

LP+/LPB+ – Economical precision

A reliable and durable player among planetary gearheads



LP+/LPB+

Specifications \ Version	LP+/LPB+		
	+	++	+++
Positioning accuracy	[Progressive bar chart]		
Rigidity	[Progressive bar chart]		
Smooth-running	[Progressive bar chart]		
Speed capacity	[Progressive bar chart]		
Power density	[Progressive bar chart]		
Max. axial/radial forces	[Progressive bar chart]		



NEMA flange



Belt pulley (PLPB)



Output flange (LPB+)



Couplings




Shrink disc



Rack / Pinion

Options

Smooth output shaft
Output flange (LPB+)
Food-grade grease 
Washdown version

Accessories

Rack / Pinion (see page 294)
Belt pulley (PLPB)
Couplings (see page 326)
Shrink disc (see page 326)
NEMA flange

LP+ 050 1/2-stage

Ratio		i	1-stage				2-stage							
			4	5	7	10	16	20	25	35	50	70	100	
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B}	Nm	11	12	12	11	11	11	12	12	12	12	11	
		in.lb	97	106	106	97	97	97	106	106	106	106	97	
Nominal output torque (with n_{in})	T_{2N}	Nm	5.2	5.7	5.7	5.2	5.2	5.2	5.7	5.7	5.7	5.7	5.2	
		in.lb	46	50	50	46	46	46	50	50	50	50	46	
Emergency stop torque (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		
Max. input speed	n_{1Max}	rpm	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	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	
Max. torsional backlash	j_t	arcmin	Standard ≤ 12 / Reduced ≤ 10				Standard ≤ 15 / Reduced ≤ 13							
Torsional rigidity	C_{d21}	Nm/arcmin	1.2	1.2	1.2	0.85	1.2	1.2	1.2	1.2	1.2	1.2	0.85	
		in.lb/arcmin	10.6	10.6	10.6	7.5	10.6	10.6	10.6	10.6	10.6	10.6	7.5	
Max. axial force ^{b)}	F_{2AMax}	N	700				700							
		lb _f	158				158							
Max. radial force ^{b)}	F_{2RMax}	N	650				650							
		lb _f	146				146							
Efficiency at full load	η	%	97				95							
Service life (For calculation, see the Chapter "Information")	L_n	h	> 20000				> 20000							
Weight incl. standard adapter plate	m	kg	0.75				0.95							
		lb _m	1.7				2.1							
Operating noise (with $n_1=3000$ rpm no 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)	11	J_f	kgcm ²	0.053	0.050	0.047	0.046	0.054	0.050	0.049	0.046	0.046	0.046	0.046
			10 ⁻³ in.lb.in ²	0.047	0.044	0.042	0.041	0.048	0.044	0.043	0.041	0.041	0.041	0.041
Clamping hub diameter (mm)	14	J_f	kgcm ²	0.20	0.20	0.20	0.19	0.20	0.20	0.20	0.19	0.19	0.19	0.19
			10 ⁻³ in.lb.in ²	0.18	0.18	0.17	0.17	0.18	0.18	0.17	0.17	0.17	0.17	0.17

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

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

LP+/LPB+ 070 1/2-stage

			1-stage					2-stage										
Ratio ^{a)}	<i>i</i>		3	4	5	7	10	15	16	20	25	30	35	50	70	100		
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B}	Nm	32	35	35	35	32	32	35	35	35	32	35	35	35	32		
		in.lb	283	310	310	310	283	283	310	310	310	283	310	310	310	310	283	
Nominal output torque (with n_{2N})	T_{2N}	Nm	16.5	18	18	18	16.5	16.5	18	18	18	16.5	18	18	18	16.5		
		in.lb	146	159	159	159	146	146	159	159	159	146	159	159	159	146		
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		
		in.lb	575	664	664	664	664	664	664	664	664	664	664	664	664	664		
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		
Max. input speed	n_{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000		
Mean no load running torque (with $n_1 = 3000$ rpm and 20°C gearhead temperature)	T_{012}	Nm	0.30	0.25	0.20	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.10		
		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	Standard ≤ 12 / Reduced ≤ 8					Standard ≤ 15 / Reduced ≤ 10										
Torsional rigidity	C_{121}	Nm/arcmin in.lb/arcmin	LP+	2.8	3.3	3.3	3.3	2.8	2.8	3.3	3.3	3.3	2.8	3.3	3.3	3.3	2.8	
			LPB+	25	29	29	29	25	25	29	29	29	25	29	29	29	25	
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Max. axial force ^{c)}	F_{2AMax}	N	1550					1550										
		lb _f	349					349										
Max. radial force	F_{2RMMax}	N	1450					1450										
		lb _f	326					326										
		N	3000					-										
		lb _f	675					-										
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	<i>m</i>	kg	LP+	2.0					2.4									
				4.4					5.3									
		lb _m	LPB+	1.6					-									
				3.5					-									
Operating noise (with $n_1 = 3000$ rpm no load)	L_{PA}	dB(A)	≤ 70															
Max. permitted housing temperature	°C		+90															
	F		194															
Ambient temperature	°C		-15 to +40															
	F		5 to 104															
Lubrication	Lubricated for life																	
Paint	Blue RAL 5002																	
Direction of rotation	Motor and gearhead same direction																	
Protection class	IP 64																	
Moment of inertia (relates to the drive)	16	J_1	kgcm ²	LP+	0.30	0.25	0.23	0.22	0.21	0.23	0.24	0.23	0.22	0.21	0.22	0.21	0.21	
					10 ⁻³ in.lb.s ²	0.27	0.22	0.20	0.19	0.19	0.20	0.21	0.20	0.19	0.19	0.19	0.19	0.19
			kgcm ²	LPB+	0.30	0.25	0.23	0.22	0.21	-	-	-	-	-	-	-	-	-
					10 ⁻³ in.lb.s ²	0.27	0.22	0.20	0.19	0.19	-	-	-	-	-	-	-	-
Clamping hub diameter (mm)	19	J_1	kgcm ²	LP+	0.58	0.53	0.52	0.50	0.50	0.51	0.52	0.52	0.51	0.49	0.51	0.49	0.49	
					10 ⁻³ in.lb.s ²	0.51	0.47	0.46	0.44	0.44	0.45	0.46	0.46	0.45	0.43	0.45	0.43	0.43
			kgcm ²	LPB+	0.58	0.53	0.52	0.50	0.50	-	-	-	-	-	-	-	-	-
					10 ⁻³ in.lb.s ²	0.51	0.47	0.46	0.44	0.44	-	-	-	-	-	-	-	-

^{a)} LPB available with ratio 3, 4, 5, 7, 10

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

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

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

LP+/LPB+ 090 1/2-stage

			1-stage					2-stage										
Ratio ^{a)}	<i>i</i>		3	4	5	7	10	15	16	20	25	30	35	50	70	100		
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B}	Nm	80	90	90	90	80	80	90	90	90	80	90	90	90	80		
		in.lb	708	797	797	797	708	708	797	797	797	708	797	797	797	797	708	
Nominal output torque (with n_{2N})	T_{2N}	Nm	40	45	45	45	40	40	45	45	45	40	45	45	45	40		
		in.lb	354	398	398	398	354	354	398	398	398	354	398	398	398	354		
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		
		in.lb	1637	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682		
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		
Max. input speed	n_{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000		
Mean no load running torque (with $n_1 = 3000$ rpm and 20°C gearhead temperature)	T_{012}	Nm	0.60	0.55	0.50	0.40	0.38	0.30	0.30	0.30	0.30	0.30	0.30	0.25	0.25	0.25		
		in.lb	5.3	4.9	4.4	3.5	3.4	2.7	2.7	2.7	2.7	2.7	2.7	2.2	2.2	2.2		
Max. torsional backlash	j_t	arcmin	Standard ≤ 12 / Reduced ≤ 8					Standard ≤ 15 / Reduced ≤ 10										
Torsional rigidity	C_{21}	Nm/arcmin in.lb/arcmin	LP+	8.5	9.5	9.5	9.5	8.5	8.5	9.5	9.5	9.5	8.5	9.5	9.5	8.5		
				75	84	85	85	75	75	84	84	84	75	84	84	75		
			LPB+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Max. axial force ^{c)}	F_{2AMax}	N	1900					1900										
		lb _f	428					428										
Max. radial force	F_{2RMMax}	N	2400					2400										
		lb _f	540					540										
		N	4300					-										
		lb _f	967.5					-										
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	LP+	4.0					5.0									
				8.8					11.1									
		lb _m	LPB+	3.3					-									
				7.3					-									
Operating noise (with $n_1 = 3000$ rpm no load)	L_{PA}	dB(A)	≤ 72															
Max. permitted housing temperature	°C		+90															
	F		194															
Ambient temperature	°C		-15 to +40															
	F		5 to 104															
Lubrication	Lubricated for life																	
Paint	Blue RAL 5002																	
Direction of rotation	Motor and gearhead same direction																	
Protection class	IP 64																	
Moment of inertia (relates to the drive)	24	J_1	kgcm ²	LP+	1.83	1.62	1.55	1.47	1.43	1.50	1.49	1.55	1.42	1.42	1.47	1.42	1.42	
					1.62	1.43	1.37	1.30	1.27	1.33	1.32	1.37	1.26	1.26	1.30	1.26	1.26	1.26
		10 ³ in.lb.s ²	LPB+	1.82	1.62	1.54	1.47	1.43	-	-	-	-	-	-	-	-	-	-
				1.61	1.43	1.36	1.30	1.27	-	-	-	-	-	-	-	-	-	-
Clamping hub diameter (mm)	28	J_1	kgcm ²	LP+	2.13	1.94	1.85	1.78	1.74	1.81	1.86	1.86	1.80	1.73	1.78	1.73	1.72	
					1.89	1.72	1.64	1.58	1.54	1.60	1.65	1.65	1.59	1.53	1.58	1.53	1.52	1.52
		10 ³ in.lb.s ²	LPB+	2.12	1.94	1.84	1.78	1.74	-	-	-	-	-	-	-	-	-	-
				1.88	1.72	1.63	1.58	1.54	-	-	-	-	-	-	-	-	-	-

^{a)} LPB available with ratio 3, 4, 5, 7, 10

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

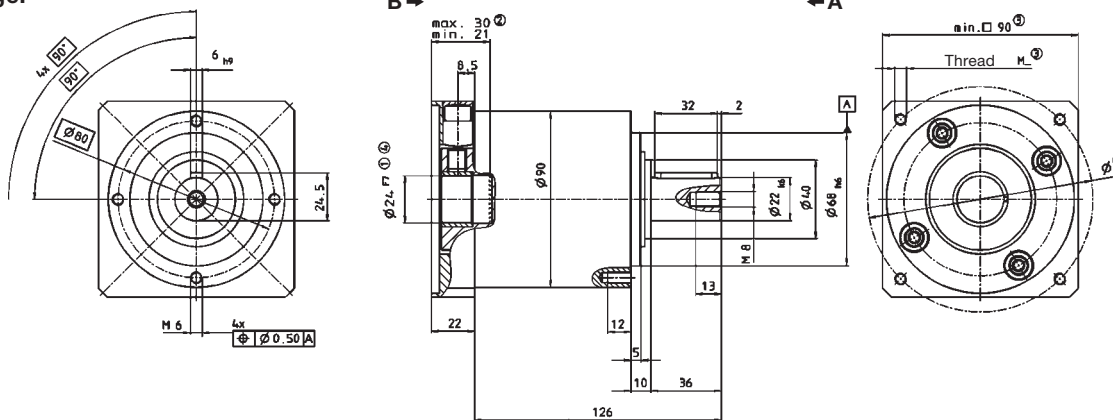
^{c)} Refers to center of the output shaft, if $n_2 = 100$ rpm

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

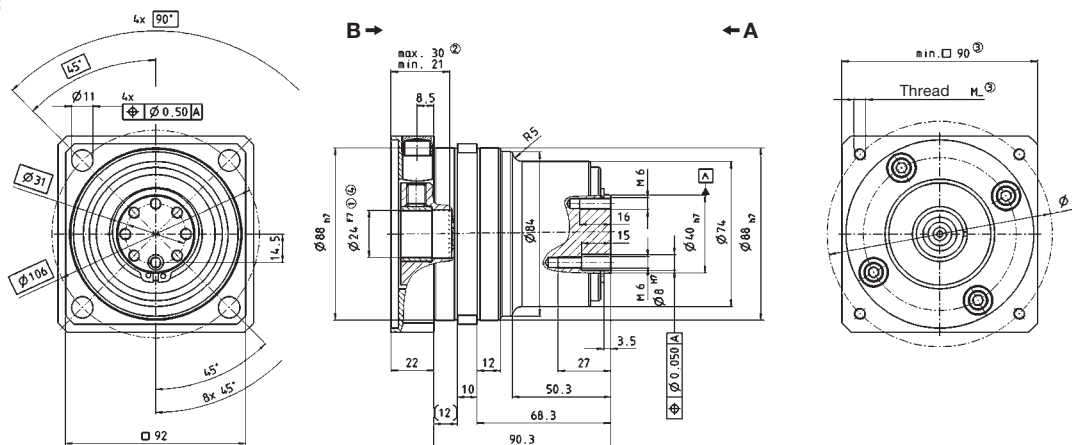
View A

View B

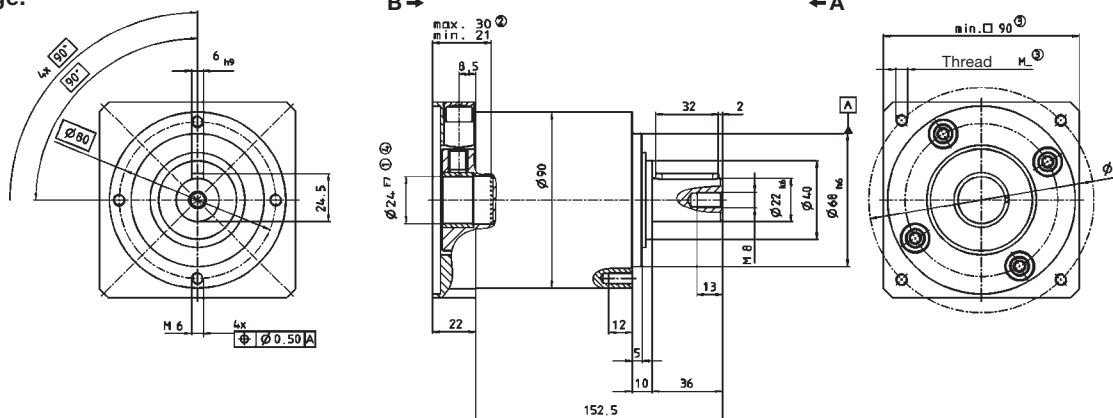
LP+ 1-stage:



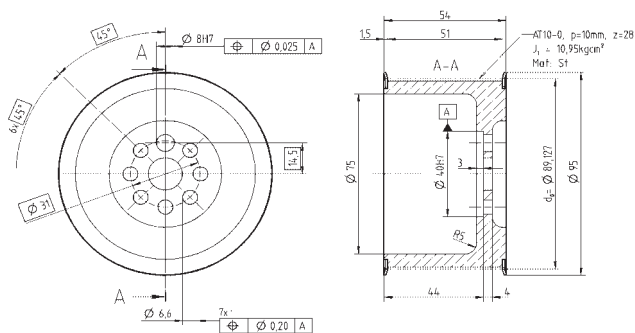
LPB+ 1-stage:



LP+ 2-stage:



Supplement: Belt pulley PLPB+



PCD effective diameter		$d_0 = (z \cdot p) / \pi$	
Weight	m	kg	0.82
		lb _m	1.81
Moment of inertia	J_1	kgcm ²	10.95
		10 ⁻⁴ in.lb.s ²	9.69

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

▲ Motor mounting according to operating manual

LP+



LP+/LPB+ 120 1/2-stage

			1-stage					2-stage									
Ratio ^{a)}	<i>i</i>		3	4	5	7	10	15	16	20	25	30	35	50	70	100	
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B}	Nm	200	200	220	220	200	200	220	220	220	200	220	220	220	200	
		in.lb	1770	1770	1947	1947	1770	1770	1947	1947	1947	1770	1947	1947	1947	1770	
Nominal output torque (with n_m)	T_{2V}	Nm	100	110	110	110	100	100	110	110	110	100	110	110	110	100	
		in.lb	885	974	974	974	885	885	974	974	974	885	974	974	974	885	
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	
		in.lb	3540	4248	4248	4248	4248	4248	4248	4248	4248	4248	4248	4248	4248	4248	
Nominal input speed (with T_{2V} and 20°C ambient temperature) ^{b)}	n_{1N}	rpm	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600		
Max. input speed	n_{1Max}	rpm	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800		
Mean no load running torque (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	0.55	0.5	0.5	0.4	0.4	0.4	0.4		
		in.lb	9.7	8.9	8.0	7.1	7.1	5.3	4.9	4.4	4.4	3.5	3.5	3.5	3.5		
Max. torsional backlash	j_t	arcmin	Standard ≤ 12 / Reduced ≤ 8					Standard ≤ 15 / Reduced ≤ 10									
Torsional rigidity	C_{21}	Nm/arcmin in.lb/arcmin	LP+	22	25	25	25	22	22	25	25	25	22	25	25	25	22
			LPB+	195	221	221	221	195	195	221	221	221	195	221	221	221	195
Max. axial force ^{c)}	F_{2AMax}	N	4000					4000									
		lb _f	900					900									
Max. radial force	F_{2RMMax}	N	4600					4600									
		lb _f	1035					1035									
		N	9500					-									
		lb _f	2138					-									
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	<i>m</i>	kg	LP+	8.6					11.0								
				19.0					24.3								
		lb _m	LPB+	7.3					-								
				16.1					-								
Operating noise (with $n_1=3000$ rpm no load)	L_{PA}	dB(A)	≤ 74														
Max. permitted housing temperature	°C		+90														
	F		194														
Ambient temperature	°C		-15 to +40														
	F		5 to 104														
Lubrication	Lubricated for life																
Paint	Blue RAL 5002																
Direction of rotation	Motor and gearhead same direction																
Protection class	IP 64																
Moment of inertia (relates to the drive)	32	J_1	kgcm ²	LP+	6.90	5.94	5.58	5.24	5.06	5.35	5.53	5.53	5.30	5.00	5.30	4.99	4.99
					10 ³ in.lb.in ²	6.11	5.26	4.94	4.64	4.48	4.73	4.89	4.89	4.69	4.43	4.69	4.42
		kgcm ²	LPB+	6.84	5.91	5.56	5.24	5.06	-	-	-	-	-	-	-	-	-
				10 ³ in.lb.in ²	6.05	5.23	4.92	4.64	4.48	-	-	-	-	-	-	-	-
Clamping hub diameter (mm)	38	J_1	kgcm ²	LP+	7.76	6.80	6.44	6.11	5.93	6.21	6.39	6.39	6.16	5.88	6.16	5.86	5.86
					10 ³ in.lb.in ²	6.87	6.02	5.70	5.41	5.25	5.50	5.66	5.66	5.45	5.20	5.45	5.19
		kgcm ²	LPB+	7.70	6.77	6.42	6.11	5.93	-	-	-	-	-	-	-	-	-
				10 ³ in.lb.in ²	6.81	5.99	5.68	5.41	5.25	-	-	-	-	-	-	-	-

^{a)} LPB available with ratio 3, 4, 5, 7, 10

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

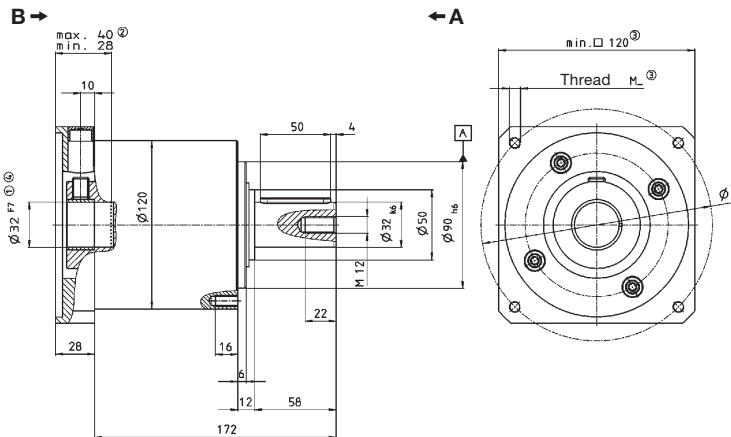
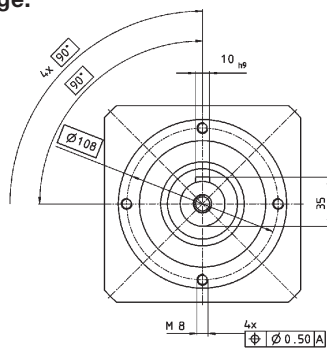
^{c)} Refers to center of the output shaft, if $n_2 = 100$ rpm

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

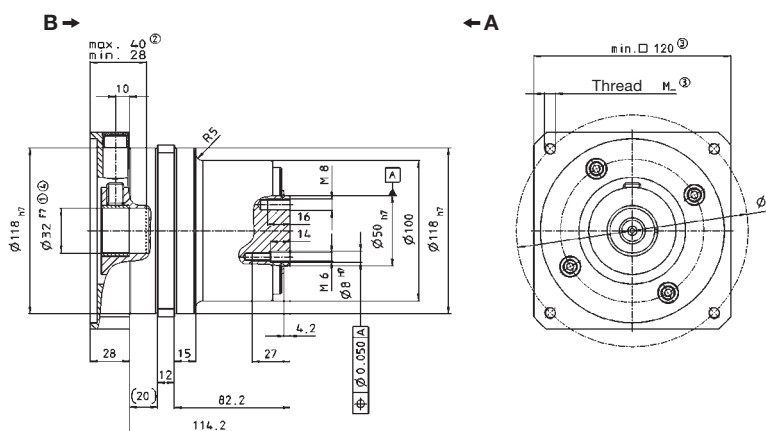
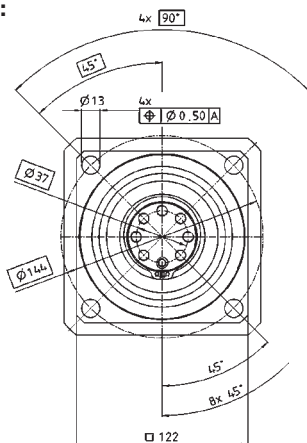
View A

View B

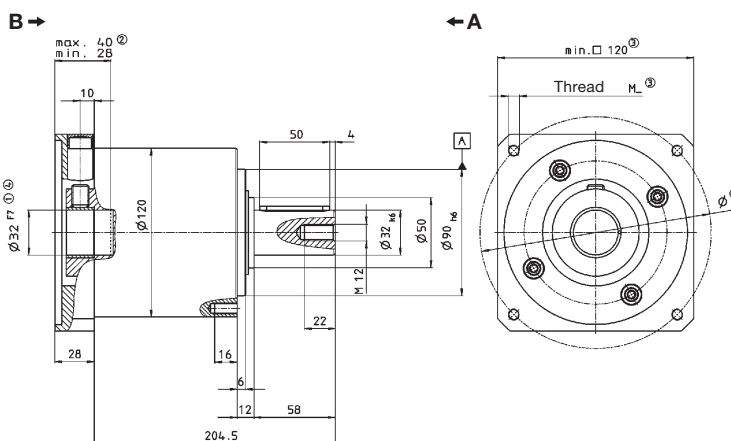
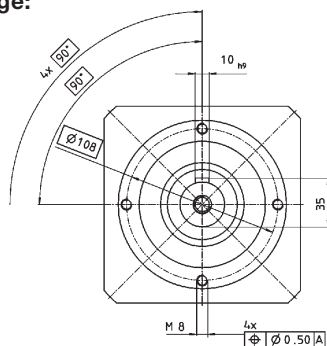
LP+ 1-stage:



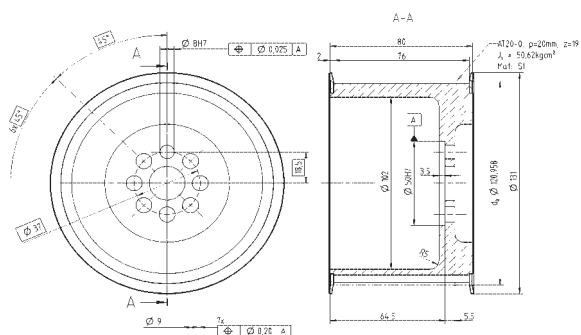
LPB+ 1-stage:



LP+ 2-stage:



Supplement: Belt pulley PLPB+



PCD effective diameter		$d_0 = (z \cdot p) / \pi$	
Weight	m	kg	2.61
		lb _m	5.77
Moment of inertia	J_i	kgcm ²	50.62
		10 ⁻² in.lb.s ²	44.80

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

⚠ Motor mounting according to operating manual

LP+

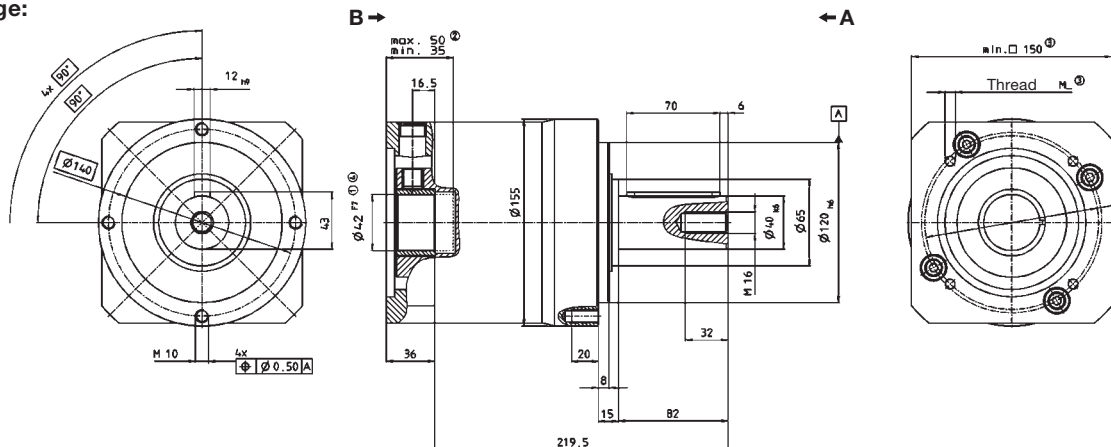
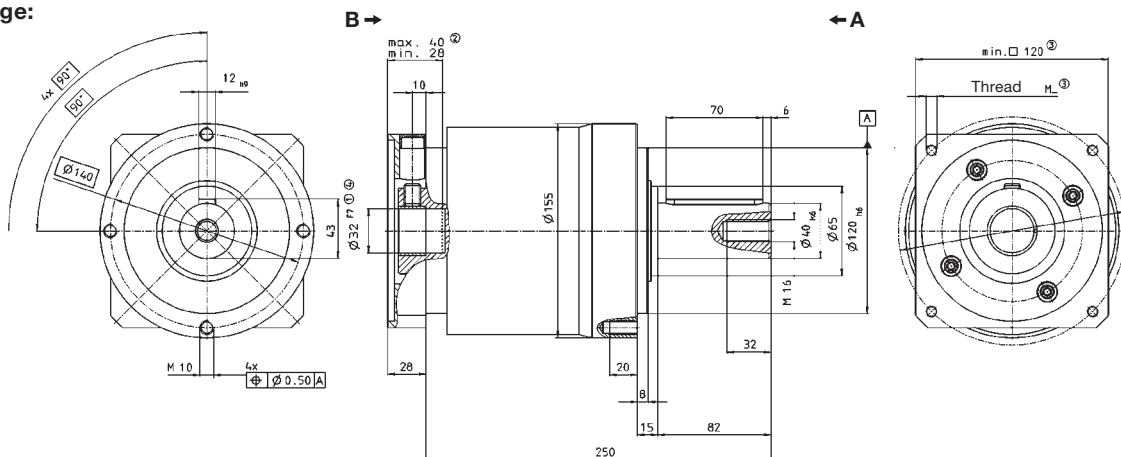


LP+ 155 1/2-stage

			1-stage		2-stage			
Ratio	<i>i</i>		5	10	25	50	100	
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B}	Nm	450	350	450	450	350	
		in.lb	3983	3098	3983	3983	3098	
Nominal output torque (with n_m)	T_{2N}	Nm	320	190	320	320	190	
		in.lb	2832	1682	2832	2832	1682	
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	24.8	22.1	8.9	7.1	6.2	
Max. torsional backlash	j_t	arcmin	Standard ≤ 12 / Reduced ≤ 8		Standard ≤ 15 / Reduced ≤ 10			
Torsional rigidity	C_{t21}	Nm/arcmin	55	44	55	55	44	
		in.lb/arcmin	487	389	487	487	389	
Max. axial force ^{b)}	F_{2AMax}	N	6000		6000			
		lb _f	1350		1350			
Max. radial force ^{b)}	F_{2RMax}	N	7500		7500			
		lb _f	1688		1688			
Efficiency at full load	η	%	97		95			
Service life (For calculation, see the Chapter "Information")	L_n	h	> 20000		> 20000			
Weight incl. standard adapter plate	<i>m</i>	kg	17.0		21.0			
		lb _m	37.6		46.4			
Operating noise (with $n_1=3000$ rpm no load)	L_{PA}	dB(A)	≤ 75					
Max. permitted housing temperature			°C					
			°F					
Ambient temperature			°C					
			°F					
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)	1-stage: 42	J_1	kgcm ²	17.1	15.7	–	–	–
			10 ⁻³ in.lb.in ²	15.1	13.9	–	–	–
	2-stage: 32	J_1	kgcm ²	–	–	5.4	5.0	5.0
			10 ⁻³ in.lb.in ²	–	–	4.8	4.4	4.4
Clamping hub diameter (mm)	38	J_1	kgcm ²	–	–	6.3	5.9	5.9
			10 ⁻³ in.lb.in 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 ± 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.
LP+ 2-stage: Motor shaft diameters up to 38mm available – please contact WITTENSTEIN alpha

Motor mounting according to operating manual

