

LP⁺/LPB⁺ Generation 3 – Innovation sets standards

LP⁺/LPB⁺ Generation 3

- Torques increased by up to 75%
- Reduction in noise level
- New ratios available

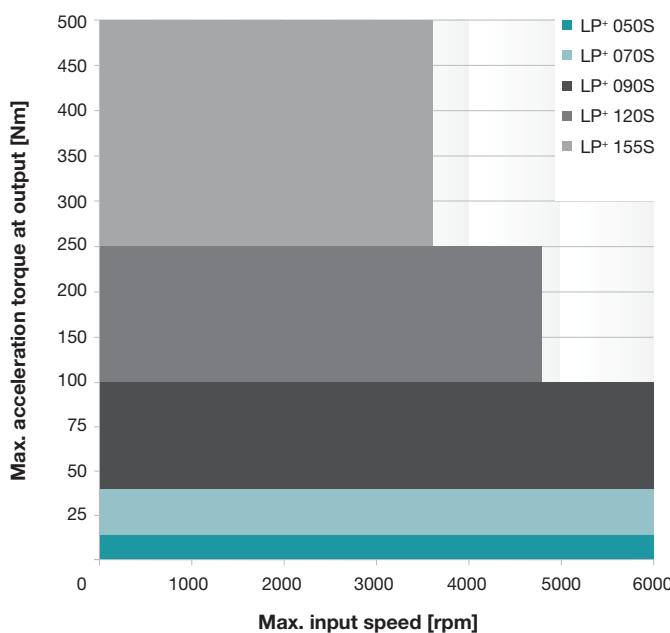
The LPB⁺ Generation 3 is also available as a two-stage version!



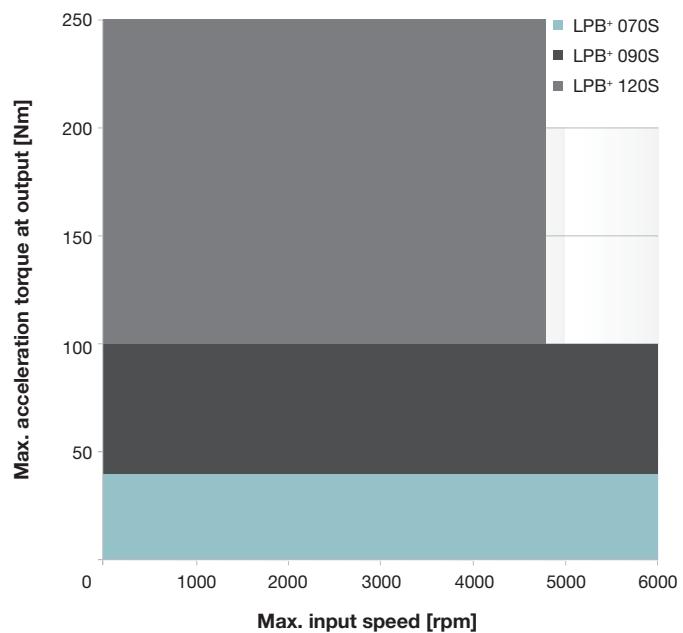
Low-backlash planetary gearheads with output shaft (LP⁺ Generation 3) or drive flange (LPB⁺ Generation 3). Optionally available with belt pulley for compact belt drive. The reliable and durable planetary gearhead combines the advantages of a proven gearhead concept with economic premium quality.

Quick size selection

LP⁺ Generation 3 (example for $i = 5$)
For applications in cyclic operation ($ED \geq 60\%$)



LPB⁺ Generation 3 (example for $i = 5$)
For applications in cyclic operation ($ED \geq 60\%$)



Versions and Applications

LP⁺ Generation 3

- Economical servo applications
- Cyclic and continuous operation
- High nominal speeds
- Economical positioning accuracy

LPB⁺ Generation 3

- Toothed belt applications
- Linear module
- Economical servo applications
- Dynamic belt applications

Comparison

Features		LP ⁺ Generation 3 from page 120	LPB ⁺ Generation 3 from page 130
Ratios ^{c)}		3 – 100	3 – 100
Torsional backlash [arcmin] ^{c)}	Standard	≤ 8	≤ 8
	Reduced	–	–
Output type			
Smooth output shaft		•	
Keywayed output shaft		•	
Output flange			•
Input type			
Motor mounted version		•	•
Type			
Food-grade lubrication ^{a) b)}		•	•
Accessories			
Coupling		•	
Rack		•	
Pinion		•	
Belt pulley			•
NEMA flange		•	

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

^{b)} Please contact WITTENSTEIN alpha

^{c)} In relation to reference sizes



LP⁺ 050 MF 1/2-stage

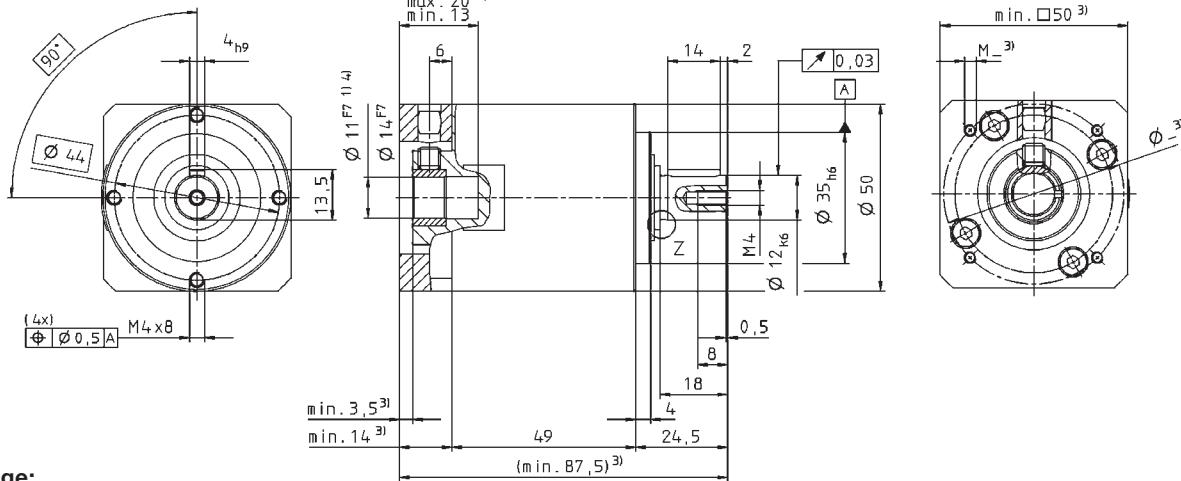
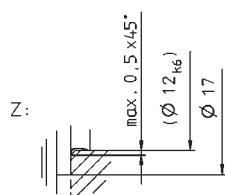
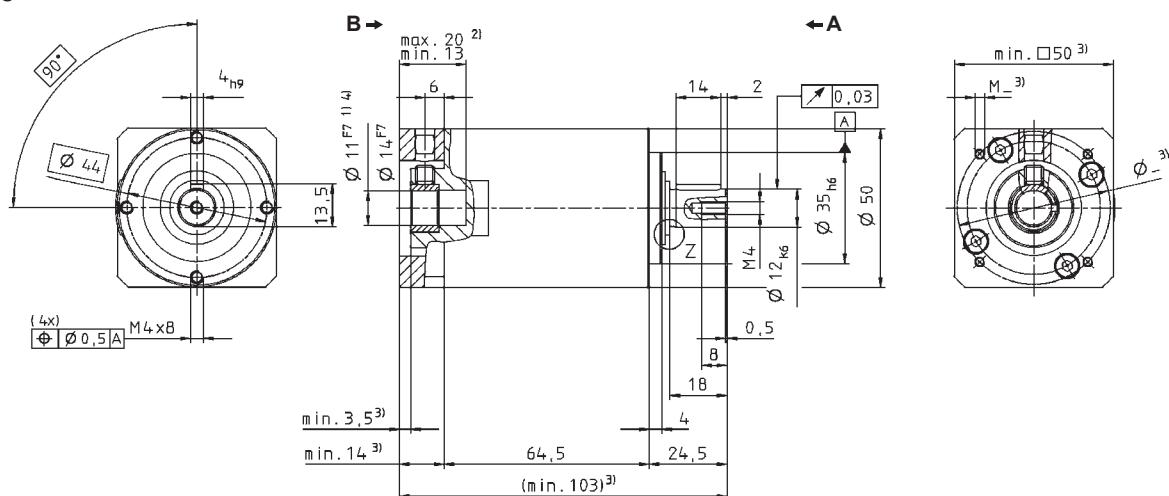
				1-stage				2-stage																				
Ratio		i		4	5	7	10	16	20	25	35	50	70	100														
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B}	Nm	13	14	14	13	13	13	14	14	14	14	14	13														
		in.lb	120	120	120	120	120	120	120	120	120	120	120	120														
Nominal output torque (with n_m)	T_{2N}	Nm	6	6.5	6.5	6	6	6	6.5	6.5	6.5	6.5	6.5	6														
		in.lb	53	58	58	53	53	53	58	58	58	58	58	53														
Emergency stop torque (permitted 1000 times during the service life of the gearbox)	T_{2Not}	Nm	26	26	26	26	26	26	26	26	26	26	26	26														
		in.lb	230	230	230	230	230	230	230	230	230	230	230	230														
Nominal input speed (with T_{2N} and 20°C ambient temperature) ^{a)}	n_{IN}	rpm	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000														
		min ⁻¹	222	222	222	222	222	222	222	222	222	222	222	222														
Max. input speed	n_{IMax}	rpm	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000														
		min ⁻¹	444	444	444	444	444	444	444	444	444	444	444	444														
Mean no load running torque (with $n_i=3000$ rpm and 20°C gearhead temperature)	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	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	0.4														
Max. torsional backlash		j_t	arcmin	≤ 10				≤ 13																				
Torsional rigidity	C_{t21}	Nm/arcmin	1.5	1.2	1.2	0.9	1.5	1.5	1.2	1.2	1.2	1.2	1.2	0.9														
		in.lb/arcmin	13	11	11	8	13	13	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 (For calculation, see the Chapter "Information")		L_h	h	> 20000				> 20000																				
Weight incl. standard adapter plate	m	kg	0.75				0.95																					
		lb _m	1.7				2.1																					
Operating noise for i=10 and $n_i=3000$ rpm without load		L_{PA}	dB(A)					≤ 62																				
Max. permitted housing temperature		$^{\circ}\text{C}$		+90																								
		F		194																								
Ambient temperature		$^{\circ}\text{C}$		-15 to +40																								
		F		5 to 104																								
Lubrication		Lubricated for life																										
Paint		Blue RAL 5002																										
Direction of rotation		Motor and gearbox same direction																										
Protection class		IP 64																										
Moment of inertia (relates to the drive)	B	11	J_f	kgcm ²	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05													
				10 ³ in.lb.s ²	0.05	0.04	0.04	0.04	0.05	0.04	0.04	0.04	0.04	0.04	0.04													
Clamping hub diameter (mm)	C	14	J_f	kgcm ²	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2													
				10 ³ in.lb.s ²	0.2	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 $n_z = 100$ 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 14mm available –
please contact WITTENSTEIN alpha

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

Motor mounting according to operating manual

LP+ 070 MF 1/2-stage

				1-stage					2-stage																				
Ratio ^{a)}		i		3	4	5	7	10	9	12	16	20	25	30	40	50	70	100											
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B}	Nm	55	42	40	40	37	55	55	55	42	40	55	40	40	40	37												
		in.lb	490	370	350	350	330	490	490	490	370	350	490	350	350	350	330												
Nominal output torque (with n_m)	T_{2N}	Nm	29	22	21	21	19	29	29	29	22	21	29	21	21	21	19												
		in.lb	260	190	190	190	170	260	260	260	190	190	260	190	190	190	170												
Emergency stop torque (permitted 1000 times during the service life of the gearbox)	T_{2Not}	Nm	65	75	75	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	660	660												
Nominal input speed (with T_{2N} and 20°C ambient temperature) ^{b)}		n_{IN}	rpm	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700											
Max. input speed		n_{IMax}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000											
Mean no load running torque (with $n_i=3000$ rpm and 20°C gearhead temperature)	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	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	1.2	1.2	0.9											
Max. torsional backlash		j_t	arcmin	≤ 8					≤ 10																				
Torsional rigidity	C_{121}	Nm/arcmin	4	4	3.3	3.3	2.8	4.0	4.0	4.0	4.0	4.0	4.0	3.3	3.3	3.3	2.8												
		in.lb/arcmin	35	35	29	29	25	35	35	35	35	35	35	29	29	29	25												
Max. axial force ^{c)}	F_{2AMax}	N	1550					1550																					
		lb _f	349					349																					
Max. radial force ^{c)}	F_{2RMax}	N	1450					1450																					
		lb _f	326					326																					
Efficiency at full load		η	%	97					95																				
Service life (For calculation, see the Chapter "Information")		L_h	h	> 20000					> 20000																				
Weight incl. standard adapter plate	m	kg	2.0					2.4																					
		lb _m	4.4					5.3																					
Operating noise for i=10 and $n_i = 3000$ rpm without load		L_{PA}	dB(A)						≤ 64																				
Max. permitted housing temperature		$^{\circ}\text{C}$							+90																				
		F							194																				
Ambient temperature		$^{\circ}\text{C}$							-15 to +40																				
		F							5 to 104																				
Lubrication							Lubricated for life																						
Paint							Blue RAL 5002																						
Direction of rotation							Motor and gearbox same direction																						
Protection class							IP 64																						
Moment of inertia (relates to the drive)	D	16	J_f	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	0.2											
				$10^{-3} \text{ in.lb.s}^2$	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	0.2											
Clamping hub diameter (mm)	E	19	J_f	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	0.5	0.5											
				$10^{-3} \text{ in.lb.s}^2$	0.5	0.5	0.5	0.4	0.4	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4											

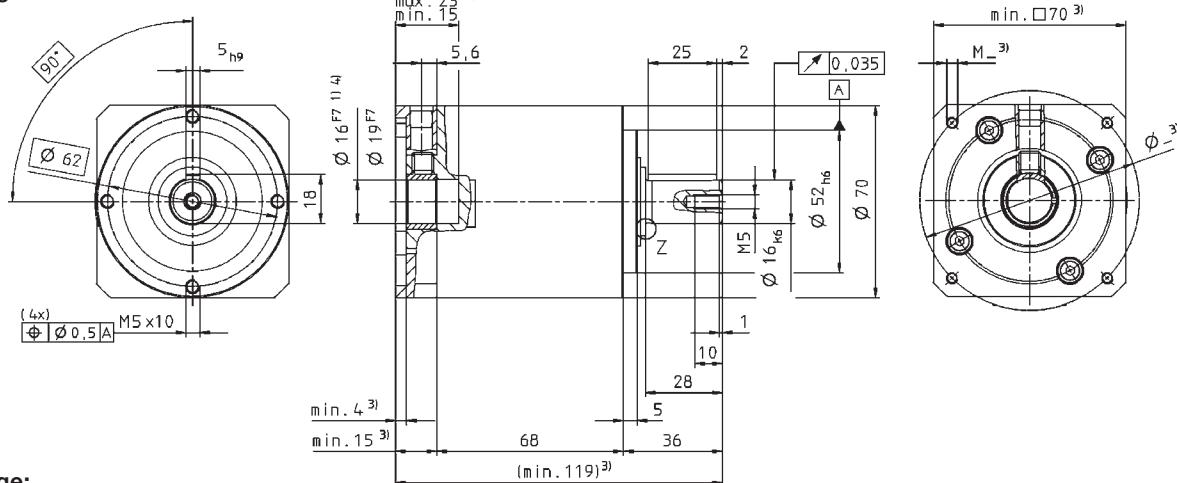
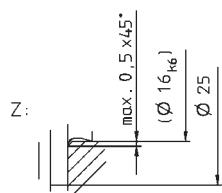
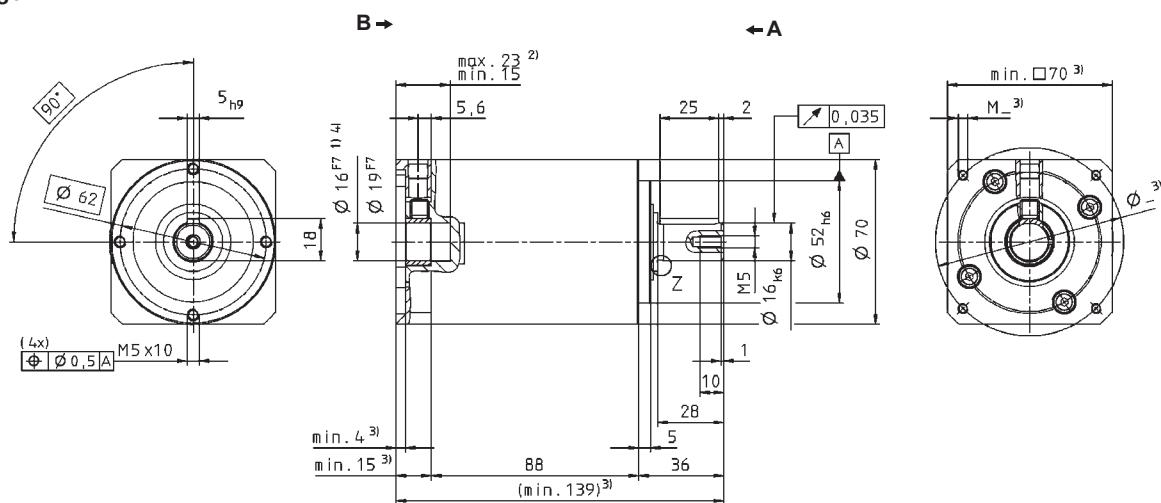
^{a)} Other ratios are available on request: i = 15, 21, 28 and 35.

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

^{c)} 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 $\pm 1\text{mm}$

- 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 19mm available – please contact WITTENSTEIN alpha

 CAD data is available under www.wittenstein-alpha.com
 Motor mounting according to operating manual

LP+ 090 MF 1/2-stage

				1-stage					2-stage																									
Ratio ^{a)}		i		3	4	5	7	10	9	12	16	20	25	30	40	50	70	100																
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B}	Nm	125	115	100	100	90	125	125	115	115	100	125	115	100	100	100	90																
		in.lb	1110	1020	890	890	800	1110	1110	1020	1020	890	1110	1020	890	890	890	800																
Nominal output torque (with n_m)	T_{2N}	Nm	63	58	50	50	45	63	63	58	58	50	63	58	50	50	50	45																
		in.lb	560	510	440	440	400	560	560	510	510	440	560	510	440	440	440	400																
Emergency stop torque (permitted 1000 times during the service life of the gearbox)	T_{2Not}	Nm	185	190	190	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	1680	1680																
Nominal input speed (with T_{2N} and 20°C ambient temperature) ^{b)}	n_{IN}	rpm	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400																
		rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000																
Max. input speed	n_{IMax}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000																
		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	0.3	0.3																
Mean no load running torque (with $n_i=3000$ rpm and 20°C gearhead temperature)	T_{012}	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	2.7	2.2	2.2	2.2																
		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	0.3	0.3																
Max. torsional backlash		j_t	arcmin	≤ 8					≤ 10																									
Torsional rigidity	C_{121}	Nm/arcmin	12	12	9.5	9.5	8.5	12	12	12	12	9.5	9.5	12	9.5	9.5	8.5																	
		in.lb/arcmin	106	106	84	84	75	106	106	106	106	84	84	106	84	84	75																	
Max. axial force ^{c)}	F_{2AMax}	N	1900					1900																										
		lb _f	430					430																										
Max. radial force ^{c)}	F_{2RMax}	N	2400					2400																										
		lb _f	540					540																										
Efficiency at full load		η	%	97					95																									
Service life (For calculation, see the Chapter "Information")		L_h	h	> 20000					> 20000																									
Weight incl. standard adapter plate	m	kg	4.0					5.0																										
		lb _m	8.8					11																										
Operating noise for i=10 and $n_i=3000$ rpm without 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 gearbox same direction																																
Protection class		IP 64																																
Moment of inertia (relates to the drive)	G	24	J_f	kgcm ²	1.8	1.6	1.6	1.5	1.4	1.5	1.5	1.6	1.6	1.5	1.5	1.4	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	1.3															
Clamping hub diameter (mm)	H	28	J_f	kgcm ²	2.1	1.9	1.9	1.8	1.7	1.8	1.8	1.9	1.9	1.8	1.8	1.7	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	1.6	1.5	1.5	1.5	1.5															

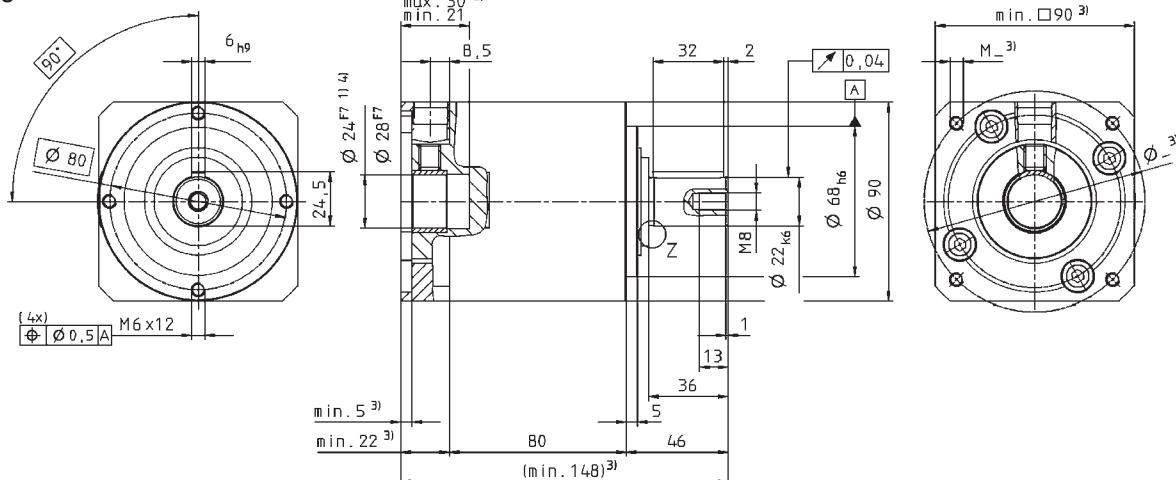
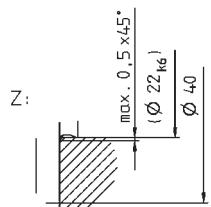
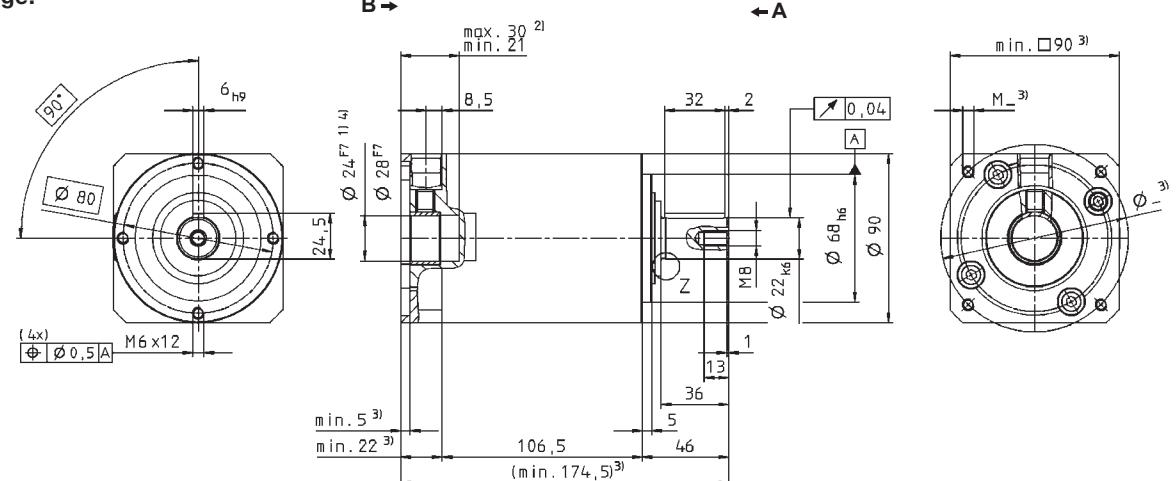
^{a)} Other ratios are available on request: i = 15, 21, 28 and 35.

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

^{c)} 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 $\pm 1\text{mm}$

- 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

 CAD data is available under www.wittenstein-alpha.com
 Motor mounting according to operating manual

LP⁺ 120 MF 1/2-stage

				1-stage					2-stage																																				
Ratio ^{a)}		<i>i</i>		3	4	5	7	10	9	12	16	20	25	30	40	50	70	100																											
Max. acceleration torque (max. 1000 cycles per hour)	<i>T</i> _{2B}	Nm	305	305	250	250	220	305	305	305	305	250	305	305	250	250	250	220																											
		in.lb	2700	2700	2210	2210	1950	2700	2700	2700	2700	2210	2700	2700	2210	2210	2210	1950																											
Nominal output torque (with <i>n</i> _m)	<i>T</i> _{2N}	Nm	155	155	125	125	110	155	155	155	155	125	155	155	125	125	125	110																											
		in.lb	1370	1370	1110	1110	970	1370	1370	1370	1370	1110	1370	1370	1110	1110	1110	970																											
Emergency stop torque (permitted 1000 times during the service life of the gearbox)	<i>T</i> _{2Not}	Nm	400	480	480	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	4250	4250																											
Nominal input speed (with <i>T</i> _{2N} and 20°C ambient temperature) ^{b)}	<i>n</i> _{IN}	rpm	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600																											
		rpm	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800																											
Mean no load running torque (with <i>n</i> _i =3000 rpm and 20°C gearhead temperature)	<i>T</i> ₀₁₂	Nm	1.1	1.0	0.9	0.8	0.8	0.6	0.6	0.6	0.5	0.5	0.4	0.5	0.4	0.4	0.4	0.4																											
		in.lb	9.7	8.9	8.0	7.1	7.1	5.3	5.3	4.9	4.4	4.4	3.5	4.4	3.5	3.5	3.5	3.5																											
Max. torsional backlash		<i>j</i> _t	arcmin	≤ 8					≤ 10																																				
Torsional rigidity	<i>C</i> ₁₂₁	Nm/arcmin	30	30	25	25	22	30	30	30	30	25	25	30	25	25	25	22																											
		in.lb/arcmin	270	270	220	220	190	270	270	270	270	220	220	270	220	220	220	190																											
Max. axial force ^{c)}	<i>F</i> _{2AMax}	N	4000					4000																																					
		lb _f	900					900																																					
Max. radial force ^{c)}	<i>F</i> _{2RMax}	N	4600					4600																																					
		lb _f	1035					1035																																					
Efficiency at full load		<i>η</i>	%	97					95																																				
Service life (For calculation, see the Chapter "Information")		<i>L</i> _h	h	> 20000					> 20000																																				
Weight incl. standard adapter plate	<i>m</i>	kg	8.6					11.0																																					
		lb _m	19.0					24.3																																					
Operating noise for i=10 and <i>n</i> _i =3000 rpm without load		<i>L</i> _{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 gearbox same direction																																											
Protection class		IP 64																																											
Moment of inertia (relates to the drive)	I	32	<i>J</i> _f	kgcm ²	6.9	5.9	5.6	5.2	5.1	5.4	5.4	5.5	5.5	5.3	5.3	5.0	5.0	5.0	5.0																										
				10 ³ in.lb.s ²	6.1	5.3	4.9	4.6	4.5	4.7	4.7	4.9	4.9	4.7	4.7	4.4	4.4	4.4	4.4																										
Clamping hub diameter (mm)	K	38	<i>J</i> _f	kgcm ²	7.8	6.8	6.4	6.1	5.9	6.2	6.2	6.4	6.4	6.2	6.2	5.9	5.9	5.9	5.9																										
				10 ³ in.lb.s ²	6.9	6.0	5.7	5.4	5.2	5.5	5.5	5.7	5.7	5.5	5.5	5.2	5.2	5.2	5.2																										

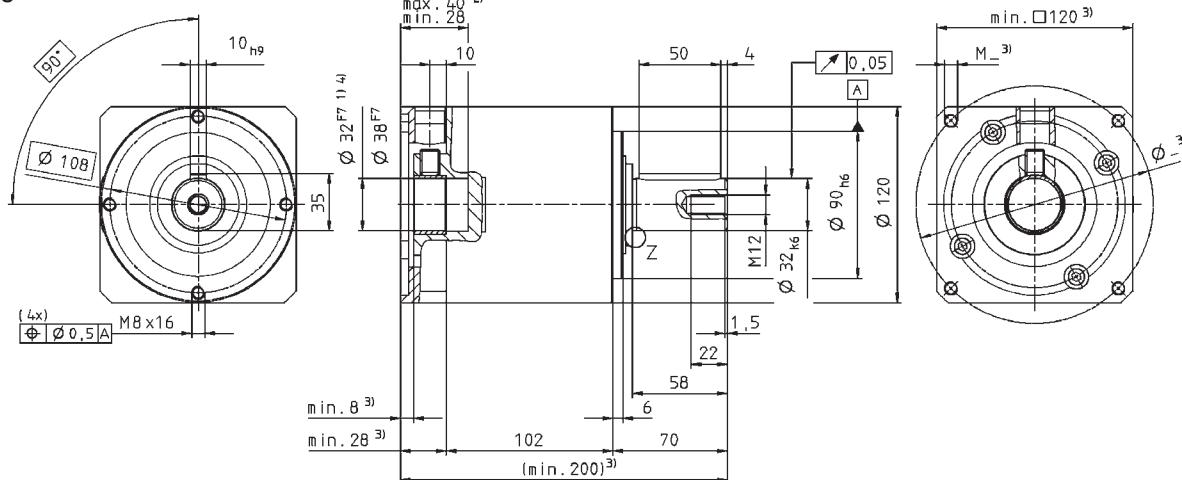
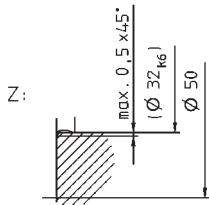
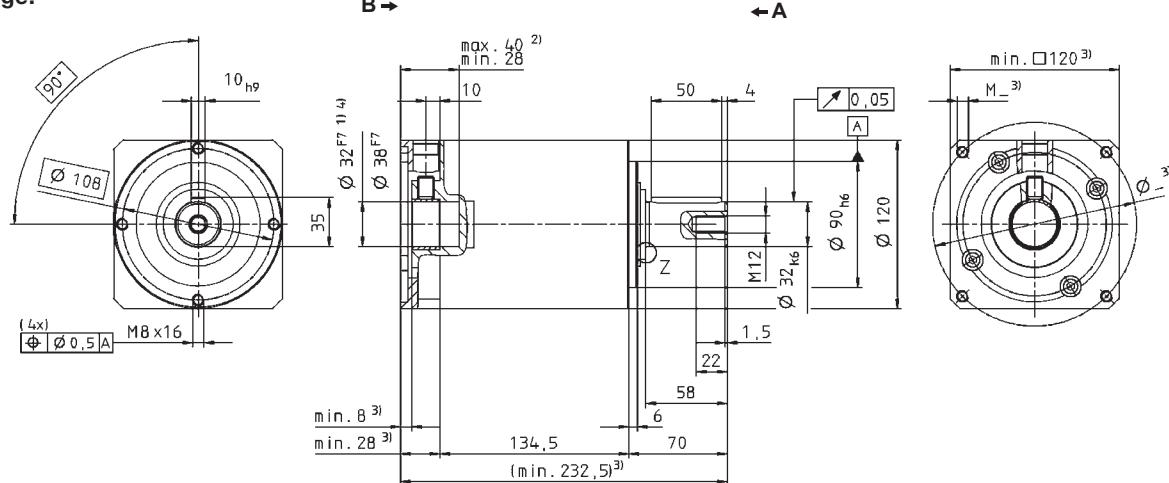
^{a)} Other ratios are available on request: i = 15, 21, 28 and 35.

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

^{c)} 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 $\pm 1\text{mm}$

- 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

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

Motor mounting according to operating manual

LP⁺ 155 MF 1/2-stage

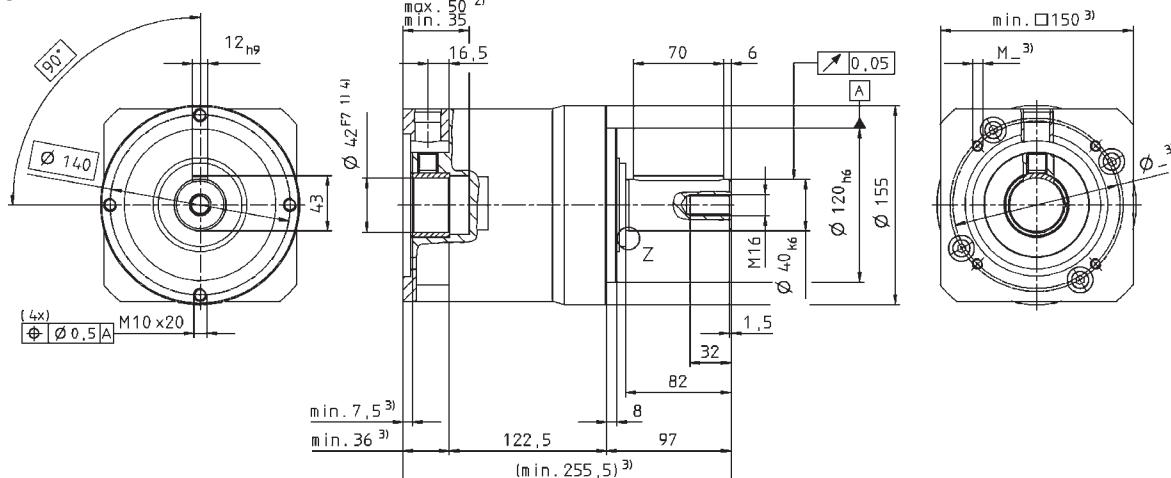
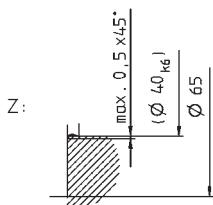
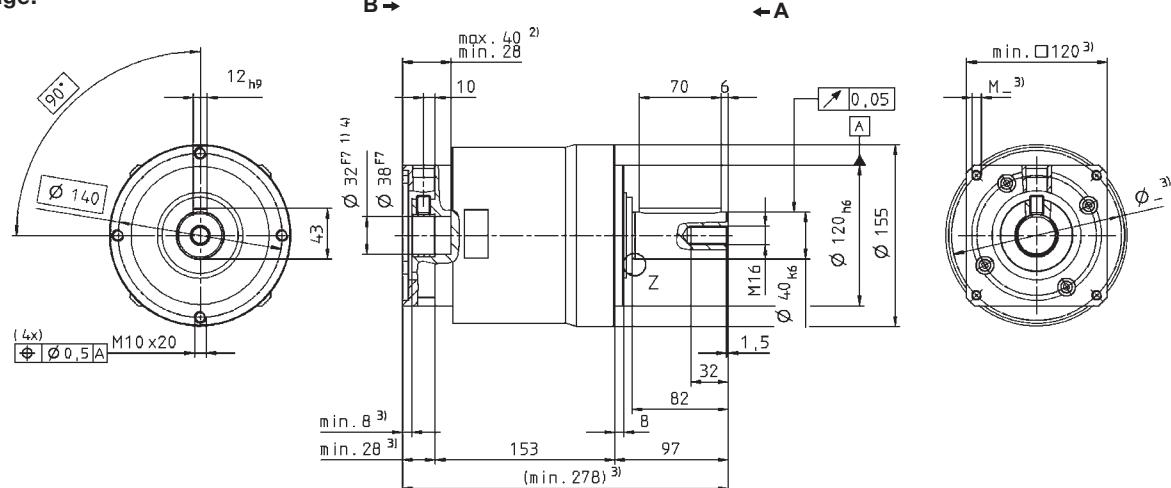
			1-stage		2-stage												
Ratio		i	5	10	25	50	100										
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B}	Nm	500	400	500	500	400										
		in.lb	4430	3540	4430	4430	3540										
Nominal output torque (with n_m)	T_{2N}	Nm	350	200	350	350	200										
		in.lb	3100	1770	3100	3100	1770										
Emergency stop torque (permitted 1000 times during the service life of the gearbox)	T_{2Not}	Nm	1000	1000	1000	1000	1000										
		in.lb	8850	8850	8850	8850	8850										
Nominal input speed (with T_{2N} and 20°C ambient temperature) ^{a)}		n_{IN}	rpm	2000	2000	2000	2000										
Max. input speed		n_{IMax}	rpm	3600	3600	3600	3600										
Mean no load running torque (with $n_i=3000$ rpm and 20°C gearhead temperature)	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	≤ 8		≤ 10											
Torsional rigidity	C_{t21}	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	1690		1690												
Efficiency at full load		η	%	97		95											
Service life (For calculation, see the Chapter "Information")		L_h	h	> 20000		> 20000											
Weight incl. standard adapter plate	m	kg	17		21												
		lb _m	38		46												
Operating noise for i=10 and $n_i=3000$ rpm without load		L_{PA}	dB(A)	≤ 69													
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 (relates to the drive)	L	42	J_t	kgcm ²	17	16	-										
				10 ³ in.lb.s ²	15	14	-										
Clamping hub diameter (mm)	I	32	J_t	kgcm ²	-	-	5.4										
				10 ³ in.lb.s ²	-	-	4.8										
	K	38	J_t	kgcm ²	-	-	6.3										
				10 ³ in.lb.s ²	-	-	5.5										

^{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 ±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

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

Motor mounting according to operating manual

LPB⁺ 070 MF 1/2-stage

				1-stage					2-stage																															
Ratio		i		3	4	5	7	10	9	12	16	20	25	30	40	50	70	100																						
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B}	Nm	55	42	40	40	37	55	55	42	42	40	55	42	40	40	37																							
		in.lb	490	370	350	350	330	490	490	370	370	350	490	370	350	350	330																							
Nominal output torque (with n_m)	T_{2N}	Nm	29	22	21	21	19	29	29	22	22	21	29	22	21	21	19																							
		in.lb	260	190	190	190	170	260	260	190	190	190	260	190	190	190	170																							
Emergency stop torque (permitted 1000 times during the service life of the gearbox)	T_{2Not}	Nm	65	75	75	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	660	660																							
Nominal input speed (with T_{2N} and 20°C ambient temperature) ^{a)}		n_{IN}	rpm	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700																						
Max. input speed		n_{IMax}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000																						
Mean no load running torque (with $n_i = 3000$ rpm and 20°C gearhead temperature)	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	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	1.2	1.2	0.9																						
Max. torsional backlash		j_t	arcmin	≤ 8					≤ 10																															
Torsional rigidity	C_{121}	Nm/arcmin	6.4	6.4	4.8	4.8	3.8	6.4	6.4	6.4	6.4	4.8	6.4	6.4	4.8	4.8	3.8																							
		in.lb/arcmin	55	55	40	40	35	55	55	55	55	40	55	55	40	40	35																							
Max. axial force ^{b)}	F_{2AMax}	N	1550					1550																																
		lb _f	350					350																																
Max. radial force ^{b)}	F_{2RMax}	N	3000					3000																																
		lb _f	680					680																																
Efficiency at full load		η	%	97					95																															
Service life (For calculation, see the Chapter "Information")		L_h	h	> 20000					> 20000																															
Weight incl. standard adapter plate	m	kg	1.6					2																																
		lb _m	3.5					4.4																																
Operating noise for i=10 and $n_i = 3000$ rpm without 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 gearbox same direction																																	
Protection class							IP 64																																	
Moment of inertia (relates to the drive)	D	16	J_f	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	0.2	0.2																					
				10 ³ 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	0.2	0.2																					
Clamping hub diameter (mm)	E	19	J_f	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	0.5	0.5	0.5																					
				10 ³ 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	0.4	0.4	0.4																						

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

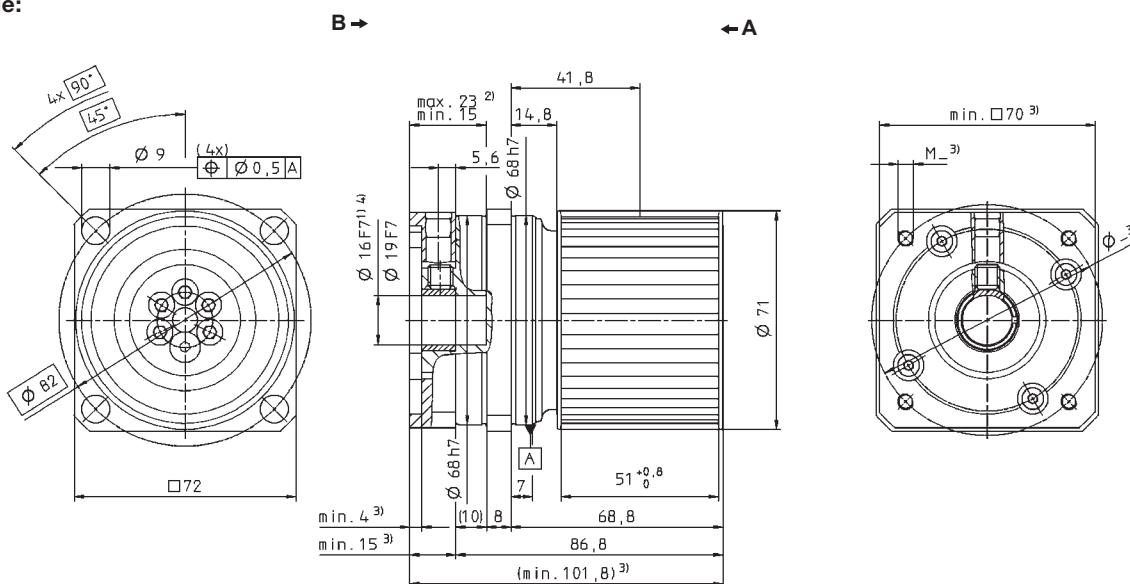
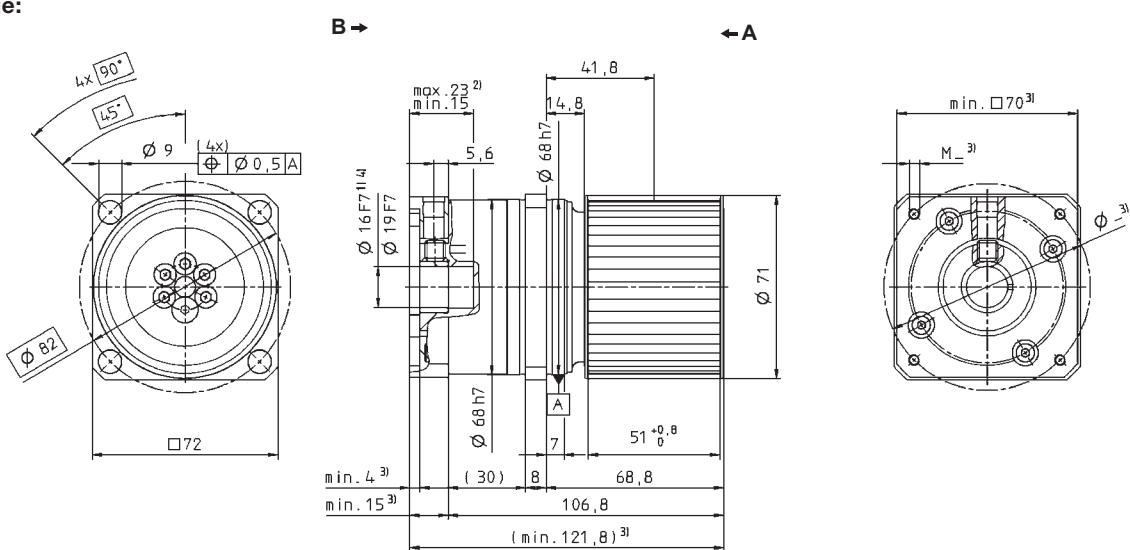
^{b)} Refers to center of the output shaft, if $n_2 = 100$ rpm

^{c)} With mounted PLPB⁺ belt pulley and 100 rpm

^{d)} Other ratios are available on request: i = 28.

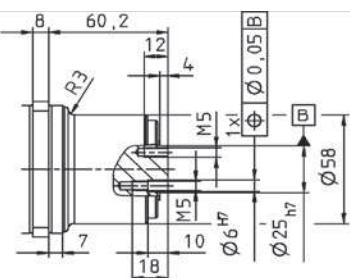
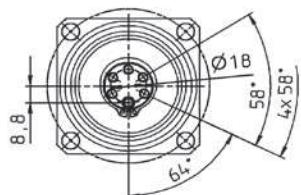
View A

View B

LPB⁺ 1-stage:**LPB⁺ 2-stage:**

Supplement: Belt pulley PLPB⁺ (not included in the scope of delivery – please order separately)

Illustration: Output flange without belt pulley



Belt Pulley PLPB+ 070 Profile AT5-0

Pitch	p	mm	5
Number of teeth	z		43
Circumference	$z * p$	mm/rotation	215
Inertia	J	kgcm ²	3.86
Mass	m	kg	0.48

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 19mm available – please contact WITTENSTEIN alpha



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



Motor mounting according to operating manual

LPB⁺ 090 MF 1/2-stage

				1-stage					2-stage																									
Ratio		i		3	4	5	7	10	9	12	16	20	25	30	40	50	70	100																
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B}	Nm	125	115	100	100	90	125	125	115	115	100	125	115	100	100	100	90																
		in.lb	1110	1020	890	890	800	1110	1110	1020	1020	890	1110	1020	890	890	890	800																
Nominal output torque (with n_m)	T_{2N}	Nm	63	58	50	50	45	63	63	58	58	50	63	58	50	50	50	45																
		in.lb	560	510	440	440	400	560	560	510	510	440	560	510	440	440	440	400																
Emergency stop torque (permitted 1000 times during the service life of the gearbox)	T_{2Not}	Nm	185	190	190	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	1680	1680																
Nominal input speed (with T_{2N} and 20°C ambient temperature) ^{a)}	n_{IN}	rpm	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400																
		rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000																
Max. input speed	n_{IMax}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000																
		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	0.3	0.3																
Mean no load running torque (with $n_i = 3000$ rpm and 20°C gearhead temperature)	T_{012}	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	2.7	2.2	2.2	2.2																
		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	0.3	0.3																
Max. torsional backlash		j_t	arcmin	≤ 8					≤ 10																									
Torsional rigidity	C_{121}	Nm/arcmin	12	12	9.5	9.5	8.5	12	12	12	12	9.5	12	12	9.5	9.5	8.5																	
		in.lb/arcmin	106	106	84	84	75	106	106	106	106	84	106	106	84	84	75																	
Max. axial force ^{b)}	F_{2AMax}	N	1900					1900																										
		lb _f	430					430																										
Max. radial force ^{b)}	F_{2RMax}	N	4300					4300																										
		lb _f	970					970																										
Efficiency at full load		η	%	97					95																									
Service life (For calculation, see the Chapter "Information")		L_h	h	> 20000					> 20000																									
Weight incl. standard adapter plate	m	kg	3.3					4.3																										
		lb _m	7.3					10																										
Operating noise for i=10 and $n_i = 3000$ rpm without load		L_{PA}	dB(A)						≤ 66																									
Max. permitted housing temperature		$^{\circ}\text{C}$							$+90$																									
		F							194																									
Ambient temperature		$^{\circ}\text{C}$							-15 to $+40$																									
		F							5 to 104																									
Lubrication		Lubricated for life																																
Paint		Blue RAL 5002																																
Direction of rotation		Motor and gearbox same direction																																
Protection class		IP 64																																
Moment of inertia (relates to the drive)	G	16	J_f	kgcm ²	1.8	1.6	1.5	1.5	1.4	1.5	1.5	1.6	1.6	1.5	1.5	1.4	1.4	1.4	1.4															
				10^{-3} in.lb.s ²	1.6	1.4	1.4	1.3	1.3	1.3	1.3	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3															
Clamping hub diameter (mm)	H	19	J_f	kgcm ²	2	1.9	1.8	1.8	1.7	1.8	1.8	1.9	1.9	1.8	1.8	1.7	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	1.6	1.5	1.5	1.5	1.5															

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

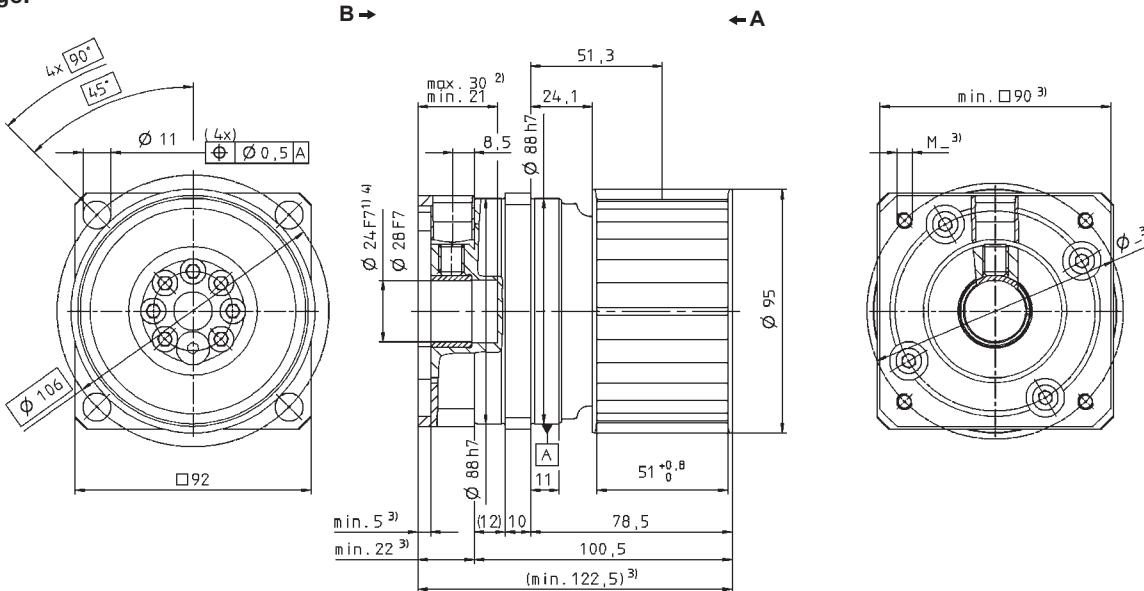
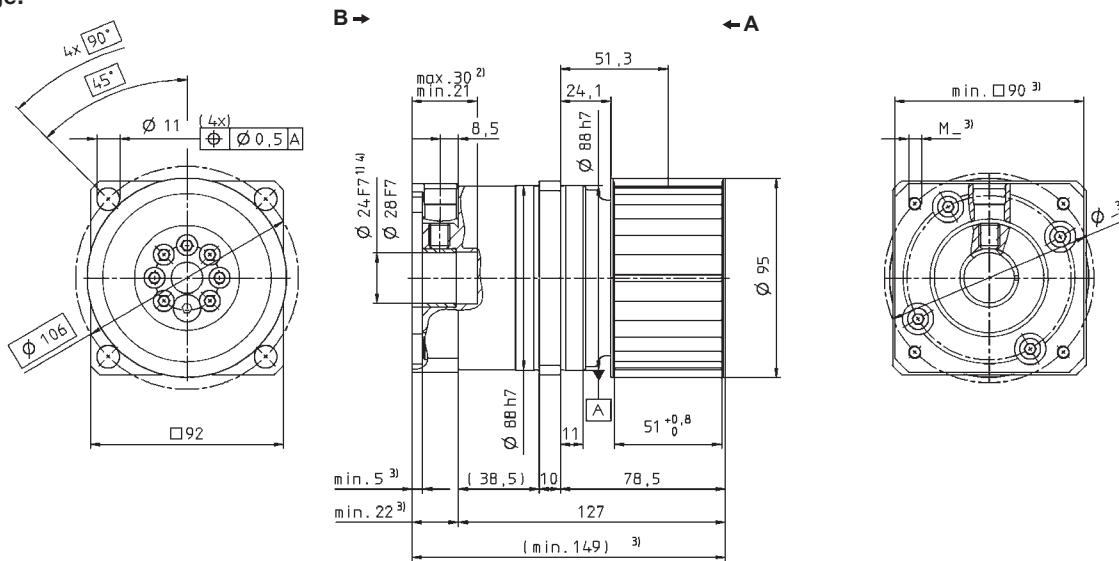
^{b)} Refers to center of the output shaft, if $n_2 = 100$ rpm

^{c)} With mounted PLPB⁺ belt pulley and 100 rpm

^{d)} Other ratios are available on request: i = 28.

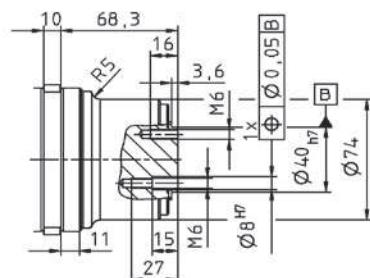
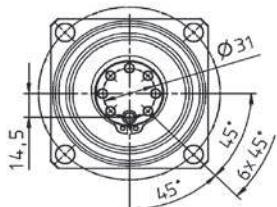
View A

View B

LPB⁺ 1-stage:**LPB⁺ 2-stage:**

Supplement: Belt pulley PLPB⁺ (not included in the scope of delivery – please order separately)

Illustration: Output flange without belt pulley


Belt Pulley PLPB⁺ 090 Profile AT10-0

Pitch	p	mm	10
Number of teeth	z		28
Circumference	$z * p$	mm/rotation	280
Inertia	J	kgcm ²	10.95
Mass	m	kg	0.82

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 28mm available – please contact WITTENSTEIN alpha



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



Motor mounting according to operating manual

LPB⁺ 120 MF 1/2-stage

				1-stage					2-stage																									
Ratio		i		3	4	5	7	10	9	12	16	20	25	30	40	50	70	100																
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B}	Nm	305	305	250	250	220	305	305	305	305	250	305	305	250	250	250	220																
		in.lb	2700	2700	2210	2210	1950	2700	2700	2700	2700	2210	2700	2700	2210	2210	2210	1950																
Nominal output torque (with n_m)	T_{2N}	Nm	155	155	125	125	110	155	155	155	155	125	155	155	125	125	125	110																
		in.lb	1370	1370	1110	1110	970	1370	1370	1370	1370	1110	1370	1370	1110	1110	1110	970																
Emergency stop torque (permitted 1000 times during the service life of the gearbox)	T_{2Not}	Nm	400	480	480	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	4250	4250																
Nominal input speed (with T_{2N} and 20°C ambient temperature) ^{a)}	n_{IN}	rpm	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600																
		rpm	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800																
Mean no load running torque (with $n_i = 3000$ rpm and 20°C gearhead temperature)	T_{012}	Nm	1.1	1.0	0.9	0.8	0.8	0.6	0.6	0.6	0.5	0.5	0.4	0.5	0.4	0.4	0.4	0.4																
		in.lb	9.7	8.9	8.0	7.1	7.1	5.3	5.3	4.9	4.4	4.4	3.5	4.4	3.5	3.5	3.5	3.5																
Max. torsional backlash		j_t	arcmin	≤ 8					≤ 10																									
Torsional rigidity	C_{121}	Nm/arcmin		47	47	36	36	30	47	47	47	47	36	47	47	36	36	30																
		in.lb/arcmin		420	420	320	320	270	420	420	420	420	320	420	420	320	320	270																
Max. axial force ^{b)}	F_{2AMax}	N	4000					4000																										
		lb _f	900					900																										
Max. radial force ^{b)}	F_{2RMax}	N	9500					9500																										
		lb _f	2140					2140																										
Efficiency at full load		η	%	97					95																									
Service life (For calculation, see the Chapter "Information")		L_h	h	> 20000					> 20000																									
Weight incl. standard adapter plate	m	kg	7.3					9.7																										
		lb _m	16					21																										
Operating noise for i=10 and $n_i = 3000$ rpm without load		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 gearbox same direction																																
Protection class		IP 64																																
Moment of inertia (relates to the drive)	I	32	J_f	kgcm ²	6.8	5.9	5.6	5.2	5.1	5.4	5.4	5.5	5.5	5.3	5.3	5.0	5.0	5.0	5.0															
				10^{-3} in.lb.s ²	6.1	5.2	4.9	4.6	4.5	4.7	4.7	4.9	4.9	4.7	4.7	4.4	4.4	4.4	4.4															
Clamping hub diameter (mm)	K	38	J_f	kgcm ²	7.7	6.8	6.4	6.1	5.9	6.2	6.2	6.4	6.4	6.2	6.2	5.9	5.9	5.9	5.9															
				10^{-3} in.lb.s ²	6.8	6.0	5.7	5.4	5.2	5.5	5.5	5.7	5.7	5.5	5.5	5.2	5.2	5.2	5.2															

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

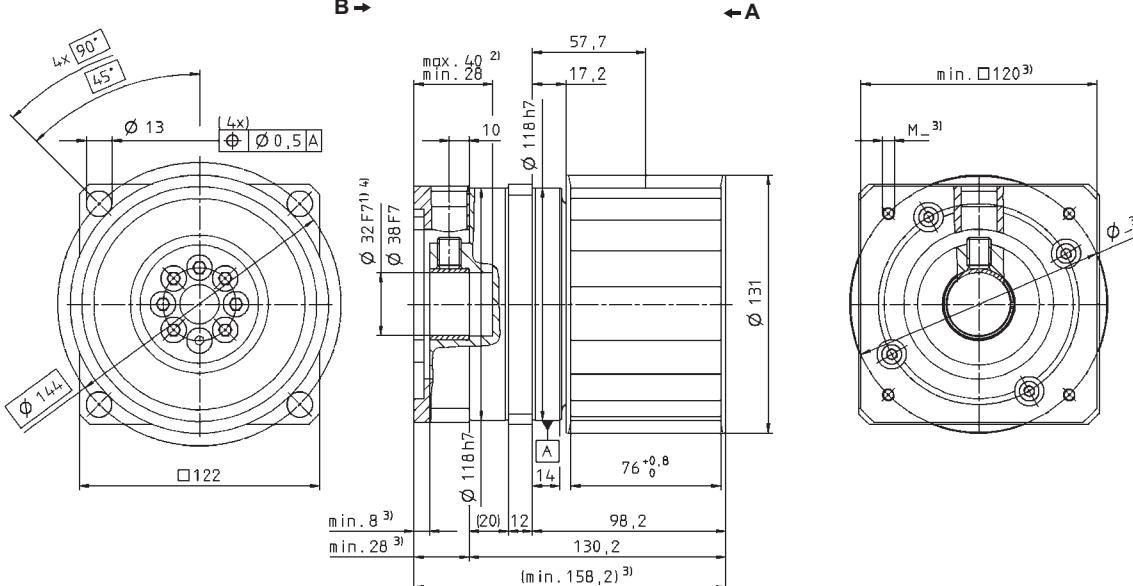
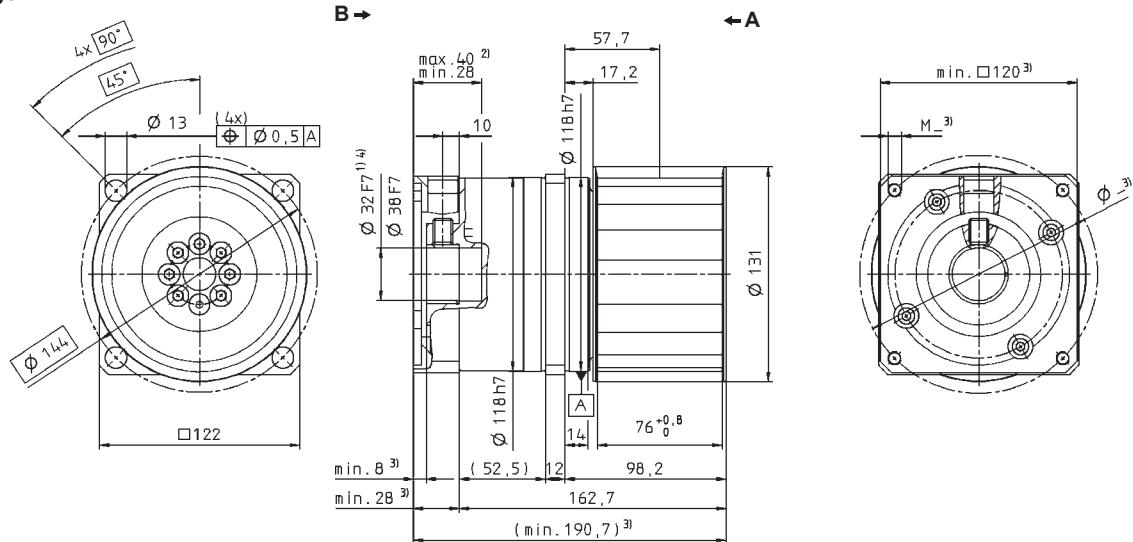
^{b)} Refers to center of the output shaft, if $n_2 = 100$ rpm

^{c)} With mounted PLPB⁺ belt pulley and 100 rpm

^{d)} Other ratios are available on request: i = 28.

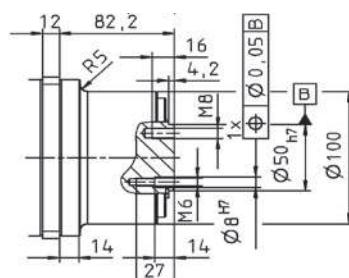
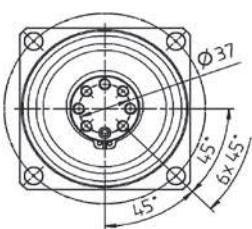
View A

View B

LPB⁺ 1-stage:**LPB⁺ 2-stage:**

Supplement: Belt pulley PLPB⁺ (not included in the scope of delivery – please order separately)

Illustration: Output flange without belt pulley


Belt Pulley PLPB⁺ 120 Profile AT20-0

Pitch	p	mm	20
Number of teeth	z		19
Circumference	$z * p$	mm/rotation	380
Inertia	J	kgcm ²	50.62
Mass	m	kg	2.61

Non-tolerated dimensions $\pm 1\text{mm}$

- 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



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



Motor mounting according to operating manual