

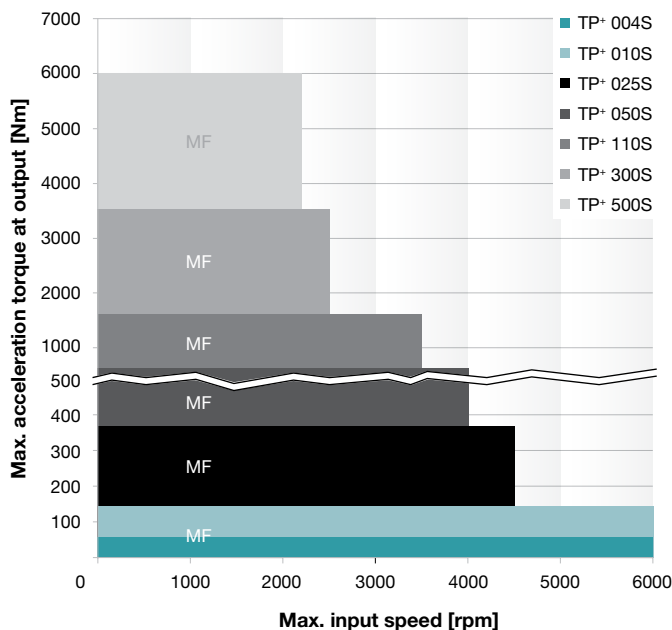
TP⁺/TP⁺ HIGH TORQUE – Compact precision



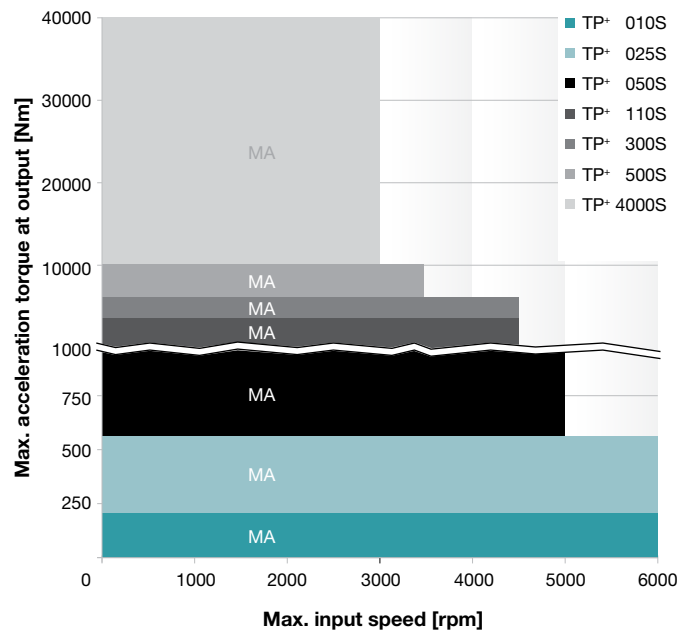
Compact top performers with drive flange. The standard version is ideally suited for high positioning accuracy and highly dynamic cyclic operation. The TP⁺ HIGH TORQUE is particularly well suited for high-precision applications in which high torsional rigidity is required.

Quick size selection

TP⁺ MF (example for $i = 5$)
For applications in cyclic operation ($ED \leq 60\%$)



TP⁺ HIGH TORQUE MA (example for $i = 22$)
For applications in cyclic operation ($ED \leq 60\%$)



Versions and Applications

TP+ MF version (standard version)

- Highly dynamic applications
- High positioning accuracy (e.g. clamped drives)
- Space-saving designs

TP+ HIGH TORQUE MA version

- Maximum power density
- Maximum positioning accuracy (e.g. clamped drives)
- High torsional rigidity
- Demanding safety requirements (e.g. vertical axes)

Comparison

Features		TP+ MF version from page 32	TP+ HIGH TORQUE MA version from page 56
Ratios ^{c)}		4 - 100	22 - 220
Torsional backlash [arcmin] ^{c)}	Standard	≤ 3	≤ 1
	Reduced	≤ 1	-
Output type			
Output flange		•	•
System output with pinion		•	•
Input type			
Motor mounted version		•	•
Input shaft		•	
Type			
Food-grade lubrication ^{a) b)}		•	•
Corrosion resistant ^{a) b)}		•	•
Optimized mass moment of inertia ^{a)}		•	•
Accessories			
Coupling		•	•
Rack		•	•
Pinion		•	•
torqXis sensor flange		•	•
Flange shaft		•	•
Intermediate plate for cooling connection		•	•
For Delta robot applications		•	•

^{a)} Power reduction; technical data available upon request

^{b)} Please contact WITTENSTEIN alpha

^{c)} In relation to reference sizes

Planetary gearheads
High End



MF

MA

TP+ 004 MF 1-stage

					1-stage			
Ratio ^{a)}	<i>i</i>				4	5	7	10
cymex®-optimized acceleration torque (please contact us regarding the design)	T_{2Bcym}		Nm		60	62	60	–
			in.lb		531	549	531	–
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B}		Nm		55	55	55	35
			in.lb		487	487	487	310
Nominal output torque (with n_{2N})	T_{2N}		Nm		28	28	28	18
			in.lb		248	248	248	159
Emergency stop torque (permitted 1000 times during the service life of the gearhead)	T_{2Not}		Nm		100	100	100	100
			in.lb		885	885	885	885
Nominal input speed (with T_{2N} and 20 °C ambient temperature) ^{b)}	n_{1N}		rpm		3300	3300	4000	4000
Max. input speed	n_{1Max}		rpm		6000	6000	6000	6000
Mean no load running torque (with n_1 = 3000 rpm and 20 °C gearhead temperature) ^{c)}	T_{012}		Nm		0.95	0.80	0.60	0.45
			in.lb		8.41	7.08	5.31	3.98
Max. torsional backlash	j_t		arcmin		Standard ≤ 4 / Reduced ≤ 2			
Torsional rigidity ^{c)}	C_{t21}		Nm/ arcmin		12	12	11	8
			in.lb/ arcmin		106	106	97	71
Tilting rigidity	C_{2K}		Nm/ arcmin		–			
			in.lb/ arcmin					
Max. axial force ^{d)}	F_{2AMax}		N		1630			
			lb _f		367			
Max. tilting moment	M_{2KMax}		Nm		110			
			in.lb		974			
Efficiency at full load	η		%		97			
Service life (For calculation, see the Chapter "Information")	L_h		h		> 20000			
Weight incl. standard adapter plate	m		kg		1.4			
			lb _m		3.1			
Operating noise (with $i=10$ and $n_1=3000$ rpm no load)	L_{PA}		dB(A)		≤ 58			
Max. permitted housing temperature			°C		+90			
			F		194			
Ambient temperature			°C		-15 to +40			
			F		5 to 104			
Lubrication					Lubricated for life			
Paint					Blue RAL 5002			
Direction of rotation					Motor and gearhead same direction			
Protection class					IP 65			
Moment of inertia (relates to the drive)	B	11	J_1	kgcm ²	0.17	0.14	0.11	0.09
				10 ⁻³ in.lb.s ²	0.15	0.12	0.10	0.08
Clamping hub diameter [mm]	C	14	J_1	kgcm ²	0.25	0.21	0.18	0.17
				10 ⁻³ in.lb.s ²	0.22	0.19	0.16	0.15
	E	19	J_1	kgcm ²	0.57	0.54	0.51	0.49
				10 ⁻³ in.lb.s ²	0.50	0.47	0.45	0.43

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

^{b)} For higher ambient temperatures, please reduce input speed

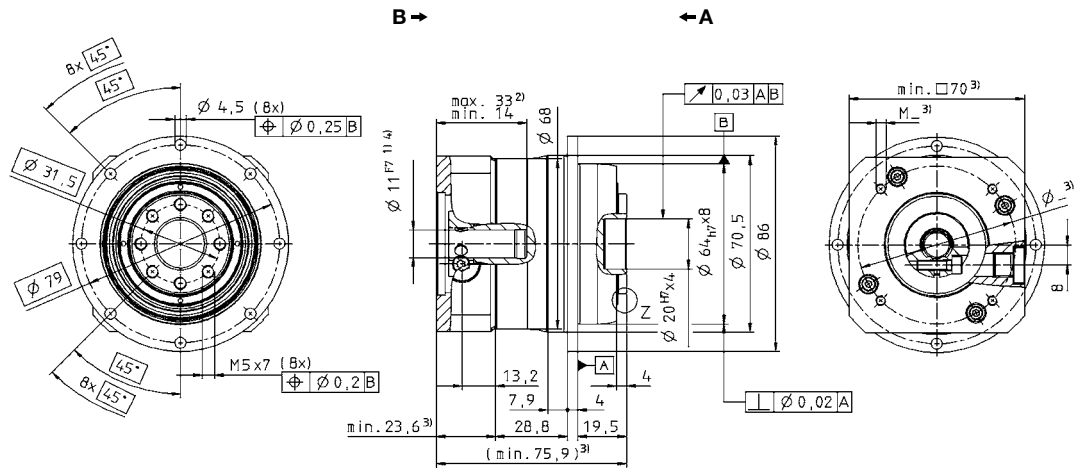
^{c)} Valid for clamping hub diameter of 14 mm

^{d)} Refers to center of the output shaft or flange

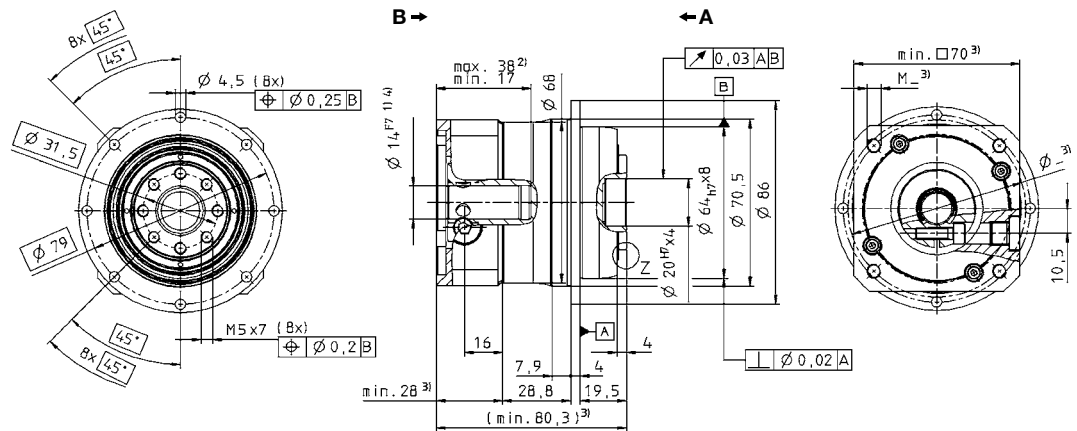
View A

View B

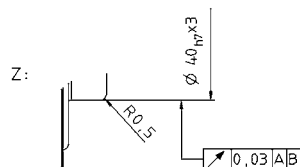
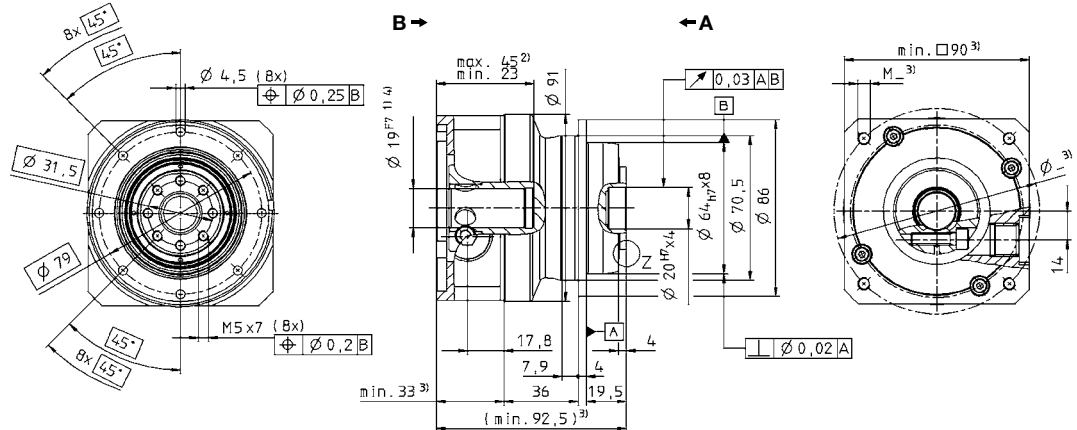
up to 11⁴⁾(B)
clamping hub
diameter



up to 14⁴⁾(C)
clamping hub
diameter



up to 19⁴⁾(E)
clamping hub
diameter



Non-tolerated dimensions ± 1 mm

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.

CAD data is available under www.wittenstein-alpha.com

Motor mounting according to operating manual

Planetary gearheads
High End

TP+
MF

TP+ 004 MF 2-stage

				2-stage																	
Ratio ^{a)}				<i>i</i>	16	20	21	25	28	31	35	40	50	61	70	91	100				
cymex®-optimized acceleration torque (please contact us regarding the design)				<i>T</i> _{2Bcym}	Nm	60	60	–	62	60	–	62	62	62	–	60	–	–			
					in.lb	531	531	–	549	531	–	549	549	549	–	531	–	–			
Max. acceleration torque (max. 1000 cycles per hour)				<i>T</i> _{2B}	Nm	55	55	40	55	55	40	55	55	55	45	55	32	35			
					in.lb	487	487	354	487	487	354	487	487	487	398	487	283	310			
Nominal output torque (with <i>η</i> _{2N})				<i>T</i> _{2N}	Nm	40	40	30	40	40	30	40	40	40	30	40	15	18			
					in.lb	354	354	266	354	354	266	354	354	354	266	354	133	159			
Emergency stop torque (permitted 1000 times during the service life of the gearhead)				<i>T</i> _{2Not}	Nm	100	100	100	100	100	100	100	100	100	100	100	100	100			
					in.lb	885	885	885	885	885	885	885	885	885	885	885	885	885	885		
Nominal input speed (with <i>T</i> _{2N} and 20 °C ambient temperature) ^{b)}				<i>n</i> _{1N}	rpm	4000	4000	4000	4000	4000	4000	4000	4800	5500	5500	5500	5500				
Max. input speed				<i>n</i> _{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000				
Mean no load running torque (with <i>n</i> ₁ = 3000 rpm and 20 °C gearhead temperature) ^{c)}				<i>T</i> ₀₁₂	Nm	0.55	0.45	0.45	0.45	0.35	0.35	0.30	0.25	0.25	0.20	0.20	0.20	0.20			
					in.lb	4.87	3.98	3.98	3.98	3.10	3.10	2.66	2.21	2.21	1.77	1.77	1.77	1.77			
Max. torsional backlash				<i>j</i> _t	arcmin	Standard ≤ 4 / Reduced ≤ 2															
Torsional rigidity ^{c)}				<i>C</i> _{t21}	Nm/ arcmin	12	12	10	12	12	9	12	11	12	9	11	7	8			
					in.lb/ arcmin	106	106	89	106	106	80	106	97	106	80	97	62	71			
Tilting rigidity				<i>C</i> _{2K}	Nm/ arcmin	–															
					in.lb/ arcmin																
Max. axial force ^{d)}				<i>F</i> _{2AMax}	N	1630															
					lb _f	367															
Max. tilting moment				<i>M</i> _{2KMax}	Nm	110															
					in.lb	974															
Efficiency at full load				η	%	94															
Service life (For calculation, see the Chapter "Information")				<i>L</i> _n	h	> 20000															
Weight incl. standard adapter plate				<i>m</i>	kg	1.5															
					lb _m	3.3															
Operating noise (with <i>i</i> =100 and <i>n</i> ₁ = 3000 rpm no load)				<i>L</i> _{PA}	dB(A)	≤ 58															
Max. permitted housing temperature					°C	+90															
					F	194															
Ambient temperature					°C	-15 to +40															
					F	5 to 104															
Lubrication					Lubricated for life																
Paint					Blue RAL 5002																
Direction of rotation					Motor and gearhead same direction																
Protection class					IP 65																
Moment of inertia (relates to the drive) Clamping hub diameter [mm]				B	11	<i>J</i> ₁	kgcm ²	0.078	0.070	0.074	0.068	0.062	0.072	0.061	0.051	0.057	0.058	0.056	0.057	0.056	
							10 ⁻³ in.lb.s ²	0.069	0.062	0.066	0.060	0.054	0.064	0.054	0.051	0.050	0.051	0.050	0.051	0.050	
				C	14	<i>J</i> ₁	kgcm ²	0.17	0.17	0.17	0.16	0.16	0.17	0.16	0.15	0.15	0.15	0.15	0.15	0.15	0.15
							10 ⁻³ in.lb.s ²	0.15	0.15	0.15	0.14	0.14	0.15	0.14	0.14	0.13	0.13	0.13	0.13	0.13	

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

^{b)} For higher ambient temperatures, please reduce input speed

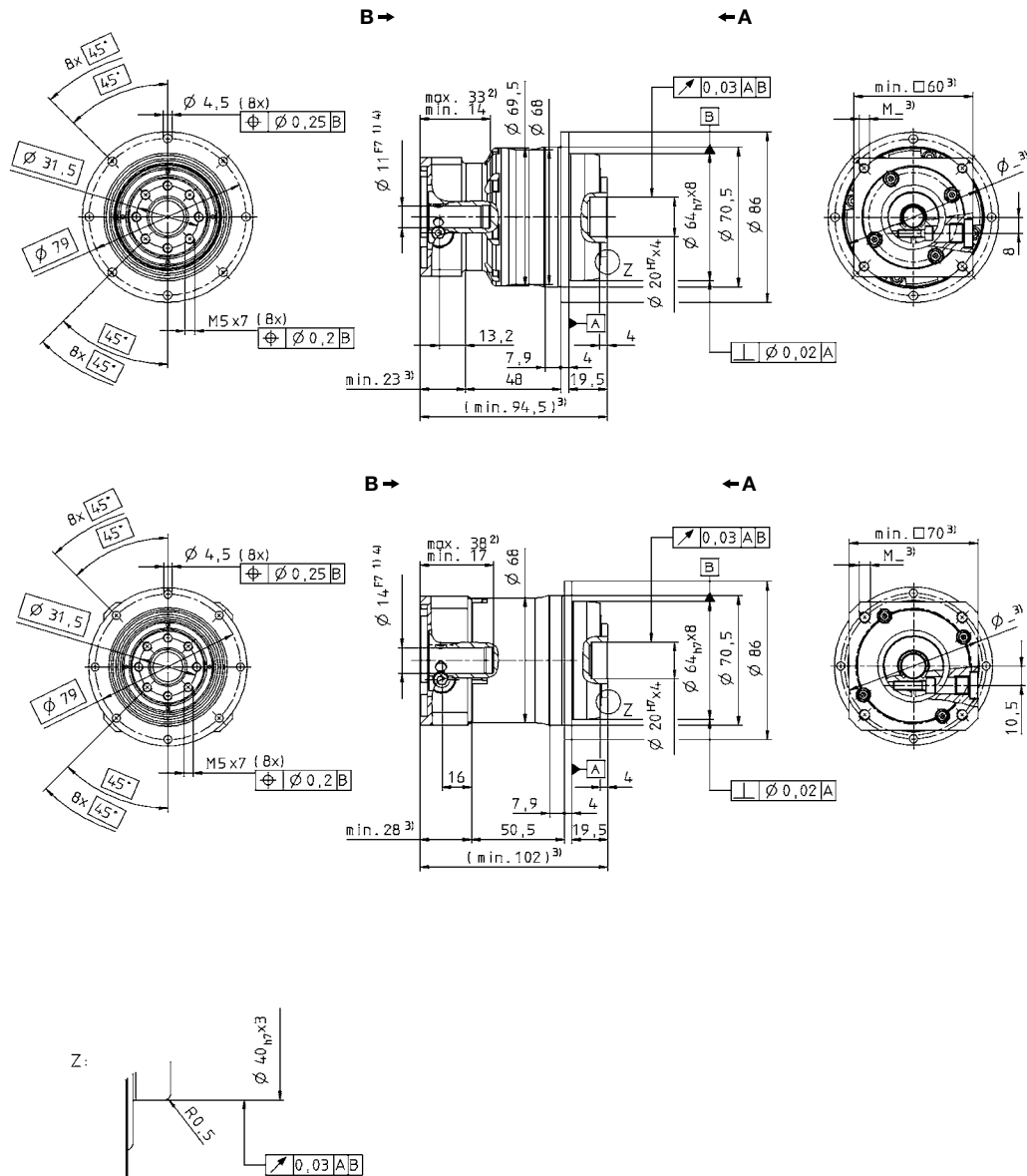
^{c)} Valid for clamping hub diameter of 11 mm

^{d)} Refers to center of the output shaft or flange

Motor shaft diameter [mm]

up to 11 ⁴⁾ (B)
clamping hub
diameter

up to 14 ⁴⁾ (C)
clamping hub
diameter



Planetary gearheads High End

MF TP+

Non-tolerated dimensions ± 1 mm

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.



 CAD data is available under www.wittenstein-alpha.com



 Motor mounting according to operating manual

TP+ 010 MF 1-stage

					1-stage			
Ratio ^{a)}	<i>i</i>				4	5	7	10
cymex®-optimized acceleration torque (please contact us regarding the design)	T_{2Bcym}		Nm		150	162	162	–
			in.lb		1328	1434	1434	–
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B}		Nm		143	143	143	105
			in.lb		1266	1266	1266	929
Nominal output torque (with n_{1N})	T_{2N}		Nm		75	75	75	60
			in.lb		664	664	664	531
Emergency stop torque (permitted 1000 times during the service life of the gearhead)	T_{2Not}		Nm		250	250	250	250
			in.lb		2213	2213	2213	2213
Nominal input speed (with T_{2N} and 20 °C ambient temperature) ^{b)}	n_{1N}		rpm		2600	2900	3100	3100
Max. input speed	n_{1Max}		rpm		6000	6000	6000	6000
Mean no load running torque (with n_1 = 3000 rpm and 20 °C gearhead temperature) ^{c)}	T_{012}		Nm		1.6	1.3	1.0	0.7
			in.lb		14.2	11.5	8.85	6.20
Max. torsional backlash	j_t		arcmin		Standard ≤ 3 / Reduced ≤ 1			
Torsional rigidity ^{c)}	C_{t21}		Nm/ arcmin		32	33	30	23
			in.lb/ arcmin		283	292	266	204
Tilting rigidity	C_{2K}		Nm/ arcmin		225			
			in.lb/ arcmin		1991			
Max. axial force ^{d)}	F_{2AMax}		N		2150			
			lb _f		484			
Max. tilting moment	M_{2KMax}		Nm		270			
			in.lb		2390			
Efficiency at full load	η		%		97			
Service life (For calculation, see the Chapter "Information")	L_h		h		> 20000			
Weight incl. standard adapter plate	m		kg		3.8			
			lb _m		8.4			
Operating noise (with $i=10$ and n_1 = 3000 rpm no load)	L_{PA}		dB(A)		≤ 59			
Max. permitted housing temperature			°C		+90			
			F		194			
Ambient temperature			°C		-15 to +40			
			F		5 to 104			
Lubrication					Lubricated for life			
Paint					Blue RAL 5002			
Direction of rotation					Motor and gearhead same direction			
Protection class					IP 65			
Moment of inertia (relates to the drive)	C	14	J_1	kgcm ²	0.78	0.62	0.48	0.40
				10 ⁻³ in.lb.s ²	0.69	0.55	0.42	0.35
Clamping hub diameter [mm]	E	19	J_1	kgcm ²	0.95	0.79	0.64	0.57
				10 ⁻³ in.lb.s ²	0.84	0.70	0.57	0.50
	G	24	J_1	kgcm ²	2.32	2.16	2.02	1.94
				10 ⁻³ in.lb.s ²	2.05	1.91	1.78	1.72

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

^{b)} For higher ambient temperatures, please reduce input speed

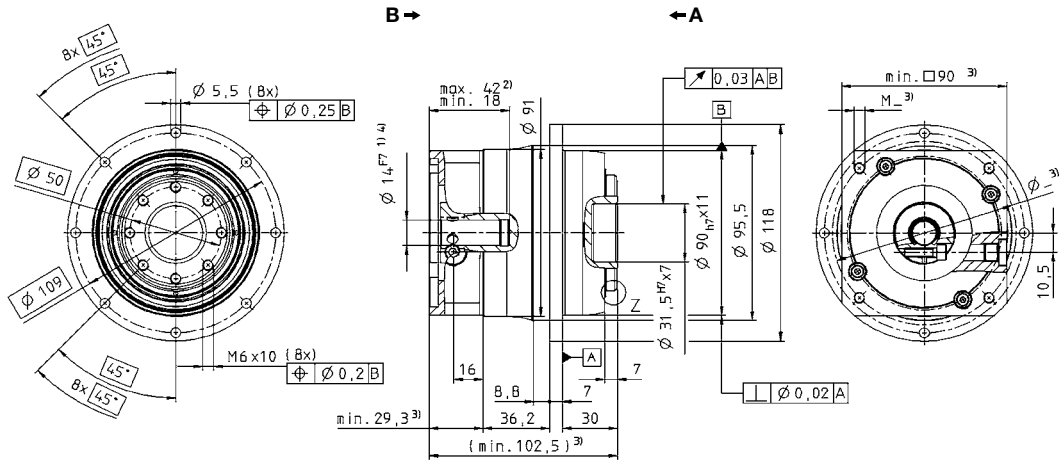
^{c)} Valid for clamping hub diameter of 19 mm

^{d)} Refers to center of the output shaft or flange

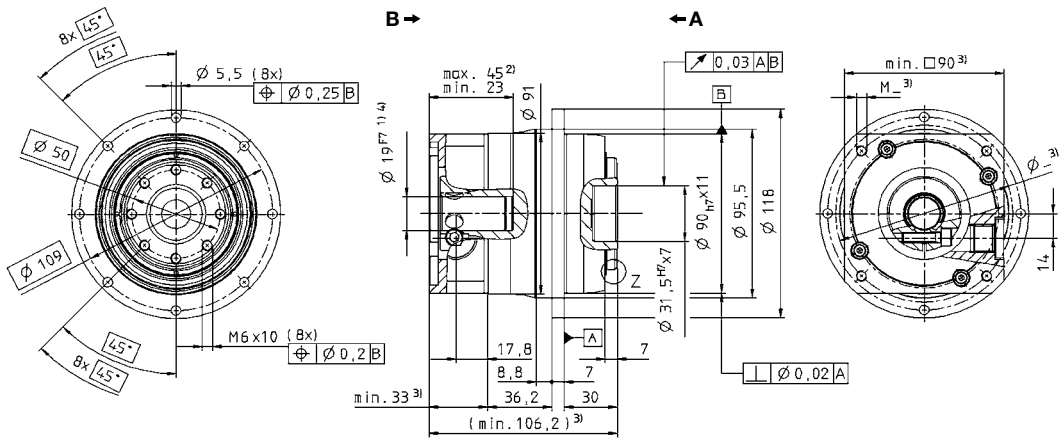
View A

View B

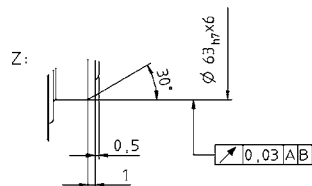
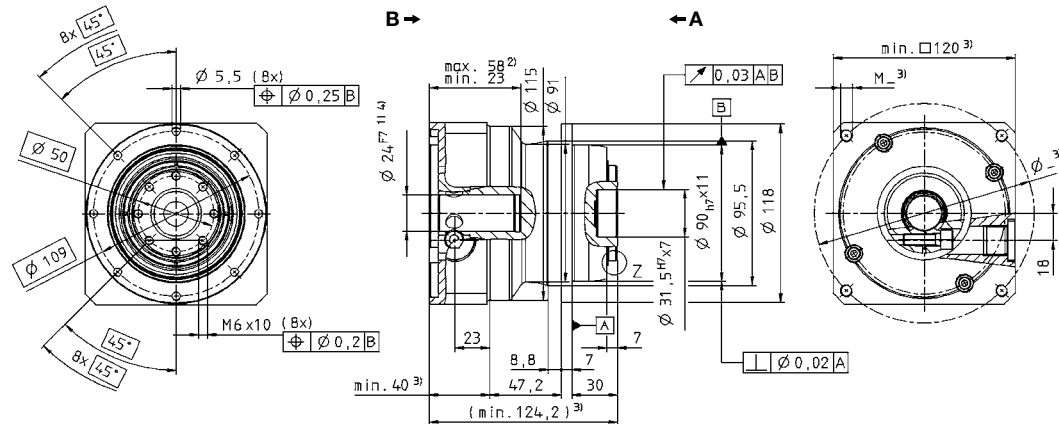
up to 14 ⁴⁾(C)
clamping hub
diameter



up to 19 ⁴⁾(E)
clamping hub
diameter



up to 24 ⁴⁾(G)
clamping hub
diameter



Non-tolerated dimensions ± 1 mm

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.

CAD data is available under www.wittenstein-alpha.com

Motor mounting according to operating manual

Planetary gearheads
High End

TP+

MF

TP+ 010 MF 2-stage

				2-stage													
Ratio ^{a)}	<i>i</i>			16	20	21	25	28	31	35	40	50	61	70	91	100	
cymex®-optimized acceleration torque (please contact us regarding the design)	<i>T</i> _{2Bcym}	Nm		162	162	–	162	162	–	162	–	162	–	162	–	–	
		in.lb		1434	1434	–	1434	1434	–	1434	–	1434	–	1434	–	–	
Max. acceleration torque (max. 1000 cycles per hour)	<i>T</i> _{2B}	Nm		143	143	100	143	143	110	143	140	143	110	143	80	105	
		in.lb		1266	1266	885	1266	1266	974	1266	1239	1266	974	1266	708	929	
Nominal output torque (with <i>n</i> _{2N})	<i>T</i> _{2N}	Nm		90	90	80	90	90	70	90	80	90	70	90	35	60	
		in.lb		797	797	708	797	797	620	797	708	797	620	797	310	531	
Emergency stop torque (permitted 1000 times during the service life of the gearhead)	<i>T</i> _{2Not}	Nm		250	250	250	250	250	250	250	250	250	250	250	250	250	
		in.lb		2213	2213	2213	2213	2213	2213	2213	2213	2213	2213	2213	2213	2213	
Nominal input speed (with <i>T</i> _{2N} and 20 °C ambient temperature) ^{b)}	<i>n</i> _{1N}	rpm		3500	3500	3500	3500	3500	3500	3500	3500	3800	4500	4500	4500	4500	
Max. input speed	<i>n</i> _{1Max}	rpm		6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	
Mean no load running torque (with <i>n</i> ₁ =3000 rpm and 20 °C gearhead temperature) ^{c)}	<i>T</i> ₀₁₂	Nm		0.90	0.75	0.70	0.65	0.55	0.50	0.50	0.40	0.35	0.35	0.35	0.30	0.30	
		in.lb		7.97	6.64	6.20	5.75	4.87	4.43	4.43	3.54	3.10	3.10	3.10	2.66	2.66	
Max. torsional backlash	<i>j</i> _t	arcmin	Standard ≤ 3 / Reduced ≤ 1														
Torsional rigidity ^{c)}	<i>C</i> _{t21}	Nm/ arcmin		32	32	26	32	31	24	32	30	30	24	28	21	22	
		in.lb/ arcmin		283	283	230	283	274	212	283	266	266	212	248	186	195	
Tilting rigidity	<i>C</i> _{2K}	Nm/ arcmin	225														
		in.lb/ arcmin	1991														
Max. axial force ^{d)}	<i>F</i> _{2AMax}	N	2150														
		lb _f	484														
Max. tilting moment	<i>M</i> _{2KMax}	Nm	270														
		in.lb	2390														
Efficiency at full load	η	%	94														
Service life (For calculation, see the Chapter "Information")	<i>L</i> _h	h	> 20000														
Weight incl. standard adapter plate	<i>m</i>	kg	3.6														
		lb _m	8.0														
Operating noise (with <i>i</i> =100 and <i>n</i> ₁ =3000 rpm no load)	<i>L</i> _{PA}	dB(A)	≤ 59														
Max. permitted housing temperature		°C	+90														
		F	194														
Ambient temperature		°C	-15 to +40														
		F	5 to 104														
Lubrication				Lubricated for life													
Paint				Blue RAL 5002													
Direction of rotation				Motor and gearhead same direction													
Protection class				IP 65													
Moment of inertia (relates to the drive)	B	11	<i>J</i> ₁	kgcm ²	0.17	0.14	0.15	0.13	0.11	0.13	0.10	0.09	0.09	0.09	0.09	0.09	
				10 ⁻³ in.lb.s ²	0.15	0.12	0.13	0.12	0.10	0.12	0.09	0.08	0.08	0.08	0.08	0.08	
Clamping hub diameter [mm]	C	14	<i>J</i> ₁	kgcm ²	0.24	0.21	0.22	0.20	0.18	0.21	0.18	0.17	0.17	0.17	0.16	0.16	
				10 ⁻³ in.lb.s ²	0.21	0.19	0.19	0.19	0.16	0.18	0.16	0.15	0.15	0.15	0.14	0.15	
	E	19	<i>J</i> ₁	kgcm ²	0.56	0.53	0.55	0.53	0.51	0.53	0.50	0.49	0.49	0.49	0.49	0.49	
				10 ⁻³ in.lb.s ²	0.50	0.47	0.49	0.47	0.45	0.47	0.44	0.43	0.43	0.43	0.43	0.43	

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

^{b)} For higher ambient temperatures, please reduce input speed

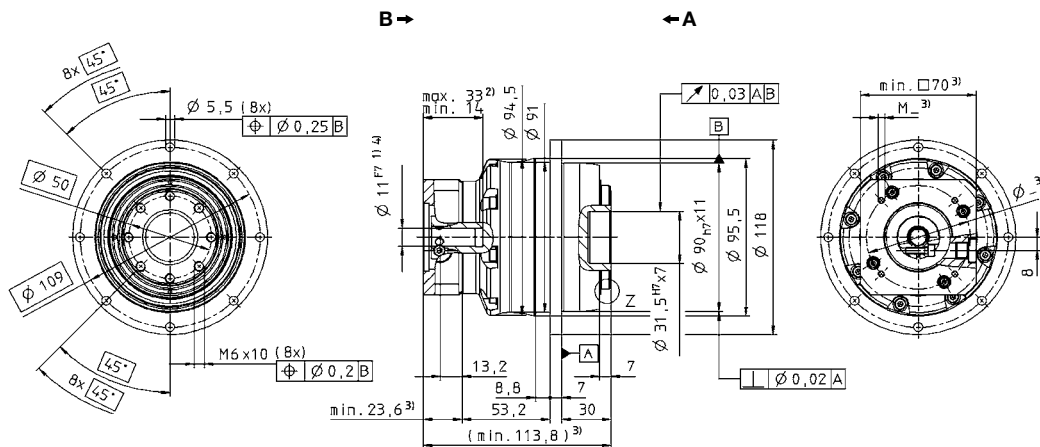
^{c)} Valid for clamping hub diameter of 14 mm

^{d)} Refers to center of the output shaft or flange

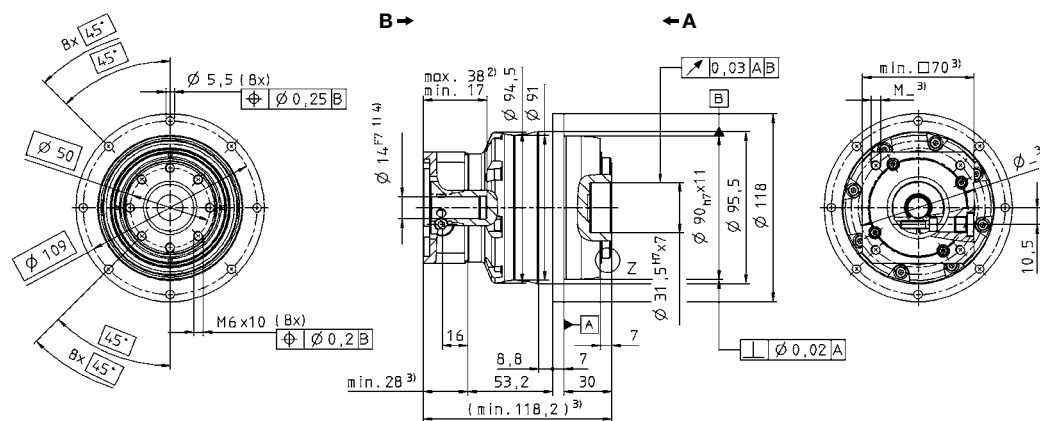
View A

View B

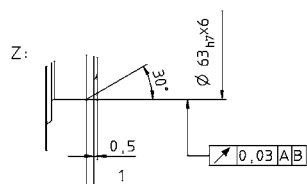
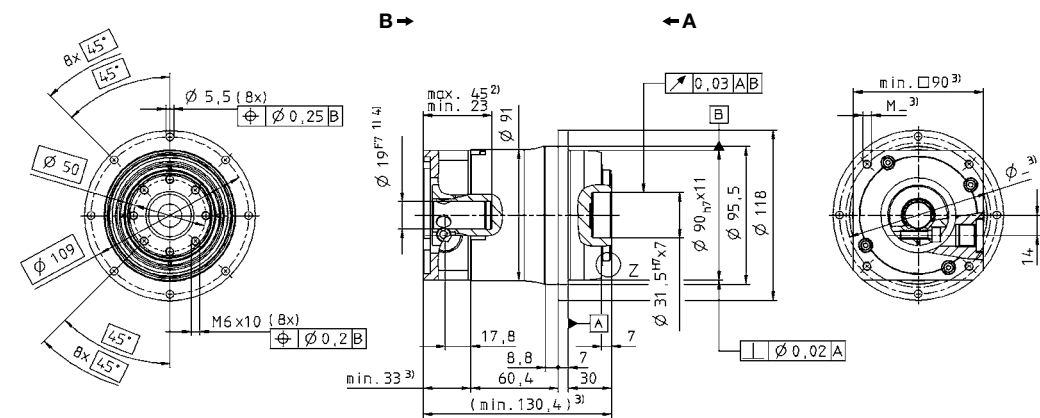
up to 11⁴⁾(B)
clamping hub
diameter



up to 14⁴⁾(C)
clamping hub
diameter



up to 19⁴⁾(E)
clamping hub
diameter



Non-tolerated dimensions ± 1 mm

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.

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Motor mounting according to operating manual

Planetary gearheads
High End

TP+

MF

TP+ 025 MF 1-stage

				1-stage							
Ratio ^{a)}				<i>i</i>		4	5	7	10		
cymex®-optimized acceleration torque (please contact us regarding the design)				<i>T</i> _{2Bcym}	Nm	390	420	350	275		
					in.lb	3452	3717	3098	2434		
Max. acceleration torque (max. 1000 cycles per hour)				<i>T</i> _{2B}	Nm	350	380	330	265		
					in.lb	3098	3363	2921	2345		
Nominal output torque (with <i>n</i> _{2N})				<i>T</i> _{2N}	Nm	170	170	170	120		
					in.lb	1505	1505	1505	1062		
Emergency stop torque (permitted 1000 times during the service life of the gearhead)				<i>T</i> _{2Not}	Nm	625	625	625	625		
					in.lb	5531	5531	5531	5531		
Nominal input speed (with <i>T</i> _{2N} and 20 °C ambient temperature) ^{b)}				<i>n</i> _{1N}	rpm	2300	2500	2500	2500		
Max. input speed				<i>n</i> _{1Max}	rpm	4500	4500	4500	4500		
Mean no load running torque (with <i>n</i> ₁ =3000 rpm and 20 °C gearhead temperature) ^{c)}				<i>T</i> ₀₁₂	Nm	3.3	2.7	2.0	1.4		
					in.lb	29.2	23.9	17.7	12.4		
Max. torsional backlash				<i>j</i> _t	arcmin	Standard ≤ 3 / Reduced ≤ 1					
Torsional rigidity ^{c)}				<i>C</i> _{t21}	Nm/ arcmin	80	86	76	62		
					in.lb/ arcmin	708	761	673	549		
Tilting rigidity				<i>C</i> _{2K}	Nm/ arcmin	550					
					in.lb/ arcmin	4868					
Max. axial force ^{d)}				<i>F</i> _{2AMax}	N	4150					
					lb _f	934					
Max. tilting moment				<i>M</i> _{2KMax}	Nm	440					
					in.lb	3894					
Efficiency at full load				η	%	97					
Service life (For calculation, see the Chapter "Information")				<i>L</i> _n	h	> 20000					
Weight incl. standard adapter plate				<i>m</i>	kg	6.5					
					lb _m	14.4					
Operating noise (with <i>i</i> =10 and <i>n</i> ₁ =3000 rpm no load)				<i>L</i> _{PA}	dB(A)	≤ 64					
Max. permitted housing temperature					°C	+90					
					F	194					
Ambient temperature					°C	-15 to +40					
					F	5 to 104					
Lubrication				Lubricated for life							
Paint				Blue RAL 5002							
Direction of rotation				Motor and gearhead same direction							
Protection class				IP 65							
Moment of inertia (relates to the drive)				E	19	<i>J</i> ₁	kgcm ²	2.59	2.11	1.69	1.45
							10 ⁻³ in.lb.s ²	2.29	1.87	1.50	1.28
Clamping hub diameter [mm]				G	24	<i>J</i> ₁	kgcm ²	3.28	2.80	2.38	2.14
							10 ⁻³ in.lb.s ²	2.90	2.48	2.11	1.89
				H	28	<i>J</i> ₁	kgcm ²	2.89	2.41	1.99	1.75
							10 ⁻³ in.lb.s ²	2.56	2.13	1.76	1.55
				K	38	<i>J</i> ₁	kgcm ²	10.3	9.87	9.45	9.21
							10 ⁻³ in.lb.s ²	9.11	8.73	8.36	8.15

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

^{b)} For higher ambient temperatures, please reduce input speed

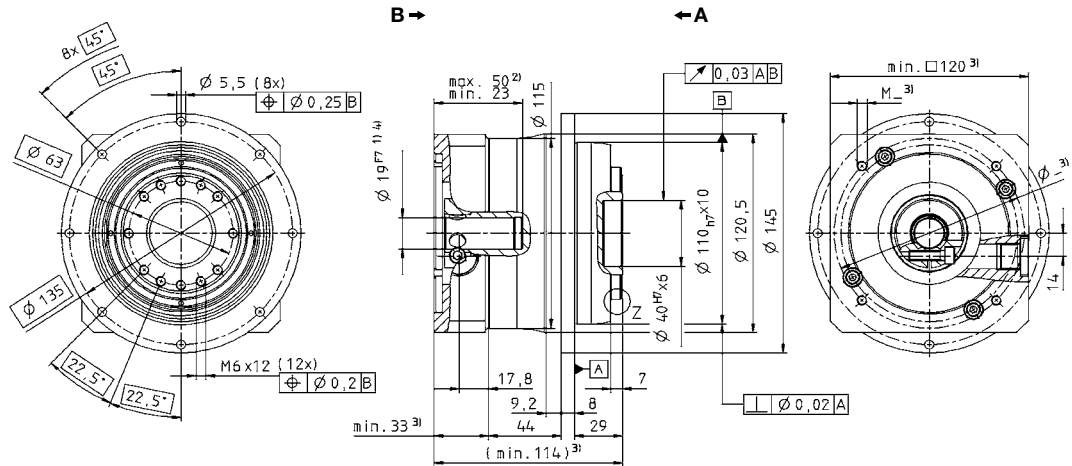
^{c)} Valid for clamping hub diameter of 24 and 28 mm

^{d)} Refers to center of the output shaft or flange

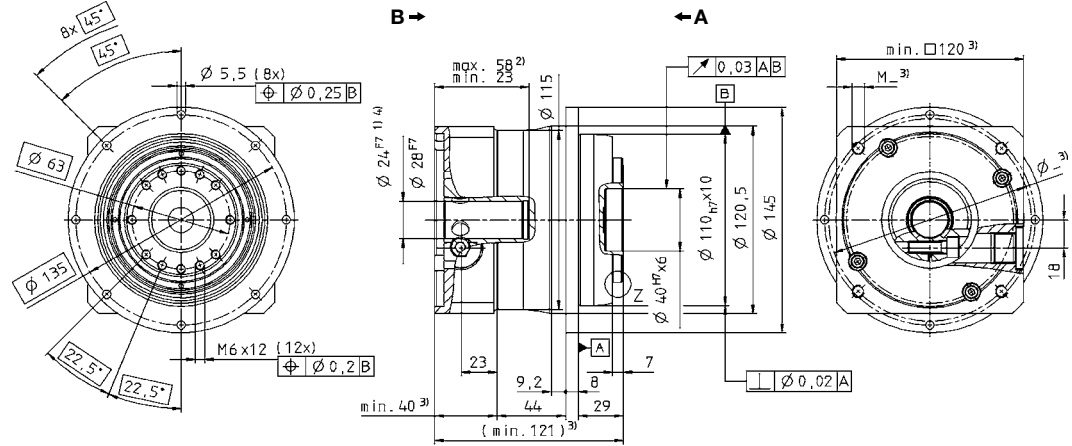
View A

View B

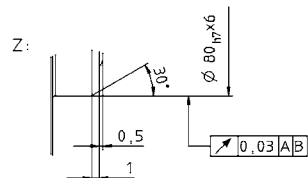
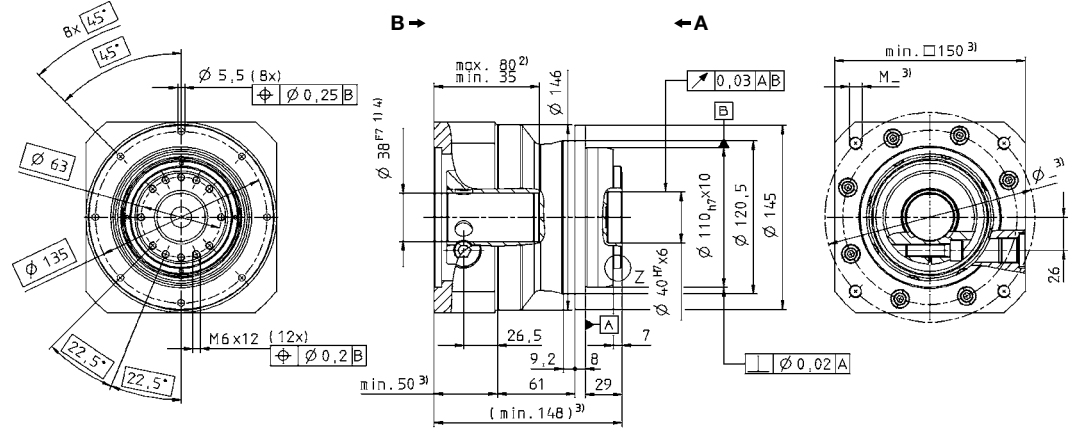
up to 19⁴⁾ (E)
clamping hub
diameter



up to 24/28⁴⁾
(G/H) clamping
hub diameter



up to 38⁴⁾ (K)
clamping hub
diameter



Non-tolerated dimensions ± 1 mm

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.

CAD data is available under www.wittenstein-alpha.com

Motor mounting according to operating manual

Planetary gearheads
High End

TP+
MF

TP+ 025 MF 2-stage

				2-stage																
Ratio ^{a)}				<i>i</i>	16	20	21	25	28	31	35	40	50	61	70	91	100			
cymex®-optimized acceleration torque (please contact us regarding the design)				<i>T</i> _{2Bcym}	Nm	390	390	–	420	390	–	420	390	420	–	350	–	275		
					in.lb	3452	3452	–	3717	3452	–	3717	3452	3717	–	3098	–	2434		
Max. acceleration torque (max. 1000 cycles per hour)				<i>T</i> _{2B}	Nm	350	350	300	380	350	300	380	350	380	280	330	250	265		
					in.lb	3098	3098	2655	3363	3098	2655	3363	3098	3363	2478	2921	2213	2345		
Nominal output torque (with <i>n</i> _{IN})				<i>T</i> _{2N}	Nm	200	210	170	200	210	190	220	200	220	170	200	100	120		
					in.lb	1770	1859	1505	1770	1859	1682	1947	1770	1947	1505	1770	885	1062		
Emergency stop torque (permitted 1000 times during the service life of the gearhead)				<i>T</i> _{2Not}	Nm	625	625	625	625	625	625	625	625	625	625	625	625	625		
					in.lb	5531	5531	5531	5531	5531	5531	5531	5531	5531	5531	5531	5531	5531	5531	
Nominal input speed (with <i>T</i> _{2N} and 20 °C ambient temperature) ^{b)}				<i>n</i> _{1N}	rpm	2800	2800	2800	2800	2800	2800	2800	3100	3500	3500	4200	4200			
Max. input speed				<i>n</i> _{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000		
Mean no load running torque (with <i>n</i> ₁ =3000 rpm and 20 °C gearhead temperature) ^{c)}				<i>T</i> ₀₁₂	Nm	1.8	1.5	1.4	1.4	1.1	1.1	1.0	0.8	0.8	0.7	0.7	0.6	0.6		
					in.lb	15.9	13.3	12.4	12.4	9.7	9.7	8.9	7.1	7.1	6.2	6.2	5.3	5.3		
Max. torsional backlash				<i>j</i> _t	arcmin	Standard ≤ 3 / Reduced ≤ 1														
Torsional rigidity ^{c)}				<i>C</i> _{t21}	Nm/ arcmin	81	81	70	83	80	54	82	76	80	61	71	55	60		
					in.lb/ arcmin	717	717	620	735	708	478	726	673	708	540	628	487	531		
Tilting rigidity				<i>C</i> _{2K}	Nm/ arcmin	550														
					in.lb/ arcmin	4867														
Max. axial force ^{d)}				<i>F</i> _{2AMax}	N	4150														
					lb _f	934														
Max. tilting moment				<i>M</i> _{2KMax}	Nm	440														
					in.lb	3894														
Efficiency at full load				η	%	94														
Service life (For calculation, see the Chapter "Information")				<i>L</i> _h	h	> 20000														
Weight incl. standard adapter plate				<i>m</i>	kg	6.7														
					lb _m	14.8														
Operating noise (with <i>i</i> =100 and <i>n</i> ₁ =3000 rpm no load)				<i>L</i> _{PA}	dB(A)	≤ 60														
Max. permitted housing temperature					°C	+90														
					F	194														
Ambient temperature					°C	-15 to +40														
					F	5 to 104														
Lubrication					Lubricated for life															
Paint					Blue RAL 5002															
Direction of rotation					Motor and gearhead same direction															
Protection class					IP 65															
Moment of inertia (relates to the drive)				C	14	<i>J</i> ₁	kgcm ²	0.66	0.55	0.60	0.53	0.44	0.55	0.43	0.38	0.38	0.39	0.37	0.38	0.37
							10 ⁻³ in.lb.s ²	0.59	0.49	0.51	0.47	0.39	0.49	0.38	0.34	0.33	0.35	0.33	0.34	0.33
Clamping hub diameter [mm]				E	19	<i>J</i> ₁	kgcm ²	0.83	0.71	0.77	0.69	0.61	0.72	0.60	0.55	0.54	0.55	0.54	0.54	0.54
							10 ⁻³ in.lb.s ²	0.73	0.63	0.68	0.61	0.54	0.64	0.53	0.49	0.48	0.4	0.48	0.48	0.48
				G	24	<i>J</i> ₁	kgcm ²	2.20	2.08	2.14	2.06	1.98	2.09	1.97	1.92	1.92	1.92	1.91	1.92	1.91
							10 ⁻³ in.lb.s ²	1.95	1.84	1.89	1.82	1.75	1.85	1.74	1.70	1.70	1.70	1.69	1.70	1.69

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

^{b)} For higher ambient temperatures, please reduce input speed

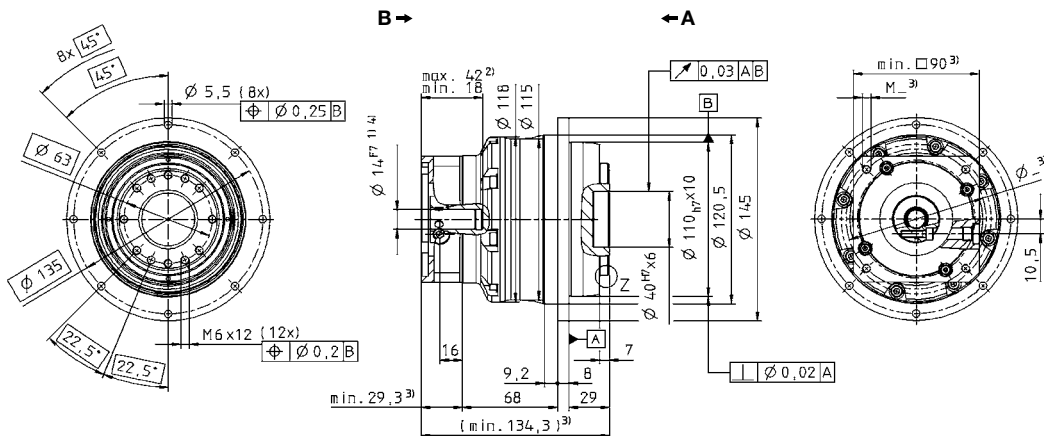
^{c)} Valid for clamping hub diameter of 19 mm

^{d)} Refers to center of the output shaft or flange

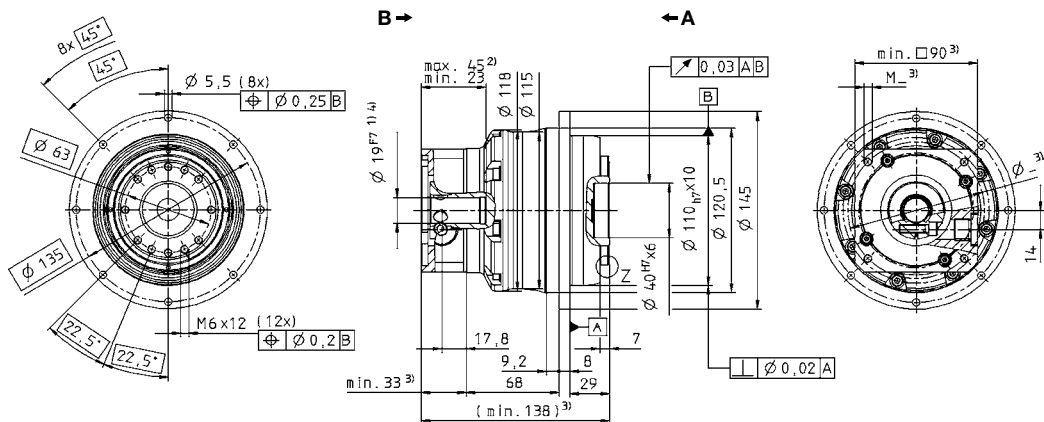
View A

View B

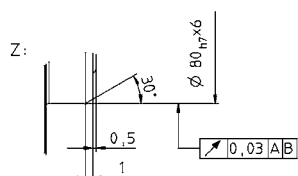
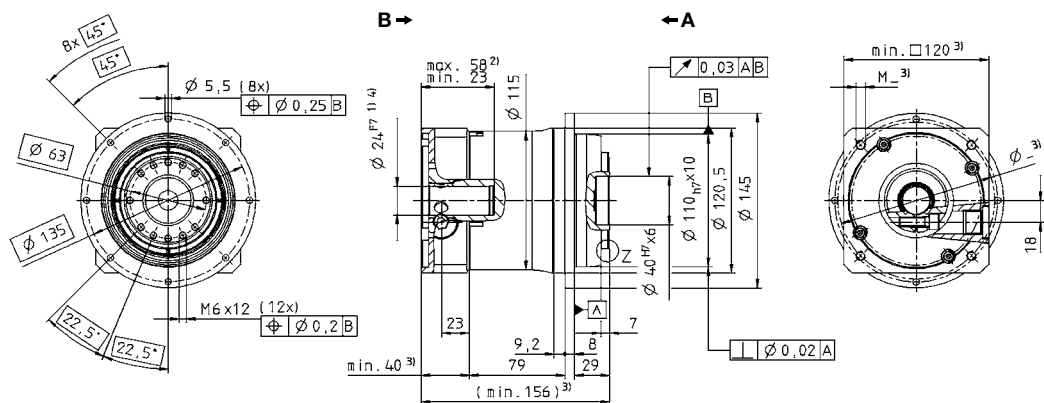
up to 14⁴⁾ (C)
clamping hub
diameter



up to 19⁴⁾ (E)
clamping hub
diameter



up to 24⁴⁾ (G)
clamping hub
diameter



Non-tolerated dimensions ±1 mm

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.

CAD data is available under www.wittenstein-alpha.com

Motor mounting according to operating manual

Planetary gearheads
High End

TP+
MF

TP+ 050 MF 1-stage

				1-stage							
Ratio ^{a)}				<i>i</i>	4	5	7	10			
cymex®-optimized acceleration torque (please contact us regarding the design)				<i>T</i> _{2Bcym}	Nm	750	800	–	600		
					in.lb	6638	7080	–	5310		
Max. acceleration torque (max. 1000 cycles per hour)				<i>T</i> _{2B}	Nm	700	700	700	540		
					in.lb	6195	6195	6195	4779		
Nominal output torque (with <i>n</i> _{2N})				<i>T</i> _{2N}	Nm	370	370	370	240		
					in.lb	3275	3275	3275	2124		
Emergency stop torque (permitted 1000 times during the service life of the gearhead)				<i>T</i> _{2Not}	Nm	1250	1250	1250	1250		
					in.lb	11063	11063	11063	11063		
Nominal input speed (with <i>T</i> _{2N} and 20 °C ambient temperature) ^{b)}				<i>n</i> _{1N}	rpm	1900	2000	2500	2500		
Max. input speed				<i>n</i> _{1Max}	rpm	4000	4000	4000	4000		
Mean no load running torque (with <i>n</i> ₁ =3000 rpm and 20 °C gearhead temperature) ^{c)}				<i>T</i> ₀₁₂	Nm	8.1	6.6	4.8	3.5		
					in.lb	71.7	58.4	42.5	31.0		
Max. torsional backlash				<i>j</i> _t	arcmin	Standard ≤ 3 / Reduced ≤ 1					
Torsional rigidity ^{c)}				<i>C</i> _{t21}	Nm/ arcmin	190	187	159	123		
					in.lb/ arcmin	1682	1655	1407	1089		
Tilting rigidity				<i>C</i> _{2K}	Nm/ arcmin	560					
					in.lb/ arcmin	4956					
Max. axial force ^{d)}				<i>F</i> _{2AMax}	N	6130					
					lb _f	1379					
Max. tilting moment				<i>M</i> _{2KMax}	Nm	1335					
					in.lb	11815					
Efficiency at full load				η	%	97					
Service life (For calculation, see the Chapter "Information")				<i>L</i> _n	h	> 20000					
Weight incl. standard adapter plate				<i>m</i>	kg	14.0					
					lb _m	30.9					
Operating noise (with <i>i</i> =10 and <i>n</i> ₁ =3000 rpm no load)				<i>L</i> _{PA}	dB(A)	≤ 65					
Max. permitted housing temperature					°C	+90					
					F	194					
Ambient temperature					°C	-15 to +40					
					F	5 to 104					
Lubrication						Lubricated for life					
Paint						Blue RAL 5002					
Direction of rotation						Motor and gearhead same direction					
Protection class						IP 65					
Moment of inertia (relates to the drive) Clamping hub diameter [mm]				G	24	<i>J</i> ₁	kgcm ²	9.47	7.85	6.39	5.54
							10 ⁻³ in.lb.s ²	8.38	6.95	5.66	4.90
				I	32	<i>J</i> ₁	kgcm ²	12.6	11.0	9.55	8.71
							10 ⁻³ in.lb.s ²	11.1	9.74	8.45	7.70
				K	38	<i>J</i> ₁	kgcm ²	13.7	12.1	10.6	9.78
							10 ⁻³ in.lb.s ²	12.1	10.7	9.38	8.65
				M	48	<i>J</i> ₁	kgcm ²	28.3	26.7	25.3	24.4
							10 ⁻³ in.lb.s ²	25.0	23.6	22.4	21.6

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

^{b)} For higher ambient temperatures, please reduce input speed

^{c)} Valid for clamping hub diameter of 32 and 38 mm

^{d)} Refers to center of the output shaft or flange

View A

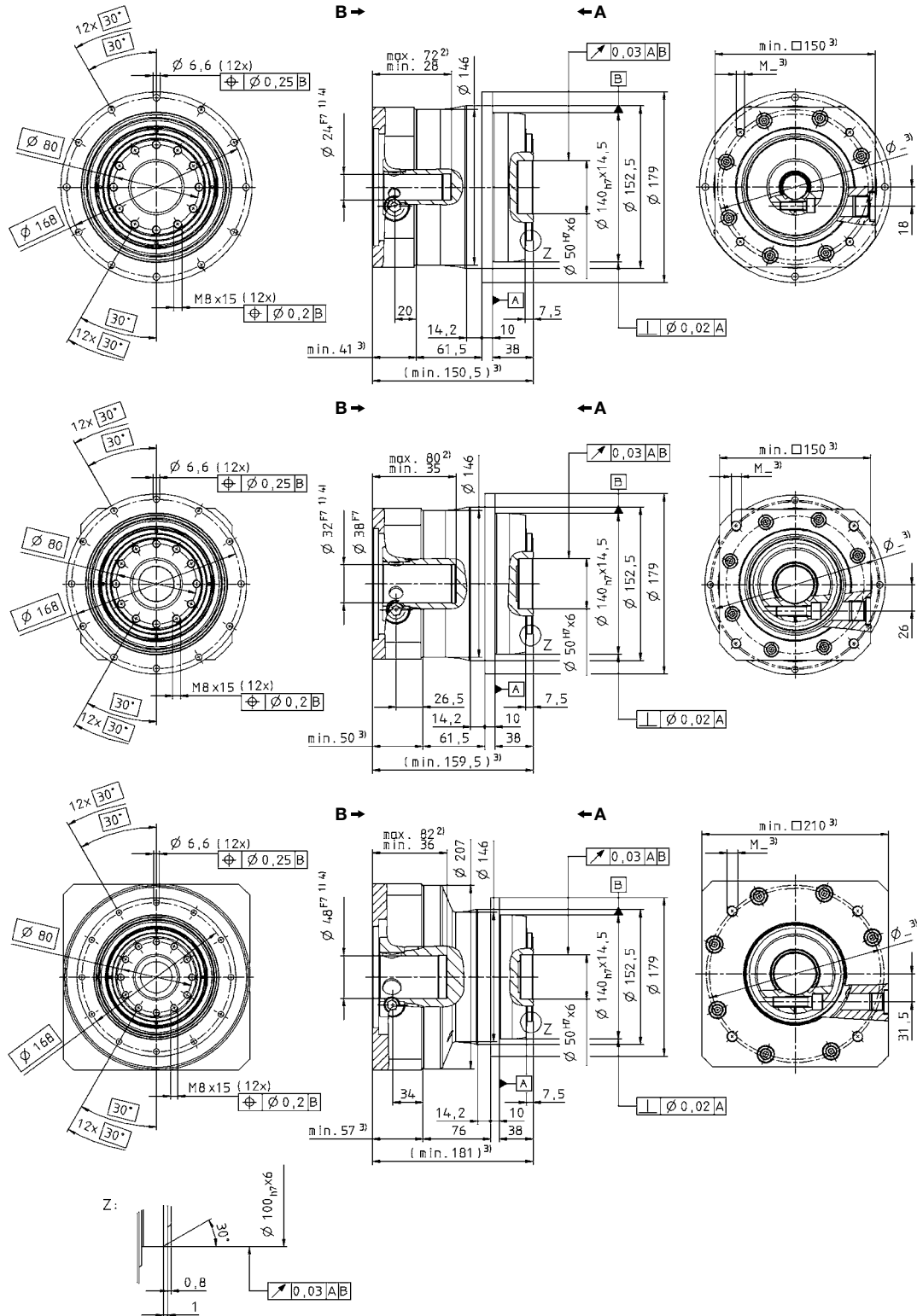
View B

Motor shaft diameter [mm]

up to 24⁴⁾ (G)
clamping hub
diameter

up to 32/38⁴⁾
(I/K) clamping hub
diameter

up to 48⁴⁾ (M)
clamping hub
diameter



Non-tolerated dimensions ±1 mm

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.

CAD data is available under www.wittenstein-alpha.com

Motor mounting according to operating manual

Planetary gearheads
High End

TP+

MF

TP+ 050 MF 2-stage

				2-stage														
Ratio ^{a)}				<i>i</i>	16	20	21	25	28	31	35	40	50	61	70	91	100	
cymex®-optimized acceleration torque (please contact us regarding the design)				<i>T</i> _{2Bcym}	Nm	800	800	–	800	800	–	800	800	800	–	–	–	600
					in.lb	7080	7080	–	7080	7080	–	7080	7080	7080	–	–	–	5310
Max. acceleration torque (max. 1000 cycles per hour)				<i>T</i> _{2B}	Nm	750	750	600	750	750	620	750	750	750	550	700	500	540
					in.lb	6638	6638	5310	6638	6638	5487	6638	6638	6638	4868	6195	4425	4779
Nominal output torque (with <i>n</i> _{2N})				<i>T</i> _{2N}	Nm	400	400	350	400	400	400	400	400	400	350	400	220	240
					in.lb	3540	3540	3098	3540	3540	3540	3540	3540	3540	3098	3540	1947	2124
Emergency stop torque (permitted 1000 times during the service life of the gearhead)				<i>T</i> _{2Not}	Nm	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250
					in.lb	11063	11063	11063	11063	11063	11063	11063	11063	11063	11063	11063	11063	11063
Nominal input speed (with <i>T</i> _{2N} and 20 °C ambient temperature) ^{b)}				<i>n</i> _{1N}	rpm	2900	2900	2900	2900	2900	2900	2900	2900	3200	3200	3200	3900	3900
Max. input speed				<i>n</i> _{1Max}	rpm	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000
Mean no load running torque (with <i>n</i> ₁ =3000 rpm and 20 °C gearhead temperature) ^{c)}				<i>T</i> ₀₁₂	Nm	4.2	3.4	3.3	3.1	2.5	2.4	2.3	1.8	1.7	1.5	1.5	1.4	1.3
					in.lb	37.2	30.1	29.2	27.4	22.1	21.2	20.4	15.9	15.1	13.3	13.3	12.4	11.5
Max. torsional backlash				<i>j</i> _t	arcmin	Standard ≤ 3 / Reduced ≤ 1												
Torsional rigidity ^{c)}				<i>C</i> _{t21}	Nm/ arcmin	180	185	145	180	180	130	175	175	175	123	145	100	115
					in.lb/ arcmin	1593	1637	1283	1593	1593	1151	1549	1549	1549	1089	1283	885	1018
Tilting rigidity				<i>C</i> _{2K}	Nm/ arcmin	560												
					in.lb/ arcmin	4956												
Max. axial force ^{d)}				<i>F</i> _{2AMax}	N	6130												
					lb _f	1379												
Max. tilting moment				<i>M</i> _{2KMax}	Nm	1335												
					in.lb	11815												
Efficiency at full load				η	%	94												
Service life (For calculation, see the Chapter "Information")				<i>L</i> _h	h	> 20000												
Weight incl. standard adapter plate				<i>m</i>	kg	14.1												
					lb _m	31.2												
Operating noise (with <i>i</i> =100 and <i>n</i> ₁ =3000 rpm no load)				<i>L</i> _{PA}	dB(A)	≤ 63												
Max. permitted housing temperature					°C	+90												
					F	194												
Ambient temperature					°C	-15 to +40												
					F	5 to 104												
Lubrication					Lubricated for life													
Paint					Blue RAL 5002													
Direction of rotation					Motor and gearhead same direction													
Protection class					IP 65													
Moment of inertia (relates to the drive)	E	19	<i>J</i> ₁	kgcm ²	2.53	2.07	2.30	2.01	1.67	2.12	1.64	1.44	1.42	1.46	1.41	1.43	1.40	
				10 ⁻³ in.lb.s ²	2.24	1.83	2.04	1.78	1.48	1.88	1.45	1.27	1.26	1.29	1.25	1.27	1.24	
Clamping hub diameter [mm]	G	24	<i>J</i> ₁	kgcm ²	3.22	2.77	2.99	2.70	2.36	2.81	2.33	2.13	2.12	2.15	2.10	2.12	2.09	
				10 ⁻³ in.lb.s ²	2.85	2.45	2.65	2.39	2.09	2.49	2.06	1.89	1.88	1.90	1.86	1.88	1.85	
	K	38	<i>J</i> ₁	kgcm ²	10.3	9.83	10.1	9.77	9.43	9.88	9.40	9.20	9.18	9.22	9.17	9.19	9.16	
				10 ⁻³ in.lb.s ²	9.11	8.70	8.94	8.64	8.35	8.74	8.32	8.14	8.12	8.16	8.12	8.13	8.11	

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

^{b)} For higher ambient temperatures, please reduce input speed

^{c)} Valid for clamping hub diameter of 24 mm

^{d)} Refers to center of the output shaft or flange

View A

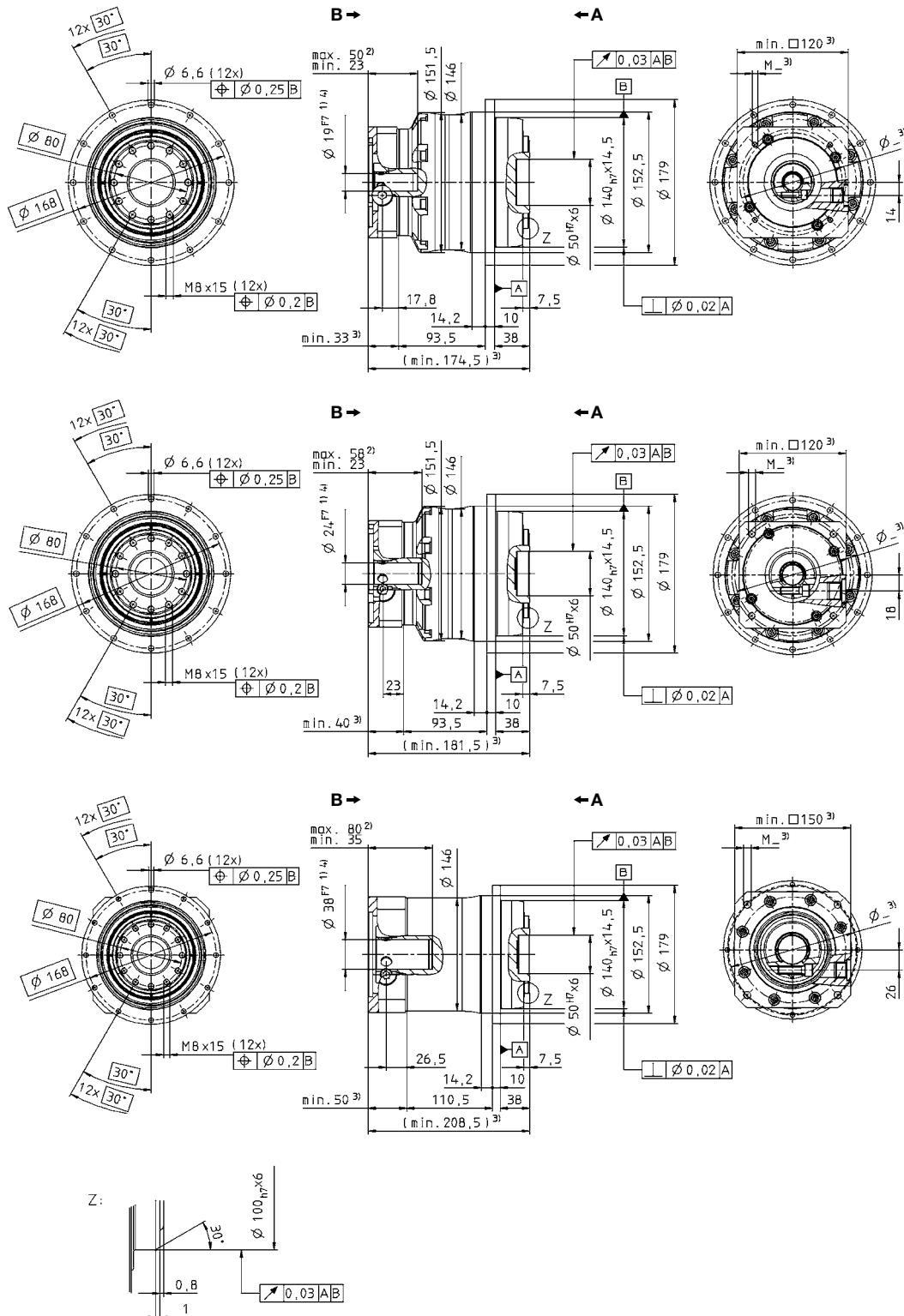
View B

Motor shaft diameter [mm]

up to 19⁴⁾ (E)
clamping hub
diameter

up to 24⁴⁾ (G)
clamping hub
diameter

up to 38⁴⁾ (K)
clamping hub
diameter



Planetary gearheads
High End

TP+
MF

Non-tolerated dimensions ± 1 mm

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.

CAD data is available under www.wittenstein-alpha.com

Motor mounting according to operating manual

TP+ 110 MF 1-stage

					1-stage			
Ratio ^{a)}	<i>i</i>				4	5	7	10
cymex®-optimized acceleration torque (please contact us regarding the design)	T_{2Bcym}	Nm			1900	2000	1900	1500
		in.lb			16815	17700	16815	13275
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B}	Nm			1600	1600	1600	1400
		in.lb			14160	14160	14160	12390
Nominal output torque (with n_{IN})	T_{2N}	Nm			700	750	750	750
		in.lb			6195	6638	6638	6638
Emergency stop torque (permitted 1000 times during the service life of the gearhead)	T_{2Not}	Nm			2750	2750	2750	2750
		in.lb			24338	24338	24338	24338
Nominal input speed (with T_{2N} and 20 °C ambient temperature) ^{b)}	n_{1N}		rpm		1400	1500	2000	2000
Max. input speed	n_{1Max}		rpm		3500	3500	3500	3500
Mean no load running torque (with $n_1=3000$ rpm and 20 °C gearhead temperature) ^{c)}	T_{012}	Nm			15.6	12.7	9.4	7.0
		in.lb			138.1	112.4	83.2	62.0
Max. torsional backlash	j_t		arcmin		Standard ≤ 3 / Reduced ≤ 1			
Torsional rigidity ^{c)}	C_{t21}	Nm/ arcmin			610	610	550	445
		in.lb/ arcmin			5399	5399	4868	3938
Tilting rigidity	C_{2K}	Nm/ arcmin			1452			
		in.lb/ arcmin			12850			
Max. axial force ^{d)}	F_{2AMax}	N			10050			
		lb _f			2261			
Max. tilting moment	M_{2KMax}	Nm			3280			
		in.lb			29028			
Efficiency at full load	η		%		97			
Service life (For calculation, see the Chapter "Information")	L_h		h		> 20000			
Weight incl. standard adapter plate	m	kg			30.0			
		lb _m			66			
Operating noise (with $i=10$ and $n_1=3000$ rpm no load)	L_{PA}		dB(A)		≤ 66			
Max. permitted housing temperature		°C			+90			
		F			194			
Ambient temperature		°C			-15 to +40			
		F			5 to 104			
Lubrication					Lubricated for life			
Paint					Blue RAL 5002			
Direction of rotation					Motor and gearhead same direction			
Protection class					IP 65			
Moment of inertia (relates to the drive)	K	38	J_1	kgcm ²	44.5	34.6	25.5	20.6
				10 ⁻³ in.lb.s ²	39.4	30.6	22.6	18.2
Clamping hub diameter [mm]	M	48	J_1	kgcm ²	51.8	41.9	32.9	28.0
				10 ⁻³ in.lb.s ²	45.8	37.1	29.1	24.8

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

^{b)} For higher ambient temperatures, please reduce input speed

^{c)} Valid for clamping hub diameter of 48 mm

^{d)} Refers to center of the output shaft or flange

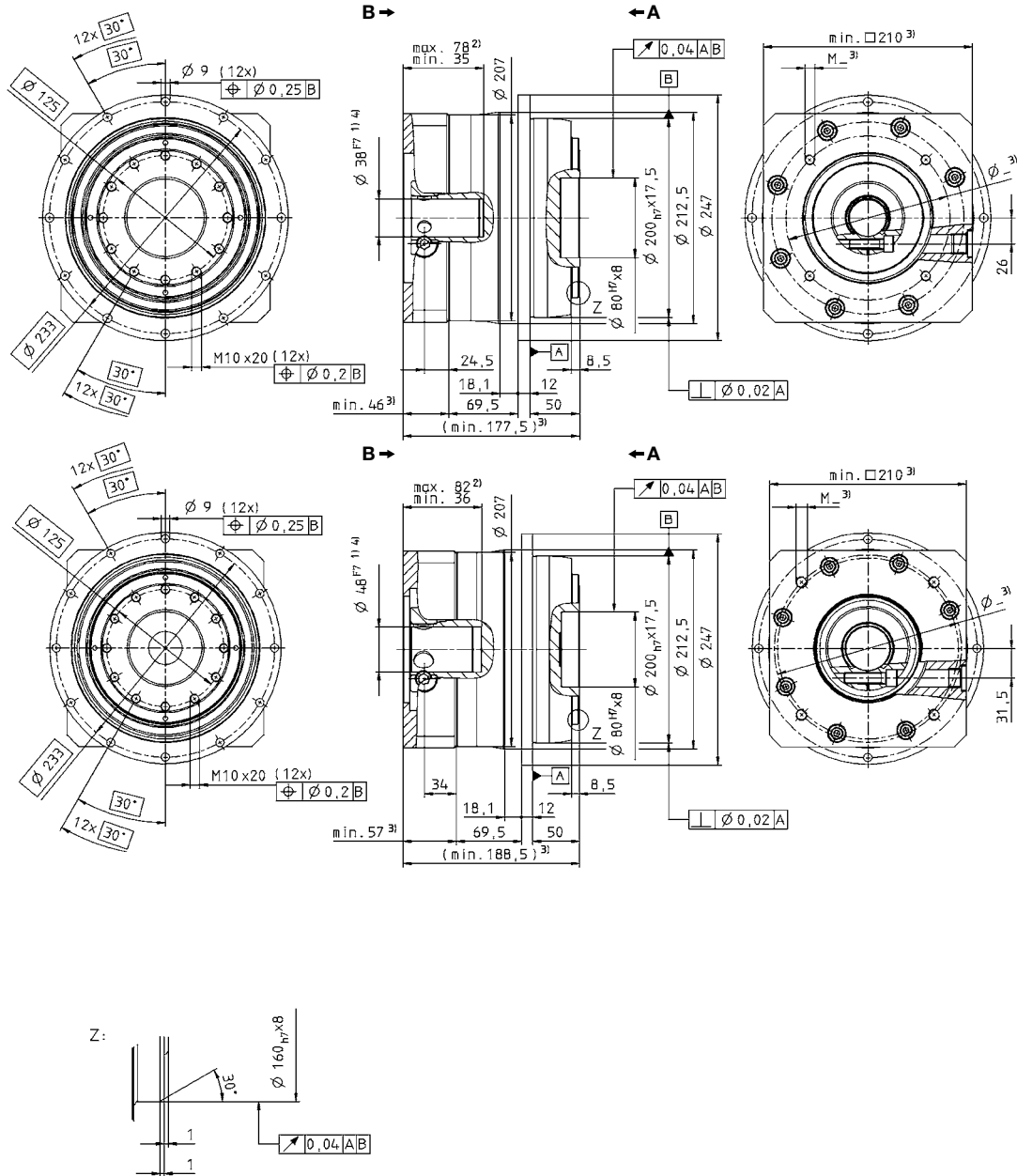
View A

View B

Motor shaft diameter [mm]

up to 38⁴⁾ (K)
clamping hub
diameter

up to 48⁴⁾ (M)
clamping hub
diameter



Planetary gearheads
High End

TP+
MF

Non-tolerated dimensions ±1 mm

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.

CAD data is available under www.wittenstein-alpha.com

Motor mounting according to operating manual

TP+ 110 MF 2-stage

				2-stage													
Ratio ^{a)}	<i>i</i>			16	20	21	25	28	31	35	40	50	61	70	91	100	
cymex®-optimized acceleration torque (please contact us regarding the design)	<i>T</i> _{2Bcym}		Nm	2000	2000	–	2000	2000	–	2000	1800	1800	–	1800	–	1500	
			in.lb	17700	17700	–	17700	17700	–	17700	15930	15930	–	15930	–	13275	
Max. acceleration torque (max. 1000 cycles per hour)	<i>T</i> _{2B}		Nm	1600	1600	1400	1600	1600	1600	1600	1600	1600	1400	1600	1300	1400	
			in.lb	14160	14160	12390	14160	14160	14160	14160	14160	14160	12390	14160	11505	12390	
Nominal output torque (with <i>n</i> _{in})	<i>T</i> _{2N}		Nm	980	980	850	1050	1050	1250	1250	850	1050	1100	900	700	800	
			in.lb	8673	8673	7523	9293	9293	11063	11063	7523	9293	9735	7965	6195	7080	
Emergency stop torque (permitted 1000 times during the service life of the gearhead)	<i>T</i> _{2Not}		Nm	2750	2750	2750	2750	2750	2750	2750	2750	2750	2750	2750	2750	2750	
			in.lb	24338	24338	24338	24338	24338	24338	24338	24338	24338	24338	24338	24338	24338	
Nominal input speed (with <i>T</i> _{2N} and 20 °C ambient temperature) ^{b)}	<i>n</i> _{1N}	rpm		2500	2500	2500	2500	2500	2500	2500	2500	2900	3200	3200	3400	3400	
Max. input speed ^{c)}	<i>n</i> _{1Max}	rpm		4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	
Mean no load running torque (with <i>n</i> ₁ =3000 rpm and 20 °C gearhead temperature) ^{c)}	<i>T</i> ₀₁₂		Nm	6.9	5.6	5.5	5.0	4.1	3.9	3.7	3.0	2.7	2.5	2.4	2.2	2.2	
			in.lb	61.1	49.6	48.7	44.3	36.3	34.5	32.7	26.6	23.9	22.1	21.2	19.5	19.5	
Max. torsional backlash	<i>j</i> _t	arcmin		Standard ≤ 3 / Reduced ≤ 1													
Torsional rigidity ^{c)}	<i>C</i> _{t21}		Nm/ arcmin	585	580	465	570	560	440	560	520	525	415	480	360	395	
			in.lb/ arcmin	5177	5133	4115	5045	4956	3894	4956	4602	4646	3673	4248	3186	3496	
Tilting rigidity	<i>C</i> _{2K}		Nm/ arcmin	1452													
			in.lb/ arcmin	12850													
Max. axial force ^{d)}	<i>F</i> _{2AMax}		N	10050													
			lb _f	2261													
Max. tilting moment	<i>M</i> _{2KMax}		Nm	3280													
			in.lb	29028													
Efficiency at full load	η	%		94													
Service life (For calculation, see the Chapter "Information")	<i>L</i> _h	h		> 20000													
Weight incl. standard adapter plate	<i>m</i>		kg	34.0													
			lb _m	75.1													
Operating noise (with <i>i</i> =100 and <i>n</i> ₁ =3000 rpm no load)	<i>L</i> _{PA}	dB(A)		≤ 66													
Max. permitted housing temperature		°C		+90													
		F		194													
Ambient temperature		°C		-15 to +40													
		F		5 to 104													
Lubrication				Lubricated for life													
Paint				Blue RAL 5002													
Direction of rotation				Motor and gearhead same direction													
Protection class				IP 65													
Moment of inertia (relates to the drive)	G	24	<i>J</i> ₁	kgcm ²	8.51	8.21	8.98	7.82	6.57	8.09	6.37	5.63	5.54	5.63	5.44	5.50	5.39
				10 ⁻³ in.lb.s ²	7.53	7.27	7.95	6.92	5.81	7.16	5.64	4.99	4.90	4.99	4.82	4.87	4.77
Clamping hub diameter [mm]	I	32	<i>J</i> ₁	kgcm ²	11.7	11.4	12.1	11.0	9.73	11.3	9.54	8.80	8.70	8.79	8.61	8.67	8.56
				10 ⁻³ in.lb.s ²	10.3	10.1	10.7	9.72	8.61	9.96	8.44	7.78	7.70	7.78	7.62	7.67	7.57
	K	38	<i>J</i> ₁	kgcm ²	12.7	12.5	13.2	12.1	10.8	12.3	10.6	9.87	9.77	9.87	9.68	9.74	9.63
				10 ⁻³ in.lb.s ²	11.3	11.0	11.7	10.7	9.6	10.9	9.39	8.73	8.65	8.73	8.56	8.62	8.52
	M	48	<i>J</i> ₁	kgcm ²	27.4	27.1	27.8	26.7	25.4	26.9	25.3	24.5	24.4	24.5	24.3	24.4	24.3
				10 ⁻³ in.lb.s ²	24.2	24.0	24.6	23.6	22.5	23.8	22.3	21.7	21.6	21.7	21.5	21.6	21.5

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

^{b)} For higher ambient temperatures, please reduce input speed

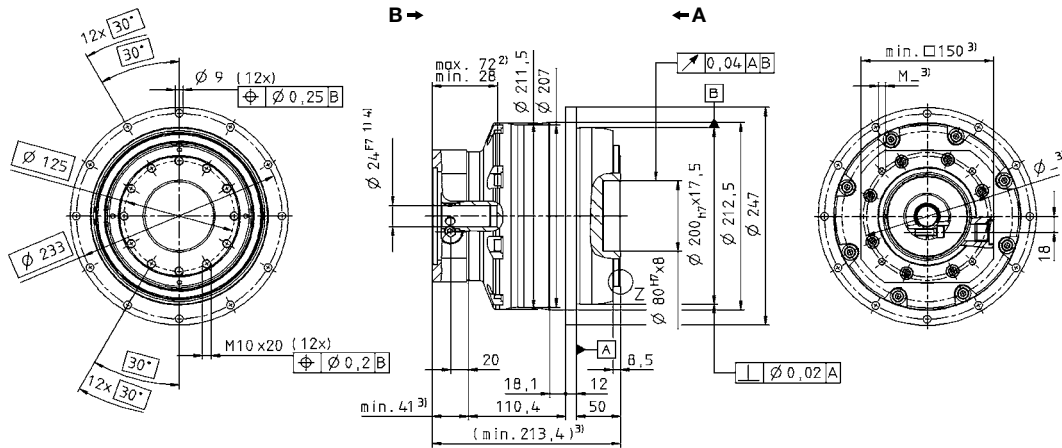
^{c)} Valid for clamping hub diameter of 32 and 38 mm

^{d)} Refers to center of the output shaft or flange

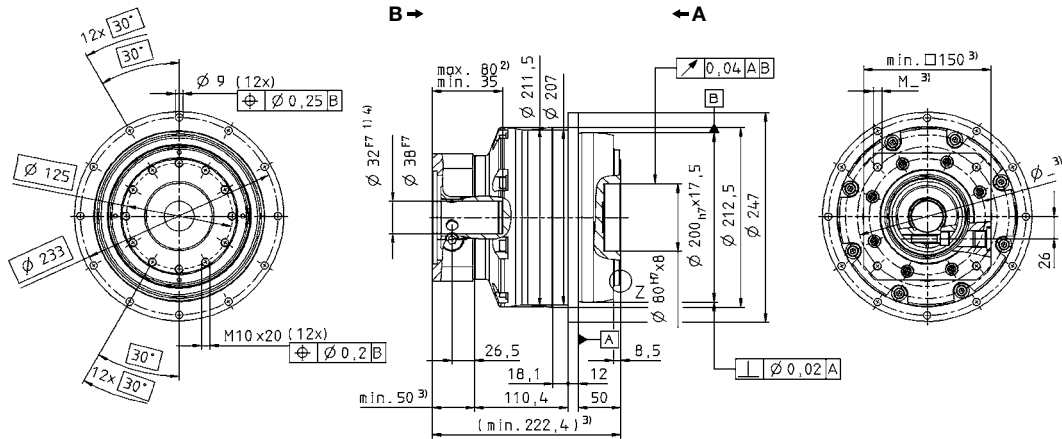
View A

View B

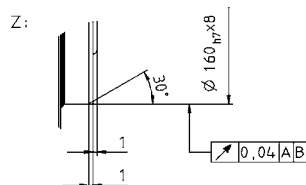
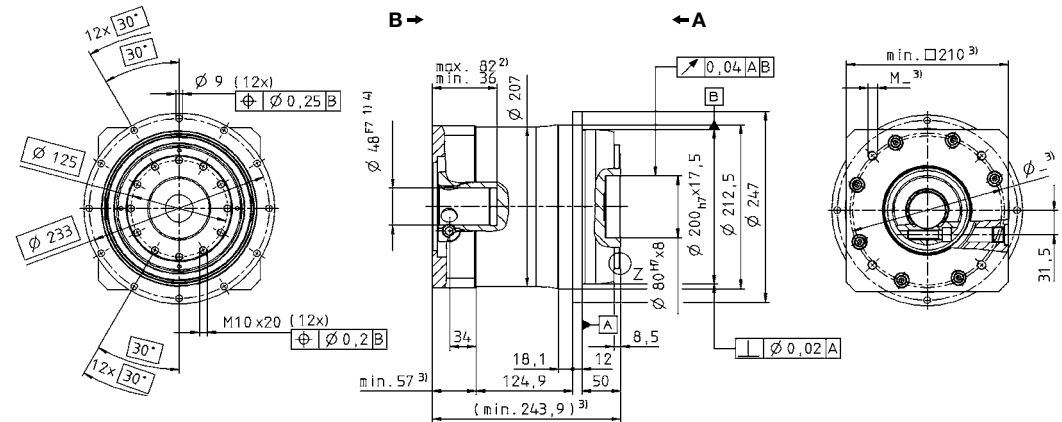
up to 24⁴⁾ (G)
clamping hub
diameter



up to 32/38⁴⁾ (I/K)
clamping hub
diameter



up to 48⁴⁾ (M)
clamping hub
diameter



Non-tolerated dimensions ±1 mm

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.

CAD data is available under www.wittenstein-alpha.com

Motor mounting according to operating manual

Planetary gearheads
High End

TP+

MF

TP+ 300 MF 1/2-stage

					1-stage			2-stage									
Ratio ^{a)}	<i>i</i>		5	7	10	20	21	25	31	35	50	61	70	91	100		
Max. acceleration torque (max. 1000 cycles per hour)	<i>T</i> _{2B}	Nm	3500	3300	1900	3500	3400	3500	3500	3500	3000	2800	3300	2800	2800		
		in.lb	30975	29205	16815	30975	30090	30975	30975	30975	30975	26550	24780	29205	24780	24780	
Nominal output torque (with <i>n</i> _{in})	<i>T</i> _{2N}	Nm	2200	1800	1000	2300	2100	2400	2200	2500	1900	1600	1800	1600	1600		
		in.lb	19470	15930	8850	20355	18585	21240	19470	22125	16815	14160	15930	14160	14160		
Emergency stop torque (permitted 1000 times during the service life of the gearhead)	<i>T</i> _{2Not}	Nm	8750	8750	8750	8750	8750	8750	8750	8750	8750	8750	8750	8750	8750		
		in.lb	77438	77438	77438	77438	77438	77438	77438	77438	77438	77438	77438	77438	77438		
Nominal input speed (with <i>T</i> _{2N} and 20 °C ambient temperature) ^{b)}	<i>n</i> _{1N}	rpm	1000	1400	1700	2000	2000	2000	2000	2000	2300	2400	2400	2500	2500		
Max. input speed	<i>n</i> _{1Max}	rpm	2500	2500	2500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500		
Mean no load running torque (with <i>n</i> ₁ =2000 rpm and 20 °C gearhead temperature)	<i>T</i> ₀₁₂	Nm	23	17	11	10	9,5	9,0	7,0	6,0	5,0	4,0	4,0	3,5	3,5		
		in.lb	204	150	97	89	84	80	62	53	44	35	35	31	31		
Max. torsional backlash	<i>j</i> _t	arcmin	Standard ≤ 3 / Reduced ≤ 1			Standard ≤ 3 / Reduced ≤ 2											
Torsional rigidity	<i>C</i> _{t21}	Nm/ arcmin	1000	900	700	850	800	950	750	900	800	700	800	600	650		
		in.lb/ arcmin	8850	7965	6195	7523	7080	9408	6638	7965	7080	6195	7080	5310	5753		
Tilting rigidity	<i>C</i> _{2K}	Nm/ arcmin	5560														
		in.lb/ arcmin	49206														
Max. axial force ^{c)}	<i>F</i> _{2AMax}	N	33000														
		lb _f	7425														
Max. tilting moment	<i>M</i> _{2KMax}	Nm	3900			5900											
		in.lb	34515			52215											
Efficiency at full load	η	%	95			93											
Service life (For calculation, see the Chapter "Information")	<i>L</i> _h	h	> 20000														
Weight incl. standard adapter plate	<i>m</i>	kg	60			58.5											
		lb _m	132.6			129.3											
Operating noise (with <i>i</i> =10 and <i>n</i> ₁ = 2000 rpm without load)	<i>L</i> _{PA}	dB(A)	≤ 64														
Max. permitted housing temperature		°C	+90														
		F	194														
Ambient temperature		°C	-15 to +40														
		F	5 to 104														
Lubrication			Lubricated for life														
Paint			Blue RAL 5002														
Direction of rotation			Motor and gearhead same direction														
Protection class			IP 65														
Moment of inertia (relates to the drive)	M	48	<i>J</i> ₁	kgcm ²	–	–	–	27.5	27.0	25.9	25.6	22.4	21.5	21.4	21.3	21.2	21.2
		10 ⁻² in.lb.s ²					24.3	23.9	22.9	22.7	19.8	19.0	18.9	18.9	18.8	18.8	
Clamping hub diameter [mm]	N	55	<i>J</i> ₁	kgcm ²	82.6	61.2	49.5	–	–	–	–	–	–	–	–	–	–
		10 ⁻² in.lb.s ²		73.1	54.2	43.8											

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

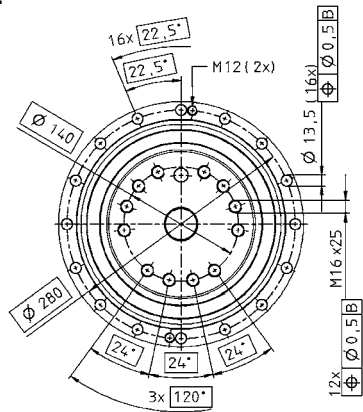
^{b)} For higher ambient temperatures, please reduce input speed

^{c)} Refers to center of the output shaft or flange

View A

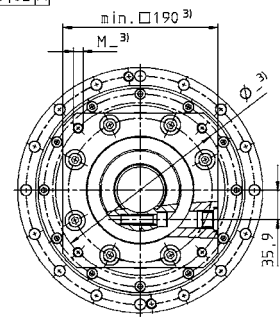
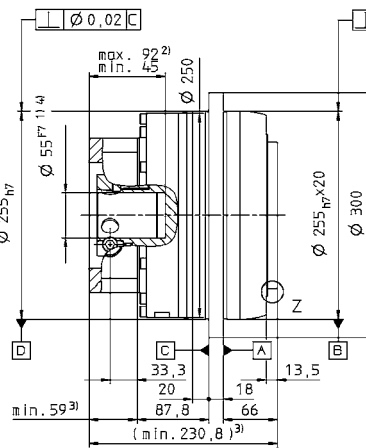
View B

1-stage:

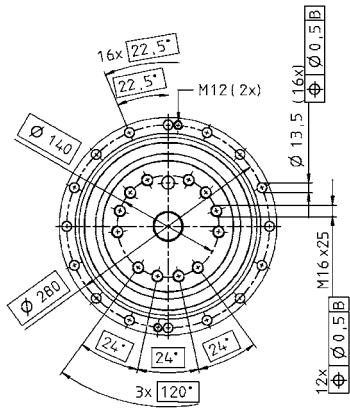


B →

← A

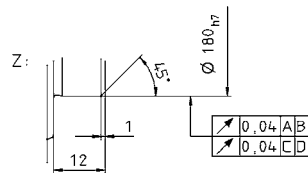
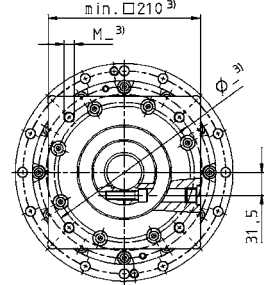
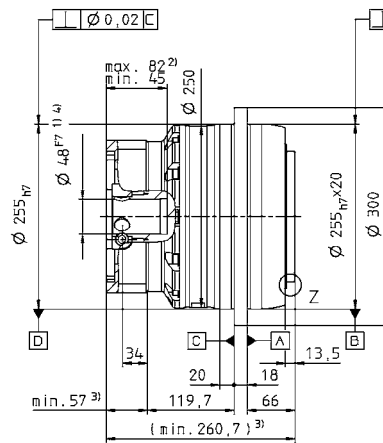


2-stage:



B →

← A



Non-tolerated dimensions $\pm 1,5$ mm

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.

CAD data is available under www.wittenstein-alpha.com

Motor mounting according to operating manual

Planetary gearheads
High End

TP+
MF

TP+ 500 MF 1/2-stage

				1-stage			2-stage										
Ratio ^{a)}		<i>i</i>		5	7	10	20	21	25	31	35	50	61	70	91	100	
Max. acceleration torque (max. 1000 cycles per hour)		<i>T</i> _{2B}	Nm	6000	5000	3400	6000	5000	6000	6000	6000	4500	4800	5000	4800	4800	
			in.lb	53100	44250	30090	53100	44250	53100	53100	53100	39825	42480	44250	42480	42480	
Nominal output torque (with <i>n</i> _m)		<i>T</i> _{2N}	Nm	3250	2800	1700	3350	3200	3800	3700	3800	2900	2900	2800	2900	2900	
			in.lb	28763	24780	15045	29648	28320	33630	32745	33630	25665	25665	24780	25665	25665	
Emergency stop torque (permitted 1000 times during the service life of the gearhead)		<i>T</i> _{2Not}	Nm	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	
			in.lb	132750	132750	132750	132750	132750	132750	132750	132750	132750	132750	132750	132750	132750	
Nominal input speed (with <i>T</i> _{2N} and 20 °C ambient temperature) ^{b)}		<i>n</i> _{1N}	rpm	900	1300	1500	1500	1500	1500	1500	1500	2000	2100	2100	2200	2200	
Max. input speed		<i>n</i> _{1Max}	rpm	2500	2500	2500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	
Mean no load running torque (with <i>n</i> ₁ =2000 rpm and 20 °C gearhead temperature)		<i>T</i> ₀₁₂	Nm	30	22	14	13	12	10	8,0	7,0	6,0	5,0	5,0	4,5	4,5	
			in.lb	266	195	124	115	106	89	71	62	53	44	44	40	40	
Max. torsional backlash		<i>j</i> _t	arcmin	Standard ≤ 3 / Reduced ≤ 1			Standard ≤ 3 / Reduced ≤ 2										
Torsional rigidity		<i>C</i> _{t21}	Nm/ arcmin	1450	1300	1100	1400	1200	1450	1200	1400	1300	1100	1250	950	1050	
			in.lb/ arcmin	12833	11505	9735	12390	10620	12833	10620	12390	11505	9735	11063	8401	9293	
Tilting rigidity		<i>C</i> _{2K}	Nm/ arcmin	9480													
			in.lb/ arcmin	83898													
Max. axial force ^{c)}		<i>F</i> _{2AMax}	N	50000													
			lb _f	11250													
Max. tilting moment		<i>M</i> _{2KMax}	Nm	5500			8800										
			in.lb	48675			77880										
Efficiency at full load		η	%	95			93										
Service life (For calculation, see the Chapter "Information")		<i>L</i> _h	h	> 20000													
Weight incl. standard adapter plate		<i>m</i>	kg	82			77.5										
			lb _m	181.2			171.3										
Operating noise (with <i>i</i> =10 and <i>n</i> ₁ =2000 rpm no load)		<i>L</i> _{PA}	dB(A)	≤ 66													
Max. permitted housing temperature			°C	+90													
			F	194													
Ambient temperature			°C	-15 to +40													
			F	5 to 104													
Lubrication				Lubricated for life													
Paint				Blue RAL 5002													
Direction of rotation				Motor and gearhead same direction													
Protection class				IP 65													
Moment of inertia (relates to the drive)	M	48	<i>J</i> ₁	kgcm ²	–	–	–	32.3	37.6	31.1	32.8	25.1	23.2	23.6	23.2	23.0	22.7
				10 ⁻² in.lb.s ²	–	–	–	28.6	33.3	27.5	29.0	22.2	20.5	20.9	20.5	20.4	20.1
Clamping hub diameter [mm]	O	60	<i>J</i> ₁	kgcm ²	175.5	137.0	115.8	–	–	–	–	–	–	–	–	–	–
				10 ⁻³ in.lb.s ²	155.3	121.2	102.5	–	–	–	–	–	–	–	–	–	–

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

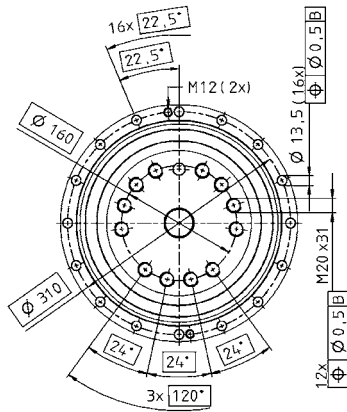
^{b)} For higher ambient temperatures, please reduce input speed

^{c)} Refers to center of the output shaft or flange

View A

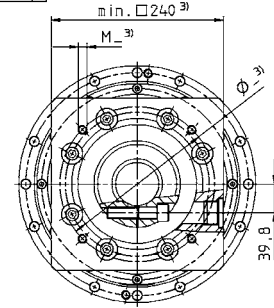
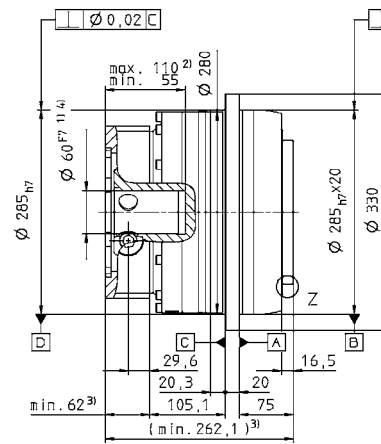
View B

1-stage:

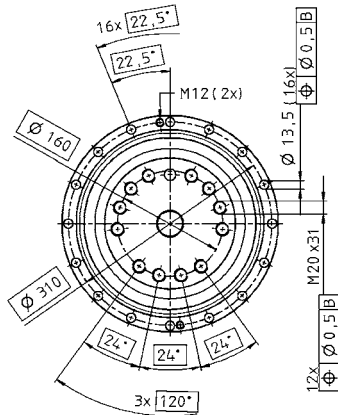


B →

← A

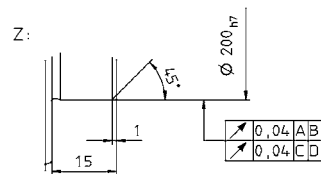
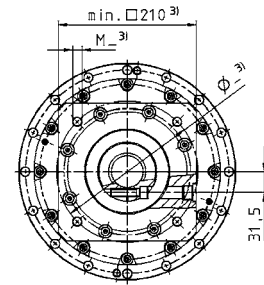
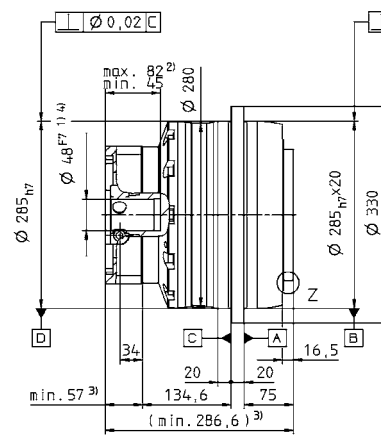


2-stage:



B →

← A



Non-tolerated dimensions $\pm 1,5$ mm

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.

CAD data is available under www.wittenstein-alpha.com

Motor mounting according to operating manual

Planetary gearheads
High End

TP+
MF

TP+ 010 MA HIGH TORQUE

			2-stage				3-stage					
Ratio ^{a)}	<i>i</i>		22	27.5	38.5	55	88	110	154	220		
Max. acceleration torque (max. 1000 cycles per hour)	<i>T</i> _{2B}	Nm	230	230	230	230	230	230	230	230		
		in.lb	2036	2036	2036	2036	2036	2036	2036	2036		
Nominal output torque (with <i>n</i> _m)	<i>T</i> _{2N}	Nm	150	150	180	110	180	180	180	180		
		in.lb	1328	1328	1593	974	1593	1593	1593	1593		
Emergency stop torque (permitted 1000 times during the service life of the gearhead)	<i>T</i> _{2Not}	Nm	525	525	525	525	525	525	525	525		
		in.lb	4646	4646	4646	4646	4646	4646	4646	4646		
Nominal input speed (with <i>T</i> _{2N} and 20 °C ambient temperature) ^{b)}	<i>n</i> _{1N}	rpm	4000	4000	4000	4000	4500	4500	4500	4500		
Max. input speed	<i>n</i> _{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000		
Mean no load running torque (with <i>n</i> _i =3000 rpm and 20 °C gearhead temperature) ^{c)}	<i>T</i> ₀₁₂	Nm	0.60	0.50	0.45	0.35	0.35	0.35	0.30	0.30		
		in.lb	5.30	4.40	4.00	3.10	3.10	3.10	2.70	2.70		
Max. torsional backlash	<i>j</i> _t	arcmin	≤ 1				≤ 1					
Torsional rigidity ^{c)}	<i>C</i> _{t21}	Nm/ arcmin	43	43	43	42	42	42	42	42		
		in.lb/ arcmin	381	381	381	372	372	372	372	372		
Tilting rigidity	<i>C</i> _{2K}	Nm/ arcmin	225				225					
		in.lb/ arcmin	1991				1991					
Max. axial force ^{d)}	<i>F</i> _{2AMax}	N	2150				2150					
		lb _f	484				484					
Max. tilting moment	<i>M</i> _{2KMax}	Nm	400				400					
		in.lb	3540				3540					
Efficiency at full load	η	%	94				92					
Service life (For calculation, see the Chapter "Information")	<i>L</i> _h	h	> 20000				> 20000					
Weight incl. standard adapter plate	<i>m</i>	kg	3.2				3.6					
		lb _m	7.1				8.0					
Operating noise (with <i>n</i> _i =3000 rpm no load)	<i>L</i> _{PA}	dB(A)	≤ 60				≤ 60					
Max. permitted housing temperature	°C		+90									
	F		194									
Ambient temperature	°C		-15 to +40									
	F		5 to 104									
Lubrication			Lubricated for life									
Paint			Blue RAL 5002									
Direction of rotation			Motor and gearhead same direction									
Protection class			IP 65									
Moment of inertia (relates to the drive)	C	14	<i>J</i> _i	kgcm ²	0.21	0.18	0.16	0.14	0.16	0.15	0.14	0.13
				10 ⁻³ in.lb.s ²	0.19	0.16	0.14	0.12	0.14	0.13	0.12	0.12
Clamping hub diameter [mm]	E	19	<i>J</i> _i	kgcm ²	0.52	0.50	0.47	0.46	—	—	—	—
				10 ⁻² in.lb.s ²	0.46	0.44	0.42	0.41				

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

^{b)} For higher ambient temperatures, please reduce input speed

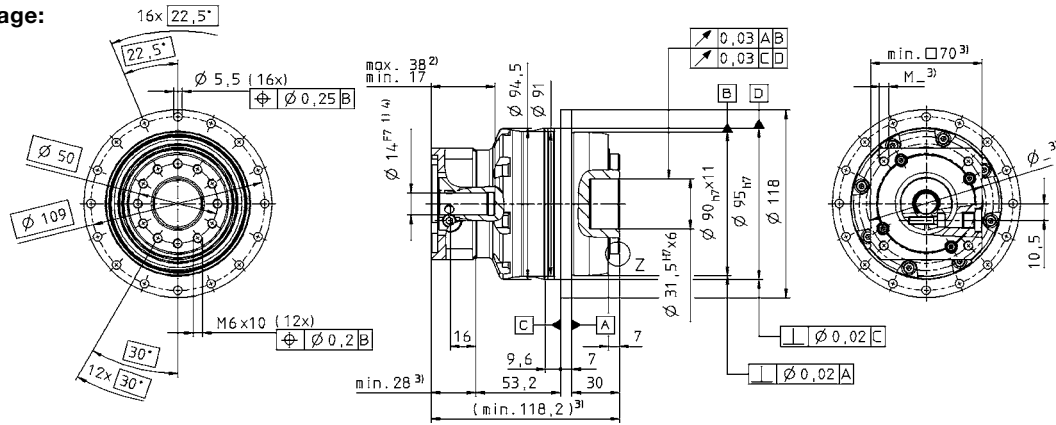
^{c)} Valid for clamping hub diameter of 14 mm

^{d)} Refers to center of the output shaft or flange

View A

View B

2-stage:



up to 14⁴⁾ (C)
clamping hub
diameter

Motor shaft diameter [mm]

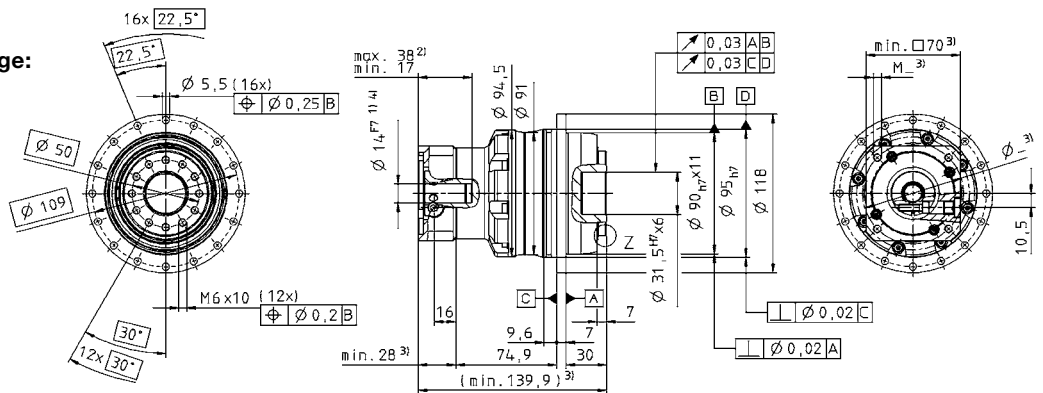
up to 19⁴⁾ (E)
clamping hub
diameter

Planetary gearheads
High End

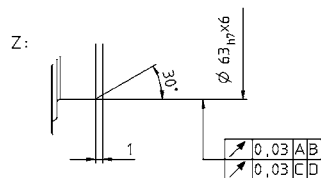
TP+

MA

3-stage:



up to 14⁴⁾ (C)
clamping hub
diameter



Non-tolerated dimensions ±1 mm

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.

CAD data is available under www.wittenstein-alpha.com

Motor mounting according to operating manual

TP+ 025 MA HIGH TORQUE

					2-stage				3-stage					
Ratio ^{a)}			<i>i</i>		22	27.5	38.5	55	66	88	110	154	220	
Max. acceleration torque (max. 1000 cycles per hour)			<i>T</i> _{2B}	Nm	530	530	530	530	480	480	480	480	480	
				in.lb	4691	4691	4691	4691	4248	4248	4248	4248	4248	
Nominal output torque (with <i>n</i> _{in})			<i>T</i> _{2N}	Nm	320	350	375	375	260	260	260	260	260	
				in.lb	2832	3098	3319	3319	2301	2301	2301	2301	2301	
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			<i>T</i> _{2Not}	Nm	1200	1200	1200	1200	1200	1200	1200	1200	1200	
				in.lb	10620	10620	10620	10620	10620	10620	10620	10620	10620	
Nominal input speed (with <i>T</i> _{2N} and 20 °C ambient temperature) ^{b)}			<i>n</i> _{1N}	rpm	3500	3500	3500	3500	4000	4000	4000	4000	4000	
Max. input speed			<i>n</i> _{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	
Mean no load running torque (with <i>n</i> ₁ =3000 rpm and 20 °C gearhead temperature) ^{c)}			<i>T</i> ₀₁₂	Nm	1.1	1.0	0.8	0.6	0.7	0.7	0.6	0.4	0.4	
				in.lb	9.7	8.9	7.1	5.3	6.2	6.2	5.3	3.5	3.5	
Max. torsional backlash			<i>j</i> _t	arcmin	≤ 1				≤ 1					
Torsional rigidity ^{c)}			<i>C</i> _{t21}	Nm/ arcmin	105	105	105	100	95	95	95	95	95	
				in.lb/ arcmin	929	929	929	885	841	841	841	841	841	
Tilting rigidity			<i>C</i> _{2K}	Nm/ arcmin	550				550					
				in.lb/ arcmin	4868				4868					
Max. axial force ^{d)}			<i>F</i> _{2AMax}	N	4150				4150					
				lb _f	934				934					
Max. tilting moment			<i>M</i> _{2KMax}	Nm	550				550					
				in.lb	4868				4868					
Efficiency at full load			η	%	94				92					
Service life (For calculation, see the Chapter "Information")			<i>L</i> _h	h	> 20000				> 20000					
Weight incl. standard adapter plate			<i>m</i>	kg	5.6				6.1					
				lb _m	12.4				13.5					
Operating noise (with <i>n</i> ₁ =3000 rpm no load)			<i>L</i> _{PA}	dB(A)	≤ 62				≤ 62					
Max. permitted housing temperature			°C		+90									
			F		194									
Ambient temperature			°C		-15 to +40									
			F		5 to 104									
Lubrication					Lubricated for life									
Paint					Blue RAL 5002									
Direction of rotation					Motor and gearhead same direction									
Protection class					IP 65									
Moment of inertia (relates to the drive)		E	19	<i>J</i> ₁	kgcm ²	0.87	0.70	0.60	0.55	0.63	0.56	0.53	0.51	0.50
					10 ⁻² in.lb.s ²	0.77	0.62	0.53	0.49	0.56	0.50	0.47	0.45	0.44
Clamping hub diameter [mm]		G	24	<i>J</i> ₁	kgcm ²	2.39	2.22	2.12	2.07	–	–	–	–	–
					10 ⁻² in.lb.s ²	2.12	1.96	1.88	1.83					

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

^{b)} For higher ambient temperatures, please reduce input speed

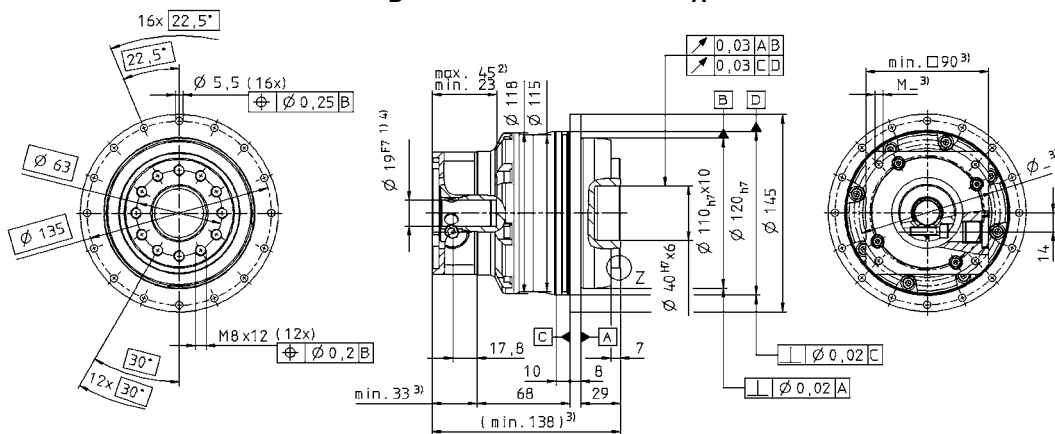
^{c)} Valid for clamping hub diameter of 19 mm

^{d)} Refers to center of the output shaft or flange

View A

View B

2-stage:

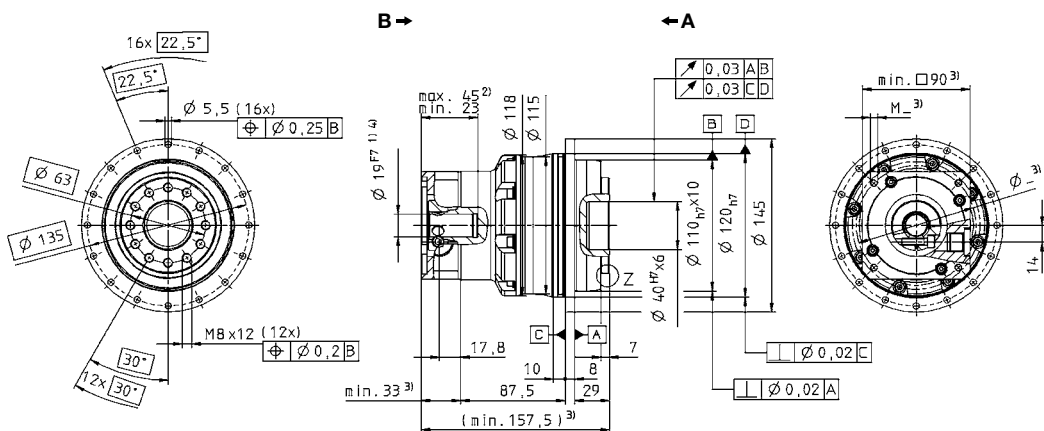


up to 19⁴⁾ (E)
clamping hub
diameter

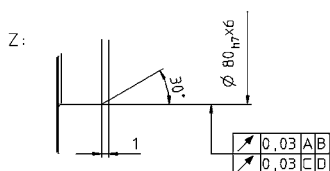
Motor shaft diameter [mm]

up to 24⁴⁾ (G)
clamping hub
diameter

3-stage:



up to 19⁴⁾ (E)
clamping hub
diameter



Non-tolerated dimensions ±1 mm

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.

CAD data is available under www.wittenstein-alpha.com

Motor mounting according to operating manual

Planetary gearheads
High End

TP+

MA

TP+ 050 MA HIGH TORQUE

				2-stage				3-stage								
Ratio ^{a)}				<i>i</i>	22	27.5	38.5	55	66	88	110	154	220			
Max. acceleration torque (max. 1000 cycles per hour)				<i>T</i> _{2B}	Nm	950	950	950	950	950	950	950	950			
					in.lb	8408	8408	8408	8408	8408	8408	8408	8408	8408		
Nominal output torque (with <i>n</i> _{in})				<i>T</i> _{2N}	Nm	575	600	650	675	675	675	675	675			
					in.lb	5089	5310	5753	5974	5974	5974	5974	5974	5974		
Emergency stop torque (permitted 1000 times during the service life of the gearhead)				<i>T</i> _{2Not}	Nm	2375	2375	2375	2375	2375	2375	2375	2375			
					in.lb	21019	21019	21019	21019	21019	21019	21019	21019	21019		
Nominal input speed (with <i>T</i> _{2N} and 20 °C ambient temperature) ^{b)}				<i>n</i> _{1N}	rpm	3000	3000	3000	3000	3500	3500	3500	3500			
Max. input speed				<i>n</i> _{1Max}	rpm	5000	5000	5000	5000	5000	5000	5000	5000			
Mean no load running torque (with <i>n</i> ₁ =3000 rpm and 20 °C gearhead temperature) ^{c)}				<i>T</i> ₀₁₂	Nm	3.7	2.9	2.0	1.7	2.0	1.6	1.4	0.9			
					in.lb	32.7	25.7	17.7	15.0	17.7	14.2	12.4	8.0	6.2		
Max. torsional backlash				<i>j</i> _t	arcmin	≤ 1				≤ 1						
Torsional rigidity ^{c)}				<i>C</i> _{t21}	Nm/ arcmin	220	220	220	220	205	205	205	205	205		
					in.lb/ arcmin	1947	1947	1947	1947	1814	1814	1814	1814	1814		
Tilting rigidity				<i>C</i> _{2K}	Nm/ arcmin	560				560						
					in.lb/ arcmin	4956				4956						
Max. axial force ^{d)}				<i>F</i> _{2AMax}	N	6130				6130						
					lb _f	1379				1379						
Max. tilting moment				<i>M</i> _{2KMax}	Nm	1335				1335						
					in.lb	11815				11815						
Efficiency at full load				η	%	94				92						
Service life (For calculation, see the Chapter "Information")				<i>L</i> _h	h	> 20000				> 20000						
Weight incl. standard adapter plate				<i>m</i>	kg	12.5				13.4						
					lb _m	27.6				29.6						
Operating noise (with <i>n</i> ₁ = 3000 rpm no load)				<i>L</i> _{PA}	dB(A)	≤ 64				≤ 64						
Max. permitted housing temperature					°C	+90										
					F	194										
Ambient temperature					°C	-15 to +40										
					F	5 to 104										
Lubrication					Lubricated for life											
Paint					Blue RAL 5002											
Direction of rotation					Motor and gearhead same direction											
Protection class					IP 65											
Moment of inertia (relates to the drive)				G	24	<i>J</i> ₁	kgcm ²	3.76	3.32	3.01	2.82	2.61	2.42	2.22	2.12	2.07
							10 ⁻³ in.lb.s ²	3.33	2.94	2.66	2.50	2.31	2.14	1.96	1.88	1.83
Clamping hub diameter [mm]				K	38	<i>J</i> ₁	kgcm ²	10.7	10.3	9.92	9.73	–	–	–	–	–
							10 ⁻³ in.lb.s ²	9.47	9.11	8.78	8.61					

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

^{b)} For higher ambient temperatures, please reduce input speed

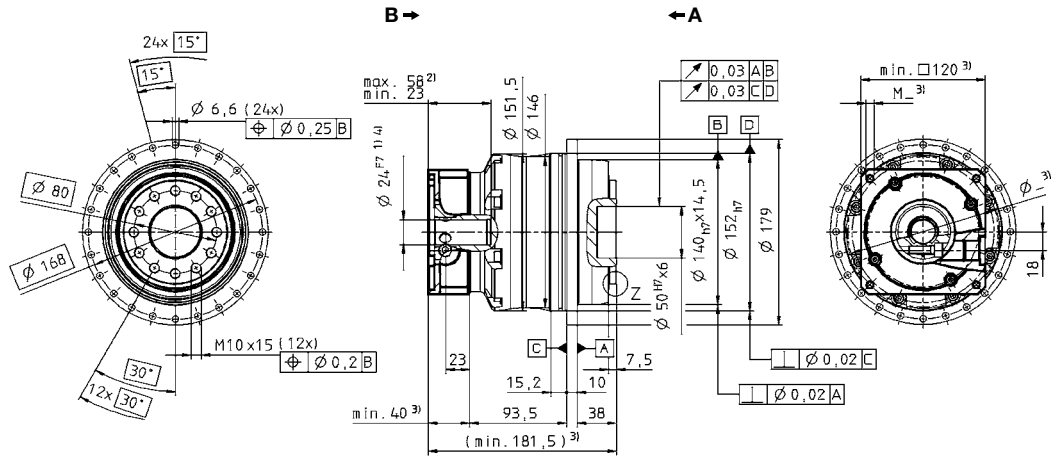
^{c)} Valid for clamping hub diameter of 24 mm

^{d)} Refers to center of the output shaft or flange

View A

View B

2-stage:

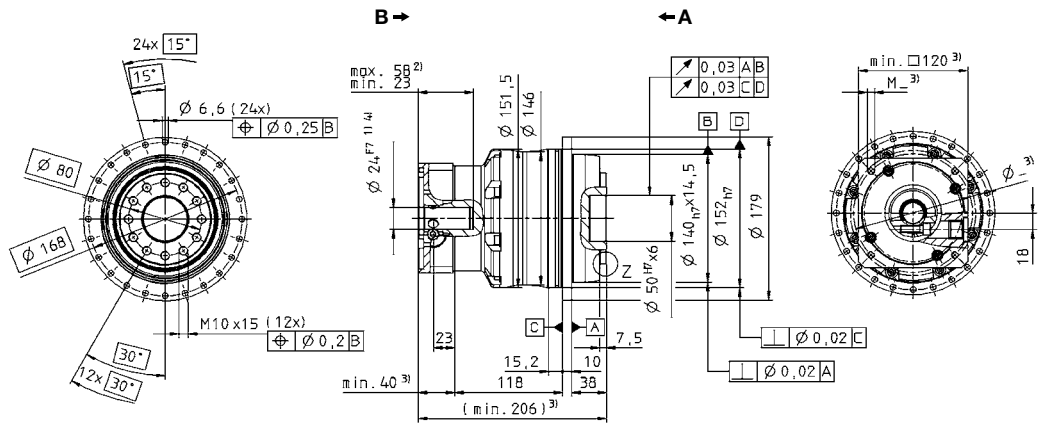


up to 24⁴⁾ (G)
clamping hub
diameter

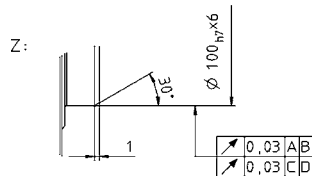
Motor shaft diameter [mm]

up to 38⁴⁾ (K)
clamping hub
diameter

3-stage:



up to 24⁴⁾ (G)
clamping hub
diameter



Non-tolerated dimensions ± 1 mm

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.

CAD data is available under www.wittenstein-alpha.com

Motor mounting according to operating manual

Planetary gearheads
High End

TP+

MA

TP+ 110 MA HIGH TORQUE

					2-stage				3-stage				
Ratio ^{a)}		<i>i</i>		22	27.5	38.5	55	66	88	110	154	220	
Max. acceleration torque (max. 1000 cycles per hour)	<i>T</i> _{2B}	Nm		3100	3100	3100	2000	2600	2600	2600	2600	2600	
		in.lb		27435	27435	27435	17700	23010	23010	23010	23010	23010	
Nominal output torque (with <i>n</i>_N)	<i>T</i> _{2N}	Nm		1570	1600	1650	1400	1600	1750	1750	1750	1750	
		in.lb		13895	14160	14603	12390	14160	15488	15488	15488	15488	
Emergency stop torque (permitted 1000 times during the service life of the gearhead)	<i>T</i> _{2Not}	Nm		6500	6500	6500	6500	6500	6500	6500	6500	6500	
		in.lb		57525	57525	57525	57525	57525	57525	57525	57525	57525	
Nominal input speed (with <i>T</i>_{2N} and 20 °C ambient temperature) ^{b)}		<i>n</i> _{1N}	rpm	2500	2500	2500	2500	3000	3000	3000	3000	3000	
Max. input speed		<i>n</i> _{1Max}	rpm	4500	4500	4500	4500	4500	4500	4500	4500	4500	
Mean no load running torque (with <i>n</i>₁=3000 rpm and 20 °C gearhead temperature) ^{c)}	<i>T</i> ₀₁₂	Nm		8.0	5.5	4.5	4.0	5.0	4.0	3.5	2.0	1.8	
		in.lb		70.8	48.7	39.8	35.4	44.3	35.4	31.0	17.7	15.9	
Max. torsional backlash		<i>j</i> _t	arcmin	≤ 1				≤ 1					
Torsional rigidity ^{c)}	<i>C</i> _{t21}	Nm/ arcmin		730	725	715	670	650	650	650	650	650	
		in.lb/ arcmin		6461	6416	6328	5930	5753	5753	5753	5753	5753	
Tilting rigidity	<i>C</i> _{2K}	Nm/ arcmin		1452				1452					
		in.lb/ arcmin		12850				12850					
Max. axial force ^{d)}	<i>F</i> _{2AMax}	N		10050				10050					
		lb _f		2261				2261					
Max. tilting moment	<i>M</i> _{2KMax}	Nm		3280				3280					
		in.lb		29028				29028					
Efficiency at full load		η	%	94				92					
Service life (For calculation, see the Chapter "Information")		<i>L</i> _h	h	> 20000				> 20000					
Weight incl. standard adapter plate	<i>m</i>	kg		33.1				35.4					
		lb _m		73.2				78.2					
Operating noise (with <i>n</i>₁=3000 rpm no load)		<i>L</i> _{PA}	dB(A)	≤ 66				≤ 66					
Max. permitted housing temperature		°C		+90									
		F		194									
Ambient temperature		°C		-15 to +40									
		F		5 to 104									
Lubrication				Lubricated for life									
Paint				Blue RAL 5002									
Direction of rotation				Motor and gearhead same direction									
Protection class				IP 65									
Moment of inertia (relates to the drive)	K	38	<i>J</i> ₁	kgcm ²	16.6	15.2	13.9	13.1	13.8	10.2	9.77	9.47	9.16
				10 ⁻² in.lb.s ²	14.7	13.5	12.3	11.6	12.2	9.03	8.65	8.38	8.11
Clamping hub diameter [mm]	M	48	<i>J</i> ₁	kgcm ²	31.4	29.9	28.7	28.0	–	–	–	–	–
				10 ⁻² in.lb.s ²	27.8	26.5	25.4	24.8					

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

^{b)} For higher ambient temperatures, please reduce input speed

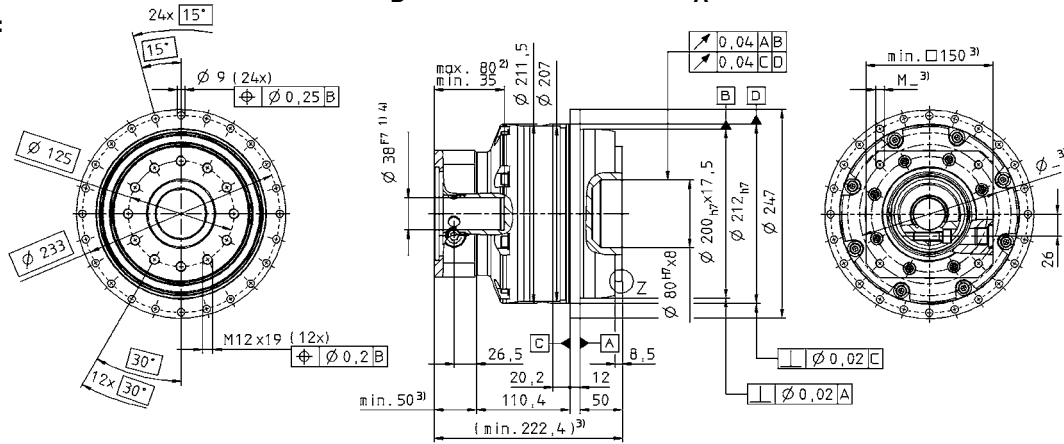
^{c)} Valid for clamping hub diameter of 38 mm

^{d)} Refers to center of the output shaft or flange

View A

View B

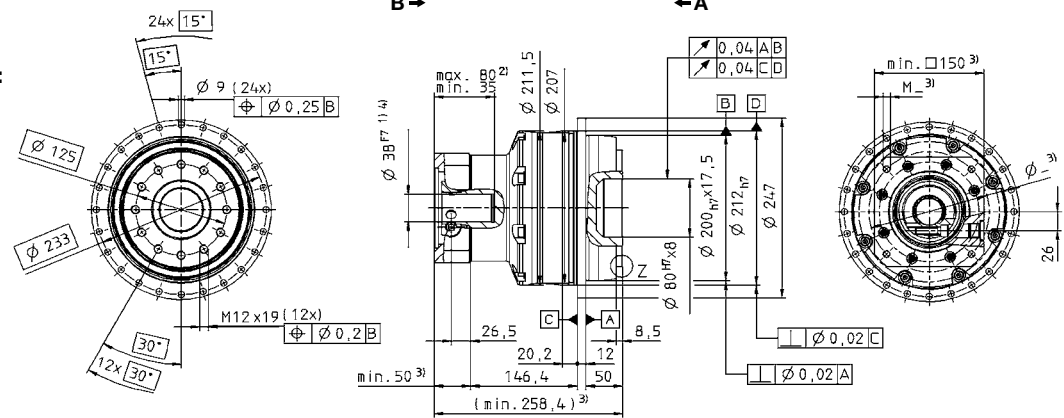
2-stage:



B →

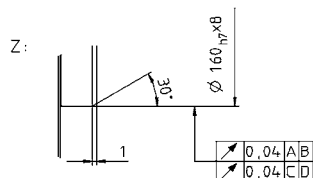
← A

3-stage:



B →

← A



Non-tolerated dimensions ±1 mm

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.

CAD data is available under www.wittenstein-alpha.com

Motor mounting according to operating manual

Motor shaft diameter [mm]

up to 38⁴⁾ (K)
clamping hub
diameter

up to 48⁴⁾ (M)
clamping hub
diameter

up to 38⁴⁾ (K)
clamping hub
diameter

Planetary gearheads
High End

TP+

MA

TP+ 300 MA HIGH TORQUE

					1-stage	2-stage					3-stage				
Ratio ^{a)}			<i>i</i>		5.5	22	27.5	38.5	55	66	88	110	154	220	
Max. acceleration torque (max. 1000 cycles per hour)			<i>T</i> _{2B}	Nm	4600	5500	5500	5500	3900	5500	5500	5500	5500	5500	
				in.lb	40714	48679	48679	48679	34518	48679	48679	48679	48679	48679	48679
Nominal output torque (with <i>n</i> _m)			<i>T</i> _{2N}	Nm	2200	3500	3500	3500	2500	3500	3500	3500	3500	3500	
				in.lb	19472	30978	30978	30978	22127	30978	30978	30978	30978	30978	30978
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			<i>T</i> _{2Not}	Nm	8750	13250	13250	13250	13250	13250	13250	13250	13250	13250	
				in.lb	77445	117273	117273	117273	117273	117273	117273	117273	117273	117273	117273
Nominal input speed (with <i>T</i> _{2N} and 20 °C ambient temperature) ^{b)}			<i>n</i> _{1N}	rpm	1000	2000	2000	2000	2000	2000	2000	2000	2000	2000	
Max. input speed			<i>n</i> _{1Max}	rpm	2500	3500	3500	3500	3500	3500	3500	3500	3500	3500	
Mean no load running torque (with <i>n</i> _i =2000 rpm and 20 °C gearhead temperature)			<i>T</i> ₀₁₂	Nm	22	12	10	9,0	7,0	6,5	4,5	4,0	3,0	2,0	
				in.lb	195	106	89	80	62	58	40	35	27	18	
Max. torsional backlash			<i>j</i> _t	arcmin	Standard ≤ 2 / Reduced ≤ 1		Standard ≤ 3 / Reduced ≤ 1.5								
Torsional rigidity			<i>C</i> _{t21}	Nm/ arcmin	1400	1200	1200	1200	1200	1200	1200	1200	1200	1200	
				in.lb/ arcmin	12391	10621	10621	10621	10621	10621	10621	10621	10621	10621	10621
Tilting rigidity			<i>C</i> _{2K}	Nm/ arcmin	5560										
				in.lb/ arcmin	49210										
Max. axial force ^{c)}			<i>F</i> _{2AMax}	N	33000										
				lb _f	7425										
Max. tilting moment			<i>M</i> _{2KMax}	Nm	3900	6500									
				in.lb	34518	57530									
Efficiency at full load			η	%	95	93									
Service life (For calculation, see “Technical Basics”)			<i>L</i> _h	h	> 20000										
Weight incl. standard adapter plate			<i>m</i>	kg	55	64				67					
				lb _m	121.25	141.1				147.7					
Operating noise (with <i>n</i> _i =2000 rpm no load)			<i>L</i> _{PA}	dB(A)	≤ 68	≤ 67				≤ 66					
Max. permitted housing temperature			°C		+90										
			F		194										
Ambient temperature			°C		-15 to +40										
			F		5 to 104										
Lubrication					Lubricated for life										
Paint					Blue RAL 5002										
Direction of rotation					Motor and gearhead same direction										
Protection class					IP 65										
Moment of inertia (relates to the drive)		K	38	<i>J</i> _i	kgcm ²	–	–	–	–	–	16.6	12.9	11.6	10.3	9.50
					in.lb.s ²	–	–	–	–	–	0.0147	0.0114	0.0103	0.0091	0.0084
Clamping hub diameter [mm]		M	48	<i>J</i> _i	kgcm ²	–	30.8	27.6	24.9	23.0	–	–	–	–	–
					in.lb.s ²	–	0.0273	0.0244	0.0220	0.0204	–	–	–	–	–
		N	55	<i>J</i> _i	kgcm ²	129	–	–	–	–	–	–	–	–	–
					in.lb.s ²	0.1142	–	–	–	–	–	–	–	–	–

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

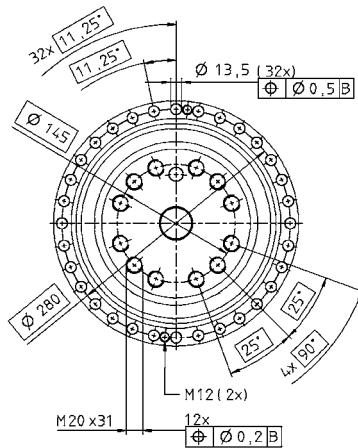
^{b)} For higher ambient temperatures, please reduce input speed

^{c)} Refers to center of the output shaft or flange

View A

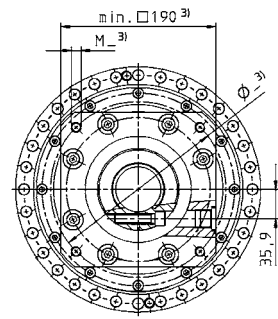
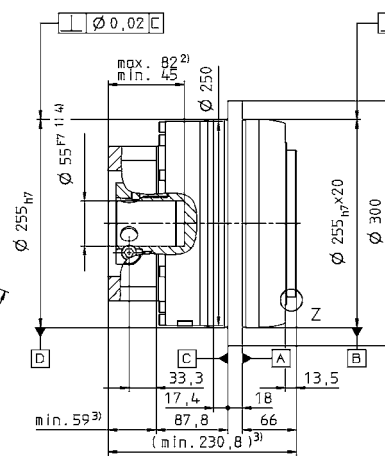
View B

1-stage:

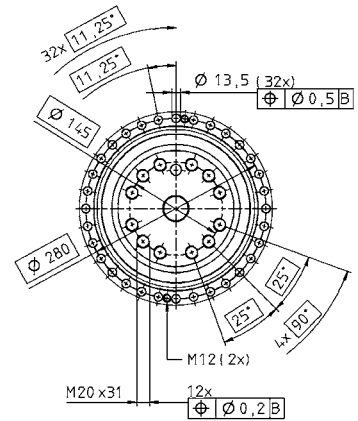


B →

← A

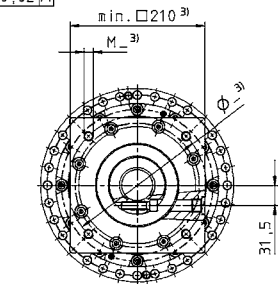
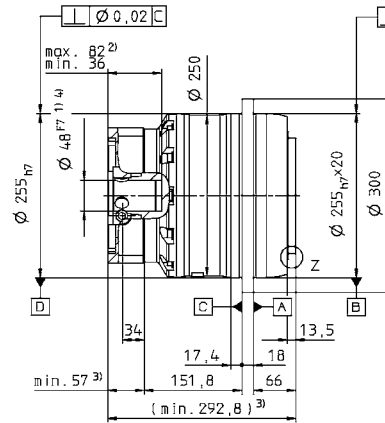


2-stage:

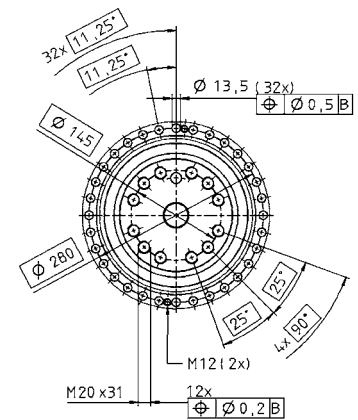


B →

← A

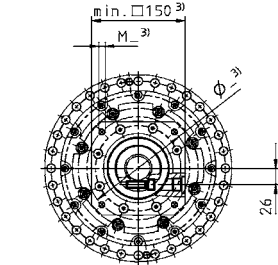
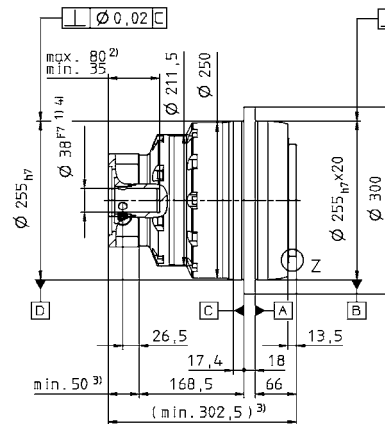


3-stage:

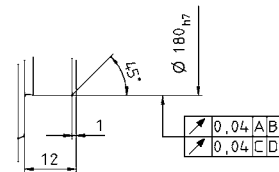


B →

← A



Z:



Non-tolerated dimensions $\pm 1,5$ mm

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.

CAD data is available under www.wittenstein-alpha.com

Motor mounting according to operating manual

Planetary gearheads
High End

TP+

MA

TP+ 500 MA HIGH TORQUE

					1-stage	2-stage					3-stage				
Ratio ^{a)}			<i>i</i>		5.5	22	27.5	38.5	55	66	88	110	154	220	
Max. acceleration torque (max. 1000 cycles per hour)			<i>T</i> _{2B}	Nm	8000	10000	10000	10000	7200	10000	10000	10000	10000	10000	
				in.lb	70806	88508	88508	88508	63726	88508	88508	88508	88508	88508	
Nominal output torque (with <i>n</i> _m)			<i>T</i> _{2N}	Nm	3500	6000	4600	4600	4700	6000	6000	6000	6000	6000	
				in.lb	30978	53105	40714	40714	41599	53105	53105	53105	53105	53105	
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			<i>T</i> _{2Not}	Nm	15000	25000	25000	25000	25000	25000	25000	25000	25000	25000	
				in.lb	132762	221270	221270	221270	221270	221270	221270	221270	221270	221270	
Nominal input speed (with <i>T</i> _{2N} and 20 °C ambient temperature) ^{b)}			<i>n</i> _{1N}	rpm	900	1500	1500	1500	1500	1500	1500	1500	1500	1500	
Max. input speed			<i>n</i> _{1Max}	rpm	2500	3500	3500	3500	3500	3500	3500	3500	3500	3500	
Mean no load running torque (with <i>n</i> ₁ =2000 rpm and 20 °C gearhead temperature)			<i>T</i> ₀₁₂	Nm	28	18	14	12	9.0	8.5	6.5	6.0	5.0	4.0	
				in.lb	248	159.3	124	106	80	75	58	53	44	35	
Max. torsional backlash			<i>j</i> _t	arcmin	Standard ≤ 2 / Reduced ≤ 1		Standard ≤ 3 / Reduced ≤ 1.5								
Torsional rigidity			<i>C</i> _{t21}	Nm/ arcmin	1650	2000	2000	1950	1900	1800	1800	1800	1800	1800	
				in.lb/ arcmin	14603	17700	17700	17258	16815	15930	15930	15930	15930	15930	
Tilting rigidity			<i>C</i> _{2K}	Nm/ arcmin	9480										
				in.lb/ arcmin	83906										
Max. axial force ^{c)}			<i>F</i> _{2AMax}	N	50000										
				lb _f	11250										
Max. tilting moment			<i>M</i> _{2KMax}	Nm	6600	9500									
				in.lb	58415	84083									
Efficiency at full load			η	%	95	93									
Service life (For calculation, see “Technical Basics”)			<i>L</i> _h	h	> 20000										
Weight incl. standard adapter plate			<i>m</i>	kg	80					89					
				lb _m	176.4					196.2					
Operating noise (with <i>n</i> ₁ =2000 rpm no load)			<i>L</i> _{PA}	dB(A)	≤ 68					≤ 67					
Max. permitted housing temperature				°C	+90										
				F	194										
Ambient temperature				°C	-15 to +40										
				F	5 to 104										
Lubrication					Lubricated for life										
Paint					Blue RAL 5002										
Direction of rotation					Motor and gearhead same direction										
Protection class					IP 65										
Moment of inertia (relates to the drive)	M	48	<i>J</i> ₁	kgcm ²	–	43.8	36.9	30.5	27.0	32.7	28.3	26.7	25.2	24.4	
				in.lb.s ²		0.0388	0.0327	0.0270	0.0239	0.0289	0.0250	0.0236	0.0223	0.0216	
Clamping hub diameter [mm]	O	60	<i>J</i> ₁	kgcm ²	175	–	–	–	–	–	–	–	–	–	
				in.lb.s ²											0.1549

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

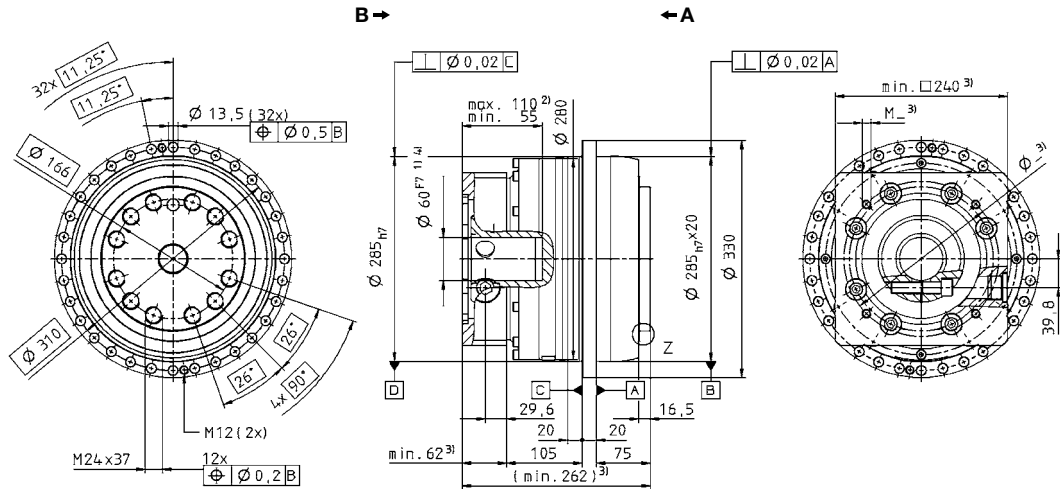
^{b)} For higher ambient temperatures, please reduce input speed

^{c)} Refers to center of the output shaft or flange

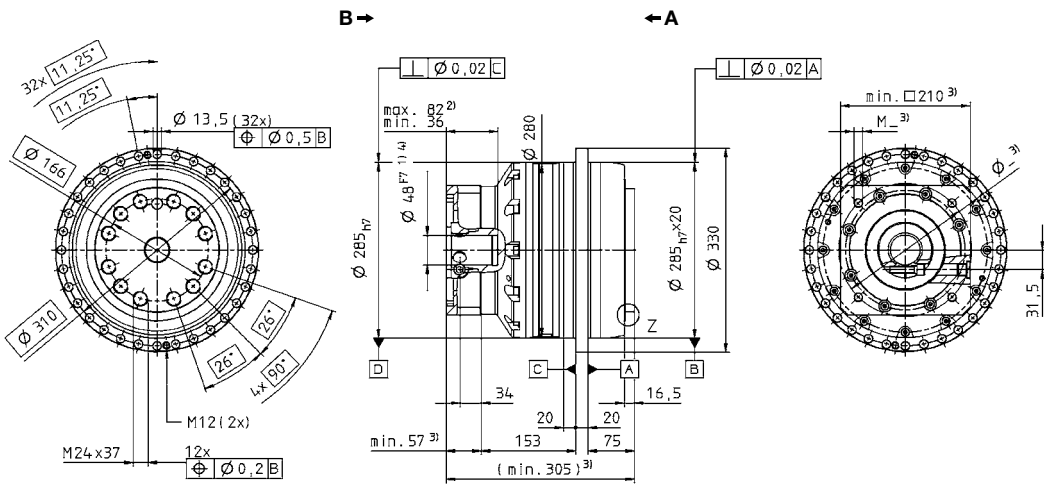
View A

View B

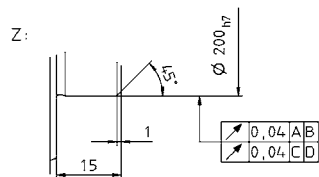
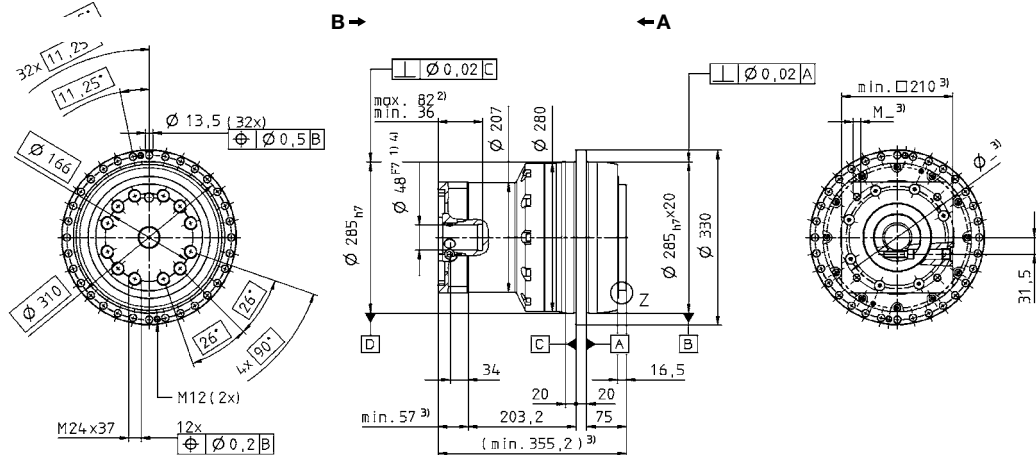
1-stage:



2-stage:



3-stage:



Non-tolerated dimensions ± 1.5 mm

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- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
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Motor mounting according to operating manual

Planetary gearheads
High End

TP+

MA

Motor shaft diameter [mm]

up to 60 ⁴⁾ (O)
clamping hub
diameter

up to 48 ⁴⁾ (M)
clamping hub
diameter

up to 48 ⁴⁾ (M)
clamping hub
diameter