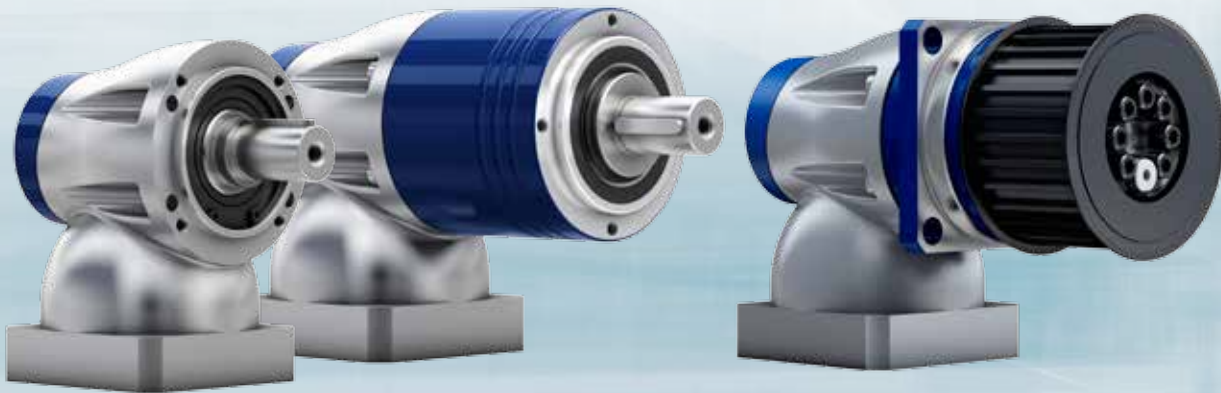


Servo right-angle gearheads General



LK+/LPK+

Economical right-angle precision

- Low backlash bevel gears with output shaft
- Applications in cyclic or continuous operation
- Torsional backlash: ≤ 8 arcmin
- Ratios: 1-100

Product highlights

- Diverse range of transmission ratios
- High nominal speeds

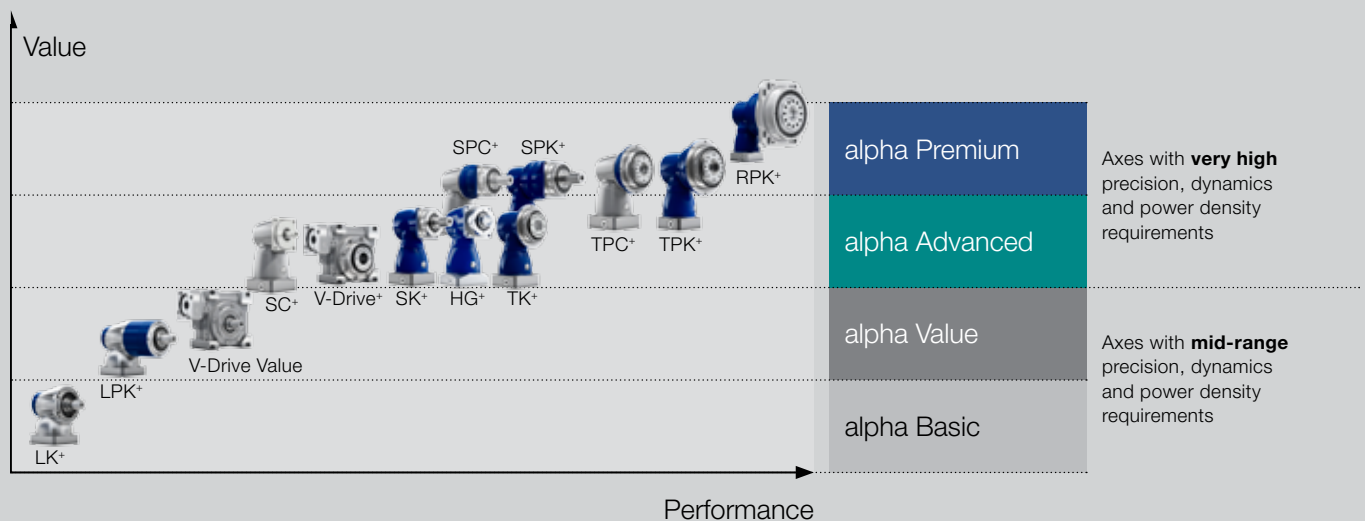
LPBK+

Economical right-angle precision

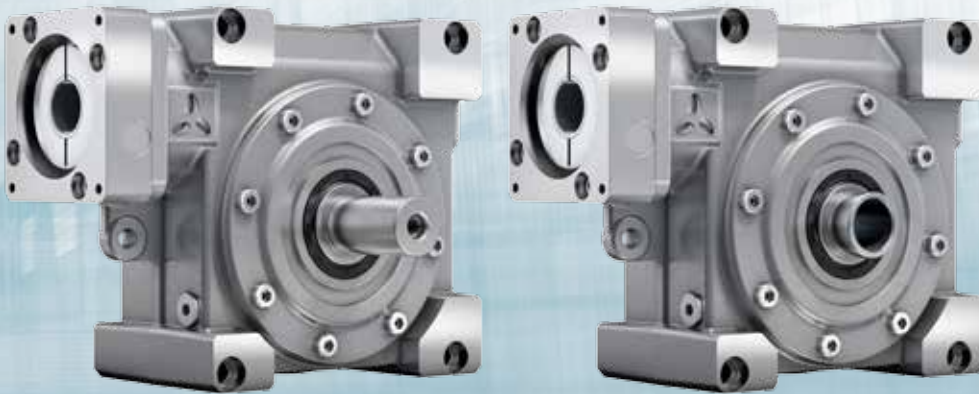
- Low backlash bevel gears with output flange
- Applications in cyclic or continuous operation
- Torsional backlash: ≤ 8 arcmin
- Ratios: 3-100

Product highlights

- Diverse range of transmission ratios
- High nominal speeds
- Optionally available with belt pulley



Now with even
higher torques!



V-Drive Value

Economical servo worm

- Low backlash servo worm gearhead with output shaft and hollow shaft
- Applications in cyclic or continuous operation
- Torsional backlash: ≤ 6 arcmin
- Ratios: 4-40

Product highlights:

- Hollow shaft version
- Single-stage up to $i=40$
- Smooth-running

Simple and convenient

From an optimized design with our cymex® software to the classic, patented WITTENSTEIN alpha motor mounting and grease volume adapted to each model – WITTENSTEIN alpha right-angle gearheads make your life so much easier.

Reliable and accurate

The low torsional backlash and high torsional rigidity of your WITTENSTEIN alpha right-angle gearhead assure maximum positioning accuracy of your drives and precision of your machines – even during highly dynamic operation up to 50,000 cycles/hour.

Maximum durability

Your WITTENSTEIN alpha right-angle gearhead is extremely reliable due to the overall design and 100% WITTENSTEIN alpha inspections: **“mount and forget”**. A length compensation feature integrated in your WITTENSTEIN alpha right-angle gearhead as standard maximizes the lifespan of your servo motor during high-speed continuous operation.

Right-angle gearheads
General



LK⁺/LPK⁺/LPBK⁺ – Economical right-angle precision

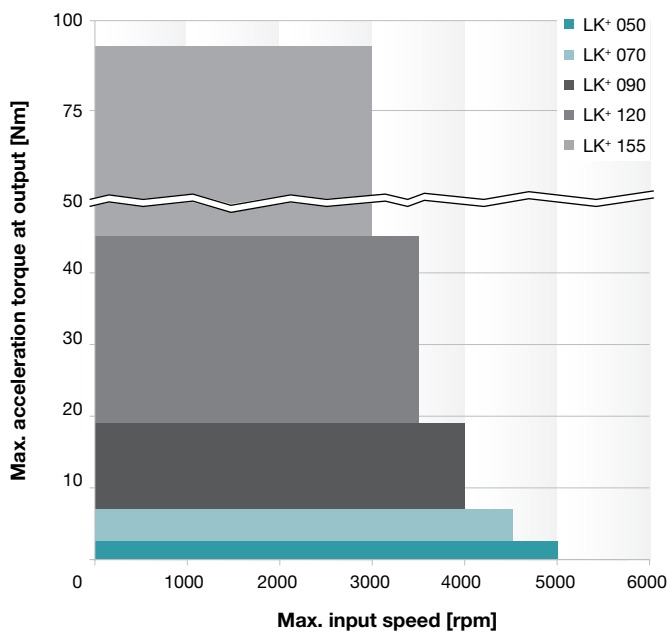


Low backlash right-angle gearheads with output shaft or output flange. This gearhead series is suitable for economical applications.

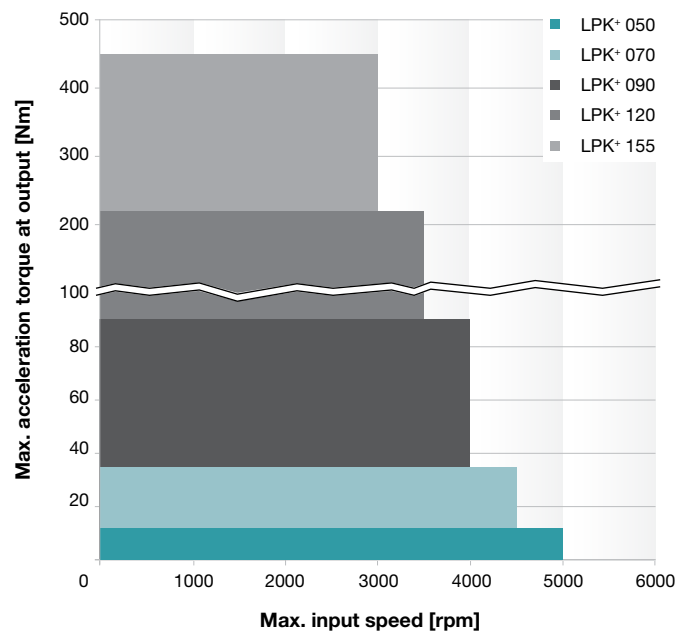
The LPBK⁺ is especially suitable for compact belt drives.

Quick size selection

LK⁺ (example for $i = 1$)
For applications in cyclic operation (DC ≤ 60%)
or continuous operation (DC ≥ 60%)



LPK⁺/LPBK⁺ (example for $i = 5$)
For applications in cyclic operation (DC ≤ 60%)
or continuous operation (DC ≥ 60%)



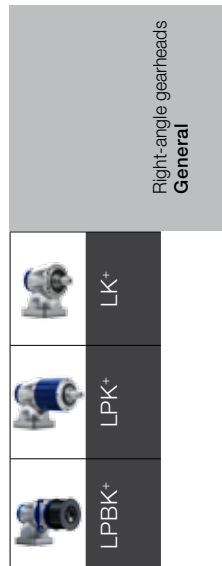
Versions and Applications

| Features | LK ⁺ MO version page 324 | LPK ⁺ MO version page 334 | LPBK ⁺ MO version page 344 |
|----------------------|--|---|--|
| Power density | • | •• | •• |
| Positioning accuracy | • | •• | •• |
| High input speeds | •• | •• | •• |
| Torsional rigidity | • | • | •• |
| Space-saving design | •• | •• | ••• |

Product features

| Ratios ^{o)} | | 1 – 1 | 3 – 100 | 3 – 100 |
|---|----------|-------|---------|---------|
| Torsional backlash [arcmin] ^{o)} | Standard | ≤ 15 | ≤ 12 | ≤ 12 |
| | 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 | | • | • | |
| Belt pulley | | | | • |
| B5 flange | | • | • | |

^{a)} Power reduction: technical data available upon request ^{b)} Please contact WITTENSTEIN alpha ^{o)} In relation to reference sizes



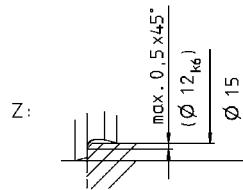
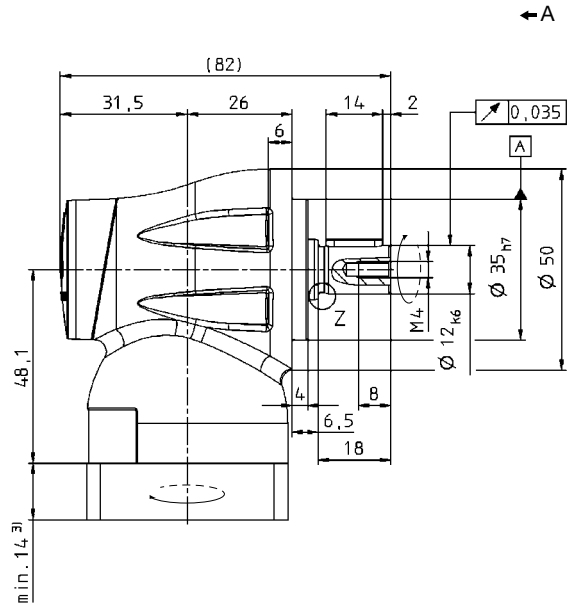
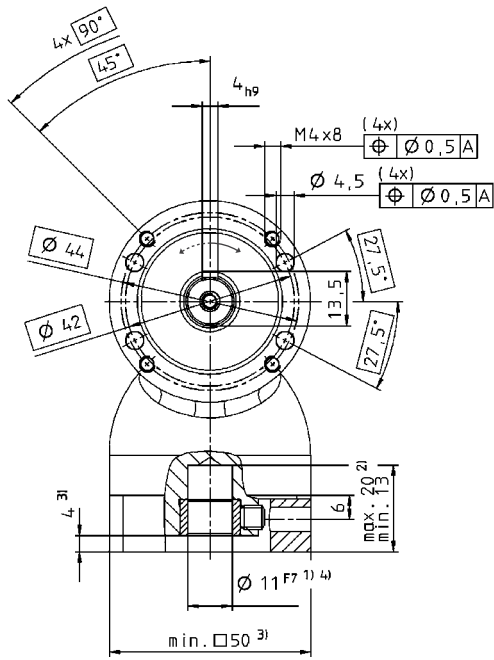
LK+ 050 1-stage

| | | 1-stage | |
|---|-----------------------------------|---------------------------------------|------------|
| Ratio | <i>i</i> | | 1 |
| Max. acceleration torque (max. 1000 cycles per hour) | T_{2B} | Nm | 2.5 |
| | | in.lb | 22 |
| Nominal output torque (with n_m) | T_{2N} | Nm | 1.2 |
| | | in.lb | 11 |
| Emergency stop torque (permitted 1000 times during the service life of the gearhead) | T_{2Not} | Nm | 5 |
| | | in.lb | 44 |
| Nominal input speed (with T_{2N} and 20°C ambient temperature ^{a)}) | n_{1N} | rpm | 3200 |
| Max. input speed | n_{1Max} | rpm | 5000 |
| Mean no load running torque (with $n_1=3000$ rpm and 20°C gearhead temperature) | T_{012} | Nm | 0.2 |
| | | in.lb | 1.8 |
| Max. torsional backlash | j_t | arcmin | ≤ 25 |
| Torsional rigidity | C_{t21} | Nm/ arcmin | - |
| | | in.lb/ arcmin | |
| Max. axial force ^{b)} | F_{2AMax} | N | 100 |
| | | lb _f | 23 |
| Max. radial force ^{b)} | F_{2RMax} | N | 650 |
| | | lb _f | 146 |
| Efficiency at full load | η | % | 95 |
| Service life (For calculation, see the Chapter "Information") | L_n | h | > 20000 |
| Weight incl. standard adapter plate | m | kg | 0.7 |
| | | lb _m | 1.5 |
| 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 | without | | |
| Direction of rotation | Motor and gearhead same direction | | |
| Protection class | IP 64 | | |
| Moment of inertia (relates to the drive) | J_i | kgcm ² | 0.14 |
| | | 10 ⁻³ in.lb.s ² | 0.12 |

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

^{b)} Refers to center of the output shaft, if $n_2 = 1000$ rpm

1-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.



CAD data is available under
<http://www.wittenstein-alpha.de/en/info-and-cad-finder.html>



Motor mounting according to operating manual

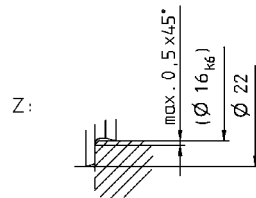
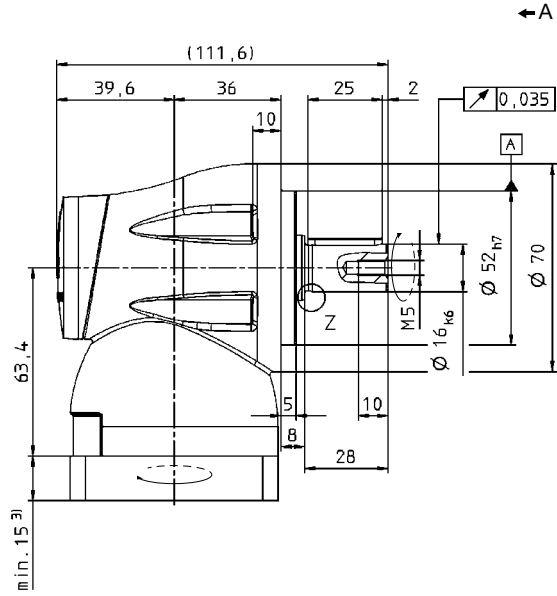
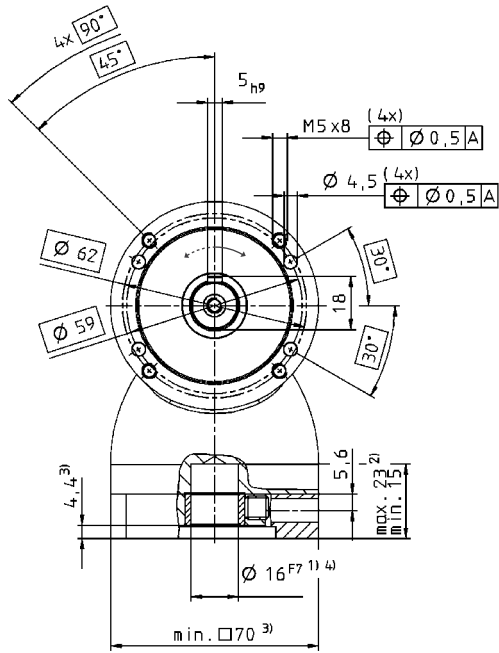
LK+ 070 1-stage

| | | 1-stage | |
|---|-----------------|---------------------------------------|-----------------------------------|
| Ratio | <i>i</i> | 1 | |
| Max. acceleration torque (max. 1000 cycles per hour) | T_{2B} | Nm | 7 |
| | | in.lb | 60 |
| Nominal output torque (with n_m) | T_{2N} | Nm | 3.7 |
| | | in.lb | 33 |
| Emergency stop torque (permitted 1000 times during the service life of the gearhead) | T_{2Not} | Nm | 15 |
| | | in.lb | 130 |
| Nominal input speed (with T_{2N} and 20°C ambient temperature) ^{a)} | n_{1N} | rpm | 3000 |
| Max. input speed | n_{1Max} | rpm | 4500 |
| Mean no load running torque (with $n_1=3000$ rpm and 20°C gearhead temperature) | T_{012} | Nm | 0.4 |
| | | in.lb | 3.5 |
| Max. torsional backlash | j_t | arcmin | ≤ 20 |
| Torsional rigidity | C_{t21} | Nm/ arcmin | - |
| | | in.lb/ arcmin | |
| Max. axial force ^{b)} | F_{2AMax} | N | 200 |
| | | lb _f | 45 |
| Max. radial force ^{b)} | F_{2RMax} | N | 1450 |
| | | lb _f | 330 |
| Efficiency at full load | η | % | 95 |
| Service life (For calculation, see the Chapter "Information") | L_n | h | > 20000 |
| Weight incl. standard adapter plate | m | kg | 1.9 |
| | | lb _m | 4.2 |
| Operating noise (with $n_1=3000$ rpm no load) | L_{PA} | dB(A) | ≤ 73 |
| Max. permitted housing temperature | | °C | +90 |
| | | F | 194 |
| Ambient temperature | | °C | -15 to 40 |
| | | F | 5 to 104 |
| Lubrication | | | Lubricated for life |
| Paint | | | without |
| Direction of rotation | | | Motor and gearhead same direction |
| Protection class | | | IP 64 |
| Moment of inertia (relates to the drive) | J_i | kgcm ² | 0.7 |
| | | 10 ⁻³ in.lb.s ² | 0.6 |

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

^{b)} Refers to center of the output shaft, if $n_2 = 1000$ rpm

1-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.



CAD data is available under
<http://www.wittenstein-alpha.de/en/info-and-cad-finder.html>



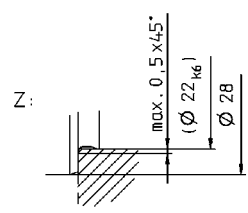
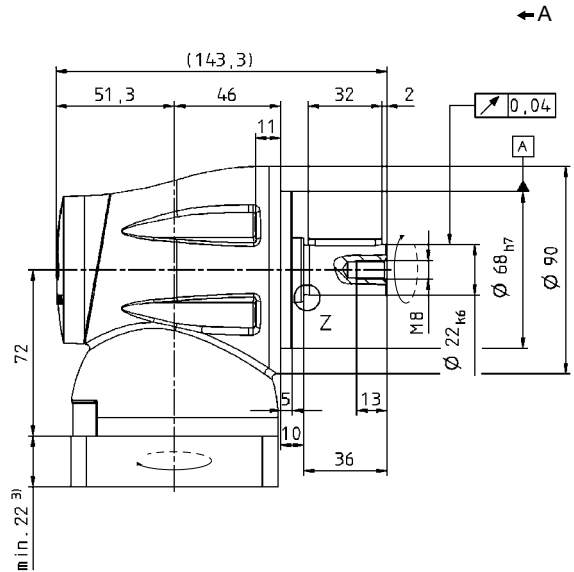
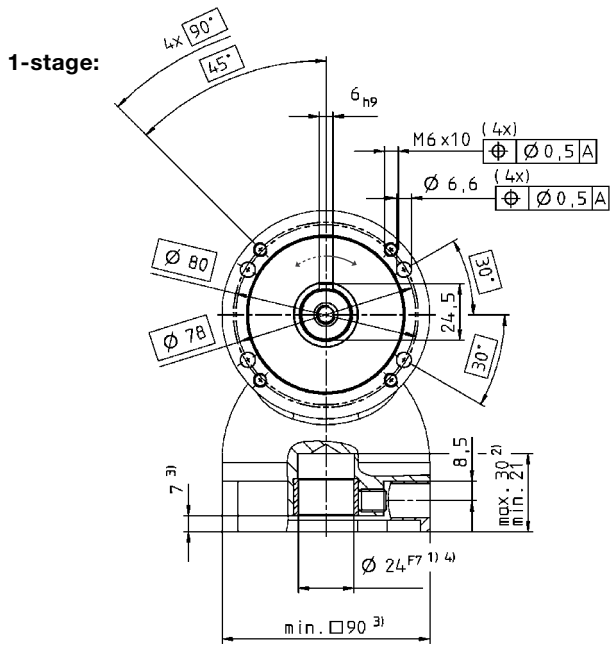
Motor mounting according to operating manual

LK+ 090 1-stage

| | | 1-stage | |
|---|-----------------------------------|---------------------------------------|-----------|
| Ratio | <i>i</i> | | 1 |
| Max. acceleration torque (max. 1000 cycles per hour) | T_{2B} | Nm | 19 |
| | | in.lb | 170 |
| Nominal output torque (with n_m) | T_{2N} | Nm | 9.3 |
| | | in.lb | 82 |
| Emergency stop torque (permitted 1000 times during the service life of the gearhead) | T_{2Not} | Nm | 37 |
| | | in.lb | 330 |
| Nominal input speed (with T_{2N} and 20°C ambient temperature) ^{a)} | n_{1N} | rpm | 2700 |
| Max. input speed | n_{1Max} | rpm | 4000 |
| Mean no load running torque (with $n_1=3000$ rpm and 20°C gearhead temperature) | T_{012} | Nm | 0.9 |
| | | in.lb | 8.0 |
| Max. torsional backlash | j_t | arcmin | ≤ 15 |
| Torsional rigidity | C_{t21} | Nm/ arcmin | 1.3 |
| | | in.lb/ arcmin | 11 |
| Max. axial force ^{b)} | F_{2AMax} | N | 450 |
| | | lb _f | 100 |
| Max. radial force ^{b)} | F_{2RMax} | N | 2400 |
| | | lb _f | 540 |
| Efficiency at full load | η | % | 95 |
| Service life (For calculation, see the Chapter "Information") | L_n | h | > 20000 |
| Weight incl. standard adapter plate | m | kg | 3.2 |
| | | lb _m | 7.1 |
| Operating noise (with $n_1=3000$ rpm no load) | L_{PA} | dB(A) | ≤ 76 |
| Max. permitted housing temperature | °C | | +90 |
| | F | | 194 |
| Ambient temperature | °C | | -15 to 40 |
| | F | | 5 to 104 |
| Lubrication | Lubricated for life | | |
| Paint | without | | |
| Direction of rotation | Motor and gearhead same direction | | |
| Protection class | IP 64 | | |
| Moment of inertia (relates to the drive) | J_i | kgcm ² | 3.3 |
| | | 10 ⁻³ in.lb.s ² | 2.9 |

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

^{b)} Refers to center of the output shaft, if $n_2 = 1000$ rpm



Right-angle gearheads
General
LK+

- 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.

CAD data is available under
<http://www.wittenstein-alpha.de/en/info-and-cad-finder.html>
 Motor mounting according to operating manual

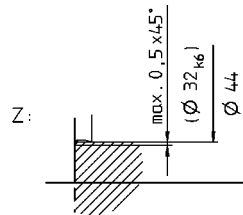
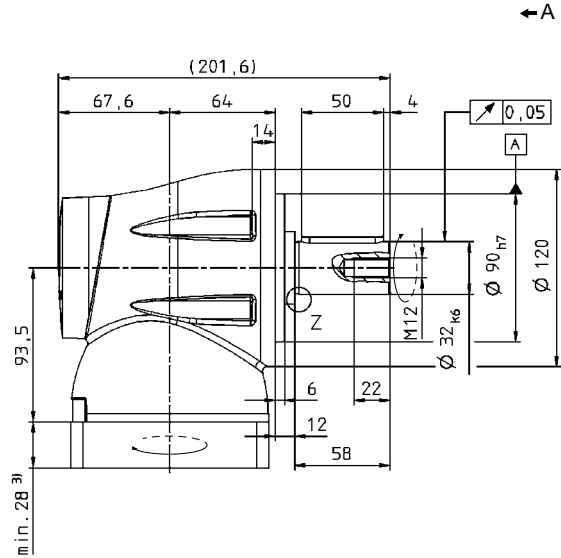
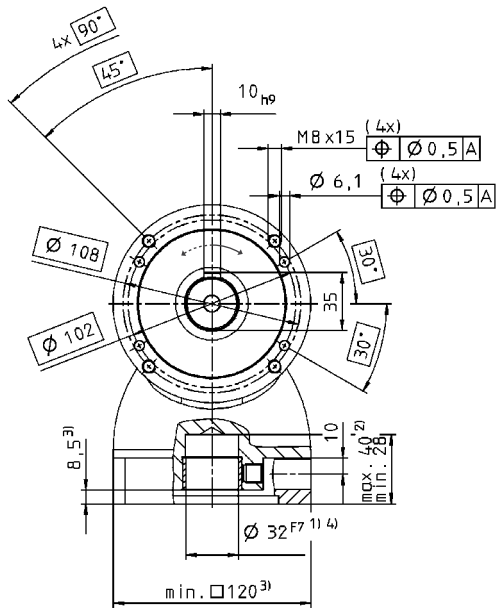
LK+ 120 1-stage

| | | 1-stage | |
|---|-----------------|---------------------------------------|-----------------------------------|
| Ratio | <i>i</i> | 1 | |
| Max. acceleration torque (max. 1000 cycles per hour) | T_{2B} | Nm | 45 |
| | | in.lb | 400 |
| Nominal output torque (with n_m) | T_{2N} | Nm | 23 |
| | | in.lb | 200 |
| Emergency stop torque (permitted 1000 times during the service life of the gearhead) | T_{2Not} | Nm | 93 |
| | | in.lb | 820 |
| Nominal input speed (with T_{2N} and 20°C ambient temperature) ^{a)} | n_{1N} | rpm | 2100 |
| Max. input speed | n_{1Max} | rpm | 3500 |
| Mean no load running torque (with $n_1=3000$ rpm and 20°C gearhead temperature) | T_{012} | Nm | 2.5 |
| | | in.lb | 22 |
| Max. torsional backlash | j_t | arcmin | ≤ 10 |
| Torsional rigidity | C_{t21} | Nm/ arcmin | - |
| | | in.lb/ arcmin | |
| Max. axial force ^{b)} | F_{2AMax} | N | 750 |
| | | lb _f | 170 |
| Max. radial force ^{b)} | F_{2RMax} | N | 4600 |
| | | lb _f | 1040 |
| Efficiency at full load | η | % | 95 |
| Service life (For calculation, see the Chapter "Information") | L_n | h | > 20000 |
| Weight incl. standard adapter plate | m | kg | 8.9 |
| | | lb _m | 20 |
| Operating noise (with $n_1=3000$ rpm no load) | L_{PA} | dB(A) | ≤ 76 |
| Max. permitted housing temperature | | °C | +90 |
| | | F | 194 |
| Ambient temperature | | °C | -15 to 40 |
| | | F | 5 to 104 |
| Lubrication | | | Lubricated for life |
| Paint | | | without |
| Direction of rotation | | | Motor and gearhead same direction |
| Protection class | | | IP 64 |
| Moment of inertia (relates to the drive) | J_i | kgcm ² | 14 |
| | | 10 ⁻³ in.lb.s ² | 12 |

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

^{b)} Refers to center of the output shaft, if $n_2 = 1000$ rpm

1-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.



CAD data is available under
<http://www.wittenstein-alpha.de/en/info-and-cad-finder.html>



Motor mounting according to operating manual

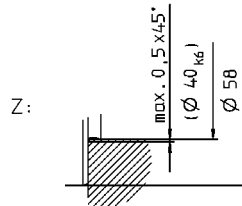
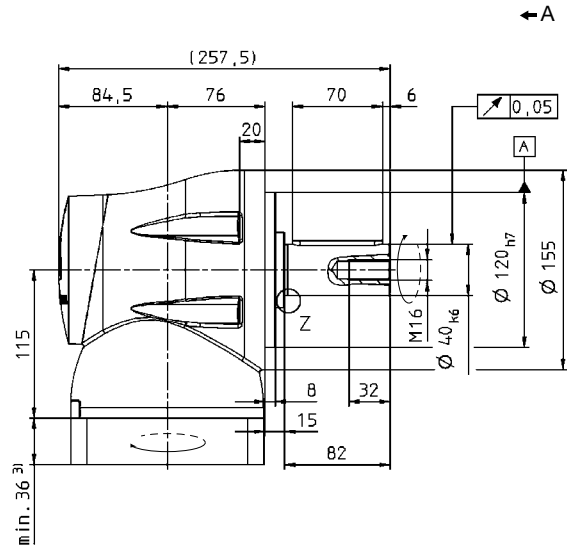
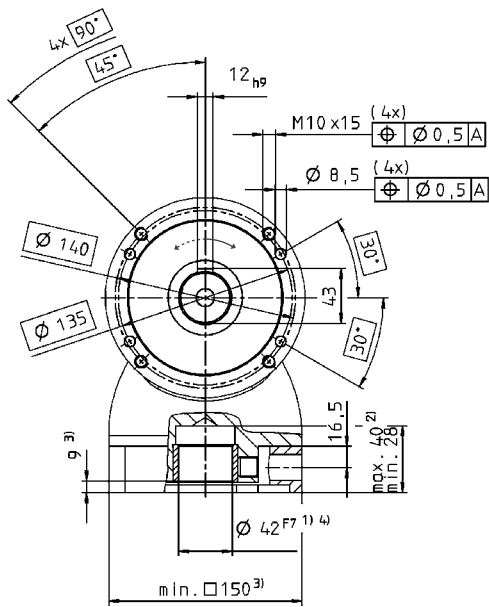
LK+ 155 1-stage

| | | 1-stage | |
|---|-----------------|---------------------------------------|-----------------------------------|
| Ratio | <i>i</i> | 1 | |
| Max. acceleration torque (max. 1000 cycles per hour) | T_{2B} | Nm | 93 |
| | | in.lb | 820 |
| Nominal output torque (with n_m) | T_{2N} | Nm | 66 |
| | | in.lb | 580 |
| Emergency stop torque (permitted 1000 times during the service life of the gearhead) | T_{2Not} | Nm | 194 |
| | | in.lb | 1720 |
| Nominal input speed (with T_{2N} and 20°C ambient temperature) ^{a)} | n_{1N} | rpm | 1600 |
| Max. input speed | n_{1Max} | rpm | 3000 |
| Mean no load running torque (with $n_1=3000$ rpm and 20°C gearhead temperature) | T_{012} | Nm | 4.5 |
| | | in.lb | |
| Max. torsional backlash | j_t | arcmin | ≤ 8 |
| | | | 40 |
| Torsional rigidity | C_{t21} | Nm/ arcmin | - |
| | | in.lb/ arcmin | |
| Max. axial force ^{b)} | F_{2AMax} | N | 1000 |
| | | lb _f | 225 |
| Max. radial force ^{b)} | F_{2RMax} | N | 7500 |
| | | lb _f | 1690 |
| Efficiency at full load | η | % | 95 |
| Service life (For calculation, see the Chapter "Information") | L_n | h | > 20000 |
| Weight incl. standard adapter plate | m | kg | 19 |
| | | lb _m | 42 |
| Operating noise (with $n_1=3000$ rpm no load) | L_{PA} | dB(A) | ≤ 78 |
| Max. permitted housing temperature | | °C | +90 |
| | | F | 194 |
| Ambient temperature | | °C | -15 to 40 |
| | | F | 5 to 104 |
| Lubrication | | | Lubricated for life |
| Paint | | | without |
| Direction of rotation | | | Motor and gearhead same direction |
| Protection class | | | IP 64 |
| Moment of inertia (relates to the drive) | J_i | kgcm ² | 57 |
| | | 10 ⁻³ in.lb.s ² | 51 |

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

^{b)} Refers to center of the output shaft, if $n_2 = 1000$ rpm

1-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.



CAD data is available under
<http://www.wittenstein-alpha.de/en/info-and-cad-finder.html>



Motor mounting according to operating manual

LPK+ 050 2/3-stage

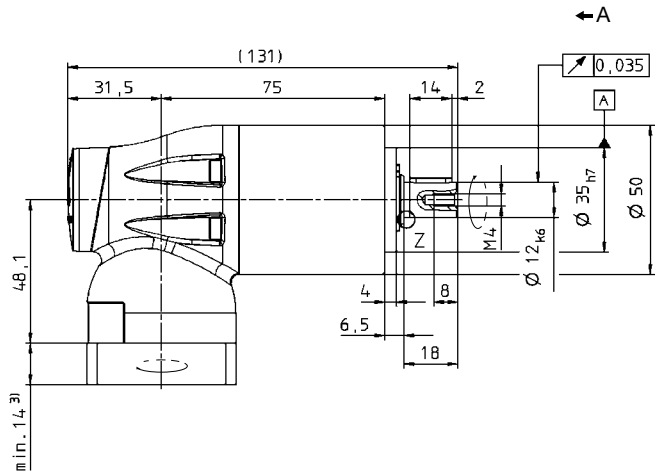
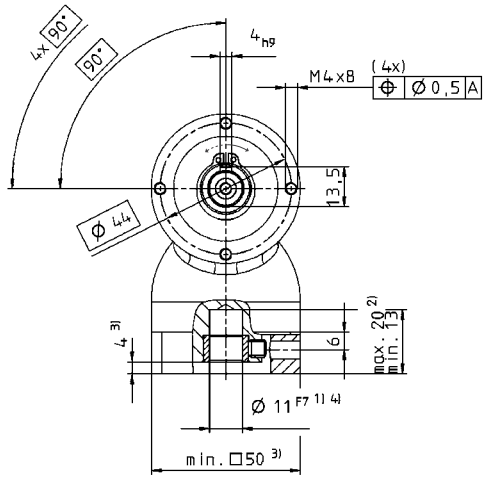
| Ratio | <i>i</i> | 2-stage | | | | 3-stage | | | | | | | |
|---|-----------------------------------|---------------------------------------|-----------|------|------|---------|---------|------|------|------|------|------|------|
| | | 4 | 5 | 7 | 10 | 16 | 20 | 25 | 35 | 50 | 70 | 100 | |
| Max. acceleration torque (max. 1000 cycles per hour) | T_{2B} | Nm | 11 | 12 | 12 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 11 |
| | | in.lb | 100 | 110 | 110 | 100 | 100 | 100 | 110 | 110 | 110 | 110 | 100 |
| Nominal output torque (with n_m) | 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 | 3200 | 3200 | 3200 | 3200 | 3200 | 3200 | 3200 | 3200 | 3200 | 3200 | |
| Max. input speed | n_{1Max} | rpm | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | |
| Mean no load running torque (with $n_1=3000$ rpm and 20°C gearhead temperature) | T_{012} | Nm | 0.17 | 0.17 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| | | in.lb | 1.5 | 1.5 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 |
| Max. torsional backlash | j_t | arcmin | ≤ 16 | | | | ≤ 15 | | | | | | |
| Torsional rigidity | C_{t21} | Nm/ arcmin | - | | | | - | | | | | | |
| | | in.lb/ arcmin | | | | | | | | | | | |
| 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 | % | 92 | | | | 90 | | | | | | |
| Service life (For calculation, see the Chapter "Information") | L_n | h | > 20000 | | | | > 20000 | | | | | | |
| Weight incl. standard adapter plate | m | kg | 1.4 | | | | 1.6 | | | | | | |
| | | lb _m | 3.1 | | | | 3.5 | | | | | | |
| Operating noise (for $i=10$ and $n_1=3000$ rpm without 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) | J_i | kgcm ² | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| | | 10 ⁻³ in.lb.s ² | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |

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

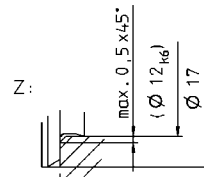
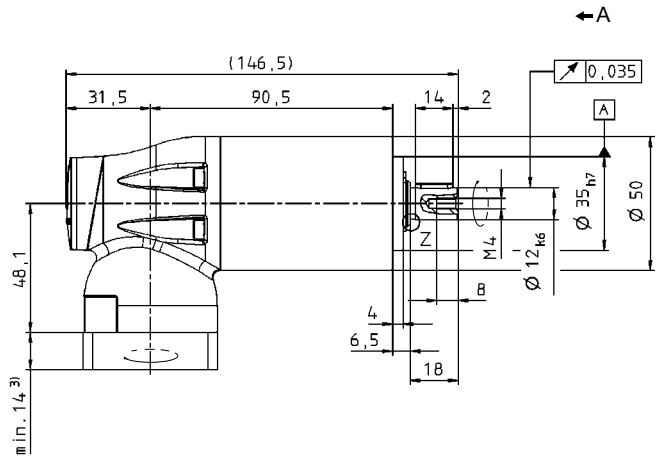
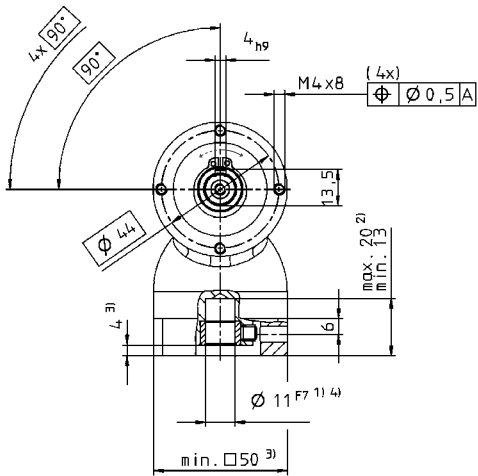
^{b)} Refers to center of the output shaft, if $n_2 = 100$ rpm

View A

2-stage:



3-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.

CAD data is available under <http://www.wittenstein-alpha.de/en/info-and-cad-finder.html>

Motor mounting according to operating manual

LPK+ 070 2/3-stage

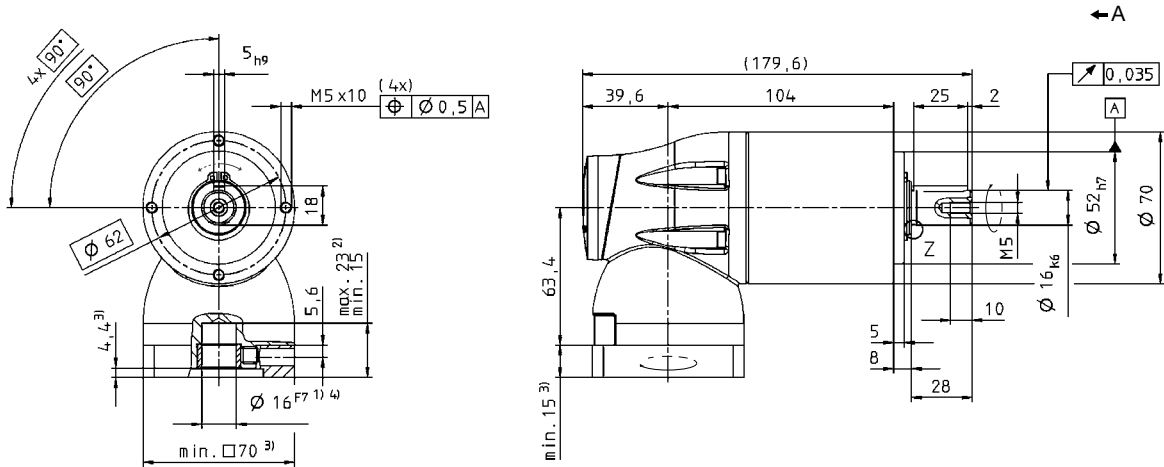
| Ratio ^{c)} | <i>i</i> | 2-stage | | | | | 3-stage | | | | | | | |
|---|-------------|---------------------------------------|-----------------------------------|------|------|------|---------|---------|------|------|------|------|------|------|
| | | 3 | 4 | 5 | 7 | 10 | 16 | 20 | 25 | 30 | 50 | 70 | 100 | |
| Max. acceleration torque (max. 1000 cycles per hour) | T_{2B} | Nm | 22 | 29 | 35 | 35 | 32 | 35 | 35 | 35 | 32 | 35 | 35 | 32 |
| | | in.lb | 190 | 260 | 310 | 310 | 280 | 310 | 310 | 310 | 280 | 310 | 310 | 280 |
| Nominal output torque (with n_m) | T_{2N} | Nm | 11 | 15 | 18 | 18 | 16.5 | 18 | 18 | 18 | 16.5 | 18 | 18 | 16.5 |
| | | in.lb | 100 | 130 | 160 | 160 | 150 | 160 | 160 | 160 | 160 | 160 | 160 | 160 |
| Emergency stop torque (permitted 1000 times during the service life of the gearhead) | T_{2Not} | Nm | 45 | 60 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 |
| | | in.lb | 400 | 530 | 664 | 660 | 660 | 660 | 660 | 660 | 660 | 660 | 660 | 660 |
| Nominal input speed (with T_{2N} and 20°C ambient temperature) ^{a)} | n_{1N} | rpm | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | |
| Max. input speed | n_{1Max} | rpm | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | |
| Mean no load running torque (with $n_1=3000$ rpm and 20°C gearhead temperature) | T_{012} | Nm | 0.72 | 0.71 | 0.67 | 0.66 | 0.62 | 0.63 | 0.63 | 0.59 | 0.59 | 0.59 | 0.59 | 0.59 |
| | | in.lb | 6.4 | 6.3 | 2.9 | 5.8 | 5.5 | 5.6 | 5.6 | 5.2 | 5.2 | 5.2 | 5.2 | 5.2 |
| Max. torsional backlash | j_t | arcmin | ≤ 14 | | | | | ≤ 12 | | | | | | |
| Torsional rigidity | C_{t21} | Nm/ arcmin | 1 | 1,5 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| | | in.lb/ arcmin | 9 | 13 | 17 | 21 | 21 | 27 | 27 | 27 | 25 | 28 | 28 | 25 |
| Max. axial force ^{b)} | F_{2AMax} | N | 1550 | | | | | 1550 | | | | | | |
| | | lb _f | 350 | | | | | 350 | | | | | | |
| Max. radial force ^{b)} | F_{2RMax} | N | 1450 | | | | | 1450 | | | | | | |
| | | lb _f | 330 | | | | | 330 | | | | | | |
| Efficiency at full load | η | % | 92 | | | | | 90 | | | | | | |
| Service life (For calculation, see the Chapter "Information") | L_n | h | > 20000 | | | | | > 20000 | | | | | | |
| Weight incl. standard adapter plate | <i>m</i> | kg | 3.8 | | | | | 4.2 | | | | | | |
| | | lb _m | 8.4 | | | | | 9.3 | | | | | | |
| Operating noise (for $i=10$ and $n_1=3000$ rpm without load) | L_{PA} | dB(A) | ≤73 | | | | | | | | | | | |
| 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) | J_i | kgcm ² | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| | | 10 ⁻³ in.lb.s ² | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 |

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

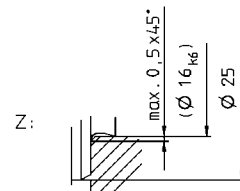
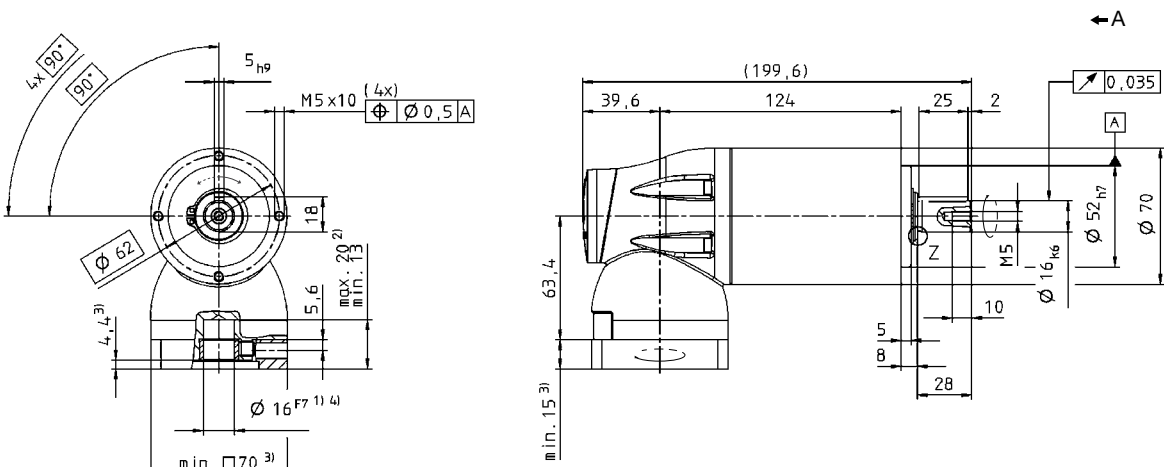
^{b)} Refers to center of the output shaft, if $n_2 = 100$ rpm

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

2-stage:



3-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.

CAD data is available under <http://www.wittenstein-alpha.de/en/info-and-cad-finder.html>

Motor mounting according to operating manual

LPK+ 090 2/3-stage

| Ratio ^{c)} | <i>i</i> | 2-stage | | | | | 3-stage | | | | | | | |
|---|-----------------------------------|---------------------------------------|-----------|------|------|------|---------|---------|------|------|------|------|------|------|
| | | 3 | 4 | 5 | 7 | 10 | 16 | 20 | 25 | 30 | 50 | 70 | 100 | |
| Max. acceleration torque (max. 1000 cycles per hour) | T_{2B} | Nm | 56 | 74 | 90 | 90 | 80 | 90 | 90 | 90 | 80 | 90 | 90 | 80 |
| | | in.lb | 500 | 650 | 800 | 800 | 710 | 800 | 800 | 800 | 710 | 800 | 800 | 710 |
| Nominal output torque (with n_m) | T_{2N} | Nm | 28 | 37 | 45 | 45 | 40 | 45 | 45 | 45 | 40 | 45 | 45 | 40 |
| | | in.lb | 250 | 330 | 400 | 400 | 350 | 400 | 400 | 400 | 400 | 400 | 400 | 350 |
| Emergency stop torque (permitted 1000 times during the service life of the gearhead) | T_{2Not} | Nm | 110 | 150 | 190 | 190 | 190 | 190 | 190 | 190 | 190 | 190 | 190 | 190 |
| | | in.lb | 970 | 1330 | 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 | 2700 | 2700 | 2700 | 2700 | 2700 | 2700 | 2700 | 2700 | 2700 | 2700 | 2700 | |
| Max. input speed | n_{1Max} | rpm | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | |
| Mean no load running torque (with $n_1 = 3000$ rpm and 20°C gearhead temperature) | T_{012} | Nm | 1.83 | 1.83 | 1.72 | 1.63 | 1.63 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | |
| | | in.lb | 16 | 16 | 15 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | |
| Max. torsional backlash | j_t | arcmin | ≤ 12 | | | | | ≤ 11 | | | | | | |
| Torsional rigidity | C_{t21} | Nm/ arcmin | 4.9 | 6.5 | 7.3 | 8.2 | 8.0 | 9.2 | 9.4 | 9.4 | 8.4 | 9.5 | 9.5 | 8.5 |
| | | in.lb/ arcmin | 43 | 58 | 65 | 73 | 71 | 81 | 83 | 83 | 74 | 84 | 84 | 75 |
| Max. axial force ^{b)} | F_{2AMax} | N | 1900 | | | | | 1900 | | | | | | |
| | | lb _f | 430 | | | | | 430 | | | | | | |
| Max. radial force ^{b)} | F_{2RMax} | N | 2400 | | | | | 2400 | | | | | | |
| | | lb _f | 540 | | | | | 540 | | | | | | |
| Efficiency at full load | η | % | 92 | | | | | 90 | | | | | | |
| Service life (For calculation, see the Chapter "Information") | L_n | h | > 20000 | | | | | > 20000 | | | | | | |
| Weight incl. standard adapter plate | <i>m</i> | kg | 6.9 | | | | | 7.9 | | | | | | |
| | | lb _m | 15 | | | | | 17 | | | | | | |
| Operating noise (for $i = 10$ and $n_1 = 3000$ rpm without load) | L_{PA} | dB(A) | ≤ 76 | | | | | | | | | | | |
| 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) | J_i | kgcm ² | 4.1 | 4.1 | 4.1 | 4.1 | 4.1 | 4.1 | 4.1 | 4.1 | 4.1 | 4.1 | 4.1 | |
| | | 10 ⁻³ in.lb.s ² | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 | |

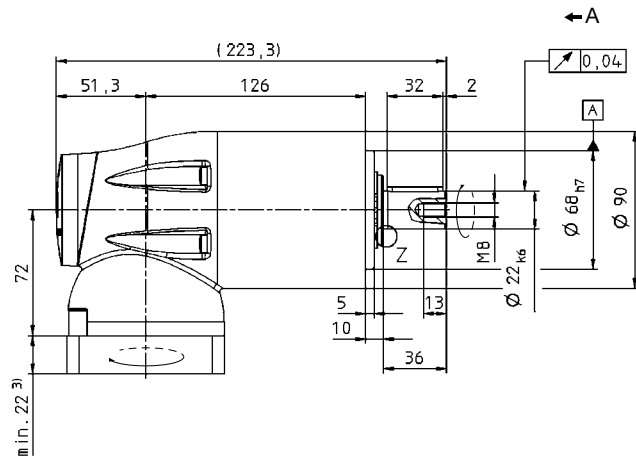
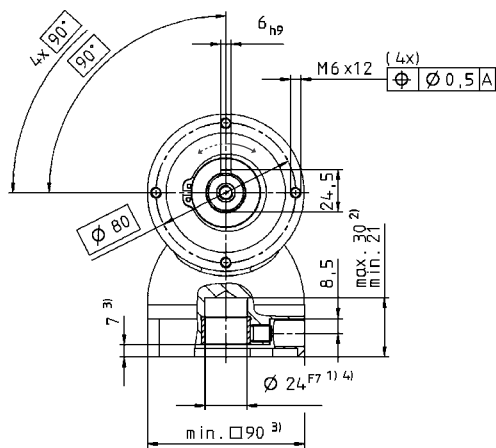
^{a)} For higher ambient temperatures, please reduce input speed

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

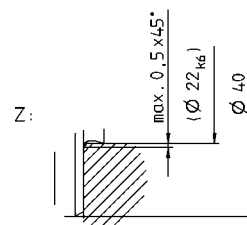
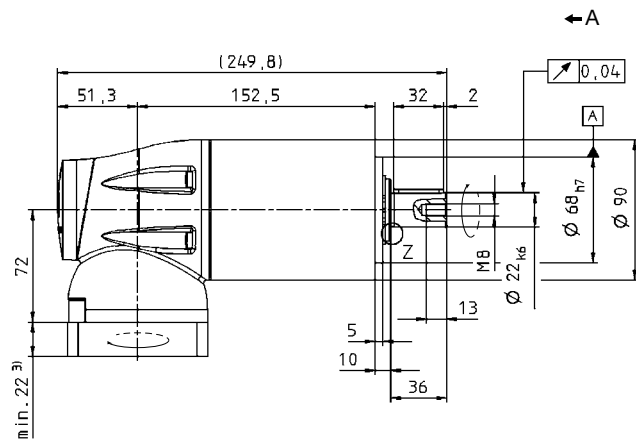
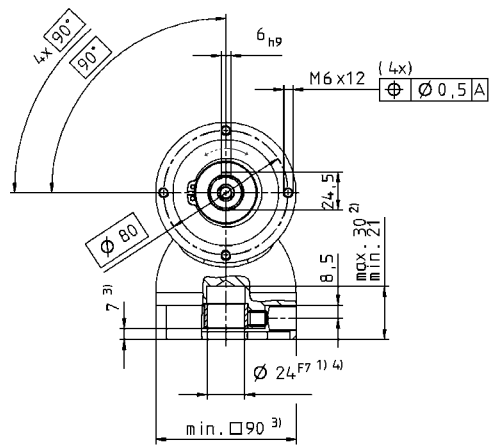
^{c)} Other ratios are available on request: $i = 15, 21, 28$ and 35

View A

2-stage:



3-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.

CAD data is available under <http://www.wittenstein-alpha.de/en/info-and-cad-finder.html>

Motor mounting according to operating manual

LPK+ 120 2/3-stage

| Ratio ^{c)} | <i>i</i> | 2-stage | | | | | 3-stage | | | | | | | |
|---|-----------------------------------|---------------------------------------|-----------|------|------|------|---------|---------|------|------|------|------|------|------|
| | | 3 | 4 | 5 | 7 | 10 | 16 | 20 | 25 | 30 | 50 | 70 | 100 | |
| Max. acceleration torque (max. 1000 cycles per hour) | T_{2B} | Nm | 136 | 181 | 220 | 220 | 200 | 220 | 220 | 220 | 200 | 220 | 220 | 200 |
| | | in.lb | 1200 | 1600 | 1950 | 1950 | 1770 | 1950 | 1950 | 1950 | 1770 | 1950 | 1950 | 1770 |
| Nominal output torque (with n_m) | T_{2N} | Nm | 68 | 91 | 110 | 110 | 100 | 110 | 110 | 110 | 100 | 110 | 110 | 100 |
| | | in.lb | 600 | 810 | 970 | 970 | 890 | 970 | 970 | 970 | 890 | 970 | 970 | 890 |
| Emergency stop torque (permitted 1000 times during the service life of the gearhead) | T_{2Not} | Nm | 280 | 380 | 480 | 480 | 480 | 480 | 480 | 480 | 480 | 480 | 480 | 480 |
| | | in.lb | 2500 | 3400 | 4200 | 4200 | 4200 | 4200 | 4200 | 4200 | 4200 | 4200 | 4200 | 4200 |
| Nominal input speed (with T_{2N} and 20°C ambient temperature) ^{a)} | n_{1N} | rpm | 2100 | 2100 | 2100 | 2100 | 2100 | 2100 | 2100 | 2100 | 2100 | 2100 | 2100 | |
| Max. input speed | n_{1Max} | rpm | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | |
| Mean no load running torque (with $n_1 = 3000$ rpm and 20°C gearhead temperature) | T_{012} | Nm | 3.3 | 3.3 | 3.09 | 3.09 | 3.09 | 2.96 | 2.96 | 2.96 | 2.96 | 2.52 | 2.52 | 2.52 |
| | | in.lb | 29 | 29 | 27 | 27 | 27 | 26 | 26 | 26 | 26 | 22 | 22 | 22 |
| Max. torsional backlash | j_t | arcmin | ≤ 11 | | | | | ≤ 11 | | | | | | |
| Torsional rigidity | C_{t21} | Nm/ arcmin | 19 | 22 | 23 | 24 | 22 | 25 | 25 | 25 | 22 | 25 | 25 | 22 |
| | | in.lb/ arcmin | 170 | 190 | 210 | 210 | 190 | 220 | 220 | 220 | 190 | 220 | 220 | 190 |
| Max. axial force ^{b)} | F_{2AMax} | N | 4000 | | | | | 4000 | | | | | | |
| | | lb _f | 900 | | | | | 900 | | | | | | |
| Max. radial force ^{b)} | F_{2RMax} | N | 4600 | | | | | 4600 | | | | | | |
| | | lb _f | 1040 | | | | | 1040 | | | | | | |
| Efficiency at full load | η | % | 92 | | | | | 90 | | | | | | |
| Service life (For calculation, see the Chapter "Information") | L_n | h | > 20000 | | | | | > 20000 | | | | | | |
| Weight incl. standard adapter plate | <i>m</i> | kg | 17 | | | | | 19 | | | | | | |
| | | lb _m | 37 | | | | | 42 | | | | | | |
| Operating noise (for $i = 10$ and $n_1 = 3000$ rpm without load) | L_{PA} | dB(A) | ≤ 76 | | | | | | | | | | | |
| 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) | J_i | kgcm ² | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 |
| | | 10 ⁻³ in.lb.s ² | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |

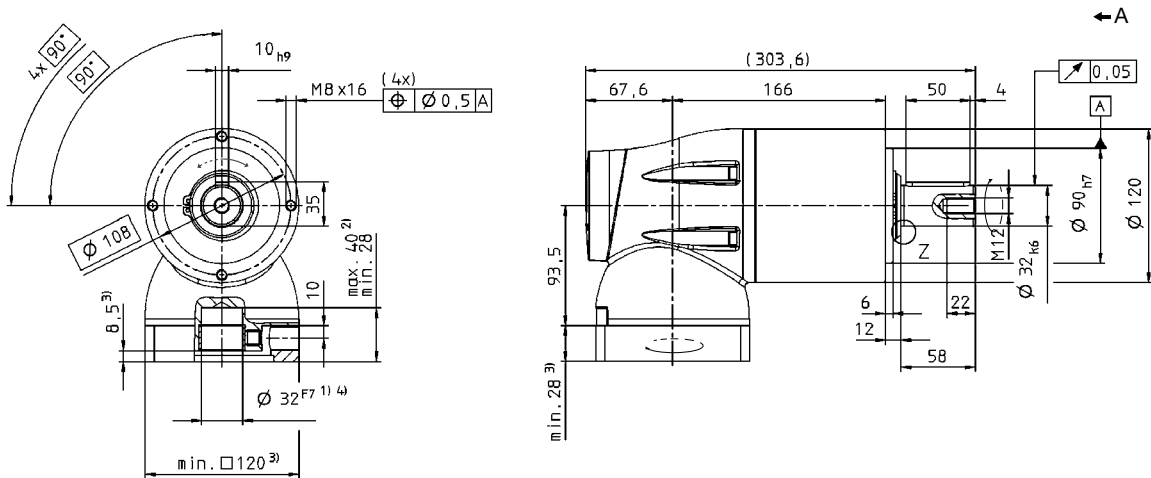
^{a)} For higher ambient temperatures, please reduce input speed

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

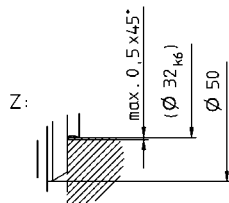
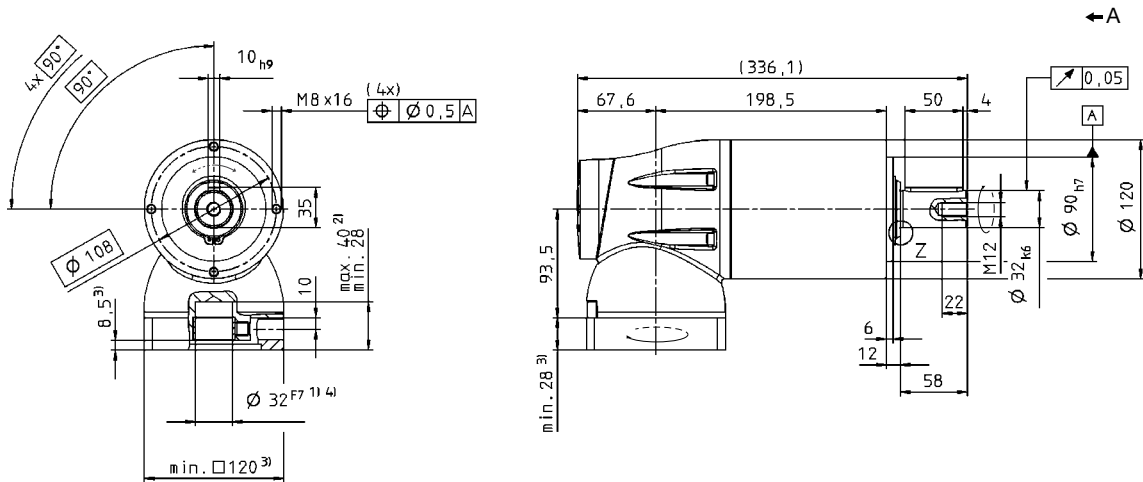
^{c)} Other ratios are available on request: $i = 15, 21, 28$ and 35

View A

2-stage:



3-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.

CAD data is available under <http://www.wittenstein-alpha.de/en/info-and-cad-finder.html>

Motor mounting according to operating manual

LPK+ 155 2/3-stage

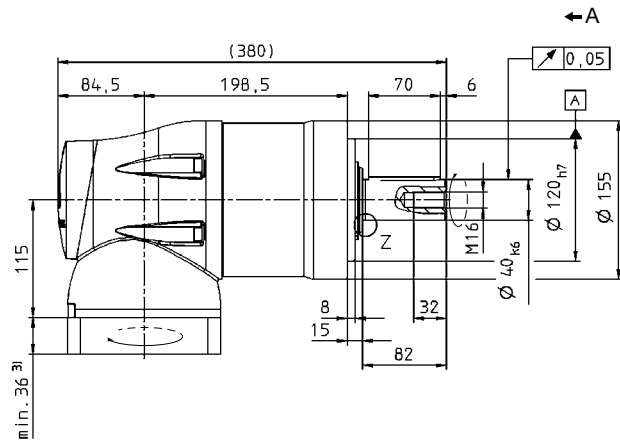
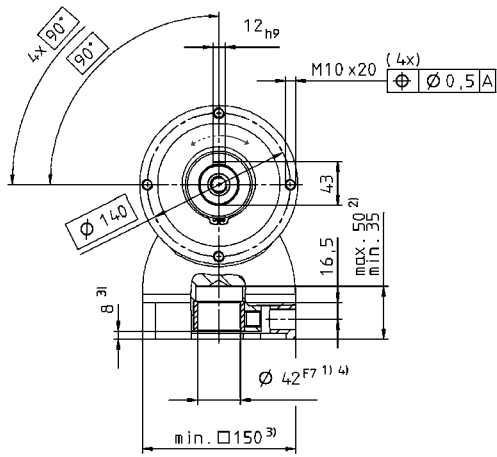
| Ratio | <i>i</i> | 2-stage | | 3-stage | | | |
|---|-----------------------------------|---------------------------------------|-----------|---------|---------|------|------|
| | | 5 | 10 | 25 | 50 | 100 | |
| Max. acceleration torque (max. 1000 cycles per hour) | T_{2B} | Nm | 450 | 350 | 450 | 450 | 350 |
| | | in.lb | 4000 | 3100 | 4000 | 4000 | 3100 |
| Nominal output torque (with n_m) | T_{2N} | Nm | 320 | 190 | 320 | 320 | 190 |
| | | in.lb | 2800 | 1700 | 2800 | 2800 | 1700 |
| 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 | 1600 | 1600 | 1600 | 1600 | 1600 |
| Max. input speed | n_{1Max} | rpm | 3000 | 3000 | 3500 | 3500 | 3500 |
| Mean no load running torque (with $n_1 = 3000$ rpm and 20°C gearhead temperature) | T_{012} | Nm | 7.3 | 7.0 | 3.5 | 3.3 | 3.2 |
| | | in.lb | | | | | |
| Max. torsional backlash | j_t | arcmin | ≤ 10 | | ≤ 11 | | |
| Torsional rigidity | C_{t21} | Nm/ arcmin | 44 | 42 | 55 | 55 | 44 |
| | | in.lb/ arcmin | 390 | 370 | 480 | 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 | % | 92 | | 90 | | |
| Service life (For calculation, see the Chapter "Information") | L_n | h | > 20000 | | > 20000 | | |
| Weight incl. standard adapter plate | m | kg | 35 | | 39 | | |
| | | lb _m | 77 | | 86 | | |
| Operating noise (for $i = 10$ and $n_1 = 3000$ rpm without load) | L_{PA} | dB(A) | ≤ 78 | | | | |
| 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) | J_i | kgcm ² | 75 | 75 | 17 | 17 | 17 |
| | | 10 ⁻³ in.lb.s ² | 66 | 66 | 15 | 15 | 15 |

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

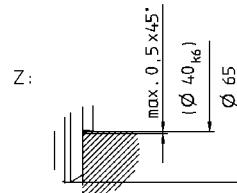
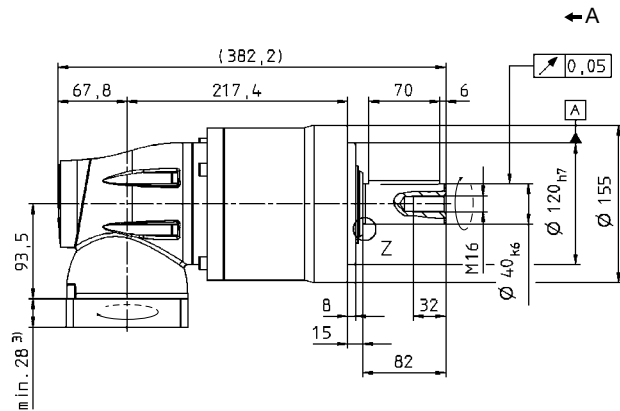
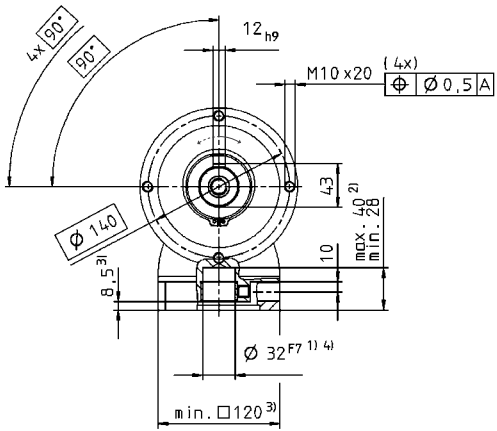
^{b)} Refers to center of the output shaft, $i = 100$ rpm

View A

2-stage:



3-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.

CAD data is available under <http://www.wittenstein-alpha.de/en/info-and-cad-finder.html>

Motor mounting according to operating manual

LPBK+ 070 2-/3-stage

| Ratio | <i>i</i> | 2-stage | | | | | 3-stage | | | | | | | | | |
|---|-------------|---------------------------------------|-----------------------------------|------|------|------|---------|---------|------|------|------|------|------|------|------|--|
| | | 3 | 4 | 5 | 7 | 10 | 16 | 20 | 25 | 30 | 35 | 50 | 70 | 100 | | |
| Max. acceleration torque (max. 1000 cycles per hour) | T_{2B} | Nm | 22 | 29 | 35 | 35 | 32 | 35 | 35 | 35 | 32 | 35 | 35 | 35 | 32 | |
| | | in.lb | 190 | 260 | 310 | 310 | 280 | 310 | 310 | 310 | 280 | 310 | 310 | 310 | 280 | |
| Nominal output torque (with n_m) | T_{2N} | Nm | 11 | 15 | 18 | 18 | 16.5 | 18 | 18 | 18 | 16.5 | 18 | 18 | 18 | 16.5 | |
| | | in.lb | 100 | 130 | 160 | 160 | 150 | 160 | 160 | 160 | 150 | 160 | 160 | 160 | 150 | |
| Emergency stop torque (permitted 1000 times during the service life of the gearhead) | T_{2Not} | Nm | 45 | 60 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | |
| | | in.lb | 400 | 530 | 660 | 660 | 660 | 664 | 664 | 664 | 664 | 664 | 664 | 664 | 664 | |
| Nominal input speed (with T_{2N} and 20°C ambient temperature) ^{a)} | n_{1N} | rpm | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | | |
| Max. input speed | n_{1Max} | rpm | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | | |
| Mean no load running torque (with $n_1=3000$ rpm and 20°C gearhead temperature) | T_{012} | Nm | 0.72 | 0.71 | 0.67 | 0.66 | 0.62 | 0.63 | 0.63 | 0.59 | 0.59 | 0.59 | 0.59 | 0.59 | 0.59 | |
| | | in.lb | 6.4 | 6.3 | 2.9 | 5.8 | 5.5 | 5.6 | 5.6 | 5.2 | 5.2 | 5.2 | 5.2 | 5.2 | 5.2 | |
| Max. torsional backlash | j_t | arcmin | ≤ 14 | | | | | ≤ 12 | | | | | | | | |
| Torsional rigidity | C_{t21} | Nm/ arcmin | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| | | in.lb/ arcmin | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| Max. axial force ^{b)} | F_{2AMax} | N | 1550 | | | | | 1550 | | | | | | | | |
| | | lb _f | 350 | | | | | 350 | | | | | | | | |
| Max. radial force ^{c)} | F_{2RMax} | N | 3000 | | | | | 3000 | | | | | | | | |
| | | lb _f | 680 | | | | | 680 | | | | | | | | |
| Efficiency at full load | η | % | 92 | | | | | 90 | | | | | | | | |
| Service life (For calculation, see the Chapter "Information") | L_n | h | > 20000 | | | | | > 20000 | | | | | | | | |
| Weight incl. standard adapter plate | m | kg | 3.4 | | | | | 3.8 | | | | | | | | |
| | | lb _m | 7.5 | | | | | 8.4 | | | | | | | | |
| Operating noise (for $i=10$ and $n_1=3000$ rpm without load) | L_{PA} | dB(A) | ≤ 73 | | | | | | | | | | | | | |
| 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) | J_i | kgcm ² | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | |
| | | 10 ⁻³ in.lb.s ² | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | |

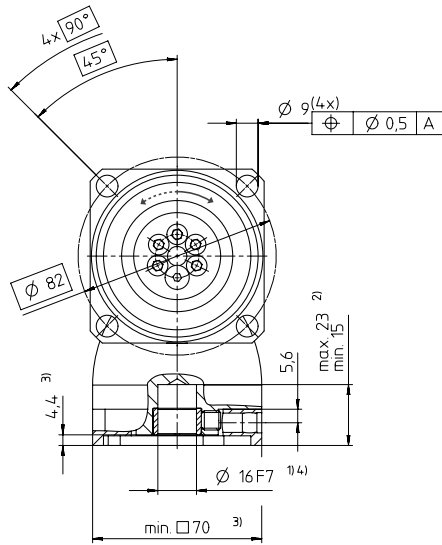
^{a)} For higher ambient temperatures, please reduce input speed

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

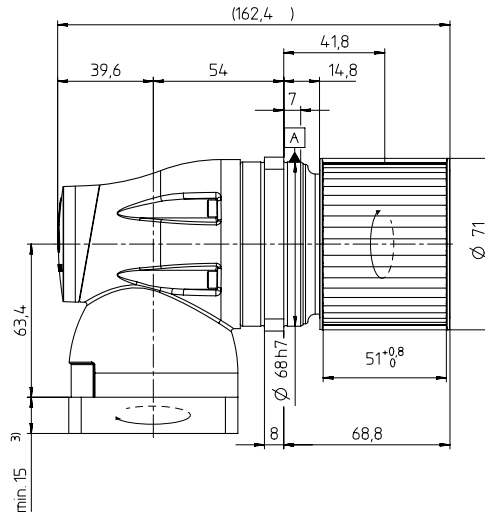
^{c)} With mounted PLPB+ belt pulley and 100 rpm

View A

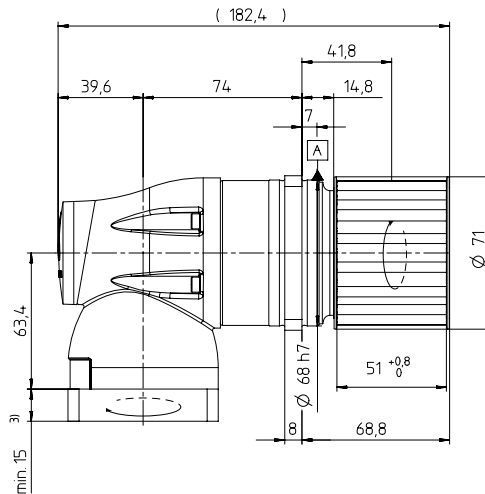
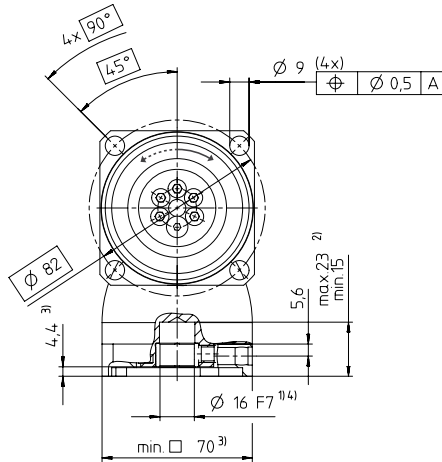
2-stage:



← A



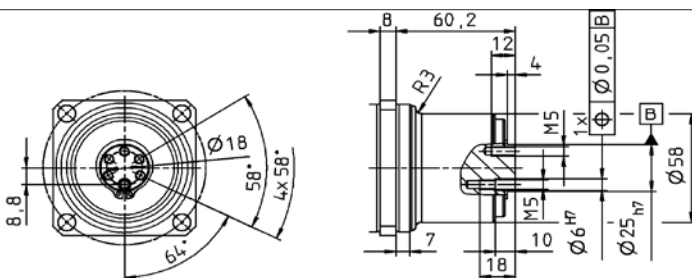
3-stage:



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 | kgcm ² | 3.86 |
| Mass | m | kg | 0.48 |

Illustration: Output flange without belt pulley



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.

CAD data is available under <http://www.wittenstein-alpha.de/en/info-and-cad-finder.html>

⚠ Motor mounting according to operating manual

LPBK+ 090 2-stage

| Ratio | <i>i</i> | 2-stage | | | | | 3-stage | | | | | | | | | |
|---|-------------|---------------------------------------|-----------------------------------|------|------|------|---------|---------|------|------|------|------|------|------|------|--|
| | | 3 | 4 | 5 | 7 | 10 | 16 | 20 | 25 | 30 | 35 | 50 | 70 | 100 | | |
| Max. acceleration torque (max. 1000 cycles per hour) | T_{2B} | Nm | 56 | 74 | 90 | 90 | 80 | 90 | 90 | 90 | 80 | 90 | 90 | 90 | 80 | |
| | | in.lb | 500 | 650 | 800 | 800 | 710 | 800 | 800 | 800 | 710 | 800 | 800 | 800 | 710 | |
| Nominal output torque (with n_m) | T_{2N} | Nm | 28 | 37 | 45 | 45 | 40 | 45 | 45 | 45 | 40 | 45 | 45 | 45 | 40 | |
| | | in.lb | 250 | 330 | 400 | 400 | 350 | 400 | 400 | 400 | 350 | 400 | 400 | 400 | 350 | |
| Emergency stop torque (permitted 1000 times during the service life of the gearhead) | T_{2Not} | Nm | 110 | 150 | 190 | 190 | 190 | 190 | 190 | 190 | 190 | 190 | 190 | 190 | 190 | |
| | | in.lb | 970 | 1330 | 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 | 2700 | 2700 | 2700 | 2700 | 2700 | 2700 | 2700 | 2700 | 2700 | 2700 | 2700 | 2700 | | |
| Max. input speed | n_{1Max} | rpm | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | | |
| Mean no load running torque (with $n_1=3000$ rpm and 20°C gearhead temperature) | T_{012} | Nm | 1.83 | 1.83 | 1.72 | 1.63 | 1.63 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | | |
| | | in.lb | 16 | 16 | 15 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | |
| Max. torsional backlash | j_t | arcmin | ≤ 12 | | | | | ≤ 11 | | | | | | | | |
| Torsional rigidity | C_{t21} | Nm/ arcmin | - | - | - | - | - | - | - | - | - | - | - | - | | |
| | | in.lb/ arcmin | - | - | - | - | - | - | - | - | - | - | - | - | | |
| Max. axial force ^{b)} | F_{2AMax} | N | 1900 | | | | | 1900 | | | | | | | | |
| | | lb _f | 430 | | | | | 430 | | | | | | | | |
| Max. radial force ^{c)} | F_{2RMax} | N | 4300 | | | | | 4300 | | | | | | | | |
| | | lb _f | 970 | | | | | 970 | | | | | | | | |
| Efficiency at full load | η | % | 92 | | | | | 90 | | | | | | | | |
| Service life (For calculation, see the Chapter "Information") | L_n | h | > 20000 | | | | | > 20000 | | | | | | | | |
| Weight incl. standard adapter plate | m | kg | 6.2 | | | | | 6.9 | | | | | | | | |
| | | lb _m | 14 | | | | | 15 | | | | | | | | |
| Operating noise (for $i=10$ and $n_1=3000$ rpm without load) | L_{PA} | dB(A) | ≤ 76 | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | | | | | | | | | | | | | | |
| | | 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) | J_i | kgcm ² | 4.1 | 4.1 | 4.1 | 4.1 | 4.1 | 4.1 | 4.1 | 4.1 | 4.1 | 4.1 | 4.1 | 4.1 | | |
| | | 10 ⁻³ in.lb.s ² | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 | | |

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

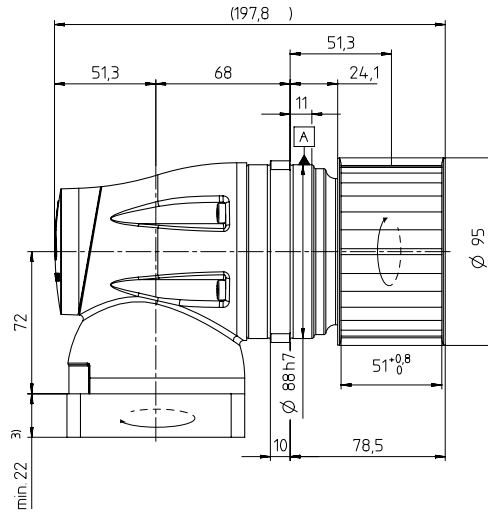
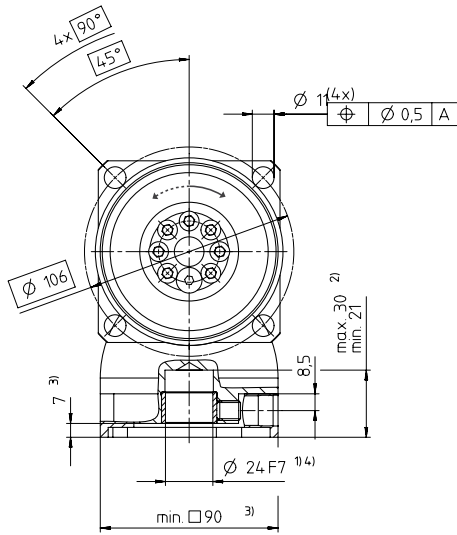
^{b)} Refers to center of the output shaft, if $n_2 = 100$ rpm

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

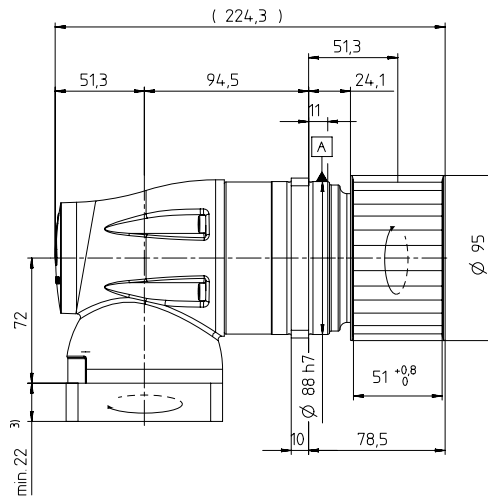
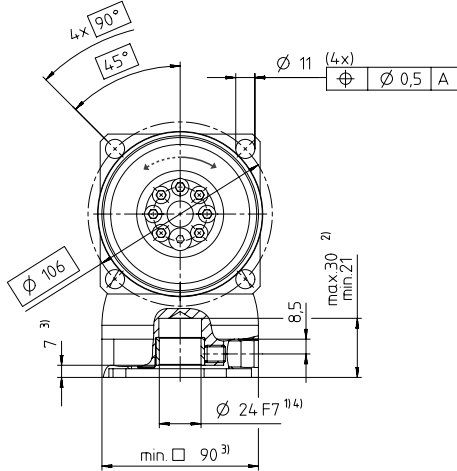
View A

2-stage:

← A



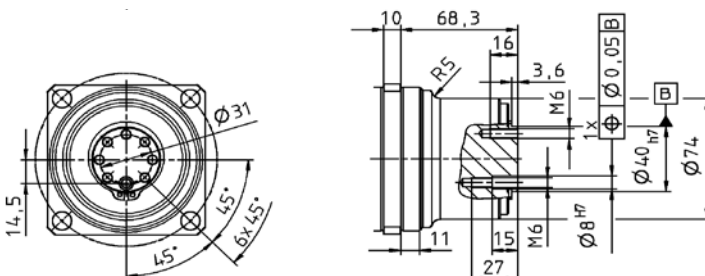
3-stage:



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

| Belt Pulley PLPB+ 090 Profile AT10-0 | | | |
|--------------------------------------|---------|-------------------|-------|
| Pitch | p | mm | 10 |
| Number of teeth | z | | 28 |
| Circumference | $z * p$ | mm/rotation | 280 |
| Inertia | J | kgcm ² | 10.95 |
| Mass | m | kg | 0.82 |

Illustration: Output flange without belt pulley



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.

CAD data is available under <http://www.wittenstein-alpha.de/en/info-and-cad-finder.html>

⚠ Motor mounting according to operating manual

LPBK+ 120 2-/3-stage

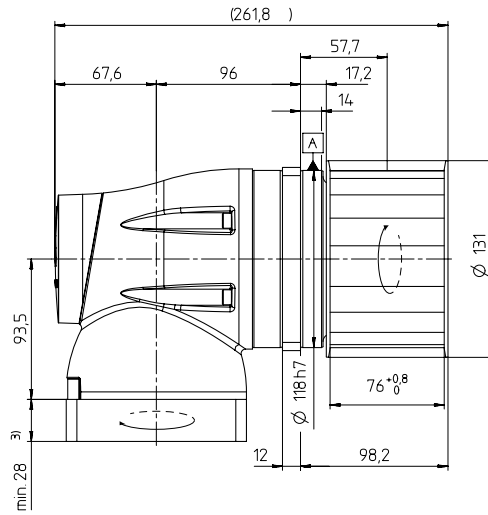
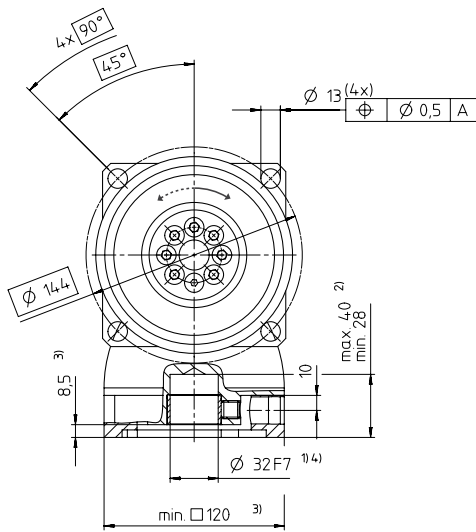
| Ratio | <i>i</i> | 2-stage | | | | | 3-stage | | | | | | | | | |
|---|-------------|---------------------------------------|-----------------------------------|------|------|------|---------|---------|------|------|------|------|------|------|------|--|
| | | 3 | 4 | 5 | 7 | 10 | 16 | 20 | 25 | 30 | 35 | 50 | 70 | 100 | | |
| Max. acceleration torque (max. 1000 cycles per hour) | T_{2B} | Nm | 136 | 181 | 220 | 220 | 200 | 220 | 220 | 220 | 200 | 220 | 220 | 220 | 200 | |
| | | in.lb | 1200 | 1600 | 1950 | 1950 | 1770 | 1950 | 1950 | 1950 | 1770 | 1950 | 1950 | 1950 | 1770 | |
| Nominal output torque (with n_m) | T_{2N} | Nm | 68 | 91 | 110 | 110 | 100 | 110 | 110 | 110 | 100 | 110 | 110 | 110 | 100 | |
| | | in.lb | 600 | 810 | 970 | 970 | 890 | 970 | 970 | 970 | 890 | 970 | 970 | 970 | 890 | |
| Emergency stop torque (permitted 1000 times during the service life of the gearhead) | T_{2Not} | Nm | 280 | 380 | 480 | 480 | 480 | 480 | 480 | 480 | 480 | 480 | 480 | 480 | 480 | |
| | | in.lb | 2500 | 3400 | 4200 | 4200 | 4200 | 4200 | 4200 | 4200 | 4200 | 4200 | 4200 | 4200 | 4200 | |
| Nominal input speed (with T_{2N} and 20°C ambient temperature) ^{a)} | n_{1N} | rpm | 2100 | 2100 | 2100 | 2100 | 2100 | 2100 | 2100 | 2100 | 2100 | 2100 | 2100 | 2100 | | |
| Max. input speed | n_{1Max} | rpm | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | | |
| Mean no load running torque (with $n_1=3000$ rpm and 20°C gearhead temperature) | T_{012} | Nm | 3.3 | 3.3 | 3.09 | 3.09 | 3.09 | 2.96 | 2.96 | 2.96 | 2.96 | 2.52 | 2.52 | 2.52 | 2.52 | |
| | | in.lb | 29 | 29 | 27 | 27 | 27 | 26 | 26 | 26 | 26 | 22 | 22 | 22 | 22 | |
| Max. torsional backlash | j_t | arcmin | ≤ 11 | | | | | ≤ 11 | | | | | | | | |
| Torsional rigidity | C_{t21} | Nm/ arcmin | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| | | in.lb/ arcmin | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| Max. axial force ^{b)} | F_{2AMax} | N | 4000 | | | | | 4000 | | | | | | | | |
| | | lb _f | 900 | | | | | 900 | | | | | | | | |
| Max. radial force ^{c)} | F_{2RMax} | N | 9500 | | | | | 9500 | | | | | | | | |
| | | lb _f | 2100 | | | | | 2100 | | | | | | | | |
| Efficiency at full load | η | % | 92 | | | | | 90 | | | | | | | | |
| Service life (For calculation, see the Chapter "Information") | L_n | h | > 20000 | | | | | > 20000 | | | | | | | | |
| Weight incl. standard adapter plate | m | kg | 16 | | | | | 17 | | | | | | | | |
| | | lb _m | 34 | | | | | 37 | | | | | | | | |
| Operating noise (for $i=10$ and $n_1=3000$ rpm without load) | L_{PA} | dB(A) | ≤ 76 | | | | | | | | | | | | | |
| 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) | J_i | kgcm ² | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | |
| | | 10 ⁻³ in.lb.s ² | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | |

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

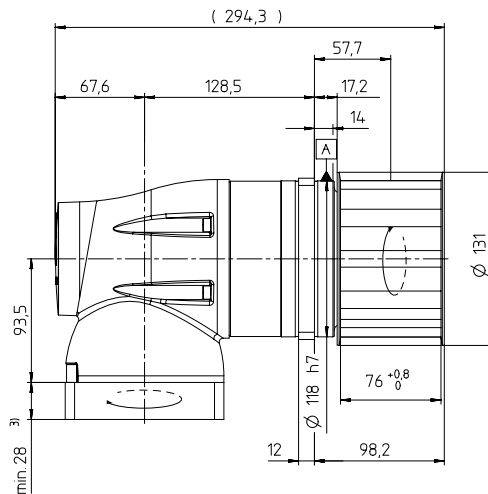
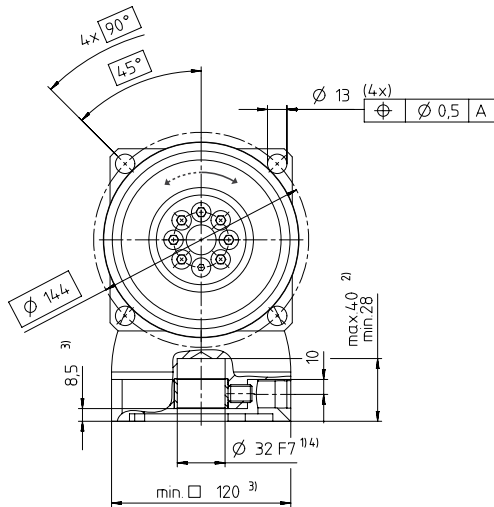
^{b)} Refers to center of the output shaft, if $n_2 = 100$ rpm

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

2-stage:



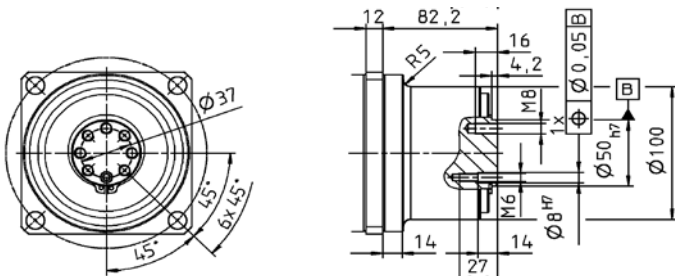
3-stage:



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

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

Illustration: Output flange without belt pulley



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.

CAD data is available under <http://www.wittenstein-alpha.de/en/info-and-cad-finder.html>

Motor mounting according to operating manual