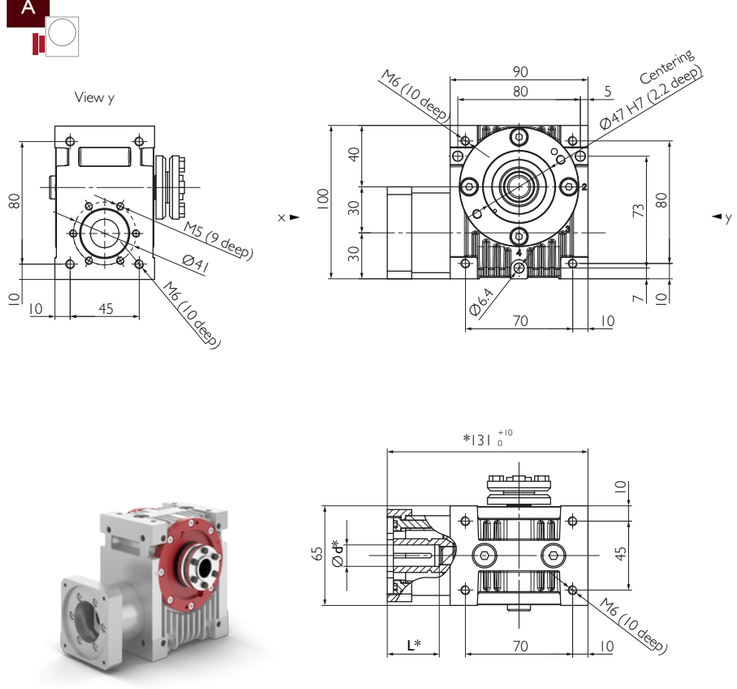
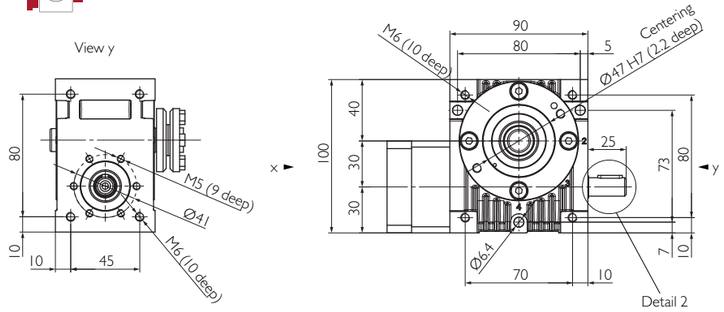
Input

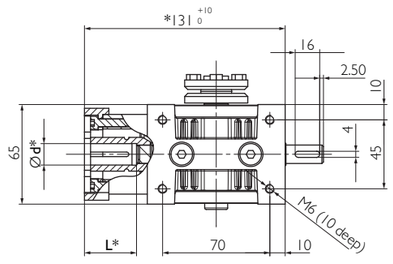
A



Example HPG 030 A2

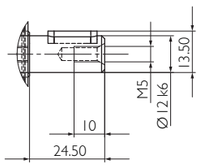
B





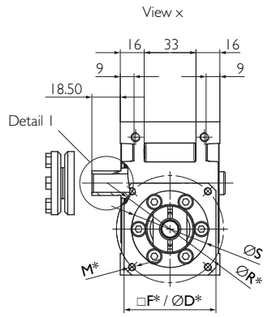
* Motor-specific gearbox dimensions
Ød: Ø motor shaft [mm], 4 ≤ **Ød** ≤ 19
L: Motor shaft length [mm], 20 ≤ **L** ≤ 33

Detail 2

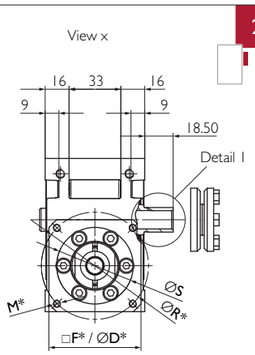


Output

1



2



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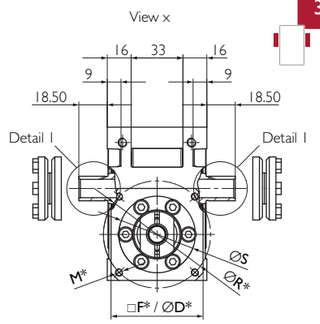
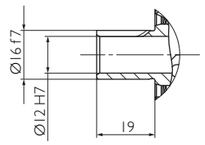


Detail I

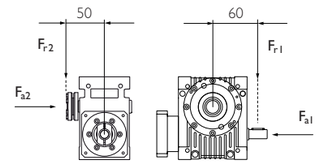


* Motor-specific gearbox dimensions
S: min. 32 [mm], **R**: Pitch circle Ø [mm], **M**: Bore hole Ø or thread [mm], □**F** / Ø**D**: Specify flange [mm]

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 vom Abtrieb zum Eintrieb		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)]	Type 1[h)]	J_1	[10^{-7} kg m^2]	344	224	182	163	152	142	137	133	132	130	129	129	129
Service life		L_h	[h]	25000												
Weight without motor components		m	[kg]	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 coupling and shrink disc at the output (output 1 & 2), with two shrink discs (output 3) increase values by 360/**i**².
g) h) Motor shaft diameter Ø**d** from Ø4 to Ø19, calculated at Ø9mm.

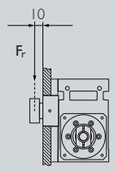
Bearing forces



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

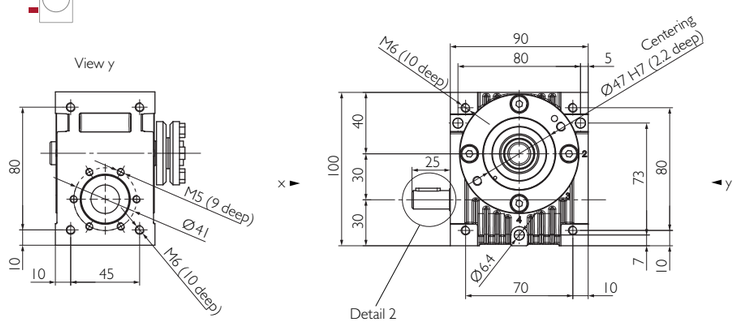
j) Bearing forces: Values valid at duty cycle of 40% at a distance of 10mm from the end of the bearing.

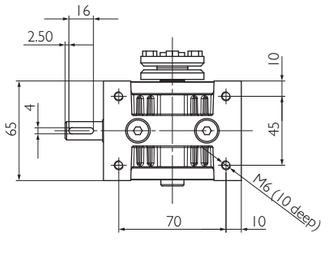


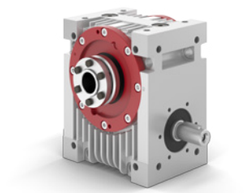
Detailed information about the **Package, Options & Accessories** on pages 32 and 33.

Input

C

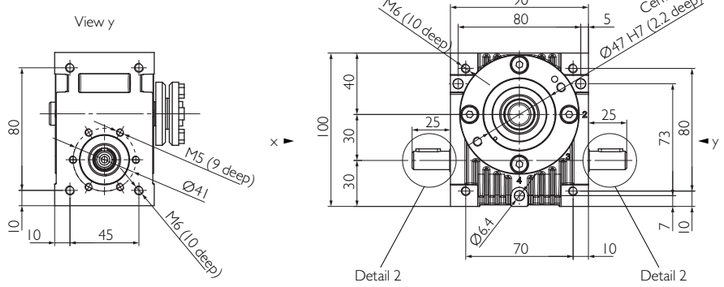


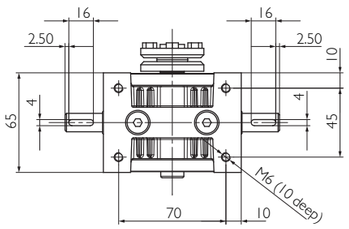




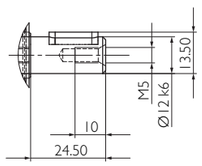
Example HPG 030 C1

D



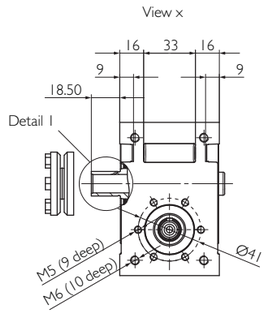


Detail 2

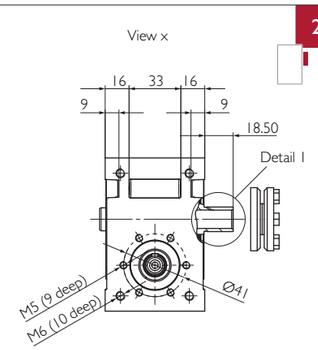


Output

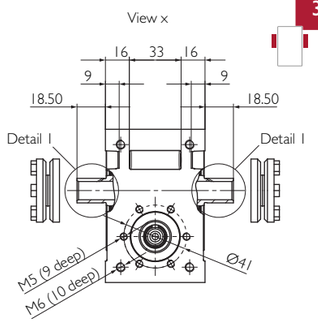
1



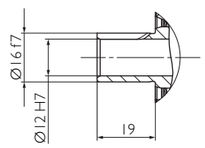
2



3



Detail 1



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 vom Abtrieb zum Eintrieb		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
Service life		L_h	[h]	25000												
Weight without motor components		m	[kg]	1.7												
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.

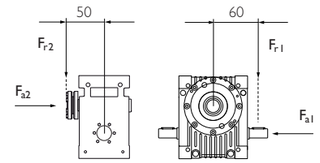
c) d) in relation to shaft center.

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.

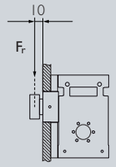
Bearing forces



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

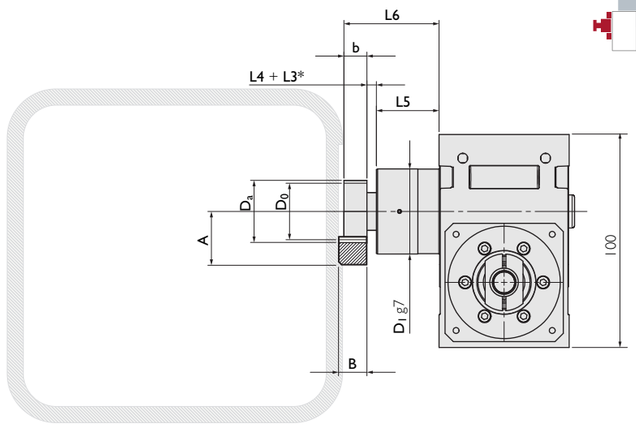
j) Bearing forces: Values valid at duty cycle of 40% at a distance of 10mm from the end of the bearing.

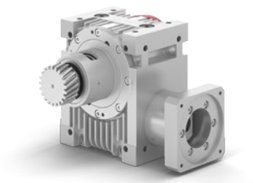


Detailed information about the **Package, Options & Accessories** on pages 32 and 33.

Output Flange including Bearing & Pinion[a)]

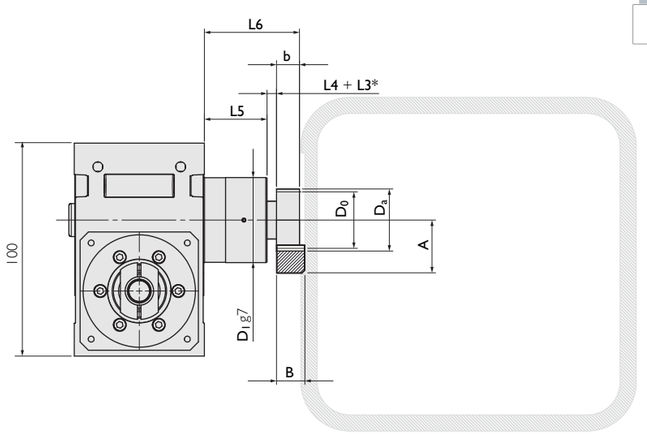
Package





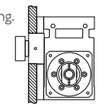
Example HPG 030 A1 Package

Package



a) Output flange in the area of the bearing is provided by the customer. Hole diameter tolerance H8.

* **L3** for additional distance ring.

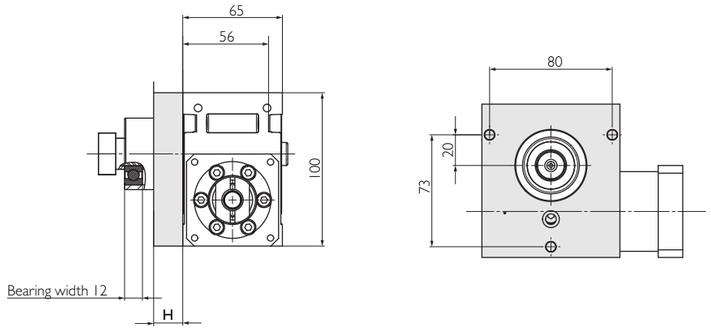


Geometric information

Helical modular pitch	Art. Nr.	m	z	A	b	B	D_a	D_0	D_1	L4	L5	L6
Pinion 1	211116	1.5	16	30.68	20	19	29.36	26.36	47	4.5	38	62.5
											43	67.5

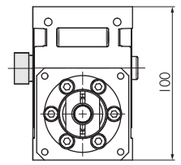
Straight modular pitch	Art. Nr.	m	z	A	b	B	D_a	D_0	D_1	L4	L5	L6
Pinion 2	201116	1.5	16	29.95	20	19	27.9	24.9	47	4.5	38	62.5
											43	67.5

Spacer Elements

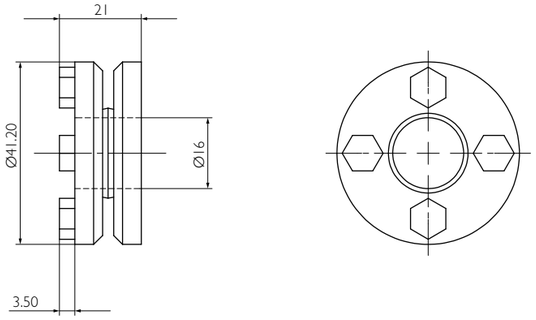


Casing can only be fastened with long screws as per the bore hole pattern.
Screws M6 of length 56mm + **H** + thread depth, tightening torque 9Nm.

with Pinion special solutions on request

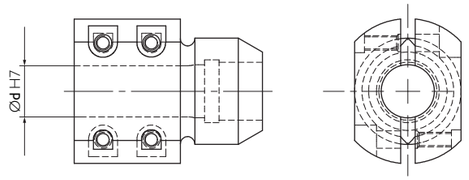


Shrink Disc



Coupling

Type 1



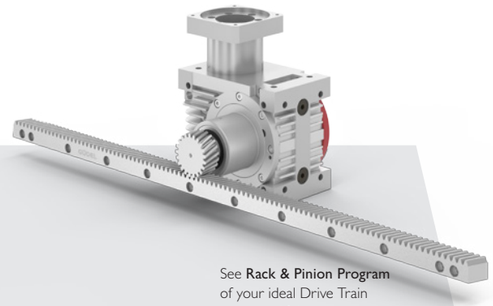
Motor shaft diameter [mm], 4 ≤ Ød ≤ 19

Your ideal Drive Train

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

			Pinion 1	Pinion 2
Maximum acceleration force	F_N	[N]	3178	2888
Maximum acceleration torque	T_N	[Nm]	41	35

Higher value for rack and pinion taking account of the number of load cycles: 1×10^6 for the rack; 1×10^7 for the pinion. Both in cycle mode.

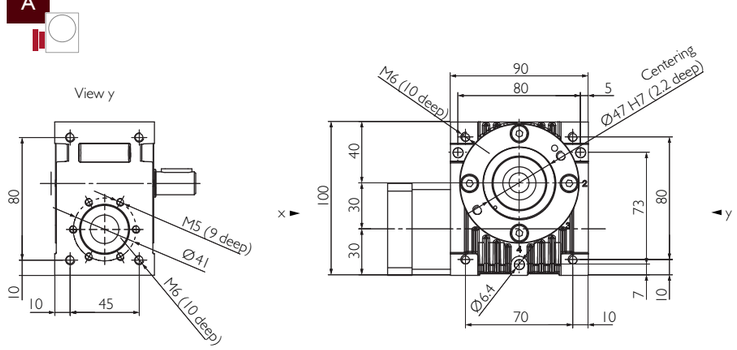


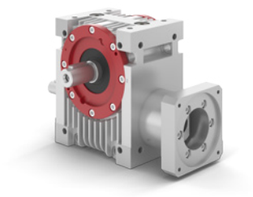
See **Rack & Pinion Program** of your ideal Drive Train on pages 104 et seq.

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

Input

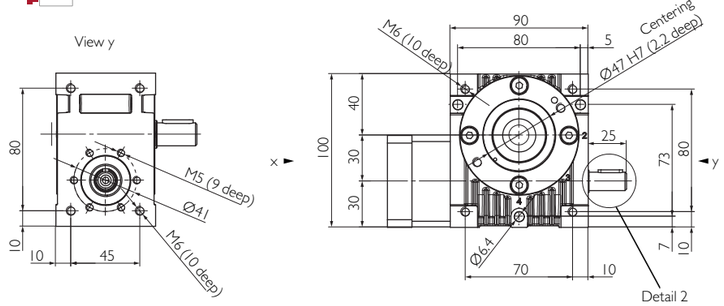
A





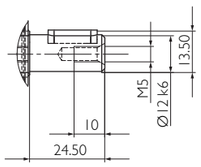
Example HPG 030 B4

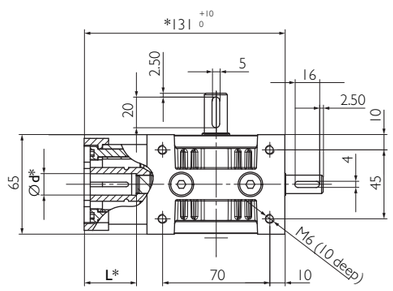
B



* Motor-specific gearbox dimensions
Ød: Ø motor shaft [mm], 4 ≤ **Ød** ≤ 19
L: Motor shaft length [mm], 20 ≤ **L** ≤ 33

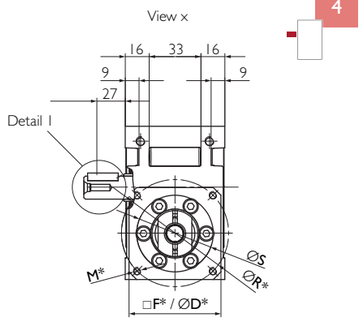
Detail 2



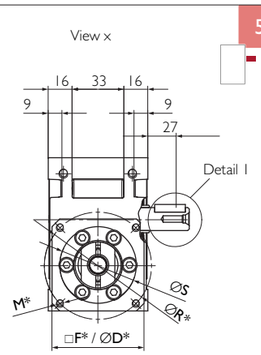


Output

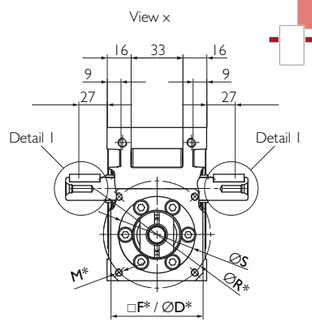
4



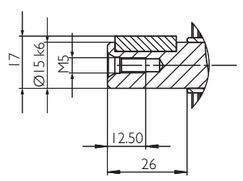
5



6



Detail 1



* Motor-specific gearbox dimensions
S: min. 32 [mm], **R:** Pitch circle Ø [mm], **M:** Bore hole Ø or thread [mm], □**F** / Ø**D:** Specify flange [mm]

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 vom Abtrieb zum Eintrieb		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)]	Type 1[h)]	J_1	[10^{-7} kg m^2]	344	224	182	163	152	142	137	133	132	130	129	129	129
Service life		L_h	[h]	25000												
Weight without motor components		m	[kg]	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.

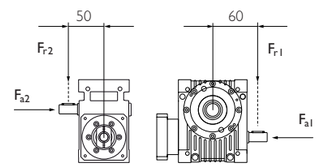
c) e) at a distance of 50 mm from the middle of the casing.

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

g) in relation to the input, including coupling.

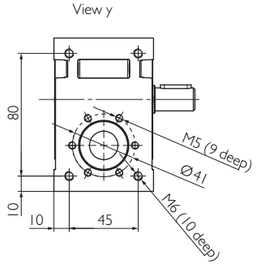
g) h) Motor shaft diameter Ø**d** from Ø4 to Ø19, calculated at Ø9mm.

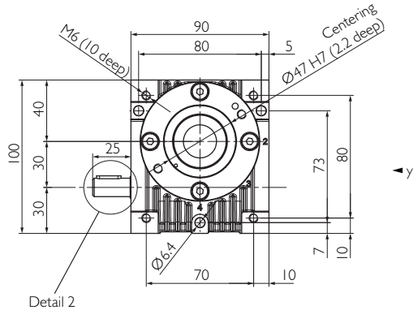
Bearing forces

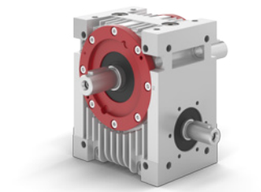


Input

C

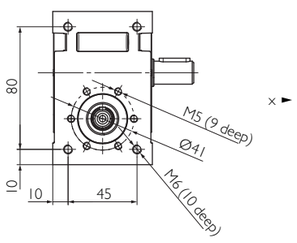


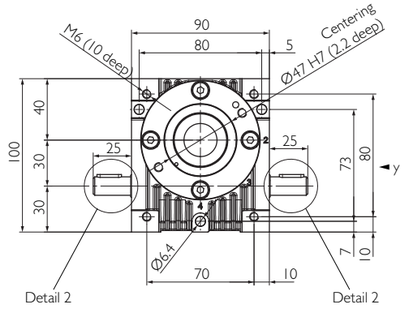


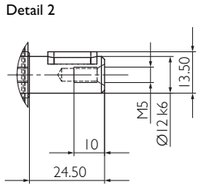


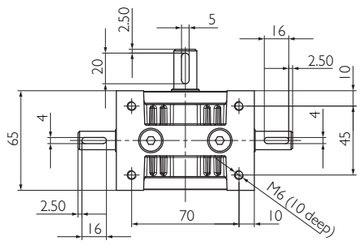
Example HPG 030 C6

D



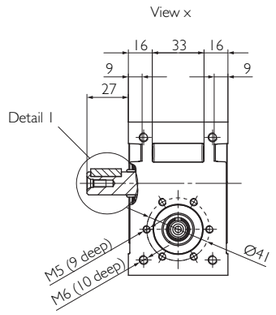




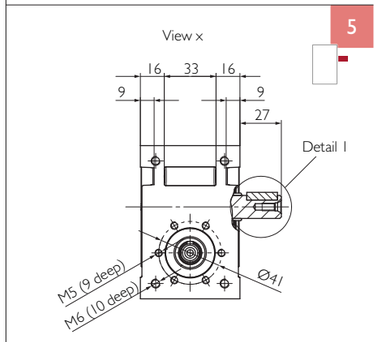


Output

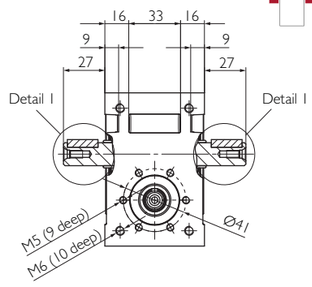
4



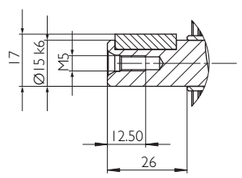
5



6



Detail 1



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 vom Abtrieb zum Eintrieb		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}	F_{a2max}	910	1200	1500	1800	2200	2100	2300	2500	2700	2900	3100	2900	3100
Max. radial force[c)e)] at the output		F_{r2max}	F_{r2max}	640	740	850	970	1100	980	1000	1000	1100	1200	1300	1300	1300
Max. overturning torque[c)] at the output		M_{2max}	M_{2max}	32	37	42	48	54	49	50	52	54	60	67	65	67
Max. axial force[c)d)] at the input		F_{a1max}	F_{a1max}	890	740	700	780	890	820	890	910	860	880	1100	890	1100
Max. radial force[c)f)] at the input		F_{r1max}	F_{r1max}	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
Service life		L_h	[h]	25000												
Weight without motor components		m	[kg]	1.7												
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.

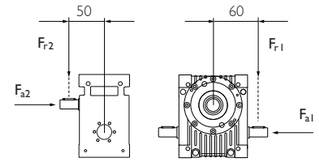
c) d) in relation to shaft center.

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.

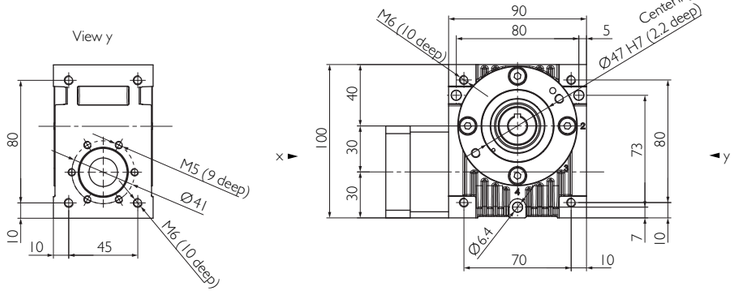
g) in relation to the input.

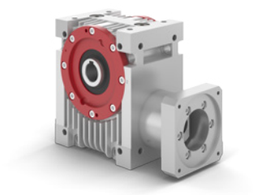
Bearing forces

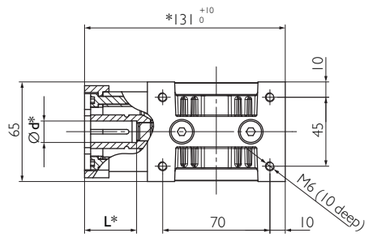


Input

A

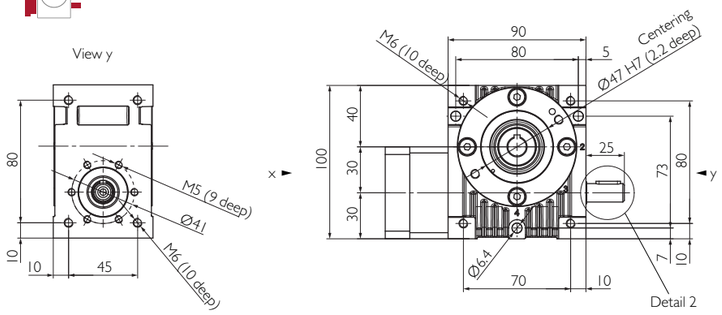


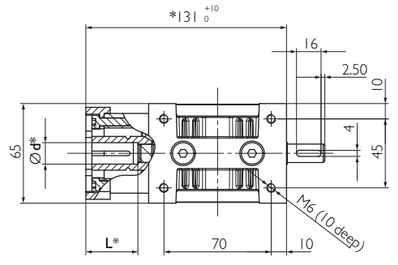




Example HPG 030 A7

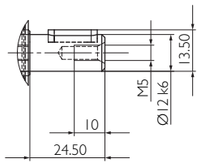
B





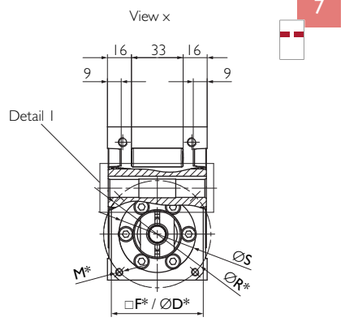
* Motor-specific gearbox dimensions
Ød: Ø motor shaft [mm], 4 ≤ **Ød** ≤ 19
L: Motor shaft length [mm], 20 ≤ **L** ≤ 33

Detail 2

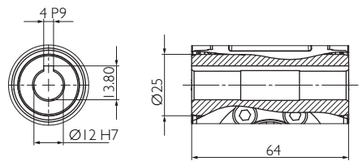


Output

7



Detail 1

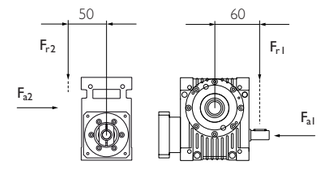


* Motor-specific gearbox dimensions
S: min. 32 [mm], **R:** Pitch circle Ø [mm], **M:** Bore hole Ø or thread [mm], □**F** / Ø**D:** Specify flange [mm]

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 vom Abtrieb zum Eintrieb		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]	Type 1[h]	J_1	[10^{-7} kg m^2]	252	183	159	148	142	136	133	131	130	129	129	129	129
Service life		L_h	[h]	25000												
Weight without motor components		m	[kg]	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												

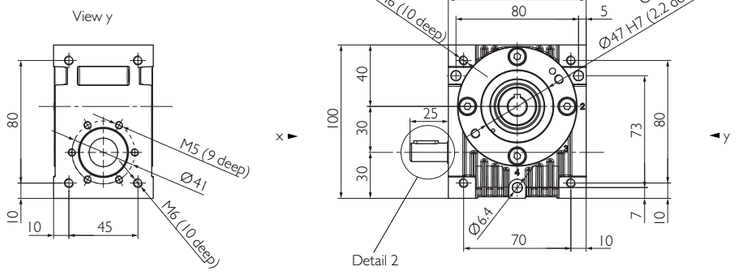
a) approximate, at n_1 = 3000 rpm and operating temperature.
b) Precision grade PS (standard backlash) for classic mechanical engineering applications.
c) Bearing forces: Values valid at n_1 = 3000 rpm; ⅓ T_{2N} and duty cycle of 40%.
Consult with Güdel for composite bearing forces, axial and radial 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 coupling.
g) h) Motor shaft diameter Ø**d** from Ø4 to Ø19, calculated at Ø9mm.

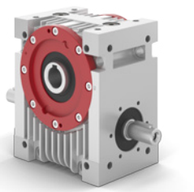
Bearing forces



Input

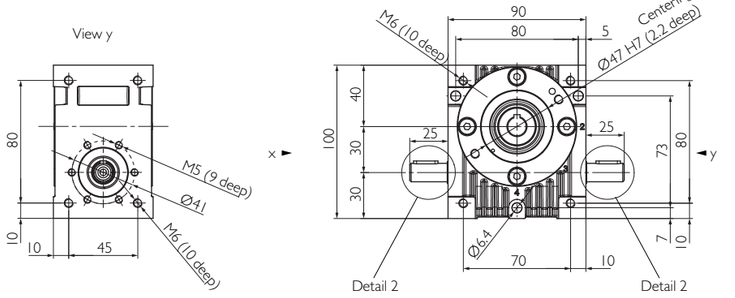
C



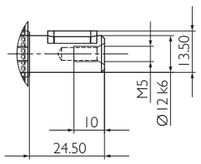


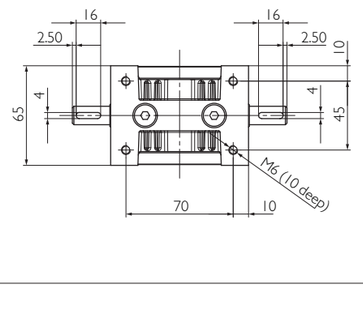
Example HPG 030 C7

D



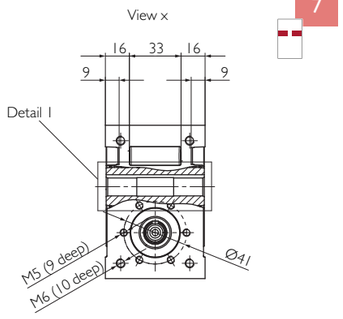
Detail 2



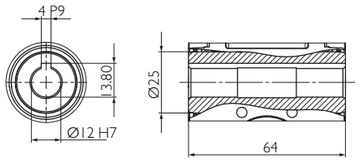


Output

7



Detail 1



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 vom Abtrieb zum Eintrieb		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
Service life		L_h	[h]	25000												
Weight without motor components		m	[kg]	1.6												
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.

Bearing forces