



	Page
B Basic Gear Units with <12' Backlash	GD2 – GD7
Center Distance 50 mm	GD2 – GD3
Center Distance 63 mm	GD6 – GD7
Couplings and Shrink-Disk	GD12
Selection and Load Tables	GD14 – GD15
Short Description	GD16
Mounting and Maintenance	GD17 – GD18
Gear Units Calculation and Selection	GF1 – GF3
Gear Units Accessories	GG1 – GG9
Mounting Guide for Servo Gears	GI5 – GI9





Center Distance

$a_o = 50 \text{ mm}$

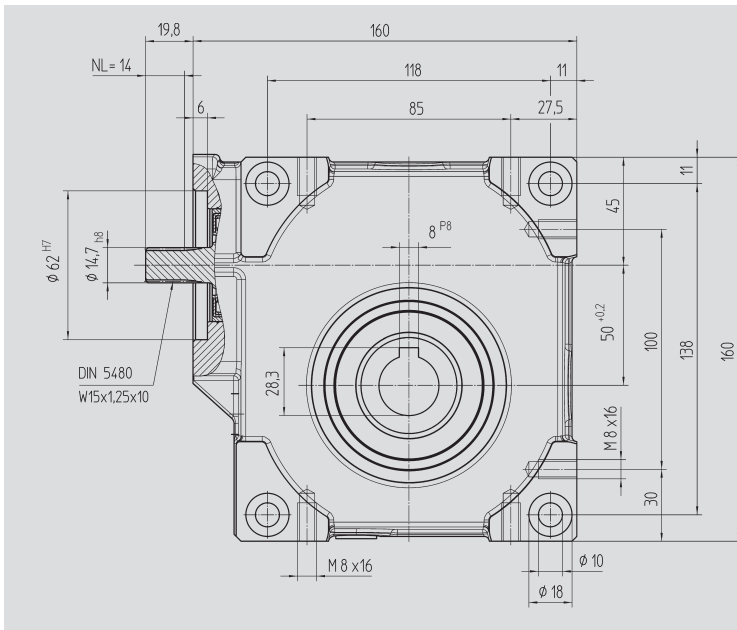


Fig. 1 Output shaft with key connection

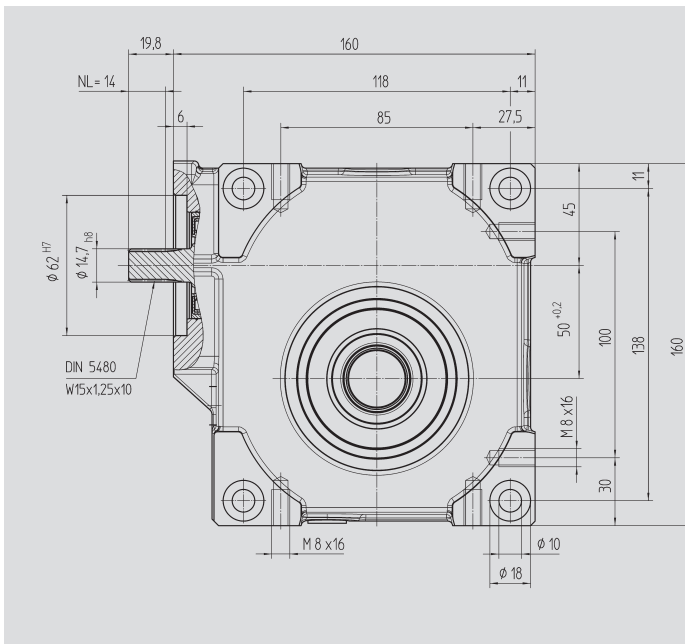
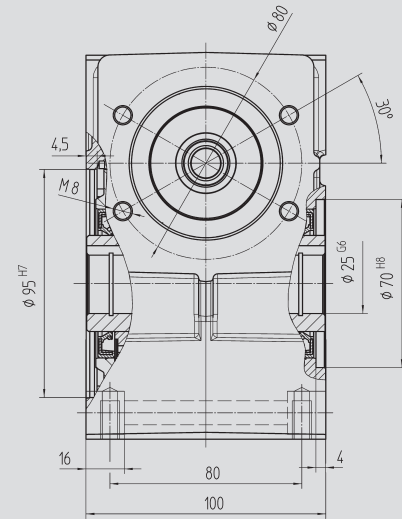
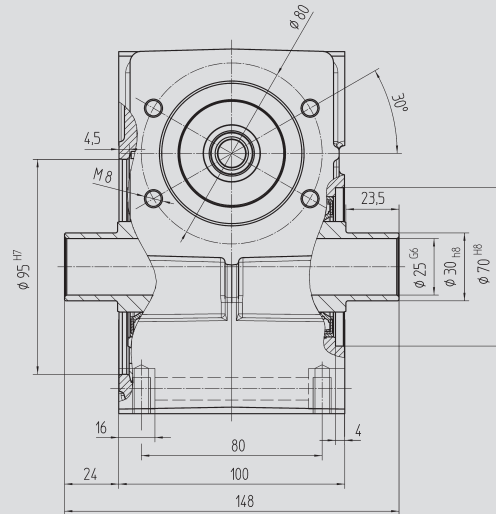



Fig. 2 Output shaft for clamp connection 80 83 030

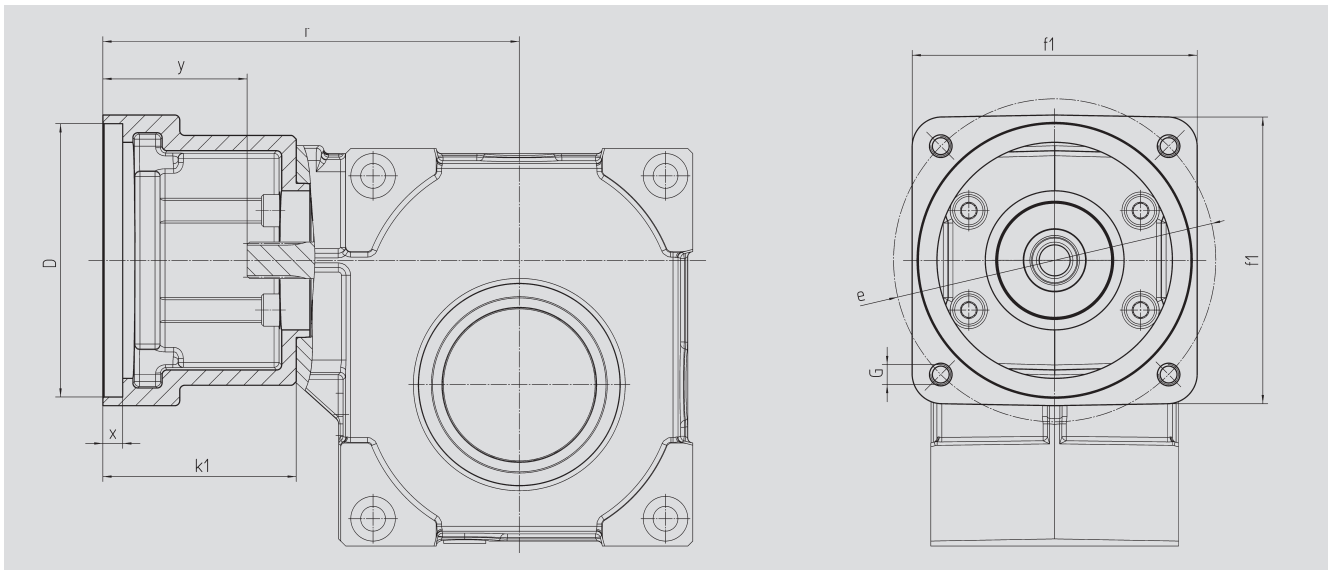


Order Code Fig. 1	Fig. 2	Ratio i		$J_{red} 10^{-4}$ kg m ²
57 03 005	57 13 005	4.75	6.5	0.8280
57 03 007	57 13 007	6.75	6.5	0.4140
57 03 009	57 13 009	9.25	6.5	0.3490
57 03 015	57 13 015	14.50	6.5	0.2800
57 03 020	57 13 020	19.50	6.5	0.1960
57 03 029	57 13 029	29.00	6.5	0.2694
57 03 039	57 13 039	39.00	6.5	0.2310
57 03 050	57 13 050	50.00	6.5	0.2140

With food grade oil, order code 57 03 1xx / 57 13 1xx



Motor Flange



Center Distance

$a_o = 50 \text{ mm}$

Order Code	D ^{G7}	k ₁	r	x	y	f ₁	e	G	kg
65 59 301	95.0	62	152	12.5	42	100	115	M8	0.60
65 59 302	50.0	62	152	10.0	42	100	70, 95, 115	M4, M6, M8	0.70
65 59 303	80.0	62	152	10.0	42	100	100	M6	0.65
65 59 304	95.0	78	168	10.0	59	115	130	M8	0.80
65 59 305	95.0	72	162	8.0	52	100	115	M8	0.75
65 59 306	60.0	74	164	21.0	54	100	75, 90, 115	M5, M5, M8	0.90
65 59 307	70.0	70	160	21.0	50	100	90, 115	M6, M8	0.80
65 59 401	95.0	73	163	8.0	53	100	115	M8	0.75
65 59 402	110.0	78	168	8.0	59	115	130	M8	0.80
65 59 403	95.0	73	163	12.0	53	115	130	M8	0.75
65 59 404	110.0	73	163	12.0	53	115	130	M8	0.70
65 59 405	95.0	78	168	11.0	59	140	165	M10	1.20
65 59 406	110.0	78	168	11.0	59	140	165	M10	1.15
65 59 407	130.0	78	168	11.0	59	140	165	M10	1.00
65 59 409	130.0	98	188	14.0	78	140	165	M10	1.10
65 59 410	110.0	74	164	8.0	54	120	145	M8	1.00
65 59 411	110.0	84	174	8.0	64	120	145	M8	1.20
65 59 412	114.3	105	195	8.0	85	180	200	M12	3.70
65 59 413	114.3	139	229	8.0	119	180	200	M12	3.35
65 59 414	114.3	91	181	8.0	71	180	200	M12	2.65
65 59 415	110.0	89	179	8.0	69	120	145	M8	1.30

The order should contain gear box 57 03 0xx / 57 13 0xx and flange 65 59 3xx or 4xx.



Center Distance

$a_o = 63 \text{ mm}$

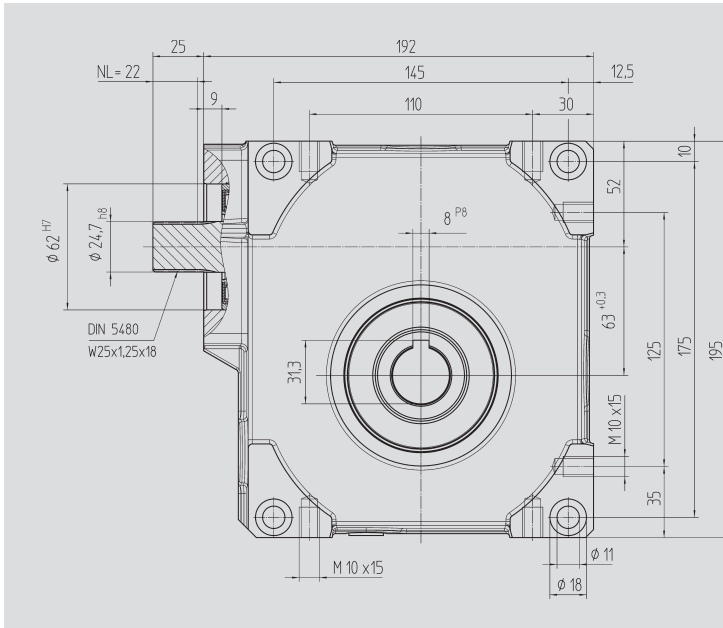


Fig. 1 Output shaft with key connection

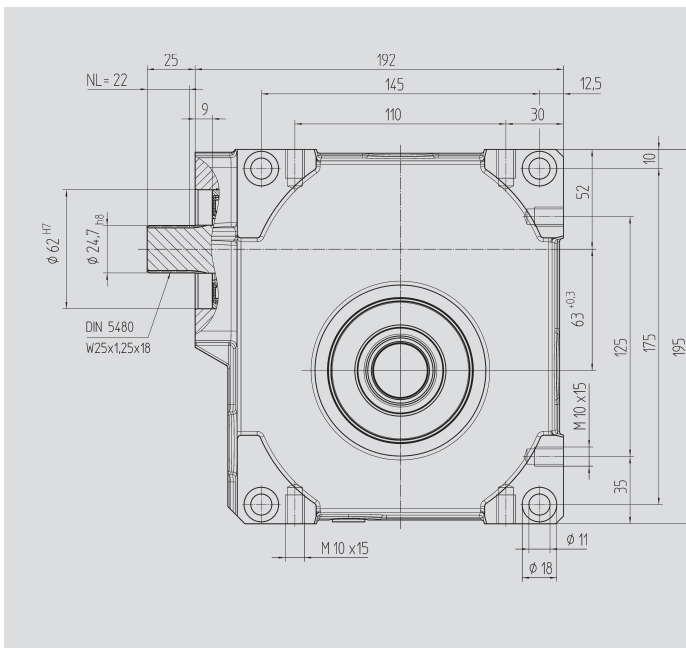
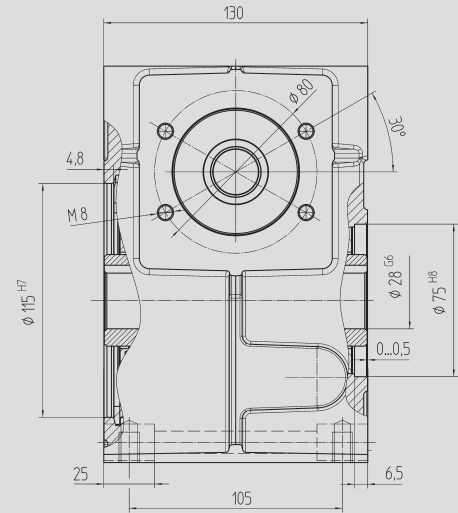
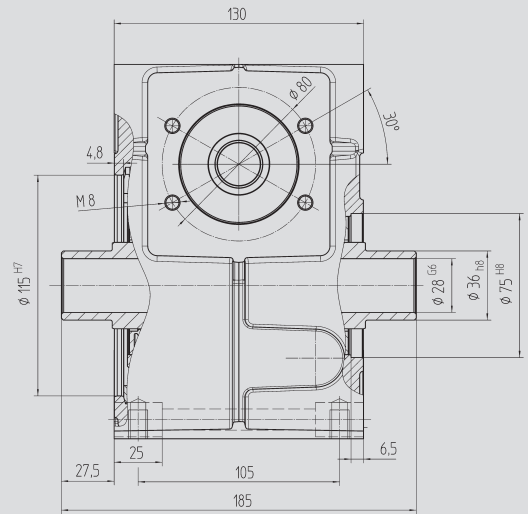


Fig. 2 Output shaft for clamp connection 80 84 036

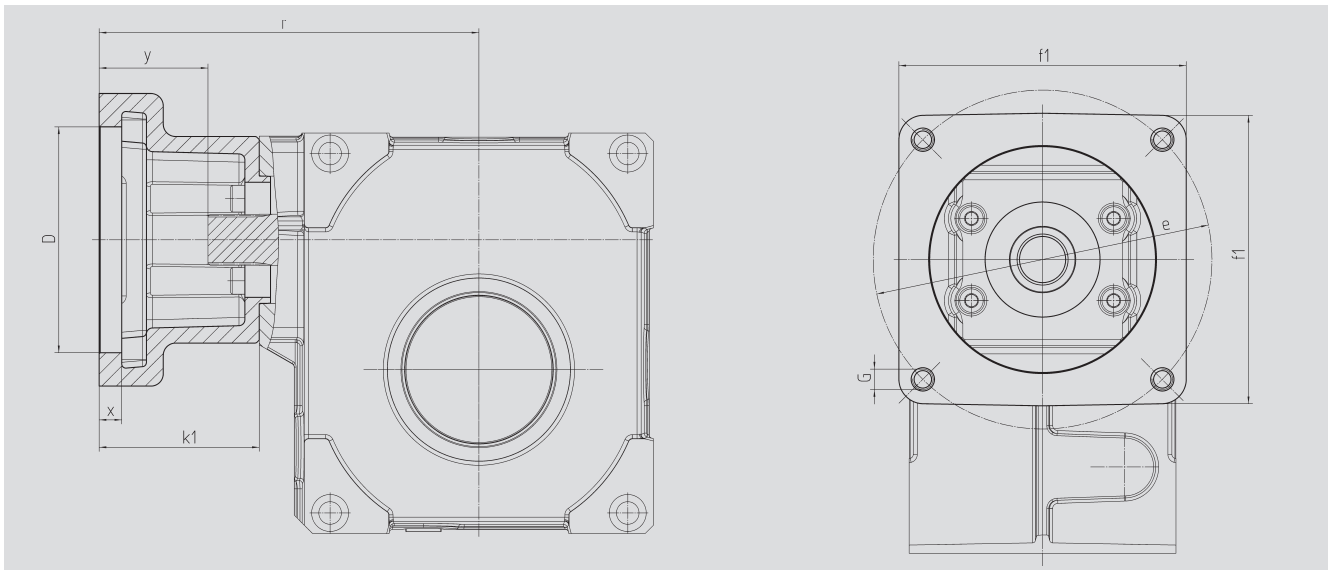


Order Code Fig. 1	Fig. 2	Ratio i	kg	$J_{red} 10^{-4}$ kg m ²
57 04 005	57 14 005	4.75	11.5	2.5350
57 04 007	57 14 007	6.75	11.5	1.3720
57 04 009	57 14 009	9.25	11.5	0.9825
57 04 015	57 14 015	14.50	11.5	0.9570
57 04 020	57 14 020	19.50	11.5	0.6940
57 04 029	57 14 029	29.00	11.5	0.9966
57 04 039	57 14 039	39.00	11.5	1.0100
57 04 052	57 14 052	52.00	11.5	0.5305

With food grade oil, order code 57 04 1xx / 57 14 1xx



Motor Flange



Center Distance

$a_o = 63 \text{ mm}$

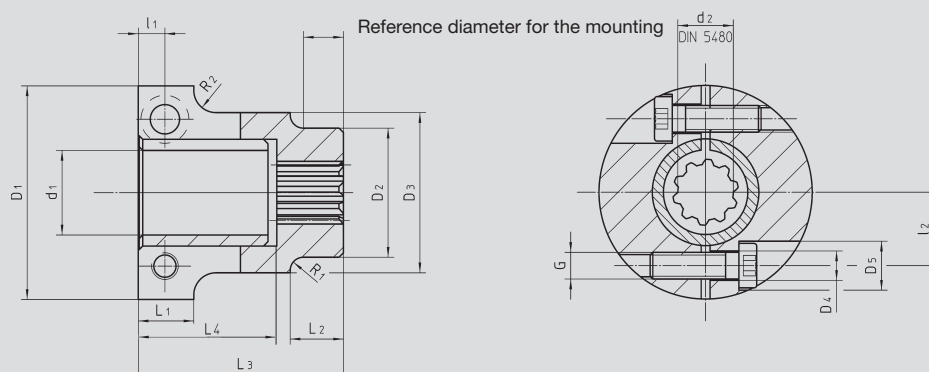
Order Code	D ^{G7}	k ₁	r	x	y	f ₁	e	G	kg
65 57 301	95.0	62	169	12.5	42	100	115	M8	0.60
65 57 302	50.0	62	169	10.0	42	100	70, 95, 115	M4, M6, M8	0.70
65 57 303	80.0	62	169	10.0	42	100	100	M6	0.65
65 57 304	95.0	78	185	10.0	57	115	130	M8	0.80
65 57 305	95.0	72	179	8.0	52	100	115	M8	0.75
65 57 306	60.0	74	181	21.0	54	100	75, 90, 115	M5, M5, M8	0.90
65 57 307	70.0	70	177	21.0	50	100	90, 115	M6, M8	0.80
65 57 401	95.0	73	180	8.0	53	100	115	M8	0.75
65 57 402	110.0	78	185	8.0	57	115	130	M8	0.80
65 57 403	95.0	73	180	12.0	53	115	130	M8	0.75
65 57 404	110.0	73	180	12.0	53	115	130	M8	0.70
65 57 405	95.0	78	185	11.0	57	140	165	M10	1.20
65 57 406	110.0	78	185	11.0	57	140	165	M10	1.15
65 57 407	130.0	78	185	11.0	57	140	165	M10	1.00
65 57 409	130.0	98	205	14.0	78	140	165	M10	1.10
65 57 410	110.0	74	181	8.0	54	120	145	M8	1.00
65 57 411	110.0	84	191	8.0	64	120	145	M8	1.20
65 57 412	114.3	105	212	8.0	85	180	200	M12	3.70
65 57 413	114.3	139	246	8.0	119	180	200	M12	3.35
65 57 414	114.3	91	198	8.0	71	180	200	M12	2.65
65 57 415	110.0	89	196	8.0	69	120	145	M8	1.30

The order should contain gear box 57 04 0xx / 57 14 0xx and flange 65 57 3xx or 4xx.



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



< 12 arcmin

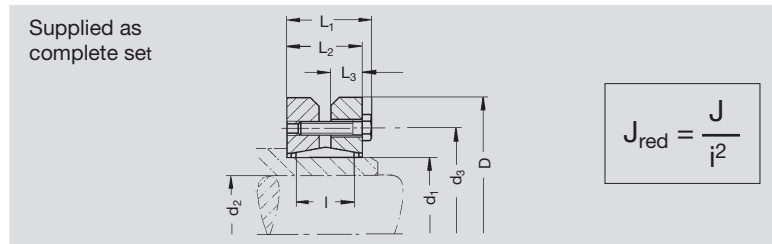
Order Code

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	M5	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	M5	31.2	0.704	0.3
65 53 024	24	15x1.25x10	48	33	16.5	46.0	5	M5	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

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



Shrink-Disk Clamping Sets for Output Drive Shafts of gear series 57 1. ...



< 12 arcmin

Order Code	mm	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	16.0	9	16	7 x M5	1.756	0.3
80 84 036	63	540	36	28	52	72	27.5	23.5	10	18	5 x M6	4.029	0.4



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.

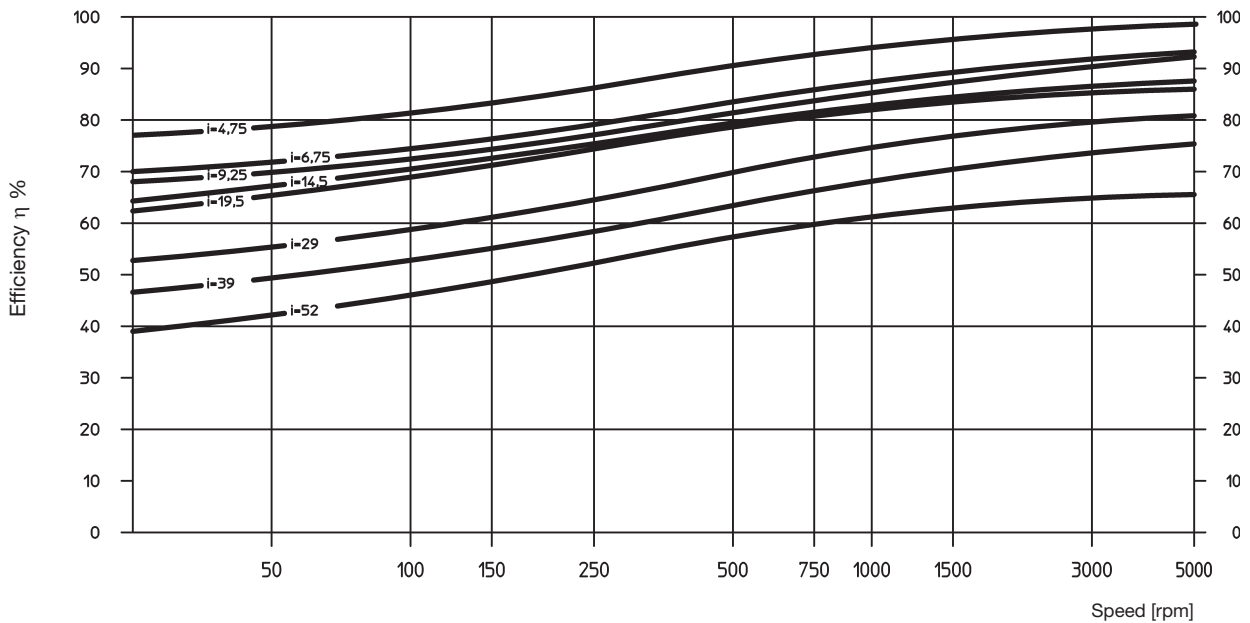


Order Code	a_0 (mm)	i	T_{2max}	Input Speed n_1 in rpm												η at 1500			
				500		750		1000		1500		3000		4000			5000		
				P_1 (kW)	T_2 (Nm)	P_1 (kW)	T_2 (Nm)	P_1 (kW)	T_2 (Nm)	P_1 (kW)	T_2 (Nm)	P_1 (kW)	T_2 (Nm)	P_1 (kW)	T_2 (Nm)		P_1 (kW)	T_2 (Nm)	
57 03 003 57 13 003	50	3.00*																	
57 03 005 57 13 005		4.75	495	0.73	59	1.08	59	1.53	63	2.27	63	4.50	63	5.58	59	6.57	55	0.93	
57 03 007 57 13 007		6.75	360	0.45	50	0.69	53	0.99	57	1.58	62	3.15	62	3.96	59	4.68	55	0.90	
57 03 009 57 13 009		9.25	248	0.29	43	0.45	46	0.63	49	0.99	52	2.30	63	3.20	63	3.69	59	0.88	
57 03 015 57 13 015		14.50	315	0.23	51	0.36	54	0.51	59	0.80	63	1.64	68	2.25	68	2.84	68	0.84	
57 03 020 57 13 020		19.50	225	0.14	41	0.23	43	0.36	45	0.50	50	1.08	59	1.49	59	1.89	59	0.83	
57 03 029 57 13 029		29.00	270	0.13	43	0.18	47	0.26	50	0.40	54	0.84	63	1.11	63	1.27	59	0.76	
57 03 039 57 13 039		39.00	180	0.11	48	0.15	50	0.22	54	0.33	59	0.69	68	0.90	68	1.13	68	0.70	
57 03 052 57 13 052		52.00	135	0.07	38	0.11	40	0.14	42	0.23	45	0.46	54	0.65	54	0.81	54	0.63	
57 04 003 57 14 003		63	3.00*																
57 04 005 57 14 005	4.75		900	1.89	153	2.97	162	3.96	162	5.50	153	9.27	131	11.88	122			0.93	
57 04 007 57 14 007	6.75		675	1.35	153	2.12	162	2.79	162	3.83	153	6.48	131	8.37	122			0.90	
57 04 009 57 14 009	9.25		450	0.67	104	1.06	113	1.47	117	2.27	122	4.44	122	5.72	113			0.88	
57 04 015 57 14 015	14.50		540	0.67	149	1.07	162	1.39	162	2.21	162	3.76	153	4.73	144			0.84	
57 04 020 57 14 020	19.50		450	0.35	104	0.55	113	0.77	117	1.15	122	2.68	149	3.45	140			0.83	
57 04 029 57 14 029	29.00		585	0.43	158	0.68	171	0.94	185	1.40	198	2.31	176	2.90	167			0.76	
57 04 039 57 14 039	39.00		405	0.27	126	0.40	135	0.55	144	0.87	158	1.69	171	2.30	171			0.70	
57 04 051 57 14 051	51.00		270	0.14	86	0.23	95	0.32	104	0.50	113	1.08	135	1.47	144			0.63	

* On Request

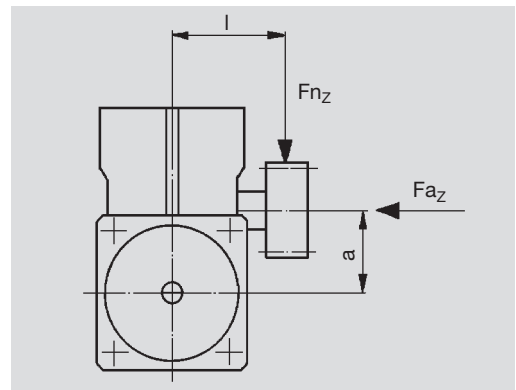


Gearing efficiency of servo worm gear units with driving worm and under full load.



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.



Center Distance	a (mm)	50		63	
Dimensions center of casing to center of pinion					
l (mm)		90	140	110	160
Max. additional load					
radial F_{n_z}	[N]	2500	1600	3500	2450
axial F_{a_z}	[N]	1250	1250	1750	1750



Short Description

ATLANTA B-servo worm gear units have been specially developed for use with the latest three-phase and DC servo-motors. Like all other components in this catalog, they are usually available ex stock or, at least, within a very short time.

The following are typical features of our B-servo gear units:

- the same dimensions as our servo worm gear units serie 59
- low-clearance gearing (backlash < 12'),
- casing of light metal for optimal heat dissipation
- robust bearings for the output drive hollow shaft, permitting additional forces.

Center distances, gear ratios and tooth systems have been chosen in accordance with DIN 3975/76.

The use of ground, right-hand worms, a worm gear of special worm-gear bronze and dip-feed lubrication (synthetic special oil) ensures a high degree of efficiency and also smooth running in both directions and a long service life. The casing with its many fixing bores and tapped holes permits mounting in any position.

The drive, i.e. the connection with the driving motor, is achieved with a special clutch. Its internal gearing, together with the barrelled profile of the driving shaft of our worm gear unit ensures transmission of the power with no free play.

For the output drive you can choose from quite a number of output drive shafts with straight and helical tooth systems and various numbers of teeth. Apart from pinion shafts there is a multitude of gearwheels with different numbers of teeth from our S & L gearwheel program which can be combined and used together with suitable special output drive shafts.

For emergency stops, the maximum transmittable torque of the gear unit (see page GD-14) and shrink disk (see page GH-1) has to be checked. The output keyway has to be calculated separately.





Mounting Instructions

Worm Gear Units

Five mounting faces with sufficiently dimensioned tapped holes are provided for mounting in any position. In order to accommodate all supplementary forces (see page GD-15) we recommend mounting at the largest contact faces., i.e. at one of the two cap sides. Putting the worm shaft (input shaft) in a lateral or inferior position is ideal for lubrication. Mounting the shaft in a top position will reduce the driving capacity by about 10%.

Coupling

The coupling is supplied pre-assembled. All contact surfaces must be cleaned and protected by a thin oil film before attaching it to the motor shaft. An important dimension for mounting is the value „X1” (compare pages GI – 5 to GI – 9).

Recommended procedure:

- Carefully clean the contact surfaces and protect them with a thin oil film.
- Place the coupling onto the motor shaft at the distance given by the measurement “X1” (see pages GI – 5 to GI – 9); a depth gauge is helpful for determining the measurement.
- Slightly tighten the clamping screws and check the clutch for true running
- Tighten the screws alternately and uniformly.
- The correct tightening torque can be seen from the operation and maintenance instructions. The gap in the coupling must be equally wide on both sides.
- It is recommended to make another final check for true running at the appropriate reference diameter!

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 disk 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. Disk and screw are screwed to the output shaft from the other side of the gear unit. The retaining ring must be clamped between disk and pinion shaft.



< 12 arcmin



Maintenance

Lubricant Change

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

Under the following conditions this is a lifetime lubrication:

The layout of the gear unit is made strictly in conformance with the guidelines specified in the ATLANTA catalog and the gear unit is operated exclusively within the permissible characteristic values and limits. The operator checks the gear unit 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).

In the case of an operation with mainly low input speeds (circumferential speed of the worm $v < 0.5$ m/s) we recommend to change the lubricant every two years.



Center Distance	Oil Quantity
a = 50 mm	0.25 l
a = 63 mm	0.60 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 of Protection

Degree of protection: IP65/67 according to ISO 20653

(Corrosion has to be verified separately).