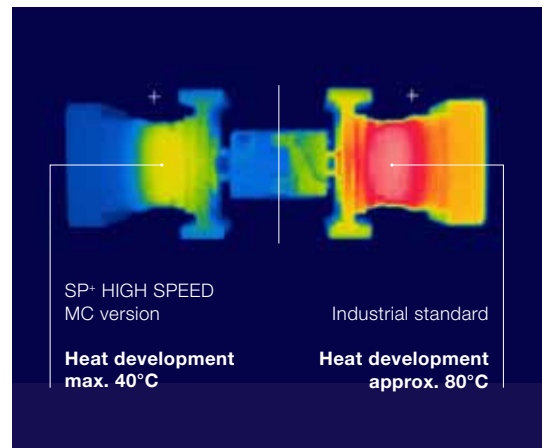


SP+/SP+ HIGH SPEED –

The classic all-rounder among planetary gearheads

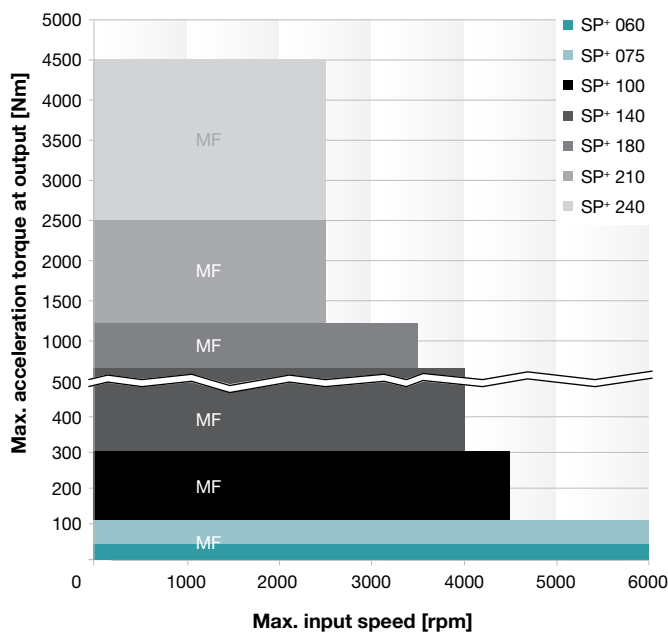


The standard version is ideally suited for high positioning accuracy and highly dynamic cyclic operation. Das SP+ HIGH SPEED is particularly well suited for applications with maximum speeds during continuous operation.

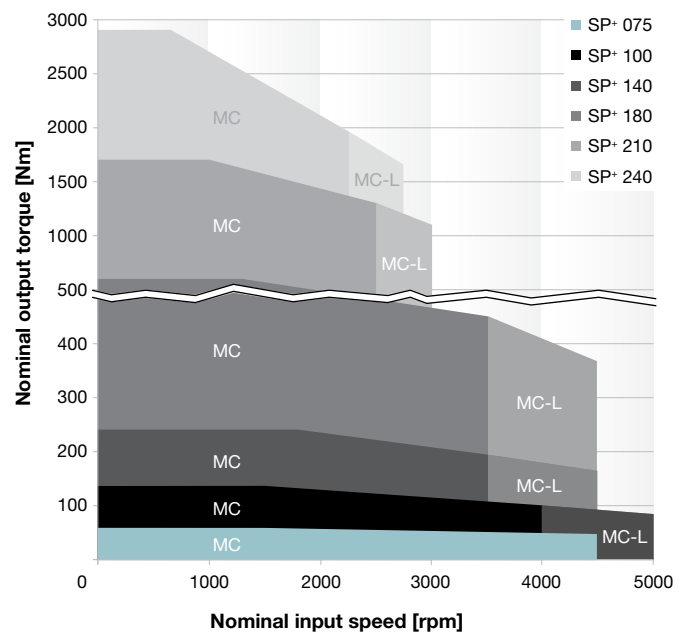


Quick size selection

SP+ MF (example for $i = 4$)
For applications in cyclic operation ($ED \leq 60\%$)



SP+ HIGH SPEED MC/MC-L (example for $i = 4$)
For applications in continuous operation ($ED \geq 60\%$)



Versions and Applications

SP+

MF version

(standard version)

- Cyclic applications (ED ≤ 60%)
- Reverse operation
- Highly dynamic applications
- High positioning accuracy

SP+ HIGH SPEED

MC version

(HIGH SPEED version)

- Applications in continuous operation (ED ≥ 60%)
- High nominal speeds
- Temperature-sensitive applications

SP+ HIGH SPEED

MC/L version

(friction-optimized version)

- Applications in continuous operation (ED ≥ 60%)
- Very high nominal speeds
- Highly temperature-sensitive applications
- Very low no-load running torque

Comparison

		Cyclic operation	Continuous operation	Continuous operation
Features		SP+ MF version from page 68	SP+ HIGH SPEED MC version from page 92	SP+ HIGH SPEED MC/L version from page 96
Ratios ^{c)}		3 -100	3 -100	3 -100
Torsional backlash [arcmin] ^{c)}	Standard	≤ 3	≤ 4	≤ 4
	Reduced	≤ 1	≤ 2	≤ 2
Output type				
Smooth output shaft		•	•	•
Keywayed output shaft		•	•	•
Output shaft with involute gearing		•	•	•
Mounted shaft Connected via shrink disc		•	•	•
System output with pinion		•	•	•
Input type				
Motor mounted version		•	•	•
Input shaft		•		
Type				
ATEX ^{a)}		•	•	
Food-grade lubrication ^{a) b)}		•	•	•
Corrosion resistant ^{a) b)}		•	•	
Optimized mass moment of inertia ^{a)}		•		
Accessories				
Coupling		•	•	•
Rack		•	•	
Pinion		•	•	
Shrink disc		•	•	•
torqXis sensor flange		•	•	•
Intermediate plate for cooling connection		•	•	•

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

^{b)} Please contact WITTENSTEIN alpha

^{c)} In relation to reference sizes



MF

MC

MC-L

SP+ 060 MF 1-stage

					1-stage				
Ratio ^{a)}			<i>i</i>		3	4	5	7	10
cymex®-optimized acceleration torque (please contact us regarding the design)			T_{2Bcym}	Nm	–	58	60	54	–
				in.lb		513	531	478	
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	30	42	42	42	32
				in.lb	266	372	372	372	283
Nominal output torque (with n_{1N})			T_{2N}	Nm	17	26	26	26	17
				in.lb	150	230	230	230	150
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	80	100	100	100	80
				in.lb	708	885	885	885	708
Nominal input speed (with T_{2N} and 20°C ambient temperature ^{b)})			n_{1N}	rpm	3300	3300	3300	4000	4000
Max. input speed			n_{1max}	rpm	6000	6000	6000	6000	6000
Mean no load running torque (with $n_1=3000$ rpm and 20°C gearhead temperature ^{c)})			T_{012}	Nm	0.9	0.7	0.6	0.4	0.3
				in.lb	8.0	6.2	5.3	3.5	2.7
Max. torsional backlash			j_t	arcmin	Standard ≤ 4 / Reduced ≤ 2				
Torsional rigidity			C_{t21}	Nm/ arcmin	4.5				
				in.lb/ arcmin	40				
Max. axial force ^{d)}			F_{2AMax}	N	2400				
				lb _f	540				
Max. radial force ^{d)}			F_{2RMax}	N	2800				
				lb _f	630				
Max. tilting torque			M_{2KMax}	Nm	152				
				in.lb	1345				
Efficiency at full load			η	%	97				
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000				
Weight incl. standard adapter plate			m	kg	1.9				
				lb _m	4.2				
Operating noise (with $i=10$ and $n_1=3000$ rpm no load)			L_{PA}	dB(A)	≤ 58				
Max. permitted housing temperature				°C	+90				
				F	194				
Ambient temperature				°C	-15 to +40				
				F	5 to 104				
Lubrication					Lubricated for life				
Paint					Blue RAL 5002				
Direction of rotation					Motor and gearhead same direction				
Protection class					IP 65				
Moment of inertia (relates to the drive)	B	11	J_1	kgcm ²	0.21	0.15	0.12	0.10	0.09
				10 ⁻³ in.lb.s ²	0.18	0.13	0.11	0.09	0.08
Clamping hub diameter [mm]	C	14	J_1	kgcm ²	0.28	0.22	0.20	0.18	0.17
				10 ⁻³ in.lb.s ²	0.25	0.20	0.17	0.16	0.15
	E	19	J_1	kgcm ²	0.61	0.55	0.52	0.50	0.49
				10 ⁻³ in.lb.s ²	0.54	0.48	0.46	0.44	0.43

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

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

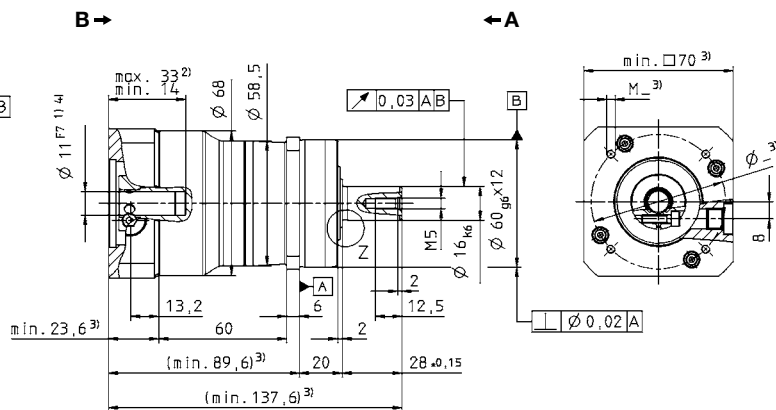
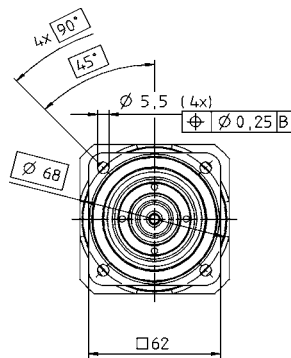
^{c)} Valid for clamping hub diameter of 14 mm

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

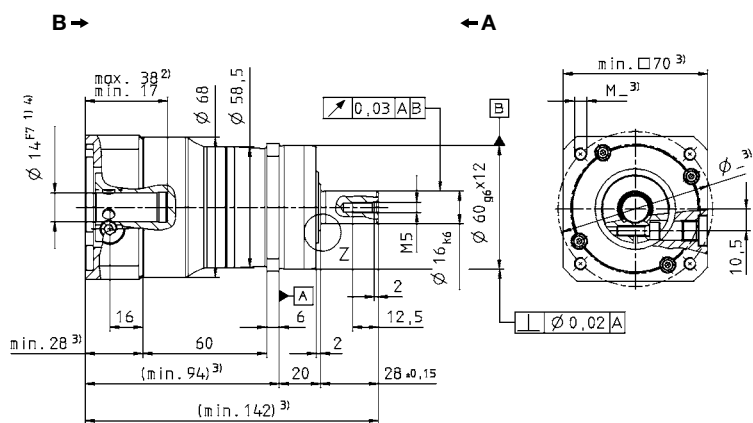
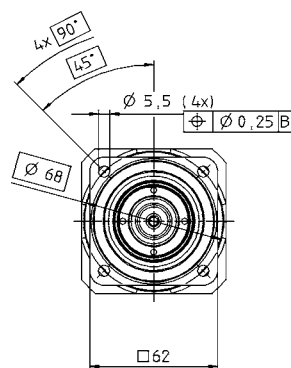
View A

View B

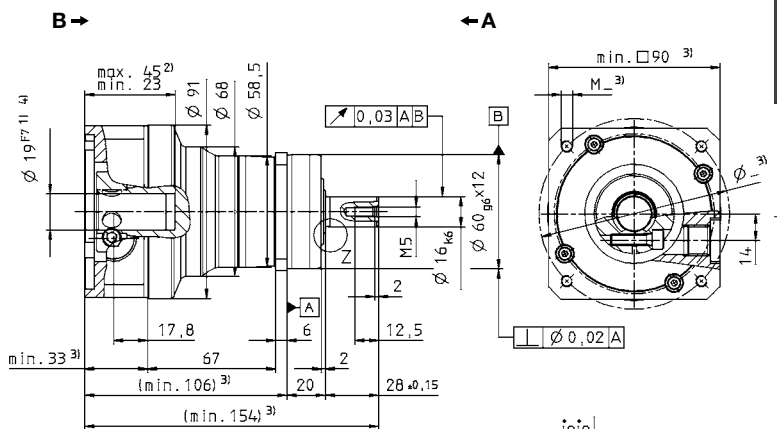
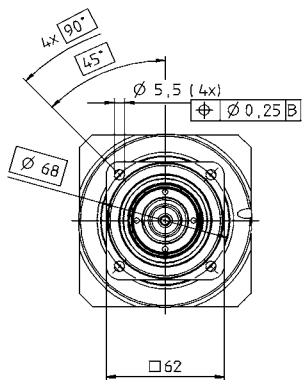
up to 11⁴⁾ (B)
clamping hub
diameter



up to 14⁴⁾ (C)
clamping hub
diameter¹⁾

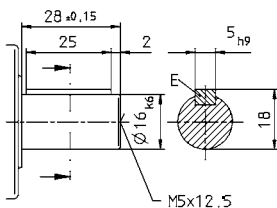


up to 19⁴⁾ (E)
clamping hub
diameter

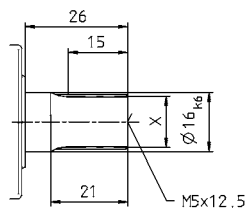


Alternatives: Output shaft variants

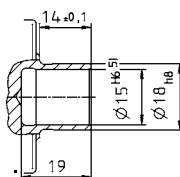
Keywayed output shaft in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 16 x 0.8 x 30 x 18 x 6m, DIN 5480



Shaft mounted
Mounted via shrink disc



Non-tolerated dimensions ± 1 mm

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length.
Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
- 5) Tolerance h6 for mounted shaft.

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

Motor mounting according to operating manual

SP+ 060 MF 2-stage

				2-stage											
Ratio ^{a)}			<i>i</i>		16	20	25	28	35	40	50	70	100		
cymex®-optimized acceleration torque (please contact us regarding the design)			<i>T</i> _{2Bcym}	Nm	58	58	60	58	60	58	60	54	–		
				in.lb	513	513	531	513	531	513	531	478	–		
Max. acceleration torque (max. 1000 cycles per hour)			<i>T</i> _{2B}	Nm	42	42	42	42	42	42	42	42	32		
				in.lb	372	372	372	372	372	372	372	372	372	283	
Nominal output torque (with <i>n</i> _N)			<i>T</i> _{2N}	Nm	26	26	26	26	26	26	26	26	17		
				in.lb	230	230	230	230	230	230	230	230	230	150	
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			<i>T</i> _{2Not}	Nm	100	100	100	100	100	100	100	100	80		
				in.lb	885	885	885	885	885	885	885	885	885	708	
Nominal input speed (with <i>T</i> _{2N} and 20°C ambient temperature) ^{b)}			<i>n</i> _{1N}	rpm	4400	4400	4400	4400	4400	4400	4800	5500	5500		
Max. input speed			<i>n</i> _{1max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000		
Mean no load running torque (with <i>n</i> ₁ =3000 rpm and 20°C gearhead temperature) ^{c)}			<i>T</i> ₀₁₂	Nm	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.2		
				in.lb	4.4	3.5	3.5	2.7	2.7	2.7	2.7	2.7	2.7	1.8	
Max. torsional backlash			<i>j</i> _t	arcmin	Standard ≤ 6 / Reduced ≤ 4										
Torsional rigidity			<i>C</i> _{t21}	Nm/° arcmin	4.5										
				in.lb/° arcmin	40										
Max. axial force ^{d)}			<i>F</i> _{2AMax}	N	2400										
				lb _f	540										
Max. radial force ^{d)}			<i>F</i> _{2RMax}	N	2800										
				lb _f	630										
Max. tilting moment			<i>M</i> _{2KMax}	Nm	152										
				in.lb	1345										
Efficiency at full load			η	%	94										
Service life (For calculation, see the Chapter "Information")			<i>L</i> _h	h	> 20000										
Weight incl. standard adapter plate			<i>m</i>	kg	2.0										
				lb _m	4.4										
Operating noise (with <i>i</i> =100 and <i>n</i> ₁ =3000 rpm no load)			<i>L</i> _{PA}	dB(A)	≤ 58										
Max. permitted housing temperature				°C	+90										
				F	194										
Ambient temperature				°C	-15 to +40										
				F	5 to 104										
Lubrication					Lubricated for life										
Paint					Blue RAL 5002										
Direction of rotation					Motor and gearhead same direction										
Protection class					IP 65										
Moment of inertia (relates to the drive)			B	11	<i>J</i> ₁	kgcm ²	0.077	0.069	0.068	0.061	0.061	0.057	0.057	0.056	0.056
						10 ⁻³ in.lb.s ²	0.068	0.061	0.060	0.054	0.054	0.050	0.050	0.050	0.050
Clamping hub diameter [mm]			C	14	<i>J</i> ₁	kgcm ²	0.17	0.16	0.16	0.16	0.16	0.15	0.15	0.15	0.15
						10 ⁻³ in.lb.s ²	0.15	0.15	0.14	0.14	0.14	0.14	0.13	0.13	0.13

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

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

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

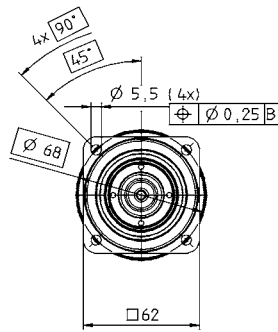
^{d)} Refers to center of the output shaft or flange

View A

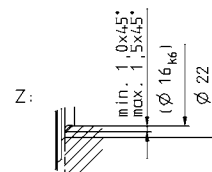
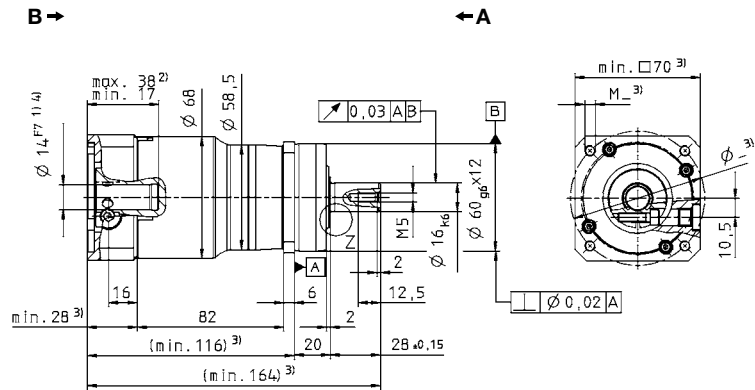
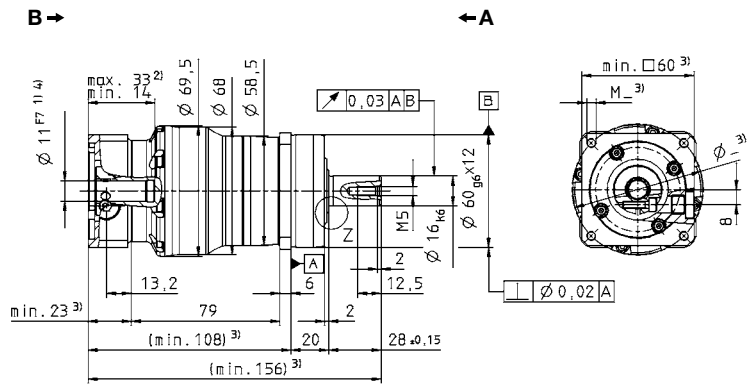
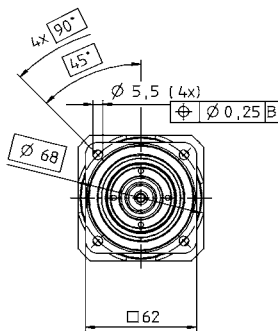
View B

Motor shaft diameter [mm]

up to 11 ⁴⁾ (B)
clamping hub
diameter



up to 14 ⁴⁾ (C)
clamping hub
diameter



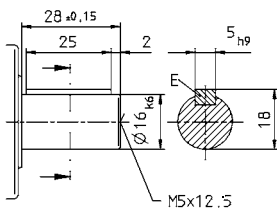
Planetary gearheads
High End

SP+

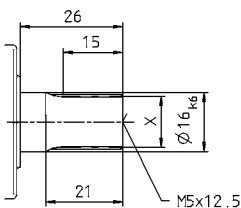
MF

Alternatives: Output shaft variants

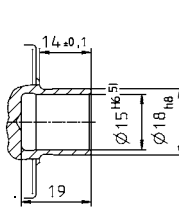
Keywayed output shaft in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 16 x 0.8 x 30 x 18 x 6m, DIN 5480



Shaft mounted
Mounted via shrink disc



Non-tolerated dimensions ± 1 mm

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length.
Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
- 5) Tolerance h6 for mounted shaft.

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



Motor mounting according to operating manual

SP+ 075 MF 1-stage

					1-stage				
Ratio ^{a)}			<i>i</i>		3	4	5	7	10
cymex®-optimized acceleration torque (please contact us regarding the design)	T_{2Bcym}			Nm	–	142	160	142	100
				in.lb	–	1254	1416	1254	883
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B}			Nm	85	110	110	110	95
				in.lb	752	974	974	974	841
Nominal output torque (with n_{2N})	T_{2N}			Nm	47	75	75	75	52
				in.lb	416	664	664	664	460
Emergency stop torque (permitted 1000 times during the service life of the gearhead)	T_{2Not}			Nm	200	250	250	250	200
				in.lb	1770	2213	2213	2213	1770
Nominal input speed (with T_{2N} and 20°C ambient temperature) ^{b)}	n_{1N}			rpm	2900	2900	2900	3100	3100
Max. input speed	n_{1Max}			rpm	6000	6000	6000	6000	6000
Mean no load running torque (with $n_1=3000$ rpm and 20°C gearhead temperature) ^{c)}	T_{012}			Nm	1.8	1.4	1.1	0.8	0.6
				in.lb	15.9	12.4	9.7	7.1	5.3
Max. torsional backlash	j_t			arcmin	Standard ≤ 4 / Reduced ≤ 2				
Torsional rigidity	C_{t21}			Nm/ arcmin	10				
				in.lb/ arcmin	89				
Max. axial force ^{d)}	F_{2AMax}			N	3350				
				lb _f	754				
Max. radial force ^{d)}	F_{2RMax}			N	4200				
				lb _f	945				
Max. tilting moment	M_{2KMax}			Nm	236				
				in.lb	2089				
Efficiency at full load	η			%	97				
Service life (For calculation, see the Chapter "Information")	L_h			h	> 20000				
Weight incl. standard adapter plate	m			kg	3.9				
				lb _m	8.6				
Operating noise (with $i=10$ and $n_1=3000$ rpm no load)	L_{PA}			dB(A)	≤ 59				
Max. permitted housing temperature				°C	+90				
				F	194				
Ambient temperature				°C	-15 to +40				
				F	5 to 104				
Lubrication					Lubricated for life				
Paint					Blue RAL 5002				
Direction of rotation					Motor and gearhead same direction				
Protection class					IP 65				
Moment of inertia (relates to the drive)	C	14	J_1	kgcm ²	0.86	0.61	0.51	0.42	0.38
				10 ⁻³ in.lb.s ²	0.76	0.54	0.46	0.37	0.33
Clamping hub diameter [mm]	E	19	J_1	kgcm ²	1.03	0.78	0.68	0.59	0.54
				10 ⁻³ in.lb.s ²	0.91	0.69	0.60	0.52	0.48
	G	24	J_1	kgcm ²	2.40	2.15	2.05	1.96	1.91
				10 ⁻³ in.lb.s ²	2.12	1.90	1.81	1.73	1.69

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

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

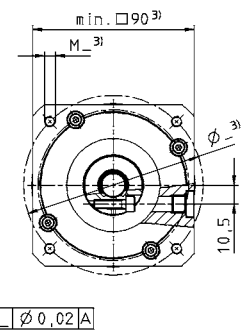
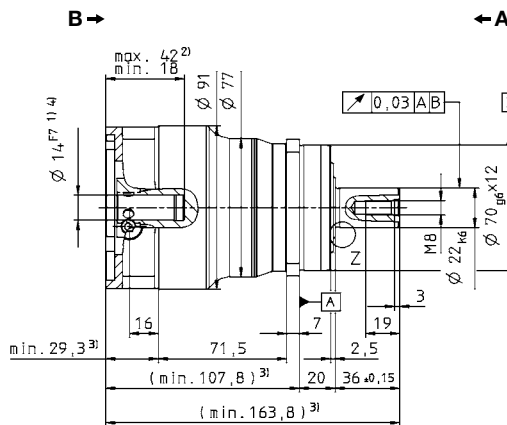
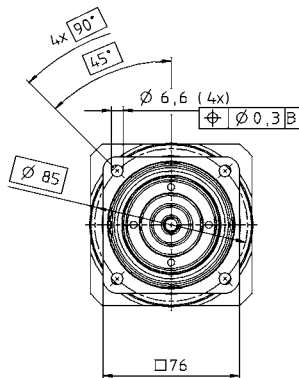
^{c)} Valid for clamping hub diameter of 19 mm

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

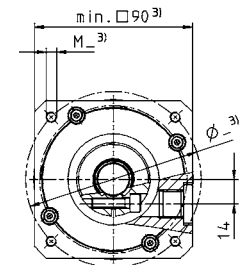
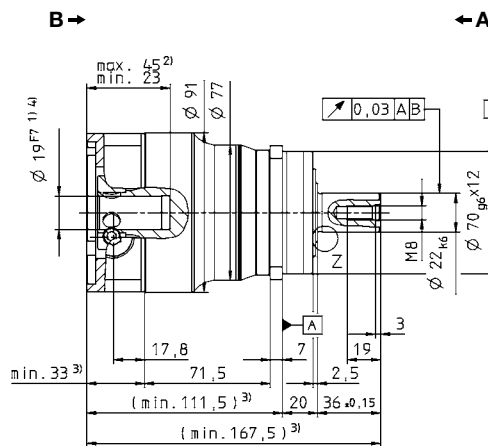
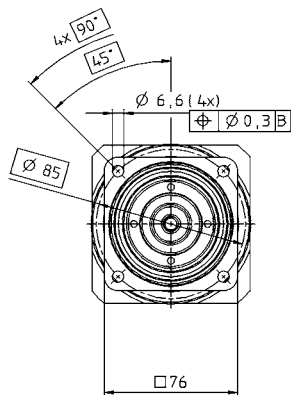
View A

View B

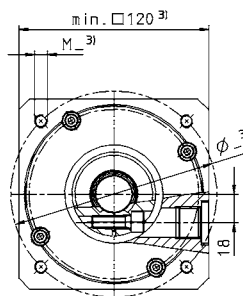
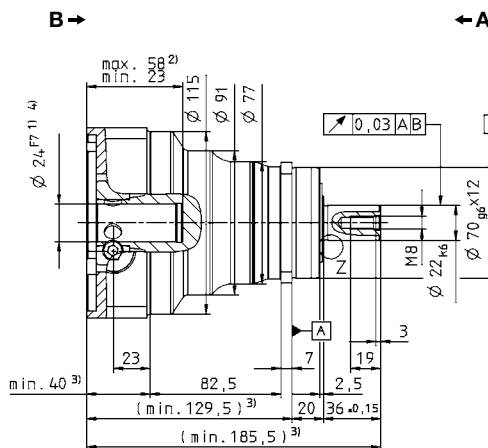
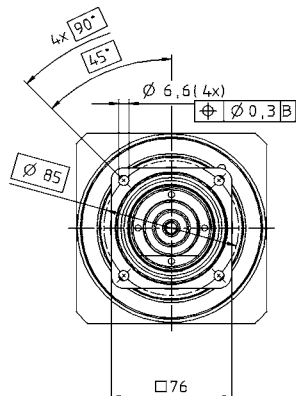
up to 14 ⁴⁾ (C)
clamping hub
diameter



up to 19 ⁴⁾ (E)
clamping hub
diameter

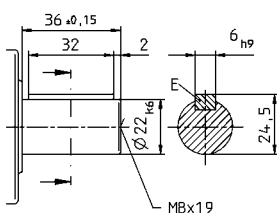


up to 24 ⁴⁾ (G)
clamping hub
diameter

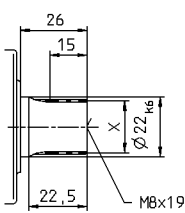


Alternatives: Output shaft variants

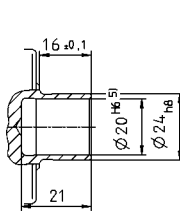
Keywayed output shaft in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 22 x 1.25 x 30 x 16 x 6m, DIN 5480



Shaft mounted
Mounted via shrink disc



Non-tolerated dimensions ± 1 mm

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length.
Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
- 5) Tolerance h6 for mounted shaft.

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

Motor mounting according to operating manual

Planetary gearheads
High End

SP+

MF

SP+ 075 MF 2-stage

					2-stage								
Ratio ^{a)}		<i>i</i>			16	20	25	28	35	40	50	70	100
cymex®-optimized acceleration torque (please contact us regarding the design)		<i>T</i> _{2Bcym}	Nm		142	142	160	142	160	135	160	142	100
			in.lb		1254	1254	1416	1254	1416	1195	1416	1254	883
Max. acceleration torque (max. 1000 cycles per hour)		<i>T</i> _{2B}	Nm		110	110	110	110	110	110	110	110	90
			in.lb		974	974	974	974	974	974	974	974	797
Nominal output torque (with <i>n</i> _{2N})		<i>T</i> _{2N}	Nm		75	75	75	75	75	75	75	75	52
			in.lb		664	664	664	664	664	664	664	664	460
Emergency stop torque (permitted 1000 times during the service life of the gearhead)		<i>T</i> _{2Not}	Nm		250	250	250	250	250	250	250	250	200
			in.lb		2213	2213	2213	2213	2213	2213	2213	2213	1770
Nominal input speed (with <i>T</i> _{2N} and 20°C ambient temperature) ^{b)}		<i>n</i> _{1N}	rpm		3500	3500	3500	3500	3500	3500	3800	4500	4500
Max. input speed		<i>n</i> _{1Max}	rpm		6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque (with <i>n</i> ₁ =3000 rpm and 20°C gearhead temperature) ^{c)}		<i>T</i> ₀₁₂	Nm		0.8	0.6	0.6	0.5	0.4	0.4	0.3	0.3	0.3
			in.lb		4.4	3.5	3.5	2.7	2.7	1.8	1.8	1.8	1.8
Max. torsional backlash		<i>j</i> _t	arcmin		Standard ≤ 6 / Reduced ≤ 4								
Torsional rigidity		<i>C</i> _{t21}	Nm/ arcmin		10								
			in.lb/ arcmin		89								
Max. axial force ^{d)}		<i>F</i> _{2AMax}	N		3350								
			lb _f		754								
Max. radial force ^{d)}		<i>F</i> _{2RMMax}	N		4200								
			lb _f		945								
Max. tilting moment		<i>M</i> _{2KMax}	Nm		236								
			in.lb		2089								
Efficiency at full load		η	%		94								
Service life (For calculation, see the Chapter “Information”)		<i>L</i> _h	h		> 20000								
Weight incl. standard adapter plate		<i>m</i>	kg		3.6								
			lb _m		8.0								
Operating noise (with <i>i</i> =100 and <i>n</i> ₁ =3000 rpm no load)		<i>L</i> _{PA}	dB(A)		≤ 59								
Max. permitted housing temperature			°C		+90								
			F		194								
Ambient temperature			°C		-15 to +40								
			F		5 to 104								
Lubrication					Lubricated for life								
Paint					Blue RAL 5002								
Direction of rotation					Motor and gearhead same direction								
Protection class					IP 65								
Moment of inertia (relates to the drive)	B	11	<i>J</i> ₁	kgcm ²	0.16	0.13	0.13	0.10	0.10	0.091	0.090	0.089	0.089
				10 ⁻³ in.lb.s ²	0.14	0.11	0.11	0.092	0.090	0.081	0.080	0.079	0.079
Clamping hub diameter [mm]	C	14	<i>J</i> ₁	kgcm ²	0.23	0.20	0.20	0.18	0.18	0.17	0.16	0.16	0.16
				10 ⁻³ in.lb.s ²	0.20	0.18	0.18	0.16	0.16	0.15	0.15	0.14	0.14
	E	19	<i>J</i> ₁	kgcm ²	0.55	0.53	0.52	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	0.43	0.43	0.43	0.43

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

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

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

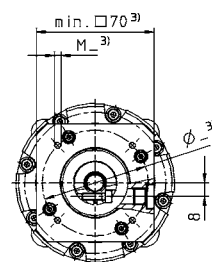
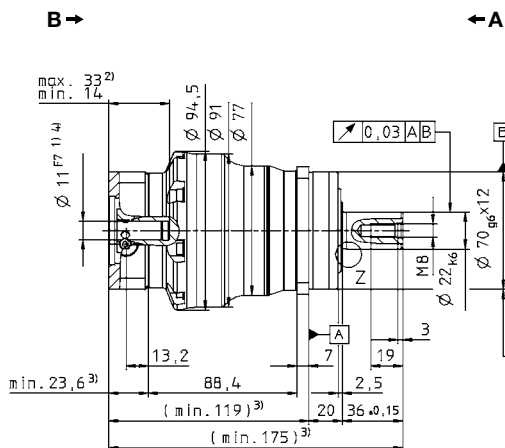
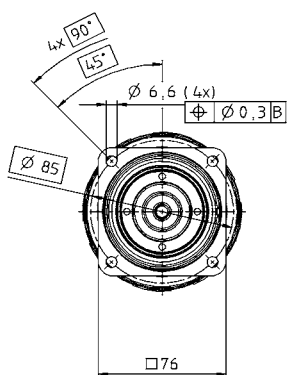
^{d)} Refers to centre of the output shaft or flange

View A

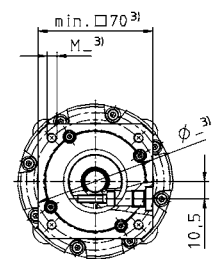
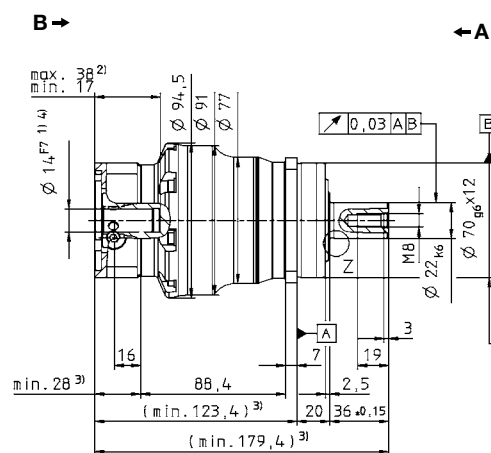
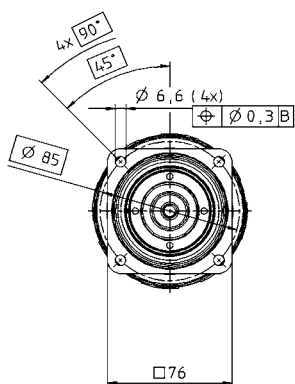
View B

Motor shaft diameter [mm]

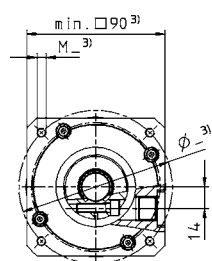
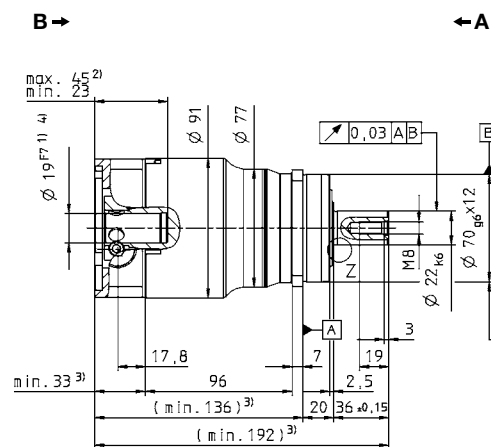
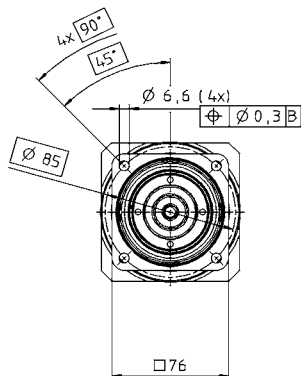
up to 11⁴⁾ (B)
clamping hub diameter



up to 14⁴⁾ (C)
clamping hub diameter

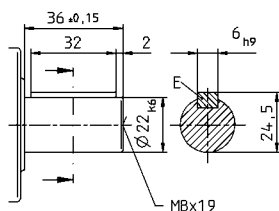


up to 19⁴⁾ (E)
clamping hub diameter

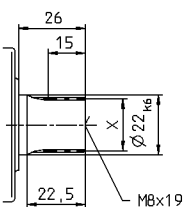


Alternatives: Output shaft variants

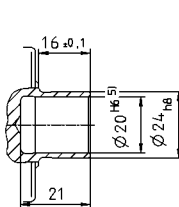
Keywayed output shaft in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 22 x 1.25 x 30 x 16 x 6m, DIN 5480



Shaft mounted
Mounted via shrink disc



Non-tolerated dimensions ± 1 mm

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length.
Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
- 5) Tolerance h6 for mounted shaft.

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



Motor mounting according to operating manual

Planetary gearheads
High End

SP+

MF

SP+ 100 MF 1-stage

					1-stage				
Ratio ^{a)}			<i>i</i>		3	4	5	7	10
cymex®-optimized acceleration torque (please contact us regarding the design)	T_{2Bcym}			Nm	–	370	400	330	260
				in.lb	–	3275	3540	2921	2301
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B}			Nm	235	315	315	315	235
				in.lb	2080	2788	2788	2788	2080
Nominal output torque (with n_{1N})	T_{2N}			Nm	120	180	175	170	120
				in.lb	1062	1593	1549	1505	1062
Emergency stop torque (permitted 1000 times during the service life of the gearhead)	T_{2Not}			Nm	500	625	625	625	500
				in.lb	4425	5531	5531	5531	4425
Nominal input speed (with T_{2N} and 20°C ambient temperature ^{b)})	n_{1N}			rpm	2500	2500	2500	2800	2800
Max. input speed	n_{1Max}			rpm	4500	4500	4500	4500	4500
Mean no load running torque (with $n_1=3000$ rpm and 20°C gearhead temperature ^{c)})	T_{012}			Nm	3.5	2.7	2.4	1.6	1.4
				in.lb	31.0	23.9	21.2	14.2	12.4
Max. torsional backlash	j_t			arcmin	Standard ≤ 3 / Reduced ≤ 1				
Torsional rigidity	C_{t21}			Nm/ arcmin	31				
				in.lb/ arcmin	274				
Max. axial force ^{d)}	F_{2AMax}			N	5650				
				lb _f	1271				
Max. radial force ^{d)}	F_{2RMax}			N	6600				
				lb _f	1485				
Max. tilting moment	M_{2KMMax}			Nm	487				
				in.lb	4310				
Efficiency at full load	η			%	97				
Service life (For calculation, see the Chapter "Information")	L_h			h	> 20000				
Weight incl. standard adapter plate	m			kg	7.7				
				lb _m	17.0				
Operating noise (with $i=10$ and $n_1=3000$ rpm no load)	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				
Paint					Blue RAL 5002				
Direction of rotation					Motor and gearhead same direction				
Protection class					IP 65				
Moment of inertia (relates to the drive)	E	19	J_1	kgcm ²	3.29	2.35	1.92	1.60	1.38
				10 ⁻⁴ in.lb.s ²	2.91	2.08	1.70	1.42	1.22
Clamping hub diameter [mm]	G	24	J_1	kgcm ²	3.99	3.04	2.61	2.29	2.07
				10 ⁻⁴ in.lb.s ²	3.53	2.69	2.31	2.03	1.83
	H	28	J_1	kgcm ²	3.59	2.65	2.22	1.90	1.68
				10 ⁻⁴ in.lb.s ²	3.18	2.35	1.97	1.68	1.49
	K	38	J_1	kgcm ²	11.1	10.1	9.68	9.36	9.14
				10 ⁻⁴ in.lb.s ²	9.78	8.95	8.57	8.28	8.09

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

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

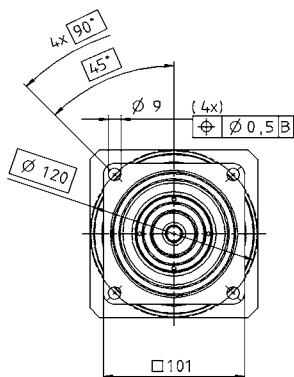
^{c)} Valid for clamping hub diameter of 24 mm

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

View A

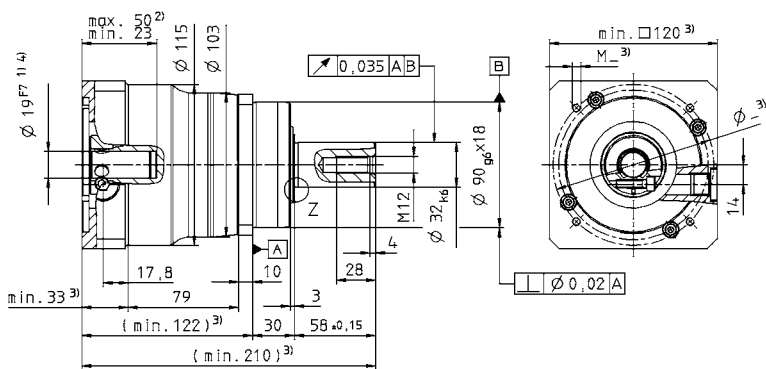
View B

up to 19⁴⁾ (E)
clamping hub diameter

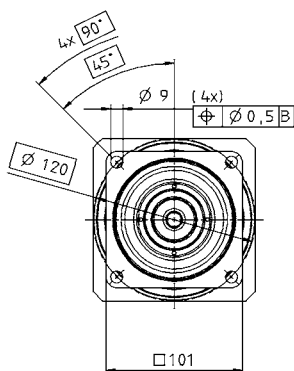


B →

← A

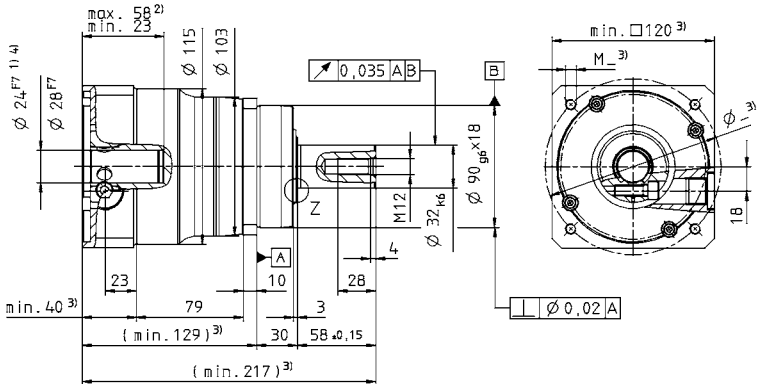


up to 24/28⁴⁾ (G/H)
clamping hub diameter

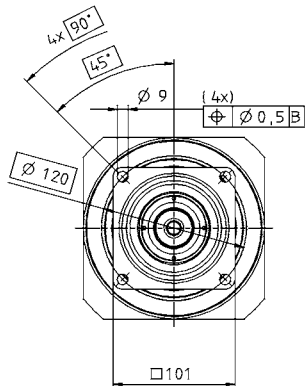


B →

← A

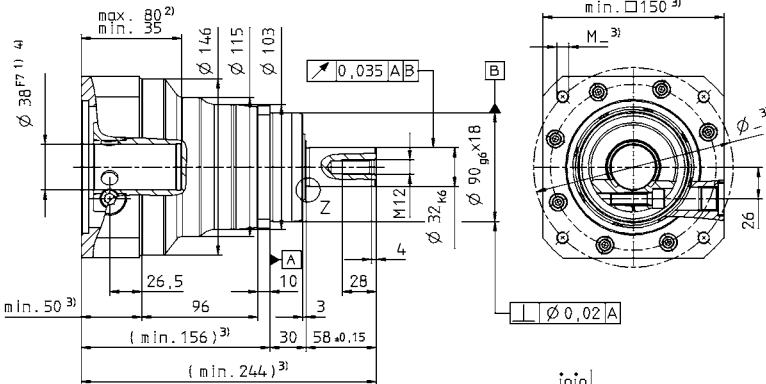


up to 38⁴⁾ (K)
clamping hub diameter



B →

← A

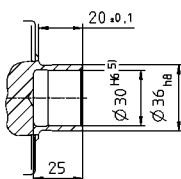
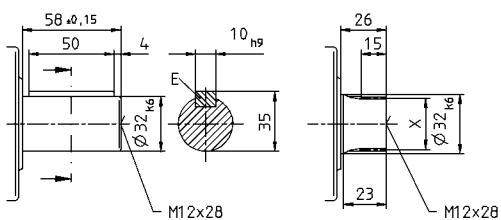


Alternatives: Output shaft variants

Keywayed output shaft in mm
E = key as per DIN 6885, sheet 1, form A

Involute gearing DIN 5480 in mm
X = W 32 x 1.25 x 30 x 24 x 6 m, DIN 5480

Shaft mounted
Mounted via shrink disc



Non-tolerated dimensions ± 1 mm

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length.
Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
- 5) Tolerance h6 for mounted shaft.

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

Motor mounting according to operating manual

SP+ 100 MF 2-stage

					2-stage								
Ratio ^{a)}		<i>i</i>			16	20	25	28	35	40	50	70	100
cymex®-optimized acceleration torque (please contact us regarding the design)		<i>T</i> _{2Bcym}		Nm	370	370	400	370	400	370	400	330	260
				in.lb	3275	3275	3540	3275	3540	3275	3540	2921	2301
Max. acceleration torque (max. 1000 cycles per hour)		<i>T</i> _{2B}		Nm	315	315	315	315	315	315	315	315	235
				in.lb	2788	2788	2788	2788	2788	2788	2788	2788	2080
Nominal output torque (with <i>n</i> _{IN})		<i>T</i> _{2N}		Nm	180	180	175	180	175	180	175	170	120
				in.lb	1593	1593	1549	1593	1549	1593	1549	1505	1062
Emergency stop torque (permitted 1000 times during the service life of the gearhead)		<i>T</i> _{2Not}		Nm	625	625	625	625	625	625	625	625	500
				in.lb	5531	5531	5531	5531	5531	5531	5531	5531	4425
Nominal input speed (with <i>T</i> _{2N} and 20°C ambient temperature) ^{b)}		<i>n</i> _{1N}	rpm		3100	3100	3100	3100	3100	3100	3500	4200	4200
Max. input speed		<i>n</i> _{1Max}	rpm		6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque (with <i>n</i> ₁ = 3000 rpm and 20°C gearhead temperature) ^{c)}		<i>T</i> ₀₁₂		Nm	1.5	1.2	1.1	0.9	0.8	0.7	0.6	0.5	0.5
				in.lb	13.3	10.6	9.7	8.8	7.1	6.2	5.3	4.4	4.4
Max. torsional backlash		<i>j</i> _t	arcmin		Standard ≤ 5 / Reduced ≤ 3								
Torsional rigidity		<i>C</i> _{t21}		Nm/ arcmin	31								
				in.lb/ arcmin	274								
Max. axial force ^{d)}		<i>F</i> _{2AMax}		N	5650								
				lb _f	1271								
Max. radial force ^{d)}		<i>F</i> _{2RMMax}		N	6600								
				lb _f	1485								
Max. tilting moment		<i>M</i> _{2KMax}		Nm	487								
				in.lb	4310								
Efficiency at full load		η	%		94								
Service life (For calculation, see the Chapter “Information”)		<i>L</i> _h	h		> 20000								
Weight incl. standardadapter plate		<i>m</i>		kg	7.9								
				lb _m	17.5								
Operating noise (with <i>i</i> =100 and <i>n</i> ₁ = 3000 rpm no load)		<i>L</i> _{PA}	dB(A)		≤ 60								
Max. permitted housing temperature				°C	+90								
				F	194								
Ambient temperature				°C	-15 to +40								
				F	5 to 104								
Lubrication					Lubricated for life								
Paint					Blue RAL 5002								
Direction of rotation					Motor and gearhead same direction								
Protection class					IP 65								
Moment of inertia (relates to the drive)	C	14	<i>J</i> _I	kgcm ²	0.64	0.54	0.52	0.43	0.43	0.38	0.38	0.37	0.37
				10 ⁻³ in.lb.s ²	0.57	0.47	0.46	0.38	0.38	0.34	0.33	0.33	0.33
Clamping hub diameter [mm]	E	19	<i>J</i> _I	kgcm ²	0.81	0.70	0.69	0.60	0.59	0.55	0.54	0.54	0.54
				10 ⁻³ in.lb.s ²	0.72	0.62	0.61	0.53	0.52	0.48	0.48	0.48	0.47
	G	24	<i>J</i> _I	kgcm ²	2.18	2.07	2.05	1.97	1.96	1.92	1.91	1.91	1.91
				10 ⁻³ in.lb.s ²	1.93	1.83	1.82	1.74	1.74	1.70	1.69	1.69	1.69
	H	28	<i>J</i> _I	kgcm ²	1,98	1,90	1,88	1,81	1,80	1,76	1,75	1,75	1,75
				10 ⁻³ in.lb.s ²	1,75	1,68	1,66	1,60	1,59	1,56	1,55	1,55	1,55

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

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

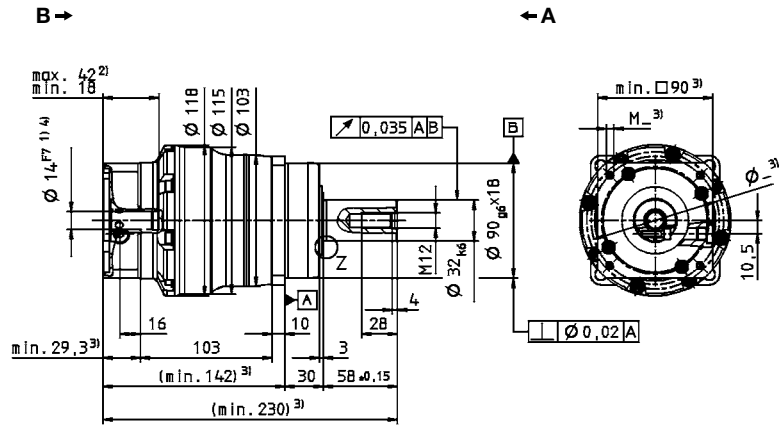
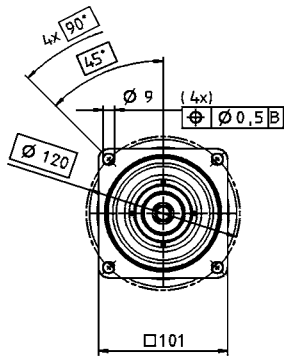
^{c)} Valid for clamping hub diameter of 19 mm

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

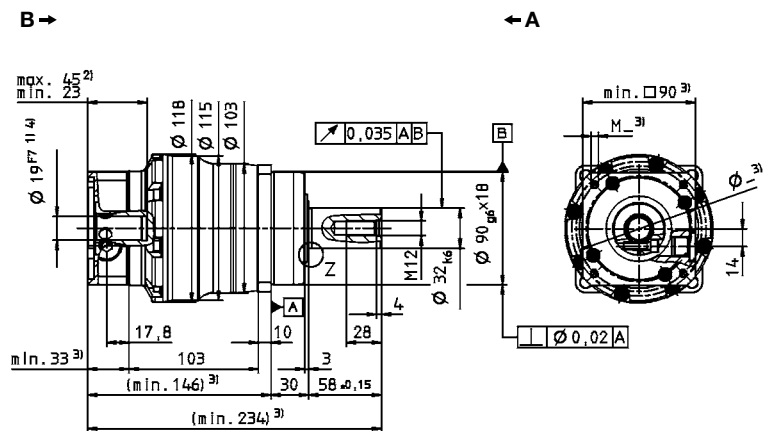
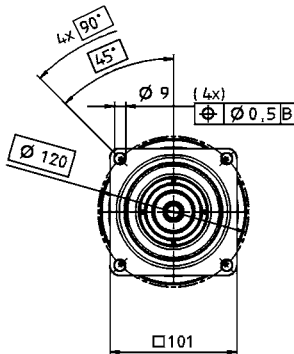
View A

View B

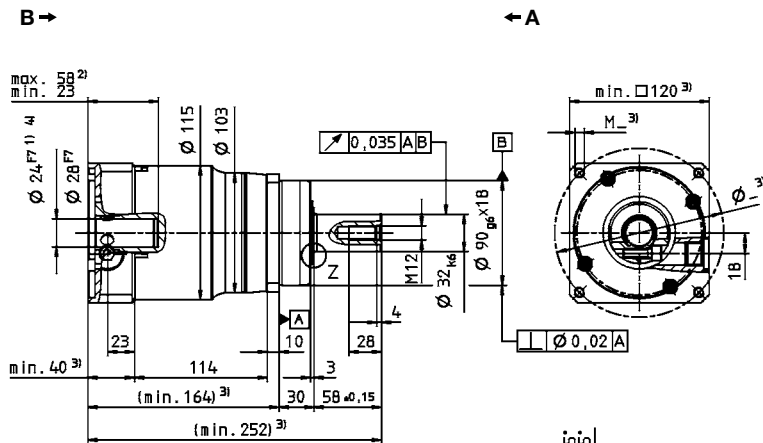
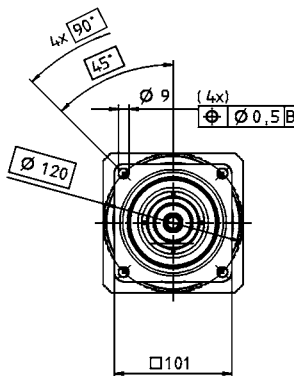
up to 14 ⁴⁾ (C)
clamping hub
diameter



up to 19 ⁴⁾ (E)
clamping hub
diameter

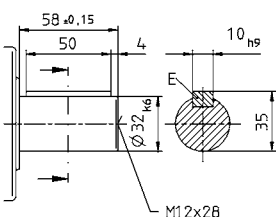


up to 24/28 ⁴⁾
(G/H)
clamping hub
diameter

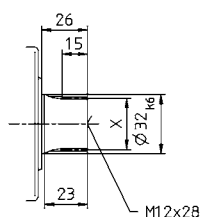


Alternatives: Output shaft variants

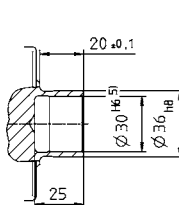
Keywayed output shaft in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 32 x 1.25 x 30 x 24 x 6 m, DIN 5480



Shaft mounted
Mounted via shrink disc



Non-tolerated dimensions ± 1 mm

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length.
Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
- 5) Tolerance h6 for mounted shaft.

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

Motor mounting according to operating manual

Planetary gearheads
High End

SP+

MF

SP+ 140 MF 1-stage

					1-stage				
Ratio ^{a)}			<i>i</i>		3	4	5	7	10
cymex®-optimized acceleration torque (please contact us regarding the design)			T_{2Bcym}	Nm	–	710	755	680	560
				in.lb	–	6284	6682	6018	4956
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	390	660	660	660	530
				in.lb	3451.5	5841	5841	5841	4691
Nominal output torque (with n_{1N})			T_{2N}	Nm	200	360	360	360	220
				in.lb	1770	3186	3186	3186	1947
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	1000	1250	1250	1250	1000
				in.lb	8850	11063	11063	11063	8850
Nominal input speed (with T_{2N} and 20°C ambient temperature ^{b)})			n_{1N}	rpm	2100	2100	2100	2600	2600
Max. input speed			n_{1Max}	rpm	4000	4000	4000	4000	4000
Mean no load running torque (with $n_1=3000$ rpm and 20°C gearhead temperature ^{c)})			T_{012}	Nm	7.6	5.8	4.7	3.4	2.5
				in.lb	67	51	42	30	22
Max. torsional backlash			j_t	arcmin	Standard ≤ 3 / Reduced ≤ 1				
Torsional rigidity			C_{t21}	Nm/ arcmin	53				
				in.lb/ arcmin	469				
Max. axial force ^{d)}			F_{2AMax}	N	9870				
				lb _f	2221				
Max. radial force ^{d)}			F_{2RMax}	N	9900				
				lb _f	2228				
Max. tilting moment			M_{2KMax}	Nm	952				
				in.lb	8425				
Efficiency at full load			η	%	97				
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000				
Weight incl. standard adapter plate			m	kg	17.2				
				lb _m	38.0				
Operating noise (with $i=10$ and $n_1=3000$ rpm no load)			L_{PA}	dB(A)	≤ 65				
Max. permitted housing temperature				°C	+90				
				F	194				
Ambient temperature				°C	-15 to +40				
				F	5 to 104				
Lubrication					Lubricated for life				
Paint					Blue RAL 5002				
Direction of rotation					Motor and gearhead same direction				
Protection class					IP 65				
Moment of inertia (relates to the drive)	G	24	J_1	kgcm ²	10.7	7.82	6.79	5.84	5.28
				10 ⁻³ in.lb.s ²	9.45	6.92	6.01	5.17	4.67
	I	32	J_1	kgcm ²	13.8	11.0	9.95	9.01	8.44
				10 ⁻³ in.lb.s ²	12.3	9.72	8.81	7.97	7.47
	K	38	J_1	kgcm ²	14.9	12.1	11.0	10.1	9.51
				10 ⁻³ in.lb.s ²	13.2	10.7	9.76	8.92	8.42
	M	48	J_1	kgcm ²	29.5	26.7	25.6	24.7	24.2
				10 ⁻³ in.lb.s ²	26.1	23.6	22.7	21.9	21.4

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

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

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

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

up to 48 ⁴⁾ (M)
clamping hub
diameter

81

SP+ 140 MF 2-stage

					2-stage									
Ratio ^{a)}		<i>i</i>			16	20	25	28	35	40	50	70	100	
cymex®-optimized acceleration torque (please contact us regarding the design)		<i>T</i> _{2Bcym}	Nm		710	710	755	710	755	710	755	680	560	
			in.lb		6284	6284	6682	6284	6682	6284	6682	6018	4956	
Max. acceleration torque (max. 1000 cycles per hour)		<i>T</i> _{2B}	Nm		660	660	660	660	660	660	660	660	530	
			in.lb		5841	5841	5841	5841	5841	5841	5841	5841	4691	
Nominal output torque (with <i>n</i> _{2N})		<i>T</i> _{2N}	Nm		360	360	360	360	360	360	360	360	220	
			in.lb		3186	3186	3186	3186	3186	3186	3186	3186	1947	
Emergency stop torque (permitted 1000 times during the service life of the gearhead)		<i>T</i> _{2Not}	Nm		1250	1250	1250	1250	1250	1250	1250	1250	1000	
			in.lb		11063	11063	11063	11063	11063	11063	11063	11063	8850	
Nominal input speed (with <i>T</i> _{2N} and 20°C ambient temperature) ^{b)}		<i>n</i> _{1N}	rpm		2900	2900	2900	2900	2900	2900	3200	3200	3900	
Max. input speed ^{c)}		<i>n</i> _{1Max}	rpm		5000	5000	5000	5000	5000	5000	5000	5000	5000	
Mean no load running torque (with <i>n</i> ₁ =3000 rpm and 20°C gearhead temperature) ^{c)}		<i>T</i> ₀₁₂	Nm		3.3	2.7	2.4	1.9	1.8	1.4	1.3	1.2	1.1	
			in.lb		29.2	23.9	21.2	16.9	15.9	12.4	11.5	10.6	9.7	
Max. torsional backlash		<i>j</i> _t	arcmin		Standard ≤ 5 / Reduced ≤ 3									
Torsional rigidity		<i>C</i> _{t21}	Nm/ arcmin		53									
			in.lb/ arcmin		469									
Max. axial force ^{d)}		<i>F</i> _{2AMax}	N		9870									
			lb _f		2221									
Max. radial force ^{d)}		<i>F</i> _{2RMax}	N		9900									
			lb _f		2228									
Max. tilting moment		<i>M</i> _{2KMax}	Nm		952									
			in.lb		8425									
Efficiency at full load		η	%		94									
Service life (For calculation, see the Chapter “Information”)		<i>L</i> _h	h		> 20000									
Weight incl. standard adapter plate		<i>m</i>	kg		17									
			lb _m		37.6									
Operating noise (with <i>i</i> =100 and <i>n</i> ₁ =3000 rpm no load)		<i>L</i> _{PA}	dB(A)		≤ 63									
Max. permitted housing temperature			°C		+90									
			F		194									
Ambient temperature			°C		-15 to +40									
			F		5 to 104									
Lubrication					Lubricated for life									
Paint					Blue RAL 5002									
Direction of rotation					Motor and gearhead same direction									
Protection class					IP 65									
Moment of inertia (relates to the drive)	E	19	<i>J</i> ₁	kgcm ²	2.50	2.01	1.97	1.65	1.63	1.40	1.39	1.38	1.38	
				10 ⁻³ in.lb.s ²	2.21	1.78	1.75	1.46	1.44	1.24	1.23	1.22	1.22	
Clamping hub diameter [mm]	G	24	<i>J</i> ₁	kgcm ²	3.19	2.71	2.67	2.34	2.32	2.10	2.08	2.08	2.07	
				10 ⁻³ in.lb.s ²	2.82	2.40	2.36	2.07	2.05	1.85	1.85	1.84	1.83	
	K	38	<i>J</i> ₁	kgcm ²	10.3	9.77	9.73	9.41	9.39	9.16	9.15	9.14	9.14	
				10 ⁻³ in.lb.s ²	9.07	8.65	8.61	8.33	8.31	8.11	8.10	8.09	8.09	

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

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

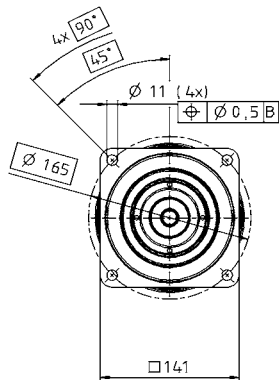
^{c)} Valid for clamping hub diameter of 24 mm

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

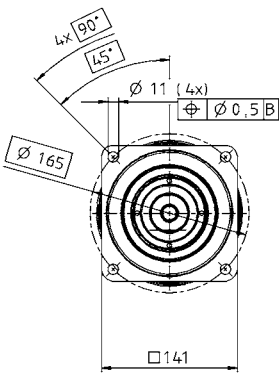
View A

View B

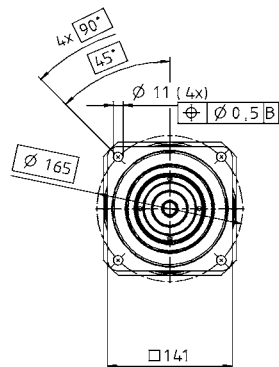
up to 19 ⁴⁾ (E)
clamping hub
diameter



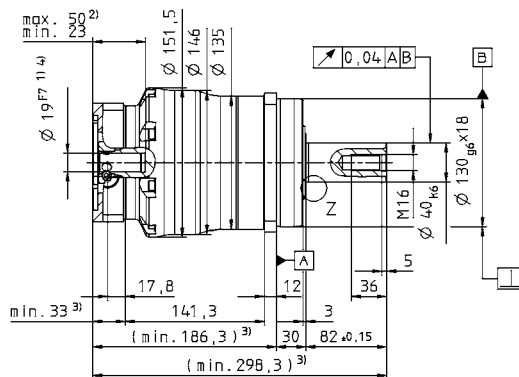
up to 24 ⁴⁾ (G)
clamping hub
diameter



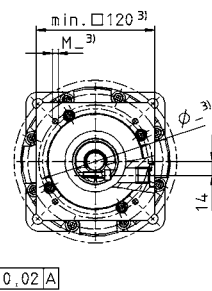
up to 38 ⁴⁾ (K)
clamping hub
diameter



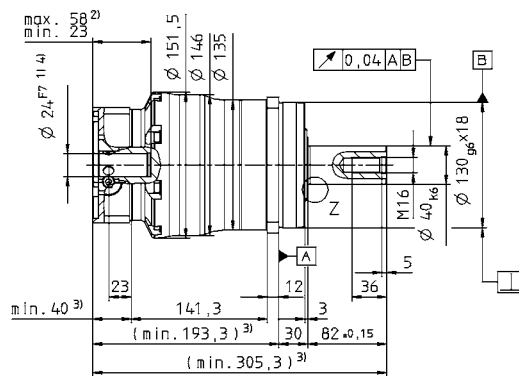
B →



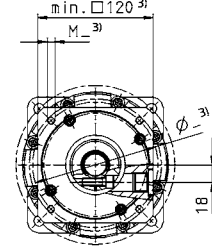
← A



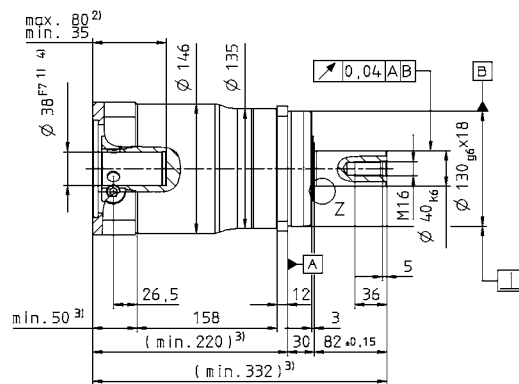
B →



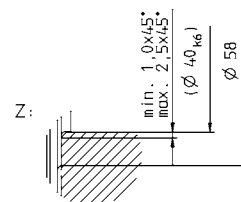
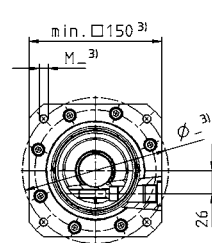
← A



B →

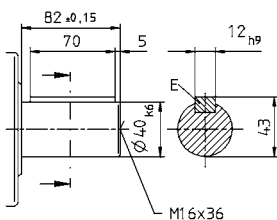


← A

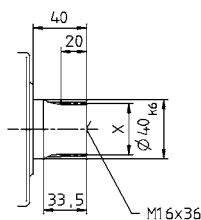


Alternatives: Output shaft variants

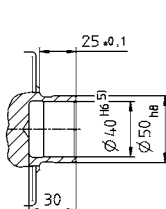
Keywayed output shaft in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 40 x 2 x 30 x 18 x 6m, DIN 5480



Shaft mounted
Mounted via shrink disc



Non-tolerated dimensions ± 1 mm

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length.
Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
- 5) Tolerance h6 for mounted shaft.

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

Motor mounting according to operating manual

SP+ 180 MF 1-stage

					1-stage				
Ratio ^{a)}			<i>i</i>		3	4	5	7	10
cymex®-optimized acceleration torque (please contact us regarding the design)			T_{2Bcym}	Nm	–	1785	1890	1785	1400
				in.lb	–	15797	16727	15797	12390
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	970	1210	1210	1210	970
				in.lb	8585	10709	10709	10709	8585
Nominal output torque (with n_{2N})			T_{2N}	Nm	530	750	750	750	750
				in.lb	4691	6638	6638	6638	6638
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	2200	2750	2750	2750	2200
				in.lb	19470	24338	24338	24338	29470
Nominal input speed (with T_{2N} and 20°C ambient temperature) ^{b)}			n_{1N}	rpm	1500	1500	1500	2300	2300
Max. input speed			n_{1Max}	rpm	3500	3500	3500	3500	3500
Mean no load running torque (with $n_1=3000$ rpm and 20°C gearhead temperature) ^{c)}			T_{012}	Nm	14.0	11.0	9.0	6.8	5.0
				in.lb	123.9	97.4	79.7	60.2	44.3
Max. torsional backlash			j_t	arcmin	Standard ≤ 3 / Reduced ≤ 1				
Torsional rigidity			C_{t21}	Nm/ arcmin	175				
				in.lb/ arcmin	1549				
Max. axial force ^{d)}			F_{2AMax}	N	14150				
				lb _f	3184				
Max. radial force ^{d)}			F_{2RMax}	N	15400				
				lb _f	3465				
Max. tilting moment			M_{2KMax}	Nm	1600				
				in.lb	14160				
Efficiency at full load			η	%	97				
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000				
Weight incl. standard adapter plate			m	kg	34				
				lb _m	75.1				
Operating noise (with $i=10$ and $n_1=3000$ rpm no load)			L_{PA}	dB(A)	≤ 66				
Max. permitted housing temperature				°C	+90				
				F	194				
Ambient temperature				°C	-15 to +40				
				F	5 to 104				
Lubrication					Lubricated for life				
Paint					Blue RAL 5002				
Direction of rotation					Motor and gearhead same direction				
Protection class					IP 65				
Moment of inertia (relates to the drive)	K	38	J_1	kgcm ²	50.8	33.9	27.9	22.2	19.2
				10 ⁻³ in.lb.s ²	45.0	30.0	24.7	19.7	17.0
Clamping hub diameter [mm]	M	48	J_1	kgcm ²	58.2	41.2	35.3	29.6	26.5
				10 ⁻³ in.lb.s ²	51.5	36.5	31.2	26.2	23.5

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

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

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

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

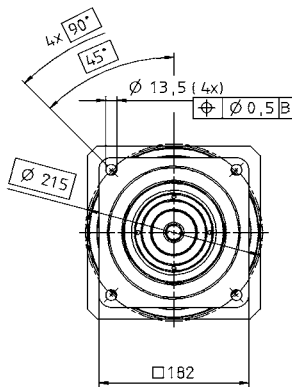
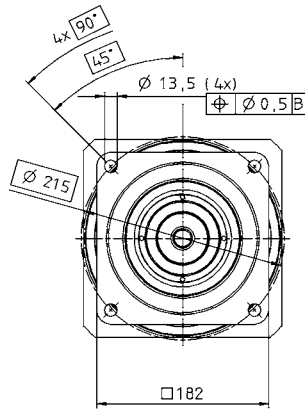
View A

View B

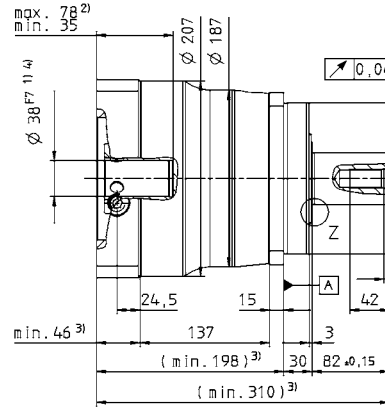
Motor shaft diameter [mm]

up to 38 ⁴⁾ (K)
clamping hub diameter

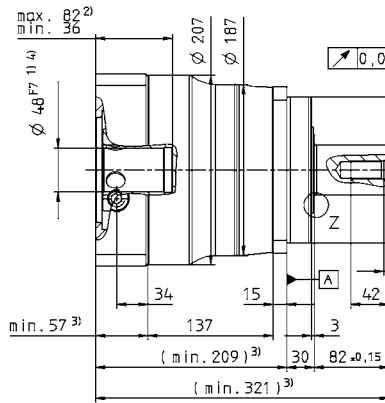
up to 48 ⁴⁾ (M)
clamping hub diameter



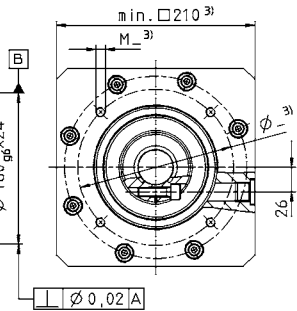
B →



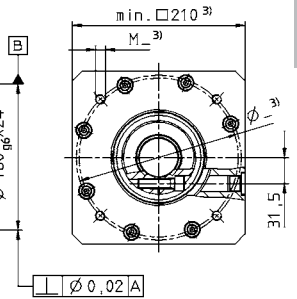
B →



← A

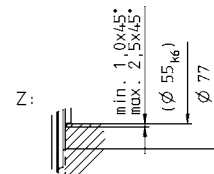


← A



Planetary gearheads
High End

SP+
MF

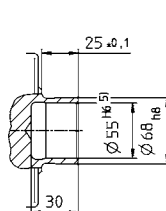
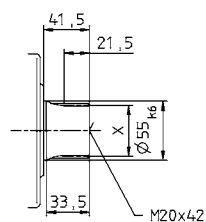
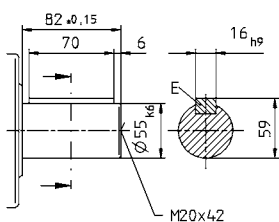


Alternatives: Output shaft variants

Keywayed output shaft in mm
E = key as per DIN 6885, sheet 1, form A

Involute gearing DIN 5480 in mm
X = W 55 x 2 x 30 x 26 x 6 mm, DIN 5480

Shaft mounted
Mounted via shrink disc



Non-tolerated dimensions ± 1 mm

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length.
Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
- 5) Tolerance h6 for mounted shaft.

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



Motor mounting according to operating manual

SP+ 180 MF 2-stage

					2-stage								
Ratio ^{a)}	i				16	20	25	28	35	40	50	70	100
cymex®-optimized acceleration torque (please contact us regarding the design)	T _{2Bcym}		Nm		1785	1785	1890	1785	1890	1785	1800	1785	1400
				in.lb	15797	15797	16727	15797	16727	15797	15930	15797	12390
Max. acceleration torque (max. 1000 cycles per hour)	T _{2B}		Nm		1210	1210	1210	1210	1210	1210	1210	1210	970
				in.lb	10709	10709	10709	10709	10709	10709	10709	10709	8585
Nominal output torque (with n _m)	T _{2N}		Nm		750	750	750	750	750	750	750	750	750
				in.lb	6638	6638	6638	6638	6638	6638	6637	6638	6638
Emergency stop torque (permitted 1000 times during the service life of the gearhead)	T _{2Not}		Nm		2750	2750	2750	2750	2750	2750	2750	2750	2200
				in.lb	24338	24338	24338	24338	24338	24338	24338	24338	19470
Nominal input speed (with T _{2N} and 20°C ambient temperature) ^{b)}	n _{1N}		rpm		2700	2700	2700	2700	2700	2700	2900	3200	3400
Max. input speed ^{c)}	n _{1Max}		rpm		4500	4500	4500	4500	4500	4000	4500	4500	4500
Mean no load running torque (with n ₁ =3000 rpm and 20°C gearhead temperature) ^{c)}	T ₀₁₂		Nm		5.3	4.3	3.9	3.1	2.8	2.3	2.1	1.9	1.7
				in.lb	46,9	38,1	34,5	27,4	24,8	20,4	18,6	16,8	15,0
Max. torsional backlash	j _t		arcmin	Standard ≤ 5 / Reduced ≤ 3									
Torsional rigidity	C _{t21}		Nm/ arcmin	175									
			in.lb/ arcmin	1549									
Max. axial force ^{d)}	F _{2AMax}		N	14150									
			lb _f	3184									
Max. radial force ^{d)}	F _{2RMax}		N	15400									
			lb _f	3465									
Max. tilting moment	M _{2KMax}		Nm	1600									
			in.lb	14160									
Efficiency at full load	η		%	94									
Service life (For calculation, see the Chapter "Information")	L _h		h	> 20000									
Weight incl. standard adapter plate	m		kg	36.4									
			lb _m	80.4									
Operating noise (with i=100 and n ₁ =3000 rpm no load)	L _{PA}		dB(A)	≤ 66									
Max. permitted housing temperature			°C	+90									
			F	194									
Ambient temperature			°C	-15 to +40									
			F	5 to 104									
Lubrication				Lubricated for life									
Paint				Blue RAL 5002									
Direction of rotation				Motor and gearhead same direction									
Protection class				IP 65									
Moment of inertia (relates to the drive)	G	24	J ₁	kgcm²	9.27	7.72	7.48	6.32	6.20	5.51	5.45	5.39	5.36
				10 ⁻³ in.lb.s²	8.20	6.83	6.62	5.59	5.49	4.88	4.82	4.77	4.74
Clamping hub diameter [mm]	I	32	J ₁	kgcm²	12.4	10.9	10.6	9.48	9.36	8.67	8.61	8.55	8.52
				10 ⁻³ in.lb.s²	11.0	9.63	9.42	8.39	8.28	7.67	7.62	7.57	7.54
	K	38	J ₁	kgcm²	13.5	12.0	11.7	10.6	10.4	9.74	9.68	9.63	9.60
				10 ⁻³ in.lb.s²	12.0	10.6	10.4	9.34	9.23	8.62	8.57	8.52	8.49
	M	48	J ₁	kgcm²	28.1	26.6	26.3	25.2	25.1	24.4	24.3	24.3	24.3
				10 ⁻³ in.lb.s²	24.9	23.5	23.3	22.3	22.2	21.6	21.5	21.5	21.5

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

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

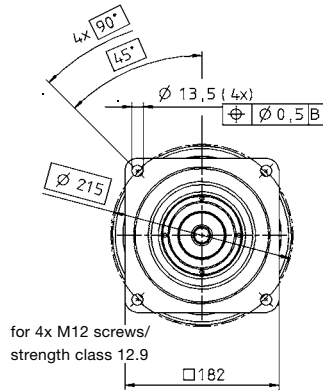
^{c)} Valid for clamping hub diameter of 38 mm

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

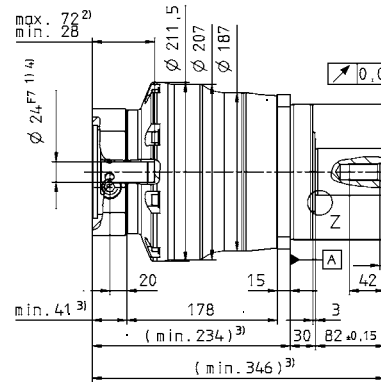
View A

View B

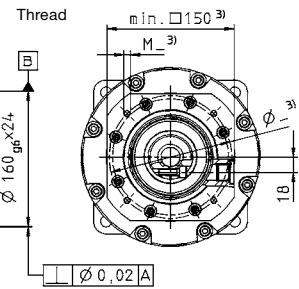
up to 24⁴⁾ (G)
clamping hub diameter



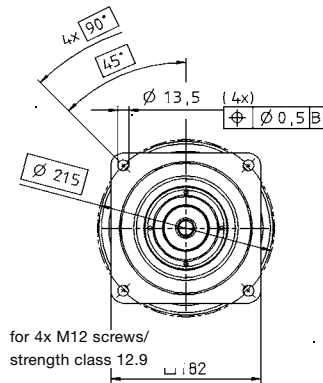
B →



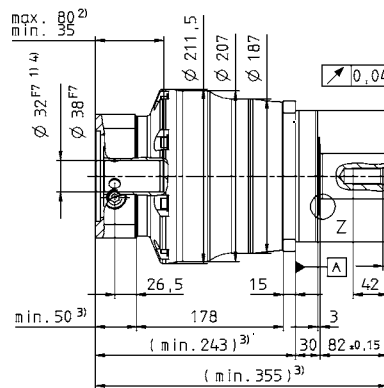
← A



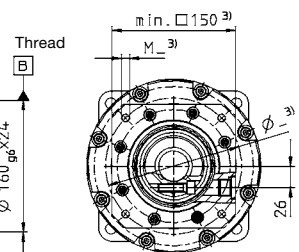
up to 32/38⁴⁾ (I/K)
clamping hub diameter



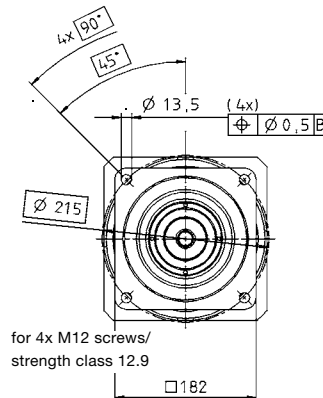
B →



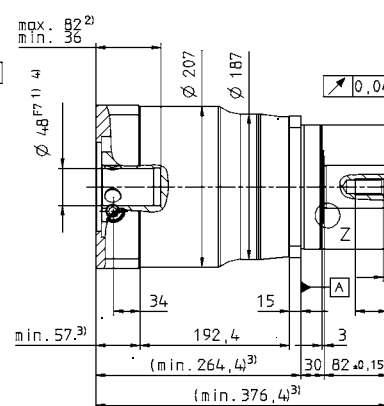
← A



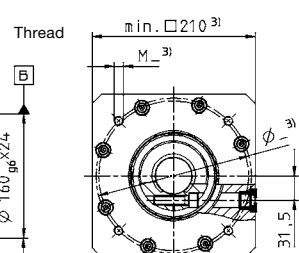
up to 48⁴⁾ (M)
clamping hub diameter



B →

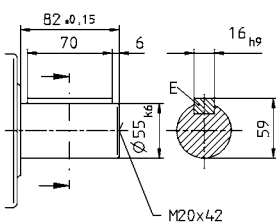


← A

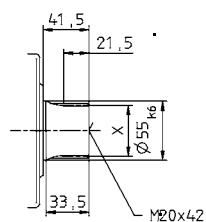


Alternatives: Output shaft variants

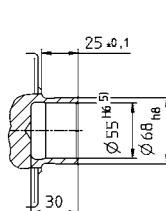
Keywayed output shaft in mm
E = key as per DIN 6885, sheet 1, form A



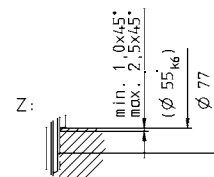
Involute gearing DIN 5480 in mm
X = W 55 x 2 x 30 x 26 x 6m, DIN 5480



Shaft mounted
Mounted via shrink disc



Z: Detail



Connecting part

Non-tolerated dimensions ± 1 mm

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length.
Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
- 5) Tolerance h6 for mounted shaft.

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

Motor mounting according to operating manual

Planetary gearheads
High End

SP+

MF

SP+ 210 MF 1/2-stage

				1-stage						2-stage									
Ratio ^{a)}		<i>i</i>		3	4	5	7	10	16	20	25	28	35	40	50	70	100		
cymex®-optimized acceleration torque (please contact us regarding the design)		<i>T</i> _{2Bcym}	Nm	- Please contact us -															
			in.lb																
Max. acceleration torque (max. 1000 cycles per hour)		<i>T</i> _{2B}	Nm	1600	2500	2500	2400	1900	2400	2500	2500	2400	2400	2400	2400	2400	1900		
			in.lb	14160	22125	22125	21240	16815	21240	22125	22125	21240	21240	21240	21240	21240	16815		
Nominal output torque (with <i>n</i> _{IN})		<i>T</i> _{2N}	Nm	1100	1500	1500	1400	1000	1500	1500	1500	1500	1500	1500	1500	1400	1000		
			in.lb	9735	13275	13275	12390	8850	13275	13275	13275	13275	13275	13275	13275	12390	8850		
Emergency stop torque (permitted 1000 times during the service life of the gearhead)		<i>T</i> _{2Not}	Nm	5000	5200	5200	5200	5000	5200	5200	5200	5200	5200	5200	5200	5200	5000		
			in.lb	44250	46020	46020	46020	44250	46020	46020	46020	46020	46020	46020	46020	46020	44250		
Nominal input speed (with <i>T</i> _{2N} and 20°C ambient temperature) ^{b)}		<i>n</i> _{1N}	rpm	1200	1200	1500	1700	2000	2500	2500	2500	2500	2500	2500	2500	3000	3000		
Max. input speed		<i>n</i> _{1Max}	rpm	2500	2500	2500	2500	2500	3500	3500	3500	3500	3500	3500	3500	3500	3500		
Mean no load running torque (with <i>n</i> ₁ =2000 rpm and 20°C gearhead temperature)		<i>T</i> ₀₁₂	Nm	32	22	17	11	7,0	7,0	6,0	5,5	4,5	4,0	3,5	3,5	3,5	3,0		
			in.lb	283	195	151	97	62	62	53	49	40	35	31	31	31	27		
Max. torsional backlash		<i>j</i> _t	arcmin	Standard ≤ 3 / Reduced ≤ 1						Standard ≤ 5 / Reduced ≤ 3									
Torsional rigidity		<i>C</i> _{t21}	Nm/ arcmin	400						400									
			in.lb/ arcmin	3540						3540									
Max. axial force ^{c)}		<i>F</i> _{2AMax}	N	30000						30000									
			lb _f	6750						6750									
Max. radial force ^{c)}		<i>F</i> _{2RMax}	N	21000						21000									
			lb _f	4725						4725									
Max. tilting moment		<i>M</i> _{2KMax}	Nm	3100						3100									
			in.lb	27435						2744									
Efficiency at full load		η	%	97						94									
Service life (For calculation, see the Chapter "Information")		<i>L</i> _h	h	> 20000						> 20000									
Weight incl. standard adapter plate		<i>m</i>	kg	56						53									
			lb _m	124						117									
Operating noise (with <i>i</i> =10 and <i>n</i> ₁ =3000 rpm no load)		<i>L</i> _{PA}	dB(A)	≤ 64															
Max. permitted housing temperature		°C		+90															
		F		194															
Ambient temperature		°C		-15 to +40															
		F		5 to 104															
Lubrication				Lubricated for life															
Paint				Blue RAL 5002															
Direction of rotation				Motor and gearhead same direction															
Protection class				IP 65															
Moment of inertia (relates to the drive)		M	48	<i>J</i> ₁	kgcm ²	-	-	-	-	-	34.5	31.5	30.8	30.0	29.7	28.5	28.3	28.1	28.0
					10 ⁻³ in.lb.s ²	-	-	-	-	-	30.5	27.9	27.3	26.6	26.3	25.2	25.0	24.9	24.8
Clamping hub diameter (mm)		N	55	<i>J</i> ₁	kgcm ²	139.0	94.3	76.9	61.5	53.1	-	-	-	-	-	-	-	-	
					10 ⁻³ in.lb.s ²	118.2	80.2	65.4	52.3	45.1	-	-	-	-	-	-	-	-	

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

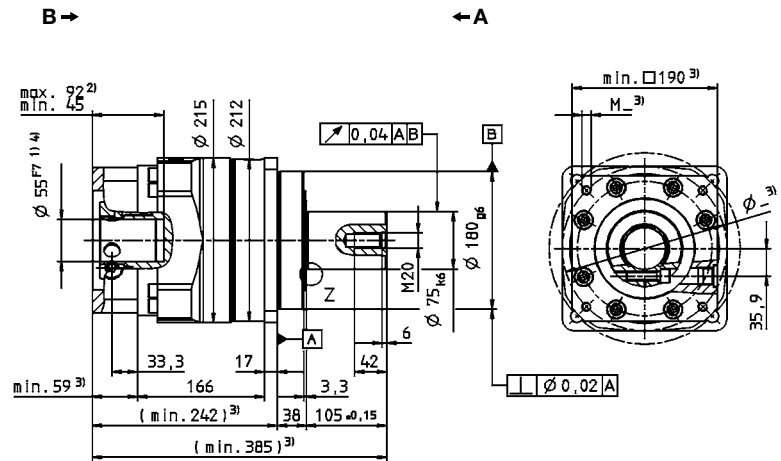
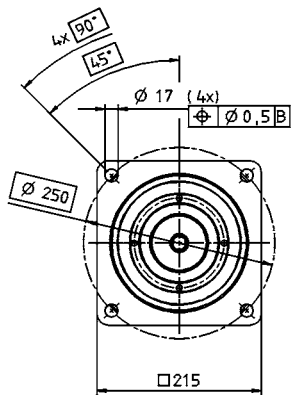
^{b)} For higher ambient temperatures, please reduce input speed

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

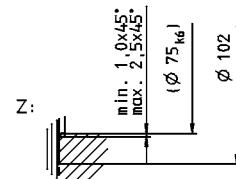
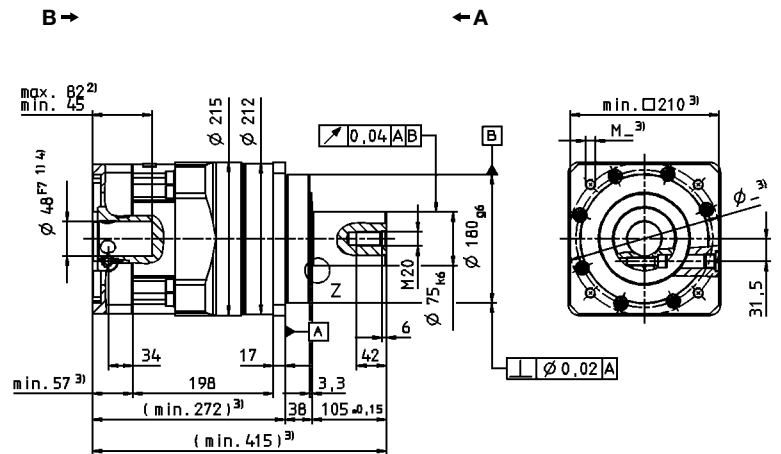
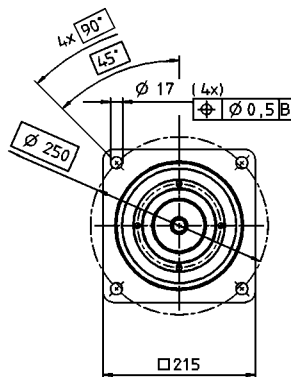
View A

View B

1-stage:



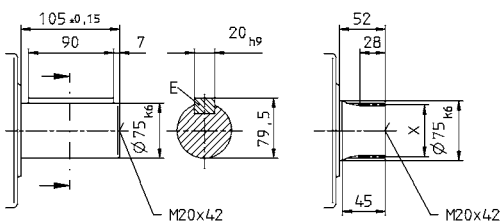
2-stage:



Alternatives: Output shaft variants

Keywayed output shaft in mm
E = key as per DIN 6885, sheet 1, form A

Involute gearing DIN 5480 in mm
X = W 70 x 2 x 30 x 34 x 6m, DIN 5480



Non-tolerated dimensions ± 1.5 mm

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

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

Motor mounting according to operating manual

Planetary gearheads
High End

SP+
MF

SP+ 240 MF 1/2-stage

				1-stage						2-stage									
Ratio ^{a)}			<i>i</i>		3	4	5	7	10	16	20	25	28	35	40	50	70	100	
cymex®-optimized acceleration torque (please contact us regarding the design)			<i>T</i> _{2Bcym}	Nm	- Please contact us -														
				in.lb															
Max. acceleration torque (max. 1000 cycles per hour)			<i>T</i> _{2B}	Nm	2750	4500	4500	4300	3400	4500	4500	4500	4500	4500	4000	4300	4300	3400	
				in.lb	24338	39825	39825	38055	30090	39825	39825	39825	39825	39825	35400	38055	38055	30090	
Nominal output torque (with <i>n</i> _{1N})			<i>T</i> _{2N}	Nm	1500	2500	2500	2300	1700	2500	2500	2500	2500	2500	2500	2500	2300	1700	
				in.lb	13275	22125	22125	20355	15045	22125	22125	22125	22125	22125	22125	22125	20355	15045	
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			<i>T</i> _{2Not}	Nm	6800	8500	8500	8500	6800	8500	8500	8500	8500	8500	8500	8500	8500	6800	
				in.lb	60180	75225	75225	75225	60180	75225	75225	75225	75225	75225	75225	75225	75225	60180	
Nominal input speed (with <i>T</i> _{2N} and 20°C ambient temperature) ^{b)}			<i>n</i> _{1N}	rpm	1000	1000	1200	1500	1700	2300	2500	2500	2500	2500	2500	2500	2800	2800	
Max. input speed			<i>n</i> _{1Max}	rpm	2500	2500	2500	2500	2500	3500	3500	3500	3500	3500	3500	3500	3500	3500	
Mean no load running torque (with <i>n</i> ₁ =2000 rpm and 20°C gearhead temperature)			<i>T</i> ₀₁₂	Nm	45	35	26	16	11	11	9,0	8,0	7,0	6,0	5,0	4,5	4,0	4,0	
				in.lb	398	310	230	142	97	97	80	71	62	53	44	40	35	35	
Max. torsional backlash			<i>j</i> _t	arcmin	Standard ≤ 3 / Reduced ≤ 1						Standard ≤ 5 / Reduced ≤ 3								
Torsional rigidity			<i>C</i> _{t21}	Nm/ arcmin	550						550								
				in.lb/ arcmin	4868						4868								
Max. axial force ^{c)}			<i>F</i> _{2AMax}	N	33000						33000								
				lb _f	7425						7425								
Max. radial force ^{c)}			<i>F</i> _{2RMax}	N	30000						30000								
				lb _f	6750						6750								
Max. tilting moment			<i>M</i> _{2KMax}	Nm	5000						5000								
				in.lb	44250						44250								
Efficiency at full load			η	%	97						94								
Service life (For calculation, see the Chapter "Information")			<i>L</i> _h	h	> 20000						> 20000								
Weight incl. standard adapter plate			<i>m</i>	kg	77						76								
				lb _m	170						168								
Operating noise (with <i>i</i> =10 and <i>n</i> ₁ =3000 rpm no load)			<i>L</i> _{PA}	dB(A)	≤ 66														
Max. permitted housing temperature				°C	+90														
				F	194														
Ambient temperature				°C	-15 to +40														
				F	5 to 104														
Lubrication					Lubricated for life														
Paint					Blue RAL 5002														
Direction of rotation					Motor and gearhead same direction														
Protection class					IP 65														
Moment of inertia (relates to the drive)		M	48	<i>J</i> ₁	kgcm ²	-	-	-	-	-	39.2	34.6	33.2	30.5	29.7	28.2	27.9	27.6	27.5
					10 ⁻³ in.lb.s ²	-	-	-	-	-	34.7	30.6	29.4	27.0	26.3	25.0	24.7	24.4	24.3
Clamping hub diameter [mm]		O	60	<i>J</i> ₁	kgcm ²	260.2	198.2	163.0	138,3	124,7	-	-	-	-	-	-	-	-	-
					10 ⁻³ in.lb.s ²	230.3	175.4	144.3	122,4	110,4	-	-	-	-	-	-	-	-	-

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

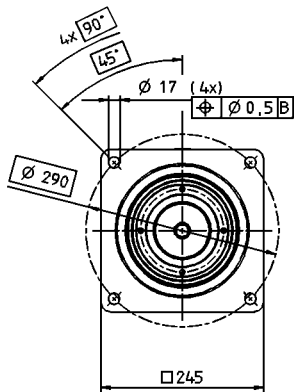
^{b)} For higher ambient temperatures, please reduce input speed

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

View A

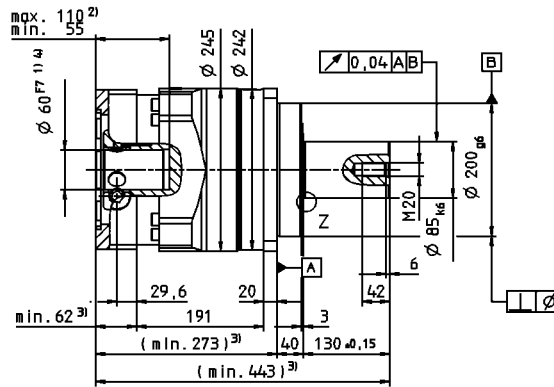
View B

1-stage:

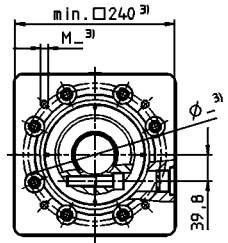


up to 60 ⁴⁾ (O)
clamping hub
diameter

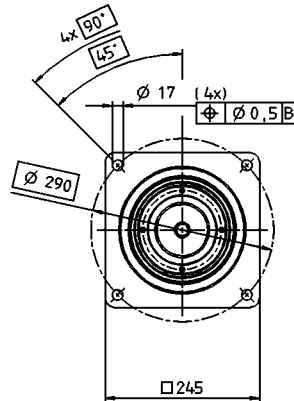
B →



← A

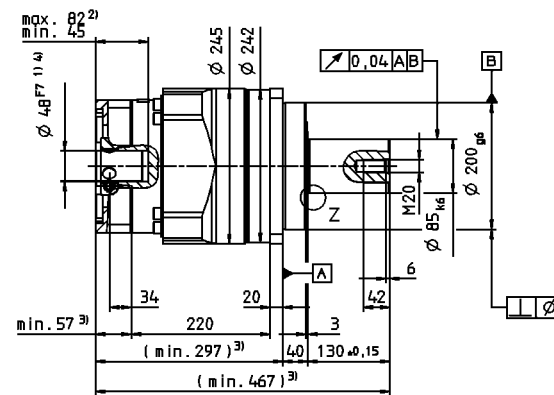


2-stage:

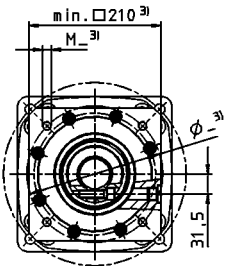


up to 48 ⁴⁾ (M)
clamping hub
diameter

B →



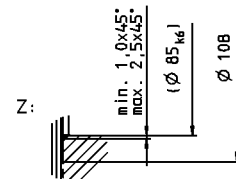
← A



Planetary gearheads
High End

SP+

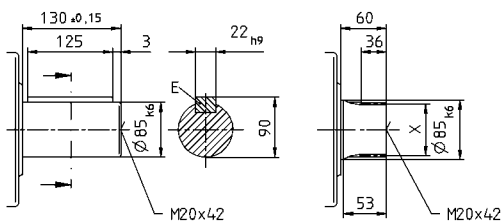
MF



Alternatives: Output shaft variants

Keywayed output shaft in mm
E = key as per DIN 6885, sheet 1, form A

Involute gearing DIN 5480 in mm
X = W 80 x 2 x 30 x 38 x 6m, DIN 5480



Non-tolerated dimensions ± 1.5 mm

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

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

Motor mounting according to operating manual

SP+ 075 MC HIGH SPEED 1-stage

					1-stage				
Ratio ^{a)}			<i>i</i>		3	4	5	7	10
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	68	90	90	90	70
				in.lb	602	797	797	797	620
cymex®-optimized nominal torque (please contact us regarding the design)			T_{2Ncym}	Nm	–	60	60	60	35
				in.lb	–	531	531	531	310
Nominal output torque (with n_{2N})			T_{2N}	Nm	28	48	48	48	30
				in.lb	248	425	425	425	266
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	200	250	250	250	200
				in.lb	1770	2213	2213	2213	1770
Nominal input speed (with T_{2N} and 20°C ambient temperature) ^{b)}			n_{1N}	rpm	4500	4500	4500	4500	4500
Max. input speed			n_{1Max}	rpm	6000	6000	6000	6000	6000
Mean no load running torque (with $n_1=3000$ rpm and 20°C gearhead temperature) ^{c)}			T_{012}	Nm	1.4	1.1	0.9	0.6	0.5
				in.lb	12.4	9.7	8.0	5.3	4.4
Max. torsional backlash			j_t	arcmin	Standard ≤ 6 / Reduced ≤ 4				
Torsional rigidity			C_{t21}	Nm/ arcmin	10				
				in.lb/ arcmin	89				
Max. axial force ^{d)}			F_{2AMax}	N	3350				
				lb _f	754				
Max. radial force ^{d)}			F_{2RMax}	N	4200				
				lb _f	945				
Max. tilting moment			M_{2KMax}	Nm	236				
				in.lb	2089				
Efficiency at full load			η	%	98.5				
Service life (For calculation, see the Chapter "Information")			L_h	h	> 30000				
Weight incl. standard adapter plate			m	kg	3.9				
				lb _m	8.6				
Operating noise (with $i=10$ and $n_1=3000$ rpm no load)			L_{PA}	dB(A)	≤ 59				
Max. permitted housing temperature				°C	+90				
				F	194				
Ambient temperature				°C	-15 to +40				
				F	5 to 104				
Lubrication					Lubricated for life				
Paint					Blue RAL 5002				
Direction of rotation					Motor and gearhead same direction				
Protection class					IP 65				
Moment of inertia (relates to the drive)			E 19 J_1	kgcm ²	1.03	0.78	0.68	0.59	0.54
				10 ⁻³ in.lb.s ²	0.91	0.69	0.60	0.52	0.48
Clamping hub diameter [mm]			G 24 J_1	kgcm ²	2.40	2.15	2.05	1.96	1.91
				10 ⁻³ in.lb.s ²	2.12	1.90	1.81	1.73	1.69

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

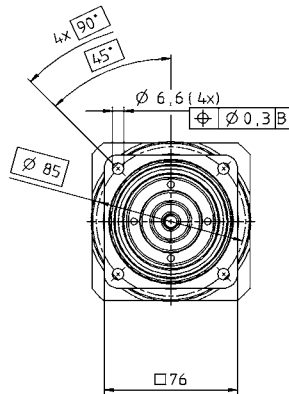
^{b)} For higher ambient temperatures, please reduce input speed

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

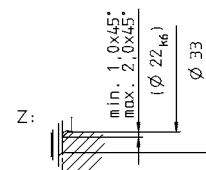
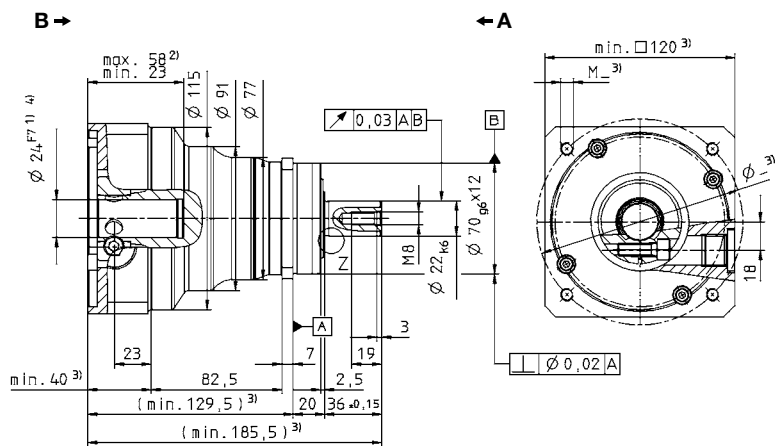
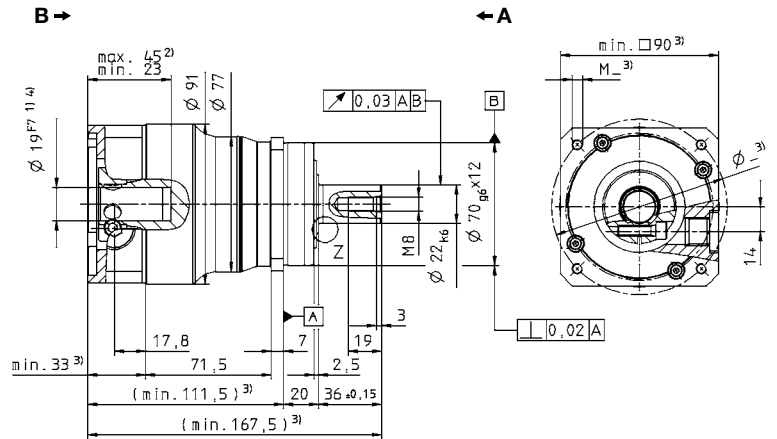
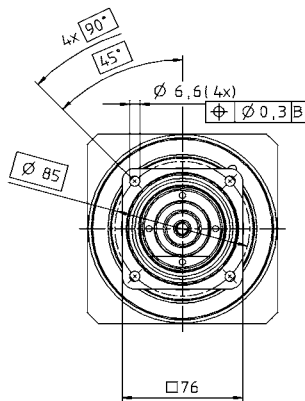
^{d)} Refers to centre of the output shaft or flange

Motor shaft diameter [mm]

up to 19 ⁴⁾ (E)
clamping hub
diameter



up to 24 ⁴⁾ (G)
clamping hub
diameter



Planetary gearheads High End

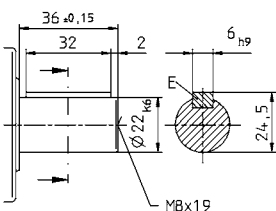
 $\frac{d}{ds}$

MC

Alternatives: Output shaft variants

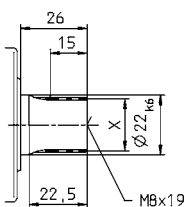
Keywayed output shaft in mm

E = key as per DIN 6885, sheet 1, form A



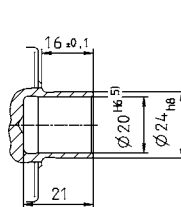
Involute gearing DIN 5480 in mm

X = W 22 x 1.25 x 30 x 16 x 6m, DIN 5480



Shaft mounted

Mounted via shrink disc



Non-tolerated dimensions ± 1 mm

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length.
Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
- 5) Tolerance h6 for mounted shaft.

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



Motor mounting according to operating manual

SP+ 075 MC HIGH SPEED 2-stage

					2-stage								
Ratio ^{a)}			<i>i</i>		16	20	25	28	35	40	50	70	100
Max. acceleration torque (max. 1000 cycles per hour)			<i>T</i> _{2B}	Nm	90	90	90	90	90	90	90	90	70
				in.lb	797	797	797	797	797	797	797	797	620
cymex®-optimized nominal torque (please contact us regarding the design)			<i>T</i> _{2Ncym}	Nm	–	–	–	–	–	60	–	–	35
				in.lb						531			310
Nominal output torque (with <i>n</i>_N)			<i>T</i> _{2N}	Nm	60	60	60	60	60	55	60	60	30
				in.lb	531	531	531	531	531	487	531	531	266
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			<i>T</i> _{2Not}	Nm	250	250	250	250	250	250	250	250	200
				in.lb	2213	2213	2213	2213	2213	2213	2213	2213	1770
Nominal input speed (with <i>T</i>_{2N} and 20°C ambient temperature) ^{b)}			<i>n</i> _{1N}	rpm	4500	4500	4500	4500	4500	4500	4500	4500	4500
Max. input speed			<i>n</i> _{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque (with <i>n</i>₁ = 3000 rpm and 20°C gearhead temperature) ^{c)}			<i>T</i> ₀₁₂	Nm	0.5	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.2
				in.lb	4.4	3.5	3.5	2.7	2.7	1.8	1.8	1.8	1.8
Max. torsional backlash			<i>j</i> _t	arcmin	Standard ≤ 8 / Reduced ≤ 6								
Torsional rigidity			<i>C</i> _{t21}	Nm/ arcmin	10								
				in.lb/ arcmin	89								
Max. axial force ^{d)}			<i>F</i> _{2AMax}	N	3350								
				lb _f	754								
Max. radial force ^{d)}			<i>F</i> _{2RMax}	N	4200								
				lb _f	945								
Max. tilting moment			<i>M</i> _{2KMax}	Nm	236								
				in.lb	2089								
Efficiency at full load			η	%	96,5								
Service life (For calculation, see the Chapter "Information")			<i>L</i> _h	h	> 30000								
Weight incl. standard adapter plate			<i>m</i>	kg	3,6								
				lb _m	8.0								
Operating noise (with <i>i</i>=100 and <i>n</i>₁=3000 rpm no load)			<i>L</i> _{PA}	dB(A)	≤ 59								
Max. permitted housing temperature				°C	+90								
				F	194								
Ambient temperature				°C	-15 to +40								
				F	5 to 104								
Lubrication					Lubricated for life								
Paint					Blue RAL 5002								
Direction of rotation					Motor and gearhead same direction								
Protection class					IP 65								
Moment of inertia (relates to the drive)	C	14	<i>J</i> ₁	kgcm ²	0.23	0.20	0.20	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	0.15	0.15	0.14	0.14
Clamping hub diameter [mm]	E	19	<i>J</i> ₁	kgcm ²	0.55	0.53	0.52	0.50	0.50	0.49	0.49	0.49	0.49
				10 ⁻³ in.lb.s ²	0.49	0.47	0.46	0.45	0.44	0.43	0.43	0.43	0.43

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

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

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

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

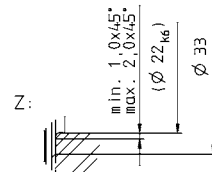
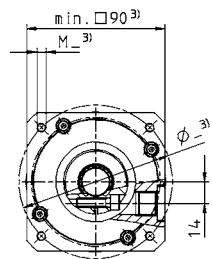
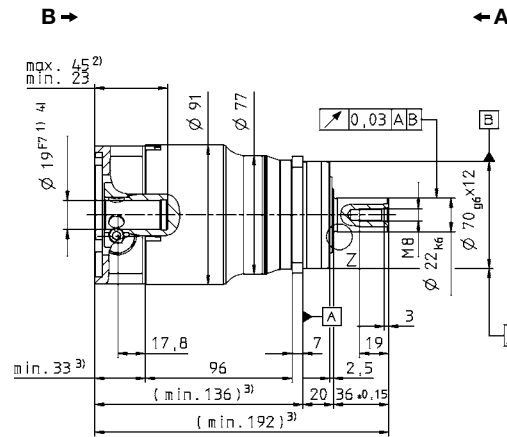
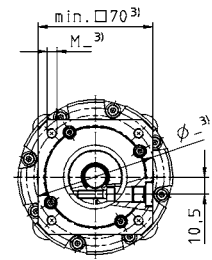
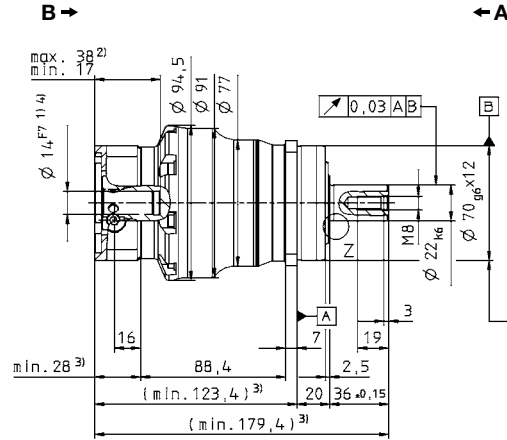
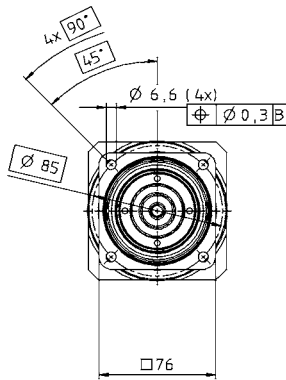
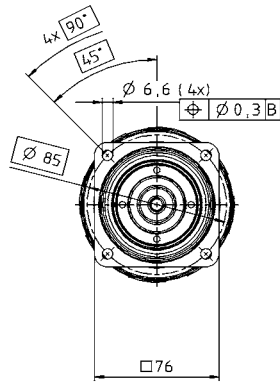
View A

View B

Motor shaft diameter [mm]

up to 14⁴⁾ (C)
clamping hub
diameter

up to 19⁴⁾ (E)
clamping hub
diameter



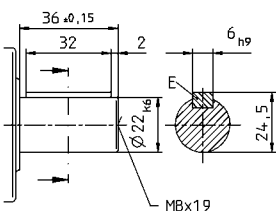
Planetary gearheads
High End

SP+

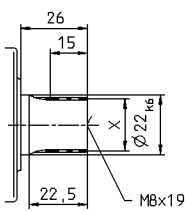
MC

Alternatives: Output shaft variants

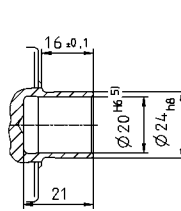
Keywayed output shaft in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 22 x 1.25 x 30 x 16 x 6m, DIN 5480



Shaft mounted
Mounted via shrink disc



Non-tolerated dimensions ± 1 mm

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length.
Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
- 5) Tolerance h6 for mounted shaft.



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



Motor mounting according to operating manual

SP+ 100 MC HIGH SPEED 1-stage

				Standard version MC					Friction optimized version L						
Ratio ^{a)}			<i>i</i>		3	4	5	7	10	3	4	5	7	10	
Max. acceleration torque (max. 1000 cycles per hour)			<i>T</i> _{2B}	Nm	180	240	240	240	180	180	240	240	240	180	
				in.lb	1593	2124	2124	2124	1593	1593	2124	2124	2124	1593	
cymex®-optimized nominal torque (please contact us regarding the design)			<i>T</i> _{2Ncym}	Nm	95	135	135	135	90	95	135	135	135	90	
				in.lb	841	1195	1195	1195	797	841	1195	1195	1195	797	
Nominal output torque (with <i>n</i> _{2N})			<i>T</i> _{2N}	Nm	70	100	105	105	80	70	100	105	105	80	
				in.lb	620	885	929	929	708	620	885	929	929	708	
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			<i>T</i> _{2Not}	Nm	500	625	625	625	500	500	625	625	625	500	
				in.lb	4425	5531	5531	5531	4425	4425	5531	5531	5531	4425	
Nominal input speed (with <i>T</i> _{2N} and 20°C ambient temperature) ^{b)}			<i>n</i> _{1N}	rpm	3500	4000	4500	4500	4500	3500	4000	4500	4500	4500	
cymex® optimized speed (please contact us regarding the design)			<i>n</i> _{1Ncym}	rpm	–	–	–	–	–	4500	5000	5000	5000	5000	
Max. input speed			<i>n</i> _{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	
Mean no load running torque (with <i>n</i> ₁ = 3000 rpm and 20°C gearhead temperature) ^{c)}			<i>T</i> ₀₁₂	Nm	2.4	2.1	1.8	1.1	0.8	0.7	–	–	–	–	
				in.lb	21.2	18.6	15.9	9.74	7.08	6.2	–	–	–	–	
Max. torsional backlash			<i>j</i> _t	arcmin	Standard ≤ 4 / Reduced ≤ 2										
Torsional rigidity			<i>C</i> _{t21}	Nm/ arcmin	31										
				in.lb/ arcmin	274										
Max. axial force ^{d)}			<i>F</i> _{2AMax}	N	5650					–					
				lb _f	1271					–					
Max. radial force ^{d)}			<i>F</i> _{2RMax}	N	6600					1000					
				lb _f	1485					225					
Max. tilting moment			<i>M</i> _{2KMax}	Nm	487					72					
				in.lb	4310					637					
Efficiency at full load			η	%	98.5					99					
Service life (For calculation, see the Chapter “Information”)			<i>L</i> _h	h	> 30000										
Weight incl. standard adapter plate			<i>m</i>	kg	7.7										
				lb _m	17.0										
Operating noise (with <i>i</i> =10 and <i>n</i> ₁ =3000 rpm no load)			<i>L</i> _{PA}	dB(A)	≤ 64										
Max. permitted housing temperature				°C	+90										
				F	194										
Ambient temperature				°C	-15 to +40										
				F	5 to 104										
Lubrication					Lubricated for life										
Paint					Blue RAL 5002										
Direction of rotation					Motor and gearhead same direction										
Protection class					IP 65					IP 52					
Moment of inertia (relates to the drive)		G	24	<i>J</i> ₁	kgcm ²	3.99	3.04	2.61	2.29	2.07	3.99	3.04	2.61	2.29	2.07
					10 ⁻³ in.lb.s ²	3.53	2.69	2.31	2.03	1.83	3.53	2.69	2.31	2.03	1.83
Clamping hub diameter [mm]		K	38	<i>J</i> ₁	kgcm ²	11.1	10.1	9.68	9.36	9.14	11.1	10.1	9.68	9.36	9.14
					10 ⁻³ in.lb.s ²	9.78	8.95	8.57	8.28	8.09	9.78	8.95	8.57	8.28	8.09

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

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

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

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

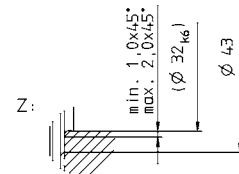
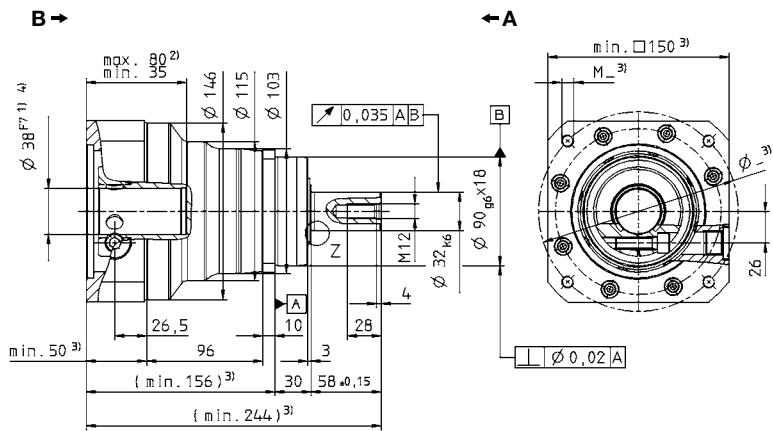
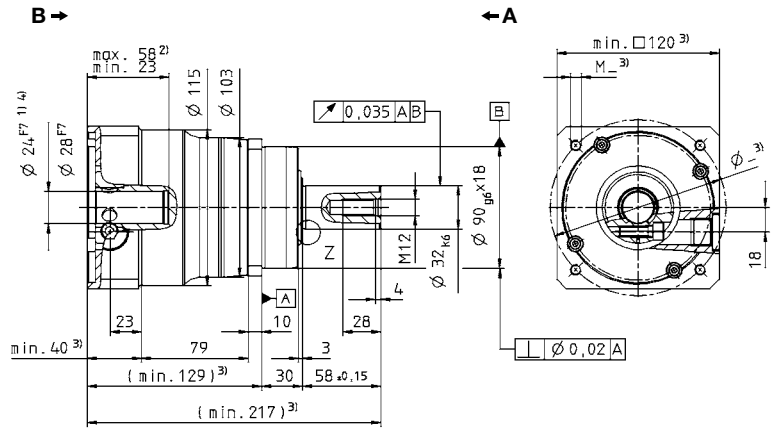
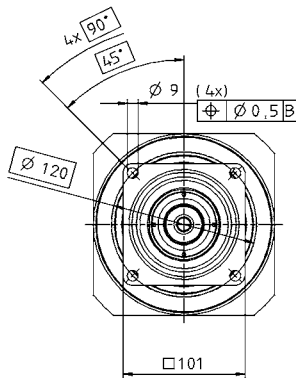
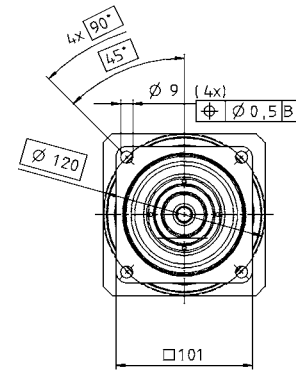
View A

View B

Motor shaft diameter [mm]

up to 24 ⁴⁾(G)
clamping hub diameter

up to 38 ⁴⁾(K)
clamping hub diameter



Planetary gearheads
High End

SP+

MC

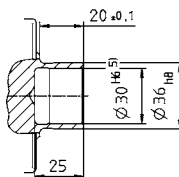
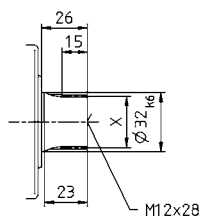
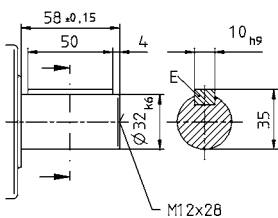
MC-L

Alternatives: Output shaft variants

Keywayed output shaft in mm
E = key as per DIN 6885, sheet 1, form A

Involute gearing DIN 5480 in mm
X = W 32 x 1.25 x 30 x 24 x 6m, DIN 5480

Shaft mounted
Mounted via shrink disc



Non-tolerated dimensions ± 1 mm

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length.
Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
- 5) Tolerance h6 for mounted shaft.



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



Motor mounting according to operating manual

SP+ 100 MC HIGH SPEED 2-stage

					2-stage									
Ratio ^{a)}			i		16	20	25	28	35	40	50	70	100	
Max. acceleration torque (max. 1000 cycles per hour)			T _{2B}	Nm	240	240	240	240	240	240	240	240	180	
				in.lb	2124	2124	2124	2124	2124	2124	2124	2124	1593	
cymex®-optimized nominal torque (please contact us regarding the design)			T _{2Ncym}	Nm	–	–	–	–	–	–	–	–	90	
				in.lb									797	
Nominal output torque (with n _{2N})			T _{2N}	Nm	140	140	140	140	140	140	140	135	80	
				in.lb	1239	1239	1239	1239	1239	1239	1239	1195	708	
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T _{2Not}	Nm	625	625	625	625	625	625	625	625	500	
				in.lb	5531	5531	5531	5531	5531	5531	5531	5531	4425	
Nominal input speed (with T _{2N} and 20°C ambient temperature) ^{b)}			n _{1N}	rpm	4500	4500	4500	4500	4500	4500	4500	4500	4500	
Max. input speed			n _{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	
Mean no load running torque (with n ₁ =3000 rpm and 20°C gearhead temperature) ^{c)}			T ₀₁₂	Nm	0.8	0.7	0.6	0.5	0.4	0.4	0.3	0.3	0.3	
				in.lb	7.1	6.2	5.3	4.4	3.5	3.5	2.7	2.7	2.7	
Max. torsional backlash			j _t	arcmin	Standard ≤ 6 / Reduced ≤ 4									
Torsional rigidity			C _{t21}	Nm/ arcmin	31									
				in.lb/ arcmin	274									
Max. axial force ^{d)}			F _{2AMax}	N	5650									
				lb _f	1271									
Max. radial force ^{d)}			F _{2RMax}	N	6600									
				lb _f	1485									
Max. tilting moment			M _{2KMax}	Nm	487									
				in.lb	4310									
Efficiency at full load			η	%	96.5									
Service life (For calculation, see the Chapter "Information")			L _h	h	> 30000									
Weight incl. standardadapter plate			m	kg	7.9									
				lb _m	17.5									
Operating noise (with i=100 and n ₁ =3000 rpm no load)			L _{PA}	dB(A)	≤ 60									
Max. permitted housing temperature				°C	+90									
				F	194									
Ambient temperature				°C	-15 to +40									
				F	5 to 104									
Lubrication					Lubricated for life									
Paint					Blue RAL 5002									
Direction of rotation					Motor and gearhead same direction									
Protection class					IP 65									
Moment of inertia (relates to the drive)		E	19	J ₁	kgcm ²	0.81	0.70	0.69	0.60	0.59	0.55	0.54	0.54	0.54
					10 ⁻³ in.lb.s ²	0.72	0.62	0.61	0.53	0.52	0.48	0.48	0.48	0.47
Clamping hub diameter [mm]		G	24	J ₁	kgcm ²	2.18	2.07	2.05	1.97	1.96	1.92	1.91	1.91	1.91
					10 ⁻³ in.lb.s ²	1.93	1.83	1.82	1.74	1.74	1.70	1.69	1.69	1.69

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

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

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

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

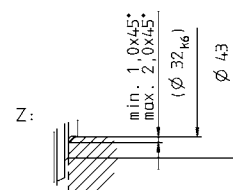
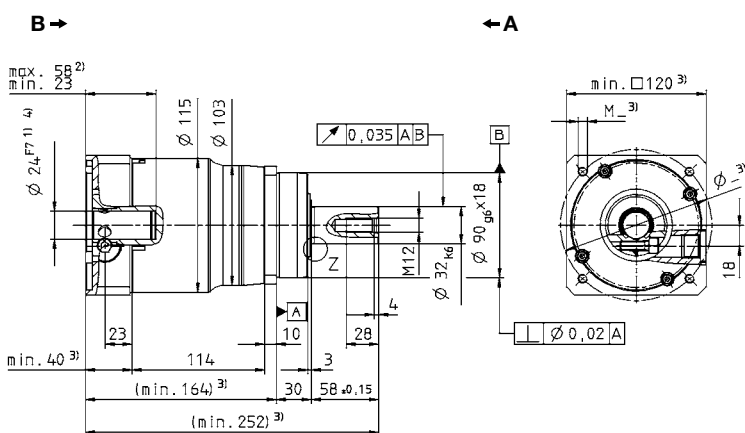
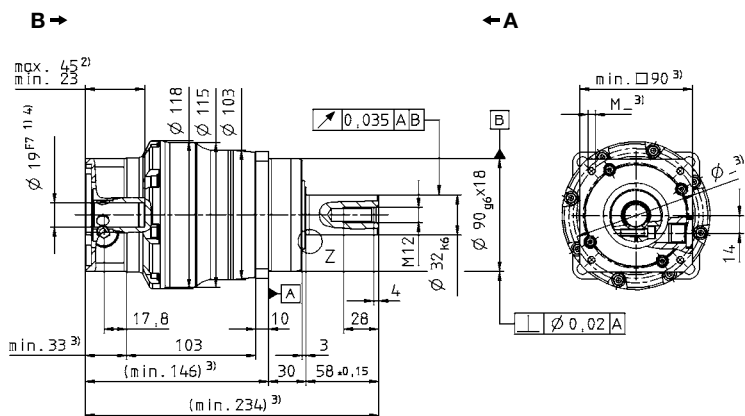
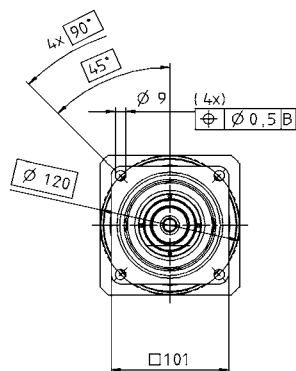
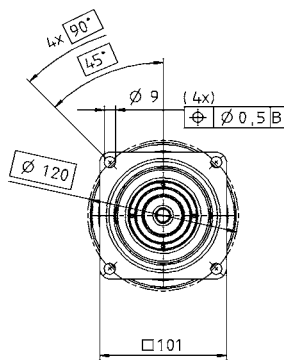
View A

View B

Motor shaft diameter [mm]

up to 19 ⁴⁾ (E)
clamping hub diameter

up to 24 ⁴⁾ (G)
clamping hub diameter

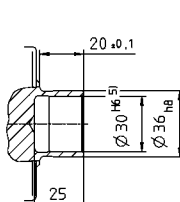
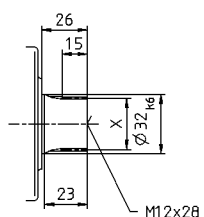
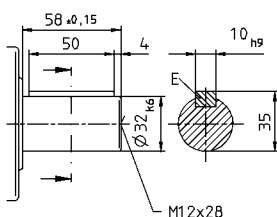


Alternatives: Output shaft variants

Keywayed output shaft in mm
E = key as per DIN 6885, sheet 1, form A

Involute gearing DIN 5480 in mm
X = W 32 x 1.25 x 30 x 24 x 6m, DIN 5480

Shaft mounted
Mounted via shrink disc



Non-tolerated dimensions ± 1 mm

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length.
Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
- 5) Tolerance h6 for mounted shaft.

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

Motor mounting according to operating manual

Planetary gearheads
High End

SP+

MC

SP+ 140 MC HIGH SPEED 1-stage

				Standard version MC					Friction optimized version L						
Ratio ^{a)}			<i>i</i>		3	4	5	7	10	3	4	5	7	10	
Max. acceleration torque (max. 1000 cycles per hour)			<i>T</i> _{2B}	Nm	310	480	480	480	380	310	480	480	480	380	
				in.lb	2744	4248	4248	4248	3363	2744	4248	4248	4248	3363	
cymex®-optimized nominal torque (please contact us regarding the design)			<i>T</i> _{2Ncym}	Nm	150	240	240	270	180	150	240	240	270	180	
				in.lb	1328	2124	2124	2390	1593	2744	4248	4248	4248	3363	
Nominal output torque (with <i>n</i> _{in})			<i>T</i> _{2N}	Nm	130	195	205	210	160	130	195	205	210	160	
				in.lb	1151	1726	1814	1859	1416	1151	1726	1814	1859	1416	
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			<i>T</i> _{2Not}	Nm	1000	1250	1250	1250	1000	1000	1250	1250	1250	1000	
				in.lb	8850	11063	11063	11063	8850	8850	11063	11063	11063	8850	
Nominal input speed (with <i>T</i> _{2N} and 20°C ambient temperature) ^{b)}			<i>n</i> _{1N}	rpm	3000	3500	4500	4500	4500	3000	3500	4500	4500	4500	
cymex® optimized speed (please contact us regarding the design)			<i>n</i> _{1Ncym}	rpm	–	–	–	–	–	4000	4500	5000	5000	5000	
Max. input speed			<i>n</i> _{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	
Mean no load running torque (with <i>n</i> ₁ = 3000 rpm and 20°C gearhead temperature) ^{c)}			<i>T</i> ₀₁₂	Nm	5.1	3.9	3.1	2.3	1.6	1.0	–	–	–	–	
				in.lb	45.1	34.5	27.4	20.4	14.2	8.9	–	–	–	–	
Max. torsional backlash			<i>j</i> _t	arcmin	Standard ≤ 4 / Reduced ≤ 2										
Torsional rigidity			<i>C</i> _{t21}	Nm/ arcmin	53										
				in.lb/ arcmin	469										
Max. axial force ^{d)}			<i>F</i> _{2AMax}	N	9870					–					
				lb _f	2221					–					
Max. radial force ^{d)}			<i>F</i> _{2RMax}	N	9900					1200					
				lb _f	2228					270					
Max. tilting moment			<i>M</i> _{2KMax}	Nm	952					110					
				in.lb	8425					974					
Efficiency at full load			η	%	98.5					99					
Service life (For calculation, see the Chapter “Information”)			<i>L</i> _h	h	> 30000										
Weight incl. standard adapter plate			<i>m</i>	kg	17.2										
				lb _m	38										
Operating noise (with <i>i</i> =10 and <i>n</i> ₁ = 3000 rpm no load)			<i>L</i> _{PA}	dB(A)	≤ 65										
Max. permitted housing temperature				°C	+90										
				F	194										
Ambient temperature				°C	-15 to +40										
				F	5 to 104										
Lubrication					Lubricated for life										
Paint					Blue RAL 5002										
Direction of rotation					Motor and gearhead same direction										
Protection class					IP 65					IP 52					
Moment of inertia (relates to the drive)		K	38	<i>J</i> ₁	kgcm ²	14.9	12.1	11.0	10.1	9.51	14.9	12.1	11.0	10.1	9.51
					10 ⁻⁴ in.lb.s ²	13.2	10.7	9.8	8.9	8.4	13.2	10.7	9.8	8.9	8.4
		Clamping hub diameter [mm]	M	48	<i>J</i> ₁	kgcm ²	29.5	26.7	25.6	24.7	24.2	29.5	26.7	25.6	24.7
10 ⁻⁴ in.lb.s ²	26.1					23.6	22.7	21.9	21.4	26.1	23.6	22.7	21.9	21.4	

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

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

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

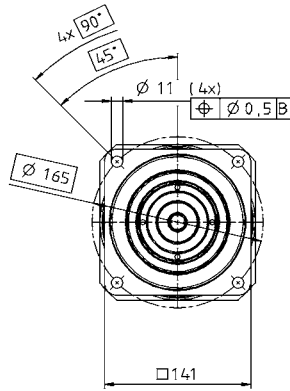
^{d)} Refers to center of the output shaft or flange

View A

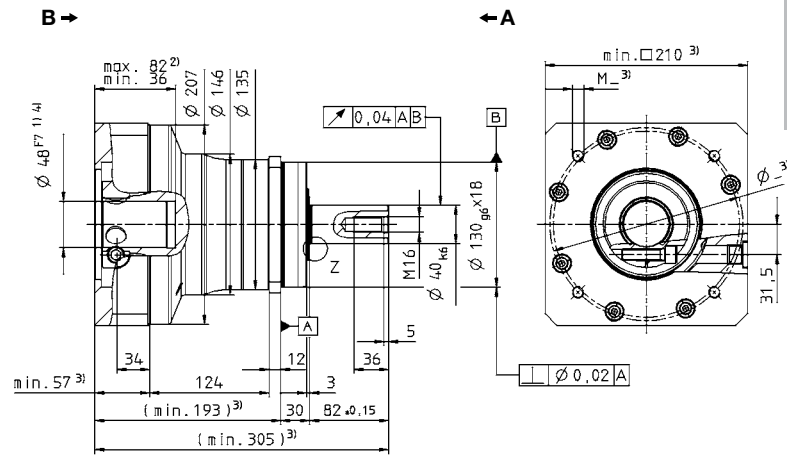
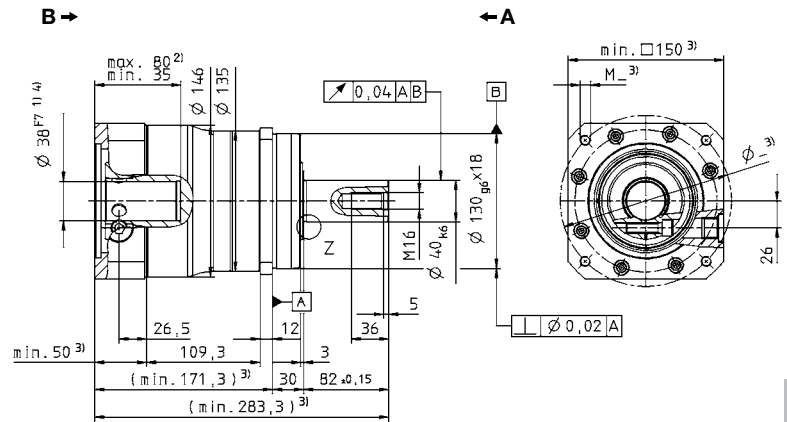
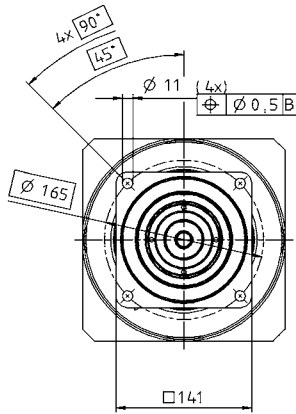
View B

Motor shaft diameter [mm]

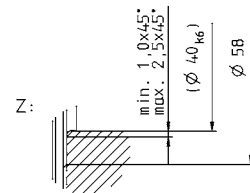
up to 38⁴⁾ (K)
clamping hub diameter



up to 48⁴⁾ (M)
clamping hub diameter



Planetary gearheads
High End



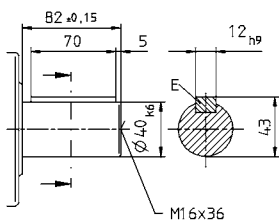
SP+

MC

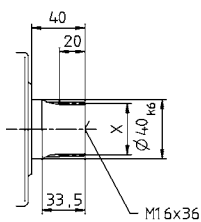
MC-L

Alternatives: Output shaft variants

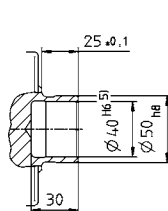
Keywayed output shaft in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 40 x 2 x 30 x 18 x 6m, DIN 5480



Shaft mounted
Mounted via shrink disc



Non-tolerated dimensions ± 1 mm

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length.
Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
- 5) Tolerance h6 for mounted shaft.



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



Motor mounting according to operating manual

SP+ 140 MC HIGH SPEED 2-stage

				2-stage									
Ratio ^{a)}			<i>i</i>		16	20	25	28	35	40	50	70	100
Max. acceleration torque (max. 1000 cycles per hour)			<i>T</i> _{2B}	Nm	480	480	480	480	480	480	480	480	380
				in.lb	4248	4248	4248	4248	4248	4248	4248	4248	3363
cymex®-optimized nominal torque (please contact us regarding the design)			<i>T</i> _{2Ncym}	Nm	290	290	290	–	–	–	–	–	–
				in.lb	2567	2567	2567						
Nominal output torque (with <i>n</i> _{IN})			<i>T</i> _{2N}	Nm	260	280	280	290	290	290	290	260	180
				in.lb	2301	2478	2478	2567	2567	2567	2567	2301	1593
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			<i>T</i> _{2Not}	Nm	1250	1250	1250	1250	1250	1250	1250	1250	1000
				in.lb	11063	11063	11063	11063	11063	11063	11063	11063	8850
Nominal input speed (with <i>T</i> _{2N} and 20°C ambient temperature) ^{b)}			<i>n</i> _{1N}	rpm	4500	4500	4500	4500	4500	4500	4500	4500	4500
Max. input speed			<i>n</i> _{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque (with <i>n</i> ₁ =3000 rpm and 20°C gearhead temperature) ^{c)}			<i>T</i> ₀₁₂	Nm	1.6	1.3	1.2	1.0	0.9	0.7	0.6	0.5	0.5
				in.lb	14.2	11.5	10.6	8.9	8.0	6.2	5.3	4.4	4.4
Max. torsional backlash			<i>j</i> _t	arcmin	Standard ≤ 6 / Reduced ≤ 4								
Torsional rigidity			<i>C</i> _{t21}	Nm/ arcmin	53								
				in.lb/ arcmin	469								
Max. axial force ^{d)}			<i>F</i> _{2AMax}	N	9870								
				lb _f	2221								
Max. radial force ^{d)}			<i>F</i> _{2RMax}	N	9900								
				lb _f	2228								
Max. tilting moment			<i>M</i> _{2KMax}	Nm	952								
				in.lb	8425								
Efficiency at full load			η	%	96.5								
Service life (For calculation, see the Chapter "Information")			<i>L</i> _h	h	> 30000								
Weight incl. standard adapter plate			<i>m</i>	kg	17								
				lb _m	38								
Operating noise (with <i>i</i> =100 and <i>n</i> ₁ =3000 rpm no load)			<i>L</i> _{PA}	dB(A)	≤ 63								
Max. permitted housing temperature				°C	+90								
				F	194								
Ambient temperature				°C	-15 to +40								
				F	5 to 104								
Lubrication					Lubricated for life								
Paint					Blue RAL 5002								
Direction of rotation					Motor and gearhead same direction								
Protection class					IP 65								
Moment of inertia (relates to the drive)	G	24	<i>J</i> ₁	kgcm ²	3.19	2.71	2.67	2.34	2.32	2.10	2.08	2.08	2.07
				10 ⁻³ in.lb.s ²	2.82	2.40	2.36	2.07	2.05	1.85	1.85	1.84	1.83
Clamping hub diameter [mm]	K	38	<i>J</i> ₁	kgcm ²	10.3	9.77	9.73	9.41	9.39	9.16	9.15	9.14	9.14
				10 ⁻³ in.lb.s ²	9.07	8.65	8.61	8.33	8.31	8.11	8.10	8.09	8.09

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

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

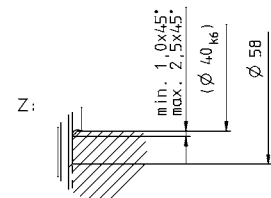
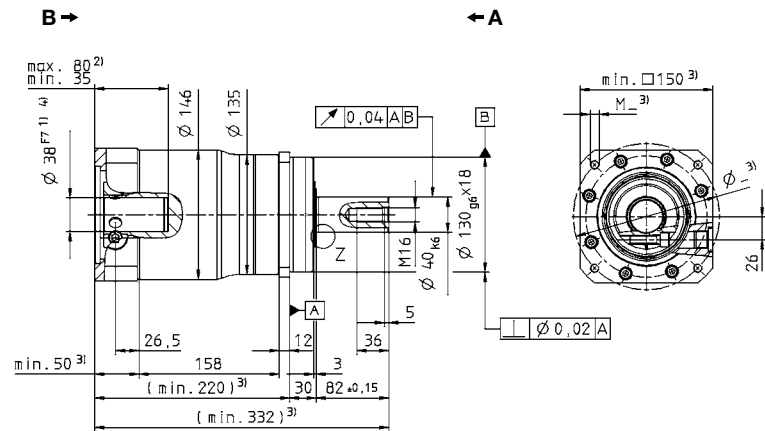
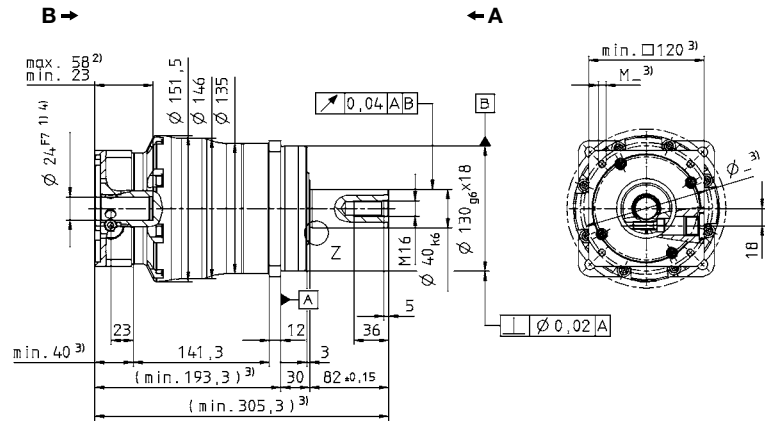
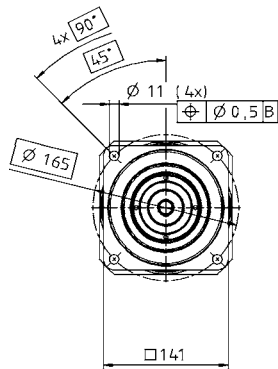
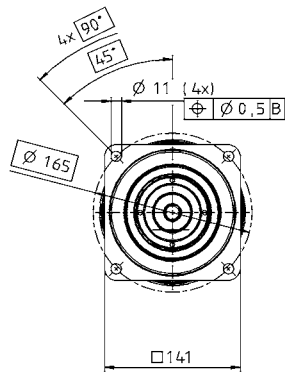
^{c)} Valid for clamping hub diameter of 24 mm

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

Motor shaft diameter [mm]

up to 24 ⁴⁾ (G)
clamping hub
diameter

up to 38 ⁴⁾ (K)
clamping hub
diameter



Planetary gearheads High End

 $\frac{d}{s}$

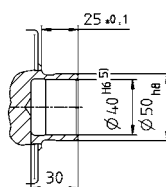
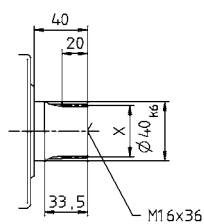
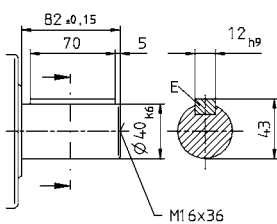
MC

Alternatives: Output shaft variants

Keywayed output shaft in mm
E = key as per DIN 6885, sheet 1, form A

Involute gearing DIN 5480 in mm
X = W 40 x 2 x 30 x 18 x 6m, DIN 5480

Shaft mounted
Mounted via shrink disc



Non-tolerated dimensions ± 1 mm

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length.
Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
- 5) Tolerance h6 for mounted shaft.



Motor mounting according to operating manual

SP+ 180 MC HIGH SPEED 1-stage

				Standard version MC					Friction optimized version L					
Ratio ^{a)}	<i>i</i>			3	4	5	7	10	3	4	5	7	10	
Max. acceleration torque (max. 1000 cycles per hour)	<i>T</i> _{2B}	Nm		700	880	880	880	700	700	880	880	880	700	
		in.lb		6195	7788	7788	7788	6195	6195	7788	7788	7788	6195	
cymex®-optimized nominal torque (please contact us regarding the design)	<i>T</i> _{2Ncym}	Nm		350	600	600	600	540	350	600	600	600	540	
		in.lb		3098	5310	5310	5310	4779	3098	5310	5310	5310	3098	
Nominal output torque (with <i>n</i> _{2N})	<i>T</i> _{2N}	Nm		290	450	440	450	400	290	450	450	450	400	
		in.lb		2567	3983	3894	3983	3540	2567	3983	3983	3983	3540	
Emergency stop torque (permitted 1000 times during the service life of the gearhead)	<i>T</i> _{2Not}	Nm		2200	2750	2750	2750	2200	2200	2750	2750	2750	2200	
		in.lb		19470	24338	24338	24338	19470	19470	24338	24338	24338	19470	
Nominal input speed (with <i>T</i> _{2N} and 20°C ambient temperature) ^{b)}	<i>n</i> _{1N}	rpm		3000	3500	4500	4500	4500	3000	3500	4500	4500	4500	
cymex® optimized speed (please contact us regarding the design)	<i>n</i> _{1Ncym}	rpm		–	–	–	–	–	4000	4500	5000	5000	5000	
Max. input speed	<i>n</i> _{1Max}	rpm		4500	6000	6000	6000	6000	4500	6000	6000	6000	6000	
Mean no load running torque (with <i>n</i> ₁ =3000 rpm and 20°C gearhead temperature) ^{c)}	<i>T</i> ₀₁₂	Nm		10.2	7.7	6.2	4.5	3.2	3.0	–	–	–	–	
		in.lb		90.3	68.1	54.9	39.8	28.3	26.6	–	–	–	–	
Max. torsional backlash	<i>j</i> _t	arcmin		Standard ≤ 4 / Reduced ≤ 2										
Torsional rigidity	<i>C</i> _{t21}	Nm/ arcmin		175										
		in.lb/ arcmin		1549										
Max. axial force ^{d)}	<i>F</i> _{2AMax}	N		14150					–					
		lb _f		3184					–					
Max. radial force ^{d)}	<i>F</i> _{2RMax}	N		15400					2000					
		lb _f		3465					450					
Max. tilting moment	<i>M</i> _{2KMax}	Nm		1600					208					
		in.lb		14160					1841					
Efficiency at full load	η	%		98.5					99					
Service life (For calculation, see the Chapter “Information”)	<i>L</i> _h	h		> 30000										
Weight incl. standard adapter plate	<i>m</i>	kg		34										
		lb _m		75										
Operating noise (with <i>i</i> =10 and <i>n</i> ₁ =3000 rpm no load)	<i>L</i> _{PA}	dB(A)		≤ 66										
Max. permitted housing temperature		°C		+90										
		F		194										
Ambient temperature		°C		-15 to +40										
		F		5 to 104										
Lubrication				Lubricated for life										
Paint				Blue RAL 5002										
Direction of rotation				Motor and gearhead same direction										
Protection class				IP 65					IP 52					
Moment of inertia (relates to the drive)	M	48	<i>J</i> ₁	kgcm ²	58.5	41.6	35.6	30.0	26.9	58.5	41.6	35.6	30.0	26.9
Clamping hub diameter [mm]				10 ⁻³ in.lb.s ²	51.8	36.8	31.5	26.6	23.8	51.8	36.8	31.5	26.6	23.8

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

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

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

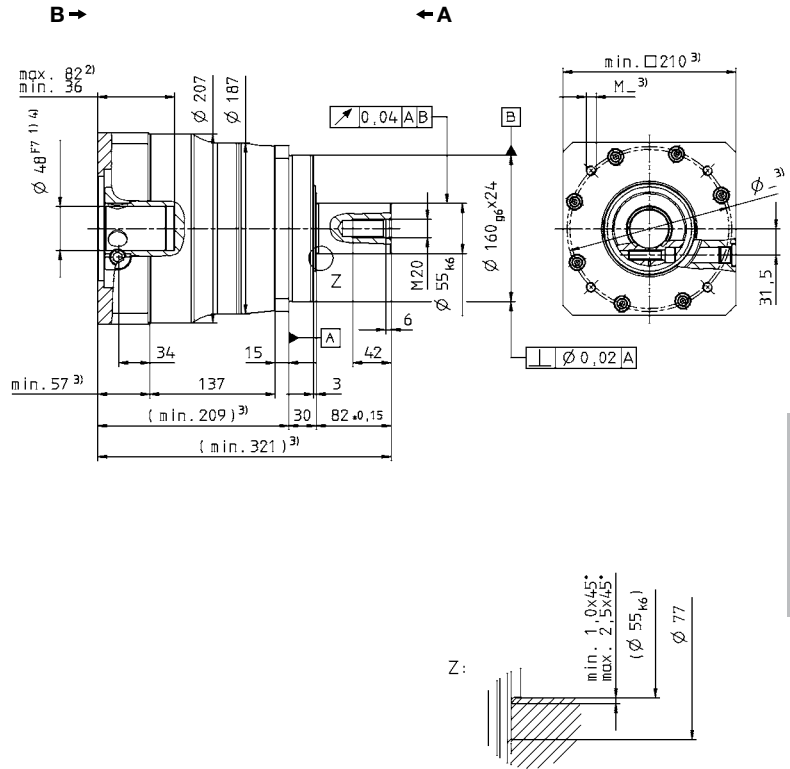
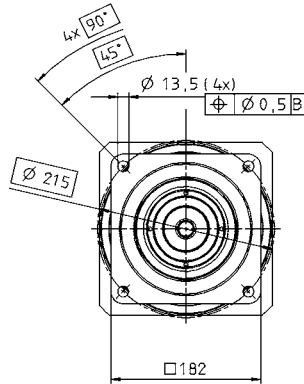
^{d)} Refers to center of the output shaft or flange

View A

View B

Motor shaft diameter [mm]

up to 48 ⁴⁾ (M)
clamping hub diameter



Planetary gearheads
High End

SP+

MC

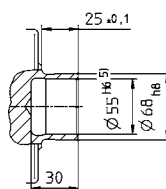
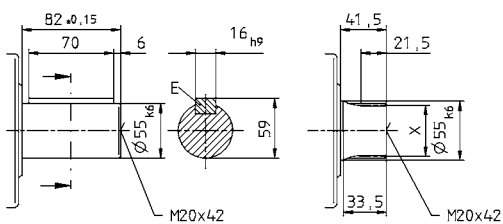
MC-L

Alternatives: Output shaft variants

Keywayed output shaft in mm
E = key as per DIN 6885, sheet 1, form A

Involute gearing DIN 5480 in mm
X = W 55 x 2 x 30 x 26 x 6m, DIN 5480

Shaft mounted
Mounted via shrink disc



Non-tolerated dimensions ± 1 mm

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length.
Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
- 5) Tolerance h6 for mounted shaft.



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



Motor mounting according to operating manual

SP+ 180 MC HIGH SPEED 2-stage

				2-stage									
Ratio ^{a)}		<i>i</i>		16	20	25	28	35	40	50	70	100	
Max. acceleration torque (max. 1000 cycles per hour)		<i>T</i> _{2B}	Nm	880	880	880	880	880	880	880	880	700	
			in.lb	7788	7788	7788	7788	7788	7788	7788	7788	7788	6195
cymex®-optimized nominal torque (please contact us regarding the design)		<i>T</i> _{2Ncym}	Nm	–	–	–	–	–	–	–	–	–	
			in.lb										
Nominal output torque (with <i>n</i> _{2N})		<i>T</i> _{2N}	Nm	600	600	600	600	600	600	600	600	600	
			in.lb	5310	5310	5310	5310	5310	5310	5310	5310	5310	5310
Emergency stop torque (permitted 1000 times during the service life of the gearhead)		<i>T</i> _{2Not}	Nm	2750	2750	2750	2750	2750	2750	2750	2750	2200	
			in.lb	24338	24338	24338	24338	24338	24338	24338	24338	24338	19470
Nominal input speed (with <i>T</i> _{2N} and 20°C ambient temperature) ^{b)}		<i>n</i> _{1N}	rpm	4500	4500	4500	4500	4500	4500	4500	4500	4500	
Max. input speed		<i>n</i> _{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	
Mean no load running torque (with <i>n</i> ₁ =3000 rpm and 20°C gearhead temperature) ^{c)}		<i>T</i> ₀₁₂	Nm	3.2	2.6	2.3	1.9	1.7	1.4	1.2	1.0	0.9	
			in.lb	28.3	23.0	20.4	16.8	15.0	12.4	10.6	8.9	8.0	
Max. torsional backlash		<i>j</i> _t	arcmin	Standard ≤ 6 / Reduced ≤ 4									
Torsional rigidity		<i>C</i> _{t21}	Nm/ arcmin	175									
			in.lb/ arcmin	149									
Max. axial force ^{d)}		<i>F</i> _{2AMax}	N	14150									
			lb _f	3184									
Max. radial force ^{d)}		<i>F</i> _{2RMax}	N	15400									
			lb _f	3465									
Max. tilting moment		<i>M</i> _{2KMax}	Nm	1600									
			in.lb	14160									
Efficiency at full load		η	%	96.5									
Service life (For calculation, see the Chapter "Information")		<i>L</i> _h	h	> 30000									
Weight incl. standard adapter plate		<i>m</i>	kg	36									
			lb _m	80									
Operating noise (with <i>i</i> =100 and <i>n</i> ₁ =3000 rpm no load)		<i>L</i> _{PA}	dB(A)	≤ 66									
Max. permitted housing temperature			°C	+90									
			F	194									
Ambient temperature			°C	-15 to +40									
			F	5 to 104									
Lubrication				Lubricated for life									
Paint				Blue RAL 5002									
Direction of rotation				Motor and gearhead same direction									
Protection class				IP 65									
Moment of inertia (relates to the drive)	K	38	<i>J</i> _f	kgcm ²	13.5	12.0	11.7	10.6	10.4	9.74	9.68	9.63	9.60
Clamping hub diameter [mm]				10 ⁻³ in.lb.s ²	12.0	10.6	10.4	9.34	9.23	8.62	8.57	8.52	8.49

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

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

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

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

MC

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SP+ 210 MC HIGH SPEED 1-stage

				Standard version MC					Friction optimized version L					
Ratio ^{a)}	<i>i</i>			3	4	5	7	10	3	4	5	7	10	
Max. acceleration torque (max. 1000 cycles per hour)	<i>T</i> _{2B}	Nm		1200	2000	2000	1700	1200	1200	2000	2000	1700	1200	
		in.lb		10620	17700	17700	15045	10620	10620	17700	17700	15045	10620	
cymex®-optimized nominal torque (please contact us regarding the design)	<i>T</i> _{2Ncym}	Nm		- Please contact us -										
		in.lb												
Nominal output torque (with <i>n</i> _{2N})	<i>T</i> _{2N}	Nm		900	1300	1150	1000	800	900	1300	1150	1000	800	
		in.lb		7965	11505	10178	8850	7080	7965	11505	10178	8850	7080	
Emergency stop torque (permitted 1000 times during the service life of the gearhead)	<i>T</i> _{2Not}	Nm		5000	5200	5200	5200	5000	5000	5200	5200	5200	5000	
		in.lb		44250	46020	46020	46020	44250	44250	46020	46020	46020	44250	
Nominal input speed (with <i>T</i> _{2N} and 20°C ambient temperature) ^{b)}	<i>n</i> _{1N}	rpm		2250	2500	3500	3500	3500	2250	2500	3500	3500	3500	
cymex® optimized speed (please contact us regarding the design)	<i>n</i> _{1Ncym}	rpm		–	–	–	–	–	2750	3000	4000	4000	4000	
Max. input speed	<i>n</i> _{1Max}	rpm		3400	6000	6000	6000	6000	6000	6000	6000	6000	6000	
Mean no load running torque (with <i>n</i> _i = 3000 rpm and 20°C gearhead temperature) ^{c)}	<i>T</i> ₀₁₂	Nm		13.0	9.0	6.5	4.0	2.5	5.5	4.9	4.6	4.0	3.4	
		in.lb		115.1	79.7	57.5	35.4	22.1	49	43	41	35	30	
Max. torsional backlash	<i>j</i> _t	arcmin		Standard ≤ 4 / Reduced ≤ 2										
Torsional rigidity	<i>C</i> _{t21}	Nm/ arcmin		400										
		in.lb/ arcmin		3540										
Max. axial force ^{d)}	<i>F</i> _{2AMax}	N		30000					8000					
		lb _f		6750					1800					
Max. radial force ^{d)}	<i>F</i> _{2RMax}	N		21000					2500					
		lb _f		4725					563					
Max. tilting moment	<i>M</i> _{2KMax}	Nm		3100					310					
		in.lb		27435					2744					
Efficiency at full load	η	%		98.5					99.0					
Service life (For calculation, see the Chapter "Information")	<i>L</i> _h	h		> 30000										
Weight incl. standard adapter plate	<i>m</i>	kg		56										
		lb _m		124										
Operating noise (with <i>i</i> =10 and <i>n</i> _i =3000 rpm no load)	<i>L</i> _{PA}	dB(A)		< 64										
Max. permitted housing temperature			°C		+90									
			F		194									
Ambient temperature			°C		-15 to +40									
			F		5 to 104									
Lubrication				Lubricated for life										
Paint				Blue RAL 5002										
Direction of rotation				Motor and gearhead same direction										
Protection class				IP 65					IP 52					
Moment of inertia (relates to the drive)	N	55	<i>J</i> _i	kgcm ²	139.0	94.3	76.9	61.5	53.1	139.0	94.3	76.9	61.5	53.1
Clamping hub diameter [mm]				10 ⁻³ in.lb.s ²	123.0	83.5	68.1	54.4	47.0	123.0	83.5	68.1	54.4	47.0

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

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

^{c)} Valid for clamping hub diameter of 55 mm

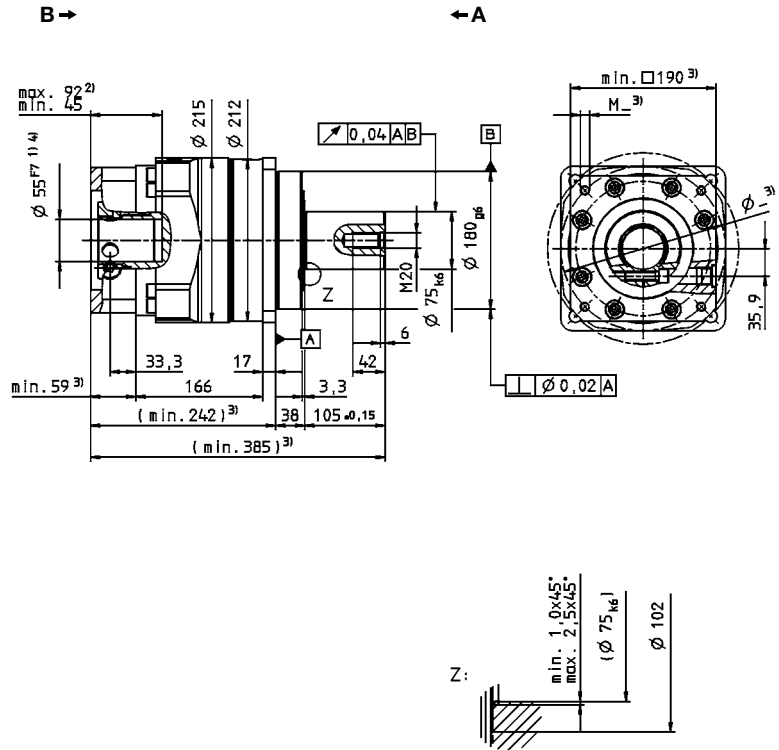
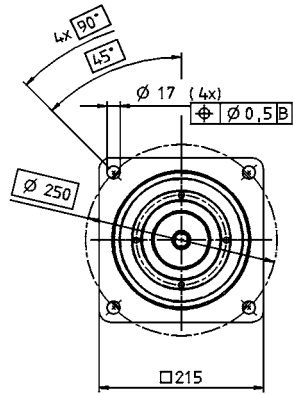
^{d)} Refers to center of the output shaft or flange

View A

View B

Motor shaft diameter [mm]

up to 55 ⁴⁾ (N)
clamping hub
diameter



Planetary gearheads
High End

SP+

MC

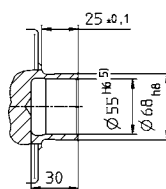
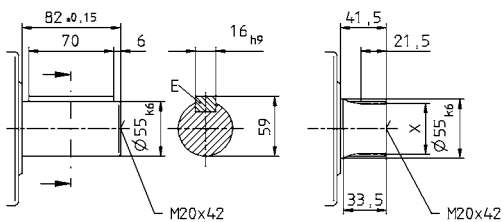
MC-L

Alternatives: Output shaft variants

Keywayed output shaft in mm
E = key as per DIN 6885, sheet 1, form A

Involute gearing DIN 5480 in mm
X = W 55 x 2 x 30 x 26 x 6m, DIN 5480

Shaft mounted
Mounted via shrink disc



Non-tolerated dimensions ± 1 mm

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length.
Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
- 5) Tolerance h6 for mounted shaft.



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



Motor mounting according to operating manual

SP+ 210 MC HIGH SPEED 2-stage

				2-stage									
Ratio ^{a)}	<i>i</i>			16	20	25	28	35	40	50	70	100	
Max. acceleration torque (max. 1000 cycles per hour)	<i>T</i> _{2B}	Nm		1680	1800	2000	1680	1920	1040	1300	1700	1200	
		in.lb		14868	15930	17700	14868	16992	9204	11505	15045	10620	
cymex®-optimized nominal torque (please contact us regarding the design)	<i>T</i> _{2Ncym}	Nm		- Please contact us -									
		in.lb											
Nominal output torque (with <i>n</i> _{in})	<i>T</i> _{2N}	Nm		840	780	975	780	975	800	1000	1000	800	
		in.lb		7434	6903	8629	6903	8629	7080	8850	8850	7080	
Emergency stop torque (permitted 1000 times during the service life of the gearhead)	<i>T</i> _{2Not}	Nm		5200	5200	5200	5200	5200	5200	5200	5200	5000	
		in.lb		46020	46020	46020	46020	46020	46020	46020	46020	44250	
Nominal input speed (with <i>T</i> _{2N} and 20°C ambient temperature) ^{b)}	<i>n</i> _{1N}	rpm		3500	4500	4500	4500	4500	4500	4500	4500	4500	
Max. input speed	<i>n</i> _{1Max}	rpm		6000	6000	6000	6000	6000	6000	6000	6000	6000	
Mean no load running torque (with <i>n</i> ₁ = 2000 rpm and 20°C gearhead temperature)	<i>T</i> ₀₁₂	Nm		3.0	2,5	2,5	2,0	2,0	1,5	1,5	1,5	1,5	
		in.lb		27	22	22	18	18	13	13	13	13	
Max. torsional backlash	<i>i</i> _t	arcmin		Standard ≤ 4 / Reduced ≤ 2									
Torsional rigidity	<i>C</i> _{t21}	Nm/ arcmin		400									
		in.lb/ arcmin		3540									
Max. axial force ^{c)}	<i>F</i> _{2AMax}	N		30000									
		lb _f		6750									
Max. radial force ^{c)}	<i>F</i> _{2RMax}	N		21000									
		lb _f		4725									
Max. tilting moment	<i>M</i> _{2KIMax}	Nm		3100									
		in.lb		27435									
Efficiency at full load	η	%		96.5									
Service life (For calculation, see the Chapter "Information")	<i>L</i> _h	h		> 30000									
Weight incl. standard adapter plate	<i>m</i>	kg		53									
		lb _m		117									
Operating noise (with <i>i</i> =10 and <i>n</i> ₁ = 2000 rpm no load)	<i>L</i> _{PA}	dB(A)											
Max. permitted housing temperature	°C												
	F												
Ambient temperature	°C			-15 to +40									
	F			32 to 194									
Lubrication				Lubricated for life									
Paint				Blue RAL 5002									
Direction of rotation				Motor and gearhead same direction									
Protection class													
Moment of inertia (relates to the drive)	M	48	<i>J</i> ₁	kgcm ²	34.5	31.5	30.8	30.0	29.7	28.5	28.3	28.1	28.0
				10 ⁻³ in.lb.s ²	30.5	27.9	27.3	26.6	26.3	25.2	25.0	24.9	24.8
Clamping hub diameter (mm)													

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

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

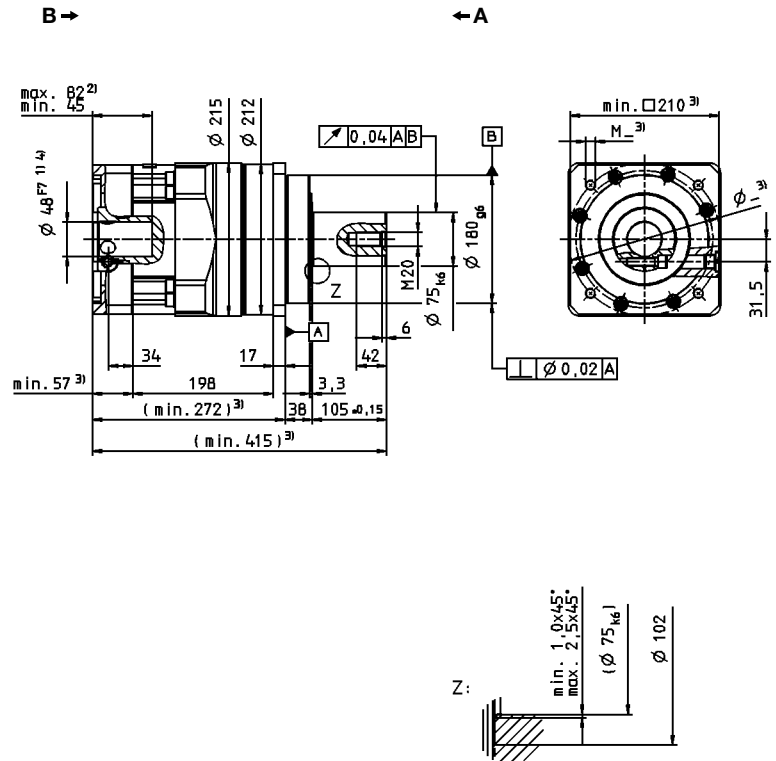
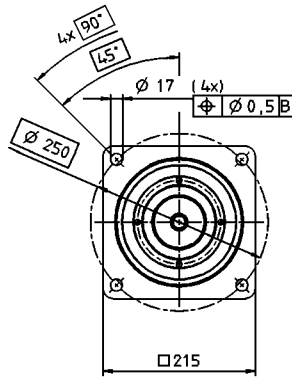
^{c)} Refers to center of the output shaft or flange

View A

View B

Motor shaft diameter [mm]

up to 48 ⁴⁾ (M)
clamping hub
diameter



Planetary gearheads
High End

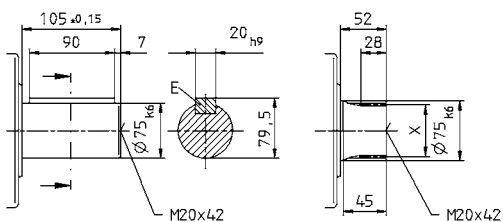
SP+

MC

Alternatives: Output shaft variants

Keywayed output shaft in mm
E = key as per DIN 6885, sheet 1, form A

Involute gearing DIN 5480 in mm
X = W 70 x 2 x 30 x 34 x 6m, DIN 5480



Non-tolerated dimensions ± 1.5 mm

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

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

Motor mounting according to operating manual

SP+ 240 MC HIGH SPEED 1-stage

				Standard version MC					Friction optimized version L					
Ratio ^{a)}	<i>i</i>			3	4	5	7	10	3	4	5	7	10	
Max. acceleration torque (max. 1000 cycles per hour)	<i>T</i> _{2B}	Nm		1750	3500	3600	2700	1800	1750	3500	3600	2700	1800	
		in.lb		15488	30975	31860	23895	15930	15488	30975	31860	23895	15930	
cymex®-optimized nominal torque (please contact us regarding the design)	<i>T</i> _{2Ncym}	Nm		- Please contact us -										
		in.lb												
Nominal output torque (with <i>n</i> _N)	<i>T</i> _{2N}	Nm		1400	1960	1770	1500	1100	1400	1960	1770	1500	1100	
		in.lb		12390	17346	15665	13275	9735	12390	17346	15665	13275	9735	
Emergency stop torque (permitted 1000 times during the service life of the gearhead)	<i>T</i> _{2Not}	Nm		6800	8500	8500	8500	6800	6800	8500	8500	8500	6800	
		in.lb		60180	75225	75225	75225	60180	60180	75225	75225	75225	60180	
Nominal input speed (with <i>T</i> _{2N} and 20°C ambient temperature) ^{b)}	<i>n</i> _{1N}	rpm		1750	2250	3000	3000	3000	1750	2250	3000	3000	3000	
cymex® optimized speed (please contact us regarding the design)	<i>n</i> _{1Ncym}	rpm		–	–	–	–	–	2250	2750	3500	3500	3500	
Max. input speed	<i>n</i> _{1Max}	rpm		3400	4000	5000	5000	5000	3400	5000	5000	5000	5000	
Mean no load running torque (with <i>n</i> ₁ = 3000 rpm and 20°C gearhead temperature) ^{c)}	<i>T</i> ₀₁₂	Nm		24	18	13	7.0	5.0	8.0	7.0	6.0	5.0	4.2	
		in.lb		212	159	115	62	44	71	62	53	44	37	
Max. torsional backlash	<i>j</i> _t	arcmin		Standard ≤ 4 / Reduced ≤ 2										
Torsional rigidity	<i>C</i> _{t21}	Nm/ arcmin		550										
		in.lb/ arcmin		4868										
Max. axial force ^{d)}	<i>F</i> _{2AMax}	N		33000					10000					
		lb _f		7425					2250					
Max. radial force ^{d)}	<i>F</i> _{2RMax}	N		30000					2000					
		lb _f		6750					450					
Max. tilting moment	<i>M</i> _{2KMax}	Nm		5000					280					
		in.lb		44250					2478					
Efficiency at full load	η	%		98.5					99					
Service life (For calculation, see the Chapter “Information”)	<i>L</i> _h	h		> 30000										
Weight incl. standard adapter plate	<i>m</i>	kg		77										
		lb _m		170										
Operating noise (with <i>i</i> =10 and <i>n</i> ₁ = 3000 rpm no load)	<i>L</i> _{PA}	dB(A)		≤ 66										
Max. permitted housing temperature	°C			+90										
	F			194										
Ambient temperature	°C			-15 to +40										
	F			5 to 104										
Lubrication				Lubricated for life										
Paint				Blue RAL 5002										
Direction of rotation				Motor and gearhead same direction										
Protection class				IP 65					IP 52					
Moment of inertia (relates to the drive)	O	60	<i>J</i> ₁	kgcm ²	260.2	198.2	163.0	138.3	124.7	260.2	198.2	163.0	84.4	70.8
Clamping hub diameter [mm]				10 ⁻³ in.lb.s ²	230.3	175.4	144.3	122.4	110.4	230.3	175.4	144.3	74.7	62.7

Reduced mass moments of inertia available on request.

^{a)} Other ratios available on request

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

^{c)} Valid for clamping hub diameter of 60 mm

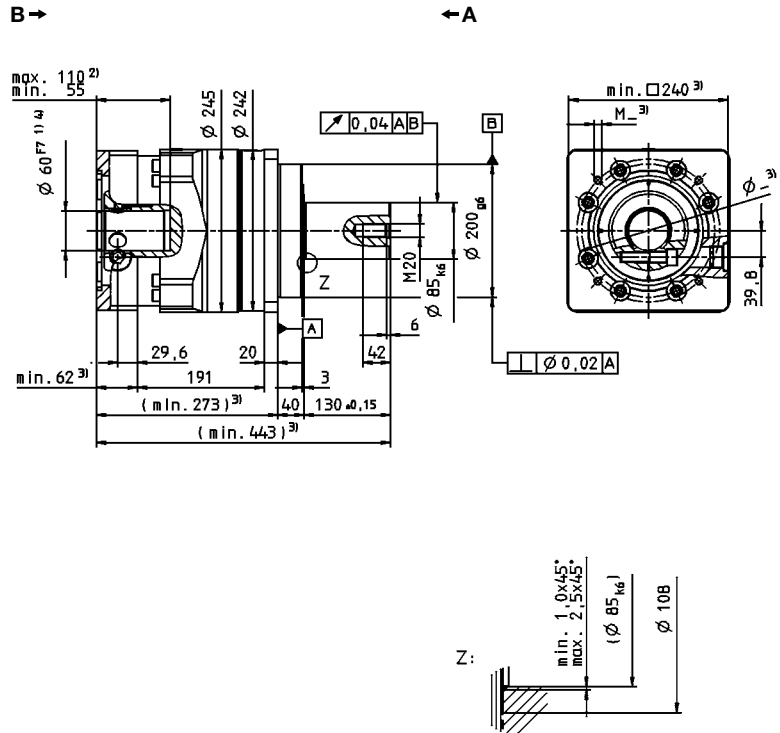
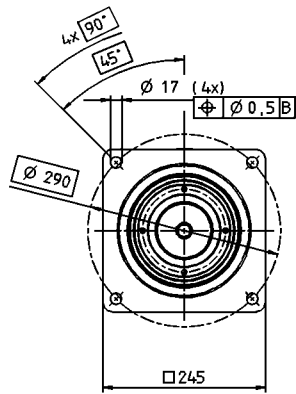
^{d)} Refers to center of the output shaft or flange

View A

View B

Motor shaft diameter [mm]

up to 60 ⁴⁾ (O)
clamping hub diameter



Planetary gearheads
High End

SP+

MC

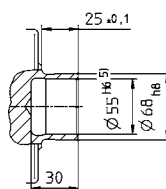
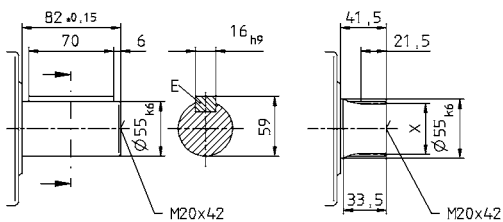
MC-L

Alternatives: Output shaft variants

Keywayed output shaft in mm
E = key as per DIN 6885, sheet 1, form A

Involute gearing DIN 5480 in mm
X = W 55 x 2 x 30 x 26 x 6m, DIN 5480

Shaft mounted
Mounted via shrink disc



Non-tolerated dimensions ± 1 mm

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length.
Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
- 5) Tolerance h6 for mounted shaft.



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Motor mounting according to operating manual

SP+ 240 MC HIGH SPEED 2-stage

				2-stage									
Ratio ^{a)}	<i>i</i>			16	20	25	28	35	40	50	70	100	
Max. acceleration torque (max. 1000 cycles per hour)	<i>T</i> _{2B}	Nm		3500	3500	3600	2900	3600	1680	2100	2700	1800	
		in.lb		30975	30975	31860	25665	31860	14868	18585	23895	15930	
cymex®-optimized nominal torque (please contact us regarding the design)	<i>T</i> _{2Ncym}	Nm		- Please contact us -									
		in.lb											
Nominal output torque (with <i>n</i>_{2N})	<i>T</i> _{2N}	Nm		1790	1770	1730	1840	1930	1300	1625	1500	1100	
		in.lb		15842	15665	15311	16284	17081	11505	14381	13275	9735	
Emergency stop torque (permitted 1000 times during the service life of the gearhead)	<i>T</i> _{2Not}	Nm		8500	8500	8500	8500	8500	8500	8500	8500	6800	
		in.lb		75225	75225	75225	75225	75225	75225	75225	75225	60180	
Nominal input speed (with <i>T</i>_{2N} and 20°C ambient temperature) ^{b)}	<i>n</i> _{1N}	rpm		3500	4500	4500	4500	4500	4500	4500	4500	4500	
Max. input speed	<i>n</i> _{1Max}	rpm		6000	6000	6000	6000	6000	6000	6000	6000	6000	
Mean no load running torque (with <i>n</i>₁ = 2000 rpm and 20°C gearhead temperature)	<i>T</i> ₀₁₂	Nm		5,0	4,5	4,0	3,5	3,0	2,5	2,5	2,5	2,0	
		in.lb		44	40	35	31	27	22	22	22	18	
Max. torsional backlash	<i>j</i> _t	arcmin		Standard ≤ 4 / Reduced ≤ 2									
Torsional rigidity	<i>C</i> _{t21}	Nm/ arcmin		550									
		in.lb/ arcmin		4868									
Max. axial force ^{c)}	<i>F</i> _{2AMax}	N		33000									
		lb _f		7425									
Max. radial force ^{c)}	<i>F</i> _{2RMax}	N		30000									
		lb _f		6750									
Max. tilting moment	<i>M</i> _{2KMax}	Nm		5000									
		in.lb		44250									
Efficiency at full load	η	%		96.5									
Service life (For calculation, see the Chapter "Information")	<i>L</i> _h	h		> 30000									
Weight incl. standard adapter plate	<i>m</i>	kg		76									
		lb _m		168									
Operating noise (with <i>i</i>=10 and <i>n</i>₁=3000 rpm no load)	<i>L</i> _{PA}	dB(A)		≤ 66									
Max. permitted housing temperature			°C	+90									
			F	194									
Ambient temperature			°C	-15 to +40									
			F	5 to 104									
Lubrication				Lubricated for life									
Paint				Blue RAL 5002									
Direction of rotation				Motor and gearhead same direction									
Protection class				IP 65									
Moment of inertia (relates to the drive) Clamping hub diameter [mm]	M	48	<i>J</i> ₁	kgcm ²	39.2	34.6	33.2	30.5	29.7	28.2	27.9	27.6	27.5
				10 ⁻² in.lb.s ²	34.7	30.6	29.4	27.0	26.3	25.0	24.7	24.4	24.3

Reduced mass moments of inertia available on request.

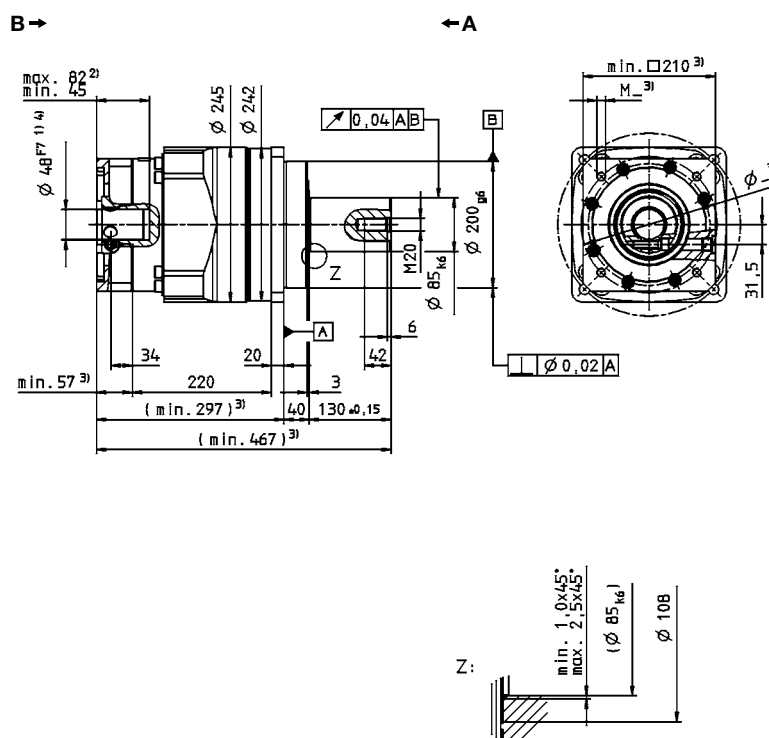
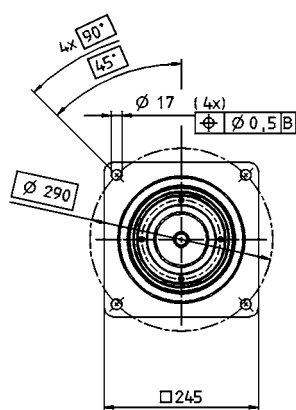
^{a)} Other ratios available on request

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

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

Motor shaft diameter [mm]

up to 48 ⁴⁾ (M)
clamping hub
diameter



Planetary gearheads High End

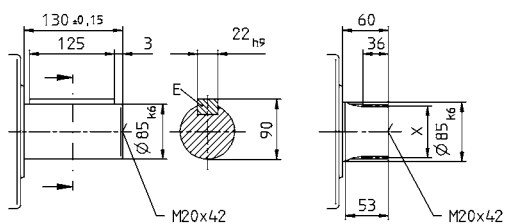
 $\frac{d}{ds}$

MC

Alternatives: Output shaft variants

Keywayed output shaft in mm
E = key as per DIN 6885, sheet 1, form A

Involute gearing DIN 5480 in mm
X = W 80 x 2 x 30 x 38 x 6m, DIN 5480



Non-tolerated dimensions ± 1.5 mm

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



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



Motor mounting according to operating manual