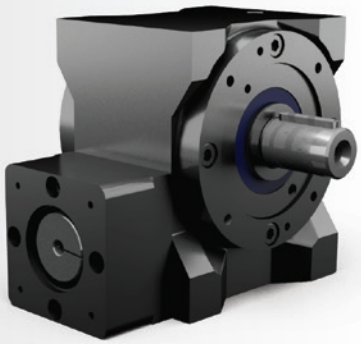
11.5 Type SC – Servo worm gearboxes

11.5.15 Features

Gear ratios: i = 10:1 to 20:1 (i > 26 upon request)
Maximum acceleration torques up to T_{2B} = 1100 Nm
5 gearbox sizes with 040 to 100 mm centre-to-centre distance
Optimised efficiency
Minimised circumferential backlash (optional)
Worm gearboxes with square flange, suitable for fitting servo-motors
Zero-play three-piece claw coupling



11.5.15.1 Models

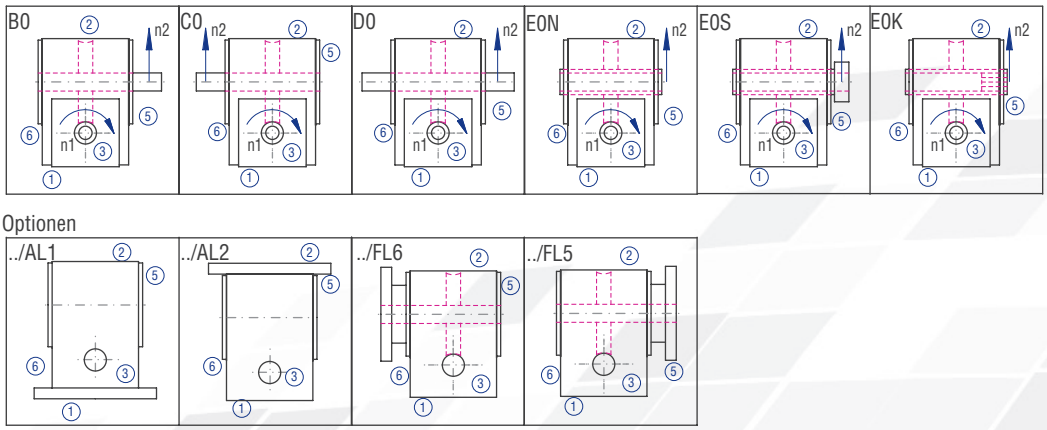


Figure **11.5.15-1; Models**

11.5.15.2 Gearbox sides

The example shows the Model B0

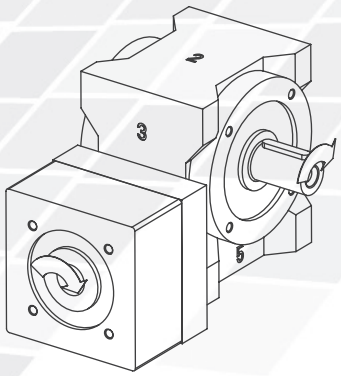


Figure **11.5.15-3; Gearbox sides**

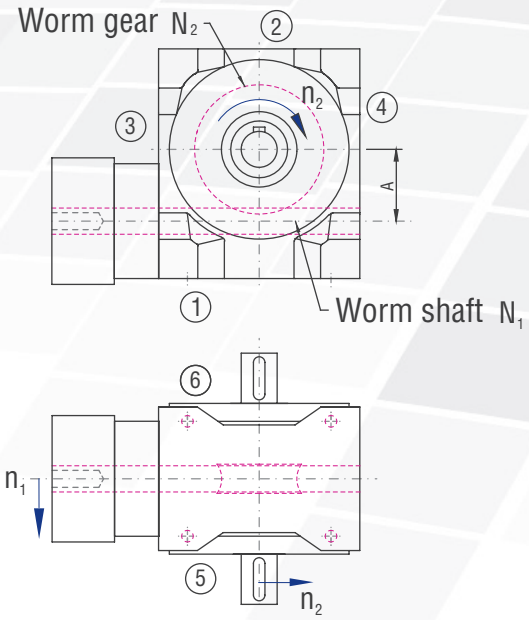


Figure **11.5.15-2; Shaft designations**

11.5.15.3 Order code

The order code reflects the customer specifications. Example:

Type	Size	Gear ratio	Model	Fixing side	Installation position	Speed n_2	Design
SC	050	5:1	B0-	1.	1-	600	/0000
Description	Size; Table 11.5.15-1	Table 11.5.15-1	Figure 11.5.15-1	Side on which fixing is made; Table 11.5.4-1	Side directed downwards; Figure 4.3.1-1 Gearbox sides	Slowly rotating shaft Table 11.5.15-1	Will be determined by ATEK
	V080-		/	14 x 30	No. 301		KN
	Flange			Motor shaft Ø x length	Flange no.		See chapter "Coupling"

11.5.15.4 Overview of performance data

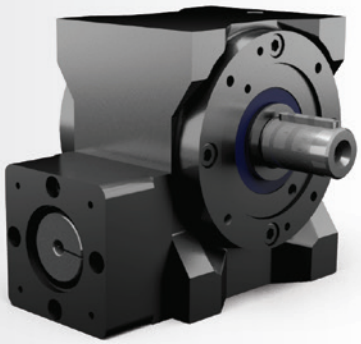
The performance data and torques listed in the selection tables are only valid if the gearboxes are used in the installation positions 1, 5 or 6. If the worm shaft is vertical or located at the top (installation position 3, 4 or 2), 90% of the values specified must be expected.
Please enquire other gear ratios.

				040	050	063	080	100
i[-]	n_1 [1/min]	i_{ist}	n_2 [1/min]	T_{2N} [Nm]	T_{2N} [Nm]	T_{2N} [Nm]	T_{2N} [Nm]	T_{2N} [Nm]
10:1	4000	38:4	421		70,0			
		39:4	410	32,0		101,0		
		40:4	400				132,0	195,0
	3000	38:4	316		83,0			
		39:4	308	37,0		124,0		
		40:4	300				177,0	257,0
	2400	38:4	253		97,0			
		39:4	246	42,0		148,0		
		40:4	240				222,0	318,0
	1500	38:4	158		110,0			
		39:4	154	48,0		171,0		
		40:4	150				267,0	380,0
20:1	4000	38:2	211		72,0			
		39:2	205	36,0		116,0		
		40:2	200				153,0	236,0
	3000	38:2	158		85,0			
		39:2	154	41,0		141,0		
		40:2	150				203,0	308,0
	2400	38:2	126		98,0			
		39:2	123	46,0		166,0		
		40:2	120				253,0	380,0
	1500	38:2	79		111,0			
		39:2	77	51,0		190,0		
		40:2	75				303,0	452,0

	040	050	063	080	100
T_{2B} (S5) [Nm]	50	112	216	408	1006
T_{2Not} (S5) [Nm]	77	152	306	625	1090
N_1 max [U/min]	6000	5500	5000	4500	3200
T_{2B} (S5) [Nm]	58	133	259	498	1112
T_{2Not} (S5) [Nm]	90	179	355	725	1440
N_1 max [U/min]	6500	5500	5000	4500	3200

Table **11.5.15-1**

11.5.16 Type SC 040 – Servo worm gearboxes



Characteristics

Characteristic	Standard	Option
Toothing	Hardened and ground worm shaft / bronze worm gear	See chapter 11.5.2
Gear ratio	10:1 to 20:1	
Housing / Flanges	Grey cast iron / aluminium	
Threaded mounting holes	On gearbox side 1 and on the flanges	See chapter 11.5.4
Shaft	Material 1 C45, shaft ends greased Fit with ISO j6 tolerance with parallel keyway: according to DIN 6885 Sheet 1	See chapter 4.6.2
Hollow shaft	Material 1 C45, shafts greased Fit with ISO H7 tolerance with parallel keyway: according to DIN 6885 Sheet 1	See chapter 4.6.3
Radial shaft seal ring	NBR, form A	See chapter 4.8
Ambient temperature	-10°C to +90°C. The values of the performance tables are valid for +20°C	See chapter 4.9.3
Circumferential backlash	< 20 arcmin	See chapter 11.5.11
Protection class	IP 54	See chapter 4.5
Corrosion protection	Prime coat; layer thickness > 40 µm	See chapter 4.4.1
Bearing life L10h	more than 15,000h	See chapter 4.9.1
Oil change intervals	Not required if the oil temperature is kept < 90°C The lifetime of the bearings can be increased by the factor 1.5 if the oil is changed after the first 500 service hours and then every 5000 service hours.	See chapter 11.5.9
Lubricants	Synthetic lubricants	See chapter 11.5.9
Motor flange	Aluminium	See chapter 11.5.14
Coupling	Insertable, flexible claw coupling, suitable for servo-motors For smooth motor shafts clamping hub KN For smooth motor shafts tension ring hub SN For motor shafts with parallel key clamping hub with groove KNN	See chapter 11.5.13

Torques in operating mode S1

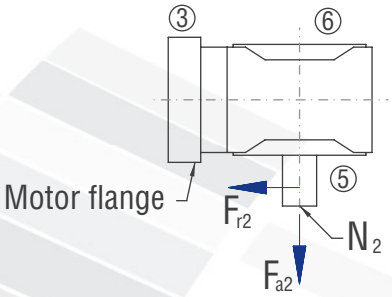
I rated	10:1		20:1	
I ist	39:4		39:2	
	n_2 [1/min]	T_{2N} [Nm]	n_2 [1/min]	T_{2N} [Nm]
4000	410	32	205	36
3000	308	37	154	41
2400	246	42	123	46
1500	154	48	77	51

Torques in operating mode S5

I rated T_{2N} [Nm] n_{1max} [U/min]			10:1 43 6000		20:1 50 6500	
Coupling size	d [mm]		KN	KNN/SN	KN	KNN/SN
K14	9	T_{2B}[Nm]	50,0	50,0	58,0	58,0
		T_{2NOT}[Nm]	68,3	77,0	90,0	90,0
	11	T_{2B}[Nm]	50,0	50,0	58,0	58,0
		T_{2NOT}[Nm]	77,0	77,0	90,0	90,0
	14	T_{2B}[Nm]	50,0	50,0	58,0	58,0
		T_{2NOT}[Nm]	77,0	77,0	90,0	90,0
	16	T_{2B}[Nm]	50,0	50,0	58,0	58,0
		T_{2NOT}[Nm]	77,0	77,0	90,0	90,0
K19	9	T_{2B}[Nm]	50,0		58,0	
		T_{2NOT}[Nm]	77,0		90,0	
	11	T_{2B}[Nm]	50,0	50,0	58,0	58,0
		T_{2NOT}[Nm]	77,0	77,0	90,0	90,0
	14	T_{2B}[Nm]	50,0	50,0	58,0	58,0
		T_{2NOT}[Nm]	77,0	77,0	90,0	90,0
	16	T_{2B}[Nm]	50,0	50,0	58,0	58,0
		T_{2NOT}[Nm]	77,0	77,0	90,0	90,0
	19	T_{2B}[Nm]	50,0	50,0	58,0	58,0
		T_{2NOT}[Nm]	77,0	77,0	90,0	90,0
	24	T_{2B}[Nm]	50,0		58,0	
		T_{2NOT}[Nm]	77,0		90,0	

Permissible radial force F_{r2} and axial force F_{a2} on shaft N_2

n_2 [rpm]	200		125		75		50		30		10	
T_2 [Nm]	F_r [N]	F_a [N]	F_r [N]	F_a [N]	F_r [N]	F_a [N]	F_r [N]	F_a [N]	F_r [N]	F_a [N]	F_r [N]	F_a [N]
		0		0		0		0		0		0
< 80	970	485	1250	625	1380	690	1600	800	1800	900	2500	1250



Gearbox inertia moments/mass

Inertia moment J_1 related to the fast-rotating shaft (N_1)

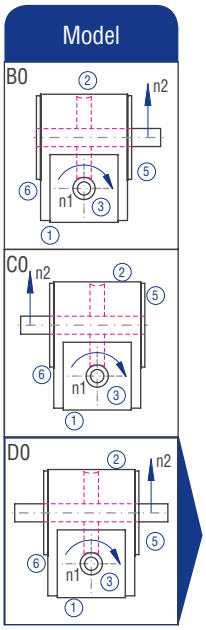
Inertia moment [kgcm²]							
i rated [-]	5:1	7.5:1	10:1	13:1	15:1	20:1	26:1
J [kgcm²]	0.3307	0.2454	0.1801	0.1458	0.1943	0.1476	0.1268

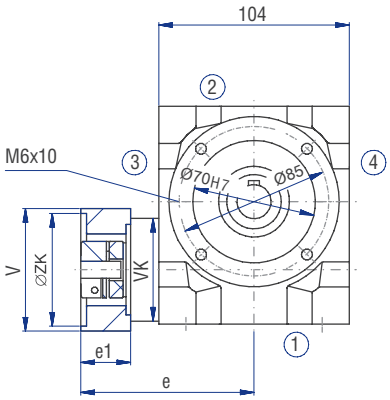
Mass ca. [kg]
7

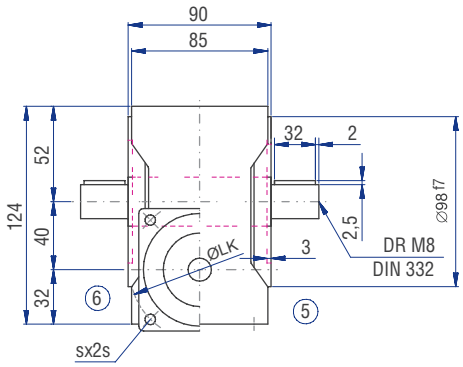
The mass of the gearbox may deviate depending on the flange size and the gear ratio.

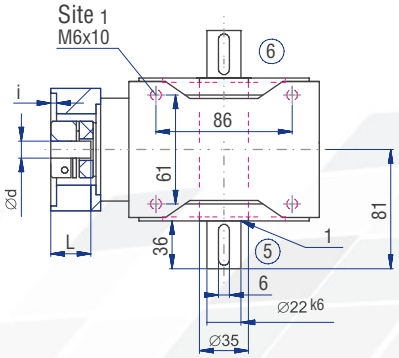
Inertia moment Coupling J

	KN	KNN	SN
	J [kgcm²]	J [kgcm²]	J [kgcm²]
K14	0.0606	0.0606	0.1446
K19	0.4229	0.4229	0.6349

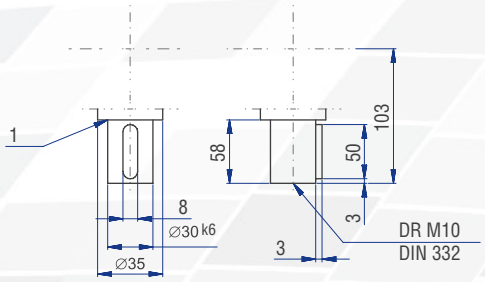


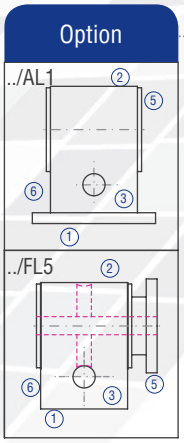


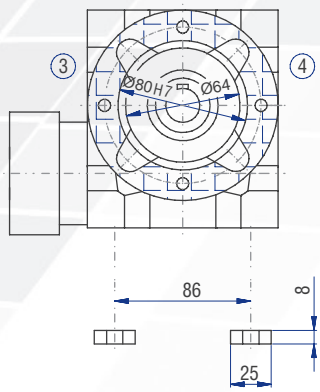


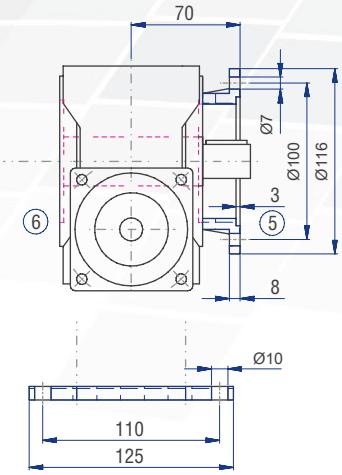


Implementation VV







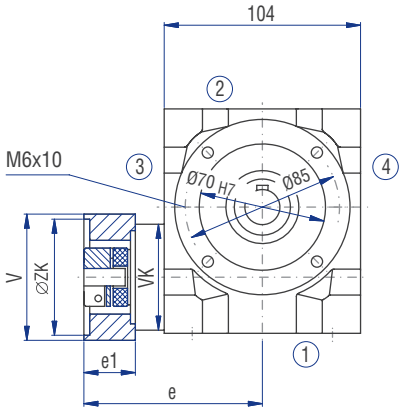


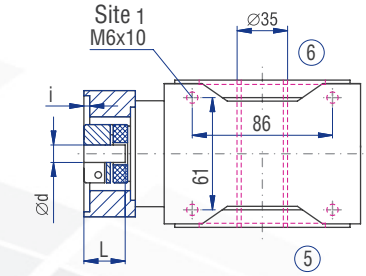
Motor dimensions

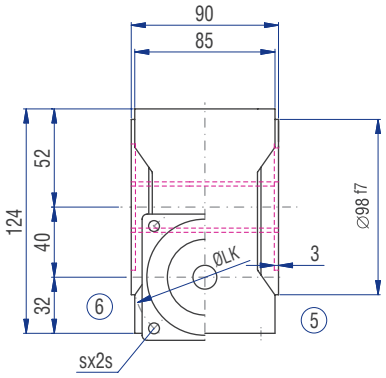
Flange no.	Motor shaft (dxL)	Thread (s)	V [mm]	ZK [mm]	LK [mm]	i [mm]	e [mm]	e1 [mm]
001	11*23	M4	65	40	63	3	93.0	30.0
002	11*23	M5	65	40	63	3	93.0	30.0
102	11*23	M5	65	60	75	3	90.0	26.5
202	11*23	M5	65	60	90	4	90.0	26.5
103	14*30	M6	65	60	75	3	108.5	45.0
104	14*30	M5	65	60	75	3	108.5	45.0
201	14*30	M5	65	60	90	4	108.5	45.0
301	14*30	M6	65	50	95	4	108.5	45.0
401	14*30	M6	65	80	100	4	108.5	45.0
501	14*30	M8	65	95	115	4	108.5	45.0
601	19*40	M8	90	95	130	4	121.0	45.0
611	19*40	M8	90	110	130	5	121.0	45.0
701	19*40	M8	90	110	145	5	121.0	45.0
802	19*40	M10	90	110	165	5	121.0	45.0

The dimensions e and e1 will change for the coupling type “clamping hub with groove” (KNN). Please contact us for consultation!

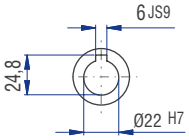
The dimensions of the Models not shown can be figured by mirroring available dimensions.



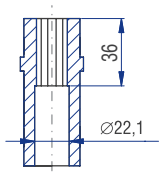


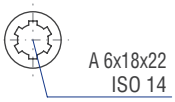


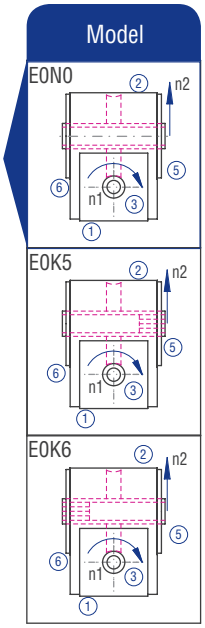
E0N0

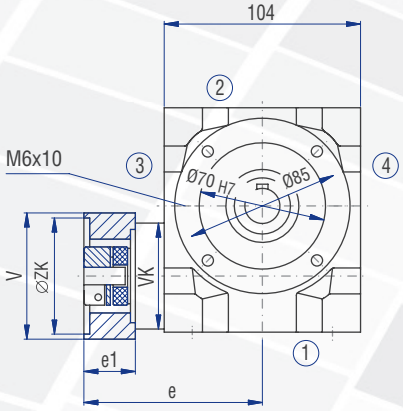


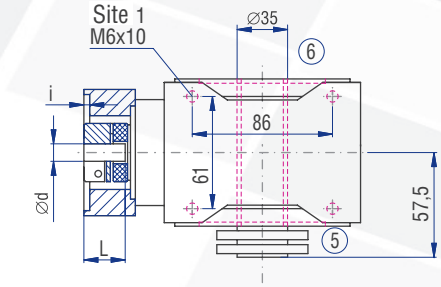
E0K5 / E0K6

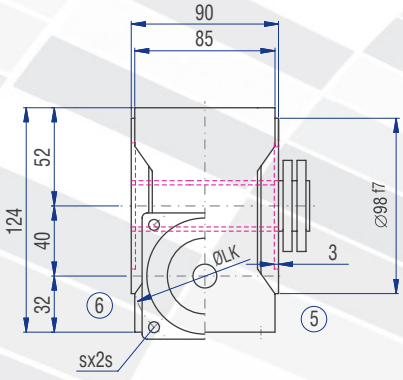


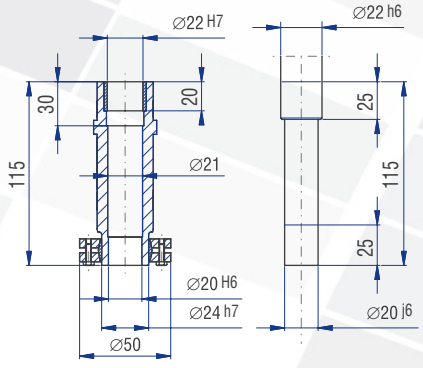


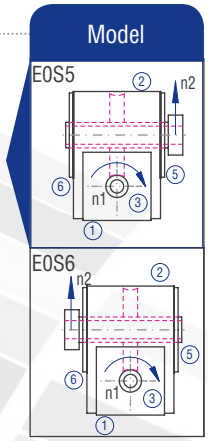




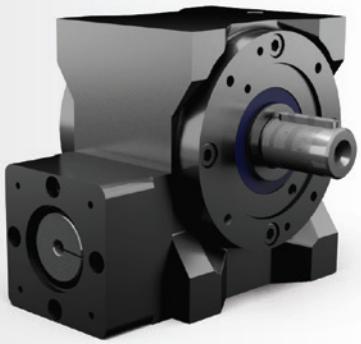








11.5.17 Type SC 050 – Servo worm gearboxes



Characteristics

Characteristic	Standard	Option
Toothing	Hardened and ground worm shaft / bronze worm gear	See chapter 11.5.2
Gear ratio	10:1 to 20:1	
Housing / Flanges	Grey cast iron / aluminium	
Threaded mounting holes	On gearbox side 1 and on the flanges	See chapter 11.5.4
Shaft	Material 1 C45, shaft ends greased Fit with ISO j6 tolerance with parallel keyway: according to DIN 6885 Sheet 1	See chapter 4.6.2
Hollow shaft	Material 1 C45, shafts greased Fit with ISO H7 tolerance with parallel keyway: according to DIN 6885 Sheet 1	See chapter 4.6.3
Radial shaft seal ring	NBR, form A	See chapter 4.8
Ambient temperature	-10°C to +90°C. The values of the performance tables are valid for +20°C	See chapter 4.9.3
Circumferential backlash	< 20 arcmin	See chapter 11.5.11
Protection class	IP 54	See chapter 4.5
Corrosion protection	Prime coat; layer thickness > 40 µm	See chapter 4.4.1
Bearing life L10h	more than 15,000h	See chapter 4.9.1
Oil change intervals	Not required if the oil temperature is kept < 90°C The lifetime of the bearings can be increased by the factor 1.5 if the oil is changed after the first 500 service hours and then every 5000 service hours.	See chapter 11.5.9
Lubricants	Synthetic lubricants	See chapter 11.5.9
Motor flange	Aluminium	See chapter 11.5.14
Coupling	Insertable, flexible claw coupling, suitable for servo-motors For smooth motor shafts clamping hub KN For smooth motor shafts tension ring hub SN For motor shafts with parallel key clamping hub with groove KNN	See chapter 11.5.13

Torques in operating mode S1

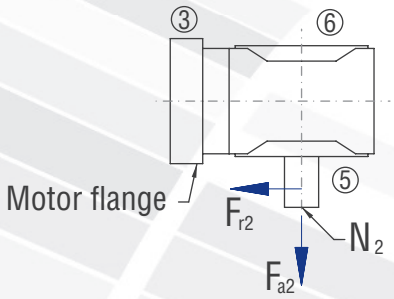
I rated	10:1		20:1	
I ist	38:4		38:2	
	n_2 [1/min]	T_{2N} [Nm]	n_2 [1/min]	T_{2N} [Nm]
4000	421	70	211	72
3000	316	83	158	85
2400	253	97	126	98
1500	158	110	79	111

Torques in operating mode S5

I rated T_{2N} [Nm] n_{1max} [U/min]			10:1 91 5500		20:1 106 5500	
Coupling size	d [mm]		KN	KNN/SN	KN	KNN/SN
K19	9	T_{2B}[Nm]	112,0		133,0	
		T_{2NOT}[Nm]	152,0		179,0	
	11	T_{2B}[Nm]	112,0	112,0	133,0	133,0
		T_{2NOT}[Nm]	152,0	152,0	179,0	179,0
	14	T_{2B}[Nm]	112,0	112,0	133,0	133,0
		T_{2NOT}[Nm]	152,0	152,0	179,0	179,0
	16	T_{2B}[Nm]	112,0	112,0	133,0	133,0
		T_{2NOT}[Nm]	152,0	152,0	179,0	179,0
	19	T_{2B}[Nm]	112,0	112,0	133,0	133,0
		T_{2NOT}[Nm]	152,0	152,0	179,0	179,0
	24	T_{2B}[Nm]	112,0		133,0	
		T_{2NOT}[Nm]	152,0		179,0	
K24	11	T_{2B}[Nm]	112,0	112,0	133,0	133,0
		T_{2NOT}[Nm]	152,0	0,0	179,0	0,0
	14	T_{2B}[Nm]	112,0	112,0	133,0	133,0
		T_{2NOT}[Nm]	152,0	152,0	179,0	179,0
	16	T_{2B}[Nm]	112,0	112,0	133,0	133,0
		T_{2NOT}[Nm]	152,0	152,0	179,0	179,0
	19	T_{2B}[Nm]	112,0	112,0	133,0	133,0
		T_{2NOT}[Nm]	152,0	152,0	179,0	179,0
	24	T_{2B}[Nm]	112,0	112,0	133,0	133,0
		T_{2NOT}[Nm]	152,0	152,0	179,0	179,0
	28	T_{2B}[Nm]	112,0	112,0	133,0	133,0
		T_{2NOT}[Nm]	152,0	152,0	179,0	179,0

Permissible radial force F_{r2} and axial force F_{a2} on shaft N_2

n_2 [rpm]	200		125		75		50		30		10	
T_2 [Nm]	F_r [N]	F_a [N]	F_r [N]	F_a [N]	F_r [N]	F_a [N]	F_r [N]	F_a [N]	F_r [N]	F_a [N]	F_r [N]	F_a [N]
< 120	2000	1000	2400	1200	2850	1425	3350	1675	4000	2000	4800	2400
> 120	1540	770	1850	925	2190	1095	2580	1290	3080	1540	3700	1850



Gearbox inertia moments/mass

Inertia moment J_1 related to the fast-rotating shaft (N_1)

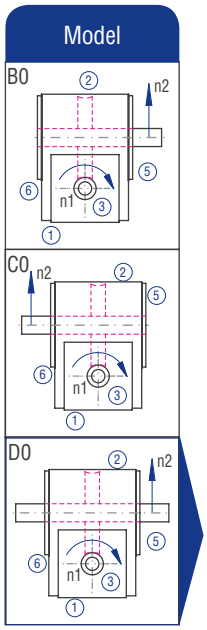
Inertia moment [kgcm²]							
i rated [-]	5:1	7.5:1	10:1	13:1	15:1	20:1	26:1
J [kgcm²]	0.9509	0.7327	0.5820	0.4876	0.6017	0.4996	0.4375

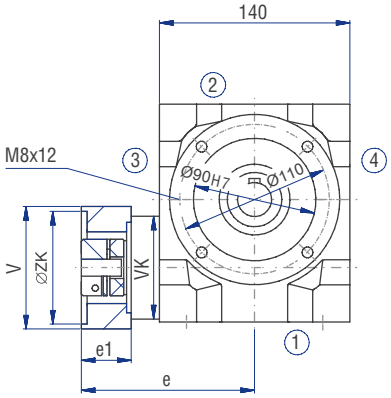
Mass ca. [kg]
13

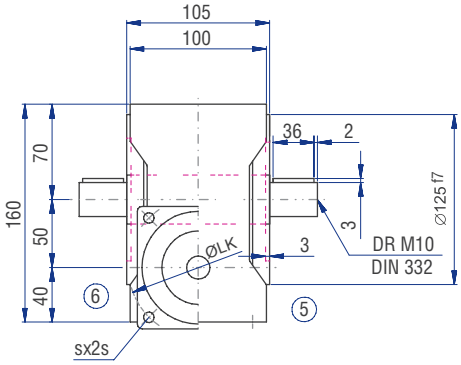
The mass of the gearbox may deviate depending on the flange size and the gear ratio.

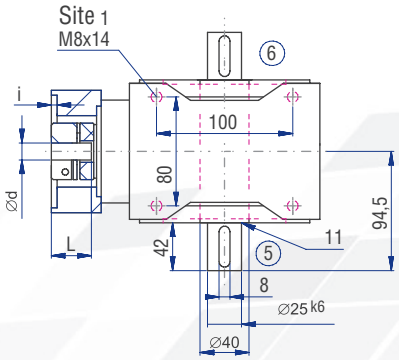
Inertia moments Coupling J

	KN	KNN	SN
	J [kgcm²]	J [kgcm²]	J [kgcm²]
K19	0.4229	0.4229	0.6349
K24	1.0910	1.0910	2.7750

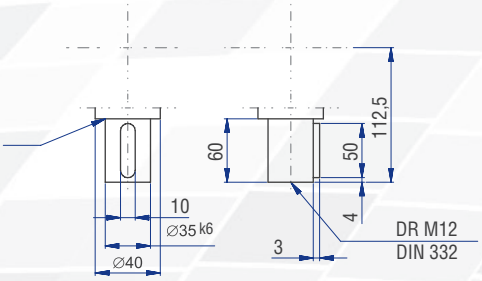


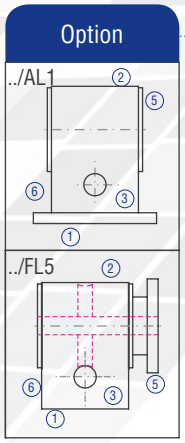


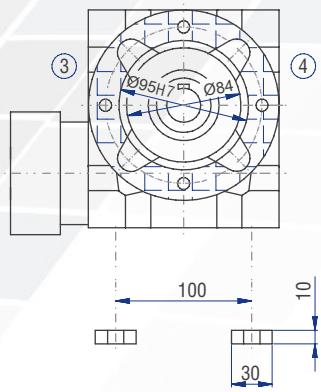


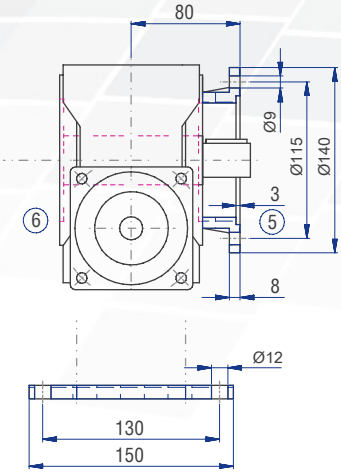


Implementation VV







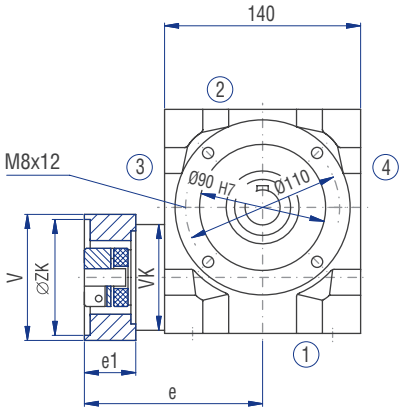


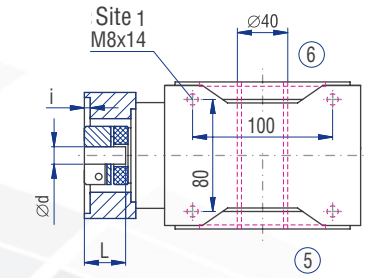
Motor dimensions

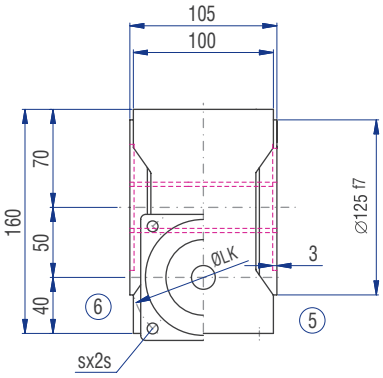
Flange no.	Motor shaft (dxL)	Thread (s)	V [mm]	ZK [mm]	LK [mm]	i [mm]	e [mm]	e1 [mm]
103	19*40	M6	90	60	75	3	141.0	45.0
201	19*40	M5	90	60	90	3	141.0	45.0
301	19*40	M6	90	50	95	4	141.0	45.0
401	19*40	M6	90	80	100	4	141.0	45.0
501	19*40	M8	90	95	115	4	141.0	45.0
601	19*40	M8	90	95	130	4	141.0	45.0
611	19*40	M8	90	110	130	5	141.0	45.0
701	19*40	M8	90	110	145	5	141.0	45.0
802	19*40	M10	90	110	165	5	141.0	45.0
811	24*50	M10	120	130	165	5	155.0	54.0

The dimensions e and e1 will change for the coupling type “clamping hub with groove” (KNN). Please contact us for consultation!

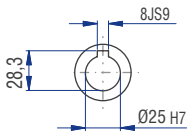
The dimensions of the Models not shown can be figured by mirroring available dimensions.



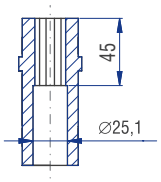


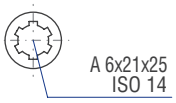


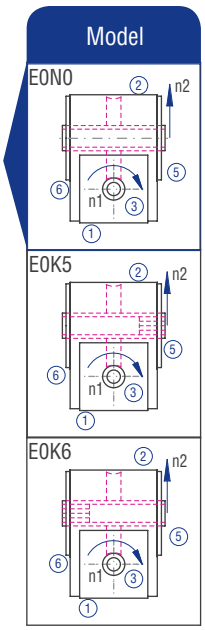
E0N0

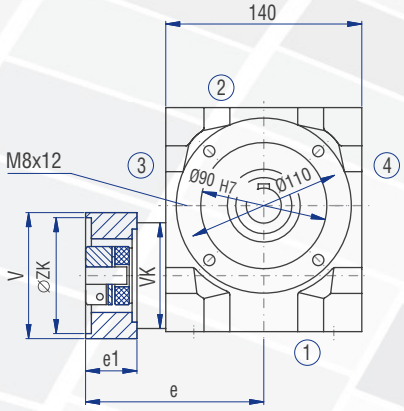


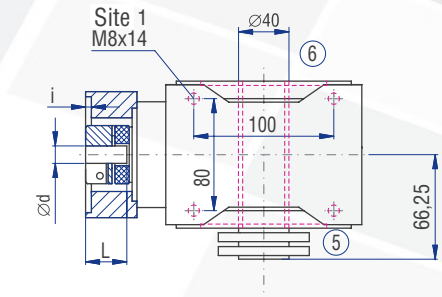
E0K5 / E0K6

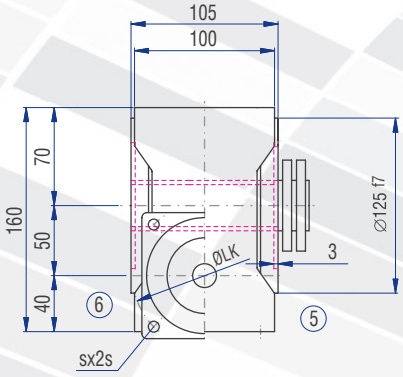


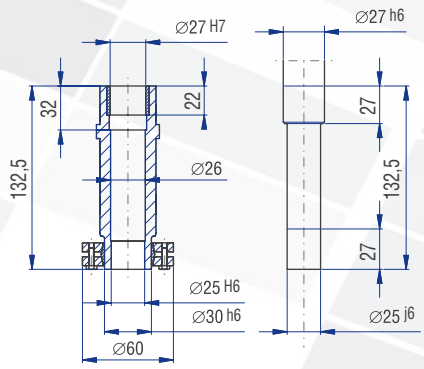


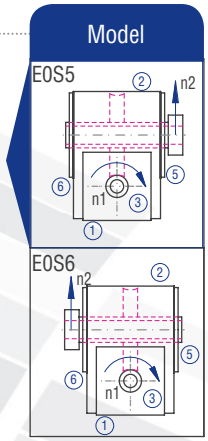




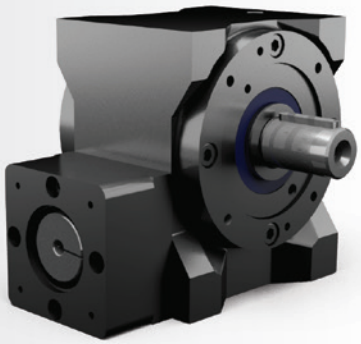








11.5.18 Type SC 063 – Servo worm gearboxes



Characteristics

Characteristic	Standard	Option
Toothing	Hardened and ground worm shaft / bronze worm gear	See chapter 11.5.2
Gear ratio	10:1 to 20:1	
Housing / Flanges	Grey cast iron / aluminium	
Threaded mounting holes	On gearbox side 1 and on the flanges	See chapter 11.5.4
Shaft	Material 1 C45, shaft ends greased Fit with ISO j6 tolerance with parallel keyway: according to DIN 6885 Sheet 1	See chapter 4.6.2
Hollow shaft	Material 1 C45, shafts greased Fit with ISO H7 tolerance with parallel keyway: according to DIN 6885 Sheet 1	See chapter 4.6.3
Radial shaft seal ring	NBR, form A	See chapter 4.8
Ambient temperature	-10°C to +90°C. The values of the performance tables are valid for +20°C	See chapter 4.9.3
Circumferential backlash	< 20 arcmin	See chapter 11.5.11
Protection class	IP 54	See chapter 4.5
Corrosion protection	Prime coat; layer thickness > 40 µm	See chapter 4.4.1
Bearing life L10h	more than 15,000h	See chapter 4.9.1
Oil change intervals	Not required if the oil temperature is kept < 90°C The lifetime of the bearings can be increased by the factor 1.5 if the oil is changed after the first 500 service hours and then every 5000 service hours.	See chapter 11.5.9
Lubricants	Synthetic lubricants	See chapter 11.5.9
Motor flange	Aluminium	See chapter 11.5.14
Coupling	Insertable, flexible claw coupling, suitable for servo-motors For smooth motor shafts clamping hub KN For smooth motor shafts tension ring hub SN For motor shafts with parallel key clamping hub with groove KNN	See chapter 11.5.13

Table 9-13

Torques in operating mode S1

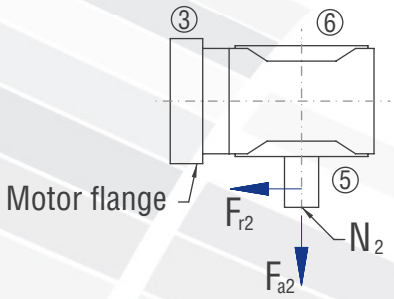
I rated	10:1		20:1	
I ist	39:4		39:2	
	n_2 [1/min]	T_{2N} [Nm]	n_2 [1/min]	T_{2N} [Nm]
4000	410	101	205	116
3000	308	124	154	141
2400	246	148	123	166
1500	154	171	77	190

Torques in operating mode S5

I rated T_{2N} [Nm] n_{1max} [U/min]			10:1 170 5000		20:1 186 5000	
Coupling size	d [mm]		KN	KNN/SN	KN	KNN/SN
K19	9	T_{2B}[Nm]	165,8		259,0	
		T_{2NOT}[Nm]	292,5		355,0	
	11	T_{2B}[Nm]	165,8	165,8	259,0	259,0
		T_{2NOT}[Nm]	292,5	292,5	355,0	355,0
	14	T_{2B}[Nm]	165,8	165,8	259,0	259,0
		T_{2NOT}[Nm]	306,0	306,0	355,0	355,0
	16	T_{2B}[Nm]	165,8	165,8	259,0	259,0
		T_{2NOT}[Nm]	306,0	306,0	355,0	355,0
	19	T_{2B}[Nm]	165,8	165,8	259,0	259,0
		T_{2NOT}[Nm]	306,0	306,0	355,0	355,0
	24	T_{2B}[Nm]	165,8		259,0	
		T_{2NOT}[Nm]	306,0		355,0	
K24	11	T_{2B}[Nm]	216,0	216,0	259,0	259,0
		T_{2NOT}[Nm]	306,0	0,0	355,0	0,0
	14	T_{2B}[Nm]	216,0	216,0	259,0	259,0
		T_{2NOT}[Nm]	306,0	306,0	355,0	355,0
	16	T_{2B}[Nm]	216,0	216,0	259,0	259,0
		T_{2NOT}[Nm]	306,0	306,0	355,0	355,0
	19	T_{2B}[Nm]	216,0	216,0	259,0	259,0
		T_{2NOT}[Nm]	306,0	306,0	355,0	355,0
	24	T_{2B}[Nm]	216,0	216,0	259,0	259,0
		T_{2NOT}[Nm]	306,0	306,0	355,0	355,0
	28	T_{2B}[Nm]	216,0	216,0	259,0	259,0
		T_{2NOT}[Nm]	306,0	306,0	355,0	355,0

Permissible radial force F_{r2} and axial force F_{a2} on shaft N_2

n_2 [rpm]	200		125		75		50		30		10	
T_2 [Nm]	F_r [N]	F_a [N]	F_r [N]	F_a [N]	F_r [N]	F_a [N]	F_r [N]	F_a [N]	F_r [N]	F_a [N]	F_r [N]	F_a [N]
< 220	2700	1350	3150	1575	3800	1900	4500	2250	5200	2600	5200	2600
> 220	2080	1040	2420	1210	2920	1460	3460	1730	4000	2000	4000	2000



Gearbox inertia moments/mass

Inertia moment J_1 related to the fast-rotating shaft (N_1)

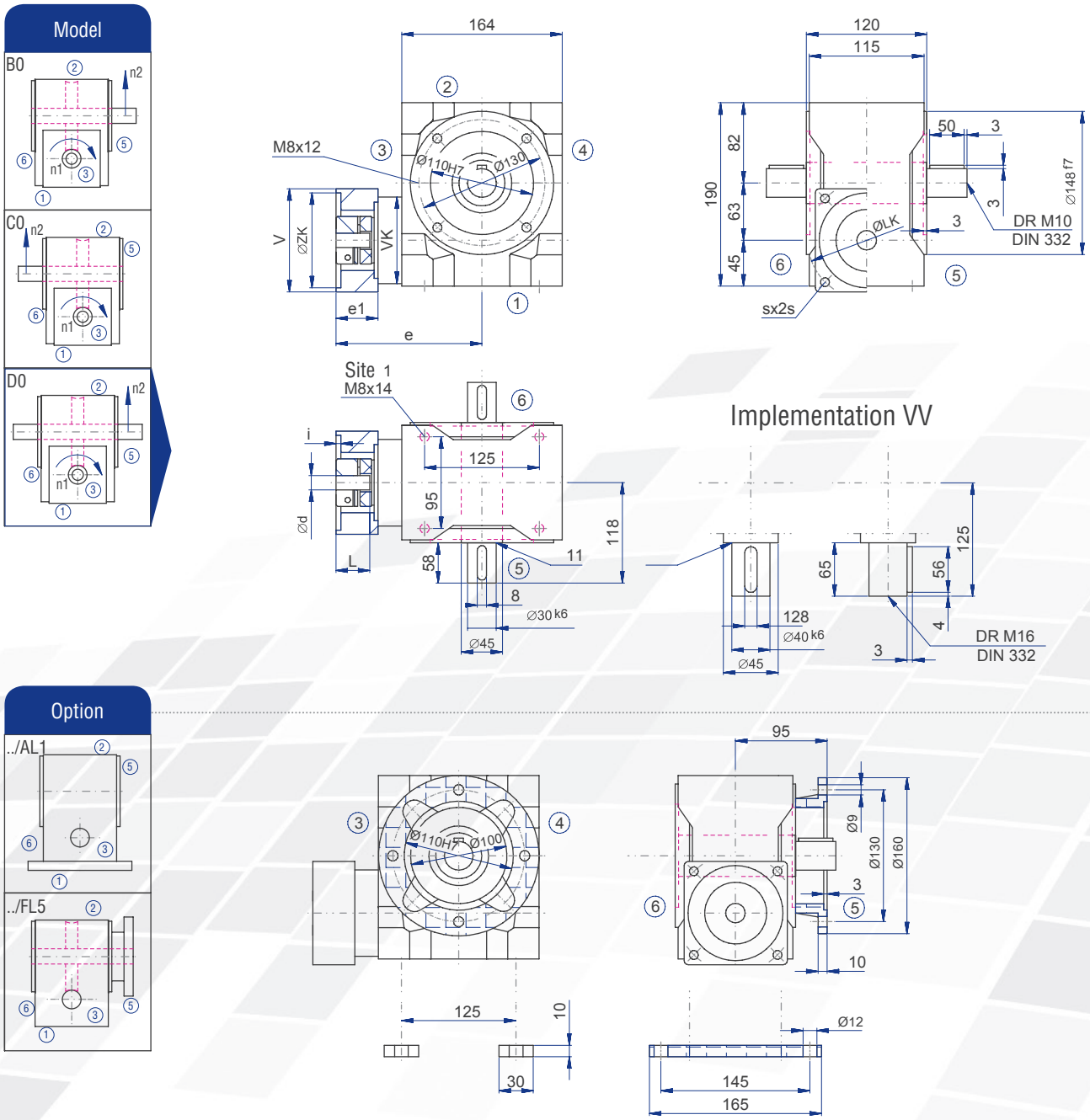
Inertia moment [kgcm²]							
i rated [-]	5:1	7.5:1	10:1	13:1	15:1	20:1	26:1
J [kgcm²]	2.1678	1.6423	1.1366	0.9368	1.3270	0.9445	0.8175

Mass ca. [kg]
20

The mass of the gearbox may deviate depending on the flange size and the gear ratio.

Inertia moments Coupling J

	KN	KNN	SN
	J [kgcm²]	J [kgcm²]	J [kgcm²]
K19	0.4229	0.4229	0.6349
K24	1.0910	1.0910	2.7750

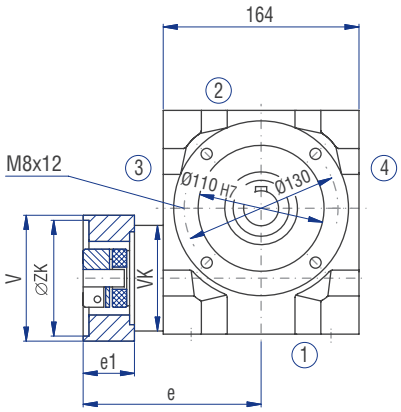


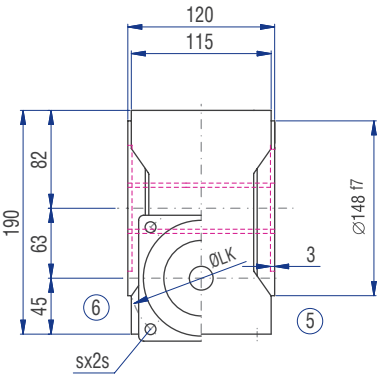
Motor dimensions

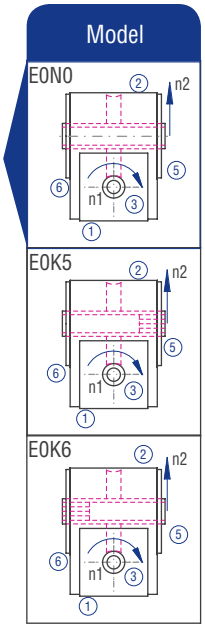
Flange no.	Motor shaft (dxL)	Thread (s)	V [mm]	ZK [mm]	LK [mm]	i [mm]	e [mm]	e1 [mm]
103	19*40	M6	90	60	75	3	154.0	45.0
201	19*40	M5	90	60	90	3	154.0	45.0
301	19*40	M6	90	50	95	4	154.0	45.0
401	19*40	M6	90	80	100	4	154.0	45.0
501	19*40	M8	90	95	115	4	154.0	45.0
601	19*40	M8	90	95	130	4	154.0	45.0
611	19*40	M8	90	110	130	5	154.0	45.0
701	19*40	M8	90	110	145	5	154.0	45.0
802	19*40	M10	90	110	165	5	154.0	45.0
811	24*50	M10	120	130	165	5	177.0	54.0

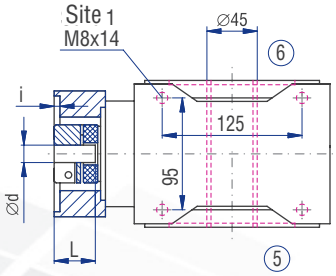
The dimensions e and e1 will change for the coupling type “clamping hub with groove” (KNN). Please contact us for consultation!

The dimensions of the Models not shown can be figured by mirroring available dimensions.



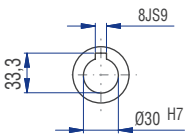


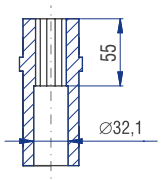


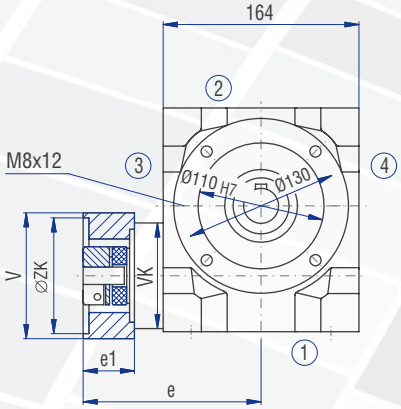


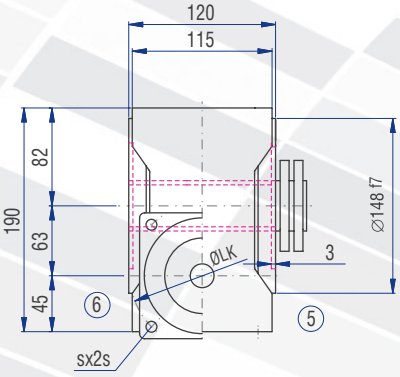
E0N0

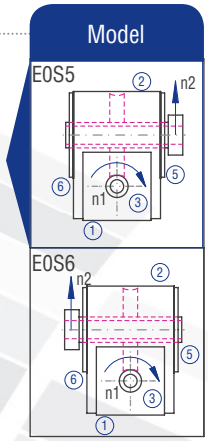
E0K5 / E0K6

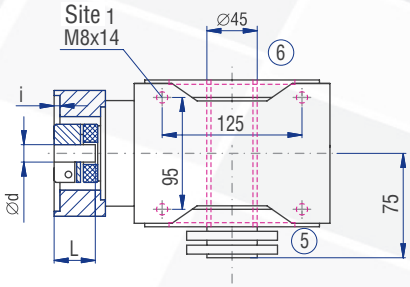


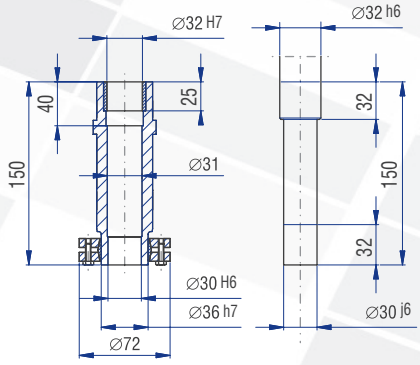




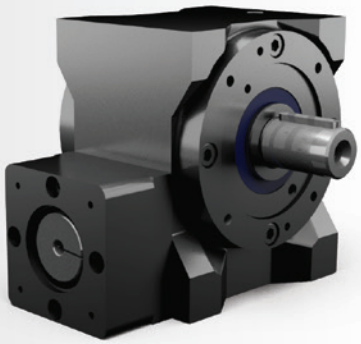








11.5.19 Type SC 080 – Servo worm gearboxes



Characteristics

Characteristic	Standard	Option
Toothing	Hardened and ground worm shaft / bronze worm gear	See chapter 11.5.2
Gear ratio	10:1 to 20:1	
Housing / Flanges	Grey cast iron / aluminium	
Threaded mounting holes	On gearbox side 1 and on the flanges	See chapter 11.5.4
Shaft	Material 1 C45, shaft ends greased Fit with ISO j6 tolerance with parallel keyway: according to DIN 6885 Sheet 1	See chapter 4.6.2
Hollow shaft	Material 1 C45, shafts greased Fit with ISO H7 tolerance with parallel keyway: according to DIN 6885 Sheet 1	See chapter 4.6.3
Radial shaft seal ring	NBR, form A	See chapter 4.8
Ambient temperature	-10°C to +90°C. The values of the performance tables are valid for +20°C	See chapter 4.9.3
Circumferential backlash	< 20 arcmin	See chapter 11.5.11
Protection class	IP 54	See chapter 4.5
Corrosion protection	Prime coat; layer thickness > 40 µm	See chapter 4.4.1
Bearing life L10h	more than 15,000h	See chapter 4.9.1
Oil change intervals	Not required if the oil temperature is kept < 90°C The lifetime of the bearings can be increased by the factor 1.5 if the oil is changed after the first 500 service hours and then every 5000 service hours.	See chapter 11.5.9
Lubricants	Synthetic lubricants	See chapter 11.5.9
Motor flange	Aluminium	See chapter 11.5.14
Coupling	Insertable, flexible claw coupling, suitable for servo-motors For smooth motor shafts clamping hub KN For smooth motor shafts tension ring hub SN For motor shafts with parallel key clamping hub with groove KNN	See chapter 11.5.13

Torques in operating mode S1

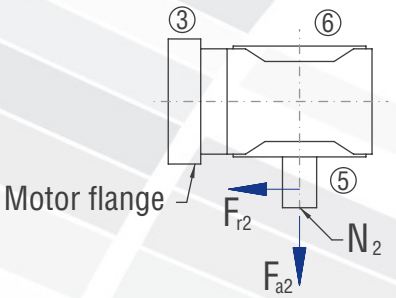
I rated	10:1		20:1	
I ist	40:4		40:2	
	n_2 [1/min]	T_{2N} [Nm]	n_2 [1/min]	T_{2N} [Nm]
4000	400	132	200	153
3000	300	177	150	203
2400	240	222	120	253
1500	150	267	75	303

Torques in operating mode S5

I rated T_{2N} [Nm] n_{1max} [U/min]			10:1 297 4500		20:1 344 4500	
Coupling size	d [mm]		KN	KNN/SN	KN	KNN/SN
K24	11	T_{2B}[Nm]	350,0	408,0	498,0	498,0
		T_{2NOT}[Nm]	450,0	0,0	725,0	0,0
	14	T_{2B}[Nm]	360,0	408,0	498,0	498,0
		T_{2NOT}[Nm]	450,0	625,0	725,0	725,0
	16	T_{2B}[Nm]	390,0	408,0	498,0	498,0
		T_{2NOT}[Nm]	500,0	625,0	725,0	725,0
	19	T_{2B}[Nm]	390,0	408,0	498,0	498,0
		T_{2NOT}[Nm]	600,0	625,0	725,0	725,0
	24	T_{2B}[Nm]	408,0	408,0	498,0	498,0
		T_{2NOT}[Nm]	625,0	625,0	725,0	725,0
	28	T_{2B}[Nm]	408,0	408,0	498,0	498,0
		T_{2NOT}[Nm]	625,0	625,0	725,0	725,0
K28	14	T_{2B}[Nm]	408,0		498,0	
		T_{2NOT}[Nm]	625,0		725,0	
	16	T_{2B}[Nm]	408,0	408,0	498,0	498,0
		T_{2NOT}[Nm]	625,0	625,0	725,0	725,0
	19	T_{2B}[Nm]	408,0	408,0	498,0	498,0
		T_{2NOT}[Nm]	625,0	625,0	725,0	725,0
	24	T_{2B}[Nm]	408,0	408,0	498,0	498,0
		T_{2NOT}[Nm]	625,0	625,0	725,0	725,0
	28	T_{2B}[Nm]	408,0	408,0	498,0	498,0
		T_{2NOT}[Nm]	625,0	625,0	725,0	725,0
	32	T_{2B}[Nm]	408,0	408,0	498,0	498,0
		T_{2NOT}[Nm]	625,0	625,0	725,0	725,0
	38	T_{2B}[Nm]	408,0	408,0	498,0	498,0
		T_{2NOT}[Nm]	625,0	0,0	725,0	0,0

Permissible radial force F_{r2} and axial force F_{a2} on shaft N_2

n_2 [rpm]	200		125		75		50		30		10	
T_2 [Nm]	F_r [N]	F_a [N]	F_r [N]	F_a [N]	F_r [N]	F_a [N]	F_r [N]	F_a [N]	F_r [N]	F_a [N]	F_r [N]	F_a [N]
< 430	3300	1650	3750	1875	4500	2250	5300	2650	6300	3150	7600	3800
> 430	2640	1320	3000	1500	3600	1800	4240	2120	5040	2520	6080	3040



Gearbox inertia moments/mass

Inertia moment J_1 related to the fast-rotating shaft (N_1)

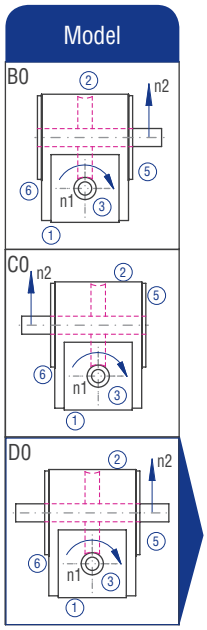
Inertia moment [kgcm²]							
i rated [-]	5:1	7.5:1	10:1	13:1	15:1	20:1	26:1
J [kgcm²]	5.8195	4.2167	2.9560	2.2634	3.2550	2.3977	1.9066

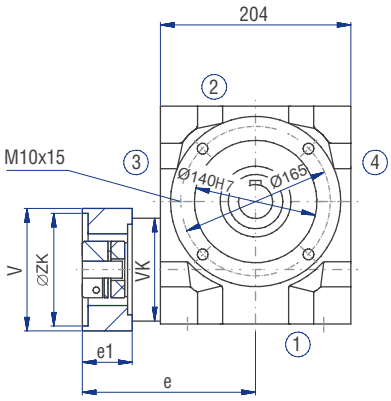
Mass ca. [kg]
30

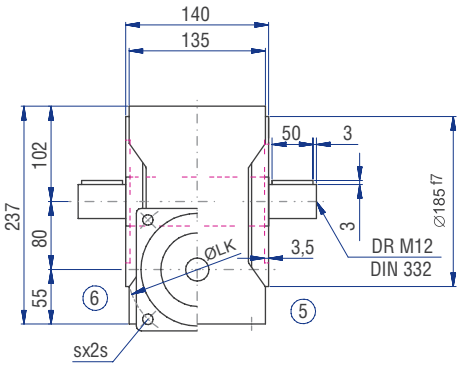
The mass of the gearbox may deviate depending on the flange size and the gear ratio.

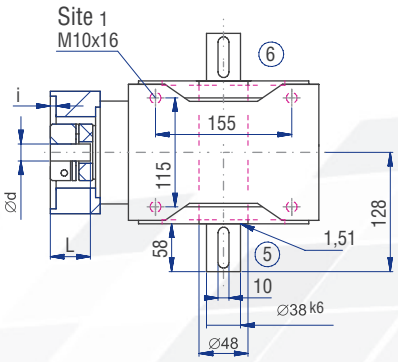
Inertia moments Coupling J

	KN	KNN	SN
	J [kgcm²]	J [kgcm²]	J [kgcm²]
K24	1.0910	1.0910	2.7750
K28	4.1710	4.1710	6.4250

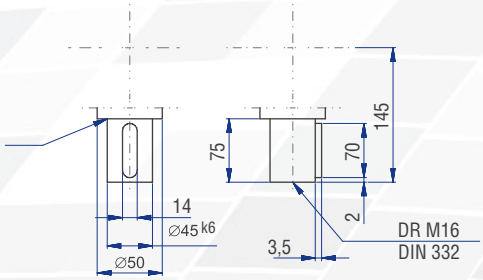


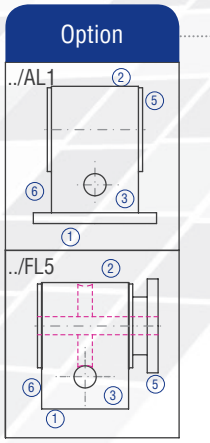


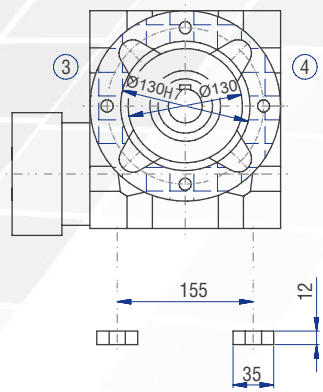


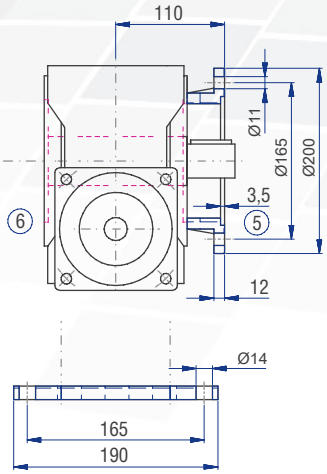


Implementation VV







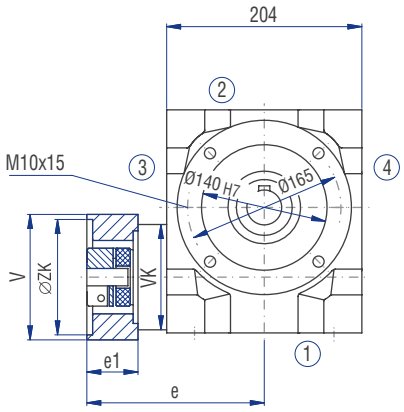


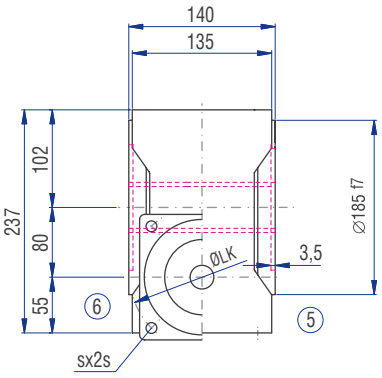
Motor dimensions

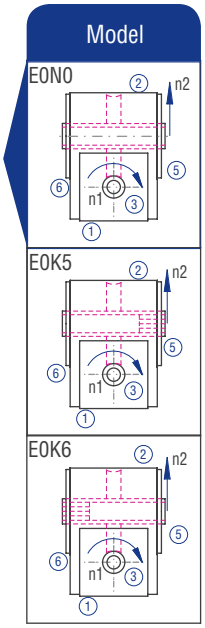
Flange no.	Motor shaft (dxL)	Thread (s)	V [mm]	ZK [mm]	LK [mm]	i [mm]	e [mm]	e1 [mm]
103	24*50	M6	120	60	75	3	192.5	54.0
201	24*50	M5	120	60	90	3	192.5	54.0
301	24*50	M6	120	50	95	4	192.5	54.0
401	24*50	M6	120	80	100	4	192.5	54.0
501	24*50	M8	120	95	115	4	192.5	54.0
601	24*50	M8	120	95	130	4	192.5	54.0
611	24*50	M8	120	110	130	5	192.5	54.0
701	24*50	M8	120	110	145	5	192.5	54.0
802	24*50	M10	120	110	165	5	192.5	54.0
811	24*50	M10	120	130	165	5	192.5	54.0
403	32*60	M6	140	80	100	4	202.5	61.0
502	32*60	M8	140	95	115	4	202.5	61.0
616	32*60	M10	140	110	130	5	202.5	61.0
902	32*60	M12	140	130	215	6	202.5	61.0
911	32*60	M12	140	180	215	6	202.5	61.0
932	38*80	M12	160	180	215	6	241.0	99.5

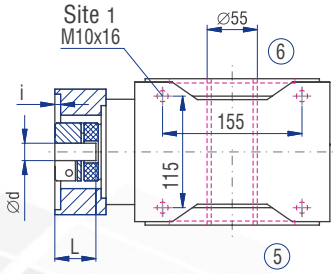
The dimensions e and e1 will change for the coupling type “clamping hub with groove” (KNN). Please contact us for consultation!

The dimensions of the Models not shown can be figured by mirroring available dimensions.



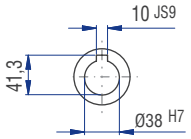


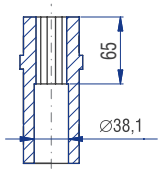


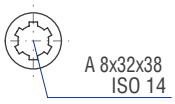


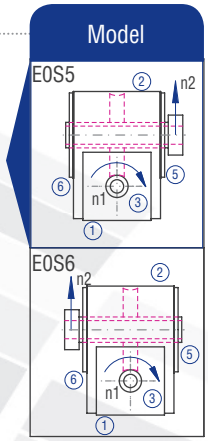
E0N0

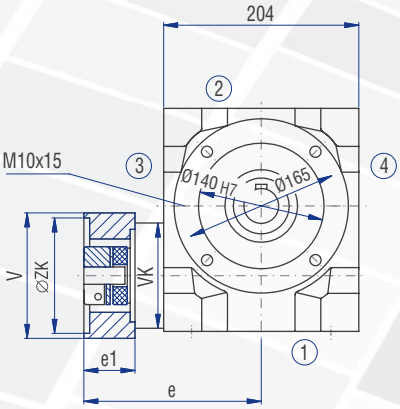
E0K5 / E0K6

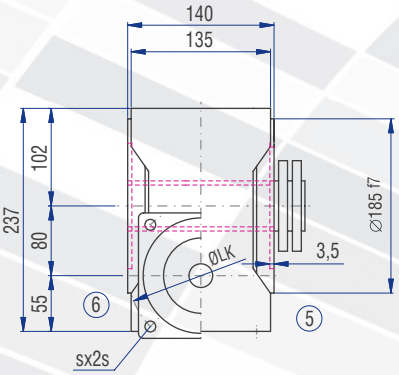


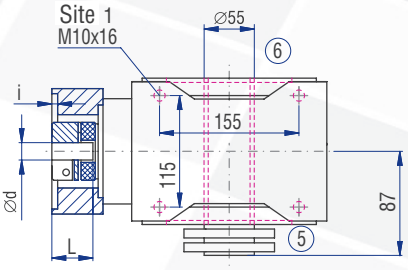


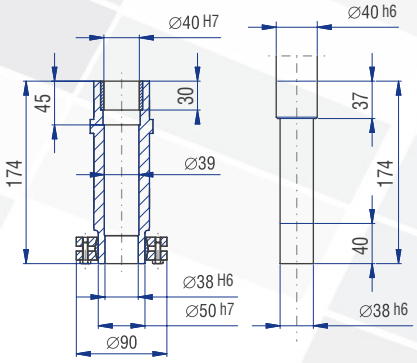




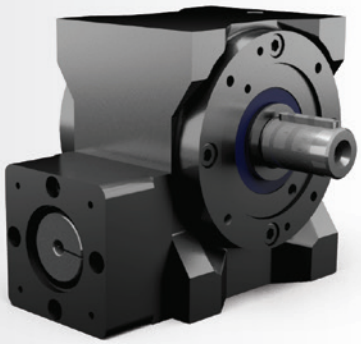








11.5.20 Type SC 100 – Servo worm gearboxes



Characteristics

Characteristic	Standard	Option
Toothing	Hardened and ground worm shaft / bronze worm gear	See chapter 11.5.2
Gear ratio	10:1 to 20:1	
Housing / Flanges	Grey cast iron / aluminium	
Threaded mounting holes	On gearbox side 1 and on the flanges	See chapter 11.5.4
Shaft	Material 1 C45, shaft ends greased Fit with ISO j6 tolerance with parallel keyway: according to DIN 6885 Sheet 1	See chapter 4.6.2
Hollow shaft	Material 1 C45, shafts greased Fit with ISO H7 tolerance with parallel keyway: according to DIN 6885 Sheet 1	See chapter 4.6.3
Radial shaft seal ring	NBR, form A	See chapter 4.8
Ambient temperature	-10°C to +90°C. The values of the performance tables are valid for +20°C	See chapter 4.9.3
Circumferential backlash	< 20 arcmin	See chapter 11.5.11
Protection class	IP 54	See chapter 4.5
Corrosion protection	Prime coat; layer thickness > 40 µm	See chapter 4.4.1
Bearing life L10h	more than 15,000h	See chapter 4.9.1
Oil change intervals	Not required if the oil temperature is kept < 90°C The lifetime of the bearings can be increased by the factor 1.5 if the oil is changed after the first 500 service hours and then every 5000 service hours.	See chapter 11.5.9
Lubricants	Synthetic lubricants	See chapter 11.5.9
Motor flange	Aluminium	See chapter 11.5.14
Coupling	Insertable, flexible claw coupling, suitable for servo-motors For smooth motor shafts clamping hub KN For smooth motor shafts tension ring hub SN For motor shafts with parallel key clamping hub with groove KNN	See chapter 11.5.13

Torques in operating mode S1

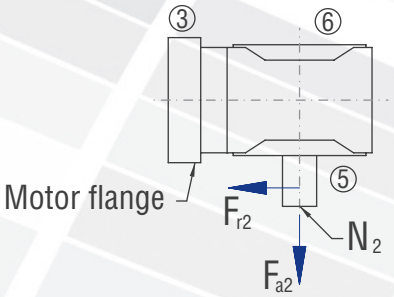
I rated	10:1		20:1	
I ist	40:4		40:2	
	n_2 [1/min]	T_{2N} [Nm]	n_2 [1/min]	T_{2N} [Nm]
4000	400	132	200	153
3000	300	177	150	203
2400	240	222	120	253
1500	150	267	75	303

Torques in operating mode S5

I rated T_{2N} [Nm] n_{1max} [U/min]			10:1 297 4500		20:1 344 4500	
Coupling size	d [mm]		KN	KNN/SN	KN	KNN/SN
K24	11	T_{2B}[Nm]	350,0	408,0	498,0	498,0
		T_{2NOT}[Nm]	450,0	0,0	725,0	0,0
	14	T_{2B}[Nm]	360,0	408,0	498,0	498,0
		T_{2NOT}[Nm]	450,0	625,0	725,0	725,0
	16	T_{2B}[Nm]	390,0	408,0	498,0	498,0
		T_{2NOT}[Nm]	500,0	625,0	725,0	725,0
	19	T_{2B}[Nm]	390,0	408,0	498,0	498,0
		T_{2NOT}[Nm]	600,0	625,0	725,0	725,0
	24	T_{2B}[Nm]	408,0	408,0	498,0	498,0
		T_{2NOT}[Nm]	625,0	625,0	725,0	725,0
	28	T_{2B}[Nm]	408,0	408,0	498,0	498,0
		T_{2NOT}[Nm]	625,0	625,0	725,0	725,0
K28	14	T_{2B}[Nm]	408,0		498,0	
		T_{2NOT}[Nm]	625,0		725,0	
	16	T_{2B}[Nm]	408,0	408,0	498,0	498,0
		T_{2NOT}[Nm]	625,0	625,0	725,0	725,0
	19	T_{2B}[Nm]	408,0	408,0	498,0	498,0
		T_{2NOT}[Nm]	625,0	625,0	725,0	725,0
	24	T_{2B}[Nm]	408,0	408,0	498,0	498,0
		T_{2NOT}[Nm]	625,0	625,0	725,0	725,0
	28	T_{2B}[Nm]	408,0	408,0	498,0	498,0
		T_{2NOT}[Nm]	625,0	625,0	725,0	725,0
	32	T_{2B}[Nm]	408,0	408,0	498,0	498,0
		T_{2NOT}[Nm]	625,0	625,0	725,0	725,0
	38	T_{2B}[Nm]	408,0	408,0	498,0	498,0
		T_{2NOT}[Nm]	625,0	0,0	725,0	0,0

Permissible radial force F_{r2} and axial force F_{a2} on shaft N_2

n_2 [rpm]	200		125		75		50		30		10	
T_2 [Nm]	F_r [N]	F_a [N]	F_r [N]	F_a [N]	F_r [N]	F_a [N]	F_r [N]	F_a [N]	F_r [N]	F_a [N]	F_r [N]	F_a [N]
< 800	3650	1825	4000	2000	4750	2375	5600	2800	6700	3350	9500	4750
> 800	2920	1460	3200	1600	3800	1900	4480	2240	5360	2680	7600	3800



Gearbox inertia moments/mass

Inertia moment J_1 related to the fast-rotating shaft (N_1)

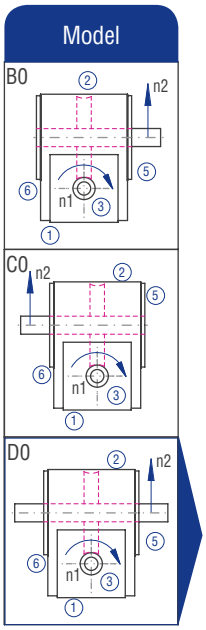
Inertia moment [kgcm²]							
i rated [-]	5:1	7.5:1	10:1	13:1	15:1	20:1	26:1
J [kgcm²]	22.3780	17.8750	14.0300	12.2840	15.1730	12.3740	11.3360

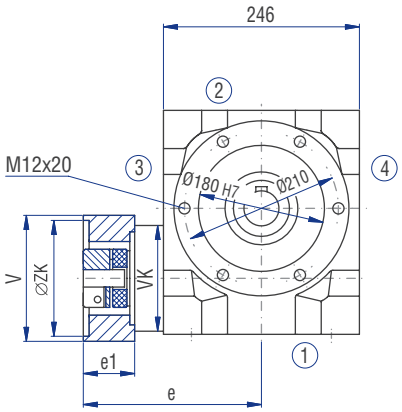
Mass ca. [kg]
53

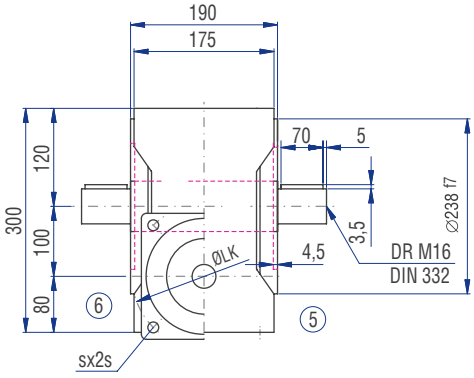
The mass of the gearbox may deviate depending on the flange size and the gear ratio.

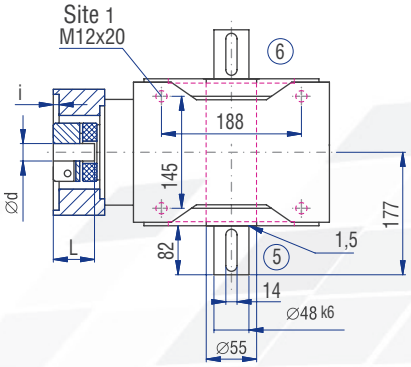
Inertia moments Coupling J

	KN	KNN	SN
	J [kgcm²]	J [kgcm²]	J [kgcm²]
	4.1710	4.1710	6.4250
K38	8.4580	8.4580	19.6460

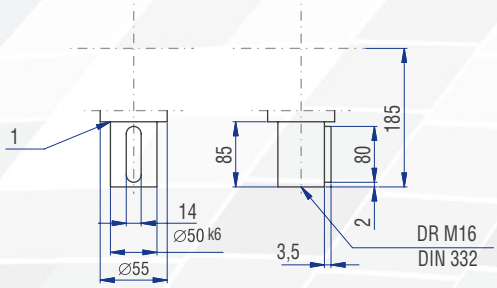


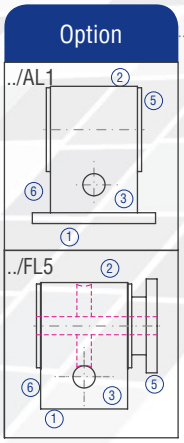


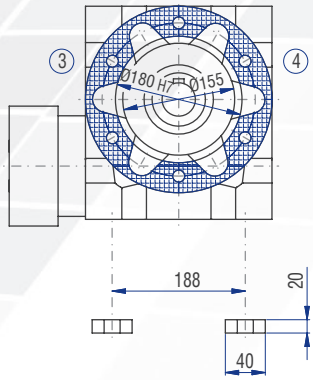


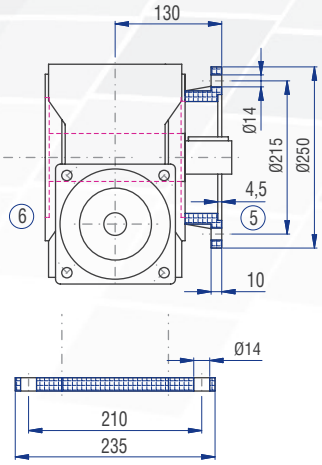


Implementation VV







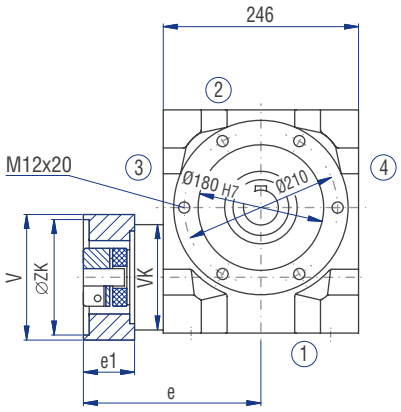


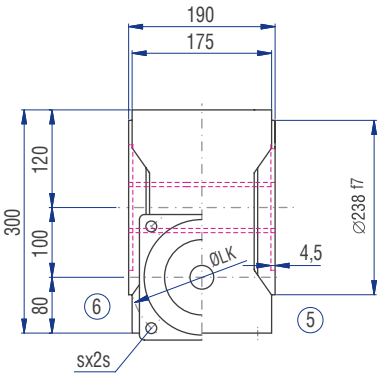
Motor dimensions

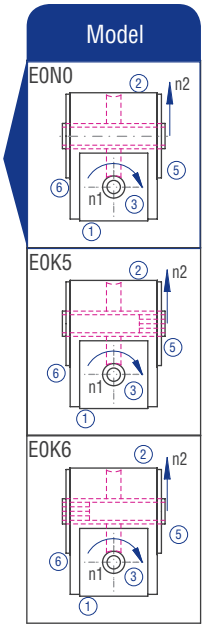
Flange no.	Motor shaft (dxL)	Thread (s)	V [mm]	ZK [mm]	LK [mm]	i [mm]	e [mm]	e1 [mm]
601	32*60	M8	160	95	130	4	242.0	62.0
611	32*60	M8	160	110	130	5	242.0	62.0
701	32*60	M8	160	110	145	5	242.0	62.0
802	32*60	M10	160	110	165	5	242.0	62.0
811	32*60	M10	160	130	165	5	242.0	62.0
403	32*60	M6	160	80	100	4	242.0	62.0
502	32*60	M8	160	95	115	4	242.0	62.0
616	32*60	M10	160	110	130	5	242.0	62.0
902	32*60	M12	160	130	215	6	242.0	62.0
911	32*60	M12	160	180	215	6	242.0	62.0

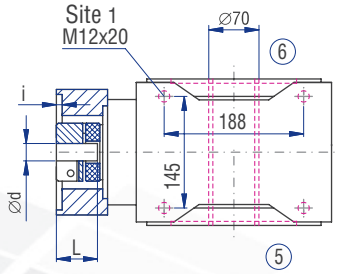
The dimensions e and e1 will change for the coupling type “clamping hub with groove” (KNN). Please contact us for consultation!

The dimensions of the Models not shown can be figured by mirroring available dimensions.









E0N0

E0K5 / E0K6