

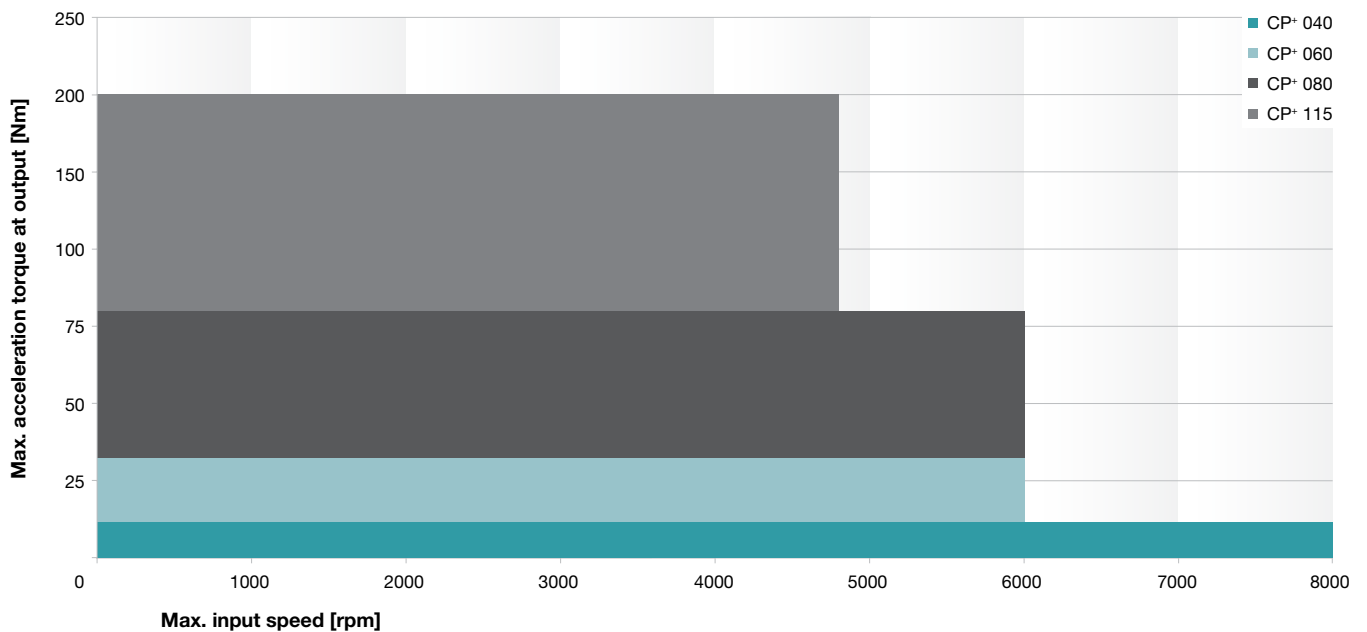
alphira® – The basic class among planetary gearheads



The alphira® gearhead combines proven gearing technology with the cost-effectiveness requirements in the economy servo sector. The result is a lightweight aluminum gearhead with a high power density and maximum reliability.

Quick size selection

alphira® (example for $i = 5$)
For applications in cyclic operation ($ED \geq 60\%$)



Versions and Applications

alphira®

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

Comparison



| Features | | alphira® Catalog page 138 |
|--|----------|------------------------------|
| Ratios ^{c)} | | 4 – 100 |
| Torsional backlash [arcmin] ^{c)} | Standard | ≤ 20 |
| | Reduced | – |
| Output type | | |
| Keywayed output shaft | | • |
| Input type | | |
| Motor mounted version | | • |
| Type | | |
| Food-grade lubrication ^{a) b)} | | • |
| Accessories | | |
| Coupling | | • |
| NEMA flange | | • |

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

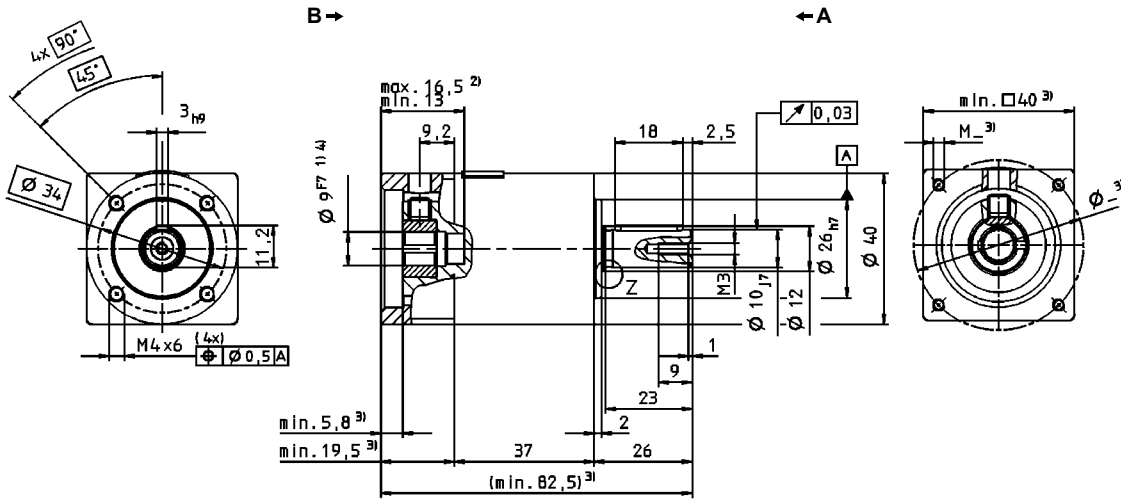
alphira® 040 1/2-stage

| | | | 1-stage | | | | 2-stage | | | | | | |
|---|-----------------------------------|---------------------------------------|------------|-------|-------|-------|---------|-------|-------|-------|-------|-------|-------|
| Ratio | <i>i</i> | | 4 | 5 | 7 | 10 | 16 | 20 | 25 | 35 | 50 | 70 | 100 |
| Max. acceleration torque (max. 1000 cycles per hour) | T_{2B} | Nm | 10.5 | 11.5 | 11.5 | 10.5 | 10.5 | 10.5 | 11.5 | 11.5 | 11.5 | 11.5 | 10.5 |
| | | in.lb | 93 | 102 | 102 | 93 | 93 | 93 | 102 | 102 | 102 | 102 | 93 |
| 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 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 |
| Max. input speed | n_{1Max} | rpm | 8000 | 8000 | 8000 | 8000 | 8000 | 8000 | 8000 | 8000 | 8000 | 8000 | 8000 |
| Mean no load running torque (with $n_1=3000$ rpm and 20°C gearhead temperature) | T_{012} | Nm | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| | | in.lb | 0.05 | 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 | ≤ 20 | | | | ≤ 25 | | | | | | |
| Torsional rigidity | C_{t21} | Nm/ arcmin | 0.58 | 0.58 | 0.58 | 0.52 | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 0.52 |
| | | in.lb/ arcmin | 5.1 | 5.1 | 5.1 | 4.6 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 4.6 |
| Max. axial force ^{b)} | F_{2AMax} | N | 230 | | | | 230 | | | | | | |
| | | lb _f | 51 | | | | 51 | | | | | | |
| Max. radial force ^{b)} | F_{2RMax} | N | 200 | | | | 200 | | | | | | |
| | | lb _f | 45 | | | | 45 | | | | | | |
| 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 | 0.31 | | | | 0.52 | | | | | | |
| | | lb _m | 0.69 | | | | 1.15 | | | | | | |
| Operating noise (with $n_1=3000$ rpm no load) | L_{PA} | dB(A) | ≤ 66 | | | | | | | | | | |
| Max. permitted housing temperature | °C | | +90 | | | | | | | | | | |
| | F | | 194 | | | | | | | | | | |
| Ambient temperature | °C | | -15 to +40 | | | | | | | | | | |
| | F | | 5 to 104 | | | | | | | | | | |
| Lubrication | Lubricated for life | | | | | | | | | | | | |
| Paint | Aluminum | | | | | | | | | | | | |
| Direction of rotation | Motor and gearhead same direction | | | | | | | | | | | | |
| Protection class | IP 64 | | | | | | | | | | | | |
| Moment of inertia (relates to the drive) | J_t | kgcm ² | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 |
| | | 10 ⁻³ in.lb.s ² | 0.036 | 0.036 | 0.036 | 0.036 | 0.036 | 0.036 | 0.036 | 0.036 | 0.036 | 0.036 | 0.036 |

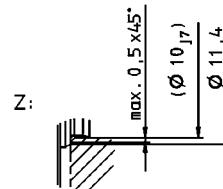
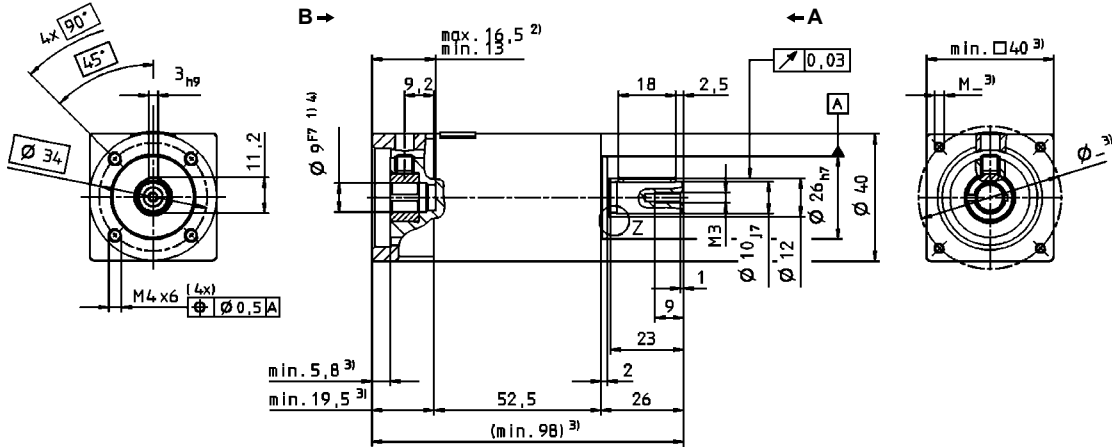
^{a)} For higher ambient temperatures, please reduce input speed

^{b)} Relates to center of the output shaft or flange, at 100 rpm

1-stage:



2-stage:



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

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing.

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

Motor mounting according to operating manual

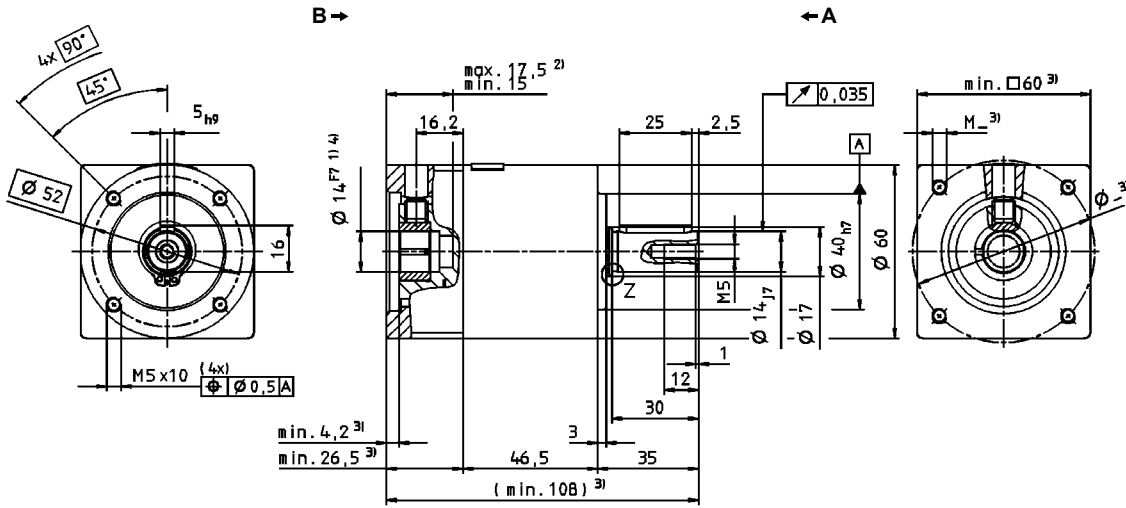
alphira® 060 1/2-stage

| | | | 1-stage | | | | 2-stage | | | | | | |
|---|-----------------------------------|--|------------|------|------|------|---------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 4 | 5 | 7 | 10 | 16 | 20 | 25 | 35 | 50 | 70 | 100 |
| Max. acceleration torque (max. 1000 cycles per hour) | T_{2B} | Nm | 32 | 32 | 32 | 29 | 32 | 32 | 32 | 32 | 32 | 32 | 29 |
| | | in.lb | 283 | 283 | 283 | 257 | 283 | 283 | 283 | 283 | 283 | 283 | 257 |
| Nominal output torque (with n_m) | T_{2N} | Nm | 16 | 16 | 16 | 15 | 16 | 16 | 16 | 16 | 16 | 16 | 15 |
| | | in.lb | 142 | 142 | 142 | 133 | 142 | 142 | 142 | 142 | 142 | 142 | 133 |
| Emergency stop torque (permitted 1000 times during the service life of the gearhead) | T_{2Not} | Nm | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 |
| | | in.lb | 664 | 664 | 664 | 664 | 664 | 664 | 664 | 664 | 664 | 664 | 664 |
| Nominal input speed (with T_{2N} and 20°C ambient temperature) ^{a)} | n_{1N} | rpm | 3700 | 3700 | 3700 | 3700 | 3700 | 3700 | 3700 | 3700 | 3700 | 3700 | 3700 |
| Max. input speed | n_{1Max} | rpm | 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 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| | | in.lb | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Max. torsional backlash | j_t | arcmin | ≤ 20 | | | | ≤ 25 | | | | | | |
| Torsional rigidity | C_{t21} | Nm/ arcmin | 2.1 | 2.1 | 2.1 | 1.9 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 1.9 |
| | | in.lb/ arcmin | 19 | 19 | 19 | 17 | 19 | 19 | 19 | 19 | 19 | 19 | 17 |
| Max. axial force ^{b)} | F_{2AMax} | N | 750 | | | | 750 | | | | | | |
| | | lb _f | 169 | | | | 169 | | | | | | |
| 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_h | h | > 20000 | | | | > 20000 | | | | | | |
| Weight incl. standard adapter plate | m | kg | 0.88 | | | | 1.1 | | | | | | |
| | | lb _m | 1.9 | | | | 2.4 | | | | | | |
| 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 | Aluminum | | | | | | | | | | | | |
| Direction of rotation | Motor and gearhead same direction | | | | | | | | | | | | |
| Protection class | IP 64 | | | | | | | | | | | | |
| Moment of inertia (relates to the drive) | J_t | kgcm ² | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| | | 10 ⁻³ in.lb.in ² | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |

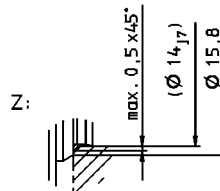
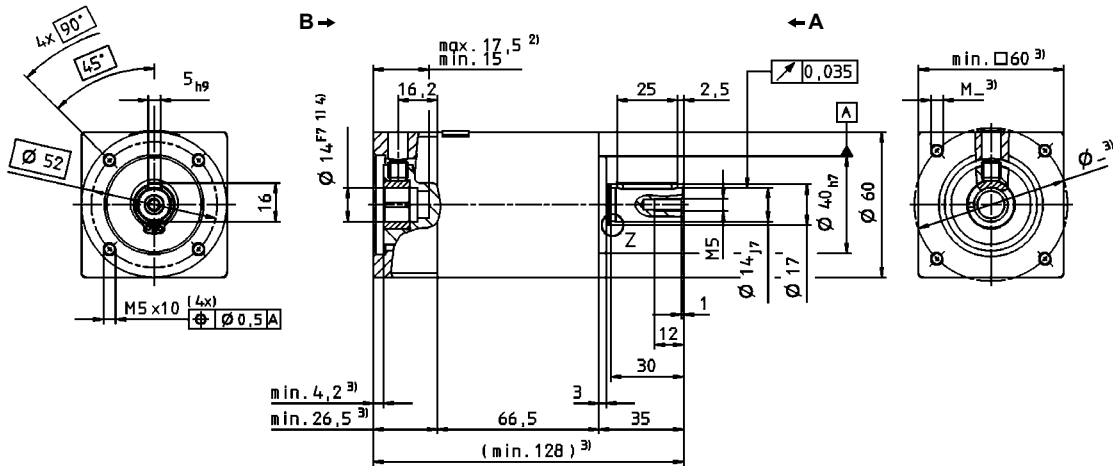
^{a)} For higher ambient temperatures, please reduce input speed

^{b)} Relates to center of the output shaft or flange, at 100 rpm

1-stage:



2-stage:



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

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing.

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

Motor mounting according to operating manual

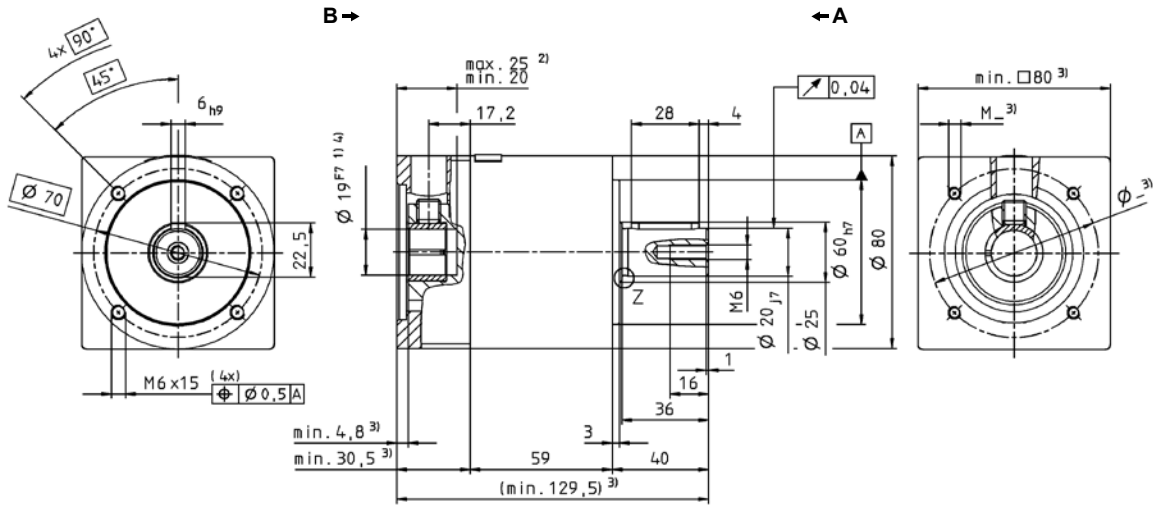
alphira® 080 1/2-stage

| | | 1-stage | | | | 2-stage | | | | | | | | |
|---|-----------------------------------|---------------------------------------|------------|------|------|---------|---------|------|------|------|------|------|------|--|
| Ratio | <i>i</i> | 4 | 5 | 7 | 10 | 16 | 20 | 25 | 35 | 50 | 70 | 100 | | |
| Max. acceleration torque (max. 1000 cycles per hour) | T_{2B} | Nm | 80 | 80 | 80 | 72 | 80 | 80 | 80 | 80 | 80 | 80 | 72 | |
| | | in.lb | 708 | 708 | 708 | 637 | 708 | 708 | 708 | 708 | 708 | 708 | 637 | |
| Nominal output torque (with n_m) | T_{2N} | Nm | 40 | 40 | 40 | 35 | 40 | 40 | 40 | 40 | 40 | 40 | 35 | |
| | | in.lb | 354 | 354 | 354 | 310 | 354 | 354 | 354 | 354 | 354 | 354 | 310 | |
| Emergency stop torque (permitted 1000 times during the service life of the gearhead) | T_{2Not} | Nm | 190 | 190 | 190 | 190 | 190 | 190 | 190 | 190 | 190 | 190 | 190 | |
| | | in.lb | 1682 | 1682 | 1682 | 1682 | 1682 | 1682 | 1682 | 1682 | 1682 | 1682 | 1682 | |
| Nominal input speed (with T_{2N} and 20°C ambient temperature) ^{a)} | n_{1N} | rpm | 3400 | 3400 | 3400 | 3400 | 3400 | 3400 | 3400 | 3400 | 3400 | 3400 | | |
| Max. input speed | n_{1Max} | rpm | 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 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | |
| | | in.lb | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | |
| Max. torsional backlash | j_t | arcmin | ≤ 20 | | | | ≤ 25 | | | | | | | |
| Torsional rigidity | C_{t21} | Nm/ arcmin | 6.1 | 6.1 | 6.1 | 5.5 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 5.5 | |
| | | in.lb/ arcmin | 54 | 54 | 54 | 49 | 54 | 54 | 54 | 54 | 54 | 54 | 49 | |
| Max. axial force ^{b)} | F_{2AMax} | N | 1600 | | | | 1600 | | | | | | | |
| | | lb _f | 360 | | | | 360 | | | | | | | |
| Max. radial force ^{b)} | F_{2RMax} | N | 1200 | | | | 1200 | | | | | | | |
| | | lb _f | 270 | | | | 270 | | | | | | | |
| 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 | 2.1 | | | | 2.8 | | | | | | | |
| | | lb _m | 4.6 | | | | 6.2 | | | | | | | |
| 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 | Aluminum | | | | | | | | | | | | | |
| Direction of rotation | Motor and gearhead same direction | | | | | | | | | | | | | |
| Protection class | IP 64 | | | | | | | | | | | | | |
| Moment of inertia (relates to the drive) | J_t | kgcm ² | 0.54 | 0.54 | 0.54 | 0.54 | 0.54 | 0.54 | 0.54 | 0.54 | 0.54 | 0.54 | 0.54 | |
| | | 10 ⁻³ in.lb.s ² | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 | |

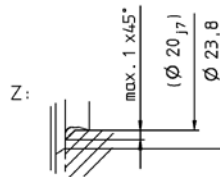
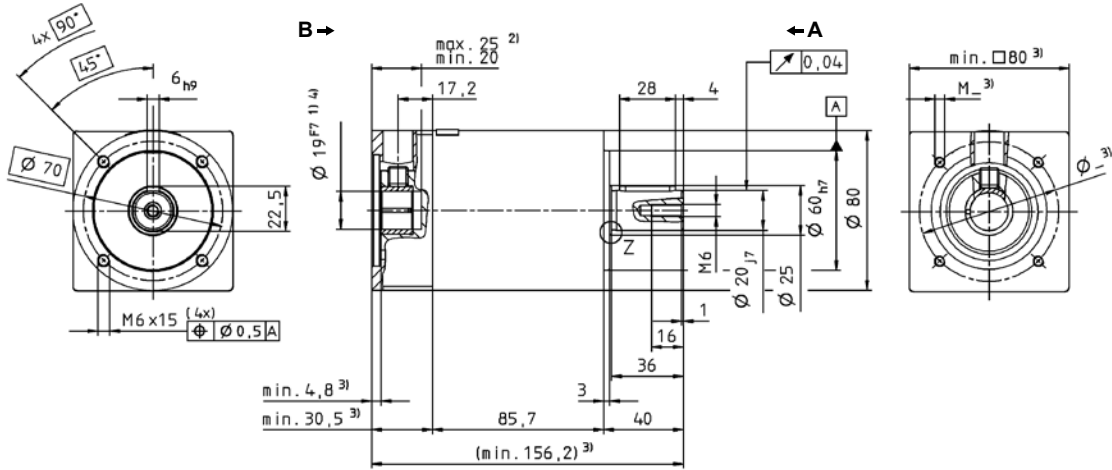
^{a)} For higher ambient temperatures, please reduce input speed

^{b)} Relates to center of the output shaft or flange, at 100 rpm

1-stage:



2-stage:



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

- 1) Check motor shaft fit.
- 2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameter is compensated by a bushing.

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

Motor mounting according to operating manual

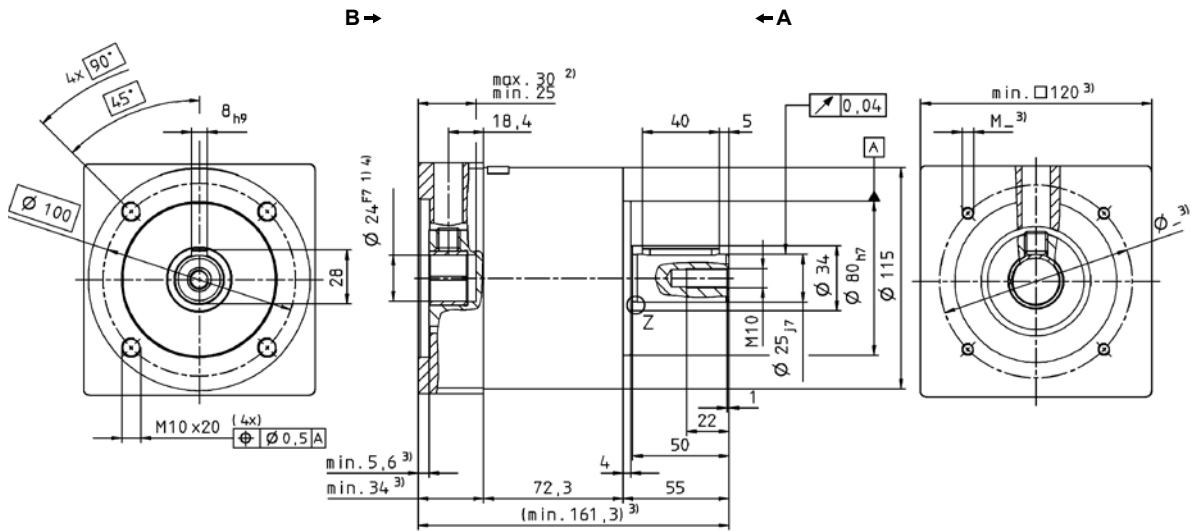
alpha[®] 115 1/2-stage

| | | | 1-stage | | | | 2-stage | | | | | | |
|---|-----------------------------------|---------------------------------------|------------|------|------|------|---------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 4 | 5 | 7 | 10 | 16 | 20 | 25 | 35 | 50 | 70 | 100 |
| Max. acceleration torque (max. 1000 cycles per hour) | T_{2B} | Nm | 200 | 200 | 200 | 180 | 200 | 200 | 200 | 200 | 200 | 200 | 180 |
| | | in.lb | 1770 | 1770 | 1770 | 1593 | 1770 | 1770 | 1770 | 1770 | 1770 | 1770 | 1593 |
| Nominal output torque (with n_m) | T_{2N} | Nm | 100 | 100 | 100 | 90 | 100 | 100 | 100 | 100 | 100 | 100 | 90 |
| | | in.lb | 885 | 885 | 885 | 797 | 885 | 885 | 885 | 885 | 885 | 885 | 797 |
| Emergency stop torque (permitted 1000 times during the service life of the gearhead) | T_{2Not} | Nm | 480 | 480 | 480 | 480 | 480 | 480 | 480 | 480 | 480 | 480 | 480 |
| | | in.lb | 4248 | 4248 | 4248 | 4248 | 4248 | 4248 | 4248 | 4248 | 4248 | 4248 | 4248 |
| Nominal input speed (with T_{2N} and 20°C ambient temperature) ^{a)} | n_{1N} | rpm | 2600 | 2600 | 2600 | 2600 | 2600 | 2600 | 2600 | 2600 | 2600 | 2600 | 2600 |
| Max. input speed | n_{1Max} | rpm | 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 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| | | in.lb | 4.4 | 4.4 | 4.4 | 4.4 | 4.4 | 4.4 | 4.4 | 4.4 | 4.4 | 4.4 | 4.4 |
| Max. torsional backlash | j_t | arcmin | ≤ 20 | | | | ≤ 25 | | | | | | |
| Torsional rigidity | C_{t21} | Nm/ arcmin | 16.5 | 16.5 | 16.5 | 14.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 14.5 |
| | | in.lb/ arcmin | 146 | 146 | 146 | 128 | 146 | 146 | 146 | 146 | 146 | 146 | 128 |
| Max. axial force ^{b)} | F_{2AMax} | N | 2100 | | | | 2100 | | | | | | |
| | | lb _f | 472 | | | | 472 | | | | | | |
| Max. radial force ^{b)} | F_{2RMax} | N | 1550 | | | | 1550 | | | | | | |
| | | lb _f | 349 | | | | 349 | | | | | | |
| 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 | 5.2 | | | | 6.9 | | | | | | |
| | | lb _m | 11.5 | | | | 15.2 | | | | | | |
| 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 | Aluminum | | | | | | | | | | | | |
| Direction of rotation | Motor and gearhead same direction | | | | | | | | | | | | |
| Protection class | IP 64 | | | | | | | | | | | | |
| Moment of inertia (relates to the drive) | J_t | kgcm ² | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 |
| | | 10 ⁻³ in.lb.s ² | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 |

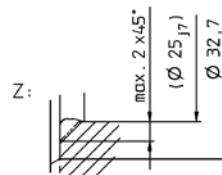
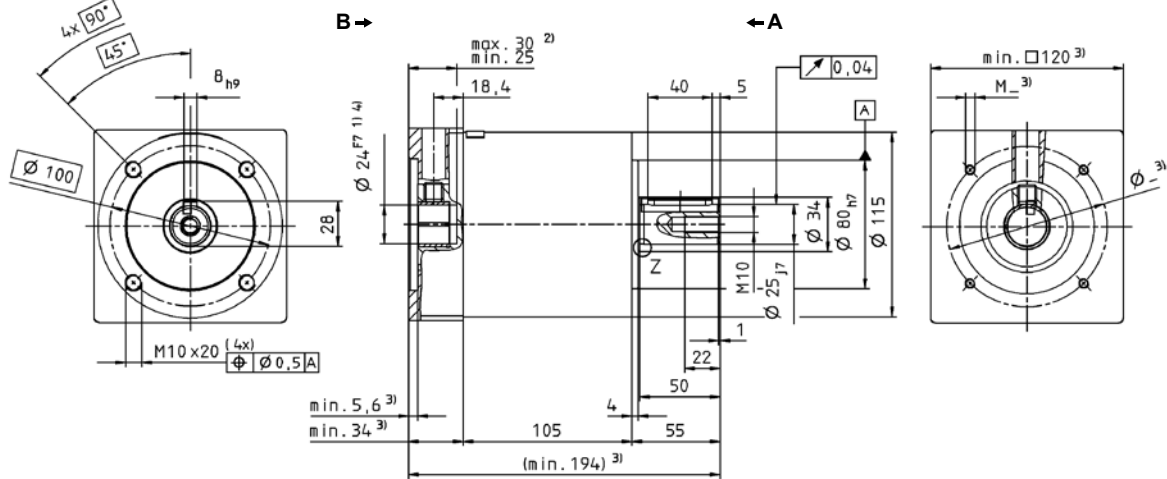
^{a)} For higher ambient temperatures, please reduce input speed

^{b)} Relates to center of the output shaft or flange, at 100 rpm

1-stage:



2-stage:



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

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