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bj·gear

dedicated gear drive solutions

Worm Gearboxes

Standard, Adapted or Special

- Sturdy and reliable
- Large reduction
- Compact design
- Low noise
- Strong bearings in solid housing
- ATEX approved for zone 2 and 22



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A reliable partner with focus on service

BJ-Gear A/S is one of the leading companies within developing, manufacturing and supplying gearboxes, spindle gears, screw jacks, electro-mechanical cylinders, actuators and bearing units.

Also, we supply motors, encoders, electro-magnetic brakes and couplings etc. of recognised manufactures making it possible to supply complete transmission solutions at short notice.

The flexible production machinery together with our modular designed product range allows very short and precise delivery times.

The combination of innovation, know-how, high-technological production facilities and our focus on customer requirements make us a competent partner. We are certified according to EN ISO 9001:2015 and our standard worm gear products are supplied for zone 2 and 22 according to the Atex directive. Products for zone 1 and 21 can be supplied according to the task.

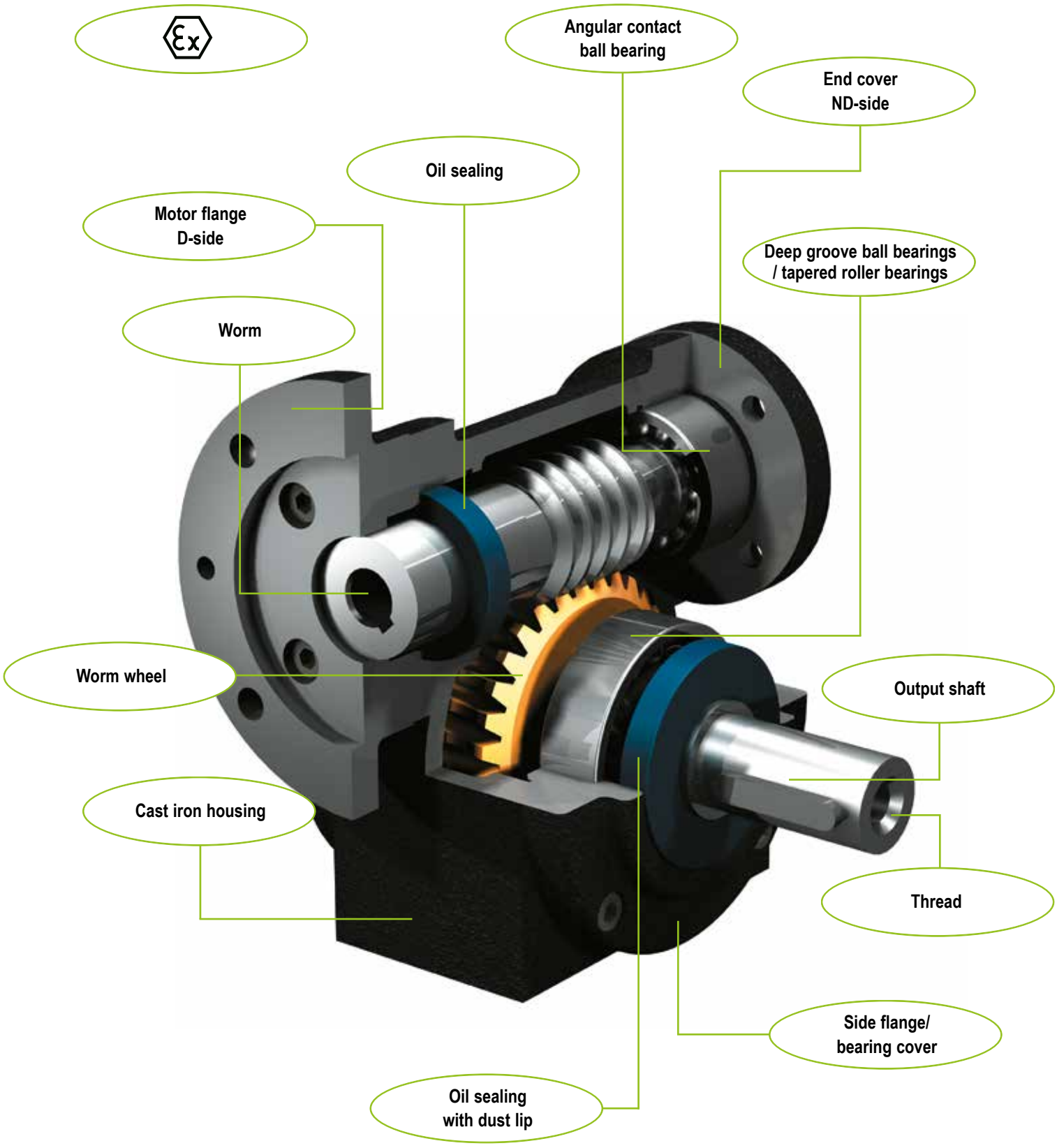
BJ-Gear is known for reliable transmission solutions for industries such as healthcare, food processing and packaging, aerospace and defense, offshore and marine, the energy and environment sector as well as for many other business areas.

You are welcome to contact our specialists on +45 87 40 80 80 / bj@bj-gear.com or take a look at www.bj-gear.com if you are interested in knowing more about our company and products.

A The BJ-Worm Gear

ATEX

Our standard worm gears are supplied for zone 2 and 22 according to the Atex directive. Products for zone 1 and 21 can be supplied according to task.



B Type designation



Product type

This product catalogue comprises only worm gearboxe of product type 1.



Gear size

Gears with centre distances from 42 to 99 mm and output torques ranging from 10 to 891 Nm.



Housing

Housing types for different kinds of gear assembly. This catalogue comprises our cast iron housings with much rigidity, low noise, good vibration absorption qualities and tight tolerances.



Bearing cover / Side flange

Either the bearing cover as the compact solution or the side flange making it possible to assemble at the output shaft. Possibilities for adaptations.



Output shaft

Different variants as standard. Possibilities for adaptations.



D-side (Drive side)

Motor flange, coupling house or end cover for another power intake connection. Possibilities for adaptations.



Worm

Hollow worm shaft or free worm shaft on the D-side. Possibly through-going worm and free shaft on the ND-side. Possibilities for adaptations. Hardened and grinded steel of high quality is used.



ND-side (Non drive side)

Possibility of building on various accessories such as brakes, encoders etc. on the ND-side. Possibilities for adaptations.



Gear ratio

Indication of gear ratio. The worm wheel is made of high-quality bronze with a specially fine combination of qualities with regard to low friction, wear and much strength.



Oil/lubricants

Oils/lubricants for different operating temperatures and for special environments. As standard, the gearboxes are life-lubricated with fully synthetic oil.



Finish

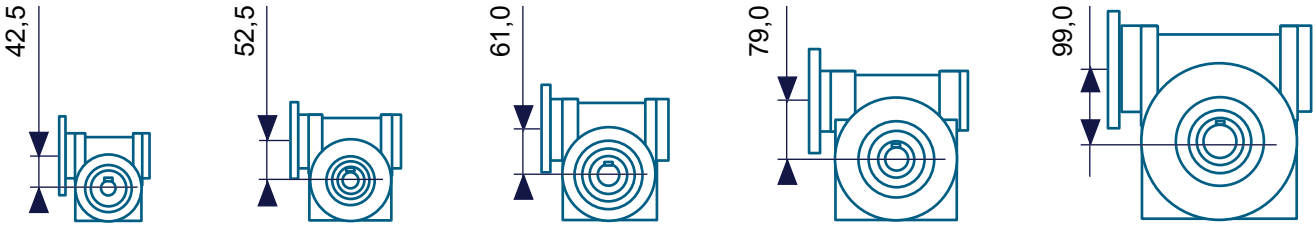
Surface treatment in different variants. Possibility of chosing your own surface treatment and colour.

C Selection guide

1	52	2	0	100	13	03	01	30	0	0

Gear size

The BJ-worm gearboxes are available in five standard sizes with housing of cast iron. Other housing materials and sizes are available on request.



Series 42 | Series 52 | Series 61 | Series 79 | Series 99

The individual sizes are numbered according to the centre distances between worm and worm wheel. A gear with a centre distance of 52.5 is designated Series 52 and is assigned number 52 on position no. 2 in the type designation.

Gear ratio

BJ-worm gearboxes are available with the following nominal gear ratios:

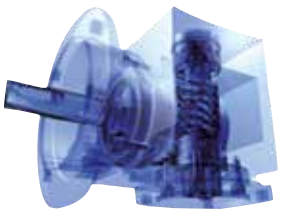
									Series 42 only		
No.	07	10	15	20	30	40	50	60	05	25	75
Gear ratio	7:1	10:1	15:1	20:1	30:1	40:1	50:1	60:1	5,4:1	25:1	75:1

For exact values, see tables of effect on page 27 til 29. Other gear ratios are available on request.

Dimensioning gear size and gear ratio

By using the graphs on subsequent pages, you can dimension gear size, gear ratio and number of revolutions as well as motor according to your requirement. Alternatively, you can use the tables on pages 27 to 29.

By means of these tables you can also find the service factor of the chosen gear as well as information on the exact ratio of the gear.

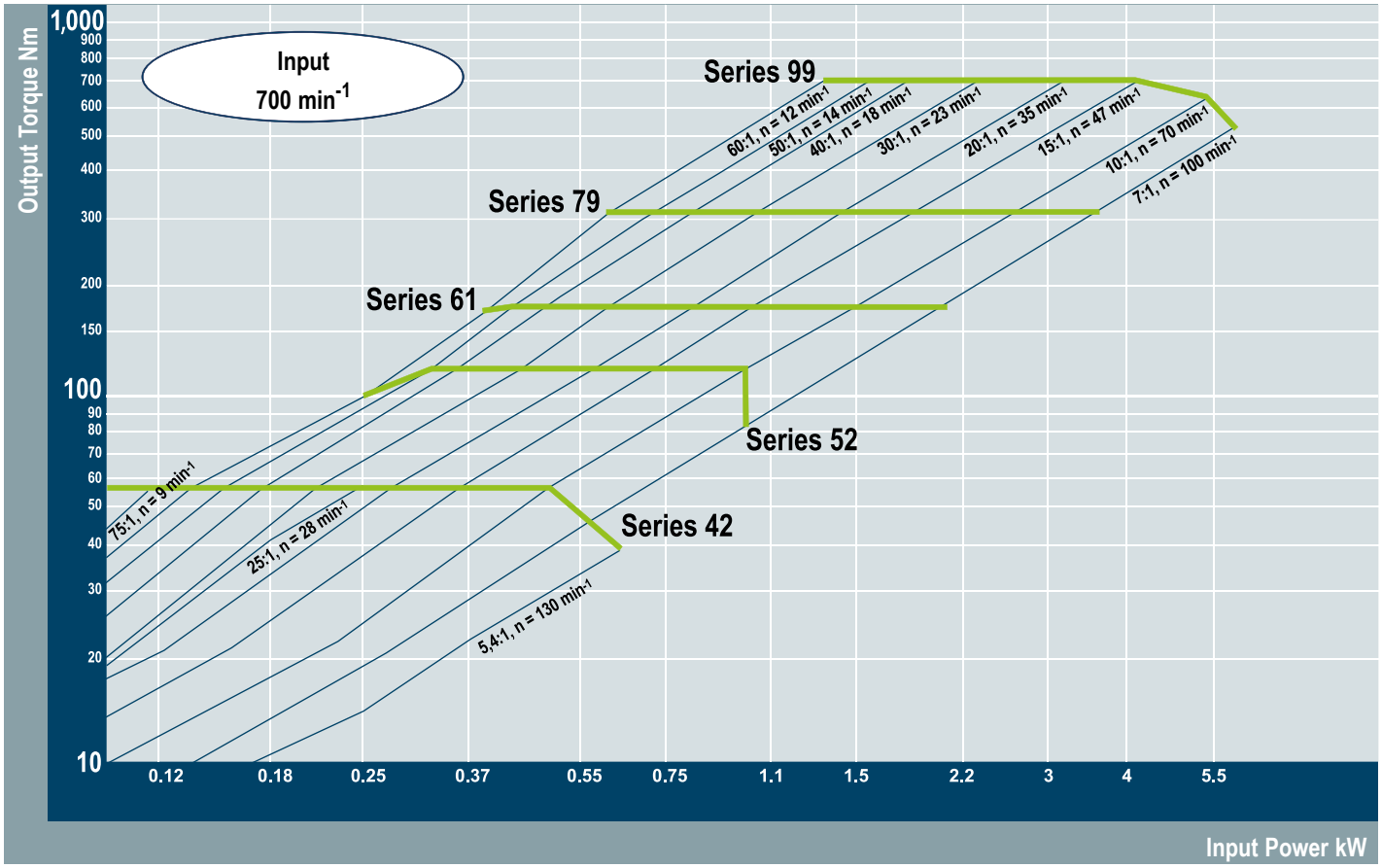


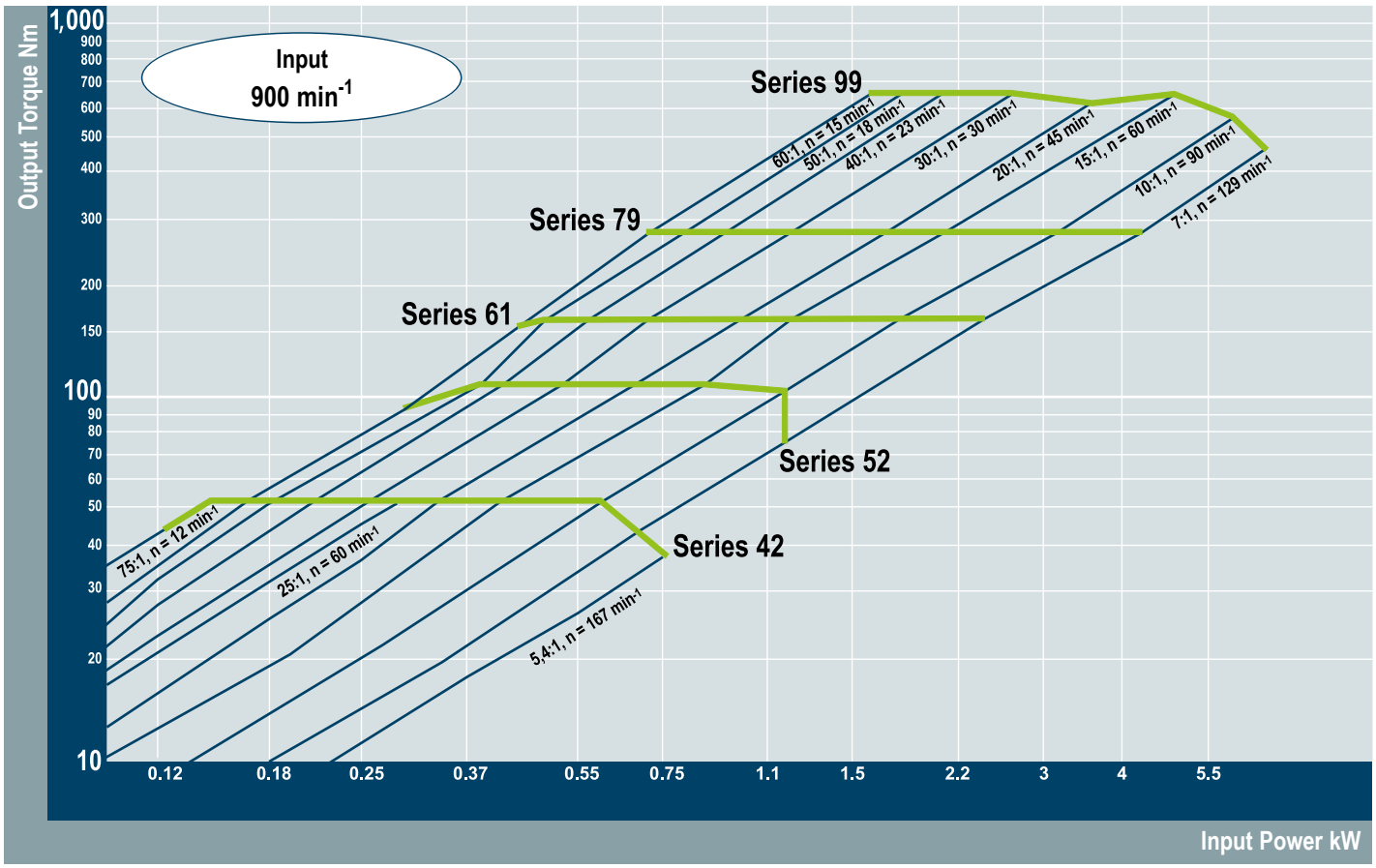
Configure worm gears online on **www.bj-gear.com**

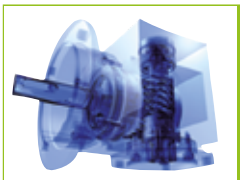
Product Configurator

Dimensioning

n is the rotating speed of output shaft.

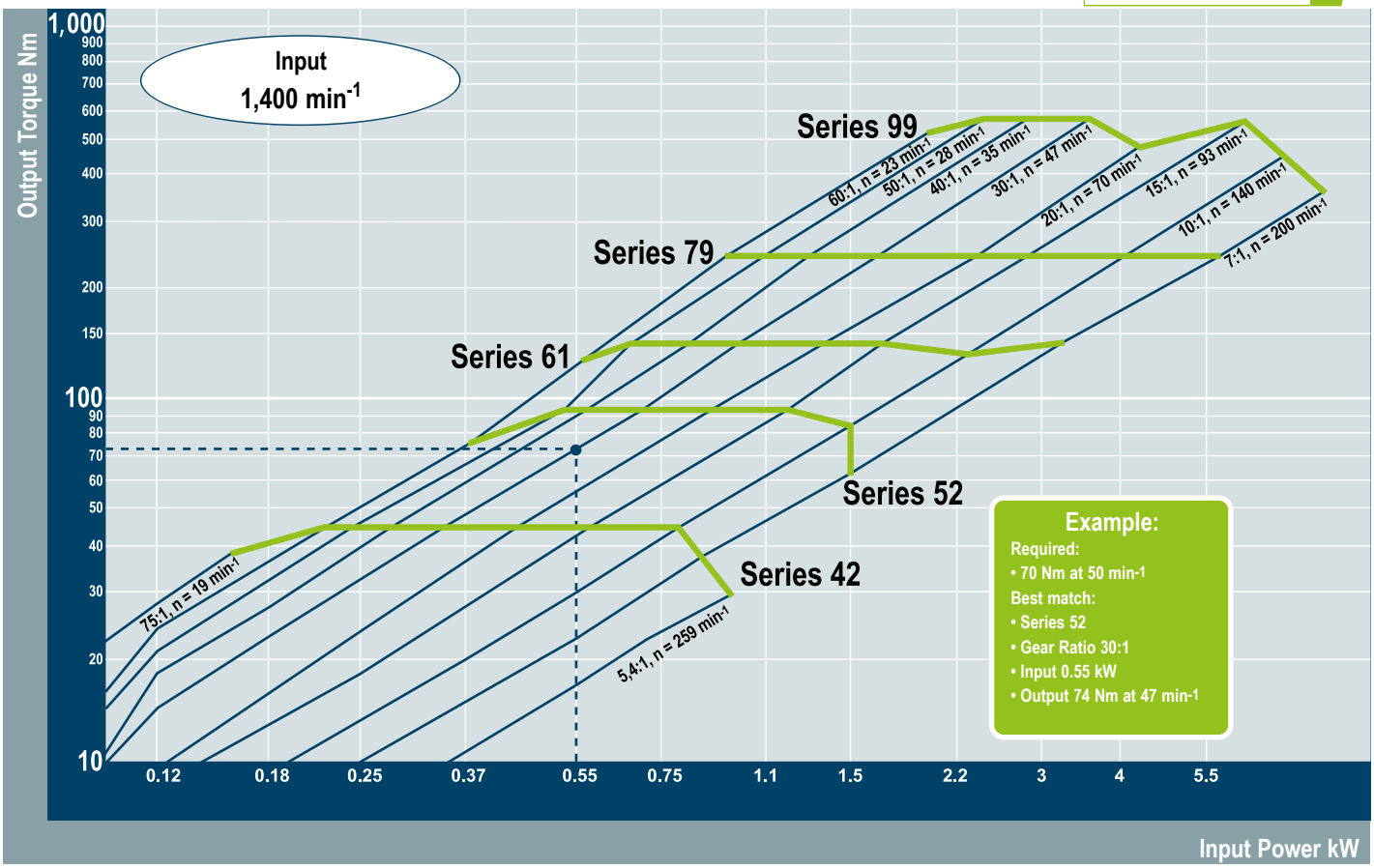


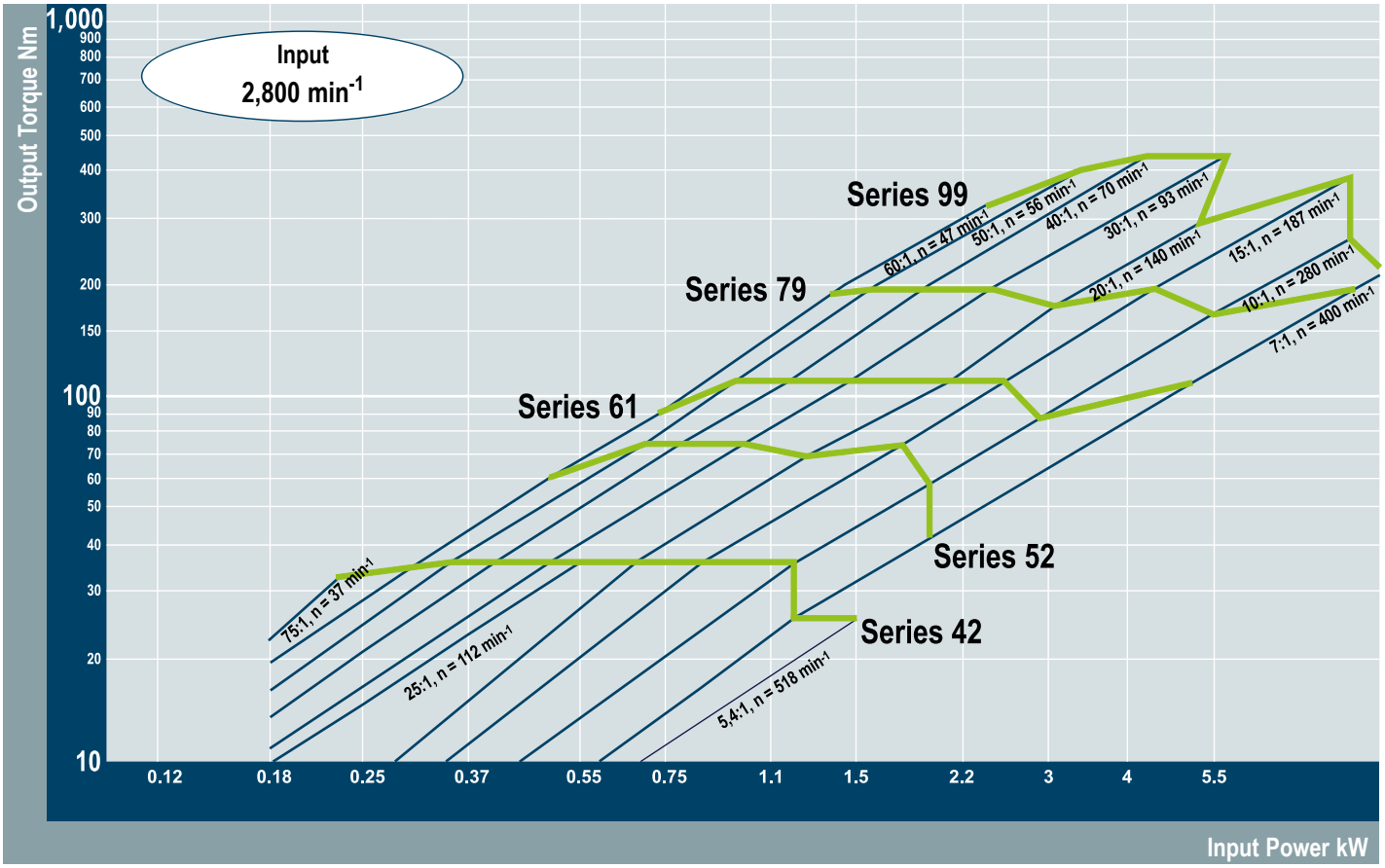




Configure worm gears online
on **www.bj-gear.com**

Product Configurator





Mounting of Gear

1	52	2	0	100	13	03	01	30	0	0

	Housing type 1. Mounting in gear housing	Housing type 1. Mounting at side flange	Housing type 2. Housing with support, worm at top	Housing type 3. Housing with support, worm at bottom
Housing Type				
Designation Number	10	11	20	30

Choice of Output Shaft

1	52	2	0	10	0	13	03	01	30	0	0

	Free shaft, right	Free shaft, left	Double free, shaft	Hollow shaft, mounting holes right	Hollow shaft, mounting holes left
Output shaft types					
Designation number indicating shaft type and size	Standard, 10	Standard, 20	30	Ø18 [mm] = 47 Ø20 [mm] = 41 Ø24 [mm] = 42 Ø25 [mm] = 43 Ø30 [mm] = 44 Ø35 [mm] = 45 Ø38 [mm] = 65 Ø40 [mm] = 48 Ø45 [mm] = 49 Ø48 [mm] = 46	Ø18 [mm] = 57 Ø20 [mm] = 51 Ø24 [mm] = 52 Ø25 [mm] = 53 Ø30 [mm] = 54 Ø35 [mm] = 55 Ø38 [mm] = 75 Ø40 [mm] = 58 Ø45 [mm] = 59 Ø48 [mm] = 56

	Series 42	Series 52	Series 61	Series 79	Series 99
Hollow shaft sizes available	Ø18 [mm] *Ø20 [mm]	Ø18 [mm] Ø20 [mm] *Ø24 [mm] Ø25 [mm]	Ø25 [mm] *Ø30 [mm] Ø35 [mm] Ø38 [mm]	Ø30 [mm] *Ø35 [mm] Ø38 [mm] Ø40 [mm]	Ø35 [mm] Ø38 [mm] Ø40 [mm] Ø45 [mm] *Ø48 [mm]

* Standard. Other shaft sizes are available on request, please contact our specialists.

Choice of output shaft / material

1	52	2	0	10	0	12	02	01	30	0	1

Ball bearing	Material	Number	
Deep groove ball bearings	Steel	0	Standard for series 42, 52, 61 and 79
Deep groove ball bearings	Stainless steel	1	Available
Tapered roller bearings	Steel	2	Standard for series 99
Tapered roller bearings	Stainless steel	3	Available

Customised side flange:

The side flange may be manufactured to fit directly into the machine where it is to be used. By doing so, you can often save both space and money.

Customised output shaft:

The output shaft may be manufactured in customised diameters and lengths, as well as provided with toothing or spline. Choice of material according to specifications.

D-side and Worm

1	52	2	0	100	13	03	01	30	0	0

	Motor flange and hollow worm at D-side	Free worm shaft at D-side	Coupling housing and free worm shaft at D-side
ND-side closed			
Standard	1X0X	3040	4X40
Precision*		3041	4X41
Throughgoing worm with free shaft on ND-side			
Standard	1X2X	3050	4X50
Precision*		3051	4X51

X To be replaced by digits No. 1 - 9 of below table. * See definition on page 11.

Customised solution:

The motor flange can be adapted to all motors. It is possible to mount couplings etc. between the motor and the gearbox. The worm may be manufactured in customised diameters and lengths.

This table indicates sizes of motor flanges, coupling housings and hollow worm shafts:

X to be replaced by		1	2	3	4	5	6	7	8	9
Series 42	Motor Flange	DCD 75	DCD 85	DCD 100	DCD 115	DCD 130			OMM	
	Coupling Housing		DCD 85	DCD 100						
	Hollow Worm	Ø 11	Ø 14						OMM	
Series 52	Motor Flange	DCD 75	DCD 85	DCD 100	DCD 115	DCD 130	DCD 165		OMM	
	Coupling Housing			DCD 100	DCD 115					
	Hollow Worm		Ø 14	Ø 19	Ø 24				OMM	
Series 61	Motor Flange	DCD 75	DCD 85	DCD 100	DCD 115	DCD 130	DCD 165		OMM	OMR/OMP
	Coupling Housing			DCD 100	DCD 115					
	Hollow Worm		Ø 14	Ø 19	Ø 24				OMM	OMR/OMP
Series 79	Motor Flange			DCD 100	DCD 115	DCD 130	DCD 165	DCD 215		OMR/OMP
	Coupling Housing									
	Hollow Worm			Ø 19	Ø 24	Ø 28				OMR/OMP
Series 99	Motor Flange				DCD 115	DCD 130	DCD 165	DCD 215		OMR/OMP
	Coupling Housing									
	Hollow Worm				Ø 24	Ø 28	Ø 38			OMR/OMP
Standard Motors		**Size 63**	**Size 71**	**Size 80**	**Size 90**	**Size 100/112**	**Size 132**			
Motor Power [kW] for 700 min^{-1}			0.09 0.12	0.18 0.25	0.37 0.55	0.75 1.1	2.2 3.0			
Motor Power [kW] for 900 min^{-1}		0.12	0.18 0.25	0.37 0.55	0.75 1.1	1.5 2.2	3.0 4.0 5.5			
Motor Power [kW] for 1400 min^{-1}		0.12 0.18	0.25 0.37	0.55 0.75	1.1 1.5	2.2 3.0 4.0	5.5 7.5			
Motor Power [kW] for 2800 min^{-1}		0.18 0.25	0.37 0.55	0.75 1.1	1.5 2.2	3.0 4.0 5.5	5.5 7.5			

DCD correspond to FT and FF motor flange sizes.

Choice of ND-side

1	52	2	0	100	13	03	01	30	0	0

01	**Closed end cover,** together with worm without free shaft on nd-side. See page 14 for an example.
02	**Torque pin,** together with hollow shaft gearboxes, type 1 without side flange. See page 16 for an example.
30	**Open end cover,** together with worm with free shaft on nd-side. See page 26 for an example.
31	**Cover for brake**

Choice of oil/lubricants

1	52	2	0	100	13	03	01	30	0	0

		Application	Viscosity ISO VG	Oil / Lubricant
0	**Fully synthetic gear oil, standard**	Normal load and ambient temp. -25° to +40°C	**220**	Klübersynth GH 6-220
1	**Fully synthetic gear oil**	Heavy load and ambient temp. -20° to > +40°C	**460**	Klübersynth GH 6-460
2	**Fully synthetic gear oil**	Heavy load and ambient temp. -20° to > +40°C	**680**	Klübersynth GH 6-680
3	**Liquid grease**	Normal load and ambient temp. -40° to > +40°C	**1200**	Klübersynth GE 46–1200
4	**Special lubricating oil** for food and pharmaceutical industries	Normal load and ambient temp. -20°C to +40°C	**460**	Klüberoil 4 UH1–460 N

Indication of ambient temperature is only indicative. Do not mix synthetic oils with mineral oils. All data is based on synthetic oils.

Oil and lubricants quantities

Series 42	Series 52	Series 61	Series 79	Series 99
0.06 litres	0.18 litres	0.21 litres	0.5 litres	1.1 litres

Choice of finish

1	52	2	0	100	13	03	01	30	0	0

0	**Painted mat-black, standard**	**RAL 9005**
1	**No treatment**	
2	**Primed**	
3	**Corrosion resistant surface treatment**	**Chromated**
9	**Customer specified**	

D Service factor

The operating conditions are of importance to the durability of the gear. The gear should therefore be dimensioned by using the service factors mentioned below. Please note that the values apply for operation with an AC standard motor.

$$\text{Service Factor} = \frac{M_{gear}\ [Nm]}{M_{required}\ [Nm]}$$

Type of load	Number of starts per hour	Operation time per day			
		2	2 – 8	8 – 12	12 – 24
Uniform, smooth load	< 50	0.8	0.9	1.0	1.3
	50 - 500	0.9	1.1	1.2	1.5
	500 <	1.0	1.2	1.4	1.7
Moderate impact load	< 50	0.9	1.1	1.3	1.5
	50 - 500	1.1	1.3	1.5	1.8
	500 <	1.3	1.5	1.7	2.0
Heavy impact load	< 50	1.3	1.5	1.6	1.8
	50 - 500	1.5	1.7	1.9	2.1
		1.7	2.0	2.1	2.4

E Backlash

Due to an increasing demand for gearboxes to be able to handle more accurate movements, we have developed precision gearboxes. The technology is based on the high qualities generally characterised by worm gearboxes. Besides the special design, production and assembly methods, the gearboxes meet strict precision requirements. On request, we can prove backlash, tolerances etc. by measuring reports.

Gear Size	Backlash	
	Standard Gears	Precision Gears
Series 42	< 0.80°	< 0.20°
Series 52	< 0.75°	< 0.20°
Series 61	< 0.70°	< 0.20°
Series 79	< 0.55°	< 0.15°
Series 99	< 0.55°	< 0.15°

The backlash values include all the clearances of bearings and toothing as well as tolerances of keys and key ways, bearing seats etc. The backlash values do not include elastic and static deformations as a result of the loads to which the gearbox is exposed. For further information please contact our specialists.

F Bearings at output shaft

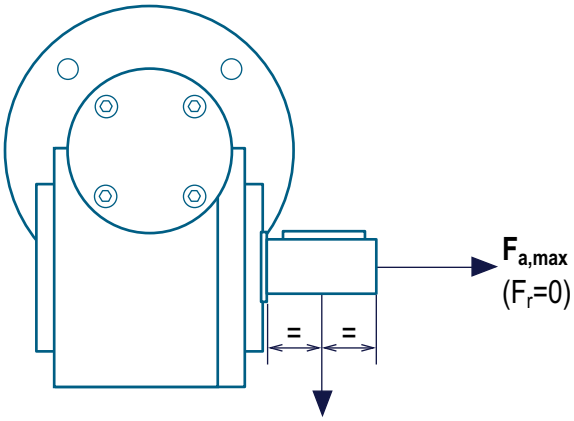


Fig. 1

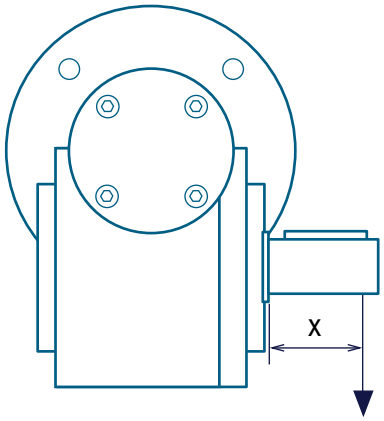


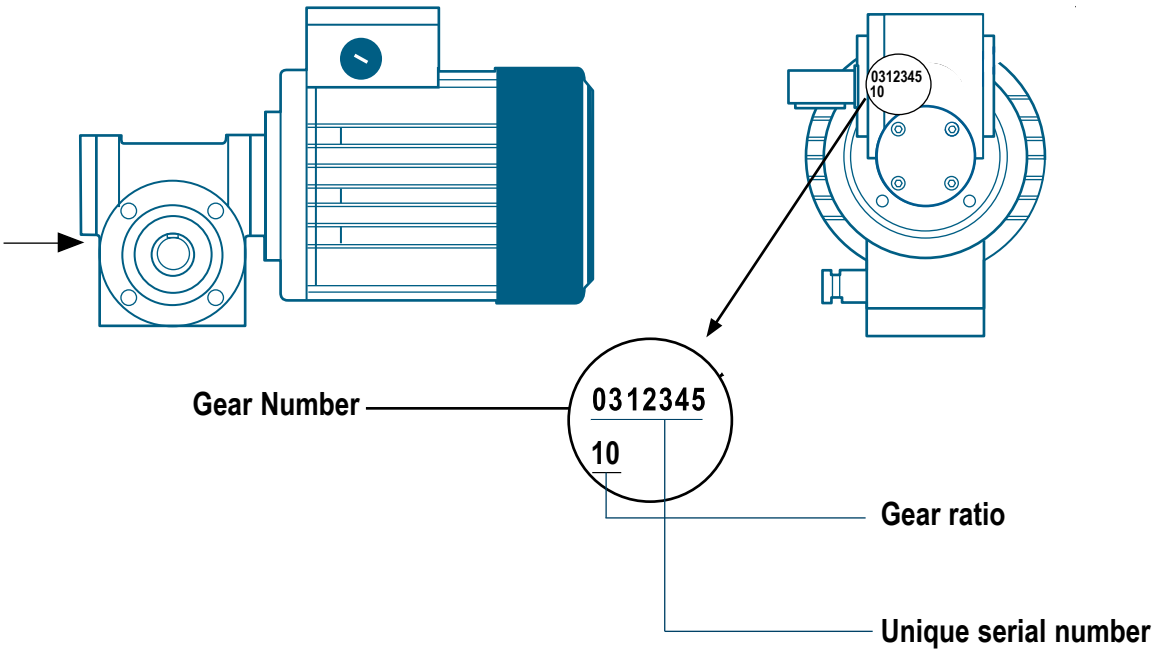
Fig. 2

Gear	Force [N]	Ball bearings	Tapered roller bearings	Side flanges, free output shaft	
				Ball bearings	Tapered roller bearings
Series 42	$F_{r, max}$ $F_{a, max}$	3,100 5,300	6,200 8,200	3,800 5,300	8,300 8,200
Series 52	$F_{r, max}$ $F_{a, max}$	4,100 7,400	7,500 11,400	5,100 7,400	10,400 11,400
Series 61	$F_{r, max}$ $F_{a, max}$	6,500 11,600	11,300 17,400	8,100 11,600	15,700 17,400
Series 79	$F_{r, max}$ $F_{a, max}$	7,600 13,200	14,000 24,800	9,300 13,200	19,500 24,800
Series 99	$F_{r, max}$ $F_{a, max}$		22,400 25,800		27,100 25,800

Relocation factor: $F_{x, max} = \frac{F_r * a}{X + b}$

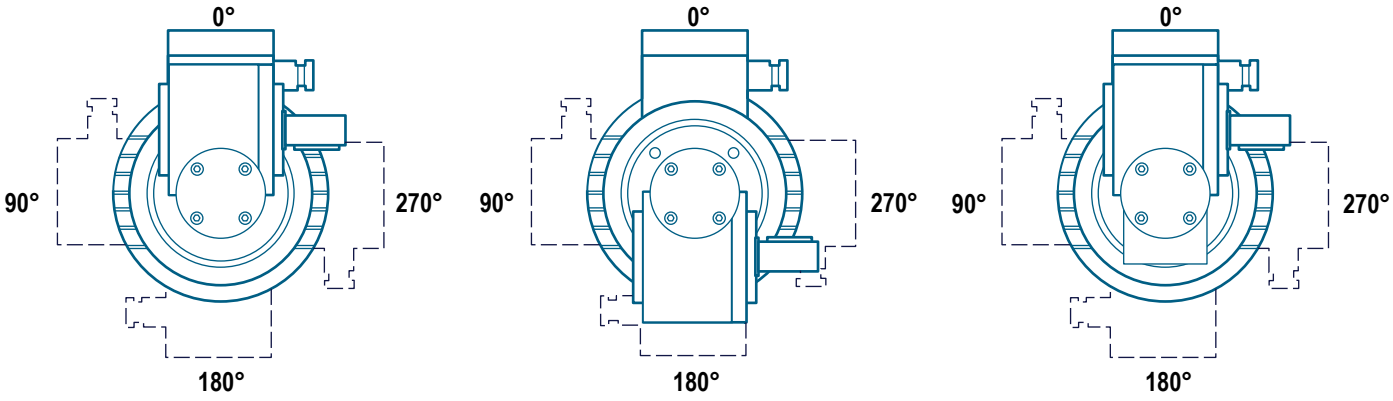
Gear	Series 42	Series 52	Series 61	Series 79	Series 99
a [mm]	85.5	98	106	119.5	156
b [mm]	65.5	73	76	87	111

G Unique gear number



On the ND-side, our gearboxes are marked with an unique gearbox number consisting of a serial number and a gear ratio, that ensures identification at any time later on. By stating the gearbox number, we can always supply a replacement gear.

H Position of terminal box



When ordering gear motors please be aware that the terminal box can be placed in different positions.
Please inform us if you need the terminal box to be placed in a position of 0°, 90°, 180° or 270°.

I Dimensional drawings

Free shaft right



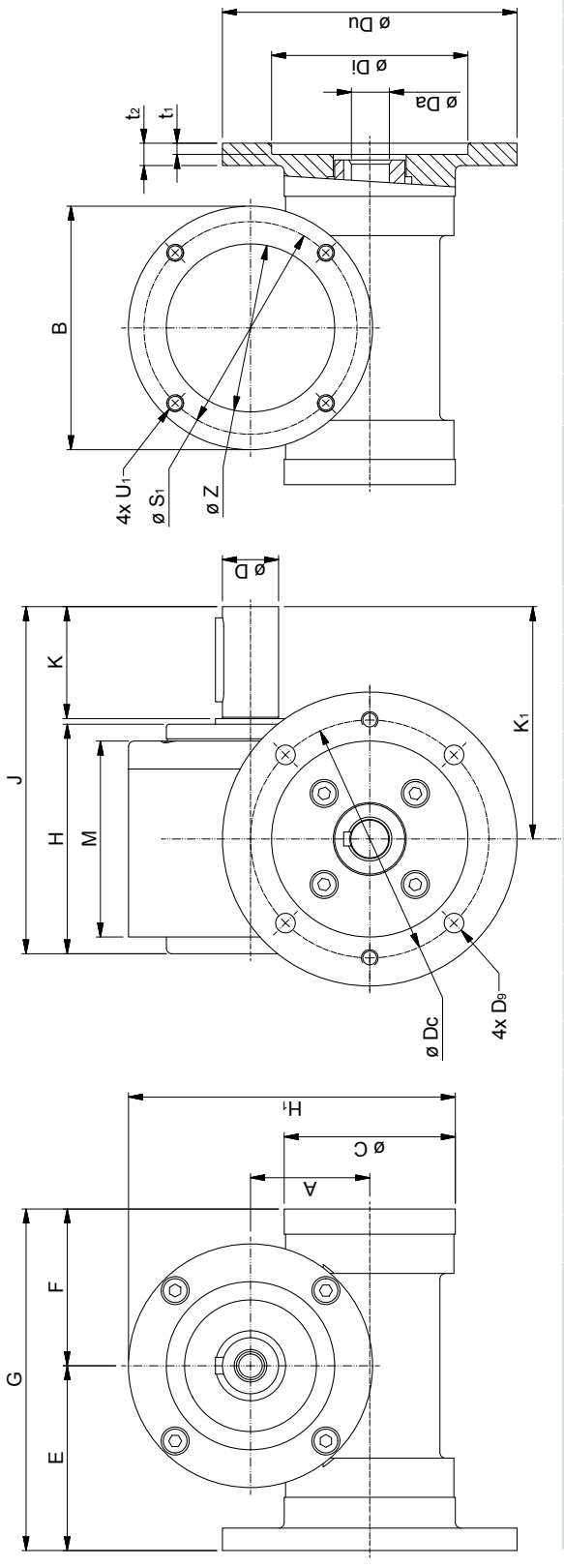


Free shaft left

1 XX 101XX 1X0X 01 / 1 XX 102XX 1X0X 01

Gear house: Housing type 1.

Gear housing with free shaft, right/left, closed end cover.



Gear - Free shaft right / left	A	B	C	D*k6	F	H	H_1	J	K*	K_1	M	S_1	Z h6	U_1	Motor size	Flange size	D_a*G7	D_c	D_i F6	D_u	D_9	E	G	t_1	t_2	Kg
1 42 10100 1101 01 / 1 42 10200 1101 01	42.5	87	61	20	56	82	116.5	124	40	83	70	76	60	M6	63	75	11	75	60	90	7	66	122	4	8	4.5
1 42 10100 1202 01 / 1 42 10200 1101 01															71	85	14	85	70	105	7	66	122	4	8	4.5
1 42 10100 1302 01 / 1 42 10200 1302 01															80	100	14[1]	100	80	120	7	66	122	4	8	4.5
1 52 10100 1202 01 / 1 52 10200 1202 01	52.5	110	72	24	68	92	143.5	144	50	98	80	95	65	M6	71	85	14	85	70	105	7	82	150	4	11	8
1 52 10100 1303 01 / 1 52 10200 1303 01															80	100	19	100	80	120	7	82	150	4	11	8
1 52 10100 1404 01 / 1 52 10200 1404 01															90	115	24	115	95	140	9	92	160	4	11	8
1 52 10100 1504 01 / 1 52 10200 1504 01															100	130	24[1]	130	110	160	9	82	160	4	11	8
1 61 10100 1202 01 / 1 61 10200 1202 01	61	126	72	32	82	94	160	156	60	109	83	108	90	M8	71	85	14	85	70	105	7	91	173	4	11	10
1 61 10100 1303 01 / 1 61 10200 1303 01															80	100	19	100	80	120	7	91	173	4	11	10
1 61 10100 1404 01 / 1 61 10200 1404 01															90	115	24	115	95	140	9	101	183	4	11	10
1 61 10100 1504 01 / 1 61 10200 1504 01															100/112	130	24[1]	130	110	160	9	91	173	4	11	10
1 79 10100 1303 01 / 1 79 10200 1303 01	79	164	82	38	97	106	202	173	65	120	92	125	105	M10	80	100	19	100	80	120	7	118	215	4	11	18
1 79 10100 1404 01 / 1 79 10200 1404 01															90	115	24	115	95	140	9	118	215	4	11	18
1 79 10100 1505 01 / 1 79 10200 1505 01															100/112	130	28	130	110	160	9	126	225	4	11	18
1 99 10100 1404 01 / 1 99 10200 1404 01	99	208	115	48	126[8]	142	260.5	234	90	163	120	165	120	M12	90	115	24	115	95	140	9	150	277	4	9	40
1 99 10100 1505 01 / 1 99 10200 1505 01															100/112	130	28	130	110	160	9	150	277	4	12	40

[1] Not IEC-standard.

Key and keyway according to DIN 6885

*Special dimensions optional.

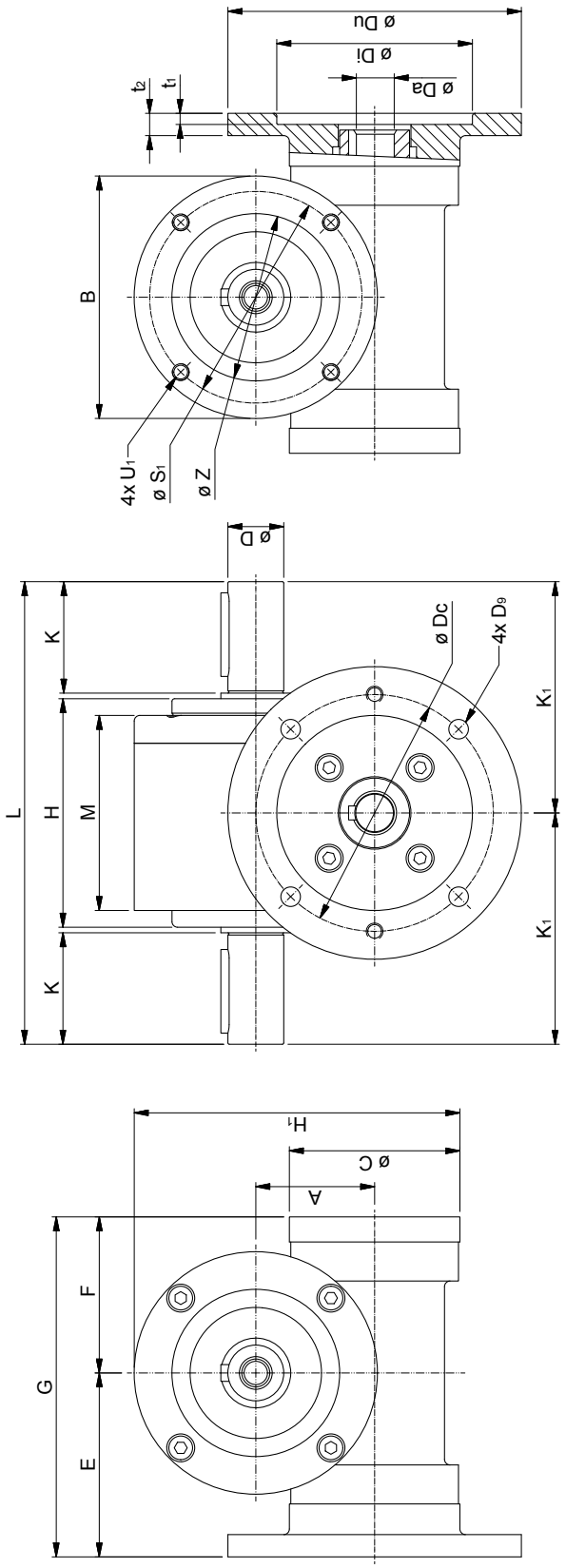


I Dimensional drawings

1 XX 10300 1X0X 01

Gear house: Housing type 1.

Gear housing with double free shaft, closed end cover.



Gear - Double free shaft	A	B	C	D*k6	F	H	H_1	K*	K_1	L	M	S_1	Z h6	U_1	Motor size	Flange size	D_a*G7	D_c	D_i F6	D_u	D_9	E	G	t_1	t_2	Kg
1 42 10300 1101 01	42.5	87	61	20	56	82	116.5	40	83	166	70	76	60	M6	63	75	11	75	60	90	7	66	122	4	8	4.5
1 42 10300 1202 01															71	85	14	85	70	105	7	66	122	4	8	4.5
1 42 10300 1302 01															80	100	14[1]	100	80	120	7	66	122	4	8	4.5
1 52 10300 1202 01	52.5	110	72	24	68	92	143.5	50	98	196	80	95	65	M6	71	85	14	85	70	105	7	82	150	4	11	8
1 52 10300 1303 01															80	100	19	100	80	120	7	82	150	4	11	8
1 52 10300 1404 01															90	115	24	115	95	140	9	92	160	4	11	8
1 52 10300 1504 01															100	130	24[1]	130	110	160	9	82	160	4	11	8
1 61 10300 1202 01	61	126	72	32	82	94	160	60	109	218	83	108	90	M8	71	85	14	85	70	105	7	91	173	4	11	10
1 61 10300 1303 01															80	100	19	100	80	120	7	91	173	4	11	10
1 61 10300 1404 01															90	115	24	115	95	140	9	101	183	4	11	10
1 61 10300 1504 01															100/112	130	24[1]	130	110	160	9	91	173	4	11	10
1 79 10300 1303 01	79	164	82	38	97	106	202	65	120	240	92	125	105	M10	80	100	19	100	80	120	7	118	215	4	11	18
1 79 10300 1404 01															90	115	24	115	95	140	9	118	215	4	11	18
1 79 10300 1505 01															100/112	130	28	130	110	160	9	126	225	4	11	18
1 99 10300 1404 01	99	208	115	48	126.8	142	260.5	90	163	326	120	165	120	M12	90	115	24	115	95	140	9	150	277	4	9	40
1 99 10300 1505 01															100/112	130	28	130	110	160	9	150	277	4	12	40

[1] Not IEC-standard.

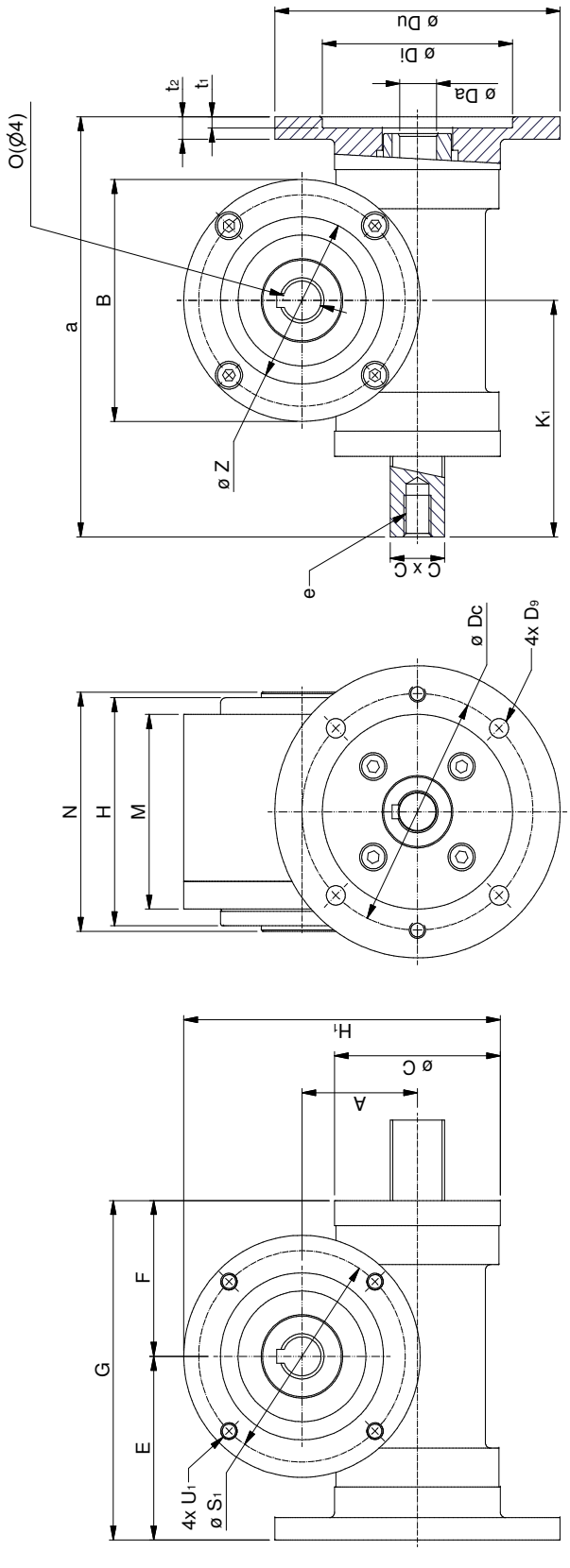
Key and keyway according to DIN 6885 *Special dimensions optional.

I Dimensional drawings

1 XX 104XX 1X0X 02 / 1 XX 105XX 1X0X 02

Gear house: Housing type 1.

Gear housing with hollow shaft, mounting holes right / left, torque pin.



Gear - Mounting holes right/left	A	B	C	F	H	H_1	K_1	M	N	O*H8	S_1	Z h6	U_1	a	cxc	e	Motor size	Flange size	D_a*G7	D_c	D_i F6	D_u	D_g	E	G	t_1	t_2	Kg
1 42 10410 1101 02 / 1 42 10510 1101 02	42.5	87	61	56	82	116.5	85	70	86	20	76	60	M6	151	20x20	M10	63	75	11	75	60	90	7	66	122	4	8	4.5
1 42 10410 1202 02 / 1 42 10510 1202 02																	71	85	14	85	70	105	7	66	122	4	8	4.5
1 42 10410 1302 02 / 1 42 10510 1302 02																	80	100	14[1]	100	80	120	7	66	122	4	8	4.5
1 52 10420 1202 02 / 1 52 10520 1202 02	52.5	110	72	68	92	143.5	103	80	96	24	95	65	M6	185	25x25	M12	71	85	14	85	70	105	7	82	150	4	11	8
1 52 10420 1303 02 / 1 52 10520 1303 02							103										80	100	19	100	80	120	7	82	150	4	11	8
1 52 10420 1404 02 / 1 52 10420 1404 02							93										90	115	24	115	95	140	9	92	160	4	11	8
1 52 10420 1504 02 / 1 52 10420 1504 02							103										100	130	24[1]	130	110	160	9	82	160	4	11	8
1 61 10440 1202 02 / 1 61 10440 1202 02	61	126	72	82	94	160	116	83	98	30	108	90	M8	207	25x25	M12	71	85	14	85	70	105	7	91	173	4	11	10
1 61 10440 1303 02 / 1 61 10440 1303 02							116										80	100	19	100	80	120	7	91	173	4	11	10
1 61 10440 1404 02 / 1 61 10440 1404 02							106										90	115	24	115	95	140	9	101	183	4	11	10
1 61 10440 1504 02 / 1 61 10440 1504 02							116										100/112	130	24[1]	130	110	160	9	91	173	4	11	10
1 79 10450 1303 02 / 1 79 10450 1303 02	79	164	82	97	106	202	143	92	110	35	125	105	M10	261	32x32	M12	80	100	19	100	80	120	7	118	215	4	11	18
1 79 10450 1404 02 / 1 79 10450 1404 02							143										90	115	24	115	95	140	9	118	215	4	11	18
1 79 10450 1505 02 / 1 79 10450 1505 02							135										100/112	130	28	130	110	160	9	126	225	4	11	18
1 99 10460 1404 02 / 1 99 10460 1404 02	99	208	115	126.8	142	260.5	185	120	146	48	165	120	M12	335	45x45	M16	90	115	24	115	95	140	9	150	277	4	9	40
1 99 10460 1505 02 / 1 99 10460 1505 02																	100/112	130	28	130	110	160	9	150	277	4	12	40

[1] Not IEC-standard.

Key and keyway according to DIN 6885

*Special dimensions optional. See also page 8 for hollow shaft sizes.

I Dimensional drawings

Free shaft right



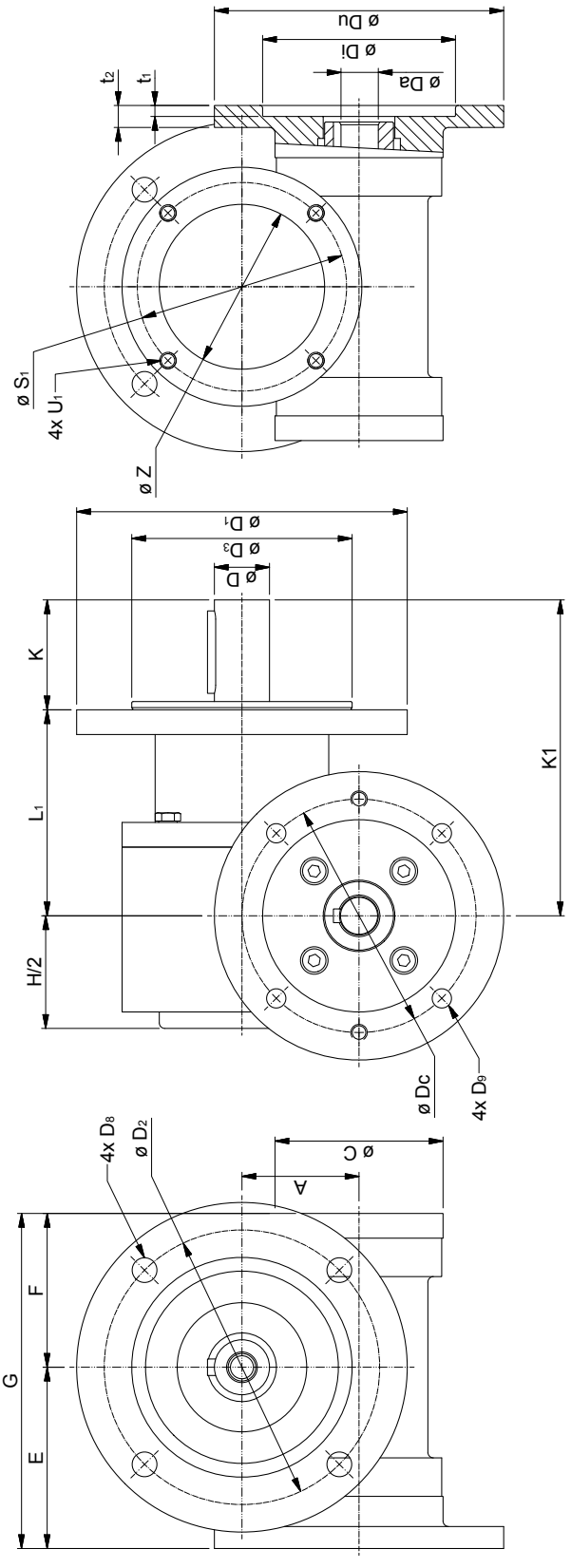


Free shaft left

1 XX 11100 1X0X 01 / 1 XX 11200 1X0X 01

Gear house: Housing type 1.

Mounting at side flange with free shaft, right/left, closed end cover.



Gear - Free shaft right/left	A	C	D*k6	D_1	D_2	D_3h6	F	D_8	H/2	K*	K1	L_1	S_1	Z h6	U_1	Motor size	Flange size	D_a*G7	D_c	D_i F6	D_u	D_9	E	G	t_1	t_2	Kg
1 42 11100 1101 01 / 1 42 11200 1101 01	42.5	61	20	120	100	80	56	9	41	40	115	75	76	60	M6	63	75	11	75	60	90	7	66	122	4	8	5.9
1 42 11100 1202 01 / 1 42 11200 1202 01																71	85	14	85	70	105	7	66	122	4	8	5.9
1 42 11100 1302 01 / 1 42 11200 1302 01																80	100	14[1]	100	80	120	7	66	122	4	8	5.9
1 52 11100 1202 01 / 1 52 11200 1202 01	52.5	72	24	140	115	95	68	9	46	50	130	80	95	65	M6	71	85	14	85	70	105	7	82	150	4	11	9
1 52 11100 1303 01 / 1 52 11200 1303 01																80	100	19	100	80	120	7	82	150	4	11	9
1 52 11100 1404 01 / 1 52 11200 1404 01																90	115	24	115	95	140	9	92	160	4	11	9
1 52 11100 1504 01 / 1 52 11200 1504 01																100	130	24[1]	130	110	160	9	82	160	4	11	9
1 61 11100 1202 01 / 1 61 11200 1202 01	61	72	32	160	130	110	82	9	47	60	145	85	108	90	M8	71	85	14	85	70	105	7	91	173	4	11	12
1 61 11100 1303 01 / 1 61 11200 1303 01																80	100	19	100	80	120	7	91	173	4	11	12
1 61 11100 1404 01 / 1 61 11200 1404 01																90	115	24	115	95	140	9	101	183	4	11	12
1 61 11100 1504 01 / 1 61 11200 1504 01																100/112	130	24[1]	130	110	160	9	91	173	4	11	12
1 79 11100 1303 01 / 1 79 11200 1303 01	79	82	38	200	165	130	97	11	53	65	165	100	125	105	M10	80	100	19	100	80	120	7	118	215	4	11	23
1 79 11100 1404 01 / 1 79 11200 1404 01																90	115	24	115	95	140	9	118	215	4	11	23
1 79 11100 1505 01 / 1 79 11200 1505 01																100/112	130	28	130	110	160	9	126	225	4	11	23
1 99 11100 1404 01 / 1 99 11200 1404 01	99	115	48	250	215	180	126B	15	71	90	205	115	165	120	M12	90	115	24	115	95	140	9	150	277	4	9	47
1 99 11100 1505 01 / 1 99 11200 1505 01																100/112	130	28	130	110	160	9	150	277	4	12	47

[1] Not IEC-standard.

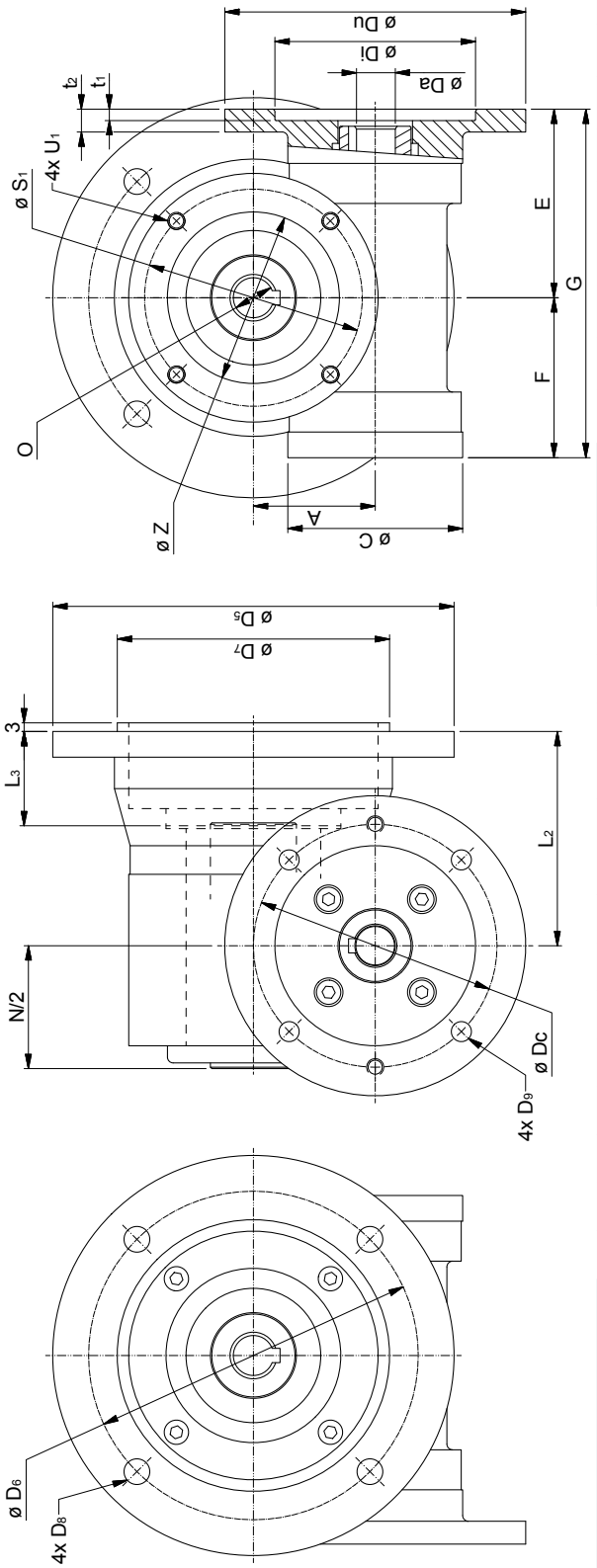
Key and keyway according to DIN 6885 *Special dimensions optional.

I Dimensional drawings

1 XX 114XX 1X0X 01 / 1 XX 115XX 1X0X 01

Gear house: Housing type 1.

Mounting at side flange with hollow shaft, mounting holes right/left, closed end cover.



Gear - Mounting holes right/left	A	C	D_5	D_6	D_7h6	D_8	F	L_2	L_3	N/2	O*H8	S_1	Z h6	U_1	Motor size	Flange size	D_a*G7	D_c	D_i F6	D_u	D_9	E	G	t_1	t_2	Kg
1 42 11410 1101 01 / 1 42 11510 1101 01	42.5	61	140	115	95	9	56	75	32	43	20	76	60	M6	63	75	11	75	60	90	7	66	122	4	8	5.9
1 42 11410 1202 01 / 1 42 11510 1202 01															71	85	14	85	70	105	7	66	122	4	8	5.9
1 42 11410 1302 01 / 1 42 11510 1302 01															80	100	14[1]	100	80	120	7	66	122	4	8	5.9
1 52 11420 1202 01 / 1 52 11520 1202 01	52.5	72	140	115	95	9	68	80	32	48	24	95	65	M6	71	85	14	85	70	105	7	82	150	4	11	9
1 52 11420 1303 01 / 1 52 11520 1303 01															80	100	19	100	80	120	7	82	150	4	11	9
1 52 11420 1404 01 / 1 52 11520 1404 01															90	115	24	115	95	140	9	92	160	4	11	9
1 52 11420 1504 01 / 1 52 11520 1504 01															100	130	24[1]	130	110	160	9	82	160	4	11	9
1 61 11440 1202 01 / 1 61 11540 1202 01	61	72	200	165	130	11	82	85	36	49	30	108	90	M8	71	85	14	85	70	105	7	91	173	4	11	12
1 61 11440 1303 01 / 1 61 11540 1303 01															80	100	19	100	80	120	7	91	173	4	11	12
1 61 11440 1404 01 / 1 61 11540 1404 01															90	115	24	115	95	140	9	101	183	4	11	12
1 61 11440 1504 01 / 1 61 11540 1504 01															100/112	130	24[1]	130	110	160	9	91	173	4	11	12
1 79 11450 1303 01 / 1 79 11550 1303 01	79	82	200	165	130	11	97	100	45	55	35	125	105	M10	80	100	19	100	80	120	7	118	215	4	11	23
1 79 11450 1404 01 / 1 79 11550 1404 01															90	115	24	115	95	140	9	118	215	4	11	23
1 79 11450 1505 01 / 1 79 11550 1505 01															100/112	130	28	130	110	160	9	126	225	4	11	23
1 99 11460 1404 01 / 1 99 11560 1404 01	99	115	250	215	180	15	126.8	115	42	73	48	165	120	M12	90	115	24	115	95	140	9	150	277	4	9	47
1 99 11460 1505 01 / 1 99 11560 1505 01															100/112	130	28	130	110	160	9	150	277	4	12	47

Key and keyway according to DIN 6885

*Special dimensions optional. See also page 8 for hollow shaft sizes.

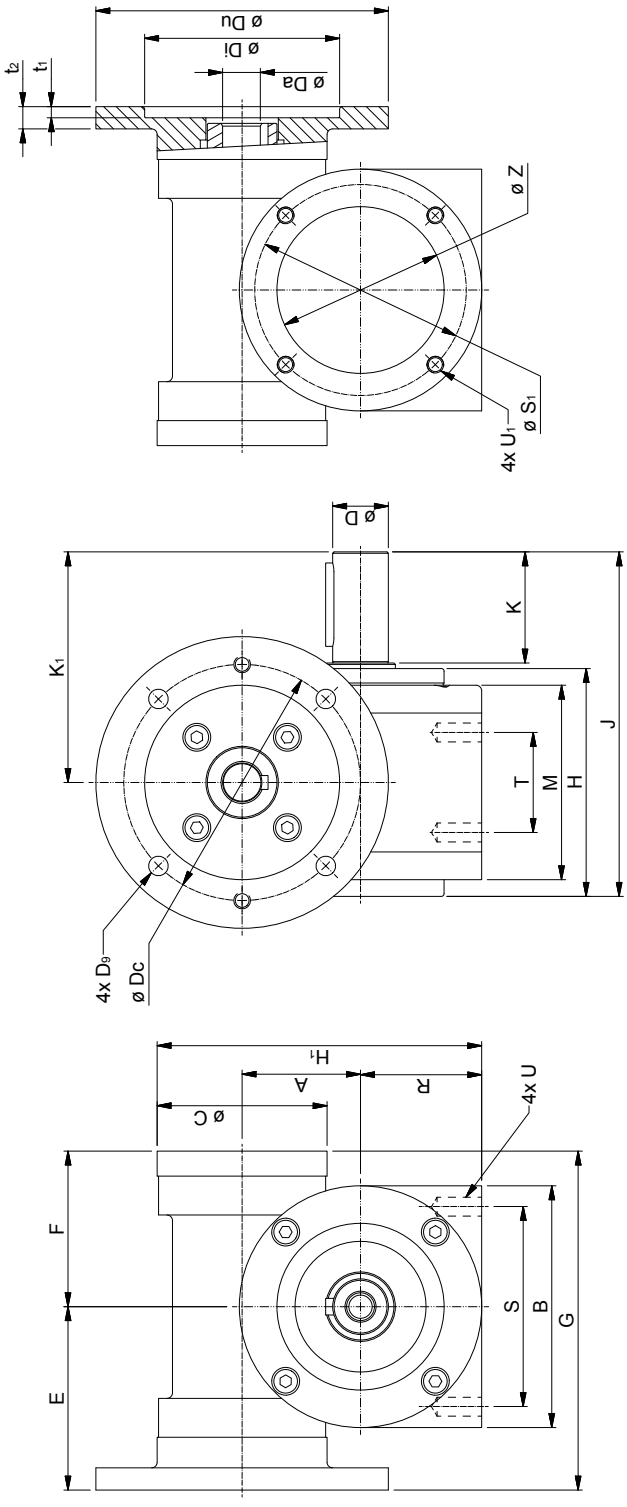
[1] Not IEC-standard.

I Dimensional drawings

1 XX 20100 1X0X 01 / 1 XX 20200 1X0X 01

Gear house: Housing type 2.

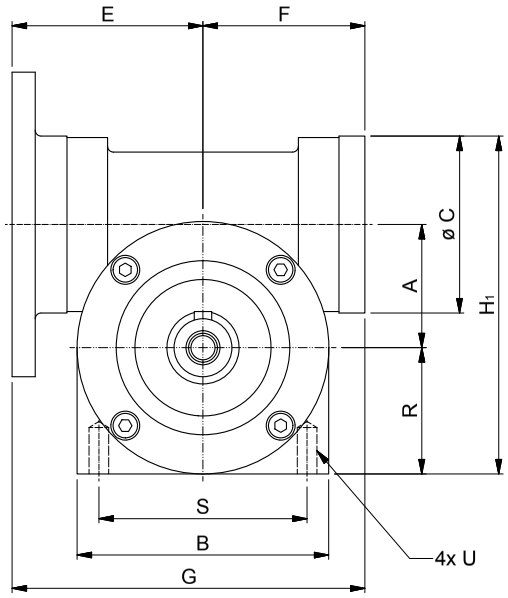
Housing with support, worm at top, free shaft, right/left, closed end cover.

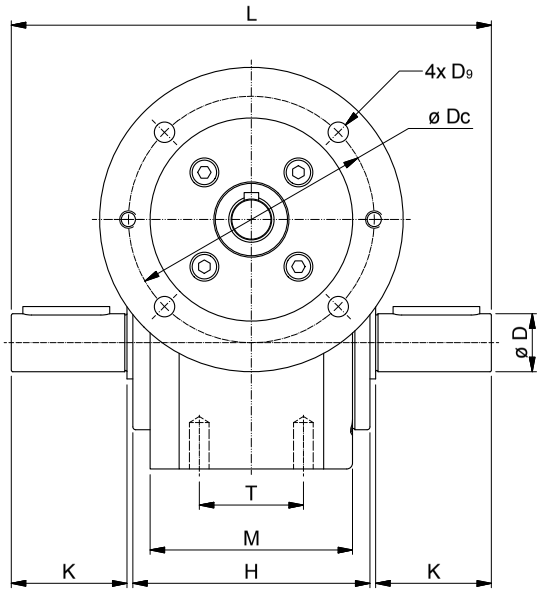


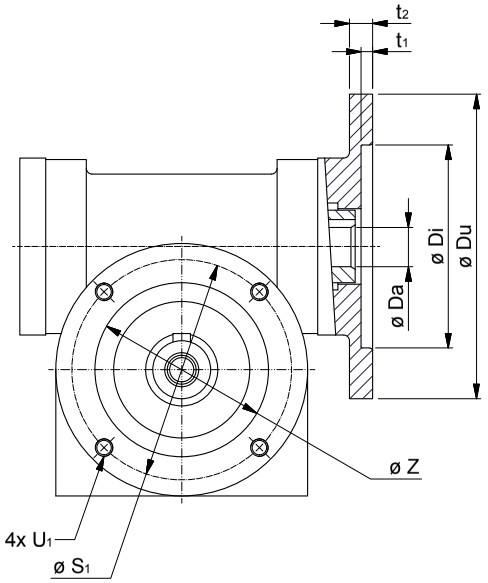
Gear - Free shaft right/left	A	B	C	D*k6	F	H	H_1	J	K*	K_1	M	R	S	S_1	T	Z h6	U_1	U	Motor size	Flange size	D_a*G7	D_c	D_1 F6	D_u	D_9	E	G	t_1	t_2	Kg
1 42 20100 1101 01 / 1 42 20200 1101 01	42.5	87	61	20	56	82	116.5	124	40	83	70	43.5	72	76	36	60	M6	M8	63	75	11	75	60	90	7	66	122	4	8	4.6
1 42 20100 1202 01 / 1 42 20200 1202 01																			71	85	14	85	70	105	7	66	122	4	8	4.6
1 42 20100 1302 01 / 1 42 20200 1302 01																			80	100	14[1]	100	80	120	7	66	122	4	8	4.6
1 52 20100 1202 01 / 1 52 20200 1202 01	52.5	110	72	24	68	92	143.5	144	50	98	80	55	85	95	40	65	M6	M10	71	85	14	85	70	105	7	82	150	4	11	9
1 52 20100 1303 01 / 1 52 20200 1303 01																			80	100	19	100	80	120	7	82	150	4	11	9
1 52 20100 1404 01 / 1 52 20200 1404 01																			90	115	24	115	95	140	9	92	160	4	11	9
1 52 20100 1504 01 / 1 52 20200 1504 01																			100	130	24[1]	130	110	160	9	82	160	4	11	9
1 61 20100 1202 01 / 1 61 20200 1202 01	61	126	72	32	82	94	160	156	60	109	83	63	106	108	42	90	M8	M10	71	85	14	85	70	105	7	91	173	4	11	11
1 61 20100 1303 01 / 1 61 20200 1303 01																			80	100	19	100	80	120	7	91	173	4	11	11
1 61 20100 1404 01 / 1 61 20200 1404 01																			90	115	24	115	95	140	9	101	183	4	11	11
1 61 20100 1504 01 / 1 61 20200 1504 01																			100/112	130	24[1]	130	110	160	9	91	173	4	11	11
1 79 20100 1303 01 / 1 79 20200 1303 01	79	164	82	38	97	106	202	173	65	120	92	82	135	125	48	105	M10	M12	80	100	19	100	80	120	7	118	215	4	11	20
1 79 20100 1404 01 / 1 79 20200 1404 01																			90	115	24	115	95	140	9	118	215	4	11	20
1 79 20100 1505 01 / 1 79 20200 1505 01																			100/112	130	28	130	110	160	9	126	225	4	11	20
1 99 20100 1404 01 / 1 99 20200 1404 01	99	208	115	48	126.8	142	260.5	234	90	163	120	104	170	165	60	120	M12	M12	90	115	24	115	95	140	9	150	277	4	9	42
1 99 20100 1505 01 / 1 99 20200 1505 01																			100/112	130	28	130	110	160	9	150	277	4	12	42

[1] Not IEC-standard.

Key and keyway according to DIN 6885 *Special dimensions optional.







1 XX 2030X 1X0X 01

Gear house: Housing type 2.

Housing with support, worm at top, double free shaft, closed end cover.

Gear - Double free shaft	A	B	C	D*k6	F	H	H_1	K*	L	M	R	S	S_1	T	Z h6	U_1	U	Motor size	Flange size	D_a*G7	D_c	D_i F6	D_u	D_9	E	G	t_1	t_2	Kg
1 42 20300 1101 01	42.5	87	61	20	56	82	116.5	40	166	70	43.5	72	76	36	60	M6	M8	63	75	11	75	60	90	7	66	122	4	8	4.6
1 42 20300 1202 01																		71	85	14	85	70	105	7	66	122	4	8	4.6
1 42 20300 1302 01																		80	100	14[1)]	100	80	120	7	66	122	4	8	4.6
1 52 20300 1202 01	52.5	110	72	24	68	92	143.5	50	196	80	55	85	95	40	65	M6	M10	71	85	14	85	70	105	7	82	150	4	11	9
1 52 20300 1303 01																		80	100	19	100	80	120	7	82	150	4	11	9
1 52 20300 1404 01																		90	115	4	115	95	140	9	92	160	4	11	9
1 52 20300 1504 01																		100	130	24[1)]	130	110	160	9	82	160	4	11	9
1 61 20300 1202 01	61	126	72	32	82	94	160	60	218	83	63	106	108	42	90	M8	M10	71	85	14	85	70	105	7	91	173	4	11	11
1 61 20300 1303 01																		80	100	19	100	80	120	7	91	173	4	11	11
1 61 20300 1404 01																		90	115	24	115	95	140	9	101	183	4	11	11
1 61 20300 1504 01																		100/112	130	24[1)]	130	110	160	9	91	173	4	11	11
1 79 20300 1303 01	79	164	82	38	97	106	202	65	240	92	82	135	125	48	105	M10	M12	80	100	19	100	80	120	7	118	215	4	11	20
1 79 20300 1404 01																		90	115	24	115	95	140	9	118	215	4	11	20
1 79 20300 1505 01																		100/112	130	28	130	110	160	9	126	225	4	11	20
1 99 20300 1404 01	99	208	115	48	126.8	142	206.5	90	326	120	104	170	165	60	120	M12	M12	90	115	24	115	95	140	9	150	277	4	9	42
1 99 20300 1505 01																		100/112	130	28	130	110	160	9	150	277	4	12	42

Key and keyway according to DIN 6885 *Special dimensions optional.

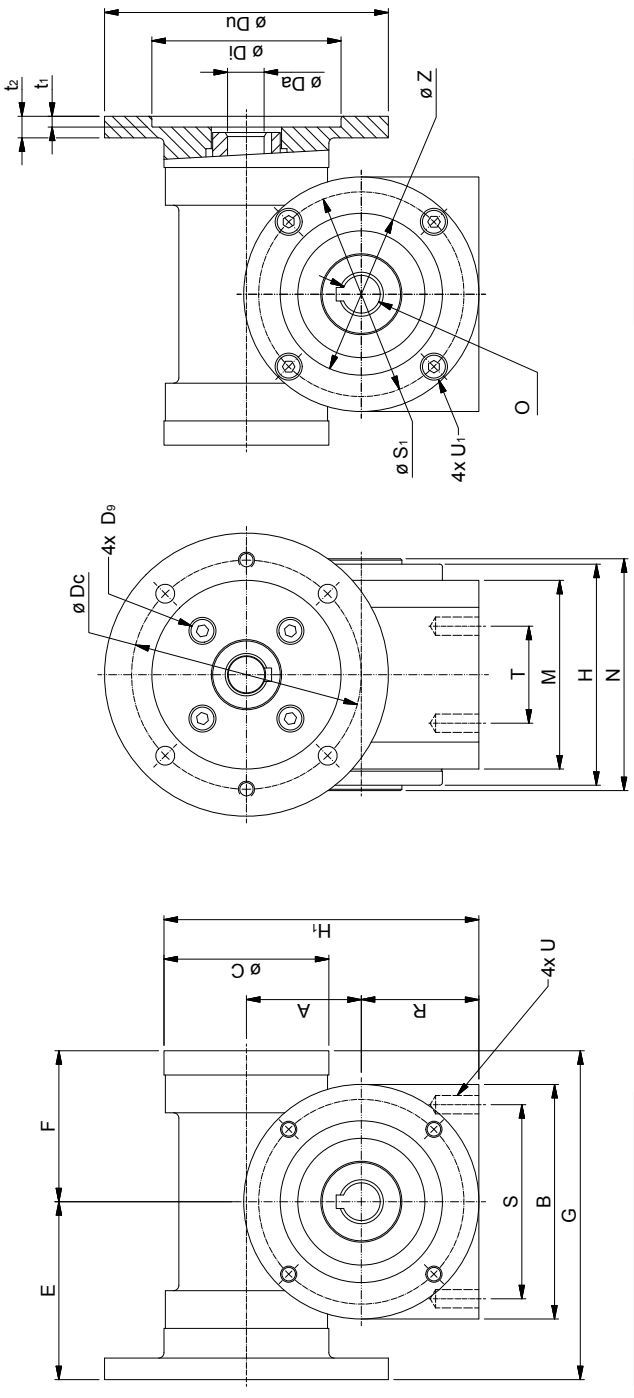
[1)] Not IEC-standard.

I Dimensional drawings

1 XX 204XX 1X0X 01 / 1 XX 205XX 1X0X 01

Gear house: Housing type 2

Housing with support, worm at top, hollow shaft, right/left, closed end cover.



Gear - Mounting holes left/right	A	B	C	F	H	H_1	M	N	O*H8	R	S	S_1	T	Z h6	U_1	U	Motor size	Flange size	D_a*G7	D_c	D_i F6	D_u	D_9	E	G	t_1	t_2	Kg
1 42 20410 1101 01 / 1 42 20510 1101 01																M8	63	75	11	75	60	90	7	66	122	4	8	4.6
1 42 20410 1202 01 / 1 42 20510 1202 01	42.5	87	61	56	82	116.5	70	86	20	43.5	72	76	36	60	M6		71	85	14	85	70	105	7	66	122	4	8	4.6
1 42 20410 1302 01 / 1 42 20410 1302 01																	80	100	14[1]	100	80	120	7	66	122	4	8	4.6
1 52 20420 1202 01 / 1 52 20520 1202 01																M10	71	85	14	85	70	105	7	82	150	4	11	9
1 52 20420 1303 01 / 1 52 20520 1303 01																	80	100	19	100	80	120	7	82	150	4	11	9
1 52 20420 1404 01 / 1 52 20520 1404 01	52.5	110	72	68	92	143.5	80	96	24	55	85	95	40	65	M6		90	115	24	115	95	140	9	92	160	4	11	9
1 52 20420 1504 01 / 1 52 20520 1504 01																	100	130	24[1]	130	110	160	9	82	160	4	11	9
1 61 20440 1202 01 / 1 61 20540 1202 01																M10	71	85	14	85	70	105	7	91	173	4	11	11
1 61 20440 1303 01 / 1 61 20540 1303 01																	80	100	19	100	80	120	7	91	173	4	11	11
1 61 20440 1404 01 / 1 61 20540 1404 01	61	126	72	82	94	160	83	98	30	63	106	108	42	90	M8		90	115	24	115	95	140	9	101	183	4	11	11
1 61 20440 1504 01 / 1 61 20540 1504 01																	100/112	130	24[1]	130	110	160	9	91	173	4	11	11
1 79 20450 1303 01 / 1 79 20550 1303 01																M12	80	100	19	100	80	120	7	118	215	4	11	20
1 79 20450 1404 01 / 1 79 20550 1404 01	79	164	82	97	106	202	92	110	35	82	135	125	48	105	M10		90	115	24	115	95	140	9	118	215	4	11	20
1 79 20450 1505 01 / 1 79 20550 1505 01																	100/112	130	28	130	110	160	9	126	225	4	11	20
1 99 20460 1404 01 / 1 99 20560 1404 01	99	208	115	126.8	142	260.5	120	146	48	104	170	165	60	120	M12		90	115	24	115	95	140	9	150	277	4	9	42
1 99 20460 1505 01 / 1 99 20560 1505 01																M12	100/112	130	28	130	110	160	9	150	277	4	12	42

[1] Not IEC-standard.

Key and keyway according to DIN 6885

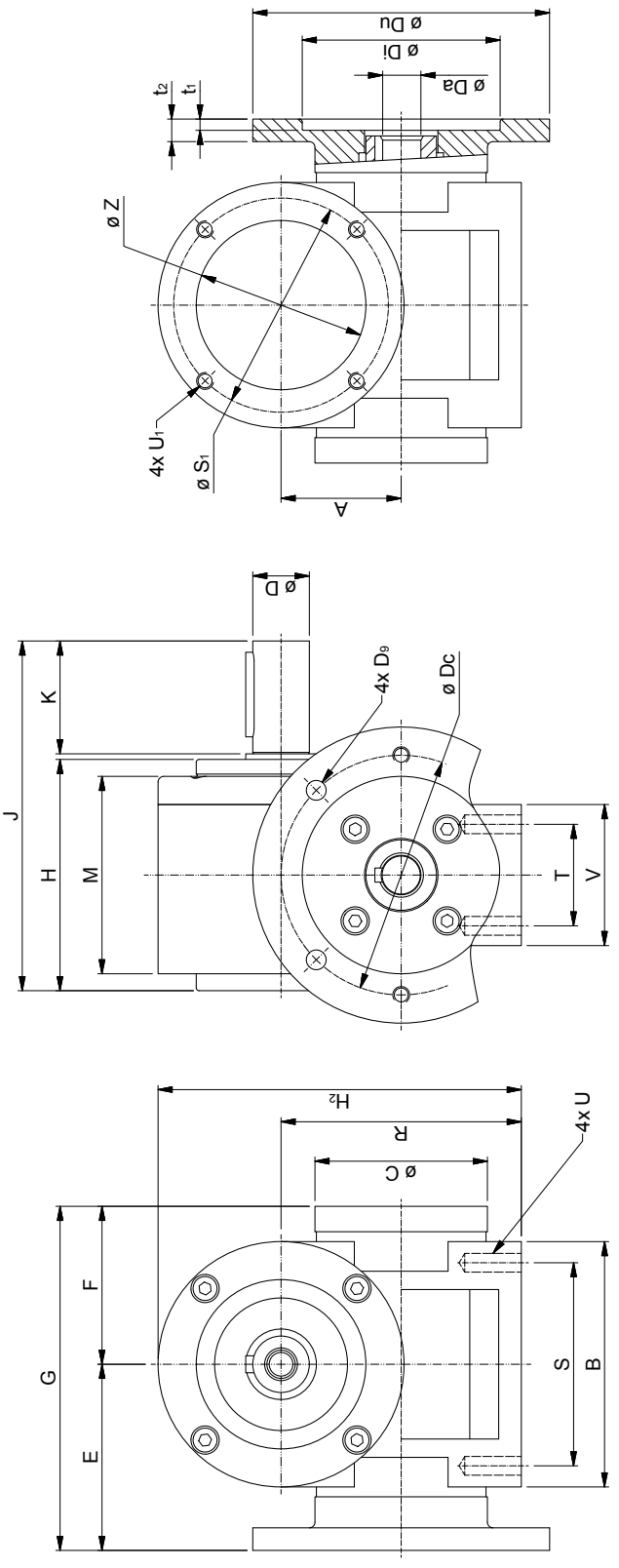
*Special dimensions optional. See also page 8 for hollow shaft sizes.

I Dimensional drawings

1 XX 301XX 1X0X 01 / 1 XX 302XX 1X0X 01

Gear house: Housing type 3.

Housing with support, worm at bottom, with free shaft right/left, closed end cover.



Gear - Free shaft right/left	A	B	C	D*k6	F	H	H_2	J	K*	M	R	S	S_1	T	V	Z h6	U_1	U	Motor size	Flange size	D_a*G7	D_c	D_1 F6	D_u	D_9	E	G	t_1	t_2	kg
1 42 30100 1101 01 / 1 42 30200 1101 01	42.5	87	61	20	56	82	128.5	124	40	70	85	72	76	36	50	60	M6	M8	63	75	11	75	60	90	7	66	122	4	8	4.8
1 42 30100 1202 01 / 1 42 30200 1202 01																			71	85	14	85	70	105	7	66	122	4	8	4.8
1 42 30100 1302 01 / 1 42 30200 1302 01																			80	100	14[1]	100	80	120	7	66	122	4	8	4.8
1 52 30100 1202 01 / 1 52 30200 1202 01	52.5	110	72	24	68	92	157.5	144	50	80	102.5	85	95	40	60	65	M6	M10	71	85	14	85	70	105	7	82	150	4	11	9
1 52 30100 1303 01 / 1 52 30200 1303 01																			80	100	19	100	80	120	7	82	150	4	11	9
1 52 30100 1404 01 / 1 52 30200 1404 01																			90	115	24	115	95	140	9	92	160	4	11	9
1 52 30100 1504 01 / 1 52 30200 1504 01																			100	130	24[1]	130	110	160	9	82	160	4	11	9
1 61 30100 1202 01 / 1 61 30200 1202 01	61	126	72	32	82	94	174	156	60	83	111	106	108	42	72	90	M8	M10	71	85	14	85	70	105	7	91	173	4	11	11
1 61 30100 1303 01 / 1 61 30200 1303 01																			80	100	19	100	80	120	7	91	173	4	11	11
1 61 30100 1404 01 / 1 61 30200 1404 01																			90	115	24	115	95	140	9	101	183	4	11	11
1 61 30100 150401 / 1 61 30200 1504 01																			100/112	130	24[1]	130	110	160	9	91	173	4	11	11
1 79 30100 1303 01 / 1 79 30200 1303 01	79	164	82	38	97	106	216	173	65	92	134	135	125	48	82	105	M10	M12	80	100	19	100	80	120	7	118	215	4	11	20
1 79 30100 1404 01 / 1 79 30200 1404 01																			90	115	24	115	95	140	9	118	215	4	11	20
1 79 30100 1505 01 / 1 79 30200 1505 01																			100/112	130	28	130	110	160	9	126	225	4	11	20
1 99 30100 1404 01 / 1 99 30200 1404 01	99	208	115	48	126.8	142	273	234	90	120	170	170	165	60	96	120	M12	M12	90	115	24	115	95	140	9	150	277	4	9	42
1 99 30100 1505 01 / 1 99 30200 1505 01																			100/112	130	28	130	110	160	9	150	277	4	12	42

[1] Not IEC-standard.

Key and keyway according to DIN 6885

*Special dimensions optional.

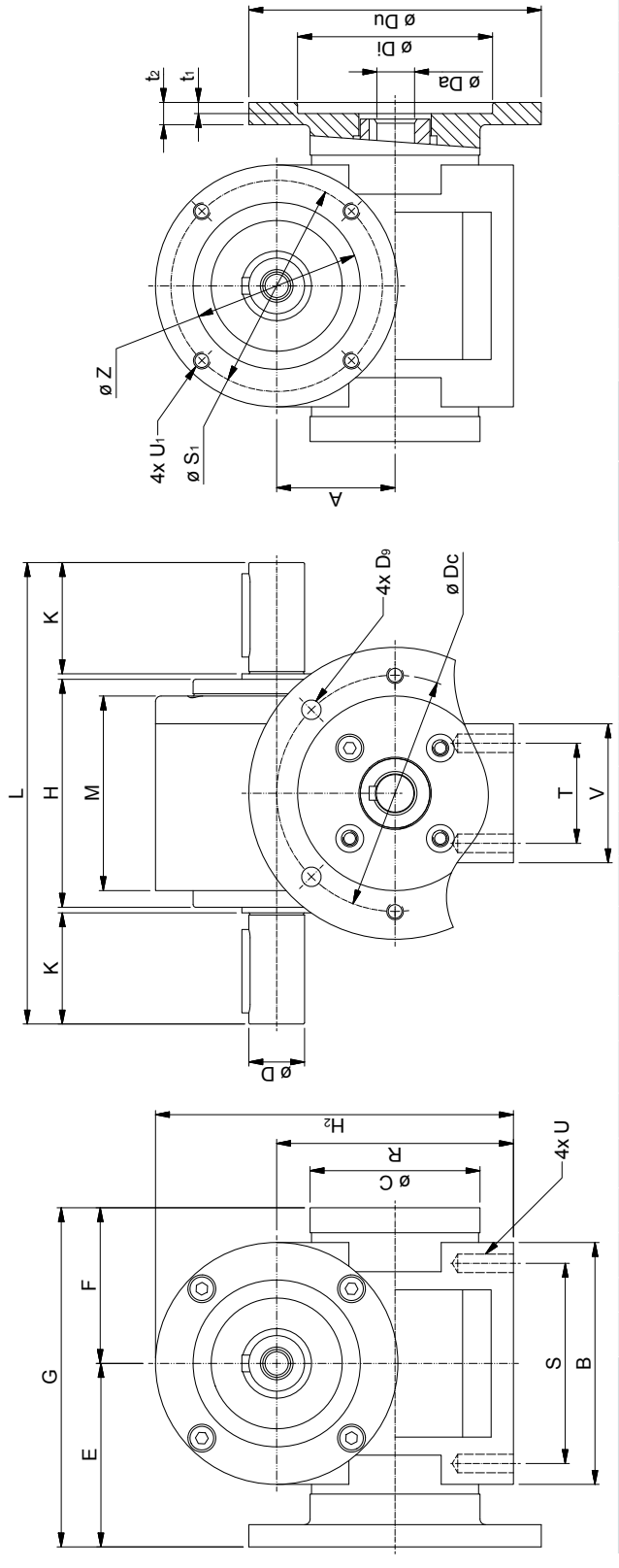


I Dimensional drawings

1 XX 303XX 1X0X 01

Gear house: Housing type 3.

Housing with support, worm at bottom, double free shaft, closed end cover.



Gear - Double free shaft	A	B	C	D*k6	F	H	H_2	K*	L	M	R	S	S_1	T	V	Z h6	U_1	U	Motor size	Flange size	D_a*G7	D_c	D_i F6	D_u	D_9	E	G	t_1	t_2	kg
1 42 30300 1101 01	42.5	87	61	20	56	82	128.5	40	166	70	85	72	76	36	50	60	M6	M8	63	75	11	75	60	90	7	66	122	4	8	4.8
1 42 30300 1202 01																			71	85	14	85	70	105	7	66	122	4	8	4.8
1 42 30300 1302 01																			80	100	14[1]	100	80	120	7	66	122	4	8	4.8
1 52 30300 1202 01	52.5	110	72	24	68	92	157.5	50	196	80	102.5	85	95	40	60	65	M6	M10	71	85	14	85	70	105	7	82	150	4	11	9
1 52 30300 1303 01																			80	100	19	100	80	120	7	82	150	4	11	9
1 52 30300 1404 01																			90	115	24	115	95	140	9	92	160	4	11	9
1 52 30300 1504 01																			100	130	24[1]	130	110	160	9	82	160	4	11	9
1 61 30300 1202 01	61	126	72	32	82	94	174	60	218	83	111	106	108	42	72	90	M8	M10	71	85	14	85	70	105	7	91	173	4	11	11
1 61 30300 1303 01																			80	100	19	100	80	120	7	91	173	4	11	11
1 61 30300 1404 01																			90	115	24	115	95	140	9	101	183	4	11	11
1 61 30300 1504 01																			100/112	130	24[1]	130	110	160	9	91	173	4	11	11
1 79 30300 1303 01	79	164	82	38	97	106	216	65	240	92	134	135	125	48	82	105	M10	M12	80	100	19	100	80	120	7	118	215	4	11	20
1 79 30300 1404 01																			90	115	24	115	95	140	9	118	215	4	11	20
1 79 30300 1505 01																			100/112	130	28	130	110	160	9	126	225	4	11	20
1 99 30300 1404 01	99	208	115	48	126.8	142	273	90	326	120	170	170	165	60	96	120	M12	M12	90	115	24	115	95	140	9	150	277	4	9	42
1 99 30300 1505 01																			100/112	130	28	130	110	160	9	150	277	4	12	42

[1] Not IEC-standard.

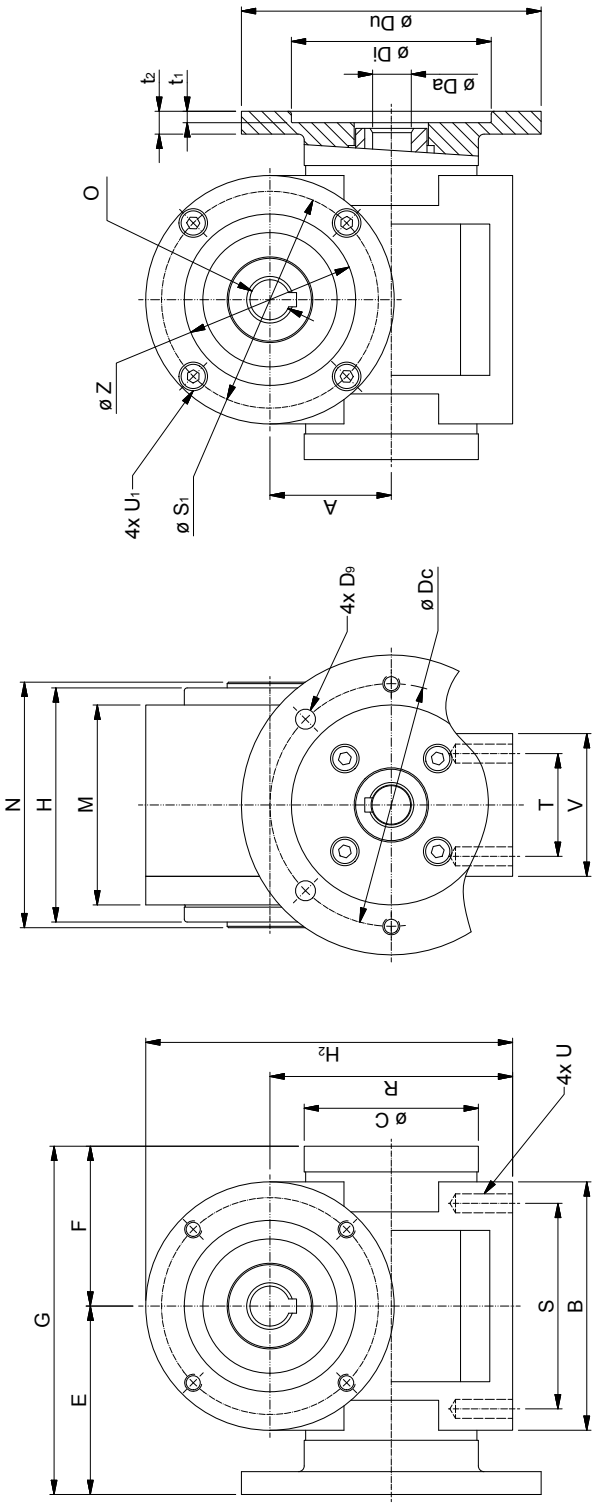
Key and keyway according to DIN 6885 *Special dimensions optional.

I Dimensional drawings

1 XX 304XX 1X0X 01 / 1 XX 305XX 1X0X 01

Gear house: Housing type 3.

Housing with support, worm at bottom, mounting holes right/left, closed end cover.



Gear - Mounting Holes Right / Left	A	B	C	F	H	H_2	M	N	O*H8	R	S	S_1	T	V	Z h6	U_1	U	Motor size	Flange size	D_a*G7	D_c	D_i F6	D_u	D_g	E	G	t_1	t_2	kg
1 42 30410 1101 01 / 1 42 30510 1101 01	42.5	87	61	56	82	128.5	70	86	20	85	72	76	36	50	60	M6	M8	63	75	11	75	60	90	7	66	122	4	8	4.8
1 42 30410 1202 01 / 1 42 30510 1202 01																		71	85	14	85	70	105	7	82	122	4	8	4.8
1 42 30410 1302 01 / 1 42 30510 1302 01																		80	100	14[1]	100	80	120	7	66	122	4	8	4.8
1 52 30420 1202 01 / 1 52 30520 1202 01	52.5	110	72	68	92	157.5	80	96	24	102.5	85	95	40	60	65	M6	M10	71	85	14	85	70	105	7	82	150	4	11	9
1 52 30420 1303 01 / 1 52 30520 1303 01																		80	100	19	100	80	120	7	82	150	4	11	9
1 52 30420 1404 01 / 1 52 30520 1404 01																		90	115	24	115	95	140	9	92	160	4	11	9
1 52 30420 1504 01 / 1 52 30520 1504 01																		100	130	24[1]	130	110	160	9	82	160	4	11	9
1 61 30440 1202 01 / 1 61 30540 1202 01	61	126	72	82	94	174	83	98	30	111	106	108	42	72	90	M8	M10	71	85	14	85	70	105	7	91	173	4	11	11
1 61 30440 1303 01 / 1 61 30540 1303 01																		80	100	19	100	80	120	7	91	173	4	11	11
1 61 30440 1404 01 / 1 61 30540 1404 01																		90	115	24	115	95	140	9	101	183	4	11	11
1 61 30440 1504 01 / 1 61 30540 1504 01																		100/112	130	24[1]	130	110	160	9	91	173	4	11	11
1 79 30450 1303 01 / 1 79 30550 1303 01	79	164	82	97	106	216	92	110	35	134	135	125	48	82	105	M10	M12	80	100	19	100	80	120	7	118	215	4	11	20
1 79 30450 1404 01 / 1 79 30550 1404 01																		90	115	24	115	95	140	9	118	215	4	11	20
1 79 30450 1505 01 / 1 79 30550 1505 01																		100/112	130	28	130	110	160	9	126	225	4	11	20
1 99 30450 1404 01 / 1 99 30550 1404 01	99	208	115	126.8	142	273	120	146	48	170	170	165	60	96	120	M12	M12	90	115	24	115	95	140	9	150	277	4	9	42
1 99 30450 1505 01 / 1 99 30550 1505 01																		100/112	130	28	130	110	160	9	150	277	4	12	42

[1] Not IEC-standard.

Key and keyway according to DIN 6885

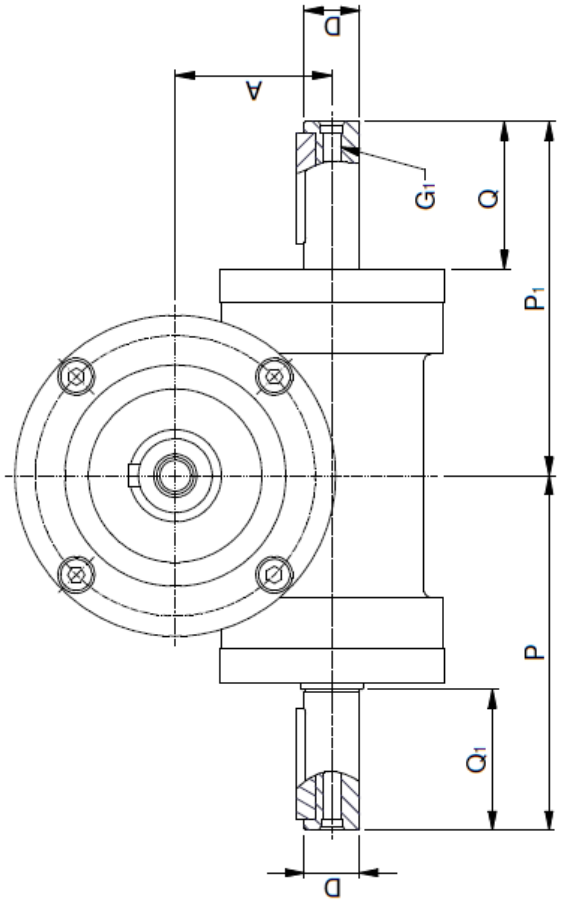
*Special dimensions optional. See also page 8 for hollow shaft sizes.

I Dimensional drawings

Free worm shaft at D-side

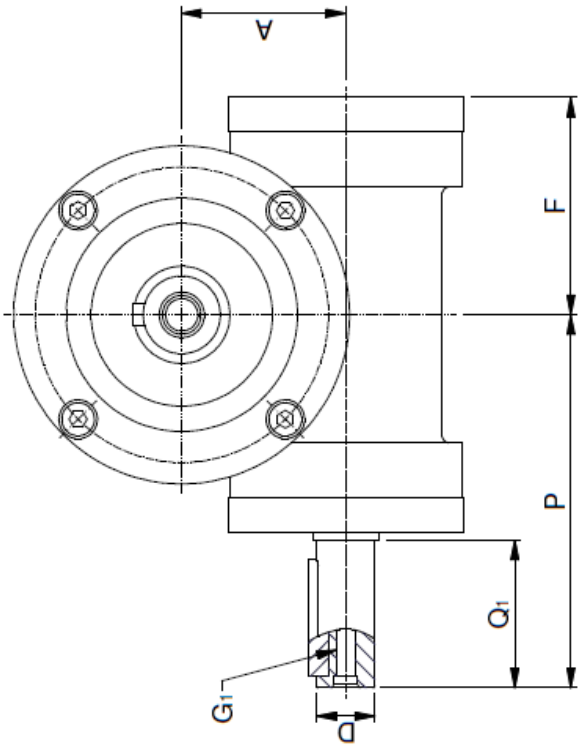
1 XX XXXXX 3050 30

Free worm shaft at D-side with throughgoing worm with free shaft on ND-side
In this example housing type 1



1 XX XXXXX 3040 01

Free worm sSaft at D-side with ND-side closed
In this example housing type 1



Gear	A	D(k6)	F	G_1	P	P1	Q	Q1
Series 42	42.5	Ø15	56	M6	96	96	38	40
Series 52	52.5	Ø19	68	M8	110	110	40	42
Series 61	61	Ø19	82	M8	120	123	40	40
Series 79	79	Ø24	97	M8	159	159	60	60
Series 99	99	Ø28	127	M8	189	189	60	60

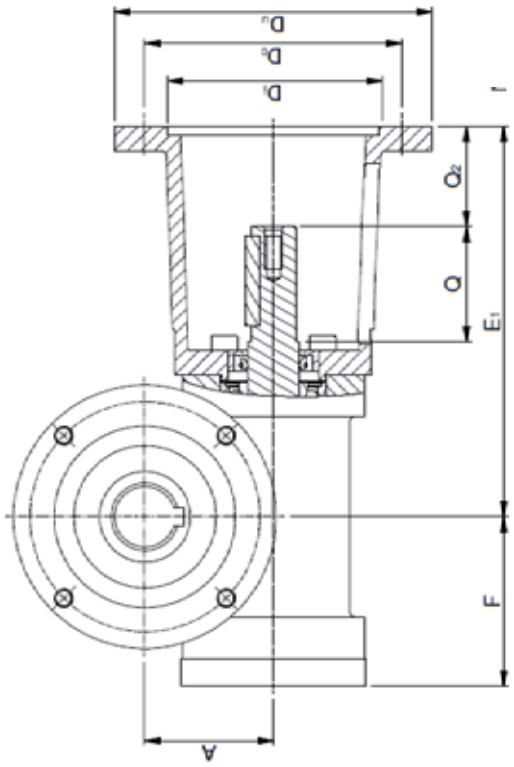
Key and keyway according to DIN 6885

I Dimensional drawings

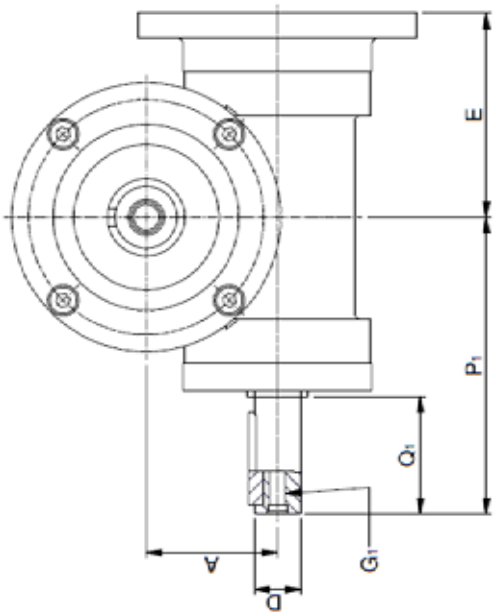
Coupling housing

Motor flange with free worm shaft at D-side

1 XX XXXXX 4X40 01
Coupling Hhusing, free worm shaft at D-side
with ND-side closed
In this example housing type 1



1 XX XXXXX 1X2X 30
Motor flange and hollow worm at D-side
with throughgoing worm with free shaft on ND-side
In this example housing type 1



Gear	A	D(k6)	Di	Du	Dc	E	E1	F	G1	P1	Q	Q1	Q2
Series 42	42.5	Ø15	Ø70	Ø105	Ø85	66	129	56	M6	96	38	40	33
Series 52	52.5	Ø19	Ø70	Ø105	Ø85	82	140	68	M8	110	40	42	30
Series 61	61	Ø19	Ø80	Ø120	Ø100	91	175	82	M8	123	40	40	55
Series 79	79	Ø24	Ø95	Ø140	Ø115	118	222.4	97	M8	159	60	60	63.4
Series 99	99	Ø28	Ø110	Ø160	Ø130	150	262	127	M8	189	60	60	73

Key and keyway according to DIN 6885

J Tables of effect

Motor		Series 42 Output torque [Nm] / Strength factor										
		Gear ratio	5.4:1	7.5:1	10:1	15:1	20:1	25:1	30:1	40:1	50:1	62:1	75:1
[rpm]	[kW]	n_2 [rpm]	130 rpm	93 rpm	70 rpm	47 rpm	35 rpm	28 rpm	23 rpm	18 rpm	14 rpm	11 rpm	9 rpm
700	0.09		5.3/8.5	7.1/6.7	9.1/6.7	12/7.0	16/3.7	20/9.2	21/6.5	24/3.7	29/2.4	32/1.6	38/1.0
	0.12		7.2/6.4	9.7/5.0	12/5.1	17/5.0	21/2.9	27/7.0	28/5.0	33/2.8	39/1.8	44/1.2	
	0.18 2)		11/4.3	14/3.6	19/3.3	26/3.4	33/1.9	41/4.7	43/3.3	51/1.8			
	0.25 2)		15/3.2	20/2.5	26/2.5	37/2.4	46/1.3	57/3.4					
	0.37 3)		23/2.1	31/1.6	40/1.6	55/1.6							
	0.55 3)		34/1.4	46/1.1									
[rpm]	[kW]	n_2 [rpm]	167 rpm	120 rpm	90 rpm	60 rpm	45 rpm	36 rpm	30 rpm	23 rpm	18 rpm	15 rpm	12 rpm
900	0.09					12/7.7	12/4.6	15/11.4	16/8.1	20/4.4	23/2.9	26/1.9	30/1.2
	0.12		5.6/7.5	7.6/5.9	9.7/5.9	13/6.0	17/3.3	21/8.3	23/5.7	28/3.2	32/2.1	36/1.4	
	0.18		8.6/5.0	11/4.2	15/3.9	21/3.8	26/2.2	32/5.6	35/3.9	43/2.2	50/1.4		
	0.25		12/3.6	16/2.9	21/2.8	29/2.8	37/1.6	46/4.0	49/2.8				
	0.37 2)		18/2.5	24/2.0	31/1.9	44/1.9							
	0.55 2)		27/1.7	37/1.3	47/1.3								
	0.75 3)		37/1.2										
[rpm]	[kW]	n_2 [rpm]	259 rpm	187 rpm	140 rpm	93 rpm	70 rpm	56 rpm	47 rpm	35 rpm	28 rpm	23 rpm	19 rpm
1,400	0.09				4.6/10	6.5/10	8.3/5.6	10/14.2	11/9.9	14/5.5	15/3.6	17/2.5	20/1.6
	0.12		3.5/9.6	4.7/7.7	6.2/7.6	8.8/7.5	11/4.2	14/10.5	15/7.5	18/4.2	21/2.8	24/1.8	28/1.2
	0.18		5.5/6.4	7.4/5.1	9.7/5.0	13/5.3	17/2.9	21/7.2	23/5.1	28/2.8	33/1.8	37/1.2	
	0.25		7.8/4.6	10/3.8	13/3.8	19/3.7	24/2.1	30/5.1	33/3.6	40/2.0			
	0.37		11/3.3	15/2.6	20/2.5	29/2.4	37/1.4	45/3.5					
	0.55 2)		17/2.2	23/1.7	31/1.6	43/1.6							
	0.75 2)		24/1.5	32/1.2	42/1.2								
[rpm]	[kW]	n_2 [rpm]	519 rpm	373 rpm	280 rpm	187 rpm	140 rpm	112 rpm	93 rpm	70 rpm	56 rpm	45 rpm	37 rpm
2,800	0.18		2.6/8.7	3.6/6.9	4.7/6.9	6.8/6.7	8.7/3.8	11/9.3	12/6.8	14/4.0	17/2.6	20/1.7	23/1.1
	0.25		3.8/6.2	5.2/4.9	6.8/4.9	9.7/4.9	12/2.7	15/7.0	17/4.9	21/2.8	25/1.8	29/1.2	
	0.37		5.9/4.1	8.0/3.3	10/3.4	14/3.5	19/1.8	23/4.8	26/3.3	32/1.8			
	0.55		8.9/2.8	12/2.2	15/2.3	22/2.2	29/1.2	35/3.2					
	0.75 2)		12/2.1	16/1.7	21/1.7	31/1.6							
	1.10 2)		18/1.4	24/1.1	32/1.1								
	1.50 3)		25/1.0										

Motor		Series 52 Output torque [Nm] / Strength factor							
		Gear ratio	7.5:1	10:1	15:1	19:1	30:1	38:1	51:1	62:1
[rpm]	[kW]	n_2 [rpm]	93 rpm	70 rpm	47 rpm	37 rpm	23 rpm	18 rpm	14 rpm	11 rpm
700	0.12		9.5/8.8	12/8.9	17/8.9	21/5.4	29/8.6	34/5.4	40/3.0	45/2.1
	0.18 2)		14/6.2	19/5.8	27/5.7	31/3.8	45/5.7	53/3.6	62/2.0	70/1.4
	0.25 2)		21/4.3	27/4.2	38/4.2	46/2.6	63/4.2	75/2.6	88/1.4	
	0.37 3)		31/2.9	40/2.9	57/2.8	69/1.8	95/2.8	113/1.7	132/1.0	
	0.55 3)		47/1.9	61/1.9	86/1.9	104/1.2				
	0.75		65/1.4	83/1.4	118/1.4					
[rpm]	[kW]	n_2 [rpm]	120 rpm	90 rpm	60 rpm	47 rpm	30 rpm	24 rpm	18 rpm	15 rpm
900	0.18		11/7.2	14/7.1	21/6.7	25/4.3	35/6.8	42/4.2	50/2.4	57/1.6
	0.25		16/5.1	21/4.9	29/5.0	36/3.1	50/4.9	60/3.0	71/1.7	81/1.1
	0.37 2)		24/3.5	31/3.4	45/3.3	54/2.1	76/3.3	90/2.1	108/1.1	
	0.55 2)		37/2.2	47/2.3	67/2.2	82/1.4	114/2.2			
	0.75 3)		51/1.6	65/1.6	92/1.6	113/1.0				
	1.10 2)		75/1.1	96/1.1						
	1.50 3)		102/0.8							
[rpm]	[kW]	n_2 [rpm]	187 rpm	140 rpm	93 rpm	74 rpm	47 rpm	37 rpm	27 rpm	23 rpm
1,400	0.25		10/6.4	13/6.3	18/6.4	23/3.9	32/6.1	39/3.8	46/2.2	53/1.5
	0.37		15/4.4	20/4.2	28/4.2	35/2.6	49/4.1	59/2.5	71/1.4	80/1.0
	0.55 2)		23/2.9	30/2.8	43/2.8	53/1.8	74/2.8	89/1.8		
	0.75 2)		32/2.1	41/2.1	59/2.1	74/1.3	101/2.0			
	1.10 2)		48/1.4	62/1.4	88/1.4					
	1.50 3)		65/1.1	85/1.0						
[rpm]	[kW]	n_2 [rpm]	373 rpm	280 rpm	187 rpm	147 rpm	93 rpm	74 rpm	55 rpm	45 rpm
2,800	0.37		7.6/5.5	10/5.4	14/5.6	18/3.4	25/5.6	31/3.4	38/1.9	45/1.3
	0.55		11/3.9	15/3.9	22/3.6	27/2.3	39/3.7	47/2.3	58/1.3	68/0.9
	0.75 2)		16/2.8	21/2.7	30/2.7	38/1.7	54/2.7	66/1.7	81/0.9	
	1.10 2)		24/1.9	31/1.9	45/1.8	56/1.2	80/1.8			
	1.50 3)		33/1.4	43/1.4	62/1.3	78/0.8				
	2.20 2) 3)		49/0.9	64/0.9						

The values hold for gears which are well run in and properly heated for operation, see page 31.

2) High output design. 3) Assembly through coupling.

J Tables of effect

Motor		Series 61 Output torque [Nm] / Strength factor								
		Gear ratio	7:1	10:1	15:1	21:1	30:1	40:1	48:1	60:1
[rpm]	[kW]	n_2 [rpm]	100 rpm	70 rpm	47 rpm	33 rpm	23 rpm	18 rpm	15 rpm	12 rpm
700	0.18		13/17.5	19/9.0	27/8.9	35/17.3	47/8.8	56/5.0	64/3.3	70/2.2
	0.25		19/12.9	27/6.5	39/6.2	50/12.3	67/6.2	82/3.5	90/2.4	99/1.6
	0.37		29/8.7	41/4.3	58/4.3	75/8.3	101/4.2	123/2.4	136/1.6	149/1.1
	0.55		44/5.8	62/2.9	88/2.8	112/5.6	152/2.8	185/1.6		
	0.75 2)		61/4.2	85/2.1	121/2.1	154/4.1	208/2.1			
	1.10 3)		90/2.9	126/1.4	178/1.4					
	1.50 3)		123/2.1	172/1.1						
[rpm]	[kW]	n_2 [rpm]	129 rpm	90 rpm	60 rpm	43 rpm	30 rpm	23 rpm	19 rpm	15 rpm
900	0.25		15/14.6	21/7.4	30/7.3	39/14.1	52/7.3	64/4.1	72/2.8	80/1.8
	0.37		23/9.6	32/5.0	45/5.0	58/9.6	79/4.9	97/2.7	109/1.9	120/1.2
	0.55		34/6.7	48/3.4	69/3.3	88/6.4	119/3.3	146/1.8	164/1.3	
	0.75		47/4.8	66/2.4	95/2.4	121/4.7	164/2.4			
	1.10		70/3.3	98/1.7	140/1.6	179/3.2				
	1.50 2)		96/2.4	134/1.2						
	2.20 3)		141/1.6							
[rpm]	[kW]	n_2 [rpm]	200 rpm	140 rpm	93 rpm	67 rpm	47 rpm	35 rpm	29 rpm	23 rpm
1,400	0.25		9.6/17.8	13/9.5	19/9.4	25/17.4	33/9.2	41/5.1	47/3.6	53/2.3
	0.37		14/12.5	20/6.3	29/6.3	38/11.8	51/6.2	62/3.5	72/2.4	80/1.5
	0.55		22/8.1	31/4.2	45/4.1	57/8.0	77/4.1	94/2.3	109/1.6	122/1.0
	0.75		30/6.0	42/3.1	62/3.0	79/5.8	106/3.0	129/1.7	151/1.2	
	1.10		45/4.1	63/2.1	91/2.1	117/4.0	157/2.1			
	1.50		62/3.0	86/1.5	125/1.5					
	2.20 2)		91/2.0	128/1.0						
[rpm]	[kW]	n_2 [rpm]	400 rpm	280 rpm	187 rpm	133 rpm	93 rpm	70 rpm	58 rpm	47 rpm
2,800	0.37		7/15.1	10/8.1	14/8.3	18/15.2	25/8.3	32/4.5	37/3.2	43/2.0
	0.55		11/10.0	15/5.5	22/5.4	28/10.1	39/5.5	49/3.0	57/2.1	65/1.4
	0.75		15/7.5	21/4.0	30/4.0	39/7.4	55/3.9	68/2.2	80/1.5	91/1.0
	1.10		22/5.2	32/2.7	45/2.7	58/5.1	82/2.7	102/1.5	119/1.1	
	1.50		31/3.7	44/2.0	63/2.0	81/3.6	112/2.0			
	2.20		46/2.5	65/1.4	93/1.3	119/2.5				
	3.00		63/1.8	89/1.0						
	4.00 3)		84/1.4							

Motor		Series 79 Output torque [Nm] / Strength factor								
		Gear ratio	7.33:1	10:1	15:1	21:1	30:1	42:1	50:1	62:1
[rpm]	[kW]	n_2 [rpm]	95 rpm	70 rpm	47 rpm	33 rpm	23 rpm	17 rpm	14 rpm	11 rpm
700	0.37		31/16.4	43/8.5	59/8.5	79/4.2	104/8.3	136/4.2	153/3.0	171/1.9
	0.55		47/11.0	65/5.7	90/5.6	120/2.8	157/5.6	205/2.8	230/2.0	258/1.3
	0.75 2)		65/8.0	89/4.2	124/4.1	165/2.1	216/4.1	282/2.1	316/1.5	
	1.10 3)		97/5.4	132/2.9	183/2.8	245/1.4				
	1.50 3)		133/4.0	181/2.1	251/2.1					
	2.20 3)		196/2.7							
[rpm]	[kW]	n_2 [rpm]	123 rpm	90 rpm	60 rpm	43 rpm	30 rpm	21 rpm	18 rpm	15 rpm
900	0.55		36/12.7	48/6.6	69/6.5	94/3.3	123/6.4	166/3.3	183/2.3	214/1.5
	0.75		50/9.3	67/4.8	96/4.7	130/2.4	169/4.7	228/2.4	252/1.7	294/1.1
	1.10		75/6.3	99/3.3	142/3.2	192/1.6	250/3.2	337/1.6		
	1.50 2)		103/4.6	136/2.4	195/2.4	263/1.2				
	2.20 3)		152/3.1	200/1.6	287/1.6					
	3.00 3)		208/2.3							
[rpm]	[kW]	n_2 [rpm]	191 rpm	140 rpm	93 rpm	67 rpm	47 rpm	33 rpm	28 rpm	23 rpm
1,400	0.75		32/11.2	42/6.0	62/5.8	82/3.1	112/5.8	149/3.0	167/2.1	196/1.4
	1.10		47/7.8	63/4.1	92/4.0	122/2.1	166/4.0	221/2.1	248/1.4	291/0.9
	1.50		65/5.7	88/2.9	127/2.9	168/1.5	228/2.9			
	2.20 2)		96/3.8	130/2.0	188/2.0	248/1.0				
	3.00 2)		133/2.8	178/1.5	258/1.5					
	4.00		178/2.1	238/1.1						
[rpm]	[kW]	n_2 [rpm]	382 rpm	280 rpm	187 rpm	133 rpm	93 rpm	67 rpm	56 rpm	45 rpm
2,800	1.10		23/9.6	31/5.2	46/5.0	63/2.7	63/5.0	114/2.7	134/1.9	153/1.2
	1.50		32/7.1	44/3.7	64/3.7	87/2.0	117/3.6	158/2.0	185/1.4	212/0.9
	2.20		48/4.8	64/2.5	95/2.5	129/1.3	173/2.5			
	3.00		66/3.5	90/1.8	131/1.8	177/1.0				
	4.00 3)		88/2.6	120/1.4	175/1.4					
	5.00 3)		122/1.9	167/1.0						

The values hold for gears which are well run in and properly heated for operation, see page 31.

2) High output design. 3) Assembly through coupling.

J Tables of effect

Motor		Series 99 Output torque [Nm] / Strength factor							
		Gear ratio	7:1	10:1	15:1	20:1	30:1	40:1	50:1	60:1
[rpm]	[kW]	n_2 [rpm]	100 rpm	70 rpm	47 rpm	35 rpm	23 rpm	18 rpm	14 rpm	12 rpm
700	0.75		61/8.8	86/7.5	124/3.7	159/4.1	218/7.3	271/4.1	319/2.6	359/1.8
	1.10		91/5.9	128/5.0	183/5.0	236/2.8	323/5.0	401/2.8	472/1.8	531/1.2
	1.50		125/4.4	175/3.7	251/3.7	323/2.1	442/3.6	549/2.0	647/1.3	724/0.9
	2.20 2)		185/3.0	258/2.5	370/2.5	474/1.4	652/2.5			
	3.00 2)		253/2.2	353/1.9	506/1.8	647/1.0	891/1.8			
	4.00 2)		338/1.6	472/1.4						
	5.50 2)		465/1.2	650/1.0						
[rpm]	[kW]	n_2 [rpm]	129 rpm	90 rpm	60 rpm	45 rpm	30 rpm	23 rpm	18 rpm	15 rpm
900	0.75		47/10.0	66/8.4	97/8.3	124/4.7	171/8.3	213/4.7	250/3.0	282/2.1
	1.10		70/6.8	98/5.7	143/5.7	185/3.2	253/5.6	315/3.2	371/2.1	418/1.4
	1.50		97/4.9	134/4.2	197/4.2	253/2.4	348/4.1	432/2.3	509/1.5	574/1.0
	2.20		143/3.4	198/2.9	290/2.8	374/1.6	513/2.8	637/1.6		
	3.00		196/2.4	271/2.1	398/2.1	511/1.2	697/2.1	866/1.2		
	4.00 2)		262/1.8	362/1.6	531/1.5					
	5.50 2)		361/1.3	500/1.2						
	7.50 2)		494/1.0							
[rpm]	[kW]	n_2 [rpm]	200 rpm	140 rpm	93 rpm	70 rpm	47 rpm	35 rpm	28 rpm	23 rpm
1,400	1.10		45/8.0	63/6.9	92/6.8	119/3.8	165/6.8	212/3.9	247/2.5	284/1.7
	1.50		62/5.8	87/5.0	127/5.0	164/2.8	228/4.9	292/2.8	340/1.8	390/1.3
	2.20		91/4.0	126/3.5	188/3.4	242/1.9	337/3.4	431/1.9	502/1.2	
	3.00		125/2.9	177/2.5	257/2.5	331/1.4	461/2.5	591/1.4		
	4.00		168/2.2	238/1.9	345/1.9	443/1.1				
	5.50 2)		232/1.6	328/1.4	475/1.3					
	7.50 2)		317/1.2	448/1.0						
[rpm]	[kW]	n_2 [rpm]	400 rpm	280 rpm	187 rpm	140 rpm	93 rpm	70 rpm	56 rpm	47 rpm
2,800	1.50		30/7.1	42/6.2	63/6.0	81/3.5	112/6.0	149/3.5	174/2.2	201/1.6
	2.20		45/4.8	63/4.2	93/4.1	121/2.4	166/4.1	222/2.4	259/1.5	298/1.1
	3.00		62/3.5	87/3.0	127/3.0	166/1.7	228/3.0	305/1.7	356/1.1	
	4.00		83/2.6	116/2.3	171/2.3	223/1.3	306/2.3	409/1.3		
	5.50		115/1.9	161/1.7	236/1.7	308/0.9	423/1.6			
	7.50		158/1.4	220/1.2	323/1.2					
	11.00 2)		232/1.0							

The values hold for gears which are well run in and properly heated for operation, see page 31.

2) High output design. 3) Assembly through coupling.

Strength Factor

The strength factor is an expression of the durability of the gearing in relation to breakage. The breakage limit is three times the strength factor.

By normal use, include the service factor on page 11 and choose a strength factor > 1.

In case of special demands on safety or other special conditions, please contact our specialists for further information.

K Mounting instructions

This instruction applies for BJ worm gearboxes size 42, 52, 61, 79 and 99. All according to our catalogues.
Mounting and taking into service shall be done by trained and/or skilled personnel.

Field of application

Unless otherwise agreed, the gearboxes may be used in ambient temperature between 0 and +40 ° C and in normal atmosphere and normal atmosperic pressure.
If the gearbox is used in dusty or dirty environment be sure that ingress in glands is avoided.
The same goes for outdoor use or wet environment.

Before mounting

- Examine the gearbox for damages and leakages.
- Ensure that the unit corresponds to the ordered.
- Some units are deliberately delivered without oil. If this is the case it is clearly marked. If the unit is delivered without oil, be sure to fill it with the right type and amount according to this catalogue (can be found on page 10 or at www.bj-gear.com).
- If possible, make a test run of the unit before mounting. (see page 31).
- If the unit is delivered with motor, electromagnetic brake or coupling, encoder etc., be sure to follow the operating instructions for these.
- Be sure that it is not possible to start the unit unintentionally during mounting.
- Before mounting the unit in the application, be sure to secure parts that could move unintentionally and make harm or damage. Please observe that not all units are self-locking.
- Be sure that the mounting planes are stable, clean and plane.

Mounting of motor:

- Be sure that there is mounting grease between the motor shaft and the hollow input shaft of the gearbox.
- The input shaft should be pre-greased at delivery.
- Do not use hammering or excessive force during mounting of the motor. It can damage the bearings in the unit.
- If the motor and unit are connected by a coupling, be sure that the alignment is within the specifications of the coupling.

Mounting of other accessories (brake, encoder etc.):

- Be sure to follow the operating instructions for these.
- Especially for brakes and clutches, be sure that no dirt, dust, oil or grease is present on or between any friction elements.

Mounting:

- Use only the holes or threads of the unit that is intended for mounting.
- Do not make changes to the units unless approved by BJ-Gear.
- If torque arm is used, be sure not to over-constrain.
- Be sure to mount it in such a way that sufficient cooling is provided. If the gearbox or motor is provided with cooling fan, be sure that sufficient air flow is accessible.
- Do not use hammering or excessive force during mounting.
- Be sure that the drive shaft and the driven shaft are properly aligned.
- If the gearbox is supplied with air vent screw, be sure to position the gearbox in such a way that it is placed above the oil level. If the gearbox is delivered with a transport screw, be sure to interchange the transport screw with the air vent screw. Do not use a motor with higher power than allowed according to catalogue or documentation.
- Do not load the gearbox with higher torque or forces than allowed according to catalogue or documentation.
- Mount the gearbox in such a way that vibrations are minimised or eliminated.
- Secure screws so they do not get loose.
- Be sure to place feather keys where needed.

L Operation and maintenance instructions

Starting up:
Before starting up the gearbox be sure that:

- The motor is properly secured to the unit.
- The gearbox is properly secured to the application.
- Test the functionally of electric brakes, couplings or safety devices, if such are installed.
- Brakes and couplings are released.
- Tools, wiring, clothes etc. are removed from moving part.
- When starting up, do it as gently as possible.
- Observe closely that the intended function occur, and if not, shut down the system and search for errors in a safe way.
- If unexpected noise or vibrations occur shut down the system and search for errors in a safe way.
- When the gearbox has reached its operation temperature, examine for leakages.

Running-in:
The lifetime of the gear will improve if is run in properly.
A proper run in is as follows:

- The first running time should not exceed half an hour. Run the gearbox for about 15 minutes in each direction with no load.
- Let the gearbox cool down.
- Start it up and load it with app. half the torque. Gradually increase to full torque. Do this in both directions.
- It is not always possible to do it this way but some running in is better than none.

Oil change

The gearboxes are life-lubricated. However, gearboxes exposed to extremely heavy load should be subject to oil change approx. every 5 years. Gearboxes running in very warm environments may require oil change every year. See page 10 for lubricants and quantities.

M Examples of standard worm gearboxes

ATEX

Aluminium worm gearbox



Cast iron worm gearbox



Chromatized worm gearbox



Examples of standard stainless steel worm gearboxes

Stainless worm gearbox series 42



Stainless worm gearbox series 99



Stainless worm gearbox series 42 with stainless motor



/// Contact us now on phone +45 87 40 80 80 to hear more about the possibilities

Examples of adapted worm gearboxes

Worm gearbox with special output shaft and flange



Worm gearbox with special motorflange, output flange and brake



Worm gearbox with special worm shaft for brake and encoder. Special output flange



Examples of adapted worm gearboxes

Worm gearbox with special motor flange, output shaft and reduced backlash



Worm gearbox with special output shaft and flange



Worm gearbox with special output shaft and flange



Examples of high precision worm gearboxes

High precision worm gearbox dual lead



High precision worm gearbox with special motor flange



Double acting precision gearbox with built-in friction coupling



Examples of special worm gearboxes

Worm gearbox with special motorflange, output flange and brake



Stainless worm gearbox with special motor flange for DC motor and stainless motor shield



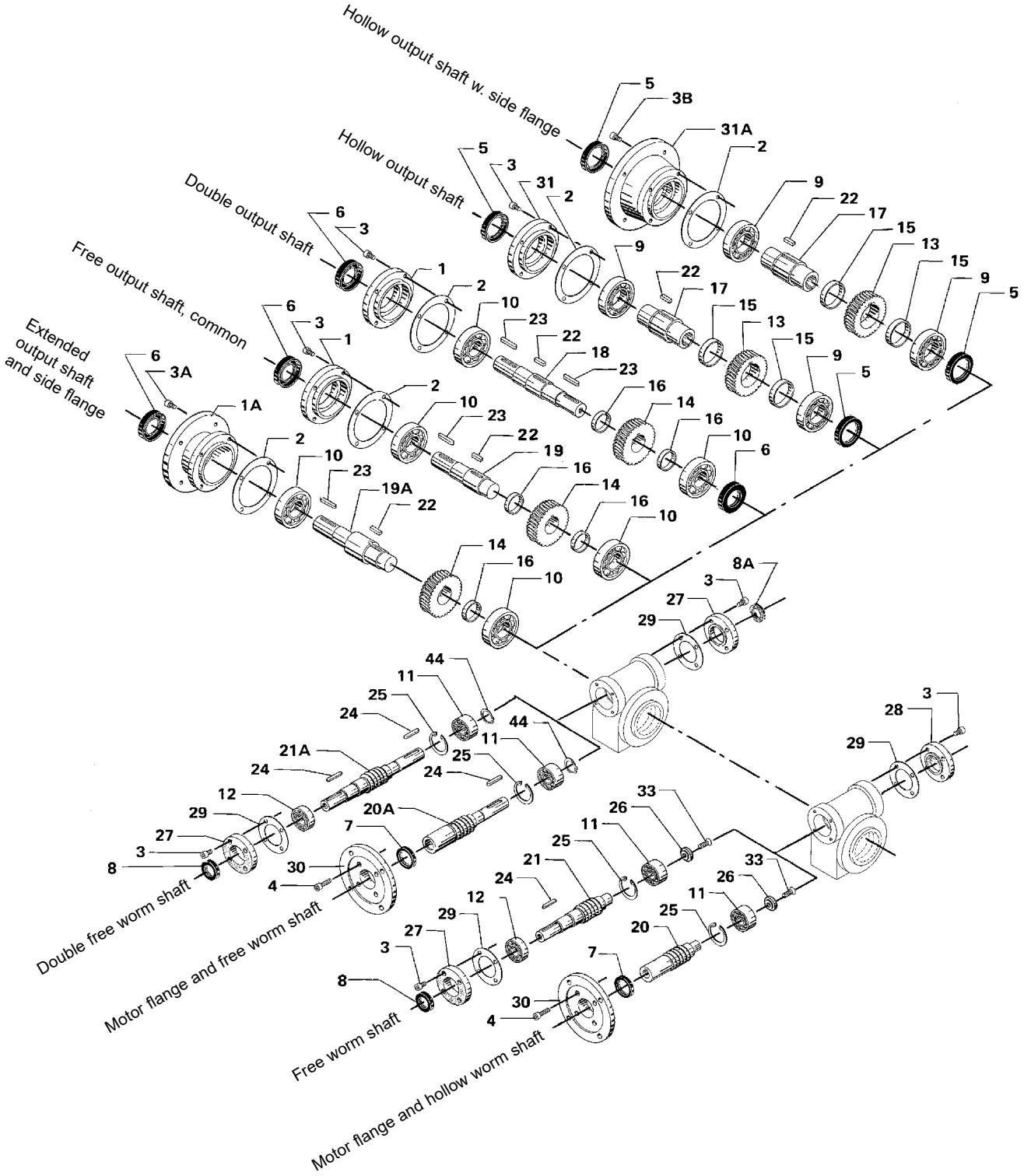
Highly efficient worm gearbox with DC motor and clutch



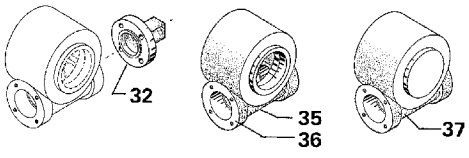
N Spare Parts List

1	Bearing cover
1A	Side flange
2	Gasket
3	Screw
3A	Bolt
3B	Screw
4	Screw
5	Oil seal
6	Oil seal
7	Oil seal
8	Oil seal
8A	Oil seal
9	Ball bearing or tapered roller bearings
10	Ball bearing or tapered roller bearings
11	Ball bearing or tapered roller bearings
12	Ball bearing or tapered roller bearings
13	Worm wheel
14	Worm wheel
15	Spacer ring
16	Spacer ring
17	Hollow output shaft
18	Double output shaft
19	Single output shaft
19A	Single output shaft, extended
20	Hollow worm shaft
20A	Hollow worm with free shaft
21	Free worm shaft
21A	Double free worm shaft
22	Parallel key B
23	Parallel key A
24	Parallel key A
25	Locking ring
26	Washer
27	End cover, open
28	End cover, closed
29	Gasket
30	Motor flange
31	Bearing cover
31A	Side flange
32	Stud cover
33	Screw
35	Gearbox, type 1, for hollow output shaft
36	Gearbox, type 1, for double free output shaft
37	Gearbox, type 1, for free output shaft
38	Gearbox, type 2, with support ,worm at top, for hollow output shaft
39	Gearbox, type 2, with support, worm at top, for double free output shaft
40	Gearbox, type 2, with support, worm at top, for free output shaft
41	Gearbox, type 3, with support and worm at bottom, for hollow output shaft
42	Gearbox, type 3, with support and worm at bottom, for double free output shaft
43	Gearbox, type 3, with support and worm at bottom, for free output shaft
44	Locking ring

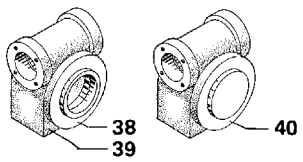
M Spare parts drawing



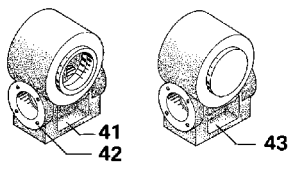
Housing type 1



Housing type 2



Housing type 3



P Range of BJ-Gear products

Worm gearboxes



Helical and helical bevel gearboxes



Right angle gearboxes



Planetary gearboxes



Linear products



Stainless steel products



Adapted products



Special products



Bearing units



Motors



Encoders, brakes and clutches



Couplings



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