

Gear Boxes





WITTENSTEIN | alpha

Delivering precision in motion. As manufacturer of the world's first precision planetary gearbox, WITTENSTEIN continues to create cutting-edge engineered technology for - industrial, energy, aerospace, simulation and beyond.

Wittenstein is committed to being a world-class partner for customers of its intelligent mechatronic drive technology, servo systems and mechanical components. By using the power of science, innovation and forward thinking engineering, the Company strives to provide cutting-edge technology for today's motion.

Since pioneering the alpha servo planetary gear reducer in 1983, support and motion requirements from the market have continued to change and Wittenstein is well positioned to deliver reliable products and services to its customers and partners.

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SP+ Planetary Gearbox



SP+ Planetary Gearbox
Alpha's all-rounder planetary gearbox, with high torsional rigidity, high torque capacity, and low backlash. Options include high speed, washdown, ATEX, and food-grade versions. Smooth, keyed or involute output shafts available. The MF version is optimised for higher torques and cyclic operation, while the MC version has been optimised for higher speeds and continuous operation.

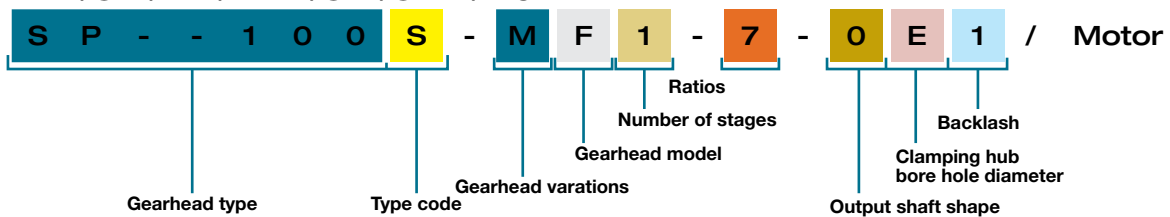
MF	060	075	100	140	180	210	240
Max Acceleration Torque (T2B) in Nm	30-42	85-110	225-315	390-660	970-1210	1600-2500	2750-4500
Nominal Output Torque (T2N) in Nm	17-26	47-75	120-180	200-360	530-750	1520-1900	1500-2500
Emergency Stop	80-100	200-250	500-625	1000-1250	2200-2750	5000-5200	6800-8500
Maximum Input Speed	6000	6000	4500	4000	3500	2500-3500	2200-3500
Nominal Input Speed	3300-5500	2900-4500	2500-4200	2100-3900	1500-3400	1200-3000	1000-2800
MC	075	100	140	180	210	240	
Max Acceleration Torque (T2B) in Nm		68-90	180-240	310-480	700-880	1200-2000	1680-3600
Nominal Output Torque (T2N) in Nm		28-60	225-300	130-290	290-450	800-1300	1100-1960
Emergency Stop		200-250	500-625	1000-1250	2200-2750	5000-5200	6800-8500
Maximum Input Speed		6000	6000	6000	4500-6000	2250-4500	3400-6000
Nominal Input Speed		4500	3500-4500	3000-3500	3000-4500	3400-6000	1750-4500



TP+ Planetary Gearbox
Alpha's top performing planetary gearbox. With the highest torque capacity, torsional rigidity, axial load capacity and power density. Less than 1 arcmin backlash is available for the highest positioning accuracy. Flanged output as standard, optional shaft version is available. Options include washdown, food grade version, and integrated sensors. The MA version has been optimised for even higher torque capacity and torsional rigidity.


MF	004	010	025	050	110	300	500
Max Acceleration Torque (T2B) in Nm	32-55	80-143	265-380	540-700	1500-2000	1900-3500	3400-6000
Nominal Output Torque (T2N) in Nm	15-40	35-90	120-220	240-370	1300-1600	1000-2500	1700-3800
Emergency Stop	100	250	625	1250	2750	8750	15000
Maximum Input Speed	6000	6000	6000	4000-5000	3500-4000	2500-3500	2200-3500
Nominal Input Speed	4000-5500	2600-4500	2300-4200	1900-3900	1400-3400	1000-2500	900-2200
MA		230	480-530	950	2000-3100	3900-5500	7200-10000
Max Acceleration Torque (T2B) in Nm		230	480-530	950	2000-3100	3900-5500	7200-10000
Nominal Output Torque (T2N) in Nm		180	260-375	575-675	1400-1750	2200-3500	3500-6000
Emergency Stop		525	1020	2375	6500	8750-13250	15000-25000
Maximum Input Speed		6000	6000	5000	4500	2500-3500	2500-3500
Nominal Input Speed		4000-4500	3500-4000	3000-3500	2500-3000	1000-2000	900-1500


TP+/SP+/TK+/TPK+/SK+/SPK+/HG+

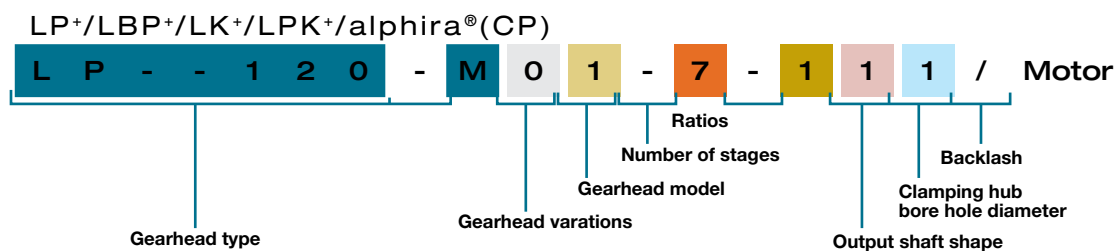


Gearhead type	Type code	Gearhead variations	Gearhead model	Number of stages	Ratios	Output shape	Clamping hub bore hole diameter	Number of stages
TP 004 - TP 500 SP 060 - SP 240 TK+ 004 - TK+ 110 TK+ 010 - TK+ 110 SK+ 060 - SK+ 180 SPK+ 075 - SPK+ 180 HG+ 060 - HG+ 180	S = Standard F = Food Lubrication G = Grease W = Washdown (SP+, TP+, SPK+, TPK+)	M = Motor attachment gearhead	A = High Torque (only TP+) C = High Speed (only SP+) F = Standard	1 = 1 - stage 2 = 2 - stage 3 = 3 - stage (only with High Torque)	See technical data sheets	0 = smooth shaft flange 1 = shaft with key 2 = involute to DIN 5480 3 = system output 4 = other 5 = hollow shaft	(See technical data sheets and clamping hub diameter table)	1 Standard 0 = Reduced

SP+ Planetary Gearbox

	LP+ Planetary Gearbox Alpha's Value line of planetary gearbox with high speed capacity, low backlash and high efficiency. NEMA flanged versions and food grade versions are available. Choose from smooth or keyed output shaft, or the LPB version with an output flange. Optional compact belt pulley is available for the LPB version.					
	LP+	050	070	090	120	155
	Max Acceleration Torque (T2B) in Nm	11-12	32-35	80-90	200-220	350-450
	Nominal Output Torque (T2N) in Nm	5.2-5.7	16-18	40-45	100-110	190-320
	Emergency Stop	26	65-75	185-190	400-480	1000
	Maximum Input Speed	8000	6000	6000	4800	3600
	Nominal Input Speed	4000	3700	3400	2600	2000
	LPB+		070	090	120	
	Max Acceleration Torque (T2B) in Nm		32-35	80-90	200-220	
	Nominal Output Torque (T2N) in Nm		16-18	40-45	100-110	
	Emergency Stop		65-75	185-190	400-480	
	Maximum Input Speed		3700	6000	4800	
	Nominal Input Speed		6000	3400	2600	

	Alpha (CP) Planetary Gearbox Alpha's basic class of planetary gearboxes. Still with good positioning accuracy, rigidity and power density. Capable of very high input speeds. The ideal gearbox for simple servo applications.				
	MF	040	060	080	115
	Max Acceleration Torque (T2B) in Nm	10.5-11.5	29-32	72-80	180-200
	Nominal Output Torque (T2N) in Nm	5.2-5.7	15-16	35-40	90-100
	Emergency Stop	26	75	190	480
	Maximum Input Speed	8000	6000	6000	4800
	Nominal Input Speed	4000	3700	3400	2600



Gearhead type	Gearhead variations	Gearhead model	Number of stages	Ratios	Output shape	Clamping hub bore hole diameter	Backlash
LP 050 - LP 155 LPB 070 - LPB 120 LK 050 - LK 155 LPK 050 - LPK 155 CP 40 - CP 155	M = Motor attachment gearhead	O = Standard L = Food-grade grease (LP+, LPB+, LK+, LPK+)	1 = 1 - stage 2 = 2 - stage 3 = 3 - stage (LPK+)	See technical data sheets	0 = smooth shaft (for LP+ models only; LP+ smooth shaft available with reduced torsional backlash only). 1 = shaft with key LPB+ 1 = Centering on output side 3 = centering on motor side. (see technical sheets).	1 = Standard 2 = Large clamping hub (only LP and LPB) (see technical data sheets).	1 = Standard (not LP+ with smooth shaft) 0 = Reduced (LP+/LPB+ only)

Low backlash planetary gearheads

Alpheno

TP+

SP+

LP+

Alphira



Servo right angle gearheads

TK+

TPK+

SK+

SPK+

HG+

LK+

LPK+

V-Drive+



Mechanical systems

Alpha Rack & Pinion Systemm

Alpha IQ

Couplings



Other products available from Wittenstein

Cymex

WITTENSTEIN se

TPM

TPM/TPMA

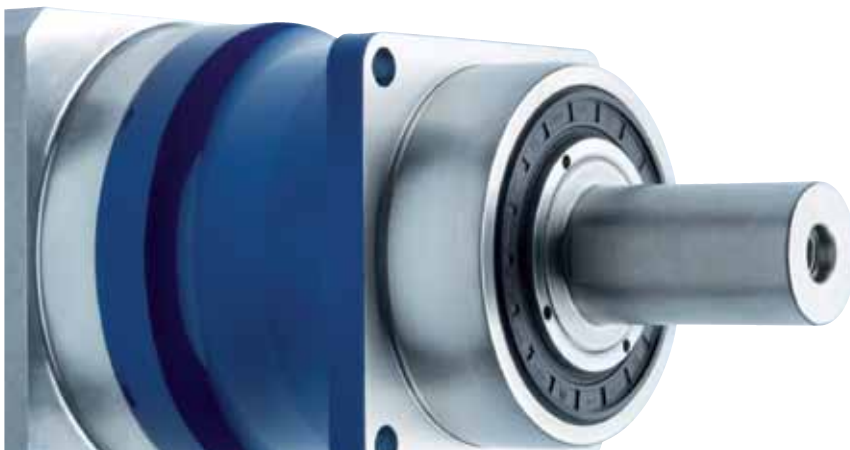
ECD

EPM



SP+ MF – The new generation

The classic all-rounder among planetary gearheads



MF version

Designed for:

- Cyclic applications
- Reverse operation
- Highly dynamic applications
- Greater positioning accuracy

SP+

Specifications \ Version	SP+ MF		
	+	++	+++
Positioning accuracy			
Rigidity			
Smooth-running			
Speed capacity			
Power density			
Max. axial/radial forces			

SP+ 060 MF 1-stage

			1-stage						
Ratio ^{a)}	<i>i</i>		3	4	5	7	10		
cymex®-optimized acceleration torque <small>(please contact us regarding the design)</small>	T_{2Bcym}	Nm	–	58	60	54	–		
		in.lb	–	513	531	478	–		
Max. acceleration torque <small>(max. 1000 cycles per hour)</small>	T_{2B}	Nm	30	42	42	42	32		
		in.lb	266	372	372	372	283		
Nominal output torque <small>(with n_{1N})</small>	T_{2N}	Nm	17	26	26	26	17		
		in.lb	150	230	230	230	150		
Emergency stop torque <small>(permitted 1000 times during the service life of the gearhead)</small>	T_{2Not}	Nm	80	100	100	100	80		
		in.lb	708	885	885	885	708		
Nominal input speed <small>(with n_{2N} and 20°C ambient temperature) ^{b)}</small>	n_{1N}	rpm	3300	3300	3300	4000	4000		
Max. input speed	n_{1max}	rpm	6000	6000	6000	6000	6000		
Mean no load running torque <small>(with $n_1 = 3000$ rpm and 20°C gearhead temperature) ^{c)}</small>	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	3.5						
		in.lb/arcmin	31						
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_{2KMMax}	Nm	152						
		in.lb	1345						
Efficiency at full load	η	%	97						
Service life <small>(For calculation, see the Chapter "Information")</small>	L_h	h	> 20000						
Weight incl. standard adapter plate	m	kg	1.9						
		lb _m	4.2						
Operating noise <small>(with $i=10$ and $n_1 = 3000$ rpm no load)</small>	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 <small>(relates to the drive)</small>	B	11	J_1	kgcm ²	0.21	0.15	0.12	0.10	0.09
				10 ² 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 ² 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 ² 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

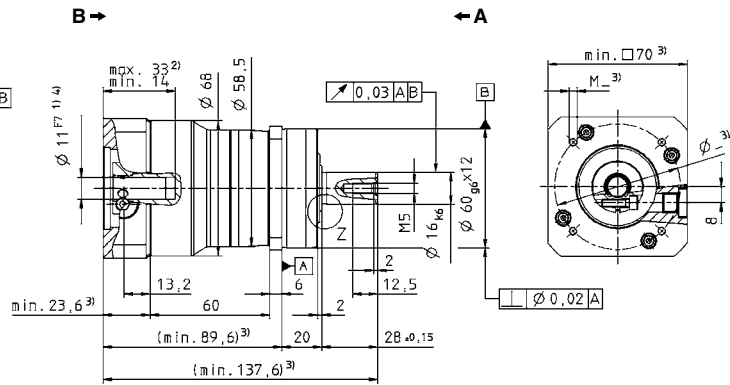
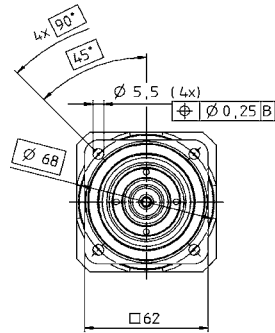
^{c)} Valid for clamping hub diameter of 14 mm

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

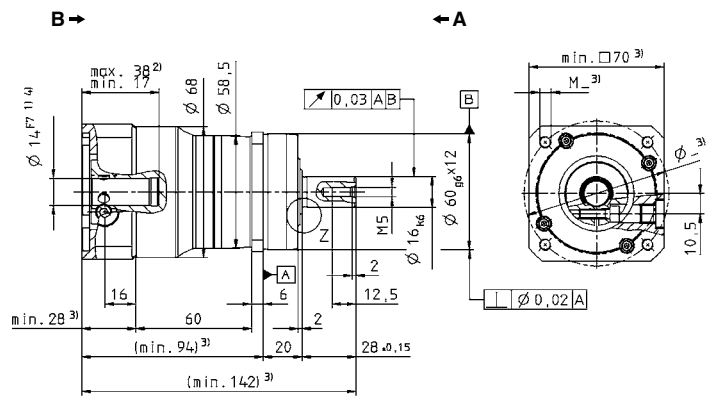
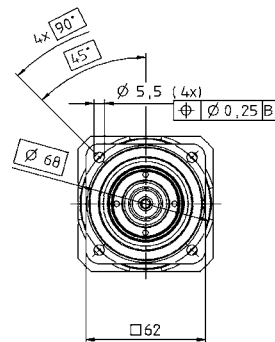
View A

View B

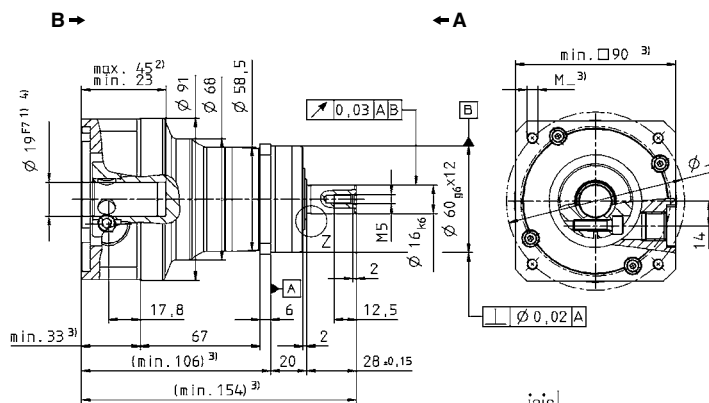
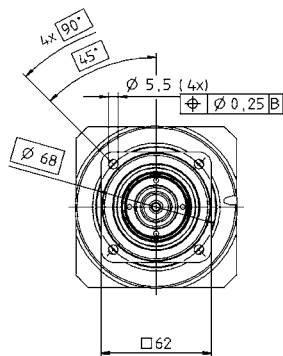
up to 11⁴⁾ (B)
clamping hub
diameter



up to 14⁴⁾ (C)
clamping hub
diameter¹⁾



up to 19⁴⁾ (E)
clamping hub
diameter

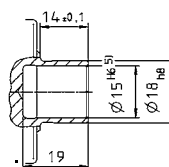
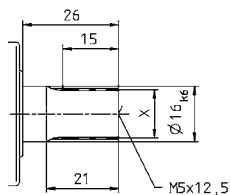
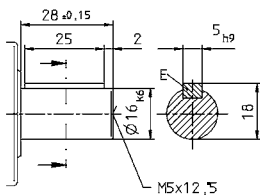


Alternatives: Output shaft variants

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) Checkmotor shaft fit.
- 2) Min./Max permissible motor shaftlength.
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 h9 for mounted shaft.

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 <small>(please contact us regarding the design)</small>	T_{2Bcym}	Nm	58	58	60	58	60	58	60	54	–		
		in.lb	513	513	531	513	531	513	531	478	–		
Max. acceleration torque <small>(max. 1000 cycles per hour)</small>	T_{2B}	Nm	42	42	42	42	42	42	42	42	32		
		in.lb	372	372	372	372	372	372	372	372	283		
Nominal output torque <small>(with n_{1N})</small>	T_{2N}	Nm	26	26	26	26	26	26	26	26	17		
		in.lb	230	230	230	230	230	230	230	230	150		
Emergency stop torque <small>(permitted 1000 times during the service life of the gearhead)</small>	T_{2Not}	Nm	100	100	100	100	100	100	100	100	80		
		in.lb	885	885	885	885	885	885	885	885	708		
Nominal input speed <small>(with n_{2N} and 20°C ambient temperature) ^{b)}</small>	n_{1N}	rpm	4400	4400	4400	4400	4400	4400	4800	5500	5500		
Max. input speed	n_{1max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000		
Mean no load running torque <small>(with $n_1=3000$ rpm and 20°C gearhead temperature) ^{c)}</small>	T_{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	1.8		
Max. torsional backlash	j_t	arcmin	Standard ≤ 6 / Reduced ≤ 4										
Torsional rigidity	C_{t21}	Nm/arcmin	3.5										
		in.lb/arcmin	31.0										
Max. axial force ^{d)}	F_{2AMax}	N	2400										
		lb _f	540										
Max. radial force ^{d)}	F_{2RMax}	N	2800										
		lb _f	630										
Max. tilting moment	M_{2KMax}	Nm	152										
		in.lb	1345										
Efficiency at full load	η	%	94										
Service life <small>(For calculation, see the Chapter "Information")</small>	L_n	h	> 20000										
Weight incl. standard adapter plate	<i>m</i>	kg	2.0										
		lb _m	4.4										
Operating noise <small>(with $i=100$ and $n_1=3000$ rpm no load)</small>	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 <small>(relates to the drive)</small>	B	11	J_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	J_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

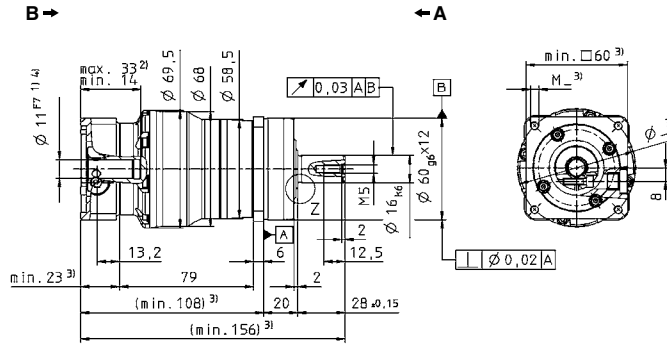
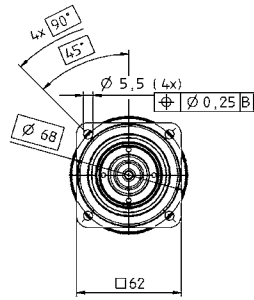
^{d)} Refers to center of the output shaft or flange

View A

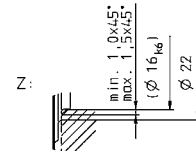
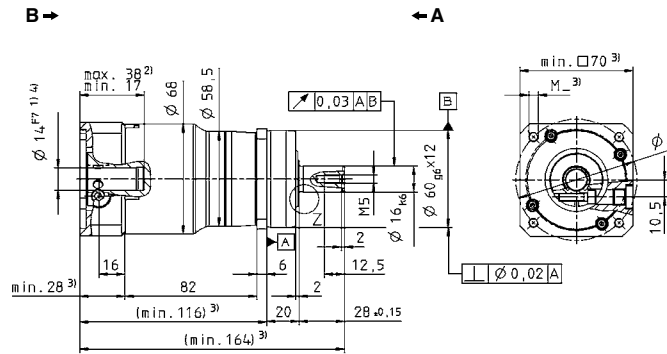
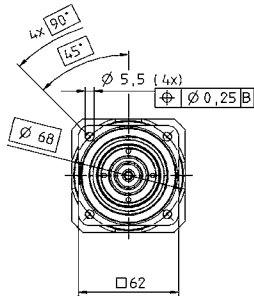
View B

Motor shaft diameter [mm]

up to 11⁴⁾ (B)
clamping hub diameter



up to 14⁴⁾ (C)
clamping hub diameter

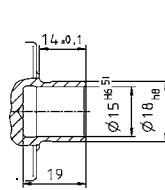
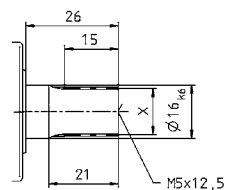
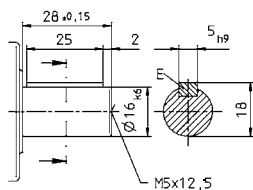


Alternatives: Output shaft variants

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.

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_{1N})	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 n_{1N} 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)}	$T_{01/2}$	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_{tZ1}	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_n	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

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 <small>(please contact us regarding the design)</small>	T_{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 <small>(max. 1000 cycles per hour)</small>	T_{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 <small>(with n_{2N})</small>	T_{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 <small>(permitted 1000 times during the service life of the gearhead)</small>	T_{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 <small>(with T_{2N} and 20°C ambient temperature) ^{b)}</small>	n_{1N}	rpm	3500	3500	3500	3500	3500	3500	3800	4500	4500		
Max. input speed	n_{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000		
Mean no load running torque <small>(with $n_1=3000$ rpm and 20°C gearhead temperature) ^{c)}</small>	T_{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	j_t	arcmin	Standard ≤ 6 / Reduced ≤ 4										
Torsional rigidity	C_{21}	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_{2KMMax}	Nm	236										
		in.lb	2089										
Efficiency at full load	η	%	94										
Service life <small>(For calculation, see the Chapter "Information")</small>	L_h	h	> 20000										
Weight incl. standard adapter plate	m	kg	3.6										
		lb _m	8.0										
Operating noise <small>(with $i=100$ and $n_1=3000$ rpm no load)</small>	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 <small>(relates to the drive)</small>	B	11	J_1	kgcm ²	0.16	0.13	0.13	0.10	0.10	0.091	0.090	0.089	0.089
				10 ² 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	J_1	kgcm ²	0.23	0.20	0.20	0.18	0.18	0.17	0.16	0.16	0.16
				10 ² in.lb.s ²	0.20	0.18	0.18	0.16	0.16	0.15	0.15	0.14	0.14
	E	19	J_1	kgcm ²	0.55	0.53	0.52	0.50	0.50	0.49	0.49	0.49	0.49
				10 ² 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

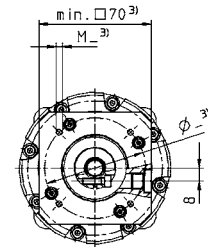
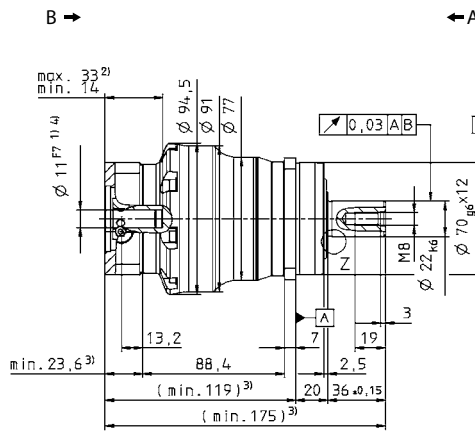
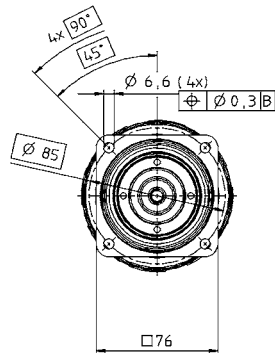
^{c)} Valid for clamping hub diameter of 14 mm

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

View A

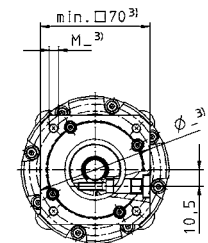
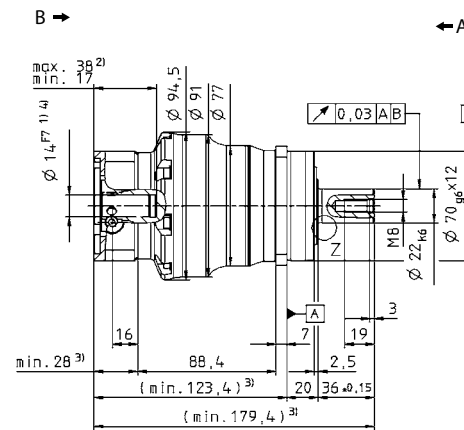
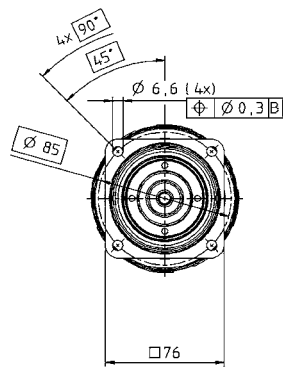
View B

up to 11⁴⁾ (B)
clamping hub
diameter

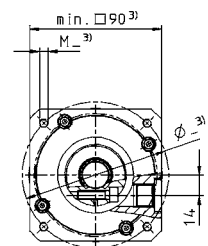
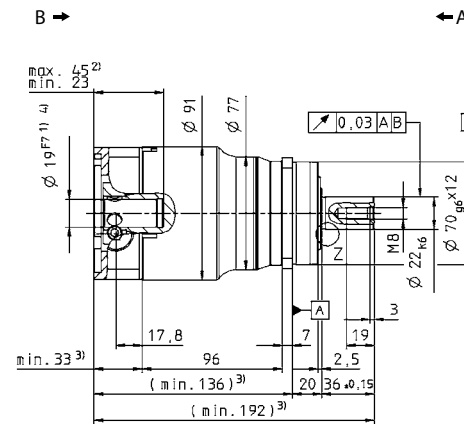
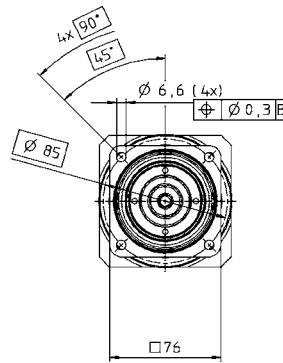


Motor shaft diameter [mm]

up to 14⁴⁾ (C)
clamping hub
diameter

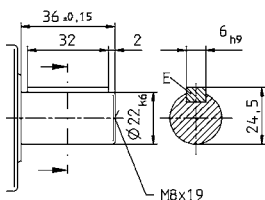


up to 19⁴⁾ (E)
clamping hub
diameter

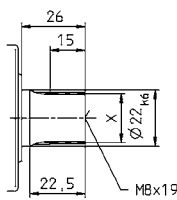


Alternatives: Output shaft variants

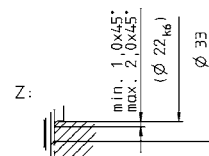
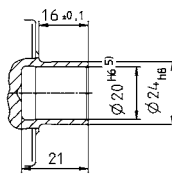
Keywayed output shaft in mm
E = key as per DIN 6885, sheet 1, form A



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.

Motor mounting according to operating manual

SP+ 100 MF 1-stage

		1-stage							
Ratio ^{a)}	<i>i</i>		3	4	5	7	10		
cymex [®] -optimized acceleration torque <small>(please contact us regarding the design)</small>	T_{2Bcym}	Nm	–	370	400	330	260		
		in.lb	–	3275	3540	2921	2301		
Max. acceleration torque <small>(max. 1000 cycles per hour)</small>	T_{2B}	Nm	235	315	315	315	235		
		in.lb	2080	2788	2788	2788	2080		
Nominal output torque <small>(with n_{1N})</small>	T_{2N}	Nm	120	180	175	170	120		
		in.lb	1062	1593	1549	1505	1062		
Emergency stop torque <small>(permitted 1000 times during the service life of the gearhead)</small>	T_{2Not}	Nm	500	625	625	625	500		
		in.lb	4425	5531	5531	5531	4425		
Nominal input speed <small>(with T_{2N} and 20°C ambient temperature) ^{b)}</small>	n_{1N}	rpm	2500	2500	2500	2800	2800		
Max. input speed	n_{1Max}	rpm	4500	4500	4500	4500	4500		
Mean no load running torque <small>(with $n_1 = 3000$ rpm and 20°C gearhead temperature) ^{c)}</small>	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_{2T}	Nm/arcmin	31						
		in.lb/arcmin	274						
Max. axial force ^{d)}	F_{2AMax}	N	5650						
		lb _f	1271						
Max. radial force ^{d)}	F_{2RMMax}	N	6600						
		lb _f	1485						
Max. tilting moment	M_{2KMMax}	Nm	487						
		in.lb	4310						
Efficiency at full load	η	%	97						
Service life <small>(For calculation, see the Chapter "Information")</small>	L_h	h	> 20000						
Weight incl. standard adapter plate	m	kg	7.7						
		lb _m	17.0						
Operating noise <small>(with $i=10$ and $n_1 = 3000$ rpm no load)</small>	L_{PA}	dB(A)	≤ 64						
Max. permitted housing temperature	°C		+90						
	F		17.0						
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 <small>(relates to the drive)</small>	E	19	J_1	kgcm ²	3.29	2.35	1.92	1.60	1.38
				10 ³ 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 ³ 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 ³ 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 ³ 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

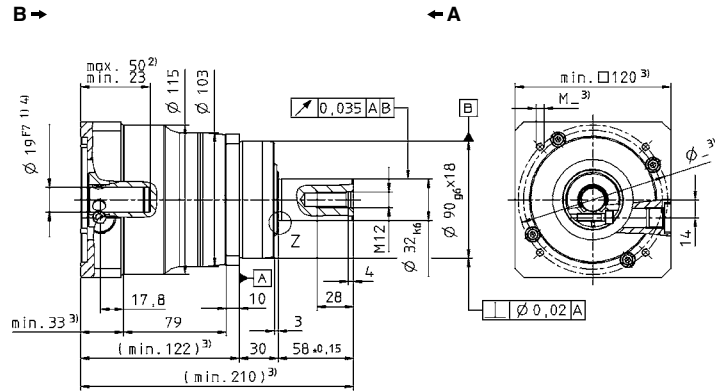
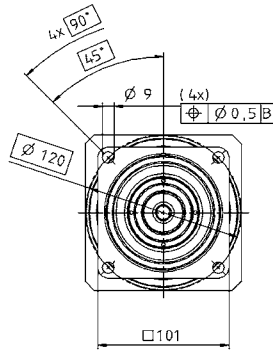
^{c)} Valid for clamping hub diameter of 24 mm

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

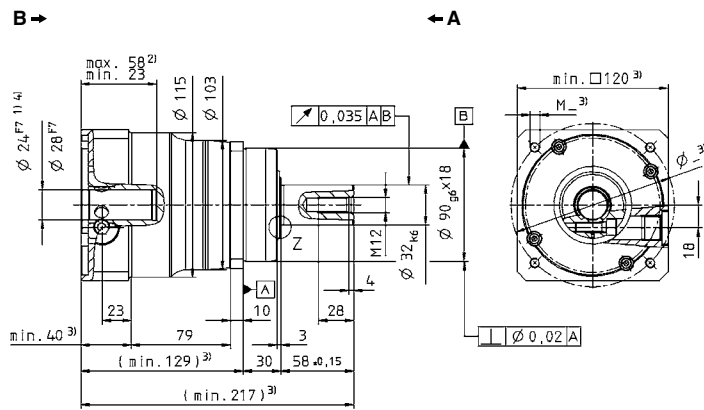
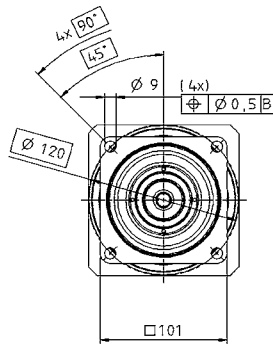
View A

View B

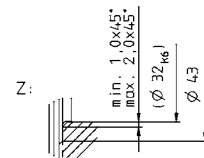
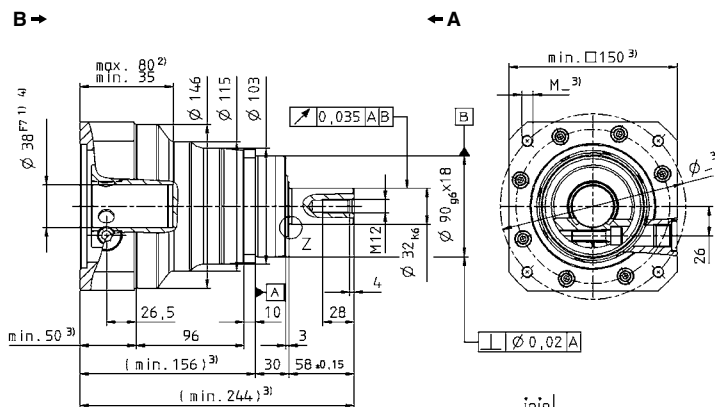
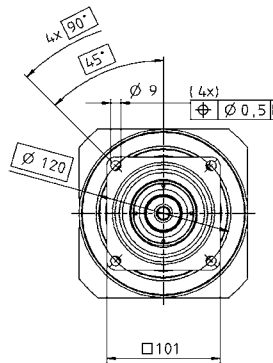
up to 19⁴⁾ (E)
clamping hub diameter



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



up to 38⁴⁾ (K)
clamping hub diameter

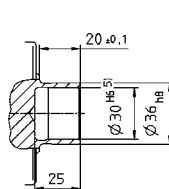
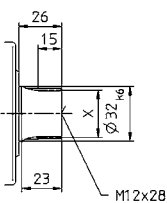
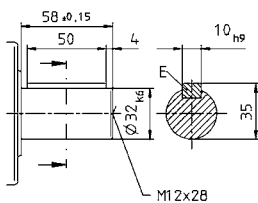


Alternatives: Output shaft variants

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.

Motor mounting according to operating manual

SP+ 100 MF 2-stage

			2-stage										
Ratio ^{a)}	i		16	20	25	28	35	40	50	70	100		
cymex [®] -optimized acceleration torque <small>(please contact us regarding the design)</small>	T_{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 <small>(max. 1000 cycles per hour)</small>	T_{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 <small>(with n_{2N})</small>	T_{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 <small>(permitted 1000 times during the service life of the gearhead)</small>	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 <small>(with T_{2N} and 20°C ambient temperature) ^{b)}</small>	n_{1N}	rpm	3100	3100	3100	3100	3100	3100	3500	4200	4200		
Max. input speed	n_{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000		
Mean no load running torque <small>(with $n_1=3000$ rpm and 20°C gearhead temperature) ^{c)}</small>	T_{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	j_t	arcmin	Standard ≤ 5 / Reduced ≤ 3										
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	%	94										
Service life <small>(For calculation, see the Chapter "Information")</small>	L_h	h	> 20000										
Weight incl. standard adapter plate	m	kg	7.9										
		lb _m	17.5										
Operating noise <small>(with $i=100$ and $n_1=3000$ rpm no load)</small>	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 <small>(relates to the drive)</small>	C	14	J_1	kgcm ²	0.64	0.54	0.52	0.43	0.43	0.38	0.38	0.37	0.37
				10 ² 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	J_1	kgcm ²	0.81	0.70	0.69	0.60	0.59	0.55	0.54	0.54	0.54
				10 ² in.lb.s ²	0.72	0.62	0.61	0.53	0.52	0.48	0.48	0.48	0.47
	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 ² 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

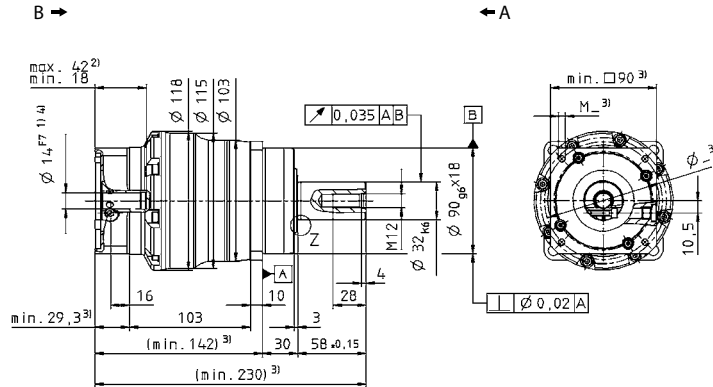
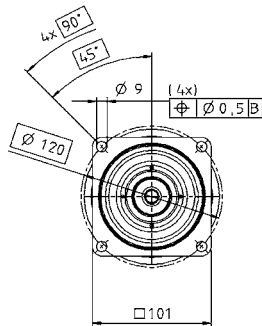
^{c)} Valid for clamping hub diameter of 19 mm

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

View A

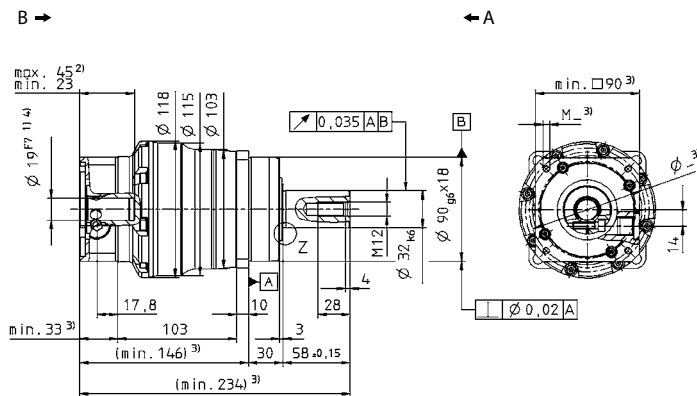
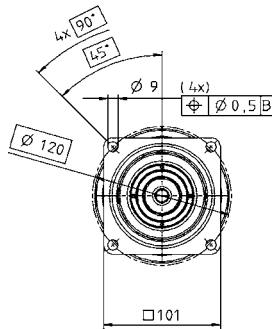
View B

up to 14⁴⁾(C)
clamping hub diameter

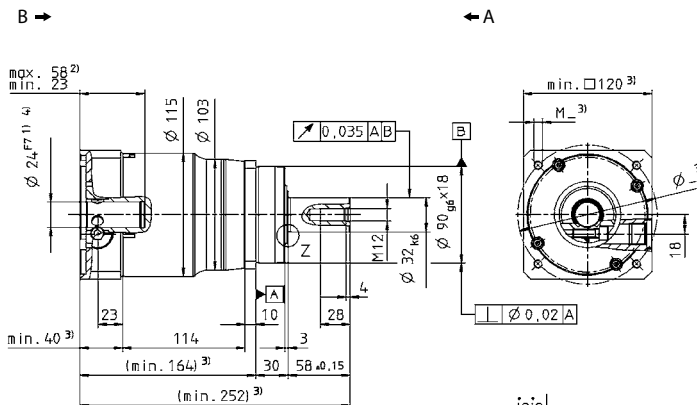
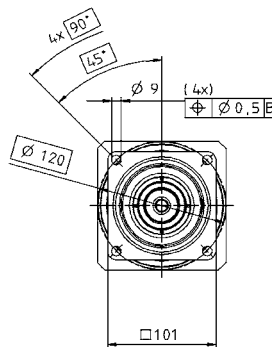


Motor shaft diameter [mm]

up to 19⁴⁾(E)
clamping hub diameter



up to 24⁴⁾(G)
clamping hub diameter

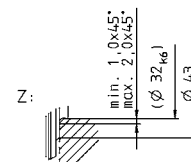
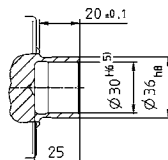
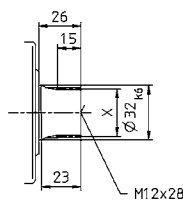
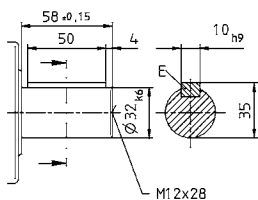


Alternatives: Output shaft variants

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.

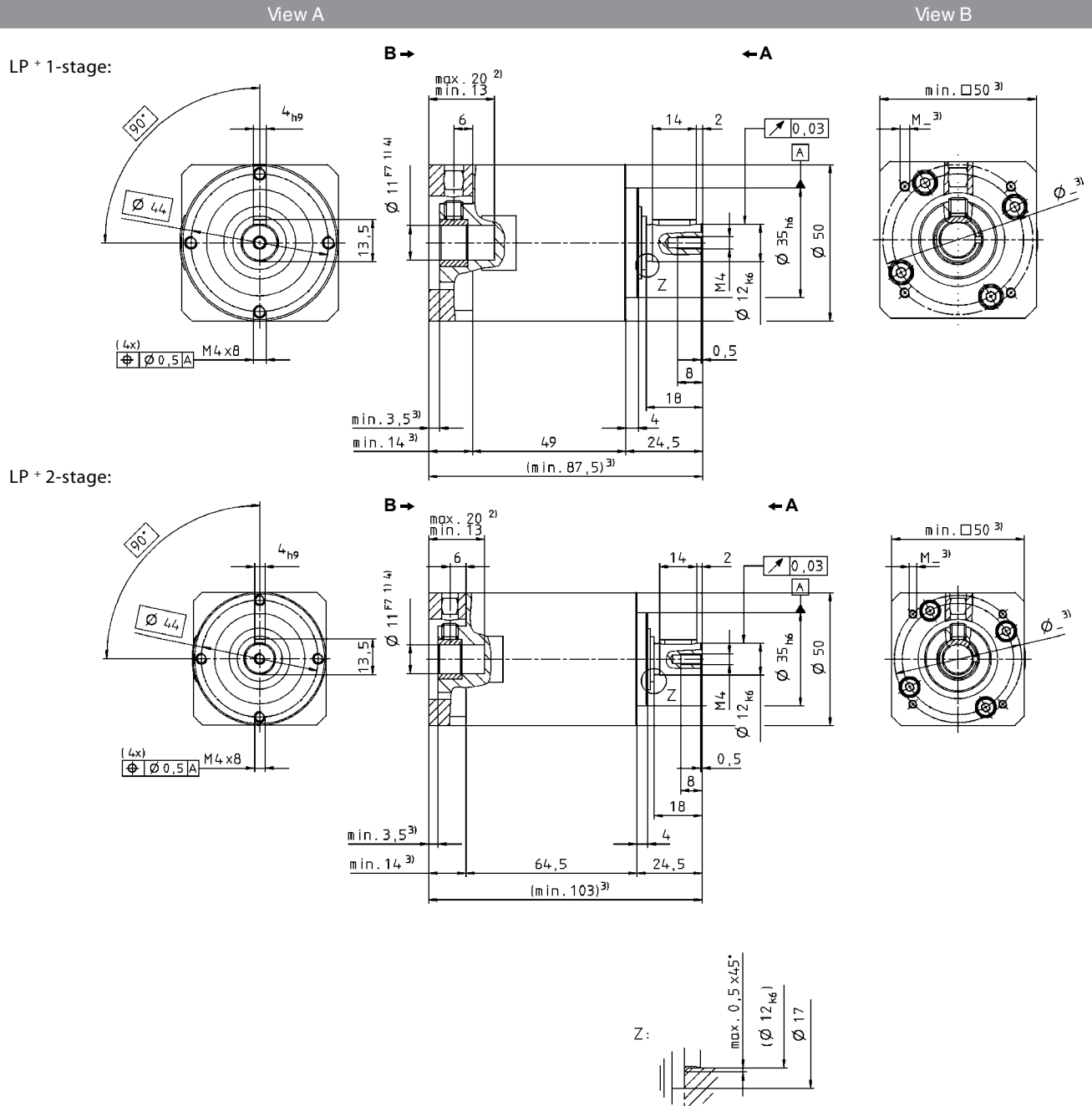
1) Motor mounting according to operating manual

LP+ 050 1/2-stage

		1-stage				2-stage							
Ratio	<i>i</i>	4	5	7	10	16	20	25	35	50	70	100	
Max. acceleration torque <small>(max. 1000 cycles per hour)</small>	T_{2B}	Nm	11	12	12	11	11	11	12	12	12	12	11
		in.lb	100	110	110	100	100	100	110	110	110	110	100
Nominal output torque <small>(with n_{1N})</small>	T_{2N}	Nm	5.2	5.7	5.7	5.2	5.2	5.2	5.7	5.7	5.7	5.7	5.2
		in.lb	46	50	50	46	46	46	50	50	50	50	46
Emergency stop torque <small>(permitted 1000 times during the service life of the gearhead)</small>	T_{2Not}	Nm	26	26	26	26	26	26	26	26	26	26	26
		in.lb	230	230	230	230	230	230	230	230	230	230	230
Nominal input speed <small>(with T_{2N} and 20°C ambient temperature)^{a)}</small>	n_{1N}	rpm	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	
Max. input speed	n_{1Max}	rpm	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	
Mean no load running torque <small>(with $n_1 = 3000$ rpm and 20°C gearhead temperature)</small>	T_{012}	Nm	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
		in.lb	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Max. torsional backlash	j_t	arcmin	Standard ≤ 12 / Reduced ≤ 10				Standard ≤ 15 / Reduced ≤ 13						
Torsional rigidity	C_{021}	Nm/ arcmin	1.2	1.2	1.2	0.9	1.2	1.2	1.2	1.2	1.2	1.2	0.9
		in.lb/ arcmin	11	11	11	8	11	11	11	11	11	11	8
Max. axial force ^{b)}	F_{2AMax}	N	700				700						
		lb _f	160				160						
Max. radial force ^{b)}	F_{2RMax}	N	650				650						
		lb _f	150				150						
Efficiency at full load	η	%	97				95						
Service life <small>(For calculation, see the Chapter "Information")</small>	L_n	h	> 20000				> 20000						
Weight incl. standard adapter plate	m	kg	0.75				0.95						
		lb _m	1.7				2.1						
Operating noise <small>(with $n_1 = 3000$ rpm no load)</small>	L_{PA}	dB(A)	≤ 68										
Max. permitted housing temperature		°C	+90										
		F	194										
Ambient temperature		°C	-15 to +40										
		F	5 to 104										
Lubrication			Lubricated for life										
Paint			Blue RAL 5002										
Direction of rotation			Motor and gearhead same direction										
Protection class			IP 64										
Moment of inertia <small>(relates to the drive)</small>	11	J_1	kgcm ²	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
			10 ⁻⁴ in.lb.s ²	0.05	0.04	0.04	0.04	0.05	0.04	0.04	0.04	0.04	0.04
Clamping hub diameter (mm)	14	J_1	kgcm ²	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
			10 ⁻⁴ in.lb.s ²	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2

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

^{b)} Refers to center of the output shaft, if $n_2 = 100$ rpm



Non-tolerated dimensions ±1mm

- 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. Motor shaft diameters up to 14mm available – please contact WITTENSTEIN alpha

▲ Motor mounting according to operating manual

LP+ 070 1/2-stage

		1-stage					2-stage									
Ratio	<i>i</i>	3	4	5	7	10	15	16	20	25	30	35	50	70	100	
Max. acceleration torque <small>(max. 1000 cycles per hour)</small>	T_{2B}	Nm	32	35	35	35	32	32	35	35	35	32	35	35	35	32
		in.lb	280	310	310	310	280	280	310	310	310	280	310	310	310	280
Nominal output torque <small>(with n_{1N})</small>	T_{2N}	Nm	16.5	18	18	18	16.5	16.5	18	18	18	16.5	18	18	18	16.5
		in.lb	150	160	160	160	150	150	160	160	160	150	160	160	160	150
Emergency stop torque <small>(permitted 1000 times during the service life of the gearhead)</small>	T_{2Not}	Nm	65	75	75	75	75	75	75	75	75	75	75	75	75	
		in.lb	580	660	660	660	660	660	660	660	660	660	660	660	660	
Nominal input speed <small>(with T_{2N} and 20°C ambient temperature ^{a)})</small>	n_{1N}	rpm	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	
Max. input speed	n_{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	
Mean no load running torque <small>(with $n_i = 3000$ rpm and 20°C gearhead temperature)</small>	T_{012}	Nm	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
		in.lb	2.7	2.2	1.8	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	
Max. torsional backlash	j_t	arcmin	Standard ≤ 12 / Reduced ≤ 8					Standard ≤ 15 / Reduced ≤ 10								
Torsional rigidity	C_{t21}	Nm/arcmin	2.8	3.3	3.3	3.3	2.8	2.8	3.3	3.3	3.3	2.8	3.3	3.3	3.3	2.8
		in.lb/arcmin	25	29	29	29	25	25	29	29	29	25	29	29	29	25
Max. axial force ^{b)}	F_{2AMax}	N	1550					1550								
		lb _f	349					349								
Max. radial force ^{b)}	F_{2RMax}	N	1450					1450								
		lb _f	326					326								
Efficiency at full load	η	%	97					95								
Service life <small>(For calculation, see the Chapter "Information")</small>	L_n	h	> 20000					> 20000								
Weight incl. standard adapter plate	m	kg	2.0					2.4								
		lb _m	4.4					5.3								
Operating noise <small>(with $n_i = 3000$ rpm no load)</small>	L_{PA}	dB(A)	≤ 70													
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 64													
Moment of inertia <small>(relates to the drive)</small>	16	J_I	kgcm ²	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
			10 ⁴ in.lb.s ²	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Clamping hub diameter (mm)	19	J_I	kgcm ²	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
			10 ⁴ in.lb.s ²	0.5	0.5	0.5	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.4	0.5	

^{a)} For higher ambient temperatures, please reduce input speed
^{b)} Refers to center of the output shaft, if $n_2 = 100$ rpm

LP+ 090 1/2-stage

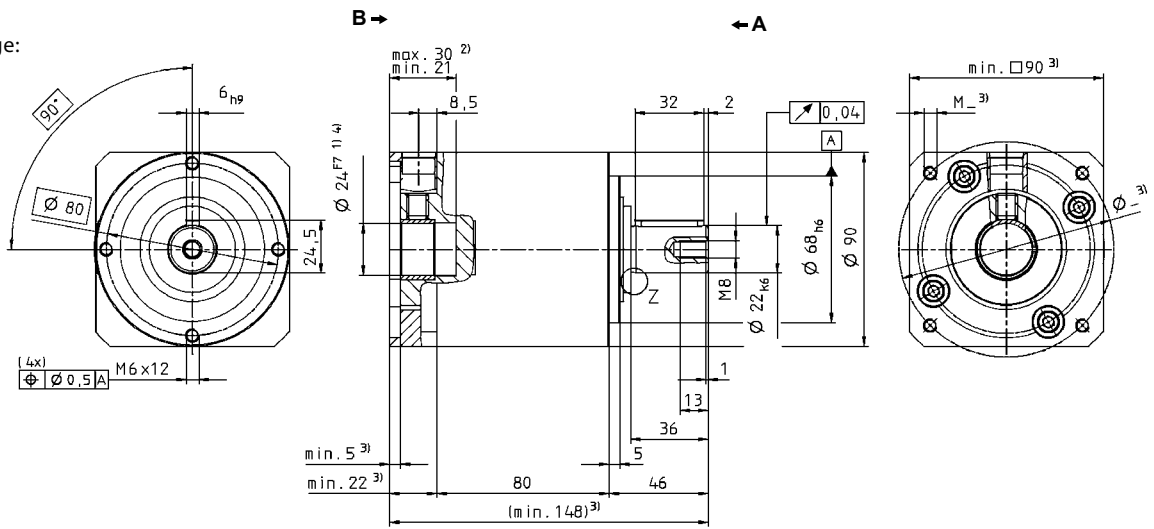
			1-stage					2-stage									
Ratio	<i>i</i>		3	4	5	7	10	15	16	20	25	30	35	50	70	100	
Max. acceleration torque <small>(max. 1000 cycles per hour)</small>	T_{2B}	Nm	80	90	90	90	80	80	90	90	90	80	90	90	90	80	
		in.lb	710	800	800	800	710	710	800	800	800	800	710	800	800	800	710
Nominal output torque <small>(with n_{1N})</small>	T_{2N}	Nm	40	45	45	45	40	40	45	45	45	40	45	45	45	40	
		in.lb	350	400	400	400	350	350	400	400	400	400	350	400	400	400	350
Emergency stop torque <small>(permitted 1000 times during the service life of the gearhead)</small>	T_{2Not}	Nm	185	190	190	190	190	190	190	190	190	190	190	190	190	190	
		in.lb	1640	1680	1680	1680	1680	1680	1680	1680	1680	1680	1680	1680	1680	1680	
Nominal input speed <small>(with T_{2N} and 20°C ambient temperature) ^{a)}</small>	n_{1N}	rpm	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	
Max. input speed	n_{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	
Mean no load running torque <small>(with $n_1 = 3000$ rpm and 20°C gearhead temperature)</small>	T_{012}	Nm	0.6	0.6	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	
		in.lb	5.3	4.9	4.4	3.5	3.4	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.2	2.2	
Max. torsional backlash	j_t	arcmin	Standard ≤ 12 / Reduced ≤ 8					Standard ≤ 15 / Reduced ≤ 10									
Torsional rigidity	C_{2T1}	Nm/arcmin	8.5	9.5	9.5	9.5	8.5	8.5	9.5	9.5	9.5	8.5	9.5	9.5	9.5	8.5	
		in.lb/arcmin	75	84	84	84	75	75	84	84	84	75	84	84	84	75	
Max. axial force ^{b)}	F_{2AMax}	N	1900					1900									
		lb _f	428					428									
Max. radial force ^{b)}	F_{2RMax}	N	2400					2400									
		lb _f	540					540									
Efficiency at full load	η	%	97					95									
Service life <small>(For calculation, see the Chapter "Information")</small>	L_h	h	> 20000					> 20000									
Weight incl. standard adapter plate	m	kg	4.0					5.0									
		lb _m	8.8					11.1									
Operating noise <small>(with $n_1 = 3000$ rpm no load)</small>	L_{PA}	dB(A)	≤ 72														
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 64																
Moment of inertia <small>(relates to the drive)</small>	24	J_1	kgcm ²	1.8	1.6	1.6	1.5	1.4	1.5	1.6	1.6	1.5	1.4	1.5	1.4	1.4	1.4
			10 ³ in.lb.s ²	1.6	1.4	1.4	1.3	1.3	1.3	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3
Clamping hub diameter (mm)	28	J_1	kgcm ²	2.1	1.9	1.9	1.8	1.7	1.8	1.9	1.9	1.8	1.7	1.8	1.7	1.7	1.7
			10 ³ in.lb.s ²	1.9	1.7	1.6	1.6	1.5	1.6	1.6	1.6	1.6	1.6	1.5	1.6	1.5	1.5

^{a)} For higher ambient temperatures, please reduce input speed
^{b)} Refers to center of the output shaft, if $n_2 = 100$ rpm

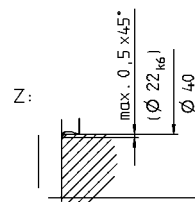
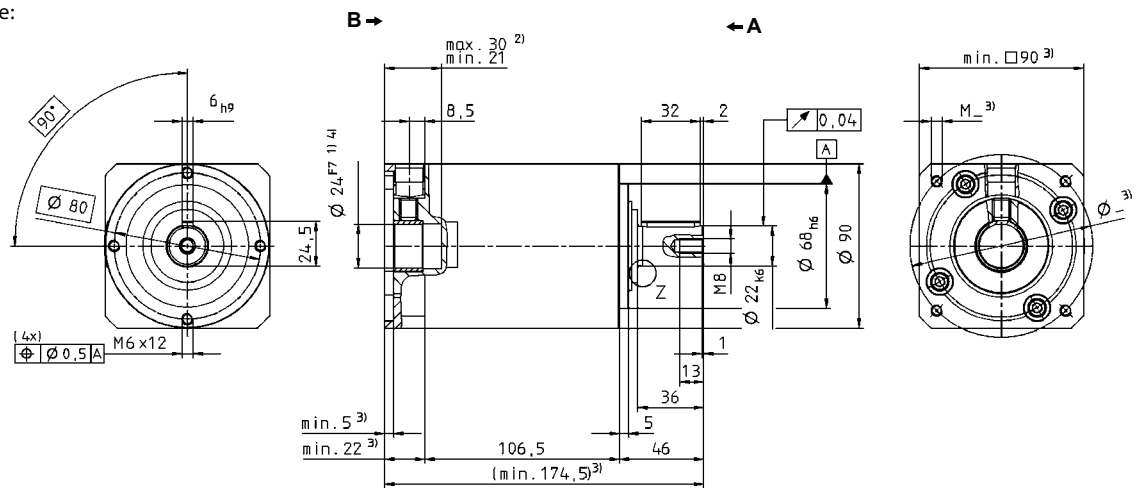
View A

View B

LP + 1-stage:



LP + 2-stage:



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. Motor shaft diameters up to 28mm available – please contact WITTENSTEIN alpha

 Motor mounting according to operating manual

LP+ 120 1/2-stage

		1-stage					2-stage										
Ratio	<i>i</i>	3	4	5	7	10	15	16	20	25	30	35	50	70	100		
Max. acceleration torque <small>(max. 1000 cycles per hour)</small>	T_{2B}	Nm	200	220	220	220	200	200	220	220	220	200	220	220	220	200	
		in.lb	1770	1950	1950	1950	1770	1770	1950	1950	1950	1770	1950	1950	1950	1770	
Nominal output torque <small>(with n_{1N})</small>	T_{2N}	Nm	100	110	110	110	100	100	110	110	110	100	110	110	110	100	
		in.lb	890	970	970	970	890	890	970	970	970	890	970	970	970	890	
Emergency stop torque <small>(permitted 1000 times during the service life of the gearhead)</small>	T_{2Not}	Nm	400	480	480	480	480	480	480	480	480	480	480	480	480	480	
		in.lb	3540	4250	4250	4250	4250	4250	4250	4250	4250	4250	4250	4250	4250	4250	
Nominal input speed <small>(with T_{2N} and 20°C ambient temperature) ^{a)}</small>	n_{1N}	rpm	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600		
Max. input speed	n_{1Max}	rpm	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800		
Mean no load running torque <small>(with $n_1 = 3000$ rpm and 20°C gearhead temperature)</small>	T_{0T2}	Nm	1.1	1.0	0.9	0.8	0.8	0.6	0.6	0.5	0.5	0.4	0.4	0.4	0.4		
		in.lb	9.7	8.9	8.0	7.1	7.1	5.3	4.9	4.4	4.4	3.5	3.5	3.5	3.5		
Max. torsional backlash	j_t	arcmin	Standard ≤ 12 / Reduced ≤ 8					Standard ≤ 15 / Reduced ≤ 10									
Torsional rigidity	C_{2T}	<small>Nm/arcmin</small>	22	25	25	25	22	22	25	25	25	22	25	25	25	22	
		<small>in.lb/arcmin</small>	190	220	220	220	190	190	220	220	220	190	220	220	220	190	
Max. axial force ^{b)}	F_{2AMax}	N	4000					4000									
		lb _f	900					900									
Max. radial force ^{b)}	F_{2RMMax}	N	4600					4600									
		lb _f	1035					1035									
Efficiency at full load	η	%	97					95									
Service life <small>(For calculation, see the Chapter "Information")</small>	L_h	h	> 20000					> 20000									
Weight incl. standardadapter plate	m	kg	8.6					11.0									
		lb _m	19.0					24.3									
Operating noise <small>(with $n_1 = 3000$ rpm no load)</small>	L_{PA}	dB(A)	≤ 74														
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 64														
Moment of inertia <small>(relates to the drive)</small>	32	J_f	kgcm ²	6.9	5.9	5.6	5.2	5.1	5.4	5.5	5.5	5.3	5.0	5.3	5.0	5.0	5.0
			10 ⁻² in.lb.s ²	6.1	5.3	4.9	4.6	4.5	4.7	4.9	4.9	4.7	4.4	4.7	4.4	4.4	4.4
Clamping hub diameter (mm)	38	J_f	kgcm ²	7.8	6.8	6.4	6.1	5.9	6.2	6.4	6.4	6.2	5.9	6.2	5.9	5.9	5.9
			10 ⁻² in.lb.s ²	6.9	6.0	5.7	5.4	5.2	5.5	5.7	5.7	5.5	5.2	5.5	5.2	5.2	5.2

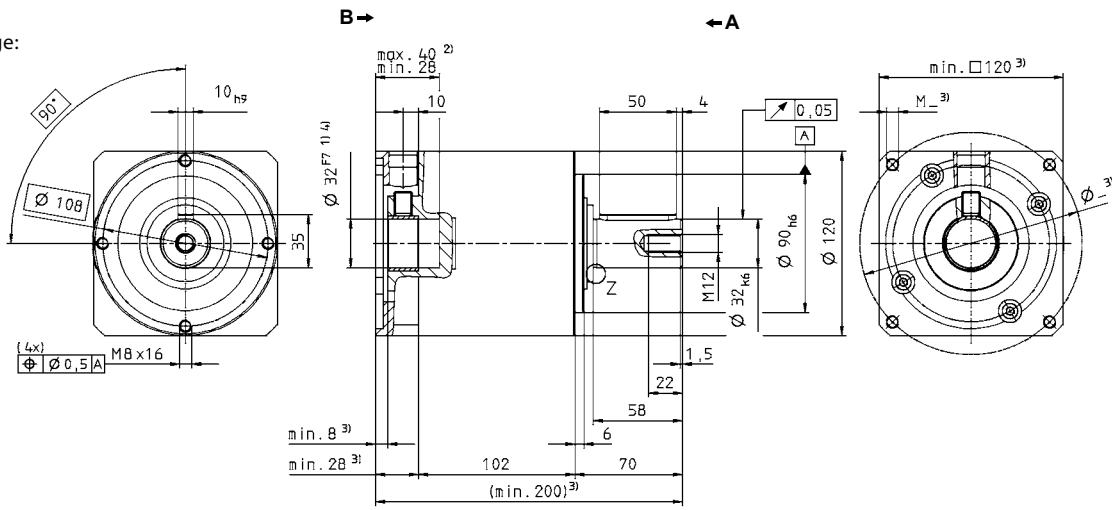
^{a)} For higher ambient temperatures, please reduce input speed

^{b)} Refers to center of the output shaft, if $n_2 = 100$ rpm

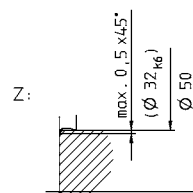
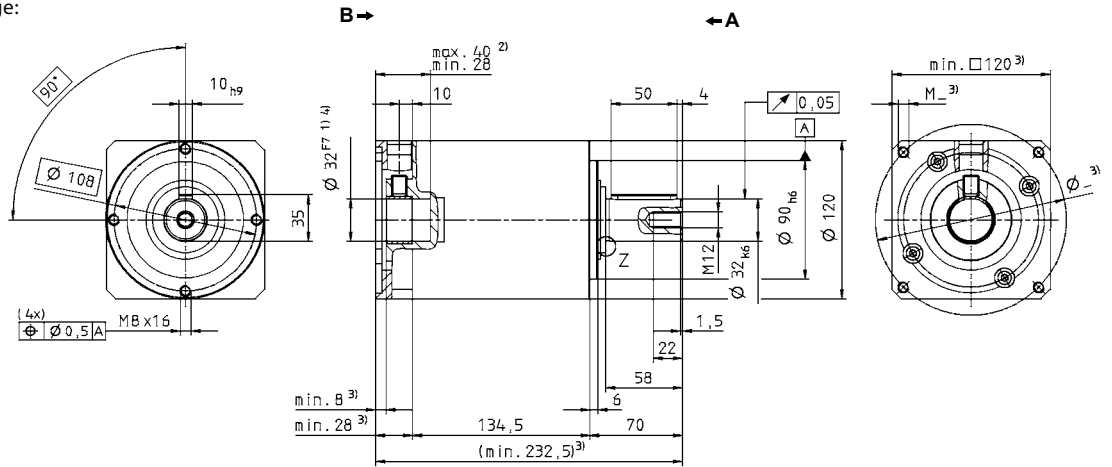
View A

View B

LP + 1-stage:




LP + 2-stage:



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. Motor shaft diameters up to 38mm available – please contact WITTENSTEIN alpha

 Motor mounting according to operating manual

LP+ 155 1/2-stage

			1-stage		2-stage			
Ratio	<i>i</i>		5	10	25	50	100	
Max. acceleration torque <small>(max. 1000 cycles per hour)</small>	T_{2B}	Nm	450	350	450	450	350	
		in.lb	3980	3100	3980	3980	3100	
Nominal output torque <small>(with n_{2N})</small>	T_{2N}	Nm	320	190	320	320	190	
		in.lb	2830	1680	2830	2830	1680	
Emergency stop torque <small>(permitted 1000 times during the service life of the gearhead)</small>	T_{2Not}	Nm	1000	1000	1000	1000	1000	
		in.lb	8850	8850	8850	8850	8850	
Nominal input speed <small>(with T_{2N} and 20°C ambient temperature) ^{a)}</small>	n_{1N}	rpm	2000	2000	2000	2000	2000	
Max. input speed	n_{1Max}	rpm	3600	3600	3600	3600	3600	
Mean no load running torque <small>(with $n_1 = 3000$ rpm and 20°C gearhead temperature)</small>	T_{012}	Nm	2.8	2.5	1.0	0.8	0.7	
		in.lb	25	22	8.9	7.1	6.2	
Max. torsional backlash	j_t	arcmin	Standard ≤ 12 / Reduced ≤ 8		Standard ≤ 15 / Reduced ≤ 10			
Torsional rigidity	C_{21}	Nm/arcmin	55	44	55	55	44	
		in.lb/arcmin	490	390	490	490	390	
Max. axial force ^{b)}	F_{2AMax}	N	6000			6000		
		lb _f	1350			1350		
Max. radial force ^{b)}	F_{2RMax}	N	7500			7500		
		lb _f	1688			1688		
Efficiency at full load	η	%	97		95			
Service life <small>(For calculation, see the Chapter "Information")</small>	L_n	h	> 20000		> 20000			
Weight incl. standard adapter plate	<i>m</i>	kg	17.0		21.0			
		lb _m	37.6		46.4			
Operating noise <small>(with $n_1 = 3000$ rpm no load)</small>	L_{PA}	dB(A)	≤ 75					
Max. permitted housing temperature			°C					
			+90					
Ambient temperature			°C					
			-15 to +40					
Lubrication			F					
			5 to 104					
Lubrication			Lubricated for life					
Paint			Blue RAL 5002					
Direction of rotation			Motor and gearhead same direction					
Protection class			IP 64					
Moment of inertia <small>(relates to the drive)</small>	1-stage: 42	J_1	kgcm ²	17	16	–	–	–
			10 ⁴ in.lb.s ²	15	14	–	–	–
Clamping hub diameter (mm)	2-stage: 32	J_1	kgcm ²	–	–	5.4	5.0	5.0
			10 ⁴ in.lb.s ²	–	–	4.8	4.4	4.4
	2-stage: 38	J_1	kgcm ²	–	–	6.3	5.9	5.9
			10 ⁴ in.lb.s ²	–	–	5.5	5.2	5.2

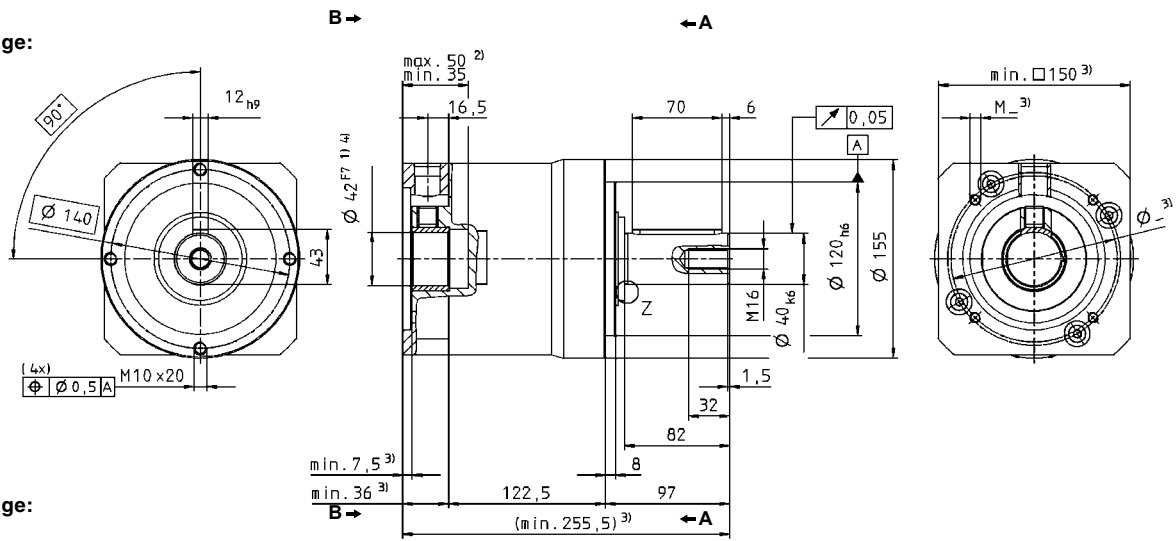
^{a)} For higher ambient temperatures, please reduce input speed

^{b)} Refers to center of the output shaft, if $n_2 = 100$ rpm

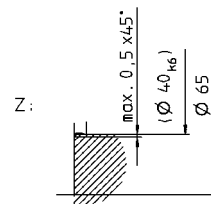
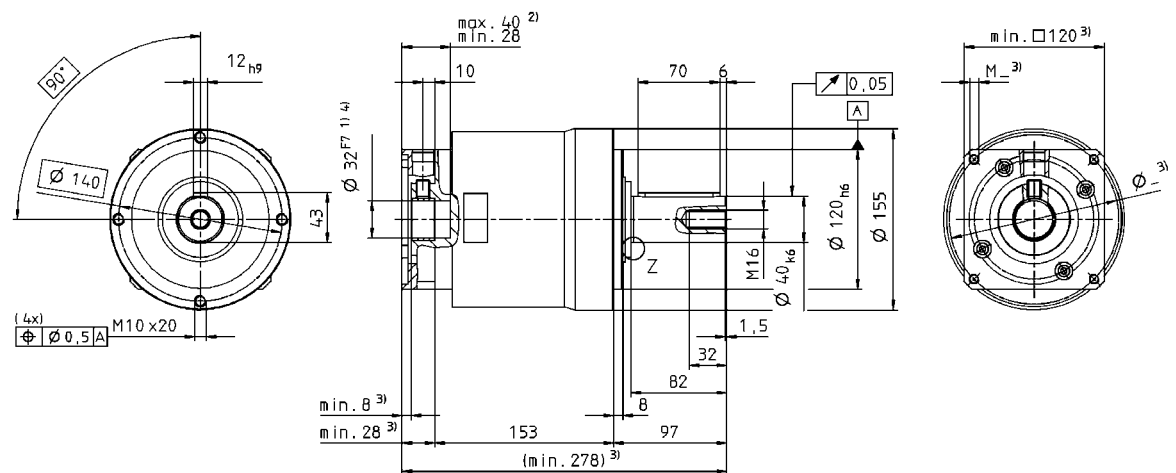
View A

View B

LP* 1-stage:



LP* 2-stage:



Non-tolerated dimensions ±1mm

- 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.
LP* 2-stage: Motor shaft diameters up to 38mm available – please contact WITTENSTEIN alpha

▲ Motor mounting according to operating manual