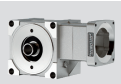


<6 arcmin

Key Connection
Size **BG 50** **5 Mounting Surfaces**

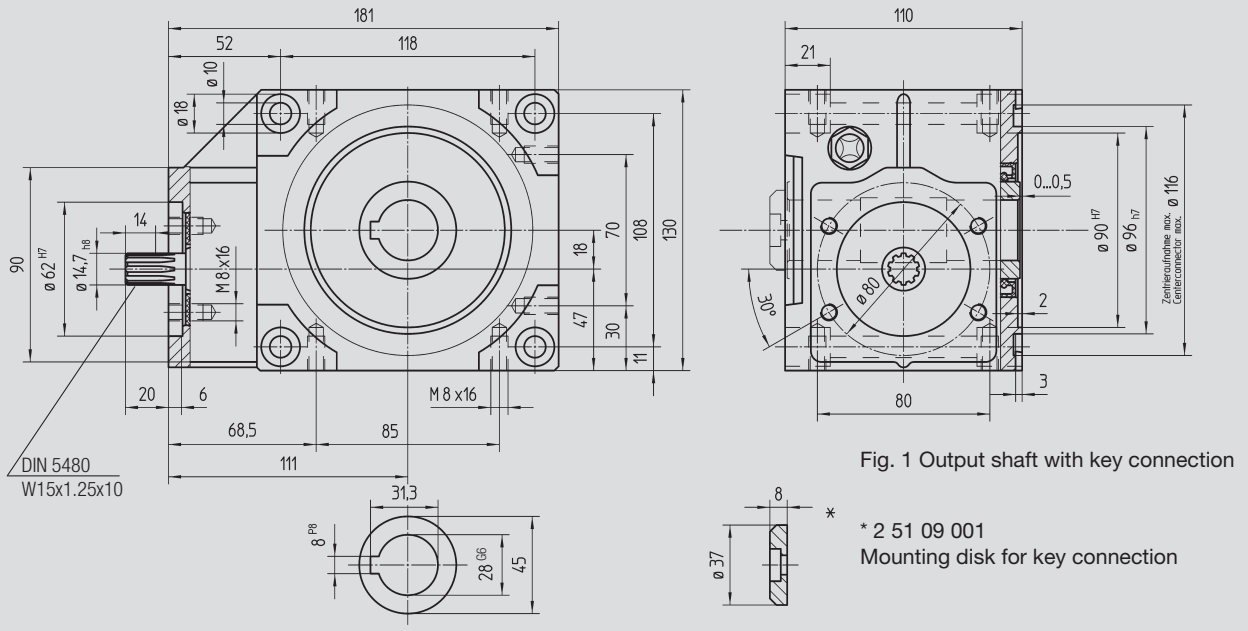


Fig. 1 Output shaft with key connection

* 2 51 09 001
Mounting disk for key connection

Shrink-Disk Connection
Size **BG 50** **5 Mounting Surfaces**

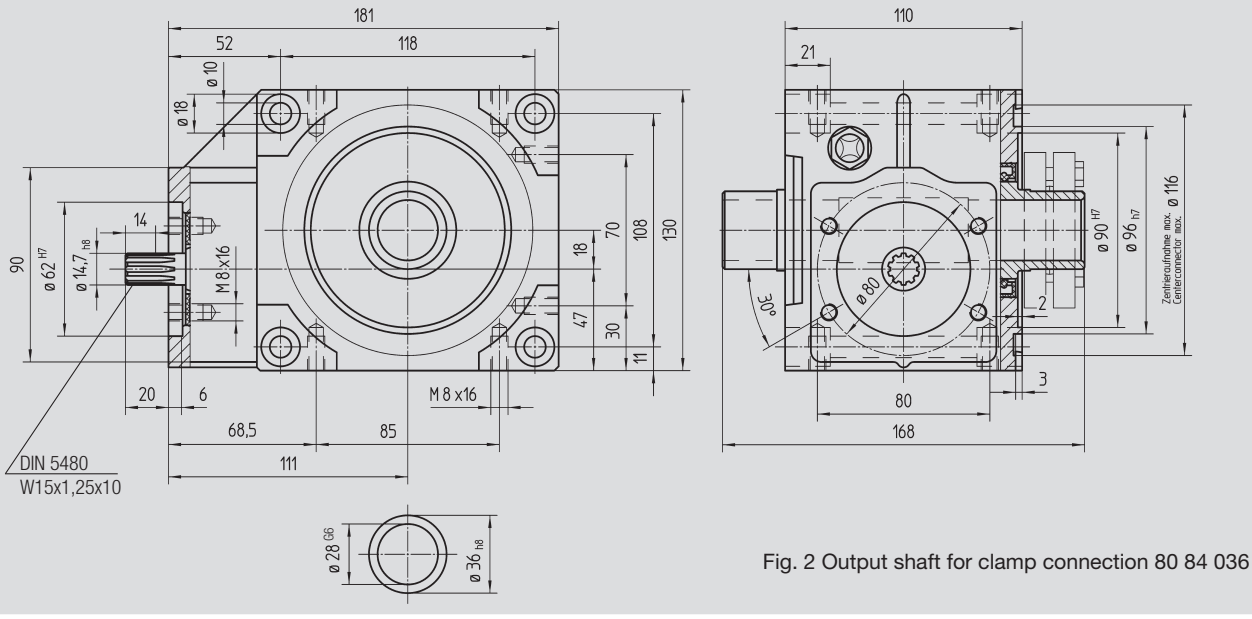
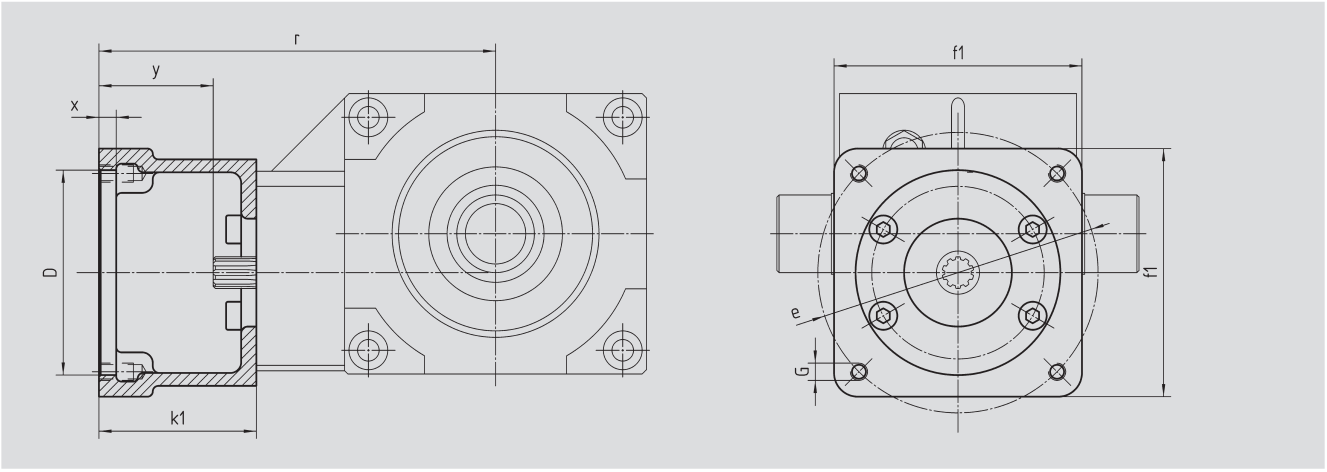


Fig. 2 Output shaft for clamp connection 80 84 036

Order Code Key Connection	Shrink-Disk Connection	Ratio i	kg	J_{red} 10^{-4} kg m²
51 03 005	51 13 005	4.75	6.4	0.820
51 03 007	51 13 007	6.75	6.4	0.551
51 03 009	51 13 009	9.25	6.4	0.406

* Necessary for mounting of ATLANTA Pinion 20 2x 4xx or Output drive shaft 65 04 xxx.

Motor Flange
Size BG 50



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	95	M6	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	M5	1.0
65 59 307	70.0	70	181	7	50	100	90	M6	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 03 0xx / 51 13 0xx and flange 65 59 3xx or 4xx.

Key Connection
Size **BG 63** **5 Mounting Surfaces**

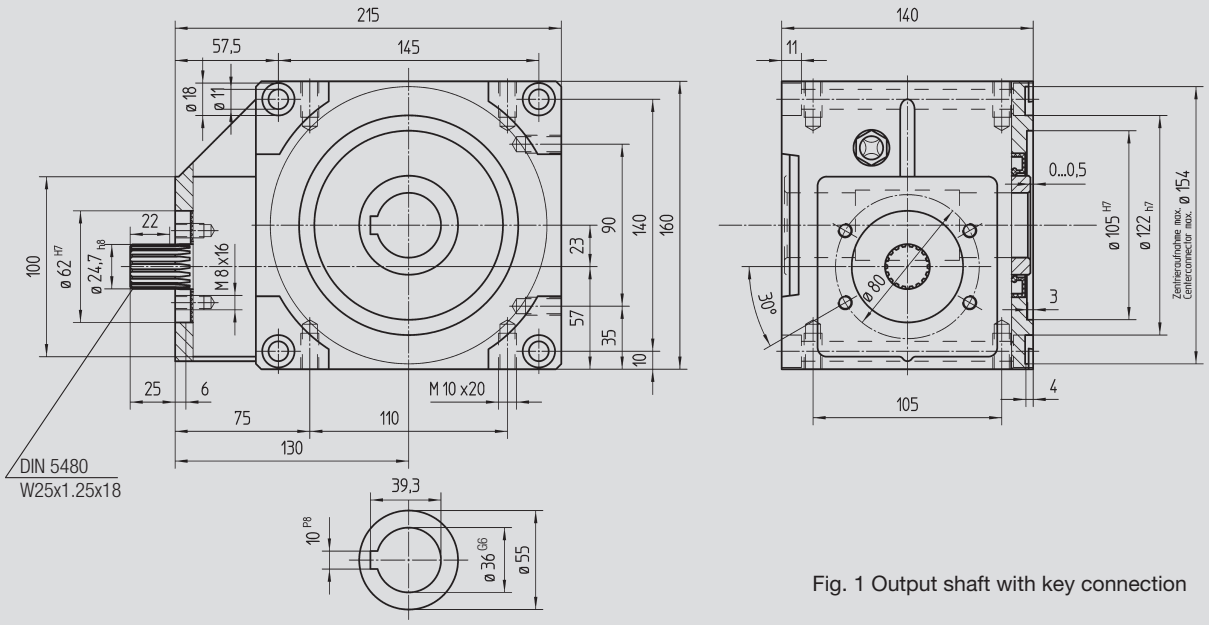


Fig. 1 Output shaft with key connection

Shrink-Disk Connection
Size **BG 63** **5 Mounting Surfaces**

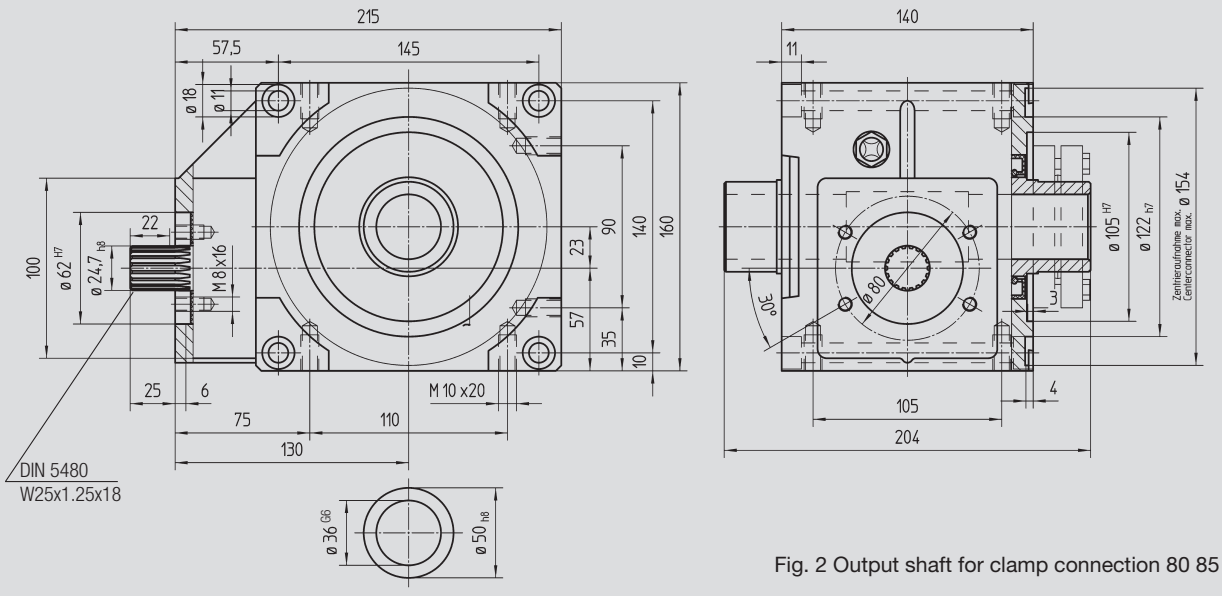
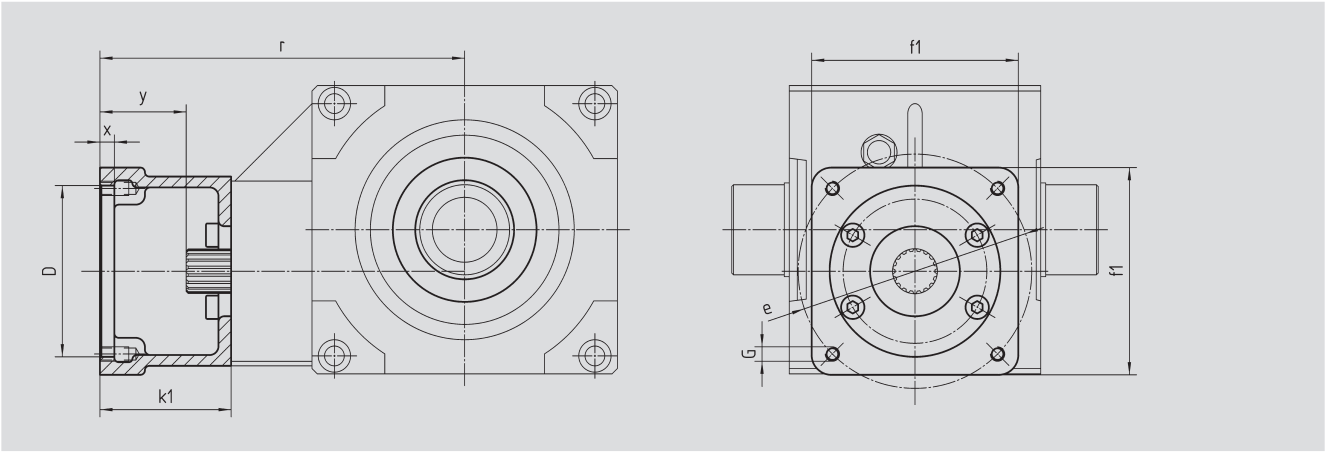


Fig. 2 Output shaft for clamp connection 80 85 050

Order Code Key Connection	Shrink-Disk Connection	Ratio i	kg	J_{red} 10^{-4} kg m²
51 04 005	51 14 005	4.75	11.8	3.234
51 04 007	51 14 007	6.75	11.8	2.148
51 04 009	51 14 009	9.25	11.7	1.595

Motor Flange
Size **BG 63**



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	95	M6	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	M5	1.0
65 59 307	70.0	70	200	7	45	100	90	M6	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 04 0xx / 51 14 0xx and flange 65 59 3xx or 4xx.

Key Connection
Size BG 80 5 Mounting Surfaces

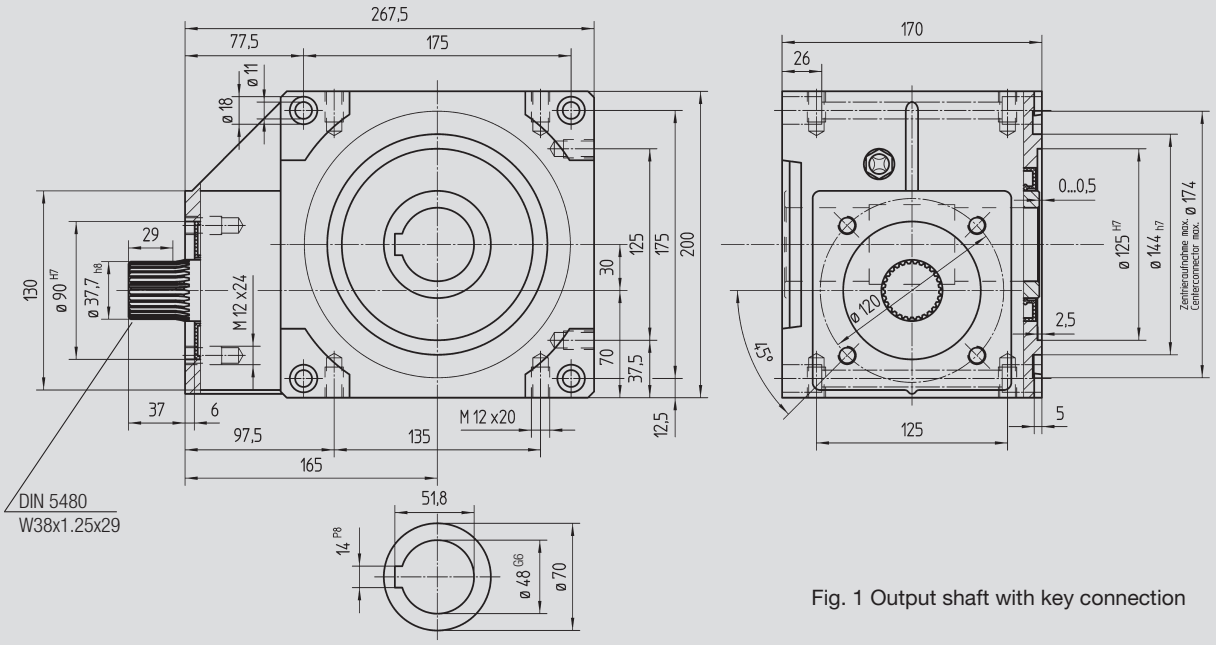


Fig. 1 Output shaft with key connection

Shrink-Disk Connection
Size BG 80 5 Mounting Surfaces

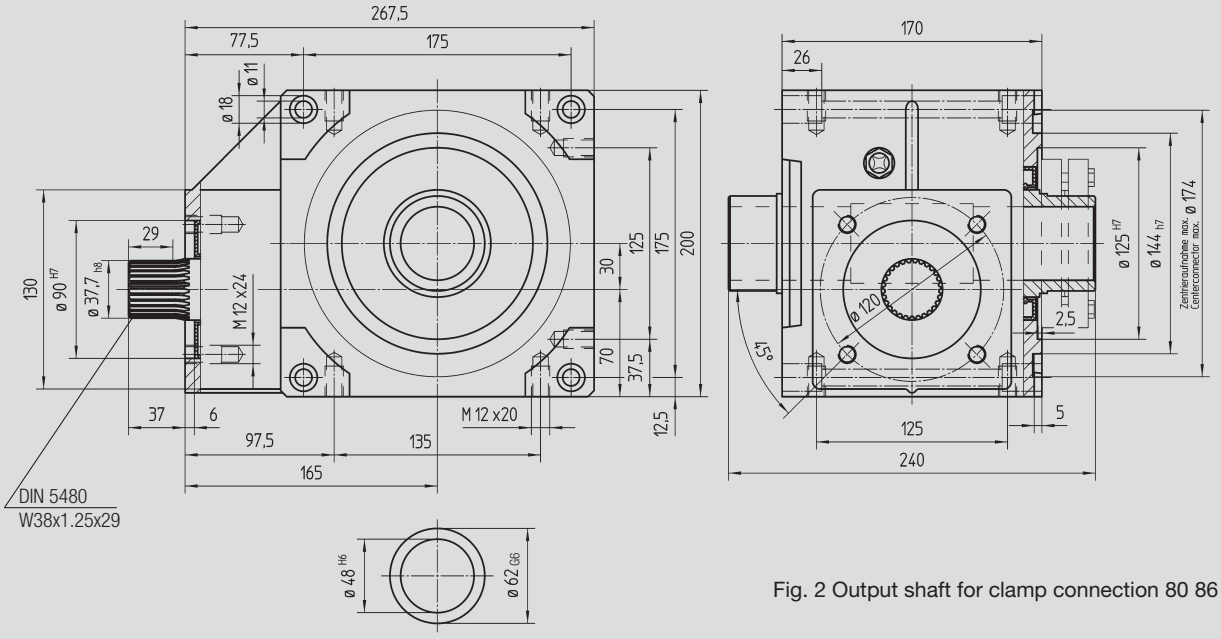
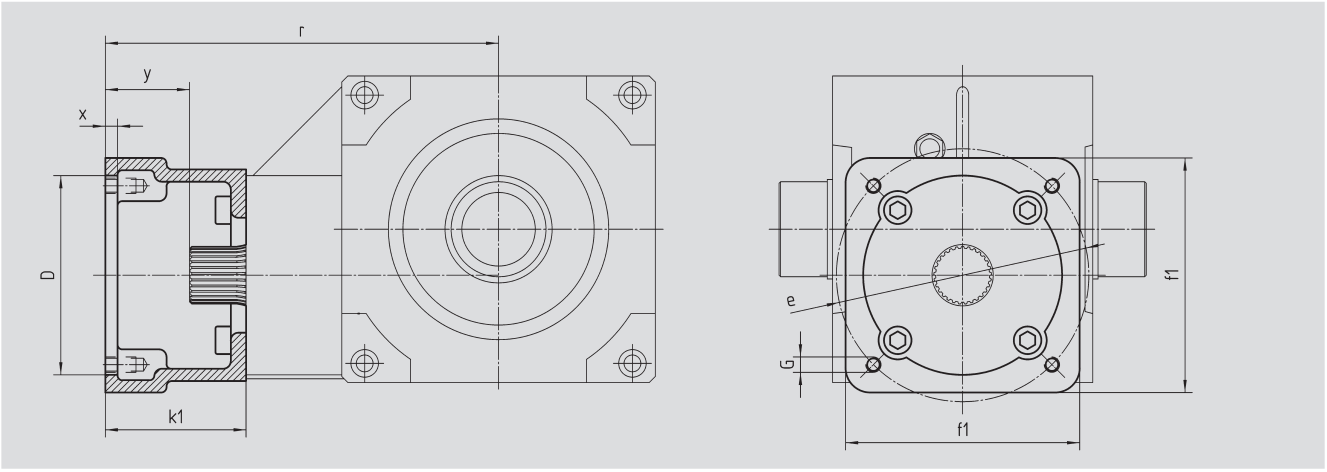


Fig. 2 Output shaft for clamp connection 80 86 062

Order Code Key Connection	Shrink-Disk Connection	Ratio i	kg	J_{red} 10^{-4} kg m^2
51 05 005	51 15 005	4.75	23.0	14.04
51 05 007	51 15 007	6.75	23.0	10.25
51 05 009	51 15 009	9.25	23.0	8.51

Motor Flange
Size **BG 80**



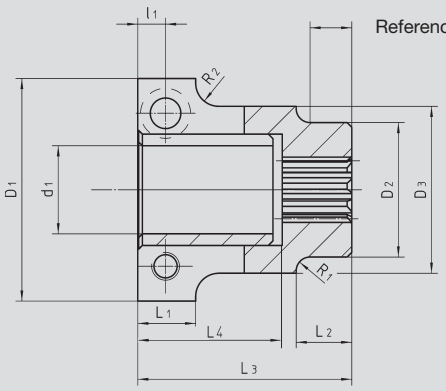
Size 80 mm

Order Code	D^{G7}	k_1	r	x	y	f_1	e	G	kg
65 59 501	110.0	92.0	257.0	7	55.0	153	165	M10	2.0
65 59 502	130.0	92.0	257.0	7	55.0	153	165	M10	3.0
65 59 503	180.0	122.0	287.0	7	85.0	192	215	M12	3.5
65 59 504	180.0	127.0	292.0	7	90.0	192	215	M12	3.5
65 59 505	180.0	112.0	277.0	7	75.0	192	215	M12	3.0
65 59 506	130.0	112.0	277.0	7	75.0	192	215	M12	3.0
65 59 507	130.0	112.0	277.0	7	75.0	155	165	M10	4.5
65 59 508	110.0	90.0	255.0	7	53.0	130	145	M8	2.0
65 59 509	110.0	108.5	273.5	7	71.5	130	145	M8	2.5
65 59 510	114.3	129.5	294.5	7	92.5	180	200	M12	5.5
65 59 511	114.3	163.5	328.5	7	126.5	180	200	M12	8.0
65 59 512	114.3	105.5	270.5	7	68.5	180	200	M12	4.0
65 59 513	110.0	113.5	278.5	7	76.5	130	145	M8	2.5

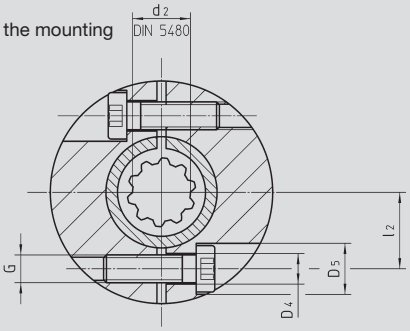
The order should contain gear box 51 05 0xx / 51 15 0xx and flange 65 59 5xx.

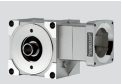
Special Couplings for Motor/Gear Units, rigid model, nitrided, preassembled for motor shafts without key

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



Reference diameter for the mounting





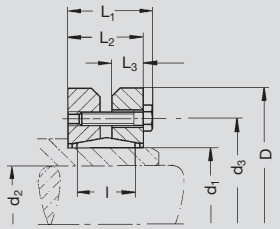
<6 arcmin

Order Code Coupling	d_1	d_2	D_1	D_2	D_3	D_4	D_5	l_1	l_2	L_1	L_2	L_3	R_1	R_2	G	L_4	J_{red} 10^{-4} kg m²	kg
65 51 008	8	15x1.25x10	36	23	-	5.5	9.0	7.5	13.0	14.0	-	46.0	5	-	M5	31.2	0.236	0.2
65 51 009	9	15x1.25x10	36	23	-	5.5	9.0	7.5	13.0	14.0	-	46.0	5	-	M5	31.2	0.246	0.2
65 51 010	10	15x1.25x10	36	23	-	5.5	9.0	7.5	13.0	14.0	-	46.0	5	-	M5	31.2	0.244	0.2
65 51 011	11	15x1.25x10	36	23	-	5.5	9.0	7.5	13.0	14.0	-	46.0	5	-	M5	31.2	0.243	0.2
65 51 014	14	15x1.25x10	36	23	-	5.5	9.0	7.5	13.0	14.0	-	46.0	5	-	M5	31.2	0.234	0.2
65 51 016	16	15x1.25x10	36	23	-	5.5	9.0	7.5	13.0	14.0	-	46.0	5	-	M5	31.2	0.225	0.2
65 53 019	19	15x1.25x10	48	33	36	6.6	11.0	8.0	16.5	16.5	9	46.0	5	3	M6	31.2	0.704	0.3
65 53 020	20	15x1.25x10	48	33	36	6.6	11.0	8.0	16.5	16.5	9	46.0	5	3	M6	31.2	0.704	0.3
65 53 022	22	15x1.25x10	48	33	36	6.6	11.0	8.0	16.5	16.5	9	46.0	5	3	M6	31.2	0.704	0.3
65 53 024	24	15x1.25x10	48	33	36	6.6	11.0	8.0	16.5	16.5	9	46.0	5	3	M6	31.2	0.647	0.2
65 53 025	25	15x1.25x10	64	51	-	9.0	15.0	9.0	29.0	18.0	-	55.5	5	-	M8	41.5	5.946	1.1
65 53 028	28	15x1.25x10	64	51	-	9.0	15.0	9.0	29.0	18.0	-	55.5	5	-	M8	41.5	5.871	1.1
65 53 032	32	15x1.25x10	64	51	-	9.0	15.0	9.0	24.0	18.0	-	55.5	5	-	M8	41.5	4.158	0.8
65 53 035	35	15x1.25x10	78	51	-	9.0	15.0	9.0	29.0	18.0	-	55.5	5	-	M8	41.5	5.605	1.0
65 53 038	38	15x1.25x10	78	51	-	9.0	15.0	9.0	29.0	18.0	-	55.5	5	-	M8	41.5	5.432	0.9
65 54 009	9	25x1.25x18	49	35	-	6.6	11.0	8.5	18.0	17.0	-	68.0	5	-	M6	43.5	2.306	0.5
65 54 010	10	25x1.25x18	49	35	-	6.6	11.0	8.5	18.0	17.0	-	68.0	5	-	M6	43.5	2.300	0.5
65 54 011	11	25x1.25x18	49	35	-	6.6	11.0	8.5	18.0	17.0	-	68.0	5	-	M6	43.5	2.381	0.5
65 54 014	14	25x1.25x18	49	35	-	6.6	11.0	8.5	18.0	17.0	-	68.0	5	-	M6	43.5	1.161	0.5
65 54 015	15	25x1.25x18	49	35	-	6.6	11.0	8.5	18.0	17.0	-	68.0	5	-	M6	43.5	2.328	0.5
65 54 016	16	25x1.25x18	49	35	-	6.6	11.0	8.5	18.0	17.0	-	68.0	5	-	M6	43.5	1.161	0.5
65 54 019	19	25x1.25x18	49	35	-	6.6	11.0	8.5	18.0	17.0	-	68.0	5	-	M6	43.5	1.112	0.4
65 54 020	20	25x1.25x18	49	35	-	6.6	11.0	8.5	18.0	17.0	-	68.0	5	-	M6	43.5	2.268	0.5
65 54 022	22	25x1.25x18	49	35	-	6.6	11.0	8.5	18.0	17.0	-	68.0	5	-	M6	43.5	2.179	0.4
65 54 024	24	25x1.25x18	49	35	-	6.6	11.0	8.5	18.0	17.0	-	68.0	5	-	M6	43.5	1.007	0.4
65 54 025	25	25x1.25x18	64	51	-	9.0	15.0	9.0	29.0	18.0	-	68.0	5	-	M8	43.5	8.165	1.2
65 54 028	28	25x1.25x18	64	51	-	9.0	15.0	9.0	29.0	18.0	-	68.0	5	-	M8	43.5	8.061	1.2
65 54 032	32	25x1.25x18	64	51	-	9.0	15.0	9.0	29.0	18.0	-	68.0	5	-	M8	43.5	7.751	1.2
65 54 035	35	25x1.25x18	78	51	-	9.0	15.0	9.0	29.0	18.0	-	68.0	5	-	M8	43.5	7.690	1.1
65 54 038	38	25x1.25x18	78	51	-	9.0	15.0	9.0	29.0	18.0	-	68.0	5	-	M8	43.5	7.348	1.1
65 54 042	42	25x1.25x18	78	51	-	9.0	15.0	9.0	29.0	18.0	-	65.5	5	-	M8	43.5	6.595	1.1
65 55 014	14	38x1.25x29	64	51	-	9.0	15.0	9.0	29.0	18.0	-	72.5	5	-	M8	41.5	8.056	1.2
65 55 016	16	38x1.25x29	64	51	-	9.0	15.0	9.0	29.0	18.0	-	72.5	5	-	M8	41.5	8.029	1.2
65 55 019	19	38x1.25x29	64	51	-	9.0	15.0	9.0	29.0	18.0	-	72.5	5	-	M8	41.5	7.978	1.2
65 55 020	20	38x1.25x29	64	51	-	9.0	15.0	9.0	29.0	18.0	-	72.5	5	-	M8	41.5	7.945	1.2
65 55 022	22	38x1.25x29	64	51	-	9.0	15.0	9.0	29.0	18.0	-	72.5	5	-	M8	41.5	7.911	1.2
65 55 024	24	38x1.25x29	64	51	-	9.0	15.0	9.0	29.0	18.0	-	72.5	5	-	M8	41.5	7.860	1.2
65 55 025	25	38x1.25x29	64	51	-	9.0	15.0	9.0	29.0	18.0	-	72.5	5	-	M8	41.5	7.818	1.1
65 55 028	28	38x1.25x29	64	51	-	9.0	15.0	9.0	29.0	18.0	-	72.5	5	-	M8	41.5	8.105	1.3
65 55 032	32	38x1.25x29	64	51	-	9.0	15.0	9.0	29.0	18.0	-	72.5	5	-	M8	41.5	7.863	1.2
65 55 035	35	38x1.25x29	78	51	-	9.0	15.0	9.0	29.0	18.0	-	72.5	5	-	M8	41.5	7.610	1.1
65 55 038	38	38x1.25x29	78	51	-	9.0	15.0	9.0	29.0	18.0	-	72.5	5	-	M8	41.5	7.284	1.0
65 55 042	42	38x1.25x29	78	51	-	9.0	15.0	9.0	29.0	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 1. ...

Supplied as complete set



$$J_{red} = \frac{J}{i^2}$$

Order Code		Nm	d_1	d_2	d_3	D	L_1	L_2	L_3	l	G	J 10^{-4} kg m²	kg
80 84 036	50	540	36	28	52	72	27.5	23.5	10	18	5 x M6	4.029	0.4
80 85 050	63	1180	50	36	70	90	31.5	27.5	12	22	9 x M6	11.322	0.8
80 86 062	80	2300	62	48	86	110	34.5	30.5	13	23	10 x M6	27.137	1.3

< 6 arcmin

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.)

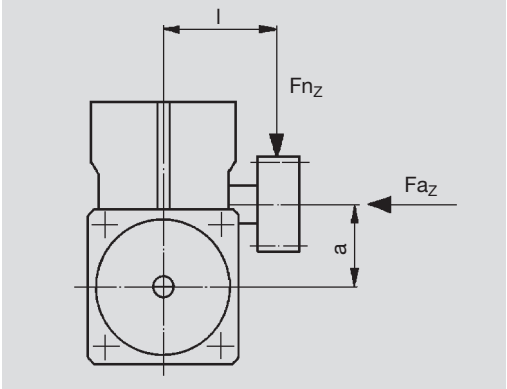
$T_{2max.}$ = static torque to avoid tooth fracture, P_1 = driving power in kW, T_2 = output torque in Nm.

BG Bevel-Gear Units

Order Code		BG	i	$T_{2\,max.}$	Input Speed n_1 in rpm 500		750		1000		1500		3000		4000		5000		η
					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)	at 1500
51 03 _05	51 13 _05	50	4.75	160	1.17	100	1.76	100	2.35	100	3.52	100	7.04	100	9.38	100	11.73	100	0.94
51 03 _07	51 13 _07		6.75	160	0.84	100	1.26	100	1.69	100	2.53	100	5.06	100	6.75	100	8.43	100	0.92
51 03 _09	51 13 _09		9.25	125	0.63	100	0.94	100	1.26	100	1.89	100	3.77	100	5.03	100	6.29	100	0.90
51 04 _05	51 14 _05	63	4.75	330	2.35	200	3.52	200	4.69	200	7.04	200	14.07	200	18.76	200	23.45	200	0.94
51 04 _07	51 14 _07		6.75	330	1.69	200	2.53	200	3.37	200	5.06	200	10.16	200	13.49	200	16.86	200	0.92
51 04 _09	51 14 _09		9.25	260	1.26	200	1.89	200	2.52	200	3.77	200	7.55	200	10.06	200	12.58	200	0.90
51 05 _05	51 15 _05	80	4.75	700	5.22	450	7.83	450	10.44	450	15.66	450	31.33	450	47.77	450	52.21	450	0.95
51 05 _07	51 15 _07		6.75	680	3.75	450	5.63	450	7.51	450	11.26	450	22.52	450	30.03	450	37.53	450	0.93
51 05 _09	51 15 _09		9.25	550	2.80	450	4.20	450	5.60	450	8.40	450	16.79	450	22.39	450	27.99	450	0.91

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)		80	140	115	170	130	190
Max. additional load							
radial Fr_z	[N]	5250	3000	9600	6500	19000	13000
axial Fa_z	[N]	2000	2000	3500	3500	6000	6000

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


<6 arcmin

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/mm^2. 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 polyclycol oil.
Under the following conditions this means lifetime lubricacaton:
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).