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.



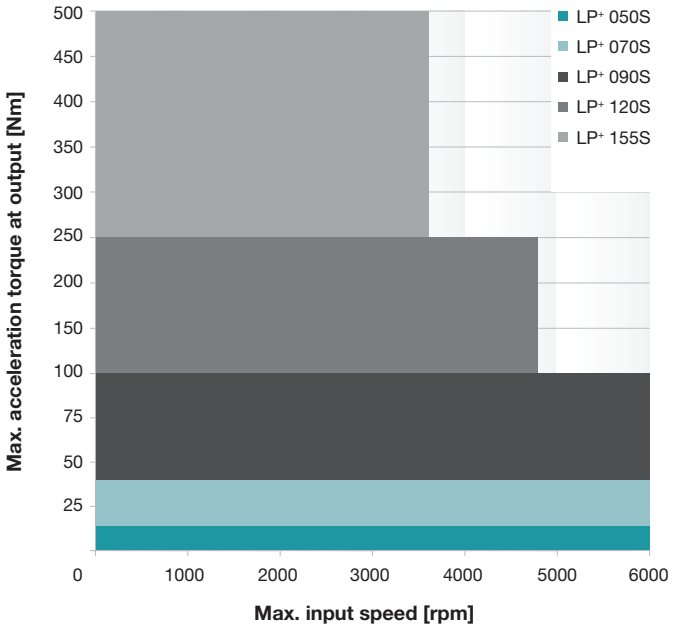
LPB+ Generation 3 with belt pulley

LP+ Generation 3

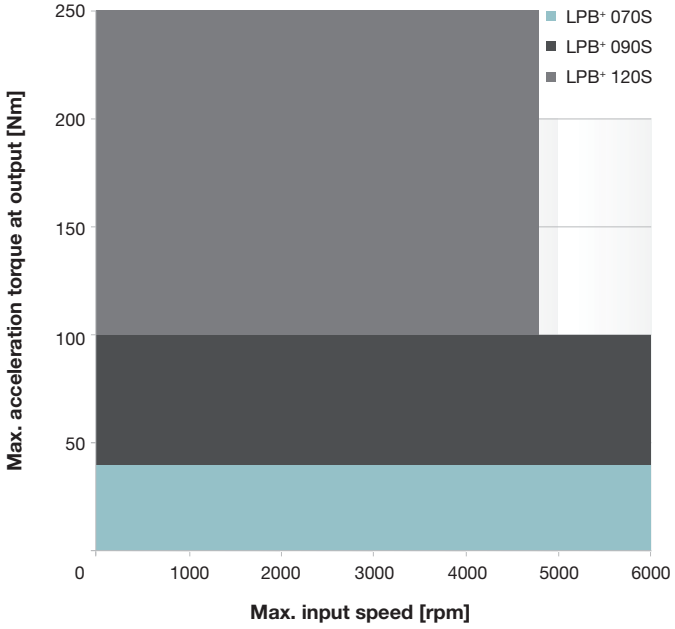
LPB+ Generation 3

Quick size selection

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



LPB+ Generation 3 (example for i = 5)
For applications in cyclic operation (ED ≥ 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		•	

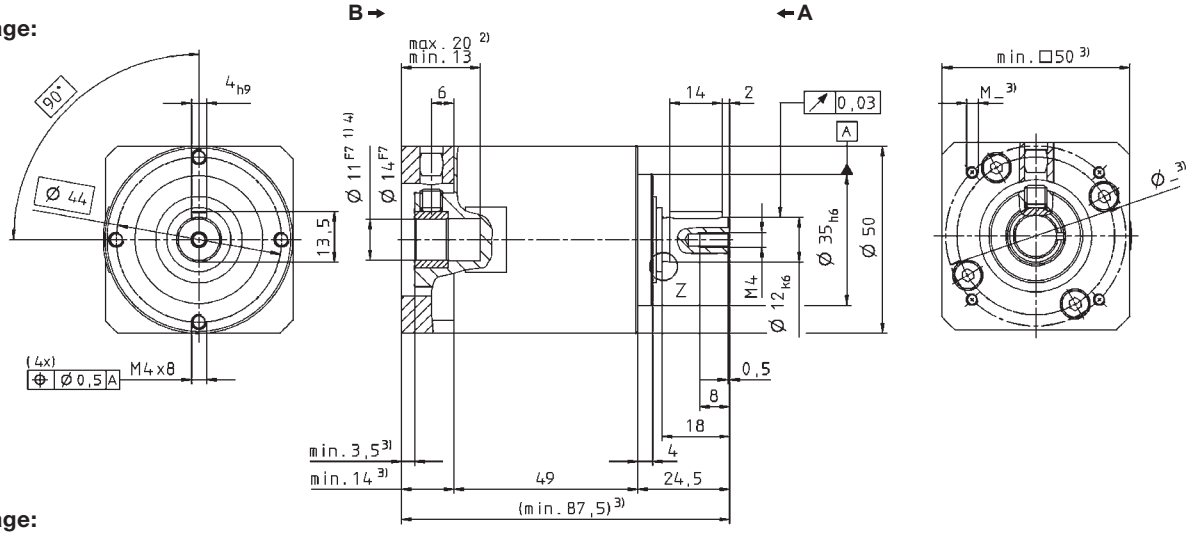
[a] Power reduction: technical data available upon request [b] Please contact WITTENSTEIN alpha [c] In relation to reference sizes

LP+ 050 MF 1/2-stage

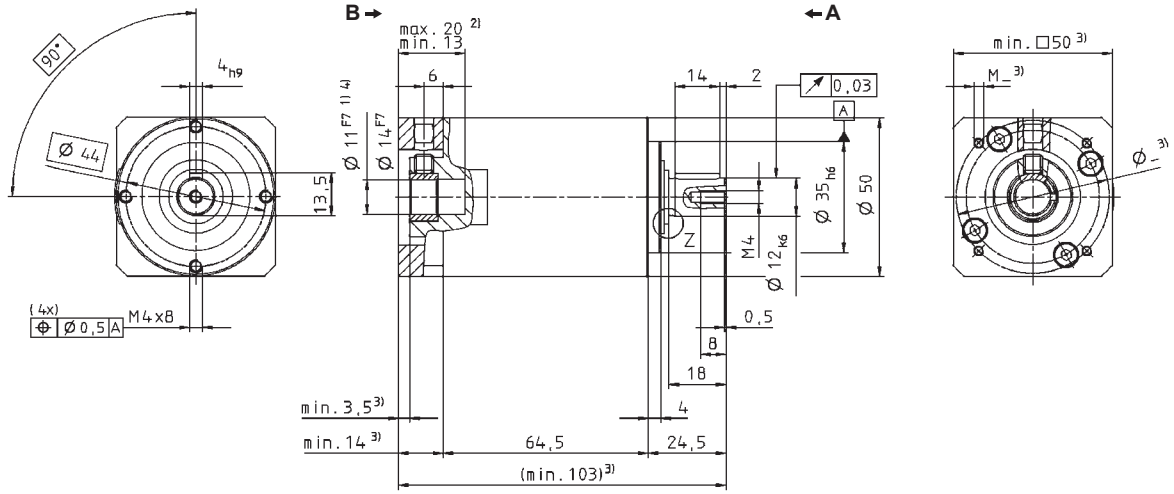
					1-stage				2-stage						
Ratio			*i*		**4**	**5**	**7**	**10**	**16**	**20**	**25**	**35**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	13	14	14	13	13	13	14	14	14	14	13
				in.lb	120	120	120	120	120	120	120	120	120	120	120
Nominal output torque (with n_{1N})			T_{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)			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 (with T_{2N} and 20°C ambient temperature) [a]			n_{1N}	rpm	4000	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	8000
Mean no load running torque (with n_1 = 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
				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	≤ 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	0.9
				in.lb/ arcmin	13	11	11	8	13	13	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_1 = 3000 rpm without load			L_{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	J_1	kgcm²	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.s²	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_1	kgcm²	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.s²	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2

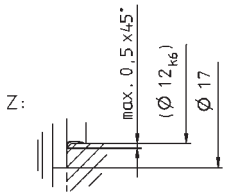
[a] For higher ambient temperatures, please reduce input speed
[b] Refers to center of the output shaft, if n_2 = 100 rpm

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

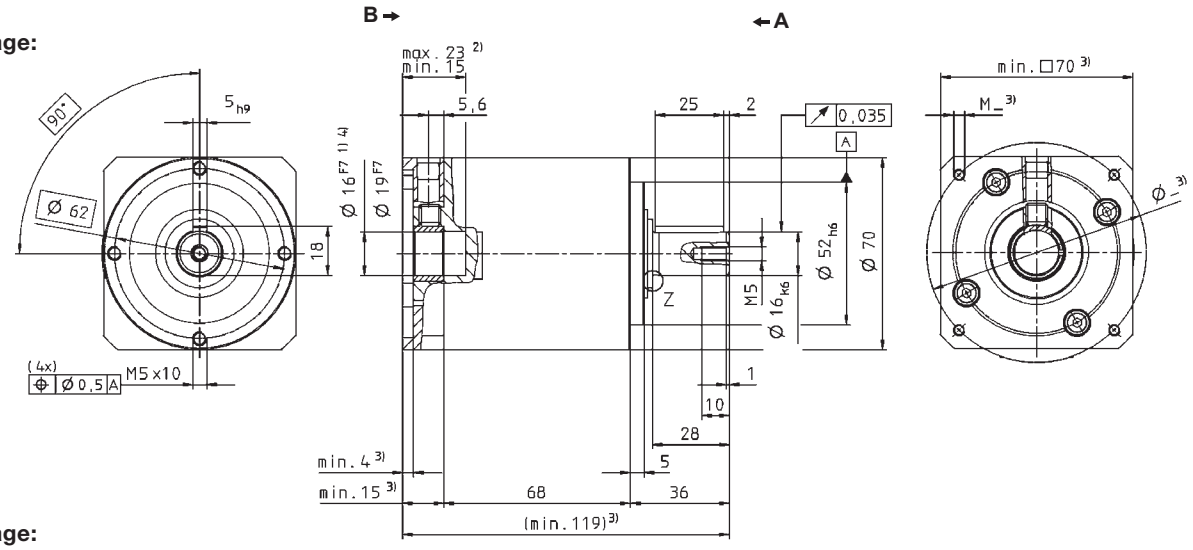
CAD data is available under www.wittenstein-alpha.com

Motor mounting according to operating manual

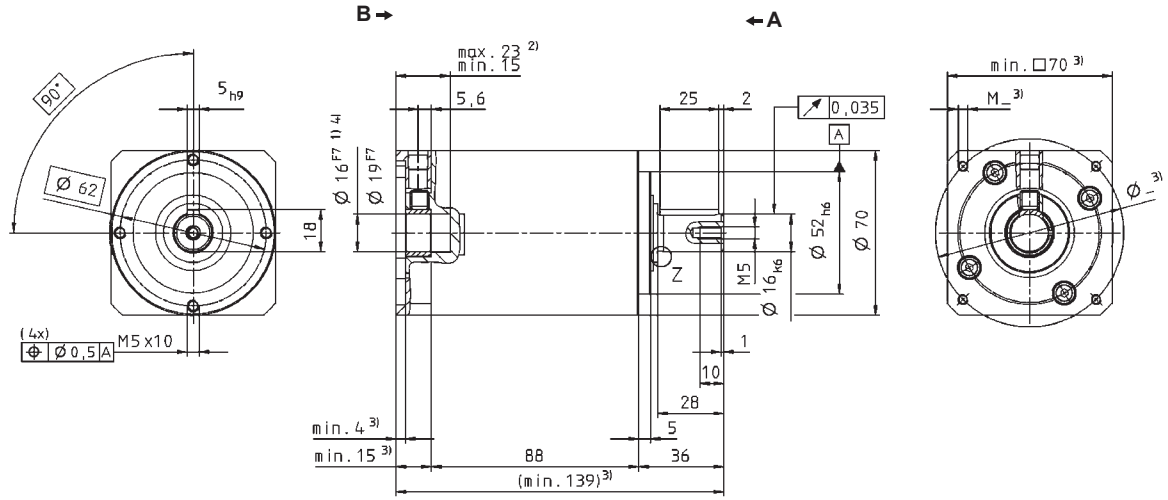
					1-stage					2-stage									
Ratio [a]			i		**3**	**4**	**5**	**7**	**10**	**9**	**12**	**16**	**20**	**25**	**30**	**40**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	55	42	40	40	37	55	55	55	42	40	55	40	40	40	37
				in.lb	490	370	350	350	330	490	490	490	370	350	490	350	350	350	330
Nominal output torque (with n_{1N})			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 gearhead)			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_{1N}	rpm	3700	3700	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	6000	6000
Mean no load running torque (with n_1 = 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
				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			j_t	arcmin	≤ 8					≤ 10									
Torsional rigidity			C_{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]			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_1 = 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 gearhead same direction														
Protection class					IP 64														
Moment of inertia (relates to the drive)	D	16	J_1	kgcm²	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.s²	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_1	kgcm²	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.s²	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	0.4

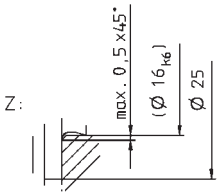
[a] Other ratios are available on request: i = 15, 21, 28 and 35.
[b] For higher ambient temperatures, please reduce input speed
[c] Refers to center of the output shaft, if n_2 = 100 rpm

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. Motor shaft diameters up to 19mm available – please contact WITTENSTEIN alpha

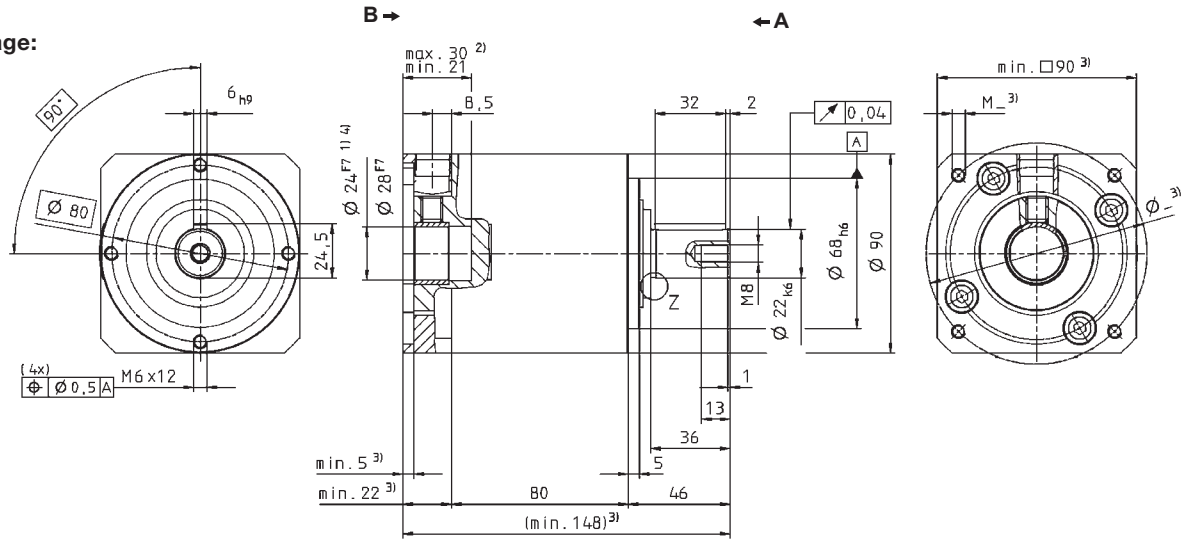
CAD data is available under www.wittenstein-alpha.com

Motor mounting according to operating manual

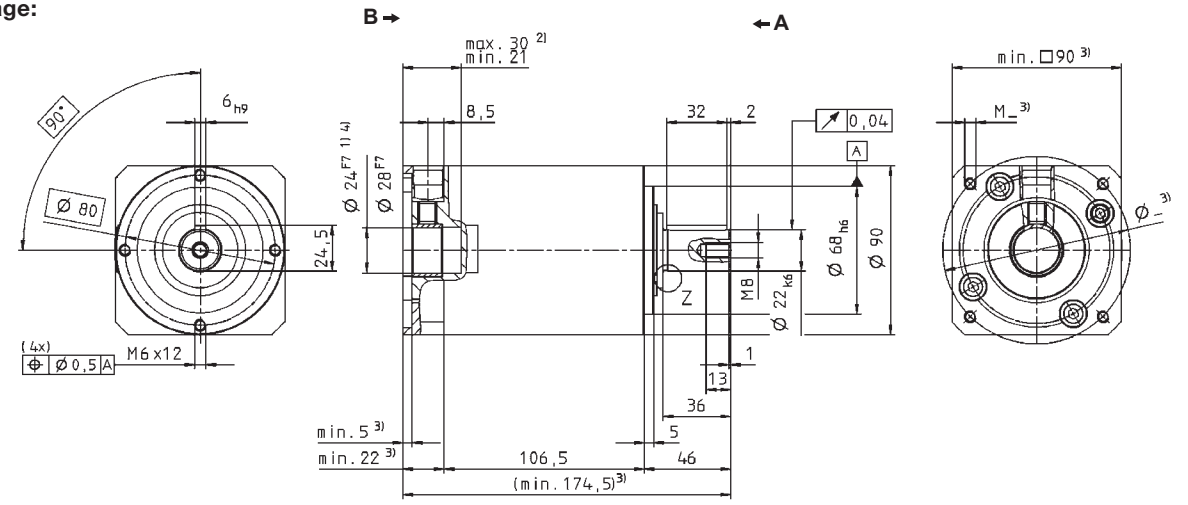
					1-stage					2-stage									
Ratio [a]			i		**3**	**4**	**5**	**7**	**10**	**9**	**12**	**16**	**20**	**25**	**30**	**40**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	125	115	100	100	90	125	125	115	115	100	125	115	100	100	90
				in.lb	1110	1020	890	890	800	1110	1110	1020	1020	890	1110	1020	890	890	800
Nominal output torque (with n_{1N})			T_{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)			T_{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 T_{2N} and 20°C ambient temperature) [b]			n_{1N}	rpm	3400	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	6000
Mean no load running torque (with n_1 = 3000 rpm and 20°C gearhead temperature)			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	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			j_t	arcmin	≤ 8					≤ 10									
Torsional rigidity			C_{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]			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_1 = 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 gearhead same direction														
Protection class					IP 64														
Moment of inertia (relates to the drive)	G	24	J_1	kgcm²	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.s²	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	28	J_1	kgcm²	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.s²	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

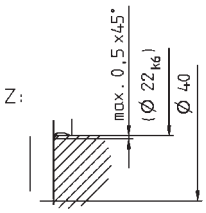
[a] Other ratios are available on request: i = 15, 21, 28 and 35.
[b] For higher ambient temperatures, please reduce input speed
[c] Refers to center of the output shaft, if n_2 = 100 rpm

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. 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

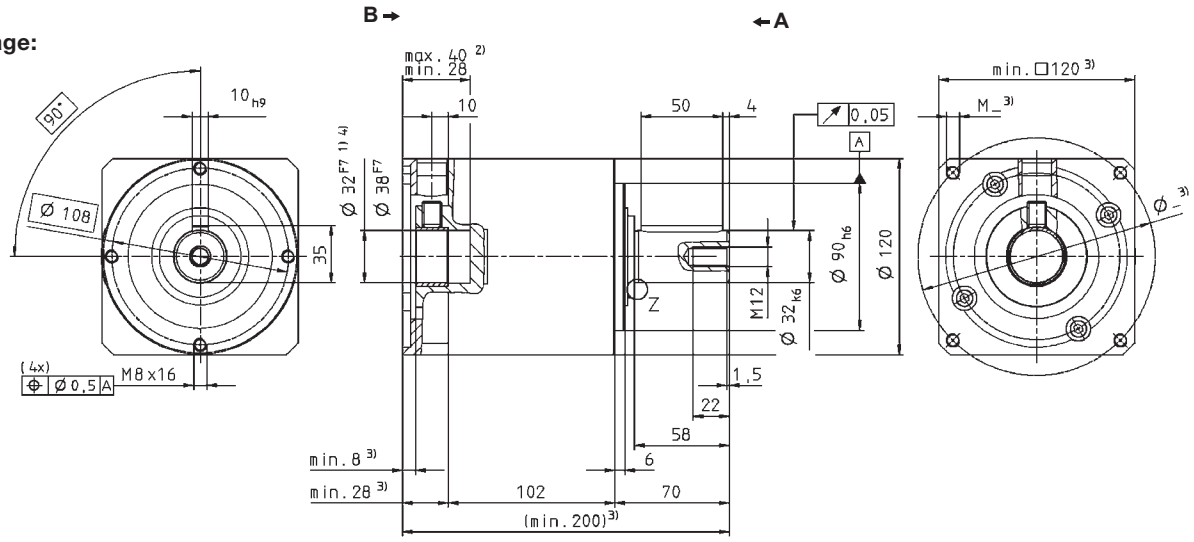
LP+ 120 MF 1/2-stage

					1-stage					2-stage									
Ratio [a]			*i*		**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_{1N})			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) [b]			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_1 = 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	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]			F_{2AMax}	N	4000					4000									
				lb_f	900					900									
Max. radial force [c]			F_{2RMax}	N	4600					4600									
				lb_f	1035					1035									
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	8.6					11.0									
				lb_m	19.0					24.3									
Operating noise for i=10 and n_1 = 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_1	kgcm²	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.s²	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	J_1	kgcm²	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.s²	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

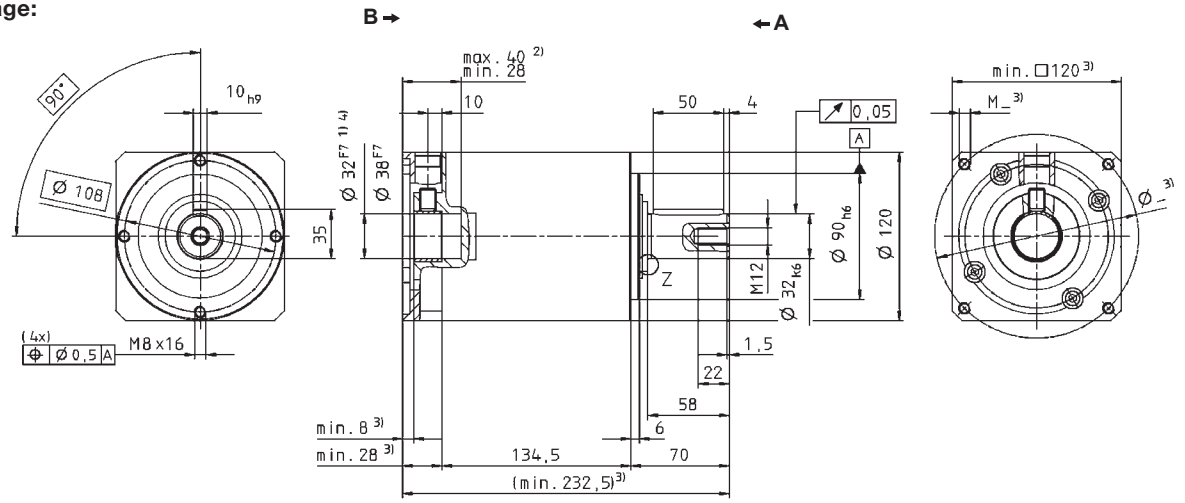
[a] Other ratios are available on request: i = 15, 21, 28 and 35.
[b] For higher ambient temperatures, please reduce input speed
[c] Refers to center of the output shaft, if n_2 = 100 rpm

View A | View B

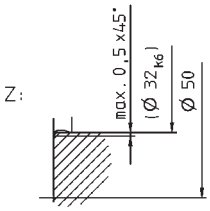
LP+ 1-stage:



LP+ 2-stage:



Z:



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 38mm available – please contact WITTENSTEIN alpha

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

Motor mounting according to operating manual

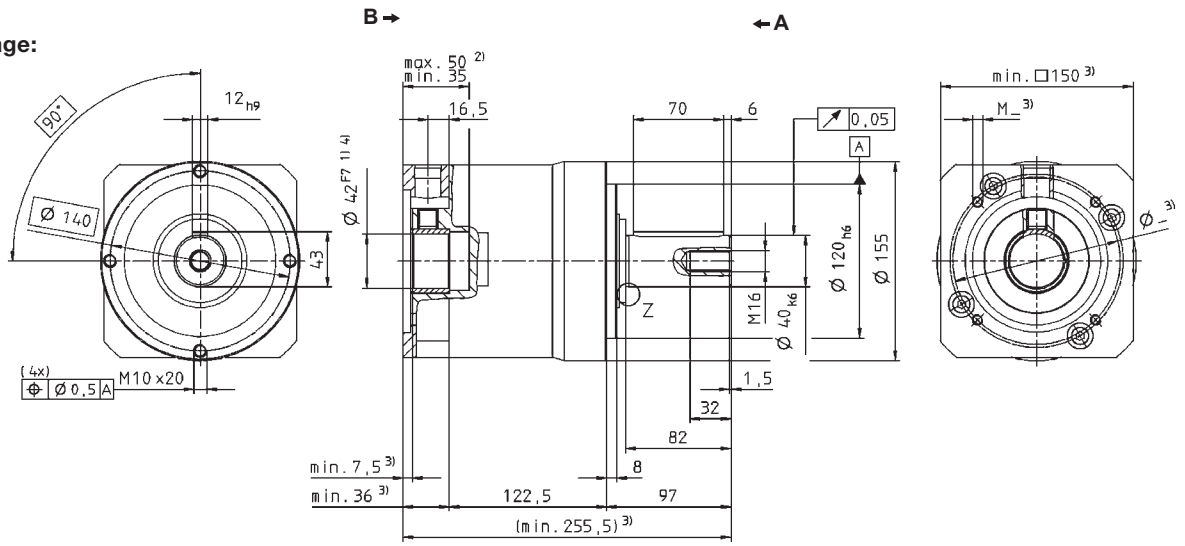
LP+ 155 MF 1/2-stage

					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_{1N})			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_1 = 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_1 = 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) Clamping hub diameter (mm)	L	42	J_1	$kgcm^2$	17	16	–	–	–
				10^{-3} in.lb.s²	15	14	–	–	–
	I	32	J_1	$kgcm^2$	–	–	5.4	5.0	5.0
				10^{-3} in.lb.s²	–	–	4.8	4.4	4.4
	K	38	J_1	$kgcm^2$	–	–	6.3	5.9	5.9
				10^{-3} in.lb.s²	–	–	5.5	5.2	5.2

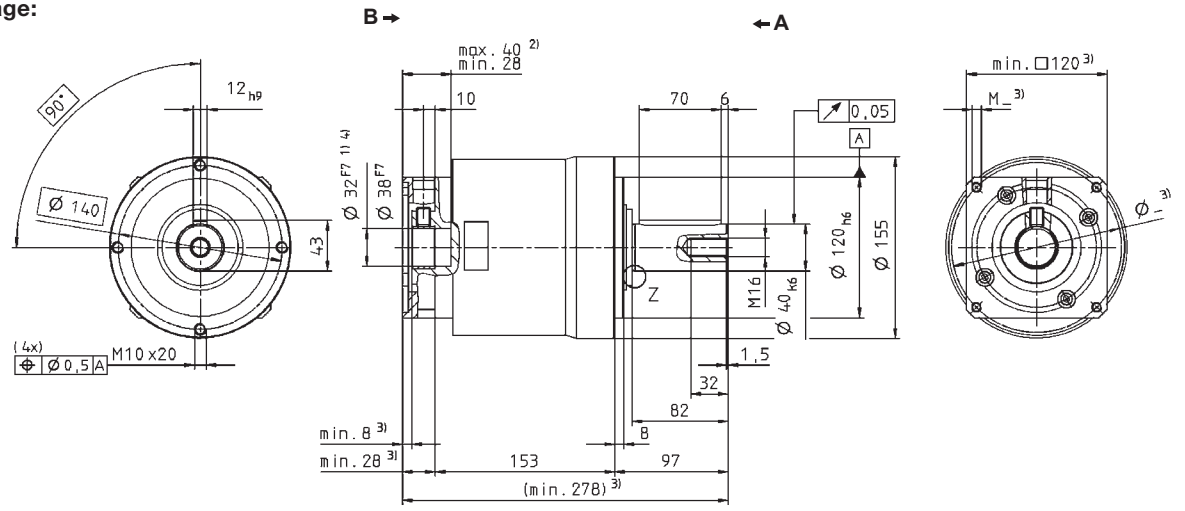
[a] For higher ambient temperatures, please reduce input speed
[b] Refers to center of the output shaft, if n_2 = 100 rpm

View A View B

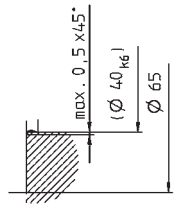
LP⁺ 1-stage:



LP⁺ 2-stage:



Z:



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

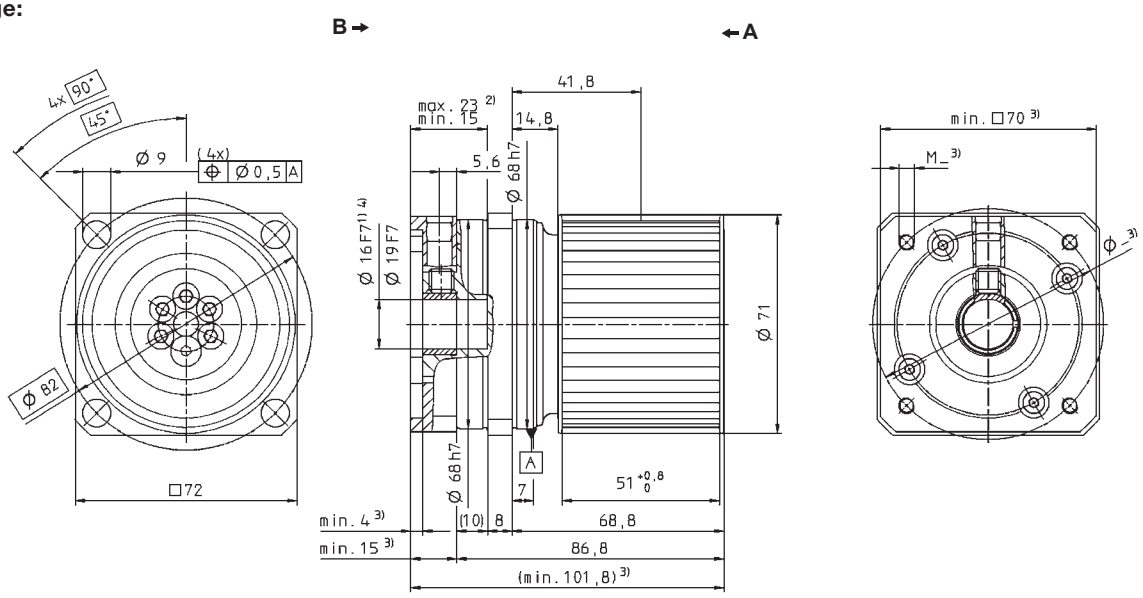
Motor mounting according to operating manual

LPB+ 070 MF 1/2-stage

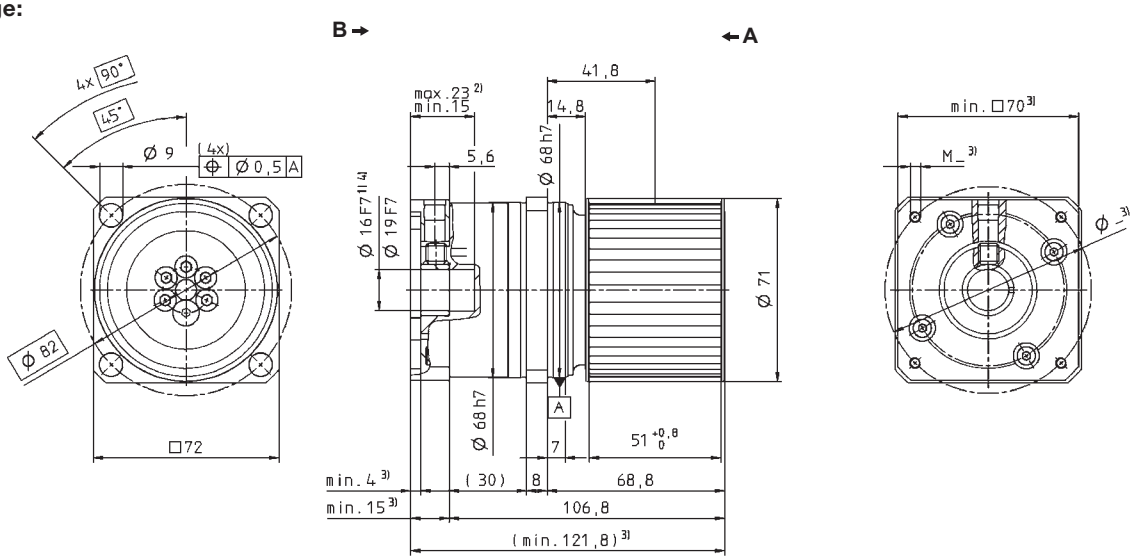
					1-stage					2-stage									
Ratio			i		**3**	**4**	**5**	**7**	**10**	**9**	**12**	**16**	**20**	**25**	**30**	**40**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	55	42	40	40	37	55	55	42	42	40	55	42	40	40	37
				in.lb	490	370	350	350	330	490	490	370	370	350	490	370	350	350	330
Nominal output torque (with n_{1N})			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 gearhead)			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_{1N}	rpm	3700	3700	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	6000	6000
Mean no load running torque (with n_1 = 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
				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			j_t	arcmin	≤ 8					≤ 10									
Torsional rigidity			C_{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]			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_1 = 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 gearhead same direction														
Protection class					IP 64														
Moment of inertia (relates to the drive)	D	16	J_1	kgcm²	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.s²	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_1	kgcm²	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.s²	0.5	0.5	0.5	0.4	0.4	0.5	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.

LPB⁺ 1-stage:



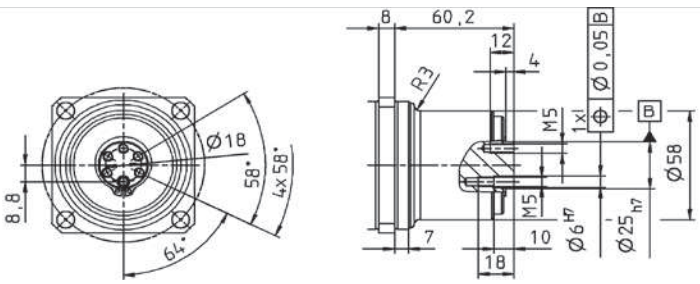
LPB⁺ 2-stage:



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

Belt Pulley PLPB+ 070 Profile AT5-0			
Pitch	*p*	mm	5
Number of teeth	*z*		43
Circumference	*z* * *p*	mm/rotation	215
Inertia	*J*	kgcm²	3.86
Mass	*m*	kg	0.48

Illustration: Output flange without belt pulley



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

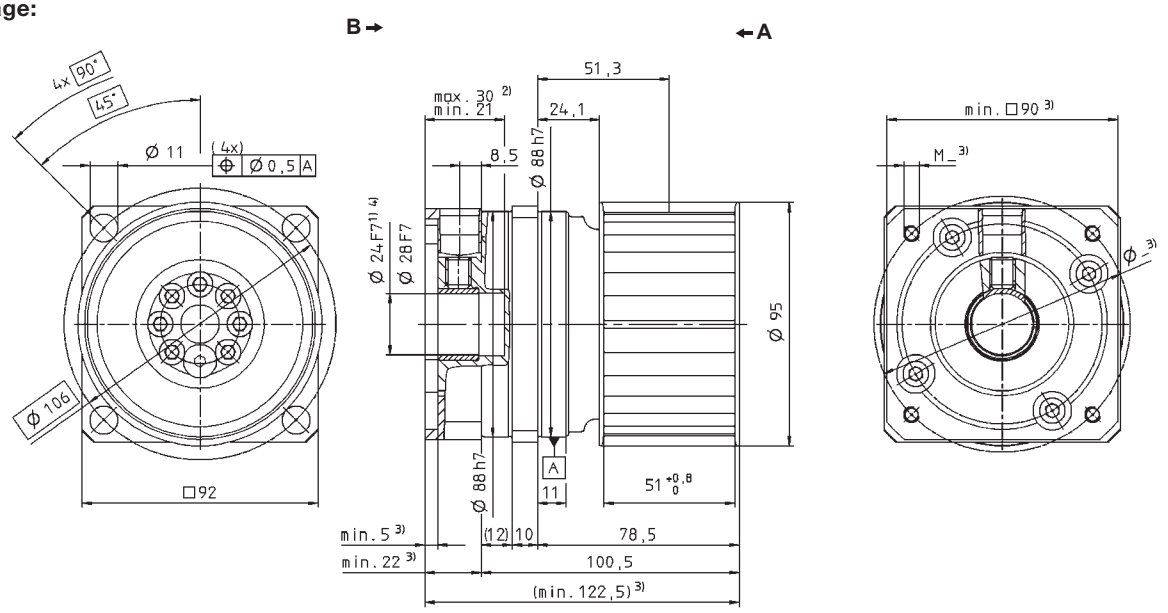
Motor mounting according to operating manual

LPB+ 090 MF 1/2-stage

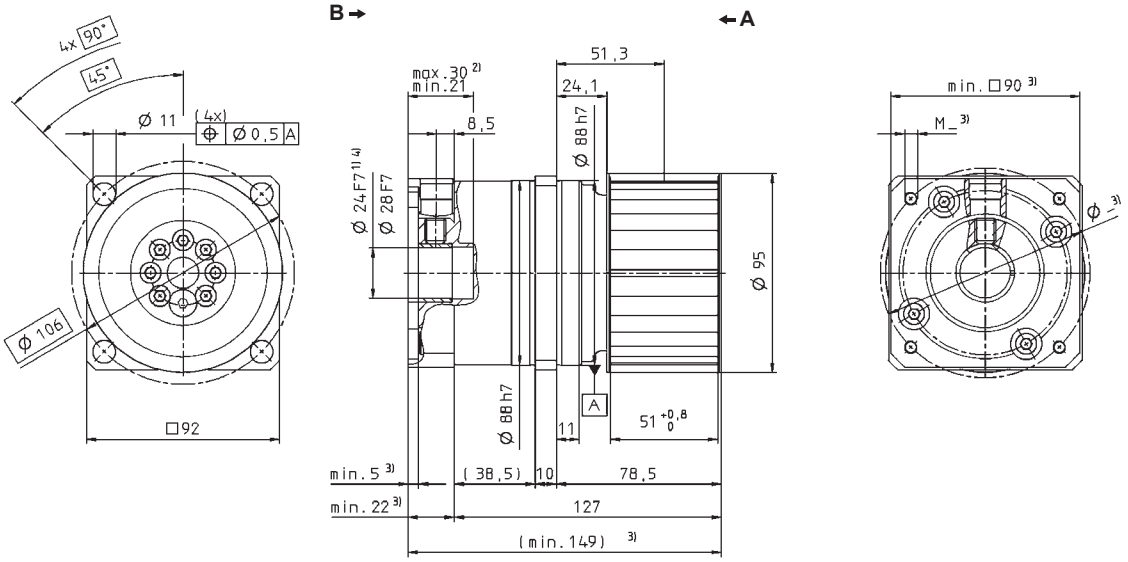
					1-stage					2-stage									
Ratio			i		**3**	**4**	**5**	**7**	**10**	**9**	**12**	**16**	**20**	**25**	**30**	**40**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	125	115	100	100	90	125	125	115	115	100	125	115	100	100	90
				in.lb	1110	1020	890	890	800	1110	1110	1020	1020	890	1110	1020	890	890	800
Nominal output torque (with n_{1N})			T_{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)			T_{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 T_{2N} and 20°C ambient temperature) [a]			n_{1N}	rpm	3400	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	6000
Mean no load running torque (with n_1 = 3000 rpm and 20°C gearhead temperature)			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	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			j_t	arcmin	≤ 8					≤ 10									
Torsional rigidity			C_{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]			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_1 = 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 gearhead same direction														
Protection class					IP 64														
Moment of inertia (relates to the drive)	G	16	J_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	1.4
				10^{-3} in.lb.s²	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_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	1.7
				10^{-3} in.lb.s²	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.

LPB⁺ 1-stage:

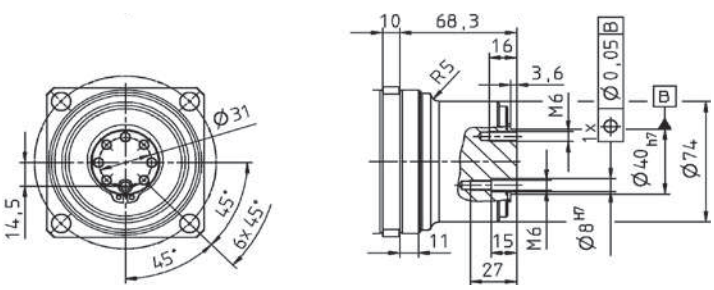


LPB⁺ 2-stage:



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*	kgcm²	10.95
Mass	*m*	kg	0.82

Non-tolerated dimensions ±1mm

1) Check motor shaft fit.
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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

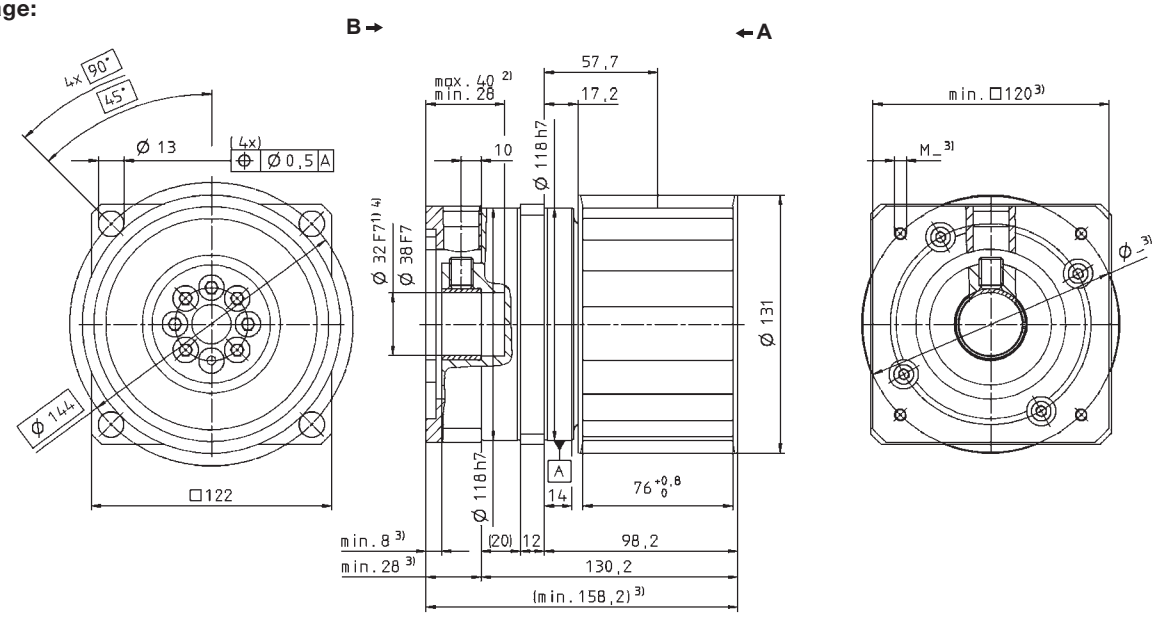
Motor mounting according to operating manual

LPB+ 120 MF 1/2-stage

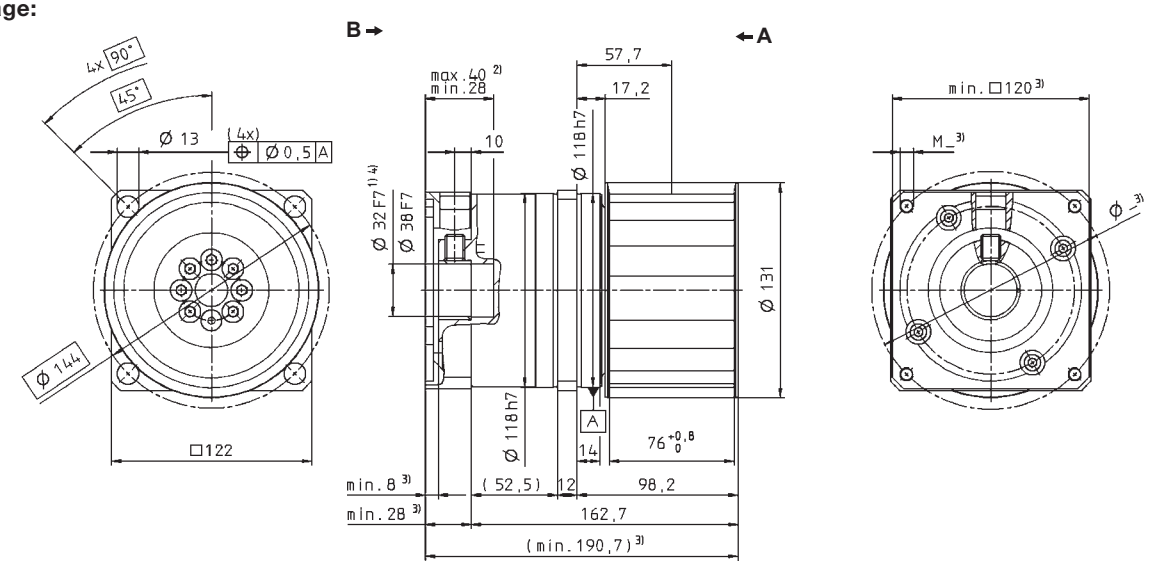
					1-stage					2-stage									
Ratio			i		**3**	**4**	**5**	**7**	**10**	**9**	**12**	**16**	**20**	**25**	**30**	**40**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	305	305	250	250	220	305	305	305	305	250	305	305	250	250	220
				in.lb	2700	2700	2210	2210	1950	2700	2700	2700	2700	2210	2700	2700	2210	2210	1950
Nominal output torque (with n_{1N})			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_1 = 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_1 = 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_1	$kgcm^2$	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.s²	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_1	$kgcm^2$	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.s²	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.

LPB⁺ 1-stage:

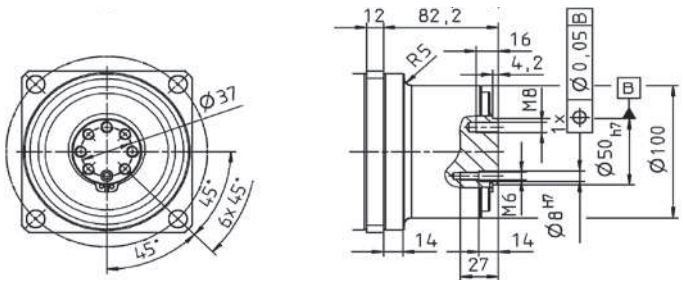


LPB⁺ 2-stage:



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*	kgcm²	50.62
Mass	*m*	kg	2.61

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 38mm available – please contact WITTENSTEIN alpha

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

Motor mounting according to operating manual