

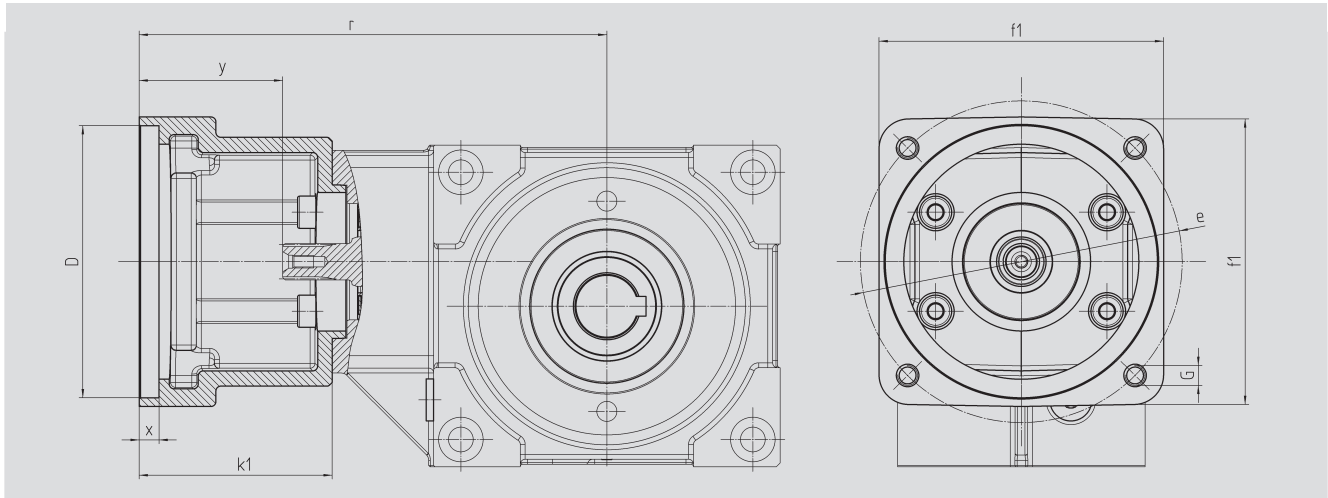


	Page
BG Bevel-Gear Units with <math><6^\circ</math> Backlash	
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Motor Flange



Size 50 mm

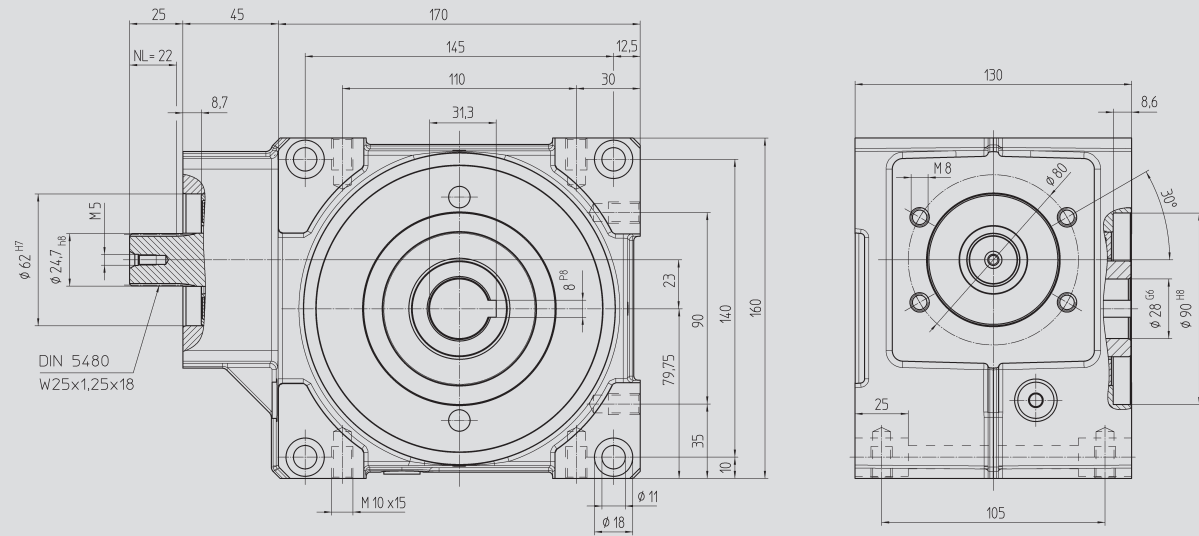
Order Code	D ^{G7}	k ₁	r	x	y	f ₁	e	G	 kg
65 59 301	95.0	62	173	6	42	100	115	M8	1.0
65 59 302	50.0	62	173	6	42	100	70, 95, 115	M4,M6,M8	1.0
65 59 303	80.0	62	173	6	42	100	100	M6	1.0
65 59 304	95.0	78	189	6	58	115	130	M8	1.0
65 59 305	95.0	72	183	5	52	105	115	M8	1.0
65 59 306	60.0	74	184	7	54	100	75, 90, 115	M5,M5,M8	1.0
65 59 307	70.0	70	181	7	50	100	90, 115	M6,M8	1.0
65 59 401	95.0	73	184	7	53	100	115	M8	1.0
65 59 402	110.0	78	189	7	58	115	130	M8	1.0
65 59 403	95.0	73	184	7	53	115	130	M8	1.0
65 59 404	110.0	73	184	7	53	115	130	M8	1.0
65 59 405	95.0	78	189	7	58	140	165	M10	1.0
65 59 406	110.0	78	189	7	58	140	165	M10	1.0
65 59 407	130.0	78	189	7	58	140	165	M10	1.0
65 59 409	130.0	98	209	7	78	140	165	M10	1.5
65 59 410	110.0	74	185	7	54	120	145	M8	1.0
65 59 411	110.0	84	195	7	64	120	145	M8	1.5
65 59 412	114.3	105	216	7	85	180	200	M12	3.5
65 59 413	114.3	139	150	7	119	180	200	M12	6.0
65 59 414	114.3	91	202	7	71	180	200	M12	2.5
65 59 415	110.0	89	200	7	69	120	145	M8	1.5

The order should contain gear box 51 23 0xx / 51 33 0xx and flange 65 59 3xx or 4xx.



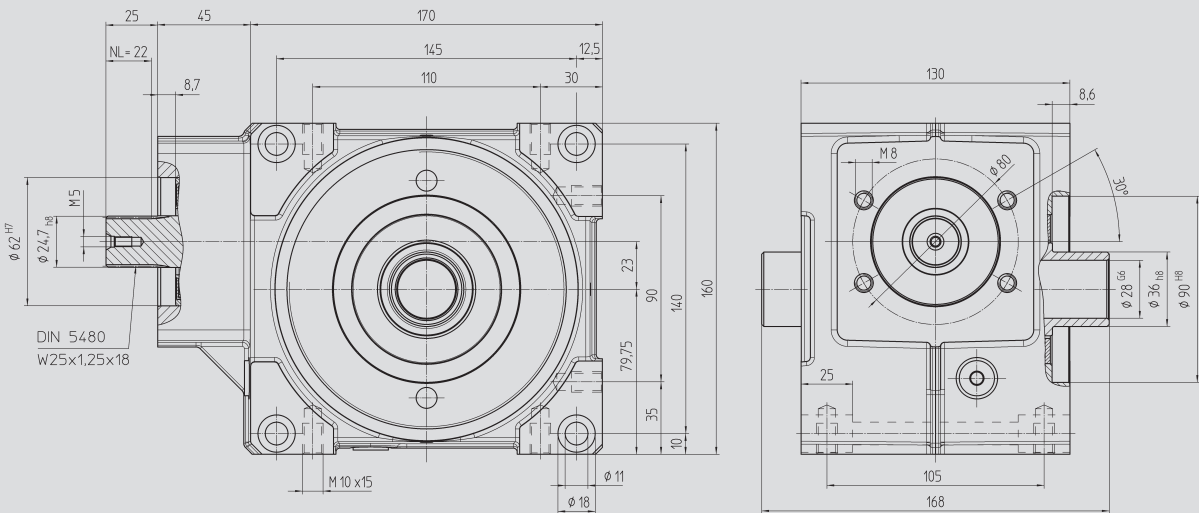
Size BG 63

Fig. 1 Output shaft with key connection



Size BG 63

Fig. 2 Output shaft for clamp connection 80 84 036

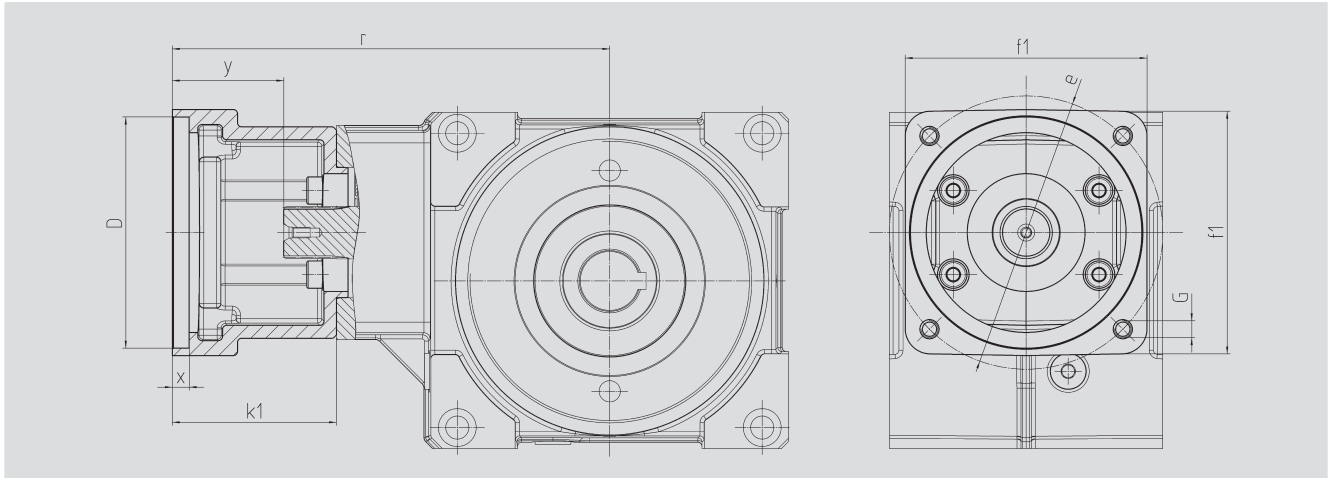


Order Code	Order Code	Ratio i	J_{red} kg	$J_{red} 10^{-4}$ kg m ²
Fig. 1	Fig. 2			
51 24 005	51 34 005	4.75	10.2	1.870
51 24 007	51 34 007	6.75	10.2	1.180
51 24 009	51 34 009	9.25	10.2	0.683

With food grade oil, order code 51 24 1xx / 51 34 1xx. With ATEX version with food grade oil, order code 51 24 2xx / 51 34 2xx.



Motor Flange



Size 63 mm

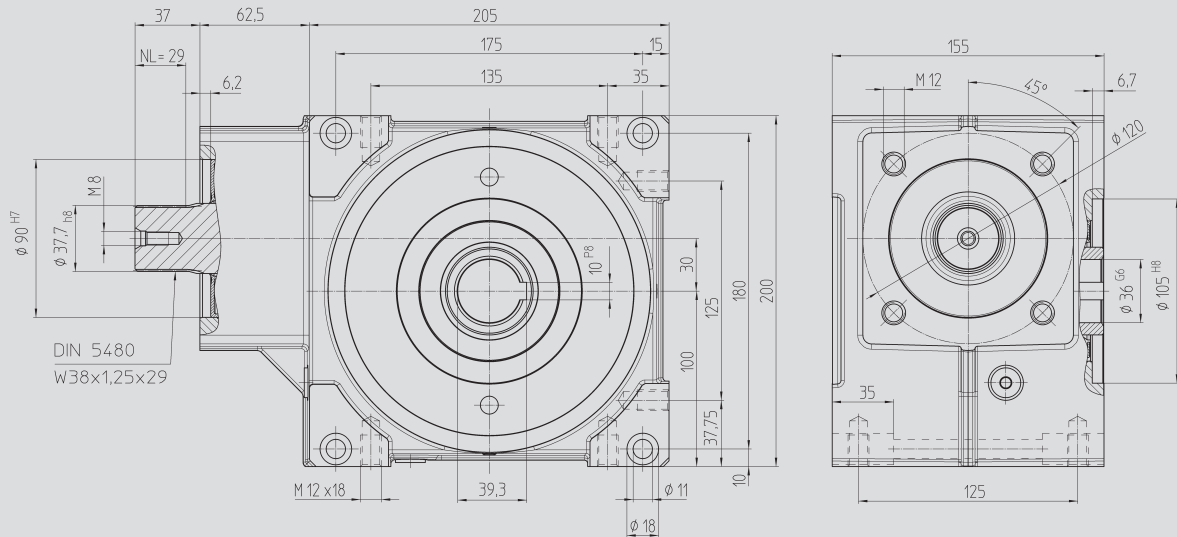
Order Code	D ^{G7}	k ₁	r	x	y	f ₁	e	G	kg
65 59 301	95.0	62	192	6	37	100	115	M8	1.0
65 59 302	50.0	62	192	6	37	100	70, 95, 115	M4,M6,M8	1.0
65 59 303	80.0	62	192	6	37	100	100	M6	1.0
65 59 304	95.0	78	208	6	53	115	130	M8	1.0
65 59 305	95.0	72	202	5	47	105	115	M8	1.0
65 59 306	60.0	74	204	7	49	100	75, 90, 115	M5,M5,M8	1.0
65 59 307	70.0	70	200	7	45	100	90, 115	M6,M8	1.0
65 59 401	95.0	73	203	7	48	100	115	M8	1.0
65 59 402	110.0	78	208	7	53	115	130	M8	1.0
65 59 403	95.0	73	203	7	48	115	130	M8	1.0
65 59 404	110.0	73	203	7	48	115	130	M8	1.0
65 59 405	95.0	78	208	7	53	140	165	M10	1.0
65 59 406	110.0	78	208	7	53	140	165	M10	1.0
65 59 407	130.0	78	208	7	53	140	165	M10	1.0
65 59 409	130.0	98	228	7	73	140	165	M10	1.5
65 59 410	110.0	74	204	7	49	120	145	M8	1.0
65 59 411	110.0	84	214	7	59	120	145	M8	1.5
65 59 412	114.3	105	235	7	80	180	200	M12	3.5
65 59 413	114.3	139	269	7	114	180	200	M12	6.0
65 59 414	114.3	91	221	7	66	180	200	M12	2.5
65 59 415	110.0	89	219	7	64	120	145	M8	1.5

The order should contain gear box 51 24 0xx / 51 34 0xx and flange 65 59 3xx or 4xx.



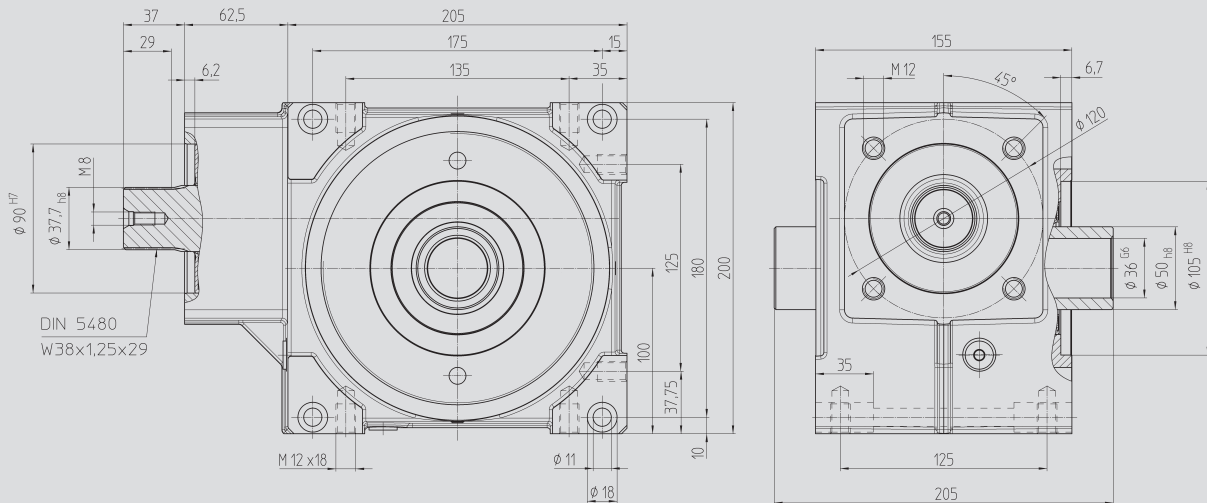
Size BG 80

Fig. 1 Output shaft with key connection



Size BG 80

Fig. 2 Output shaft for clamp connection 80 85 050



Order Code

Fig. 1

Fig. 2

Ratio i



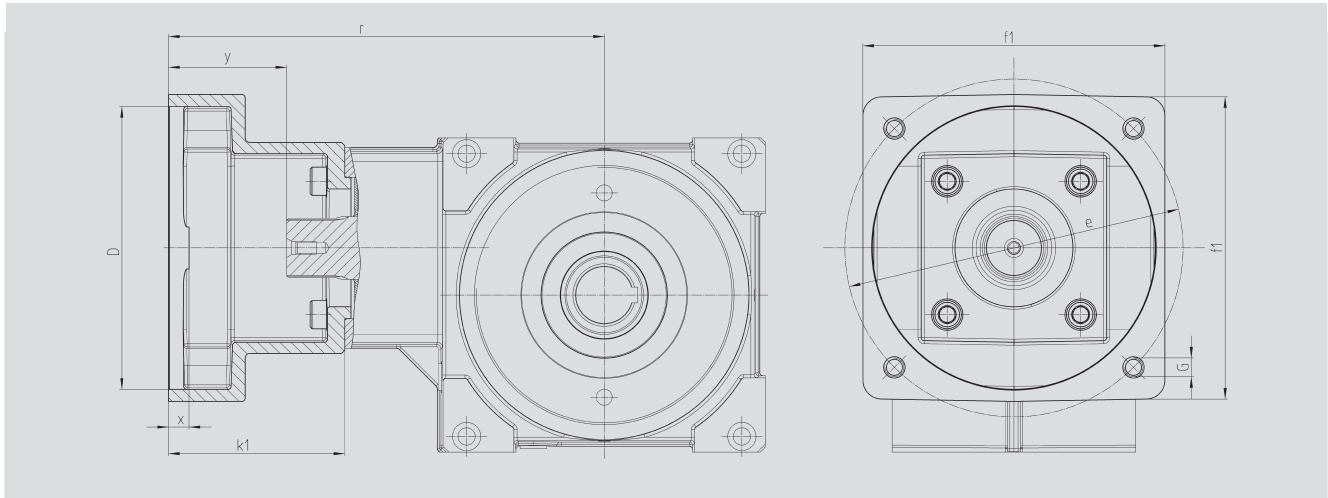
**J_{red} 10⁻⁴
kg m²**

51 25 005	51 35 005	4.75	23.0	7.800
51 25 007	51 35 007	6.75	23.0	4.620
51 25 009	51 35 009	9.25	23.0	3.270

With food grade oil, order code 51 25 1xx / 51 35 1xx. With ATEX version with food grade oil, order code 51 25 2xx / 51 35 2xx.



Motor Flange



Size 80 mm

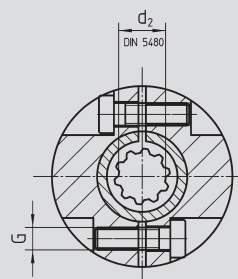
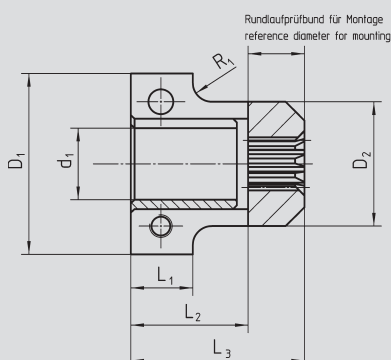
Order Code	D ^{G7}	k ₁	r	x	y	f ₁	e	G	kg
65 59 501	110.0	92.0	257.0	8.0	55.0	140	165	M10	2.0
65 59 502	130.0	92.0	257.0	8.0	55.0	140	165	M10	3.0
65 59 503	180.0	122.0	287.0	8.0	85.0	192	215	M12	3.5
65 59 504	180.0	127.0	292.0	8.0	90.0	192	215	M12	3.5
65 59 505	180.0	112.0	277.0	10.0	75.0	192	215	M12	3.0
65 59 506	130.0	112.0	277.0	10.0	75.0	192	215	M12	3.0
65 59 507	130.0	112.0	277.0	10.0	75.0	140	165	M10	4.5
65 59 508	110.0	90.0	255.0	8.0	53.0	140	145	M8	2.0
65 59 509	110.0	108.5	273.5	8.0	71.5	140	145	M8	2.5
65 59 510	114.3	129.5	294.5	8.0	92.5	180	200	M12	5.5
65 59 511	114.3	163.5	328.5	8.0	126.5	180	200	M12	8.0
65 59 512	114.3	105.5	270.5	8.0	68.5	180	200	M12	4.0
65 59 513	110.0	113.5	278.5	8.0	76.5	140	145	M8	2.5

The order should contain gear box 51 25 0xx / 51 35 0xx and flange 65 59 5xx.



Special Couplings for Motor/Gear Units, rigid model, nitrided, preassembled for motor shafts without key

Bore on gear unit side
low-clearance tooth-hub
profile corresponding to
DIN 5480 for push-fitting



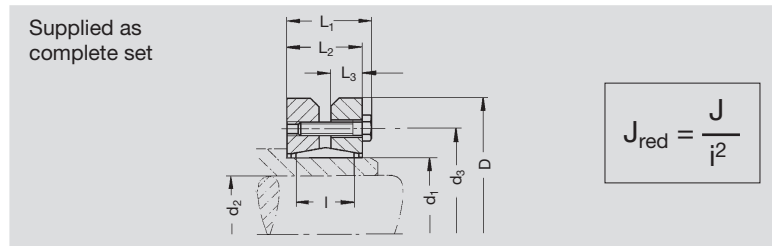
Order Code

Coupling	d ₁	d ₂	D ₁	D ₂	L ₁	L ₃	R ₁	G	L ₂	J _{red} 10 ⁻⁴ kg m ²	kg
65 51 008	8	15x1.25x10	36	23	14.0	46.0	5	M5	31.2	0.236	0.2
65 51 009	9	15x1.25x10	36	23	14.0	46.0	5	M5	31.2	0.246	0.2
65 51 010	10	15x1.25x10	36	23	14.0	46.0	5	M5	31.2	0.244	0.2
65 51 011	11	15x1.25x10	36	23	14.0	46.0	5	M5	31.2	0.243	0.2
65 51 014	14	15x1.25x10	36	23	14.0	46.0	5	M5	31.2	0.234	0.2
65 51 016	16	15x1.25x10	36	23	14.0	46.0	5	M5	31.2	0.225	0.2
65 53 019	19	15x1.25x10	48	33	16.5	46.0	5	M6	31.2	0.704	0.3
65 53 020	20	15x1.25x10	48	33	16.5	46.0	5	M6	31.2	0.704	0.3
65 53 022	22	15x1.25x10	48	33	16.5	46.0	5	M6	31.2	0.704	0.3
65 53 024	24	15x1.25x10	48	33	16.5	46.0	5	M6	31.2	0.647	0.2
65 53 025	25	15x1.25x10	64	51	18.0	55.5	5	M8	41.5	5.946	1.1
65 53 028	28	15x1.25x10	64	51	18.0	55.5	5	M8	41.5	5.871	1.1
65 53 032	32	15x1.25x10	64	51	18.0	55.5	5	M8	41.5	4.158	0.8
65 53 035	35	15x1.25x10	78	51	18.0	55.5	5	M8	41.5	5.605	1.0
65 53 038	38	15x1.25x10	78	51	18.0	55.5	5	M8	41.5	5.432	0.9
65 54 009	9	25x1.25x18	49	35	17.0	68.0	5	M6	43.5	2.306	0.5
65 54 010	10	25x1.25x18	49	35	17.0	68.0	5	M6	43.5	2.300	0.5
65 54 011	11	25x1.25x18	49	35	17.0	68.0	5	M6	43.5	2.381	0.5
65 54 014	14	25x1.25x18	49	35	17.0	68.0	5	M6	43.5	1.161	0.5
65 54 015	15	25x1.25x18	49	35	17.0	68.0	5	M6	43.5	2.328	0.5
65 54 016	16	25x1.25x18	49	35	17.0	68.0	5	M6	43.5	1.161	0.5
65 54 019	19	25x1.25x18	49	35	17.0	68.0	5	M6	43.5	1.112	0.4
65 54 020	20	25x1.25x18	49	35	17.0	68.0	5	M6	43.5	2.268	0.5
65 54 022	22	25x1.25x18	49	35	17.0	68.0	5	M6	43.5	2.179	0.4
65 54 024	24	25x1.25x18	49	35	17.0	68.0	5	M6	43.5	1.007	0.4
65 54 025	25	25x1.25x18	64	51	18.0	68.0	5	M8	43.5	8.165	1.2
65 54 028	28	25x1.25x18	64	51	18.0	68.0	5	M8	43.5	8.061	1.2
65 54 032	32	25x1.25x18	64	51	18.0	68.0	5	M8	43.5	7.751	1.2
65 54 035	35	25x1.25x18	78	51	18.0	68.0	5	M8	43.5	7.690	1.1
65 54 038	38	25x1.25x18	78	51	18.0	68.0	5	M8	43.5	7.348	1.1
65 54 042	42	25x1.25x18	78	51	18.0	65.5	5	M8	43.5	6.595	1.1
65 55 014	14	38x1.25x29	64	51	18.0	72.5	5	M8	41.5	8.056	1.2
65 55 016	16	38x1.25x29	64	51	18.0	72.5	5	M8	41.5	8.029	1.2
65 55 019	19	38x1.25x29	64	51	18.0	72.5	5	M8	41.5	7.978	1.2
65 55 020	20	38x1.25x29	64	51	18.0	72.5	5	M8	41.5	7.945	1.2
65 55 022	22	38x1.25x29	64	51	18.0	72.5	5	M8	41.5	7.911	1.2
65 55 024	24	38x1.25x29	64	51	18.0	72.5	5	M8	41.5	7.860	1.2
65 55 025	25	38x1.25x29	64	51	18.0	72.5	5	M8	41.5	7.818	1.1
65 55 028	28	38x1.25x29	64	51	18.0	72.5	5	M8	41.5	8.105	1.3
65 55 032	32	38x1.25x29	64	51	18.0	72.5	5	M8	41.5	7.863	1.2
65 55 035	35	38x1.25x29	78	51	18.0	72.5	5	M8	41.5	7.610	1.1
65 55 038	38	38x1.25x29	78	51	18.0	72.5	5	M8	41.5	7.284	1.0
65 55 042	42	38x1.25x29	78	51	18.0	70.5	5	M8	41.5	6.547	1.0

Couplings on page GA-10 can be used as well.



Shrink-Disk Clamping Sets for Output Drive Shafts of gear series 51 3. ...



Order Code	BG	Nm	d ₁	d ₂	d ₃	D	L ₁	L ₂	L ₃	l	G	J 10 ⁻⁴ kg m ²	 kg
80 83 030	50	400	30	25	44	60	25.0	21.50	9	16	7 x M5	1.756	0.3
80 84 036	63	540	36	28	52	72	27.5	23.50	10	18	5 x M6	4.029	0.4
80 85 050	80	1180	50	36	70	90	31.5	27.50	12	22.5	9 x M6	11.322	0.8





The values in the tables are based upon wear or maximum flank load at 12,000 hours full load and on servo-operation. With continuous full-load operation it may be necessary to consider temperature limits! (Please ask us, if in doubt.)

T_{2max} = static torque to avoid tooth fracture, P_1 = driving power in kW, T_2 = output torque in Nm.

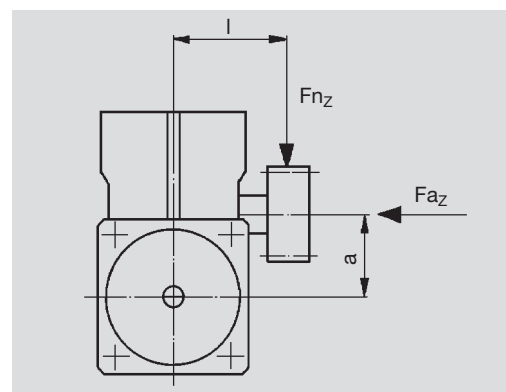
BG Bevel-Gear Units



Order Code	BG	i	T_{2max}	Input Speed n_1 (rpm)												η at 1500					
				500		750		1000		1500		3000		4000			5000				
				P_1 (kW)	T_2 (Nm)	P_1 (kW)	T_2 (Nm)	P_1 (kW)	T_2 (Nm)	P_1 (kW)	T_2 (Nm)	P_1 (kW)	T_2 (Nm)	P_1 (kW)	T_2 (Nm)		P_1 (kW)	T_2 (Nm)			
51 23 _05 51 33 _05	50	4.75	145	1.14	97	1.71	97	2.28	97	3.41	97	6.82	97	9.10	97	11.37	97	0.94			
51 23 _07 51 33 _07				6.75	125	0.57	68	0.86	68	1.15	68	1.72	68	3.44	68	4.59	68		5.73	68	0.92
51 23 _09 51 33 _09				9.25	100	0.35	56	0.53	56	0.70	56	1.06	56	2.11	56	2.82	56		3.52	56	0.90
51 24 _05 51 34 _05	63	4.75	305	2.34	200	3.52	200	4.69	200	7.04	200	14.07	200	18.76	200	23.45	200	0.94			
51 24 _07 51 34 _07				6.75	280	1.22	145	1.83	145	2.45	145	3.67	145	7.33	145	9.78	145		12.22	145	0.92
51 24 _09 51 34 _09				9.25	245	0.81	128	1.21	128	1.61	128	2.42	128	4.83	128	6.44	128		8.05	128	0.90
51 25 _05 51 35 _05	80	4.75	750	5.86	500	8.79	500	11.73	500	17.59	500	35.18	500	46.90	500	58.63	500	0.94			
51 25 _07 51 35 _07				6.75	660	2.99	355	4.49	355	5.99	355	8.98	355	17.96	355	23.94	355		29.93	355	0.92
51 25 _09 51 35 _09				9.25	510	1.73	275	2.59	275	3.46	275	5.19	275	10.38	275	13.84	275		17.29	275	0.90

Additional loads on output drive

The data given are reference values. You should consider the values arising from the choice of the tooth system. It is assumed that the point of action of the force is the center of the shaft. In cases where additional axial forces occur, over and above high transverse forces, please ask for advice.



Size	BG	50		63		80	
Dimension center of casing to center of pinion l (mm)		90	140	110	160	125	175
Max. additional load							
radial F_{rZ}	[N]	4000	2570	6000	4120	7500	5360
axial F_{aZ}	[N]	1800	1800	2800	2800	3500	3500



Short Description

ATLANTA BG servo bevel-gear units have been specially developed for use with new generation three-phase AC motors and DC motors. Like all other items in this catalog they are usually available from stock or within very short time.

Our servo bevel-gear units feature:

- gear ratios which are similar, sometimes identical with those of the series 98, 58, and 59
- low-clearance gearing (backlash < 6")
- light-alloy housing for optimal heat dissipation
- robust tapered-roller bearing of the output hollow shaft for high additional forces
- low moments of inertia for high dynamics

Sizes and gear ratios correspond with those of the existing servo worm-gear unit series. The bevel-gears are manufactured and installed with optimal tooth bearing. The use of bevel-gears end-lapped in sets guarantees smooth running in both directions of rotation. The housing is machined on all sides and provided with many fixing holes and threaded bores and can thus be installed in any mounting position desired.



The drive or the connection to the driving motor, is realized via a special clutch. The internal gearing of this clutch in combination with the barrelled profile of the driving shaft of our bevel-gear units assures the flow of forces without play.

For the output drive we offer quite a number of output shafts with straight or helical tooth systems and with different numbers of teeth. Besides pinion shafts it is possible to combine and use a large variety of other numbers of teeth from our gear-wheel program with matching special output shafts. It goes without saying that analogous to our gear units the complete range of output shafts is not only available for key fitting but also for shrink-disk fitting.

Our wide range of standard elements for servo drives is supplemented by racks. The ex-stock program comprises many different types from rather simple, soft racks through hardened versions with straight tooth system or optionally with helical tooth system for smooth running, to racks ground on all sides to very narrow tolerances.

For emergency stops, the maximum transmittable torque of the gear unit (see page GE-10) and shrink disk (see page GH-1) has to be checked. The output keyway has to be calculated separately.



Mounting Instructions

Bevel-Gear Unit

Five machined mounting surfaces with sufficiently dimensioned fixing holes and threaded bores are provided for tension-free installation in any mounting position. In order to make full use of the additional dynamic forces (see p. GE-10) we recommend to choose the largest available contact surfaces, i.e. on the side of the cover or on the opposite side. Lubrication conditions are almost the same in all mounting positions.

Coupling

The coupling is supplied pre-assembled. Before fixing it on the motor shaft carefully clean all contact surfaces and protect them with a thin oil film. An important dimension for mounting is "X1" (compare pages GI – 5 to GI – 9)

We recommend to proceed as follows:

- Clean the contact surfaces and protect them with a thin oil film.
- Position the coupling on the motor shaft at the distance "X1" (see pages GI – 5 to GI – 9) using a depth gauge for determining this dimension.
- Slightly tighten the screws alternately and check the coupling for true running
- Observe the tightening torque indicated in the operation and maintenance instructions bearing in mind that the width of the gap on both sides of the clutch must remain the same.
- It is advisable to make another final concentricity check at the reference collar.

A mounting guide can be found on page GI-5 to GI-9

Motor

Insert the motor with coupling mounted into the gear centering piece and bolt it to the gearbox.

Output Pinion Shaft

Unless the output pinion shaft comes already fully assembled, we recommend to proceed as follows:
Clean pinion shaft and hollow shaft extension and then oil them. For the special output drive shaft we recommend tolerance h6 (DIN ISO286). the material must have a minimum yield point of 385 N/mm². A recalculation of the strength is necessary.

Output Drive Shaft for Shrink-Disk Connection

Slide shrink disk onto the hollow shaft extension of the gear unit (please do not tighten the screws beforehand!). Insert the output shaft from the desired side into the hollow shaft fully up to the stop. Make the transverse pressure connection by evenly tightening the clamping screws. Tighten the screws one after the other (not crosswise) in several passes to the torque indicated in the operation and maintenance instructions.





Output Drive Shaft for Key Connection

The retaining ring, the disc and the screw supplied with the output drive shaft serve for locking the output shaft in axial direction. For this purpose insert the retaining ring in the applicable recess of the hollow shaft and slide the output drive shaft from the desired side into the hollow shaft up to the stop. Disc and screw are screwed to the output shaft from the other side of the gear unit. The retaining ring must be clamped between disc and pinion shaft.

Maintenance

Lubricant Change

ATLANTA servo bevel-gear units are filled with synthetic polyglycol oil.

Under the following conditions this means lifetime lubrication:

The layout of the gear unit is made strictly in conformance with the guidelines specified in the ATLANTA catalogue and the gear unit is operated exclusively within the permissible characteristic values and limits. The operator checks the gear regularly (every 4 weeks) for oil leakage. The surface temperature does not exceed max. 80° C. Experience has shown that this temperature is not reached with servo-operation (intermittent operation).

Size	Oil Quantity
BG 50	0.3 l
BG 63	0.5 l
BG 80	1.2 l

We recommend the following synthetic gear lubricant:

Klübersynth GH 6 - 220

Order Code: 65 90 010 (1 liter)

Alternative:

SHELL Tivela S 220, BP Enersyn SG-XP 220, ARAL Degol GS 220

Degree to Protection

Degree of protection: IP65/67 according to ISO 20653
(Corrosion has to be verified separately).

