

Worm geared motors



	Orientation
6/2	Overview
6/3	Modular system
	General technical data
6/4	Permissible radial force
	Geared motors up to 1.1 kW
6/5	Selection and ordering data
	Transmission ratios and maximum torques
6/10	Selection and ordering data
	Mounting types
6/12	Selection and ordering data
	Shaft designs
6/13	Selection and ordering data
	Flange-mounted designs
6/14	Selection and ordering data
	Mounting types and mounting positions
6/15	Selection and ordering data
	Special versions
6/16	Lubricants
6/16	2nd output shaft extension
6/16	Plug-in shaft
	Dimensions
6/17	Dimension drawing overview
6/18	Dimension drawings

MOTOX Geared Motors

Worm geared motors

Orientation

Overview



The worm gearbox series S is designed for different mechanical engineering tasks for the lower torque range. Thanks to the small dimensions and low weight, the products are suitable for a wide range of different applications.

The compact MOTOX S worm gearboxes have worm gear teeth that are characterized by particularly low-noise operating characteristics at high levels of efficiency. The mounting position and the position of the output shafts can be freely selected. At the output, solid shafts and hollow shafts are available as alternatives. The gearbox housings have a centering edge at both output sides by default. They can also be secured with a flange or torque arm. Foot mounting is possible on three sides.

The worm gearboxes of the S series are single-stage worm gearboxes. The worm toothing has been manufactured in accordance with the latest technical know-how and is based on the worm form ZK, whereby the best gliding properties are achieved using worm gears made of high-quality bronze and worm shafts made of steel. The worm shafts undergo additional grinding to ensure that the gearbox performs its task with as little noise and as few losses as possible. The highly stable and light cast-metal housings are made from high-quality aluminum alloy. This means that the gearboxes have low surface temperatures.

The gear teeth and the rolling-contact bearings are lubricated with synthetic lubricant in all of the types of construction. The oil fill level is optimized for every mounting angle and the gearbox can be operated as required in any mounting angle. The gearboxes are permanently lubricated, an oil change is not required. No oil control or drain plugs are required.

Worm gearboxes S are designated as follows:

Gearbox type:

S Worm gearbox

Transmission stage (-) Unspecified

Type:

Shaft

- (-) Solid shaft
 - With one shaft extension (position A or B)
 - With two shaft extensions (pos. AB)
- A** Hollow shaft

Mounting

- (-) Foot-mounted design
- F** Flange-mounted design (A-type)
- Z** Housing flange (C-type), on both sides
- D** Torque arm

Input unit:

K4 Short coupling lantern with clamp connection for connecting an IEC motor

Example:

S F 08 - K4 (71)

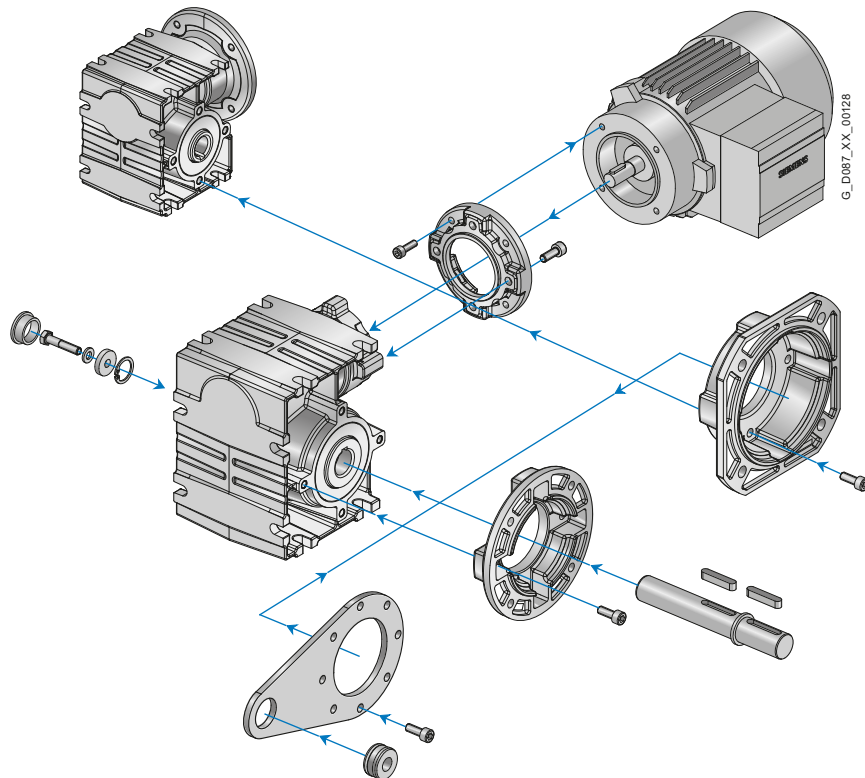
Gearbox type	_____	_____	_____	_____	_____
Type	_____	_____	_____	_____	_____
Size	_____	_____	_____	_____	_____
Input unit	_____	_____	_____	_____	_____
(for motor size)	_____	_____	_____	_____	_____

Overview (continued)

Modular system

The MOTOX S worm gearboxes are supplied in a basic version. With further components, the gearboxes can be mounted in the installation with a flange or torque arm. The mounting surfaces on the housing can be utilized for the foot mounting.

The geared motors are delivered completely assembled. The torque arm is supplied loose to enable it to be mounted as required on site. The position of the torque arm can be freely selected.



Use

MOTOX S worm gearboxes are characterized by high throughput in a very small space and a high transmission ratio in a single stage. Thanks to their compact design, worm gearboxes are an ideal solution when installation space is at a premium and they offer a range of mounting options due to their flange, foot, and torque-arm housing designs.

Output shafts are available in different versions and diameters, as solid or hollow shafts. The gearbox housings, made from die-cast aluminum with good thermal conductivity, are strong and absorb vibrations.

MOTOX Geared Motors

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General technical data

Permissible radial force F_{Rperm}

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							
						≤ 16	≤ 25	≤ 40	≤ 63	≤ 100	≤ 160	≤ 250	≤ 400
S08	16	40	83.5	63.5	36 000	1 800	1 800	1 800	1 800	1 800	1 690	1 400	1 120
SF08			106.0	86.0		1 800	1 800	1 800	1 800	1 620	1 330	1 100	880
S18	20	40	98.0	78.0	76 000	3 800	3 800	3 800	3 200	2 650	2 180	1 780	1 420
SF18			128.0	108.0		3 200	3 120	2 920	2 450	2 030	1 670	1 360	1 090
S28	20	40	120.5	100.5	72 000	3 600	3 600	3 600	3 600	3 600	3 290	2 680	2 120
SF28			153.5	133.5		3 600	3 600	3 600	3 600	3 150	2 580	2 110	1 660

MOTOX Geared Motors

Worm geared motors

Geared motors up to 1.1 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.

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	S.28-LAI63M6							
	8.5	46.2	1.6	100	2KJ1732 - ■ BE13 - ■■ A1	P01	8	
	10.6	41.0	2.1	80	2KJ1732 - ■ BE13 - ■■ B1	P01	8	
	14.2	34.5	2.8	60	2KJ1732 - ■ BE13 - ■■ C1	P01	8	
	S.18-LAI63M6							
	10.6	39.6	0.9	80	2KJ1731 - ■ BE13 - ■■ B1	P01	6	
	14.2	33.8	1.4	60	2KJ1731 - ■ BE13 - ■■ C1	P01	6	
	17	30.0	1.7	50	2KJ1731 - ■ BE13 - ■■ D1	P01	6	
	S.08-LAI63M6							
	14.2	29.9	0.8	60	2KJ1730 - ■ BE13 - ■■ C1	P01	5	
	17.0	26.8	1	50	2KJ1730 - ■ BE13 - ■■ D1	P01	5	
	21.2	23.5	1.3	40	2KJ1730 - ■ BE13 - ■■ E1	P01	5	
	0.12	S.28-LAI63S4						
		13.5	40.3	1.7	100	2KJ1732 - ■ BC13 - ■■ A1		8
		16.9	35.7	2.3	80	2KJ1732 - ■ BC13 - ■■ B1		8
22.5		29.9	2.7	60	2KJ1732 - ■ BC13 - ■■ C1		8	
27		26.5	3	50	2KJ1732 - ■ BC13 - ■■ D1		8	
33.8		22.9	3.4	40	2KJ1732 - ■ BC13 - ■■ E1		8	
45		18.5	4.1	30	2KJ1732 - ■ BC13 - ■■ F1		8	
S.18-LAI63S4								
16.9		34.8	1	80	2KJ1731 - ■ BC13 - ■■ B1		6	
22.5		29.5	1.5	60	2KJ1731 - ■ BC13 - ■■ C1		6	
27		26.2	1.7	50	2KJ1731 - ■ BC13 - ■■ D1		6	
33.8		22.6	2	40	2KJ1731 - ■ BC13 - ■■ E1		6	
45		18.2	2.4	30	2KJ1731 - ■ BC13 - ■■ F1		6	
54		15.9	2.5	25	2KJ1731 - ■ BC13 - ■■ G1		6	
67.5		13.5	3.2	20	2KJ1731 - ■ BC13 - ■■ H1		6	
90		10.6	4.1	15	2KJ1731 - ■ BC13 - ■■ J1		6	
135		7.4	5.7	10	2KJ1731 - ■ BC13 - ■■ K1		6	
193		5.4	7.6	7	2KJ1731 - ■ BC13 - ■■ L1		6	
270		3.9	10	5	2KJ1731 - ■ BC13 - ■■ M1		6	
S.08-LAI63S4								
22.5		26.4	0.88	60	2KJ1730 - ■ BC13 - ■■ C1		5	
27.0		23.5	1.1	50	2KJ1730 - ■ BC13 - ■■ D1		5	
33.8		20.5	1.4	40	2KJ1730 - ■ BC13 - ■■ E1		5	
45.0		16.9	1.7	30	2KJ1730 - ■ BC13 - ■■ F1		5	
54.0		14.8	1.9	25	2KJ1730 - ■ BC13 - ■■ G1		5	
67.5		12.7	2.2	20	2KJ1730 - ■ BC13 - ■■ H1		5	

Shaft designs, see page 6/13

1, 5 or 6

Frequency and voltage, see page 8/20

1 to 9

Gearbox housing mounting position, see page 6/15

A, D, F or H

*) Design: worm gearbox S with solid shaft

MOTOX Geared Motors

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Geared motors up to 1.1 kW

Selection and ordering data (continued)

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	
0.12	S.08-LAI63S4							
	90		10.1	2.7	15	2KJ1730 - ■BC13 - ■■J1	5	
	135		7.2	3.9	10	2KJ1730 - ■BC13 - ■■K1	5	
	193		5.2	5.3	7	2KJ1730 - ■BC13 - ■■L1	5	
	270		3.8	6.7	5	2KJ1730 - ■BC13 - ■■M1	5	
0.18	S.28-LAI71S6							
	10.6		82	1.1	80	2KJ1732 - ■CD13 - ■■B1	P01	10
	14.2		69.1	1.4	60	2KJ1732 - ■CD13 - ■■C1	P01	10
	17		61.5	1.5	50	2KJ1732 - ■CD13 - ■■D1	P01	10
	21.2		53.2	1.8	40	2KJ1732 - ■CD13 - ■■E1	P01	10
	28.3		43.3	2.1	30	2KJ1732 - ■CD13 - ■■F1	P01	10
	S.28-LAI63M4							
	13.5		60.4	1.2	100	2KJ1732 - ■BE13 - ■■A1		8
	16.9		53.5	1.5	80	2KJ1732 - ■BE13 - ■■B1		8
	22.5		44.8	1.8	60	2KJ1732 - ■BE13 - ■■C1		8
	27		39.8	2	50	2KJ1732 - ■BE13 - ■■D1		8
	33.8		34.3	2.3	40	2KJ1732 - ■BE13 - ■■E1		8
	45		27.7	2.8	30	2KJ1732 - ■BE13 - ■■F1		8
	54		24	3.1	25	2KJ1732 - ■BE13 - ■■G1		8
	67.5		20.4	3.7	20	2KJ1732 - ■BE13 - ■■H1		8
	S.28-LAI63S2							
	282		5.4	9.9	10	2KJ1732 - ■BC13 - ■■K1	P00	8
	403		3.9	13.4	7	2KJ1732 - ■BC13 - ■■L1	P00	8
	564		2.8	18.1	5	2KJ1732 - ■BC13 - ■■M1	P00	8
	S.18-LAI71S6							
	17		60.1	0.86	50	2KJ1731 - ■CD13 - ■■D1	P01	8
	21.2		52.4	1	40	2KJ1731 - ■CD13 - ■■E1	P01	8
	S.18-LAI63M4							
	22.5		44.3	1	60	2KJ1731 - ■BE13 - ■■C1		6
	27		39.2	1.1	50	2KJ1731 - ■BE13 - ■■D1		6
	33.8		34	1.3	40	2KJ1731 - ■BE13 - ■■E1		6
	45		27.4	1.6	30	2KJ1731 - ■BE13 - ■■F1		6
	54		23.8	1.6	25	2KJ1731 - ■BE13 - ■■G1		6
	67.5		20.3	2.2	20	2KJ1731 - ■BE13 - ■■H1		6
90		15.9	2.7	15	2KJ1731 - ■BE13 - ■■J1		6	
135		11.1	3.8	10	2KJ1731 - ■BE13 - ■■K1		6	
193		8	5.1	7	2KJ1731 - ■BE13 - ■■L1		6	
270		5.8	6.7	5	2KJ1731 - ■BE13 - ■■M1		6	
S.18-LAI63S2								
282		5.4	5.6	10	2KJ1731 - ■BC13 - ■■K1	P00	6	
403		3.9	7.5	7	2KJ1731 - ■BC13 - ■■L1	P00	6	
564		2.8	9.9	5	2KJ1731 - ■BC13 - ■■M1	P00	6	

Shaft designs, see page 6/13

Frequency and voltage, see page 8/20

Gearbox housing mounting position, see page 6/15

*) Design: worm gearbox S with solid shaft

1, 5 or 6

1 to 9

A, D, F or H

MOTOX Geared Motors

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Geared motors up to 1.1 kW

Selection and ordering data (continued)

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	
0.18	S.08-LAI63M4							
	33.8	30.7	0.91	40	2KJ1730 - ■BE13 - ■■E1		5	
	45.0	25.3	1.1	30	2KJ1730 - ■BE13 - ■■F1		5	
	54.0	22.2	1.3	25	2KJ1730 - ■BE13 - ■■G1		5	
	67.5	19.1	1.4	20	2KJ1730 - ■BE13 - ■■H1		5	
	90	15.2	1.8	15	2KJ1730 - ■BE13 - ■■J1		5	
	135	10.8	2.6	10	2KJ1730 - ■BE13 - ■■K1		5	
	193	7.8	3.5	7	2KJ1730 - ■BE13 - ■■L1		5	
	270	5.8	4.5	5	2KJ1730 - ■BE13 - ■■M1		5	
	S.08-LAI63S2							
	282	5.2	3.9	10	2KJ1730 - ■BC13 - ■■K1	P00	5	
	403	3.8	5.3	7	2KJ1730 - ■BC13 - ■■L1	P00	5	
	564	2.8	7	5	2KJ1730 - ■BC13 - ■■M1	P00	5	
	0.25	S.28-LAI71M6						
		14.3	94.9	1	60	2KJ1732 - ■CE13 - ■■C1	P01	10
		17.2	84.5	1.1	50	2KJ1732 - ■CE13 - ■■D1	P01	10
		S.28-LAI71S4						
16.9		74.3	1.1	80	2KJ1732 - ■CD13 - ■■B1		10	
22.5		62.3	1.3	60	2KJ1732 - ■CD13 - ■■C1		10	
27		55.3	1.4	50	2KJ1732 - ■CD13 - ■■D1		10	
33.8		47.6	1.7	40	2KJ1732 - ■CD13 - ■■E1		10	
45		38.5	2	30	2KJ1732 - ■CD13 - ■■F1		10	
54		33.4	2.3	25	2KJ1732 - ■CD13 - ■■G1		10	
S.28-LAI63M2								
283		7.4	7.1	10	2KJ1732 - ■BE13 - ■■K1	P00	8	
404		5.4	9.7	7	2KJ1732 - ■BE13 - ■■L1	P00	8	
566		3.9	13.1	5	2KJ1732 - ■BE13 - ■■M1	P00	8	
S.18-LAI71S4								
27		54.5	0.82	50	2KJ1731 - ■CD13 - ■■D1		8	
33.8		47.2	0.95	40	2KJ1731 - ■CD13 - ■■E1		8	
45		38	1.2	30	2KJ1731 - ■CD13 - ■■F1		8	
54		33.1	1.2	25	2KJ1731 - ■CD13 - ■■G1		8	
67.5		28.1	1.5	20	2KJ1731 - ■CD13 - ■■H1		8	
90		22.1	2	15	2KJ1731 - ■CD13 - ■■J1		8	
135		15.5	2.8	10	2KJ1731 - ■CD13 - ■■K1		8	
193		11.2	3.7	7	2KJ1731 - ■CD13 - ■■L1		8	
270		8.1	4.8	5	2KJ1731 - ■CD13 - ■■M1		8	
S.18-LAI63M2								
283		7.4	4	10	2KJ1731 - ■BE13 - ■■K1	P00	6	
404		5.4	5.4	7	2KJ1731 - ■BE13 - ■■L1	P00	6	
566		3.9	7.1	5	2KJ1731 - ■BE13 - ■■M1	P00	6	
S.08-LAI63M2								
70.8		21.3	1	40	2KJ1730 - ■BE13 - ■■E1	P00	5	
94.3		17.2	1.2	30	2KJ1730 - ■BE13 - ■■F1	P00	5	

Shaft designs, see page 6/13

1, 5 or 6

Frequency and voltage, see page 8/20

1 to 9

Gearbox housing mounting position, see page 6/15

A, D, F or H

*) Design: worm gearbox S with solid shaft

MOTOX Geared Motors

Worm geared motors

Geared motors up to 1.1 kW

Selection and ordering data (continued)

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
0.25	S.08-LAI63M2						
	113	15.2	1.4	25	2KJ1730 - ■BE13 - ■■G1	P00	5
	142	13	1.6	20	2KJ1730 - ■BE13 - ■■H1	P00	5
	189	10.3	2	15	2KJ1730 - ■BE13 - ■■J1	P00	5
	283	7.3	2.8	10	2KJ1730 - ■BE13 - ■■K1	P00	5
	404	5.3	3.8	7	2KJ1730 - ■BE13 - ■■L1	P00	5
	566	3.8	5	5	2KJ1730 - ■BE13 - ■■M1	P00	5
0.37	S.28-LAI71M4						
	22.8	90.9	0.89	60	2KJ1732 - ■CE13 - ■■C1		10
	27.4	80.7	0.98	50	2KJ1732 - ■CE13 - ■■D1		10
	34.2	69.5	1.1	40	2KJ1732 - ■CE13 - ■■E1		10
	45.7	56.2	1.4	30	2KJ1732 - ■CE13 - ■■F1		10
	54.8	48.7	1.5	25	2KJ1732 - ■CE13 - ■■G1		10
	68.5	41.3	1.8	20	2KJ1732 - ■CE13 - ■■H1		10
	S.28-LAI71S2						
	274	11.4	4.8	10	2KJ1732 - ■CD13 - ■■K1	P00	10
	391	8.2	6.5	7	2KJ1732 - ■CD13 - ■■L1	P00	10
	548	6	8.7	5	2KJ1732 - ■CD13 - ■■M1	P00	10
	S.18-LAI71M4						
	54.8	48.3	0.81	25	2KJ1731 - ■CE13 - ■■G1		8
	68.5	41.1	1.1	20	2KJ1731 - ■CE13 - ■■H1		8
	91.3	32.2	1.3	15	2KJ1731 - ■CE13 - ■■J1		8
	137	22.6	1.9	10	2KJ1731 - ■CE13 - ■■K1		8
	196	16.3	2.5	7	2KJ1731 - ■CE13 - ■■L1		8
	274	11.8	3.3	5	2KJ1731 - ■CE13 - ■■M1		8
	S.18-LAI71S2						
	274	11.4	2.7	10	2KJ1731 - ■CD13 - ■■K1	P00	8
	391	8.2	3.6	7	2KJ1731 - ■CD13 - ■■L1	P00	8
	548	5.9	4.7	5	2KJ1731 - ■CD13 - ■■M1	P00	8
0.55	S.28-LAI80S4						
	46.5	82.1	0.92	30	2KJ1732 - ■DB13 - ■■F1		14
	55.8	71.1	1	25	2KJ1732 - ■DB13 - ■■G1		14
	69.8	60.3	1.2	20	2KJ1732 - ■DB13 - ■■H1		14
	93	47.3	1.6	15	2KJ1732 - ■DB13 - ■■J1		14
	140	33.1	2.3	10	2KJ1732 - ■DB13 - ■■K1		14
	199	23.9	3.1	7	2KJ1732 - ■DB13 - ■■L1		14
	279	17.4	4	5	2KJ1732 - ■DB13 - ■■M1		14
	S.28-LAI71M2						
	280	16.5	3.2	10	2KJ1732 - ■CE13 - ■■K1	P00	10
	400	11.9	4.4	7	2KJ1732 - ■CE13 - ■■L1	P00	10
	560	8.7	5.9	5	2KJ1732 - ■CE13 - ■■M1	P00	10
	S.18-LAI71M2						
	112	35.8	0.83	25	2KJ1731 - ■CE13 - ■■G1	P00	8
	140	30.4	1	20	2KJ1731 - ■CE13 - ■■H1	P00	8

Shaft designs, see page 6/13

Frequency and voltage, see page 8/20

Gearbox housing mounting position, see page 6/15

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1, 5 or 6

1 to 9

A, D, F or H

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0.55	S.18-LAI71M2							
	187		23.7	1.3	15	2KJ1731 - ■CE13 - ■■J1	8	
	280		16.5	1.8	10	2KJ1731 - ■CE13 - ■■K1	8	
	400		11.9	2.4	7	2KJ1731 - ■CE13 - ■■L1	8	
	560		8.6	3.2	5	2KJ1731 - ■CE13 - ■■M1	8	
0.75	S.28-LAI80ZMB4							
	70		81.9	0.92	20	2KJ1732 - ■DE13 - ■■H1	14	
	93.3		64.3	1.2	15	2KJ1732 - ■DE13 - ■■J1	14	
	140		45	1.7	10	2KJ1732 - ■DE13 - ■■K1	14	
	200		32.5	2.3	7	2KJ1732 - ■DE13 - ■■L1	14	
	280		23.7	3	5	2KJ1732 - ■DE13 - ■■M1	14	
	S.28-LAI80M2							
	95.7		54.9	0.97	30	2KJ1732 - ■DC13 - ■■F1	P00	14
	115		47.5	1.1	25	2KJ1732 - ■DC13 - ■■G1	P00	14
	144		40.3	1.3	20	2KJ1732 - ■DC13 - ■■H1	P00	14
	191		31.5	1.7	15	2KJ1732 - ■DC13 - ■■J1	P00	14
	287		22	2.4	10	2KJ1732 - ■DC13 - ■■K1	P00	14
	410		15.9	3.3	7	2KJ1732 - ■DC13 - ■■L1	P00	14
	574		11.6	4.4	5	2KJ1732 - ■DC13 - ■■M1	P00	14
	1.1	S.28-LAI80ZMB2						
143			59.4	0.91	20	2KJ1732 - ■DN13 - ■■H1	P00	14
191			46.4	1.1	15	2KJ1732 - ■DN13 - ■■J1	P00	14
286			32.4	1.6	10	2KJ1732 - ■DN13 - ■■K1	P00	14
409			23.4	2.2	7	2KJ1732 - ■DN13 - ■■L1	P00	14
572			17.0	3	5	2KJ1732 - ■DN13 - ■■M1	P00	14

Shaft designs, see page 6/13

1, 5 or 6

Frequency and voltage, see page 8/20

1 to 9

Gearbox housing mounting position, see page 6/15

A, D, F or H

*) Design: worm gearbox S with solid shaft

MOTOX Geared Motors

Worm geared motors

Transmission ratios and maximum torques

Selection and ordering data

Gearbox size	Ratio code Order No. 15th and 16th position	Gearbox ratio i_{tot}	Lead angle of the worm γ_m °	Output speed $n_1 = 2\ 800\ rpm$				Output speed $n_1 = 1\ 400\ rpm$				IEC motor size		
				n_2 rpm	T_2 Nm	P_{1N} kW	η %	n_2 rpm	T_2 Nm	P_{1N} kW	η %			
				63	71	80								
S08	B1	80	2.1	35.0	18	0.14	48	17.5	19	0.07	47	•		
	C1	60	2.7	46.7	22	0.20	55	23.3	24	0.11	52	•		
	D1	50	3.2	56.0	21	0.21	58	28.0	27	0.14	56	•		
	E1	40	3.8	70.0	21	0.24	63	35.0	28	0.17	61	•		
	F1	30	4.6	93.3	20	0.29	68	46.7	28	0.20	67	•		
	G1	25	5.2	112.0	20	0.33	72	56.0	27	0.23	70	•		
	H1	20	7.4	140.0	21	0.40	77	70.0	27	0.26	75	•		
	J1	15	9.2	186.7	20	0.48	81	93.3	27	0.33	80	•		
	K1	10	14	280.0	20	0.68	86	140.0	27	0.47	85	•		
	L1	7	19	400.0	19	0.89	89	200.0	26	0.62	88	•		
	M1	5	25	560.0	19	1.22	91	280.0	25	0.81	91	•		
S18	B1	80	3.5	35.0	33	0.22	55	17.5	35	0.12	54	•		
	C1	60	3.5	46.7	33	0.26	61	23.3	44	0.18	59	•		
	D1	50	4.0	56.0	33	0.30	64	28.0	44	0.20	63	•	•	
	E1	40	4.5	70.0	31	0.33	68	35.0	43	0.24	67	•	•	
	F1	30	5.5	93.3	31	0.42	73	46.7	41	0.28	72	•	•	
	G1	25	6.5	112.0	31	0.48	76	56.0	41	0.32	75	•	•	
	H1	20	9.5	140.0	31	0.56	81	70.0	41	0.38	80	•	•	
	J1	15	11	186.7	30	0.70	84	93.3	41	0.48	84	•	•	
	K1	10	17	280.0	30	1.00	88	140.0	40	0.67	88	•	•	
	L1	7	17	400.0	29	1.33	91	200.0	39	0.91	90	•	•	
	M1	5	23	560.0	28	1.78	92	280.0	37	1.18	92	•	•	
S28	A1	100	2.0	28.0	57	0.33	50	14.0	72	0.22	49	•		
	B1	80	2.5	35.0	57	0.39	54	17.5	80	0.27	54	•	•	
	C1	60	3.0	46.7	57	0.46	60	23.3	78	0.32	59	•	•	
	D1	50	3.5	56.0	55	0.50	64	28.0	75	0.35	63	•	•	
	E1	40	4.5	70.0	55	0.59	68	35.0	74	0.40	68	•	•	
	F1	30	5.0	93.3	53	0.71	73	46.7	73	0.49	73	•	•	•
	G1	25	6.0	112.0	53	0.82	76	56.0	73	0.56	76	•	•	•
	H1	20	8.5	140.0	53	0.96	81	70.0	73	0.67	80	•	•	•
	J1	15	10	186.7	53	1.23	84	93.3	72	0.84	84	•	•	•
	K1	10	15	280.0	53	1.77	88	140.0	72	1.20	88	•	•	•
	L1	7	15	400.0	53	2.44	91	200.0	71	1.63	91	•	•	•
M1	5	21	560.0	51	3.22	93	280.0	69	2.18	93	•	•	•	

MOTOX Geared Motors

Worm geared motors

Transmission ratios and maximum torques

Selection and ordering data (continued)

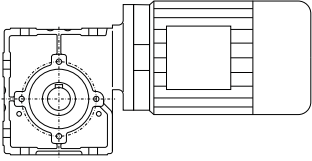
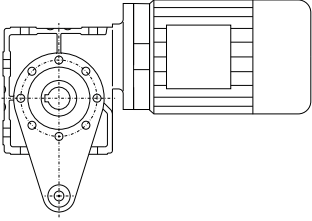
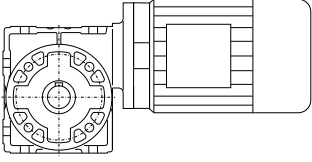
Gearbox size	Ratio code Order No. 15th and 16th position	Gearbox ratio i_{tot}	Lead angle of the worm γ_m °	Output speed $n_1 = 900$ rpm				Output speed $n_1 = 500$ rpm				IEC motor size		
				n_2 rpm	T_2 Nm	P_{1N} kW	η %	n_2 rpm	T_2 Nm	P_{1N} kW	η %	63	71	80
S08	B1	80	2.1	11.3	19	0.05	44	6.3	20	0.03	40	•		
	C1	60	2.7	15.0	24	0.08	50	8.3	24	0.05	45	•		
	D1	50	3.2	18.0	27	0.10	53	10.0	28	0.06	49	•		
	E1	40	3.8	22.5	31	0.13	58	12.5	31	0.08	54	•		
	F1	30	4.6	30.0	32	0.16	64	16.7	33	0.10	60	•		
	G1	25	5.2	36.0	32	0.18	68	20.0	32	0.10	64	•		
	H1	20	7.4	45.0	31	0.20	73	25.0	31	0.12	70	•		
	J1	15	9.2	60.0	33	0.27	78	33.3	33	0.15	75	•		
	K1	10	14	90.0	32	0.36	84	50.0	33	0.21	81	•		
	L1	7	19	128.6	31	0.48	87	71.4	33	0.29	85	•		
M1	5	25	180.0	30	0.63	90	100.0	33	0.39	88	•			
S18	B1	80	3.5	11.3	35	0.08	51	6.3	36	0.05	47	•		
	C1	60	3.5	15.0	49	0.14	57	8.3	51	0.09	52	•		
	D1	50	4.0	18.0	51	0.16	61	10.0	59	0.11	56	•	•	
	E1	40	4.5	22.5	51	0.18	65	12.5	64	0.14	61	•	•	
	F1	30	5.5	30.0	50	0.22	70	16.7	63	0.17	66	•	•	
	G1	25	6.5	36.0	49	0.25	74	20.0	62	0.19	70	•	•	
	H1	20	9.5	45.0	50	0.30	78	25.0	62	0.22	75	•	•	
	J1	15	11	60.0	50	0.38	82	33.3	62	0.27	79	•	•	
	K1	10	17	90.0	49	0.53	87	50.0	61	0.38	85	•	•	
	L1	7	17	128.6	47	0.70	90	71.4	58	0.49	88	•	•	
M1	5	23	180.0	44	0.91	91	100.0	56	0.65	90	•	•		
S28	A1	100	2.0	9.0	72	0.14	47	5.0	72	0.09	43	•		
	B1	80	2.5	11.3	92	0.21	52	6.3	93	0.13	48	•	•	
	C1	60	3.0	15.0	93	0.26	57	8.3	116	0.19	53	•	•	
	D1	50	3.5	18.0	90	0.28	61	10.0	115	0.21	57	•	•	
	E1	40	4.5	22.5	90	0.32	66	12.5	113	0.24	62	•	•	
	F1	30	5.0	30.0	86	0.38	72	16.7	110	0.28	68	•	•	•
	G1	25	6.0	36.0	85	0.43	75	20.0	109	0.32	71	•	•	•
	H1	20	8.5	45.0	85	0.51	79	25.0	109	0.38	76	•	•	•
	J1	15	10	60.0	85	0.64	83	33.3	109	0.47	81	•	•	•
	K1	10	15	90.0	85	0.92	87	50.0	109	0.66	86	•	•	•
L1	7	15	128.6	84	1.26	90	71.4	107	0.90	89	•	•	•	
M1	5	21	180.0	82	1.68	92	100.0	105	1.21	91	•	•	•	

MOTOX Geared Motors

Worm geared motors

Mounting types

Selection and ordering data

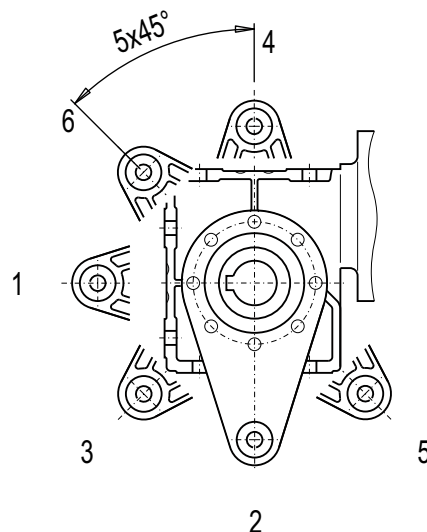
Mounting type	Order No. 14th position	Code in type designation 4th position	Representation
Housing flange (C-type)	H	Z	
Design with torque arm	D	D	
Flange-mounted design (A-type)	F	F	

6

Worm gearbox with torque arm

The torque arm consists of an arm with an eye; it can be screwed onto the gearbox housing with an axis intersection of 45° in any one of five positions around the output.

If **D** appears in the **14th position** of the order number, the torque arm will be delivered loose.



Selection and ordering data

Shaft design	Order No. 8th position	Order No. suffix	Shaft dimensions		
Worm gearbox S, foot-mounted design					
Size			S.08	S.18	S.28
Solid shaft with feather key	1		V16x 40	V20 x 40	V20 x 40
Worm gearbox SAZ with housing flange					
Size			S.08	S.18	S.28
Hollow shaft	5		H16 x 84		H20 x 121
	6			H20 x 100	
Worm gearbox SAD with torque arm					
Size			S.08	S.18	S.28
Hollow shaft	5		H16 x 84		H20 x 121
	6			H20 x 100	
Worm gearbox SF/SAF, flange-mounted design (A-type)					
Size			S.F08	S.F18	S.F28
Solid shaft with feather key	2		V16x 40	V20 x 40	V20 x 40
Hollow shaft	5		H16 x 84		H20 x 121
	6			H20 x 100	

MOTOX Geared Motors

Worm geared motors

Flange-mounted designs (A-type)

Selection and ordering data

Order code	Flange diameter		
Worm gearbox S.F			
Size	S.F08	S.F18	S.F28
H01	80	110	120
H02	120 / Q90	120	160 / Q136

Selection and ordering data

The gearbox is lubricated for its entire service life in such a way that it can be installed and operated using all the mounting types / mounting positions listed below.

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

Worm gearbox S, flange-mounted design, and with housing flange

Oil control valves:

These types are lubricated for life.

No ventilation, oil level, or drain plugs are present.

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

S: B3-00 (IM B3-00) ¹⁾

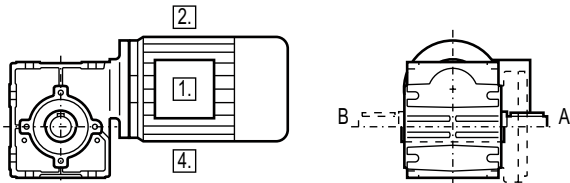
Order code: output side A **D06**, output side B **D08**

SF: B5-01 (IM B5-01) ¹⁾

Order code: output side A **D22**, output side B **D24**

SAD, SAF, SAZ: H-01 ¹⁾

Order code: output side A **D76**, output side B **D77**



S: B6-00 (IM B6-00)

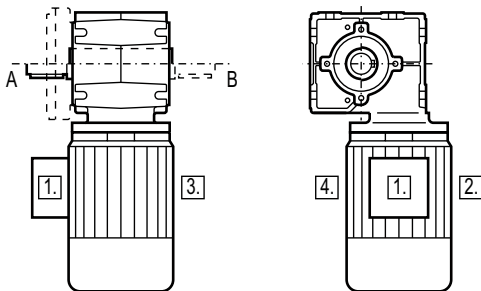
Order code: output side A **D38**, output side B **D40**

SF: B5-00 (IM B5-00)

Order code: output side A **D18**, output side B **D20**

SAD, SAF, SAZ: H-04

Order code: output side A **D82**, output side B **D83**



S: V5-00 (IM V5-00)

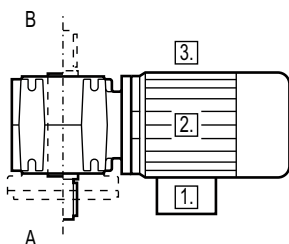
Order code: output side A **E03**, output side B **E05**

SF: V1-00 (IM V1-00)

Order code: output side A **D90**, output side B **D92**

SAD, SAF, SAZ: H-05

Order code: output side A **D84**, output side B **D85**



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.

1) Standard mounting type

S: B8-00 (IM B8-00)

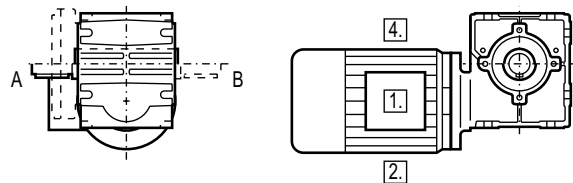
Order code: output side A **D68**, output side B **D70**

SF: B5-03 (IM B5-03)

Order code: output side A **D32**, output side B **D34**

SAD, SAF, SAZ: H-02

Order code: output side A **D78**, output side B **D79**



S: B7-00 (IM B7-00)

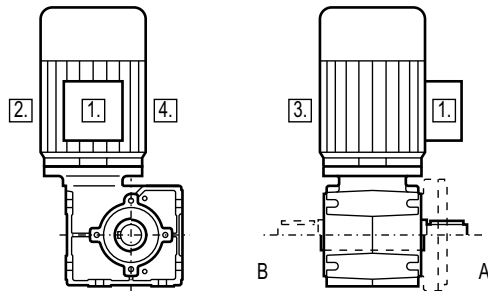
Order code: output side A **D59**, output side B **D61**

SF: B5-02 (IM B5-02)

Order code: output side A **D27**, output side B **D29**

SAD, SAF, SAZ: H-03

Order code: output side A **D80**, output side B **D81**



S: V6-00 (IM V6-00)

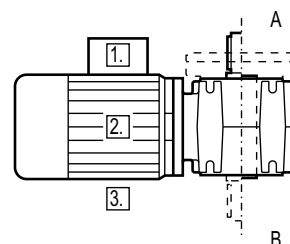
Order code: output side A **E15**, output side B **E17**

SF: V3-00 (IM V3-00)

Order code: output side A **D98**, output side B **E00**

SAD, SAF, SAZ: H-06

Order code: output side A **D86**, output side B **D87**



MOTOX Geared Motors

Worm geared motors

Special versions

Lubricants

Worm gearbox S is always filled with synthetic lubricant prior to despatch and is supplied ready for use. The rating plate contains information about the appropriate type of oil (PGLP) and ISO viscosity class.

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	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 USDA-H1					
Standard temperature	-30	...	+50 °C	CLP ISO H1 VG460	K11

¹⁾ Recommendation

²⁾ On request

2nd output shaft extension

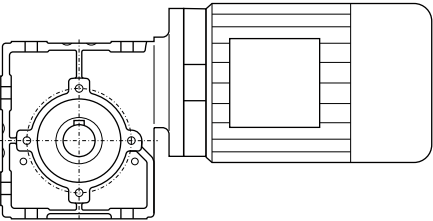
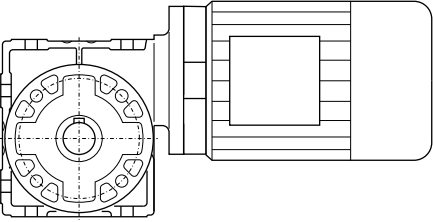
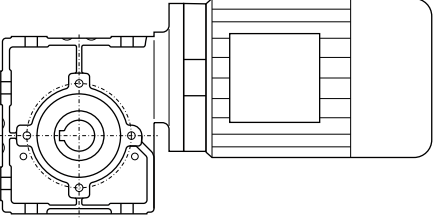
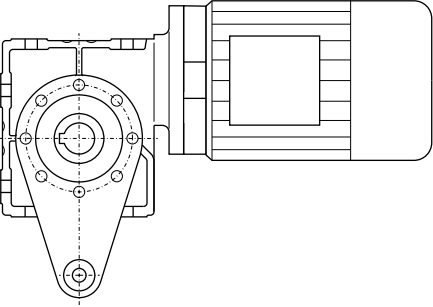
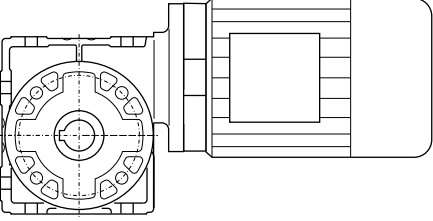
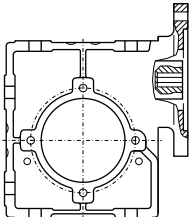
See the dimension drawings for the corresponding design for the relevant dimensions.

Order code:
2nd output shaft extension **G73**

Plug-in shaft

If required, hollow-shaft designs of the gearboxes are available additionally with a plug-in shaft.

Dimension drawing overview

	Gearbox type	Dimension drawing on page
	S08	6/18
	S18	6/23
	S28	6/28
	SF08	6/19
	SF18	6/24
	SF28	6/29
	SAZ08	6/20
	SAZ18	6/25
	SAZ28	6/30
	SAD08	6/21
	SAD18	6/26
	SAD28	6/31
	SAF08	6/22
	SAF18	6/27
	SAF28	6/32
	S.08-K4 ... S.28-K4	6/33

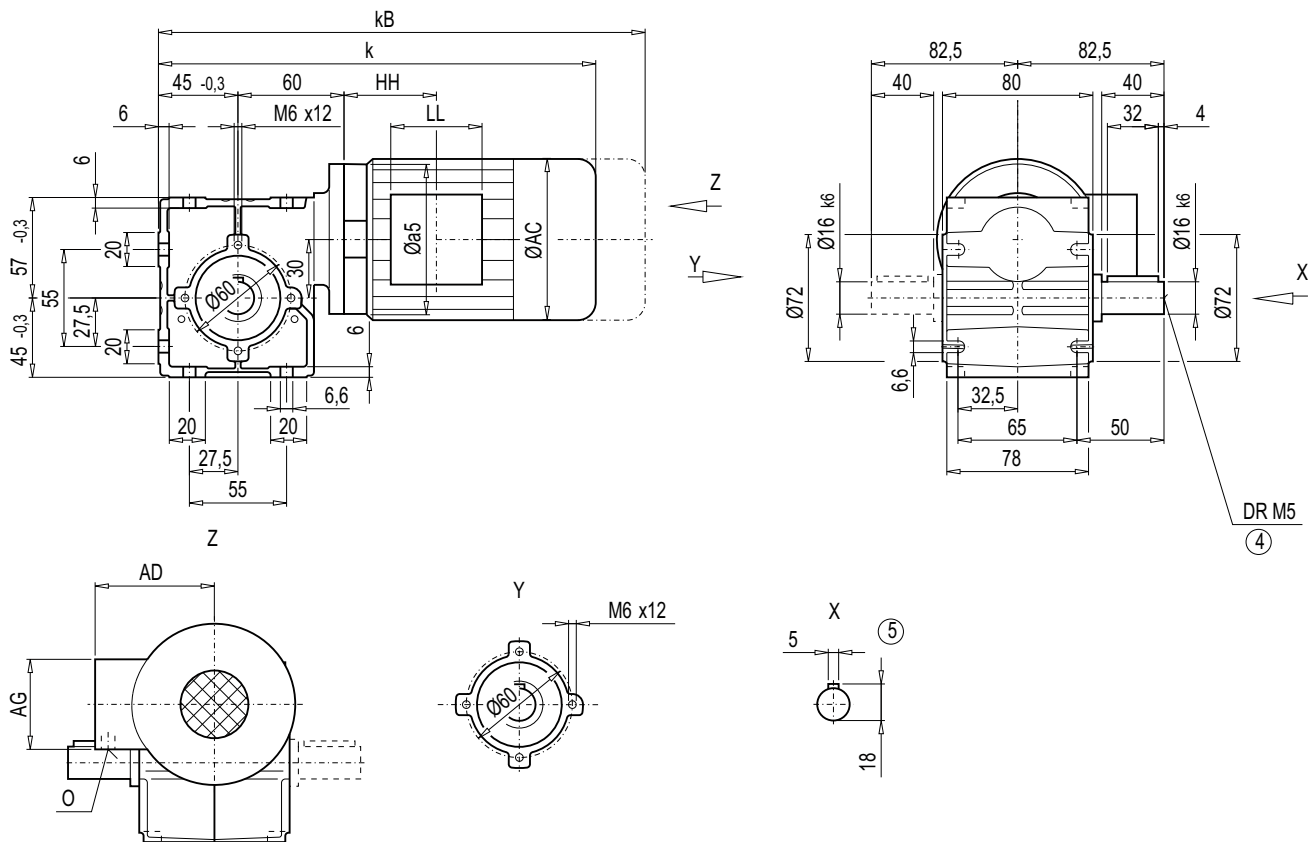
MOTOX Geared Motors

Worm geared motors

Dimensions

Gearbox S08, foot-mounted design

S012



6

Motor	S08									Weight S08
	k	kB	AC	AD	AG	LL	HH	a5	O	
LAI63	284.5	335.5	118	101 (135.5)	75 (90)	75 (90)	69.5	90	M20x1.5/M25x1.5	5

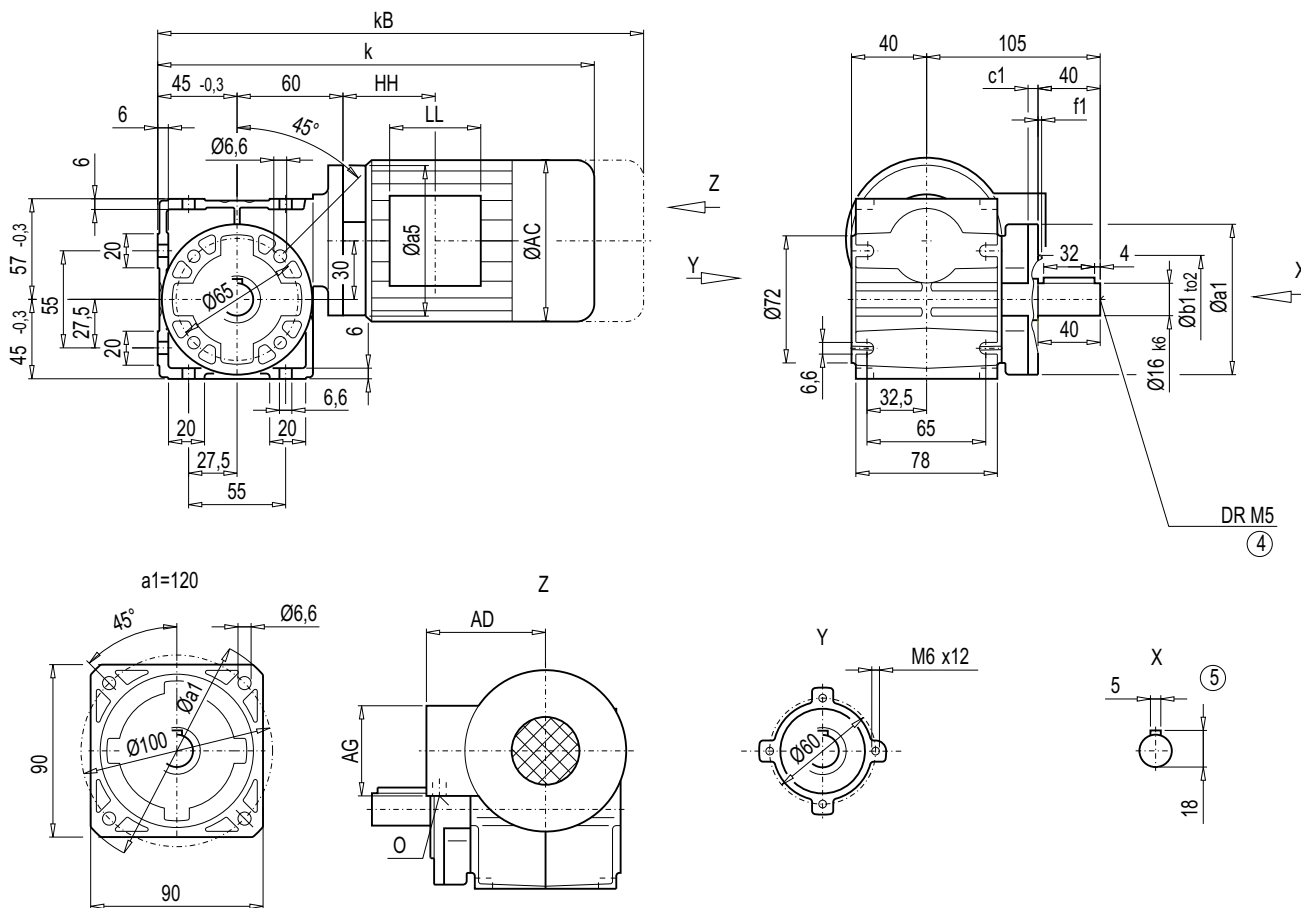
④ DIN 332

⑤ Feather key / keyway DIN 6885

() Values in brackets for motor with brake and / or with encoder

Gearbox SF08, flange-mounted design (A-type)

SF012



Flange	a1	b1	to2	c1	f1
A80	80	50	j6	7	2.5
A120/Q90	120	80	j6	7	3.0

Motor	SF08									Weight SF08
	k	kB	AC	AD	AG	LL	HH	a5	O	
LAI63	284.5	335.5	118	101 (135.5)	75 (90)	75 (90)	69.5	90	M20x1.5/M25x1.5	5

④ DIN 332

⑤ Feather key / keyway DIN 6885

() Values in brackets for motor with brake and / or with encoder

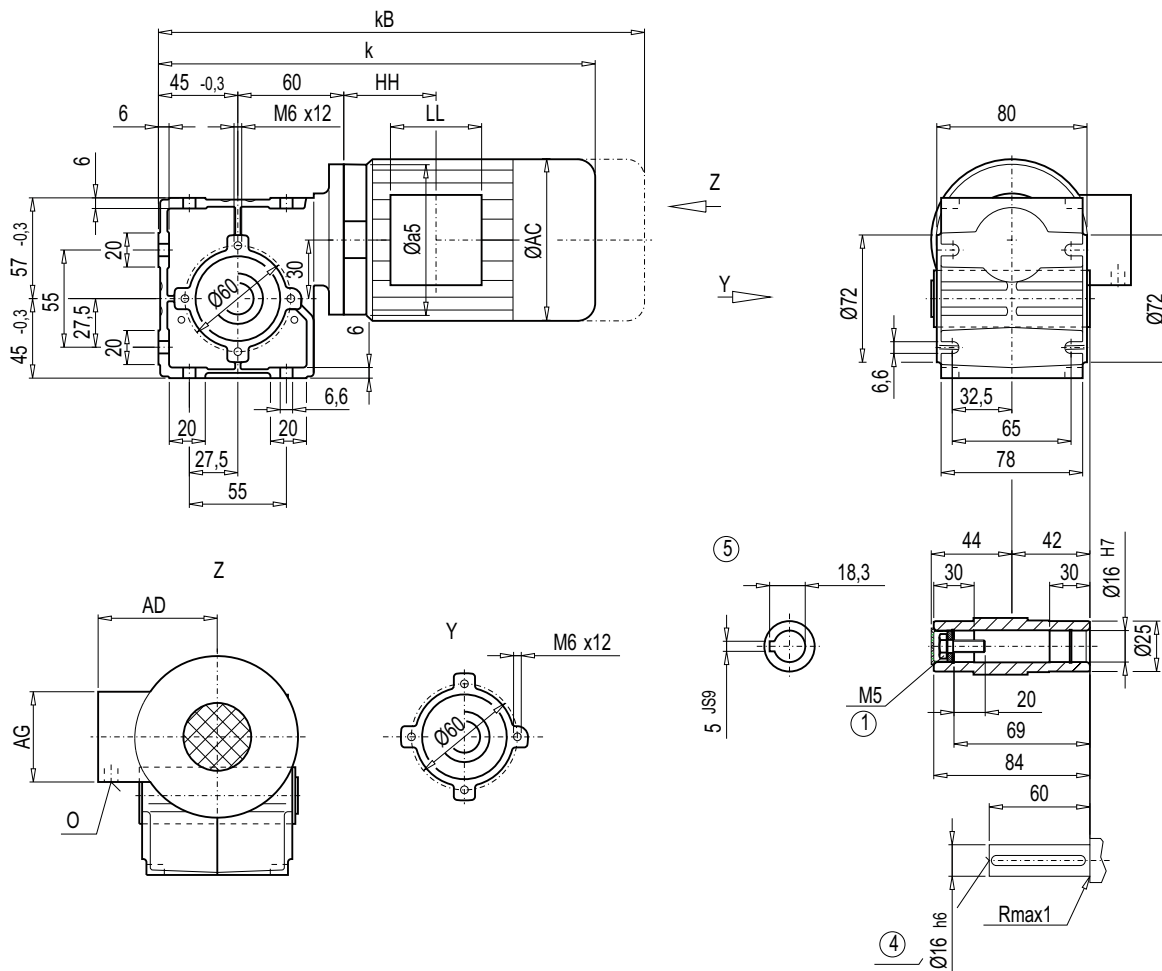
MOTOX Geared Motors

Worm geared motors

Dimensions

Gearbox SAZ08, housing-flange-mounted design (C-type)

SAZ012



6

Motor	SAZ08									Weight SAZ08
	k	k _B	AC	AD	AG	LL	HH	a5	O	
LAI63	284.5	335.5	118	101 (135.5)	75 (90)	75 (90)	69.5	90	M20x1.5/M25x1.5	5

① EN ISO 4014

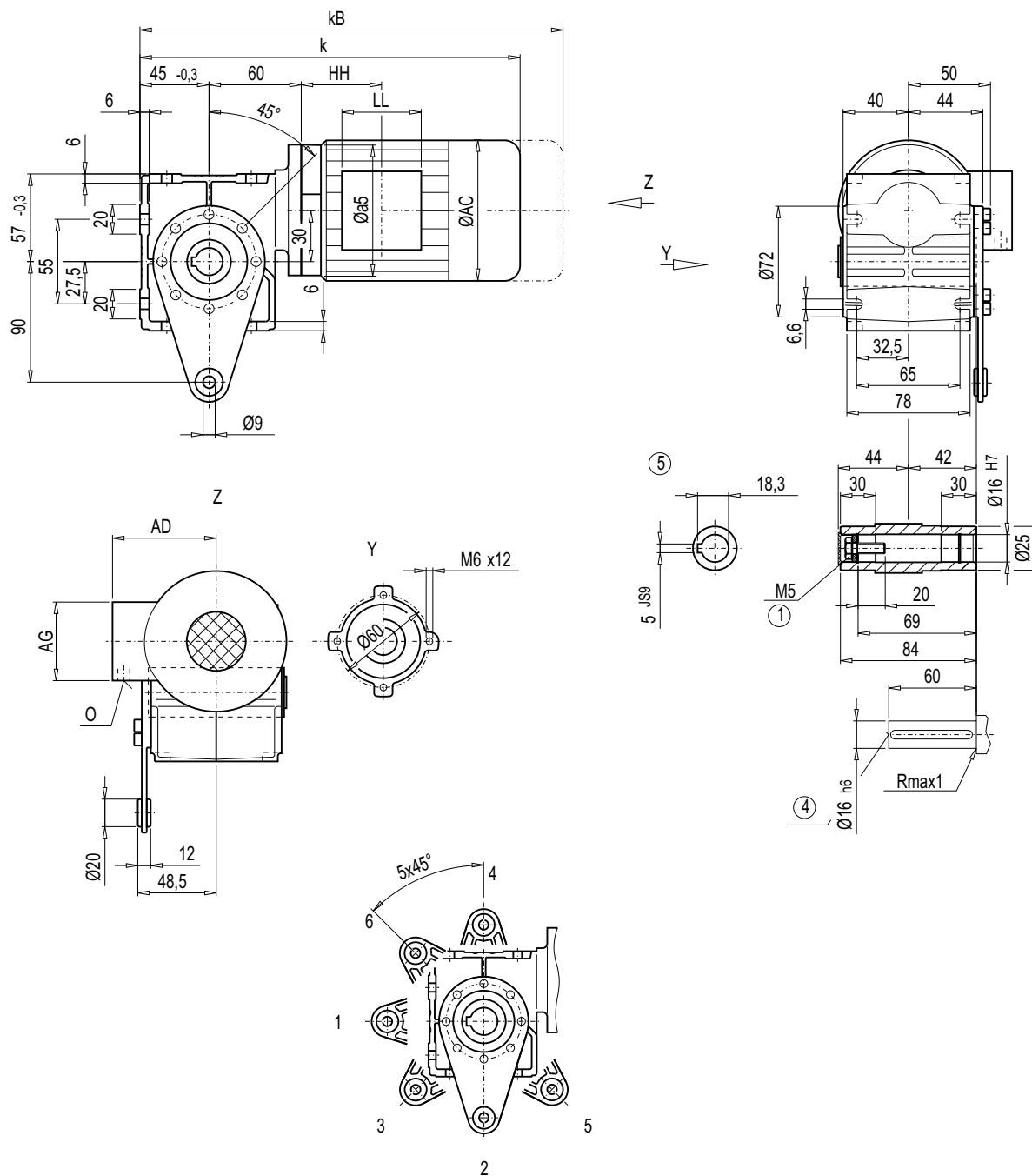
④ DIN 332

⑤ Feather key / keyway DIN 6885

() Values in brackets for motor with brake and / or with encoder

Gearbox SAD08, shaft-mounted design with torque arm

SAD012



Motor	SAD08									Weight SAD08
	k	kB	AC	AD	AG	LL	HH	a5	O	
LAI63	284.5	335.5	118	101 (135.5)	75 (90)	75 (90)	69.5	90	M20x1.5/M25x1.5	5

① EN ISO 4014

④ DIN 332

⑤ Feather key / keyway DIN 6885

() Values in brackets for motor with brake and / or with encoder

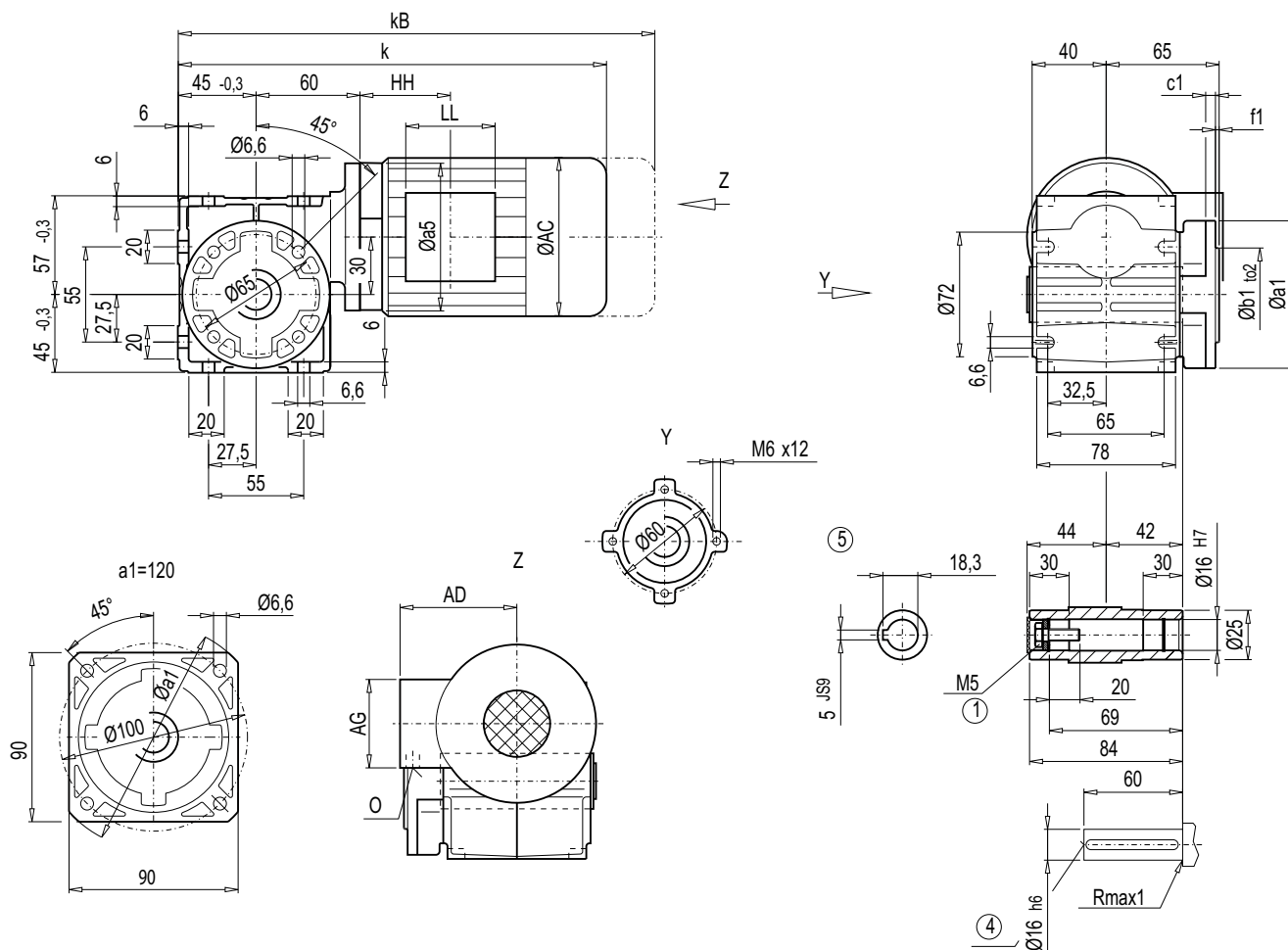
MOTOX Geared Motors

Worm geared motors

Dimensions

Gearbox SAF08, flange-mounted design

SAF012



Flange	a1	b1	to2	c1	f1
A80	80	50	j6	7	2.5
A120/Q90	120	80	j6	7	3.0

6

Motor	SAF08									Weight SAF08
	k	kB	AC	AD	AG	LL	HH	a5	O	
LAI63	284.5	335.5	118	101 (135.5)	75 (90)	75 (90)	69.5	90	M20x1.5/M25x1.5	5

① EN ISO 4014

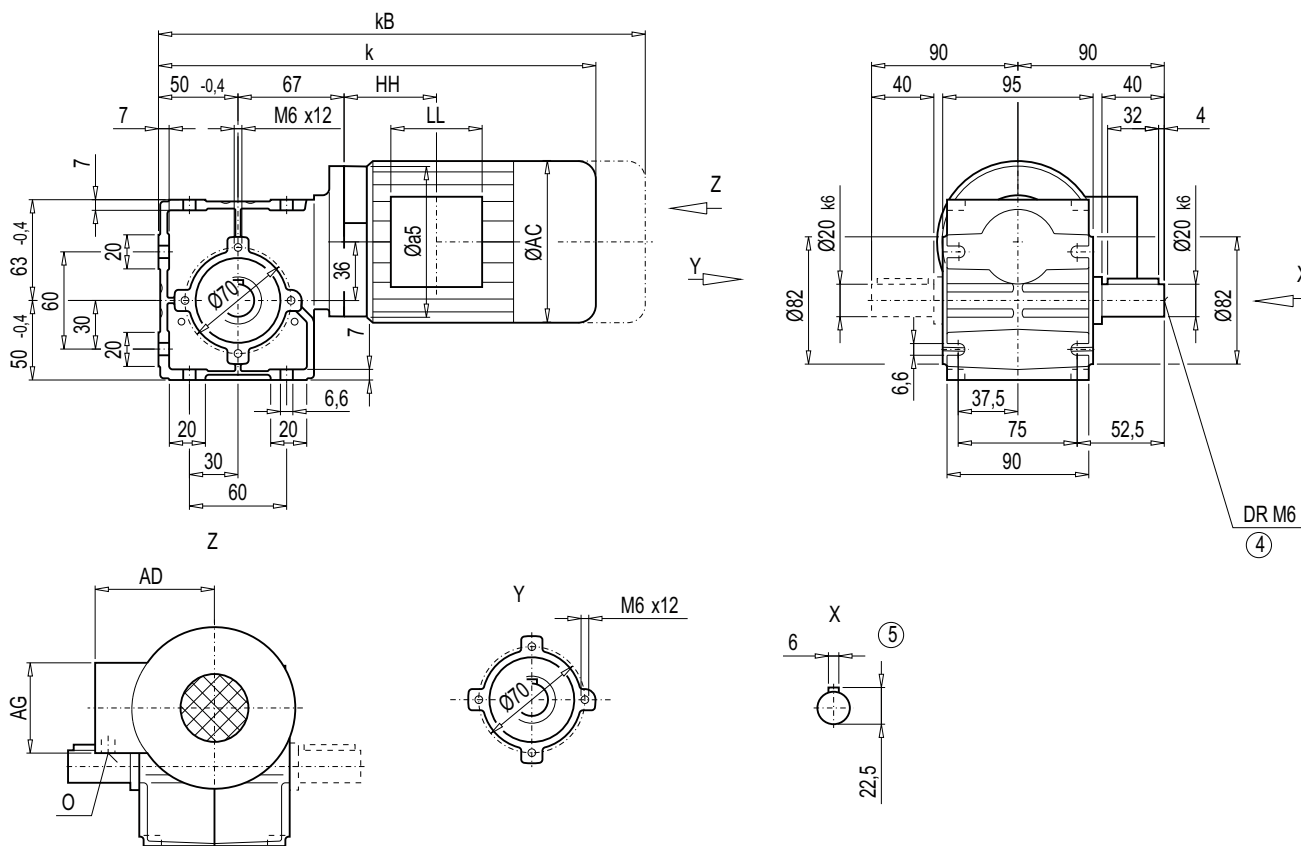
④ DIN 332

⑤ Feather key / keyway DIN 6885

() Values in brackets for motor with brake and / or with encoder

Gearbox S18, foot-mounted design

S012



6

Motor	S18									Weight S18
	k	kB	AC	AD	AG	LL	HH	a5	O	
LAI63	296.5	347.5	118	101 (135.5)	75 (90)	75 (90)	69.5	90	M20x1.5/M25x1.5	6
LAI71	327.0	378.5	139	111.0 (146)	75 (90)	75 (90)	63.5	105	M20x1.5/M25x1.5	8

④ DIN 332

⑤ Feather key / keyway DIN 6885

() Values in brackets for motor with brake and / or with encoder

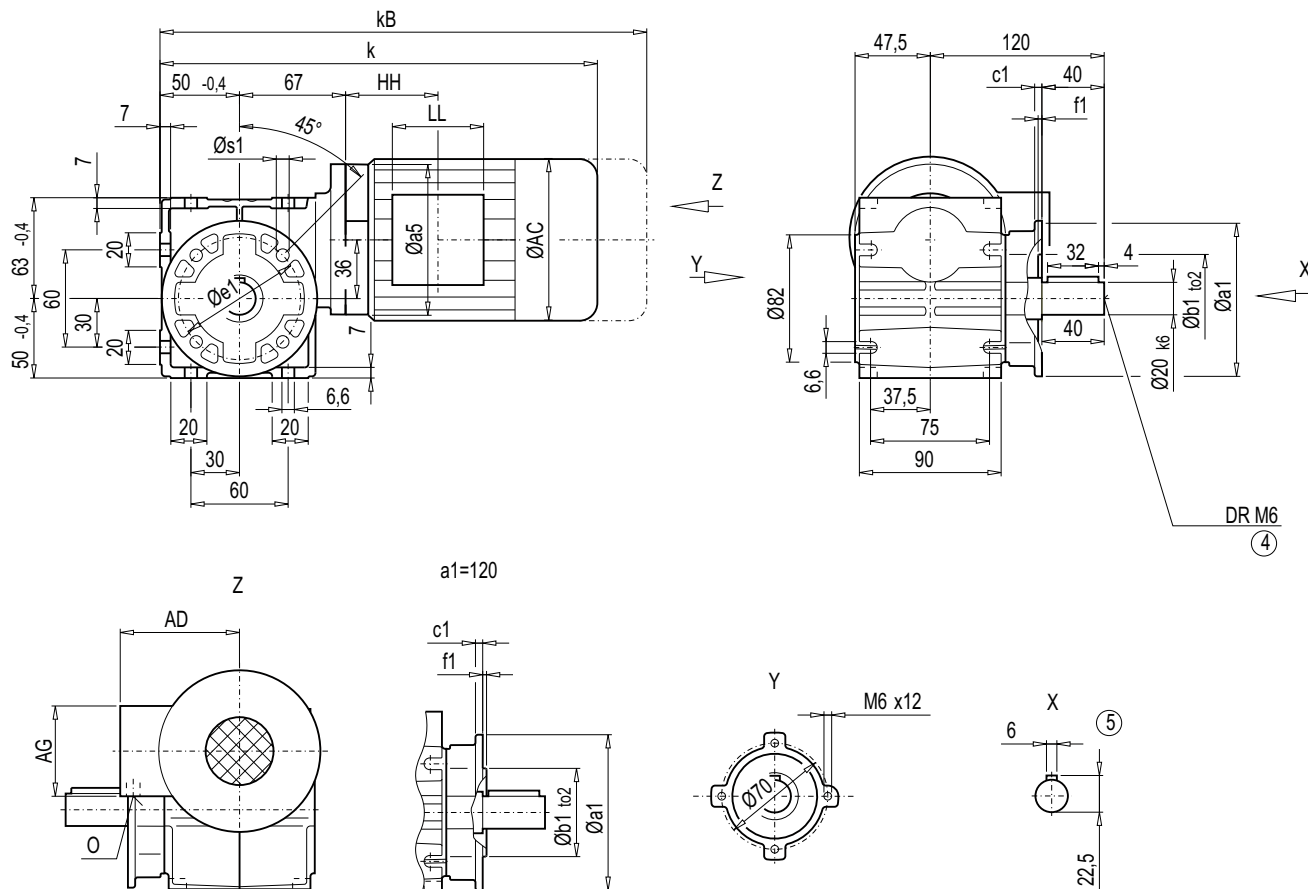
MOTOX Geared Motors

Worm geared motors

Dimensions

Gearbox SF18, flange-mounted design (A-type)

SF012



Flange	a1	b1	to2	c1	e1	f1	s1
A110	110	60	H8	8	87	4	9
A120	120	80	j6	8	100	3	6.6

Motor	SF18									Weight SF18
	k	kB	AC	AD	AG	LL	HH	a5	O	
LAI63	296.5	347.5	118	101 (135.5)	75 (90)	75 (90)	69.5	90	M20x1.5/M25x1.5	6
LAI71	327.0	378.5	139	111.0 (146)	75 (90)	75 (90)	63.5	105	M20x1.5/M25x1.5	8

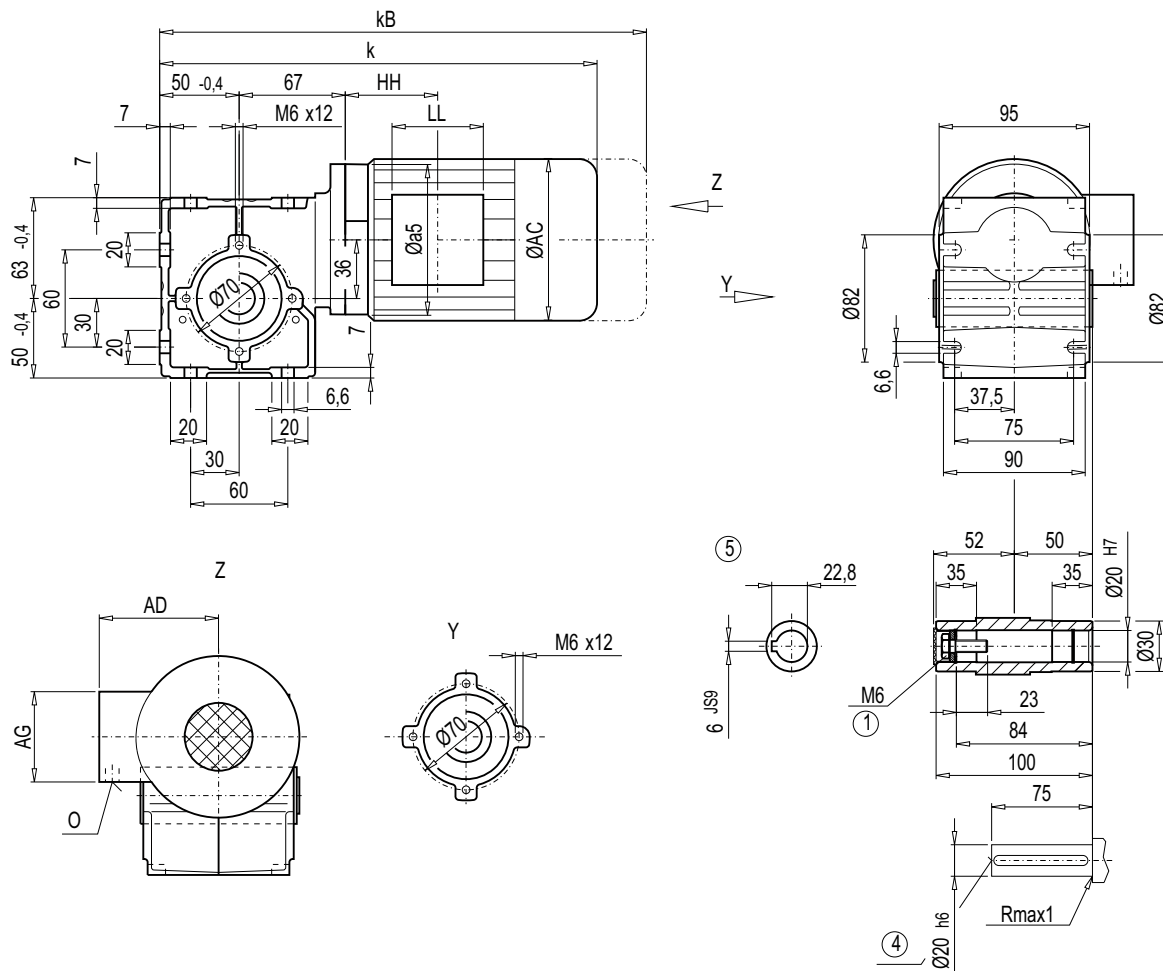
④ DIN 332

⑤ Feather key / keyway DIN 6885

() Values in brackets for motor with brake and / or with encoder

Gearbox SAZ18, housing-flange-mounted design (C-type)

SAZ012



Motor	SAZ18									Weight
	k	kB	AC	AD	AG	LL	HH	a5	O	SAZ18
LAI63	296.5	347.5	118	101 (135.5)	75 (90)	75 (90)	69.5	90	M20x1.5/M25x1.5	6
LAI71	327.0	378.5	139	111.0 (146)	75 (90)	75 (90)	63.5	105	M20x1.5/M25x1.5	7

① EN ISO 4014

④ DIN 332

⑤ Feather key / keyway DIN 6885

() Values in brackets for motor with brake and / or with encoder

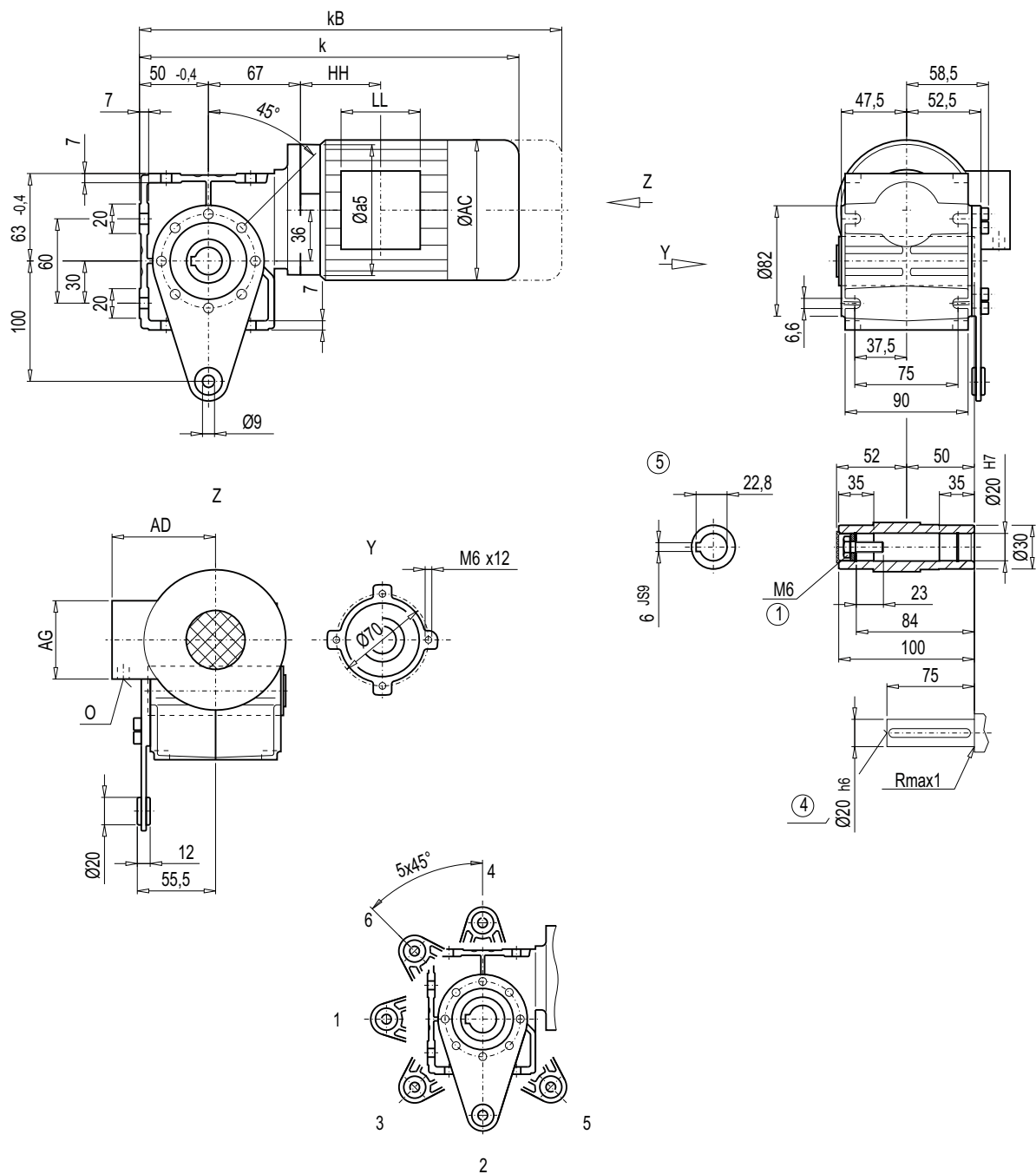
MOTOX Geared Motors

Worm geared motors

Dimensions

Gearbox SAD18, shaft-mounted design with torque arm

SAD012



6

Motor	SAD18									Weight SAD18
	k	kB	AC	AD	AG	LL	HH	a5	O	
LAI63	296.5	347.5	118	101 (135.5)	75 (90)	75 (90)	69.5	90	M20x1.5/M25x1.5	6
LAI71	327.0	378.5	139	111.0 (146)	75 (90)	75 (90)	63.5	105	M20x1.5/M25x1.5	8

① EN ISO 4014

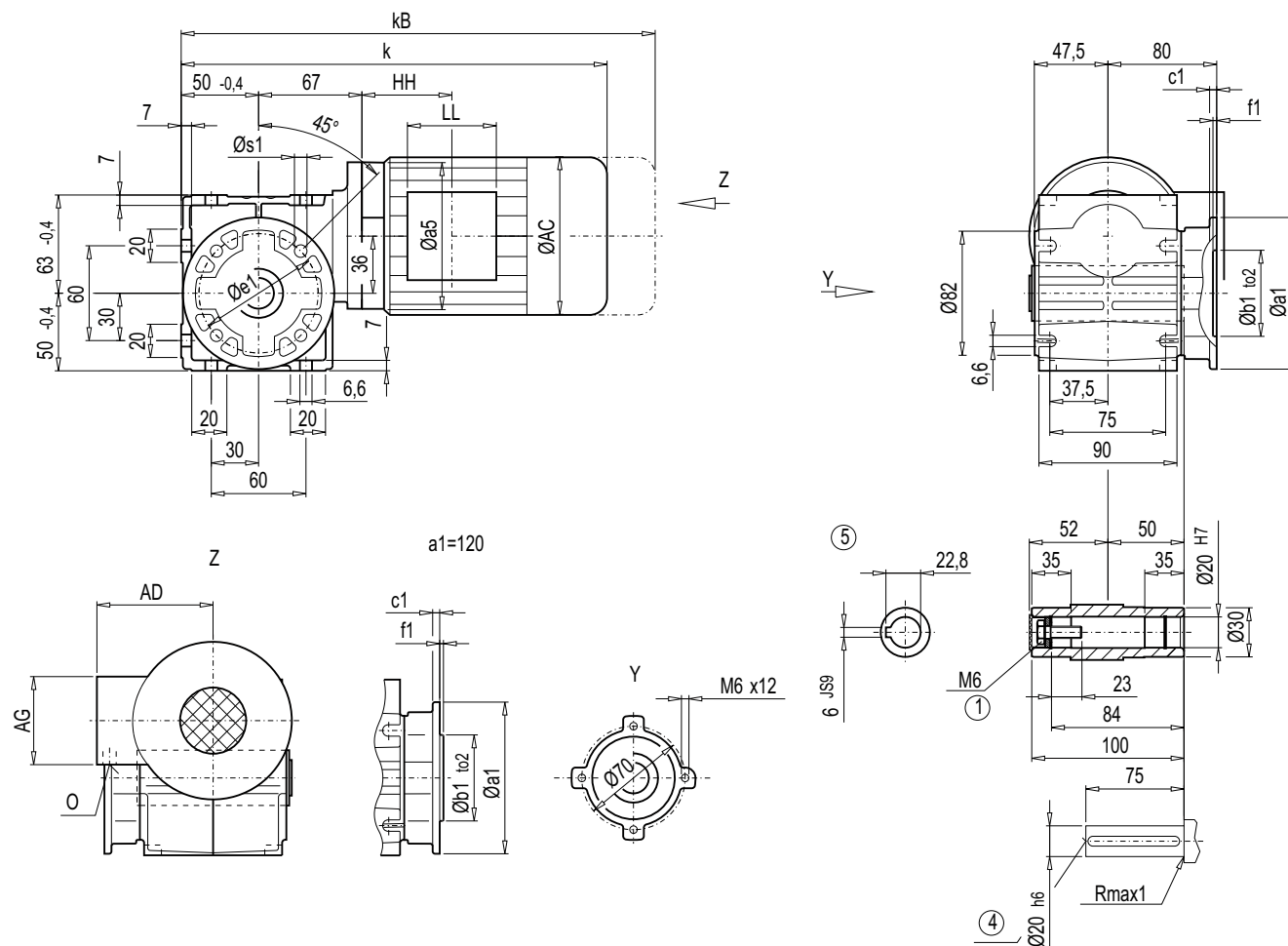
④ DIN 332

⑤ Feather key / keyway DIN 6885

() Values in brackets for motor with brake and / or with encoder

Gearbox SAF18, flange-mounted design

SAF012



Flange	a1	b1	to2	c1	e1	f1	s1
A110	110	60	H8	8	87	4	9
A120	120	80	j6	8	100	3	6.6

Motor	SAF18									Weight SAF18
	k	kB	AC	AD	AG	LL	HH	a5	O	
LAI63	296.5	347.5	118	101 (135.5)	75 (90)	75 (90)	69.5	90	M20x1.5/M25x1.5	6
LAI71	327.0	378.5	139	111.0 (146)	75 (90)	75 (90)	63.5	105	M20x1.5/M25x1.5	8

① EN ISO 4014

④ DIN 332

⑤ Feather key / keyway DIN 6885

() Values in brackets for motor with brake and / or with encoder

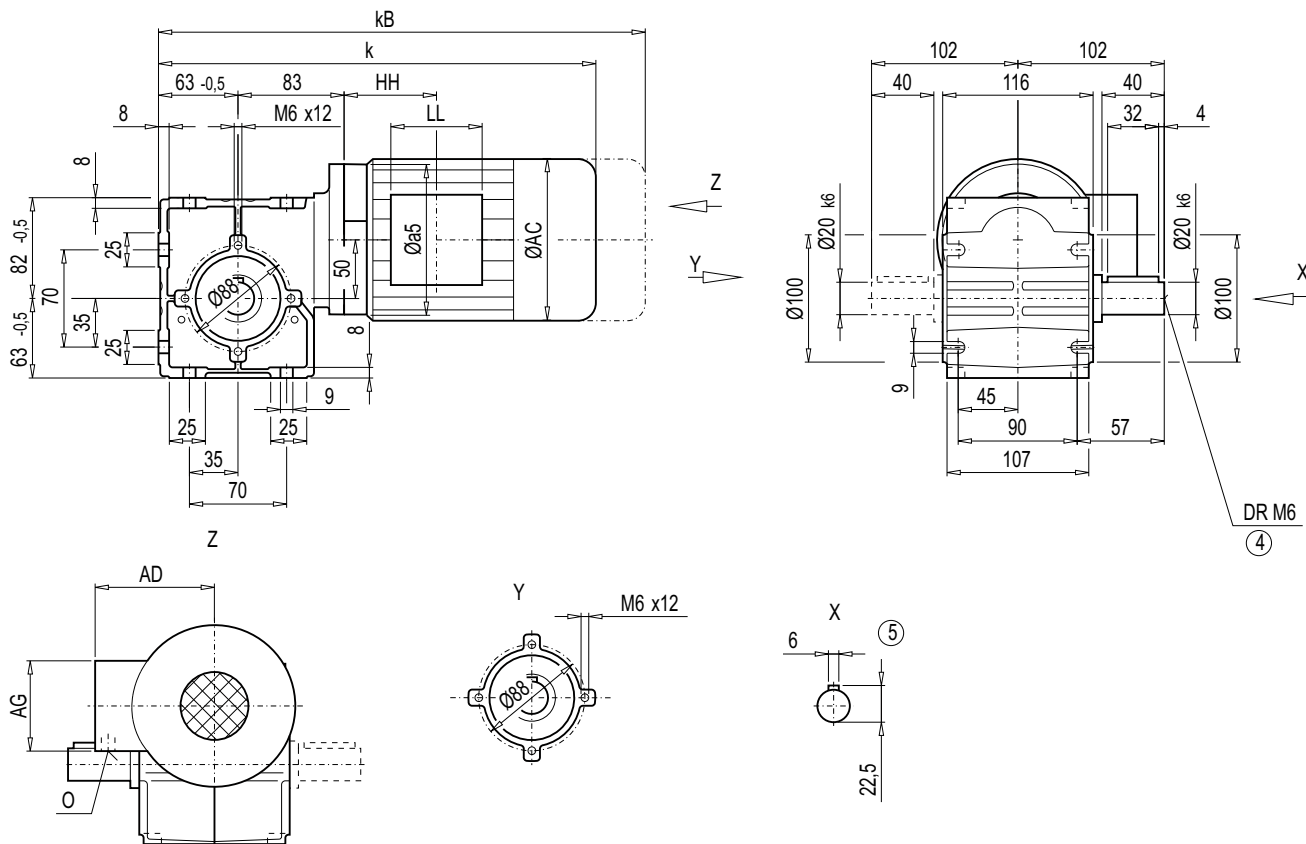
MOTOX Geared Motors

Worm geared motors

Dimensions

Gearbox S28, foot-mounted design

S012



6

Motor	S28									Weight S28
	k	kB	AC	AD	AG	LL	HH	a5	O	
LAI63	325.5	376.5	118	101.0 (135.5)	75 (90)	75 (90)	69.5	90	M20x1.5/M25x1.5	8
LAI71	356.0	407.5	139	111.0 (146)	75 (90)	75 (90)	63.5	105	M20x1.5/M25x1.5	10
LAI80	379.5	433.5	156.5	120.0 (155)	75 (90)	75 (90)	63.5	120	M20x1.5/M25x1.5	14
LAI80Z	414.5	478.5	156.5	120.0 (155)	75 (90)	75 (90)	63.5	120	M20x1.5/M25x1.5	16

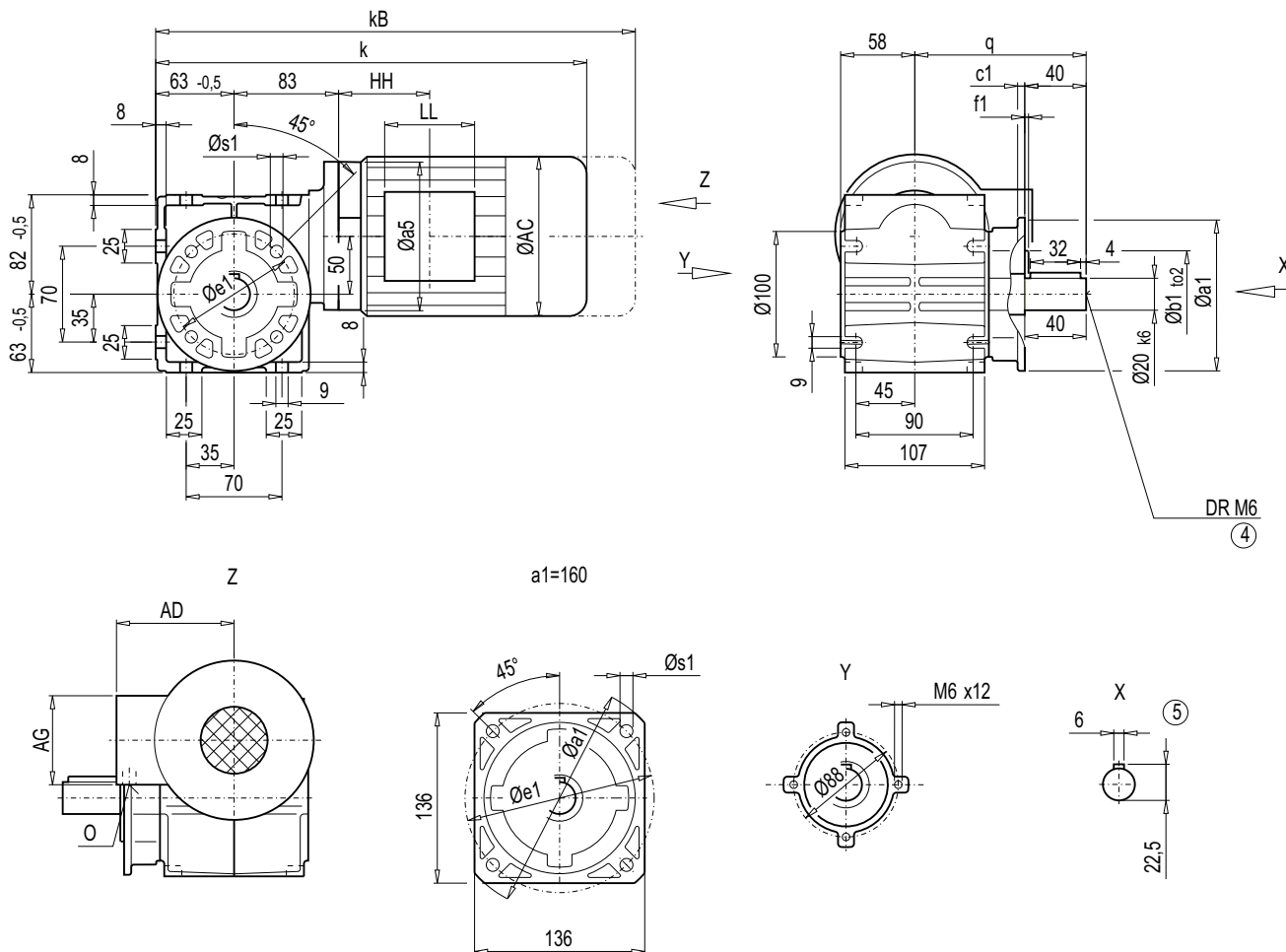
④ DIN 332

⑤ Feather key / keyway DIN 6885

() Values in brackets for motor with brake and / or with encoder

Gearbox SF28, flange-mounted design (A-type)

SF012



Flange	a1	b1	to2	c1	e1	f1	s1	q
A120	120	80	j6	8	100	3	6.6	120
A160/Q136	160	110	j6	8	130	3.5	9	135

SF28										Weight
Motor	k	kB	AC	AD	AG	LL	HH	a5	O	SF28
LAI63	325.5	376.5	118	101.0 (135.5)	75 (90)	75 (90)	69.5	90	M20x1.5/M25x1.5	9
LAI71	356.0	407.5	139	111.0 (146)	75 (90)	75 (90)	63.5	105	M20x1.5/M25x1.5	10
LAI80	379.5	433.5	156.5	120.0 (155)	75 (90)	75 (90)	63.5	120	M20x1.5/M25x1.5	14
LAI80Z	414.5	478.5	156.5	120.0 (155)	75 (90)	75 (90)	63.5	120	M20x1.5/M25x1.5	16

④ DIN 332

⑤ Feather key / keyway DIN 6885

() Values in brackets for motor with brake and / or with encoder

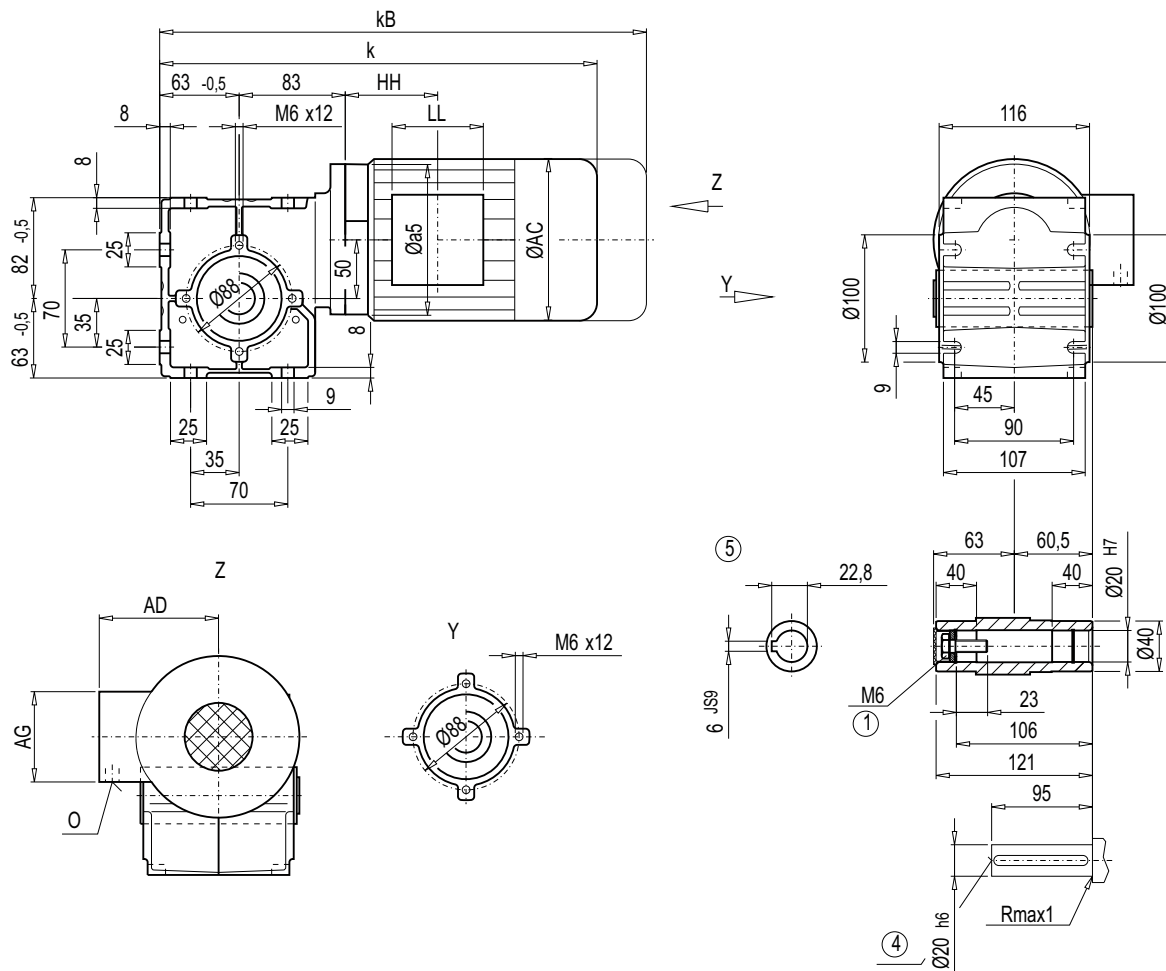
MOTOX Geared Motors

Worm geared motors

Dimensions

Gearbox SAZ28, housing-flange-mounted design (C-type)

SAZ012



6

Motor	SAZ28									Weight
	k	kB	AC	AD	AG	LL	HH	a5	O	SAZ28
LAI63	325.5	376.5	118	101.0 (135.5)	75 (90)	75 (90)	69.5	90	M20x1.5/M25x1.5	8
LAI71	356.0	407.5	139	111.0 (146)	75 (90)	75 (90)	63.5	105	M20x1.5/M25x1.5	10
LAI80	379.5	433.5	156.5	120.0 (155)	75 (90)	75 (90)	63.5	120	M20x1.5/M25x1.5	14
LAI80Z	414.5	478.5	156.5	120.0 (155)	75 (90)	75 (90)	63.5	120	M20x1.5/M25x1.5	16

① EN ISO 4014

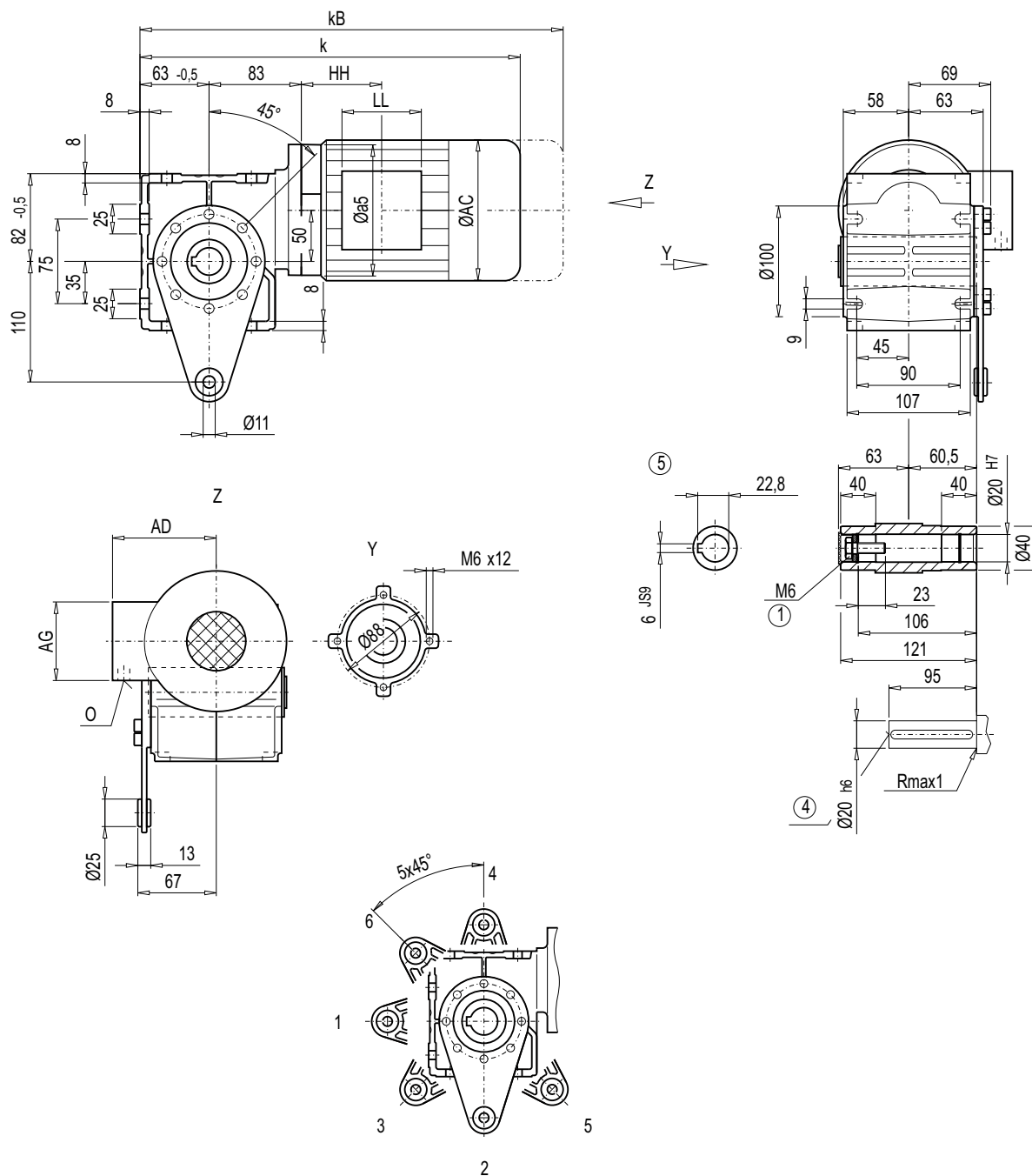
④ DIN 332

⑤ Feather key / keyway DIN 6885

() Values in brackets for motor with brake and / or with encoder

Gearbox SAD28, shaft-mounted design with torque arm

SAD012



6

Motor	SAD28									Weight
	k	kB	AC	AD	AG	LL	HH	a5	O	SAD28
LAI63	325.5	376.5	118	101.0 (135.5)	75 (90)	75 (90)	69.5	90	M20x1.5/M25x1.5	8
LAI71	356.0	407.5	139	111.0 (146)	75 (90)	75 (90)	63.5	105	M20x1.5/M25x1.5	10
LAI80	379.5	433.5	156.5	120.0 (155)	75 (90)	75 (90)	63.5	120	M20x1.5/M25x1.5	14
LAI80Z	414.5	478.5	156.5	120.0 (155)	75 (90)	75 (90)	63.5	120	M20x1.5/M25x1.5	16

① EN ISO 4014

④ DIN 332

⑤ Feather key / keyway DIN 6885

() Values in brackets for motor with brake and / or with encoder

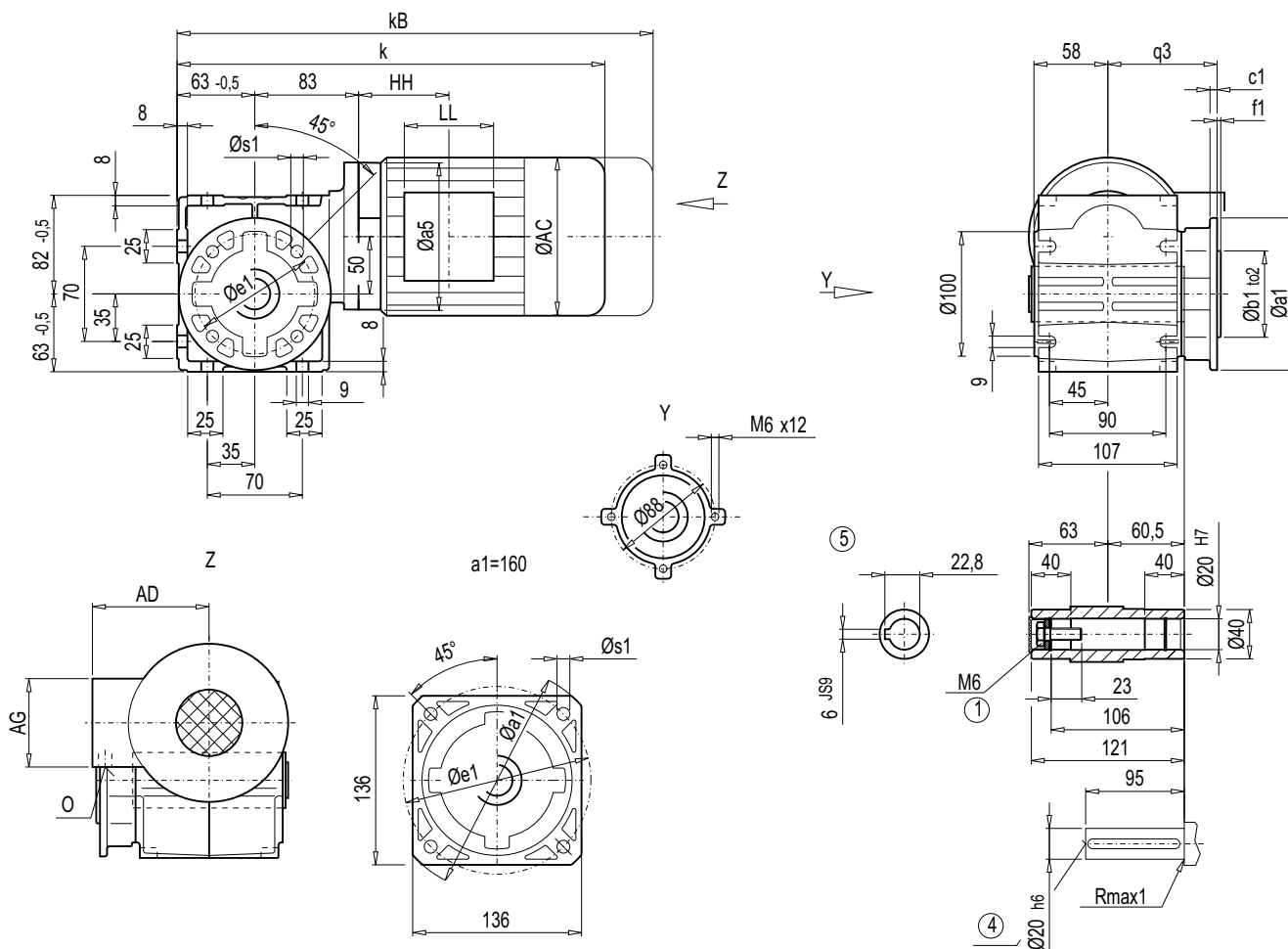
MOTOX Geared Motors

Worm geared motors

Dimensions

Gearbox SAF28, flange-mounted design

SAF012



6

Flange	a1	b1	to2	c1	e1	f1	s1	q3
A120	120	80	j6	8	100	3	6.6	80
A160/Q136	160	110	j6	8	130	3.5	9	95

Motor	SAF28									Weight SAF28
	k	kB	AC	AD	AG	LL	HH	a5	O	
LAI63	325.5	376.5	118	101.0 (135.5)	75 (90)	75 (90)	69.5	90	M20x1.5/M25x1.5	8
LAI71	356.0	407.5	139	111.0 (146)	75 (90)	75 (90)	63.5	105	M20x1.5/M25x1.5	10
LAI80	379.5	433.5	156.5	120.0 (155)	75 (90)	75 (90)	63.5	120	M20x1.5/M25x1.5	14
LAI80Z	414.5	478.5	156.5	120.0 (155)	75 (90)	75 (90)	63.5	120	M20x1.5/M25x1.5	16

① EN ISO 4014

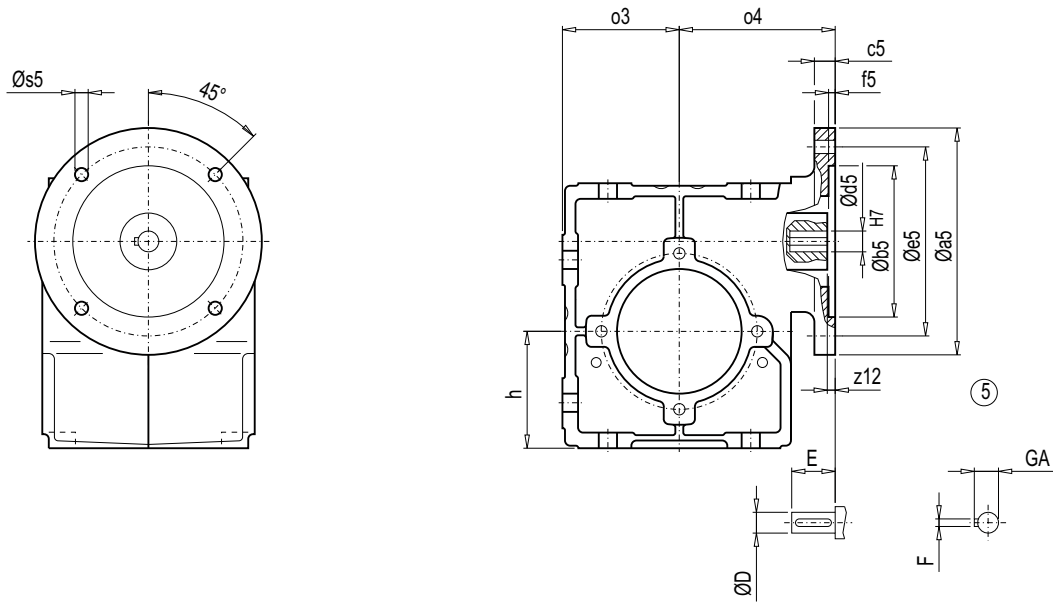
④ DIN 332

⑤ Feather key / keyway DIN 6885

() Values in brackets for motor with brake and / or with encoder

Gearbox S.-K4

S.-K4



	Motor	a5	e5	b5	f5	c5	z12	s5	d5/D	E	F	GA	o3	o4	h
S08-K4	63	90	75	60	3	7	2	5.8	11	23	4	12.5	45	60	45
S18-K4	63	90	75	60	3	7	2	5.8	11	23	4	12.5	50	67	50
	71	105	85	70				7	14	30	5	16			
S28-K4	63	90	75	60	3	8	6	5.8	11	23	4	12.5	63	83	63
	71	105	85	70				7	14	30	5	16			
	80	120	100	80	3.5			7	19	40	6	21.5			

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