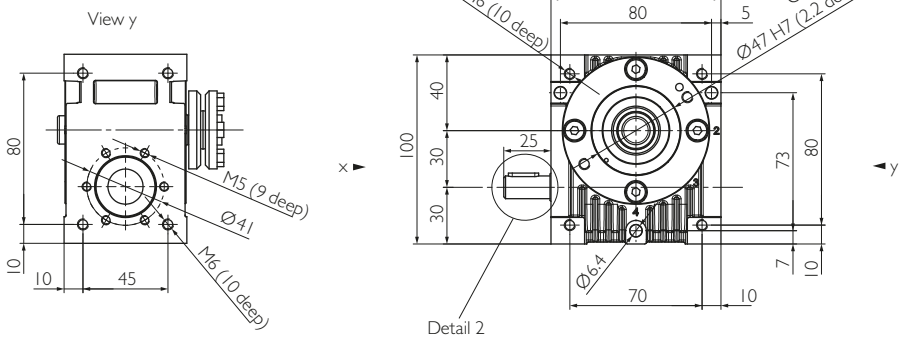
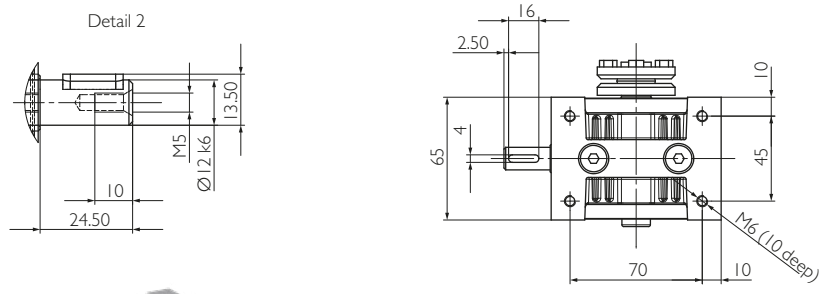
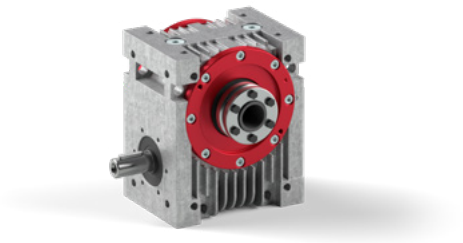
Input

C

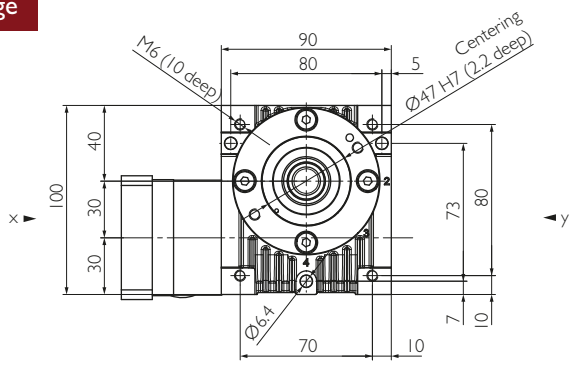


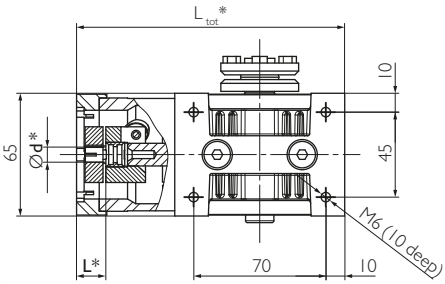


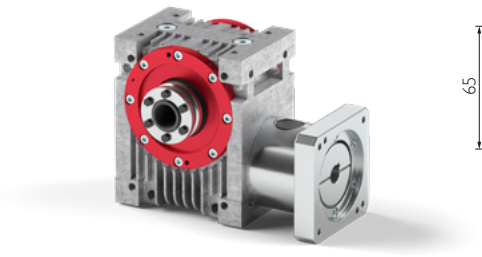


Example HPG 030 C2

C with option motor flange





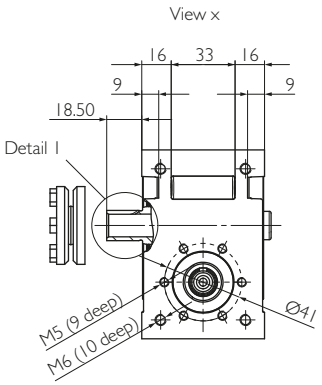


Example HPG 030 C1

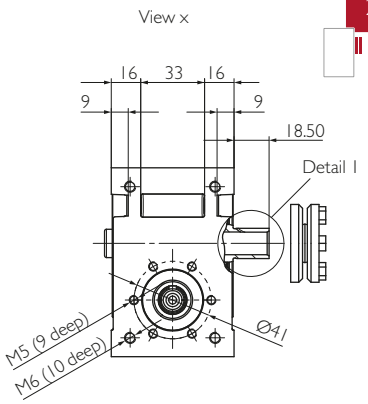
* Motor-specific gearbox dimensions

Output

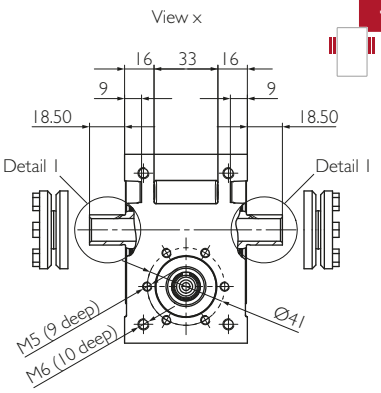
1

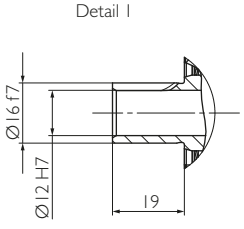


2



3





Ratio	i			2	3	4	5	6	8	10	13.33	16	24	30	47	60
Nominal torque at the output Efficiency	n_{1N} = 500 rpm	T_{2N}	[Nm]	12.9	17.9	20.1	19.2	16.9	19.4	17.9	17.5	19.5	19.0	8.6	18.8	8.6
		η	[%]	85	84	83	81	80	76	74	67	63	54	48	40	30
	n_{1N} = 1000 rpm	T_{2N}	[Nm]	11.3	16.0	18.3	17.5	15.5	17.9	16.6	16.2	18.1	17.6	8.6	17.5	8.6
		η	[%]	86	86	85	83	81	77	74	68	65	55	50	44	40
	n_{1N} = 1500 rpm	T_{2N}	[Nm]	10.0	14.4	16.7	16.2	14.3	16.6	15.4	15.1	16.9	16.4	8.6	16.3	8.6
		η	[%]	86	86	85	83	80	77	73	68	64	54	49	45	40
	n_{1N} = 3000 rpm	T_{2N}	[Nm]	7.4	11.2	13.3	13.1	11.7	13.7	12.8	12.6	14.0	13.7	8.6	13.6	8.6
		η	[%]	84	84	83	81	77	74	71	67	62	53	48	44	40
	n_{1N} = 4500 rpm	T_{2N}	[Nm]	5.9	9.2	11.0	11.0	9.9	11.6	10.9	10.8	12.0	11.8	10.0	11.7	10.0
		η	[%]	81	82	81	78	76	73	69	65	60	51	47	42	37
	n_{1N} = 6000 rpm	T_{2N}	[Nm]	4.9	7.8	9.4	9.4	8.6	10.1	9.5	9.4	10.5	10.3	10.0	10.2	10.0
		η	[%]	79	79	78	77	75	72	68	62	56	47	42	37	33
Max. acceleration torque		T_{2B}	[Nm]	13	21									10	21	10
Emergency stop torque		T_{2Not}	[Nm]	35										20	35	20
Idling torque[a]		T_{012}	[Nm]	0.65			0.6				0.5					
Max. input speed		n_{1Max}	[rpm]	6000												
Max. backlash[b] at the output	PS	j_t	[arcmin]	<22	<18	<16	<16	<14	<12					<11		
Torsional rigidity from output to input		C_{t21}	[Nm/arcmin]	0.3	0.45	0.58	0.63	0.66	0.68	0.72	0.74	0.78	0.8	0.75	0.85	0.75
Stability at the output		C_{2K}	[Nm/arcmin]	27												
Max. axial force[c) d)] at the output		F_{a2max}	[N]	910	1200	1500	1800	2200	2100	2300	2500	2700	2900	3100	2900	3100
Max. radial force[c) e)] at the output		F_{r2max}	[N]	640	740	850	970	1100	980	1000	1000	1100	1200	1300	1300	1300
Max. overturning torque[c)] at the output		M_{2max}	[Nm]	32	37	42	48	54	49	50	52	54	60	67	65	67
Max. axial force[c) d)] at the input		F_{a1max}	[N]	890	740	700	780	890	820	890	910	860	880	1100	890	1100
Max. radial force[c) f)] at the input		F_{r1max}	[N]	280	270	280	300	320	320	330	340	330	340	360	340	360
Mass moment of inertia[g)]		J_1	[10^{-7} kg m^2]	230	110	68	49	38	28	23	19	18	16	15	15	15
Mass moment of inertia[g) h)]		J_1	[10^{-7} kg m^2]	280	161	119	100	89	79	74	70	69	67	66	66	65
Mass moment of inertia[g) i)]		J_1	[10^{-7} kg m^2]	510	390	348	329	318	308	303	299	298	296	295	295	295
Service life		L_h	[h]	25000												
Weight without motor components		m	[kg]	1.7												
Weight with motor components		m	[kg]	≈ 2.2												
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														

a) approximate, at n_1 = 3000 rpm and operating temperature.

b) Precision grade PS (standard backlash) for classic mechanical engineering applications.

c) Bearing forces: Values valid at n_1 = 3000 rpm; ⅔ 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.

c) e) at a distance of 50 mm from the middle of the casing.

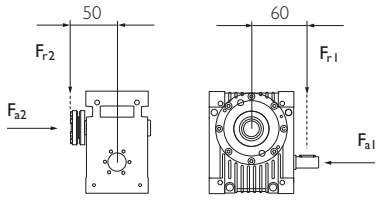
c) f) at a distance of 60 mm from the middle of the casing.

g) in relation to the input, including shrink disc at the output (output 1 & 2),
with two shrink discs (output 3) increase values by 360/i^2.

g) h) including elastomer coupling 5103-14 (calculated with drilled hole for motor shaft-Ø15)

g) i) including elastomer coupling 5103-19 (calculated with drilled hole for motor shaft-Ø15)

Bearing forces

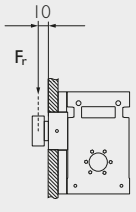


at the output at the input

Package

			Output flange including bearing & pinion				
Radial rigidity	C_3	[N/mm]	22000				
Speed	n_{2N}	[rpm]	1500	750	400	150	100
Max. radial force[j)]	F_{rmax}	[N]	1100	1350	1500	1600	1700

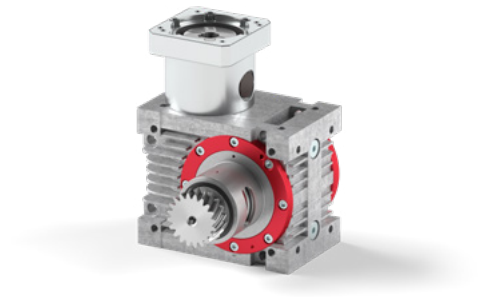
j) Bearing forces: Values valid at duty cycle of 40% at a distance of 10mm from the end of the bearing.

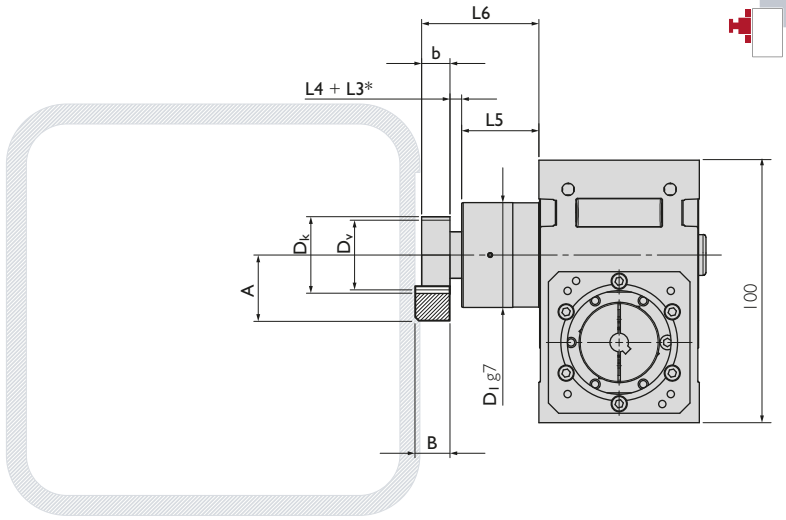


Detailed information about the **package, options & accessories** on pages 30 and 31.

Output flange including bearing & pinion a)

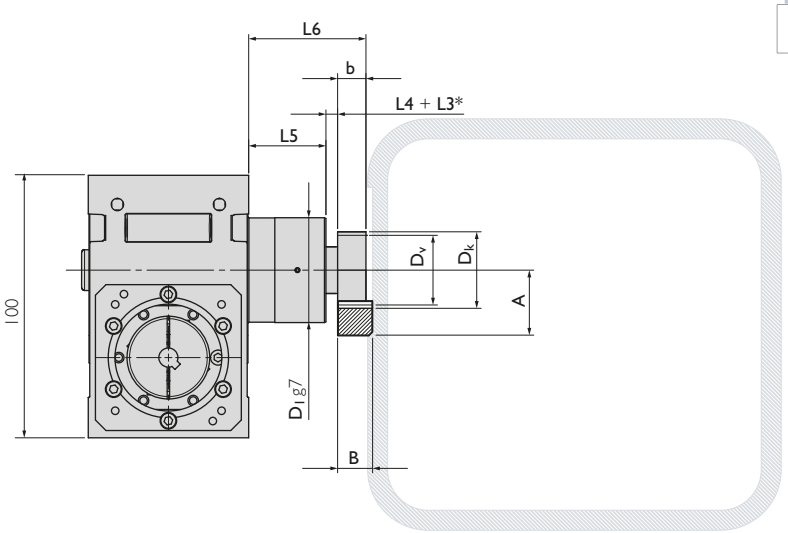
Package



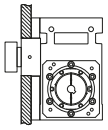


Example HPG 030 C2 Package

Package



a) The output flange must be supported by the customer supplied equipment at the bearing end (D1), in a hole with an H8 tolerance.



* **L3** for additional distance ring.

Geometric information

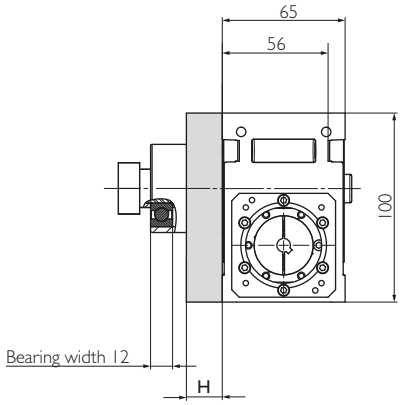
Helical mudolar pitch	Part. No.	m_n	P_t	z	A	b	B	D_k	D_0	D_v	D_1	L4	L5	L6
Pinion 1	211116	1.5	5.00	16	30.680	20	19	29.36	25.465	26.365	47	4.5	38	62.5
													43	67.5

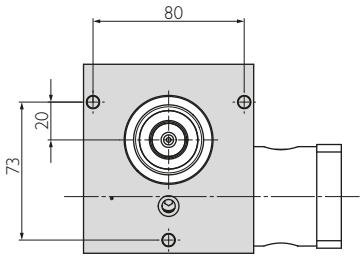
m_n: Normal module, P_t: Transverse pitch [mm], z: Number of teeth, D_v: Pitch circle diameter for design, D_0: Pitch circle diameter for calculation

Straight modular pitch	Part. No.	m_n	P_n	z	A	b	B	D_k	D_0	D_v	D_1	L4	L5	L6
Pinion 2	201116	1.5	4.72	16	29.95	20	19	27.90	24.000	24.900	47	4.5	38	62.5
													43	67.5

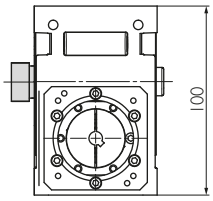
m_n: Normal module, P_n: Normal pitch [mm], z: Number of teeth, D_v: Pitch circle diameter for design, D_0: Pitch circle diameter for calculation

Spacer elements



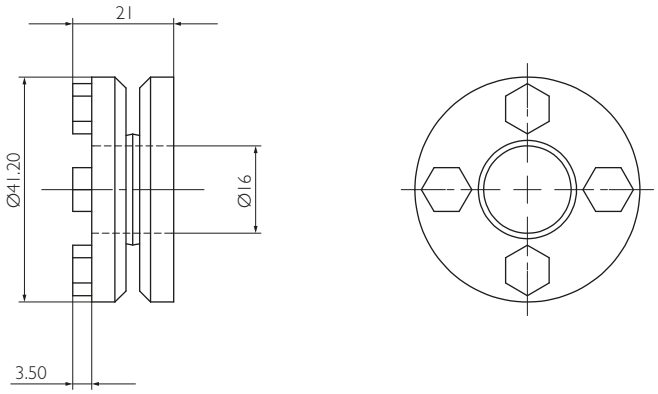


With pinion special solutions on request

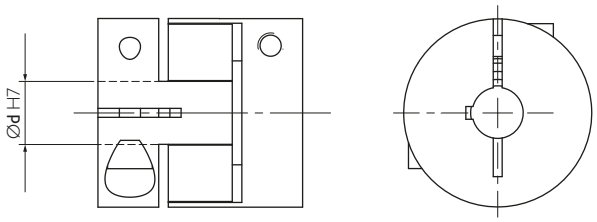


Casing can only be fastened with long screws as per the bore hole pattern.
Screws M6 of length 56mm + **H** + thread depth, tightening torque 9Nm.

Shrink disc

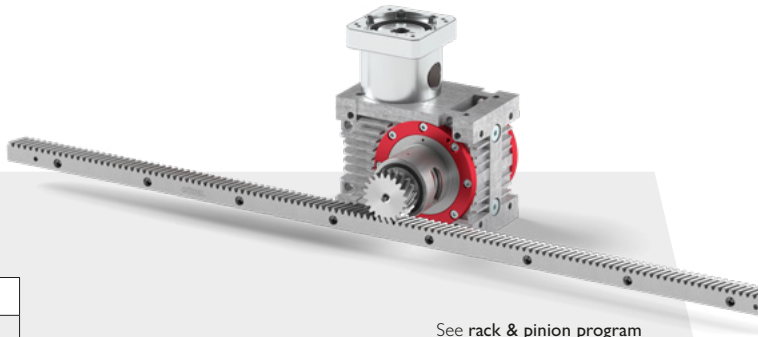


Elastomer coupling



For more details see **Motor Interface** on page 84 et. seq.

Your ideal drive train



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

			Pinion 1			Pinion 2
			Q6	Q7	Q9	Q6
Max acceleration force	F_{2B}	[N]	4724	1221	2352	2888
Max acceleration torque	T_{2B}	[Nm]	60	16	30	35
Precision			PR			PS
Feed force			High	Medium		Elevated

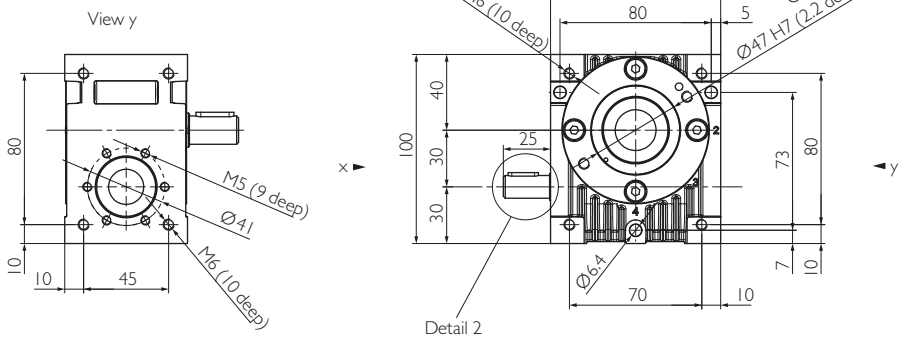
Above values for rack and pinion take into consideration a number of load cycles: 1×10^6 for the rack; 1×10^7 for the pinion. Both in pulsating operation.

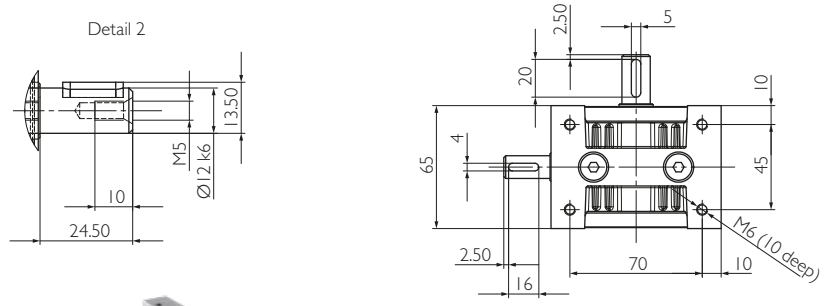
See **rack & pinion program** of your ideal drive train on pages 70 et seq.

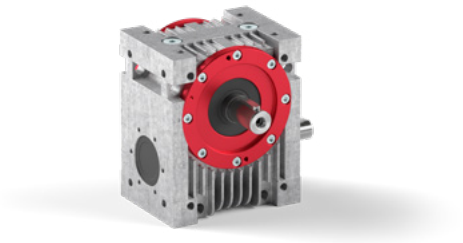
See **flowcharts** to find your ideal drive train on pages 88 et seq.

Input

C

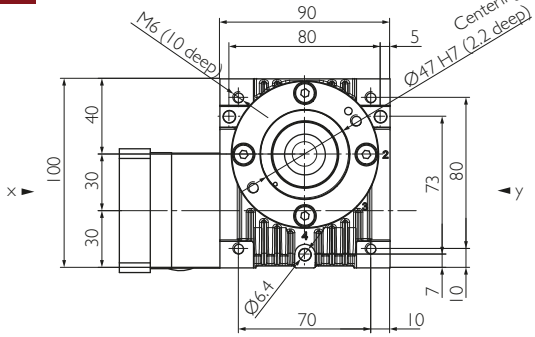


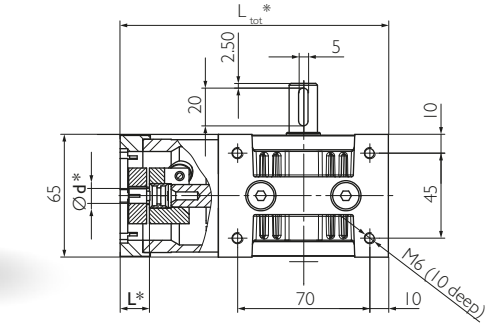


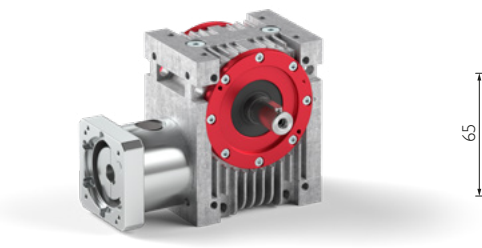


Example HPG 030 C4

C with option motor flange





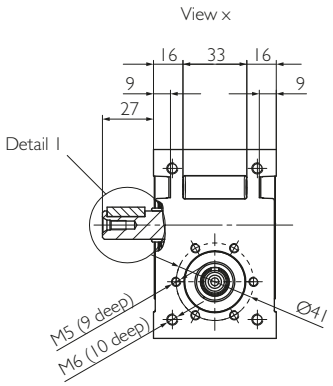


Example HPG 030 C6

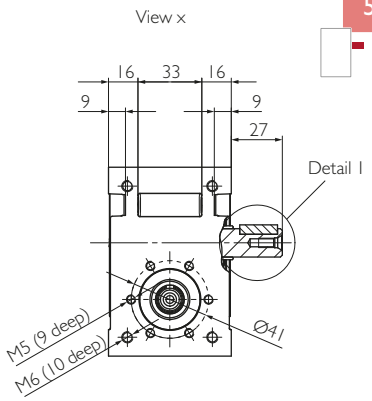
* Motor-specific gearbox dimensions

Output

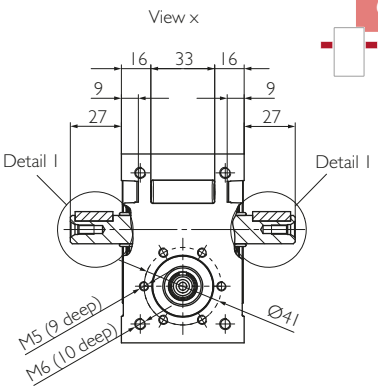
4

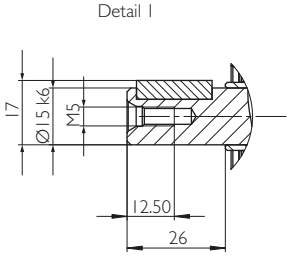


5



6





Ratio	i			2	3	4	5	6	8	10	13.33	16	24	30	47	60
Nominal torque at the output Efficiency	n_{1N} = 500 rpm	T_{2N}	[Nm]	12.9	17.9	20.1	19.2	16.9	19.4	17.9	17.5	19.5	19.0	8.6	18.8	8.6
		η	[%]	85	84	83	81	80	76	74	67	63	54	48	40	30
	n_{1N} = 1000 rpm	T_{2N}	[Nm]	11.3	16.0	18.3	17.5	15.5	17.9	16.6	16.2	18.1	17.6	8.6	17.5	8.6
		η	[%]	86	86	85	83	81	77	74	68	65	55	50	44	40
	n_{1N} = 1500 rpm	T_{2N}	[Nm]	10.0	14.4	16.7	16.2	14.3	16.6	15.4	15.1	16.9	16.4	8.6	16.3	8.6
		η	[%]	86	86	85	83	80	77	73	68	64	54	49	45	40
	n_{1N} = 3000 rpm	T_{2N}	[Nm]	7.4	11.2	13.3	13.1	11.7	13.7	12.8	12.6	14.0	13.7	8.6	13.6	8.6
		η	[%]	84	84	83	81	77	74	71	67	62	53	48	44	40
	n_{1N} = 4500 rpm	T_{2N}	[Nm]	5.9	9.2	11.0	11.0	9.9	11.6	10.9	10.8	12.0	11.8	10.0	11.7	10.0
		η	[%]	81	82	81	78	76	73	69	65	60	51	47	42	37
	n_{1N} = 6000 rpm	T_{2N}	[Nm]	4.9	7.8	9.4	9.4	8.6	10.1	9.5	9.4	10.5	10.3	10.0	10.2	10.0
		η	[%]	79	79	78	77	75	72	68	62	56	47	42	37	33
Max. acceleration torque		T_{2B}	[Nm]	13	21									10	21	10
Emergency stop torque		T_{2Not}	[Nm]	35										20	35	20
Idling torque[a]		T_{012}	[Nm]	0.65			0.6				0.5					
Max. input speed		n_{1Max}	[rpm]	6000												
Max. backlash[b] at the output	PS	j_t	[arcmin]	<22	<18	<16	<16	<14	<12					<11		
Torsional rigidity from output to input		C_{t21}	[Nm/arcmin]	0.3	0.45	0.58	0.63	0.66	0.68	0.72	0.74	0.78	0.8	0.75	0.85	0.75
Stability at the output		C_{2K}	[Nm/arcmin]	27												
Max. axial force[c) d)] at the output		F_{a2max}	[N]	910	1200	1500	1800	2200	2100	2300	2500	2700	2900	3100	2900	3100
Max. radial force[c) e)] at the output		F_{r2max}	[N]	640	740	850	970	1100	980	1000	1000	1100	1200	1300	1300	1300
Max. overturning torque[c)] at the output		M_{2max}	[Nm]	32	37	42	48	54	49	50	52	54	60	67	65	67
Max. axial force[c) d)] at the input		F_{a1max}	[N]	890	740	700	780	890	820	890	910	860	880	1100	890	1100
Max. radial force[c) f)] at the input		F_{r1max}	[N]	280	270	280	300	320	320	330	340	330	340	360	340	360
Mass moment of inertia[g)]		J_1	[10^{-7} kg m^2]	230	110	68	49	38	28	23	19	18	16	15	15	15
Mass moment of inertia[g) h)]		J_1	[10^{-7} kg m^2]	280	161	119	100	89	79	74	70	69	67	66	66	65
Mass moment of inertia[g) i)]		J_1	[10^{-7} kg m^2]	510	390	348	329	318	308	303	299	298	296	295	295	295
Service life		L_h	[h]	25000												
Weight without motor components		m	[kg]	1.7												
Weight with motor components		m	[kg]	≈ 2.2												
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														

a) approximate, at n_1 = 3000 rpm and operating temperature.

b) Precision grade PS (standard backlash) for classic mechanical engineering applications.

c) Bearing forces: Values valid at n_1 = 3000 rpm; ⅔ 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.

c) e) at a distance of 50 mm from the middle of the casing.

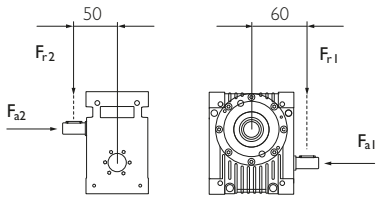
c) f) at a distance of 60 mm from the middle of the casing.

g) in relation to the input.

g) h) including elastomer coupling 5103-14 (calculated with drilled hole for motor shaft-Ø15)

g) i) including elastomer coupling 5103-19 (calculated with drilled hole for motor shaft-Ø15)

Bearing forces



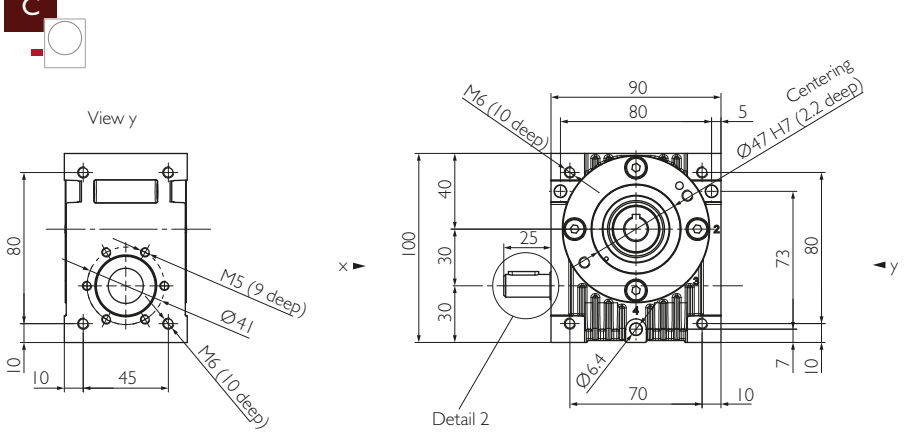
at the output at the input

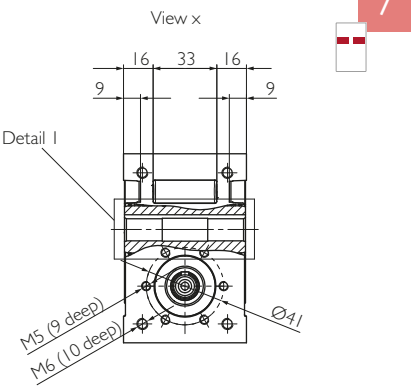
Input

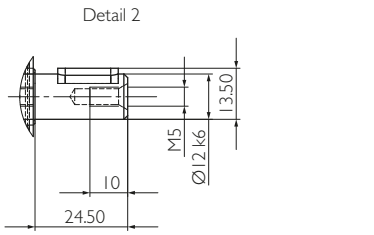
Output

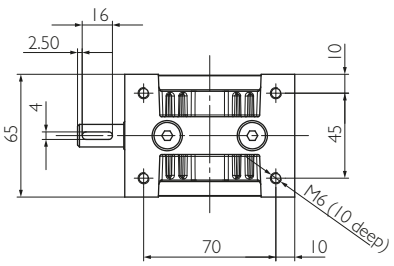
C

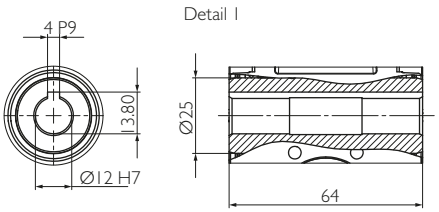
7

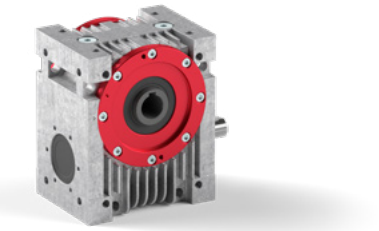






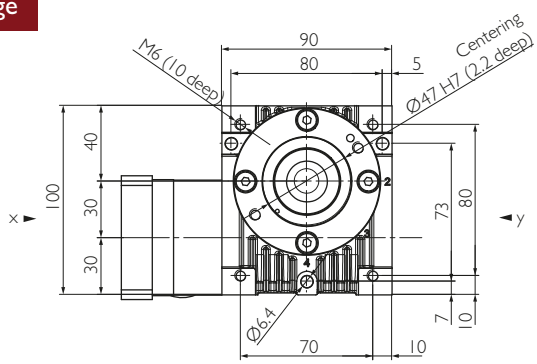


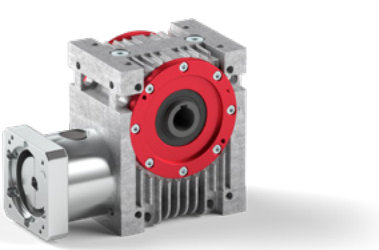


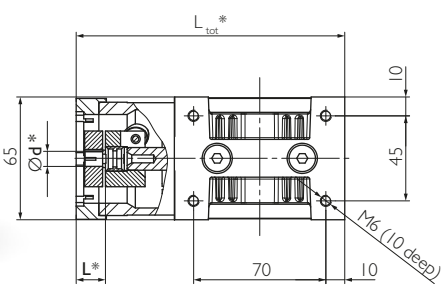


Example HPG 030 C7

C with option motor flange







Example HPG 030 C7

* Motor-specific gearbox dimensions

Ratio	i			2	3	4	5	6	8	10	13.33	16	24	30	47	60
Nominal torque at the output Efficiency	n_{1N} = 500 rpm	T_{2N}	[Nm]	12.9	17.9	20.1	19.2	16.9	19.4	17.9	17.5	19.5	19.0	8.6	18.8	8.6
		η	[%]	85	84	83	81	80	76	74	67	63	54	48	40	30
	n_{1N} = 1000 rpm	T_{2N}	[Nm]	11.3	16.0	18.3	17.5	15.5	17.9	16.6	16.2	18.1	17.6	8.6	17.5	8.6
		η	[%]	86	86	85	83	81	77	74	68	65	55	50	44	40
	n_{1N} = 1500 rpm	T_{2N}	[Nm]	10.0	14.4	16.7	16.2	14.3	16.6	15.4	15.1	16.9	16.4	8.6	16.3	8.6
		η	[%]	86	86	85	83	80	77	73	68	64	54	49	45	40
	n_{1N} = 3000 rpm	T_{2N}	[Nm]	7.4	11.2	13.3	13.1	11.7	13.7	12.8	12.6	14.0	13.7	8.6	13.6	8.6
		η	[%]	84	84	83	81	77	74	71	67	62	53	48	44	40
	n_{1N} = 4500 rpm	T_{2N}	[Nm]	5.9	9.2	11.0	11.0	9.9	11.6	10.9	10.8	12.0	11.8	10.0	11.7	10.0
		η	[%]	81	82	81	78	76	73	69	65	60	51	47	42	37
	n_{1N} = 6000 rpm	T_{2N}	[Nm]	4.9	7.8	9.4	9.4	8.6	10.1	9.5	9.4	10.5	10.3	10.0	10.2	10.0
		η	[%]	79	79	78	77	75	72	68	62	56	47	42	37	33
Max. acceleration torque		T_{2B}	[Nm]	13	21									10	21	10
Emergency stop torque		T_{2Not}	[Nm]	35										20	35	20
Idling torque[a]		T_{012}	[Nm]	0.65			0.6				0.5					
Max. input speed		n_{1Max}	[rpm]	6000												
Max. backlash[b] at the output	PS	j_t	[arcmin]	<22	<18	<16	<16	<14	<12					<11		
Torsional rigidity from output to input		C_{t21}	[Nm/arcmin]	0.3	0.45	0.58	0.63	0.66	0.68	0.72	0.74	0.78	0.8	0.75	0.85	0.75
Stability at the output		C_{2K}	[Nm/arcmin]	27												
Max. axial force[c) d)] at the output		F_{a2max}	[N]	560	770	1000	1300	1600	1600	1700	1900	2000	2400	2700	2600	2700
Max. radial force[c) e)] at the output		F_{r2max}	[N]	510	570	660	770	860	800	810	850	880	990	1100	1100	1100
Max. overturning torque[c)] at the output		M_{2max}	[Nm]	26	29	33	38	43	40	41	43	44	49	55	53	55
Max. axial force[c) d)] at the input		F_{a1max}	[N]	890	740	700	780	890	820	890	910	860	880	1100	890	1100
Max. radial force[c) f)] at the input		F_{r1max}	[N]	280	270	280	300	320	320	330	340	330	340	360	340	360
Mass moment of inertia[g)]		J_1	[10^{-7} kg m^2]	138	69	45	34	28	22	19	17	16	15	15	15	15
Mass moment of inertia[g) h)]		J_1	[10^{-7} kg m^2]	189	120	96	85	79	73	70	68	67	66	66	65	65
Mass moment of inertia[g) i)]		J_1	[10^{-7} kg m^2]	418	349	325	314	308	302	299	297	296	295	295	295	295
Service life		L_h	[h]	25000												
Weight without motor components		m	[kg]	1.6												
Weight with motor components		m	[kg]	≈ 2.2												
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														

a) approximate, at n_1 = 3000 rpm and operating temperature.

b) Precision grade PS (standard backlash) for classic mechanical engineering applications.

c) Bearing forces: Values valid at n_1 = 3000 rpm; ⅔ 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.

c) e) at a distance of 50 mm from the middle of the casing.

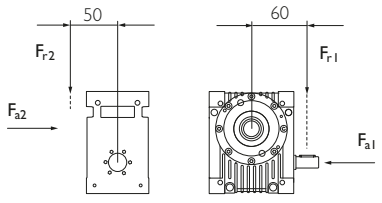
c) f) at a distance of 60 mm from the middle of the casing.

g) in relation to the input.

g) h) including elastomer coupling 5103-14 (calculated with drilled hole for motor shaft-Ø15)

g) i) including elastomer coupling 5103-19 (calculated with drilled hole for motor shaft-Ø15)

Bearing forces



at the output at the input

ANDANTEX USA Inc.

1705 Valley Road,
Wanamassa, NJ 07712
800-713-6170
Fax 732-493-2949
E-mail info@andantex.com
WWW.ANDANTEX.COM

Güdel AG
Gaswerkstrasse 26
4900 Langenthal
Switzerland
Phone +41 62 916 91 91
info@ch.gudel.com
gudel.com

GÜDEL