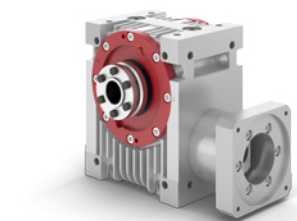
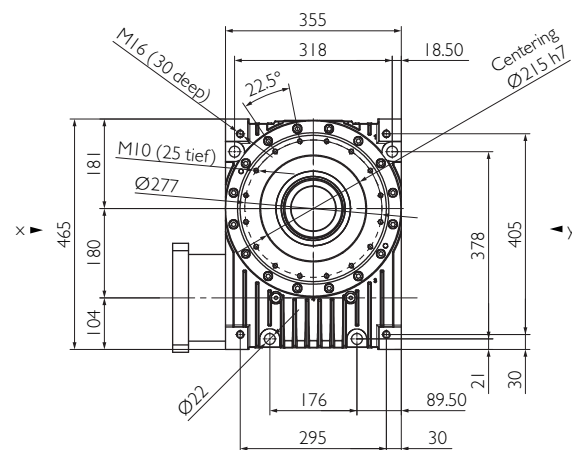
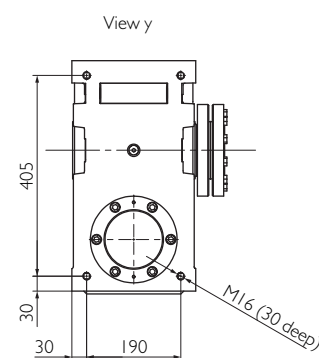


Input



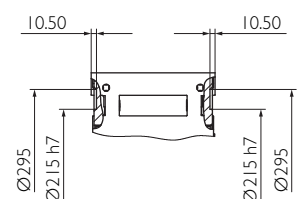
Example HPG 120 AI

* Motor-specific gearbox dimensions

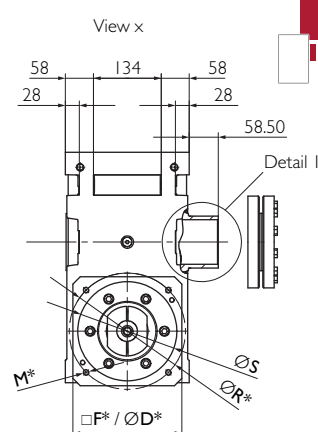
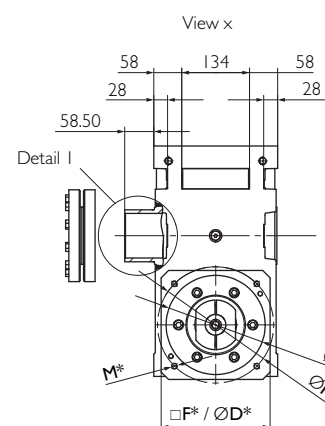
Ød: Ø motor shaft [mm], $20 \leq \text{Ød} \leq 60$

L: Motor shaft length [mm], $60 \leq L \leq 120$

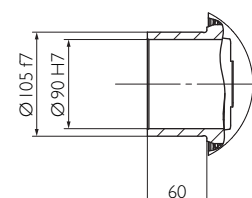
Centering on the Output



Output



Detail 1



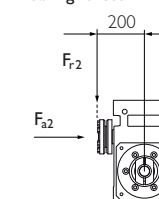
* Motor-specific gearbox dimensions

S: min. 120 [mm], **R:** Pitch circle Ø [mm], **M:** Bore hole Ø or thread [mm], **□F/ØD:** Specify flange [mm]

Ratio	i			6	8	10	13.33	16	24	47
Nominal torque at the output Efficiency	n _{1N} = 500rpm	T _{2N}	[Nm]	5091	5950	5553	5473	6100	5963	5920
		η	[%]	95	94	93	92	90	86	76
	n _{1N} = 1000rpm	T _{2N}	[Nm]	3726	4396	4131	4093	4566	4477	4452
		η	[%]	95	94	94	92	90	87	77
	n _{1N} = 1500rpm	T _{2N}	[Nm]	2938	3486	3289	3268	3649	3583	3566
		η	[%]	95	94	94	92	90	87	77
	n _{1N} = 3000rpm	T _{2N}	[Nm]	1798	2150	2041	2037	2277	2241	2234
		η	[%]	95	94	93	91	90	86	76
Max. acceleration torque		T _{2B}	[Nm]	6100						
Emergency stop torque		T _{2Not}	[Nm]	8000						
Idling torque ^{a)}		T ₀₁₂	[Nm]	7.5			5.5			
Max. input speed		n _{1Max}	[rpm]	3000						
Max. backlash ^{b)} at the output	PS	j _t	[arcmin]	<3					<2.5	
Torsional rigidity vom Abtrieb zum Eintrieb		C _{t21}	[Nm/arcmin]	292	342	385	425	470	510	540
Stability at the output		C _{2K}	[Nm/arcmin]	500						
Max. axial force ^{c)d)} at the output		F _{a2max}	[N]	30000	35000	43000	45000	45000	47000	49000
Max. radial force ^{c)e)} at the output		F _{r2max}	[N]	18000	20000	23000	24000	23000	24000	24000
Max. overturning torque ^{c)} at the output		M _{2max}	[Nm]	3700	4000	4600	4700	4600	4800	4900
Mass moment of inertia ^{a)}		J ₁	[10 ⁻⁵ kg m ²]	2042	1564	1343	1171	1103	1018	967
Service life		L _h	[h]	25000						
Weight without motor components		m	[kg]	145						
Max. permissible housing temperature			[°C]	+90						
Ambient temperature			[°C]	-15 up to +50						
Lubrication		synthetic gear oil (as per DIN 51502: CLP PG 460)								
Painting		None								
Protection class		IP65								

- approximate, at $n_1 = 2000$ rpm and operating temperature.
- Precision grade PS (standard backlash) for classic mechanical engineering applications.
- Bearing forces: Values valid at $n_1 = 1000$ rpm; $\frac{1}{2} T_{2N}$ and duty cycle of 40%. Consult with Güdel for composite bearing forces, axial and radial forces.
- c) d) in relation to shaft center.
- e) at a distance of 200 mm from the middle of the casing.
- g) in relation to the input, including coupling and shrink disc at the output (output 1 & 2).
Coupling: Motor shaft diameter $\varnothing d$ from $\varnothing 20$ to $\varnothing 60$, calculated at $\varnothing 32$ mm.

Bearing forces

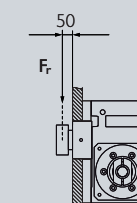


at the output

Package

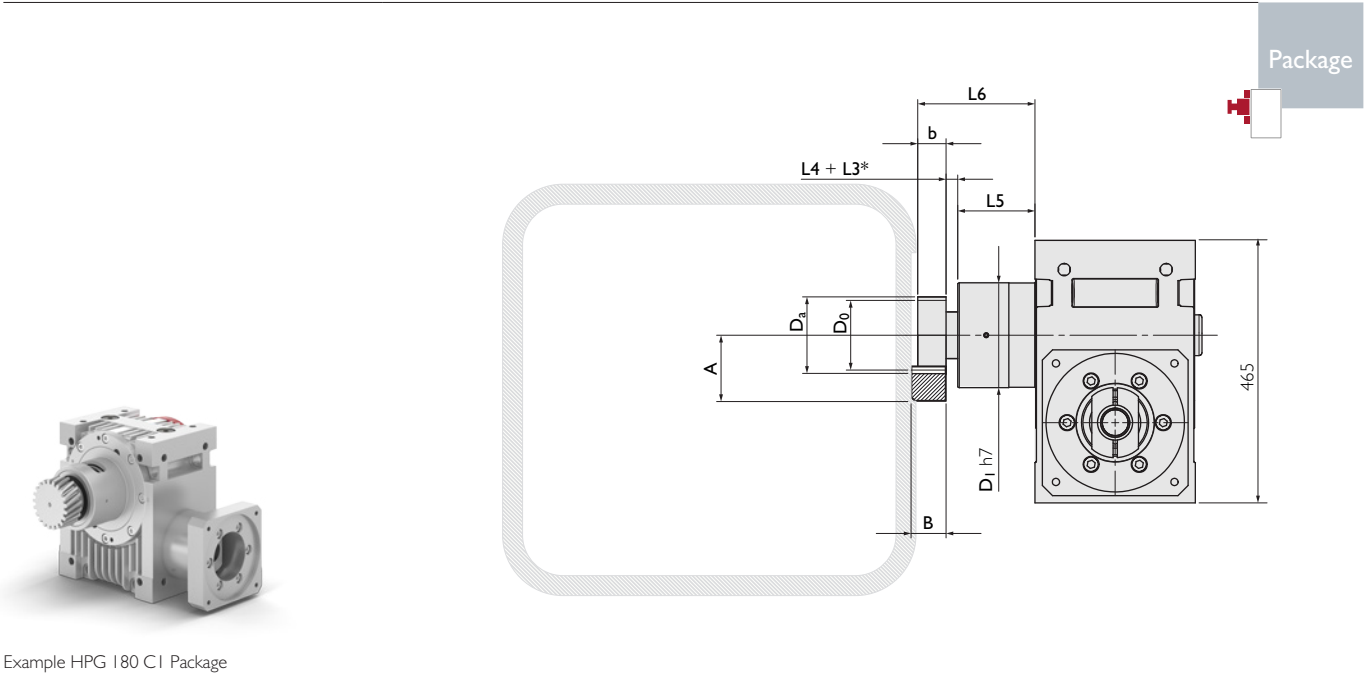
			Output Flange including Bearing & Pinion		
Radial rigidity	C_3	[N/mm]	80000		
Speed	n_N	[rpm]	400	200	100
Max. radial force ¹⁾	F_{rmax}	[N]	90000	95000	100000

- j) Bearing forces: Values valid at duty cycle of 40% at a distance of 50mm from the end of the bearing.

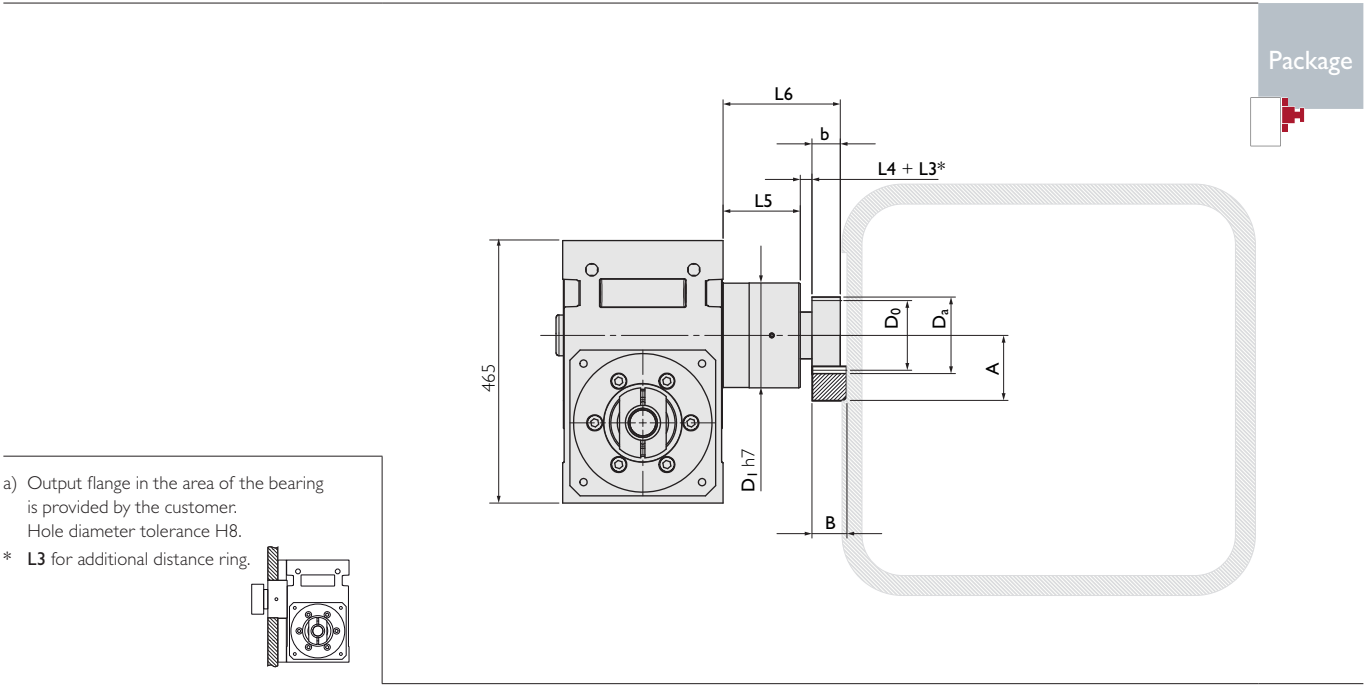


Detailed information about the **Package, Options & Accessories** on pages 100 and 101.

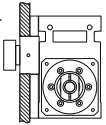
Output Flange including Bearing & Pinion^{a)}



Example HPG 180 C1 Package



a) Output flange in the area of the bearing is provided by the customer. Hole diameter tolerance H8.
* L3 for additional distance ring.



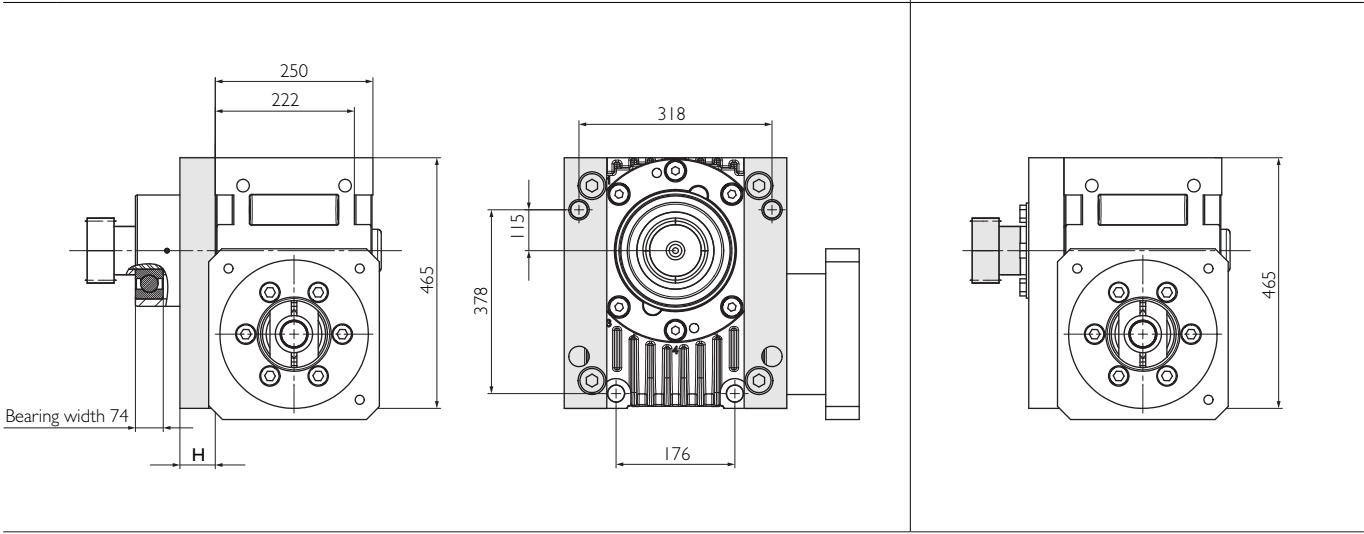
Geometric information

Helical modular pitch	Part. No.	m	z	A	b	B	D _a	D ₀	D _I	L4	L5	L6
Pinion 1	211720	6	20	106.66	60	59	139.3	127.32	220	20	160	240
Pinion 2	211820	8	20	155.88	80	79	185.7	169.76	220	35	160	275
Pinion 3	211915	10	15	171.58	100	99	185.2	165.16	220	40	160	300

Straight modular pitch	Part. No.	m	z	A	b	B	D _a	D ₀	D _I	L4	L5	L6
Pinion 4	201821	8	20	151.0	80	79	176.0	160.0	220	35	160	275
Pinion 5	201916	10	16	172.0	100	99	186.0	166.0	220	40	160	300

Spacer Elements

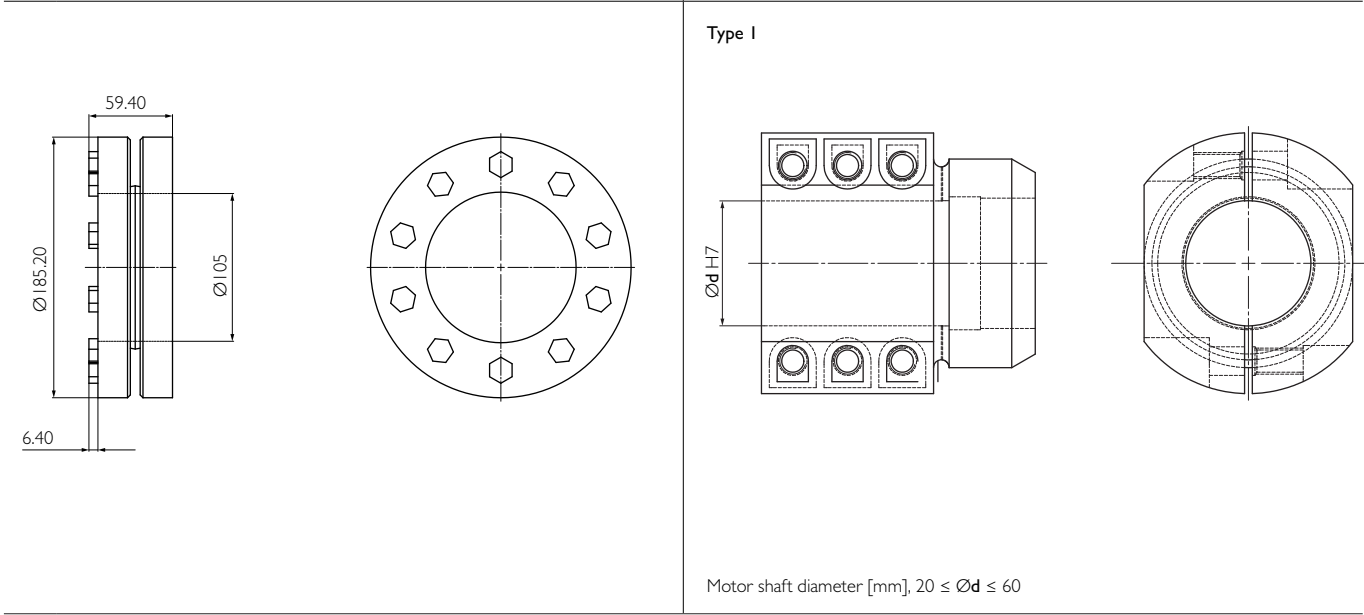
with Pinion special solutions on request



Casing can only be fastened with long screws as per the bore hole pattern.
Screws M20 of length 222mm + H + thread depth, tightening torque 240Nm.

Shrink Disc

Coupling



Motor shaft diameter [mm], 20 ≤ Ød ≤ 60

Your ideal Drive Train

Our Function Package with high-performance angle gearbox, output flange, pinion and rack by Güdel.

			Pinion 1	Pinion 2	Pinion 3	Pinion 4	Pinion 5
Maximum acceleration force	F _N	[N]	58870	114380	160516	91220	137151
Maximum acceleration torque	T _N	[Nm]	3748	9709	12773	7298	10972

Higher value for rack and pinion taking account of the number of load cycles:
1×10⁶ for the rack; 1×10⁷ for the pinion. Both in cycle mode.

See **Rack & Pinion Program** of your ideal Drive Train on pages 104 et seq.

See **Flowcharts** to find your ideal Drive Train on pages 116 et seq.



