9.3.9 Type S 080 – Standard worm gearboxes

Characteristics

Characteristic	Standard	Option
Toothing	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	30:6	n_2 [rpm]	600.0	300.0	200.0	150.0	100.0	30.0
		P_{1N} [kW]	11.13	8.18	4.36	5.55	4.01	1.58
		T_{2N} [Nm]	170	250	298	332	360	448
		P_{1NT} [kW]	8.62	6.68	5.70	5.05	4.24	0.00
		Efficiency	0.96	0.96	0.95	0.94	0.94	0.89
7.5:1	30:4	n_2 [rpm]	400.0	200.0	133.0	100.0	66.0	20.0
		P_{1N} [kW]	8.64	6.37	5.01	4.36	3.33	1.39
		T_{2N} [Nm]	196	289	341	391	439	569
		P_{1NT} [kW]	6.69	5.14	4.37	3.88	3.27	0.00
		Efficiency	0.95	0.95	0.95	0.94	0.92	0.86
10:1	40:4	n_2 [rpm]	300.0	150.0	100.0	75.0	50.0	15.0
		P_{1N} [kW]	6.58	4.96	3.79	3.15	2.35	0.96
		T_{2N} [Nm]	197	297	340	373	408	513
		P_{1NT} [kW]	5.92	4.47	3.79	3.36	2.86	0.00
		Efficiency	0.94	0.94	0.94	0.93	0.91	0.84
13:1	53:4	n_2 [rpm]	230.0	115.0	76.0	57.0	38.0	11.0
		P_{1N} [kW]	4.41	2.41	1.70	1.33	0.94	0.34
		T_{2N} [Nm]	173	187	196	202	210	236
		P_{1NT} [kW]	5.27	3.91	3.32	2.96	2.56	0.00
		Efficiency	0.93	0.92	0.91	0.90	0.88	0.83
15:1	30:2	n_2 [rpm]	200.0	100.0	66.0	50.0	33.0	10.0
		P_{1N} [kW]	5.61	4.10	3.26	2.81	2.18	0.93
		T_{2N} [Nm]	241	352	415	473	530	681
		P_{1NT} [kW]	4.08	3.09	2.62	2.32	1.97	0.00
		Efficiency	0.90	0.90	0.89	0.88	0.85	0.77
20:1	40:2	n_2 [rpm]	150.0	75.0	50.0	37.0	25.0	7.5
		P_{1N} [kW]	4.24	3.04	2.37	2.05	1.57	0.64
		T_{2N} [Nm]	240	344	399	450	498	615
		P_{1NT} [kW]	3.59	2.67	2.26	2.01	1.72	0.00
		Efficiency	0.89	0.89	0.88	0.86	0.83	0.75

i	i ist		n_1 [rpm]					
			3000	1500	1000	750	500	150
26:1	53:2	n_2 [rpm]	115.0	57.0	38.0	28.0	19.0	5.8
		P_{1N} [kW]	2.83	1.67	1.19	0.94	0.68	0.25
		T_{2N} [Nm]	210	245	256	264	275	312
		P_{1NT} [kW]	3.19	2.34	1.99	1.78	1.55	0.00
		Efficiency	0.88	0.87	0.85	0.83	0.80	0.73
30:1	30:1	n_2 [rpm]	100.0	50.0	33.0	25.0	16.0	5.0
		P_{1N} [kW]	3.47	2.52	2.03	1.78	1.38	0.63
		T_{2N} [Nm]	272	395	456	530	593	760
		P_{1NT} [kW]	2.41	1.81	1.54	1.38	1.18	0.00
		Efficiency	0.82	0.82	0.80	0.78	0.75	0.63
40:1	40:1	n_2 [rpm]	75.0	37.0	25.0	18.0	12.0	3.8
		P_{1N} [kW]	2.62	1.87	1.49	1.31	1.02	0.40
		T_{2N} [Nm]	267	381	443	501	553	625
		P_{1NT} [kW]	2.14	1.58	1.35	1.21	1.05	0.00
		Efficiency	0.80	0.80	0.78	0.75	0.71	0.61
53:1	53:1	n_2 [rpm]	57.0	28.0	18.0	14.0	9.4	2.8
		P_{1N} [kW]	1.78	1.04	0.76	0.61	0.45	0.18
		T_{2N} [Nm]	234	271	284	294	308	352
		P_{1NT} [kW]	1.93	1.41	1.20	1.09	0.96	0.00
		Efficiency	0.78	0.77	0.74	0.71	0.68	0.58
62:1	62:1	n_2 [rpm]	48.0	24.0	16.0	12.0	8.1	2.4
		P_{1N} [kW]	1.40	1.01	0.81	0.69	0.54	0.23
		T_{2N} [Nm]	194	279	325	352	393	448
		P_{1NT} [kW]	1.55	1.15	0.98	0.89	0.78	0.00
		Efficiency	0.70	0.70	0.68	0.65	0.61	0.49
83:1	82:1	n_2 [rpm]	36.0	18.0	12.0	9.0	6.0	1.8
		P_{1N} [kW]	1.10	0.90	0.64	0.49	0.35	0.13
		T_{2N} [Nm]	196	304	304	304	304	304
		P_{1NT} [kW]	1.43	1.04	0.90	0.82	0.73	0.00
		Efficiency	0.68	0.65	0.61	0.59	0.55	0.46

	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]	610	695	625	321	826	725	432	920	780	480	480	510

Permissible radial force F_{r1} and axial force F_{a1} on shaft N_1

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]
< 35	1000	500	1250	625	1420	710	1600	800	1780	890	2200	1100
> 35	770	385	960	480	1090	545	1230	615	1470	735	1690	845

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

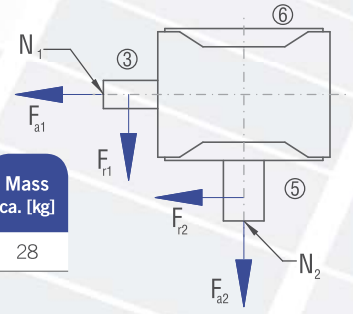
n_2 [rpm]	200		125		75		50		30		10	
T_2 [Nm]	F_r [N]	F_a [N]	F_r [N]	F_a [N]	F_r [N]	F_a [N]	F_r [N]	F_a [N]	F_r [N]	F_a [N]	F_r [N]	F_a [N]
< 430	3300	1650	3750	1875	4500	2250	5300	2650	6300	3150	7600	3800
> 430	2640	1320	3000	1500	3600	1800	4240	2120	5040	2520	6080	3040

Inertia moments/mass

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

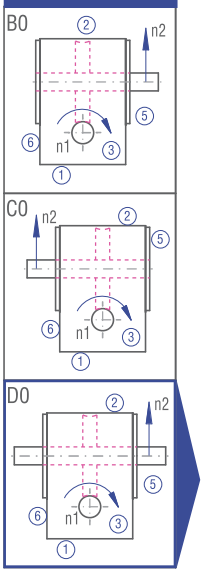
	Inertia moment [kgcm^2]											
	5:1	7.5:1	10:1	13:1	15:1	20:1	26:1	30:1	40:1	53:1	62:1	83:1
J1	5.82	4.22	2.96	2.26	3.26	2.40	1.91	3.01	2.26	1.82	2.51	1.91

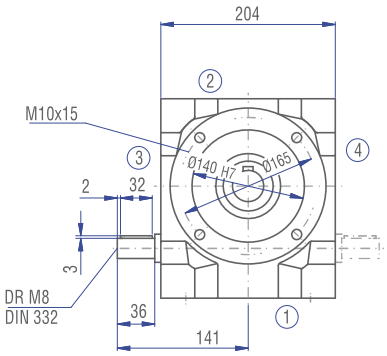
Mass ca. [kg]
28

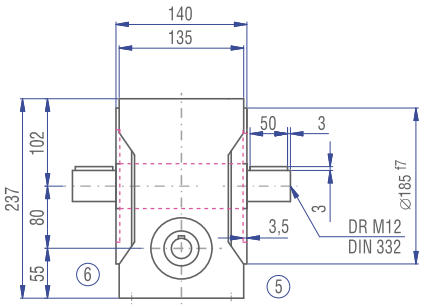


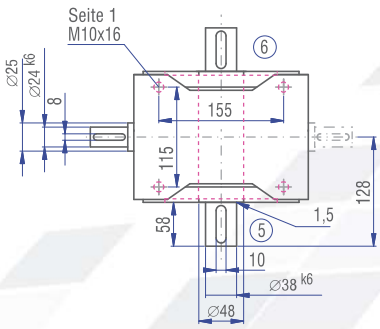
The mass of the gearbox may deviate depending on the gear ratio and the type.

Model

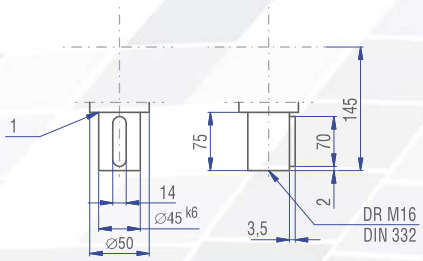




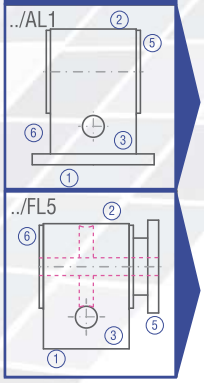


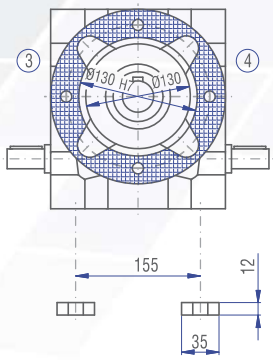


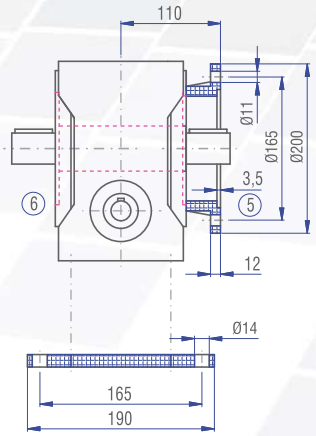
Implementation VV



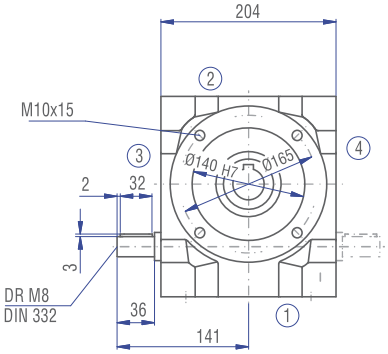
Option

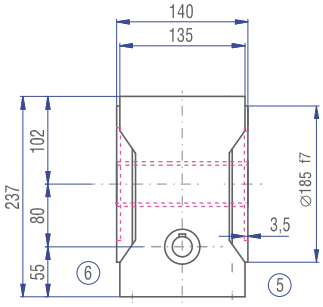


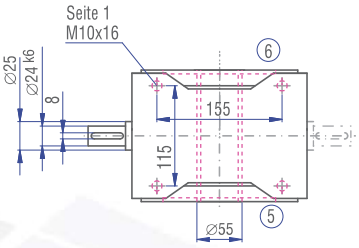




The dimensions of the Models not shown can be figured by mirroring available dimensions.







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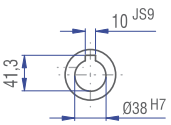

E0K5 / E0K6