

9.3.10 Type S 100 – 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 [1/min]					
			3000	1500	1000	750	500	150
5:1	30:6	n ₂ [1/min]	600,0	300,0	200,0	150,0	100,0	30,0
		P _{1N} [kW]	29,45	19,31	14,99	12,45	9,47	4,01
		T _{2N} [Nm]	450	590	680	745	850	1.150
		P _{1NT} [kW]	11,30	8,60	7,55	6,87	5,96	0,00
		Wirkungsgrad	0,96	0,96	0,95	0,94	0,94	0,90
7,5:1	30:4	n ₂ [1/min]	400,0	200,0	133,0	100,0	66,0	20,0
		P _{1N} [kW]	22,62	14,33	10,92	9,10	7,00	3,03
		T _{2N} [Nm]	513	650	743	817	932	1.258
		P _{1NT} [kW]	9,06	6,85	5,99	5,43	4,71	0,00
		Wirkungsgrad	0,95	0,95	0,95	0,94	0,93	0,87
10:1	40:4	n ₂ [1/min]	300,0	150,0	100,0	75,0	50,0	15,0
		P _{1N} [kW]	18,55	11,75	8,95	7,45	5,79	2,02
		T _{2N} [Nm]	555	703	803	882	1.006	1.095
		P _{1NT} [kW]	8,57	6,35	5,49	4,95	4,30	0,00
		Wirkungsgrad	0,94	0,94	0,94	0,93	0,91	0,85
13:1	52:4	n ₂ [1/min]	230,0	115,0	76,0	57,0	38,0	11,0
		P _{1N} [kW]	11,09	6,09	4,30	3,37	2,37	0,85
		T _{2N} [Nm]	427	464	486	502	523	586
		P _{1NT} [kW]	7,87	5,73	4,92	4,43	3,85	0,00
		Wirkungsgrad	0,93	0,92	0,91	0,90	0,89	0,83
15:1	30:2	n ₂ [1/min]	200,0	100,0	66,0	50,0	33,0	10,0
		P _{1N} [kW]	13,12	8,32	6,41	5,34	4,16	1,88
		T _{2N} [Nm]	564	715	817	898	1.025	1.386
		P _{1NT} [kW]	5,76	4,31	3,75	3,40	2,95	0,00
		Wirkungsgrad	0,90	0,90	0,89	0,88	0,86	0,77
20:1	40:2	n ₂ [1/min]	150,0	75,0	50,0	37,0	25,0	7,5
		P _{1N} [kW]	10,84	6,87	5,28	4,45	3,47	1,49
		T _{2N} [Nm]	614	778	888	975	1.112	1.441
		P _{1NT} [kW]	5,44	3,99	3,44	3,10	2,69	0,00
		Wirkungsgrad	0,89	0,89	0,88	0,86	0,84	0,76
26:1	52:2	n ₂ [1/min]	115,0	57,0	38,0	28,0	19,0	5,8
		P _{1N} [kW]	7,63	4,20	3,00	2,38	1,72	0,64
		T _{2N} [Nm]	556	605	634	655	683	773
		P _{1NT} [kW]	4,94	3,57	3,06	2,75	2,40	0,00
		Wirkungsgrad	0,88	0,87	0,85	0,83	0,80	0,73
30:1	30:1	n ₂ [1/min]	100,0	50,0	33,0	25,0	16,0	5,0
		P _{1N} [kW]	7,53	4,78	3,60	3,19	2,51	1,18
		T _{2N} [Nm]	590	748	825	950	1.080	1.437
		P _{1NT} [kW]	3,50	2,60	2,27	2,06	1,81	0,00
		Wirkungsgrad	0,82	0,82	0,80	0,78	0,75	0,64
40:1	40:1	n ₂ [1/min]	75,0	37,0	25,0	18,0	12,0	3,8
		P _{1N} [kW]	6,33	4,01	3,13	2,65	2,13	1,00
		T _{2N} [Nm]	645	817	933	1.025	1.169	1.581
		P _{1NT} [kW]	3,32	2,42	2,09	1,90	1,67	0,00
		Wirkungsgrad	0,80	0,80	0,78	0,76	0,72	0,62
53:1	52:1	n ₂ [1/min]	57,0	28,0	18,0	14,0	9,4	2,8
		P _{1N} [kW]	4,76	2,63	1,92	1,53	1,11	0,45
		T _{2N} [Nm]	615	670	704	728	762	870
		P _{1NT} [kW]	3,04	2,19	1,88	1,71	1,51	0,00
		Wirkungsgrad	0,78	0,77	0,74	0,72	0,69	0,59
62:1	63:1	n ₂ [1/min]	48,0	24,0	16,0	12,0	8,1	2,4
		P _{1N} [kW]	4,59	2,91	2,17	1,70	1,21	0,44
		T _{2N} [Nm]	645	817	886	886	886	886
		P _{1NT} [kW]	2,39	1,74	1,52	1,39	1,24	0,00
		Wirkungsgrad	0,70	0,70	0,68	0,65	0,61	0,50
83:1	82:1	n ₂ [1/min]	36,0	18,0	12,0	9,0	6,0	1,8
		P _{1N} [kW]	3,33	1,74	1,23	0,94	0,67	0,24
		T _{2N} [Nm]	591	599	599	599	599	599
		P _{1NT} [kW]	2,24	1,61	1,40	1,28	1,15	0,00
		Wirkungsgrad	0,68	0,66	0,62	0,61	0,57	0,47

	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]	1190	1360	1090	736	1610	1440	980	1765	1582	1080	1040	1000

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]
< 80	1250	625	1600	800	1800	900	2000	1000	2250	1125	2650	1325
> 80	960	480	1230	615	1380	690	1540	770	1730	865	2040	1020

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

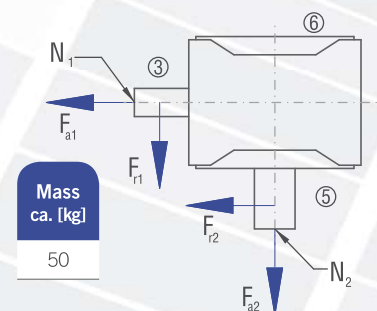
n ₂ [rpm]	200		125		75		50		30		10	
T ₂ [Nm]	F _r [N]	F _a [N]	F _r [N]	F _a [N]	F _r [N]	F _a [N]	F _r [N]	F _a [N]	F _r [N]	F _a [N]	F _r [N]	F _a [N]
< 800	3650	1825	4000	2000	4750	2375	5600	2800	6700	3350	9500	4750
> 800	2920	1460	3200	1600	3800	1900	4480	2240	5360	2680	7600	3800

Inertia moments/mass

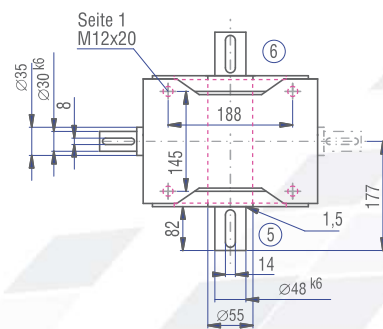
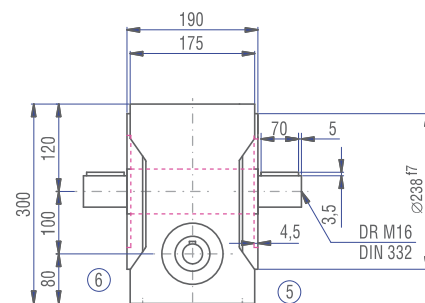
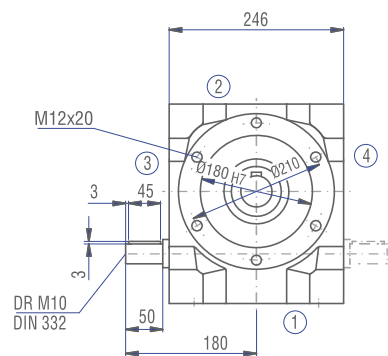
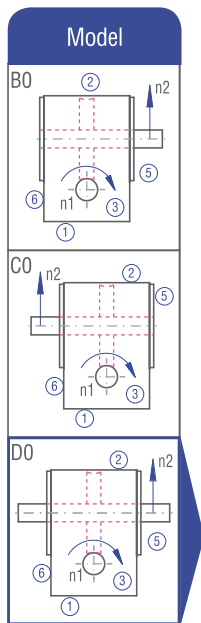
Inertia moment J₁ related to the fast-rotating shaft (N₁)

	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	22.38	17.88	14.03	12.28	15.17	12.37	11.34	14.50	11.96	11.10	12.56	11.34

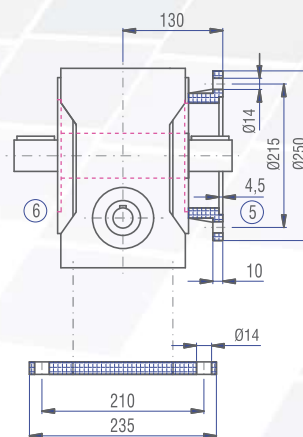
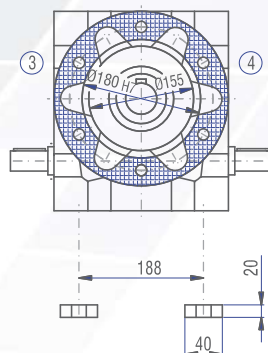
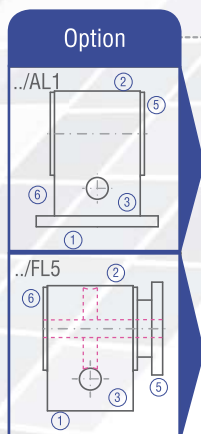
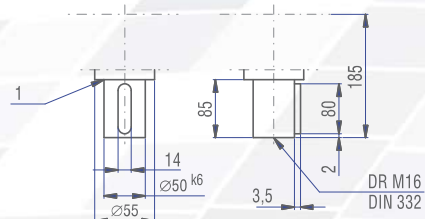
The mass of the gearbox may deviate depending on the gear ratio and the type.

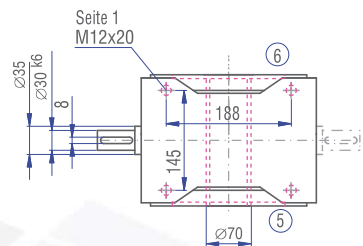
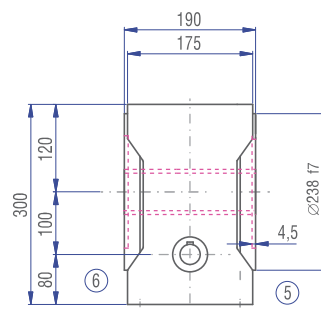
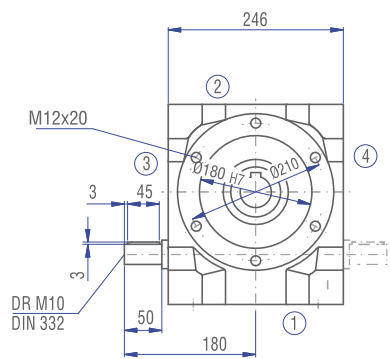


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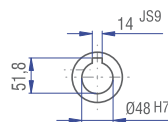


Implementation VV

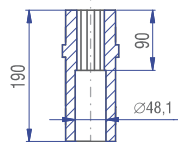




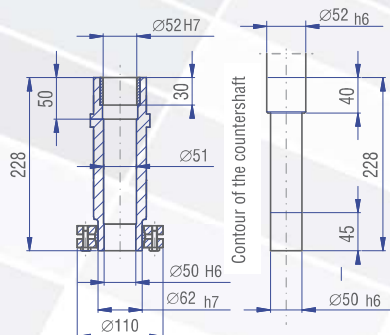
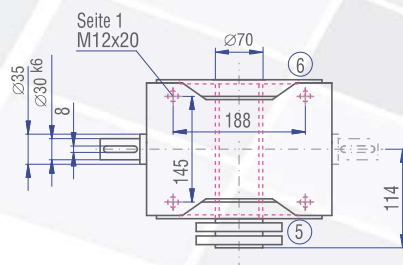
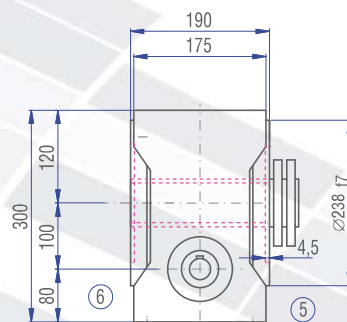
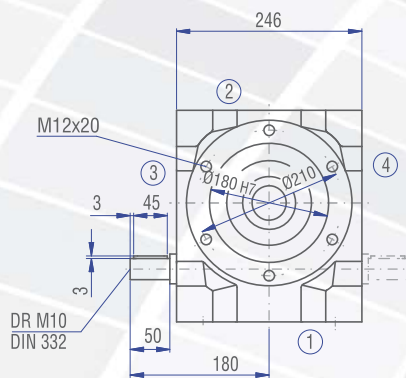
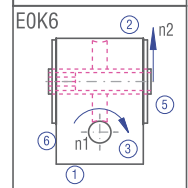
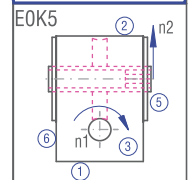
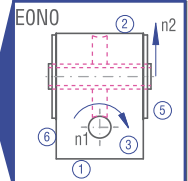
EON0



EOK5 / EOK6



Model



Model

