

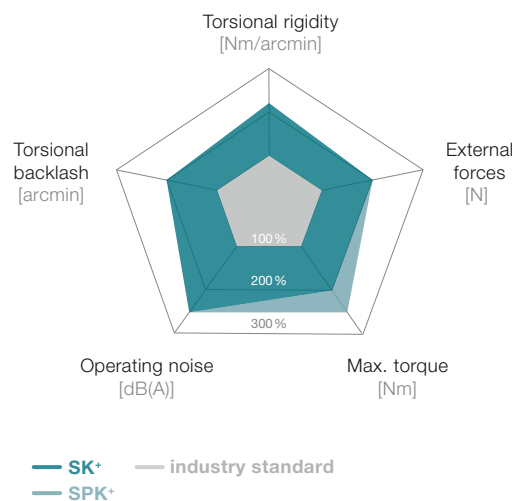
SK⁺ / SPK⁺ – Space-saving right-angle precision with output shaft



SK⁺

The versatile hypoid gearbox with SP⁺ compatible output shaft. SPK⁺ gearboxes with planetary stage are especially suitable for high-precision applications requiring higher power and outstanding torsional rigidity.

The SK⁺ / SPK⁺ compared to the industry standard



Product highlights

Max. torsional backlash

SK⁺ ≤ 4 arcmin (Standard)

SPK⁺ ≤ 4 arcmin (Standard)

≤ 2 arcmin (Reduced)

Diverse range of ratios $i = 3 - 1,000$

Multiple output configurations for greater flexibility

Smooth shaft, shaft with key, splined shaft (DIN 5480), blind hollow shaft, Output on both sides

Other gearbox models

Corrosional resistant design, ATEX (SK⁺)



SPK⁺ in corrosion-resistant design



SK⁺ with rearward shaft

Taper roller bearings for
absorbing axial and radial forces

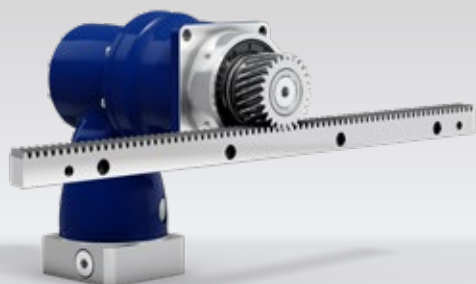
Output compatible
with SP+ series

Variable output connection,
also rearward

High-quality hypoid gearing
for a higher torque
and smoother operation

Metal bellows coupling at the
input: length compensation to
protect the motor bearing

SPK⁺



SPK⁺ with rack and pinion



SK⁺ with metal bellows coupling

SK⁺ 060 MF 1-/2-stage

			1-stage					2-stage											
Ratio			i		3	4	5	7	10	12	16	20	25	28	35	40	50	70	100
Max. torque ^{a) b) e)}			T _{2a}	Nm	36	36	36	25	20	36	36	36	36	36	36	36	36	25	20
				in.lb	319	319	319	221	177	319	319	319	319	319	319	319	319	319	221
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)			T _{2B}	Nm	30	30	30	25	20	30	30	30	30	30	30	30	30	25	20
				in.lb	266	266	266	221	177	266	266	266	266	266	266	266	266	266	221
Nominal torque (at n _{1N})			T _{2N}	Nm	22	22	22	20	15	22	22	22	22	22	22	22	22	20	15
				in.lb	195	195	195	177	133	195	195	195	195	195	195	195	195	195	177
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)			T _{2Not}	Nm	40	50	50	45	40	50	50	50	50	50	50	50	50	45	40
				in.lb	354	443	443	398	354	443	443	443	443	443	443	443	443	443	398
Permitted average input speed (at T _{2N} and 20 °C ambient temperature) ^{d)}			n _{1N}	n _{1T}	2500	2700	3000	3000	3000	4400	4400	4400	4400	4400	4400	4400	4800	5500	5500
Max. input speed			n _{1Max}	rpm	7500	7500	7500	7500	7500	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	1.5	1.4	1.1	1.5	1.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
				in.lb	13	12	9.7	13	12	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Max. backlash			j _t	arcmin	Standard ≤ 5														
Torsional rigidity ^{b)}			C ₁₂₁	Nm/arcmin	2	2.1	2.2	2	1.8	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2	1.8
				in.lb/arcmin	18	19	19	18	16	19	19	19	19	19	19	19	19	19	18
Max. axial force ^{c)}			F _{2AMax}	N	2400														
				lb _f	540														
Max. lateral force ^{c)}			F _{2QMax}	N	2700														
				lb _f	608														
Max. tilting moment			M _{2KMax}	Nm	251														
				in.lb	2222														
Efficiency at full load			η	%	96					94									
Service life ^{f)}			L _h	h	> 20000														
Weight (incl. standard adapter plate)			m	kg	2.9					3.2									
				lb _m	6					7									
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	0 to +40														
				F	32 to 104														
Lubrication					Lubricated for life														
Direction of rotation					In- and output opposite direction														
Protection class					IP 65														
Metal bellows coupling (recommended product type – validate sizing with cymex [®])					BC2 - 00030AA - 016.000 - X														
Bore diameter of coupling on the application side				mm	X = 010.000 - 030.000														
Mass moment of inertia (relates to the drive) Clamping hub diameter [mm]	B	11	J _i	kgcm ²	-	-	-	-	-	0.09	0.09	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.06
				10 ⁻³ in.lb.s ²	-	-	-	-	-	0.08	0.08	0.06	0.06	0.05	0.05	0.05	0.05	0.05	0.05
	C	14	J _i	kgcm ²	0.52	0.44	0.4	0.36	0.34	0.2	0.2	0.19	0.19	0.18	0.18	0.17	0.17	0.17	0.17
				10 ⁻³ in.lb.s ²	0.46	0.39	0.35	0.32	0.3	0.18	0.18	0.17	0.17	0.16	0.16	0.15	0.15	0.15	0.15
	E	19	J _i	kgcm ²	0.87	0.79	0.75	0.71	0.7	-	-	-	-	-	-	-	-	-	-
				10 ⁻³ in.lb.s ²	0.77	0.7	0.66	0.63	0.62	-	-	-	-	-	-	-	-	-	-

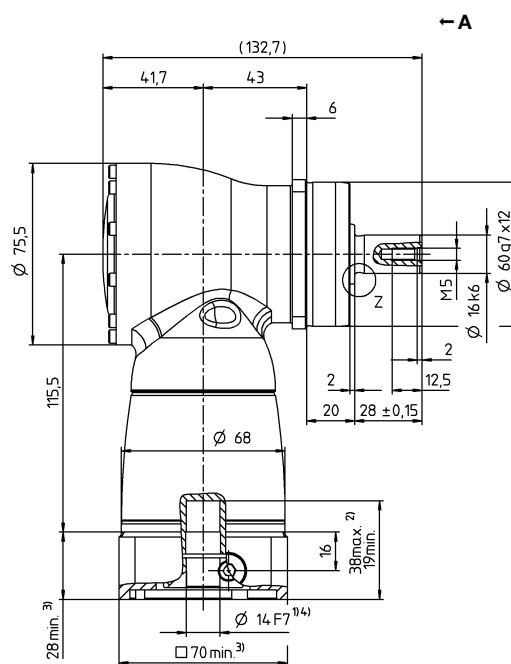
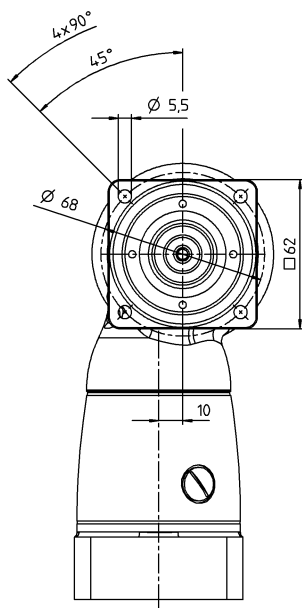
Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{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

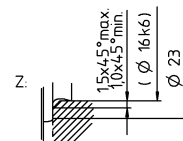
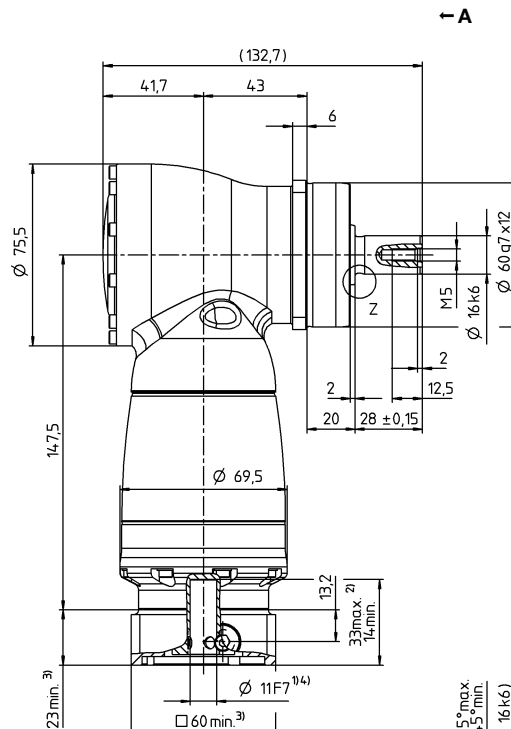
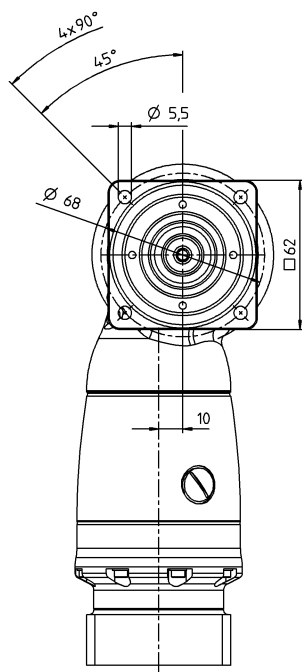
1-stage

up to 14/19⁴⁾
(C⁵⁾/E) clamping
hub diameter



2-stage

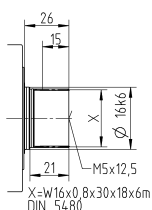
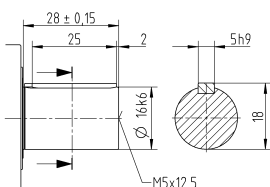
up to 11/14⁴⁾
(B⁵⁾/C) clamping
hub diameter



Other output variants

Shaft with key

Splined shaft (DIN 5480)



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

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

SK⁺ 075 MF 1-/2-stage

				1-stage					2-stage										
Ratio			<i>i</i>		3	4	5	7	10	12	16	20	25	28	35	40	50	70	100
Max. torque ^{a) b) e)}			<i>T</i> _{2a}	<i>Nm</i>	84	84	84	60	50	84	84	84	84	84	84	84	84	60	50
				<i>in.lb</i>	743	743	743	531	443	743	743	743	743	743	743	743	743	743	531
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)			<i>T</i> _{2B}	<i>Nm</i>	70	70	70	60	50	70	70	70	70	70	70	70	70	60	50
				<i>in.lb</i>	620	620	620	531	443	620	620	620	620	620	620	620	620	620	531
Nominal torque (at <i>n</i> _n)			<i>T</i> _{2N}	<i>Nm</i>	50	50	50	45	40	50	50	50	50	50	50	50	50	45	40
				<i>in.lb</i>	443	443	443	398	354	443	443	443	443	443	443	443	443	443	398
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)			<i>T</i> _{2Not}	<i>Nm</i>	95	115	115	110	100	115	115	115	115	115	115	115	115	110	100
				<i>in.lb</i>	841	1018	1018	974	885	1018	1018	1018	1018	1018	1018	1018	1018	1018	974
Permitted average input speed (at <i>T</i> _{2N} and 20 °C ambient temperature) ^{d)}			<i>n</i> _{1N}	<i>n</i> _{1T}	2300	2500	2800	2800	2800	3500	3500	3500	3500	3500	3500	3500	3800	4500	4500
Max. input speed			<i>n</i> _{1Max}	<i>rpm</i>	7500	7500	7500	7500	7500	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque ^{b)} (at <i>n</i> _i = 3000 rpm and 20 °C gearbox temperature)			<i>T</i> ₀₁₂	<i>Nm</i>	2.4	2	1.8	2.2	2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
				<i>in.lb</i>	21	18	16	19	18	2.7	2.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Max. backlash			<i>j</i> _t	<i>arcmin</i>	Standard ≤ 4														
Torsional rigidity ^{b)}			<i>C</i> ₁₂₁	<i>Nm/arcmin</i>	5	5.5	6	6	6	5.5	5.5	5.5	5.5	5.5	5.5	5.5	6	6	6
				<i>in.lb/arcmin</i>	44	49	53	53	53	49	49	49	49	49	49	49	49	53	53
Max. axial force ^{c)}			<i>F</i> _{2AMax}	<i>N</i>	3400														
				<i>lb_f</i>	765														
Max. lateral force ^{c)}			<i>F</i> _{2QMax}	<i>N</i>	4000														
				<i>lb_f</i>	900														
Max. tilting moment			<i>M</i> _{2KMax}	<i>Nm</i>	437														
				<i>in.lb</i>	3868														
Efficiency at full load			<i>η</i>	%	96					94									
Service life ^{f)}			<i>L</i> _h	<i>h</i>	> 20000														
Weight (incl. standard adapter plate)			<i>m</i>	<i>kg</i>	4.8					5.4									
				<i>lb_m</i>	11					12									
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex®)			<i>L</i> _{PA}	<i>dB(A)</i>	≤ 66														
Max. permitted housing temperature				°C	+90														
				<i>F</i>	194														
Ambient temperature				°C	0 to +40														
				<i>F</i>	32 to 104														
Lubrication					Lubricated for life														
Direction of rotation					In- and output opposite direction														
Protection class					IP 65														
Metal bellows coupling (recommended product type – validate sizing with cymex®)					BC2 - 00080AA - 022.000 - X														
Bore diameter of coupling on the application side				<i>mm</i>	X = 014.000 - 042.000														
Mass moment of inertia (relates to the drive) Clamping hub diameter [mm]	C	14	<i>J</i> _i	<i>kgcm²</i>	-	-	-	-	-	0.28	0.27	0.23	0.23	0.2	0.2	0.18	0.18	0.18	0.18
				<i>10⁻³ in.lb.s²</i>	-	-	-	-	-	0.25	0.24	0.2	0.2	0.18	0.18	0.16	0.16	0.16	0.16
	E	19	<i>J</i> _i	<i>kgcm²</i>	1.46	1.19	1.06	0.95	0.9	0.73	0.71	0.68	0.67	0.63	0.62	0.63	0.63	0.63	0.63
				<i>10⁻³ in.lb.s²</i>	1.29	1.05	0.94	0.84	0.8	0.65	0.63	0.6	0.59	0.56	0.55	0.56	0.56	0.56	0.56
	H	28	<i>J</i> _i	<i>kgcm²</i>	2.88	2.61	2.47	2.37	2.31	-	-	-	-	-	-	-	-	-	-
				<i>10⁻³ in.lb.s²</i>	2.55	2.31	2.19	2.1	2.04	-	-	-	-	-	-	-	-	-	-

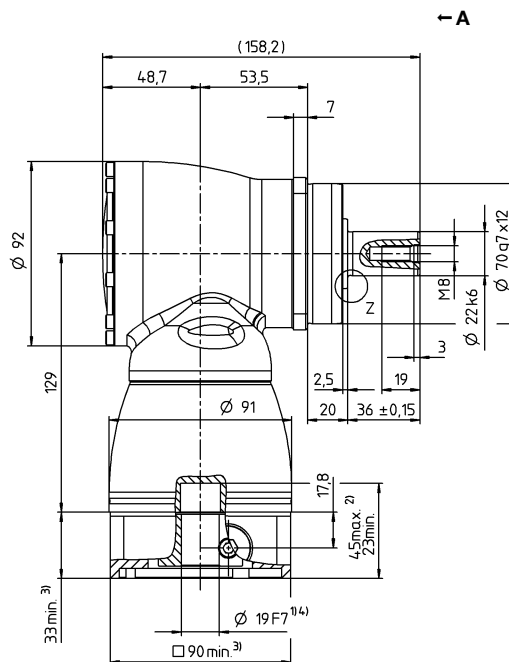
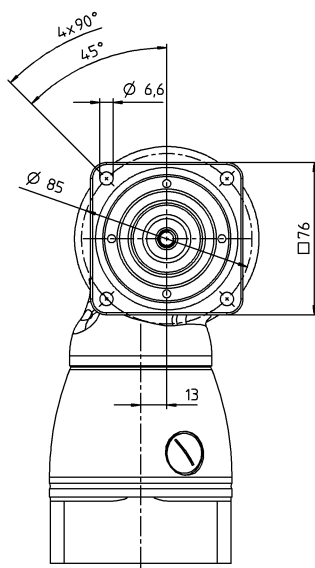
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Please contact us for optimum sizing at S1 conditions (Continuous operation).

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- ^{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
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View A

1-stage

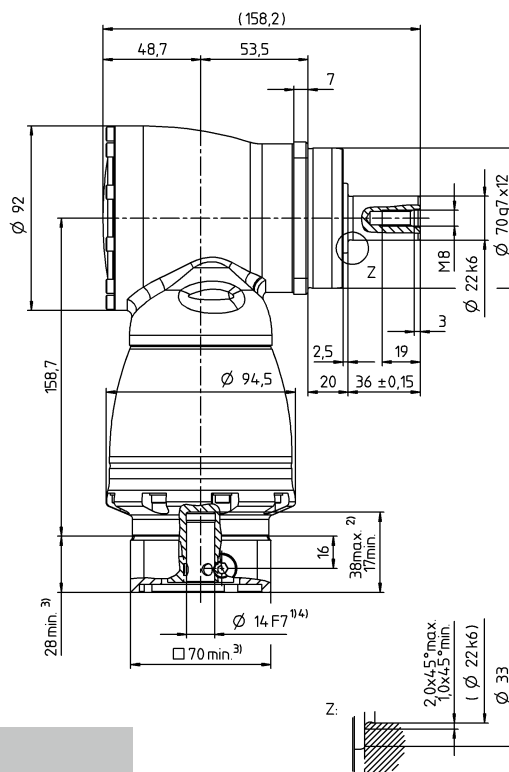
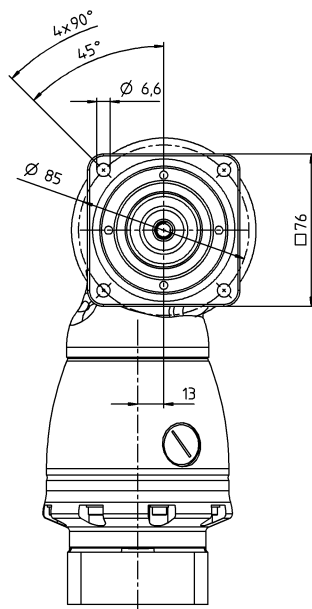
up to 19/28⁴⁾
(E⁵⁾/H) clamping
hub diameter



← A

2-stage

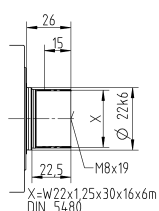
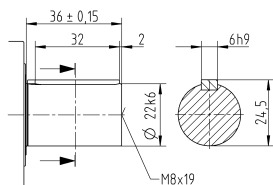
up to 14/19⁴⁾
(C⁵⁾/E) clamping
hub diameter



Other output variants

Shaft with key

Splined shaft (DIN 5480)



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

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

SK⁺ 100 MF 1-/2-stage

				1-stage					2-stage										
Ratio			<i>i</i>		3	4	5	7	10	12	16	20	25	28	35	40	50	70	100
Max. torque ^{a) b) e)}			<i>T</i> _{2a}	<i>Nm</i>	204	204	204	145	125	204	204	204	204	204	204	204	204	145	125
				<i>in.lb</i>	1806	1806	1806	1283	1106	1806	1806	1806	1806	1806	1806	1806	1806	1806	1283
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)			<i>T</i> _{2B}	<i>Nm</i>	170	170	170	145	125	170	170	170	170	170	170	170	170	145	125
				<i>in.lb</i>	1505	1505	1505	1283	1106	1505	1505	1505	1505	1505	1505	1505	1505	1505	1283
Nominal torque (at <i>n</i> _{IN})			<i>T</i> _{2N}	<i>Nm</i>	100	100	100	90	80	100	100	100	100	100	100	100	100	90	80
				<i>in.lb</i>	885	885	885	797	708	885	885	885	885	885	885	885	885	885	797
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)			<i>T</i> _{2Not}	<i>Nm</i>	220	260	260	255	250	260	260	260	260	260	260	260	260	255	250
				<i>in.lb</i>	1947	2301	2301	2257	2213	2301	2301	2301	2301	2301	2301	2301	2301	2301	2257
Permitted average input speed (at <i>T</i> _{2N} and 20 °C ambient temperature) ^{d)}			<i>n</i> _{1N}	<i>n</i> _{1T}	2200	2400	2700	2500	2500	3100	3100	3100	3100	3100	3100	3100	3500	4200	4200
Max. input speed			<i>n</i> _{1Max}	<i>rpm</i>	5500	5500	5500	5500	5500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
Mean no load running torque ^{b)} (at <i>n</i> ₁ = 3000 rpm and 20 °C gearbox temperature)			<i>T</i> ₀₁₂	<i>Nm</i>	3.9	3.1	2.9	4.1	3.3	0.6	0.6	0.5	0.4	0.4	0.3	0.2	0.2	0.2	0.2
				<i>in.lb</i>	35	27	26	36	29	5.3	5.3	4.4	3.5	3.5	2.7	1.8	1.8	1.8	1.8
Max. backlash			<i>j</i> _t	<i>arcmin</i>	Standard ≤ 4														
Torsional rigidity ^{b)}			<i>C</i> _{t21}	<i>Nm/arcmin</i>	10	11	13	13	13	11	11	11	11	11	11	11	13	13	13
				<i>in.lb/arcmin</i>	89	97	115	115	115	97	97	97	97	97	97	97	97	115	115
Max. axial force ^{c)}			<i>F</i> _{2AMax}	<i>N</i>	5700														
				<i>lb_f</i>	1283														
Max. lateral force ^{c)}			<i>F</i> _{2QMax}	<i>N</i>	6300														
				<i>lb_f</i>	1418														
Max. tilting moment			<i>M</i> _{2KMax}	<i>Nm</i>	833														
				<i>in.lb</i>	7373														
Efficiency at full load			<i>η</i>	%	96					94									
Service life ^{f)}			<i>L</i> _h	<i>h</i>	> 20000														
Weight (incl. standard adapter plate)			<i>m</i>	<i>kg</i>	9.3					10									
				<i>lb_m</i>	21					22									
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex®)			<i>L</i> _{PA}	<i>dB(A)</i>	≤ 66														
Max. permitted housing temperature				°C	+90														
				<i>F</i>	194														
Ambient temperature				°C	0 to +40														
				<i>F</i>	32 to 104														
Lubrication					Lubricated for life														
Direction of rotation					In- and output opposite direction														
Protection class					IP 65														
Metal bellows coupling (recommended product type – validate sizing with cymex®)					BC2 - 00200AA - 032.000 - X														
				<i>mm</i>	X = 022.000 - 045.000														
Mass moment of inertia (relates to the drive) Clamping hub diameter [mm]	E	19	<i>J</i> ₁	<i>kgcm²</i>	-	-	-	-	-	1.02	0.97	0.86	0.84	0.75	0.74	0.69	0.69	0.68	0.68
				<i>10⁻³ in.lb.s²</i>	-	-	-	-	-	0.9	0.86	0.76	0.74	0.66	0.65	0.61	0.61	0.6	0.6
	G	24	<i>J</i> ₁	<i>kgcm²</i>	-	-	-	-	-	2.59	2.54	2.42	2.4	2.31	2.3	2.26	2.25	2.25	2.25
				<i>10⁻³ in.lb.s²</i>	-	-	-	-	-	2.29	2.25	2.14	2.12	2.04	2.04	2	1.99	1.99	1.99
	H	28	<i>J</i> ₁	<i>kgcm²</i>	4.64	3.8	3.34	2.98	2.79	-	-	-	-	-	-	-	-	-	-
				<i>10⁻³ in.lb.s²</i>	4.11	3.36	2.96	2.64	2.47	-	-	-	-	-	-	-	-	-	-
	K	38	<i>J</i> ₁	<i>kgcm²</i>	11.9	11	10.6	10.2	10	-	-	-	-	-	-	-	-	-	-
				<i>10⁻³ in.lb.s²</i>	10.53	9.74	9.38	9.03	8.85	-	-	-	-	-	-	-	-	-	-

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Please contact us for optimum sizing at S1 conditions (Continuous operation).

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

^{b)} Valid for standard clamping hub diameter

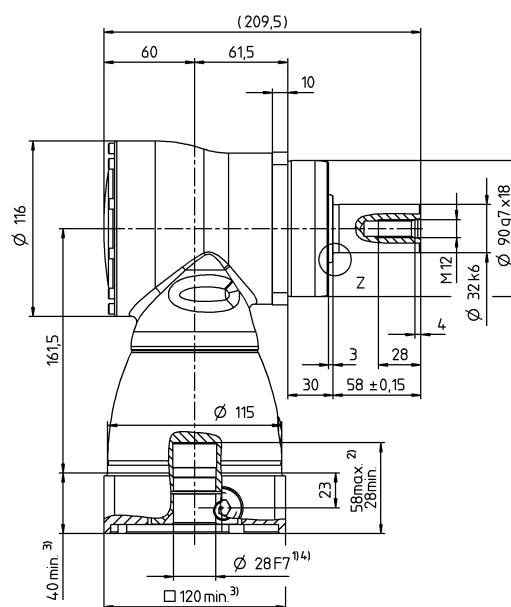
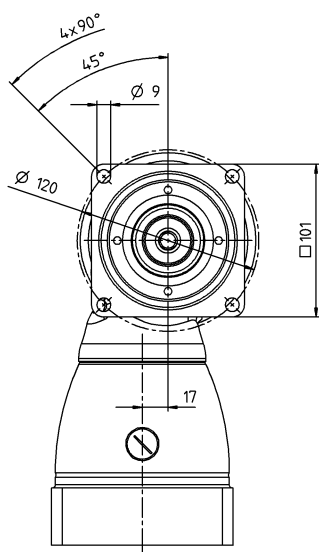
^{c)} Refers to center of the output shaft or flange

^{d)} Please reduce input speed at higher ambient temperatures

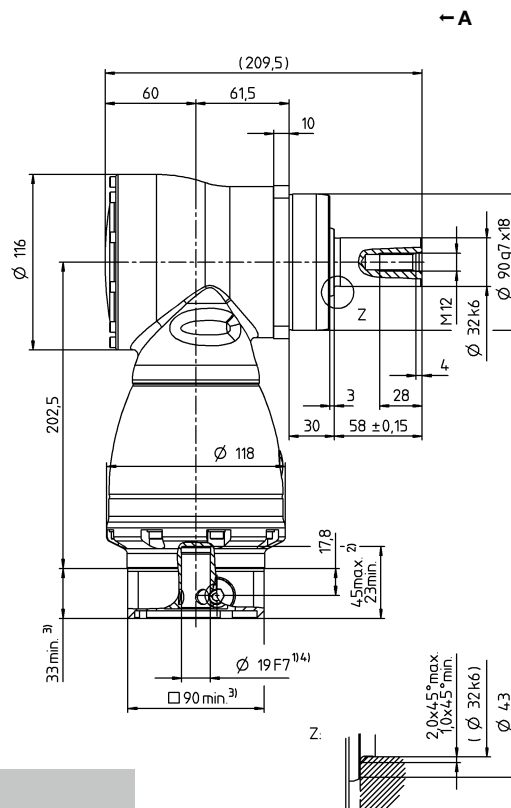
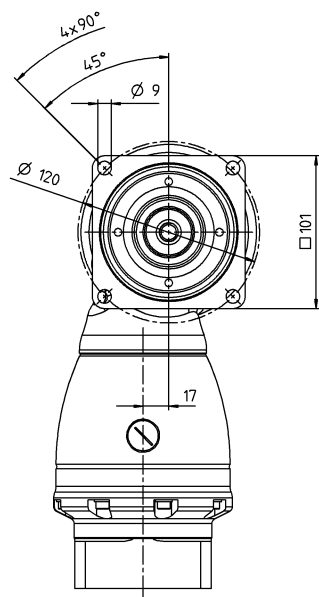
^{e)} Smooth shaft

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

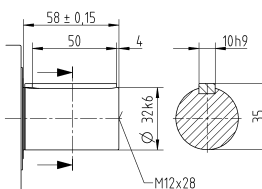
up to 28/38 ⁴⁾
(H⁵)/K) clamping
hub diameter



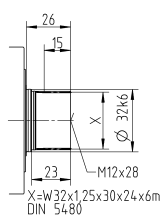
up to 19/24 ⁴⁾
(E⁵⁾/G) clamping
hub diameter



Shaft with key



Splined shaft (DIN 5480)



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

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

SK⁺

SK⁺ 140 MF 1-/2-stage

				1-stage					2-stage											
Ratio			<i>i</i>		3	4	5	7	10	12	16	20	25	28	35	40	50	70	100	
Max. torque ^{a) b) e)}			<i>T</i> _{2a}	<i>Nm</i>	360	360	360	250	210	360	360	360	360	360	360	360	360	250	210	
				<i>in.lb</i>	3186	3186	3186	2213	1859	3186	3186	3186	3186	3186	3186	3186	3186	3186	2213	1859
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)			<i>T</i> _{2B}	<i>Nm</i>	300	300	300	250	210	300	300	300	300	300	300	300	300	250	210	
				<i>in.lb</i>	2655	2655	2655	2213	1859	2655	2655	2655	2655	2655	2655	2655	2655	2655	2213	1859
Nominal torque (at <i>n</i> _n)			<i>T</i> _{2N}	<i>Nm</i>	190	190	190	175	160	190	190	190	190	190	190	190	190	175	160	
				<i>in.lb</i>	1682	1682	1682	1549	1416	1682	1682	1682	1682	1682	1682	1682	1682	1682	1549	1416
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)			<i>T</i> _{2Not}	<i>Nm</i>	400	500	500	450	400	500	500	500	500	500	500	500	500	450	400	
				<i>in.lb</i>	3540	4425	4425	3983	3540	4425	4425	4425	4425	4425	4425	4425	4425	4425	3983	3540
Permitted average input speed (at <i>T</i> _{2n} and 20 °C ambient temperature) ^{d)}			<i>n</i> _{1N}	<i>n</i> _{1T}	1900	2000	2200	2000	2000	2900	2900	2900	2900	2900	2900	2900	3200	3200	3900	
Max. input speed			<i>n</i> _{1Max}	<i>rpm</i>	5000	5000	5000	5000	5000	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	
Mean no load running torque ^{b)} (at <i>n</i> _i = 3000 rpm and 20 °C gearbox temperature)			<i>T</i> ₀₁₂	<i>Nm</i>	9.3	6.9	7.1	9.7	7.1	1.4	0.9	0.7	0.5	0.5	0.4	0.4	0.3	0.3	0.3	
				<i>in.lb</i>	82	61	63	86	63	12	8.0	6.2	4.4	4.4	3.5	3.5	2.7	2.7	2.7	2.7
Max. backlash			<i>j</i> _t	<i>arcmin</i>	Standard ≤ 4															
Torsional rigidity ^{b)}			<i>C</i> _{t21}	<i>Nm/arcmin</i>	27	30	32	32	32	29	29	29	29	29	29	29	29	31	31	31
				<i>in.lb/arcmin</i>	239	266	283	283	283	257	257	257	257	257	257	257	257	257	274	274
Max. axial force ^{c)}			<i>F</i> _{2AMax}	<i>N</i>	9900															
				<i>lb_f</i>	2228															
Max. lateral force ^{c)}			<i>F</i> _{2QMax}	<i>N</i>	9500															
				<i>lb_f</i>	2138															
Max. tilting moment			<i>M</i> _{2KMax}	<i>Nm</i>	1692															
				<i>in.lb</i>	14976															
Efficiency at full load			<i>η</i>	%	96					94										
Service life ^{f)}			<i>L</i> _h	<i>h</i>	> 20000															
Weight (incl. standard adapter plate)			<i>m</i>	<i>kg</i>	22.6					25										
				<i>lb_m</i>	50					55										
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex®)			<i>L</i> _{PA}	<i>dB(A)</i>	≤ 68															
Max. permitted housing temperature				°C	+90															
				<i>F</i>	194															
Ambient temperature				°C	0 to +40															
				<i>F</i>	32 to 104															
Lubrication					Lubricated for life															
Direction of rotation					In- and output opposite direction															
Protection class					IP 65															
Metal bellows coupling (recommended product type – validate sizing with cymex®)					BC2 - 00300AA - 040.000 - X															
Bore diameter of coupling on the application side				<i>mm</i>	X = 024.000 - 060.000															
Mass moment of inertia (relates to the drive) Clamping hub diameter [mm]		G	24	<i>J</i> _i	<i>kgcm²</i>	-	-	-	-	-	4.21	3.85	3.28	3.17	2.78	2.73	2.48	2.46	2.43	2.42
					<i>10⁻³ in.lb.s²</i>	-	-	-	-	-	3.73	3.41	2.9	2.81	2.46	2.42	2.19	2.18	2.15	2.14
		K	38	<i>J</i> _i	<i>kgcm²</i>	25	19.1	16.3	14.1	12.8	11.1	10.7	10.2	10.1	9.69	9.64	9.39	9.37	9.34	9.33
<i>10⁻³ in.lb.s²</i>	22.13				16.9	14.43	12.48	11.33	9.82	9.47	9.03	8.94	8.58	8.53	8.31	8.29	8.27	8.26		

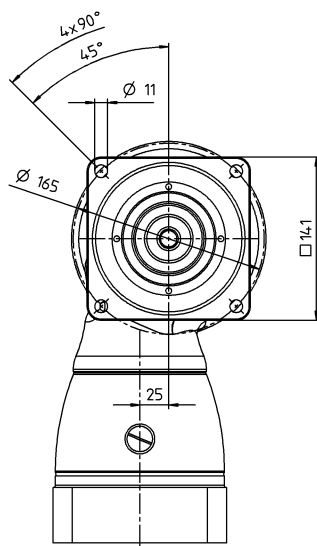
Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{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

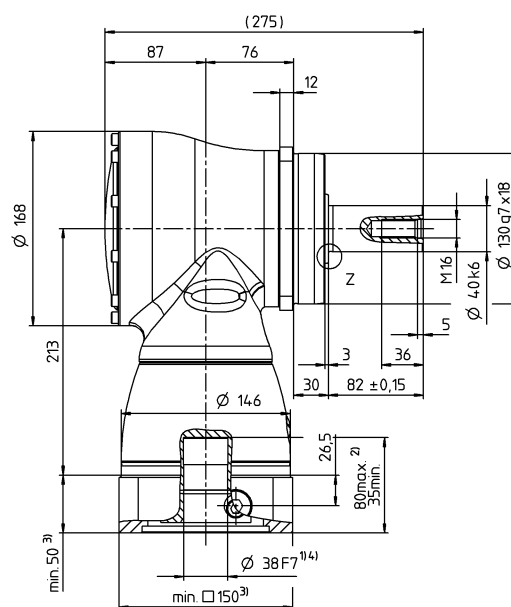
View A

1-stage

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

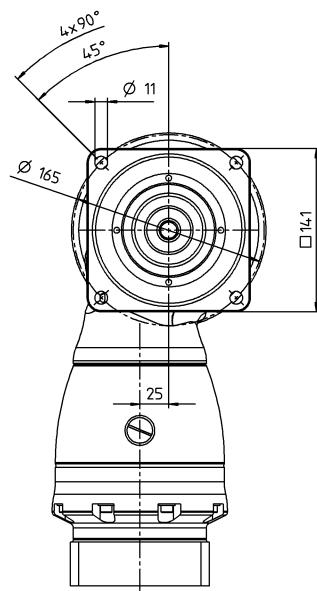


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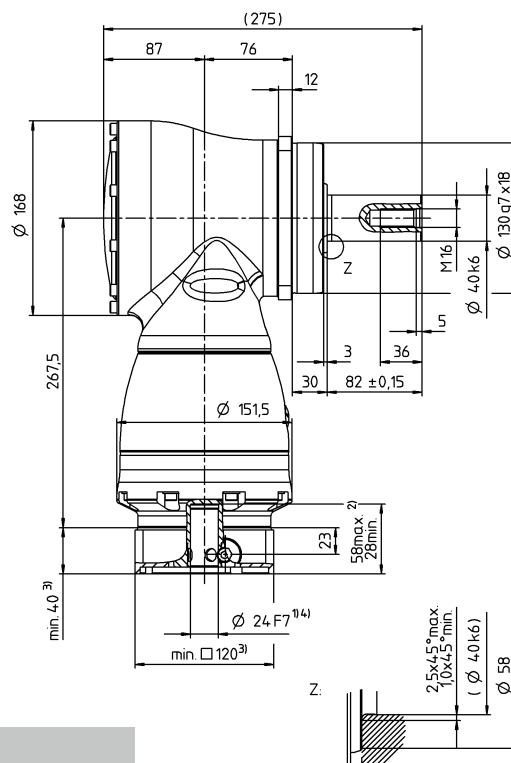


2-stage

up to 24/38⁴⁾
(G⁵⁾/K) clamping
hub diameter

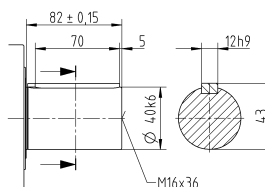


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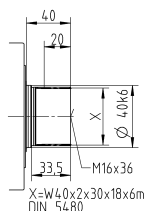


Other output variants

Shaft with key



Splined shaft (DIN 5480)



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

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

SK⁺ 180 MF 1-/2-stage

				1-stage					2-stage												
Ratio			<i>i</i>		3	4	5	7	10	12	16	20	25	28	35	40	50	70	100		
Max. torque ^{a) b) e)}			<i>T</i> _{2a}	<i>Nm</i>	768	768	768	550	470	768	768	768	768	768	768	768	768	550	470		
				<i>in.lb</i>	6797	6797	6797	4868	4160	6797	6797	6797	6797	6797	6797	6797	6797	6797	4868	4160	
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)			<i>T</i> _{2B}	<i>Nm</i>	640	640	640	550	470	640	640	640	640	640	640	640	640	550	470		
				<i>in.lb</i>	5665	5665	5665	4868	4160	5665	5665	5665	5665	5665	5665	5665	5665	5665	4868	4160	
Nominal torque (at <i>n</i> _{IN})			<i>T</i> _{2N}	<i>Nm</i>	400	400	400	380	360	400	400	400	400	400	400	400	400	380	360		
				<i>in.lb</i>	3540	3540	3540	3363	3186	3540	3540	3540	3540	3540	3540	3540	3540	3540	3363	3186	
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)			<i>T</i> _{2Not}	<i>Nm</i>	900	1050	1050	970	900	1050	1050	1050	1050	1050	1050	1050	1050	970	900		
				<i>in.lb</i>	7966	9293	9293	8585	7966	9293	9293	9293	9293	9293	9293	9293	9293	9293	8585	7966	
Permitted average input speed (at <i>T</i> _{2N} and 20 °C ambient temperature) ^{d)}			<i>n</i> _{1N}	<i>n</i> _{1T}	1600	1800	2000	1800	1800	2700	2700	2700	2700	2700	2700	2700	2900	3200	3400		
Max. input speed			<i>n</i> _{1Max}	<i>rpm</i>	4500	4500	4500	4500	4500	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000		
Mean no load running torque ^{b)} (at <i>n</i> _l = 3000 rpm and 20 °C gearbox temperature)			<i>T</i> ₀₁₂	<i>Nm</i>	19	16	14	17	14	3	2.3	1.8	1.6	1.3	1.2	0.9	0.9	0.9	0.9		
				<i>in.lb</i>	168	142	124	150	124	27	20	16	14	12	11	8.0	8.0	8.0	8.0	8.0	
Max. backlash			<i>j</i> _t	<i>arcmin</i>	Standard ≤ 4																
Torsional rigidity ^{b)}			<i>C</i> _{t21}	<i>Nm/arcmin</i>	64	71	79	78	77	71	71	71	71	71	71	71	71	78	78	78	
				<i>in.lb/arcmin</i>	566	628	699	690	682	628	628	628	628	628	628	628	628	628	690	690	690
Max. axial force ^{c)}			<i>F</i> _{2AMax}	<i>N</i>	14200																
				<i>lb_f</i>	3195																
Max. lateral force ^{c)}			<i>F</i> _{2QMax}	<i>N</i>	14700																
				<i>lb_f</i>	3308																
Max. tilting moment			<i>M</i> _{2KMax}	<i>Nm</i>	3213																
				<i>in.lb</i>	28438																
Efficiency at full load			<i>η</i>	%	96					94											
Service life ^{f)}			<i>L</i> _h	<i>h</i>	> 20000																
Weight (incl. standard adapter plate)			<i>m</i>	<i>kg</i>	45.4					48											
				<i>lb_m</i>	100					106											
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex®)			<i>L</i> _{PA}	<i>dB(A)</i>	≤ 68																
Max. permitted housing temperature				°C	+90																
				<i>F</i>	194																
Ambient temperature				°C	0 to +40																
				<i>F</i>	32 to 104																
Lubrication					Lubricated for life																
Direction of rotation					In- and output opposite direction																
Protection class					IP 65																
Metal bellows coupling (recommended product type – validate sizing with cymex®)					BC2 - 00800AA - 055.000 - 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	<i>J</i> _i	<i>kgcm²</i>	-	-	-	-	-	15.3	14	12.3	12	10.9	10.7	10.1	10	9.95	9.91
						<i>10⁻³ in.lb.s²</i>	-	-	-	-	-	13.54	12.39	10.89	10.62	9.65	9.47	8.94	8.85	8.81	8.77
			M	48	<i>J</i> _i	<i>kgcm²</i>	73.3	51.6	42.1	34	29.7	30	28.7	27.1	26.7	25.6	25.4	24.8	24.7	24.7	24.6
<i>10⁻³ in.lb.s²</i>	64.87	45.67				37.26	30.09	26.28	26.55	25.4	23.98	23.63	22.66	22.48	21.95	21.86	21.86	21.77			

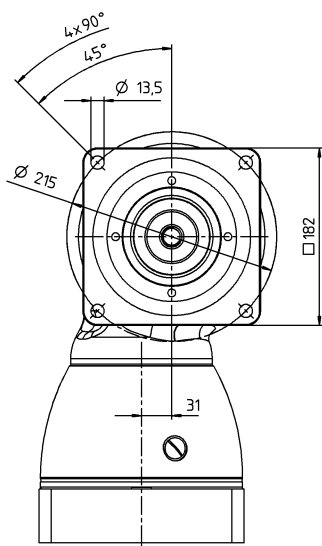
Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{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

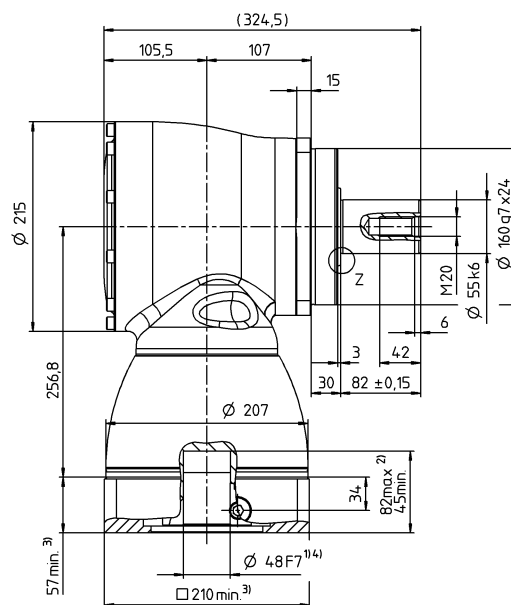
View A

1-stage

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

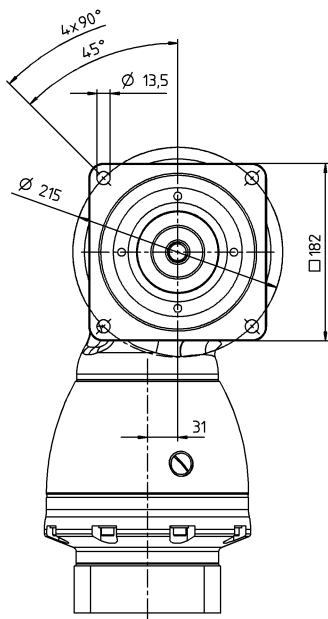


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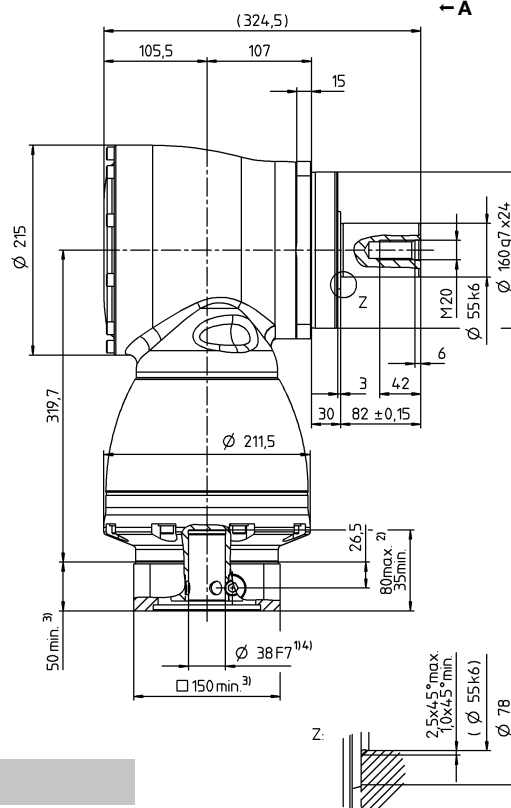


2-stage

up to 38/48⁴⁾
(K⁵⁾/M) clamping hub diameter



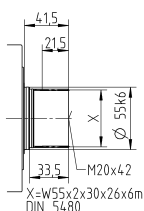
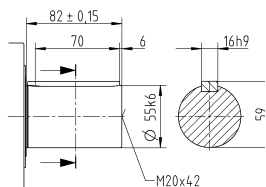
← A



Other output variants

Shaft with key

Splined shaft (DIN 5480)



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

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

SPK+ 075 MF 2-stage

				2-stage									
Ratio	<i>i</i>			12	16	20	25	28	35	40	50	70	100
Max. torque ^{a) b) e)}	T_{2a}	Nm		144	144	176	176	176	176	80	100	140	152
		in.lb		1275	1275	1558	1558	1558	1558	708	885	1239	1345
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)	T_{2B}	Nm		120	120	132	132	132	132	80	100	132	114
		in.lb		1062	1062	1168	1168	1168	1168	708	885	1168	1009
Nominal torque (at n_n)	T_{2N}	Nm		75	75	75	75	75	75	60	75	75	52
		in.lb		664	664	664	664	664	664	531	664	664	460
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)	T_{2Not}	Nm		160	200	250	250	250	250	160	200	250	250
		in.lb		1416	1770	2213	2213	2213	2213	1416	1770	2213	2213
Permitted average input speed (at T_{2N} and 20 °C ambient temperature) ^{d)}	n_{1N}	n_{1T}		2000	2400	2400	2700	2400	2500	2500	2500	2500	2500
Max. input speed	n_{1Max}	rpm		7500	7500	7500	7500	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	1.3	1.2	1.3	1.3	1.3	1.3	1.4	1.4
		in.lb		13	12	12	11	12	12	12	12	12	12
Max. backlash	j_t	arcmin		Standard ≤ 5 / Reduced ≤ 3									
Torsional rigidity ^{b)}	C_{t21}	Nm/arcmin		10	10	10	10	10	10	10	10	10	10
		in.lb/arcmin		89	89	89	89	89	89	89	89	89	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		260									
		in.lb		2301									
Efficiency at full load	η	%		94									
Service life ^{f)}	L_h	h		> 20000									
Weight (incl. standard adapter plate)	m	kg		5.2									
		lb _m		11									
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		0 to +40									
		F		32 to 104									
Lubrication				Lubricated for life									
Direction of rotation				In- and output opposite direction									
Protection class				IP 65									
Metal bellows coupling (recommended product type – validate sizing with cymex [®])				BC2 - 00150AA - 022.000 - 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]	C	14	J_1	kgcm ²	0.54	0.45	0.44	0.4	0.44	0.36	0.35	0.34	0.34
				10 ⁻³ in.lb.s ²	0.48	0.4	0.39	0.35	0.39	0.32	0.31	0.3	0.3
	E	19	J_1	kgcm ²	0.89	0.8	0.79	0.75	0.79	0.71	0.7	0.7	0.69
				10 ⁻³ in.lb.s ²	0.79	0.71	0.7	0.66	0.7	0.63	0.62	0.62	0.61

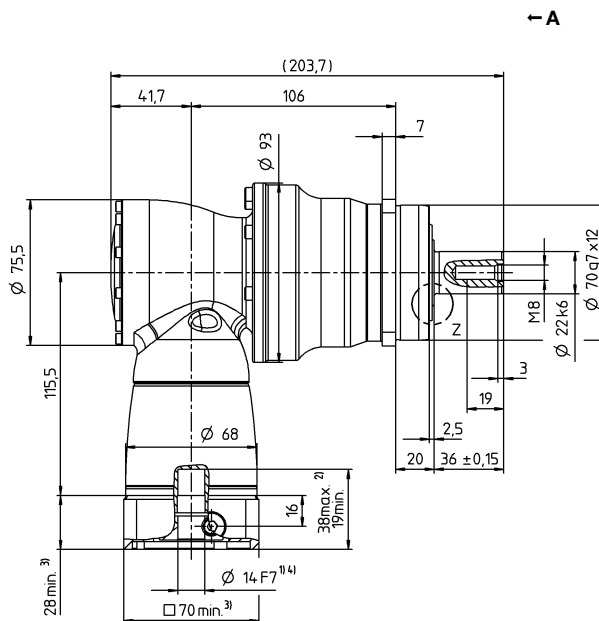
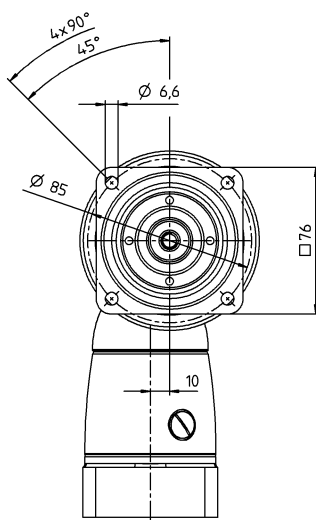
Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{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

Motor shaft diameter [mm]

2-stage

up to 14/19⁴⁾
(C⁵⁾/E) clamping
hub diameter


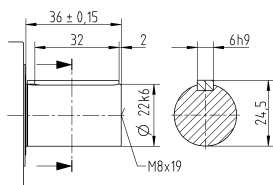
← A

Hypoid gearboxes

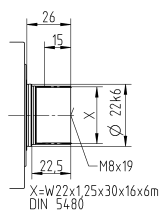
SPK

Other output variants

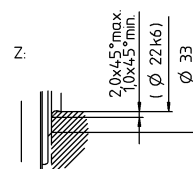
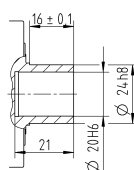
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

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

SPK+ 075 MF 3-stage

				3-stage														
Ratio			i		64	84	100	125	140	175	200	250	280	350	400	500	700	1000
Max. torque ^{a) b) e)}			T _{2a}	Nm	144	144	176	176	176	176	176	176	176	176	80	100	140	152
				in.lb	1275	1275	1558	1558	1558	1558	1558	1558	1558	1558	1558	708	885	1239
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)			T _{2B}	Nm	120	120	132	132	132	132	132	132	132	132	80	100	132	114
				in.lb	1062	1062	1168	1168	1168	1168	1168	1168	1168	1168	1168	708	885	1168
Nominal torque (at n _{IN})			T _{2N}	Nm	75	75	75	75	75	75	75	75	75	75	60	75	75	52
				in.lb	664	664	664	664	664	664	664	664	664	664	664	531	664	664
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)			T _{2Not}	Nm	200	160	250	250	250	250	250	250	250	250	160	200	250	250
				in.lb	1770	1416	2213	2213	2213	2213	2213	2213	2213	2213	2213	1416	1770	2213
Permitted average input speed (at T _{2N} and 20 °C ambient temperature) ^{d)}			n _{1N}	n _{1T}	4400	4400	4400	4400	4400	4400	4400	4800	4400	4800	5500	5500	5500	5500
Max. input speed			n _{1Max}	rpm	6000	6000	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	0.45	0.45	0.45	0.45	0.45	0.45	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
				in.lb	4.0	4.0	4.0	4.0	4.0	4.0	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
Max. backlash			j _t	arcmin	Standard ≤ 5 / Reduced ≤ 3													
Torsional rigidity ^{b)}			C _{t21}	Nm/arcmin	10	10	10	10	10	10	10	10	10	10	10	10	10	10
				in.lb/arcmin	89	89	89	89	89	89	89	89	89	89	89	89	89	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	260													
				in.lb	2301													
Efficiency at full load			η	%	92													
Service life ^{f)}			L _h	h	> 20000													
Weight (incl. standard adapter plate)			m	kg	5.5													
				lb _m	12													
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	0 to +40													
				F	32 to 104													
Lubrication					Lubricated for life													
Direction of rotation					In- and output opposite direction													
Protection class					IP 65													
Metal bellows coupling (recommended product type – validate sizing with cymex®)					BC2 - 00150AA - 022.000 - 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]	B	11	J _i	kgcm ²	0.09	0.07	0.08	0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
				10 ⁻³ in.lb.s ²	0.08	0.06	0.07	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
	C	14	J _i	kgcm ²	0.2	0.18	0.19	0.19	0.18	0.18	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
10 ⁻³ in.lb.s ²				0.18	0.16	0.17	0.17	0.16	0.16	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15

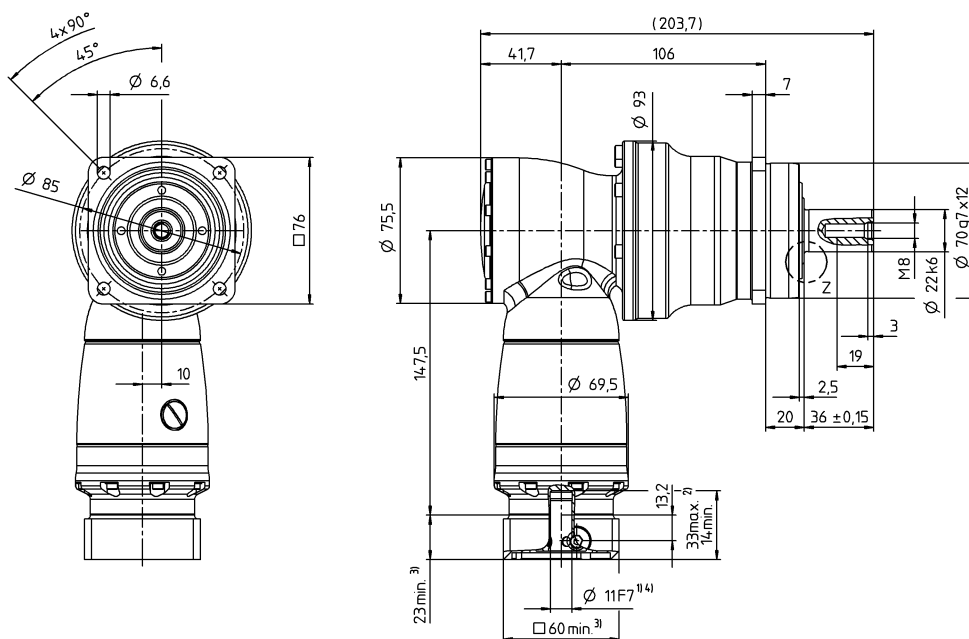
Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{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

Motor shaft diameter [mm]

3-stage

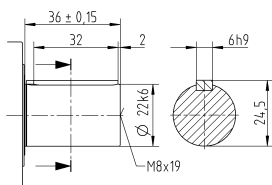
up to 11/14⁴⁾
(B⁵⁾/C) clamping
hub diameter


Hypoid gearboxes

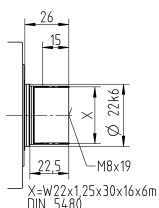
SPK

Other output variants

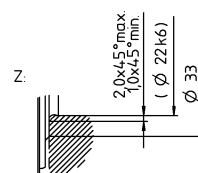
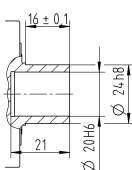
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

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

SPK⁺ 100 MF 2-stage

				2-stage										
Ratio			<i>i</i>		12	16	20	25	28	35	40	50	70	100
Max. torque ^{a) b) e)}			<i>T</i> _{2a}	<i>Nm</i>	336	336	420	420	428	428	200	250	350	376
				<i>in.lb</i>	2974	2974	3717	3717	3788	3788	1770	2213	3098	3328
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)			<i>T</i> _{2B}	<i>Nm</i>	280	280	350	350	378	378	200	250	350	282
				<i>in.lb</i>	2478	2478	3098	3098	3346	3346	1770	2213	3098	2496
Nominal torque (at <i>n</i> _n)			<i>T</i> _{2N}	<i>Nm</i>	180	180	175	175	170	170	160	175	170	120
				<i>in.lb</i>	1593	1593	1549	1549	1505	1505	1416	1549	1505	1062
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)			<i>T</i> _{2Not}	<i>Nm</i>	380	460	575	575	625	625	400	500	625	625
				<i>in.lb</i>	3363	4071	5089	5089	5532	5532	3540	4425	5532	5532
Permitted average input speed (at <i>T</i> _{2N} and 20 °C ambient temperature) ^{d)}			<i>n</i> _{1N}	<i>n</i> _{1T}	2000	2400	2400	2700	2400	2500	2500	2500	2500	2500
Max. input speed			<i>n</i> _{1Max}	<i>rpm</i>	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
Mean no load running torque ^{b)} (at <i>n</i> _i = 3000 rpm and 20 °C gearbox temperature)			<i>T</i> ₀₁₂	<i>Nm</i>	2	2.2	2.1	2.1	2.1	2.1	2	2	2	2
				<i>in.lb</i>	18	19	19	19	19	19	18	18	18	18
Max. backlash			<i>j</i> _t	<i>arcmin</i>	Standard ≤ 4 / Reduced ≤ 2									
Torsional rigidity ^{b)}			<i>C</i> _{t21}	<i>Nm/arcmin</i>	31	31	31	31	31	31	31	31	31	31
				<i>in.lb/arcmin</i>	274	274	274	274	274	274	274	274	274	274
Max. axial force ^{c)}			<i>F</i> _{2AMax}	<i>N</i>	5650									
				<i>lb_f</i>	1271									
Max. lateral force ^{c)}			<i>F</i> _{2QMax}	<i>N</i>	6300									
				<i>lb_f</i>	1418									
Max. tilting moment			<i>M</i> _{2KMax}	<i>Nm</i>	500									
				<i>in.lb</i>	4425									
Efficiency at full load			<i>η</i>	%	94									
Service life ^{f)}			<i>L</i> _h	<i>h</i>	> 20000									
Weight (incl. standard adapter plate)			<i>m</i>	<i>kg</i>	9.7									
				<i>lb_m</i>	21									
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex®)			<i>L</i> _{PA}	<i>dB(A)</i>	≤ 68									
Max. permitted housing temperature				°C	+90									
				<i>F</i>	194									
Ambient temperature				°C	0 to +40									
				<i>F</i>	32 to 104									
Lubrication					Lubricated for life									
Direction of rotation					In- and output opposite direction									
Protection class					IP 65									
Metal bellows coupling (recommended product type – validate sizing with cymex®)					BC2 - 00300AA - 032.000 - X									
Bore diameter of coupling on the application side				<i>mm</i>	X = 024.000 - 060.000									
Mass moment of inertia (relates to the drive) Clamping hub diameter [mm]	E	19	<i>J</i> _i	<i>kgcm²</i>	1.48	1.2	1.17	1.05	1.15	0.95	0.9	0.89	0.89	0.89
				<i>10⁻³ in.lb.s²</i>	1.31	1.06	1.04	0.93	1.02	0.84	0.8	0.79	0.79	0.79
	H	28	<i>J</i> _i	<i>kgcm²</i>	2.89	2.62	2.59	2.46	2.56	2.36	2.31	2.31	2.3	2.3
				<i>10⁻³ in.lb.s²</i>	2.56	2.32	2.29	2.18	2.27	2.09	2.04	2.04	2.04	2.04

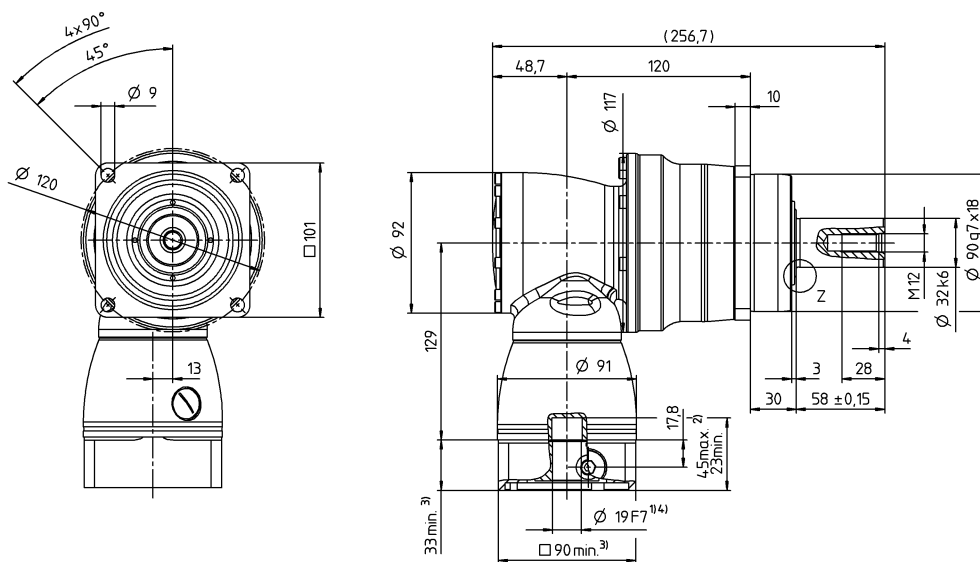
Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{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

Motor shaft diameter [mm]

2-stage

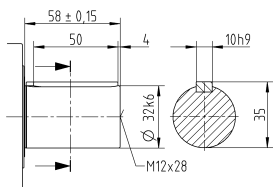
up to 19/28 ⁴⁾
(E ⁵⁾/H) clamping
hub diameter


Hypoid gearboxes

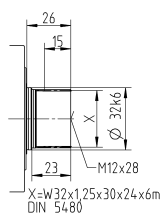
SPK

Other output variants

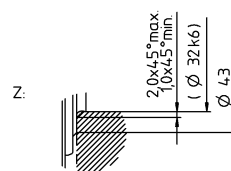
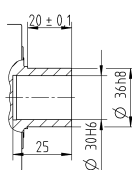
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

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

SPK⁺ 100 MF 3-stage

			3-stage													
Ratio	<i>i</i>		64	84	100	125	140	175	200	250	280	350	400	500	700	1000
Max. torque ^{a) b) e)}	T_{2a}	Nm	336	336	420	420	420	420	420	420	428	428	200	250	350	376
		in.lb	2974	2974	3717	3717	3717	3717	3717	3717	3788	3788	1770	2213	3098	3328
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)	T_{2B}	Nm	280	280	350	350	350	350	350	350	378	378	200	250	350	282
		in.lb	2478	2478	3098	3098	3098	3098	3098	3098	3346	3346	1770	2213	3098	2496
Nominal torque (at n_{1N})	T_{2N}	Nm	180	180	175	175	175	175	175	175	170	170	160	175	170	120
		in.lb	1593	1593	1549	1549	1549	1549	1549	1549	1505	1505	1416	1549	1505	1062
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)	T_{2Not}	Nm	460	380	575	575	575	575	575	575	625	625	400	500	625	625
		in.lb	4071	3363	5089	5089	5089	5089	5089	5089	5532	5532	3540	4425	5532	5532
Permitted average input speed (at T_{2N} and 20 °C ambient temperature) ^{d)}	n_{1N}	n_{1T}	3500	3500	3500	3500	3500	3500	3500	3800	3500	3800	4500	4500	4500	4500
Max. input speed	n_{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature)	T_{012}	Nm	0.6	0.45	0.45	0.45	0.45	0.45	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		in.lb	5.3	4.0	4.0	4.0	4.0	4.0	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
Max. backlash	j_t	arcmin	Standard ≤ 4 / Reduced ≤ 2													
Torsional rigidity ^{b)}	C_{t21}	Nm/arcmin	31	31	31	31	31	31	31	31	31	31	31	31	31	31
		in.lb/arcmin	274	274	274	274	274	274	274	274	274	274	274	274	274	274
Max. axial force ^{c)}	F_{2AMax}	N	5650													
		lb _f	1271													
Max. lateral force ^{c)}	F_{2QMax}	N	6300													
		lb _f	1418													
Max. tilting moment	M_{2KMax}	Nm	500													
		in.lb	4425													
Efficiency at full load	η	%	92													
Service life ^{f)}	L_h	h	> 20000													
Weight (incl. standard adapter plate)	m	kg	10.3													
		lb _m	23													
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®])	L_{PA}	dB(A)	≤ 68													
Max. permitted housing temperature		°C	+90													
		F	194													
Ambient temperature		°C	0 to +40													
		F	32 to 104													
Lubrication			Lubricated for life													
Direction of rotation			In- and output opposite direction													
Protection class			IP 65													
Metal bellows coupling (recommended product type – validate sizing with cymex [®])			BC2 - 00300AA - 032.000 - 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]	C 14	J_1	kgcm ²	0.28	0.23	0.24	0.23	0.21	0.2	0.19	0.18	0.19	0.18	0.18	0.18	0.18
			10 ⁻³ in.lb.s ²	0.25	0.2	0.21	0.2	0.19	0.18	0.17	0.16	0.17	0.16	0.16	0.16	0.16
	E 19	J_1	kgcm ²	0.72	0.63	0.68	0.68	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63
			10 ⁻³ in.lb.s ²	0.64	0.56	0.6	0.6	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56

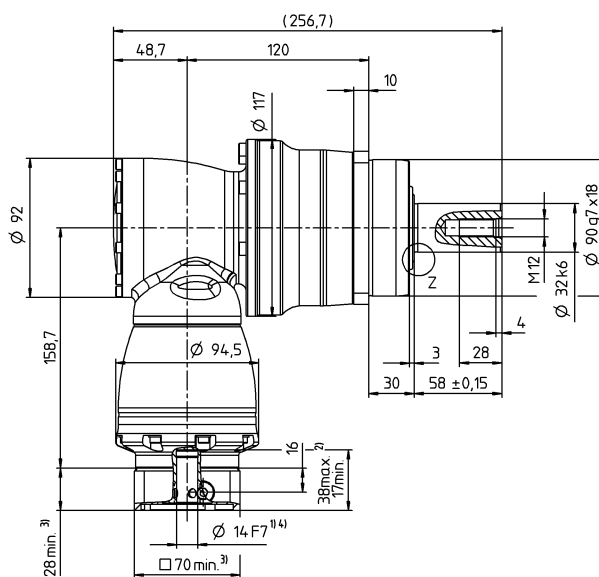
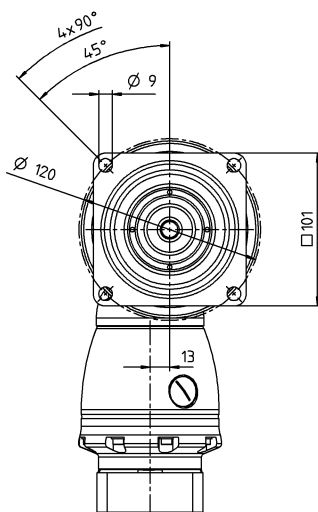
Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{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

Motor shaft diameter [mm]

3-stage

up to 14/19⁴⁾
(C⁵⁾/E) clamping
hub diameter


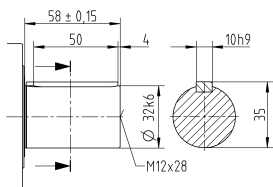
← A

Hypoid gearboxes

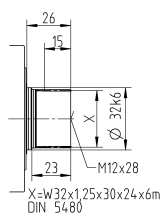
SPK

Other output variants

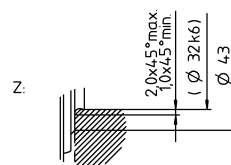
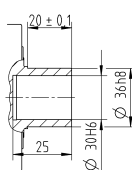
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

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

SPK⁺ 140 MF 2-stage

				2-stage										
Ratio			<i>i</i>		12	16	20	25	28	35	40	50	70	100
Max. torque ^{a) b) e)}			<i>T</i> _{2a}	<i>Nm</i>	816	816	1020	1020	825	825	500	625	625	720
				<i>in.lb</i>	7222	7222	9028	9028	7302	7302	4425	5532	5532	6373
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)			<i>T</i> _{2B}	<i>Nm</i>	680	680	792	792	792	792	500	625	792	636
				<i>in.lb</i>	6019	6019	7010	7010	7010	7010	4425	5532	7010	5629
Nominal torque (at <i>n</i> _N)			<i>T</i> _{2N}	<i>Nm</i>	360	360	360	360	360	360	320	360	360	220
				<i>in.lb</i>	3186	3186	3186	3186	3186	3186	2832	3186	3186	1947
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)			<i>T</i> _{2Not}	<i>Nm</i>	880	1040	1300	1300	1350	1350	1000	1250	1350	1250
				<i>in.lb</i>	7789	9205	11506	11506	11949	11949	8851	11064	11949	11064
Permitted average input speed (at <i>T</i> _{2N} and 20 °C ambient temperature) ^{d)}			<i>n</i> _{1N}	<i>n</i> _{1T}	1900	2300	2300	2600	2300	2300	2300	2300	2300	2300
Max. input speed			<i>n</i> _{1Max}	<i>rpm</i>	5500	5500	5500	5500	5500	5500	5500	5500	5500	5500
Mean no load running torque ^{b)} (at <i>n</i> _i = 3000 rpm and 20 °C gearbox temperature)			<i>T</i> ₀₁₂	<i>Nm</i>	5.5	3.7	3.6	3.4	3.5	4.7	3.3	3.3	3.6	3.6
				<i>in.lb</i>	49	33	32	30	31	42	29	29	32	32
Max. backlash			<i>j</i> _t	<i>arcmin</i>	Standard ≤ 4 / Reduced ≤ 2									
Torsional rigidity ^{b)}			<i>C</i> _{t21}	<i>Nm/arcmin</i>	53	53	53	53	53	53	53	53	53	53
				<i>in.lb/arcmin</i>	469	469	469	469	469	469	469	469	469	469
Max. axial force ^{c)}			<i>F</i> _{2AMax}	<i>N</i>	9870									
				<i>lb_f</i>	2221									
Max. lateral force ^{c)}			<i>F</i> _{2QMax}	<i>N</i>	9600									
				<i>lb_f</i>	2160									
Max. tilting moment			<i>M</i> _{2KMax}	<i>Nm</i>	1000									
				<i>in.lb</i>	8851									
Efficiency at full load			<i>η</i>	%	94									
Service life ^{f)}			<i>L</i> _h	<i>h</i>	> 20000									
Weight (incl. standard adapter plate)			<i>m</i>	<i>kg</i>	20									
				<i>lb_m</i>	44									
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex®)			<i>L</i> _{PA}	<i>dB(A)</i>	≤ 68									
Max. permitted housing temperature				°C	+90									
				<i>F</i>	194									
Ambient temperature				°C	0 to +40									
				<i>F</i>	32 to 104									
Lubrication					Lubricated for life									
Direction of rotation					In- and output opposite direction									
Protection class					IP 65									
Metal bellows coupling (recommended product type – validate sizing with cymex®)					BC2 - 00800AA - 040.000 - 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]	H	28	<i>J</i> _i	<i>kgcm²</i>	4.68	3.82	3.75	3.31	3.68	2.97	2.8	2.79	2.78	2.77
				<i>10⁻³ in.lb.s²</i>	4.14	3.38	3.32	2.93	3.26	2.63	2.48	2.47	2.46	2.45
	K	38	<i>J</i> _i	<i>kgcm²</i>	11.8	11	10.9	10.5	10.9	10.1	9.96	9.95	9.94	9.94
<i>10⁻³ in.lb.s²</i>				10.44	9.74	9.65	9.29	9.65	8.94	8.81	8.81	8.8	8.8	

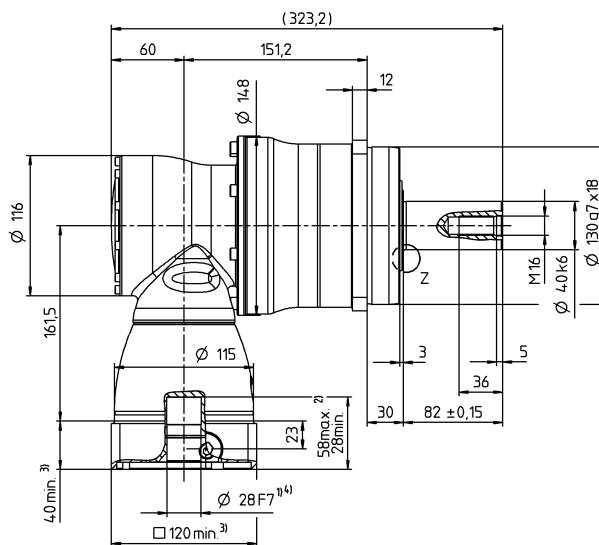
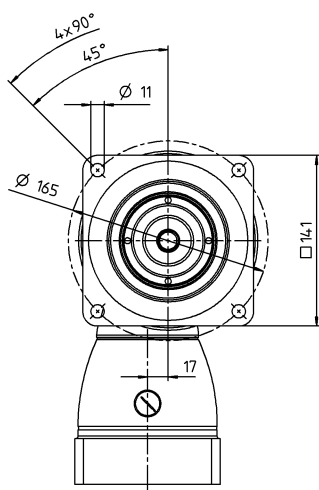
Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{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

Motor shaft diameter [mm]

2-stage

up to 28/38⁴⁾
(H⁵⁾/K) clamping
hub diameter


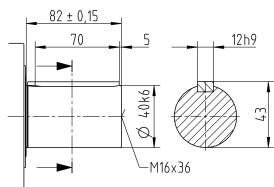
← A

Hypoid gearboxes

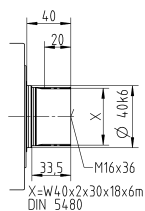
SPK

Other output variants

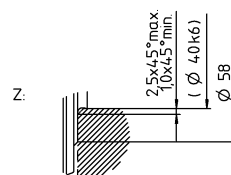
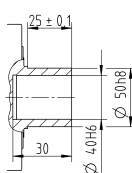
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

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

SPK⁺ 140 MF 3-stage

			3-stage													
Ratio	<i>i</i>		64	84	100	125	140	175	200	250	280	350	400	500	700	1000
Max. torque ^{a) b) e)}	T_{2a}	Nm	816	816	1020	1020	1020	1020	1020	1020	825	825	500	625	825	720
		in.lb	7222	7222	9028	9028	9028	9028	9028	9028	7302	7302	4425	5532	7302	6373
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)	T_{2B}	Nm	680	680	792	792	792	792	792	792	792	792	500	625	792	636
		in.lb	6019	6019	7010	7010	7010	7010	7010	7010	7010	7010	4425	5532	7010	5629
Nominal torque (at n_{IN})	T_{2N}	Nm	360	360	360	360	360	360	360	360	360	360	320	360	360	220
		in.lb	3186	3186	3186	3186	3186	3186	3186	3186	3186	3186	2832	3186	3186	1947
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)	T_{2Not}	Nm	1040	880	1300	1300	1300	1300	1300	1300	1350	1350	1000	1250	1350	1250
		in.lb	9205	7789	11506	11506	11506	11506	11506	11506	11949	11949	8851	11064	11949	11064
Permitted average input speed (at T_{2N} and 20 °C ambient temperature) ^{d)}	n_{1N}	n_{1T}	3100	3100	3100	3100	3100	3100	3100	3500	3100	3500	4200	4200	4200	4200
Max. input speed	n_{1Max}	rpm	4500	4500	4500	4500	4500	4500	4500	4500	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	1.1	0.9	0.9	0.75	0.75	0.6	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
		in.lb	9.7	8.0	8.0	6.6	6.6	5.3	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max. backlash	j_t	arcmin	Standard ≤ 4 / Reduced ≤ 2													
Torsional rigidity ^{b)}	C_{t21}	Nm/arcmin	53	53	53	53	53	53	53	53	53	53	53	53	53	53
		in.lb/arcmin	469	469	469	469	469	469	469	469	469	469	469	469	469	469
Max. axial force ^{c)}	F_{2AMax}	N	9870													
		lb _f	2221													
Max. lateral force ^{c)}	F_{2QMax}	N	9600													
		lb _f	2160													
Max. tilting moment	M_{2KMax}	Nm	1000													
		in.lb	8851													
Efficiency at full load	η	%	92													
Service life ^{f)}	L_h	h	> 20000													
Weight (incl. standard adapter plate)	m	kg	20.7													
		lb _m	46													
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®])	L_{PA}	dB(A)	≤ 68													
Max. permitted housing temperature		°C	+90													
		F	194													
Ambient temperature		°C	0 to +40													
		F	32 to 104													
Lubrication			Lubricated for life													
Direction of rotation			In- and output opposite direction													
Protection class			IP 65													
Metal bellows coupling (recommended product type – validate sizing with cymex [®])			BC2 - 00800AA - 040.000 - 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]	E 19	J_1	kgcm ²	1.01	0.76	0.88	0.85	0.76	0.75	0.7	0.69	0.7	0.69	0.69	0.69	0.69
			10 ⁻³ in.lb.s ²	0.89	0.67	0.78	0.75	0.67	0.66	0.62	0.61	0.62	0.61	0.61	0.61	0.61
	G 24	J_1	kgcm ²	2.57	2.32	2.44	2.42	2.32	2.31	2.26	2.25	2.26	2.25	2.25	2.25	2.25
			10 ⁻³ in.lb.s ²	2.27	2.05	2.16	2.14	2.05	2.04	2	1.99	2	1.99	1.99	1.99	1.99

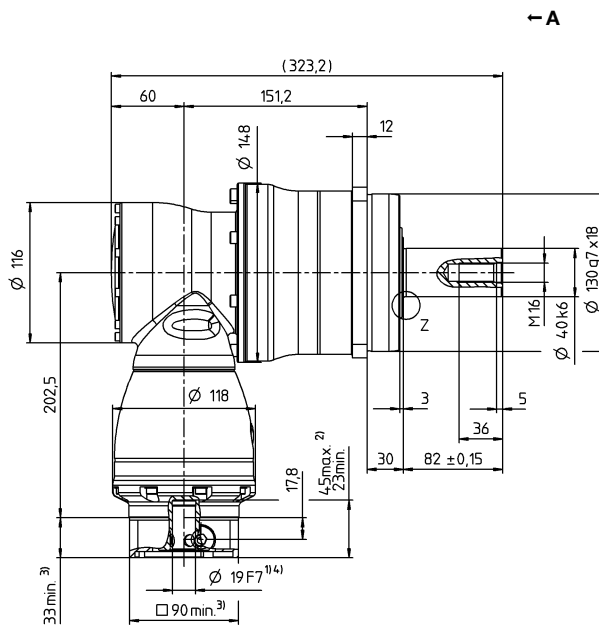
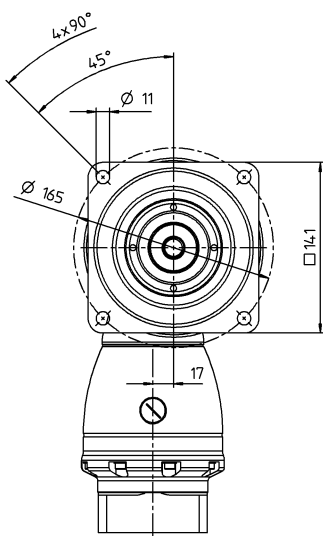
Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{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

Motor shaft diameter [mm]

3-stage

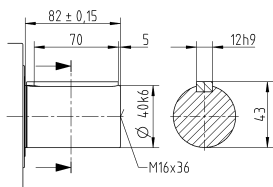
up to 19/24 ⁴⁾
(E ⁵⁾/G) clamping
hub diameter


Hypoid gearboxes

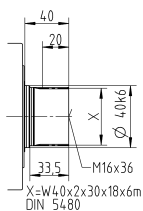
SPK

Other output variants

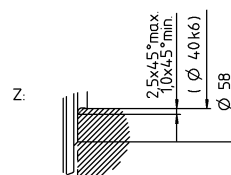
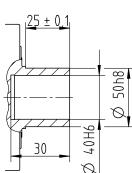
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

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

SPK⁺ 180 MF 2-stage

				2-stage									
Ratio	<i>i</i>			12	16	20	25	28	35	40	50	70	100
Max. torque ^{a) b) e)}	T_{2a}	Nm		1440	1440	1800	1800	1936	1936	840	1050	1470	1552
		in.lb		12745	12745	15931	15931	17135	17135	7435	9293	13011	13736
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)	T_{2B}	Nm		1200	1200	1452	1452	1452	1452	840	1050	1452	1164
		in.lb		10621	10621	12851	12851	12851	12851	7435	9293	12851	10302
Nominal torque (at n_{IN})	T_{2N}	Nm		750	750	750	750	750	750	640	750	750	750
		in.lb		6638	6638	6638	6638	6638	6638	5665	6638	6638	6638
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)	T_{2Not}	Nm		1600	2000	2500	2500	2750	2750	1600	2000	2750	2750
		in.lb		14161	17702	22127	22127	24340	24340	14161	17702	24340	24340
Permitted average input speed (at T_{2N} and 20 °C ambient temperature) ^{d)}	n_{1N}	n_{1T}		1600	1900	1900	2100	1900	2100	2100	2100	2100	2100
Max. input speed	n_{1Max}	rpm		5000	5000	5000	5000	5000	5000	5000	5000	5000	5000
Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature)	T_{012}	Nm		11	9.2	9.2	7	8.5	10	7.5	7.5	7	7
		in.lb		97	81	81	62	75	89	66	66	62	62
Max. backlash	j_t	arcmin		Standard ≤ 4 / Reduced ≤ 2									
Torsional rigidity ^{b)}	C_{t21}	Nm/arcmin		175	175	175	175	175	175	175	175	175	175
		in.lb/arcmin		1549	1549	1549	1549	1549	1549	1549	1549	1549	1549
Max. axial force ^{c)}	F_{2AMax}	N		15570									
		lb _f		3503									
Max. lateral force ^{c)}	F_{2QMax}	N		15000									
		lb _f		3375									
Max. tilting moment	M_{2KMax}	Nm		1800									
		in.lb		15931									
Efficiency at full load	η	%		94									
Service life ^{f)}	L_h	h		> 20000									
Weight (incl. standard adapter plate)	m	kg		45									
		lb _m		99									
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®])	L_{PA}	dB(A)		≤ 70									
Max. permitted housing temperature		°C		+90									
		F		194									
Ambient temperature		°C		0 to +40									
		F		32 to 104									
Lubrication				Lubricated for life									
Direction of rotation				In- and output opposite direction									
Protection class				IP 65									
Metal bellows coupling (recommended product type – validate sizing with cymex [®])				BC2 - 01500AA - 055.000 - 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]	K 38	J_1	kgcm ²	24.7	19.5	19	16.3	18.6	14	12.9	12.8	12.7	12.7
			10 ⁻³ in.lb.s ²	21.86	17.26	16.82	14.43	16.46	12.39	11.42	11.33	11.24	11.24

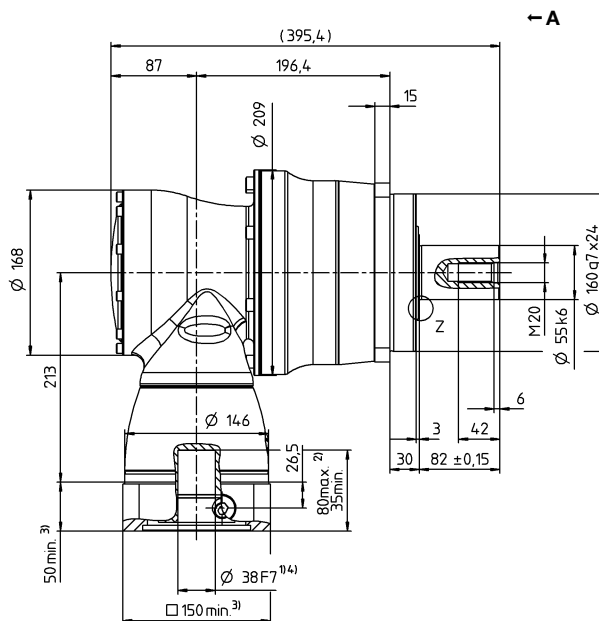
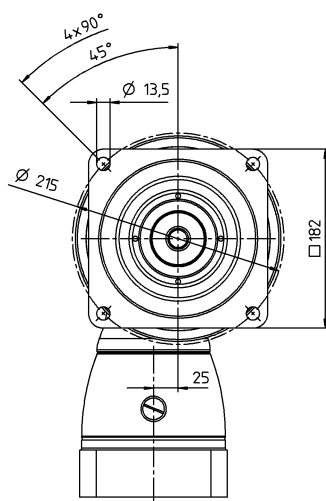
Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{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

Motor shaft diameter [mm]

2-stage

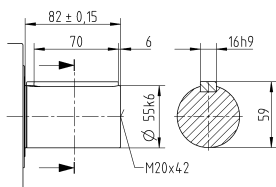
up to 38 ⁴⁾ (K) ⁵⁾
clamping hub
diameter


Hypoid gearboxes

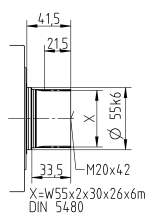
SPK

Other output variants

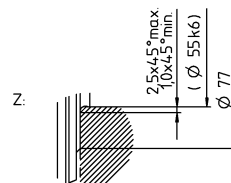
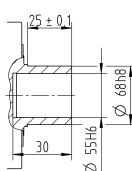
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

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

SPK⁺ 180 MF 3-stage

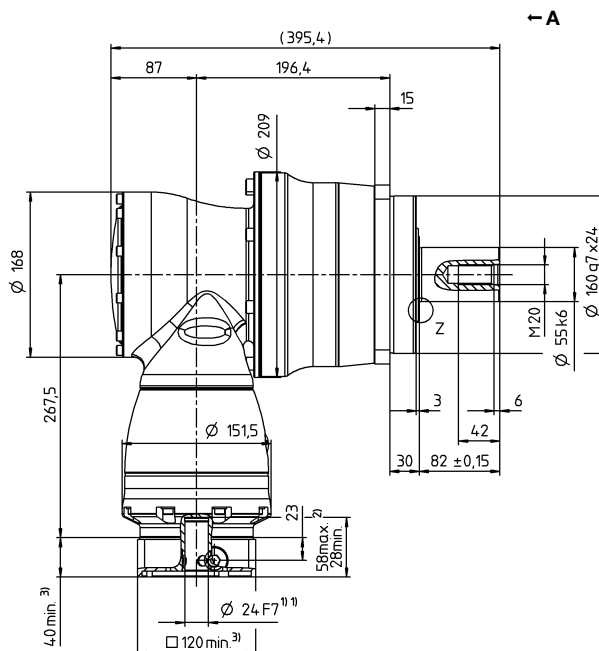
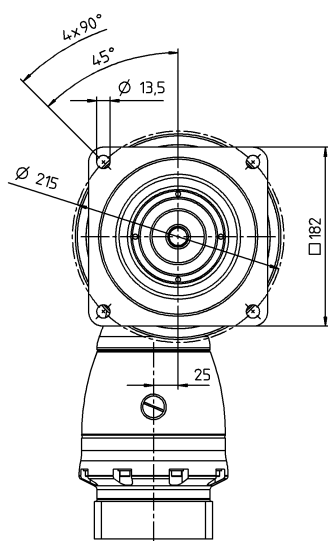
			3-stage													
Ratio	<i>i</i>		64	84	100	125	140	175	200	250	280	350	400	500	700	1000
Max. torque ^{a) b) e)}	T_{2a}	Nm	1440	1440	1800	1800	1800	1800	1800	1800	1936	1936	840	1050	1470	1552
		in.lb	12745	12745	15931	15931	15931	15931	15931	15931	17135	17135	7435	9293	13011	13736
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)	T_{2B}	Nm	1200	1200	1452	1452	1452	1452	1452	1452	1452	1452	840	1050	1452	1164
		in.lb	10621	10621	12851	12851	12851	12851	12851	12851	12851	12851	7435	9293	12851	10302
Nominal torque (at n_{IN})	T_{2N}	Nm	750	750	750	750	750	750	750	750	750	750	640	750	750	750
		in.lb	6638	6638	6638	6638	6638	6638	6638	6638	6638	6638	5665	6638	6638	6638
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)	T_{2Not}	Nm	2000	1600	2500	2500	2500	2500	2500	2500	2750	2750	1600	2000	2750	2750
		in.lb	17702	14161	22127	22127	22127	22127	22127	22127	24340	24340	14161	17702	24340	24340
Permitted average input speed (at T_{2N} and 20 °C ambient temperature) ^{d)}	n_{1N}	n_{1T}	2900	2900	2900	2900	2900	2900	2900	3200	2900	3200	3900	3900	3900	3900
Max. input speed	n_{1Max}	rpm	4500	4500	4500	4500	4500	4500	4500	4500	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	2	1	1.6	1.2	1.2	1	1	0.8	1	0.8	0.8	0.8	0.8	0.8
		in.lb	18	8.9	14	11	11	8.9	8.9	7.1	8.9	7.1	7.1	7.1	7.1	7.1
Max. backlash	j_t	arcmin	Standard ≤ 4 / Reduced ≤ 2													
Torsional rigidity ^{b)}	C_{t21}	Nm/arcmin	175	175	175	175	175	175	175	175	175	175	175	175	175	175
		in.lb/arcmin	1549	1549	1549	1549	1549	1549	1549	1549	1549	1549	1549	1549	1549	1549
Max. axial force ^{c)}	F_{2AMax}	N	15570													
		lb _f	3503													
Max. lateral force ^{c)}	F_{2QMax}	N	15000													
		lb _f	3375													
Max. tilting moment	M_{2KMax}	Nm	1800													
		in.lb	15931													
Efficiency at full load	η	%	92													
Service life ^{f)}	L_h	h	> 20000													
Weight (incl. standard adapter plate)	m	kg	47.4													
		lb _m	105													
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®])	L_{PA}	dB(A)	≤ 70													
Max. permitted housing temperature		°C	+90													
		F	194													
Ambient temperature		°C	0 to +40													
		F	32 to 104													
Lubrication			Lubricated for life													
Direction of rotation			In- and output opposite direction													
Protection class			IP 65													
Metal bellows coupling (recommended product type – validate sizing with cymex [®])			BC2 - 01500AA - 055.000 - 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]	G 24	J_1	kgcm ²	3.97	2.82	3.36	3.22	2.82	2.75	2.5	2.47	2.5	2.44	2.42	2.42	2.42
			10 ⁻³ in.lb.s ²	3.51	2.5	2.97	2.85	2.5	2.43	2.21	2.19	2.21	2.16	2.14	2.14	2.14
	K 38	J_1	kgcm ²	10.9	9.74	10.3	10.1	9.74	9.66	9.41	9.38	9.41	9.38	9.33	9.33	9.33
			10 ⁻³ in.lb.s ²	9.65	8.62	9.12	8.94	8.62	8.55	8.33	8.3	8.33	8.3	8.26	8.26	8.26

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

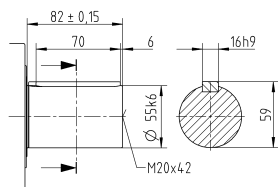
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ^{f)} Please contact us to discuss application-specific service lifetimes

3-stage

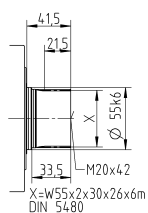
up to 24/38 ⁴⁾
(G⁵/K) clamping
hub diameter

SPK⁺

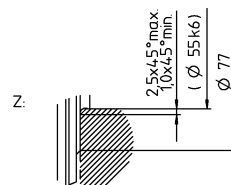
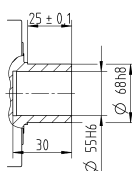
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

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

⁵⁾ Standard clamping hub diameter

SPK+ 210 MF 2-stage

				2-stage									
Ratio	<i>i</i>			12	16	20	25	28	35	40	50	70	100
Max. torque ^{a) b) e)}	T_{2a}	Nm		3072	3072	3840	3840	3840	3840	1880	2350	3290	2800
		in.lb		27190	27190	33987	33987	33987	33987	16640	20799	29119	24782
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)	T_{2B}	Nm		2560	2560	3000	3000	2880	2880	1880	2350	2880	2280
		in.lb		22658	22658	26552	26552	25490	25490	16640	20799	25490	20180
Nominal torque (at n_n)	T_{2N}	Nm		1500	1500	1500	1500	1400	1500	1400	1500	1400	1000
		in.lb		13276	13276	13276	13276	12391	13276	12391	13276	12391	8851
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)	T_{2Not}	Nm		3600	4200	5250	5250	5900	5900	3600	4500	5900	5900
		in.lb		31863	37173	46467	46467	52220	52220	31863	39829	52220	52220
Permitted average input speed (at T_{2N} and 20 °C ambient temperature) ^{d)}	n_{1N}	n_{1T}		1500	1700	1700	1900	1700	1900	1700	1700	1700	1700
Max. input speed	n_{1Max}	rpm		4500	4500	4500	4500	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		21	19	17	16	15	15	16	16	15	14
		in.lb		186	168	150	142	133	133	142	142	133	124
Max. backlash	j_t	arcmin		Standard ≤ 4 / Reduced ≤ 2									
Torsional rigidity ^{b)}	C_{t21}	Nm/arcmin		300	300	300	300	300	300	300	300	300	300
		in.lb/arcmin		2655	2655	2655	2655	2655	2655	2655	2655	2655	2655
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	%		94									
Service life ^{f)}	L_h	h		> 20000									
Weight (incl. standard adapter plate)	m	kg		82									
		lb _m		181									
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®])	L_{PA}	dB(A)		≤ 71									
Max. permitted housing temperature		°C		+90									
		F		194									
Ambient temperature		°C		0 to +40									
		F		32 to 104									
Lubrication				Lubricated for life									
Direction of rotation				In- and output opposite direction									
Protection class				IP 65									
Metal bellows coupling (recommended product type – validate sizing with cymex [®])				BC2 - 04000AA - 075.000 - 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]	M 48	J_i	kgcm ²	78.8	54.6	53	43.4	51.5	42.2	30.2	30	29.8	29.8
			10 ⁻³ in.lb.s ²	69.74	48.32	46.91	38.41	45.58	37.35	26.73	26.55	26.37	26.37

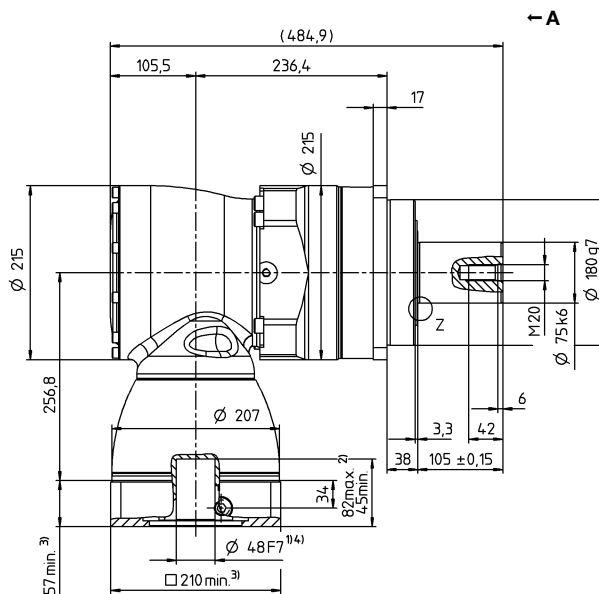
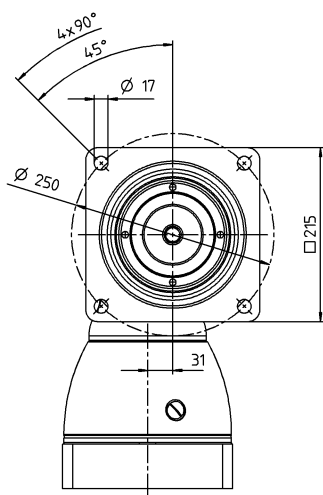
Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{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

Motor shaft diameter [mm]

2-stage

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


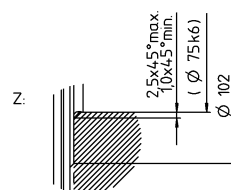
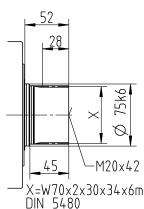
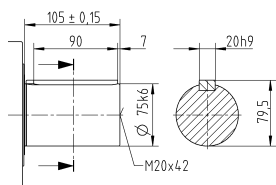
Hypoid gearboxes

SPK

Other output variants

Shaft with key

Splined shaft (DIN 5480)



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

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

SPK+ 210 MF 3-stage

					3-stage															
Ratio			i		64	84	100	125	140	175	200	250	280	350	400	500	700	1000		
Max. torque ^{a) b) e)}			T _{2a}	Nm	3072	3072	3840	3840	3840	3840	3840	3840	3840	3840	1880	2350	3290	2800		
				in.lb	27190	27190	33987	33987	33987	33987	33987	33987	33987	33987	16640	20799	29119	24782		
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)			T _{2B}	Nm	2560	2560	3000	3000	3000	3000	3000	3000	2880	2880	1880	2350	2880	2280		
				in.lb	22658	22658	26552	26552	26552	26552	26552	26552	25490	25490	16640	20799	25490	20180		
Nominal torque (at n _{IN})			T _{2N}	Nm	1500	1500	1500	1500	1500	1500	1500	1500	1400	1400	1500	1500	1400	1000		
				in.lb	13276	13276	13276	13276	13276	13276	13276	13276	12391	12391	13276	13276	12391	8851		
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)			T _{2Not}	Nm	4200	3600	5250	5250	5250	5250	5250	5250	5900	5900	3600	4500	5900	5900		
				in.lb	37173	31863	46467	46467	46467	46467	46467	46467	52220	52220	31863	39829	52220	52220		
Permitted average input speed (at T _{2N} and 20 °C ambient temperature) ^{d)}			n _{1N}	n _{1T}	2700	2700	2700	2700	2700	2700	2700	2900	2700	2900	3400	3400	3400	3400		
Max. input speed			n _{1Max}	rpm	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000		
Mean no load running torque ^{b)} (at n ₁ = 3000 rpm and 20 °C gearbox temperature)			T ₀₁₂	Nm	4.8	2.4	3.8	3.4	2.6	2.6	2	2	2	2	2	2	2	2		
				in.lb	42	21	34	30	23	23	18	18	18	18	18	18	18	18	18	
Max. backlash			j _t	arcmin	Standard ≤ 4 / Reduced ≤ 2															
Torsional rigidity ^{b)}			C _{t21}	Nm/arcmin	300	300	300	300	300	300	300	300	300	300	300	300	300	300		
				in.lb/arcmin	2655	2655	2655	2655	2655	2655	2655	2655	2655	2655	2655	2655	2655	2655	2655	
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	%	92															
Service life ^{f)}			L _h	h	> 20000															
Weight (incl. standard adapter plate)			m	kg	86															
				lb _m	190															
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex®)			L _{PA}	dB(A)	≤ 71															
Max. permitted housing temperature				°C	+90															
				F	194															
Ambient temperature				°C	0 to +40															
				F	32 to 104															
Lubrication					Lubricated for life															
Direction of rotation					In- and output opposite direction															
Protection class					IP 65															
Metal bellows coupling (recommended product type – validate sizing with cymex®)					BC2 - 04000AA - 075.000 - 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]			K	38	J _i	kgcm ²	14	10.9	12.3	12	10.9	10.7	10.1	10	10.1	10	9.9	9.9	9.9	9.9
						10 ⁻³ in.lb.s ²	12.39	9.65	10.89	10.62	9.65	9.47	8.94	8.85	8.94	8.85	8.76	8.76	8.76	8.76
			M	48	J _i	kgcm ²	28.7	25.6	27.1	26.7	26.7	25.6	24.8	24.7	24.8	24.7	24.6	24.6	24.6	24.6
10 ⁻³ in.lb.s ²	25.4	22.66				23.98	23.63	23.63	22.66	21.95	21.86	21.95	21.86	21.77	21.77	21.77	21.77			

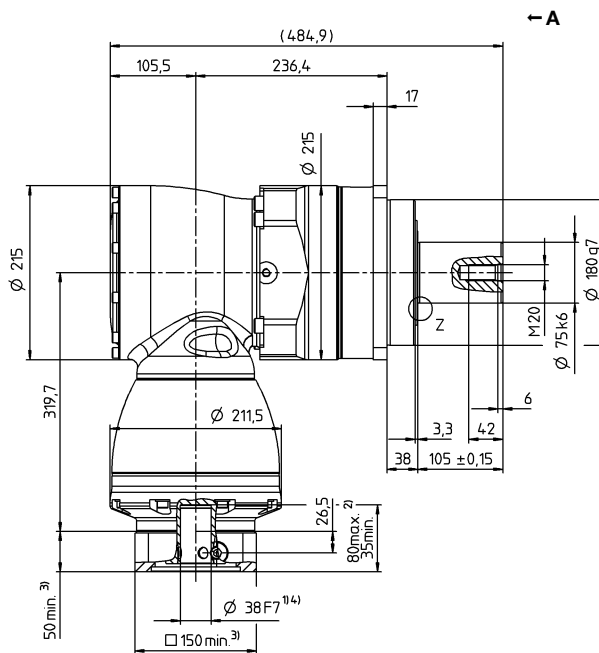
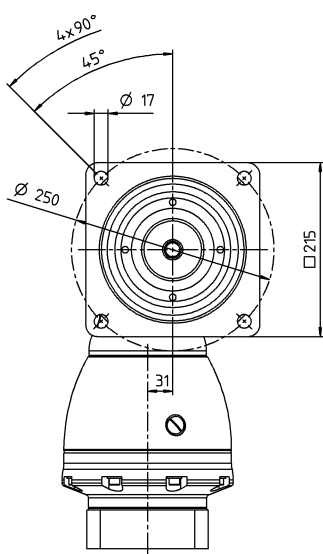
Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{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

Motor shaft diameter [mm]

3-stage

up to 38/48⁴⁾
(K⁵⁾/M) clamping
hub diameter


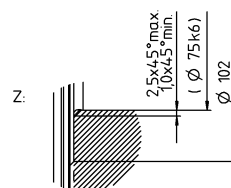
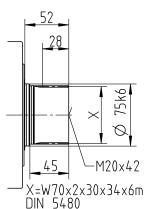
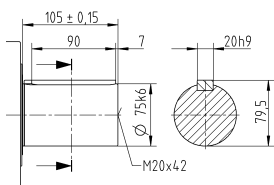
Hypoid gearboxes

SPK

Other output variants

Shaft with key

Splined shaft (DIN 5480)



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

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

SPK⁺ 240 MF 3-stage

			3-stage					
Ratio	<i>i</i>		48	100	175	350	500	1000
Max. torque ^{a) b) e)}	T_{2a}	Nm	5446	5446	5700	5700	5700	3642
		in.lb	48201	48201	50450	50450	50450	32235
Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour)	T_{2B}	Nm	4800	5400	5400	5400	5160	3642
		in.lb	42484	47794	47794	47794	45670	32235
Nominal torque (at n_{IN})	T_{2N}	Nm	2500	2500	2500	2500	2500	1700
		in.lb	22127	22127	22127	22127	22127	15046
Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox)	T_{2Not}	Nm	6400	8500	8500	8500	8500	6850
		in.lb	56645	75232	75232	75232	75232	60628
Permitted average input speed (at T_{2N} and 20 °C ambient temperature) ^{d)}	n_{1N}	n_{1T}	1800	1900	2100	2100	2100	2100
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	13	8.4	9.6	7.2	6.9	6.9
		in.lb	115	74	85	64	61	61
Max. backlash	j_t	arcmin	Standard ≤ 5.5 / Reduced ≤ 3.5					
Torsional rigidity ^{b)}	C_{t21}	Nm/arcmin	510	510	510	510	510	510
		in.lb/arcmin	4514	4514	4514	4514	4514	4514
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	%	92					
Service life ^{f)}	L_h	h	> 20000					
Weight (incl. standard adapter plate)	m	kg	93					
		lb _m	206					
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®])	L_{PA}	dB(A)	≤ 71					
Max. permitted housing temperature		°C	+90					
		F	194					
Ambient temperature		°C	0 to +40					
		F	32 to 104					
Lubrication			Lubricated for life					
Direction of rotation			In- and output opposite direction					
Protection class			IP 65					
Metal bellows coupling (recommended product type – validate sizing with cymex [®])			BC2 - 06000AA - 085.000 - 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]	K 38	J_i	kgcm ²	26.5	17	15	13	13
			10 ⁻³ in.lb.s ²	23.45	15.05	13.28	11.51	11.51

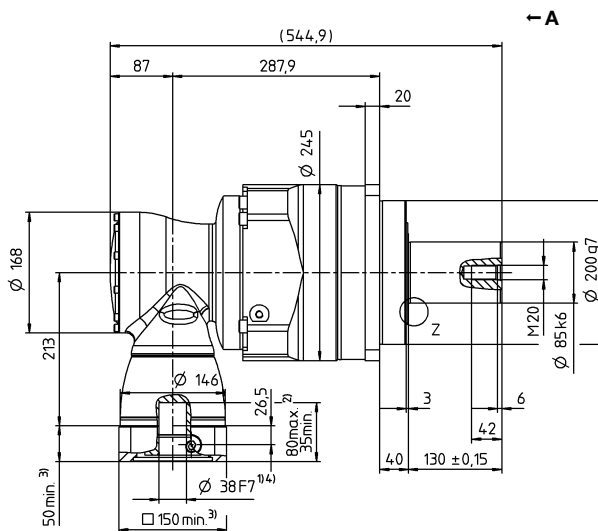
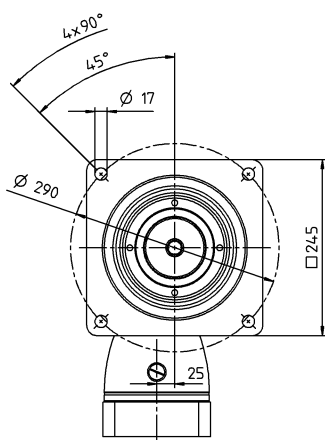
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- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
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- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ^{f)} Please contact us to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

View A

Motor shaft diameter [mm]

3-stage

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


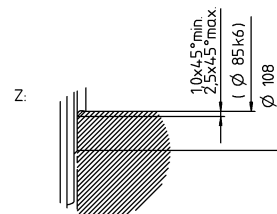
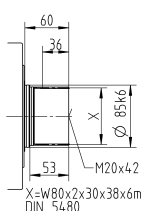
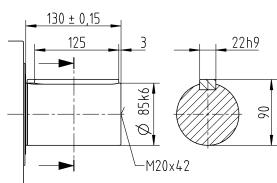
Hypoid gearboxes

SPK

Other output variants

Shaft with key

Splined shaft (DIN 5480)



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

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.

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