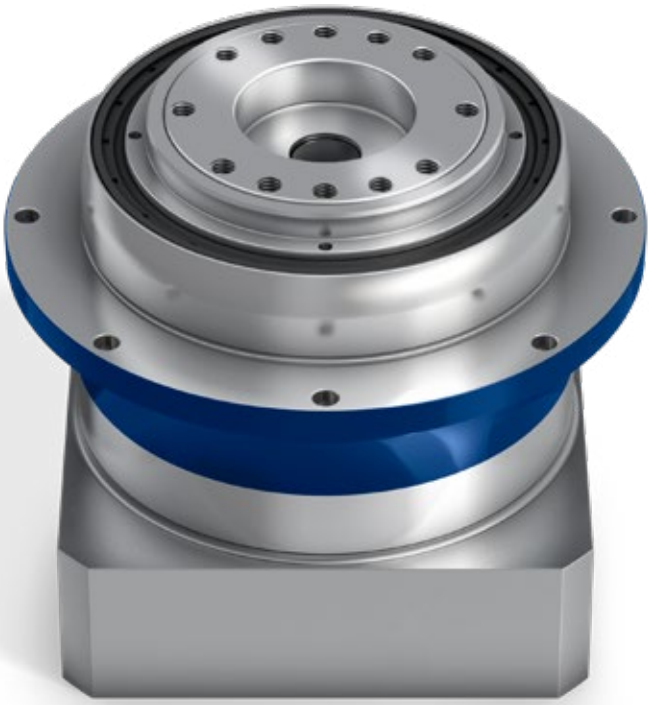
TP+ / TP+ HIGH TORQUE – Compact precision



TP+

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

Product highlights

Max. torsional backlash [arcmin] ≤ 1 – 4

High torsional rigidity

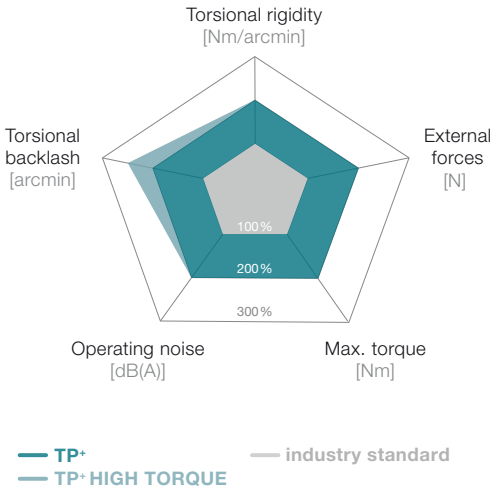
Space-saving design

Available output types
Flange, System output

Flexible drive options
Clamping hub socket, optimized mass inertia, keyed clamping hub socket

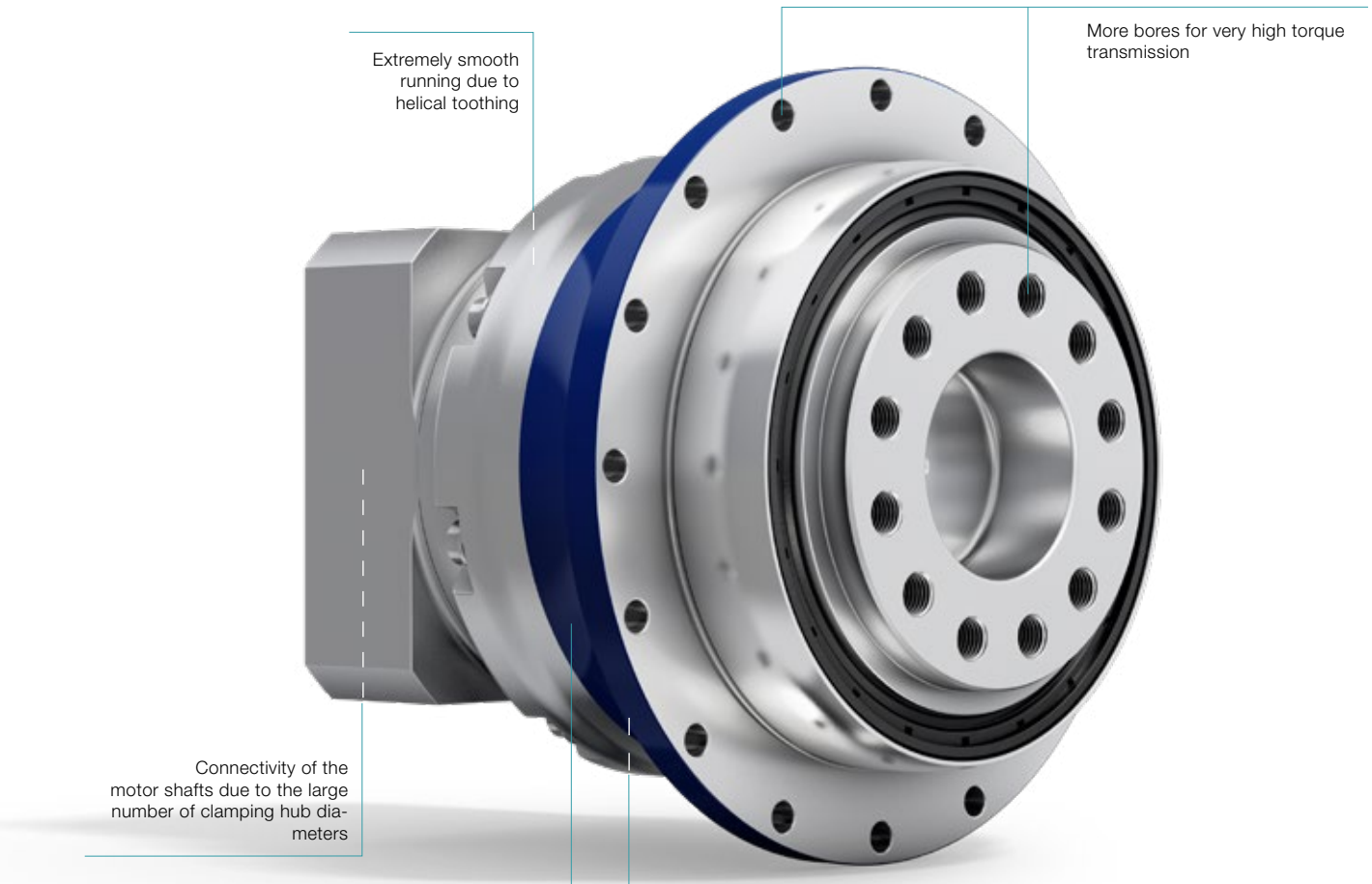
Other gearbox models
Corrosion resistant design, food-grade lubrication

TP+ compared to the industry standard

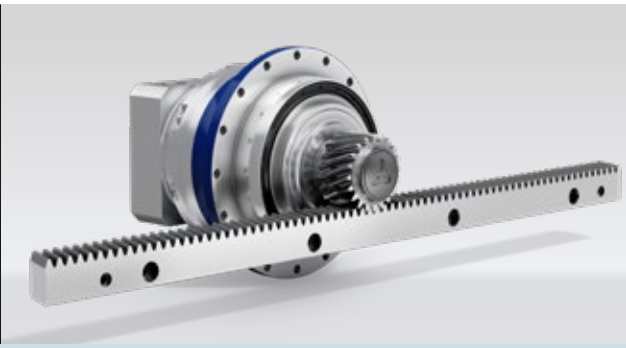


TP+ 2000

TP+ in corrosion resistant design



TP⁺ HIGH TORQUE



TP⁺ HIGH TORQUE with rack and pinion

premo® TP Line

				1-stage				
Ratio			*i*	**4**	**5**	**7**	**8**	**10**
Max. torque [a) b)]			T_{2a}	*Nm*	83	83	83	56	56
				in.lb	735	735	735	496	496
Max. acceleration torque [b)] (max. 1000 cycles per hour)			T_{2B}	*Nm*	66	66	66	42	42
				in.lb	584	584	584	372	372
Nominal torque (at n_{1N})			T_{2N}	*Nm*	27	27	26	26	27
				in.lb	239	236	226	230	237
Emergency stop torque [a) b)] (permitted 1000 times during the service life of the gearbox)			T_{2Not}	*Nm*	100	100	100	100	100
				in.lb	885	885	885	885	885
Permitted average input speed (at T_{2N} and 20 °C ambient temperature) [d)]			n_{1N}	*rpm*	3300	3300	4000	4000	4000
Max. input speed [b)]			n_{1Max}	*rpm*	7500	8000	8500	8500	8500
Mean no load running torque [b)] (at n_1 = 3000 rpm and 20 °C gearbox temperature)			T_{012}	*Nm*	0.56	0.48	0.37	0.37	0.31
				in.lb	5.0	4.2	3.3	3.3	2.7
Max. backlash			j_t	*arcmin*	Standard ≤ 4 / Reduced ≤ 2				
Torsional rigidity [b)]			C_{t21}	*Nm/arcmin*	12	12	11	8	8
				in.lb/arcmin	106	106	97	71	71
Tilting rigidity			C_{2K}	*Nm/arcmin*	85				
				in.lb/arcmin	752				
Max. axial force [c)]			F_{2AMax}	*N*	2119				
				lb_f	477				
Max. tilting moment			M_{2KMax}	*Nm*	110				
				in.lb	974				
Efficiency at full load			η	%	97				
Service life [f)]			L_h	*h*	> 20000				
Weight (incl. standard adapter plate)			*m*	*kg*	1.4				
				lb_m	3.1				
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex®)			L_{PA}	*dB(A)*	≤ 55				
Max. permitted housing temperature				*°C*	+90				
				F	194				
Ambient temperature				*°C*	–15 to +40				
				F	5 to 104				
Lubrication					Lubricated for life				
Direction of rotation					In- and output same direction				
Protection class					IP 65				
Metal bellows coupling (recommended product type – validate sizing with cymex®)					BCT-00015AAX-031.500				
Bore diameter of coupling on the application side				*mm*	X = 012.000 - 028.000				
Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request	B	11	J_1	*kgcm²*	0.17	0.14	0.11	0.11	0.09
				10^{-3} *in.lb.s²*	0.15	0.12	0.10	0.10	0.08
	C	14	J_1	*kgcm²*	0.25	0.21	0.18	0.18	0.17
				10^{-3} *in.lb.s²*	0.22	0.19	0.16	0.16	0.15
	E	19	J_1	*kgcm²*	0.57	0.54	0.51	0.51	0.49
				10^{-3} *in.lb.s²*	0.50	0.48	0.45	0.45	0.43

Please use our sizing software cymex® for a detailed sizing – **www.wittenstein-cymex.com**

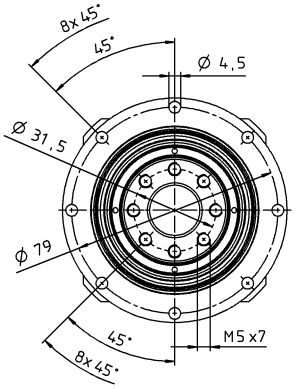
[a)] At max. 10 % M_{2KMax}
[b)] Valid for standard clamping hub diameter
[c)] Refers to center of the output shaft or flange
[d)] Please reduce input speed at higher ambient temperatures
[f)] Please contact us to discuss application-specific service lifetimes

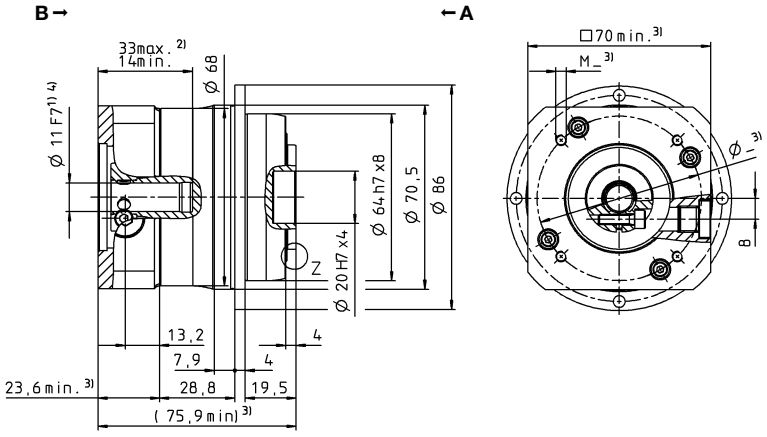
View A | View B

1-stage

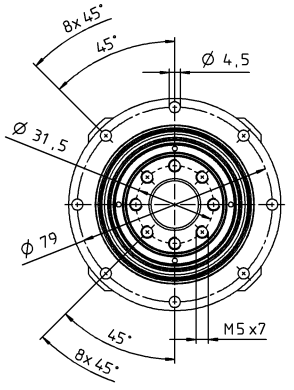
Motor shaft diameter [mm]

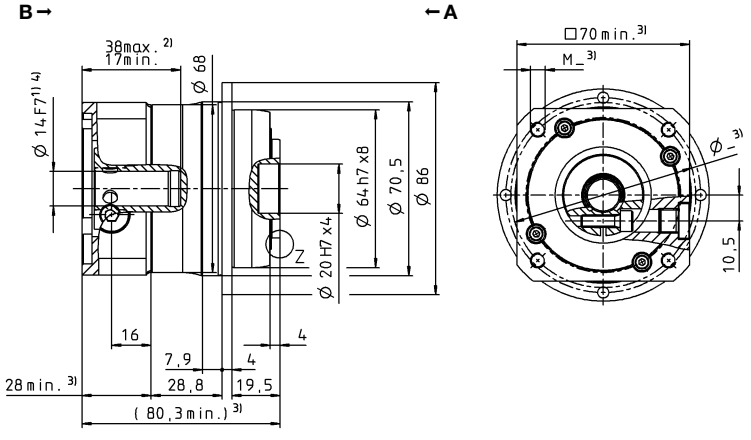
up to 11 [4] (B) clamping hub diameter



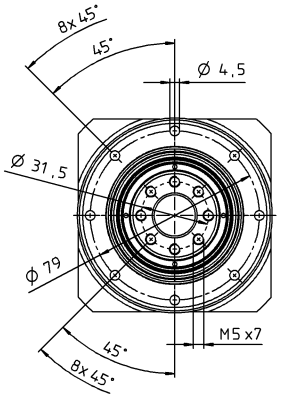


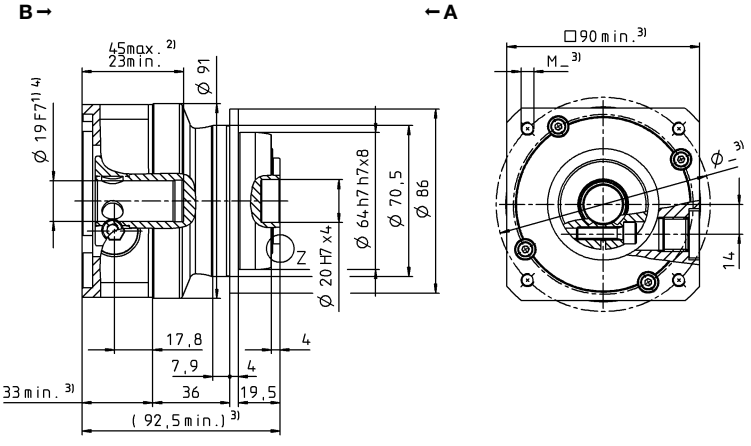
up to 14 [4] (C) [5] clamping hub diameter

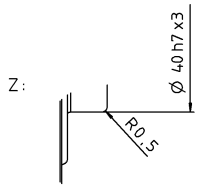




up to 19 [4] (E) clamping hub diameter







Non-tolerated dimensions are nominal dimensions

[1] Check motor shaft fit

[2] Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

[3] The dimensions depend on the motor

[4] Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

[5] Standard clamping hub diameter

				2-stage														
Ratio			*i*	**16**	**20**	**21**	**25**	**28**	**31**	**32**	**35**	**40**	**50**	**61**	**64**	**70**	**91**	**100**
Max. torque [a) b)]			T_{2a}	*Nm*	57	57	60	72	57	50	57	72	57	72	49	48	56	43	48
				in.lb	507	507	533	634	507	442	507	634	507	634	435	423	499	385	423
Max. acceleration torque [b)] (max. 1000 cycles per hour)			T_{2B}	*Nm*	57	57	48	66	57	48	57	66	57	66	49	42	56	38	42
				in.lb	507	507	425	584	504	425	507	584	507	584	434	372	496	336	372
Nominal torque (at n_{1N})			T_{2N}	*Nm*	39	41	32	41	45	36	39	45	46	48	39	34	45	31	34
				in.lb	342	365	286	361	403	320	343	399	406	421	341	297	399	272	297
Emergency stop torque [a) b)] (permitted 1000 times during the service life of the gearbox)			T_{2Not}	*Nm*	100	100	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	885
Permitted average input speed (at T_{2N} and 20 °C ambient temperature) [d)]			n_{1N}	*rpm*	4000	4000	4000	4000	4000	4000	4000	4000	4000	4800	5500	4800	5500	5500	5500
Max. input speed [b)]			n_{1Max}	*rpm*	9000	9000	9000	9000	9000	9000	9000	9000	9000	9000	9000	9000	9000	9000	9000
Mean no load running torque [b)] (at n_1 = 3000 rpm and 20 °C gearbox temperature)			T_{012}	*Nm*	0.28	0.23	0.24	0.22	0.21	0.22	0.21	0.17	0.18	0.17	0.16	0.17	0.17	0.15	0.16
				in.lb	2.5	2.0	2.1	1.9	1.9	1.9	1.9	1.5	1.6	1.5	1.4	1.5	1.5	1.3	1.4
Max. backlash			j_t	*arcmin*	Standard ≤ 4 / Reduced ≤ 2														
Torsional rigidity [b)]			C_{t21}	*Nm/arcmin*	12	12	10	12	12	9	12	12	11	12	9	12	11	7	8
				in.lb/arcmin	106	106	89	106	106	80	106	106	97	106	80	106	97	62	71
Tilting rigidity			C_{2K}	*Nm/arcmin*	85														
				in.lb/arcmin	752														
Max. axial force [c)]			F_{2AMax}	*N*	2119														
				lb$_f$	477														
Max. tilting moment			M_{2KMax}	*Nm*	110														
				in.lb	974														
Efficiency at full load			η	%	94														
Service life [f)]			L_h	*h*	> 20000														
Weight (incl. standard adapter plate)			*m*	*kg*	1.5														
				lb$_m$	3.3														
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex®)			L_{PA}	*dB(A)*	≤ 54														
Max. permitted housing temperature				*°C*	+90														
				F	194														
Ambient temperature				*°C*	–15 to +40														
				F	5 to 104														
Lubrication					Lubricated for life														
Direction of rotation					In- and output same direction														
Protection class					IP 65														
Metal bellows coupling (recommended product type – validate sizing with cymex®)					BCT-00015AAX-031.500														
Bore diameter of coupling on the application side				*mm*	X = 012.000 - 028.000														
Mass moment of inertia (relates to the drive)	B	11	J_1	*kgcm^2*	0.078	0.070	0.074	0.068	0.062	0.072	0.062	0.061	0.057	0.057	0.058	0.060	0.056	0.057	0.056
				10^{-3} in.lb.s^2	0.069	0.062	0.065	0.060	0.055	0.064	0.055	0.054	0.050	0.050	0.051	0.053	0.050	0.050	0.050
Clamping hub diameter [mm]																			
Optimized mass inertia version available on request	C	14	J_1	*kgcm^2*	0.17	0.17	0.17	0.16	0.16	0.17	0.16	0.16	0.15	0.15	0.15	0.16	0.15	0.15	0.15
				10^{-3} in.lb.s^2	0.15	0.15	0.15	0.15	0.14	0.15	0.14	0.14	0.14	0.14	0.14	0.14	0.13	0.14	0.13

Please use our sizing software cymex® for a detailed sizing – **www.wittenstein-cymex.com**

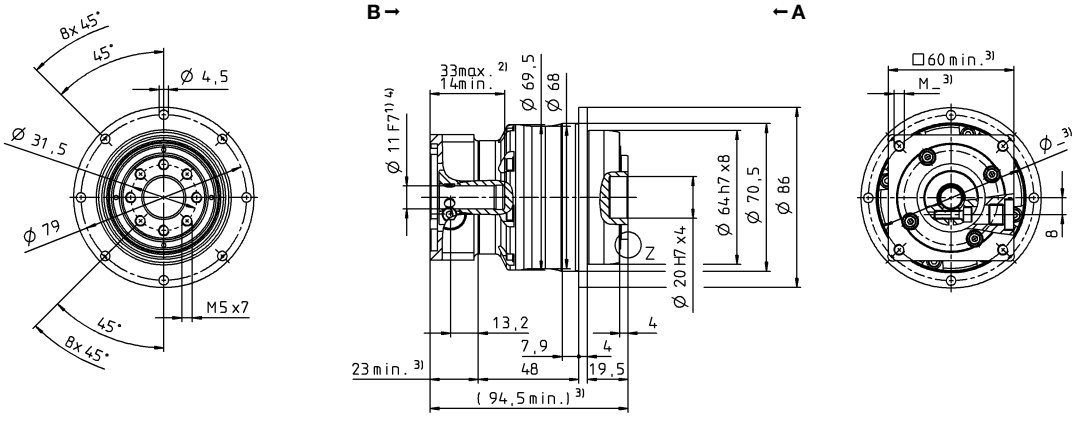
[a)] At max. 10 % M_{2KMax}
[b)] Valid for standard clamping hub diameter
[c)] Refers to center of the output shaft or flange
[d)] Please reduce input speed at higher ambient temperatures
[f)] Please contact us to discuss application-specific service lifetimes

View A | View B

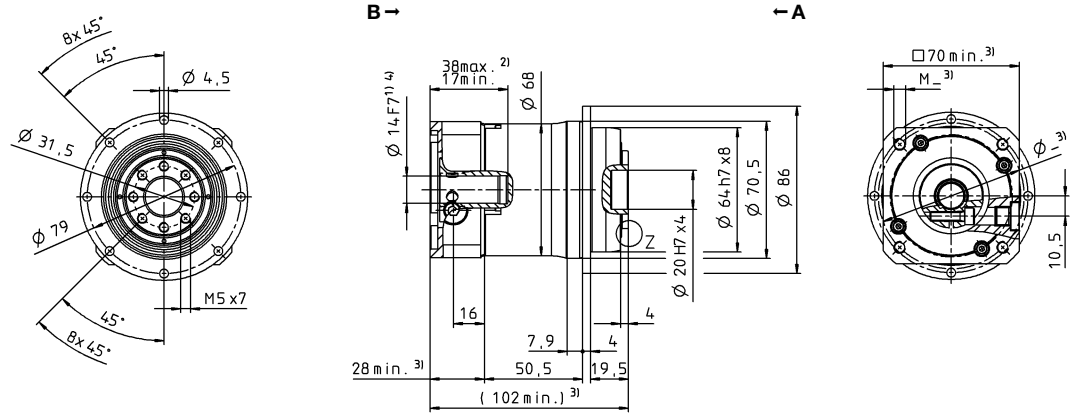
2-stage

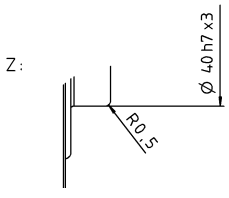
Motor shaft diameter [mm]

up to 11 [4] (B) [5] clamping hub diameter



up to 14 [4] (C) clamping hub diameter





Non-tolerated dimensions are nominal dimensions

[1] Check motor shaft fit

[2] Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

[3] The dimensions depend on the motor

[4] Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

[5] Standard clamping hub diameter

				1-stage				
Ratio			*i*	**4**	**5**	**7**	**8**	**10**
Max. torque [a) b)]			*Nm*	185	210	210	168	168
	T_{2a}		*in.lb*	1640	1859	1859	1487	1487
Max. acceleration torque [b)] (max. 1000 cycles per hour)	T_{2B}		*Nm*	172	172	172	126	126
			in.lb	1522	1522	1522	1115	1115
Nominal torque (at n_{1N})	T_{2N}		*Nm*	84	81	81	80	81
			in.lb	743	716	719	712	720
Emergency stop torque [a) b)] (permitted 1000 times during the service life of the gearbox)	T_{2Not}		*Nm*	250	250	251	251	251
			in.lb	2213	2213	2222	2222	2222
Permitted average input speed (at T_{2N} and 20 °C ambient temperature) [d)]	n_{1N}		*rpm*	2600	2900	3100	3100	3100
Max. input speed [b)]	n_{1Max}		*rpm*	7500	7500	8000	8000	8000
Mean no load running torque [b)] (at n_1 = 3000 rpm and 20 °C gearbox temperature)	T_{012}		*Nm*	1.3	1.1	0.84	0.84	0.64
			in.lb	12	9.5	7.4	7.4	5.7
Max. backlash	j_t		*arcmin*	Standard ≤ 3 / Reduced ≤ 1				
Torsional rigidity [b)]	C_{t21}		*Nm/arcmin*	32	33	30	23	23
			in.lb/arcmin	283	292	266	204	204
Tilting rigidity	C_{2K}		*Nm/arcmin*	225				
			in.lb/arcmin	1991				
Max. axial force [c)]	F_{2AMax}		*N*	2795				
			lb_f	629				
Max. tilting moment	M_{2KMax}		*Nm*	270				
			in.lb	2390				
Efficiency at full load	η		%	97				
Service life [f)]	L_h		*h*	> 20000				
Weight (incl. standard adapter plate)	*m*		*kg*	3.8				
			lb_m	8.4				
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex®)	L_{PA}		*dB(A)*	≤ 57				
Max. permitted housing temperature			°C	+90				
			F	194				
Ambient temperature			°C	–15 to +40				
			F	5 to 104				
Lubrication				Lubricated for life				
Direction of rotation				In- and output same direction				
Protection class				IP 65				
Metal bellows coupling (recommended product type – validate sizing with cymex®)				BCT-00060AAX-050.000				
Bore diameter of coupling on the application side			*mm*	X = 014.000 - 035.000				
Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request	C	14	J_1	*kgcm²*	0.78	0.62	0.48	0.48	0.40
				10^{-3} *in.lb.s²*	0.69	0.55	0.42	0.42	0.35
	E	19	J_1	*kgcm²*	0.95	0.79	0.64	0.64	0.57
				10^{-3} *in.lb.s²*	0.84	0.70	0.57	0.57	0.50
	G	24	J_1	*kgcm²*	2.32	2.16	2.02	2.02	1.94
				10^{-3} *in.lb.s²*	2.05	1.91	1.79	1.79	1.72

Please use our sizing software cymex® for a detailed sizing – **www.wittenstein-cymex.com**

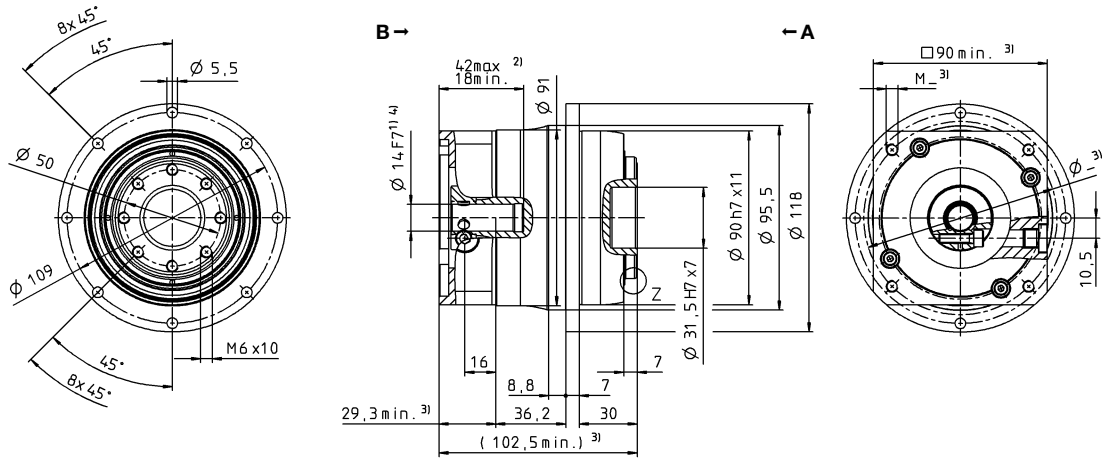
[a)] At max. 10 % M_{2KMax}
[b)] Valid for standard clamping hub diameter
[c)] Refers to center of the output shaft or flange
[d)] Please reduce input speed at higher ambient temperatures
[f)] Please contact us to discuss application-specific service lifetimes

View A | View B

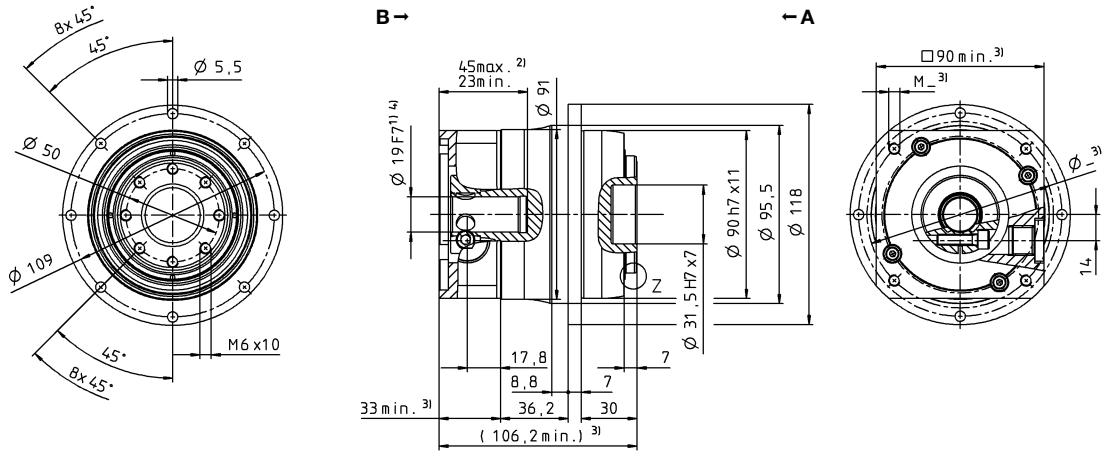
1-stage

Motor shaft diameter [mm]

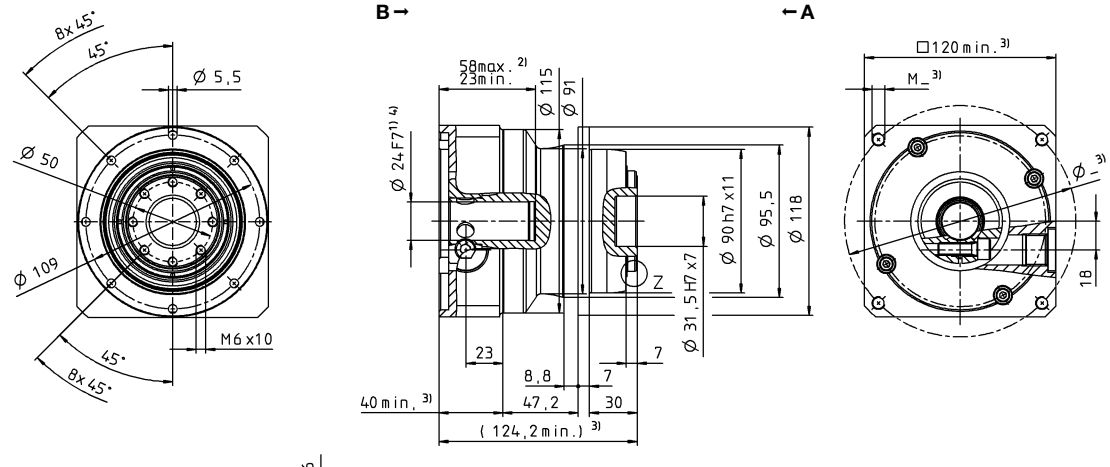
up to 14 [4] (C) clamping hub diameter

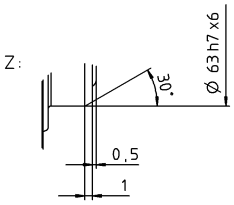


up to 19 [4] (E) [5] clamping hub diameter



up to 24 [4] (G) clamping hub diameter





Non-tolerated dimensions are nominal dimensions

[1] Check motor shaft fit

[2] Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

[3] The dimensions depend on the motor

[4] Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

[5] Standard clamping hub diameter

				2-stage														
Ratio			*i*	**16**	**20**	**21**	**25**	**28**	**31**	**32**	**35**	**40**	**50**	**61**	**64**	**70**	**91**	**100**
Max. torque [a) b)]			T_{2a}	*Nm*	157	126	133	158	157	121	157	158	154	158	121	105	157	96	105
				in.lb	1392	1118	1174	1398	1392	1071	1392	1398	1363	1398	1071	932	1392	848	932
Max. acceleration torque [b)] (max. 1000 cycles per hour)			T_{2B}	*Nm*	157	126	120	158	157	121	157	158	154	158	121	105	157	96	105
				in.lb	1392	1118	1062	1398	1392	1071	1392	1398	1363	1398	1071	932	1392	848	932
Nominal torque (at n_{1N})			T_{2N}	*Nm*	106	101	96	124	107	87	119	126	112	126	97	84	126	77	84
				in.lb	935	895	850	1097	945	770	1053	1118	987	1118	857	746	1114	678	746
Emergency stop torque [a) b)] (permitted 1000 times during the service life of the gearbox)			T_{2Not}	*Nm*	251	251	251	251	251	251	251	251	251	251	251	251	251	251	251
				in.lb	2222	2222	2222	2222	2222	2222	2222	2222	2222	2222	2222	2222	2222	2222	2222
Permitted average input speed (at T_{2N} and 20 °C ambient temperature) [d)]			n_{1N}	*rpm*	3500	3500	3500	3500	3500	3500	3500	3500	3500	3800	4500	3800	4500	4500	4500
Max. input speed [b)]			n_{1Max}	*rpm*	8500	8500	8500	8500	8500	8500	8500	8500	8500	8500	8500	8500	8500	8500	8500
Mean no load running torque [b)] (at n_1 = 3000 rpm and 20 °C gearbox temperature)			T_{012}	*Nm*	0.56	0.48	0.47	0.44	0.40	0.40	0.40	0.28	0.32	0.32	0.23	0.32	0.24	0.24	0.25
				in.lb	5.0	4.2	4.2	3.9	3.5	3.5	3.5	2.5	2.8	2.8	2.0	2.8	2.1	2.1	2.2
Max. backlash			j_t	*arcmin*	Standard ≤ 3 / Reduced ≤ 1														
Torsional rigidity [b)]			C_{t21}	*Nm/arcmin*	32	32	26	32	31	24	31	32	30	30	24	30	28	21	22
				in.lb/arcmin	283	283	230	283	274	212	274	283	266	266	212	266	248	186	195
Tilting rigidity			C_{2K}	*Nm/arcmin*	225														
				in.lb/arcmin	1991														
Max. axial force [c)]			F_{2AMax}	*N*	2795														
				lb$_f$	629														
Max. tilting moment			M_{2KMax}	*Nm*	270														
				in.lb	2390														
Efficiency at full load			η	%	94														
Service life [f)]			L_h	*h*	> 20000														
Weight (incl. standard adapter plate)			*m*	*kg*	3.6														
				lb$_m$	8.0														
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex®)			L_{PA}	*dB(A)*	≤ 55														
Max. permitted housing temperature				*°C*	+90														
				F	194														
Ambient temperature				*°C*	–15 to +40														
				F	5 to 104														
Lubrication					Lubricated for life														
Direction of rotation					In- and output same direction														
Protection class					IP 65														
Metal bellows coupling (recommended product type – validate sizing with cymex®)					BCT-00060AAX-050.000														
Bore diameter of coupling on the application side				*mm*	X = 014.000 - 035.000														
Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request	B	11	J_1	*kgcm²*	0.17	0.14	0.15	0.13	0.11	0.14	0.11	0.10	0.09	0.09	0.09	0.10	0.09	0.09	0.09
				10^{-3} in.lb.s²	0.15	0.12	0.13	0.12	0.10	0.12	0.10	0.09	0.08	0.08	0.08	0.09	0.08	0.08	0.08
	C	14	J_1	*kgcm²*	0.24	0.21	0.22	0.20	0.18	0.21	0.18	0.18	0.17	0.17	0.17	0.17	0.16	0.17	0.16
				10^{-3} in.lb.s²	0.21	0.19	0.20	0.18	0.16	0.18	0.16	0.16	0.15	0.15	0.15	0.15	0.15	0.15	0.14
	E	19	J_1	*kgcm²*	0.56	0.53	0.55	0.53	0.51	0.53	0.51	0.50	0.49	0.49	0.49	0.52	0.49	0.49	0.49
				10^{-3} in.lb.s²	0.50	0.47	0.48	0.47	0.45	0.47	0.45	0.44	0.43	0.43	0.43	0.46	0.43	0.43	0.43

Please use our sizing software cymex® for a detailed sizing – **www.wittenstein-cymex.com**

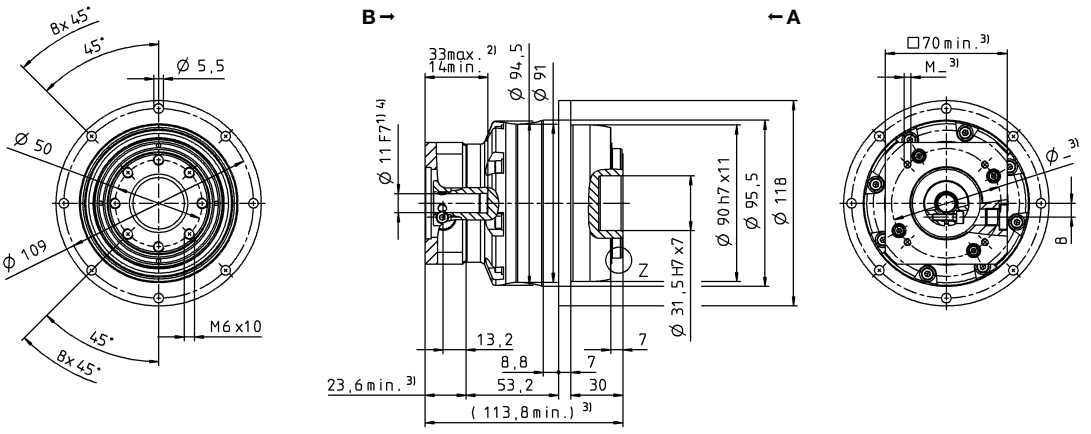
[a)] At max. 10 % M_{2KMax}
[b)] Valid for standard clamping hub diameter
[c)] Refers to center of the output shaft or flange
[d)] Please reduce input speed at higher ambient temperatures
[f)] Please contact us to discuss application-specific service lifetimes

View A | View B

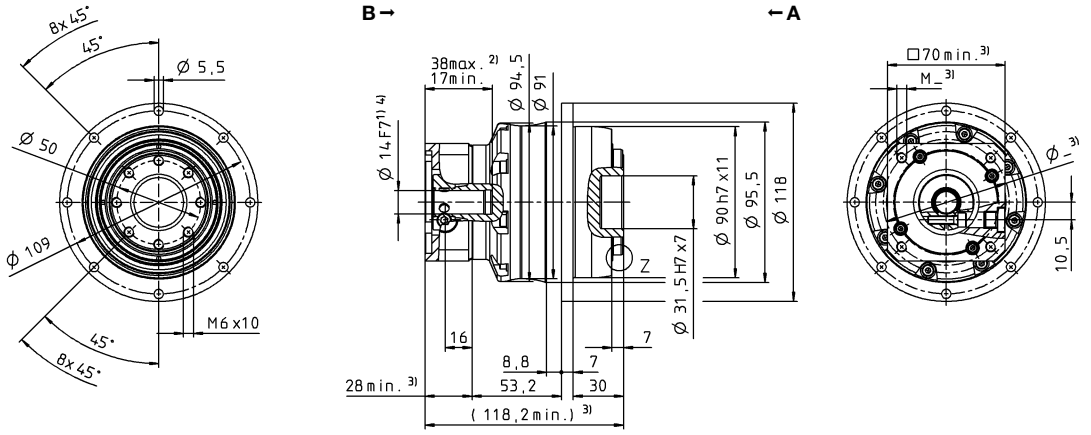
2-stage

Motor shaft diameter [mm]

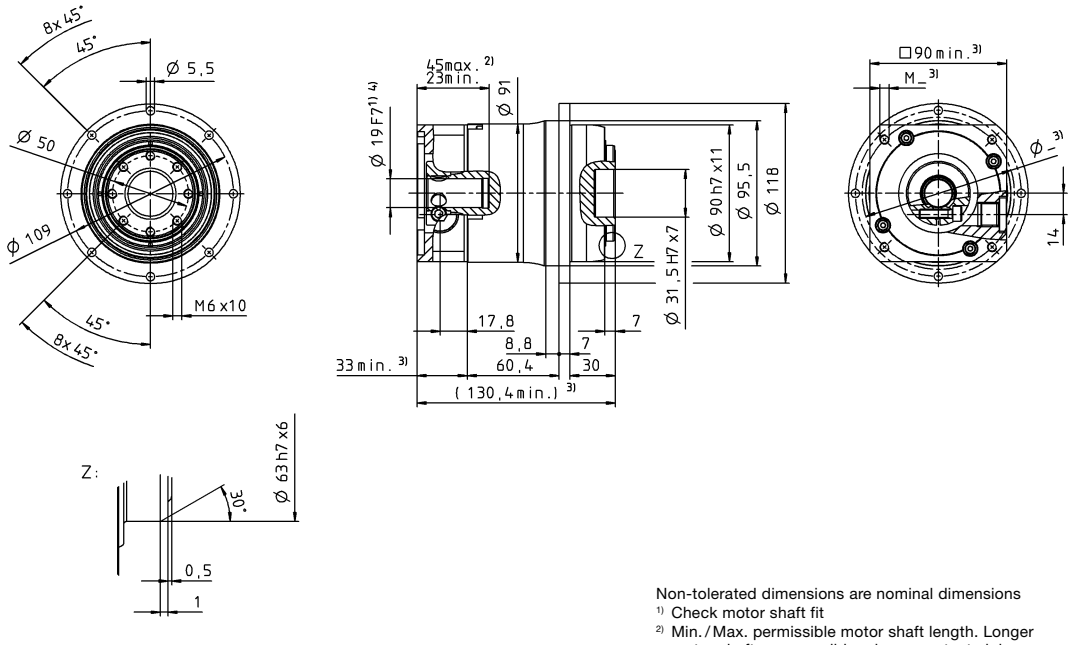
up to 11 [4] (B) clamping hub diameter



up to 14 [4] (C) [5] clamping hub diameter



up to 19 [4] (E) clamping hub diameter



Non-tolerated dimensions are nominal dimensions

[1] Check motor shaft fit

[2] Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

[3] The dimensions depend on the motor

[4] Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

[5] Standard clamping hub diameter

					1-stage				
Ratio			i		**4**	**5**	**7**	**8**	**10**
Max. torque [a) b)]			T_{2a}	*Nm*	352	380	352	352	352
				in.lb	3115	3363	3115	3115	3115
Max. acceleration torque [b)] (max. 1000 cycles per hour)			T_{2B}	*Nm*	352	380	352	318	318
				in.lb	3115	3363	3115	2815	2815
Nominal torque (at n_{1N})			T_{2N}	*Nm*	175	169	172	172	180
				in.lb	1548	1498	1524	1521	1591
Emergency stop torque [a) b)] (permitted 1000 times during the service life of the gearbox)			T_{2Not}	*Nm*	625	625	625	625	625
				in.lb	5532	5532	5532	5532	5532
Permitted average input speed (at T_{2N} and 20 °C ambient temperature) [d)]			n_{1N}	*rpm*	2300	2500	2500	2500	2500
Max. input speed [b)]			n_{1Max}	*rpm*	6000	7000	7500	7500	7500
Mean no load running torque [b)] (at n_1 = 3000 rpm and 20 °C gearbox temperature)			T_{012}	*Nm*	2.8	2.3	1.7	1.7	1.2
				in.lb	25	20	15	15	10
Max. backlash			j_t	*arcmin*	Standard ≤ 3 / Reduced ≤ 1				
Torsional rigidity [b)]			C_{t21}	*Nm/arcmin*	80	86	76	62	62
				in.lb/arcmin	708	761	673	549	549
Tilting rigidity			C_{2K}	*Nm/arcmin*	550				
				in.lb/arcmin	4868				
Max. axial force [c)]			F_{2AMax}	*N*	4800				
				lb$_f$	1080				
Max. tilting moment			M_{2KMax}	*Nm*	440				
				in.lb	3894				
Efficiency at full load			η	%	97				
Service life [f)]			L_h	*h*	> 20000				
Weight (incl. standard adapter plate)			m	*kg*	6.5				
				lb$_m$	14.4				
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex®)			L_{PA}	*dB(A)*	≤ 61				
Max. permitted housing temperature				°C	+90				
				F	194				
Ambient temperature				°C	–15 to +40				
				F	5 to 104				
Lubrication					Lubricated for life				
Direction of rotation					In- and output same direction				
Protection class					IP 65				
Metal bellows coupling (recommended product type – validate sizing with cymex®)					BCT-00150AAX-063.000				
Bore diameter of coupling on the application side				*mm*	X = 019.000 - 042.000				
Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request	E	19	J_1	*kgcm²*	2.59	2.11	1.69	1.69	1.45
				10^{-3} in.lb.s²	2.29	1.87	1.50	1.50	1.28
	G	24	J_1	*kgcm²*	3.28	2.80	2.38	2.38	2.14
				10^{-3} in.lb.s²	2.90	2.48	2.11	2.11	1.89
	H	28	J_1	*kgcm²*	2.89	2.41	1.99	1.99	1.75
				10^{-3} in.lb.s²	2.56	2.13	1.76	1.76	1.55
	K	38	J_1	*kgcm²*	10.3	9.87	9.45	9.45	9.21
				10^{-3} in.lb.s²	9.12	8.73	8.36	8.36	8.15

Please use our sizing software cymex® for a detailed sizing – **www.wittenstein-cymex.com**

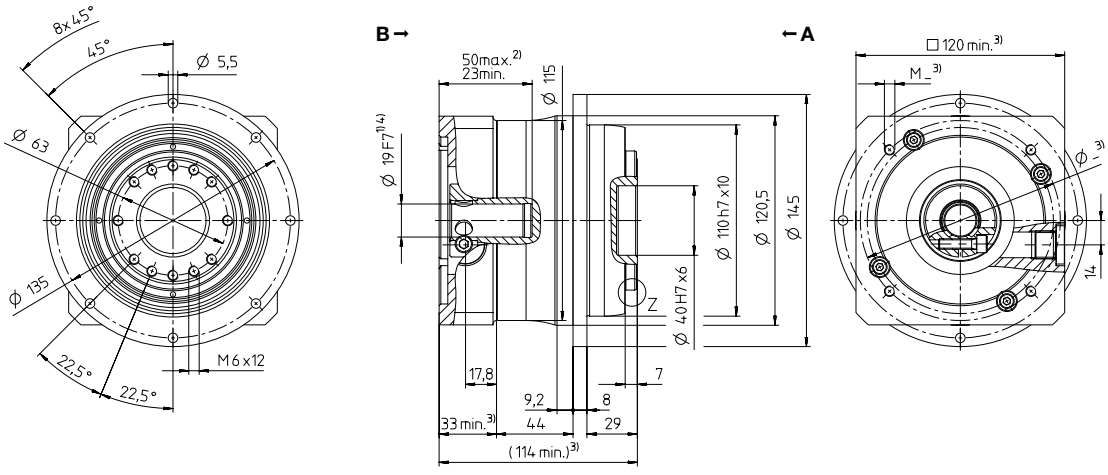
[a)] At max. 10 % M_{2KMax}
[b)] Valid for standard clamping hub diameter
[c)] Refers to center of the output shaft or flange
[d)] Please reduce input speed at higher ambient temperatures
[f)] Please contact us to discuss application-specific service lifetimes

View A | View B

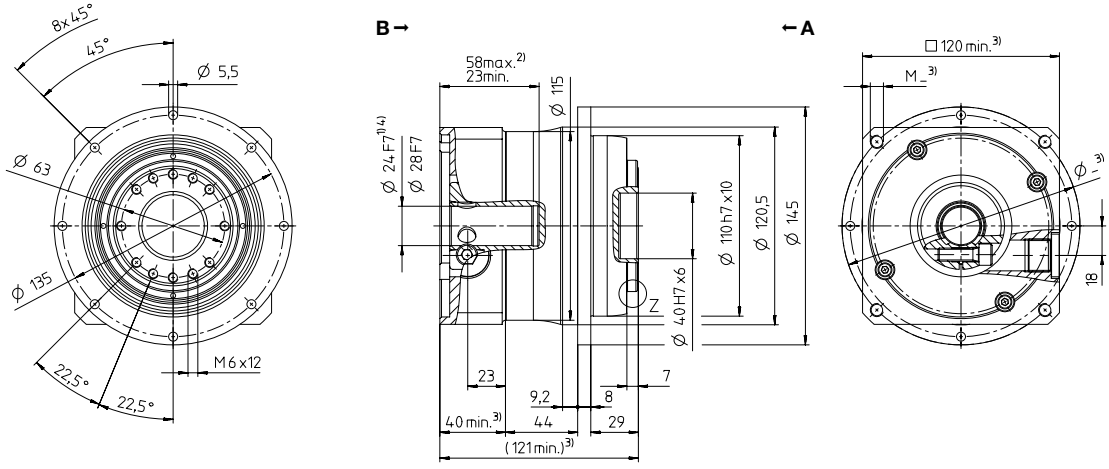
1-stage

Motor shaft diameter [mm]

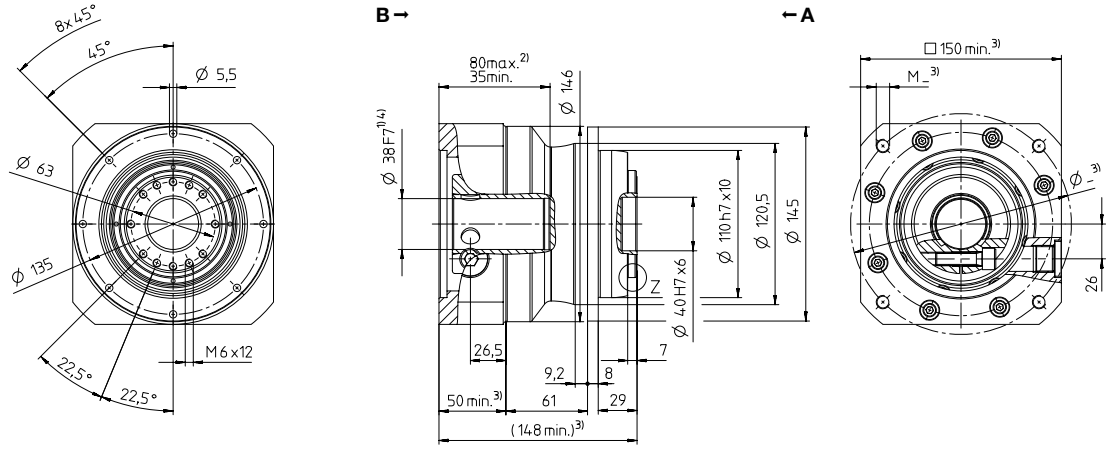
up to 19 [4] (E) clamping hub diameter

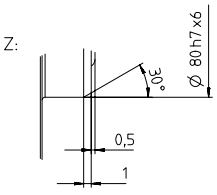


up to 24/28 [4] (G[5]/H) clamping hub diameter



up to 38 [4] (K) clamping hub diameter





Non-tolerated dimensions are nominal dimensions

[1] Check motor shaft fit

[2] Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

[3] The dimensions depend on the motor

[4] Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

[5] Standard clamping hub diameter

				2-stage													
Ratio			*i*	**16**	**20**	**21**	**25**	**28**	**31**	**32**	**35**	**40**	**50**	**61**	**64**	**70**	**91**	**100**
Max. torque [a) b)]			T_{2a} *Nm*	352	352	352	380	352	352	352	380	352	380	352	352	352	352	352
			in.lb	3115	3115	3115	3363	3115	3115	3115	3363	3115	3363	3115	3115	3115	3115	3115
Max. acceleration torque [b)] (max. 1000 cycles per hour)			T_{2B} *Nm*	352	352	330	380	352	330	352	380	352	380	308	292	352	275	292
			in.lb	3115	3115	2921	3363	3115	2921	3115	3363	3115	3363	2726	2584	3115	2434	2584
Nominal torque (at n_{1N})			T_{2N} *Nm*	250	267	211	265	282	231	251	294	282	304	246	233	282	220	233
			in.lb	2213	2366	1872	2348	2492	2047	2220	2598	2492	2691	2181	2064	2492	1947	2064
Emergency stop torque [a) b)] (permitted 1000 times during the service life of the gearbox)			T_{2Not} *Nm*	625	625	625	625	625	625	625	625	625	625	625	625	625	625	625
			in.lb	5532	5532	5532	5532	5532	5532	5532	5532	5532	5532	5532	5532	5532	5532	5532
Permitted average input speed (at T_{2N} and 20 °C ambient temperature) [d)]			n_{1N} *rpm*	2800	2800	2800	2800	2800	2800	2800	2800	2800	3100	3500	3100	3500	4200	4200
Max. input speed [b)]			n_{1Max} *rpm*	8500	8500	8500	8500	8500	8500	8500	8500	8500	8500	8500	8500	8500	8500	8500
Mean no load running torque [b)] (at n_1 = 3000 rpm and 20 °C gearbox temperature)			T_{012} *Nm*	1.2	1.0	1.1	0.90	0.80	0.84	0.80	0.60	0.59	0.50	0.48	0.50	0.42	0.48	0.38
			in.lb	10	8.9	9.9	8.0	7.1	7.4	7.1	5.3	5.2	4.4	4.2	4.4	3.7	4.2	3.4
Max. backlash			j_t *arcmin*	Standard ≤ 3 / Reduced ≤ 1														
Torsional rigidity [b)]			C_{t21} *Nm/arcmin*	81	81	70	83	80	54	80	82	76	80	61	80	71	55	60
			in.lb/arcmin	717	717	620	735	708	478	708	726	673	708	540	708	628	487	531
Tilting rigidity			C_{2K} *Nm/arcmin*	550														
			in.lb/arcmin	4868														
Max. axial force [c)]			F_{2AMax} *N*	4800														
			lb$_f$	1080														
Max. tilting moment			M_{2KMax} *Nm*	440														
			in.lb	3894														
Efficiency at full load			η *%*	94														
Service life [f)]			L_h *h*	> 20000														
Weight (incl. standard adapter plate)			*m* *kg*	6.7														
			lb$_m$	14.8														
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex®)			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														
Direction of rotation				In- and output same direction														
Protection class				IP 65														
Metal bellows coupling (recommended product type – validate sizing with cymex®)				BCT-00150AAX-063.000														
Bore diameter of coupling on the application side			*mm*	X = 019.000 - 042.000														
Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request	C	14	J_1 *kgcm²*	0.66	0.55	0.60	0.53	0.44	0.55	0.44	0.43	0.38	0.38	0.39	0.40	0.37	0.38	0.37
			10^{-3} in.lb.s²	0.58	0.48	0.53	0.47	0.39	0.49	0.39	0.38	0.34	0.33	0.34	0.36	0.33	0.34	0.33
	E	19	J_1 *kgcm²*	0.83	0.71	0.77	0.70	0.61	0.72	0.61	0.60	0.55	0.55	0.55	0.57	0.54	0.55	0.54
			10^{-3} in.lb.s²	0.73	0.63	0.68	0.62	0.54	0.64	0.54	0.53	0.49	0.48	0.49	0.50	0.48	0.48	0.48
	G	24	J_1 *kgcm²*	2.20	2.08	2.14	2.07	1.98	2.09	1.98	1.97	1.92	1.92	1.92	2.00	1.91	1.92	1.91
			10^{-3} in.lb.s²	1.95	1.84	1.89	1.83	1.75	1.85	1.75	1.74	1.70	1.70	1.70	1.77	1.69	1.70	1.69
	H	28	J_1 *kgcm²*	2.00	1.91	1.96	1.89	1.82	1.85	1.89	1.81	1.76	1.76	1.76	1.83	1.75	1.75	1.75
			10^{-3} in.lb.s²	1.77	1.69	1.73	1.67	1.61	1.64	1.67	1.60	1.56	1.56	1.56	1.62	1.55	1.55	1.55

Please use our sizing software cymex® for a detailed sizing – **www.wittenstein-cymex.com**

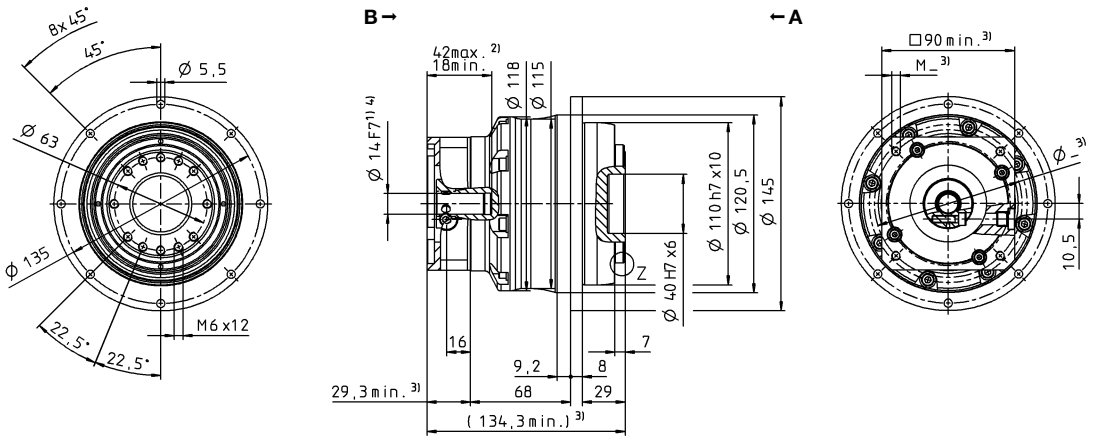
[a)] At max. 10 % M_{2KMax}
[b)] Valid for standard clamping hub diameter
[c)] Refers to center of the output shaft or flange
[d)] Please reduce input speed at higher ambient temperature
[f)] Please contact us to discuss application-specific service lifetimes

View A | View B

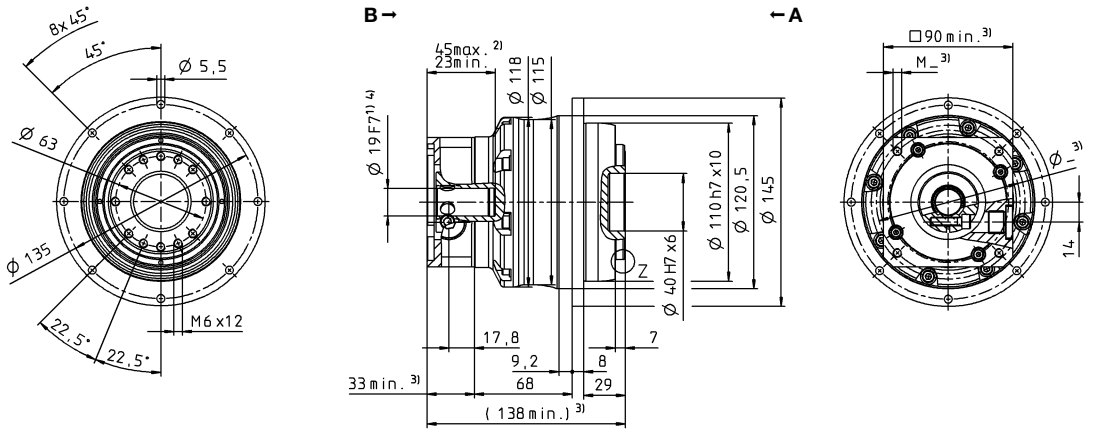
2-stage

Motor shaft diameter [mm]

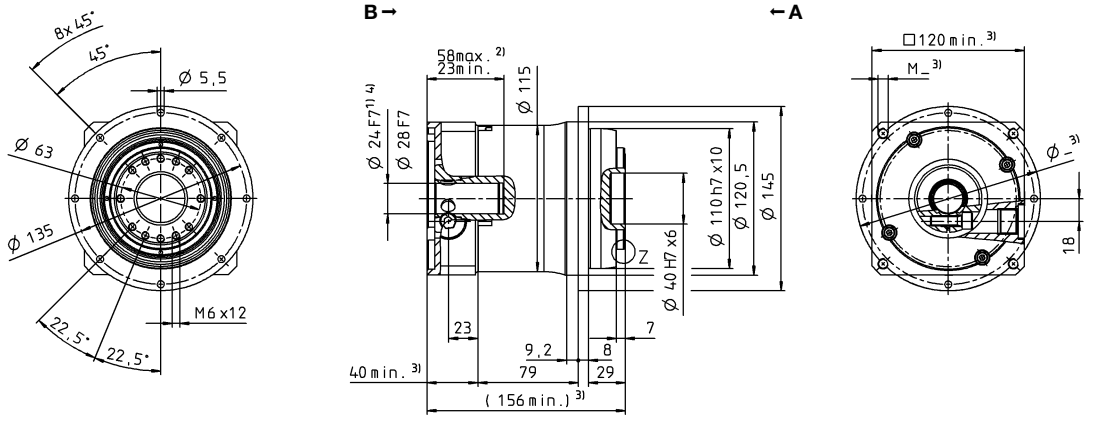
up to 14 [4] (C) clamping hub diameter

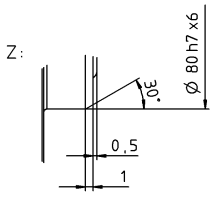


up to 19 [4] (E) [5] clamping hub diameter



up to 24/28 [4] (G/H) clamping hub diameter





Non-tolerated dimensions are nominal dimensions

[1] Check motor shaft fit

[2] Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

[3] The dimensions depend on the motor

[4] Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

[5] Standard clamping hub diameter

					1-stage				
Ratio			i		**4**	**5**	**7**	**8**	**10**
Max. torque [a) b)]			T_{2a}	*Nm*	992	992	868	720	720
				in.lb	8780	8780	7686	6373	6373
Max. acceleration torque [b)] (max. 1000 cycles per hour)			T_{2B}	*Nm*	840	840	840	648	648
				in.lb	7435	7435	7435	5735	5735
Nominal torque (at n_{1N})			T_{2N}	*Nm*	345	337	322	316	331
				in.lb	3052	2987	2854	2796	2928
Emergency stop torque [a) b)] (permitted 1000 times during the service life of the gearbox)			T_{2Not}	*Nm*	1250	1250	1250	1250	1250
				in.lb	11064	11064	11064	11064	11064
Permitted average input speed (at T_{2N} and 20 °C ambient temperature) [d)]			n_{1N}	*rpm*	1900	2000	2500	2500	2500
Max. input speed [b)]			n_{1Max}	*rpm*	5000	5500	6000	6000	6000
Mean no load running torque [b)] (at n_1 = 3000 rpm and 20 °C gearbox temperature)			T_{012}	*Nm*	6.5	5.3	3.8	3.8	2.9
				in.lb	57	47	33	33	26
Max. backlash			j_t	*arcmin*	Standard ≤ 3 / Reduced ≤ 1				
Torsional rigidity [b)]			C_{t21}	*Nm/arcmin*	190	187	159	123	123
				in.lb/arcmin	1682	1655	1407	1089	1089
Tilting rigidity			C_{2K}	*Nm/arcmin*	560				
				in.lb/arcmin	4956				
Max. axial force [c)]			F_{2AMax}	*N*	6130				
				lb_f	1379				
Max. tilting moment			M_{2KMax}	*Nm*	1335				
				in.lb	11816				
Efficiency at full load			η	%	97				
Service life [f)]			L_h	*h*	> 20000				
Weight (incl. standard adapter plate)			m	*kg*	14				
				lb_m	30.9				
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex®)			L_{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				
Direction of rotation					In- and output same direction				
Protection class					IP 65				
Metal bellows coupling (recommended product type – validate sizing with cymex®)					BCT-00300AAX-080.000				
Bore diameter of coupling on the application side				*mm*	X = 024.000 - 060.000				
Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request	G	24	J_1	*kgcm²*	9.47	7.85	6.39	6.39	5.54
				10^{-3} *in.lb.s²*	8.38	6.95	5.66	5.66	4.90
	I	32	J_1	*kgcm²*	12.6	11.0	9.55	9.55	8.10
				10^{-3} *in.lb.s²*	11.2	9.74	8.45	8.45	7.17
	K	38	J_1	*kgcm²*	13.7	12.1	10.6	10.6	9.78
				10^{-3} *in.lb.s²*	12.1	10.7	9.38	9.38	8.66
	M	48	J_1	*kgcm²*	28.3	26.7	25.3	25.3	24.4
				10^{-3} *in.lb.s²*	25.1	23.6	22.4	22.4	21.6

Please use our sizing software cymex® for a detailed sizing – **www.wittenstein-cymex.com**

[a)] At max. 10 % M_{2KMax}
[b)] Valid for standard clamping hub diameter
[c)] Refers to center of the output shaft or flange
[d)] Please reduce input speed at higher ambient temperatures
[f)] Please contact us to discuss application-specific service lifetimes

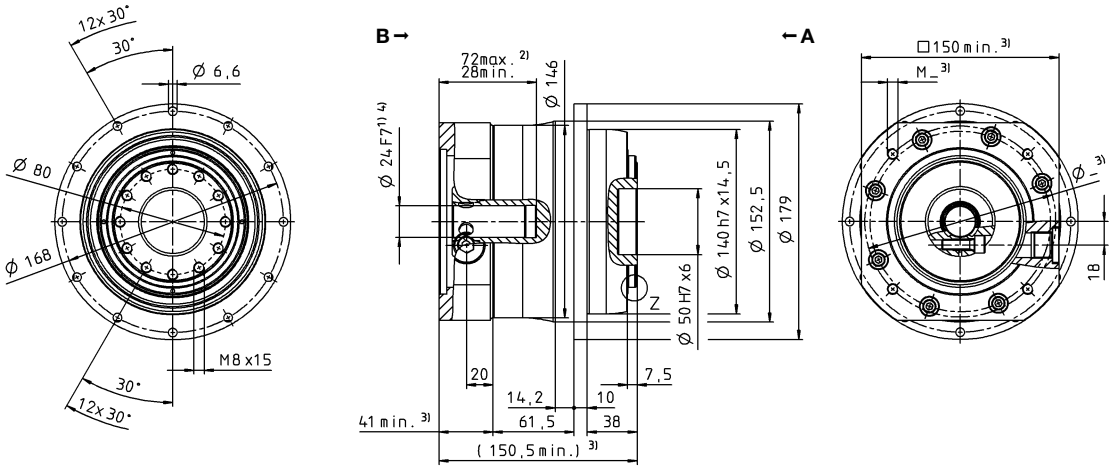
View A

View B

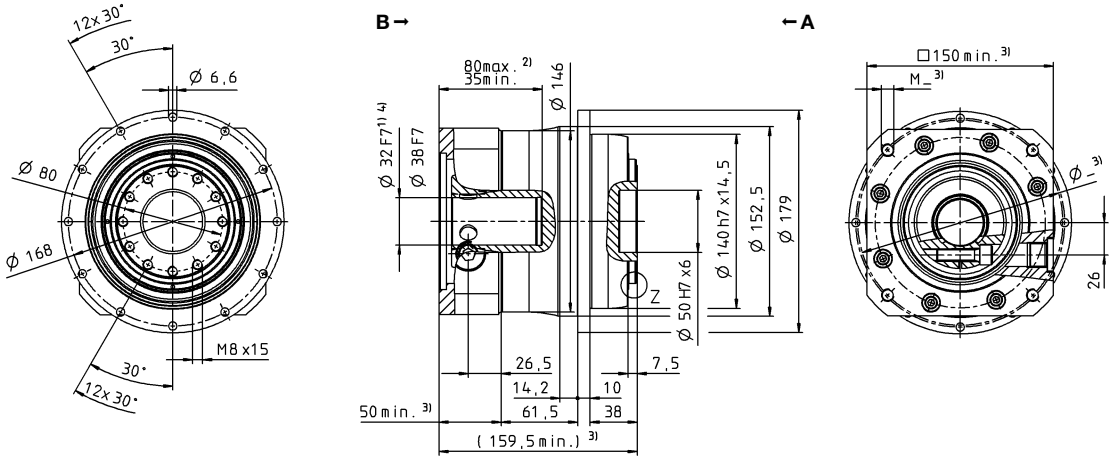
1-stage

Motor shaft diameter [mm]

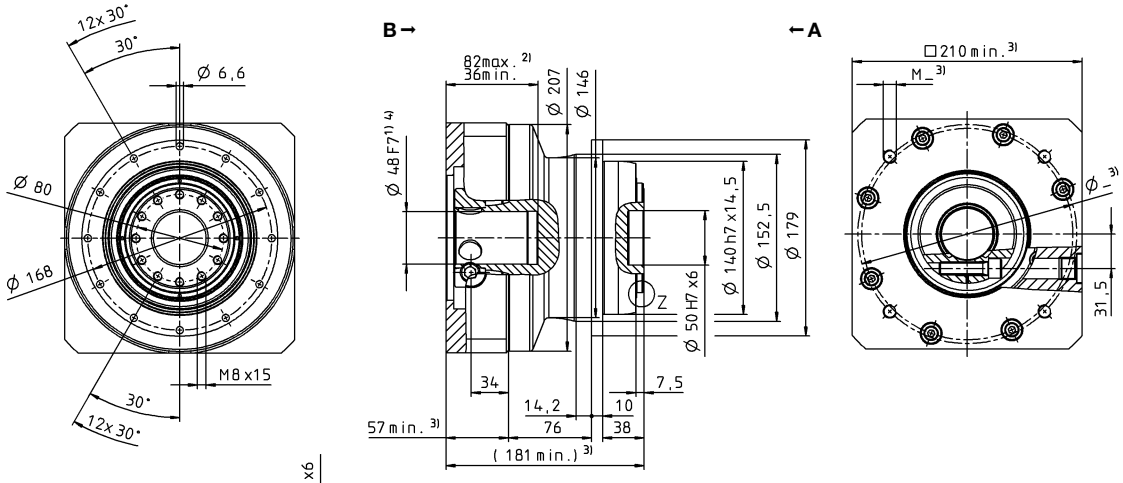
up to 24 [4] (G) clamping hub diameter

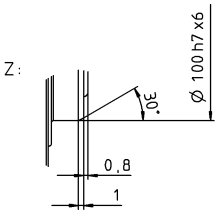


up to 32/38 [4] (I/K [5]) clamping hub diameter



up to 48 [4] (M) clamping hub diameter





Non-tolerated dimensions are nominal dimensions

[1] Check motor shaft fit

[2] Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

[3] The dimensions depend on the motor

[4] Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

[5] Standard clamping hub diameter

				2-stage														
Ratio			*i*	**16**	**20**	**21**	**25**	**28**	**31**	**32**	**35**	**40**	**50**	**61**	**64**	**70**	**91**	**100**
Max. torque [a) b)]			T_{2a} *Nm*	825	825	660	825	825	682	825	825	825	825	605	594	770	550	594
			in.lb	7302	7302	5842	7302	7302	6036	7302	7302	7302	7302	5355	5257	6815	4868	5257
Max. acceleration torque [b)] (max. 1000 cycles per hour)			T_{2B} *Nm*	825	825	660	825	825	682	825	825	825	825	605	594	770	550	594
			in.lb	7302	7302	5842	7302	7302	6036	7302	7302	7302	7302	5355	5257	6815	4868	5257
Nominal torque (at n_{1N})			T_{2N} *Nm*	461	493	393	489	545	431	464	541	607	585	425	475	598	440	475
			in.lb	4078	4361	3476	4332	4824	3812	4104	4792	5370	5179	3765	4206	5291	3894	4206
Emergency stop torque [a) b)] (permitted 1000 times during the service life of the gearbox)			T_{2Not} *Nm*	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250
			in.lb	11064	11064	11064	11064	11064	11064	11064	11064	11064	11064	11064	11064	11064	11064	11064
Permitted average input speed (at T_{2N} and 20 °C ambient temperature) [d)]			n_{1N} *rpm*	2900	2900	2900	2900	2900	2900	2900	2900	2900	3200	3200	3200	3200	3900	3900
Max. input speed [b)]			n_{1Max} *rpm*	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
Mean no load running torque [b)] (at n_1 = 3000 rpm and 20 °C gearbox temperature)			T_{012} *Nm*	2.8	2.4	2.2	2.6	2.0	1.9	2.0	1.5	1.5	1.2	1.0	1.2	1.1	0.96	0.88
			in.lb	25	22	20	23	17	17	17	14	13	11	8.9	11	9.9	8.5	7.8
Max. backlash			j_t *arcmin*	Standard ≤ 3 / Reduced ≤ 1														
Torsional rigidity [b)]			C_{t21} *Nm/arcmin*	180	185	145	180	180	130	180	175	175	175	123	175	145	100	115
			in.lb/arcmin	1593	1637	1283	1593	1593	1151	1593	1549	1549	1549	1089	1549	1283	885	1018
Tilting rigidity			C_{2K} *Nm/arcmin*	560														
			in.lb/arcmin	4956														
Max. axial force [c)]			F_{2AMax} *N*	6130														
			lb$_f$	1379														
Max. tilting moment			M_{2KMax} *Nm*	1335														
			in.lb	11816														
Efficiency at full load			η *%*	94														
Service life [f)]			L_h *h*	> 20000														
Weight (incl. standard adapter plate)			*m* *kg*	14.1														
			lb$_m$	31.2														
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex®)			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														
Direction of rotation				In- and output same direction														
Protection class				IP 65														
Metal bellows coupling (recommended product type – validate sizing with cymex®)				BCT-00300AAX-080.000														
Bore diameter of coupling on the application side			*mm*	X = 024.000 - 060.000														
Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request	E	19	J_1 *kgcm²*	2.53	2.08	2.30	2.01	1.67	2.12	1.67	1.64	1.44	1.42	1.46	1.51	1.41	1.43	1.40
			10^{-3} in.lb.s²	2.24	1.84	2.04	1.78	1.48	1.88	1.48	1.45	1.27	1.26	1.29	1.34	1.25	1.27	1.24
	G	24	J_1 *kgcm²*	3.22	2.77	2.99	2.70	2.37	2.81	2.37	2.33	2.13	2.12	2.15	2.20	2.10	2.12	2.09
			10^{-3} in.lb.s²	2.85	2.45	2.65	2.39	2.10	2.49	2.10	2.06	1.89	1.88	1.90	1.95	1.86	1.88	1.85
	K	38	J_1 *kgcm²*	10.3	9.83	10.1	9.77	9.43	9.88	9.43	9.40	9.20	9.18	9.22	9.50	9.17	9.19	9.16
			10^{-3} in.lb.s²	9.12	8.70	8.94	8.65	8.35	8.74	8.35	8.32	8.14	8.12	8.16	8.41	8.12	8.13	8.11

Please use our sizing software cymex® for a detailed sizing – **www.wittenstein-cymex.com**

[a)] At max. 10 % M_{2KMax}
[b)] Valid for standard clamping hub diameter
[c)] Refers to center of the output shaft or flange
[d)] Please reduce input speed at higher ambient temperatures
[f)] Please contact us to discuss application-specific service lifetimes

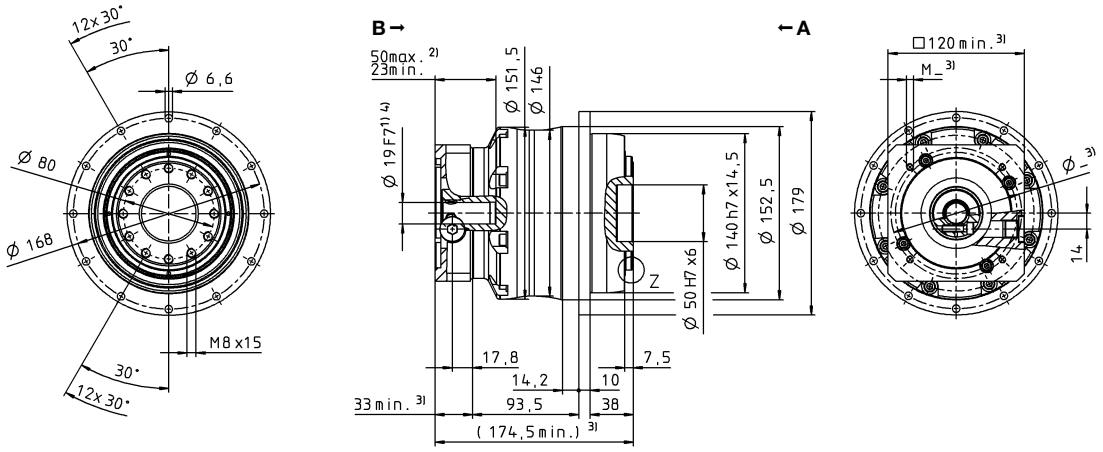
View A

View B

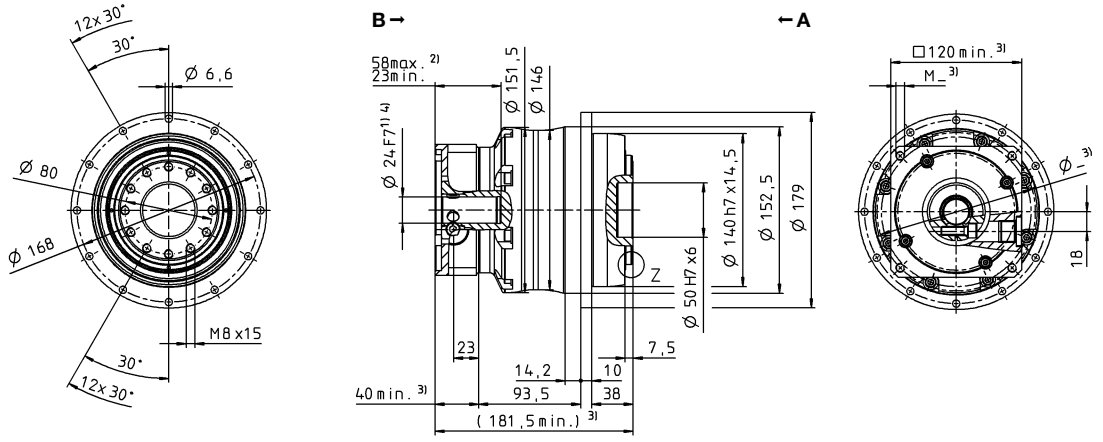
2-stage

Motor shaft diameter [mm]

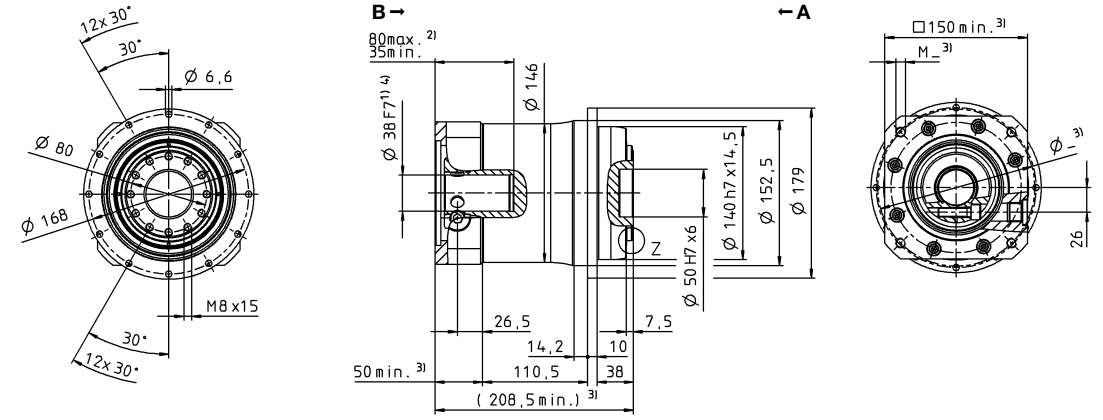
up to 19 [4] (E) clamping hub diameter

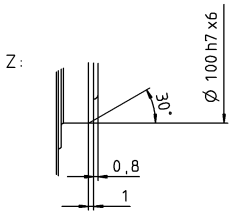


up to 24 [4] (G) [5] clamping hub diameter



up to 38 [4] (K) clamping hub diameter





Non-tolerated dimensions are nominal dimensions

[1] Check motor shaft fit

[2] Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

[3] The dimensions depend on the motor

[4] Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

[5] Standard clamping hub diameter

				1-stage				
Ratio			*i*	**4**	**5**	**7**	**8**	**10**
Max. torque [a) b)]			T_{2a}	*Nm*	2560	2560	2560	2240	2240
				in.lb	22658	22658	22658	19826	19826
Max. acceleration torque [b)] (max. 1000 cycles per hour)			T_{2B}	*Nm*	1920	1920	1920	1680	1680
				in.lb	16994	16994	16994	14869	14869
Nominal torque (at n_{1N})			T_{2N}	*Nm*	946	919	861	861	901
				in.lb	8375	8134	7618	7618	7972
Emergency stop torque [a) b)] (permitted 1000 times during the service life of the gearbox)			T_{2Not}	*Nm*	3075	3075	3075	3075	3075
				in.lb	27216	27216	27216	27216	27216
Permitted average input speed (at T_{2N} and 20 °C ambient temperature) [d)]			n_{1N}	*rpm*	1400	1500	2000	2000	2000
Max. input speed [b)]			n_{1Max}	*rpm*	4500	4500	5000	5000	5000
Mean no load running torque [b)] (at n_1 = 3000 rpm and 20 °C gearbox temperature)			T_{012}	*Nm*	16	12	8.8	8.8	6.0
				in.lb	138	109	78	78	53
Max. backlash			j_t	*arcmin*	Standard ≤ 3 / Reduced ≤ 1				
Torsional rigidity [b)]			C_{t21}	*Nm/arcmin*	610	610	550	445	445
				in.lb/arcmin	5399	5399	4868	3939	3939
Tilting rigidity			C_{2K}	*Nm/arcmin*	1452				
				in.lb/arcmin	12851				
Max. axial force [c)]			F_{2AMax}	*N*	10050				
				lb_f	2261				
Max. tilting moment			M_{2KMax}	*Nm*	3280				
				in.lb	29031				
Efficiency at full load			η	%	97				
Service life [f)]			L_h	*h*	> 20000				
Weight (incl. standard adapter plate)			*m*	*kg*	30				
				lb_m	66.3				
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex®)			L_{PA}	*dB(A)*	≤ 68				
Max. permitted housing temperature				*°C*	+90				
				F	194				
Ambient temperature				*°C*	–15 to +40				
				F	5 to 104				
Lubrication					Lubricated for life				
Direction of rotation					In- and output same direction				
Protection class					IP 65				
Metal bellows coupling (recommended product type – validate sizing with cymex®)					BCT-01500AAX-125.000				
Bore diameter of coupling on the application side				*mm*	X = 050.000 - 080.000				
Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request	K	38	J_1	*kgcm²*	44.5	34.6	25.5	25.5	20.6
				10^{-3} in.lb.s²	39.4	30.6	22.6	22.6	18.2
	M	48	J_1	*kgcm²*	58.8	41.9	32.9	32.9	28.0
				10^{-3} in.lb.s²	52.0	37.1	29.1	29.1	24.8
	N	55	J_1	*kgcm²*	61.5	51.5	42.3	42.3	37.3
				10^{-3} in.lb.s²	54.4	45.6	37.4	37.4	33.0

Please use our sizing software cymex® for a detailed sizing – **www.wittenstein-cymex.com**

[a)] At max. 10 % M_{2KMax}
[b)] Valid for standard clamping hub diameter
[c)] Refers to center of the output shaft or flange
[d)] Please reduce input speed at higher ambient temperatures
[f)] Please contact us to discuss application-specific service lifetimes

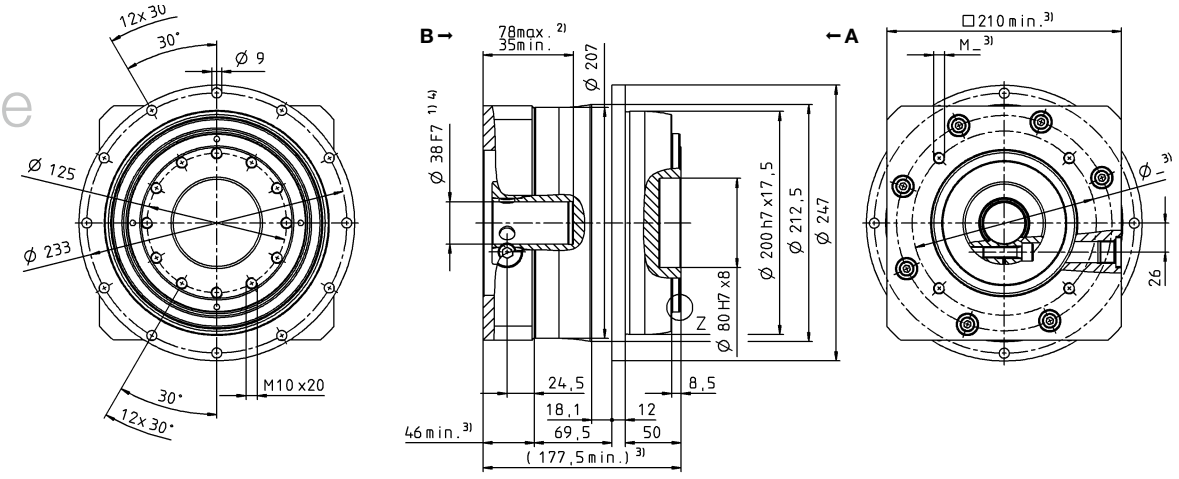
View A

View B

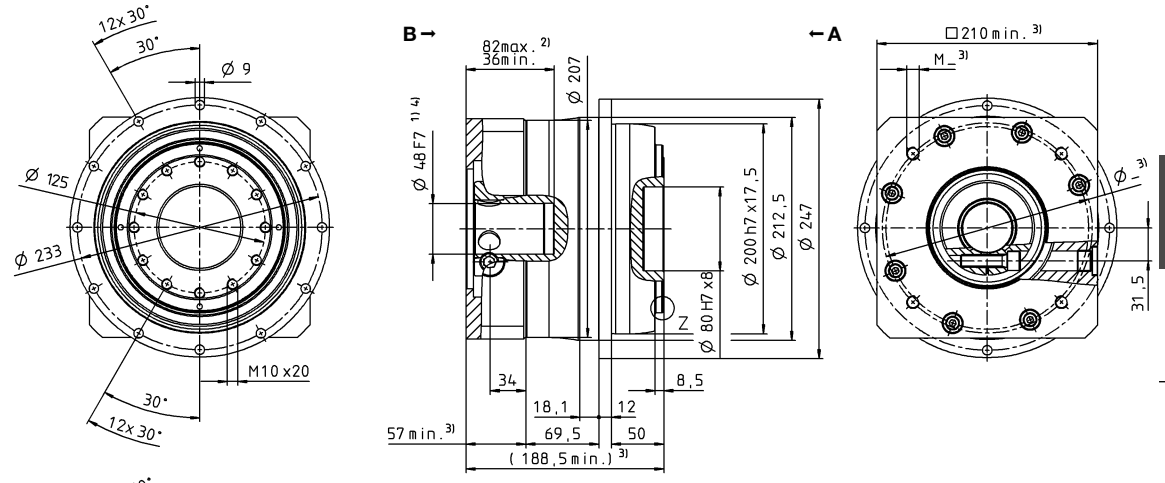
1-stage

Motor shaft diameter [mm]

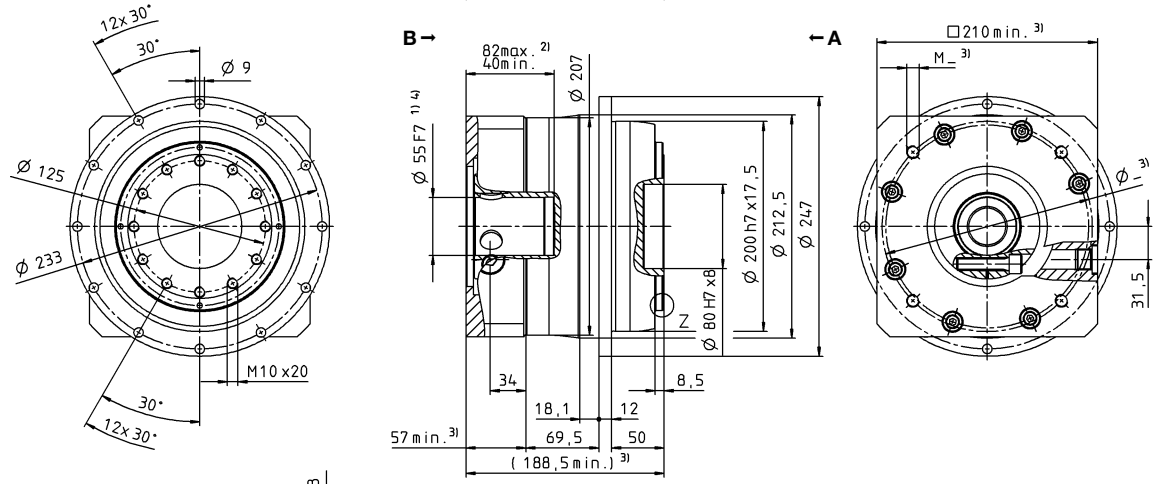
up to 38 [4] (K) clamping hub diameter

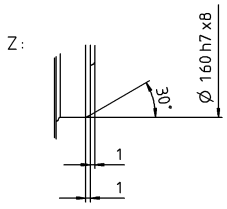


up to 48 [4] (M) [5] clamping hub diameter



up to 55 [4] (N) clamping hub diameter





Non-tolerated dimensions are nominal dimensions

[1] Check motor shaft fit

[2] Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

[3] The dimensions depend on the motor

[4] Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

[5] Standard clamping hub diameter

					2-stage														
Ratio			i		**16**	**20**	**21**	**25**	**28**	**31**	**32**	**35**	**40**	**50**	**61**	**64**	**70**	**91**	**100**
Max. torque [a) b)]			T_{2a}	*Nm*	1760	1760	1540	1760	1760	1760	1760	1760	1760	1760	1540	1540	1760	1430	1540
				in.lb	15577	15577	13630	15577	15577	15577	15577	15577	15577	15577	13630	13630	15577	12657	13630
Max. acceleration torque [b)] (max. 1000 cycles per hour)			T_{2B}	*Nm*	1760	1760	1540	1760	1760	1760	1760	1760	1760	1760	1540	1540	1760	1430	1540
				in.lb	15577	15577	13630	15577	15577	15577	15577	15577	15577	15577	13630	13630	15577	12657	13630
Nominal torque (at n_{1N})			T_{2N}	*Nm*	1205	1240	1023	1278	1257	1065	1221	1408	1315	1408	1232	1232	1408	1144	1232
				in.lb	10669	10976	9051	11312	11121	9422	10807	12462	11636	12462	10904	10904	12462	10125	10904
Emergency stop torque [a) b)] (permitted 1000 times during the service life of the gearbox)			T_{2Not}	*Nm*	3075	3075	3075	3075	3075	3075	3075	3075	3075	3075	3075	3075	3075	3075	3075
				in.lb	27216	27216	27216	27216	27216	27216	27216	27216	27216	27216	27216	27216	27216	27216	27216
Permitted average input speed (at T_{2N} and 20 °C ambient temperature) [d)]			n_{1N}	*rpm*	2500	2500	2500	2500	2500	2500	2500	2500	2500	2900	3200	2900	3200	3400	3400
Max. input speed [b)]			n_{1Max}	*rpm*	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque [b)] (at n_1 = 3000 rpm and 20 °C gearbox temperature)			T_{012}	*Nm*	7.0	5.8	5.2	5.2	4.5	4.4	4.5	3.1	3.0	2.5	2.1	2.5	2.0	1.8	1.8
				in.lb	52	52	46	46	40	39	40	28	27	22	18	22	18	16	16
Max. backlash			j_t	*arcmin*	Standard ≤ 3 / Reduced ≤ 1														
Torsional rigidity [b)]			C_{t21}	*Nm/arcmin*	585	580	465	570	560	440	560	560	520	525	415	525	480	360	395
				in.lb/arcmin	5178	5133	4116	5045	4956	3894	4956	4956	4602	4647	3673	4647	4248	3186	3496
Tilting rigidity			C_{2K}	*Nm/arcmin*	1452														
				in.lb/arcmin	12851														
Max. axial force [c)]			F_{2AMax}	*N*	10050														
				lb_f	2261														
Max. tilting moment			M_{2KMax}	*Nm*	3280														
				in.lb	29031														
Efficiency at full load			η	%	94														
Service life [f)]			L_h	*h*	> 20000														
Weight (incl. standard adapter plate)			m	*kg*	34														
				lb_m	75.1														
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex®)			L_{PA}	*dB(A)*	≤ 61														
Max. permitted housing temperature				*°C*	+90														
				F	194														
Ambient temperature				*°C*	–15 to +40														
				F	5 to 104														
Lubrication					Lubricated for life														
Direction of rotation					In- and output same direction														
Protection class					IP 65														
Metal bellows coupling (recommended product type – validate sizing with cymex®)					BCT-01500AAX-125.000														
Bore diameter of coupling on the application side				*mm*	X = 050.000 - 080.000														
Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request	G	24	J_1	*kgcm²*	8.51	8.21	8.98	7.82	6.57	8.09	6.57	6.37	5.63	5.54	5.63	5.78	5.44	5.51	5.40
				10^{-3} in.lb.s²	7.53	7.27	7.95	6.92	5.81	7.16	5.81	5.64	4.98	4.90	4.98	5.12	4.81	4.88	4.78
	I	32	J_1	*kgcm²*	11.7	11.4	12.1	11.0	9.73	11.3	9.73	9.54	8.80	8.70	8.80	8.95	8.61	8.67	8.56
				10^{-3} in.lb.s²	10.4	10.1	10.7	9.74	8.61	10.0	8.61	8.44	7.79	7.70	7.79	7.92	7.62	7.67	7.58
	K	38	J_1	*kgcm²*	12.7	12.5	13.2	12.1	10.8	12.3	10.8	10.6	9.87	9.77	9.87	10.0	9.68	9.74	9.63
				10^{-3} in.lb.s²	11.2	11.1	11.7	10.7	9.56	10.9	9.56	9.39	8.73	8.65	8.73	8.87	8.57	8.62	8.52
	M	48	J_1	*kgcm²*	27.4	27.1	27.8	26.7	25.4	26.9	25.4	25.3	24.5	24.4	24.5	24.9	24.3	24.4	24.3
				10^{-3} in.lb.s²	24.3	24.0	24.6	23.6	22.5	23.8	22.5	22.4	21.7	21.6	21.7	22.0	21.5	21.6	21.5

Please use our sizing software cymex® for a detailed sizing – **www.wittenstein-cymex.com**

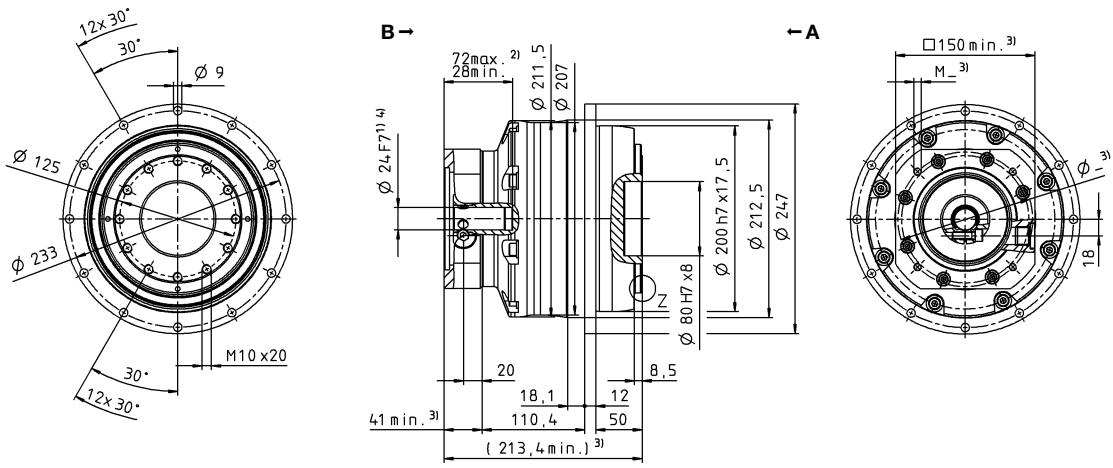
[a)] At max. 10 % M_{2KMax}
[b)] Valid for standard clamping hub diameter
[c)] Refers to center of the output shaft or flange
[d)] Please reduce input speed at higher ambient temperatures
[f)] Please contact us to discuss application-specific service lifetimes

View A | View B

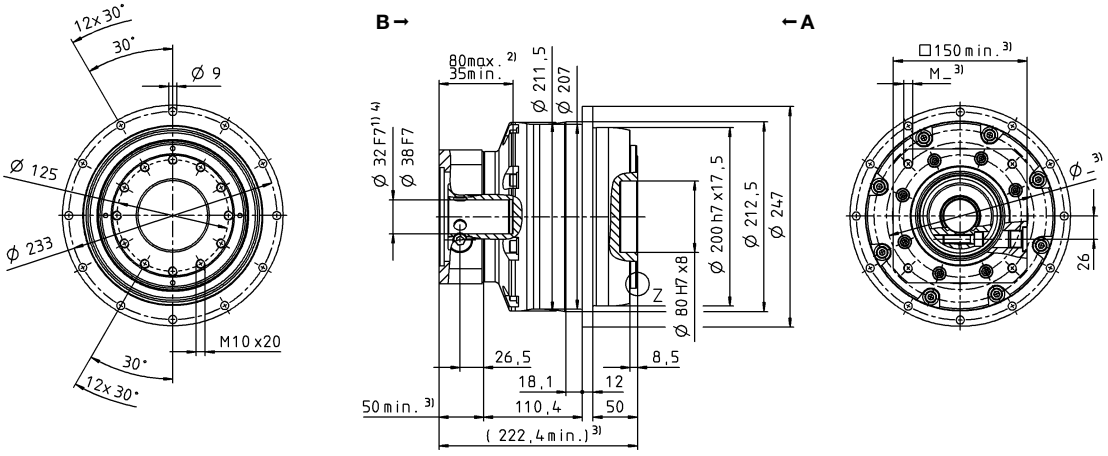
2-stage

Motor shaft diameter [mm]

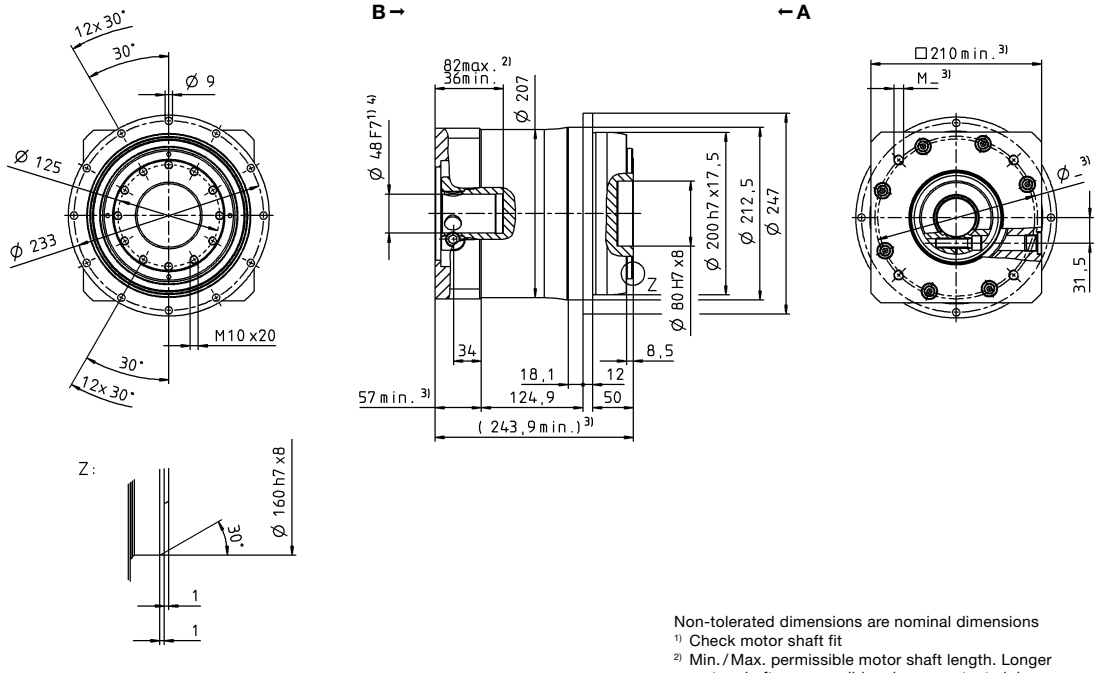
up to 24 [4] (G) clamping hub diameter



up to 32/38 [4] (I/K [5]) clamping hub diameter



up to 48 [4] (M) clamping hub diameter



Non-tolerated dimensions are nominal dimensions

[1] Check motor shaft fit

[2] Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

[3] The dimensions depend on the motor

[4] Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

[5] Standard clamping hub diameter

				1-stage		
Ratio			*i*	**5**	**7**	**10**
Max. torque [a) b)]			T_{2a}	*Nm*	5600	5250	2800
				in.lb	49564	46467	24782
Max. acceleration torque [b)] (max. 1000 cycles per hour)			T_{2B}	*Nm*	4200	3960	2280
				in.lb	37173	35049	20180
Nominal torque (at n_{1N})			T_{2N}	*Nm*	1996	1835	1794
				in.lb	17666	16242	15878
Emergency stop torque [a) b)] (permitted 1000 times during the service life of the gearbox)			T_{2Not}	*Nm*	9900	9900	8750
				in.lb	87623	87623	77445
Permitted average input speed (at T_{2N} and 20 °C ambient temperature) [d)]			n_{1N}	*rpm*	1000	1400	1700
Max. input speed [b)]			n_{1Max}	*rpm*	3000	3000	3000
Mean no load running torque [b)] (at n_1 = 2000 rpm and 20 °C gearbox temperature)			T_{012}	*Nm*	20	14	8.8
				in.lb	177	120	78
Max. backlash			j_t	*arcmin*	Standard ≤ 3 / Reduced ≤ 1		
Torsional rigidity [b)]			C_{t21}	*Nm/arcmin*	1000	900	700
				in.lb/arcmin	8851	7966	6196
Tilting rigidity			C_{2K}	*Nm/arcmin*	5560		
				in.lb/arcmin	49210		
Max. axial force [c)]			F_{2AMax}	*N*	33000		
				lb_f	7425		
Max. tilting moment			M_{2KMax}	*Nm*	3900		
				in.lb	34518		
Efficiency at full load			η	%	95		
Service life [f)]			L_h	*h*	> 20000		
Weight (incl. standard adapter plate)			*m*	*kg*	60		
				lb_m	132.6		
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex®)			L_{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		
Direction of rotation					In- and output same direction		
Protection class					IP 65		
Metal bellows coupling (recommended product type – validate sizing with cymex®)					–		
Bore diameter of coupling on the application side				*mm*	–		
Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request	N	55	J_1	$kgcm^2$	82.6	61.2	49.5
				10^{-3} *in.lb.s²*	73.1	54.2	43.8

Please use our sizing software cymex® for a detailed sizing – **www.wittenstein-cymex.com**

[a)] At max. 10 % M_{2KMax}
[b)] Valid for standard clamping hub diameter
[c)] Refers to center of the output shaft or flange
[d)] Please reduce input speed at higher ambient temperatures
[f)] Please contact us to discuss application-specific service lifetimes

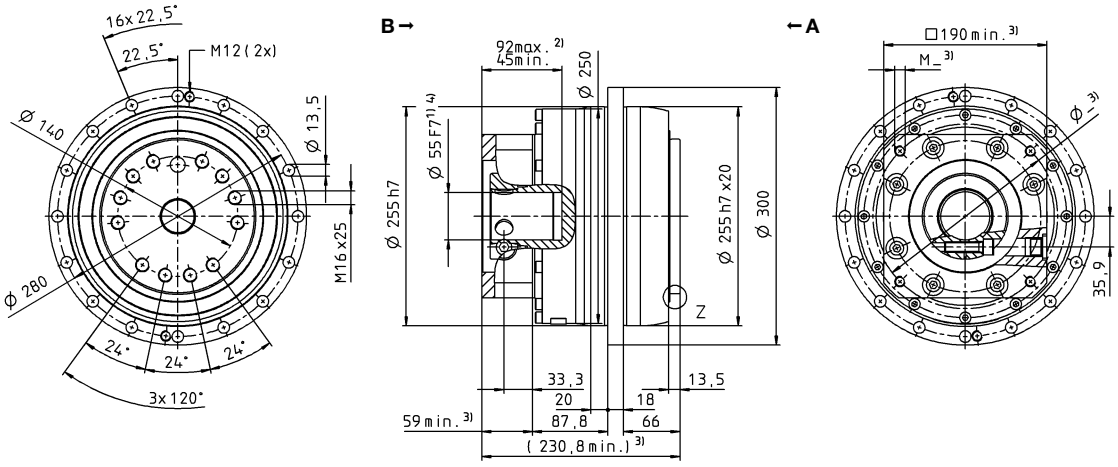
View A

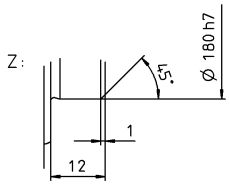
View B

Motor shaft diameter [mm]

1-stage

up to 55 [4] (N) [5] clamping hub diameter





Non-tolerated dimensions are nominal dimensions

[1] Check motor shaft fit

[2] Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

[3] The dimensions depend on the motor

[4] Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

[5] Standard clamping hub diameter

				2-stage									
Ratio		*i*		**20**	**21**	**25**	**31**	**35**	**50**	**61**	**70**	**91**	**100**
Max. torque [a) b)]		T_{2a}	*Nm*	3850	3740	3949	3850	3949	3600	3080	3630	2800	2800
			in.lb	34076	33102	34947	34076	34947	31863	27260	32128	24782	24782
Max. acceleration torque [b)] (max. 1000 cycles per hour)		T_{2B}	*Nm*	3850	3740	3949	3850	3949	3600	3080	3630	2800	2800
			in.lb	34076	33102	34952	34076	34952	31863	27260	32128	24782	24782
Nominal torque (at n_{1N})		T_{2N}	*Nm*	1354	1456	1676	2114	1710	1722	2070	2339	2240	2240
			in.lb	11981	12888	14834	18709	15131	15238	18320	20698	19826	19826
Emergency stop torque [a) b)] (permitted 1000 times during the service life of the gearbox)		T_{2Not}	*Nm*	9900	9870	9900	9156	9900	9900	9008	9900	8750	8750
			in.lb	87623	87357	87623	81035	87623	87623	79728	87623	77445	77445
Permitted average input speed (at T_{2N} and 20 °C ambient temperature) [d)]		n_{1N}	*rpm*	2000	2000	2000	2000	2000	2300	2400	2400	2500	2500
Max. input speed [b)]		n_{1Max}	*rpm*	4375	4375	4375	4375	4375	4375	4375	4375	4375	4375
Mean no load running torque [b)] (at n_1 = 2000 rpm and 20 °C gearbox temperature)		T_{012}	*Nm*	6.7	5.5	5.5	4.8	4.0	3.8	2.8	3.0	2.8	2.4
			in.lb	59	49	48	43	35	34	25	26	25	21
Max. backlash		j_t	*arcmin*	Standard ≤ 3 / Reduced ≤ 2									
Torsional rigidity [b)]		C_{t21}	*Nm/arcmin*	850	800	950	750	900	800	700	800	600	650
			in.lb/arcmin	7523	7081	8408	6638	7966	7081	6196	7081	5310	5753
Tilting rigidity		C_{2K}	*Nm/arcmin*	5560									
			in.lb/arcmin	49210									
Max. axial force [c)]		F_{2AMax}	*N*	33000									
			lb_f	7425									
Max. tilting moment		M_{2KMax}	*Nm*	5900									
			in.lb	52220									
Efficiency at full load		η	%	94									
Service life [f)]		L_h	*h*	> 20000									
Weight (incl. standard adapter plate)		*m*	*kg*	58.5									
			lb_m	129.3									
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex®)		L_{PA}	*dB(A)*	≤ 61									
Max. permitted housing temperature			°C	+90									
			F	194									
Ambient temperature			°C	–15 to +40									
			F	5 to 104									
Lubrication				Lubricated for life									
Direction of rotation				In- and output same direction									
Protection class				IP 65									
Metal bellows coupling (recommended product type – validate sizing with cymex®)				–									
Bore diameter of coupling on the application side			*mm*	–									
Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request	M	48	J_1	*kgcm²*	27.5	27.0	25.9	25.6	22.4	21.5	21.4	21.3	21.2	21.2
				10^{-3} *in.lb.s²*	24.3	23.9	22.9	22.7	19.8	19.0	18.9	18.9	18.8	18.8

Please use our sizing software cymex® for a detailed sizing – **www.wittenstein-cymex.com**

[a)] At max. 10 % M_{2KMax}
[b)] Valid for standard clamping hub diameter
[c)] Refers to center of the output shaft or flange
[d)] Please reduce input speed at higher ambient temperatures
[f)] Please contact us to discuss application-specific service lifetimes

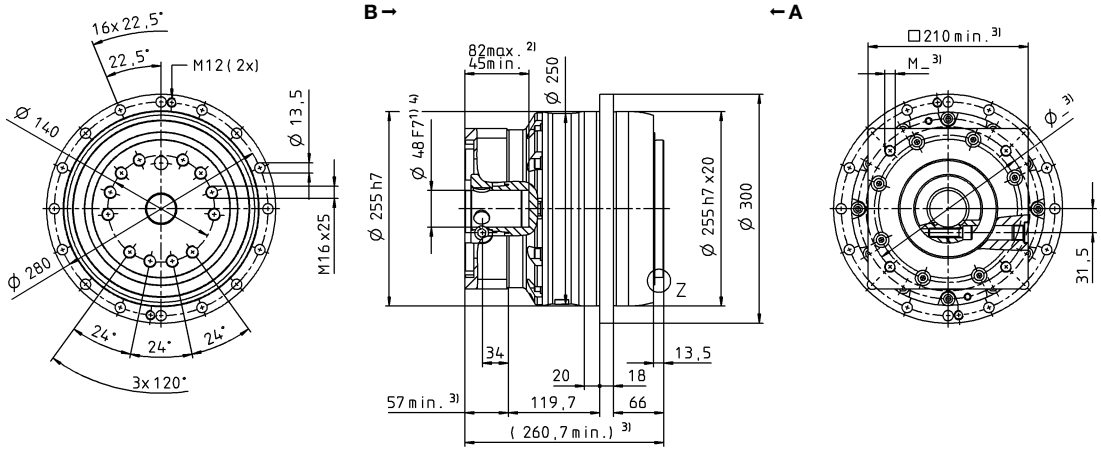
View A

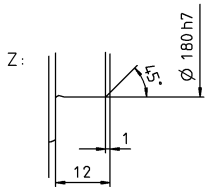
View B

Motor shaft diameter [mm]

2-stage

up to 48 [4] (M) [5]
clamping hub diameter





Non-tolerated dimensions are nominal dimensions

[1] Check motor shaft fit

[2] Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

[3] The dimensions depend on the motor

[4] Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

[5] Standard clamping hub diameter

			1-stage		
Ratio	*i*		**5**	**7**	**10**
Max. torque [a) b)]	T_{2a}	*Nm*	9600	6790	4000
		in.lb	84968	60097	35403
Max. acceleration torque [b)] (max. 1000 cycles per hour)	T_{2B}	*Nm*	7200	6000	4000
		in.lb	63726	53105	35403
Nominal torque (at n_{1N})	T_{2N}	*Nm*	3131	2857	2840
		in.lb	27711	25286	25135
Emergency stop torque [a) b)] (permitted 1000 times during the service life of the gearbox)	T_{2Not}	*Nm*	15000	15000	15000
		in.lb	132762	132762	132762
Permitted average input speed (at T_{2N} and 20 °C ambient temperature) [d)]	n_{1N}	*rpm*	900	1300	1500
Max. input speed [b)]	n_{1Max}	*rpm*	3000	3000	3000
Mean no load running torque [b)] (at n_1 = 2000 rpm and 20 °C gearbox temperature)	T_{012}	*Nm*	27	19	12
		in.lb	242	170	110
Max. backlash	j_t	*arcmin*	Standard ≤ 3 / Reduced ≤ 1		
Torsional rigidity [b)]	C_{t21}	*Nm/arcmin*	1450	1300	1100
		in.lb/arcmin	12834	11506	9736
Tilting rigidity	C_{2K}	*Nm/arcmin*	9480		
		in.lb/arcmin	83906		
Max. axial force [c)]	F_{2AMax}	*N*	50000		
		lb_f	11250		
Max. tilting moment	M_{2KMax}	*Nm*	5500		
		in.lb	48679		
Efficiency at full load	η	*%*	95		
Service life [f)]	L_h	*h*	> 20000		
Weight (incl. standard adapter plate)	*m*	*kg*	82		
		lb_m	181.2		
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex®)	L_{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		
Direction of rotation			In- and output same direction		
Protection class			IP 65		
Metal bellows coupling (recommended product type – validate sizing with cymex®)			–		
Bore diameter of coupling on the application side		*mm*	–		
Mass moment of inertia (relates to the drive) **O** Clamping hub diameter [mm] **60** Optimized mass inertia version available on request	J_1	*kgcm²*	182	142	120
		10⁻³ in.lb.s²	161	126	106

Please use our sizing software cymex® for a detailed sizing – **www.wittenstein-cymex.com**

[a)] At max. 10 % M_{2KMax}
[b)] Valid for standard clamping hub diameter
[c)] Refers to center of the output shaft or flange
[d)] Please reduce input speed at higher ambient temperatures
[f)] Please contact us to discuss application-specific service lifetimes

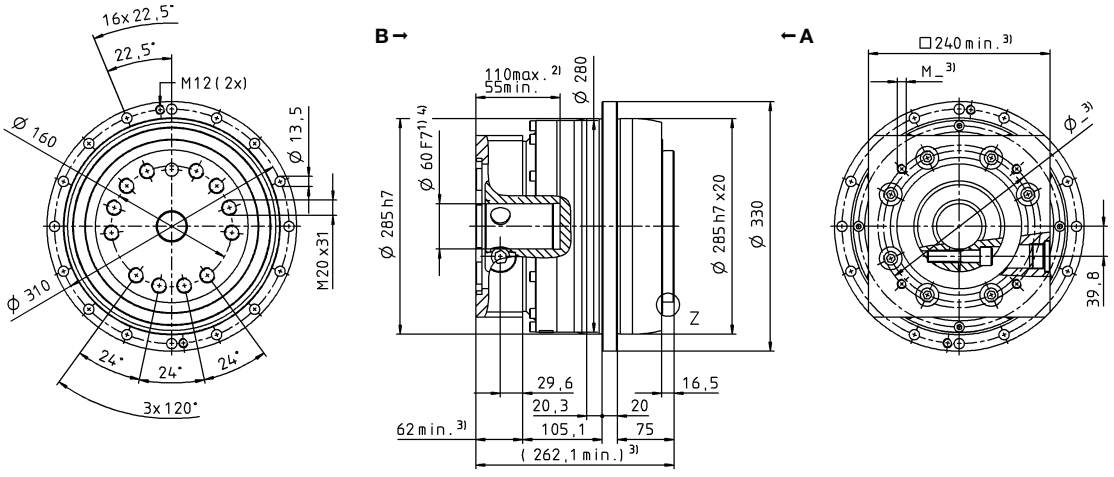
View A

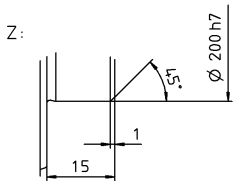
View B

Motor shaft diameter [mm]

1-stage

up to 60 [4] (O) [5]
clamping hub diameter





Non-tolerated dimensions are nominal dimensions

[1] Check motor shaft fit

[2] Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

[3] The dimensions depend on the motor

[4] Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

[5] Standard clamping hub diameter

			2-stage									
Ratio	*i*		**20**	**21**	**25**	**31**	**35**	**50**	**61**	**70**	**91**	**100**
Max. torque [a) b)]	T_{2a}	*Nm*	5446	5718	6808	6354	6808	4975	5280	5500	4800	4800
		in.lb	48202	50612	60252	56239	60252	44033	46732	48679	42484	42484
Max. acceleration torque [b)] (max. 1000 cycles per hour)	T_{2B}	*Nm*	5446	5718	6808	6324	6808	4975	5280	5500	4800	4800
		in.lb	48202	50612	60252	56239	60252	44033	46732	48679	42484	42484
Nominal torque (at n_{1N})	T_{2N}	*Nm*	3026	3270	3729	4086	3828	3697	4224	4400	3840	3840
		in.lb	26785	28944	33002	36160	33878	32720	37386	38944	33987	33987
Emergency stop torque [a) b)] (permitted 1000 times during the service life of the gearbox)	T_{2Not}	*Nm*	15000	13928	15000	10854	15000	15000	10678	15000	15000	15000
		in.lb	132762	123274	132762	96063	132762	132762	94513	132762	132762	132762
Permitted average input speed (at T_{2N} and 20 °C ambient temperature) [d)]	n_{1N}	*rpm*	1500	1500	1500	1500	1500	2000	2100	2100	2200	2200
Max. input speed [b)]	n_{1Max}	*rpm*	4375	4375	4375	4375	4375	4375	4375	4375	4375	4375
Mean no load running torque [b)] (at n_1 = 2000 rpm and 20 °C gearbox temperature)	T_{012}	*Nm*	10	9.6	9.2	7.0	7.0	5.8	3.4	4.5	3.5	3.6
		in.lb	92	85	81	62	62	51	30	40	31	32
Max. backlash	j_t	*arcmin*	Standard ≤ 3 / Reduced ≤ 2									
Torsional rigidity [b)]	C_{t21}	*Nm/arcmin*	1400	1200	1450	1200	1400	1300	1100	1250	950	1050
		in.lb/arcmin	12391	10621	12834	10621	12391	11506	9736	11064	8408	9293
Tilting rigidity	C_{2K}	*Nm/arcmin*	9480									
		in.lb/arcmin	83906									
Max. axial force [c)]	F_{2AMax}	*N*	50000									
		lb_f	11250									
Max. tilting moment	M_{2KMax}	*Nm*	8800									
		in.lb	77887									
Efficiency at full load	η	%	94									
Service life [f)]	L_h	*h*	> 20000									
Weight (incl. standard adapter plate)	*m*	*kg*	77.5									
		lb_m	171.3									
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex®)	L_{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									
Direction of rotation			In- and output same direction									
Protection class			IP 65									
Metal bellows coupling (recommended product type – validate sizing with cymex®)			–									
Bore diameter of coupling on the application side		*mm*	–									
Mass moment of inertia (relates to the drive) **M** **48** Clamping hub diameter [mm] Optimized mass inertia version available on request	J_1	*kgcm²*	24.8	35.9	40.2	33.7	27.4	27.4	25.4	31.0	25.0	25.2
		10^{-3} *in.lb.s²*	21.9	31.8	35.6	29.8	24.2	24.2	22.5	27.4	22.1	22.3

Please use our sizing software cymex® for a detailed sizing – **www.wittenstein-cymex.com**

[a)] At max. 10 % M_{2KMax}
[b)] Valid for standard clamping hub diameter
[c)] Refers to center of the output shaft or flange
[d)] Please reduce input speed at higher ambient temperatures
[f)] Please contact us to discuss application-specific service lifetimes

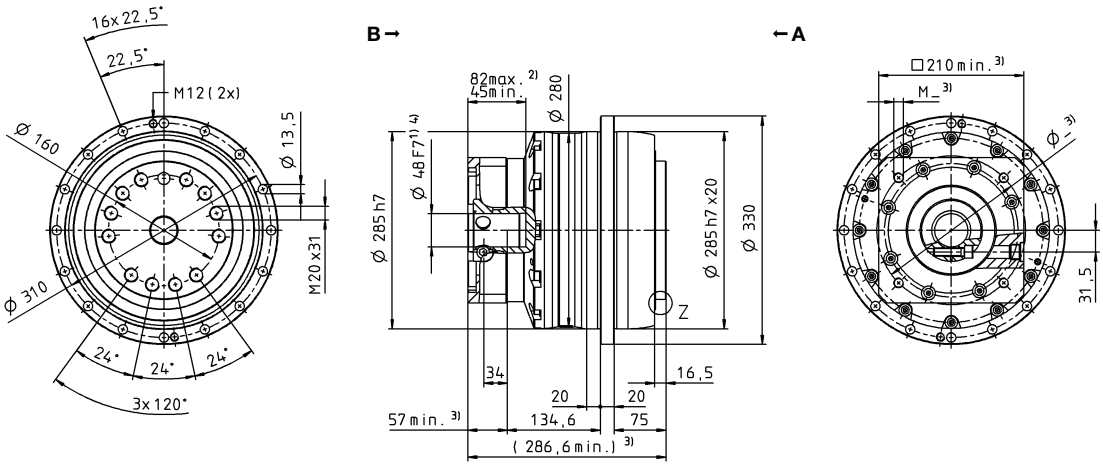
View A

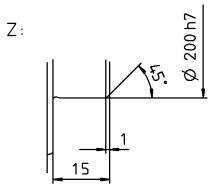
View B

Motor shaft diameter [mm]

2-stage

up to 48 [4] (M) [5]
clamping hub
diameter





Non-tolerated dimensions are nominal dimensions

[1] Check motor shaft fit

[2] Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

[3] The dimensions depend on the motor

[4] Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

[5] Standard clamping hub diameter

				2-stage				3-stage			
Ratio			*i*	**22**	**27.5**	**38.5**	**55**	**88**	**110**	**154**	**220**
Max. torque [a) b)]			*Nm*	315	315	315	315	315	315	315	315
	T_{2a}		*in.lb*	2788	2788	2788	2788	2788	2788	2788	2788
Max. acceleration torque [b)] (max. 1000 cycles per hour)	T_{2B}		*Nm*	230	230	230	230	230	230	230	230
			in.lb	2036	2036	2036	2036	2036	2036	2036	2036
Nominal torque (at n_{1N})	T_{2N}		*Nm*	140	137	139	147	184	184	181	184
			in.lb	1242	1213	1230	1303	1629	1629	1599	1629
Emergency stop torque [a) b)] (permitted 1000 times during the service life of the gearbox)	T_{2Not}		*Nm*	525	525	525	525	525	525	525	525
			in.lb	4647	4647	4647	4647	4647	4647	4647	4647
Permitted average input speed (at T_{2N} and 20 °C ambient temperature) [d)]	n_{1N}		*rpm*	4000	4000	4000	4000	4500	4500	4500	4500
Max. input speed [b)]	n_{1Max}		*rpm*	8500	8500	8500	8500	8500	8500	8500	8500
Mean no load running torque [b)] (at n_1 = 3000 rpm and 20 °C gearbox temperature)	T_{012}		*Nm*	0.52	0.47	0.41	0.38	0.28	0.26	0.22	0.18
			in.lb	4.6	4.2	4.0	3.4	2.5	2.3	1.9	1.6
Max. backlash	j_t		*arcmin*	≤ 1							
Torsional rigidity [b)]	C_{t21}		*Nm/arcmin*	43	43	43	42	42	42	42	42
			in.lb/arcmin	381	381	381	372	372	372	372	372
Tilting rigidity	C_{2K}		*Nm/arcmin*	225							
			in.lb/arcmin	1991							
Max. axial force [c)]	F_{2AMax}		*N*	2795							
			lb_f	629							
Max. tilting moment	M_{2KMax}		*Nm*	400							
			in.lb	3540							
Efficiency at full load	η		%	94							
Service life [f)]	L_h		*h*	> 20000							
Weight (incl. standard adapter plate)	*m*		*kg*	3.2				3.6			
			lb_m	7.1				8.0			
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex®)	L_{PA}		*dB(A)*	≤ 56							
Max. permitted housing temperature			°C	+90							
			F	194							
Ambient temperature			°C	–15 to +40							
			F	5 to 104							
Lubrication				Lubricated for life							
Direction of rotation				In- and output same direction							
Protection class				IP 65							
Metal bellows coupling (recommended product type – validate sizing with cymex®)				BCT-00150AAX-050.00							
Bore diameter of coupling on the application side			*mm*	X = 016.000 - 038.000							
Mass moment of inertia (relates to the drive)	C	14	J_1	*kgcm²*	0.21	0.18	0.16	0.14	0.16	0.15	0.14	0.13
				10^{-3} in.lb.s²	0.19	0.16	0.14	0.12	0.14	0.13	0.12	0.12
Clamping hub diameter [mm]	E	19	J_1	*kgcm²*	0.52	0.50	0.47	0.46	-	-	-	-
Optimized mass inertia version available on request				*10^{-3} in.lb.s²*	0.46	0.44	0.42	0.41	-	-	-	-

Please use our sizing software cymex® for a detailed sizing – **www.wittenstein-cymex.com**

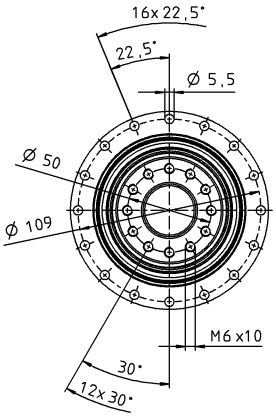
[a)] At max. 10 % M_{2KMax}
[b)] Valid for standard clamping hub diameter
[c)] Refers to center of the output shaft or flange
[d)] Please reduce input speed at higher ambient temperatures
[f)] Please contact us to discuss application-specific service lifetimes

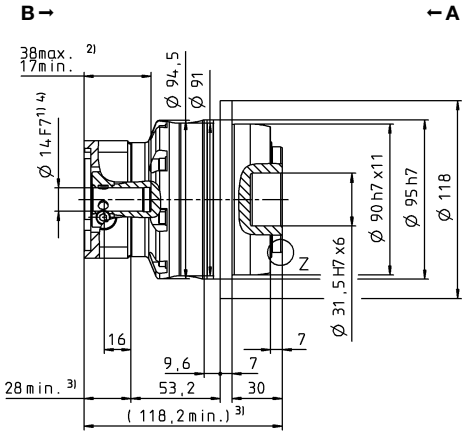
View A

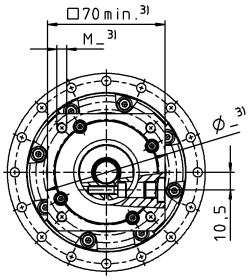
View B

2-stage

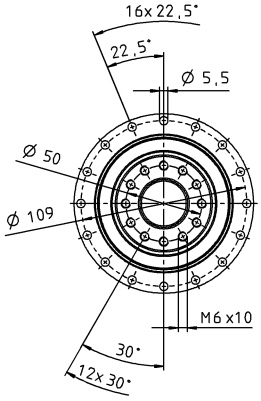
up to 14 [4] (C) [5] clamping hub diameter

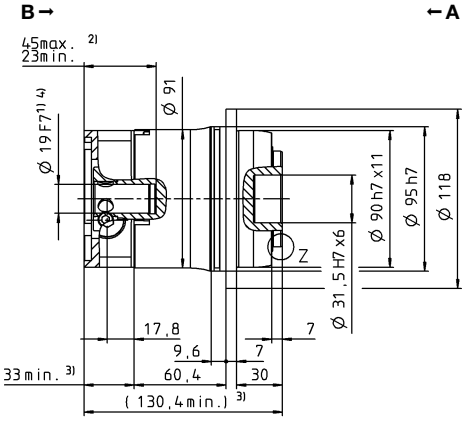


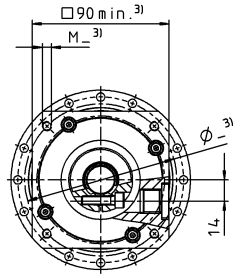




up to 19 [4] (E) clamping hub diameter



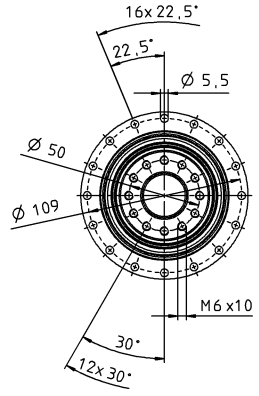


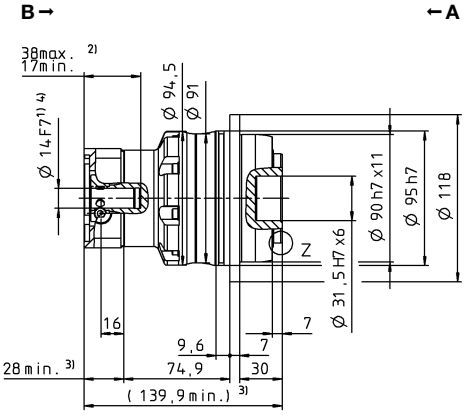


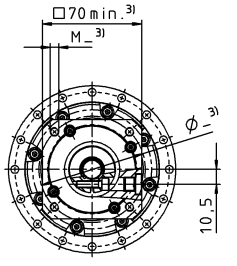
Motor shaft diameter [mm]

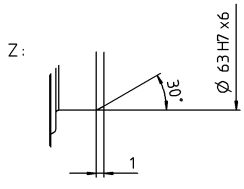
3-stage

up to 14 [4] (C) [5] clamping hub diameter









Non-tolerated dimensions are nominal dimensions

[1] Check motor shaft fit

[2] Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

[3] The dimensions depend on the motor

[4] Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

[5] Standard clamping hub diameter

				2-stage				3-stage				
Ratio			*i*	**22**	**27.5**	**38.5**	**55**	**66**	**88**	**110**	**154**	**220**
Max. torque [a) b)]			T_{2a}	*Nm*	583	583	583	583	525	525	525	525	525
				in.lb	5160	5160	5160	5160	4645	4645	4645	4645	4645
Max. acceleration torque [b)] (max. 1000 cycles per hour)			T_{2B}	*Nm*	530	530	530	530	480	480	480	480	480
				in.lb	4691	4691	4691	4691	4248	4248	4248	4248	4248
Nominal torque (at n_{1N})			T_{2N}	*Nm*	312	314	371	413	260	276	296	330	364
				in.lb	2762	2775	3286	3652	2304	2447	2617	2920	3222
Emergency stop torque [a) b)] (permitted 1000 times during the service life of the gearbox)			T_{2Not}	*Nm*	1200	1200	1200	1200	1200	1200	1200	1200	1200
				in.lb	10621	10621	10621	10621	10621	10621	10621	10621	10621
Permitted average input speed (at T_{2N} and 20 °C ambient temperature) [d)]			n_{1N}	*rpm*	3500	3500	3500	3500	4000	4000	4000	4000	4000
Max. input speed [b)]			n_{1Max}	*rpm*	8500	8500	8500	8500	8500	8500	8500	8500	8500
Mean no load running torque [b)] (at n_1 = 3000 rpm and 20 °C gearbox temperature)			T_{012}	*Nm*	1.0	0.87	0.78	0.70	0.62	0.52	0.44	0.35	0.27
				in.lb	9.2	7.7	6.9	6.2	5.5	4.6	3.9	3.1	2.4
Max. backlash			j_t	*arcmin*	≤ 1								
Torsional rigidity [b)]			C_{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			C_{2K}	*Nm/arcmin*	550								
				in.lb/arcmin	4868								
Max. axial force [c)]			F_{2AMax}	*N*	4800								
				lb_f	1080								
Max. tilting moment			M_{2KMax}	*Nm*	550								
				in.lb	4868								
Efficiency at full load			η	%	94								
Service life [f)]			L_h	*h*	> 20000								
Weight (incl. standard adapter plate)			*m*	*kg*	5.6				6.1				
				lb_m	12.4				13.5				
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex®)			L_{PA}	*dB(A)*	≤ 58				≤ 56				
Max. permitted housing temperature				°C	+90								
				F	194								
Ambient temperature				°C	–15 to +40								
				F	5 to 104								
Lubrication					Lubricated for life								
Direction of rotation					In- and output same direction								
Protection class					IP 65								
Metal bellows coupling (recommended product type – validate sizing with cymex®)					BCT-00300AAX-063.00								
Bore diameter of coupling on the application side				*mm*	X = 030.000 - 056.000								
Mass moment of inertia (relates to the drive)	E	19	J_1	$kgcm^2$	0.87	0.7	0.6	0.55	0.63	0.56	0.53	0.51	0.50
				10^{-3} *in.lb.s²*	0.77	0.62	0.53	0.49	0.56	0.50	0.47	0.45	0.44
Clamping hub diameter [mm]													
Optimized mass inertia version available on request	G	24	J_1	$kgcm^2$	2.39	2.22	2.12	2.07	-	-	-	-	-
				10^{-3} *in.lb.s²*	2.12	1.96	1.88	1.83	-	-	-	-	-

Please use our sizing software cymex® for a detailed sizing – **www.wittenstein-cymex.com**

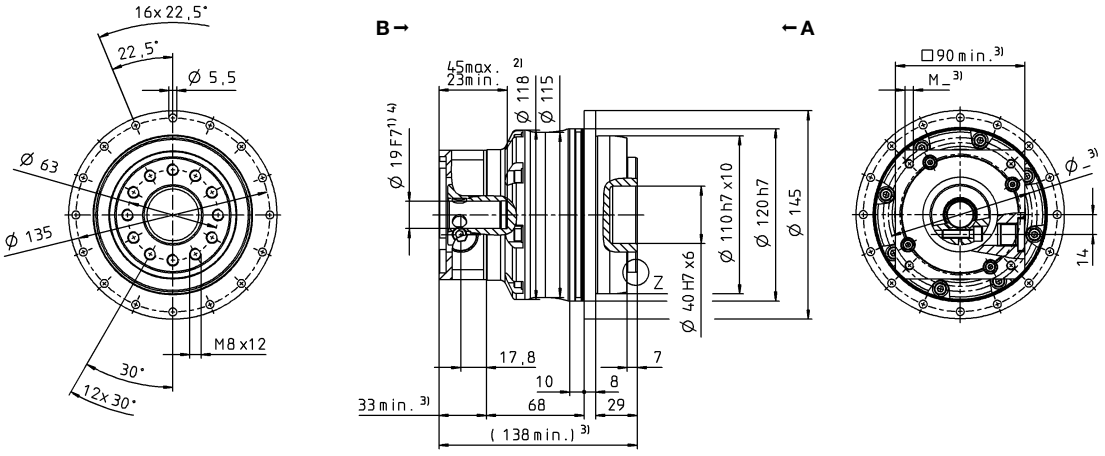
[a)] At max. 10 % M_{2KMax}
[b)] Valid for standard clamping hub diameter
[c)] Refers to center of the output shaft or flange
[d)] Please reduce input speed at higher ambient temperatures
[f)] Please contact us to discuss application-specific service lifetimes

View A | View B

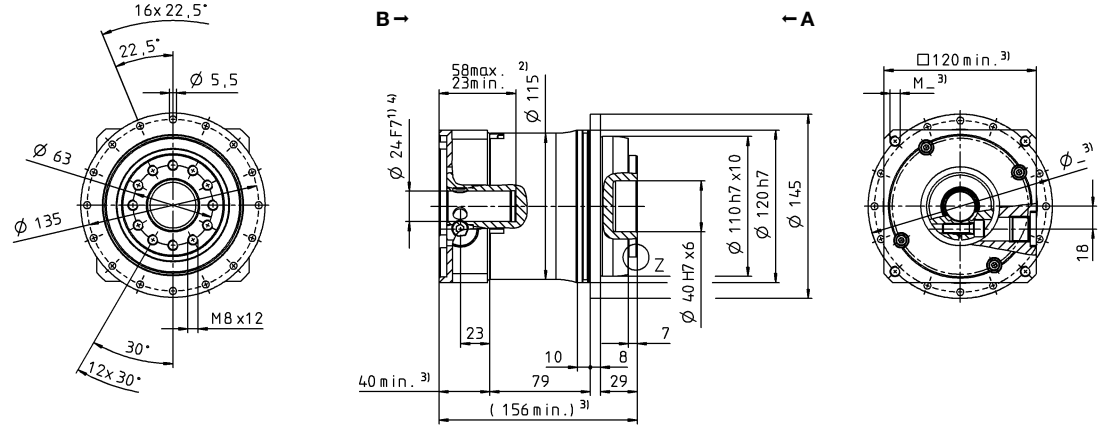
Motor shaft diameter [mm]

2-stage

up to 19 [4] (E) [5] clamping hub diameter

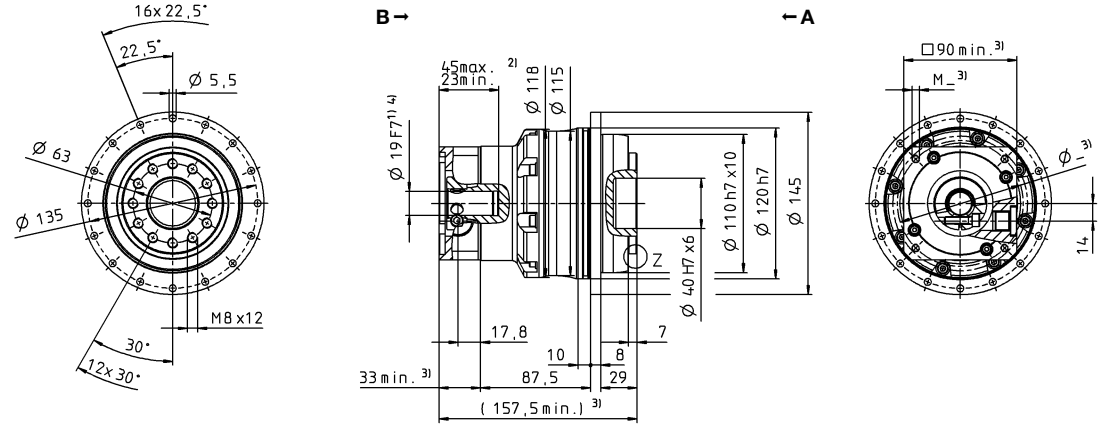


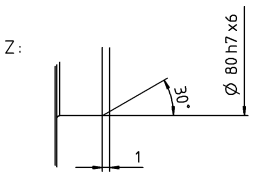
up to 24 [4] (G) clamping hub diameter



3-stage

up to 19 [4] (E) [5] clamping hub diameter





Non-tolerated dimensions are nominal dimensions

[1] Check motor shaft fit

[2] Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

[3] The dimensions depend on the motor

[4] Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

[5] Standard clamping hub diameter

				2-stage				3-stage				
Ratio			*i*	**22**	**27.5**	**38.5**	**55**	**66**	**88**	**110**	**154**	**220**
Max. torque [a) b)]			T_{2a}	*Nm*	1402	1402	1402	1402	1402	1402	1402	1402	1402
				in.lb	12406	12406	12406	12406	12406	12406	12406	12406	12406
Max. acceleration torque [b)] (max. 1000 cycles per hour)			T_{2B}	*Nm*	992	992	992	992	992	992	992	992	992
				in.lb	8780	8780	8780	8780	8780	8780	8780	8780	8780
Nominal torque (at n_{1N})			T_{2N}	*Nm*	523	566	638	717	723	794	794	794	794
				in.lb	4632	5005	5649	6348	6400	7024	7024	7024	7024
Emergency stop torque [a) b)] (permitted 1000 times during the service life of the gearbox)			T_{2Not}	*Nm*	2375	2375	2375	2375	2375	2375	2375	2375	2375
				in.lb	21021	21021	21021	21021	21021	21021	21021	21021	21021
Permitted average input speed (at T_{2N} and 20 °C ambient temperature) [d)]			n_{1N}	*rpm*	3000	3000	3000	3000	3500	3500	3500	3500	3500
Max. input speed [b)]			n_{1Max}	*rpm*	7500	7500	7500	7500	7500	7500	7500	7500	7500
Mean no load running torque [b)] (at n_1 = 3000 rpm and 20 °C gearbox temperature)			T_{012}	*Nm*	2.7	2.4	2.1	1.7	1.8	1.3	1.1	0.9	0.72
				in.lb	23.9	21.2	18.9	15.0	15.9	11.5	10.1	8.0	6.4
Max. backlash			j_t	*arcmin*	≤ 1								
Torsional rigidity [b)]			C_{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			C_{2K}	*Nm/arcmin*	560								
				in.lb/arcmin	4956								
Max. axial force [c)]			F_{2AMax}	*N*	6130								
				lb_f	1379								
Max. tilting moment			M_{2KMax}	*Nm*	1335								
				in.lb	11816								
Efficiency at full load			η	%	94				92				
Service life [f)]			L_h	*h*	> 20000								
Weight (incl. standard adapter plate)			*m*	*kg*	12.5				13.4				
				lb_m	27.6				29.6				
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex®)			L_{PA}	*dB(A)*	≤ 60				≤ 57				
Max. permitted housing temperature				°C	+90								
				F	194								
Ambient temperature				°C	–15 to +40								
				F	5 to 104								
Lubrication					Lubricated for life								
Direction of rotation					In- and output same direction								
Protection class					IP 65								
Metal bellows coupling (recommended product type – validate sizing with cymex®)					BCT-00300AAX-080.00								
Bore diameter of coupling on the application side				*mm*	X = 045.000 - 056.000								
Mass moment of inertia (relates to the drive)	G	24	J_1	$kgcm^2$	3.80	3.33	3.00	2.80	2.60	2.40	2.20	2.10	2.10
Clamping hub diameter [mm]				10^{-3} *in.lb.s²*	3.36	2.95	2.66	2.48	2.30	2.10	1.90	1.90	1.90
Optimized mass inertia version available on request	K	38	J_1	$kgcm^2$	10.7	10.3	9.90	9.70	-	-	-	-	-
				10^{-3} *in.lb.s²*	9.47	9.12	8.76	8.58	-	-	-	-	-

Please use our sizing software cymex® for a detailed sizing – **www.wittenstein-cymex.com**

[a)] At max. 10 % M_{2KMax}
[b)] Valid for standard clamping hub diameter
[c)] Refers to center of the output shaft or flange
[d)] Please reduce input speed at higher ambient temperatures
[f)] Please contact us to discuss application-specific service lifetimes

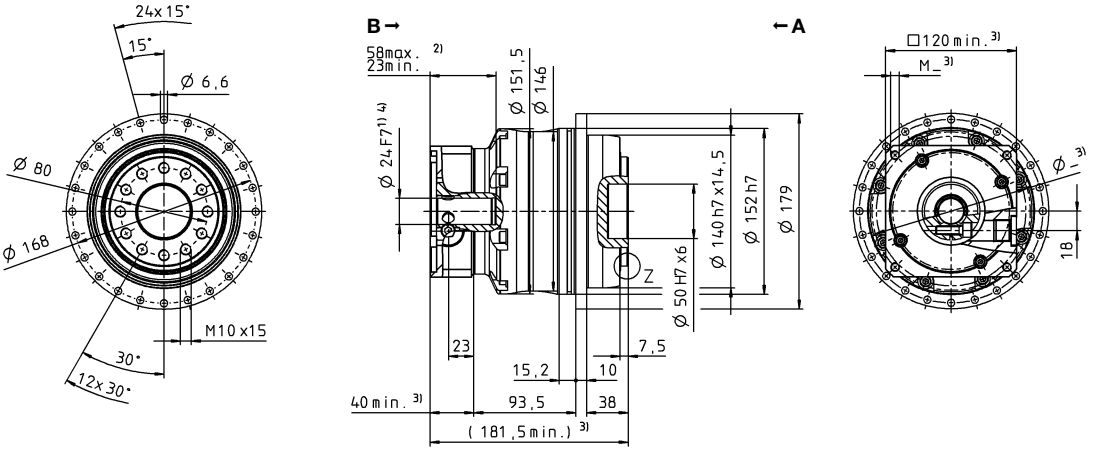
View A

View B

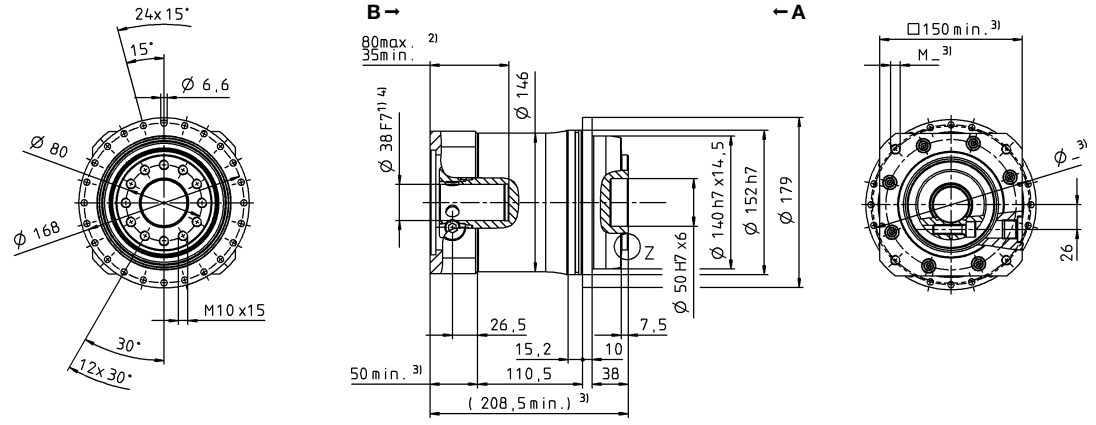
Motor shaft diameter [mm]

2-stage

up to 24 [4] (G) [5] clamping hub diameter

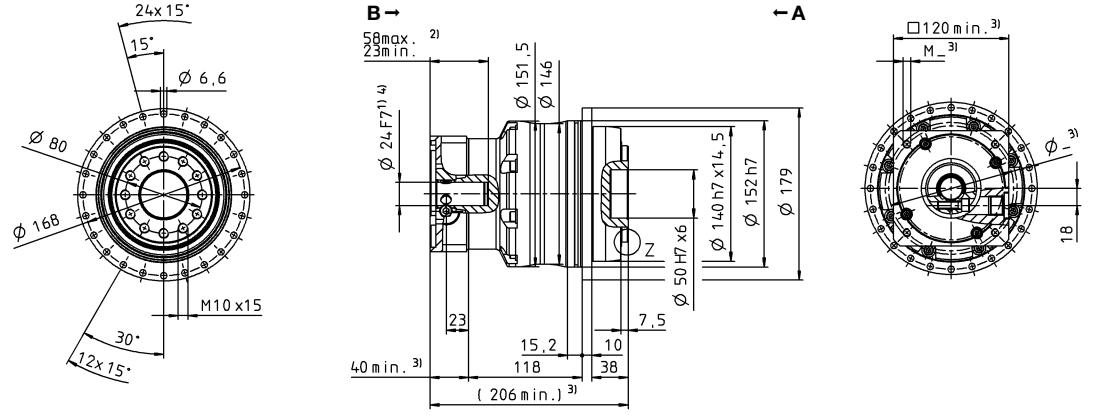


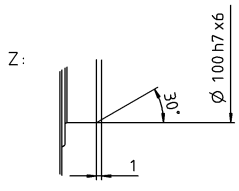
up to 38 [4] (K) clamping hub diameter



3-stage

up to 24 [4] (G) [5] clamping hub diameter





Non-tolerated dimensions are nominal dimensions

[1] Check motor shaft fit

[2] Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

[3] The dimensions depend on the motor

[4] Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

[5] Standard clamping hub diameter

				2-stage				3-stage				
Ratio			*i*	**22**	**27.5**	**38.5**	**55**	**66**	**88**	**110**	**154**	**220**
Max. torque [a) b)]			T_{2a}	*Nm*	3822	3822	3822	3200	3023	3023	3023	3023	3023
				in.lb	33826	33826	33826	28323	26757	26757	26757	26757	26757
Max. acceleration torque [b)] (max. 1000 cycles per hour)			T_{2B}	*Nm*	3100	3100	3100	2400	2600	2600	2600	2600	2600
				in.lb	27437	27437	27437	21242	23012	23012	23012	23012	23012
Nominal torque (at n_{1N})			T_{2N}	*Nm*	1546	1662	2149	1827	1649	1797	1924	2080	2080
				in.lb	13687	14708	19022	16169	14593	15909	17033	18410	18410
Emergency stop torque [a) b)] (permitted 1000 times during the service life of the gearbox)			T_{2Not}	*Nm*	6500	6500	6500	6500	6500	6500	6500	6500	6500
				in.lb	57530	57530	57530	57530	57530	57530	57530	57530	57530
Permitted average input speed (at T_{2N} and 20 °C ambient temperature) [d)]			n_{1N}	*rpm*	2500	2500	2500	2500	3000	3000	3000	3000	3000
Max. input speed [b)]			n_{1Max}	*rpm*	6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque [b)] (at n_1 = 3000 rpm and 20 °C gearbox temperature)			T_{012}	*Nm*	6.2	5.5	4.8	4.3	3.8	3.0	2.6	1.8	1.6
				in.lb	55.0	48.7	42.5	38.1	33.6	26.9	23	15.6	14.2
Max. backlash			j_t	*arcmin*	≤ 1								
Torsional rigidity [b)]			C_{t21}	*Nm/arcmin*	730	725	715	670	650	650	650	650	650
				in.lb/arcmin	6461	6417	6328	5930	5753	5753	5753	5753	5753
Tilting rigidity			C_{2K}	*Nm/arcmin*	1452								
				in.lb/arcmin	12851								
Max. axial force [c)]			F_{2AMax}	*N*	10050								
				lb_f	2261								
Max. tilting moment			M_{2KMax}	*Nm*	3280								
				in.lb	29031								
Efficiency at full load			η	%	94								
Service life [f)]			L_h	*h*	> 20000								
Weight (incl. standard adapter plate)			*m*	*kg*	33.1				35.4				
				lb_m	73.2				78.2				
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex®)			L_{PA}	*dB(A)*	≤ 61				≤ 59				
Max. permitted housing temperature				°C	+90								
				F	194								
Ambient temperature				°C	–15 to +40								
				F	5 to 104								
Lubrication					Lubricated for life								
Direction of rotation					In- and output same direction								
Protection class					IP 65								
Metal bellows coupling (recommended product type – validate sizing with cymex®)					BCT-01500AAX-125.00								
Bore diameter of coupling on the application side				*mm*	X = 055.000 - 070.000								
Mass moment of inertia (relates to the drive)	K	38	J_1	$kgcm^2$	16.6	15.2	13.9	13.1	13.8	10.2	9.80	9.50	9.20
Clamping hub diameter [mm]				10^{-3} *in.lb.s²*	14.7	13.5	12.3	11.6	12.2	9.00	8.70	8.40	8.10
Optimized mass inertia version available on request	M	48	J_1	$kgcm^2$	31.4	29.9	28.7	28.0	-	-	-	-	-
				10^{-3} *in.lb.s²*	27.8	26.5	25.4	24.8	-	-	-	-	-

Please use our sizing software cymex® for a detailed sizing – **www.wittenstein-cymex.com**

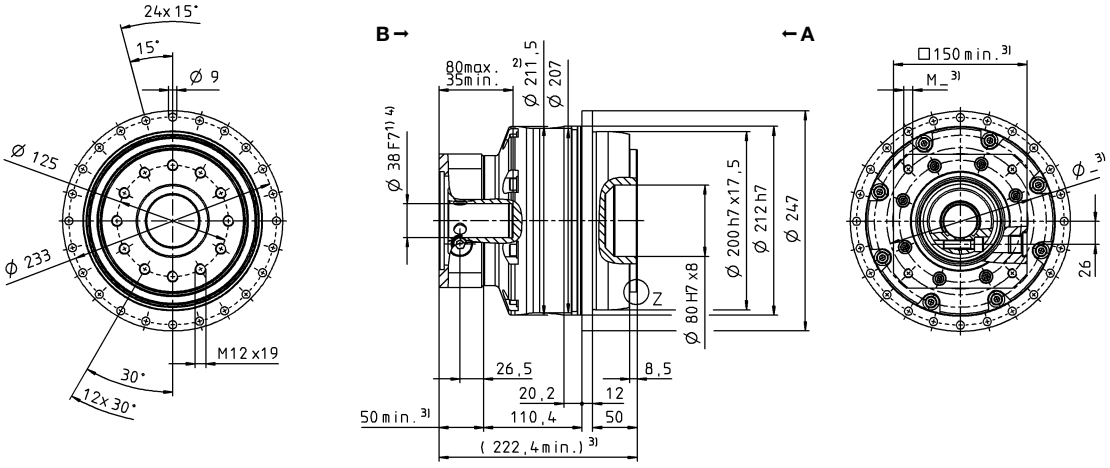
[a)] At max. 10 % M_{2KMax}
[b)] Valid for standard clamping hub diameter
[c)] Refers to center of the output shaft or flange
[d)] Please reduce input speed at higher ambient temperatures
[f)] Please contact us to discuss application-specific service lifetimes

View A

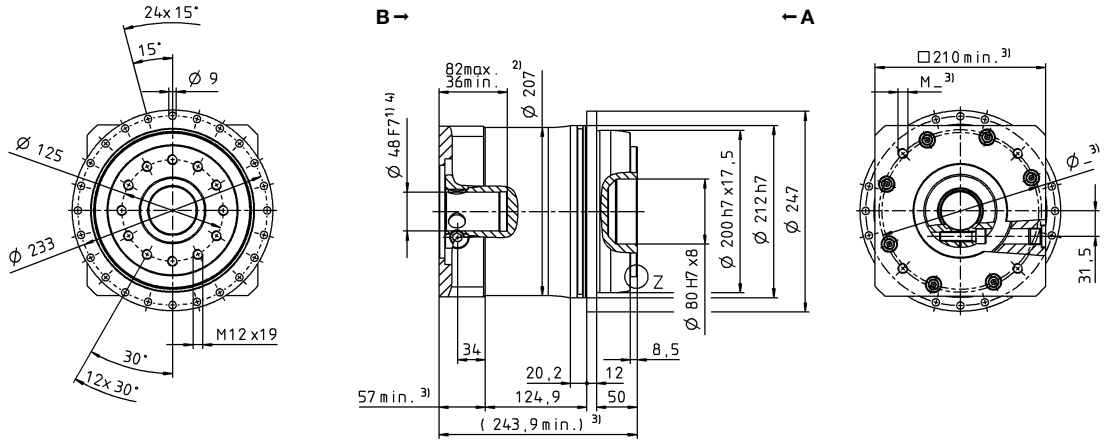
View B

2-stage

up to 38 [4] (K) [5] clamping hub diameter

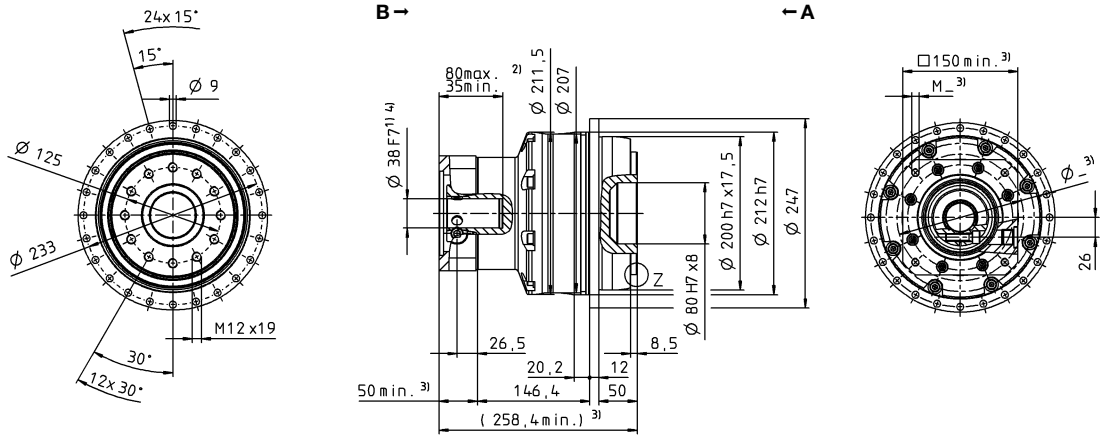


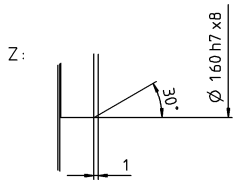
up to 48 [4] (M) clamping hub diameter



3-stage

up to 38 [4] (K) [5] clamping hub diameter





Motor shaft diameter [mm]

Non-tolerated dimensions are nominal dimensions

[1] Check motor shaft fit

[2] Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

[3] The dimensions depend on the motor

[4] Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

[5] Standard clamping hub diameter

				1-stage	2-stage				3-stage				
Ratio			*i*		**5.5**	**22**	**27.5**	**38.5**	**55**	**66**	**88**	**110**	**154**	**220**
Max. torque [a) b)]			T_{2a}	*Nm*	7360	7535	7535	7535	5473	6987	6987	6987	6987	6987
				in.lb	65142	66691	66691	66691	48436	61838	61838	61838	61838	61838
Max. acceleration torque [b)] (max. 1000 cycles per hour)			T_{2B}	*Nm*	5520	6600	6600	6600	4680	6600	6600	6600	6600	6600
				in.lb	48856	58415	58415	58415	41422	58415	58415	58415	58415	58415
Nominal torque (at n_{1N})			T_{2N}	*Nm*	2829	3566	3788	3884	3744	3216	3506	3750	4148	4617
				in.lb	25035	31563	33530	34378	33137	28465	31035	33186	36711	40863
Emergency stop torque [a) b)] (permitted 1000 times during the service life of the gearbox)			T_{2Not}	*Nm*	10938	15333	15333	15296	15333	15333	15333	15333	15333	15333
				in.lb	96806	135709	135709	135377	135709	135709	135709	135709	135709	135709
Permitted average input speed (at T_{2N} and 20 °C ambient temperature) [d)]			n_{1N}	*rpm*	1000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Max. input speed [b)]			n_{1Max}	*rpm*	3125	4375	4375	4375	4375	4375	4375	4375	4375	4375
Mean no load running torque [b)] (at n_1 = 2000 rpm and 20 °C gearbox temperature)			T_{012}	*Nm*	19	8.8	7.8	6.8	5.9	5.2	3.6	3.1	2.1	1.5
				in.lb	170	78	69	60	52	46	32	27	19	13
Max. backlash			j_t	*arcmin*	Standard ≤ 2 / Reduced ≤ 1	Standard ≤ 3 / Reduced ≤ 1.5								
Torsional rigidity [b)]			C_{t21}	*Nm/arcmin*	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200
				in.lb/arcmin	10621	10621	10621	10621	10621	10621	10621	10621	10621	10621
Tilting rigidity			C_{2K}	*Nm/arcmin*	5560									
				in.lb/arcmin	49210									
Max. axial force [c)]			F_{2AMax}	*N*	33000									
				lb_f	7425									
Max. tilting moment			M_{2KMax}	*Nm*	3900	6500								
				in.lb	34518	57530								
Efficiency at full load			η	%	95	93								
Service life [f)]			L_h	*h*	> 20000									
Weight (incl. standard adapter plate)			*m*	*kg*	55	64				67				
				lb_m	122	141				148				
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex®)			L_{PA}	*dB(A)*	≤ 65	≤ 62				≤ 59				
Max. permitted housing temperature				°C	+90									
				F	194									
Ambient temperature				°C	–15 to +40									
				F	5 to 104									
Lubrication					Lubricated for life									
Direction of rotation					In- and output same direction									
Protection class					IP 65									
Metal bellows coupling (recommended product type – validate sizing with cymex®)					BCT-04000AAX-145.00									
Bore diameter of coupling on the application side				*mm*	X = 070.000 - 100.000									
Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request	K	38	J_1	*kgcm²*	-	-	-	-	-	16.6	12.9	11.6	10.3	9.50
				10^{-3} *in.lb.s²*	-	-	-	-	-	14.7	11.4	10.3	9.10	8.40
	M	48	J_1	*kgcm²*	-	30.8	27.6	24.9	23.0	-	-	-	-	-
				10^{-3} *in.lb.s²*	-	27.3	24.4	22.0	20.4	-	-	-	-	-
	N	55	J_1	*kgcm²*	129	-	-	-	-	-	-	-	-	-
				10^{-3} *in.lb.s²*	114	-	-	-	-	-	-	-	-	-

Please use our sizing software cymex® for a detailed sizing – **www.wittenstein-cymex.com**

[a)] At max. 10 % M_{2KMax}
[b)] Valid for standard clamping hub diameter
[c)] Refers to center of the output shaft or flange
[d)] Please reduce input speed at higher ambient temperatures
[f)] Please contact us to discuss application-specific service lifetimes

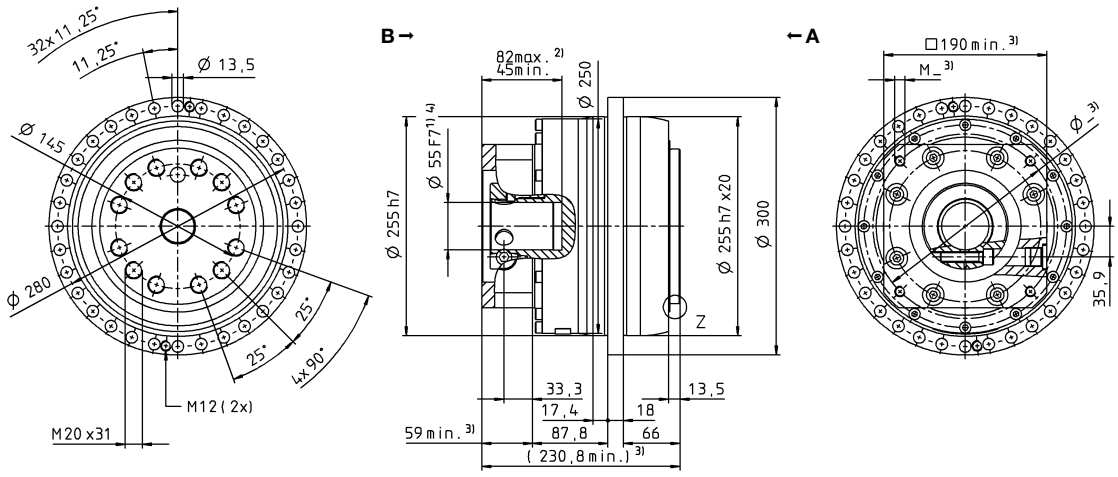
View A

View B

Motor shaft diameter [mm]

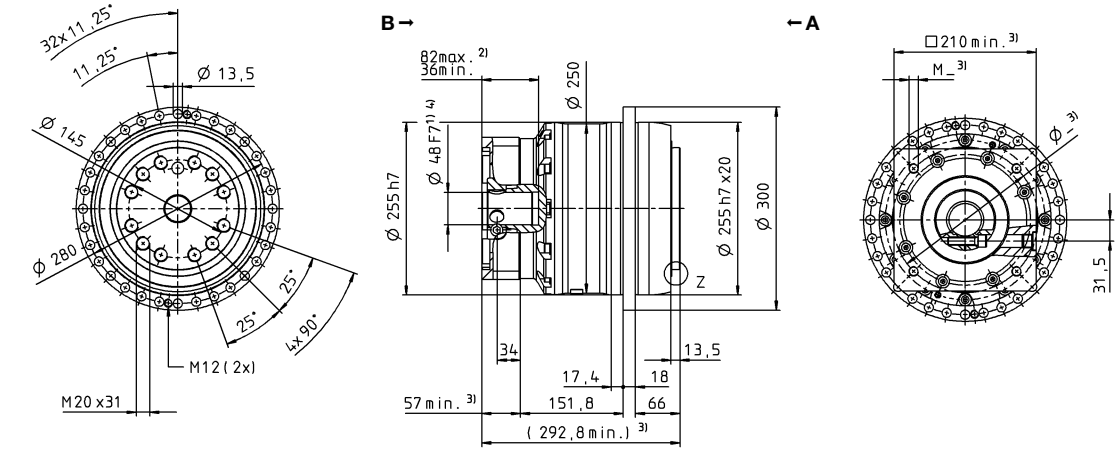
1-stage

up to 55 [4] (N) [5] clamping hub diameter



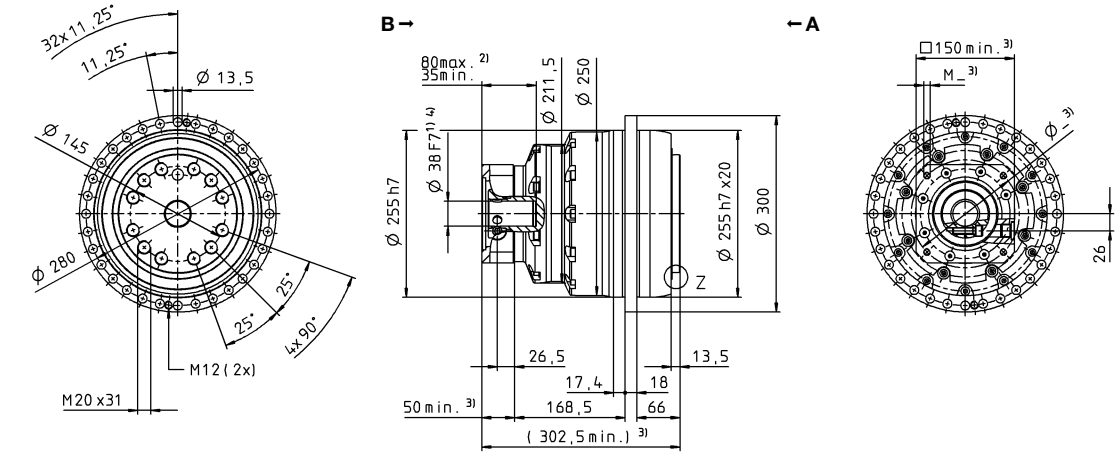
2-stage

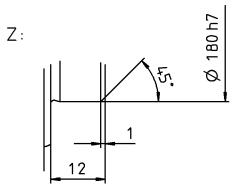
up to 48 [4] (M) [5] clamping hub diameter



3-stage

up to 38 [4] (K) [5] clamping hub diameter





Non-tolerated dimensions are nominal dimensions

[1] Check motor shaft fit

[2] Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

[3] The dimensions depend on the motor

[4] Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

[5] Standard clamping hub diameter

					1-stage	2-stage				3-stage				
Ratio			i		**5.5**	**22**	**27.5**	**38.5**	**55**	**66**	**88**	**110**	**154**	**220**
Max. torque [a) b)]			T_{2a}	*Nm*	10450	10450	10450	10450	10450	10450	10450	10450	10450	10450
				in.lb	92491	92491	92491	92491	92491	92491	92491	92491	92491	92491
Max. acceleration torque [b)] (max. 1000 cycles per hour)			T_{2B}	*Nm*	9600	10450	10450	10450	8640	10450	10450	10450	10450	10450
				in.lb	84968	92491	92491	92491	76471	92491	92491	92491	92491	92491
Nominal torque (at n_{1N})			T_{2N}	*Nm*	4313	5068	4980	5057	5325	4941	7464	7396	7546	7907
				in.lb	38174	44858	44075	44759	47129	43731	66060	65462	66792	69986
Emergency stop torque [a) b)] (permitted 1000 times during the service life of the gearbox)			T_{2Not}	*Nm*	18750	25000	25000	25000	25000	25000	25000	25000	25000	25000
				in.lb	165953	221270	221270	221270	221270	221270	221270	221270	221270	221270
Permitted average input speed (at T_{2N} and 20 °C ambient temperature) [d)]			n_{1N}	*rpm*	900	1500	1500	1500	1500	1500	1500	1500	1500	1500
Max. input speed [b)]			n_{1Max}	*rpm*	3125	4375	4375	4375	4375	4375	4375	4375	4375	4375
Mean no load running torque [b)] (at n_1 = 2000 rpm and 20 °C gearbox temperature)			T_{012}	*Nm*	27	11	10	8.9	7.8	6.8	5.0	4.7	3.6	3.0
				in.lb	241	100	89	79	69	60	45	42	32	27
Max. backlash			j_t	*arcmin*	Standard ≤ 2 / Reduced ≤ 1	Standard ≤ 3 / Reduced ≤ 1.5								
Torsional rigidity [b)]			C_{t21}	*Nm/arcmin*	2000	2000	2000	1950	1900	1800	1800	1800	1800	1800
				in.lb/arcmin	17702	17702	17702	17259	16817	15931	15931	15931	15931	15931
Tilting rigidity			C_{2K}	*Nm/arcmin*	9480									
				in.lb/arcmin	83906									
Max. axial force [c)]			F_{2AMax}	*N*	50000									
				lb_f	11250									
Max. tilting moment			M_{2KMax}	*Nm*	6600	9500								
				in.lb	58415	84083								
Efficiency at full load			η	%	95	93								
Service life [f)]			L_h	*h*	> 20000									
Weight (incl. standard adapter plate)			*m*	*kg*	80	80				89				
				lb_m	177	177				197				
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex®)			L_{PA}	*dB(A)*	≤ 70	≤ 63				≤ 60				
Max. permitted housing temperature				°C	+90									
				F	194									
Ambient temperature				°C	–15 to +40									
				F	5 to 104									
Lubrication					Lubricated for life									
Direction of rotation					In- and output same direction									
Protection class					IP 65									
Metal bellows coupling (recommended product type – validate sizing with cymex®)					BCT-10000AAX-166.00									
Bore diameter of coupling on the application side				*mm*	X = 080.000 - 180.000									
Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request	K	38	J_1	*kgcm²*	-	-	-	-	-	17.9	13.5	11.9	10.5	9.70
				10^{-3} *in.lb.s²*	-	-	-	-	-	15.8	11.9	10.5	9.30	8.60
	M	48	J_1	*kgcm²*	-	43.8	36.9	30.5	27.0	32.7	28.3	26.7	25.2	24.4
				10^{-3} *in.lb.s²*	-	38.8	32.7	27.0	23.9	28.9	25.0	23.6	22.3	21.6
	O	60	J_1	*kgcm²*	175	-	-	-	-	-	-	-	-	-
				10^{-3} *in.lb.s²*	155	-	-	-	-	-	-	-	-	-

Please use our sizing software cymex® for a detailed sizing – **www.wittenstein-cymex.com**

[a)] At max. 10 % M_{2KMax}
[b)] Valid for standard clamping hub diameter
[c)] Refers to center of the output shaft or flange
[d)] Please reduce input speed at higher ambient temperatures
[f)] Please contact us to discuss application-specific service lifetimes

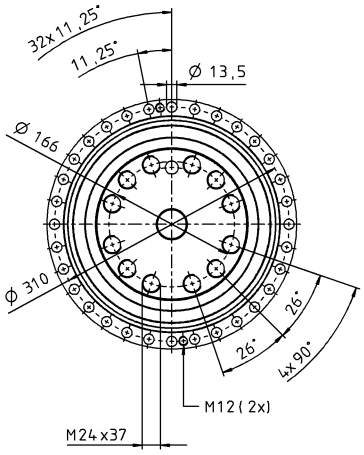
View A

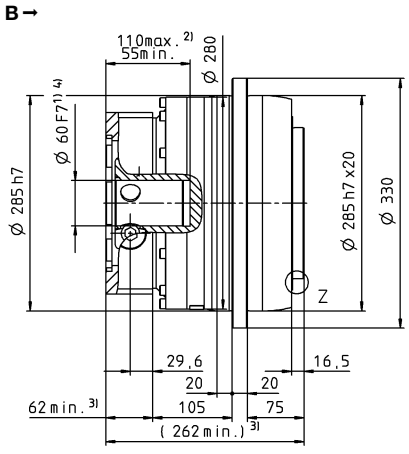
View B

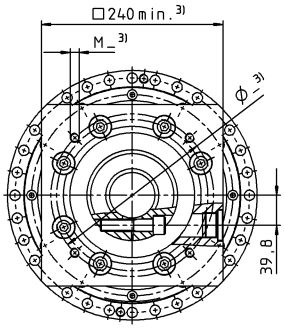
Motor shaft diameter [mm]

1-stage

up to 60 [4] (O) [5] clamping hub diameter

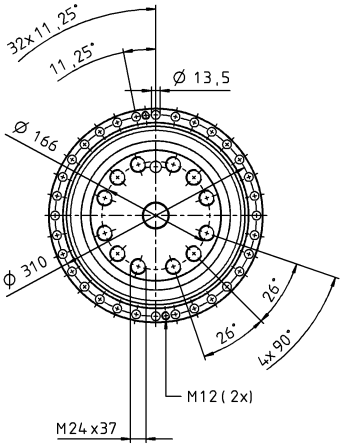


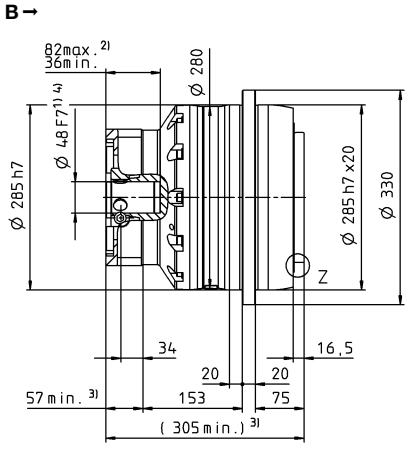


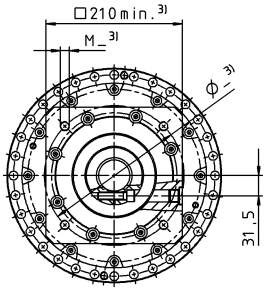


2-stage

up to 48 [4] (M) [5] clamping hub diameter

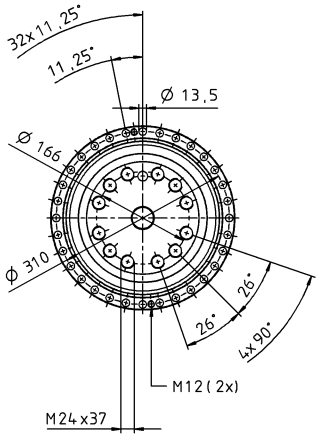


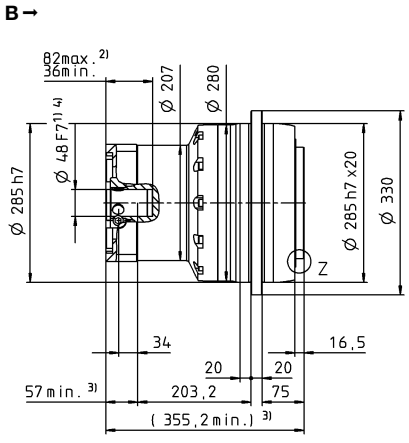


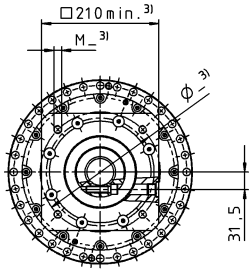


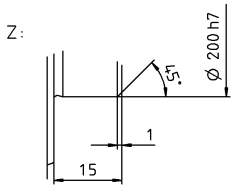
3-stage

up to 38/48 [4] (K/M [5]) clamping hub diameter









Non-tolerated dimensions are nominal dimensions

[1] Check motor shaft fit

[2] Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

[3] The dimensions depend on the motor

[4] Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

[5] Standard clamping hub diameter

				2-stage		3-stage						
Ratio			*i*	**22**	**30.25**	**66**	**88**	**110**	**121**	**154**	**220**	**302.5**
Max. torque [a) b)]			T_{2a}	*Nm*	22000	22000	22000	22000	22000	22000	22000	15600	21500
				in.lb	194718	194718	194718	194718	194718	194718	194718	138072	190292
Max. acceleration torque [b)] (max. 1000 cycles per hour)			T_{2B}	*Nm*	22000	22000	22000	22000	22000	22000	22000	15600	21500
				in.lb	194718	194718	194718	194718	194718	194718	194718	138072	190292
Nominal torque (at n_{1N})			T_{2N}	*Nm*	13500	13500	13500	13500	13500	13500	13500	10000	13500
				in.lb	119486	119486	119486	119486	119486	119486	119486	88508	119486
Emergency stop torque [a) b)] (permitted 1000 times during the service life of the gearbox)			T_{2Not}	*Nm*	44000	44000	44000	44000	44000	44000	44000	44000	44000
				in.lb	389435	389435	389435	389435	389435	389435	389435	389435	389435
Permitted average input speed (at T_{2N} and 20 °C ambient temperature) [d)]			n_{1N}	*rpm*	2000	2000	2500	2500	2500	2500	2500	2500	2500
Max. input speed [b)]			n_{1Max}	*rpm*	3000	3000	3500	3500	3500	3500	3500	3500	3500
Mean no load running torque [b) h)] (at n_1 = 2000 rpm and 20 °C gearbox temperature)			T_{012}	*Nm*	17	13	7.5	6.0	5.0	5.0	4.5	4.0	4.0
				in.lb	151	115	66	53	44	44	40	35	35
Max. backlash			j_t	*arcmin*	≤ 3								
Torsional rigidity [b)]			C_{t21}	*Nm/arcmin*	2900	2900	3000	3000	3000	3000	2950	2850	2850
				in.lb/arcmin	25667	25667	26552	26552	26552	26552	26110	25225	25225
Tilting rigidity			C_{2K}	*Nm/arcmin*	13000								
				in.lb/arcmin	115060								
Max. axial force [c)]			F_{2AMax}	*N*	100000								
				lb_f	22500								
Max. tilting moment			M_{2KMax}	*Nm*	31600								
				in.lb	279685								
Efficiency at full load			η	%	95								
Service life [f)]			L_h	*h*	> 20000								
Weight (incl. standard adapter plate)			*m*	*kg*	190		185						
				lb_m	420		409						
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex®)			L_{PA}	*dB(A)*	≤ 68		≤ 66						
Max. permitted housing temperature				°C	+90								
				F	194								
Ambient temperature				°C	0 to +40								
				F	32 to 104								
Lubrication					Lubricated for life								
Direction of rotation					In- and output same direction								
Protection class					IP 65								
Metal bellows coupling (recommended product type – validate sizing with cymex®)					–								
Bore diameter of coupling on the application side				*mm*	–								
Mass moment of inertia (relates to the drive)	M	48	J_1	*kgcm²*	-	-	52	37	35	35	28	26	25
Clamping hub diameter [mm]				*10⁻³ in.lb.s²*	-	-	46	33	31	31	25	23	22
Optimized mass inertia version available on request	N	55	J_1	*kgcm²*	101	74	-	-	-	-	-	-	-
				10⁻³ in.lb.s²	89	65	-	-	-	-	-	-	-

Please use our sizing software cymex® for a detailed sizing – **www.wittenstein-cymex.com**

[a)] At max. 10 % M_{2KMax}
[b)] Valid for standard clamping hub diameter
[c)] Refers to center of the output shaft or flange
[d)] Please reduce input speed at higher ambient temperatures
[f)] Please contact us to discuss application-specific service lifetimes
[h)] Depending on the mounting position. Please contact WITTENSTEIN alpha for details.

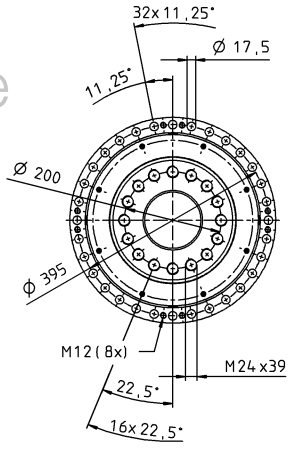
View A

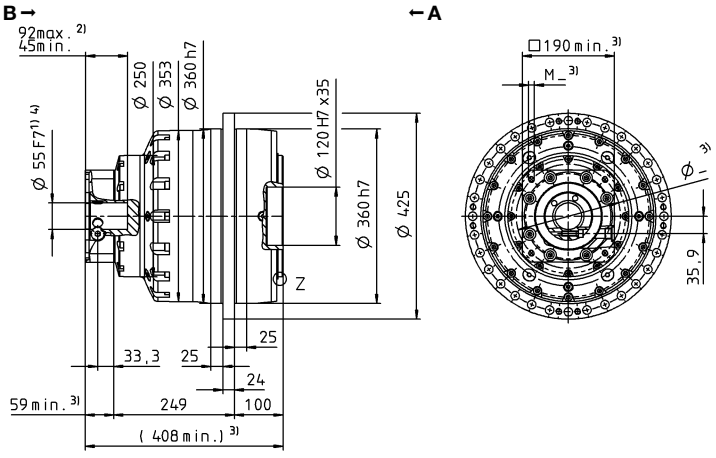
View B

Motor shaft diameter [mm]

2-stage

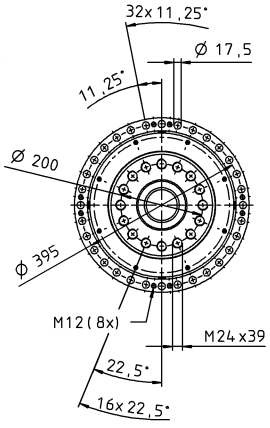
up to 55 [4] (N) [5] clamping hub diameter

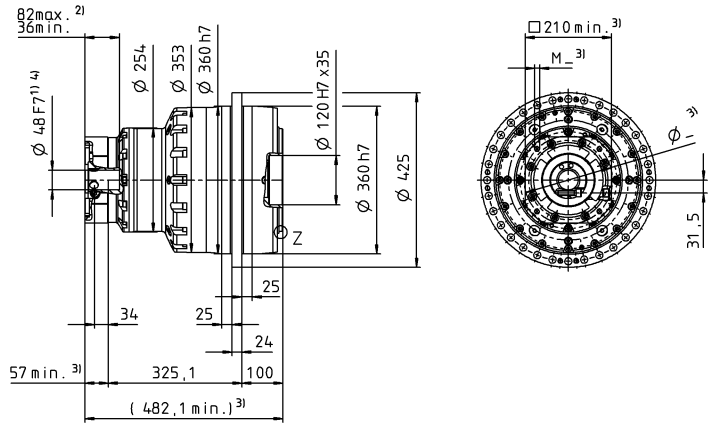


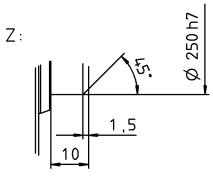


3-stage

up to 48 [4] (M) [5] clamping hub diameter







Non-tolerated dimensions are nominal dimensions

[1] Check motor shaft fit

[2] Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

[3] The dimensions depend on the motor

[4] Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

[5] Standard clamping hub diameter