

LP⁺/LPB⁺ Generation 3 – Innovation sets standards

LP⁺/LPB⁺ Generation 3

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

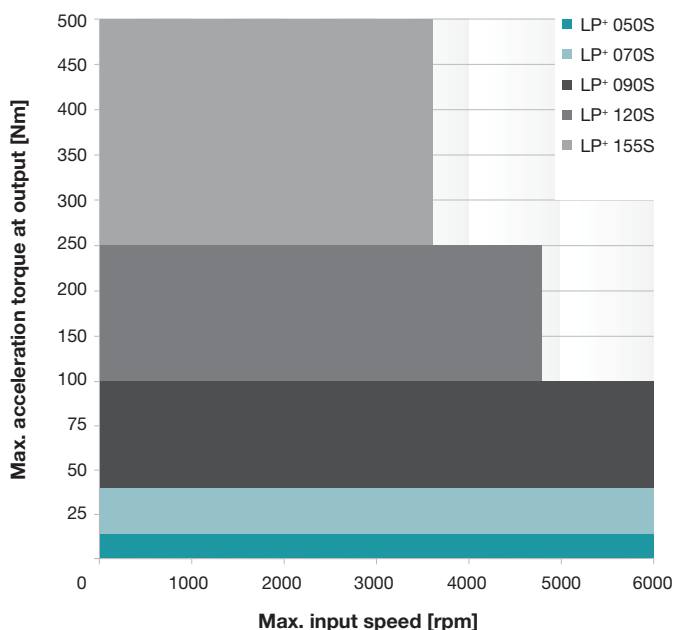
The LPB⁺ Generation 3 is also available as a two-stage version!

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.

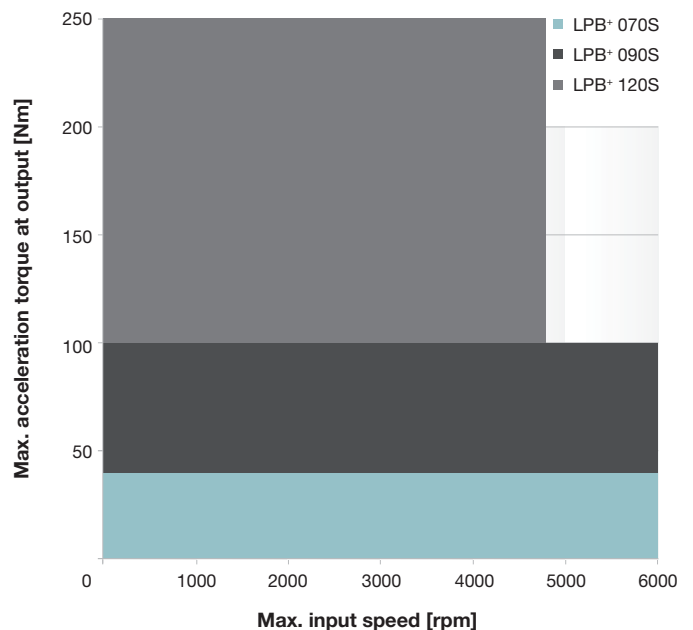


Quick size selection

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

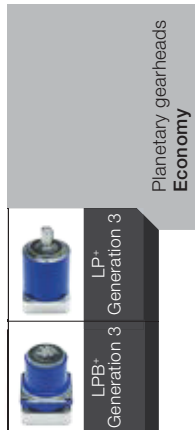
Comparison

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>i</i>		4	5	7	10	16	20	25	35	50	70	100	
Max. acceleration torque (max. 1000 cycles per hour)	<i>T</i> _{2B}	Nm	13	14	14	13	13	13	14	14	14	14	13	
		in.lb	120	120	120	120	120	120	120	120	120	120	120	
Nominal output torque (with <i>n</i>_N)	<i>T</i> _{2N}	Nm	6	6.5	6.5	6	6	6	6.5	6.5	6.5	6.5	6	
		in.lb	53	58	58	53	53	53	58	58	58	58	53	
Emergency stop torque (permitted 1000 times during the service life of the gearhead)	<i>T</i> _{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 (with <i>T</i>_{2N} and 20°C ambient temperature) ^{a)}	<i>n</i> _{1N}	rpm	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	
Max. input speed	<i>n</i> _{1Max}	rpm	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	
Mean no load running torque (with <i>n</i>_i = 3000 rpm and 20°C gearhead temperature)	<i>T</i> 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	<i>j</i> _t	arcmin	≤ 10				≤ 13							
Torsional rigidity	<i>C</i> _{t21}	Nm/ arcmin	1.5	1.2	1.2	0.9	1.5	1.5	1.2	1.2	1.2	1.2	0.9	
		in.lb/ arcmin	13	11	11	8	13	13	11	11	11	11	8	
Max. axial force ^{b)}	<i>F</i> _{2AMax}	N	700				700							
		lb _f	160				160							
Max. radial force ^{b)}	<i>F</i> _{2RMax}	N	650				650							
		lb _f	150				150							
Efficiency at full load	η	%	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	0.75				0.95							
		lb _m	1.7				2.1							
Operating noise for i=10 and <i>n</i>_i = 3000 rpm without load	<i>L</i> _{PA}	dB(A)	≤ 62											
Max. permitted housing temperature		°C	+90											
		F	194											
Ambient temperature		°C	-15 to +40											
		F	5 to 104											
Lubrication			Lubricated for life											
Paint			Blue RAL 5002											
Direction of rotation			Motor and gearhead same direction											
Protection class			IP 64											
Moment of inertia (relates to the drive)	B	11	<i>J</i> _i	kgcm ²	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
Clamping hub diameter (mm)	C	14	<i>J</i> _i	kgcm 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

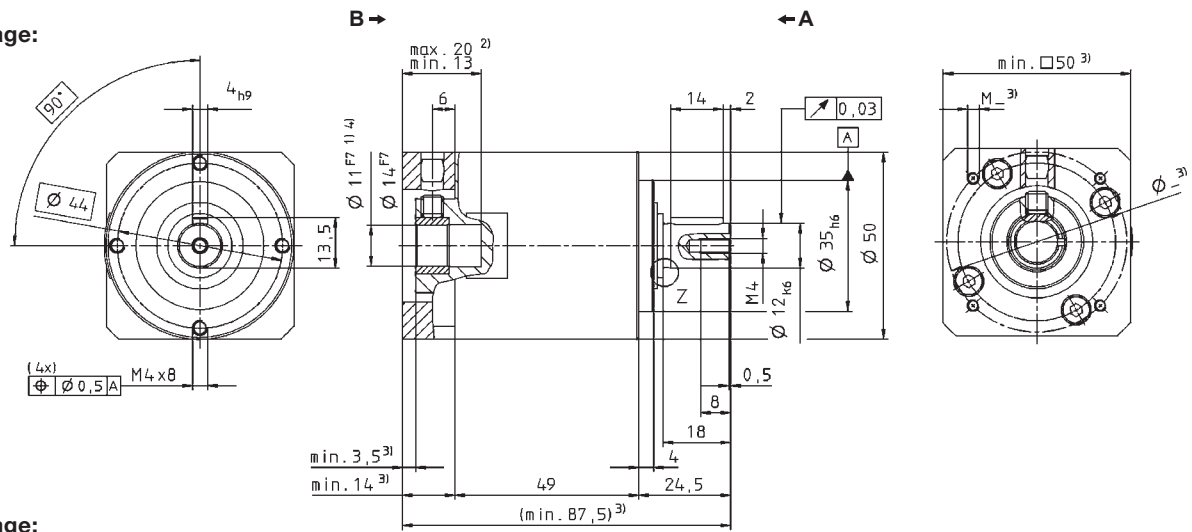
^{a)} For higher ambient temperatures, please reduce input speed

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

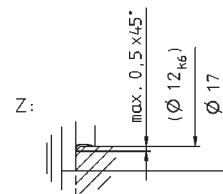
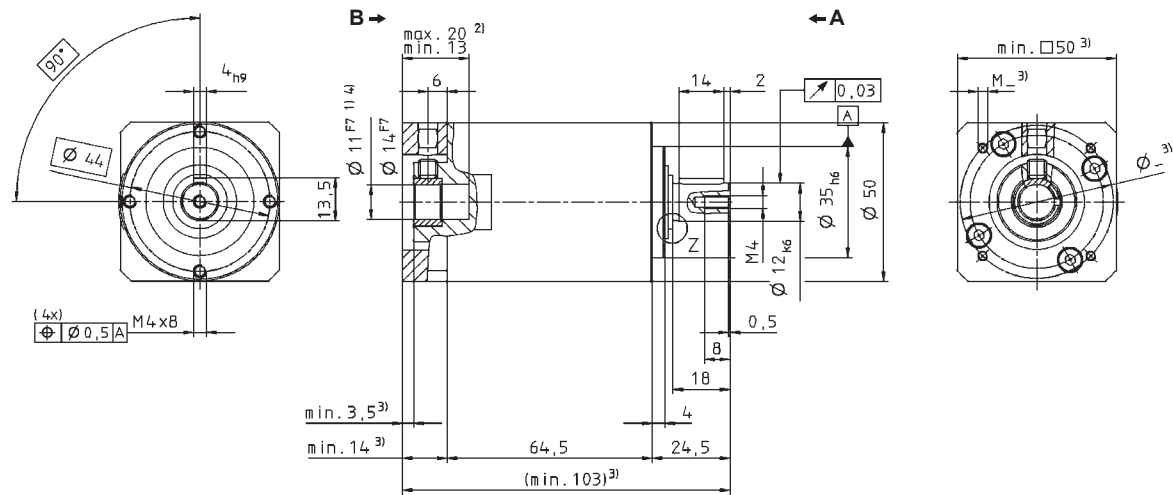
View A

View B

LP⁺ 1-stage:



LP⁺ 2-stage:



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

- 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 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>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	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 <i>n</i> _{IN})	<i>T</i> _{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 gearhead)	<i>T</i> _{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 <i>T</i> _{2N} and 20°C ambient temperature) ^{b)}	<i>n</i> _{1N}	rpm	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	
Max. input speed	<i>n</i> _{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	
Mean no load running torque (with <i>n</i> ₁ = 3000 rpm and 20°C gearhead temperature)	<i>T</i> 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	
		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	0.9	
Max. torsional backlash	<i>j</i> _t	arcmin	≤ 8						≤ 10									
Torsional rigidity	<i>C</i> _{t21}	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)}	<i>F</i> _{2AMax}	N	1550						1550									
		lb _f	349						349									
Max. radial force ^{c)}	<i>F</i> _{2RMax}	N	1450						1450									
		lb _f	326						326									
Efficiency at full load	η	%	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	2.0						2.4									
		lb _m	4.4						5.3									
Operating noise for i=10 and <i>n</i> ₁ = 3000 rpm without load	<i>L</i> _{PA}	dB(A)	≤ 64															
Max. permitted housing temperature	°C		+90															
	F		194															
Ambient temperature	°C		-15 to +40															
	F		5 to 104															
Lubrication			Lubricated for life															
Paint			Blue RAL 5002															
Direction of rotation			Motor and gearhead same direction															
Protection class			IP 64															
Moment of inertia (relates to the drive)	D	16	<i>J</i> ₁	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 ⁻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
Clamping hub diameter (mm)	E	19	<i>J</i> ₁	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	
				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	0.5	0.4	0.4

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

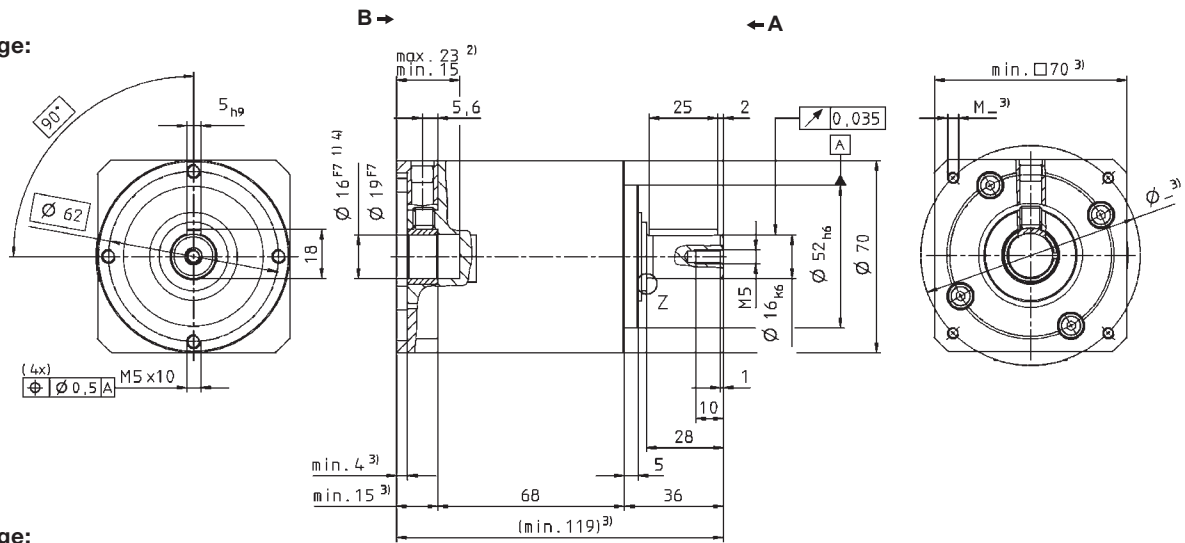
^{b)} For higher ambient temperatures, please reduce input speed

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

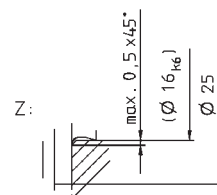
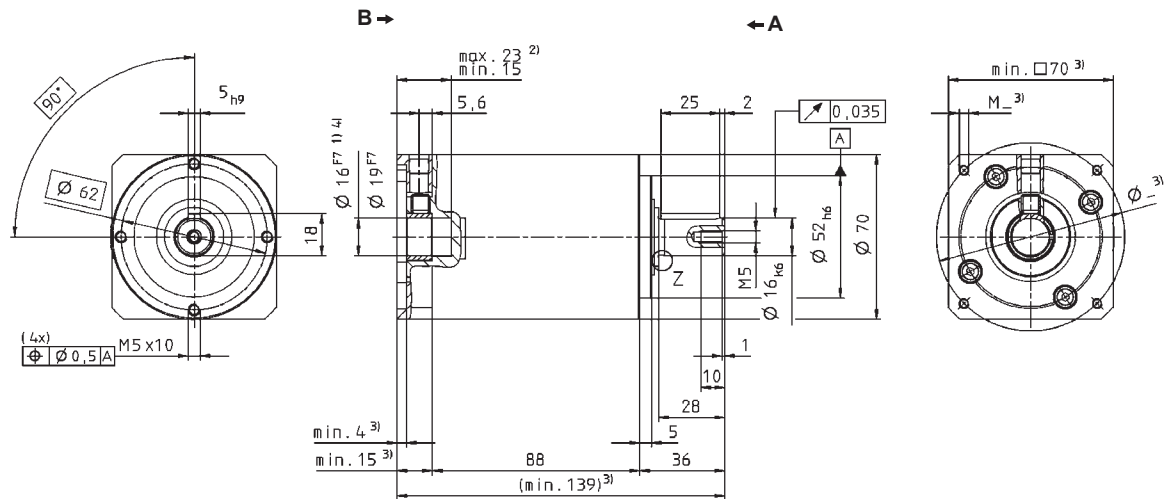
View A

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>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	125	115	100	100	90	125	125	115	115	100	125	115	100	100	90	
		in.lb	1110	1020	890	890	800	1110	1110	1020	1020	890	1110	1020	890	890	800	
Nominal output torque (with <i>n</i>_{IN})	<i>T</i> _{2N}	Nm	63	58	50	50	45	63	63	58	58	50	63	58	50	50	45	
		in.lb	560	510	440	440	400	560	560	510	510	440	560	510	440	440	400	
Emergency stop torque (permitted 1000 times during the service life of the gearhead)	<i>T</i> _{2Not}	Nm	185	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	
Nominal input speed (with <i>T</i>_{2N} and 20°C ambient temperature) ^{b)}	<i>n</i> _{1N}	rpm	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	
Max. input speed	<i>n</i> _{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	
Mean no load running torque (with <i>n</i>₁ = 3000 rpm and 20°C gearhead temperature)	<i>T</i> 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	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	2.2	
Max. torsional backlash	<i>j</i> _t	arcmin	≤ 8						≤ 10									
Torsional rigidity	<i>C</i> _{t21}	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)}	<i>F</i> _{2AMax}	N	1900						1900									
		lb _f	430						430									
Max. radial force ^{c)}	<i>F</i> _{2RMax}	N	2400						2400									
		lb _f	540						540									
Efficiency at full load	η	%	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	4.0						5.0									
		lb _m	8.8						11									
Operating noise for i=10 and <i>n</i>₁ = 3000 rpm without load	<i>L</i> _{PA}	dB(A)	≤66															
Max. permitted housing temperature		°C	+90															
		F	194															
Ambient temperature		°C	-15 to +40															
		F	5 to 104															
Lubrication			Lubricated for life															
Paint			Blue RAL 5002															
Direction of rotation			Motor and gearhead same direction															
Protection class			IP 64															
Moment of inertia (relates to the drive)	G	24	<i>J</i> ₁	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
				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
Clamping hub diameter (mm)	H	28	<i>J</i> ₁	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
				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

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

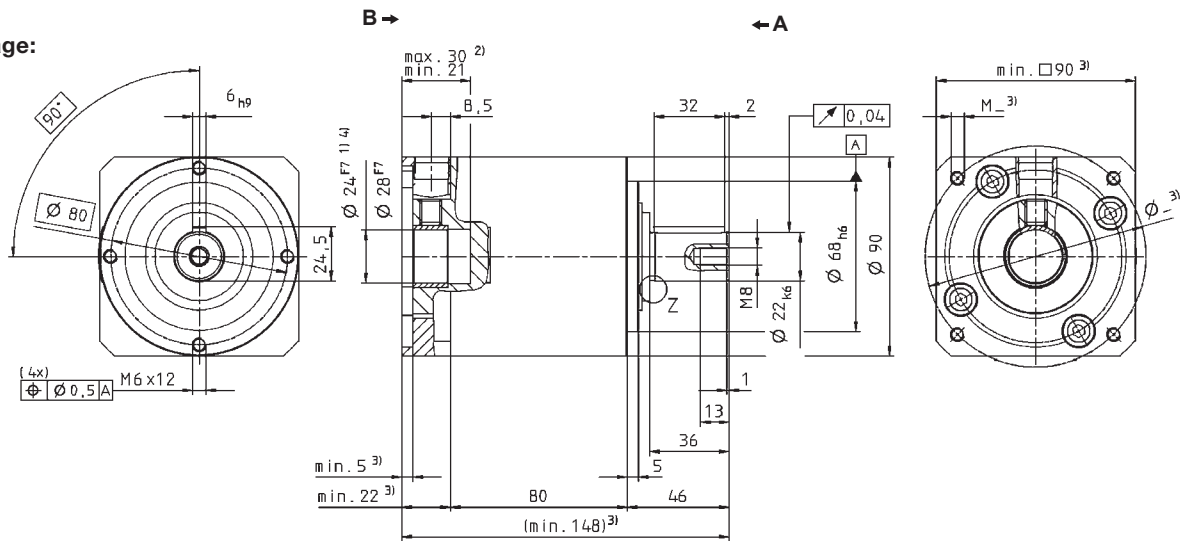
^{b)} For higher ambient temperatures, please reduce input speed

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

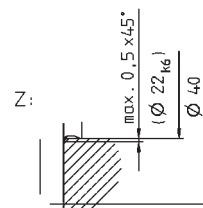
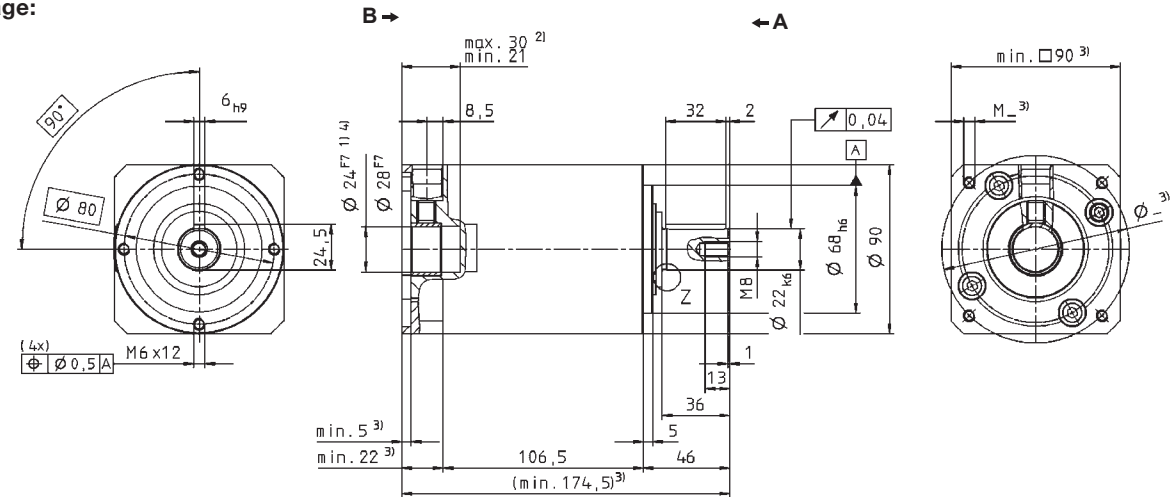
View A

View B

LP+ 1-stage:



LP+ 2-stage:



Non-tolerated dimensions ± 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 28 mm 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	220	
		in.lb	2700	2700	2210	2210	1950	2700	2700	2700	2700	2210	2700	2700	2210	2210	1950	
Nominal output torque (with <i>n</i> _{IN})	<i>T</i> _{2N}	Nm	155	155	125	125	110	155	155	155	155	125	155	155	125	125	110	
		in.lb	1370	1370	1110	1110	970	1370	1370	1370	1370	1110	1370	1370	1110	1110	970	
Emergency stop torque (permitted 1000 times during the service life of the gearhead)	<i>T</i> _{2Not}	Nm	400	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	
Nominal input speed (with <i>T</i> _{2N} and 20°C ambient temperature) ^{b)}	<i>n</i> _{1N}	rpm	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	
Max. input speed	<i>n</i> _{1Max}	rpm	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800	
Mean no load running torque (with <i>n</i> ₁ = 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	
		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	
Max. torsional backlash	<i>j</i> _t	arcmin	≤ 8					≤ 10										
Torsional rigidity	<i>C</i> _{t21}	Nm/ arcmin	30	30	25	25	22	30	30	30	30	25	25	30	25	25	22	
		in.lb/ arcmin	270	270	220	220	190	270	270	270	270	220	220	270	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	η	%	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> ₁ = 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 gearhead same direction															
Protection class			IP 64															
Moment of inertia (relates to the drive)	I	32	<i>J</i> ₁	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
				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
Clamping hub diameter (mm)	K	38	<i>J</i> ₁	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
				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

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

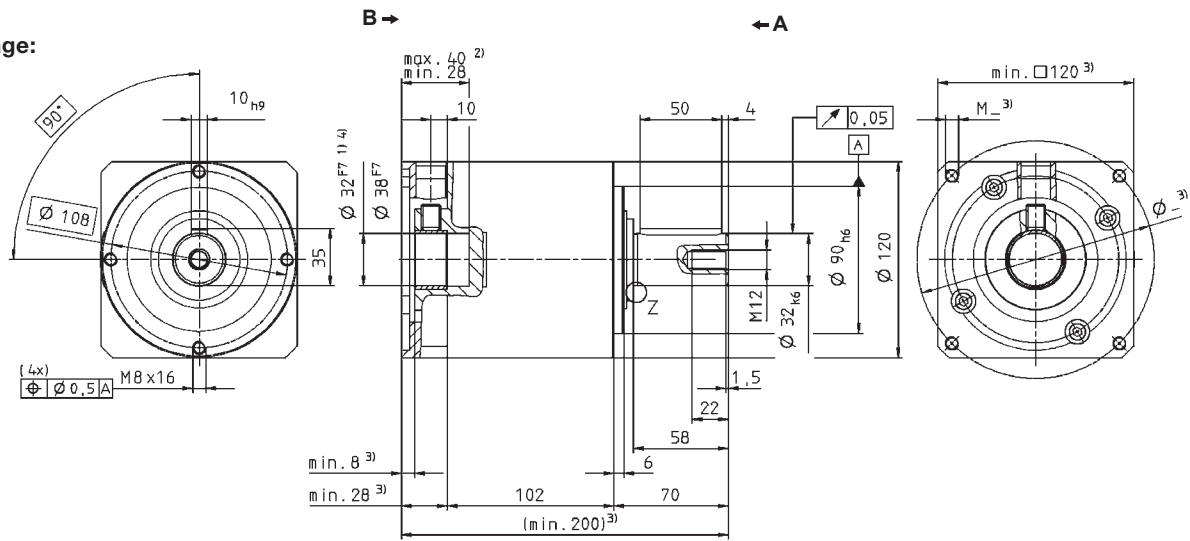
^{b)} For higher ambient temperatures, please reduce input speed

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

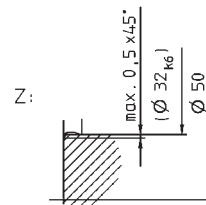
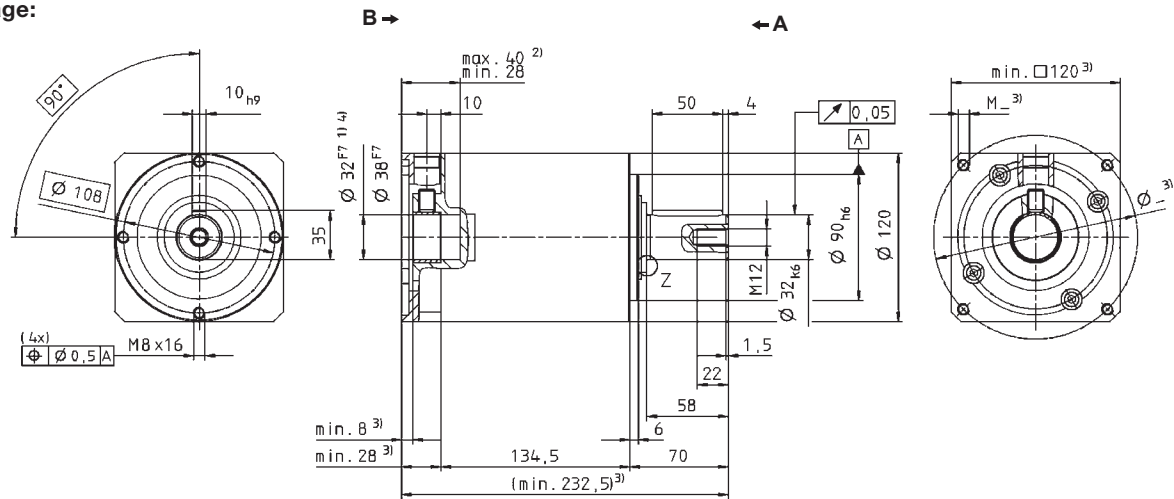
View A

View B

LP+ 1-stage:



LP+ 2-stage:



Non-tolerated dimensions ± 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

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

 Motor mounting according to operating manual

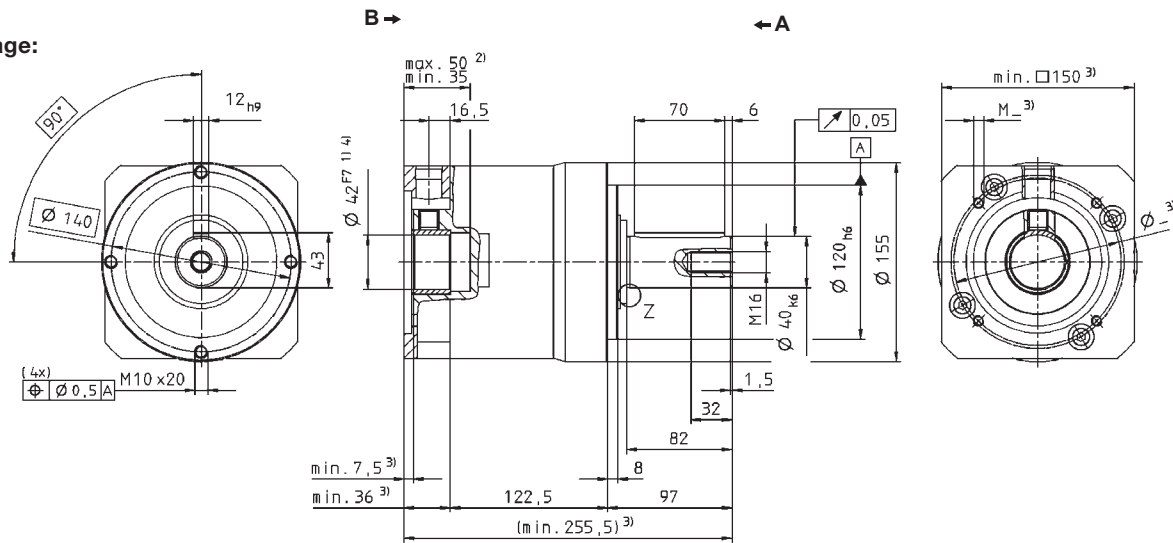
LP⁺ 155 MF 1/2-stage

				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_{in})	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 gearhead)	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 _{1N}	rpm		2000	2000	2000	2000	2000	
Max. input speed	n _{1Max}	rpm		3600	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 ₁	kgcm ²	17	16	–	–	–
				10 ⁻³ in.lb.s ²	15	14	–	–	–
Clamping hub diameter (mm)	I	32	J ₁	kgcm ²	–	–	5.4	5.0	5.0
				10 ⁻³ in.lb.s ²	–	–	4.8	4.4	4.4
	K	38	J ₁	kgcm ²	–	–	6.3	5.9	5.9
				10 ⁻³ in.lb.s ²	–	–	5.5	5.2	5.2

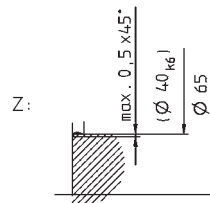
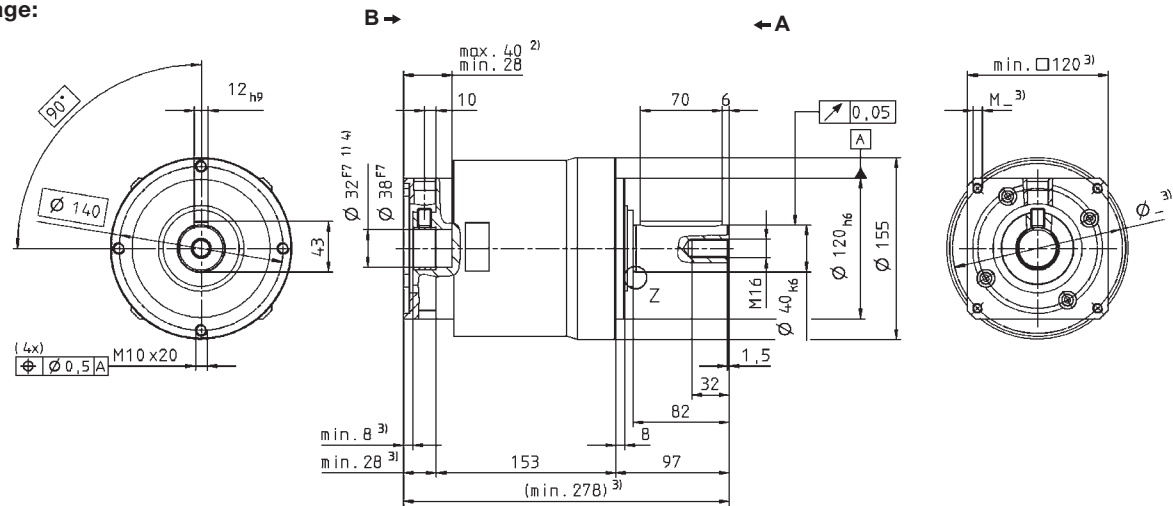
^{a)} For higher ambient temperatures, please reduce input speed

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

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.
- 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>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	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 <i>n</i>_{IN})	<i>T</i> _{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 gearhead)	<i>T</i> _{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 <i>T</i>_{2N} and 20°C ambient temperature) ^{a)}	<i>n</i> _{1N}	rpm	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	
Max. input speed	<i>n</i> _{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	
Mean no load running torque (with <i>n</i>_i = 3000 rpm and 20°C gearhead temperature)	<i>T</i> 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	
		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	0.9	
Max. torsional backlash	<i>j</i> _t	arcmin	≤ 8						≤ 10									
Torsional rigidity	<i>C</i> _{t21}	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)}	<i>F</i> _{2AMax}	N	1550						1550									
		lb _f	350						350									
Max. radial force ^{b)}	<i>F</i> _{2RMax}	N	3000						3000									
		lb _f	680						680									
Efficiency at full load	η	%	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	1.6						2									
		lb _m	3.5						4.4									
Operating noise for i=10 and <i>n</i>_i = 3000 rpm without load	<i>L</i> _{PA}	dB(A)	≤64															
Max. permitted housing temperature	°C		+90															
	F		194															
Ambient temperature	°C		-15 to +40															
	F		5 to 104															
Lubrication			Lubricated for life															
Paint			Blue RAL 5002															
Direction of rotation			Motor and gearhead same direction															
Protection class			IP 64															
Moment of inertia (relates to the drive)	D	16	<i>J</i> ₁	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 ⁻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
Clamping hub diameter (mm)	E	19	<i>J</i> ₁	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	
				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

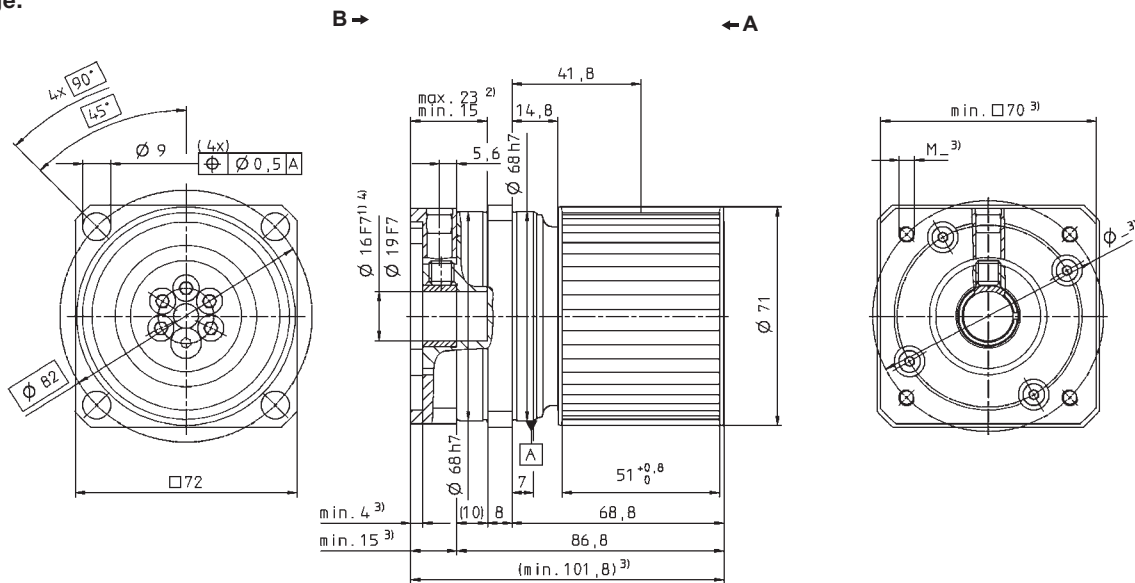
^{c)} With mounted PLPB⁺ belt pulley and 100 rpm

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

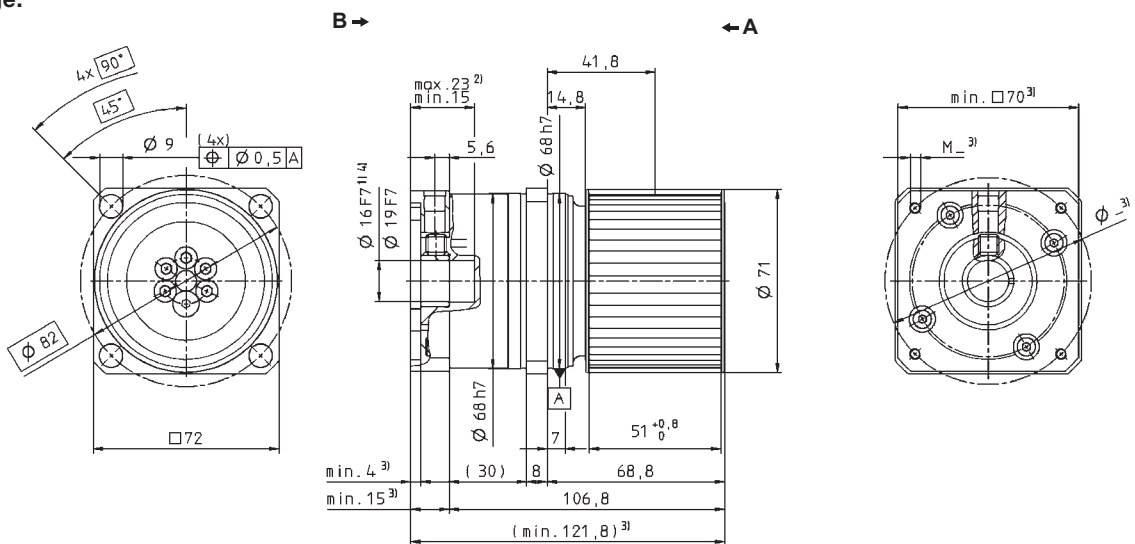
View A

View B

LPB+ 1-stage:

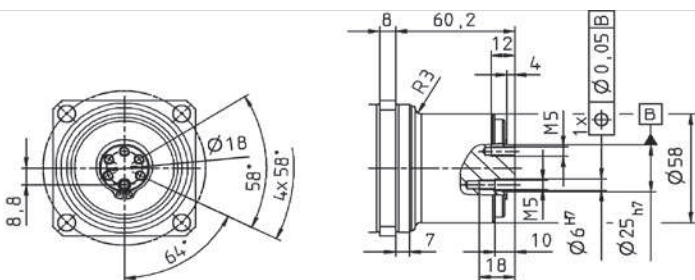


LPB+ 2-stage:



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	$z \cdot p$	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

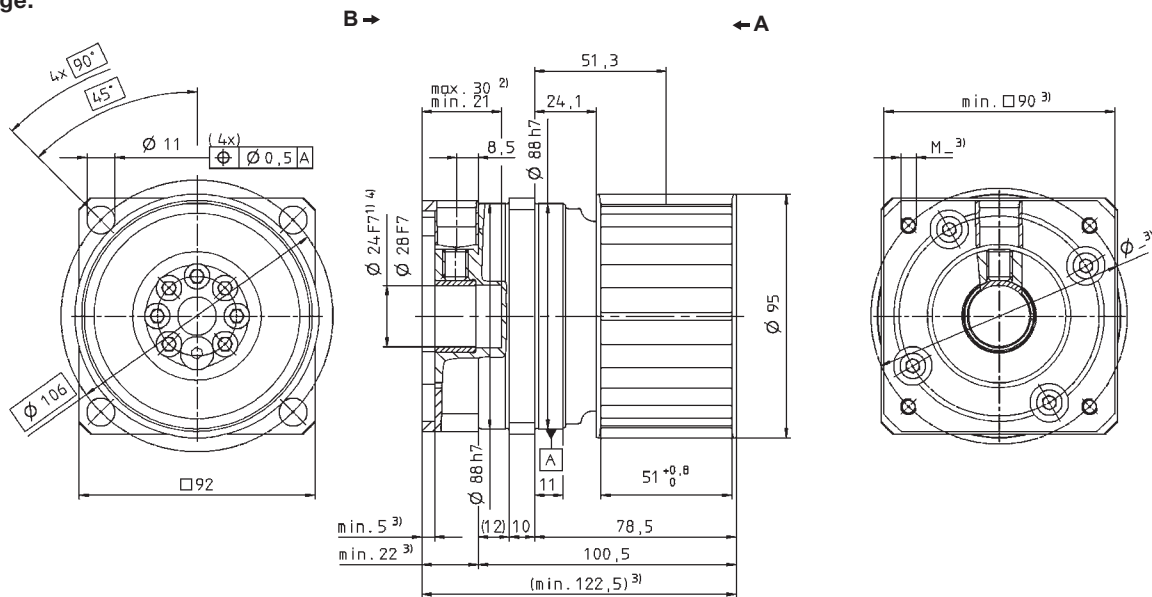
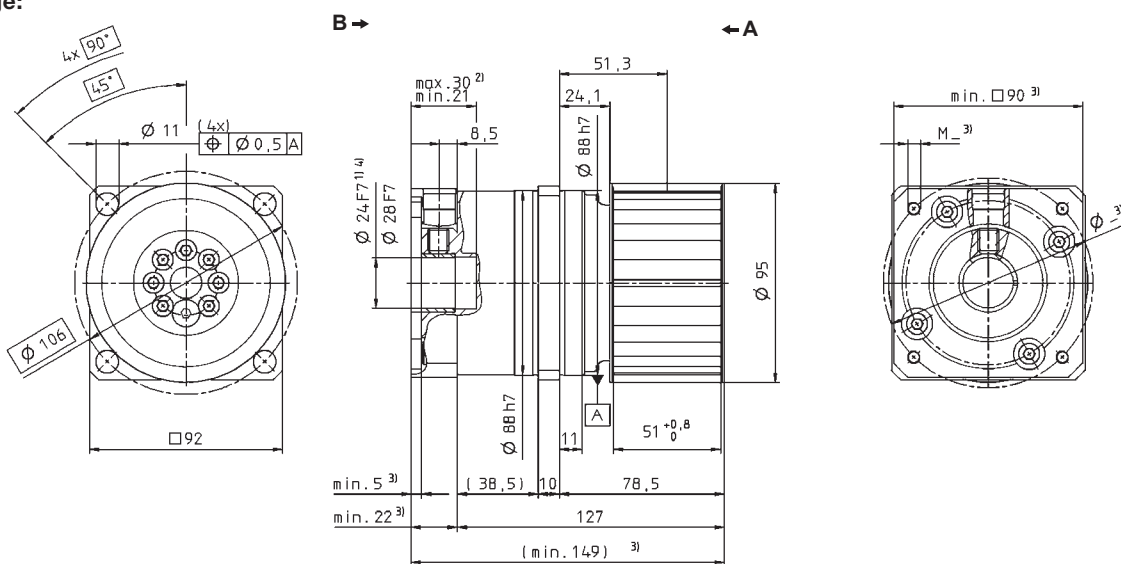
			1-stage						2-stage									
Ratio	<i>i</i>		3	4	5	7	10	9	12	16	20	25	30	40	50	70	100	
Max. acceleration torque (max. 1000 cycles per hour)	<i>T</i> _{2B}	Nm	125	115	100	100	90	125	125	115	115	100	125	115	100	100	90	
		in.lb	1110	1020	890	890	800	1110	1110	1020	1020	890	1110	1020	890	890	800	
Nominal output torque (with <i>n</i> _{IN})	<i>T</i> _{2N}	Nm	63	58	50	50	45	63	63	58	58	50	63	58	50	50	45	
		in.lb	560	510	440	440	400	560	560	510	510	440	560	510	440	440	400	
Emergency stop torque (permitted 1000 times during the service life of the gearhead)	<i>T</i> _{2Not}	Nm	185	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	
Nominal input speed (with <i>T</i> _{2N} and 20°C ambient temperature) ^{a)}	<i>n</i> _{1N}	rpm	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	
Max. input speed	<i>n</i> _{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	
Mean no load running torque (with <i>n</i> ₁ = 3000 rpm and 20°C gearhead temperature)	<i>T</i> 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	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	2.2	
Max. torsional backlash	<i>j</i> _t	arcmin	≤ 8						≤ 10									
Torsional rigidity	<i>C</i> _{t21}	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)}	<i>F</i> _{2AMax}	N	1900						1900									
		lb _f	430						430									
Max. radial force ^{b)}	<i>F</i> _{2RMax}	N	4300						4300									
		lb _f	970						970									
Efficiency at full load	η	%	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	3.3						4.3									
		lb _m	7.3						10									
Operating noise for i=10 and <i>n</i> ₁ = 3000 rpm without load	<i>L</i> _{PA}	dB(A)	≤ 66															
Max. permitted housing temperature	°C		+90															
	F		194															
Ambient temperature	°C		-15 to +40															
	F		5 to 104															
Lubrication			Lubricated for life															
Paint			Blue RAL 5002															
Direction of rotation			Motor and gearhead same direction															
Protection class			IP 64															
Moment of inertia (relates to the drive)	G	16	<i>J</i> ₁	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
				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
Clamping hub diameter (mm)	H	19	<i>J</i> ₁	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
				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

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

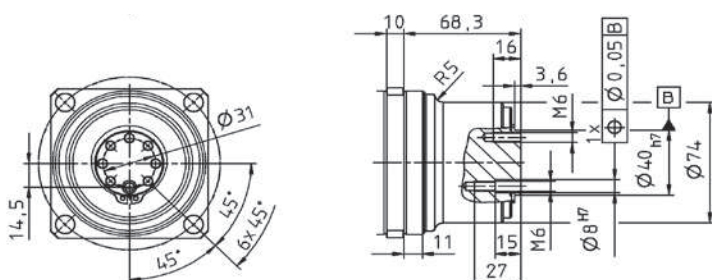
^{b)} Refers to center of the output shaft, if n_2 = 100 rpm

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

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

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	$z \cdot p$	mm/rotation	280
Inertia	J	kgcm ²	10.95
Mass	m	kg	0.82

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

 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	220	
		in.lb	2700	2700	2210	2210	1950	2700	2700	2700	2700	2210	2700	2700	2210	2210	1950	
Nominal output torque (with n_{IN})	T _{2N}	Nm	155	155	125	125	110	155	155	155	155	125	155	155	125	125	110	
		in.lb	1370	1370	1110	1110	970	1370	1370	1370	1370	1110	1370	1370	1110	1110	970	
Emergency stop torque (permitted 1000 times during the service life of the gearhead)	T _{2Not}	Nm	400	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	
Nominal input speed (with T_{2N} and 20°C ambient temperature) ^{a)}	n _{1N}	rpm	2600	2600	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	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	
		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	
Max. torsional backlash	j _t	arcmin	≤ 8					≤ 10										
Torsional rigidity	C _{t21}	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 gearhead same direction															
Protection class			IP 64															
Moment of inertia (relates to the drive)	I	32	J _i	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
				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
Clamping hub diameter (mm)	K	38	J _i	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
				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

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

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

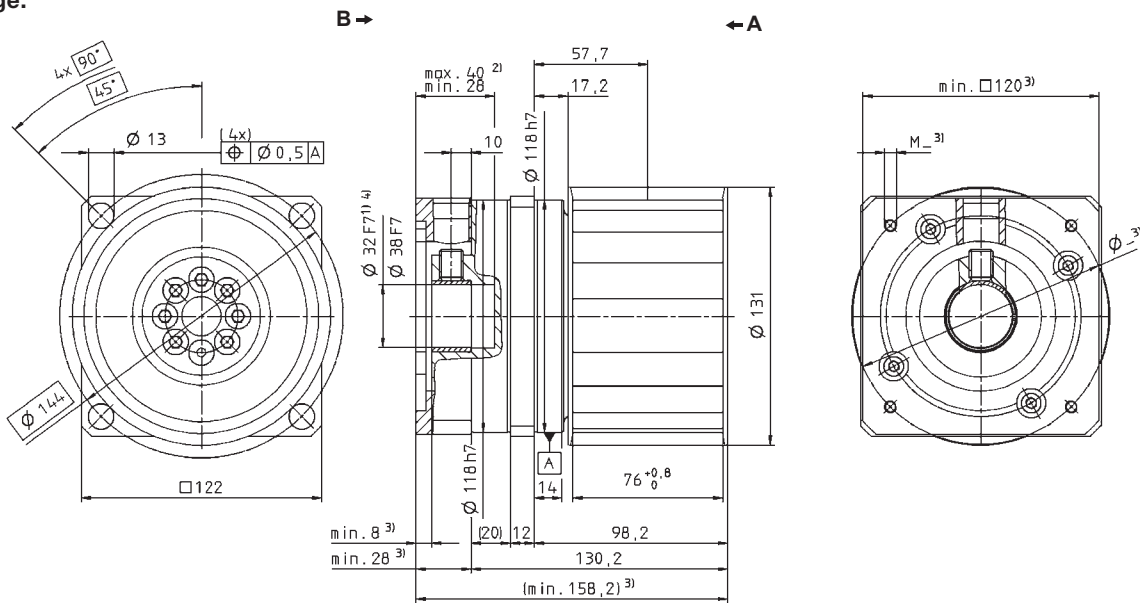
^{c)} With mounted PLPB⁺ belt pulley and 100 rpm

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

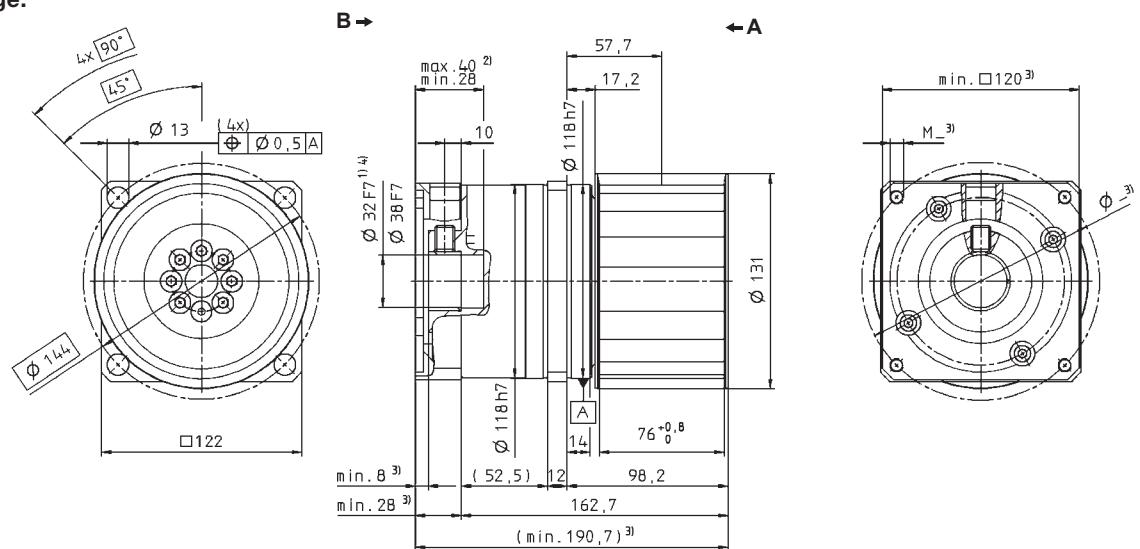
View A

View B

LPB⁺ 1-stage:

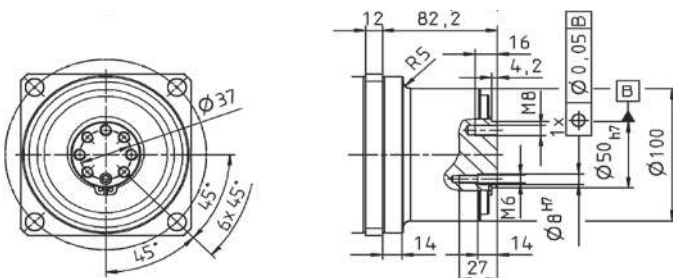


LPB⁺ 2-stage:



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	$z \cdot p$	mm/rotation	380
Inertia	J	kgcm ²	50.62
Mass	m	kg	2.61

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

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

 Motor mounting according to operating manual