



WITTENSTEIN

alpha

alpha Advanced Line Product catalog

Powerful
Compact
Precise



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All technical specifications were correct at the time of going to print. We are continually developing our products and therefore reserve the right to make modifications. This documentation is subject to occasional errors. Please appreciate that legal claims cannot be asserted as a result of incorrect specifications, illustrations or descriptions. The text, photos, technical drawings and any other illustrations printed in this publication are protected property of WITTENSTEIN alpha GmbH.

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Dear Business Associates,

Even though we are extremely passionate about technology and innovation, the success of our customers is our top priority. We have designed our products and services to help you achieve a competitive advantage – through consistently high quality, permanent availability and the best service worldwide.

The product portfolio is divided into four product segments, which have already been successfully established on the market. The alpha Premium Line offers unique, individual solutions. Our alpha Advanced Line provides maximum power density, compact precision and outstanding positioning accuracy. Gearboxes of the alpha Basic and alpha Value Line are especially suitable for applications requiring cost-oriented, particularly flexible yet efficient solutions.

You are sure to find the right solution quickly and easily from our product range. We offer holistic mechanical and mechatronic drive solutions for all types of axis. We also provide complete solutions from a single source on request. Our range of products and solutions will continue to grow in the future because we never stop developing new ideas to make your work easier.

Take our word for it!

Thomas Patzak and Norbert Pastoors
Managing Directors WITTENSTEIN alpha GmbH



YOUR WORLD IS OUR DRIVE.

FOR MORE THAN 40 YEARS.



SP



LP



Linear systems



TPM+



High Performance Linear System



alpha Value Line System

1983

1994

1996

1999

2002

2004

2006

2007

2011

2013

2015

TP



cymex®
sizing software



XP+ / TP+ / SP+ / LP+



TPK+ / SPK+ /
HG+ / SK+ / TK+



HDV
Hygienic Design



PERFORMANCE

Performance where it counts:

High torque, outstanding precision and high power density – essential for our products and systems.

FUTURE PROOF

We live processes:

Only those who know the exact details of customer processes and requirements are in a position to develop solutions that offer added value in the short and long term.

SCALABILITY

You never make compromises:

Whatever the performance area – we offer solutions that grow with your requirements.



WITTENSTEIN

alpha

It is good to know today what will be needed tomorrow. Applying it in practice is even better. We develop technology that shapes the future – ENGINEERING FUTURE SOLUTIONS.

EFFICIENCY

We like it „lean“:

We offer products and systems that are energy-efficient and require minimal installation space in machines.

AVAILABILITY

You need reliability:

We have the widest range of products on the market and can implement your application „just in time“.

CONNECTIVITY

We think in terms of interfaces:

All of our systems can be integrated in a wide range of peripherals.



DP+ for Delta robots



INIRA®



alpha Linear Systems



alpha Basic Line



cynapse®



cymex® select



NTP

2016

cymex® 5



SIZING ASSISTANT



2017

V-Drive Family



2018

premo®



2019

CAD POINT



2022

WITTENSTEIN Service Portal



2023

axenia value



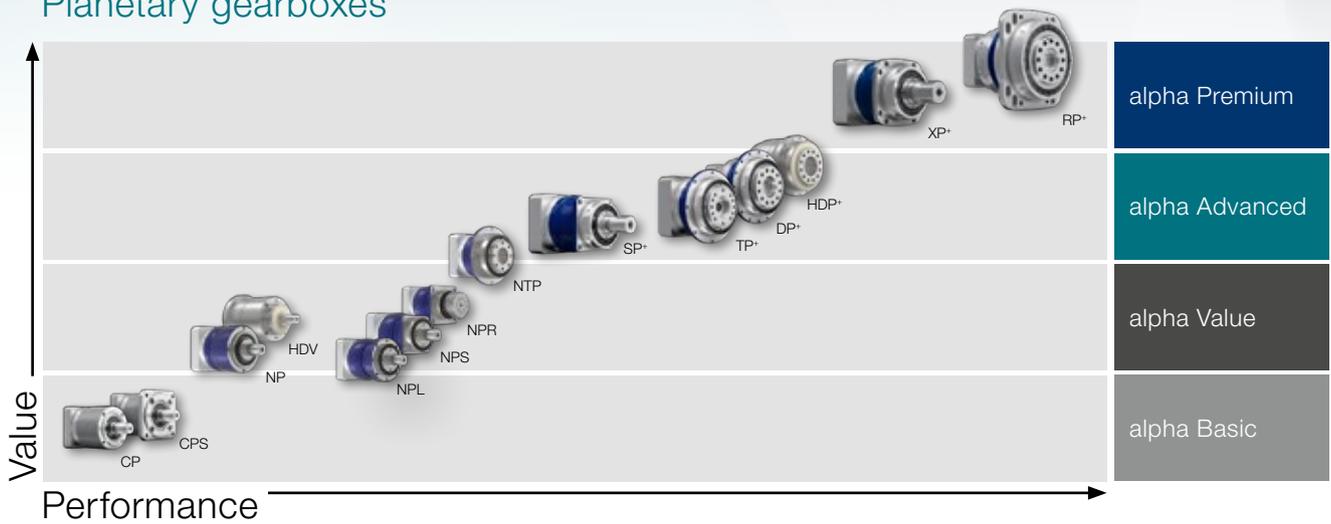
WITTENSTEIN alpha on all axes

Complete drive solutions under one roof

We offer the best solutions for almost every application. In addition to gearboxes, our product portfolio includes a wide range of drive solutions with linear systems and servo actuators. Adapted accessories such as couplings and shrink disks round off the product portfolio.

The diagrams below provide a quick overview of our product portfolio for a wide variety of requirements and applications:

Planetary gearboxes



Hypoid, bevel and worm gearboxes

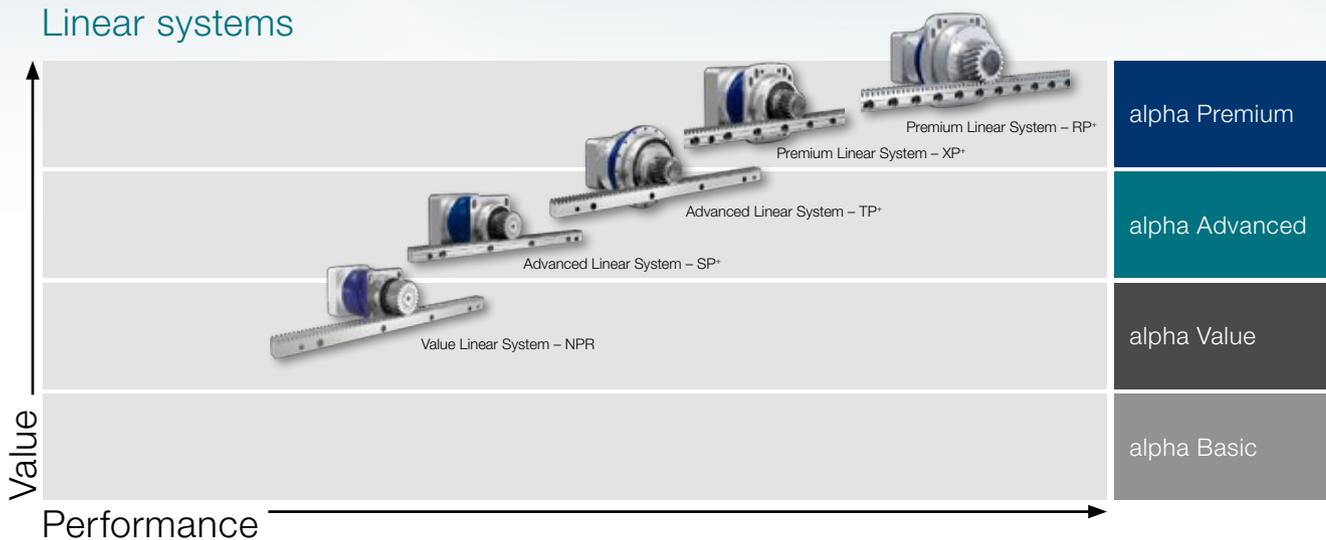


Know-how in every sector

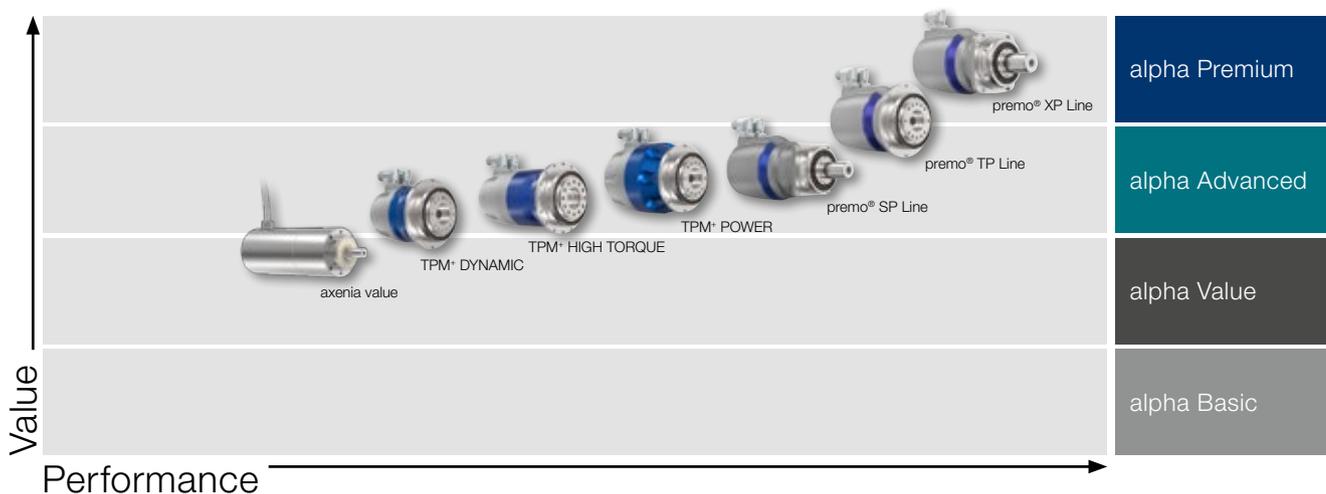
Our solutions range from high-precision axes in manufacturing systems to packaging machines that must operate with maximum productivity in the smallest installation space. Overview:

- Machine tools and production technology
- Food and packaging machines
- Wood working machinery
- Printing and paper machines
- Robotics and automation

Linear systems



Servo actuators



WITTENSTEIN alpha Engineering Tools – many ways to reach your goals

Our software portfolio helps you choose the optimal drive

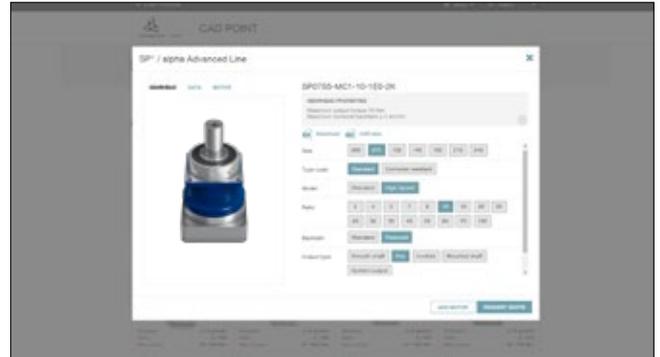
You can conveniently download dimension sheets and CAD data, select the best gearbox quickly and easily design complex kinematic sequences in detail – our software solutions offer various methods of selecting the best, most reliable drive on all axes.



CAD POINT – Your smart catalog

- Performance data, dimension sheets and CAD data for all types of gearboxes
- Available online without logging in
- Comprehensive documentation of the selection

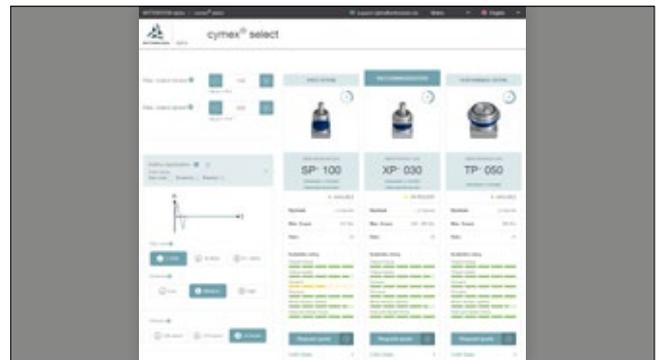
www.wittenstein-cad-point.com



cymex[®] select – Best solution within seconds

- Efficient and customizable product selection in seconds
- Top three product recommendations for your requirements
- Available online without login
- Possibility of requesting quotation quickly and directly

cymex-select.wittenstein-group.com



cymex[®] 5 – Calculate on the Best

- Detailed calculation of complete drive trains
- Precise simulation of motion and load variables
- Downloadable software for complex designs

www.wittenstein-cymex.com





Final

Templates

- Mechanical Applications
- Electrical Applications
- Mechanics
- Transformations

Linear application

| | |
|-----|----------------------|
| Len | 6.98 m |
| Vol | 17.96 m ³ |
| EO | 62.41 % |
| rd | 362 |

Dist page 1

| | |
|-------|-------------------------------------|
| Len | 0.5 m |
| Vol | 2.24 m ³ |
| EO | 6.91 m ³ /m ³ |
| rd | 19700.22 % |
| Area | 1 |
| Face | 221.89 N/mm |
| Len | 148.83 N/mm |
| Coord | 18.88 m |
| Area | 16 m ² |
| Len | |

Dist page 2

| | |
|-------|--|
| Len | 1498.15 m |
| Vol | 107.85 m ³ |
| EO | 42.5 m ³ /m ³ |
| rd | 28.89 m ³ /m ³ |
| Area | 6770.3 m ² |
| Face | 3298.53 m ² |
| Face | 20480.86 m ² |
| Face | 8632.36 m ² |
| Face | 1664 m ² /m ² |
| Face | 837648.12 m ² /m ² |
| Area | 2.013 |
| Len | 13.59 |
| Area | 688 mm ² /mm ² |
| Coord | 3483.85 N/mm |
| EO | 582.95 N/mm |
| EO | 3.44 mm ² |
| Dist | |

TPK-2016-MP3-63-8K1-15

Operating mode

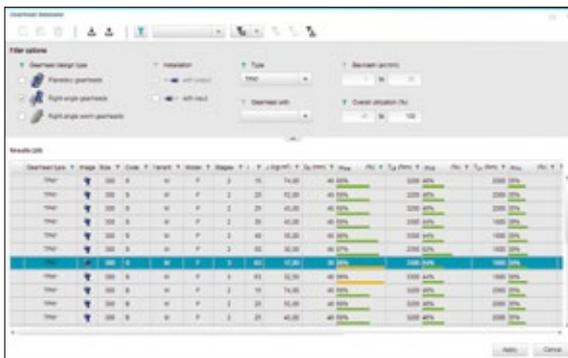
| | |
|----------|--------------------------------------|
| Duration | 1 |
| Len | 1498.15 m |
| Vol | 107.85 m ³ |
| EO | 42.5 m ³ /m ³ |
| rd | 28.89 m ³ /m ³ |

cymex® 5 is the current standard

With cymex® 5, the dimensioning and design of complete drive trains (application + transformation + gearbox + motor) is now fast, simple and reliable. Calculation is made much easier through predefined standard applications. Consideration for all major influencing factors guarantees an optimal design and increases the efficiency of your machine.

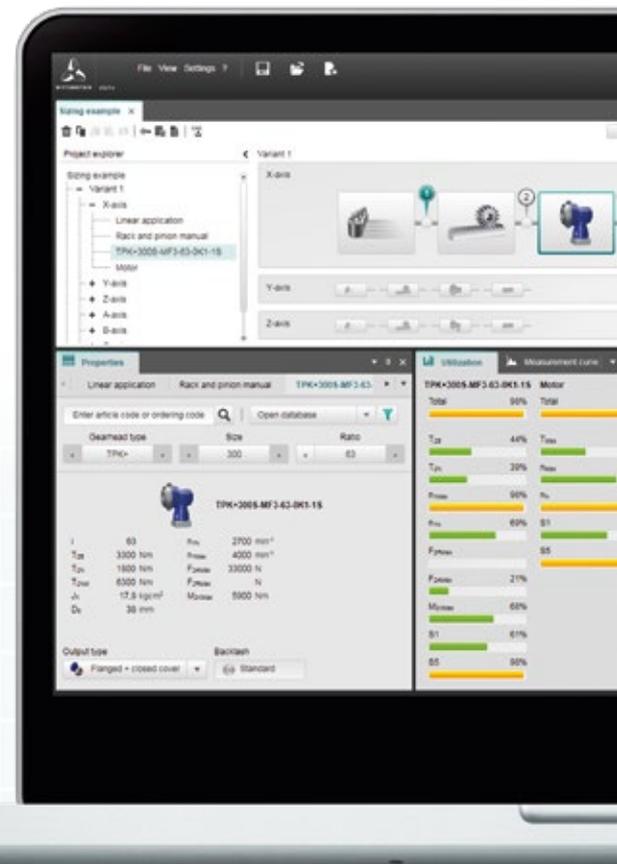
cymex® 5 can define any number of axes simultaneously

In contrast to other design tools, cymex® 5 can define any number of axes at the same time. The version calculation is up to 60% quicker as a result.



cymex® 5 has an extremely extensive database

More than 14,000 motors from the 50 most prominent motor manufacturers are stored in the design tool. Continuously updated, always state-of-the-art. Moreover, more than 8,000 gearbox versions from WITTENSTEIN alpha and over 200 combinations of linear systems with all relevant technical specifications can be found here.

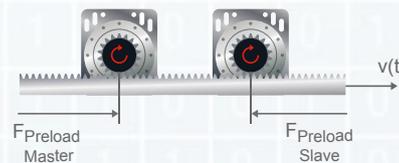


Free download

The basic version of cymex® 5 design software is available as a free download.



www.wittenstein-cymex.com



cymex® 5 incorporates the completely new Master / Slave function*

The Master / Slave function enables the electrically clamped configuration of two drives. The mutual tensioning of master and slave eliminates the backlash in the drive train and provides for a high degree of rigidity in the machine.

*Premium function, on request.

cymex® 5



+ cymex® 5 has a unique optimization calculator*

During the design process, cymex® 5 provides optimization suggestions for the selected gearbox, which increase reliability and efficiency while ensuring your gearbox has the perfect dimensions e.g. through downsizing. This saves on costs and reduces the installation space in the machine.



+ cymex® 5 offers comprehensive documentation

Following the geometry comparison, cymex® 5 creates calculation documentation and generates data sheets for gearbox and motor on request. Furthermore, the 2D and 3D CAD data of selected components can be retrieved.



+ cymex® 5 enables the precise simulation of motion and load variables

The optimized software offers many options for the individual design of the drive train. These have been integrated to supplement the existing applications already in cymex® 3: the crank, conveyor, center winder and feed roll.



11 languages

alpha Advanced Line – the perfect solution for demanding applications

Our SP⁺ planetary gearbox has been setting the benchmark for decades

The seed of WITTENSTEIN alpha was planted more than 40 years ago and many generations of SP⁺ planetary gearboxes have consistently set new standards among planetary gearboxes ever since. Our engineers are determined to make each new generation of gearboxes even better and more powerful than the one before. As a result, we manufacture superior products which are ideal for the demanding applications of our customers.

The latest alpha Advanced Line – even more powerful

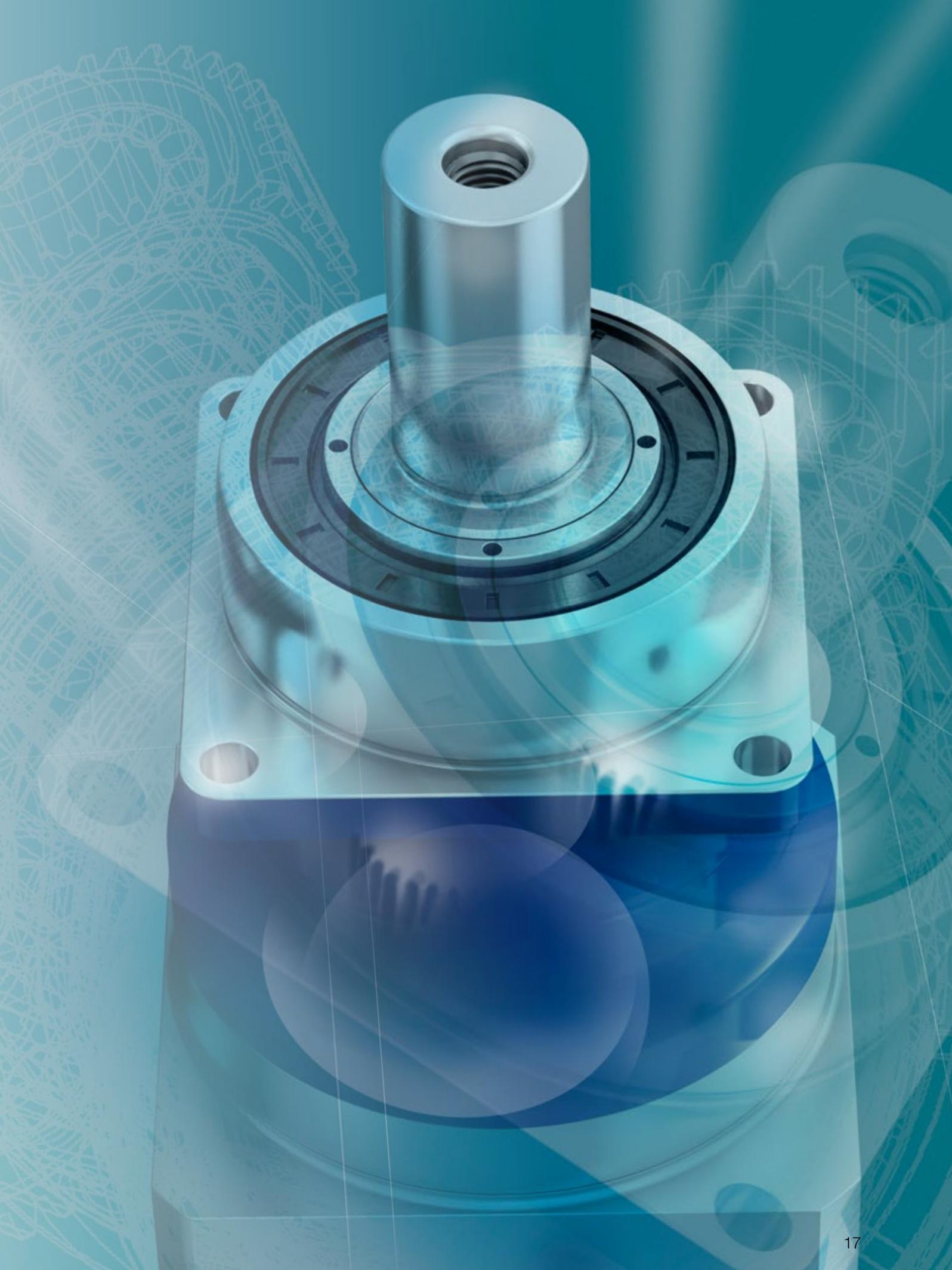
Our SP⁺ and TP⁺ bestsellers have been further developed to significantly increase the power density. This optimization has increased speed and torque values considerably while simultaneously reducing running noise. Lower no-load running torques reduce occurring losses. This significantly increases the overall energy efficiency. The HIGH SPEED and HIGH TORQUE variants achieve even greater performance dimensions and higher speeds. At the same time the extremely compact design provides significant space savings, which is especially important in small installation spaces.

Suitable for all requirements

Whether planetary, hypoid, bevel or worm gears, the alpha Advanced Line always offers our customers a suitable solution for their specific applications, regardless of the required performance range. With more than 30 product variants in the alpha Advanced Line alone, applications can be fully equipped with our gearboxes, even in combination with compatible linear systems. The high-precision all-rounders of the alpha Advanced Line operate with an impressive accuracy range of 1 - 5 arcmin and can be used in any application.

Your benefits at a glance

- **Maximum power density**
- **Maximum speeds, torques and positioning accuracies**
- **Low operating noise**
- **Wide variety of variants and systems**
- **Extensive experience and outstanding safety**



alpha Advanced Line – Product overview

Planetary gearboxes

This series is characterized by outstanding power density resulting from an extremely compact design. The HIGH SPEED and HIGH TORQUE variants achieve even greater torsional rigidity values and performance dimensions with regard to speed and torque.



SP+ / SP+ HIGH SPEED



TP+



TP+ HIGH TORQUE

Hypoid gearboxes

Maximum performance in restricted mounting situations. Our hypoid gearboxes are characterized by an extremely high power density with a wide variety of variants. This strong combination can meet virtually any application requirements.



HG+



SK+



SPK+



TK+



TPK+



TPK+ HIGH TORQUE

Bevel gearboxes

High performances at low gear ratios is the main strength of this series, which can be installed in the smallest of spaces. Additionally a high efficiency of 97 % ensures efficient operation.



SC+



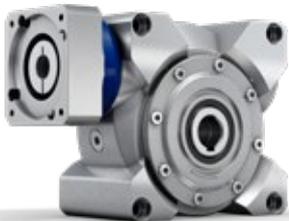
SPC+



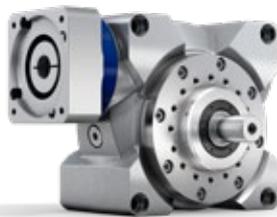
TPC+

Worm gearboxes

In addition to an extremely high power density, our powerful V-Drive Advanced series is characterized by a consistently low backlash throughout the product life cycle. Flexible output shapes allow the gearbox to be used in a wide range of applications. The servo worm gears are suitable both for cyclic operation and applications in continuous operation.



VH+



VS+



VT+

Application-specific solutions

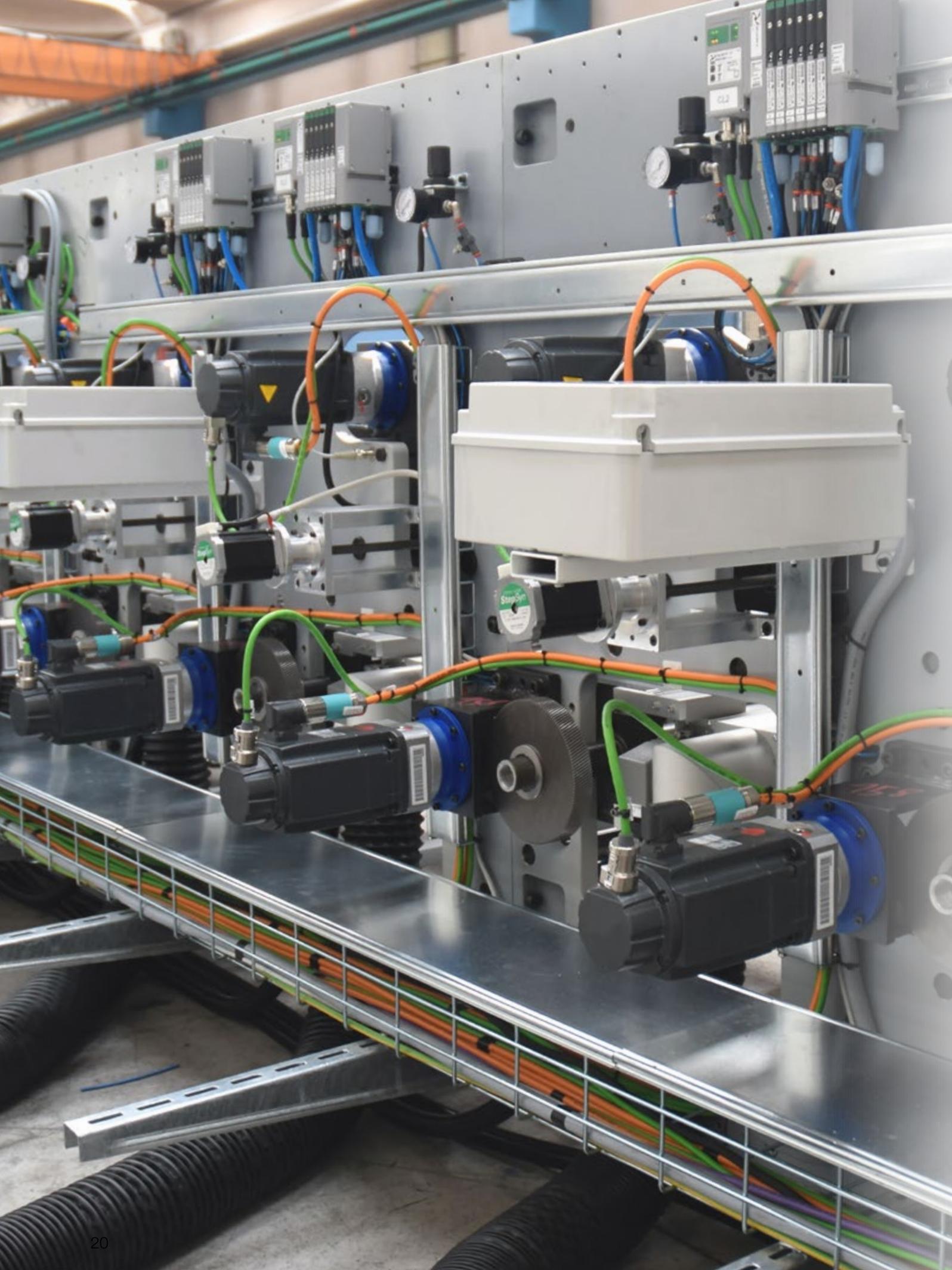
Special requirements need special solutions. Whether in highly dynamic Delta robotics applications or the food industry with a focus on hygienic design. We offer optimal solutions for your specific applications.



DP+



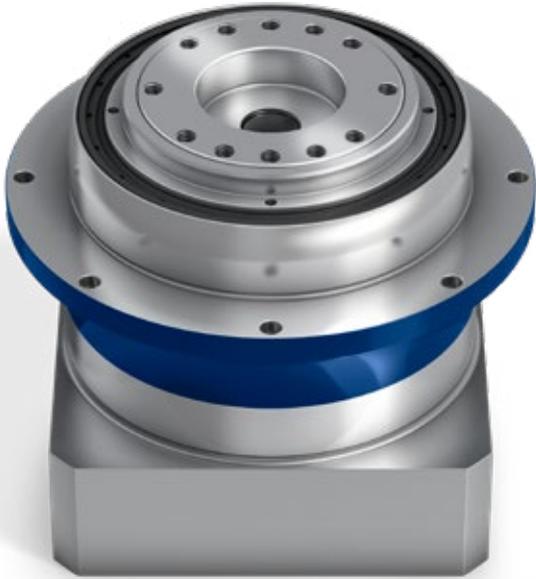
HDP+



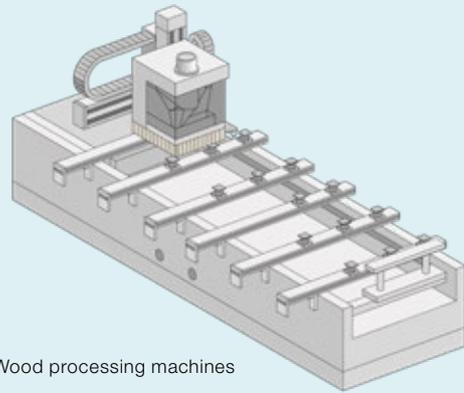
alpha Advanced Line in action

TP+ / TP+ HIGH TORQUE – Compact precision

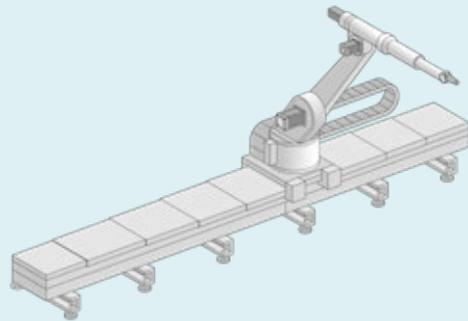
Maximum precision, perfect true-running accuracy and high speeds are essential requirements for flexographic printing presses. The TP+ and TP+ HIGH TORQUE planetary gearboxes of WITTENSTEIN alpha incorporate all of these characteristics, resulting in a uniquely high printing quality and increased machine output.



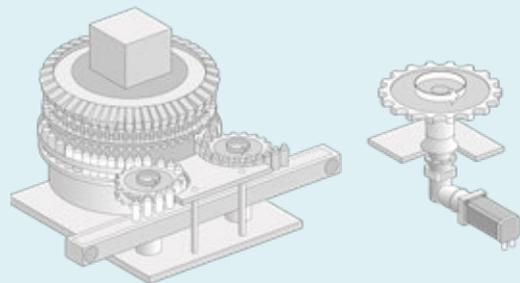
Advanced Line products can also be used in machines that generate rotary movements under extreme loads such as wood working machinery, 7th axis applications or in bottling plants.



Wood processing machines



7th axis



Bottling plant





SP⁺ and TP⁺ planetary gearboxes
When maximum power density
is vital.

SP+ / SP+ HIGH SPEED – The classic all-rounder



SP+

The standard version of these low-backlash planetary gearboxes with output shaft is ideally suited for high positioning accuracy and highly dynamic cyclic operation. The SP+ HIGH SPEED is particularly appropriate for applications with maximum speeds during continuous operation.

Product highlights

Max. torsional backlash [arcmin] $\leq 1 - 6$

Various output configurations

Smooth shaft, shaft with key, splined shaft (DIN 5480), blind hollow shaft

High nominal speeds

SP+ HIGH SPEED version for applications in continuous operation

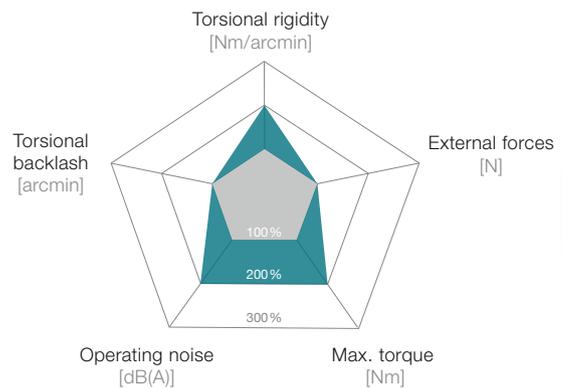
Flexible drive options

Clamping hub socket, coupling, optimized mass inertia, keyed clamping hub socket

Other gearbox models

Corrosion resistant design, ATEX, food-grade lubrication, low friction version

The SP+ compared to the industry standard



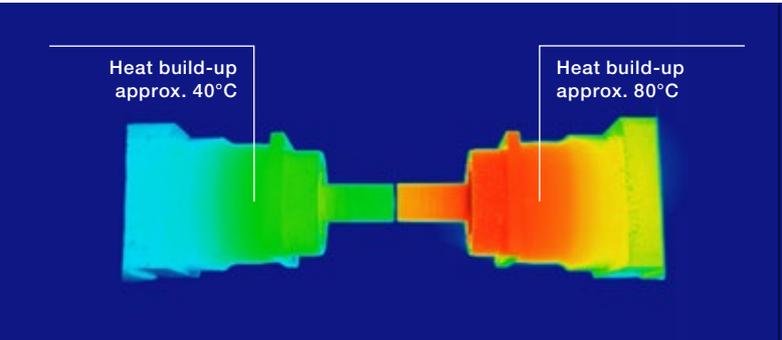
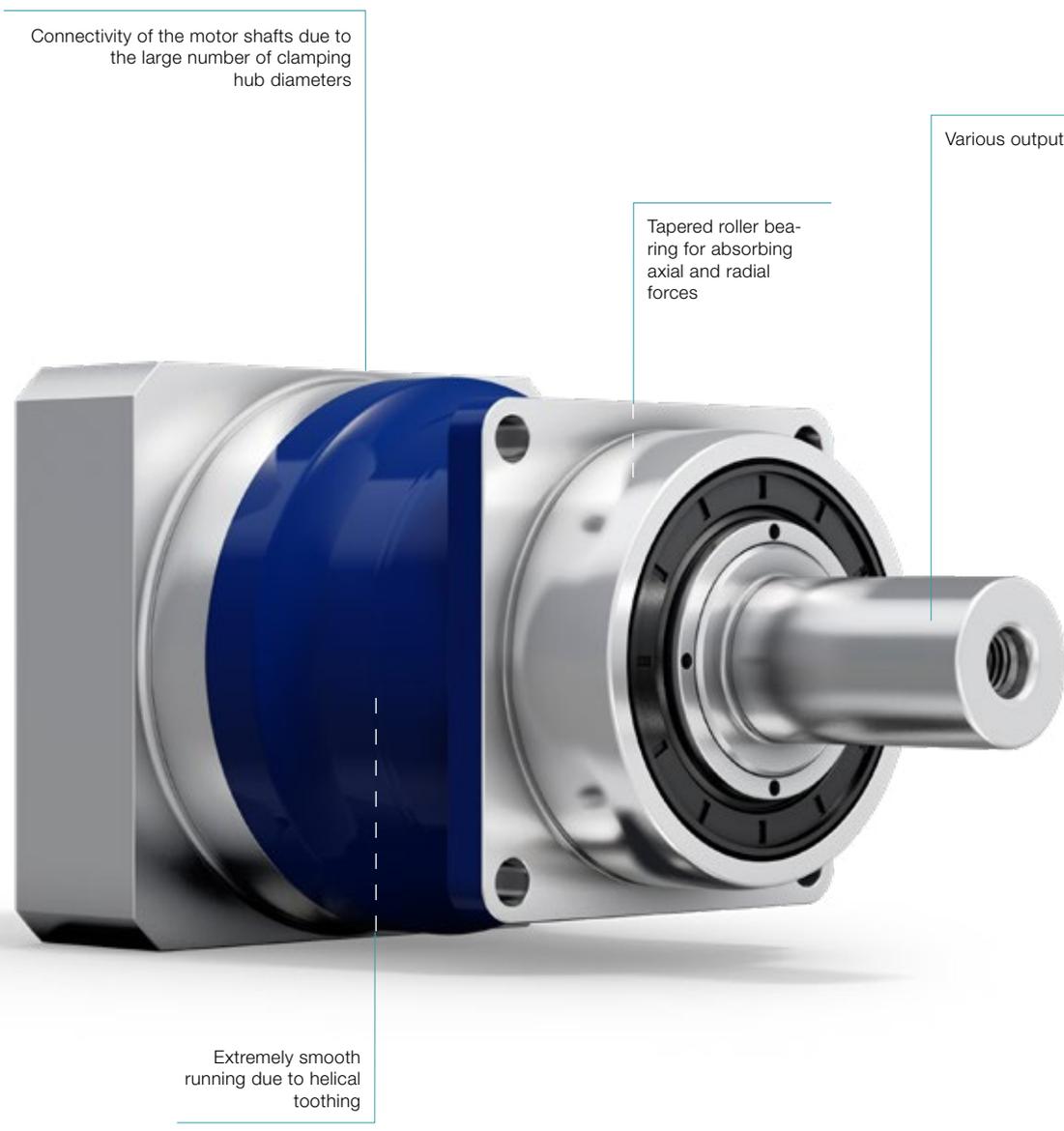
— SP+ / SP+ HIGH SPEED — industry standard



SP+ planetary gearbox in corrosion resistant design



SP+ with R-flange and rack and pinion



SP* HIGH SPEED MC version

Industry standard



SP* with metal bellows coupling

SP+ 060 MF 1-stage

| | | | 1-stage | | | | | | | |
|--|-------------|-----------------|--------------------------------------|---------------------------------------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 3 | 4 | 5 | 7 | 8 | 10 | | |
| Max. torque ^{a) b) e)} | T_{2a} | Nm | 48 | 67 | 67 | 67 | 51 | 51 | | |
| | | in.lb | 425 | 595 | 595 | 595 | 453 | 453 | | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | Nm | 36 | 50 | 50 | 50 | 38 | 38 | | |
| | | in.lb | 319 | 443 | 443 | 443 | 336 | 336 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 21 | 27 | 27 | 26 | 26 | 27 | | |
| | | in.lb | 190 | 239 | 236 | 226 | 230 | 237 | | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 96 | 109 | 109 | 109 | 100 | 100 | | |
| | | in.lb | 850 | 965 | 965 | 965 | 885 | 885 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 3300 | 3300 | 3300 | 4000 | 4000 | 4000 | | |
| Max. input speed | n_{1Max} | rpm | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 0.68 | 0.52 | 0.48 | 0.34 | 0.32 | 0.32 | | |
| | | in.lb | 6.0 | 4.6 | 4.2 | 3.0 | 2.8 | 2.8 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 4 / Reduced ≤ 2 | | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | Nm/arcmin | 3.5 | | | | | | | |
| | | in.lb/arcmin | 31 | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 2400 | | | | | | | |
| | | lb _f | 540 | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 2800 | | | | | | | |
| | | lb _f | 630 | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 152 | | | | | | | |
| | | in.lb | 1345 | | | | | | | |
| Efficiency at full load | η | % | 97 | | | | | | | |
| Service life ¹⁾ | L_h | h | > 20000 | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 1.9 | | | | | | | |
| | | lb _m | 4.2 | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{pA} | dB(A) | ≤ 58 | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | |
| | | F | 194 | | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | | |
| | | F | 5 to 104 | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | |
| Protection class | | | IP 65 | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC2-00060AA016.000-X | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 012.000 - 035.000 | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | B | 11 | J_i | kgcm ² | 0.21 | 0.15 | 0.12 | 0.10 | 0.10 | 0.09 |
| | | | | 10 ⁻³ in.lb.s ² | 0.19 | 0.13 | 0.11 | 0.09 | 0.09 | 0.08 |
| | C | 14 | J_i | kgcm ² | 0.28 | 0.22 | 0.20 | 0.18 | 0.16 | 0.16 |
| | | | | 10 ⁻³ in.lb.s ² | 0.25 | 0.19 | 0.18 | 0.16 | 0.14 | 0.14 |
| | E | 19 | J_i | kgcm ² | 0.61 | 0.55 | 0.52 | 0.50 | 0.49 | 0.49 |
| | | | | 10 ⁻³ in.lb.s ² | 0.54 | 0.49 | 0.46 | 0.44 | 0.43 | 0.43 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

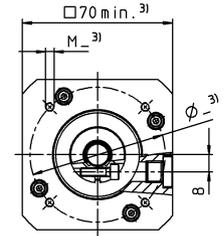
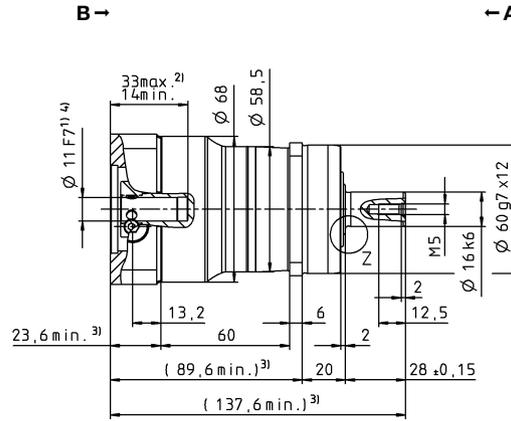
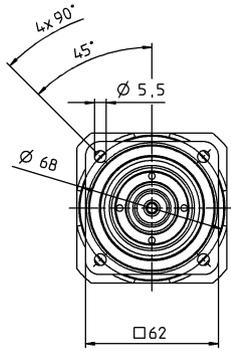
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

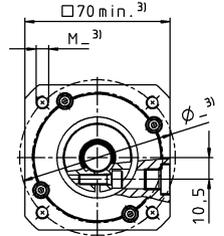
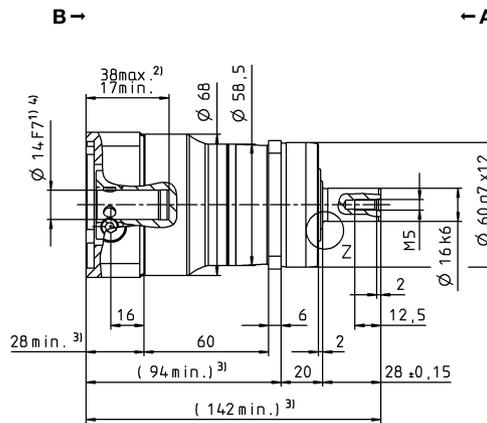
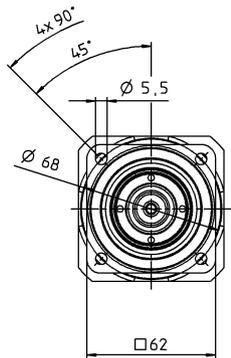
View B

1-stage

up to 11⁴⁾ (B)
clamping hub diameter

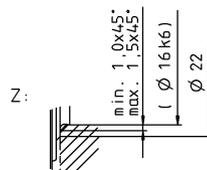
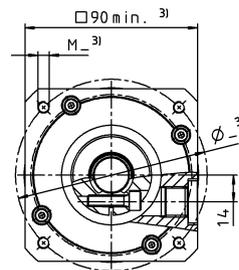
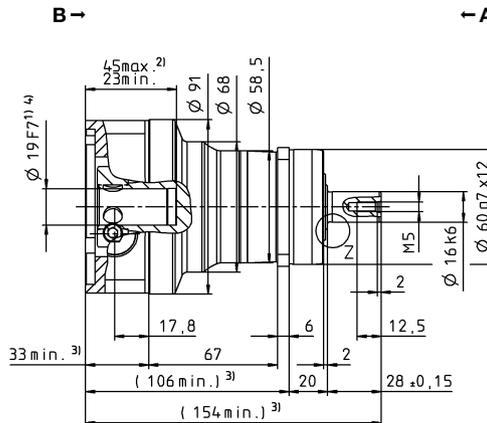
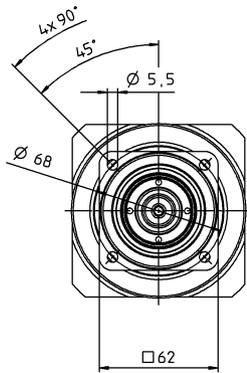


up to 14⁴⁾ (C)⁵⁾
clamping hub diameter



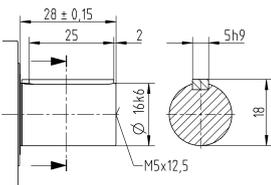
Motor shaft diameter [mm]

up to 19⁴⁾ (E)
clamping hub diameter

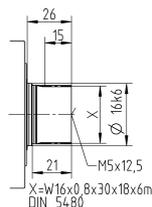


Other output variants

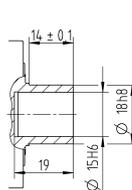
Shaft with key



Spined shaft (DIN 5480)



Shaft mounted



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

SP+ 060 MF 2-stage

| | | | 2-stage | | | | | | | | | | | | |
|--|-------------|-----------------|--------------------------------------|---------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Ratio | <i>i</i> | | 16 | 20 | 25 | 28 | 32 | 35 | 40 | 50 | 64 | 70 | 100 | | |
| Max. torque ^{a) b) e)} | T_{2a} | Nm | 57 | 57 | 67 | 57 | 57 | 67 | 57 | 67 | 48 | 56 | 48 | | |
| | | in.lb | 507 | 507 | 595 | 507 | 507 | 595 | 507 | 595 | 423 | 499 | 423 | | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | Nm | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 38 | 50 | 38 | | |
| | | in.lb | 443 | 443 | 443 | 443 | 443 | 443 | 443 | 443 | 336 | 443 | 336 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 38 | 40 | 40 | 40 | 38 | 40 | 40 | 40 | 31 | 40 | 31 | | |
| | | in.lb | 332 | 354 | 351 | 357 | 333 | 357 | 357 | 357 | 270 | 357 | 272 | | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 109 | 109 | 109 | 109 | 109 | 109 | 109 | 109 | 109 | 109 | 100 | | |
| | | in.lb | 965 | 965 | 965 | 965 | 965 | 965 | 965 | 965 | 965 | 965 | 885 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 4400 | 4400 | 4400 | 4400 | 4400 | 4400 | 4400 | 4800 | 4800 | 5500 | 5500 | | |
| Max. input speed | n_{1Max} | rpm | 8500 | 8500 | 8500 | 8500 | 8500 | 8500 | 8500 | 8500 | 8500 | 8500 | 8500 | | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 0.28 | 0.25 | 0.23 | 0.22 | 0.24 | 0.20 | 0.20 | 0.19 | 0.19 | 0.17 | 0.18 | | |
| | | in.lb | 2.5 | 2.2 | 2.0 | 1.9 | 2.1 | 1.8 | 1.8 | 1.7 | 1.7 | 1.5 | 1.6 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 6 / Reduced ≤ 4 | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | Nm/arcmin | 3.5 | | | | | | | | | | | | |
| | | in.lb/arcmin | 31 | | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 2400 | | | | | | | | | | | | |
| | | lb _f | 540 | | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 2800 | | | | | | | | | | | | |
| | | lb _f | 630 | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 152 | | | | | | | | | | | | |
| | | in.lb | 1345 | | | | | | | | | | | | |
| Efficiency at full load | η | % | 94 | | | | | | | | | | | | |
| Service life ¹⁾ | L_h | h | > 20000 | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 2.0 | | | | | | | | | | | | |
| | | lb _m | 4.4 | | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{pA} | dB(A) | ≤ 57 | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | | | | | | | |
| | | F | 5 to 104 | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC2-00060AA016.000-X | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 012.000 - 035.000 | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | B | 11 | J_i | kgcm ² | 0.077 | 0.069 | 0.068 | 0.061 | 0.061 | 0.061 | 0.057 | 0.057 | 0.056 | 0.056 | 0.056 |
| | | | | 10 ⁻³ in.lb.s ² | 0.068 | 0.061 | 0.060 | 0.054 | 0.054 | 0.054 | 0.050 | 0.050 | 0.050 | 0.050 | 0.050 |
| | C | 14 | J_i | kgcm ² | 0.17 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| | | | | 10 ⁻³ in.lb.s ² | 0.15 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

^{a)} At max. 10 % F_{20Max}

^{b)} Valid for standard clamping hub diameter

^{c)} Refers to center of the output shaft or flange

^{d)} Please reduce input speed at higher ambient temperatures

^{e)} Smooth shaft

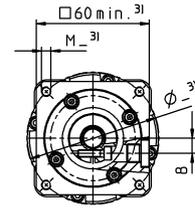
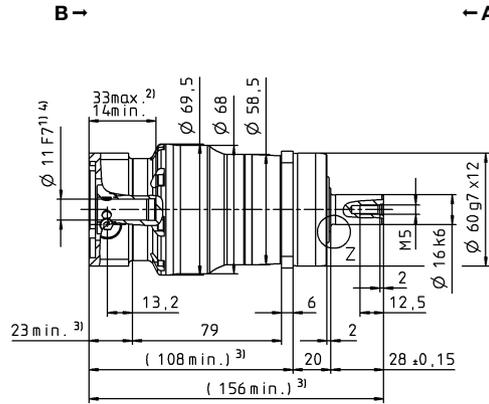
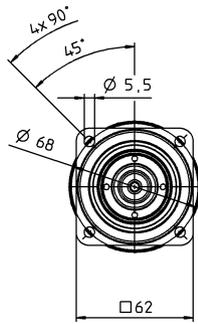
¹⁾ Please contact us to discuss application-specific service lifetimes

View A

View B

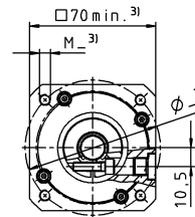
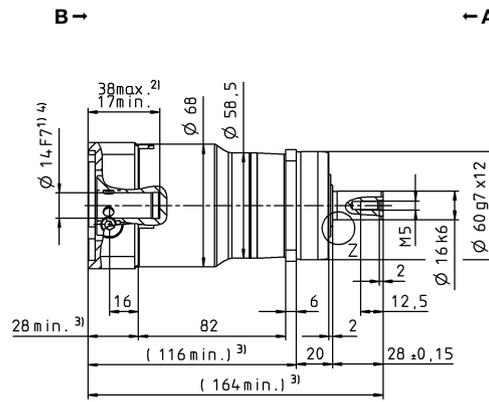
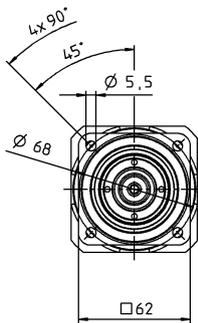
2-stage

up to 11⁴⁾ (B)⁵⁾
clamping hub diameter



Motor shaft diameter [mm]

up to 14⁴⁾ (C)
clamping hub diameter

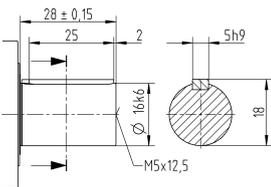


Planetary gearboxes

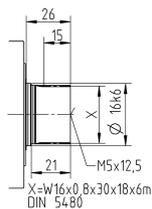
SP+
MF

Other output variants

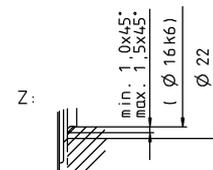
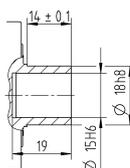
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

SP+ 075 MF 1-stage

| | | | 1-stage | | | | | | | |
|--|-------------|-----------------|--------------------------------------|---------------------------------------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 3 | 4 | 5 | 7 | 8 | 10 | | |
| Max. torque ^{a) b) e)} | T_{2a} | Nm | 136 | 176 | 176 | 176 | 152 | 152 | | |
| | | in.lb | 1204 | 1558 | 1558 | 1558 | 1345 | 1345 | | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | Nm | 102 | 132 | 132 | 132 | 114 | 114 | | |
| | | in.lb | 903 | 1168 | 1168 | 1168 | 1009 | 1009 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 63 | 81 | 81 | 81 | 80 | 81 | | |
| | | in.lb | 558 | 719 | 716 | 719 | 712 | 720 | | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 139 | 185 | 250 | 250 | 250 | 250 | | |
| | | in.lb | 1230 | 1640 | 2213 | 2213 | 2213 | 2213 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 2900 | 2900 | 2900 | 3100 | 3100 | 3100 | | |
| Max. input speed | n_{1Max} | rpm | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 1.5 | 1.4 | 0.96 | 0.72 | 0.55 | 0.52 | | |
| | | in.lb | 14 | 12 | 8.5 | 6.4 | 4.9 | 4.6 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 4 / Reduced ≤ 2 | | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | Nm/arcmin | 10 | | | | | | | |
| | | in.lb/arcmin | 89 | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 3350 | | | | | | | |
| | | lb _f | 754 | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 4200 | | | | | | | |
| | | lb _f | 945 | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 236 | | | | | | | |
| | | in.lb | 2089 | | | | | | | |
| Efficiency at full load | η | % | 97 | | | | | | | |
| Service life ¹⁾ | L_h | h | > 20000 | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 3.9 | | | | | | | |
| | | lb _m | 8.6 | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{pA} | dB(A) | ≤ 59 | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | |
| | | F | 194 | | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | | |
| | | F | 5 to 104 | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | |
| Protection class | | | IP 65 | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC2-00150AA022.000-X | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 019.000 - 042.000 | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | C | 14 | J_i | kgcm ² | 0.86 | 0.61 | 0.51 | 0.42 | 0.38 | 0.38 |
| | | | | 10 ⁻³ in.lb.s ² | 0.76 | 0.54 | 0.45 | 0.37 | 0.34 | 0.34 |
| | E | 19 | J_i | kgcm ² | 1.03 | 0.78 | 0.68 | 0.59 | 0.54 | 0.54 |
| | | | | 10 ⁻³ in.lb.s ² | 0.91 | 0.69 | 0.60 | 0.52 | 0.48 | 0.48 |
| | G | 24 | J_i | kgcm ² | 2.40 | 2.15 | 2.05 | 1.96 | 1.91 | 1.91 |
| | | | | 10 ⁻³ in.lb.s ² | 2.12 | 1.90 | 1.81 | 1.73 | 1.69 | 1.69 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

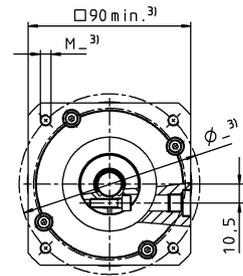
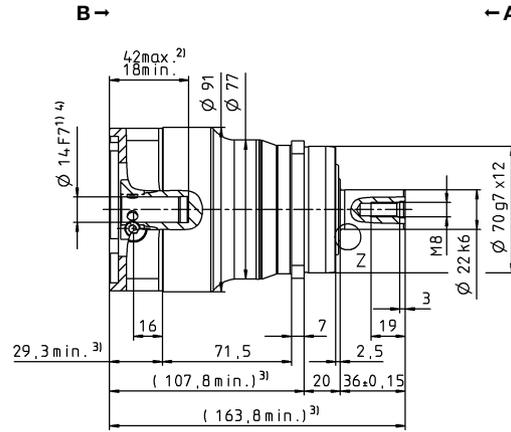
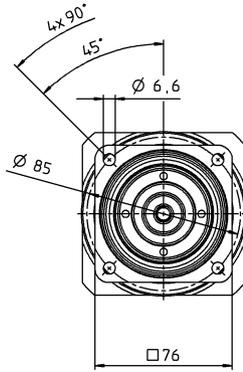
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

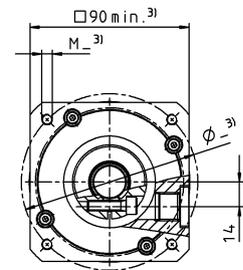
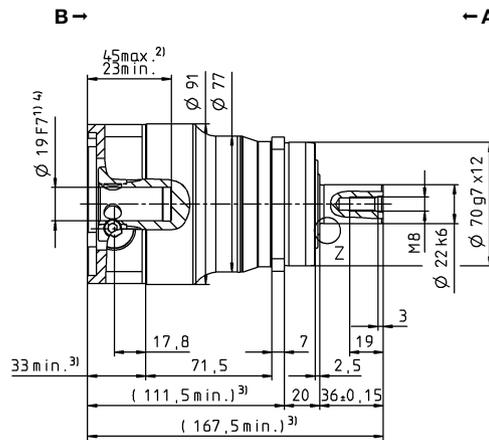
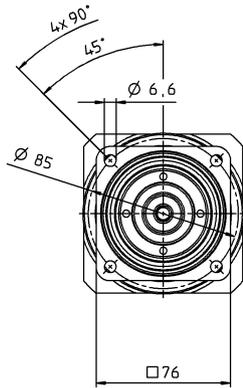
View B

1-stage

up to 14⁴⁾ (C)
clamping hub diameter

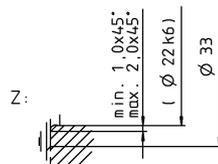
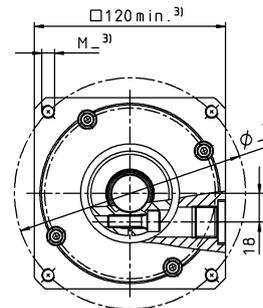
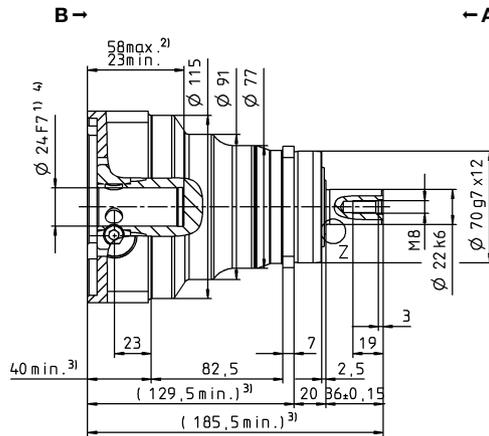
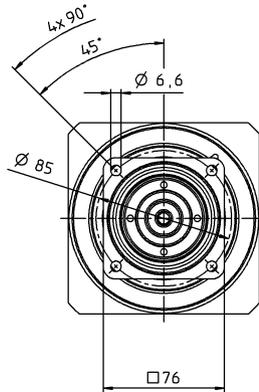


up to 19⁴⁾ (E)⁵⁾
clamping hub diameter



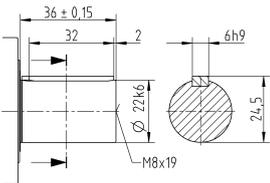
Motor shaft diameter [mm]

up to 24⁴⁾ (G)
clamping hub diameter

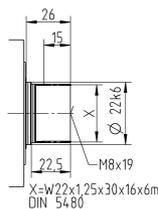


Other output variants

Shaft with key

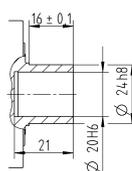


Spined shaft (DIN 5480)



X=W22x125x30x16x6m
DIN 5480

Shaft mounted



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

SP+ 075 MF 2-stage

| | | | 2-stage | | | | | | | | | | | |
|--|-------------|-----------------|--------------------------------------|---------------------------------------|------|------|------|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 16 | 20 | 25 | 28 | 32 | 35 | 40 | 50 | 64 | 70 | 100 | |
| Max. torque ^{a) b) e)} | T_{2a} | Nm | 126 | 126 | 158 | 126 | 126 | 158 | 126 | 158 | 105 | 113 | 105 | |
| | | in.lb | 1118 | 1118 | 1398 | 1118 | 1118 | 1398 | 1118 | 1398 | 932 | 998 | 932 | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | Nm | 126 | 126 | 132 | 126 | 126 | 132 | 126 | 132 | 105 | 113 | 105 | |
| | | in.lb | 1118 | 1118 | 1168 | 1118 | 1118 | 1168 | 1118 | 1168 | 932 | 998 | 932 | |
| Nominal torque (at n_n) | T_{2N} | Nm | 101 | 101 | 106 | 101 | 101 | 106 | 101 | 106 | 84 | 90 | 84 | |
| | | in.lb | 895 | 895 | 935 | 895 | 895 | 935 | 895 | 935 | 746 | 799 | 746 | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | |
| | | in.lb | 2213 | 2213 | 2213 | 2213 | 2213 | 2213 | 2213 | 2213 | 2213 | 2213 | 2213 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3800 | 3800 | 4500 | 4500 | |
| Max. input speed | n_{1Max} | rpm | 8500 | 8500 | 8500 | 8500 | 8500 | 8500 | 8500 | 8500 | 8500 | 8500 | 8500 | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 0.50 | 0.41 | 0.35 | 0.32 | 0.44 | 0.28 | 0.26 | 0.23 | 0.23 | 0.21 | 0.23 | |
| | | in.lb | 4.4 | 3.6 | 3.1 | 2.8 | 3.9 | 2.5 | 2.3 | 2.0 | 2.0 | 1.9 | 2.0 | |
| Max. backlash | j_t | arcmin | Standard ≤ 6 / Reduced ≤ 4 | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | Nm/arcmin | 10 | | | | | | | | | | | |
| | | in.lb/arcmin | 89 | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 3350 | | | | | | | | | | | |
| | | lb _f | 754 | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 4200 | | | | | | | | | | | |
| | | lb _f | 945 | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 236 | | | | | | | | | | | |
| | | in.lb | 2089 | | | | | | | | | | | |
| Efficiency at full load | η | % | 94 | | | | | | | | | | | |
| Service life ¹⁾ | L_h | h | > 20000 | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 3.6 | | | | | | | | | | | |
| | | lb _m | 8.0 | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{pA} | dB(A) | ≤ 55 | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | | | | | | |
| | | F | 5 to 104 | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC2-00150AA022.000-X | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 019.000 - 042.000 | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | B | 11 | J_i | kgcm ² | 0.16 | 0.13 | 0.13 | 0.10 | 0.10 | 0.10 | 0.09 | 0.09 | 0.09 | 0.09 |
| | | | | 10 ⁻³ in.lb.s ² | 0.14 | 0.12 | 0.12 | 0.09 | 0.09 | 0.09 | 0.08 | 0.08 | 0.08 | 0.08 |
| | C | 14 | J_i | kgcm ² | 0.23 | 0.20 | 0.20 | 0.18 | 0.18 | 0.18 | 0.16 | 0.16 | 0.16 | 0.16 |
| | | | | 10 ⁻³ in.lb.s ² | 0.20 | 0.18 | 0.18 | 0.16 | 0.16 | 0.16 | 0.14 | 0.14 | 0.14 | 0.14 |
| | E | 19 | J_i | kgcm ² | 0.55 | 0.53 | 0.52 | 0.50 | 0.50 | 0.50 | 0.49 | 0.49 | 0.49 | 0.49 |
| | | | | 10 ⁻³ in.lb.s ² | 0.49 | 0.47 | 0.46 | 0.44 | 0.44 | 0.44 | 0.43 | 0.43 | 0.43 | 0.43 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

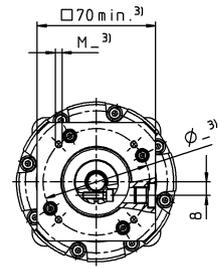
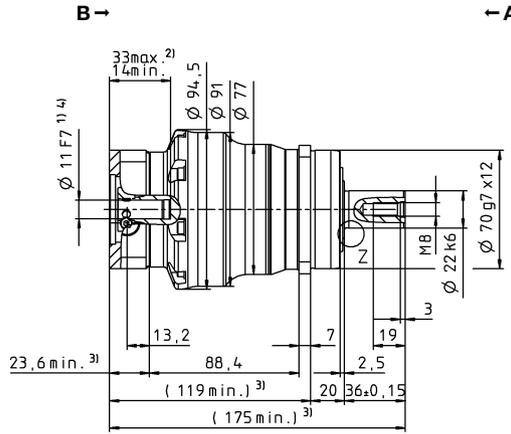
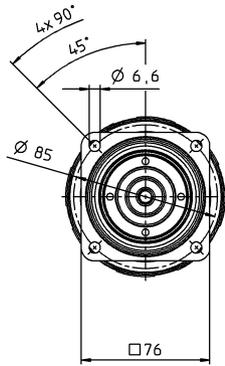
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

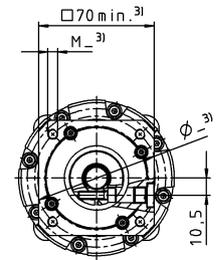
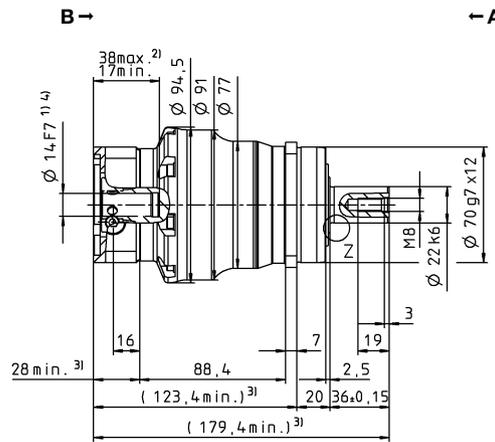
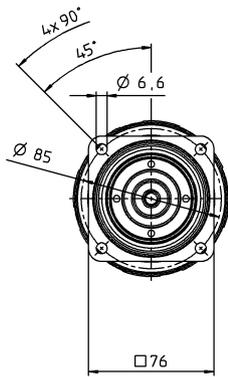
View B

2-stage

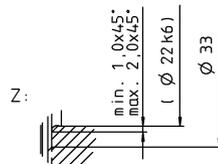
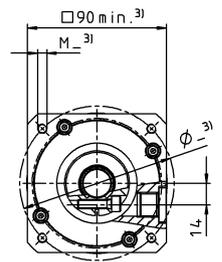
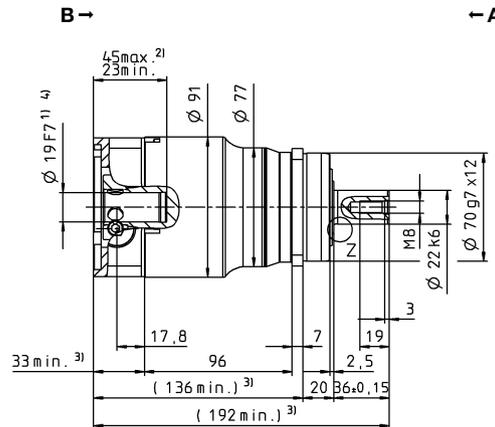
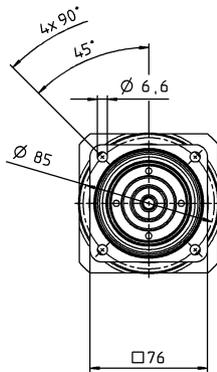
up to 11⁴⁾ (B)
clamping hub diameter



up to 14⁴⁾ (C)⁵⁾
clamping hub diameter

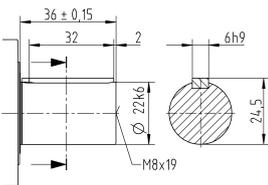


up to 19⁴⁾ (E)
clamping hub diameter

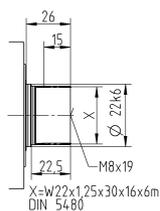


Other output variants

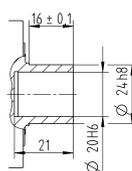
Shaft with key



Spined shaft (DIN 5480)



Shaft mounted



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

SP+ 100 MF 1-stage

| | | | 1-stage | | | | | | | |
|--|---|-----------------|--------------------------------------|---------------------------------------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 3 | 4 | 5 | 7 | 8 | 10 | | |
| Max. torque ^{a) b) e)} | T_{2a} | Nm | 376 | 495 | 495 | 428 | 376 | 376 | | |
| | | in.lb | 3328 | 4381 | 4381 | 3784 | 3328 | 3328 | | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | Nm | 282 | 378 | 378 | 378 | 282 | 282 | | |
| | | in.lb | 2496 | 3346 | 3346 | 3346 | 2496 | 2496 | | |
| Nominal torque (at n_{1N}) | T_{2N} | Nm | 131 | 171 | 169 | 166 | 166 | 174 | | |
| | | in.lb | 1157 | 1510 | 1498 | 1473 | 1470 | 1538 | | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 500 | 625 | 625 | 625 | 625 | 625 | | |
| | | in.lb | 4425 | 5532 | 5532 | 5532 | 5532 | 5532 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 2500 | 2500 | 2500 | 2800 | 2800 | 2800 | | |
| Max. input speed | n_{1Max} | rpm | 5500 | 5500 | 5500 | 5500 | 5500 | 5500 | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 3.1 | 2.4 | 2.1 | 1.3 | 1.0 | 1.0 | | |
| | | in.lb | 28 | 21 | 18 | 12 | 9.2 | 9.2 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 3 / Reduced ≤ 1 | | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | Nm/arcmin | 31 | | | | | | | |
| | | in.lb/arcmin | 274 | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 5650 | | | | | | | |
| | | lb _f | 1271 | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 6600 | | | | | | | |
| | | lb _f | 1485 | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 487 | | | | | | | |
| | | in.lb | 4310 | | | | | | | |
| Efficiency at full load | η | % | 97 | | | | | | | |
| Service life ¹⁾ | L_h | h | > 20000 | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 7.7 | | | | | | | |
| | | lb _m | 17 | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{pA} | dB(A) | ≤ 58 | | | | | | | |
| | | | +90 | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | |
| | | F | 194 | | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | | |
| | | F | 5 to 104 | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | |
| Protection class | | | IP 65 | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC2-00300AA032.000-X | | | | | | | |
| | Bore diameter of coupling on the application side | mm | X = 024.000 - 060.000 | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | E | 19 | J_1 | kgcm ² | 3.29 | 2.35 | 1.92 | 1.60 | 1.38 | 1.38 |
| | | | | 10 ⁻³ in.lb.s ² | 2.91 | 2.08 | 1.70 | 1.42 | 1.22 | 1.22 |
| | G | 24 | J_1 | kgcm ² | 3.99 | 3.04 | 2.61 | 2.29 | 2.07 | 2.07 |
| | | | | 10 ⁻³ in.lb.s ² | 3.53 | 2.69 | 2.31 | 2.03 | 1.83 | 1.83 |
| | H | 28 | J_1 | kgcm ² | 3.59 | 2.65 | 2.22 | 1.90 | 1.68 | 1.68 |
| | | | | 10 ⁻³ in.lb.s ² | 3.18 | 2.35 | 1.96 | 1.68 | 1.49 | 1.49 |
| | K | 38 | J_1 | kgcm ² | 11.1 | 10.1 | 9.68 | 9.36 | 9.14 | 9.14 |
| | | | | 10 ⁻³ in.lb.s ² | 9.82 | 8.94 | 8.57 | 8.28 | 8.09 | 8.09 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

^{a)} At max. 10 % F_{2QMax}

^{b)} Valid for standard clamping hub diameter

^{c)} Refers to center of the output shaft or flange

^{d)} Please reduce input speed at higher ambient temperatures

^{e)} Smooth shaft

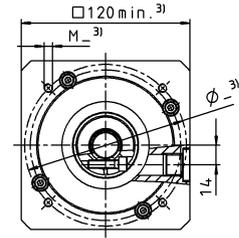
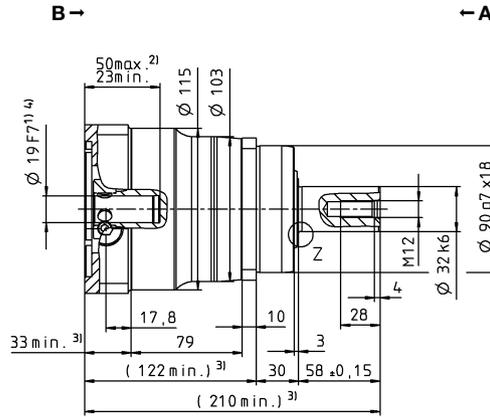
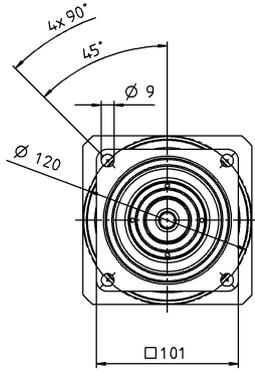
¹⁾ Please contact us to discuss application-specific service lifetimes

View A

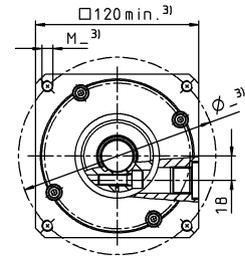
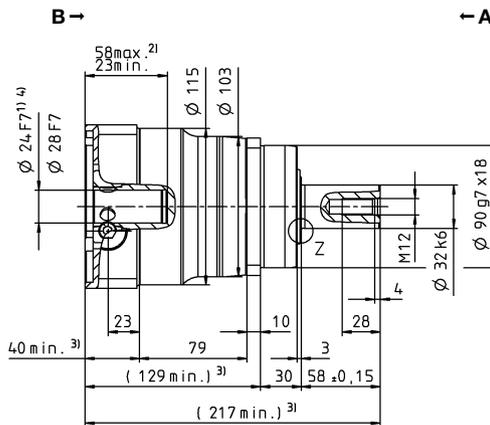
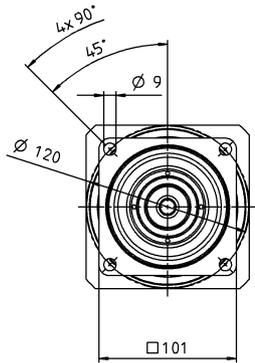
View B

1-stage

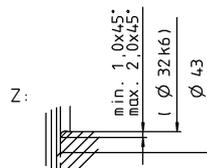
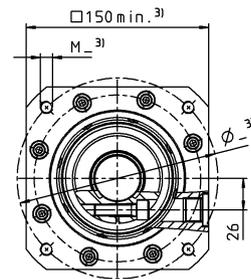
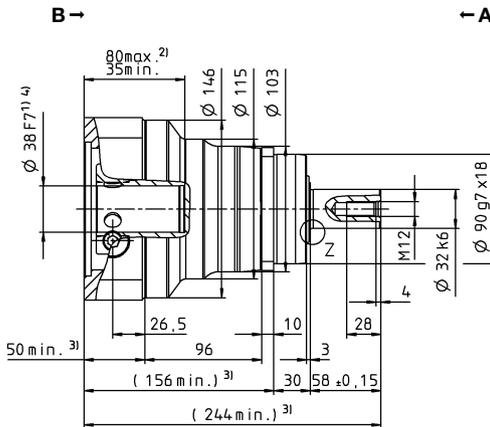
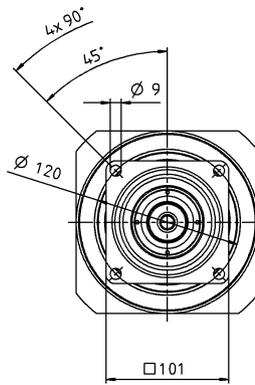
up to 19⁴⁾ (E) clamping hub diameter



up to 24/28⁴⁾ (G⁵⁾/H) clamping hub diameter

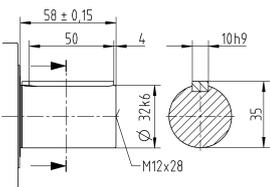


up to 38⁴⁾ (K) clamping hub diameter

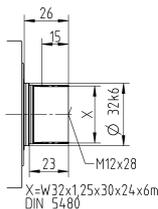


Other output variants

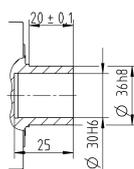
Shaft with key



Spined shaft (DIN 5480)



Shaft mounted



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

SP+ 100 MF 2-stage

| | | | 2-stage | | | | | | | | | | | | |
|--|-------------|-----------------|--------------------------------------|---------------------------------------|------|------|------|------|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 16 | 20 | 25 | 28 | 32 | 35 | 40 | 50 | 64 | 70 | 100 | | |
| Max. torque ^{a) b) e)} | T_{2a} | Nm | 347 | 347 | 347 | 347 | 347 | 347 | 347 | 347 | 259 | 347 | 259 | | |
| | | in.lb | 3067 | 3067 | 3067 | 3067 | 3067 | 3067 | 3067 | 3067 | 3067 | 2288 | 3067 | 2288 | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | Nm | 347 | 347 | 347 | 347 | 347 | 347 | 347 | 347 | 259 | 347 | 259 | | |
| | | in.lb | 3067 | 3067 | 3067 | 3067 | 3067 | 3067 | 3067 | 3067 | 3067 | 2288 | 3067 | 2288 | |
| Nominal torque (at n_{1N}) | T_{2N} | Nm | 243 | 259 | 257 | 277 | 243 | 277 | 277 | 277 | 207 | 277 | 207 | | |
| | | in.lb | 2146 | 2295 | 2277 | 2453 | 2153 | 2453 | 2453 | 2453 | 1830 | 2453 | 1830 | | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 625 | 625 | 625 | 625 | 625 | 625 | 625 | 625 | 625 | 625 | 625 | | |
| | | in.lb | 5532 | 5532 | 5532 | 5532 | 5532 | 5532 | 5532 | 5532 | 5532 | 5532 | 5532 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 3100 | 3100 | 3100 | 3100 | 3100 | 3100 | 3100 | 3500 | 3500 | 4200 | 4200 | | |
| Max. input speed | n_{1Max} | rpm | 6500 | 6500 | 6500 | 6500 | 6500 | 6500 | 6500 | 6500 | 6500 | 6500 | 6500 | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 1.0 | 0.93 | 0.85 | 0.77 | 0.86 | 0.54 | 0.54 | 0.46 | 0.46 | 0.39 | 0.37 | | |
| | | in.lb | 9.2 | 8.2 | 7.5 | 6.8 | 7.6 | 4.8 | 4.8 | 4.1 | 4.1 | 3.5 | 3.3 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 5 / Reduced ≤ 3 | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | Nm/arcmin | 31 | | | | | | | | | | | | |
| | | in.lb/arcmin | 274 | | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 5650 | | | | | | | | | | | | |
| | | lb _f | 1271 | | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 6600 | | | | | | | | | | | | |
| | | lb _f | 1485 | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 487 | | | | | | | | | | | | |
| | | in.lb | 4310 | | | | | | | | | | | | |
| Efficiency at full load | η | % | 94 | | | | | | | | | | | | |
| Service life ¹⁾ | L_h | h | > 20000 | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 7.9 | | | | | | | | | | | | |
| | | lb _m | 17.5 | | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{pA} | dB(A) | ≤ 56 | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | | | | | | | |
| | | F | 5 to 104 | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC2-00300AA032.000-X | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 024.000 - 060.000 | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | C | 14 | J_1 | kgcm ² | 0.64 | 0.54 | 0.52 | 0.43 | 0.43 | 0.43 | 0.38 | 0.38 | 0.54 | 0.37 | 0.37 |
| | | | | 10 ⁻³ in.lb.s ² | 0.57 | 0.48 | 0.46 | 0.38 | 0.38 | 0.38 | 0.34 | 0.34 | 0.48 | 0.33 | 0.33 |
| | E | 19 | J_1 | kgcm ² | 0.81 | 0.70 | 0.68 | 0.60 | 0.60 | 0.59 | 0.55 | 0.54 | 0.38 | 0.54 | 0.54 |
| | | | | 10 ⁻³ in.lb.s ² | 0.72 | 0.62 | 0.60 | 0.53 | 0.53 | 0.52 | 0.49 | 0.48 | 0.34 | 0.48 | 0.48 |
| | G | 24 | J_1 | kgcm ² | 2.18 | 2.07 | 2.05 | 1.97 | 1.97 | 1.96 | 1.92 | 1.91 | 1.91 | 1.91 | 1.91 |
| | | | | 10 ⁻³ in.lb.s ² | 1.93 | 1.83 | 1.81 | 1.74 | 1.74 | 1.73 | 1.70 | 1.69 | 1.69 | 1.69 | 1.69 |
| | H | 28 | J_1 | kgcm ² | 1.98 | 1.90 | 1.88 | 1.81 | 1.81 | 1.80 | 1.76 | 1.75 | 1.75 | 1.75 | 1.75 |
| | | | | 10 ⁻³ in.lb.s ² | 1.75 | 1.68 | 1.66 | 1.60 | 1.60 | 1.59 | 1.56 | 1.55 | 1.55 | 1.55 | 1.55 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

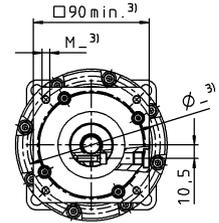
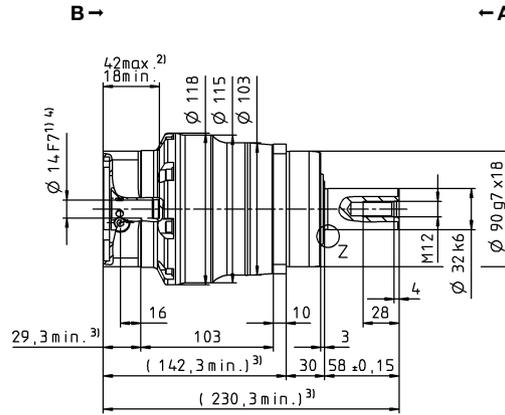
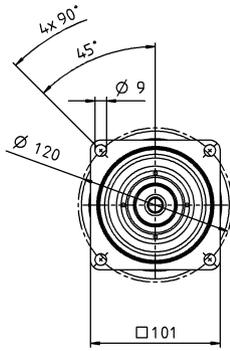
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

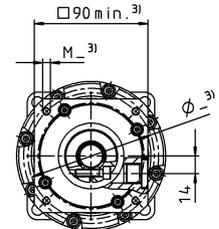
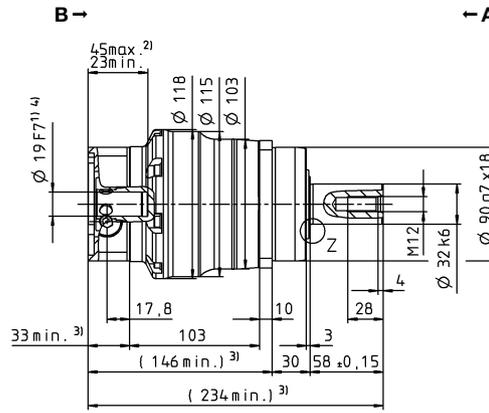
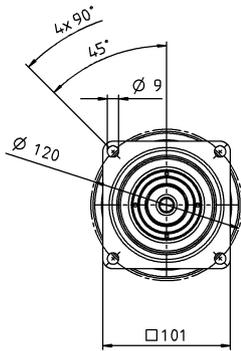
View B

2-stage

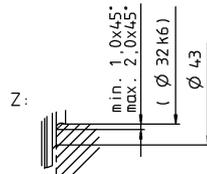
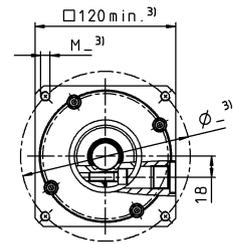
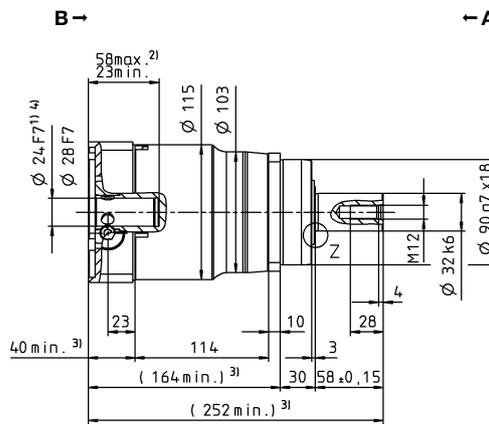
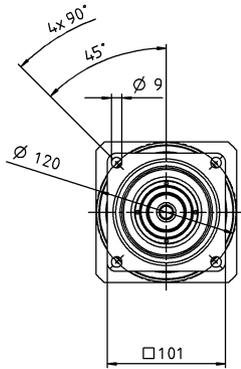
up to 14⁴⁾ (C) clamping hub diameter



up to 19⁴⁾ (E)⁵⁾ clamping hub diameter

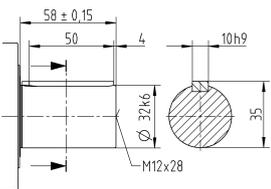


up to 24/28⁴⁾ (G/H) clamping hub diameter

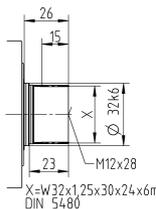


Other output variants

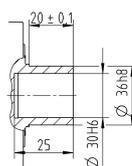
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

SP+ 140 MF 1-stage

| | | | 1-stage | | | | | | | |
|--|-------------|-----------------|--------------------------------------|---------------------------------------|-------|-------|-------|-------|------|------|
| Ratio | <i>i</i> | | 3 | 4 | 5 | 7 | 8 | 10 | | |
| Max. torque ^{a) b) e)} | T_{2a} | Nm | 624 | 1056 | 1056 | 825 | 720 | 720 | | |
| | | in.lb | 5523 | 9346 | 9346 | 7302 | 6373 | 6373 | | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | Nm | 468 | 792 | 792 | 792 | 636 | 636 | | |
| | | in.lb | 4142 | 7010 | 7010 | 7010 | 5629 | 5629 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 202 | 335 | 333 | 319 | 312 | 327 | | |
| | | in.lb | 1786 | 2962 | 2944 | 2820 | 2763 | 2894 | | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 1250 | 1350 | 1350 | 1350 | 1250 | 1250 | | |
| | | in.lb | 11064 | 11949 | 11949 | 11949 | 11064 | 11064 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 2100 | 2100 | 2100 | 2600 | 2600 | 2600 | | |
| Max. input speed | n_{1Max} | rpm | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 6.7 | 5.4 | 4.4 | 3.0 | 2.5 | 2.2 | | |
| | | in.lb | 60 | 47 | 39 | 27 | 23 | 19 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 3 / Reduced ≤ 1 | | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | Nm/arcmin | 53 | | | | | | | |
| | | in.lb/arcmin | 469 | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 9870 | | | | | | | |
| | | lb _f | 2221 | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 9900 | | | | | | | |
| | | lb _f | 2228 | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 952 | | | | | | | |
| | | in.lb | 8426 | | | | | | | |
| Efficiency at full load | η | % | 97 | | | | | | | |
| Service life ¹⁾ | L_h | h | > 20000 | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 17.2 | | | | | | | |
| | | lb _m | 38 | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{pA} | dB(A) | ≤ 59 | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | |
| | | F | 194 | | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | | |
| | | F | 5 to 104 | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | |
| Protection class | | | IP 65 | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC2-00800AA040.000-X | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 040.000 - 075.000 | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | G | 24 | J_i | kgcm ² | 10.7 | 7.82 | 6.79 | 5.84 | 5.28 | 5.28 |
| | | | | 10 ⁻³ in.lb.s ² | 9.47 | 6.92 | 6.01 | 5.17 | 4.67 | 4.67 |
| | I | 32 | J_i | kgcm ² | 13.8 | 11.0 | 9.95 | 9.00 | 8.44 | 8.44 |
| | | | | 10 ⁻³ in.lb.s ² | 12.2 | 9.74 | 8.81 | 7.97 | 7.47 | 7.47 |
| | K | 38 | J_i | kgcm ² | 14.9 | 12.1 | 11.0 | 10.1 | 9.51 | 9.51 |
| | | | | 10 ⁻³ in.lb.s ² | 13.2 | 10.7 | 9.74 | 8.94 | 8.42 | 8.42 |
| | M | 48 | J_i | kgcm ² | 29.5 | 26.7 | 25.6 | 24.7 | 24.2 | 24.2 |
| | | | | 10 ⁻³ in.lb.s ² | 26.1 | 23.6 | 22.7 | 21.9 | 21.4 | 21.4 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

^{a)} At max. 10 % F_{2QMax}

^{b)} Valid for standard clamping hub diameter

^{c)} Refers to center of the output shaft or flange

^{d)} Please reduce input speed at higher ambient temperatures

^{e)} Smooth shaft

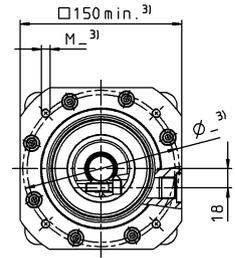
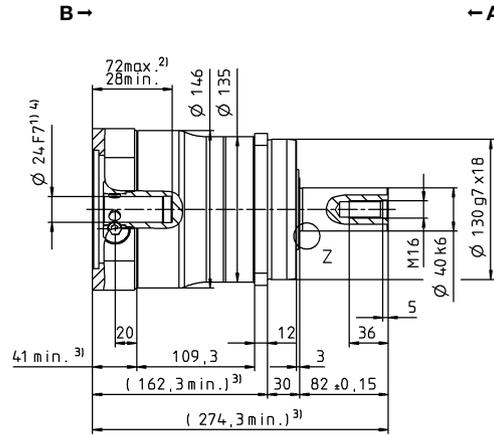
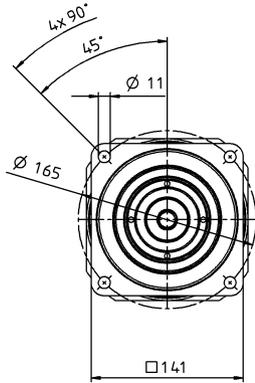
¹⁾ Please contact us to discuss application-specific service lifetimes

View A

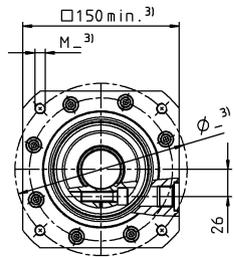
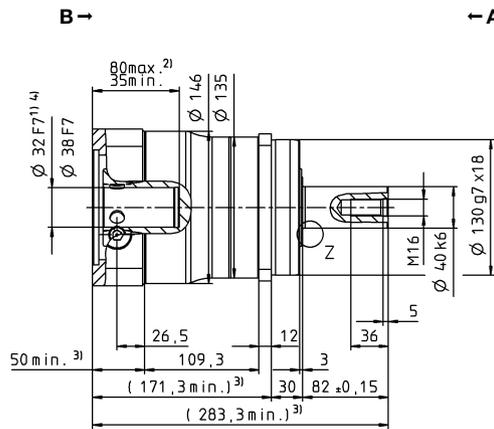
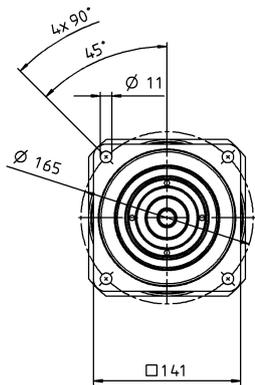
View B

1-stage

up to 24⁴⁾ (G) clamping hub diameter

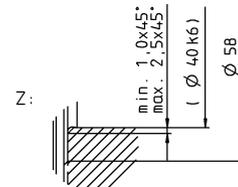
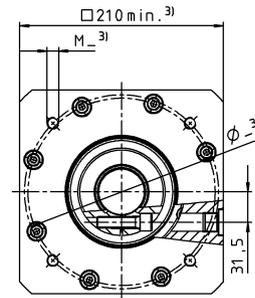
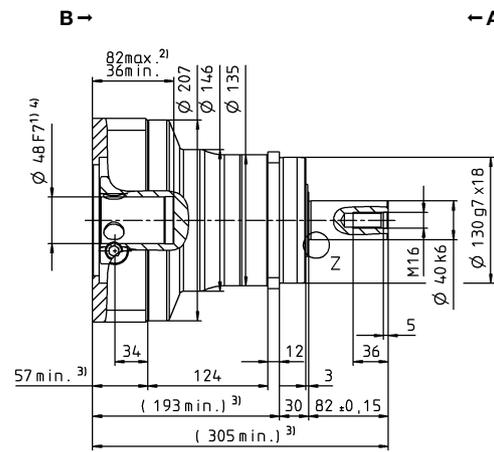
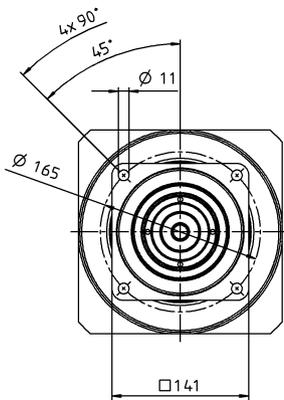


up to 32/38⁴⁾ (I/K⁵⁾) clamping hub diameter



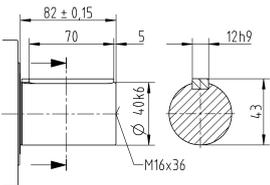
Motor shaft diameter [mm]

up to 48⁴⁾ (M) clamping hub diameter

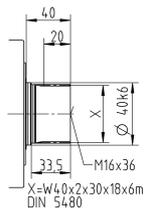


Other output variants

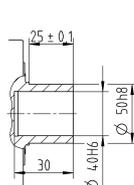
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

SP+ 140 MF 2-stage

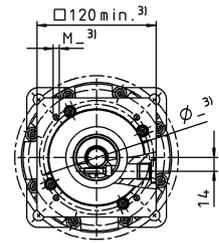
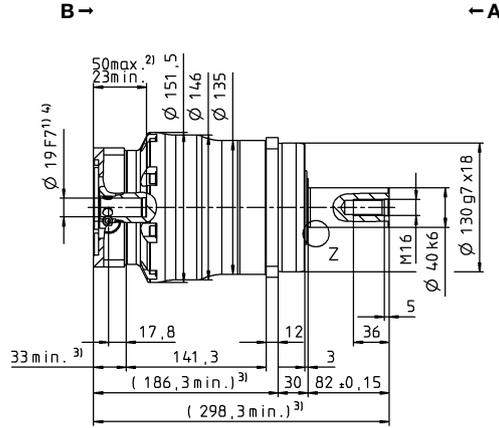
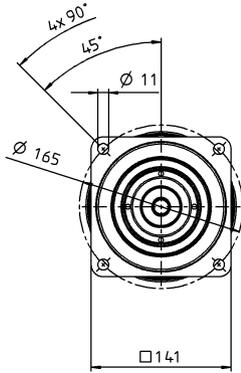
| | | | 2-stage | | | | | | | | | | | | |
|--|-------------|-----------------|---------------------------------------|---------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|
| Ratio | <i>i</i> | | 16 | 20 | 25 | 28 | 32 | 35 | 40 | 50 | 64 | 70 | 100 | | |
| Max. torque ^{a) b) e)} | T_{2a} | Nm | 726 | 726 | 670 | 726 | 726 | 670 | 726 | 670 | 583 | 726 | 583 | | |
| | | in.lb | 6426 | 6426 | 5934 | 6426 | 6426 | 5934 | 6426 | 5934 | 5160 | 6426 | 5160 | | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | Nm | 726 | 726 | 670 | 726 | 726 | 670 | 726 | 670 | 583 | 726 | 583 | | |
| | | in.lb | 6426 | 6426 | 5934 | 6426 | 6426 | 5934 | 6426 | 5930 | 5164 | 6426 | 5160 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 461 | 493 | 489 | 545 | 464 | 536 | 581 | 536 | 466 | 581 | 466 | | |
| | | in.lb | 4078 | 4361 | 4332 | 4824 | 4104 | 4747 | 5141 | 4747 | 4128 | 5141 | 4128 | | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 1350 | 1350 | 1350 | 1350 | 1350 | 1350 | 1350 | 1350 | 1350 | 1350 | 1250 | | |
| | | in.lb | 11949 | 11949 | 11949 | 11949 | 11949 | 11949 | 11949 | 11949 | 11949 | 11949 | 11064 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 2900 | 2900 | 2900 | 2900 | 2900 | 2900 | 2900 | 3200 | 3200 | 3200 | 3900 | | |
| Max. input speed | n_{1Max} | rpm | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 2.4 | 2.1 | 2.0 | 1.8 | 1.6 | 1.2 | 1.2 | 1.1 | 1.1 | 0.88 | 0.80 | | |
| | | in.lb | 21 | 19 | 17 | 16 | 14 | 11 | 11 | 9.4 | 9.4 | 7.8 | 7.1 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 5 / Reduced ≤ 3 | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | Nm/arcmin | 53 | | | | | | | | | | | | |
| | | in.lb/arcmin | 469 | | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 9870 | | | | | | | | | | | | |
| | | lb _f | 2221 | | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 9900 | | | | | | | | | | | | |
| | | lb _f | 2228 | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 952 | | | | | | | | | | | | |
| | | in.lb | 8426 | | | | | | | | | | | | |
| Efficiency at full load | η | % | 94 | | | | | | | | | | | | |
| Service life ¹⁾ | L_h | h | > 20000 | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 17 | | | | | | | | | | | | |
| | | lb _m | 37.6 | | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{pA} | dB(A) | ≤ 59 | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | | | | | | | |
| | | F | 5 to 104 | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC2-00800AA040.000-X | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 040.000 - 075.000 | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | E | 19 | J_i | kgcm ² | 2.50 | 2.01 | 1.97 | 1.65 | 1.65 | 1.63 | 1.40 | 1.39 | 1.39 | 1.38 | 1.38 |
| | | | | 10 ⁻³ in.lb.s ² | 2.21 | 1.78 | 1.74 | 1.46 | 1.46 | 1.44 | 1.24 | 1.23 | 1.23 | 1.22 | 1.22 |
| | G | 24 | J_i | kgcm ² | 3.19 | 2.71 | 2.67 | 2.34 | 2.34 | 2.32 | 2.10 | 2.08 | 2.08 | 2.08 | 2.07 |
| | | | | 10 ⁻³ in.lb.s ² | 2.82 | 2.40 | 2.36 | 2.07 | 2.07 | 2.05 | 1.86 | 1.84 | 1.84 | 1.84 | 1.83 |
| K | 38 | J_i | kgcm ² | 10.3 | 9.77 | 9.73 | 9.41 | 9.41 | 9.39 | 9.16 | 9.15 | 9.15 | 9.14 | 9.14 | |
| | | | 10 ⁻³ in.lb.s ² | 9.07 | 8.65 | 8.61 | 8.33 | 8.33 | 8.31 | 8.11 | 8.10 | 8.10 | 8.09 | 8.09 | |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

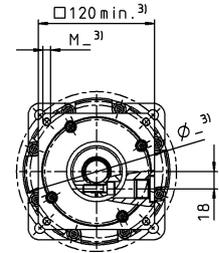
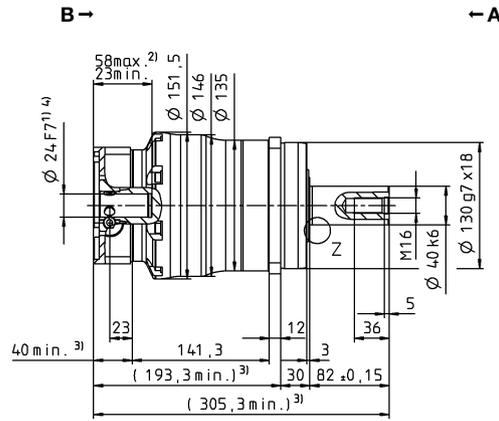
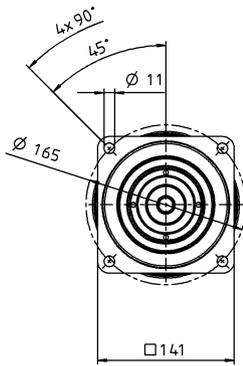
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

2-stage

up to 19⁴⁾ (E)
clamping hub diameter

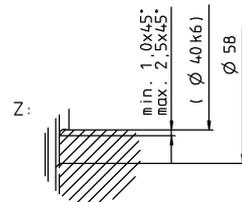
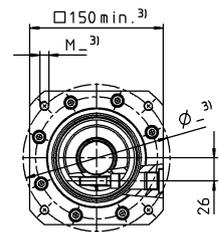
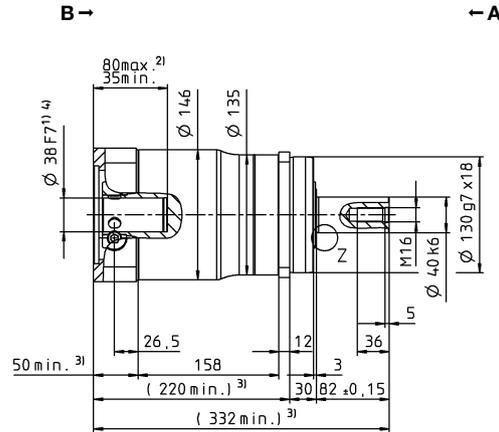
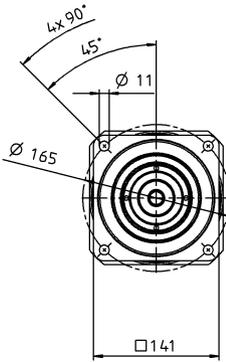


up to 24⁴⁾ (G)⁵⁾
clamping hub diameter



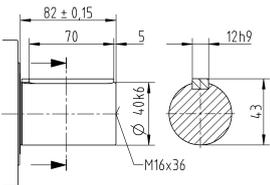
Motor shaft diameter [mm]

up to 38⁴⁾ (K)
clamping hub diameter

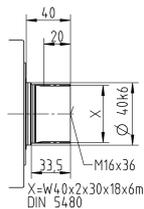


Other output variants

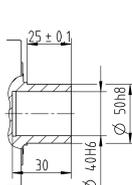
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

SP+ 180 MF 1-stage

| | | | 1-stage | | | | | | | |
|--|-------------|-----------------|--------------------------------------|---------------------------------------|-------|-------|-------|-------|------|------|
| Ratio | <i>i</i> | | 3 | 4 | 5 | 7 | 8 | 10 | | |
| Max. torque ^{a) b) e)} | T_{2a} | Nm | 1552 | 1936 | 1936 | 1936 | 1552 | 1552 | | |
| | | in.lb | 13736 | 17135 | 17135 | 17135 | 13736 | 13736 | | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | Nm | 1164 | 1452 | 1452 | 1452 | 1164 | 1164 | | |
| | | in.lb | 10302 | 12851 | 12851 | 12851 | 10302 | 10302 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 513 | 927 | 919 | 825 | 825 | 864 | | |
| | | in.lb | 4544 | 8203 | 8134 | 7305 | 7305 | 7644 | | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 2750 | 2750 | 2750 | 2750 | 2750 | 2750 | | |
| | | in.lb | 24340 | 24340 | 24340 | 24340 | 24340 | 24340 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 1500 | 1500 | 1500 | 2300 | 2300 | 2300 | | |
| Max. input speed | n_{1Max} | rpm | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 15 | 12 | 8.0 | 5.6 | 5.6 | 3.8 | | |
| | | in.lb | 135 | 103 | 71 | 50 | 50 | 34 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 3 / Reduced ≤ 1 | | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | Nm/arcmin | 175 | | | | | | | |
| | | in.lb/arcmin | 1549 | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 15570 | | | | | | | |
| | | lb _f | 3503 | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 15400 | | | | | | | |
| | | lb _f | 3465 | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 1600 | | | | | | | |
| | | in.lb | 14161 | | | | | | | |
| Efficiency at full load | η | % | 97 | | | | | | | |
| Service life ¹⁾ | L_h | h | > 20000 | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 34 | | | | | | | |
| | | lb _m | 75.1 | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{pA} | dB(A) | ≤ 62 | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | |
| | | F | 194 | | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | | |
| | | F | 5 to 104 | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | |
| Protection class | | | IP 65 | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC2-01500AA055.000-X | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 050.000 - 080.000 | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | K | 38 | J_1 | kgcm ² | 50.8 | 33.9 | 27.9 | 22.2 | 22.2 | 19.2 |
| | | | | 10 ⁻³ in.lb.s ² | 45.0 | 30.0 | 24.7 | 19.7 | 19.7 | 17.0 |
| | M | 48 | J_1 | kgcm ² | 58.2 | 41.2 | 35.3 | 29.6 | 29.6 | 26.5 |
| | | | | 10 ⁻³ in.lb.s ² | 51.5 | 36.5 | 31.2 | 26.2 | 26.2 | 23.5 |
| | N | 55 | J_1 | kgcm ² | 65.7 | 49.7 | 44.0 | 38.5 | 38.5 | 35.4 |
| | | | | 10 ⁻³ in.lb.s ² | 58.1 | 44.0 | 38.9 | 34.1 | 34.1 | 31.3 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

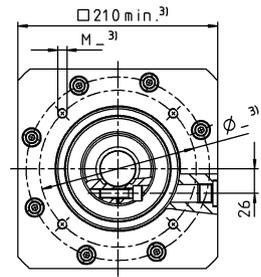
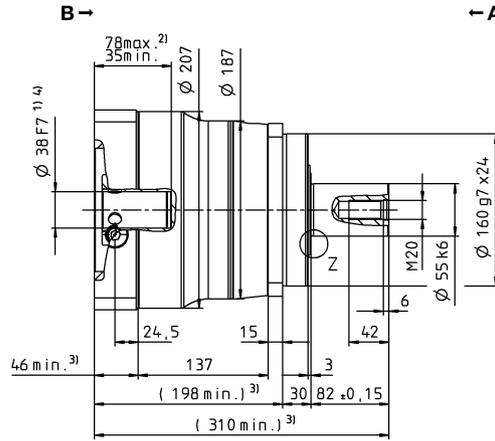
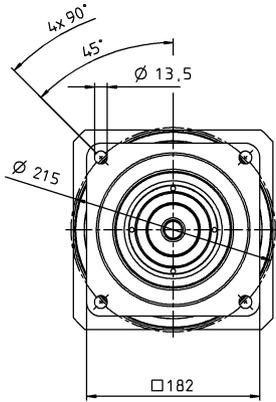
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

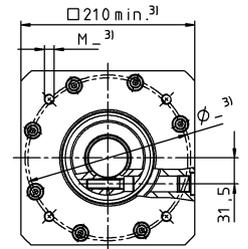
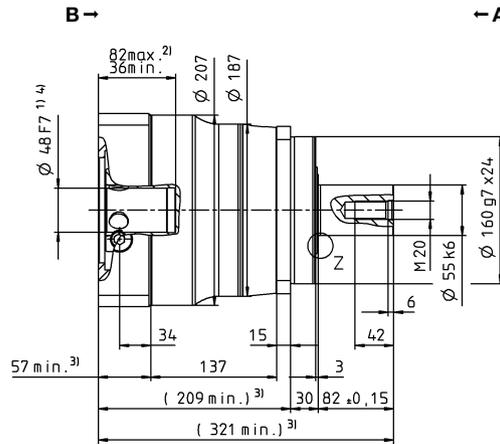
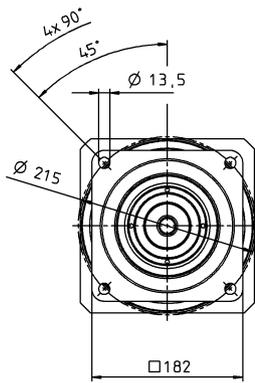
View B

1-stage

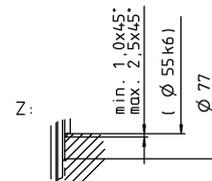
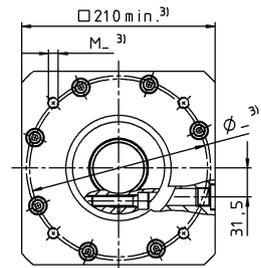
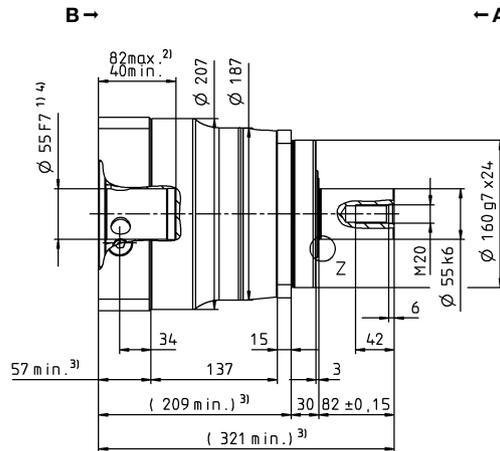
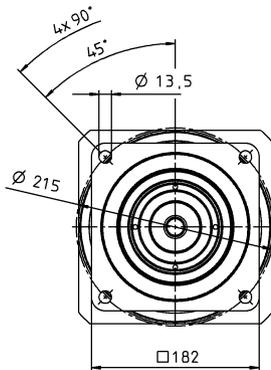
up to 38⁴⁾ (K)
clamping hub diameter



up to 48⁴⁾ (M)⁵⁾
clamping hub diameter

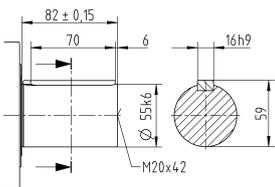


up to 55⁴⁾ (N)⁵⁾
clamping hub diameter

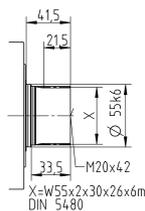


Other output variants

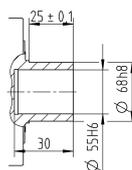
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

SP+ 180 MF 2-stage

| | | | 2-stage | | | | | | | | | | | | |
|--|-------------|-----------------|--------------------------------------|---------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|
| Ratio | <i>i</i> | | 16 | 20 | 25 | 28 | 32 | 35 | 40 | 50 | 64 | 70 | 100 | | |
| Max. torque ^{a) b) e)} | T_{2a} | Nm | 1485 | 1485 | 1857 | 1485 | 1485 | 1857 | 1485 | 1857 | 1238 | 1356 | 1238 | | |
| | | in.lb | 13146 | 13146 | 16432 | 13146 | 13146 | 16432 | 13146 | 16432 | 10955 | 12000 | 10955 | | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | Nm | 1452 | 1452 | 1452 | 1452 | 1452 | 1452 | 1452 | 1452 | 1164 | 1356 | 1164 | | |
| | | in.lb | 12851 | 12851 | 12851 | 12851 | 12851 | 12851 | 12851 | 12851 | 10302 | 12002 | 10302 | | |
| Nominal torque (at n_{1N}) | T_{2N} | Nm | 1162 | 1162 | 1162 | 1162 | 1162 | 1162 | 1162 | 1162 | 931 | 1085 | 931 | | |
| | | in.lb | 10281 | 10281 | 10281 | 10281 | 10281 | 10281 | 10281 | 10281 | 8242 | 9600 | 8242 | | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 2750 | 2750 | 2750 | 2750 | 2750 | 2750 | 2750 | 2750 | 2750 | 2750 | 2750 | | |
| | | in.lb | 24340 | 24340 | 24340 | 24340 | 24340 | 24340 | 24340 | 24340 | 24340 | 24340 | 24340 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 2700 | 2700 | 2700 | 2700 | 2700 | 2700 | 2700 | 2900 | 2900 | 3200 | 3400 | | |
| Max. input speed | n_{1Max} | rpm | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 4.7 | 3.9 | 3.6 | 3.3 | 3.3 | 2.8 | 2.2 | 1.9 | 2.2 | 1.8 | 1.8 | | |
| | | in.lb | 42 | 35 | 32 | 29 | 29 | 25 | 20 | 17 | 20 | 16 | 16 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 5 / Reduced ≤ 3 | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | Nm/arcmin | 175 | | | | | | | | | | | | |
| | | in.lb/arcmin | 1549 | | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 15570 | | | | | | | | | | | | |
| | | lb _f | 3503 | | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 15400 | | | | | | | | | | | | |
| | | lb _f | 3465 | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 1600 | | | | | | | | | | | | |
| | | in.lb | 14161 | | | | | | | | | | | | |
| Efficiency at full load | η | % | 94 | | | | | | | | | | | | |
| Service life ¹⁾ | L_h | h | > 20000 | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 36.4 | | | | | | | | | | | | |
| | | lb _m | 80.4 | | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{pA} | dB(A) | ≤ 58 | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | | | | | | | |
| | | F | 5 to 104 | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC2-01500AA055.000-X | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 050.000 - 080.000 | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | G | 24 | J_1 | kgcm ² | 9.27 | 7.72 | 7.48 | 6.32 | 6.32 | 6.20 | 5.51 | 5.45 | 5.39 | 5.36 | |
| | | | | 10 ⁻³ in.lb.s ² | 8.20 | 6.83 | 6.62 | 5.59 | 5.59 | 5.49 | 4.88 | 4.82 | 4.82 | 4.77 | 4.74 |
| | I | 32 | J_1 | kgcm ² | 12.4 | 10.9 | 10.6 | 9.48 | 9.48 | 9.36 | 8.67 | 9.68 | 8.55 | 8.55 | 8.52 |
| | | | | 10 ⁻³ in.lb.s ² | 11.0 | 9.63 | 9.42 | 8.39 | 8.39 | 8.28 | 7.67 | 8.57 | 7.57 | 7.57 | 7.54 |
| | K | 38 | J_1 | kgcm ² | 13.5 | 12.0 | 11.7 | 10.6 | 10.6 | 10.4 | 9.74 | 9.68 | 9.63 | 9.60 | |
| | | | | 10 ⁻³ in.lb.s ² | 12.0 | 10.6 | 10.4 | 9.34 | 9.34 | 9.23 | 8.62 | 8.57 | 8.57 | 8.52 | 8.50 |
| | M | 48 | J_1 | kgcm ² | 28.1 | 26.6 | 26.3 | 25.2 | 25.2 | 25.1 | 24.4 | 24.3 | 24.3 | 24.3 | |
| | | | | 10 ⁻³ in.lb.s ² | 24.9 | 23.5 | 23.3 | 22.3 | 22.3 | 22.2 | 21.6 | 21.5 | 21.5 | 21.5 | 21.5 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

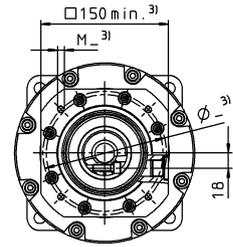
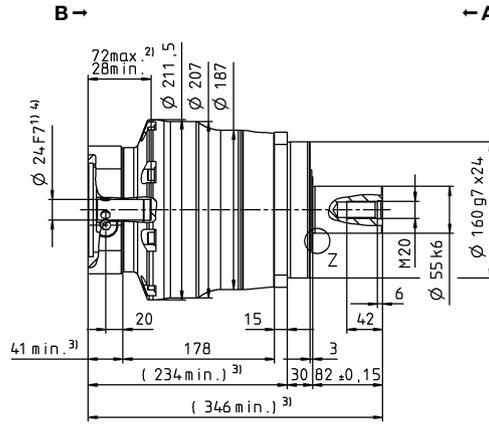
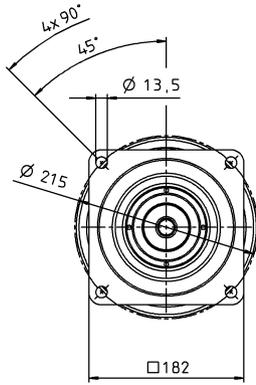
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

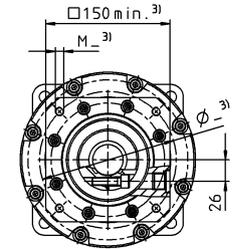
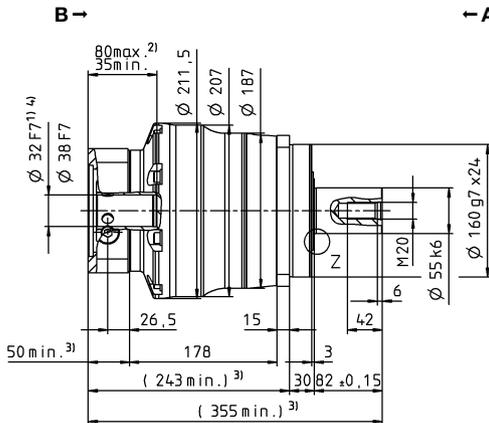
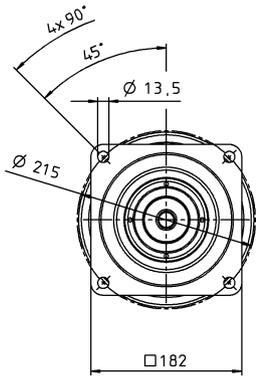
View B

2-stage

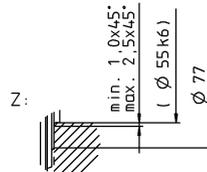
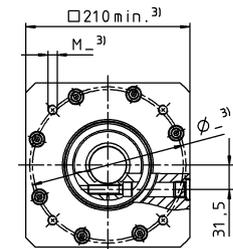
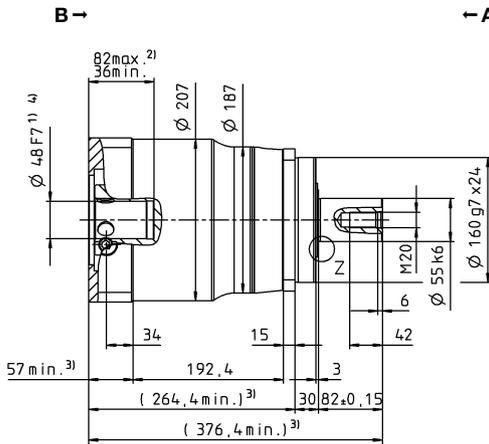
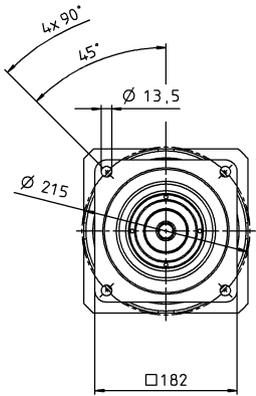
up to 24⁴⁾ (G) clamping hub diameter



up to 32/38⁴⁾ (I/K⁵⁾ clamping hub diameter

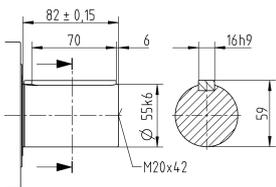


up to 48⁴⁾ (M) clamping hub diameter

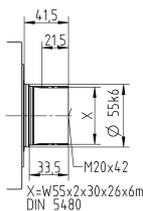


Other output variants

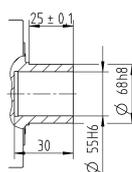
Shaft with key



Spined shaft (DIN 5480)



Shaft mounted



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

SP+ 210 MF 1-stage

| | | | 1-stage | | | | | | |
|--|-------------|-----------------|--------------------------------------|---------------------------------------|-------|-------|-------|------|------|
| Ratio | i | | 4 | 5 | 7 | 8 | 10 | | |
| Max. torque ^{a) b) e)} | T_{2a} | Nm | 4000 | 4000 | 3840 | 2800 | 2800 | | |
| | | in.lb | 35403 | 35403 | 33987 | 24782 | 24782 | | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | Nm | 3000 | 3000 | 2880 | 2280 | 2280 | | |
| | | in.lb | 26552 | 26552 | 25490 | 20180 | 20180 | | |
| Nominal torque (at n_{1N}) | T_{2N} | Nm | 1895 | 1767 | 1731 | 1631 | 1708 | | |
| | | in.lb | 16772 | 15641 | 15323 | 14432 | 15122 | | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 5900 | 5900 | 5900 | 5900 | 5900 | | |
| | | in.lb | 52220 | 52220 | 52220 | 52220 | 52220 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 1200 | 1500 | 1700 | 2000 | 2000 | | |
| Max. input speed | n_{1Max} | rpm | 3000 | 3000 | 3000 | 3000 | 3000 | | |
| Mean no load running torque ^{b)} (at $n_1 = 2000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 19 | 15 | 8.8 | 8.8 | 6.4 | | |
| | | in.lb | 164 | 129 | 78 | 78 | 57 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 3 / Reduced ≤ 1 | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | Nm/arcmin | 400 | | | | | | |
| | | in.lb/arcmin | 3540 | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 30000 | | | | | | |
| | | lb _f | 6750 | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 21000 | | | | | | |
| | | lb _f | 4725 | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 3100 | | | | | | |
| | | in.lb | 27437 | | | | | | |
| Efficiency at full load | η | % | 97 | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 56 | | | | | | |
| | | lb _m | 123.8 | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{pA} | dB(A) | ≤ 64 | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | |
| | | F | 194 | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | |
| | | F | 5 to 104 | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | |
| Protection class | | | IP 65 | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC2-04000AA075.000-X | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 050.000 - 090.000 | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | N | 55 | J_1 | kgcm ² | 94.3 | 76.9 | 61.5 | 61.5 | 53.1 |
| | | | | 10 ⁻³ in.lb.s ² | 83.5 | 68.1 | 54.4 | 54.4 | 47.0 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

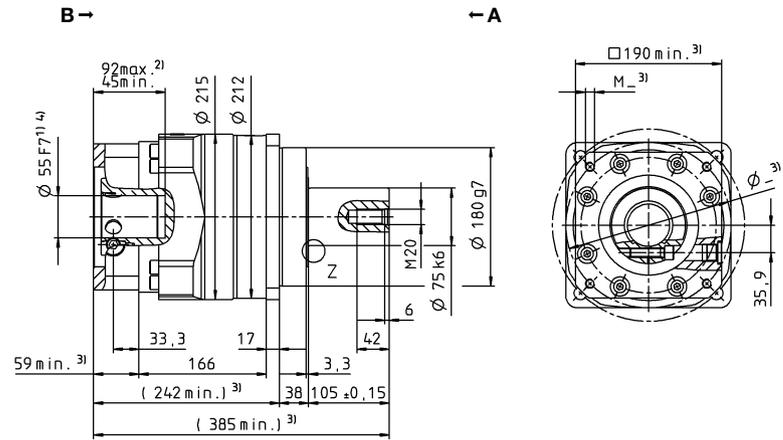
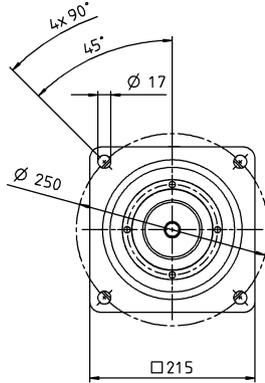
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

View B

Motor shaft diameter [mm]

1-stage

up to 55⁴⁾ (N)⁵⁾
clamping hub diameter

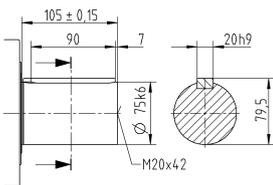
Planetary gearboxes

SP+

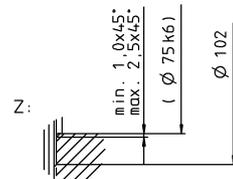
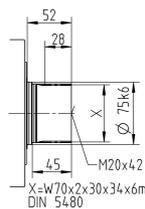
MF

Other output variants

Shaft with key



Splined shaft (DIN 5480)



Non-tolerated dimensions are nominal dimensions

1) Check motor shaft fit

2) Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

3) The dimensions depend on the motor

4) Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

5) Standard clamping hub diameter

SP+ 210 MF 2-stage

| | | | | 2-stage | | | | | | | | | | | |
|--|-------------|-----------------------|-------|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| Ratio | <i>i</i> | | | 16 | 20 | 25 | 28 | 32 | 35 | 40 | 50 | 64 | 70 | 100 | |
| Max. torque ^{a) b) e)} | T_{2a} | <i>Nm</i> | | 3159 | 3159 | 3949 | 3159 | 3159 | 3840 | 2880 | 3600 | 2043 | 2457 | 2043 | |
| | | <i>in.lb</i> | | 27958 | 27958 | 34947 | 27958 | 27958 | 33987 | 25490 | 31863 | 18081 | 21745 | 18081 | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | <i>Nm</i> | | 2880 | 3000 | 3000 | 2880 | 2880 | 2880 | 2840 | 2880 | 2043 | 2457 | 2043 | |
| | | <i>in.lb</i> | | 25490 | 26552 | 26552 | 25490 | 25490 | 25490 | 25136 | 25490 | 18081 | 21745 | 18081 | |
| Nominal torque (at n_{1N}) | T_{2N} | <i>Nm</i> | | 1274 | 1266 | 1567 | 1294 | 2200 | 1599 | 1358 | 1679 | 1634 | 1965 | 1634 | |
| | | <i>in.lb</i> | | 11277 | 11205 | 13873 | 11452 | 19474 | 14150 | 12019 | 14861 | 14465 | 17396 | 14465 | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | <i>Nm</i> | | 5900 | 5900 | 5900 | 5900 | 5900 | 5900 | 5900 | 5900 | 5900 | 5900 | 5900 | |
| | | <i>in.lb</i> | | 52220 | 52220 | 52220 | 52220 | 52220 | 52220 | 52220 | 52220 | 52220 | 52220 | 52220 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | <i>rpm</i> | | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 | 3000 | 3000 | |
| Max. input speed | n_{1Max} | <i>rpm</i> | | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | |
| Mean no load running torque ^{b)} (at $n_1 = 2000$ rpm and 20 °C gearbox temperature) | T_{012} | <i>Nm</i> | | 5.6 | 5.2 | 4.8 | 4.5 | 4.5 | 3.6 | 3.4 | 3.0 | 3.0 | 2.6 | 2.4 | |
| | | <i>in.lb</i> | | 50 | 46 | 43 | 39 | 39 | 32 | 30 | 27 | 27 | 23 | 21 | |
| Max. backlash | j_t | <i>arcmin</i> | | Standard ≤ 5 / Reduced ≤ 3 | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | <i>Nm/arcmin</i> | | 400 | | | | | | | | | | | |
| | | <i>in.lb/arcmin</i> | | 3540 | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | <i>N</i> | | 30000 | | | | | | | | | | | |
| | | <i>lb_f</i> | | 6750 | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | <i>N</i> | | 21000 | | | | | | | | | | | |
| | | <i>lb_f</i> | | 4725 | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | <i>Nm</i> | | 3100 | | | | | | | | | | | |
| | | <i>in.lb</i> | | 27437 | | | | | | | | | | | |
| Efficiency at full load | η | % | | 94 | | | | | | | | | | | |
| Service life ¹⁾ | L_h | <i>h</i> | | > 20000 | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | <i>m</i> | <i>kg</i> | | 53 | | | | | | | | | | | |
| | | <i>lb_m</i> | | 117 | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{pA} | <i>dB(A)</i> | | ≤ 57 | | | | | | | | | | | |
| Max. permitted housing temperature | <i>F</i> | °C | | +90 | | | | | | | | | | | |
| | | <i>F</i> | | 194 | | | | | | | | | | | |
| Ambient temperature | <i>F</i> | °C | | -15 to +40 | | | | | | | | | | | |
| | | <i>F</i> | | 5 to 104 | | | | | | | | | | | |
| Lubrication | | | | Lubricated for life | | | | | | | | | | | |
| Direction of rotation | | | | In- and output same direction | | | | | | | | | | | |
| Protection class | | | | IP 65 | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | | BC2-04000AA075.000-X | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | <i>mm</i> | | X = 050.000 - 090.000 | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | M | 48 | J_1 | <i>kgcm²</i> | 34.5 | 31.5 | 30.8 | 30.0 | 30.0 | 29.7 | 28.5 | 28.3 | 28.3 | 28.1 | 28.0 |
| | | | | <i>10⁻³ in.lb.s²</i> | 30.5 | 27.9 | 27.3 | 26.6 | 26.6 | 26.3 | 25.2 | 25.0 | 25.0 | 24.9 | 24.8 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

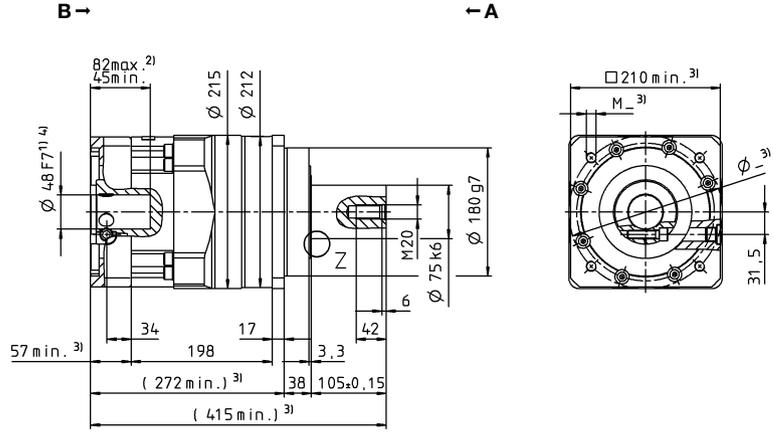
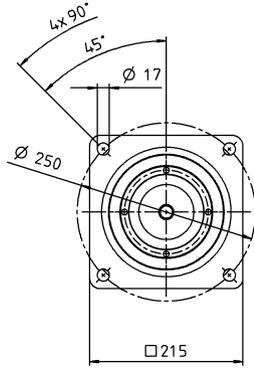
View A

View B

Motor shaft diameter [mm]

2-stage

up to 48⁴⁾ (M)⁵⁾
clamping hub diameter



Planetary gearboxes

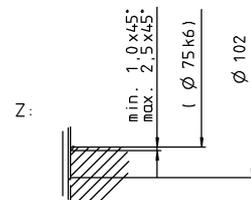
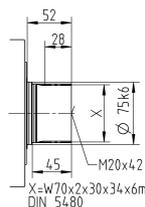
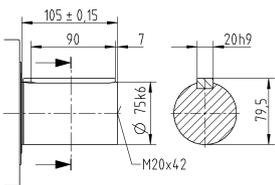
SP+

MF

Other output variants

Shaft with key

Splined shaft (DIN 5480)



Non-tolerated dimensions are nominal dimensions

- ¹⁾ Check motor shaft fit
- ²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
- ³⁾ The dimensions depend on the motor
- ⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm
- ⁵⁾ Standard clamping hub diameter

SP+ 240 MF 1-stage

| | | | 1-stage | | | | | |
|--|-------------|-----------------|---------------------------------------|-------|-------|-------|-------|-----|
| Ratio | i | | 4 | 5 | 7 | 8 | 10 | |
| Max. torque ^{a) b) e)} | T_{2a} | Nm | 5700 | 5700 | 5700 | 4000 | 4000 | |
| | | in.lb | 50450 | 50450 | 50450 | 35403 | 35403 | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | Nm | 5400 | 5400 | 5160 | 4000 | 4000 | |
| | | in.lb | 47794 | 47794 | 45670 | 35403 | 35403 | |
| Nominal torque (at n_{1N}) | T_{2N} | Nm | 3038 | 2872 | 2737 | 2611 | 2735 | |
| | | in.lb | 26885 | 25418 | 24223 | 23111 | 24208 | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 8500 | 8500 | 8500 | 6850 | 6850 | |
| | | in.lb | 75232 | 75232 | 75232 | 60628 | 60628 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 1000 | 1200 | 1500 | 1700 | 1700 | |
| Max. input speed | n_{1Max} | rpm | 3000 | 3000 | 3000 | 3000 | 3000 | |
| Mean no load running torque ^{b)} (at $n_1 = 2000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 24 | 19 | 12 | 12 | 10 | |
| | | in.lb | 212 | 164 | 106 | 106 | 89 | |
| Max. backlash | j_t | arcmin | Standard ≤ 3 / Reduced ≤ 1 | | | | | |
| Torsional rigidity ^{b)} | C_{121} | Nm/arcmin | 550 | | | | | |
| | | in.lb/arcmin | 4868 | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 33000 | | | | | |
| | | lb _f | 7425 | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 30000 | | | | | |
| | | lb _f | 6750 | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 5000 | | | | | |
| | | in.lb | 44254 | | | | | |
| Efficiency at full load | η | % | 97 | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 77 | | | | | |
| | | lb _m | 170.2 | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | 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 | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | |
| Protection class | | | IP 65 | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC2-06000AA085.000-X | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 060.000 - 140.000 | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | O 60 | J_1 | kgcm ² | 198 | 163 | 138 | 138 | 125 |
| | | | 10 ⁻³ in.lb.s ² | 175 | 144 | 122 | 122 | 110 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

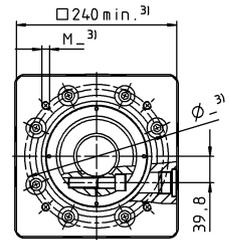
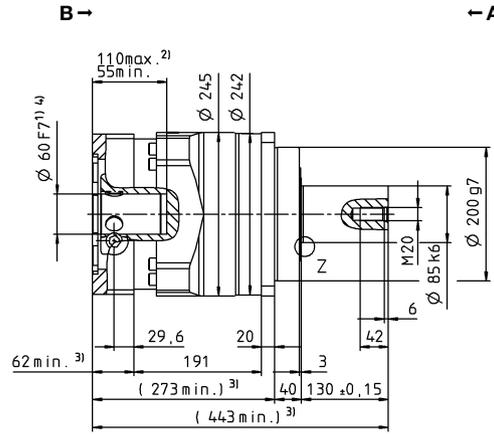
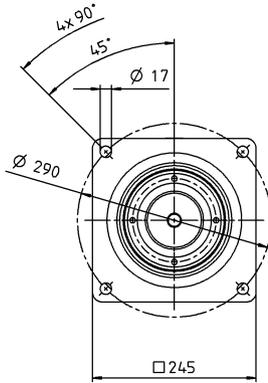
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

View B

Motor shaft diameter [mm]

1-stage

up to 60⁴⁾ (O)⁵⁾
clamping hub diameter

Planetary gearboxes

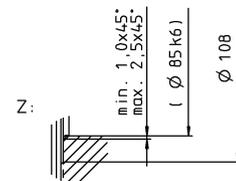
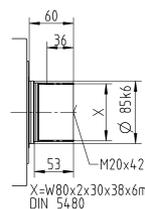
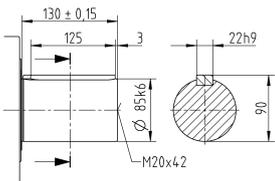
SP+

MF

Other output variants

Shaft with key

Splined shaft (DIN 5480)



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.³⁾ The dimensions depend on the motor⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm⁵⁾ Standard clamping hub diameter

SP+ 240 MF 2-stage

| | | | | 2-stage | | | | | | | | | | | |
|--|-------------|-----------------------|-------|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| Ratio | <i>i</i> | | | 16 | 20 | 25 | 28 | 32 | 35 | 40 | 50 | 64 | 70 | 100 | |
| Max. torque ^{a) b) e)} | T_{2a} | <i>Nm</i> | | 5446 | 5446 | 5700 | 5446 | 5446 | 5700 | 5446 | 5700 | 3642 | 5700 | 3642 | |
| | | <i>in.lb</i> | | 48202 | 48202 | 50450 | 48202 | 48202 | 50450 | 48202 | 50450 | 32236 | 50450 | 32236 | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | <i>Nm</i> | | 5400 | 5400 | 5400 | 5400 | 5400 | 5400 | 4400 | 5160 | 3642 | 4730 | 3642 | |
| | | <i>in.lb</i> | | 47794 | 47794 | 47794 | 47794 | 47794 | 47794 | 38944 | 45670 | 32236 | 41864 | 32236 | |
| Nominal torque (at n_{1N}) | T_{2N} | <i>Nm</i> | | 2658 | 2596 | 3198 | 2667 | 3754 | 3283 | 2803 | 3457 | 2914 | 3784 | 2914 | |
| | | <i>in.lb</i> | | 23524 | 22976 | 28308 | 23607 | 33222 | 29060 | 24811 | 30600 | 25789 | 33491 | 25789 | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | <i>Nm</i> | | 8500 | 8500 | 8500 | 8500 | 8500 | 8500 | 8500 | 8500 | 6850 | 8500 | 6850 | |
| | | <i>in.lb</i> | | 75232 | 75232 | 75232 | 75232 | 75232 | 75232 | 75232 | 75232 | 60628 | 75232 | 60628 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | <i>rpm</i> | | 2300 | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 | 2800 | 2800 | |
| Max. input speed | n_{1Max} | <i>rpm</i> | | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | |
| Mean no load running torque ^{b)} (at $n_1 = 2000$ rpm and 20 °C gearbox temperature) | T_{012} | <i>Nm</i> | | 8.4 | 7.1 | 6.5 | 5.9 | 5.9 | 4.5 | 4.1 | 3.5 | 3.5 | 3.0 | 3.0 | |
| | | <i>in.lb</i> | | 74 | 63 | 58 | 52 | 52 | 40 | 36 | 31 | 31 | 26 | 26 | |
| Max. backlash | j_t | <i>arcmin</i> | | Standard ≤ 5 / Reduced ≤ 3 | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | <i>Nm/arcmin</i> | | 550 | | | | | | | | | | | |
| | | <i>in.lb/arcmin</i> | | 4868 | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | <i>N</i> | | 33000 | | | | | | | | | | | |
| | | <i>lb_f</i> | | 7425 | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | <i>N</i> | | 30000 | | | | | | | | | | | |
| | | <i>lb_f</i> | | 6750 | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | <i>Nm</i> | | 5000 | | | | | | | | | | | |
| | | <i>in.lb</i> | | 44254 | | | | | | | | | | | |
| Efficiency at full load | η | % | | 94 | | | | | | | | | | | |
| Service life ¹⁾ | L_h | <i>h</i> | | > 20000 | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | <i>kg</i> | | 76 | | | | | | | | | | | |
| | | <i>lb_m</i> | | 168 | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{pA} | <i>dB(A)</i> | | ≤ 58 | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | | +90 | | | | | | | | | | | |
| | | <i>F</i> | | 194 | | | | | | | | | | | |
| Ambient temperature | | °C | | -15 to +40 | | | | | | | | | | | |
| | | <i>F</i> | | 5 to 104 | | | | | | | | | | | |
| Lubrication | | | | Lubricated for life | | | | | | | | | | | |
| Direction of rotation | | | | In- and output same direction | | | | | | | | | | | |
| Protection class | | | | IP 65 | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | | BC2-06000AA085.000-X | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | <i>mm</i> | | X = 060.000 - 140.000 | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | M | 48 | J_1 | <i>kgcm²</i> | 39.2 | 34.6 | 33.2 | 30.5 | 30.5 | 29.7 | 28.2 | 27.9 | 27.6 | 27.6 | 27.5 |
| | | | | <i>10⁻³ in.lb.s²</i> | 34.7 | 30.6 | 29.4 | 27.0 | 27.0 | 26.3 | 25.0 | 24.7 | 24.4 | 24.4 | 24.3 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

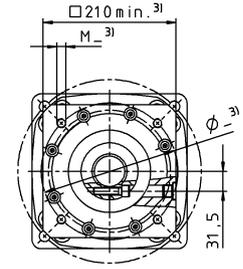
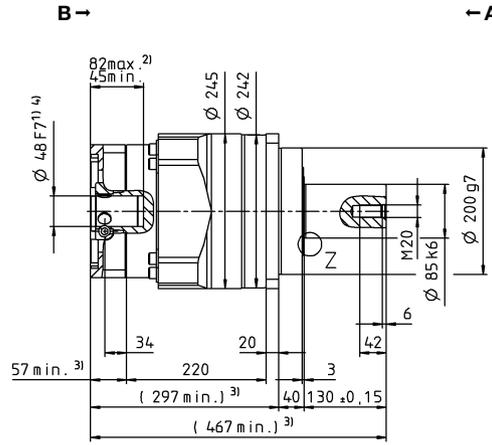
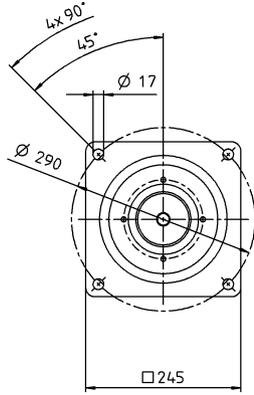
View A

View B

Motor shaft diameter [mm]

2-stage

up to 48⁴⁾ (M)⁵⁾
clamping hub diameter



Planetary gearboxes

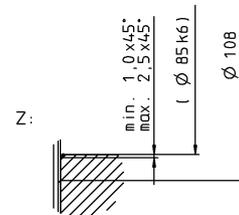
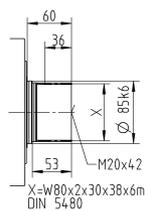
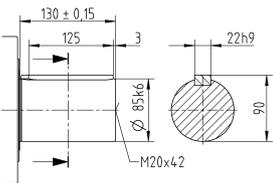
SP+

MF

Other output variants

Shaft with key

Splined shaft (DIN 5480)



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

SP+ 075 MC 1-stage

| | | | 1-stage | | | | | | | |
|---|-------------|-----------------|--------------------------------------|---------------------------------------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 3 | 4 | 5 | 7 | 8 | 10 | | |
| Max. torque ^{a) b) e)} | T_{2a} | Nm | 68 | 90 | 90 | 90 | 70 | 70 | | |
| | | in.lb | 602 | 797 | 797 | 797 | 620 | 620 | | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | Nm | 68 | 90 | 90 | 90 | 70 | 70 | | |
| | | in.lb | 602 | 797 | 797 | 797 | 620 | 620 | | |
| Nominal torque (at n_N) | T_{2N} | Nm | 41 | 51 | 51 | 52 | 50 | 53 | | |
| | | in.lb | 362 | 448 | 447 | 459 | 441 | 468 | | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 139 | 185 | 250 | 250 | 213 | 213 | | |
| | | in.lb | 1230 | 1640 | 2213 | 2213 | 1885 | 1885 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | | |
| Max. input speed | n_{1Max} | rpm | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 1.1 | 0.88 | 0.72 | 0.49 | 0.42 | 0.40 | | |
| | | in.lb | 9.9 | 7.8 | 6.4 | 4.3 | 3.7 | 3.5 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 6 / Reduced ≤ 4 | | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | Nm/arcmin | 10 | | | | | | | |
| | | in.lb/arcmin | 89 | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 3350 | | | | | | | |
| | | lb _f | 754 | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 4200 | | | | | | | |
| | | lb _f | 945 | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 236 | | | | | | | |
| | | in.lb | 2089 | | | | | | | |
| Efficiency at full load | η | % | 98.5 | | | | | | | |
| Service life ¹⁾ | L_h | h | > 30000 | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 3.9 | | | | | | | |
| | | lb _m | 8.6 | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{pA} | dB(A) | ≤ 59 | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | |
| | | F | 194 | | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | | |
| | | F | 5 to 104 | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | |
| Protection class | | | IP 65 | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC2-00080AA022.000-X | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 014.000 - 042.000 | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | E | 19 | J_1 | kgcm ² | 1.03 | 0.78 | 0.68 | 0.59 | 0.54 | 0.54 |
| | | | | 10 ⁻³ in.lb.s ² | 0.91 | 0.69 | 0.60 | 0.52 | 0.48 | 0.48 |
| | G | 24 | J_1 | kgcm ² | 2.40 | 2.15 | 2.05 | 1.96 | 1.91 | 1.91 |
| | | | | 10 ⁻³ in.lb.s ² | 2.12 | 1.90 | 1.81 | 1.73 | 1.69 | 1.69 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

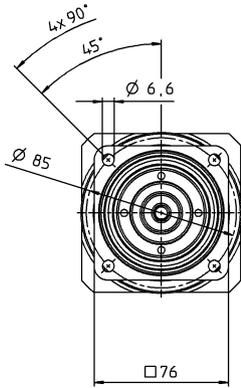
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

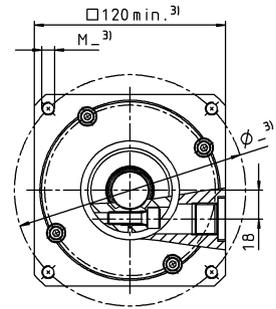
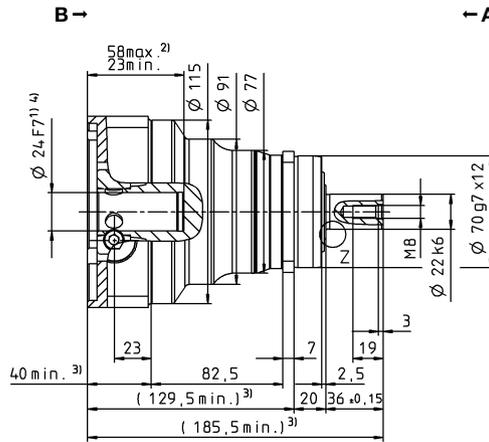
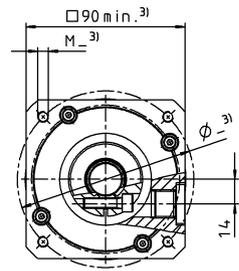
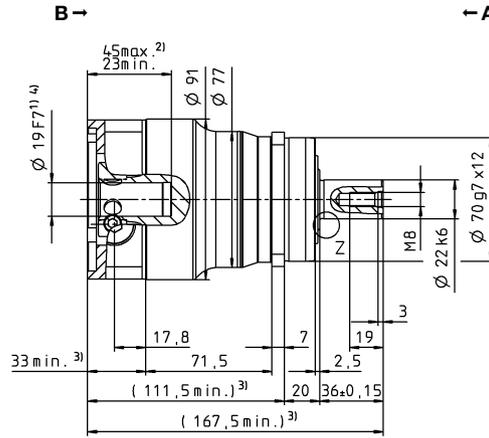
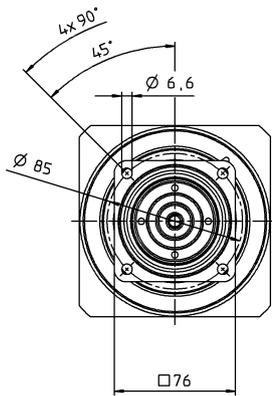
View B

1-stage

up to 19⁴⁾ (E)⁵⁾
clamping hub
diameter



up to 24⁴⁾ (G)
clamping hub
diameter



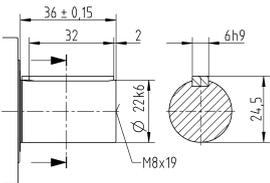
Planetary gearboxes

SP+

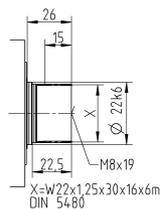
MC

Other output variants

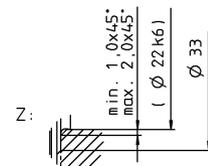
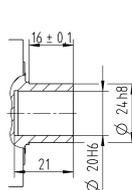
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

SP+ 075 MC 2-stage

| | | | 2-stage | | | | | | | | | | | |
|--|-------------|-----------------|--------------------------------------|---------------------------------------|------|------|------|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 16 | 20 | 25 | 28 | 32 | 35 | 40 | 50 | 64 | 70 | 100 | |
| Max. torque ^{a) b) e)} | T_{2a} | Nm | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 70 | 90 | 70 | |
| | | in.lb | 797 | 797 | 797 | 797 | 797 | 797 | 797 | 797 | 797 | 620 | 797 | 620 |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | Nm | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 70 | 90 | 70 | |
| | | in.lb | 797 | 797 | 797 | 797 | 797 | 797 | 797 | 797 | 797 | 620 | 797 | 620 |
| Nominal torque (at n_N) | T_{2N} | Nm | 62 | 62 | 72 | 65 | 72 | 72 | 65 | 72 | 56 | 72 | 56 | |
| | | in.lb | 552 | 553 | 637 | 572 | 637 | 637 | 574 | 637 | 496 | 637 | 496 | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 213 | 250 | 213 | |
| | | in.lb | 2213 | 2213 | 2213 | 2213 | 2213 | 2213 | 2213 | 2213 | 1885 | 2213 | 1885 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | |
| Max. input speed | n_{1Max} | rpm | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 0.36 | 0.24 | 0.18 | 0.18 | 0.17 | 0.16 | 0.16 | 0.16 | 0.16 | 0.15 | 0.14 | |
| | | in.lb | 3.2 | 2.1 | 1.6 | 1.6 | 1.5 | 1.4 | 1.4 | 1.4 | 1.4 | 1.3 | 1.2 | |
| Max. backlash | j_t | arcmin | Standard ≤ 8 / Reduced ≤ 6 | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | Nm/arcmin | 10 | | | | | | | | | | | |
| | | in.lb/arcmin | 89 | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 3350 | | | | | | | | | | | |
| | | lb _f | 754 | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 4200 | | | | | | | | | | | |
| | | lb _f | 945 | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 236 | | | | | | | | | | | |
| | | in.lb | 2089 | | | | | | | | | | | |
| Efficiency at full load | η | % | 96.5 | | | | | | | | | | | |
| Service life ¹⁾ | L_h | h | > 30000 | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 3.6 | | | | | | | | | | | |
| | | lb _m | 8.0 | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{pA} | dB(A) | ≤ 55 | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | | | | | | |
| | | F | 5 to 104 | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC2-00080AA022.000-X | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 014.000 - 042.000 | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | C | 14 | J_1 | kgcm ² | 0.23 | 0.20 | 0.20 | 0.18 | 0.18 | 0.18 | 0.16 | 0.16 | 0.16 | 0.16 |
| | | | | 10 ⁻³ in.lb.s ² | 0.20 | 0.18 | 0.18 | 0.16 | 0.16 | 0.16 | 0.14 | 0.14 | 0.14 | 0.14 |
| | E | 19 | J_1 | kgcm ² | 0.55 | 0.53 | 0.52 | 0.50 | 0.50 | 0.50 | 0.49 | 0.49 | 0.49 | 0.49 |
| | | | | 10 ⁻³ in.lb.s ² | 0.49 | 0.47 | 0.46 | 0.44 | 0.44 | 0.44 | 0.43 | 0.43 | 0.43 | 0.43 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

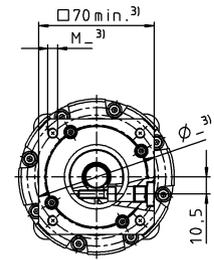
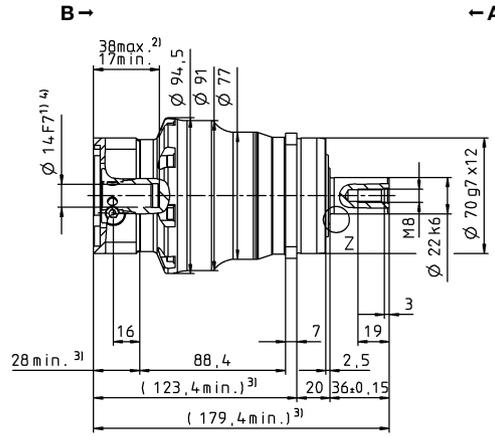
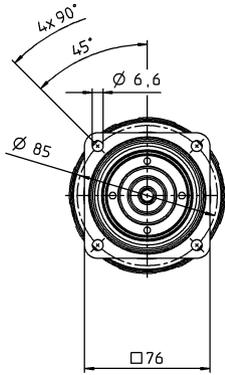
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

View B

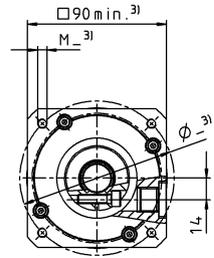
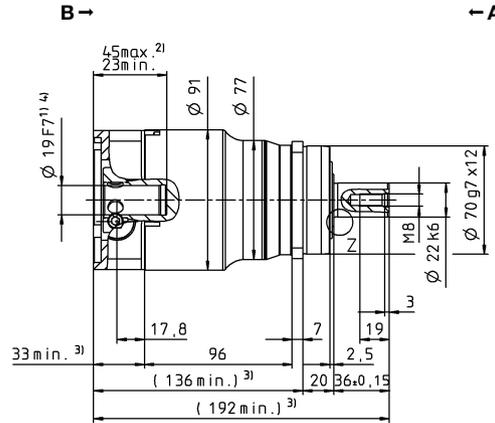
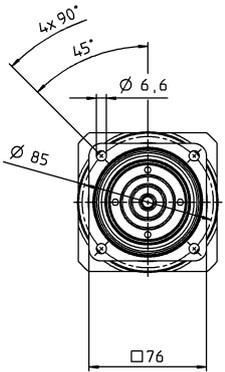
2-stage

up to 14⁴⁾ (C)⁵⁾
clamping hub
diameter



Motor shaft diameter [mm]

up to 19⁴⁾ (E)
clamping hub
diameter



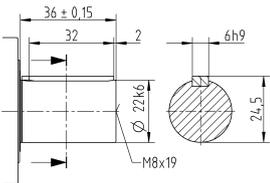
Planetary gearboxes

SP+

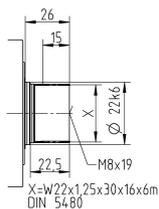
MC

Other output variants

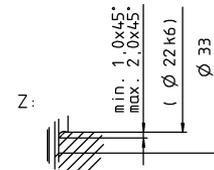
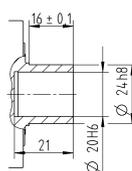
Shaft with key



Spined shaft (DIN 5480)



Shaft mounted



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

SP+ 100 MC 1-stage

| | | | Standard version MC | | | | | | Friction optimized version L | | | | | | | |
|--|---|-----------------|--------------------------------------|---------------------------------------|------|------|------|-------|------------------------------|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 3 | 4 | 5 | 7 | 8 | 10 | 3 | 4 | 5 | 7 | 8 | 10 | | |
| Max. torque ^{a) b) e)} | T_{2a} | Nm | 180 | 240 | 240 | 240 | 180 | 180 | 180 | 240 | 240 | 240 | 180 | 180 | | |
| | | in.lb | 1593 | 2124 | 2124 | 2124 | 1593 | 1593 | 1593 | 2124 | 2124 | 2124 | 1593 | 1593 | | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | Nm | 180 | 240 | 240 | 240 | 180 | 180 | 180 | 240 | 240 | 240 | 180 | 180 | | |
| | | in.lb | 1593 | 2124 | 2124 | 2124 | 1593 | 1593 | 1593 | 2124 | 2124 | 2124 | 1593 | 1593 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 76 | 95 | 91 | 93 | 93 | 97 | 76 | 95 | 91 | 93 | 93 | 97 | | |
| | | in.lb | 677 | 838 | 806 | 823 | 821 | 861 | 677 | 838 | 806 | 823 | 821 | 861 | | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 454 | 625 | 625 | 625 | 599 | 599 | 454 | 625 | 625 | 625 | 599 | 599 | | |
| | | in.lb | 4016 | 5532 | 5532 | 5532 | 5302 | 5302 | 4016 | 5532 | 5532 | 5532 | 5302 | 5302 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 3500 | 4000 | 4500 | 4500 | 4500 | 4500 | 3500 | 4000 | 4500 | 4500 | 4500 | 4500 | | |
| Max. input speed | n_{1Max} | rpm | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 2.0 | 1.8 | 1.4 | 0.84 | 0.78 | 0.64 | 0.9 | 0.8 | 0.6 | 0.5 | 0.4 | 0.4 | | |
| | | in.lb | 17 | 16 | 12 | 7.4 | 6.9 | 5.7 | 8.0 | 7.1 | 5.3 | 4.4 | 3.5 | 3.5 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 4 / Reduced ≤ 2 | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | Nm/arcmin | 31 | | | | | | | | | | | | | |
| | | in.lb/arcmin | 274 | | | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 5650 | | | | | 2000 | | | | | | | | |
| | | lb _f | 1271 | | | | | 450 | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 6600 | | | | | 1000 | | | | | | | | |
| | | lb _f | 1485 | | | | | 225 | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 487 | | | | | 72 | | | | | | | | |
| | | in.lb | 4310 | | | | | 637 | | | | | | | | |
| Efficiency at full load | η | % | 98.5 | | | | | 99 | | | | | | | | |
| Service life ¹⁾ | L_h | h | > 30000 | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 7.7 | | | | | | | | | | | | | |
| | | lb _m | 17 | | | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{pA} | dB(A) | ≤ 58 | | | | | | | | | | | | | |
| | | °C | +90 | | | | | | | | | | | | | |
| Max. permitted housing temperature | F | °C | +90 | | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | | |
| Ambient temperature | F | °C | -15 to +40 | | | | | | | | | | | | | |
| | | F | 5 to 104 | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | IP 52 | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC2-00300AA032.000-X | | | | | | | | | | | | | |
| | Bore diameter of coupling on the application side | mm | X = 024.000 - 060.000 | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | G | 24 | J_1 | kgcm ² | 3.99 | 3.04 | 2.61 | 2.29 | 2.26 | 2.07 | 3.99 | 3.04 | 2.61 | 2.29 | 2.26 | 2.07 |
| | | | | 10 ⁻³ in.lb.s ² | 3.53 | 2.69 | 2.31 | 2.03 | 2.00 | 1.83 | 3.53 | 2.69 | 2.31 | 2.03 | 2.00 | 1.83 |
| | K | 38 | J_1 | kgcm ² | 11.1 | 10.1 | 9.68 | 9.36 | 9.55 | 9.14 | 11.1 | 10.1 | 9.68 | 9.36 | 9.55 | 9.14 |
| | | | | 10 ⁻³ in.lb.s ² | 9.82 | 8.94 | 8.57 | 8.28 | 8.45 | 8.09 | 9.82 | 8.94 | 8.57 | 8.28 | 8.45 | 8.09 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

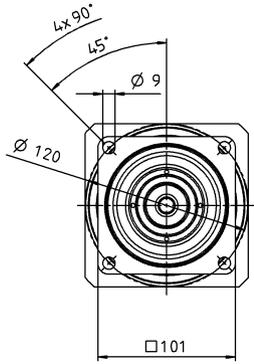
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

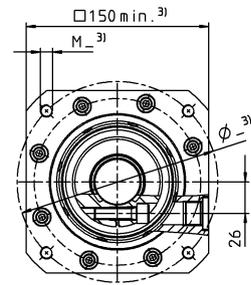
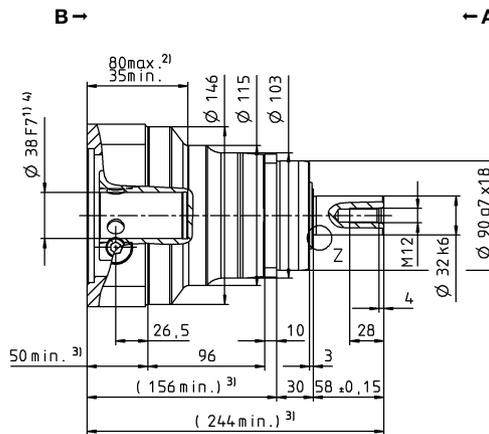
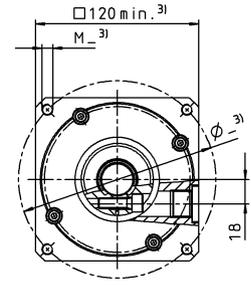
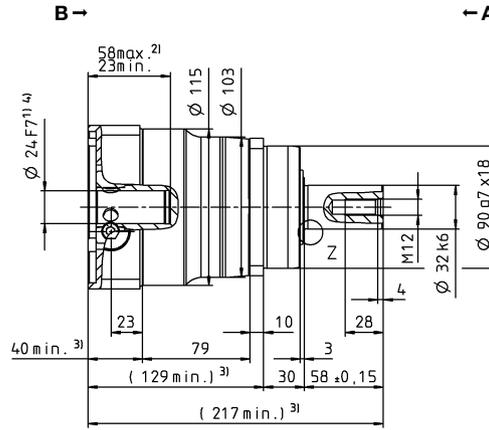
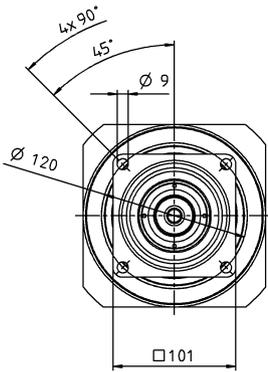
View B

1-stage

up to 24⁴⁾ (G)⁵⁾
clamping hub diameter



up to 38⁴⁾ (K)
clamping hub diameter



Motor shaft diameter [mm]

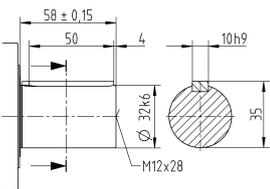
Planetary gearboxes

SP+

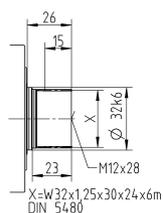
MC

Other output variants

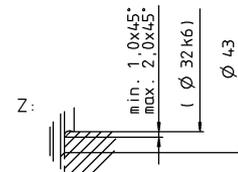
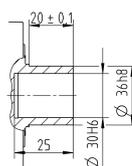
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

SP+ 100 MC 2-stage

| | | | 2-stage | | | | | | | | | | | | |
|--|-------------|-----------------|--------------------------------------|---------------------------------------|------|------|------|------|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 16 | 20 | 25 | 28 | 32 | 35 | 40 | 50 | 64 | 70 | 100 | | |
| Max. torque ^{a) b) e)} | T_{2a} | Nm | 240 | 240 | 240 | 240 | 240 | 240 | 240 | 240 | 180 | 240 | 180 | | |
| | | in.lb | 2124 | 2124 | 2124 | 2124 | 2124 | 2124 | 2124 | 2124 | 2124 | 1593 | 2124 | 1593 | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | Nm | 240 | 240 | 240 | 240 | 240 | 240 | 240 | 240 | 180 | 240 | 180 | | |
| | | in.lb | 2124 | 2124 | 2124 | 2124 | 2124 | 2124 | 2124 | 2124 | 2124 | 1593 | 2124 | 1593 | |
| Nominal torque (at n_n) | T_{2N} | Nm | 138 | 148 | 149 | 164 | 141 | 164 | 183 | 182 | 144 | 189 | 144 | | |
| | | in.lb | 1221 | 1313 | 1322 | 1453 | 1251 | 1450 | 1617 | 1614 | 1275 | 1673 | 1275 | | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 625 | 625 | 625 | 625 | 625 | 625 | 625 | 625 | 599 | 625 | 599 | | |
| | | in.lb | 5532 | 5532 | 5532 | 5532 | 5532 | 5532 | 5532 | 5532 | 5302 | 5532 | 5302 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | | |
| Max. input speed | n_{1Max} | rpm | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 0.52 | 0.53 | 0.48 | 0.43 | 0.38 | 0.28 | 0.40 | 0.25 | 0.25 | 0.20 | 0.19 | | |
| | | in.lb | 4.6 | 4.7 | 4.2 | 3.8 | 3.4 | 2.5 | 3.5 | 2.2 | 2.2 | 1.8 | 1.7 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 6 / Reduced ≤ 4 | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | Nm/arcmin | 31 | | | | | | | | | | | | |
| | | in.lb/arcmin | 274 | | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 5650 | | | | | | | | | | | | |
| | | lb _f | 1271 | | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 6600 | | | | | | | | | | | | |
| | | lb _f | 1485 | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 487 | | | | | | | | | | | | |
| | | in.lb | 4310 | | | | | | | | | | | | |
| Efficiency at full load | η | % | 96.5 | | | | | | | | | | | | |
| Service life ¹⁾ | L_h | h | > 30000 | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 7.9 | | | | | | | | | | | | |
| | | lb _m | 17.5 | | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{pA} | dB(A) | ≤ 56 | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | | | | | | | |
| | | F | 5 to 104 | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC2-00300AA032.000-X | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 024.000 - 060.000 | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | E | 19 | J_i | kgcm ² | 0.81 | 0.70 | 0.68 | 0.60 | 0.43 | 0.59 | 0.55 | 0.54 | 0.38 | 0.54 | 0.54 |
| | | | | 10 ⁻³ in.lb.s ² | 0.72 | 0.62 | 0.60 | 0.53 | 0.38 | 0.52 | 0.49 | 0.48 | 0.34 | 0.48 | 0.48 |
| | G | 24 | J_i | kgcm ² | 2.18 | 2.07 | 2.05 | 1.97 | 2.06 | 1.96 | 1.92 | 1.91 | 1.91 | 1.91 | 1.91 |
| | | | | 10 ⁻³ in.lb.s ² | 1.93 | 1.83 | 1.81 | 1.74 | 1.82 | 1.73 | 1.70 | 1.69 | 1.69 | 1.69 | 1.69 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

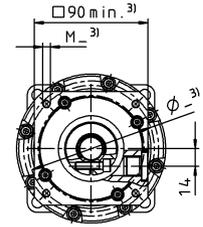
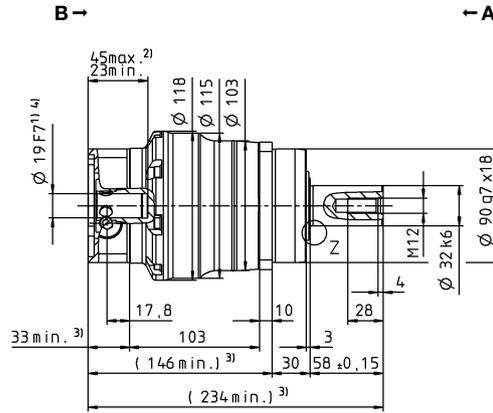
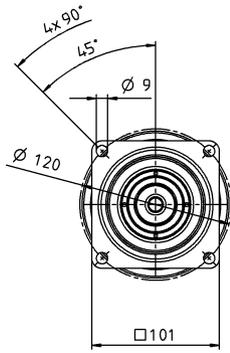
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

View B

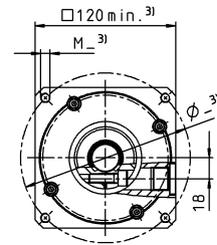
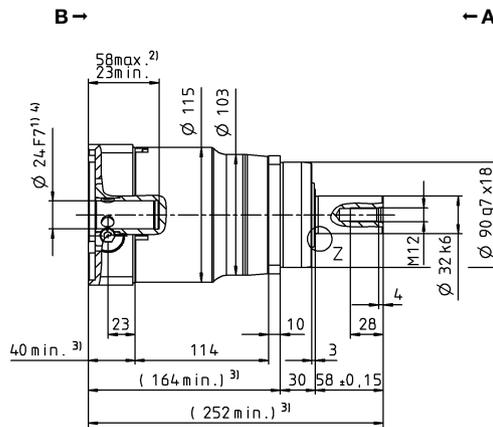
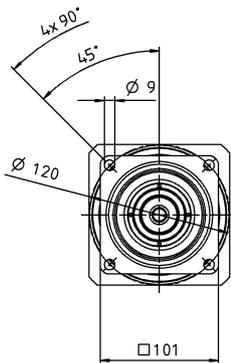
2-stage

up to 19⁴⁾ (E)⁵⁾
clamping hub diameter



Motor shaft diameter [mm]

up to 24⁴⁾ (G)
clamping hub diameter



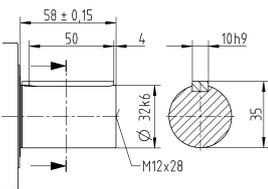
Planetary gearboxes

SP+

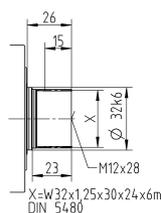
MC

Other output variants

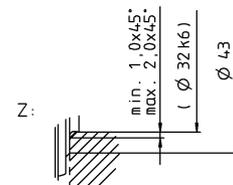
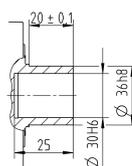
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

SP+ 140 MC 1-stage

| | | | Standard version MC | | | | | | Friction optimized version L | | | | | | | |
|--|-------------|-----------------|--------------------------------------|---------------------------------------|-------|-------|-------|-------|------------------------------|-------|-------|-------|-------|-------|------|------|
| Ratio | <i>i</i> | | 3 | 4 | 5 | 7 | 8 | 10 | 3 | 4 | 5 | 7 | 8 | 10 | | |
| Max. torque ^{a) b) e)} | T_{2a} | Nm | 310 | 480 | 480 | 480 | 380 | 380 | 310 | 480 | 480 | 480 | 380 | 380 | | |
| | | in.lb | 2744 | 4248 | 4248 | 4248 | 3363 | 3363 | 2744 | 4248 | 4248 | 4248 | 3363 | 3363 | | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | Nm | 310 | 480 | 480 | 480 | 380 | 380 | 310 | 480 | 480 | 480 | 380 | 380 | | |
| | | in.lb | 2744 | 4248 | 4248 | 4248 | 3363 | 3363 | 2744 | 4248 | 4248 | 4248 | 3363 | 3363 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 127 | 195 | 182 | 187 | 186 | 195 | 127 | 195 | 182 | 187 | 186 | 195 | | |
| | | in.lb | 1122 | 1730 | 1612 | 1656 | 1644 | 1727 | 1122 | 1730 | 1612 | 1656 | 1644 | 1727 | | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 1250 | 1350 | 1350 | 1350 | 1250 | 1250 | 1250 | 1350 | 1350 | 1350 | 1250 | 1250 | | |
| | | in.lb | 11064 | 11949 | 11949 | 11949 | 11064 | 11064 | 11064 | 11949 | 11949 | 11949 | 11064 | 11064 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 3000 | 3500 | 4500 | 4500 | 4500 | 4500 | 3000 | 3500 | 4500 | 4500 | 4500 | 4500 | | |
| Max. input speed | n_{1Max} | rpm | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 4.1 | 3.5 | 3.0 | 2.2 | 1.8 | 1.7 | 2.0 | 1.5 | 1.2 | 1.0 | 0.9 | 0.9 | | |
| | | in.lb | 36 | 31 | 27 | 20 | 16 | 15 | 18 | 13 | 11 | 8.9 | 8.0 | 8.0 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 4 / Reduced ≤ 2 | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | Nm/arcmin | 53 | | | | | | | | | | | | | |
| | | in.lb/arcmin | 469 | | | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 9870 | | | | | | 3000 | | | | | | | |
| | | lb _f | 2221 | | | | | | 675 | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 9900 | | | | | | 1200 | | | | | | | |
| | | lb _f | 2228 | | | | | | 270 | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 952 | | | | | | 110 | | | | | | | |
| | | in.lb | 8426 | | | | | | 974 | | | | | | | |
| Efficiency at full load | η | % | 98.5 | | | | | | 99 | | | | | | | |
| Service life ¹⁾ | L_h | h | > 30000 | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 17.2 | | | | | | | | | | | | | |
| | | lb _m | 38 | | | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{pA} | dB(A) | ≤ 59 | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | | | | | | | | |
| | | F | 5 to 104 | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | IP 52 | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC2-00500AA040.000-X | | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 035.000 - 060.000 | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | K | 38 | J_i | kgcm ² | 14.9 | 12.1 | 11.0 | 10.1 | 10.1 | 9.5 | 14.9 | 12.1 | 11.0 | 10.1 | 10.1 | 9.5 |
| | | | | 10 ⁻³ in.lb.s ² | 13.2 | 10.7 | 9.7 | 8.9 | 8.9 | 8.4 | 13.2 | 10.7 | 9.7 | 8.9 | 8.9 | 8.4 |
| | M | 48 | J_i | kgcm ² | 29.5 | 26.7 | 25.6 | 24.7 | 24.7 | 24.2 | 29.5 | 26.7 | 25.6 | 24.7 | 24.7 | 24.2 |
| | | | | 10 ⁻³ in.lb.s ² | 26.1 | 23.6 | 22.7 | 21.9 | 21.9 | 21.4 | 26.1 | 23.6 | 22.7 | 21.9 | 21.9 | 21.4 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

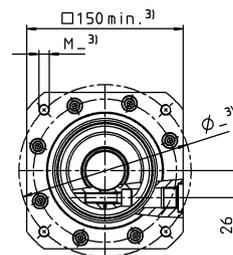
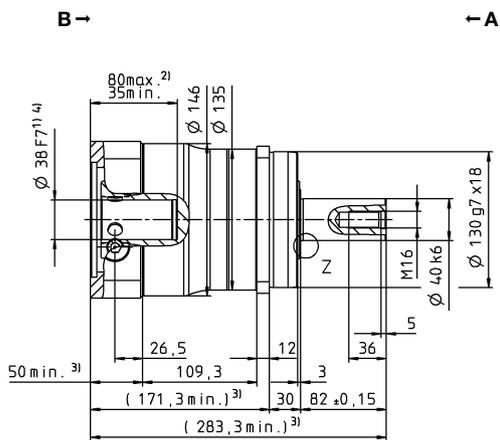
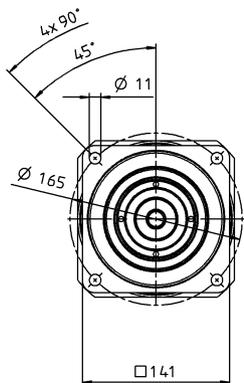
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

View B

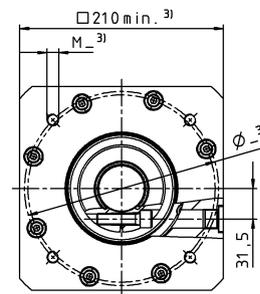
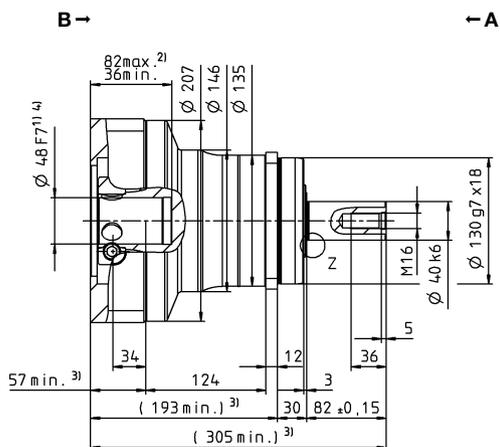
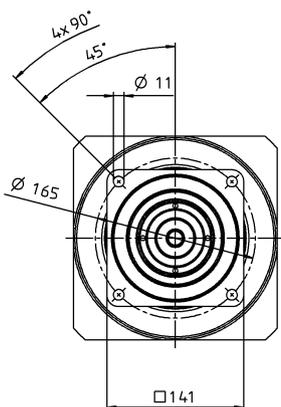
1-stage

up to 38⁴⁾ (K)⁵⁾
clamping hub
diameter



Motor shaft diameter [mm]

up to 48⁴⁾ (M)
clamping hub
diameter



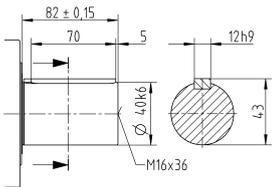
Planetary gearboxes

SP+

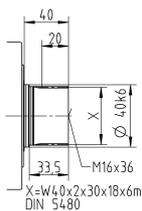
MC

Other output variants

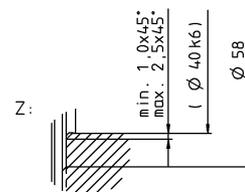
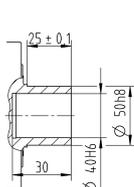
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

SP+ 140 MC 2-stage

| | | | 2-stage | | | | | | | | | | | | |
|--|-------------|-----------------|--------------------------------------|---------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|
| Ratio | <i>i</i> | | 16 | 20 | 25 | 28 | 32 | 35 | 40 | 50 | 64 | 70 | 100 | | |
| Max. torque ^{a) b) e)} | T_{2a} | Nm | 480 | 480 | 480 | 480 | 480 | 480 | 480 | 480 | 380 | 480 | 380 | | |
| | | in.lb | 4248 | 4248 | 4248 | 4248 | 4248 | 4248 | 4248 | 4248 | 4248 | 3363 | 4248 | 3363 | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | Nm | 480 | 480 | 480 | 480 | 480 | 480 | 480 | 480 | 380 | 480 | 380 | | |
| | | in.lb | 4248 | 4248 | 4248 | 4248 | 4248 | 4248 | 4248 | 4248 | 4248 | 3363 | 4248 | 3363 | |
| Nominal torque (at n_N) | T_{2N} | Nm | 277 | 297 | 298 | 328 | 287 | 329 | 364 | 367 | 304 | 304 | 304 | | |
| | | in.lb | 2447 | 2629 | 2636 | 2900 | 2544 | 2915 | 3219 | 3250 | 2691 | 2690 | 2691 | | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 1350 | 1350 | 1350 | 1350 | 1350 | 1350 | 1350 | 1350 | 1250 | 1350 | 1250 | | |
| | | in.lb | 11949 | 11949 | 11949 | 11949 | 11949 | 11949 | 11949 | 11949 | 11064 | 11949 | 11064 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | | |
| Max. input speed | n_{1Max} | rpm | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 1.1 | 1.0 | 0.96 | 0.80 | 0.72 | 0.60 | 0.55 | 0.45 | 0.45 | 0.40 | 0.40 | | |
| | | in.lb | 9.7 | 9.2 | 8.5 | 7.1 | 6.4 | 5.3 | 4.9 | 4.0 | 4.0 | 3.5 | 3.5 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 6 / Reduced ≤ 4 | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | Nm/arcmin | 53 | | | | | | | | | | | | |
| | | in.lb/arcmin | 469 | | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 9870 | | | | | | | | | | | | |
| | | lb _f | 2221 | | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 9900 | | | | | | | | | | | | |
| | | lb _f | 2228 | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 952 | | | | | | | | | | | | |
| | | in.lb | 8426 | | | | | | | | | | | | |
| Efficiency at full load | η | % | 96.5 | | | | | | | | | | | | |
| Service life ¹⁾ | L_h | h | > 30000 | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 17 | | | | | | | | | | | | |
| | | lb _m | 37.6 | | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{pA} | dB(A) | ≤ 59 | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | | | | | | | |
| | | F | 5 to 104 | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC2-00500AA040.000-X | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 035.000 - 060.000 | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | G | 24 | J_1 | kgcm ² | 3.19 | 2.71 | 2.67 | 2.34 | 1.65 | 2.32 | 2.10 | 2.08 | 2.08 | 2.08 | 2.07 |
| | | | | 10 ⁻³ in.lb.s ² | 2.82 | 2.40 | 2.36 | 2.07 | 1.46 | 2.05 | 1.86 | 1.84 | 1.84 | 1.84 | 1.83 |
| | K | 38 | J_1 | kgcm ² | 10.3 | 9.77 | 9.73 | 9.41 | 2.34 | 9.39 | 9.16 | 9.15 | 1.39 | 9.14 | 9.14 |
| | | | | 10 ⁻³ in.lb.s ² | 9.07 | 8.65 | 8.61 | 8.33 | 2.07 | 8.31 | 8.11 | 8.10 | 1.23 | 8.09 | 8.09 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

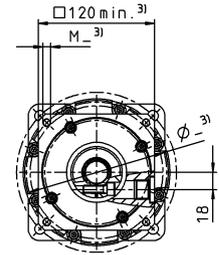
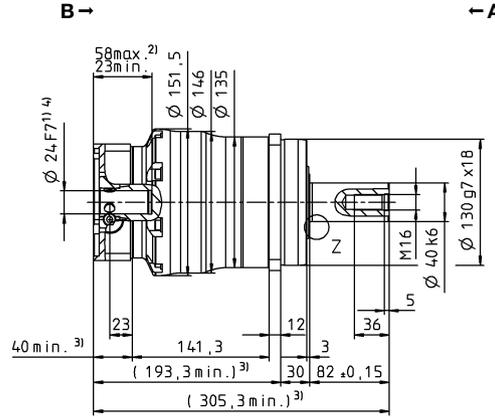
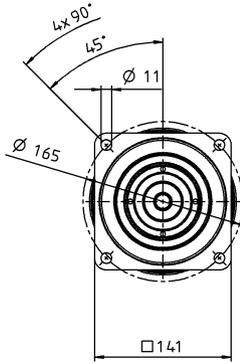
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

View B

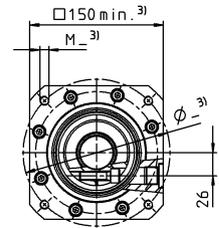
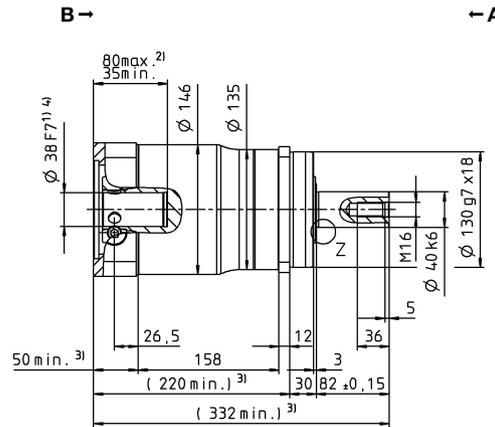
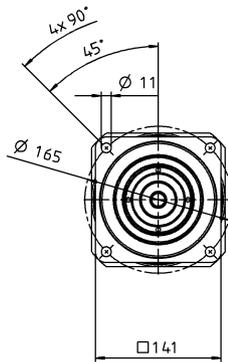
2-stage

up to 24⁴⁾ (G)⁵⁾
clamping hub diameter



Motor shaft diameter [mm]

up to 38⁴⁾ (K)
clamping hub diameter



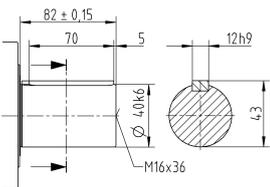
Planetary gearboxes

SP+

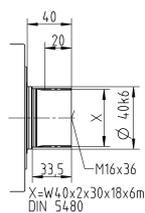
MC

Other output variants

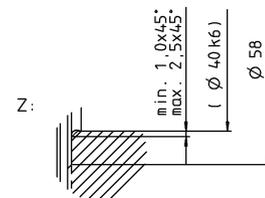
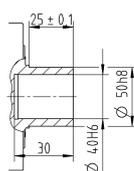
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

SP+ 180 MC 1-stage

| | | | Standard version MC | | | | | | Friction optimized version L | | | | | | | |
|--|-------------|-----------------|--------------------------------------|---------------------------------------|-------|-------|-------|-------|------------------------------|-------|-------|-------|-------|-------|------|------|
| Ratio | <i>i</i> | | 3 | 4 | 5 | 7 | 8 | 10 | 3 | 4 | 5 | 7 | 8 | 10 | | |
| Max. torque ^{a) b) e)} | T_{2a} | Nm | 700 | 880 | 880 | 880 | 700 | 700 | 700 | 880 | 880 | 880 | 700 | 700 | | |
| | | in.lb | 6196 | 7789 | 7789 | 7789 | 6196 | 6196 | 6196 | 7789 | 7789 | 7789 | 6196 | 6196 | | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | Nm | 700 | 880 | 880 | 880 | 700 | 700 | 700 | 880 | 880 | 880 | 700 | 700 | | |
| | | in.lb | 6196 | 7789 | 7789 | 7789 | 6196 | 6196 | 6196 | 7789 | 7789 | 7789 | 6196 | 6196 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 289 | 492 | 379 | 469 | 465 | 488 | 289 | 492 | 379 | 469 | 465 | 488 | | |
| | | in.lb | 2554 | 4355 | 3357 | 4151 | 4117 | 4316 | 2554 | 4355 | 3357 | 4151 | 4117 | 4316 | | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 2640 | 2750 | 2750 | 2750 | 2640 | 2640 | 2640 | 2750 | 2750 | 2750 | 2640 | 2640 | | |
| | | in.lb | 23366 | 24340 | 24340 | 24340 | 23366 | 23366 | 23366 | 24340 | 24340 | 24340 | 23366 | 23366 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 3000 | 3500 | 4500 | 4500 | 4500 | 4500 | 3000 | 3500 | 4500 | 4500 | 4500 | 4500 | | |
| Max. input speed | n_{1Max} | rpm | 4500 | 6000 | 6000 | 6000 | 6000 | 6000 | 4500 | 6000 | 6000 | 6000 | 6000 | 6000 | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 9.8 | 8.2 | 6.6 | 4.4 | 4.4 | 3.2 | 3.8 | 3.0 | 2.3 | 1.8 | 1.7 | 1.6 | | |
| | | in.lb | 87 | 73 | 58 | 39 | 39 | 28 | 34 | 27 | 20 | 16 | 15 | 14 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 4 / Reduced ≤ 2 | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | Nm/arcmin | 175 | | | | | | | | | | | | | |
| | | in.lb/arcmin | 1549 | | | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 14150 | | | | | | 5000 | | | | | | | |
| | | lb _f | 3184 | | | | | | 1125 | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 15400 | | | | | | 2000 | | | | | | | |
| | | lb _f | 3465 | | | | | | 450 | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 1600 | | | | | | 208 | | | | | | | |
| | | in.lb | 14161 | | | | | | 1841 | | | | | | | |
| Efficiency at full load | η | % | 98.5 | | | | | | 99 | | | | | | | |
| Service life ¹⁾ | L_h | h | > 30000 | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 34 | | | | | | | | | | | | | |
| | | lb _m | 75.1 | | | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{pA} | dB(A) | ≤ 62 | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | | | | | | | | |
| | | F | 5 to 104 | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | IP 52 | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC2-00800AA055.000-X | | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 040.000 - 075.000 | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | M | 48 | J_1 | kgcm ² | 58.5 | 41.6 | 35.6 | 30.0 | 30.0 | 26.9 | 58.5 | 41.6 | 35.6 | 30.0 | 30.0 | 26.9 |
| | | | | 10 ⁻³ in.lb.s ² | 51.8 | 36.8 | 31.5 | 26.6 | 26.6 | 23.8 | 51.8 | 36.8 | 31.5 | 26.6 | 26.6 | 23.8 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

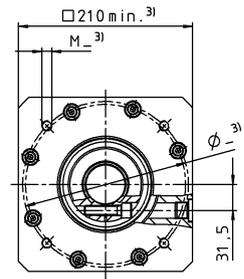
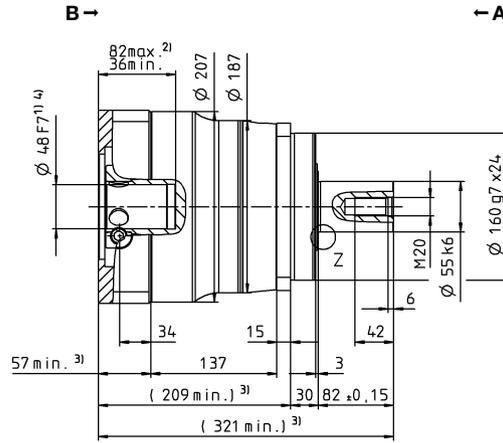
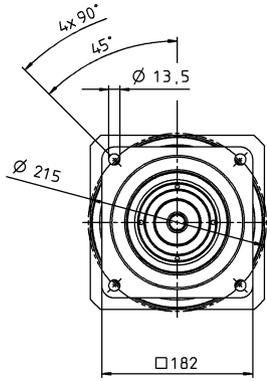
View A

View B

Motor shaft diameter [mm]

1-stage

up to 48⁴⁾ (M)⁵⁾
clamping hub diameter



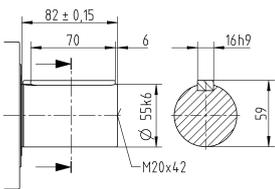
Planetary gearboxes

SP+

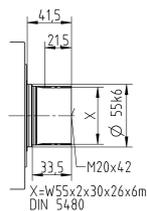
MC

Other output variants

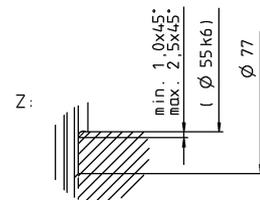
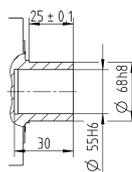
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

SP+ 180 MC 2-stage

| | | | | 2-stage | | | | | | | | | | | |
|--|-------------|-----------------------|-------|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Ratio | <i>i</i> | | | 16 | 20 | 25 | 28 | 32 | 35 | 40 | 50 | 64 | 70 | 100 | |
| Max. torque ^{a) b) e)} | T_{2a} | <i>Nm</i> | | 880 | 880 | 880 | 880 | 880 | 880 | 880 | 880 | 700 | 880 | 700 | |
| | | <i>in.lb</i> | | 7789 | 7789 | 7789 | 7789 | 7789 | 7789 | 7789 | 7789 | 7789 | 6196 | 7789 | 6196 |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | <i>Nm</i> | | 880 | 880 | 880 | 880 | 880 | 880 | 880 | 880 | 700 | 880 | 700 | |
| | | <i>in.lb</i> | | 7789 | 7789 | 7789 | 7789 | 7789 | 7789 | 7789 | 7789 | 7789 | 6196 | 7789 | 6196 |
| Nominal torque (at n_{1N}) | T_{2N} | <i>Nm</i> | | 696 | 704 | 704 | 704 | 704 | 704 | 704 | 704 | 560 | 704 | 560 | |
| | | <i>in.lb</i> | | 6156 | 6231 | 6231 | 6231 | 6231 | 6231 | 6231 | 6231 | 6231 | 4956 | 6231 | 4956 |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | <i>Nm</i> | | 2750 | 2750 | 2750 | 2750 | 2750 | 2750 | 2750 | 2750 | 2640 | 2750 | 2640 | |
| | | <i>in.lb</i> | | 24340 | 24340 | 24340 | 24340 | 24340 | 24340 | 24340 | 24340 | 24340 | 23366 | 24340 | 23366 |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | <i>rpm</i> | | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | |
| Max. input speed | n_{1Max} | <i>rpm</i> | | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | <i>Nm</i> | | 2.2 | 2.3 | 1.8 | 1.7 | 1.7 | 1.4 | 1.2 | 1.2 | 1.2 | 0.95 | 1.0 | |
| | | <i>in.lb</i> | | 20 | 21 | 16 | 15 | 15 | 12 | 11 | 11 | 11 | 8.4 | 9.2 | |
| Max. backlash | j_t | <i>arcmin</i> | | Standard ≤ 6 / Reduced ≤ 4 | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | <i>Nm/arcmin</i> | | 175 | | | | | | | | | | | |
| | | <i>in.lb/arcmin</i> | | 1549 | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | <i>N</i> | | 14150 | | | | | | | | | | | |
| | | <i>lb_f</i> | | 3184 | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | <i>N</i> | | 15400 | | | | | | | | | | | |
| | | <i>lb_f</i> | | 3465 | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | <i>Nm</i> | | 1600 | | | | | | | | | | | |
| | | <i>in.lb</i> | | 14161 | | | | | | | | | | | |
| Efficiency at full load | η | % | | 96.5 | | | | | | | | | | | |
| Service life ¹⁾ | L_h | <i>h</i> | | > 30000 | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | <i>kg</i> | | 36.4 | | | | | | | | | | | |
| | | <i>lb_m</i> | | 80.4 | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{pA} | <i>dB(A)</i> | | ≤ 58 | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | | +90 | | | | | | | | | | | |
| | | <i>F</i> | | 194 | | | | | | | | | | | |
| Ambient temperature | | °C | | -15 to +40 | | | | | | | | | | | |
| | | <i>F</i> | | 5 to 104 | | | | | | | | | | | |
| Lubrication | | | | Lubricated for life | | | | | | | | | | | |
| Direction of rotation | | | | In- and output same direction | | | | | | | | | | | |
| Protection class | | | | IP 65 | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | | BC2-00800AA055.000-X | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | <i>mm</i> | | X = 040.000 - 075.000 | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | K | 38 | J_1 | <i>kgcm²</i> | 13.5 | 12.0 | 11.7 | 10.6 | 10.6 | 10.4 | 9.74 | 9.68 | 5.45 | 9.63 | 9.60 |
| | | | | <i>10⁻³ in.lb.s²</i> | 12.0 | 10.6 | 10.4 | 9.34 | 9.34 | 9.23 | 8.62 | 8.57 | 4.82 | 8.52 | 8.50 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

^{a)} At max. 10 % F_{2QMax}

^{b)} Valid for standard clamping hub diameter

^{c)} Refers to center of the output shaft or flange

^{d)} Please reduce input speed at higher ambient temperatures

^{e)} Smooth shaft

¹⁾ Please contact us to discuss application-specific service lifetimes

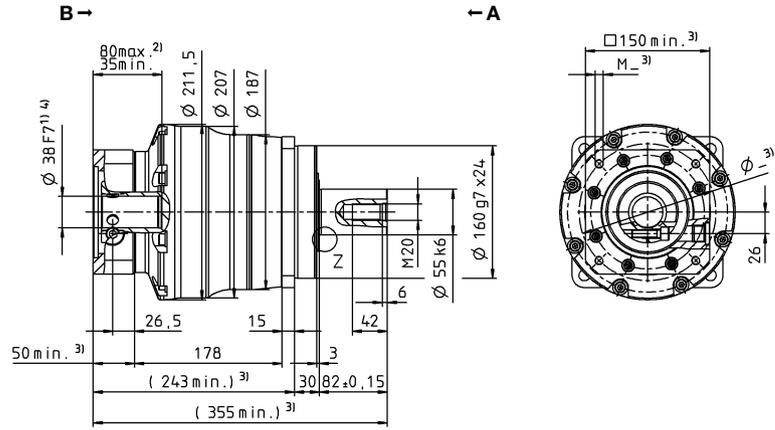
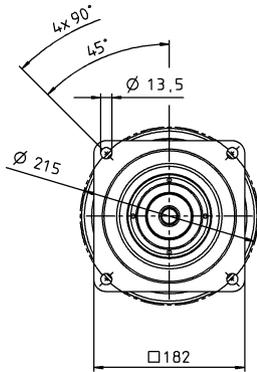
View A

View B

Motor shaft diameter [mm]

2-stage

up to 38⁴⁾ (K)⁵⁾
clamping hub diameter



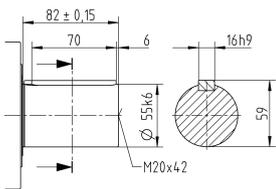
Planetary gearboxes

SP+

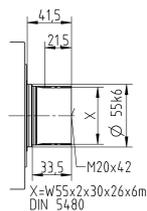
MC

Other output variants

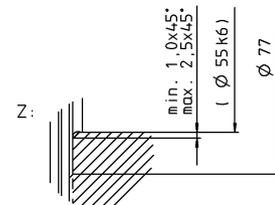
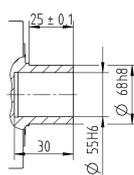
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



Non-tolerated dimensions are nominal dimensions

- ¹⁾ Check motor shaft fit
- ²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
- ³⁾ The dimensions depend on the motor
- ⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm
- ⁵⁾ Standard clamping hub diameter

SP+ 210 MC 1-stage

| | | | Standard version MC | | | | | Friction optimized version L | | | | | | |
|--|-------------|-----------------|--------------------------------------|---------------------------------------|-------|-------|-------|------------------------------|-------|-------|-------|-------|------|------|
| Ratio | <i>i</i> | | 4 | 5 | 7 | 8 | 10 | 4 | 5 | 7 | 8 | 10 | | |
| Max. torque ^{a) b) e)} | T_{2a} | Nm | 2000 | 2000 | 1700 | 1200 | 1200 | 2000 | 2000 | 1700 | 1200 | 1200 | | |
| | | in.lb | 17702 | 17702 | 15046 | 10621 | 10621 | 17702 | 17702 | 15046 | 10621 | 10621 | | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | Nm | 2000 | 2000 | 1700 | 1200 | 1200 | 2000 | 2000 | 1700 | 1200 | 1200 | | |
| | | in.lb | 17702 | 17702 | 15046 | 10621 | 10621 | 17702 | 17702 | 15046 | 10621 | 10621 | | |
| Nominal torque (at n_{1N}) | T_{2N} | Nm | 1260 | 1141 | 1169 | 960 | 960 | 1260 | 1141 | 1169 | 960 | 960 | | |
| | | in.lb | 11148 | 10098 | 10347 | 8497 | 8497 | 11148 | 10098 | 10347 | 8497 | 8497 | | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 5900 | 5900 | 5900 | 5900 | 5900 | 5900 | 5900 | 5900 | 5900 | 5900 | | |
| | | in.lb | 52220 | 52220 | 52220 | 52220 | 52220 | 52220 | 52220 | 52220 | 52220 | 52220 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 2500 | 3500 | 3500 | 3500 | 3500 | 2500 | 3500 | 3500 | 3500 | 3500 | | |
| Max. input speed | n_{1Max} | rpm | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | | |
| Mean no load running torque ^{b)} (at $n_1 = 2000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 11 | 8.4 | 5.6 | 5.6 | 4.4 | 4.9 | 4.6 | 4.0 | 3.8 | 3.6 | | |
| | | in.lb | 99 | 74 | 50 | 50 | 39 | 43 | 41 | 35 | 34 | 32 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 4 / Reduced ≤ 2 | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | Nm/arcmin | 400 | | | | | | | | | | | |
| | | in.lb/arcmin | 3540 | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 30000 | | | | | 8000 | | | | | | |
| | | lb _f | 6750 | | | | | 1800 | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 21000 | | | | | 2500 | | | | | | |
| | | lb _f | 4725 | | | | | 563 | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 3100 | | | | | 310 | | | | | | |
| | | in.lb | 27437 | | | | | 2744 | | | | | | |
| Efficiency at full load | η | % | 98.5 | | | | | 99 | | | | | | |
| Service life ^{f)} | L_h | h | > 30000 | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 56 | | | | | | | | | | | |
| | | lb _m | 123.8 | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{pA} | dB(A) | ≤ 64 | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | | | | | | |
| | | F | 5 to 104 | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | IP 52 | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC2-04000AA075.000-X | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 050.000 - 090.000 | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | N | 55 | J_1 | kgcm ² | 94.3 | 76.9 | 61.5 | 61.5 | 53.1 | 94.3 | 76.9 | 61.5 | 61.5 | 53.1 |
| | | | | 10 ⁻³ in.lb.s ² | 83.5 | 68.1 | 54.4 | 54.4 | 47.0 | 83.5 | 68.1 | 54.4 | 54.4 | 47.0 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ^{f)} Please contact us to discuss application-specific service lifetimes

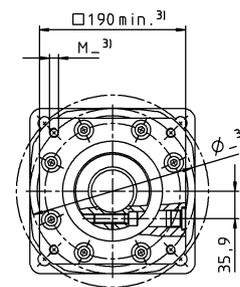
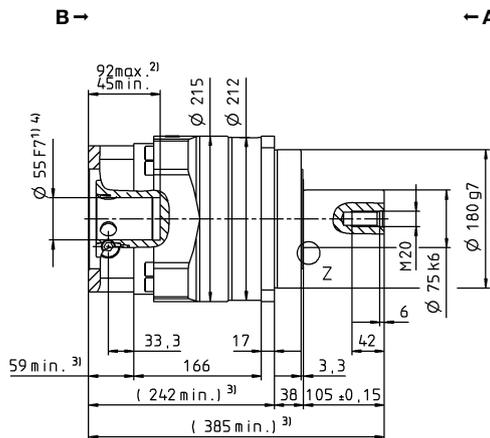
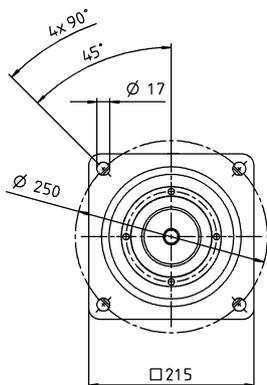
View A

View B

Motor shaft diameter [mm]

1-stage

up to 55 ⁴⁾ (N) ⁵⁾
clamping hub diameter



Planetary gearboxes

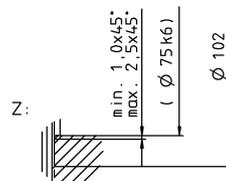
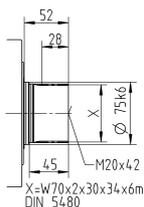
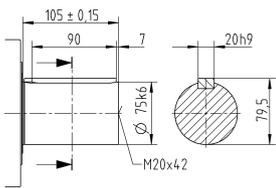
SP+

MC

Other output variants

Shaft with key

Spined shaft (DIN 5480)



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

SP+ 210 MC 2-stage

| | | | | 2-stage | | | | | | | | | | |
|--|-------------|-----------------------|--|--------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Ratio | <i>i</i> | | | 16 | 20 | 25 | 28 | 32 | 35 | 40 | 50 | 64 | 70 | 100 |
| Max. torque ^{a) b) e)} | T_{2a} | <i>Nm</i> | | 1680 | 1800 | 2000 | 1680 | 1680 | 1920 | 1040 | 1300 | 1200 | 1700 | 1200 |
| | | <i>in.lb</i> | | 14869 | 15931 | 17702 | 14869 | 14869 | 16994 | 9205 | 11506 | 10621 | 15046 | 10621 |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | <i>Nm</i> | | 1680 | 1800 | 2000 | 1680 | 1680 | 1920 | 1040 | 1300 | 1200 | 1700 | 1200 |
| | | <i>in.lb</i> | | 14869 | 15931 | 17702 | 14869 | 14869 | 16994 | 9205 | 11506 | 10621 | 15046 | 10621 |
| Nominal torque (at n_{1N}) | T_{2N} | <i>Nm</i> | | 898 | 728 | 910 | 744 | 1344 | 929 | 787 | 984 | 960 | 1360 | 960 |
| | | <i>in.lb</i> | | 7949 | 6445 | 8056 | 6581 | 11895 | 8226 | 6969 | 8711 | 8497 | 12037 | 8497 |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | <i>Nm</i> | | 5900 | 5900 | 5900 | 5900 | 5900 | 5900 | 5900 | 5900 | 5900 | 5900 | 5900 |
| | | <i>in.lb</i> | | 52220 | 52220 | 52220 | 52220 | 52220 | 52220 | 52220 | 52220 | 52220 | 52220 | 52220 |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | <i>rpm</i> | | 3500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 |
| Max. input speed | n_{1Max} | <i>rpm</i> | | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 |
| Mean no load running torque ^{b)} (at $n_1 = 2000$ rpm and 20 °C gearbox temperature) | T_{012} | <i>Nm</i> | | 3.4 | 3.1 | 2.9 | 2.6 | 2.6 | 2.0 | 2.0 | 1.8 | 1.8 | 1.6 | 1.6 |
| | | <i>in.lb</i> | | 30 | 27 | 25 | 23 | 23 | 18 | 18 | 16 | 16 | 14 | 14 |
| Max. backlash | j_t | <i>arcmin</i> | | Standard ≤ 5 / Reduced ≤ 4 | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | <i>Nm/arcmin</i> | | 400 | | | | | | | | | | |
| | | <i>in.lb/arcmin</i> | | 3540 | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | <i>N</i> | | 30000 | | | | | | | | | | |
| | | <i>lb_f</i> | | 6750 | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | <i>N</i> | | 21000 | | | | | | | | | | |
| | | <i>lb_f</i> | | 4725 | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | <i>Nm</i> | | 3100 | | | | | | | | | | |
| | | <i>in.lb</i> | | 27437 | | | | | | | | | | |
| Efficiency at full load | η | % | | 96.5 | | | | | | | | | | |
| Service life ¹⁾ | L_h | <i>h</i> | | > 30000 | | | | | | | | | | |
| Weight (incl. standard adapter plate) | <i>m</i> | <i>kg</i> | | 53 | | | | | | | | | | |
| | | <i>lb_m</i> | | 117.1 | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{pA} | <i>dB(A)</i> | | ≤ 57 | | | | | | | | | | |
| Max. permitted housing temperature | | °C | | +90 | | | | | | | | | | |
| | | <i>F</i> | | 194 | | | | | | | | | | |
| Ambient temperature | | °C | | -15 to +40 | | | | | | | | | | |
| | | <i>F</i> | | 5 to 104 | | | | | | | | | | |
| Lubrication | | | | Lubricated for life | | | | | | | | | | |
| Direction of rotation | | | | In- and output same direction | | | | | | | | | | |
| Protection class | | | | IP 65 | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | | BC2-04000AA075.000-X | | | | | | | | | | |
| Bore diameter of coupling on the application side | | <i>mm</i> | | X = 050.000 - 090.000 | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | M 48 | J_1 | <i>kgcm²</i> | 34.5 | 31.5 | 30.8 | 30.0 | 30.0 | 29.7 | 28.5 | 28.3 | 28.3 | 28.1 | 28.0 |
| | | | <i>10⁻³ in.lb.s²</i> | 30.5 | 27.9 | 27.3 | 26.6 | 26.6 | 26.3 | 25.2 | 25.0 | 25.0 | 24.9 | 24.8 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

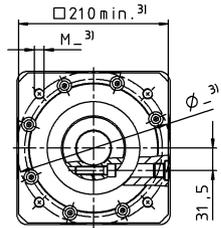
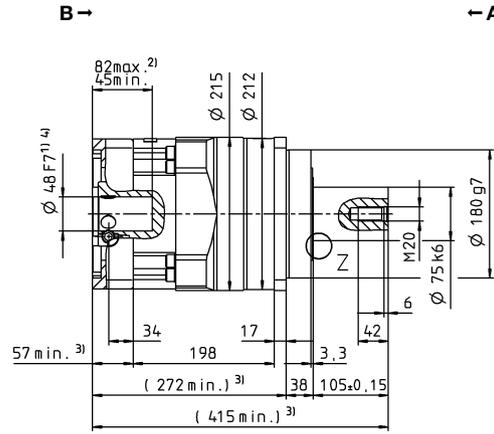
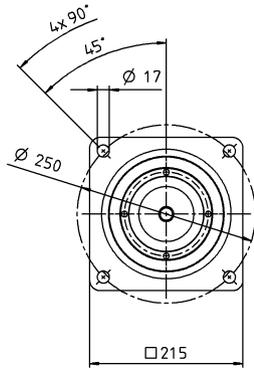
View A

View B

Motor shaft diameter [mm]

2-stage

up to 48⁴⁾ (M)⁵⁾
clamping hub diameter



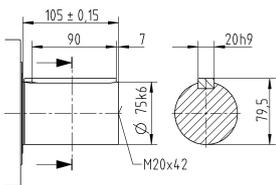
Planetary gearboxes

SP+

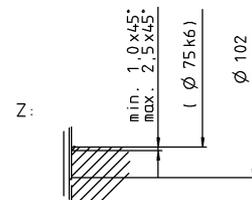
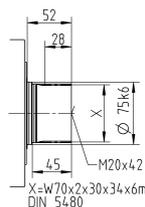
MC

Other output variants

Shaft with key



Splined shaft (DIN 5480)



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

SP+ 240 MC 1-stage

| | | | Standard version MC | | | | | Friction optimized version L | | | | | |
|---|-------------|-----------------|---------------------------------------|-------|-------|-------|-------|------------------------------|-------|-------|-------|-------|-----|
| Ratio | <i>i</i> | | 4 | 5 | 7 | 8 | 10 | 4 | 5 | 7 | 8 | 10 | |
| Max. torque ^{a) b) e)} | T_{2a} | Nm | 3500 | 3600 | 2700 | 1800 | 1800 | 3500 | 3600 | 2700 | 1800 | 1800 | |
| | | in.lb | 30978 | 31863 | 23897 | 15931 | 15931 | 30978 | 31863 | 23897 | 15931 | 15931 | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | Nm | 3500 | 3600 | 2700 | 1800 | 1800 | 3500 | 3600 | 2700 | 1800 | 1800 | |
| | | in.lb | 30978 | 31863 | 23897 | 15931 | 15931 | 30978 | 31863 | 23897 | 15931 | 15931 | |
| Nominal torque (at n_{1N}) | T_{2N} | Nm | 2029 | 1861 | 1910 | 1440 | 1440 | 2029 | 1861 | 1910 | 1440 | 1440 | |
| | | in.lb | 17955 | 16471 | 16909 | 12745 | 12745 | 17955 | 16471 | 16909 | 12745 | 12745 | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 8500 | 8500 | 8500 | 6850 | 6850 | 8500 | 8500 | 8500 | 6850 | 6850 | |
| | | in.lb | 75232 | 75232 | 75232 | 60628 | 60628 | 75232 | 75232 | 75232 | 60628 | 60628 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 2250 | 3000 | 3000 | 3000 | 3000 | 2250 | 3000 | 3000 | 3000 | 3000 | |
| Max. input speed | n_{1Max} | rpm | 4000 | 5000 | 5000 | 5000 | 5000 | 4000 | 5000 | 5000 | 5000 | 5000 | |
| Mean no load running torque ^{b)} (at $n_1 = 2000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 16 | 12 | 8.6 | 8.6 | 5.8 | 7.0 | 6.0 | 5.0 | 4.8 | 4.2 | |
| | | in.lb | 141 | 107 | 77 | 77 | 51 | 62 | 53 | 44 | 43 | 37 | |
| Max. backlash | j_t | arcmin | Standard ≤ 4 / Reduced ≤ 2 | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | Nm/arcmin | 550 | | | | | | | | | | |
| | | in.lb/arcmin | 4868 | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 33000 | | | | | 10000 | | | | | |
| | | lb _f | 7425 | | | | | 2250 | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 30000 | | | | | 2000 | | | | | |
| | | lb _f | 6750 | | | | | 450 | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 5000 | | | | | 280 | | | | | |
| | | in.lb | 44254 | | | | | 2478 | | | | | |
| Efficiency at full load | η | % | 98.5 | | | | | 99 | | | | | |
| Service life ¹⁾ | L_h | h | > 30000 | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 77 | | | | | | | | | | |
| | | lb _m | 170.2 | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | 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 | | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | IP 52 | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC2-04000AA085.000-X | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 050.000 - 090.000 | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | O 60 | J_1 | kgcm ² | 198 | 163 | 138 | 138 | 125 | 198 | 163 | 138 | 138 | 125 |
| | | | 10 ⁻³ in.lb.s ² | 175 | 144 | 122 | 122 | 110 | 175 | 144 | 122 | 122 | 110 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

SP+ 240 MC 2-stage

| | | | | 2-stage | | | | | | | | | | | |
|--|-------------|-----------------------|-------|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Ratio | <i>i</i> | | | 16 | 20 | 25 | 28 | 32 | 35 | 40 | 50 | 64 | 70 | 100 | |
| Max. torque ^{a) b) e)} | T_{2a} | <i>Nm</i> | | 3500 | 3500 | 3600 | 2900 | 2900 | 3600 | 1680 | 2100 | 1800 | 2700 | 1800 | |
| | | <i>in.lb</i> | | 30978 | 30978 | 31863 | 25667 | 25667 | 31863 | 14869 | 18587 | 15931 | 23897 | 15931 | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | <i>Nm</i> | | 3500 | 3500 | 3600 | 2900 | 2900 | 3600 | 1680 | 2100 | 1800 | 2700 | 1800 | |
| | | <i>in.lb</i> | | 30978 | 30978 | 31863 | 25667 | 25667 | 31863 | 14869 | 18587 | 15931 | 23897 | 15931 | |
| Nominal torque (at n_{1N}) | T_{2N} | <i>Nm</i> | | 1950 | 1803 | 2266 | 1867 | 2320 | 2694 | 1344 | 1680 | 1440 | 2160 | 1440 | |
| | | <i>in.lb</i> | | 17255 | 15960 | 20058 | 16521 | 20534 | 23843 | 11895 | 14869 | 12745 | 19118 | 12745 | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | <i>Nm</i> | | 8500 | 8500 | 8500 | 8500 | 8500 | 8500 | 8500 | 8500 | 6850 | 8500 | 6850 | |
| | | <i>in.lb</i> | | 75232 | 75232 | 75232 | 75232 | 75232 | 75232 | 75232 | 75232 | 75232 | 60628 | 75232 | 60628 |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | <i>rpm</i> | | 3500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | |
| Max. input speed | n_{1Max} | <i>rpm</i> | | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | |
| Mean no load running torque ^{b)} (at $n_1 = 2000$ rpm and 20 °C gearbox temperature) | T_{012} | <i>Nm</i> | | 4.8 | 4.4 | 4.0 | 3.6 | 3.6 | 2.8 | 2.4 | 2.0 | 2.0 | 1.6 | 1.4 | |
| | | <i>in.lb</i> | | 43 | 39 | 35 | 32 | 32 | 25 | 21 | 18 | 18 | 14 | 13 | |
| Max. backlash | j_t | <i>arcmin</i> | | Standard ≤ 5 / Reduced ≤ 4 | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | <i>Nm/arcmin</i> | | 550 | | | | | | | | | | | |
| | | <i>in.lb/arcmin</i> | | 4868 | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | <i>N</i> | | 33000 | | | | | | | | | | | |
| | | <i>lb_f</i> | | 7425 | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | <i>N</i> | | 30000 | | | | | | | | | | | |
| | | <i>lb_f</i> | | 6750 | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | <i>Nm</i> | | 5000 | | | | | | | | | | | |
| | | <i>in.lb</i> | | 44254 | | | | | | | | | | | |
| Efficiency at full load | η | % | | 96.5 | | | | | | | | | | | |
| Service life ¹⁾ | L_h | <i>h</i> | | > 30000 | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | <i>m</i> | <i>kg</i> | | 76 | | | | | | | | | | | |
| | | <i>lb_m</i> | | 168.0 | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{pA} | <i>dB(A)</i> | | ≤ 58 | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | | +90 | | | | | | | | | | | |
| | | <i>F</i> | | 194 | | | | | | | | | | | |
| Ambient temperature | | °C | | -15 to +40 | | | | | | | | | | | |
| | | <i>F</i> | | 5 to 104 | | | | | | | | | | | |
| Lubrication | | | | Lubricated for life | | | | | | | | | | | |
| Direction of rotation | | | | In- and output same direction | | | | | | | | | | | |
| Protection class | | | | IP 65 | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | | BC2-04000AA085.000-X | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | <i>mm</i> | | X = 050.000 - 090.000 | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | M | 48 | J_1 | <i>kgcm²</i> | 34.5 | 31.5 | 30.8 | 30.0 | 30.0 | 29.7 | 28.5 | 28.3 | 28.3 | 28.1 | 28.0 |
| | | | | <i>10⁻³ in.lb.s²</i> | 30.5 | 27.9 | 27.3 | 26.6 | 26.6 | 26.3 | 25.2 | 25.1 | 25.1 | 24.9 | 24.8 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

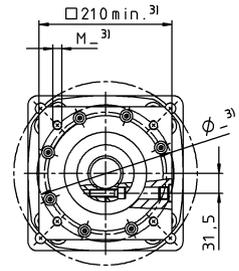
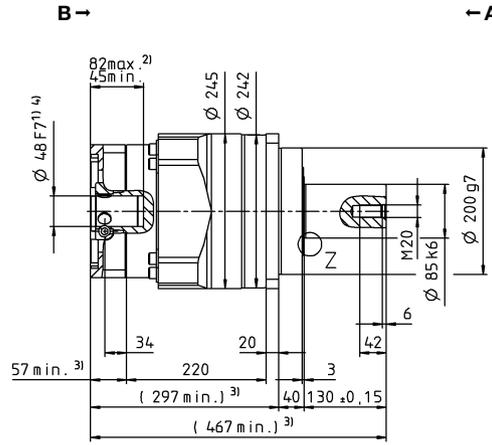
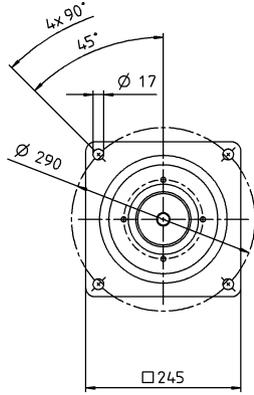
View A

View B

Motor shaft diameter [mm]

2-stage

up to 48⁴⁾ (M)⁵⁾
clamping hub diameter



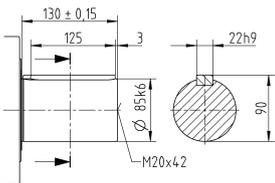
Planetary gearboxes

SP+

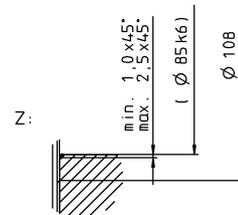
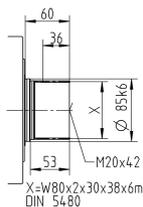
MC

Other output variants

Shaft with key



Splined shaft (DIN 5480)



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

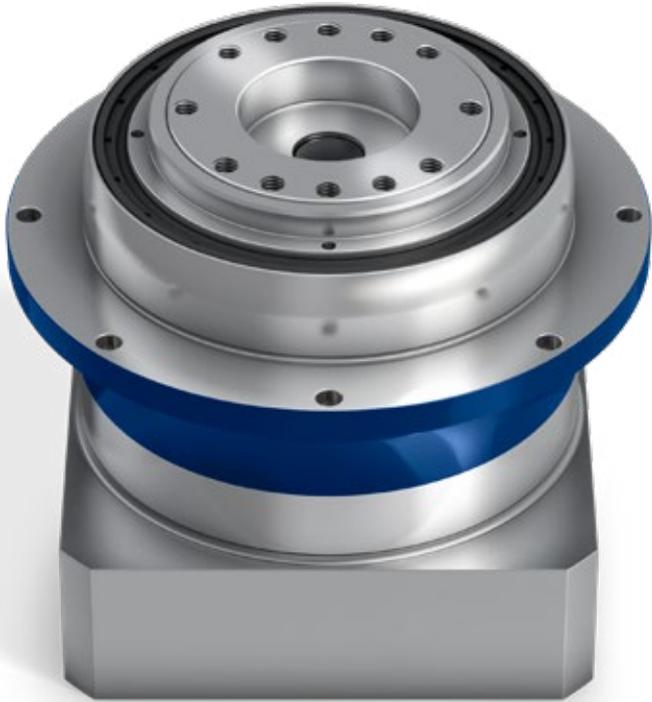
²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

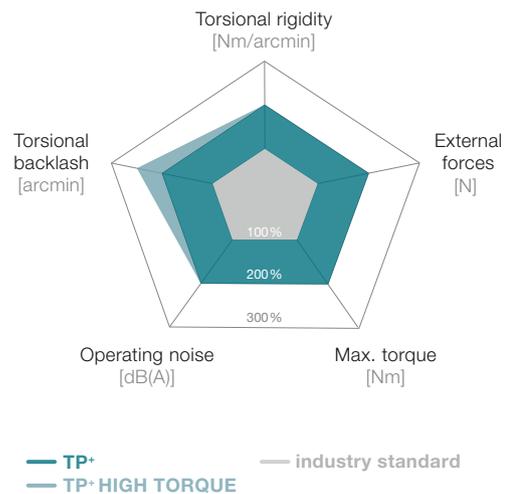
TP+ / TP+ HIGH TORQUE – Compact precision



TP+

Compact top performers with output flange. The standard version is ideally suited for high positioning accuracy and highly dynamic cyclic operation. The TP+ HIGH TORQUE is particularly appropriate for high-precision applications in which high torsional rigidity is required.

TP+ compared to the industry standard



Product highlights

Max. torsional backlash [arcmin] ≤ 1 – 4

High torsional rigidity

Space-saving design

Flexible drive options

Clamping hub socket, optimized mass inertia, keyed clamping hub socket

Other gearbox models

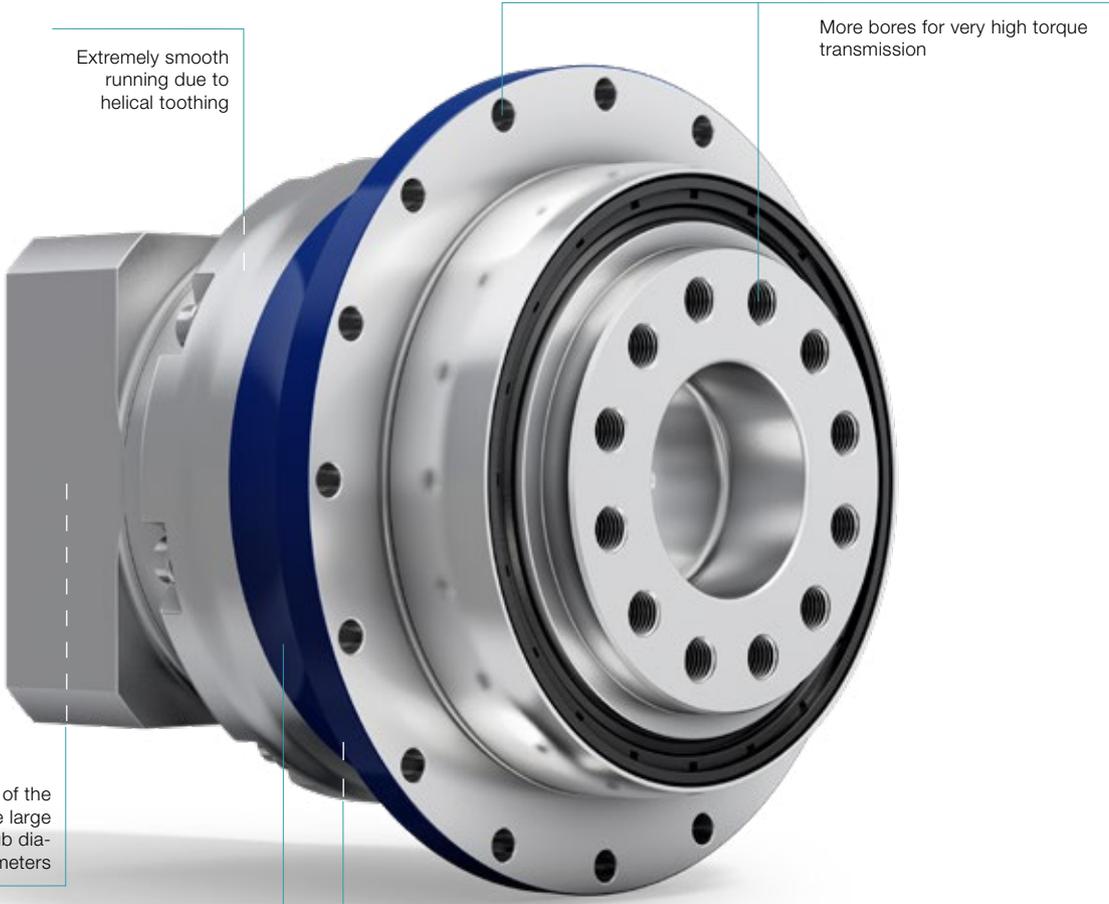
Corrosion resistant design, food-grade lubrication



TP+ 2000



TP+ in corrosion resistant design



Extremely smooth running due to helical toothing

More bores for very high torque transmission

Connectivity of the motor shafts due to the large number of clamping hub diameters

Very high torque density due to superior toothing concept

TP+ HIGH TORQUE

Tapered roller bearing for absorbing axial and radial forces



TP+ HIGH TORQUE with rack and pinion



premo® TP Line

TP+ 004 MF 1-stage

| | | | 1-stage | | | | | | |
|--|-------------|-----------------|--------------------------------------|---------------------------------------|------|------|------|------|------|
| Ratio | <i>i</i> | | 4 | 5 | 7 | 8 | 10 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 83 | 83 | 83 | 56 | 56 | | |
| | | in.lb | 735 | 735 | 735 | 496 | 496 | | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 66 | 66 | 66 | 42 | 42 | | |
| | | in.lb | 584 | 584 | 584 | 372 | 372 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 27 | 27 | 26 | 26 | 27 | | |
| | | in.lb | 239 | 236 | 226 | 230 | 237 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 100 | 100 | 100 | 100 | 100 | | |
| | | in.lb | 885 | 885 | 885 | 885 | 885 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 3300 | 3300 | 4000 | 4000 | 4000 | | |
| Max. input speed | n_{1Max} | rpm | 7500 | 7500 | 7500 | 7500 | 7500 | | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 0.56 | 0.48 | 0.37 | 0.37 | 0.31 | | |
| | | in.lb | 5.0 | 4.2 | 3.3 | 3.3 | 2.7 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 4 / Reduced ≤ 2 | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 12 | 12 | 11 | 8 | 8 | | |
| | | in.lb/arcmin | 106 | 106 | 97 | 71 | 71 | | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 85 | | | | | | |
| | | in.lb/arcmin | 752 | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 2119 | | | | | | |
| | | lb _f | 477 | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 110 | | | | | | |
| | | in.lb | 974 | | | | | | |
| Efficiency at full load | η | % | 97 | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 1.4 | | | | | | |
| | | lb _m | 3.1 | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 55 | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | |
| | | F | 194 | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | |
| | | F | 5 to 104 | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | |
| Protection class | | | IP 65 | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BCT-00015AAX-031.500 | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 012.000 - 028.000 | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | B | 11 | J_1 | kgcm ² | 0.17 | 0.14 | 0.11 | 0.11 | 0.09 |
| | | | | 10 ⁻³ in.lb.s ² | 0.15 | 0.12 | 0.10 | 0.10 | 0.08 |
| | C | 14 | J_1 | kgcm ² | 0.25 | 0.21 | 0.18 | 0.18 | 0.17 |
| | | | | 10 ⁻³ in.lb.s ² | 0.22 | 0.19 | 0.16 | 0.16 | 0.15 |
| | E | 19 | J_1 | kgcm ² | 0.57 | 0.54 | 0.51 | 0.51 | 0.49 |
| | | | | 10 ⁻³ in.lb.s ² | 0.50 | 0.48 | 0.45 | 0.45 | 0.43 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

^{a)} At max. 10 % M_{2KMax}

^{b)} Valid for standard clamping hub diameter

^{c)} Refers to center of the output shaft or flange

^{d)} Please reduce input speed at higher ambient temperatures

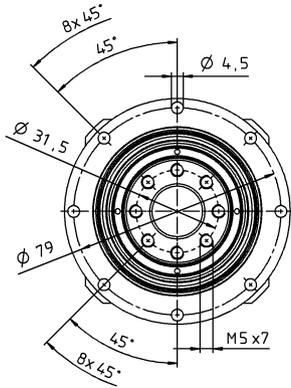
^{f)} Please contact us to discuss application-specific service lifetimes

View A

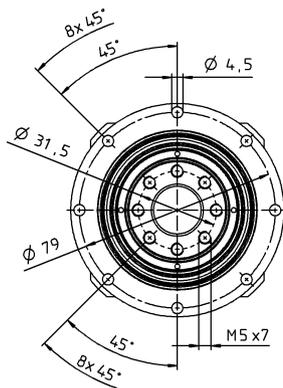
View B

1-stage

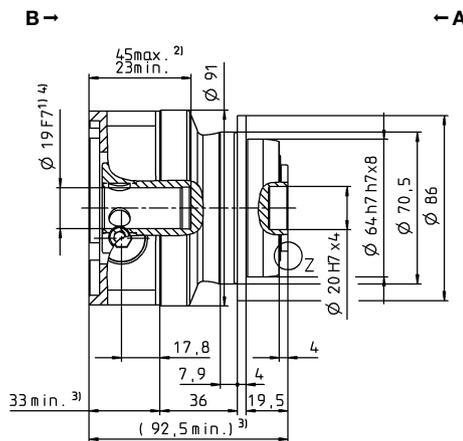
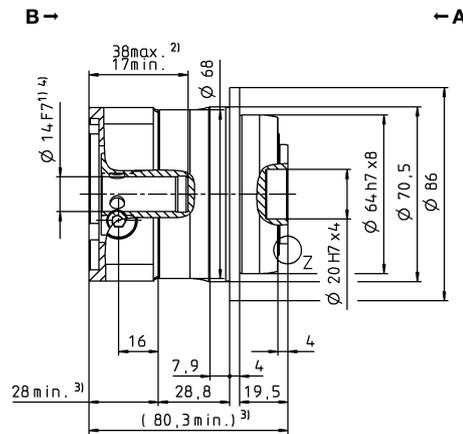
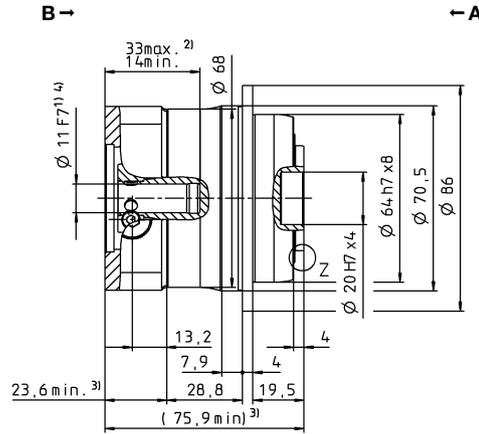
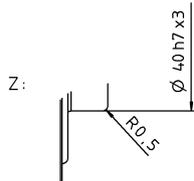
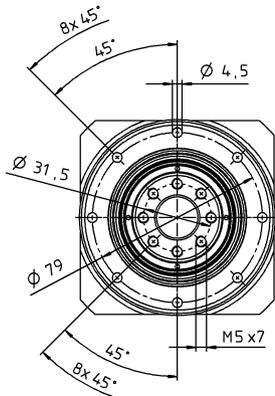
up to 11⁴⁾ (B)
clamping hub diameter



up to 14⁴⁾ (C)⁵⁾
clamping hub diameter



up to 19⁴⁾ (E)
clamping hub diameter



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

Motor shaft diameter [mm]

TP+ 004 MF 2-stage

| | | | 2-stage | | | | | | | | | | | | | | | | |
|--|-------------|-----------------|--------------------------------------|---------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Ratio | <i>i</i> | | 16 | 20 | 21 | 25 | 28 | 31 | 32 | 35 | 40 | 50 | 61 | 64 | 70 | 91 | 100 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 57 | 57 | 60 | 72 | 57 | 50 | 57 | 72 | 57 | 72 | 49 | 48 | 56 | 43 | 48 | | |
| | | in.lb | 507 | 507 | 533 | 634 | 507 | 442 | 507 | 634 | 507 | 634 | 435 | 423 | 499 | 385 | 423 | | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 57 | 57 | 48 | 66 | 57 | 48 | 57 | 66 | 57 | 66 | 49 | 42 | 56 | 38 | 42 | | |
| | | in.lb | 507 | 507 | 425 | 584 | 504 | 425 | 507 | 584 | 507 | 584 | 434 | 372 | 496 | 336 | 372 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 39 | 41 | 32 | 41 | 45 | 36 | 39 | 45 | 46 | 48 | 39 | 34 | 45 | 31 | 34 | | |
| | | in.lb | 342 | 365 | 286 | 361 | 403 | 320 | 343 | 399 | 406 | 421 | 341 | 297 | 399 | 272 | 297 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | | |
| | | in.lb | 885 | 885 | 885 | 885 | 885 | 885 | 885 | 885 | 885 | 885 | 885 | 885 | 885 | 885 | 885 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4800 | 5500 | 4800 | 5500 | 5500 | 5500 | | |
| Max. input speed | n_{1Max} | rpm | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 0.28 | 0.23 | 0.24 | 0.22 | 0.21 | 0.22 | 0.21 | 0.17 | 0.18 | 0.17 | 0.16 | 0.17 | 0.17 | 0.15 | 0.16 | | |
| | | in.lb | 2.5 | 2.0 | 2.1 | 1.9 | 1.9 | 1.9 | 1.9 | 1.5 | 1.6 | 1.5 | 1.4 | 1.5 | 1.5 | 1.3 | 1.4 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 4 / Reduced ≤ 2 | | | | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 12 | 12 | 10 | 12 | 12 | 9 | 12 | 12 | 11 | 12 | 9 | 12 | 11 | 7 | 8 | | |
| | | in.lb/arcmin | 106 | 106 | 89 | 106 | 106 | 80 | 106 | 106 | 97 | 106 | 80 | 106 | 97 | 62 | 71 | | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 85 | | | | | | | | | | | | | | | | |
| | | in.lb/arcmin | 752 | | | | | | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 2119 | | | | | | | | | | | | | | | | |
| | | lb _f | 477 | | | | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 110 | | | | | | | | | | | | | | | | |
| | | in.lb | 974 | | | | | | | | | | | | | | | | |
| Efficiency at full load | η | % | 94 | | | | | | | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 1.5 | | | | | | | | | | | | | | | | |
| | | lb _m | 3.3 | | | | | | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 54 | | | | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | | | | | | | | | | | |
| | | F | 5 to 104 | | | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BCT-00015AAX-031.500 | | | | | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 012.000 - 028.000 | | | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | B | 11 | J_1 | kgcm ² | 0.078 | 0.070 | 0.074 | 0.068 | 0.062 | 0.072 | 0.062 | 0.061 | 0.057 | 0.057 | 0.058 | 0.060 | 0.056 | 0.057 | 0.056 |
| | | | | 10 ⁻³ in.lb.s ² | 0.069 | 0.062 | 0.065 | 0.060 | 0.055 | 0.064 | 0.055 | 0.054 | 0.050 | 0.050 | 0.051 | 0.053 | 0.050 | 0.050 | 0.050 |
| | C | 14 | J_1 | kgcm ² | 0.17 | 0.17 | 0.17 | 0.16 | 0.16 | 0.17 | 0.16 | 0.16 | 0.15 | 0.15 | 0.15 | 0.16 | 0.15 | 0.15 | 0.15 |
| | | | | 10 ⁻³ in.lb.s ² | 0.15 | 0.15 | 0.15 | 0.15 | 0.14 | 0.15 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.13 | 0.14 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

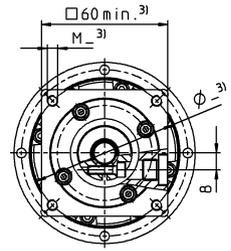
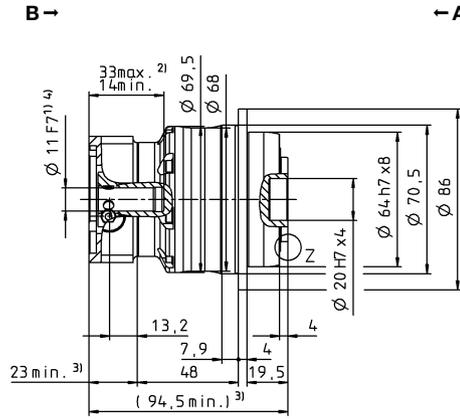
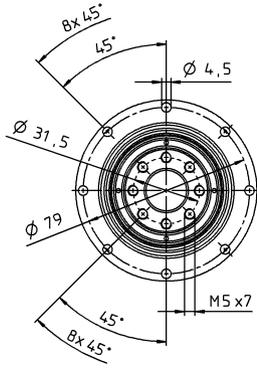
- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

View B

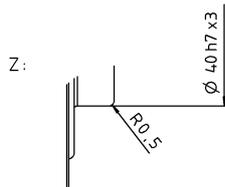
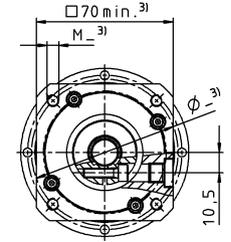
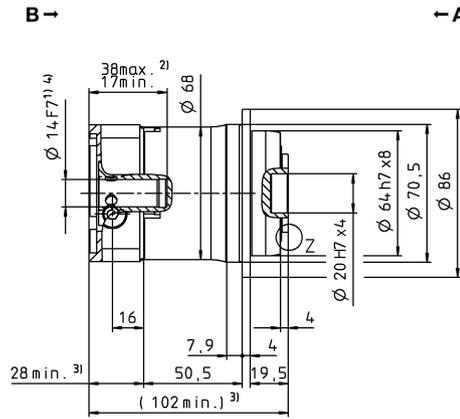
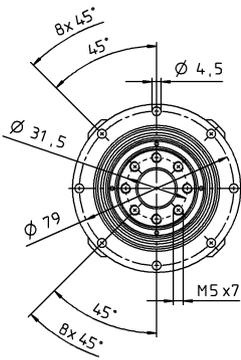
2-stage

up to 11⁴⁾ (B)⁵⁾
clamping hub diameter



Motor shaft diameter [mm]

up to 14⁴⁾ (C)
clamping hub diameter



Planetary gearboxes

TP+

MF

Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

TP+ 010 MF 1-stage

| | | | 1-stage | | | | | | |
|--|-------------|-----------------|--------------------------------------|---------------------------------------|------|------|------|------|------|
| Ratio | <i>i</i> | | 4 | 5 | 7 | 8 | 10 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 185 | 210 | 210 | 168 | 168 | | |
| | | in.lb | 1640 | 1859 | 1859 | 1487 | 1487 | | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 172 | 172 | 172 | 126 | 126 | | |
| | | in.lb | 1522 | 1522 | 1522 | 1115 | 1115 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 84 | 81 | 81 | 80 | 81 | | |
| | | in.lb | 743 | 716 | 719 | 712 | 720 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 250 | 250 | 251 | 251 | 251 | | |
| | | in.lb | 2213 | 2213 | 2222 | 2222 | 2222 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 2600 | 2900 | 3100 | 3100 | 3100 | | |
| Max. input speed | n_{1Max} | rpm | 7500 | 7500 | 7500 | 7500 | 7500 | | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 1.3 | 1.1 | 0.84 | 0.84 | 0.64 | | |
| | | in.lb | 12 | 9.5 | 7.4 | 7.4 | 5.7 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 3 / Reduced ≤ 1 | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 32 | 33 | 30 | 23 | 23 | | |
| | | in.lb/arcmin | 283 | 292 | 266 | 204 | 204 | | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 225 | | | | | | |
| | | in.lb/arcmin | 1991 | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 2795 | | | | | | |
| | | lb _f | 629 | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 270 | | | | | | |
| | | in.lb | 2390 | | | | | | |
| Efficiency at full load | η | % | 97 | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 3.8 | | | | | | |
| | | lb _m | 8.4 | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 57 | | | | | | |
| | | | +90 | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | |
| | | F | 194 | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | |
| | | F | 5 to 104 | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | |
| Protection class | | | IP 65 | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BCT-00060AAX-050.000 | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 014.000 - 035.000 | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | C | 14 | J_1 | kgcm ² | 0.78 | 0.62 | 0.48 | 0.48 | 0.40 |
| | | | | 10 ⁻³ in.lb.s ² | 0.69 | 0.55 | 0.42 | 0.42 | 0.35 |
| | E | 19 | J_1 | kgcm ² | 0.95 | 0.79 | 0.64 | 0.64 | 0.57 |
| | | | | 10 ⁻³ in.lb.s ² | 0.84 | 0.70 | 0.57 | 0.57 | 0.50 |
| | G | 24 | J_1 | kgcm ² | 2.32 | 2.16 | 2.02 | 2.02 | 1.94 |
| | | | | 10 ⁻³ in.lb.s ² | 2.05 | 1.91 | 1.79 | 1.79 | 1.72 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

^{a)} At max. 10 % M_{2KMax}

^{b)} Valid for standard clamping hub diameter

^{c)} Refers to center of the output shaft or flange

^{d)} Please reduce input speed at higher ambient temperatures

^{f)} Please contact us to discuss

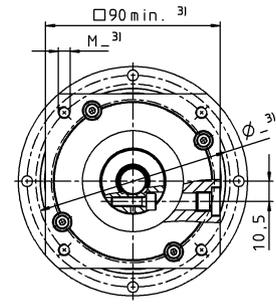
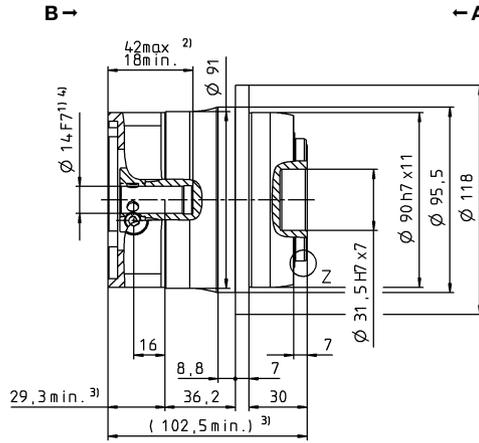
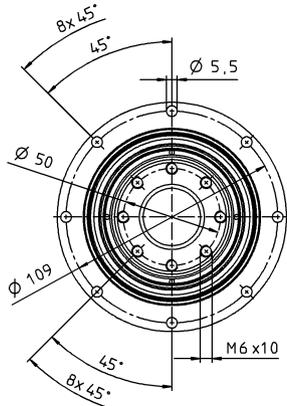
application-specific service lifetimes

View A

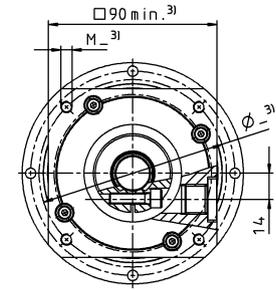
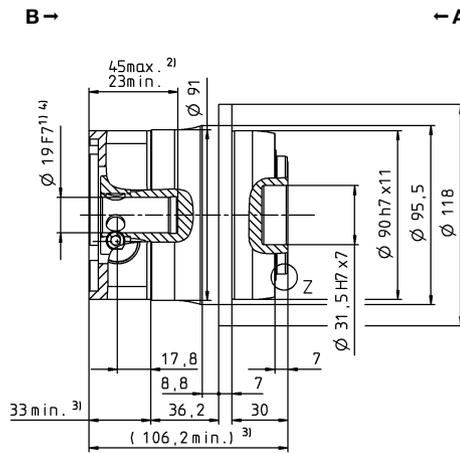
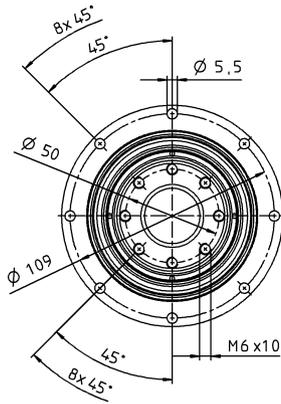
View B

1-stage

up to 14⁴⁾ (C)
clamping hub diameter

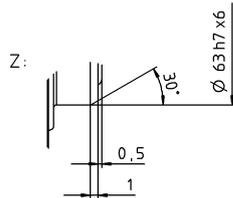
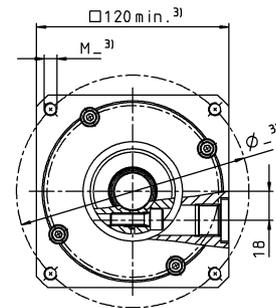
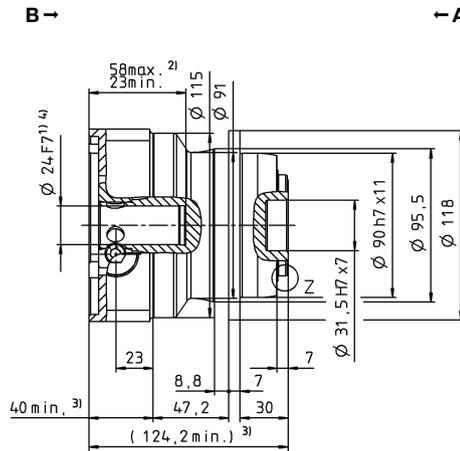
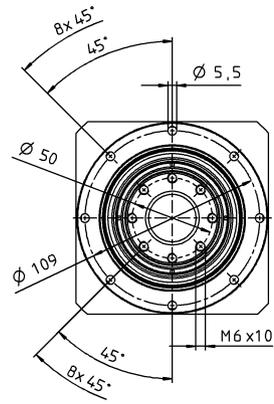


up to 19⁴⁾ (E)⁵⁾
clamping hub diameter



Motor shaft diameter [mm]

up to 24⁴⁾ (G)
clamping hub diameter



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

Planetary gearboxes

TP*

MF

TP+ 010 MF 2-stage

| | | | 2-stage | | | | | | | | | | | | | | | | |
|--|-------------|-----------------|--------------------------------------|---------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 16 | 20 | 21 | 25 | 28 | 31 | 32 | 35 | 40 | 50 | 61 | 64 | 70 | 91 | 100 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 157 | 126 | 133 | 158 | 157 | 121 | 157 | 158 | 154 | 158 | 121 | 105 | 157 | 96 | 105 | | |
| | | in.lb | 1392 | 1118 | 1174 | 1398 | 1392 | 1071 | 1392 | 1398 | 1363 | 1398 | 1071 | 932 | 1392 | 848 | 932 | | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 157 | 126 | 120 | 158 | 157 | 121 | 157 | 158 | 154 | 158 | 121 | 105 | 157 | 96 | 105 | | |
| | | in.lb | 1392 | 1118 | 1062 | 1398 | 1392 | 1071 | 1392 | 1398 | 1363 | 1398 | 1071 | 932 | 1392 | 848 | 932 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 106 | 101 | 96 | 124 | 107 | 87 | 119 | 126 | 112 | 126 | 97 | 84 | 126 | 77 | 84 | | |
| | | in.lb | 935 | 895 | 850 | 1097 | 945 | 770 | 1053 | 1118 | 987 | 1118 | 857 | 746 | 1114 | 678 | 746 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 251 | 251 | 251 | 251 | 251 | 251 | 251 | 251 | 251 | 251 | 251 | 251 | 251 | 251 | 251 | | |
| | | in.lb | 2222 | 2222 | 2222 | 2222 | 2222 | 2222 | 2222 | 2222 | 2222 | 2222 | 2222 | 2222 | 2222 | 2222 | 2222 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3800 | 4500 | 3800 | 4500 | 4500 | 4500 | | |
| Max. input speed | n_{1Max} | rpm | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | | |
| | | | | | | | | | | | | | | | | | | | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 0.56 | 0.48 | 0.47 | 0.44 | 0.40 | 0.40 | 0.40 | 0.28 | 0.32 | 0.32 | 0.23 | 0.32 | 0.24 | 0.24 | 0.25 | | |
| | | in.lb | 5.0 | 4.2 | 4.2 | 3.9 | 3.5 | 3.5 | 3.5 | 2.5 | 2.8 | 2.8 | 2.0 | 2.8 | 2.1 | 2.1 | 2.2 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 3 / Reduced ≤ 1 | | | | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 32 | 32 | 26 | 32 | 31 | 24 | 31 | 32 | 30 | 30 | 24 | 30 | 28 | 21 | 22 | | |
| | | in.lb/arcmin | 283 | 283 | 230 | 283 | 274 | 212 | 274 | 283 | 266 | 266 | 212 | 266 | 248 | 186 | 195 | | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 225 | | | | | | | | | | | | | | | | |
| | | in.lb/arcmin | 1991 | | | | | | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 2795 | | | | | | | | | | | | | | | | |
| | | lb _f | 629 | | | | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 270 | | | | | | | | | | | | | | | | |
| | | in.lb | 2390 | | | | | | | | | | | | | | | | |
| Efficiency at full load | η | % | 94 | | | | | | | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 3.6 | | | | | | | | | | | | | | | | |
| | | lb _m | 8.0 | | | | | | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 55 | | | | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | | | | | | | | | | | |
| | | F | 5 to 104 | | | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BCT-00060AAX-050.000 | | | | | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 014.000 - 035.000 | | | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | B | 11 | J_i | kgcm ² | 0.17 | 0.14 | 0.15 | 0.13 | 0.11 | 0.14 | 0.11 | 0.10 | 0.09 | 0.09 | 0.09 | 0.10 | 0.09 | 0.09 | |
| | | | | 10 ⁻³ in.lb.s ² | 0.15 | 0.12 | 0.13 | 0.12 | 0.10 | 0.12 | 0.10 | 0.09 | 0.08 | 0.08 | 0.08 | 0.09 | 0.08 | 0.08 | 0.08 |
| | C | 14 | J_i | kgcm ² | 0.24 | 0.21 | 0.22 | 0.20 | 0.18 | 0.21 | 0.18 | 0.18 | 0.17 | 0.17 | 0.17 | 0.17 | 0.16 | 0.17 | 0.16 |
| | | | | 10 ⁻³ in.lb.s ² | 0.21 | 0.19 | 0.20 | 0.18 | 0.16 | 0.18 | 0.16 | 0.16 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| | E | 19 | J_i | kgcm ² | 0.56 | 0.53 | 0.55 | 0.53 | 0.51 | 0.53 | 0.51 | 0.50 | 0.49 | 0.49 | 0.49 | 0.52 | 0.49 | 0.49 | 0.49 |
| | | | | 10 ⁻³ in.lb.s ² | 0.50 | 0.47 | 0.48 | 0.47 | 0.45 | 0.47 | 0.45 | 0.44 | 0.43 | 0.43 | 0.43 | 0.43 | 0.46 | 0.43 | 0.43 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

^{a)} At max. 10 % M_{2KMax}

^{b)} Valid for standard clamping hub diameter

^{c)} Refers to center of the output shaft or flange

^{d)} Please reduce input speed at higher ambient temperatures

^{f)} Please contact us to discuss

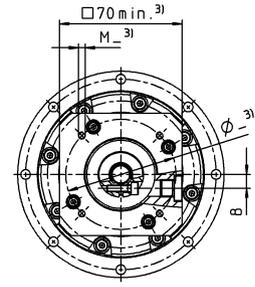
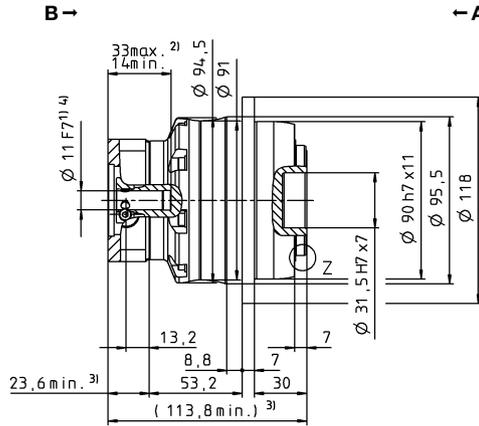
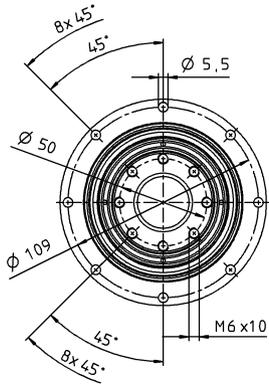
application-specific service lifetimes

View A

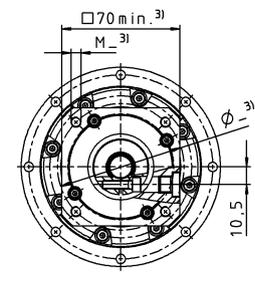
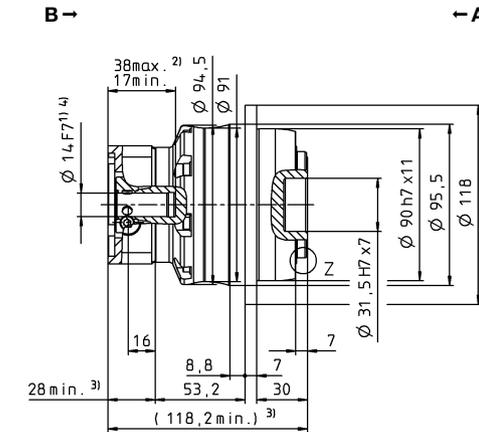
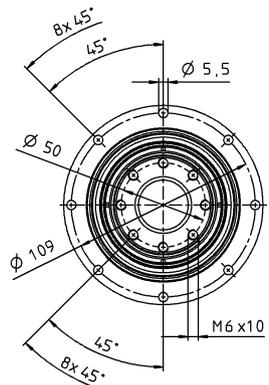
View B

2-stage

up to 11⁴⁾ (B)
clamping hub diameter

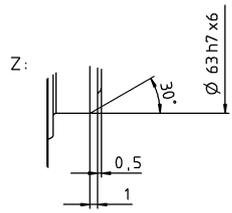
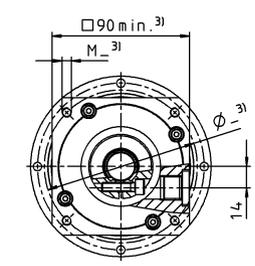
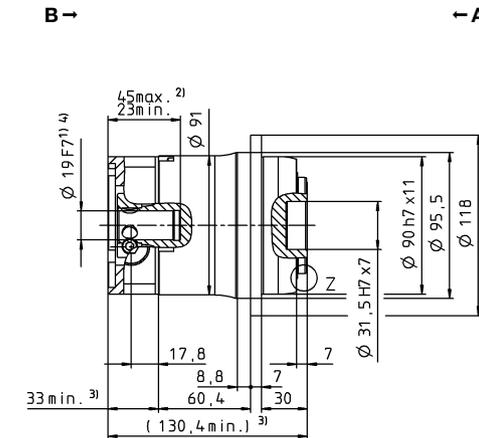
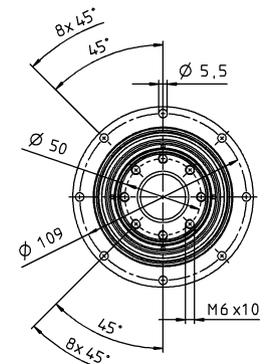


up to 14⁴⁾ (C)⁵⁾
clamping hub diameter



Motor shaft diameter [mm]

up to 19⁴⁾ (E)
clamping hub diameter



Non-tolerated dimensions are nominal dimensions
¹⁾ Check motor shaft fit
²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
³⁾ The dimensions depend on the motor
⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm
⁵⁾ Standard clamping hub diameter

Planetary gearboxes

TP*

MF

TP+ 025 MF 1-stage

| | | | 1-stage | | | | | | |
|--|-------------|-----------------|--------------------------------------|---------------------------------------|------|------|------|------|------|
| Ratio | <i>i</i> | | 4 | 5 | 7 | 8 | 10 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 352 | 380 | 352 | 352 | 352 | | |
| | | in.lb | 3115 | 3363 | 3115 | 3115 | 3115 | | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 352 | 380 | 352 | 318 | 318 | | |
| | | in.lb | 3115 | 3363 | 3115 | 2815 | 2815 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 175 | 169 | 172 | 172 | 180 | | |
| | | in.lb | 1548 | 1498 | 1524 | 1521 | 1591 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 625 | 625 | 625 | 625 | 625 | | |
| | | in.lb | 5532 | 5532 | 5532 | 5532 | 5532 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 2300 | 2500 | 2500 | 2500 | 2500 | | |
| Max. input speed | n_{1Max} | rpm | 5500 | 5500 | 5500 | 5500 | 5500 | | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 2.8 | 2.3 | 1.7 | 1.7 | 1.2 | | |
| | | in.lb | 25 | 20 | 15 | 15 | 10 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 3 / Reduced ≤ 1 | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 80 | 86 | 76 | 62 | 62 | | |
| | | in.lb/arcmin | 708 | 761 | 673 | 549 | 549 | | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 550 | | | | | | |
| | | in.lb/arcmin | 4868 | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 4800 | | | | | | |
| | | lb _f | 1080 | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 440 | | | | | | |
| | | in.lb | 3894 | | | | | | |
| Efficiency at full load | η | % | 97 | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 6.5 | | | | | | |
| | | lb _m | 14.4 | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 61 | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | |
| | | F | 194 | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | |
| | | F | 5 to 104 | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | |
| Protection class | | | IP 65 | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BCT-00150AAX-063.000 | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 019.000 - 042.000 | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | E | 19 | J_1 | kgcm ² | 2.59 | 2.11 | 1.69 | 1.69 | 1.45 |
| | | | | 10 ⁻³ in.lb.s ² | 2.29 | 1.87 | 1.50 | 1.50 | 1.28 |
| | G | 24 | J_1 | kgcm ² | 3.28 | 2.80 | 2.38 | 2.38 | 2.14 |
| | | | | 10 ⁻³ in.lb.s ² | 2.90 | 2.48 | 2.11 | 2.11 | 1.89 |
| | H | 28 | J_1 | kgcm ² | 2.89 | 2.41 | 1.99 | 1.99 | 1.75 |
| | | | | 10 ⁻³ in.lb.s ² | 2.56 | 2.13 | 1.76 | 1.76 | 1.55 |
| | K | 38 | J_1 | kgcm ² | 10.3 | 9.87 | 9.45 | 9.45 | 9.21 |
| | | | | 10 ⁻³ in.lb.s ² | 9.12 | 8.73 | 8.36 | 8.36 | 8.15 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

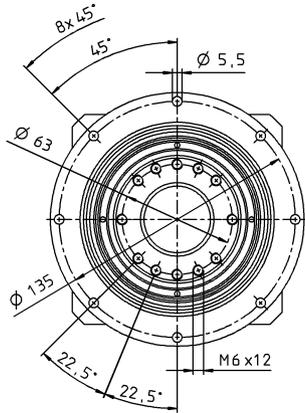
- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

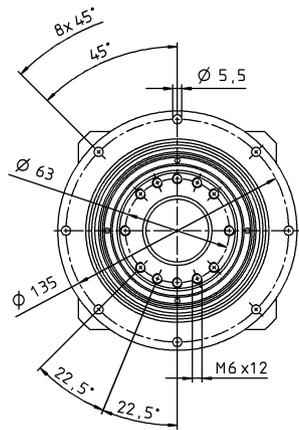
View B

1-stage

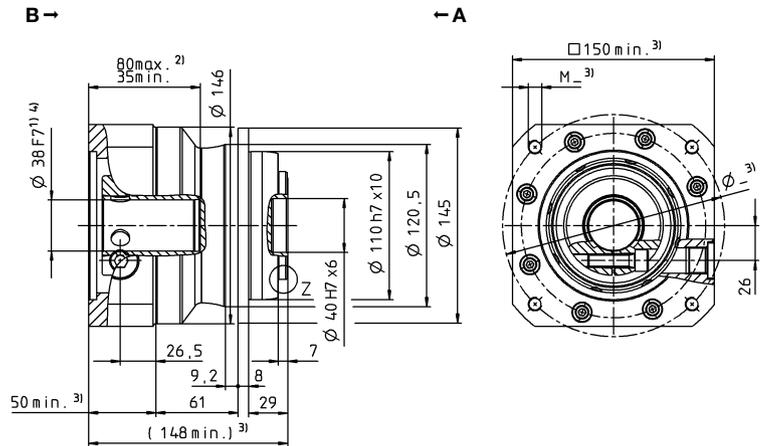
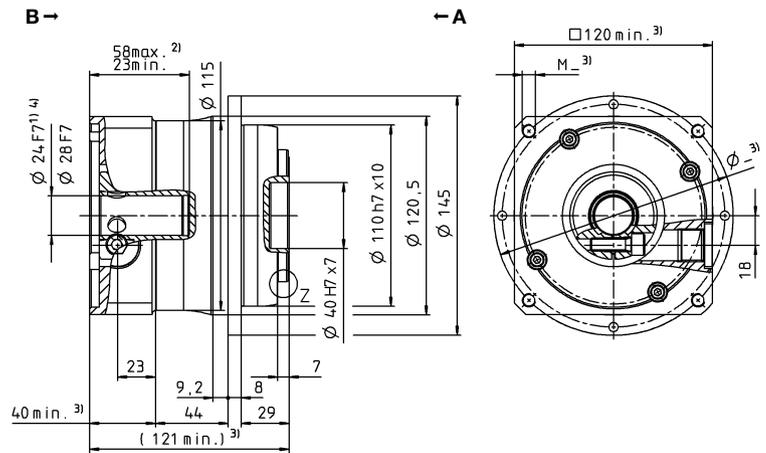
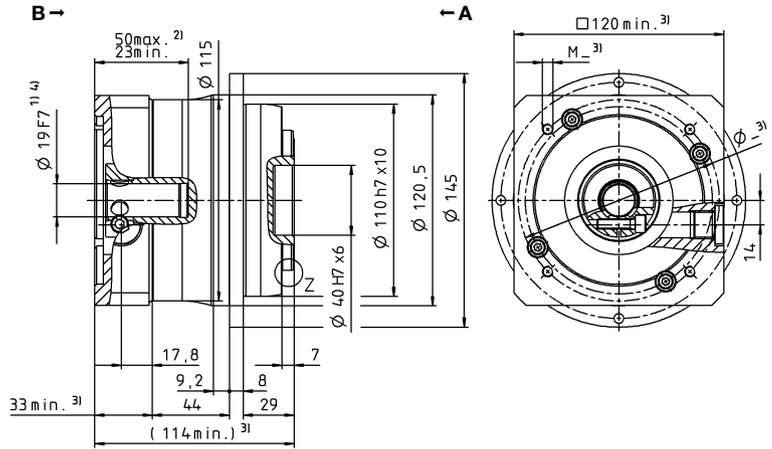
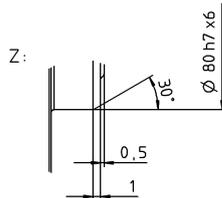
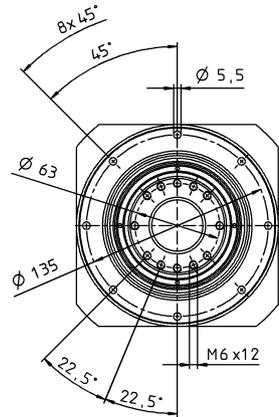
up to 19⁴⁾ (E)
clamping hub diameter



up to 24/28⁴⁾
(G⁵⁾/H) clamping hub diameter



up to 38⁴⁾ (K)
clamping hub diameter



Planetary gearboxes

TP+
MF

Non-tolerated dimensions are nominal dimensions
¹⁾ Check motor shaft fit
²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
³⁾ The dimensions depend on the motor
⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm
⁵⁾ Standard clamping hub diameter

TP+ 025 MF 2-stage

| | | | 2-stage | | | | | | | | | | | | | | | | |
|---|-------------|-----------------|--------------------------------------|---------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 16 | 20 | 21 | 25 | 28 | 31 | 32 | 35 | 40 | 50 | 61 | 64 | 70 | 91 | 100 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 352 | 352 | 352 | 380 | 352 | 352 | 352 | 380 | 352 | 380 | 352 | 352 | 352 | 352 | 352 | 352 | |
| | | in.lb | 3115 | 3115 | 3115 | 3363 | 3115 | 3115 | 3115 | 3363 | 3115 | 3363 | 3115 | 3363 | 3115 | 3115 | 3115 | 3115 | 3115 |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 352 | 352 | 330 | 380 | 352 | 330 | 352 | 380 | 352 | 380 | 308 | 292 | 352 | 275 | 292 | 292 | |
| | | in.lb | 3115 | 3115 | 2921 | 3363 | 3115 | 2921 | 3115 | 3363 | 3115 | 3363 | 2726 | 2584 | 3115 | 2434 | 2584 | 2584 | |
| Nominal torque (at n_n) | T_{2N} | Nm | 250 | 267 | 211 | 265 | 282 | 231 | 251 | 294 | 282 | 304 | 246 | 233 | 282 | 220 | 233 | 233 | |
| | | in.lb | 2213 | 2366 | 1872 | 2348 | 2492 | 2047 | 2220 | 2598 | 2492 | 2691 | 2181 | 2064 | 2492 | 1947 | 2064 | 2064 | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 625 | 625 | 625 | 625 | 625 | 625 | 625 | 625 | 625 | 625 | 625 | 625 | 625 | 625 | 625 | 625 | |
| | | in.lb | 5532 | 5532 | 5532 | 5532 | 5532 | 5532 | 5532 | 5532 | 5532 | 5532 | 5532 | 5532 | 5532 | 5532 | 5532 | 5532 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 2800 | 2800 | 2800 | 2800 | 2800 | 2800 | 2800 | 2800 | 2800 | 3100 | 3500 | 3100 | 3500 | 4200 | 4200 | | |
| Max. input speed | n_{1Max} | rpm | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 1.2 | 1.0 | 1.1 | 0.90 | 0.80 | 0.84 | 0.80 | 0.60 | 0.59 | 0.50 | 0.48 | 0.50 | 0.42 | 0.48 | 0.38 | | |
| | | in.lb | 10 | 8.9 | 9.9 | 8.0 | 7.1 | 7.4 | 7.1 | 5.3 | 5.2 | 4.4 | 4.2 | 4.4 | 3.7 | 4.2 | 3.4 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 3 / Reduced ≤ 1 | | | | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 81 | 81 | 70 | 83 | 80 | 54 | 80 | 82 | 76 | 80 | 61 | 80 | 71 | 55 | 60 | | |
| | | in.lb/arcmin | 717 | 717 | 620 | 735 | 708 | 478 | 708 | 726 | 673 | 708 | 540 | 708 | 628 | 487 | 531 | | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 550 | | | | | | | | | | | | | | | | |
| | | in.lb/arcmin | 4868 | | | | | | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 4800 | | | | | | | | | | | | | | | | |
| | | lb _f | 1080 | | | | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 440 | | | | | | | | | | | | | | | | |
| | | in.lb | 3894 | | | | | | | | | | | | | | | | |
| Efficiency at full load | η | % | 94 | | | | | | | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 6.7 | | | | | | | | | | | | | | | | |
| | | lb _m | 14.8 | | | | | | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 58 | | | | | | | | | | | | | | | | |
| | | °C | +90 | | | | | | | | | | | | | | | | |
| Max. permitted housing temperature | F | °C | -15 to +40 | | | | | | | | | | | | | | | | |
| | | F | 5 to 104 | | | | | | | | | | | | | | | | |
| Ambient temperature | | | | | | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BCT-00150AAX-063.000 | | | | | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 019.000 - 042.000 | | | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) <small>Clamping hub diameter [mm] Optimized mass inertia version available on request</small> | C | 14 | J_1 | kgcm ² | 0.66 | 0.55 | 0.60 | 0.53 | 0.44 | 0.55 | 0.44 | 0.43 | 0.38 | 0.38 | 0.39 | 0.40 | 0.37 | 0.38 | 0.37 |
| | | | | 10 ⁻³ in.lb.s ² | 0.58 | 0.48 | 0.53 | 0.47 | 0.39 | 0.49 | 0.39 | 0.38 | 0.34 | 0.33 | 0.34 | 0.36 | 0.33 | 0.34 | 0.33 |
| | E | 19 | J_1 | kgcm ² | 0.83 | 0.71 | 0.77 | 0.70 | 0.61 | 0.72 | 0.61 | 0.60 | 0.55 | 0.55 | 0.55 | 0.57 | 0.54 | 0.55 | 0.54 |
| | | | | 10 ⁻³ in.lb.s ² | 0.73 | 0.63 | 0.68 | 0.62 | 0.54 | 0.64 | 0.54 | 0.53 | 0.49 | 0.48 | 0.49 | 0.50 | 0.48 | 0.48 | 0.48 |
| | G | 24 | J_1 | kgcm ² | 2.20 | 2.08 | 2.14 | 2.07 | 1.98 | 2.09 | 1.98 | 1.97 | 1.92 | 1.92 | 1.92 | 2.00 | 1.91 | 1.92 | 1.91 |
| | | | | 10 ⁻³ in.lb.s ² | 1.95 | 1.84 | 1.89 | 1.83 | 1.75 | 1.85 | 1.75 | 1.74 | 1.70 | 1.70 | 1.70 | 1.77 | 1.69 | 1.70 | 1.69 |
| | H | 28 | J_1 | kgcm ² | 2.00 | 1.91 | 1.96 | 1.89 | 1.82 | 1.85 | 1.89 | 1.81 | 1.76 | 1.76 | 1.76 | 1.83 | 1.75 | 1.75 | 1.75 |
| | | | | 10 ⁻³ in.lb.s ² | 1.77 | 1.69 | 1.73 | 1.67 | 1.61 | 1.64 | 1.67 | 1.60 | 1.56 | 1.56 | 1.56 | 1.62 | 1.55 | 1.55 | 1.55 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

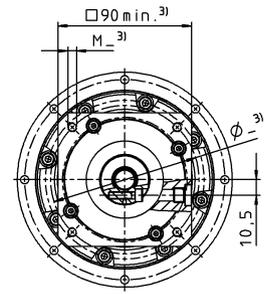
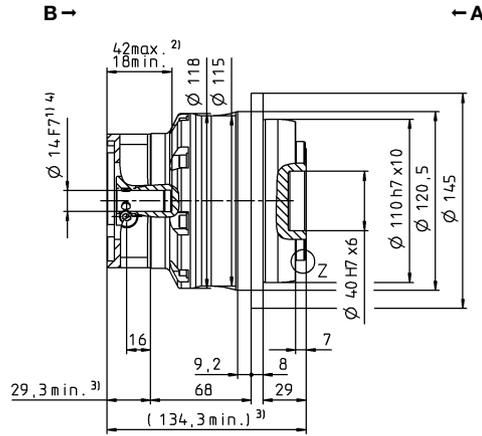
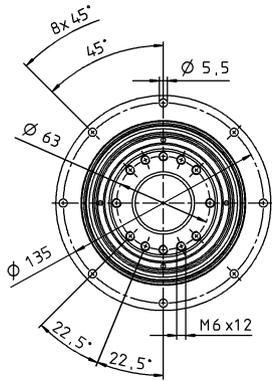
- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperature
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

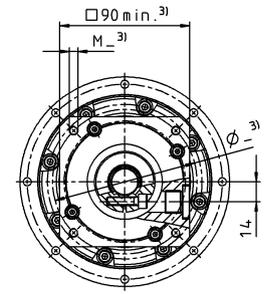
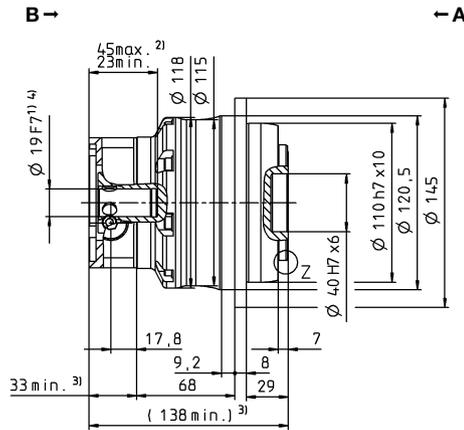
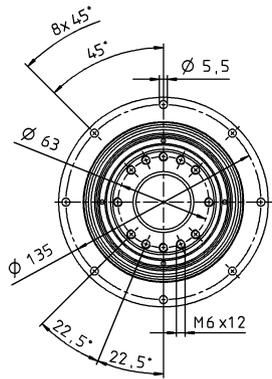
View B

2-stage

up to 14⁴⁾ (C) clamping hub diameter

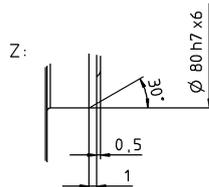
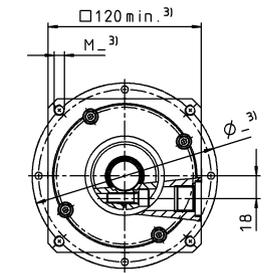
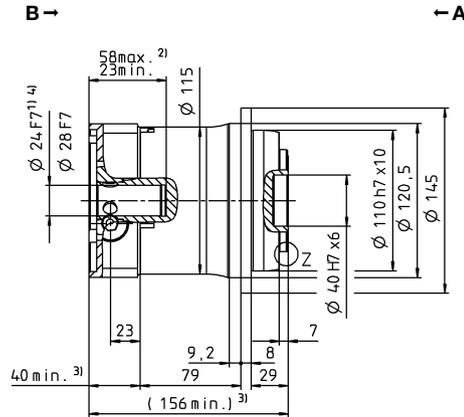
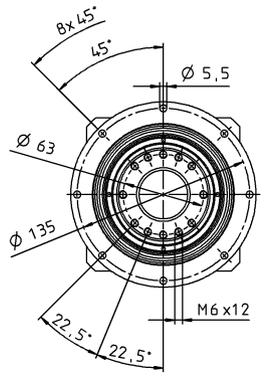


up to 19⁴⁾ (E)⁵⁾ clamping hub diameter



Motor shaft diameter [mm]

up to 24/28⁴⁾ (G/H) clamping hub diameter



- Non-tolerated dimensions are nominal dimensions
- ¹⁾ Check motor shaft fit
- ²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
- ³⁾ The dimensions depend on the motor
- ⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm
- ⁵⁾ Standard clamping hub diameter

TP+ 050 MF 1-stage

| | | | 1-stage | | | | | | |
|--|-------------|-----------------|--------------------------------------|---------------------------------------|-------|-------|-------|------|------|
| Ratio | <i>i</i> | | 4 | 5 | 7 | 8 | 10 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 992 | 992 | 868 | 720 | 720 | | |
| | | in.lb | 8780 | 8780 | 7686 | 6373 | 6373 | | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 840 | 840 | 840 | 648 | 648 | | |
| | | in.lb | 7435 | 7435 | 7435 | 5735 | 5735 | | |
| Nominal torque (at n_N) | T_{2N} | Nm | 345 | 337 | 322 | 316 | 331 | | |
| | | in.lb | 3052 | 2987 | 2854 | 2796 | 2928 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 1250 | 1250 | 1250 | 1250 | 1250 | | |
| | | in.lb | 11064 | 11064 | 11064 | 11064 | 11064 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 1900 | 2000 | 2500 | 2500 | 2500 | | |
| Max. input speed | n_{1Max} | rpm | 5000 | 5000 | 5000 | 5000 | 5000 | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 6.5 | 5.3 | 3.8 | 3.8 | 2.9 | | |
| | | in.lb | 57 | 47 | 33 | 33 | 26 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 3 / Reduced ≤ 1 | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 190 | 187 | 159 | 123 | 123 | | |
| | | in.lb/arcmin | 1682 | 1655 | 1407 | 1089 | 1089 | | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 560 | | | | | | |
| | | in.lb/arcmin | 4956 | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 6130 | | | | | | |
| | | lb _f | 1379 | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 1335 | | | | | | |
| | | in.lb | 11816 | | | | | | |
| Efficiency at full load | η | % | 97 | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 14 | | | | | | |
| | | lb _m | 30.9 | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 64 | | | | | | |
| | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | |
| | | F | 194 | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | |
| | | F | 5 to 104 | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | |
| Protection class | | | IP 65 | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BCT-00300AAX-080.000 | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 024.000 - 060.000 | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | G | 24 | J_1 | kgcm ² | 9.47 | 7.85 | 6.39 | 6.39 | 5.54 |
| | | | | 10 ⁻³ in.lb.s ² | 8.38 | 6.95 | 5.66 | 5.66 | 4.90 |
| | I | 32 | J_1 | kgcm ² | 12.6 | 11.0 | 9.55 | 9.55 | 8.10 |
| | | | | 10 ⁻³ in.lb.s ² | 11.2 | 9.74 | 8.45 | 8.45 | 7.17 |
| | K | 38 | J_1 | kgcm ² | 13.7 | 12.1 | 10.6 | 10.6 | 9.78 |
| | | | | 10 ⁻³ in.lb.s ² | 12.1 | 10.7 | 9.38 | 9.38 | 8.66 |
| | M | 48 | J_1 | kgcm ² | 28.3 | 26.7 | 25.3 | 25.3 | 24.4 |
| | | | | 10 ⁻³ in.lb.s ² | 25.1 | 23.6 | 22.4 | 22.4 | 21.6 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

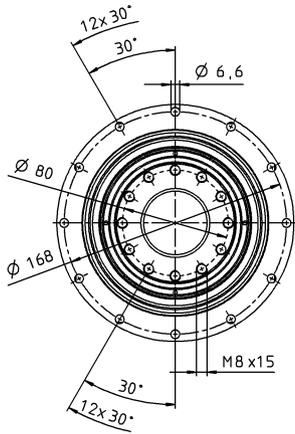
- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

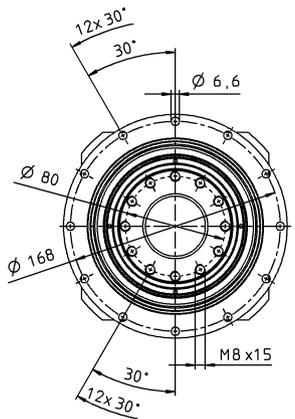
View B

1-stage

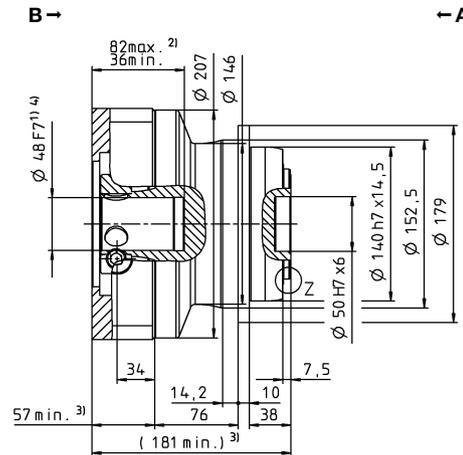
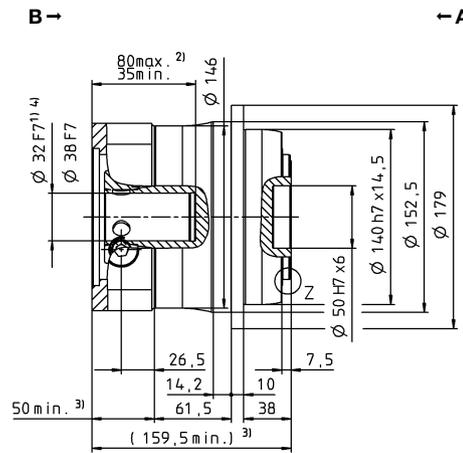
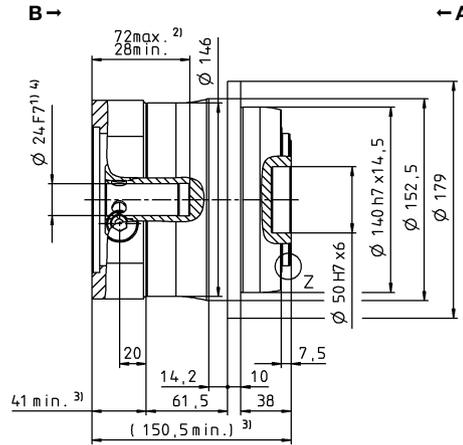
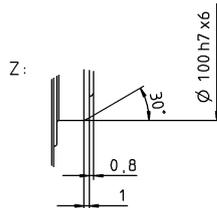
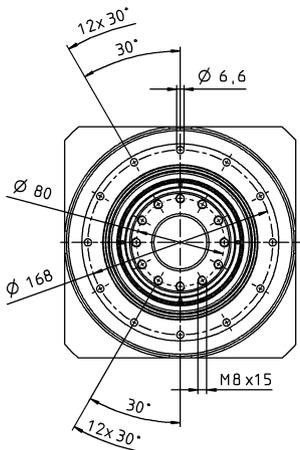
up to 24⁴⁾ (G) clamping hub diameter



up to 32/38⁴⁾ (I/K⁵⁾ clamping hub diameter



up to 48⁴⁾ (M) clamping hub diameter



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

Motor shaft diameter [mm]

Planetary gearboxes

TP+ MF

TP+ 050 MF 2-stage

| | | | 2-stage | | | | | | | | | | | | | | | | |
|--|-------------|-----------------|--------------------------------------|---------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|
| Ratio | i | | 16 | 20 | 21 | 25 | 28 | 31 | 32 | 35 | 40 | 50 | 61 | 64 | 70 | 91 | 100 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 825 | 825 | 660 | 825 | 825 | 682 | 825 | 825 | 825 | 825 | 605 | 594 | 770 | 550 | 594 | | |
| | | in.lb | 7302 | 7302 | 5842 | 7302 | 7302 | 6036 | 7302 | 7302 | 7302 | 7302 | 7302 | 5355 | 5257 | 6815 | 4868 | 5257 | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 825 | 825 | 660 | 825 | 825 | 682 | 825 | 825 | 825 | 825 | 605 | 594 | 770 | 550 | 594 | | |
| | | in.lb | 7302 | 7302 | 5842 | 7302 | 7302 | 6036 | 7302 | 7302 | 7302 | 7302 | 7302 | 5355 | 5257 | 6815 | 4868 | 5257 | |
| Nominal torque (at n_n) | T_{2N} | Nm | 461 | 493 | 393 | 489 | 545 | 431 | 464 | 541 | 607 | 585 | 425 | 475 | 598 | 440 | 475 | | |
| | | in.lb | 4078 | 4361 | 3476 | 4332 | 4824 | 3812 | 4104 | 4792 | 5370 | 5179 | 3765 | 4206 | 5291 | 3894 | 4206 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 1250 | 1250 | 1250 | 1250 | 1250 | 1250 | 1250 | 1250 | 1250 | 1250 | 1250 | 1250 | 1250 | 1250 | 1250 | | |
| | | in.lb | 11064 | 11064 | 11064 | 11064 | 11064 | 11064 | 11064 | 11064 | 11064 | 11064 | 11064 | 11064 | 11064 | 11064 | 11064 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 2900 | 2900 | 2900 | 2900 | 2900 | 2900 | 2900 | 2900 | 2900 | 3200 | 3200 | 3200 | 3200 | 3900 | 3900 | | |
| Max. input speed | n_{1Max} | rpm | 6250 | 6250 | 6250 | 6250 | 6250 | 6250 | 6250 | 6250 | 6250 | 6250 | 6250 | 6250 | 6250 | 6250 | 6250 | | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 2.8 | 2.4 | 2.2 | 2.6 | 2.0 | 1.9 | 2.0 | 1.5 | 1.5 | 1.2 | 1.0 | 1.2 | 1.1 | 0.96 | 0.88 | | |
| | | in.lb | 25 | 22 | 20 | 23 | 17 | 17 | 17 | 14 | 13 | 11 | 8.9 | 11 | 9.9 | 8.5 | 7.8 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 3 / Reduced ≤ 1 | | | | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 180 | 185 | 145 | 180 | 180 | 130 | 180 | 175 | 175 | 175 | 123 | 175 | 145 | 100 | 115 | | |
| | | in.lb/arcmin | 1593 | 1637 | 1283 | 1593 | 1593 | 1151 | 1593 | 1549 | 1549 | 1549 | 1089 | 1549 | 1283 | 885 | 1018 | | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 560 | | | | | | | | | | | | | | | | |
| | | in.lb/arcmin | 4956 | | | | | | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 6130 | | | | | | | | | | | | | | | | |
| | | lb _f | 1379 | | | | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 1335 | | | | | | | | | | | | | | | | |
| | | in.lb | 11816 | | | | | | | | | | | | | | | | |
| Efficiency at full load | η | % | 94 | | | | | | | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 14.1 | | | | | | | | | | | | | | | | |
| | | lb _m | 31.2 | | | | | | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 58 | | | | | | | | | | | | | | | | |
| | | °C | +90 | | | | | | | | | | | | | | | | |
| Max. permitted housing temperature | F | °C | -15 to +40 | | | | | | | | | | | | | | | | |
| | | F | 5 to 104 | | | | | | | | | | | | | | | | |
| Ambient temperature | | | | | | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BCT-00300AAX-080.000 | | | | | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 024.000 - 060.000 | | | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | E | 19 | J_i | kgcm ² | 2.53 | 2.08 | 2.30 | 2.01 | 1.67 | 2.12 | 1.67 | 1.64 | 1.44 | 1.42 | 1.46 | 1.51 | 1.41 | 1.43 | 1.40 |
| | | | | 10 ⁻³ in.lb.s ² | 2.24 | 1.84 | 2.04 | 1.78 | 1.48 | 1.88 | 1.48 | 1.45 | 1.27 | 1.26 | 1.29 | 1.34 | 1.25 | 1.27 | 1.24 |
| | G | 24 | J_i | kgcm ² | 3.22 | 2.77 | 2.99 | 2.70 | 2.37 | 2.81 | 2.37 | 2.33 | 2.13 | 2.12 | 2.15 | 2.20 | 2.10 | 2.12 | 2.09 |
| | | | | 10 ⁻³ in.lb.s ² | 2.85 | 2.45 | 2.65 | 2.39 | 2.10 | 2.49 | 2.10 | 2.06 | 1.89 | 1.88 | 1.90 | 1.95 | 1.86 | 1.88 | 1.85 |
| | K | 38 | J_i | kgcm ² | 10.3 | 9.83 | 10.1 | 9.77 | 9.43 | 9.88 | 9.43 | 9.40 | 9.20 | 9.18 | 9.22 | 9.50 | 9.17 | 9.19 | 9.16 |
| | | | | 10 ⁻³ in.lb.s ² | 9.12 | 8.70 | 8.94 | 8.65 | 8.35 | 8.74 | 8.35 | 8.32 | 8.14 | 8.12 | 8.16 | 8.41 | 8.12 | 8.13 | 8.11 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

^{a)} At max. 10 % M_{2KMax}

^{b)} Valid for standard clamping hub diameter

^{c)} Refers to center of the output shaft or flange

^{d)} Please reduce input speed at higher ambient temperatures

^{f)} Please contact us to discuss

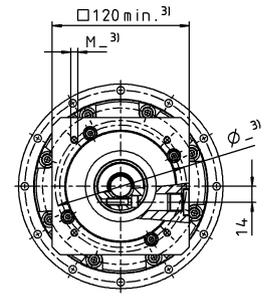
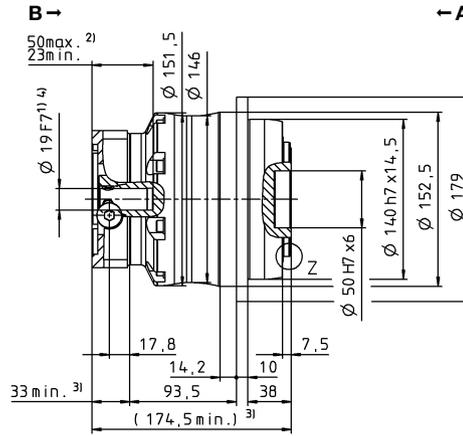
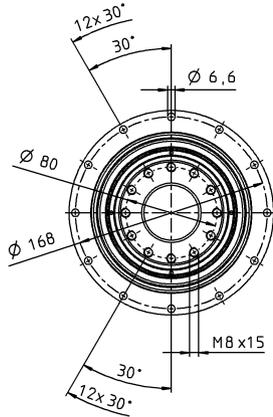
application-specific service lifetimes

View A

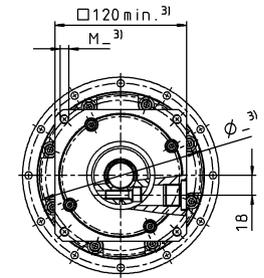
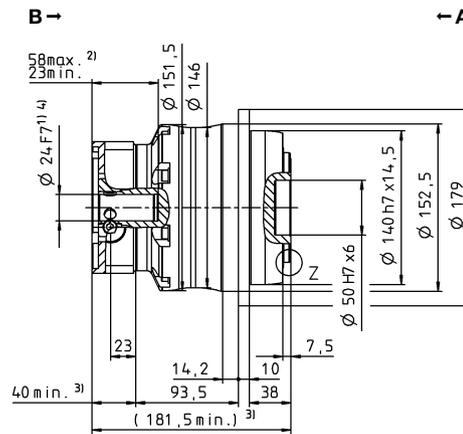
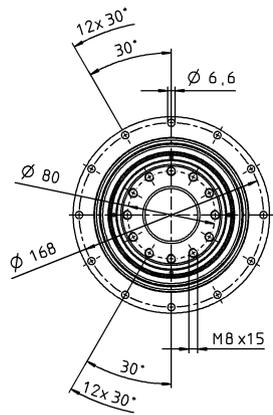
View B

2-stage

up to 19⁴⁾ (E)
clamping hub diameter

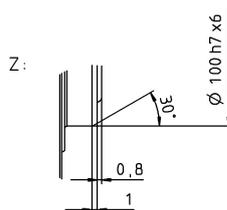
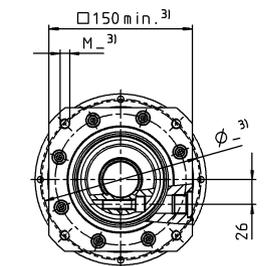
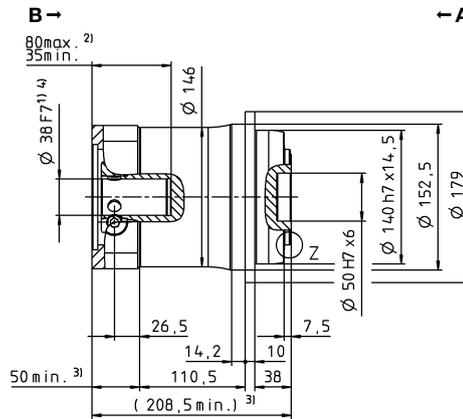
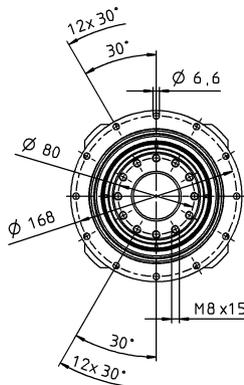


up to 24⁴⁾ (G)⁵⁾
clamping hub diameter



Motor shaft diameter [mm]

up to 38⁴⁾ (K)
clamping hub diameter



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

TP+ 110 MF 1-stage

| | | | 1-stage | | | | | | |
|--|-------------|-----------------|--------------------------------------|---------------------------------------|-------|-------|-------|------|------|
| Ratio | <i>i</i> | | 4 | 5 | 7 | 8 | 10 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 2560 | 2560 | 2560 | 2240 | 2240 | | |
| | | in.lb | 22658 | 22658 | 22658 | 19826 | 19826 | | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 1920 | 1920 | 1920 | 1680 | 1680 | | |
| | | in.lb | 16994 | 16994 | 16994 | 14869 | 14869 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 946 | 919 | 861 | 861 | 901 | | |
| | | in.lb | 8375 | 8134 | 7618 | 7618 | 7972 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 3075 | 3075 | 3075 | 3075 | 3075 | | |
| | | in.lb | 27216 | 27216 | 27216 | 27216 | 27216 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 1400 | 1500 | 2000 | 2000 | 2000 | | |
| Max. input speed | n_{1Max} | rpm | 4500 | 4500 | 4500 | 4500 | 4500 | | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 16 | 12 | 8.8 | 8.8 | 6.0 | | |
| | | in.lb | 138 | 109 | 78 | 78 | 53 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 3 / Reduced ≤ 1 | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 610 | 610 | 550 | 445 | 445 | | |
| | | in.lb/arcmin | 5399 | 5399 | 4868 | 3939 | 3939 | | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 1452 | | | | | | |
| | | in.lb/arcmin | 12851 | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 10050 | | | | | | |
| | | lb _f | 2261 | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 3280 | | | | | | |
| | | in.lb | 29031 | | | | | | |
| Efficiency at full load | η | % | 97 | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 30 | | | | | | |
| | | lb _m | 66.3 | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 68 | | | | | | |
| | | °C | +90 | | | | | | |
| Max. permitted housing temperature | | F | 194 | | | | | | |
| | | °C | -15 to +40 | | | | | | |
| Ambient temperature | | F | 5 to 104 | | | | | | |
| | | °C | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | |
| Protection class | | | IP 65 | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BCT-01500AAX-125.000 | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 050.000 - 080.000 | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | K | 38 | J_1 | kgcm ² | 44.5 | 34.6 | 25.5 | 25.5 | 20.6 |
| | | | | 10 ⁻³ in.lb.s ² | 39.4 | 30.6 | 22.6 | 22.6 | 18.2 |
| | M | 48 | J_1 | kgcm ² | 58.8 | 41.9 | 32.9 | 32.9 | 28.0 |
| | | | | 10 ⁻³ in.lb.s ² | 52.0 | 37.1 | 29.1 | 29.1 | 24.8 |
| | N | 55 | J_1 | kgcm ² | 61.5 | 51.5 | 42.3 | 42.3 | 37.3 |
| | | | | 10 ⁻³ in.lb.s ² | 54.4 | 45.6 | 37.4 | 37.4 | 33.0 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

^{a)} At max. 10 % M_{2KMax}

^{b)} Valid for standard clamping hub diameter

^{c)} Refers to center of the output shaft or flange

^{d)} Please reduce input speed at higher ambient temperatures

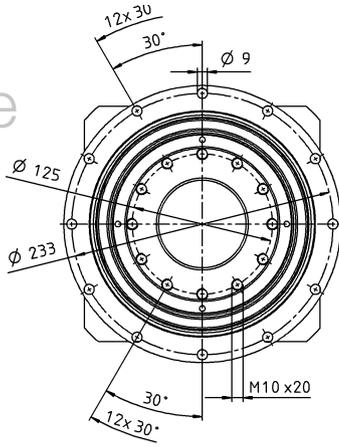
^{f)} Please contact us to discuss application-specific service lifetimes

View A

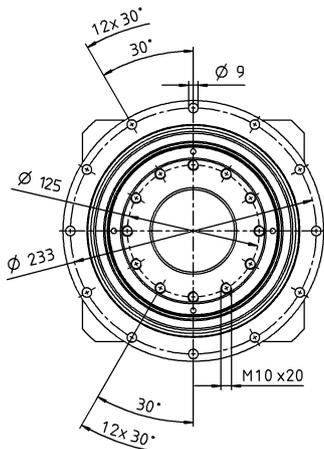
View B

1-stage

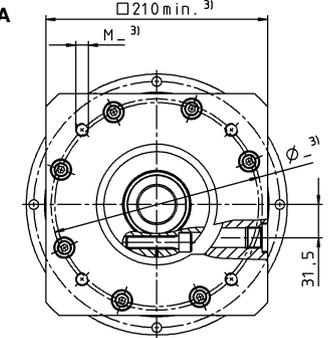
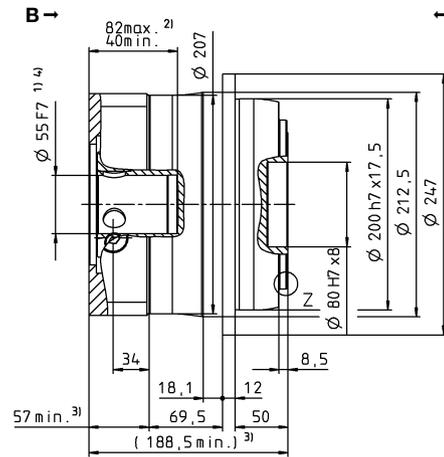
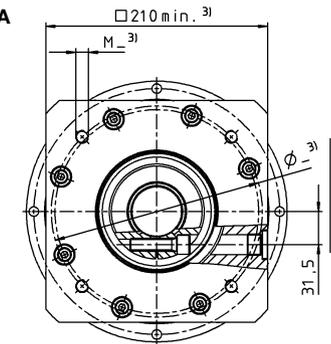
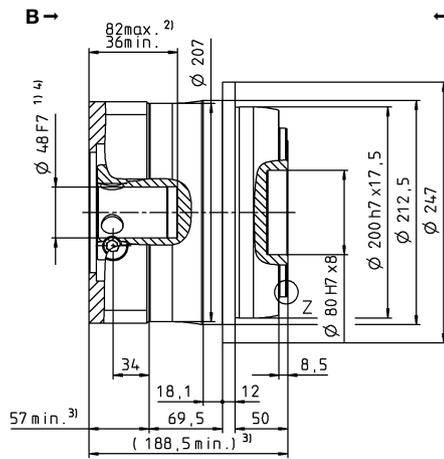
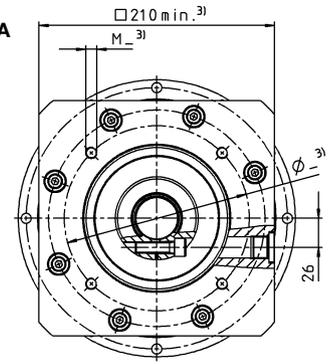
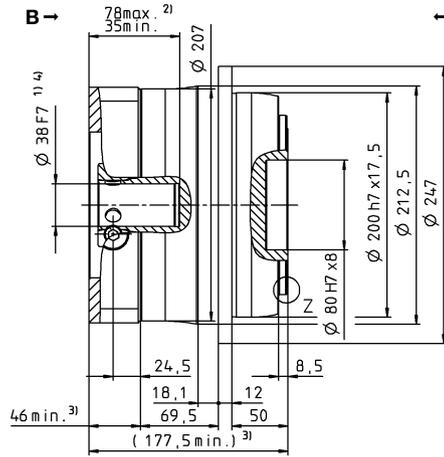
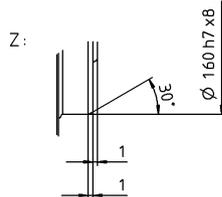
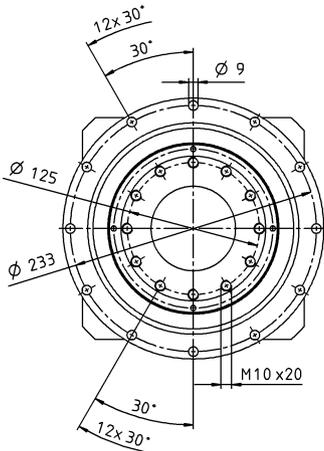
up to 38⁴⁾ (K)
clamping hub diameter



up to 48⁴⁾ (M)⁵⁾
clamping hub diameter



up to 55⁴⁾ (N)
clamping hub diameter



Planetary gearboxes

TP+ MF

Motor shaft diameter [mm]

Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

TP+ 110 MF 2-stage

| | | | | 2-stage | | | | | | | | | | | | | | | |
|---|-------------|-----------------|-------|---------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Ratio | <i>i</i> | | | 16 | 20 | 21 | 25 | 28 | 31 | 32 | 35 | 40 | 50 | 61 | 64 | 70 | 91 | 100 | |
| Max. torque ^{a) b)} | T_{2a} | Nm | | 1760 | 1760 | 1540 | 1760 | 1760 | 1760 | 1760 | 1760 | 1760 | 1760 | 1540 | 1540 | 1760 | 1430 | 1540 | |
| | | in.lb | | 15577 | 15577 | 13630 | 15577 | 15577 | 15577 | 15577 | 15577 | 15577 | 15577 | 15577 | 13630 | 13630 | 15577 | 12657 | 13630 |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | | 1760 | 1760 | 1540 | 1760 | 1760 | 1760 | 1760 | 1760 | 1760 | 1760 | 1540 | 1540 | 1760 | 1430 | 1540 | |
| | | in.lb | | 15577 | 15577 | 13630 | 15577 | 15577 | 15577 | 15577 | 15577 | 15577 | 15577 | 15577 | 13630 | 13630 | 15577 | 12657 | 13630 |
| Nominal torque (at n_n) | T_{2N} | Nm | | 1205 | 1240 | 1023 | 1278 | 1257 | 1065 | 1221 | 1408 | 1315 | 1408 | 1232 | 1232 | 1408 | 1144 | 1232 | |
| | | in.lb | | 10669 | 10976 | 9051 | 11312 | 11121 | 9422 | 10807 | 12462 | 11636 | 12462 | 10904 | 10904 | 12462 | 10125 | 10904 | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | | 3075 | 3075 | 3075 | 3075 | 3075 | 3075 | 3075 | 3075 | 3075 | 3075 | 3075 | 3075 | 3075 | 3075 | 3075 | |
| | | in.lb | | 27216 | 27216 | 27216 | 27216 | 27216 | 27216 | 27216 | 27216 | 27216 | 27216 | 27216 | 27216 | 27216 | 27216 | 27216 | 27216 |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 | 2900 | 3200 | 2900 | 3200 | 3400 | 3400 | |
| Max. input speed | n_{1Max} | rpm | | 5625 | 5625 | 5625 | 5625 | 5625 | 5625 | 5625 | 5625 | 5625 | 5625 | 5625 | 5625 | 5625 | 5625 | 5625 | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | | 7.0 | 5.8 | 5.2 | 5.2 | 4.5 | 4.4 | 4.5 | 3.1 | 3.0 | 2.5 | 2.1 | 2.5 | 2.0 | 1.8 | 1.8 | |
| | | in.lb | | 52 | 52 | 46 | 46 | 40 | 39 | 40 | 28 | 27 | 22 | 18 | 22 | 18 | 16 | 16 | |
| Max. backlash | j_t | arcmin | | Standard ≤ 3 / Reduced ≤ 1 | | | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | | 585 | 580 | 465 | 570 | 560 | 440 | 560 | 560 | 520 | 525 | 415 | 525 | 480 | 360 | 395 | |
| | | in.lb/arcmin | | 5178 | 5133 | 4116 | 5045 | 4956 | 3894 | 4956 | 4956 | 4602 | 4647 | 3673 | 4647 | 4248 | 3186 | 3496 | |
| Tilting rigidity | C_{2K} | Nm/arcmin | | 1452 | | | | | | | | | | | | | | | |
| | | in.lb/arcmin | | 12851 | | | | | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | | 10050 | | | | | | | | | | | | | | | |
| | | lb _f | | 2261 | | | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | | 3280 | | | | | | | | | | | | | | | |
| | | in.lb | | 29031 | | | | | | | | | | | | | | | |
| Efficiency at full load | η | % | | 94 | | | | | | | | | | | | | | | |
| Service life ^{f)} | L_h | h | | > 20000 | | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | | 34 | | | | | | | | | | | | | | | |
| | | lb _m | | 75.1 | | | | | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | | ≤ 61 | | | | | | | | | | | | | | | |
| | | °C | | +90 | | | | | | | | | | | | | | | |
| Max. permitted housing temperature | F | °C | | -15 to +40 | | | | | | | | | | | | | | | |
| | | F | | 5 to 104 | | | | | | | | | | | | | | | |
| Ambient temperature | | °C | | -15 to +40 | | | | | | | | | | | | | | | |
| | | F | | 5 to 104 | | | | | | | | | | | | | | | |
| Lubrication | | | | Lubricated for life | | | | | | | | | | | | | | | |
| Direction of rotation | | | | In- and output same direction | | | | | | | | | | | | | | | |
| Protection class | | | | IP 65 | | | | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | | BCT-01500AAX-125.000 | | | | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | | X = 050.000 - 080.000 | | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) <small>Clamping hub diameter [mm] Optimized mass inertia version available on request</small> | G | 24 | J_i | kgcm ² | 8.51 | 8.21 | 8.98 | 7.82 | 6.57 | 8.09 | 6.57 | 6.37 | 5.63 | 5.54 | 5.63 | 5.78 | 5.44 | 5.51 | 5.40 |
| | | | | 10 ⁻³ in.lb.s ² | 7.53 | 7.27 | 7.95 | 6.92 | 5.81 | 7.16 | 5.81 | 5.64 | 4.98 | 4.90 | 4.98 | 5.12 | 4.81 | 4.88 | 4.78 |
| | I | 32 | J_i | kgcm ² | 11.7 | 11.4 | 12.1 | 11.0 | 9.73 | 11.3 | 9.73 | 9.54 | 8.80 | 8.70 | 8.80 | 8.95 | 8.61 | 8.67 | 8.56 |
| | | | | 10 ⁻³ in.lb.s ² | 10.4 | 10.1 | 10.7 | 9.74 | 8.61 | 10.0 | 8.61 | 8.44 | 7.79 | 7.70 | 7.79 | 7.92 | 7.62 | 7.67 | 7.58 |
| | K | 38 | J_i | kgcm ² | 12.7 | 12.5 | 13.2 | 12.1 | 10.8 | 12.3 | 10.8 | 10.6 | 9.87 | 9.77 | 9.87 | 10.0 | 9.68 | 9.74 | 9.63 |
| | | | | 10 ⁻³ in.lb.s ² | 11.2 | 11.1 | 11.7 | 10.7 | 9.56 | 10.9 | 9.56 | 9.39 | 8.73 | 8.65 | 8.73 | 8.87 | 8.57 | 8.62 | 8.52 |
| | M | 48 | J_i | kgcm ² | 27.4 | 27.1 | 27.8 | 26.7 | 25.4 | 26.9 | 25.4 | 25.3 | 24.5 | 24.4 | 24.5 | 24.9 | 24.3 | 24.4 | 24.3 |
| | | | | 10 ⁻³ in.lb.s ² | 24.3 | 24.0 | 24.6 | 23.6 | 22.5 | 23.8 | 22.5 | 22.4 | 21.7 | 21.6 | 21.7 | 22.0 | 21.5 | 21.6 | 21.5 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

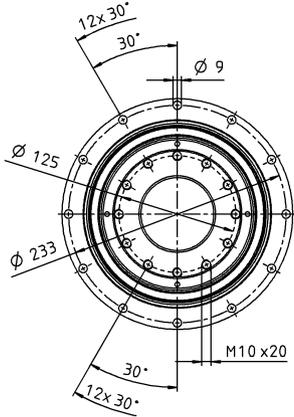
- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

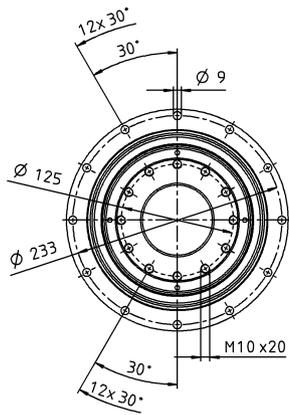
View B

2-stage

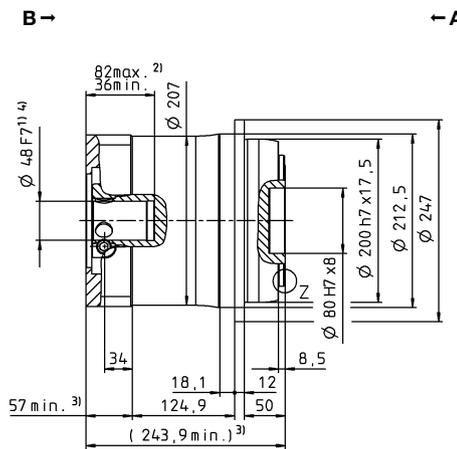
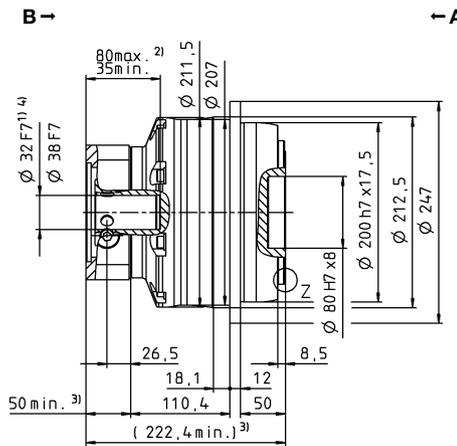
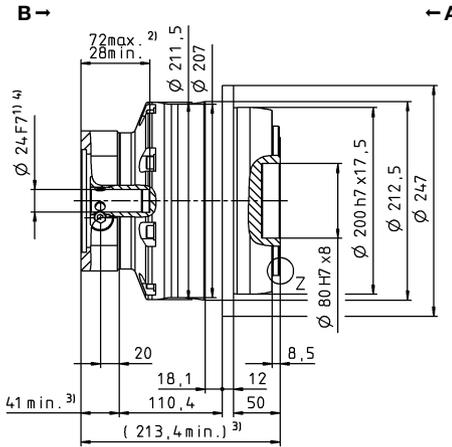
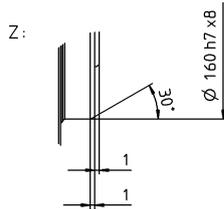
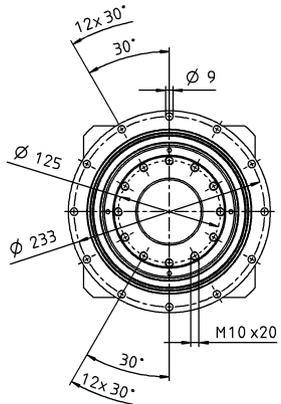
up to 24⁴⁾ (G)
clamping hub diameter



up to 32/38⁴⁾
(I/K⁵⁾ clamping hub diameter



up to 48⁴⁾ (M)
clamping hub diameter



Motor shaft diameter [mm]

Planetary gearboxes

TP*

MF

Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

TP+ 300 MF 1-stage

| | | | 1-stage | | | | | |
|--|-------------|-----------------|--------------------------------------|---------------------------------------|-------|-------|------|------|
| Ratio | <i>i</i> | | 5 | 7 | 8 | 10 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 5600 | 5250 | 2800 | 2800 | | |
| | | in.lb | 49564 | 46467 | 24782 | 24782 | | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 4200 | 3960 | 2280 | 2280 | | |
| | | in.lb | 37173 | 35049 | 20180 | 20180 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 1996 | 1835 | 1815 | 1794 | | |
| | | in.lb | 17666 | 16242 | 16063 | 15878 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 9900 | 9900 | 8557 | 8750 | | |
| | | in.lb | 87623 | 87623 | 75733 | 77445 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 1000 | 1400 | 1400 | 1700 | | |
| Max. input speed | n_{1Max} | rpm | 3000 | 3000 | 3000 | 3000 | | |
| Mean no load running torque ^{b)} (at $n_1 = 2000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 20 | 14 | 14 | 8.8 | | |
| | | in.lb | 177 | 120 | 120 | 78 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 3 / Reduced ≤ 1 | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 1000 | 900 | 700 | 700 | | |
| | | in.lb/arcmin | 8851 | 7966 | 6196 | 6196 | | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 5560 | | | | | |
| | | in.lb/arcmin | 49210 | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 33000 | | | | | |
| | | lb _f | 7425 | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 3900 | | | | | |
| | | in.lb | 34518 | | | | | |
| Efficiency at full load | η | % | 95 | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 60 | | | | | |
| | | lb _m | 132.6 | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 64 | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | |
| | | F | 194 | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | |
| | | F | 5 to 104 | | | | | |
| Lubrication | | | Lubricated for life | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | |
| Protection class | | | IP 65 | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | - | | | | | |
| Bore diameter of coupling on the application side | | mm | - | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | N | 55 | J_1 | kgcm ² | 82.6 | 61.2 | 61.2 | 49.5 |
| | | | | 10 ⁻³ in.lb.s ² | 73.1 | 54.2 | 54.2 | 43.8 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{f)} Please contact us to discuss application-specific service lifetimes

TP+ 300 MF 2-stage

| | | | | 2-stage | | | | | | | | | | | | |
|--|-------------|-----------------|-------|---------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| Ratio | <i>i</i> | | | 20 | 21 | 25 | 31 | 32 | 35 | 50 | 61 | 64 | 70 | 91 | 100 | |
| Max. torque ^{a) b)} | T_{2a} | Nm | | 3850 | 3740 | 3949 | 3850 | 3630 | 3949 | 3600 | 3080 | 2800 | 3630 | 2800 | 2800 | |
| | | in.lb | | 34076 | 33102 | 34947 | 34076 | 32128 | 34947 | 31863 | 27260 | 24782 | 32128 | 24782 | 24782 | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | | 3850 | 3740 | 3949 | 3850 | 3630 | 3949 | 3600 | 3080 | 2800 | 3630 | 2800 | 2800 | |
| | | in.lb | | 34076 | 33102 | 34952 | 34076 | 32128 | 34952 | 31863 | 27260 | 24782 | 32128 | 24782 | 24782 | |
| Nominal torque (at n_n) | T_{2N} | Nm | | 1354 | 1456 | 1676 | 2114 | 2353 | 1710 | 1722 | 2070 | 2240 | 2339 | 2240 | 2240 | |
| | | in.lb | | 11981 | 12888 | 14834 | 18709 | 20823 | 15131 | 15238 | 18320 | 19826 | 20698 | 19826 | 19826 | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | | 9900 | 9870 | 9900 | 9156 | 9900 | 9900 | 9900 | 9008 | 9900 | 9900 | 8750 | 8750 | |
| | | in.lb | | 87623 | 87357 | 87623 | 81035 | 87623 | 87623 | 87623 | 79728 | 87623 | 87623 | 77445 | 77445 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | | 2000 | 2000 | 2000 | 2000 | 2000 | 2000 | 2300 | 2400 | 2300 | 2400 | 2500 | 2500 | |
| Max. input speed | n_{1Max} | rpm | | 4375 | 4375 | 4375 | 4375 | 4375 | 4375 | 4375 | 4375 | 4375 | 4375 | 4375 | 4375 | |
| Mean no load running torque ^{b)} (at $n_1 = 2000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | | 6.7 | 5.5 | 5.5 | 4.8 | 5.5 | 4.0 | 3.8 | 2.8 | 3.8 | 3.0 | 2.8 | 2.4 | |
| | | in.lb | | 59 | 49 | 48 | 43 | 48 | 35 | 34 | 25 | 34 | 26 | 25 | 21 | |
| Max. backlash | j_t | arcmin | | Standard ≤ 3 / Reduced ≤ 2 | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | | 850 | 800 | 950 | 750 | 950 | 900 | 800 | 700 | 800 | 800 | 600 | 650 | |
| | | in.lb/arcmin | | 7523 | 7081 | 8408 | 6638 | 8408 | 7966 | 7081 | 6196 | 7081 | 7081 | 5310 | 5753 | |
| Tilting rigidity | C_{2K} | Nm/arcmin | | 5560 | | | | | | | | | | | | |
| | | in.lb/arcmin | | 49210 | | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | | 33000 | | | | | | | | | | | | |
| | | lb _f | | 7425 | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | | 5900 | | | | | | | | | | | | |
| | | in.lb | | 52220 | | | | | | | | | | | | |
| Efficiency at full load | η | % | | 94 | | | | | | | | | | | | |
| Service life ^{f)} | L_h | h | | > 20000 | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | | 58.5 | | | | | | | | | | | | |
| | | lb _m | | 129.3 | | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | | ≤ 61 | | | | | | | | | | | | |
| | | | | +90 | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | | +90 | | | | | | | | | | | | |
| | | F | | 194 | | | | | | | | | | | | |
| Ambient temperature | | °C | | -15 to +40 | | | | | | | | | | | | |
| | | F | | 5 to 104 | | | | | | | | | | | | |
| Lubrication | | | | Lubricated for life | | | | | | | | | | | | |
| Direction of rotation | | | | In- and output same direction | | | | | | | | | | | | |
| Protection class | | | | IP 65 | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | | - | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | | - | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | M | 48 | J_1 | kgcm ² | 27.5 | 27.0 | 25.9 | 25.6 | 22.4 | 22.4 | 21.5 | 21.4 | 25.8 | 21.3 | 21.2 | 21.2 |
| | | | | 10 ⁻³ in.lb.s ² | 24.3 | 23.9 | 22.9 | 22.7 | 19.8 | 19.8 | 19.0 | 18.9 | 22.8 | 18.9 | 18.8 | 18.8 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{f)} Please contact us to discuss application-specific service lifetimes

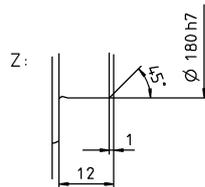
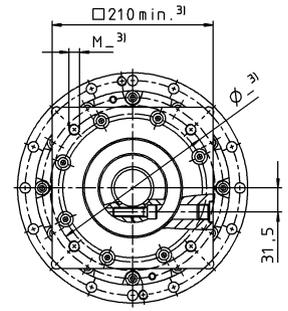
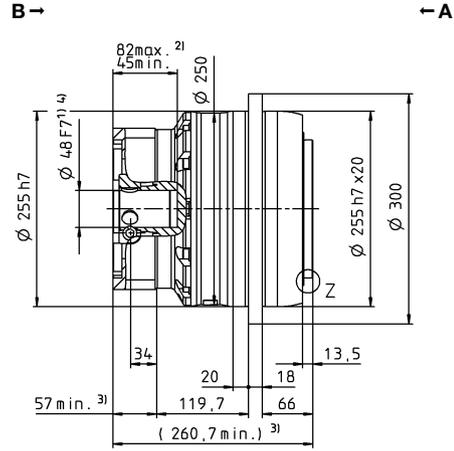
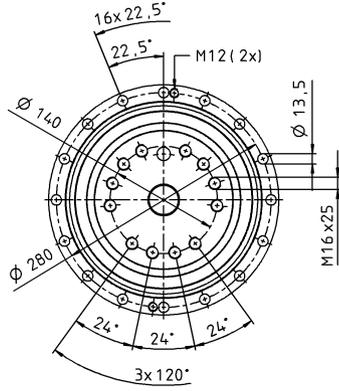
View A

View B

Motor shaft diameter [mm]

2-stage

up to 48⁴⁾ (M)⁵⁾
clamping hub diameter



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

Planetary gearboxes

TP+

MF

TP+ 500 MF 1-stage

| | | | 1-stage | | | | |
|--|-------------|-----------------|---------------------------------------|--------|--------|--------|-----|
| Ratio | i | | 5 | 7 | 8 | 10 | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 9600 | 6790 | 4000 | 4000 | |
| | | in.lb | 84968 | 60097 | 35403 | 35403 | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 7200 | 6000 | 4000 | 4000 | |
| | | in.lb | 63726 | 53105 | 35403 | 35403 | |
| Nominal torque (at n_n) | T_{2N} | Nm | 3131 | 2857 | 2830 | 2840 | |
| | | in.lb | 27711 | 25286 | 25049 | 25135 | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 15000 | 15000 | 15000 | 15000 | |
| | | in.lb | 132762 | 132762 | 132762 | 132762 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 900 | 1300 | 1300 | 1500 | |
| Max. input speed | n_{1Max} | rpm | 3000 | 3000 | 3000 | 3000 | |
| Mean no load running torque ^{b)} (at $n_i = 2000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 27 | 19 | 19 | 12 | |
| | | in.lb | 242 | 170 | 170 | 110 | |
| Max. backlash | j_t | arcmin | Standard ≤ 3 / Reduced ≤ 1 | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 1450 | 1300 | 1100 | 1100 | |
| | | in.lb/arcmin | 12834 | 11506 | 9736 | 9736 | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 9480 | | | | |
| | | in.lb/arcmin | 83906 | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 50000 | | | | |
| | | lb _f | 11250 | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 5500 | | | | |
| | | in.lb | 48679 | | | | |
| Efficiency at full load | η | % | 95 | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | |
| Weight (incl. standard adapter plate) | m | kg | 82 | | | | |
| | | lb _m | 181.2 | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 64 | | | | |
| | | | +90 | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | |
| | | F | 194 | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | |
| | | F | 5 to 104 | | | | |
| Lubrication | | | Lubricated for life | | | | |
| Direction of rotation | | | In- and output same direction | | | | |
| Protection class | | | IP 65 | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | - | | | | |
| Bore diameter of coupling on the application side | | mm | - | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | O 60 | J_1 | kgcm ² | 182 | 142 | 142 | 120 |
| | | | 10 ⁻³ in.lb.s ² | 161 | 126 | 126 | 106 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{f)} Please contact us to discuss application-specific service lifetimes

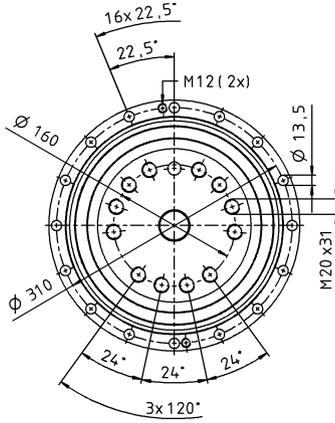
View A

View B

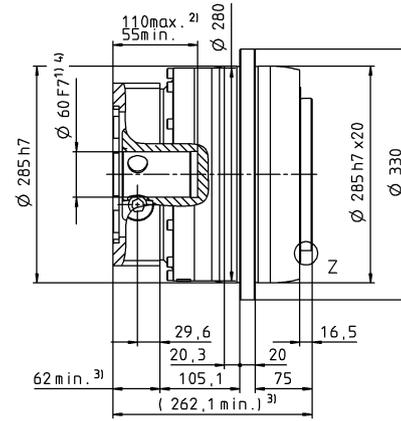
Motor shaft diameter [mm]

up to 60⁴⁾ (O)⁵⁾
clamping hub diameter

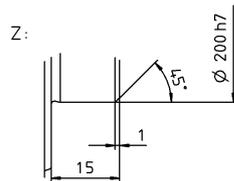
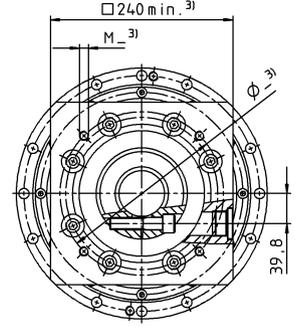
1-stage



B →



← A



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

TP+ 500 MF 2-stage

| | | | | 2-stage | | | | | | | | | | | | |
|--|-------------|-----------------|-------|---------------------------------------|--------|--------|-------|--------|--------|--------|-------|--------|--------|--------|--------|------|
| Ratio | <i>i</i> | | | 20 | 21 | 25 | 31 | 32 | 35 | 50 | 61 | 64 | 70 | 91 | 100 | |
| Max. torque ^{a) b)} | T_{2a} | Nm | | 5446 | 5718 | 6808 | 6354 | 5500 | 6808 | 4975 | 5280 | 4800 | 5500 | 4800 | 4800 | |
| | | in.lb | | 48202 | 50612 | 60252 | 56239 | 48679 | 60252 | 44033 | 46732 | 42484 | 48679 | 42484 | 42484 | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | | 5446 | 5718 | 6808 | 6324 | 5500 | 6808 | 4975 | 5280 | 4800 | 5500 | 4800 | 4800 | |
| | | in.lb | | 48202 | 50612 | 60252 | 56239 | 48679 | 60252 | 44033 | 46732 | 42484 | 48679 | 42484 | 42484 | |
| Nominal torque (at n_n) | T_{2N} | Nm | | 3026 | 3270 | 3729 | 4086 | 4376 | 3828 | 3697 | 4224 | 3840 | 4400 | 3840 | 3840 | |
| | | in.lb | | 26785 | 28944 | 33002 | 36160 | 38730 | 33878 | 32720 | 37386 | 33987 | 38944 | 33987 | 33987 | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | | 15000 | 13928 | 15000 | 10854 | 15000 | 15000 | 15000 | 10678 | 15000 | 15000 | 15000 | 15000 | |
| | | in.lb | | 132762 | 123274 | 132762 | 96063 | 132762 | 132762 | 132762 | 94513 | 132762 | 132762 | 132762 | 132762 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 | 2000 | 2100 | 2000 | 2100 | 2200 | 2200 | |
| Max. input speed | n_{1Max} | rpm | | 4375 | 4375 | 4375 | 4375 | 4375 | 4375 | 4375 | 4375 | 4375 | 4375 | 4375 | 4375 | |
| Mean no load running torque ^{b)} (at $n_1 = 2000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | | 10 | 9.6 | 9.2 | 7.0 | 9.2 | 7.0 | 5.8 | 3.4 | 5.8 | 4.5 | 3.5 | 3.6 | |
| | | in.lb | | 92 | 85 | 81 | 62 | 81 | 62 | 51 | 30 | 51 | 40 | 31 | 32 | |
| Max. backlash | j_t | arcmin | | Standard ≤ 3 / Reduced ≤ 2 | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | | 1400 | 1200 | 1450 | 1200 | 1450 | 1400 | 1300 | 1100 | 1300 | 1250 | 950 | 1050 | |
| | | in.lb/arcmin | | 12391 | 10621 | 12834 | 10621 | 12834 | 12391 | 11506 | 9736 | 11506 | 11064 | 8408 | 9293 | |
| Tilting rigidity | C_{2K} | Nm/arcmin | | 9480 | | | | | | | | | | | | |
| | | in.lb/arcmin | | 83906 | | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | | 50000 | | | | | | | | | | | | |
| | | lb _f | | 11250 | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | | 8800 | | | | | | | | | | | | |
| | | in.lb | | 77887 | | | | | | | | | | | | |
| Efficiency at full load | η | % | | 94 | | | | | | | | | | | | |
| Service life ^{f)} | L_h | h | | > 20000 | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | | 77.5 | | | | | | | | | | | | |
| | | lb _m | | 171.3 | | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | | ≤ 60 | | | | | | | | | | | | |
| | | °C | | +90 | | | | | | | | | | | | |
| Max. permitted housing temperature | | F | | 194 | | | | | | | | | | | | |
| | | °C | | -15 to +40 | | | | | | | | | | | | |
| Ambient temperature | | F | | 5 to 104 | | | | | | | | | | | | |
| | | °C | | | | | | | | | | | | | | |
| Lubrication | | | | Lubricated for life | | | | | | | | | | | | |
| Direction of rotation | | | | In- and output same direction | | | | | | | | | | | | |
| Protection class | | | | IP 65 | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | | - | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | | - | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | M | 48 | J_1 | kgcm ² | 24.8 | 35.9 | 40.2 | 33.7 | 35.4 | 27.4 | 27.4 | 25.4 | 25.8 | 31.0 | 25.0 | 25.2 |
| | | | | 10 ⁻³ in.lb.s ² | 21.9 | 31.8 | 35.6 | 29.8 | 31.3 | 24.2 | 24.2 | 22.5 | 22.8 | 27.4 | 22.1 | 22.3 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{f)} Please contact us to discuss application-specific service lifetimes

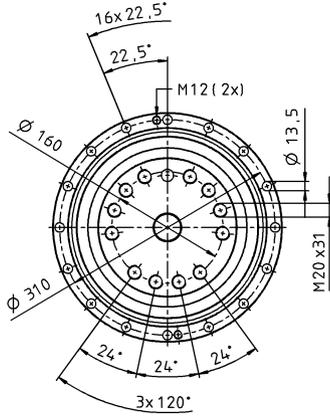
View A

View B

Motor shaft diameter [mm]

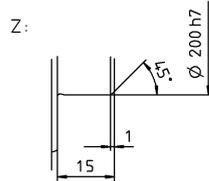
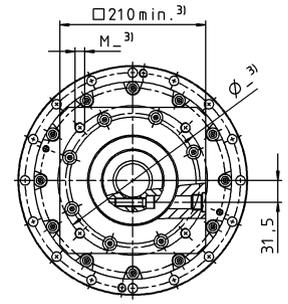
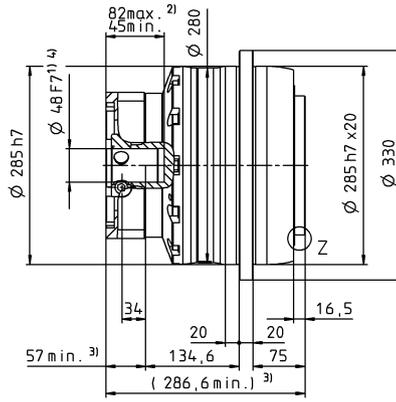
2-stage

up to 48⁴⁾ (M)⁵⁾
clamping hub diameter



B →

← A



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

TP+ 010 MA 2-/3-stage

| | | | 2-stage | | | | 3-stage | | | | | |
|--|-------------|-----------------|-------------------------------|---------------------------------------|------|------|---------|------|------|------|------|------|
| Ratio | <i>i</i> | | 22 | 27.5 | 38.5 | 55 | 88 | 110 | 154 | 220 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 315 | 315 | 315 | 315 | 315 | 315 | 315 | 315 | | |
| | | in.lb | 2788 | 2788 | 2788 | 2788 | 2788 | 2788 | 2788 | 2788 | | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 230 | 230 | 230 | 230 | 230 | 230 | 230 | 230 | | |
| | | in.lb | 2036 | 2036 | 2036 | 2036 | 2036 | 2036 | 2036 | 2036 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 140 | 137 | 139 | 147 | 184 | 184 | 181 | 184 | | |
| | | in.lb | 1242 | 1213 | 1230 | 1303 | 1629 | 1629 | 1599 | 1629 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 525 | 525 | 525 | 525 | 525 | 525 | 525 | 525 | | |
| | | in.lb | 4647 | 4647 | 4647 | 4647 | 4647 | 4647 | 4647 | 4647 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 4000 | 4000 | 4000 | 4000 | 4500 | 4500 | 4500 | 4500 | | |
| Max. input speed | n_{1Max} | rpm | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 0.52 | 0.47 | 0.41 | 0.38 | 0.28 | 0.26 | 0.22 | 0.18 | | |
| | | in.lb | 4.6 | 4.2 | 4.0 | 3.4 | 2.5 | 2.3 | 1.9 | 1.6 | | |
| Max. backlash | j_t | arcmin | ≤ 1 | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 43 | 43 | 43 | 42 | 42 | 42 | 42 | 42 | | |
| | | in.lb/arcmin | 381 | 381 | 381 | 372 | 372 | 372 | 372 | 372 | | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 225 | | | | | | | | | |
| | | in.lb/arcmin | 1991 | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 2795 | | | | | | | | | |
| | | lb _f | 629 | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 400 | | | | | | | | | |
| | | in.lb | 3540 | | | | | | | | | |
| Efficiency at full load | η | % | 94 | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | |
| Weight (incl. standard adapter plate) | <i>m</i> | kg | 3.2 | | | | 3.6 | | | | | |
| | | lb _m | 7.1 | | | | 8.0 | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 56 | | | | | | | | | |
| | | °C | +90 | | | | | | | | | |
| Max. permitted housing temperature | | F | 194 | | | | | | | | | |
| | | °C | -15 to +40 | | | | | | | | | |
| Ambient temperature | | F | 5 to 104 | | | | | | | | | |
| | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BCT-00150AAX-050.00 | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 016.000 - 038.000 | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | C | 14 | J_1 | kgcm ² | 0.21 | 0.18 | 0.16 | 0.14 | 0.16 | 0.15 | 0.14 | 0.13 |
| | | | | 10 ⁻³ in.lb.s ² | 0.19 | 0.16 | 0.14 | 0.12 | 0.14 | 0.13 | 0.12 | 0.12 |
| | E | 19 | J_1 | kgcm ² | 0.52 | 0.50 | 0.47 | 0.46 | - | - | - | - |
| | | | | 10 ⁻³ in.lb.s ² | 0.46 | 0.44 | 0.42 | 0.41 | - | - | - | - |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

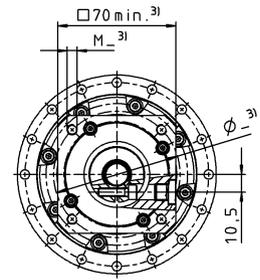
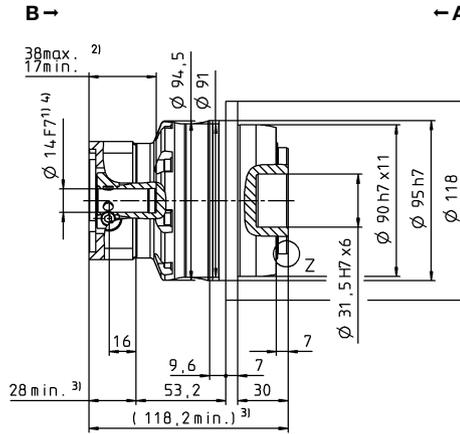
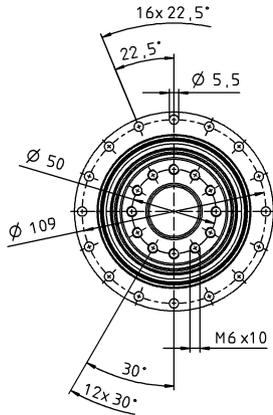
- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

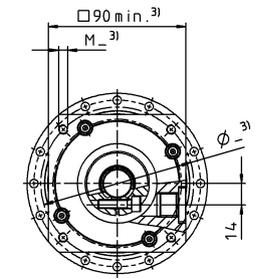
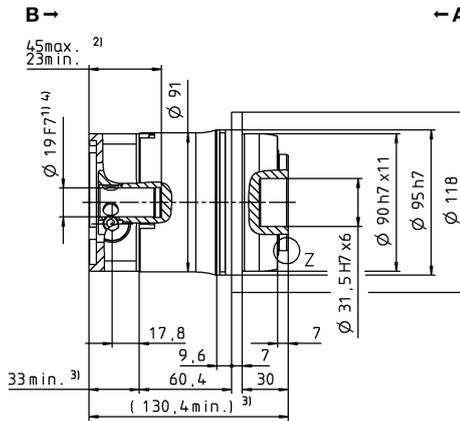
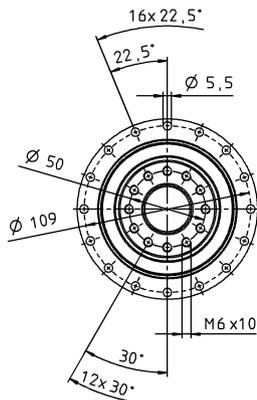
View B

2-stage

up to 14⁴⁾ (C)⁵⁾
clamping hub diameter



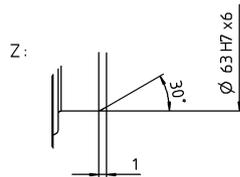
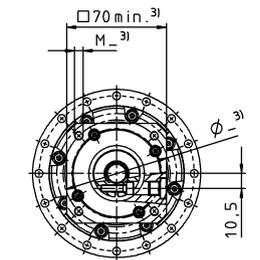
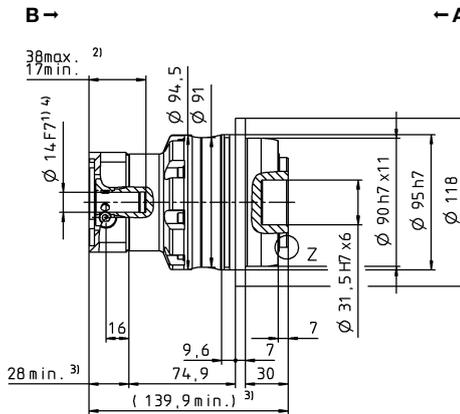
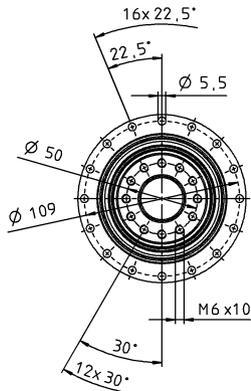
up to 19⁴⁾ (E)
clamping hub diameter



Motor shaft diameter [mm]

3-stage

up to 14⁴⁾ (C)⁵⁾
clamping hub diameter



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

TP+ 025 MA 2-/3-stage

| | | | 2-stage | | | | 3-stage | | | | | | |
|--|-------------|-----------------|-------------------------------|---------------------------------------|-------|-------|---------|-------|-------|-------|-------|------|------|
| Ratio | <i>i</i> | | 22 | 27.5 | 38.5 | 55 | 66 | 88 | 110 | 154 | 220 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 583 | 583 | 583 | 583 | 525 | 525 | 525 | 525 | 525 | | |
| | | in.lb | 5160 | 5160 | 5160 | 5160 | 4645 | 4645 | 4645 | 4645 | 4645 | | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 530 | 530 | 530 | 530 | 480 | 480 | 480 | 480 | 480 | | |
| | | in.lb | 4691 | 4691 | 4691 | 4691 | 4248 | 4248 | 4248 | 4248 | 4248 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 312 | 314 | 371 | 413 | 260 | 276 | 296 | 330 | 364 | | |
| | | in.lb | 2762 | 2775 | 3286 | 3652 | 2304 | 2447 | 2617 | 2920 | 3222 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 1200 | 1200 | 1200 | 1200 | 1200 | 1200 | 1200 | 1200 | 1200 | | |
| | | in.lb | 10621 | 10621 | 10621 | 10621 | 10621 | 10621 | 10621 | 10621 | 10621 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 3500 | 3500 | 3500 | 3500 | 4000 | 4000 | 4000 | 4000 | 4000 | | |
| Max. input speed | n_{1Max} | rpm | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 1.0 | 0.87 | 0.78 | 0.70 | 0.62 | 0.52 | 0.44 | 0.35 | 0.27 | | |
| | | in.lb | 9.2 | 7.7 | 6.9 | 6.2 | 5.5 | 4.6 | 3.9 | 3.1 | 2.4 | | |
| Max. backlash | j_t | arcmin | ≤ 1 | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 105 | 105 | 105 | 100 | 95 | 95 | 95 | 95 | 95 | | |
| | | in.lb/arcmin | 929 | 929 | 929 | 885 | 841 | 841 | 841 | 841 | 841 | | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 550 | | | | | | | | | | |
| | | in.lb/arcmin | 4868 | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 4800 | | | | | | | | | | |
| | | lb _f | 1080 | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 550 | | | | | | | | | | |
| | | in.lb | 4868 | | | | | | | | | | |
| Efficiency at full load | η | % | 94 | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 5.6 | | | | 6.1 | | | | | | |
| | | lb _m | 12.4 | | | | 13.5 | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 58 | | | | ≤ 56 | | | | | | |
| | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | | | | | |
| | | F | 5 to 104 | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BCT-00300AAX-063.00 | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 030.000 - 056.000 | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | E | 19 | J_1 | kgcm ² | 0.87 | 0.7 | 0.6 | 0.55 | 0.63 | 0.56 | 0.53 | 0.51 | 0.50 |
| | | | | 10 ⁻³ in.lb.s ² | 0.77 | 0.62 | 0.53 | 0.49 | 0.56 | 0.50 | 0.47 | 0.45 | 0.44 |
| | G | 24 | J_1 | kgcm ² | 2.39 | 2.22 | 2.12 | 2.07 | - | - | - | - | - |
| | | | | 10 ⁻³ in.lb.s ² | 2.12 | 1.96 | 1.88 | 1.83 | - | - | - | - | - |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

^{a)} At max. 10 % M_{2KMax}

^{b)} Valid for standard clamping hub diameter

^{c)} Refers to center of the output shaft or flange

^{d)} Please reduce input speed at higher ambient temperatures

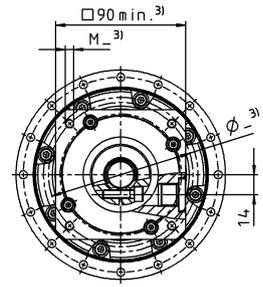
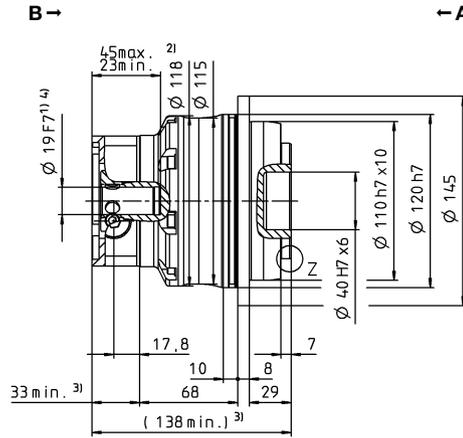
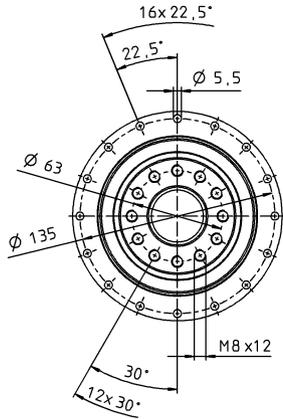
^{f)} Please contact us to discuss application-specific service lifetimes

View A

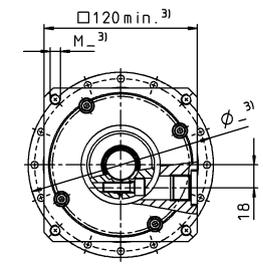
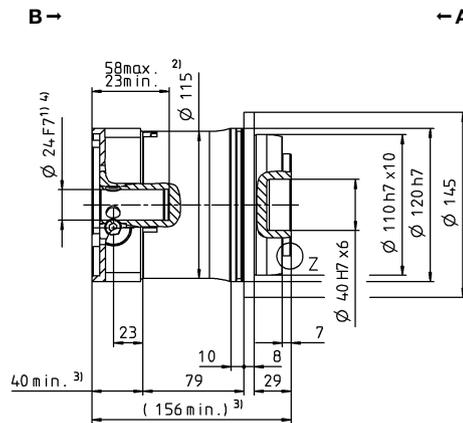
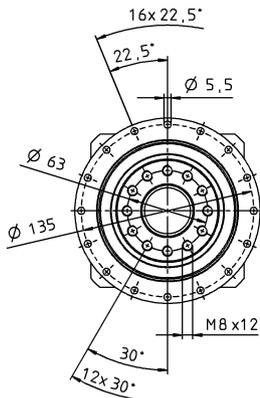
View B

2-stage

up to 19⁴⁾ (E)⁵⁾
clamping hub diameter



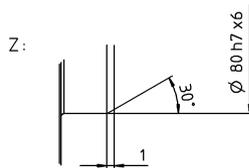
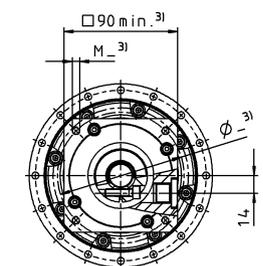
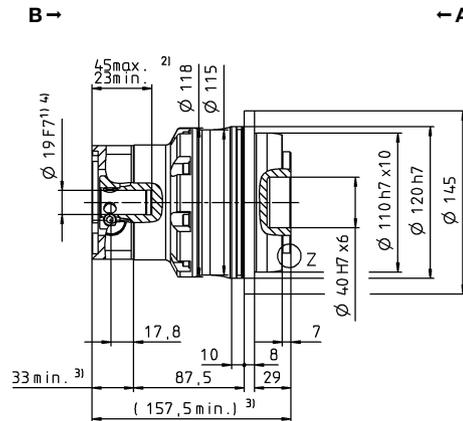
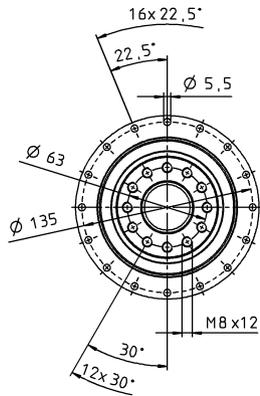
up to 24⁴⁾ (G)
clamping hub diameter



Motor shaft diameter [mm]

3-stage

up to 19⁴⁾ (E)⁵⁾
clamping hub diameter



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

TP+ 050 MA 2-/3-stage

| | | | 2-stage | | | | 3-stage | | | | | | |
|--|-------------|-----------------|-------------------------------|---------------------------------------|-------|-------|---------|-------|-------|-------|-------|------|------|
| Ratio | <i>i</i> | | 22 | 27.5 | 38.5 | 55 | 66 | 88 | 110 | 154 | 220 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 1402 | 1402 | 1402 | 1402 | 1402 | 1402 | 1402 | 1402 | 1402 | | |
| | | in.lb | 12406 | 12406 | 12406 | 12406 | 12406 | 12406 | 12406 | 12406 | 12406 | | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 992 | 992 | 992 | 992 | 992 | 992 | 992 | 992 | 992 | | |
| | | in.lb | 8780 | 8780 | 8780 | 8780 | 8780 | 8780 | 8780 | 8780 | 8780 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 523 | 566 | 638 | 717 | 723 | 794 | 794 | 794 | 794 | | |
| | | in.lb | 4632 | 5005 | 5649 | 6348 | 6400 | 7024 | 7024 | 7024 | 7024 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 2375 | 2375 | 2375 | 2375 | 2375 | 2375 | 2375 | 2375 | 2375 | | |
| | | in.lb | 21021 | 21021 | 21021 | 21021 | 21021 | 21021 | 21021 | 21021 | 21021 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 3000 | 3000 | 3000 | 3000 | 3500 | 3500 | 3500 | 3500 | 3500 | | |
| Max. input speed | n_{1Max} | rpm | 6250 | 6250 | 6250 | 6250 | 6250 | 6250 | 6250 | 6250 | 6250 | | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 2.7 | 2.4 | 2.1 | 1.7 | 1.8 | 1.3 | 1.1 | 0.9 | 0.72 | | |
| | | in.lb | 23.9 | 21.2 | 18.9 | 15.0 | 15.9 | 11.5 | 10.1 | 8.0 | 6.4 | | |
| Max. backlash | j_t | arcmin | ≤ 1 | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 220 | 220 | 220 | 220 | 205 | 205 | 205 | 205 | 205 | | |
| | | in.lb/arcmin | 1947 | 1947 | 1947 | 1947 | 1814 | 1814 | 1814 | 1814 | 1814 | | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 560 | | | | | | | | | | |
| | | in.lb/arcmin | 4956 | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 6130 | | | | | | | | | | |
| | | lb _f | 1379 | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 1335 | | | | | | | | | | |
| | | in.lb | 11816 | | | | | | | | | | |
| Efficiency at full load | η | % | 94 | | | | 92 | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 12.5 | | | | 13.4 | | | | | | |
| | | lb _m | 27.6 | | | | 29.6 | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 60 | | | | ≤ 57 | | | | | | |
| | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | | | | | |
| | | F | 5 to 104 | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BCT-00300AAX-080.00 | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 045.000 - 056.000 | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | G | 24 | J_1 | kgcm ² | 3.80 | 3.33 | 3.00 | 2.80 | 2.60 | 2.40 | 2.20 | 2.10 | 2.10 |
| | | | | 10 ⁻³ in.lb.s ² | 3.36 | 2.95 | 2.66 | 2.48 | 2.30 | 2.10 | 1.90 | 1.90 | 1.90 |
| | K | 38 | J_1 | kgcm ² | 10.7 | 10.3 | 9.90 | 9.70 | - | - | - | - | - |
| | | | | 10 ⁻³ in.lb.s ² | 9.47 | 9.12 | 8.76 | 8.58 | - | - | - | - | - |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

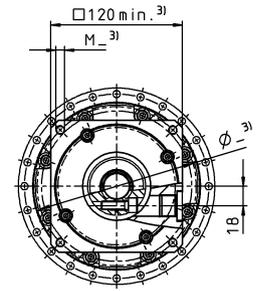
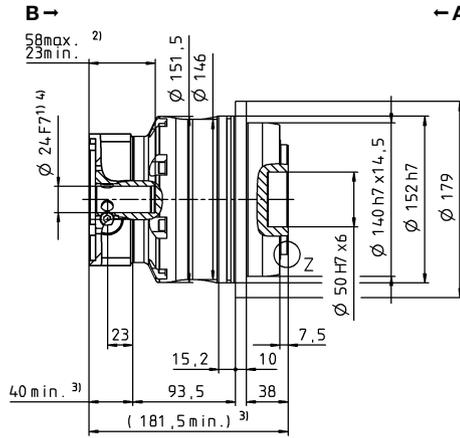
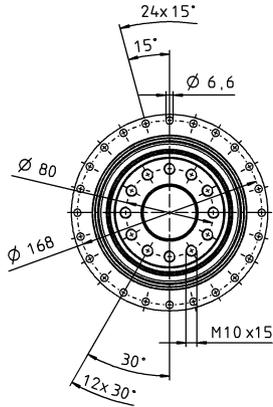
- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

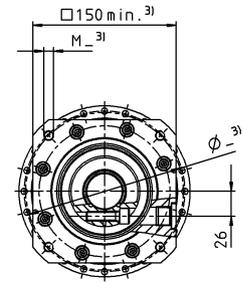
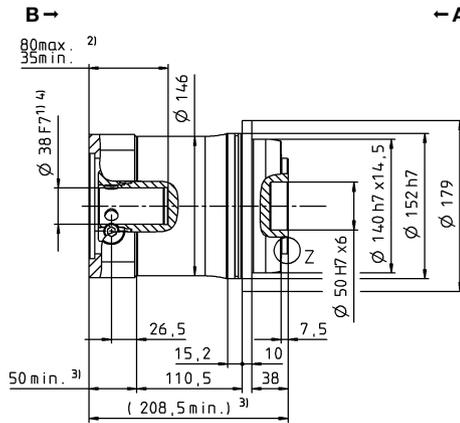
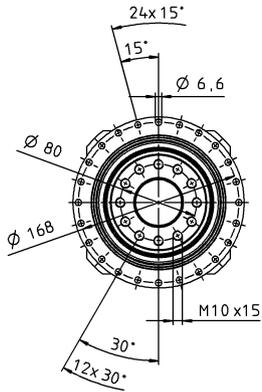
View B

2-stage

up to 24⁴⁾ (G)⁵⁾
clamping hub diameter



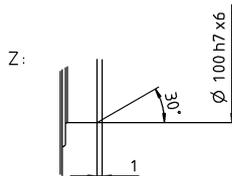
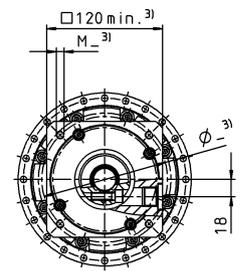
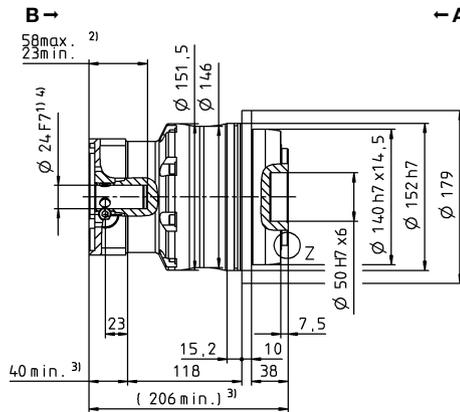
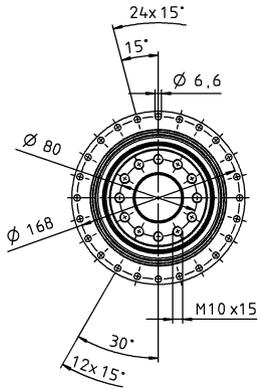
up to 38⁴⁾ (K)
clamping hub diameter



Motor shaft diameter [mm]

3-stage

up to 24⁴⁾ (G)⁵⁾
clamping hub diameter



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

TP+ 110 MA 2-/3-stage

| | | | 2-stage | | | | 3-stage | | | | | | |
|--|-------------|-----------------|-------------------------------|---------------------------------------|-------|-------|---------|-------|-------|-------|-------|------|------|
| Ratio | <i>i</i> | | 22 | 27.5 | 38.5 | 55 | 66 | 88 | 110 | 154 | 220 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 3822 | 3822 | 3822 | 3200 | 3023 | 3023 | 3023 | 3023 | 3023 | | |
| | | in.lb | 33826 | 33826 | 33826 | 28323 | 26757 | 26757 | 26757 | 26757 | 26757 | | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 3100 | 3100 | 3100 | 2400 | 2600 | 2600 | 2600 | 2600 | 2600 | | |
| | | in.lb | 27437 | 27437 | 27437 | 21242 | 23012 | 23012 | 23012 | 23012 | 23012 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 1546 | 1662 | 2149 | 1827 | 1649 | 1797 | 1924 | 2080 | 2080 | | |
| | | in.lb | 13687 | 14708 | 19022 | 16169 | 14593 | 15909 | 17033 | 18410 | 18410 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 6500 | 6500 | 6500 | 6500 | 6500 | 6500 | 6500 | 6500 | 6500 | | |
| | | in.lb | 57530 | 57530 | 57530 | 57530 | 57530 | 57530 | 57530 | 57530 | 57530 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 2500 | 2500 | 2500 | 2500 | 3000 | 3000 | 3000 | 3000 | 3000 | | |
| Max. input speed | n_{1Max} | rpm | 5625 | 5625 | 5625 | 5625 | 5625 | 5625 | 5625 | 5625 | 5625 | | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 6.2 | 5.5 | 4.8 | 4.3 | 3.8 | 3.0 | 2.6 | 1.8 | 1.6 | | |
| | | in.lb | 55.0 | 48.7 | 42.5 | 38.1 | 33.6 | 26.9 | 23 | 15.6 | 14.2 | | |
| Max. backlash | j_t | arcmin | ≤ 1 | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 730 | 725 | 715 | 670 | 650 | 650 | 650 | 650 | 650 | | |
| | | in.lb/arcmin | 6461 | 6417 | 6328 | 5930 | 5753 | 5753 | 5753 | 5753 | 5753 | | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 1452 | | | | | | | | | | |
| | | in.lb/arcmin | 12851 | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 10050 | | | | | | | | | | |
| | | lb _f | 2261 | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 3280 | | | | | | | | | | |
| | | in.lb | 29031 | | | | | | | | | | |
| Efficiency at full load | η | % | 94 | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 33.1 | | | | 35.4 | | | | | | |
| | | lb _m | 73.2 | | | | 78.2 | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 61 | | | | ≤ 59 | | | | | | |
| | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | | | | | |
| | | F | 5 to 104 | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BCT-01500AAX-125.00 | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 055.000 - 070.000 | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | K | 38 | J_1 | kgcm ² | 16.6 | 15.2 | 13.9 | 13.1 | 13.8 | 10.2 | 9.80 | 9.50 | 9.20 |
| | | | | 10 ⁻³ in.lb.s ² | 14.7 | 13.5 | 12.3 | 11.6 | 12.2 | 9.00 | 8.70 | 8.40 | 8.10 |
| | M | 48 | J_1 | kgcm ² | 31.4 | 29.9 | 28.7 | 28.0 | - | - | - | - | - |
| | | | | 10 ⁻³ in.lb.s ² | 27.8 | 26.5 | 25.4 | 24.8 | - | - | - | - | - |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

^{a)} At max. 10 % M_{2KMax}

^{b)} Valid for standard clamping hub diameter

^{c)} Refers to center of the output shaft or flange

^{d)} Please reduce input speed at higher ambient temperatures

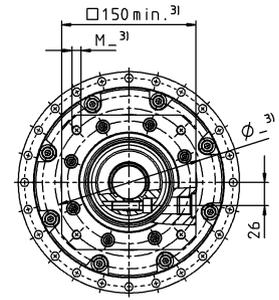
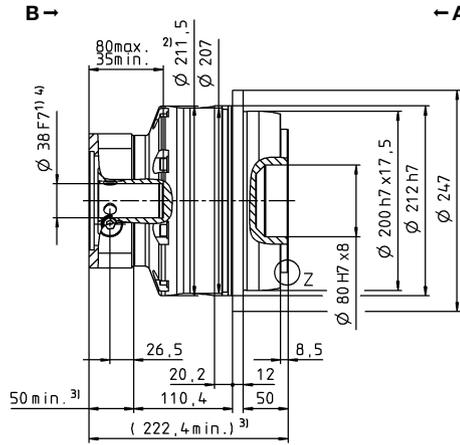
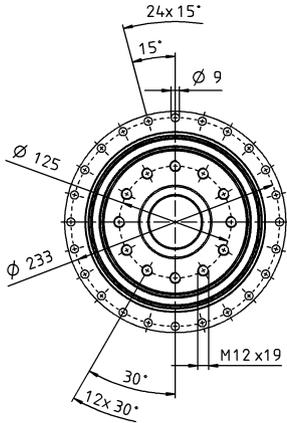
^{f)} Please contact us to discuss application-specific service lifetimes

View A

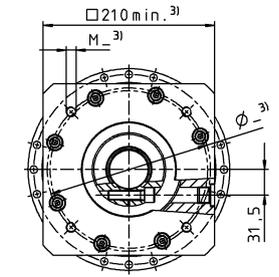
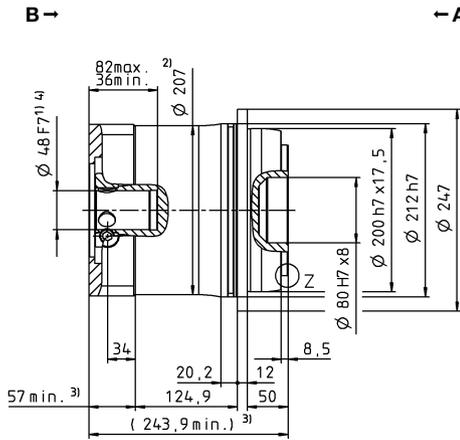
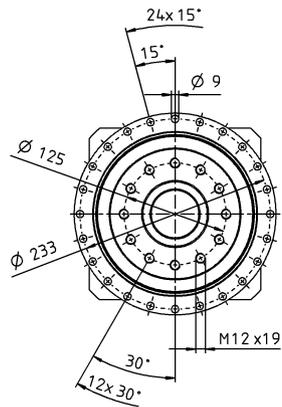
View B

2-stage

up to 38⁴⁾ (K)⁵⁾
clamping hub diameter



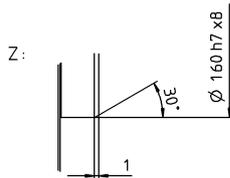
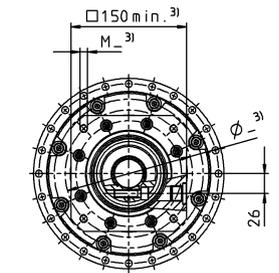
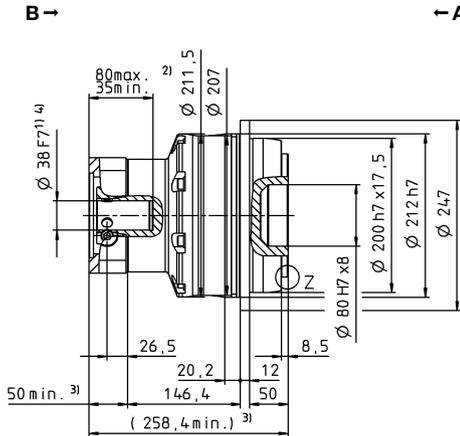
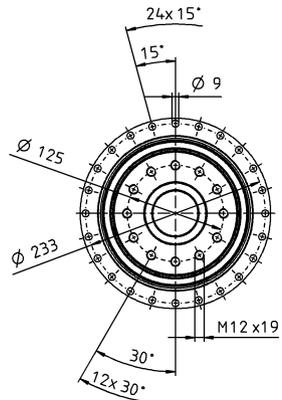
up to 48⁴⁾ (M)
clamping hub diameter



Motor shaft diameter [mm]

3-stage

up to 38⁴⁾ (K)⁵⁾
clamping hub diameter



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

TP+ 300 MA 1-/2-/3-stage

| | | | 1-stage | 2-stage | | | | | 3-stage | | | | | |
|--|-------------|-----------------|---|--|--------|--------|--------|-----------|---------|--------|--------|--------|------|------|
| Ratio | <i>i</i> | | 5.5 | 22 | 27.5 | 38.5 | 55 | 66 | 88 | 110 | 154 | 220 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 7360 | 7535 | 7535 | 7535 | 5473 | 6987 | 6987 | 6987 | 6987 | 6987 | | |
| | | in.lb | 65142 | 66691 | 66691 | 66691 | 48436 | 61838 | 61838 | 61838 | 61838 | 61838 | | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 5520 | 6600 | 6600 | 6600 | 4680 | 6600 | 6600 | 6600 | 6600 | 6600 | | |
| | | in.lb | 48856 | 58415 | 58415 | 58415 | 41422 | 58415 | 58415 | 58415 | 58415 | 58415 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 2829 | 3566 | 3788 | 3884 | 3744 | 3216 | 3506 | 3750 | 4148 | 4617 | | |
| | | in.lb | 25035 | 31563 | 33530 | 34378 | 33137 | 28465 | 31035 | 33186 | 36711 | 40863 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 10938 | 15333 | 15333 | 15296 | 15333 | 15333 | 15333 | 15333 | 15333 | 15333 | | |
| | | in.lb | 96806 | 135709 | 135709 | 135377 | 135709 | 135709 | 135709 | 135709 | 135709 | 135709 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 1000 | 2000 | 2000 | 2000 | 2000 | 2000 | 2000 | 2000 | 2000 | 2000 | | |
| Max. input speed | n_{1Max} | rpm | 3125 | 4375 | 4375 | 4375 | 4375 | 4375 | 4375 | 4375 | 4375 | 4375 | | |
| Mean no load running torque ^{b)} (at $n_i = 2000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 19 | 8.8 | 7.8 | 6.8 | 5.9 | 5.2 | 3.6 | 3.1 | 2.1 | 1.5 | | |
| | | in.lb | 170 | 78 | 69 | 60 | 52 | 46 | 32 | 27 | 19 | 13 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 2 / Reduced ≤ 1 | Standard ≤ 3 / Reduced ≤ 1.5 | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 1200 | 1200 | 1200 | 1200 | 1200 | 1200 | 1200 | 1200 | 1200 | 1200 | | |
| | | in.lb/arcmin | 10621 | 10621 | 10621 | 10621 | 10621 | 10621 | 10621 | 10621 | 10621 | 10621 | | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 5560 | | | | | | | | | | | |
| | | in.lb/arcmin | 49210 | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 33000 | | | | | | | | | | | |
| | | lb _f | 7425 | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 3900 | 6500 | | | | | | | | | | |
| | | in.lb | 34518 | 57530 | | | | | | | | | | |
| Efficiency at full load | η | % | 95 | 93 | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | <i>m</i> | kg | 55 | 64 | | | | 67 | | | | | | |
| | | lb _m | 122 | 141 | | | | 148 | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 65 | ≤ 62 | | | | ≤ 59 | | | | | | |
| | | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | | | | | | |
| | | F | 5 to 104 | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BCT-04000AAX-145.00 | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 070.000 - 100.000 | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | K | 38 | J_1 | kgcm ² | - | - | - | - | - | 16.6 | 12.9 | 11.6 | 10.3 | 9.50 |
| | | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | 14.7 | 11.4 | 10.3 | 9.10 | 8.40 |
| | M | 48 | J_1 | kgcm ² | - | 30.8 | 27.6 | 24.9 | 23.0 | - | - | - | - | - |
| | | | | 10 ⁻³ in.lb.s ² | - | 27.3 | 24.4 | 22.0 | 20.4 | - | - | - | - | - |
| | N | 55 | J_1 | kgcm ² | 129 | - | - | - | - | - | - | - | - | - |
| | | | | 10 ⁻³ in.lb.s ² | 114 | - | - | - | - | - | - | - | - | - |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

^{a)} At max. 10 % M_{2KMax}

^{b)} Valid for standard clamping hub diameter

^{c)} Refers to center of the output shaft or flange

^{d)} Please reduce input speed at higher ambient temperatures

^{f)} Please contact us to discuss

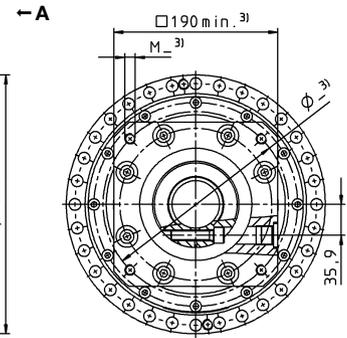
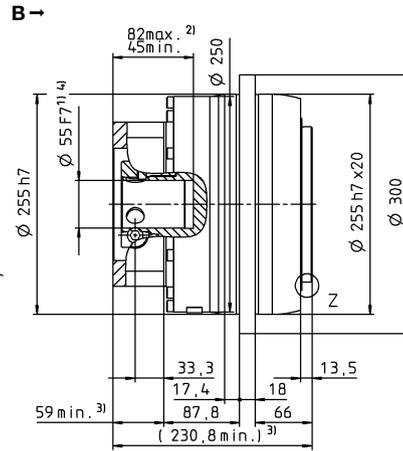
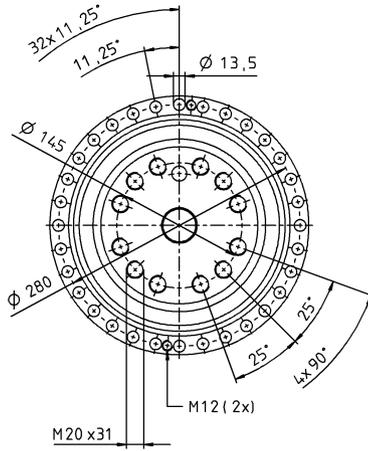
application-specific service lifetimes

View A

View B

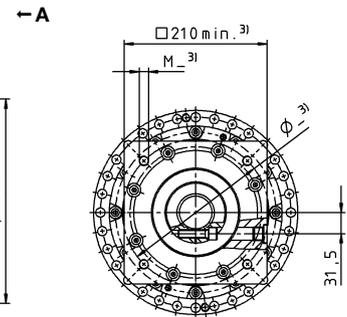
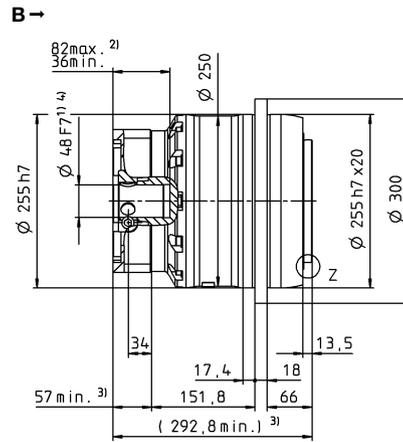
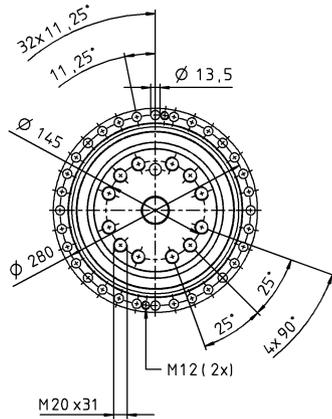
1-stage

up to 55⁴⁾ (N)⁵⁾
clamping hub diameter



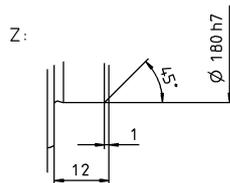
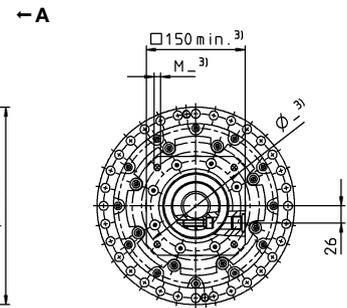
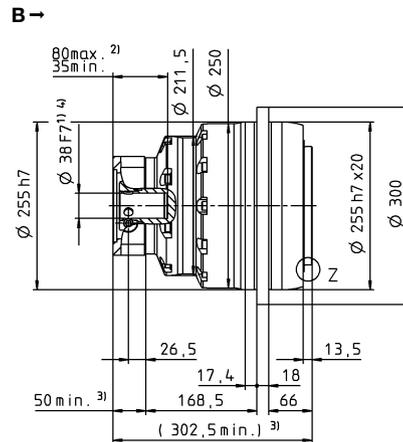
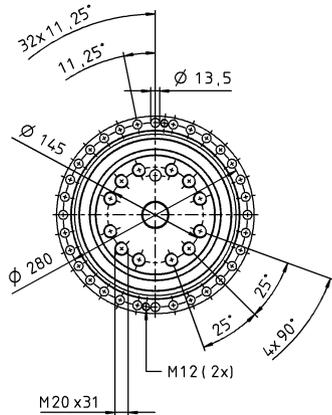
2-stage

up to 48⁴⁾ (M)⁵⁾
clamping hub diameter



3-stage

up to 38⁴⁾ (K)⁵⁾
clamping hub diameter



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

Motor shaft diameter [mm]

Planetary gearboxes

TP*

MA

TP+ 500 MA 1-/2-/3-stage

| | | | | 1-stage | 2-stage | | | | 3-stage | | | | | | |
|--|-------------|-----------------|-------|---|--|--------|--------|--------|-----------|--------|--------|--------|--------|------|---|
| Ratio | <i>i</i> | | | 5.5 | 22 | 27.5 | 38.5 | 55 | 66 | 88 | 110 | 154 | 220 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | | 10450 | 10450 | 10450 | 10450 | 10450 | 10450 | 10450 | 10450 | 10450 | 10450 | | |
| | | in.lb | | 92491 | 92491 | 92491 | 92491 | 92491 | 92491 | 92491 | 92491 | 92491 | 92491 | | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | | 9600 | 10450 | 10450 | 10450 | 8640 | 10450 | 10450 | 10450 | 10450 | 10450 | | |
| | | in.lb | | 84968 | 92491 | 92491 | 92491 | 76471 | 92491 | 92491 | 92491 | 92491 | 92491 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | | 4313 | 5068 | 4980 | 5057 | 5325 | 4941 | 7464 | 7396 | 7546 | 7907 | | |
| | | in.lb | | 38174 | 44858 | 44075 | 44759 | 47129 | 43731 | 66060 | 65462 | 66792 | 69986 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | | 18750 | 25000 | 25000 | 25000 | 25000 | 25000 | 25000 | 25000 | 25000 | 25000 | | |
| | | in.lb | | 165953 | 221270 | 221270 | 221270 | 221270 | 221270 | 221270 | 221270 | 221270 | 221270 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | | 900 | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 | | |
| Max. input speed | n_{1Max} | rpm | | 3125 | 4375 | 4375 | 4375 | 4375 | 4375 | 4375 | 4375 | 4375 | 4375 | | |
| Mean no load running torque ^{b)} (at $n_i = 2000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | | 27 | 11 | 10 | 8.9 | 7.8 | 6.8 | 5.0 | 4.7 | 3.6 | 3.0 | | |
| | | in.lb | | 241 | 100 | 89 | 79 | 69 | 60 | 45 | 42 | 32 | 27 | | |
| Max. backlash | j_t | arcmin | | Standard ≤ 2 / Reduced ≤ 1 | Standard ≤ 3 / Reduced ≤ 1.5 | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | | 2000 | 2000 | 2000 | 1950 | 1900 | 1800 | 1800 | 1800 | 1800 | 1800 | | |
| | | in.lb/arcmin | | 17702 | 17702 | 17702 | 17259 | 16817 | 15931 | 15931 | 15931 | 15931 | 15931 | | |
| Tilting rigidity | C_{2K} | Nm/arcmin | | 9480 | | | | | | | | | | | |
| | | in.lb/arcmin | | 83906 | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | | 50000 | | | | | | | | | | | |
| | | lb _f | | 11250 | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | | 6600 | 9500 | | | | | | | | | | |
| | | in.lb | | 58415 | 84083 | | | | | | | | | | |
| Efficiency at full load | η | % | | 95 | 93 | | | | | | | | | | |
| Service life ^{f)} | L_h | h | | > 20000 | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | <i>m</i> | kg | | 80 | 80 | | | | 89 | | | | | | |
| | | lb _m | | 177 | 177 | | | | 197 | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | | ≤ 70 | ≤ 63 | | | | ≤ 60 | | | | | | |
| | | | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | | +90 | | | | | | | | | | | |
| | | F | | 194 | | | | | | | | | | | |
| Ambient temperature | | °C | | -15 to +40 | | | | | | | | | | | |
| | | F | | 5 to 104 | | | | | | | | | | | |
| Lubrication | | | | Lubricated for life | | | | | | | | | | | |
| Direction of rotation | | | | In- and output same direction | | | | | | | | | | | |
| Protection class | | | | IP 65 | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | | BCT-10000AAX-166.00 | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | | X = 080.000 - 180.000 | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | K | 38 | J_1 | kgcm ² | - | - | - | - | - | 17.9 | 13.5 | 11.9 | 10.5 | 9.70 | |
| | | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | 15.8 | 11.9 | 10.5 | 9.30 | 8.60 | |
| | M | 48 | J_1 | kgcm ² | - | 43.8 | 36.9 | 30.5 | 27.0 | 32.7 | 28.3 | 26.7 | 25.2 | 24.4 | |
| | | | | 10 ⁻³ in.lb.s ² | - | 38.8 | 32.7 | 27.0 | 23.9 | 28.9 | 25.0 | 23.6 | 22.3 | 21.6 | |
| | O | 60 | J_1 | kgcm ² | 175 | - | - | - | - | - | - | - | - | - | - |
| | | | | 10 ⁻³ in.lb.s ² | 155 | - | - | - | - | - | - | - | - | - | - |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

^{a)} At max. 10 % M_{2KMax}

^{b)} Valid for standard clamping hub diameter

^{c)} Refers to center of the output shaft or flange

^{d)} Please reduce input speed at higher ambient temperatures

^{f)} Please contact us to discuss

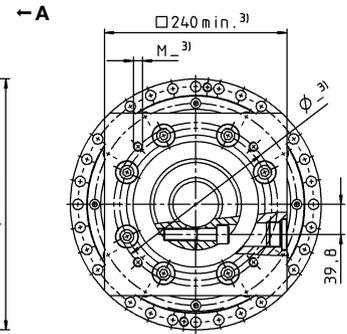
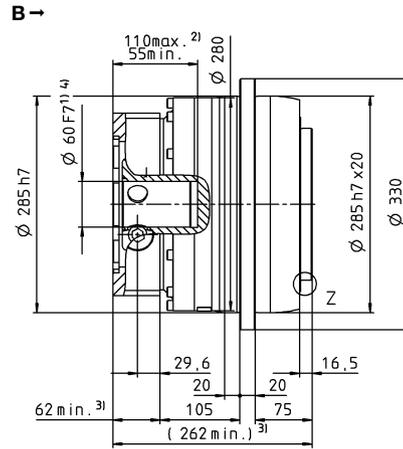
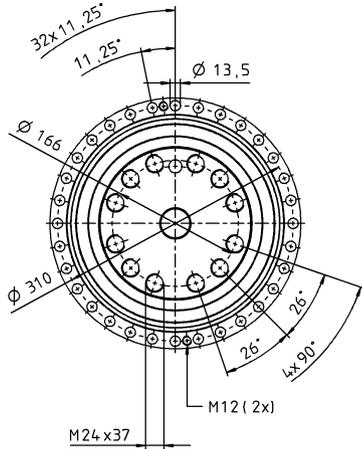
application-specific service lifetimes

View A

View B

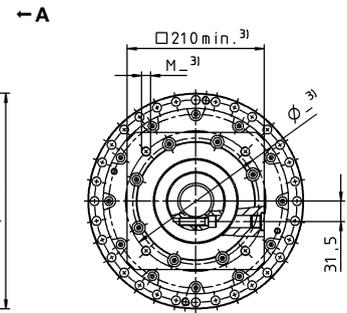
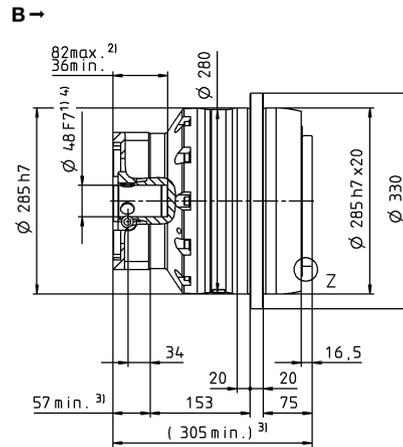
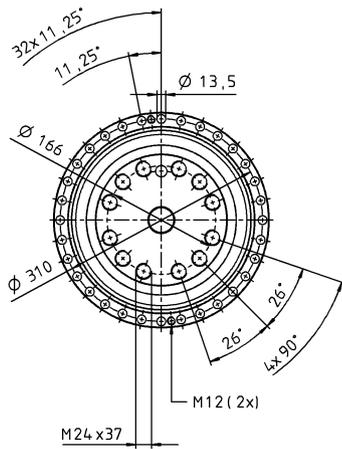
1-stage

up to 60⁴⁾ (O)⁵⁾
clamping hub diameter



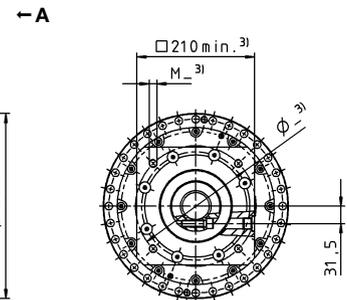
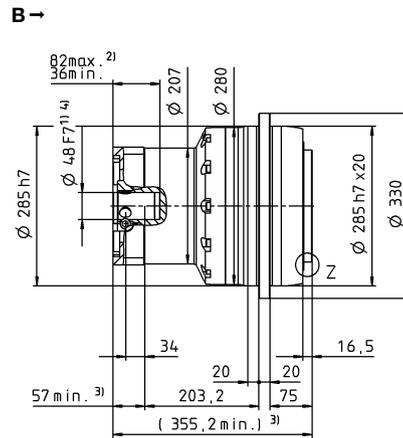
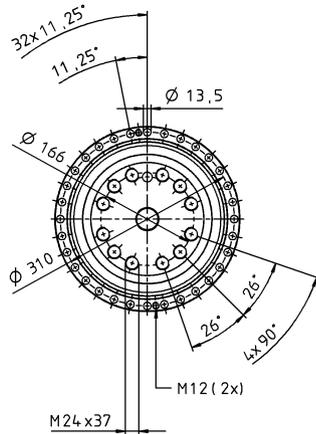
2-stage

up to 48⁴⁾ (M)⁵⁾
clamping hub diameter

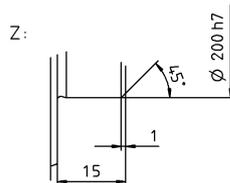


3-stage

up to 38/48⁴⁾
(K/M⁵⁾) clamping hub diameter



Motor shaft diameter [mm]



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

TP+ 2000 MA 2-/3-stage

| | | | 2-stage | | 3-stage | | | | | | | | |
|--|-------------|-----------------|-------------------------------|---------------------------------------|---------|--------|--------|--------|--------|--------|--------|----|----|
| Ratio | <i>i</i> | | 22 | 30.25 | 66 | 88 | 110 | 121 | 154 | 220 | 302.5 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 22000 | 22000 | 22000 | 22000 | 22000 | 22000 | 22000 | 15600 | 21500 | | |
| | | in.lb | 194718 | 194718 | 194718 | 194718 | 194718 | 194718 | 194718 | 138072 | 190292 | | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 22000 | 22000 | 22000 | 22000 | 22000 | 22000 | 22000 | 15600 | 21500 | | |
| | | in.lb | 194718 | 194718 | 194718 | 194718 | 194718 | 194718 | 194718 | 138072 | 190292 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 13500 | 13500 | 13500 | 13500 | 13500 | 13500 | 13500 | 10000 | 13500 | | |
| | | in.lb | 119486 | 119486 | 119486 | 119486 | 119486 | 119486 | 119486 | 88508 | 119486 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 44000 | 44000 | 44000 | 44000 | 44000 | 44000 | 44000 | 44000 | 44000 | | |
| | | in.lb | 389435 | 389435 | 389435 | 389435 | 389435 | 389435 | 389435 | 389435 | 389435 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 2000 | 2000 | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 | | |
| Max. input speed | n_{1Max} | rpm | 3000 | 3000 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | | |
| Mean no load running torque ^{b)} (at $n_1 = 2000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 17 | 13 | 7.5 | 6.0 | 5.0 | 5.0 | 4.5 | 4.0 | 4.0 | | |
| | | in.lb | 151 | 115 | 66 | 53 | 44 | 44 | 40 | 35 | 35 | | |
| Max. backlash | j_t | arcmin | ≤ 3 | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 2900 | 2900 | 3000 | 3000 | 3000 | 3000 | 2950 | 2850 | 2850 | | |
| | | in.lb/arcmin | 25667 | 25667 | 26552 | 26552 | 26552 | 26552 | 26110 | 25225 | 25225 | | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 13000 | | | | | | | | | | |
| | | in.lb/arcmin | 115060 | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 100000 | | | | | | | | | | |
| | | lb _f | 22500 | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 31600 | | | | | | | | | | |
| | | in.lb | 279685 | | | | | | | | | | |
| Efficiency at full load | η | % | 95 | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | |
| Weight (incl. standard adapter plate) | <i>m</i> | kg | 190 | | | 185 | | | | | | | |
| | | lb _m | 420 | | | 409 | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 68 | | | ≤ 66 | | | | | | | |
| | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | |
| Ambient temperature | | °C | 0 to +40 | | | | | | | | | | |
| | | F | 32 to 104 | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | - | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | - | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | M | 48 | J_1 | kgcm ² | - | - | 52 | 37 | 35 | 35 | 28 | 26 | 25 |
| | | | | 10 ⁻³ in.lb.s ² | - | - | 46 | 33 | 31 | 31 | 25 | 23 | 22 |
| | N | 55 | J_1 | kgcm ² | 101 | 74 | - | - | - | - | - | - | - |
| | | | | 10 ⁻³ in.lb.s ² | 89 | 65 | - | - | - | - | - | - | - |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

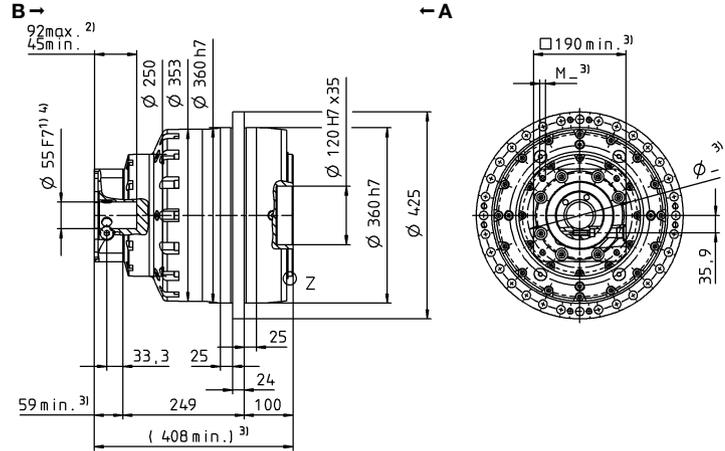
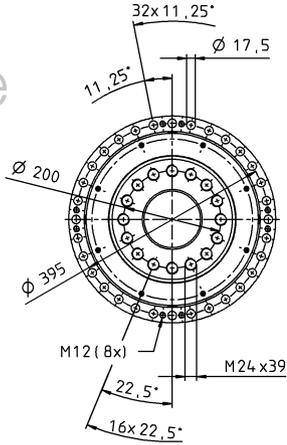
- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

View B

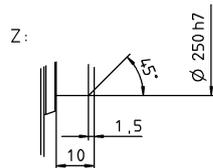
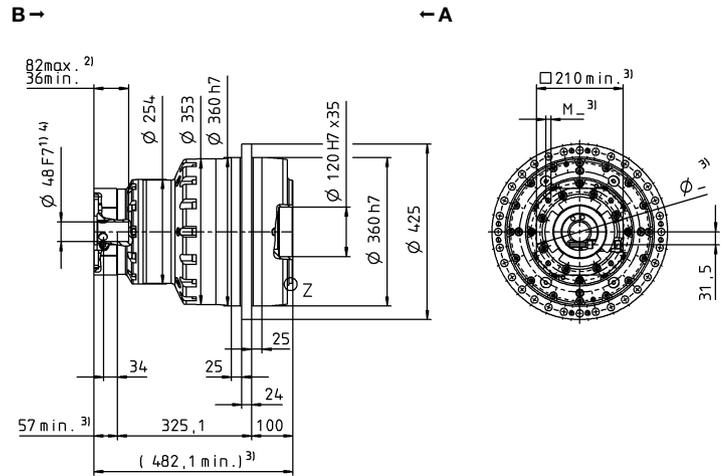
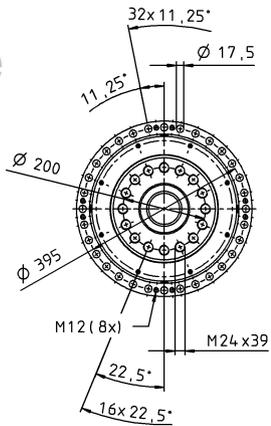
2-stage

up to 55⁴⁾ (N)⁵⁾
clamping hub diameter



3-stage

up to 48⁴⁾ (M)⁵⁾
clamping hub diameter



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

Motor shaft diameter [mm]

Planetary gearboxes

TP*

MA



Hypoid gearboxes

HG⁺ / SK⁺ / SPK⁺

TK⁺ / TPK⁺ / TPK⁺ HIGH TORQUE

Precise and highly dynamic



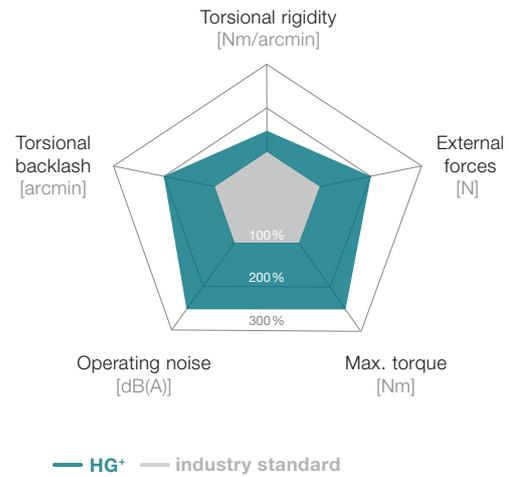
HG+ – Precise hollow shaft solution



HG+

The versatile hypoid gearboxes of the alpha Advanced Line are available with a hollow shaft on one or both sides. With the HG+, the low torsional backlash and high torsional rigidity assure maximum positioning accuracy of the drives and the high precision of machines – even during highly dynamic operation.

The HG+ compared to the industry standard



Product highlights

- Max. torsional backlash [arcmin] ≤ 4
- Hollow shaft version
- Multiple output configurations for greater flexibility
- Extremely smooth-running
- Other gearbox models
- Corrosion resistant design, ATEX



HG+ in corrosion-resistant design



HG+ with hollow shaft on both sides

Hollow shaft for feeding through media or establishing a connection to the application

Variable output connection, also rearward

Taper roller bearings for absorbing axial and radial forces



Metal bellows coupling at the input: length compensation to protect the motor bearing

High-quality hypoid gearing for a higher torque and smoother operation



HG+ with shrink disk

HG+ 060 MF 1-/2-stage

| | | | 1-stage | | | | | 2-stage | | | | | | | | | | |
|---|-------------|-----------------|-----------------------------------|---------------------------------------|------|------|------|---------|------|------|------|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 3 | 4 | 5 | 7 | 10 | 12 | 16 | 20 | 25 | 28 | 35 | 40 | 50 | 70 | 100 | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 36 | 36 | 36 | 25 | 20 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 25 | 20 | |
| | | in.lb | 319 | 319 | 319 | 221 | 177 | 319 | 319 | 319 | 319 | 319 | 319 | 319 | 319 | 319 | 221 | 177 |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 30 | 30 | 30 | 25 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 25 | 20 | |
| | | in.lb | 266 | 266 | 266 | 221 | 177 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 221 | 177 |
| Nominal torque (at n_n) | T_{2N} | Nm | 22 | 22 | 22 | 20 | 15 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 20 | 15 | |
| | | in.lb | 195 | 195 | 195 | 177 | 133 | 195 | 195 | 195 | 195 | 195 | 195 | 195 | 195 | 195 | 177 | 133 |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 40 | 50 | 50 | 45 | 40 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 45 | 40 | |
| | | in.lb | 354 | 443 | 443 | 398 | 354 | 443 | 443 | 443 | 443 | 443 | 443 | 443 | 443 | 443 | 398 | 354 |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | 2500 | 2700 | 3000 | 3000 | 3000 | 4400 | 4400 | 4400 | 4400 | 4400 | 4400 | 4400 | 4800 | 5500 | 5500 | |
| Max. input speed | n_{1Max} | rpm | 7500 | 7500 | 7500 | 7500 | 7500 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 1.6 | 1.5 | 1.2 | 1.7 | 1.5 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | |
| | | in.lb | 14 | 13 | 11 | 15 | 13 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | |
| Max. backlash | j_t | arcmin | Standard ≤ 5 | | | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 2.2 | 2.3 | 2.4 | 2.2 | 1.9 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.2 | 1.9 | |
| | | in.lb/arcmin | 19 | 20 | 21 | 19 | 17 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 21 | 19 | 17 |
| Max. axial force ^{c)} | F_{2AMax} | N | 2400 | | | | | | | | | | | | | | | |
| | | lb _f | 540 | | | | | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 2700 | | | | | | | | | | | | | | | |
| | | lb _f | 608 | | | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 251 | | | | | | | | | | | | | | | |
| | | in.lb | 2222 | | | | | | | | | | | | | | | |
| Efficiency at full load | η | % | 96 | | | | | 94 | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 2.9 | | | | | 3.2 | | | | | | | | | | |
| | | lb _m | 6 | | | | | 7 | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 64 | | | | | | | | | | | | | | | |
| | | °C | +90 | | | | | | | | | | | | | | | |
| Max. permitted housing temperature | F | °C | 194 | | | | | | | | | | | | | | | |
| | | °C | 0 to +40 | | | | | | | | | | | | | | | |
| Ambient temperature | F | °C | 32 to 104 | | | | | | | | | | | | | | | |
| | | °C | 32 to 104 | | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | | |
| Shrink disc (Standard version) | | | SD 018x044 S2 | | | | | | | | | | | | | | | |
| Max. torque (without axial force) | T_{max} | Nm | 100 | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | B | 11 | J_i | kgcm ² | - | - | - | - | - | 0.09 | 0.09 | 0.07 | 0.07 | 0.06 | 0.06 | 0.06 | 0.06 | |
| | | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | 0.08 | 0.08 | 0.06 | 0.06 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| | C | 14 | J_i | kgcm ² | 0.52 | 0.44 | 0.4 | 0.36 | 0.34 | 0.2 | 0.2 | 0.19 | 0.19 | 0.18 | 0.18 | 0.17 | 0.17 | 0.17 |
| | | | | 10 ⁻³ in.lb.s ² | 0.46 | 0.39 | 0.35 | 0.32 | 0.3 | 0.18 | 0.18 | 0.17 | 0.17 | 0.16 | 0.16 | 0.15 | 0.15 | 0.15 |
| | E | 19 | J_i | kgcm ² | 0.87 | 0.79 | 0.75 | 0.71 | 0.7 | - | - | - | - | - | - | - | - | - |
| | | | | 10 ⁻³ in.lb.s ² | 0.77 | 0.7 | 0.66 | 0.63 | 0.62 | - | - | - | - | - | - | - | - | - |

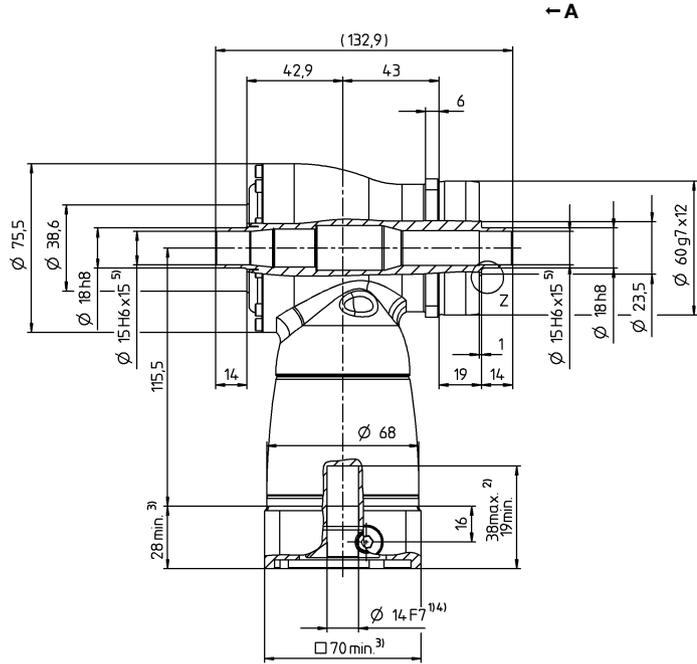
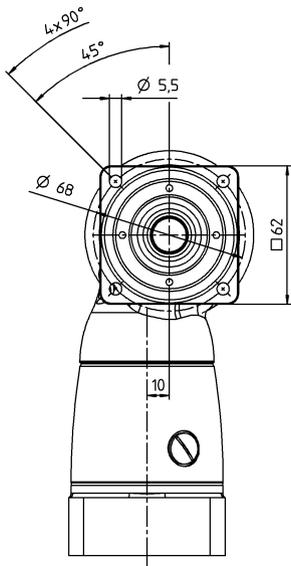
Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

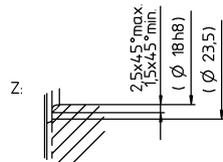
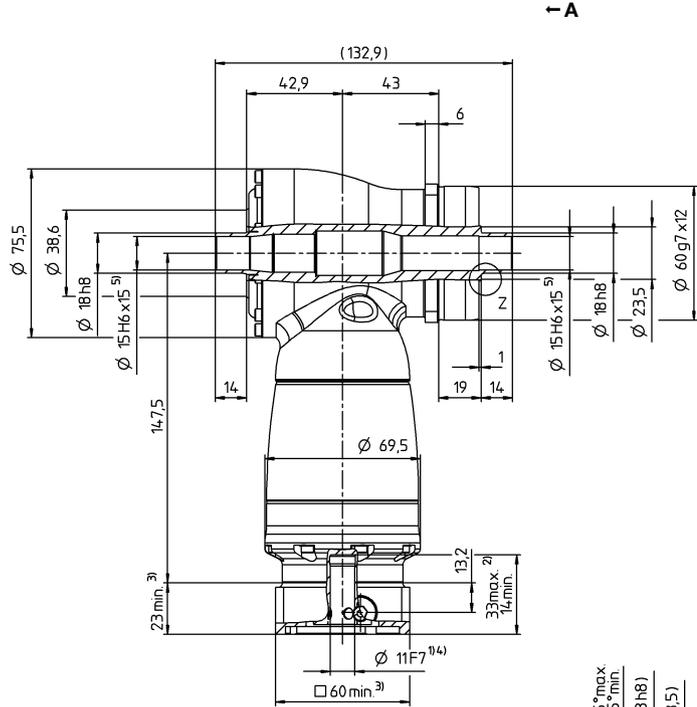
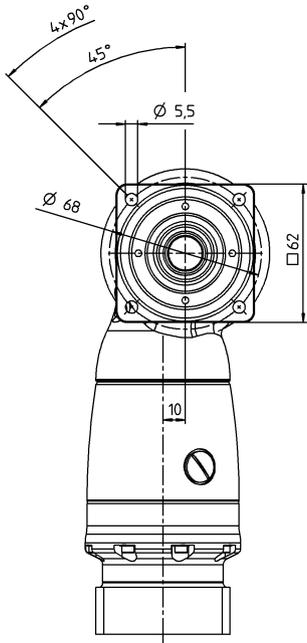
1-stage

up to 14/19⁴⁾
(C⁶⁾/E) clamping
hub diameter



2-stage

up to 11/14⁴⁾
(B⁶⁾/C) clamping
hub diameter



Motor shaft diameter [mm]

Hypoid gearboxes

HG⁺

See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

- Non-tolerated dimensions are nominal dimensions
- ¹⁾ Check motor shaft fit
- ²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
- ³⁾ The dimensions depend on the motor
- ⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm
- ⁵⁾ Tolerance h6 for mounted shaft.
- ⁶⁾ Standard clamping hub diameter

HG+ 075 MF 1-/2-stage

| | | | 1-stage | | | | | 2-stage | | | | | | | | | | | |
|--|-------------|-----------------|-----------------------------------|---------------------------------------|------|------|------|---------|------|------|------|------|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 3 | 4 | 5 | 7 | 10 | 12 | 16 | 20 | 25 | 28 | 35 | 40 | 50 | 70 | 100 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 84 | 84 | 84 | 60 | 50 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 60 | 50 | | |
| | | in.lb | 743 | 743 | 743 | 531 | 443 | 743 | 743 | 743 | 743 | 743 | 743 | 743 | 743 | 743 | 531 | 443 | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 70 | 70 | 70 | 60 | 50 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 60 | 50 | | |
| | | in.lb | 620 | 620 | 620 | 531 | 443 | 620 | 620 | 620 | 620 | 620 | 620 | 620 | 620 | 620 | 531 | 443 | |
| Nominal torque (at n_n) | T_{2N} | Nm | 50 | 50 | 50 | 45 | 40 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 45 | 40 | | |
| | | in.lb | 443 | 443 | 443 | 398 | 354 | 443 | 443 | 443 | 443 | 443 | 443 | 443 | 443 | 443 | 398 | 354 | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 95 | 115 | 115 | 110 | 100 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 110 | 100 | | |
| | | in.lb | 841 | 1018 | 1018 | 974 | 885 | 1018 | 1018 | 1018 | 1018 | 1018 | 1018 | 1018 | 1018 | 1018 | 974 | 885 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | 2300 | 2500 | 2800 | 2800 | 2800 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3800 | 4500 | 4500 | | |
| Max. input speed | n_{1Max} | rpm | 7500 | 7500 | 7500 | 7500 | 7500 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 1.6 | 1.5 | 1.2 | 1.7 | 1.5 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | | |
| | | in.lb | 14 | 13 | 11 | 15 | 13 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 4 | | | | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 5.3 | 5.9 | 6.7 | 6.6 | 6.5 | 5.9 | 5.9 | 5.9 | 5.9 | 5.9 | 5.9 | 5.9 | 6.7 | 6.6 | 6.5 | | |
| | | in.lb/arcmin | 47 | 52 | 59 | 58 | 58 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 59 | 58 | 58 | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 3400 | | | | | | | | | | | | | | | | |
| | | lb _f | 765 | | | | | | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 4000 | | | | | | | | | | | | | | | | |
| | | lb _f | 900 | | | | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 437 | | | | | | | | | | | | | | | | |
| | | in.lb | 3868 | | | | | | | | | | | | | | | | |
| Efficiency at full load | η | % | 96 | | | | | 94 | | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 4.8 | | | | | 5.1 | | | | | | | | | | | |
| | | lb _m | 11 | | | | | 11 | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 66 | | | | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | | | | | |
| Ambient temperature | | °C | 0 to +40 | | | | | | | | | | | | | | | | |
| | | F | 32 to 104 | | | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | | | |
| Shrink disc (Standard version) | | | SD 024x050 S2 | | | | | | | | | | | | | | | | |
| Max. torque (without axial force) | T_{max} | Nm | 250 | | | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | C | 14 | J_1 | kgcm ² | - | - | - | - | - | 0.28 | 0.27 | 0.23 | 0.23 | 0.2 | 0.2 | 0.18 | 0.18 | 0.18 | |
| | | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | 0.25 | 0.24 | 0.2 | 0.2 | 0.18 | 0.18 | 0.16 | 0.16 | 0.16 | 0.16 |
| | E | 19 | J_1 | kgcm ² | 1.46 | 1.19 | 1.06 | 0.95 | 0.9 | 0.73 | 0.71 | 0.68 | 0.67 | 0.63 | 0.62 | 0.63 | 0.63 | 0.63 | 0.63 |
| | | | | 10 ⁻³ in.lb.s ² | 1.29 | 1.05 | 0.94 | 0.84 | 0.8 | 0.65 | 0.63 | 0.6 | 0.59 | 0.56 | 0.55 | 0.56 | 0.56 | 0.56 | 0.56 |
| | H | 28 | J_1 | kgcm ² | 2.88 | 2.61 | 2.47 | 2.37 | 2.31 | - | - | - | - | - | - | - | - | - | - |
| | | | | 10 ⁻³ in.lb.s ² | 2.55 | 2.31 | 2.19 | 2.1 | 2.04 | - | - | - | - | - | - | - | - | - | - |

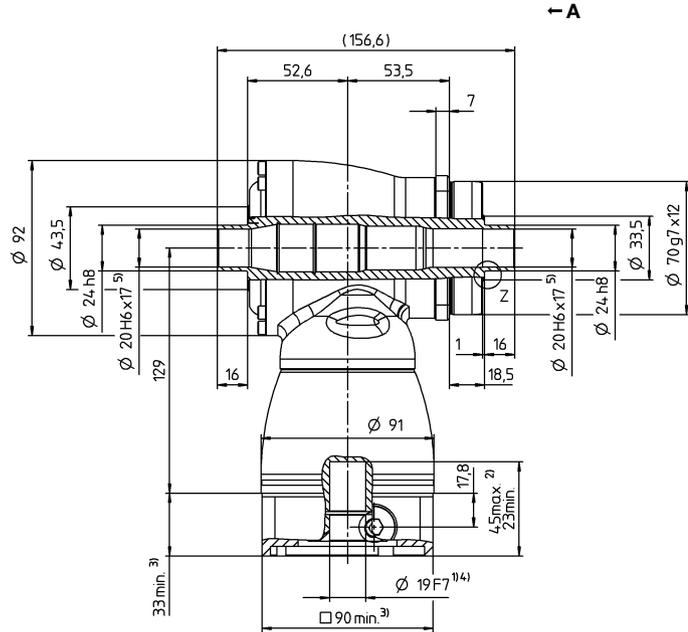
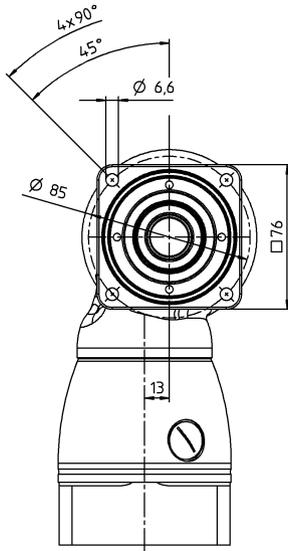
Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

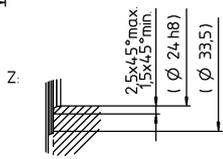
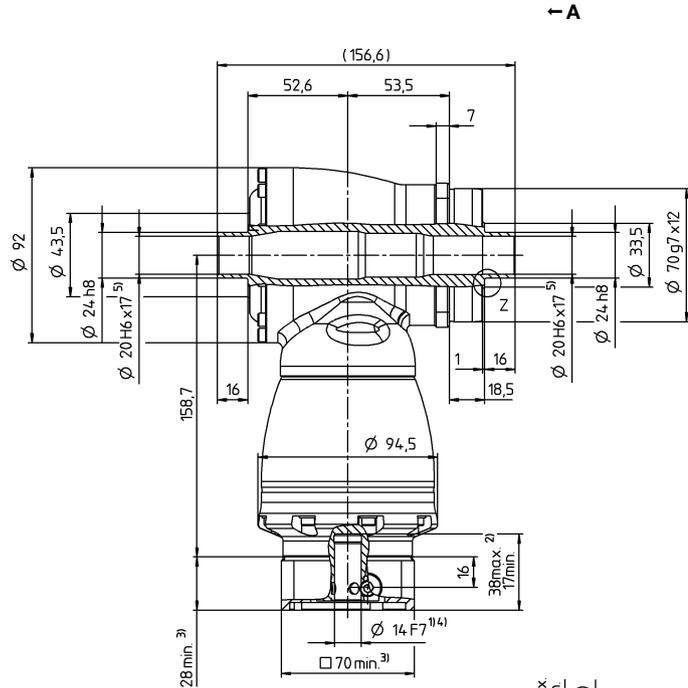
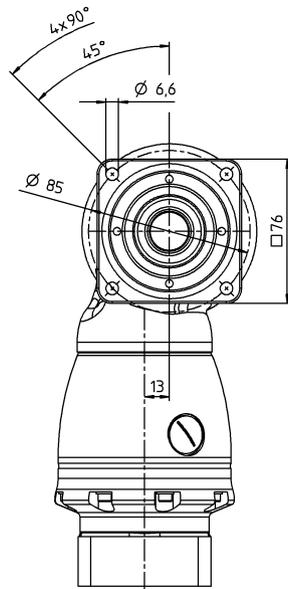
1-stage

up to 19/28⁴⁾
(E⁶⁾/H) clamping
hub diameter



2-stage

up to 14/19⁴⁾
(C⁶⁾/E) clamping
hub diameter



Motor shaft diameter [mm]

Hypoid gearboxes

HG⁺

See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

- Non-tolerated dimensions are nominal dimensions
- ¹⁾ Check motor shaft fit
- ²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
- ³⁾ The dimensions depend on the motor
- ⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm
- ⁵⁾ Tolerance h6 for mounted shaft.
- ⁶⁾ Standard clamping hub diameter

HG+ 100 MF 1-/2-stage

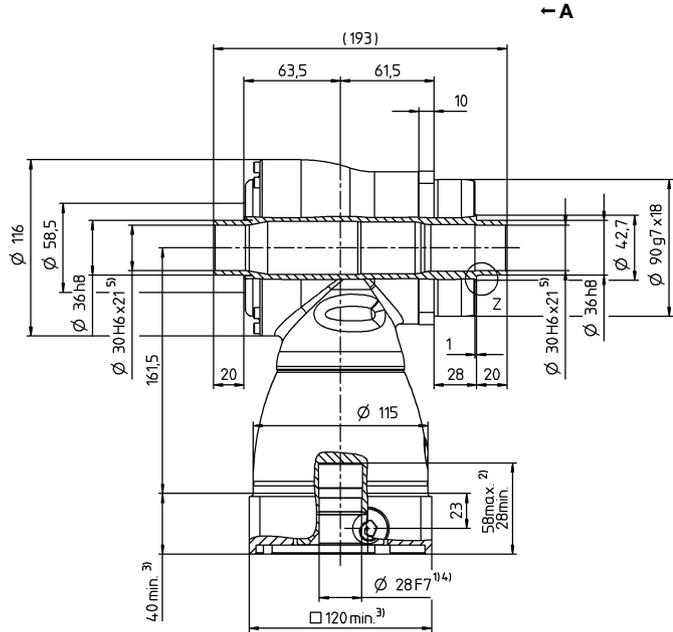
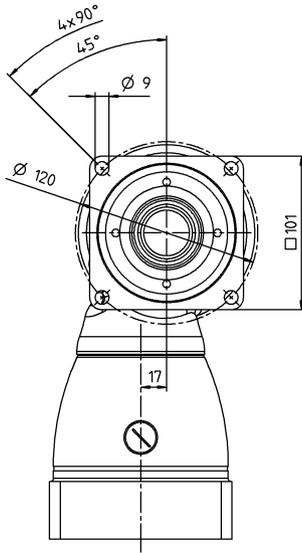
| | | | 1-stage | | | | | 2-stage | | | | | | | | | | |
|--|-------------|-----------------|---------------------------------------|-------|------|------|------|---------|------|------|------|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 3 | 4 | 5 | 7 | 10 | 12 | 16 | 20 | 25 | 28 | 35 | 40 | 50 | 70 | 100 | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 204 | 204 | 204 | 145 | 125 | 204 | 204 | 204 | 204 | 204 | 204 | 204 | 204 | 145 | 125 | |
| | | in.lb | 1806 | 1806 | 1806 | 1283 | 1106 | 1806 | 1806 | 1806 | 1806 | 1806 | 1806 | 1806 | 1806 | 1806 | 1283 | 1106 |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 170 | 170 | 170 | 145 | 125 | 170 | 170 | 170 | 170 | 170 | 170 | 170 | 170 | 145 | 125 | |
| | | in.lb | 1505 | 1505 | 1505 | 1283 | 1106 | 1505 | 1505 | 1505 | 1505 | 1505 | 1505 | 1505 | 1505 | 1505 | 1283 | 1106 |
| Nominal torque (at n_n) | T_{2N} | Nm | 100 | 100 | 100 | 90 | 80 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 90 | 80 | |
| | | in.lb | 885 | 885 | 885 | 797 | 708 | 885 | 885 | 885 | 885 | 885 | 885 | 885 | 885 | 885 | 797 | 708 |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 220 | 260 | 260 | 255 | 250 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 255 | 250 |
| | | in.lb | 1947 | 2301 | 2301 | 2257 | 2213 | 2301 | 2301 | 2301 | 2301 | 2301 | 2301 | 2301 | 2301 | 2301 | 2257 | 2213 |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | 2200 | 2400 | 2700 | 2500 | 2500 | 3100 | 3100 | 3100 | 3100 | 3100 | 3100 | 3100 | 3100 | 3500 | 4200 | 4200 |
| Max. input speed | n_{1Max} | rpm | 5500 | 5500 | 5500 | 5500 | 5500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 4.3 | 3.4 | 3.2 | 4.6 | 3.7 | 0.7 | 0.7 | 0.6 | 0.4 | 0.4 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| | | in.lb | 38 | 30 | 28 | 41 | 33 | 6.2 | 6.2 | 5.3 | 3.5 | 3.5 | 2.7 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 |
| Max. backlash | j_t | arcmin | Standard ≤ 4 | | | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 10.7 | 12.1 | 14 | 14.2 | 14.4 | 12.1 | 12.1 | 12.1 | 12.1 | 12.1 | 12.1 | 12.1 | 14 | 14.2 | 14.4 | |
| | | in.lb/arcmin | 95 | 107 | 124 | 126 | 127 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 124 | 126 | 127 | |
| Max. axial force ^{c)} | F_{2AMax} | N | 5700 | | | | | | | | | | | | | | | |
| | | lb _f | 1283 | | | | | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 6300 | | | | | | | | | | | | | | | |
| | | lb _f | 1418 | | | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 833 | | | | | | | | | | | | | | | |
| | | in.lb | 7373 | | | | | | | | | | | | | | | |
| Efficiency at full load | η | % | 96 | | | | | 94 | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 9.3 | | | | | 9.5 | | | | | | | | | | |
| | | lb _m | 21 | | | | | 21 | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 66 | | | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | | | | |
| Ambient temperature | | °C | 0 to +40 | | | | | | | | | | | | | | | |
| | | F | 32 to 104 | | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | | |
| Shrink disc (Standard version) | | | SD 036x072 S2 | | | | | | | | | | | | | | | |
| Max. torque (without axial force) | T_{max} | Nm | 650 | | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | E 19 | J_1 | kgcm ² | - | - | - | - | - | 1.02 | 0.97 | 0.86 | 0.84 | 0.75 | 0.74 | 0.69 | 0.69 | 0.68 | 0.68 |
| | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | 0.9 | 0.86 | 0.76 | 0.74 | 0.66 | 0.65 | 0.61 | 0.61 | 0.6 | 0.6 |
| | G 24 | J_1 | kgcm ² | - | - | - | - | - | 2.59 | 2.54 | 2.42 | 2.4 | 2.31 | 2.3 | 2.26 | 2.25 | 2.25 | 2.25 |
| | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | 2.29 | 2.25 | 2.14 | 2.12 | 2.04 | 2.04 | 2 | 1.99 | 1.99 | 1.99 |
| | H 28 | J_1 | kgcm ² | 4.64 | 3.8 | 3.34 | 2.98 | 2.79 | - | - | - | - | - | - | - | - | - | - |
| | | | 10 ⁻³ in.lb.s ² | 4.11 | 3.36 | 2.96 | 2.64 | 2.47 | - | - | - | - | - | - | - | - | - | - |
| | K 38 | J_1 | kgcm ² | 11.9 | 11 | 10.6 | 10.2 | 10 | - | - | - | - | - | - | - | - | - | - |
| | | | 10 ⁻³ in.lb.s ² | 10.53 | 9.74 | 9.38 | 9.03 | 8.85 | - | - | - | - | - | - | - | - | - | - |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{f)} Please contact us to discuss application-specific service lifetimes

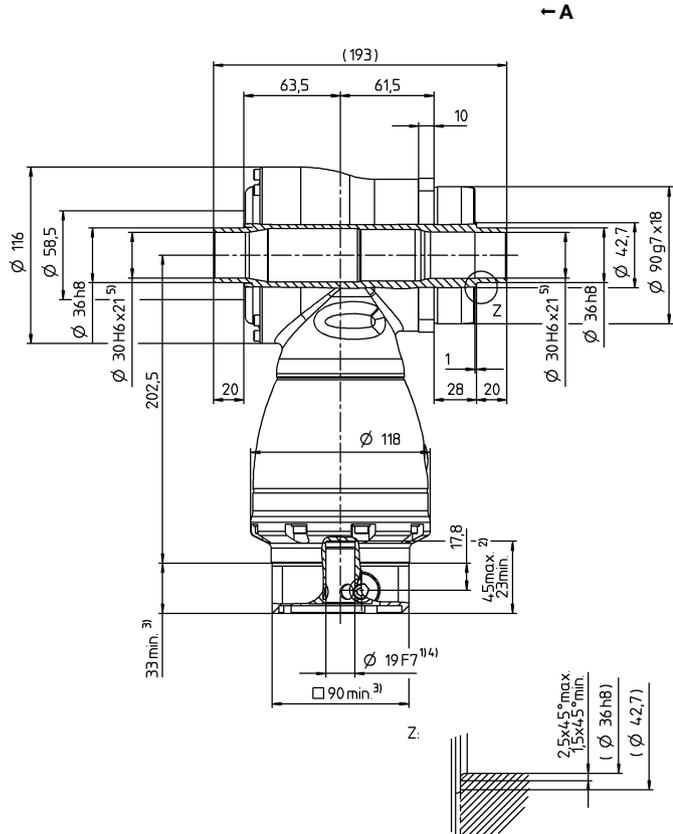
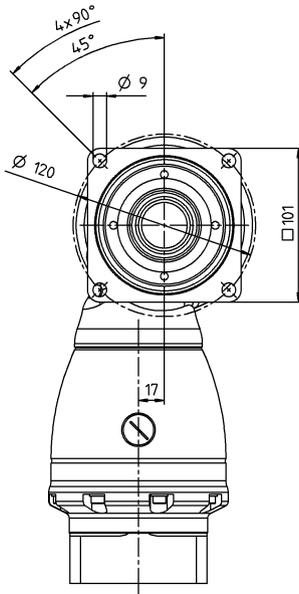
1-stage

up to 28/38⁴⁾
(H⁶⁾/K) clamping
hub diameter



2-stage

up to 19/24⁴⁾
(E⁶⁾/G) clamping
hub diameter



Motor shaft diameter [mm]

Hypoid gearboxes

HG⁺

See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Tolerance h6 for mounted shaft.

⁶⁾ Standard clamping hub diameter

HG⁺ 140 MF 1-/2-stage

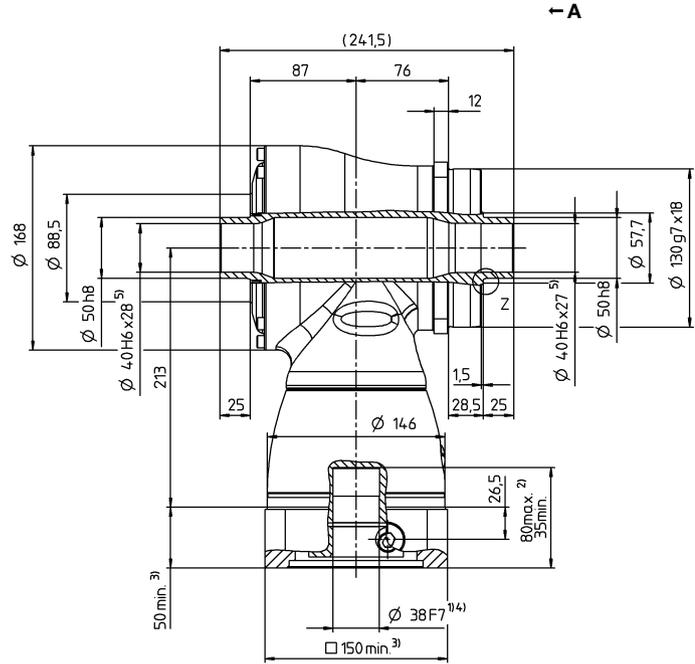
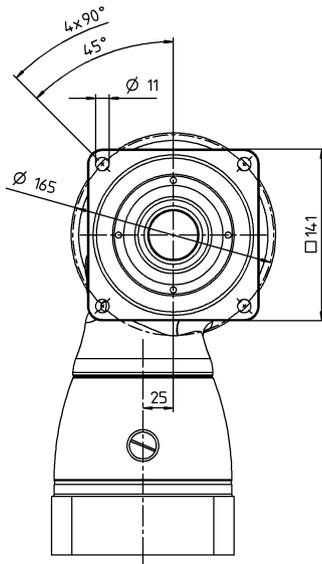
| | | | 1-stage | | | | | 2-stage | | | | | | | | | | | |
|--|-------------|-----------------|-----------------------------------|---------------------------------------|-------|------|-------|---------|-------|------|------|------|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 3 | 4 | 5 | 7 | 10 | 12 | 16 | 20 | 25 | 28 | 35 | 40 | 50 | 70 | 100 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 360 | 360 | 360 | 250 | 210 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 250 | 210 | | |
| | | in.lb | 3186 | 3186 | 3186 | 2213 | 1859 | 3186 | 3186 | 3186 | 3186 | 3186 | 3186 | 3186 | 3186 | 2213 | 1859 | | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 300 | 300 | 300 | 250 | 210 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 250 | 210 | | |
| | | in.lb | 2655 | 2655 | 2655 | 2213 | 1859 | 2655 | 2655 | 2655 | 2655 | 2655 | 2655 | 2655 | 2655 | 2213 | 1859 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 190 | 190 | 190 | 175 | 160 | 190 | 190 | 190 | 190 | 190 | 190 | 190 | 190 | 175 | 160 | | |
| | | in.lb | 1682 | 1682 | 1682 | 1549 | 1416 | 1682 | 1682 | 1682 | 1682 | 1682 | 1682 | 1682 | 1682 | 1549 | 1416 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 400 | 500 | 500 | 450 | 400 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 450 | 400 | | |
| | | in.lb | 3540 | 4425 | 4425 | 3983 | 3540 | 4425 | 4425 | 4425 | 4425 | 4425 | 4425 | 4425 | 4425 | 3983 | 3540 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | 1900 | 2000 | 2200 | 2000 | 2000 | 2900 | 2900 | 2900 | 2900 | 2900 | 2900 | 2900 | 3200 | 3200 | 3900 | | |
| Max. input speed | n_{1Max} | rpm | 5000 | 5000 | 5000 | 5000 | 5000 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 10 | 7.6 | 7.9 | 11 | 7.9 | 1.5 | 1 | 0.8 | 0.6 | 0.6 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | | |
| | | in.lb | 89 | 67 | 70 | 97 | 70 | 13 | 8.9 | 7.1 | 5.3 | 5.3 | 3.5 | 3.5 | 2.7 | 2.7 | 2.7 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 4 | | | | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 32 | 36 | 41 | 39 | 38 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 41 | 39 | 38 | | |
| | | in.lb/arcmin | 283 | 319 | 363 | 345 | 336 | 319 | 319 | 319 | 319 | 319 | 319 | 319 | 363 | 345 | 336 | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 9900 | | | | | | | | | | | | | | | | |
| | | lb _f | 2228 | | | | | | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 9500 | | | | | | | | | | | | | | | | |
| | | lb _f | 2138 | | | | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 1692 | | | | | | | | | | | | | | | | |
| | | in.lb | 14976 | | | | | | | | | | | | | | | | |
| Efficiency at full load | η | % | 96 | | | | | 94 | | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 22.6 | | | | | 24 | | | | | | | | | | | |
| | | lb _m | 50 | | | | | 53 | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 68 | | | | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | | | | | |
| Ambient temperature | | °C | 0 to +40 | | | | | | | | | | | | | | | | |
| | | F | 32 to 104 | | | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | | | |
| Shrink disc (Standard version) | | | SD 050x090 S2 | | | | | | | | | | | | | | | | |
| Max. torque (without axial force) | T_{max} | Nm | 1320 | | | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) | G | 24 | J_1 | kgcm ² | - | - | - | - | - | 4.2 | 3.84 | 3.27 | 3.16 | 2.78 | 2.73 | 2.48 | 2.46 | 2.43 | 2.42 |
| | | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | 3.72 | 3.4 | 2.89 | 2.8 | 2.46 | 2.42 | 2.19 | 2.18 | 2.15 | 2.14 |
| Clamping hub diameter [mm] | K | 38 | J_1 | kgcm ² | 25 | 19.1 | 16.3 | 14.1 | 12.8 | 11.1 | 10.7 | 10.2 | 10.1 | 9.69 | 9.64 | 9.39 | 9.37 | 9.34 | 9.33 |
| | | | | 10 ⁻³ in.lb.s ² | 22.13 | 16.9 | 14.43 | 12.48 | 11.33 | 9.82 | 9.47 | 9.03 | 8.94 | 8.58 | 8.53 | 8.31 | 8.29 | 8.27 | 8.26 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{f)} Please contact us to discuss application-specific service lifetimes

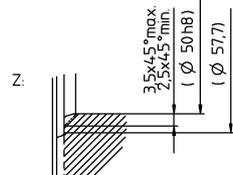
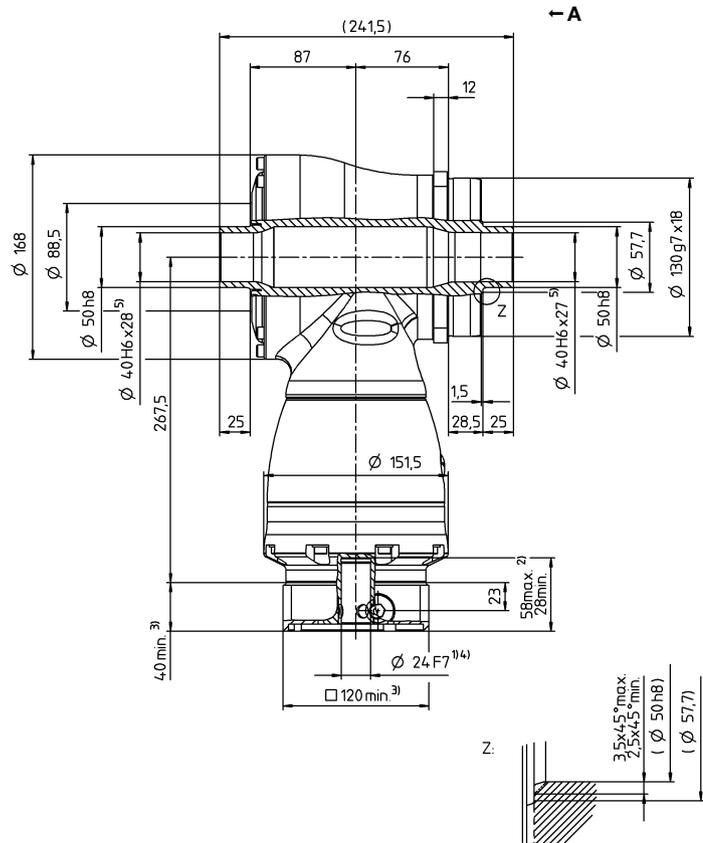
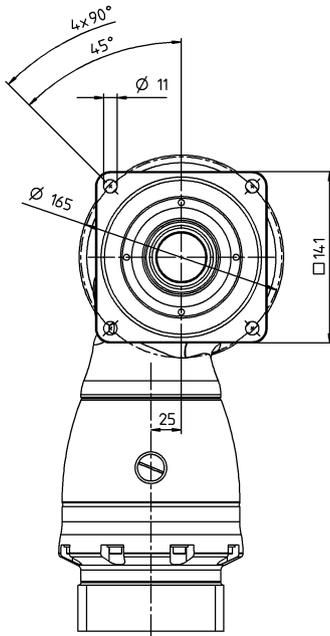
1-stage

up to 38⁴⁾ (K)⁶⁾
clamping hub diameter



2-stage

up to 24/38⁴⁾
(G/K)⁶⁾ clamping
hub diameter



Motor shaft diameter [mm]

Hypoid gearboxes

HG+

See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Tolerance h6 for mounted shaft.

⁶⁾ Standard clamping hub diameter

HG+ 180 MF 1-/2-stage

| | | | 1-stage | | | | | 2-stage | | | | | | | | | | | |
|---|-------------|-----------------|-----------------------------------|---------------------------------------|-------|-------|-------|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Ratio | <i>i</i> | | 3 | 4 | 5 | 7 | 10 | 12 | 16 | 20 | 25 | 28 | 35 | 40 | 50 | 70 | 100 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 768 | 768 | 768 | 550 | 470 | 768 | 768 | 768 | 768 | 768 | 768 | 768 | 768 | 550 | 470 | | |
| | | in.lb | 6797 | 6797 | 6797 | 4868 | 4160 | 6797 | 6797 | 6797 | 6797 | 6797 | 6797 | 6797 | 6797 | 6797 | 4868 | 4160 | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 640 | 640 | 640 | 550 | 470 | 640 | 640 | 640 | 640 | 640 | 640 | 640 | 640 | 550 | 470 | | |
| | | in.lb | 5665 | 5665 | 5665 | 4868 | 4160 | 5665 | 5665 | 5665 | 5665 | 5665 | 5665 | 5665 | 5665 | 4868 | 4160 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 400 | 400 | 400 | 380 | 360 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 380 | 360 | | |
| | | in.lb | 3540 | 3540 | 3540 | 3363 | 3186 | 3540 | 3540 | 3540 | 3540 | 3540 | 3540 | 3540 | 3540 | 3363 | 3186 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 900 | 1050 | 1050 | 970 | 900 | 1050 | 1050 | 1050 | 1050 | 1050 | 1050 | 1050 | 1050 | 970 | 900 | | |
| | | in.lb | 7966 | 9293 | 9293 | 8585 | 7966 | 9293 | 9293 | 9293 | 9293 | 9293 | 9293 | 9293 | 9293 | 8585 | 7966 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | 1600 | 1800 | 2000 | 1800 | 1800 | 2700 | 2700 | 2700 | 2700 | 2700 | 2700 | 2700 | 2900 | 3200 | 3400 | | |
| Max. input speed | n_{1Max} | rpm | 4500 | 4500 | 4500 | 4500 | 4500 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 21 | 17 | 16 | 19 | 16 | 3.3 | 2.5 | 2 | 1.8 | 1.4 | 1.3 | 1 | 1 | 1 | 1 | | |
| | | in.lb | 186 | 150 | 142 | 168 | 142 | 29 | 22 | 18 | 16 | 12 | 12 | 8.9 | 8.9 | 8.9 | 8.9 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 4 | | | | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 71 | 80 | 91 | 89 | 88 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 91 | 89 | 88 | | |
| | | in.lb/arcmin | 628 | 708 | 805 | 788 | 779 | 708 | 708 | 708 | 708 | 708 | 708 | 708 | 805 | 788 | 779 | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 14200 | | | | | | | | | | | | | | | | |
| | | lb _f | 3195 | | | | | | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 14700 | | | | | | | | | | | | | | | | |
| | | lb _f | 3308 | | | | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 3213 | | | | | | | | | | | | | | | | |
| | | in.lb | 28438 | | | | | | | | | | | | | | | | |
| Efficiency at full load | η | % | 96 | | | | | 94 | | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 45.4 | | | | | 47 | | | | | | | | | | | |
| | | lb _m | 100 | | | | | 104 | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 68 | | | | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | | | | | |
| Ambient temperature | | °C | 0 to +40 | | | | | | | | | | | | | | | | |
| | | F | 32 to 104 | | | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | | | |
| Shrink disc (Standard version) | | | SD 068x115 S2 | | | | | | | | | | | | | | | | |
| Max. torque (without axial force) | T_{max} | Nm | 2450 | | | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) | K | 38 | J_1 | kgcm ² | - | - | - | - | - | 15.3 | 14 | 12.3 | 12 | 10.9 | 10.7 | 10.1 | 10 | 9.95 | 9.91 |
| | | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | 13.54 | 12.39 | 10.89 | 10.62 | 9.65 | 9.47 | 8.94 | 8.85 | 8.81 | 8.77 |
| Clamping hub diameter [mm] | M | 48 | J_1 | kgcm ² | 73.3 | 51.6 | 42.1 | 34 | 29.7 | 30 | 28.7 | 27.1 | 26.7 | 25.6 | 25.4 | 24.8 | 24.7 | 24.7 | 24.6 |
| | | | | 10 ⁻³ in.lb.s ² | 64.87 | 45.67 | 37.26 | 30.09 | 26.28 | 26.55 | 25.4 | 23.98 | 23.63 | 22.66 | 22.48 | 21.95 | 21.86 | 21.86 | 21.77 |

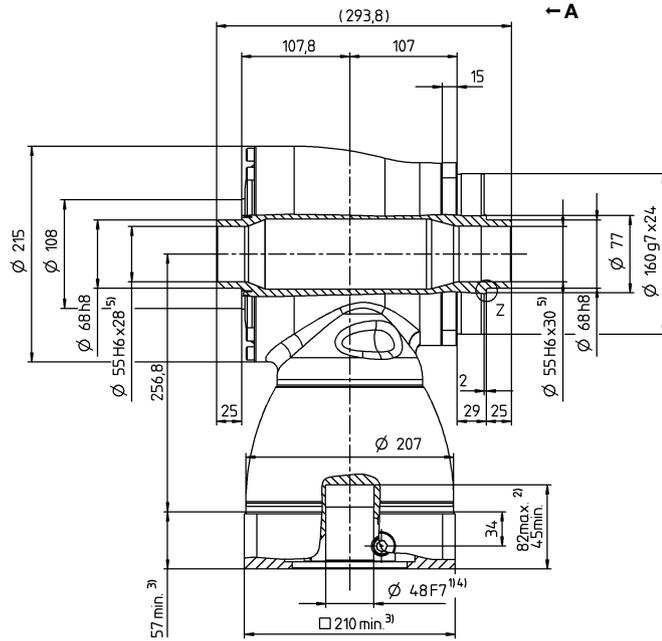
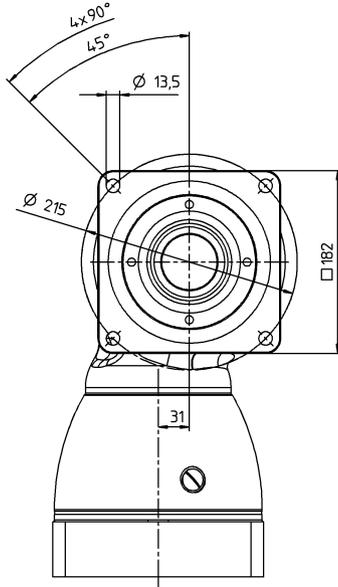
Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

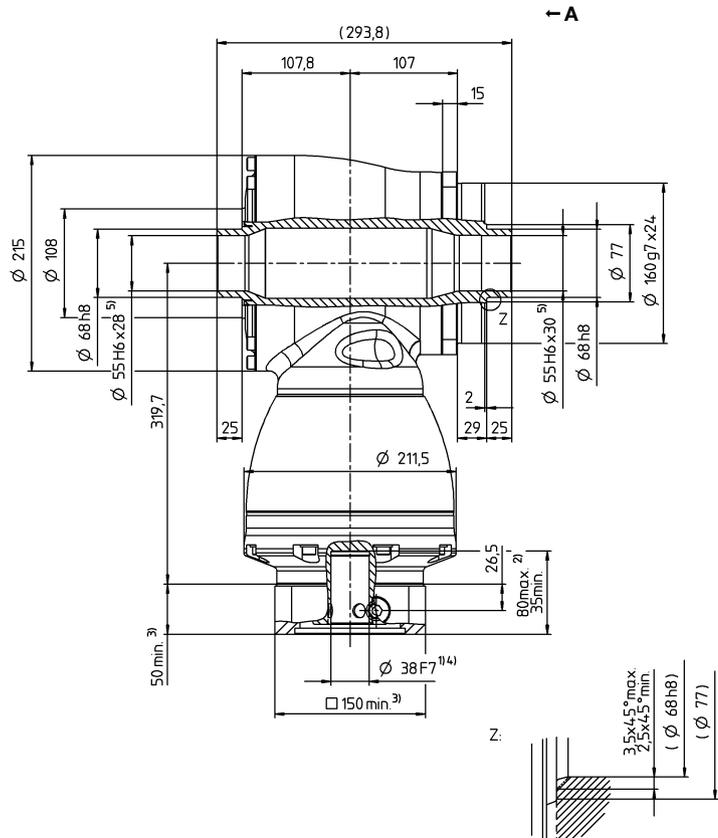
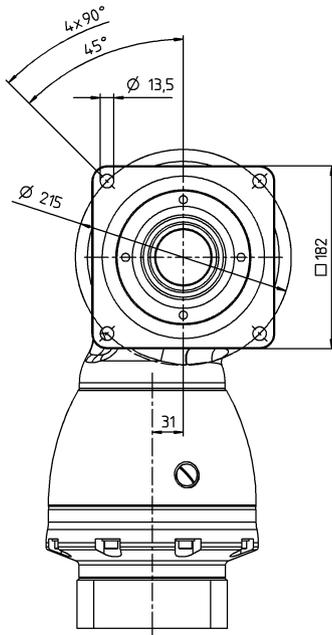
1-stage

up to 48⁴⁾ (M⁶⁾
clamping hub diameter



2-stage

up to 38/48⁴⁾
(K⁶⁾/M) clamping hub diameter



Motor shaft diameter [mm]

Hypoid gearboxes

HG+

See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Tolerance h6 for mounted shaft.

⁶⁾ Standard clamping hub diameter

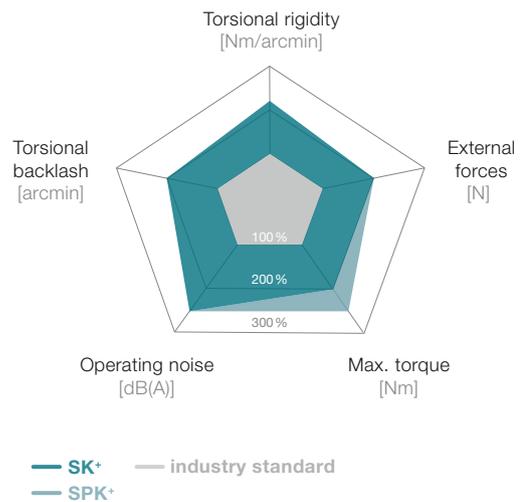
SK⁺ / SPK⁺ – Space-saving right-angle precision with output shaft



SK⁺

The versatile hypoid gearbox with SP⁺ compatible output shaft. SPK⁺ gearboxes with planetary stage are especially suitable for high-precision applications requiring higher power and outstanding torsional rigidity.

The SK⁺ / SPK⁺ compared to the industry standard



Product highlights

Max. torsional backlash
 SK⁺ ≤ 4 arcmin (Standard)
 SPK⁺ ≤ 4 arcmin (Standard)
 ≤ 2 arcmin (Reduced)

Diverse range of ratios $i = 3 - 1,000$

Flexibility thanks to various output types

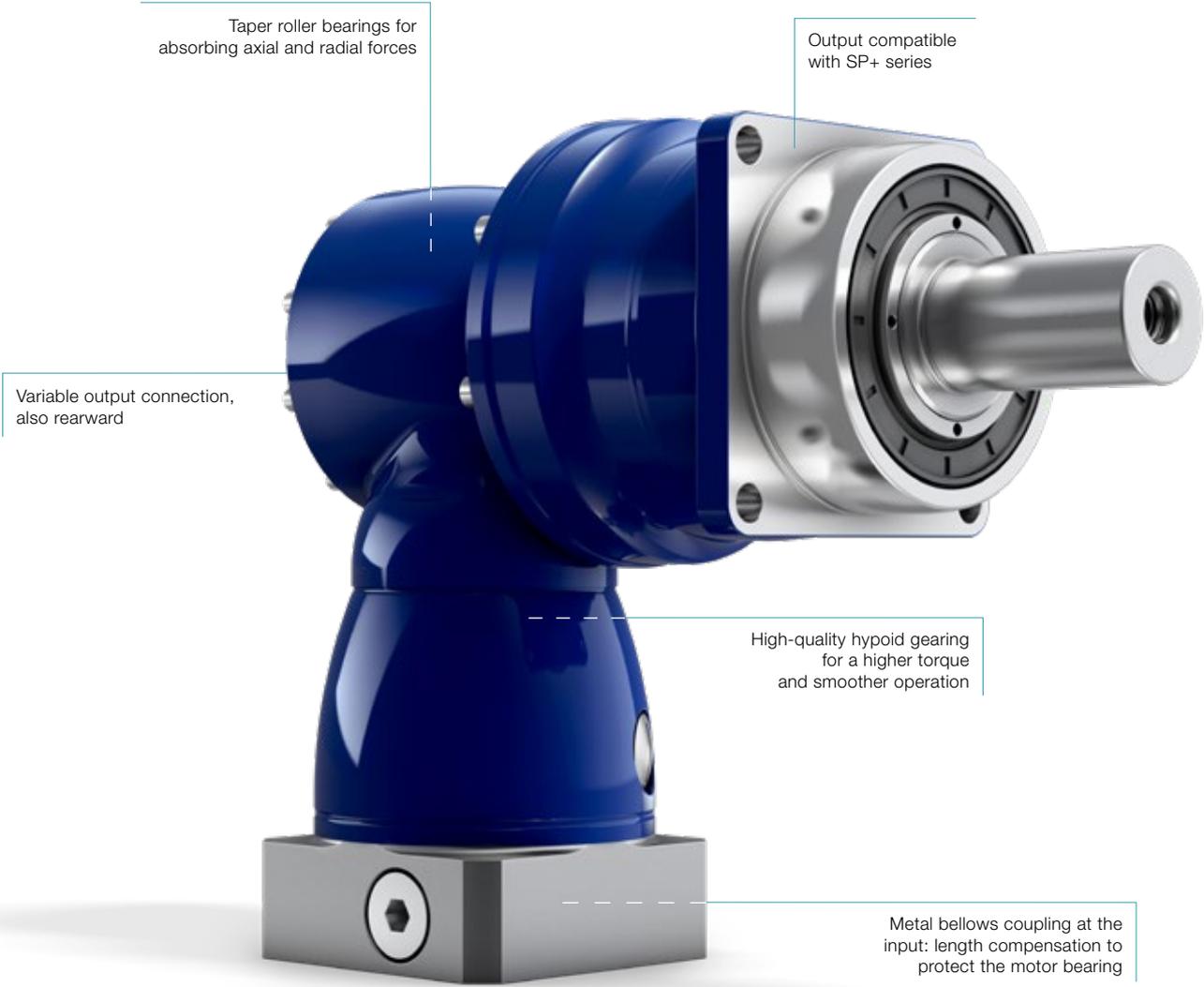
Other gearbox models
 Corrosional resistant design, ATEX (SK⁺)



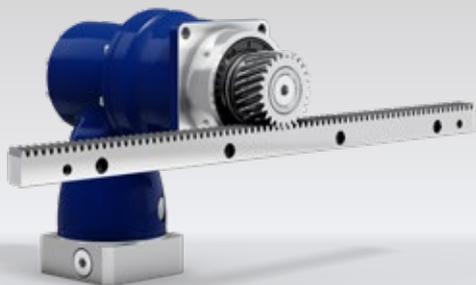
SPK⁺ in corrosion-resistant design



SK⁺ with rearward shaft



SPK+



SPK+ with rack and pinion



SK+ with metal bellows coupling

SK+ 060 MF 1-/2-stage

| | | | 1-stage | | | | | 2-stage | | | | | | | | | | |
|--|-------------|-----------------|---------------------------------------|---------------------------------------|------|------|------|---------|------|------|------|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 3 | 4 | 5 | 7 | 10 | 12 | 16 | 20 | 25 | 28 | 35 | 40 | 50 | 70 | 100 | |
| Max. torque ^{a) b) e)} | T_{2a} | Nm | 36 | 36 | 36 | 25 | 20 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 25 | 20 | |
| | | in.lb | 319 | 319 | 319 | 221 | 177 | 319 | 319 | 319 | 319 | 319 | 319 | 319 | 319 | 319 | 221 | 177 |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | Nm | 30 | 30 | 30 | 25 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 25 | 20 | |
| | | in.lb | 266 | 266 | 266 | 221 | 177 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 221 | 177 |
| Nominal torque (at n_n) | T_{2N} | Nm | 22 | 22 | 22 | 20 | 15 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 20 | 15 | |
| | | in.lb | 195 | 195 | 195 | 177 | 133 | 195 | 195 | 195 | 195 | 195 | 195 | 195 | 195 | 195 | 177 | 133 |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 40 | 50 | 50 | 45 | 40 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 45 | 40 | |
| | | in.lb | 354 | 443 | 443 | 398 | 354 | 443 | 443 | 443 | 443 | 443 | 443 | 443 | 443 | 443 | 398 | 354 |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | 2500 | 2700 | 3000 | 3000 | 3000 | 4400 | 4400 | 4400 | 4400 | 4400 | 4400 | 4400 | 4800 | 5500 | 5500 | |
| Max. input speed | n_{1Max} | rpm | 7500 | 7500 | 7500 | 7500 | 7500 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 1.5 | 1.4 | 1.1 | 1.5 | 1.4 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | |
| | | in.lb | 13 | 12 | 9.7 | 13 | 12 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | |
| Max. backlash | j_t | arcmin | Standard ≤ 5 | | | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 2 | 2.1 | 2.2 | 2 | 1.8 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2 | 1.8 | |
| | | in.lb/arcmin | 18 | 19 | 19 | 18 | 16 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 18 | 16 | |
| Max. axial force ^{c)} | F_{2AMax} | N | 2400 | | | | | | | | | | | | | | | |
| | | lb _f | 540 | | | | | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 2700 | | | | | | | | | | | | | | | |
| | | lb _f | 608 | | | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 251 | | | | | | | | | | | | | | | |
| | | in.lb | 2222 | | | | | | | | | | | | | | | |
| Efficiency at full load | η | % | 96 | | | | | 94 | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 2.9 | | | | | 3.2 | | | | | | | | | | |
| | | lb _m | 6 | | | | | 7 | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 64 | | | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | | | | |
| Ambient temperature | | °C | 0 to +40 | | | | | | | | | | | | | | | |
| | | F | 32 to 104 | | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC2 - 00030AA - 016.000 - X | | | | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 010.000 - 030.000 | | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | B | 11 | J_i | kgcm ² | - | - | - | - | - | 0.09 | 0.09 | 0.07 | 0.07 | 0.06 | 0.06 | 0.06 | 0.06 | |
| | | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | 0.08 | 0.08 | 0.06 | 0.06 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| | C | 14 | J_i | kgcm ² | 0.52 | 0.44 | 0.4 | 0.36 | 0.34 | 0.2 | 0.2 | 0.19 | 0.19 | 0.18 | 0.18 | 0.17 | 0.17 | 0.17 |
| | | | | 10 ⁻³ in.lb.s ² | 0.46 | 0.39 | 0.35 | 0.32 | 0.3 | 0.18 | 0.18 | 0.17 | 0.17 | 0.16 | 0.16 | 0.15 | 0.15 | 0.15 |
| E | 19 | J_i | kgcm ² | 0.87 | 0.79 | 0.75 | 0.71 | 0.7 | - | - | - | - | - | - | - | - | - | |
| | | | 10 ⁻³ in.lb.s ² | 0.77 | 0.7 | 0.66 | 0.63 | 0.62 | - | - | - | - | - | - | - | - | - | |

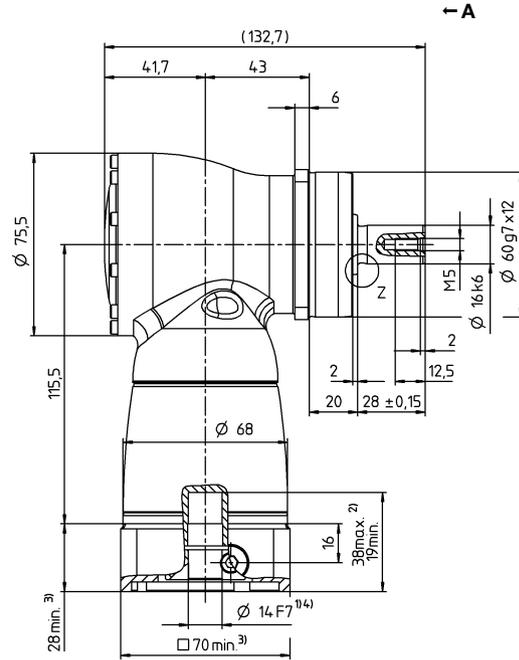
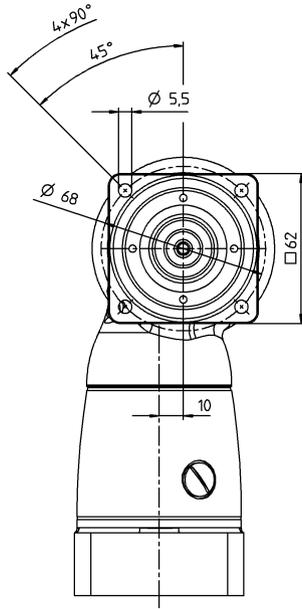
Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

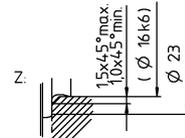
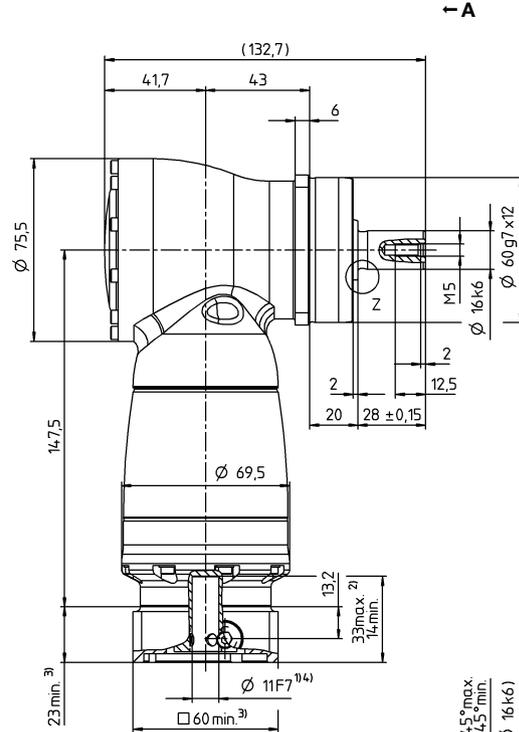
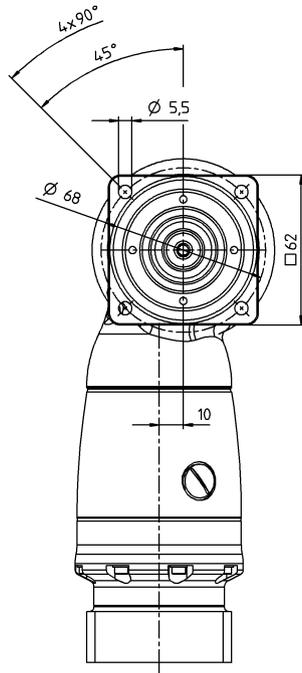
1-stage

up to 14/19⁴⁾
(C⁵⁾/E) clamping
hub diameter



2-stage

up to 11/14⁴⁾
(B⁵⁾/C) clamping
hub diameter



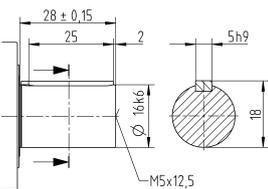
Motor shaft diameter [mm]

Hypoid gearboxes

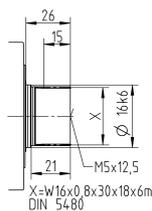
SK*

Other output variants

Shaft with key



Splined shaft (DIN 5480)



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions
¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

SK+ 075 MF 1-/2-stage

| | | | 1-stage | | | | | 2-stage | | | | | | | | | | | |
|--|-------------|-----------------|---------------------------------------|---------------------------------------|------|------|------|---------|------|------|------|------|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 3 | 4 | 5 | 7 | 10 | 12 | 16 | 20 | 25 | 28 | 35 | 40 | 50 | 70 | 100 | | |
| Max. torque ^{a) b) e)} | T_{2a} | Nm | 84 | 84 | 84 | 60 | 50 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 60 | 50 | | |
| | | in.lb | 743 | 743 | 743 | 531 | 443 | 743 | 743 | 743 | 743 | 743 | 743 | 743 | 743 | 743 | 531 | 443 | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | Nm | 70 | 70 | 70 | 60 | 50 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 60 | 50 | | |
| | | in.lb | 620 | 620 | 620 | 531 | 443 | 620 | 620 | 620 | 620 | 620 | 620 | 620 | 620 | 620 | 531 | 443 | |
| Nominal torque (at n_n) | T_{2N} | Nm | 50 | 50 | 50 | 45 | 40 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 45 | 40 | | |
| | | in.lb | 443 | 443 | 443 | 398 | 354 | 443 | 443 | 443 | 443 | 443 | 443 | 443 | 443 | 443 | 398 | 354 | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 95 | 115 | 115 | 110 | 100 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 110 | 100 | | |
| | | in.lb | 841 | 1018 | 1018 | 974 | 885 | 1018 | 1018 | 1018 | 1018 | 1018 | 1018 | 1018 | 1018 | 1018 | 974 | 885 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | 2300 | 2500 | 2800 | 2800 | 2800 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3800 | 4500 | 4500 | | |
| Max. input speed | n_{1Max} | rpm | 7500 | 7500 | 7500 | 7500 | 7500 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 2.4 | 2 | 1.8 | 2.2 | 2 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | | |
| | | in.lb | 21 | 18 | 16 | 19 | 18 | 2.7 | 2.7 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 4 | | | | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 5 | 5.5 | 6 | 6 | 6 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 6 | 6 | 6 | | |
| | | in.lb/arcmin | 44 | 49 | 53 | 53 | 53 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 53 | 53 | 53 | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 3400 | | | | | | | | | | | | | | | | |
| | | lb _f | 765 | | | | | | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 4000 | | | | | | | | | | | | | | | | |
| | | lb _f | 900 | | | | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 437 | | | | | | | | | | | | | | | | |
| | | in.lb | 3868 | | | | | | | | | | | | | | | | |
| Efficiency at full load | η | % | 96 | | | | | 94 | | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 4.8 | | | | | 5.4 | | | | | | | | | | | |
| | | lb _m | 11 | | | | | 12 | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 66 | | | | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | | | | | |
| Ambient temperature | | °C | 0 to +40 | | | | | | | | | | | | | | | | |
| | | F | 32 to 104 | | | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC2 - 00080AA - 022.000 - X | | | | | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 014.000 - 042.000 | | | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | C | 14 | J_1 | kgcm ² | - | - | - | - | - | 0.28 | 0.27 | 0.23 | 0.23 | 0.2 | 0.2 | 0.18 | 0.18 | 0.18 | |
| | | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | 0.25 | 0.24 | 0.2 | 0.2 | 0.18 | 0.18 | 0.16 | 0.16 | 0.16 | 0.16 |
| | E | 19 | J_1 | kgcm ² | 1.46 | 1.19 | 1.06 | 0.95 | 0.9 | 0.73 | 0.71 | 0.68 | 0.67 | 0.63 | 0.62 | 0.63 | 0.63 | 0.63 | 0.63 |
| | | | | 10 ⁻³ in.lb.s ² | 1.29 | 1.05 | 0.94 | 0.84 | 0.8 | 0.65 | 0.63 | 0.6 | 0.59 | 0.56 | 0.55 | 0.56 | 0.56 | 0.56 | 0.56 |
| H | 28 | J_1 | kgcm ² | 2.88 | 2.61 | 2.47 | 2.37 | 2.31 | - | - | - | - | - | - | - | - | - | - | |
| | | | 10 ⁻³ in.lb.s ² | 2.55 | 2.31 | 2.19 | 2.1 | 2.04 | - | - | - | - | - | - | - | - | - | - | |

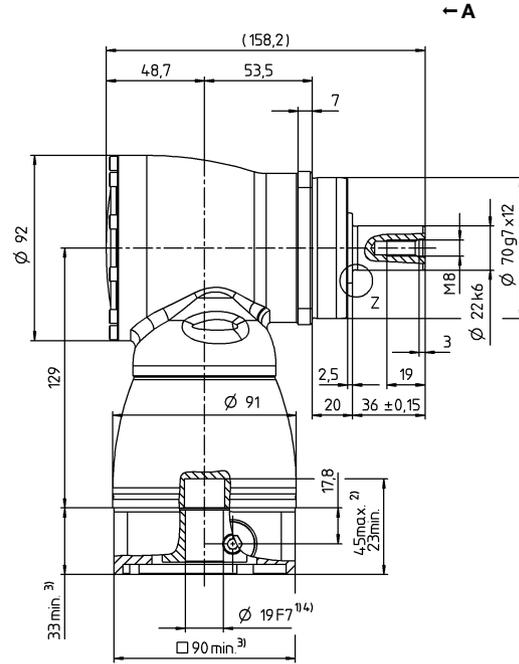
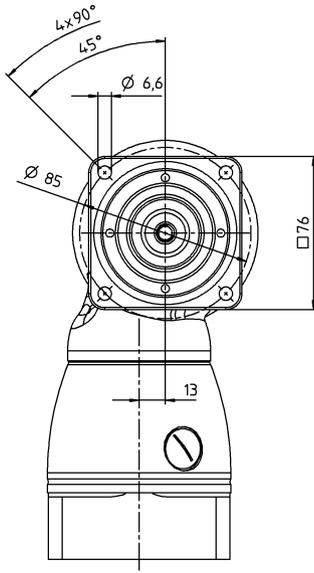
Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

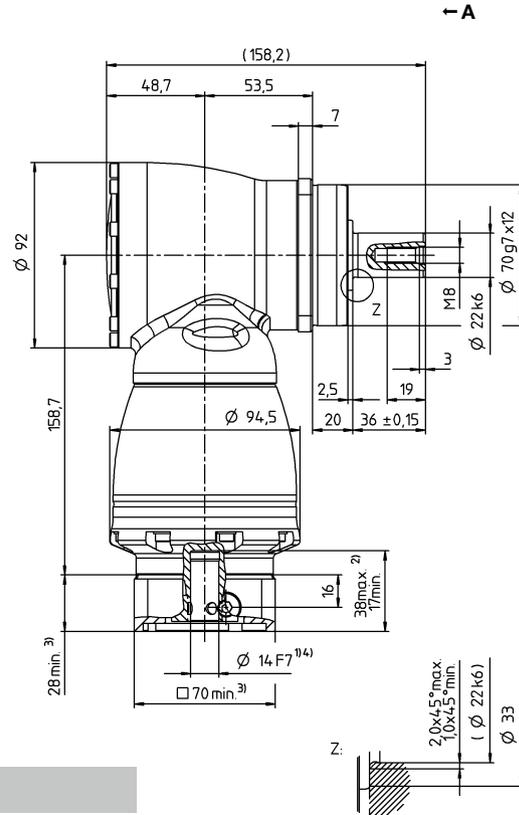
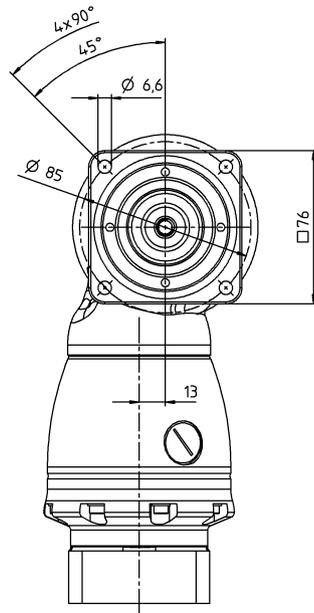
1-stage

up to 19/28⁴⁾
(E⁵⁾/H) clamping
hub diameter



2-stage

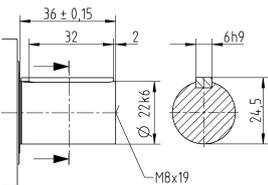
up to 14/19⁴⁾
(C⁵⁾/E) clamping
hub diameter



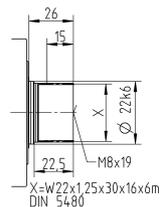
Motor shaft diameter [mm]

Other output variants

Shaft with key



Splined shaft (DIN 5480)



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions
1) Check motor shaft fit

2) Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

3) The dimensions depend on the motor

4) Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

5) Standard clamping hub diameter

Hypoid gearboxes

SK*

SK+ 100 MF 1-/2-stage

| | | | 1-stage | | | | | 2-stage | | | | | | | | | | | |
|--|-------------|-----------------|-----------------------------------|---------------------------------------|-------|------|------|---------|------|------|------|------|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 3 | 4 | 5 | 7 | 10 | 12 | 16 | 20 | 25 | 28 | 35 | 40 | 50 | 70 | 100 | | |
| Max. torque ^{a) b) e)} | T_{2a} | Nm | 204 | 204 | 204 | 145 | 125 | 204 | 204 | 204 | 204 | 204 | 204 | 204 | 204 | 145 | 125 | | |
| | | in.lb | 1806 | 1806 | 1806 | 1283 | 1106 | 1806 | 1806 | 1806 | 1806 | 1806 | 1806 | 1806 | 1806 | 1806 | 1283 | 1106 | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | Nm | 170 | 170 | 170 | 145 | 125 | 170 | 170 | 170 | 170 | 170 | 170 | 170 | 170 | 145 | 125 | | |
| | | in.lb | 1505 | 1505 | 1505 | 1283 | 1106 | 1505 | 1505 | 1505 | 1505 | 1505 | 1505 | 1505 | 1505 | 1505 | 1283 | 1106 | |
| Nominal torque (at n_n) | T_{2N} | Nm | 100 | 100 | 100 | 90 | 80 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 90 | 80 | | |
| | | in.lb | 885 | 885 | 885 | 797 | 708 | 885 | 885 | 885 | 885 | 885 | 885 | 885 | 885 | 885 | 797 | 708 | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 220 | 260 | 260 | 255 | 250 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 255 | 250 | | |
| | | in.lb | 1947 | 2301 | 2301 | 2257 | 2213 | 2301 | 2301 | 2301 | 2301 | 2301 | 2301 | 2301 | 2301 | 2301 | 2257 | 2213 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | 2200 | 2400 | 2700 | 2500 | 2500 | 3100 | 3100 | 3100 | 3100 | 3100 | 3100 | 3100 | 3100 | 3500 | 4200 | 4200 | |
| Max. input speed | n_{1Max} | rpm | 5500 | 5500 | 5500 | 5500 | 5500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 3.9 | 3.1 | 2.9 | 4.1 | 3.3 | 0.6 | 0.6 | 0.5 | 0.4 | 0.4 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | | |
| | | in.lb | 35 | 27 | 26 | 36 | 29 | 5.3 | 5.3 | 4.4 | 3.5 | 3.5 | 2.7 | 1.8 | 1.8 | 1.8 | 1.8 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 4 | | | | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 10 | 11 | 13 | 13 | 13 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 13 | 13 | 13 | | |
| | | in.lb/arcmin | 89 | 97 | 115 | 115 | 115 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 115 | 115 | 115 | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 5700 | | | | | | | | | | | | | | | | |
| | | lb _f | 1283 | | | | | | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 6300 | | | | | | | | | | | | | | | | |
| | | lb _f | 1418 | | | | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 833 | | | | | | | | | | | | | | | | |
| | | in.lb | 7373 | | | | | | | | | | | | | | | | |
| Efficiency at full load | η | % | 96 | | | | | 94 | | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 9.3 | | | | | 10 | | | | | | | | | | | |
| | | lb _m | 21 | | | | | 22 | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 66 | | | | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | | | | | |
| Ambient temperature | | °C | 0 to +40 | | | | | | | | | | | | | | | | |
| | | F | 32 to 104 | | | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC2 - 00200AA - 032.000 - X | | | | | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 022.000 - 045.000 | | | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | E | 19 | J_i | kgcm ² | - | - | - | - | - | 1.02 | 0.97 | 0.86 | 0.84 | 0.75 | 0.74 | 0.69 | 0.68 | 0.68 | |
| | | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | 0.9 | 0.86 | 0.76 | 0.74 | 0.66 | 0.65 | 0.61 | 0.61 | 0.6 | 0.6 |
| | G | 24 | J_i | kgcm ² | - | - | - | - | - | 2.59 | 2.54 | 2.42 | 2.4 | 2.31 | 2.3 | 2.26 | 2.25 | 2.25 | 2.25 |
| | | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | 2.29 | 2.25 | 2.14 | 2.12 | 2.04 | 2.04 | 2 | 1.99 | 1.99 | 1.99 |
| | H | 28 | J_i | kgcm ² | 4.64 | 3.8 | 3.34 | 2.98 | 2.79 | - | - | - | - | - | - | - | - | - | - |
| | | | | 10 ⁻³ in.lb.s ² | 4.11 | 3.36 | 2.96 | 2.64 | 2.47 | - | - | - | - | - | - | - | - | - | - |
| | K | 38 | J_i | kgcm ² | 11.9 | 11 | 10.6 | 10.2 | 10 | - | - | - | - | - | - | - | - | - | - |
| | | | | 10 ⁻³ in.lb.s ² | 10.53 | 9.74 | 9.38 | 9.03 | 8.85 | - | - | - | - | - | - | - | - | - | - |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

^{a)} At max. 10 % F_{2QMax}

^{b)} Valid for standard clamping hub diameter

^{c)} Refers to center of the output shaft or flange

^{d)} Please reduce input speed at higher ambient temperatures

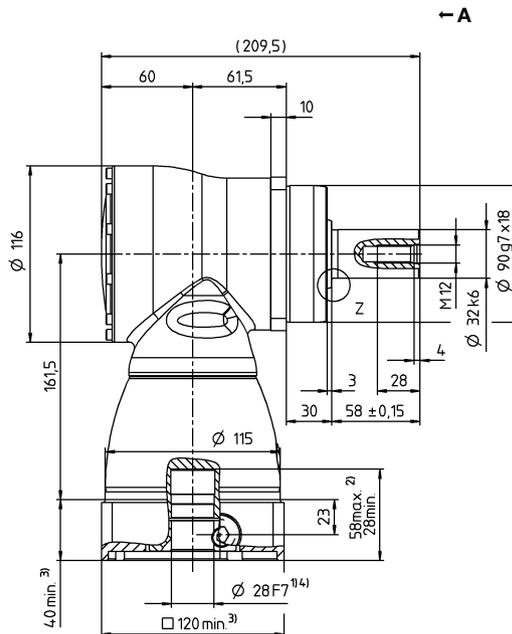
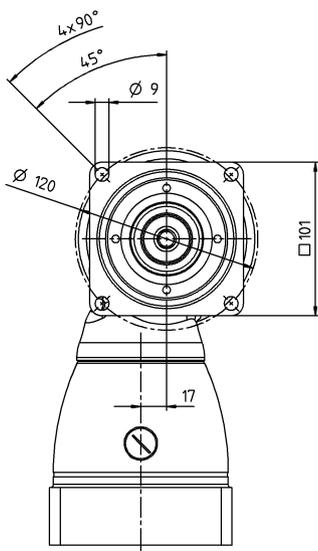
^{e)} Smooth shaft

^{f)} Please contact us to discuss application-specific service lifetimes

View A

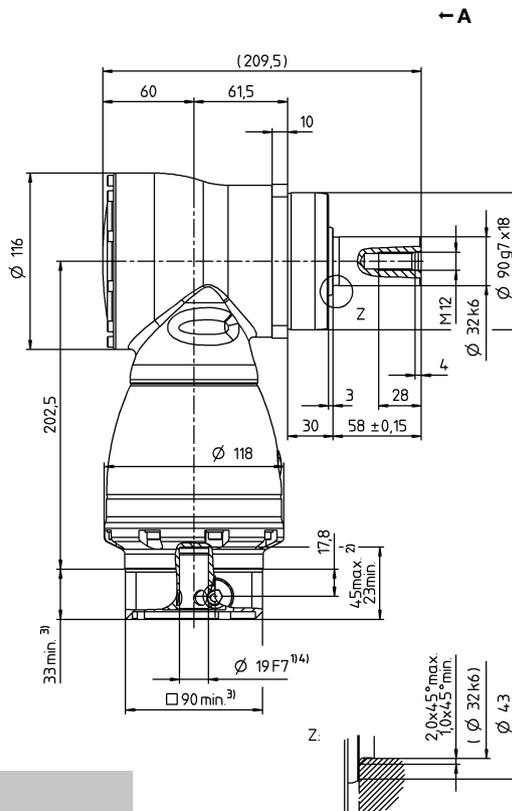
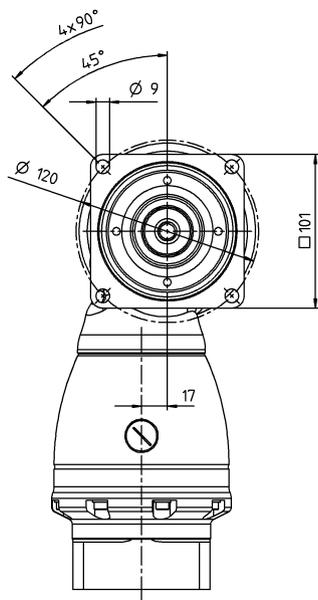
1-stage

up to 28/38⁴⁾
(H⁵⁾/K) clamping
hub diameter



2-stage

up to 19/24⁴⁾
(E⁵⁾/G) clamping
hub diameter



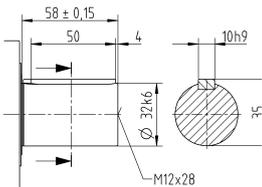
Motor shaft diameter [mm]

Hypoid gearboxes

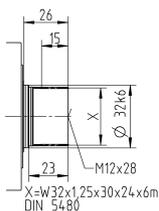
SK*

Other output variants

Shaft with key



Spined shaft (DIN 5480)



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

SK+ 140 MF 1-/2-stage

| | | | 1-stage | | | | | 2-stage | | | | | | | | | | | |
|---|-------------|-----------------|-----------------------------------|---------------------------------------|-------|------|-------|---------|-------|------|------|------|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 3 | 4 | 5 | 7 | 10 | 12 | 16 | 20 | 25 | 28 | 35 | 40 | 50 | 70 | 100 | | |
| Max. torque ^{a) b) e)} | T_{2a} | Nm | 360 | 360 | 360 | 250 | 210 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 250 | 210 | | |
| | | in.lb | 3186 | 3186 | 3186 | 2213 | 1859 | 3186 | 3186 | 3186 | 3186 | 3186 | 3186 | 3186 | 3186 | 2213 | 1859 | | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | Nm | 300 | 300 | 300 | 250 | 210 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 250 | 210 | | |
| | | in.lb | 2655 | 2655 | 2655 | 2213 | 1859 | 2655 | 2655 | 2655 | 2655 | 2655 | 2655 | 2655 | 2655 | 2213 | 1859 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 190 | 190 | 190 | 175 | 160 | 190 | 190 | 190 | 190 | 190 | 190 | 190 | 190 | 175 | 160 | | |
| | | in.lb | 1682 | 1682 | 1682 | 1549 | 1416 | 1682 | 1682 | 1682 | 1682 | 1682 | 1682 | 1682 | 1682 | 1549 | 1416 | | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 400 | 500 | 500 | 450 | 400 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 450 | 400 | | |
| | | in.lb | 3540 | 4425 | 4425 | 3983 | 3540 | 4425 | 4425 | 4425 | 4425 | 4425 | 4425 | 4425 | 4425 | 3983 | 3540 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | 1900 | 2000 | 2200 | 2000 | 2000 | 2900 | 2900 | 2900 | 2900 | 2900 | 2900 | 2900 | 3200 | 3200 | 3900 | | |
| Max. input speed | n_{1Max} | rpm | 5000 | 5000 | 5000 | 5000 | 5000 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 9.3 | 6.9 | 7.1 | 9.7 | 7.1 | 1.4 | 0.9 | 0.7 | 0.5 | 0.5 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | | |
| | | in.lb | 82 | 61 | 63 | 86 | 63 | 12 | 8.0 | 6.2 | 4.4 | 4.4 | 3.5 | 3.5 | 2.7 | 2.7 | 2.7 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 4 | | | | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 27 | 30 | 32 | 32 | 32 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 31 | 31 | 31 | | |
| | | in.lb/arcmin | 239 | 266 | 283 | 283 | 283 | 257 | 257 | 257 | 257 | 257 | 257 | 257 | 274 | 274 | 274 | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 9900 | | | | | | | | | | | | | | | | |
| | | lb _f | 2228 | | | | | | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 9500 | | | | | | | | | | | | | | | | |
| | | lb _f | 2138 | | | | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 1692 | | | | | | | | | | | | | | | | |
| | | in.lb | 14976 | | | | | | | | | | | | | | | | |
| Efficiency at full load | η | % | 96 | | | | | 94 | | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 22.6 | | | | | 25 | | | | | | | | | | | |
| | | lb _m | 50 | | | | | 55 | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 68 | | | | | | | | | | | | | | | | |
| | | °C | +90 | | | | | | | | | | | | | | | | |
| Max. permitted housing temperature | F | °C | 194 | | | | | | | | | | | | | | | | |
| | | °C | 0 to +40 | | | | | | | | | | | | | | | | |
| Ambient temperature | F | °C | 32 to 104 | | | | | | | | | | | | | | | | |
| | | °C | 32 to 104 | | | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC2 - 00300AA - 040.000 - X | | | | | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 024.000 - 060.000 | | | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) | G | 24 | J_1 | kgcm ² | - | - | - | - | - | 4.21 | 3.85 | 3.28 | 3.17 | 2.78 | 2.73 | 2.48 | 2.46 | 2.43 | 2.42 |
| | | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | 3.73 | 3.41 | 2.9 | 2.81 | 2.46 | 2.42 | 2.19 | 2.18 | 2.15 | 2.14 |
| Clamping hub diameter [mm] | K | 38 | J_1 | kgcm ² | 25 | 19.1 | 16.3 | 14.1 | 12.8 | 11.1 | 10.7 | 10.2 | 10.1 | 9.69 | 9.64 | 9.39 | 9.37 | 9.34 | 9.33 |
| | | | | 10 ⁻³ in.lb.s ² | 22.13 | 16.9 | 14.43 | 12.48 | 11.33 | 9.82 | 9.47 | 9.03 | 8.94 | 8.58 | 8.53 | 8.31 | 8.29 | 8.27 | 8.26 |

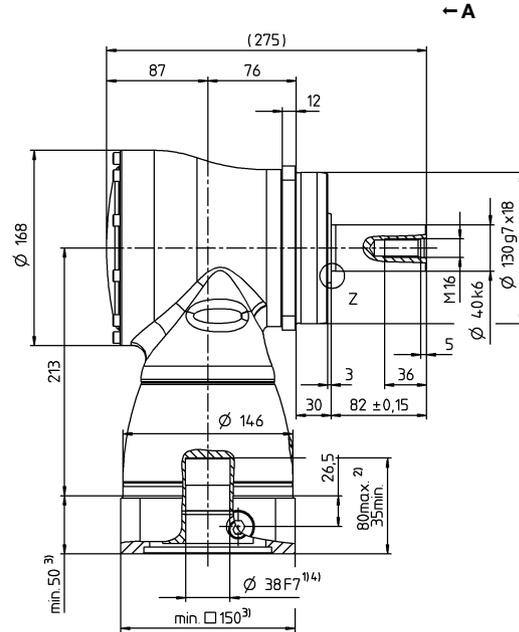
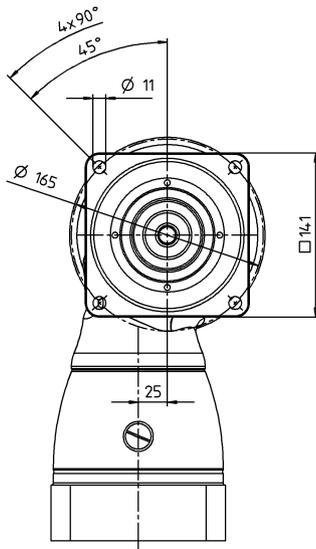
Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

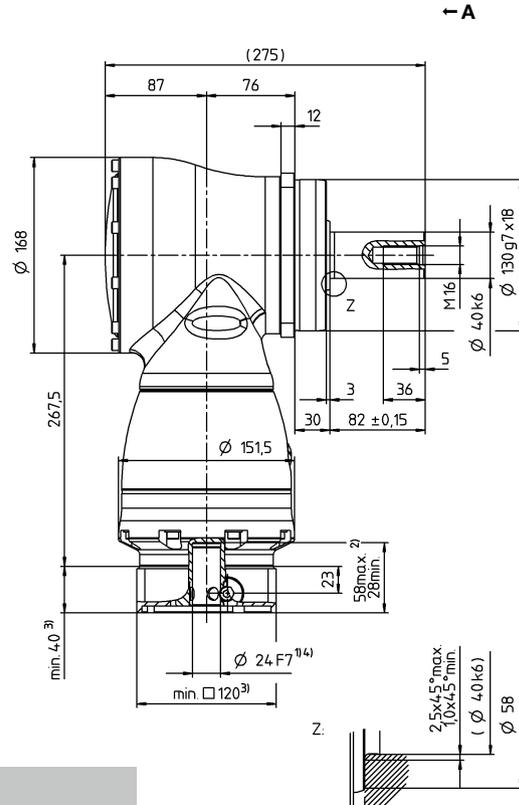
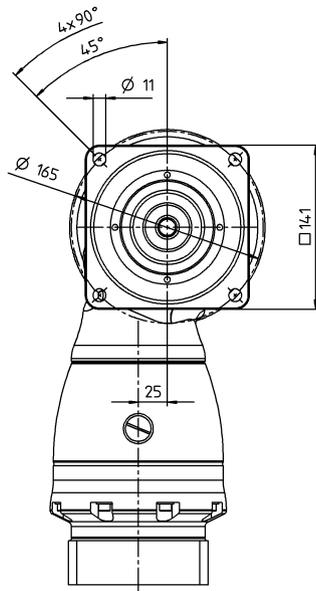
1-stage

up to 38⁴⁾ (K⁵⁾
clamping hub diameter



2-stage

up to 24/38⁴⁾
(G⁵⁾/K clamping
hub diameter



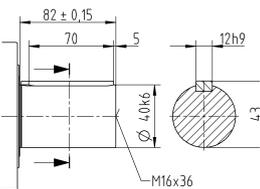
Motor shaft diameter [mm]

Hypoid gearboxes

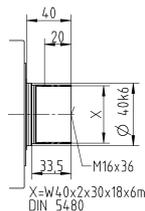
SK*

Other output variants

Shaft with key



Spined shaft (DIN 5480)



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

SK+ 180 MF 1-/2-stage

| | | | 1-stage | | | | | 2-stage | | | | | | | | | | | |
|---|-------------|-----------------|-----------------------------------|---------------------------------------|-------|-------|-------|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Ratio | <i>i</i> | | 3 | 4 | 5 | 7 | 10 | 12 | 16 | 20 | 25 | 28 | 35 | 40 | 50 | 70 | 100 | | |
| Max. torque ^{a) b) e)} | T_{2a} | Nm | 768 | 768 | 768 | 550 | 470 | 768 | 768 | 768 | 768 | 768 | 768 | 768 | 768 | 550 | 470 | | |
| | | in.lb | 6797 | 6797 | 6797 | 4868 | 4160 | 6797 | 6797 | 6797 | 6797 | 6797 | 6797 | 6797 | 6797 | 6797 | 4868 | 4160 | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | Nm | 640 | 640 | 640 | 550 | 470 | 640 | 640 | 640 | 640 | 640 | 640 | 640 | 640 | 550 | 470 | | |
| | | in.lb | 5665 | 5665 | 5665 | 4868 | 4160 | 5665 | 5665 | 5665 | 5665 | 5665 | 5665 | 5665 | 5665 | 4868 | 4160 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 400 | 400 | 400 | 380 | 360 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 380 | 360 | | |
| | | in.lb | 3540 | 3540 | 3540 | 3363 | 3186 | 3540 | 3540 | 3540 | 3540 | 3540 | 3540 | 3540 | 3540 | 3363 | 3186 | | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 900 | 1050 | 1050 | 970 | 900 | 1050 | 1050 | 1050 | 1050 | 1050 | 1050 | 1050 | 1050 | 970 | 900 | | |
| | | in.lb | 7966 | 9293 | 9293 | 8585 | 7966 | 9293 | 9293 | 9293 | 9293 | 9293 | 9293 | 9293 | 9293 | 8585 | 7966 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | 1600 | 1800 | 2000 | 1800 | 1800 | 2700 | 2700 | 2700 | 2700 | 2700 | 2700 | 2700 | 2900 | 3200 | 3400 | | |
| Max. input speed | n_{1Max} | rpm | 4500 | 4500 | 4500 | 4500 | 4500 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 19 | 16 | 14 | 17 | 14 | 3 | 2.3 | 1.8 | 1.6 | 1.3 | 1.2 | 0.9 | 0.9 | 0.9 | 0.9 | | |
| | | in.lb | 168 | 142 | 124 | 150 | 124 | 27 | 20 | 16 | 14 | 12 | 11 | 8.0 | 8.0 | 8.0 | 8.0 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 4 | | | | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 64 | 71 | 79 | 78 | 77 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 78 | 78 | 78 | | |
| | | in.lb/arcmin | 566 | 628 | 699 | 690 | 682 | 628 | 628 | 628 | 628 | 628 | 628 | 628 | 690 | 690 | 690 | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 14200 | | | | | | | | | | | | | | | | |
| | | lb _f | 3195 | | | | | | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 14700 | | | | | | | | | | | | | | | | |
| | | lb _f | 3308 | | | | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 3213 | | | | | | | | | | | | | | | | |
| | | in.lb | 28438 | | | | | | | | | | | | | | | | |
| Efficiency at full load | η | % | 96 | | | | | 94 | | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 45.4 | | | | | 48 | | | | | | | | | | | |
| | | lb _m | 100 | | | | | 106 | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 68 | | | | | | | | | | | | | | | | |
| | | °C | +90 | | | | | | | | | | | | | | | | |
| Max. permitted housing temperature | F | °C | 194 | | | | | | | | | | | | | | | | |
| | | °C | 0 to +40 | | | | | | | | | | | | | | | | |
| Ambient temperature | F | °C | 32 to 104 | | | | | | | | | | | | | | | | |
| | | °C | 32 to 104 | | | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC2 - 00800AA - 055.000 - X | | | | | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 040.000 - 075.000 | | | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) | K | 38 | J_1 | kgcm ² | - | - | - | - | - | 15.3 | 14 | 12.3 | 12 | 10.9 | 10.7 | 10.1 | 10 | 9.95 | 9.91 |
| | | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | 13.54 | 12.39 | 10.89 | 10.62 | 9.65 | 9.47 | 8.94 | 8.85 | 8.81 | 8.77 |
| Clamping hub diameter [mm] | M | 48 | J_1 | kgcm ² | 73.3 | 51.6 | 42.1 | 34 | 29.7 | 30 | 28.7 | 27.1 | 26.7 | 25.6 | 25.4 | 24.8 | 24.7 | 24.7 | 24.6 |
| | | | | 10 ⁻³ in.lb.s ² | 64.87 | 45.67 | 37.26 | 30.09 | 26.28 | 26.55 | 25.4 | 23.98 | 23.63 | 22.66 | 22.48 | 21.95 | 21.86 | 21.86 | 21.77 |

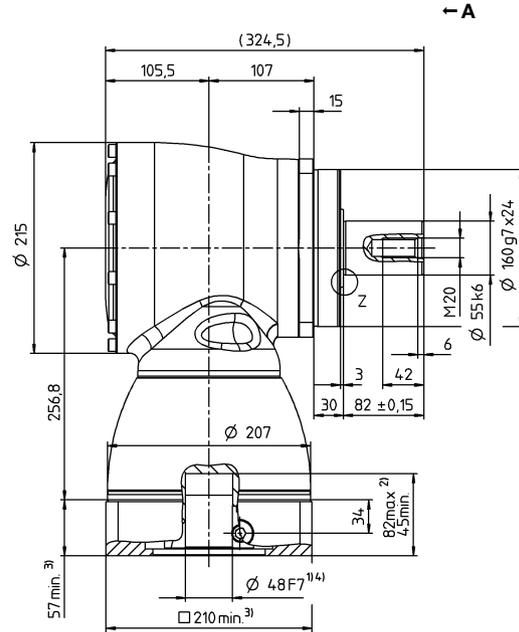
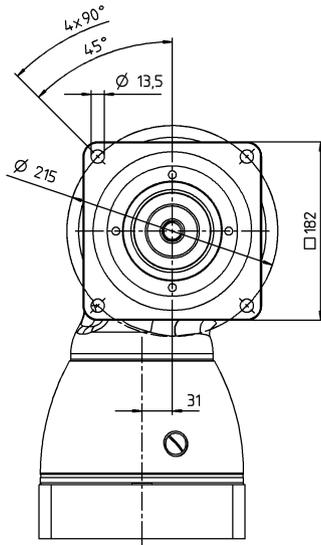
Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

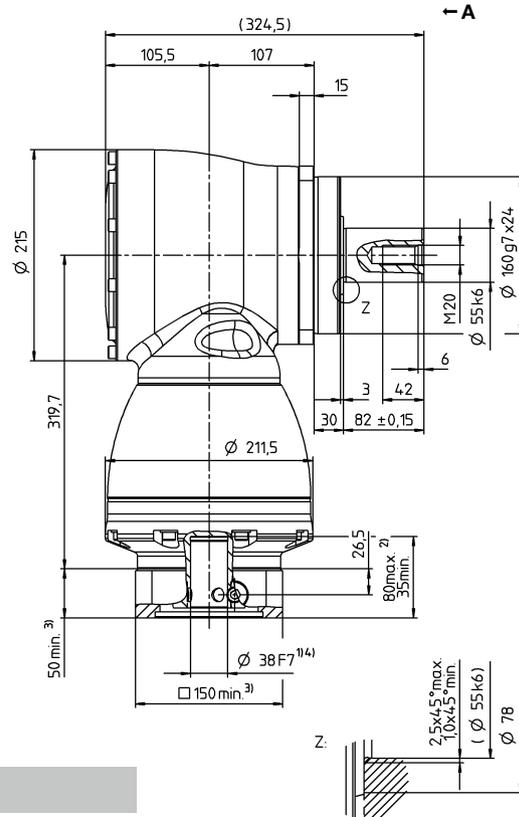
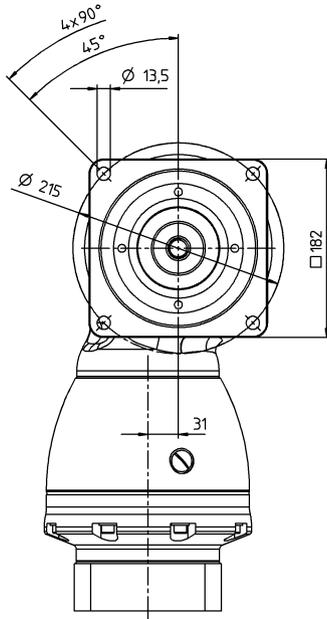
1-stage

up to 48⁴⁾ (M)⁵⁾
clamping hub diameter



2-stage

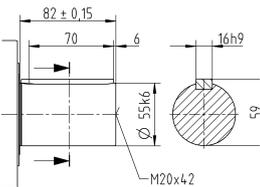
up to 38/48⁴⁾
(K⁵⁾/M) clamping hub diameter



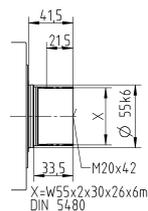
Motor shaft diameter [mm]

Other output variants

Shaft with key



Splined shaft (DIN 5480)



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions
¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

Hypoid gearboxes

SK*

SPK+ 075 MF 2-stage

| | | | 2-stage | | | | | | | | | | | |
|---|-------------|-----------------|-----------------------------------|---------------------------------------|------|------|------|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 12 | 16 | 20 | 25 | 28 | 35 | 40 | 50 | 70 | 100 | | |
| Max. torque ^{a) b) e)} | T_{2a} | Nm | 144 | 144 | 176 | 176 | 176 | 176 | 80 | 100 | 140 | 152 | | |
| | | in.lb | 1275 | 1275 | 1558 | 1558 | 1558 | 1558 | 708 | 885 | 1239 | 1345 | | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | Nm | 120 | 120 | 132 | 132 | 132 | 132 | 80 | 100 | 132 | 114 | | |
| | | in.lb | 1062 | 1062 | 1168 | 1168 | 1168 | 1168 | 708 | 885 | 1168 | 1009 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 75 | 75 | 75 | 75 | 75 | 75 | 60 | 75 | 75 | 52 | | |
| | | in.lb | 664 | 664 | 664 | 664 | 664 | 664 | 531 | 664 | 664 | 460 | | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 160 | 200 | 250 | 250 | 250 | 250 | 160 | 200 | 250 | 250 | | |
| | | in.lb | 1416 | 1770 | 2213 | 2213 | 2213 | 2213 | 1416 | 1770 | 2213 | 2213 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | 2000 | 2400 | 2400 | 2700 | 2400 | 2500 | 2500 | 2500 | 2500 | 2500 | | |
| Max. input speed | n_{1Max} | rpm | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 1.5 | 1.4 | 1.3 | 1.2 | 1.3 | 1.3 | 1.3 | 1.3 | 1.4 | 1.4 | | |
| | | in.lb | 13 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 5 / Reduced ≤ 3 | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | | |
| | | in.lb/arcmin | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 3350 | | | | | | | | | | | |
| | | lb _f | 754 | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 4000 | | | | | | | | | | | |
| | | lb _f | 900 | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 236 | | | | | | | | | | | |
| | | in.lb | 2089 | | | | | | | | | | | |
| Efficiency at full load | η | % | 94 | | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 5.2 | | | | | | | | | | | |
| | | lb _m | 11 | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 66 | | | | | | | | | | | |
| | | | +90 | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | |
| Ambient temperature | | °C | 0 to +40 | | | | | | | | | | | |
| | | F | 32 to 104 | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC2 - 00150AA - 022.000 - X | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 019.000 - 042.000 | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) | C | 14 | J_1 | kgcm ² | 0.54 | 0.45 | 0.44 | 0.4 | 0.44 | 0.36 | 0.35 | 0.34 | 0.34 | 0.34 |
| | | | | 10 ⁻³ in.lb.s ² | 0.48 | 0.4 | 0.39 | 0.35 | 0.39 | 0.32 | 0.31 | 0.3 | 0.3 | 0.3 |
| Clamping hub diameter [mm] | E | 19 | J_1 | kgcm ² | 0.89 | 0.8 | 0.79 | 0.75 | 0.79 | 0.71 | 0.7 | 0.7 | 0.7 | 0.69 |
| | | | | 10 ⁻³ in.lb.s ² | 0.79 | 0.71 | 0.7 | 0.66 | 0.7 | 0.63 | 0.62 | 0.62 | 0.62 | 0.61 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

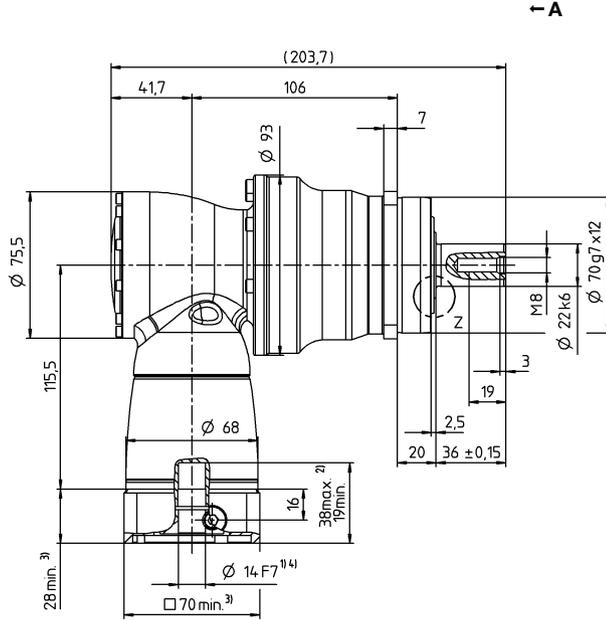
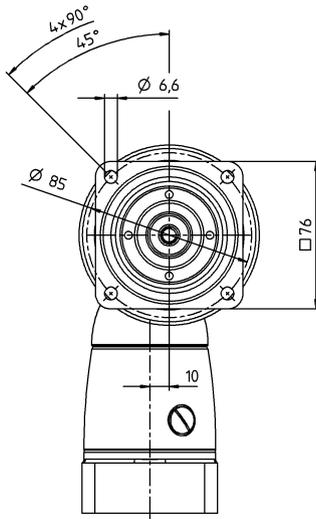
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

Motor shaft diameter [mm]

2-stage

up to 14/19⁴⁾
(C⁵⁾/E) clamping
hub diameter



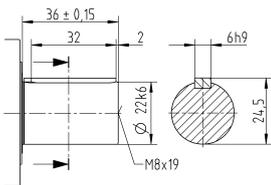
← A

Hypoid gearboxes

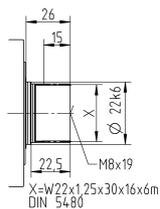
SPK

Other output variants

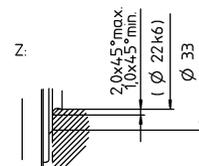
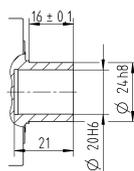
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

- Non-tolerated dimensions are nominal dimensions
- ¹⁾ Check motor shaft fit
- ²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
- ³⁾ The dimensions depend on the motor
- ⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm
- ⁵⁾ Standard clamping hub diameter

SPK+ 075 MF 3-stage

| | | | 3-stage | | | | | | | | | | | | | | |
|--|-------------|-----------------|--------------------------------------|---------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 64 | 84 | 100 | 125 | 140 | 175 | 200 | 250 | 280 | 350 | 400 | 500 | 700 | 1000 | |
| Max. torque ^{a) b) e)} | T_{2a} | Nm | 144 | 144 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 80 | 100 | 140 | 152 | |
| | | in.lb | 1275 | 1275 | 1558 | 1558 | 1558 | 1558 | 1558 | 1558 | 1558 | 1558 | 1558 | 708 | 885 | 1239 | 1345 |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | Nm | 120 | 120 | 132 | 132 | 132 | 132 | 132 | 132 | 132 | 132 | 80 | 100 | 132 | 114 | |
| | | in.lb | 1062 | 1062 | 1168 | 1168 | 1168 | 1168 | 1168 | 1168 | 1168 | 1168 | 1168 | 708 | 885 | 1168 | 1009 |
| Nominal torque (at n_N) | T_{2N} | Nm | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 60 | 75 | 75 | 52 | |
| | | in.lb | 664 | 664 | 664 | 664 | 664 | 664 | 664 | 664 | 664 | 664 | 664 | 531 | 664 | 664 | 460 |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 200 | 160 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 160 | 200 | 250 | 250 | |
| | | in.lb | 1770 | 1416 | 2213 | 2213 | 2213 | 2213 | 2213 | 2213 | 2213 | 2213 | 1416 | 1770 | 2213 | 2213 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | 4400 | 4400 | 4400 | 4400 | 4400 | 4400 | 4400 | 4800 | 4400 | 4800 | 5500 | 5500 | 5500 | 5500 | |
| Max. input speed | n_{1Max} | rpm | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | |
| | | in.lb | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | |
| Max. backlash | j_t | arcmin | Standard ≤ 5 / Reduced ≤ 3 | | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | |
| | | in.lb/arcmin | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | |
| Max. axial force ^{c)} | F_{2AMax} | N | 3350 | | | | | | | | | | | | | | |
| | | lb _f | 754 | | | | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 4000 | | | | | | | | | | | | | | |
| | | lb _f | 900 | | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 236 | | | | | | | | | | | | | | |
| | | in.lb | 2089 | | | | | | | | | | | | | | |
| Efficiency at full load | η | % | 92 | | | | | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 5.5 | | | | | | | | | | | | | | |
| | | lb _m | 12 | | | | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 66 | | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | | | |
| Ambient temperature | | °C | 0 to +40 | | | | | | | | | | | | | | |
| | | F | 32 to 104 | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC2 - 00150AA - 022.000 - X | | | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 019.000 - 042.000 | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) | B | 11 | J_1 | kgcm ² | 0.09 | 0.07 | 0.08 | 0.07 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| | | | | 10 ⁻³ in.lb.s ² | 0.08 | 0.06 | 0.07 | 0.06 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| Clamping hub diameter [mm] | C | 14 | J_1 | kgcm ² | 0.2 | 0.18 | 0.19 | 0.19 | 0.18 | 0.18 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| | | | | 10 ⁻³ in.lb.s ² | 0.18 | 0.16 | 0.17 | 0.17 | 0.16 | 0.16 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

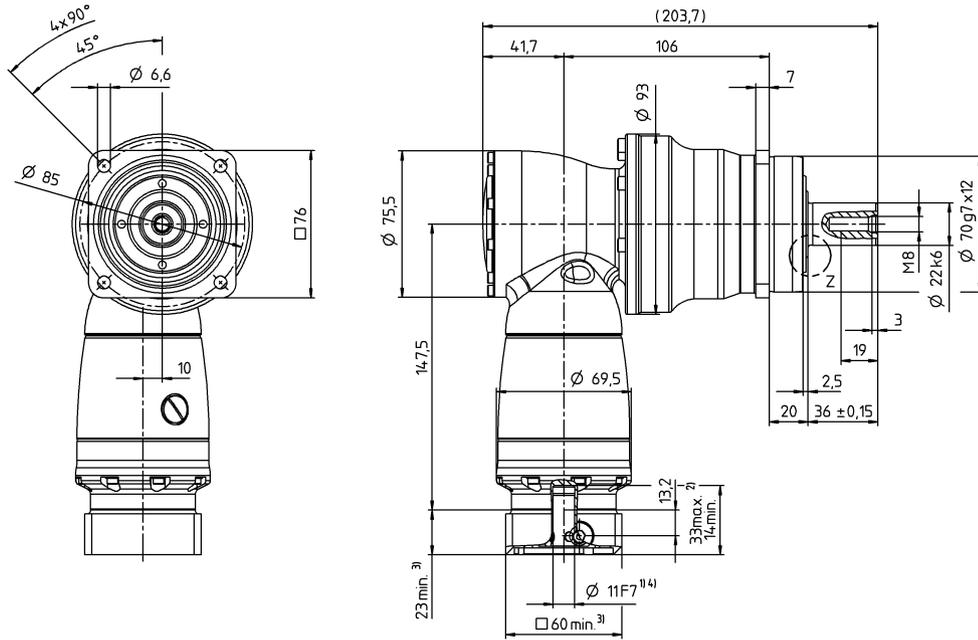
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

Motor shaft diameter [mm]

3-stage

up to 11/14⁴⁾
(B⁵⁾/C) clamping
hub diameter

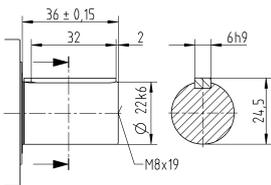


Hypoid gearboxes

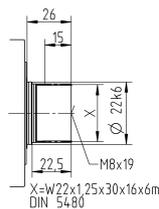
SPK

Other output variants

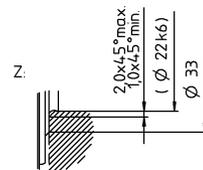
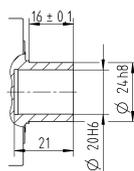
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions

- ¹⁾ Check motor shaft fit
- ²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
- ³⁾ The dimensions depend on the motor
- ⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm
- ⁵⁾ Standard clamping hub diameter

SPK+ 100 MF 2-stage

| | | | 2-stage | | | | | | | | | | |
|---|-------------|--|--------------------------------------|---------------------------------------|------|------|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 12 | 16 | 20 | 25 | 28 | 35 | 40 | 50 | 70 | 100 | |
| Max. torque ^{a) b) e)} | T_{2a} | Nm | 336 | 336 | 420 | 420 | 428 | 428 | 200 | 250 | 350 | 376 | |
| | | in.lb | 2974 | 2974 | 3717 | 3717 | 3788 | 3788 | 1770 | 2213 | 3098 | 3328 | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | Nm | 280 | 280 | 350 | 350 | 378 | 378 | 200 | 250 | 350 | 282 | |
| | | in.lb | 2478 | 2478 | 3098 | 3098 | 3346 | 3346 | 1770 | 2213 | 3098 | 2496 | |
| Nominal torque (at n_n) | T_{2N} | Nm | 180 | 180 | 175 | 175 | 170 | 170 | 160 | 175 | 170 | 120 | |
| | | in.lb | 1593 | 1593 | 1549 | 1549 | 1505 | 1505 | 1416 | 1549 | 1505 | 1062 | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 380 | 460 | 575 | 575 | 625 | 625 | 400 | 500 | 625 | 625 | |
| | | in.lb | 3363 | 4071 | 5089 | 5089 | 5532 | 5532 | 3540 | 4425 | 5532 | 5532 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | 2000 | 2400 | 2400 | 2700 | 2400 | 2500 | 2500 | 2500 | 2500 | 2500 | |
| Max. input speed | n_{1Max} | rpm | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2 | 2 | 2 | 2 | |
| | | in.lb | 18 | 19 | 19 | 19 | 19 | 19 | 18 | 18 | 18 | 18 | |
| Max. backlash | j_t | arcmin | Standard ≤ 4 / Reduced ≤ 2 | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | |
| | | in.lb/arcmin | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | |
| Max. axial force ^{c)} | F_{2AMax} | N | 5650 | | | | | | | | | | |
| | | lb _f | 1271 | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 6300 | | | | | | | | | | |
| | | lb _f | 1418 | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 487 | | | | | | | | | | |
| | | in.lb | 4310 | | | | | | | | | | |
| Efficiency at full load | η | % | 94 | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 9.7 | | | | | | | | | | |
| | | lb _m | 21 | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 68 | | | | | | | | | | |
| | | °C | +90 | | | | | | | | | | |
| Max. permitted housing temperature | | F | 194 | | | | | | | | | | |
| | | °C | 0 to +40 | | | | | | | | | | |
| Ambient temperature | | F | 32 to 104 | | | | | | | | | | |
| | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC2 - 00300AA - 032.000 - X | | | | | | | | | | |
| | | Bore diameter of coupling on the application side | mm | X = 024.000 - 060.000 | | | | | | | | | |
| Mass moment of inertia (relates to the drive) | E | 19 | J_1 | kgcm ² | 1.48 | 1.2 | 1.17 | 1.05 | 1.15 | 0.95 | 0.9 | 0.89 | 0.89 |
| | | | | 10 ⁻³ in.lb.s ² | 1.31 | 1.06 | 1.04 | 0.93 | 1.02 | 0.84 | 0.8 | 0.79 | 0.79 |
| Clamping hub diameter [mm] | H | 28 | J_1 | kgcm ² | 2.89 | 2.62 | 2.59 | 2.46 | 2.56 | 2.36 | 2.31 | 2.31 | 2.3 |
| | | | | 10 ⁻³ in.lb.s ² | 2.56 | 2.32 | 2.29 | 2.18 | 2.27 | 2.09 | 2.04 | 2.04 | 2.04 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

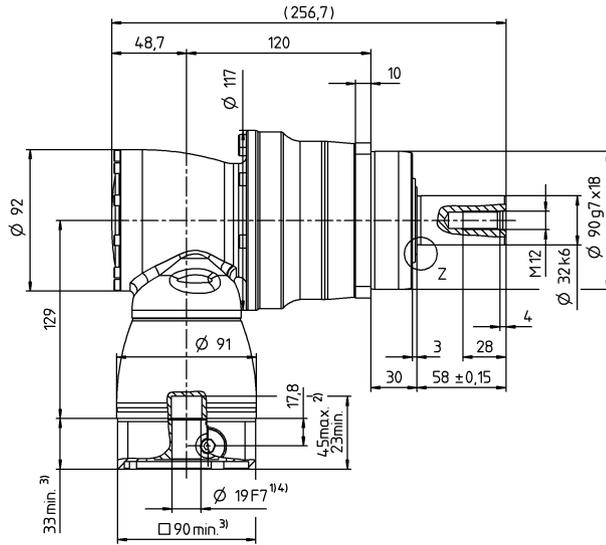
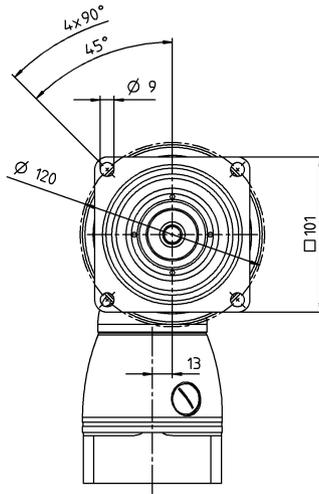
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

Motor shaft diameter [mm]

2-stage

up to 19/28⁴⁾
(E⁵⁾/H) clamping
hub diameter

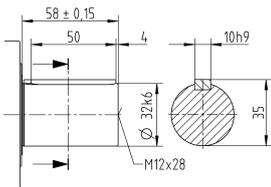


Hypoid gearboxes

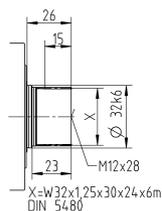
SPK

Other output variants

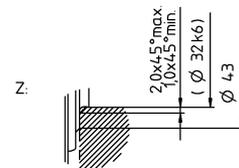
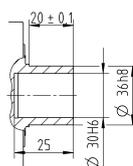
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions

- ¹⁾ Check motor shaft fit
- ²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
- ³⁾ The dimensions depend on the motor
- ⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm
- ⁵⁾ Standard clamping hub diameter

SPK+ 100 MF 3-stage

| | | | 3-stage | | | | | | | | | | | | | | |
|--|-------------|-----------------|--------------------------------------|---------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 64 | 84 | 100 | 125 | 140 | 175 | 200 | 250 | 280 | 350 | 400 | 500 | 700 | 1000 | |
| Max. torque ^{a) b) e)} | T_{2a} | Nm | 336 | 336 | 420 | 420 | 420 | 420 | 420 | 420 | 428 | 428 | 200 | 250 | 350 | 376 | |
| | | in.lb | 2974 | 2974 | 3717 | 3717 | 3717 | 3717 | 3717 | 3717 | 3788 | 3788 | 1770 | 2213 | 3098 | 3328 | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | Nm | 280 | 280 | 350 | 350 | 350 | 350 | 350 | 350 | 378 | 378 | 200 | 250 | 350 | 282 | |
| | | in.lb | 2478 | 2478 | 3098 | 3098 | 3098 | 3098 | 3098 | 3098 | 3346 | 3346 | 1770 | 2213 | 3098 | 2496 | |
| Nominal torque (at n_N) | T_{2N} | Nm | 180 | 180 | 175 | 175 | 175 | 175 | 175 | 175 | 170 | 170 | 160 | 175 | 170 | 120 | |
| | | in.lb | 1593 | 1593 | 1549 | 1549 | 1549 | 1549 | 1549 | 1549 | 1505 | 1505 | 1416 | 1549 | 1505 | 1062 | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 460 | 380 | 575 | 575 | 575 | 575 | 575 | 575 | 625 | 625 | 400 | 500 | 625 | 625 | |
| | | in.lb | 4071 | 3363 | 5089 | 5089 | 5089 | 5089 | 5089 | 5089 | 5532 | 5532 | 3540 | 4425 | 5532 | 5532 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3800 | 3500 | 3800 | 4500 | 4500 | 4500 | 4500 | |
| Max. input speed | n_{1Max} | rpm | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 0.6 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | |
| | | in.lb | 5.3 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | |
| Max. backlash | j_t | arcmin | Standard ≤ 4 / Reduced ≤ 2 | | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | |
| | | in.lb/arcmin | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | |
| Max. axial force ^{c)} | F_{2AMax} | N | 5650 | | | | | | | | | | | | | | |
| | | lb _f | 1271 | | | | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 6300 | | | | | | | | | | | | | | |
| | | lb _f | 1418 | | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 487 | | | | | | | | | | | | | | |
| | | in.lb | 4310 | | | | | | | | | | | | | | |
| Efficiency at full load | η | % | 92 | | | | | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 10.3 | | | | | | | | | | | | | | |
| | | lb _m | 23 | | | | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 68 | | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | | | |
| Ambient temperature | | °C | 0 to +40 | | | | | | | | | | | | | | |
| | | F | 32 to 104 | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC2 - 00300AA - 032.000 - X | | | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 024.000 - 060.000 | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) | C | 14 | J_1 | kgcm ² | 0.28 | 0.23 | 0.24 | 0.23 | 0.21 | 0.2 | 0.19 | 0.18 | 0.19 | 0.18 | 0.18 | 0.18 | 0.18 |
| | | | | 10 ⁻³ in.lb.s ² | 0.25 | 0.2 | 0.21 | 0.2 | 0.19 | 0.18 | 0.17 | 0.16 | 0.17 | 0.16 | 0.16 | 0.16 | 0.16 |
| Clamping hub diameter [mm] | E | 19 | J_1 | kgcm ² | 0.72 | 0.63 | 0.68 | 0.68 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 |
| | | | | 10 ⁻³ in.lb.s ² | 0.64 | 0.56 | 0.6 | 0.6 | 0.56 | 0.56 | 0.56 | 0.56 | 0.56 | 0.56 | 0.56 | 0.56 | 0.56 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

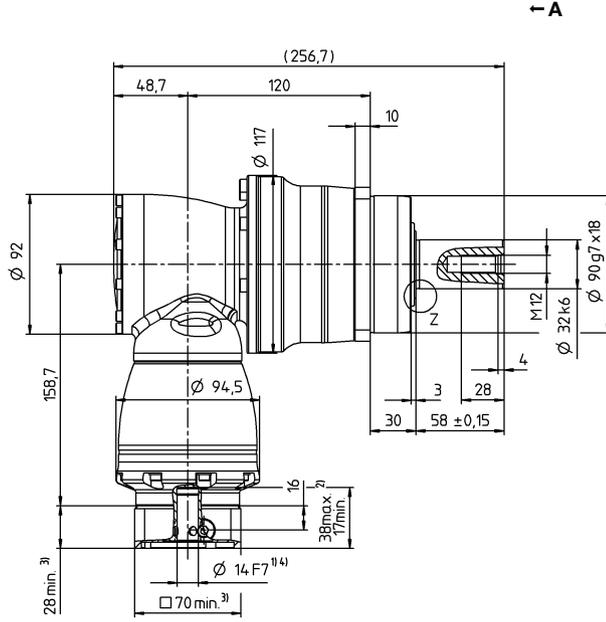
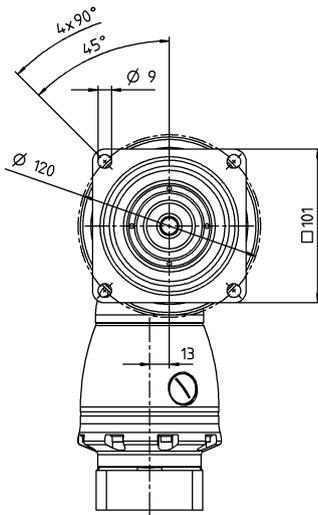
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

Motor shaft diameter [mm]

3-stage

up to 14/19⁴⁾
(C⁵⁾/E) clamping
hub diameter

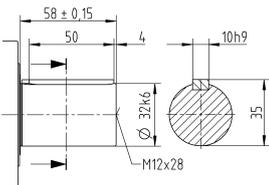


Hypoid gearboxes

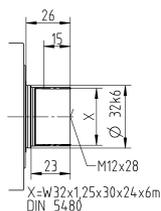
SPK

Other output variants

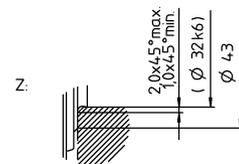
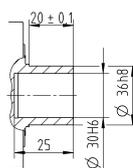
Shaft with key



Spined shaft (DIN 5480)



Shaft mounted



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

- Non-tolerated dimensions are nominal dimensions
- ¹⁾ Check motor shaft fit
- ²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
- ³⁾ The dimensions depend on the motor
- ⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm
- ⁵⁾ Standard clamping hub diameter

SPK+ 140 MF 2-stage

| | | | 2-stage | | | | | | | | | | | |
|--|-------------|-----------------|--------------------------------------|---------------------------------------|-------|-------|-------|-------|------|-------|-------|-------|------|------|
| Ratio | <i>i</i> | | 12 | 16 | 20 | 25 | 28 | 35 | 40 | 50 | 70 | 100 | | |
| Max. torque ^{a) b) e)} | T_{2a} | Nm | 816 | 816 | 1020 | 1020 | 825 | 825 | 500 | 625 | 625 | 720 | | |
| | | in.lb | 7222 | 7222 | 9028 | 9028 | 7302 | 7302 | 4425 | 5532 | 5532 | 6373 | | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | Nm | 680 | 680 | 792 | 792 | 792 | 792 | 500 | 625 | 792 | 636 | | |
| | | in.lb | 6019 | 6019 | 7010 | 7010 | 7010 | 7010 | 4425 | 5532 | 7010 | 5629 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 360 | 360 | 360 | 360 | 360 | 360 | 320 | 360 | 360 | 220 | | |
| | | in.lb | 3186 | 3186 | 3186 | 3186 | 3186 | 3186 | 2832 | 3186 | 3186 | 1947 | | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 880 | 1040 | 1300 | 1300 | 1350 | 1350 | 1000 | 1250 | 1350 | 1250 | | |
| | | in.lb | 7789 | 9205 | 11506 | 11506 | 11949 | 11949 | 8851 | 11064 | 11949 | 11064 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | 1900 | 2300 | 2300 | 2600 | 2300 | 2300 | 2300 | 2300 | 2300 | 2300 | | |
| Max. input speed | n_{1Max} | rpm | 5500 | 5500 | 5500 | 5500 | 5500 | 5500 | 5500 | 5500 | 5500 | 5500 | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 3.5 | 4.7 | 3.3 | 3.3 | 3.6 | 3.6 | 3.1 | 3.1 | 3.1 | 3.1 | | |
| | | in.lb | 31 | 42 | 29 | 29 | 32 | 32 | 27 | 27 | 27 | 27 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 4 / Reduced ≤ 2 | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | | |
| | | in.lb/arcmin | 469 | 469 | 469 | 469 | 469 | 469 | 469 | 469 | 469 | 469 | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 9870 | | | | | | | | | | | |
| | | lb _f | 2221 | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 9450 | | | | | | | | | | | |
| | | lb _f | 2126 | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 952 | | | | | | | | | | | |
| | | in.lb | 8426 | | | | | | | | | | | |
| Efficiency at full load | η | % | 94 | | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 20 | | | | | | | | | | | |
| | | lb _m | 44 | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 68 | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | |
| Ambient temperature | | °C | 0 to +40 | | | | | | | | | | | |
| | | F | 32 to 104 | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC2 - 00800AA - 040.000 - X | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 040.000 - 075.000 | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) | H | 28 | J_1 | kgcm ² | 4.68 | 3.82 | 3.75 | 3.31 | 3.68 | 2.97 | 2.8 | 2.79 | 2.78 | 2.77 |
| | | | | 10 ⁻³ in.lb.s ² | 4.14 | 3.38 | 3.32 | 2.93 | 3.26 | 2.63 | 2.48 | 2.47 | 2.46 | 2.45 |
| Clamping hub diameter [mm] | K | 38 | J_1 | kgcm ² | 11.8 | 11 | 10.9 | 10.5 | 10.9 | 10.1 | 9.96 | 9.95 | 9.94 | 9.94 |
| | | | | 10 ⁻³ in.lb.s ² | 10.44 | 9.74 | 9.65 | 9.29 | 9.65 | 8.94 | 8.81 | 8.81 | 8.8 | 8.8 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

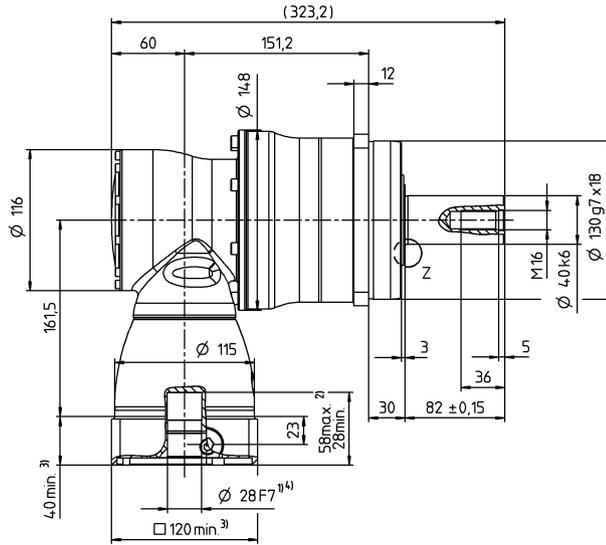
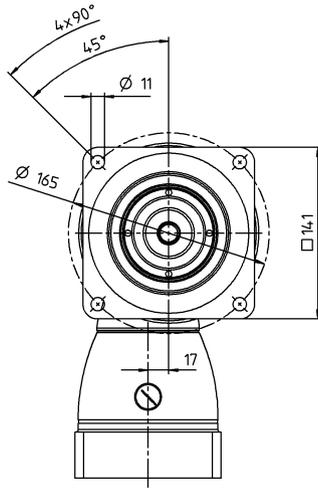
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

Motor shaft diameter [mm]

2-stage

up to 28 / 38⁴⁾
(H⁵⁾ / K) clamping
hub diameter

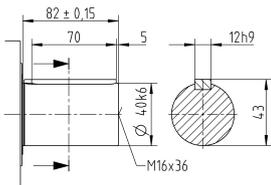


Hypoid gearboxes

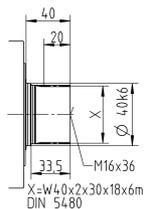
SPK

Other output variants

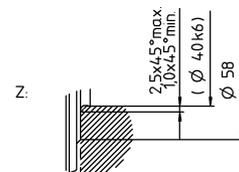
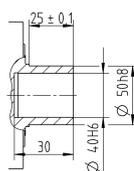
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions

- ¹⁾ Check motor shaft fit
- ²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
- ³⁾ The dimensions depend on the motor
- ⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm
- ⁵⁾ Standard clamping hub diameter

SPK+ 140 MF 3-stage

| | | | 3-stage | | | | | | | | | | | | | | |
|--|-------------|---|---------------------------------------|-----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|-------|
| Ratio | <i>i</i> | | 64 | 84 | 100 | 125 | 140 | 175 | 200 | 250 | 280 | 350 | 400 | 500 | 700 | 1000 | |
| Max. torque ^{a) b) e)} | T_{2a} | Nm | 816 | 816 | 1020 | 1020 | 1020 | 1020 | 1020 | 1020 | 825 | 825 | 500 | 625 | 825 | 720 | |
| | | in.lb | 7222 | 7222 | 9028 | 9028 | 9028 | 9028 | 9028 | 9028 | 9028 | 7302 | 7302 | 4425 | 5532 | 7302 | 6373 |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | Nm | 680 | 680 | 792 | 792 | 792 | 792 | 792 | 792 | 792 | 792 | 500 | 625 | 792 | 636 | |
| | | in.lb | 6019 | 6019 | 7010 | 7010 | 7010 | 7010 | 7010 | 7010 | 7010 | 7010 | 7010 | 4425 | 5532 | 7010 | 5629 |
| Nominal torque (at n_N) | T_{2N} | Nm | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 320 | 360 | 360 | 220 | |
| | | in.lb | 3186 | 3186 | 3186 | 3186 | 3186 | 3186 | 3186 | 3186 | 3186 | 3186 | 3186 | 2832 | 3186 | 3186 | 1947 |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 1040 | 880 | 1300 | 1300 | 1300 | 1300 | 1300 | 1300 | 1300 | 1350 | 1350 | 1000 | 1250 | 1350 | 1250 |
| | | in.lb | 9205 | 7789 | 11506 | 11506 | 11506 | 11506 | 11506 | 11506 | 11506 | 11949 | 11949 | 8851 | 11064 | 11949 | 11064 |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | 3100 | 3100 | 3100 | 3100 | 3100 | 3100 | 3100 | 3100 | 3500 | 3100 | 3500 | 4200 | 4200 | 4200 | |
| Max. input speed | n_{1Max} | rpm | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 1.1 | 0.9 | 0.9 | 0.75 | 0.75 | 0.6 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | |
| | | in.lb | 9.7 | 8.0 | 8.0 | 6.6 | 6.6 | 5.3 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | |
| Max. backlash | j_t | arcmin | Standard ≤ 4 / Reduced ≤ 2 | | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | |
| | | in.lb/arcmin | 469 | 469 | 469 | 469 | 469 | 469 | 469 | 469 | 469 | 469 | 469 | 469 | 469 | 469 | |
| Max. axial force ^{c)} | F_{2AMax} | N | 9870 | | | | | | | | | | | | | | |
| | | lb _f | 2221 | | | | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 9450 | | | | | | | | | | | | | | |
| | | lb _f | 2126 | | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 952 | | | | | | | | | | | | | | |
| | | in.lb | 8426 | | | | | | | | | | | | | | |
| Efficiency at full load | η | % | 92 | | | | | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 20.7 | | | | | | | | | | | | | | |
| | | lb _m | 46 | | | | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 68 | | | | | | | | | | | | | | |
| | | °C | +90 | | | | | | | | | | | | | | |
| Max. permitted housing temperature | | F | 194 | | | | | | | | | | | | | | |
| | | °C | 0 to +40 | | | | | | | | | | | | | | |
| Ambient temperature | | F | 32 to 104 | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC2 - 00800AA - 040.000 - X | | | | | | | | | | | | | | |
| | | Bore diameter of coupling on the application side | mm | X = 040.000 - 075.000 | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) | E 19 | J_1 | kgcm ² | 1.01 | 0.76 | 0.88 | 0.85 | 0.76 | 0.75 | 0.7 | 0.69 | 0.7 | 0.69 | 0.69 | 0.69 | 0.69 | |
| | | | 10 ⁻³ in.lb.s ² | 0.89 | 0.67 | 0.78 | 0.75 | 0.67 | 0.66 | 0.62 | 0.61 | 0.62 | 0.61 | 0.61 | 0.61 | 0.61 | |
| Clamping hub diameter [mm] | G 24 | J_1 | kgcm ² | 2.57 | 2.32 | 2.44 | 2.42 | 2.32 | 2.31 | 2.26 | 2.25 | 2.26 | 2.25 | 2.25 | 2.25 | 2.25 | |
| | | | 10 ⁻³ in.lb.s ² | 2.27 | 2.05 | 2.16 | 2.14 | 2.05 | 2.04 | 2 | 1.99 | 2 | 1.99 | 1.99 | 1.99 | 1.99 | |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

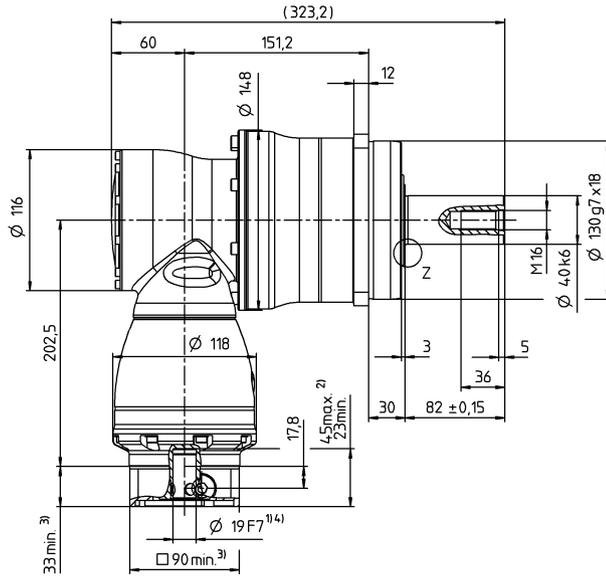
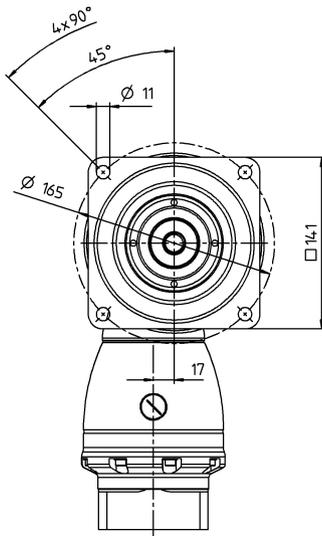
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

Motor shaft diameter [mm]

3-stage

up to 19/24⁴⁾
(E⁵⁾/G) clamping
hub diameter



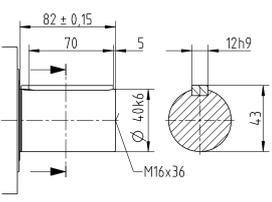
← A

Hypoid gearboxes

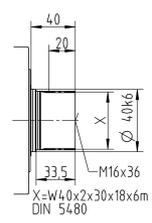
SPK

Other output variants

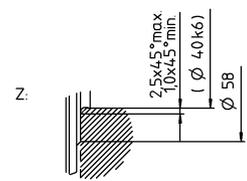
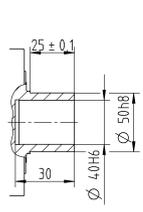
Shaft with key



Spined shaft (DIN 5480)



Shaft mounted



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

- Non-tolerated dimensions are nominal dimensions
- ¹⁾ Check motor shaft fit
- ²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
- ³⁾ The dimensions depend on the motor
- ⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm
- ⁵⁾ Standard clamping hub diameter

SPK+ 180 MF 2-stage

| | | | 2-stage | | | | | | | | | | | |
|--|-------------|-----------------|--------------------------------------|---------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Ratio | <i>i</i> | | 12 | 16 | 20 | 25 | 28 | 35 | 40 | 50 | 70 | 100 | | |
| Max. torque ^{a) b) e)} | T_{2a} | Nm | 1440 | 1440 | 1800 | 1800 | 1936 | 1936 | 840 | 1050 | 1470 | 1552 | | |
| | | in.lb | 12745 | 12745 | 15931 | 15931 | 17135 | 17135 | 7435 | 9293 | 13011 | 13736 | | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | Nm | 1200 | 1200 | 1452 | 1452 | 1452 | 1452 | 840 | 1050 | 1452 | 1164 | | |
| | | in.lb | 10621 | 10621 | 12851 | 12851 | 12851 | 12851 | 7435 | 9293 | 12851 | 10302 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 750 | 750 | 750 | 750 | 750 | 750 | 640 | 750 | 750 | 750 | | |
| | | in.lb | 6638 | 6638 | 6638 | 6638 | 6638 | 6638 | 5665 | 6638 | 6638 | 6638 | | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 1600 | 2000 | 2500 | 2500 | 2750 | 2750 | 1600 | 2000 | 2750 | 2750 | | |
| | | in.lb | 14161 | 17702 | 22127 | 22127 | 24340 | 24340 | 14161 | 17702 | 24340 | 24340 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | 1600 | 1900 | 1900 | 2100 | 1900 | 2100 | 2100 | 2100 | 2100 | 2100 | | |
| Max. input speed | n_{1Max} | rpm | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 11 | 9.2 | 9.2 | 7 | 8.5 | 10 | 7.5 | 7.5 | 7 | 7 | | |
| | | in.lb | 97 | 81 | 81 | 62 | 75 | 89 | 66 | 66 | 62 | 62 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 4 / Reduced ≤ 2 | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 175 | 175 | 175 | 175 | 175 | 175 | 175 | 175 | 175 | 175 | | |
| | | in.lb/arcmin | 1549 | 1549 | 1549 | 1549 | 1549 | 1549 | 1549 | 1549 | 1549 | 1549 | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 15570 | | | | | | | | | | | |
| | | lb _f | 3503 | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 15400 | | | | | | | | | | | |
| | | lb _f | 3465 | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 1600 | | | | | | | | | | | |
| | | in.lb | 14161 | | | | | | | | | | | |
| Efficiency at full load | η | % | 94 | | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 45 | | | | | | | | | | | |
| | | lb _m | 99 | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 70 | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | |
| Ambient temperature | | °C | 0 to +40 | | | | | | | | | | | |
| | | F | 32 to 104 | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC2 - 01500AA - 055.000 - X | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 050.000 - 080.000 | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | K | 38 | J_1 | kgcm ² | 24.7 | 19.5 | 19 | 16.3 | 18.6 | 14 | 12.9 | 12.8 | 12.7 | 12.7 |
| | | | | 10 ⁻³ in.lb.s ² | 21.86 | 17.26 | 16.82 | 14.43 | 16.46 | 12.39 | 11.42 | 11.33 | 11.24 | 11.24 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

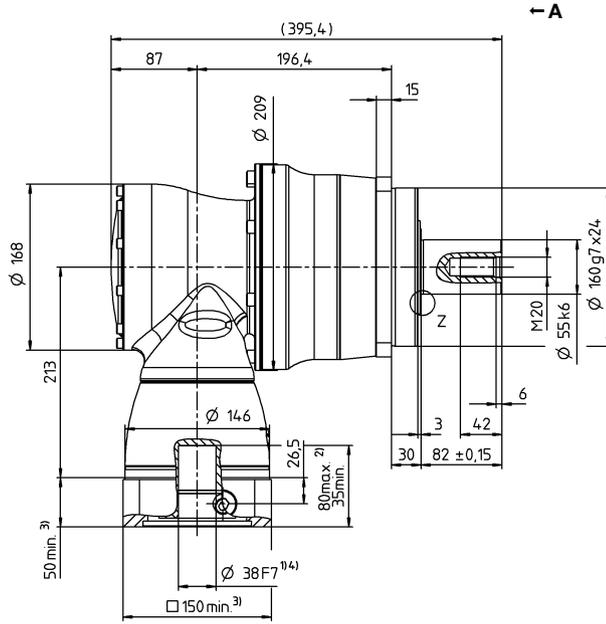
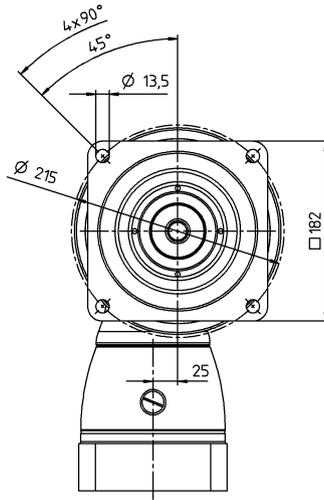
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

Motor shaft diameter [mm]

2-stage

up to 38⁴⁾ (K)⁵⁾
clamping hub diameter

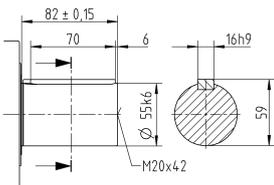


Hypoid gearboxes

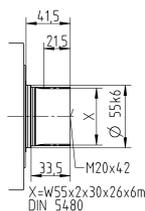
SPK

Other output variants

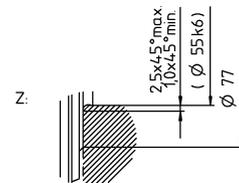
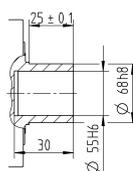
Shaft with key



Spined shaft (DIN 5480)



Shaft mounted



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

- Non-tolerated dimensions are nominal dimensions
- ¹⁾ Check motor shaft fit
- ²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
- ³⁾ The dimensions depend on the motor
- ⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm
- ⁵⁾ Standard clamping hub diameter

SPK+ 180 MF 3-stage

| | | | | 3-stage | | | | | | | | | | | | | | |
|--|-------------|-----------------------|--|--------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Ratio | <i>i</i> | | | 64 | 84 | 100 | 125 | 140 | 175 | 200 | 250 | 280 | 350 | 400 | 500 | 700 | 1000 | |
| Max. torque ^{a) b) e)} | T_{2a} | <i>Nm</i> | | 1440 | 1440 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1936 | 1936 | 840 | 1050 | 1470 | 1552 | |
| | | <i>in.lb</i> | | 12745 | 12745 | 15931 | 15931 | 15931 | 15931 | 15931 | 15931 | 15931 | 17135 | 17135 | 7435 | 9293 | 13011 | 13736 |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | <i>Nm</i> | | 1200 | 1200 | 1452 | 1452 | 1452 | 1452 | 1452 | 1452 | 1452 | 1452 | 840 | 1050 | 1452 | 1164 | |
| | | <i>in.lb</i> | | 10621 | 10621 | 12851 | 12851 | 12851 | 12851 | 12851 | 12851 | 12851 | 12851 | 12851 | 7435 | 9293 | 12851 | 10302 |
| Nominal torque (at n_N) | T_{2N} | <i>Nm</i> | | 750 | 750 | 750 | 750 | 750 | 750 | 750 | 750 | 750 | 750 | 640 | 750 | 750 | 750 | |
| | | <i>in.lb</i> | | 6638 | 6638 | 6638 | 6638 | 6638 | 6638 | 6638 | 6638 | 6638 | 6638 | 6638 | 5665 | 6638 | 6638 | 6638 |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | <i>Nm</i> | | 2000 | 1600 | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 | 2750 | 2750 | 1600 | 2000 | 2750 | 2750 |
| | | <i>in.lb</i> | | 17702 | 14161 | 22127 | 22127 | 22127 | 22127 | 22127 | 22127 | 22127 | 22127 | 24340 | 24340 | 14161 | 17702 | 24340 |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | | 2900 | 2900 | 2900 | 2900 | 2900 | 2900 | 2900 | 3200 | 2900 | 3200 | 3900 | 3900 | 3900 | 3900 | |
| Max. input speed | n_{1Max} | <i>rpm</i> | | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | <i>Nm</i> | | 2 | 1 | 1.6 | 1.2 | 1.2 | 1 | 1 | 0.8 | 1 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | |
| | | <i>in.lb</i> | | 18 | 8.9 | 14 | 11 | 11 | 8.9 | 8.9 | 7.1 | 8.9 | 7.1 | 7.1 | 7.1 | 7.1 | 7.1 | 7.1 |
| Max. backlash | j_t | <i>arcmin</i> | | Standard ≤ 4 / Reduced ≤ 2 | | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | <i>Nm/arcmin</i> | | 175 | 175 | 175 | 175 | 175 | 175 | 175 | 175 | 175 | 175 | 175 | 175 | 175 | 175 | |
| | | <i>in.lb/arcmin</i> | | 1549 | 1549 | 1549 | 1549 | 1549 | 1549 | 1549 | 1549 | 1549 | 1549 | 1549 | 1549 | 1549 | 1549 | 1549 |
| Max. axial force ^{c)} | F_{2AMax} | <i>N</i> | | 15570 | | | | | | | | | | | | | | |
| | | <i>lb_f</i> | | 3503 | | | | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | <i>N</i> | | 15400 | | | | | | | | | | | | | | |
| | | <i>lb_f</i> | | 3465 | | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | <i>Nm</i> | | 1600 | | | | | | | | | | | | | | |
| | | <i>in.lb</i> | | 14161 | | | | | | | | | | | | | | |
| Efficiency at full load | η | <i>%</i> | | 92 | | | | | | | | | | | | | | |
| Service life ^{f)} | L_h | <i>h</i> | | > 20000 | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | <i>m</i> | <i>kg</i> | | 47.4 | | | | | | | | | | | | | | |
| | | <i>lb_m</i> | | 105 | | | | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | <i>dB(A)</i> | | ≤ 70 | | | | | | | | | | | | | | |
| Max. permitted housing temperature | | <i>°C</i> | | +90 | | | | | | | | | | | | | | |
| | | <i>F</i> | | 194 | | | | | | | | | | | | | | |
| Ambient temperature | | <i>°C</i> | | 0 to +40 | | | | | | | | | | | | | | |
| | | <i>F</i> | | 32 to 104 | | | | | | | | | | | | | | |
| Lubrication | | | | Lubricated for life | | | | | | | | | | | | | | |
| Direction of rotation | | | | In- and output opposite direction | | | | | | | | | | | | | | |
| Protection class | | | | IP 65 | | | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | | BC2 - 01500AA - 055.000 - X | | | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | <i>mm</i> | | X = 050.000 - 080.000 | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) | G 24 | J_1 | <i>kgcm²</i> | 3.97 | 2.82 | 3.36 | 3.22 | 2.82 | 2.75 | 2.5 | 2.47 | 2.5 | 2.44 | 2.42 | 2.42 | 2.42 | 2.42 | |
| | | | <i>10⁻³ in.lb.s²</i> | 3.51 | 2.5 | 2.97 | 2.85 | 2.5 | 2.43 | 2.21 | 2.19 | 2.21 | 2.16 | 2.14 | 2.14 | 2.14 | 2.14 | |
| Clamping hub diameter [mm] | K 38 | J_1 | <i>kgcm²</i> | 10.9 | 9.74 | 10.3 | 10.1 | 9.74 | 9.66 | 9.41 | 9.38 | 9.41 | 9.38 | 9.33 | 9.33 | 9.33 | 9.33 | |
| | | | <i>10⁻³ in.lb.s²</i> | 9.65 | 8.62 | 9.12 | 8.94 | 8.62 | 8.55 | 8.33 | 8.3 | 8.33 | 8.3 | 8.26 | 8.26 | 8.26 | 8.26 | |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

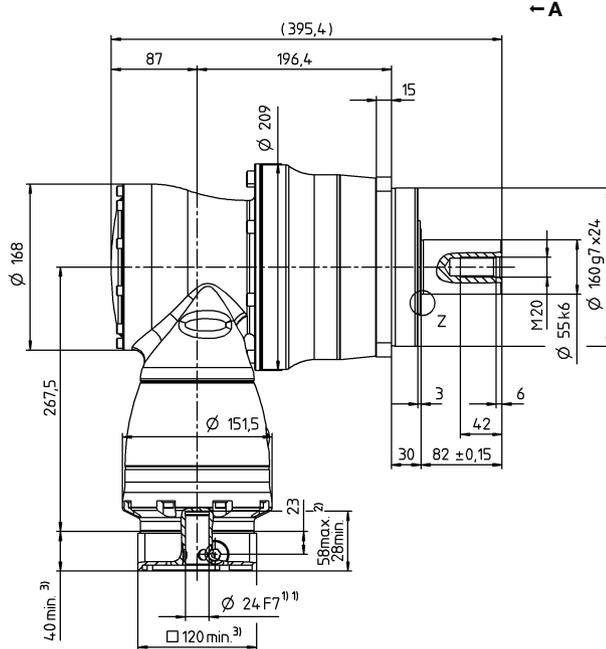
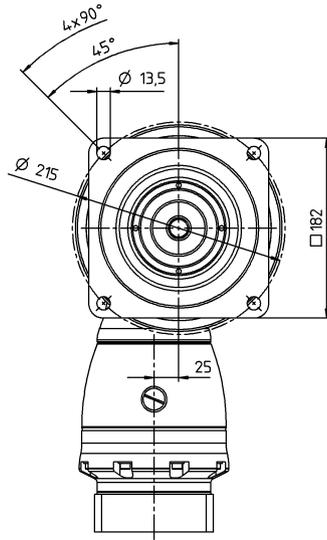
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

Motor shaft diameter [mm]

3-stage

up to 24 / 38⁴⁾
(G⁵⁾ / K) clamping
hub diameter

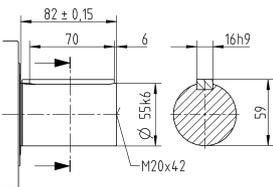


Hypoid gearboxes

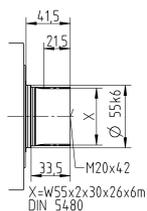
SPK

Other output variants

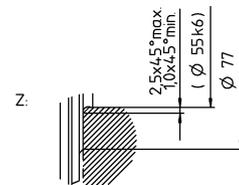
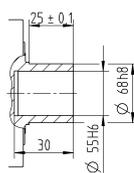
Shaft with key



Spined shaft (DIN 5480)



Shaft mounted



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions

- ¹⁾ Check motor shaft fit
- ²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
- ³⁾ The dimensions depend on the motor
- ⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm
- ⁵⁾ Standard clamping hub diameter

SPK+ 210 MF 2-stage

| | | | 2-stage | | | | | | | | | | | |
|--|-------------|-----------------|--------------------------------------|---------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Ratio | <i>i</i> | | 12 | 16 | 20 | 25 | 28 | 35 | 40 | 50 | 70 | 100 | | |
| Max. torque ^{a) b) e)} | T_{2a} | Nm | 3072 | 3072 | 3840 | 3840 | 3840 | 3840 | 1880 | 2350 | 3290 | 2800 | | |
| | | in.lb | 27190 | 27190 | 33987 | 33987 | 33987 | 33987 | 16640 | 20799 | 29119 | 24782 | | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | Nm | 2560 | 2560 | 3000 | 3000 | 2880 | 2880 | 1880 | 2350 | 2880 | 2280 | | |
| | | in.lb | 22658 | 22658 | 26552 | 26552 | 25490 | 25490 | 16640 | 20799 | 25490 | 20180 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 1500 | 1500 | 1500 | 1500 | 1400 | 1500 | 1400 | 1500 | 1400 | 1000 | | |
| | | in.lb | 13276 | 13276 | 13276 | 13276 | 12391 | 13276 | 12391 | 13276 | 12391 | 8851 | | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 3600 | 4200 | 5250 | 5250 | 5900 | 5900 | 3600 | 4500 | 5900 | 5900 | | |
| | | in.lb | 31863 | 37173 | 46467 | 46467 | 52220 | 52220 | 31863 | 39829 | 52220 | 52220 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | 1500 | 1700 | 1700 | 1900 | 1700 | 1900 | 1700 | 1700 | 1700 | 1700 | | |
| Max. input speed | n_{1Max} | rpm | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 21 | 19 | 17 | 16 | 15 | 15 | 16 | 16 | 15 | 14 | | |
| | | in.lb | 186 | 168 | 150 | 142 | 133 | 133 | 142 | 142 | 133 | 124 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 4 / Reduced ≤ 2 | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | | |
| | | in.lb/arcmin | 2655 | 2655 | 2655 | 2655 | 2655 | 2655 | 2655 | 2655 | 2655 | 2655 | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 30000 | | | | | | | | | | | |
| | | lb _f | 6750 | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 21000 | | | | | | | | | | | |
| | | lb _f | 4725 | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 3100 | | | | | | | | | | | |
| | | in.lb | 27437 | | | | | | | | | | | |
| Efficiency at full load | η | % | 94 | | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 82 | | | | | | | | | | | |
| | | lb _m | 181 | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 71 | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | |
| Ambient temperature | | °C | 0 to +40 | | | | | | | | | | | |
| | | F | 32 to 104 | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC2 - 04000AA - 075.000 - X | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 050.000 - 090.000 | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | M | 48 | J_1 | kgcm ² | 78.8 | 54.6 | 53 | 43.4 | 51.5 | 42.2 | 30.2 | 30 | 29.8 | 29.8 |
| | | | | 10 ⁻³ in.lb.s ² | 69.74 | 48.32 | 46.91 | 38.41 | 45.58 | 37.35 | 26.73 | 26.55 | 26.37 | 26.37 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

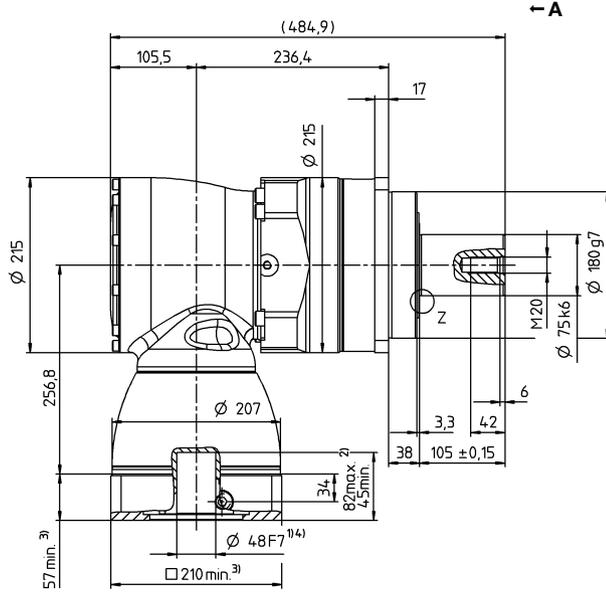
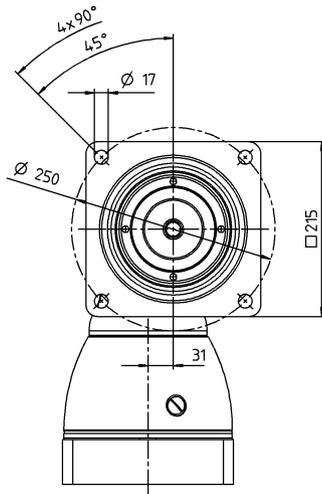
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

Motor shaft diameter [mm]

2-stage

up to 48⁴⁾ (M)⁵⁾
clamping hub diameter

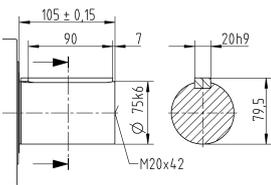


Hypoid gearboxes

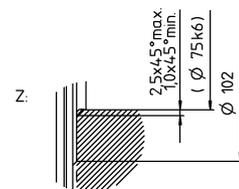
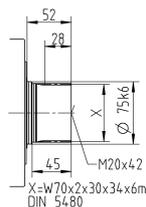
SPK

Other output variants

Shaft with key



Spined shaft (DIN 5480)



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions
¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

SPK+ 210 MF 3-stage

| | | | 3-stage | | | | | | | | | | | | | | |
|--|-------------|-----------------|--------------------------------------|---------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Ratio | <i>i</i> | | 64 | 84 | 100 | 125 | 140 | 175 | 200 | 250 | 280 | 350 | 400 | 500 | 700 | 1000 | |
| Max. torque ^{a) b) e)} | T_{2a} | Nm | 3072 | 3072 | 3840 | 3840 | 3840 | 3840 | 3840 | 3840 | 3840 | 3840 | 1880 | 2350 | 3290 | 2800 | |
| | | in.lb | 27190 | 27190 | 33987 | 33987 | 33987 | 33987 | 33987 | 33987 | 33987 | 33987 | 16640 | 20799 | 29119 | 24782 | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | Nm | 2560 | 2560 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 2880 | 2880 | 1880 | 2350 | 2880 | 2280 | |
| | | in.lb | 22658 | 22658 | 26552 | 26552 | 26552 | 26552 | 26552 | 26552 | 25490 | 25490 | 16640 | 20799 | 25490 | 20180 | |
| Nominal torque (at n_n) | T_{2N} | Nm | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 | 1400 | 1400 | 1500 | 1500 | 1400 | 1000 | |
| | | in.lb | 13276 | 13276 | 13276 | 13276 | 13276 | 13276 | 13276 | 13276 | 12391 | 12391 | 13276 | 13276 | 12391 | 8851 | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 4200 | 3600 | 5250 | 5250 | 5250 | 5250 | 5250 | 5250 | 5900 | 5900 | 3600 | 4500 | 5900 | 5900 | |
| | | in.lb | 37173 | 31863 | 46467 | 46467 | 46467 | 46467 | 46467 | 46467 | 52220 | 52220 | 31863 | 39829 | 52220 | 52220 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | 2700 | 2700 | 2700 | 2700 | 2700 | 2700 | 2700 | 2900 | 2700 | 2900 | 3400 | 3400 | 3400 | 3400 | |
| Max. input speed | n_{1Max} | rpm | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 4.8 | 2.4 | 3.8 | 3.4 | 2.6 | 2.6 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | |
| | | in.lb | 42 | 21 | 34 | 30 | 23 | 23 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | |
| Max. backlash | j_t | arcmin | Standard ≤ 4 / Reduced ≤ 2 | | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | |
| | | in.lb/arcmin | 2655 | 2655 | 2655 | 2655 | 2655 | 2655 | 2655 | 2655 | 2655 | 2655 | 2655 | 2655 | 2655 | 2655 | |
| Max. axial force ^{c)} | F_{2AMax} | N | 30000 | | | | | | | | | | | | | | |
| | | lb _f | 6750 | | | | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 21000 | | | | | | | | | | | | | | |
| | | lb _f | 4725 | | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 3100 | | | | | | | | | | | | | | |
| | | in.lb | 27437 | | | | | | | | | | | | | | |
| Efficiency at full load | η | % | 92 | | | | | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 86 | | | | | | | | | | | | | | |
| | | lb _m | 190 | | | | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 71 | | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | | | |
| Ambient temperature | | °C | 0 to +40 | | | | | | | | | | | | | | |
| | | F | 32 to 104 | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC2 - 04000AA - 075.000 - X | | | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 050.000 - 090.000 | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) | K | 38 | J_1 | kgcm ² | 14 | 10.9 | 12.3 | 12 | 10.9 | 10.7 | 10.1 | 10 | 10.1 | 10 | 9.9 | 9.9 | 9.9 |
| | | | | 10 ⁻³ in.lb.s ² | 12.39 | 9.65 | 10.89 | 10.62 | 9.65 | 9.47 | 8.94 | 8.85 | 8.94 | 8.85 | 8.76 | 8.76 | 8.76 |
| Clamping hub diameter [mm] | M | 48 | J_1 | kgcm ² | 28.7 | 25.6 | 27.1 | 26.7 | 26.7 | 25.6 | 24.8 | 24.7 | 24.8 | 24.7 | 24.6 | 24.6 | 24.6 |
| | | | | 10 ⁻³ in.lb.s ² | 25.4 | 22.66 | 23.98 | 23.63 | 23.63 | 22.66 | 21.95 | 21.86 | 21.95 | 21.86 | 21.77 | 21.77 | 21.77 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

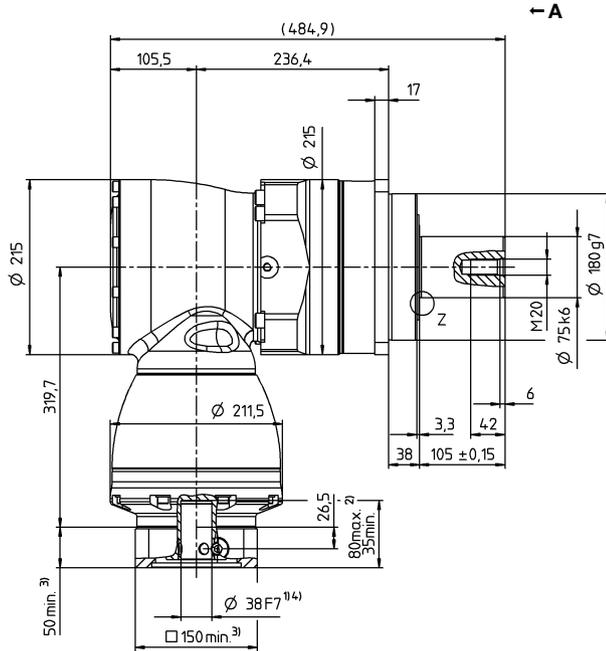
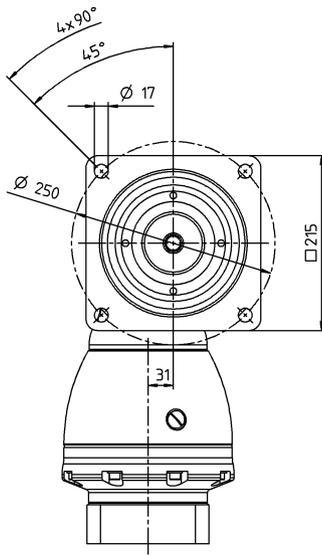
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

Motor shaft diameter [mm]

3-stage

up to 38 / 48⁴⁾
(K⁵⁾ / M) clamping
hub diameter

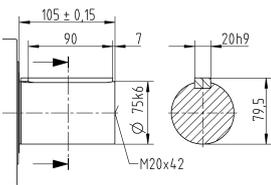


Hypoid gearboxes

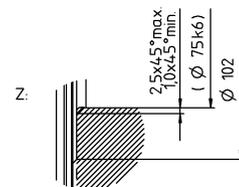
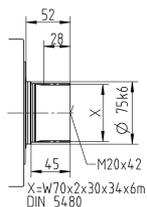
SPK

Other output variants

Shaft with key



Spined shaft (DIN 5480)



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions
1) Check motor shaft fit

2) Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

3) The dimensions depend on the motor

4) Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

5) Standard clamping hub diameter

SPK+ 240 MF 3-stage

| | | | 3-stage | | | | | | |
|---|-------------|-----------------|--|-------|-------|-------|-------|-------|-------|
| Ratio | <i>i</i> | | 48 | 100 | 175 | 350 | 500 | 1000 | |
| Max. torque ^{a) b) e)} | T_{2a} | Nm | 5446 | 5446 | 5700 | 5700 | 5700 | 3642 | |
| | | in.lb | 48201 | 48201 | 50450 | 50450 | 50450 | 32235 | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | Nm | 4800 | 5400 | 5400 | 5400 | 5160 | 3642 | |
| | | in.lb | 42484 | 47794 | 47794 | 47794 | 45670 | 32235 | |
| Nominal torque (at n_n) | T_{2N} | Nm | 2500 | 2500 | 2500 | 2500 | 2500 | 1700 | |
| | | in.lb | 22127 | 22127 | 22127 | 22127 | 22127 | 15046 | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 6400 | 8500 | 8500 | 8500 | 8500 | 6850 | |
| | | in.lb | 56645 | 75232 | 75232 | 75232 | 75232 | 60628 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | 1800 | 1900 | 2100 | 2100 | 2100 | 2100 | |
| Max. input speed | n_{1Max} | rpm | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 13 | 8.4 | 9.6 | 7.2 | 6.9 | 6.9 | |
| | | in.lb | 115 | 74 | 85 | 64 | 61 | 61 | |
| Max. backlash | j_t | arcmin | Standard ≤ 5.5 / Reduced ≤ 3.5 | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 510 | 510 | 510 | 510 | 510 | 510 | |
| | | in.lb/arcmin | 4514 | 4514 | 4514 | 4514 | 4514 | 4514 | |
| Max. axial force ^{c)} | F_{2AMax} | N | 33000 | | | | | | |
| | | lb _f | 7425 | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 30000 | | | | | | |
| | | lb _f | 6750 | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 5000 | | | | | | |
| | | in.lb | 44254 | | | | | | |
| Efficiency at full load | η | % | 92 | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 93 | | | | | | |
| | | lb _m | 206 | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 71 | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | |
| | | F | 194 | | | | | | |
| Ambient temperature | | °C | 0 to +40 | | | | | | |
| | | F | 32 to 104 | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | |
| Protection class | | | IP 65 | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC2 - 06000AA - 085.000 - X | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 060.000 - 140.000 | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | K 38 | J_1 | kgcm ² | 26.5 | 17 | 15 | 13 | 13 | 13 |
| | | | 10 ⁻³ in.lb.s ² | 23.45 | 15.05 | 13.28 | 11.51 | 11.51 | 11.51 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

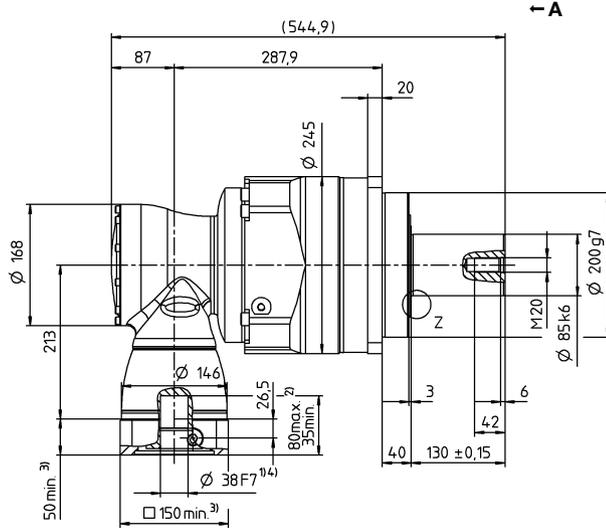
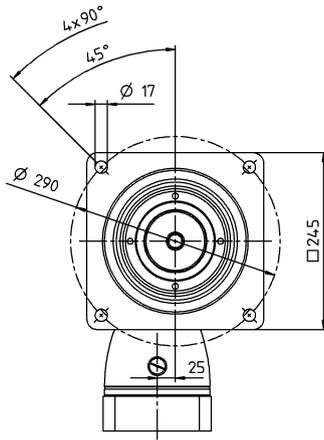
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

Motor shaft diameter [mm]

3-stage

up to 38⁴⁾ (K)⁵⁾
clamping hub diameter

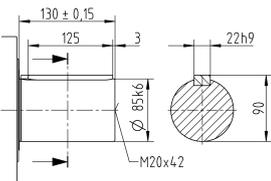


Hybrid gearboxes

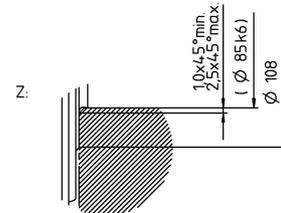
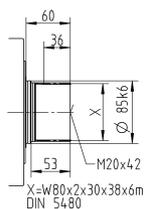
SPK

Other output variants

Shaft with key



Splined shaft (DIN 5480)



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

- Non-tolerated dimensions are nominal dimensions
- ¹⁾ Check motor shaft fit
- ²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
- ³⁾ The dimensions depend on the motor
- ⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm
- ⁵⁾ Standard clamping hub diameter

TK+ / TPK+ / TPK+ HIGH TORQUE – Space-saving right-angle precision with output flange



The versatile hypoid gearbox with TP+ compatible output flange and hollow shaft. TPK+ / TPK+ HIGH TORQUE gearboxes with planetary stage are especially suitable for high-precision applications requiring higher power and torsional rigidity.

The TK+ / TPK+ / TK+ HIGH TORQUE compared to the industry standard

Product highlights

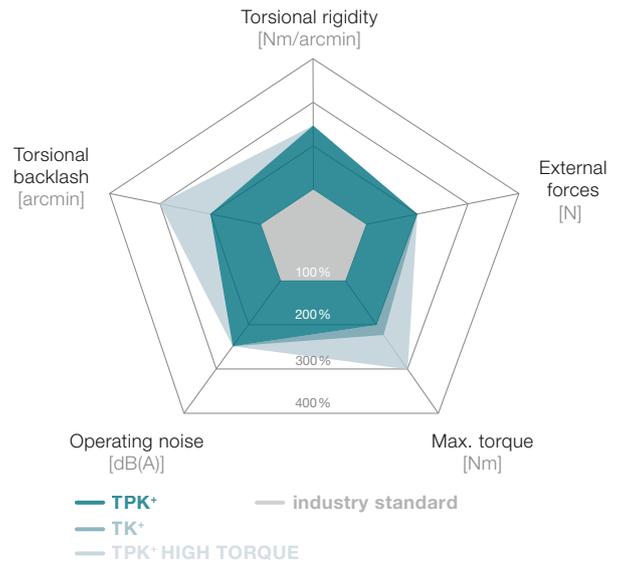
Max. torsional backlash
 TK+ ≤ 4 arcmin (Standard)
 TPK+ ≤ 3.3 arcmin (Standard)
 ≤ 2 arcmin (Reduced)
 TPK+ HIGH TORQUE ≤ 1.3 arcmin (Standard)

Diverse range of ratios $i = 3 - 5,500$

High torque capacity (MA)

Flexibility thanks to various types of output shapes
 Also available in hollow shaft version

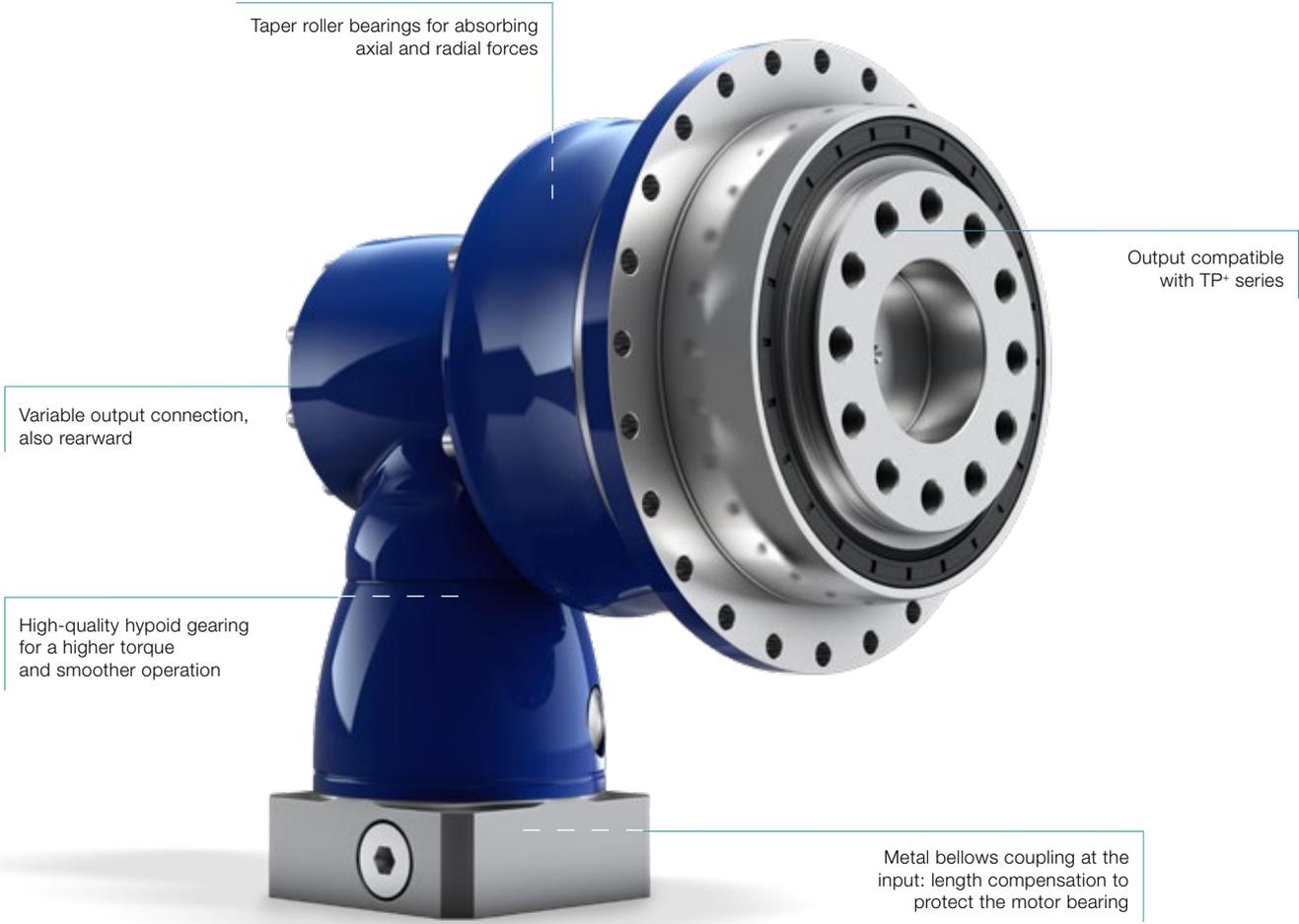
Other gearbox models
 Corrosion resistant design, ATEX (TK+)



TK+ in corrosion-resistant design



TPK+ with rack and pinion



TPK+ HIGH TORQUE



TK+ with metal bellows coupling



TPK+ 2000 available on request

TK+ 004 MF 1-/2-stage

| | | | 1-stage | | | | | 2-stage | | | | | | | | | | | |
|--|-------------|-----------------|---------------------------------------|---------------------------------------|------|------|------|---------|------|------|------|------|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 3 | 4 | 5 | 7 | 10 | 12 | 16 | 20 | 25 | 28 | 35 | 40 | 50 | 70 | 100 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 36 | 36 | 36 | 25 | 20 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 25 | 20 | | |
| | | in.lb | 319 | 319 | 319 | 221 | 177 | 319 | 319 | 319 | 319 | 319 | 319 | 319 | 319 | 319 | 221 | 177 | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 30 | 30 | 30 | 25 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 25 | 20 | | |
| | | in.lb | 266 | 266 | 266 | 221 | 177 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 221 | 177 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 22 | 22 | 22 | 20 | 15 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 20 | 15 | | |
| | | in.lb | 195 | 195 | 195 | 177 | 133 | 195 | 195 | 195 | 195 | 195 | 195 | 195 | 195 | 177 | 133 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 40 | 50 | 50 | 45 | 40 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 45 | 40 | | |
| | | in.lb | 354 | 443 | 443 | 398 | 354 | 443 | 443 | 443 | 443 | 443 | 443 | 443 | 443 | 398 | 354 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature ^{d)}) | n_{1N} | n_{1T} | 2200 | 2400 | 2700 | 2700 | 2700 | 4400 | 4400 | 4400 | 4400 | 4400 | 4400 | 4400 | 4800 | 5500 | 5500 | | |
| Max. input speed | n_{1Max} | rpm | 7500 | 7500 | 7500 | 7500 | 7500 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 1.9 | 1.8 | 1.4 | 1.5 | 1.4 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | | |
| | | in.lb | 17 | 16 | 12 | 13 | 12 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 5 | | | | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 2.6 | 2.8 | 3 | 2.6 | 2.3 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 3 | 2.6 | 2.3 | |
| | | in.lb/arcmin | 23 | 25 | 27 | 23 | 20 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 27 | 23 | 20 | |
| Max. axial force ^{c)} | F_{2AMax} | N | 2400 | | | | | | | | | | | | | | | | |
| | | lb _f | 540 | | | | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 251 | | | | | | | | | | | | | | | | |
| | | in.lb | 2222 | | | | | | | | | | | | | | | | |
| Efficiency at full load | η | % | 96 | | | | | 94 | | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 2.9 | | | | | 3.2 | | | | | | | | | | | |
| | | lb _m | 6 | | | | | 7 | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 64 | | | | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | | | | | |
| Ambient temperature | | °C | 0 to +40 | | | | | | | | | | | | | | | | |
| | | F | 32 to 104 | | | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BCT - 00015AAX - 031.500 | | | | | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 012.000 - 028.000 | | | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | B | 11 | J_1 | kgcm ² | - | - | - | - | - | 0.09 | 0.09 | 0.07 | 0.07 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | |
| | | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | 0.08 | 0.08 | 0.06 | 0.06 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| | C | 14 | J_1 | kgcm ² | 0.57 | 0.46 | 0.41 | 0.37 | 0.35 | 0.21 | 0.2 | 0.19 | 0.19 | 0.18 | 0.18 | 0.17 | 0.17 | 0.17 | 0.17 |
| | | | | 10 ⁻³ in.lb.s ² | 0.5 | 0.41 | 0.36 | 0.33 | 0.31 | 0.19 | 0.18 | 0.17 | 0.17 | 0.16 | 0.16 | 0.15 | 0.15 | 0.15 | 0.15 |
| E | 19 | J_1 | kgcm ² | 0.92 | 0.82 | 0.76 | 0.72 | 0.7 | - | - | - | - | - | - | - | - | - | - | |
| | | | 10 ⁻³ in.lb.s ² | 0.81 | 0.73 | 0.67 | 0.64 | 0.62 | - | - | - | - | - | - | - | - | - | - | - |

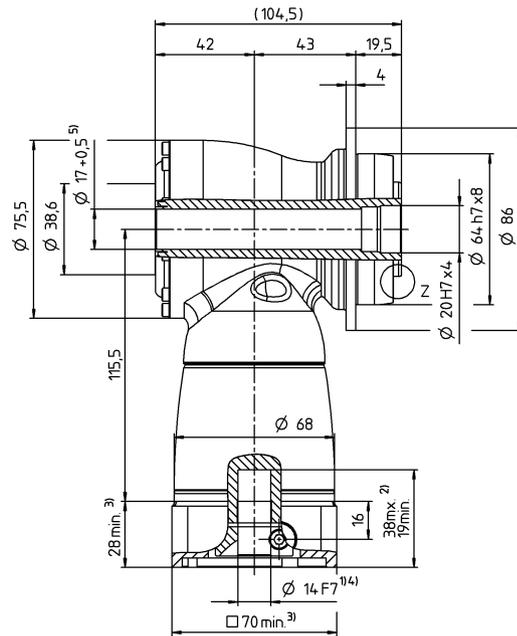
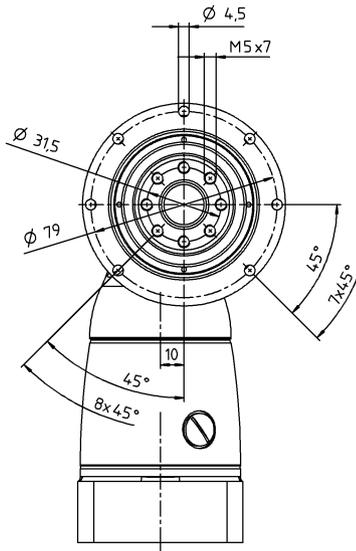
Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

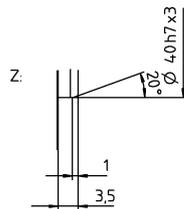
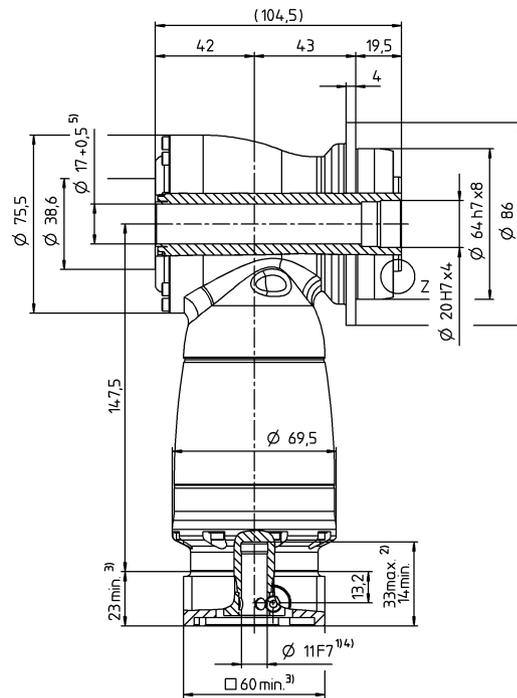
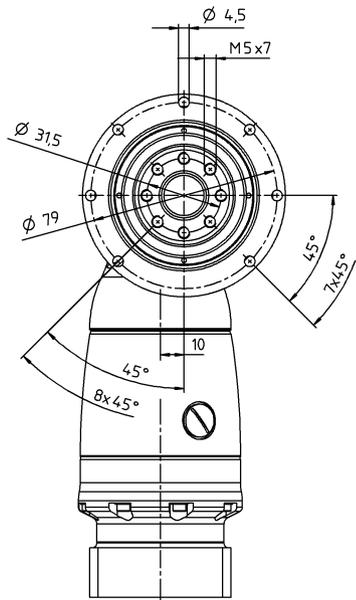
1-stage

up to 14/19⁴⁾
(C⁶⁾/E) clamping
hub diameter



2-stage

up to 11/14⁴⁾
(B⁶/C) clamping
hub diameter



Motor shaft diameter [mm]

Hypoid gearboxes

TK

See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Led through element max. Ø 16.8 mm

⁶⁾ Standard clamping hub diameter

TK+ 010 MF 1-/2-stage

| | | | 1-stage | | | | | 2-stage | | | | | | | | | | | |
|---|-------------|-----------------|---------------------------------------|---------------------------------------|------|------|------|---------|------|------|------|------|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 3 | 4 | 5 | 7 | 10 | 12 | 16 | 20 | 25 | 28 | 35 | 40 | 50 | 70 | 100 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 84 | 84 | 84 | 60 | 50 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 60 | 50 | | |
| | | in.lb | 743 | 743 | 743 | 531 | 443 | 743 | 743 | 743 | 743 | 743 | 743 | 743 | 743 | 743 | 531 | 443 | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 70 | 70 | 70 | 60 | 50 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 60 | 50 | | |
| | | in.lb | 620 | 620 | 620 | 531 | 443 | 620 | 620 | 620 | 620 | 620 | 620 | 620 | 620 | 620 | 531 | 443 | |
| Nominal torque (at n_n) | T_{2N} | Nm | 50 | 50 | 50 | 45 | 40 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 45 | 40 | | |
| | | in.lb | 443 | 443 | 443 | 398 | 354 | 443 | 443 | 443 | 443 | 443 | 443 | 443 | 443 | 443 | 398 | 354 | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 95 | 115 | 115 | 110 | 100 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 110 | 100 | | |
| | | in.lb | 841 | 1018 | 1018 | 974 | 885 | 1018 | 1018 | 1018 | 1018 | 1018 | 1018 | 1018 | 1018 | 1018 | 974 | 885 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature ^{d)}) | n_{1N} | n_{1T} | 2100 | 2200 | 2500 | 2500 | 2500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3800 | 4500 | 4500 | | |
| Max. input speed | n_{1Max} | rpm | 7500 | 7500 | 7500 | 7500 | 7500 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 3.3 | 2.8 | 2.1 | 2.4 | 2.2 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | | |
| | | in.lb | 29 | 25 | 19 | 21 | 19 | 3.5 | 3.5 | 2.7 | 2.7 | 2.7 | 2.7 | 1.8 | 1.8 | 1.8 | 1.8 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 4 | | | | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 6 | 7 | 8 | 8 | 8 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 8 | 8 | 8 | | |
| | | in.lb/arcmin | 53 | 62 | 71 | 71 | 71 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 71 | 71 | 71 | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 3400 | | | | | | | | | | | | | | | | |
| | | lb _f | 765 | | | | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 437 | | | | | | | | | | | | | | | | |
| | | in.lb | 3868 | | | | | | | | | | | | | | | | |
| Efficiency at full load | η | % | 96 | | | | | 94 | | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 5.3 | | | | | 6.1 | | | | | | | | | | | |
| | | lb _m | 12 | | | | | 13 | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 66 | | | | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | | | | | |
| Ambient temperature | | °C | 0 to +40 | | | | | | | | | | | | | | | | |
| | | F | 32 to 104 | | | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BCT - 00060AAX - 050.000 | | | | | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 014.000 - 035.000 | | | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | C | 14 | J_1 | kgcm ² | - | - | - | - | - | 0.31 | 0.28 | 0.24 | 0.23 | 0.21 | 0.2 | 0.19 | 0.18 | 0.18 | |
| | | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | 0.27 | 0.25 | 0.21 | 0.2 | 0.19 | 0.18 | 0.17 | 0.16 | 0.16 | 0.16 |
| | E | 19 | J_1 | kgcm ² | 1.81 | 1.39 | 1.18 | 1.02 | 0.93 | 0.75 | 0.72 | 0.68 | 0.68 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 |
| | | | | 10 ⁻³ in.lb.s ² | 1.6 | 1.23 | 1.04 | 0.9 | 0.82 | 0.66 | 0.64 | 0.6 | 0.6 | 0.56 | 0.56 | 0.56 | 0.56 | 0.56 | 0.56 |
| H | 28 | J_1 | kgcm ² | 3.22 | 2.8 | 2.6 | 2.43 | 2.34 | - | - | - | - | - | - | - | - | - | - | |
| | | | 10 ⁻³ in.lb.s ² | 2.85 | 2.48 | 2.3 | 2.15 | 2.07 | - | - | - | - | - | - | - | - | - | - | - |

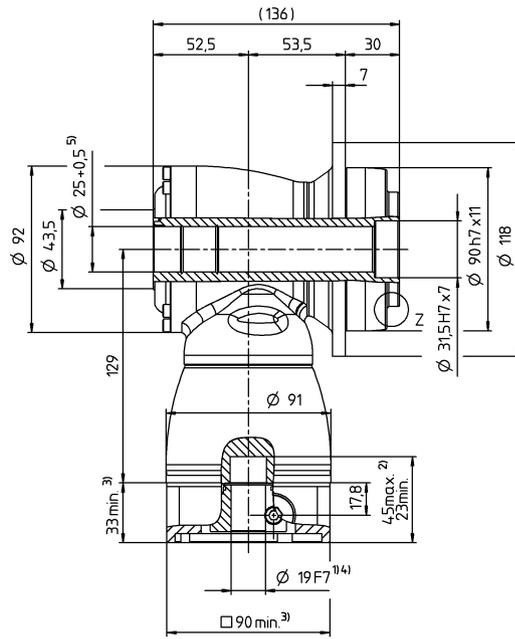
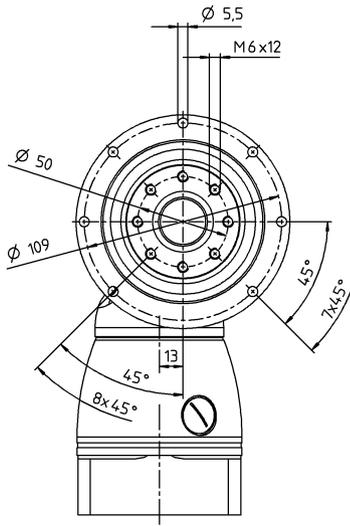
Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

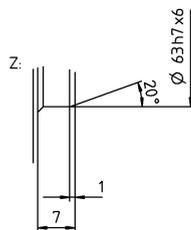
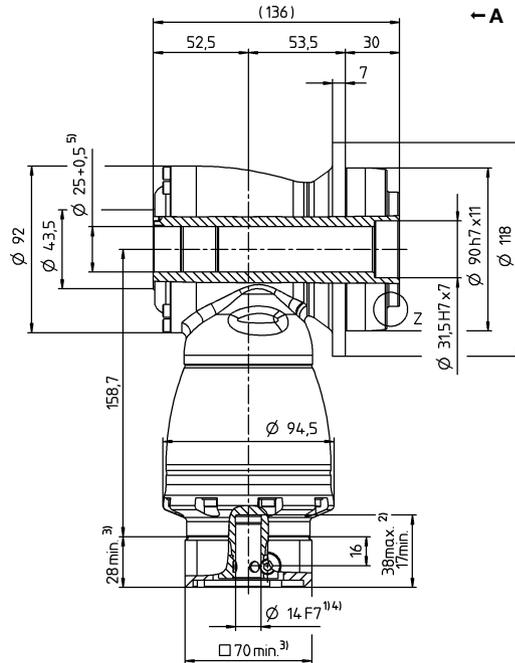
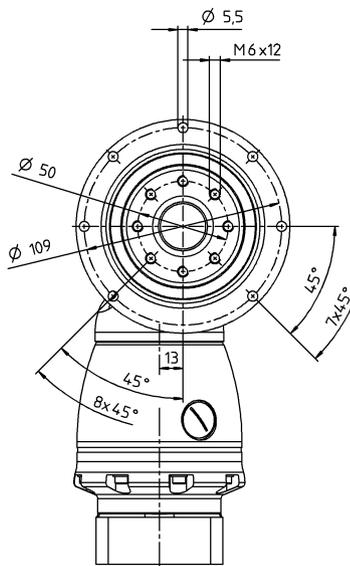
1-stage

up to 19/28⁴⁾
(E⁶⁾/H) clamping
hub diameter



2-stage

up to 14/19⁴⁾
(C⁶⁾/E) clamping
hub diameter



Motor shaft diameter [mm]

Hypoid gearboxes

TK

See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Led through element max. Ø 24.8 mm

⁶⁾ Standard clamping hub diameter

TK+ 025 MF 1-/2-stage

| | | | 1-stage | | | | | 2-stage | | | | | | | | | | | | |
|---|-------------|-----------------|-----------------------------------|---------------------------------------|-------|-------|------|---------|------|------|------|------|------|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 3 | 4 | 5 | 7 | 10 | 12 | 16 | 20 | 25 | 28 | 35 | 40 | 50 | 70 | 100 | | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 204 | 204 | 204 | 145 | 125 | 204 | 204 | 204 | 204 | 204 | 204 | 204 | 204 | 145 | 125 | | | |
| | | in.lb | 1806 | 1806 | 1806 | 1283 | 1106 | 1806 | 1806 | 1806 | 1806 | 1806 | 1806 | 1806 | 1806 | 1806 | 1283 | 1106 | | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 170 | 170 | 170 | 145 | 125 | 170 | 170 | 170 | 170 | 170 | 170 | 170 | 170 | 145 | 125 | | | |
| | | in.lb | 1505 | 1505 | 1505 | 1283 | 1106 | 1505 | 1505 | 1505 | 1505 | 1505 | 1505 | 1505 | 1505 | 1505 | 1283 | 1106 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 100 | 100 | 100 | 90 | 80 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 90 | 80 | | | |
| | | in.lb | 885 | 885 | 885 | 797 | 708 | 885 | 885 | 885 | 885 | 885 | 885 | 885 | 885 | 885 | 797 | 708 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 220 | 260 | 260 | 255 | 250 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 255 | 250 | | |
| | | in.lb | 1947 | 2301 | 2301 | 2257 | 2213 | 2301 | 2301 | 2301 | 2301 | 2301 | 2301 | 2301 | 2301 | 2301 | 2257 | 2213 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature ^{d)}) | n_{1N} | n_{1T} | 2000 | 2100 | 2400 | 2200 | 2200 | 3100 | 3100 | 3100 | 3100 | 3100 | 3100 | 3100 | 3100 | 3500 | 4200 | 4200 | | |
| Max. input speed | n_{1Max} | rpm | 5500 | 5500 | 5500 | 5500 | 5500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 4.9 | 3.9 | 4 | 4.5 | 3.6 | 0.7 | 0.7 | 0.6 | 0.5 | 0.5 | 0.4 | 0.2 | 0.2 | 0.2 | 0.2 | | | |
| | | in.lb | 43 | 35 | 35 | 40 | 32 | 6.2 | 6.2 | 5.3 | 4.4 | 4.4 | 3.5 | 1.8 | 1.8 | 1.8 | 1.8 | | | |
| Max. backlash | j_t | arcmin | Standard ≤ 4 | | | | | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 12 | 13 | 16 | 16 | 16 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 16 | 16 | 16 | | | |
| | | in.lb/arcmin | 106 | 115 | 142 | 142 | 142 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 142 | 142 | 142 | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 5700 | | | | | | | | | | | | | | | | | |
| | | lb _f | 1283 | | | | | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 833 | | | | | | | | | | | | | | | | | |
| | | in.lb | 7373 | | | | | | | | | | | | | | | | | |
| Efficiency at full load | η | % | 96 | | | | | 94 | | | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 8.9 | | | | | 10.6 | | | | | | | | | | | | |
| | | lb _m | 20 | | | | | 23 | | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 66 | | | | | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | | | | | | |
| Ambient temperature | | °C | 0 to +40 | | | | | | | | | | | | | | | | | |
| | | F | 32 to 104 | | | | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BCT - 00150AAX - 063.000 | | | | | | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 019.000 - 042.000 | | | | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | E | 19 | J_1 | kgcm ² | - | - | - | - | - | 1.08 | 1.01 | 0.88 | 0.85 | 0.76 | 0.75 | 0.7 | 0.69 | 0.68 | 0.68 | |
| | | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | 0.96 | 0.89 | 0.78 | 0.75 | 0.67 | 0.66 | 0.62 | 0.61 | 0.6 | 0.6 | |
| | G | 24 | J_1 | kgcm ² | - | - | - | - | - | 2.65 | 2.57 | 2.44 | 2.42 | 2.32 | 2.31 | 2.26 | 2.25 | 2.25 | 2.25 | 2.25 |
| | | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | 2.35 | 2.27 | 2.16 | 2.14 | 2.05 | 2.04 | 2 | 1.99 | 1.99 | 1.99 | |
| | H | 28 | J_1 | kgcm ² | 5.5 | 4.3 | 3.6 | 3.1 | 2.9 | - | - | - | - | - | - | - | - | - | - | - |
| | | | | 10 ⁻³ in.lb.s ² | 4.87 | 3.81 | 3.19 | 2.74 | 2.57 | - | - | - | - | - | - | - | - | - | - | - |
| | K | 38 | J_1 | kgcm ² | 12.7 | 11.5 | 10.9 | 10.4 | 10.1 | - | - | - | - | - | - | - | - | - | - | - |
| | | | | 10 ⁻³ in.lb.s ² | 11.24 | 10.18 | 9.65 | 9.2 | 8.94 | - | - | - | - | - | - | - | - | - | - | - |

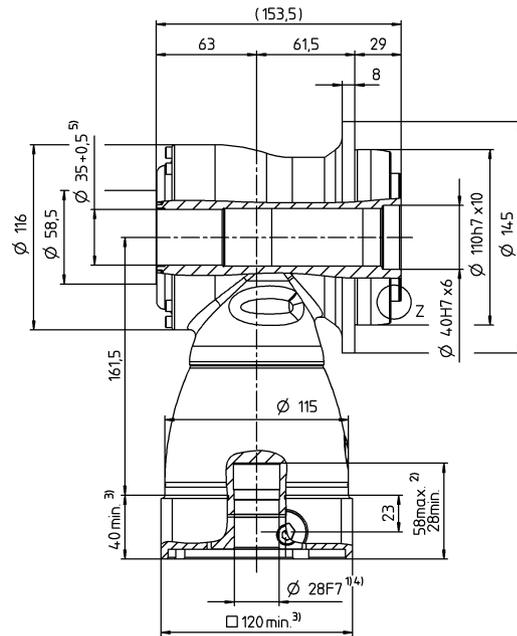
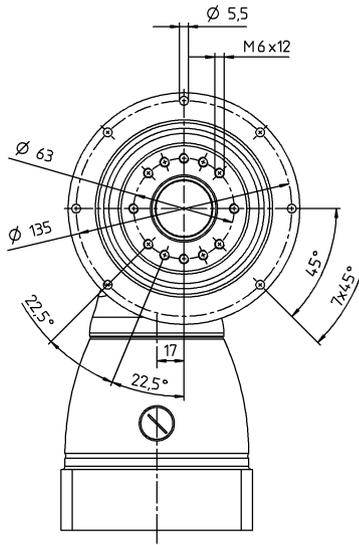
Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

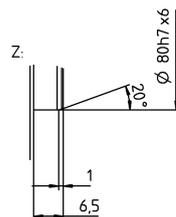
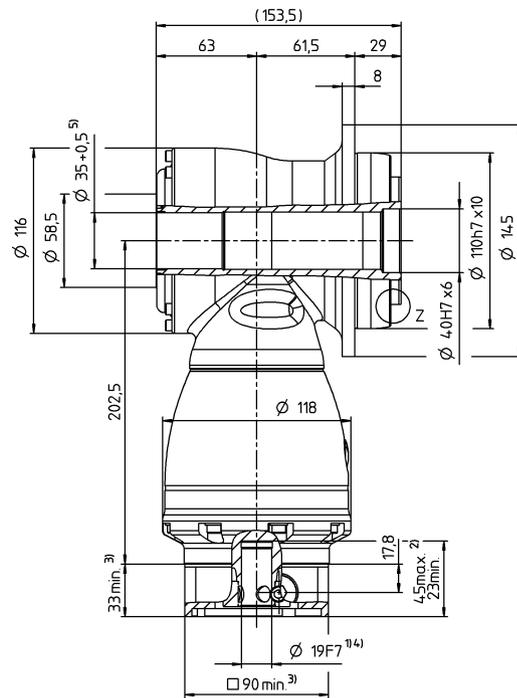
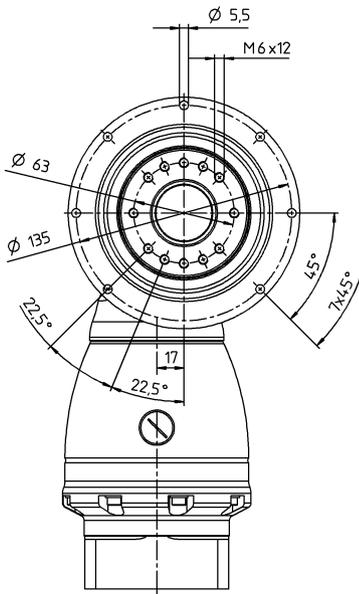
1-stage

up to 28/38⁴⁾
(H⁶⁾/K) clamping
hub diameter



2-stage

up to 19/24⁴⁾
(E⁶⁾/G) clamping
hub diameter



Motor shaft diameter [mm]

Hypoid gearboxes

TK

See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Led through element max. Ø 34.8 mm

⁶⁾ Standard clamping hub diameter

TK+ 050 MF 1-/2-stage

| | | | 1-stage | | | | | 2-stage | | | | | | | | | | | |
|--|-------------|-----------------|-----------------------------------|---------------------------------------|-------|-------|-------|---------|-------|------|------|------|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 3 | 4 | 5 | 7 | 10 | 12 | 16 | 20 | 25 | 28 | 35 | 40 | 50 | 70 | 100 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 360 | 360 | 360 | 250 | 210 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 250 | 210 | | |
| | | in.lb | 3186 | 3186 | 3186 | 2213 | 1859 | 3186 | 3186 | 3186 | 3186 | 3186 | 3186 | 3186 | 3186 | 3186 | 2213 | 1859 | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 300 | 300 | 300 | 250 | 210 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 250 | 210 | | |
| | | in.lb | 2655 | 2655 | 2655 | 2213 | 1859 | 2655 | 2655 | 2655 | 2655 | 2655 | 2655 | 2655 | 2655 | 2213 | 1859 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 190 | 190 | 190 | 175 | 160 | 190 | 190 | 190 | 190 | 190 | 190 | 190 | 190 | 175 | 160 | | |
| | | in.lb | 1682 | 1682 | 1682 | 1549 | 1416 | 1682 | 1682 | 1682 | 1682 | 1682 | 1682 | 1682 | 1682 | 1549 | 1416 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 400 | 500 | 500 | 450 | 400 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 450 | 400 | | |
| | | in.lb | 3540 | 4425 | 4425 | 3983 | 3540 | 4425 | 4425 | 4425 | 4425 | 4425 | 4425 | 4425 | 4425 | 3983 | 3540 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature ^{d)}) | n_{1N} | n_{1T} | 1700 | 1800 | 2000 | 1800 | 1800 | 2900 | 2900 | 2900 | 2900 | 2900 | 2900 | 2900 | 3200 | 3200 | 3900 | | |
| Max. input speed | n_{1Max} | rpm | 5000 | 5000 | 5000 | 5000 | 5000 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 9.6 | 7.1 | 8.4 | 9 | 6.6 | 1.7 | 1.1 | 0.8 | 0.6 | 0.6 | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 | | |
| | | in.lb | 85 | 63 | 74 | 80 | 58 | 15 | 9.7 | 7.1 | 5.3 | 5.3 | 4.4 | 4.4 | 3.5 | 3.5 | 3.5 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 4 | | | | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 36 | 40 | 46 | 44 | 42 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 46 | 44 | 42 | | |
| | | in.lb/arcmin | 319 | 354 | 407 | 389 | 372 | 354 | 354 | 354 | 354 | 354 | 354 | 354 | 407 | 389 | 372 | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 9900 | | | | | | | | | | | | | | | | |
| | | lb _f | 2228 | | | | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 1692 | | | | | | | | | | | | | | | | |
| | | in.lb | 14976 | | | | | | | | | | | | | | | | |
| Efficiency at full load | η | % | 96 | | | | | 94 | | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 22 | | | | | 26 | | | | | | | | | | | |
| | | lb _m | 49 | | | | | 57 | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 68 | | | | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | | | | | |
| Ambient temperature | | °C | 0 to +40 | | | | | | | | | | | | | | | | |
| | | F | 32 to 104 | | | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BCT - 00300AAX - 080.000 | | | | | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 024.000 - 060.000 | | | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) | G | 24 | J_1 | kgcm ² | - | - | - | - | - | 4.43 | 3.97 | 3.36 | 3.22 | 2.82 | 2.75 | 2.5 | 2.47 | 2.44 | 2.42 |
| | | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | 3.92 | 3.51 | 2.97 | 2.85 | 2.5 | 2.43 | 2.21 | 2.19 | 2.16 | 2.14 |
| Clamping hub diameter [mm] | K | 38 | J_1 | kgcm ² | 28.4 | 21 | 17.6 | 14.7 | 13.1 | 11.3 | 10.9 | 10.3 | 10.1 | 9.74 | 9.66 | 9.41 | 9.38 | 9.35 | 9.33 |
| | | | | 10 ⁻³ in.lb.s ² | 25.13 | 18.59 | 15.58 | 13.01 | 11.59 | 10 | 9.65 | 9.12 | 8.94 | 8.62 | 8.55 | 8.33 | 8.3 | 8.27 | 8.26 |

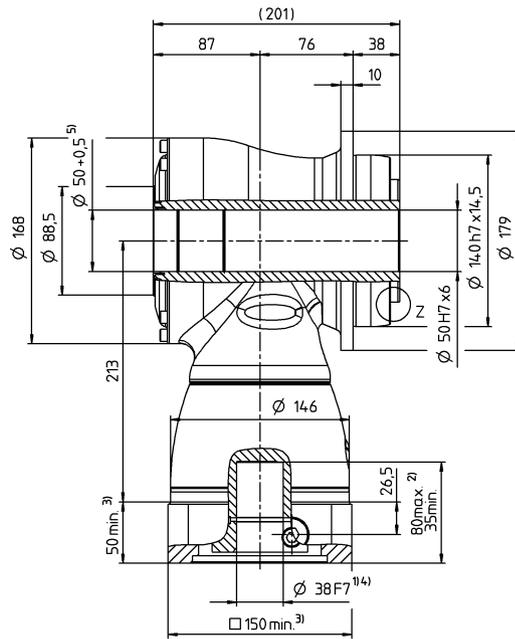
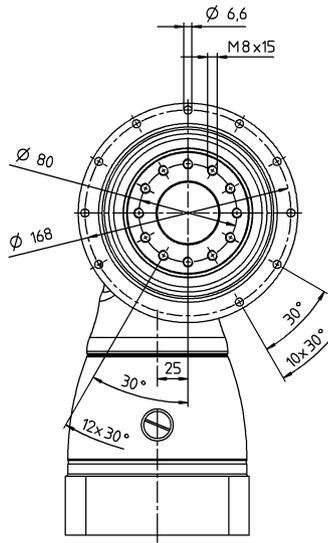
Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

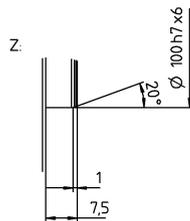
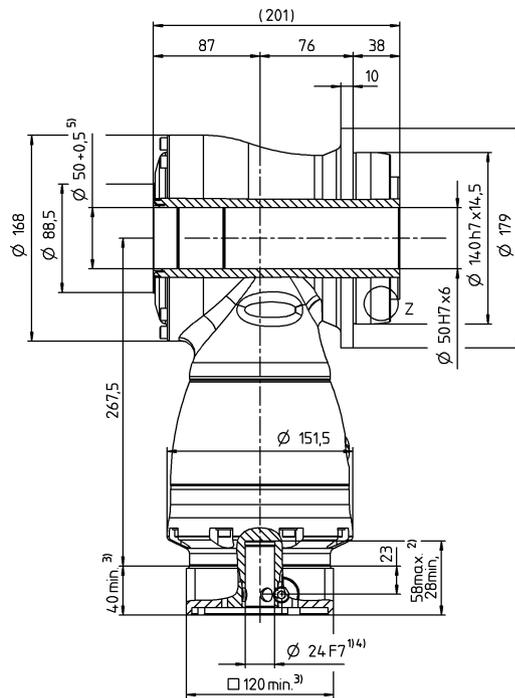
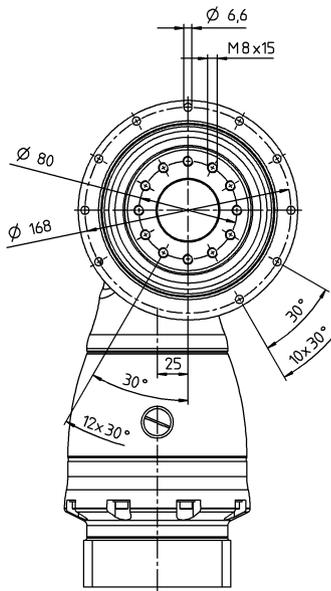
1-stage

up to 38⁴⁾ (K)⁶⁾
clamping hub diameter



2-stage

up to 24/38⁴⁾
(G⁶⁾/K) clamping
hub diameter



Motor shaft diameter [mm]

Hypoid gearboxes

TK

See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Led through element max. Ø 49.8 mm

⁶⁾ Standard clamping hub diameter

TK+ 110 MF 1-/2-stage

| | | | 1-stage | | | | | 2-stage | | | | | | | | | | | |
|--|-------------|-----------------|-----------------------------------|---------------------------------------|------|-------|-------|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Ratio | <i>i</i> | | 3 | 4 | 5 | 7 | 10 | 12 | 16 | 20 | 25 | 28 | 35 | 40 | 50 | 70 | 100 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 768 | 768 | 768 | 550 | 470 | 768 | 768 | 768 | 768 | 768 | 768 | 768 | 768 | 550 | 470 | | |
| | | in.lb | 6797 | 6797 | 6797 | 4868 | 4160 | 6797 | 6797 | 6797 | 6797 | 6797 | 6797 | 6797 | 6797 | 6797 | 4868 | 4160 | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 640 | 640 | 640 | 550 | 470 | 640 | 640 | 640 | 640 | 640 | 640 | 640 | 640 | 550 | 470 | | |
| | | in.lb | 5665 | 5665 | 5665 | 4868 | 4160 | 5665 | 5665 | 5665 | 5665 | 5665 | 5665 | 5665 | 5665 | 5665 | 4868 | 4160 | |
| Nominal torque (at n_n) | T_{2N} | Nm | 400 | 400 | 400 | 380 | 360 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 380 | 360 | | |
| | | in.lb | 3540 | 3540 | 3540 | 3363 | 3186 | 3540 | 3540 | 3540 | 3540 | 3540 | 3540 | 3540 | 3540 | 3540 | 3363 | 3186 | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 900 | 1050 | 1050 | 970 | 900 | 1050 | 1050 | 1050 | 1050 | 1050 | 1050 | 1050 | 1050 | 1050 | 970 | 900 | |
| | | in.lb | 7966 | 9293 | 9293 | 8585 | 7966 | 9293 | 9293 | 9293 | 9293 | 9293 | 9293 | 9293 | 9293 | 9293 | 8585 | 7966 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature ^{d)}) | n_{1N} | n_{1T} | 1400 | 1600 | 1800 | 1600 | 1600 | 2700 | 2700 | 2700 | 2700 | 2700 | 2700 | 2700 | 2700 | 2900 | 3200 | 3400 | |
| Max. input speed | n_{1Max} | rpm | 4500 | 4500 | 4500 | 4500 | 4500 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 20 | 17 | 18 | 19 | 16 | 3.6 | 2.8 | 2.2 | 1.9 | 1.6 | 1.4 | 1.1 | 1.1 | 1.1 | 1.1 | | |
| | | in.lb | 177 | 150 | 159 | 168 | 142 | 32 | 25 | 19 | 17 | 14 | 12 | 9.7 | 9.7 | 9.7 | 9.7 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 4 | | | | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 76 | 87 | 99 | 97 | 96 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 99 | 97 | 96 | | |
| | | in.lb/arcmin | 673 | 770 | 876 | 859 | 850 | 770 | 770 | 770 | 770 | 770 | 770 | 770 | 876 | 859 | 850 | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 14200 | | | | | | | | | | | | | | | | |
| | | lb _f | 3195 | | | | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 3213 | | | | | | | | | | | | | | | | |
| | | in.lb | 28438 | | | | | | | | | | | | | | | | |
| Efficiency at full load | η | % | 96 | | | | | 94 | | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 48 | | | | | 54 | | | | | | | | | | | |
| | | lb _m | 106 | | | | | 119 | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 68 | | | | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | | | | | |
| Ambient temperature | | °C | 0 to +40 | | | | | | | | | | | | | | | | |
| | | F | 32 to 104 | | | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BCT - 01500AAX - 125.000 | | | | | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 050.000 - 080.000 | | | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) | K | 38 | J_1 | kgcm ² | - | - | - | - | - | 16.8 | 14.8 | 12.9 | 12.3 | 11.2 | 10.9 | 10.3 | 10.1 | 10 | 9.93 |
| | | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | 14.87 | 13.1 | 11.42 | 10.89 | 9.91 | 9.65 | 9.12 | 8.94 | 8.85 | 8.79 |
| Clamping hub diameter [mm] | M | 48 | J_1 | kgcm ² | 96.5 | 64.6 | 50.5 | 38.2 | 31.8 | 31.5 | 29.5 | 27.6 | 27 | 25.9 | 25.6 | 25 | 24.8 | 24.7 | 24.6 |
| | | | | 10 ⁻³ in.lb.s ² | 85.4 | 57.17 | 44.69 | 33.81 | 28.14 | 27.88 | 26.11 | 24.43 | 23.9 | 22.92 | 22.66 | 22.13 | 21.95 | 21.86 | 21.77 |

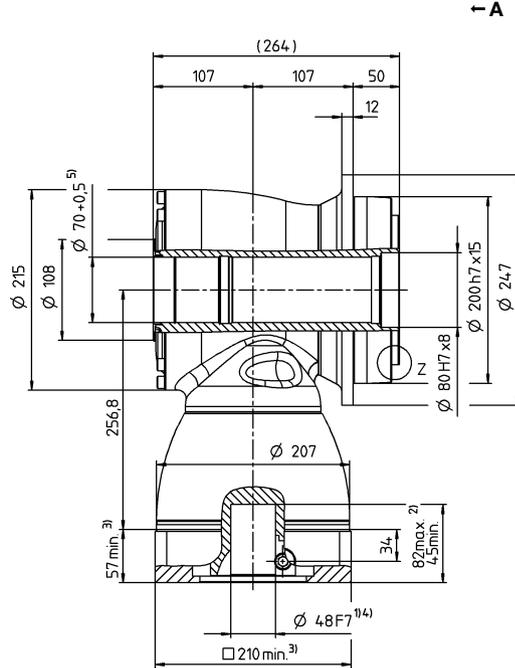
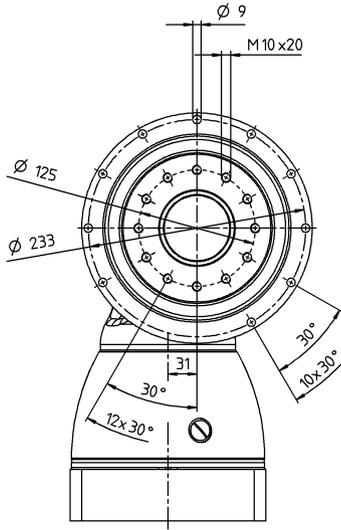
Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

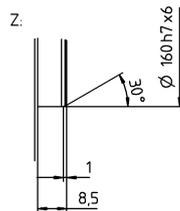
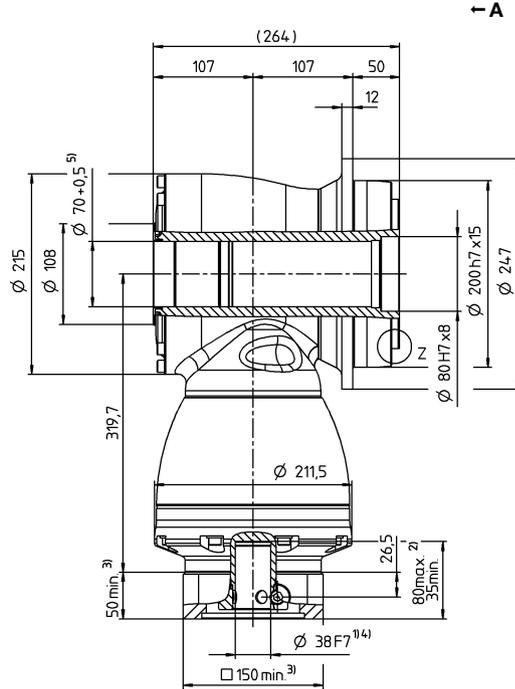
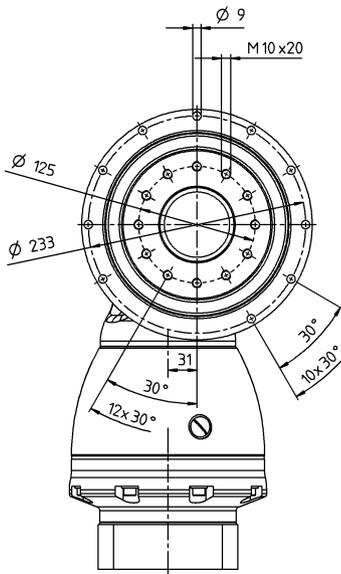
1-stage

up to 48⁴⁾ (M)⁶⁾
clamping hub diameter



2-stage

up to 38/48⁴⁾
(K⁶⁾/M) clamping hub diameter



Motor shaft diameter [mm]

Hypoid gearboxes

TK

See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Led through element max. Ø 69.8 mm

⁶⁾ Standard clamping hub diameter

TPK+ 010 MF 2-stage

| | | | 2-stage | | | | | | | | | | | | |
|--|-------------|-----------------|--------------------------------------|---------------------------------------|------|------|------|------|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 12 | 16 | 20 | 25 | 28 | 35 | 40 | 49 | 50 | 70 | 100 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 144 | 144 | 180 | 180 | 210 | 210 | 80 | 175 | 100 | 140 | 168 | | |
| | | in.lb | 1275 | 1275 | 1593 | 1593 | 1859 | 1859 | 708 | 1549 | 885 | 1239 | 1487 | | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 120 | 120 | 150 | 150 | 172 | 172 | 80 | 172 | 100 | 140 | 126 | | |
| | | in.lb | 1062 | 1062 | 1328 | 1328 | 1522 | 1522 | 708 | 1522 | 885 | 1239 | 1115 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 75 | 75 | 75 | 75 | 75 | 75 | 60 | 75 | 75 | 75 | 60 | | |
| | | in.lb | 664 | 664 | 664 | 664 | 664 | 664 | 531 | 664 | 664 | 664 | 531 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 160 | 200 | 250 | 250 | 251 | 251 | 160 | 251 | 200 | 251 | 251 | | |
| | | in.lb | 1416 | 1770 | 2213 | 2213 | 2222 | 2222 | 1416 | 2222 | 1770 | 2222 | 2222 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | 2000 | 2400 | 2400 | 2700 | 2400 | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 | | |
| Max. input speed | n_{1Max} | rpm | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 1.7 | 1.4 | 1.3 | 1.2 | 1.3 | 1.3 | 1.4 | 1.4 | 1.4 | 1.3 | 1.3 | | |
| | | in.lb | 15 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 5 / Reduced ≤ 3 | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 16 | 16 | 20 | 21 | 23 | 24 | 15 | 23 | 19 | 22 | 27 | | |
| | | in.lb/arcmin | 142 | 142 | 177 | 186 | 204 | 212 | 133 | 204 | 168 | 195 | 239 | | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 225 | | | | | | | | | | | | |
| | | in.lb/arcmin | 1991 | | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 2795 | | | | | | | | | | | | |
| | | lb _f | 629 | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 270 | | | | | | | | | | | | |
| | | in.lb | 2390 | | | | | | | | | | | | |
| Efficiency at full load | η | % | 94 | | | | | | | | | | | | |
| Service life ¹⁾ | L_h | h | > 20000 | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 5.2 | | | | | | | | | | | | |
| | | lb _m | 11 | | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 66 | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | |
| Ambient temperature | | °C | 0 to +40 | | | | | | | | | | | | |
| | | F | 32 to 104 | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BCT - 00060AAX - 050.000 | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 014.000 - 035.000 | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) | C | 14 | J_1 | kgcm ² | 0.55 | 0.46 | 0.44 | 0.39 | 0.43 | 0.36 | 0.34 | 0.37 | 0.34 | 0.34 | 0.34 |
| | | | | 10 ⁻³ in.lb.s ² | 0.49 | 0.41 | 0.39 | 0.35 | 0.38 | 0.32 | 0.3 | 0.33 | 0.3 | 0.3 | 0.3 |
| Clamping hub diameter [mm] | E | 19 | J_1 | kgcm ² | 0.9 | 0.81 | 0.79 | 0.75 | 0.78 | 0.71 | 0.7 | 0.72 | 0.7 | 0.69 | 0.69 |
| | | | | 10 ⁻³ in.lb.s ² | 0.8 | 0.72 | 0.7 | 0.66 | 0.69 | 0.63 | 0.62 | 0.64 | 0.62 | 0.61 | 0.61 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

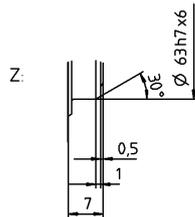
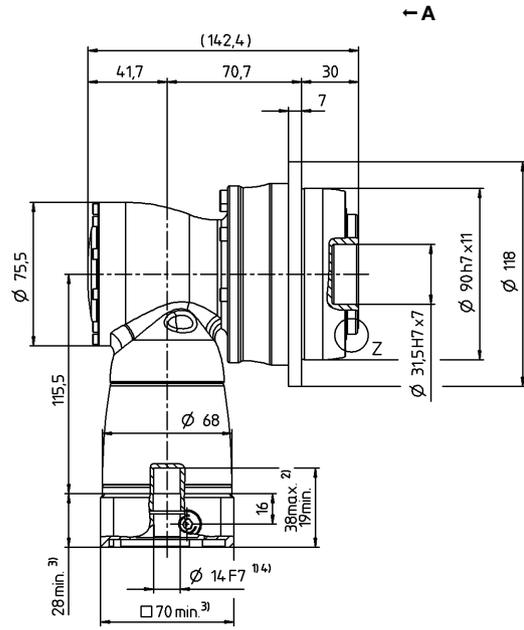
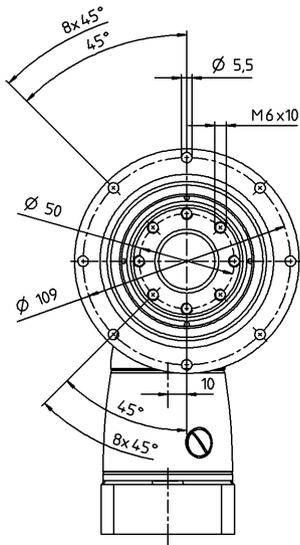
- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

Motor shaft diameter [mm]

2-stage

up to 14/19⁴⁾
(C⁵⁾ / E) clamping
hub diameter



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

- Non-tolerated dimensions are nominal dimensions
- ¹⁾ Check motor shaft fit
- ²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
- ³⁾ The dimensions depend on the motor
- ⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm
- ⁵⁾ Standard clamping hub diameter

TPK+ 010 MF 3-stage

| | | | 3-stage | | | | | | | | | | | | | |
|---|-------------|--|--------------------------------------|---------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 64 | 84 | 100 | 125 | 140 | 175 | 200 | 250 | 280 | 350 | 400 | 500 | 700 | 1000 |
| Max. torque ^{a) b)} | T_{2a} | Nm | 144 | 144 | 180 | 180 | 180 | 180 | 180 | 180 | 210 | 210 | 96 | 120 | 168 | 168 |
| | | in.lb | 1275 | 1275 | 1593 | 1593 | 1593 | 1593 | 1593 | 1593 | 1859 | 1859 | 850 | 1062 | 1487 | 1487 |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 120 | 120 | 150 | 150 | 150 | 150 | 150 | 150 | 172 | 172 | 80 | 100 | 140 | 126 |
| | | in.lb | 1062 | 1062 | 1328 | 1328 | 1328 | 1328 | 1328 | 1328 | 1522 | 1522 | 708 | 885 | 1239 | 1115 |
| Nominal torque (at n_n) | T_{2N} | Nm | 85 | 85 | 90 | 90 | 90 | 90 | 90 | 90 | 75 | 90 | 60 | 75 | 90 | 60 |
| | | in.lb | 752 | 752 | 797 | 797 | 797 | 797 | 797 | 797 | 664 | 797 | 531 | 664 | 797 | 531 |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 200 | 160 | 250 | 250 | 250 | 250 | 250 | 250 | 251 | 251 | 160 | 200 | 251 | 251 |
| | | in.lb | 1770 | 1416 | 2213 | 2213 | 2213 | 2213 | 2213 | 2213 | 2222 | 2222 | 1416 | 1770 | 2222 | 2222 |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | 4400 | 4400 | 4400 | 4400 | 4400 | 4400 | 4400 | 4800 | 4400 | 4800 | 5500 | 5500 | 5500 | 5500 |
| Max. input speed | n_{1Max} | rpm | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| | | in.lb | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 |
| Max. backlash | j_t | arcmin | Standard ≤ 5 / Reduced ≤ 3 | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 16 | 16 | 20 | 21 | 20 | 21 | 20 | 21 | 23 | 24 | 15 | 19 | 22 | 27 |
| | | in.lb/arcmin | 142 | 142 | 177 | 186 | 177 | 186 | 177 | 186 | 204 | 212 | 133 | 168 | 195 | 239 |
| Tilting rigidity | C_{2K} | Nm/arcmin | 225 | | | | | | | | | | | | | |
| | | in.lb/arcmin | 1991 | | | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 2795 | | | | | | | | | | | | | |
| | | lb _f | 629 | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 270 | | | | | | | | | | | | | |
| | | in.lb | 2390 | | | | | | | | | | | | | |
| Efficiency at full load | η | % | 92 | | | | | | | | | | | | | |
| Service life ¹⁾ | L_h | h | > 20000 | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 5.5 | | | | | | | | | | | | | |
| | | lb _m | 12 | | | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 66 | | | | | | | | | | | | | |
| | | °C | +90 | | | | | | | | | | | | | |
| Max. permitted housing temperature | | F | 194 | | | | | | | | | | | | | |
| | | °C | 0 to +40 | | | | | | | | | | | | | |
| Ambient temperature | | F | 32 to 104 | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BCT - 00060AAX - 050.000 | | | | | | | | | | | | | |
| | | Bore diameter of coupling on the application side | mm | X = 014.000 - 035.000 | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) | B | 11 | J_1 | kgcm ² | 0.09 | 0.07 | 0.08 | 0.07 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| | | | | 10 ⁻³ in.lb.s ² | 0.08 | 0.06 | 0.07 | 0.06 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| Clamping hub diameter [mm] | C | 14 | J_1 | kgcm ² | 0.2 | 0.18 | 0.19 | 0.19 | 0.18 | 0.18 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | |
| | | | | 10 ⁻³ in.lb.s ² | 0.18 | 0.16 | 0.17 | 0.17 | 0.16 | 0.16 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

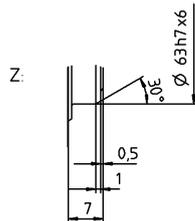
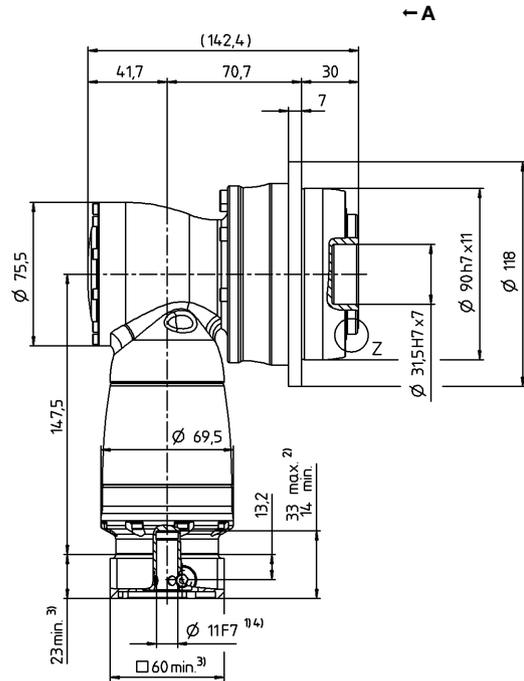
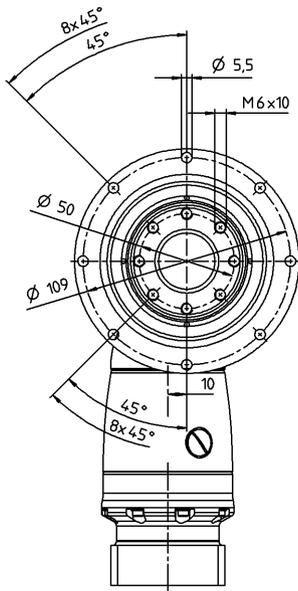
- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

Motor shaft diameter [mm]

3-stage

up to 11/14⁴⁾
(B⁵⁾/C) clamping
hub diameter



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions
1) Check motor shaft fit

2) Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

3) The dimensions depend on the motor

4) Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

5) Standard clamping hub diameter

TPK+ 025 MF 2-stage

| | | | 2-stage | | | | | | | | | | | | |
|---|-------------|-----------------|--------------------------------------|---------------------------------------|------|------|------|------|------|------|------|------|------|------|------|
| Ratio | i | | 12 | 16 | 20 | 25 | 28 | 35 | 40 | 49 | 50 | 70 | 100 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 336 | 336 | 380 | 380 | 352 | 352 | 200 | 352 | 250 | 350 | 352 | | |
| | | in.lb | 2974 | 2974 | 3363 | 3363 | 3115 | 3115 | 1770 | 3115 | 2213 | 3098 | 3115 | | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 280 | 280 | 350 | 350 | 352 | 352 | 200 | 352 | 250 | 350 | 318 | | |
| | | in.lb | 2478 | 2478 | 3098 | 3098 | 3115 | 3115 | 1770 | 3115 | 2213 | 3098 | 2815 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 170 | 170 | 170 | 170 | 170 | 170 | 160 | 170 | 170 | 170 | 120 | | |
| | | in.lb | 1505 | 1505 | 1505 | 1505 | 1505 | 1505 | 1416 | 1505 | 1505 | 1505 | 1062 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 380 | 460 | 575 | 575 | 625 | 625 | 400 | 625 | 500 | 625 | 625 | | |
| | | in.lb | 3363 | 4071 | 5089 | 5089 | 5532 | 5532 | 3540 | 5532 | 4425 | 5532 | 5532 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | 2000 | 2400 | 2400 | 2700 | 2400 | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 | | |
| Max. input speed | n_{1Max} | rpm | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 2.5 | 2.1 | 2 | 1.8 | 2 | 2.2 | 2 | 2.2 | 2 | 2 | 2 | | |
| | | in.lb | 22 | 19 | 18 | 16 | 18 | 19 | 18 | 19 | 18 | 18 | 18 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 4 / Reduced ≤ 2 | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 40 | 42 | 53 | 55 | 59 | 60 | 44 | 60 | 55 | 60 | 56 | | |
| | | in.lb/arcmin | 354 | 372 | 469 | 487 | 522 | 531 | 389 | 531 | 487 | 531 | 496 | | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 550 | | | | | | | | | | | | |
| | | in.lb/arcmin | 4868 | | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 4800 | | | | | | | | | | | | |
| | | lb _f | 1080 | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 440 | | | | | | | | | | | | |
| | | in.lb | 3894 | | | | | | | | | | | | |
| Efficiency at full load | η | % | 94 | | | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 9 | | | | | | | | | | | | |
| | | lb _m | 20 | | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 68 | | | | | | | | | | | | |
| | | °C | +90 | | | | | | | | | | | | |
| Max. permitted housing temperature | F | °C | 194 | | | | | | | | | | | | |
| | | °C | 0 to +40 | | | | | | | | | | | | |
| Ambient temperature | F | °C | 32 to 104 | | | | | | | | | | | | |
| | | °C | 32 to 104 | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BCT - 00150AAX - 063.000 | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 019.000 - 042.000 | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) | E | 19 | J_1 | kgcm ² | 1.43 | 1.18 | 1.16 | 1.04 | 1.14 | 0.94 | 0.89 | 0.95 | 0.89 | 0.89 | 0.89 |
| | | | | 10 ⁻³ in.lb.s ² | 1.27 | 1.04 | 1.03 | 0.92 | 1.01 | 0.83 | 0.79 | 0.84 | 0.79 | 0.79 | 0.79 |
| Clamping hub diameter [mm] | H | 28 | J_1 | kgcm ² | 2.85 | 2.59 | 2.57 | 2.45 | 2.56 | 2.4 | 2.31 | 2.37 | 2.3 | 2.3 | 2.3 |
| | | | | 10 ⁻³ in.lb.s ² | 2.52 | 2.29 | 2.27 | 2.17 | 2.27 | 2.12 | 2.04 | 2.1 | 2.04 | 2.04 | 2.04 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

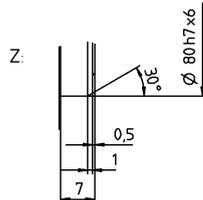
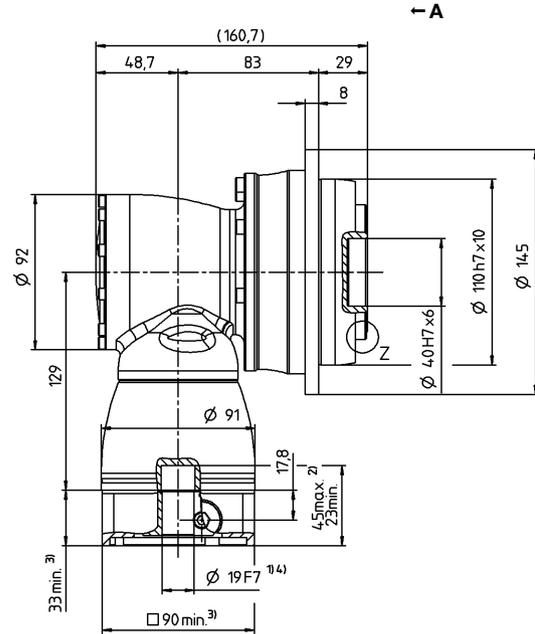
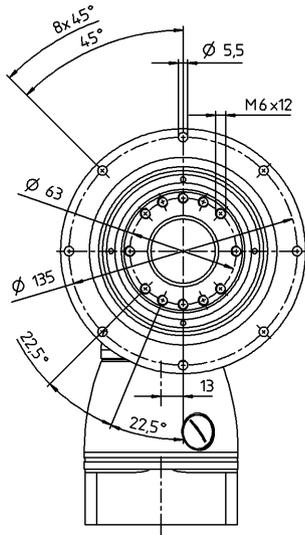
- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

Motor shaft diameter [mm]

2-stage

up to 19/28⁴⁾
(E⁵⁾/H) clamping
hub diameter



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

- Non-tolerated dimensions are nominal dimensions
- ¹⁾ Check motor shaft fit
- ²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
- ³⁾ The dimensions depend on the motor
- ⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm
- ⁵⁾ Standard clamping hub diameter

TPK+ 025 MF 3-stage

| | | | 3-stage | | | | | | | | | | | | | | |
|---|-------------|--|--------------------------------------|---------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 64 | 84 | 100 | 125 | 140 | 175 | 200 | 250 | 280 | 350 | 400 | 500 | 700 | 1000 | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 336 | 336 | 380 | 380 | 380 | 380 | 380 | 380 | 352 | 352 | 240 | 300 | 352 | 352 | |
| | | in.lb | 2974 | 2974 | 3363 | 3363 | 3363 | 3363 | 3363 | 3363 | 3363 | 3115 | 3115 | 2124 | 2655 | 3115 | 3115 |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 280 | 280 | 350 | 350 | 350 | 350 | 350 | 350 | 352 | 352 | 200 | 250 | 350 | 318 | |
| | | in.lb | 2478 | 2478 | 3098 | 3098 | 3098 | 3098 | 3098 | 3098 | 3098 | 3115 | 3115 | 1770 | 2213 | 3098 | 2815 |
| Nominal torque (at n_n) | T_{2N} | Nm | 200 | 170 | 200 | 200 | 200 | 200 | 200 | 200 | 210 | 200 | 160 | 200 | 200 | 120 | |
| | | in.lb | 1770 | 1505 | 1770 | 1770 | 1770 | 1770 | 1770 | 1770 | 1859 | 1770 | 1416 | 1770 | 1770 | 1062 | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 460 | 380 | 575 | 575 | 575 | 575 | 575 | 575 | 625 | 625 | 400 | 500 | 625 | 625 | |
| | | in.lb | 4071 | 3363 | 5089 | 5089 | 5089 | 5089 | 5089 | 5089 | 5532 | 5532 | 3540 | 4425 | 5532 | 5532 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3800 | 3500 | 3800 | 4500 | 4500 | 4500 | 4500 | |
| Max. input speed | n_{1Max} | rpm | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 0.6 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | |
| | | in.lb | 5.3 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | |
| Max. backlash | j_t | arcmin | Standard ≤ 4 / Reduced ≤ 2 | | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 42 | 40 | 53 | 55 | 53 | 55 | 53 | 55 | 59 | 60 | 44 | 55 | 60 | 56 | |
| | | in.lb/arcmin | 372 | 354 | 469 | 487 | 469 | 487 | 469 | 487 | 522 | 531 | 389 | 487 | 531 | 496 | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 550 | | | | | | | | | | | | | | |
| | | in.lb/arcmin | 4868 | | | | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 4800 | | | | | | | | | | | | | | |
| | | lb _f | 1080 | | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 440 | | | | | | | | | | | | | | |
| | | in.lb | 3894 | | | | | | | | | | | | | | |
| Efficiency at full load | η | % | 92 | | | | | | | | | | | | | | |
| Service life ¹⁾ | L_h | h | > 20000 | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 9.8 | | | | | | | | | | | | | | |
| | | lb _m | 22 | | | | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 68 | | | | | | | | | | | | | | |
| | | °C | +90 | | | | | | | | | | | | | | |
| Max. permitted housing temperature | | F | 194 | | | | | | | | | | | | | | |
| | | °C | 0 to +40 | | | | | | | | | | | | | | |
| Ambient temperature | | F | 32 to 104 | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BCT - 00150AAX - 063.000 | | | | | | | | | | | | | | |
| | | Bore diameter of coupling on the application side | mm | X = 019.000 - 042.000 | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) | C | 14 | J_1 | kgcm ² | 0.28 | 0.23 | 0.24 | 0.23 | 0.21 | 0.2 | 0.19 | 0.18 | 0.19 | 0.18 | 0.18 | 0.18 | 0.18 |
| | | | | 10 ⁻³ in.lb.s ² | 0.25 | 0.2 | 0.21 | 0.2 | 0.19 | 0.18 | 0.17 | 0.16 | 0.17 | 0.16 | 0.16 | 0.16 | 0.16 |
| Clamping hub diameter [mm] | E | 19 | J_1 | kgcm ² | 0.72 | 0.63 | 0.68 | 0.68 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | |
| | | | | 10 ⁻³ in.lb.s ² | 0.64 | 0.56 | 0.6 | 0.6 | 0.56 | 0.56 | 0.56 | 0.56 | 0.56 | 0.56 | 0.56 | 0.56 | |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

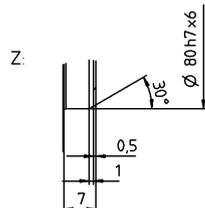
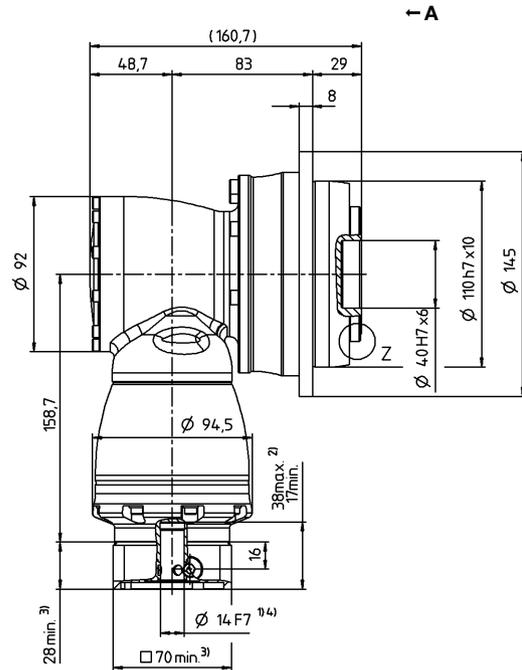
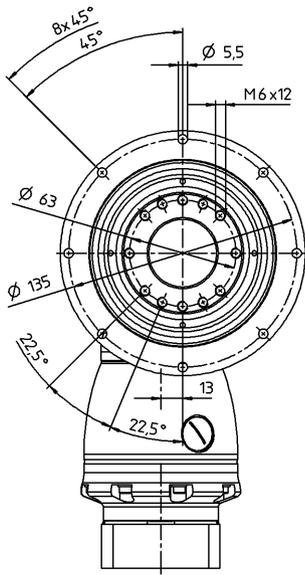
- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

Motor shaft diameter [mm]

3-stage

up to 14/19⁴⁾
(C⁵⁾/E) clamping
hub diameter



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

- Non-tolerated dimensions are nominal dimensions
- ¹⁾ Check motor shaft fit
- ²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
- ³⁾ The dimensions depend on the motor
- ⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm
- ⁵⁾ Standard clamping hub diameter

TPK+ 050 MF 2-stage

| | | | 2-stage | | | | | | | | | | | | |
|---|-------------|-----------------|--------------------------------------|---------------------------------------|-------|-------|-------|-------|------|-------|-------|-------|-------|------|------|
| Ratio | <i>i</i> | | 12 | 16 | 20 | 25 | 28 | 35 | 40 | 49 | 50 | 70 | 100 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 816 | 816 | 992 | 992 | 868 | 868 | 500 | 868 | 625 | 868 | 720 | | |
| | | in.lb | 7222 | 7222 | 8780 | 8780 | 7682 | 7682 | 4425 | 7682 | 5532 | 7682 | 6373 | | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 680 | 680 | 840 | 840 | 840 | 840 | 500 | 840 | 625 | 840 | 648 | | |
| | | in.lb | 6019 | 6019 | 7435 | 7435 | 7435 | 7435 | 4425 | 7435 | 5532 | 7435 | 5735 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 370 | 370 | 370 | 370 | 370 | 370 | 320 | 370 | 370 | 370 | 240 | | |
| | | in.lb | 3275 | 3275 | 3275 | 3275 | 3275 | 3275 | 2832 | 3275 | 3275 | 3275 | 2124 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 880 | 1040 | 1250 | 1250 | 1250 | 1250 | 1000 | 1250 | 1250 | 1250 | 1250 | | |
| | | in.lb | 7789 | 9205 | 11064 | 11064 | 11064 | 11064 | 8851 | 11064 | 11064 | 11064 | 11064 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | 1900 | 2300 | 2300 | 2600 | 2300 | 2300 | 2300 | 2300 | 2300 | 2300 | 2300 | | |
| Max. input speed | n_{1Max} | rpm | 5500 | 5500 | 5500 | 5500 | 5500 | 5500 | 5500 | 5500 | 5500 | 5500 | 5500 | | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 5.6 | 4.3 | 4.2 | 3.4 | 4.1 | 4.7 | 3.3 | 4.1 | 3.3 | 3.3 | 3.3 | | |
| | | in.lb | 50 | 38 | 37 | 30 | 36 | 42 | 29 | 36 | 29 | 29 | 29 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 4 / Reduced ≤ 2 | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 87 | 91 | 111 | 119 | 123 | 127 | 96 | 127 | 115 | 125 | 112 | | |
| | | in.lb/arcmin | 770 | 805 | 982 | 1053 | 1089 | 1124 | 850 | 1124 | 1018 | 1106 | 991 | | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 560 | | | | | | | | | | | | |
| | | in.lb/arcmin | 4956 | | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 6130 | | | | | | | | | | | | |
| | | lb _f | 1379 | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 1335 | | | | | | | | | | | | |
| | | in.lb | 11816 | | | | | | | | | | | | |
| Efficiency at full load | η | % | 94 | | | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 17 | | | | | | | | | | | | |
| | | lb _m | 38 | | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 68 | | | | | | | | | | | | |
| | | °C | +90 | | | | | | | | | | | | |
| Max. permitted housing temperature | | F | 194 | | | | | | | | | | | | |
| | | °C | 0 to +40 | | | | | | | | | | | | |
| Ambient temperature | | F | 32 to 104 | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BCT - 00300AAX - 080.000 | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 024.000 - 060.000 | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) | H | 28 | J_1 | kgcm ² | 4.56 | 3.76 | 3.71 | 3.28 | 3.66 | 3 | 2.79 | 3.1 | 2.78 | 2.77 | 2.77 |
| | | | | 10 ⁻³ in.lb.s ² | 4.04 | 3.33 | 3.28 | 2.9 | 3.24 | 2.66 | 2.47 | 2.74 | 2.46 | 2.45 | 2.45 |
| Clamping hub diameter [mm] | K | 38 | J_1 | kgcm ² | 11.7 | 10.9 | 10.9 | 10.4 | 10.8 | 10.3 | 9.95 | 10.4 | 9.94 | 9.94 | 9.94 |
| | | | | 10 ⁻³ in.lb.s ² | 10.35 | 9.65 | 9.65 | 9.2 | 9.56 | 9.12 | 8.81 | 9.2 | 8.8 | 8.8 | 8.8 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

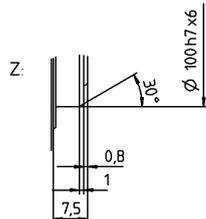
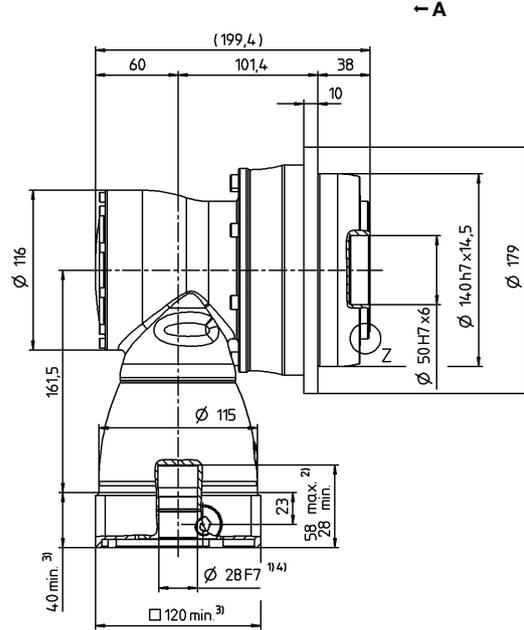
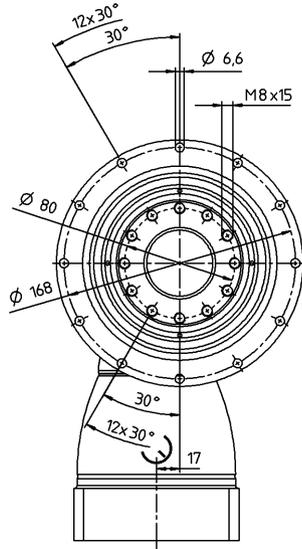
- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

Motor shaft diameter [mm]

2-stage

up to 28/38⁴⁾
(H⁵⁾/K) clamping
hub diameter



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions

- ¹⁾ Check motor shaft fit
- ²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
- ³⁾ The dimensions depend on the motor
- ⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm
- ⁵⁾ Standard clamping hub diameter

TPK+ 050 MF 3-stage

| | | | 3-stage | | | | | | | | | | | | | |
|---|-------------|-----------------|---------------------------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|-------|
| Ratio | i | | 64 | 84 | 100 | 125 | 140 | 175 | 200 | 250 | 280 | 350 | 400 | 500 | 700 | 1000 |
| Max. torque ^{a) b)} | T_{2a} | Nm | 816 | 816 | 992 | 992 | 992 | 992 | 992 | 992 | 868 | 868 | 600 | 750 | 868 | 720 |
| | | in.lb | 7222 | 7222 | 8780 | 8780 | 8780 | 8780 | 8780 | 8780 | 8780 | 7682 | 7682 | 5310 | 6638 | 7682 |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 680 | 680 | 840 | 840 | 840 | 840 | 840 | 840 | 840 | 840 | 500 | 625 | 840 | 648 |
| | | in.lb | 6019 | 6019 | 7435 | 7435 | 7435 | 7435 | 7435 | 7435 | 7435 | 7435 | 4425 | 5532 | 7435 | 5735 |
| Nominal torque (at n_n) | T_{2N} | Nm | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 320 | 370 | 400 | 240 |
| | | in.lb | 3540 | 3540 | 3540 | 3540 | 3540 | 3540 | 3540 | 3540 | 3540 | 3540 | 2832 | 3275 | 3540 | 2124 |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 1040 | 880 | 1250 | 1250 | 1250 | 1250 | 1250 | 1250 | 1250 | 1250 | 1000 | 1250 | 1250 | 1250 |
| | | in.lb | 9205 | 7789 | 11064 | 11064 | 11064 | 11064 | 11064 | 11064 | 11064 | 11064 | 8851 | 11064 | 11064 | 11064 |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | 3100 | 3100 | 3100 | 3100 | 3100 | 3100 | 3100 | 3500 | 3100 | 3500 | 4200 | 4200 | 4200 | 4200 |
| Max. input speed | n_{1Max} | rpm | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 1.1 | 0.9 | 0.9 | 0.75 | 0.75 | 0.6 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 |
| | | in.lb | 9.7 | 8.0 | 8.0 | 6.6 | 6.6 | 5.3 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Max. backlash | j_t | arcmin | Standard ≤ 4 / Reduced ≤ 2 | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 91 | 87 | 111 | 119 | 111 | 119 | 111 | 119 | 123 | 127 | 95 | 115 | 125 | 112 |
| | | in.lb/arcmin | 805 | 770 | 982 | 1053 | 982 | 1053 | 982 | 1053 | 1089 | 1124 | 841 | 1018 | 1106 | 991 |
| Tilting rigidity | C_{2K} | Nm/arcmin | 560 | | | | | | | | | | | | | |
| | | in.lb/arcmin | 4956 | | | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 6130 | | | | | | | | | | | | | |
| | | lb _f | 1379 | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 1335 | | | | | | | | | | | | | |
| | | in.lb | 11816 | | | | | | | | | | | | | |
| Efficiency at full load | η | % | 92 | | | | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 18.7 | | | | | | | | | | | | | |
| | | lb _m | 41 | | | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 68 | | | | | | | | | | | | | |
| | | °C | +90 | | | | | | | | | | | | | |
| Max. permitted housing temperature | | F | 194 | | | | | | | | | | | | | |
| | | °C | 0 to +40 | | | | | | | | | | | | | |
| Ambient temperature | | F | 32 to 104 | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BCT - 00300AAX - 080.000 | | | | | | | | | | | | | |
| | | mm | X = 024.000 - 060.000 | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) | E 19 | J_1 | kgcm ² | 1.01 | 0.76 | 0.88 | 0.85 | 0.76 | 0.75 | 0.7 | 0.69 | 0.7 | 0.69 | 0.69 | 0.69 | 0.69 |
| | | | 10 ⁻³ in.lb.s ² | 0.89 | 0.67 | 0.78 | 0.75 | 0.67 | 0.66 | 0.62 | 0.61 | 0.62 | 0.61 | 0.61 | 0.61 | 0.61 |
| Clamping hub diameter [mm] | G 24 | J_1 | kgcm ² | 2.57 | 2.32 | 2.44 | 2.42 | 2.32 | 2.31 | 2.26 | 2.25 | 2.26 | 2.25 | 2.25 | 2.25 | 2.25 |
| | | | 10 ⁻³ in.lb.s ² | 2.27 | 2.05 | 2.16 | 2.14 | 2.05 | 2.04 | 2 | 1.99 | 2 | 1.99 | 1.99 | 1.99 | 1.99 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

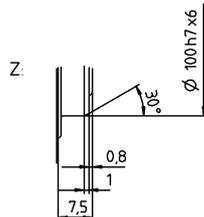
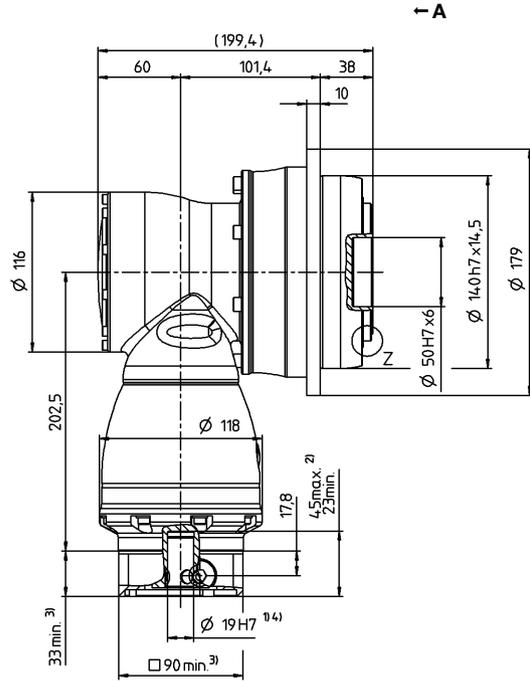
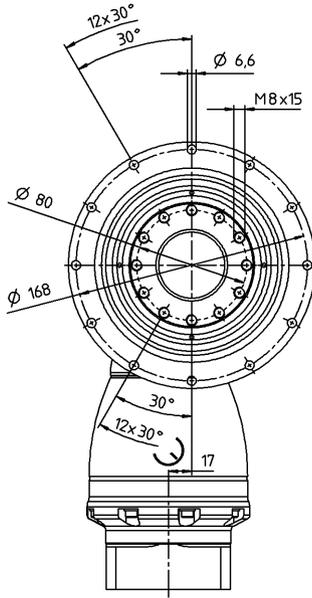
- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

Motor shaft diameter [mm]

3-stage

up to 19/24⁴⁾
(E⁵⁾/G) clamping
hub diameter



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions

- ¹⁾ Check motor shaft fit
- ²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
- ³⁾ The dimensions depend on the motor
- ⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm
- ⁵⁾ Standard clamping hub diameter

TPK+ 110 MF 2-stage

| | | | 2-stage | | | | | | | | | | | | |
|--|-------------|-----------------|--------------------------------------|---------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Ratio | i | | 12 | 16 | 20 | 25 | 28 | 35 | 40 | 49 | 50 | 70 | 100 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 1440 | 1440 | 1800 | 1800 | 2520 | 2520 | 840 | 1750 | 1050 | 1470 | 2100 | | |
| | | in.lb | 12745 | 12745 | 15931 | 15931 | 22304 | 22304 | 7435 | 15489 | 9293 | 13011 | 18587 | | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 1200 | 1200 | 1500 | 1500 | 1920 | 1920 | 840 | 1750 | 1050 | 1470 | 1680 | | |
| | | in.lb | 10621 | 10621 | 13276 | 13276 | 16994 | 16994 | 7435 | 15489 | 9293 | 13011 | 14869 | | |
| Nominal torque (at n_N) | T_{2N} | Nm | 700 | 700 | 750 | 750 | 750 | 750 | 640 | 750 | 750 | 750 | 750 | | |
| | | in.lb | 6196 | 6196 | 6638 | 6638 | 6638 | 6638 | 5665 | 6638 | 6638 | 6638 | 6638 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 1600 | 2000 | 2500 | 2500 | 3075 | 3075 | 1600 | 3075 | 2000 | 2800 | 3075 | | |
| | | in.lb | 14161 | 17702 | 22127 | 22127 | 27216 | 27216 | 14161 | 27216 | 17702 | 24782 | 27216 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | 1600 | 1900 | 1900 | 2100 | 1900 | 2100 | 2100 | 2100 | 2100 | 2100 | 2100 | | |
| Max. input speed | n_{1Max} | rpm | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 12 | 8.9 | 8.9 | 5.5 | 8.2 | 8 | 7.5 | 10 | 7.5 | 7.4 | 7.4 | | |
| | | in.lb | 106 | 79 | 79 | 49 | 73 | 71 | 66 | 89 | 66 | 65 | 65 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 4 / Reduced ≤ 2 | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 253 | 269 | 336 | 346 | 400 | 407 | 274 | 410 | 341 | 404 | 389 | | |
| | | in.lb/arcmin | 2239 | 2381 | 2974 | 3062 | 3540 | 3602 | 2425 | 3629 | 3018 | 3576 | 3443 | | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 1452 | | | | | | | | | | | | |
| | | in.lb/arcmin | 12851 | | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 10050 | | | | | | | | | | | | |
| | | lb _f | 2261 | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 3280 | | | | | | | | | | | | |
| | | in.lb | 29030 | | | | | | | | | | | | |
| Efficiency at full load | η | % | 94 | | | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 41 | | | | | | | | | | | | |
| | | lb _m | 91 | | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 70 | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | |
| Ambient temperature | | °C | 0 to +40 | | | | | | | | | | | | |
| | | F | 32 to 104 | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BCT - 01500AAX - 125.000 | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 050.000 - 080.000 | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | K | 38 | J_1 | kgcm ² | 24.3 | 19 | 18.7 | 16.1 | 18.5 | 15.7 | 12.8 | 17.5 | 12.7 | 12.7 | 12.7 |
| | | | | 10 ⁻³ in.lb.s ² | 21.51 | 16.82 | 16.55 | 14.25 | 16.37 | 13.89 | 11.33 | 15.49 | 11.24 | 11.24 | 11.24 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

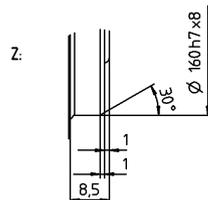
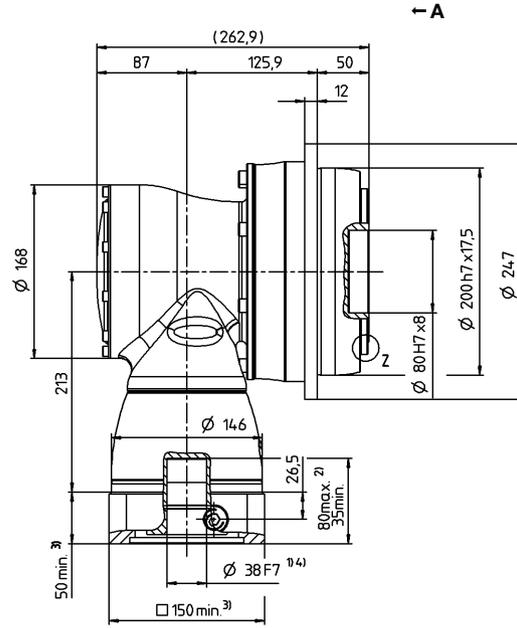
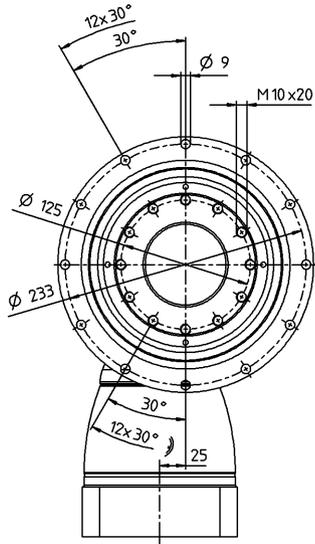
- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

Motor shaft diameter [mm]

2-stage

up to 38⁴⁾ (K)⁵⁾
clamping hub diameter



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

- Non-tolerated dimensions are nominal dimensions
- ¹⁾ Check motor shaft fit
- ²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
- ³⁾ The dimensions depend on the motor
- ⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm
- ⁵⁾ Standard clamping hub diameter

TPK+ 110 MF 3-stage

| | | | | 3-stage | | | | | | | | | | | | | |
|---|-------------|----------------|-------|--------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Ratio | i | | | 64 | 84 | 100 | 125 | 140 | 175 | 200 | 250 | 280 | 350 | 400 | 500 | 700 | 1000 |
| Max. torque ^{a) b)} | T_{2a} | Nm | | 1440 | 1440 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 2520 | 2520 | 1008 | 1260 | 1764 | 2240 |
| | | $in.lb$ | | 12745 | 12745 | 15931 | 15931 | 15931 | 15931 | 15931 | 15931 | 22304 | 22304 | 8922 | 11152 | 15613 | 19826 |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | | 1200 | 1200 | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 | 1920 | 1920 | 840 | 1050 | 1470 | 1680 |
| | | $in.lb$ | | 10621 | 10621 | 13276 | 13276 | 13276 | 13276 | 13276 | 13276 | 16994 | 16994 | 7435 | 9293 | 13011 | 14869 |
| Nominal torque (at n_n) | T_{2N} | Nm | | 700 | 700 | 950 | 950 | 950 | 950 | 950 | 950 | 1120 | 1250 | 640 | 750 | 1120 | 800 |
| | | $in.lb$ | | 6196 | 6196 | 8408 | 8408 | 8408 | 8408 | 8408 | 8408 | 9913 | 11064 | 5665 | 6638 | 9913 | 7081 |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | | 2000 | 1600 | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 | 3075 | 3075 | 1600 | 2000 | 2800 | 3075 |
| | | $in.lb$ | | 17702 | 14161 | 22127 | 22127 | 22127 | 22127 | 22127 | 22127 | 27216 | 27216 | 14161 | 17702 | 24782 | 27216 |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | | 2900 | 2900 | 2900 | 2900 | 2900 | 2900 | 2900 | 3200 | 2900 | 3200 | 3900 | 3900 | 3900 | 3900 |
| Max. input speed | n_{1Max} | rpm | | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 |
| Mean no load running torque ^{b)} (at $n_1 = 3000 rpm$ and 20 °C gearbox temperature) | T_{012} | Nm | | 3 | 1.5 | 2.4 | 1.8 | 1.8 | 1.5 | 1.5 | 1.2 | 1.5 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 |
| | | $in.lb$ | | 27 | 13 | 21 | 16 | 16 | 13 | 13 | 11 | 13 | 11 | 11 | 11 | 11 | 11 |
| Max. backlash | j_t | $arcmin$ | | Standard ≤ 4 / Reduced ≤ 2 | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | $Nm/arcmin$ | | 269 | 252 | 336 | 346 | 336 | 346 | 336 | 346 | 400 | 407 | 274 | 341 | 404 | 389 |
| | | $in.lb/arcmin$ | | 2381 | 2230 | 2974 | 3062 | 2974 | 3062 | 2974 | 3062 | 3540 | 3602 | 2425 | 3018 | 3576 | 3443 |
| Tilting rigidity | C_{2K} | $Nm/arcmin$ | | 1452 | | | | | | | | | | | | | |
| | | $in.lb/arcmin$ | | 12851 | | | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | | 10050 | | | | | | | | | | | | | |
| | | lb_f | | 2261 | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | | 3280 | | | | | | | | | | | | | |
| | | $in.lb$ | | 29030 | | | | | | | | | | | | | |
| Efficiency at full load | η | % | | 92 | | | | | | | | | | | | | |
| Service life ^{f)} | L_h | h | | > 20000 | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | | 45.4 | | | | | | | | | | | | | |
| | | lb_m | | 100 | | | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | $dB(A)$ | | ≤ 70 | | | | | | | | | | | | | |
| | | °C | | +90 | | | | | | | | | | | | | |
| Max. permitted housing temperature | F | °C | | 194 | | | | | | | | | | | | | |
| | | F | | 0 to +40 | | | | | | | | | | | | | |
| Ambient temperature | F | °C | | 32 to 104 | | | | | | | | | | | | | |
| | | F | | | | | | | | | | | | | | | |
| Lubrication | | | | Lubricated for life | | | | | | | | | | | | | |
| Direction of rotation | | | | In- and output opposite direction | | | | | | | | | | | | | |
| Protection class | | | | IP 65 | | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | | BCT - 01500AAX - 125.000 | | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | | X = 050.000 - 080.000 | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) | G | 24 | J_1 | $kgcm^2$ | 3.97 | 2.82 | 3.36 | 3.22 | 2.82 | 2.75 | 2.5 | 2.47 | 2.5 | 2.44 | 2.42 | 2.42 | 2.42 |
| | | | | $10^{-3} in.lb.s^2$ | 3.51 | 2.5 | 2.97 | 2.85 | 2.5 | 2.43 | 2.21 | 2.19 | 2.21 | 2.16 | 2.14 | 2.14 | 2.14 |
| Clamping hub diameter [mm] | K | 38 | J_1 | $kgcm^2$ | 10.9 | 9.74 | 10.3 | 10.1 | 9.74 | 9.66 | 9.41 | 9.38 | 9.41 | 9.38 | 9.33 | 9.33 | 9.33 |
| | | | | $10^{-3} in.lb.s^2$ | 9.65 | 8.62 | 9.12 | 8.94 | 8.62 | 8.55 | 8.33 | 8.3 | 8.33 | 8.3 | 8.26 | 8.26 | 8.26 |

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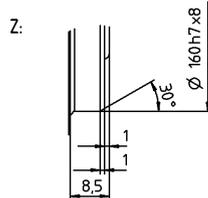
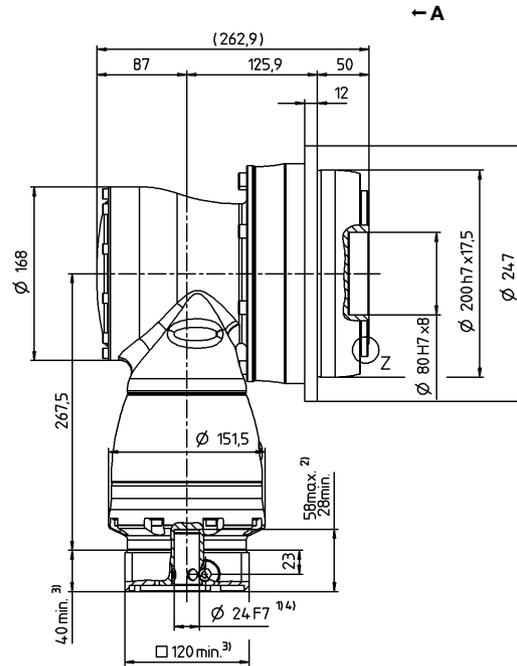
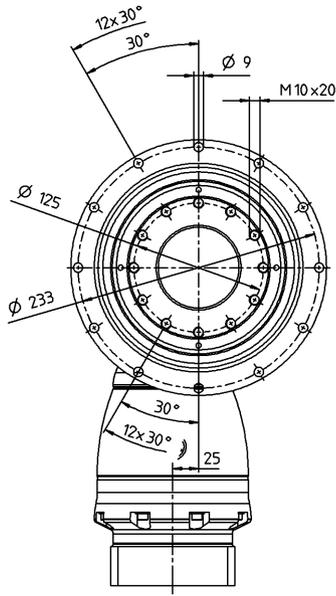
- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

Motor shaft diameter [mm]

3-stage

up to 24 / 38⁴⁾
(G⁵⁾ / K) clamping
hub diameter



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

- Non-tolerated dimensions are nominal dimensions
- ¹⁾ Check motor shaft fit
- ²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
- ³⁾ The dimensions depend on the motor
- ⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm
- ⁵⁾ Standard clamping hub diameter

TPK+ 300 MF 2-stage

| | | | 2-stage | | | | | | | | | |
|--|-------------|-----------------|--------------------------------------|---------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Ratio | <i>i</i> | | 15 | 20 | 25 | 35 | 49 | 50 | 70 | 100 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 3840 | 3840 | 3840 | 5250 | 3840 | 2350 | 3290 | 2800 | | |
| | | in.lb | 33987 | 33987 | 33987 | 46467 | 33987 | 20799 | 29119 | 24782 | | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 3200 | 3200 | 3200 | 3960 | 3850 | 2350 | 3290 | 2280 | | |
| | | in.lb | 28323 | 28323 | 28323 | 35049 | 34076 | 20799 | 29119 | 20180 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 2000 | 2000 | 2000 | 1800 | 1800 | 1800 | 1800 | 1600 | | |
| | | in.lb | 17702 | 17702 | 17702 | 15931 | 15931 | 15931 | 15931 | 14161 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 4500 | 5250 | 5250 | 7350 | 6790 | 4500 | 6300 | 8750 | | |
| | | in.lb | 39829 | 46467 | 46467 | 65053 | 60097 | 39829 | 55760 | 77445 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | 1500 | 1700 | 1900 | 1900 | 1700 | 1700 | 1700 | 1700 | | |
| Max. input speed | n_{1Max} | rpm | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 24 | 19 | 15 | 14 | 17 | 21 | 17 | 16 | | |
| | | in.lb | 212 | 168 | 133 | 124 | 150 | 186 | 150 | 142 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 4 / Reduced ≤ 2 | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 615 | 640 | 664 | 730 | 728 | 658 | 727 | 642 | | |
| | | in.lb/arcmin | 5443 | 5665 | 5877 | 6461 | 6443 | 5824 | 6435 | 5682 | | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 5560 | | | | | | | | | |
| | | in.lb/arcmin | 49210 | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 33000 | | | | | | | | | |
| | | lb _f | 7425 | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 5900 | | | | | | | | | |
| | | in.lb | 52220 | | | | | | | | | |
| Efficiency at full load | η | % | 94 | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 83 | | | | | | | | | |
| | | lb _m | 183 | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 71 | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | |
| | | F | 194 | | | | | | | | | |
| Ambient temperature | | °C | 0 to +40 | | | | | | | | | |
| | | F | 32 to 104 | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | - | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | - | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | M | 48 | J_1 | kgcm ² | 74 | 52 | 43 | 43 | 35 | 30 | 30 | 30 |
| | | | | 10 ⁻³ in.lb.s ² | 65.49 | 46.02 | 38.06 | 38.06 | 30.98 | 26.55 | 26.55 | 26.55 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

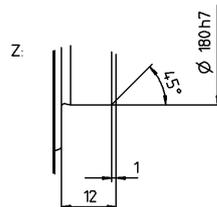
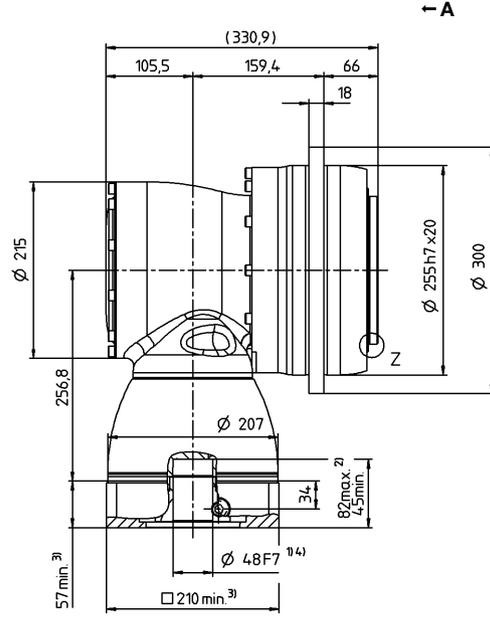
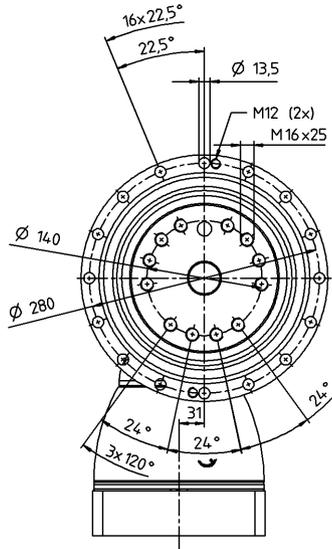
- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

Motor shaft diameter [mm]

2-stage

up to 48⁴⁾ (M)⁵⁾
clamping hub diameter



Hypoid gearboxes

TPK+

MF

See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions
¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

TPK+ 300 MF 3-stage

| | | | 3-stage | | | | | | | | | | | | | |
|---|-------------|-----------------|--------------------------------------|---------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Ratio | i | | 63 | 100 | 125 | 140 | 175 | 200 | 250 | 280 | 350 | 500 | 700 | 1000 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 5250 | 3840 | 3840 | 3840 | 3840 | 3840 | 3840 | 5250 | 5250 | 2820 | 3948 | 2800 | | |
| | | in.lb | 46467 | 33987 | 33987 | 33987 | 33987 | 33987 | 33987 | 33987 | 46467 | 46467 | 24959 | 34943 | 24782 | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 3960 | 3200 | 3200 | 3200 | 3200 | 3200 | 3200 | 3960 | 3960 | 2350 | 3290 | 2280 | | |
| | | in.lb | 35049 | 28323 | 28323 | 28323 | 28323 | 28323 | 28323 | 28323 | 35049 | 35049 | 20799 | 29119 | 20180 | |
| Nominal torque (at n_n) | T_{2N} | Nm | 1800 | 2000 | 2000 | 2000 | 2000 | 2000 | 2000 | 1800 | 1800 | 1800 | 1800 | 1600 | | |
| | | in.lb | 15931 | 17702 | 17702 | 17702 | 17702 | 17702 | 17702 | 17702 | 15931 | 15931 | 15931 | 15931 | 14161 | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 6300 | 5250 | 5250 | 5250 | 5250 | 5250 | 5250 | 7350 | 7350 | 4500 | 6300 | 8750 | | |
| | | in.lb | 55760 | 46467 | 46467 | 46467 | 46467 | 46467 | 46467 | 46467 | 65053 | 65053 | 39829 | 55760 | 77445 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | 2700 | 2700 | 2700 | 2700 | 2700 | 2700 | 2900 | 2700 | 2900 | 3400 | 3400 | 3400 | | |
| Max. input speed | n_{1Max} | rpm | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 11 | 6 | 5 | 4.2 | 3.8 | 3 | 2.8 | 2.6 | 2.4 | 2.2 | 2.2 | 2 | | |
| | | in.lb | 97 | 53 | 44 | 37 | 34 | 27 | 25 | 23 | 21 | 19 | 19 | 18 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 4 / Reduced ≤ 2 | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 699 | 640 | 664 | 640 | 664 | 640 | 664 | 715 | 730 | 658 | 727 | 642 | | |
| | | in.lb/arcmin | 6187 | 5665 | 5877 | 5665 | 5877 | 5665 | 5877 | 6328 | 6461 | 5824 | 6435 | 5682 | | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 5560 | | | | | | | | | | | | | |
| | | in.lb/arcmin | 49210 | | | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 33000 | | | | | | | | | | | | | |
| | | lb _f | 7425 | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 5900 | | | | | | | | | | | | | |
| | | in.lb | 52220 | | | | | | | | | | | | | |
| Efficiency at full load | η | % | 92 | | | | | | | | | | | | | |
| Service life ¹⁾ | L_h | h | > 20000 | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 87 | | | | | | | | | | | | | |
| | | lb _m | 192 | | | | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 71 | | | | | | | | | | | | | |
| | | °C | +90 | | | | | | | | | | | | | |
| Max. permitted housing temperature | | F | 194 | | | | | | | | | | | | | |
| | | °C | 0 to +40 | | | | | | | | | | | | | |
| Ambient temperature | | F | 32 to 104 | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | - | | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | - | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) | K | 38 | J_1 | kgcm ² | 17.8 | 14.1 | 12.1 | 11 | 10.8 | 10.2 | 10.1 | 10.1 | 10 | 9.9 | 9.9 | 9.9 |
| | | | | 10 ⁻³ in.lb.s ² | 15.75 | 12.48 | 10.71 | 9.74 | 9.56 | 9.03 | 8.94 | 8.94 | 8.85 | 8.76 | 8.76 | 8.76 |
| Clamping hub diameter [mm] | M | 48 | J_1 | kgcm ² | 32.5 | 28.8 | 26.8 | 25.7 | 25.5 | 24.9 | 24.8 | 24.9 | 24.8 | 24.6 | 24.6 | 24.6 |
| | | | | 10 ⁻³ in.lb.s ² | 28.76 | 25.49 | 23.72 | 22.74 | 22.57 | 22.04 | 21.95 | 22.04 | 21.95 | 21.77 | 21.77 | 21.77 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

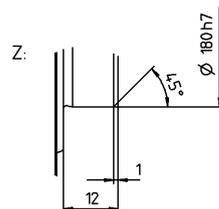
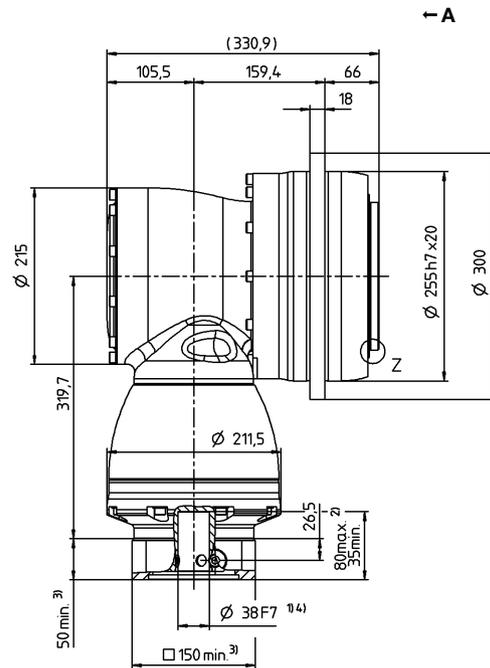
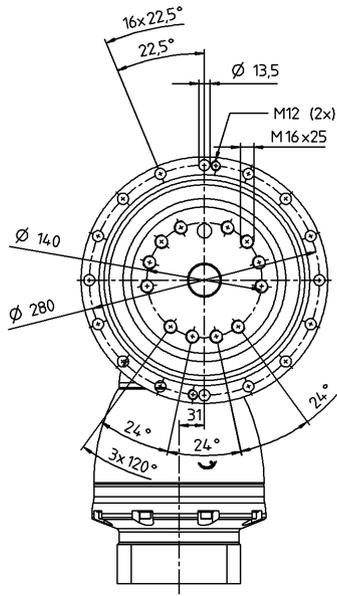
- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

Motor shaft diameter [mm]

3-stage

up to 38 / 48⁴⁾
(K⁵⁾ / M) clamping
hub diameter



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions
¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

TPK+ 500 MF 3-stage

| | | | 3-stage | | | | | |
|---|-------------|-----------------|--|-------|--------|--------|--------|-------|
| Ratio | i | | 100 | 175 | 350 | 500 | 1000 | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 5446 | 6250 | 6808 | 4975 | 4800 | |
| | | in.lb | 48201 | 55318 | 60256 | 44033 | 42484 | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 5446 | 6250 | 6808 | 4975 | 4800 | |
| | | in.lb | 48201 | 55318 | 60256 | 44033 | 42484 | |
| Nominal torque (at n_n) | T_{2N} | Nm | 3350 | 3800 | 3800 | 2900 | 2900 | |
| | | in.lb | 29650 | 33633 | 33633 | 25667 | 25667 | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 10000 | 11250 | 14000 | 15000 | 15000 | |
| | | in.lb | 88508 | 99572 | 123911 | 132762 | 132762 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | 2100 | 1900 | 1900 | 1900 | 1900 | |
| Max. input speed | n_{1Max} | rpm | 5000 | 5000 | 5000 | 5000 | 5000 | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 7.2 | 11 | 7.8 | 7.8 | 7.8 | |
| | | in.lb | 64 | 97 | 69 | 69 | 69 | |
| Max. backlash | j_t | arcmin | Standard ≤ 3.3 / Reduced ≤ 2.3 | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 1250 | 1350 | 1350 | 1280 | 1050 | |
| | | in.lb/arcmin | 11064 | 11949 | 11949 | 11329 | 9293 | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 9480 | | | | | |
| | | in.lb/arcmin | 83906 | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 50000 | | | | | |
| | | lb _f | 11250 | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 8800 | | | | | |
| | | in.lb | 77887 | | | | | |
| Efficiency at full load | η | % | 92 | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 96 | | | | | |
| | | lb _m | 212 | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 71 | | | | | |
| | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | |
| | | F | 194 | | | | | |
| Ambient temperature | | °C | 0 to +40 | | | | | |
| | | F | 32 to 104 | | | | | |
| Lubrication | | | Lubricated for life | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | |
| Protection class | | | IP 65 | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | - | | | | | |
| Bore diameter of coupling on the application side | | mm | - | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | K 38 | J_1 | kgcm ² | 16.7 | 16.5 | 16.4 | 16.4 | 16.4 |
| | | | 10 ⁻³ in.lb.s ² | 14.78 | 14.6 | 14.51 | 14.51 | 14.51 |

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Please contact us for optimum sizing at S1 conditions (Continuous operation).

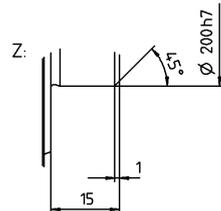
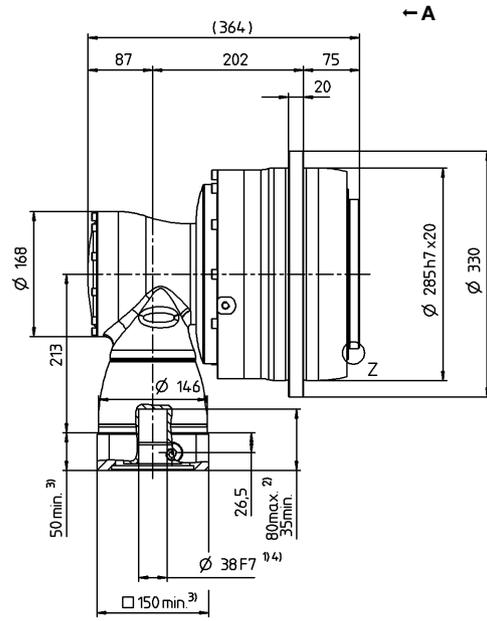
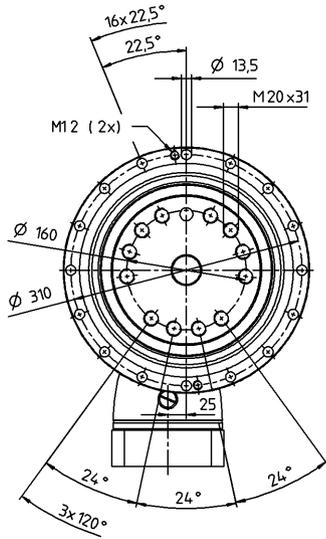
- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

Motor shaft diameter [mm]

3-stage

up to 38⁴⁾ (K)⁵⁾
clamping hub diameter



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

- Non-tolerated dimensions are nominal dimensions
- ¹⁾ Check motor shaft fit
- ²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
- ³⁾ The dimensions depend on the motor
- ⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm
- ⁵⁾ Standard clamping hub diameter

TPK+ 025 MA 3-/4-stage

| | | | 3-stage | | | | | | | 4-stage | | | | | | | | | |
|---|-------------|-----------------|---------------------------------------|---------------------------------------|------|-------|------|------|-------|---------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| Ratio | <i>i</i> | | 66 | 88 | 110 | 137.5 | 154 | 220 | 385 | 330 | 462 | 577.5 | 770 | 1078 | 1540 | 2695 | 3850 | 5500 | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 583 | 583 | 583 | 583 | 550 | 440 | 583 | 583 | 583 | 583 | 583 | 583 | 583 | 583 | 583 | 583 | |
| | | in.lb | 5160 | 5160 | 5160 | 5160 | 4868 | 3894 | 5160 | 5160 | 5160 | 5160 | 5160 | 5160 | 5160 | 5160 | 5160 | 5160 | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 530 | 530 | 530 | 530 | 530 | 440 | 530 | 530 | 530 | 530 | 530 | 530 | 530 | 530 | 530 | 530 | |
| | | in.lb | 4691 | 4691 | 4691 | 4691 | 4691 | 3894 | 4691 | 4691 | 4691 | 4691 | 4691 | 4691 | 4691 | 4691 | 4691 | 4691 | |
| Nominal torque (at n_n) | T_{2N} | Nm | 375 | 375 | 375 | 375 | 375 | 330 | 375 | 375 | 375 | 375 | 375 | 375 | 375 | 375 | 375 | 375 | |
| | | in.lb | 3319 | 3319 | 3319 | 3319 | 3319 | 2921 | 3319 | 3319 | 3319 | 3319 | 3319 | 3319 | 3319 | 3319 | 3319 | 3319 | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 880 | 1100 | 1100 | 1200 | 990 | 880 | 1200 | 880 | 1200 | 1200 | 1200 | 1200 | 1200 | 1200 | 1200 | 1200 | |
| | | in.lb | 7789 | 9736 | 9736 | 10621 | 8762 | 7789 | 10621 | 7789 | 10621 | 10621 | 10621 | 10621 | 10621 | 10621 | 10621 | 10621 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | 2400 | 2600 | 2900 | 2900 | 2900 | 2900 | 2900 | 4300 | 4300 | 4300 | 4300 | 4300 | 4300 | 5400 | 5400 | 5400 | |
| Max. input speed | n_{1Max} | rpm | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 1.4 | 1.2 | 1.2 | 1.4 | 1.6 | 1.6 | 1.2 | 0.45 | 0.45 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | |
| | | in.lb | 12 | 11 | 11 | 12 | 14 | 14 | 11 | 4.0 | 4.0 | 2.7 | 2.7 | 2.7 | 1.8 | 1.8 | 1.8 | 1.8 | |
| Max. backlash | j_t | arcmin | Standard ≤ 1.3 | | | | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 95 | 95 | 96 | 99 | 95 | 94 | 101 | 95 | 101 | 98 | 98 | 102 | 102 | 101 | 101 | 98 | |
| | | in.lb/arcmin | 841 | 841 | 850 | 876 | 841 | 832 | 894 | 841 | 894 | 867 | 867 | 903 | 903 | 894 | 894 | 867 | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 550 | | | | | | | | | | | | | | | | |
| | | in.lb/arcmin | 4868 | | | | | | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 4800 | | | | | | | | | | | | | | | | |
| | | lb _f | 1080 | | | | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 550 | | | | | | | | | | | | | | | | |
| | | in.lb | 4868 | | | | | | | | | | | | | | | | |
| Efficiency at full load | η | % | 92 | | | | | | | 90 | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 8.4 | | | | | | | 8.7 | | | | | | | | | |
| | | lb _m | 19 | | | | | | | 19 | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 66 | | | | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | | | | | |
| Ambient temperature | | °C | 0 to +40 | | | | | | | | | | | | | | | | |
| | | F | 32 to 104 | | | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BCT - 00300AAX - 063.000 | | | | | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 030.000 - 056.000 | | | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | B | 11 | J_1 | kgcm ² | - | - | - | - | - | - | 0.08 | 0.09 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | |
| | | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | - | 0.07 | 0.08 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| | C | 14 | J_1 | kgcm ² | 0.56 | 0.46 | 0.41 | 0.4 | 0.37 | 0.35 | 0.34 | 0.19 | 0.2 | 0.18 | 0.18 | 0.17 | 0.17 | 0.17 | 0.17 |
| | | | | 10 ⁻³ in.lb.s ² | 0.5 | 0.41 | 0.36 | 0.35 | 0.33 | 0.31 | 0.3 | 0.17 | 0.18 | 0.16 | 0.16 | 0.16 | 0.15 | 0.15 | 0.15 |
| E | 19 | J_1 | kgcm ² | 0.91 | 0.81 | 0.76 | 0.76 | 0.72 | 0.7 | 0.7 | - | - | - | - | - | - | - | - | |
| | | | 10 ⁻³ in.lb.s ² | 0.81 | 0.72 | 0.67 | 0.67 | 0.64 | 0.62 | 0.62 | - | - | - | - | - | - | - | - | - |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

^{a)} At max. 10 % M_{2KMax}

^{b)} Valid for standard clamping hub diameter

^{c)} Refers to center of the output shaft or flange

^{d)} Please reduce input speed at higher ambient temperatures

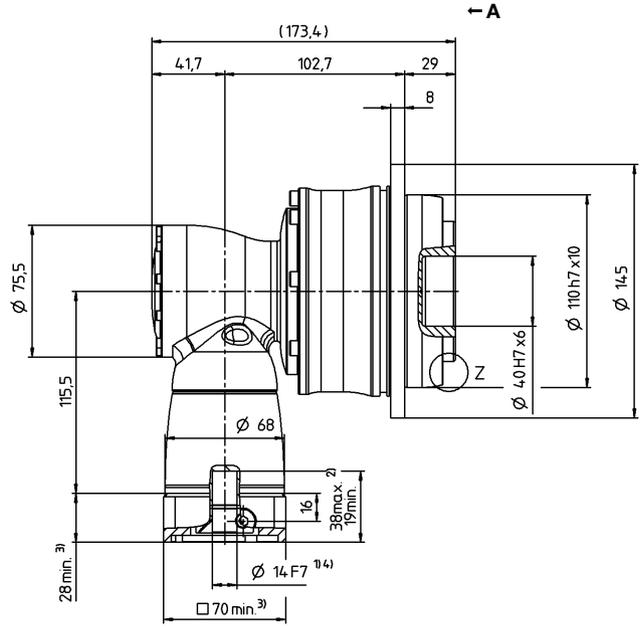
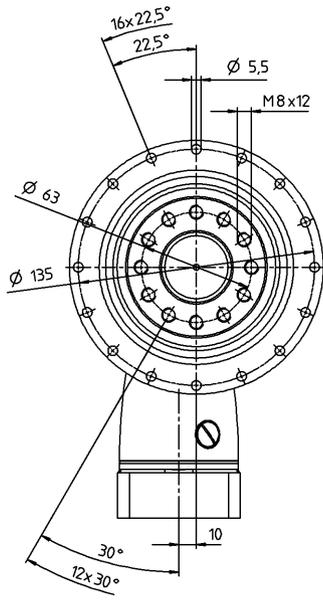
^{f)} Please contact us to discuss

application-specific service lifetimes

View A

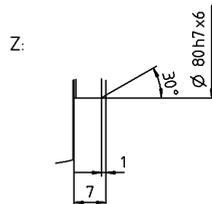
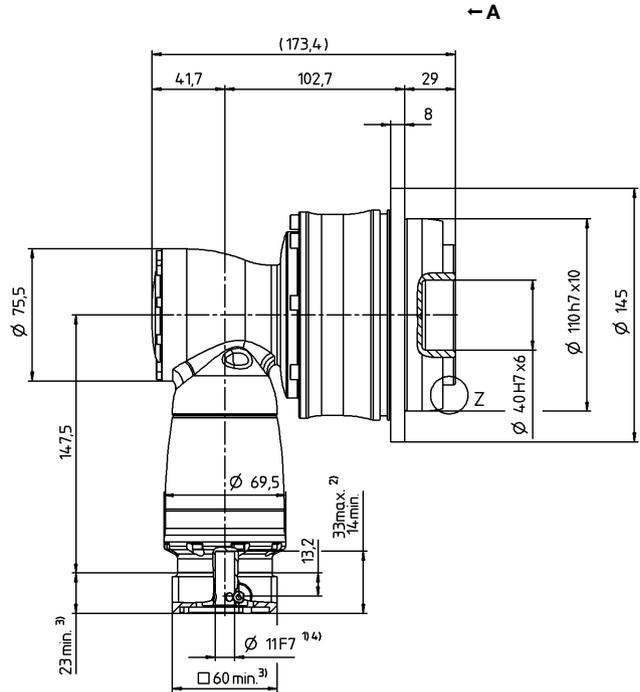
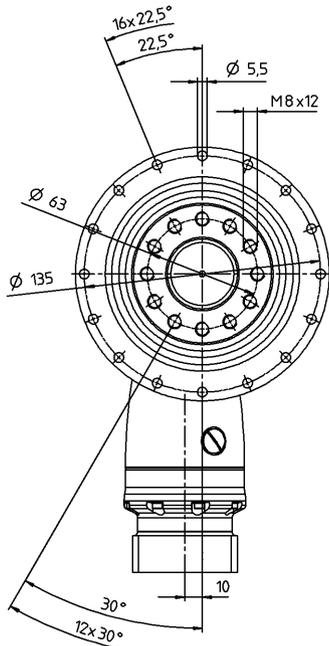
3-stage

up to 14/19⁴⁾
(C⁵⁾/E) clamping
hub diameter



4-stage

up to 11/14⁴⁾
(B⁵⁾/C) clamping
hub diameter



Motor shaft diameter [mm]

Hypoid gearboxes

TPK+

MA

See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions
1) Check motor shaft fit

2) Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

3) The dimensions depend on the motor

4) Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

5) Standard clamping hub diameter

TPK+ 050 MA 3-/4-stage

| | | | 3-stage | | | | | | | 4-stage | | | | | | | | | |
|--|-------------|-----------------|---------------------------------------|---------------------------------------|-------|-------|-------|-------|-------|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Ratio | <i>i</i> | | 66 | 88 | 110 | 137.5 | 154 | 220 | 385 | 330 | 462 | 577.5 | 770 | 1078 | 1540 | 2695 | 3850 | 5500 | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 1402 | 1402 | 1402 | 1402 | 1320 | 1100 | 1402 | 1402 | 1402 | 1402 | 1402 | 1402 | 1402 | 1402 | 1402 | 1402 | 1402 |
| | | in.lb | 12409 | 12409 | 12409 | 12409 | 11683 | 9736 | 12409 | 12409 | 12409 | 12409 | 12409 | 12409 | 12409 | 12409 | 12409 | 12409 | 12409 |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 992 | 992 | 992 | 992 | 992 | 992 | 992 | 992 | 992 | 992 | 992 | 992 | 992 | 992 | 992 | 992 | 992 |
| | | in.lb | 8780 | 8780 | 8780 | 8780 | 8780 | 8780 | 8780 | 8780 | 8780 | 8780 | 8780 | 8780 | 8780 | 8780 | 8780 | 8780 | 8780 |
| Nominal torque (at n_n) | T_{2N} | Nm | 675 | 675 | 675 | 675 | 675 | 675 | 675 | 675 | 675 | 675 | 675 | 675 | 675 | 675 | 675 | 675 | 675 |
| | | in.lb | 5974 | 5974 | 5974 | 5974 | 5974 | 5974 | 5974 | 5974 | 5974 | 5974 | 5974 | 5974 | 5974 | 5974 | 5974 | 5974 | 5974 |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 2090 | 2375 | 2375 | 2375 | 2375 | 2375 | 2375 | 2090 | 2375 | 2375 | 2375 | 2375 | 2375 | 2375 | 2375 | 2375 | 2375 |
| | | in.lb | 18498 | 21021 | 21021 | 21021 | 21021 | 21021 | 21021 | 18498 | 21021 | 21021 | 21021 | 21021 | 21021 | 21021 | 21021 | 21021 | 21021 |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | 2200 | 2400 | 2700 | 2700 | 2700 | 2700 | 2700 | 3400 | 3400 | 3400 | 3400 | 3400 | 3400 | 4400 | 4400 | 4400 | |
| Max. input speed | n_{1Max} | rpm | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 2.9 | 2.4 | 2 | 2.1 | 2.4 | 2.1 | 2 | 0.6 | 0.75 | 0.45 | 0.45 | 0.45 | 0.3 | 0.15 | 0.15 | 0.15 | |
| | | in.lb | 26 | 21 | 18 | 19 | 21 | 19 | 18 | 5.3 | 6.6 | 4.0 | 4.0 | 4.0 | 2.7 | 1.3 | 1.3 | 1.3 | |
| Max. backlash | j_t | arcmin | Standard ≤ 1.3 | | | | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 202 | 203 | 205 | 210 | 205 | 205 | 215 | 202 | 214 | 208 | 209 | 214 | 214 | 215 | 215 | 217 | |
| | | in.lb/arcmin | 1788 | 1797 | 1814 | 1859 | 1814 | 1814 | 1903 | 1788 | 1894 | 1841 | 1850 | 1894 | 1894 | 1903 | 1903 | 1921 | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 560 | | | | | | | | | | | | | | | | |
| | | in.lb/arcmin | 4956 | | | | | | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 6130 | | | | | | | | | | | | | | | | |
| | | lb _f | 1379 | | | | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 1335 | | | | | | | | | | | | | | | | |
| | | in.lb | 11816 | | | | | | | | | | | | | | | | |
| Efficiency at full load | η | % | 92 | | | | | | | 90 | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 16.9 | | | | | | | 17.5 | | | | | | | | | |
| | | lb _m | 37 | | | | | | | 39 | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 68 | | | | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | | | | | |
| Ambient temperature | | °C | 0 to +40 | | | | | | | | | | | | | | | | |
| | | F | 32 to 104 | | | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BCT - 00300AAX - 080.000 | | | | | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 045.000 - 056.000 | | | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | C | 14 | J_1 | kgcm ² | - | - | - | - | - | - | 0.24 | 0.29 | 0.2 | 0.2 | 0.2 | 0.19 | 0.18 | 0.18 | 0.18 |
| | | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | - | - | 0.21 | 0.26 | 0.18 | 0.18 | 0.18 | 0.17 | 0.16 | 0.16 |
| | E | 19 | J_1 | kgcm ² | 1.65 | 1.3 | 1.13 | 1.11 | 0.99 | 0.91 | 0.9 | 0.68 | 0.73 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 |
| | | | | 10 ⁻³ in.lb.s ² | 1.46 | 1.15 | 1 | 0.98 | 0.88 | 0.81 | 0.8 | 0.6 | 0.65 | 0.56 | 0.56 | 0.56 | 0.56 | 0.56 | 0.56 |
| H | 28 | J_1 | kgcm ² | 3.07 | 2.71 | 2.54 | 2.53 | 2.4 | 2.53 | 2.32 | - | - | - | - | - | - | - | - | |
| | | | 10 ⁻³ in.lb.s ² | 2.72 | 2.4 | 2.25 | 2.24 | 2.12 | 2.24 | 2.05 | - | - | - | - | - | - | - | - | - |

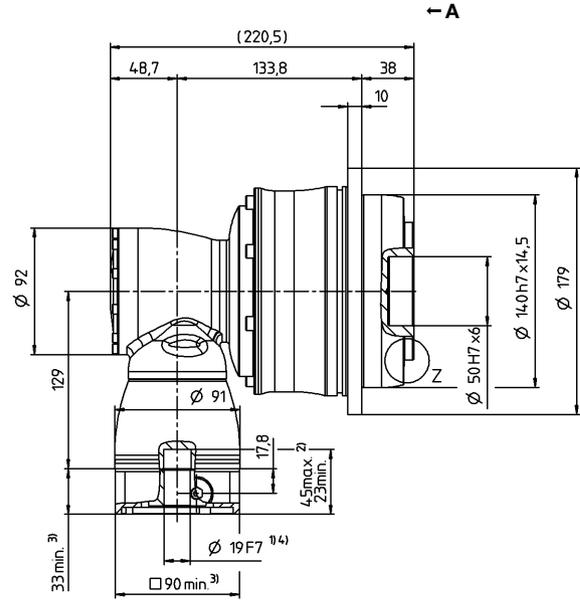
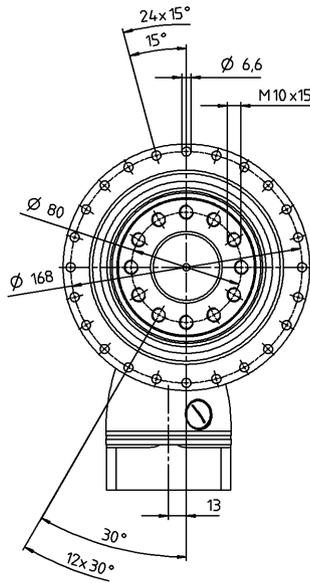
Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

3-stage

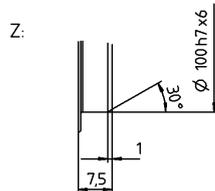
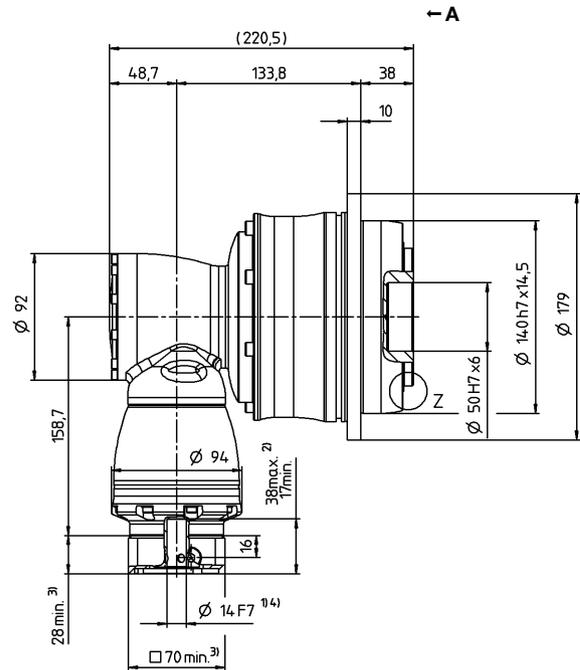
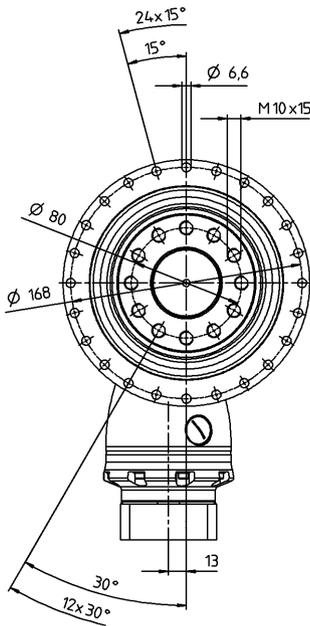
up to 19/28⁴⁾
(E⁵⁾/H) clamping
hub diameter



Motor shaft diameter [mm]

4-stage

up to 14/19⁴⁾
(C⁵⁾/E) clamping
hub diameter



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions
¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

Hypoid gearboxes

TPK+

MA

TPK+ 110 MA 3-/4-stage

| | | | 3-stage | | | | | | | 4-stage | | | | | | | | | |
|---|-------------|-----------------|-----------------------------------|---------------------------------------|-------|-------|-------|-------|-------|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Ratio | <i>i</i> | | 66 | 88 | 110 | 137.5 | 154 | 220 | 385 | 330 | 462 | 577.5 | 770 | 1078 | 1540 | 2695 | 3850 | 5500 | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 3822 | 3822 | 3822 | 3822 | 3190 | 2750 | 3822 | 3822 | 3822 | 3822 | 3822 | 3822 | 3822 | 3822 | 3822 | 3822 | 3200 |
| | | in.lb | 33828 | 33828 | 33828 | 33828 | 28234 | 24340 | 33828 | 33828 | 33828 | 33828 | 33828 | 33828 | 33828 | 33828 | 33828 | 33828 | 33828 |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 3100 | 3100 | 3100 | 3100 | 3100 | 2750 | 3100 | 3100 | 3100 | 3100 | 3100 | 3100 | 3100 | 3100 | 3100 | 3100 | 2400 |
| | | in.lb | 27437 | 27437 | 27437 | 27437 | 27437 | 24340 | 27437 | 27437 | 27437 | 27437 | 27437 | 27437 | 27437 | 27437 | 27437 | 27437 | 21242 |
| Nominal torque (at n_n) | T_{2N} | Nm | 1650 | 1650 | 1650 | 1650 | 1650 | 1650 | 1650 | 1650 | 1650 | 1650 | 1650 | 1650 | 1650 | 1650 | 1650 | 1650 | 1400 |
| | | in.lb | 14604 | 14604 | 14604 | 14604 | 14604 | 14604 | 14604 | 14604 | 14604 | 14604 | 14604 | 14604 | 14604 | 14604 | 14604 | 14604 | 12391 |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 4840 | 5720 | 5720 | 6500 | 5610 | 5500 | 6500 | 4840 | 6500 | 6050 | 6500 | 6500 | 6500 | 6500 | 6500 | 6500 | 6500 |
| | | in.lb | 42838 | 50627 | 50627 | 57530 | 49653 | 48679 | 57530 | 42838 | 57530 | 53547 | 57530 | 57530 | 57530 | 57530 | 57530 | 57530 | 57530 |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | 2100 | 2300 | 2600 | 2600 | 2400 | 2400 | 2400 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 4100 | 4100 | 4100 | |
| Max. input speed | n_{1Max} | rpm | 5500 | 5500 | 5500 | 5500 | 5500 | 5500 | 5500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 6 | 4.6 | 3.6 | 3.4 | 4.4 | 3.5 | 3.3 | 1.4 | 1.5 | 1.1 | 0.9 | 0.9 | 0.45 | 0.45 | 0.3 | 0.3 | |
| | | in.lb | 53 | 41 | 32 | 30 | 39 | 31 | 29 | 12 | 13 | 9.7 | 8.0 | 8.0 | 4.0 | 4.0 | 2.7 | 2.7 | |
| Max. backlash | j_t | arcmin | Standard ≤ 1.3 | | | | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | Nm/arcmin | 634 | 642 | 654 | 675 | 654 | 648 | 687 | 634 | 682 | 662 | 667 | 685 | 685 | 689 | 687 | 658 | |
| | | in.lb/arcmin | 5611 | 5682 | 5788 | 5974 | 5788 | 5735 | 6080 | 5611 | 6036 | 5859 | 5903 | 6063 | 6063 | 6098 | 6080 | 5824 | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 1452 | | | | | | | | | | | | | | | | |
| | | in.lb/arcmin | 12851 | | | | | | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 10050 | | | | | | | | | | | | | | | | |
| | | lb _f | 2261 | | | | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 3280 | | | | | | | | | | | | | | | | |
| | | in.lb | 29031 | | | | | | | | | | | | | | | | |
| Efficiency at full load | η | % | 92 | | | | | | | 90 | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 39.9 | | | | | | | 40.6 | | | | | | | | | |
| | | lb _m | 88 | | | | | | | 90 | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 70 | | | | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | | | | | |
| Ambient temperature | | °C | 0 to +40 | | | | | | | | | | | | | | | | |
| | | F | 32 to 104 | | | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BCT - 01500AAX - 125.000 | | | | | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 055.000 - 070.000 | | | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | E | 19 | J_1 | kgcm ² | - | - | - | - | - | - | 0.89 | 1.06 | 0.76 | 0.76 | 0.76 | 0.69 | 0.68 | 0.68 | 0.68 |
| | | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | - | 0.79 | 0.94 | 0.67 | 0.67 | 0.67 | 0.61 | 0.6 | 0.6 | 0.6 |
| | G | 24 | J_1 | kgcm ² | - | - | - | - | - | - | 2.46 | 2.63 | 2.33 | 2.32 | 2.32 | 2.26 | 2.25 | 2.25 | 2.25 |
| | | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | - | 2.18 | 2.33 | 2.06 | 2.05 | 2.05 | 2 | 1.99 | 1.99 | 1.99 |
| | H | 28 | J_1 | kgcm ² | 5.48 | 4.27 | 3.64 | 3.58 | 3.14 | 2.87 | 2.84 | - | - | - | - | - | - | - | - |
| | | | | 10 ⁻³ in.lb.s ² | 4.85 | 3.78 | 3.22 | 3.17 | 2.78 | 2.54 | 2.51 | - | - | - | - | - | - | - | - |
| | K | 38 | J_1 | kgcm ² | 12.72 | 11.52 | 10.89 | 10.83 | 10.39 | 10.12 | 10.09 | - | - | - | - | - | - | - | - |
| | | | | 10 ⁻³ in.lb.s ² | 11.26 | 10.2 | 9.64 | 9.58 | 9.2 | 8.96 | 8.93 | - | - | - | - | - | - | - | - |

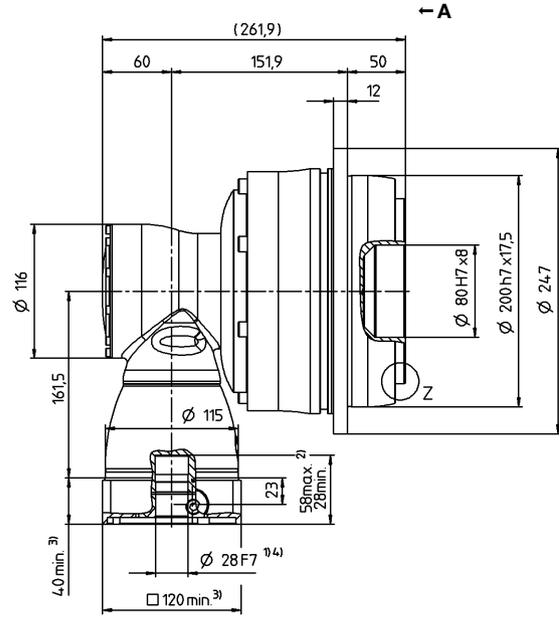
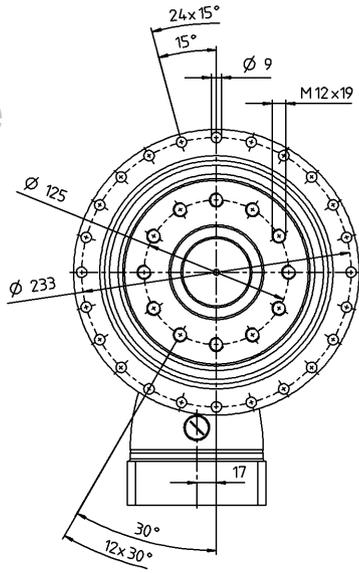
Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

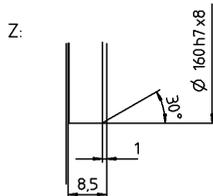
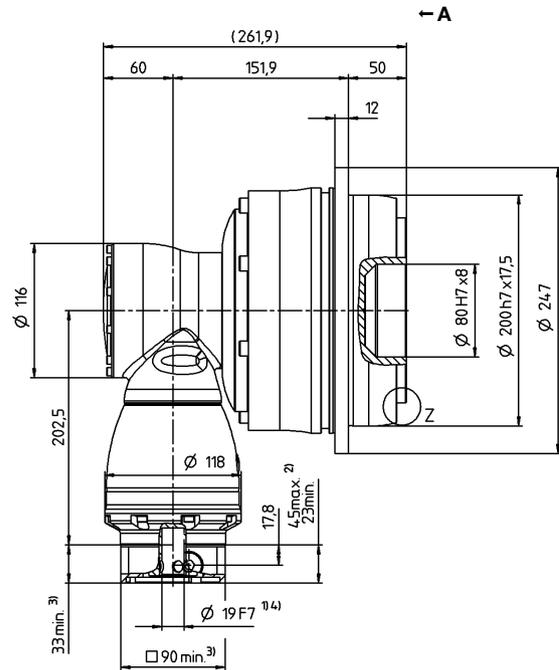
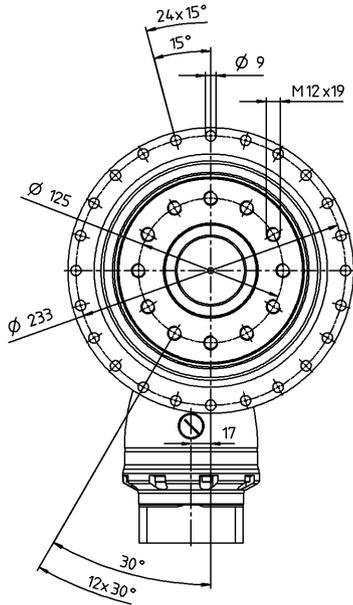
3-stage

up to 28/38⁴⁾
(H⁵⁾/K) clamping
hub diameter



4-stage

up to 19/24⁴⁾
(E⁵⁾/G) clamping
hub diameter



Motor shaft diameter [mm]

Hypoid gearboxes

TPK+

MA

See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions
¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

TPK+ 300 MA 3-/4-stage

| | | | 3-stage | | | | | | | 4-stage | | | | | | | | | |
|--|-------------|-----------------|--|-------|-------|--------|-------|-------|--------|---------|--------|-------|--------|--------|--------|--------|--------|--------|--------|
| Ratio | <i>i</i> | | 66 | 88 | 110 | 137.5 | 154 | 220 | 385 | 330 | 462 | 577.5 | 770 | 1078 | 1540 | 2695 | 3850 | 5500 | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 7535 | 7535 | 7535 | 7535 | 5500 | 4620 | 7535 | 7535 | 7535 | 7535 | 7535 | 7535 | 7535 | 7535 | 7535 | 7535 | 5473 |
| | | in.lb | 66691 | 66691 | 66691 | 66691 | 48679 | 40891 | 66691 | 66691 | 66691 | 66691 | 66691 | 66691 | 66691 | 66691 | 66691 | 66691 | 66691 |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 6600 | 6600 | 6600 | 6600 | 5500 | 4620 | 6600 | 6600 | 6600 | 6600 | 6600 | 6600 | 6600 | 6600 | 6600 | 6600 | 4680 |
| | | in.lb | 58415 | 58415 | 58415 | 58415 | 48679 | 40891 | 58415 | 58415 | 58415 | 58415 | 58415 | 58415 | 58415 | 58415 | 58415 | 58415 | 58415 |
| Nominal torque (at n_n) | T_{2N} | Nm | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 |
| | | in.lb | 30978 | 30978 | 30978 | 30978 | 30978 | 30978 | 30978 | 30978 | 30978 | 30978 | 30978 | 30978 | 30978 | 30978 | 30978 | 30978 | 30978 |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 8800 | 11000 | 11000 | 13750 | 9900 | 8800 | 15296 | 8800 | 15296 | 11000 | 13750 | 15296 | 15296 | 15296 | 15296 | 15296 | 15333 |
| | | in.lb | 77887 | 97359 | 97359 | 121699 | 87623 | 77887 | 135382 | 77887 | 135382 | 97359 | 121699 | 135382 | 135382 | 135382 | 135382 | 135382 | 135709 |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | 1800 | 1900 | 2100 | 2100 | 1900 | 1900 | 1900 | 2800 | 2800 | 2800 | 2800 | 2800 | 2800 | 3100 | 3800 | 3800 | |
| Max. input speed | n_{1Max} | rpm | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 11 | 8.2 | 6.9 | 6.5 | 9.2 | 7.8 | 7.5 | 2.3 | 3.3 | 1.5 | 1.4 | 1.2 | 0.9 | 0.6 | 0.6 | 0.6 | |
| | | in.lb | 97 | 73 | 61 | 58 | 81 | 69 | 66 | 20 | 29 | 13 | 12 | 11 | 8.0 | 5.3 | 5.3 | 5.3 | |
| Max. backlash | j_t | arcmin | Standard ≤ 3.3 / Reduced ≤ 1.8 | | | | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 1099 | 1108 | 1114 | 960 | 1114 | 1111 | 979 | 1099 | 976 | 953 | 958 | 978 | 978 | 979 | 979 | 989 | |
| | | in.lb/arcmin | 9727 | 9807 | 9860 | 8497 | 9860 | 9833 | 8665 | 9727 | 8638 | 8435 | 8479 | 8656 | 8656 | 8665 | 8665 | 8753 | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 5560 | | | | | | | | | | | | | | | | |
| | | in.lb/arcmin | 49210 | | | | | | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 33000 | | | | | | | | | | | | | | | | |
| | | lb _f | 7425 | | | | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 6500 | | | | | | | | | | | | | | | | |
| | | in.lb | 57530 | | | | | | | | | | | | | | | | |
| Efficiency at full load | η | % | 92 | | | | | | | 90 | | | | | | | | | |
| Service life ¹⁾ | L_h | h | > 20000 | | | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | <i>m</i> | kg | 83 | | | | | | | 87 | | | | | | | | | |
| | | lb _m | 183 | | | | | | | 192 | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 71 | | | | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | | | | | |
| Ambient temperature | | °C | 0 to +40 | | | | | | | | | | | | | | | | |
| | | F | 32 to 104 | | | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BCT - 04000AAX - 145.000 | | | | | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 070.000 - 100.000 | | | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) | G 24 | J_1 | kgcm ² | - | - | - | - | - | - | - | 3.32 | 4.24 | 2.8 | 2.79 | 2.79 | 2.49 | 2.43 | 2.42 | 2.42 |
| | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | - | - | - | 2.94 | 3.75 | 2.48 | 2.47 | 2.47 | 2.2 | 2.15 | 2.14 |
| Clamping hub diameter [mm] | K 38 | J_1 | kgcm ² | 26.04 | 19.71 | 16.71 | 16.58 | 14.26 | 12.89 | 12.83 | 10.23 | 11.15 | 9.71 | 9.7 | 9.7 | 9.4 | 9.34 | 9.33 | 9.33 |
| | | | 10 ⁻³ in.lb.s ² | 23.05 | 17.44 | 14.79 | 14.67 | 12.62 | 11.41 | 11.35 | 9.05 | 9.87 | 8.59 | 8.58 | 8.58 | 8.32 | 8.27 | 8.26 | 8.26 |

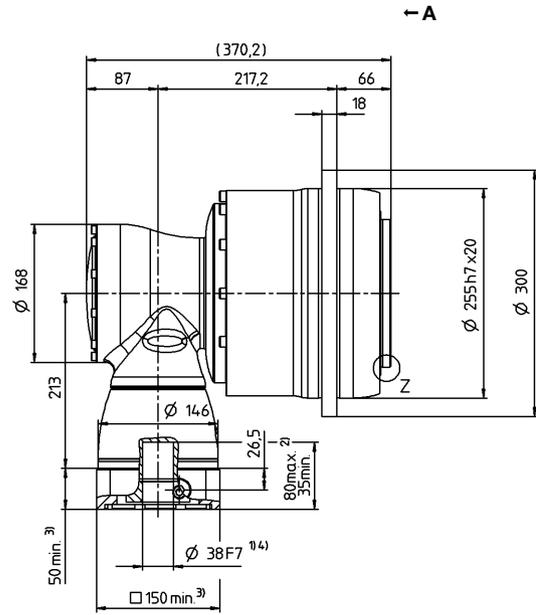
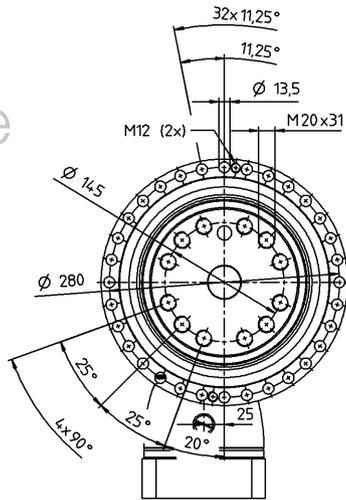
Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

3-stage

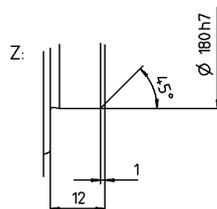
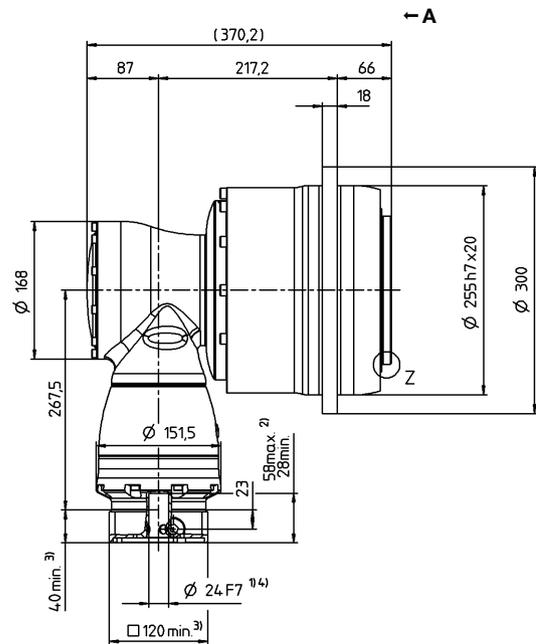
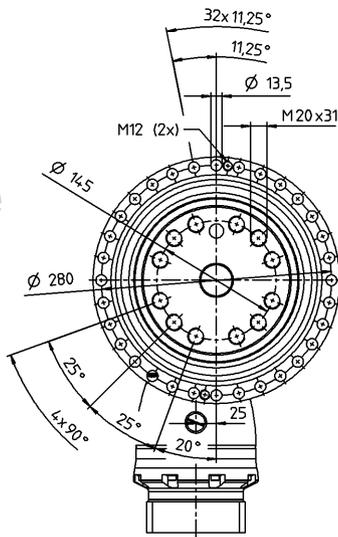
up to 38⁴⁾ (K⁵⁾
clamping hub diameter



Motor shaft diameter [mm]

4-stage

up to 24 / 38⁴⁾
(G⁵⁾ / (K) clamping hub diameter



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

TPK+ 500 MA 3-/4-stage

| | | | 3-stage | | | | | | | 4-stage | | | | | | | | | |
|--|-------------|-----------------|--|--------|--------|--------|--------|--------|--------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Ratio | <i>i</i> | | 66 | 88 | 110 | 137.5 | 154 | 220 | 385 | 330 | 462 | 577.5 | 770 | 1078 | 1540 | 2695 | 3850 | 5500 | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 10450 | 10450 | 10450 | 10450 | 10450 | 10340 | 10450 | 10450 | 10450 | 10450 | 10450 | 10450 | 10450 | 10450 | 10450 | 10450 | 10450 |
| | | in.lb | 92491 | 92491 | 92491 | 92491 | 92491 | 91517 | 92491 | 92491 | 92491 | 92491 | 92491 | 92491 | 92491 | 92491 | 92491 | 92491 | 92491 |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 10450 | 10450 | 10450 | 10450 | 10450 | 10340 | 10450 | 10450 | 10450 | 10450 | 10450 | 10450 | 10450 | 10450 | 10450 | 10450 | 8640 |
| | | in.lb | 92491 | 92491 | 92491 | 92491 | 92491 | 91517 | 92491 | 92491 | 92491 | 92491 | 92491 | 92491 | 92491 | 92491 | 92491 | 92491 | 92491 |
| Nominal torque (at n_n) | T_{2N} | Nm | 5400 | 5400 | 5400 | 5400 | 5400 | 5400 | 5400 | 5400 | 5400 | 5400 | 5400 | 5400 | 5400 | 5400 | 5400 | 5400 | 5400 |
| | | in.lb | 47794 | 47794 | 47794 | 47794 | 47794 | 47794 | 47794 | 47794 | 47794 | 47794 | 47794 | 47794 | 47794 | 47794 | 47794 | 47794 | 47794 |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 19800 | 23100 | 23100 | 25000 | 21340 | 19800 | 25000 | 19800 | 25000 | 24750 | 25000 | 25000 | 25000 | 25000 | 25000 | 25000 | 25000 |
| | | in.lb | 175246 | 204453 | 204453 | 221270 | 188876 | 175246 | 221270 | 175246 | 221270 | 219057 | 221270 | 221270 | 221270 | 221270 | 221270 | 221270 | 221270 |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | 1500 | 1700 | 1900 | 1900 | 1700 | 1700 | 1700 | 2600 | 2600 | 2600 | 2600 | 2600 | 2600 | 3100 | 3300 | 3300 | |
| Max. input speed | n_{1Max} | rpm | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 19 | 15 | 13 | 13 | 17 | 15 | 15 | 4.1 | 6 | 3 | 2.7 | 2.6 | 1.8 | 1.7 | 1.5 | 1.5 | |
| | | in.lb | 168 | 133 | 115 | 115 | 150 | 133 | 133 | 36 | 53 | 27 | 24 | 23 | 16 | 15 | 13 | 13 | |
| Max. backlash | j_t | arcmin | Standard ≤ 3.3 / Reduced ≤ 1.8 | | | | | | | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | Nm/arcmin | 1879 | 1890 | 1901 | 1747 | 1899 | 1898 | 1772 | 1879 | 1766 | 1735 | 1742 | 1770 | 1770 | 1772 | 1772 | 1786 | |
| | | in.lb/arcmin | 16631 | 16728 | 16825 | 15462 | 16808 | 16799 | 15684 | 16631 | 15631 | 15356 | 15418 | 15666 | 15666 | 15684 | 15684 | 15808 | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 9480 | | | | | | | | | | | | | | | | |
| | | in.lb/arcmin | 83906 | | | | | | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 50000 | | | | | | | | | | | | | | | | |
| | | lb _f | 11250 | | | | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 9500 | | | | | | | | | | | | | | | | |
| | | in.lb | 84083 | | | | | | | | | | | | | | | | |
| Efficiency at full load | η | % | 92 | | | | | | | 90 | | | | | | | | | |
| Service life ¹⁾ | L_h | h | > 20000 | | | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | <i>m</i> | kg | 120 | | | | | | | 124 | | | | | | | | | |
| | | lb _m | 265 | | | | | | | 274 | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 71 | | | | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | | | | | |
| Ambient temperature | | °C | 0 to +40 | | | | | | | | | | | | | | | | |
| | | F | 32 to 104 | | | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output opposite direction | | | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BCT - 10000AAX - 166.000 | | | | | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 080.000 - 180.000 | | | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) | K 38 | J_1 | kgcm ² | - | - | - | - | - | - | - | 12.43 | 15.36 | 10.93 | 10.92 | 10.91 | 10.13 | 9.95 | 9.91 | 9.91 |
| | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | - | - | - | 11 | 13.59 | 9.67 | 9.66 | 9.66 | 8.97 | 8.81 | 8.77 |
| Clamping hub diameter [mm] | M 48 | J_1 | kgcm ² | 75.54 | 52.83 | 42.94 | 42.67 | 34.37 | 29.87 | 29.73 | 27.14 | 30.07 | 25.64 | 25.63 | 25.62 | 24.84 | 24.66 | 24.62 | 24.62 |
| | | | 10 ⁻³ in.lb.s ² | 66.85 | 46.75 | 38 | 37.76 | 30.42 | 26.43 | 26.31 | 24.02 | 26.61 | 22.69 | 22.68 | 22.67 | 21.98 | 21.82 | 21.79 | 21.79 |

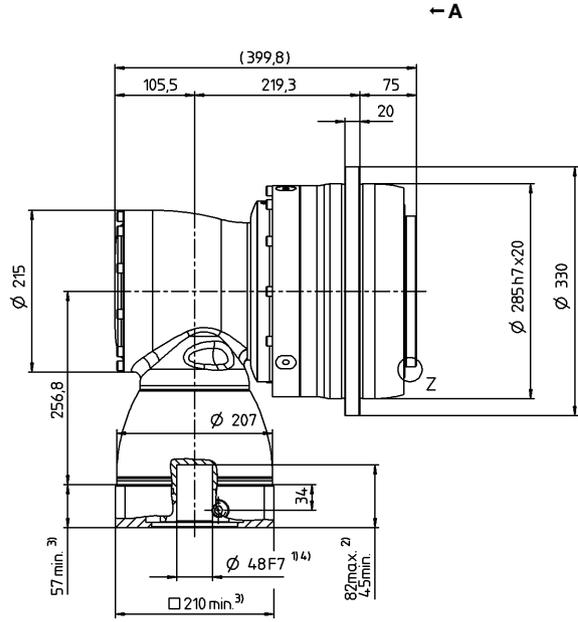
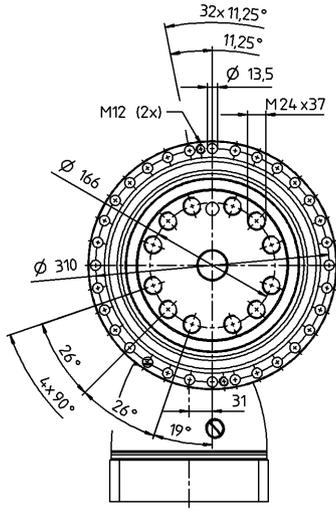
Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

3-stage

up to 48⁴⁾ (M)⁵⁾
clamping hub diameter

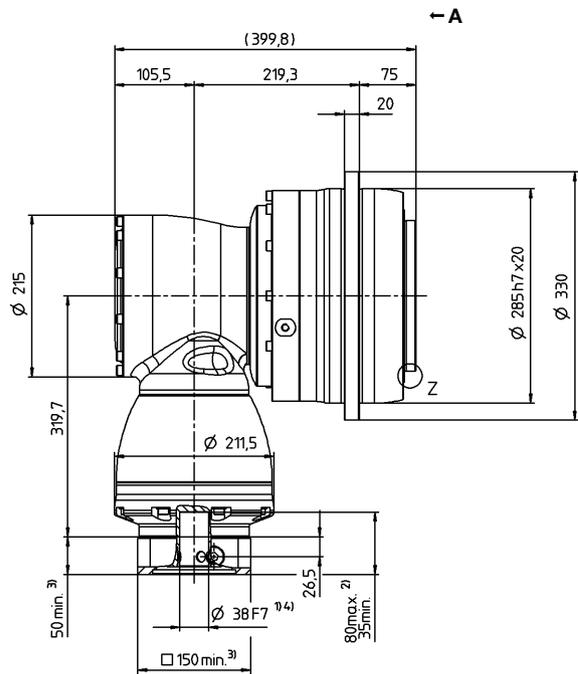
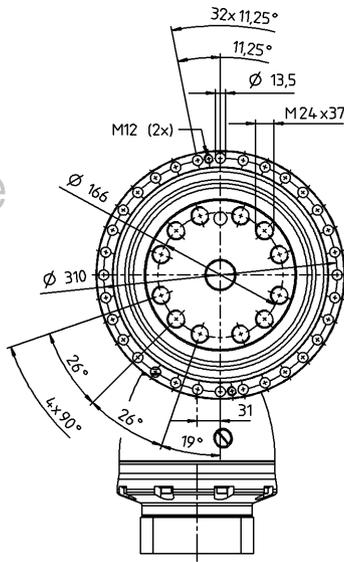


← A

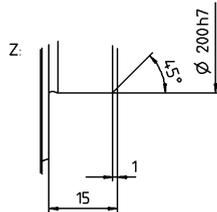
Motor shaft diameter [mm]

4-stage

up to 38 / 48⁴⁾
(K⁵⁾ / (M) clamping hub diameter



← A



Hypoid gearboxes

TPK⁺

MA

See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter





Bevel gearboxes
SC⁺ / SPC⁺ / TPC⁺
High performance
guaranteed

SC+ / SPC+ / TPC+ – High performance at low ratios



SC+

SPC+

If the application requires above-average performance at lower ratios: The innovative design of the alpha Advanced Line bevel gearbox SC+ / SPC+ / TPC+ is not only space-saving, elegant and energy-efficient, it also delivers an impressive performance and guarantees smooth operation.

SC+ / SPC+ / TPC+ compared to the industry standard

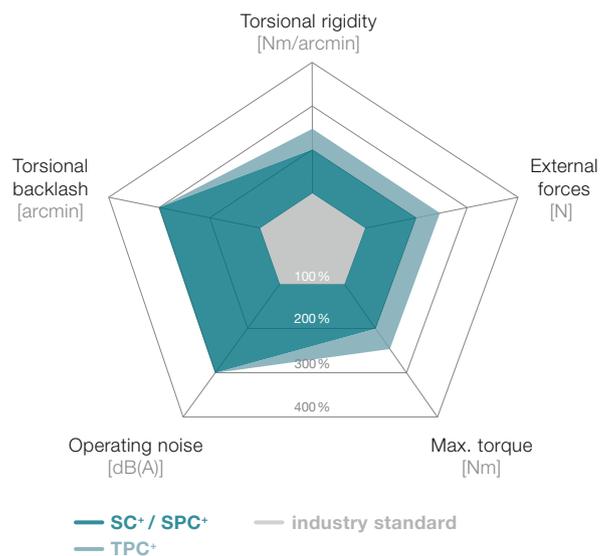
Product highlights

Max. torsional backlash
 SC+ ≤ 4 arcmin (Standard)
 SPC+ / TPC+ ≤ 4 arcmin (Standard)
 ≤ 2 arcmin (Reduced)

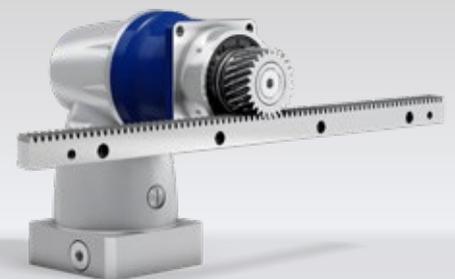
High power density and dynamics

High output speeds
 due to gear ratios
 1:1 and 2:1 (single-stage)

Efficiency of 97%



TPC+ with pinions



SPC+ with rack and pinion

Intelligent design which reduces friction losses to a minimum

Output compatible with TP+ series

High toothing quality ensures:

- Improved load bearing capacity and therefore higher torque
- Precision thanks to minimum torsional backlash
- Extremely smooth operation and stable running characteristics

Low temperature development, also at high speeds

Ideal for open system concepts: no external screws and functional beading integrated in the housing

Metal bellows coupling at the input: length compensation to protect the motor bearing

TPC+



SPC+ with metal bellows coupling

SC+ 060 MF 1-stage

| | | | | 1-stage | | |
|---|-------------|-----------------------|-------|--|------|------|
| Ratio | <i>i</i> | | | 1 | 2 | |
| Max. torque ^{a) b) e)} | T_{2a} | <i>Nm</i> | | 12 | 12 | |
| | | <i>in.lb</i> | | 106 | 106 | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | <i>Nm</i> | | 10 | 10 | |
| | | <i>in.lb</i> | | 89 | 89 | |
| Nominal torque (at n_n) | T_{2N} | <i>Nm</i> | | 7 | 7 | |
| | | <i>in.lb</i> | | 62 | 62 | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | <i>Nm</i> | | 25 | 25 | |
| | | <i>in.lb</i> | | 221 | 221 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | | 5000 | 5500 | |
| Max. input speed | n_{1Max} | <i>rpm</i> | | 6000 | 6000 | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | <i>Nm</i> | | 0.7 | 0.5 | |
| | | <i>in.lb</i> | | 6.2 | 4.4 | |
| Max. backlash | j_t | <i>arcmin</i> | | Standard ≤ 5 | | |
| Torsional rigidity ^{b)} | C_{t21} | <i>Nm/arcmin</i> | | 0.4 | 0.6 | |
| | | <i>in.lb/arcmin</i> | | 4 | 5 | |
| Max. axial force ^{c)} | F_{2AMax} | <i>N</i> | | 500 | | |
| | | <i>lb_f</i> | | 113 | | |
| Max. lateral force ^{c)} | F_{2OMax} | <i>N</i> | | 950 | | |
| | | <i>lb_f</i> | | 214 | | |
| Max. tilting moment | M_{2KMax} | <i>Nm</i> | | 71 | | |
| | | <i>in.lb</i> | | 628 | | |
| Efficiency at full load | η | <i>%</i> | | 97 | | |
| Service life ^{f)} | L_h | <i>h</i> | | > 20000 | | |
| Weight (incl. standard adapter plate) | m | <i>kg</i> | | 1.9 | | |
| | | <i>lb_m</i> | | 4 | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | <i>dB(A)</i> | | ≤ 66 | | |
| Max. permitted housing temperature | | <i>°C</i> | | +90 | | |
| | | <i>F</i> | | 194 | | |
| Ambient temperature | | <i>°C</i> | | 0 to +40 | | |
| | | <i>F</i> | | 32 to 104 | | |
| Lubrication | | | | Lubricated for life | | |
| Direction of rotation | | | | In- and output same direction | | |
| Protection class | | | | IP 65 | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | | BC2 - 00015AA - 012.000 - X | | |
| Bore diameter of coupling on the application side | | <i>mm</i> | | X = 008.000 - 028.000 | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | C | 14 | J_1 | <i>kgcm²</i> | 0.66 | 0.42 |
| | | | | <i>10⁻³ in.lb.s²</i> | 0.58 | 0.37 |
| | E | 19 | J_1 | <i>kgcm²</i> | 0.99 | 0.75 |
| | | | | <i>10⁻³ in.lb.s²</i> | 0.88 | 0.66 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

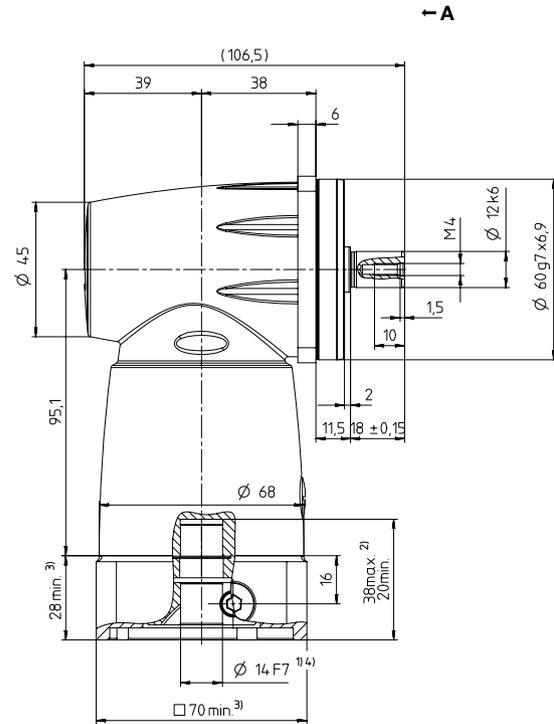
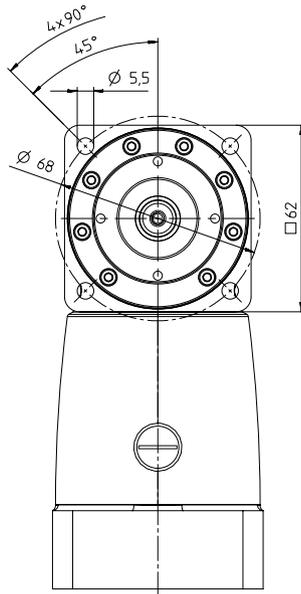
- ^{a)} At max. 10 % F_{2OMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

Motor shaft diameter [mm]

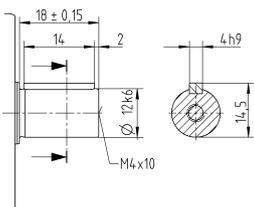
1-stage

up to 14 / 19⁴⁾
(C⁵⁾/E) clamping
hub diameter



Other output variants

Shaft with key



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions
1) Check motor shaft fit

2) Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

3) The dimensions depend on the motor

4) Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

5) Standard clamping hub diameter

SC+ 075 MF 1-stage

| | | | | 1-stage | |
|---|-------------|-----------------------|-------|--------------------------------|----------|
| Ratio | <i>i</i> | | | 1 | 2 |
| Max. torque ^{a) b) e)} | T_{2a} | <i>Nm</i> | | 36 | 36 |
| | | <i>in.lb</i> | | 319 | 319 |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | <i>Nm</i> | | 30 | 30 |
| | | <i>in.lb</i> | | 266 | 266 |
| Nominal torque (at n_n) | T_{2N} | <i>Nm</i> | | 20 | 20 |
| | | <i>in.lb</i> | | 177 | 177 |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | <i>Nm</i> | | 48 | 62 |
| | | <i>in.lb</i> | | 425 | 549 |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | | 2600 | 4000 |
| Max. input speed | n_{1Max} | <i>rpm</i> | | 6000 | 6000 |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | <i>Nm</i> | | 1.5 | 0.8 |
| | | <i>in.lb</i> | | 13 | 7.1 |
| Max. backlash | j_t | <i>arcmin</i> | | Standard ≤ 4 | |
| Torsional rigidity ^{b)} | C_{t21} | <i>Nm/arcmin</i> | | 1 | 1.5 |
| | | <i>in.lb/arcmin</i> | | 9 | 13 |
| Max. axial force ^{c)} | F_{2AMax} | <i>N</i> | | 700 | |
| | | <i>lb_f</i> | | 158 | |
| Max. lateral force ^{c)} | F_{2OMax} | <i>N</i> | | 1300 | |
| | | <i>lb_f</i> | | 293 | |
| Max. tilting moment | M_{2KMax} | <i>Nm</i> | | 131 | |
| | | <i>in.lb</i> | | 1159 | |
| Efficiency at full load | η | <i>%</i> | | 97 | |
| Service life ^{f)} | L_h | <i>h</i> | | > 20000 | |
| Weight (incl. standard adapter plate) | m | <i>kg</i> | | 3.6 | |
| | | <i>lb_m</i> | | 8 | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | <i>dB(A)</i> | | ≤ 68 | |
| Max. permitted housing temperature | | <i>°C</i> | | +90 | |
| | | <i>F</i> | | 194 | |
| Ambient temperature | | <i>°C</i> | | 0 to +40 | |
| | | <i>F</i> | | 32 to 104 | |
| Lubrication | | | | Lubricated for life | |
| Direction of rotation | | | | In- and output same direction | |
| Protection class | | | | IP 65 | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | | BC2 - 00030AA - 016.000 - X | |
| Bore diameter of coupling on the application side | | <i>mm</i> | | X = 010.000 - 030.000 | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | E | 19 | J_1 | 1.99 | 1.19 |
| | | | | 10^{-3} in.lb.s ² | 1.76 |
| | H | 28 | J_1 | 3.43 | 2.63 |
| | | | | 10^{-3} in.lb.s ² | 3.04 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

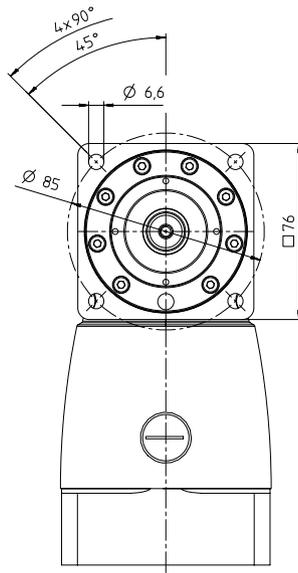
- ^{a)} At max. 10 % F_{2OMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

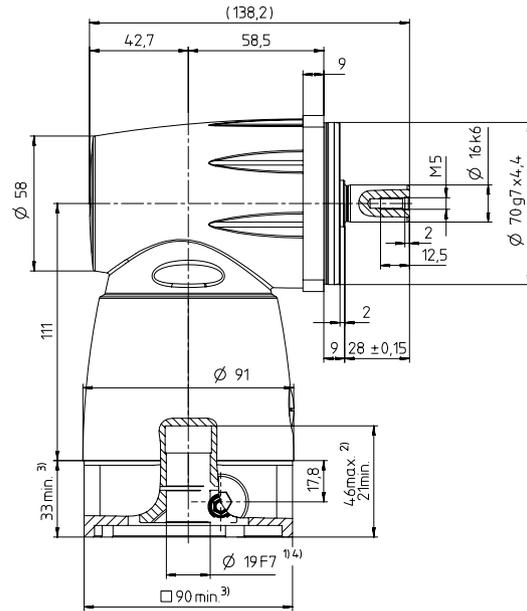
Motor shaft diameter [mm]

1-stage

up to 19/28⁴⁾
(E⁵⁾/H) clamping
hub diameter

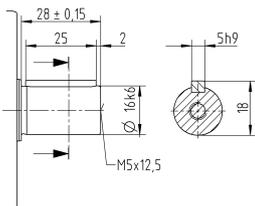


← A



Other output variants

Shaft with key



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions
1) Check motor shaft fit

2) Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

3) The dimensions depend on the motor

4) Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

5) Standard clamping hub diameter

SC+ 100 MF 1-stage

| | | | | 1-stage | | |
|---|-------------|-----------------------|-------|--|-------|-------|
| Ratio | <i>i</i> | | | 1 | 2 | |
| Max. torque ^{a) b) e)} | T_{2a} | <i>Nm</i> | | 97 | 97 | |
| | | <i>in.lb</i> | | 859 | 859 | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | <i>Nm</i> | | 81 | 81 | |
| | | <i>in.lb</i> | | 717 | 717 | |
| Nominal torque (at n_n) | T_{2N} | <i>Nm</i> | | 50 | 50 | |
| | | <i>in.lb</i> | | 443 | 443 | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | <i>Nm</i> | | 135 | 160 | |
| | | <i>in.lb</i> | | 1195 | 1416 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | | 2500 | 2800 | |
| Max. input speed | n_{1Max} | <i>rpm</i> | | 4500 | 4500 | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | <i>Nm</i> | | 3.4 | 2.2 | |
| | | <i>in.lb</i> | | 30 | 19 | |
| Max. backlash | j_t | <i>arcmin</i> | | Standard ≤ 4 | | |
| Torsional rigidity ^{b)} | C_{t21} | <i>Nm/arcmin</i> | | 2.9 | 4.6 | |
| | | <i>in.lb/arcmin</i> | | 26 | 41 | |
| Max. axial force ^{c)} | F_{2AMax} | <i>N</i> | | 1900 | | |
| | | <i>lb_f</i> | | 428 | | |
| Max. lateral force ^{c)} | F_{2OMax} | <i>N</i> | | 3800 | | |
| | | <i>lb_f</i> | | 855 | | |
| Max. tilting moment | M_{2KMax} | <i>Nm</i> | | 439 | | |
| | | <i>in.lb</i> | | 3886 | | |
| Efficiency at full load | η | <i>%</i> | | 97 | | |
| Service life ^{f)} | L_h | <i>h</i> | | > 20000 | | |
| Weight (incl. standard adapter plate) | m | <i>kg</i> | | 7 | | |
| | | <i>lb_m</i> | | 15 | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | <i>dB(A)</i> | | ≤ 68 | | |
| Max. permitted housing temperature | | <i>°C</i> | | +90 | | |
| | | <i>F</i> | | 194 | | |
| Ambient temperature | | <i>°C</i> | | 0 to +40 | | |
| | | <i>F</i> | | 32 to 104 | | |
| Lubrication | | | | Lubricated for life | | |
| Direction of rotation | | | | In- and output same direction | | |
| Protection class | | | | IP 65 | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | | BC2 - 00080AA - 022.000 - X | | |
| Bore diameter of coupling on the application side | | <i>mm</i> | | X = 014.000 - 042.000 | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | H | 28 | J_1 | <i>kgcm²</i> | 7.1 | 4.8 |
| | | | | <i>10⁻³ in.lb.s²</i> | 6.28 | 4.25 |
| | K | 38 | J_1 | <i>kgcm²</i> | 14.2 | 11.9 |
| | | | | <i>10⁻³ in.lb.s²</i> | 12.57 | 10.53 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

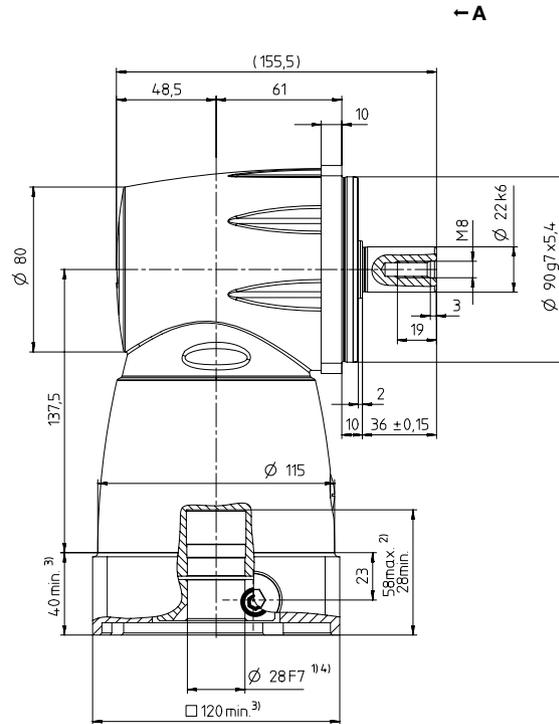
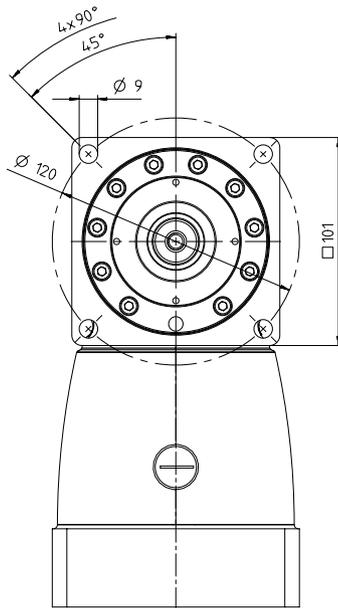
- ^{a)} At max. 10 % F_{2OMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

Motor shaft diameter [mm]

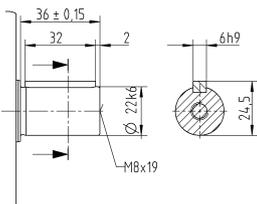
1-stage

up to 28/38⁴⁾
(H⁵⁾/K) clamping
hub diameter



Other output variants

Shaft with key



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions
¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

SC+ 140 MF 1-stage

| | | | 1-stage | | | |
|---|--------------|-----------------------|-------------------------------|--|-------|-------|
| Ratio | <i>i</i> | | 1 | 2 | | |
| Max. torque ^{a) b) e)} | T_{2a} | <i>Nm</i> | 210 | 210 | | |
| | | <i>in.lb</i> | 1859 | 1859 | | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | <i>Nm</i> | 175 | 175 | | |
| | | <i>in.lb</i> | 1549 | 1549 | | |
| Nominal torque (at n_n) | T_{2N} | <i>Nm</i> | 110 | 110 | | |
| | | <i>in.lb</i> | 974 | 974 | | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | <i>Nm</i> | 240 | 310 | | |
| | | <i>in.lb</i> | 2124 | 2744 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | 1600 | 2100 | | |
| Max. input speed | n_{1Max} | <i>rpm</i> | 4500 | 4500 | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | <i>Nm</i> | 6.2 | 3.9 | | |
| | | <i>in.lb</i> | 55 | 35 | | |
| Max. backlash | j_t | <i>arcmin</i> | Standard ≤ 4 | | | |
| Torsional rigidity ^{b)} | C_{t21} | <i>Nm/arcmin</i> | 6.4 | 9.1 | | |
| | | <i>in.lb/arcmin</i> | 57 | 81 | | |
| Max. axial force ^{c)} | F_{2AMax} | <i>N</i> | 3000 | | | |
| | | <i>lb_f</i> | 675 | | | |
| Max. lateral force ^{c)} | F_{2QMMax} | <i>N</i> | 6000 | | | |
| | | <i>lb_f</i> | 1350 | | | |
| Max. tilting moment | M_{2KMMax} | <i>Nm</i> | 957 | | | |
| | | <i>in.lb</i> | 8470 | | | |
| Efficiency at full load | η | <i>%</i> | 97 | | | |
| Service life ¹⁾ | L_h | <i>h</i> | > 20000 | | | |
| Weight (incl. standard adapter plate) | m | <i>kg</i> | 14.7 | | | |
| | | <i>lb_m</i> | 32 | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | <i>dB(A)</i> | ≤ 70 | | | |
| Max. permitted housing temperature | | <i>°C</i> | +90 | | | |
| | | <i>F</i> | 194 | | | |
| Ambient temperature | | <i>°C</i> | 0 to +40 | | | |
| | | <i>F</i> | 32 to 104 | | | |
| Lubrication | | | Lubricated for life | | | |
| Direction of rotation | | | In- and output same direction | | | |
| Protection class | | | IP 65 | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC2 - 00200AA - 032.000 - X | | | |
| Bore diameter of coupling on the application side | | <i>mm</i> | X = 022.000 - 045.000 | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | K | 38 | J_1 | <i>kgcm²</i> | 41.3 | 21.3 |
| | | | | <i>10⁻³ in.lb.s²</i> | 36.55 | 18.85 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

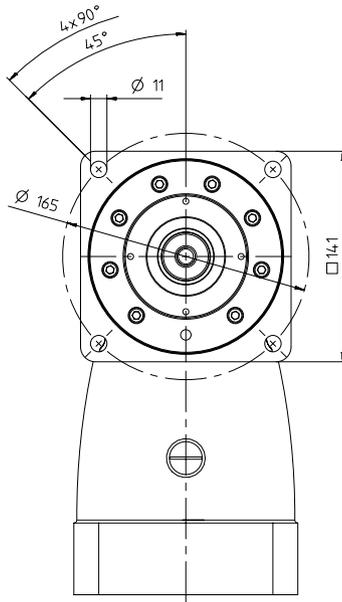
- ^{a)} At max. 10 % F_{2QMMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

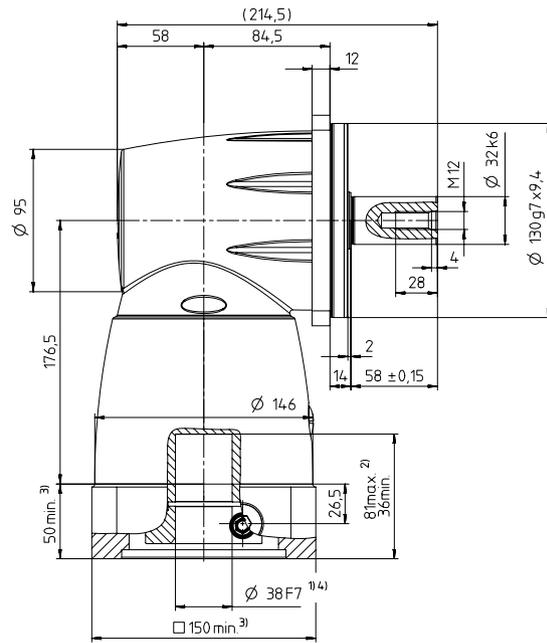
Motor shaft diameter [mm]

1-stage

up to 38⁴⁾ (K)⁵⁾
clamping hub diameter

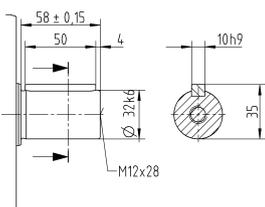


← A



Other output variants

Shaft with key



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

- Non-tolerated dimensions are nominal dimensions
- ¹⁾ Check motor shaft fit
- ²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
- ³⁾ The dimensions depend on the motor
- ⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm
- ⁵⁾ Standard clamping hub diameter

SC+ 180 MF 1-stage

| | | | | 1-stage | | |
|---|--------------|-----------------------|-------|--|-------|-------|
| Ratio | <i>i</i> | | | 1 | 2 | |
| Max. torque ^{a) b) e)} | T_{2a} | <i>Nm</i> | | 378 | 378 | |
| | | <i>in.lb</i> | | 3346 | 3346 | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | <i>Nm</i> | | 315 | 315 | |
| | | <i>in.lb</i> | | 2788 | 2788 | |
| Nominal torque (at n_n) | T_{2N} | <i>Nm</i> | | 200 | 200 | |
| | | <i>in.lb</i> | | 1770 | 1770 | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | <i>Nm</i> | | 390 | 685 | |
| | | <i>in.lb</i> | | 3452 | 6063 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | | 1200 | 1500 | |
| Max. input speed | n_{1Max} | <i>rpm</i> | | 4000 | 4000 | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | <i>Nm</i> | | 14 | 8 | |
| | | <i>in.lb</i> | | 124 | 71 | |
| Max. backlash | j_t | <i>arcmin</i> | | Standard ≤ 3 | | |
| Torsional rigidity ^{b)} | C_{t21} | <i>Nm/arcmin</i> | | 13 | 22 | |
| | | <i>in.lb/arcmin</i> | | 115 | 195 | |
| Max. axial force ^{c)} | F_{2AMax} | <i>N</i> | | 4500 | | |
| | | <i>lb_f</i> | | 1013 | | |
| Max. lateral force ^{c)} | F_{2QMMax} | <i>N</i> | | 9000 | | |
| | | <i>lb_f</i> | | 2025 | | |
| Max. tilting moment | M_{2KMMax} | <i>Nm</i> | | 1910 | | |
| | | <i>in.lb</i> | | 16905 | | |
| Efficiency at full load | η | <i>%</i> | | 97 | | |
| Service life ¹⁾ | L_h | <i>h</i> | | > 20000 | | |
| Weight (incl. standard adapter plate) | m | <i>kg</i> | | 31.4 | | |
| | | <i>lb_m</i> | | 69 | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | <i>dB(A)</i> | | ≤ 70 | | |
| Max. permitted housing temperature | | <i>°C</i> | | +90 | | |
| | | <i>F</i> | | 194 | | |
| Ambient temperature | | <i>°C</i> | | 0 to +40 | | |
| | | <i>F</i> | | 32 to 104 | | |
| Lubrication | | | | Lubricated for life | | |
| Direction of rotation | | | | In- and output same direction | | |
| Protection class | | | | IP 65 | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | | BC2 - 00300AA - 040.000 - X | | |
| Bore diameter of coupling on the application side | | <i>mm</i> | | X = 024.000 - 060.000 | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | M | 48 | J_1 | <i>kgcm²</i> | 99.5 | 46.7 |
| | | | | <i>10⁻³ in.lb.s²</i> | 88.06 | 41.33 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
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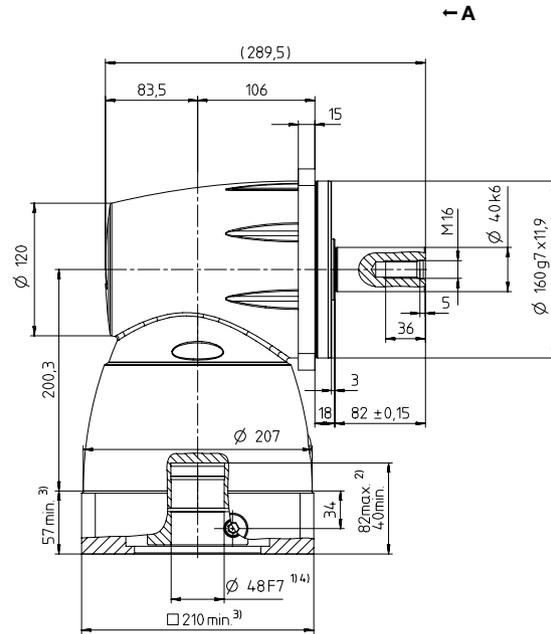
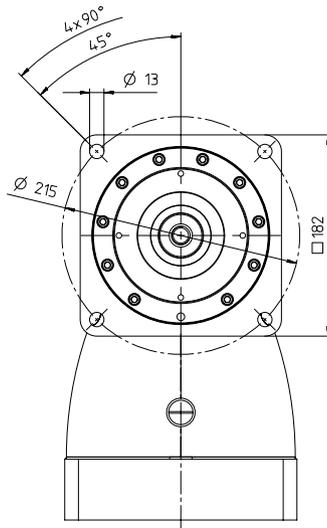
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

Motor shaft diameter [mm]

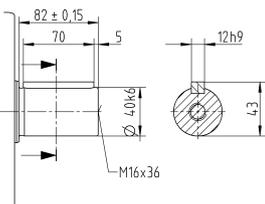
1-stage

up to 48⁴⁾ (M)⁵⁾
clamping hub diameter



Other output variants

Shaft with key



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions
¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

SPC+ 060 MF 2-stage

| | | | | 2-stage | | | | | | | |
|--|-------------|-----------------------|-------|--|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | | 4 | 5 | 7 | 8 | 10 | 14 | 20 | |
| Max. torque ^{a) b) e)} | T_{2a} | <i>Nm</i> | | 48 | 60 | 67 | 48 | 60 | 67 | 51 | |
| | | <i>in.lb</i> | | 425 | 531 | 593 | 425 | 531 | 593 | 451 | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | <i>Nm</i> | | 40 | 50 | 50 | 40 | 50 | 50 | 38 | |
| | | <i>in.lb</i> | | 354 | 443 | 443 | 354 | 443 | 443 | 336 | |
| Nominal torque (at n_{IN}) | T_{2N} | <i>Nm</i> | | 26 | 26 | 26 | 26 | 26 | 26 | 17 | |
| | | <i>in.lb</i> | | 230 | 230 | 230 | 230 | 230 | 230 | 150 | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | <i>Nm</i> | | 100 | 109 | 109 | 100 | 109 | 109 | 100 | |
| | | <i>in.lb</i> | | 885 | 965 | 965 | 885 | 965 | 965 | 885 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{IN} | n_{IT} | | 3000 | 3000 | 3200 | 3400 | 3400 | 3600 | 3600 | |
| Max. input speed | n_{1Max} | <i>rpm</i> | | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | <i>Nm</i> | | 1.7 | 1.5 | 1.3 | 1 | 1 | 0.84 | 0.67 | |
| | | <i>in.lb</i> | | 15 | 13 | 12 | 8.9 | 8.9 | 7.4 | 5.9 | |
| Max. backlash | j_t | <i>arcmin</i> | | Standard ≤ 5 / Reduced ≤ 3 | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | <i>Nm/arcmin</i> | | 2.4 | 2.7 | 3.1 | 2.7 | 3 | 3.2 | 3.3 | |
| | | <i>in.lb/arcmin</i> | | 21 | 24 | 27 | 24 | 27 | 28 | 29 | |
| Max. axial force ^{c)} | F_{2AMax} | <i>N</i> | | 2400 | | | | | | | |
| | | <i>lb_f</i> | | 540 | | | | | | | |
| Max. lateral force ^{c)} | F_{2OMax} | <i>N</i> | | 2800 | | | | | | | |
| | | <i>lb_f</i> | | 630 | | | | | | | |
| Max. tilting moment | M_{2KMax} | <i>Nm</i> | | 152 | | | | | | | |
| | | <i>in.lb</i> | | 1345 | | | | | | | |
| Efficiency at full load | η | % | | 95 | | | | | | | |
| Service life ¹⁾ | L_h | <i>h</i> | | > 20000 | | | | | | | |
| Weight (incl. standard adapter plate) | <i>m</i> | <i>kg</i> | | 3.1 | | | | | | | |
| | | <i>lb_m</i> | | 7 | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | <i>dB(A)</i> | | ≤ 68 | | | | | | | |
| Max. permitted housing temperature | | °C | | +90 | | | | | | | |
| | | <i>F</i> | | 194 | | | | | | | |
| Ambient temperature | | °C | | 0 to +40 | | | | | | | |
| | | <i>F</i> | | 32 to 104 | | | | | | | |
| Lubrication | | | | Lubricated for life | | | | | | | |
| Direction of rotation | | | | In- and output same direction | | | | | | | |
| Protection class | | | | IP 65 | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | | BC2 - 00060AA - 016.000 - X | | | | | | | |
| Bore diameter of coupling on the application side | | <i>mm</i> | | X = 012.000 - 035.000 | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | C | 14 | J_1 | <i>kgcm²</i> | 0.72 | 0.7 | 0.66 | 0.44 | 0.43 | 0.43 | 0.43 |
| | | | | <i>10⁻³ in.lb.s²</i> | 0.64 | 0.62 | 0.58 | 0.39 | 0.38 | 0.38 | 0.38 |
| | E | 19 | J_1 | <i>kgcm²</i> | 1.05 | 1.03 | 0.99 | 0.77 | 0.76 | 0.76 | 0.75 |
| | | | | <i>10⁻³ in.lb.s²</i> | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
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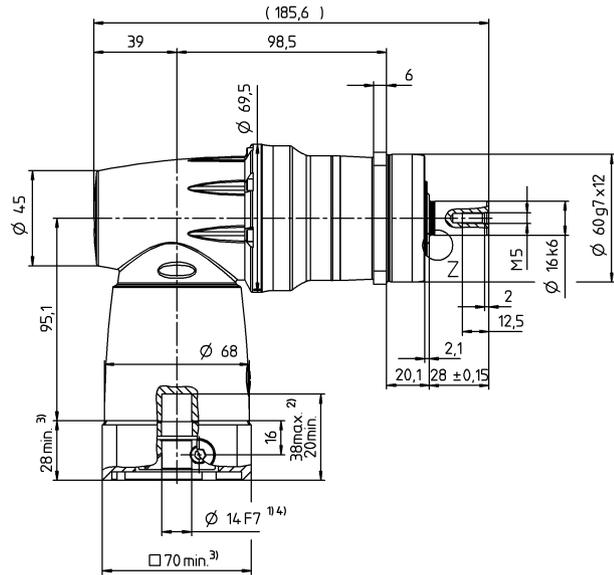
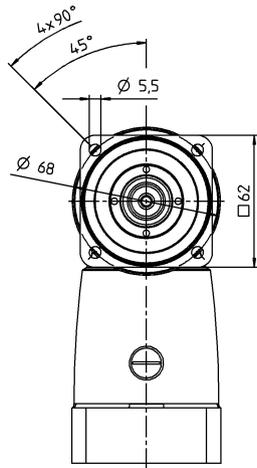
- ^{a)} At max. 10 % F_{2OMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

Motor shaft diameter [mm]

2-stage

up to 14/19⁴⁾
(C⁵⁾/E) clamping
hub diameter



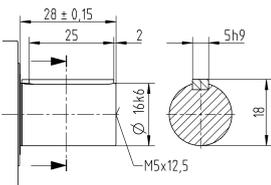
← A

Bevel gearboxes

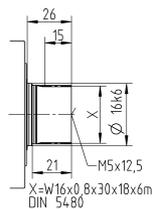
SPC

Other output variants

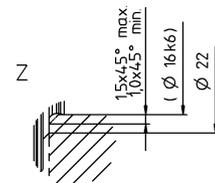
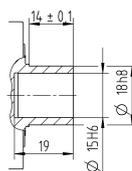
Shaft with key



Spined shaft (DIN 5480)



Shaft mounted



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions
1) Check motor shaft fit

2) Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

3) The dimensions depend on the motor

4) Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

5) Standard clamping hub diameter

SPC+ 075 MF 2-stage

| | | | | 2-stage | | | | | | | |
|--|-------------|-----------------------|-------|--|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | | 4 | 5 | 7 | 8 | 10 | 14 | 20 | |
| Max. torque ^{a) b) e)} | T_{2a} | <i>Nm</i> | | 144 | 176 | 176 | 144 | 176 | 176 | 152 | |
| | | <i>in.lb</i> | | 1275 | 1558 | 1558 | 1275 | 1558 | 1558 | 1345 | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | <i>Nm</i> | | 120 | 132 | 132 | 120 | 132 | 132 | 114 | |
| | | <i>in.lb</i> | | 1062 | 1168 | 1168 | 1062 | 1168 | 1168 | 1009 | |
| Nominal torque (at n_n) | T_{2N} | <i>Nm</i> | | 75 | 75 | 75 | 75 | 75 | 75 | 52 | |
| | | <i>in.lb</i> | | 664 | 664 | 664 | 664 | 664 | 664 | 460 | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | <i>Nm</i> | | 192 | 240 | 250 | 248 | 250 | 250 | 250 | |
| | | <i>in.lb</i> | | 1699 | 2124 | 2213 | 2195 | 2213 | 2213 | 2213 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | | 2200 | 2200 | 2400 | 2650 | 2650 | 2800 | 2800 | |
| Max. input speed | n_{1Max} | <i>rpm</i> | | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | <i>Nm</i> | | 3.8 | 3.3 | 2.8 | 2.7 | 2.4 | 1.9 | 1.6 | |
| | | <i>in.lb</i> | | 34 | 29 | 25 | 24 | 21 | 17 | 14 | |
| Max. backlash | j_t | <i>arcmin</i> | | Standard ≤ 4 / Reduced ≤ 2 | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | <i>Nm/arcmin</i> | | 6.6 | 7.5 | 8.6 | 7.6 | 8.3 | 9.1 | 9.5 | |
| | | <i>in.lb/arcmin</i> | | 58 | 66 | 76 | 67 | 73 | 81 | 84 | |
| Max. axial force ^{c)} | F_{2AMax} | <i>N</i> | | 3350 | | | | | | | |
| | | <i>lb_f</i> | | 754 | | | | | | | |
| Max. lateral force ^{c)} | F_{2OMax} | <i>N</i> | | 4200 | | | | | | | |
| | | <i>lb_f</i> | | 945 | | | | | | | |
| Max. tilting moment | M_{2KMax} | <i>Nm</i> | | 236 | | | | | | | |
| | | <i>in.lb</i> | | 2089 | | | | | | | |
| Efficiency at full load | η | % | | 95 | | | | | | | |
| Service life ¹⁾ | L_h | <i>h</i> | | > 20000 | | | | | | | |
| Weight (incl. standard adapter plate) | <i>m</i> | <i>kg</i> | | 5.9 | | | | | | | |
| | | <i>lb_m</i> | | 13 | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | <i>dB(A)</i> | | ≤ 68 | | | | | | | |
| Max. permitted housing temperature | | °C | | +90 | | | | | | | |
| | | <i>F</i> | | 194 | | | | | | | |
| Ambient temperature | | °C | | 0 to +40 | | | | | | | |
| | | <i>F</i> | | 32 to 104 | | | | | | | |
| Lubrication | | | | Lubricated for life | | | | | | | |
| Direction of rotation | | | | In- and output same direction | | | | | | | |
| Protection class | | | | IP 65 | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | | BC2 - 00150AA - 022.000 - X | | | | | | | |
| Bore diameter of coupling on the application side | | <i>mm</i> | | X = 019.000 - 042.000 | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | E | 19 | J_1 | <i>kgcm²</i> | 2.33 | 2.15 | 1.99 | 1.25 | 1.23 | 1.21 | 1.2 |
| | | | | <i>10⁻³ in.lb.s²</i> | 2.06 | 1.9 | 1.76 | 1.11 | 1.09 | 1.07 | 1.06 |
| | H | 28 | J_1 | <i>kgcm²</i> | 3.66 | 3.59 | 3.43 | 2.68 | 2.67 | 2.65 | 2.64 |
| | | | | <i>10⁻³ in.lb.s²</i> | 3.24 | 3.18 | 3.04 | 2.37 | 2.36 | 2.35 | 2.34 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

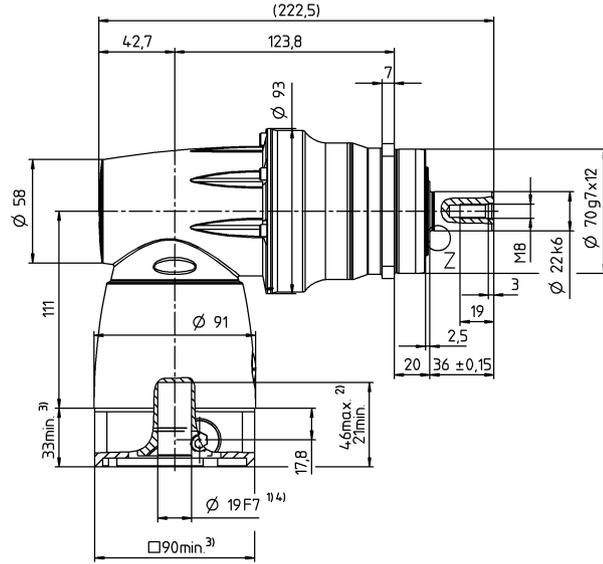
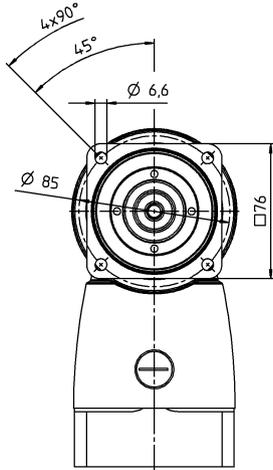
- ^{a)} At max. 10 % F_{2OMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

Motor shaft diameter [mm]

2-stage

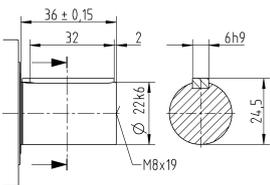
up to 19/28⁴⁾
(E⁵⁾/H) clamping
hub diameter



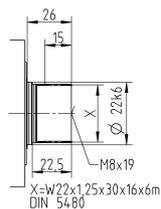
← A

Other output variants

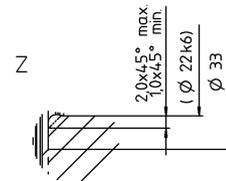
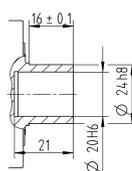
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions
1) Check motor shaft fit

2) Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

3) The dimensions depend on the motor

4) Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

5) Standard clamping hub diameter

SPC+ 100 MF 2-stage

| | | | | 2-stage | | | | | | | |
|--|-------------|-----------------------|-------|--|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | | 4 | 5 | 7 | 8 | 10 | 14 | 20 | |
| Max. torque ^{a) b) e)} | T_{2a} | <i>Nm</i> | | 389 | 486 | 428 | 389 | 486 | 428 | 376 | |
| | | <i>in.lb</i> | | 3443 | 4301 | 3788 | 3443 | 4301 | 3788 | 3328 | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | <i>Nm</i> | | 324 | 378 | 378 | 324 | 378 | 378 | 282 | |
| | | <i>in.lb</i> | | 2868 | 3346 | 3346 | 2868 | 3346 | 3346 | 2496 | |
| Nominal torque (at n_n) | T_{2N} | <i>Nm</i> | | 180 | 175 | 170 | 180 | 175 | 170 | 120 | |
| | | <i>in.lb</i> | | 1593 | 1549 | 1505 | 1593 | 1549 | 1505 | 1062 | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | <i>Nm</i> | | 540 | 625 | 625 | 625 | 625 | 625 | 625 | |
| | | <i>in.lb</i> | | 4779 | 5532 | 5532 | 5532 | 5532 | 5532 | 5532 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | | 2000 | 2000 | 2200 | 2300 | 2300 | 2400 | 2400 | |
| Max. input speed | n_{1Max} | <i>rpm</i> | | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | <i>Nm</i> | | 7.1 | 6.7 | 5.6 | 4.3 | 4 | 3.4 | 3.2 | |
| | | <i>in.lb</i> | | 63 | 59 | 50 | 38 | 35 | 30 | 28 | |
| Max. backlash | j_t | <i>arcmin</i> | | Standard ≤ 4 / Reduced ≤ 2 | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | <i>Nm/arcmin</i> | | 20 | 23 | 26 | 24 | 26 | 28 | 30 | |
| | | <i>in.lb/arcmin</i> | | 177 | 204 | 230 | 212 | 230 | 248 | 266 | |
| Max. axial force ^{c)} | F_{2AMax} | <i>N</i> | | 5650 | | | | | | | |
| | | <i>lb_f</i> | | 1271 | | | | | | | |
| Max. lateral force ^{c)} | F_{2OMax} | <i>N</i> | | 6600 | | | | | | | |
| | | <i>lb_f</i> | | 1485 | | | | | | | |
| Max. tilting moment | M_{2KMax} | <i>Nm</i> | | 487 | | | | | | | |
| | | <i>in.lb</i> | | 4310 | | | | | | | |
| Efficiency at full load | η | % | | 95 | | | | | | | |
| Service life ¹⁾ | L_h | <i>h</i> | | > 20000 | | | | | | | |
| Weight (incl. standard adapter plate) | <i>m</i> | <i>kg</i> | | 11.7 | | | | | | | |
| | | <i>lb_m</i> | | 26 | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | <i>dB(A)</i> | | ≤ 68 | | | | | | | |
| Max. permitted housing temperature | | °C | | +90 | | | | | | | |
| | | <i>F</i> | | 194 | | | | | | | |
| Ambient temperature | | °C | | 0 to +40 | | | | | | | |
| | | <i>F</i> | | 32 to 104 | | | | | | | |
| Lubrication | | | | Lubricated for life | | | | | | | |
| Direction of rotation | | | | In- and output same direction | | | | | | | |
| Protection class | | | | IP 65 | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | | BC2 - 00300AA - 032.000 - X | | | | | | | |
| Bore diameter of coupling on the application side | | <i>mm</i> | | X = 024.000 - 060.000 | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | H | 28 | J_1 | <i>kgcm²</i> | 8 | 7.6 | 7 | 5 | 4.9 | 4.9 | 4.8 |
| | | | | <i>10⁻³ in.lb.s²</i> | 7 | 7 | 6 | 4 | 4 | 4 | 4 |
| | K | 38 | J_1 | <i>kgcm²</i> | 15 | 14.7 | 14.1 | 12.1 | 12 | 11.9 | 11.9 |
| | | | | <i>10⁻³ in.lb.s²</i> | 13 | 13 | 12 | 11 | 11 | 11 | 11 |

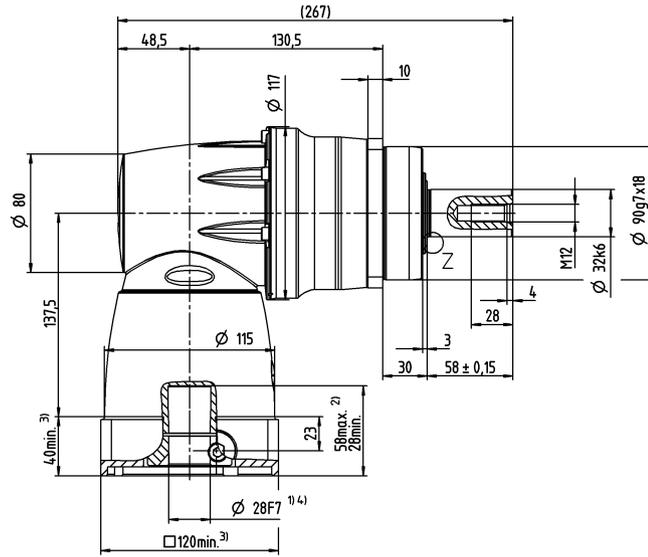
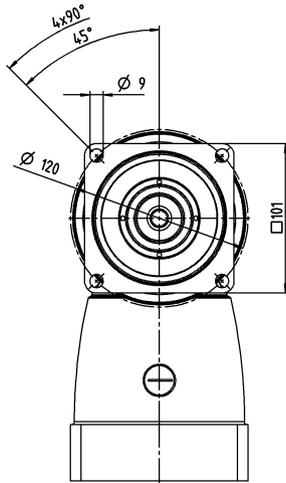
Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{a)} At max. 10 % F_{2OMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

Motor shaft diameter [mm]

2-stage

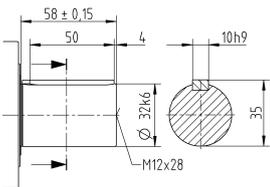
up to 28 / 38⁴⁾
(H⁵⁾ / K) clamping
hub diameter



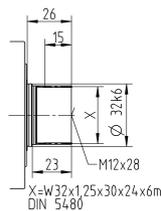
← A

Other output variants

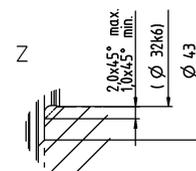
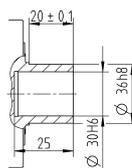
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

- Non-tolerated dimensions are nominal dimensions
- ¹⁾ Check motor shaft fit
- ²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
- ³⁾ The dimensions depend on the motor
- ⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm
- ⁵⁾ Standard clamping hub diameter

SPC+ 140 MF 2-stage

| | | | | 2-stage | | | | | | | |
|--|--------------|-----------------------|-------|--|-------|-------|-------|-------|-------|-------|------|
| Ratio | <i>i</i> | | | 4 | 5 | 7 | 8 | 10 | 14 | 20 | |
| Max. torque ^{a) b) e)} | T_{2a} | <i>Nm</i> | | 840 | 1050 | 825 | 840 | 1050 | 825 | 720 | |
| | | <i>in.lb</i> | | 7435 | 9293 | 7302 | 7435 | 9293 | 7302 | 6373 | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | <i>Nm</i> | | 700 | 792 | 792 | 700 | 792 | 792 | 636 | |
| | | <i>in.lb</i> | | 6196 | 7010 | 7010 | 6196 | 7010 | 7010 | 5629 | |
| Nominal torque (at n_n) | T_{2N} | <i>Nm</i> | | 360 | 360 | 360 | 360 | 360 | 360 | 220 | |
| | | <i>in.lb</i> | | 3186 | 3186 | 3186 | 3186 | 3186 | 3186 | 1947 | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | <i>Nm</i> | | 960 | 1200 | 1350 | 1240 | 1350 | 1350 | 1250 | |
| | | <i>in.lb</i> | | 8497 | 10621 | 11949 | 10975 | 11949 | 11949 | 11064 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | | 1300 | 1300 | 1400 | 1500 | 1500 | 1600 | 1600 | |
| Max. input speed | n_{1Max} | <i>rpm</i> | | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | <i>Nm</i> | | 15 | 13 | 11 | 11 | 9.2 | 7.8 | 6.6 | |
| | | <i>in.lb</i> | | 133 | 115 | 97 | 97 | 81 | 69 | 58 | |
| Max. backlash | j_t | <i>arcmin</i> | | Standard ≤ 4 / Reduced ≤ 2 | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | <i>Nm/arcmin</i> | | 37 | 41 | 46 | 41 | 45 | 48 | 51 | |
| | | <i>in.lb/arcmin</i> | | 327 | 363 | 407 | 363 | 398 | 425 | 451 | |
| Max. axial force ^{c)} | F_{2AMax} | <i>N</i> | | 9870 | | | | | | | |
| | | <i>lb_f</i> | | 2221 | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMMax} | <i>N</i> | | 9900 | | | | | | | |
| | | <i>lb_f</i> | | 2228 | | | | | | | |
| Max. tilting moment | M_{2KMMax} | <i>Nm</i> | | 952 | | | | | | | |
| | | <i>in.lb</i> | | 8426 | | | | | | | |
| Efficiency at full load | η | <i>%</i> | | 95 | | | | | | | |
| Service life ¹⁾ | L_h | <i>h</i> | | > 20000 | | | | | | | |
| Weight (incl. standard adapter plate) | m | <i>kg</i> | | 24.7 | | | | | | | |
| | | <i>lb_m</i> | | 55 | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | <i>dB(A)</i> | | ≤ 70 | | | | | | | |
| Max. permitted housing temperature | | <i>°C</i> | | +90 | | | | | | | |
| | | <i>F</i> | | 194 | | | | | | | |
| Ambient temperature | | <i>°C</i> | | 0 to +40 | | | | | | | |
| | | <i>F</i> | | 32 to 104 | | | | | | | |
| Lubrication | | | | Lubricated for life | | | | | | | |
| Direction of rotation | | | | In- and output same direction | | | | | | | |
| Protection class | | | | IP 65 | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | | BC2 - 00800AA - 040.000 - X | | | | | | | |
| Bore diameter of coupling on the application side | | <i>mm</i> | | X = 040.000 - 075.000 | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | K | 38 | J_1 | <i>kgcm²</i> | 30.6 | 29.7 | 27.9 | 18.9 | 18.7 | 18.5 | 18.4 |
| | | | | <i>10⁻³ in.lb.s²</i> | 27 | 26 | 25 | 17 | 17 | 16 | 16 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

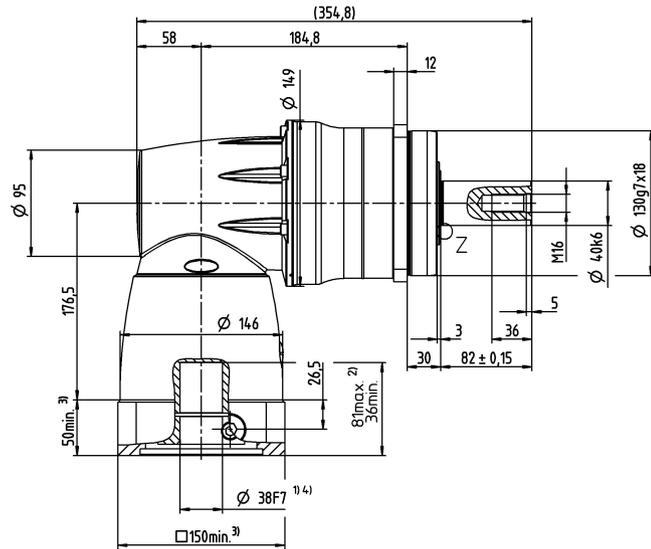
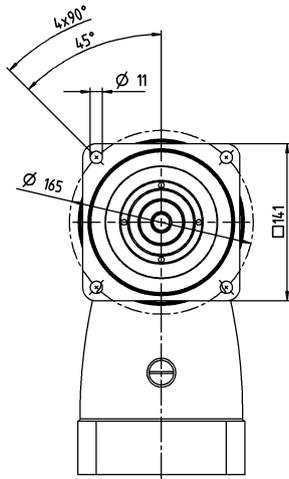
- ^{a)} At max. 10 % F_{2AMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

Motor shaft diameter [mm]

2-stage

up to 38⁴⁾ (K)⁵⁾
clamping hub diameter



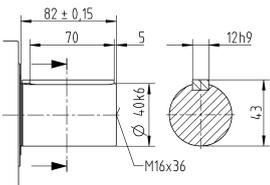
← A

Bevel gearboxes

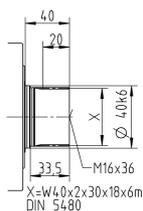
SPC

Other output variants

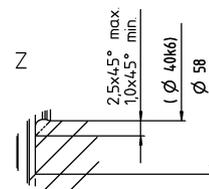
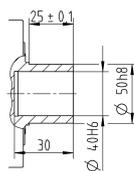
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions
¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

SPC+ 180 MF 2-stage

| | | | | 2-stage | | | | | | | |
|---|--------------|-----------------------|-------|--|-------|-------|-------|-------|-------|-------|------|
| Ratio | <i>i</i> | | | 4 | 5 | 7 | 8 | 10 | 14 | 20 | |
| Max. torque ^{a) b) e)} | T_{2a} | <i>Nm</i> | | 1512 | 1890 | 1936 | 1512 | 1890 | 1936 | 1552 | |
| | | <i>in.lb</i> | | 13382 | 16728 | 17135 | 13382 | 16728 | 17135 | 13736 | |
| Max. acceleration torque ^{b) e)} (max. 1000 cycles per hour) | T_{2B} | <i>Nm</i> | | 1260 | 1452 | 1452 | 1260 | 1452 | 1452 | 1164 | |
| | | <i>in.lb</i> | | 11152 | 12851 | 12851 | 11152 | 12851 | 12851 | 10302 | |
| Nominal torque (at n_n) | T_{2N} | <i>Nm</i> | | 750 | 750 | 750 | 750 | 750 | 750 | 750 | |
| | | <i>in.lb</i> | | 6638 | 6638 | 6638 | 6638 | 6638 | 6638 | 6638 | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | <i>Nm</i> | | 1560 | 1950 | 2730 | 2740 | 2750 | 2750 | 2750 | |
| | | <i>in.lb</i> | | 13807 | 17259 | 24163 | 24251 | 24340 | 24340 | 24340 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | | 1000 | 1000 | 1100 | 1200 | 1200 | 1300 | 1300 | |
| Max. input speed | n_{1Max} | <i>rpm</i> | | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | <i>Nm</i> | | 30 | 27 | 24 | 16 | 15 | 13 | 12 | |
| | | <i>in.lb</i> | | 266 | 239 | 212 | 142 | 133 | 115 | 106 | |
| Max. backlash | j_t | <i>arcmin</i> | | Standard ≤ 4 / Reduced ≤ 2 | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | <i>Nm/arcmin</i> | | 104 | 122 | 143 | 130 | 144 | 157 | 166 | |
| | | <i>in.lb/arcmin</i> | | 920 | 1080 | 1266 | 1151 | 1275 | 1390 | 1469 | |
| Max. axial force ^{c)} | F_{2AMax} | <i>N</i> | | 15570 | | | | | | | |
| | | <i>lb_f</i> | | 3503 | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMMax} | <i>N</i> | | 15400 | | | | | | | |
| | | <i>lb_f</i> | | 3465 | | | | | | | |
| Max. tilting moment | M_{2KMMax} | <i>Nm</i> | | 1600 | | | | | | | |
| | | <i>in.lb</i> | | 14161 | | | | | | | |
| Efficiency at full load | η | <i>%</i> | | 95 | | | | | | | |
| Service life ¹⁾ | L_h | <i>h</i> | | > 20000 | | | | | | | |
| Weight (incl. standard adapter plate) | m | <i>kg</i> | | 54.7 | | | | | | | |
| | | <i>lb_m</i> | | 121 | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | <i>dB(A)</i> | | ≤ 70 | | | | | | | |
| Max. permitted housing temperature | | <i>°C</i> | | +90 | | | | | | | |
| | | <i>F</i> | | 194 | | | | | | | |
| Ambient temperature | | <i>°C</i> | | 0 to +40 | | | | | | | |
| | | <i>F</i> | | 32 to 104 | | | | | | | |
| Lubrication | | | | Lubricated for life | | | | | | | |
| Direction of rotation | | | | In- and output same direction | | | | | | | |
| Protection class | | | | IP 65 | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | | BC2 - 01500AA - 055.000 - X | | | | | | | |
| Bore diameter of coupling on the application side | | <i>mm</i> | | X = 050.000 - 080.000 | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | M | 48 | J_1 | <i>kgcm²</i> | 109.5 | 105 | 94.7 | 49.2 | 48.1 | 46.9 | 46.2 |
| | | | | <i>10⁻³ in.lb.s²</i> | 97 | 93 | 84 | 44 | 43 | 42 | 41 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

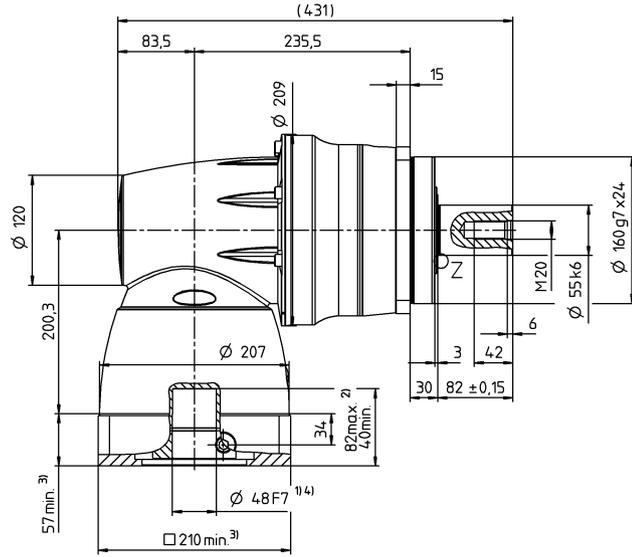
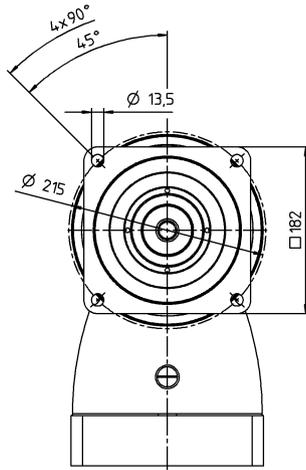
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

Motor shaft diameter [mm]

2-stage

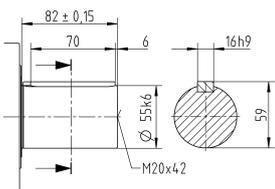
up to 48⁴⁾ (M)⁵⁾
clamping hub diameter



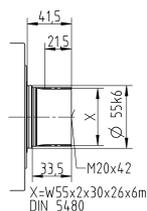
← A

Other output variants

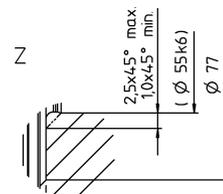
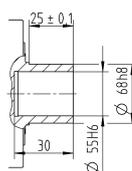
Shaft with key



Splined shaft (DIN 5480)



Shaft mounted



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions
1) Check motor shaft fit

2) Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

3) The dimensions depend on the motor

4) Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

5) Standard clamping hub diameter

TPC+ 004 MF 2-stage

| | | | | 2-stage | | | | | | | |
|--|-------------|-----------------------|-------|--|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | | 4 | 5 | 7 | 8 | 10 | 14 | 20 | |
| Max. torque ^{a) b)} | T_{2a} | <i>Nm</i> | | 48 | 60 | 83 | 48 | 60 | 83 | 56 | |
| | | <i>in.lb</i> | | 425 | 531 | 735 | 425 | 531 | 735 | 496 | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | <i>Nm</i> | | 40 | 50 | 66 | 40 | 50 | 66 | 42 | |
| | | <i>in.lb</i> | | 354 | 443 | 584 | 354 | 443 | 584 | 372 | |
| Nominal torque (at n_n) | T_{2N} | <i>Nm</i> | | 28 | 28 | 28 | 28 | 28 | 28 | 18 | |
| | | <i>in.lb</i> | | 248 | 248 | 248 | 248 | 248 | 248 | 159 | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | <i>Nm</i> | | 100 | 100 | 100 | 100 | 100 | 100 | 100 | |
| | | <i>in.lb</i> | | 885 | 885 | 885 | 885 | 885 | 885 | 885 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | | 2900 | 2900 | 3100 | 3400 | 3400 | 3600 | 3600 | |
| Max. input speed | n_{1Max} | <i>rpm</i> | | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | <i>Nm</i> | | 2.1 | 1.8 | 1.5 | 1.3 | 1.2 | 1 | 0.84 | |
| | | <i>in.lb</i> | | 19 | 16 | 13 | 12 | 11 | 8.9 | 7.4 | |
| Max. backlash | j_t | <i>arcmin</i> | | Standard ≤ 5 / Reduced ≤ 3 | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | <i>Nm/arcmin</i> | | 4.8 | 6.2 | 7.6 | 6.1 | 7.4 | 8.5 | 7.3 | |
| | | <i>in.lb/arcmin</i> | | 42 | 55 | 67 | 54 | 65 | 75 | 65 | |
| Tilting rigidity | C_{2K} | <i>Nm/arcmin</i> | | 85 | | | | | | | |
| | | <i>in.lb/arcmin</i> | | 752 | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | <i>N</i> | | 2119 | | | | | | | |
| | | <i>lb_f</i> | | 477 | | | | | | | |
| Max. tilting moment | M_{2KMax} | <i>Nm</i> | | 110 | | | | | | | |
| | | <i>in.lb</i> | | 974 | | | | | | | |
| Efficiency at full load | η | <i>%</i> | | 95 | | | | | | | |
| Service life ¹⁾ | L_h | <i>h</i> | | > 20000 | | | | | | | |
| Weight (incl. standard adapter plate) | m | <i>kg</i> | | 2.6 | | | | | | | |
| | | <i>lb_m</i> | | 6 | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | <i>dB(A)</i> | | ≤ 68 | | | | | | | |
| Max. permitted housing temperature | | <i>°C</i> | | +90 | | | | | | | |
| | | <i>F</i> | | 194 | | | | | | | |
| Ambient temperature | | <i>°C</i> | | 0 to +40 | | | | | | | |
| | | <i>F</i> | | 32 to 104 | | | | | | | |
| Lubrication | | | | Lubricated for life | | | | | | | |
| Direction of rotation | | | | In- and output same direction | | | | | | | |
| Protection class | | | | IP 65 | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | | BCT - 00015AAX - 031.500 | | | | | | | |
| Bore diameter of coupling on the application side | | <i>mm</i> | | X = 012.000 - 028.000 | | | | | | | |
| Mass moment of inertia (relates to the drive) | C | 14 | J_1 | <i>kgcm²</i> | 0.72 | 0.7 | 0.66 | 0.44 | 0.43 | 0.43 | 0.43 |
| | | | | <i>10⁻³ in.lb.s²</i> | 0.64 | 0.62 | 0.58 | 0.39 | 0.38 | 0.38 | 0.38 |
| Clamping hub diameter [mm] | E | 19 | J_1 | <i>kgcm²</i> | 1.05 | 1.03 | 0.99 | 0.77 | 0.76 | 0.76 | 0.75 |
| | | | | <i>10⁻³ in.lb.s²</i> | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

^{a)} At max. 10 % M_{2KMax}

^{b)} Valid for standard clamping hub diameter

^{c)} Refers to center of the output shaft or flange

^{d)} Please reduce input speed at higher ambient temperatures

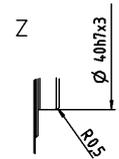
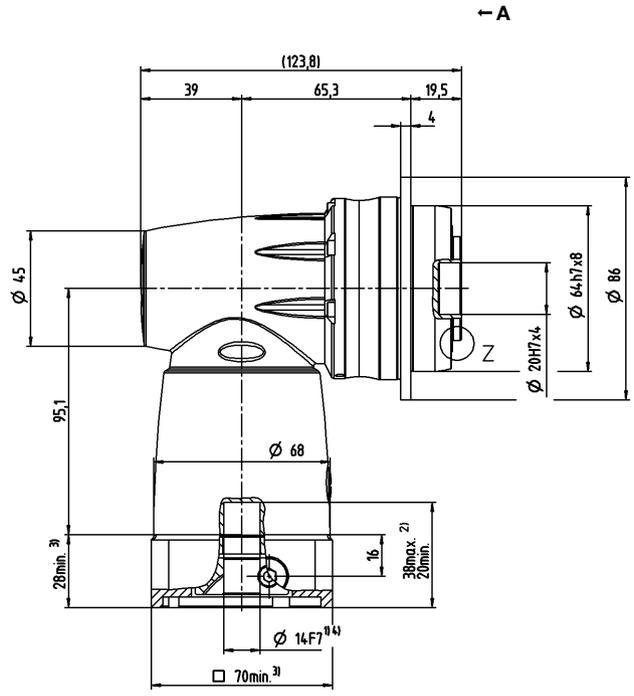
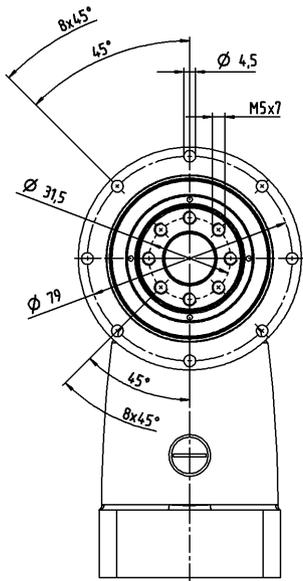
¹⁾ Please contact us to discuss application-specific service lifetimes

View A

Motor shaft diameter [mm]

2-stage

up to 14 / 19⁴⁾
(C⁵⁾ / E) clamping
hub diameter



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

- Non-tolerated dimensions are nominal dimensions
- ¹⁾ Check motor shaft fit
- ²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
- ³⁾ The dimensions depend on the motor
- ⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm
- ⁵⁾ Standard clamping hub diameter

Bevel gearboxes

TPC+

TPC+ 010 MF 2-stage

| | | | | 2-stage | | | | | | | |
|--|-------------|-----------------------|-------|--|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | | 4 | 5 | 7 | 8 | 10 | 14 | 20 | |
| Max. torque ^{a) b)} | T_{2a} | <i>Nm</i> | | 144 | 180 | 210 | 144 | 180 | 210 | 168 | |
| | | <i>in.lb</i> | | 1275 | 1593 | 1859 | 1275 | 1593 | 1859 | 1487 | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | <i>Nm</i> | | 120 | 150 | 172 | 120 | 150 | 172 | 126 | |
| | | <i>in.lb</i> | | 1062 | 1328 | 1522 | 1062 | 1328 | 1522 | 1115 | |
| Nominal torque (at n_{1N}) | T_{2N} | <i>Nm</i> | | 75 | 75 | 75 | 75 | 75 | 75 | 60 | |
| | | <i>in.lb</i> | | 664 | 664 | 664 | 664 | 664 | 664 | 531 | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | <i>Nm</i> | | 192 | 240 | 251 | 248 | 251 | 251 | 251 | |
| | | <i>in.lb</i> | | 1699 | 2124 | 2222 | 2195 | 2222 | 2222 | 2222 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | | 2100 | 2100 | 2300 | 2650 | 2650 | 2800 | 2800 | |
| Max. input speed | n_{1Max} | <i>rpm</i> | | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | 6000 | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | <i>Nm</i> | | 4.2 | 3.7 | 3.2 | 2.9 | 2.7 | 2.1 | 1.9 | |
| | | <i>in.lb</i> | | 37 | 33 | 28 | 26 | 24 | 19 | 17 | |
| Max. backlash | j_t | <i>arcmin</i> | | Standard ≤ 4 / Reduced ≤ 2 | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | <i>Nm/arcmin</i> | | 12 | 16 | 20 | 16 | 20 | 23 | 21 | |
| | | <i>in.lb/arcmin</i> | | 106 | 142 | 177 | 142 | 177 | 204 | 186 | |
| Tilting rigidity | C_{2K} | <i>Nm/arcmin</i> | | 225 | | | | | | | |
| | | <i>in.lb/arcmin</i> | | 1991 | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | <i>N</i> | | 2795 | | | | | | | |
| | | <i>lb_f</i> | | 629 | | | | | | | |
| Max. tilting moment | M_{2KMax} | <i>Nm</i> | | 270 | | | | | | | |
| | | <i>in.lb</i> | | 2390 | | | | | | | |
| Efficiency at full load | η | % | | 95 | | | | | | | |
| Service life ¹⁾ | L_h | <i>h</i> | | > 20000 | | | | | | | |
| Weight (incl. standard adapter plate) | m | <i>kg</i> | | 5.8 | | | | | | | |
| | | <i>lb_m</i> | | 13 | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | <i>dB(A)</i> | | ≤ 68 | | | | | | | |
| Max. permitted housing temperature | | °C | | +90 | | | | | | | |
| | | <i>F</i> | | 194 | | | | | | | |
| Ambient temperature | | °C | | 0 to +40 | | | | | | | |
| | | <i>F</i> | | 32 to 104 | | | | | | | |
| Lubrication | | | | Lubricated for life | | | | | | | |
| Direction of rotation | | | | In- and output same direction | | | | | | | |
| Protection class | | | | IP 65 | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | | BCT - 00060AAX - 050.000 | | | | | | | |
| Bore diameter of coupling on the application side | | <i>mm</i> | | X = 014.000 - 035.000 | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | E | 19 | J_1 | <i>kgcm²</i> | 2.41 | 2.27 | 1.99 | 1.29 | 1.26 | 1.22 | 1.21 |
| | | | | <i>10⁻³ in.lb.s²</i> | 2.13 | 2.01 | 1.76 | 1.14 | 1.12 | 1.08 | 1.07 |
| | H | 28 | J_1 | <i>kgcm²</i> | 3.85 | 3.71 | 3.43 | 2.73 | 2.7 | 2.66 | 2.64 |
| | | | | <i>10⁻³ in.lb.s²</i> | 3.41 | 3.28 | 3.04 | 2.42 | 2.39 | 2.35 | 2.34 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

^{a)} At max. 10 % M_{2KMax}

^{b)} Valid for standard clamping hub diameter

^{c)} Refers to center of the output shaft or flange

^{d)} Please reduce input speed at higher ambient temperatures

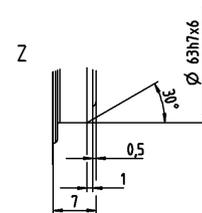
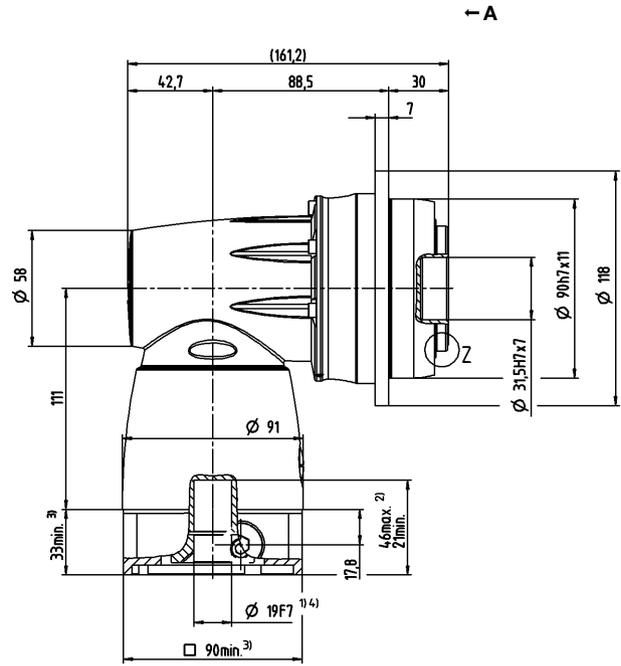
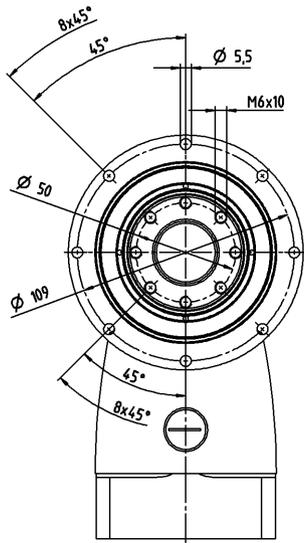
¹⁾ Please contact us to discuss application-specific service lifetimes

View A

Motor shaft diameter [mm]

2-stage

up to 19/28⁴⁾
(E⁵⁾/H) clamping
hub diameter



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

- Non-tolerated dimensions are nominal dimensions
- ¹⁾ Check motor shaft fit
- ²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
- ³⁾ The dimensions depend on the motor
- ⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm
- ⁵⁾ Standard clamping hub diameter

TPC+ 025 MF 2-stage

| | | | | 2-stage | | | | | | | |
|--|-------------|-----------------------|-------|--|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | | 4 | 5 | 7 | 8 | 10 | 14 | 20 | |
| Max. torque ^{a) b)} | T_{2a} | <i>Nm</i> | | 352 | 380 | 352 | 352 | 380 | 352 | 352 | |
| | | <i>in.lb</i> | | 3115 | 3363 | 3115 | 3115 | 3363 | 3115 | 3115 | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | <i>Nm</i> | | 324 | 380 | 352 | 324 | 380 | 352 | 318 | |
| | | <i>in.lb</i> | | 2868 | 3363 | 3115 | 2868 | 3363 | 3115 | 2815 | |
| Nominal torque (at n_n) | T_{2N} | <i>Nm</i> | | 170 | 170 | 170 | 180 | 175 | 170 | 120 | |
| | | <i>in.lb</i> | | 1505 | 1505 | 1505 | 1593 | 1549 | 1505 | 1062 | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | <i>Nm</i> | | 540 | 625 | 625 | 625 | 625 | 625 | 625 | |
| | | <i>in.lb</i> | | 4779 | 5532 | 5532 | 5532 | 5532 | 5532 | 5532 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | | 1900 | 1900 | 2100 | 2300 | 2300 | 2400 | 2400 | |
| Max. input speed | n_{1Max} | <i>rpm</i> | | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | <i>Nm</i> | | 7.9 | 7.1 | 6.1 | 4.7 | 4.3 | 3.7 | 3.2 | |
| | | <i>in.lb</i> | | 70 | 63 | 54 | 42 | 38 | 33 | 28 | |
| Max. backlash | j_t | <i>arcmin</i> | | Standard ≤ 4 / Reduced ≤ 2 | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | <i>Nm/arcmin</i> | | 33 | 43 | 53 | 45 | 56 | 61 | 57 | |
| | | <i>in.lb/arcmin</i> | | 292 | 381 | 469 | 398 | 496 | 540 | 504 | |
| Tilting rigidity | C_{2K} | <i>Nm/arcmin</i> | | 550 | | | | | | | |
| | | <i>in.lb/arcmin</i> | | 4868 | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | <i>N</i> | | 4800 | | | | | | | |
| | | <i>lb_f</i> | | 1080 | | | | | | | |
| Max. tilting moment | M_{2KMax} | <i>Nm</i> | | 440 | | | | | | | |
| | | <i>in.lb</i> | | 3894 | | | | | | | |
| Efficiency at full load | η | % | | 95 | | | | | | | |
| Service life ¹⁾ | L_h | <i>h</i> | | > 20000 | | | | | | | |
| Weight (incl. standard adapter plate) | m | <i>kg</i> | | 10.5 | | | | | | | |
| | | <i>lb_m</i> | | 23 | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | <i>dB(A)</i> | | ≤ 68 | | | | | | | |
| Max. permitted housing temperature | | °C | | +90 | | | | | | | |
| | | <i>F</i> | | 194 | | | | | | | |
| Ambient temperature | | °C | | 0 to +40 | | | | | | | |
| | | <i>F</i> | | 32 to 104 | | | | | | | |
| Lubrication | | | | Lubricated for life | | | | | | | |
| Direction of rotation | | | | In- and output same direction | | | | | | | |
| Protection class | | | | IP 65 | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | | BCT - 00150AAX - 063.000 | | | | | | | |
| Bore diameter of coupling on the application side | | <i>mm</i> | | X = 019.000 - 042.000 | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | H | 28 | J_1 | <i>kgcm²</i> | 8.3 | 7.9 | 7 | 5.1 | 5 | 4.9 | 4.8 |
| | | | | <i>10⁻³ in.lb.s²</i> | 7 | 7 | 6 | 5 | 4 | 4 | 4 |
| | K | 38 | J_1 | <i>kgcm²</i> | 15.4 | 14.9 | 14.1 | 12.2 | 12.1 | 12 | 11.9 |
| | | | | <i>10⁻³ in.lb.s²</i> | 14 | 13 | 12 | 11 | 11 | 11 | 11 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

^{a)} At max. 10 % M_{2KMax}

^{b)} Valid for standard clamping hub diameter

^{c)} Refers to center of the output shaft or flange

^{d)} Please reduce input speed at higher ambient temperatures

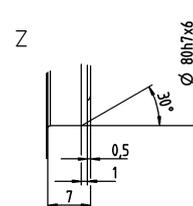
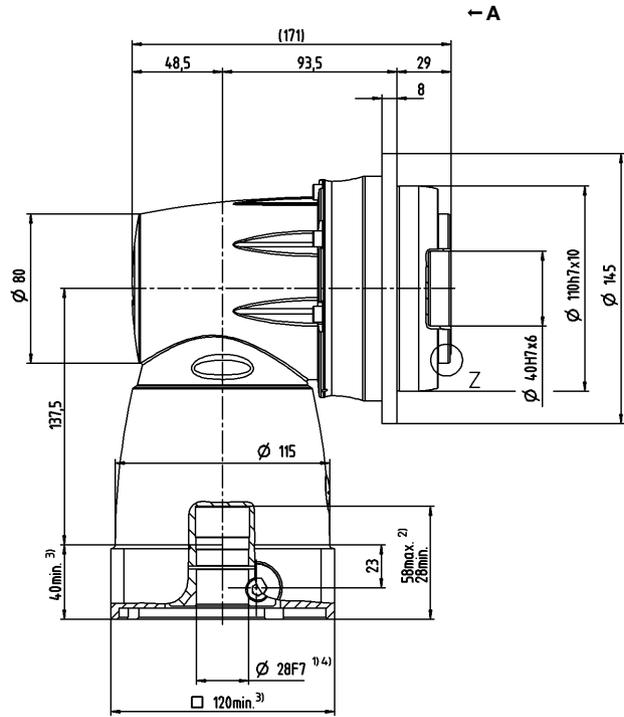
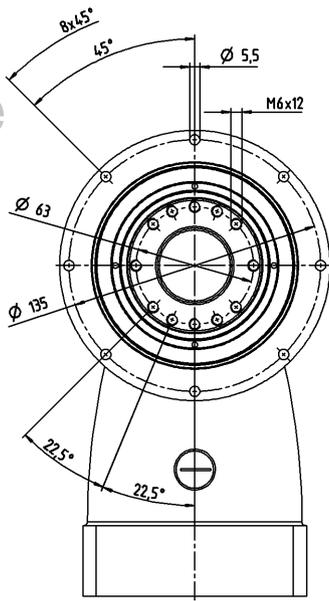
¹⁾ Please contact us to discuss application-specific service lifetimes

View A

Motor shaft diameter [mm]

2-stage

up to 28/38⁴⁾
(H⁵⁾/K) clamping
hub diameter



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions

- ¹⁾ Check motor shaft fit
- ²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
- ³⁾ The dimensions depend on the motor
- ⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm
- ⁵⁾ Standard clamping hub diameter

TPC+ 050 MF 2-stage

| | | | | 2-stage | | | | | | | |
|--|-------------|-----------------------|-------|--|-------|-------|-------|-------|-------|-------|------|
| Ratio | <i>i</i> | | | 4 | 5 | 7 | 8 | 10 | 14 | 20 | |
| Max. torque ^{a) b)} | T_{2a} | <i>Nm</i> | | 840 | 992 | 868 | 840 | 992 | 868 | 720 | |
| | | <i>in.lb</i> | | 7435 | 8780 | 7682 | 7435 | 8780 | 7682 | 6373 | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | <i>Nm</i> | | 700 | 840 | 840 | 700 | 840 | 840 | 648 | |
| | | <i>in.lb</i> | | 6196 | 7435 | 7435 | 6196 | 7435 | 7435 | 5735 | |
| Nominal torque (at n_n) | T_{2N} | <i>Nm</i> | | 370 | 370 | 370 | 370 | 370 | 370 | 240 | |
| | | <i>in.lb</i> | | 3275 | 3275 | 3275 | 3275 | 3275 | 3275 | 2124 | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | <i>Nm</i> | | 960 | 1200 | 1250 | 1240 | 1250 | 1250 | 1250 | |
| | | <i>in.lb</i> | | 8497 | 10621 | 11064 | 10975 | 11064 | 11064 | 11064 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | | 1200 | 1200 | 1300 | 1500 | 1500 | 1600 | 1600 | |
| Max. input speed | n_{1Max} | <i>rpm</i> | | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | 4500 | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | <i>Nm</i> | | 19 | 16 | 14 | 13 | 11 | 9.4 | 7.8 | |
| | | <i>in.lb</i> | | 168 | 142 | 124 | 115 | 97 | 83 | 69 | |
| Max. backlash | j_t | <i>arcmin</i> | | Standard ≤ 4 / Reduced ≤ 2 | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | <i>Nm/arcmin</i> | | 73 | 93 | 111 | 93 | 113 | 124 | 111 | |
| | | <i>in.lb/arcmin</i> | | 646 | 823 | 982 | 823 | 1000 | 1097 | 982 | |
| Tilting rigidity | C_{2K} | <i>Nm/arcmin</i> | | 560 | | | | | | | |
| | | <i>in.lb/arcmin</i> | | 4956 | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | <i>N</i> | | 6130 | | | | | | | |
| | | <i>lb_f</i> | | 1379 | | | | | | | |
| Max. tilting moment | M_{2KMax} | <i>Nm</i> | | 1379 | | | | | | | |
| | | <i>in.lb</i> | | 12205 | | | | | | | |
| Efficiency at full load | η | <i>%</i> | | 95 | | | | | | | |
| Service life ¹⁾ | L_h | <i>h</i> | | > 20000 | | | | | | | |
| Weight (incl. standard adapter plate) | m | <i>kg</i> | | 21.5 | | | | | | | |
| | | <i>lb_m</i> | | 48 | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | <i>dB(A)</i> | | ≤ 70 | | | | | | | |
| Max. permitted housing temperature | | <i>°C</i> | | +90 | | | | | | | |
| | | <i>F</i> | | 194 | | | | | | | |
| Ambient temperature | | <i>°C</i> | | 0 to +40 | | | | | | | |
| | | <i>F</i> | | 32 to 104 | | | | | | | |
| Lubrication | | | | Lubricated for life | | | | | | | |
| Direction of rotation | | | | In- and output same direction | | | | | | | |
| Protection class | | | | IP 65 | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | | BCT - 00300AAX - 080.000 | | | | | | | |
| Bore diameter of coupling on the application side | | <i>mm</i> | | X = 024.000 - 060.000 | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | K | 38 | J_1 | <i>kgcm²</i> | 32.3 | 30.8 | 27.9 | 19.4 | 19 | 18.7 | 18.5 |
| | | | | <i>10⁻³ in.lb.s²</i> | 29 | 27 | 25 | 17 | 17 | 17 | 16 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

^{a)} At max. 10 % M_{2KMax}

^{b)} Valid for standard clamping hub diameter

^{c)} Refers to center of the output shaft or flange

^{d)} Please reduce input speed at higher ambient temperatures

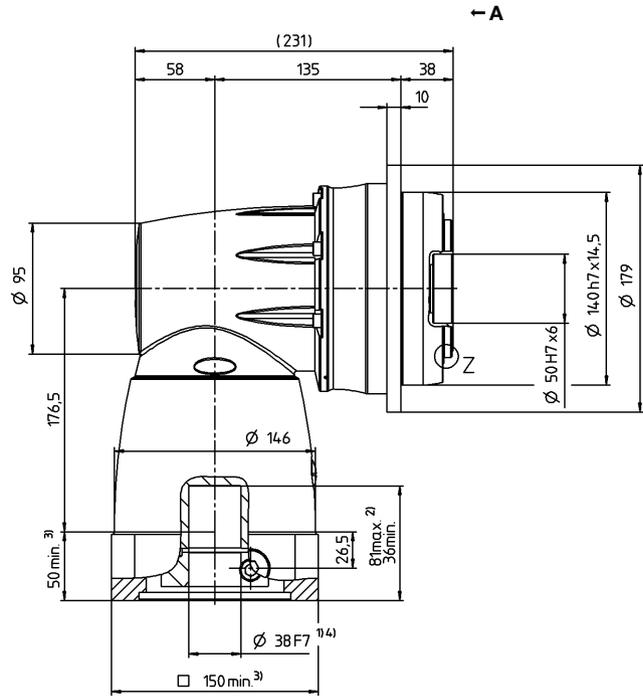
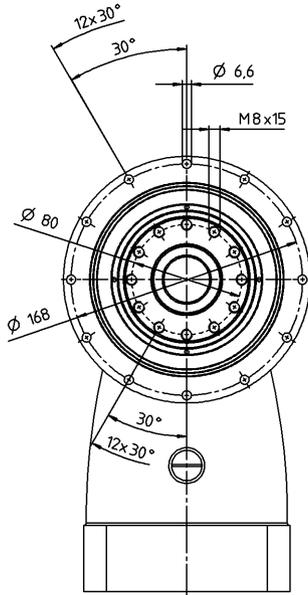
¹⁾ Please contact us to discuss application-specific service lifetimes

View A

Motor shaft diameter [mm]

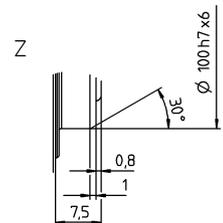
2-stage

up to 38⁴⁾ (K)⁵⁾
clamping hub diameter



Bevel gearboxes

TPC+



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

- Non-tolerated dimensions are nominal dimensions
- ¹⁾ Check motor shaft fit
- ²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
- ³⁾ The dimensions depend on the motor
- ⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm
- ⁵⁾ Standard clamping hub diameter

TPC+ 110 MF 2-stage

| | | | | 2-stage | | | | | | | |
|---|-------------|-----------------------|-------|--|-------|-------|-------|-------|-------|-------|------|
| Ratio | <i>i</i> | | | 4 | 5 | 7 | 8 | 10 | 14 | 20 | |
| Max. torque ^{a) b)} | T_{2a} | <i>Nm</i> | | 1512 | 1890 | 2560 | 1512 | 1890 | 2560 | 2240 | |
| | | <i>in.lb</i> | | 13382 | 16728 | 22658 | 13382 | 16728 | 22658 | 19826 | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | <i>Nm</i> | | 1260 | 1575 | 1920 | 1260 | 1575 | 1920 | 1680 | |
| | | <i>in.lb</i> | | 11152 | 13940 | 16994 | 11152 | 13940 | 16994 | 14869 | |
| Nominal torque (at n_n) | T_{2N} | <i>Nm</i> | | 700 | 750 | 750 | 700 | 750 | 750 | 750 | |
| | | <i>in.lb</i> | | 6196 | 6638 | 6638 | 6196 | 6638 | 6638 | 6638 | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | <i>Nm</i> | | 1560 | 1950 | 2730 | 2740 | 3075 | 3075 | 3075 | |
| | | <i>in.lb</i> | | 13807 | 17259 | 24163 | 24251 | 27216 | 27216 | 27216 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | n_{1T} | | 900 | 900 | 1000 | 1200 | 1200 | 1300 | 1300 | |
| Max. input speed | n_{1Max} | <i>rpm</i> | | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | <i>Nm</i> | | 37 | 32 | 28 | 20 | 17 | 15 | 13 | |
| | | <i>in.lb</i> | | 327 | 283 | 248 | 177 | 150 | 133 | 115 | |
| Max. backlash | j_t | <i>arcmin</i> | | Standard ≤ 4 / Reduced ≤ 2 | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | <i>Nm/arcmin</i> | | 181 | 242 | 324 | 278 | 345 | 407 | 390 | |
| | | <i>in.lb/arcmin</i> | | 1602 | 2142 | 2868 | 2461 | 3054 | 3602 | 3452 | |
| Tilting rigidity | C_{2K} | <i>Nm/arcmin</i> | | 1452 | | | | | | | |
| | | <i>in.lb/arcmin</i> | | 12851 | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | <i>N</i> | | 10050 | | | | | | | |
| | | <i>lb_f</i> | | 2261 | | | | | | | |
| Max. tilting moment | M_{2KMax} | <i>Nm</i> | | 3280 | | | | | | | |
| | | <i>in.lb</i> | | 29031 | | | | | | | |
| Efficiency at full load | η | <i>%</i> | | 95 | | | | | | | |
| Service life ¹⁾ | L_h | <i>h</i> | | > 20000 | | | | | | | |
| Weight (incl. standard adapter plate) | m | <i>kg</i> | | 50.7 | | | | | | | |
| | | <i>lb_m</i> | | 112 | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | <i>dB(A)</i> | | ≤ 70 | | | | | | | |
| Max. permitted housing temperature | | <i>°C</i> | | +90 | | | | | | | |
| | | <i>F</i> | | 194 | | | | | | | |
| Ambient temperature | | <i>°C</i> | | 0 to +40 | | | | | | | |
| | | <i>F</i> | | 32 to 104 | | | | | | | |
| Lubrication | | | | Lubricated for life | | | | | | | |
| Direction of rotation | | | | In- and output same direction | | | | | | | |
| Protection class | | | | IP 65 | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | | BCT - 01500AAX - 125.000 | | | | | | | |
| Bore diameter of coupling on the application side | | <i>mm</i> | | X = 050.000 - 080.000 | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | M | 48 | J_1 | <i>kgcm²</i> | 121.2 | 112.6 | 94.7 | 52.1 | 50 | 47.9 | 46.7 |
| | | | | <i>10⁻³ in.lb.s²</i> | 107 | 100 | 84 | 46 | 44 | 42 | 41 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

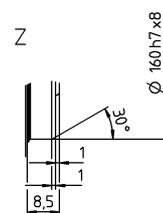
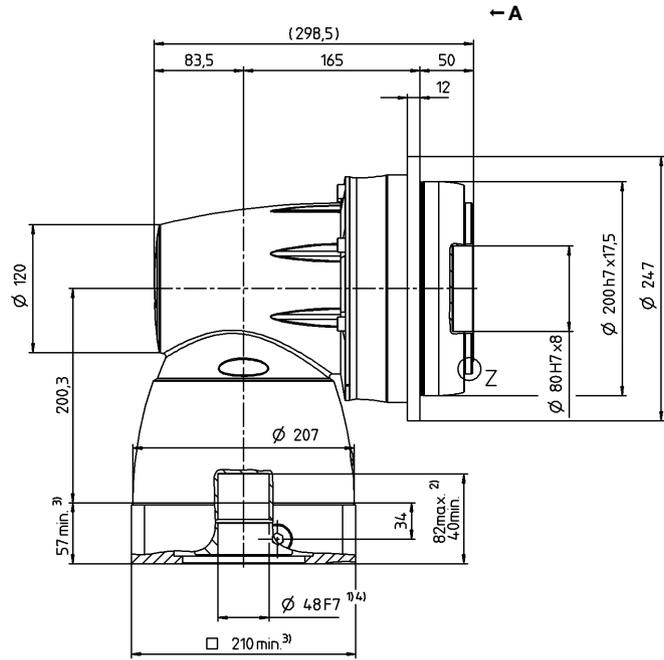
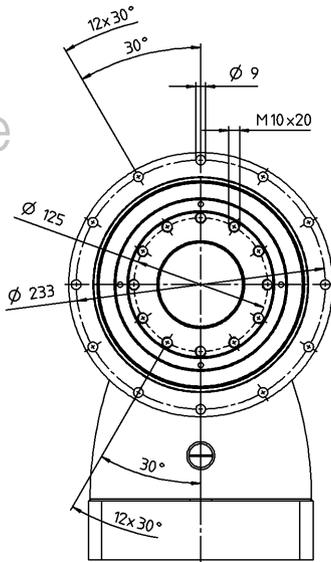
- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

Motor shaft diameter [mm]

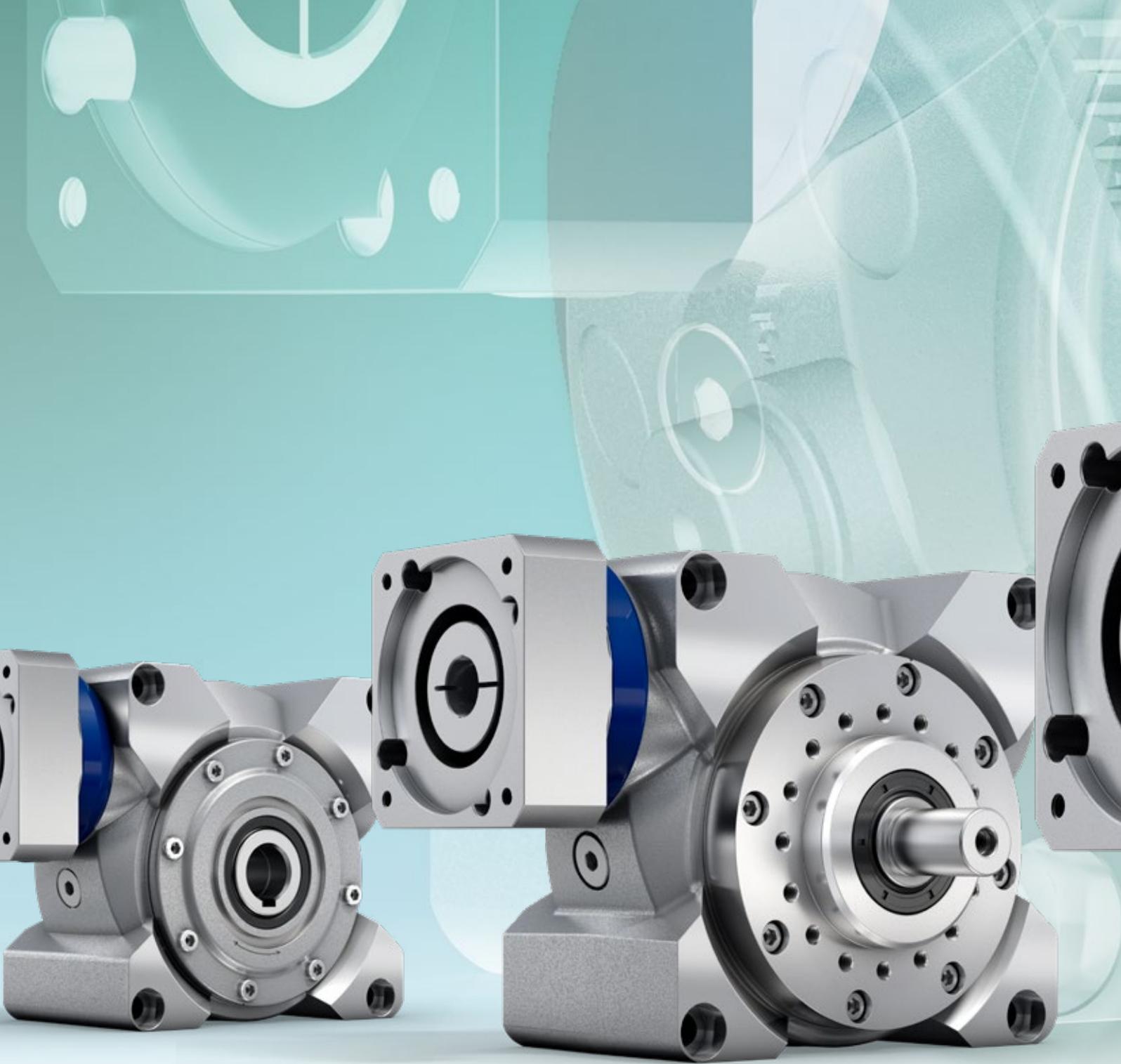
2-stage

up to 48⁴⁾ (M)⁵⁾
clamping hub diameter

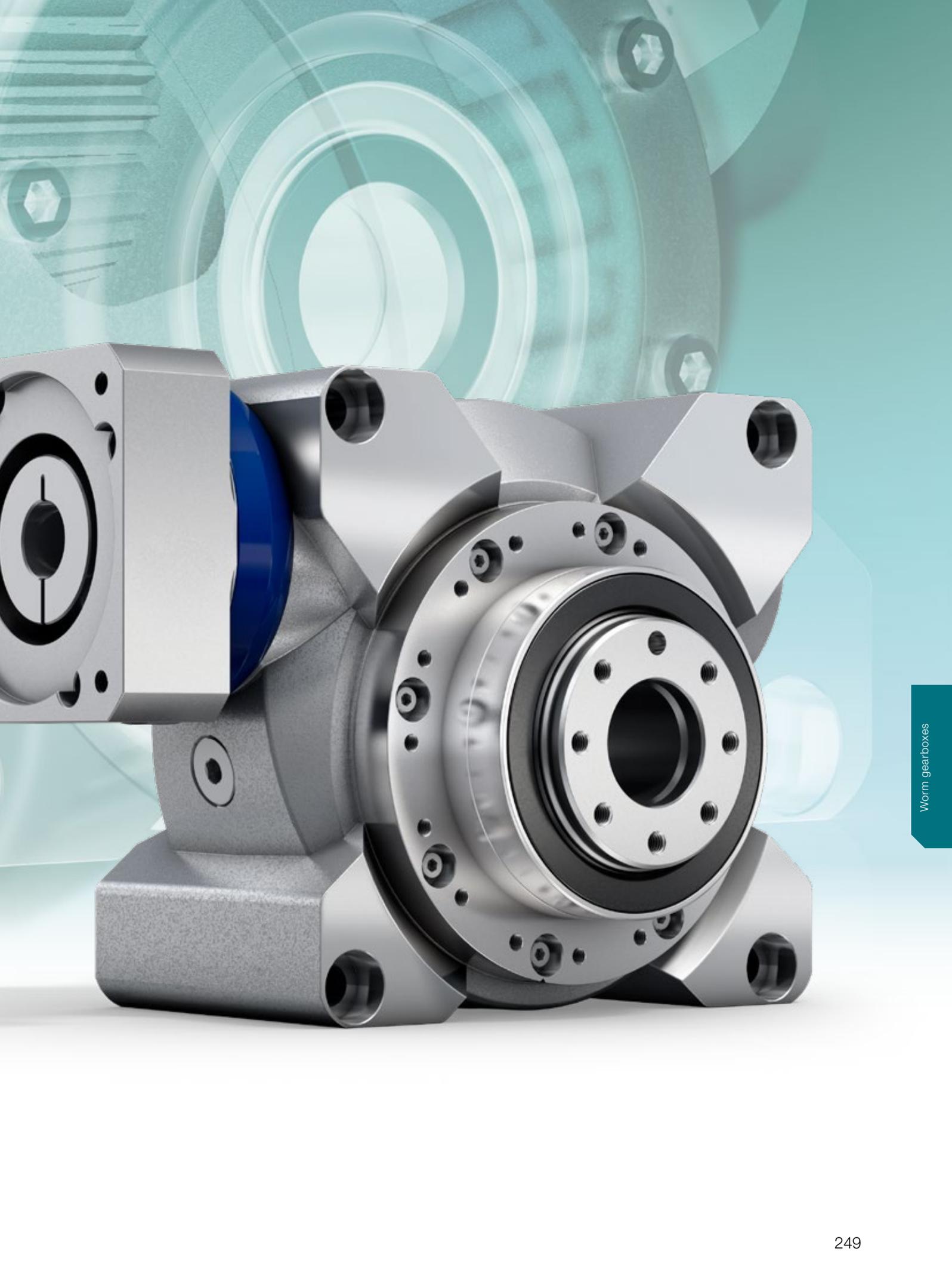


See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

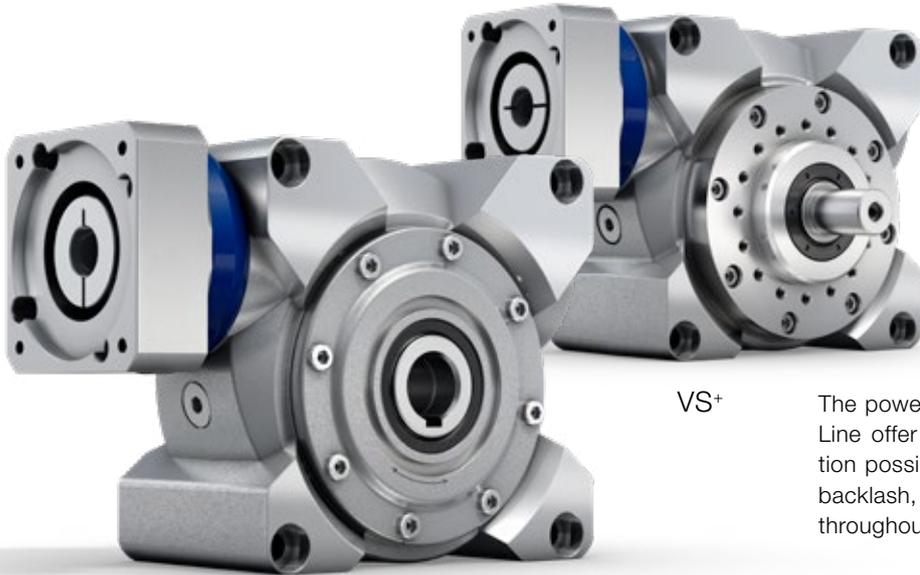
- Non-tolerated dimensions are nominal dimensions
- ¹⁾ Check motor shaft fit
- ²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
- ³⁾ The dimensions depend on the motor
- ⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm
- ⁵⁾ Standard clamping hub diameter



Worm gearboxes VH⁺ / VS⁺ / VT⁺
Flexible powerhouses



VH+ / VS+ / VT+ – Precision worm gearboxes



VH+

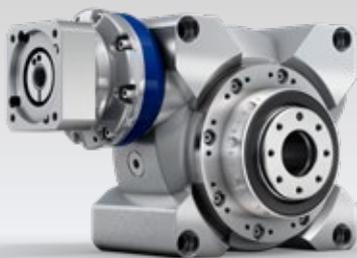
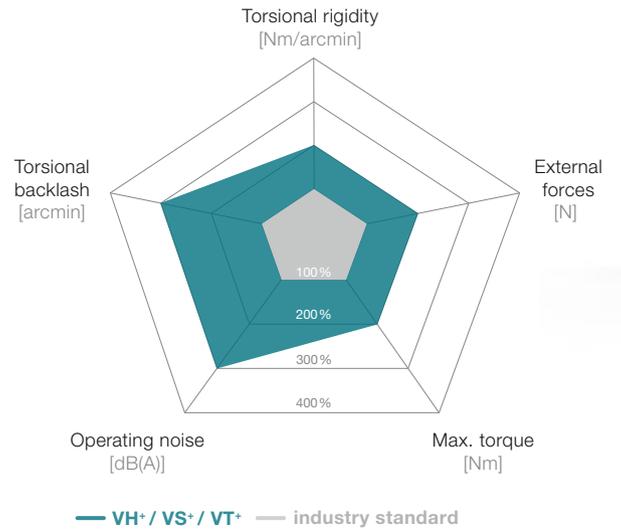
VS+

The powerful V-Drive worm gears of the alpha Advanced Line offer flexible output shapes and countless application possibilities. With high-quality toothing and constant backlash, the gearboxes remain exceptionally efficient throughout their entire service life.

V-Drive Advanced compared to the industry standard

Product highlights

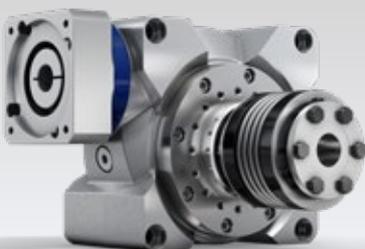
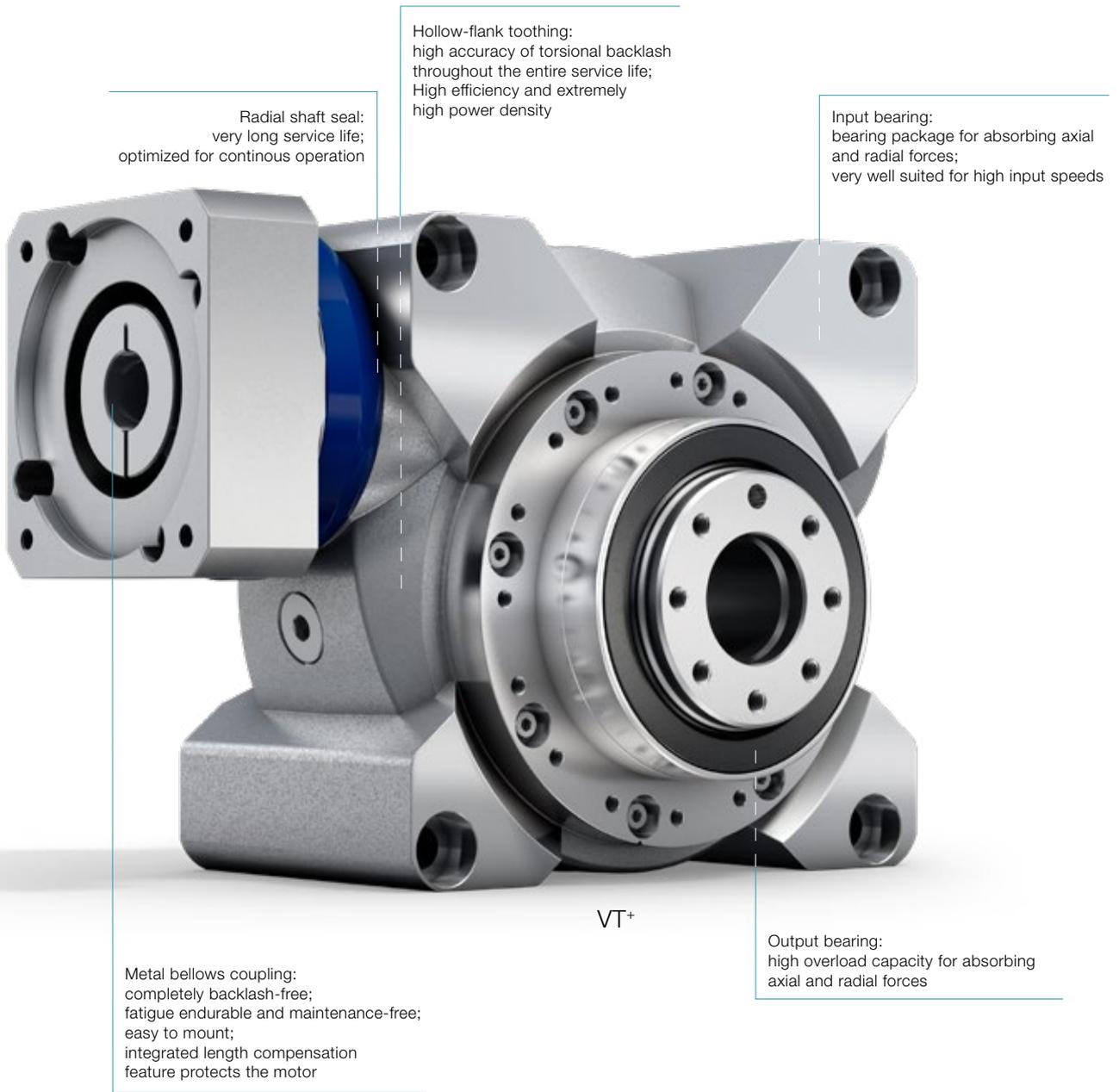
- Max. torsional backlash [arcmin]** ≤ 3 (Standard) / ≤ 2 (Reduced)
- Constant, low torsional backlash** consistently high quality and high positioning accuracy guaranteed throughout its lifespan
- No stick-slip effect** owing to the enhanced hollow-flank teeth
- Optimally sized output bearing** for absorbing high axial and radial forces in cyclic or continuous operation
- Hollow-flank teeth** with high overload capacity owing to the low specific tooth pressure



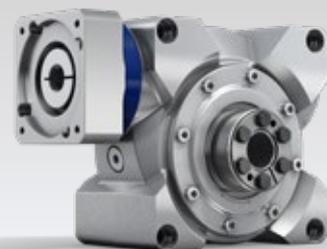
VT+ with integrated planetary input stage for higher ratios



VS+ in linear system



VS+ with metal bellows coupling BC3



VH+ with shrink disk

VH+ 040 MF 1-/2-stage

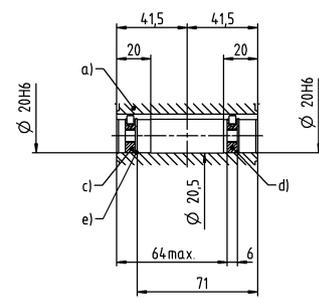
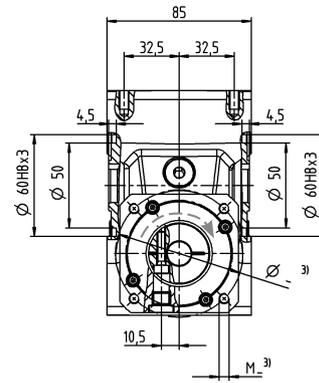
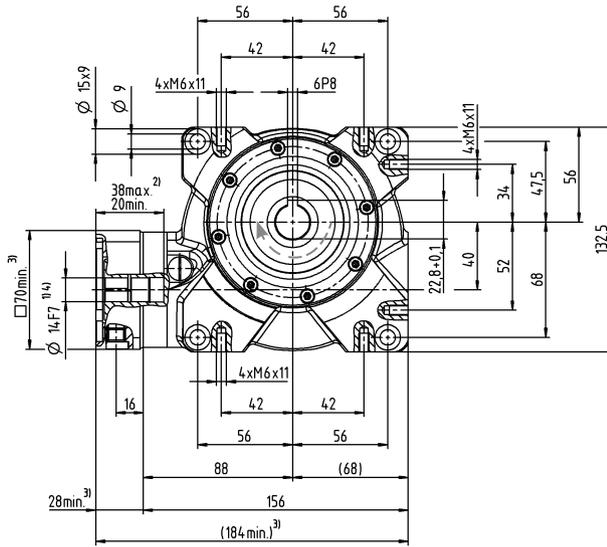
| | | | 1-stage | | | | | | 2-stage | | | | | | | | |
|---|--------------|-----------------|-------------------------------|---------------------------------------|------|------|------|------|----------------------------|------|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 4 | 7 | 10 | 16 | 28 | 40 | 50 | 70 | 100 | 140 | 200 | 280 | 400 | | |
| Max. torque ^{a) b)} (at $n_1 = 500$ rpm) | T_{2a} | Nm | 74 | 82 | 98 | 101 | 106 | 98 | 98 | 82 | 98 | 106 | 98 | 106 | 98 | | |
| | | in.lb | 655 | 726 | 867 | 894 | 938 | 867 | 867 | 726 | 867 | 938 | 867 | 938 | 867 | | |
| Torque for constant backlash (over the lifetime) | T_{2Servo} | Nm | 17 | 24 | 25 | 26 | 29 | 25 | 25 | 24 | 25 | 29 | 25 | 29 | 25 | | |
| | | in.lb | 150 | 212 | 221 | 230 | 257 | 221 | 221 | 212 | 221 | 257 | 221 | 257 | 221 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 118 | 126 | 125 | 129 | 134 | 122 | 125 | 126 | 125 | 134 | 122 | 134 | 122 | | |
| | | in.lb | 1044 | 1115 | 1106 | 1142 | 1186 | 1080 | 1106 | 1115 | 1106 | 1186 | 1080 | 1186 | 1080 | | |
| Permitted average input speed (at 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 4000 | | | | | | 4400 | | | | | | | | |
| Max. input speed | n_{1Max} | rpm | 6000 | | | | | | | | | | | | | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 0.8 | 0.7 | 0.6 | 0.5 | 0.4 | 0.4 | 0.4 | 0.2 | 0.2 | 0.4 | 0.4 | 0.3 | 0.2 | | |
| | | in.lb | 7.1 | 6.2 | 5.3 | 4.4 | 3.5 | 3.5 | 3.5 | 1.8 | 1.8 | 3.5 | 3.5 | 2.7 | 1.8 | | |
| Max. backlash | j_1 | arcmin | ≤ 3 | Standard ≤ 3 / Reduced ≤ 2 | | | | | Standard ≤ 4 / Reduced ≤ 3 | | | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | Nm/arcmin | 4.5 | | | | | | 5 | | | | | | | | |
| | | in.lb/arcmin | 40 | | | | | | 40 | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | | | | | | | 3000 | | | | | | | | |
| | | lb _f | | | | | | | 675 | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | | | | | | | 2400 | | | | | | | | |
| | | lb _f | | | | | | | 540 | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | | | | | | | 205 | | | | | | | | |
| | | in.lb | | | | | | | 1814 | | | | | | | | |
| Efficiency at full load (at $n_1 = 500$ rpm) | η | % | 93 | 90 | 88 | 82 | 73 | 67 | 86 | 88 | 86 | 71 | 65 | 71 | 65 | | |
| Service life ¹⁾ | L_h | h | > 20000 | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 5.0 | | | | | | 5.6 | | | | | | | | |
| | | lb _m | 11.1 | | | | | | 12.0 | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 54 | | | | | | ≤ 58 | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | | | | | | | | | |
| | | F | 5 to 104 | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | |
| Shrink disc (Standard version) | | | SD 024x050 S2 | | | | | | | | | | | | | | |
| Max. torque (without axial force) | T_{max} | Nm | 250 | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | C | 14 | J_1 | kgcm ² | 0.52 | 0.38 | 0.34 | 0.32 | 0.32 | 0.31 | 0.25 | 0.28 | 0.24 | 0.23 | 0.19 | 0.18 | 0.18 |
| | | | | 10 ⁻³ in.lb.s ² | 0.46 | 0.34 | 0.30 | 0.28 | 0.28 | 0.27 | 0.22 | 0.25 | 0.21 | 0.20 | 0.17 | 0.16 | 0.16 |
| | E | 19 | J_1 | kgcm ² | 0.54 | 0.40 | 0.37 | 0.35 | 0.34 | 0.33 | 0.36 | 0.40 | 0.36 | 0.34 | 0.30 | 0.30 | 0.30 |
| | | | | 10 ⁻³ in.lb.s ² | 0.48 | 0.35 | 0.33 | 0.31 | 0.30 | 0.29 | 0.32 | 0.35 | 0.32 | 0.30 | 0.27 | 0.27 | 0.27 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ¹⁾ Please contact us to discuss application-specific service lifetimes

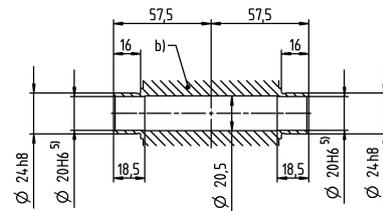
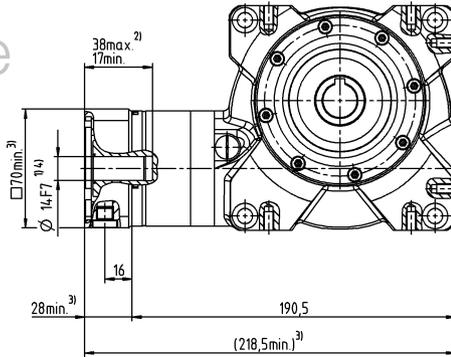
1-stage

up to 14/19⁴⁾
(C⁶⁾/E) clamping
hub diameter



2-stage

up to 14/19⁴⁾
(C⁶⁾/E) clamping
hub diameter



Motor shaft diameter [mm]

Worm gearboxes

VH+

- a) Hollow shaft, keywayed
- b) Hollow shaft, smooth
- c) End disc for screw M6
- d) End disc as forcing washer for screw M8
- e) Locking ring – DIN 472

See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions
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 with a minimum wall thickness of 1 mm.
⁵⁾ Tolerance h6 for mounted shaft.
⁶⁾ Standard clamping hub diameter

VH+ 050 MF 1-/2-stage

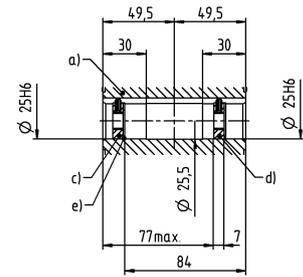
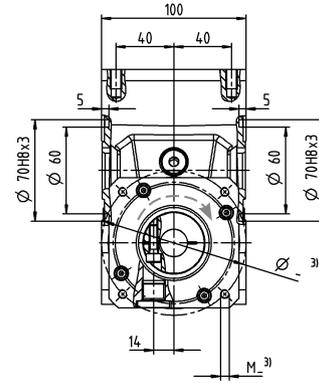
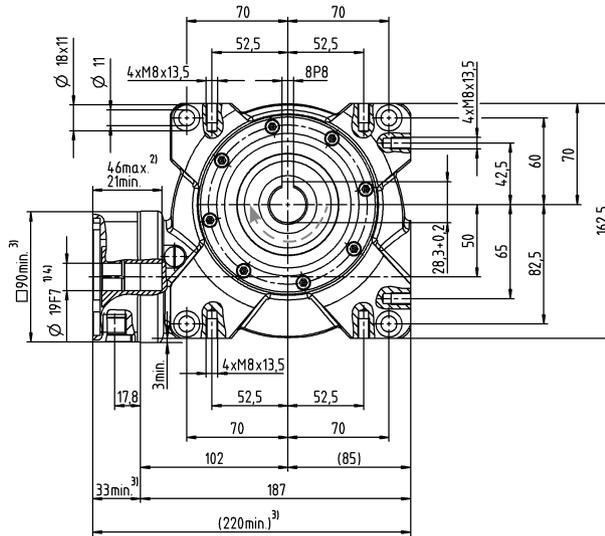
| | | | 1-stage | | | | | | 2-stage | | | | | | | | |
|--|--------------|-----------------|-------------------------------|---------------------------------------|------|------|------|------|----------------------------|------|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 4 | 7 | 10 | 16 | 28 | 40 | 50 | 70 | 100 | 140 | 200 | 280 | 400 | | |
| Max. torque ^{a) b)} (at $n_1 = 500$ rpm) | T_{2a} | Nm | 165 | 180 | 182 | 193 | 204 | 183 | 182 | 180 | 182 | 204 | 183 | 204 | 183 | | |
| | | in.lb | 1460 | 1593 | 1611 | 1708 | 1805 | 1620 | 1611 | 1593 | 1611 | 1805 | 1620 | 1805 | 1620 | | |
| Torque for constant backlash (over the lifetime) | T_{2Servo} | Nm | 54 | 71 | 74 | 81 | 90 | 74 | 74 | 71 | 74 | 90 | 74 | 90 | 74 | | |
| | | in.lb | 478 | 628 | 655 | 717 | 797 | 655 | 655 | 628 | 655 | 797 | 655 | 797 | 655 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 230 | 242 | 242 | 250 | 262 | 236 | 242 | 242 | 242 | 262 | 236 | 262 | 236 | | |
| | | in.lb | 2036 | 2142 | 2142 | 2213 | 2319 | 2089 | 2142 | 2142 | 2142 | 2319 | 2089 | 2319 | 2089 | | |
| Permitted average input speed (at 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 4000 | | | | | | 3500 | | | | | | | | |
| Max. input speed | n_{1Max} | rpm | 6000 | | | | | | | | | | | | | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 2.3 | 2.2 | 1.6 | 1.5 | 1.2 | 1.1 | 0.7 | 0.5 | 0.4 | 0.6 | 0.6 | 0.4 | 0.4 | | |
| | | in.lb | 20.4 | 19.5 | 14.2 | 13.3 | 10.6 | 9.7 | 6.2 | 4.4 | 3.5 | 5.3 | 5.3 | 3.5 | 3.5 | | |
| Max. backlash | j_1 | arcmin | ≤ 3 | Standard ≤ 3 / Reduced ≤ 2 | | | | | Standard ≤ 4 / Reduced ≤ 3 | | | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | Nm/arcmin | 8 | | | | | | | | | | | | | | |
| | | in.lb/arcmin | 71 | | | | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 5000 | | | | | | | | | | | | | | |
| | | lb _f | 1125 | | | | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 3800 | | | | | | | | | | | | | | |
| | | lb _f | 855 | | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 409 | | | | | | | | | | | | | | |
| | | in.lb | 3620 | | | | | | | | | | | | | | |
| Efficiency at full load (at $n_1 = 500$ rpm) | η | % | 92 | 89 | 86 | 82 | 72 | 64 | 84 | 87 | 84 | 70 | 62 | 70 | 62 | | |
| Service life ¹⁾ | L_h | h | > 20000 | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 8.0 | | | | | | 8.7 | | | | | | | | |
| | | lb _m | 17.7 | | | | | | 19.0 | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 62 | | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | | | | | | | | | |
| | | F | 5 to 104 | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | |
| Shrink disc (Standard version) | | | SD 030x060 S2V | | | | | | | | | | | | | | |
| Max. torque (without axial force) | T_{max} | Nm | 550 | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | C | 14 | J_1 | kgcm ² | - | - | - | - | - | - | 0.80 | 0.80 | 0.80 | 0.70 | 0.70 | 0.70 | 0.70 |
| | | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | - | 0.71 | 0.71 | 0.71 | 0.62 | 0.62 | 0.62 | 0.62 |
| | E | 19 | J_1 | kgcm ² | 1.50 | 1.21 | 1.12 | 1.03 | 1.00 | 1.05 | 1.20 | 1.30 | 1.20 | 1.10 | 1.10 | 1.10 | 1.10 |
| | | | | 10 ⁻³ in.lb.s ² | 1.33 | 1.07 | 0.99 | 0.91 | 0.89 | 0.93 | 1.06 | 1.15 | 1.06 | 0.97 | 0.97 | 0.97 | 0.97 |
| | G | 24 | J_1 | kgcm ² | 1.6 | 1.32 | 1.23 | 1.14 | 1.11 | 1.15 | - | - | - | - | - | - | - |
| | | | | 10 ⁻³ in.lb.s ² | 1.4 | 1.2 | 1.1 | 1.0 | 0.98 | 1.0 | - | - | - | - | - | - | - |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ¹⁾ Please contact us to discuss application-specific service lifetimes

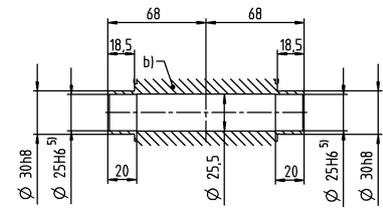
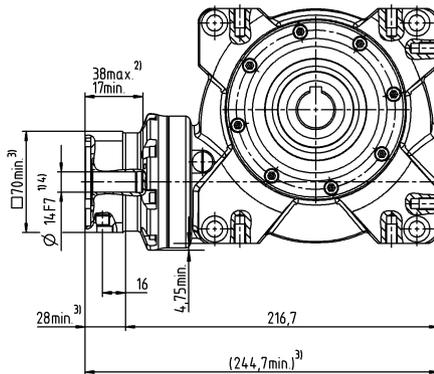
1-stage

up to 19/24⁴⁾
(E⁶⁾/G) clamping
hub diameter



2-stage

up to 14/19⁴⁾
(C⁶⁾/E) clamping
hub diameter



Motor shaft diameter [mm]

Worm gearboxes

VH+

- a) Hollow shaft, keywayed
- b) Hollow shaft, smooth
- c) End disc for screw M10
- d) End disc as forcing washer for screw M12
- e) Locking ring – DIN 472

See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions
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 with a minimum wall thickness of 1 mm.
⁵⁾ Tolerance h6 for mounted shaft.
⁶⁾ Standard clamping hub diameter

VH+ 063 MF 1-/2-stage

| | | | 1-stage | | | | | | 2-stage | | | | | | | | |
|---|--------------|-----------------|---------------------------------------|---------------------------------------|------|------|------|------|----------------------------|------|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 4 | 7 | 10 | 16 | 28 | 40 | 50 | 70 | 100 | 140 | 200 | 280 | 400 | | |
| Max. torque ^{a) b)} (at $n_1 = 500$ rpm) | T_{2a} | Nm | 319 | 353 | 364 | 372 | 392 | 363 | 364 | 353 | 364 | 392 | 363 | 392 | 363 | | |
| | | in.lb | 2823 | 3124 | 3221 | 3292 | 3469 | 3213 | 3221 | 3124 | 3221 | 3469 | 3213 | 3469 | 3213 | | |
| Torque for constant backlash (over the lifetime) | T_{2Servo} | Nm | 198 | 210 | 225 | 221 | 229 | 226 | 225 | 210 | 225 | 229 | 226 | 229 | 226 | | |
| | | in.lb | 1752 | 1859 | 1991 | 1956 | 2027 | 2000 | 1991 | 1859 | 1991 | 2027 | 2000 | 2027 | 2000 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 460 | 484 | 491 | 494 | 518 | 447 | 491 | 484 | 494 | 518 | 447 | 518 | 447 | | |
| | | in.lb | 4071 | 4283 | 4345 | 4372 | 4584 | 3956 | 4345 | 4283 | 4372 | 4584 | 3956 | 4584 | 3956 | | |
| Permitted average input speed (at 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 4000 | | | | | | 3100 | | | | | | | | |
| Max. input speed | n_{1Max} | rpm | 4500 | | | | | | | | | | | | | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 4.2 | 3.1 | 3 | 2.4 | 2.3 | 2.2 | 1.2 | 0.7 | 0.7 | 1.1 | 1.1 | 0.8 | 0.6 | | |
| | | in.lb | 37.2 | 27.4 | 26.6 | 21.2 | 20.4 | 19.5 | 10.6 | 6.2 | 6.2 | 9.7 | 9.7 | 7.1 | 5.3 | | |
| Max. backlash | j_1 | arcmin | ≤ 3 | Standard ≤ 3 / Reduced ≤ 2 | | | | | Standard ≤ 4 / Reduced ≤ 3 | | | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | Nm/arcmin | 28 | | | | | | | | | | | | | | |
| | | in.lb/arcmin | 248 | | | | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 8250 | | | | | | | | | | | | | | |
| | | lb _f | 1856 | | | | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 6000 | | | | | | | | | | | | | | |
| | | lb _f | 1350 | | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 843 | | | | | | | | | | | | | | |
| | | in.lb | 7461 | | | | | | | | | | | | | | |
| Efficiency at full load (at $n_1 = 500$ rpm) | η | % | 93 | 91 | 88 | 83 | 74 | 68 | 86 | 89 | 86 | 72 | 66 | 72 | 66 | | |
| Service life ¹⁾ | L_h | h | > 20000 | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 13.0 | | | | | | 13.7 | | | | | | | | |
| | | lb _m | 28.7 | | | | | | 30.0 | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 64 | | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | | | | | | | | | |
| | | F | 5 to 104 | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | |
| Shrink disc (Standard version) | | | SD 036x072 S2V | | | | | | | | | | | | | | |
| Max. torque (without axial force) | T_{max} | Nm | 640 | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | E | 19 | J_1 | kgcm ² | - | - | - | - | - | - | 2.60 | 2.80 | 2.50 | 2.40 | 2.40 | 2.40 | 2.30 |
| | | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | - | 2.30 | 2.48 | 2.21 | 2.12 | 2.12 | 2.12 | 2.04 |
| | G | 24 | J_1 | kgcm ² | - | - | - | - | - | - | 4.10 | 4.30 | 4.10 | 4.00 | 4.00 | 3.90 | 3.90 |
| | | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | - | 3.63 | 3.81 | 3.63 | 3.54 | 3.54 | 3.45 | 3.45 |
| H | 28 | J_1 | kgcm ² | 4.80 | 3.89 | 3.65 | 3.56 | 3.52 | 3.47 | - | - | - | - | - | - | - | |
| | | | 10 ⁻³ in.lb.s ² | 4.25 | 3.44 | 3.23 | 3.15 | 3.12 | 3.07 | - | - | - | - | - | - | - | |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

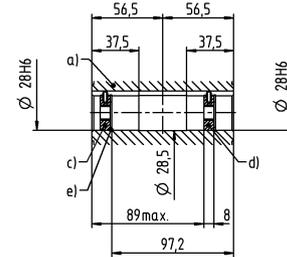
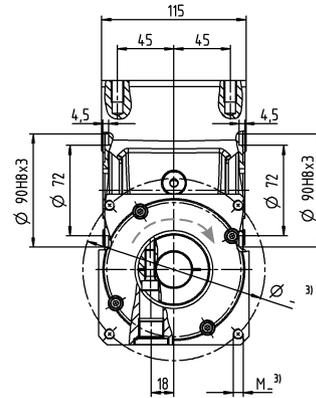
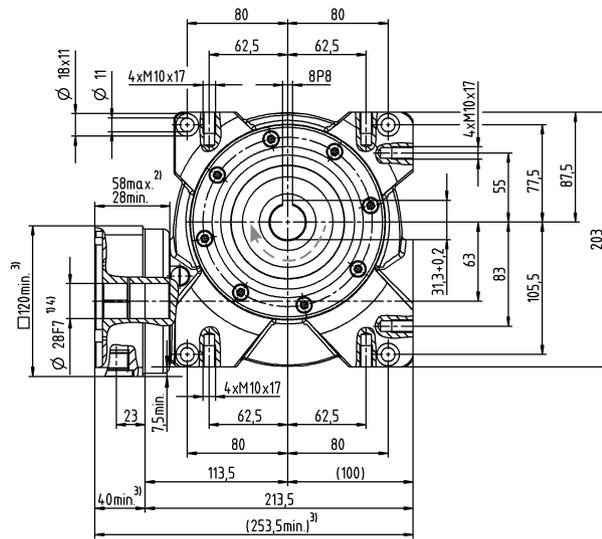
- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

← A

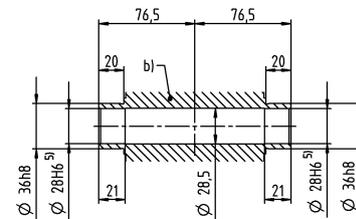
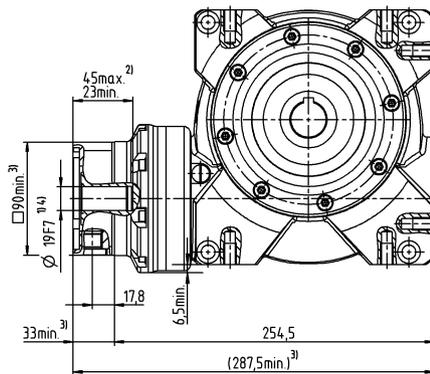
1-stage

up to 28⁴⁾ (H)⁶⁾
clamping hub diameter



2-stage

up to 19/24⁴⁾
(E⁶⁾/G) clamping
hub diameter



Motor shaft diameter [mm]

Worm gearboxes

VH+

- a) Hollow shaft, keywayed
- b) Hollow shaft, smooth
- c) End disc for screw M10
- d) End disc as forcing washer for screw M12
- e) Locking ring – DIN 472

See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions

- 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 with a minimum wall thickness of 1 mm.
- ⁵⁾ Tolerance h6 for mounted shaft.
- ⁶⁾ Standard clamping hub diameter

VH+ 080 MF 1-/2-stage

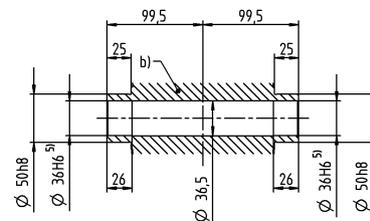
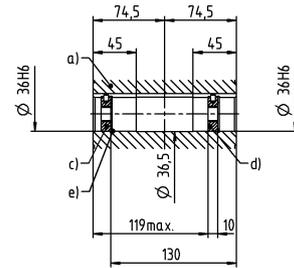
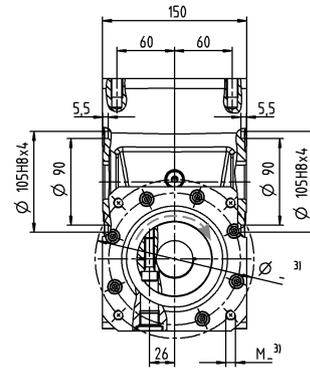
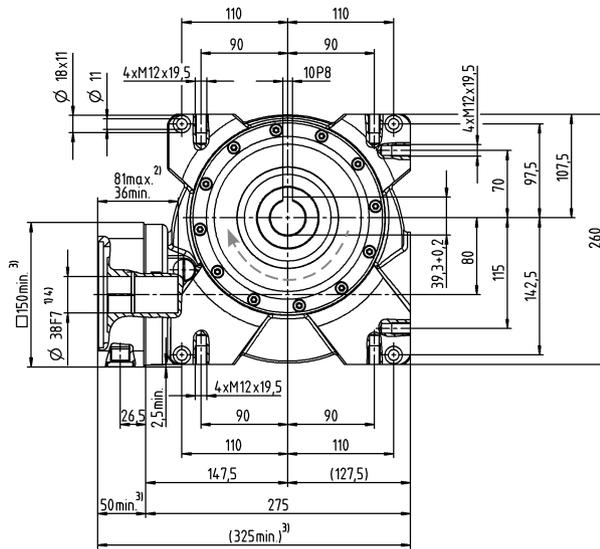
| | | | 1-stage | | | | | | 2-stage | | | | | | | |
|--|--------------|-----------------|---------------------------------------|----------------------------|-------|-------|-------|-------|---------|----------------------------|-------|-------|-------|-------|-------|-------|
| Ratio | <i>i</i> | | 4 | 7 | 10 | 16 | 28 | 40 | 50 | 70 | 100 | 140 | 200 | 280 | 400 | |
| Max. torque ^{a) b)} (at $n_1 = 500$ rpm) | T_{2a} | Nm | 578 | 646 | 672 | 702 | 785 | 676 | 672 | 646 | 672 | 785 | 676 | 785 | 676 | |
| | | in.lb | 5115 | 5717 | 5947 | 6213 | 6947 | 5983 | 5947 | 5717 | 5947 | 6947 | 5983 | 6947 | 5983 | |
| Torque for constant backlash (over the lifetime) | T_{2Servo} | Nm | 469 | 601 | 613 | 677 | 764 | 631 | 613 | 601 | 613 | 764 | 631 | 764 | 631 | |
| | | in.lb | 4151 | 5319 | 5425 | 5991 | 6761 | 5584 | 5425 | 5319 | 5425 | 6761 | 5584 | 6761 | 5584 | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 938 | 993 | 963 | 1005 | 1064 | 941 | 963 | 993 | 963 | 1064 | 941 | 1064 | 941 | |
| | | in.lb | 8301 | 8788 | 8523 | 8894 | 9416 | 8328 | 8523 | 8788 | 8523 | 9416 | 8328 | 9416 | 8328 | |
| Permitted average input speed (at 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 3500 | | | | | | 2900 | | | | | | | |
| Max. input speed | n_{1Max} | rpm | 4000 | | | | | | 4500 | | | | | | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 7.2 | 7.1 | 6.5 | 5 | 4.8 | 4.5 | 2.8 | 1.6 | 1.5 | 2.4 | 2.4 | 1.8 | 1.3 | |
| | | in.lb | 63.7 | 62.8 | 57.5 | 44.3 | 42.5 | 39.8 | 24.8 | 14.2 | 13.3 | 21.2 | 21.2 | 15.9 | 11.5 | |
| Max. backlash | j_1 | arcmin | ≤ 3 | Standard ≤ 3 / Reduced ≤ 2 | | | | | | Standard ≤ 4 / Reduced ≤ 3 | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | Nm/arcmin | 78 | | | | | | | | | | | | | |
| | | in.lb/arcmin | 690 | | | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 13900 | | | | | | | | | | | | | |
| | | lb _f | 3128 | | | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 9000 | | | | | | | | | | | | | |
| | | lb _f | 2025 | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 1544 | | | | | | | | | | | | | |
| | | in.lb | 13664 | | | | | | | | | | | | | |
| Efficiency at full load (at $n_1 = 500$ rpm) | η | % | 94 | 92 | 89 | 86 | 77 | 70 | 87 | 90 | 87 | 75 | 68 | 75 | 68 | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 27.0 | | | | | | 29.5 | | | | | | | |
| | | lb _m | 59.7 | | | | | | 68.0 | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 66 | | | | | | ≤ 68 | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | | | | | | | | |
| | | F | 5 to 104 | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | |
| Shrink disc (Standard version) | | | SD 050x090 S2V | | | | | | | | | | | | | |
| Max. torque (without axial force) | T_{max} | Nm | 1400 | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) | G 24 | J_1 | kgcm ² | - | - | - | - | - | - | 10.40 | 10.10 | 10.10 | 8.80 | 9.50 | 9.40 | 9.30 |
| | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | - | 9.20 | 8.94 | 8.94 | 7.79 | 8.41 | 8.32 | 8.23 |
| Clamping hub diameter [mm] | K 38 | J_1 | kgcm ² | 20.30 | 16.75 | 16.79 | 15.37 | 15.26 | 15.90 | 17.30 | 17.00 | 17.10 | 15.80 | 16.40 | 16.30 | 16.20 |
| | | | 10 ⁻³ in.lb.s ² | 17.97 | 14.82 | 14.86 | 13.60 | 13.51 | 14.07 | 15.31 | 15.05 | 15.13 | 13.98 | 14.51 | 14.43 | 14.34 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{f)} Please contact us to discuss application-specific service lifetimes

1-stage

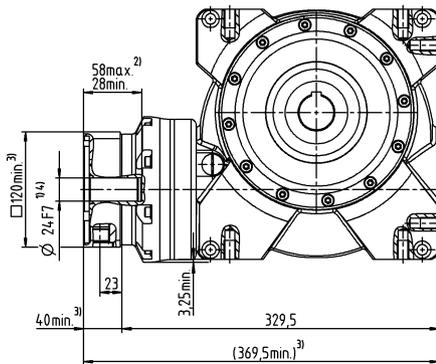
up to 38⁴⁾ (K)⁶⁾
clamping hub diameter



Motor shaft diameter [mm]

2-stage

up to 24/38⁴⁾
(G⁶⁾/K) clamping
hub diameter



- a) Hollow shaft, keywayed
- b) Hollow shaft, smooth
- c) End disc for screw M12
- d) End disc as forcing washer for screw M16
- e) Locking ring – DIN 472

See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions

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 with a minimum wall thickness of 1 mm.

⁵⁾ Tolerance h6 for mounted shaft.

⁶⁾ Standard clamping hub diameter

VH+ 100 MF 1-/2-stage

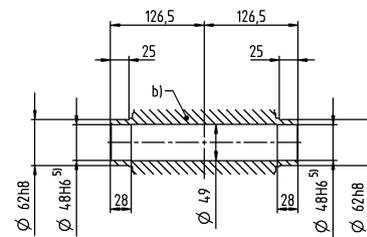
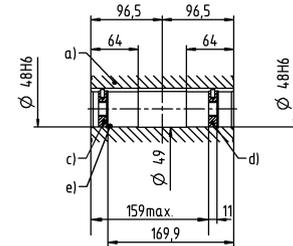
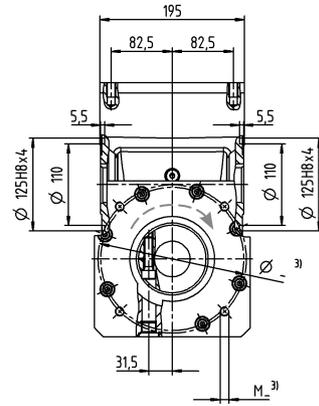
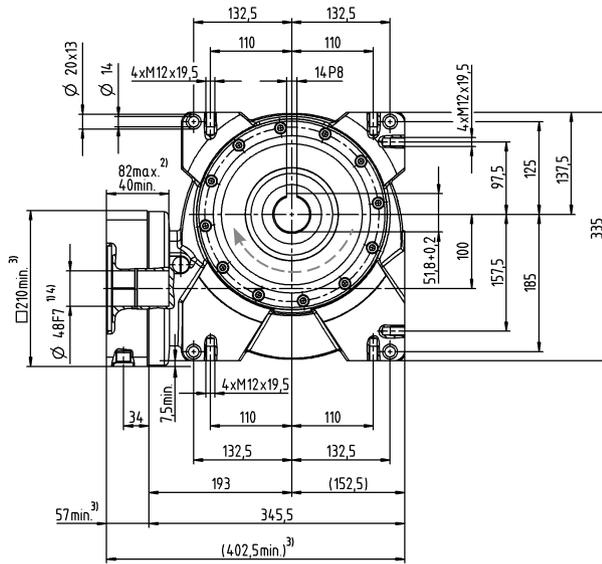
| | | | 1-stage | | | | | | 2-stage | | | | | | | | |
|---|--------------|-----------------|-------------------------------|---------------------------------------|-------|-------|-------|-------|---------|----------------------------|-------|-------|-------|-------|-------|-------|-------|
| Ratio | <i>i</i> | | 4 | 7 | 10 | 16 | 28 | 40 | 50 | 70 | 100 | 140 | 200 | 280 | 400 | | |
| Max. torque ^{a) b)} (at $n_1 = 500$ rpm) | T_{2a} | Nm | 1184 | 1336 | 1377 | 1392 | 1505 | 1376 | 1377 | 1336 | 1377 | 1505 | 1376 | 1505 | 1376 | | |
| | | in.lb | 10478 | 11824 | 12186 | 12319 | 13319 | 12178 | 12186 | 11825 | 12186 | 13319 | 12178 | 13319 | 12178 | | |
| Torque for constant backlash (over the lifetime) | T_{2Servo} | Nm | 1155 | 1304 | 1343 | 1359 | 1469 | 1343 | 1343 | 1304 | 1343 | 1469 | 1343 | 1469 | 1343 | | |
| | | in.lb | 10222 | 11540 | 11886 | 12027 | 13001 | 11886 | 11886 | 11541 | 11886 | 13001 | 11886 | 13001 | 11886 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 1819 | 1932 | 1940 | 1955 | 2073 | 1856 | 1940 | 1940 | 1940 | 2073 | 1856 | 2073 | 1856 | | |
| | | in.lb | 16098 | 17098 | 17169 | 17302 | 18346 | 16426 | 17169 | 17169 | 17169 | 18346 | 16426 | 18346 | 16426 | | |
| Permitted average input speed (at 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 3000 | | | | | | 2700 | | | | | | | | |
| Max. input speed | n_{1Max} | rpm | 3500 | | | | | | 4000 | | | | | | | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 12.2 | 10.5 | 9.8 | 9.1 | 8.2 | 7.2 | 4.1 | 2.3 | 2.2 | 3.8 | 3.6 | 2.6 | 2 | | |
| | | in.lb | 108.0 | 92.9 | 86.7 | 80.5 | 72.6 | 63.7 | 36.3 | 20.4 | 19.5 | 33.6 | 31.9 | 23.0 | 17.7 | | |
| Max. backlash | j_1 | arcmin | ≤ 3 | Standard ≤ 3 / Reduced ≤ 2 | | | | | | Standard ≤ 4 / Reduced ≤ 3 | | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | Nm/arcmin | 153 | | | | | | | | | | | | | | |
| | | in.lb/arcmin | 1354 | | | | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 19500 | | | | | | | | | | | | | | |
| | | lb _f | 4388 | | | | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 14000 | | | | | | | | | | | | | | |
| | | lb _f | 3150 | | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 3059 | | | | | | | | | | | | | | |
| | | in.lb | 27072 | | | | | | | | | | | | | | |
| Efficiency at full load (at $n_1 = 500$ rpm) | η | % | 95 | 93 | 91 | 87 | 80 | 76 | 89 | 89 | 89 | 78 | 74 | 78 | 74 | | |
| Service life ¹⁾ | L_h | h | > 20000 | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 51.0 | | | | | | 53.6 | | | | | | | | |
| | | lb _m | 112.7 | | | | | | 118.0 | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | 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 | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | |
| Shrink disc (Standard version) | | | SD 062x110 S2V | | | | | | | | | | | | | | |
| Max. torque (without axial force) | T_{max} | Nm | 2300 | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) | K | 38 | J_1 | kgcm ² | - | - | - | - | - | - | 31.70 | 33.00 | 31.10 | 30.10 | 30.40 | 30.00 | 29.80 |
| | | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | - | 28.05 | 29.21 | 27.52 | 26.64 | 26.90 | 26.55 | 26.37 |
| Clamping hub diameter [mm] | M | 48 | J_1 | kgcm ² | 50.25 | 40.70 | 38.77 | 39.62 | 37.15 | 37.47 | 46.40 | 47.70 | 45.80 | 44.80 | 45.10 | 44.70 | 44.50 |
| | | | | 10 ⁻³ in.lb.s ² | 44.47 | 36.02 | 34.31 | 35.06 | 32.88 | 33.16 | 41.06 | 42.21 | 40.53 | 39.65 | 39.91 | 39.56 | 39.38 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ¹⁾ Please contact us to discuss application-specific service lifetimes

1-stage

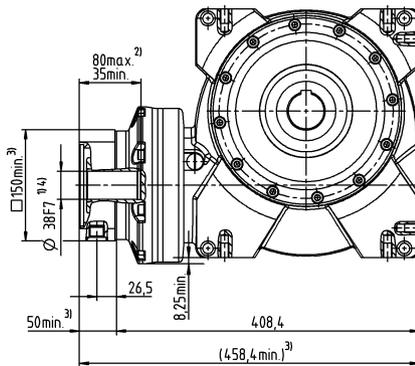
up to 48⁴⁾ (M⁶⁾
clamping hub diameter



Motor shaft diameter [mm]

2-stage

up to 38 / 48⁴⁾
(K⁶⁾ / M) clamping
hub diameter



- a) Hollow shaft, keywayed
- b) Hollow shaft, smooth
- c) End disc for screw M16
- d) End disc as forcing washer for screw M20
- e) Locking ring – DIN 472

See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions

- 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 with a minimum wall thickness of 1 mm.
- ⁵⁾ Tolerance h6 for mounted shaft.
- ⁶⁾ Standard clamping hub diameter

Worm gearboxes

VH+

VS+ 050 MF 1-/2-stage

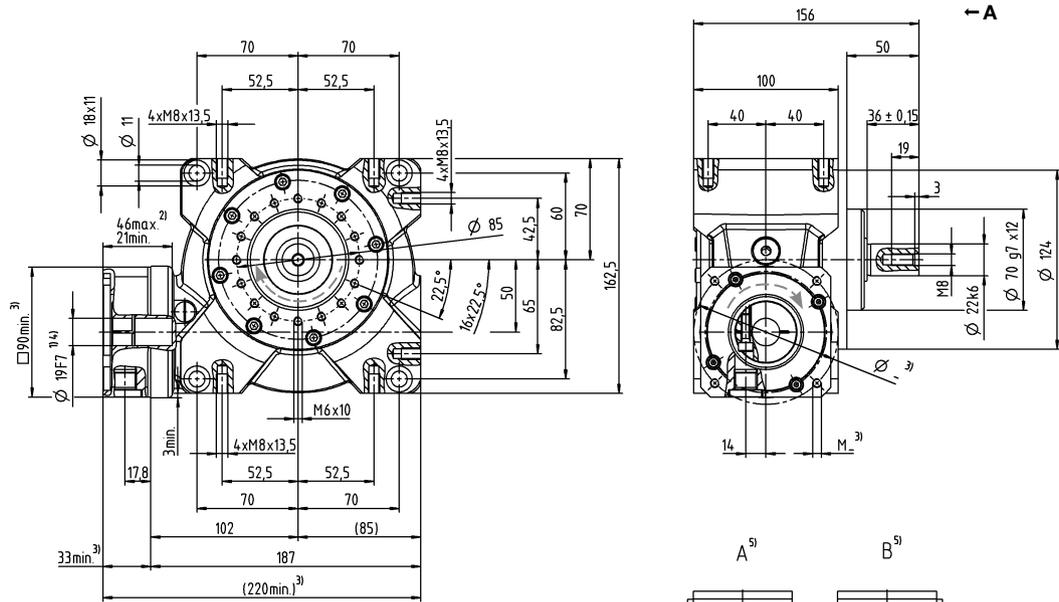
| | | | 1-stage | | | | | | 2-stage | | | | | | | | |
|---|--------------|-----------------|-------------------------------|---------------------------------------|------|------|------|------|----------------------------|------|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 4 | 7 | 10 | 16 | 28 | 40 | 50 | 70 | 100 | 140 | 200 | 280 | 400 | | |
| Max. torque ^{a) b) e)} (at $n_1 = 500$ rpm) | T_{2a} | Nm | 165 | 180 | 182 | 193 | 204 | 183 | 182 | 180 | 182 | 204 | 183 | 204 | 183 | | |
| | | in.lb | 1460 | 1593 | 1611 | 1708 | 1805 | 1620 | 1611 | 1593 | 1611 | 1805 | 1620 | 1805 | 1620 | | |
| Torque for constant backlash (over the lifetime) | T_{2Servo} | Nm | 54 | 71 | 74 | 81 | 90 | 74 | 74 | 71 | 74 | 90 | 74 | 90 | 74 | | |
| | | in.lb | 478 | 628 | 655 | 717 | 797 | 655 | 655 | 628 | 655 | 797 | 655 | 797 | 655 | | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 230 | 242 | 242 | 250 | 262 | 236 | 242 | 242 | 242 | 262 | 236 | 262 | 236 | | |
| | | in.lb | 2036 | 2142 | 2142 | 2213 | 2319 | 2089 | 2142 | 2142 | 2142 | 2319 | 2089 | 2319 | 2089 | | |
| Permitted average input speed (at 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 4000 | | | | | | 3500 | | | | | | | | |
| Max. input speed | n_{1Max} | rpm | 6000 | | | | | | | | | | | | | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 2.3 | 2.2 | 1.6 | 1.5 | 1.2 | 1.1 | 0.7 | 0.5 | 0.4 | 0.6 | 0.6 | 0.4 | 0.4 | | |
| | | in.lb | 20.4 | 19.5 | 14.2 | 13.3 | 10.6 | 9.7 | 6.2 | 4.4 | 3.5 | 5.3 | 5.3 | 3.5 | 3.5 | | |
| Max. backlash | j_1 | arcmin | ≤ 3 | Standard ≤ 3 / Reduced ≤ 2 | | | | | Standard ≤ 4 / Reduced ≤ 3 | | | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | Nm/arcmin | 8 | | | | | | | | | | | | | | |
| | | in.lb/arcmin | 71 | | | | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 5000 | | | | | | | | | | | | | | |
| | | lb _f | 1125 | | | | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 3800 | | | | | | | | | | | | | | |
| | | lb _f | 855 | | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 409 | | | | | | | | | | | | | | |
| | | in.lb | 3620 | | | | | | | | | | | | | | |
| Efficiency at full load (at $n_1 = 500$ rpm) | η | % | 92 | 89 | 86 | 82 | 72 | 64 | 84 | 87 | 84 | 70 | 62 | 70 | 62 | | |
| Service life ¹⁾ | L_h | h | > 20000 | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 9.0 | | | | | | 9.7 | | | | | | | | |
| | | lb _m | 19.9 | | | | | | 21.0 | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 62 | | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | | | | | | | | | |
| | | F | 5 to 104 | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC3 - 00200A - 022.000 - X | | | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 015.000 - 044.000 | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | C | 14 | J_1 | kgcm ² | - | - | - | - | - | - | 0.80 | 0.80 | 0.80 | 0.70 | 0.70 | 0.70 | 0.70 |
| | | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | - | 0.71 | 0.71 | 0.71 | 0.62 | 0.62 | 0.62 | 0.62 |
| | E | 19 | J_1 | kgcm ² | 1.50 | 1.21 | 1.12 | 1.03 | 1.00 | 1.05 | 1.20 | 1.30 | 1.20 | 1.10 | 1.10 | 1.10 | 1.10 |
| | | | | 10 ⁻³ in.lb.s ² | 1.33 | 1.07 | 0.99 | 0.91 | 0.89 | 0.93 | 1.06 | 1.15 | 1.06 | 0.97 | 0.97 | 0.97 | 0.97 |
| | G | 24 | J_1 | kgcm ² | 1.6 | 1.32 | 1.23 | 1.14 | 1.11 | 1.15 | - | - | - | - | - | - | - |
| | | | | 10 ⁻³ in.lb.s ² | 1.4 | 1.2 | 1.1 | 1.0 | 0.98 | 1.0 | - | - | - | - | - | - | - |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ^{f)} Please contact us to discuss application-specific service lifetimes

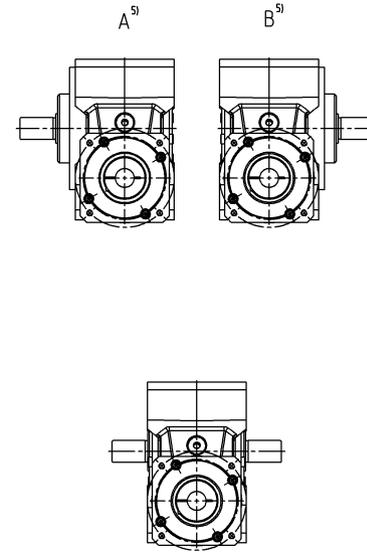
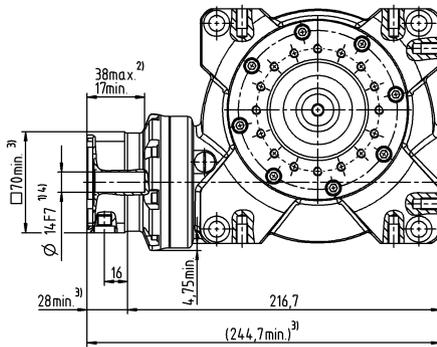
1-stage

up to 19/24⁴⁾
(E⁶⁾/G) clamping
hub diameter



2-stage

up to 14/19⁴⁾
(C⁶⁾/E) clamping
hub diameter



Optional dual-shaft output. Drawings available upon request.
Involute gearing is not possible.

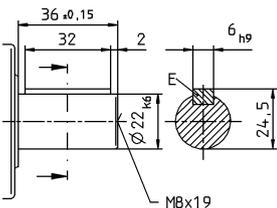
Motor shaft diameter [mm]

Worm gearboxes

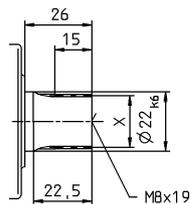
VS+

Other output variants

Shaft with key



Spined shaft (DIN 5480)



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions

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 with a minimum wall thickness of 1 mm.

⁵⁾ Output side

⁶⁾ Standard clamping hub diameter

VS+ 063 MF 1-/2-stage

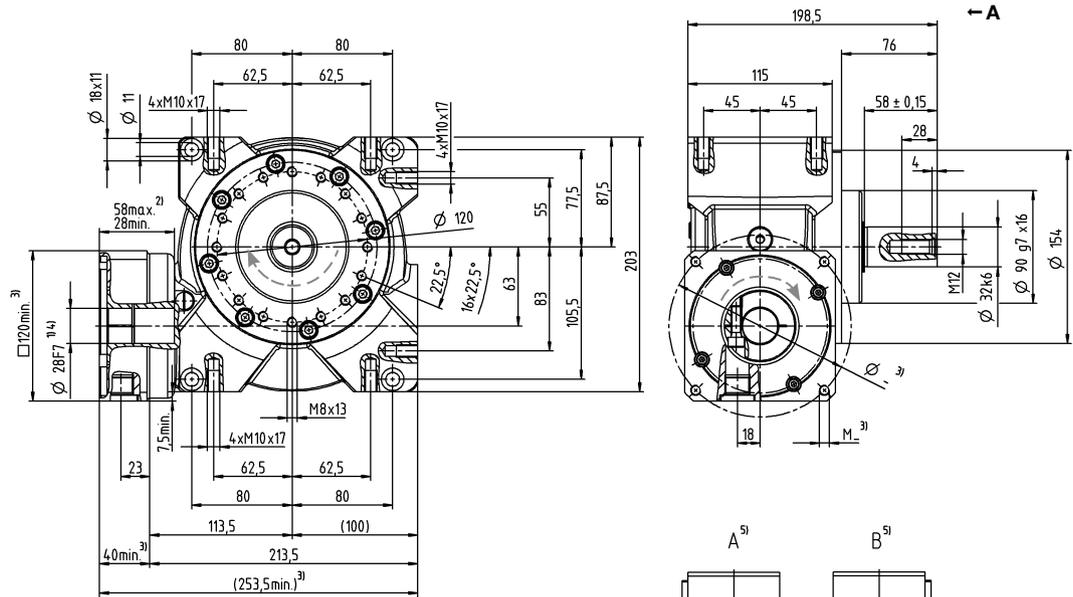
| | | | 1-stage | | | | | | 2-stage | | | | | | | | |
|--|--------------|-----------------|---------------------------------------|---------------------------------------|------|------|------|------|----------------------------|------|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 4 | 7 | 10 | 16 | 28 | 40 | 50 | 70 | 100 | 140 | 200 | 280 | 400 | | |
| Max. torque ^{a) b) e)} (at $n_1 = 500$ rpm) | T_{2a} | Nm | 319 | 353 | 364 | 372 | 392 | 363 | 364 | 353 | 364 | 392 | 363 | 392 | 363 | | |
| | | in.lb | 2823 | 3124 | 3221 | 3292 | 3469 | 3213 | 3221 | 3124 | 3221 | 3469 | 3213 | 3469 | 3213 | | |
| Torque for constant backlash (over the lifetime) | T_{2Servo} | Nm | 198 | 210 | 225 | 221 | 229 | 226 | 225 | 210 | 225 | 229 | 226 | 229 | 226 | | |
| | | in.lb | 1752 | 1859 | 1991 | 1956 | 2027 | 2000 | 1991 | 1859 | 1991 | 2027 | 2000 | 2027 | 2000 | | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 460 | 484 | 491 | 494 | 518 | 447 | 491 | 484 | 494 | 518 | 447 | 518 | 447 | | |
| | | in.lb | 4071 | 4283 | 4345 | 4372 | 4584 | 3956 | 4345 | 4283 | 4372 | 4584 | 3956 | 4584 | 3956 | | |
| Permitted average input speed (at 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 4000 | | | | | | 3100 | | | | | | | | |
| Max. input speed | n_{1Max} | rpm | 4500 | | | | | | | | | | | | | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 4.2 | 3.1 | 3 | 2.4 | 2.3 | 2.2 | 1.2 | 0.7 | 0.7 | 1.1 | 1.1 | 0.8 | 0.6 | | |
| | | in.lb | 37.2 | 27.4 | 26.6 | 21.2 | 20.4 | 19.5 | 10.6 | 6.2 | 6.2 | 9.7 | 9.7 | 7.1 | 5.3 | | |
| Max. backlash | j_1 | arcmin | ≤ 3 | Standard ≤ 3 / Reduced ≤ 2 | | | | | Standard ≤ 4 / Reduced ≤ 3 | | | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | Nm/arcmin | 28 | | | | | | | | | | | | | | |
| | | in.lb/arcmin | 248 | | | | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 8250 | | | | | | | | | | | | | | |
| | | lb _f | 1856 | | | | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 6000 | | | | | | | | | | | | | | |
| | | lb _f | 1350 | | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 843 | | | | | | | | | | | | | | |
| | | in.lb | 7461 | | | | | | | | | | | | | | |
| Efficiency at full load (at $n_1 = 500$ rpm) | η | % | 93 | 91 | 88 | 83 | 74 | 68 | 86 | 89 | 86 | 72 | 66 | 72 | 66 | | |
| Service life ¹⁾ | L_h | h | > 20000 | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 16.0 | | | | | | 16.7 | | | | | | | | |
| | | lb _m | 35.4 | | | | | | 37.0 | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 64 | | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | | | | | | | | | |
| | | F | 5 to 104 | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC3 - 00500A - 032.000 - X | | | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 024.000 - 056.000 | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | E | 19 | J_1 | kgcm ² | - | - | - | - | - | - | 2.60 | 2.80 | 2.50 | 2.40 | 2.40 | 2.40 | 2.30 |
| | | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | - | 2.30 | 2.48 | 2.21 | 2.12 | 2.12 | 2.12 | 2.04 |
| | G | 24 | J_1 | kgcm ² | - | - | - | - | - | - | 4.10 | 4.30 | 4.10 | 4.00 | 4.00 | 3.90 | 3.90 |
| | | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | - | 3.63 | 3.81 | 3.63 | 3.54 | 3.54 | 3.45 | 3.45 |
| H | 28 | J_1 | kgcm ² | 4.80 | 3.89 | 3.65 | 3.56 | 3.52 | 3.47 | - | - | - | - | - | - | - | |
| | | | 10 ⁻³ in.lb.s ² | 4.25 | 3.44 | 3.23 | 3.15 | 3.12 | 3.07 | - | - | - | - | - | - | - | |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ^{f)} Please contact us to discuss application-specific service lifetimes

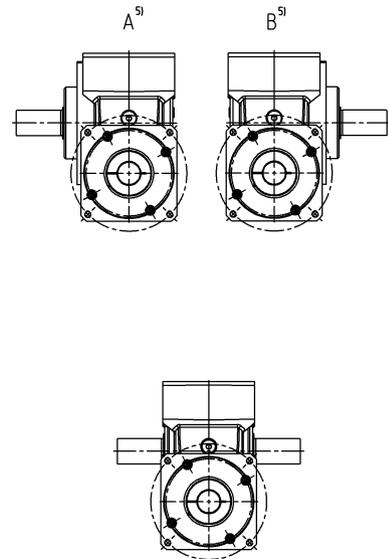
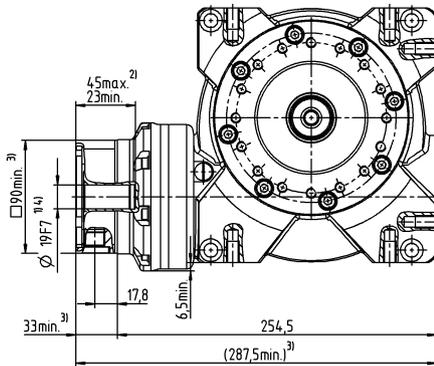
1-stage

up to 28⁴⁾ (H)⁶⁾
clamping hub diameter



2-stage

up to 19/24⁴⁾ (E⁶⁾/G)
clamping hub diameter



Optional dual-shaft output. Drawings available upon request.
Involute gearing is not possible.

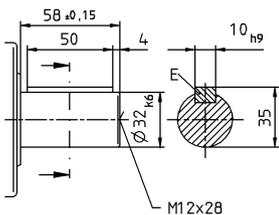
Motor shaft diameter [mm]

Worm gearboxes

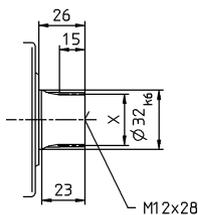
VS+

Other output variants

Shaft with key



Spined shaft (DIN 5480)



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions

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 with a minimum wall thickness of 1 mm.

⁵⁾ Output side

⁶⁾ Standard clamping hub diameter

VS+ 080 MF 1-/2-stage

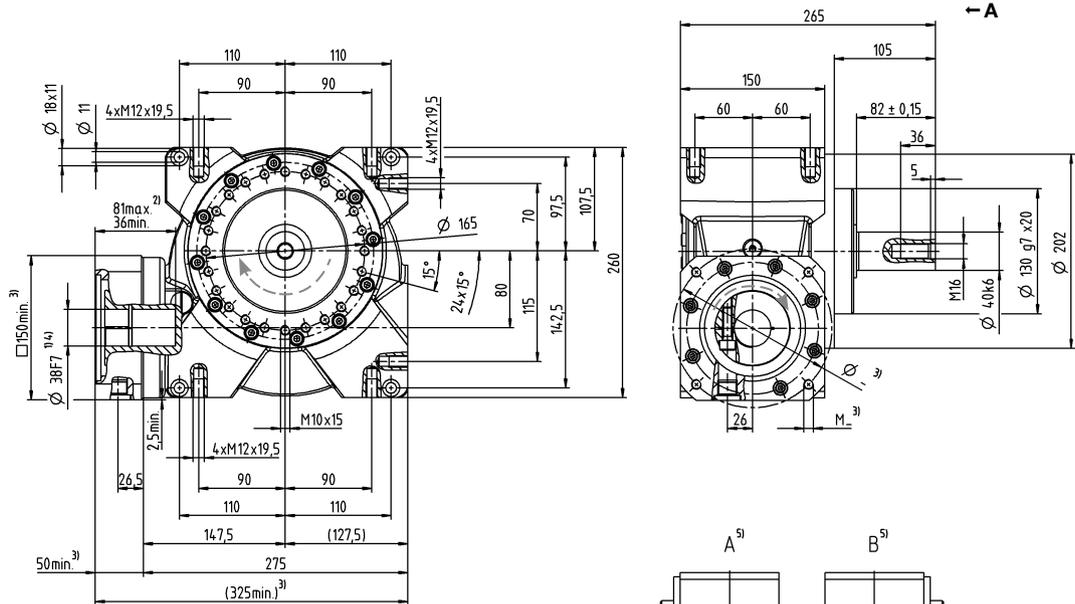
| | | | 1-stage | | | | | | 2-stage | | | | | | | |
|---|--------------|-----------------|---------------------------------------|----------------------------|-------|-------|-------|-------|---------|----------------------------|-------|-------|-------|-------|-------|-------|
| Ratio | <i>i</i> | | 4 | 7 | 10 | 16 | 28 | 40 | 50 | 70 | 100 | 140 | 200 | 280 | 400 | |
| Max. torque ^{a) b) e)} (at $n_1 = 500$ rpm) | T_{2a} | Nm | 578 | 646 | 672 | 702 | 785 | 676 | 672 | 646 | 672 | 785 | 676 | 785 | 676 | |
| | | in.lb | 5115 | 5717 | 5947 | 6213 | 6947 | 5983 | 5947 | 5717 | 5947 | 6947 | 5983 | 6947 | 5983 | |
| Torque for constant backlash (over the lifetime) | T_{2Servo} | Nm | 469 | 601 | 613 | 677 | 764 | 631 | 613 | 601 | 613 | 764 | 631 | 764 | 631 | |
| | | in.lb | 4151 | 5319 | 5425 | 5991 | 6761 | 5584 | 5425 | 5319 | 5425 | 6761 | 5584 | 6761 | 5584 | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 938 | 993 | 963 | 1005 | 1064 | 941 | 963 | 993 | 963 | 1064 | 941 | 1064 | 941 | |
| | | in.lb | 8301 | 8788 | 8523 | 8894 | 9416 | 8328 | 8523 | 8788 | 8523 | 9416 | 8328 | 9416 | 8328 | |
| Permitted average input speed (at 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 3500 | | | | | | 2900 | | | | | | | |
| Max. input speed | n_{1Max} | rpm | 4000 | | | | | | 4500 | | | | | | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 7.2 | 7.1 | 6.5 | 5 | 4.8 | 4.5 | 2.8 | 1.6 | 1.5 | 2.4 | 2.4 | 1.8 | 1.3 | |
| | | in.lb | 63.7 | 62.8 | 57.5 | 44.3 | 42.5 | 39.8 | 24.8 | 14.2 | 13.3 | 21.2 | 21.2 | 15.9 | 11.5 | |
| Max. backlash | j_1 | arcmin | ≤ 3 | Standard ≤ 3 / Reduced ≤ 2 | | | | | | Standard ≤ 4 / Reduced ≤ 3 | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | Nm/arcmin | 78 | | | | | | | | | | | | | |
| | | in.lb/arcmin | 690 | | | | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 13900 | | | | | | | | | | | | | |
| | | lb _f | 3128 | | | | | | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | 9000 | | | | | | | | | | | | | |
| | | lb _f | 2025 | | | | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 1544 | | | | | | | | | | | | | |
| | | in.lb | 13664 | | | | | | | | | | | | | |
| Efficiency at full load (at $n_1 = 500$ rpm) | η | % | 94 | 92 | 89 | 86 | 77 | 70 | 87 | 90 | 87 | 75 | 68 | 75 | 68 | |
| Service life ¹⁾ | L_h | h | > 20000 | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 33.0 | | | | | | 35.5 | | | | | | | |
| | | lb _m | 72.9 | | | | | | 78.0 | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 66 | | | | | | ≤ 68 | | | | | | | |
| | | | | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | | | | | | | | |
| | | F | 5 to 104 | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC3 - 00800A - 040.000 - X | | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 030.000 - 060.000 | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) | G 24 | J_1 | kgcm ² | - | - | - | - | - | - | 10.40 | 10.10 | 10.10 | 8.80 | 9.50 | 9.40 | 9.30 |
| | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | - | 9.20 | 8.94 | 8.94 | 7.79 | 8.41 | 8.32 | 8.23 |
| Clamping hub diameter [mm] | K 38 | J_1 | kgcm ² | 20.30 | 16.56 | 16.69 | 15.33 | 15.24 | 15.90 | 17.30 | 17.00 | 17.10 | 15.80 | 16.40 | 16.30 | 16.20 |
| | | | 10 ⁻³ in.lb.s ² | 17.97 | 14.66 | 14.77 | 13.57 | 13.49 | 14.07 | 15.31 | 15.05 | 15.13 | 13.98 | 14.51 | 14.43 | 14.34 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

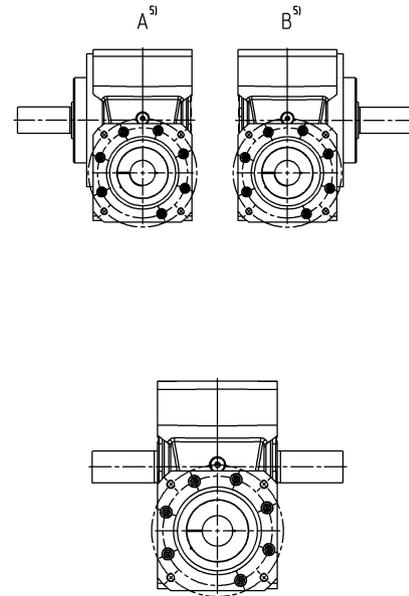
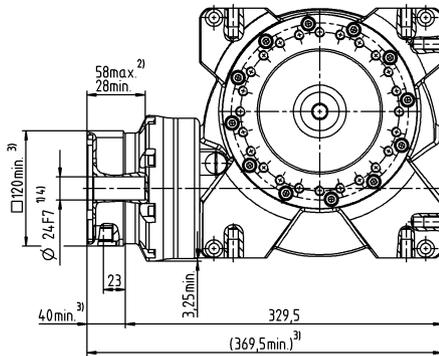
1-stage

up to 38⁴⁾ (K)⁶⁾
clamping hub diameter



2-stage

up to 24/38⁴⁾
(G⁶⁾/K) clamping hub diameter



Optional dual-shaft output. Drawings available upon request. Involute gearing is not possible.

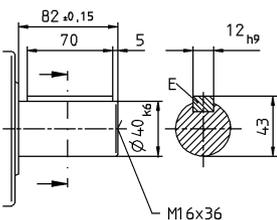
Motor shaft diameter [mm]

Worm gearboxes

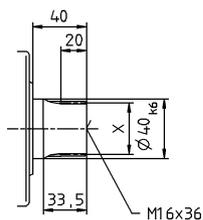
VS+

Other output variants

Shaft with key



Spined shaft (DIN 5480)



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions

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 with a minimum wall thickness of 1 mm.

⁵⁾ Output side

⁶⁾ Standard clamping hub diameter

VS+ 100 MF 1-/2-stage

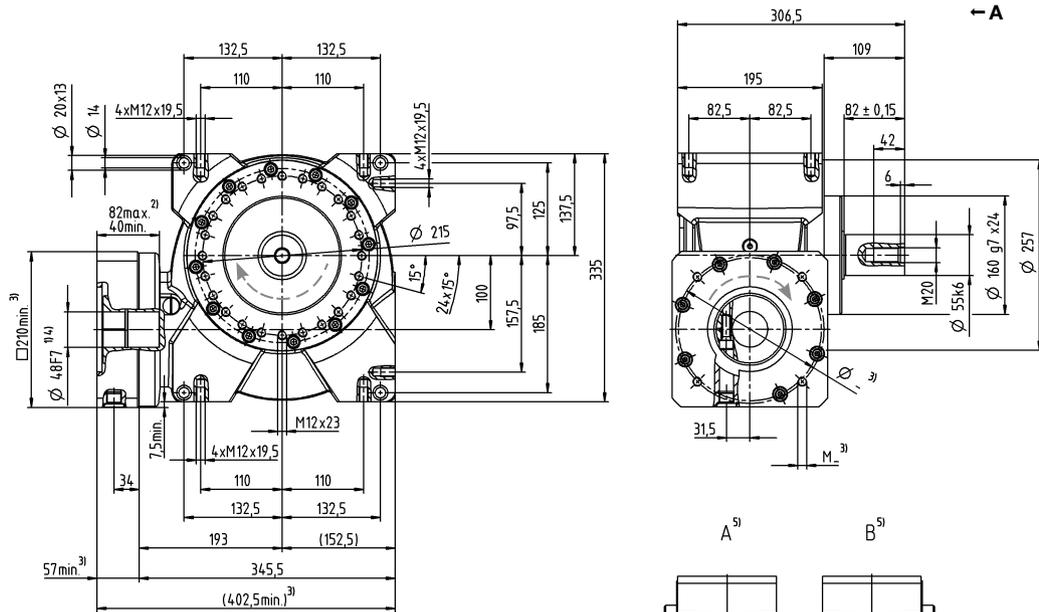
| | | | 1-stage | | | | | | 2-stage | | | | | | | | |
|--|--------------|-----------------|-------------------------------|---------------------------------------|-------|-------|-------|-------|----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Ratio | <i>i</i> | | 4 | 7 | 10 | 16 | 28 | 40 | 50 | 70 | 100 | 140 | 200 | 280 | 400 | | |
| Max. torque ^{a) b) e)} (at $n_1 = 500$ rpm) | T_{2a} | Nm | 1184 | 1336 | 1377 | 1392 | 1505 | 1376 | 1377 | 1336 | 1377 | 1505 | 1376 | 1505 | 1376 | | |
| | | in.lb | 10478 | 11824 | 12186 | 12319 | 13319 | 12178 | 12186 | 11825 | 12186 | 13319 | 12178 | 13319 | 12178 | | |
| Torque for constant backlash (over the lifetime) | T_{2Servo} | Nm | 1155 | 1304 | 1343 | 1359 | 1469 | 1343 | 1343 | 1304 | 1343 | 1469 | 1343 | 1469 | 1343 | | |
| | | in.lb | 10222 | 11540 | 11886 | 12027 | 13001 | 11886 | 11886 | 11541 | 11886 | 13001 | 11886 | 13001 | 11886 | | |
| Emergency stop torque ^{a) b) e)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 1819 | 1932 | 1940 | 1955 | 2073 | 1856 | 1940 | 1940 | 1940 | 2073 | 1856 | 2073 | 1856 | | |
| | | in.lb | 16098 | 17098 | 17169 | 17302 | 18346 | 16426 | 17169 | 17169 | 17169 | 18346 | 16426 | 18346 | 16426 | | |
| Permitted average input speed (at 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 3000 | | | | | | 2700 | | | | | | | | |
| Max. input speed | n_{1Max} | rpm | 3500 | | | | | | 4000 | | | | | | | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 12.2 | 10.5 | 9.8 | 9.1 | 8.2 | 7.2 | 4.1 | 2.3 | 2.2 | 3.8 | 3.6 | 2.6 | 2 | | |
| | | in.lb | 108.0 | 92.9 | 86.7 | 80.5 | 72.6 | 63.7 | 36.3 | 20.4 | 19.5 | 33.6 | 31.9 | 23.0 | 17.7 | | |
| Max. backlash | j_1 | arcmin | ≤ 3 | Standard ≤ 3 / Reduced ≤ 2 | | | | | Standard ≤ 4 / Reduced ≤ 3 | | | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | Nm/arcmin | | | | | | | 153 | | | | | | | | |
| | | in.lb/arcmin | | | | | | | 1354 | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | | | | | | | 19500 | | | | | | | | |
| | | lb _f | | | | | | | 4388 | | | | | | | | |
| Max. lateral force ^{c)} | F_{2QMax} | N | | | | | | | 14000 | | | | | | | | |
| | | lb _f | | | | | | | 3150 | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | | | | | | | 3059 | | | | | | | | |
| | | in.lb | | | | | | | 27072 | | | | | | | | |
| Efficiency at full load (at $n_1 = 500$ rpm) | η | % | 95 | 93 | 91 | 87 | 80 | 76 | 89 | 89 | 89 | 78 | 74 | 78 | 74 | | |
| Service life ¹⁾ | L_h | h | > 20000 | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 62.0 | | | | | | 64.6 | | | | | | | | |
| | | lb _m | 137.0 | | | | | | 143.0 | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | 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 | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BC3 - 01500A - 055.000 - X | | | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 035.000 - 070.000 | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) | K | 38 | J_1 | kgcm ² | - | - | - | - | - | - | 31.70 | 33.00 | 31.10 | 30.10 | 30.40 | 30.00 | 29.80 |
| | | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | - | 28.05 | 29.21 | 27.52 | 26.64 | 26.90 | 26.55 | 26.37 |
| Clamping hub diameter [mm] | M | 48 | J_1 | kgcm ² | 50.02 | 40.63 | 38.73 | 39.60 | 37.14 | 37.47 | 46.40 | 47.70 | 45.80 | 44.80 | 45.10 | 44.70 | 44.50 |
| | | | | 10 ⁻³ in.lb.s ² | 44.27 | 35.96 | 34.28 | 35.05 | 32.87 | 33.16 | 41.06 | 42.21 | 40.53 | 39.65 | 39.91 | 39.56 | 39.38 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{a)} At max. 10 % F_{2QMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{e)} Smooth shaft
- ¹⁾ Please contact us to discuss application-specific service lifetimes

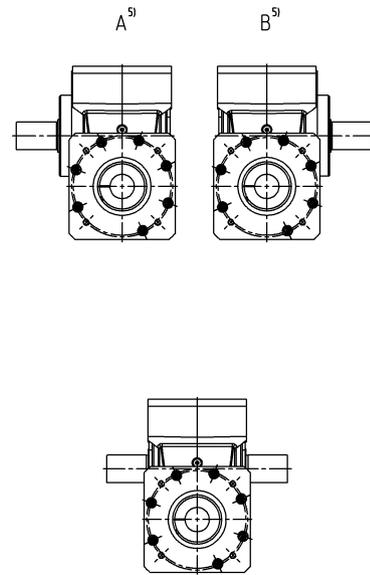
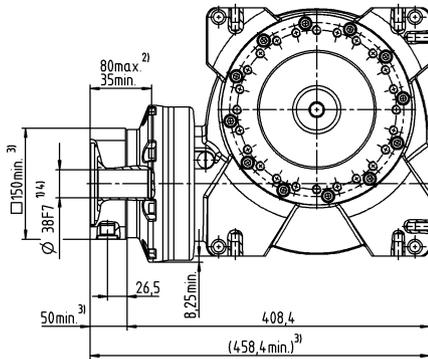
1-stage

up to 48⁴⁾ (M⁶⁾
clamping hub diameter



2-stage

up to 38/48⁴⁾
(K⁶⁾/M clamping hub diameter



Optional dual-shaft output. Drawings available upon request.
Involute gearing is not possible.

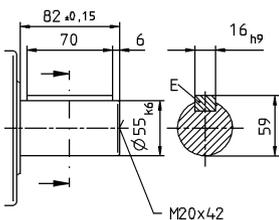
Motor shaft diameter [mm]

Worm gearboxes

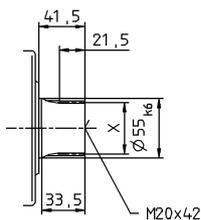
VS+

Other output variants

Shaft with key



Splined shaft (DIN 5480)



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions

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 with a minimum wall thickness of 1 mm.

⁵⁾ Output side

⁶⁾ Standard clamping hub diameter

VT+ 050 MF 1-/2-stage

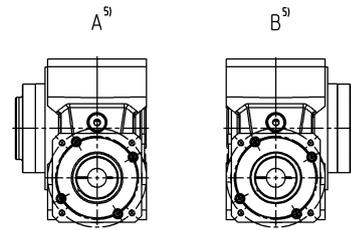
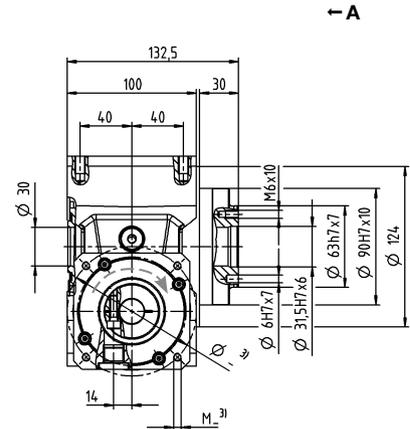
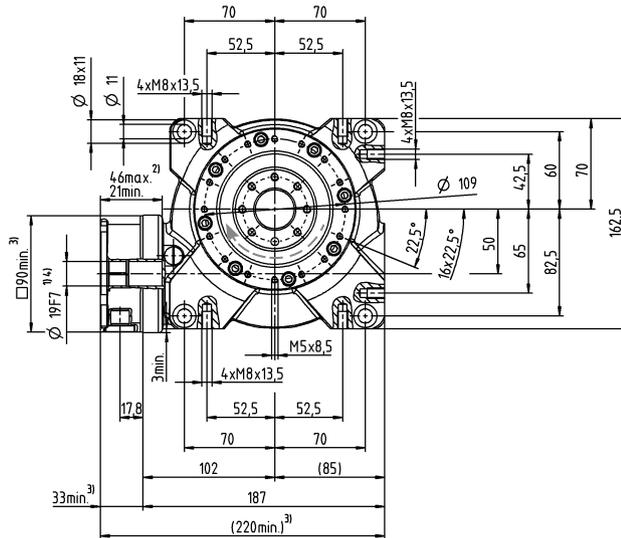
| | | | 1-stage | | | | | | 2-stage | | | | | | | | |
|--|--------------|-----------------|---------------------------------------|---------------------------------------|------|------|------|------|----------------------------|------|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 4 | 7 | 10 | 16 | 28 | 40 | 50 | 70 | 100 | 140 | 200 | 280 | 400 | | |
| Max. torque ^{a) b)} (at $n_1 = 500$ rpm) | T_{2a} | Nm | 165 | 180 | 182 | 193 | 204 | 183 | 182 | 180 | 182 | 204 | 183 | 204 | 183 | | |
| | | in.lb | 1460 | 1593 | 1611 | 1708 | 1805 | 1620 | 1611 | 1593 | 1611 | 1805 | 1620 | 1805 | 1620 | | |
| Torque for constant backlash (over the lifetime) | T_{2Servo} | Nm | 54 | 71 | 74 | 81 | 90 | 74 | 74 | 71 | 74 | 90 | 74 | 90 | 74 | | |
| | | in.lb | 478 | 628 | 655 | 717 | 797 | 655 | 655 | 628 | 655 | 797 | 655 | 797 | 655 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 230 | 242 | 242 | 250 | 262 | 236 | 242 | 242 | 242 | 262 | 236 | 262 | 236 | | |
| | | in.lb | 2036 | 2142 | 2142 | 2213 | 2319 | 2089 | 2142 | 2142 | 2142 | 2319 | 2089 | 2319 | 2089 | | |
| Permitted average input speed (at 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 4000 | | | | | | 3500 | | | | | | | | |
| Max. input speed | n_{1Max} | rpm | 6000 | | | | | | | | | | | | | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 2.3 | 2.2 | 1.6 | 1.5 | 1.2 | 1.1 | 0.7 | 0.5 | 0.4 | 0.6 | 0.6 | 0.4 | 0.4 | | |
| | | in.lb | 20.4 | 19.5 | 14.2 | 13.3 | 10.6 | 9.7 | 6.2 | 4.4 | 3.5 | 5.3 | 5.3 | 3.5 | 3.5 | | |
| Max. backlash | j_i | arcmin | ≤ 3 | Standard ≤ 3 / Reduced ≤ 2 | | | | | Standard ≤ 4 / Reduced ≤ 3 | | | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | Nm/arcmin | 17 | | | | | | 17 | | | | | | | | |
| | | in.lb/arcmin | 150 | | | | | | 150 | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 5000 | | | | | | 5000 | | | | | | | | |
| | | lb _f | 1125 | | | | | | 1125 | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 409 | | | | | | 409 | | | | | | | | |
| | | in.lb | 3620 | | | | | | 3620 | | | | | | | | |
| Efficiency at full load (at $n_1 = 500$ rpm) | η | % | 92 | 89 | 86 | 82 | 72 | 64 | 84 | 87 | 84 | 70 | 62 | 70 | 62 | | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 504 | | | | | | 504 | | | | | | | | |
| | | in.lb/arcmin | 4460 | | | | | | 4460 | | | | | | | | |
| Service life ¹⁾ | L_h | h | > 20000 | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 9.0 | | | | | | 9.5 | | | | | | | | |
| | | lb _m | 19.9 | | | | | | 21.0 | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 62 | | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | | | | | | | | | |
| | | F | 5 to 104 | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BCT-00060AAX-050.000 | | | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 014.000 - 035.000 | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | C | 14 | J_i | kgcm ² | - | - | - | - | - | - | 0.80 | 0.80 | 0.80 | 0.70 | 0.70 | 0.70 | 0.70 |
| | | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | 0.71 | 0.71 | 0.71 | 0.62 | 0.62 | 0.62 | 0.62 | |
| | E | 19 | J_i | kgcm ² | 1.50 | 1.21 | 1.12 | 1.03 | 1.00 | 1.05 | 1.20 | 1.30 | 1.20 | 1.10 | 1.10 | 1.10 | 1.10 |
| | | | | 10 ⁻³ in.lb.s ² | 1.33 | 1.07 | 0.99 | 0.91 | 0.89 | 0.93 | 1.06 | 1.15 | 1.06 | 0.97 | 0.97 | 0.97 | 0.97 |
| G | 24 | J_i | kgcm ² | 1.6 | 1.32 | 1.23 | 1.14 | 1.11 | 1.15 | - | - | - | - | - | - | - | |
| | | | 10 ⁻³ in.lb.s ² | 1.4 | 1.2 | 1.1 | 1.0 | 0.98 | 1.0 | - | - | - | - | - | - | - | |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ¹⁾ Please contact us to discuss application-specific service lifetimes

1-stage

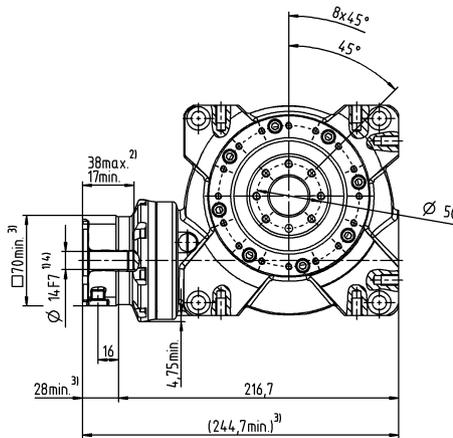
up to 19/24⁴⁾
(E⁶⁾/G) clamping
hub diameter



Motor shaft diameter [mm]

2-stage

up to 14/19⁴⁾
(C⁶⁾/E) clamping
hub diameter



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions

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 with a minimum wall thickness of 1 mm.

⁵⁾ Output side

⁶⁾ Standard clamping hub diameter

VT+ 063 MF 1-/2-stage

| | | | 1-stage | | | | | | 2-stage | | | | | | | | |
|---|--------------|-----------------|---------------------------------------|---------------------------------------|------|------|------|------|----------------------------|------|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 4 | 7 | 10 | 16 | 28 | 40 | 50 | 70 | 100 | 140 | 200 | 280 | 400 | | |
| Max. torque ^{a) b)} (at $n_1 = 500$ rpm) | T_{2a} | Nm | 319 | 353 | 364 | 372 | 392 | 363 | 364 | 353 | 364 | 392 | 363 | 392 | 363 | | |
| | | in.lb | 2823 | 3124 | 3221 | 3292 | 3469 | 3213 | 3221 | 3124 | 3221 | 3469 | 3213 | 3469 | 3213 | | |
| Torque for constant backlash (over the lifetime) | T_{2Servo} | Nm | 198 | 210 | 225 | 221 | 229 | 226 | 225 | 210 | 225 | 229 | 226 | 229 | 226 | | |
| | | in.lb | 1752 | 1859 | 1991 | 1956 | 2027 | 2000 | 1991 | 1859 | 1991 | 2027 | 2000 | 2027 | 2000 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 460 | 484 | 491 | 494 | 518 | 447 | 491 | 484 | 494 | 518 | 447 | 518 | 447 | | |
| | | in.lb | 4071 | 4283 | 4345 | 4372 | 4584 | 3956 | 4345 | 4283 | 4372 | 4584 | 3956 | 4584 | 3956 | | |
| Permitted average input speed (at 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 4000 | | | | | | 3100 | | | | | | | | |
| Max. input speed | n_{1Max} | rpm | 4500 | | | | | | | | | | | | | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 4.2 | 3.1 | 3 | 2.4 | 2.3 | 2.2 | 1.2 | 0.7 | 0.7 | 1.1 | 1.1 | 0.8 | 0.6 | | |
| | | in.lb | 37.2 | 27.4 | 26.6 | 21.2 | 20.4 | 19.5 | 10.6 | 6.2 | 6.2 | 9.7 | 9.7 | 7.1 | 5.3 | | |
| Max. backlash | j_i | arcmin | ≤ 3 | Standard ≤ 3 / Reduced ≤ 2 | | | | | Standard ≤ 4 / Reduced ≤ 3 | | | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | Nm/arcmin | 50 | | | | | | 50 | | | | | | | | |
| | | in.lb/arcmin | 443 | | | | | | 443 | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 8250 | | | | | | 8250 | | | | | | | | |
| | | lb _f | 1856 | | | | | | 1856 | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 843 | | | | | | 843 | | | | | | | | |
| | | in.lb | 7461 | | | | | | 7461 | | | | | | | | |
| Efficiency at full load (at $n_1 = 500$ rpm) | η | % | 93 | 91 | 88 | 83 | 74 | 68 | 86 | 89 | 86 | 72 | 66 | 72 | 66 | | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 603 | | | | | | 603 | | | | | | | | |
| | | in.lb/arcmin | 5337 | | | | | | 5337 | | | | | | | | |
| Service life ¹⁾ | L_h | h | > 20000 | | | | | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 15.0 | | | | | | 15.2 | | | | | | | | |
| | | lb _m | 33 | | | | | | 34.0 | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex®) | L_{PA} | dB(A) | ≤ 64 | | | | | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | | | | | | | | | |
| | | F | 5 to 104 | | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex®) | | | BCT-00150AAX-063.000 | | | | | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 019.000 - 042.000 | | | | | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | E | 19 | J_1 | kgcm ² | - | - | - | - | - | - | 2.60 | 2.80 | 2.50 | 2.40 | 2.40 | 2.40 | 2.30 |
| | | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | - | 2.30 | 2.48 | 2.21 | 2.12 | 2.12 | 2.12 | 2.04 |
| | G | 24 | J_1 | kgcm ² | - | - | - | - | - | - | 4.10 | 4.30 | 4.10 | 4.00 | 4.00 | 3.90 | 3.90 |
| | | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | - | 3.63 | 3.81 | 3.63 | 3.54 | 3.54 | 3.45 | 3.45 |
| H | 28 | J_1 | kgcm ² | 4.80 | 3.89 | 3.65 | 3.56 | 3.52 | 3.47 | - | - | - | - | - | - | - | |
| | | | 10 ⁻³ in.lb.s ² | 4.25 | 3.44 | 3.23 | 3.15 | 3.12 | 3.07 | - | - | - | - | - | - | - | |

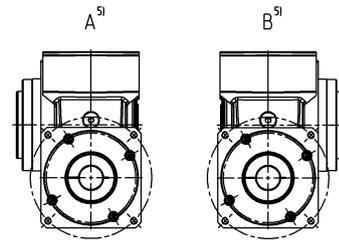
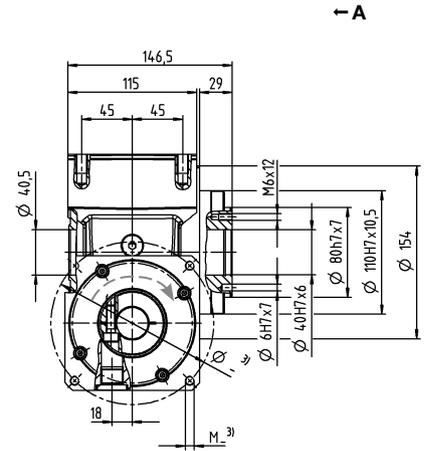
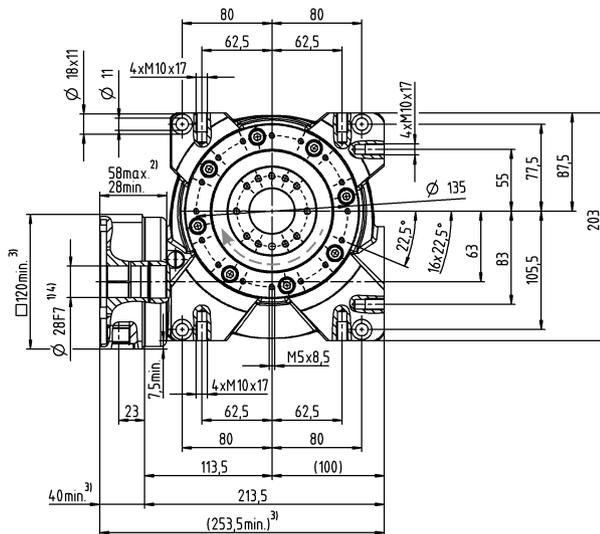
Please use our sizing software cymex® for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

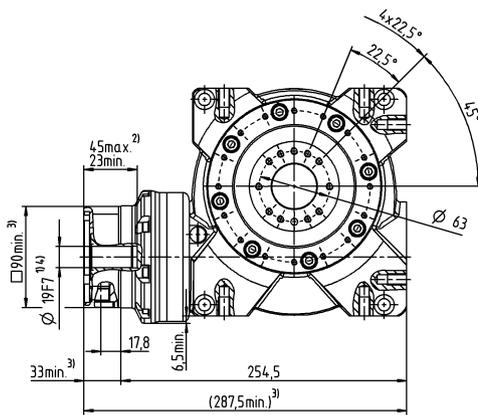
1-stage

up to 28⁴⁾ (H)⁶⁾
clamping hub diameter



2-stage

up to 19/24⁴⁾
(E⁶⁾/G) clamping hub diameter



Motor shaft diameter [mm]

Worm gearboxes

See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions

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 with a minimum wall thickness of 1 mm.

⁵⁾ Output side

⁶⁾ Standard clamping hub diameter

VT+

VT+ 080 MF 1-/2-stage

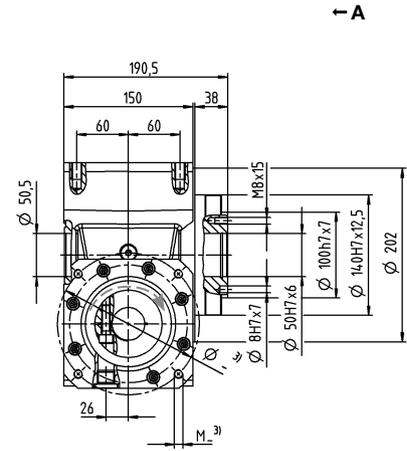
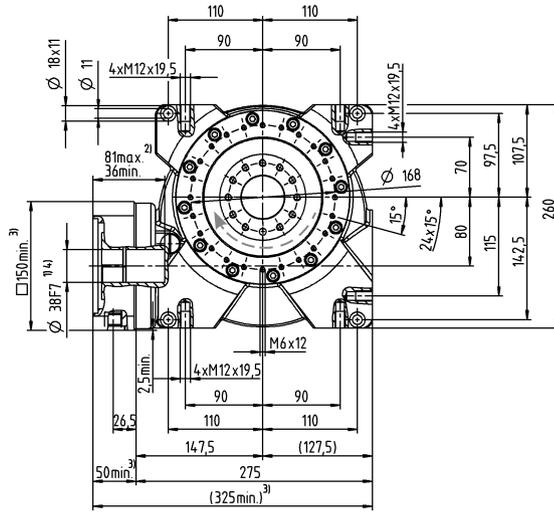
| | | | 1-stage | | | | | | 2-stage | | | | | | | | |
|--|--------------|-----------------|-------------------------------|---------------------------------------|-------|-------|-------|-------|-------------------------------|----------------------------|-------|-------|-------|-------|-------|-------|-------|
| Ratio | <i>i</i> | | 4 | 7 | 10 | 16 | 28 | 40 | 50 | 70 | 100 | 140 | 200 | 280 | 400 | | |
| Max. torque ^{a) b)} (at $n_1 = 500$ rpm) | T_{2a} | Nm | 578 | 646 | 672 | 702 | 785 | 676 | 672 | 646 | 672 | 785 | 676 | 785 | 676 | | |
| | | in.lb | 5115 | 5717 | 5947 | 6213 | 6947 | 5983 | 5947 | 5717 | 5947 | 6947 | 5983 | 6947 | 5983 | | |
| Torque for constant backlash (over the lifetime) | T_{2Servo} | Nm | 469 | 601 | 613 | 677 | 764 | 631 | 613 | 601 | 613 | 764 | 631 | 764 | 631 | | |
| | | in.lb | 4151 | 5319 | 5425 | 5991 | 6761 | 5584 | 5425 | 5319 | 5425 | 6761 | 5584 | 6761 | 5584 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 938 | 993 | 963 | 1005 | 1064 | 941 | 963 | 993 | 963 | 1064 | 941 | 1064 | 941 | | |
| | | in.lb | 8301 | 8788 | 8523 | 8894 | 9416 | 8328 | 8523 | 8788 | 8523 | 9416 | 8328 | 9416 | 8328 | | |
| Permitted average input speed (at 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 3500 | | | | | | 2900 | | | | | | | | |
| Max. input speed | n_{1Max} | rpm | 4000 | | | | | | 4500 | | | | | | | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 7.2 | 7.1 | 6.5 | 5 | 4.8 | 4.5 | 2.8 | 1.6 | 1.5 | 2.4 | 2.4 | 1.8 | 1.3 | | |
| | | in.lb | 63.7 | 62.8 | 57.5 | 44.3 | 42.5 | 39.8 | 24.8 | 14.2 | 13.3 | 21.2 | 21.2 | 15.9 | 11.5 | | |
| Max. backlash | j_i | arcmin | ≤ 3 | Standard ≤ 3 / Reduced ≤ 2 | | | | | | Standard ≤ 4 / Reduced ≤ 3 | | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | Nm/arcmin | 113 | | | | | | 113 | | | | | | | | |
| | | in.lb/arcmin | 1000 | | | | | | 1000 | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 13900 | | | | | | 13900 | | | | | | | | |
| | | lb _f | 3128 | | | | | | 3128 | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 1544 | | | | | | 1544 | | | | | | | | |
| | | in.lb | 13664 | | | | | | 13664 | | | | | | | | |
| Efficiency at full load (at $n_1 = 500$ rpm) | η | % | 94 | 92 | 89 | 86 | 77 | 70 | 87 | 90 | 87 | 75 | 68 | 75 | 68 | | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 1178 | | | | | | 1178 | | | | | | | | |
| | | in.lb/arcmin | 10425 | | | | | | 10425 | | | | | | | | |
| Service life ¹⁾ | L_h | h | > 20000 | | | | | | > 20000 | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 32.0 | | | | | | 33.5 | | | | | | | | |
| | | lb _m | 70.7 | | | | | | 74.0 | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 66 | | | | | | ≤ 68 | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | +90 | | | | | | | | |
| | | F | 194 | | | | | | 194 | | | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | -15 to +40 | | | | | | | | |
| | | F | 5 to 104 | | | | | | 5 to 104 | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | Lubricated for life | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | In- and output same direction | | | | | | | | |
| Protection class | | | IP 65 | | | | | | IP 65 | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BCT-00300AAX-080.000 | | | | | | BCT-00300AAX-080.000 | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 024.000 - 060.000 | | | | | | X = 024.000 - 060.000 | | | | | | | | |
| Mass moment of inertia (relates to the drive) | G | 24 | J_1 | kgcm ² | - | - | - | - | - | 10.40 | 10.10 | 10.10 | 8.80 | 9.50 | 9.40 | 9.30 | |
| | | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | 9.20 | 8.94 | 8.94 | 7.79 | 8.41 | 8.32 | 8.23 | |
| Clamping hub diameter [mm] | K | 38 | J_1 | kgcm ² | 20.30 | 16.56 | 16.69 | 15.33 | 15.24 | 15.90 | 17.30 | 17.00 | 17.10 | 15.80 | 16.40 | 16.30 | 16.20 |
| | | | | 10 ⁻³ in.lb.s ² | 17.97 | 14.66 | 14.77 | 13.57 | 13.49 | 14.07 | 15.31 | 15.05 | 15.13 | 13.98 | 14.51 | 14.43 | 14.34 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ¹⁾ Please contact us to discuss application-specific service lifetimes

1-stage

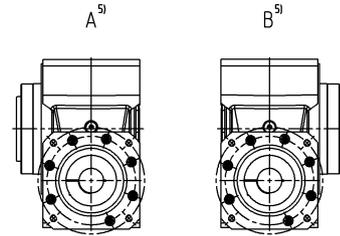
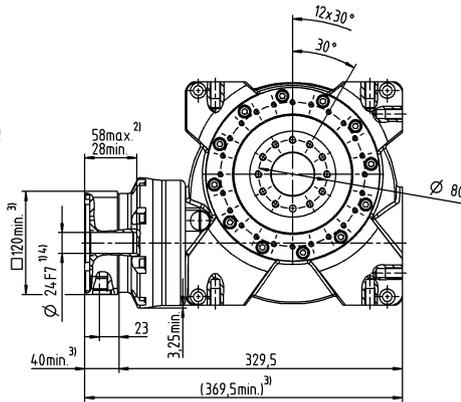
up to 38⁴⁾ (K)⁶⁾
clamping hub diameter



← A

2-stage

up to 24/38⁴⁾
(G⁶⁾/K) clamping
hub diameter



Motor shaft diameter [mm]

See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions are nominal dimensions

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 with a minimum wall thickness of 1 mm.

⁵⁾ Output side

⁶⁾ Standard clamping hub diameter

VT+ 100 MF 1-/2-stage

| | | | 1-stage | | | | | | 2-stage | | | | | | | | |
|--|--------------|-----------------|-------------------------------|---------------------------------------|-------|-------|-------|-------|-------------------------------|----------------------------|-------|-------|-------|-------|-------|-------|-------|
| Ratio | <i>i</i> | | 4 | 7 | 10 | 16 | 28 | 40 | 50 | 70 | 100 | 140 | 200 | 280 | 400 | | |
| Max. torque ^{a) b)} (at $n_1 = 500$ rpm) | T_{2a} | Nm | 1184 | 1336 | 1377 | 1392 | 1505 | 1376 | 1377 | 1336 | 1377 | 1505 | 1376 | 1505 | 1376 | | |
| | | in.lb | 10478 | 11824 | 12186 | 12319 | 13319 | 12178 | 12186 | 11825 | 12186 | 13319 | 12178 | 13319 | 12178 | | |
| Torque for constant backlash (over the lifetime) | T_{2Servo} | Nm | 1155 | 1304 | 1343 | 1359 | 1469 | 1343 | 1343 | 1304 | 1343 | 1469 | 1343 | 1469 | 1343 | | |
| | | in.lb | 10222 | 11540 | 11886 | 12027 | 13001 | 11886 | 11886 | 11541 | 11886 | 13001 | 11886 | 13001 | 11886 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 1819 | 1932 | 1940 | 1955 | 2073 | 1856 | 1940 | 1940 | 1940 | 2073 | 1856 | 2073 | 1856 | | |
| | | in.lb | 16098 | 17098 | 17169 | 17302 | 18346 | 16426 | 17169 | 17169 | 17169 | 18346 | 16426 | 18346 | 16426 | | |
| Permitted average input speed (at 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 3000 | | | | | | 2700 | | | | | | | | |
| Max. input speed | n_{1Max} | rpm | 3500 | | | | | | 4000 | | | | | | | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 12.2 | 10.5 | 9.8 | 9.1 | 8.2 | 7.2 | 4.1 | 2.3 | 2.2 | 3.8 | 3.6 | 2.6 | 2 | | |
| | | in.lb | 108.0 | 92.9 | 86.7 | 80.5 | 72.6 | 63.7 | 36.3 | 20.4 | 19.5 | 33.6 | 31.9 | 23.0 | 17.7 | | |
| Max. backlash | j_i | arcmin | ≤ 3 | Standard ≤ 3 / Reduced ≤ 2 | | | | | | Standard ≤ 4 / Reduced ≤ 3 | | | | | | | |
| Torsional rigidity ^{b)} | C_{121} | Nm/arcmin | 213 | | | | | | 213 | | | | | | | | |
| | | in.lb/arcmin | 1885 | | | | | | 1885 | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 19500 | | | | | | 19500 | | | | | | | | |
| | | lb _f | 4388 | | | | | | 4388 | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 3059 | | | | | | 3059 | | | | | | | | |
| | | in.lb | 27072 | | | | | | 27072 | | | | | | | | |
| Efficiency at full load (at $n_1 = 500$ rpm) | η | % | 95 | 93 | 91 | 87 | 80 | 76 | 89 | 89 | 89 | 78 | 74 | 78 | 74 | | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 2309 | | | | | | 2309 | | | | | | | | |
| | | in.lb/arcmin | 20435 | | | | | | 20435 | | | | | | | | |
| Service life ¹⁾ | L_h | h | > 20000 | | | | | | > 20000 | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 63.0 | | | | | | 64.6 | | | | | | | | |
| | | lb _m | 139.0 | | | | | | 143.0 | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 70 | | | | | | ≤ 70 | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | +90 | | | | | | | | |
| | | F | 194 | | | | | | 194 | | | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | -15 to +40 | | | | | | | | |
| | | F | 5 to 104 | | | | | | 5 to 104 | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | Lubricated for life | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | In- and output same direction | | | | | | | | |
| Protection class | | | IP 65 | | | | | | IP 65 | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | BCT-01500AAX-125.000 | | | | | | BCT-01500AAX-125.000 | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | X = 050.000 - 080.000 | | | | | | X = 050.000 - 080.000 | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] | K | 38 | J_1 | kgcm ² | - | - | - | - | - | 31.70 | 33.00 | 31.10 | 30.10 | 30.40 | 30.00 | 29.80 | |
| | | | | 10 ⁻³ in.lb.s ² | - | - | - | - | - | 28.05 | 29.21 | 27.52 | 26.64 | 26.90 | 26.55 | 26.37 | |
| | M | 48 | J_1 | kgcm ² | 50.02 | 40.63 | 38.73 | 39.60 | 37.14 | 37.47 | 46.40 | 47.70 | 45.80 | 44.80 | 45.10 | 44.70 | 44.50 |
| | | | | 10 ⁻³ in.lb.s ² | 44.27 | 35.96 | 34.28 | 35.05 | 32.87 | 33.16 | 41.06 | 42.21 | 40.53 | 39.65 | 39.91 | 39.56 | 39.38 |

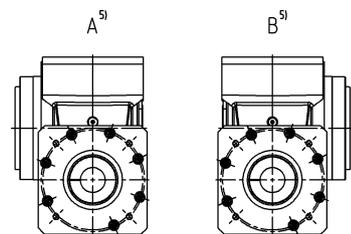
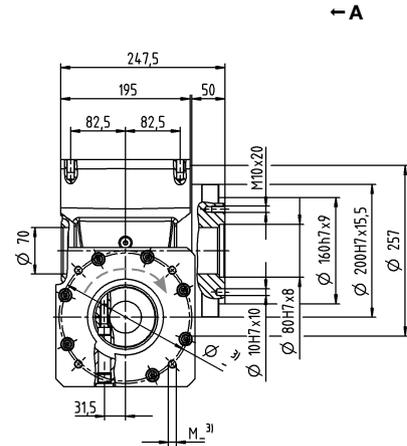
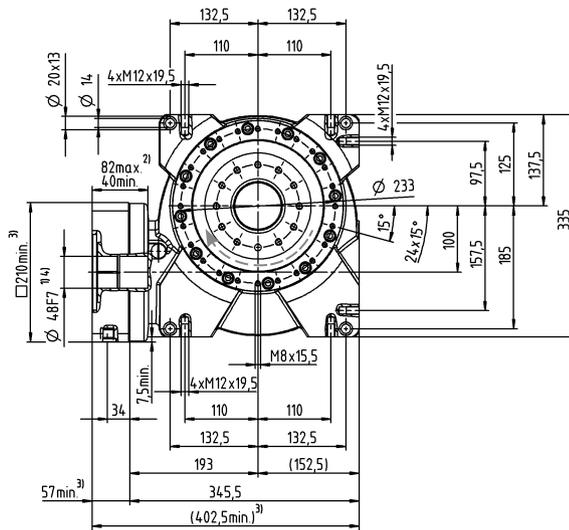
Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com
Please contact us for optimum sizing at S1 conditions (Continuous operation).

- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

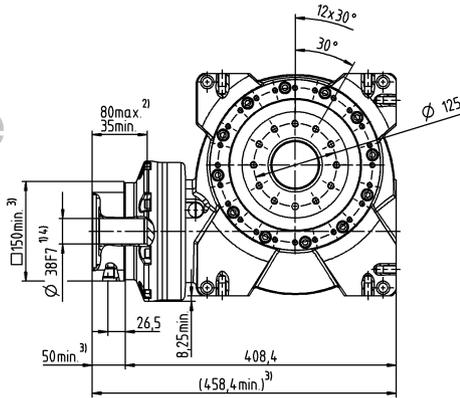
1-stage

up to 48⁴⁾ (M⁶⁾
clamping hub diameter



2-stage

up to 38/48⁴⁾
(K⁶⁾/M) clamping hub diameter



Motor shaft diameter [mm]

Worm gearboxes

See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

- Non-tolerated dimensions are nominal dimensions
- 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 with a minimum wall thickness of 1 mm.
- ⁵⁾ Output side
- ⁶⁾ Standard clamping hub diameter

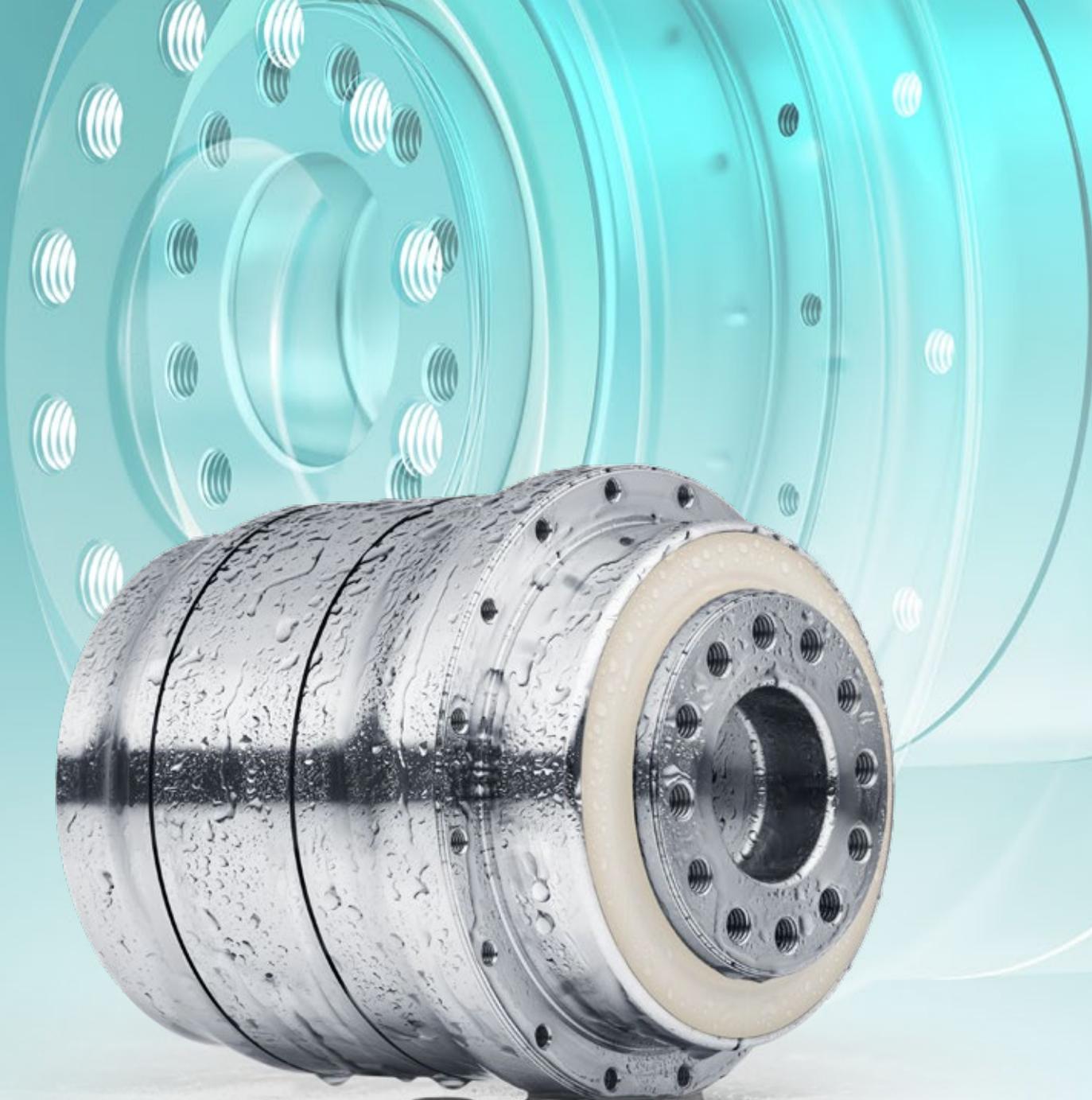
VT+

Application-specific solutions

The right solution for all requirements

Varying customer requirements create major challenges for Delta robots and require continuous further development of the drives. For more than ten years, WITTENSTEIN has been developing and manufacturing gearbox and servo actuator solutions for Delta robots that are just as individual as the applications of our customers. With unique engineering experience, recognized methodological competencies and software expertise as well as a high-performance product portfolio, we offer our customers the security of a technically and economically refined drive design for highly dynamic, multidimensional movement profiles.





Hygienically safe drive

Our products with hygienic design are specially developed for challenging food processing applications, made of highly resistant stainless steel and ideal for cleaning with aggressive cleaning agents and disinfectants.

Direct process integration allows new freedom in design and an open machine concept without encasings.

DP+ – The right solution for all requirements

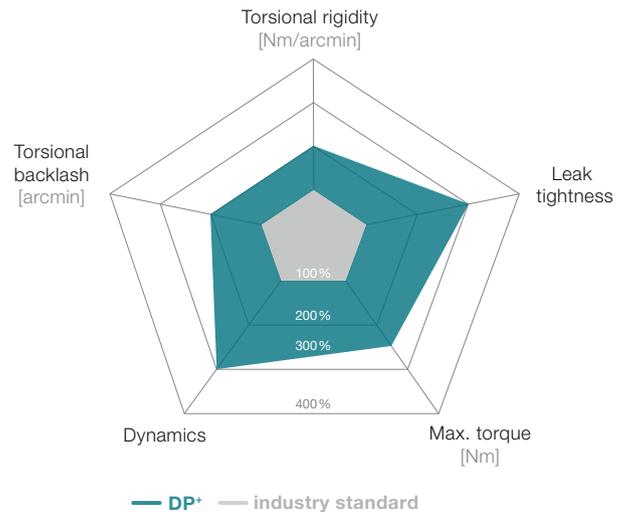


The DP+ planetary gearbox was specially developed for use in Delta robotics applications. Various characteristics allow use of the gearbox in dry, spray and wet areas (HDP+). In addition to an optimized sealing system, this drive solution includes advantages such as improved dynamics due to the optimized moment of inertia. The DP+ is available in four sizes and covers a ratio range of $i = 16 - 55$.

The DP+ compared to the industry standard

Product highlights

- Reliability** Extremely reliable gearboxes prevent cost-intensive machine breakdowns
- Positioning accuracy** Minimal backlash and extreme rigidity ensure maximum positioning accuracy at the tool center point
- Speed** Highest speeds increase machine output
- Maintenance** Highest quality standards guarantee a long service life and extend maintenance intervals
- Consistently high performance** Constant backlash throughout the service life of the gearbox ensures a consistently high performance
- Low inertia** Use of an servo actuator further reduces inertia



Dry area

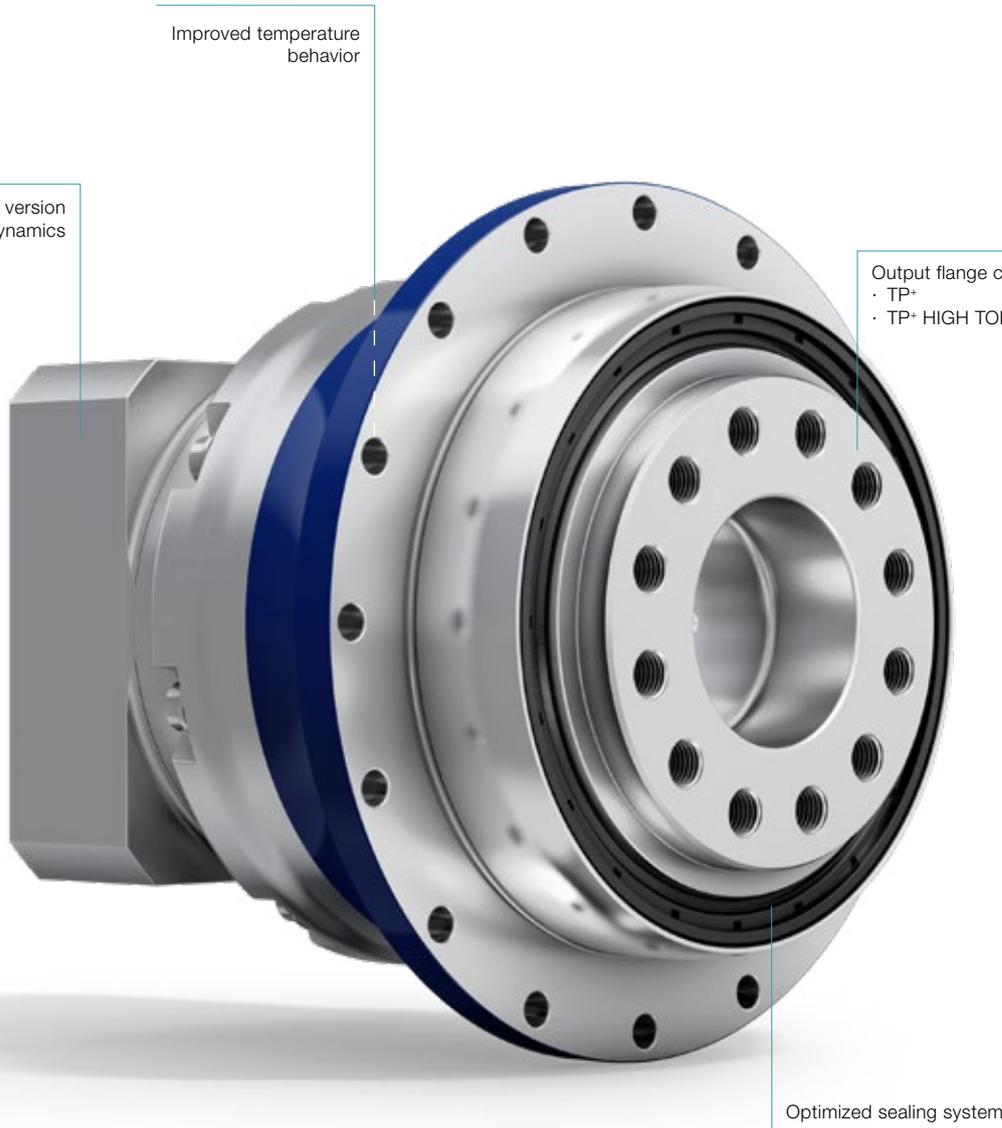
Fields of application: Secondary packaging, Handling, Mounting, Intralogistics ...

💧 Spray area (close to the process)

Fields of application: Pharmaceutical industry, Medical technology, Primary packaging without hygiene design requirements, Clean room...



More information on Delta robotics: simply scan the QR code with your smartphone.



Improved temperature behavior

Mass inertia optimized version for improved dynamics

Output flange compatible with:
· TP+
· TP+ HIGH TORQUE

Optimized sealing system

Application-spec. solutions

💧 Wet area (integrated in the process)



HDP+

Fields of application: Primary packaging with hygiene design requirements

We are happy to advise you on individual solutions for your project-specific requirements.



Custom solutions

DP+ 004 MF 2-stage

| | | | 2-stage | | | | | | | | | | |
|--|-------------|-----------------|--------------------------------------|---------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Ratio | i | | 16 | 20 | 21 | 25 | 28 | 31 | 35 | 40 | 50 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 57 | 57 | 60 | 72 | 57 | 50 | 72 | 57 | 72 | | |
| | | in.lb | 507 | 507 | 533 | 634 | 507 | 442 | 634 | 507 | 634 | | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 57 | 57 | 48 | 66 | 57 | 48 | 66 | 57 | 66 | | |
| | | in.lb | 507 | 507 | 425 | 584 | 507 | 425 | 584 | 507 | 584 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 39 | 41 | 32 | 41 | 45 | 36 | 45 | 46 | 48 | | |
| | | in.lb | 342 | 365 | 286 | 361 | 403 | 320 | 399 | 406 | 421 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | | |
| | | in.lb | 885 | 885 | 885 | 885 | 885 | 885 | 885 | 885 | 885 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4800 | | |
| Max. input speed | n_{1Max} | rpm | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 0.28 | 0.23 | 0.24 | 0.22 | 0.21 | 0.22 | 0.17 | 0.18 | 0.17 | | |
| | | in.lb | 2.5 | 2.0 | 2.1 | 1.9 | 1.9 | 1.9 | 1.5 | 1.6 | 1.5 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 4 / Reduced ≤ 2 | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 12 | 12 | 10 | 12 | 12 | 9 | 12 | 11 | 12 | | |
| | | in.lb/arcmin | 106 | 106 | 89 | 106 | 106 | 80 | 106 | 97 | 106 | | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 85 | | | | | | | | | | |
| | | in.lb/arcmin | 752 | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 2119 | | | | | | | | | | |
| | | lb _f | 477 | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 110 | | | | | | | | | | |
| | | in.lb | 974 | | | | | | | | | | |
| Efficiency at full load | η | % | 94 | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 1.5 | | | | | | | | | | |
| | | lb _m | 3.3 | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 54 | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | | | | | |
| | | F | 5 to 104 | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | - | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | - | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | B | 11 | J_1 | kgcm ² | 0.078 | 0.070 | 0.074 | 0.068 | 0.062 | 0.072 | 0.061 | 0.057 | 0.057 |
| | | | | 10 ⁻³ in.lb.s ² | 0.069 | 0.062 | 0.065 | 0.060 | 0.055 | 0.064 | 0.054 | 0.050 | 0.050 |
| | C | 14 | J_1 | kgcm ² | 0.17 | 0.17 | 0.17 | 0.16 | 0.16 | 0.17 | 0.16 | 0.15 | 0.15 |
| | | | | 10 ⁻³ in.lb.s ² | 0.15 | 0.15 | 0.15 | 0.15 | 0.14 | 0.15 | 0.14 | 0.14 | 0.14 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

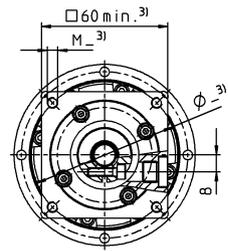
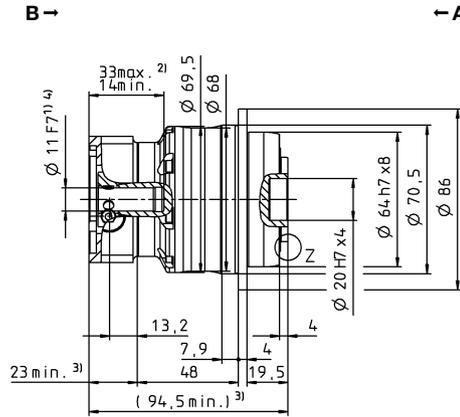
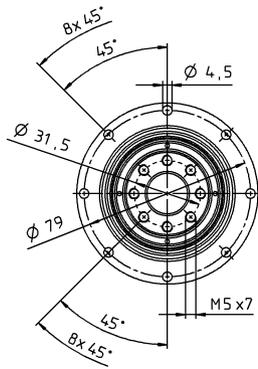
- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

View B

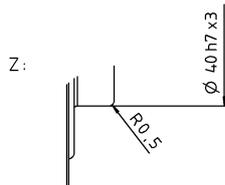
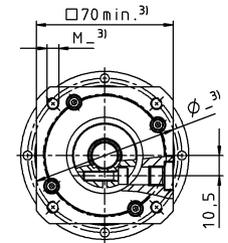
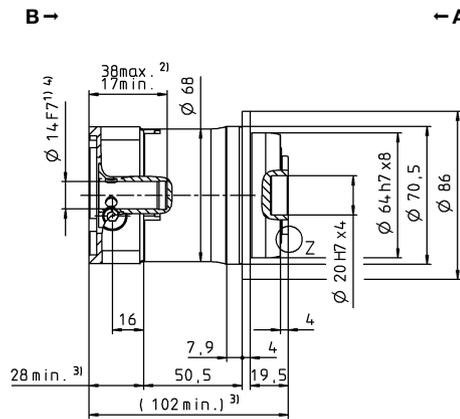
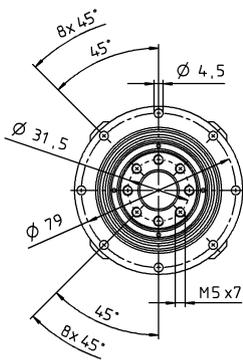
2-stage

up to 11⁴⁾ (B)⁵⁾
clamping hub
diameter



Motor shaft diameter [mm]

up to 14⁴⁾ (C)
clamping hub
diameter



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

DP+ 010 MF 2-stage

| | | | 2-stage | | | | | | | | | | |
|--|-------------|-----------------|--------------------------------------|---------------------------------------|------|------|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 16 | 20 | 21 | 25 | 28 | 31 | 35 | 40 | 50 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 157 | 126 | 133 | 158 | 157 | 121 | 158 | 154 | 158 | | |
| | | in.lb | 1392 | 1118 | 1174 | 1398 | 1392 | 1071 | 1398 | 1363 | 1398 | | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 157 | 126 | 120 | 158 | 157 | 121 | 158 | 154 | 158 | | |
| | | in.lb | 1392 | 1113 | 1062 | 1398 | 1392 | 1071 | 1398 | 1363 | 1398 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 106 | 101 | 96 | 124 | 107 | 87 | 126 | 112 | 126 | | |
| | | in.lb | 935 | 895 | 850 | 1097 | 945 | 770 | 1118 | 987 | 1118 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 251 | 251 | 251 | 251 | 251 | 251 | 251 | 251 | 251 | | |
| | | in.lb | 2222 | 2222 | 2222 | 2222 | 2222 | 2222 | 2222 | 2222 | 2222 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3800 | | |
| Max. input speed | n_{1Max} | rpm | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 0.56 | 0.48 | 0.47 | 0.44 | 0.40 | 0.40 | 0.28 | 0.32 | 0.32 | | |
| | | in.lb | 5.0 | 4.2 | 4.2 | 3.9 | 3.5 | 3.5 | 2.5 | 2.8 | 2.8 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 3 / Reduced ≤ 1 | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 32 | 32 | 26 | 32 | 31 | 24 | 32 | 30 | 30 | | |
| | | in.lb/arcmin | 283 | 283 | 230 | 283 | 274 | 212 | 283 | 266 | 266 | | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 225 | | | | | | | | | | |
| | | in.lb/arcmin | 1991 | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 2795 | | | | | | | | | | |
| | | lb _f | 629 | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 270 | | | | | | | | | | |
| | | in.lb | 2390 | | | | | | | | | | |
| Efficiency at full load | η | % | 94 | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 3.6 | | | | | | | | | | |
| | | lb _m | 8.0 | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 55 | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | | | | | |
| | | F | 5 to 104 | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | - | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | - | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | B | 11 | J_1 | kgcm ² | 0.17 | 0.14 | 0.15 | 0.13 | 0.11 | 0.14 | 0.10 | 0.09 | 0.09 |
| | | | | 10 ⁻³ in.lb.s ² | 0.15 | 0.12 | 0.13 | 0.12 | 0.10 | 0.12 | 0.09 | 0.08 | 0.08 |
| | C | 14 | J_1 | kgcm ² | 0.24 | 0.21 | 0.22 | 0.20 | 0.18 | 0.21 | 0.18 | 0.17 | 0.17 |
| | | | | 10 ⁻³ in.lb.s ² | 0.21 | 0.19 | 0.20 | 0.18 | 0.16 | 0.18 | 0.16 | 0.15 | 0.15 |
| | E | 19 | J_1 | kgcm ² | 0.56 | 0.53 | 0.55 | 0.53 | 0.51 | 0.53 | 0.50 | 0.49 | 0.49 |
| | | | | 10 ⁻³ in.lb.s ² | 0.50 | 0.47 | 0.48 | 0.47 | 0.45 | 0.47 | 0.44 | 0.43 | 0.43 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

^{a)} At max. 10 % M_{2KMax}

^{b)} Valid for standard clamping hub diameter

^{c)} Refers to center of the output shaft or flange

^{d)} Please reduce input speed at higher ambient temperatures

^{f)} Please contact us to discuss

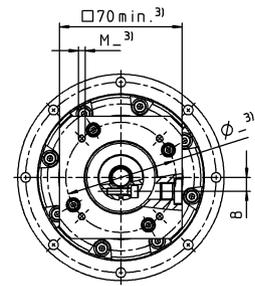
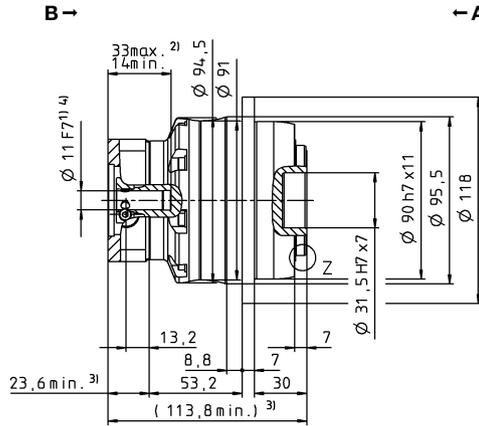
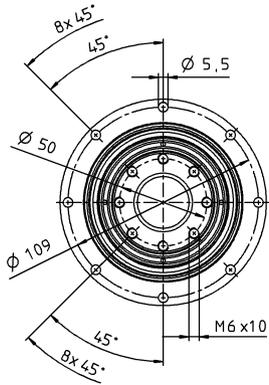
application-specific service lifetimes

View A

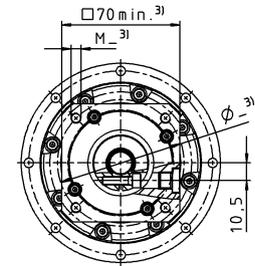
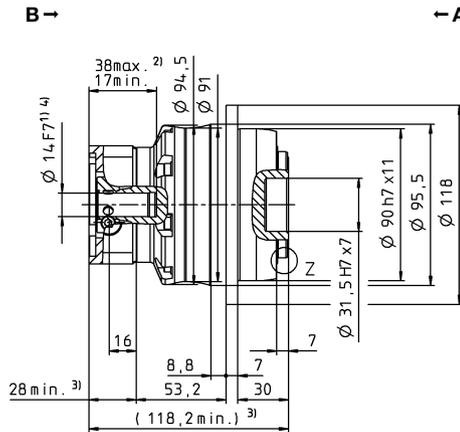
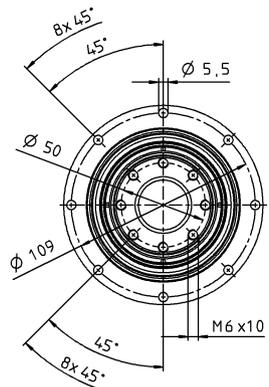
View B

2-stage

up to 11⁴⁾ (B)
clamping hub diameter

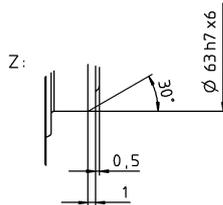
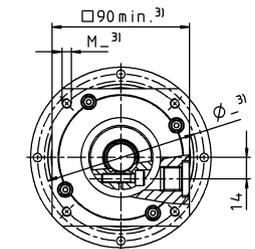
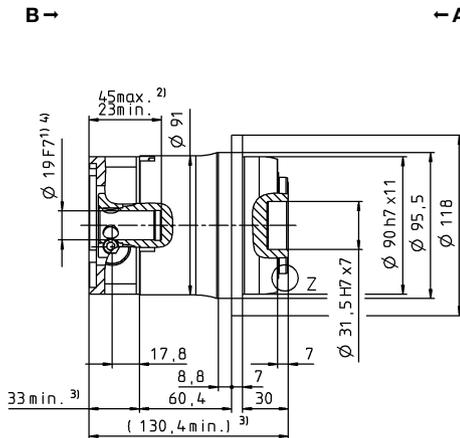
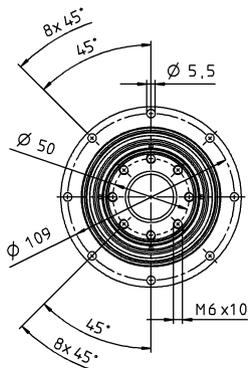


up to 14⁴⁾ (C)⁵⁾
clamping hub diameter



Motor shaft diameter [mm]

up to 19⁴⁾ (E)
clamping hub diameter



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

DP+ 025 MF 2-stage

| | | | 2-stage | | | | | | | | | | |
|--|-------------|-----------------|--------------------------------------|---------------------------------------|------|------|------|------|------|------|------|------|------|
| Ratio | <i>i</i> | | 16 | 20 | 21 | 25 | 28 | 31 | 35 | 40 | 50 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 352 | 352 | 352 | 380 | 352 | 352 | 380 | 352 | 380 | | |
| | | in.lb | 3115 | 3115 | 3115 | 3363 | 3115 | 3115 | 3363 | 3115 | 3363 | | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 352 | 352 | 330 | 380 | 352 | 330 | 380 | 352 | 380 | | |
| | | in.lb | 3115 | 3115 | 2921 | 3363 | 3115 | 2921 | 3363 | 3115 | 3363 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 250 | 267 | 211 | 265 | 282 | 231 | 294 | 282 | 304 | | |
| | | in.lb | 2213 | 2366 | 1872 | 2348 | 2492 | 2047 | 2598 | 2492 | 2691 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 625 | 625 | 625 | 625 | 625 | 625 | 625 | 625 | 625 | | |
| | | in.lb | 5532 | 5532 | 5532 | 5532 | 5532 | 5532 | 5532 | 5532 | 5532 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 2800 | 2800 | 2800 | 2800 | 2800 | 2800 | 2800 | 2800 | 3100 | | |
| Max. input speed | n_{1Max} | rpm | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | 7500 | | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 1.2 | 1.0 | 1.1 | 0.90 | 0.80 | 0.84 | 0.60 | 0.59 | 0.50 | | |
| | | in.lb | 10 | 8.9 | 9.9 | 8.0 | 7.1 | 7.4 | 5.3 | 5.2 | 4.4 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 3 / Reduced ≤ 1 | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 81 | 81 | 70 | 83 | 80 | 54 | 82 | 76 | 80 | | |
| | | in.lb/arcmin | 717 | 717 | 620 | 735 | 708 | 478 | 726 | 673 | 708 | | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 550 | | | | | | | | | | |
| | | in.lb/arcmin | 4868 | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 4800 | | | | | | | | | | |
| | | lb _f | 1080 | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 440 | | | | | | | | | | |
| | | in.lb | 3894 | | | | | | | | | | |
| Efficiency at full load | η | % | 94 | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 6.7 | | | | | | | | | | |
| | | lb _m | 14.8 | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 58 | | | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | | | | | | |
| | | F | 194 | | | | | | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | | | | | | |
| | | F | 5 to 104 | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | - | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | - | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | C | 14 | J_1 | kgcm ² | 0.66 | 0.55 | 0.60 | 0.53 | 0.44 | 0.55 | 0.43 | 0.38 | 0.38 |
| | | | | 10 ⁻³ in.lb.s ² | 0.58 | 0.48 | 0.53 | 0.47 | 0.39 | 0.49 | 0.38 | 0.34 | 0.33 |
| | E | 19 | J_1 | kgcm ² | 0.83 | 0.71 | 0.77 | 0.70 | 0.61 | 0.72 | 0.60 | 0.55 | 0.55 |
| | | | | 10 ⁻³ in.lb.s ² | 0.73 | 0.63 | 0.68 | 0.62 | 0.54 | 0.64 | 0.53 | 0.49 | 0.48 |
| | G | 24 | J_1 | kgcm ² | 2.20 | 2.08 | 2.14 | 2.07 | 1.98 | 2.09 | 1.97 | 1.92 | 1.92 |
| | | | | 10 ⁻³ in.lb.s ² | 1.95 | 1.84 | 1.89 | 1.83 | 1.75 | 1.85 | 1.74 | 1.70 | 1.70 |
| | H | 28 | J_1 | kgcm ² | 2.00 | 1.91 | 1.96 | 1.89 | 1.82 | 1.85 | 1.81 | 1.76 | 1.76 |
| | | | | 10 ⁻³ in.lb.s ² | 1.77 | 1.69 | 1.73 | 1.67 | 1.61 | 1.64 | 1.60 | 1.56 | 1.56 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

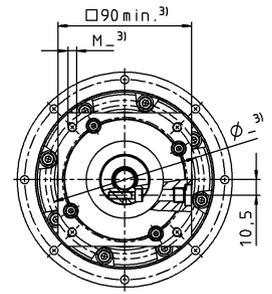
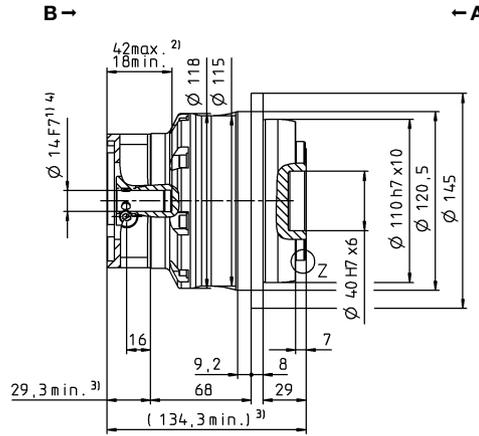
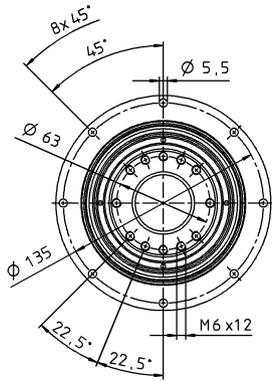
- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{f)} Please contact us to discuss application-specific service lifetimes

View A

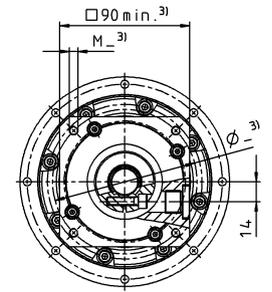
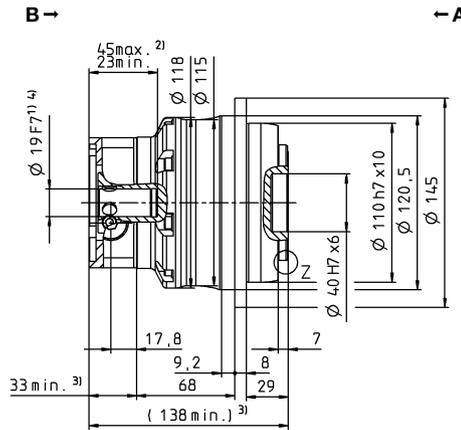
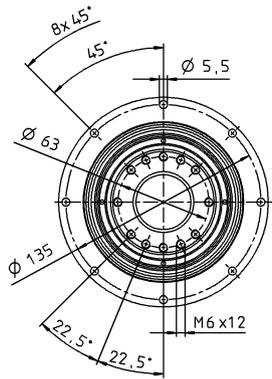
View B

2-stage

up to 14⁴⁾ (C) clamping hub diameter

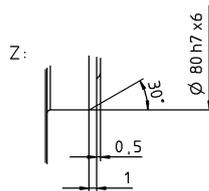
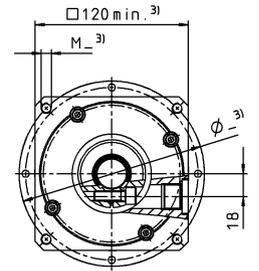
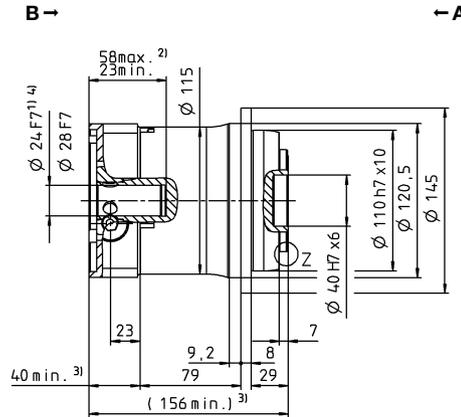
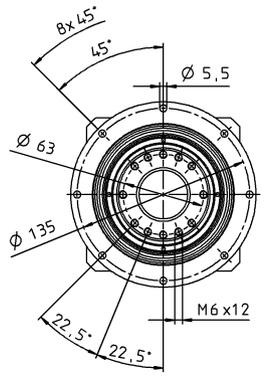


up to 19⁴⁾ (E)⁵⁾ clamping hub diameter



Motor shaft diameter [mm]

up to 24/28⁴⁾ (G/H) clamping hub diameter



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

DP+ 050 MF 2-stage

| | | | 2-stage | | | | | | | | | | |
|--|-------------|-----------------|--------------------------------------|---------------------------------------|-------|-------|-------|-------|-------|-------|-------|------|------|
| Ratio | i | | 16 | 20 | 21 | 25 | 28 | 31 | 35 | 40 | 50 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 825 | 825 | 660 | 825 | 825 | 682 | 825 | 825 | 825 | | |
| | | in.lb | 7302 | 7302 | 5842 | 7302 | 7302 | 6036 | 7302 | 7302 | 7302 | | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 825 | 825 | 660 | 825 | 825 | 682 | 825 | 825 | 825 | | |
| | | in.lb | 7302 | 7302 | 5842 | 7302 | 7302 | 6036 | 7302 | 7302 | 7302 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 461 | 493 | 393 | 489 | 545 | 431 | 541 | 607 | 585 | | |
| | | in.lb | 4078 | 4361 | 2476 | 4332 | 4824 | 3812 | 4792 | 5370 | 5179 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 1250 | 1250 | 1250 | 1250 | 1250 | 1250 | 1250 | 1250 | 1250 | | |
| | | in.lb | 11064 | 11064 | 11064 | 11064 | 11064 | 11064 | 11064 | 11064 | 11064 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 2900 | 2900 | 2900 | 2900 | 2900 | 2900 | 2900 | 2900 | 3200 | | |
| Max. input speed | n_{1Max} | rpm | 6250 | 6250 | 6250 | 6250 | 6250 | 6250 | 6250 | 6250 | 6250 | | |
| Mean no load running torque ^{b)} (at $n_i = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 2.8 | 2.4 | 2.2 | 2.6 | 2.0 | 1.9 | 1.5 | 1.5 | 1.2 | | |
| | | in.lb | 25 | 22 | 20 | 23 | 17 | 17 | 14 | 13 | 11 | | |
| Max. backlash | j_t | arcmin | Standard ≤ 3 / Reduced ≤ 1 | | | | | | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 180 | 185 | 145 | 180 | 180 | 130 | 175 | 175 | 175 | | |
| | | in.lb/arcmin | 1593 | 1637 | 1283 | 1593 | 1593 | 1151 | 1549 | 1549 | 1549 | | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 560 | | | | | | | | | | |
| | | in.lb/arcmin | 4956 | | | | | | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 6130 | | | | | | | | | | |
| | | lb _f | 1379 | | | | | | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 1379 | | | | | | | | | | |
| | | in.lb | 11816 | | | | | | | | | | |
| Efficiency at full load | η | % | 94 | | | | | | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 14.1 | | | | | | | | | | |
| | | lb _m | 31.2 | | | | | | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 60 | | | | | | | | | | |
| | | °C | +90 | | | | | | | | | | |
| Max. permitted housing temperature | | F | 194 | | | | | | | | | | |
| | | °C | -15 to +40 | | | | | | | | | | |
| Ambient temperature | | F | 5 to 104 | | | | | | | | | | |
| | | | | | | | | | | | | | |
| Lubrication | | | Lubricated for life | | | | | | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | | | | | | |
| Protection class | | | IP 65 | | | | | | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | - | | | | | | | | | | |
| Bore diameter of coupling on the application side | | mm | - | | | | | | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | E | 19 | J_1 | kgcm ² | 2.53 | 2.08 | 2.30 | 2.01 | 1.67 | 2.12 | 1.64 | 1.44 | 1.42 |
| | | | | 10 ⁻³ in.lb.s ² | 2.24 | 1.84 | 2.04 | 1.78 | 1.48 | 1.88 | 1.45 | 1.27 | 1.26 |
| | G | 24 | J_1 | kgcm ² | 3.22 | 2.77 | 2.99 | 2.70 | 2.37 | 2.81 | 2.33 | 2.13 | 2.12 |
| | | | | 10 ⁻³ in.lb.s ² | 2.85 | 2.45 | 2.65 | 2.39 | 2.10 | 2.49 | 2.06 | 1.89 | 1.88 |
| | K | 38 | J_1 | kgcm ² | 10.3 | 9.83 | 10.1 | 9.77 | 9.43 | 9.88 | 9.40 | 9.20 | 9.18 |
| | | | | 10 ⁻³ in.lb.s ² | 9.12 | 8.70 | 8.94 | 8.65 | 8.35 | 8.74 | 8.32 | 8.14 | 8.12 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

^{a)} At max. 10 % M_{2KMax}

^{b)} Valid for standard clamping hub diameter

^{c)} Refers to center of the output shaft or flange

^{d)} Please reduce input speed at higher ambient temperatures

^{f)} Please contact us to discuss

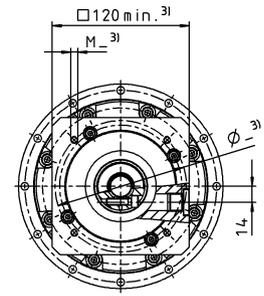
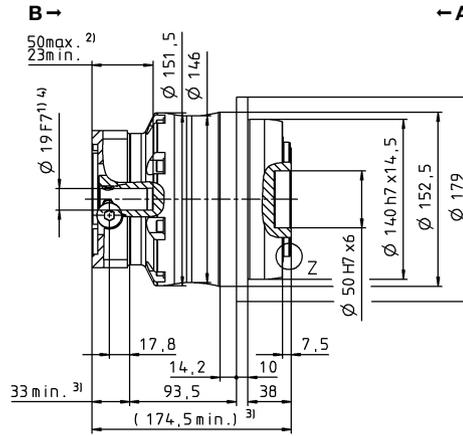
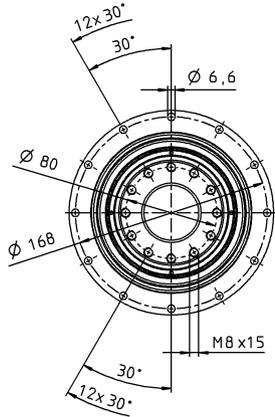
application-specific service lifetimes

View A

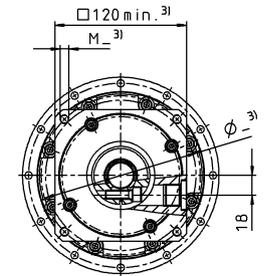
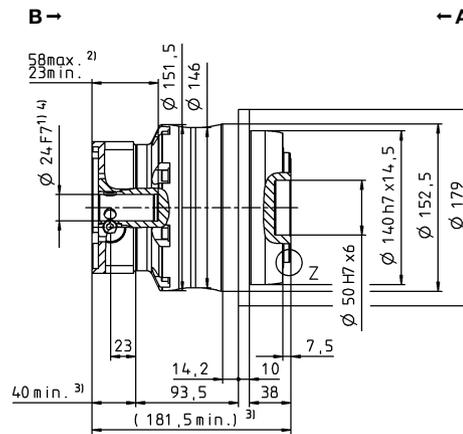
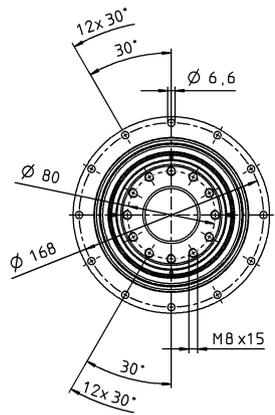
View B

2-stage

up to 19⁴⁾ (E)
clamping hub diameter

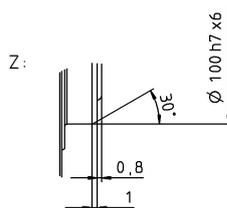
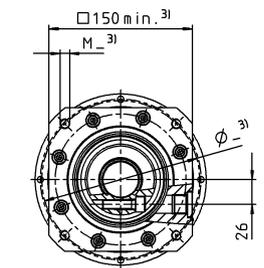
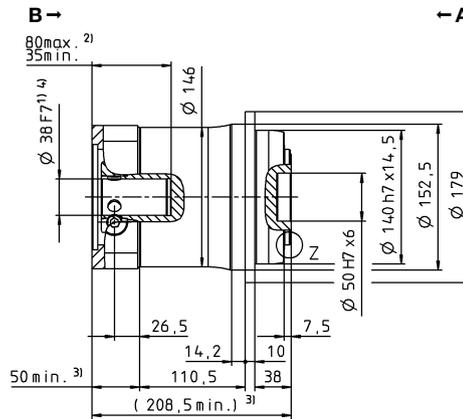
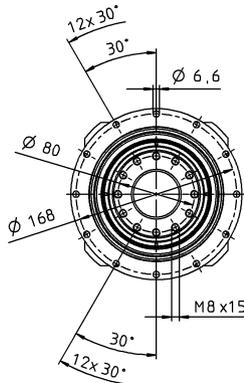


up to 24⁴⁾ (G)⁵⁾
clamping hub diameter



Motor shaft diameter [mm]

up to 38⁴⁾ (K)
clamping hub diameter



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

DP+ 010 MA 2-stage

| | | | 2-stage | | | | | |
|--|-------------|-----------------|-------------------------------|---------------------------------------|------|------|------|------|
| Ratio | i | | 22 | 27.5 | 38.5 | 55 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 315 | 315 | 315 | 315 | | |
| | | in.lb | 2788 | 2788 | 2788 | 2788 | | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 230 | 230 | 230 | 230 | | |
| | | in.lb | 2036 | 2036 | 2036 | 2036 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 140 | 137 | 139 | 147 | | |
| | | in.lb | 1242 | 1213 | 1230 | 1303 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 525 | 525 | 525 | 525 | | |
| | | in.lb | 4647 | 4647 | 4647 | 4647 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 4000 | 4000 | 4000 | 4000 | | |
| Max. input speed | n_{1Max} | rpm | 7500 | 7500 | 7500 | 7500 | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 0.52 | 0.47 | 0.41 | 0.38 | | |
| | | in.lb | 4.6 | 4.2 | 4.0 | 3.4 | | |
| Max. backlash | j_t | arcmin | ≤ 1 | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 43 | 43 | 43 | 42 | | |
| | | in.lb/arcmin | 381 | 381 | 381 | 372 | | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 225 | | | | | |
| | | in.lb/arcmin | 1991 | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 2795 | | | | | |
| | | lb _f | 629 | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 400 | | | | | |
| | | in.lb | 3540 | | | | | |
| Efficiency at full load | η | % | 94 | | | | | |
| Service life ¹⁾ | L_h | h | > 20000 | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 3.2 | | | | | |
| | | lb _m | 7.1 | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 56 | | | | | |
| | | | | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | |
| | | F | 194 | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | |
| | | F | 5 to 104 | | | | | |
| Lubrication | | | Lubricated for life | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | |
| Protection class | | | IP 65 | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | - | | | | | |
| Bore diameter of coupling on the application side | | mm | - | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | C | 14 | J_1 | kgcm ² | 0.21 | 0.18 | 0.16 | 0.14 |
| | | | | 10 ⁻³ in.lb.s ² | 0.19 | 0.16 | 0.14 | 0.12 |
| | E | 19 | J_1 | kgcm ² | 0.52 | 0.50 | 0.47 | 0.46 |
| | | | | 10 ⁻³ in.lb.s ² | 0.46 | 0.44 | 0.42 | 0.41 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

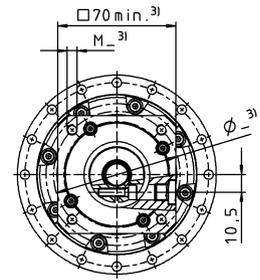
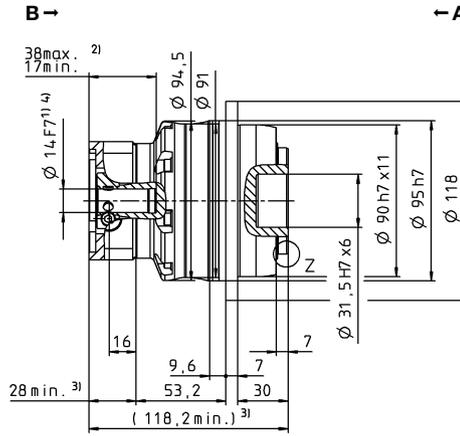
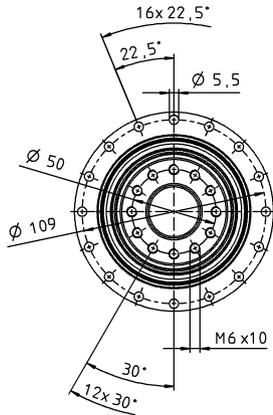
- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

View B

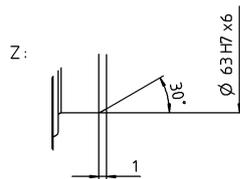
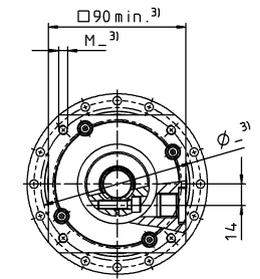
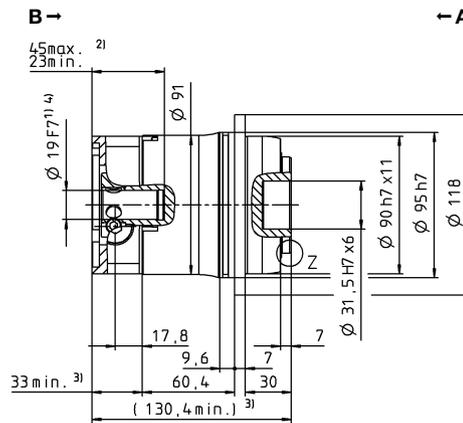
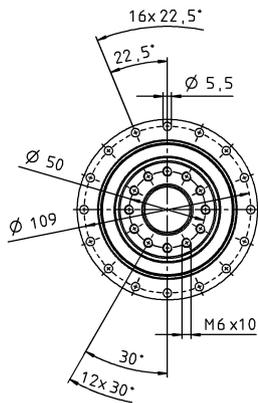
2-stage

up to 14⁴⁾ (C)⁵⁾
clamping hub
diameter



Motor shaft diameter [mm]

up to 19⁴⁾ (E)
clamping hub
diameter



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

DP+ 025 MA 2-stage

| | | | 2-stage | | | | | |
|--|-------------|-----------------|-------------------------------|---------------------------------------|-------|-------|------|------|
| Ratio | <i>i</i> | | 22 | 27.5 | 38.5 | 55 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 583 | 583 | 583 | 583 | | |
| | | in.lb | 5160 | 5160 | 5160 | 5160 | | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 530 | 530 | 530 | 530 | | |
| | | in.lb | 4691 | 4691 | 4691 | 4691 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 312 | 314 | 371 | 413 | | |
| | | in.lb | 2762 | 2775 | 3286 | 3652 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 1200 | 1200 | 1200 | 1200 | | |
| | | in.lb | 10621 | 10621 | 10621 | 10621 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 3500 | 3500 | 3500 | 3500 | | |
| Max. input speed | n_{1Max} | rpm | 7500 | 7500 | 7500 | 7500 | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 1.0 | 0.87 | 0.78 | 0.70 | | |
| | | in.lb | 9.2 | 7.7 | 6.9 | 6.2 | | |
| Max. backlash | j_t | arcmin | ≤ 1 | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 105 | 105 | 105 | 100 | | |
| | | in.lb/arcmin | 929 | 929 | 929 | 885 | | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 550 | | | | | |
| | | in.lb/arcmin | 4868 | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 4800 | | | | | |
| | | lb _f | 1080 | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 550 | | | | | |
| | | in.lb | 4868 | | | | | |
| Efficiency at full load | η | % | 94 | | | | | |
| Service life ¹⁾ | L_h | h | > 20000 | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 5.6 | | | | | |
| | | lb _m | 12.4 | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 58 | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | |
| | | F | 194 | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | |
| | | F | 5 to 104 | | | | | |
| Lubrication | | | Lubricated for life | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | |
| Protection class | | | IP 65 | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | - | | | | | |
| Bore diameter of coupling on the application side | | mm | - | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | E | 19 | J_1 | kgcm ² | 0.87 | 0.70 | 0.60 | 0.55 |
| | | | | 10 ⁻³ in.lb.s ² | 0.77 | 0.62 | 0.53 | 0.49 |
| | G | 24 | J_1 | kgcm ² | 2.39 | 2.22 | 2.12 | 2.07 |
| | | | | 10 ⁻³ in.lb.s ² | 2.12 | 1.96 | 1.88 | 1.83 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

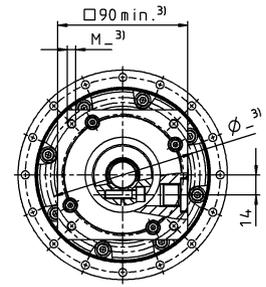
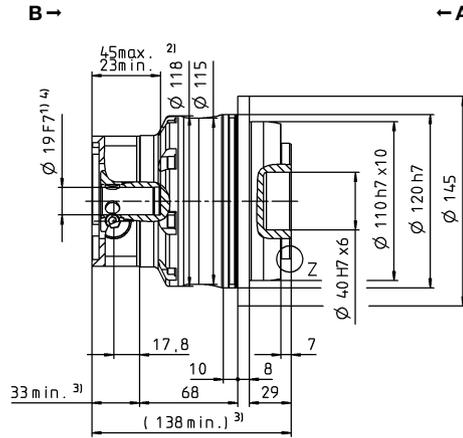
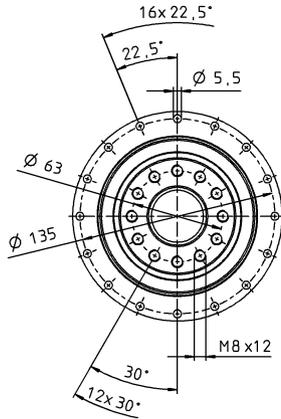
- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

View B

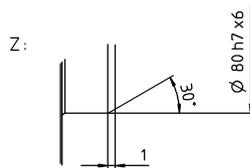
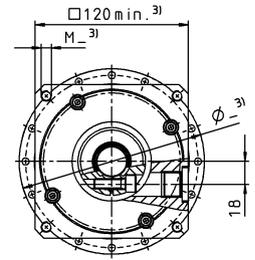
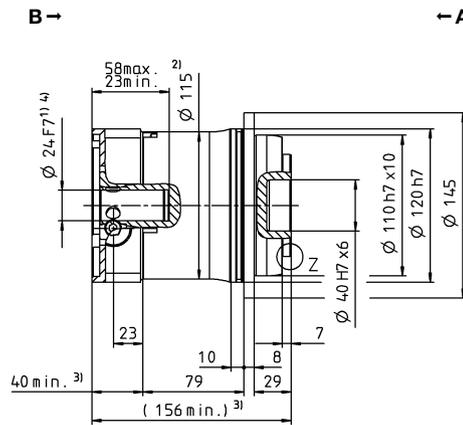
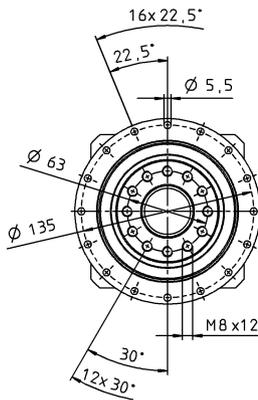
2-stage

up to 19⁴⁾ (E)⁵⁾
clamping hub diameter



Motor shaft diameter [mm]

up to 24⁴⁾ (G)
clamping hub diameter



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

DP+ 050 MA 2-stage

| | | | 2-stage | | | | | |
|--|-------------|-----------------|-------------------------------|---------------------------------------|-------|-------|------|------|
| Ratio | i | | 22 | 27.5 | 38.5 | 55 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 1402 | 1402 | 1402 | 1402 | | |
| | | in.lb | 12406 | 12406 | 12406 | 12406 | | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 992 | 992 | 992 | 992 | | |
| | | in.lb | 8780 | 8780 | 8780 | 8780 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 523 | 566 | 638 | 717 | | |
| | | in.lb | 4632 | 5005 | 5649 | 6348 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 2375 | 2375 | 2375 | 2375 | | |
| | | in.lb | 21021 | 21021 | 21021 | 21021 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 3000 | 3000 | 3000 | 3000 | | |
| Max. input speed | n_{1Max} | rpm | 6250 | 6250 | 6250 | 6250 | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 2.7 | 2.4 | 2.1 | 1.7 | | |
| | | in.lb | 23.9 | 21.2 | 18.9 | 15.0 | | |
| Max. backlash | j_t | arcmin | ≤ 1 | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 220 | 220 | 220 | 220 | | |
| | | in.lb/arcmin | 1947 | 1947 | 1947 | 1947 | | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 560 | | | | | |
| | | in.lb/arcmin | 4956 | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 6130 | | | | | |
| | | lb _f | 1379 | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 1335 | | | | | |
| | | in.lb | 11816 | | | | | |
| Efficiency at full load | η | % | 94 | | | | | |
| Service life ¹⁾ | L_h | h | > 20000 | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 12.5 | | | | | |
| | | lb _m | 27.6 | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 60 | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | |
| | | F | 194 | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | |
| | | F | 5 to 104 | | | | | |
| Lubrication | | | Lubricated for life | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | |
| Protection class | | | IP 65 | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | - | | | | | |
| Bore diameter of coupling on the application side | | mm | - | | | | | |
| Mass moment of inertia (relates to the drive) Clamping hub diameter [mm] Optimized mass inertia version available on request | G | 24 | J_1 | kgcm ² | 3.80 | 3.33 | 3.00 | 2.80 |
| | | | | 10 ⁻³ in.lb.s ² | 3.36 | 2.95 | 2.66 | 2.48 |
| | K | 38 | J_1 | kgcm ² | 10.7 | 10.3 | 9.90 | 9.70 |
| | | | | 10 ⁻³ in.lb.s ² | 9.47 | 9.12 | 8.76 | 8.58 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

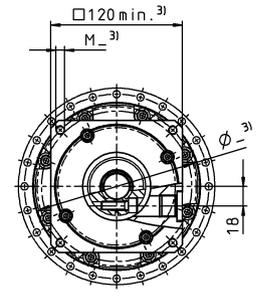
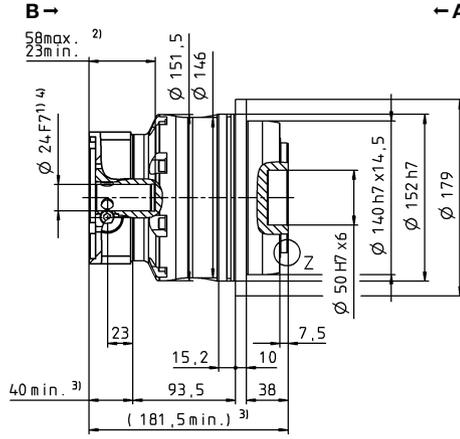
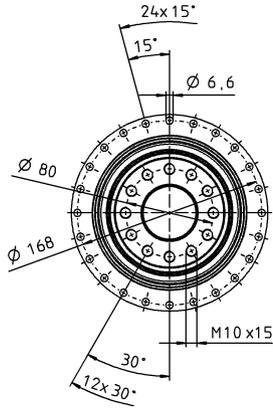
- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ¹⁾ Please contact us to discuss application-specific service lifetimes

View A

View B

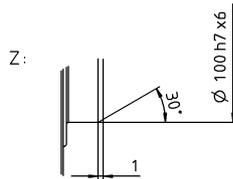
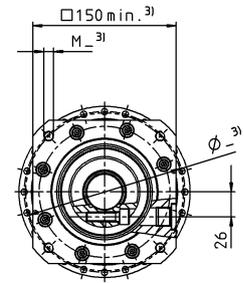
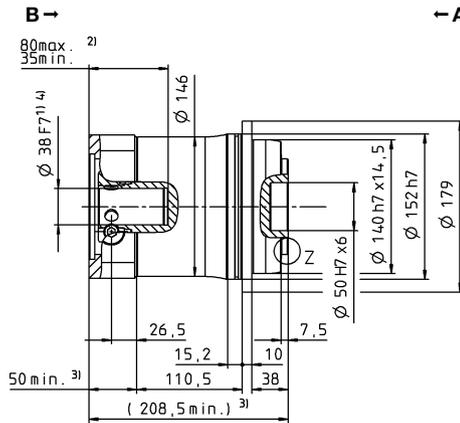
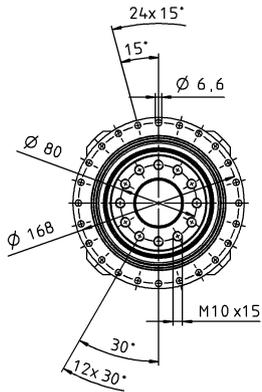
2-stage

up to 24⁴⁾ (G)⁵⁾
clamping hub diameter



Motor shaft diameter [mm]

up to 38⁴⁾ (K)
clamping hub diameter



Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

HDP+ – Cleanliness guaranteed



HDP+

Product highlights

Positioning accuracy: Minimal backlash and extreme torsional rigidity ensure maximum positioning accuracy

New freedom in design through direct process integration

Resistance: Resistant against chemical cleaning agents and disinfectants

Cleaning: Fast, efficient and safe cleaning, also suitable for CIP processes

Consistently high performance: Constant backlash throughout the service life of the gearbox ensures a consistently high performance

Max. achievable leak tightness: IP69X (max. 30 bar)

Aseptic, highly dynamic and outstanding positioning accuracy – the HDP+ meets the strict hygiene requirements of production and packaging facilities. The gearbox in hygienic design not only offers you maximum safety against contamination-related product and process risks, but also guarantees maximum system availability and productivity.

HDP+ is setting new industrial standards in hygienic design

Benefits for system manufacturers

- Integration in a system constructed according to Hygiene Design requirements (certification available)
- Meets legal obligations (machinery directive, food hygiene regulation)
- Reduction of individual parts simplifies production / assembly and allows a more compact machine design
- Greater overall system effectiveness
- Competitive advantage through innovation

Benefits for operators

- Easier, faster cleaning: shorter CIP / SIP times
- Improved reliability and longer life
- Quick and easy disassembly
- Reduced consumption of cleaning materials
- Minimal costs for maintenance and repair
- Cost savings: competitive advantage and lower end user price
- Increased food safety



Used for fish processing



Used for filling and packing milk products

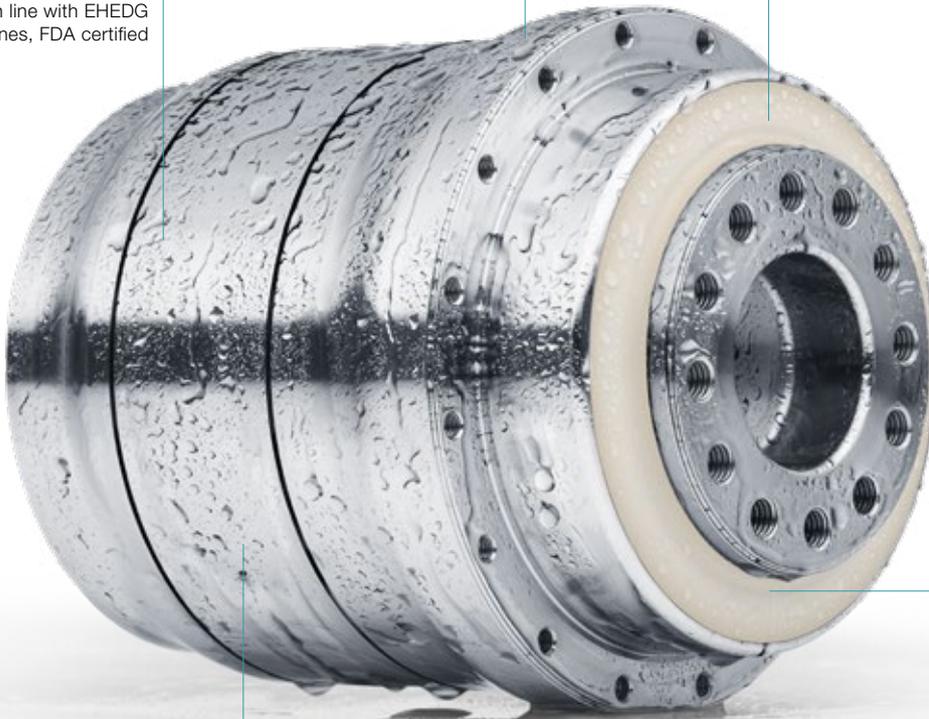


More information on hygienic design solutions: Simply scan the QR code with your smartphone.

Smooth rolled surface in hygienic steel 1.4404

Triple sealing concept guarantees optimal reliability

Designed in line with EHEDG guidelines, FDA certified



Seals resistant to cleaning materials have IP69X protection (max. 30 bar)

No dead spaces

Application-spec. solutions



Used for portioning meat products



The high-precision HDP* is ideal for Delta robotics applications

HDP+ 010 MA 2-stage

| | | | 2-stage | | | | | |
|---|-------------|-----------------|-------------------------------|---------------------------------------|------|------|------|------|
| Ratio | i | | 22 | 27.5 | 38.5 | 55 | | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 252 | 252 | 252 | 252 | | |
| | | in.lb | 2230 | 2230 | 2230 | 2230 | | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 185 | 185 | 185 | 185 | | |
| | | in.lb | 1637 | 1637 | 1637 | 1637 | | |
| Nominal torque (at n_n) | T_{2N} | Nm | 140 | 137 | 139 | 147 | | |
| | | in.lb | 1242 | 1213 | 1230 | 1303 | | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 525 | 525 | 525 | 525 | | |
| | | in.lb | 4647 | 4647 | 4647 | 4647 | | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 4000 | 4000 | 4000 | 4000 | | |
| Max. input speed | n_{1Max} | rpm | 7500 | 7500 | 7500 | 7500 | | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 0.52 | 0.47 | 0.38 | 0.38 | | |
| | | in.lb | 4.6 | 4.2 | 3.4 | 3.4 | | |
| Max. backlash | j_t | arcmin | ≤ 1 | | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 43 | 43 | 43 | 42 | | |
| | | in.lb/arcmin | 381 | 381 | 381 | 372 | | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 225 | | | | | |
| | | in.lb/arcmin | 1991 | | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 2795 | | | | | |
| | | lb _f | 629 | | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 400 | | | | | |
| | | in.lb | 3540 | | | | | |
| Efficiency at full load | η | % | 94 | | | | | |
| Service life ^{f)} | L_h | h | > 20000 | | | | | |
| Weight (incl. standard adapter plate) | m | kg | 7.3 | | | | | |
| | | lb _m | 16.1 | | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 56 | | | | | |
| | | | +90 | | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | | |
| | | F | 194 | | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | | |
| | | F | 5 to 104 | | | | | |
| Lubrication | | | Lubricated for life | | | | | |
| Direction of rotation | | | In- and output same direction | | | | | |
| Protection class ^{g)} | | | IP69K (max. 30 bar) | | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | - | | | | | |
| Bore diameter of coupling on the application side | | mm | - | | | | | |
| Mass moment of inertia (relates to the drive) | C | 14 | J_1 | kgcm ² | 0.16 | 0.14 | 0.11 | 0.10 |
| | | | | 10 ⁻³ in.lb.s ² | 0.14 | 0.12 | 0.10 | 0.9 |
| Clamping hub diameter [mm] Optimized mass inertia version | E | 19 | J_1 | kgcm ² | 0.39 | 0.36 | 0.34 | 0.33 |
| | | | | 10 ⁻³ in.lb.s ² | 0.35 | 0.32 | 0.30 | 0.29 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

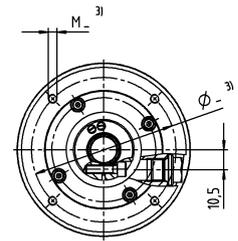
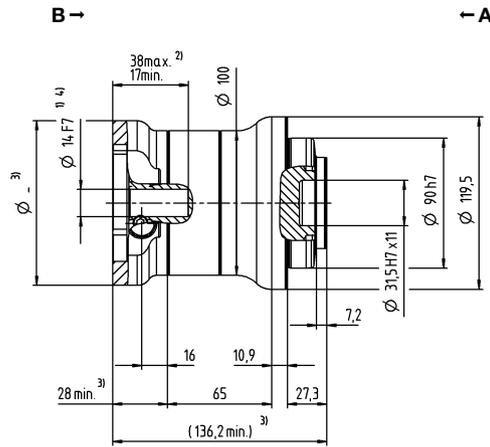
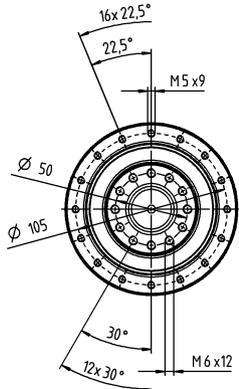
- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ^{f)} Please contact us to discuss application-specific service lifetimes
- ^{g)} Applies at standstill, for details see operating instructions

View A

View B

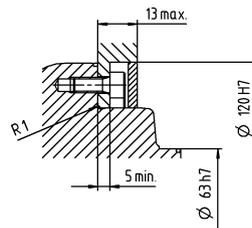
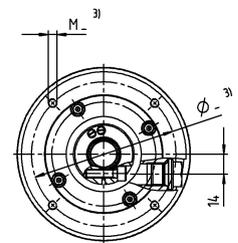
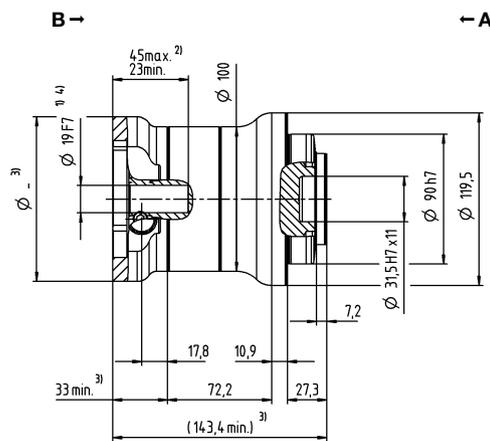
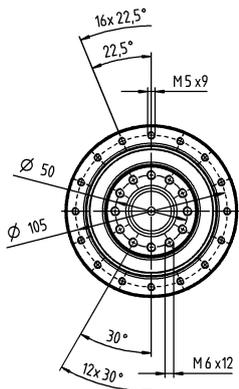
2-stage

up to 14⁴⁾ (C)⁵⁾
clamping hub
diameter



Motor shaft diameter [mm]

up to 19⁴⁾ (E)
clamping hub
diameter



Mounting accessories:
Mounting kit comprising seals and
O-rings available as an option.

Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

HDP+ 025 MA 2-stage

| | | | 2-stage | | | | |
|---|-------------|-----------------|---------------------------------------|-------|-------|-------|------|
| Ratio | i | | 22 | 27.5 | 38.5 | 55 | |
| Max. torque ^{a) b)} | T_{2a} | Nm | 466 | 466 | 466 | 466 | |
| | | in.lb | 4128 | 4128 | 4128 | 4128 | |
| Max. acceleration torque ^{b)} (max. 1000 cycles per hour) | T_{2B} | Nm | 425 | 425 | 425 | 425 | |
| | | in.lb | 3762 | 3762 | 3762 | 3762 | |
| Nominal torque (at n_n) | T_{2N} | Nm | 312 | 314 | 371 | 413 | |
| | | in.lb | 2762 | 2775 | 3286 | 3652 | |
| Emergency stop torque ^{a) b)} (permitted 1000 times during the service life of the gearbox) | T_{2Not} | Nm | 1200 | 1200 | 1200 | 1200 | |
| | | in.lb | 10621 | 10621 | 10621 | 10621 | |
| Permitted average input speed (at T_{2a} and 20 °C ambient temperature) ^{d)} | n_{1N} | rpm | 3500 | 3500 | 3500 | 3500 | |
| Max. input speed | n_{1Max} | rpm | 7500 | 7500 | 7500 | 7500 | |
| Mean no load running torque ^{b)} (at $n_1 = 3000$ rpm and 20 °C gearbox temperature) | T_{012} | Nm | 1.0 | 0.87 | 0.78 | 0.70 | |
| | | in.lb | 9.2 | 7.7 | 6.9 | 6.2 | |
| Max. backlash | j_t | arcmin | ≤ 1 | | | | |
| Torsional rigidity ^{b)} | C_{t21} | Nm/arcmin | 100 | 100 | 100 | 100 | |
| | | in.lb/arcmin | 885 | 885 | 885 | 885 | |
| Tilting rigidity | C_{2K} | Nm/arcmin | 550 | | | | |
| | | in.lb/arcmin | 4868 | | | | |
| Max. axial force ^{c)} | F_{2AMax} | N | 4800 | | | | |
| | | lb _f | 1080 | | | | |
| Max. tilting moment | M_{2KMax} | Nm | 550 | | | | |
| | | in.lb | 4868 | | | | |
| Efficiency at full load | η | % | 94 | | | | |
| Service life ¹⁾ | L_h | h | > 20000 | | | | |
| Weight (incl. standard adapter plate) | m | kg | 11.1 | | | | |
| | | lb _m | 24.5 | | | | |
| Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex [®]) | L_{PA} | dB(A) | ≤ 58 | | | | |
| Max. permitted housing temperature | | °C | +90 | | | | |
| | | F | 194 | | | | |
| Ambient temperature | | °C | -15 to +40 | | | | |
| | | F | 5 to 104 | | | | |
| Lubrication | | | Lubricated for life | | | | |
| Direction of rotation | | | In- and output same direction | | | | |
| Protection class ⁹⁾ | | | IP69K (max. 30 bar) | | | | |
| Metal bellows coupling (recommended product type – validate sizing with cymex [®]) | | | - | | | | |
| Bore diameter of coupling on the application side | | mm | - | | | | |
| Mass moment of inertia (relates to the drive) | E 19 | J_1 | kgcm ² | 0.75 | 0.57 | 0.47 | 0.42 |
| | | | 10 ⁻³ in.lb.s ² | 0.67 | 0.52 | 0.42 | 0.37 |
| Clamping hub diameter [mm] Optimized mass inertia version | G 24 | J_1 | kgcm ² | 1.77 | 1.59 | 1.49 | 1.44 |
| | | | 10 ⁻³ in.lb.s ² | 1.57 | 1.41 | 1.32 | 1.28 |

Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

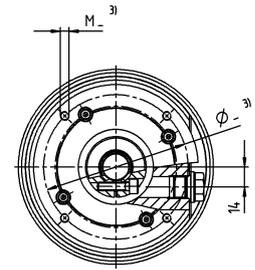
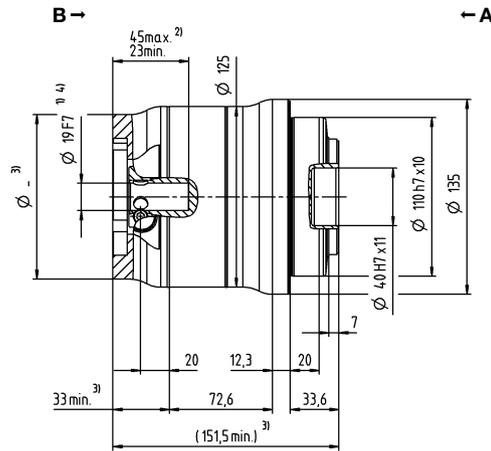
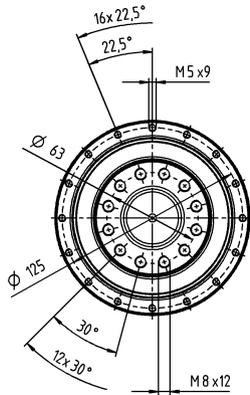
- ^{a)} At max. 10 % M_{2KMax}
- ^{b)} Valid for standard clamping hub diameter
- ^{c)} Refers to center of the output shaft or flange
- ^{d)} Please reduce input speed at higher ambient temperatures
- ¹⁾ Please contact us to discuss application-specific service lifetimes
- ⁹⁾ Applies at standstill, for details see operating instructions

View A

View B

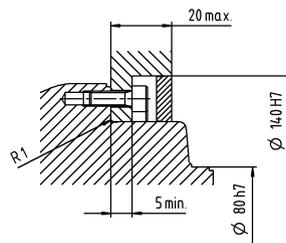
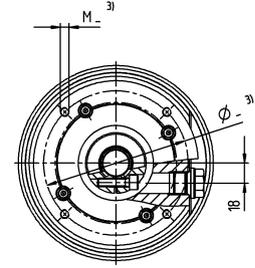
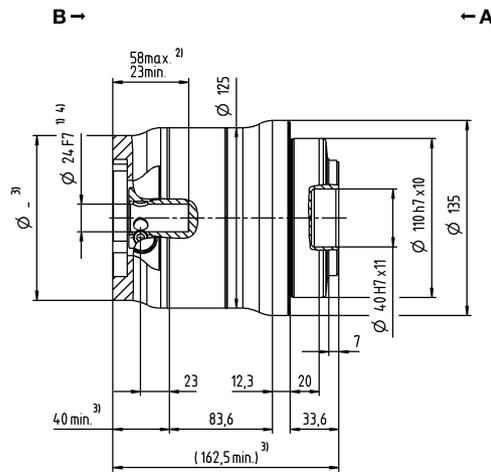
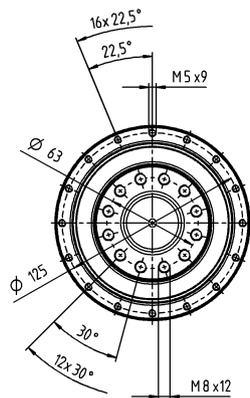
2-stage

up to 19⁴⁾ (E)⁵⁾
clamping hub
diameter



Motor shaft diameter [mm]

up to 24⁴⁾ (G)
clamping hub
diameter



Mounting accessories:
Mounting kit comprising seals and
O-rings available as an option.

Non-tolerated dimensions are nominal dimensions

¹⁾ Check motor shaft fit

²⁾ Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.

³⁾ The dimensions depend on the motor

⁴⁾ Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

⁵⁾ Standard clamping hub diameter

Basic Line gearbox overview



| Product type | | CP | CPS | CPK | CPSK | CVH | CVS |
|---|------------|------|------|------|------|---------|---------|
| Version | | MF | MF | MF | MF | MF / MT | MF / MT |
| Ratio ^{c)} | min. $i =$ | 3 | 3 | 3 | 3 | 7 | 7 |
| | max. $i =$ | 100 | 100 | 100 | 100 | 40 | 40 |
| Max. torsional backlash [arcmin] ^{c)} | Standard | ≤ 12 | ≤ 12 | ≤ 15 | ≤ 15 | ≤ 15 | ≤ 15 |
| | Reduced | – | – | – | – | – | – |
| Output type | | | | | | | |
| Smooth shaft | | x | x | x | x | – | x |
| Shaft with key ^{d)} | | x | x | x | x | – | x |
| Splined shaft (DIN 5480) | | – | – | – | – | – | – |
| Blind hollow shaft | | – | – | – | – | – | – |
| Hollow shaft interface | | – | – | – | – | x | – |
| Keyed hollow shaft | | – | – | – | – | x | – |
| Flanged hollow shaft | | – | – | – | – | – | – |
| Flange | | – | – | – | – | – | – |
| System output | | – | – | – | – | – | – |
| Output on both sides | | – | – | – | – | x | x |
| Input type | | | | | | | |
| Motor-mounted | | x | x | x | x | x | x |
| Self-contained version ^{b)} | | – | – | – | – | – | – |
| Characteristic | | | | | | | |
| Flange with slotted holes | | – | – | – | – | – | – |
| ATEX ^{a)} | | – | – | – | – | – | – |
| Food-grade lubrication ^{a) b)} | | x | x | x | x | x | x |
| Corrosion resistant ^{a) b)} | | – | – | – | – | – | – |
| Optimized mass inertia ^{a)} | | – | – | – | – | – | – |
| System solutions | | | | | | | |
| Linear system (rack/pinion) | | – | – | – | – | – | – |
| Servo actuator | | – | – | – | – | – | – |
| Accessories (please refer to the product pages for further options) | | | | | | | |
| Coupling | | x | x | x | x | – | x |
| Shrink disc | | – | – | – | – | x | – |

^{a)} Power reduction: technical data available on request

^{b)} Please contact WITTENSTEIN alpha

^{c)} In relation to reference sizes

^{d)} Power reduction: Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com

Value Line gearbox overview



| Product type | | NP | NPL | NPS | NPT | NPR | NTP | NPK | NPLK | NPSK | NPTK | NPRK | NVH | NVS | HDV |
|---|------------|-------|-------|-------|-------|-------|-----|------|------|------|------|------|-----|-----|-------|
| Version | | MF/MA | MF/MA | MF/MA | MF/MA | MF/MA | MQ | MF | MF | MF | MF | MF | MF | MF | MF/MT |
| Ratio ^{c)} | min. $i =$ | 3 | 3 | 3 | 3 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 |
| | max. $i =$ | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 400 | 400 | 400 |
| Max. torsional backlash [arcmin] ^{c)} | Standard | ≤ 8 | ≤ 8 | ≤ 8 | ≤ 8 | ≤ 8 | ≤ 5 | ≤ 11 | ≤ 11 | ≤ 11 | ≤ 11 | ≤ 11 | ≤ 6 | ≤ 6 | ≤ 10 |
| | Reduced | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Output type | | | | | | | | | | | | | | | |
| Smooth shaft | | x | x | x | - | x | - | x | x | x | - | x | - | x | x |
| Shaft with key ^{d)} | | x | x | x | - | x | - | x | x | x | - | x | - | x | x |
| Splined shaft (DIN 5480) | | - | x | x | - | x | - | - | x | x | - | x | - | - | - |
| Blind hollow shaft | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Hollow shaft interface | | - | - | - | - | - | - | - | - | - | - | - | x | - | - |
| Keyed hollow shaft | | - | - | - | - | - | - | - | - | - | - | - | x | - | - |
| Flanged hollow shaft | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Flange | | - | - | - | x | - | x | - | - | - | x | - | - | - | - |
| System output | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Output on both sides | | - | - | - | - | - | - | - | - | - | - | - | x | x | - |
| Input type | | | | | | | | | | | | | | | |
| Motor-mounted | | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| Self-contained version ^{b)} | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Characteristic | | | | | | | | | | | | | | | |
| Flange with slotted holes | | - | - | - | - | x | - | - | - | - | - | x | - | - | - |
| ATEX ^{a)} | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Food-grade lubrication ^{a) b)} | | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| Corrosion resistant ^{a) b)} | | - | - | - | - | - | - | - | - | - | - | - | x | x | x |
| Optimized mass inertia ^{a)} | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| System solutions | | | | | | | | | | | | | | | |
| Linear system (rack/pinion) | | x | x | x | - | x | - | x | x | x | - | x | - | x | - |
| Servo actuator | | - | - | - | - | - | - | - | - | - | - | - | - | - | x |
| Accessories (please refer to the product pages for further options) | | | | | | | | | | | | | | | |
| Coupling | | x | x | x | x | x | x | x | x | x | - | x | - | x | - |
| Shrink disc | | - | - | - | - | - | - | - | - | - | - | - | x | - | - |

^{a)} Power reduction: technical data available on request

^{b)} Please contact WITTENSTEIN alpha

^{c)} In relation to reference sizes

^{d)} Power reduction: Please use our sizing software cymex® for a detailed sizing – www.wittenstein-cymex.com

Advanced Line gearbox overview



| Product type | | SP+ | SP+ HIGH SPEED | SP+ HIGH SPEED friction optimized | TP+ | TP+ HIGH TORQUE | HG+ | SK+ | SPK+ |
|---|----------|-----|-------------------|---|-----|--------------------|-----|-----|------|
| Version | | MF | MC | MC-L | MF | MA | MF | MF | MF |
| Catalog page | | 26 | 26 | 26 | 80 | 80 | 126 | 138 | 148 |
| Ratio ^{c)} | min. i = | 3 | 3 | 3 | 4 | 22 | 3 | 3 | 12 |
| | max. i = | 100 | 100 | 10 | 100 | 302.5 | 100 | 100 | 1000 |
| Max. torsional backlash [arcmin] ^{c)} | Standard | ≤ 3 | ≤ 4 | ≤ 4 | ≤ 3 | ≤ 1 | ≤ 4 | ≤ 4 | ≤ 4 |
| | Reduced | ≤ 1 | ≤ 2 | ≤ 2 | ≤ 1 | – | – | – | ≤ 2 |
| Output shape | | | | | | | | | |
| Smooth shaft | | x | x | x | – | – | – | x | x |
| Shaft with key ^{d)} | | x | x | x | – | – | – | x | x |
| Splined shaft (DIN 5480) | | x | x | x | – | – | – | x | x |
| Blind hollow shaft | | x | x | x | – | – | – | – | x |
| Hollow shaft interface | | – | – | – | – | – | x | – | – |
| Keyed hollow shaft | | – | – | – | – | – | – | – | – |
| Flanged hollow shaft | | – | – | – | – | – | – | – | – |
| Flange | | – | – | – | x | x | – | – | – |
| System output | | – | – | – | x | x | – | – | – |
| Output on both sides | | – | – | – | – | – | x | x | x |
| Input type | | | | | | | | | |
| Motor-mounted | | x | x | x | x | x | x | x | x |
| Self-contained version ^{b)} | | x | – | – | x | – | – | – | – |
| Characteristic | | | | | | | | | |
| Flange with slotted holes | | x | – | – | – | – | – | – | – |
| ATEX ^{a)} | | x | x | – | – | – | x | x | – |
| Food-grade lubrication ^{a) b)} | | x | x | x | x | x | x | x | x |
| Corrosion resistant ^{a) b)} | | x | x | x | x | x | x | x | x |
| Optimized mass inertia ^{a)} | | x | x | x | x | x | – | – | – |
| System solutions | | | | | | | | | |
| Linear system (rack / pinion) | | x | x | – | x | x | – | x | x |
| Servo actuator | | x | – | – | x | x | – | – | – |
| Accessories (please refer to the product pages for further options) | | | | | | | | | |
| Coupling | | x | x | x | x | x | – | x | x |
| Shrink disc | | x | x | x | – | – | x | – | x |

^{a)} Power reduction: technical data available on request

^{b)} Please contact WITTENSTEIN alpha

^{c)} In relation to reference sizes

^{d)} Power reduction: Please use our sizing software cymex[®] for a detailed sizing – www.wittenstein-cymex.com



| TK+ | TPK+ | TPK+ HIGH TORQUE | SC+ | SPC+ | TPC+ | VH+ | VS+ | VT+ | DP+ | HDP+ |
|-----|------|---------------------|-----|------|------|-----|-----|-----|---------|------|
| MF | MF | MA | MF | MF | MF | MF | MF | MF | MF / MA | MA |
| 172 | 182 | 182 | 218 | 228 | 238 | 252 | 262 | 270 | 285 | 298 |
| 3 | 12 | 66 | 1 | 4 | 4 | 4 | 4 | 4 | 16 | 22 |
| 100 | 5500 | 5500 | 2 | 20 | 20 | 400 | 400 | 400 | 55 | 55 |
| ≤ 4 | ≤ 4 | ≤ 1.3 | ≤ 4 | ≤ 4 | ≤ 4 | ≤ 3 | ≤ 3 | ≤ 3 | ≤ 3 | ≤ 1 |
| - | ≤ 2 | - | - | ≤ 2 | ≤ 2 | ≤ 2 | ≤ 2 | ≤ 2 | ≤ 1 | - |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| - | - | - | x | x | - | - | x | - | - | - |
| - | - | - | x | x | - | - | x | - | - | - |
| - | - | - | - | x | - | - | x | - | - | - |
| - | - | - | - | x | - | - | - | - | - | - |
| - | - | - | - | - | - | x | - | - | - | - |
| - | - | - | - | - | - | x | - | - | - | - |
| x | - | - | - | - | - | - | - | x | - | - |
| - | x | x | - | - | x | - | - | - | x | x |
| - | x | x | - | - | x | - | - | - | - | - |
| x | x | x | - | - | - | x | x | - | - | - |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| x | x | x | x | x | x | x | x | x | x | x |
| - | - | - | - | - | - | - | - | - | - | - |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| - | - | - | - | - | - | - | - | - | - | - |
| x | - | - | - | - | - | - | - | - | - | - |
| x | x | x | x | x | x | x | x | x | x | x |
| x | x | x | - | - | - | x | x | x | x | x |
| - | - | - | - | - | - | - | - | - | x | x |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| x | x | x | x | x | x | - | x | x | - | - |
| - | - | - | - | - | - | - | - | - | - | - |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| x | x | x | x | x | x | - | x | x | - | - |
| - | - | - | - | x | - | x | - | - | - | - |

Premium Line gearbox overview



| Product type | | XP+ | XP+ HIGH TORQUE | XP+ HIGH SPEED | RP+ | RP+ HIGH TORQUE | XPK+ | RPK+ | XPC+ | RPC+ |
|---|------------|-----|--------------------|-------------------|-----|--------------------|------|-------|------|-------|
| Version | | MF | MA | MC | MF | MA | MF | MA | MF | MA |
| Ratio ^{c)} | min. $i =$ | 3 | 5.5 | 3 | 4 | 5.5 | 12 | 48 | 4 | 22 |
| | max. $i =$ | 100 | 55 | 100 | 10 | 220 | 1000 | 5500 | 20 | 55 |
| Max. torsional backlash [arcmin] ^{c)} | Standard | ≤ 3 | ≤ 1 | ≤ 4 | ≤ 3 | ≤ 1 | ≤ 4 | ≤ 1.3 | ≤ 4 | ≤ 1.3 |
| | Reduced | ≤ 1 | – | ≤ 2 | ≤ 1 | – | ≤ 2 | – | ≤ 2 | – |
| Output shape | | | | | | | | | | |
| Smooth shaft | | x | x | x | – | – | x | – | x | – |
| Shaft with key ^{d)} | | x | – | x | – | – | x | – | x | – |
| Splined shaft (DIN 5480) | | x | x | x | – | – | x | – | x | – |
| Blind hollow shaft | | x | x | x | – | – | x | – | x | – |
| Hollow shaft interface | | – | – | – | – | – | – | – | – | – |
| Keyed hollow shaft | | – | – | – | – | – | – | – | – | – |
| Flanged hollow shaft | | – | – | – | – | – | – | – | – | – |
| Flange | | – | – | – | x | x | – | x | – | x |
| System output | | x | x | x | x | x | x | x | x | x |
| Output on both sides | | – | – | – | – | – | – | – | – | – |
| Input type | | | | | | | | | | |
| Motor-mounted | | x | x | x | x | x | x | x | x | x |
| Self-contained version ^{b)} | | x | – | – | – | – | – | – | – | – |
| Characteristic | | | | | | | | | | |
| Flange with slotted holes | | x | x | x | x | x | x | x | x | x |
| ATEX ^{a)} | | – | – | – | – | – | – | – | – | – |
| Food-grade lubrication ^{a) b)} | | x | x | x | x | x | x | x | x | x |
| Corrosion resistant ^{a) b)} | | – | – | – | – | – | – | – | – | – |
| Optimized mass inertia ^{a)} | | x | – | x | x | x | – | – | – | – |
| System solutions | | | | | | | | | | |
| Linear system (rack / pinion) | | x | x | x | x | x | x | x | x | x |
| Servo actuator | | x | – | – | x | x | – | – | – | – |
| Accessories (please refer to the product pages for further options) | | | | | | | | | | |
| Coupling | | x | x | x | – | – | x | – | x | – |
| Shrink disc | | x | – | x | – | – | x | – | x | – |

^{a)} Power reduction: technical data available on request

^{b)} Please contact WITTENSTEIN alpha

^{c)} In relation to reference sizes

^{d)} Power reduction: Please use our sizing software cymex® for a detailed sizing – www.wittenstein-cymex.com

Servo actuator overview



| Product type | | PBG | PAG | PHG | RPM+ | TPM+ DYNAMIC | TPM+ HIGH TORQUE | TPM+ POWER | AVF |
|---|------------|----------|----------|----------|-------------------|-----------------|---------------------|---------------|----------|
| Version | | Standard | Standard | Standard | Customer specific | Standard | Standard | Standard | Standard |
| Ratio ^{c)} | min. $i =$ | 16 | 16 | 16 | 22 | 16 | 22 | 4 | 10 |
| | max. $i =$ | 100 | 100 | 100 | 220 | 91 | 220 | 100 | 25 |
| Max. torsional backlash ^{c)} [arcmin] | Standard | ≤ 5 | ≤ 3 | ≤ 4 | ≤ 1 | ≤ 3 | ≤ 1 | ≤ 3 | ≤ 10 |
| | Reduced | ≤ 3 | ≤ 1 | ≤ 2 | - | ≤ 1 | ≤ 1 | ≤ 1 | - |
| Output shape | | | | | | | | | |
| Smooth shaft | | x | - | x | - | - | - | - | x |
| Shaft with key ^{d)} | | x | - | x | - | - | - | - | x |
| Splined shaft (DIN 5480) | | x | - | x | - | - | - | - | - |
| Blind hollow shaft | | - | - | - | - | - | - | - | - |
| Hollow shaft interface | | - | - | - | - | - | - | - | - |
| Keyed hollow shaft | | - | - | - | - | - | - | - | - |
| Flanged hollow shaft | | - | - | - | - | - | - | - | - |
| Flange | | - | x | - | x | x | x | x | - |
| System output | | - | x | x | x | x | x | x | - |
| Output on both sides | | - | - | - | - | - | - | - | - |
| Input type | | | | | | | | | |
| Motor-mounted | | - | - | - | - | - | - | - | - |
| Self-contained version | | - | - | - | - | - | - | - | - |
| Characteristic | | | | | | | | | |
| Flange with slotted holes | | - | - | x | x | - | - | - | - |
| ATEX ^{a)} | | - | - | - | - | - | - | - | - |
| Food-grade lubrication ^{a) b)} | | x | x | x | x | x | x | x | x |
| Corrosion resistant ^{a) b)} | | - | - | - | - | x | x | x | x |
| Optimized mass Inertia ^{a)} | | - | - | - | - | - | - | - | - |
| System solutions | | | | | | | | | |
| Linear system (rack / pinion) | | x | x | x | x | x | x | x | - |
| Accessories (please refer to the product pages for further options) | | | | | | | | | |
| Coupling | | x | x | - | - | x | x | x | - |
| Shrink disc | | x | - | x | - | - | - | - | - |
| Power cable, signal cable, hybrid cable | | x | x | x | x | x | x | x | x |

^{a)} Power reduction: technical data available on request

^{b)} Please contact WITTENSTEIN alpha

^{c)} In relation to reference sizes

^{d)} Power reduction: Please use our sizing software cymex® for a detailed sizing – www.wittenstein-cymex.com

Overview of gearbox variants

SP 100 S - MF1 - 10 - 0G1 - 2S

Characteristic:

B = Modular output combination
C = Reverse centering
E = ATEX
F = Food grade lubrication
G = Grease
H = Food-grade grease
L = Friction optimized
R = Flange with slotted holes
S = Standard
W = Corrosion resistant

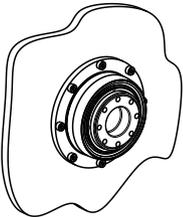
Explanation of variants
deviating from the standard:

B = Modular output combination

An additional backward output type is available for hypoid gearboxes. See page 353 for details.

C = Reverse centering

To save space, this variant offers greater flexibility in mounting the product on the machine.



E = ATEX

Devices bearing the Ex symbol comply with EU Directive 2014/34/EN (ATEX) and are approved for use in defined explosion-prone zones. Performance data is limited and can be found in the operating instructions.

F = Food grade lubrication

These products are available with food-grade lubrication and can therefore be used in the food industry. Please note that the torque ratings in the catalog are reduced by 20 % (excluding V-Drive).

G = Grease

This variant allows you to lubricate selected products with grease instead of oil. Please note that the torque ratings in the catalog are reduced by 20 %.

H = Food-grade grease

This variant allows you to lubricate selected products with food-safe grease instead of oil. Please note that the torque ratings in the catalog are reduced by 40%.

L = Friction optimized

A friction-optimized variant is available for HIGH SPEED products.

Design changes allow the products to be used particularly in applications with high temperature sensitivity, high nominal speeds or long duty cycles.

R = Flange with slotted holes

This output type is designed for linear applications with rack and pinion or belt pulley. Integrated slotted holes enable easy positioning of the pinion or simple tensioning of the belt.

W = Corrosion resistant

These products can be used in corrosive environments, e.g. in the food industry, pharmaceutical industry or packaging industry. All external product areas have been designed to avoid corrosion. In addition the products are provided with food-grade grease lubrication. Please note that the torque ratings in the catalog are reduced by 20 % (excluding V-Drive).

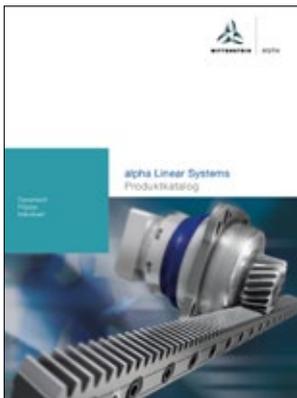
alpha Advanced Linear Systems

Strong performance in the advanced segment

Advanced Linear Systems are adapted to applications with average to high demands in terms of smooth running, positioning accuracy and feed force. Different gearbox versions and options such as HIGH TORQUE or HIGH SPEED can be selected to utilize the most appropriate system for the application. Typical fields of application include wood, plastic and composite machining, machining centers and automation.

The alpha preferred linear system – The best of each segment

Our preferred linear systems in the Advanced Segment are always comprised of the perfect combination of gearbox, pinion, rack and lubrication system. The systems are optimized to achieve the required feed force, feed speed, rigidity and degree of utilization of the individual components.



For further information, refer to our alpha Linear Systems catalog and our website:
www.wittenstein-alpha.com/linear-systems

For a wide range of applications

Linear systems from WITTENSTEIN alpha are suitable for a wide range of applications and industries. New standards and advantages have been achieved in the following areas:

- Smooth operation
- Positioning accuracy
- Feed force
- Power density
- Rigidity
- Easy installation
- Design options
- Scalability

Together with a comprehensive range of services, we pledge to support you from the initial concept to the design, installation and commissioning phase. We will also ensure a consistent supply of spare parts.

Your benefits at a glance

Perfectly adapted linear systems available with planetary, right-angle and worm gearboxes or as an actuator

Optionally with INIRA®

Large individual configuration range due to numerous pinion/gearbox combinations



INIRA®: The revolution in rack assembly



Simply scan the QR code using your smartphone to see INIRA® in action.

INIRA® combines our existing innovative concepts for the simple, safe and efficient installation of racks. INIRA® clamping, INIRA® adjusting and INIRA® pinning have already made the assembly process much faster, more accurate and more ergonomic. Available for the Advanced and Premium Linear Systems.

INIRA® clamping: Simply faster and more ergonomic
Previously, enormous effort was required to clamp racks to the machine bed using screw clamps. INIRA® clamping integrates the clamping device in the rack. The rack incorporates a mounting sleeve which is guided over the head of the fastening screw to ensure quick and ergonomic clamping.

INIRA® pinning: Simply better and more efficient
The previous method used for pinning racks was extremely time-consuming. Precision bores have to be drilled and the chips generated must be carefully removed from the assembly. INIRA® pinning now offers a completely new solution for the chipless pinning of racks, which reduces installation times considerably (time spent on each rack ~ 1 min).

INIRA® adjusting: Simply safer and more precise
In combination with INIRA® clamping, INIRA® adjusting is the ideal solution for perfectly adjusting the transition between two rack segments. The innovative setting tool can adjust the transition extremely reliably and precisely, accurate to the micrometer.



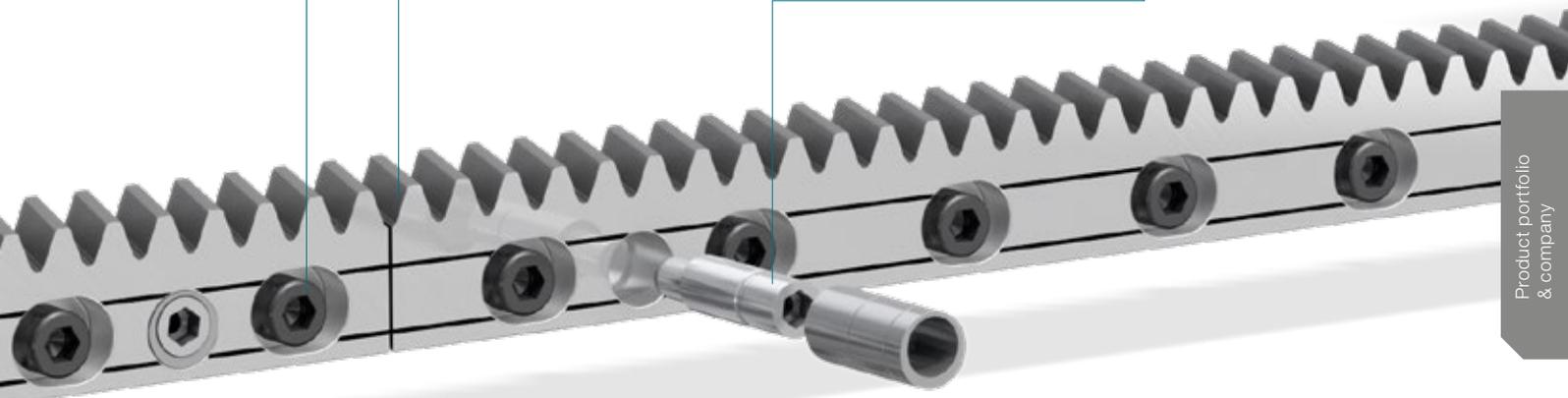
INIRA® clamping



INIRA® adjusting



INIRA® pinning



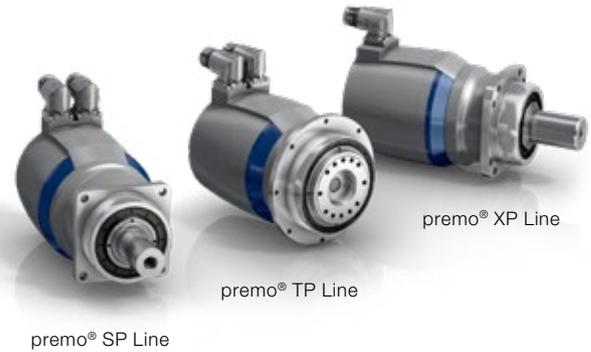
Precision meets motion = premo® by WITTENSTEIN alpha

premo® is a new, powerful servo actuator platform that combines absolute precision with perfect movement. The central idea behind this first fully scalable servo actuator platform is uncompromising flexibility from the viewpoint of the user. Motors and gearboxes with application-related graduated performance characteristics can be configured modularly to individual servo actuators. The result is a

highly versatile modular system with customizable power, designed for a wide variety of applications. The core of the servo actuator is a torsionally rigid precision gearbox with low backlash and excellent torque density combined with the equally powerful, permanent magnet servo motor with a split winding that guarantees low cogging and minimal velocity ripple.

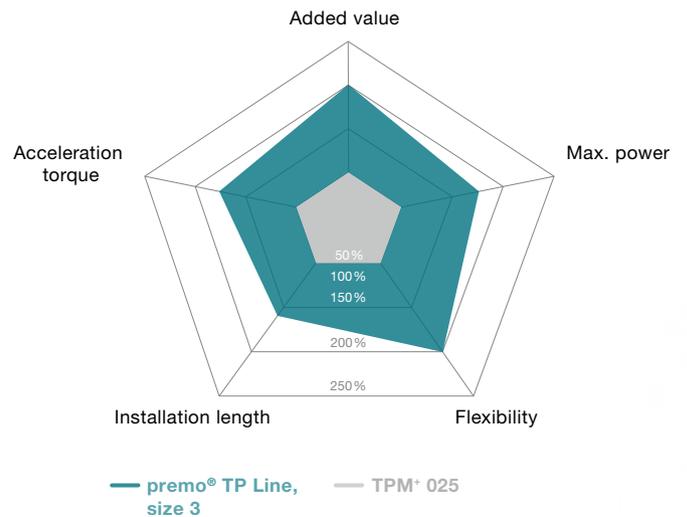
premo® – clearly superior in performance

- Higher machine performance thanks to higher acceleration torque
- High torque density combined with a compact design allow for the realization of higher performance machines with significant space saving
- Improved connectivity to next generation controllers from leading system providers through the use of digital feedback (EnDat 2.2, DSL, HIPERFACE DSL®, DRIVE-CLiQ)
- Compatibility for high bus voltages up to 750 V DC
- Reduced wiring requirement through single-connector technology
- Improved reliability and safety through the use of more powerful brakes and SIL 2 encoders



Product highlights

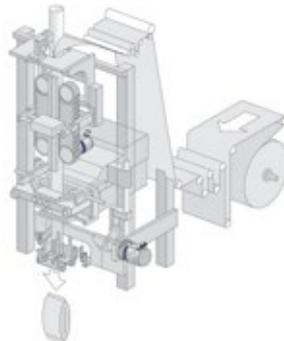
- Optimized power density for greater energy efficiency and productivity
- Flexible mechanical and electrical interfaces for high scalability
- Variety of options for individually upgrading the basic configuration



premo® application examples



Handling portal
premo® SP Line



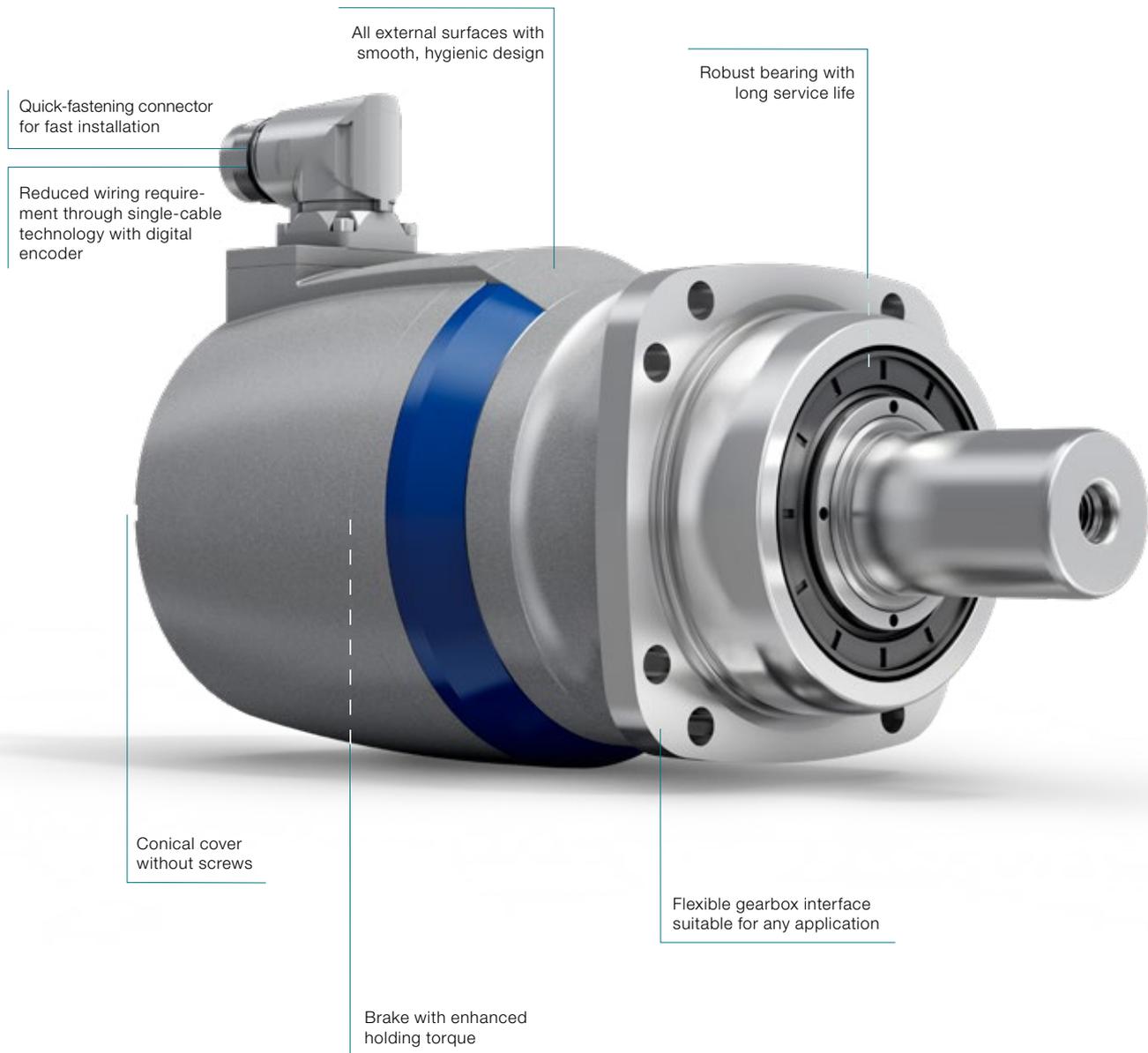
Fill and Seal machine
premo® TP Line



Milling cutter for a machining center
premo® XP Line

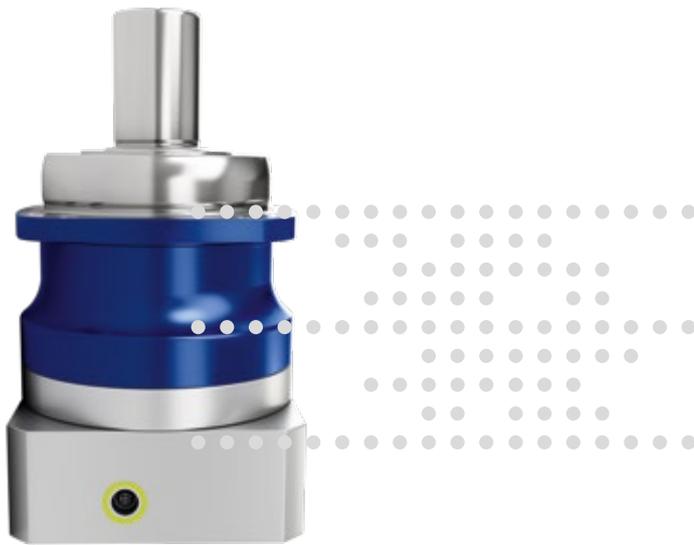
Typical fields of application and industry solutions

- Delta robot (axes 1–3, swivel axis)
- Handling portal (Z-axis, swivel/rotating axis)
- Machine tool reaming (rotating axes A–C, tool changer)
- Fill and Seal Machine (incl. jaw stroke, sealing jaw, blade)
- Folding carton packaging (incl. assembly/folding, filling valve)
- Plastic thermoform (tool axis)



cynapse® – It's new. It's connective. The smart gearbox.

Mechatronic drive systems that can independently acquire and communicate information are an essential precondition for IIoT. WITTENSTEIN alpha is the first component manufacturer to offer smart gearboxes as standard – gearboxes with cynapse®. They have an integrated sensor module which enables industry 4.0 connectivity.



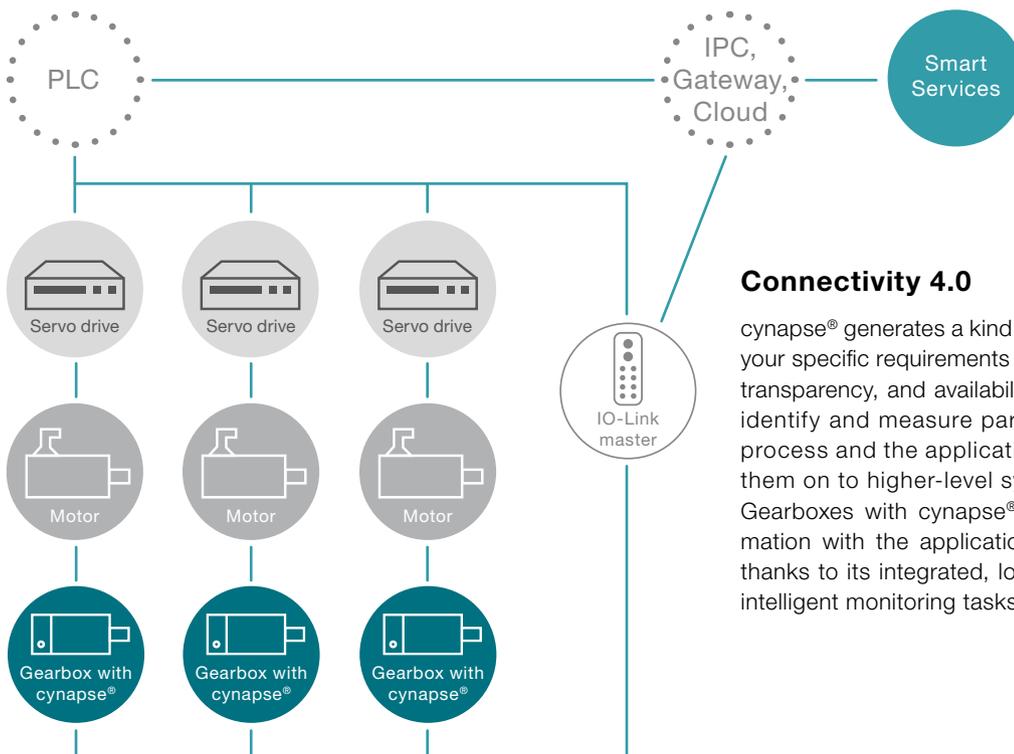
cynapse®
play IIoT

cynapse® – how it works

cynapse® ensures the gearbox can be easily integrated into the digital world in future. The cynapse® feature is integrated in the existing installation space for this, and is connected via an IO-Link interface. As a result, measured data such as temperature, vibration, operating time, acceleration and product-specific information can be accessed.

cynapse® wins customers over with:

- Sensor module integrated into the installation space
- Simple connection by IO-Link interface
- Gearbox threshold monitoring
- Quick product identification thanks to digital name plate



Connectivity 4.0

cynapse® generates a kind of electronic “fingerprint” of your specific requirements for performance, efficiency, transparency, and availability. The smart gearbox can identify and measure parameters directly from the process and the application environment and pass them on to higher-level systems.

Gearboxes with cynapse® can also exchange information with the applications on IIoT platforms and, thanks to its integrated, logic functions, can perform intelligent monitoring tasks independently.

Smart Services – the perfect complement

Your benefits at a glance

- Determination and monitoring of critical threshold values
- Early identification of problematic statuses
- Easy & simple integration
- Avoidance of machine downtimes
- Transparency for drive axes
- Customized services



cynapse® Monitor as control terminal

The cynapse® Monitor service visualizes the data collected with cynapse® in the form of a control terminal. In addition to the live sensor data, histograms and histories saved on the sensor, and events are also displayed. The cynapse® monitor therefore provides an overview about the operating behavior of the drive axes and saves you the development of stand-alone visualization solutions.



Data Gateway as data interface

The Data Gateway service is the core service for integrating and processing cynapse® data (process values, parameter and data logger information) for use in condition monitoring. The collected sensor data is made available by the data gateway in a structured data format, which can be continuously integrated into several target systems (databases, cloud systems, etc.) simultaneously and in parallel. This significantly reduces the amount of integration work for your machine infrastructure.



cynapse® Teach-In to determine threshold values

The cynapse® Teach-In service helps you parameterize cynapse® for your individual machine process by automatically determining threshold values. Process-specific threshold values allow unusual events to be detected and made visible.



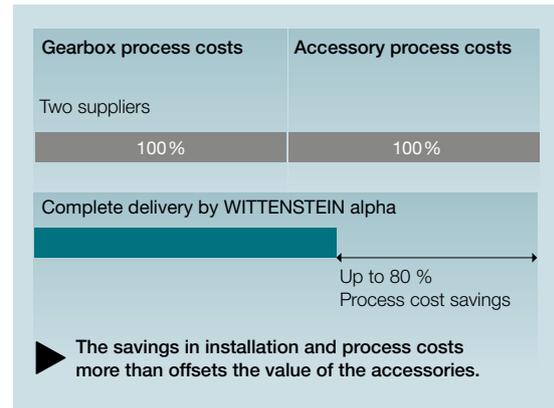
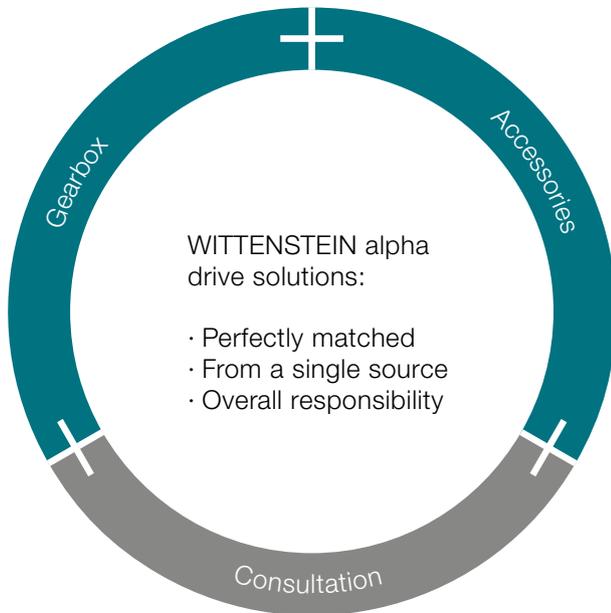
Anomaly-Check

With the Anomaly-Check service, nonconformity in the process or the component behavior can be detected at an early stage in order to prevent cost-intensive machine downtimes. By monitoring multiple sensors simultaneously and using machine learning methods, a wide variety of applications can be learned and monitored for anomalies.

Accessories – smart additions for intelligent performance

Gearboxes, accessories and consulting from a single source

Optimization of your added value chain
Use the combination of gearbox and accessories in a complete package to streamline your internal processes.



Shrink disks

Shrink disks are frictional hub / shaft connections. Together with our hollow shaft or mounted shaft gearboxes for mounting directly on load shafts, machines can be designed to take up a minimal installation space.

The benefits:

- Simple mounting and removal
- Quick selection, easy and convenient
- Optional: corrosion resistant version



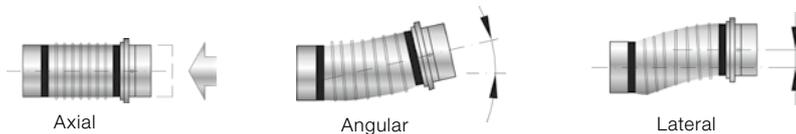
Preferred shrink disk series

To view a wide range of nickel-plated, stainless steel and other shrink disks as well as all the relevant technical data and dimensions, visit our homepage www.wittenstein-alpha.com

Couplings

Couplings are used for compensating misalignment during assembly and material-related heat expansion

Compensation for shaft misalignment



Metal bellows coupling

- Compensation for shaft misalignment
- Completely backlash free
- Corrosion resistant version available as an option (BC2, BC3, BCT)
- High torsional rigidity



Elastomer coupling

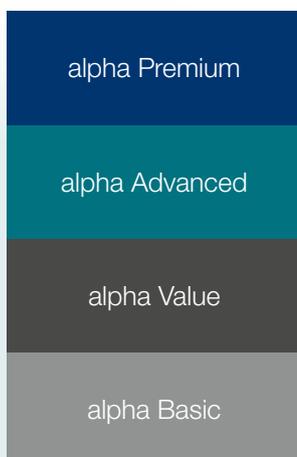
- Compensation for shaft misalignment
- Completely backlash free
- Selectable torsional rigidity/damping
- Compact design
- Extremely simple installation (plug-in)



Torque limiter

- Compensation for shaft misalignment
- Completely backlash free
- Precise, preset overload protection (switch-off in 1 – 3 ms)
- Precise repeat accuracy
- Just one protection element per axis

Preferred coupling series



Preferred series are defined for the relevant gearbox segments to make selection easier. Preferred couplings are defined based on the maximum torque that the gearbox can transmit. Standard industrial conditions for the number of cycles (1000/h) and ambient temperature were adopted.

Please note that the coupling load is based on the torque that the gearbox can transmit and not the torque in your application. We recommend using our cymex® 5 design software to create a more detailed design. (www.wittenstein-cymex.com)

For more coupling types, please visit www.wittenstein-alpha.com

Support at each interaction stage

With the WITTENSTEIN alpha service concept, we are also setting new standards in the field of customer support.

Global presence

Our global consultation network will help you overcome your complex challenges through our extensive experience, a variety of design tools and individual engineering services.

Speed counts

Our speedline® team guarantees fast response times in the area of logistics. We provide on-site support during the installation and commissioning of mechanical systems to give you a sustained competitive edge.

Personal consultation

Our highly qualified and committed expert personnel will accompany you throughout the entire product lifecycle - around the clock. When it comes to customer support, you can count on us!

Design

Consultation
CAD POINT
cymex® select
Sizing software cymex®
Engineering

Installation

speedline® delivery
Installation on-site
Operating & installation instructions
Pick-up & return service

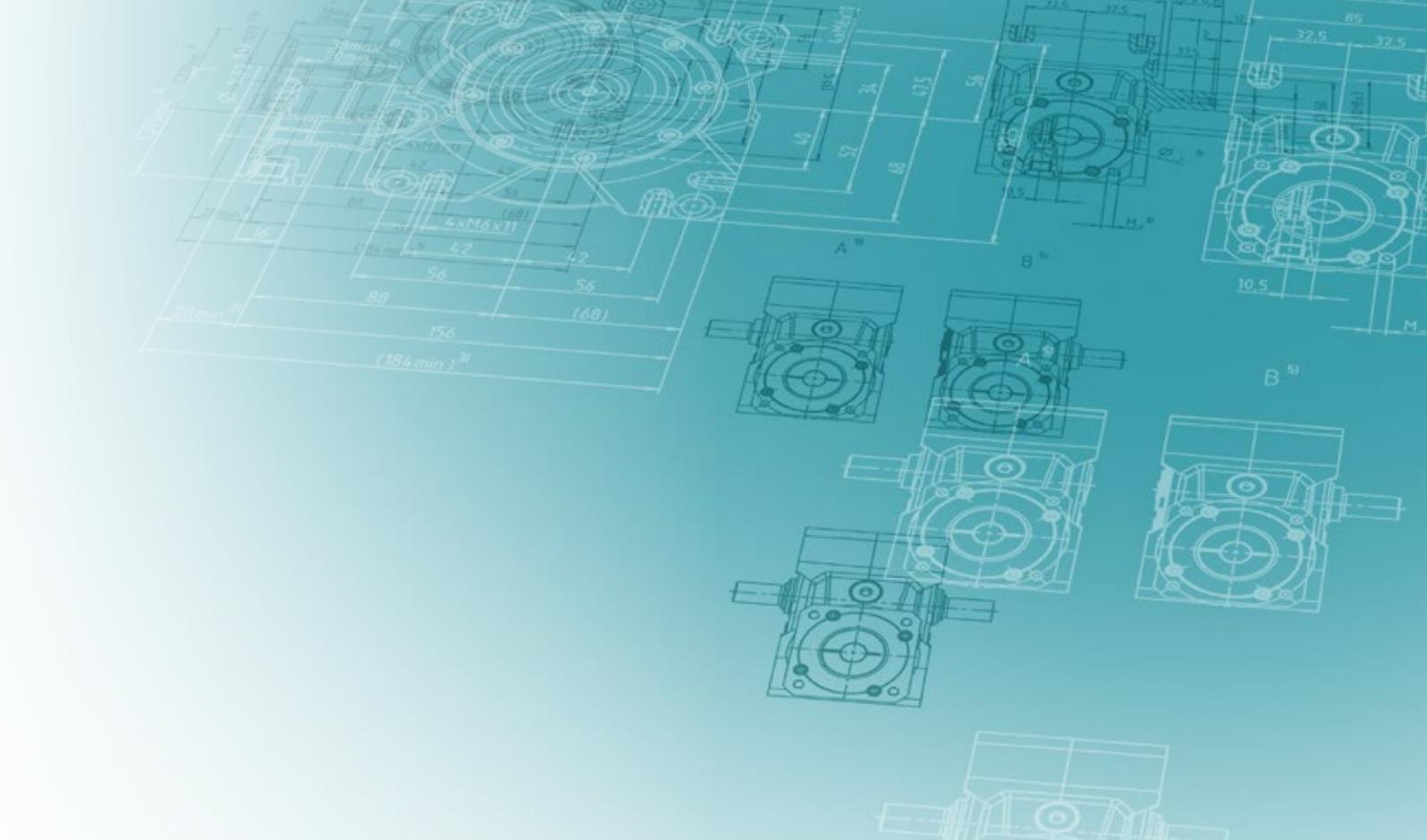


We are happy to advise you:

24 h service hotline: +49 7931 493-12900

No matter where you need us:

A comprehensive sales and service network provides quick availability and competent support worldwide.



Maintenance

24 h service hotline
Maintenance and inspection
Repair
cymex® statistics
Modernization

Training

Product training
Sizing training
Installation training
Service training

Support at each interaction stage

Design

Whatever your requirements are: we offer the right design methodology. Use the CAD POINT to gain easy access to CAD files, cymex® select for creating simple designs,

cymex® 5 for precise dimensioning and our engineering service for individual solutions.

Consultation

- Personal contact on-site
- Professional application calculations and drive design create the best solutions



CAD POINT

- 3D data of selected solution
- Online comparison with motor geometry
- Transparent and simple selection of required components

Engineering

Catalog gearboxes:

- Advanced software tools for accurate calculation, simulation and analysis of the drive train
- Optimization of your productivity and reduction in development costs



cymex® select

- Efficient and customizable product selection in seconds
- Top three product recommendations for your requirements
- Automatic geometry adjustment

Special gearboxes:

- Gearing design and development
- Development and production of special gearboxes
- Send all inquiries to: sondergetriebe@wittenstein.de



cymex® 5 sizing software

- Dimensioning, design and evaluation of the entire drive train
- Reliable, efficient design
- Optimization of drive system



Installation

All delivered products are perfectly matched to your application environment and fully operational right away.

Our service experts support you in the installation and commissioning of complex mechatronic systems, guaranteeing maximum availability of your plant.

speedline® delivery

Tel. +49 7931 493-10444

- Delivery of standard series in 24 or 48 hours ex works*
- Outstanding flexibility for fast deliveries at short notice

Operating and installation instructions

- Detailed explanations of how to use the product
- Motor installation videos
- Assembly videos on rack and pinion system

Installation on-site

- Professional installation
- Optimal integration of the system in your application
- Explanation of the drive function

Pick-up and return service

- Cost savings through minimization of downtimes
- Professional logistics organization
- Reduction of transport risks through customized, direct pick-up and delivery



* Non-binding delivery time depending on part availability.

Support at each interaction stage

Maintenance

WITTENSTEIN alpha guarantees fast repairs of the highest quality and precision – with short throughput times and intensive support. In addition, we will provide you with information about various measurements, material

analyses and condition monitoring inspections. You can rely on short response times, unbureaucratic processing and individual support.

24 h service hotline

Tel. +49 7931 493-12900

- Available round the clock
- Personal, prompt service for resolving time-critical maintenance issues

cymex® statistics

- Systematic field data acquisition
- Reliability calculations (MTBF)
- Customized evaluations

Maintenance and inspection

- Documentation regarding condition and expected service life
- Maintaining required state
- Customized maintenance schedules

Modernization

- Professional retrofitting
- Reliable compatibility testing of existing solutions

Repair

- Restoring to required state
- Short throughput times
- Immediate response in time-critical situations



Training

Discover how our products function and how they can add value to your application. We offer you training courses at our premises or on-site at your plant. Benefit from

practice-oriented learning methods and a highly skilled team of trainers.

Product training

Greater knowledge enables greater achievement. We will be pleased to share our expert knowledge with you: Profit from our many years of experience and learn more about the product portfolio of WITTENSTEIN alpha.

Installation training

We offer you individual training courses on-site for your system application of selected linear axes as well as professional installation.

Sizing training

Become a design expert! We will provide you with training courses on our design software, adapted to your requirements. Whether for beginners or experts, for occasional or regular users – we adapt our training course to your wishes and requirements.

Service training

Participation in a service training course is a prerequisite for sourcing spare parts at the parts list level. We offer you training courses at our premises or on-site at your plant. Moreover, we regularly host maintenance workshops at which the participants are instructed in safe handling during mounting of the motor to the gearbox as well as the independent replacement of wearing parts and gearbox assemblies.



The WITTENSTEIN group – The company and its fields of business



WITTENSTEIN

With approximately 2,800 employees worldwide, the WITTENSTEIN group stands for innovation, precision and excellence in the world of mechatronic drive technology, both nationally and internationally. The group is active in seven innovative fields of business. Furthermore, WITTENSTEIN group is represented by some 60 subsidiaries in around 40 countries in all important technology and sales markets worldwide.



Our fields of expertise

We provide know-how for a host of different sectors:

- Machine and plant construction
- Software development
- Aerospace
- Automotive & E-mobility
- Energy
- Oil & Gas Exploration and Production
- Medical technology
- Measurement and testing technology
- Nanotechnology
- Simulation

The WITTENSTEIN Group



WITTENSTEIN alpha GmbH
High-precision servo drives and linear systems



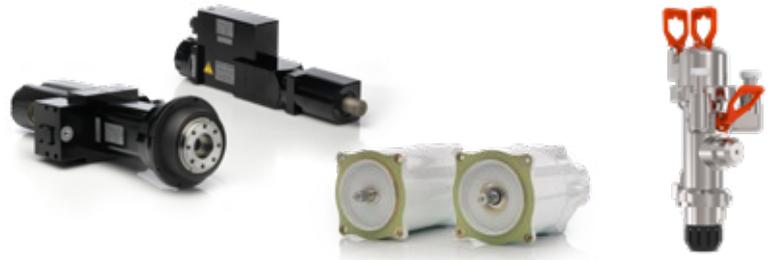
WITTENSTEIN cyber motor GmbH
Highly dynamic servo motors and drive electronics



WITTENSTEIN galaxie GmbH
Superior gearboxes and drive systems



WITTENSTEIN motion control GmbH
Drive systems for the most extreme environmental requirements



attocube systems AG
Nanoprecision drive and measurement technology solutions



baramundi software GmbH
Secure management of IT infrastructure in offices and production areas



WITTENSTEIN – one with the future

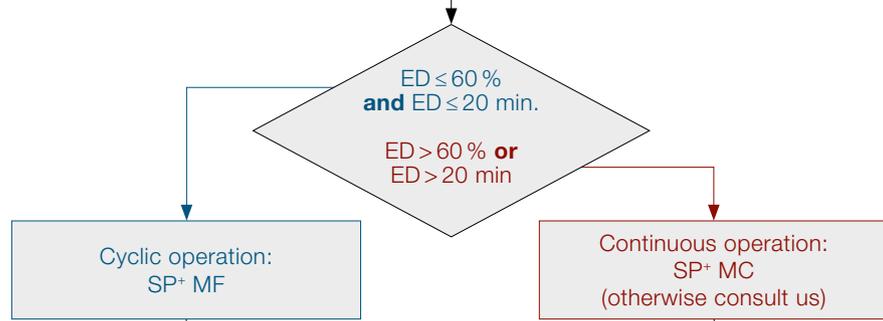
Gearbox general – Detailed sizing

Cyclic operation **S5** and continuous operation **S1**

Calculate the duty cycle ED

$$ED = \frac{(t_b + t_c + t_d)}{(t_b + t_c + t_d + t_e)} \cdot 100$$

$$ED = t_b + t_c + t_d$$



$$Z_h = \frac{3600}{(t_b + t_c + t_d + t_e)} \quad \text{see diagram 1}$$

f_s is dependent on Z_h see diagram 2

Calculate the number of cycles Z_h

Calculate the shock factor f_s see diagram 2

T_{2b} depends on the application

$$T_{2b, fs} = T_{2b} \cdot f_s$$

Calculate the max. acceleration torque at the output including the shock factor $T_{2b, fs}$

$$f_0 = \frac{t_{\alpha 1} + \dots + t_{\alpha n}}{t_{ges}}$$

t_α = elevation time
 t_α = operating time with

$$T_{2b, fs} \geq T_{2B}$$

Calculate the elevation range f_0

Calculate the average elevation speed $n_{2m\alpha}$

$$n_{2m} = \frac{|n_{2b}| \cdot t_b + \dots + |n_{2n}| \cdot t_n}{t_b + \dots + t_n} \quad \text{incl. pause time}$$

Calculate the relevant output shaft revolutions f_α

$$n_{2m\alpha} = \frac{|n_{2\alpha 1}| \cdot t_{\alpha 1} + \dots + |n_{2\alpha n}| \cdot t_{\alpha n}}{t_{\alpha 1} + \dots + t_{\alpha n}}$$

Calculate of $T_{2\alpha, zul}$ see diagramm 3

$$T_{2b, fs} \leq T_{2\alpha, zul}$$

no Select a larger gearbox or please consult

yes

Calculate the max. output speed n_{2max} see diagram 1

$$f_\alpha = n_{2m\alpha} \cdot L_h \cdot f_0$$

L_h = required service life

i depends on
 - required output speed (for the application)
 - reasonable input speed (gearbox / motor)

$$n_{1max} = n_{2max} \cdot i$$

$$n_{1max} \leq n_{1Mot max}$$

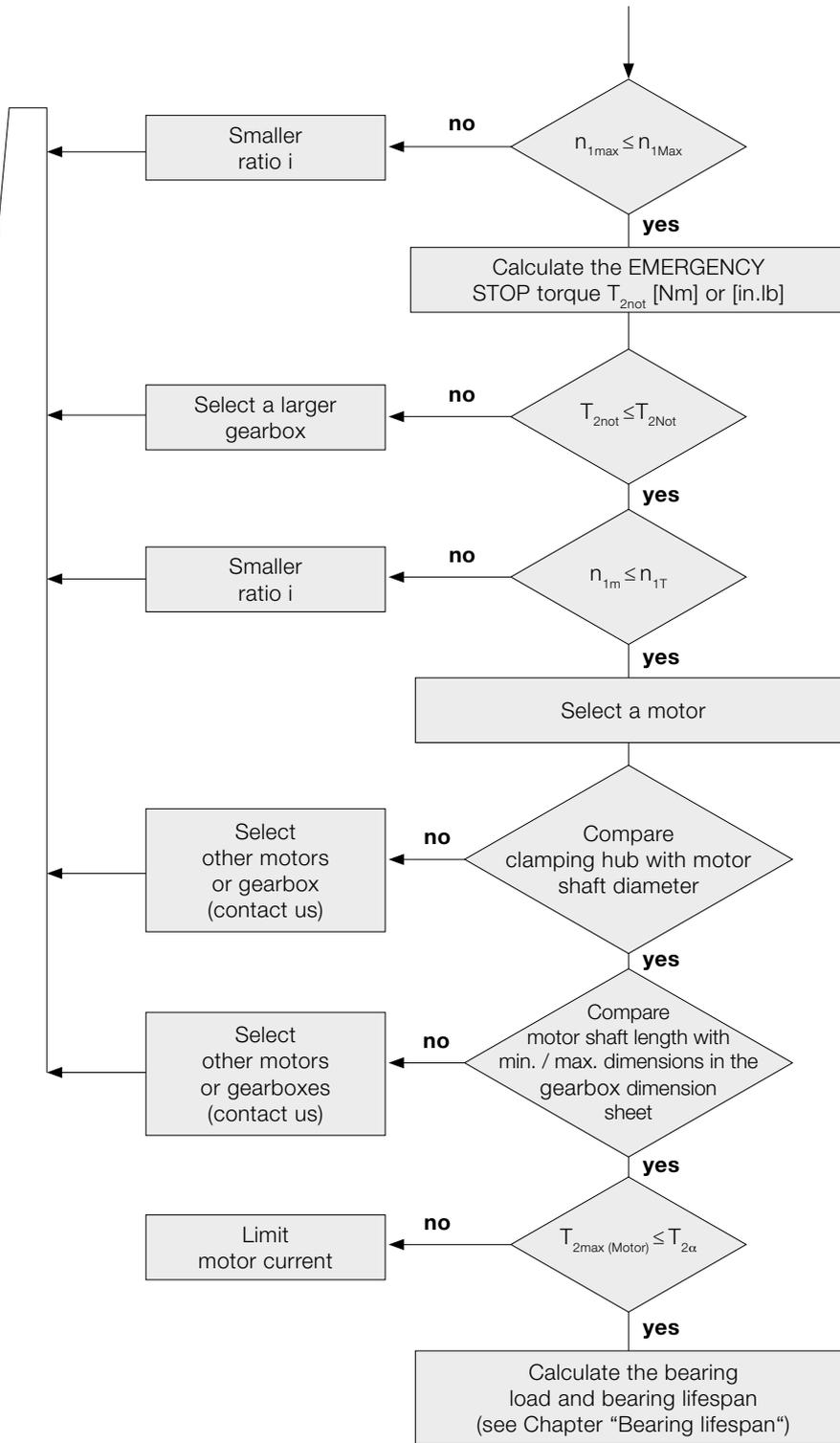
T – consisting of corresponding output and input torque

$$T_{1b} = T_{2b} \cdot \frac{1}{i} \cdot \frac{1}{\eta} \quad T_{1b} \leq T_{Mot max}$$

λ – from resulting inertia ratio.
 Guide value: $1 \leq \lambda \leq 10$
 (see alphabet for calculation)

Calculate the ratio i

n_{2max} depends on the application



Please refer to the relevant technical data for information on the max. permissible characteristic values for your gearbox.

T_{2not} depends on the application

$$n_{1m} = n_{2m} \cdot i$$

$$D_{W, Mot} \leq D_{clamping\ hub}$$

The motor shaft must be inserted far enough into the clamping hub.

The motor shaft must protrude far enough into the clamping hub without making contact.

$$T_{2max (Motor)} = T_{1max (Motor)} \cdot i \cdot \eta_{gearbox}$$

The gearbox should not be damaged when the motor operates at full load, limit the motor current if necessary.

Diagram 1
Standard collective load at output. At input speeds up to rated speed n_{1N} or thermal speed limit n_{1T} , the temperature of the gearbox will not exceed 90 °C under average ambient conditions.

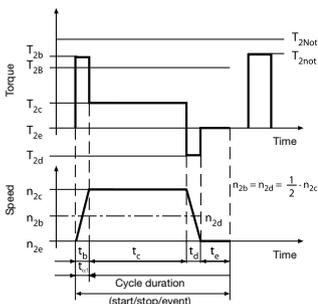


Diagram 2
Large number of cycles combined with short acceleration times may cause the drive train to vibrate. Use the shock factor f_s to include the resulting excess torque values in calculations.

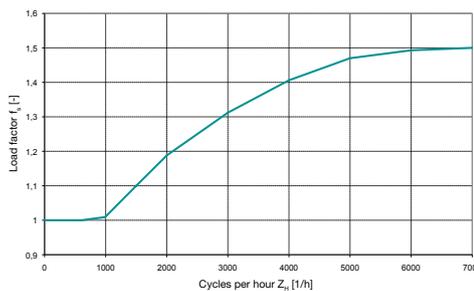
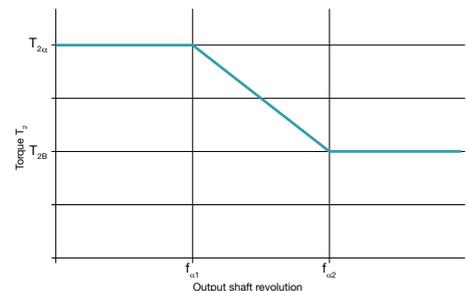
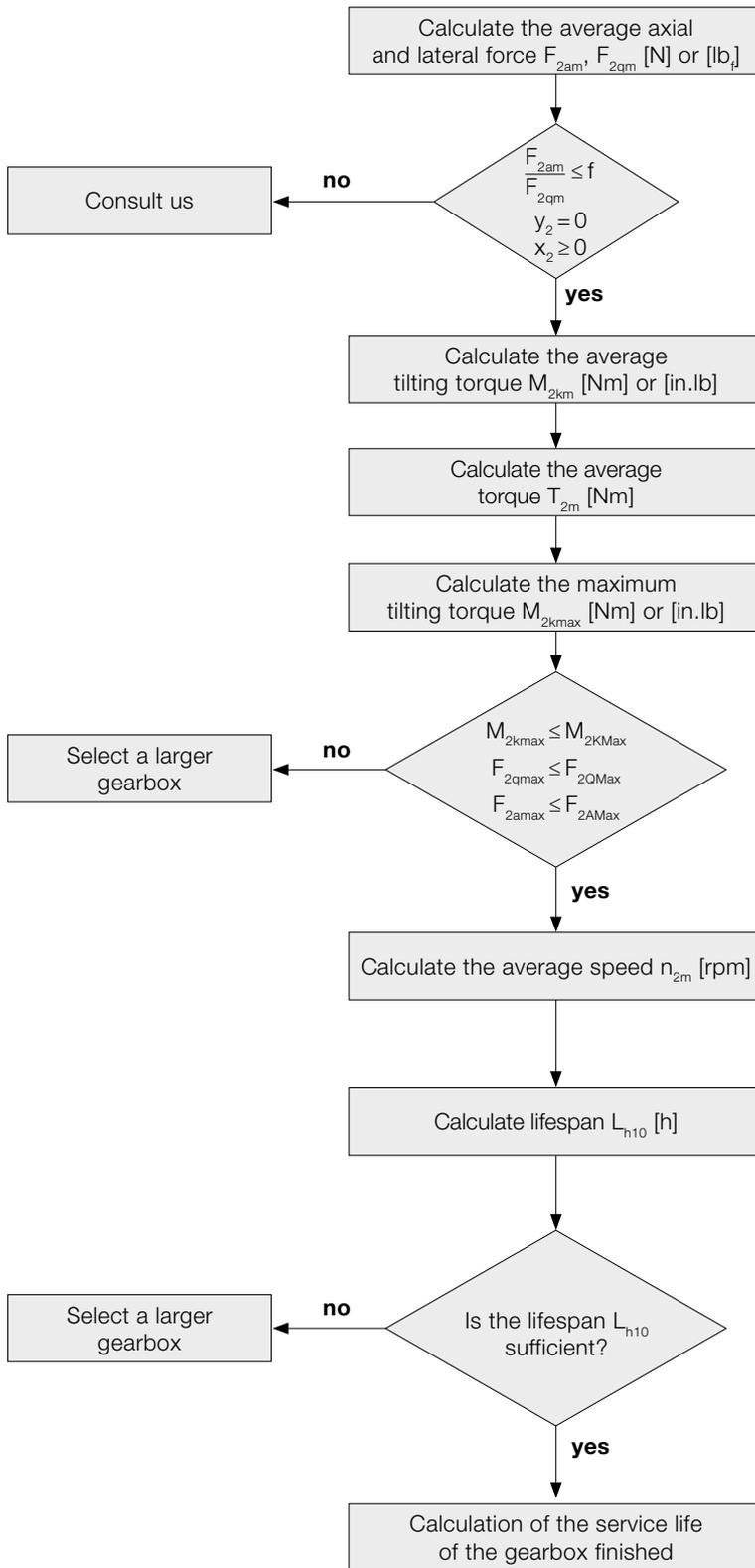


Diagram 3
The transmittable torque $T_{2u,per}$ of the gearbox is dependent on the number of output shaft revolutions. In the lower output shaft revolution range, the fatigue strength range of the toothing can be fully utilized up to the maximum value T_{2u} .



Gearbox general – Detailed sizing

Service life of the gearbox L_{h10}



$$F_{2am} = \sqrt[3]{\frac{|n_{2b}| \cdot t_b \cdot |F_{2ab}|^3 + \dots + |n_{2n}| \cdot t_n \cdot |F_{2an}|^3}{|n_{2b}| \cdot t_b + \dots + |n_{2n}| \cdot t_n}}$$

$$F_{2qm} = \sqrt[3]{\frac{|n_{2b}| \cdot t_b \cdot |F_{2qb}|^3 + \dots + |n_{2n}| \cdot t_n \cdot |F_{2qn}|^3}{|n_{2b}| \cdot t_b + \dots + |n_{2n}| \cdot t_n}}$$

$$M_{2km} = \frac{F_{2am} \cdot y_2 + F_{2qm} \cdot (x_2 + z_2)^a}{W}$$

$$T_{2m} = \sqrt[3]{\frac{|n_{2b}| \cdot t_b \cdot |T_{2b}|^3 + \dots + |n_{2n}| \cdot t_n \cdot |T_{2n}|^3}{|n_{2b}| \cdot t_b + \dots + |n_{2n}| \cdot t_n}}$$

$$M_{2kmax} = \frac{F_{2amax} \cdot y_2 + F_{2qmax} \cdot (x_2 + z_2)^a}{W}$$

^{a)} x, y, z in mm

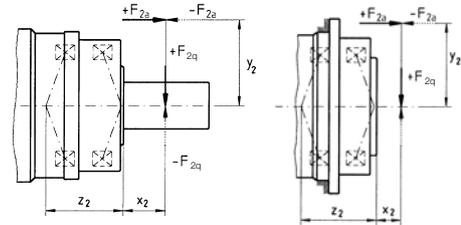
$$n_{2m} = \frac{n_{2b} \cdot t_b + \dots + n_{2n} \cdot t_n}{t_b + \dots + t_n}$$

$$L_{h10} = \frac{16666}{n_{2m}} \cdot \left[\frac{K1_2}{M_{2km}} \right]^{p_2}$$

| | metric | inch |
|---|--------|------|
| W | 1000 | 1 |

| | TP ⁺ /TPK ⁺ | SP ⁺ /SPK ⁺ |
|---|-----------------------------------|-----------------------------------|
| f | 0.37 | 0.40 |

Example with output shaft and flange:



| SP ⁺ /SPK ⁺ /SPC ⁺ | | 060 | 075 | 100 | 140 | 180 | 210 | 240 |
|---|---------|------|------|-------|-------|-------|--------|--------|
| z ₂ | [mm] | 42.2 | 44.8 | 50.5 | 63.0 | 79.2 | 94.0 | 99.0 |
| | [in] | 1.66 | 1.76 | 1.99 | 2.48 | 3.12 | 3.70 | 3.90 |
| K _{1,2} | [Nm] | 795 | 1109 | 1894 | 3854 | 9456 | 15554 | 19521 |
| | [in.lb] | 7036 | 9815 | 16762 | 34108 | 83686 | 137653 | 172761 |
| p ₂ | | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |

| TP ⁺ /TPK ⁺ / TPC ⁺ /DP ⁺ | | 004 | 010 | 025 | 050 | 110 | 300 | 500 | 2000 |
|--|---------|------|-------|-------|-------|-------|--------|--------|--------|
| z ₂ | [mm] | 57.6 | 82.7 | 94.5 | 81.2 | 106.8 | 140.6 | 157 | 216 |
| | [in] | 2.27 | 3.26 | 3.72 | 3.20 | 4.21 | 5.48 | 6.12 | 8.50 |
| K _{1,2} | [Nm] | 536 | 1325 | 1896 | 4048 | 9839 | 18895 | 27251 | 96400 |
| | [in.lb] | 4744 | 11726 | 16780 | 35825 | 87075 | 167220 | 241171 | 853140 |
| p ₂ | | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 | 3.33 |

| HDP ⁺ | | 010 | 025 |
|------------------|---------|-------|-------|
| z ₂ | [mm] | 90.4 | 99.1 |
| | [in] | 3.56 | 3.90 |
| K _{1,2} | [Nm] | 1325 | 1896 |
| | [in.lb] | 11726 | 16780 |
| p ₂ | | 3.33 | 3.33 |

TK⁺/SK⁺/HG⁺/SC⁺/VH⁺/VS⁺/VT⁺: Calculation using cymex®.
Please contact us for further information.

Hypoid gearboxes – Detailed sizing

| Gearbox types and sizes | | | TK* 004 SK* 060 HG* 060 | SPK* 075 TPK* 010 TPK* 025 MA | TK* 010 SK* 075 HG* 075 | SPK* 100 TPK* 025 TPK* 050 MA |
|--|--------------|--|-------------------------------|--|-------------------------------|-------------------------------------|
| Dimensions of rearward drive | | | | | | |
| Solid shaft: | diameter | $\varnothing D_{KG}$ mm | 16 | 16 | 22 | 22 |
| | length | L mm | 28 ±0.15 | 28 ±0.15 | 36 ±0.15 | 36 ±0.15 |
| Hollow shaft interface outer diameter | | $\varnothing D_{HB}$ mm | 18 | 18 | 24 | 24 |
| Hollow shaft interface inner diameter | | $\varnothing d_{HB}$ mm | 15 | 15 | 20 | 20 |
| Hollow shaft interface length | | L_{HW} mm | 14 | 14 | 16 | 16 |
| Distance from input axis | | A mm | 42.9 | 42.9 | 52.6 | 52.6 |
| Key dimensions (E = key as per DIN 6885, sheet 1, form A) | l | mm | 25 | 25 | 32 | 32 |
| | b_{H9} | mm | 5 | 5 | 6 | 6 |
| | a | mm | 2 | 2 | 2 | 2 |
| | h | mm | 18 | 18 | 24.5 | 24.5 |
| Output shaft threaded bore | | B | M5x12.5 | M5x12.5 | M8x19 | M8x19 |
| Permissible load of rearward drive | | | | | | |
| Max. acceleration torque ^{c)} | $T_{3a,zul}$ | $= T_{2a,zul}$ on the condition that $T_{2b,fs} + T_{3b,fs} \leq T_{2a,zul}$ | Please contact us | $= T_{2a,zul}$ on the condition that $T_{2b,fs} + T_{3b,fs} \leq T_{2a,zul}$ | Please contact us | |
| Nominal output torque ^{c)} | T_{3N} | $= T_{2N} - T_{2n}$ | | $= T_{2N} - T_{2n}$ | | |
| EMERGENCY STOP torque ^{c)} | T_{3Not} | $= T_{2Not} - T_{2not}$ | | $= T_{2Not} - T_{2not}$ | | |
| Max. axial force ^{b)} | F_{3Amax} | 1500 | 1500 | 1800 | 1800 | |
| Max. lateral force ^{b)} | F_{3Qmax} | 2300 | 2300 | 3000 | 3000 | |
| Max. tilting torque | M_{3Kmax} | 60 | 60 | 100 | 100 | |
| Calculation of average tilting torque at the rearward drive | | | | | | |
| Factor for tilting torque calculation | z_3 mm | 11.9 | 11.9 | 15.6 | 15.6 | |
| Distance between axial force and center of gearbox | y_3 mm | Application-dependent | | | | |
| Distance between lateral force and shaft collar | x_3 mm | Application-dependent | | | | |

^{a)} Connection via shrink discs

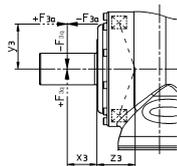
^{b)} Refers to center of shaft

^{c)} See also page 336, "Detailed dimensioning – Gearbox"

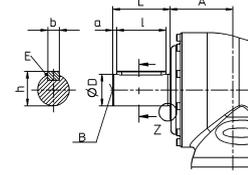
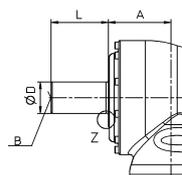
Rearward drive:

Smooth shaft

Shaft with key

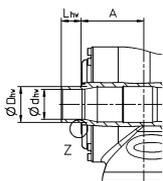


$$M_{3K} = F_{3a} \cdot y_3 + F_{3q} \cdot (x_3 + z_3)$$



| TK* 025 SK* 100 HG* 100 | SPK* 140 TPK* 050 TPK* 110 MA | TK* 050 SK* 140 HG* 140 | SPK* 180 SPK* 240 TPK* 110 TPK* 500 TPK* 300 MA | TK* 110 SK* 180 HG* 180 | SPK* 210 TPK* 300 TPK* 500 MA |
|--|-------------------------------------|--|---|--|-------------------------------------|
| 32 | 32 | 40 | 40 | 55 | 55 |
| 58 ±0.15 | 58 ±0.15 | 82 ±0.15 | 82 ±0.15 | 82 ±0.15 | 82 ±0.15 |
| 36 | 36 | 50 | 50 | 68 | 68 |
| 30 | 30 | 40 | 40 | 55 | 55 |
| 20 | 20 | 25 | 25 | 25 | 25 |
| 63.5 | 63.5 | 87 | 87 | 107.8 | 107.8 |
| 50 | 50 | 70 | 70 | 70 | 70 |
| 10 | 10 | 12 | 12 | 16 | 16 |
| 4 | 4 | 5 | 5 | 6 | 6 |
| 35 | 35 | 43 | 43 | 59 | 59 |
| M12x28 | M12x28 | M16x36 | M16x36 | M20x42 | M20x42 |
| $= T_{2\alpha,zul}$ on the condition that $T_{2b,fs} + T_{3b,fs} \leq T_{2\alpha,zul}$ | Please contact us | $= T_{2\alpha,zul}$ on the condition that $T_{2b,fs} + T_{3b,fs} \leq T_{2\alpha,zul}$ | Please contact us | $= T_{2\alpha,zul}$ on the condition that $T_{2b,fs} + T_{3b,fs} \leq T_{2\alpha,zul}$ | Please contact us |
| $= T_{2N} - T_{2n}$ | | $= T_{2N} - T_{2n}$ | | $= T_{2N} - T_{2n}$ | |
| $= T_{2Not} - T_{2not}$ | | $= T_{2Not} - T_{2not}$ | | $= T_{2Not} - T_{2not}$ | |
| 2000 | 2000 | 9900 | 9900 | 12000 | 12000 |
| 3300 | 3300 | 9500 | 9500 | 11000 | 11000 |
| 150 | 150 | 580 | 580 | 710 | 710 |
| 16.5 | 16.5 | 20 | 20 | 23.75 | 23.75 |
| Application-dependent | | | | | |
| Application-dependent | | | | | |

Hollow shaft interface a)



Hollow shaft



No connection possible

Cover



No connection possible

Worm gearboxes – Detailed sizing

A: Simplified sizing for servo motors based on the maximum motor torque: $M_{max} * i \leq T_{2\alpha}$

B: Sizing based on the application

Step 1:

Determine the application data

$$T_{2b} = \text{_____ [Nm]} \quad n_{1n} = \text{_____ [rpm]}$$

Step 2:

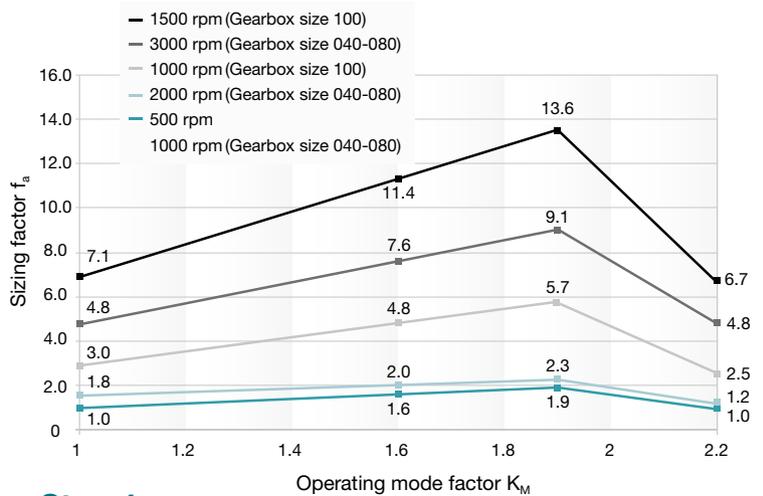
Determine the operating mode factor $K_M = \text{_____}$

| Typical applications | Cycle | Torque characteristic | Operating mode factor K_M |
|--|--|-----------------------|-----------------------------|
| Format changing, e.g. in packaging machines, drives for processing equipment, actuators etc. | S5 operation: Low duty cycle Small number of cycles Low dynamics | | 1.0 |
| Tool changers with low dynamics, pick & place gantry axes, tire building machines etc. | S5 operation: Medium duty cycle Small number of cycles Medium dynamics | | 1.6 |
| Linear axes in plasma, laser or water jet cutters, portals, tool changers with high dynamics | S5 operation: Medium duty cycle Medium number of cycles High dynamics | | 1.9 |
| Roller drives in printing presses, star drives in rackers etc. | S1 operation: High duty cycle | | 2.2 |

cymex® 5 also allows sizing calculations for other applications / cycles!

Step 3:

Determine the sizing factor f_a with the operating mode factor K_M $f_a = \text{_____}$



Step 4:

Compare the equivalent application torque with the maximum gearbox $T_{2\alpha}$ (see table, Step 5)

$$T_{2eq} = f_a * T_{2b} \leq T_{2\alpha}$$

$$T_{2eq} = \text{_____} * \text{_____} \leq T_{2\alpha}$$

$$T_{2eq} = \text{_____ [Nm]} \leq \text{_____ [Nm]}$$

We recommend using a vent screw for duty cycles $\geq 60\%$, longer than 20 min (S1 operation) and $n1N \geq 3000$ rpm.

Step 5: Quick selection of the technical data

| | | | V-Drive Advanced | | | | |
|--|-------------------|-----------------|------------------|-----------|-----------|---------------------------|---------------------------|
| | | | 040 | 050 | 063 | 080 | 100 |
| Ratio | i | | 4 - 400 | | | | |
| Maximum torque ^{a)} (at $n_1 = 500$ rpm) | $T_{2\alpha}$ | Nm | 74-106 | 165-204 | 319-372 | 578-785 | 1184-1505 |
| | | in.lb | 655-938 | 1460-1805 | 2823-3292 | 5115-6947 | 10478-13319 |
| Max. input speed | n_{1max} | rpm | 6000 | 6000 | 4500 | 4000 / 4500 ^{b)} | 3500 / 4000 ^{b)} |
| Max. lateral force | $F_{2\alpha Max}$ | N | 2400 | 3800 | 6000 | 9000 | 14000 |
| | | lb _f | 540 | 855 | 1350 | 2025 | 3150 |
| Operating noise (with $n_1 = 3000$ rpm no load) | L_{PA} | dB(A) | ≤ 54 | ≤ 62 | ≤ 64 | ≤ 66 | ≤ 70 |
| Max. torsional backlash | j_t | arcmin | ≤ 3 | ≤ 3 | ≤ 3 | ≤ 3 | ≤ 3 |
| Service life (For calculation see "Information") | L_h | h | > 20000 | > 20000 | > 20000 | > 20000 | > 20000 |

^{a)} The maximum torques depend on the ratio.

^{b)} First value for single-stage version, second value for two-stage version.

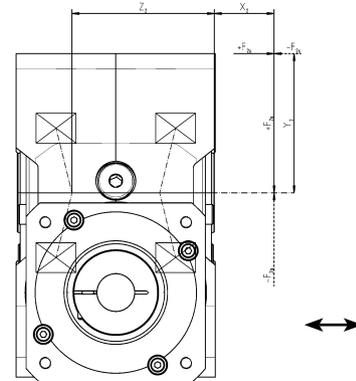
Account must be taken of the lateral and axial forces at the output:

Please also carry out steps 6 and 7 if forces are present at the output (e.g. if timing belt pulleys, pinions or levers are mounted there).

Step 6 (if external forces are present):

Determine the forces acting on the output and check the boundary conditions

- Lateral force $F_{2q} = \text{_____ [N]}$
- Lateral force distance $x_2 = \text{_____ [mm]}$
- Axial force $F_{2a} = \text{_____ [N]}$
- Axial force distance $y_2 = \text{_____ [mm]}$
(required if F_{2a} is present)



Conditions if axial force F_{2a} is present:

- 1. $F_{2a} \leq 0.25 * F_{2q} \Rightarrow (\text{_____} \leq 0.25 * \text{_____})$ Met Not met: Sizing with cymex® 5
- 2. $y_2 \leq x_2 \Rightarrow (\text{_____} \leq \text{_____})$ Met Not met: Sizing with cymex® 5

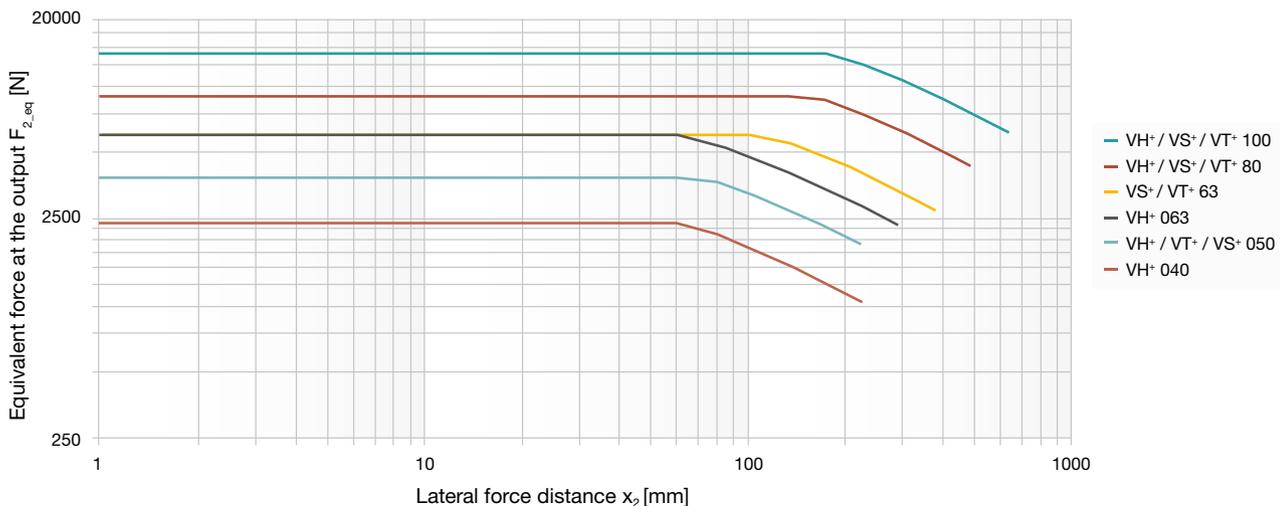
Step 7:

Determine the maximum equivalent force acting on the output $F_{2,eq}$

$F_{2,eq} = F_{2q} + 0.25 * F_{2a} \leq F_{2QMax}$ (F_{2QMax} can be determined from the diagram below)

$F_{2,eq} = \text{_____} + 0.25 * \text{_____} \leq \text{_____}$

$F_{2,eq} = \text{_____ [N]} \leq \text{_____ [N]}$ Met Not met: Sizing with cymex® 5



Glossary – the alphabet

Adapter plate

WITTENSTEIN alpha uses a system of standardized adapter plates to connect the motor and the gearbox, making it possible to mount a WITTENSTEIN alpha gearbox to any desired motor without difficulty.

Angular minute

A degree is subdivided into 60 angular minutes (= 60 arcmin = 60').

Example:

If the torsional backlash is $j_t = 1$ arcmin, the output can be turned $1/60^\circ$. The repercussions for the application are determined by the arc length:

$$b = 2 \cdot \pi \cdot r \cdot \alpha^\circ / 360^\circ$$

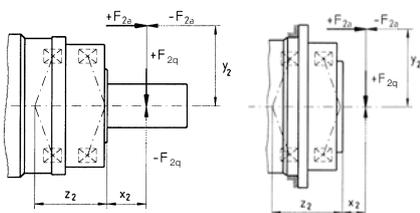
Example:

A pinion with a radius $r = 50$ mm mounted on a gearbox with torsional backlash $j_t = 3$ arcmin can be turned $b = 0.04$ mm.

Axial force (F_{2AMax})

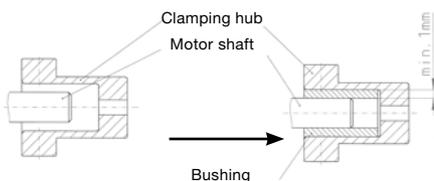
The axial force acting on a gearbox runs parallel to its output shaft or perpendicular to its output shaft. It may be applied with axial offset via a lever arm y_2 under certain circumstances, in which case it also generates a bending moment. If the axial force exceeds the permissible catalog values (max. axial force F_{2AMax}), additional design features (e.g. axial bearings) must be implemented to absorb these forces.

Example with output shaft and flange:



Bushing

If the motor shaft diameter is smaller than the → clamping hub, a bushing is used to compensate the difference in diameter. The bushing must have a minimum thickness of 1 mm and a motor shaft diameter of 2 mm.



CAD POINT

Performance data, dimension sheets and CAD data for all types of gearbox can be found online in our CAD POINT together with comprehensive documentation of the selection.

(www.wittenstein-cad-point.com)

Clamping hub

The clamping hub ensures a frictional connection between the motor shaft and gearbox. A → bushing is used as the connecting element if the motor shaft diameter is smaller than that of the clamping hub. Optionally, a positive connection via a parallel key is also possible.

Continuous operation (S1)

Continuous operation is defined by the → duty cycle. If the duty cycle is greater than 60 % and / or longer than 20 minutes, this qualifies as continuous operation. → Operating modes

Cyclic operation (S5)

Cyclic operation is defined via the → duty cycle. If the duty cycle is less than 60 % and shorter than 20 minutes, it qualifies as cyclic operation (→ operating modes).

cymex®

cymex® is the calculation software developed by our company for dimensioning complete drive trains. The software enables the precise simulation of motion and load variables. The software is available for download from our website (www.wittenstein-cymex.com). We can also provide training to enable you to make full use of all the possibilities provided by the software.

cymex® select

The cymex® select quick sizing tool from WITTENSTEIN alpha allows for efficient and innovative product selection in seconds and is available online. You get the right recommendations for your application and your motor in no time based on technical and economic suitability. (cymex-select.wittenstein-group.com)

Degree of protection (IP)

The various degrees of protection are defined in DIN EN 60529 "Degrees of protection offered by enclosure (IP code)". The IP degree of protection (International Protection) is represented by two digits. The first digit indicates the protection against the ingress of impurities and the second the protection against the ingress of water.

Example:

IP65

Protection against the ingress of dust (dust-proof)

Protection against spray water

Duty cycle (DC)

The cycle determines the duty cycle DC. The times for acceleration (t_b), constant travel if applicable (t_c) and deceleration (t_d) combined yield the duty cycle in minutes. The duty cycle is expressed as a percentage with inclusion of the pause time t_e .

$$DC [\%] = \frac{t_b + t_c + t_d}{t_b + t_c + t_d + t_e} \cdot 100 \frac{\text{Motion duration}}{\text{Cycle duration}}$$

$$DC [\text{min}] = t_b + t_c + t_d$$

Emergency stop torque (T_{2Not})

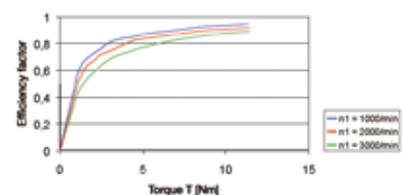
The Emergency stop torque T_{2Not} is the maximum permissible torque at the gearbox output and must not be reached more than 1000 times during the life of the gearbox. It must never be exceeded!

Efficiency (η)

Efficiency [%] η is the ratio of output power to input power. Power lost through friction reduces efficiency to less than 1 or 100 %.

$$\eta = P_{\text{off}} / P_{\text{on}} = (P_{\text{on}} - P_{\text{loss}}) / P_{\text{on}}$$

Sample curve of the efficiency factor of a planetary gear depending on the torque



WITTENSTEIN alpha always measures the efficiency of a gearbox during operation at full load. If the input power or torque are lower, the efficiency rating is also lower due to the constant no-load torque. Power losses do not increase as a result. A lower efficiency is also expected at high speeds (see illustration).



Ex symbol

Devices bearing the Ex symbol comply with EU Directive 94 / 9 / EC (ATEX) and are approved for use in defined explosion-hazardous zones. Detailed information on explosion groups and categories, as well as further information on the relevant gearbox are available upon request.

Food-grade lubrication (F)

These products are designed with food-grade lubrication and can therefore be used in the food industry. Note the reduced torques compared to the standard products. (V-Drive excluded). The exact torques can be found in cymex® 5 or CAD POINT.

HIGH SPEED (MC)

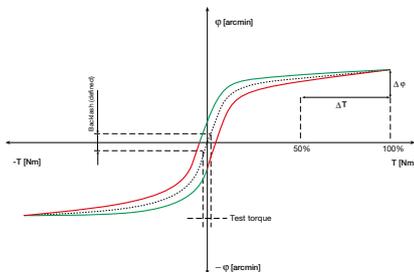
The HIGH SPEED version of our gearbox has been specially developed for applications in continuous operation at high input speeds, e.g. as found in the printing and packaging industries.

HIGH TORQUE (MA)

WITTENSTEIN alpha gearboxes are also available in a HIGH TORQUE version. These gearboxes are particularly suited to applications requiring extremely high torques and maximum stiffness.

Hysteresis curve

The hysteresis is measured to determine the torsional rigidity of a gearbox. The result of this measurement is known as the hysteresis curve.



If the input shaft is locked, the gearbox is continuously loaded and relieved at the output in both directions up to a defined torque. The torsional angle is plotted against the torque. This yields a closed curve from which the → **torsional backlash** and → **torsional rigidity** can be calculated.

Jerk (j)

Jerk is derived from acceleration and is defined as the change in acceleration within a unit of time. The term impact is used if the acceleration curve changes abruptly and the jerk is infinitely large.

Lateral force ($F_{2QM_{max}}$)

The max. lateral force $F_{2QM_{max}}$ [N] is the force component acting at right angles to the output shaft or parallel to the output flange. It acts perpendicular to the → axial force and can assume an axial distance of x_2 in relation to the shaft nut or shaft flange, which acts as a lever arm. The lateral force produces a bending moment (see also → axial force).

Mass inertia ratio ($\lambda = \text{Lambda}$)

The mass inertia ratio λ is the ratio of external inertia (application side) to internal inertia (motor and gearbox side). It is an important parameter determining the controllability of an application. Accurate control of dynamic processes becomes more difficult with differing mass moments of inertia and as λ becomes greater. WITTENSTEIN alpha recommends that a guideline value of $\lambda < 5$ is maintained. A gearbox reduces the external mass moment of inertia by a factor of $1/i^2$.

$$\lambda = \frac{J_{\text{extern}}}{J_{\text{intern}}}$$

J reduced externally at input:

$$J'_{\text{external}} = J_{\text{external}} / i^2$$

Simple applications ≤ 10

Dynamic applications ≤ 5

Highly dynamic applications ≤ 1

Mass moment of inertia (J)

The mass moment of inertia J [kg/cm²] is a measurement of the effort applied by an object to maintain its momentary condition (at rest or moving).

Mesh frequency (f_z)

The mesh frequency may cause problems regarding vibrations in an application, especially if the excitation frequency corresponds to a intrinsic frequency of the application. The mesh frequency can be calculated for planetary gearboxes from WITTENSTEIN alpha (exception: gearboxes with ratio $i = 8$) using the formula $f_z = 1.8 \cdot n_2$ [rpm] and on planetary gearboxes from WITTENSTEIN alpha, is independent of the ratio. If it does indeed become problematic, the intrinsic frequency of the system can be changed or another gearbox (e.g. hypoid gearbox) with a different mesh frequency can be selected.

No-load running torque (T_{012})

The no-load running torque T_{012} is the torque which must be applied to a gearbox in order to overcome the internal friction; it is therefore considered lost torque. The values specified in the catalog are calculated by WITTENSTEIN alpha at a speed of $n_1 = 3000$ rpm and an ambient temperature of 20 °C.

$$T_{012}: \begin{array}{cc} 0 & 1 \rightarrow 2 \\ \text{without} & \text{from input side towards} \\ \text{load} & \text{output side} \end{array}$$

Idling torques decrease during operation.

NSF

Lubricants certified as grade H1 by the NSF (National Sanitation Foundation) can be used in the food sector where occasional unavoidable contact with food cannot be excluded.

Operating modes

(continuous operation **S1** and cyclic operation **S5**)

Gearboxes are selected depending on whether the motion profile is characterized by frequent acceleration and deceleration phases in → **cyclic operation** (S5) as well as pauses, or whether it is designed for → **continuous operation** (S1), i.e. with long phases of constant motion.

Operating noise (L_{PA})

The gear ratio and speed affect the noise level. As a general rule: A higher speed means a higher noise level, while a higher ratio means a lower noise level. The values specified in our catalog are based on a reference ratio and speed. The reference speed is either $n_1 = 3000$ rpm or $n_1 = 2000$ rpm depending on the size of the gearbox. You can find ratio-specific values in cymex® – www.wittenstein-cymex.com.

Output shaft revolution (f_α)

Factor f_α determines the number of life time cycles for the required gearbox service life. It describes the number of revolutions at the output used to assess the torque permitted at the output.

→ Refer to this term for further details.

Glossary – the alphabet

Positioning accuracy

The positioning accuracy is determined by the angular deviation from a setpoint and equals the sum of the torsional angles due to load → **(torsional rigidity and torsional backlash)** and kinetics → **(synchronization error) occurring simultaneously in practise** .

Quality control

All Premium and Advanced gearboxes are subject to a final inspection before they leave the WITTENSTEIN alpha factory to ensure that they are all delivered within specification.

Ratio (i)

The gear ratio i indicates the factor by which the gearbox transforms the three relevant parameters of motion (speed, torque and mass moment of inertia). The factor is a result of the geometry of the gearing elements (Example: $i = 10$).

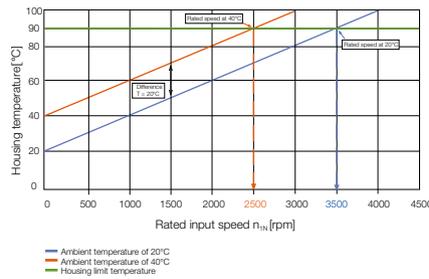
$$\begin{array}{l}
 n_1 = 3000 \text{ min}^{-1} \quad \begin{array}{l} \nearrow i \\ \searrow -i \end{array} \quad \begin{array}{l} T_2 = 200 \text{ Nm} \\ n_2 = 300 \text{ min}^{-1} \end{array} \\
 T_1 = 20 \text{ Nm} \\
 J_1 = 0,10 \text{ kgm}^2 \quad \longleftarrow \quad J_2 = 10 \text{ kgm}^2 \quad \text{(Application)}
 \end{array}$$

Safety note

For applications with special safety requirements (e.g. vertical axes, clamped drives), we recommend exclusive use of our Premium and Advanced products (excluding V-Drive).

Speed (n)

Two speeds are of relevance when dimensioning a gearbox: the maximum speed and the thermal speed limit at the input. The maximum permissible speed n_{1Max} must not be exceeded because it serves as the basis for dimensioning → **cyclic operation**. The nominal speed n_{1N} must not be exceeded in → **continuous operation**. The thermal speed limit n_{1T} at an ambient temperature of 20° C, is determined by the maximum gearbox temperature of $T = 90^\circ \text{ C}$ at no-load. As can be seen in the diagram below, the temperature limit is reached more quickly in the presence of an elevated outside temperature. In other words: the nominal input speed must be reduced if the ambient temperature is high. The values applicable to your gearbox are available from WITTENSTEIN alpha on request.



Delivery of speedline®

If necessary, you can receive delivery of standard series in 24 or 48 hours ex works. Outstanding flexibility for fast deliveries at short notice

Synchronization

Synchronization refers to the measurable speed variation between the input and output during one revolution of the output shaft. It is caused by manufacturing tolerances and causes minute angular deviations and ratio fluctuations.

Technical data

You can download further technical data relating to the entire product portfolio from our website

Tilting rigidity

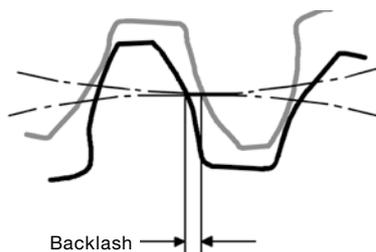
The tilting rigidity C_{2K} [Nm/arcmin] of the gearbox consists of the bending stiffness of the output or pinion shaft and the stiffness of the output bearing. It is defined as the quotient of tilting moment M_{2K} [Nm] and tilting angle Φ [arcmin] ($C_{2K} = M_{2K}/\Phi$).

Tilting torque (M_{2K})

The tilting torque M_{2K} is a result of the → **axial and lateral forces** applied and their respective points of application in relation to the inner radial bearing on the output side.

Torsional backlash (j_t)

Torsional backlash j_t [arcmin] is the maximum angle of torsion of the output shaft in relation to the input. Simply put, the torsional backlash represents the gap between two tooth flanks.



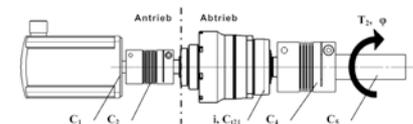
Torsional backlash is measured with the input shaft locked.

The output is then loaded with a defined test torque in order to overcome the internal gearbox friction. The main factor affecting torsional backlash is the face clearance between the gear teeth. The low torsional backlash of WITTENSTEIN alpha gearboxes is due to their high manufacturing accuracy and the specific combination of gear wheels.

Torsional rigidity (C₁₂₁)

Torsional rigidity [Nm/arcmin] C_{121} is defined as the quotient of applied torque and resulting torsion angle ($C_{121} = \Delta T/\Delta \Phi$). It shows the torque required to turn the output shaft by one angular minute. The torsional rigidity can be determined from the → **hysteresis curve**.

Torsional rigidity C , angle of torsion Φ



Reduce all torsional rigidity values at the output:

$$C_{(n),out} = C_{(n),in} \cdot i^2$$

with i = Gearbox ratio [-]

$C_{(n)}$ = Individual rigidity values [Nm/arcmin]

Note: The torsional rigidity C_{121} for the gearbox always relates to the output.

Series connection of torsional rigidity values

$$1/C_{tot} = 1/C_{1,out} + 1/C_{2,out} + \dots + 1/C_{(n)}$$

Angle of torsion Φ [arcmin]

$$\Phi = T_2 \cdot 1/C_{tot}$$

with T_2 = output torque [Nm]

Torque (M)

The torque is the actual driving force of a rotary motion. The force and lever arm combine to produce the torque that acts around the axis of rotation. $M = F \cdot l$

Torque (T_{2α})

$T_{2\alpha}$ represents the maximum torque transmitted by the gearbox. This value may decrease depending on the application-specific conditions and the precise evaluation of the movement profile.

→ Refer to this term for further details.



Glossary – Formulae

Formulae

| | | |
|---|--|---|
| Torque [Nm] | $T = J \cdot \alpha$ | J = Mass moment of inertia [kgm ²] α = Angular acceleration [1/s ²] |
| Torque [Nm] | $T = F \cdot l$ | F = Force [N] l = Lever, length [m] |
| Acceleration force [N] | $F_b = m \cdot a$ | m = Mass [kg] a = Linear acceleration [m/s ²] |
| Frictional force [N] | $F_{\text{Reib}} = m \cdot g \cdot \mu$ | g = Acceleration due to gravity 9.81 m/s ² μ = Coefficient of friction |
| Angular speed [1/s] | $\omega = 2 \cdot \pi \cdot n / 60$ | n = Speed [rpm] π = PI = 3.14... |
| Linear speed [m/s] | $v = \omega \cdot r$ | v = Linear speed [m/s] r = Radius [m] |
| Linear speed [m/s] (spindle) | $v_{\text{sp}} = \omega \cdot h / (2 \cdot \pi)$ | h = Screw pitch [m] |
| Linear acceleration [m/s²] | $a = v / t_b$ | t_b = Acceleration time [s] |
| Angular acceleration [1/s²] | $\alpha = \omega / t_b$ | |
| Pinion path [mm] | $s = m_n \cdot z \cdot \pi / \cos \beta$ | m_n = Normal module [mm] z = Number of teeth [-] β = Helix angle [°] |

Conversion table

| | |
|---------------------------|--|
| 1 mm | = 0.039 in |
| 1 Nm | = 8.85 in.lb |
| 1 kgcm² | = 8.85 x 10 ⁻⁴ in.lb.s ² |
| 1 N | = 0.225 lb _f |
| 1 kg | = 2.21 lb _m |

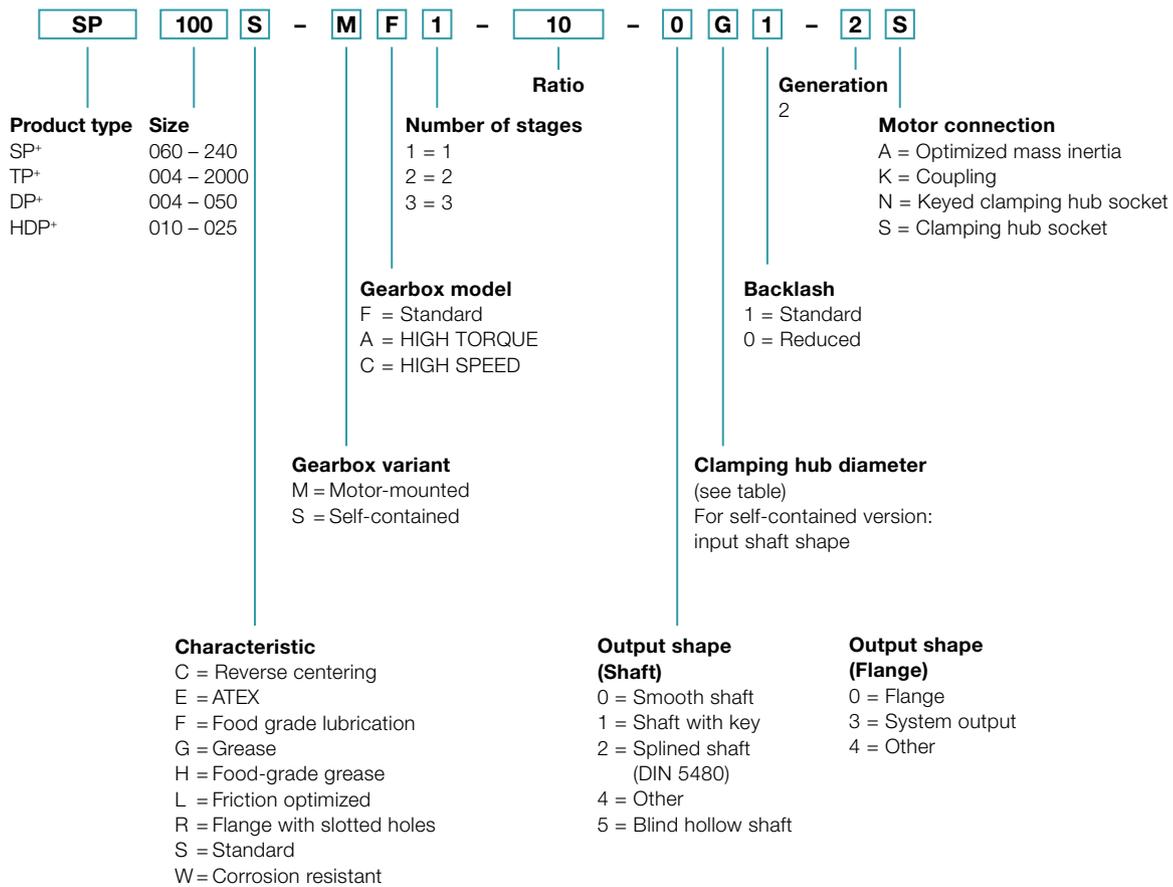
Symbol

| Symbol | Unit | Designation |
|----------|------------------|----------------------------------|
| C | Nm/arcmin | Stiffness |
| ED | %, min | Duty cycle |
| F | N | Force |
| f_s | – | Load factor |
| f_e | – | Factor for duty cycle |
| i | – | Ratio |
| j | arcmin | Backlash |
| J | kgm ² | Mass moment of inertia |
| $K1$ | Nm | Factor for bearing calculation |
| L | h | Service life |
| L_{PA} | dB(A) | Operating noise |
| m | kg | Mass |
| M | Nm | Torque |
| n | rpm | Speed |
| p | – | Exponent for bearing calculation |
| η | % | Efficiency |
| t | s | Time |
| T | Nm | Torque |
| v | m/min | Linear speed |
| z | 1/h | Number of cycles |

Index

| Index | Designation |
|----------------|--------------------|
| Capital letter | Permissible values |
| Small letter | Actual values |
| 1 | Input |
| 2 | Output |
| A/a | Axial |
| B/b | Acceleration |
| c | Constant |
| d | Deceleration |
| e | Pause |
| h | Hours |
| K/k | Tilting |
| m | Mean |
| Max/max | Maximum |
| Mot | Motor |
| N | Nominal |
| Not/not | Emergency stop |
| 0 | No load |
| Q/q | Lateral |
| t | Torsional |
| T | Tangential |

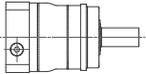
Ordering code – Planetary gearbox



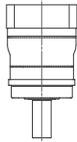
Mounting positions and clamping hub diameters

Clamping hub diameter
(see technical data sheet for possible diameters)

B5
Horizontal



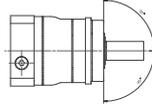
V1
Output vertical downwards



V3
Output vertical upwards



S
Can be tilted $\pm 90^\circ$
from a horizontal position



| Code letter | mm | Code letter | mm |
|-------------|----|-------------|----|
| B | 11 | I | 32 |
| C | 14 | K | 38 |
| E | 19 | M | 48 |
| G | 24 | N | 55 |
| H | 28 | O | 60 |

Intermediate sizes possible using bushings with a minimum thickness of 1 mm.

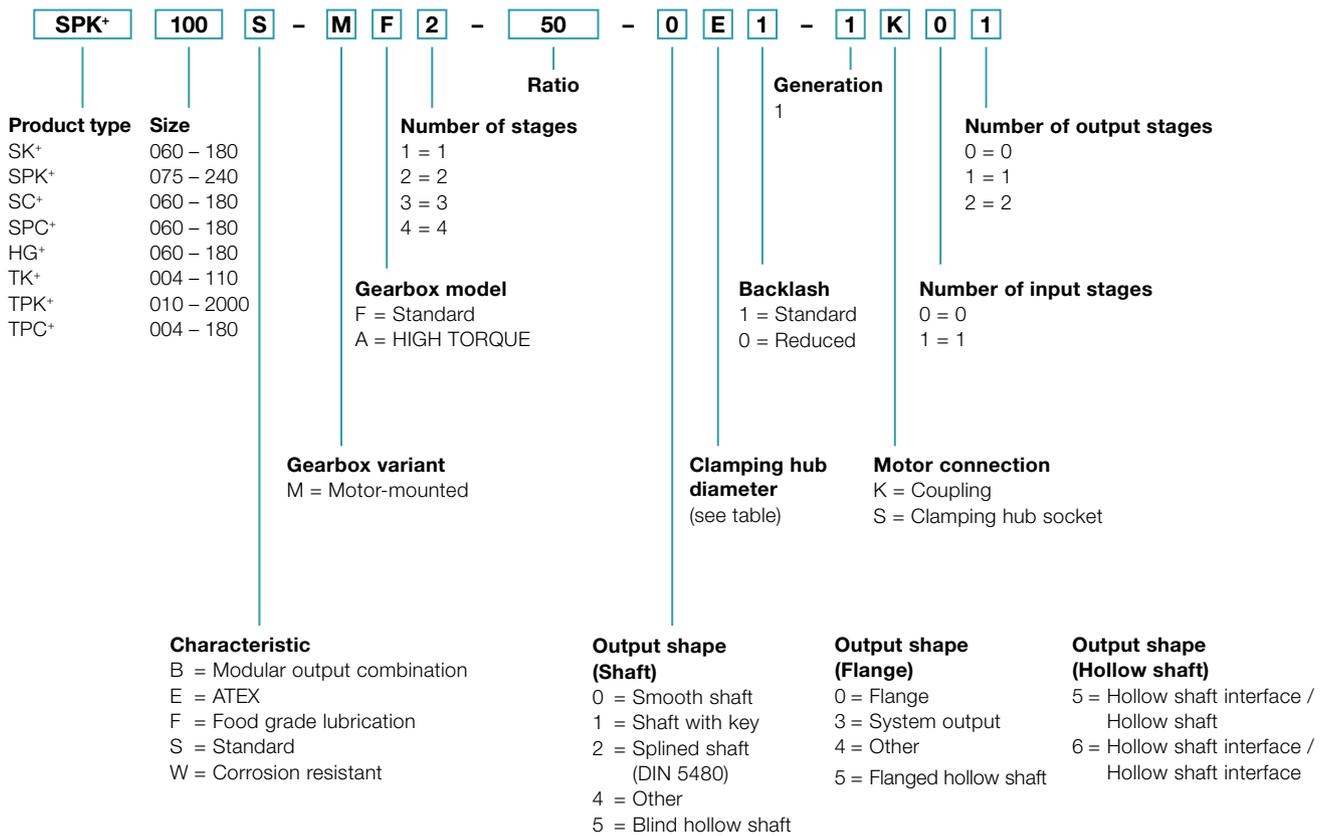
For information purposes only – not required when placing orders!

Exceptions:

- The mounting position of TP+ 2000 must be specified.
- DP+ / HDP+ products are designed for mounting position B5 as standard!

If the mounting position is different, contact WITTENSTEIN alpha without fail.

Ordering code – Hypoid- / Bevel gearboxes

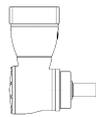


Mounting positions

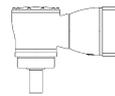
B5 / V3
Output horizontal/
motor shaft vertical upwards



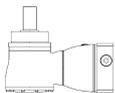
B5 / V1
Output horizontal/
motor shaft vertical downwards



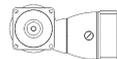
V1 / B5
Output vertical downwards/
motor shaft horizontal



V3 / B5
Output vertical upwards/
motor shaft horizontal



B5 / B5
Output horizontal/
motor shaft horizontal

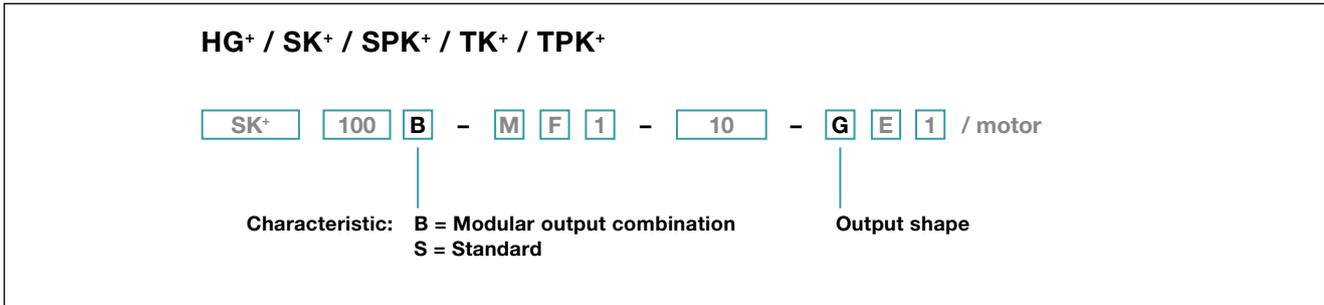


Please note the orientation when placing your order.

Exceptions:

- The mounting position of TPK⁺ 2000 must be specified.
- If the mounting position is different, contact WITTENSTEIN alpha without fail.

Characteristic: Modular output combination (B)



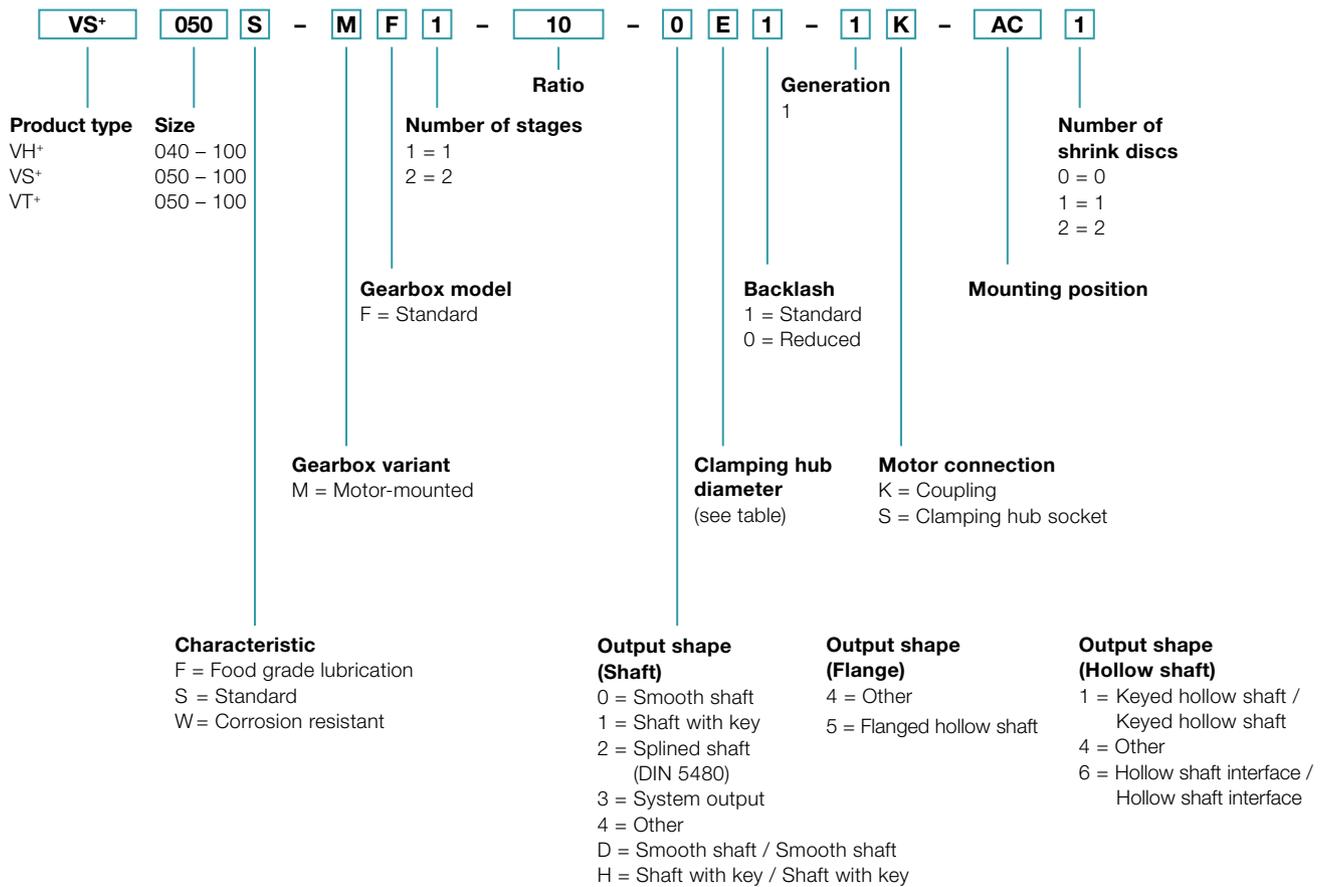
When selecting an output combination from the modular system, please select the letter „B“ as the characteristic in the ordering code. The digit for the required output shape is the modular matrix system.

Example: If you opt for an SK+ with a smooth shaft and require an additional output in the form of a shaft with key, then select the letter „G“ and enter in the order key under „Output shape“.

| | | Backward | | | | | |
|------------|---|---|---|---|---|---|--|
| | | Output shape | | | | | |
| Front | |  |  |  |  |  | |
| | | Smooth shaft | Shaft with key | Hollow shaft interface | Hollow shaft | Cover | |
| SK+ / SPK+ |  Smooth shaft | D | G | A | - | 0* | |
| |  Shaft with key | E | H | B | - | 1* | |
| |  Splined shaft (DIN 5480) | F | I | C | - | 2* | |
| SPK+ |  Blind hollow shaft | O | P | N | - | 5* | |
| TK+ |  Flanged hollow shaft | D | G | 6 | 5* | 0 | |
| TPK+ |  Flange | D | G | 6 | - | 0* | |
| HG+ |  Hollow shaft | D | G | 6* | 5* | 0 | |

* Standard version: please specify characteristic „S“ in the order code

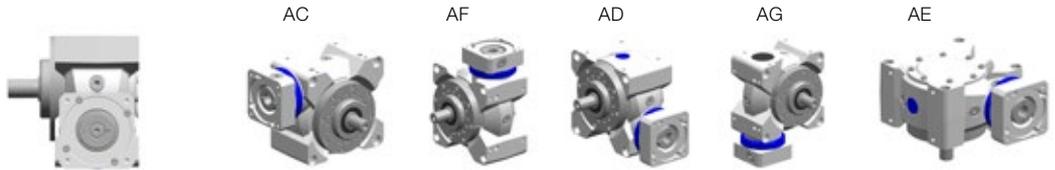
Ordering code – Worm gearboxes



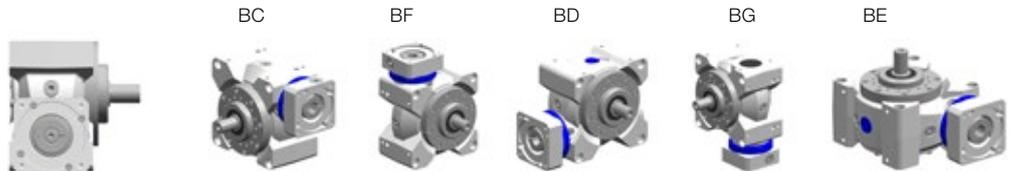
Mounting positions and clamping hub diameters

Mounting position (only relevant for oil volume)

Output side A:
View of motor interface,
Output left
Only valid for VS⁺, VT⁺



Output side B:
View of motor interface,
Output right
Only valid for VS⁺, VT⁺



For VH⁺ and VS⁺ with dual-shaft output or hollow shaft, A and B in the mounting position must be replaced with 0 (zero).

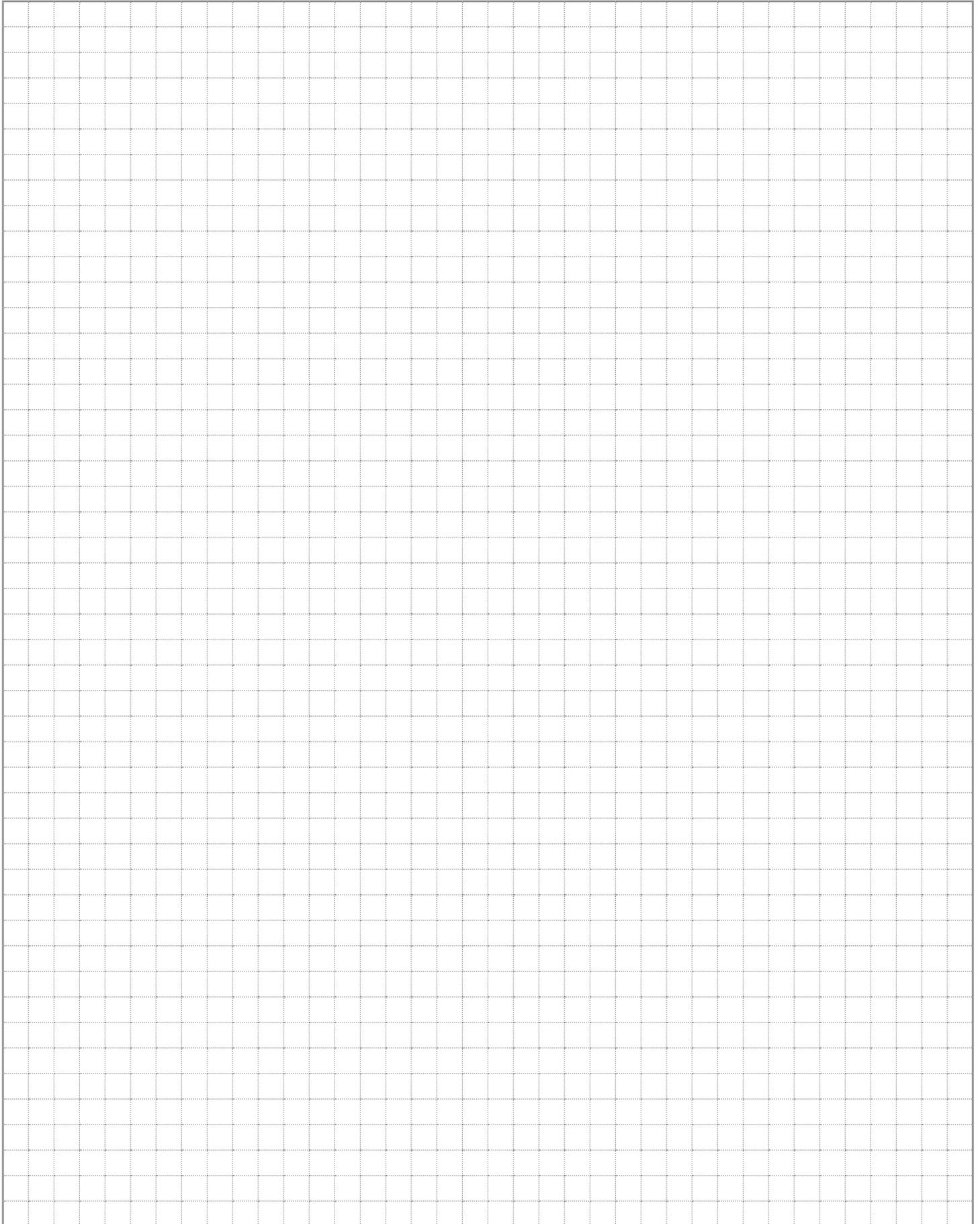
Clamping hub diameter

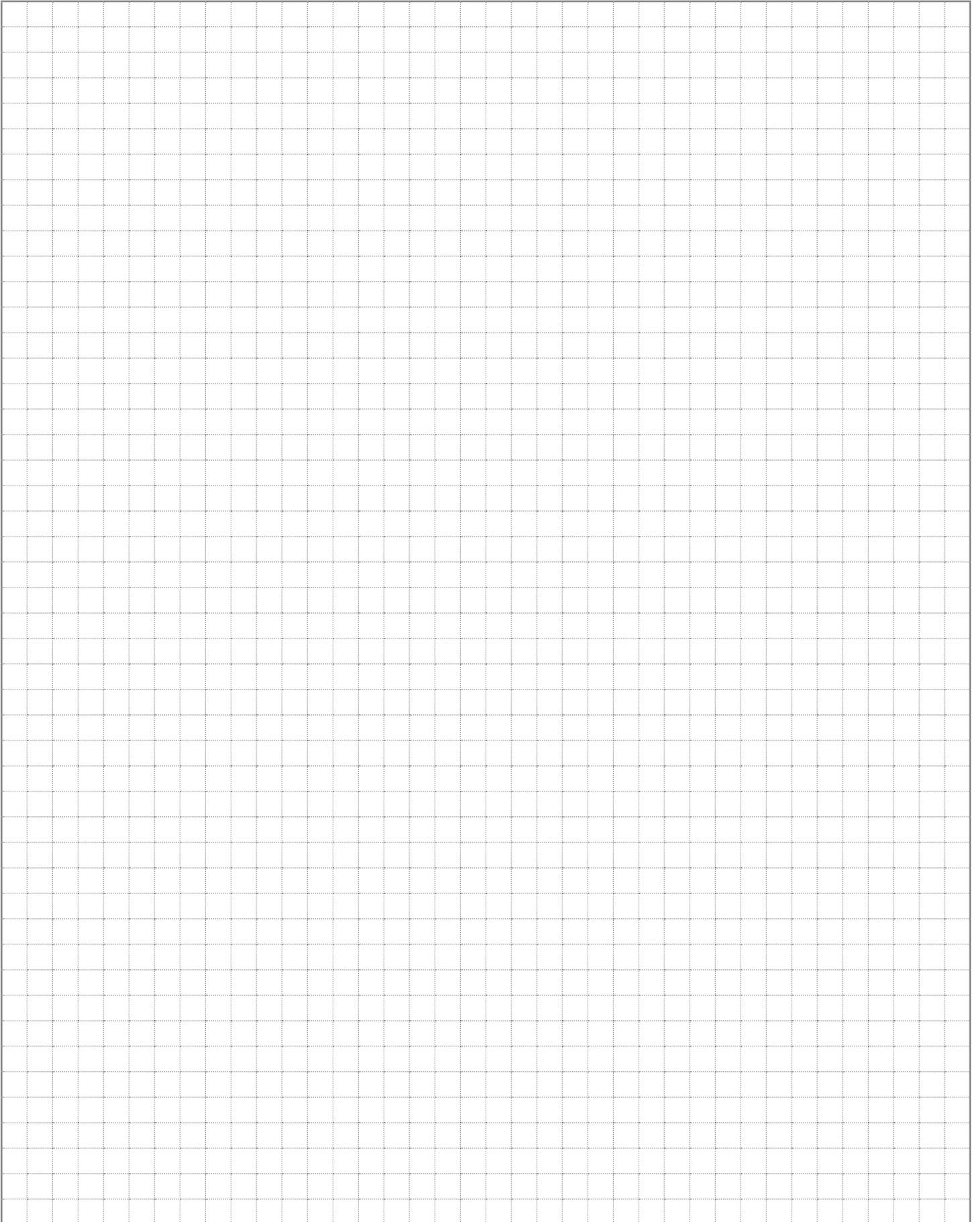
(see technical data sheet for possible diameters)

| Code letter | mm | Code letter | mm |
|-------------|----|-------------|----|
| B | 11 | I | 32 |
| C | 14 | K | 38 |
| E | 19 | M | 48 |
| G | 24 | N | 55 |
| H | 28 | O | 60 |

Intermediate diameters possible in combination with a bushing with a minimum thickness of 1 mm.

YOUR NOTE







alpha

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Subject to technical changes. alpha Advanced Line

WITTENSTEIN alpha – Intelligent drive systems

www.wittenstein-alpha.com

The entire world of drive technology – Catalogs available on request or online at www.wittenstein-alpha.com/catalogs



alpha Premium Line. Unique, individual solutions that offer unparalleled power density.



alpha Advanced Line. Maximum power density and outstanding positioning accuracy for complex applications.



alpha Basic Line & alpha Value Line. Reliable, flexible and economical solutions for a wide range of applications.



alpha Linear Systems. Precise, dynamic system solutions for every requirement.



alpha Mechatronic Systems. Energy-efficient, versatile and flexible mechatronic drive systems.



alpha Accessories. Optimally designed and adapted for gearboxes and actuators.