

SP+ / SP+ HIGH SPEED – The classic all-rounder



SP+

The standard version of these low-backlash planetary gearboxes with output shaft is ideally suited for high positioning accuracy and highly dynamic cyclic operation. The SP+ HIGH SPEED is particularly appropriate for applications with maximum speeds during continuous operation.

Product highlights

Max. torsional backlash [arcmin] $\leq 1 - 6$

Multiple output configurations for greater flexibility

Smooth shaft, shaft with key, splined shaft (DIN 5480), blind hollow shaft

High nominal speeds

SP+ HIGH SPEED version for applications in continuous operation

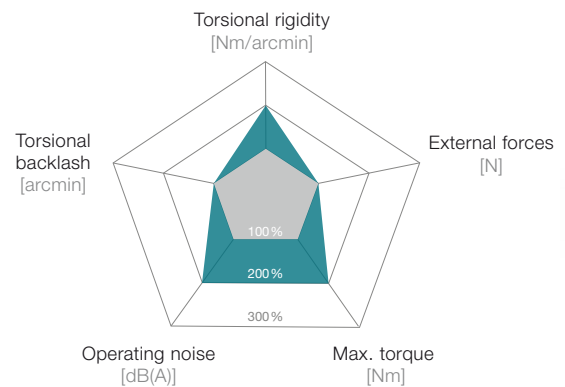
Flexible drive options

Clamping hub socket, coupling, optimized mass inertia, keyed clamping hub socket

Other gearbox models

Corrosion resistant design, ATEX, food-grade lubrication, low friction version

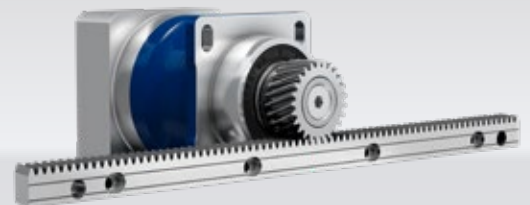
The SP+ compared to the industry standard



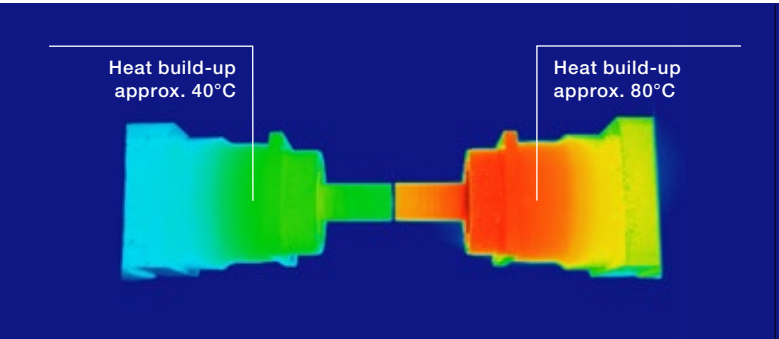
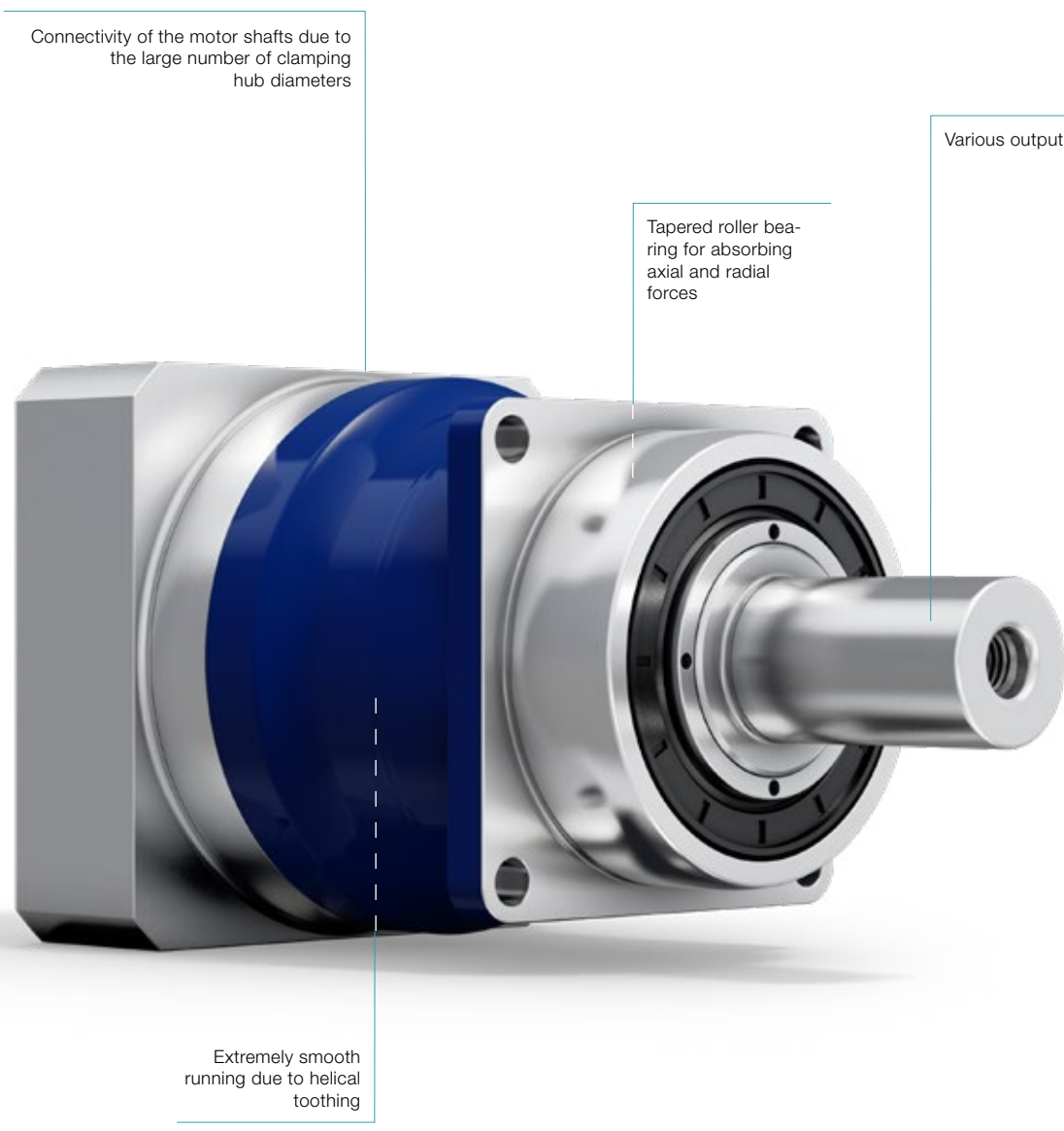
— SP+ / SP+ HIGH SPEED — industry standard



SP+ planetary gearbox in corrosion resistant design



SP+ with R-flange and rack and pinion



SP* HIGH SPEED MC version

Industry standard



SP* with metal bellows coupling

SP+ 060 MF 1-stage

			1-stage							
Ratio	<i>i</i>		3	4	5	7	8	10		
Max. torque ^{a) b) e)}	T_{2a}	Nm	48	67	67	67	51	51		
		in.lb	425	595	595	595	453	453		
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)	T_{2B}	Nm	36	50	50	50	38	38		
		in.lb	319	443	443	443	336	336		
Nominal torque (at n_n)	T_{2N}	Nm	21	27	27	26	26	27		
		in.lb	190	239	236	226	230	237		
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)	T_{2Not}	Nm	96	109	109	109	100	100		
		in.lb	850	965	965	965	885	885		
Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)}	n_{1N}	rpm	3300	3300	3300	4000	4000	4000		
Max. input speed	n_{1Max}	rpm	7500	7500	7500	7500	7500	7500		
Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature)	T_{012}	Nm	0.68	0.52	0.48	0.34	0.32	0.32		
		in.lb	6.0	4.6	4.2	3.0	2.8	2.8		
Max. backlash	j_t	arcmin	Standard ≤ 4 / Reduced ≤ 2							
Torsional rigidity ^{b)}	C_{121}	Nm/arcmin	3.5							
		in.lb/arcmin	31							
Max. axial force ^{c)}	F_{2AMax}	N	2400							
		lb _f	540							
Max. lateral force ^{c)}	F_{2QMax}	N	2800							
		lb _f	630							
Max. tilting moment	M_{2KMax}	Nm	152							
		in.lb	1345							
Efficiency at full load	η	%	97							
Service life ¹⁾	L_h	h	> 20000							
Weight (incl. standard adapter plate)	m	kg	1.9							
		lb _m	4.2							
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 [®])			BC2-00060AA016.000-X							
Bore diameter of coupling on the application side		mm	X = 012.000 - 035.000							
Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request	B	11	J_i	kgcm ²	0.21	0.15	0.12	0.10	0.10	0.09
				10 ⁻³ in.lb.s ²	0.19	0.13	0.11	0.09	0.09	0.08
	C	14	J_i	kgcm ²	0.28	0.22	0.20	0.18	0.16	0.16
				10 ⁻³ in.lb.s ²	0.25	0.19	0.18	0.16	0.14	0.14
	E	19	J_i	kgcm ²	0.61	0.55	0.52	0.50	0.49	0.49
				10 ⁻³ in.lb.s ²	0.54	0.49	0.46	0.44	0.43	0.43

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

^{a)} At max. 10 % F_{2QMax}

^{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

^{e)} Smooth shaft

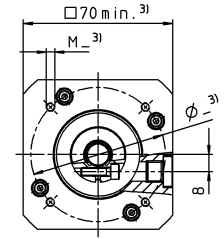
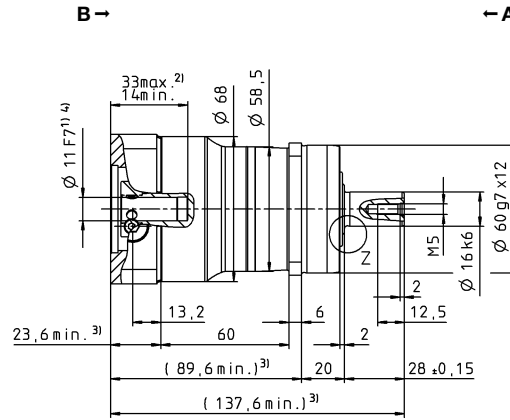
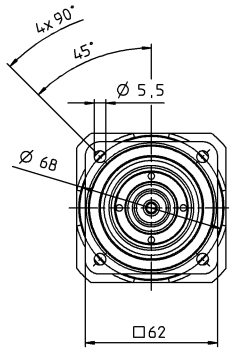
¹⁾ Please contact us to discuss
application-specific service lifetimes

View A

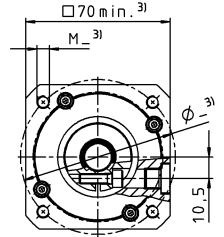
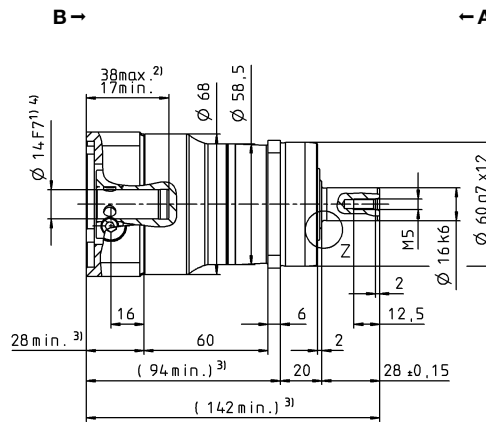
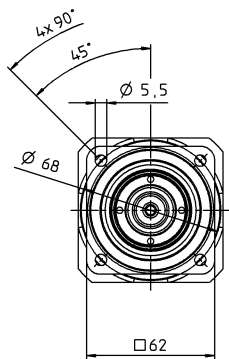
View B

1-stage

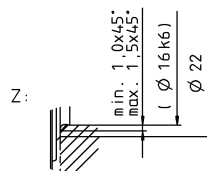
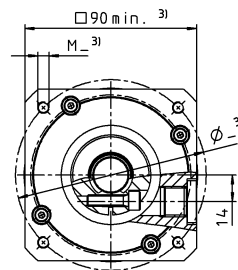
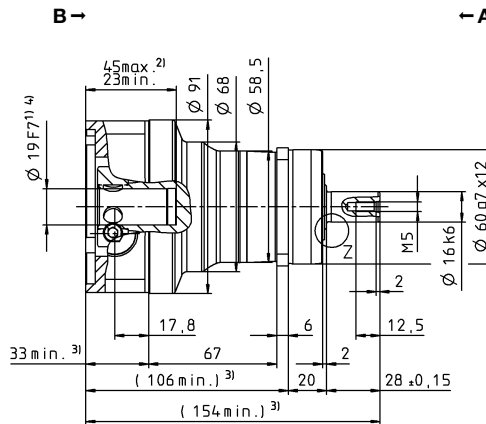
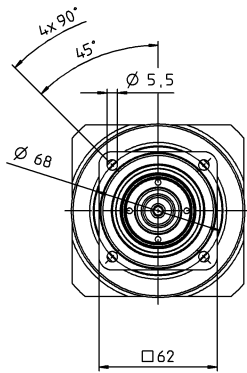
up to 11⁴⁾ (B)
clamping hub diameter



up to 14⁴⁾ (C)⁵⁾
clamping hub diameter

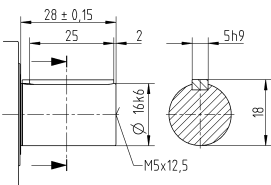


up to 19⁴⁾ (E)
clamping hub diameter

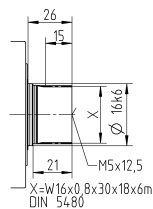


Other output variants

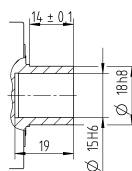
Shaft with key



Spined shaft (DIN 5480)



Shaft mounted



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

SP+ 060 MF 2-stage

			2-stage												
Ratio	<i>i</i>		16	20	25	28	32	35	40	50	64	70	100		
Max. torque ^{a) b) e)}	T_{2a}	Nm	57	57	67	57	57	67	57	67	48	56	48		
		in.lb	507	507	595	507	507	595	507	595	423	499	423		
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)	T_{2B}	Nm	50	50	50	50	50	50	50	50	38	50	38		
		in.lb	443	443	443	443	443	443	443	443	336	443	336		
Nominal torque (at n_n)	T_{2N}	Nm	38	40	40	40	38	40	40	40	31	40	31		
		in.lb	332	354	351	357	333	357	357	357	270	357	272		
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)	T_{2Not}	Nm	109	109	109	109	109	109	109	109	109	109	100		
		in.lb	965	965	965	965	965	965	965	965	965	965	885		
Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)}	n_{1N}	rpm	4400	4400	4400	4400	4400	4400	4400	4800	4800	5500	5500		
Max. input speed	n_{1Max}	rpm	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	0.28	0.25	0.23	0.22	0.24	0.20	0.20	0.19	0.19	0.17	0.18		
		in.lb	2.5	2.2	2.0	1.9	2.1	1.8	1.8	1.7	1.7	1.5	1.6		
Max. backlash	j_t	arcmin	Standard ≤ 6 / Reduced ≤ 4												
Torsional rigidity ^{b)}	C_{121}	Nm/arcmin	3.5												
		in.lb/arcmin	31												
Max. axial force ^{c)}	F_{2AMax}	N	2400												
		lb _f	540												
Max. lateral force ^{c)}	F_{2QMax}	N	2800												
		lb _f	630												
Max. tilting moment	M_{2KMax}	Nm	152												
		in.lb	1345												
Efficiency at full load	η	%	94												
Service life ¹⁾	L_h	h	> 20000												
Weight (incl. standard adapter plate)	m	kg	2.0												
		lb _m	4.4												
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 [®])			BC2-00060AA016.000-X												
Bore diameter of coupling on the application side		mm	X = 012.000 - 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	kgcm ²	0.077	0.069	0.068	0.061	0.061	0.061	0.057	0.057	0.056	0.056	0.056
				10 ⁻³ in.lb.s ²	0.068	0.061	0.060	0.054	0.054	0.054	0.050	0.050	0.050	0.050	0.050
	C	14	J_1	kgcm ²	0.17	0.16	0.16	0.16	0.16	0.16	0.15	0.15	0.15	0.15	0.15
				10 ⁻³ in.lb.s ²	0.15	0.14	0.14	0.14	0.14	0.14	0.13	0.13	0.13	0.13	0.13

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

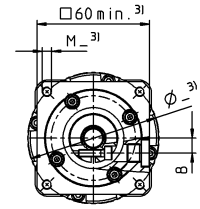
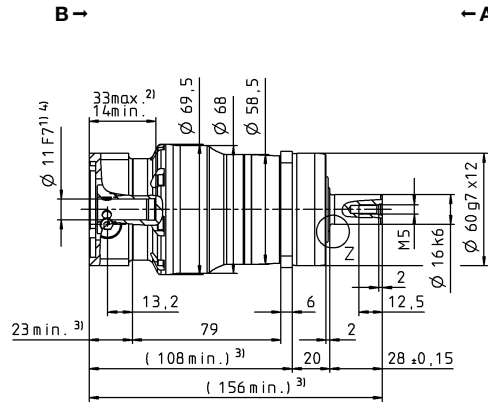
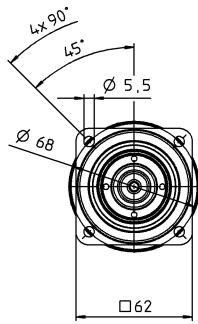
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

View B

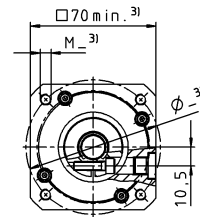
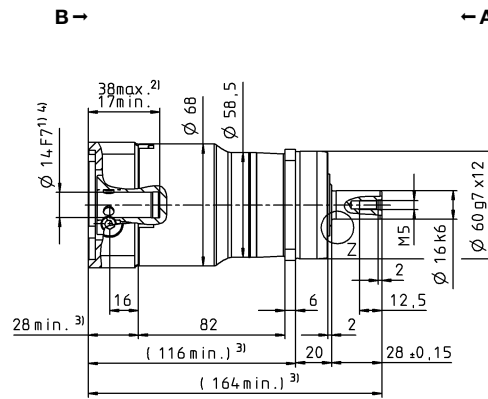
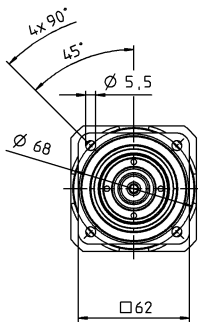
2-stage

up to 11⁴⁾ (B)⁵⁾
clamping hub
diameter



Motor shaft diameter [mm]

up to 14⁴⁾ (C)
clamping hub
diameter



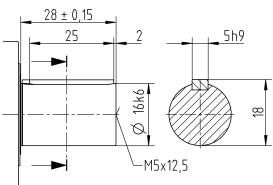
Planetary gearboxes

SP+

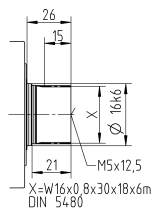
MF

Other output variants

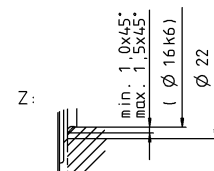
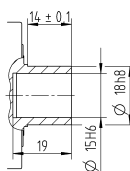
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



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

SP+ 075 MF 1-stage

			1-stage							
Ratio	<i>i</i>		3	4	5	7	8	10		
Max. torque ^{a) b) e)}	T_{2a}	Nm	136	176	176	176	152	152		
		in.lb	1204	1558	1558	1558	1345	1345		
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)	T_{2B}	Nm	102	132	132	132	114	114		
		in.lb	903	1168	1168	1168	1009	1009		
Nominal torque (at n_n)	T_{2N}	Nm	63	81	81	81	80	81		
		in.lb	558	719	716	719	712	720		
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)	T_{2Not}	Nm	139	185	250	250	250	250		
		in.lb	1230	1640	2213	2213	2213	2213		
Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)}	n_{1N}	rpm	2900	2900	2900	3100	3100	3100		
Max. input speed	n_{1Max}	rpm	7500	7500	7500	7500	7500	7500		
Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature)	T_{012}	Nm	1.5	1.4	0.96	0.72	0.55	0.52		
		in.lb	14	12	8.5	6.4	4.9	4.6		
Max. backlash	j_t	arcmin	Standard ≤ 4 / Reduced ≤ 2							
Torsional rigidity ^{b)}	C_{121}	Nm/arcmin	10							
		in.lb/arcmin	89							
Max. axial force ^{c)}	F_{2AMax}	N	3350							
		lb _f	754							
Max. lateral force ^{c)}	F_{2QMax}	N	4200							
		lb _f	945							
Max. tilting moment	M_{2KMax}	Nm	236							
		in.lb	2089							
Efficiency at full load	η	%	97							
Service life ^{f)}	L_h	h	> 20000							
Weight (incl. standard adapter plate)	m	kg	3.9							
		lb _m	8.6							
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®])	L_{pA}	dB(A)	≤ 59							
Max. permitted housing temperature		°C	+90							
		F	194							
Ambient temperature		°C	-15 to +40							
		F	5 to 104							
Lubrication			Lubricated for life							
Direction of rotation			In- and output same direction							
Protection class			IP 65							
Metal bellows coupling (recommended product type – validate sizing with cymex [®])			BC2-00150AA022.000-X							
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_i	kgcm ²	0.86	0.61	0.51	0.42	0.38	0.38
				10 ⁻³ in.lb.s ²	0.76	0.54	0.45	0.37	0.34	0.34
	E	19	J_i	kgcm ²	1.03	0.78	0.68	0.59	0.54	0.54
				10 ⁻³ in.lb.s ²	0.91	0.69	0.60	0.52	0.48	0.48
	G	24	J_i	kgcm ²	2.40	2.15	2.05	1.96	1.91	1.91
				10 ⁻³ in.lb.s ²	2.12	1.90	1.81	1.73	1.69	1.69

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

^{a)} At max. 10 % F_{2QMax}

^{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

^{e)} Smooth shaft

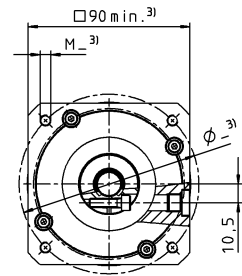
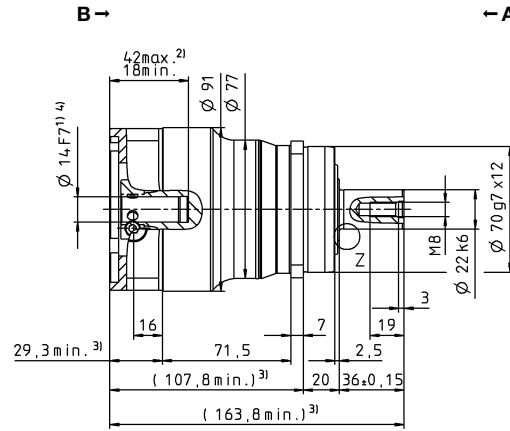
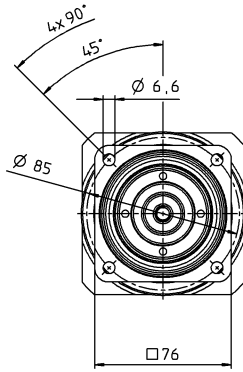
^{f)} Please contact us to discuss application-specific service lifetimes

View A

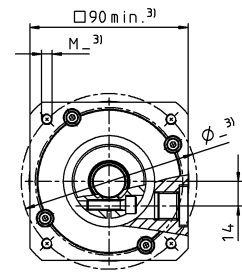
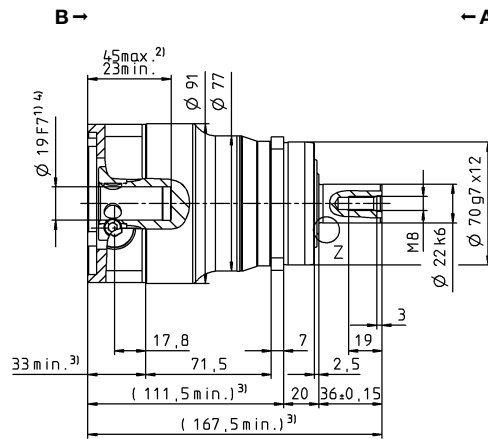
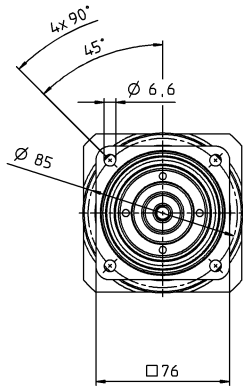
View B

1-stage

up to 14⁴⁾ (C)
clamping hub diameter

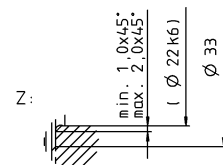
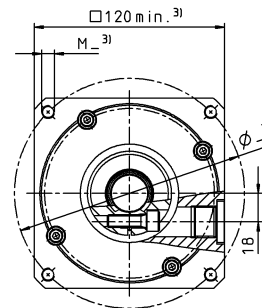
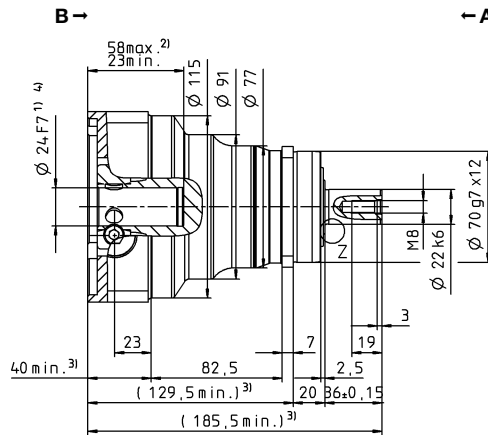
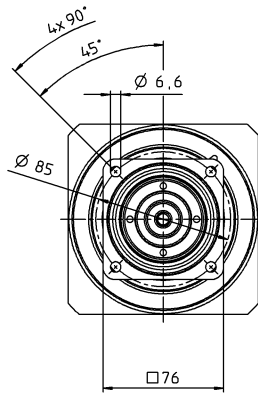


up to 19⁴⁾ (E)⁵⁾
clamping hub diameter



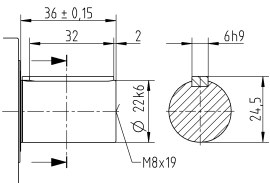
Motor shaft diameter [mm]

up to 24⁴⁾ (G)
clamping hub diameter

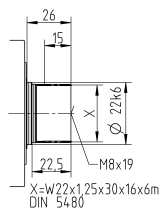


Other output variants

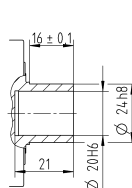
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



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

SP+ 075 MF 2-stage

			2-stage											
Ratio	<i>i</i>		16	20	25	28	32	35	40	50	64	70	100	
Max. torque ^{a) b) e)}	T_{2a}	Nm	126	126	158	126	126	158	126	158	105	113	105	
		in.lb	1118	1118	1398	1118	1118	1398	1118	1398	932	998	932	
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)	T_{2B}	Nm	126	126	132	126	126	132	126	132	105	113	105	
		in.lb	1118	1118	1168	1118	1118	1168	1118	1168	932	998	932	
Nominal torque (at n_n)	T_{2N}	Nm	101	101	106	101	101	106	101	106	84	90	84	
		in.lb	895	895	935	895	895	935	895	935	746	799	746	
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)	T_{2Not}	Nm	250	250	250	250	250	250	250	250	250	250	250	
		in.lb	2213	2213	2213	2213	2213	2213	2213	2213	2213	2213	2213	
Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)}	n_{1N}	rpm	3500	3500	3500	3500	3500	3500	3500	3800	3800	4500	4500	
Max. input speed	n_{1Max}	rpm	8500	8500	8500	8500	8500	8500	8500	8500	8500	8500	8500	
Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature)	T_{012}	Nm	0.50	0.41	0.35	0.32	0.44	0.28	0.26	0.23	0.23	0.21	0.23	
		in.lb	4.4	3.6	3.1	2.8	3.9	2.5	2.3	2.0	2.0	1.9	2.0	
Max. backlash	j_t	arcmin	Standard ≤ 6 / Reduced ≤ 4											
Torsional rigidity ^{b)}	C_{121}	Nm/arcmin	10											
		in.lb/arcmin	89											
Max. axial force ^{c)}	F_{2AMax}	N	3350											
		lb _f	754											
Max. lateral force ^{c)}	F_{2QMax}	N	4200											
		lb _f	945											
Max. tilting moment	M_{2KMax}	Nm	236											
		in.lb	2089											
Efficiency at full load	η	%	94											
Service life ¹⁾	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 [®])			BC2-00150AA022.000-X											
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	B	11	J_i	kgcm ²	0.16	0.13	0.13	0.10	0.10	0.10	0.09	0.09	0.09	0.09
				10 ⁻³ in.lb.s ²	0.14	0.12	0.12	0.09	0.09	0.09	0.08	0.08	0.08	0.08
	C	14	J_i	kgcm ²	0.23	0.20	0.20	0.18	0.18	0.18	0.16	0.16	0.16	0.16
				10 ⁻³ in.lb.s ²	0.20	0.18	0.18	0.16	0.16	0.16	0.14	0.14	0.14	0.14
	E	19	J_i	kgcm ²	0.55	0.53	0.52	0.50	0.50	0.50	0.49	0.49	0.49	0.49
				10 ⁻³ in.lb.s ²	0.49	0.47	0.46	0.44	0.44	0.44	0.43	0.43	0.43	0.43

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

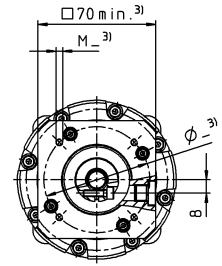
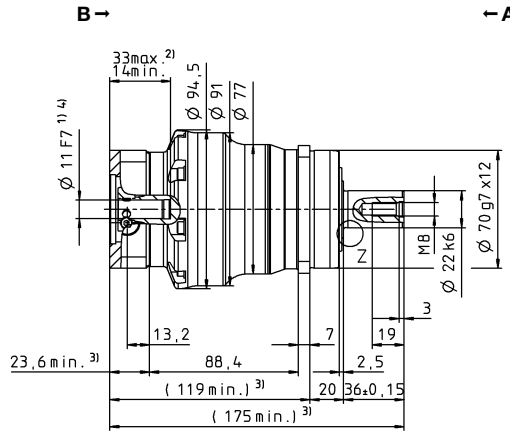
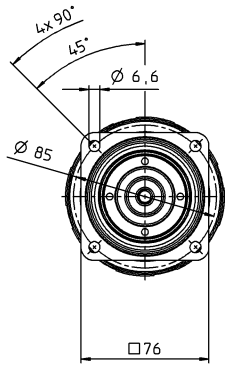
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

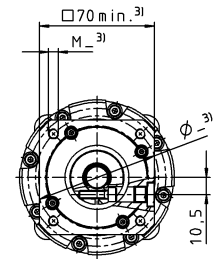
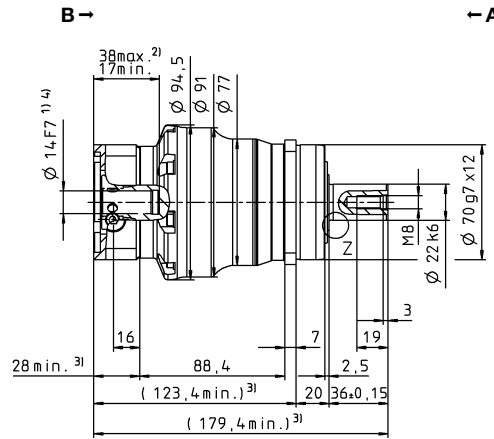
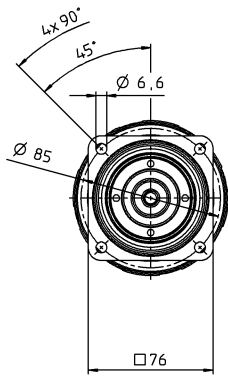
View B

2-stage

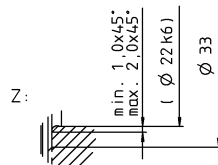
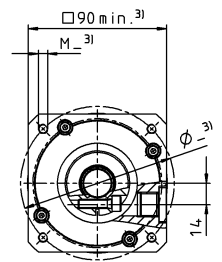
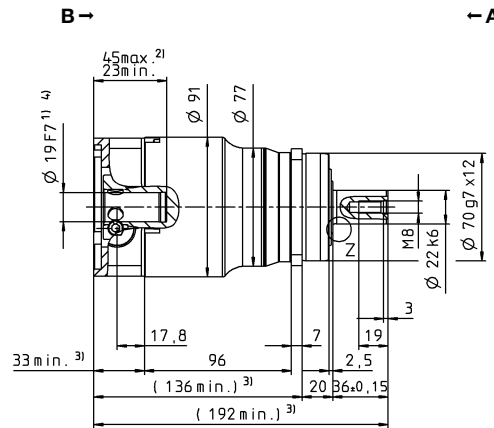
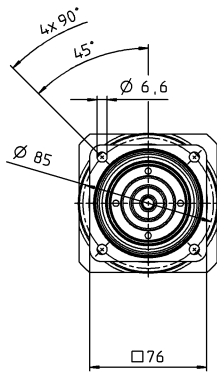
up to 11⁴⁾ (B)
clamping hub diameter



up to 14⁴⁾ (C)⁵⁾
clamping hub diameter

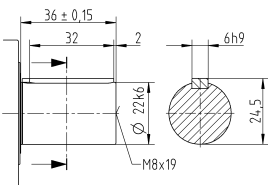


up to 19⁴⁾ (E)
clamping hub diameter

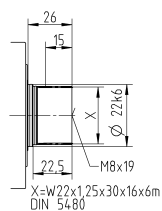


Other output variants

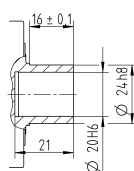
Shaft with key



Spined shaft (DIN 5480)



Shaft mounted



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

SP+ 100 MF 1-stage

			1-stage							
Ratio	<i>i</i>		3	4	5	7	8	10		
Max. torque ^{a) b) e)}	T_{2a}	Nm	376	495	495	428	376	376		
		in.lb	3328	4381	4381	3784	3328	3328		
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)	T_{2B}	Nm	282	378	378	378	282	282		
		in.lb	2496	3346	3346	3346	2496	2496		
Nominal torque (at n_{1N})	T_{2N}	Nm	131	171	169	166	166	174		
		in.lb	1157	1510	1498	1473	1470	1538		
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)	T_{2Not}	Nm	500	625	625	625	625	625		
		in.lb	4425	5532	5532	5532	5532	5532		
Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)}	n_{1N}	rpm	2500	2500	2500	2800	2800	2800		
Max. input speed	n_{1Max}	rpm	5500	5500	5500	5500	5500	5500		
Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature)	T_{012}	Nm	3.1	2.4	2.1	1.3	1.0	1.0		
		in.lb	28	21	18	12	9.2	9.2		
Max. backlash	j_t	arcmin	Standard ≤ 3 / Reduced ≤ 1							
Torsional rigidity ^{b)}	C_{121}	Nm/arcmin	31							
		in.lb/arcmin	274							
Max. axial force ^{c)}	F_{2AMax}	N	5650							
		lb _f	1271							
Max. lateral force ^{c)}	F_{2QMax}	N	6600							
		lb _f	1485							
Max. tilting moment	M_{2KMax}	Nm	487							
		in.lb	4310							
Efficiency at full load	η	%	97							
Service life ¹⁾	L_h	h	> 20000							
Weight (incl. standard adapter plate)	m	kg	7.7							
		lb _m	17							
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®])	L_{pA}	dB(A)	≤ 58							
			+90							
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 [®])			BC2-00300AA032.000-X							
	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	kgcm ²	3.29	2.35	1.92	1.60	1.38	1.38
				10 ⁻³ in.lb.s ²	2.91	2.08	1.70	1.42	1.22	1.22
	G	24	J_1	kgcm ²	3.99	3.04	2.61	2.29	2.07	2.07
				10 ⁻³ in.lb.s ²	3.53	2.69	2.31	2.03	1.83	1.83
	H	28	J_1	kgcm ²	3.59	2.65	2.22	1.90	1.68	1.68
				10 ⁻³ in.lb.s ²	3.18	2.35	1.96	1.68	1.49	1.49
	K	38	J_1	kgcm ²	11.1	10.1	9.68	9.36	9.14	9.14
				10 ⁻³ in.lb.s ²	9.82	8.94	8.57	8.28	8.09	8.09

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

^{a)} At max. 10 % F_{2QMax}

^{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

^{e)} Smooth shaft

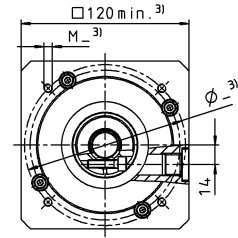
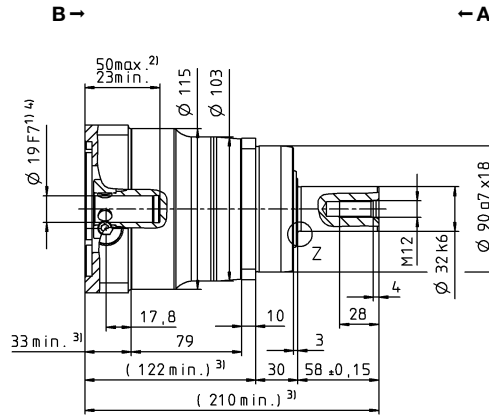
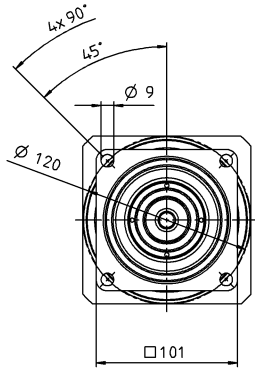
¹⁾ Please contact us to discuss application-specific service lifetimes

View A

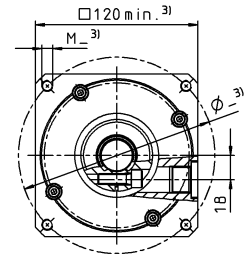
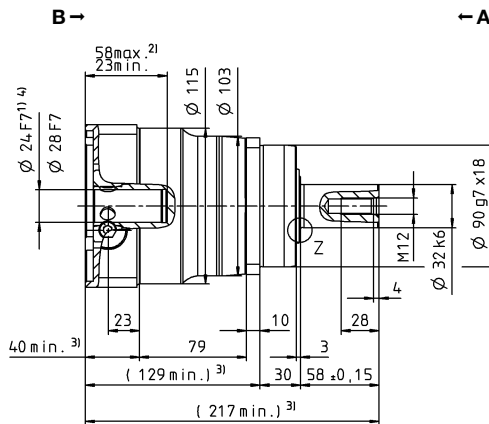
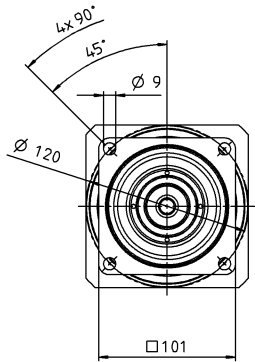
View B

1-stage

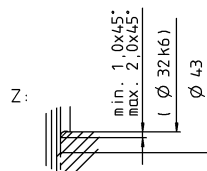
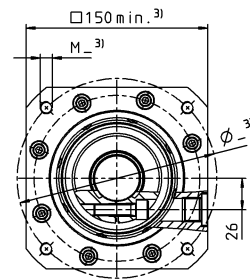
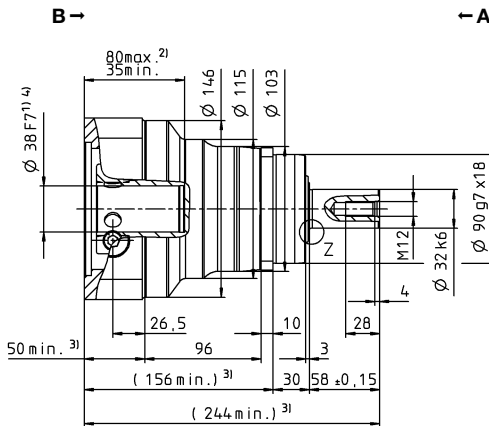
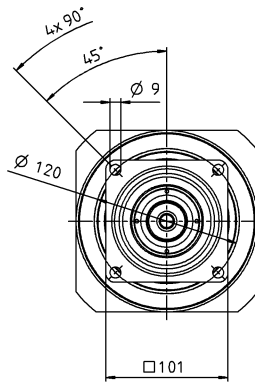
up to 19⁴⁾ (E) clamping hub diameter



up to 24/28⁴⁾ (G⁵⁾/H) clamping hub diameter



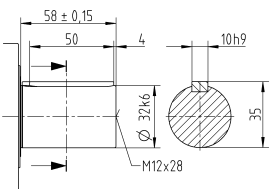
up to 38⁴⁾ (K) clamping hub diameter



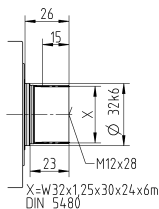
Motor shaft diameter [mm]

Other output variants

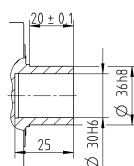
Shaft with key



Spined shaft (DIN 5480)



Shaft mounted



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

SP+ 100 MF 2-stage

			2-stage												
Ratio	<i>i</i>		16	20	25	28	32	35	40	50	64	70	100		
Max. torque ^{a) b) e)}	T_{2a}	Nm	347	347	347	347	347	347	347	347	259	347	259		
		in.lb	3067	3067	3067	3067	3067	3067	3067	3067	3067	2288	3067	2288	
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)	T_{2B}	Nm	347	347	347	347	347	347	347	347	259	347	259		
		in.lb	3067	3067	3067	3067	3067	3067	3067	3067	3067	2288	3067	2288	
Nominal torque (at n_{1N})	T_{2N}	Nm	243	259	257	277	243	277	277	277	207	277	207		
		in.lb	2146	2295	2277	2453	2153	2453	2453	2453	1830	2453	1830		
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)	T_{2Not}	Nm	625	625	625	625	625	625	625	625	625	625	625		
		in.lb	5532	5532	5532	5532	5532	5532	5532	5532	5532	5532	5532		
Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)}	n_{1N}	rpm	3100	3100	3100	3100	3100	3100	3100	3500	3500	4200	4200		
Max. input speed	n_{1Max}	rpm	6500	6500	6500	6500	6500	6500	6500	6500	6500	6500	6500		
Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature)	T_{012}	Nm	1.0	0.93	0.85	0.77	0.86	0.54	0.54	0.46	0.46	0.39	0.37		
		in.lb	9.2	8.2	7.5	6.8	7.6	4.8	4.8	4.1	4.1	3.5	3.3		
Max. backlash	j_t	arcmin	Standard ≤ 5 / Reduced ≤ 3												
Torsional rigidity ^{b)}	C_{121}	Nm/arcmin	31												
		in.lb/arcmin	274												
Max. axial force ^{c)}	F_{2AMax}	N	5650												
		lb _f	1271												
Max. lateral force ^{c)}	F_{2QMax}	N	6600												
		lb _f	1485												
Max. tilting moment	M_{2KMax}	Nm	487												
		in.lb	4310												
Efficiency at full load	η	%	94												
Service life ¹⁾	L_h	h	> 20000												
Weight (incl. standard adapter plate)	m	kg	7.9												
		lb _m	17.5												
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 [®])			BC2-00300AA032.000-X												
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	C	14	J_1	kgcm ²	0.64	0.54	0.52	0.43	0.43	0.43	0.38	0.38	0.54	0.37	0.37
				10 ⁻³ in.lb.s ²	0.57	0.48	0.46	0.38	0.38	0.38	0.34	0.34	0.48	0.33	0.33
	E	19	J_1	kgcm ²	0.81	0.70	0.68	0.60	0.60	0.59	0.55	0.54	0.38	0.54	0.54
				10 ⁻³ in.lb.s ²	0.72	0.62	0.60	0.53	0.53	0.52	0.49	0.48	0.34	0.48	0.48
	G	24	J_1	kgcm ²	2.18	2.07	2.05	1.97	1.97	1.96	1.92	1.91	1.91	1.91	1.91
				10 ⁻³ in.lb.s ²	1.93	1.83	1.81	1.74	1.74	1.73	1.70	1.69	1.69	1.69	1.69
	H	28	J_1	kgcm ²	1.98	1.90	1.88	1.81	1.81	1.80	1.76	1.75	1.75	1.75	1.75
				10 ⁻³ in.lb.s ²	1.75	1.68	1.66	1.60	1.60	1.59	1.56	1.55	1.55	1.55	1.55

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

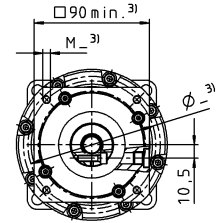
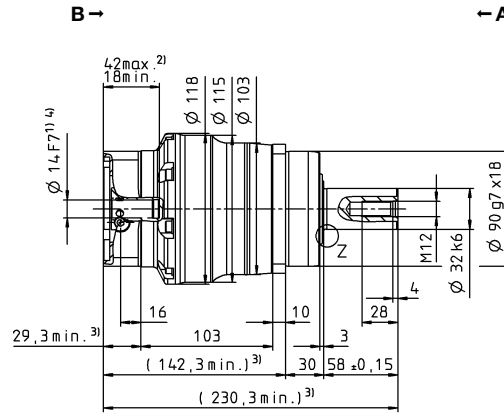
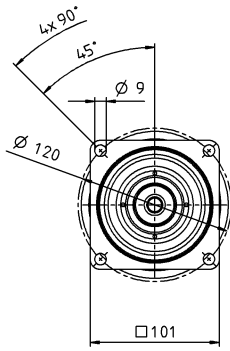
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

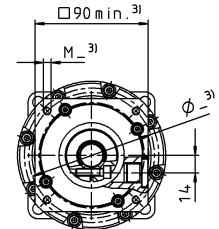
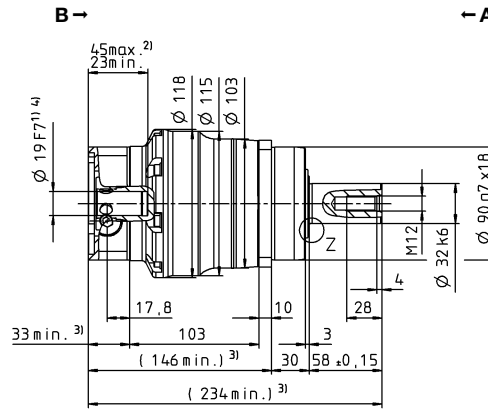
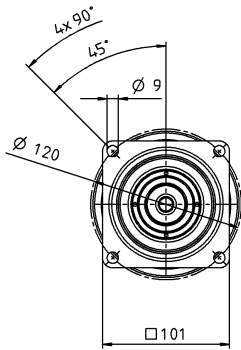
View B

2-stage

up to 14⁴⁾ (C)
clamping hub diameter

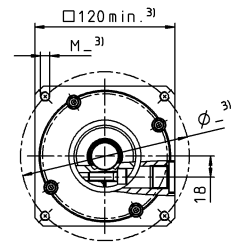
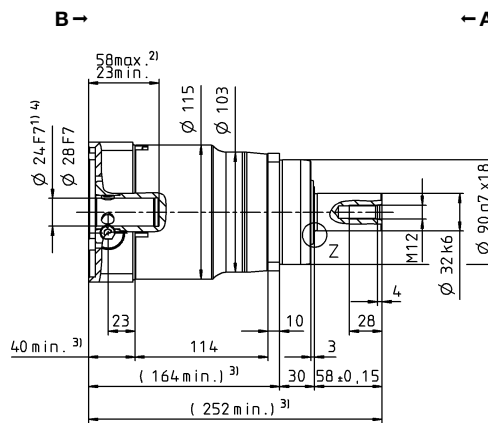
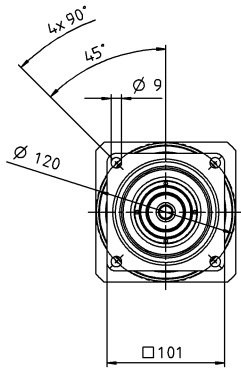


up to 19⁴⁾ (E)⁵⁾
clamping hub diameter



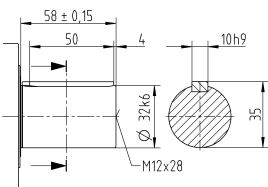
Motor shaft diameter [mm]

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

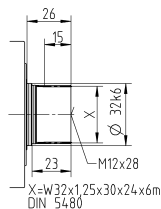


Other output variants

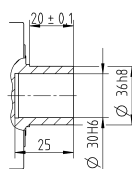
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



Non-tolerated dimensions are nominal dimensions

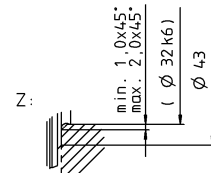
¹⁾ Check motor shaft fit

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



SP+ 140 MF 1-stage

			1-stage							
Ratio	<i>i</i>		3	4	5	7	8	10		
Max. torque ^{a) b) e)}	T_{2a}	Nm	624	1056	1056	825	720	720		
		in.lb	5523	9346	9346	7302	6373	6373		
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)	T_{2B}	Nm	468	792	792	792	636	636		
		in.lb	4142	7010	7010	7010	5629	5629		
Nominal torque (at n_n)	T_{2N}	Nm	202	335	333	319	312	327		
		in.lb	1786	2962	2944	2820	2763	2894		
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)	T_{2Not}	Nm	1250	1350	1350	1350	1250	1250		
		in.lb	11064	11949	11949	11949	11064	11064		
Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)}	n_{1N}	rpm	2100	2100	2100	2600	2600	2600		
Max. input speed	n_{1Max}	rpm	5000	5000	5000	5000	5000	5000		
Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature)	T_{012}	Nm	6.7	5.4	4.4	3.0	2.5	2.2		
		in.lb	60	47	39	27	23	19		
Max. backlash	j_t	arcmin	Standard ≤ 3 / Reduced ≤ 1							
Torsional rigidity ^{b)}	C_{121}	Nm/arcmin	53							
		in.lb/arcmin	469							
Max. axial force ^{c)}	F_{2AMax}	N	9870							
		lb _f	2221							
Max. lateral force ^{c)}	F_{2QMax}	N	9900							
		lb _f	2228							
Max. tilting moment	M_{2KMax}	Nm	952							
		in.lb	8426							
Efficiency at full load	η	%	97							
Service life ¹⁾	L_h	h	> 20000							
Weight (incl. standard adapter plate)	m	kg	17.2							
		lb _m	38							
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®])	L_{pA}	dB(A)	≤ 59							
Max. permitted housing temperature		°C	+90							
		F	194							
Ambient temperature		°C	-15 to +40							
		F	5 to 104							
Lubrication			Lubricated for life							
Direction of rotation			In- and output same direction							
Protection class			IP 65							
Metal bellows coupling (recommended product type – validate sizing with cymex [®])			BC2-00800AA040.000-X							
Bore diameter of coupling on the application side		mm	X = 040.000 - 075.000							
Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request	G	24	J_i	kgcm ²	10.7	7.82	6.79	5.84	5.28	5.28
				10 ⁻³ in.lb.s ²	9.47	6.92	6.01	5.17	4.67	4.67
	I	32	J_i	kgcm ²	13.8	11.0	9.95	9.00	8.44	8.44
				10 ⁻³ in.lb.s ²	12.2	9.74	8.81	7.97	7.47	7.47
	K	38	J_i	kgcm ²	14.9	12.1	11.0	10.1	9.51	9.51
				10 ⁻³ in.lb.s ²	13.2	10.7	9.74	8.94	8.42	8.42
	M	48	J_i	kgcm ²	29.5	26.7	25.6	24.7	24.2	24.2
				10 ⁻³ in.lb.s ²	26.1	23.6	22.7	21.9	21.4	21.4

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

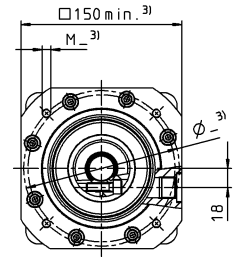
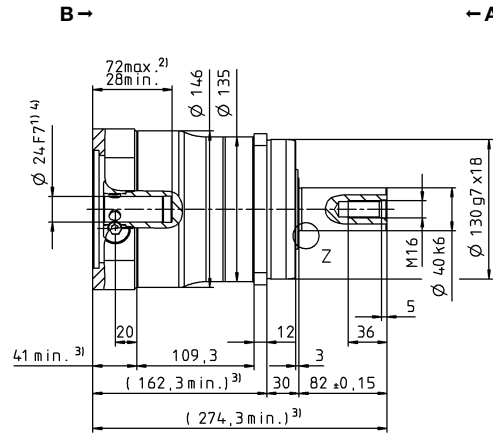
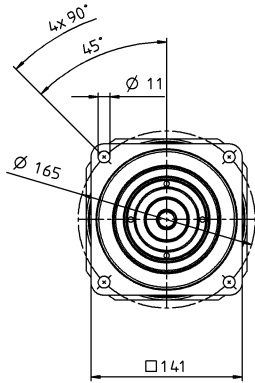
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

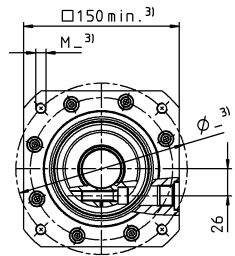
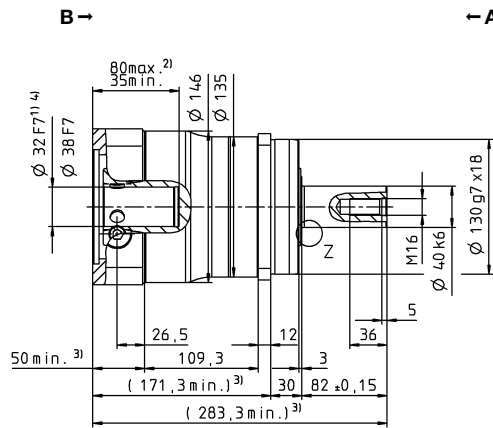
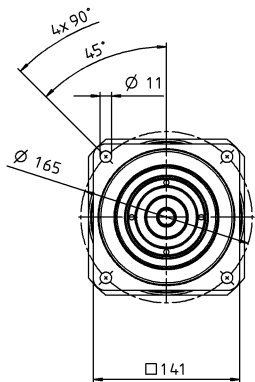
View B

1-stage

up to 24⁴⁾ (G) clamping hub diameter

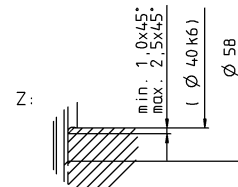
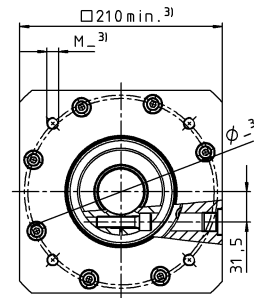
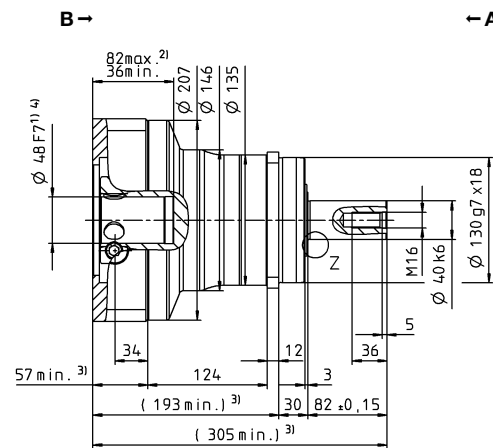
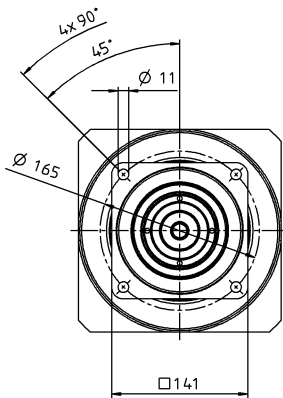


up to 32/38⁴⁾ (I/K⁵⁾ clamping hub diameter



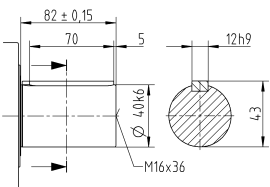
Motor shaft diameter [mm]

up to 48⁴⁾ (M) clamping hub diameter

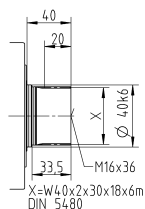


Other output variants

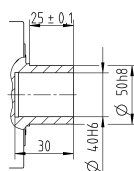
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



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

SP+ 140 MF 2-stage

			2-stage												
Ratio	<i>i</i>		16	20	25	28	32	35	40	50	64	70	100		
Max. torque ^{a) b) e)}	T_{2a}	Nm	726	726	670	726	726	670	726	670	583	726	583		
		in.lb	6426	6426	5934	6426	6426	5934	6426	5934	5160	6426	5160		
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)	T_{2B}	Nm	726	726	670	726	726	670	726	670	583	726	583		
		in.lb	6426	6426	5934	6426	6426	5934	6426	5930	5164	6426	5160		
Nominal torque (at n_n)	T_{2N}	Nm	461	493	489	545	464	536	581	536	466	581	466		
		in.lb	4078	4361	4332	4824	4104	4747	5141	4747	4128	5141	4128		
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)	T_{2Not}	Nm	1350	1350	1350	1350	1350	1350	1350	1350	1350	1350	1250		
		in.lb	11949	11949	11949	11949	11949	11949	11949	11949	11949	11949	11064		
Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)}	n_{1N}	rpm	2900	2900	2900	2900	2900	2900	2900	3200	3200	3200	3900		
Max. input speed	n_{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000		
Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature)	T_{012}	Nm	2.4	2.1	2.0	1.8	1.6	1.2	1.2	1.1	1.1	0.88	0.80		
		in.lb	21	19	17	16	14	11	11	9.4	9.4	7.8	7.1		
Max. backlash	j_t	arcmin	Standard ≤ 5 / Reduced ≤ 3												
Torsional rigidity ^{b)}	C_{121}	Nm/arcmin	53												
		in.lb/arcmin	469												
Max. axial force ^{c)}	F_{2AMax}	N	9870												
		lb _f	2221												
Max. lateral force ^{c)}	F_{2QMax}	N	9900												
		lb _f	2228												
Max. tilting moment	M_{2KMax}	Nm	952												
		in.lb	8426												
Efficiency at full load	η	%	94												
Service life ¹⁾	L_h	h	> 20000												
Weight (incl. standard adapter plate)	m	kg	17												
		lb _m	37.6												
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®])	L_{pA}	dB(A)	≤ 59												
Max. permitted housing temperature		°C	+90												
		F	194												
Ambient temperature		°C	-15 to +40												
		F	5 to 104												
Lubrication			Lubricated for life												
Direction of rotation			In- and output same direction												
Protection class			IP 65												
Metal bellows coupling (recommended product type – validate sizing with cymex [®])			BC2-00800AA040.000-X												
Bore diameter of coupling on the application side		mm	X = 040.000 - 075.000												
Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request	E	19	J_i	kgcm ²	2.50	2.01	1.97	1.65	1.65	1.63	1.40	1.39	1.39	1.38	1.38
				10 ⁻³ in.lb.s ²	2.21	1.78	1.74	1.46	1.46	1.44	1.24	1.23	1.23	1.22	1.22
	G	24	J_i	kgcm ²	3.19	2.71	2.67	2.34	2.34	2.32	2.10	2.08	2.08	2.08	2.07
				10 ⁻³ in.lb.s ²	2.82	2.40	2.36	2.07	2.07	2.05	1.86	1.84	1.84	1.84	1.83
K	38	J_i	kgcm ²	10.3	9.77	9.73	9.41	9.41	9.39	9.16	9.15	9.15	9.14	9.14	
			10 ⁻³ in.lb.s ²	9.07	8.65	8.61	8.33	8.33	8.31	8.11	8.10	8.10	8.09	8.09	

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

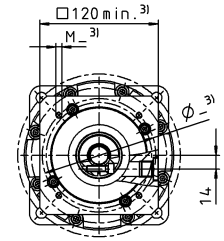
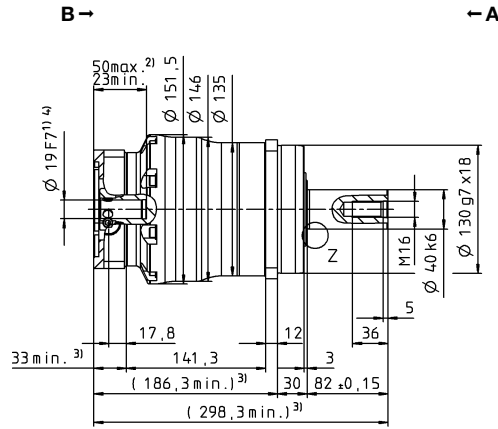
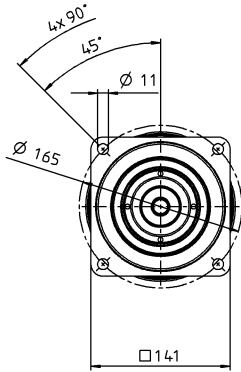
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

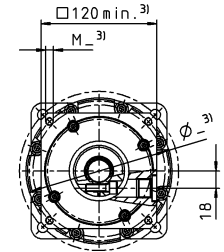
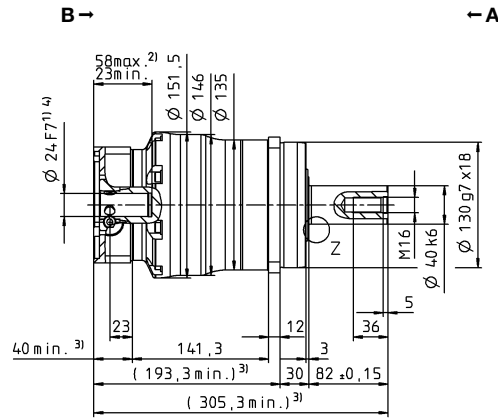
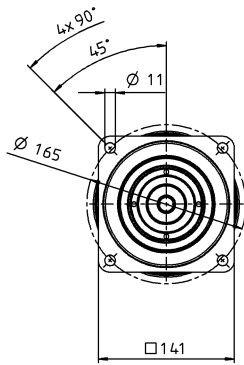
View B

2-stage

up to 19⁴⁾ (E)
clamping hub diameter

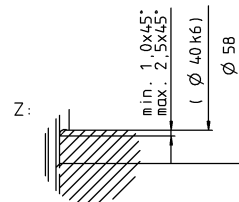
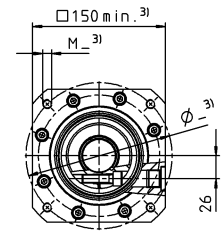
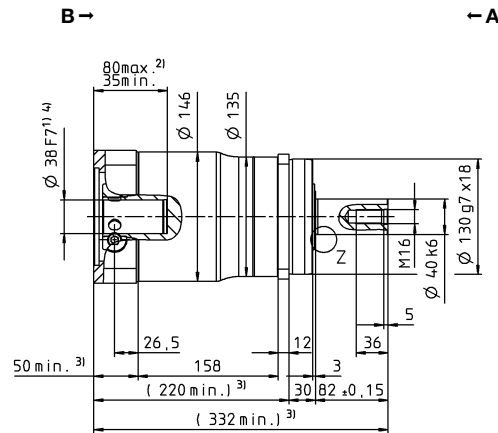
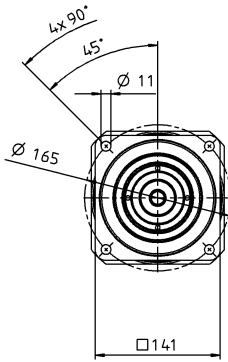


up to 24⁴⁾ (G)⁵⁾
clamping hub diameter



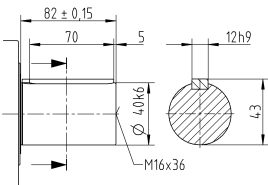
Motor shaft diameter [mm]

up to 38⁴⁾ (K)
clamping hub diameter

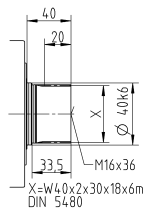


Other output variants

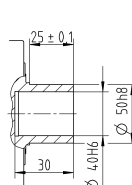
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



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

SP+ 180 MF 1-stage

			1-stage							
Ratio	<i>i</i>		3	4	5	7	8	10		
Max. torque ^{a) b) e)}	T_{2a}	Nm	1552	1936	1936	1936	1552	1552		
		in.lb	13736	17135	17135	17135	13736	13736		
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)	T_{2B}	Nm	1164	1452	1452	1452	1164	1164		
		in.lb	10302	12851	12851	12851	10302	10302		
Nominal torque (at n_n)	T_{2N}	Nm	513	927	919	825	825	864		
		in.lb	4544	8203	8134	7305	7305	7644		
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)	T_{2Not}	Nm	2750	2750	2750	2750	2750	2750		
		in.lb	24340	24340	24340	24340	24340	24340		
Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)}	n_{1N}	rpm	1500	1500	1500	2300	2300	2300		
Max. input speed	n_{1Max}	rpm	4500	4500	4500	4500	4500	4500		
Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature)	T_{012}	Nm	15	12	8.0	5.6	5.6	3.8		
		in.lb	135	103	71	50	50	34		
Max. backlash	j_t	arcmin	Standard ≤ 3 / Reduced ≤ 1							
Torsional rigidity ^{b)}	C_{121}	Nm/arcmin	175							
		in.lb/arcmin	1549							
Max. axial force ^{c)}	F_{2AMax}	N	15570							
		lb _f	3503							
Max. lateral force ^{c)}	F_{2QMax}	N	15400							
		lb _f	3465							
Max. tilting moment	M_{2KMax}	Nm	1600							
		in.lb	14161							
Efficiency at full load	η	%	97							
Service life ¹⁾	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)	≤ 62							
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 [®])			BC2-01500AA055.000-X							
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	kgcm ²	50.8	33.9	27.9	22.2	22.2	19.2
				10 ⁻³ in.lb.s ²	45.0	30.0	24.7	19.7	19.7	17.0
	M	48	J_1	kgcm ²	58.2	41.2	35.3	29.6	29.6	26.5
				10 ⁻³ in.lb.s ²	51.5	36.5	31.2	26.2	26.2	23.5
	N	55	J_1	kgcm ²	65.7	49.7	44.0	38.5	38.5	35.4
				10 ⁻³ in.lb.s ²	58.1	44.0	38.9	34.1	34.1	31.3

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

^{a)} At max. 10 % F_{2QMax}

^{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

^{e)} Smooth shaft

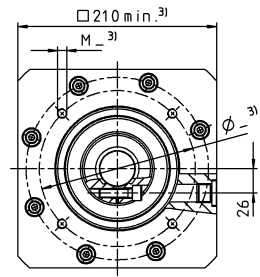
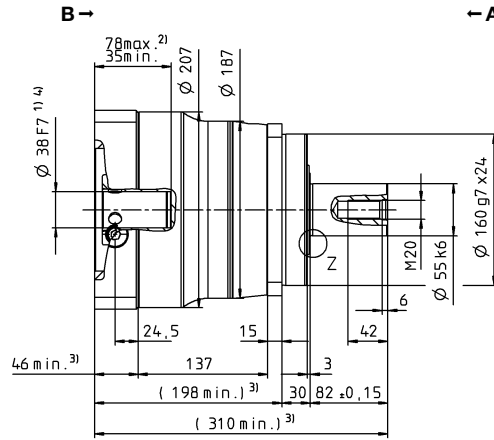
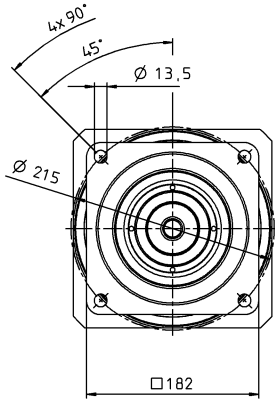
¹⁾ Please contact us to discuss application-specific service lifetimes

View A

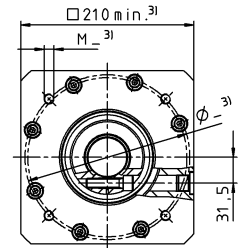
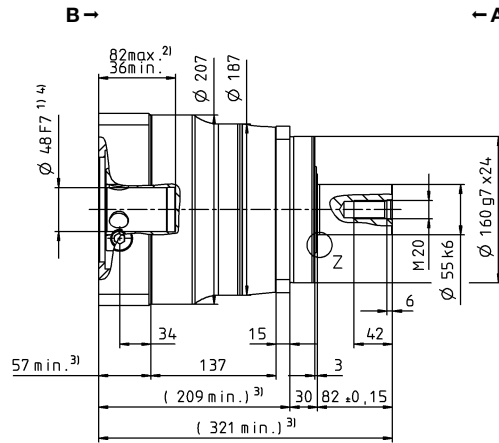
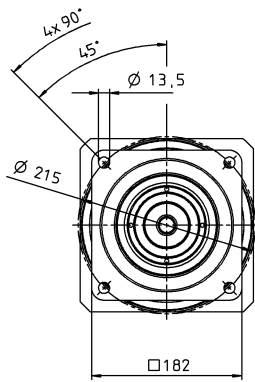
View B

1-stage

up to 38⁴⁾ (K)
clamping hub diameter

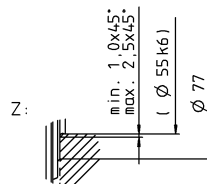
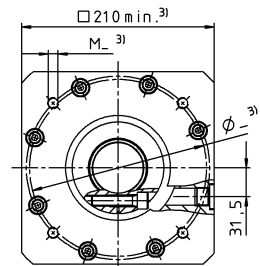
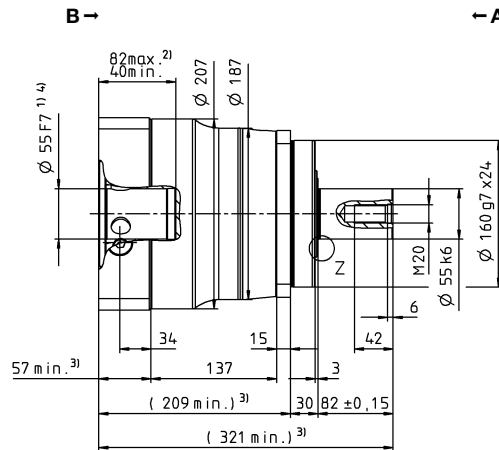
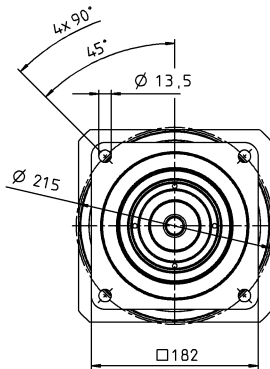


up to 48⁴⁾ (M)⁵⁾
clamping hub diameter



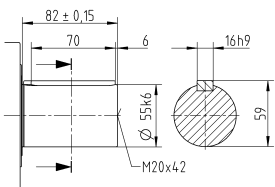
Motor shaft diameter [mm]

up to 55⁴⁾ (N)⁵⁾
clamping hub diameter

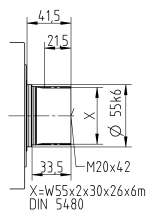


Other output variants

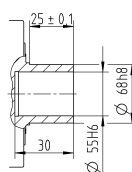
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



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

SP+ 180 MF 2-stage

			2-stage												
Ratio	<i>i</i>		16	20	25	28	32	35	40	50	64	70	100		
Max. torque ^{a) b) e)}	T_{2a}	Nm	1485	1485	1857	1485	1485	1857	1485	1857	1238	1356	1238		
		in.lb	13146	13146	16432	13146	13146	16432	13146	16432	10955	12000	10955		
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)	T_{2B}	Nm	1452	1452	1452	1452	1452	1452	1452	1452	1164	1356	1164		
		in.lb	12851	12851	12851	12851	12851	12851	12851	12851	10302	12002	10302		
Nominal torque (at n_n)	T_{2N}	Nm	1162	1162	1162	1162	1162	1162	1162	1162	931	1085	931		
		in.lb	10281	10281	10281	10281	10281	10281	10281	10281	8242	9600	8242		
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)	T_{2Not}	Nm	2750	2750	2750	2750	2750	2750	2750	2750	2750	2750	2750		
		in.lb	24340	24340	24340	24340	24340	24340	24340	24340	24340	24340	24340		
Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)}	n_{1N}	rpm	2700	2700	2700	2700	2700	2700	2700	2900	2900	3200	3400		
Max. input speed	n_{1Max}	rpm	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000		
Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature)	T_{012}	Nm	4.7	3.9	3.6	3.3	3.3	2.8	2.2	1.9	2.2	1.8	1.8		
		in.lb	42	35	32	29	29	25	20	17	20	16	16		
Max. backlash	j_t	arcmin	Standard ≤ 5 / Reduced ≤ 3												
Torsional rigidity ^{b)}	C_{121}	Nm/arcmin	175												
		in.lb/arcmin	1549												
Max. axial force ^{c)}	F_{2AMax}	N	15570												
		lb _f	3503												
Max. lateral force ^{c)}	F_{2QMax}	N	15400												
		lb _f	3465												
Max. tilting moment	M_{2KMax}	Nm	1600												
		in.lb	14161												
Efficiency at full load	η	%	94												
Service life ^{f)}	L_h	h	> 20000												
Weight (incl. standard adapter plate)	m	kg	36.4												
		lb _m	80.4												
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 [®])			BC2-01500AA055.000-X												
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_i	kgcm ²	9.27	7.72	7.48	6.32	6.32	6.20	5.51	5.45	5.39	5.36	
				10 ⁻³ in.lb.s ²	8.20	6.83	6.62	5.59	5.59	5.49	4.88	4.82	4.82	4.77	4.74
	I	32	J_i	kgcm ²	12.4	10.9	10.6	9.48	9.48	9.36	8.67	9.68	8.55	8.55	8.52
				10 ⁻³ in.lb.s ²	11.0	9.63	9.42	8.39	8.39	8.28	7.67	8.57	7.57	7.57	7.54
	K	38	J_i	kgcm ²	13.5	12.0	11.7	10.6	10.6	10.4	9.74	9.68	9.63	9.60	
				10 ⁻³ in.lb.s ²	12.0	10.6	10.4	9.34	9.34	9.23	8.62	8.57	8.57	8.52	8.50
	M	48	J_i	kgcm ²	28.1	26.6	26.3	25.2	25.2	25.1	24.4	24.3	24.3	24.3	24.3
				10 ⁻³ in.lb.s ²	24.9	23.5	23.3	22.3	22.3	22.2	21.6	21.5	21.5	21.5	21.5

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

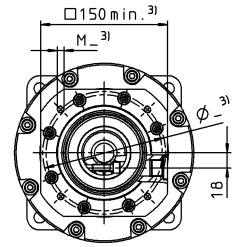
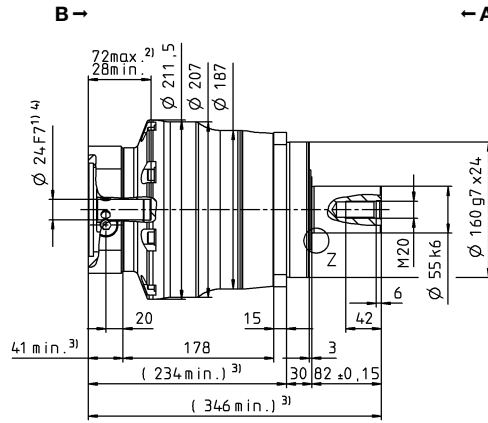
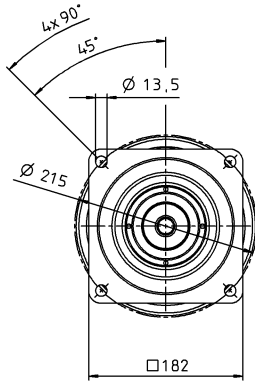
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

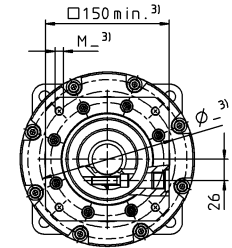
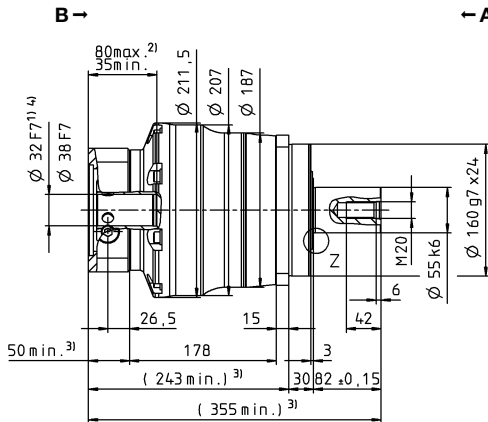
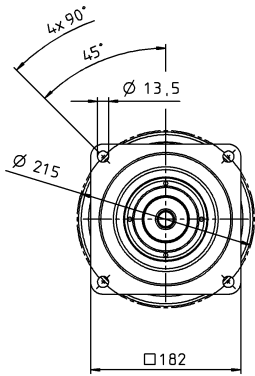
View B

2-stage

up to 24⁴⁾ (G)
clamping hub diameter

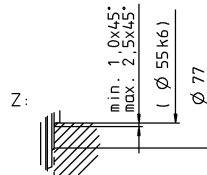
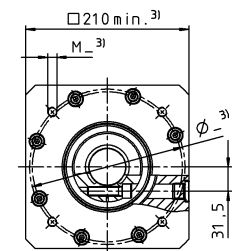
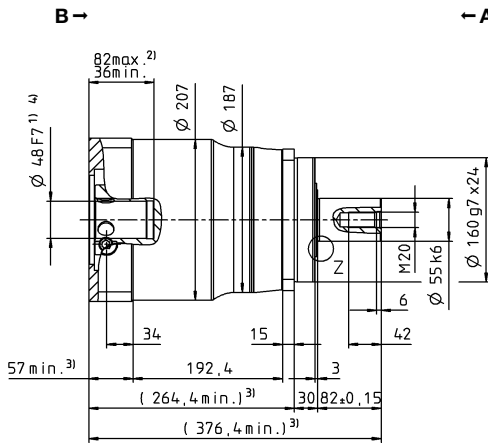
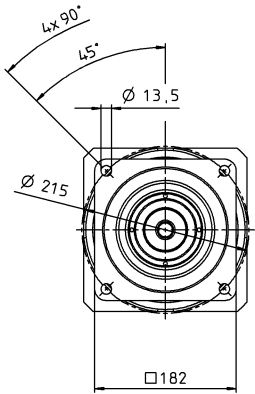


up to 32/38⁴⁾
(I/K⁵⁾) clamping
hub diameter



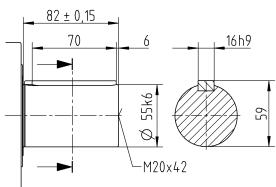
Motor shaft diameter [mm]

up to 48⁴⁾ (M)
clamping hub diameter

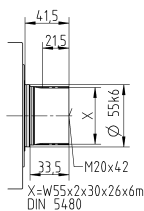


Other output variants

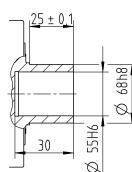
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



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

SP+ 210 MF 1-stage

			1-stage						
Ratio	i		4	5	7	8	10		
Max. torque ^{a) b) e)}	T_{2a}	Nm	4000	4000	3840	2800	2800		
		in.lb	35403	35403	33987	24782	24782		
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)	T_{2B}	Nm	3000	3000	2880	2280	2280		
		in.lb	26552	26552	25490	20180	20180		
Nominal torque (at n_{1N})	T_{2N}	Nm	1895	1767	1731	1631	1708		
		in.lb	16772	15641	15323	14432	15122		
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)	T_{2Not}	Nm	5900	5900	5900	5900	5900		
		in.lb	52220	52220	52220	52220	52220		
Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)}	n_{1N}	rpm	1200	1500	1700	2000	2000		
Max. input speed	n_{1Max}	rpm	3000	3000	3000	3000	3000		
Mean no load running torque ^{b)} (at $n_1 = 2000$ rpm and 20 °C gearbox temperature)	T_{012}	Nm	19	15	8.8	8.8	6.4		
		in.lb	164	129	78	78	57		
Max. backlash	j_t	arcmin	Standard ≤ 3 / Reduced ≤ 1						
Torsional rigidity ^{b)}	C_{121}	Nm/arcmin	400						
		in.lb/arcmin	3540						
Max. axial force ^{c)}	F_{2AMax}	N	30000						
		lb _f	6750						
Max. lateral force ^{c)}	F_{2QMax}	N	21000						
		lb _f	4725						
Max. tilting moment	M_{2KMax}	Nm	3100						
		in.lb	27437						
Efficiency at full load	η	%	97						
Service life ¹⁾	L_h	h	> 20000						
Weight (incl. standard adapter plate)	m	kg	56						
		lb _m	123.8						
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 [®])			BC2-04000AA075.000-X						
Bore diameter of coupling on the application side		mm	X = 050.000 - 090.000						
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	94.3	76.9	61.5	61.5	53.1
				10 ⁻³ in.lb.s ²	83.5	68.1	54.4	54.4	47.0

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

- ^{a)} At max. 10 % F_{2QMax}
- ^{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
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

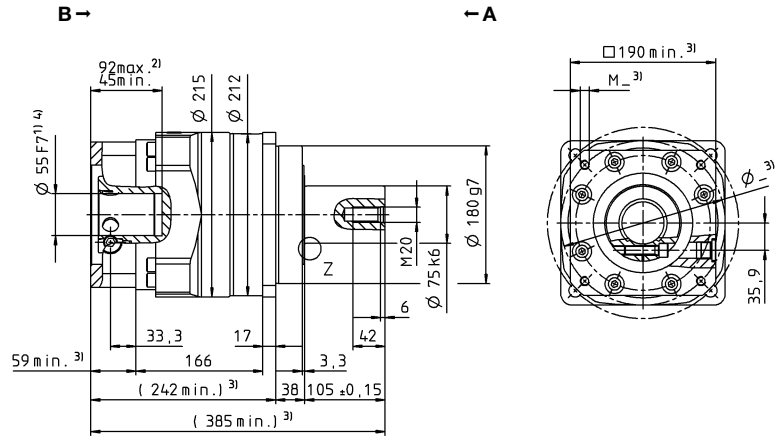
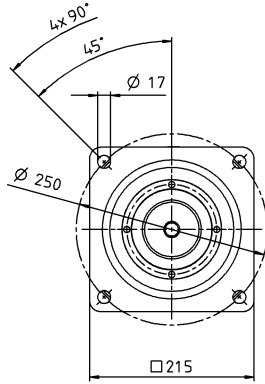
View A

View B

Motor shaft diameter [mm]

1-stage

up to 55⁴⁾ (N)⁵⁾
clamping hub diameter



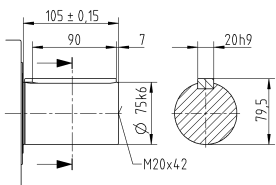
Planetary gearboxes

SP+

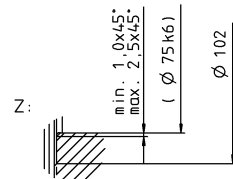
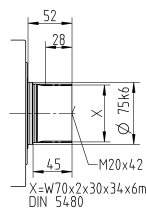
MF

Other output variants

Shaft with key



Splined shaft (DIN 5480)



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

SP+ 210 MF 2-stage

				2-stage											
Ratio	<i>i</i>			16	20	25	28	32	35	40	50	64	70	100	
Max. torque ^{a) b) e)}	T_{2a}	<i>Nm</i>		3159	3159	3949	3159	3159	3840	2880	3600	2043	2457	2043	
		<i>in.lb</i>		27958	27958	34947	27958	27958	33987	25490	31863	18081	21745	18081	
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)	T_{2B}	<i>Nm</i>		2880	3000	3000	2880	2880	2880	2840	2880	2043	2457	2043	
		<i>in.lb</i>		25490	26552	26552	25490	25490	25490	25136	25490	18081	21745	18081	
Nominal torque (at n_{1N})	T_{2N}	<i>Nm</i>		1274	1266	1567	1294	2200	1599	1358	1679	1634	1965	1634	
		<i>in.lb</i>		11277	11205	13873	11452	19474	14150	12019	14861	14465	17396	14465	
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)	T_{2Not}	<i>Nm</i>		5900	5900	5900	5900	5900	5900	5900	5900	5900	5900	5900	
		<i>in.lb</i>		52220	52220	52220	52220	52220	52220	52220	52220	52220	52220	52220	
Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)}	n_{1N}	<i>rpm</i>		2500	2500	2500	2500	2500	2500	2500	2500	2500	3000	3000	
Max. input speed	n_{1Max}	<i>rpm</i>		4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	
Mean no load running torque ^{b)} (at $n_1 = 2000$ rpm and 20 °C gearbox temperature)	T_{012}	<i>Nm</i>		5.6	5.2	4.8	4.5	4.5	3.6	3.4	3.0	3.0	2.6	2.4	
		<i>in.lb</i>		50	46	43	39	39	32	30	27	27	23	21	
Max. backlash	j_t	<i>arcmin</i>		Standard ≤ 5 / Reduced ≤ 3											
Torsional rigidity ^{b)}	C_{121}	<i>Nm/arcmin</i>		400											
		<i>in.lb/arcmin</i>		3540											
Max. axial force ^{c)}	F_{2AMax}	<i>N</i>		30000											
		<i>lb_f</i>		6750											
Max. lateral force ^{c)}	F_{2QMax}	<i>N</i>		21000											
		<i>lb_f</i>		4725											
Max. tilting moment	M_{2KMax}	<i>Nm</i>		3100											
		<i>in.lb</i>		27437											
Efficiency at full load	η	%		94											
Service life ¹⁾	L_h	<i>h</i>		> 20000											
Weight (incl. standard adapter plate)	m	<i>kg</i>		53											
		<i>lb_m</i>		117											
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®])	L_{pA}	<i>dB(A)</i>		≤ 57											
Max. permitted housing temperature		°C		+90											
		<i>F</i>		194											
Ambient temperature		°C		-15 to +40											
		<i>F</i>		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 [®])				BC2-04000AA075.000-X											
Bore diameter of coupling on the application side		<i>mm</i>		X = 050.000 - 090.000											
Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request	M	48	J_1	<i>kgcm²</i>	34.5	31.5	30.8	30.0	30.0	29.7	28.5	28.3	28.3	28.1	28.0
				<i>10⁻³ in.lb.s²</i>	30.5	27.9	27.3	26.6	26.6	26.3	25.2	25.0	25.0	24.9	24.8

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

- ^{a)} At max. 10 % F_{2QMax}
- ^{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
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

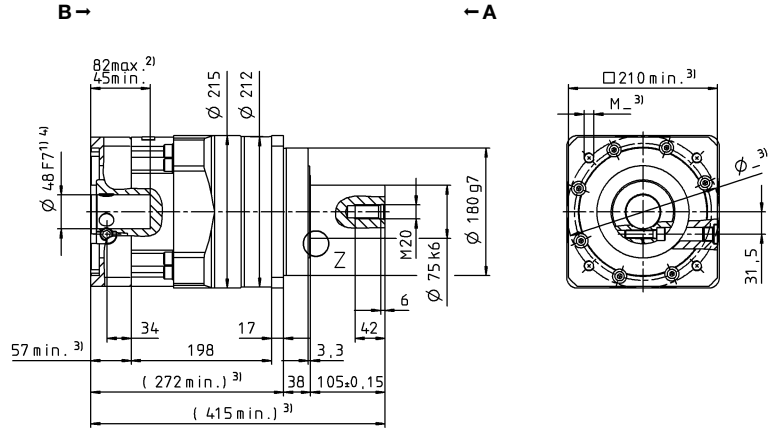
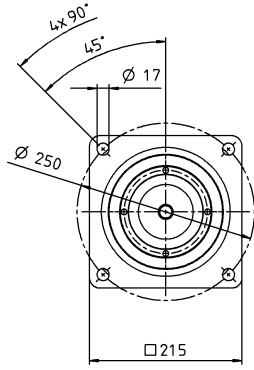
View A

View B

Motor shaft diameter [mm]

2-stage

up to 48⁴⁾ (M)⁵⁾
clamping hub diameter



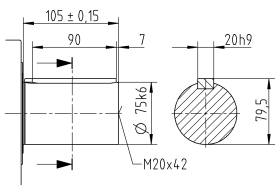
Planetary gearboxes

SP+

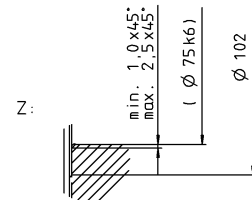
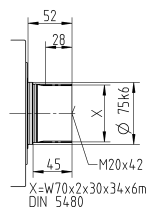
MF

Other output variants

Shaft with key



Splined shaft (DIN 5480)



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

SP+ 240 MF 1-stage

			1-stage					
Ratio	<i>i</i>		4	5	7	8	10	
Max. torque ^{a) b) e)}	T_{2a}	Nm	5700	5700	5700	4000	4000	
		in.lb	50450	50450	50450	35403	35403	
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)	T_{2B}	Nm	5400	5400	5160	4000	4000	
		in.lb	47794	47794	45670	35403	35403	
Nominal torque (at n_{1N})	T_{2N}	Nm	3038	2872	2737	2611	2735	
		in.lb	26885	25418	24223	23111	24208	
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)	T_{2Not}	Nm	8500	8500	8500	6850	6850	
		in.lb	75232	75232	75232	60628	60628	
Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)}	n_{1N}	rpm	1000	1200	1500	1700	1700	
Max. input speed	n_{1Max}	rpm	3000	3000	3000	3000	3000	
Mean no load running torque ^{b)} (at $n_1 = 2000$ rpm and 20 °C gearbox temperature)	T_{012}	Nm	24	19	12	12	10	
		in.lb	212	164	106	106	89	
Max. backlash	j_t	arcmin	Standard ≤ 3 / Reduced ≤ 1					
Torsional rigidity ^{b)}	C_{121}	Nm/arcmin	550					
		in.lb/arcmin	4868					
Max. axial force ^{c)}	F_{2AMax}	N	33000					
		lb _f	7425					
Max. lateral force ^{c)}	F_{2QMax}	N	30000					
		lb _f	6750					
Max. tilting moment	M_{2KMax}	Nm	5000					
		in.lb	44254					
Efficiency at full load	η	%	97					
Service life ^{f)}	L_h	h	> 20000					
Weight (incl. standard adapter plate)	m	kg	77					
		lb _m	170.2					
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®])	L_{pA}	dB(A)	≤ 66					
Max. permitted housing temperature		°C	+90					
		F	194					
Ambient temperature		°C	-15 to +40					
		F	5 to 104					
Lubrication			Lubricated for life					
Direction of rotation			In- and output same direction					
Protection class			IP 65					
Metal bellows coupling (recommended product type – validate sizing with cymex [®])			BC2-06000AA085.000-X					
Bore diameter of coupling on the application side		mm	X = 060.000 - 140.000					
Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request	O 60	J_1	kgcm ²	198	163	138	138	125
			10 ⁻³ in.lb.s ²	175	144	122	122	110

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

- ^{a)} At max. 10 % F_{2QMax}
- ^{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
- ^{e)} Smooth shaft
- ^{f)} Please contact us to discuss application-specific service lifetimes

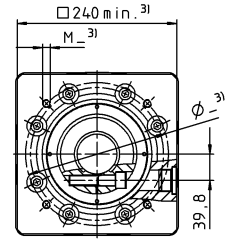
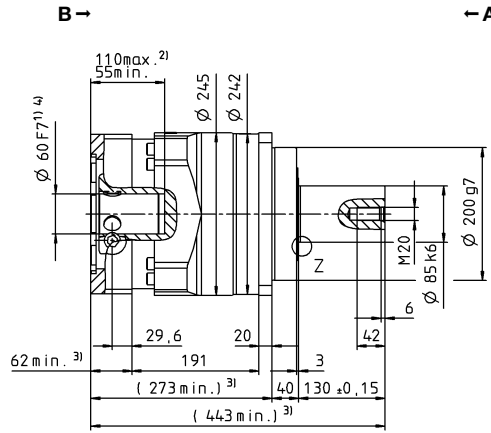
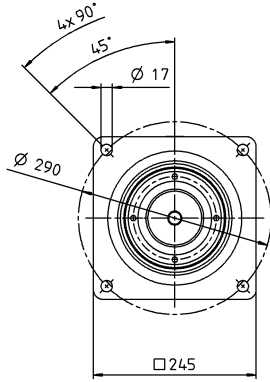
View A

View B

Motor shaft diameter [mm]

1-stage

up to 60⁴⁾ (O)⁵⁾
clamping hub diameter



Planetary gearboxes

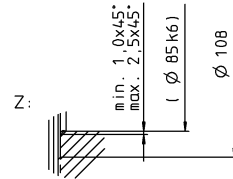
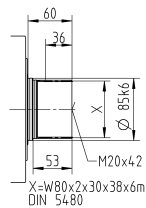
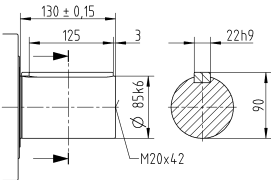
SP+

MF

Other output variants

Shaft with key

Splined shaft (DIN 5480)



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

SP+ 240 MF 2-stage

				2-stage											
Ratio	<i>i</i>			16	20	25	28	32	35	40	50	64	70	100	
Max. torque ^{a) b) e)}	T_{2a}	<i>Nm</i>		5446	5446	5700	5446	5446	5700	5446	5700	3642	5700	3642	
		<i>in.lb</i>		48202	48202	50450	48202	48202	50450	48202	50450	32236	50450	32236	
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)	T_{2B}	<i>Nm</i>		5400	5400	5400	5400	5400	5400	4400	5160	3642	4730	3642	
		<i>in.lb</i>		47794	47794	47794	47794	47794	47794	38944	45670	32236	41864	32236	
Nominal torque (at n_{1N})	T_{2N}	<i>Nm</i>		2658	2596	3198	2667	3754	3283	2803	3457	2914	3784	2914	
		<i>in.lb</i>		23524	22976	28308	23607	33222	29060	24811	30600	25789	33491	25789	
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)	T_{2Not}	<i>Nm</i>		8500	8500	8500	8500	8500	8500	8500	8500	6850	8500	6850	
		<i>in.lb</i>		75232	75232	75232	75232	75232	75232	75232	75232	60628	75232	60628	
Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)}	n_{1N}	<i>rpm</i>		2300	2500	2500	2500	2500	2500	2500	2500	2500	2800	2800	
Max. input speed	n_{1Max}	<i>rpm</i>		4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	
Mean no load running torque ^{b)} (at $n_1 = 2000$ rpm and 20 °C gearbox temperature)	T_{012}	<i>Nm</i>		8.4	7.1	6.5	5.9	5.9	4.5	4.1	3.5	3.5	3.0	3.0	
		<i>in.lb</i>		74	63	58	52	52	40	36	31	31	26	26	
Max. backlash	j_t	<i>arcmin</i>		Standard ≤ 5 / Reduced ≤ 3											
Torsional rigidity ^{b)}	C_{121}	<i>Nm/arcmin</i>		550											
		<i>in.lb/arcmin</i>		4868											
Max. axial force ^{c)}	F_{2AMax}	<i>N</i>		33000											
		<i>lb_f</i>		7425											
Max. lateral force ^{c)}	F_{2QMax}	<i>N</i>		30000											
		<i>lb_f</i>		6750											
Max. tilting moment	M_{2KMax}	<i>Nm</i>		5000											
		<i>in.lb</i>		44254											
Efficiency at full load	η	%		94											
Service life ¹⁾	L_h	<i>h</i>		> 20000											
Weight (incl. standard adapter plate)	m	<i>kg</i>		76											
		<i>lb_m</i>		168											
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®])	L_{pA}	<i>dB(A)</i>		≤ 58											
Max. permitted housing temperature		°C		+90											
		<i>F</i>		194											
Ambient temperature		°C		-15 to +40											
		<i>F</i>		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 [®])				BC2-06000AA085.000-X											
Bore diameter of coupling on the application side		<i>mm</i>		X = 060.000 - 140.000											
Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request	M	48	J_1	<i>kgcm²</i>	39.2	34.6	33.2	30.5	30.5	29.7	28.2	27.9	27.6	27.6	27.5
				<i>10⁻³ in.lb.s²</i>	34.7	30.6	29.4	27.0	27.0	26.3	25.0	24.7	24.4	24.4	24.3

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

- ^{a)} At max. 10 % F_{2QMax}
- ^{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
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

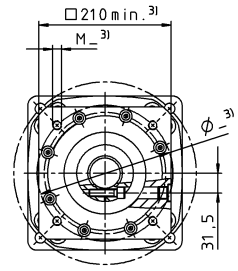
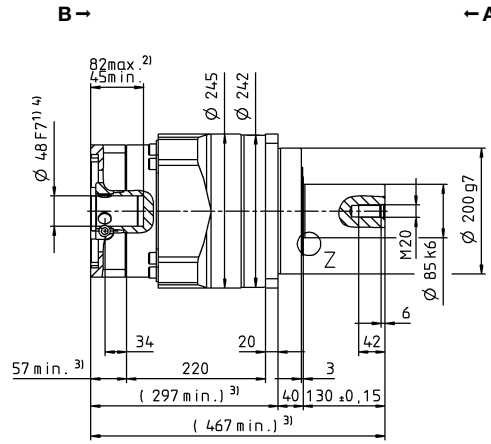
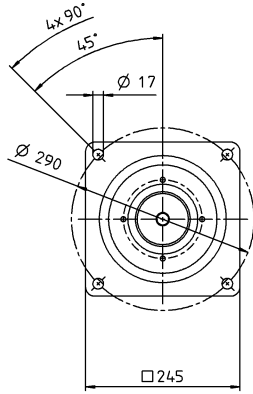
View A

View B

Motor shaft diameter [mm]

2-stage

up to 48⁴⁾ (M)⁵⁾
clamping hub diameter



Planetary gearboxes

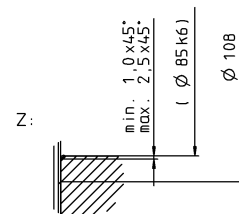
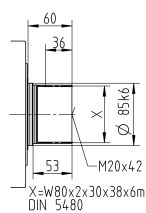
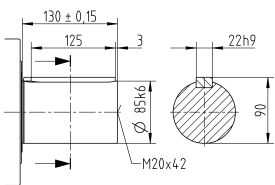
SP+

MF

Other output variants

Shaft with key

Splined shaft (DIN 5480)



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

SP+ 075 MC 1-stage

			1-stage							
Ratio	<i>i</i>		3	4	5	7	8	10		
Max. torque ^{a) b) e)}	T_{2a}	Nm	68	90	90	90	70	70		
		in.lb	602	797	797	797	620	620		
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)	T_{2B}	Nm	68	90	90	90	70	70		
		in.lb	602	797	797	797	620	620		
Nominal torque (at n_N)	T_{2N}	Nm	41	51	51	52	50	53		
		in.lb	362	448	447	459	441	468		
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)	T_{2Not}	Nm	139	185	250	250	213	213		
		in.lb	1230	1640	2213	2213	1885	1885		
Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)}	n_{1N}	rpm	4500	4500	4500	4500	4500	4500		
Max. input speed	n_{1Max}	rpm	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	1.1	0.88	0.72	0.49	0.42	0.40		
		in.lb	9.9	7.8	6.4	4.3	3.7	3.5		
Max. backlash	j_t	arcmin	Standard ≤ 6 / Reduced ≤ 4							
Torsional rigidity ^{b)}	C_{121}	Nm/arcmin	10							
		in.lb/arcmin	89							
Max. axial force ^{c)}	F_{2AMax}	N	3350							
		lb _f	754							
Max. lateral force ^{c)}	F_{2QMax}	N	4200							
		lb _f	945							
Max. tilting moment	M_{2KMax}	Nm	236							
		in.lb	2089							
Efficiency at full load	η	%	98.5							
Service life ¹⁾	L_h	h	> 30000							
Weight (incl. standard adapter plate)	m	kg	3.9							
		lb _m	8.6							
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®])	L_{pA}	dB(A)	≤ 59							
Max. permitted housing temperature		°C	+90							
		F	194							
Ambient temperature		°C	-15 to +40							
		F	5 to 104							
Lubrication			Lubricated for life							
Direction of rotation			In- and output same direction							
Protection class			IP 65							
Metal bellows coupling (recommended product type – validate sizing with cymex [®])			BC2-00080AA022.000-X							
Bore diameter of coupling on the application side		mm	X = 014.000 - 042.000							
Mass moment of inertia (relates to the drive) Clamping hub diameter [mm]	E	19	J_1	kgcm ²	1.03	0.78	0.68	0.59	0.54	0.54
				10 ⁻³ in.lb.s ²	0.91	0.69	0.60	0.52	0.48	0.48
	G	24	J_1	kgcm ²	2.40	2.15	2.05	1.96	1.91	1.91
				10 ⁻³ in.lb.s ²	2.12	1.90	1.81	1.73	1.69	1.69

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

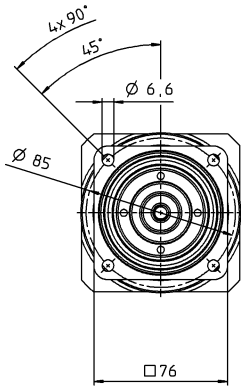
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

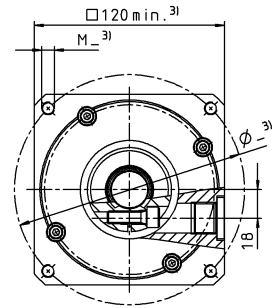
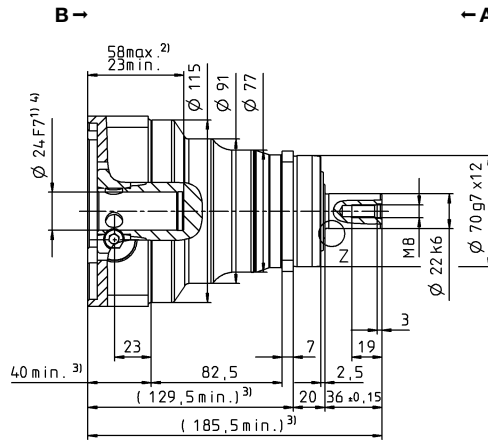
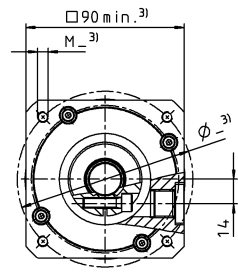
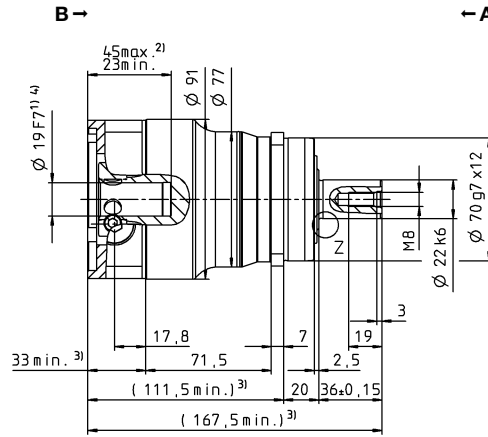
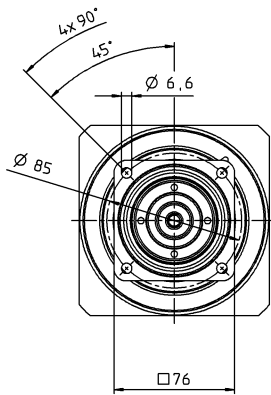
View B

1-stage

up to 19⁴⁾ (E)⁵⁾
clamping hub
diameter



up to 24⁴⁾ (G)
clamping hub
diameter



Motor shaft diameter [mm]

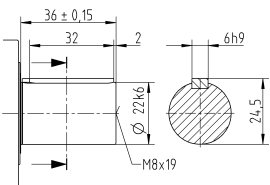
Planetary gearboxes

SP+

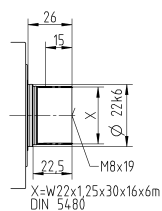
MC

Other output variants

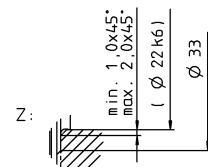
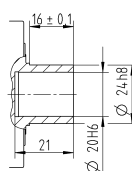
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



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

SP+ 075 MC 2-stage

			2-stage											
Ratio	<i>i</i>		16	20	25	28	32	35	40	50	64	70	100	
Max. torque ^{a) b) e)}	T_{2a}	Nm	90	90	90	90	90	90	90	90	70	90	70	
		in.lb	797	797	797	797	797	797	797	797	797	620	797	620
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)	T_{2B}	Nm	90	90	90	90	90	90	90	90	70	90	70	
		in.lb	797	797	797	797	797	797	797	797	797	620	797	620
Nominal torque (at n_N)	T_{2N}	Nm	62	62	72	65	72	72	65	72	56	72	56	
		in.lb	552	553	637	572	637	637	574	637	496	637	496	
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)	T_{2Not}	Nm	250	250	250	250	250	250	250	250	213	250	213	
		in.lb	2213	2213	2213	2213	2213	2213	2213	2213	1885	2213	1885	
Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)}	n_{1N}	rpm	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	
Max. input speed	n_{1Max}	rpm	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	0.36	0.24	0.18	0.18	0.17	0.16	0.16	0.16	0.16	0.15	0.14	
		in.lb	3.2	2.1	1.6	1.6	1.5	1.4	1.4	1.4	1.4	1.3	1.2	
Max. backlash	j_t	arcmin	Standard ≤ 8 / Reduced ≤ 6											
Torsional rigidity ^{b)}	C_{121}	Nm/arcmin	10											
		in.lb/arcmin	89											
Max. axial force ^{c)}	F_{2AMax}	N	3350											
		lb _f	754											
Max. lateral force ^{c)}	F_{2QMax}	N	4200											
		lb _f	945											
Max. tilting moment	M_{2KMax}	Nm	236											
		in.lb	2089											
Efficiency at full load	η	%	96.5											
Service life ¹⁾	L_h	h	> 30000											
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 [®])			BC2-00080AA022.000-X											
Bore diameter of coupling on the application side		mm	X = 014.000 - 042.000											
Mass moment of inertia (relates to the drive) Clamping hub diameter [mm]	C	14	J_1	kgcm ²	0.23	0.20	0.20	0.18	0.18	0.18	0.16	0.16	0.16	0.16
				10 ⁻³ in.lb.s ²	0.20	0.18	0.18	0.16	0.16	0.16	0.14	0.14	0.14	0.14
	E	19	J_1	kgcm ²	0.55	0.53	0.52	0.50	0.50	0.50	0.49	0.49	0.49	0.49
				10 ⁻³ in.lb.s ²	0.49	0.47	0.46	0.44	0.44	0.44	0.43	0.43	0.43	0.43

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

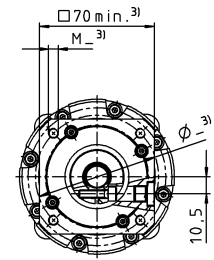
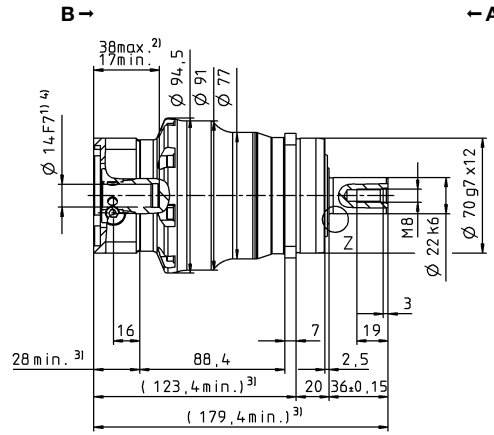
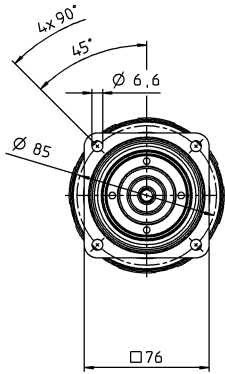
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

View B

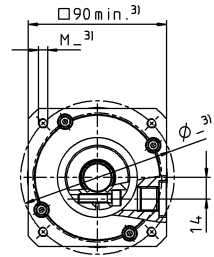
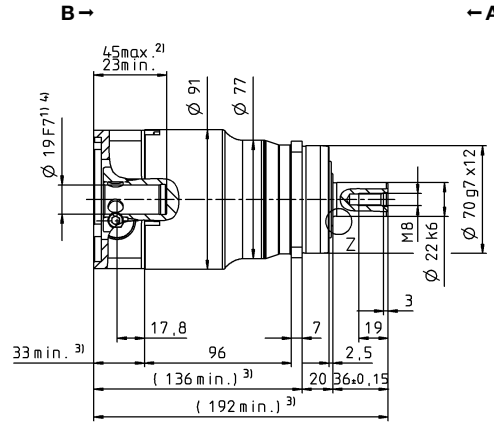
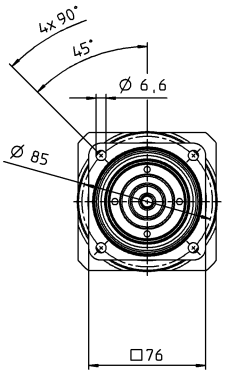
2-stage

up to 14⁴⁾ (C)⁵⁾
clamping hub
diameter



Motor shaft diameter [mm]

up to 19⁴⁾ (E)
clamping hub
diameter



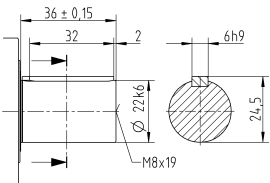
Planetary gearboxes

SP+

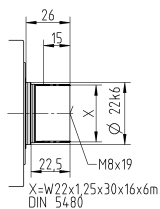
MC

Other output variants

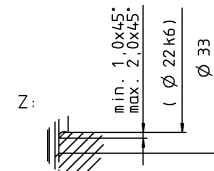
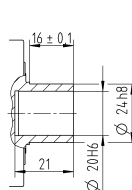
Shaft with key



Spined shaft (DIN 5480)



Shaft mounted



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

SP+ 100 MC 1-stage

			Standard version MC						Friction optimized version L							
Ratio	<i>i</i>		3	4	5	7	8	10	3	4	5	7	8	10		
Max. torque ^{a) b) e)}	T_{2a}	Nm	180	240	240	240	180	180	180	240	240	240	180	180		
		in.lb	1593	2124	2124	2124	1593	1593	1593	2124	2124	2124	1593	1593		
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)	T_{2B}	Nm	180	240	240	240	180	180	180	240	240	240	180	180		
		in.lb	1593	2124	2124	2124	1593	1593	1593	2124	2124	2124	1593	1593		
Nominal torque (at n_n)	T_{2N}	Nm	76	95	91	93	93	97	76	95	91	93	93	97		
		in.lb	677	838	806	823	821	861	677	838	806	823	821	861		
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)	T_{2Not}	Nm	454	625	625	625	599	599	454	625	625	625	599	599		
		in.lb	4016	5532	5532	5532	5302	5302	4016	5532	5532	5532	5302	5302		
Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)}	n_{1N}	rpm	3500	4000	4500	4500	4500	4500	3500	4000	4500	4500	4500	4500		
Max. input speed	n_{1Max}	rpm	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	2.0	1.8	1.4	0.84	0.78	0.64	0.9	0.8	0.6	0.5	0.4	0.4		
		in.lb	17	16	12	7.4	6.9	5.7	8.0	7.1	5.3	4.4	3.5	3.5		
Max. backlash	j_t	arcmin	Standard ≤ 4 / Reduced ≤ 2													
Torsional rigidity ^{b)}	C_{121}	Nm/arcmin	31													
		in.lb/arcmin	274													
Max. axial force ^{c)}	F_{2AMax}	N	5650					2000								
		lb _f	1271					450								
Max. lateral force ^{c)}	F_{2QMax}	N	6600					1000								
		lb _f	1485					225								
Max. tilting moment	M_{2KMax}	Nm	487					72								
		in.lb	4310					637								
Efficiency at full load	η	%	98.5					99								
Service life ¹⁾	L_h	h	> 30000													
Weight (incl. standard adapter plate)	m	kg	7.7													
		lb _m	17													
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®])	L_{pA}	dB(A)	≤ 58													
		°C	+90													
Max. permitted housing temperature	F	°C	+90													
		F	194													
Ambient temperature	F	°C	-15 to +40													
		F	5 to 104													
Lubrication			Lubricated for life													
Direction of rotation			In- and output same direction													
Protection class			IP 65					IP 52								
Metal bellows coupling (recommended product type – validate sizing with cymex [®])			BC2-00300AA032.000-X													
	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]	G	24	J_1	kgcm ²	3.99	3.04	2.61	2.29	2.26	2.07	3.99	3.04	2.61	2.29	2.26	2.07
				10 ⁻³ in.lb.s ²	3.53	2.69	2.31	2.03	2.00	1.83	3.53	2.69	2.31	2.03	2.00	1.83
	K	38	J_1	kgcm ²	11.1	10.1	9.68	9.36	9.55	9.14	11.1	10.1	9.68	9.36	9.55	9.14
				10 ⁻³ in.lb.s ²	9.82	8.94	8.57	8.28	8.45	8.09	9.82	8.94	8.57	8.28	8.45	8.09

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

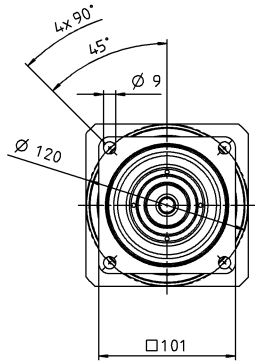
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

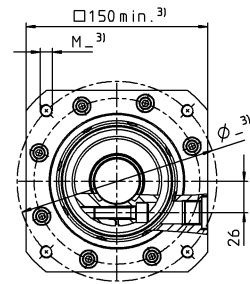
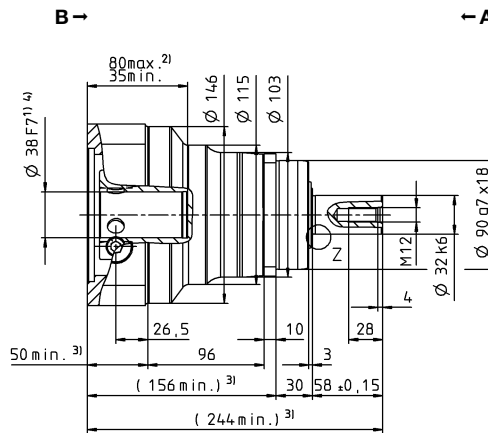
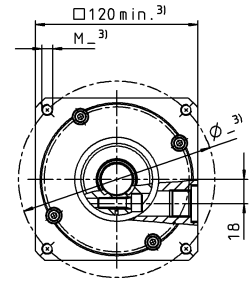
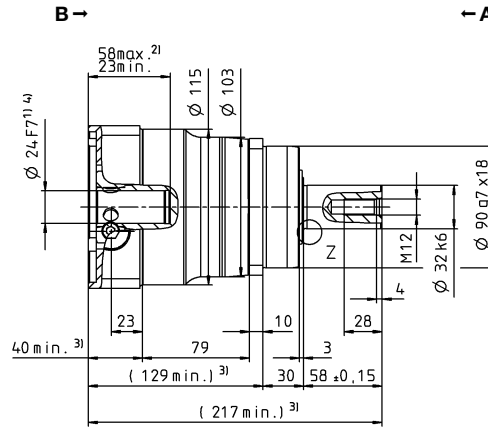
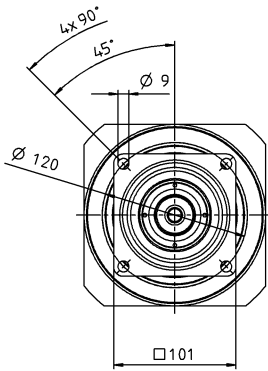
View B

1-stage

up to 24⁴⁾ (G)⁵⁾
clamping hub diameter



up to 38⁴⁾ (K)
clamping hub diameter



Motor shaft diameter [mm]

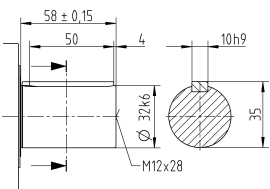
Planetary gearboxes

SP+

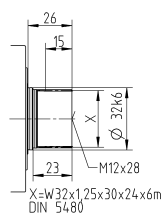
MC

Other output variants

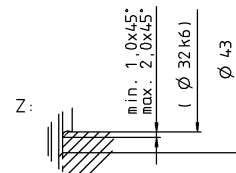
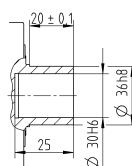
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



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

SP+ 100 MC 2-stage

			2-stage												
Ratio	<i>i</i>		16	20	25	28	32	35	40	50	64	70	100		
Max. torque ^{a) b) e)}	T_{2a}	Nm	240	240	240	240	240	240	240	240	180	240	180		
		in.lb	2124	2124	2124	2124	2124	2124	2124	2124	2124	1593	2124	1593	
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)	T_{2B}	Nm	240	240	240	240	240	240	240	240	180	240	180		
		in.lb	2124	2124	2124	2124	2124	2124	2124	2124	2124	1593	2124	1593	
Nominal torque (at n_n)	T_{2N}	Nm	138	148	149	164	141	164	183	182	144	189	144		
		in.lb	1221	1313	1322	1453	1251	1450	1617	1614	1275	1673	1275		
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)	T_{2Not}	Nm	625	625	625	625	625	625	625	625	599	625	599		
		in.lb	5532	5532	5532	5532	5532	5532	5532	5532	5302	5532	5302		
Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)}	n_{1N}	rpm	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500		
Max. input speed	n_{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000		
Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature)	T_{012}	Nm	0.52	0.53	0.48	0.43	0.38	0.28	0.40	0.25	0.25	0.20	0.19		
		in.lb	4.6	4.7	4.2	3.8	3.4	2.5	3.5	2.2	2.2	1.8	1.7		
Max. backlash	j_t	arcmin	Standard ≤ 6 / Reduced ≤ 4												
Torsional rigidity ^{b)}	C_{121}	Nm/arcmin	31												
		in.lb/arcmin	274												
Max. axial force ^{c)}	F_{2AMax}	N	5650												
		lb _f	1271												
Max. lateral force ^{c)}	F_{2QMax}	N	6600												
		lb _f	1485												
Max. tilting moment	M_{2KMax}	Nm	487												
		in.lb	4310												
Efficiency at full load	η	%	96.5												
Service life ¹⁾	L_h	h	> 30000												
Weight (incl. standard adapter plate)	m	kg	7.9												
		lb _m	17.5												
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 [®])			BC2-00300AA032.000-X												
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]	E	19	J_i	kgcm ²	0.81	0.70	0.68	0.60	0.43	0.59	0.55	0.54	0.38	0.54	0.54
				10 ⁻³ in.lb.s ²	0.72	0.62	0.60	0.53	0.38	0.52	0.49	0.48	0.34	0.48	0.48
	G	24	J_i	kgcm ²	2.18	2.07	2.05	1.97	2.06	1.96	1.92	1.91	1.91	1.91	1.91
				10 ⁻³ in.lb.s ²	1.93	1.83	1.81	1.74	1.82	1.73	1.70	1.69	1.69	1.69	1.69

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

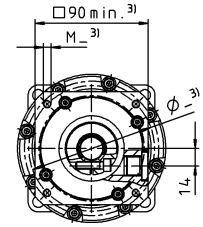
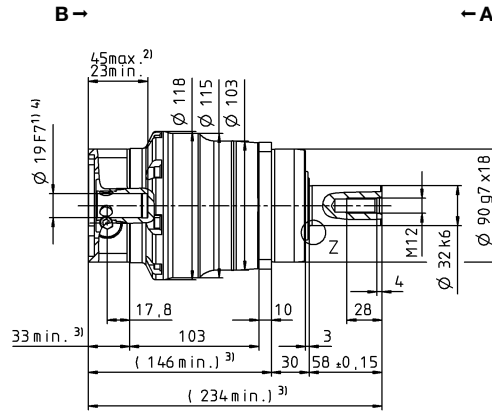
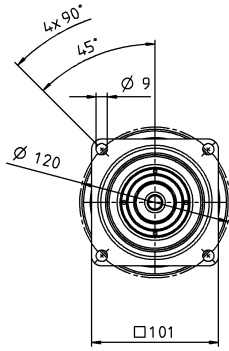
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

View B

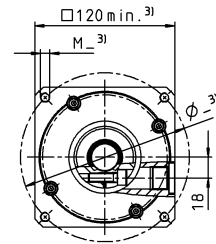
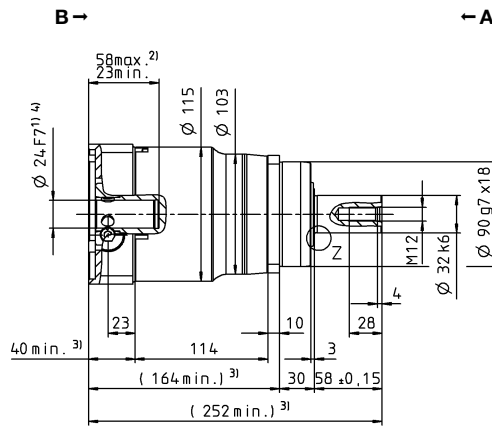
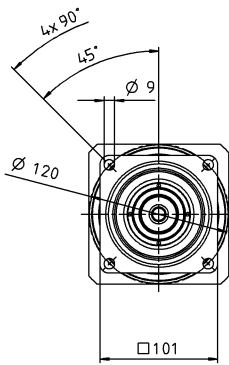
2-stage

up to 19⁴⁾ (E)⁵⁾
clamping hub diameter



Motor shaft diameter [mm]

up to 24⁴⁾ (G)
clamping hub diameter



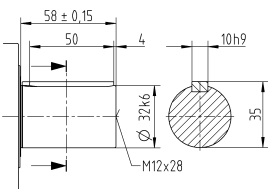
Planetary gearboxes

SP+

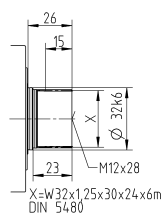
MC

Other output variants

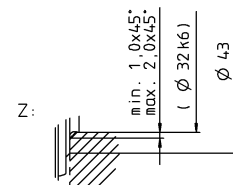
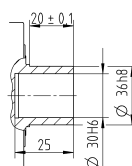
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



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

SP+ 140 MC 1-stage

			Standard version MC						Friction optimized version L							
Ratio	<i>i</i>		3	4	5	7	8	10	3	4	5	7	8	10		
Max. torque ^{a) b) e)}	T_{2a}	Nm	310	480	480	480	380	380	310	480	480	480	380	380		
		in.lb	2744	4248	4248	4248	3363	3363	2744	4248	4248	4248	3363	3363		
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)	T_{2B}	Nm	310	480	480	480	380	380	310	480	480	480	380	380		
		in.lb	2744	4248	4248	4248	3363	3363	2744	4248	4248	4248	3363	3363		
Nominal torque (at n_n)	T_{2N}	Nm	127	195	182	187	186	195	127	195	182	187	186	195		
		in.lb	1122	1730	1612	1656	1644	1727	1122	1730	1612	1656	1644	1727		
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)	T_{2Not}	Nm	1250	1350	1350	1350	1250	1250	1250	1350	1350	1350	1250	1250		
		in.lb	11064	11949	11949	11949	11064	11064	11064	11949	11949	11949	11064	11064		
Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)}	n_{1N}	rpm	3000	3500	4500	4500	4500	4500	3000	3500	4500	4500	4500	4500		
Max. input speed	n_{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000		
Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature)	T_{012}	Nm	4.1	3.5	3.0	2.2	1.8	1.7	2.0	1.5	1.2	1.0	0.9	0.9		
		in.lb	36	31	27	20	16	15	18	13	11	8.9	8.0	8.0		
Max. backlash	j_t	arcmin	Standard ≤ 4 / Reduced ≤ 2													
Torsional rigidity ^{b)}	C_{121}	Nm/arcmin	53													
		in.lb/arcmin	469													
Max. axial force ^{c)}	F_{2AMax}	N	9870						3000							
		lb _f	2221						675							
Max. lateral force ^{c)}	F_{2QMax}	N	9900						1200							
		lb _f	2228						270							
Max. tilting moment	M_{2KMax}	Nm	952						110							
		in.lb	8426						974							
Efficiency at full load	η	%	98.5						99							
Service life ¹⁾	L_h	h	> 30000													
Weight (incl. standard adapter plate)	m	kg	17.2													
		lb _m	38													
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®])	L_{pA}	dB(A)	≤ 59													
Max. permitted housing temperature		°C	+90													
		F	194													
Ambient temperature		°C	-15 to +40													
		F	5 to 104													
Lubrication			Lubricated for life													
Direction of rotation			In- and output same direction													
Protection class			IP 65						IP 52							
Metal bellows coupling (recommended product type – validate sizing with cymex [®])			BC2-00500AA040.000-X													
Bore diameter of coupling on the application side		mm	X = 035.000 - 060.000													
Mass moment of inertia (relates to the drive) Clamping hub diameter [mm]	K	38	J_i	kgcm ²	14.9	12.1	11.0	10.1	10.1	9.5	14.9	12.1	11.0	10.1	10.1	9.5
				10 ⁻³ in.lb.s ²	13.2	10.7	9.7	8.9	8.9	8.4	13.2	10.7	9.7	8.9	8.9	8.4
	M	48	J_i	kgcm ²	29.5	26.7	25.6	24.7	24.7	24.2	29.5	26.7	25.6	24.7	24.7	24.2
				10 ⁻³ in.lb.s ²	26.1	23.6	22.7	21.9	21.9	21.4	26.1	23.6	22.7	21.9	21.9	21.4

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

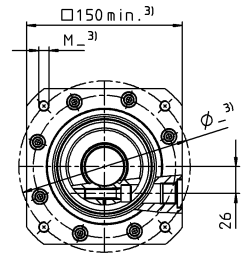
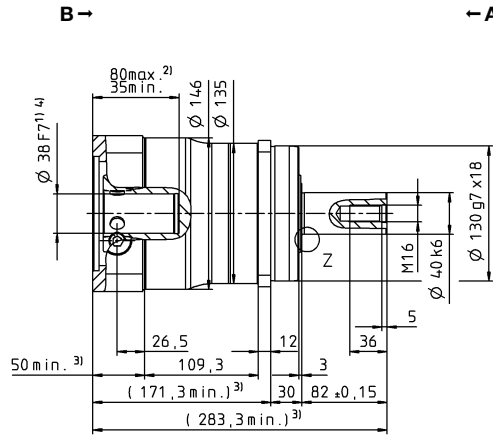
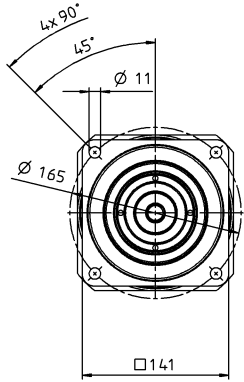
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

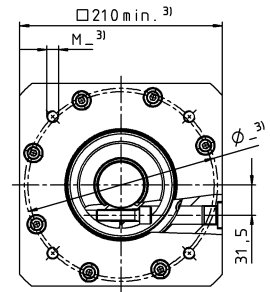
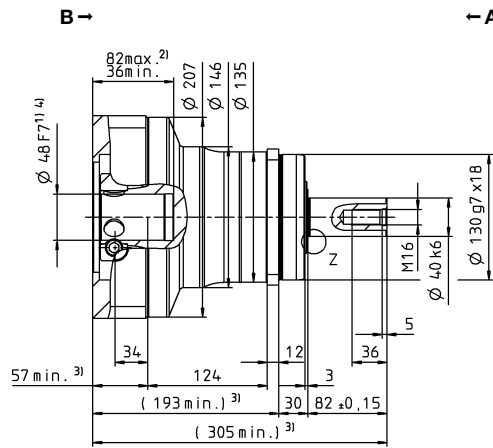
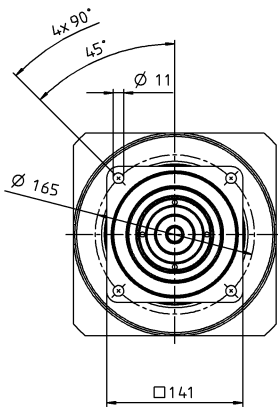
View B

1-stage

up to 38⁴⁾ (K)⁵⁾
clamping hub diameter



up to 48⁴⁾ (M)
clamping hub diameter



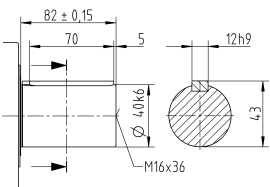
Motor shaft diameter [mm]

Planetary gearboxes

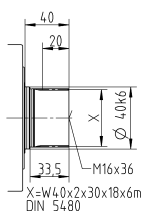
SP+
MC

Other output variants

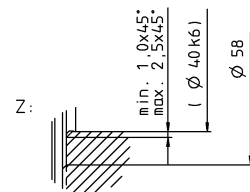
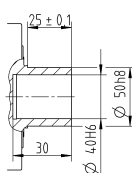
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



- 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

SP+ 140 MC 2-stage

			2-stage												
Ratio	<i>i</i>		16	20	25	28	32	35	40	50	64	70	100		
Max. torque ^{a) b) e)}	T_{2a}	Nm	480	480	480	480	480	480	480	480	380	480	380		
		in.lb	4248	4248	4248	4248	4248	4248	4248	4248	4248	3363	4248	3363	
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)	T_{2B}	Nm	480	480	480	480	480	480	480	480	380	480	380		
		in.lb	4248	4248	4248	4248	4248	4248	4248	4248	4248	3363	4248	3363	
Nominal torque (at n_N)	T_{2N}	Nm	277	297	298	328	287	329	364	367	304	304	304		
		in.lb	2447	2629	2636	2900	2544	2915	3219	3250	2691	2690	2691		
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)	T_{2Not}	Nm	1350	1350	1350	1350	1350	1350	1350	1350	1250	1350	1250		
		in.lb	11949	11949	11949	11949	11949	11949	11949	11949	11064	11949	11064		
Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)}	n_{1N}	rpm	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500		
Max. input speed	n_{1Max}	rpm	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	1.1	1.0	0.96	0.80	0.72	0.60	0.55	0.45	0.45	0.40	0.40		
		in.lb	9.7	9.2	8.5	7.1	6.4	5.3	4.9	4.0	4.0	3.5	3.5		
Max. backlash	j_t	arcmin	Standard ≤ 6 / Reduced ≤ 4												
Torsional rigidity ^{b)}	C_{121}	Nm/arcmin	53												
		in.lb/arcmin	469												
Max. axial force ^{c)}	F_{2AMax}	N	9870												
		lb _f	2221												
Max. lateral force ^{c)}	F_{2QMax}	N	9900												
		lb _f	2228												
Max. tilting moment	M_{2KMax}	Nm	952												
		in.lb	8426												
Efficiency at full load	η	%	96.5												
Service life ¹⁾	L_h	h	> 30000												
Weight (incl. standard adapter plate)	m	kg	17												
		lb _m	37.6												
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®])	L_{pA}	dB(A)	≤ 59												
Max. permitted housing temperature		°C	+90												
		F	194												
Ambient temperature		°C	-15 to +40												
		F	5 to 104												
Lubrication			Lubricated for life												
Direction of rotation			In- and output same direction												
Protection class			IP 65												
Metal bellows coupling (recommended product type – validate sizing with cymex [®])			BC2-00500AA040.000-X												
Bore diameter of coupling on the application side		mm	X = 035.000 - 060.000												
Mass moment of inertia (relates to the drive) Clamping hub diameter [mm]	G	24	J_1	kgcm ²	3.19	2.71	2.67	2.34	1.65	2.32	2.10	2.08	2.08	2.08	2.07
				10 ⁻³ in.lb.s ²	2.82	2.40	2.36	2.07	1.46	2.05	1.86	1.84	1.84	1.84	1.83
	K	38	J_1	kgcm ²	10.3	9.77	9.73	9.41	2.34	9.39	9.16	9.15	1.39	9.14	9.14
				10 ⁻³ in.lb.s ²	9.07	8.65	8.61	8.33	2.07	8.31	8.11	8.10	1.23	8.09	8.09

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

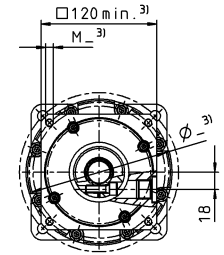
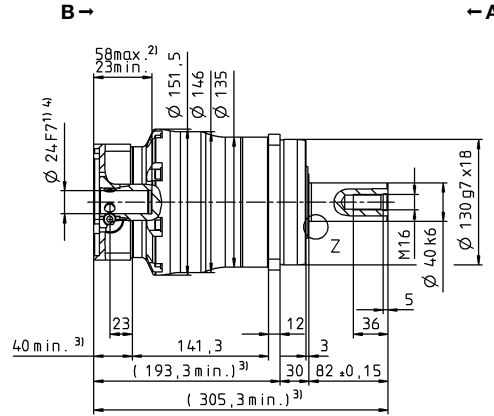
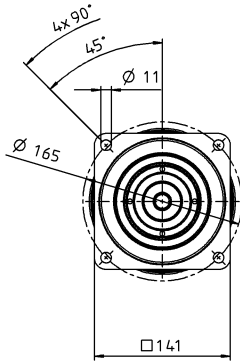
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

View B

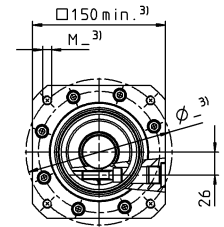
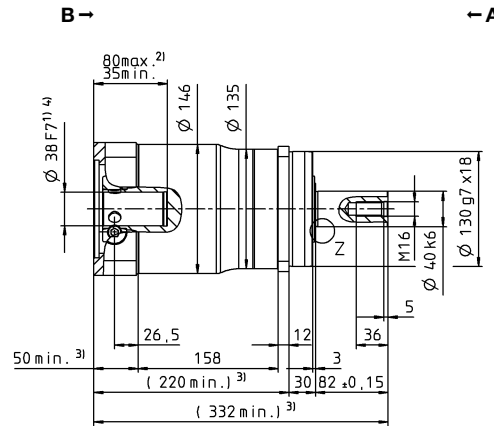
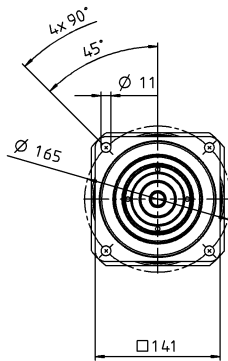
2-stage

up to 24⁴⁾ (G)⁵⁾
clamping hub diameter



Motor shaft diameter [mm]

up to 38⁴⁾ (K)
clamping hub diameter



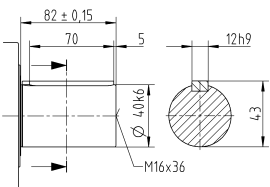
Planetary gearboxes

SP+

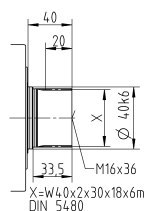
MC

Other output variants

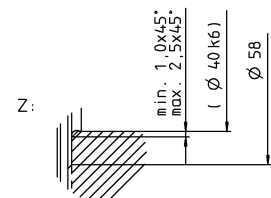
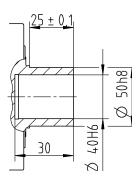
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



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

SP+ 180 MC 1-stage

			Standard version MC						Friction optimized version L						
Ratio	<i>i</i>		3	4	5	7	8	10	3	4	5	7	8	10	
Max. torque ^{a) b) e)}	T_{2a}	Nm	700	880	880	880	700	700	700	880	880	880	700	700	
		in.lb	6196	7789	7789	7789	6196	6196	6196	7789	7789	7789	6196	6196	
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)	T_{2B}	Nm	700	880	880	880	700	700	700	880	880	880	700	700	
		in.lb	6196	7789	7789	7789	6196	6196	6196	7789	7789	7789	6196	6196	
Nominal torque (at n_{1N})	T_{2N}	Nm	289	492	379	469	465	488	289	492	379	469	465	488	
		in.lb	2554	4355	3357	4151	4117	4316	2554	4355	3357	4151	4117	4316	
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)	T_{2Not}	Nm	2640	2750	2750	2750	2640	2640	2640	2750	2750	2750	2640	2640	
		in.lb	23366	24340	24340	24340	23366	23366	23366	24340	24340	24340	23366	23366	
Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)}	n_{1N}	rpm	3000	3500	4500	4500	4500	4500	3000	3500	4500	4500	4500	4500	
Max. input speed	n_{1Max}	rpm	4500	6000	6000	6000	6000	6000	4500	6000	6000	6000	6000	6000	
Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature)	T_{012}	Nm	9.8	8.2	6.6	4.4	4.4	3.2	3.8	3.0	2.3	1.8	1.7	1.6	
		in.lb	87	73	58	39	39	28	34	27	20	16	15	14	
Max. backlash	j_t	arcmin	Standard ≤ 4 / Reduced ≤ 2												
Torsional rigidity ^{b)}	C_{121}	Nm/arcmin	175												
		in.lb/arcmin	1549												
Max. axial force ^{c)}	F_{2AMax}	N	14150						5000						
		lb _f	3184						1125						
Max. lateral force ^{c)}	F_{2QMax}	N	15400						2000						
		lb _f	3465						450						
Max. tilting moment	M_{2KMax}	Nm	1600						208						
		in.lb	14161						1841						
Efficiency at full load	η	%	98.5						99						
Service life ¹⁾	L_h	h	> 30000												
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)	≤ 62												
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						IP 52						
Metal bellows coupling (recommended product type – validate sizing with cymex [®])			BC2-00800AA055.000-X												
Bore diameter of coupling on the application side		mm	X = 040.000 - 075.000												
Mass moment of inertia (relates to the drive) Clamping hub diameter [mm]	M 48	J_1	kgcm ²	58.5	41.6	35.6	30.0	30.0	26.9	58.5	41.6	35.6	30.0	30.0	26.9
			10 ⁻³ in.lb.s ²	51.8	36.8	31.5	26.6	26.6	23.8	51.8	36.8	31.5	26.6	26.6	23.8

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

- ^{a)} At max. 10 % F_{2QMax}
- ^{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
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

SP+ 180 MC 2-stage

				2-stage											
Ratio	<i>i</i>			16	20	25	28	32	35	40	50	64	70	100	
Max. torque ^{a) b) e)}	T_{2a}	<i>Nm</i>		880	880	880	880	880	880	880	880	700	880	700	
		<i>in.lb</i>		7789	7789	7789	7789	7789	7789	7789	7789	7789	6196	7789	6196
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)	T_{2B}	<i>Nm</i>		880	880	880	880	880	880	880	880	700	880	700	
		<i>in.lb</i>		7789	7789	7789	7789	7789	7789	7789	7789	7789	6196	7789	6196
Nominal torque (at n_{1N})	T_{2N}	<i>Nm</i>		696	704	704	704	704	704	704	704	560	704	560	
		<i>in.lb</i>		6156	6231	6231	6231	6231	6231	6231	6231	6231	4956	6231	4956
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)	T_{2Not}	<i>Nm</i>		2750	2750	2750	2750	2750	2750	2750	2750	2640	2750	2640	
		<i>in.lb</i>		24340	24340	24340	24340	24340	24340	24340	24340	24340	23366	24340	23366
Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)}	n_{1N}	<i>rpm</i>		4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	
Max. input speed	n_{1Max}	<i>rpm</i>		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}	<i>Nm</i>		2.2	2.3	1.8	1.7	1.7	1.4	1.2	1.2	1.2	0.95	1.0	
		<i>in.lb</i>		20	21	16	15	15	12	11	11	11	8.4	9.2	
Max. backlash	j_t	<i>arcmin</i>		Standard ≤ 6 / Reduced ≤ 4											
Torsional rigidity ^{b)}	C_{121}	<i>Nm/arcmin</i>		175											
		<i>in.lb/arcmin</i>		1549											
Max. axial force ^{c)}	F_{2AMax}	<i>N</i>		14150											
		<i>lb_f</i>		3184											
Max. lateral force ^{c)}	F_{2QMax}	<i>N</i>		15400											
		<i>lb_f</i>		3465											
Max. tilting moment	M_{2KMax}	<i>Nm</i>		1600											
		<i>in.lb</i>		14161											
Efficiency at full load	η	%		96.5											
Service life ¹⁾	L_h	<i>h</i>		> 30000											
Weight (incl. standard adapter plate)	m	<i>kg</i>		36.4											
		<i>lb_m</i>		80.4											
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®])	L_{pA}	<i>dB(A)</i>		≤ 58											
Max. permitted housing temperature		°C		+90											
		<i>F</i>		194											
Ambient temperature		°C		-15 to +40											
		<i>F</i>		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 [®])				BC2-00800AA055.000-X											
Bore diameter of coupling on the application side		<i>mm</i>		X = 040.000 - 075.000											
Mass moment of inertia (relates to the drive) Clamping hub diameter [mm]	K	38	J_1	<i>kgcm²</i>	13.5	12.0	11.7	10.6	10.6	10.4	9.74	9.68	5.45	9.63	9.60
				<i>10⁻³ in.lb.s²</i>	12.0	10.6	10.4	9.34	9.34	9.23	8.62	8.57	4.82	8.52	8.50

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

- ^{a)} At max. 10 % F_{2QMax}
- ^{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
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

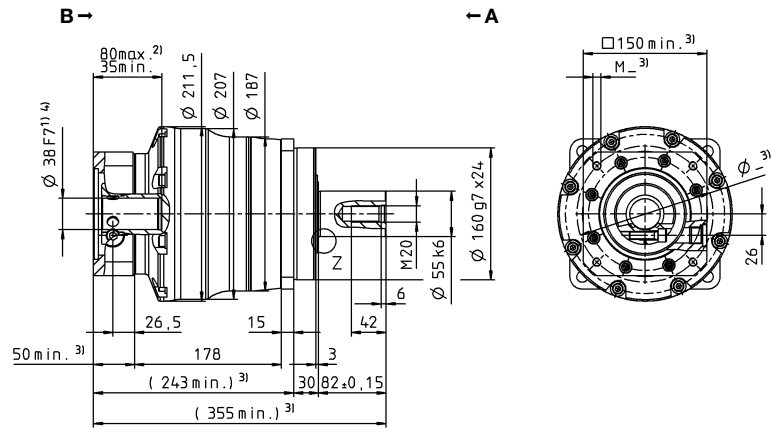
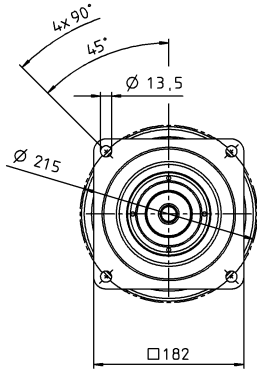
View A

View B

Motor shaft diameter [mm]

2-stage

up to 38⁴⁾ (K)⁵⁾
clamping hub diameter



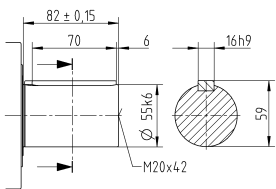
Planetary gearboxes

SP+

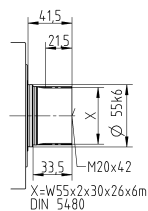
MC

Other output variants

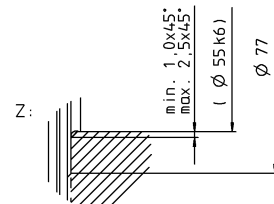
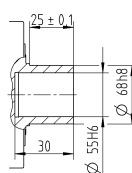
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



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

SP+ 210 MC 1-stage

			Standard version MC					Friction optimized version L						
Ratio	<i>i</i>		4	5	7	8	10	4	5	7	8	10		
Max. torque ^{a) b) e)}	T_{2a}	Nm	2000	2000	1700	1200	1200	2000	2000	1700	1200	1200		
		in.lb	17702	17702	15046	10621	10621	17702	17702	15046	10621	10621		
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)	T_{2B}	Nm	2000	2000	1700	1200	1200	2000	2000	1700	1200	1200		
		in.lb	17702	17702	15046	10621	10621	17702	17702	15046	10621	10621		
Nominal torque (at n_{1N})	T_{2N}	Nm	1260	1141	1169	960	960	1260	1141	1169	960	960		
		in.lb	11148	10098	10347	8497	8497	11148	10098	10347	8497	8497		
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)	T_{2Not}	Nm	5900	5900	5900	5900	5900	5900	5900	5900	5900	5900		
		in.lb	52220	52220	52220	52220	52220	52220	52220	52220	52220	52220		
Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)}	n_{1N}	rpm	2500	3500	3500	3500	3500	2500	3500	3500	3500	3500		
Max. input speed	n_{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000		
Mean no load running torque ^{b)} (at $n_1 = 2000$ rpm and 20 °C gearbox temperature)	T_{012}	Nm	11	8.4	5.6	5.6	4.4	4.9	4.6	4.0	3.8	3.6		
		in.lb	99	74	50	50	39	43	41	35	34	32		
Max. backlash	j_t	arcmin	Standard ≤ 4 / Reduced ≤ 2											
Torsional rigidity ^{b)}	C_{121}	Nm/arcmin	400											
		in.lb/arcmin	3540											
Max. axial force ^{c)}	F_{2AMax}	N	30000					8000						
		lb _f	6750					1800						
Max. lateral force ^{c)}	F_{2QMax}	N	21000					2500						
		lb _f	4725					563						
Max. tilting moment	M_{2KMax}	Nm	3100					310						
		in.lb	27437					2744						
Efficiency at full load	η	%	98.5					99						
Service life ¹⁾	L_h	h	> 30000											
Weight (incl. standard adapter plate)	m	kg	56											
		lb _m	123.8											
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					IP 52						
Metal bellows coupling (recommended product type – validate sizing with cymex [®])			BC2-04000AA075.000-X											
Bore diameter of coupling on the application side		mm	X = 050.000 - 090.000											
Mass moment of inertia (relates to the drive) Clamping hub diameter [mm]	N	55	J_1	kgcm ²	94.3	76.9	61.5	61.5	53.1	94.3	76.9	61.5	61.5	53.1
				10 ⁻³ in.lb.s ²	83.5	68.1	54.4	54.4	47.0	83.5	68.1	54.4	54.4	47.0

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

- ^{a)} At max. 10 % F_{2QMax}
- ^{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
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

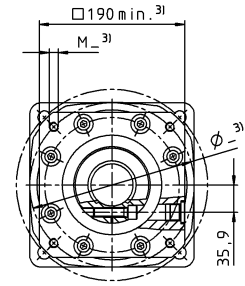
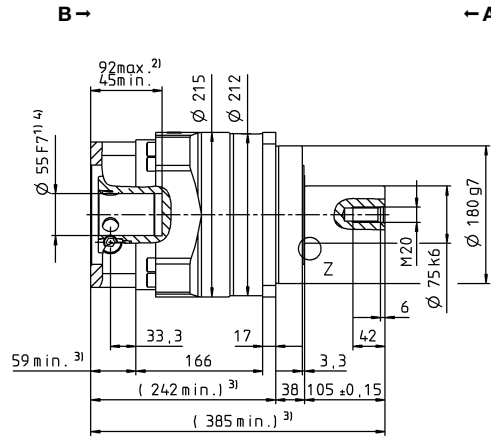
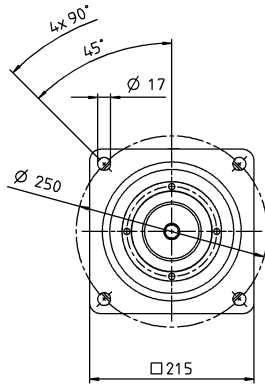
View A

View B

Motor shaft diameter [mm]

1-stage

up to 55⁴⁾ (N)⁵⁾
clamping hub diameter



Planetary gearboxes

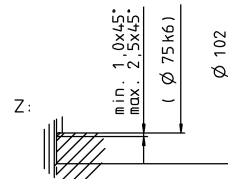
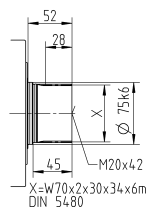
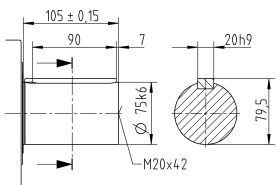
SP+

MC

Other output variants

Shaft with key

Spined shaft (DIN 5480)



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

SP+ 210 MC 2-stage

				2-stage											
Ratio	<i>i</i>			16	20	25	28	32	35	40	50	64	70	100	
Max. torque ^{a) b) e)}	T_{2a}	<i>Nm</i>		1680	1800	2000	1680	1680	1920	1040	1300	1200	1700	1200	
		<i>in.lb</i>		14869	15931	17702	14869	14869	16994	9205	11506	10621	15046	10621	
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)	T_{2B}	<i>Nm</i>		1680	1800	2000	1680	1680	1920	1040	1300	1200	1700	1200	
		<i>in.lb</i>		14869	15931	17702	14869	14869	16994	9205	11506	10621	15046	10621	
Nominal torque (at n_{1N})	T_{2N}	<i>Nm</i>		898	728	910	744	1344	929	787	984	960	1360	960	
		<i>in.lb</i>		7949	6445	8056	6581	11895	8226	6969	8711	8497	12037	8497	
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)	T_{2Not}	<i>Nm</i>		5900	5900	5900	5900	5900	5900	5900	5900	5900	5900	5900	
		<i>in.lb</i>		52220	52220	52220	52220	52220	52220	52220	52220	52220	52220	52220	
Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)}	n_{1N}	<i>rpm</i>		3500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	
Max. input speed	n_{1Max}	<i>rpm</i>		6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	
Mean no load running torque ^{b)} (at $n_1 = 2000$ rpm and 20 °C gearbox temperature)	T_{012}	<i>Nm</i>		3.4	3.1	2.9	2.6	2.6	2.0	2.0	1.8	1.8	1.6	1.6	
		<i>in.lb</i>		30	27	25	23	23	18	18	16	16	14	14	
Max. backlash	j_t	<i>arcmin</i>		Standard ≤ 5 / Reduced ≤ 4											
Torsional rigidity ^{b)}	C_{121}	<i>Nm/arcmin</i>		400											
		<i>in.lb/arcmin</i>		3540											
Max. axial force ^{c)}	F_{2AMax}	<i>N</i>		30000											
		<i>lb_f</i>		6750											
Max. lateral force ^{c)}	F_{2QMax}	<i>N</i>		21000											
		<i>lb_f</i>		4725											
Max. tilting moment	M_{2KMax}	<i>Nm</i>		3100											
		<i>in.lb</i>		27437											
Efficiency at full load	η	%		96.5											
Service life ¹⁾	L_h	<i>h</i>		> 30000											
Weight (incl. standard adapter plate)	m	<i>kg</i>		53											
		<i>lb_m</i>		117.1											
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®])	L_{pA}	<i>dB(A)</i>		≤ 57											
Max. permitted housing temperature		°C		+90											
		<i>F</i>		194											
Ambient temperature		°C		-15 to +40											
		<i>F</i>		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 [®])				BC2-04000AA075.000-X											
Bore diameter of coupling on the application side		<i>mm</i>		X = 050.000 - 090.000											
Mass moment of inertia (relates to the drive) Clamping hub diameter [mm]	M	48	J_1	<i>kgcm²</i>	34.5	31.5	30.8	30.0	30.0	29.7	28.5	28.3	28.3	28.1	28.0
				<i>10⁻³ in.lb.s²</i>	30.5	27.9	27.3	26.6	26.6	26.3	25.2	25.0	25.0	24.9	24.8

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

- ^{a)} At max. 10 % F_{2QMax}
- ^{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
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

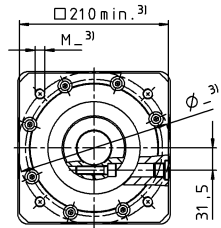
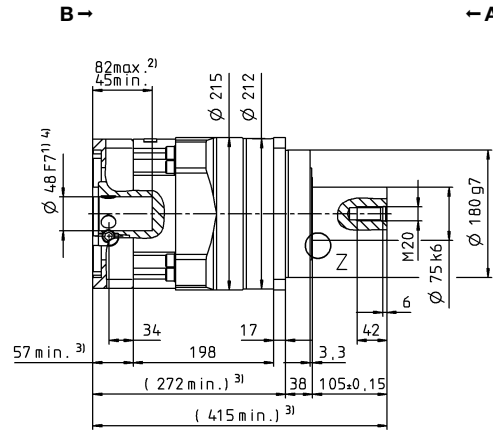
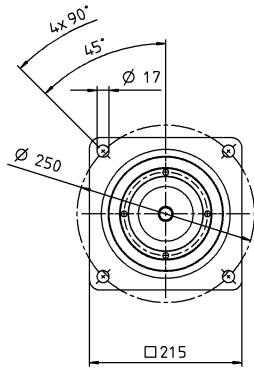
View A

View B

Motor shaft diameter [mm]

2-stage

up to 48⁴⁾ (M)⁵⁾
clamping hub diameter



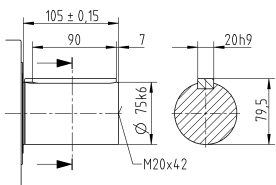
Planetary gearboxes

SP+

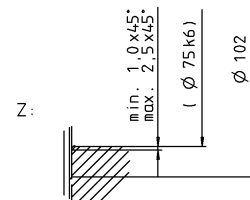
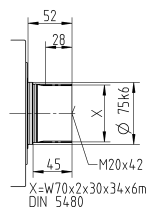
MC

Other output variants

Shaft with key



Splined shaft (DIN 5480)



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

SP+ 240 MC 1-stage

			Standard version MC					Friction optimized version L					
Ratio	<i>i</i>		4	5	7	8	10	4	5	7	8	10	
Max. torque ^{a) b) e)}	T_{2a}	Nm	3500	3600	2700	1800	1800	3500	3600	2700	1800	1800	
		in.lb	30978	31863	23897	15931	15931	30978	31863	23897	15931	15931	
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)	T_{2B}	Nm	3500	3600	2700	1800	1800	3500	3600	2700	1800	1800	
		in.lb	30978	31863	23897	15931	15931	30978	31863	23897	15931	15931	
Nominal torque (at n_{1N})	T_{2N}	Nm	2029	1861	1910	1440	1440	2029	1861	1910	1440	1440	
		in.lb	17955	16471	16909	12745	12745	17955	16471	16909	12745	12745	
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)	T_{2Not}	Nm	8500	8500	8500	6850	6850	8500	8500	8500	6850	6850	
		in.lb	75232	75232	75232	60628	60628	75232	75232	75232	60628	60628	
Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)}	n_{1N}	rpm	2250	3000	3000	3000	3000	2250	3000	3000	3000	3000	
Max. input speed	n_{1Max}	rpm	4000	5000	5000	5000	5000	4000	5000	5000	5000	5000	
Mean no load running torque ^{b)} (at $n_1 = 2000$ rpm and 20 °C gearbox temperature)	T_{012}	Nm	16	12	8.6	8.6	5.8	7.0	6.0	5.0	4.8	4.2	
		in.lb	141	107	77	77	51	62	53	44	43	37	
Max. backlash	j_t	arcmin	Standard ≤ 4 / Reduced ≤ 2										
Torsional rigidity ^{b)}	C_{121}	Nm/arcmin	550										
		in.lb/arcmin	4868										
Max. axial force ^{c)}	F_{2AMax}	N	33000					10000					
		lb _f	7425					2250					
Max. lateral force ^{c)}	F_{2QMax}	N	30000					2000					
		lb _f	6750					450					
Max. tilting moment	M_{2KMax}	Nm	5000					280					
		in.lb	44254					2478					
Efficiency at full load	η	%	98.5					99					
Service life ¹⁾	L_h	h	> 30000										
Weight (incl. standard adapter plate)	m	kg	77										
		lb _m	170.2										
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®])	L_{pA}	dB(A)	≤ 66										
Max. permitted housing temperature		°C	+90										
		F	194										
Ambient temperature		°C	-15 to +40										
		F	5 to 104										
Lubrication			Lubricated for life										
Direction of rotation			In- and output same direction										
Protection class			IP 65					IP 52					
Metal bellows coupling (recommended product type – validate sizing with cymex [®])			BC2-04000AA085.000-X										
Bore diameter of coupling on the application side		mm	X = 050.000 - 090.000										
Mass moment of inertia (relates to the drive) Clamping hub diameter [mm]	O 60	J_1	kgcm ²	198	163	138	138	125	198	163	138	138	125
			10 ⁻³ in.lb.s ²	175	144	122	122	110	175	144	122	122	110

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

- ^{a)} At max. 10 % F_{2QMax}
- ^{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
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

SP+ 240 MC 2-stage

				2-stage											
Ratio	<i>i</i>			16	20	25	28	32	35	40	50	64	70	100	
Max. torque ^{a) b) e)}	T_{2a}	<i>Nm</i>		3500	3500	3600	2900	2900	3600	1680	2100	1800	2700	1800	
		<i>in.lb</i>		30978	30978	31863	25667	25667	31863	14869	18587	15931	23897	15931	
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)	T_{2B}	<i>Nm</i>		3500	3500	3600	2900	2900	3600	1680	2100	1800	2700	1800	
		<i>in.lb</i>		30978	30978	31863	25667	25667	31863	14869	18587	15931	23897	15931	
Nominal torque (at n_{1N})	T_{2N}	<i>Nm</i>		1950	1803	2266	1867	2320	2694	1344	1680	1440	2160	1440	
		<i>in.lb</i>		17255	15960	20058	16521	20534	23843	11895	14869	12745	19118	12745	
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)	T_{2Not}	<i>Nm</i>		8500	8500	8500	8500	8500	8500	8500	8500	6850	8500	6850	
		<i>in.lb</i>		75232	75232	75232	75232	75232	75232	75232	75232	75232	60628	75232	60628
Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)}	n_{1N}	<i>rpm</i>		3500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	
Max. input speed	n_{1Max}	<i>rpm</i>		6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	
Mean no load running torque ^{b)} (at $n_1 = 2000$ rpm and 20 °C gearbox temperature)	T_{012}	<i>Nm</i>		4.8	4.4	4.0	3.6	3.6	2.8	2.4	2.0	2.0	1.6	1.4	
		<i>in.lb</i>		43	39	35	32	32	25	21	18	18	14	13	
Max. backlash	j_t	<i>arcmin</i>		Standard ≤ 5 / Reduced ≤ 4											
Torsional rigidity ^{b)}	C_{121}	<i>Nm/arcmin</i>		550											
		<i>in.lb/arcmin</i>		4868											
Max. axial force ^{c)}	F_{2AMax}	<i>N</i>		33000											
		<i>lb_f</i>		7425											
Max. lateral force ^{c)}	F_{2QMax}	<i>N</i>		30000											
		<i>lb_f</i>		6750											
Max. tilting moment	M_{2KMax}	<i>Nm</i>		5000											
		<i>in.lb</i>		44254											
Efficiency at full load	η	%		96.5											
Service life ¹⁾	L_h	<i>h</i>		> 30000											
Weight (incl. standard adapter plate)	<i>m</i>	<i>kg</i>		76											
		<i>lb_m</i>		168.0											
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®])	L_{pA}	<i>dB(A)</i>		≤ 58											
Max. permitted housing temperature		°C		+90											
		<i>F</i>		194											
Ambient temperature		°C		-15 to +40											
		<i>F</i>		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 [®])				BC2-04000AA085.000-X											
Bore diameter of coupling on the application side		<i>mm</i>		X = 050.000 - 090.000											
Mass moment of inertia (relates to the drive) Clamping hub diameter [mm]	M	48	J_1	<i>kgcm²</i>	34.5	31.5	30.8	30.0	30.0	29.7	28.5	28.3	28.3	28.1	28.0
				<i>10⁻³ in.lb.s²</i>	30.5	27.9	27.3	26.6	26.6	26.3	25.2	25.1	25.1	24.9	24.8

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

- ^{a)} At max. 10 % F_{2QMax}
- ^{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
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

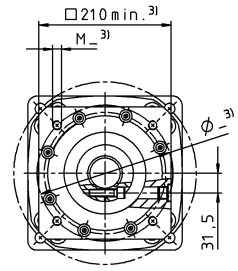
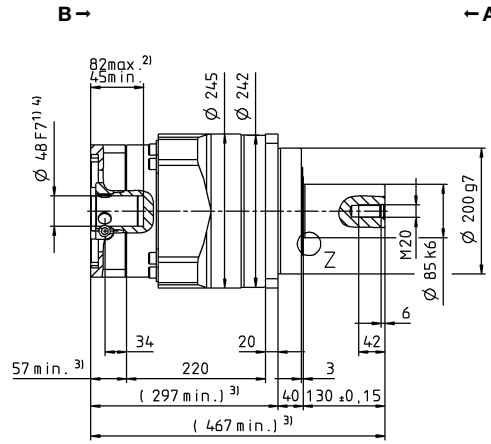
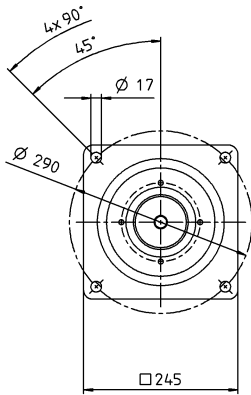
View A

View B

Motor shaft diameter [mm]

2-stage

up to 48⁴⁾ (M)⁵⁾
clamping hub diameter



Planetary gearboxes

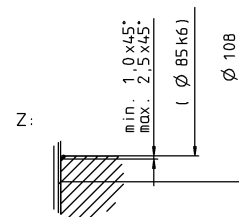
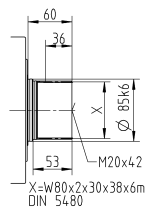
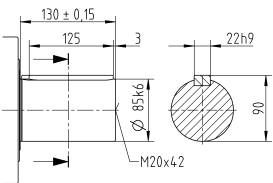
SP+

MC

Other output variants

Shaft with key

Splined shaft (DIN 5480)



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