

# Low backlash planetary gearheads Economy



## LP<sup>+</sup> Generation 3

Innovation sets standards

The low-backlash LP<sup>+</sup> Generation 3 planetary gearhead extends and completes the product portfolio.

- Up to 75% higher torques
- Noise level halved
- New ratios for optimum solutions
- Maximum quality and reliable availability

## LPB<sup>+</sup> Generation 3

Innovation sets standards

The low-backlash LPB<sup>+</sup> Generation 3 planetary gearhead with flange output is the logical extension of the current product range. The Generation 3 offers:

- Compact and intelligent solutions for your drive
- Two-stage version for maximum ratio flexibility

## Versatile installation

In whatever position you install your gearhead, it always contains the same quantity of grease.

The gearheads are so flexible, you can install them vertically, horizontally or with the output facing upwards or downwards.

## Extended boundaries

Our Economy range includes some impressive new additions. In the 070, 090 and 120 sizes, our LP<sup>+</sup>/LPB<sup>+</sup> Generation 3 gearheads feature up to 75% more torque, independent of the ratio!



### LP<sup>+</sup>/LPB<sup>+</sup> Generation 3

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

The LPB<sup>+</sup> Generation 3 is also available  
as a two-stage version!

### alphira®

Simple precision

The alphira® gearhead combines proven gearing technology with the cost-effectiveness requirements in the economy servo sector.

Ideal for simple servo applications.

Available from our online shop  
[www.shop.wittenstein.de](http://www.shop.wittenstein.de) in Germany,  
Austria and Switzerland

### Just in time

With our Economy range, this is not merely a slogan. With our Economy range products, we set new standards with regard to delivery times and delivery reliability.

	LPB <sup>+</sup>	LP <sup>+</sup>
	Generation 3	Generation 3
	alphira®	

Planetary gearheads  
Economy

# LP<sup>+</sup>/LPB<sup>+</sup> Generation 3 – Innovation sets standards

**LP<sup>+</sup>/LPB<sup>+</sup> Generation 3**  
· Torques increased by up to 75%  
· Reduction in noise level  
· New ratios available  
**The LPB<sup>+</sup> Generation 3 is also available as a two-stage version!**

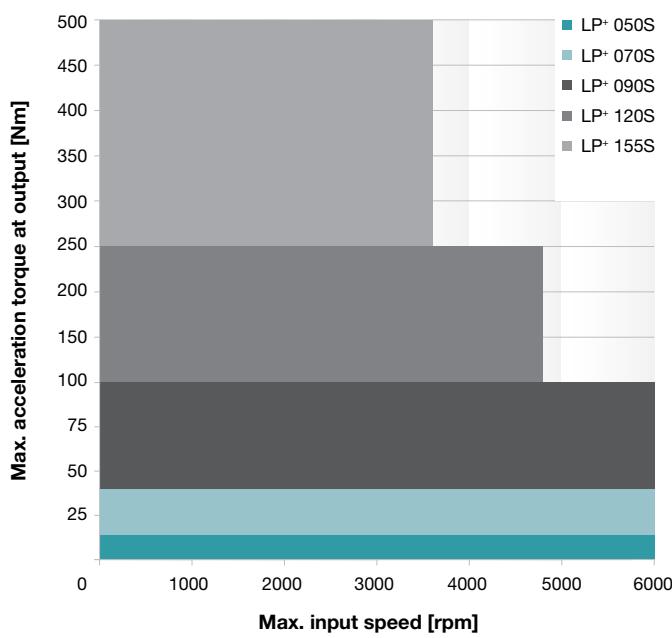
LPB<sup>+</sup> Generation 3 with belt pulley



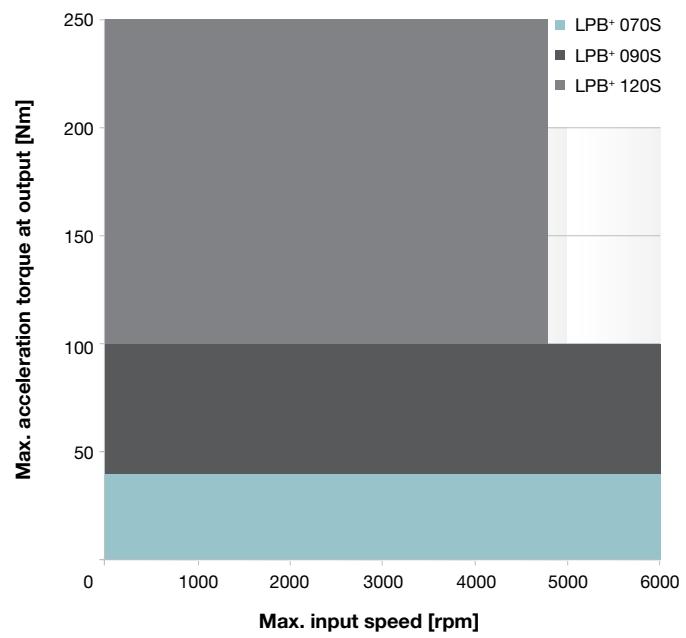
Low-backlash planetary gearheads with output shaft (LP<sup>+</sup> Generation 3) or drive flange (LPB<sup>+</sup> Generation 3). Optionally available with belt pulley for compact belt drive. The reliable and durable planetary gearhead combines the advantages of a proven gearhead concept with economic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

## Quick size selection

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



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



# Versions and Applications

## LP<sup>+</sup> Generation 3

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

## LPB<sup>+</sup> Generation 3

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

## Comparison

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

<sup>a)</sup> Power reduction: technical data available upon request

<sup>b)</sup> Please contact WITTENSTEIN alpha

<sup>c)</sup> In relation to reference sizes



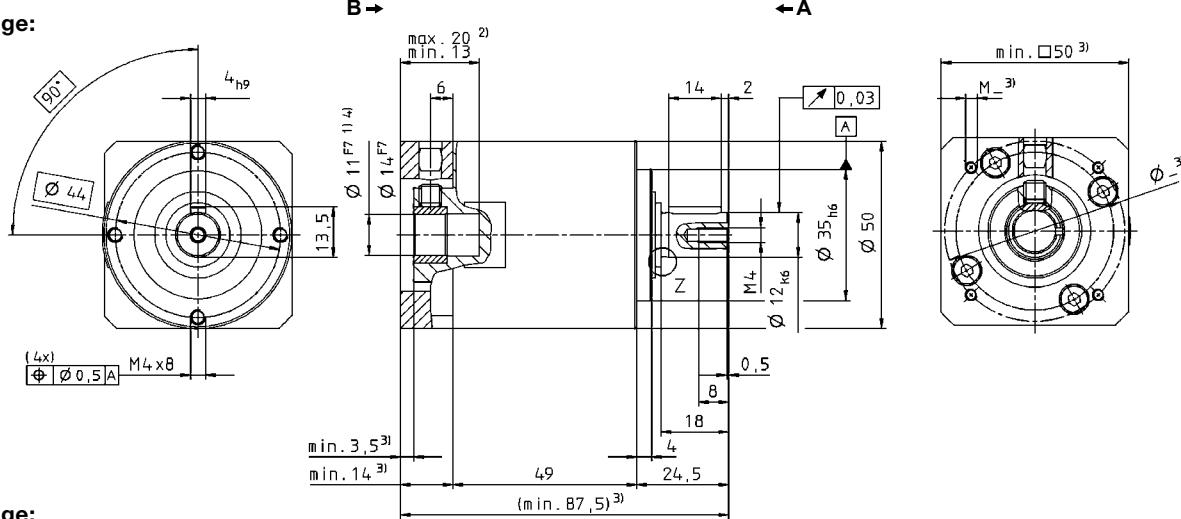
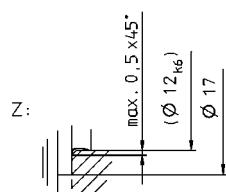
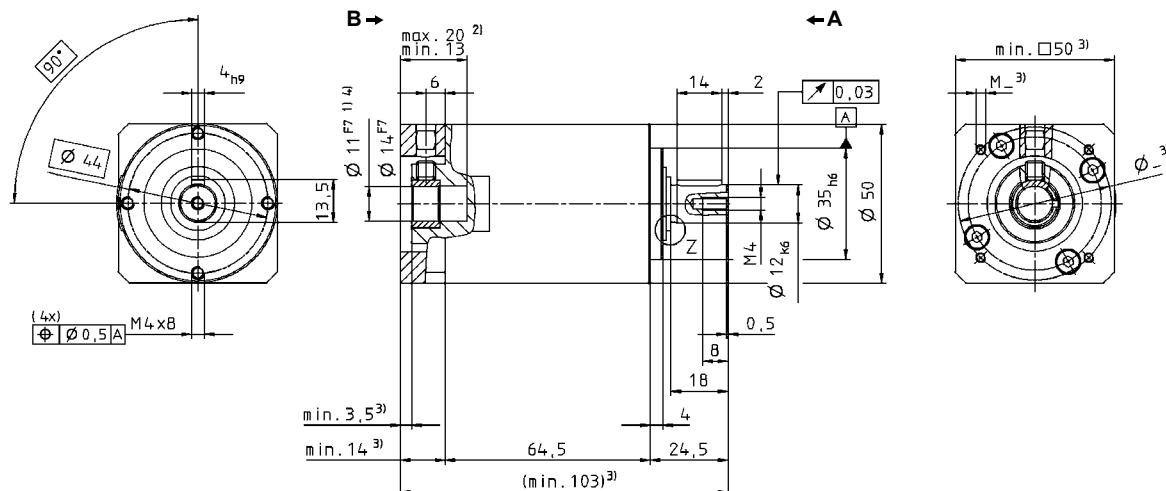
LPB<sup>+</sup>  
Generation 3      LP<sup>+</sup>  
Generation 3

Planetary gearheads  
Economy



View A

View B

**LP<sup>+</sup> 1-stage:****LP<sup>+</sup> 2-stage:**Non-tolerated dimensions  $\pm 1$ 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

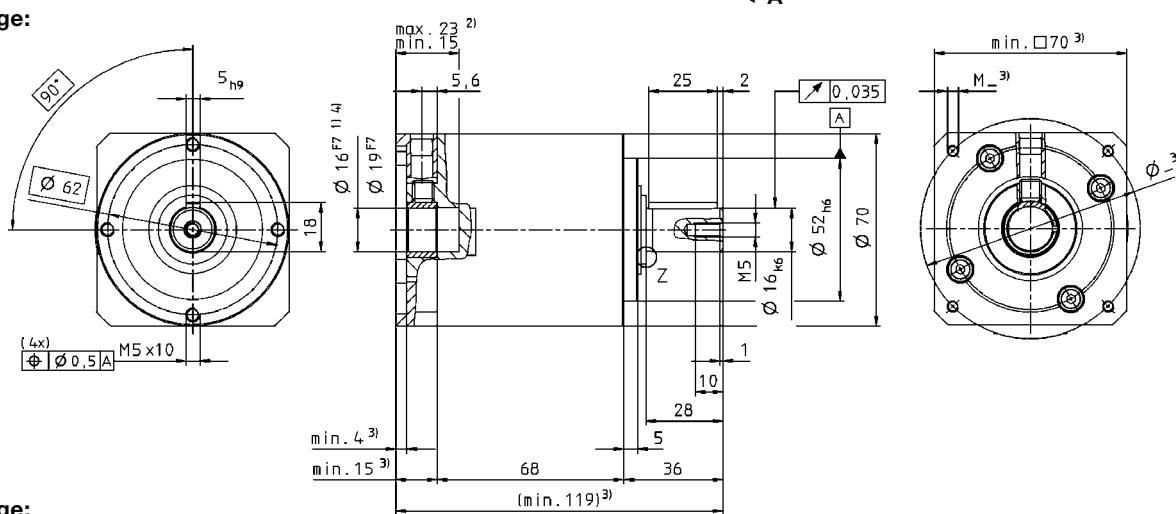
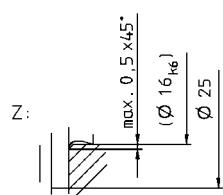
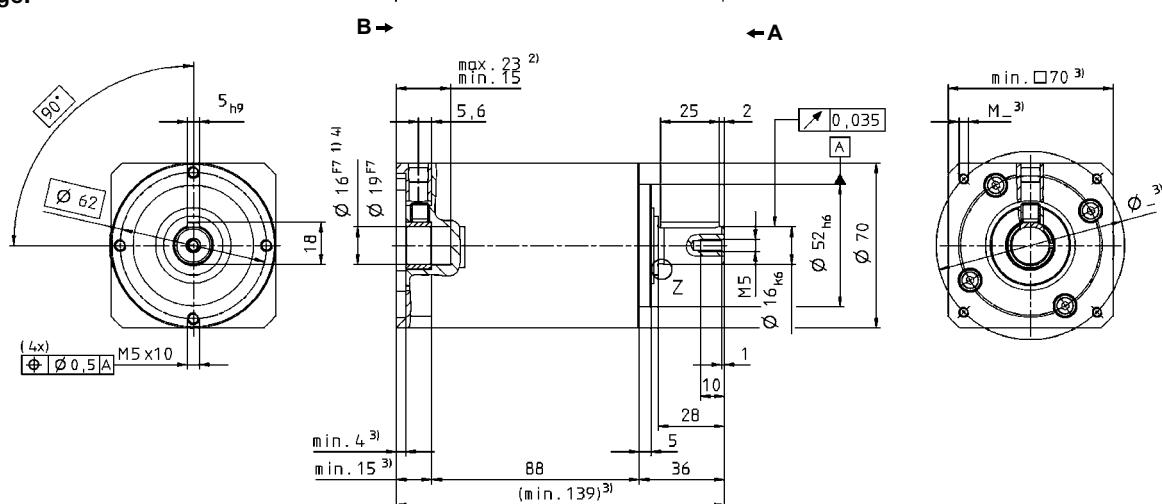
CAD data is available under [www.wittenstein-alpha.com](http://www.wittenstein-alpha.com)

Motor mounting according to operating manual



View A

View B

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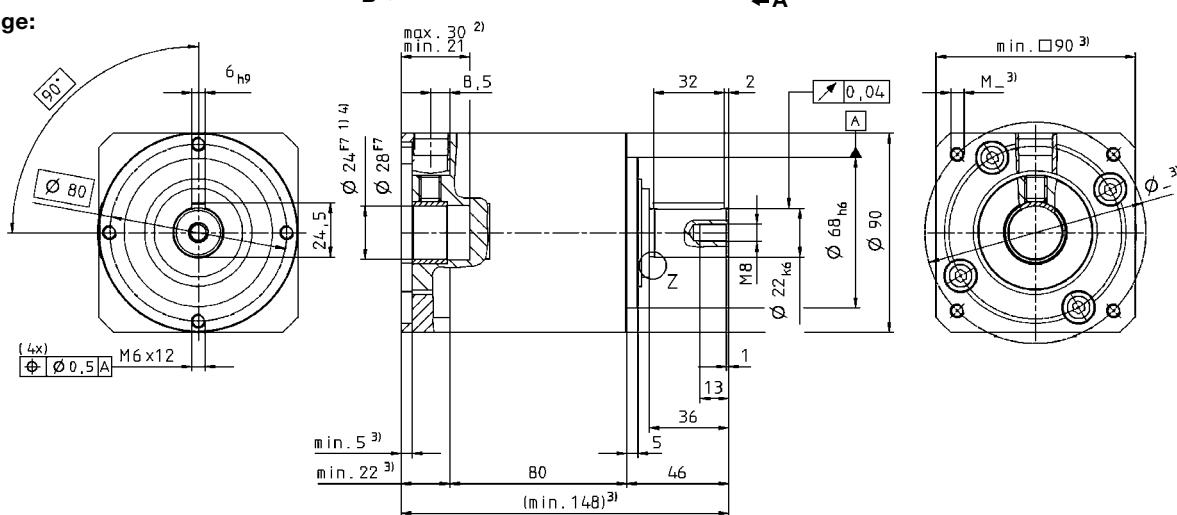
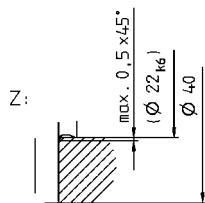
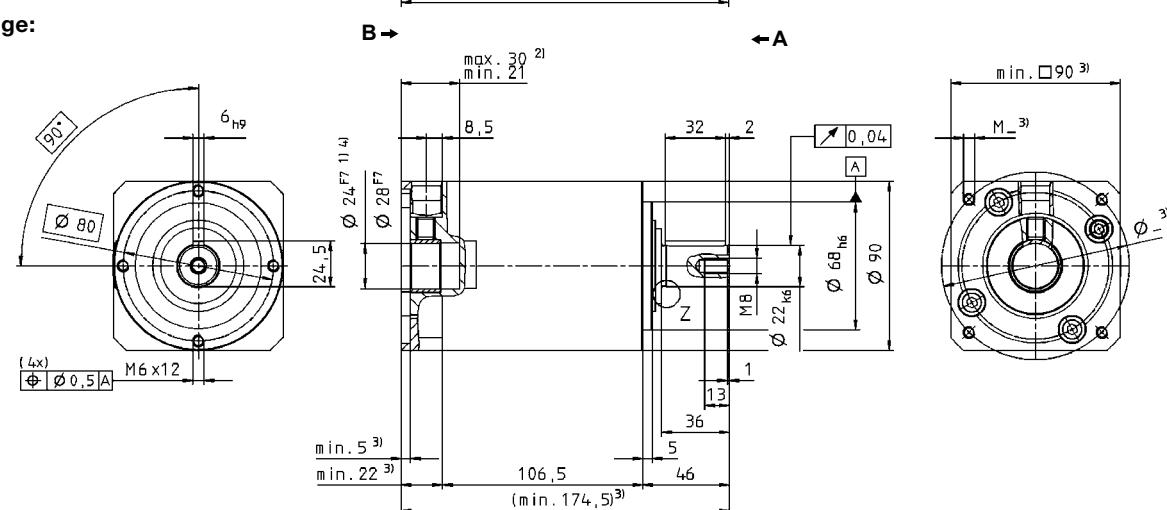
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Motor mounting according to operating manual



View A

View B

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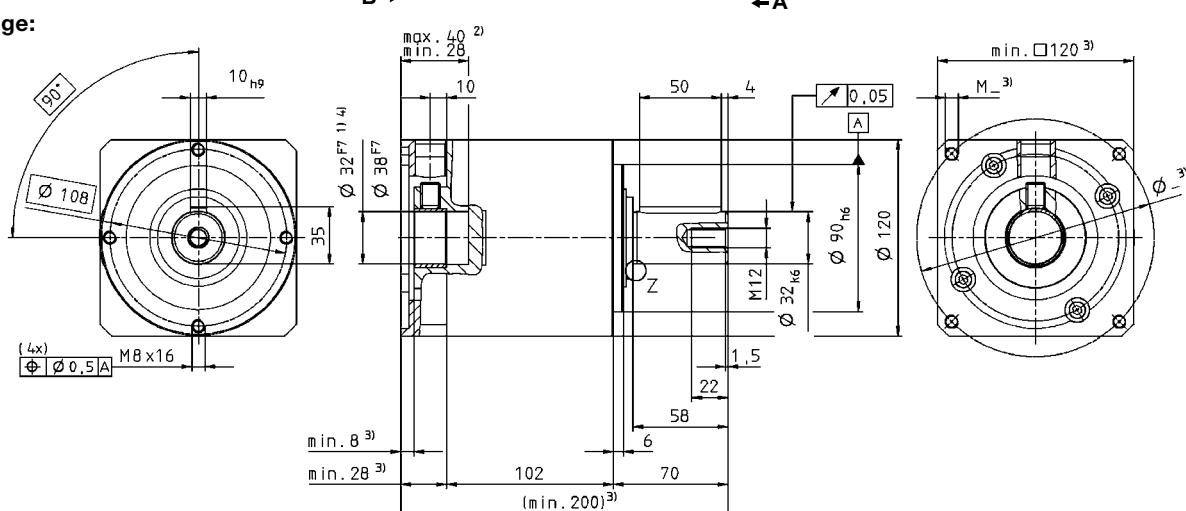
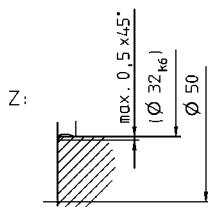
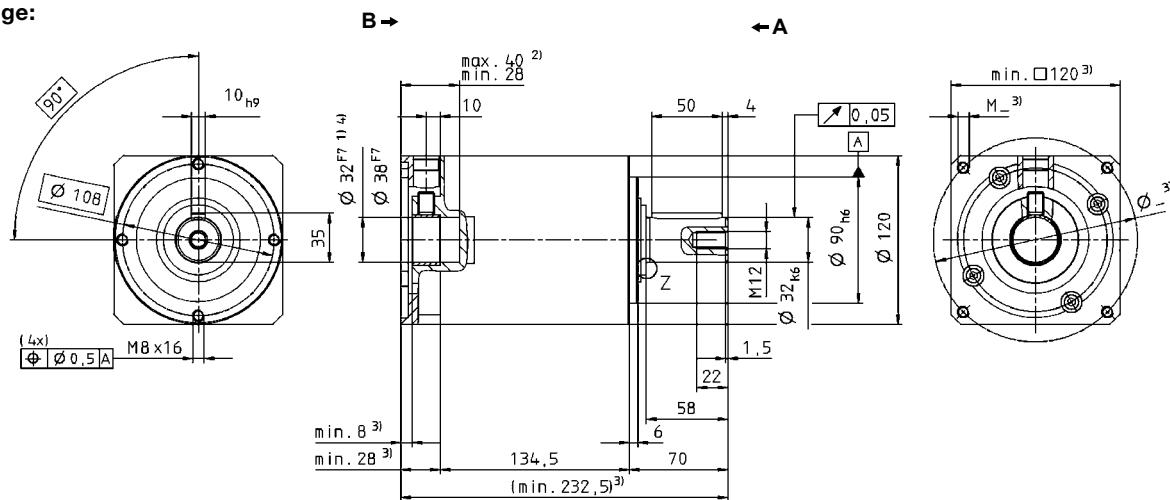
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Motor mounting according to operating manual



View A

View B

**LP<sup>+</sup> 1-stage:****LP<sup>+</sup> 2-stage:**

Non-tolerated dimensions ±1mm

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

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Motor mounting according to operating manual

# LP+ 155 MF 1/2-stage

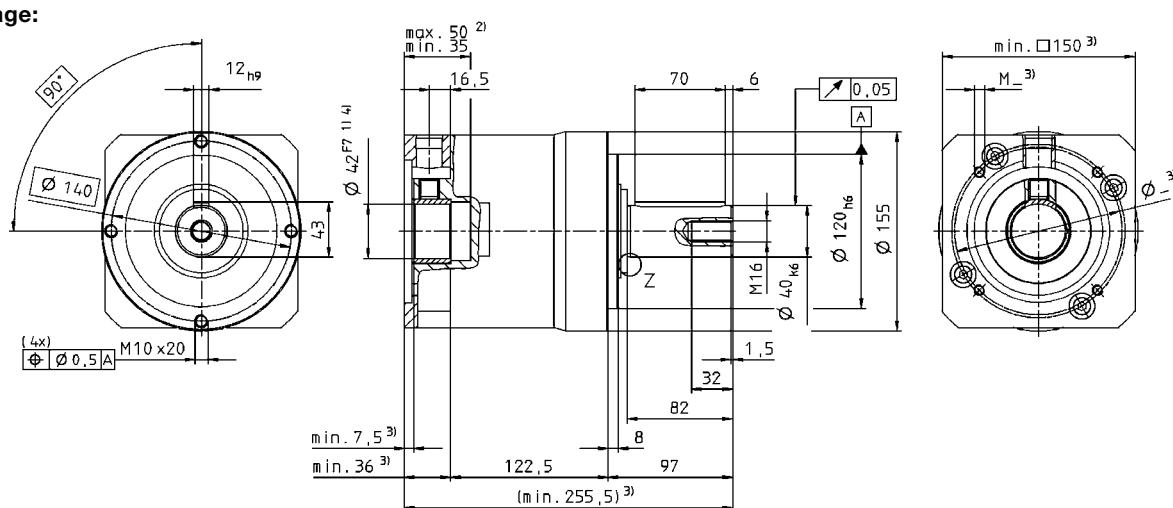
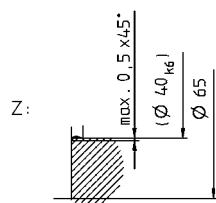
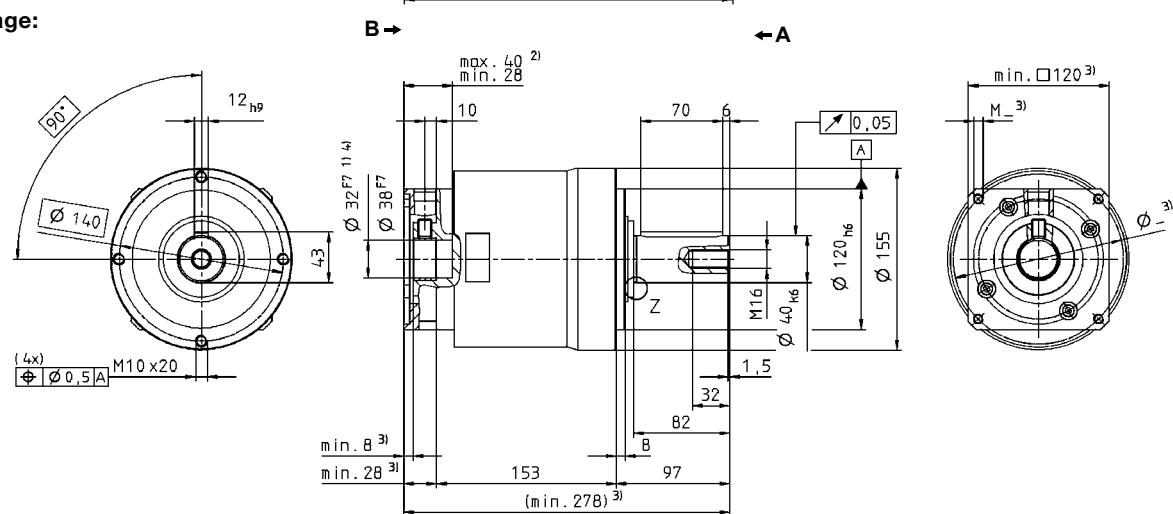
			1-stage		2-stage							
Ratio		i	5	10	25	50	100					
Max. acceleration torque (max. 1000 cycles per hour)	$T_{2B}$	Nm	500	400	500	500	400					
		in.lb	4430	3540	4430	4430	3540					
Nominal output torque (with $n_{IN}$ )	$T_{2N}$	Nm	350	200	350	350	200					
		in.lb	3100	1770	3100	3100	1770					
Emergency stop torque (permitted 1000 times during the service life of the 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) <sup>a)</sup>		$n_{IN}$	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	$\leq 8$		$\leq 10$						
Torsional rigidity	$C_{t21}$	Nm/arcmin	55	44	55	55	44					
		in.lb/arcmin	490	390	490	490	390					
Max. axial force <sup>b)</sup>	$F_{2AMax}$	N	6000				6000					
		lb <sub>f</sub>	1350				1350					
Max. radial force <sup>b)</sup>	$F_{2RMax}$	N	7500				7500					
		lb <sub>f</sub>	1690				1690					
Efficiency at full load		$\eta$	%	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 <sub>m</sub>	38			46						
Operating noise for i=10 and $n_i = 3000$ rpm without load		$L_{PA}$	dB(A)	$\leq 69$								
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	$J_f$	kgcm <sup>2</sup>	17	16	-					
				10 <sup>3</sup> in.lb.s <sup>2</sup>	15	14	-					
	I	32	$J_f$	kgcm <sup>2</sup>	-	-	5.4					
Clamping hub diameter (mm)				10 <sup>3</sup> in.lb.s <sup>2</sup>	-	-	4.8					
	K	38	$J_f$	kgcm <sup>2</sup>	-	-	6.3					
				10 <sup>3</sup> in.lb.s <sup>2</sup>	-	-	5.5					

<sup>a)</sup> For higher ambient temperatures, please reduce input speed

<sup>b)</sup> Refers to center of the output shaft, if  $n_2 = 100$  rpm

View A

View B

**LP<sup>+</sup> 1-stage:****LP<sup>+</sup> 2-stage:**

Non-tolerated dimensions ±1mm

- 1) Check motor shaft fit.
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LP<sup>+</sup> 2-stage: Motor shaft diameters up to 38mm available – please contact WITTENSTEIN alpha

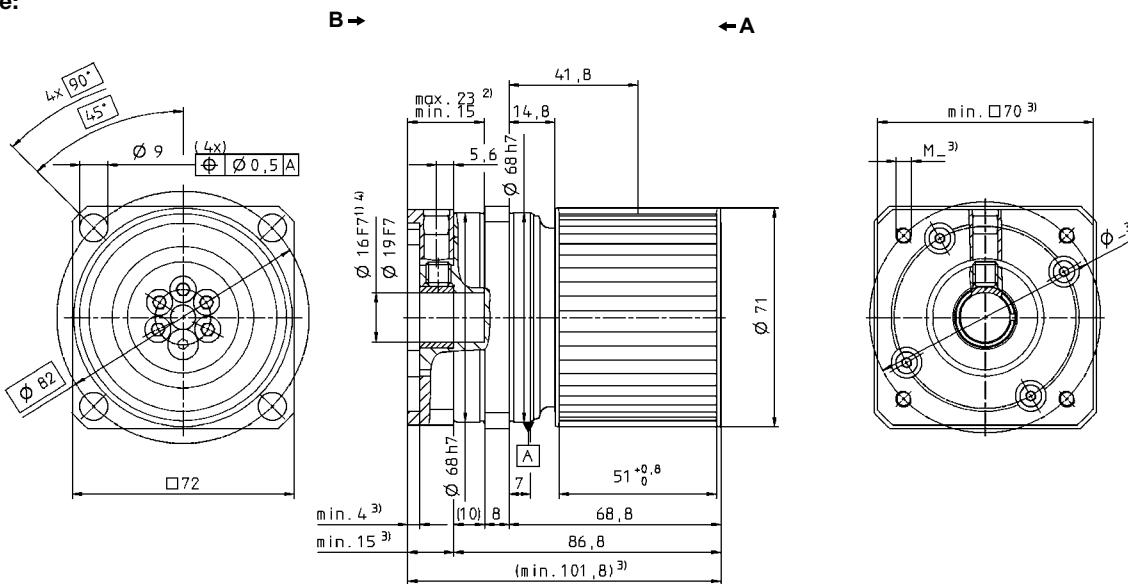
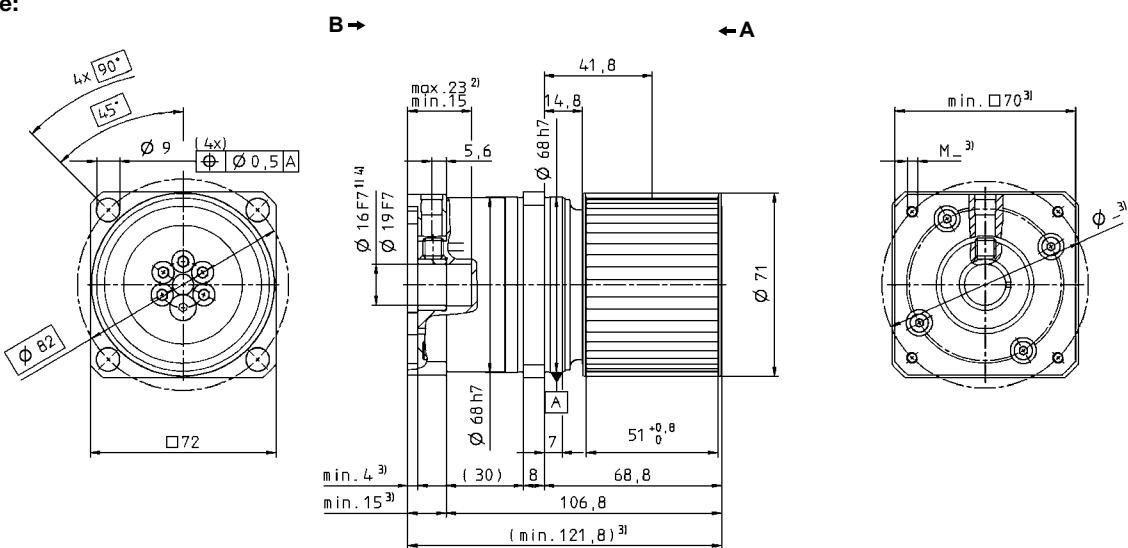
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Motor mounting according to operating manual



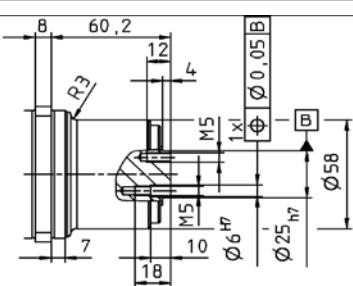
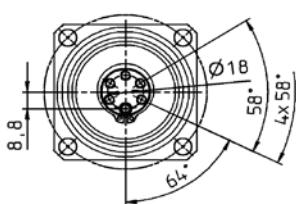
View A

View B

**LPB<sup>+</sup> 1-stage:****LPB<sup>+</sup> 2-stage:**

Supplement: Belt pulley PLPB<sup>+</sup> (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 <sup>2</sup>	3.86
Mass	$m$	kg	0.48

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

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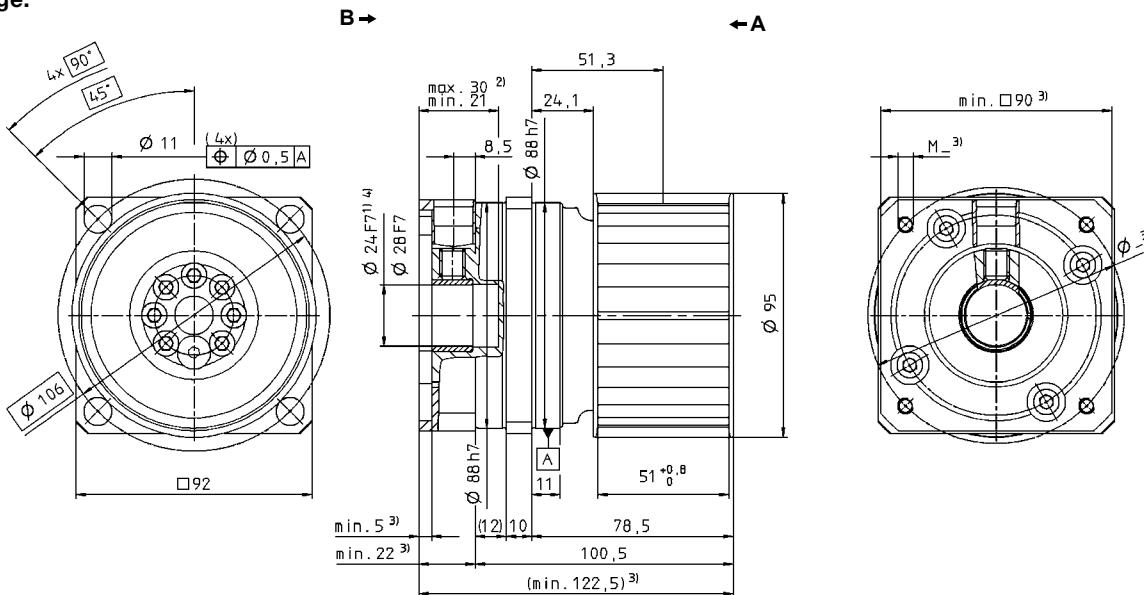
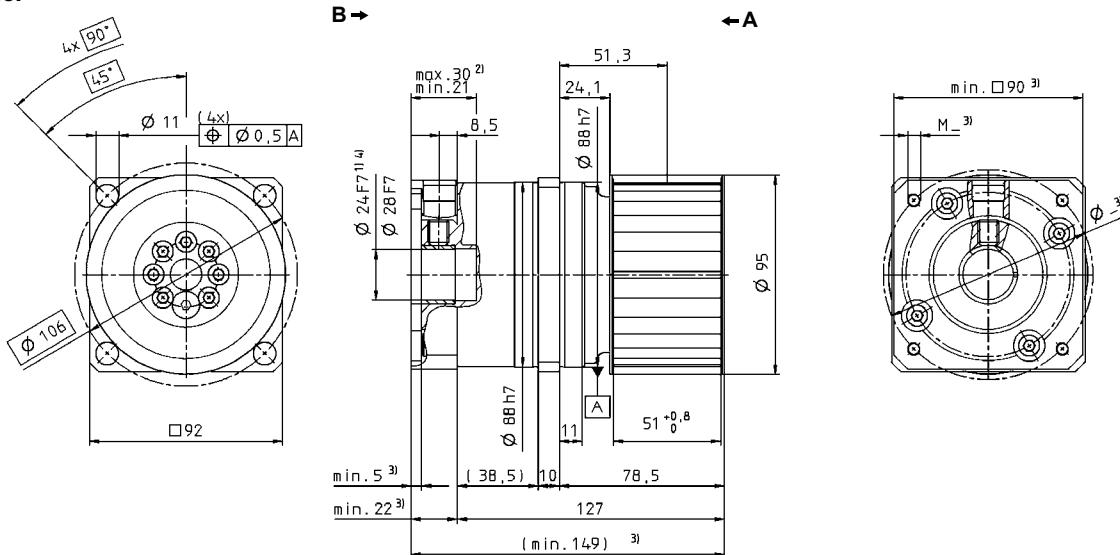


Motor mounting according to operating manual



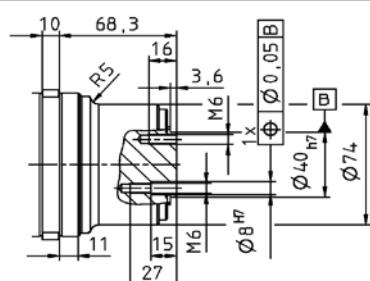
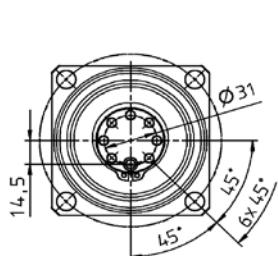
View A

View B

**LPB<sup>+</sup> 1-stage:****LPB<sup>+</sup> 2-stage:**

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

Illustration: Output flange without belt pulley



Belt Pulley PLPB <sup>+</sup> 090 Profile AT10-0			
Pitch	$\rho$	mm	10
Number of teeth	$z$		28
Circumference	$z \cdot \rho$	mm/rotation	280
Inertia	$J$	kgcm <sup>2</sup>	10.95
Mass	$m$	kg	0.82

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

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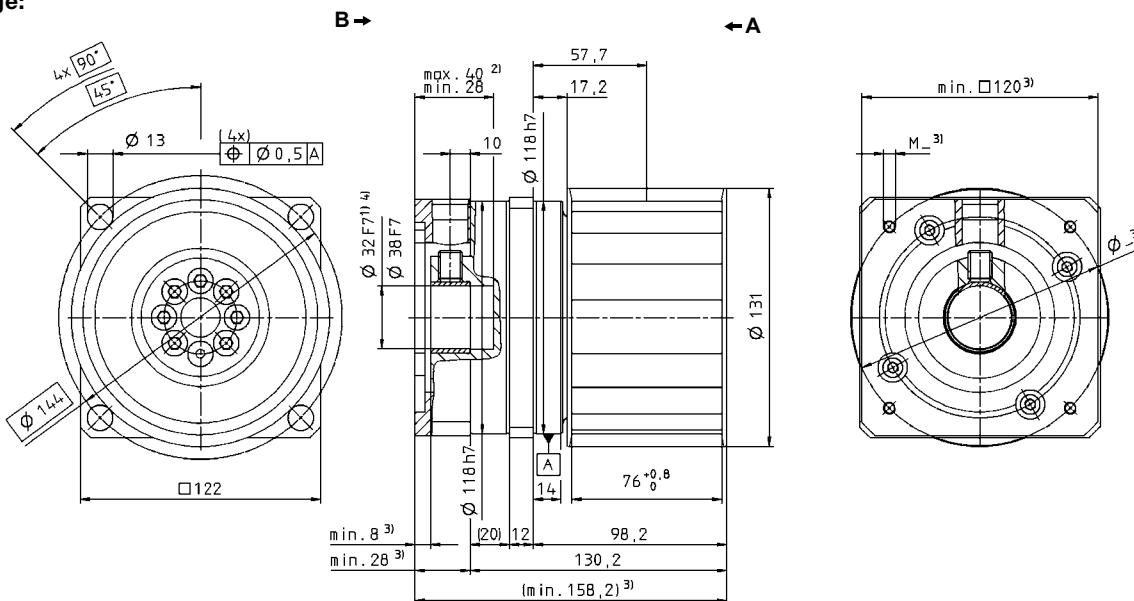
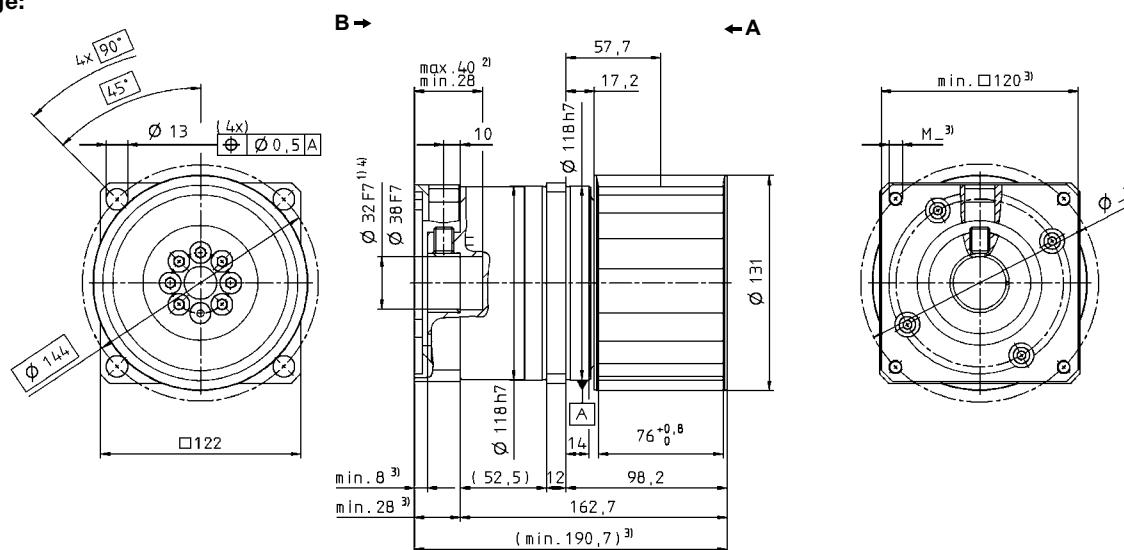


Motor mounting according to operating manual



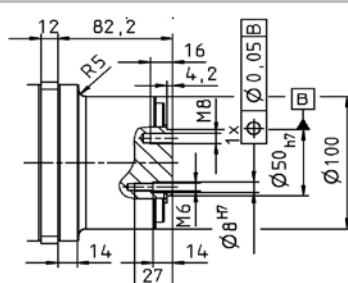
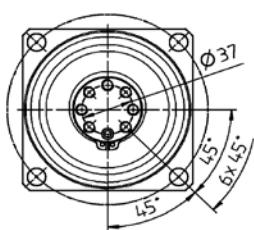
View A

View B

**LPB<sup>+</sup> 1-stage:****LPB<sup>+</sup> 2-stage:**Planetary gearheads  
EconomyLPB<sup>+</sup>  
Generation 3

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

Illustration: Output flange without belt pulley



Belt Pulley PLPB <sup>+</sup> 120 Profile AT20-0		
Pitch	$\rho$	mm   20
Number of teeth	$z$	19
Circumference	$z * \rho$	mm/rotation   380
Inertia	$J$	kgcm <sup>2</sup>   50.62
Mass	$m$	kg   2.61

Non-tolerated dimensions ±1mm

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⚠ Motor mounting according to operating manual