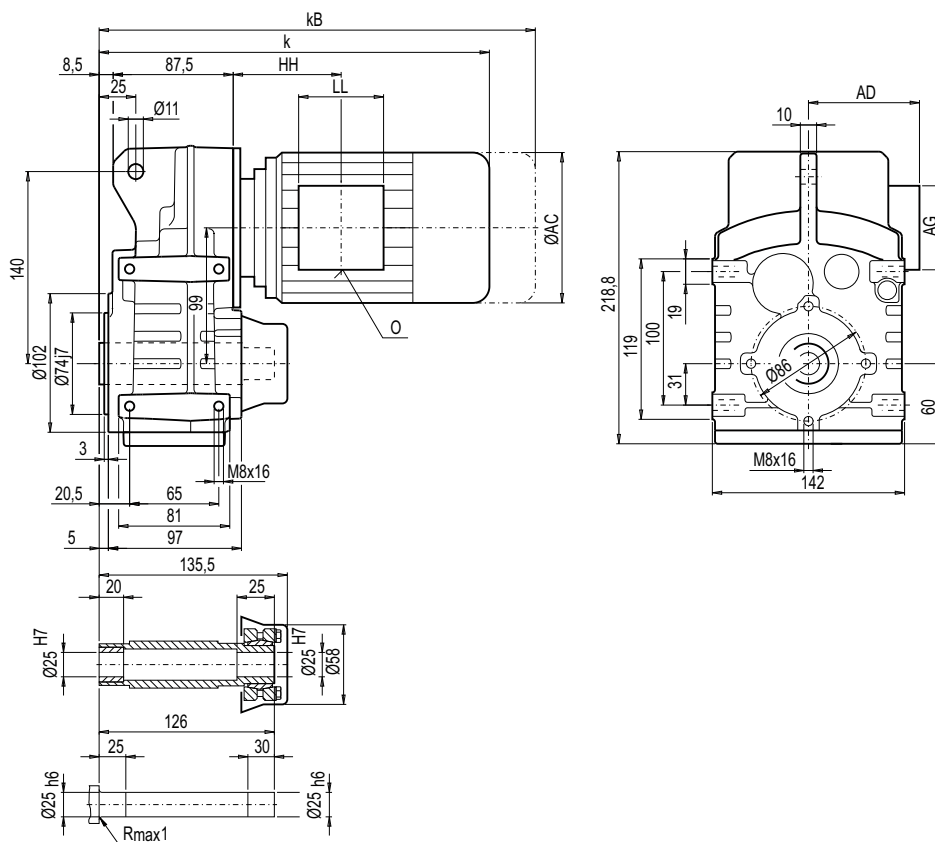
MOTOX Geared Motors

Parallel shaft geared motors

Dimensions

Gearbox FDAS/FZAS28, FDAZS/FZAZS28 (3- / 2-stage) shaft-mounted design with shrink disk

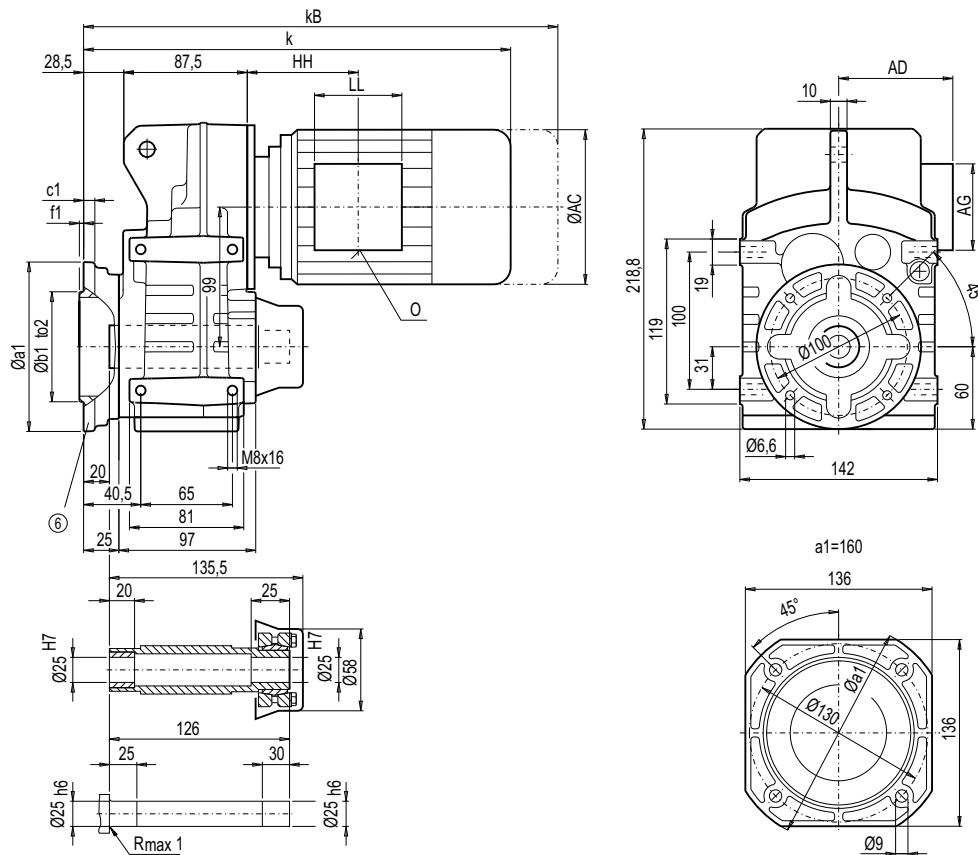
FAS012
FAZS012



Motor	F.A.S28								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDA.S28	FZA.S28
LA71	299.5	354.5	139.0	146	90	90	58.5	M20x1.5/M25x1.5	10	9
LA71Z	318.5	373.5	139.0	146	90	90	58.5	M20x1.5/M25x1.5	10	9
LA80	401.5	465.0	156.5	155	90	90	123.0	M20x1.5/M25x1.5	15	15
LA80Z	424.0	487.5	156.5	155	90	90	196.0	M20x1.5/M25x1.5	19	19
LA90S/L	396.5	467.5	174.0	163	90	90	87.0	M20x1.5/M25x1.5	19	19
LA90ZL	441.5	512.5	174.0	163	90	90	211.0	M20x1.5/M25x1.5	28	28
LA100L	478.5	559.5	195.0	168	120	120	163.5	2xM32x1.5	-	28
LA100ZL	548.5	629.5	195.0	168	120	120	295.5	2xM32x1.5	-	38

Gearbox FDAFS/FZAFS28 (3- / 2-stage), flange-mounted design and shrink disk

FAFS012



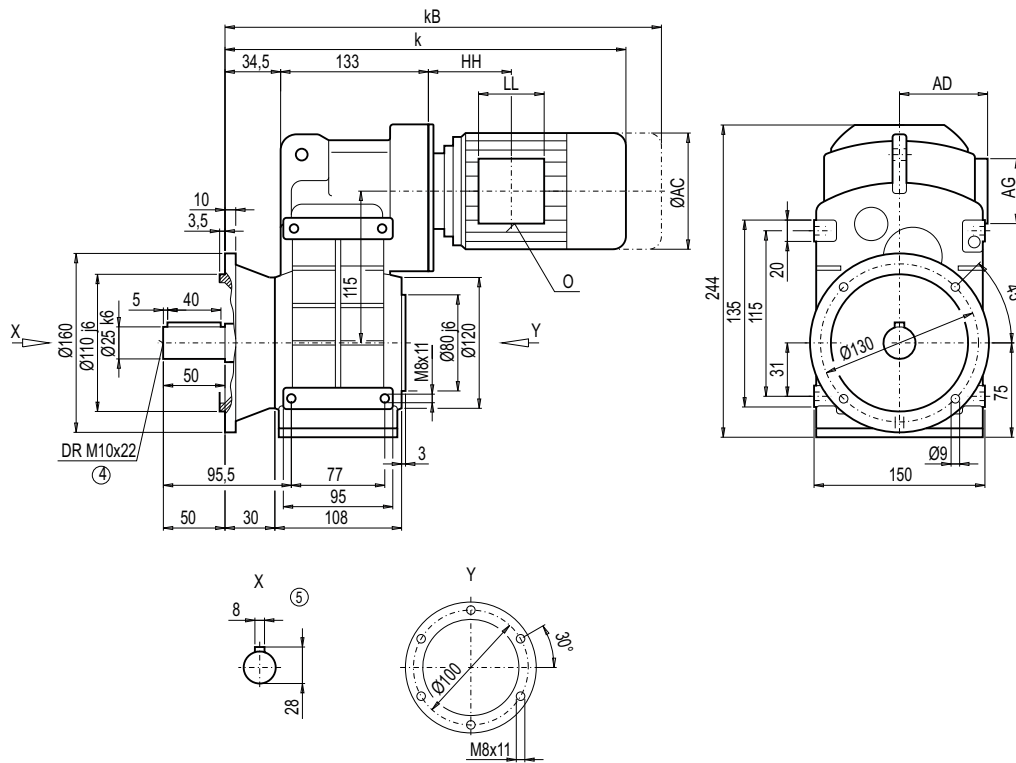
Flange	a1	b1	to2	c1	f1
A120	120	80	j6	8	3.0
A160	160	110	j6	9	3.5

Motor	F.AFS28								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDAFS28	FZAFS28
LA71	318.5	373.5	139.0	146	90	90	58.5	M20x1.5/M25x1.5	10	10
LA71Z	337.5	392.5	139.0	146	90	90	58.5	M20x1.5/M25x1.5	10	10
LA80	420.5	474.0	156.5	155	90	90	123.0	M20x1.5/M25x1.5	15	15
LA80Z	443.0	506.5	156.5	155	90	90	196.0	M20x1.5/M25x1.5	19	19
LA90S/L	415.5	486.5	174.0	163	90	90	87.0	M20x1.5/M25x1.5	20	19
LA90ZL	460.5	531.5	174.0	163	90	90	211.0	M20x1.5/M25x1.5	29	28
LA100L	497.5	578.5	195.0	168	120	120	163.5	2xM32x1.5	-	29
LA100ZL	567.5	648.5	195.0	168	120	120	295.5	2xM32x1.5	-	39

© For note, see page 3/178

Gearbox FDF/FZF38B (3- / 2-stage), flange-mounted design (A-type)

FF012



3

Motor	F.F38B								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDF38B	FZF38B
LA71	401.0	456.0	139.0	146	90	90	89.5	M20x1.5/M25x1.5	20	19
LA71Z	420.0	475.0	139.0	146	90	90	89.5	M20x1.5/M25x1.5	20	19
LA80	438.0	501.5	156.5	155	90	90	89.0	M20x1.5/M25x1.5	25	24
LA80Z	460.5	524.0	156.5	155	90	90	162.0	M20x1.5/M25x1.5	29	28
LA90S/L	469.0	540.0	174.0	163	90	90	89.0	M20x1.5/M25x1.5	29	29
LA90ZL	514.0	585.0	174.0	163	90	90	213.0	M20x1.5/M25x1.5	35	35
LA100L	515.0	596.0	195.0	168	120	120	129.5	2xM32x1.5	-	38
LA100ZL	585.0	666.0	195.0	168	120	120	261.5	2xM32x1.5	-	48

④ DIN 332

⑤ Feather key / keyway DIN 6885

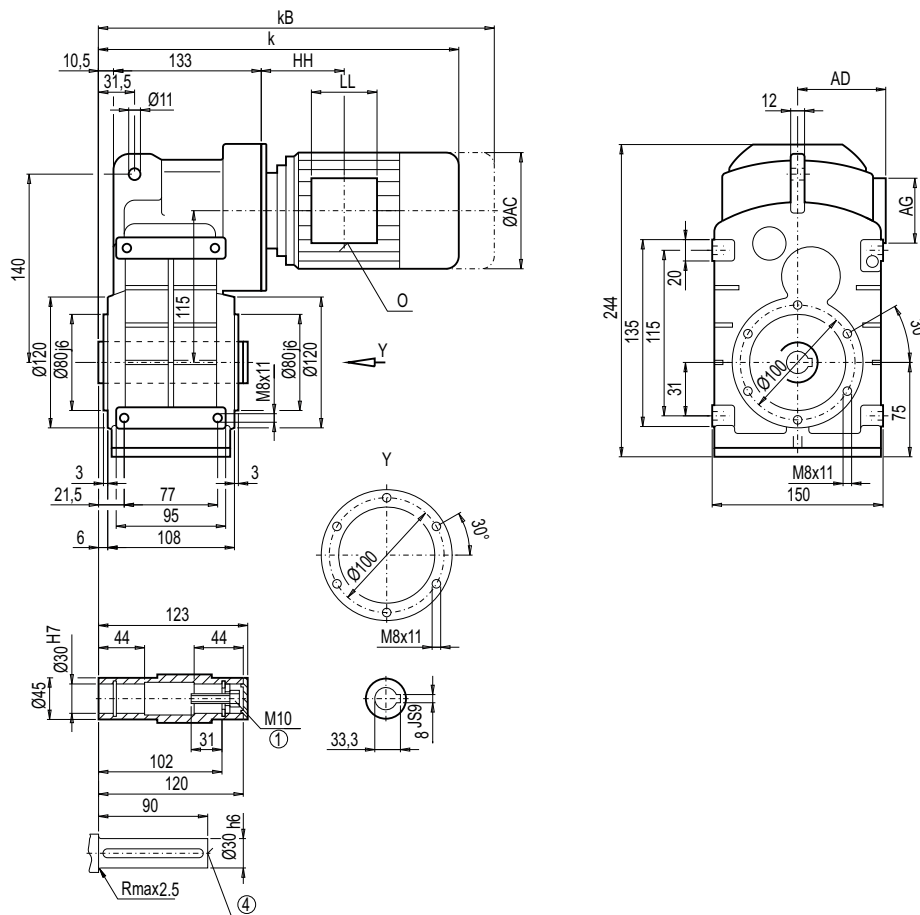
MOTOX Geared Motors

Parallel shaft geared motors

Dimensions

Gearbox FDA/FZA38B, FDAZ/FZAZ38B (3- / 2-stage), housing-flange-mounted design (C-type)

FA012
FAZ012



Motor	F.A.38B								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDA.38B	FZA.38B
LA71	377.0	432.0	139.0	146	90	90	89.5	M20x1.5/M25x1.5	16	16
LA71Z	396.0	451.0	139.0	146	90	90	89.5	M20x1.5/M25x1.5	16	16
LA80	414.0	477.5	156.5	155	90	90	89.0	M20x1.5/M25x1.5	21	21
LA80Z	436.5	500.0	156.5	155	90	90	162.0	M20x1.5/M25x1.5	25	25
LA90S/L	445.0	516.0	174.0	163	90	90	89.0	M20x1.5/M25x1.5	26	26
LA90ZL	490.0	561.0	174.0	163	90	90	213.0	M20x1.5/M25x1.5	32	32
LA100L	491.0	572.0	195.0	168	120	120	129.5	2xM32x1.5	-	35
LA100ZL	561.0	642.0	195.0	168	120	120	261.5	2xM32x1.5	-	45

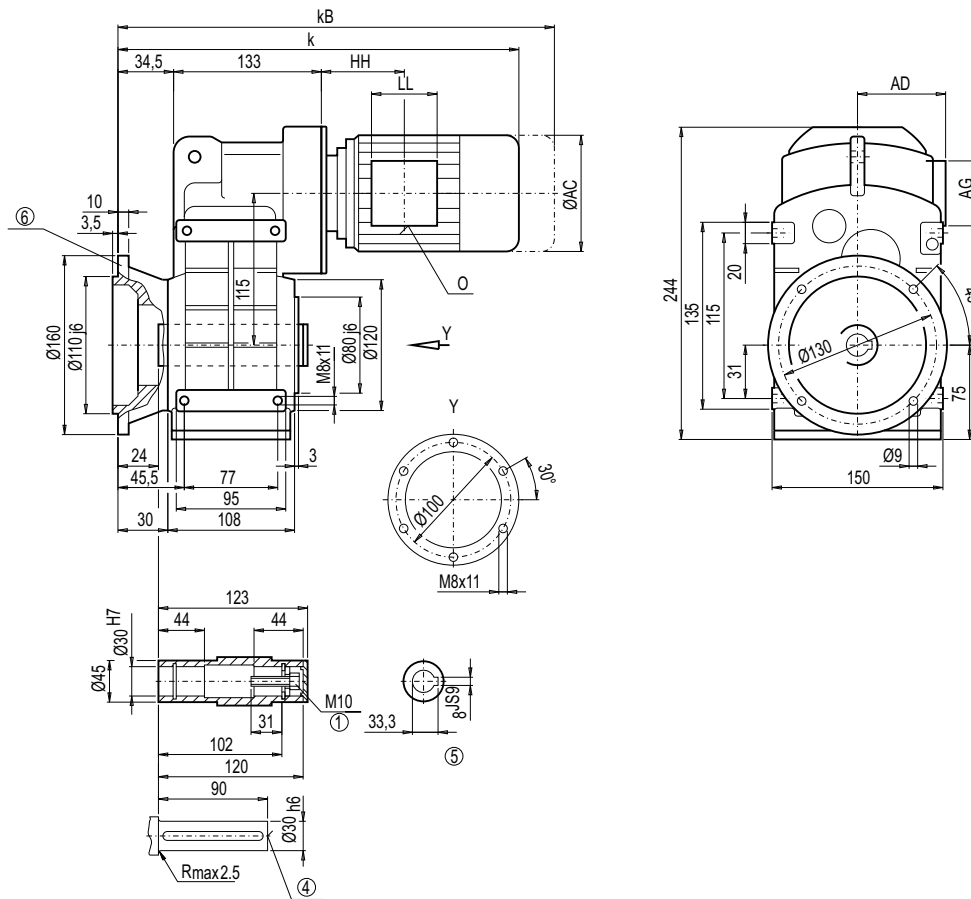
① DIN 6912

④ DIN 332

⑤ Feather key / keyway DIN 6885

Gearbox FDAF/FZAF38B (3- / 2-stage), flange-mounted design

FAF012



Motor	F.AF38B								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDAF38B	FZAF38B
LA71	401.0	456.0	139.0	146	90	90	89.5	M20x1.5/M25x1.5	18	18
LA71Z	420.0	475.0	139.0	146	90	90	89.5	M20x1.5/M25x1.5	18	18
LA80	438.0	501.5	156.5	155	90	90	89.0	M20x1.5/M25x1.5	23	23
LA80Z	460.5	524.0	156.5	155	90	90	162.0	M20x1.5/M25x1.5	27	27
LA90S/L	469.0	540.0	174.0	163	90	90	89.0	M20x1.5/M25x1.5	28	28
LA90ZL	514.0	585.0	174.0	163	90	90	213.0	M20x1.5/M25x1.5	34	34
LA100L	515.0	596.0	195.0	168	120	120	129.5	2xM32x1.5	-	37
LA100ZL	585.0	666.0	195.0	168	120	120	261.5	2xM32x1.5	-	47

① DIN 6912

④ DIN 332

⑤ Feather key / keyway DIN 6885

⑥ For note, see page 3/178

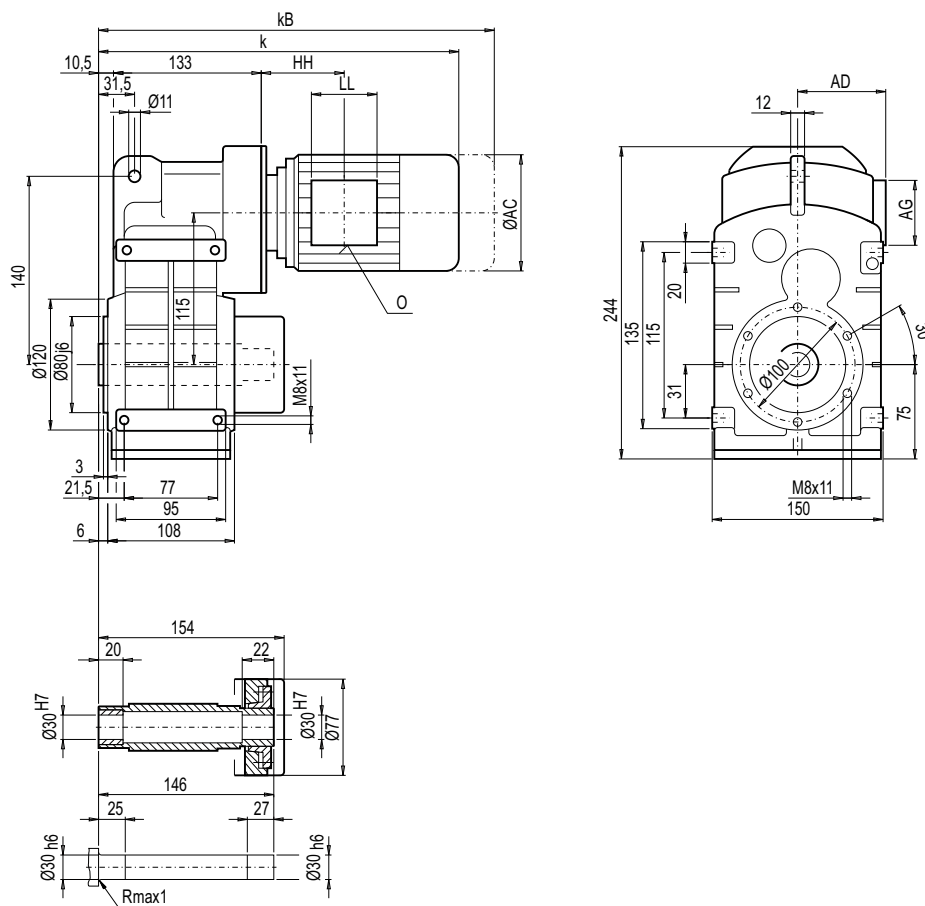
MOTOX Geared Motors

Parallel shaft geared motors

Dimensions

Gearbox FDAS/FZAS38B, FDAZS/FZAZS38B (3- / 2-stage), shaft-mounted design with shrink disk

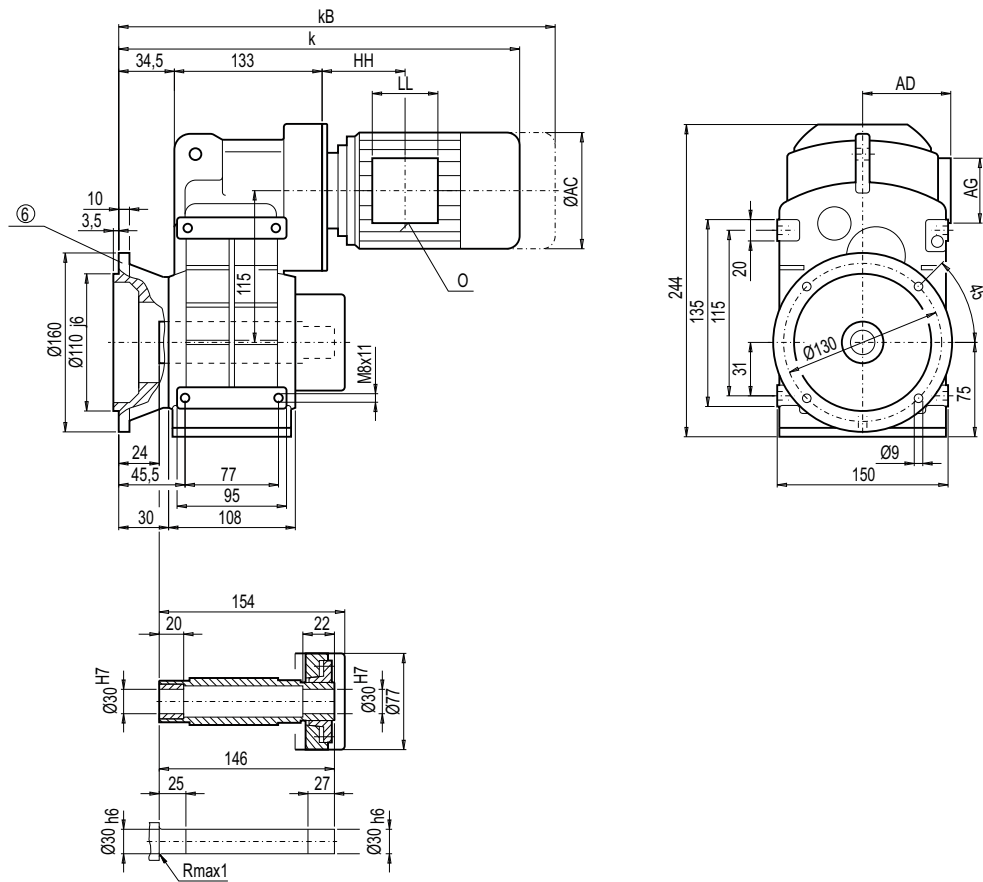
FAS012
FAZS012



Motor	F.A.S38B								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDA.S38B	FZA.S38B
LA71	377.0	432.0	139.0	146	90	90	89.5	M20x1.5/M25x1.5	17	17
LA71Z	396.0	451.0	139.0	146	90	90	89.5	M20x1.5/M25x1.5	17	17
LA80	414.0	477.5	156.5	155	90	90	89.0	M20x1.5/M25x1.5	22	22
LA80Z	436.5	500.0	156.5	155	90	90	162.0	M20x1.5/M25x1.5	26	26
LA90S/L	445.0	516.0	174.0	163	90	90	89.0	M20x1.5/M25x1.5	27	26
LA90ZL	490.0	561.0	174.0	163	90	90	213.0	M20x1.5/M25x1.5	33	32
LA100L	491.0	572.0	195.0	168	120	120	129.5	2xM32x1.5	-	35
LA100ZL	561.0	642.0	195.0	168	120	120	261.5	2xM32x1.5	-	45

Gearbox FDAFS/FZAFS38B (3- / 2-stage), flange-mounted design and shrink disk

FAFS012



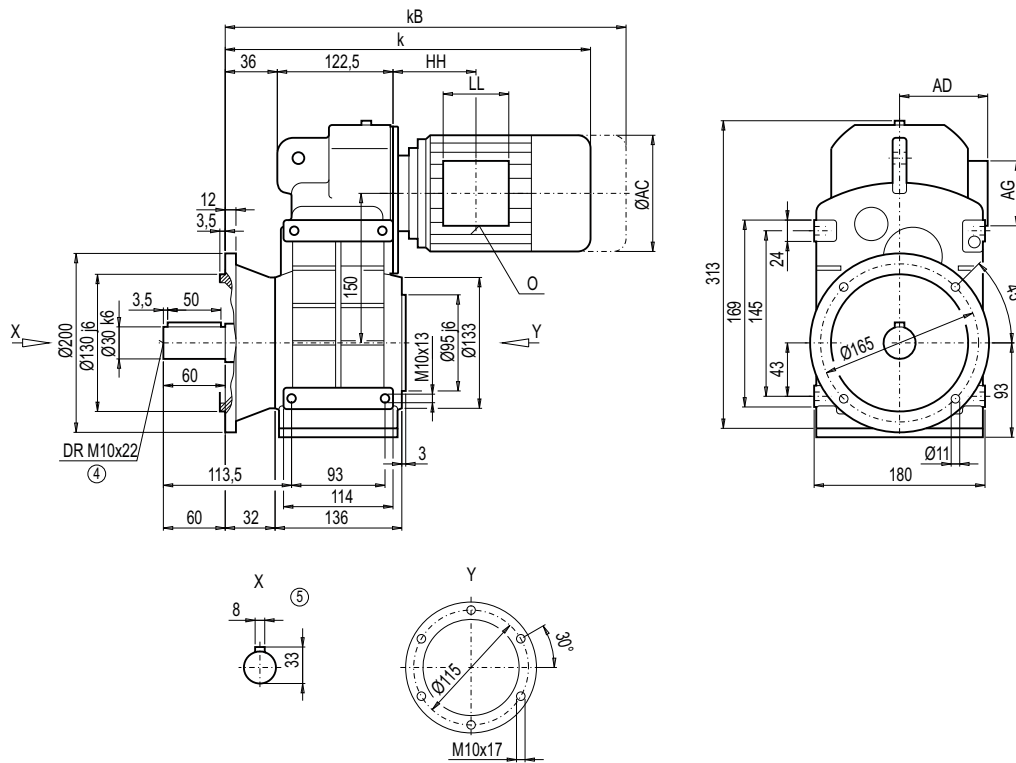
3

Motor	F.AFS38B								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDAFS38B	FZAFS38B
LA71	401.0	456.0	139.0	146	90	90	89.5	M20x1.5/M25x1.5	19	19
LA71Z	420.0	475.0	139.0	146	90	90	89.5	M20x1.5/M25x1.5	19	19
LA80	438.0	501.5	156.5	155	90	90	89.0	M20x1.5/M25x1.5	24	24
LA80Z	460.5	524.0	156.5	155	90	90	162.0	M20x1.5/M25x1.5	28	28
LA90S/L	469.0	540.0	174.0	163	90	90	89.0	M20x1.5/M25x1.5	29	28
LA90ZL	514.0	585.0	174.0	163	90	90	213.0	M20x1.5/M25x1.5	35	34
LA100L	515.0	596.0	195.0	168	120	120	129.5	2xM32x1.5	-	37
LA100ZL	585.0	666.0	195.0	168	120	120	261.5	2xM32x1.5	-	47

© For note, see page 3/178

Gearbox FDF/FZF48B (3- / 2-stage), flange-mounted design (A-type)

FF012



Motor	F.F48B								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDF48B	FZF48B
LA71	417.0	472.0	139.0	146	90	90	114.5	M20x1.5/M25x1.5	28	28
LA71Z	436.0	491.0	139.0	146	90	90	114.5	M20x1.5/M25x1.5	28	28
LA80	454.0	517.5	156.5	155	90	90	114.0	M20x1.5/M25x1.5	33	33
LA80Z	476.5	540.0	156.5	155	90	90	187.0	M20x1.5/M25x1.5	37	37
LA90S/L	485.0	556.0	174.0	163	90	90	114.0	M20x1.5/M25x1.5	38	38
LA90ZL	530.0	601.0	174.0	163	90	90	238.0	M20x1.5/M25x1.5	44	44
LA100L	531.0	612.0	195.0	168	120	120	154.5	2xM32x1.5	47	47
LA100ZL	601.0	682.0	195.0	168	120	120	286.5	2xM32x1.5	57	57
LA112M	560.5	641.5	219.0	181	120	120	160.0	2xM32x1.5	-	57
LA112ZM	588.5	669.5	219.0	181	120	120	264.0	2xM32x1.5	-	64

④ DIN 332

⑤ Feather key / keyway DIN 6885

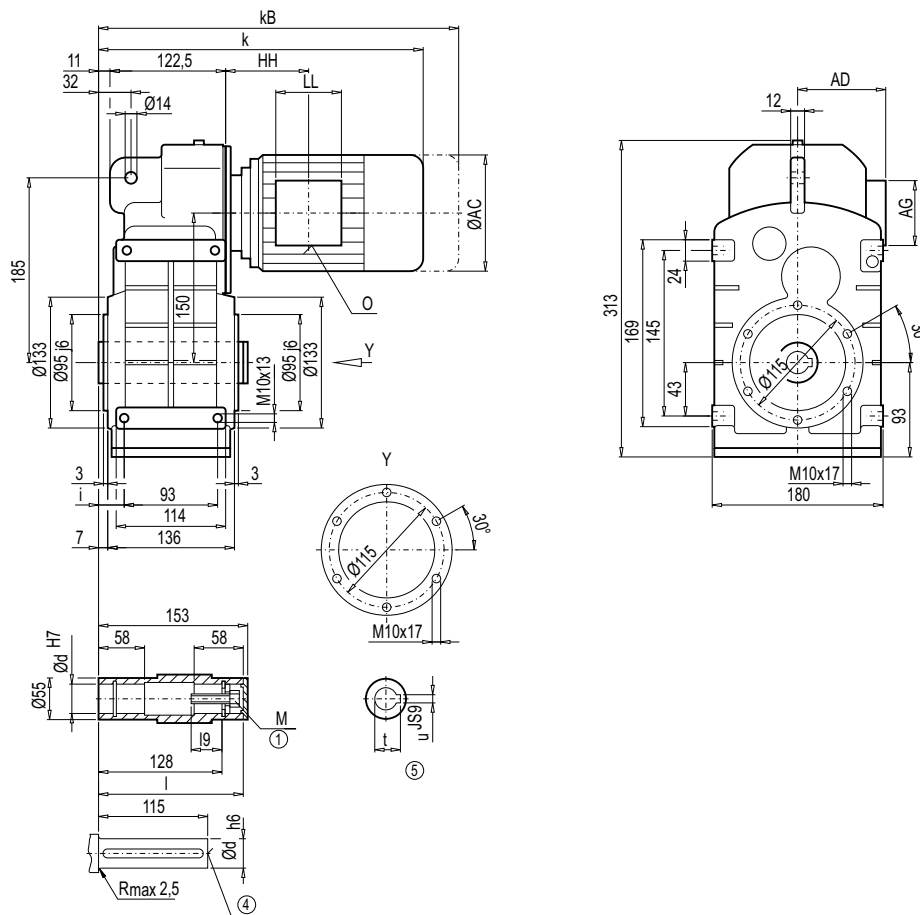
MOTOX Geared Motors

Parallel shaft geared motors

Dimensions

Gearbox FDA/FZA48B, FDAZ/FZAZ48B (3- / 2-stage), housing-flange-mounted design (C-type)

FA012
FAZ012



d	l	l ₉	M	t	u	i
35 *)	150	40	M12	38.3	10	28.5
40	150	48	M16	43.3	12	28.5

*) Preferred series

Motor	F.A.48B								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDA.48B	FZA.48B
LA71	392.0	447.0	139.0	146	90	90	114.5	M20x1.5/M25x1.5	24	24
LA71Z	411.0	466.0	139.0	146	90	90	114.5	M20x1.5/M25x1.5	24	24
LA80	429.0	492.5	156.5	155	90	90	114.0	M20x1.5/M25x1.5	29	29
LA80Z	451.5	515.0	156.5	155	90	90	187.0	M20x1.5/M25x1.5	33	33
LA90S/L	460.0	531.0	174.0	163	90	90	114.0	M20x1.5/M25x1.5	34	33
LA90ZL	505.0	576.0	174.0	163	90	90	238.0	M20x1.5/M25x1.5	40	39
LA100L	506.0	587.0	195.0	168	120	120	154.5	2xM32x1.5	43	42
LA100ZL	576.0	657.0	195.0	168	120	120	286.5	2xM32x1.5	53	52
LA112M	535.5	616.5	219.0	181	120	120	160.0	2xM32x1.5	-	53
LA112ZM	563.5	644.5	219.0	181	120	120	264.0	2xM32x1.5	-	60

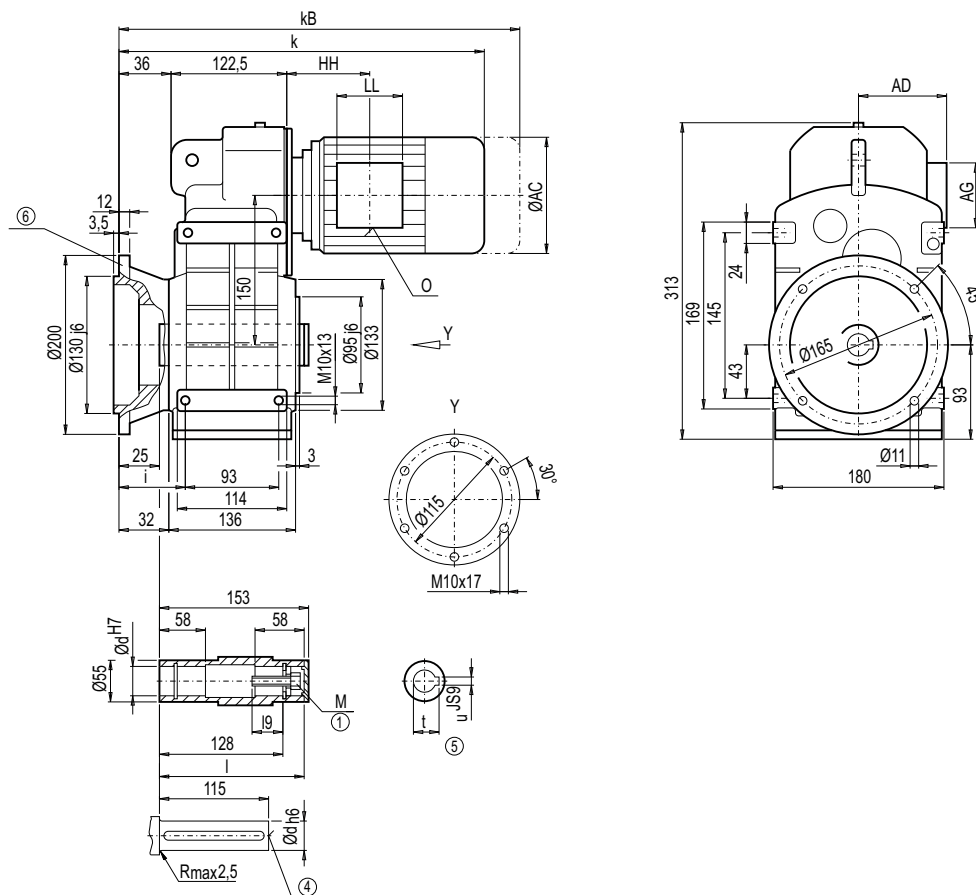
① DIN 6912

④ DIN 332

⑤ Feather key / keyway DIN 6885

Gearbox FDAF/FZAF48B (3- / 2-stage), flange-mounted design

FAF012



d	l	l9	M	t	u	i
35 ^{*)}	150	40	M12	38.3	10	53.5
40	150	48	M16	43.3	12	53.5

^{*)} Preferred series

Motor	F.AF48B								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDAF48B	FZAF48B
LA71	417.0	472.0	139.0	146	90	90	114.5	M20x1.5/M25x1.5	27	27
LA71Z	436.0	491.0	139.0	146	90	90	114.5	M20x1.5/M25x1.5	27	27
LA80	454.0	517.5	156.5	155	90	90	114.0	M20x1.5/M25x1.5	32	32
LA80Z	476.5	540.0	156.5	155	90	90	187.0	M20x1.5/M25x1.5	36	36
LA90S/L	485.0	556.0	174.0	163	90	90	114.0	M20x1.5/M25x1.5	37	36
LA90ZL	530.0	601.0	174.0	163	90	90	238.0	M20x1.5/M25x1.5	43	42
LA100L	531.0	612.0	195.0	168	120	120	154.5	2xM32x1.5	46	45
LA100ZL	601.0	682.0	195.0	168	120	120	286.5	2xM32x1.5	56	55
LA112M	560.5	641.5	219.0	181	120	120	160.0	2xM32x1.5	-	56
LA112ZM	588.5	669.5	219.0	181	120	120	264.0	2xM32x1.5	-	63

① DIN 6912

④ DIN 332

⑤ Feather key / keyway DIN 6885

⑥ For note, see page 3/178

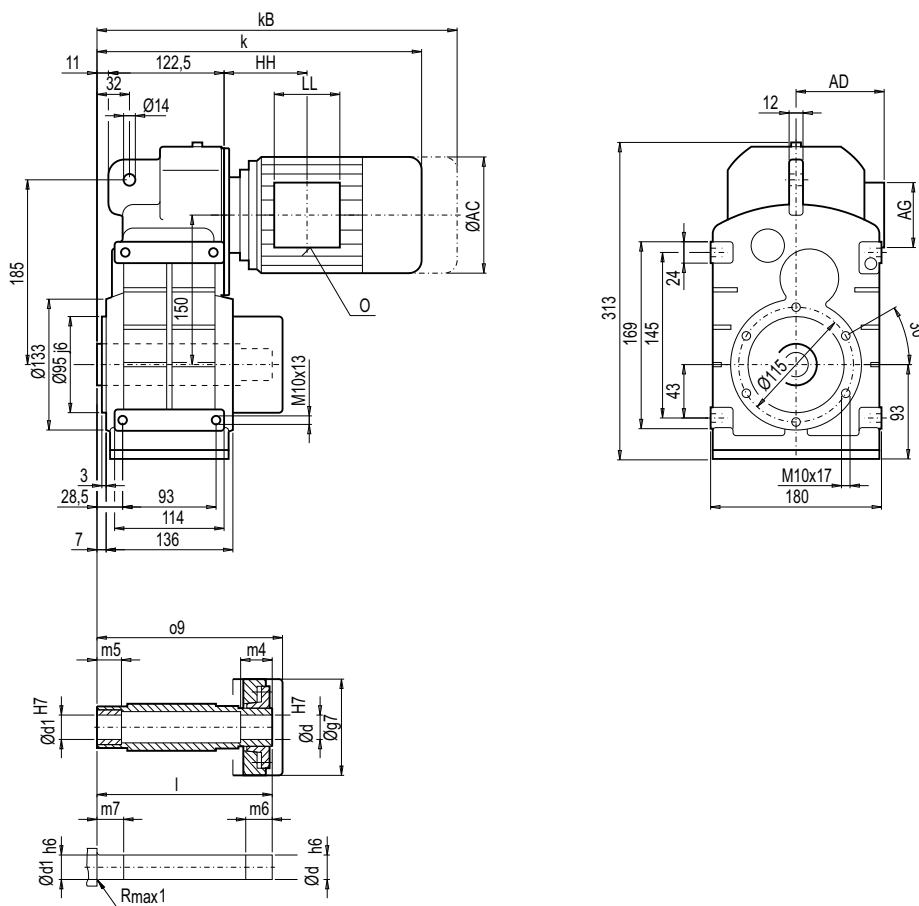
MOTOX Geared Motors

Parallel shaft geared motors

Dimensions

Gearbox FDAS/FZAS48B, FDAZS/FZAZS48B (3- / 2-stage), shaft-mounted design with shrink disk

FAS012
FAZS012



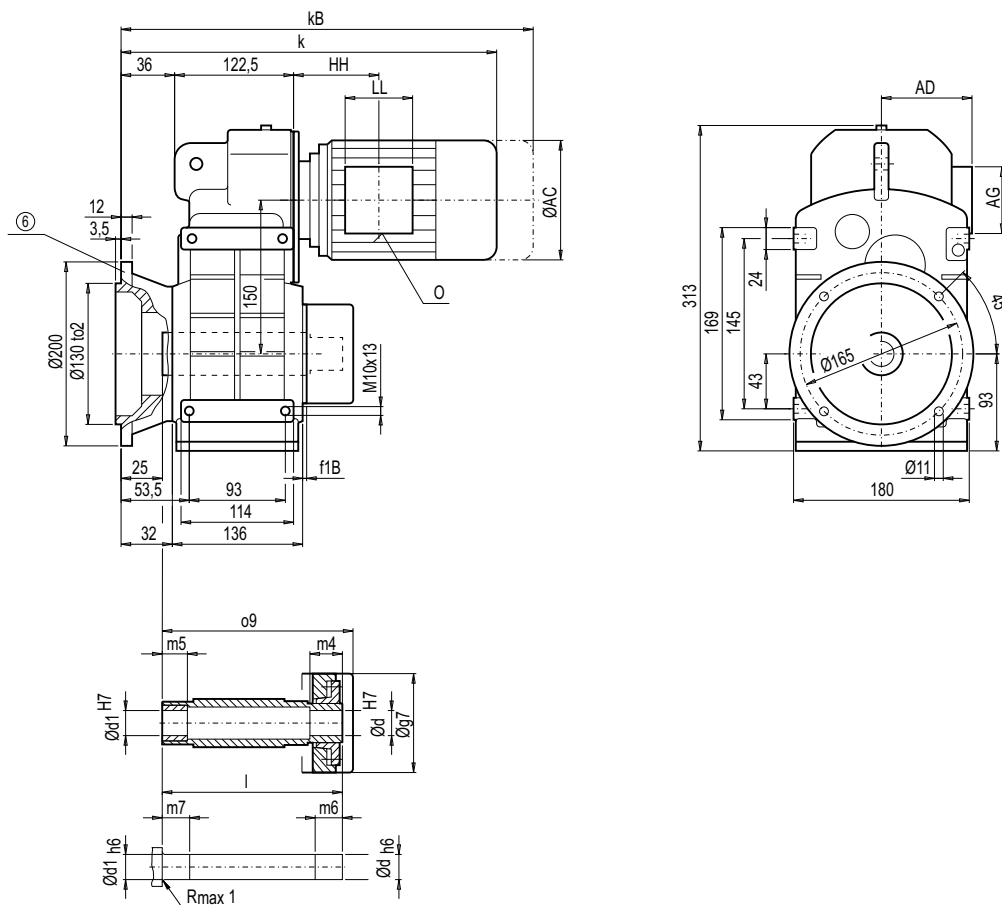
d	d1	l	o9	m4	m5	m6	m7	g7
35 *)	35	177	184	32	20	37	25	93
40	50	177	184	25	20	30	25	93

*) Preferred series

Motor	F.A.S48B								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDA.S48B	FZA.S48B
LA71	392.0	447.0	139.0	146	90	90	114.5	M20x1.5/M25x1.5	25	25
LA71Z	411.0	466.0	139.0	146	90	90	114.5	M20x1.5/M25x1.5	25	25
LA80	429.0	492.5	156.5	155	90	90	114.0	M20x1.5/M25x1.5	30	30
LA80Z	451.5	515.0	156.5	155	90	90	187.0	M20x1.5/M25x1.5	34	34
LA90S/L	460.0	531.0	174.0	163	90	90	114.0	M20x1.5/M25x1.5	34	34
LA90ZL	505.0	576.0	174.0	163	90	90	238.0	M20x1.5/M25x1.5	40	40
LA100L	506.0	587.0	195.0	168	120	120	154.5	2xM32x1.5	43	43
LA100ZL	576.0	657.0	195.0	168	120	120	286.5	2xM32x1.5	53	53
LA112M	535.5	616.5	219.0	181	120	120	160.0	2xM32x1.5	-	54
LA112ZM	563.5	644.5	219.0	181	120	120	264.0	2xM32x1.5	-	61

Gearbox FDAFS/FZAFS48B (3- / 2-stage), flange-mounted design and shrink disk

FAFS012



d	d1	l	o9	m4	m5	m6	m7	g7
35 *)	35	177	184	32	20	37	25	93
40	40	177	184	25	20	30	25	93

*) Preferred series

Motor	F.AFS48B								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDAFS48B	FZAFS48B
LA71	417.0	472.0	139.0	146	90	90	114.5	M20x1.5/M25x1.5	28	28
LA71Z	436.0	491.0	139.0	146	90	90	114.5	M20x1.5/M25x1.5	28	28
LA80	454.0	517.5	156.5	155	90	90	114.0	M20x1.5/M25x1.5	33	33
LA80Z	476.5	540.0	156.5	155	90	90	187.0	M20x1.5/M25x1.5	37	37
LA90S/L	485.0	556.0	174.0	163	90	90	114.0	M20x1.5/M25x1.5	37	37
LA90ZL	530.0	601.0	174.0	163	90	90	238.0	M20x1.5/M25x1.5	43	43
LA100L	531.0	612.0	195.0	168	120	120	154.5	2xM32x1.5	46	46
LA100ZL	601.0	682.0	195.0	168	120	120	286.5	2xM32x1.5	56	56
LA112M	560.5	641.5	219.0	181	120	120	160.0	2xM32x1.5	-	57
LA112ZM	588.5	669.5	219.0	181	120	120	264.0	2xM32x1.5	-	64

© For note, see page 3/178

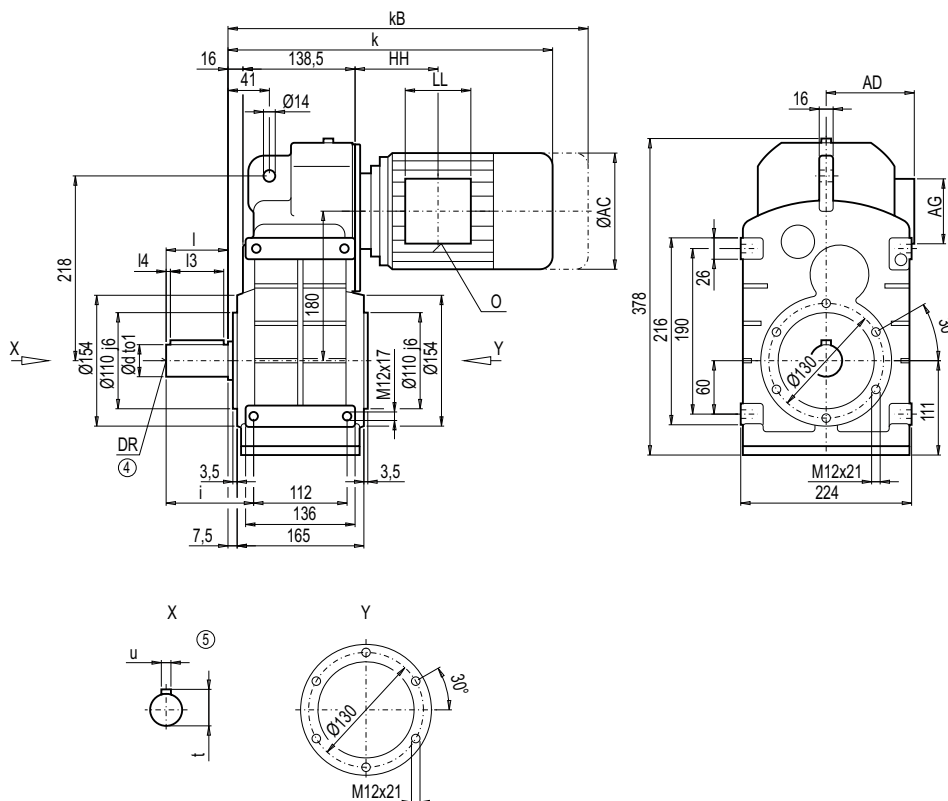
MOTOX Geared Motors

Parallel shaft geared motors

Dimensions

Gearbox FDZ/FZZ68B (3- / 2-stage), housing-flange-mounted design (C-type)

FZ012



d	to1	l	l3	l4	t	u	i	DR
35	k6	70	56	5	38.0	10	104	M12x28
40 *)	k6	80	70	5	43.0	12	114	M16x36
50	k6	100	80	10	53.5	14	134	M16x36

*) Preferred series

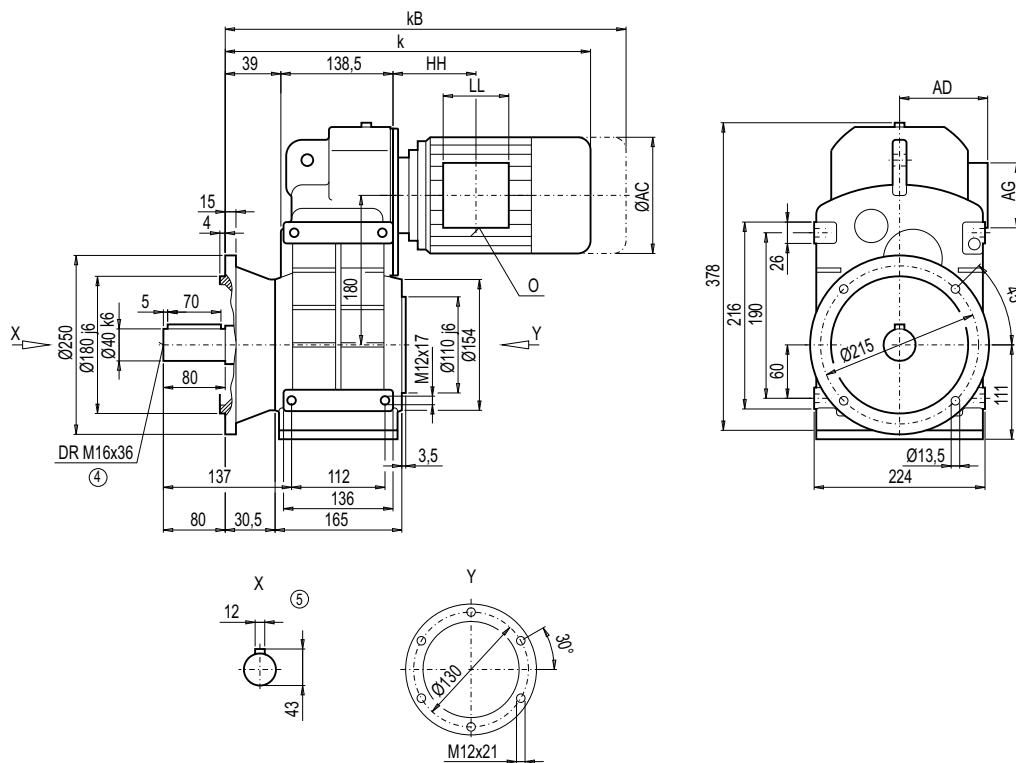
Motor	F.Z68B								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDZ68B	FZZ68B
LA71	407.5	462.5	139.0	146	90	90	109.0	M20x1.5/M25x1.5	40	-
LA71Z	426.5	481.5	139.0	146	90	90	109.0	M20x1.5/M25x1.5	40	-
LA80	444.5	508.0	156.5	155	90	90	108.5	M20x1.5/M25x1.5	45	45
LA80Z	467.0	530.5	156.5	155	90	90	181.5	M20x1.5/M25x1.5	49	49
LA90S/L	475.5	546.5	174.0	163	90	90	108.5	M20x1.5/M25x1.5	50	50
LA90ZL	520.5	591.5	174.0	163	90	90	232.5	M20x1.5/M25x1.5	56	56
LA100L	521.5	602.5	195.0	168	120	120	149.0	2xM32x1.5	59	59
LA100ZL	591.5	672.5	195.0	168	120	120	281.0	2xM32x1.5	69	69
LA112M	550.5	631.5	219.0	181	120	120	154.0	2xM32x1.5	-	70
LA112ZM	578.5	659.5	219.0	181	120	120	258.0	2xM32x1.5	-	77
LA132S/M	612.5	714.5	259.0	195	140	140	196.5	2xM32x1.5	-	80
LA132ZM	658.5	760.5	259.0	195	140	140	304.5	2xM32x1.5	-	51

④ DIN 332

⑤ Feather key / keyway DIN 6885

Gearbox FDF/FZF68B (3- / 2-stage), flange-mounted design (A-type)

FF012



Motor	F.F68B								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDF68B	FZF68B
LA71	430.5	485.5	139.0	146	90	90	109.0	M20x1.5/M25x1.5	48	-
LA71Z	449.5	504.5	139.0	146	90	90	109.0	M20x1.5/M25x1.5	48	-
LA80	467.5	531.0	156.5	155	90	90	108.5	M20x1.5/M25x1.5	53	53
LA80Z	490.0	553.5	156.5	155	90	90	181.5	M20x1.5/M25x1.5	57	57
LA90S/L	498.5	569.5	174.0	163	90	90	108.5	M20x1.5/M25x1.5	57	57
LA90ZL	543.5	614.5	174.0	163	90	90	232.5	M20x1.5/M25x1.5	63	63
LA100L	544.5	625.5	195.0	168	120	120	149.0	2xM32x1.5	67	67
LA100ZL	614.5	695.5	195.0	168	120	120	281.0	2xM32x1.5	77	77
LA112M	573.5	654.5	219.0	181	120	120	154.0	2xM32x1.5	-	78
LA112ZM	601.5	682.5	219.0	181	120	120	258.0	2xM32x1.5	-	85
LA132S/M	635.5	737.5	259.0	195	140	140	196.5	2xM32x1.5	-	88
LA132ZM	681.5	783.5	259.0	195	140	140	304.5	2xM32x1.5	-	109

④ DIN 332

⑤ Feather key / keyway DIN 6885

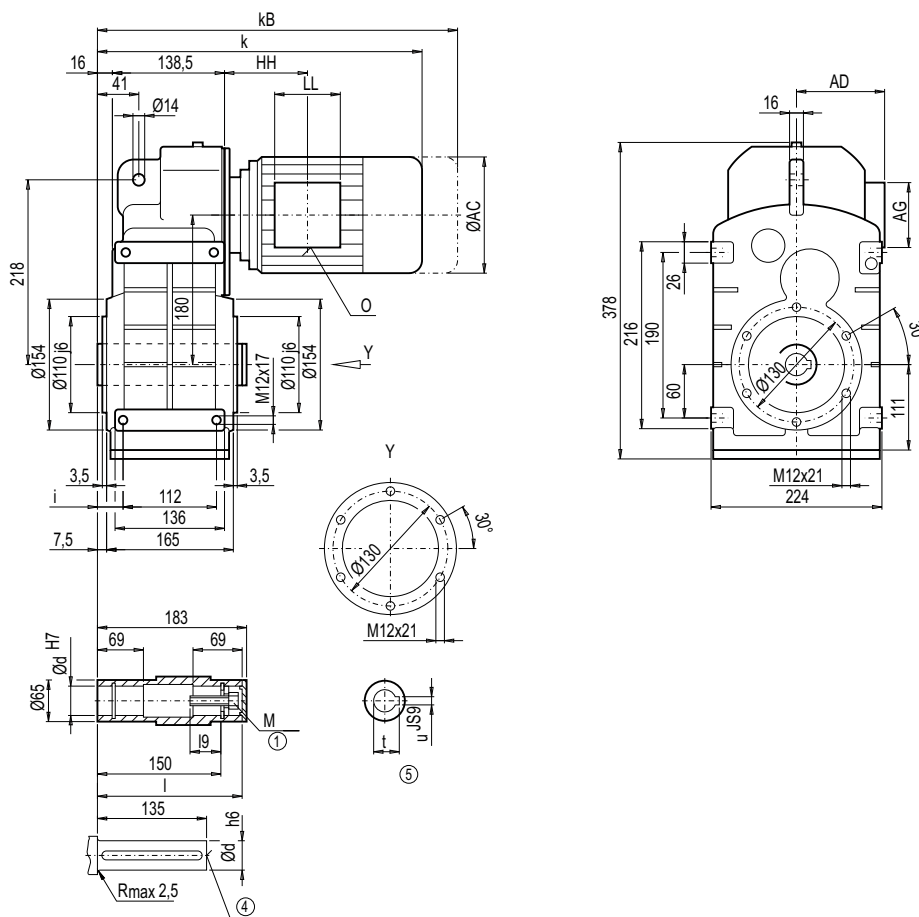
MOTOX Geared Motors

Parallel shaft geared motors

Dimensions

Gearbox FDA/FZA68B, FDAZ/FZAZ68B (3- / 2-stage), housing-flange-mounted design (C-type)

FA012
FAZ012



d	l	l9	M	t	u	i
40 *)	180	48	M16	43.3	12	34
45	180	47	M16	48.8	14	34

*) Preferred series

Motor	F.A.68B								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDA.68B	FZA.68B
LA71	407.5	462.5	139.0	146	90	90	109.0	M20x1.5/M25x1.5	37	–
LA71Z	426.5	481.5	139.0	146	90	90	109.0	M20x1.5/M25x1.5	37	–
LA80	444.5	508.0	156.5	155	90	90	108.5	M20x1.5/M25x1.5	42	42
LA80Z	467.0	530.5	156.5	155	90	90	181.5	M20x1.5/M25x1.5	46	46
LA90S/L	475.5	546.5	174.0	163	90	90	108.5	M20x1.5/M25x1.5	46	46
LA90ZL	520.5	591.5	174.0	163	90	90	232.5	M20x1.5/M25x1.5	52	52
LA100L	521.5	602.5	195.0	168	120	120	149.0	2xM32x1.5	55	55
LA100ZL	591.5	672.5	195.0	168	120	120	281.0	2xM32x1.5	65	65
LA112M	550.5	631.5	219.0	181	120	120	154.0	2xM32x1.5	–	67
LA112ZM	578.5	659.5	219.0	181	120	120	258.0	2xM32x1.5	–	74
LA132S/M	612.5	714.5	259.0	195	140	140	196.5	2xM32x1.5	–	77
LA132ZM	658.5	760.5	259.0	195	140	140	304.5	2xM32x1.5	–	98

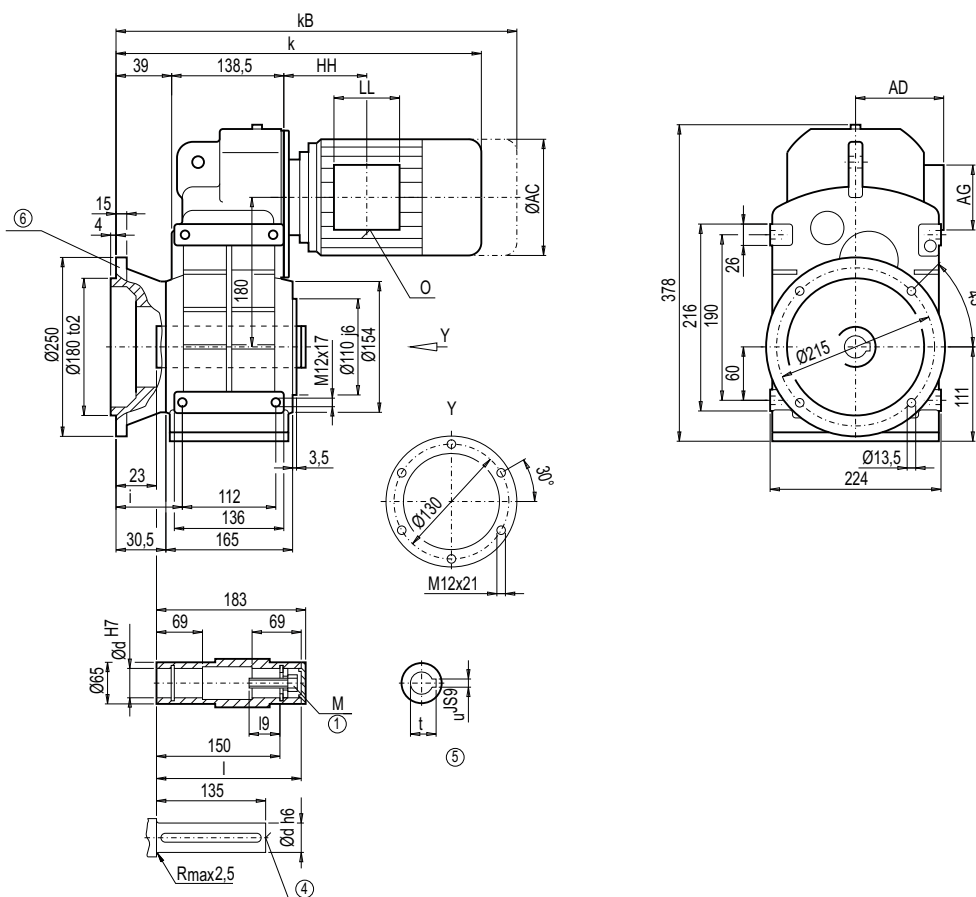
① DIN 6912

④ DIN 332

⑤ Feather key / keyway DIN 6885

Gearbox FDAF/FZAF68B (3- / 2-stage), flange-mounted design

FAF012



d	l	l9	M	t	u	i
40 *)	180	48	M16	43.3	12	57
45	180	47	M16	48.8	14	57

*) Preferred series

Motor	F.AF68B								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDAF68B	FZAF68B
LA71	430.5	485.5	139.0	146	90	90	109.0	M20x1.5/M25x1.5	45	-
LA71Z	449.5	504.5	139.0	146	90	90	109.0	M20x1.5/M25x1.5	45	-
LA80	467.5	531.0	156.5	155	90	90	108.5	M20x1.5/M25x1.5	50	50
LA80Z	490.0	553.5	156.5	155	90	90	181.5	M20x1.5/M25x1.5	54	54
LA90S/L	498.5	569.5	174.0	163	90	90	108.5	M20x1.5/M25x1.5	54	54
LA90ZL	543.5	614.5	174.0	163	90	90	232.5	M20x1.5/M25x1.5	60	60
LA100L	544.5	625.5	195.0	168	120	120	149.0	2xM32x1.5	63	63
LA100ZL	614.5	695.5	195.0	168	120	120	281.0	2xM32x1.5	73	73
LA112M	573.5	654.5	219.0	181	120	120	154.0	2xM32x1.5	-	75
LA112ZM	601.5	682.5	219.0	181	120	120	258.0	2xM32x1.5	-	82
LA132S/M	635.5	737.5	259.0	195	140	140	196.5	2xM32x1.5	-	85
LA132ZM	681.5	783.5	259.0	195	140	140	304.5	2xM32x1.5	-	106

① DIN 6912

④ DIN 332

⑤ Feather key / keyway DIN 6885

⑥ For note, see page 3/178

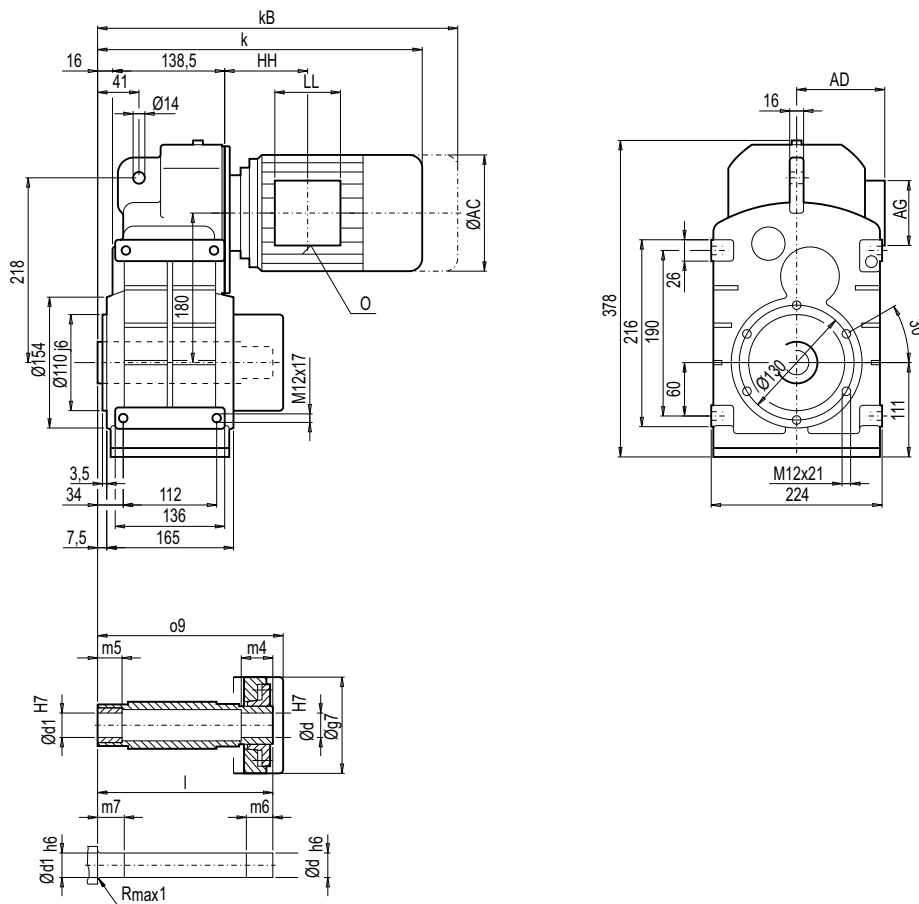
MOTOX Geared Motors

Parallel shaft geared motors

Dimensions

Gearbox FDAS/FZAS68B, FDAZS/FZAZS68B (3- / 2-stage), shaft-mounted design with shrink disk

FAS012
FAZS012



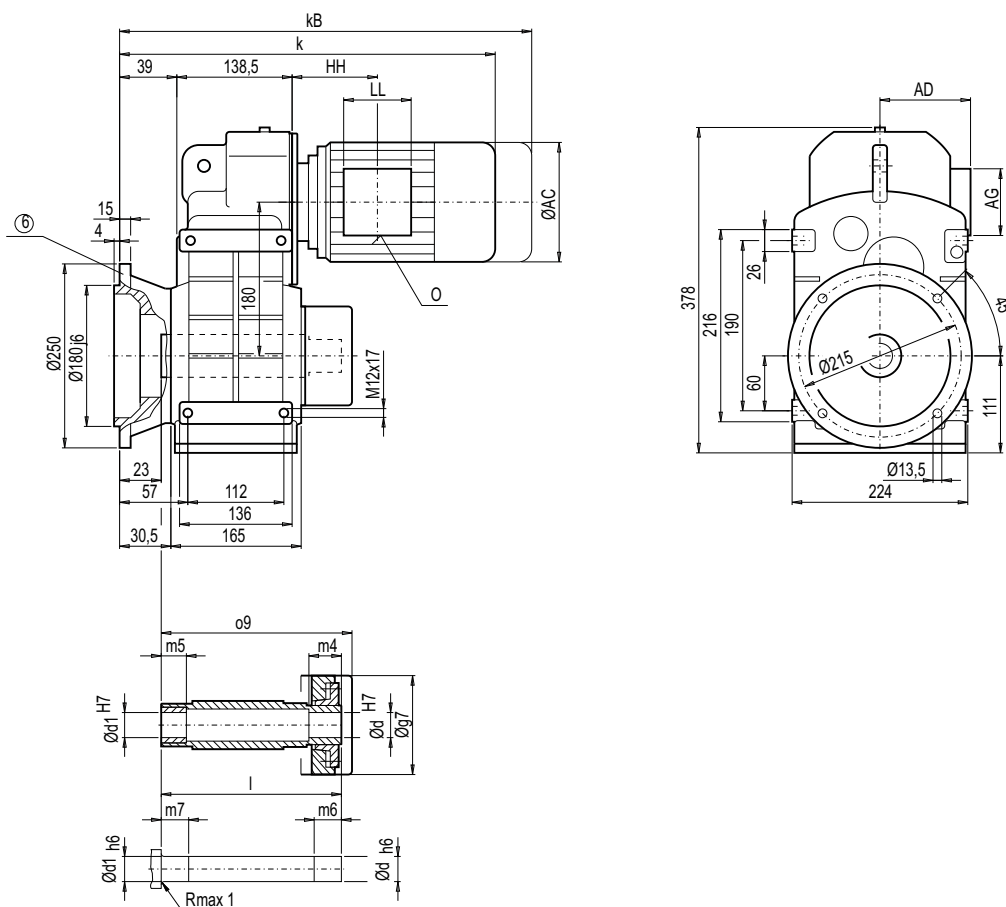
d	d1	l	o9	m4	m5	m6	m7	g7
40 *)	40	209	216	35	20	40	25	112
50	50	209	216	27	20	32	25	112

*) Preferred series

Motor	F.A.S68B								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDA.S68B	FZA.S68B
LA71	407.5	462.5	139.0	146	90	90	109.0	M20x1.5/M25x1.5	38	–
LA71Z	426.5	481.5	139.0	146	90	90	109.0	M20x1.5/M25x1.5	38	–
LA80	444.5	508.0	156.5	155	90	90	108.5	M20x1.5/M25x1.5	43	43
LA80Z	467.0	530.5	156.5	155	90	90	181.5	M20x1.5/M25x1.5	47	47
LA90S/L	475.5	546.5	174.0	163	90	90	108.5	M20x1.5/M25x1.5	48	48
LA90ZL	520.5	591.5	174.0	163	90	90	232.5	M20x1.5/M25x1.5	54	54
LA100L	521.5	602.5	195.0	168	120	120	149.0	2xM32x1.5	57	57
LA100ZL	591.5	672.5	195.0	168	120	120	281.0	2xM32x1.5	67	67
LA112M	550.5	631.5	219.0	181	120	120	154.0	2xM32x1.5	–	68
LA112ZM	578.5	659.5	219.0	181	120	120	258.0	2xM32x1.5	–	75
LA132S/M	612.5	714.5	259.0	195	140	140	196.5	2xM32x1.5	–	78
LA132ZM	658.5	760.5	259.0	195	140	140	304.5	2xM32x1.5	–	99

Gearbox FDAFS/FZAFS68B (3- / 2-stage), flange-mounted design and shrink disk

FAFS012



d	d1	l	o9	m4	m5	m6	m7	g7
40 *)	40	209	216	35	20	40	25	112
50	50	209	216	27	20	32	25	112

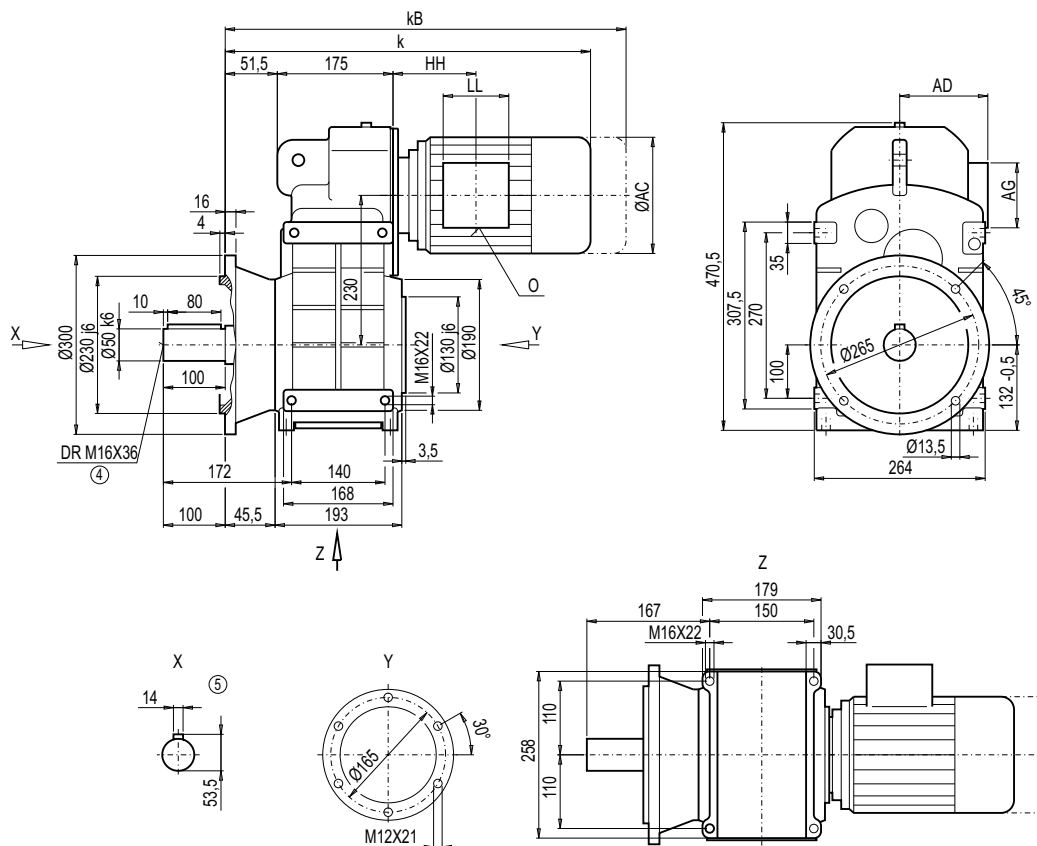
*) Preferred series

Motor	F.AFS68B								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDAFS68B	FZAFS68B
LA71	430.5	485.5	139.0	146	90	90	109.0	M20x1.5/M25x1.5	46	-
LA71Z	449.5	504.5	139.0	146	90	90	109.0	M20x1.5/M25x1.5	46	-
LA80	467.5	531.0	156.5	155	90	90	108.5	M20x1.5/M25x1.5	51	51
LA80Z	490.0	553.5	156.5	155	90	90	181.5	M20x1.5/M25x1.5	55	55
LA90S/L	498.5	569.5	174.0	163	90	90	108.5	M20x1.5/M25x1.5	55	55
LA90ZL	543.5	614.5	174.0	163	90	90	232.5	M20x1.5/M25x1.5	61	61
LA100L	544.5	625.5	195.0	168	120	120	149.0	2xM32x1.5	65	65
LA100ZL	614.5	695.5	195.0	168	120	120	281.0	2xM32x1.5	75	75
LA112M	573.5	654.5	219.0	181	120	120	154.0	2xM32x1.5	-	76
LA112ZM	601.5	682.5	219.0	181	120	120	258.0	2xM32x1.5	-	83
LA132S/M	635.5	737.5	259.0	195	140	140	196.5	2xM32x1.5	-	86
LA132ZM	681.5	783.5	259.0	195	140	140	304.5	2xM32x1.5	-	107

© For note, see page 3/178

Gearbox FDF/FZF88B (3- / 2-stage), flange-mounted design (A-type)

FF012



Motor	F.F88B								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDF88B	FZF88B
LA71	473.5	528.5	139.0	146	90	90	103.0	M20x1.5/M25x1.5	81	-
LA71Z	492.5	547.5	139.0	146	90	90	103.0	M20x1.5/M25x1.5	81	-
LA80	510.5	574.0	156.5	155	90	90	102.5	M20x1.5/M25x1.5	86	86
LA80Z	533.0	596.5	156.5	155	90	90	175.5	M20x1.5/M25x1.5	90	90
LA90S/L	541.5	612.5	174.0	163	90	90	102.5	M20x1.5/M25x1.5	91	91
LA90ZL	586.5	657.5	174.0	163	90	90	226.5	M20x1.5/M25x1.5	97	97
LA100L	587.5	668.5	195.0	168	120	120	143.0	2xM32x1.5	100	100
LA100ZL	657.5	738.5	195.0	168	120	120	275.0	2xM32x1.5	110	110
LA112M	614.5	695.5	219.0	181	120	120	146.0	2xM32x1.5	111	112
LA112ZM	642.5	723.5	219.0	181	120	120	250.0	2xM32x1.5	118	119
LA132S/M	674.5	776.5	259.0	195	140	140	186.5	2xM32x1.5	124	125
LA132ZM	720.5	822.5	259.0	195	140	140	294.5	2xM32x1.5	146	146
LA160M/L	777.0	895.5	313.5	227	165	165	212.0	2xM40x1.5	-	158
LA160ZL	825.0	943.5	313.5	227	165	165	365.0	2xM40x1.5	-	197

④ DIN 332

⑤ Feather key / keyway DIN 6885

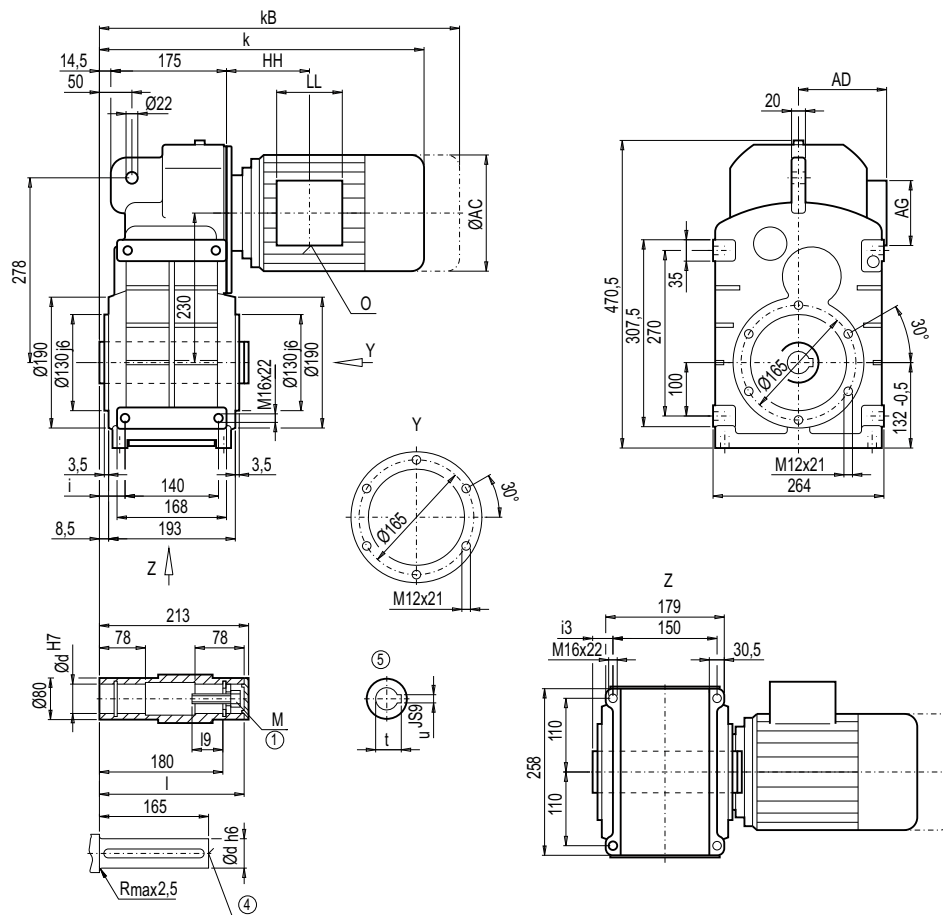
MOTOX Geared Motors

Parallel shaft geared motors

Dimensions

Gearbox FDA/FZA88B, FDAZ/FZAZ88B (3- / 2-stage), housing-flange-mounted design (C-type)

FA012
FAZ012



d	l	l9	M	t	u	i	i3
50 *)	210	44.5	M16	53.8	14	35	30
60	210	54.0	M20	64.4	18	35	30

*) Preferred series

Motor	F.A.88B								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDA.88B	FZA.88B
LA71	436.5	491.5	139.0	146	90	90	103.0	M20x1.5/M25x1.5	62	-
LA71Z	455.5	510.5	139.0	146	90	90	103.0	M20x1.5/M25x1.5	62	-
LA80	473.5	537.0	156.5	155	90	90	102.5	M20x1.5/M25x1.5	67	67
LA80Z	496.0	559.5	156.5	155	90	90	175.5	M20x1.5/M25x1.5	71	71
LA90S/L	504.5	575.5	174.0	163	90	90	102.5	M20x1.5/M25x1.5	71	72
LA90ZL	549.5	620.5	174.0	163	90	90	226.5	M20x1.5/M25x1.5	77	78
LA100L	550.5	631.5	195.0	168	120	120	143.0	2xM32x1.5	81	81
LA100ZL	620.5	701.5	195.0	168	120	120	275.0	2xM32x1.5	91	91
LA112M	577.5	658.5	219.0	181	120	120	146.0	2xM32x1.5	92	93
LA112ZM	605.5	686.5	219.0	181	120	120	250.0	2xM32x1.5	99	100
LA132S/M	637.5	739.5	259.0	195	140	140	186.5	2xM32x1.5	105	106
LA132ZM	683.5	785.5	259.0	195	140	140	294.5	2xM32x1.5	126	127
LA160M/L	740.0	858.5	313.5	227	165	165	212.0	2xM40x1.5	-	139
LA160ZL	788.0	906.5	313.5	227	165	165	365.0	2xM40x1.5	-	178

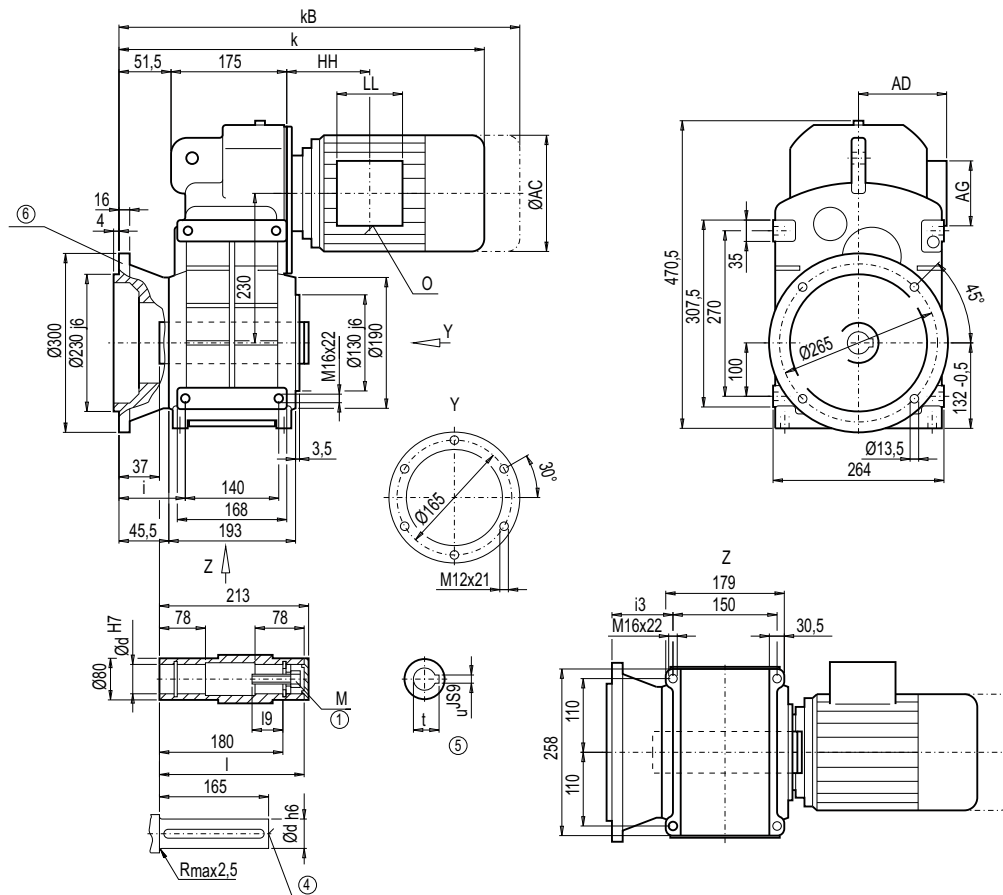
① DIN EN ISO 4014

④ DIN 332

⑤ Feather key / keyway DIN 6885

Gearbox FDAF/FZAF88B (3- / 2-stage), flange-mounted design

FAF012



d	l	l9	M	t	u	i	i3
50 *)	210	44.5	M16	53.8	14	72	67
60	210	54.0	M20	64.4	18	72	67

*) Preferred series

Motor	F.AF88B								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDAF88B	FZAF88B
LA71	473.5	528.5	139.0	146	90	90	103.0	M20x1.5/M25x1.5	73	-
LA71Z	492.5	547.5	139.0	146	90	90	103.0	M20x1.5/M25x1.5	73	-
LA80	510.5	574.0	156.5	155	90	90	102.5	M20x1.5/M25x1.5	78	78
LA80Z	533.0	596.5	156.5	155	90	90	175.5	M20x1.5/M25x1.5	82	82
LA90S/L	541.5	612.5	174.0	163	90	90	102.5	M20x1.5/M25x1.5	82	83
LA90ZL	586.5	657.5	174.0	163	90	90	226.5	M20x1.5/M25x1.5	88	89
LA100L	587.5	668.5	195.0	168	120	120	143.0	2xM32x1.5	92	92
LA100ZL	657.5	738.5	195.0	168	120	120	275.0	2xM32x1.5	102	102
LA112M	614.5	695.5	219.0	181	120	120	146.0	2xM32x1.5	103	104
LA112ZM	642.5	723.5	219.0	181	120	120	250.0	2xM32x1.5	110	111
LA132S/M	674.5	776.5	259.0	195	140	140	186.5	2xM32x1.5	116	117
LA132ZM	720.5	822.5	259.0	195	140	140	294.5	2xM32x1.5	137	138
LA160M/L	777.0	895.5	313.5	227	165	165	212.0	2xM40x1.5	-	150
LA160ZL	825.0	943.5	313.5	227	165	165	365.0	2xM40x1.5	-	189

① DIN EN ISO 4014

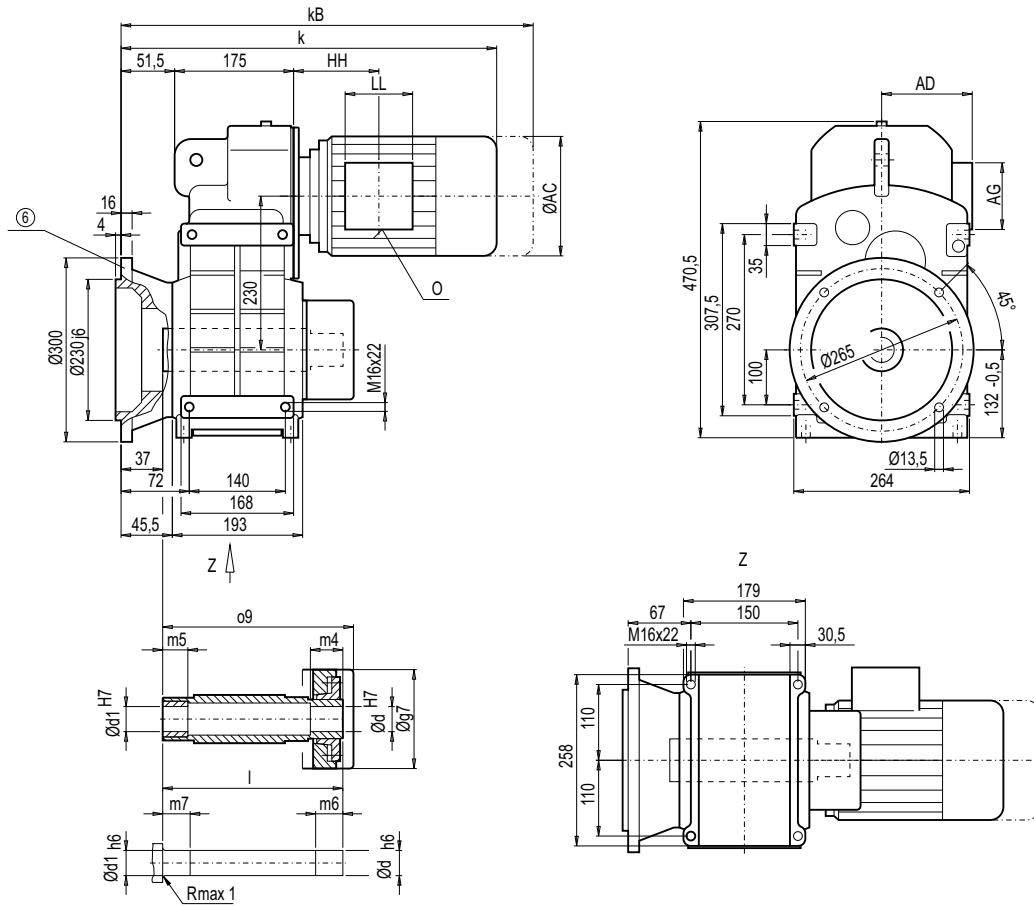
④ DIN 332

⑤ Feather key / keyway DIN 6885

⑥ For note, see page 3/178

Gearbox FDAFS/FZAFS88B (3- / 2-stage), flange-mounted design and shrink disk

FAFS012



d	d1	l	o9	m4	m5	m6	m7	g7
50 *)	50	241	249	29	30	34	35	132
60	60	241	249	29	30	34	35	132

*) Preferred series

Motor	F.AFS88B								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDAFS88B	FZAFS88B
LA71	473.5	528.5	139.0	146	90	90	103.0	M20x1.5/M25x1.5	75	-
LA71Z	492.5	547.5	139.0	146	90	90	103.0	M20x1.5/M25x1.5	75	-
LA80	510.5	574.0	156.5	155	90	90	102.5	M20x1.5/M25x1.5	80	80
LA80Z	533.0	596.5	156.5	155	90	90	175.5	M20x1.5/M25x1.5	84	84
LA90S/L	541.5	612.5	174.0	163	90	90	102.5	M20x1.5/M25x1.5	84	85
LA90ZL	586.5	657.5	174.0	163	90	90	226.5	M20x1.5/M25x1.5	90	91
LA100L	587.5	668.5	195.0	168	120	120	143.0	2xM32x1.5	93	94
LA100ZL	657.5	738.5	195.0	168	120	120	275.0	2xM32x1.5	103	104
LA112M	614.5	695.5	219.0	181	120	120	146.0	2xM32x1.5	105	106
LA112ZM	642.5	723.5	219.0	181	120	120	250.0	2xM32x1.5	112	113
LA132S/M	674.5	776.5	259.0	195	140	140	186.5	2xM32x1.5	118	119
LA132ZM	720.5	822.5	259.0	195	140	140	294.5	2xM32x1.5	139	140
LA160M/L	777.0	895.5	313.5	227	165	165	212.0	2xM40x1.5	-	151
LA160ZL	825.0	943.5	313.5	227	165	165	365.0	2xM40x1.5	-	190

© For note, see page 3/178

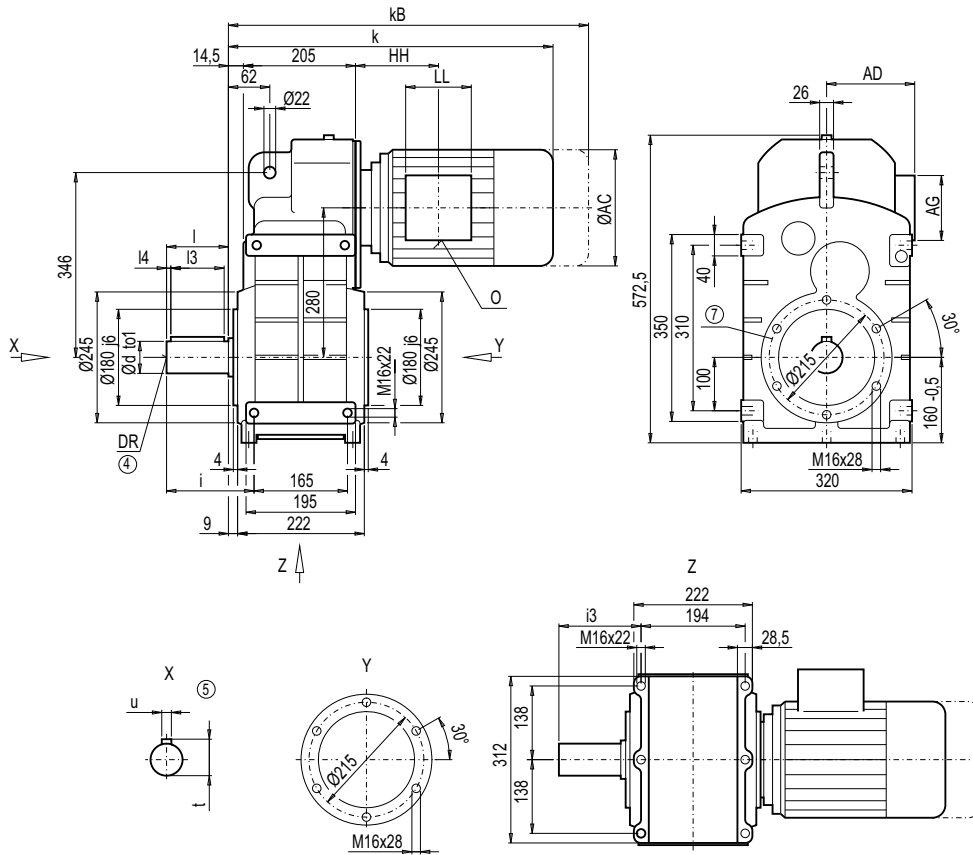
MOTOX Geared Motors

Parallel shaft geared motors

Dimensions

Gearbox FDZ/FZZ108B (3- / 2-stage), housing-flange-mounted design (C-type)

FZ012



d	to1	l	i3	i4	t	u	i	i3	DR
60 *)	m6	120	110	5	64	18	157.5	143	M20x42
80	m6	170	125	20	85	22	207.5	193	M20x42

*) Preferred series

Motor	F.Z108B								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDZ108B	FZZ108B
LA80	488.5	552.0	156.5	155.0	90	90	87.5	M20x1.5/M25x1.5	121	-
LA80Z	511.0	574.5	156.5	155.0	90	90	160.5	M20x1.5/M25x1.5	125	-
LA90S/L	519.5	590.5	174.0	163.0	90	90	87.5	M20x1.5/M25x1.5	126	-
LA90ZL	564.5	635.5	174.0	163.0	90	90	211.5	M20x1.5/M25x1.5	132	-
LA100L	563.0	644.0	195.0	168.0	120	120	125.5	2xM32x1.5	134	134
LA100ZL	633.0	714.0	195.0	168.0	120	120	257.5	2xM32x1.5	144	144
LA112M	589.0	670.0	219.0	181.0	120	120	127.5	2xM32x1.5	146	146
LA112ZM	617.0	698.0	219.0	181.0	120	120	231.5	2xM32x1.5	153	153
LA132S/M	649.0	751.0	259.0	195.0	140	140	168.0	2xM32x1.5	157	158
LA132ZM	695.0	797.0	259.0	195.0	140	140	276.0	2xM32x1.5	179	179
LA160M/L	753.5	872.0	313.5	227.0	165	165	195.5	2xM40x1.5	192	193
LA160ZL	801.5	920.0	313.5	227.0	165	165	348.5	2xM40x1.5	231	232
LG180M/L	813.0	935.0	348.0	322.5	260	192	212.5	2xM40x1.5	-	285
LG180ZM/ZL	864.0	986.0	348.0	322.5	260	192	212.5	2xM40x1.5	-	315

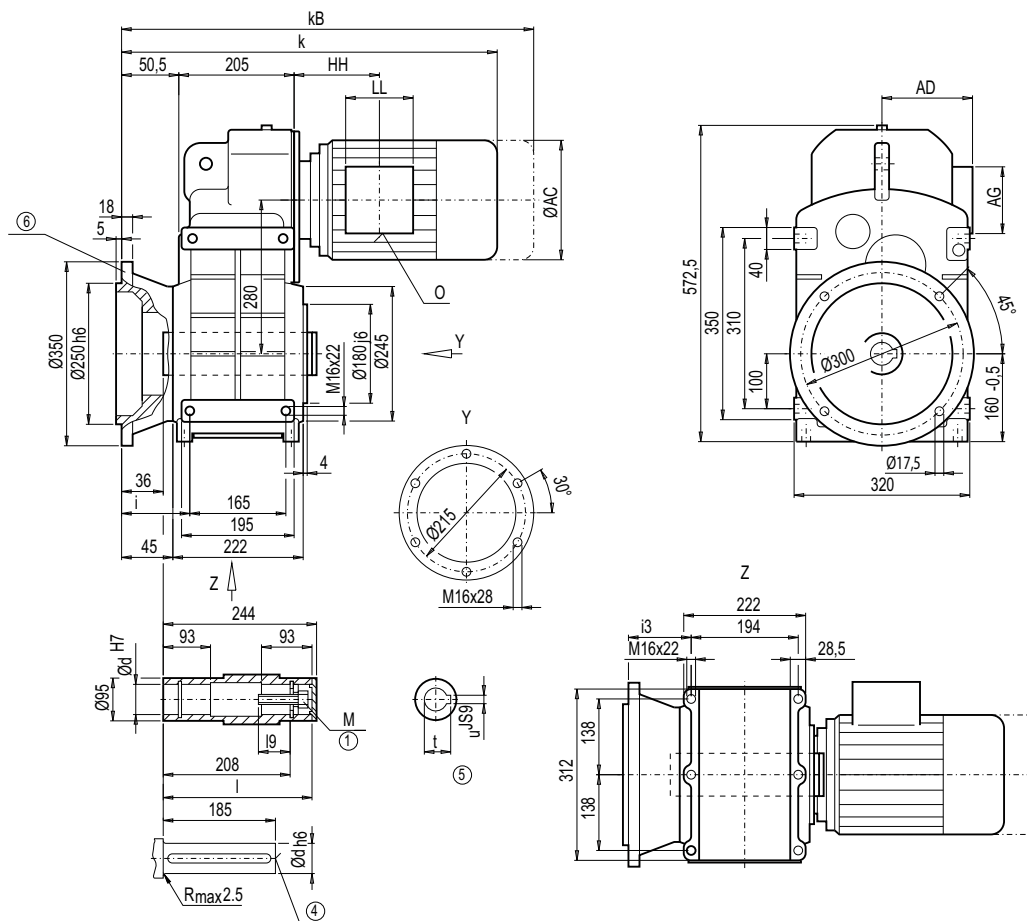
④ DIN 332

⑤ Feather key / keyway DIN 6885

⑦ For note, see page 3/179

Gearbox FDAF/FZAF108B (3- / 2-stage), flange-mounted design

FAF012



d	l	l9	M	t	u	i	i3
60 *)	240	63.5	M20	64.4	18	73.5	59
70	240	63.5	M20	74.9	20	73.5	59

*) Preferred series

Motor	F.AF108B								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDAF108B	FZAF108B
LA80	524.5	588.0	156.5	155.0	90	90	87.5	M20x1.5/M25x1.5	121	-
LA80Z	547.0	610.5	156.5	155.0	90	90	160.5	M20x1.5/M25x1.5	125	-
LA90S/L	555.5	626.5	174.0	163.0	90	90	87.5	M20x1.5/M25x1.5	126	-
LA90ZL	600.5	671.5	174.0	163.0	90	90	211.5	M20x1.5/M25x1.5	132	-
LA100L	599.0	680.0	195.0	168.0	120	120	125.5	2xM32x1.5	134	134
LA100ZL	669.0	750.0	195.0	168.0	120	120	257.5	2xM32x1.5	144	144
LA112M	625.0	706.0	219.0	181.0	120	120	127.5	2xM32x1.5	146	147
LA112ZM	653.0	734.0	219.0	181.0	120	120	231.5	2xM32x1.5	153	154
LA132S/M	685.0	787.0	259.0	195.0	140	140	168.0	2xM32x1.5	158	158
LA132ZM	731.0	833.0	259.0	195.0	140	140	276.0	2xM32x1.5	179	179
LA160M/L	789.5	908.0	313.5	227.0	165	165	195.5	2xM40x1.5	192	193
LA160ZL	837.5	956.0	313.5	227.0	165	165	348.5	2xM40x1.5	231	232
LG180M/L	849.0	971.0	348.0	322.5	260	192	212.5	2xM40x1.5	-	285
LG180ZM/ZL	900.0	1 022.0	348.0	322.5	260	192	212.5	2xM40x1.5	-	315

① DIN EN ISO 4014

④ DIN 332

⑤ Feather key / keyway DIN 6885

⑥ For note, see page 3/178

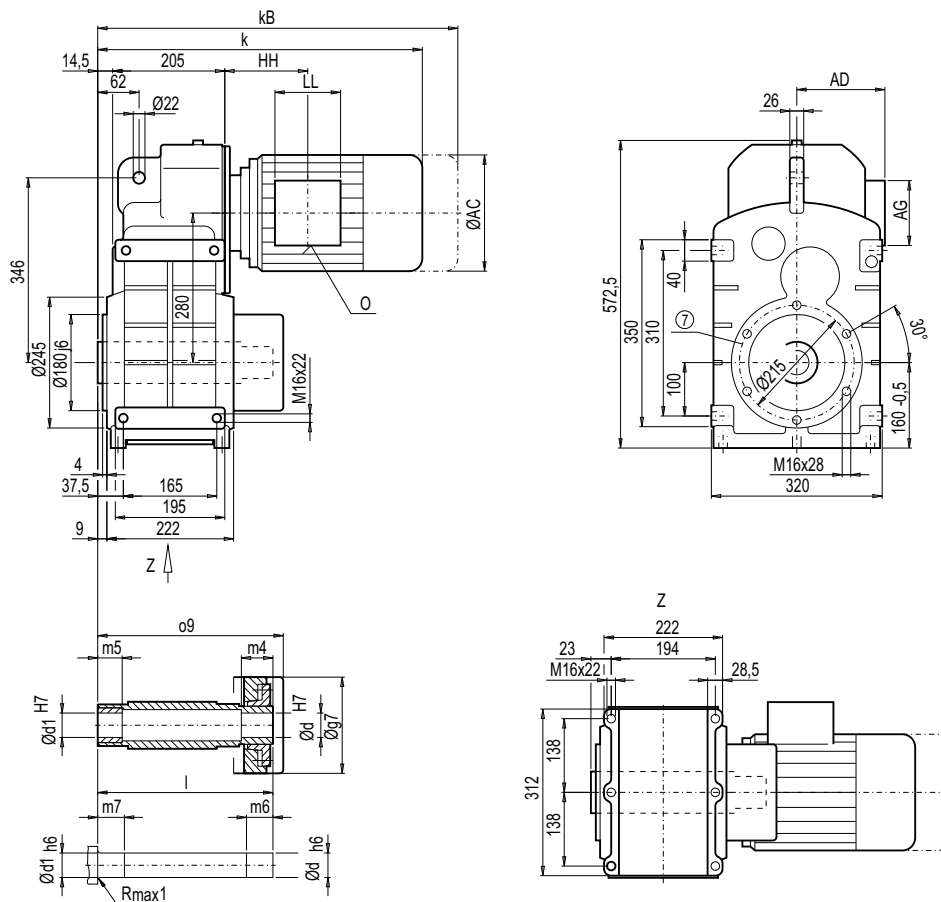
MOTOX Geared Motors

Parallel shaft geared motors

Dimensions

Gearbox FDAS/FZAS108B, FDAZS/FZAZS108B (3- / 2-stage), shaft-mounted design with shrink disk

FAS012
FAZS012



d	d1	l	o9	m4	m5	m6	m7	g7
65 *)	65	280	288	30	40	35	45	144
70	70	280	288	30	40	35	45	144

*) Preferred series

Motor	F.A.S108B								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDA.S108B	FZA.S108B
LA80	488.5	552.0	156.5	155.0	90	90	87.5	M20x1.5/M25x1.5	115	-
LA80Z	511.0	574.5	156.5	155.0	90	90	160.5	M20x1.5/M25x1.5	119	-
LA90S/L	519.5	590.5	174.0	163.0	90	90	87.5	M20x1.5/M25x1.5	120	-
LA90ZL	564.5	635.5	174.0	163.0	90	90	211.5	M20x1.5/M25x1.5	126	-
LA100L	563.0	644.0	195.0	168.0	120	120	125.5	2xM32x1.5	128	128
LA100ZL	633.0	714.0	195.0	168.0	120	120	257.5	2xM32x1.5	138	138
LA112M	589.0	670.0	219.0	181.0	120	120	127.5	2xM32x1.5	140	140
LA112ZM	617.0	698.0	219.0	181.0	120	120	231.5	2xM32x1.5	147	147
LA132S/M	649.0	751.0	259.0	195.0	140	140	168.0	2xM32x1.5	151	152
LA132ZM	695.0	797.0	259.0	195.0	140	140	276.0	2xM32x1.5	173	173
LA160M/L	753.5	872.0	313.5	227.0	165	165	195.5	2xM40x1.5	186	187
LA160ZL	801.5	920.0	313.5	227.0	165	165	348.5	2xM40x1.5	225	226
LG180M/L	813.0	935.0	348.0	322.5	260	192	212.5	2xM40x1.5	-	279
LG180ZM/ZL	864.0	986.0	348.0	322.5	260	192	212.5	2xM40x1.5	-	309

⑦ For note, see page 3/179

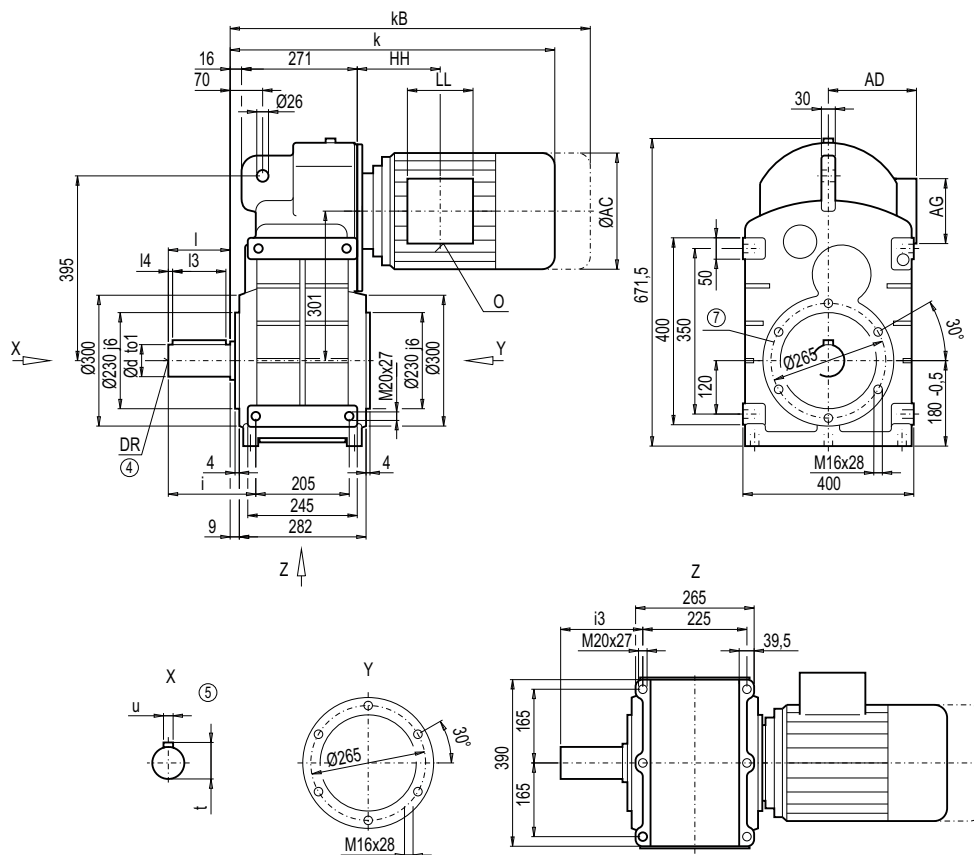
MOTOX Geared Motors

Parallel shaft geared motors

Dimensions

Gearbox FDZ/FZZ128B (3- / 2-stage), housing-flange-mounted design (C-type)

FZ012



d	to1	l	i3	i4	t	u	i	i3	DR
70 *)	m6	140	125	7.5	74.5	20	187.5	177.5	M20x42
90	m6	170	140	15.0	95.0	25	217.5	207.5	M24x50

*) Preferred series

Motor	F.Z128B								Weight	
	k	k _B	AC	AD	AG	LL	HH	O	FDZ128B	FZZ128B
LA90S/L	575.5	646.5	174.0	163.0	90	90	76.0	M20x1.5/M25x1.5	206	–
LA90ZL	620.5	691.5	174.0	163.0	90	90	200.0	M20x1.5/M25x1.5	212	–
LA100L	618.5	699.5	195.0	168.0	120	120	113.5	2xM32x1.5	214	–
LA100ZL	688.5	769.5	195.0	168.0	120	120	245.5	2xM32x1.5	224	–
LA112M	645.0	726.0	219.0	181.0	120	120	116.0	2xM32x1.5	226	224
LA112ZM	673.0	754.0	219.0	181.0	120	120	220.0	2xM32x1.5	233	231
LA132S/M	704.0	806.0	259.0	195.0	140	140	155.5	2xM32x1.5	236	235
LA132ZM	750.0	852.0	259.0	195.0	140	140	263.5	2xM32x1.5	258	256
LA160M/L	809.5	928.0	313.5	227.0	165	165	184.0	2xM40x1.5	271	269
LA160ZL	857.5	976.0	313.5	227.0	165	165	337.0	2xM40x1.5	310	308
LG180M/L	866.0	988.0	348.0	322.5	260	192	198.0	2xM40x1.5	367	366
LG180ZM/ZL	917.0	1 039.0	348.0	322.5	260	192	198.0	2xM40x1.5	397	396
LG200L	922.0	1 048.0	385.0	301.0	260	192	228.0	2xM50x1.5	447	446
K4-LGI225S	1 182.5	1 421.5	442.0	325.0	260	192	443.0	2xM50x1.5	–	601
K4-LGI225M	1 182.5	1 421.5	442.0	325.0	260	192	443.0	2xM50x1.5	–	589
K4-LGI225ZM	1 242.5	1 481.5	442.0	325.0	260	192	443.0	2xM50x1.5	–	647

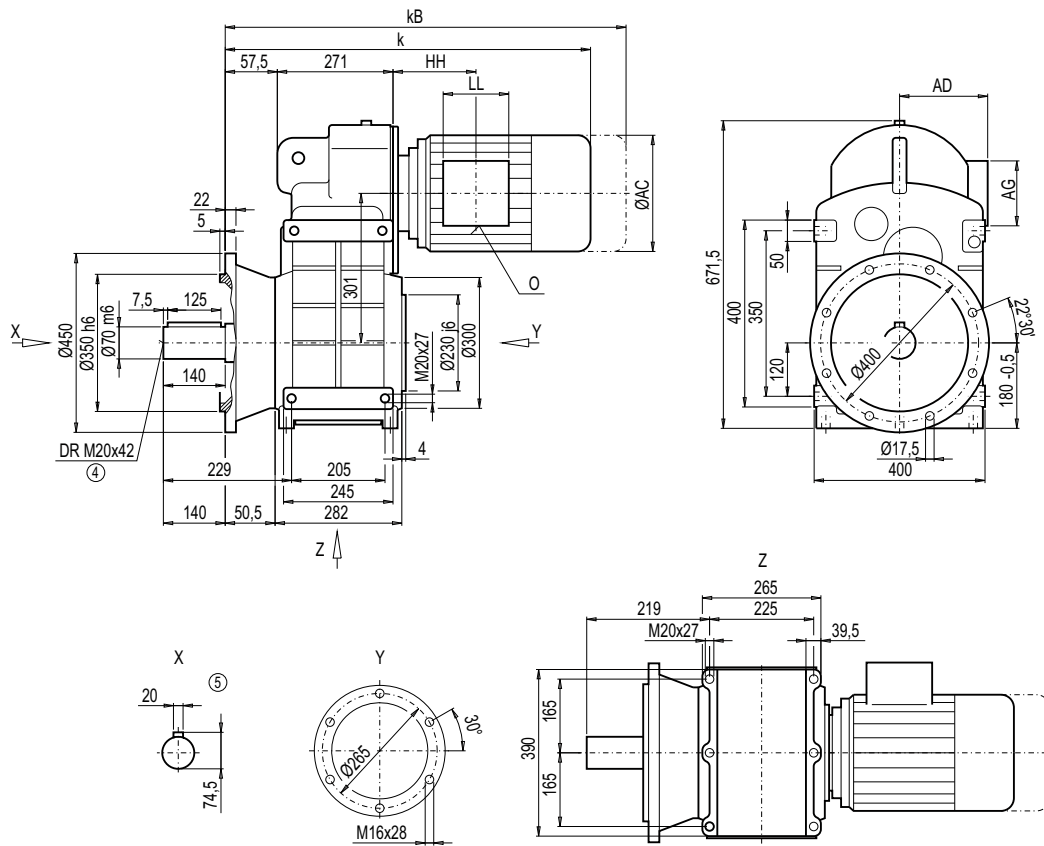
④ DIN 332

⑤ Feather key / keyway DIN 6885

⑦ For note, see page 3/179

Gearbox FDF/FZF128B (3- / 2-stage), flange-mounted design (A-type)

FF012

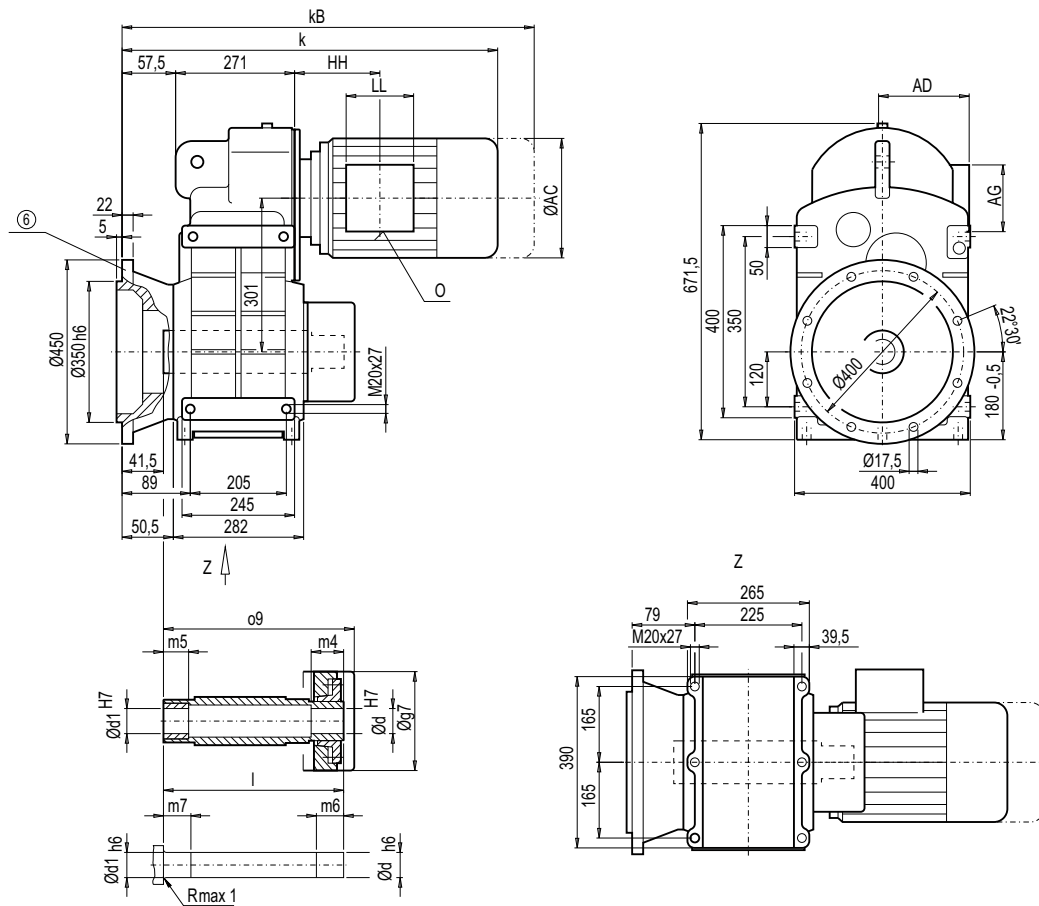


3

Motor	F.F128B								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDF128B	FZF128B
LA90S/L	617.0	688.0	174.0	163.0	90	90	76.0	M20x1.5/M25x1.5	226	–
LA90ZL	662.0	733.0	174.0	163.0	90	90	200.0	M20x1.5/M25x1.5	232	–
LA100L	660.0	741.0	195.0	168.0	120	120	113.5	2xM32x1.5	234	–
LA100ZL	730.0	811.0	195.0	168.0	120	120	245.5	2xM32x1.5	244	–
LA112M	686.5	767.5	219.0	181.0	120	120	116.0	2xM32x1.5	246	244
LA112ZM	714.5	795.5	219.0	181.0	120	120	220.0	2xM32x1.5	253	251
LA132S/M	745.5	847.5	259.0	195.0	140	140	155.5	2xM32x1.5	256	255
LA132ZM	791.5	893.5	259.0	195.0	140	140	263.5	2xM32x1.5	278	276
LA160M/L	851.0	969.5	313.5	227.0	165	165	184.0	2xM40x1.5	291	289
LA160ZL	899.0	1 017.5	313.5	227.0	165	165	337.0	2xM40x1.5	230	328
LG180M/L	907.5	1 029.5	348.0	322.5	260	192	198.0	2xM40x1.5	387	386
LG180ZM/ZL	958.5	1 080.5	348.0	322.5	260	192	198.0	2xM40x1.5	417	416
LG200L	963.5	1 089.5	385.0	301.0	260	192	228.0	2xM50x1.5	467	466
K4-LGI225S	1 224.0	1 463.0	442.0	325.0	260	192	443.0	2xM50x1.5	–	621
K4-LGI225M	1 224.0	1 463.0	442.0	325.0	260	192	443.0	2xM50x1.5	–	609
K4-LGI225ZM	1 284.0	1 523.0	442.0	325.0	260	192	443.0	2xM50x1.5	–	667

Gearbox FDAFS/FZAFS128B (3- / 2-stage), flange-mounted design and shrink disk

FAFS012



d	d1	l	o9	m4	m5	m6	m7	g7
75 *)	75	345	357	44	50	49	55	180
80	80	345	357	40	50	45	55	180

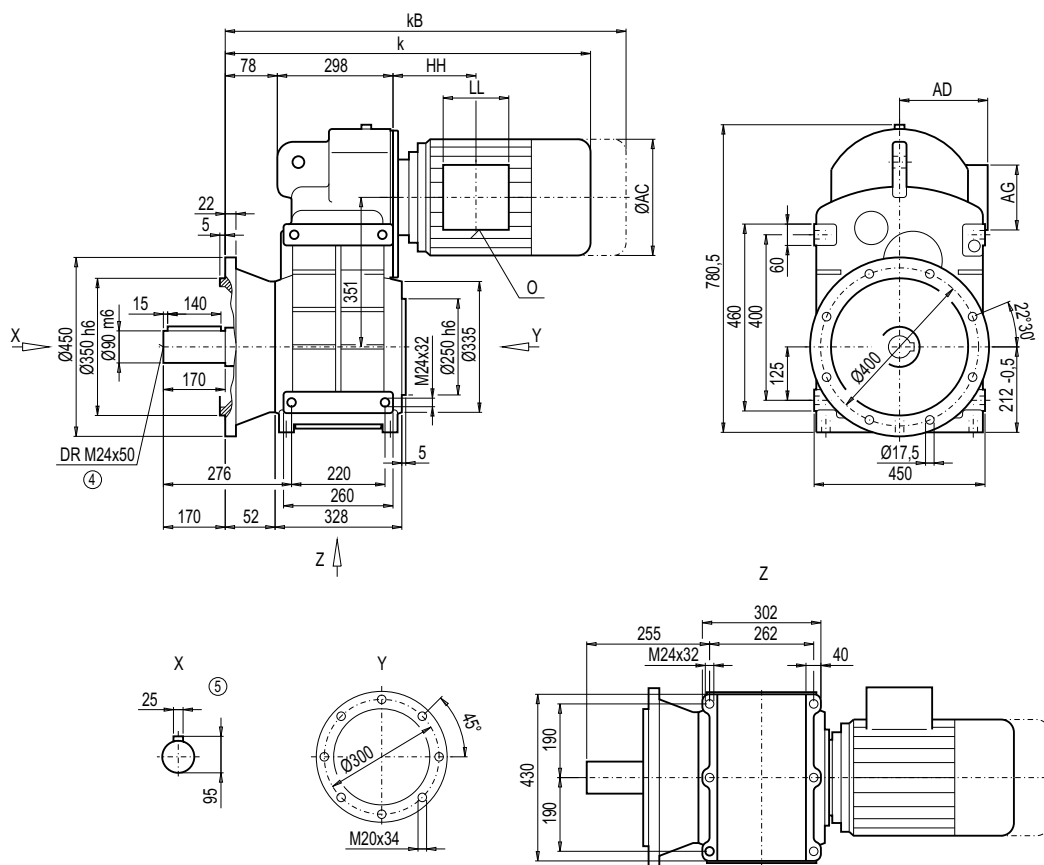
*) Preferred series

Motor	F.AFS128B								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDAFS128B	FZAFS128B
LA90S/L	617.0	688.0	174.0	163.0	90	90	76.0	M20x1.5/M25x1.5	210	–
LA90ZL	662.0	733.0	174.0	163.0	90	90	200.0	M20x1.5/M25x1.5	216	–
LA100L	660.0	741.0	195.0	168.0	120	120	113.5	2xM32x1.5	218	–
LA100ZL	730.0	811.0	195.0	168.0	120	120	245.5	2xM32x1.5	228	–
LA112M	686.5	767.5	219.0	181.0	120	120	116.0	2xM32x1.5	230	228
LA112ZM	714.5	795.5	219.0	181.0	120	120	220.0	2xM32x1.5	237	235
LA132S/M	745.5	847.5	259.0	195.0	140	140	155.5	2xM32x1.5	241	239
LA132ZM	791.5	893.5	259.0	195.0	140	140	263.5	2xM32x1.5	262	260
LA160M/L	851.0	969.5	313.5	227.0	165	165	184.0	2xM40x1.5	275	274
LA160ZL	899.0	1 017.5	313.5	227.0	165	165	337.0	2xM40x1.5	314	313
LG180M/L	907.5	1 029.5	348.0	322.5	260	192	198.0	2xM40x1.5	372	370
LG180ZM/ZL	958.5	1 080.5	348.0	322.5	260	192	198.0	2xM40x1.5	402	400
LG200L	963.5	1 089.5	385.0	301.0	260	192	228.0	2xM50x1.5	452	450
K4-LGI225S	1 224.0	1 463.0	442.0	325.0	260	192	443.0	2xM50x1.5	–	615
K4-LGI225M	1 224.0	1 463.0	442.0	325.0	260	192	443.0	2xM50x1.5	–	593
K4-LGI225ZM	1 284.0	1 523.0	442.0	325.0	260	192	443.0	2xM50x1.5	–	651

© For note, see page 3/178

Gearbox FDF/FZF148B (3- / 2-stage), flange-mounted design (A-type)

FF012



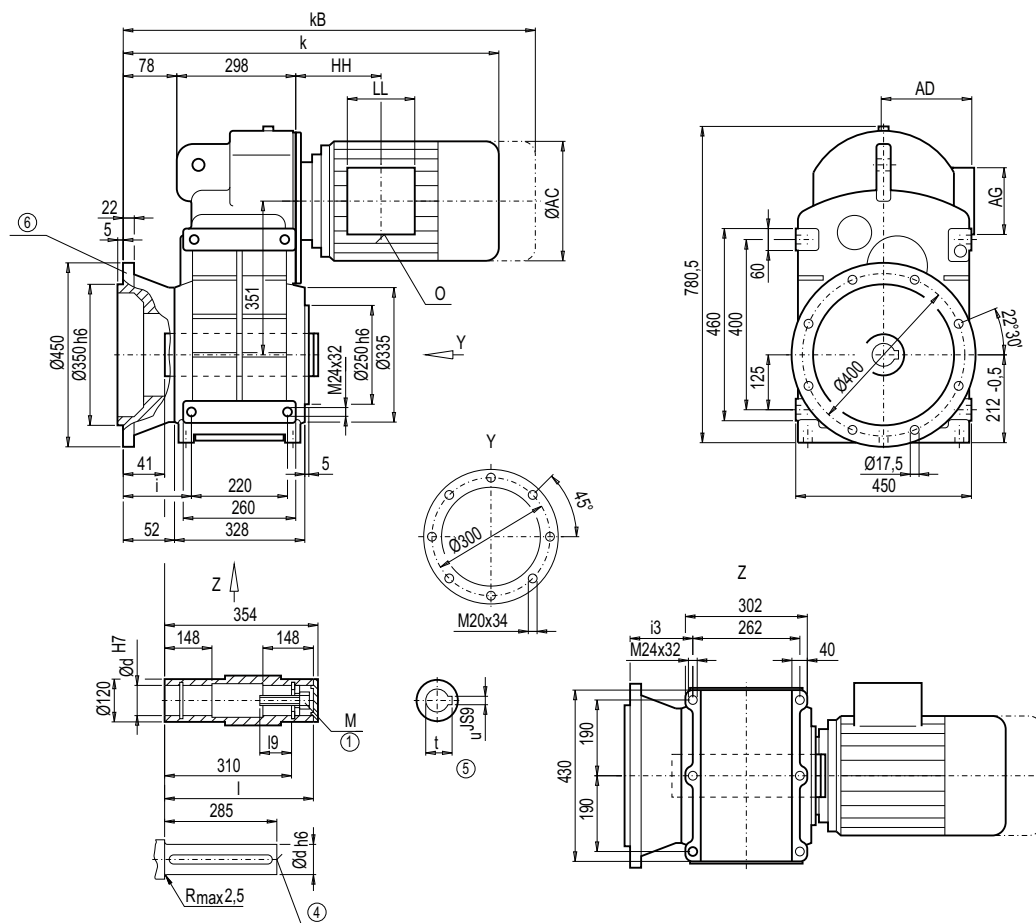
Motor	F.F148B								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDF148B	FZF148B
LA100L	698.0	779.0	195.0	168.0	120	120	104.0	2xM32x1.5	333	—
LA100ZL	768.0	849.0	195.0	168.0	120	120	236.0	2xM32x1.5	343	—
LA112M	723.5	804.5	219.0	181.0	120	120	105.5	2xM32x1.5	345	—
LA112ZM	751.5	832.5	219.0	181.0	120	120	209.5	2xM32x1.5	352	—
LA132S/M	782.5	884.5	259.0	195.0	140	140	145.0	2xM32x1.5	354	350
LA132ZM	828.5	930.5	259.0	195.0	140	140	253.0	2xM32x1.5	375	371
LA160M/L	882.0	1 000.5	313.5	227.0	165	165	167.5	2xM40x1.5	393	389
LA160ZL	930.0	1 048.5	313.5	227.0	165	165	320.5	2xM40x1.5	432	428
LG180M/L	941.5	1 063.5	348.0	322.5	260	192	184.5	2xM40x1.5	484	480
LG180ZM/ZL	992.5	1 114.5	348.0	322.5	260	192	184.5	2xM40x1.5	514	510
LG200L	997.5	1 123.5	385.0	301.0	260	192	214.5	2xM50x1.5	564	560
LG225S	1 068.5	1 307.5	442.0	325.0	260	192	250.5	2xM50x1.5	638	637
LG225M	1 068.5	1 307.5	442.0	325.0	260	192	250.5	2xM50x1.5	626	625
LG225ZM	1 128.5	1 367.5	442.0	325.0	260	192	250.5	2xM50x1.5	684	683
K4-LGI250M	1 355.5	1 580.5	495.0	392.0	300	236	469.5	2xM63x1.5	—	804
K4-LGI250ZM	1 425.5	1 650.5	495.0	392.0	300	236	469.5	2xM63x1.5	—	907

④ DIN 332

⑤ Feather key / keyway DIN 6885

Gearbox FDAF/FZAF148B (3- / 2-stage), flange-mounted design

FAF012



d	l	l ₉	M	t	u	i	i ₃
80 *)	350	63.5	M20	85.4	22	106	85
90	350	72.0	M24	95.4	25	106	85

*) Preferred series

Motor	F.AF148B								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDAF148B	FZAF148B
LA100L	698.0	779.0	195.0	168.0	120	120	104.0	2xM32x1.5	305	–
LA100ZL	768.0	849.0	195.0	168.0	120	120	236.0	2xM32x1.5	315	–
LA112M	723.5	804.5	219.0	181.0	120	120	105.5	2xM32x1.5	317	–
LA112ZM	751.5	832.5	219.0	181.0	120	120	209.5	2xM32x1.5	324	–
LA132S/M	782.5	884.5	259.0	195.0	140	140	145.0	2xM32x1.5	326	322
LA132ZM	828.5	930.5	259.0	195.0	140	140	253.0	2xM32x1.5	347	343
LA160M/L	882.0	1 000.5	313.5	227.0	165	165	167.5	2xM40x1.5	365	361
LA160ZL	930.0	1 048.5	313.5	227.0	165	165	320.5	2xM40x1.5	404	400
LG180M/L	941.5	1 063.5	348.0	322.5	260	192	184.5	2xM40x1.5	456	452
LG180ZM/ZL	992.5	1 114.5	348.0	322.5	260	192	184.5	2xM40x1.5	486	482
LG200L	997.5	1 123.5	385.0	301.0	260	192	214.5	2xM50x1.5	536	532
LG225S	1 068.5	1 307.5	442.0	325.0	260	192	250.5	2xM50x1.5	610	609
LG225M	1 068.5	1 307.5	442.0	325.0	260	192	250.5	2xM50x1.5	598	597
LG225ZM	1 128.5	1 367.5	442.0	325.0	260	192	250.5	2xM50x1.5	656	655
K4-LGI250M	1 355.5	1 580.5	495.0	392.0	300	236	469.5	2xM63x1.5	–	776
K4-LGI250ZM	1 425.5	1 650.5	495.0	392.0	300	236	469.5	2xM63x1.5	–	879

① DIN EN ISO 4014

④ DIN 332

⑤ Feather key / keyway DIN 6885

⑥ For note, see page 3/178

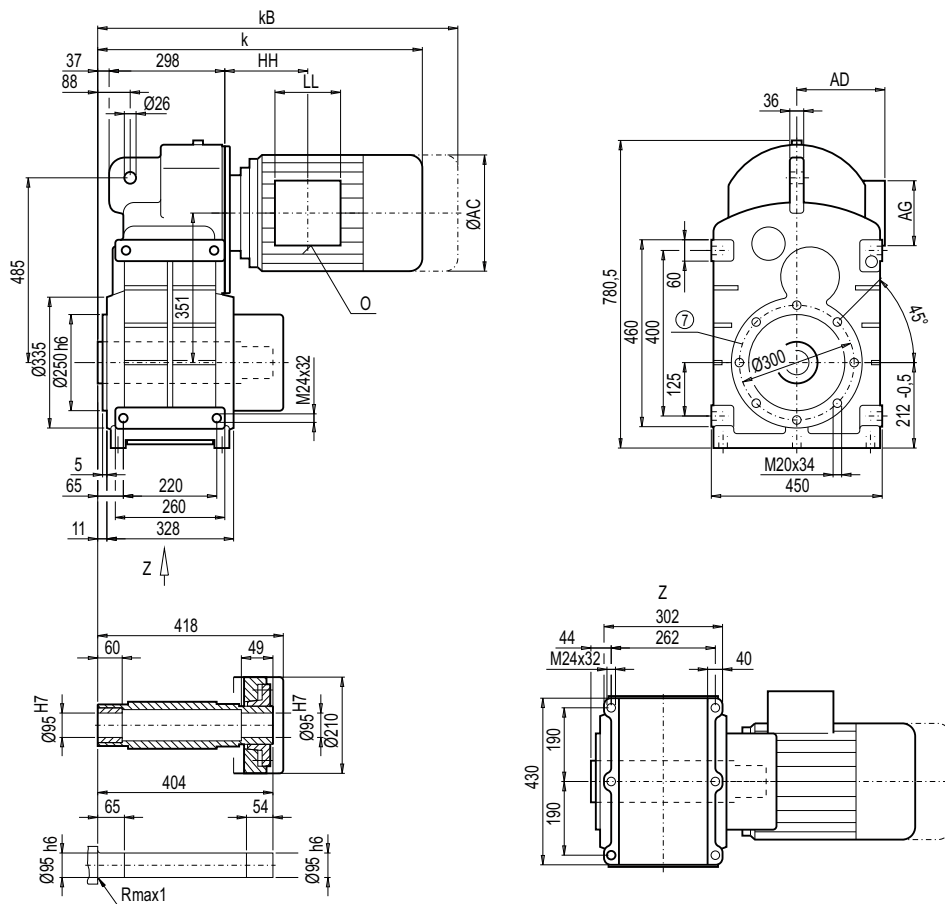
MOTOX Geared Motors

Parallel shaft geared motors

Dimensions

Gearbox FDAS/FZAS148B, FDAZS/FZAZS148B (3- / 2-stage), shaft-mounted design with shrink disk

FAS012
FAZS012

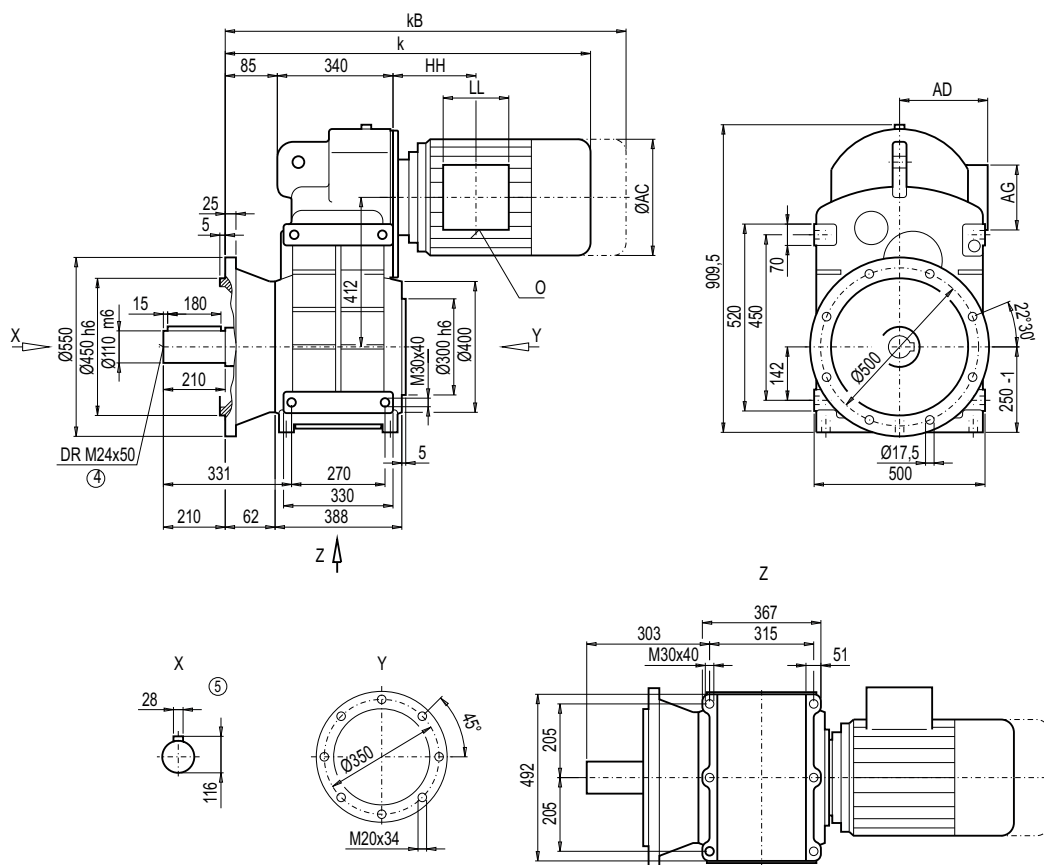


Motor	F.A.S148B								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDA.S148B	FZA.S148B
LA100L	657.0	738.0	195.0	168.0	120	120	104.0	2xM32x1.5	290	–
LA100ZL	727.0	808.0	195.0	168.0	120	120	236.0	2xM32x1.5	300	–
LA112M	682.5	763.5	219.0	181.0	120	120	105.5	2xM32x1.5	301	–
LA112ZM	710.5	791.5	219.0	181.0	120	120	209.5	2xM32x1.5	308	–
LA132S/M	741.5	843.5	259.0	195.0	140	140	145.0	2xM32x1.5	310	306
LA132ZM	787.5	889.5	259.0	195.0	140	140	253.0	2xM32x1.5	331	327
LA160M/L	841.0	959.5	313.5	227.0	165	165	167.5	2xM40x1.5	350	345
LA160ZL	889.0	1 007.5	313.5	227.0	165	165	320.5	2xM40x1.5	389	384
LG180M/L	900.5	1 022.5	348.0	322.5	260	192	184.5	2xM40x1.5	441	436
LG180ZM/ZL	951.5	1 073.5	348.0	322.5	260	192	184.5	2xM40x1.5	471	466
LG200L	956.5	1 082.5	385.0	301.0	260	192	214.5	2xM50x1.5	521	516
LG225S	1 027.5	1 266.5	442.0	325.0	260	192	250.5	2xM50x1.5	597	593
LG225M	1 027.5	1 266.5	442.0	325.0	260	192	250.5	2xM50x1.5	585	581
LG225ZM	1 087.5	1 326.5	442.0	325.0	260	192	250.5	2xM50x1.5	643	639
K4-LGI250M	1 314.5	1 539.5	495.0	392.0	300	236	469.5	2xM63x1.5	–	760
K4-LGI250ZM	1 384.5	1 609.5	495.0	392.0	300	236	469.5	2xM63x1.5	–	863

⑦ For note, see page 3/179

Gearbox FDF/FZF168B (3- / 2-stage), flange-mounted design (A-type)

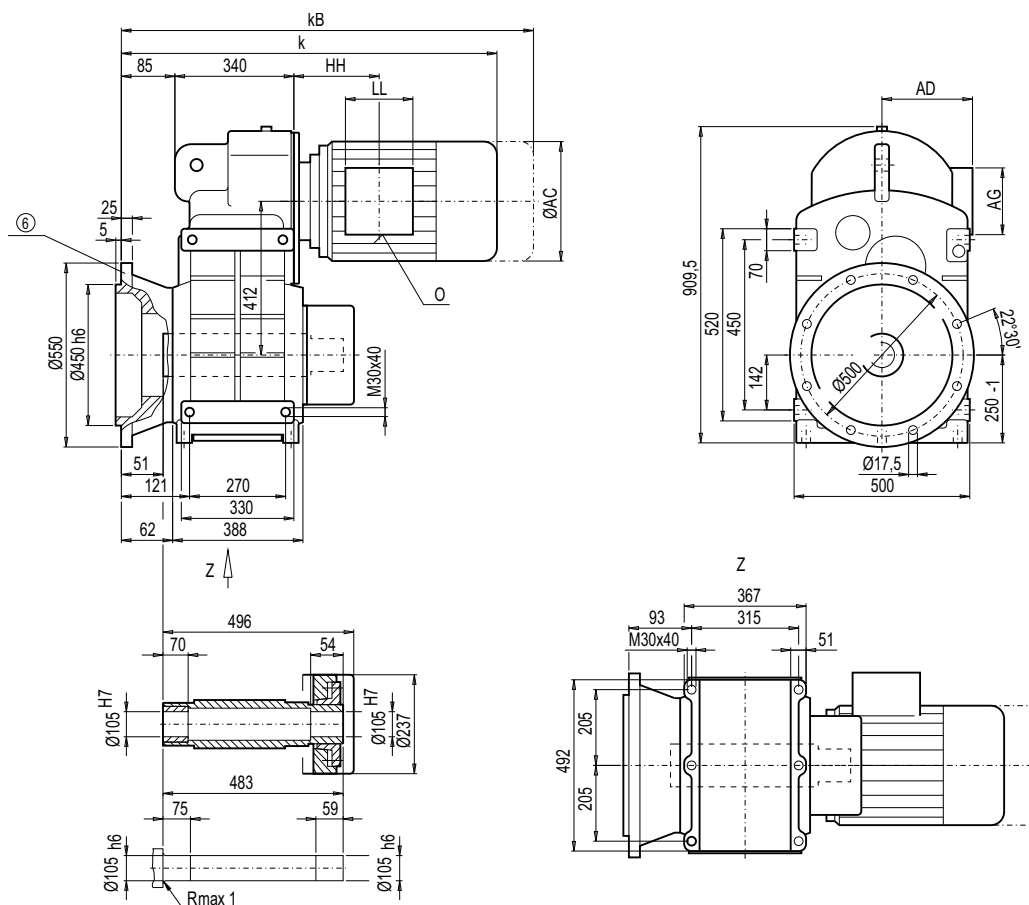
FF012



Motor	F.F168B								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDF168B	FZF168B
LA132S/M	823.5	925.5	259.0	195.0	140	140	137.0	2xM32x1.5	533	522
LA132ZM	869.5	971.5	259.0	195.0	140	140	245.0	2xM32x1.5	554	543
LA160M/L	923.5	1 042.0	313.5	227.0	165	165	160.0	2xM40x1.5	567	556
LA160ZL	971.5	1 090.0	313.5	227.0	165	165	313.0	2xM40x1.5	606	595
LG180M/L	983.0	1 105.0	348.0	322.5	260	192	177.0	2xM40x1.5	663	651
LG180ZM/ZL	1 034.0	1 156.0	348.0	322.5	260	192	177.0	2xM40x1.5	693	681
LG200L	1 039.0	1 165.0	385.0	301.0	260	192	207.0	2xM50x1.5	743	731
LG225S	1 110.0	1 349.0	442.0	325.0	260	192	243.0	2xM50x1.5	816	805
LG225M	1 110.0	1 349.0	442.0	325.0	260	192	243.0	2xM50x1.5	804	793
LG225ZM	1 170.0	1 409.0	442.0	325.0	260	192	243.0	2xM50x1.5	862	851
LG250M	1 203.5	1 428.5	495.0	392.0	300	236	278.5	2xM63x1.5	906	895
LG250ZM	1 273.5	1 499.0	495.0	392.0	300	236	278.5	2xM63x1.5	1 009	998
K4-LGI280S	1 482.5	1 709.5	555.0	432.0	300	236	489.5	2xM63x1.5	-	1 125
K4-LGI280M	1 482.5	1 709.5	555.0	432.0	300	236	489.5	2xM63x1.5	-	1 138
K4-LGI280ZM	1 592.5	1 819.5	555.0	432.0	300	236	489.5	2xM63x1.5	-	1 226

Gearbox FDAFS/FZAFS168B (3- / 2-stage), flange-mounted design and shrink disk

FAFS012

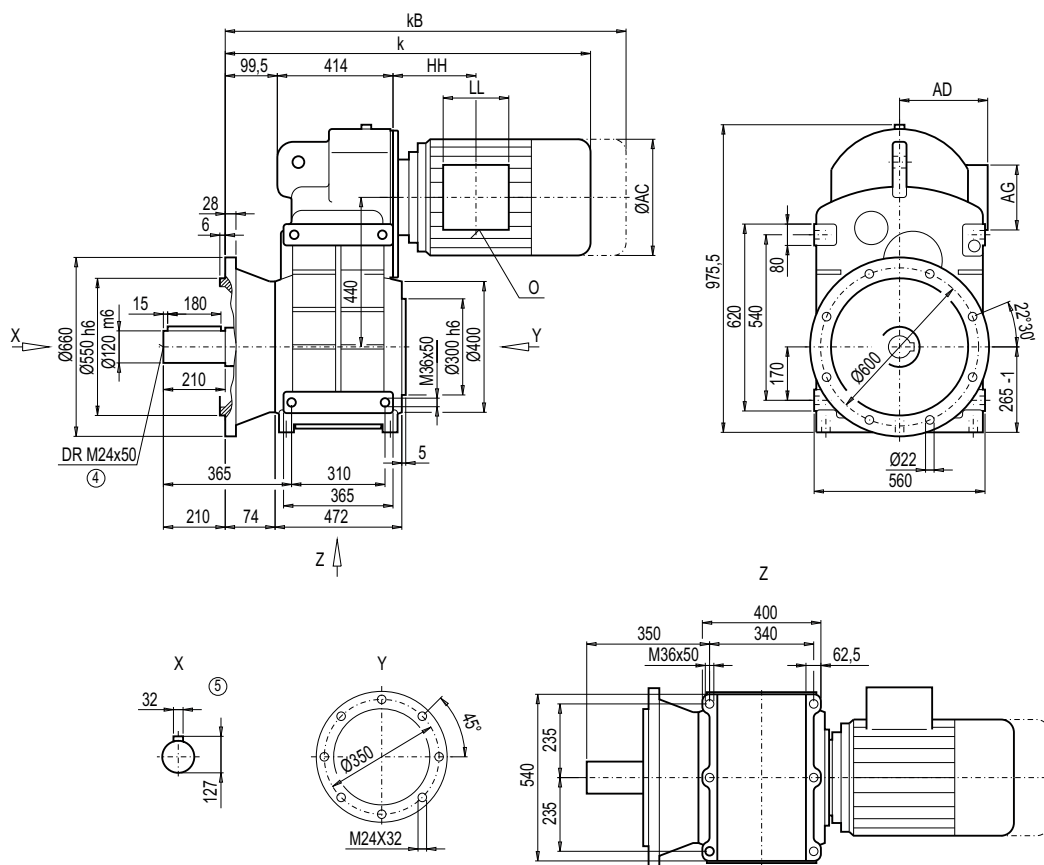


Motor	F.AFS168B								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDAFS168B	FZAFS168B
LA132S/M	823.5	925.5	259.0	195.0	140	140	137.0	2xM32x1.5	498	487
LA132ZM	869.5	971.5	259.0	195.0	140	140	245.0	2xM32x1.5	519	508
LA160M/L	923.5	1 042.0	313.5	227.0	165	165	160.0	2xM40x1.5	532	521
LA160ZL	971.5	1 090.0	313.5	227.0	165	165	313.0	2xM40x1.5	571	560
LG180M/L	983.0	1 105.0	348.0	322.5	260	192	177.0	2xM40x1.5	628	616
LG180ZM/ZL	1 034.0	1 156.0	348.0	322.5	260	192	177.0	2xM40x1.5	658	646
LG200L	1 039.0	1 165.0	385.0	301.0	260	192	207.0	2xM50x1.5	708	696
LG225S	1 110.0	1 349.0	442.0	325.0	260	192	243.0	2xM50x1.5	781	770
LG225M	1 110.0	1 349.0	442.0	325.0	260	192	243.0	2xM50x1.5	769	758
LG225ZM	1 170.0	1 409.0	442.0	325.0	260	192	243.0	2xM50x1.5	827	816
LG250M	1 203.5	1 428.5	495.0	392.0	300	236	278.5	2xM63x1.5	871	860
LG250ZM	1 273.5	1 499.0	495.0	392.0	300	236	278.5	2xM63x1.5	974	963
K4-LGI280S	1 482.5	1 709.5	555.0	432.0	300	236	489.5	2xM63x1.5	–	1 091
K4-LGI280M	1 482.5	1 709.5	555.0	432.0	300	236	489.5	2xM63x1.5	–	1 103
K4-LGI280ZM	1 592.5	1 819.5	555.0	432.0	300	236	489.5	2xM63x1.5	–	1 191

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Gearbox FDF/FZF188B (3- / 2-stage), flange-mounted design (A-type)

FF012



Motor	F.F188B								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDF188B	FZF188B
LA132S/M	897.5	999.5	259.0	195.0	140	140	122.5	2xM32x1.5	740	-
LA132ZM	943.5	1 045.5	259.0	195.0	140	140	230.5	2xM32x1.5	761	-
LA160M/L	997.5	1 116.0	313.5	227.0	165	165	145.5	2xM40x1.5	773	759
LA160ZL	1 045.5	1 164.0	313.5	227.0	165	165	298.5	2xM40x1.5	812	798
LG180M/L	1 057.0	1 179.0	348.0	322.5	260	192	162.5	2xM40x1.5	869	854
LG180ZM/ZL	1 108.0	1 230.0	348.0	322.5	260	192	162.5	2xM40x1.5	899	884
LG200L	1 113.0	1 239.0	385.0	301.0	260	192	192.5	2xM50x1.5	949	934
LG225S	1 184.0	1 423.0	442.0	325.0	260	192	228.5	2xM50x1.5	1 022	1 007
LG225M	1 184.0	1 423.0	442.0	325.0	260	192	228.5	2xM50x1.5	1 010	995
LG225ZM	1 244.0	1 483.0	442.0	325.0	260	192	228.5	2xM50x1.5	1 068	1 053
LG250M	1 277.5	1 502.5	495.0	392.0	300	236	264.0	2xM63x1.5	1 112	1 097
LG250ZM	1 347.5	1 573.0	495.0	392.0	300	236	264.0	2xM63x1.5	1 215	1 200
K4-LGI280S	1 557.0	1 784.0	555.0	432.0	300	236	475.5	2xM63x1.5	1 240	1 226
K4-LGI280M	1 557.0	1 784.0	555.0	432.0	300	236	475.5	2xM63x1.5	1 346	1 331
K4-LGI280ZM	1 667.0	1 894.0	555.0	432.0	300	236	475.5	2xM63x1.5	1 434	1 419
K2-LGI315S/M	1 745.0	2 010.0	610.0	500.0	380	307	584.5	2xM63x1.5	-	1 461
K2-LGI315ZM	1 905.0	2 170.0	610.0	500.0	380	307	584.5	2xM63x1.5	-	1 616
K2-LGI315L	1 905.0	2 170.0	610.0	500.0	380	307	584.5	2xM63x1.5	-	1 756
K2-LGI315ZL	2 045.0	2 310.0	610.0	500.0	380	307	584.5	2xM63x1.5	-	1 956

④ DIN 332

⑤ Feather key / keyway DIN 6885

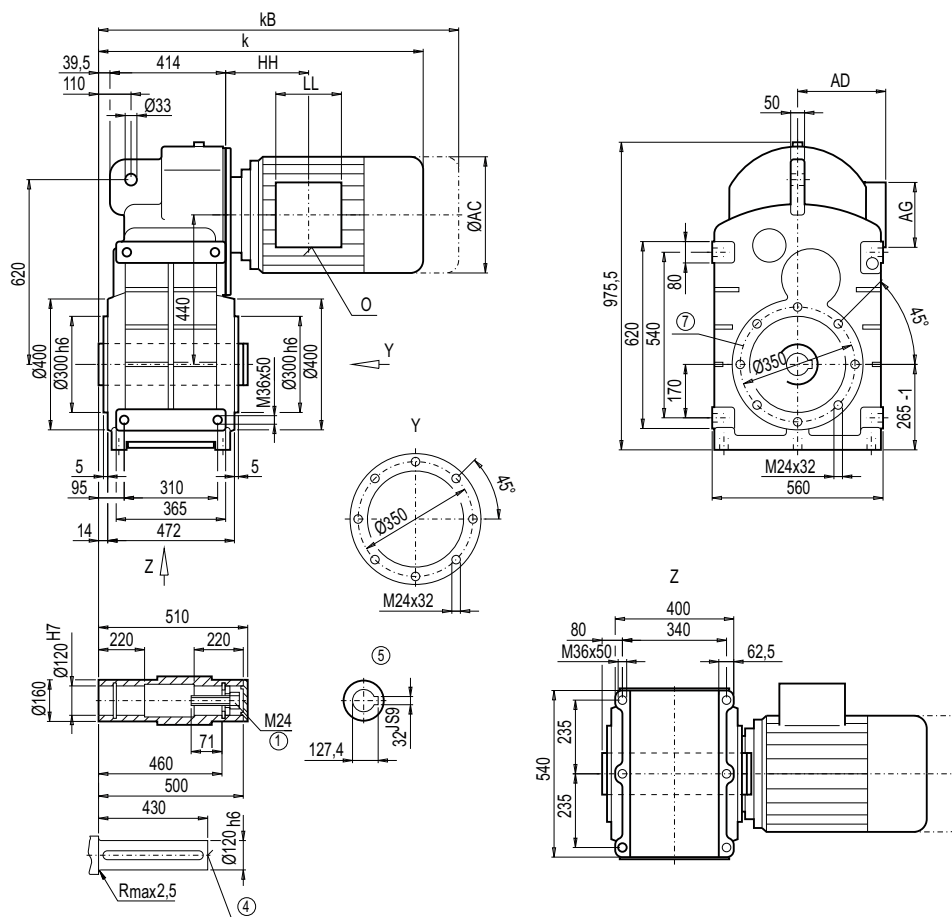
MOTOX Geared Motors

Parallel shaft geared motors

Dimensions

Gearbox FDA/FZA188B, FDAZ/FZAZ188B (3- / 2-stage), housing-flange-mounted design (C-type)

FA012
FAZ012



Motor	F.A.188B								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDA.188B	FZA.188B
LA132S/M	837.5	939.5	259.0	195.0	140	140	122.5	2xM32x1.5	622	–
LA132ZM	883.5	985.5	259.0	195.0	140	140	230.5	2xM32x1.5	643	–
LA160M/L	937.5	1 056.0	313.5	227.0	165	165	145.5	2xM40x1.5	655	641
LA160ZL	985.5	1 104.0	313.5	227.0	165	165	298.5	2xM40x1.5	694	680
LG180M/L	997.0	1 119.0	348.0	322.5	260	192	162.5	2xM40x1.5	751	736
LG180ZM/ZL	1 048.0	1 170.0	348.0	322.5	260	192	162.5	2xM40x1.5	781	766
LG200L	1 053.0	1 179.0	385.0	301.0	260	192	192.5	2xM50x1.5	831	816
LG225S	1 124.0	1 363.0	442.0	325.0	260	192	228.5	2xM50x1.5	904	889
LG225M	1 124.0	1 363.0	442.0	325.0	260	192	228.5	2xM50x1.5	892	877
LG225ZM	1 184.0	1 423.0	442.0	325.0	260	192	228.5	2xM50x1.5	950	935
LG250M	1 217.5	1 442.5	495.0	392.0	300	236	264.0	2xM63x1.5	994	979
LG250ZM	1 287.5	1 513.0	495.0	392.0	300	236	264.0	2xM63x1.5	1 097	1 082
K4-LGI280S	1 497.0	1 724.0	555.0	432.0	300	236	475.5	2xM63x1.5	1 122	1 108
K4-LGI280M	1 497.0	1 724.0	555.0	432.0	300	236	475.5	2xM63x1.5	1 228	1 213
K4-LGI280ZM	1 607.0	1 834.0	555.0	432.0	300	236	475.5	2xM63x1.5	1 316	1 301
K2-LGI315S/M	1 685.0	1 950.0	610.0	500.0	380	307	584.5	2xM63x1.5	–	1 343
K2-LGI315ZM	1 845.0	2 110.0	610.0	500.0	380	307	584.5	2xM63x1.5	–	1 498
K2-LGI315L	1 845.0	2 110.0	610.0	500.0	380	307	584.5	2xM63x1.5	–	1 643
K2-LGI315ZL	1 985.0	2 250.0	610.0	500.0	380	307	584.5	2xM63x1.5	–	1 838

① DIN EN ISO 4014

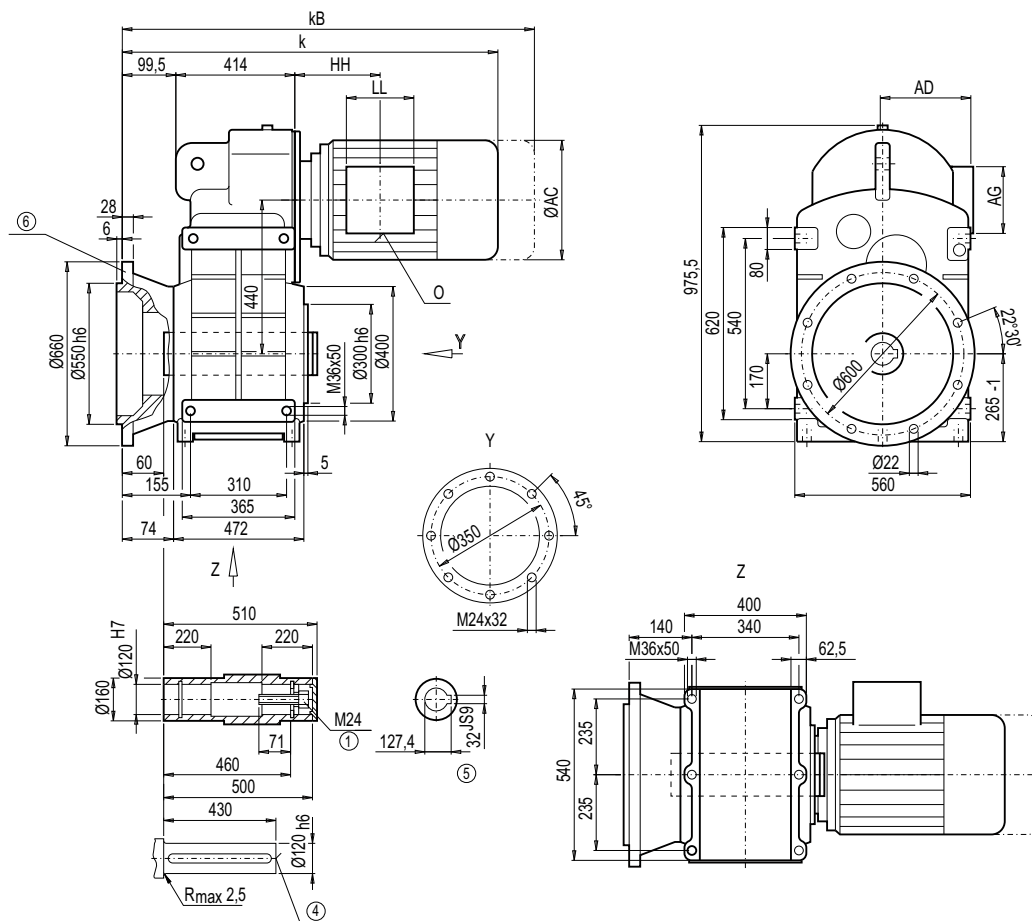
④ DIN 332

⑤ Feather key / keyway DIN 6885

⑦ For note, see page 3/179

Gearbox FDAF/FZAF188B (3- / 2-stage), flange-mounted design

FAF012



Motor	F.AF188B								Weight	
	k	k _B	AC	AD	AG	LL	HH	O	FDAF188B	FZAF188B
LA132S/M	897.5	999.5	259.0	195.0	140	140	122.5	2xM32x1.5	677	-
LA132ZM	943.5	1 045.5	259.0	195.0	140	140	230.5	2xM32x1.5	698	-
LA160M/L	997.5	1 116.0	313.5	227.0	165	165	145.5	2xM40x1.5	710	696
LA160ZL	1 045.5	1 164.0	313.5	227.0	165	165	298.5	2xM40x1.5	749	735
LG180M/L	1 057.0	1 179.0	348.0	322.5	260	192	162.5	2xM40x1.5	806	791
LG180ZM/ZL	1 108.0	1 230.0	348.0	322.5	260	192	162.5	2xM40x1.5	836	821
LG200L	1 113.0	1 239.0	385.0	301.0	260	192	192.5	2xM50x1.5	886	871
LG225S	1 184.0	1 423.0	442.0	325.0	260	192	228.5	2xM50x1.5	959	944
LG225M	1 184.0	1 423.0	442.0	325.0	260	192	228.5	2xM50x1.5	947	932
LG225ZM	1 244.0	1 483.0	442.0	325.0	260	192	228.5	2xM50x1.5	1 005	990
LG250M	1 277.5	1 502.5	495.0	392.0	300	236	264.0	2xM63x1.5	1 051	1 034
LG250ZM	1 347.5	1 573.0	495.0	392.0	300	236	264.0	2xM63x1.5	1 152	1 137
K4-LGI280S	1 557.0	1 784.0	555.0	432.0	300	236	475.5	2xM63x1.5	1 177	1 163
K4-LGI280M	1 557.0	1 784.0	555.0	432.0	300	236	475.5	2xM63x1.5	1 283	1 268
K4-LGI280ZM	1 667.0	1 894.0	555.0	432.0	300	236	475.5	2xM63x1.5	1 371	1 356
K2-LGI315S/M	1 745.0	2 010.0	610.0	500.0	380	307	584.5	2xM63x1.5	-	1 398
K2-LGI315ZM	1 905.0	2 170.0	610.0	500.0	380	307	584.5	2xM63x1.5	-	1 553
K2-LGI315L	1 905.0	2 170.0	610.0	500.0	380	307	584.5	2xM63x1.5	-	1 693
K2-LGI315ZL	2 045.0	2 310.0	610.0	500.0	380	307	584.5	2xM63x1.5	-	1 893

① DIN EN ISO 4014

④ DIN 332

⑤ Feather key / keyway DIN 6885

⑥ For note, see page 3/178

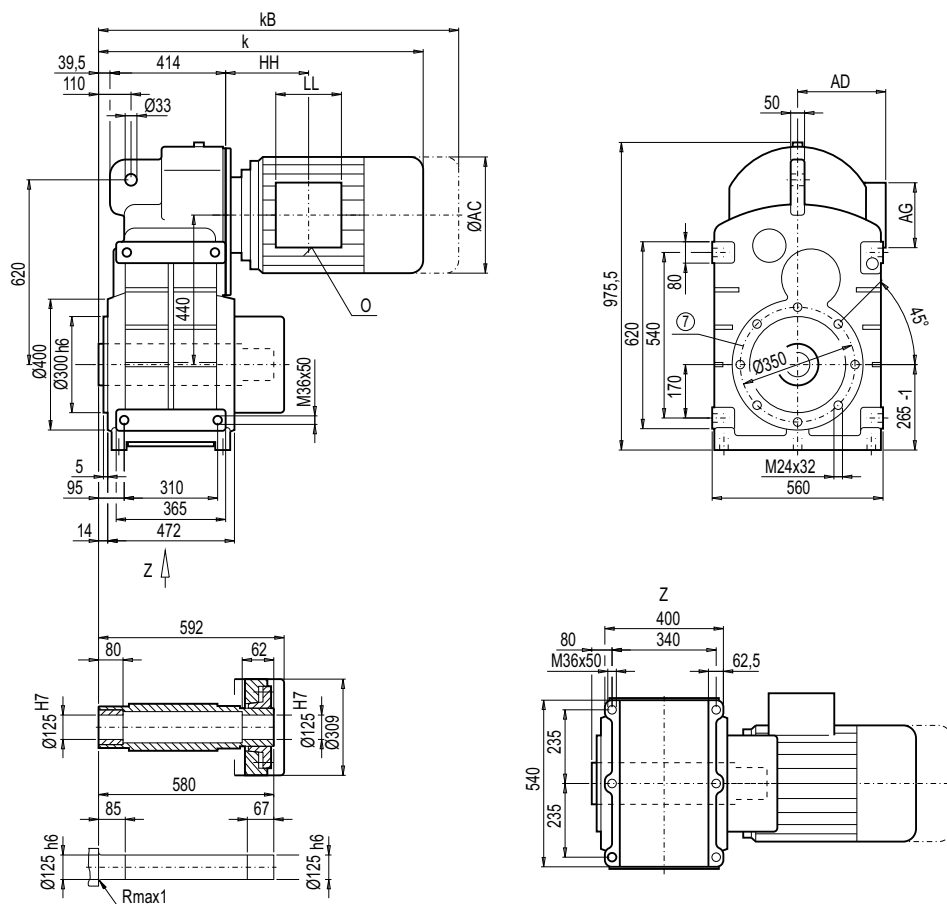
MOTOX Geared Motors

Parallel shaft geared motors

Dimensions

Gearbox FDAS/FZAS188B, FDAZS/FZAZS188B (3- / 2-stage), shaft-mounted design with shrink disk

FAS012
FAZS012

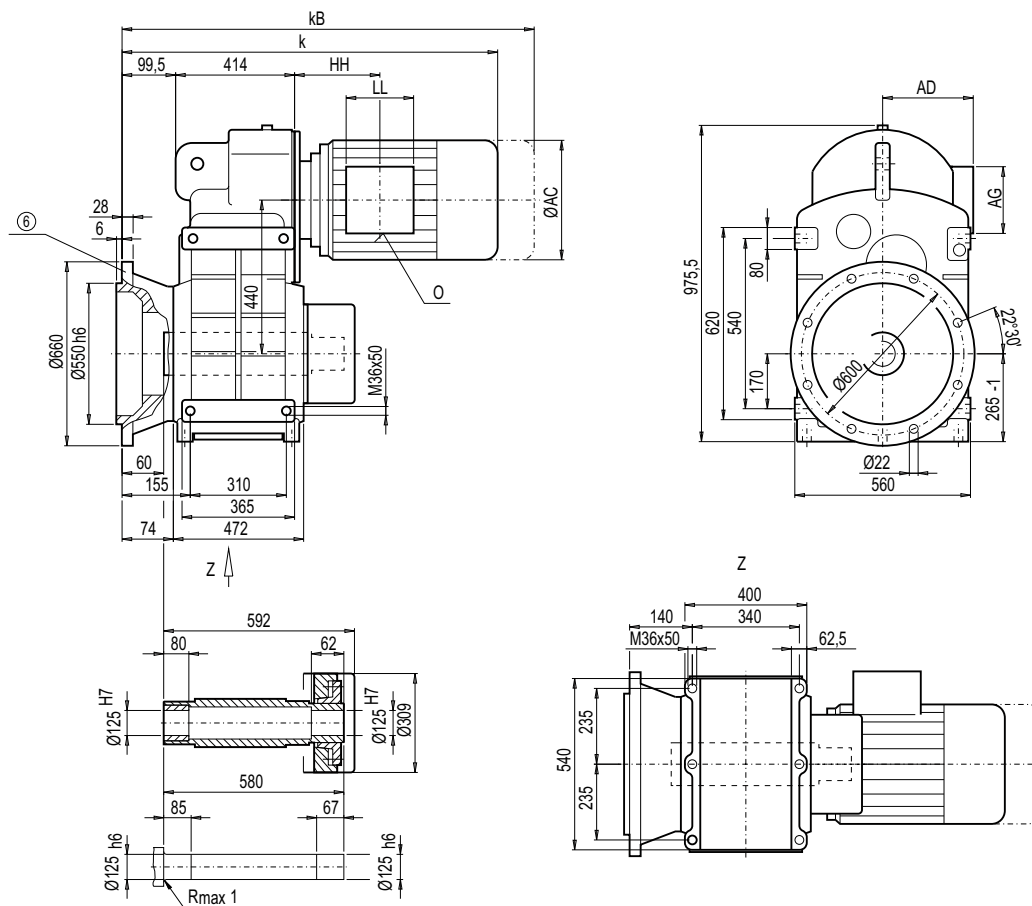


Motor	F.A.S188B								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDA.S188B	FZA.S188B
LA132S/M	837.5	939.5	259.0	195.0	140	140	122.5	2xM32x1.5	738	–
LA132ZM	883.5	985.5	259.0	195.0	140	140	230.5	2xM32x1.5	759	–
LA160M/L	937.5	1 056.0	313.5	227.0	165	165	145.5	2xM40x1.5	771	757
LA160ZL	985.5	1 104.0	313.5	227.0	165	165	298.5	2xM40x1.5	810	796
LG180M/L	997.0	1 119.0	348.0	322.5	260	192	162.5	2xM40x1.5	867	852
LG180ZM/ZL	1 048.0	1 170.0	348.0	322.5	260	192	162.5	2xM40x1.5	897	882
LG200L	1 053.0	1 179.0	385.0	301.0	260	192	192.5	2xM50x1.5	947	932
LG225S	1 124.0	1 363.0	442.0	325.0	260	192	228.5	2xM50x1.5	1 020	1 005
LG225M	1 124.0	1 363.0	442.0	325.0	260	192	228.5	2xM50x1.5	1 008	993
LG225ZM	1 184.0	1 423.0	442.0	325.0	260	192	228.5	2xM50x1.5	1 066	1 051
LG250M	1 217.5	1 442.5	495.0	392.0	300	236	264.0	2xM63x1.5	1 110	1 095
LG250ZM	1 287.5	1 513.0	495.0	392.0	300	236	264.0	2xM63x1.5	1 213	1 198
K4-LGI280S	1 497.0	1 724.0	555.0	432.0	300	236	475.5	2xM63x1.5	1 238	1 224
K4-LGI280M	1 497.0	1 724.0	555.0	432.0	300	236	475.5	2xM63x1.5	1 344	1 329
K4-LGI280ZM	1 607.0	1 834.0	555.0	432.0	300	236	475.5	2xM63x1.5	1 432	1 417
K2-LGI315S/M	1 685.0	1 950.0	610.0	500.0	380	307	584.5	2xM63x1.5	–	1 459
K2-LGI315ZM	1 845.0	2 110.0	610.0	500.0	380	307	584.5	2xM63x1.5	–	1 614
K2-LGI315L	1 845.0	2 110.0	610.0	500.0	380	307	584.5	2xM63x1.5	–	1 754
K2-LGI315ZL	1 985.0	2 250.0	610.0	500.0	380	307	584.5	2xM63x1.5	–	1 954

⑦ For note, see page 3/179

Gearbox FDAFS/FZAFS188B (3- / 2-stage), flange-mounted design and shrink disk

F.AFS012



Motor	F.AFS188B								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDAFS188B	FZAFS188B
LA132S/M	897.5	999.5	259.0	195.0	140	140	122.5	2xM32x1.5	687	-
LA132ZM	943.5	1 045.5	259.0	195.0	140	140	230.5	2xM32x1.5	708	-
LA160M/L	997.5	1 116.0	313.5	227.0	165	165	145.5	2xM40x1.5	721	706
LA160ZL	1 045.5	1 164.0	313.5	227.0	165	165	298.5	2xM40x1.5	760	745
LG180M/L	1 057.0	1 179.0	348.0	322.5	260	192	162.5	2xM40x1.5	816	802
LG180ZM/ZL	1 108.0	1 230.0	348.0	322.5	260	192	162.5	2xM40x1.5	846	832
LG200L	1 113.0	1 239.0	385.0	301.0	260	192	192.5	2xM50x1.5	896	882
LG225S	1 184.0	1 423.0	442.0	325.0	260	192	228.5	2xM50x1.5	969	954
LG225M	1 184.0	1 423.0	442.0	325.0	260	192	228.5	2xM50x1.5	957	942
LG225ZM	1 244.0	1 483.0	442.0	325.0	260	192	228.5	2xM50x1.5	1 015	1 000
LG250M	1 277.5	1 502.5	495.0	392.0	300	236	264.0	2xM63x1.5	1 059	1 044
LG250ZM	1 347.5	1 573.0	495.0	392.0	300	236	264.0	2xM63x1.5	1 162	1 147
K4-LGI280S	1 557.0	1 784.0	555.0	432.0	300	236	475.5	2xM63x1.5	1 187	1 173
K4-LGI280M	1 557.0	1 784.0	555.0	432.0	300	236	475.5	2xM63x1.5	1 293	1 278
K4-LGI280ZM	1 667.0	1 894.0	555.0	432.0	300	236	475.5	2xM63x1.5	1 381	1 366
K2-LGI315S/M	1 745.0	2 010.0	610.0	500.0	380	307	584.5	2xM63x1.5	-	1 408
K2-LGI315ZM	1 905.0	2 170.0	610.0	500.0	380	307	584.5	2xM63x1.5	-	1 563
K2-LGI315L	1 905.0	2 170.0	610.0	500.0	380	307	584.5	2xM63x1.5	-	1 703
K2-LGI315ZL	2 045.0	2 310.0	610.0	500.0	380	307	584.5	2xM63x1.5	-	1 903

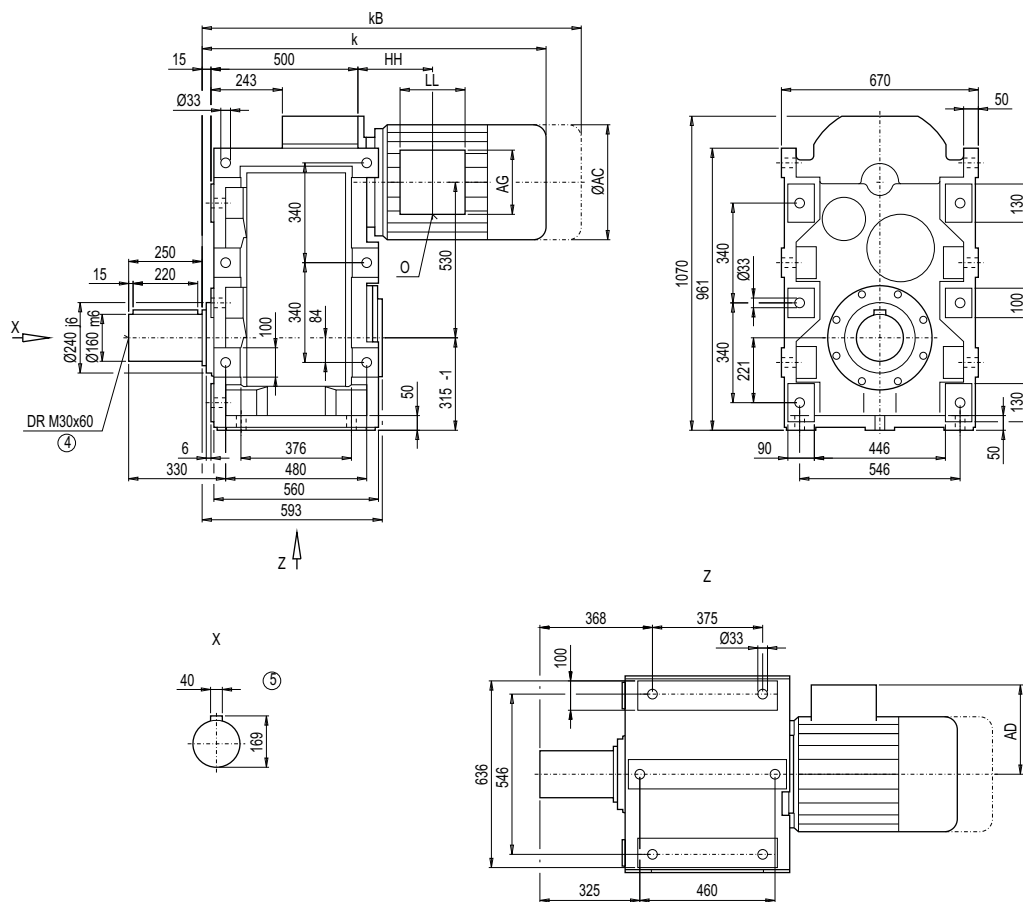
MOTOX Geared Motors

Parallel shaft geared motors

Dimensions

Gearbox FD/FZ208, FDZ/FZZ208 (3- / 2-stage), housing-flange-mounted design (C-type)

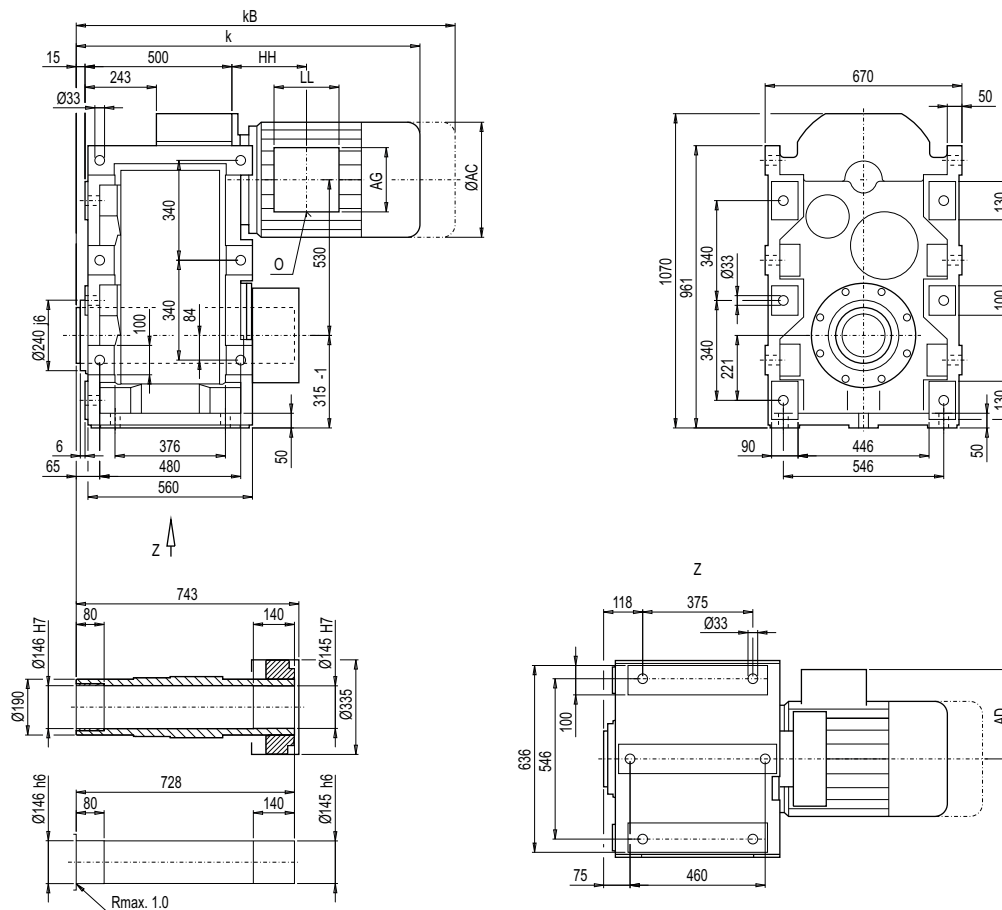
F012
FZ012



Motor	F..208								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FD.208	FZ.208
LA132S/M	899.0	1 001.0	259.0	195.0	140	140	122.5	2xM32x1.5	1 124	–
LA132ZM	945.0	1 047.0	259.0	195.0	140	140	230.5	2xM32x1.5	1 145	–
LA160M/L	999.0	1 117.5	313.5	227.0	165	165	145.5	2xM40x1.5	1 158	1 128
LA160ZL	1 047.0	1 165.5	313.5	227.0	165	165	298.5	2xM40x1.5	1 197	1 166
LG180M/L	1 058.5	1 180.5	348.0	322.5	260	192	162.5	2xM40x1.5	1 253	1 223
LG180ZM/ZL	1 109.5	1 231.5	348.0	322.5	260	192	162.5	2xM40x1.5	1 283	1 253
LG200L	1 114.5	1 240.5	385.0	301.0	260	192	192.5	2xM50x1.5	1 333	1 303
LG225S	1 185.5	1 424.5	442.0	325.0	260	192	228.5	2xM50x1.5	1 406	1 376
LG225M	1 185.5	1 424.5	442.0	325.0	260	192	228.5	2xM50x1.5	1 394	1 364
LG225ZM	1 245.5	1 484.5	442.0	325.0	260	192	228.5	2xM50x1.5	1 452	1 422
LG250M	1 279.0	1 504.5	495.0	392.0	300	236	264.0	2xM63x1.5	1 496	1 466
LG250ZM	1 349.0	1 574.5	495.0	392.0	300	236	264.0	2xM63x1.5	1 599	1 569
K4-LGI280S	1 558.5	1 785.5	555.0	432.0	300	236	475.5	2xM63x1.5	1 625	1 595
K4-LGI280M	1 558.5	1 785.5	555.0	432.0	300	236	475.5	2xM63x1.5	1 730	1 700
K4-LGI280ZM	1 668.5	1 895.5	555.0	432.0	300	236	475.5	2xM63x1.5	1 818	1 788
K2-LGI315S/M	1 746.5	2 011.5	610.0	500.0	380	307	584.5	2xM63x1.5	1 860	1 830
K2-LGI315ZM	1 906.5	2 171.5	610.0	500.0	380	307	584.5	2xM63x1.5	2 015	1 985
K2-LGI315L	1 906.5	2 171.5	610.0	500.0	380	307	584.5	2xM63x1.5	2 155	2 125
K2-LGI315ZL	2 046.5	2 311.5	610.0	500.0	380	307	584.5	2xM63x1.5	2 355	2 325

④ DIN 332

⑤ Feather key / keyway DIN 6885

Gearbox FDAS/FZAS208, FDAZS/FZASZ208 (3- / 2-stage) shaft-mounted design with shrink disk
FAS012
FAZS012


Motor	F.A.S208B								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDA.S208	FZA.S208
LA132S/M	899.0	1 001.0	259.0	195.0	140	140	122.5	2xM32x1.5	1 054	–
LA132ZM	945.0	1 047.0	259.0	195.0	140	140	230.5	2xM32x1.5	1 075	–
LA160M/L	999.0	1 117.5	313.5	227.0	165	165	145.5	2xM40x1.5	1 088	1 060
LA160ZL	1 047.0	1 165.5	313.5	227.0	165	165	298.5	2xM40x1.5	1 127	1 099
LG180M/L	1 058.5	1 180.5	348.0	322.5	260	192	162.5	2xM40x1.5	1 183	1 155
LG180ZM/ZL	1 109.5	1 231.5	348.0	322.5	260	192	162.5	2xM40x1.5	1 213	1 185
LG200L	1 114.5	1 240.5	385.0	301.0	260	192	192.5	2xM50x1.5	1 263	1 235
LG225S	1 185.5	1 424.5	442.0	325.0	260	192	228.5	2xM50x1.5	1 336	1 308
LG225M	1 185.5	1 424.5	442.0	325.0	260	192	228.5	2xM50x1.5	1 324	1 296
LG225ZM	1 245.5	1 484.5	442.0	325.0	260	192	228.5	2xM50x1.5	1 382	1 354
LG250M	1 279.0	1 504.5	495.0	392.0	300	236	264.0	2xM63x1.5	1 426	1 398
LG250ZM	1 349.0	1 574.5	495.0	392.0	300	236	264.0	2xM63x1.5	1 529	1 501
K4-LGI280S	1 558.5	1 785.5	555.0	432.0	300	236	475.5	2xM63x1.5	1 555	1 527
K4-LGI280M	1 558.5	1 785.5	555.0	432.0	300	236	475.5	2xM63x1.5	1 660	1 632
K4-LGI280ZM	1 668.5	1 895.5	555.0	432.0	300	236	475.5	2xM63x1.5	1 748	1 720
K2-LGI315S/M	1 746.5	2 011.5	610.0	500.0	380	307	584.5	2xM63x1.5	1 790	1 762
K2-LGI315ZM	1 906.5	2 171.5	610.0	500.0	380	307	584.5	2xM63x1.5	1 945	1 917
K2-LGI315L	1 906.5	2 171.5	610.0	500.0	380	307	584.5	2xM63x1.5	2 085	2 057
K2-LGI315ZL	2 046.5	2 311.5	610.0	500.0	380	307	584.5	2xM63x1.5	2 285	2 257

MOTOX Geared Motors

Parallel shaft geared motors

Dimensions

Gearbox FDADS/FZADS208 (3- / 2-stage), shaft-mounted design with torque arm (continued)

FADS012

Motor	F.ADS208								Weight	
	k	kB	AC	AD	AG	LL	HH	O	FDADS208	FZADS208
LA132S/M	899.0	1 001.0	259.0	195.0	140	140	122.5	2xM32x1.5	1 077	–
LA132ZM	945.0	1 047.0	259.0	195.0	140	140	230.5	2xM32x1.5	1 098	–
LA160M/L	999.0	1 117.5	313.5	227.0	165	165	145.5	2xM40x1.5	1 111	1 083
LA160ZL	1 047.0	1 165.5	313.5	227.0	165	165	298.5	2xM40x1.5	1 150	1 122
LG180M/L	1 058.5	1 180.5	348.0	322.5	260	192	162.5	2xM40x1.5	1 206	1 178
LG180ZM/ZL	1 109.5	1 231.5	348.0	322.5	260	192	162.5	2xM40x1.5	1 236	1 208
LG200L	1 114.5	1 240.5	385.0	301.0	260	192	192.5	2xM50x1.5	1 286	1 258
LG225S	1 185.5	1 424.5	442.0	325.0	260	192	228.5	2xM50x1.5	1 359	1 331
LG225M	1 185.5	1 424.5	442.0	325.0	260	192	228.5	2xM50x1.5	1 348	1 319
LG225ZM	1 245.5	1 484.5	442.0	325.0	260	192	228.5	2xM50x1.5	1 405	1 377
LG250M	1 279.0	1 504.5	495.0	392.0	300	236	264.0	2xM63x1.5	1 449	1 421
LG250ZM	1 349.0	1 574.5	495.0	392.0	300	236	264.0	2xM63x1.5	1 552	1 524
K4-LGI280S	1 558.5	1 785.5	555.0	432.0	300	236	475.5	2xM63x1.5	1 578	1 550
K4-LGI280M	1 558.5	1 785.5	555.0	432.0	300	236	475.5	2xM63x1.5	1 683	1 655
K4-LGI280ZM	1 668.5	1 895.5	555.0	432.0	300	236	475.5	2xM63x1.5	1 771	1 743
K2-LGI315S/M	1 746.5	2 011.5	610.0	500.0	380	307	584.5	2xM63x1.5	1 813	1 785
K2-LGI315ZM	1 906.5	2 171.5	610.0	500.0	380	307	584.5	2xM63x1.5	1 968	1 940
K2-LGI315L	1 906.5	2 171.5	610.0	500.0	380	307	584.5	2xM63x1.5	2 108	2 080
K2-LGI315ZL	2 046.5	2 311.5	610.0	500.0	380	307	584.5	2xM63x1.5	2 308	2 280

MOTOX Geared Motors

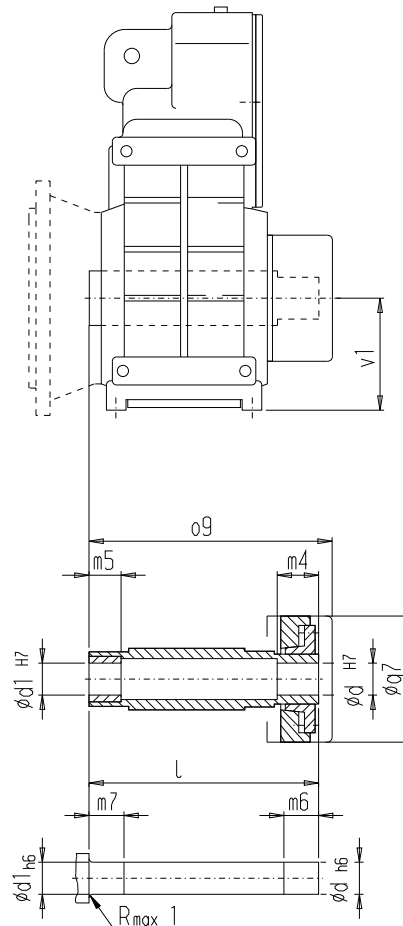
Parallel shaft geared motors

Dimensions

Offset hollow shafts with shrink disk

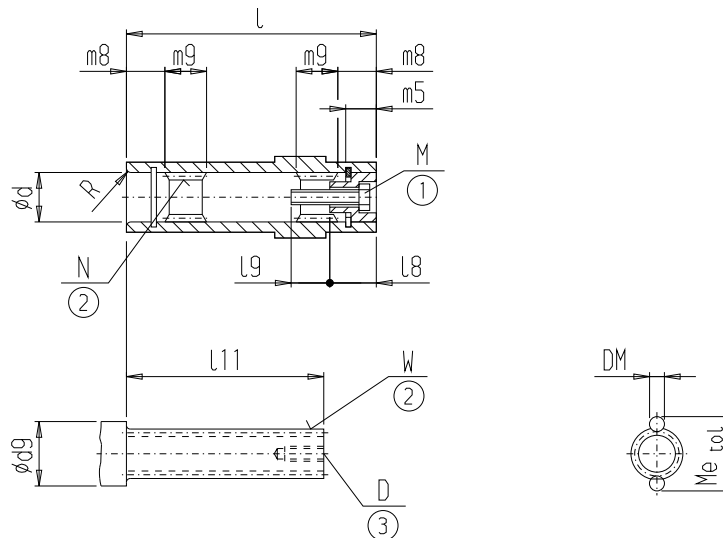
Optional hollow shafts for parallel shaft gearbox with shrink disk

FA.S



Gearbox	d	d1	l	o9	m4	m5	m6	m7	g7	v1
F.AS/F.AFS38B	30	31	146	154	22	20	27	25	77	75
F.AS/F.AFS48B	40	41	177	184	25	20	30	25	93	93
F.AS/F.AFS68B	40	42	209	216	35	20	40	25	112	111
	50	51	209	216	27	20	32	25	112	111
F.AS/F.AFS88B	50	52	214	249	29	30	34	35	132	132
	60	61	241	249	29	30	34	35	132	132
F.AS/F.AFS108B	65	66	280	288	30	40	35	45	144	160
	70	71	280	288	30	40	35	45	144	160
F.AS/F.AFS128B	75	76	345	357	44	50	49	55	180	180
	80	81	345	357	40	50	45	55	180	180
F.AS/F.AFS148B	95	96	404	418	49	60	54	65	210	212
F.AS/F.AFS168B	105	106	483	496	54	70	59	75	237	250
F.AS/F.AFS188B	125	126	580	592	61	80	67	85	263	265

Shaft-mounted design with splined shaft in acc. with DIN 5480



3

Gearbox	d	l	d9 min.	l11	W	D	R	m8	m9
F.A.T28	30	104	36	72	W25x1.25x30x18 8f	M10	R1.6	17.0	25
F.A.T38B	35	120	45	95	W35x1.25x30x26 8f	M10	R2	17.0	27
F.A.T48B	40	150	52	120	W40x2x30x18 8f	M12	R3	22.0	34
F.A.T68B	55	180	65	142	W50x2x30x24 8f	M16	R2	21.0	40
F.A.T88B	65	210	80	172	W60x2x30x28 8f	M16	R2	22.5	49
F.A.T108B	72	240	85	201	W70x2x30x34 8f	M20	R2	22.5	56
F.A.T128B	90	300	105	257	W80x3x30x25 8f	M20	R2	24.0	71
F.A.T148B	90	350	110	306	W90x3x30x28 8f	M20	R3	25.0	88
F.A.T168B	110	410	130	350	W110x3x30x35 8f	M24	R3	32.0	99
F.A.T188B	135	500	145	445	W130x5x30x24 8f	M24	R4	42.0	120

Gearbox	N	m5	l8	l9	M	DM	Me	tol
F.A.T28	N25x1.25x30x18 9H	9.0	17	31.8	M10x40	2.75	28.023	-0.049
F.A.T38B	N35x1.25x30x26 9H	12.0	18	27.0	M10x35	2.50	37.423	-0.041
F.A.T48B	N40x2x30x18 9H	14.0	20	37.0	M12x45	4.50	45.083	-0.043
F.A.T68B	N50x2x30x24 9H	16.0	23	49.5	M16x55	4.00	54.156	-0.049
F.A.T88B	N60x2x30x28 9H	16.5	26	46.5	M16x55	4.00	63.918	-0.053
F.A.T108B	N70x2x30x34 9H	16.5	28	51.0	M20x60	4.00	74.181	-0.057
F.A.T128B	N80x3x30x25 9H	17.0	31	46.0	M20x60	6.00	85.856	-0.053
F.A.T148B	N90x3x30x28 9H	17.0	31	51.0	M20x60	6.00	95.911	-0.053
F.A.T168B	N110x3x30x35 9H	20.0	41	65.5	M24x80	6.00	115.998	-0.061
F.A.T188B	N130x5x30x24 9H	20.0	50	35.5	M24x60	10.00	139.848	-0.061

① DIN 912

② DIN 5480

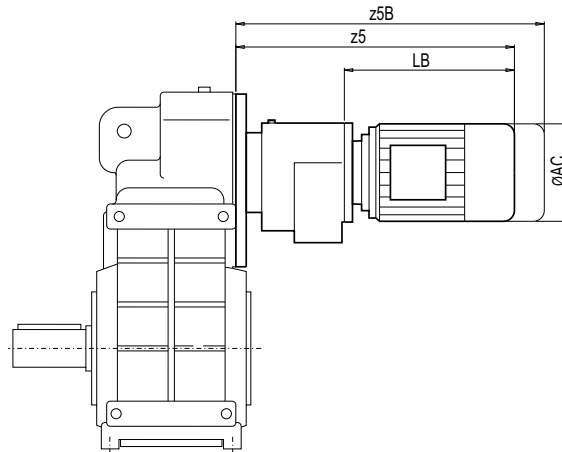
③ DIN 332-D

MOTOX Geared Motors

Parallel shaft geared motors

Dimensions

Parallel shaft tandem gearbox

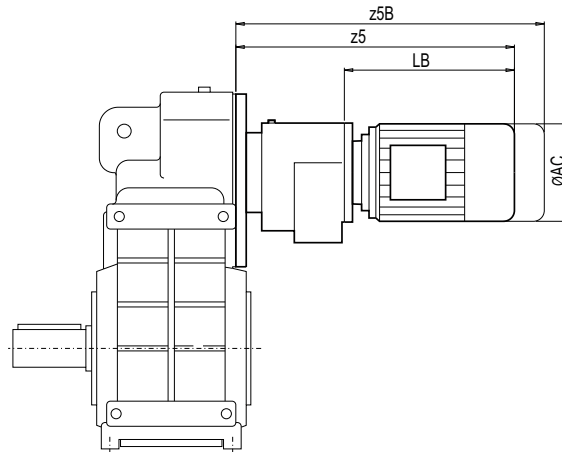


Gearbox	Motor	AC	z5	zB5	LB
FZ.38B-Z28	LA71	139.0	338.0	393.0	202.5
	LA71Z	139.0	357.0	412.0	221.5
	LA80	156.5	440.0	503.5	304.5
	LA80Z	156.5	462.5	526.0	327.0
	LA90S/L	174.0	435.0	506.0	299.5
	LA90ZL	174.0	480.0	551.0	344.5
	LA100L	195.0	517.0	598.0	381.5
	LA100ZL	195.0	587.0	668.0	451.5
FZ.38B-D28	LA71	139.0	338.0	393.0	202.5
	LA71Z	139.0	357.0	412.0	221.5
	LA80	156.5	440.0	503.5	304.5
	LA80Z	156.5	462.5	526.0	327.0
	LA90S/L	174.0	435.0	506.0	299.5
	LA90ZL	174.0	480.0	551.0	344.5
	LA100ZL	195.0	612.0	693.0	451.5
FD.48B-Z28	LA71	139.0	363.0	418.0	202.5
	LA71Z	139.0	382.0	437.0	221.5
	LA80	156.5	465.0	528.5	304.5
	LA80Z	156.5	487.5	551.0	327.0
	LA90S/L	174.0	460.0	531.0	299.5
	LA90ZL	174.0	505.0	576.0	344.5
	LA100L	195.0	542.0	623.0	381.5
	LA100ZL	195.0	612.0	693.0	451.5
FD.48B-D28	LA71	139.0	363.0	418.0	202.5
	LA71Z	139.0	382.0	437.0	221.5
	LA80	156.5	465.0	528.5	304.5
	LA80Z	156.5	487.5	551.0	327.0
	LA90S/L	174.0	460.0	531.0	299.5
	LA90ZL	174.0	505.0	576.0	344.5
	LA100L	195.0	542.0	623.0	381.5
	LA100ZL	195.0	612.0	693.0	451.5
FD.68B-Z28	LA71	139.0	357.5	412.5	202.5
	LA71Z	139.0	376.5	431.5	221.5
	LA80	156.5	459.5	523.0	304.5
	LA80Z	156.5	482.0	545.5	327.0
	LA90S/L	174.0	454.5	525.5	299.5
	LA90ZL	174.0	499.5	570.5	344.5
	LA100L	195.0	536.5	617.5	381.5
	LA100ZL	195.0	606.5	687.5	451.5
	LA112M ¹⁾	219.0	609.0	690.0	402.0

Gearbox	Motor	AC	z5	zB5	LB
FD.68B-D28	LA71	139.0	357.5	412.5	202.5
	LA71Z	139.0	376.5	431.5	221.5
	LA80	156.5	459.5	523.0	304.5
	LA80Z	156.5	482.0	545.5	327.0
	LA90S/L	174.0	454.5	525.5	299.5
	LA90ZL	174.0	499.5	570.5	344.5
	LA100ZL	195.0	600.5	681.5	451.5
FD.88B-Z28	LA71	139.0	351.5	406.5	202.5
	LA71Z	139.0	370.5	425.5	221.5
	LA80	156.5	453.5	517.0	304.5
	LA80Z	156.5	476.0	539.5	327.0
	LA90S/L	174.0	448.5	519.5	299.5
	LA90ZL	174.0	493.5	564.5	344.5
	LA100L	195.0	530.5	611.5	381.5
	LA100ZL	195.0	600.5	681.5	451.5
FD.88B-D28	LA71	139.0	351.5	406.5	202.5
	LA71Z	139.0	370.5	425.5	221.5
	LA80	156.5	453.5	517.0	304.5
	LA80Z	156.5	476.0	539.5	327.0
	LA90S/L	174.0	448.5	519.5	299.5
	LA90ZL	174.0	493.5	564.5	344.5
	LA100L	195.0	530.5	611.5	381.5
	LA100ZL	195.0	600.5	681.5	451.5
FD.108B-Z38	LA71 ¹⁾	139.0	465.5	520.5	258.5
	LA71Z ¹⁾	139.0	484.5	539.5	277.5
	LA80 ¹⁾	156.5	502.5	566.0	295.5
	LA80Z ¹⁾	156.5	525.0	588.5	318.0
	LA90S/L ¹⁾	174.0	533.5	604.5	326.5
	LA90ZL ¹⁾	174.0	578.5	649.5	371.5
	LA100L ¹⁾	195.0	579.5	660.5	372.5
	LA100ZL ¹⁾	195.0	649.5	730.5	442.5
	LA112M ¹⁾	219.0	609.0	690.0	402.0
	LA112ZM ¹⁾	219.0	637.0	718.0	430.0
	LA71 ²⁾	139.0	476.0	531.0	258.5
	LA71Z ²⁾	139.0	495.0	550.0	277.5
	LA80 ²⁾	156.5	513.0	576.5	295.5
LA80Z ²⁾	156.5	535.5	599.0	318.0	
LA90S/L ²⁾	174.0	544.0	615.0	326.5	
LA90ZL ²⁾	174.0	589.0	660.0	371.5	

1) $i_{tot} \geq 1647$ 2) $i_{tot} < 1647$

Parallel shaft tandem gearbox (continued)



Gearbox	Motor	AC	z5	zB5	LB
FD.108B-Z38	LA100L ²⁾	195.0	590.0	671.0	372.5
	LA100ZL ²⁾	195.0	660.0	741.0	442.5
	LA112M ²⁾	219.0	619.5	700.5	402.0
	LA112ZM ²⁾	219.0	647.5	728.5	430.0
FD.108B-D38	LA71	139.0	480.5	535.5	273.5
	LA71Z	139.0	499.5	554.5	292.5
	LA80	156.5	517.5	581.0	310.5
	LA80Z	156.5	540.0	603.5	333.0
	LA90S/L	174.0	548.5	619.5	341.5
FD.128B-Z38	LA90ZL	174.0	593.5	664.5	386.5
	LA71	139.0	458.5	513.5	258.5
	LA71Z	139.0	477.5	532.5	277.5
	LA80	156.5	495.5	559.0	295.5
	LA80Z	156.5	518.0	581.5	318.0
	LA90S/L	174.0	526.5	597.5	326.5
	LA90ZL	174.0	571.5	642.5	371.5
	LA100L	195.0	572.5	653.5	372.5
	LA100ZL	195.0	642.5	723.5	442.5
	LA112M	219.0	602.0	683.0	402.0
	LA112ZM	219.0	630.0	711.0	430.0
FD.128B-D38	LA71	139.0	473.5	528.5	273.5
	LA71Z	139.0	492.5	547.5	292.5
	LA80	156.5	510.5	574.0	310.5
	LA80Z	156.5	533.0	596.5	333.0
	LA90S/L	174.0	541.5	612.5	341.5
FD.128B-Z48	LA90ZL	174.0	586.5	657.5	386.5
	LA71	139.0	532.0	587.0	253.0
	LA71Z	139.0	551.0	606.0	272.0
	LA80	156.5	569.0	632.5	290.0
	LA80Z	156.5	591.5	655.0	312.5
FD.128B-D48	LA90S	174.0	600.0	671.0	321.0
	LA90L	174.0	600.0	671.0	321.0
	LA90ZL	174.0	645.0	716.0	366.0
	LA100L	195.0	646.0	727.0	367.0
	LA100ZL	195.0	716.0	797.0	437.0

Gearbox	Motor	AC	z5	zB5	LB	
FD.128B-Z48	LA112M	219.0	675.0	756.0	396.0	
	LA112ZM	219.0	703.0	784.0	424.0	
	LA132S	259.0	737.0	839.0	458.0	
	LA132M	259.0	737.0	839.0	458.0	
	LA132ZM	259.0	783.0	885.0	504.0	
FD.148B-Z38	LA71	139.0	454.0	509.0	258.5	
	LA71Z	139.0	473.0	528.0	277.5	
	LA80	156.5	491.0	554.5	295.5	
	LA80Z	156.5	513.5	577.0	318.0	
	LA90S	174.0	522.0	593.0	326.5	
	LA90L	174.0	522.0	593.0	326.5	
	LA90ZL	174.0	567.0	638.0	371.5	
	LA100L	195.0	568.0	649.0	372.5	
	LA100ZL	195.0	638.0	719.0	442.5	
	LA112M	219.0	597.5	678.5	402.0	
FD.148B-D38	LA112ZM	219.0	625.5	706.5	430.0	
	LA71	139.0	469.0	524.0	273.5	
	LA71Z	139.0	488.0	543.0	292.5	
	LA80	156.5	506.0	569.5	310.5	
	LA80Z	156.5	528.5	592.0	333.0	
	LA90S	174.0	537.0	608.0	341.5	
	LA90L	174.0	537.0	608.0	341.5	
	LA90ZL	174.0	582.0	653.0	386.5	
	FD.148B-Z48	LA71	139.0	521.5	576.5	253.0
		LA71Z	139.0	540.5	595.5	272.0
LA80		156.5	558.5	622.0	290.0	
LA80Z		156.5	581.0	644.5	312.5	
LA90S/L		174.0	589.5	660.5	321.0	
LA90ZL		174.0	634.5	705.5	366.0	
LA100L		195.0	635.5	716.5	367.0	
LA100ZL		195.0	705.5	786.5	437.0	
LA112M		219.0	664.5	745.5	396.0	
LA112ZM		219.0	692.5	773.5	424.0	
LA132S/M		259.0	726.5	828.5	458.0	
LA132ZM	259.0	772.5	874.5	504.0		

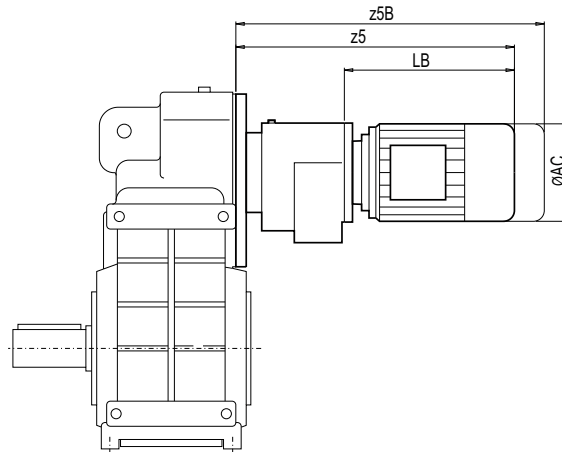
2) $t_{tot} < 1647$

MOTOX Geared Motors

Parallel shaft geared motors

Dimensions

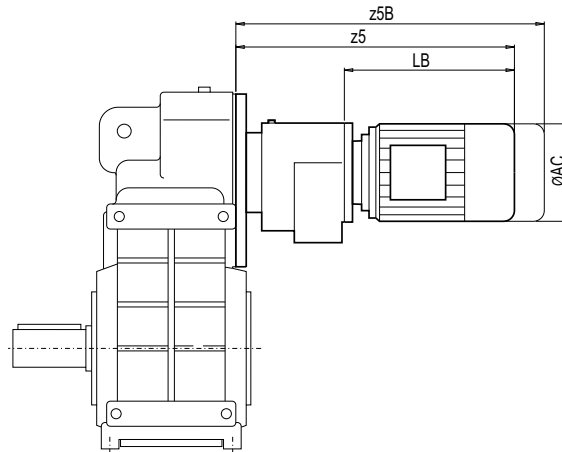
Parallel shaft tandem gearbox (continued)



Gearbox	Motor	AC	z5	zB5	LB
FD.168B-Z48	LA71	139.0	513.5	568.5	253.0
	LA71Z	139.0	532.5	587.5	272.0
	LA80	156.5	550.5	614.0	290.0
	LA80Z	156.5	573.0	636.5	312.5
	LA90S	174.0	581.5	652.5	321.0
	LA90L	174.0	581.5	652.5	321.0
	LA90ZL	174.0	626.5	697.5	366.0
	LA100L	195.0	627.5	708.5	367.0
	LA100ZL	195.0	697.5	778.5	437.0
	LA112M	219.0	656.5	737.5	396.0
	LA112ZM	219.0	684.5	765.5	424.0
	LA132S	259.0	718.5	820.5	458.0
	LA132M	259.0	718.5	820.5	458.0
	LA132ZM	259.0	764.5	866.5	504.0
FD.168B-D48	LA71	139.0	530.5	585.5	270.0
	LA71Z	139.0	549.5	604.5	289.0
	LA80	156.5	567.5	631.0	307.0
	LA80Z	156.5	590.0	653.5	329.5
	LA90S/L	174.0	598.5	669.5	338.0
	LA90ZL	174.0	643.5	714.5	383.0
	LA100L	195.0	644.5	725.5	384.0
	LA100ZL	195.0	714.5	795.5	454.0
	FD.168B-Z68	LA71	139.0	583.0	638.0
LA71Z		139.0	602.0	657.0	266.0
LA80		156.5	620.0	683.5	284.0
LA80Z		156.5	642.5	706.0	306.5
LA90S/L		174.0	651.0	722.0	315.0
LA90ZL		174.0	696.0	767.0	360.0
LA100L		195.0	697.0	778.0	361.0
LA100ZL		195.0	767.0	848.0	431.0
LA112M		219.0	724.0	805.0	388.0
LA112ZM		219.0	752.0	833.0	416.0
LA132S/M		259.0	784.0	886.0	448.0
LA132ZM		259.0	830.0	932.0	494.0
LA160M/L		313.5	886.5	1 005.0	550.5
LA160ZL		313.5	934.5	1 053.0	598.5

Gearbox	Motor	AC	z5	zB5	LB
FD.188B-Z48	LA71	139.0	499.0	554.0	253.0
	LA71Z	139.0	518.0	573.0	272.0
	LA80	156.5	536.0	599.5	290.0
	LA80Z	156.5	558.5	622.0	312.5
	LA90S/L	174.0	567.0	638.0	321.0
	LA90ZL	174.0	612.0	683.0	366.0
	LA100L	195.0	613.0	694.0	367.0
	LA100ZL	195.0	683.0	764.0	437.0
	LA112M	219.0	642.0	723.0	396.0
	LA112ZM	219.0	670.0	751.0	424.0
	LA132S/M	259.0	704.0	806.0	458.0
LA132ZM	259.0	750.0	852.0	504.0	
FD_188B-D48	LA71	139.0	516.0	571.0	270.0
	LA71Z	139.0	535.0	590.0	289.0
	LA80	156.5	553.0	616.5	307.0
	LA80Z	156.5	575.5	639.0	329.5
	LA90S	174.0	584.0	655.0	338.0
	LA90L	174.0	584.0	655.0	338.0
	LA90ZL	174.0	629.0	700.0	383.0
	LA100L	195.0	630.0	711.0	384.0
	LA100ZL	195.0	700.0	781.0	454.0
FD_188B-Z68	LA71	139.0	585.0	640.0	247.0
	LA71Z	139.0	604.0	659.0	266.0
	LA80	156.5	622.0	685.5	284.0
	LA80Z	156.5	644.5	708.0	306.5
	LA90S/L	174.0	653.0	724.0	315.0
	LA90ZL	174.0	698.0	769.0	360.0
	LA100L	195.0	699.0	780.0	361.0
	LA100ZL	195.0	769.0	850.0	431.0
	LA132S/M	259.0	786.0	888.0	448.0
	LA132ZM	259.0	832.0	934.0	494.0
	LA160M/L	313.5	888.5	1 007.0	550.5
LA160ZL	313.5	936.5	1 055.0	598.5	

Parallel shaft tandem gearbox (continued)



Gearbox	Motor	AC	z5	zB5	LB
FD.208-Z68	LA71	139.0	585.0	640.0	247.0
	LA71Z	139.0	604.0	659.0	266.0
	LA80	156.5	622.0	685.5	284.0
	LA80Z	156.5	644.5	708.0	306.5
	LA90S/L	174.0	653.0	724.0	315.0
	LA90ZL	174.0	698.0	769.0	360.0
	LA100L	195.0	699.0	780.0	361.0
	LA100ZL	195.0	769.0	850.0	431.0
	LA132S/M	259.0	786.0	888.0	448.0
	LA132ZM	259.0	832.0	934.0	494.0
	LA160M/L	313.5	888.5	1 007.0	550.5
	LA160ZL	313.5	936.5	1 055.0	598.5
FD_208-D68	LA71	139.0	603.5	658.5	265.5
	LA71Z	139.0	622.5	677.5	284.5
	LA80	156.5	640.5	704.0	302.5
	LA80Z	156.5	663.0	726.5	325.0
	LA90S/L	174.0	671.5	742.5	333.5
	LA90ZL	174.0	716.5	787.5	378.5
	LA100L	195.0	717.5	798.5	379.5
LA100ZL	195.0	787.5	868.5	449.5	

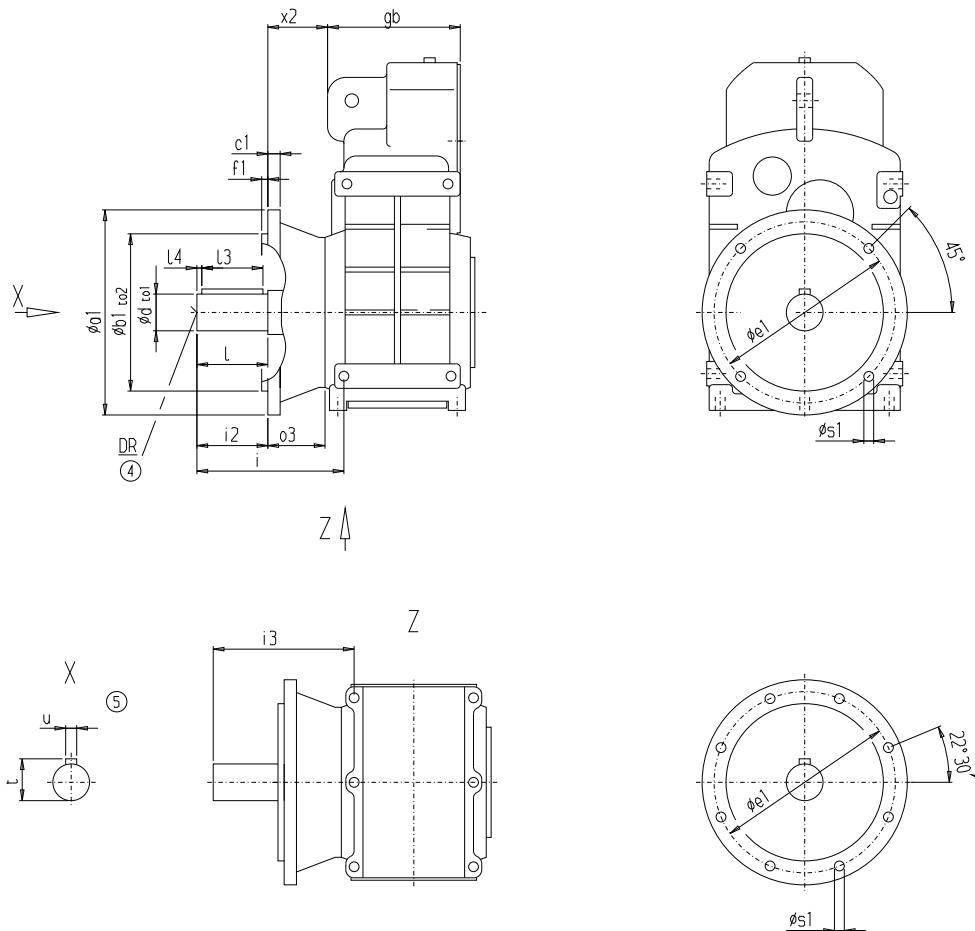
Gearbox	Motor	AC	z5	zB5	LB
FD.208-Z88	LA90S/L	174.0	776.5	847.5	300.0
	LA90ZL	174.0	821.5	892.5	345.0
	LA100L	195.0	820.0	901.0	343.5
	LA100ZL	195.0	890.0	971.0	413.5
	LA112M	219.0	846.0	927.0	369.5
	LA112ZM	219.0	874.0	955.0	397.5
	LA132S/M	259.0	906.0	1 008.0	429.5
	LA132ZM	259.0	952.0	1 054.0	475.5
	LA160M/L	313.5	1 010.5	1 129.0	534.0
	LA160ZL	313.5	1 058.5	1 177.0	582.0
	LG180M/L	348.0	1 070.0	1 192.0	593.5
	LG180ZM/ZL	348.0	1 121.0	1 243.0	644.5

MOTOX Geared Motors

Parallel shaft geared motors

Dimensions

Flange design for mixers



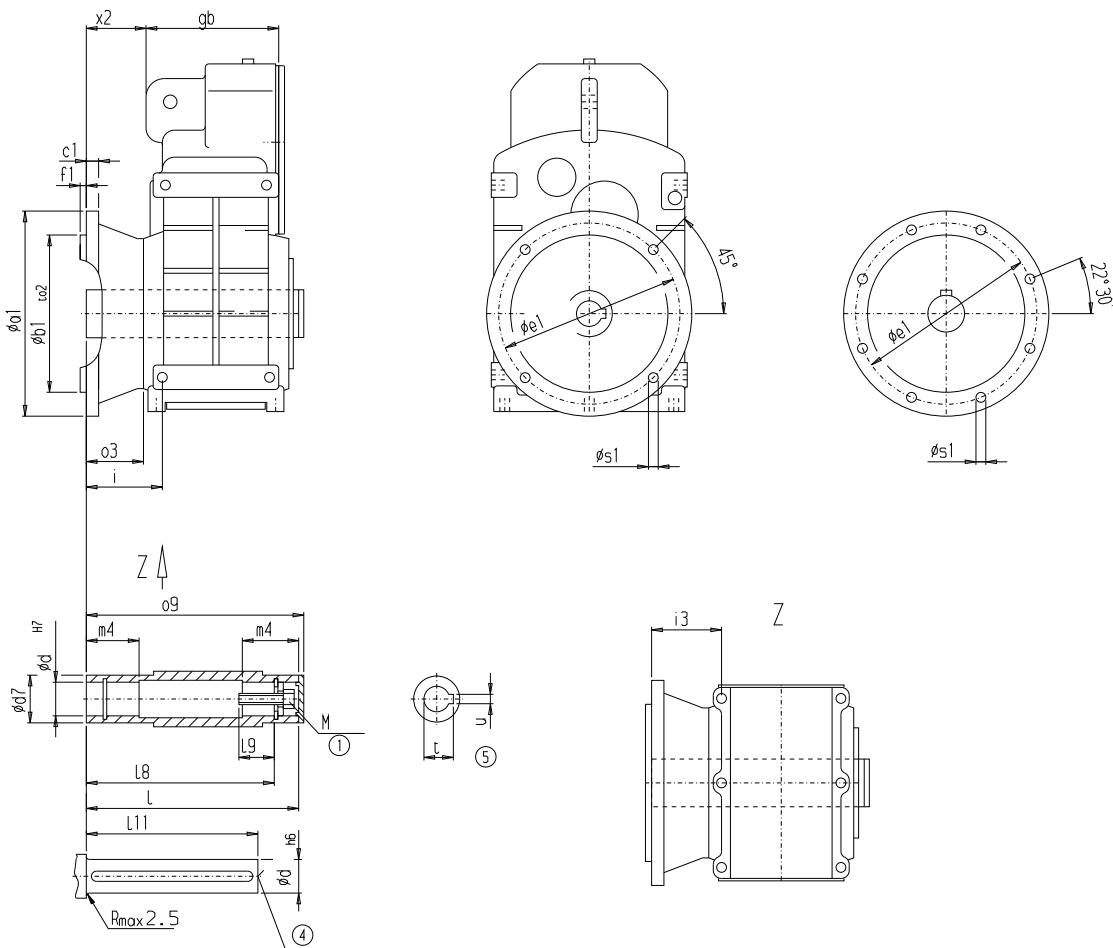
Gearbox	a1	b1	to2	c1	e1	f1	s1	o3	i	i2	i3
FDM88B FZM88B	300	230	j6	20	265	4	13.5	120	286.5	140	281.5
FDM108B FZM108B	350	250	h6	20	300	5	17.5	135	333.5	170	319.0
FDM128B FZM128B	450	350	h6	25	400	5	17.5	165	373.5	170	363.5
FDM148B FZM148B	450	350	h6	25	400	5	17.5	185	449.0	210	428.0
FDM168B FZM168B	550	450	h6	28	500	5	17.5	210	479.0	210	451.0

Gearbox	x2	gb	d	to1	l	i3	l4	t	u	DR	Weights	
											FDM	FZM
FDM88B FZM88B	126.0	175	70	m6	140	110	15	74.5	20	M20x42	80	81
FDM108B FZM108B	140.5	205	80	m6	170	125	20	85.0	22	M20x42	135	135
FDM128B FZM128B	172.0	271	90	m6	170	140	15	95.0	25	M24x50	236	234
FDM148B FZM148B	211.0	298	100	m6	210	180	15	106.0	28	M24x50	337	333
FDM168B FZM168B	237.0	336	120	m6	210	180	15	127.0	32	M24x50	540	529

④ DIN 332

⑤ Feather key / keyway DIN 6885

Shaft-mounted design with mixer flanges



Gearbox	a1	b1	to2	c1	e1	f1	s1	o3	i	i3	x2	gb
FDAM88B FZAM88B	300	230	j6	20	265	4	13.5	120	146.5	141.5	126.0	175
FDAM108B FZAM108B	350	250	h6	20	300	5	17.5	135	163.5	149.0	140.5	205
FDAM128B FZAM128B	450	350	h6	25	400	5	17.5	165	203.5	193.5	172.0	271
FDAM148B FZAM148B	450	350	h6	25	400	5	17.5	185	239.0	218.0	211.0	298
FDAM168B FZAM168B	550	450	h6	28	500	5	17.5	210	269.0	241.0	237.0	336

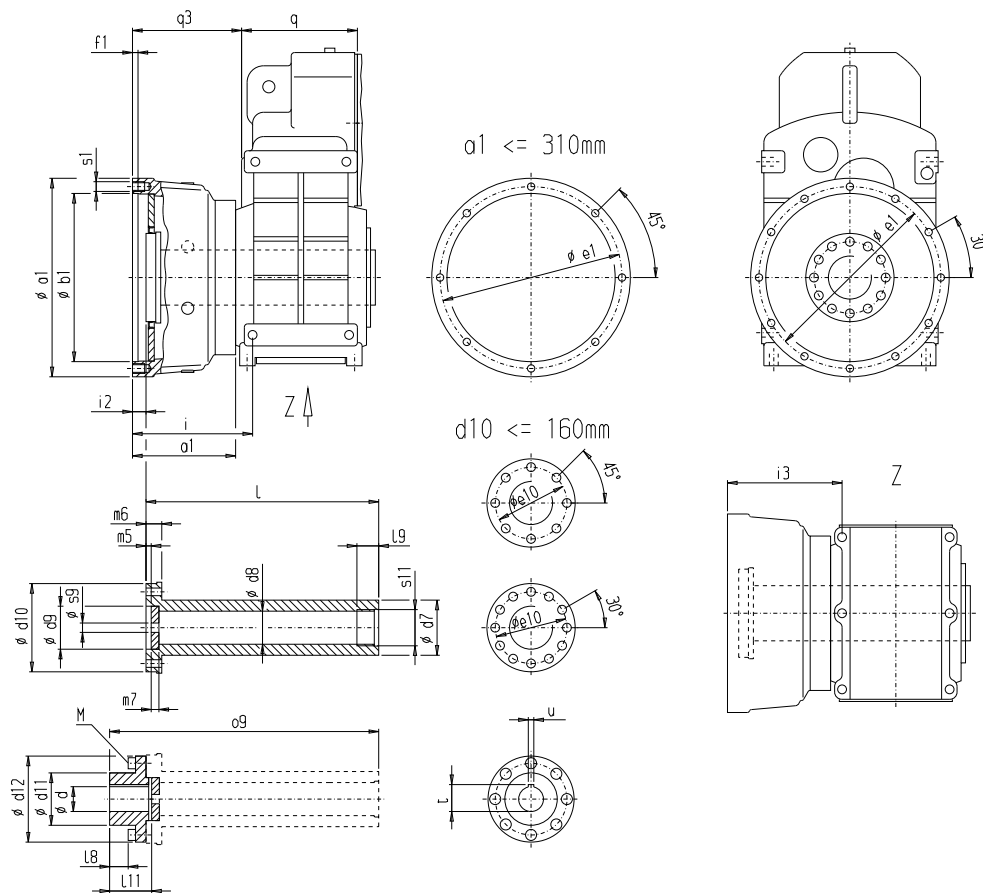
Gearbox	o9	d	d7	l	m4	l8	l9	l11	t	u	M	Weights	
												FDAM	FZAM
FDAM88B FZAM88B	324.0	60	80	321	78	291	54.0	275	64.4	18	M20	72	73
FDAM108B FZAM108B	369.5	70	95	366	93	334	63.5	310	74.9	20	M20	122	122
FDAM128B FZAM128B	458.0	80	110	456	123	419	63.5	395	85.4	22	M20	216	214
FDAM148B FZAM148B	526.0	90	120	524	148	484	72.0	460	95.4	25	M24	309	305
FDAM168B FZAM168B	611.0	110	150	609	175	565	73.0	540	116.4	28	M24	495	484

MOTOX Geared Motors

Parallel shaft geared motors

Dimensions

Flange design for extruder drives



Gearbox	a1	b1	e1	f1	s1	q1	i	i3	i2	q3	q	
FDAE/FZAE68B	260	220	+0.046 / 0	236	10	M12x17	147.5	174.0	–	15.0	156.0	138.5
FDAE/FZAE88B	310	255	+0.052 / 0	280	10	M16x22	171.0	197.5	192.5	15.5	177.0	175.0
FDAE/FZAE108B	360	305	+0.052 / 0	330	10	M16x22	188.0	216.5	202.0	23.0	193.5	205.0
FDAE/FZAE128B	420	345	+0.057 / 0	380	10	M20x27	206.0	244.5	234.5	25.0	213.0	271.0
FDAE/FZAE148B	450	360	+0.057 / 0	400	10	M24x32	225.0	279.0	258.0	27.0	251.0	298.0
FDAE/FZAE168B	510	420	+0.063 / 0	460	15	M24x32	262.0	321.0	293.0	38.0	285.0	340.0

Flange design for extruder drives (continued)

Gearbox	d	l11	d7	d8	l9	s11	o9 l	d10 d12	m6	e10
FDAE/FZAE68B	20	48	65	38	30	M42x2	349.0	105	14	88
	25									
	30									
FDAE/FZAE88B	30	58	80	49	39	M56x2	410.5	130	23	110
	35									
	40									
FDAE/FZAE108B	40	71	95	60	39	M64x2	462.0	160	25	130
	45									
	50									
FDAE/FZAE128B	45	87	110	71	49	M80x3	554.0	175	31	150
	50									
	60									
FDAE/FZAE148B	60	95	120	88	52	M95x3	626.0	190	33	160
	70									
	75									
FDAE/FZAE168B	70	105	150	104	57	M110x3	722.0	230	42	195
	80									
	90									

Gearbox	d	d9	s9	m7	d11	m5	l8	M	t	u	
FDAE/FZAE68B	20	48	+0.025 / 0	11	11	65	4.0	20.0	M10x25	22.8	6
	25									28.3	8
	30									33.3	8
FDAE/FZAE88B	30	63	+0.030 / 0	17	12	80	4.5	23.5	M12x35	33.3	8
	35									38.3	10
	40									43.3	12
FDAE/FZAE108B	40	78	+0.030 / 0	17	14	95	5.0	31.0	M16x40	43.3	12
	45									48.8	14
	50									53.8	14
FDAE/FZAE128B	45	88	+0.035 / 0	22	17	110	5.0	42.0	M16x45	48.8	14
	50									53.8	14
	60									64.4	18
FDAE/FZAE148B	60	105	+0.035 / 0	22	20	120	6.0	45.0	M16x55	64.4	18
	70									74.9	20
	75									79.9	20
FDAE/FZAE168B	70	125	+0.040 / 0	25	22	150	6.0	49.0	M20x55	74.9	20
	80									85.4	22
	90									95.4	25

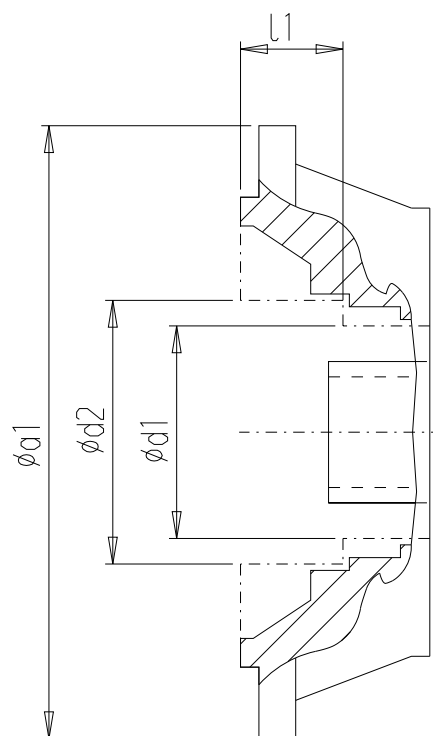
MOTOX Geared Motors

Parallel shaft geared motors

Dimensions

Inside contour of the flange-mounted design (A-type)

Design notes for the customer's interface, e.g. plug-in shaft for hollow shaft design.



Gearbox	a1	d1	d2	l1
F.F.28	120	70	72	24.0
F.F.28	160	70	103	8.5
F.F.38B	160	70	77	20.0
F.F.48B	200	84	90	22.5
F.F.68B	250	96	96	-
F.F.88B	300	126	138	31.0
F.F.108B	350	176	185	32.0
F.F.128B	450	226	234	38.5
F.F.148B	450	246	262	34.0
F.F.168B	550	296	313	39.0
F.F.188B	660	296	296	-

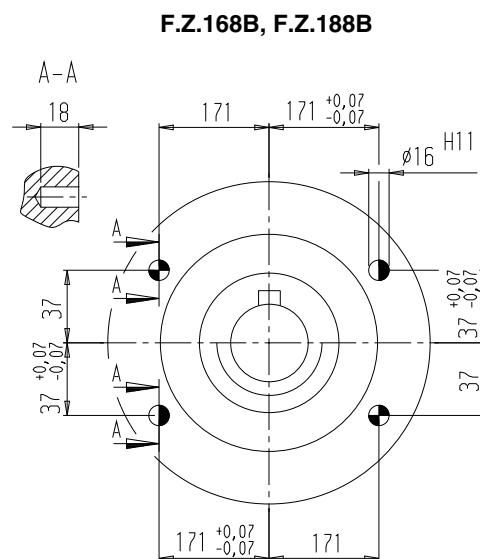
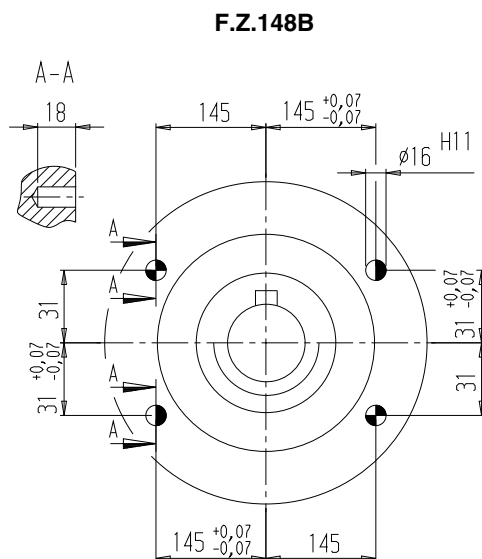
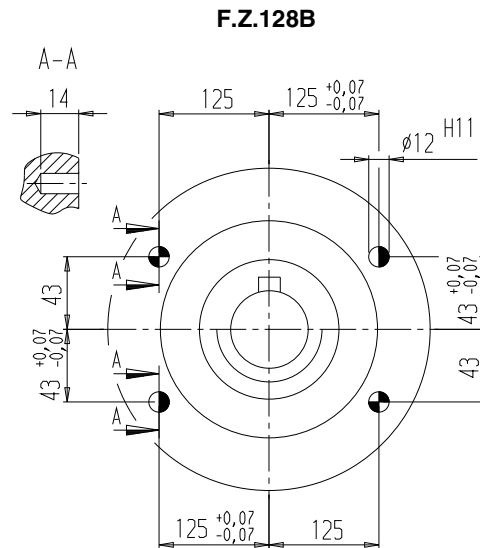
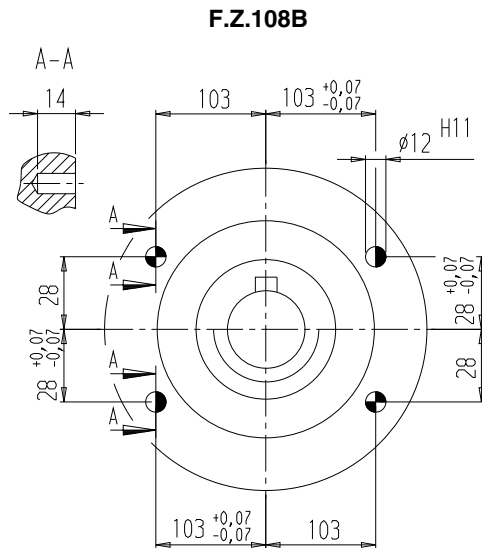
Pin holes

In the case of sizes F.Z.108B to 188B, the customer's interface can be pinned on the housing flange (C-type).

The output flanges have been designed to ensure the reliable transmission of the permissible torques and radial forces by the bolt connections.

If an additional fuse, e. g. for high shock loads, is required, the existing pin holes can be used.

The gearbox and the machine can be drilled and pinned together. To do so, the provided dimensions must be observed.



- Spring pins, heavy-duty design, to DIN 1481: Use pin holes provided in the housing flange.
- Grooved cylindrical pins with chamfer to DIN EN 28740/ISO 8740: Drill connecting component together with housing.

MOTOX Geared Motors

Parallel shaft geared motors

Notes

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