

9.3.7 Type S 050 – Standard worm gearboxes



Characteristics

Characteristic	Standard	Option
Toothings	Hardened and ground worm shaft / bronze worm gear	See chapter 9.2.1
Gear ratio	5:1 to 83:1	
Housing / Flanges	Grey cast iron	
Threaded mounting hole	On gearbox side 1 and on the flanges	See chapter 9.2.3
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	< 30 arcmin	See chapter 9.2.10
Protection class	IP 54	See chapter 4.5
Corrosion protection	Prime coat; layer thickness > 40 µm	See chapter 4.4
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 9.2.8
Lubricant	Synthetic lubricants	See chapter 9.2.8

Performance data

i	i ist		n ₁ [rpm]					
			3000	1500	1000	750	500	150
5:1	29:6	n ₂ [rpm]	600.0	300.0	200.0	150.0	100.0	30.0
		P _{1N} [kW]	4.74	3.29	2.54	2.08	1.47	0.54
		T _{2N} [Nm]	70	96	110	119	125	145
		P _{1NT} [kW]	3.90	2.76	2.10	2.04	1.76	0.00
		Efficiency	0.96	0.95	0.94	0.93	0.92	0.88
7.5:1	29:4	n ₂ [rpm]	400.0	200.0	133.0	100.0	66.0	20.0
		P _{1N} [kW]	3.41	2.42	1.84	1.43	1.01	0.40
		T _{2N} [Nm]	74	104	117	120	125	153
		P _{1NT} [kW]	3.16	2.12	1.76	1.57	1.36	0.00
		Efficiency	0.94	0.93	0.92	0.91	0.89	0.83
10:1	38:4	n ₂ [rpm]	300.0	150.0	100.0	75.0	50.0	15.0
		P _{1N} [kW]	3.02	1.64	1.15	0.96	0.71	0.26
		T _{2N} [Nm]	85	91	94	103	112	130
		P _{1NT} [kW]	2.82	1.88	1.56	1.40	1.23	0.00
		Efficiency	0.93	0.92	0.90	0.89	0.87	0.82
13:1	51:4	n ₂ [rpm]	230.0	115.0	76.0	57.0	38.0	11.0
		P _{1N} [kW]	1.51	0.82	0.58	0.45	0.32	0.12
		T _{2N} [Nm]	55	59	62	64	66	75
		P _{1NT} [kW]	2.51	1.67	0.14	1.27	1.13	0.00
		Efficiency	0.90	0.89	0.88	0.87	0.85	0.80
15:1	29:2	n ₂ [rpm]	200.0	100.0	66.0	50.0	33.0	10.0
		P _{1N} [kW]	1.82	1.32	1.02	0.84	0.65	0.26
		T _{2N} [Nm]	74	106	120	131	145	179
		P _{1NT} [kW]	1.91	1.27	1.05	0.94	0.82	0.00
		Efficiency	0.88	0.87	0.85	0.84	0.81	0.74
20:1	38:2	n ₂ [rpm]	150.0	75.0	50.0	37.0	25.0	7.5
		P _{1N} [kW]	1.54	1.03	0.73	0.63	0.47	0.18
		T _{2N} [Nm]	81	106	110	123	133	158
		P _{1NT} [kW]	1.70	1.12	0.93	0.84	0.74	0.00
		Efficiency	0.87	0.85	0.83	0.81	0.78	0.72

	5:1	7.5:1	10:1	13:1	15:1	20:1	26:1	30:1	40:1	53:1	62:1	83:1
T _{2max} [Nm]	150	167	152	100	195	179	137	219	197	145	120	112

Permissible radial force F_{r1} and axial force F_{a1} on shaft N₁

n ₁ [rpm]	3000		1500		1000		750		500		150	
T ₁ [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]
< 15	590	295	730	365	820	410	940	470	1050	525	1300	650
> 15	450	225	560	280	630	315	720	360	810	405	1000	500

Permissible radial force F_{r2} and axial force F_{a2} on shaft N₂

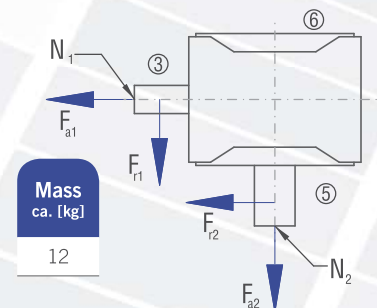
n ₂ [rpm]	200		125		75		50		30		10	
T ₂ [Nm]	F _r [N]	F _a [N]	F _r [N]	F _a [N]	F _r [N]	F _a [N]	F _r [N]	F _a [N]	F _r [N]	F _a [N]	F _r [N]	F _a [N]
< 120	2000	1000	2400	1200	2850	1425	3350	1675	4000	2000	4800	2400
> 120	1540	770	1850	925	2190	1095	2580	1290	3080	1540	3700	1850

Inertia moments/mass

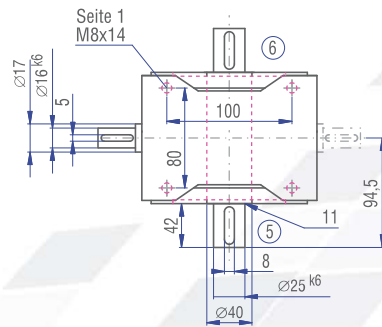
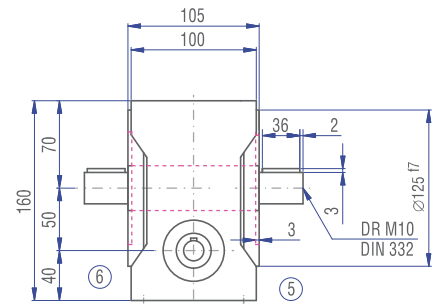
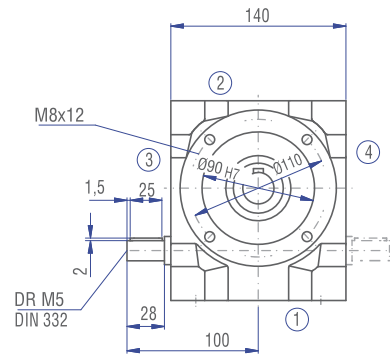
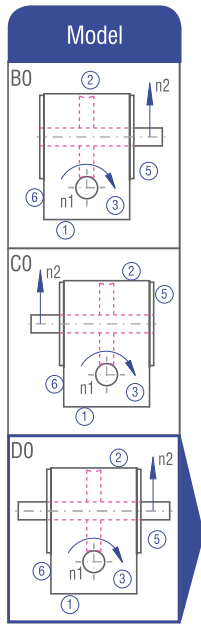
Inertia moment J₁ related to the fast-rotating shaft (N₁)

	Inertia moment [kgcm ²]											
	5:1	7.5:1	10:1	13:1	15:1	20:1	26:1	30:1	40:1	53:1	62:1	83:1
J ₁	0.95	0.73	0.58	0.49	0.60	0.50	0.44	0.57	0.48	0.42	0.47	0.42

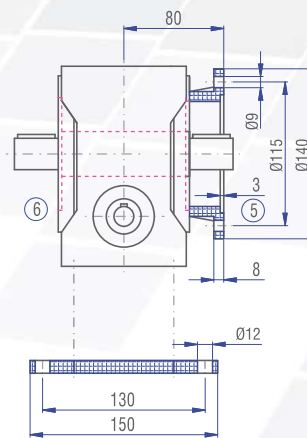
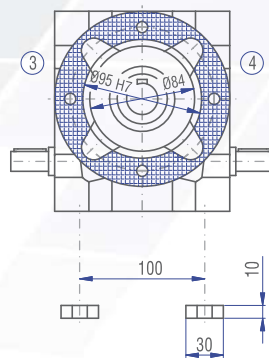
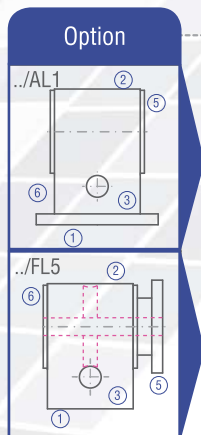
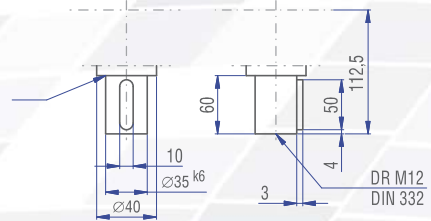
The mass of the gearbox may deviate depending on the gear ratio and the type.

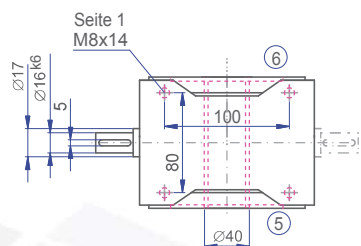
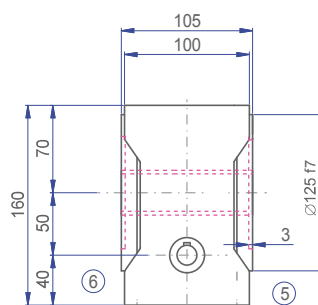
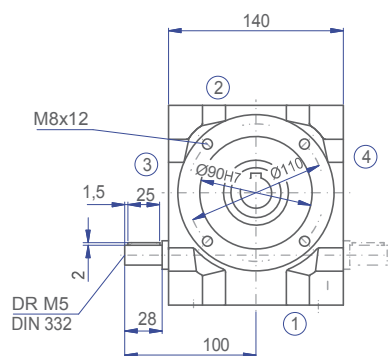


9.3.7 Type S 050 – Standard worm gearboxes



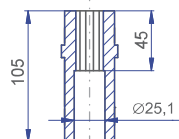
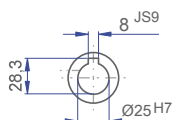
Implementation VV



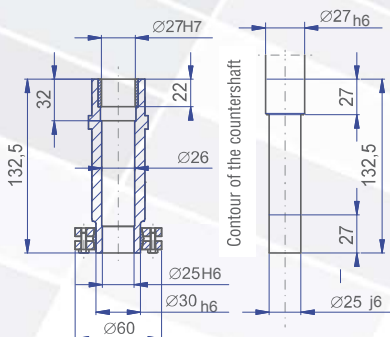
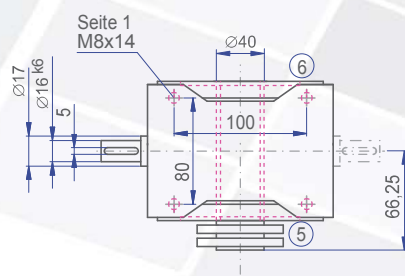
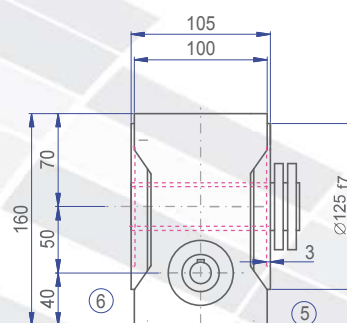
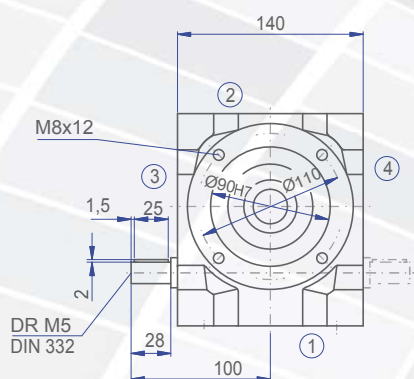
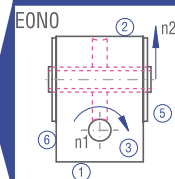


E0N0

E0K5 / E0K6



Model



Model

