WITTENSTEIN | alpha

Low backlash planetary gearheads
Servo right-angle gearheads
System solutions
Accessories

Product catalog 2014/2015

30 years

WITTENSTEIN alpha

WITTENSTEIN | alpha

Product catalog 2014/2015

Low backlash planetary gearheads
Servo right-angle gearheads
System solutions
Accessories

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WITTENSTEIN alpha GmbH Management:
Dr. Bernd Schimpf

Dear Customers,

In 2014, we celebrate the anniversary of our company's 30-year history. When he founded alpha getriebebau GmbH in 1984, Dr. Manfred Wittenstein laid the foundation for what has now become WITTENSTEIN alpha GmbH. While the name of the company has changed, the characteristics that have made us successful remain the same today. For many years now, our customers have known what they can rely on: leadership in innovation, consulting, technology, and quality.

But how does a company achieve market leadership, and how does that company remain successful? First and foremost, through the dedicated commitment of each and every employee to achieve engineering excellence.

With efficiency engineering, WITTENSTEIN alpha combines many of the unmistakable features that have characterized our organization for many years into a powerful mission statement. For us, efficiency engineering means efficient processes and efficient products. This drives us to focus not only on the efficiency of a component, but on all of our customers' requirements. Consider these two examples: The new rack installation concept reduces installation time by up to 50%, and the new Hygienic Design series is the world's first planetary gearhead that is certified to EHEDG.

This is our commitment to you: in the future, we will continue doing exactly what the founders of the WITTENSTEIN Group did so well: ensure leadership in the world market through an unwavering commitment to innovation, and be the global benchmark for drive technology.

Find out for yourself!

Your WITTENSTEIN alpha GmbH Management Team

WITTENSTEIN Group

Specialized fields united in one company

– one with the future

WITTENSTEIN

WITTENSTEIN | alpha

Drives, controls and positional accuracy are areas that require maximum precision. Products manufactured by WITTENSTEIN alpha GmbH are setting benchmarks worldwide in the fields of mechanical engineering and drive technology. From low backlash planetary gearheads, servo right-angle gearheads and complete drive units to the comprehensive cymex® engineering software package and expert technical consultation: WITTENSTEIN alpha GmbH has redefined the meaning of precision.

WITTENSTEIN | electronics

WITTENSTEIN electronics GmbH develops, manufactures and distributes **electronic and software components** for complex mechatronic drive systems and provides tailor-made support for its own innovative technology. The intelligent and efficient electronic components are characterized by outstanding power density and excellent reliability and are capable of working under extreme environmental conditions.

WITTENSTEIN | motion control

Integration plays an innovative role here and is a decisive factor in increasing power density and dynamics. WITTENSTEIN motion control GmbH develops **mechatronic drive systems with a high customer benefit** based on the products of the WITTENSTEIN Group. Under extreme operating conditions, electromechanical servo systems impressively demonstrate characteristics such as controllability, precision, functionality, reliability and durability.

WITTENSTEIN | cyber motor

Outstanding power density and dynamics, minimal weight and maximum reliability characterize the **servo motors** from WITTENSTEIN cyber motor GmbH. Customized motors for increased productivity and longest service life. Thanks to the development of special materials, the motors are suitable for use under extreme environmental conditions such as ultra-high vacuum, radioactive areas and in high-temperature applications.

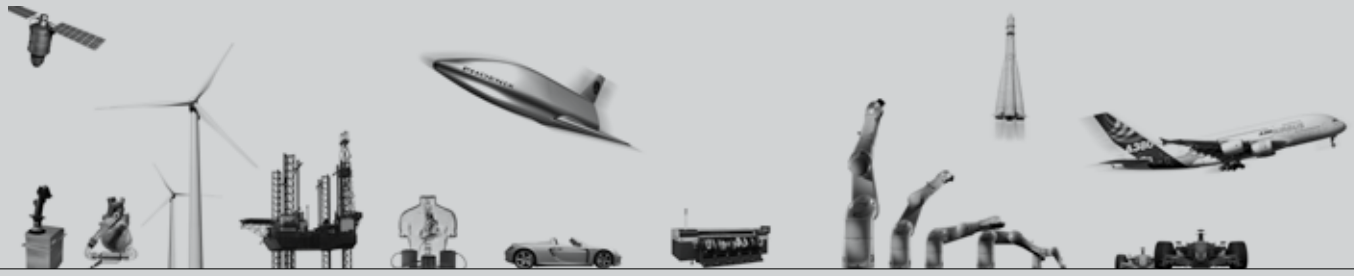


Photo Phoenix: EADS Astrium

WITTENSTEIN – Products that know no limits. High-precision drive systems for diverse branches of industry: Drive technology · Electronics · Machine tools · Manufacturing systems · Robotics, automation, handling · Textile, printing and paper machines · Laser, glass and wood processing machines · Food and packaging machines · Pneumatics · Semiconductor industry · Linear technology · Aerospace industry · Extreme ambient conditions (such as high temperatures, ultra-high vacuums) · Oil exploration · Medical technology · Pharmaceutical industry · Motor racing · Automotive and tire industry · Optical media · Vehicle technology · Defense technology

WITTENSTEIN AG is active in **eight innovative fields of business,** each with their own subsidiaries: Servo gearheads, servo drive systems, medical technology, miniature servo units, innovative gearing technology, rotary and linear actuator systems, nanotechnology, as well as electronic and software components for drive technology.

WITTENSTEIN AG employs approximately 1,800 people worldwide and is represented by 60 subsidiaries and dealerships in more than 40 countries.

WITTENSTEIN | intens

Intelligence fascinates, inspires and adds that extra dimension. Innovative medical technology manufactured by WITTENSTEIN intens GmbH, which **focuses mainly on intelligent implants** achieves all of the above. FITBONE® is currently the only fully-implantable, mechatronic intramedullary pin for bone extension worldwide that can be controlled and adjusted through the use of intelligent technology. Intelligence is crucial to every step of the development process, right up to the end product.

WITTENSTEIN | bastian

Whether in the design, manufacture, inspection or testing phase – when developing innovative gearing technology, WITTENSTEIN bastian GmbH always considers the unique requirements of the different application areas. Thus, solutions are **created that really connect.** WITTENSTEIN bastian GmbH redefines the concept of individuality on a daily basis: because the company is open to innovation and has the courage to explore unknown territory.

WITTENSTEIN | aerospace & simulation

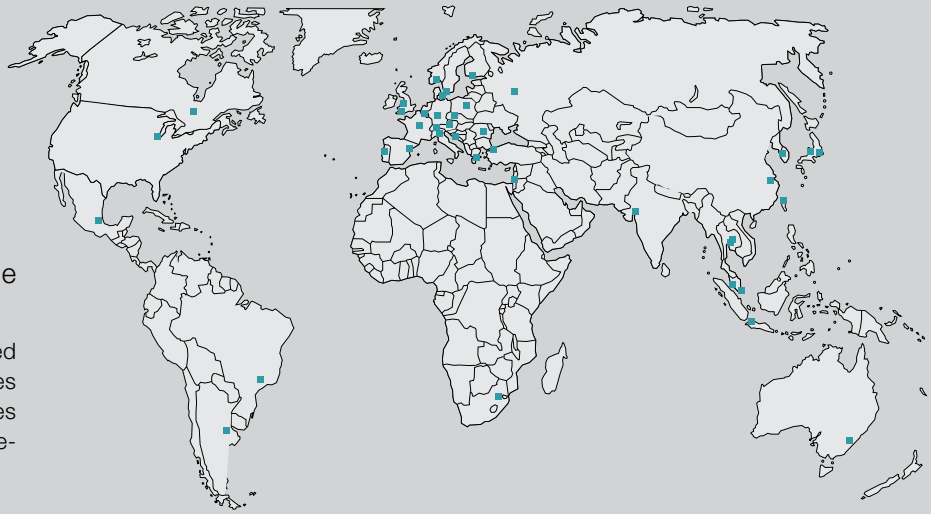
Maximum effect, minimum weight and efficiency plays a vital role in the aerospace industry. The powerful actuator systems manufactured by WITTENSTEIN aerospace & simulation GmbH represent both high quality and unique compactness. These highly efficient systems are used **in the Airbus A380 as well as in training aircraft and simulators.**

attocube
pioneers of precision

attocube systems is a sought after partner for high-end laboratories in science and industry worldwide and specializes in integrated system solutions for custom applications in the field of nano technology. The company develops and produces an unrivaled product family comprised of **nano positioners, distance sensors, cryostats and complete microscope systems** – all of which operate reliably and precisely at the very limit of what is physically and technically possible.

WITTENSTEIN worldwide

No matter where you need us: A comprehensive sales and service network provides quick availability and competent support worldwide.



WITTENSTEIN alpha is setting benchmarks worldwide

in the fields of mechanical engineering and drive technology

3 x 1 = one or
"The whole is more than the sum of its parts!"

Listening, understanding, calculating, optimizing and implementing tailored solutions for our customers – for WITTENSTEIN alpha, engineering begins at an early stage and continues far beyond successful implementation.

As one of the few manufacturers of mechanical drive systems worldwide, we combine multiple core competencies as a prerequisite for stringent as well as integrated engineering, all under one roof.

Research &
Development,
Production
and Sales …

… from a single source!

30 years of WITTENSTEIN alpha

First low backlash planetary gearheads — Software development — System solutions — Low backlash planetary gearheads

1983 SP

1984 Founding of alpha getriebebau

1994 TP

1995 SP classic

1996 LP

1999 cymex®

2002 alpha is the most innovative of the German medium-sized companies

2004 SP+/TP+/LP+-product range alpheno®

Competence in many sectors

A comprehensive sales and service network provides quick availability and competent support worldwide. Thanks to many years of experience, our expert specialists provide market leading consultation for a wide variety of industrial sectors.

Machine tools and manufacturing systems
Maximum precision, process reliability and productivity thanks to durable, virtually backlash-free and torsionally-rigid mechanical system solutions used in feed, swivel and auxiliary axes, for example.

Food and packaging machines
A range of gearheads designed for all types of axis used in packaging technology - including gearheads in a corrosion-proof design - for maximum operating efficiency, machine flexibility and cycle speeds.

Wood processing machines
Mechanical systems such as gearheads with rack and pinion combined with on-site consultation and a comprehensive knowledge of engineering, form an impressive package that guarantees a high-quality end product with maximum efficiency.

Printing and paper machines
Innovative gearhead products that offer high constant speeds, seamless synchronization and permanent precision – the perfect solution for high-quality printing processes and other continuous applications. Available as an option:
Integrated sensors for monitoring web tension and similar parameters.

Robotics, automation and handling technology
A wide range of servo gearheads and mechanical drive systems, from low-cost to high-end products for all types of robot and auxiliary axles such as drive axles and tool manipulators.

Servo right-angle gearheads | The revolution in linear technology | New generation LP+/LPB+ | Hygienic Design/New generation of bevel gears | New generation of racks

2007 2008 — 2011 — 2012 — 2013 — 2014

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

High Performance Linear System

LP+/LPB+ Generation 3

Hygienic Design/SC+/SPC+/TPC+

Innovative rack installation

WITTENSTEIN alpha

Change of name to WITTENSTEIN alpha

efficiency engineering

efficiency engineering mission statement

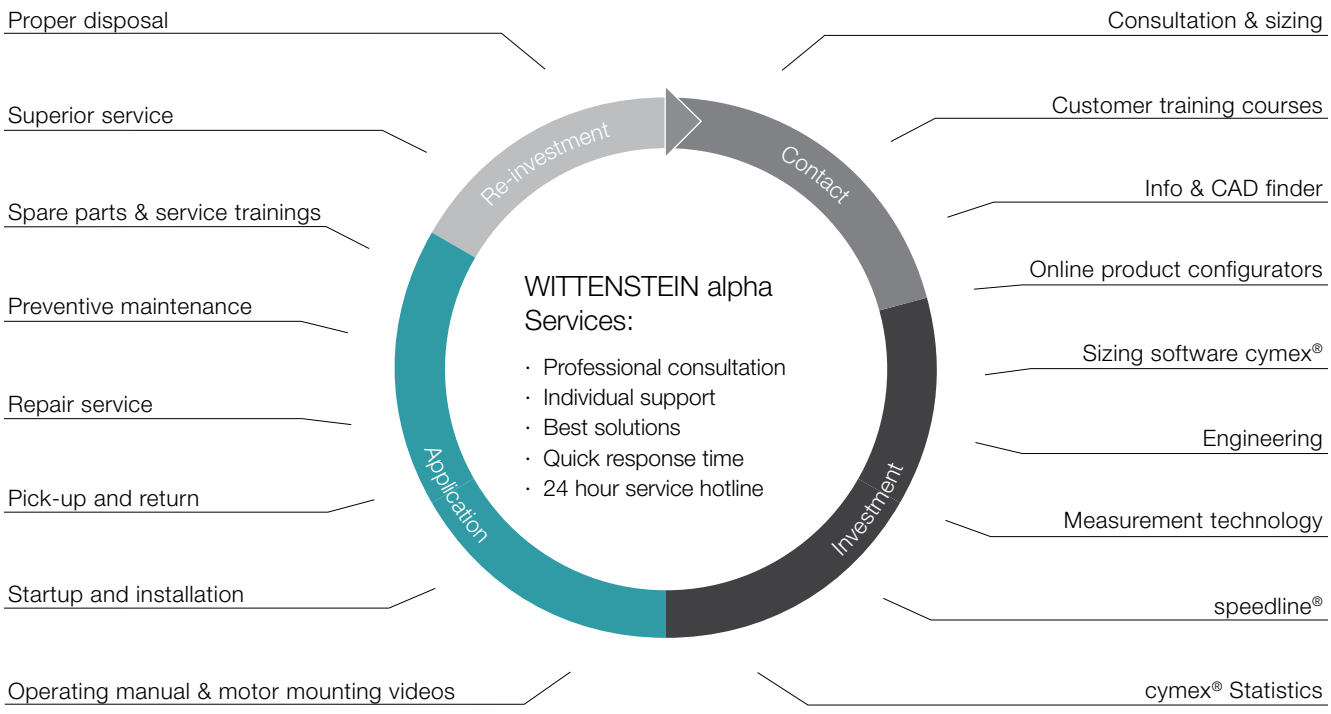
30 years of WITTENSTEIN alpha

WITTENSTEIN alpha Services

Individual support at each interaction stage

Fascinated with innovative and efficient system solutions

With the WITTENSTEIN alpha service concept, we are now also setting new standards in the field of customer support. We are there for you, from the initial concept and throughout the entire life cycle of your application. Our global consultation network supports you in your complex challenges through our extensive experience, a variety of sizing tools and individual engineering services. Fast response times in the logistics area and the speedline® as well as on-site support during the installation and commissioning of mechanical systems provide you with a sustained competitive edge. In terms of aftersales, our Customer Service is personally available to you with highly qualified and committed expert personnel - around the clock.
When it comes to customer support, you can count on us!



You can find detailed information in the our Service catalog and at: **www.wittenstein-alpha.de/en**

In North America use: **www.wittenstein-us.com**
In the UK use: **www.wittenstein.co.uk**

speedline®: Tel. +49 7931 493-10444 24h service hotline: Tel. +49 7931 493-12900

Consultation and sizing

Personally on-site for you

Engineering

Your challenge is our drive

Consultation means experience

Our expertise
Personal consultation on drive technology, customized services, and process and drive peripherals You can count on our regionally-based sales and technical expertise, worldwide.

Your benefits
- Professional consulting
- Personal contact
- Best solutions through professional
- application calculations and drive design

Your benefits

Increase reliability through selection of drives for highly complex applications
- Reduce development costs through time savings
- Increase machine and process reliability
- Increase performance and productivity
- Individual project support

System expertise
- Complex multi-axle analysis
- Multi-body simulation (2D)
- Multi-body simulation (3D)
- Optimization of motion design

Component expertise
- Toothing design
- Shaft and bearing design
- FEM calculations
- Project consulting and design support

Extensive expertise
in application sizing and simulation

We are happy to advise you: **Tel. +49 7931 493-10800 (Germany)**
Tel. +1 630 540-5300 (North America)
Tel. +44 1782 286 427 (UK)

Online tools

Available free of charge at any time

Online product configurators

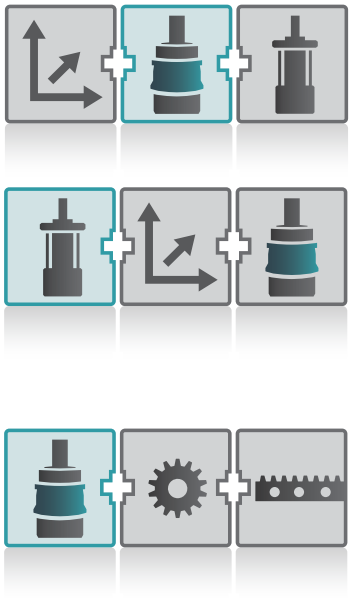
Your application is configured according to your specific requirements
Are you searching for the right drive solution for your application? With our product configurators, we will help you at every step of the way to find your solution.

Your benefits
- Optimized for a quick and efficient selection
- Intuitive user guidance
- Online check of motor and gearhead compatibility
- All application information at a glance

We offer three different online product configurators:

- Gearhead + motor configurator:
  Uses your application requirements to first select a gearhead and then a suitable motor.
- Motor + gearhead configurator:
  You know which motor you would like to use, or wish to select a motor first. Once you have selected the correct motor, you want to find the right gearhead that is compatible with your motor and also satisfies your application requirements.
- Rack & pinion configurator:
  Find the right components for your rack and pinion system.

The online product configurators are available free of charge at: **http://www.wittenstein-us.com/tech-support/design-tools/**



Info & CAD Finder

The required information - simply and quickly
With our Info & CAD Finder, you can find the product you are looking for in just a few clicks. Here you will also find performance data, CAD data, operating instructions and motor mounting instructions for your product.

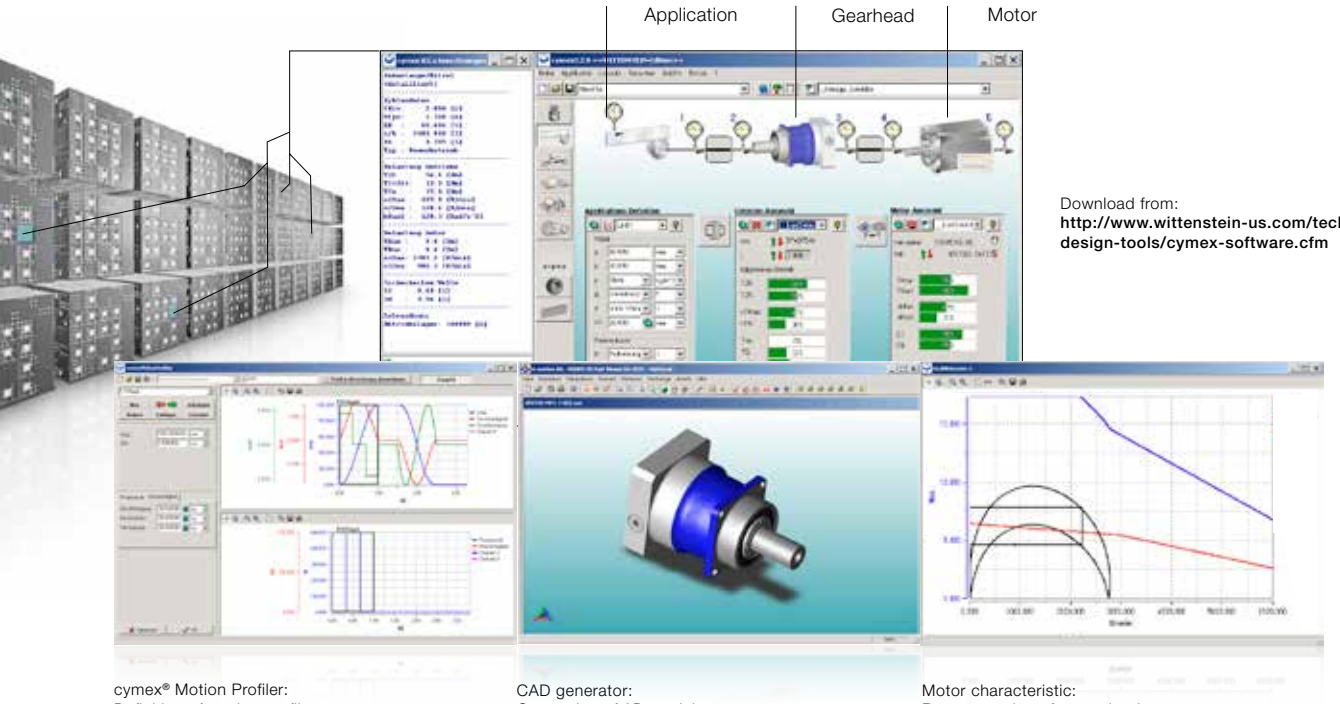
Using the intuitive menu, it is easy to configure your product and request the required data.

Your benefits

- Online comparison with motor geometry
- Transparent and simple selection
- Ordering code generation
- Documentation of selection
- 3D file of selected solution

The Info & CAD Finder is available free of charge at: **http://www.wittenstein-alpha.de/en/info-and-cad-finder**

cymex® 3 (cyber motion explorer) – Sizing of the entire drive train



Download from:
http://www.wittenstein-us.com/tech-support/design-tools/cymex-software.cfm

cymex® Motion Profiler:
Definition of motion profiles

CAD generator:
Generation of 3D models

Motor characteristic:
Representation of motor load

cymex® training courses

We offer our customers regular cymex® training courses. We would welcome the opportunity to make our application calculation and drive design expertise available to you.

If you are interested in either cymex® or product training courses, please contact your responsible sales engineer or send an e-mail to:
tech-schulung@wittenstein.de
info@wittenstein-us.com

Your benefits

- Simple and reliable design through pre-defined standard applications
- All customer-specific application parameters taken into account
- cymex® Motion Profiler for creating simple and complex motion and load profiles
- Functions for importing motion profiles from SAM, Excel, ASCII
- Database containing all WITTENSTEIN alpha products as well as 11,000 motors from all current manufacturers
- Visualization of loads in relation to all important component parameters in the drive train
- Offline CAD generator: 3D gearhead files including all attached components
- Technical calculation documentation

speedline®

Speedy deliveries

Pick-up & return

Customized logistics solution

Speed demands flexibility

We offer you delivery of the standard SP+, TP+ and LP+ Generation 3 series within 24 or 48 hours ex works at attractive conditions.* Benefit now from the short-term availability of our V-Drive+ servo worm gearhead.

We handle the complete shipment for you

In time-critical situations, we ensure immediate and professional pick-up as well as the fastest possible delivery of your drive requiring repair. Benefit from our bring service, even in the case of a speedline® order.

The benefits for you:

- Fast and short-term implementation of ideas thanks to high flexibility
- Minimum re-stocking times and fastest response time in case of unplanned needs
- Maximum reliability through transparent information flow and dependable processing

Your benefits:

- Cost savings through minimization of downtimes
- Professional logistics organization
- Reduction of transport risks through customized, direct delivery

speedline®
by WITTENSTEIN alpha

Our speedline® team can be contacted under:

Tel. +49 7931 493-10444 (Germany)
Tel. +49 7931 493-10333 (International)

*non-binding delivery time depending upon part availability

Customer Service

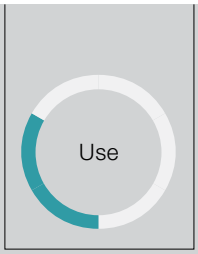
Perfectly coordinated service from a single source

Customer Service: Our objective is to delight you as an excellent partner through an active and flexible service.

Our offer is your benefit:

- Installation and commissioning
  Professional support for the best possible start
- Repair service
  Customized repairs
- speedline® Repair service
  Fast repairs in proven quality
- Preventive maintenance
  Highest demands require maximum reliability
- Spare parts service
  Fast, simple and in original quality
- Modernization service
  Application-specific retrofitting
- Proper disposal
  Ecologically sustainable

24h service hotline
Always there for you!



Our Global Customer Service team is personally available to you around the clock: 24h a day – 365 days a year

Tel. +49 7931 493-12900

cymex® Statistics –
our knowledge
is your advantage

Our cymex® service database allows us to provide you with optimum consultation.

KOMPETENZPREIS
BADEN-WÜRTTEMBERG

"For outstanding, sustainable implementation of innovation and quality management in operational practice and the achievement of demonstrable corporate success."

Low backlash planetary gearheads High End / Economy

					
Products		**alpheno®**	**RP+**	**TP+**	**TP+ HIGH TORQUE**
Version				MF	MA
Power density		←			
Catalog page		24	26	28	54
Ratio [c]	min. i =	3	22	4	22
	max. i =	100	220	100	220
Torsional backlash [arcmin] [c]	Standard	≤ 3	≤ 1	≤ 3	≤ 1
	Reduced	≤ 1	-	≤ 1	-
Max. acceleration torque [Nm] (max. 1000 cycles per hour)		2800 / 3360 [b]	10.000	6000	10.000
Output type					
Smooth output shaft		•			
Grooved output shaft		•			
Output shaft with involute toothing		•			
Attachable shaft Connected via shrink disc		•			
Output flange			•	•	•
System output with pinion		•	•	•	•
Input type					
Motor attachment version		•	•	•	•
Drive shaft		•		•	
Version					
ATEX [a]					
Food-grade lubrication [a] [b]		•	•	•	•
Corrosion resistant [a] [b]				•	•
Optimized mass moment of inertia [a]		•	•	•	•
Accessories (please refer to the product pages for further options)					
Coupling		•		•	•
Rack		•	•	•	•
Pinion		•	•	•	•
Belt pulley					
Shrink disc		•			
torqXis sensor flange				•	•
B5 mounting flange					

[a] Power reduction: technical data available upon request [b] Please contact WITTENSTEIN alpha [c] In relation to reference sizes

					
SP⁺	**SP⁺ HIGH SPEED**	**SP⁺ HIGH SPEED**	**LP⁺ Generation 3**	**LPB⁺ Generation 3**	**alphira®**
MF	MC	MC-L	MF	MF	MO
70	96	100	120	134	140
3	3	3	3	3	4
100	100	10	100	100	100
≤ 3	≤ 4	≤ 4	≤ 8	≤ 8	≤ 20
≤ 1	≤ 2	≤ 2	-	-	-
4500	3600	3600	500	305	200
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Servo right-angle gearheads High End / Economy

							
Products		**RPK+**	**TK+**	**TPK+**	**TPK+ HIGH TORQUE**	**SK+**	**SPK+**
Version		MF	MF	MF	MA	MF	MF
Power density		◄					
Catalog page		152	154	166	192	202	214
Ratio [c]	min. i =	66	3	12	66	3	12
	max. i =	5500	100	10000	5500	100	10000
Torsional backlash [arcmin]] [c]	Standard	≤ 1,3	≤ 4	≤ 4	≤ 1,3	≤ 4	≤ 4
	Reduced	-	-	-	-	-	≤ 2
Max. acceleration torque [Nm] (max. 1000 cycles per hour)		10000	640	6000	10000	640	4500
Output type							
Smooth output shaft						•	•
Grooved output shaft						•	•
Output shaft with involute toothing						•	•
Output shaft, rear side, smooth			•	•	•	•	•
Output shaft, rear side, keywayed			•	•	•	•	•
Output flange		•		•	•		
Hollow shaft interface Connected via shrink disc	Standard						
	Rear side		•	•	•	•	•
Flanged hollow shaft			•				
Closed cover, back		•	•	•	•	•	•
System output with pinion		•		•	•		
Shaft on both sides						•	
Input type							
Motor attachment version		•	•	•	•	•	•
Version							
ATEX [a]			•			•	
Food-grade lubrication [a] [b]		•	•	•	•	•	•
Corrosion resistant [a] [b]			•	•	•	•	•
Accessories (please refer to the product pages for further options)							
Coupling			•	•	•	•	•
Rack		•	•	•	•	•	•
Pinion		•	•	•	•	•	•
Belt pulley							
Shrink disc			•	•	•	•	•
torqXis sensor flange			•	•	•	•	•
B5 mounting flange							

[a] Power reduction: technical data available upon request [b] Please contact WITTENSTEIN alpha [c] In relation to reference sizes

											
HG⁺	**SC⁺**	**SPC⁺**	**TPC⁺**	**VDT⁺**	**VDH⁺**	**VDS⁺**	**LK⁺**	**LPK⁺**	**LPBK⁺**	**VDHe**	**VDSe**
MF	MF	MF	MF	MF	MF	MF	MO	MO	MO	MF	MF
240	252	264	274	284	294	304	314	326	336	342	350
3	1	3	3	4	4	4	1	3	3	4	4
100	2	20	20	40	40	40	1	100	100	40	40
≤ 4	≤ 4	≤ 4	≤ 4	≤ 3	≤ 3	≤ 3	≤ 15	≤ 12	≤ 12	≤ 8	≤ 8
-	-	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2	-	-	-	-	-
640	315	1210	1600	1505	1505	1505	93	450	220	301	301
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Low backlash planetary gearheads High End

alpheno®
Perfection in a new dimension

- Low backlash planetary gearhead with output shaft
- Cyclic or continuous operation
- Torsional backlash: ≤ 1 arcmin
- Ratio: 3-100

Product highlights:
- Maximum power density
- High axial and radial forces
- High torsional rigidity

RP+
High-precision powerhouse

- Low backlash planetary gearhead with output flange
- Application in cyclic operation
- Torsional backlash: ≤ 1 arcmin
- Ratio: 4-220

Product highlights:
- Maximum torsional rigidity
- Maximum axial and radial forces
- Easy installation
- Optimized for rack and pinion applications

TP+ and TP+ HIGH TORQUE
Compact precision

- Low backlash planetary gearhead with output flange
- Cyclic operation
- Torsional backlash: ≤ 1 arcmin
- Ratio: 4-302.5

Product highlights:
- High torsional rigidity
- Space-saving design

Power density ◄

Maximum power density

And the torques?
Although the previous series achieved outstanding results, we managed to increase the torques by up to 40%. Raising the limits – Typical of WITTENSTEIN alpha!

Simple motor installation

Safe, and secure motor installation is possible in a single step. The WITTENSTEIN alpha-patented motor mounting is also available with integrated thermal length compensation as an option.

Versatile installation

In whatever position you install it – your gearhead always contains the same quantity of oil/grease. The gearheads are so flexible, you can install them vertically, horizontally or with the output facing upwards or downwards.

Maximum positioning accuracy

Upon request, the High End planetary gearheads are available with torsional backlash of less than one arc minute. This significantly increases the positioning accuracy of your application.

SP⁺ and SP⁺ HIGH SPEED
The classic all-rounder

- Low backlash planetary gearhead with output shaft
- Application in cyclic or continuous operation
- Torsional backlash: ≤ 1 arcmin
- Ratio: 3-100

Product highlights:
- Multiple output configurations
- High nominal speeds (SP⁺ HIGH SPEED)

Superior running thanks to helical teeth

Our High End planetary gearheads “whisper”. Compared to the straight-toothed gearheads, our helical-toothed gearheads are 6 dB(A) quieter during operation. And what a difference 64 instead of 70 decibels makes to added value. You will barely notice vibrations because these gearheads run so smoothly.

World-class lifespan

The seal rings on the High End planetary gearheads were specially developed and the material and geometry are both optimized to ensure an extremely long lifespan!

alpheno® – Perfection in a new dimension

WITTENSTEIN alpha sets standards

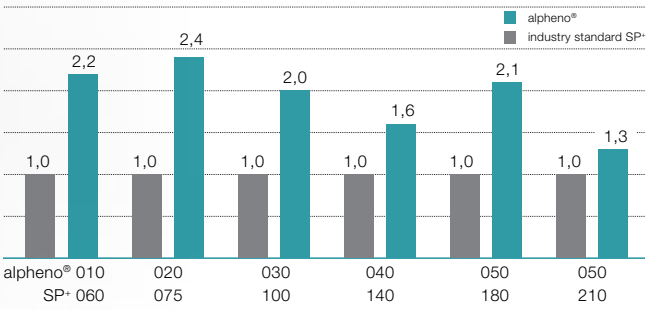
The alpheno® gear output interface facilitates a higher power transmission when compared to the industry standard which limits the transmitting torques of the gearhead. alpheno® transcends these limitations.

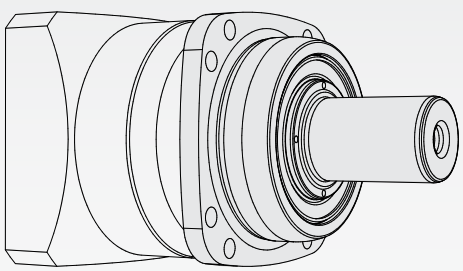
The technical advancement of alpheno® and its increased power can be directly utilized for your applications with the new design of the gear output.

alpheno® convinces with highest power density

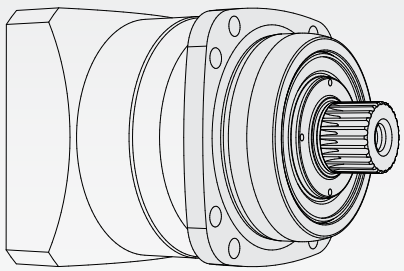
We offer you more performance in less space for the most compact drive requirements. This will allow your machine to perform better if specific system solutions are required.

Power density of the industry standard and alpheno®

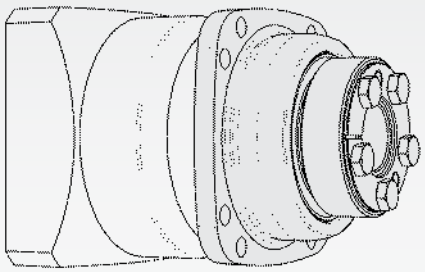




Smooth shaft



Involute



Slip-on shaft incl. shrink disk

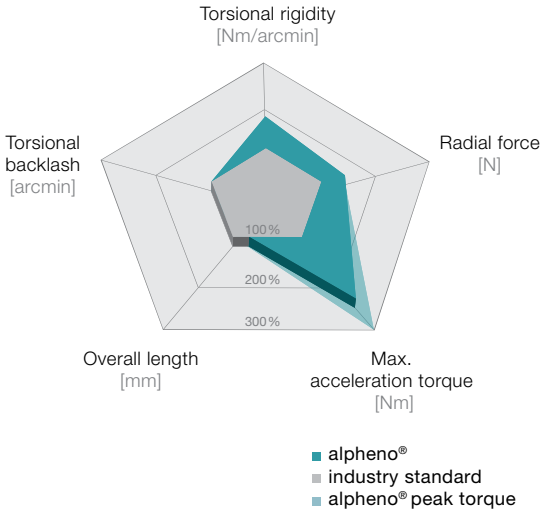
Performance linear system
with alpheno® planetary gearhead
in an optimized version for rack
and pinion applications.

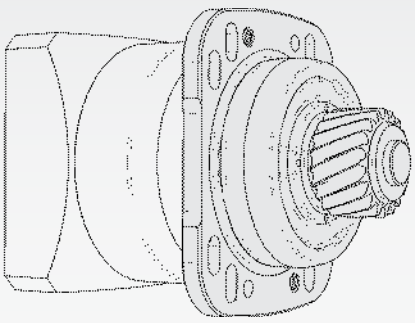
The integrated slots reduce the design
and installation requirements to
a minimum.

Performance data

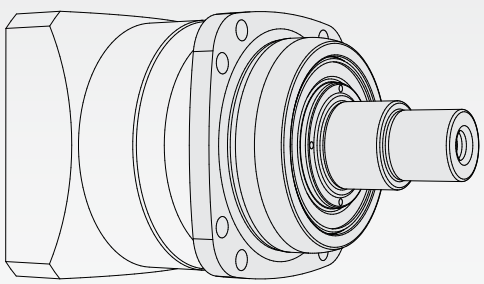
Torsional backlash [arcmin]	< 1
Ratio [-]	3 - 100
Max. acceleration torque [Nm]	2800
alpha peak torque [Nm]	3360
Max. input speed [min^{-1}]	6000
Efficiency [%]	97

alpheno® in comparison to the industry standard





Incl. pinion



Customer-specific

Options

Like the SP+ shaft gearhead, alpheno® is also available in a HIGH SPEED version and with a slip-on shaft at the gear output. A variant with optimized mass inertia guarantees a maximum level of energy efficiency. In combination with the WITTENSTEIN alpha rack-and-pinion portfolio, alpheno® represents an unbeatable drive bearing arrangement in the field of linear motion.

RP+ – High-precision powerhouse

Sets standards in terms of power density, modularity and easy installation.

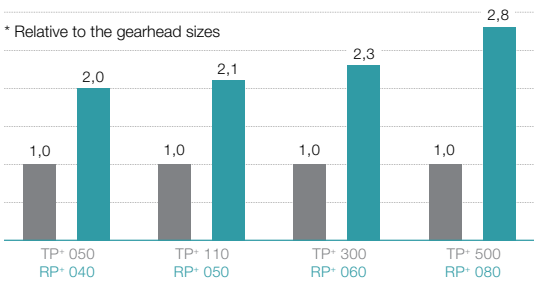
The new standard for flange gearheads

The RP+ gearhead series combines all the advantages of the familiar gearhead series.
Features include reduced backlash of < 1 arcmin, maximum power density, modular mounting position, simple motor installation, superior running thanks to helical teeth, maximum positioning accuracy and world-class lifespan.

The RP+ impresses with maximum power density

- If your drive requires maximum performance
- If you value world-class engineering
- If you require an even more compact system

Power density comparison between industry standard & RP+ *

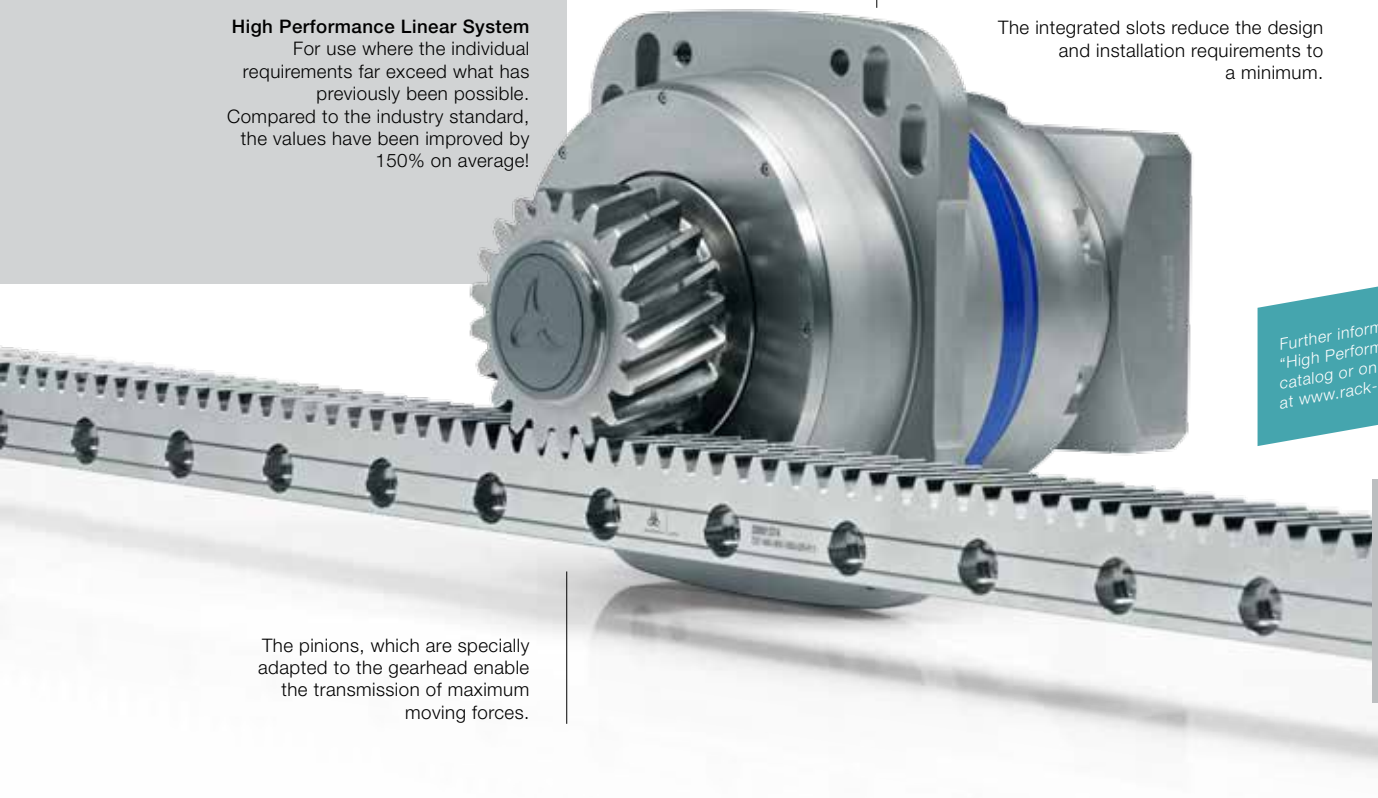


The geometry of the RP+ output flange is perfectly adapted to the power density.

The RP+ highperformance planetary gearhead is optimized for rack and pinion applications.

High Performance Linear System
For use where the individual requirements far exceed what has previously been possible. Compared to the industry standard, the values have been improved by 150% on average!

The integrated slots reduce the design and installation requirements to a minimum.



Further information is available in the "High Performance Linear System" catalog or on the Internet at www.rack-pinion.com

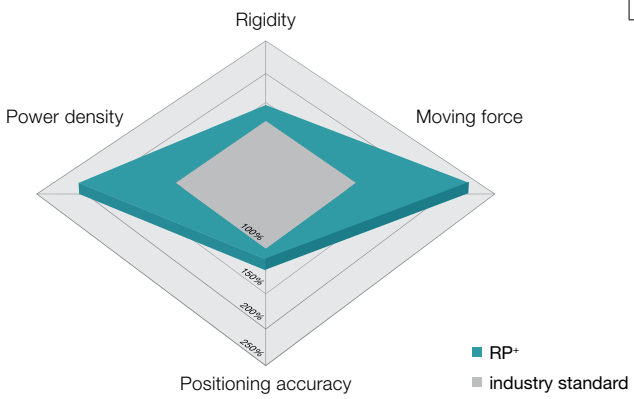
The pinions, which are specially adapted to the gearhead enable the transmission of maximum moving forces.

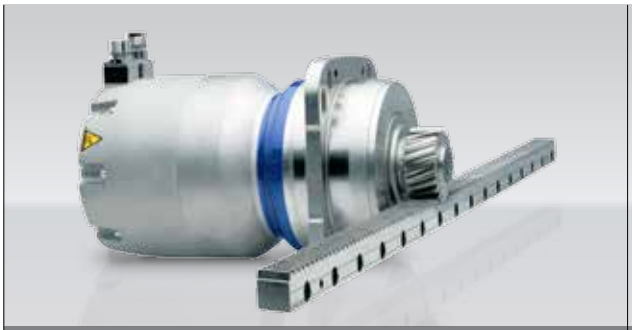
Performance data for RP+

Positioning accuracy [µm]	< 5*
Ratios [-]	4-220
Max. moving force per drive [N]	112,000
Movement speed [m/min]	400
Efficiency [%]	≥ 97
System rigidity [%]	+ 50**

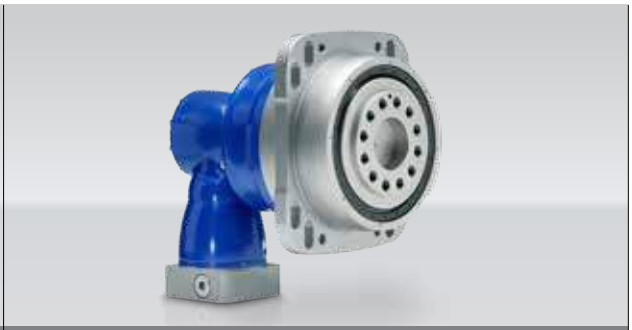
* Direct measuring system required
** Compared to industry standard

Performance data as linear system





The RP+ is also available as the RPM+ actuator version. The RPM+ combines the advantages of the RP+ series in an even more compact design. Thanks to its special design, the permanently excited servo motor ensures maximum power density.



The RPK+, which combines the hypoid angle section and the high performance planetary gearhead RP+ completes the series.

TP+/TP+ HIGH TORQUE – Compact precision

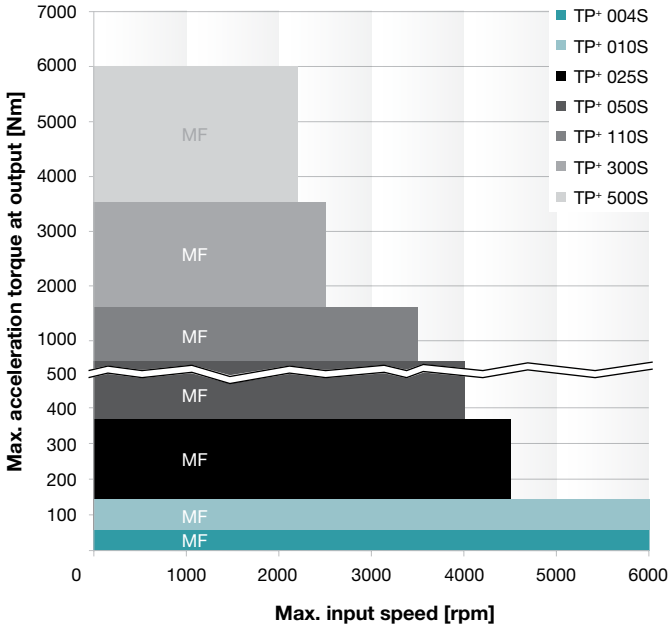
TP+ HIGH TORQUE

TP+

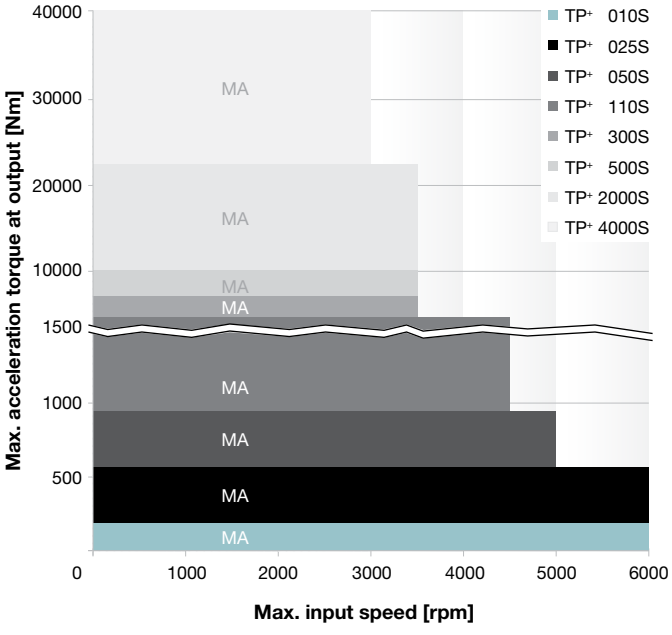
Compact top performers with output flange. The standard version is ideally suited for high positioning accuracy and highly dynamic cyclic operation.
The TP+ HIGH TORQUE is particularly well suited for high-precision applications in which high torsional rigidity is required.

Quick size selection

TP+ MF (example for i = 5)
For applications in cyclic operation (ED ≤ 60%)



TP+ HIGH TORQUE MA (example for i = 22)
For applications in cyclic operation (ED ≤ 60%)



Versions and Applications

Features	**TP⁺** MF version page 30	**TP⁺ HIGH TORQUE** MA version page 54
Power density	• •	• • •
Positioning accuracy (e.g. clamped drives)	• •	• • •
Highly dynamic applications (e.g. Delta robot)	• • •	• • •
Torsional rigidity	• •	• • •
Space-saving design	• •	• • •
Stringent safety requirement (e.g. vertical axes)	• •	• • •

Product features

Ratios [c]		4 - 100	22 - 302,5
Torsional backlash [arcmin] [c]	Standard	≤ 3	≤ 1
	Reduced	≤ 1	-
Output type			
Output flange		•	•
System output with pinion		•	•
Input type			
Motor mounted version		•	•
Input shaft		•	
Type			
Food-grade lubrication [a] [b]		•	•
Corrosion resistant [a] [b]		•	•
Optimized mass moment of inertia [a]		•	•
Accessories			
Coupling		•	•
Rack		•	•
Pinion		•	•
torqXis sensor flange		•	•
Flange shaft		•	•
Intermediate plate for cooling connection		•	•
For Delta robot applications		•	•

[a] Power reduction: technical data available upon request [b] Please contact WITTENSTEIN alpha [c] In relation to reference sizes

					1-stage			
Ratio [a]			*i*		**4**	**5**	**7**	**10**
cymex®-optimized acceleration torque (please contact us regarding the sizing)			T_{2Bcym}	Nm	60	62	60	–
				in.lb	531	549	531	–
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	55	55	55	35
				in.lb	487	487	487	310
Nominal output torque (with n_{1N})			T_{2N}	Nm	28	28	28	18
				in.lb	248	248	248	159
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	100	100	100	100
				in.lb	885	885	885	885
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b]			n_{1N}	rpm	3300	3300	4000	4000
Max. input speed			n_{1Max}	rpm	6000	6000	6000	6000
Mean no load running torque (with n_1 = 3000 rpm and 20 °C gearhead temperature) [c]			T_{012}	Nm	0.95	0.80	0.60	0.45
				in.lb	8.41	7.08	5.31	3.98
Max. torsional backlash			j_t	arcmin	Standard ≤ 4 / Reduced ≤ 2			
Torsional rigidity [c]			C_{t21}	Nm/ arcmin	12	12	11	8
				in.lb/ arcmin	106	106	97	71
Tilting rigidity			C_{2K}	Nm/ arcmin	–			
				in.lb/ arcmin				
Max. axial force [d]			F_{2AMax}	N	1630			
				lb_f	367			
Max. tilting moment			M_{2KMax}	Nm	110			
				in.lb	974			
Efficiency at full load			η	%	97			
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000			
Weight incl. standard adapter plate			*m*	kg	1.4			
				lb_m	3.1			
Operating noise (with *i*=10 and n_1 = 3000 rpm no load)			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			
Paint					Blue RAL 5002			
Direction of rotation					Motor and gearhead same direction			
Protection class					IP 65			
Moment of inertia (relates to the drive)	B	11	J_1	kgcm²	0.17	0.14	0.11	0.09
				10^{-3} in.lb.s²	0.15	0.12	0.10	0.08
Clamping hub diameter [mm]	C	14	J_1	kgcm²	0.25	0.21	0.18	0.17
				10^{-3} in.lb.s²	0.22	0.19	0.16	0.15
	E	19	J_1	kgcm²	0.57	0.54	0.51	0.49
				10^{-3} in.lb.s²	0.50	0.47	0.45	0.43

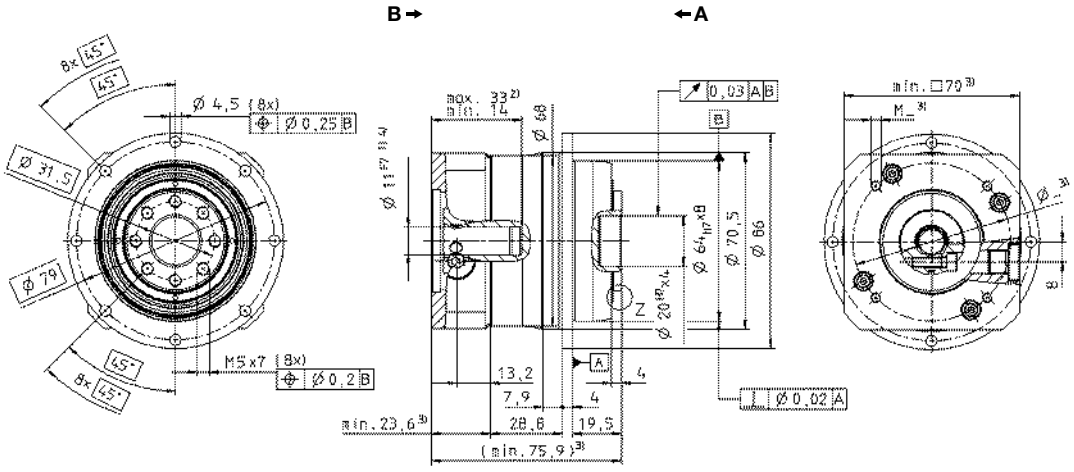
Reduced mass moments of inertia available on request.

[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Valid for clamping hub diameter of 14 mm
[d] Refers to center of the output shaft or flange

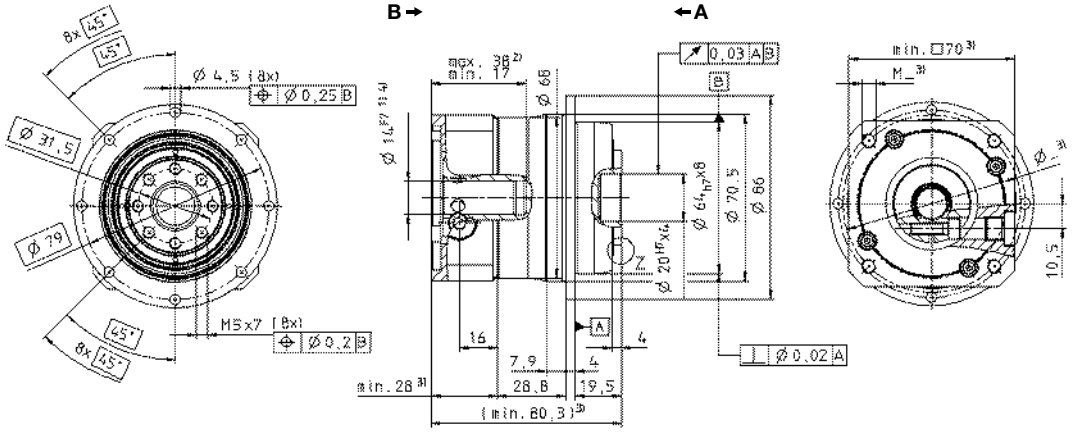
View A View B

Motor shaft diameter [mm]

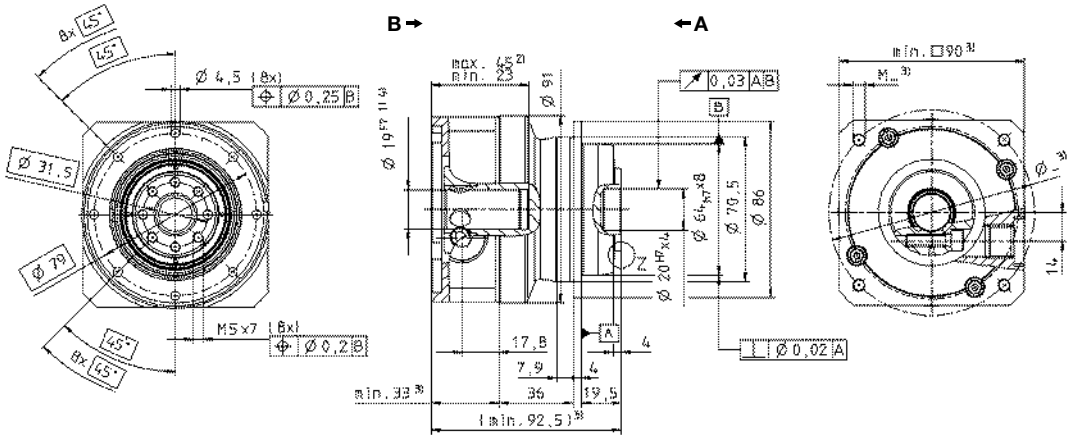
up to 11 [4] (B) clamping hub diameter

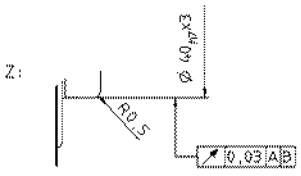


up to 14 [4] (C) clamping hub diameter



up to 19 [4] (E) clamping hub diameter





Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

				2-stage												
Ratio [a]	i			**16**	**20**	**21**	**25**	**28**	**31**	**35**	**40**	**50**	**61**	**70**	**91**	**100**
cymex®-optimized acceleration torque (please contact us regarding the sizing)	T_{2Bcym}	Nm		60	60	–	62	60	–	62	62	62	–	60	–	–
		in.lb		531	531	–	549	531	–	549	549	549	–	531	–	–
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B}	Nm		55	55	40	55	55	40	55	55	55	45	55	32	35
		in.lb		487	487	354	487	487	354	487	487	487	398	487	283	310
Nominal output torque (with n_{1N})	T_{2N}	Nm		40	40	30	40	40	30	40	40	40	30	40	15	18
		in.lb		354	354	266	354	354	266	354	354	354	266	354	133	159
Emergency stop torque (permitted 1000 times during the service life of the gearhead)	T_{2Not}	Nm		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
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b]	n_{1N}	rpm		4000	4000	4000	4000	4000	4000	4000	4000	4800	5500	5500	5500	5500
Max. input speed	n_{1Max}	rpm		6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque (with n_1 = 3000 rpm and 20 °C gearhead temperature) [c]	T_{012}	Nm		0.55	0.45	0.45	0.45	0.35	0.35	0.30	0.25	0.25	0.20	0.20	0.20	0.20
		in.lb		4.87	3.98	3.98	3.98	3.10	3.10	2.66	2.21	2.21	1.77	1.77	1.77	1.77
Max. torsional backlash	j_t	arcmin		Standard ≤ 4 / Reduced ≤ 2												
Torsional rigidity [c]	C_{t21}	Nm/ arcmin		12	12	10	12	12	9	12	11	12	9	11	7	8
		in.lb/ arcmin		106	106	89	106	106	80	106	97	106	80	97	62	71
Tilting rigidity	C_{2K}	Nm/ arcmin		–												
		in.lb/ arcmin														
Max. axial force [d]	F_{2AMax}	N		1630												
		lb_f		367												
Max. tilting moment	M_{2KMax}	Nm		110												
		in.lb		974												
Efficiency at full load	η	%		94												
Service life (For calculation, see the Chapter "Information")	L_h	h		> 20000												
Weight incl. standard adapter plate	m	kg		1.5												
		lb_m		3.3												
Operating noise (with i=100 and n_1 = 3000 rpm no load)	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												
Paint				Blue RAL 5002												
Direction of rotation				Motor and gearhead same direction												
Protection class				IP 65												
Moment of inertia (relates to the drive) Clamping hub diameter [mm]	B	11	J_1	kgcm²	0.078	0.070	0.074	0.068	0.062	0.072	0.061	0.051	0.057	0.058	0.056	0.057	0.056
				10^{-3} in.lb.s²	0.069	0.062	0.066	0.060	0.054	0.064	0.054	0.051	0.050	0.051	0.050	0.051	0.050
	C	14	J_1	kgcm²	0.17	0.17	0.17	0.16	0.16	0.17	0.16	0.15	0.15	0.15	0.15	0.15	0.15
				10^{-3} in.lb.s²	0.15	0.15	0.15	0.14	0.14	0.15	0.14	0.14	0.13	0.13	0.13	0.13	0.13

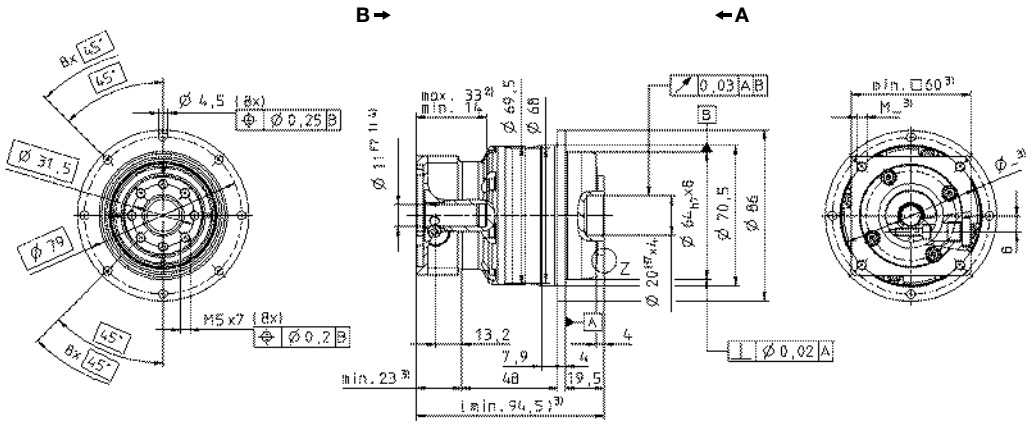
Reduced mass moments of inertia available on request.

[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Valid for clamping hub diameter of 11 mm
[d] Refers to center of the output shaft or flange

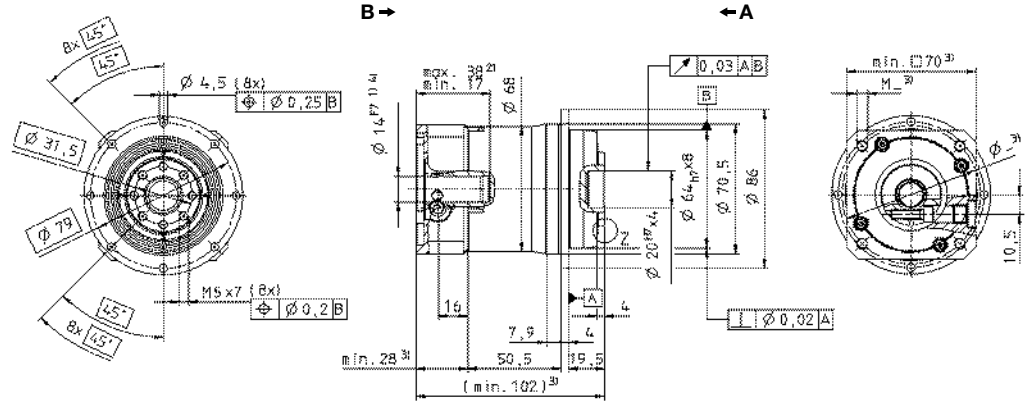
View A View B

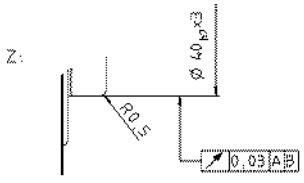
Motor shaft diameter [mm]

up to 11 [4] (B) clamping hub diameter



up to 14 [4] (C) clamping hub diameter





Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

					1-stage			
Ratio [a]			*i*		**4**	**5**	**7**	**10**
cymex®-optimized acceleration torque (please contact us regarding the sizing)			T_{2Bcym}	Nm	150	162	162	–
				in.lb	1328	1434	1434	–
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	143	143	143	105
				in.lb	1266	1266	1266	929
Nominal output torque (with n_{1N})			T_{2N}	Nm	75	75	75	60
				in.lb	664	664	664	531
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	250	250	250	250
				in.lb	2213	2213	2213	2213
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b]			n_{1N}	rpm	2600	2900	3100	3100
Max. input speed			n_{1Max}	rpm	6000	6000	6000	6000
Mean no load running torque (with n_1 = 3000 rpm and 20 °C gearhead temperature) [c]			T_{012}	Nm	1.6	1.3	1.0	0.7
				in.lb	14.2	11.5	8.85	6.20
Max. torsional backlash			j_t	arcmin	Standard ≤ 3 / Reduced ≤ 1			
Torsional rigidity [c]			C_{t21}	Nm/ arcmin	32	33	30	23
				in.lb/ arcmin	283	292	266	204
Tilting rigidity			C_{2K}	Nm/ arcmin	225			
				in.lb/ arcmin	1991			
Max. axial force [d]			F_{2AMax}	N	2150			
				lb_f	484			
Max. tilting moment			M_{2KMax}	Nm	270			
				in.lb	2390			
Efficiency at full load			η	%	97			
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000			
Weight incl. standard adapter plate			*m*	kg	3.8			
				lb_m	8.4			
Operating noise (with *i*=10 and n_1 = 3000 rpm no load)			L_{PA}	dB(A)	≤ 59			
Max. permitted housing temperature				°C	+90			
				F	194			
Ambient temperature				°C	-15 to +20			
				F	5 to 104			
Lubrication					Lubricated for life			
Paint					Blue RAL 5002			
Direction of rotation					Motor and gearhead same direction			
Protection class					IP 65			
Moment of inertia (relates to the drive)	C	14	J_1	kgcm²	0.78	0.62	0.48	0.40
				10^{-3} in.lb.s²	0.69	0.55	0.42	0.35
Clamping hub diameter [mm]	E	19	J_1	kgcm²	0.95	0.79	0.64	0.57
				10^{-3} in.lb.s²	0.84	0.70	0.57	0.50
	G	24	J_1	kgcm²	2.32	2.16	2.02	1.94
				10^{-3} in.lb.s²	2.05	1.91	1.78	1.72

Reduced mass moments of inertia available on request.

[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Valid for clamping hub diameter of 19 mm
[d] Refers to center of the output shaft or flange

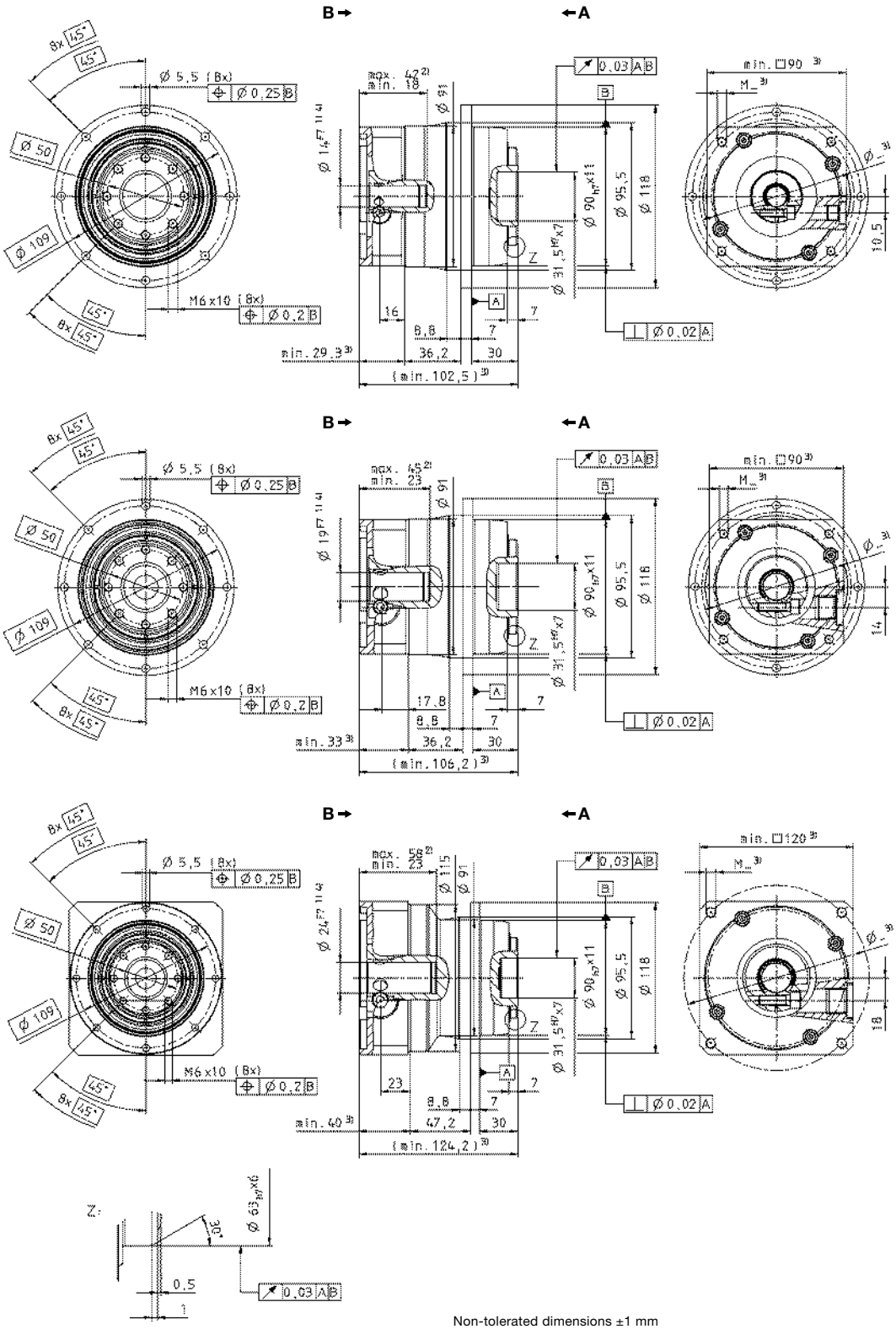
View A View B

Motor shaft diameter [mm]

up to 14 [4] (C) clamping hub diameter

up to 19 [4] (E) clamping hub diameter

up to 24 [4] (G) clamping hub diameter



Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

					2-stage													
Ratio [a]			*i*		**16**	**20**	**21**	**25**	**28**	**31**	**35**	**40**	**50**	**61**	**70**	**91**	**100**
cymex®-optimized acceleration torque (please contact us regarding the sizing)			T_{2Bcym}	Nm	162	162	–	162	162	–	162	–	162	–	162	–	–
				in.lb	1434	1434	–	1434	1434	–	1434	–	1434	–	1434	–	–
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	143	143	100	143	143	110	143	140	143	110	143	80	105
				in.lb	1266	1266	885	1266	1266	974	1266	1239	1266	974	1266	708	929
Nominal output torque (with n_{1N})			T_{2N}	Nm	90	90	80	90	90	70	90	80	90	70	90	35	60
				in.lb	797	797	708	797	797	620	797	708	797	620	797	310	531
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	250	250	250	250	250	250	250	250	250	250	250	250	250
				in.lb	2213	2213	2213	2213	2213	2213	2213	2213	2213	2213	2213	2213	2213
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b]			n_{1N}	rpm	3500	3500	3500	3500	3500	3500	3500	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
Mean no load running torque (with n_1 = 3000 rpm and 20 °C gearhead temperature) [c]			T_{012}	Nm	0.90	0.75	0.70	0.65	0.55	0.50	0.50	0.40	0.35	0.35	0.35	0.30	0.30
				in.lb	7.97	6.64	6.20	5.75	4.87	4.43	4.43	3.54	3.10	3.10	3.10	2.66	2.66
Max. torsional backlash			j_t	arcmin	Standard ≤ 3 / Reduced ≤ 1												
Torsional rigidity [c]			C_{t21}	Nm/ arcmin	32	32	26	32	31	24	32	30	30	24	28	21	22
				in.lb/ arcmin	283	283	230	283	274	212	283	266	266	212	248	186	195
Tilting rigidity			C_{2K}	Nm/ arcmin	225												
				in.lb/ arcmin	1991												
Max. axial force [d]			F_{2AMax}	N	2150												
				lb_f	484												
Max. tilting moment			M_{2KMax}	Nm	270												
				in.lb	2390												
Efficiency at full load			η	%	94												
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000												
Weight incl. standard adapter plate			*m*	kg	3.6												
				lb_m	8.0												
Operating noise (with *i*=100 and n_1 = 3000 rpm no load)			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												
Paint					Blue RAL 5002												
Direction of rotation					Motor and gearhead same direction												
Protection class					IP 65												
Moment of inertia (relates to the drive)	B	11	J_1	kgcm²	0.17	0.14	0.15	0.13	0.11	0.13	0.10	0.09	0.09	0.09	0.09	0.09	0.09
				10^{-3} in.lb.s²	0.15	0.12	0.13	0.12	0.10	0.12	0.09	0.08	0.08	0.08	0.08	0.08	0.08
Clamping hub diameter [mm]	C	14	J_1	kgcm²	0.24	0.21	0.22	0.20	0.18	0.21	0.18	0.17	0.17	0.17	0.16	0.16	0.16
				10^{-3} in.lb.s²	0.21	0.19	0.19	0.19	0.16	0.18	0.16	0.15	0.15	0.15	0.14	0.15	0.14
	E	19	J_1	kgcm²	0.56	0.53	0.55	0.53	0.51	0.53	0.50	0.49	0.49	0.49	0.49	0.49	0.49
				10^{-3} in.lb.s²	0.50	0.47	0.49	0.47	0.45	0.47	0.44	0.43	0.43	0.43	0.43	0.43	0.43

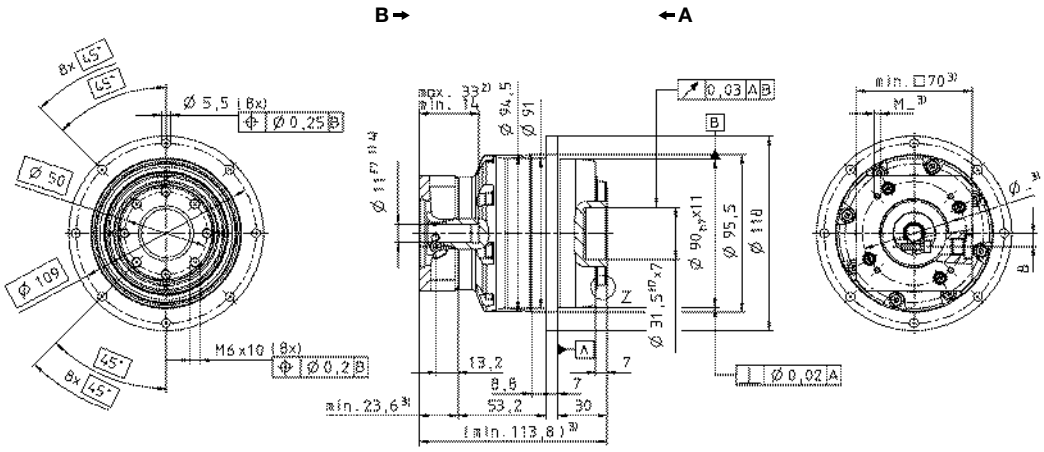
Reduced mass moments of inertia available on request.

[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Valid for clamping hub diameter of 14 mm
[d] Refers to center of the output shaft or flange

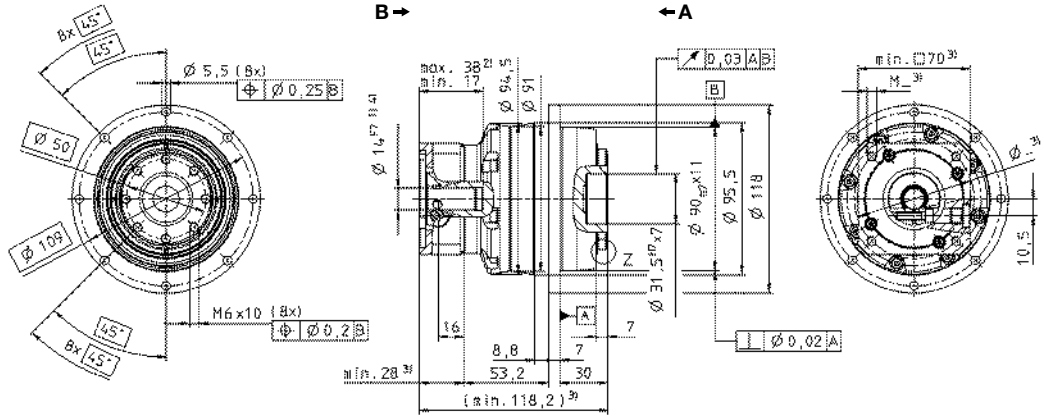
View A View B

Motor shaft diameter [mm]

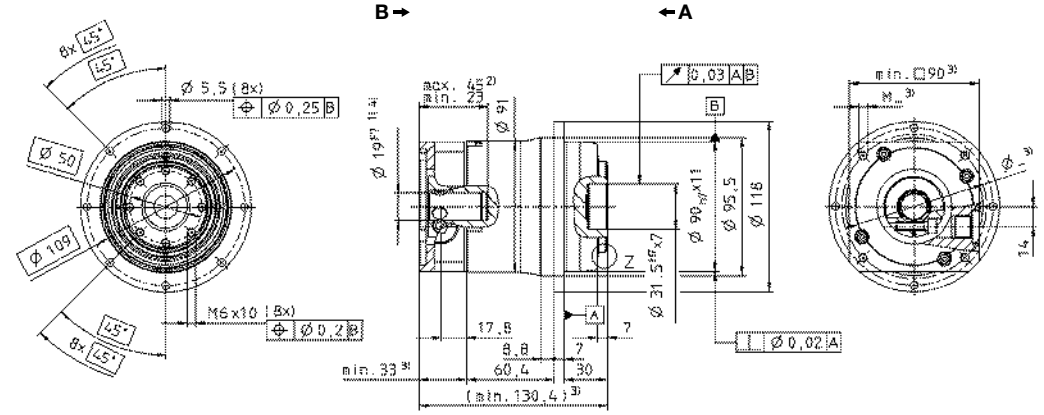
up to 11 [4] (B) clamping hub diameter

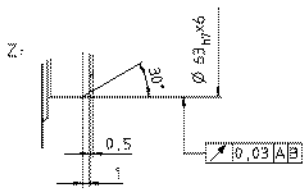


up to 14 [4] (C) clamping hub diameter



up to 19 [4] (E) clamping hub diameter





Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

					1-stage			
Ratio [a]			*i*		**4**	**5**	**7**	**10**
cymex®-optimized acceleration torque (please contact us regarding the sizing)			T_{2Bcym}	Nm	390	420	350	275
				in.lb	3452	3717	3098	2434
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	350	380	330	265
				in.lb	3098	3363	2921	2345
Nominal output torque (with n_{1N})			T_{2N}	Nm	170	170	170	120
				in.lb	1505	1505	1505	1062
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	625	625	625	625
				in.lb	5531	5531	5531	5531
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b]			n_{1N}	rpm	2300	2500	2500	2500
Max. input speed			n_{1Max}	rpm	4500	4500	4500	4500
Mean no load running torque (with n_1=3000 rpm and 20 °C gearhead temperature) [c]			T_{012}	Nm	3.3	2.7	2.0	1.4
				in.lb	29.2	23.9	17.7	12.4
Max. torsional backlash			j_t	arcmin	Standard ≤ 3 / Reduced ≤ 1			
Torsional rigidity [c]			C_{t21}	Nm/ arcmin	80	86	76	62
				in.lb/ arcmin	708	761	673	549
Tilting rigidity			C_{2K}	Nm/ arcmin	550			
				in.lb/ arcmin	4868			
Max. axial force [d]			F_{2AMax}	N	4150			
				lb_f	934			
Max. tilting moment			M_{2KMax}	Nm	440			
				in.lb	3894			
Efficiency at full load			η	%	97			
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000			
Weight incl. standard adapter plate			*m*	kg	6.5			
				lb_m	14.4			
Operating noise (with *i*=10 and n_1=3000 rpm no load)			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			
Paint					Blue RAL 5002			
Direction of rotation					Motor and gearhead same direction			
Protection class					IP 65			
Moment of inertia (relates to the drive)	E	19	J_1	kgcm²	2.59	2.11	1.69	1.45
				10^{-3} in.lb.s²	2.29	1.87	1.50	1.28
Clamping hub diameter [mm]	G	24	J_1	kgcm²	3.28	2.80	2.38	2.14
				10^{-3} in.lb.s²	2.90	2.48	2.11	1.89
	H	28	J_1	kgcm²	2.89	2.41	1.99	1.75
				10^{-3} in.lb.s²	2.56	2.13	1.76	1.55
	K	38	J_1	kgcm²	10.3	9.87	9.45	9.21
				10^{-3} in.lb.s²	9.11	8.73	8.36	8.15

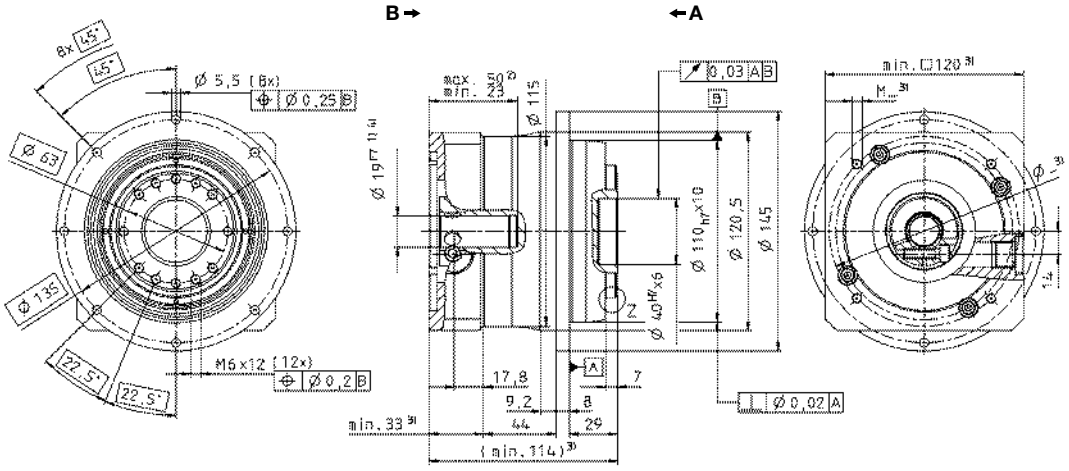
Reduced mass moments of inertia available on request.

[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Valid for clamping hub diameter of 24 and 28 mm
[d] Refers to center of the output shaft or flange

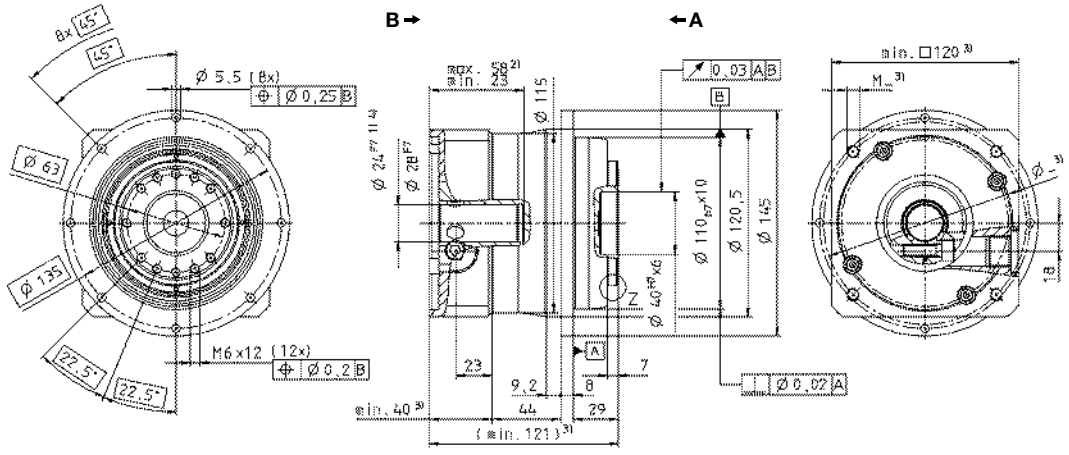
View A View B

Motor shaft diameter [mm]

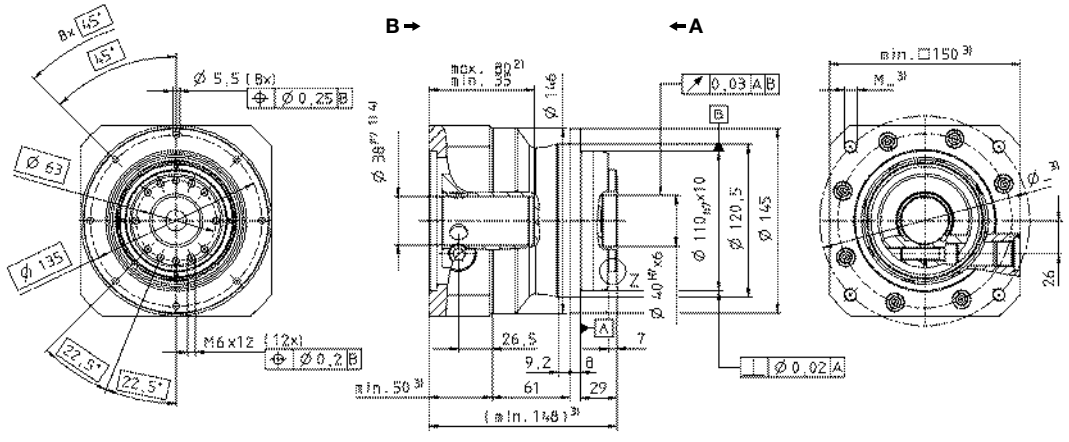
up to 19 [4] (E) clamping hub diameter

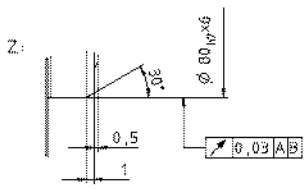


up to 24/28 [4] (G/H) clamping hub diameter



up to 38 [4] (K) clamping hub diameter





Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

					2-stage												
Ratio [a]			*i*		**16**	**20**	**21**	**25**	**28**	**31**	**35**	**40**	**50**	**61**	**70**	**91**	**100**
cymex®-optimized acceleration torque (please contact us regarding the sizing)			T_{2Bcym}	Nm	390	390	–	420	390	–	420	390	420	–	350	–	275
				in.lb	3452	3452	–	3717	3452	–	3717	3452	3717	–	3098	–	2434
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	350	350	300	380	350	300	380	350	380	280	330	250	265
				in.lb	3098	3098	2655	3363	3098	2655	3363	3098	3363	2478	2921	2213	2345
Nominal output torque (with n_{1N})			T_{2N}	Nm	200	210	170	200	210	190	220	200	220	170	200	100	120
				in.lb	1770	1859	1505	1770	1859	1682	1947	1770	1947	1505	1770	885	1062
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	625	625	625	625	625	625	625	625	625	625	625	625	625
				in.lb	5531	5531	5531	5531	5531	5531	5531	5531	5531	5531	5531	5531	5531
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b]			n_{1N}	rpm	2800	2800	2800	2800	2800	2800	2800	2800	3100	3500	3500	4200	4200
Max. input speed			n_{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque (with n_1 = 3000 rpm and 20 °C gearhead temperature) [c]			T_{012}	Nm	1.8	1.5	1.4	1.4	1.1	1.1	1.0	0.8	0.8	0.7	0.7	0.6	0.6
				in.lb	15.9	13.3	12.4	12.4	9.7	9.7	8.9	7.1	7.1	6.2	6.2	5.3	5.3
Max. torsional backlash			j_t	arcmin	Standard ≤ 3 / Reduced ≤ 1												
Torsional rigidity [c]			C_{t21}	Nm/ arcmin	81	81	70	83	80	54	82	76	80	61	71	55	60
				in.lb/ arcmin	717	717	620	735	708	478	726	673	708	540	628	487	531
Tilting rigidity			C_{2K}	Nm/ arcmin	550												
				in.lb/ arcmin	4867												
Max. axial force [d]			F_{2AMax}	N	4150												
				lb_f	934												
Max. tilting moment			M_{2KMax}	Nm	440												
				in.lb	3894												
Efficiency at full load			η	%	94												
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000												
Weight incl. standard adapter plate			*m*	kg	6.7												
				lb_m	14.8												
Operating noise (with *i*=100 and n_1 = 3000 rpm no load)			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												
Paint					Blue RAL 5002												
Direction of rotation					Motor and gearhead same direction												
Protection class					IP 65												
Moment of inertia (relates to the drive)	C	14	J_1	kgcm²	0.66	0.55	0.60	0.53	0.44	0.55	0.43	0.38	0.38	0.39	0.37	0.38	0.37
				10^{-3} in.lb.s²	0.59	0.49	0.51	0.47	0.39	0.49	0.38	0.34	0.33	0.35	0.33	0.34	0.33
Clamping hub diameter [mm]	E	19	J_1	kgcm²	0.83	0.71	0.77	0.69	0.61	0.72	0.60	0.55	0.54	0.55	0.54	0.54	0.54
				10^{-3} in.lb.s²	0.73	0.63	0.68	0.61	0.54	0.64	0.53	0.49	0.48	0.4	0.48	0.48	0.48
	G	24	J_1	kgcm²	2.20	2.08	2.14	2.06	1.98	2.09	1.97	1.92	1.92	1.92	1.91	1.92	1.91
				10^{-3} in.lb.s²	1.95	1.84	1.89	1.82	1.75	1.85	1.74	1.70	1.70	1.70	1.69	1.70	1.69

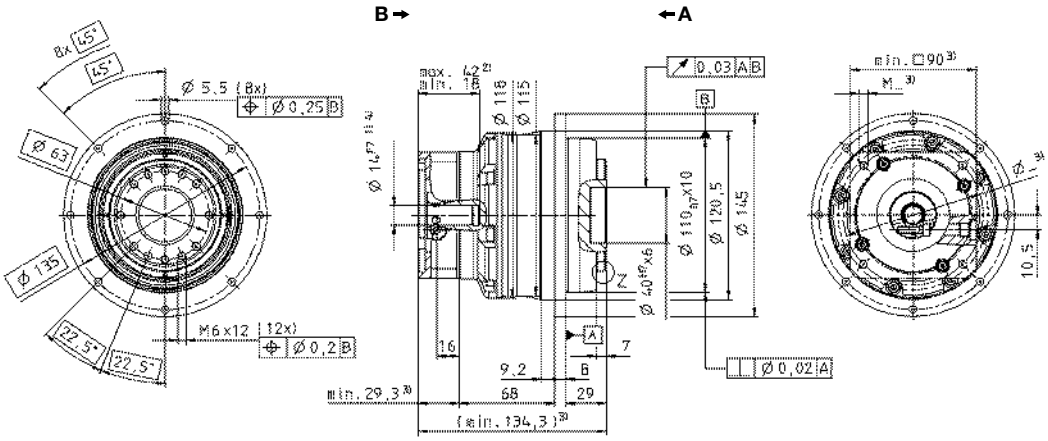
Reduced mass moments of inertia available on request.

[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Valid for clamping hub diameter of 19 mm
[d] Refers to center of the output shaft or flange

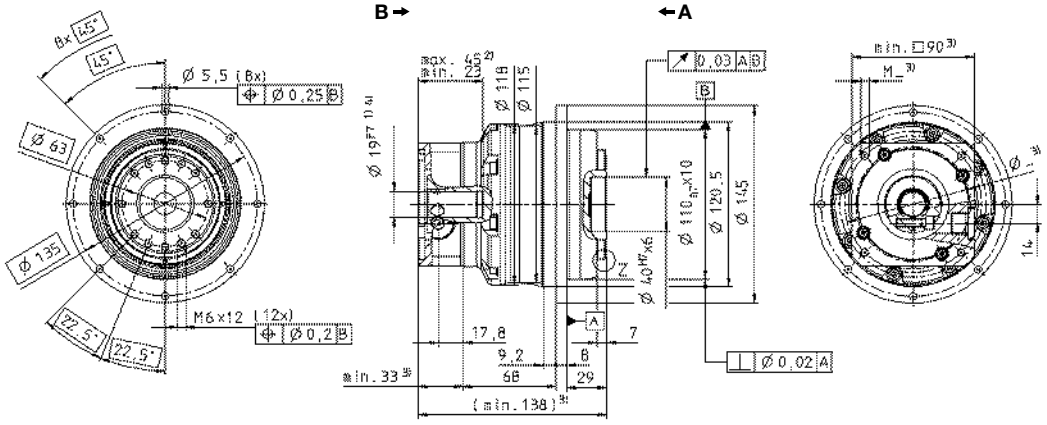
View A View B

Motor shaft diameter [mm]

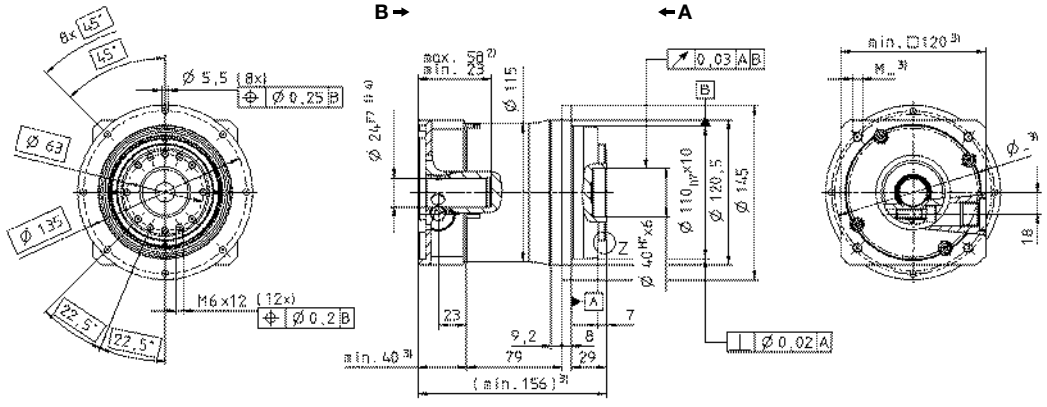
up to 14 [4] (C) clamping hub diameter

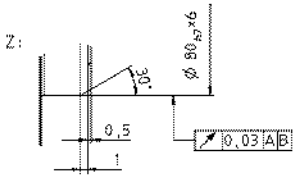


up to 19 [4] (E) clamping hub diameter



up to 24 [4] (G) clamping hub diameter





Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

					1-stage			
Ratio [a]			*i*		**4**	**5**	**7**	**10**
cymex®-optimized acceleration torque (please contact us regarding the sizing)			T_{2Bcym}	Nm	750	800	–	600
				in.lb	6638	7080	–	5310
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	700	700	700	540
				in.lb	6195	6195	6195	4779
Nominal output torque (with n_{1N})			T_{2N}	Nm	370	370	370	240
				in.lb	3275	3275	3275	2124
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	1250	1250	1250	1250
				in.lb	11063	11063	11063	11063
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b]			n_{1N}	rpm	1900	2000	2500	2500
Max. input speed			n_{1Max}	rpm	4000	4000	4000	4000
Mean no load running torque (with n_1=3000 rpm and 20 °C gearhead temperature) [c]			T_{012}	Nm	8.1	6.6	4.8	3.5
				in.lb	71.7	58.4	42.5	31.0
Max. torsional backlash			j_t	arcmin	Standard ≤ 3 / Reduced ≤ 1			
Torsional rigidity [c]			C_{t21}	Nm/ arcmin	190	187	159	123
				in.lb/ arcmin	1682	1655	1407	1089
Tilting rigidity			C_{2K}	Nm/ arcmin	560			
				in.lb/ arcmin	4956			
Max. axial force [d]			F_{2AMax}	N	6130			
				lb_f	1379			
Max. tilting moment			M_{2KMax}	Nm	1335			
				in.lb	11815			
Efficiency at full load			η	%	97			
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000			
Weight incl. standard adapter plate			*m*	kg	14.0			
				lb_m	30.9			
Operating noise (with *i*=10 and n_1=3000 rpm no load)			L_{PA}	dB(A)	≤ 65			
Max. permitted housing temperature				°C	+90			
				F	194			
Ambient temperature				°C	-15 to +40			
				F	5 to 104			
Lubrication					Lubricated for life			
Paint					Blue RAL 5002			
Direction of rotation					Motor and gearhead same direction			
Protection class					IP 65			
Moment of inertia (relates to the drive)	G	24	J_1	kgcm²	9.47	7.85	6.39	5.54
				10^{-3} in.lb.s²	8.38	6.95	5.66	4.90
Clamping hub diameter [mm]	I	32	J_1	kgcm²	12.6	11.0	9.55	8.71
				10^{-3} in.lb.s²	11.1	9.74	8.45	7.70
	K	38	J_1	kgcm²	13.7	12.1	10.6	9.78
				10^{-3} in.lb.s²	12.1	10.7	9.38	8.65
	M	48	J_1	kgcm²	28.3	26.7	25.3	24.4
				10^{-3} in.lb.s²	25.0	23.6	22.4	21.6

Reduced mass moments of inertia available on request.

[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Valid for clamping hub diameter of 32 and 38 mm
[d] Refers to center of the output shaft or flange

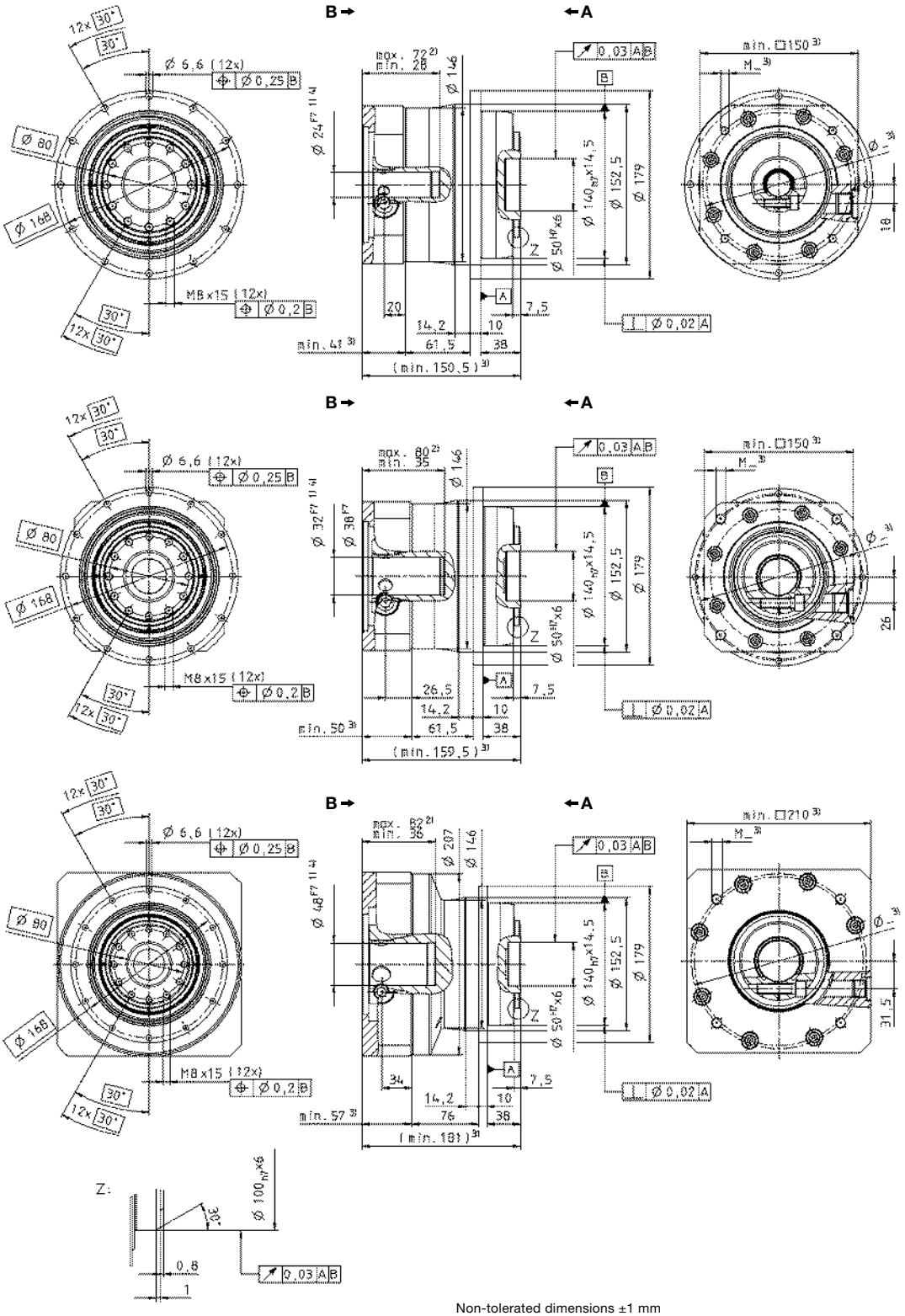
View A View B

Motor shaft diameter [mm]

up to 24 [4] (G) clamping hub diameter

up to 32/38 [4] (I/K) clamping hub diameter

up to 48 [4] (M) clamping hub diameter



Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

					2-stage													
Ratio [a]			*i*		**16**	**20**	**21**	**25**	**28**	**31**	**35**	**40**	**50**	**61**	**70**	**91**	**100**
cymex®-optimized acceleration torque (please contact us regarding the sizing)			T_{2Bcym}	Nm	800	800	–	800	800	–	800	800	800	–	–	–	600
				in.lb	7080	7080	–	7080	7080	–	7080	7080	7080	–	–	–	5310
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	750	750	600	750	750	620	750	750	750	550	700	500	540
				in.lb	6638	6638	5310	6638	6638	5487	6638	6638	6638	4868	6195	4425	4779
Nominal output torque (with n_{1N})			T_{2N}	Nm	400	400	350	400	400	400	400	400	400	350	400	220	240
				in.lb	3540	3540	3098	3540	3540	3540	3540	3540	3540	3098	3540	1947	2124
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250
				in.lb	11063	11063	11063	11063	11063	11063	11063	11063	11063	11063	11063	11063	11063
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b]			n_{1N}	rpm	2900	2900	2900	2900	2900	2900	2900	2900	3200	3200	3200	3900	3900
Max. input speed			n_{1Max}	rpm	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000
Mean no load running torque (with n_1 = 3000 rpm and 20 °C gearhead temperature) [c]			T_{012}	Nm	4.2	3.4	3.3	3.1	2.5	2.4	2.3	1.8	1.7	1.5	1.5	1.4	1.3
				in.lb	37.2	30.1	29.2	27.4	22.1	21.2	20.4	15.9	15.1	13.3	13.3	12.4	11.5
Max. torsional backlash			j_t	arcmin	Standard ≤ 3 / Reduced ≤ 1												
Torsional rigidity [c]			C_{t21}	Nm/ arcmin	180	185	145	180	180	130	175	175	175	123	145	100	115
				in.lb/ arcmin	1593	1637	1283	1593	1593	1151	1549	1549	1549	1089	1283	885	1018
Tilting rigidity			C_{2K}	Nm/ arcmin	560												
				in.lb/ arcmin	4956												
Max. axial force [d]			F_{2AMax}	N	6130												
				lb_f	1379												
Max. tilting moment			M_{2KMax}	Nm	1335												
				in.lb	11815												
Efficiency at full load			η	%	94												
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000												
Weight incl. standard adapter plate			*m*	kg	14.1												
				lb_m	31.2												
Operating noise (with *i*=100 and n_1 = 3000 rpm no load)			L_{PA}	dB(A)	≤ 63												
Max. permitted housing temperature				°C	+90												
				F	194												
Ambient temperature				°C	-15 to +40												
				F	5 to 104												
Lubrication					Lubricated for life												
Paint					Blue RAL 5002												
Direction of rotation					Motor and gearhead same direction												
Protection class					IP 65												
Moment of inertia (relates to the drive)	E	19	J_1	kgcm²	2.53	2.07	2.30	2.01	1.67	2.12	1.64	1.44	1.42	1.46	1.41	1.43	1.40
				10^{-3} in.lb.s²	2.24	1.83	2.04	1.78	1.48	1.88	1.45	1.27	1.26	1.29	1.25	1.27	1.24
Clamping hub diameter [mm]	G	24	J_1	kgcm²	3.22	2.77	2.99	2.70	2.36	2.81	2.33	2.13	2.12	2.15	2.10	2.12	2.09
				10^{-3} in.lb.s²	2.85	2.45	2.65	2.39	2.09	2.49	2.06	1.89	1.88	1.90	1.86	1.88	1.85
	K	38	J_1	kgcm²	10.3	9.83	10.1	9.77	9.43	9.88	9.40	9.20	9.18	9.22	9.17	9.19	9.16
				10^{-3} in.lb.s²	9.11	8.70	8.94	8.64	8.35	8.74	8.32	8.14	8.12	8.16	8.12	8.13	8.11

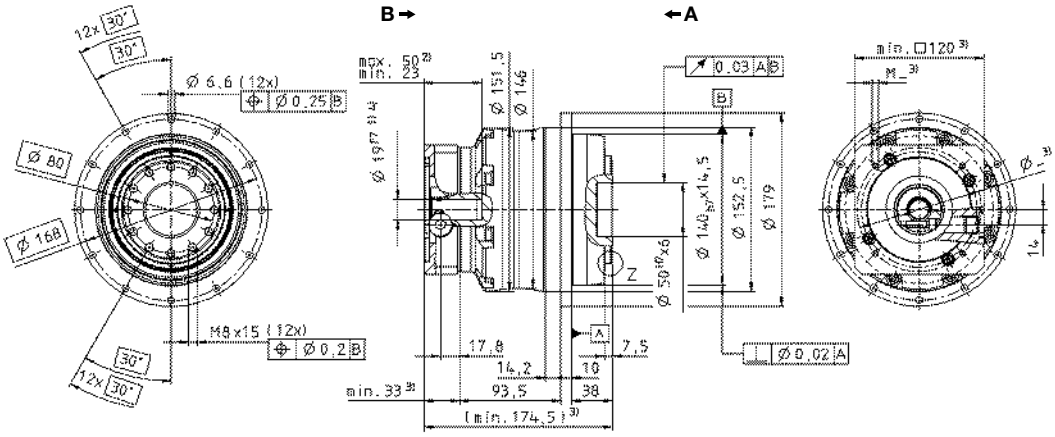
Reduced mass moments of inertia available on request.

[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Valid for clamping hub diameter of 24 mm
[d] Refers to center of the output shaft or flange

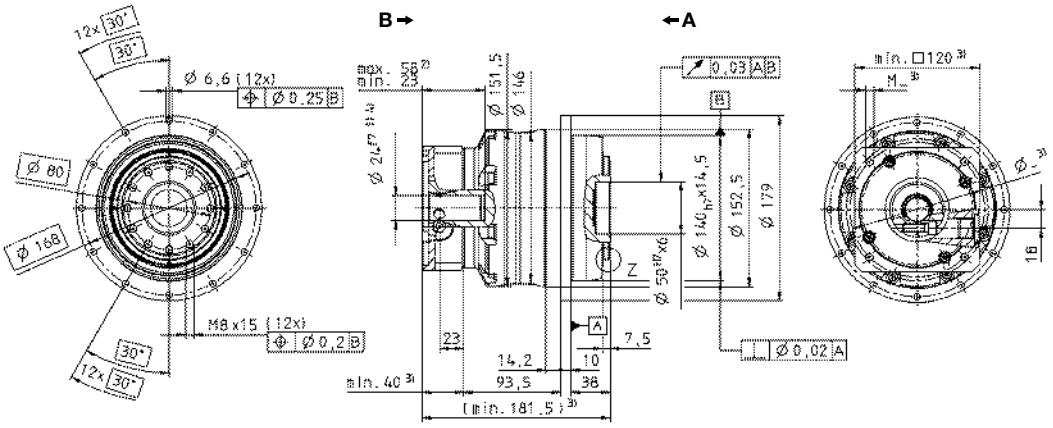
View A View B

Motor shaft diameter [mm]

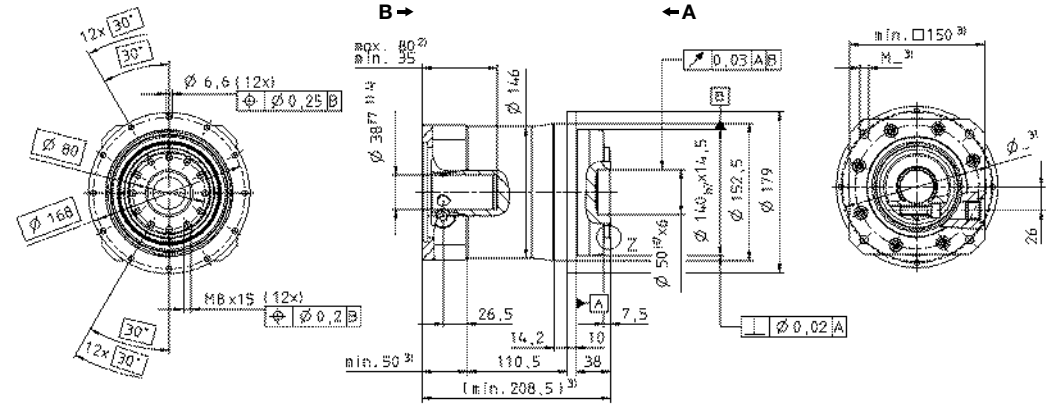
up to 19 [4] (E) clamping hub diameter

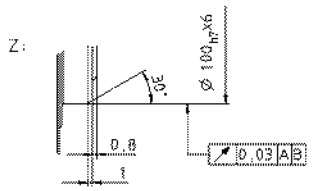


up to 24 [4] (G) clamping hub diameter



up to 38 [4] (K) clamping hub diameter





Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

					1-stage			
Ratio [a]			i		**4**	**5**	**7**	**10**
cymex®-optimized acceleration torque (please contact us regarding the sizing)			T_{2Bcym}	Nm	1900	2000	1900	1500
				in.lb	16815	17700	16815	13275
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	1600	1600	1600	1400
				in.lb	14160	14160	14160	12390
Nominal output torque (with n_{1N})			T_{2N}	Nm	700	750	750	750
				in.lb	6195	6638	6638	6638
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	2750	2750	2750	2750
				in.lb	24338	24338	24338	24338
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b]			n_{1N}	rpm	1400	1500	2000	2000
Max. input speed			n_{1Max}	rpm	3500	3500	3500	3500
Mean no load running torque (with n_1 = 3000 rpm and 20 °C gearhead temperature) [c]			T_{012}	Nm	15.6	12.7	9.4	7.0
				in.lb	138.1	112.4	83.2	62.0
Max. torsional backlash			j_t	arcmin	Standard ≤ 3 / Reduced ≤ 1			
Torsional rigidity [c]			C_{t21}	Nm/ arcmin	610	610	550	445
				in.lb/ arcmin	5399	5399	4868	3938
Tilting rigidity			C_{2K}	Nm/ arcmin	1452			
				in.lb/ arcmin	12850			
Max. axial force [d]			F_{2AMax}	N	10050			
				lb_f	2261			
Max. tilting moment			M_{2KMax}	Nm	3280			
				in.lb	29028			
Efficiency at full load			η	%	97			
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000			
Weight incl. standard adapter plate			m	kg	30.0			
				lb_m	66			
Operating noise (with i=10 and n_1 = 3000 rpm no load)			L_{PA}	dB(A)	≤ 66			
Max. permitted housing temperature				°C	+90			
				F	194			
Ambient temperature				°C	-15 to +40			
				F	5 to 104			
Lubrication					Lubricated for life			
Paint					Blue RAL 5002			
Direction of rotation					Motor and gearhead same direction			
Protection class					IP 65			
Moment of inertia (relates to the drive)	K	38	J_1	kgcm²	44.5	34.6	25.5	20.6
				10^{-3} in.lb.s²	39.4	30.6	22.6	18.2
Clamping hub diameter [mm]	M	48	J_1	kgcm²	51.8	41.9	32.9	28.0
				10^{-3} in.lb.s²	45.8	37.1	29.1	24.8

Reduced mass moments of inertia available on request.

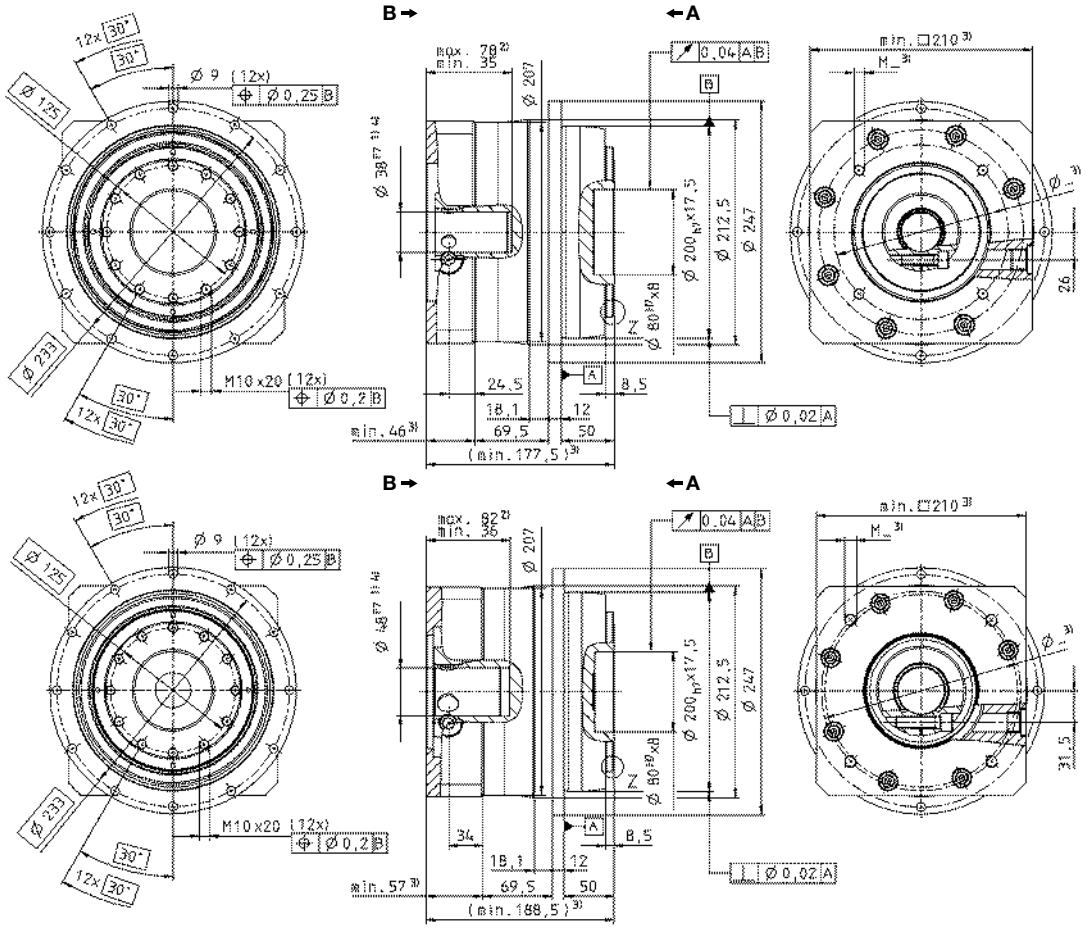
[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Valid for clamping hub diameter of 48 mm
[d] Refers to center of the output shaft or flange

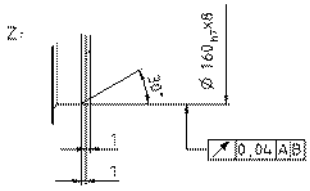
View A View B

Motor shaft diameter [mm]

up to 38 [4] (K) clamping hub diameter

up to 48 [4] (M) clamping hub diameter





Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

					2-stage													
Ratio [a]			*i*		**16**	**20**	**21**	**25**	**28**	**31**	**35**	**40**	**50**	**61**	**70**	**91**	**100**
cymex®-optimized acceleration torque (please contact us regarding the sizing)			T_{2Bcym}	Nm	2000	2000	–	2000	2000	–	2000	1800	1800	–	1800	–	1500
				in.lb	17700	17700	–	17700	17700	–	17700	15930	15930	–	15930	–	13275
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	1600	1600	1400	1600	1600	1600	1600	1600	1600	1400	1600	1300	1400
				in.lb	14160	14160	12390	14160	14160	14160	14160	14160	14160	12390	14160	11505	12390
Nominal output torque (with n_{1N})			T_{2N}	Nm	980	980	850	1050	1050	1250	1250	850	1050	1100	900	700	800
				in.lb	8673	8673	7523	9293	9293	11063	11063	7523	9293	9735	7965	6195	7080
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	2750	2750	2750	2750	2750	2750	2750	2750	2750	2750	2750	2750	2750
				in.lb	24338	24338	24338	24338	24338	24338	24338	24338	24338	24338	24338	24338	24338
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b]			n_{1N}	rpm	2500	2500	2500	2500	2500	2500	2500	2500	2900	3200	3200	3400	3400
Max. input speed [c]			n_{1Max}	rpm	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
Mean no load running torque (with n_1=3000 rpm and 20 °C gearhead temperature) [c]			T_{012}	Nm	6.9	5.6	5.5	5.0	4.1	3.9	3.7	3.0	2.7	2.5	2.4	2.2	2.2
				in.lb	61.1	49.6	48.7	44.3	36.3	34.5	32.7	26.6	23.9	22.1	21.2	19.5	19.5
Max. torsional backlash			j_t	arcmin	Standard ≤ 3 / Reduced ≤ 1												
Torsional rigidity [c]			C_{t21}	Nm/ arcmin	585	580	465	570	560	440	560	520	525	415	480	360	395
				in.lb/ arcmin	5177	5133	4115	5045	4956	3894	4956	4602	4646	3673	4248	3186	3496
Tilting rigidity			C_{2K}	Nm/ arcmin	1452												
				in.lb/ arcmin	12850												
Max. axial force [d]			F_{2AMax}	N	10050												
				lb_f	2261												
Max. tilting moment			M_{2KMax}	Nm	3280												
				in.lb	29028												
Efficiency at full load			η	%	94												
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000												
Weight incl. standard adapter plate			*m*	kg	34.0												
				lb_m	75.1												
Operating noise (with *i*=100 and n_1=3000 rpm no load)			L_{PA}	dB(A)	≤ 66												
Max. permitted housing temperature				°C	+90												
				F	194												
Ambient temperature				°C	-15 to +40												
				F	5 to 104												
Lubrication					Lubricated for life												
Paint					Blue RAL 5002												
Direction of rotation					Motor and gearhead same direction												
Protection class					IP 65												
Moment of inertia (relates to the drive)	G	24	J_1	kgcm²	8.51	8.21	8.98	7.82	6.57	8.09	6.37	5.63	5.54	5.63	5.44	5.50	5.39
				10^{-3} in.lb.s²	7.53	7.27	7.95	6.92	5.81	7.16	5.64	4.99	4.90	4.99	4.82	4.87	4.77
Clamping hub diameter [mm]	I	32	J_1	kgcm²	11.7	11.4	12.1	11.0	9.73	11.3	9.54	8.80	8.70	8.79	8.61	8.67	8.56
				10^{-3} in.lb.s²	10.3	10.1	10.7	9.72	8.61	9.96	8.44	7.78	7.70	7.78	7.62	7.67	7.57
	K	38	J_1	kgcm²	12.7	12.5	13.2	12.1	10.8	12.3	10.6	9.87	9.77	9.87	9.68	9.74	9.63
				10^{-3} in.lb.s²	11.3	11.0	11.7	10.7	9.6	10.9	9.39	8.73	8.65	8.73	8.56	8.62	8.52
	M	48	J_1	kgcm²	27.4	27.1	27.8	26.7	25.4	26.9	25.3	24.5	24.4	24.5	24.3	24.4	24.3
				10^{-3} in.lb.s²	24.2	24.0	24.6	23.6	22.5	23.8	22.3	21.7	21.6	21.7	21.5	21.6	21.5

Reduced mass moments of inertia available on request.

[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Valid for clamping hub diameter of 32 and 38 mm
[d] Refers to center of the output shaft or flange

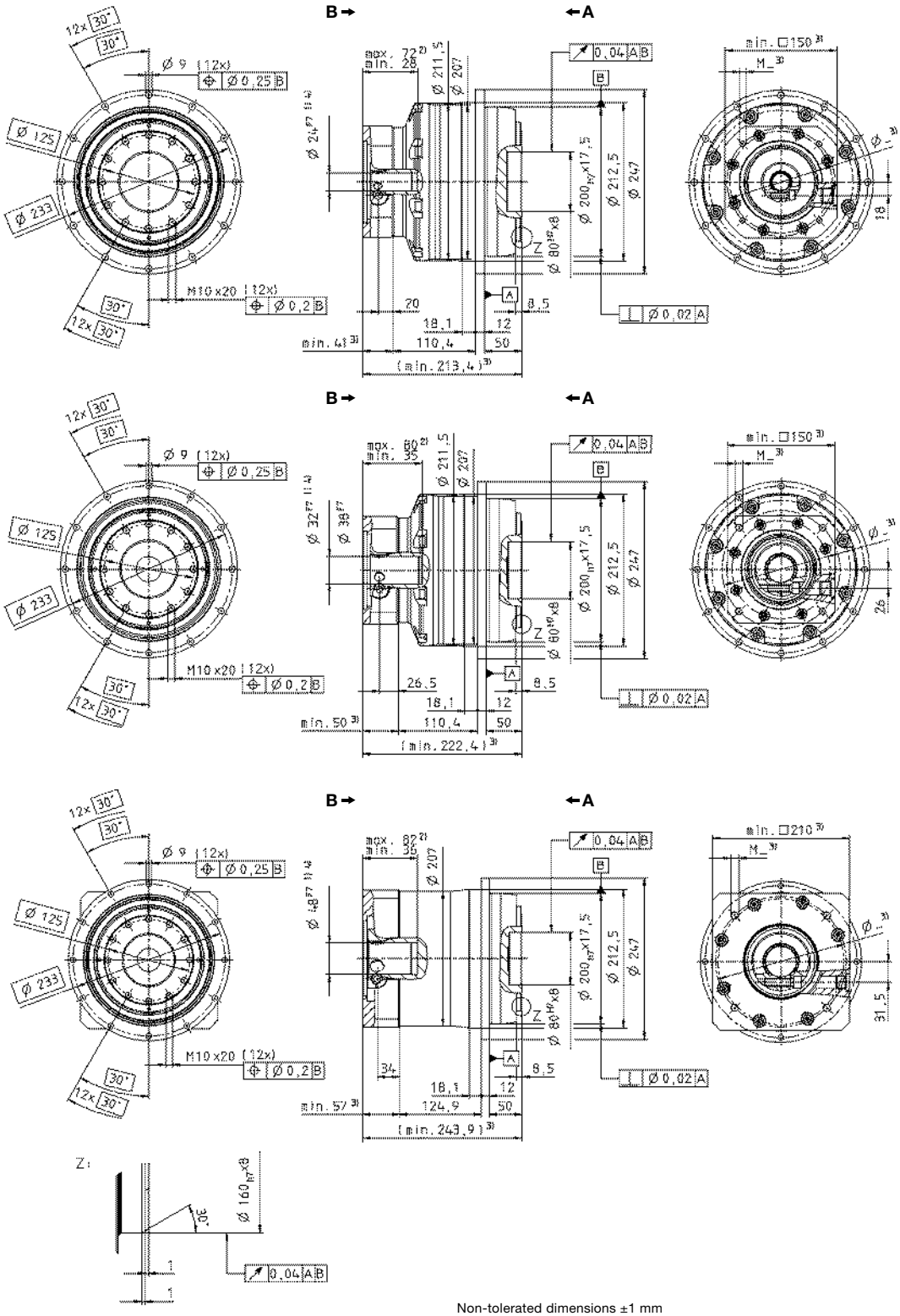
View A View B

Motor shaft diameter [mm]

up to 24 [4] (G) clamping hub diameter

up to 32/38 [4] (I/K) clamping hub diameter

up to 48 [4] (M) clamping hub diameter



Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

TP+ 300 MF 1/2-stage

					1-stage			2-stage									
Ratio [a]			i		**5**	**7**	**10**	**20**	**21**	**25**	**31**	**35**	**50**	**61**	**70**	**91**	**100**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	3500	3300	1900	3500	3400	3500	3500	3500	3000	2800	3300	2800	2800
				in.lb	30975	29205	16815	30975	30090	30975	30975	30975	26550	24780	29205	24780	24780
Nominal output torque (with n_{1N})			T_{2N}	Nm	2200	1800	1000	2300	2100	2400	2200	2500	1900	1600	1800	1600	1600
				in.lb	19470	15930	8850	20355	18585	21240	19470	22125	16815	14160	15930	14160	14160
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	8750	8750	8750	8750	8750	8750	8750	8750	8750	8750	8750	8750	8750
				in.lb	77438	77438	77438	77438	77438	77438	77438	77438	77438	77438	77438	77438	77438
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b]			n_{1N}	rpm	1000	1400	1700	2000	2000	2000	2000	2000	2300	2400	2400	2500	2500
Max. input speed			n_{1Max}	rpm	2500	2500	2500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500
Mean no load running torque (with n_1=2000 rpm and 20 °C gearhead temperature)			T_{012}	Nm	23	17	11	10	9,5	9,0	7,0	6,0	5,0	4,0	4,0	3,5	3,5
				in.lb	204	150	97	89	84	80	62	53	44	35	35	31	31
Max. torsional backlash			j_t	arcmin	Standard ≤ 3 / Reduced ≤ 1			Standard ≤ 3 / Reduced ≤ 2									
Torsional rigidity			C_{t21}	Nm/ arcmin	1000	900	700	850	800	950	750	900	800	700	800	600	650
				in.lb/ arcmin	8850	7965	6195	7523	7080	9408	6638	7965	7080	6195	7080	5310	5753
Tilting rigidity			C_{2K}	Nm/ arcmin	5560												
				in.lb/ arcmin	49206												
Max. axial force [c]			F_{2AMax}	N	33000												
				lb_f	7425												
Max. tilting moment			M_{2KMax}	Nm	3900			5900									
				in.lb	34515			52215									
Efficiency at full load			η	%	95			93									
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000												
Weight incl. standard adapter plate			m	kg	60			58.5									
				lb_m	132.6			129.3									
Operating noise (with i=10 and n_1=2000 rpm without load)			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												
Paint					Blue RAL 5002												
Direction of rotation					Motor and gearhead same direction												
Protection class					IP 65												
Moment of inertia (relates to the drive)	M	48	J_1	kgcm²	–	–	–	27.5	27.0	25.9	25.6	22.4	21.5	21.4	21.3	21.2	21.2
				10^{-3} in.lb.s²				24.3	23.9	22.9	22.7	19.8	19.0	18.9	18.9	18.8	18.8
Clamping hub diameter [mm]	N	55	J_1	kgcm²	82.6	61.2	49.5	–	–	–	–	–	–	–	–	–	–
				10^{-3} in.lb.s²	73.1	54.2	43.8										

Reduced mass moments of inertia available on request.

[a] Other ratios available on request

[b] For higher ambient temperatures, please reduce input speed

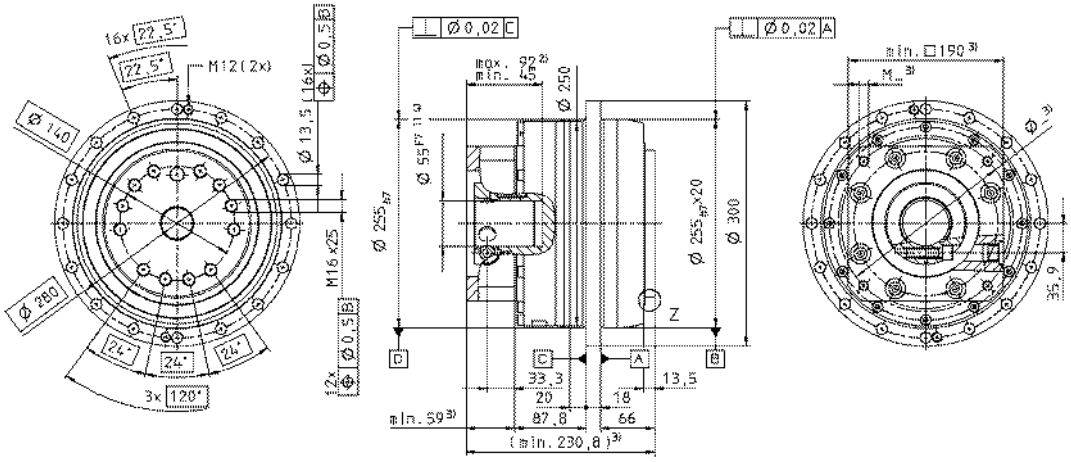
[c] Refers to center of the output shaft or flange

View A | View B

Motor shaft diameter [mm]

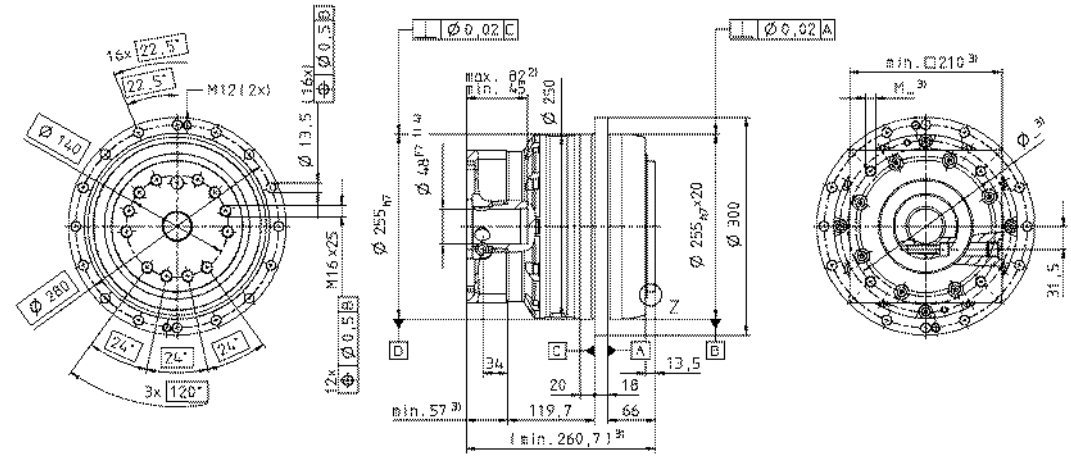
up to 55 [4] (N) clamping hub diameter

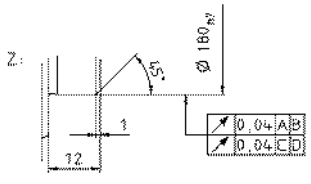
1-stage:



up to 48 [4] (M) clamping hub diameter

2-stage:





Non-tolerated dimensions ±1,5 mm

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

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

Motor mounting according to operating manual

				1-stage			2-stage									
Ratio [a]			*i*	**5**	**7**	**10**	**20**	**21**	**25**	**31**	**35**	**50**	**61**	**70**	**91**	**100**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	6000	5000	3400	6000	5000	6000	6000	6000	4500	4800	5000	4800	4800
			T_{2B} in.lb	53100	44250	30090	53100	44250	53100	53100	53100	39825	42480	44250	42480	42480
Nominal output torque (with n_{1N})			T_{2N} Nm	3250	2800	1700	3350	3200	3800	3700	3800	2900	2900	2800	2900	2900
			T_{2N} in.lb	28763	24780	15045	29648	28320	33630	32745	33630	25665	25665	24780	25665	25665
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not} Nm	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000
			T_{2Not} in.lb	132750	132750	132750	132750	132750	132750	132750	132750	132750	132750	132750	132750	132750
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b]			n_{1N} rpm	900	1300	1500	1500	1500	1500	1500	1500	2000	2100	2100	2200	2200
Max. input speed			n_{1Max} rpm	2500	2500	2500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500
Mean no load running torque (with n_1=2000 rpm and 20 °C gearhead temperature)			T_{012} Nm	30	22	14	13	12	10	8,0	7,0	6,0	5,0	5,0	4,5	4,5
			T_{012} in.lb	266	195	124	115	106	89	71	62	53	44	44	40	40
Max. torsional backlash			j_t arcmin	Standard ≤ 3 / Reduced ≤ 1			Standard ≤ 3 / Reduced ≤ 2									
Torsional rigidity			C_{t21} Nm/ arcmin	1450	1300	1100	1400	1200	1450	1200	1400	1300	1100	1250	950	1050
			C_{t21} in.lb/ arcmin	12833	11505	9735	12390	10620	12833	10620	12390	11505	9735	11063	8401	9293
Tilting rigidity			C_{2K} Nm/ arcmin	9480												
			C_{2K} in.lb/ arcmin	83898												
Max. axial force [c]			F_{2AMax} N	50000												
			F_{2AMax} lb_f	11250												
Max. tilting moment			M_{2KMax} Nm	5500			8800									
			M_{2KMax} in.lb	48675			77880									
Efficiency at full load			η %	95			93									
Service life (For calculation, see the Chapter "Information")			L_h h	> 20000												
Weight incl. standard adapter plate			*m* kg	82			77.5									
			m lb_m	181.2			171.3									
Operating noise (with *i*=10 and n_1=2000 rpm no load)			L_{PA} dB(A)	≤ 66												
Max. permitted housing temperature			°C	+90												
			F	194												
Ambient temperature			°C	-15 to +40												
			F	5 to 104												
Lubrication				Lubricated for life												
Paint				Blue RAL 5002												
Direction of rotation				Motor and gearhead same direction												
Protection class				IP 65												
Moment of inertia (relates to the drive)	M	48	J_1 kgcm²	–	–	–	32.3	37.6	31.1	32.8	25.1	23.2	23.6	23.2	23.0	22.7
			J_1 10^{-3} in.lb.s²				28.6	33.3	27.5	29.0	22.2	20.5	20.9	20.5	20.4	20.1
Clamping hub diameter [mm]	O	60	J_1 kgcm²	175.5	137.0	115.8	–	–	–	–	–	–	–	–	–	–
			J_1 10^{-3} in.lb.s²	155.3	121.2	102.5										

Reduced mass moments of inertia available on request.

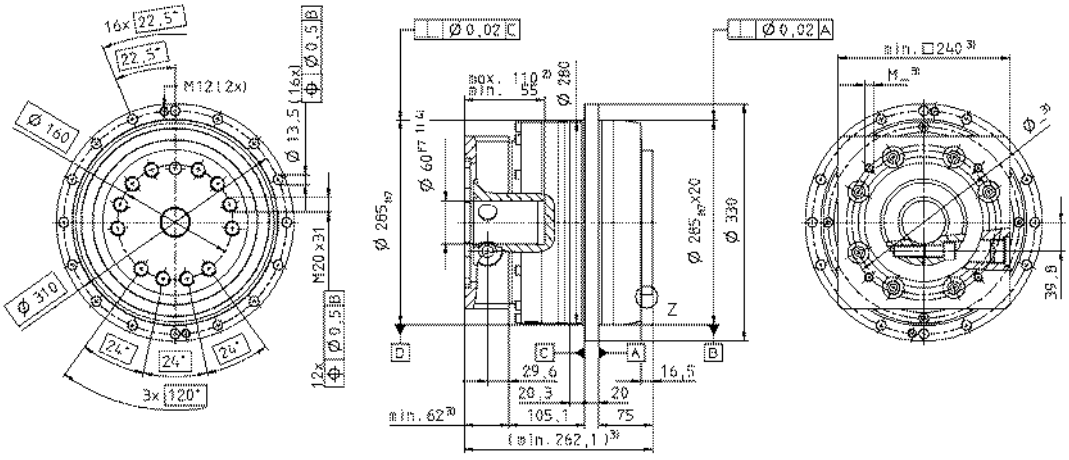
[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Refers to center of the output shaft or flange

View A | View B

Motor shaft diameter [mm]

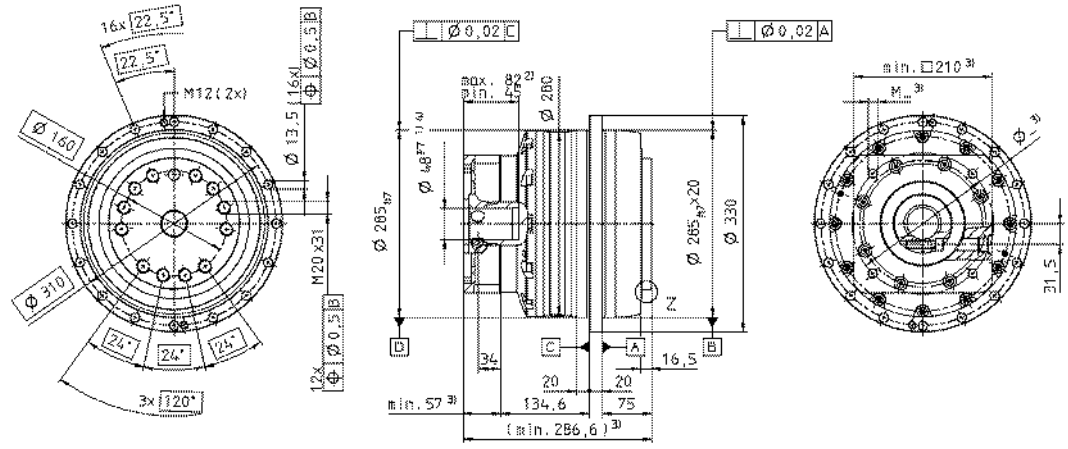
1-stage:

up to 60 [4] (O) clamping hub diameter



2-stage:

up to 48 [4] (M) clamping hub diameter



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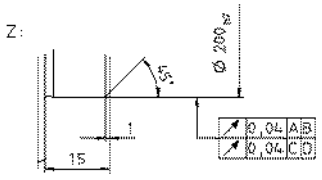


Non-tolerated dimensions ±1,5 mm

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

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

Motor mounting according to operating manual

					2-stage				3-stage			
Ratio [a]			i		**22**	**27.5**	**38.5**	**55**	**88**	**110**	**154**	**220**
Max. acceleration torque (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 output torque (with n_{1N})			T_{2N}	Nm	150	150	180	110	180	180	180	180
				in.lb	1328	1328	1593	974	1593	1593	1593	1593
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	525	525	525	525	525	525	525	525
				in.lb	4646	4646	4646	4646	4646	4646	4646	4646
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b]			n_{1N}	rpm	4000	4000	4000	4000	4500	4500	4500	4500
Max. input speed			n_{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque (with n_1=3000 rpm and 20 °C gearhead temperature) [c]			T_{012}	Nm	0.60	0.50	0.45	0.35	0.35	0.35	0.30	0.30
				in.lb	5.30	4.40	4.00	3.10	3.10	3.10	2.70	2.70
Max. torsional backlash			j_t	arcmin	≤ 1				≤ 1			
Torsional rigidity [c]			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				225			
				in.lb/ arcmin	1991				1991			
Max. axial force [d]			F_{2AMax}	N	2150				2150			
				lb_f	484				484			
Max. tilting moment			M_{2KMax}	Nm	400				400			
				in.lb	3540				3540			
Efficiency at full load			η	%	94				92			
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000				> 20000			
Weight incl. standard adapter plate			m	kg	3.2				3.6			
				lb_m	7.1				8.0			
Operating noise (with n_1=3000 rpm no load)			L_{PA}	dB(A)	≤ 60				≤ 60			
Max. permitted housing temperature				°C	+90							
				F	194							
Ambient temperature				°C	-15 to +40							
				F	5 to 104							
Lubrication					Lubricated for life							
Paint					Blue RAL 5002							
Direction of rotation					Motor and gearhead same direction							
Protection class					IP 65							
Moment of inertia (relates to the drive)	C	14	J_1	kgcm²	0.21	0.18	0.16	0.14	0.16	0.15	0.14	0.13
				10^{-3} in.lb.s²	0.19	0.16	0.14	0.12	0.14	0.13	0.12	0.12
Clamping hub diameter [mm]	E	19	J_1	kgcm²	0.52	0.50	0.47	0.46	–	–	–	–
				10^{-3} in.lb.s²	0.46	0.44	0.42	0.41				

Reduced mass moments of inertia available on request.

[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Valid for clamping hub diameter of 14 mm
[d] Refers to center of the output shaft or flange

View A View B

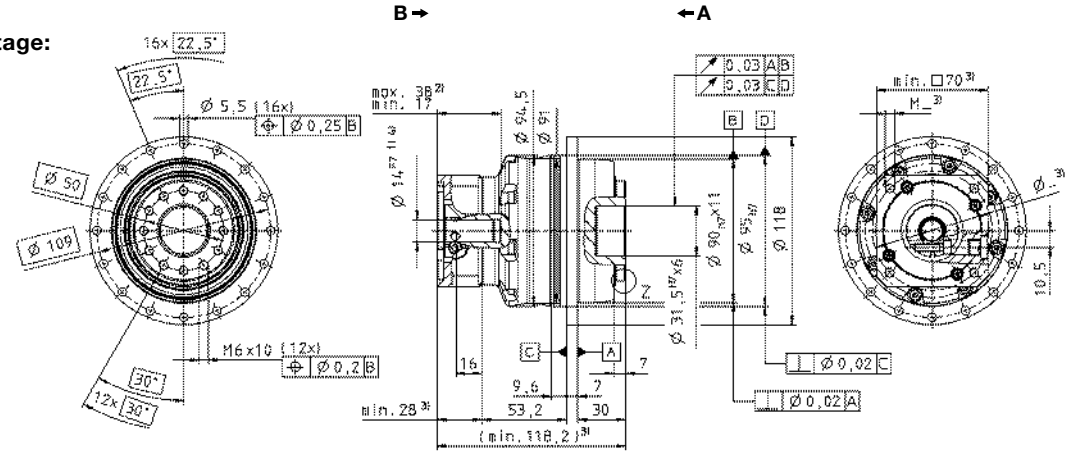
Motor shaft diameter [mm]

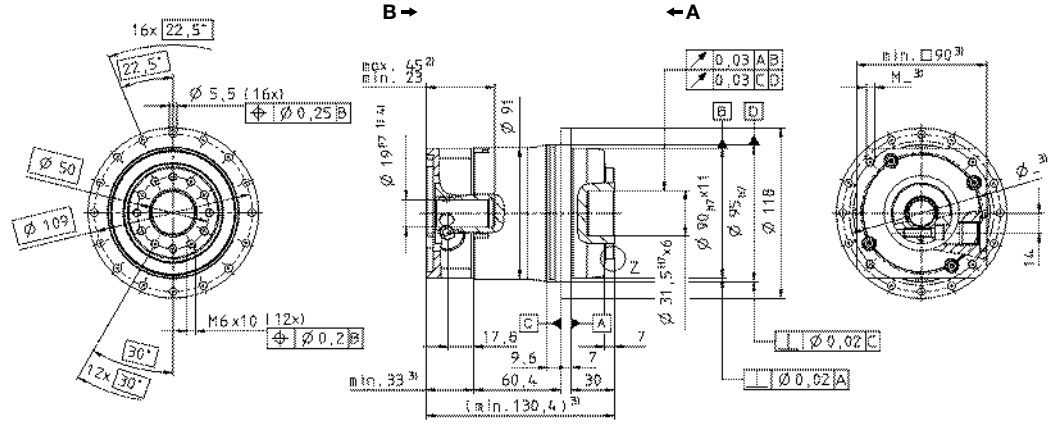
up to 14 [4] (C) clamping hub diameter

up to 19 [4] (E) clamping hub diameter

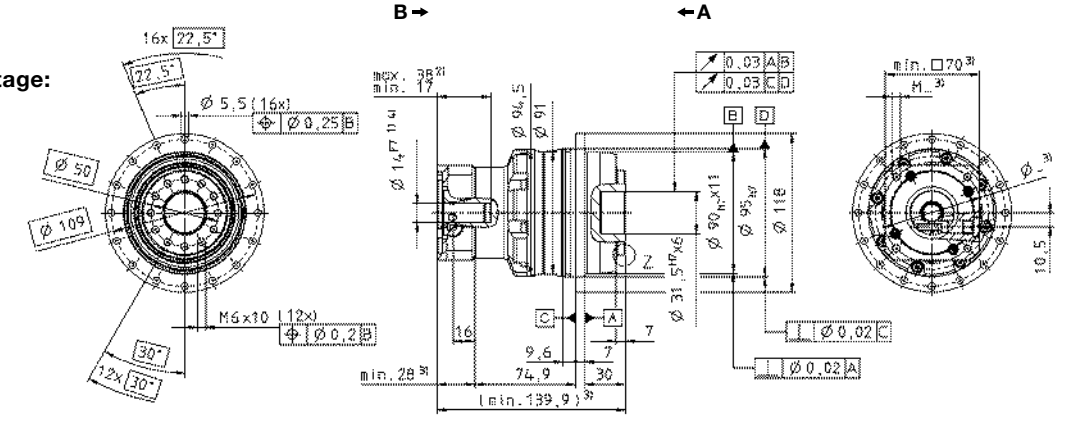
up to 14 [4] (C) clamping hub diameter

2-stage:

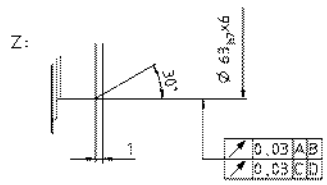




3-stage:



Z:



Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

					2-stage				3-stage				
Ratio [a]			i		**22**	**27.5**	**38.5**	**55**	**66**	**88**	**110**	**154**	**220**
Max. acceleration torque (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 output torque (with n_{1N})			T_{2N}	Nm	320	350	375	375	260	260	260	260	260
				in.lb	2832	3098	3319	3319	2301	2301	2301	2301	2301
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	1200	1200	1200	1200	1200	1200	1200	1200	1200
				in.lb	10620	10620	10620	10620	10620	10620	10620	10620	10620
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b]			n_{1N}	rpm	3500	3500	3500	3500	4000	4000	4000	4000	4000
Max. input speed			n_{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque (with n_1=3000 rpm and 20 °C gearhead temperature) [c]			T_{012}	Nm	1.1	1.0	0.8	0.6	0.7	0.7	0.6	0.4	0.4
				in.lb	9.7	8.9	7.1	5.3	6.2	6.2	5.3	3.5	3.5
Max. torsional backlash			j_t	arcmin	≤ 1				≤ 1				
Torsional rigidity [c]			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				550				
				in.lb/ arcmin	4868				4868				
Max. axial force [d]			F_{2AMax}	N	4150				4150				
				lb_f	934				934				
Max. tilting moment			M_{2KMax}	Nm	550				550				
				in.lb	4868				4868				
Efficiency at full load			η	%	94				92				
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000				> 20000				
Weight incl. standard adapter plate			m	kg	5.6				6.1				
				lb_m	12.4				13.5				
Operating noise (with n_1=3000 rpm no load)			L_{PA}	dB(A)	≤ 62				≤ 62				
Max. permitted housing temperature				°C	+90								
				F	194								
Ambient temperature				°C	-15 to +40								
				F	5 to 104								
Lubrication					Lubricated for life								
Paint					Blue RAL 5002								
Direction of rotation					Motor and gearhead same direction								
Protection class					IP 65								
Moment of inertia (relates to the drive)	E	19	J_1	kgcm²	0.87	0.70	0.60	0.55	0.63	0.56	0.53	0.51	0.50
				10^{-3} in.lb.s²	0.77	0.62	0.53	0.49	0.56	0.50	0.47	0.45	0.44
Clamping hub diameter [mm]	G	24	J_1	kgcm²	2.39	2.22	2.12	2.07	–	–	–	–	–
				10^{-3} in.lb.s²	2.12	1.96	1.88	1.83					

Reduced mass moments of inertia available on request.

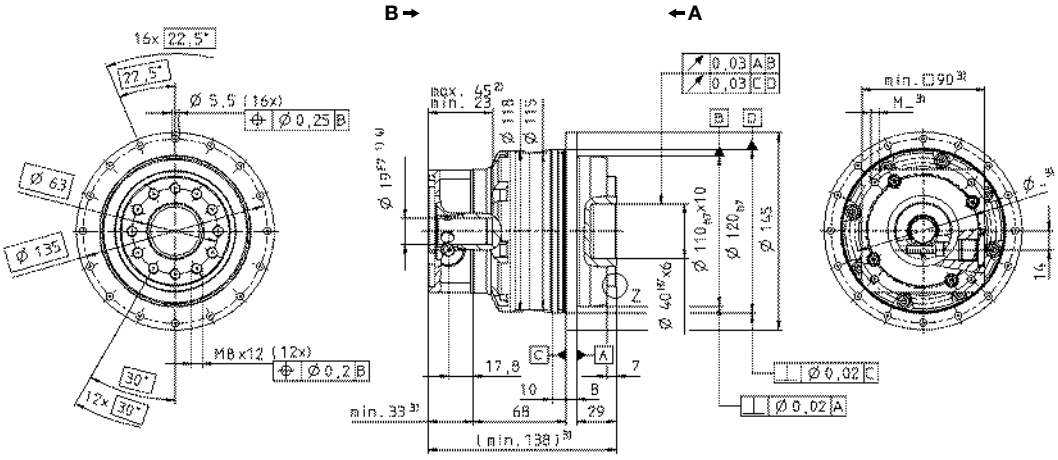
[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Valid for clamping hub diameter of 19 mm
[d] Refers to center of the output shaft or flange

View A View B

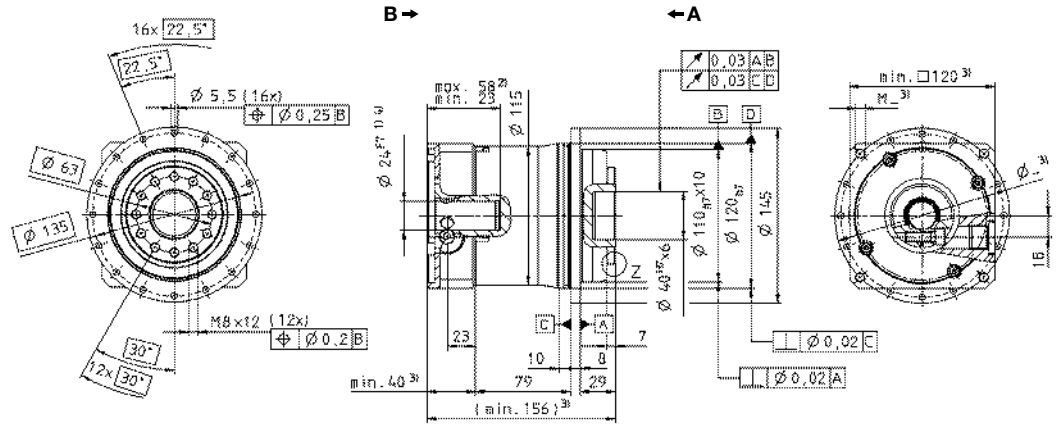
Motor shaft diameter [mm]

2-stage:

up to 19 [4] (E) clamping hub diameter

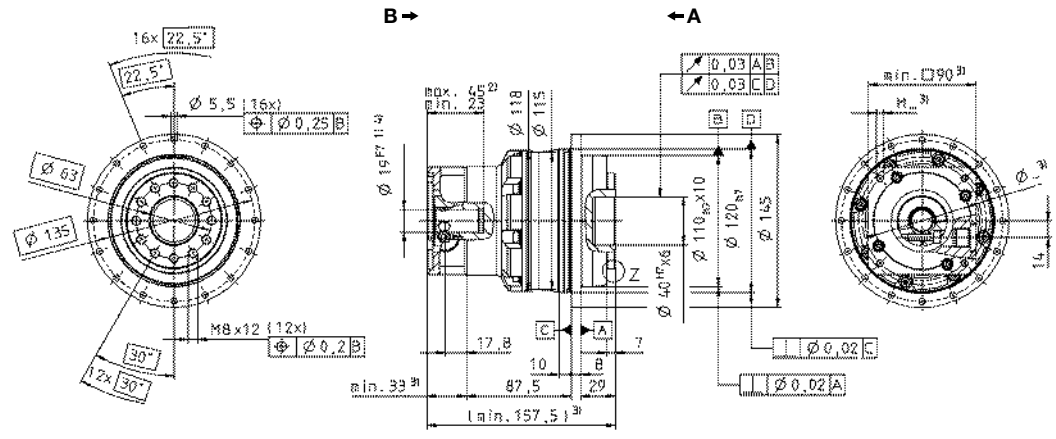


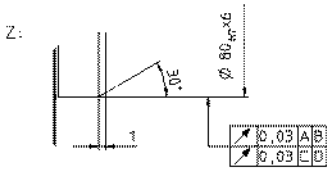
up to 24 [4] (G) clamping hub diameter



3-stage:

up to 19 [4] (E) clamping hub diameter





Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

					2-stage				3-stage				
Ratio [a]			i		**22**	**27.5**	**38.5**	**55**	**66**	**88**	**110**	**154**	**220**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	950	950	950	950	950	950	950	950	950
				in.lb	8408	8408	8408	8408	8408	8408	8408	8408	8408
Nominal output torque (with n_{1N})			T_{2N}	Nm	575	600	650	675	675	675	675	675	675
				in.lb	5089	5310	5753	5974	5974	5974	5974	5974	5974
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	2375	2375	2375	2375	2375	2375	2375	2375	2375
				in.lb	21019	21019	21019	21019	21019	21019	21019	21019	21019
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b]			n_{1N}	rpm	3000	3000	3000	3000	3500	3500	3500	3500	3500
Max. input speed			n_{1Max}	rpm	5000	5000	5000	5000	5000	5000	5000	5000	5000
Mean no load running torque (with n_1=3000 rpm and 20 °C gearhead temperature) [c]			T_{012}	Nm	3.7	2.9	2.0	1.7	2.0	1.6	1.4	0.9	0.7
				in.lb	32.7	25.7	17.7	15.0	17.7	14.2	12.4	8.0	6.2
Max. torsional backlash			j_t	arcmin	≤ 1				≤ 1				
Torsional rigidity [c]			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				560				
				in.lb/ arcmin	4956				4956				
Max. axial force [d]			F_{2AMax}	N	6130				6130				
				lb_f	1379				1379				
Max. tilting moment			M_{2KMax}	Nm	1335				1335				
				in.lb	11815				11815				
Efficiency at full load			η	%	94				92				
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000				> 20000				
Weight incl. standard adapter plate			m	kg	12.5				13.4				
				lb_m	27.6				29.6				
Operating noise (with n_1=3000 rpm no load)			L_{PA}	dB(A)	≤ 64				≤ 64				
Max. permitted housing temperature				°C	+90								
				F	194								
Ambient temperature				°C	-15 to +40								
				F	5 to 104								
Lubrication					Lubricated for life								
Paint					Blue RAL 5002								
Direction of rotation					Motor and gearhead same direction								
Protection class					IP 65								
Moment of inertia (relates to the drive)	G	24	J_1	kgcm²	3.76	3.32	3.01	2.82	2.61	2.42	2.22	2.12	2.07
				10^{-3} in.lb.s²	3.33	2.94	2.66	2.50	2.31	2.14	1.96	1.88	1.83
Clamping hub diameter [mm]	K	38	J_1	kgcm²	10.7	10.3	9.92	9.73	–	–	–	–	–
				10^{-3} in.lb.s²	9.47	9.11	8.78	8.61					

Reduced mass moments of inertia available on request.

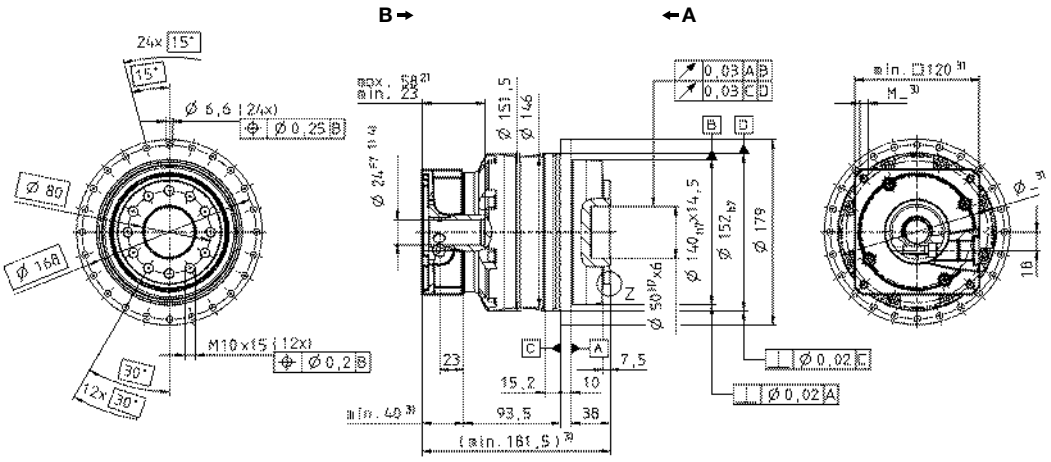
[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Valid for clamping hub diameter of 24 mm
[d] Refers to center of the output shaft or flange

View A View B

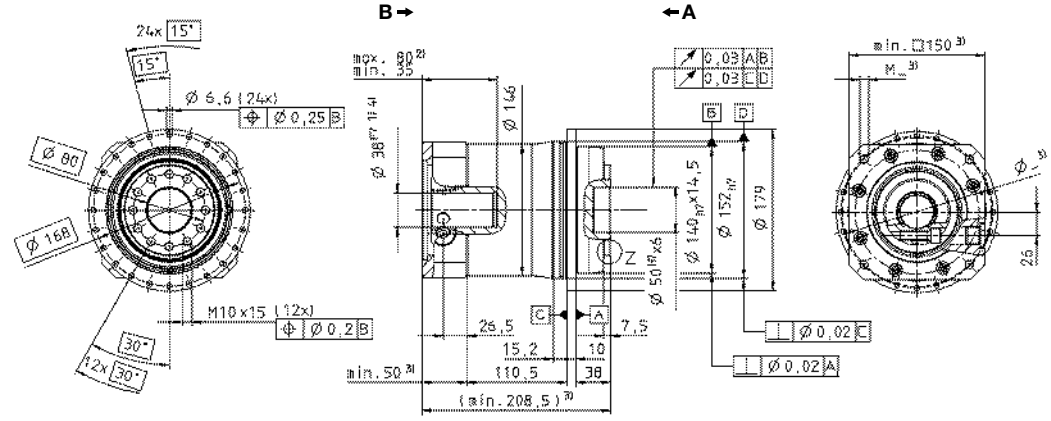
Motor shaft diameter [mm]

2-stage:

up to 24 [4] (G) clamping hub diameter

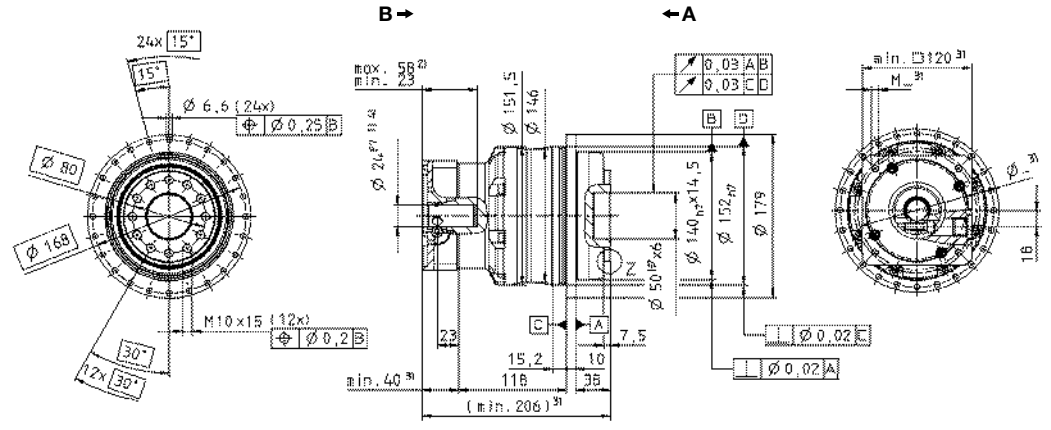


up to 38 [4] (K) clamping hub diameter



3-stage:

up to 24 [4] (G) clamping hub diameter



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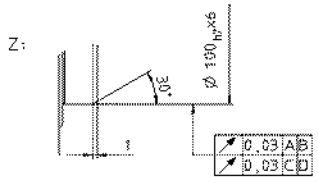


Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

					2-stage				3-stage				
Ratio [a]			i		**22**	**27.5**	**38.5**	**55**	**66**	**88**	**110**	**154**	**220**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	3100	3100	3100	2000	2600	2600	2600	2600	2600
				in.lb	27435	27435	27435	17700	23010	23010	23010	23010	23010
Nominal output torque (with n_{1N})			T_{2N}	Nm	1570	1600	1650	1400	1600	1750	1750	1750	1750
				in.lb	13895	14160	14603	12390	14160	15488	15488	15488	15488
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	6500	6500	6500	6500	6500	6500	6500	6500	6500
				in.lb	57525	57525	57525	57525	57525	57525	57525	57525	57525
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b]			n_{1N}	rpm	2500	2500	2500	2500	3000	3000	3000	3000	3000
Max. input speed			n_{1Max}	rpm	4500	4500	4500	4500	4500	4500	4500	4500	4500
Mean no load running torque (with n_1=3000 rpm and 20 °C gearhead temperature) [c]			T_{012}	Nm	8.0	5.5	4.5	4.0	5.0	4.0	3.5	2.0	1.8
				in.lb	70.8	48.7	39.8	35.4	44.3	35.4	31.0	17.7	15.9
Max. torsional backlash			j_t	arcmin	≤ 1				≤ 1				
Torsional rigidity [c]			C_{t21}	Nm/ arcmin	730	725	715	670	650	650	650	650	650
				in.lb/ arcmin	6461	6416	6328	5930	5753	5753	5753	5753	5753
Tilting rigidity			C_{2K}	Nm/ arcmin	1452				1452				
				in.lb/ arcmin	12850				12850				
Max. axial force [d]			F_{2AMax}	N	10050				10050				
				lb_f	2261				2261				
Max. tilting moment			M_{2KMax}	Nm	3280				3280				
				in.lb	29028				29028				
Efficiency at full load			η	%	94				92				
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000				> 20000				
Weight incl. standard adapter plate			m	kg	33.1				35.4				
				lb_m	73.2				78.2				
Operating noise (with n_1=3000 rpm no load)			L_{PA}	dB(A)	≤ 66				≤ 66				
Max. permitted housing temperature				°C	+90								
				F	194								
Ambient temperature				°C	-15 to +40								
				F	5 to 104								
Lubrication					Lubricated for life								
Paint					Blue RAL 5002								
Direction of rotation					Motor and gearhead same direction								
Protection class					IP 65								
Moment of inertia (relates to the drive)	K	38	J_1	kgcm²	16.6	15.2	13.9	13.1	13.8	10.2	9.77	9.47	9.16
				10^{-3} in.lb.s²	14.7	13.5	12.3	11.6	12.2	9.03	8.65	8.38	8.11
Clamping hub diameter [mm]	M	48	J_1	kgcm²	31.4	29.9	28.7	28.0	–	–	–	–	–
				10^{-3} in.lb.s²	27.8	26.5	25.4	24.8					

Reduced mass moments of inertia available on request.

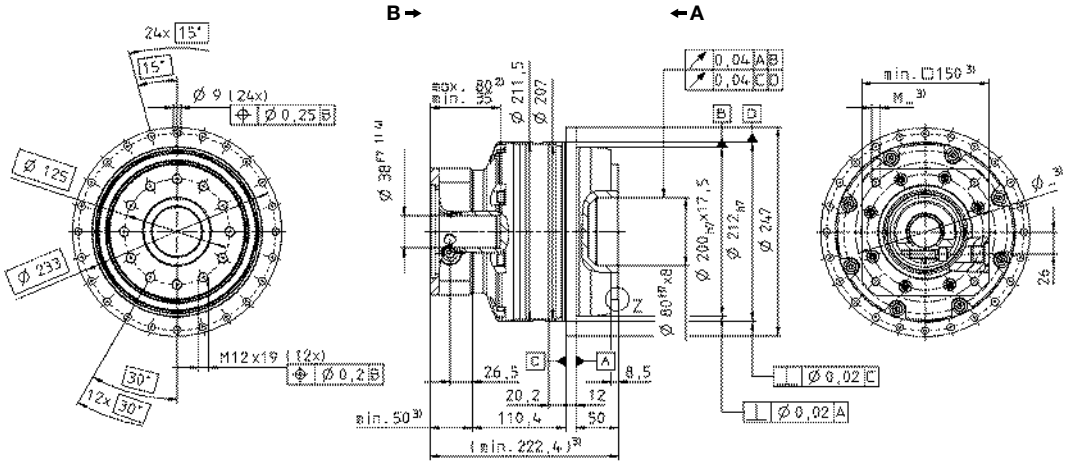
[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Valid for clamping hub diameter of 38 mm
[d] Refers to center of the output shaft or flange

View A View B

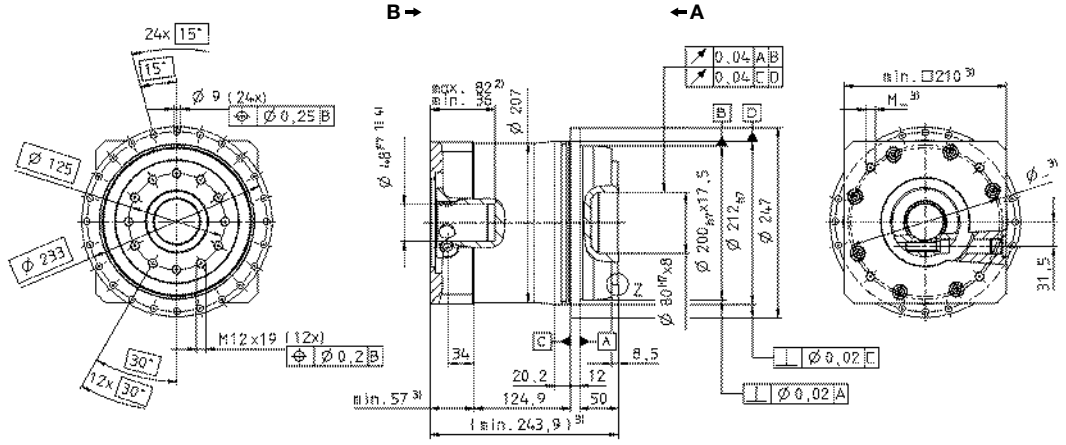
Motor shaft diameter [mm]

2-stage:

up to 38 [4] (K) clamping hub diameter

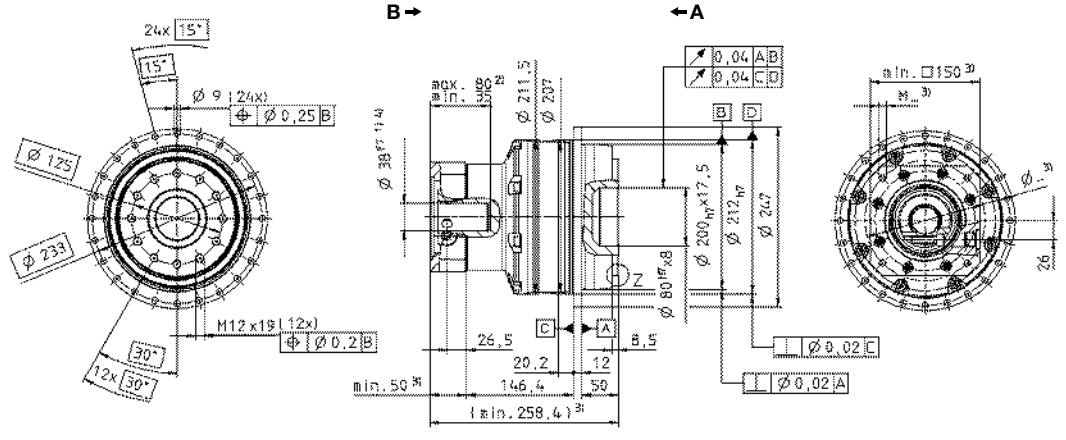


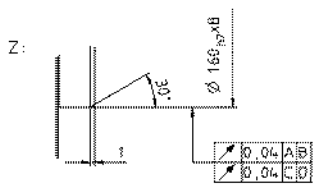
up to 48 [4] (M) clamping hub diameter



3-stage:

up to 38 [4] (K) clamping hub diameter





Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

				1-stage	2-stage				3-stage				
Ratio [a]			*i*	**5.5**	**22**	**27.5**	**38.5**	**55**	**66**	**88**	**110**	**154**	**220**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	4600	5500	5500	5500	3900	5500	5500	5500	5500	5500
			in.lb	40714	48679	48679	48679	34518	48679	48679	48679	48679	48679
Nominal output torque (with n_{1N})			T_{2N} Nm	2200	3500	3500	3500	2500	3500	3500	3500	3500	3500
			in.lb	19472	30978	30978	30978	22127	30978	30978	30978	30978	30978
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not} Nm	8750	13250	13250	13250	13250	13250	13250	13250	13250	13250
			in.lb	77445	117273	117273	117273	117273	117273	117273	117273	117273	117273
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b]			n_{1N} rpm	1000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Max. input speed			n_{1Max} rpm	2500	3500	3500	3500	3500	3500	3500	3500	3500	3500
Mean no load running torque (with n_1=2000 rpm and 20 °C gearhead temperature)			T_{012} Nm	22	12	10	9,0	7,0	6,5	4,5	4,0	3,0	2,0
			in.lb	195	106	89	80	62	58	40	35	27	18
Max. torsional backlash			j_t arcmin	Standard ≤ 2 / Reduced ≤ 1	Standard ≤ 3 / Reduced ≤ 1.5								
Torsional rigidity			C_{t21} Nm/ arcmin	1400	1200	1200	1200	1200	1200	1200	1200	1200	1200
			in.lb/ arcmin	12391	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 (For calculation. see "Technical Basics")			L_h h	> 20000									
Weight incl. standard adapter plate			*m* kg	55	64				67				
			lb_m	121.25	141.1				147.7				
Operating noise (with n_1=2000 rpm no load)			L_{PA} dB(A)	≤ 68	≤ 67				≤ 66				
Max. permitted housing temperature			°C	+90									
			F	194									
Ambient temperature			°C	-15 to +40									
			F	5 to 104									
Lubrication				Lubricated for life									
Paint				Blue RAL 5002									
Direction of rotation				Motor and gearhead same direction									
Protection class				IP 65									
Moment of inertia (relates to the drive)	K	38	J_1 kgcm²	–	–	–	–	–	16.6	12.9	11.6	10.3	9.50
			in.lb.s²						0.0147	0.0114	0.0103	0.0091	0.0084
Clamping hub diameter [mm]	M	48	J_1 kgcm²	–	30.8	27.6	24.9	23.0	–	–	–	–	–
			in.lb.s²		0.0273	0.0244	0.0220	0.0204					
	N	55	J_1 kgcm²	129	–	–	–	–	–	–	–	–	–
			in.lb.s²	0.1142									

Reduced mass moments of inertia available on request.

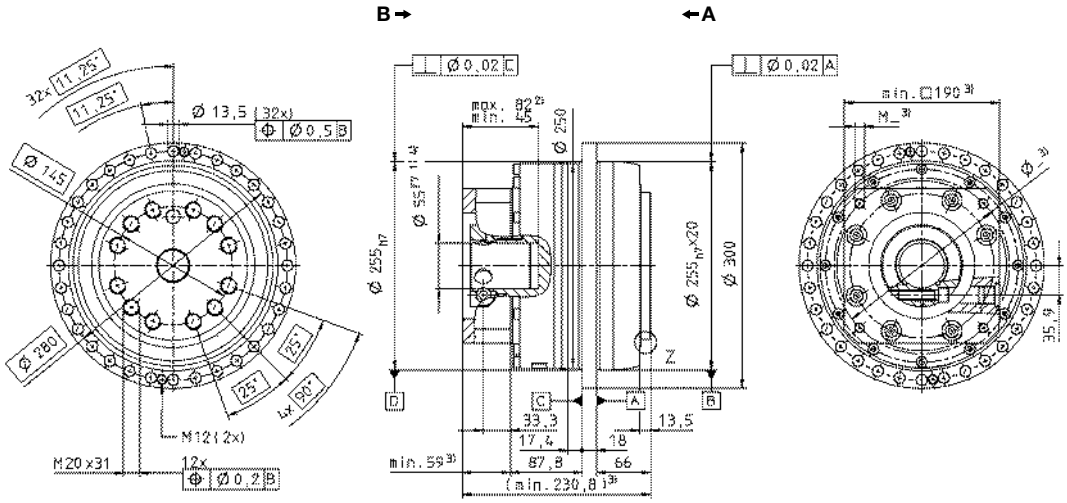
[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Refers to center of the output shaft or flange

View A View B

Motor shaft diameter [mm]

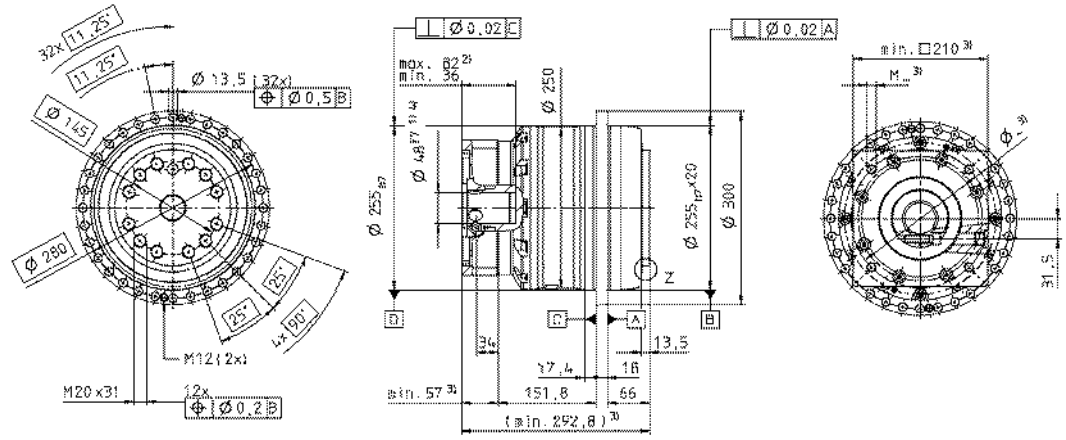
1-stage:

up to 55 [4] (N) clamping hub diameter



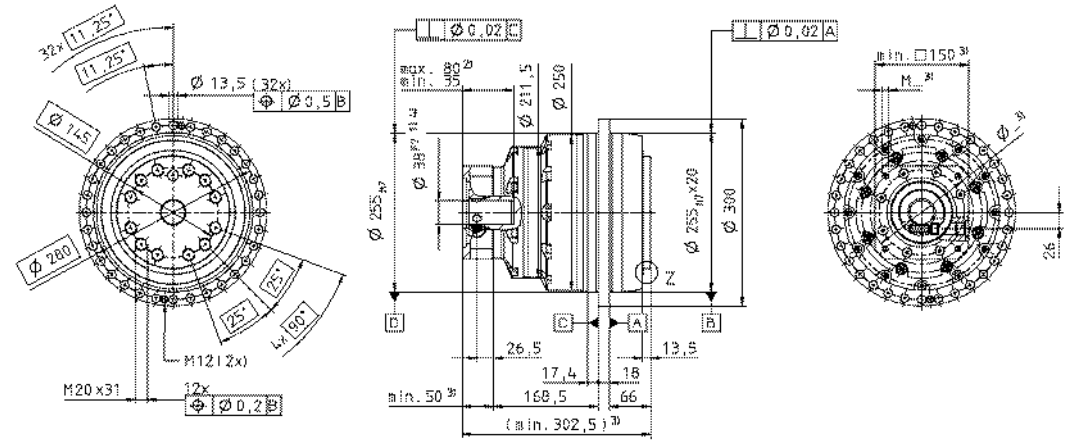
2-stage:

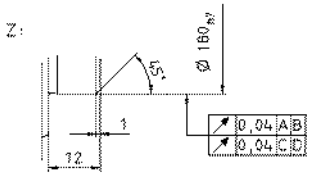
up to 48 [4] (M) clamping hub diameter



3-stage:

up to 38 [4] (K) clamping hub diameter





Non-tolerated dimensions ±1,5 mm

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

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

Motor mounting according to operating manual

				1-stage	2-stage				3-stage				
Ratio [a]			*i*	**5.5**	**22**	**27.5**	**38.5**	**55**	**66**	**88**	**110**	**154**	**220**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	8000	10000	10000	10000	7200	10000	10000	10000	10000	10000
			T_{2B} in.lb	70806	88508	88508	88508	63726	88508	88508	88508	88508	88508
Nominal output torque (with n_{1N})			T_{2N} Nm	3500	6000	4600	4600	4700	6000	6000	6000	6000	6000
			T_{2N} in.lb	30978	53105	40714	40714	41599	53105	53105	53105	53105	53105
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2NOt} Nm	15000	25000	25000	25000	25000	25000	25000	25000	25000	25000
			T_{2NOt} in.lb	132762	221270	221270	221270	221270	221270	221270	221270	221270	221270
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b]			n_{1N} rpm	900	1500	1500	1500	1500	1500	1500	1500	1500	1500
Max. input speed			n_{1Max} rpm	2500	3500	3500	3500	3500	3500	3500	3500	3500	3500
Mean no load running torque (with n_1=2000 rpm and 20 °C gearhead temperature)			T_{012} Nm	28	18	14	12	9.0	8.5	6.5	6.0	5.0	4.0
			T_{012} in.lb	248	159.3	124	106	80	75	58	53	44	35
Max. torsional backlash			j_t arcmin	Standard ≤ 2 / Reduced ≤ 1	Standard ≤ 3 / Reduced ≤ 1								
Torsional rigidity			C_{t21} Nm/ arcmin	1650	2000	2000	1950	1900	1800	1800	1800	1800	1800
			C_{t21} in.lb/ arcmin	14603	17700	17700	17258	16815	15930	15930	15930	15930	15930
Tilting rigidity			C_{2K} Nm/ arcmin	9480									
			C_{2K} in.lb/ arcmin	83906									
Max. axial force [c]			F_{2AMax} N	50000									
			F_{2AMax} lb_f	11250									
Max. tilting moment			M_{2KMax} Nm	6600	9500								
			M_{2KMax} in.lb	58415	84083								
Efficiency at full load			η %	95	93								
Service life (For calculation, see "Technical Basics")			L_h h	> 20000									
Weight incl. standard adapter plate			*m* kg	80					89				
			m lb_m	176.4					196.2				
Operating noise (with n_1=2000 rpm no load)			L_{PA} dB(A)	≤ 68					≤ 67				
Max. permitted housing temperature			°C	+90									
			F	194									
Ambient temperature			°C	-15 to +40									
			F	5 to 104									
Lubrication				Lubricated for life									
Paint				Blue RAL 5002									
Direction of rotation				Motor and gearhead same direction									
Protection class				IP 65									
Moment of inertia (relates to the drive)	M	48	J_1 kgcm²	–	43.8	36.9	30.5	27.0	32.7	28.3	26.7	25.2	24.4
			J_1 in.lb.s²		0.0388	0.0327	0.0270	0.0239	0.0289	0.0250	0.0236	0.0223	0.0216
Clamping hub diameter [mm]	O	60	J_1 kgcm²	175	–	–	–	–	–	–	–	–	–
			J_1 in.lb.s²	0.1549									

Reduced mass moments of inertia available on request.

[a] Other ratios available on request

[b] For higher ambient temperatures, please reduce input speed

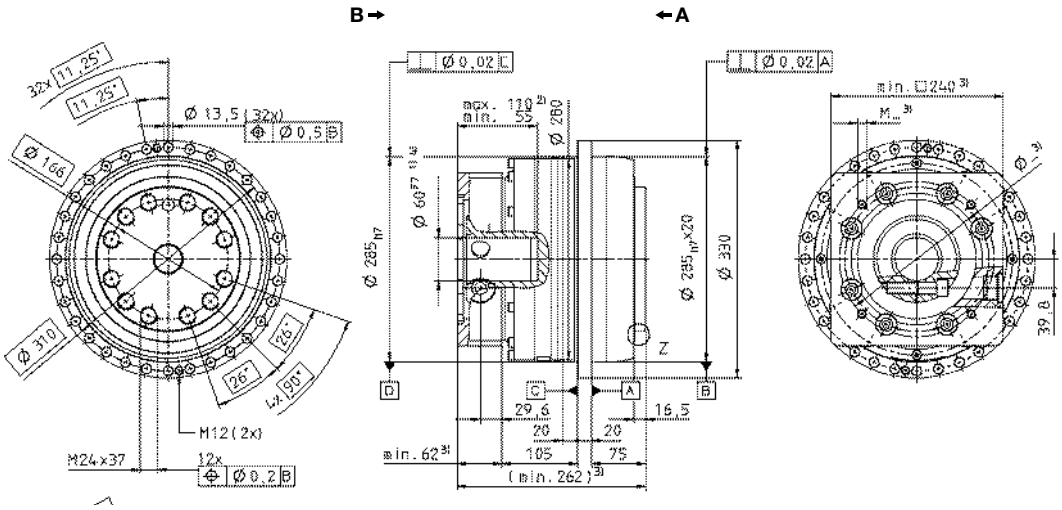
[c] Refers to center of the output shaft or flange

View A View B

Motor shaft diameter [mm]

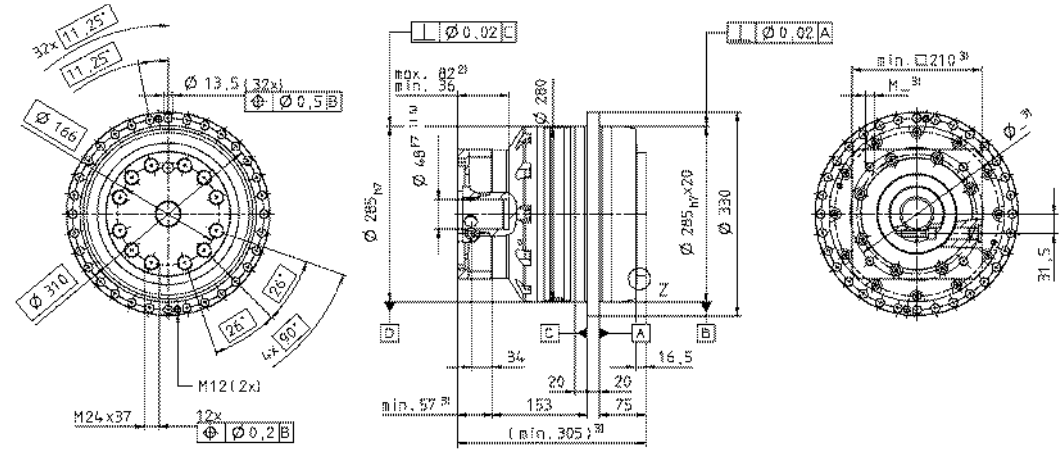
1-stage:

up to 60 [4] (O) clamping hub diameter



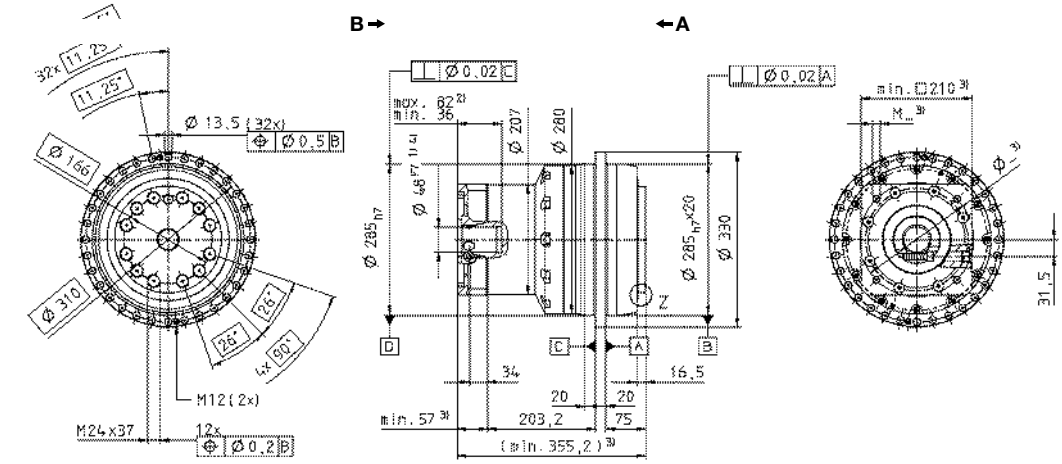
2-stage:

up to 48 [4] (M) clamping hub diameter

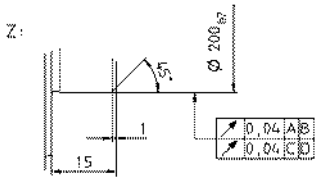


3-stage:

up to 48 [4] (M) clamping hub diameter



Z:



Non-tolerated dimensions ±1,5 mm

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

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

Motor mounting according to operating manual

					2-stage		3-stage							
Ratio				*i*	**22**	**30.25**	**66**	**88**	**110**	**121**	**154**	**220**	**302.5**
Max. acceleration torque (max. 1000 cycles per hour)				T_{2B}	Nm	22000	22000	22000	22000	22000	22000	22000	15600	21500
					in.lb	194700	194700	194700	194700	194700	194700	194700	138060	190275
Nominal output torque (with n_{1N})				T_{2N}	Nm	13500	13500	13500	13500	13500	13500	13500	10000	13500
					in.lb	119475	119475	119475	119475	119475	119475	119475	88500	119475
Emergency stop torque (permitted 1000 times during the service life of the gearhead)				T_{2Not}	Nm	44000	44000	44000	44000	44000	44000	44000	44000	44000
					in.lb	389400	389400	389400	389400	389400	389400	389400	389400	389400
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [a]				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 (with n_1=2000 rpm and 20 °C gearhead temperature)				T_{012}	Nm	17	13	7.5	6	5	5	4.5	4	4
					in.lb	150	115	66	53	44	44	40	35	35
Max. torsional backlash				j_t	arcmin	≤ 3								
Torsional rigidity				C_{t21}	Nm/ arcmin	2900	2900	3000	3000	3000	3000	2950	2850	2850
					in.lb/ arcmin	25665	25665	26550	26550	26550	26550	26108	25223	25223
Tilting rigidity				C_{2K}	Nm/ arcmin	-								
					in.lb/ arcmin	-								
Max. axial force [b]				F_{2AMax}	N	100000								
					lb_f	22500								
Max. tilting moment				M_{2KMax}	Nm	31600		31600						
					in.lb	279660		279660						
Efficiency at full load				η	%	95		93						
Service life (For calculation, see the Chapter "Information")				L_h	h	> 20000								
Weight incl. standard adapter plate				*m*	kg	190		185						
					lb_m	420		409						
Operating noise (with n_1=3000 rpm no load)				L_{PA}	dB(A)	≤ 68		≤ 66						
Max. permitted housing temperature					°C	90								
					F	194								
Ambient temperature					°C	0 to +40								
					F	5 to 104								
Lubrication						Lubricated for life								
Paint						Blue RAL 5002								
Direction of rotation						Motor and gearhead same direction								
Protection class						IP 65								
Moment of inertia (relates to the drive)	M	48		J_1	kgcm²	-	-	52	37	35	35	28	26	25
					10^{-3} in.lb.s²	-	-	46	33	31	31	25	23	22
Clamping hub diameter [mm]	O	60		J_1	kgcm²	101	74	-	-	-	-	-	-	-
					10^{-3} in.lb.s²	89	65	-	-	-	-	-	-	-

[a] For higher ambient temperatures, please reduce input speed

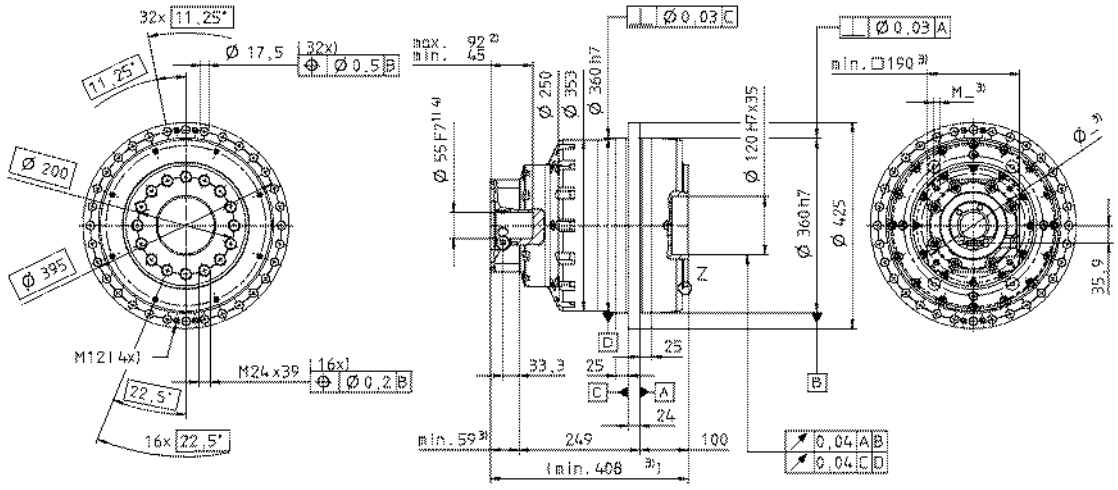
[b] Refers to center of the output shaft or flange

View A View B

Motor shaft diameter [mm]

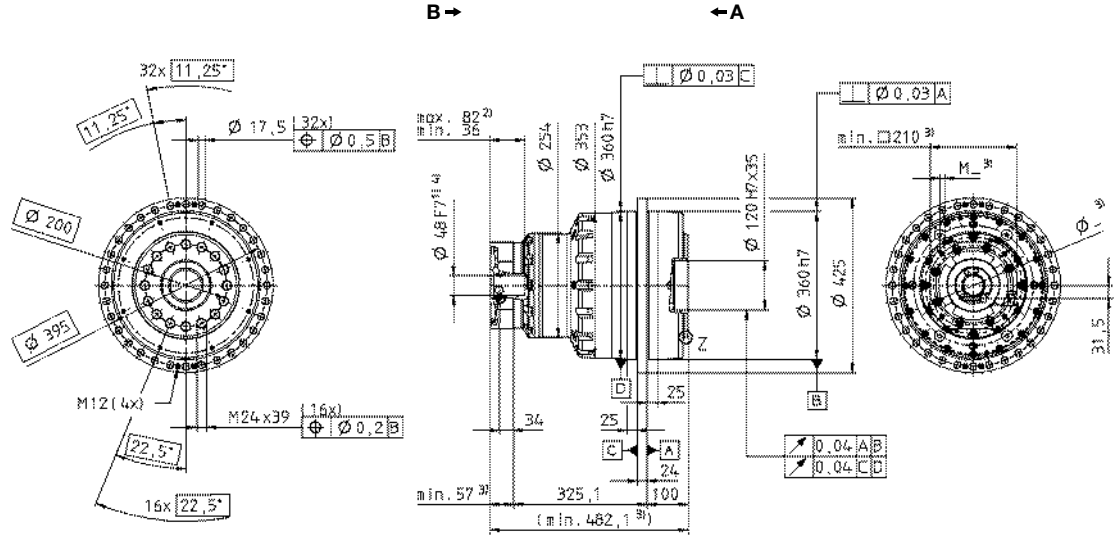
up to 60 [4] (O) clamping hub diameter

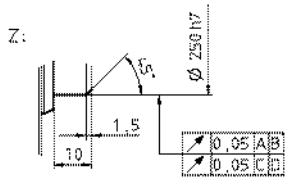
2-stage:



up to 48 [4] (M) clamping hub diameter

3-stage:





Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

					2-stage		3-stage						
Ratio			*i*		**22**	**30.25**	**66**	**88**	**110**	**121**	**154**	**220**	**302.5**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	40000	40000	40000	40000	40000	40000	40000	32000	40000
				in.lb	354000	354000	354000	354000	354000	354000	354000	283200	354000
Nominal output torque (with n_{1N})			T_{2N}	Nm	18000	18000	18000	18000	18000	18000	18000	16500	18000
				in.lb	159300	159300	159300	159300	159300	159300	159300	146025	159300
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	70000	70000	70000	70000	70000	70000	70000	61000	70000
				in.lb	619500	619500	619500	619500	619500	619500	619500	539850	619500
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [a]			n_{1N}	rpm	1500	1500	1500	1500	1500	1500	1500	1500	1500
Max. input speed			n_{1Max}	rpm	3000	3000	3000	3000	3000	3000	3000	3000	3000
Mean no load running torque (with n_1=2000 rpm and 20 °C gearhead temperature)			T_{012}	Nm	26	21	15	12	10	10	8.5	7.5	7.5
				in.lb	230	186	133	106	89	89	75	66	66
Max. torsional backlash			j_t	arcmin	≤ 5								
Torsional rigidity			C_{t21}	Nm/ arcmin	5300	5300	5800	5800	5800	5800	5700	5700	5700
				in.lb/ arcmin	46905	46905	51330	51330	51330	51330	50445	50445	50445
Tilting rigidity			C_{2K}	Nm/ arcmin	65000								
				in.lb/ arcmin	575250								
Max. axial force [b]			F_{2AMax}	N	140000								
				lb_f	31500								
Max. tilting moment			M_{2KMax}	Nm	58000		71400						
				in.lb	513300		631890						
Efficiency at full load			η	%	95		93						
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000								
Weight incl. standard adapter plate			*m*	kg	350		380						
				lb_m	774		840						
Operating noise (with n_1=3000 rpm no load)			L_{PA}	dB(A)	≤ 70		≤ 68						
Max. permitted housing temperature				°C	90								
				F	194								
Ambient temperature				°C	0 to +40								
				F	5 to 104								
Lubrication					Lubricated for life								
Paint					Blue RAL 5002								
Direction of rotation					Motor and gearhead same direction								
Protection class					IP 65								
Moment of inertia (relates to the drive)	M	48	J_1	$kgcm^2$	-	-	85	55	43	48	34	29	28
				10^{-3} in.lb.s²	-	-	75	49	38	42	30	26	25
Clamping hub diameter [mm]	O	60	J_1	$kgcm^2$	230	174	-	-	-	-	-	-	-
				10^{-3} in.lb.s²	204	154	-	-	-	-	-	-	-

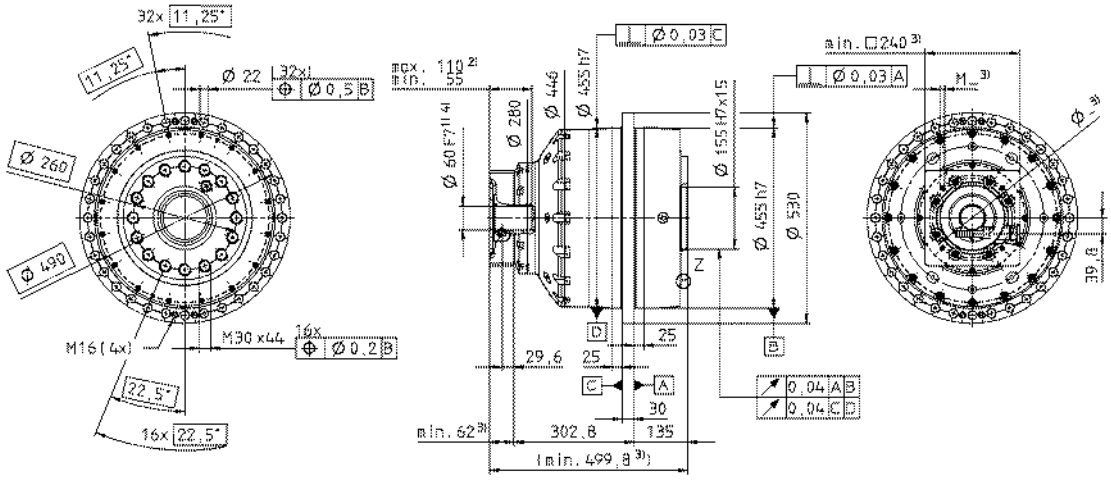
[a] For higher ambient temperatures, please reduce input speed
[b] Refers to center of the output shaft or flange

View A View B

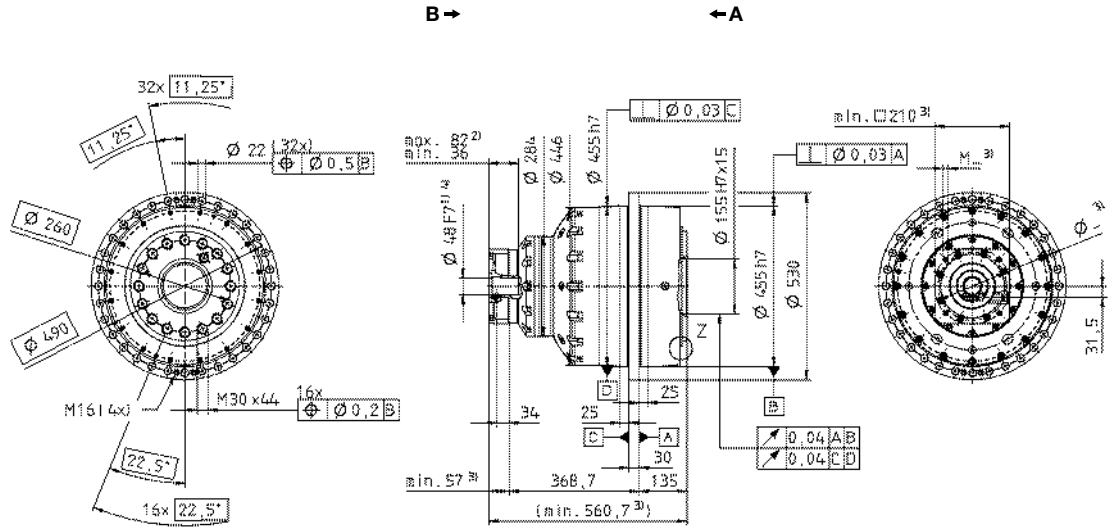
Motor shaft diameter [mm]

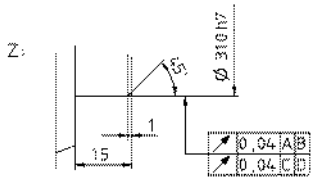
up to 60 [4] (O) clamping hub diameter

2-stage:



3-stage:





Non-tolerated dimensions ±1 mm

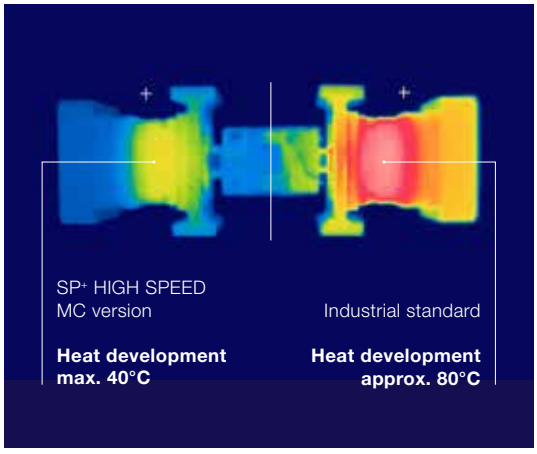
1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.

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

Motor mounting according to operating manual

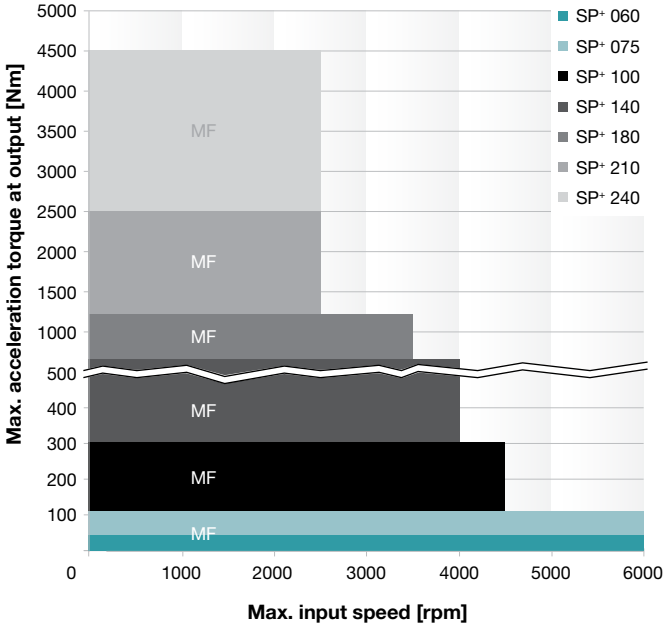
SP+/SP+ HIGH SPEED – The classic all-rounder

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

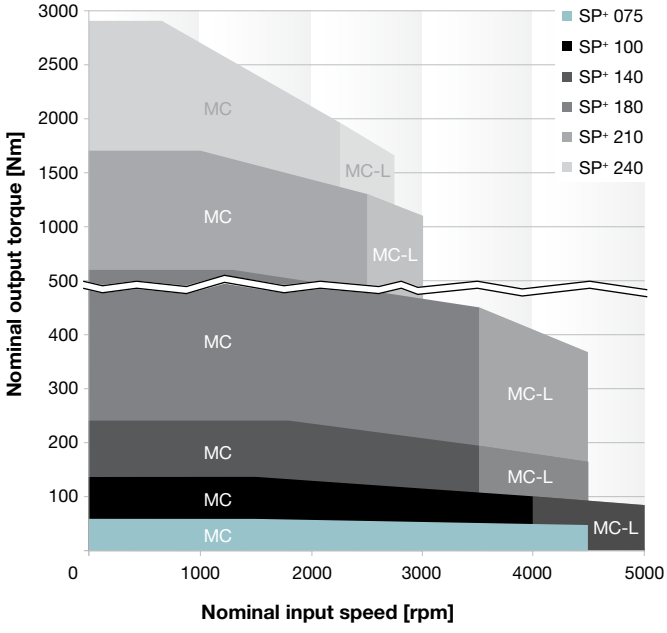


Quick size selection

SP+ MF (example for i = 4)
For applications in cyclic operation (ED ≤ 60%)



SP+ HIGH SPEED MC/MC-L (example for i = 4)
For applications in continuous operation (ED ≥ 60%)



Versions and Applications

Features	SP+ MF version page 72	SP+ HIGH SPEED MC version page 96	SP+ HIGH SPEED MC-L version page 100
Application	Cyclic operation (duty cycle ≤ 60%)	Continuous operation (duty cycle ≥ 60%)	Continuous operation (duty cycle ≥ 60%)
Positioning accuracy (e.g. clamped drives)	••	•	•
Highly dynamic applications	••	•	•
High input speeds	•	••	•••
Temperature-sensitive applications	•	••	•••
Low no-load running torque	•	••	•••

Product features

Ratios [c]		3 -100	3 -100	3 -10
Torsional backlash [arcmin] [c]	Standard	≤ 3	≤ 4	≤ 4
	Reduced	≤ 1	≤ 2	≤ 2
Output type				
Smooth output shaft		•	•	•
Output shaft with key		•	•	•
Output shaft with involute gearing		•	•	
Mounted shaft Connected via shrink disc		•	•	
System output with pinion		•	•	
Input type				
Motor mounted version		•	•	•
Input shaft		•		
Type				
ATEX [a]		•	•	
Food-grade lubrication [a] [b]		•	•	•
Corrosion resistant [a] [b]		•	•	
Optimized mass moment of inertia [a]		•		
Accessories				
Coupling		•	•	•
Rack		•	•	
Pinion		•	•	
Shrink disc		•	•	
torqXis sensor flange		•	•	•
Intermediate plate for cooling connection		•	•	•

[a] Power reduction: technical data available upon request [b] Please contact WITTENSTEIN alpha [c] In relation to reference sizes

				1-stage				
Ratio [a]			***i***	**3**	**4**	**5**	**7**	**10**
cymex®-optimized acceleration torque (please contact us regarding the design)			T_{2Bcym} Nm	–	58	60	54	–
			T_{2Bcym} in.lb		513	531	478	
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	30	42	42	42	32
			T_{2B} in.lb	266	372	372	372	283
Nominal output torque (with n_{1N})			T_{2N} Nm	17	26	26	26	17
			T_{2N} in.lb	150	230	230	230	150
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not} Nm	80	100	100	100	80
			T_{2Not} in.lb	708	885	885	885	708
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b]			n_{1N} rpm	3300	3300	3300	4000	4000
Max. input speed			n_{1max} rpm	6000	6000	6000	6000	6000
Mean no load running torque (with n_1=3000 rpm and 20°C gearhead temperature) [c]			T_{012} Nm	0.9	0.7	0.6	0.4	0.3
			T_{012} in.lb	8.0	6.2	5.3	3.5	2.7
Max. torsional backlash			j_t arcmin	Standard ≤ 4 / Reduced ≤ 2				
Torsional rigidity			C_{t21} Nm/ arcmin	4.5				
			C_{t21} in.lb/ arcmin	40				
Max. axial force [d]			F_{2AMax} N	2400				
			F_{2AMax} lb_f	540				
Max. radial force [d]			F_{2RMax} N	2800				
			F_{2RMax} lb_f	630				
Max. tilting torque			M_{2KMax} Nm	152				
			M_{2KMax} in.lb	1345				
Efficiency at full load			η %	97				
Service life (For calculation, see the Chapter “Information”)			L_h h	> 20000				
Weight incl. standard adapter plate			m kg	1.9				
			m lb_m	4.2				
Operating noise (with i=10 and n_1=3000 rpm no load)			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				
Paint				Blue RAL 5002				
Direction of rotation				Motor and gearhead same direction				
Protection class				IP 65				
Moment of inertia (relates to the drive)	B	11	J_1 kgcm²	0.21	0.15	0.12	0.10	0.09
			J_1 10^{-3} in.lb.s²	0.18	0.13	0.11	0.09	0.08
Clamping hub diameter [mm]	C	14	J_1 kgcm²	0.28	0.22	0.20	0.18	0.17
			J_1 10^{-3} in.lb.s²	0.25	0.20	0.17	0.16	0.15
	E	19	J_1 kgcm²	0.61	0.55	0.52	0.50	0.49
			J_1 10^{-3} in.lb.s²	0.54	0.48	0.46	0.44	0.43

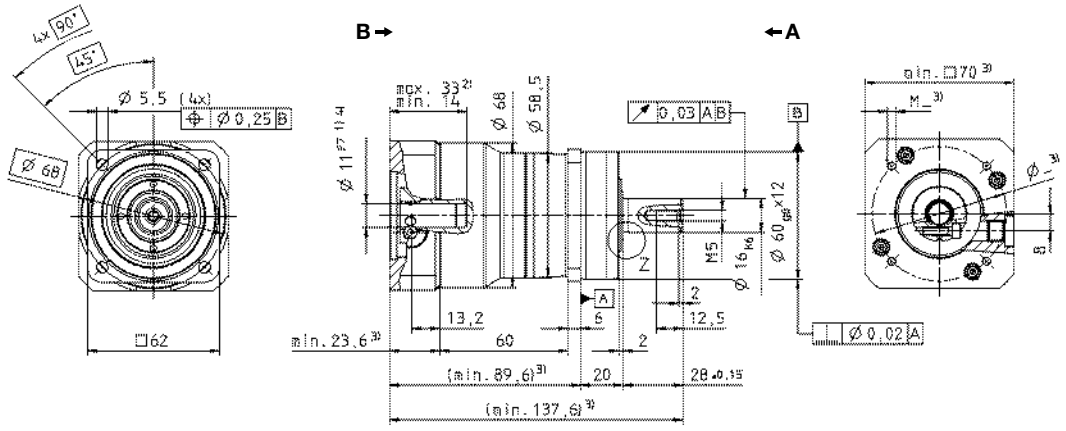
Reduced mass moments of inertia available on request.

[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Valid for clamping hub diameter of 14 mm
[d] Refers to center of the output shaft or flange

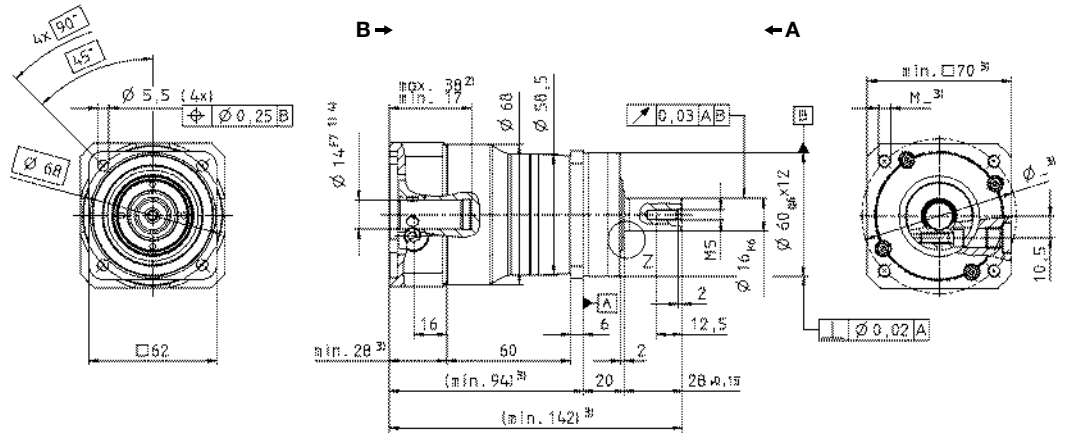
View A View B

Motor shaft diameter [mm]

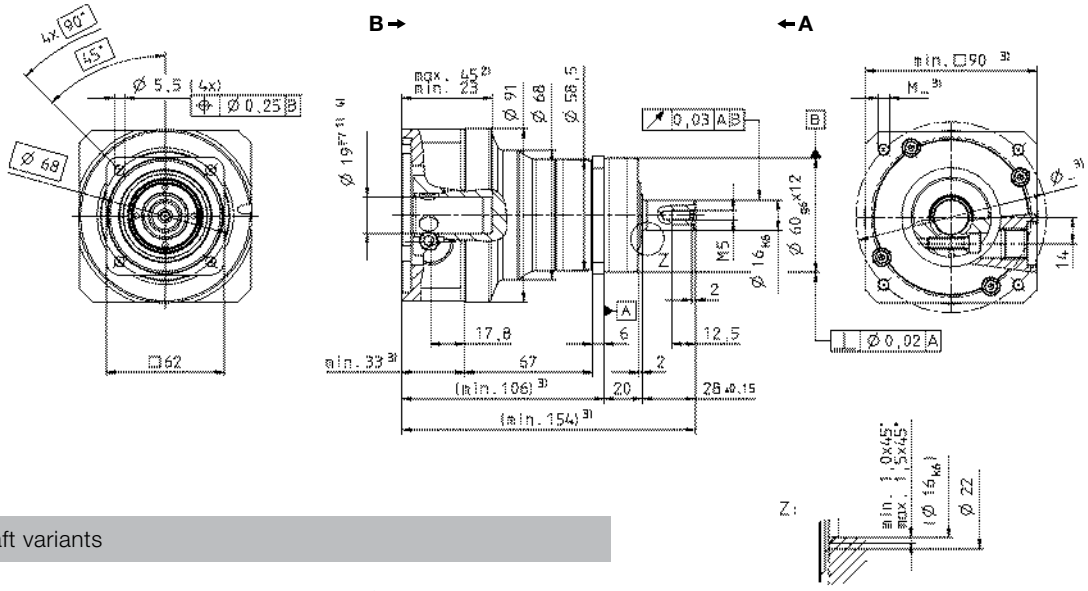
up to 11 [4] (B) clamping hub diameter



up to 14 [4] (C) clamping hub diameter)

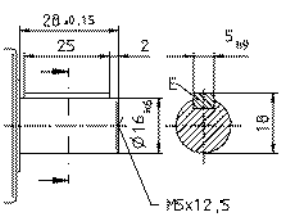


up to 19 [4] (E) clamping hub diameter

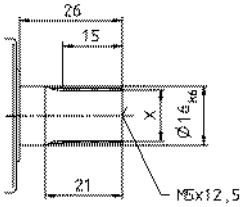


Alternatives: Output shaft variants

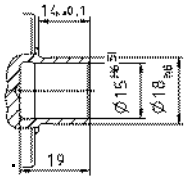
Output shaft with key in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 16 x 0.8 x 30 x 18 x 6m, DIN 5480



Shaft mounted
Mounted via shrink disc



Non-tolerated dimensions ± 1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
5) Tolerance h6 for mounted shaft.

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

Motor mounting according to operating manual

				2-stage								
Ratio [a]			***i***	**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
cymex®-optimized acceleration torque (please contact us regarding the design)			T_{2Bcym} Nm	58	58	60	58	60	58	60	54	–
			T_{2Bcym} in.lb	513	513	531	513	531	513	531	478	–
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	42	42	42	42	42	42	42	42	32
			T_{2B} in.lb	372	372	372	372	372	372	372	372	283
Nominal output torque (with n_{1N})			T_{2N} Nm	26	26	26	26	26	26	26	26	17
			T_{2N} in.lb	230	230	230	230	230	230	230	230	150
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not} Nm	100	100	100	100	100	100	100	100	80
			T_{2Not} in.lb	885	885	885	885	885	885	885	885	708
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b]			n_{1N} rpm	4400	4400	4400	4400	4400	4400	4800	5500	5500
Max. input speed			n_{1max} rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque (with n_1 = 3000 rpm and 20°C gearhead temperature) [c]			T_{012} Nm	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.2
			T_{012} in.lb	4.4	3.5	3.5	2.7	2.7	2.7	2.7	2.7	1.8
Max. torsional backlash			j_t arcmin	Standard ≤ 6 / Reduced ≤ 4								
Torsional rigidity			C_{t21} Nm/ arcmin	4.5								
			C_{t21} in.lb/ arcmin	40								
Max. axial force [d]			F_{2AMax} N	2400								
			F_{2AMax} lb_f	540								
Max. radial force [d]			F_{2RMax} N	2800								
			F_{2RMax} lb_f	630								
Max. tilting moment			M_{2KMax} Nm	152								
			M_{2KMax} in.lb	1345								
Efficiency at full load			η %	94								
Service life (For calculation, see the Chapter “Information”)			L_h h	> 20000								
Weight incl. standard adapter plate			*m* kg	2.0								
			m lb_m	4.4								
Operating noise (with *i*=100 and n_1 = 3000 rpm no load)			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								
Paint				Blue RAL 5002								
Direction of rotation				Motor and gearhead same direction								
Protection class				IP 65								
Moment of inertia (relates to the drive)	B	11	J_1 kgcm²	0.077	0.069	0.068	0.061	0.061	0.057	0.057	0.056	0.056
			J_1 10^{-3} in.lb.s²	0.068	0.061	0.060	0.054	0.054	0.050	0.050	0.050	0.050
Clamping hub diameter [mm]	C	14	J_1 kgcm²	0.17	0.16	0.16	0.16	0.16	0.15	0.15	0.15	0.15
			J_1 10^{-3} in.lb.s²	0.15	0.15	0.14	0.14	0.14	0.14	0.13	0.13	0.13

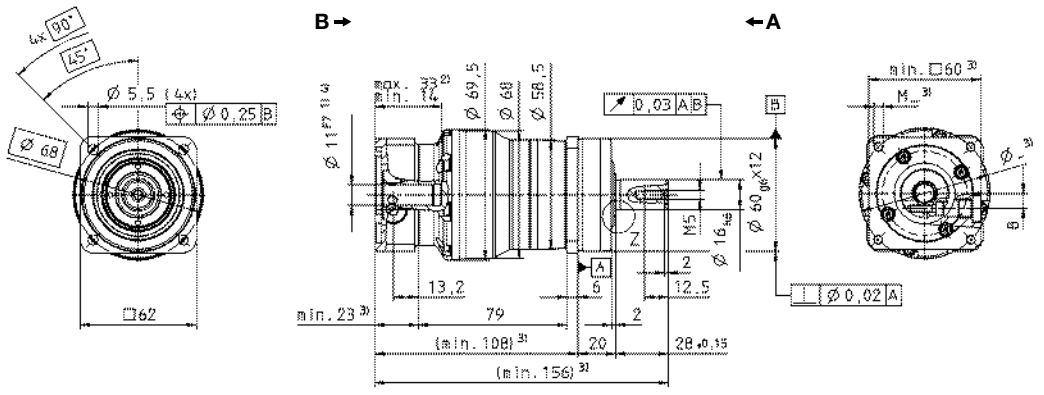
Reduced mass moments of inertia available on request.

[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Valid for clamping hub diameter of 11 mm
[d] Refers to center of the output shaft or flange

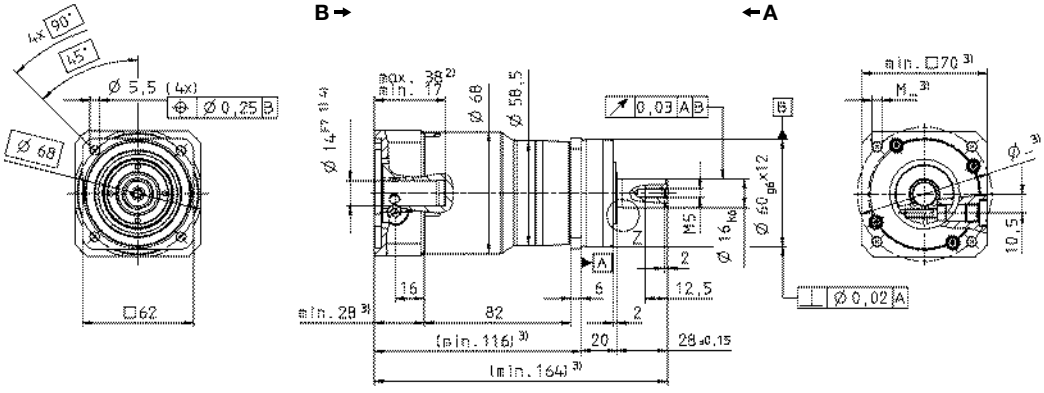
View A View B

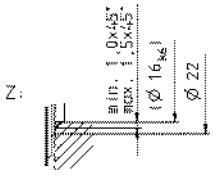
Motor shaft diameter [mm]

up to 11 [4] (B) clamping hub diameter



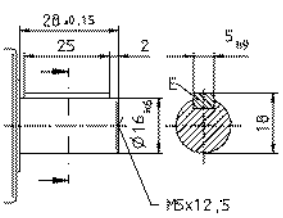
up to 14 [4] (C) clamping hub diameter



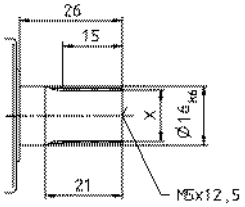


Alternatives: Output shaft variants

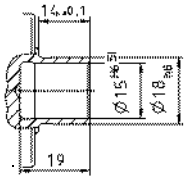
Output shaft with key in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 16 x 0.8 x 30 x 18 x 6m, DIN 5480



Shaft mounted
Mounted via shrink disc



Non-tolerated dimensions ± 1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
5) Tolerance h6 for mounted shaft.

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

Motor mounting according to operating manual

				1-stage				
Ratio [a]			***i***	**3**	**4**	**5**	**7**	**10**
cymex®-optimized acceleration torque (please contact us regarding the design)			T_{2Bcym} Nm	–	142	160	142	100
			T_{2Bcym} in.lb	–	1254	1416	1254	883
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	85	110	110	110	95
			T_{2B} in.lb	752	974	974	974	841
Nominal output torque (with n_{1N})			T_{2N} Nm	47	75	75	75	52
			T_{2N} in.lb	416	664	664	664	460
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not} Nm	200	250	250	250	200
			T_{2Not} in.lb	1770	2213	2213	2213	1770
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b]			n_{1N} rpm	2900	2900	2900	3100	3100
Max. input speed			n_{1Max} rpm	6000	6000	6000	6000	6000
Mean no load running torque (with n_1=3000 rpm and 20°C gearhead temperature) [c]			T_{012} Nm	1.8	1.4	1.1	0.8	0.6
			T_{012} in.lb	15.9	12.4	9.7	7.1	5.3
Max. torsional backlash			j_t arcmin	Standard ≤ 4 / Reduced ≤ 2				
Torsional rigidity			C_{t21} Nm/ arcmin	10				
			C_{t21} in.lb/ arcmin	89				
Max. axial force [d]			F_{2AMax} N	3350				
			F_{2AMax} lb_f	754				
Max. radial force [d]			F_{2RMax} N	4200				
			F_{2RMax} lb_f	945				
Max. tilting moment			M_{2KMax} Nm	236				
			M_{2KMax} in.lb	2089				
Efficiency at full load			η %	97				
Service life (For calculation, see the Chapter “Information”)			L_h h	> 20000				
Weight incl. standardadapter plate			*m* kg	3.9				
			m lb_m	8.6				
Operating noise (with *i*=10 and n_1=3000 rpm no load)			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				
Paint				Blue RAL 5002				
Direction of rotation				Motor and gearhead same direction				
Protection class				IP 65				
Moment of inertia (relates to the drive)	C	14	J_1 kgcm²	0.86	0.61	0.51	0.42	0.38
			J_1 10^{-3} in.lb.s²	0.76	0.54	0.46	0.37	0.33
Clamping hub diameter [mm]	E	19	J_1 kgcm²	1.03	0.78	0.68	0.59	0.54
			J_1 10^{-3} in.lb.s²	0.91	0.69	0.60	0.52	0.48
	G	24	J_1 kgcm²	2.40	2.15	2.05	1.96	1.91
			J_1 10^{-3} in.lb.s²	2.12	1.90	1.81	1.73	1.69

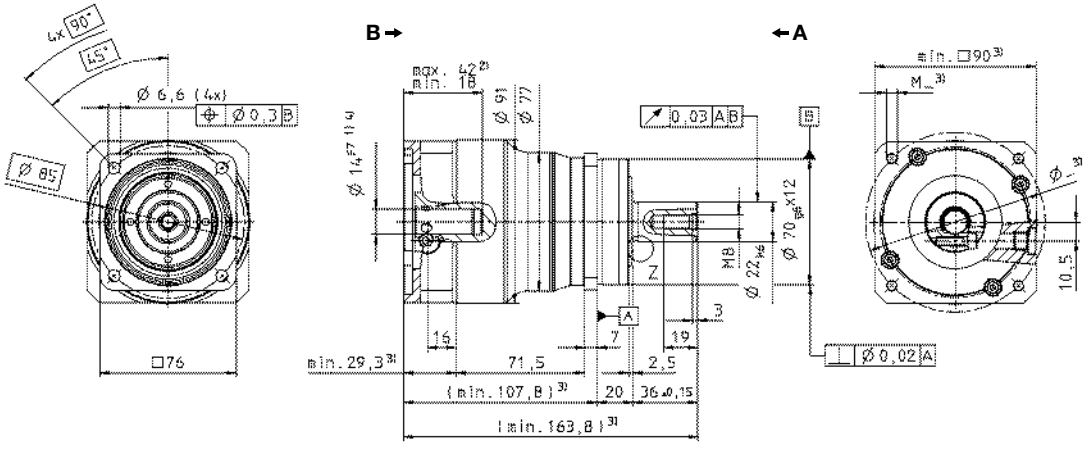
Reduced mass moments of inertia available on request.

[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Valid for clamping hub diameter of 19 mm
[d] Refers to centre of the output shaft or flange

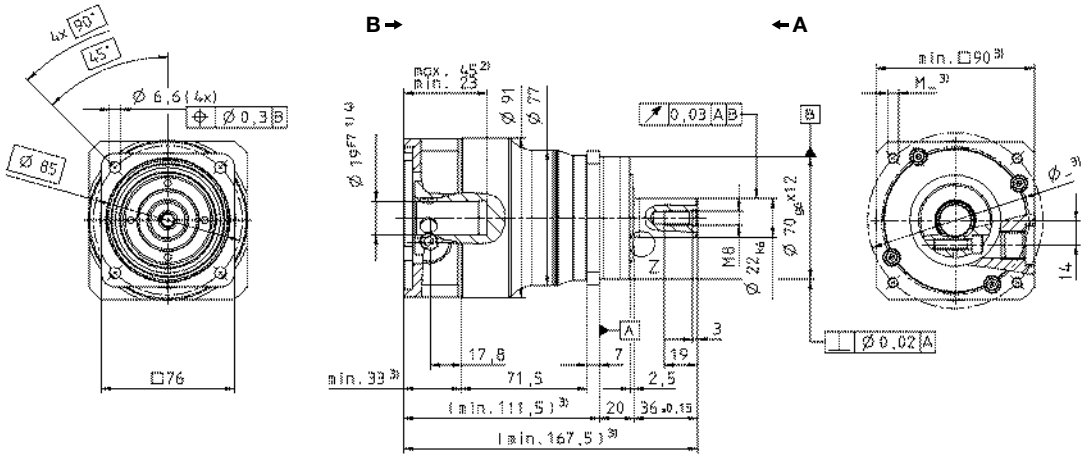
View A View B

Motor shaft diameter [mm]

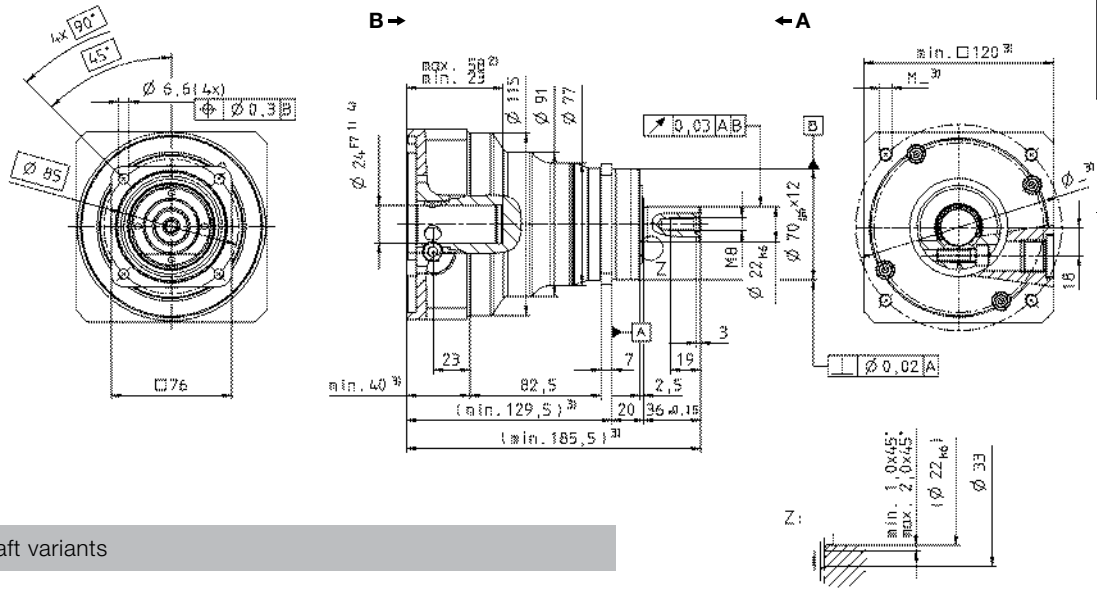
up to 14 [4] (C) clamping hub diameter



up to 19 [4] (E) clamping hub diameter

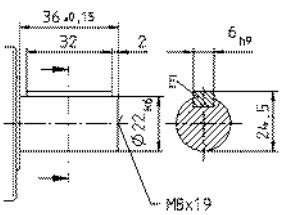


up to 24 [4] (G) clamping hub diameter

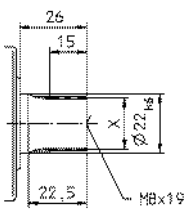


Alternatives: Output shaft variants

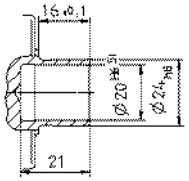
Output shaft with key in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 22 x 1.25 x 30 x 16 x 6m, DIN 5480



Shaft mounted
Mounted via shrink disc



Non-tolerated dimensions ± 1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
5) Tolerance h6 for mounted shaft.

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

Motor mounting according to operating manual

				2-stage								
Ratio [a]			*i*	**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
cymex®-optimized acceleration torque (please contact us regarding the design)			T_{2Bcym} Nm	142	142	160	142	160	135	160	142	100
			in.lb	1254	1254	1416	1254	1416	1195	1416	1254	883
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	110	110	110	110	110	110	110	110	90
			in.lb	974	974	974	974	974	974	974	974	797
Nominal output torque (with n_{1N})			T_{2N} Nm	75	75	75	75	75	75	75	75	52
			in.lb	664	664	664	664	664	664	664	664	460
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not} Nm	250	250	250	250	250	250	250	250	200
			in.lb	2213	2213	2213	2213	2213	2213	2213	2213	1770
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b]			n_{1N} rpm	3500	3500	3500	3500	3500	3500	3800	4500	4500
Max. input speed			n_{1Max} rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque (with n_1 = 3000 rpm and 20°C gearhead temperature) [c]			T_{012} Nm	0.8	0.6	0.6	0.5	0.4	0.4	0.3	0.3	0.3
			in.lb	4.4	3.5	3.5	2.7	2.7	1.8	1.8	1.8	1.8
Max. torsional backlash			j_t arcmin	Standard ≤ 6 / Reduced ≤ 4								
Torsional rigidity			C_{t21} Nm/ arcmin	10								
			in.lb/ arcmin	89								
Max. axial force [d]			F_{2AMax} N	3350								
			lb_f	754								
Max. radial force [d]			F_{2RMax} N	4200								
			lb_f	945								
Max. tilting moment			M_{2KMax} Nm	236								
			in.lb	2089								
Efficiency at full load			η %	94								
Service life (For calculation, see the Chapter "Information")			L_h h	> 20000								
Weight incl. standard adapter plate			*m* kg	3.6								
			lb_m	8.0								
Operating noise (with *i*=100 and n_1 = 3000 rpm no load)			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								
Paint				Blue RAL 5002								
Direction of rotation				Motor and gearhead same direction								
Protection class				IP 65								
Moment of inertia (relates to the drive)	B	11	J_1 kgcm²	0.16	0.13	0.13	0.10	0.10	0.091	0.090	0.089	0.089
			10^{-3} in.lb.s²	0.14	0.11	0.11	0.092	0.090	0.081	0.080	0.079	0.079
Clamping hub diameter [mm]	C	14	J_1 kgcm²	0.23	0.20	0.20	0.18	0.18	0.17	0.16	0.16	0.16
			10^{-3} in.lb.s²	0.20	0.18	0.18	0.16	0.16	0.15	0.15	0.14	0.14
	E	19	J_1 kgcm²	0.55	0.53	0.52	0.50	0.50	0.49	0.49	0.49	0.49
			10^{-3} in.lb.s²	0.49	0.47	0.46	0.44	0.44	0.43	0.43	0.43	0.43

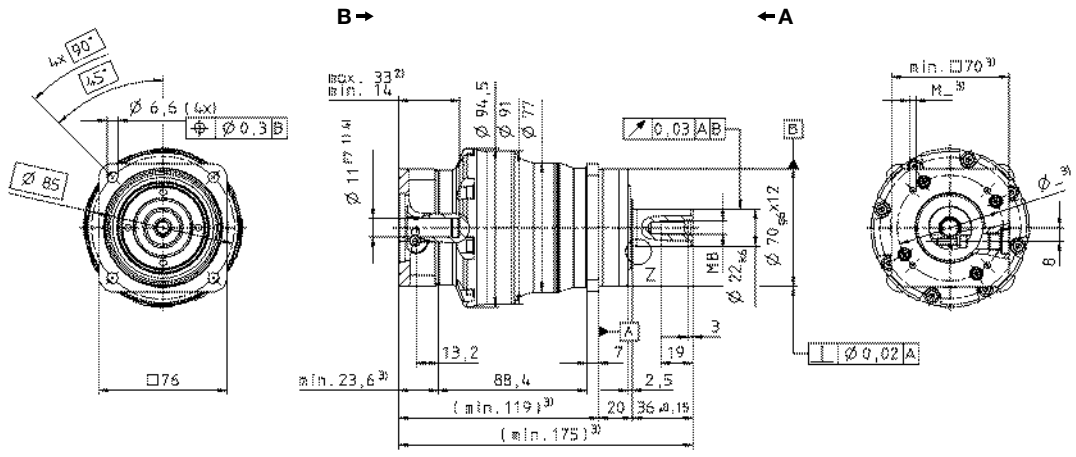
Reduced mass moments of inertia available on request.

[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Valid for clamping hub diameter of 14 mm
[d] Refers to centre of the output shaft or flange

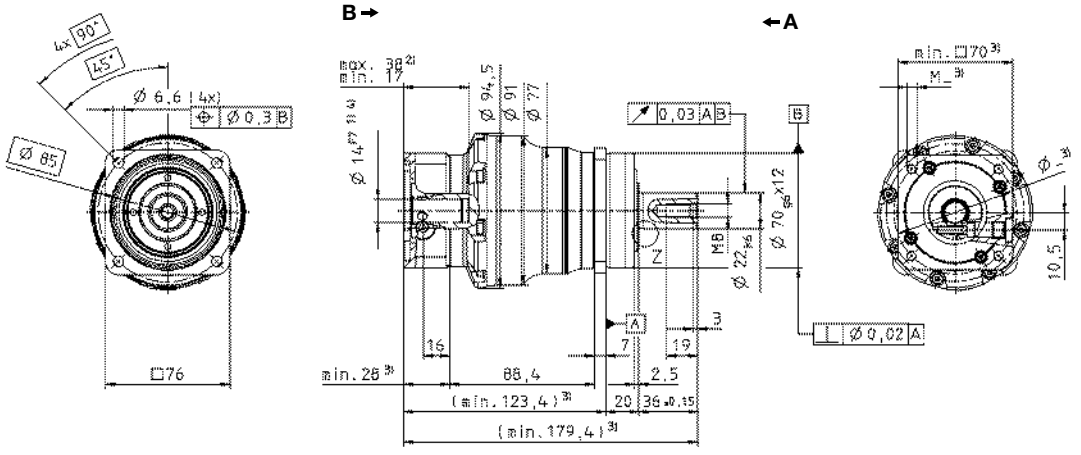
View A View B

Motor shaft diameter [mm]

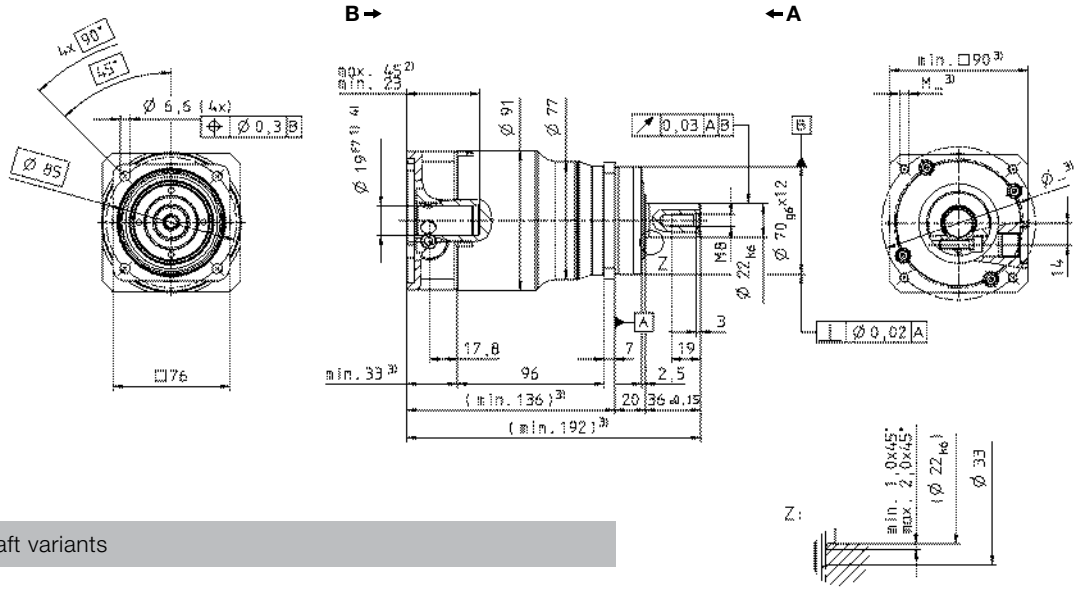
up to 11 [4] (B) clamping hub diameter



up to 14 [4] (C) clamping hub diameter

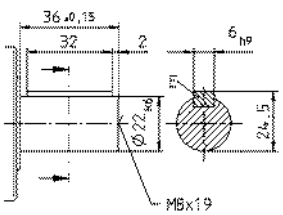


up to 19 [4] (E) clamping hub diameter

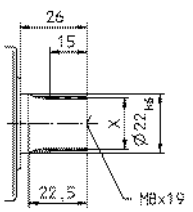


Alternatives: Output shaft variants

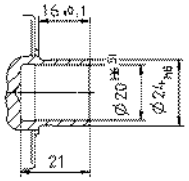
Output shaft with key in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 22 x 1.25 x 30 x 16 x 6m, DIN 5480



Shaft mounted
Mounted via shrink disc



Non-tolerated dimensions ± 1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
5) Tolerance h6 for mounted shaft.

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

Motor mounting according to operating manual

					1-stage			
Ratio [a]			***i***		**3**	**4**	**5**	**7**	**10**
cymex®-optimized acceleration torque (please contact us regarding the design)			T_{2Bcym}	Nm	–	370	400	330	260
				in.lb	–	3275	3540	2921	2301
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	235	315	315	315	235
				in.lb	2080	2788	2788	2788	2080
Nominal output torque (with n_{1N})			T_{2N}	Nm	120	180	175	170	120
				in.lb	1062	1593	1549	1505	1062
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	500	625	625	625	500
				in.lb	4425	5531	5531	5531	4425
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b]			n_{1N}	rpm	2500	2500	2500	2800	2800
Max. input speed			n_{1Max}	rpm	4500	4500	4500	4500	4500
Mean no load running torque (with n_1 = 3000 rpm and 20°C gearhead temperature) [c]			T_{012}	Nm	3.5	2.7	2.4	1.6	1.4
				in.lb	31.0	23.9	21.2	14.2	12.4
Max. torsional backlash			j_t	arcmin	Standard ≤ 3 / Reduced ≤ 1				
Torsional rigidity			C_{t21}	Nm/ arcmin	31				
				in.lb/ arcmin	274				
Max. axial force [d]			F_{2AMax}	N	5650				
				lb_f	1271				
Max. radial force [d]			F_{2RMax}	N	6600				
				lb_f	1485				
Max. tilting moment			M_{2KMax}	Nm	487				
				in.lb	4310				
Efficiency at full load			η	%	97				
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000				
Weight incl. standard adapter plate			*m*	kg	7.7				
				lb_m	17.0				
Operating noise (with *i*=10 and n_1 = 3000 rpm no load)			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				
Paint					Blue RAL 5002				
Direction of rotation					Motor and gearhead same direction				
Protection class					IP 65				
Moment of inertia (relates to the drive)	E	19	J_1	$kgcm^2$	3.29	2.35	1.92	1.60	1.38
				10^{-3} in.lb.s²	2.91	2.08	1.70	1.42	1.22
Clamping hub diameter [mm]	G	24	J_1	$kgcm^2$	3.99	3.04	2.61	2.29	2.07
				10^{-3} in.lb.s²	3.53	2.69	2.31	2.03	1.83
	H	28	J_1	$kgcm^2$	3.59	2.65	2.22	1.90	1.68
				10^{-3} in.lb.s²	3.18	2.35	1.97	1.68	1.49
	K	38	J_1	$kgcm^2$	11.1	10.1	9.68	9.36	9.14
				10^{-3} in.lb.s²	9.78	8.95	8.57	8.28	8.09

Reduced mass moments of inertia available on request.

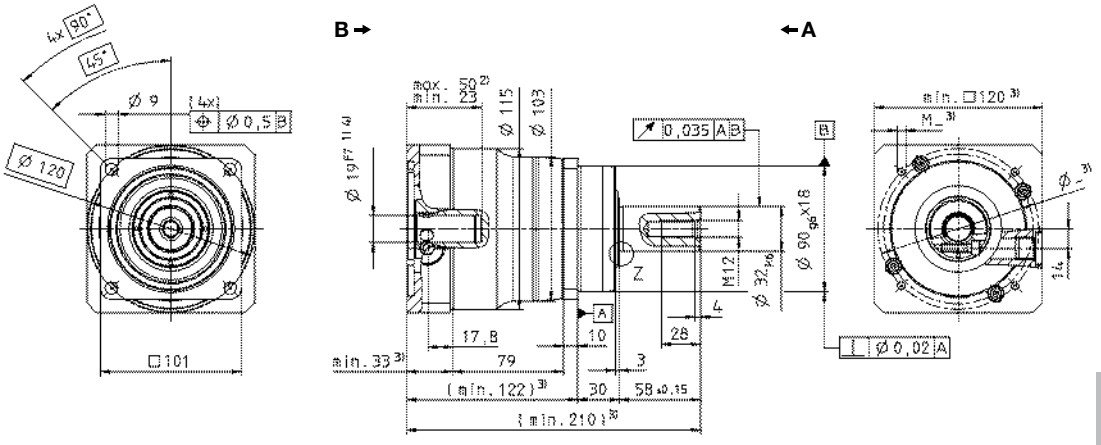
[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Valid for clamping hub diameter of 24 mm
[d] Refers to centre of the output shaft or flange

Motor shaft diameter [mm]

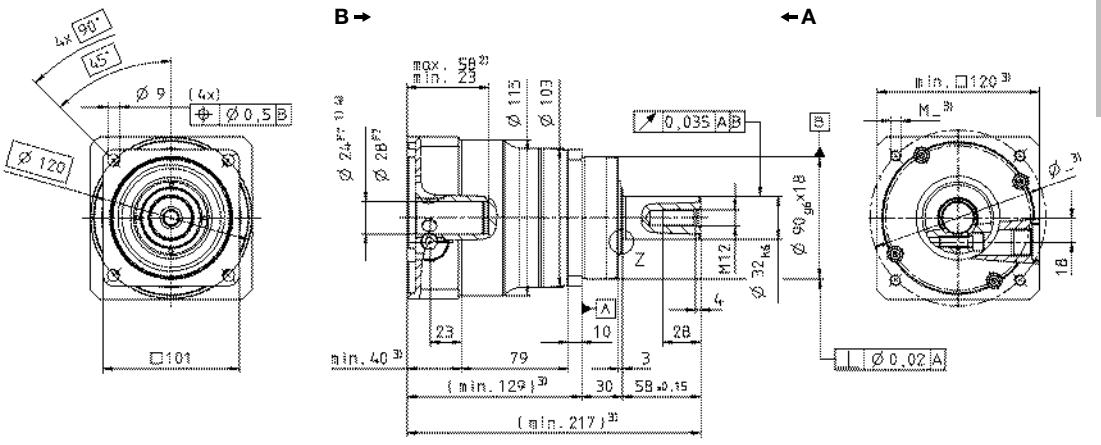
View A

View B

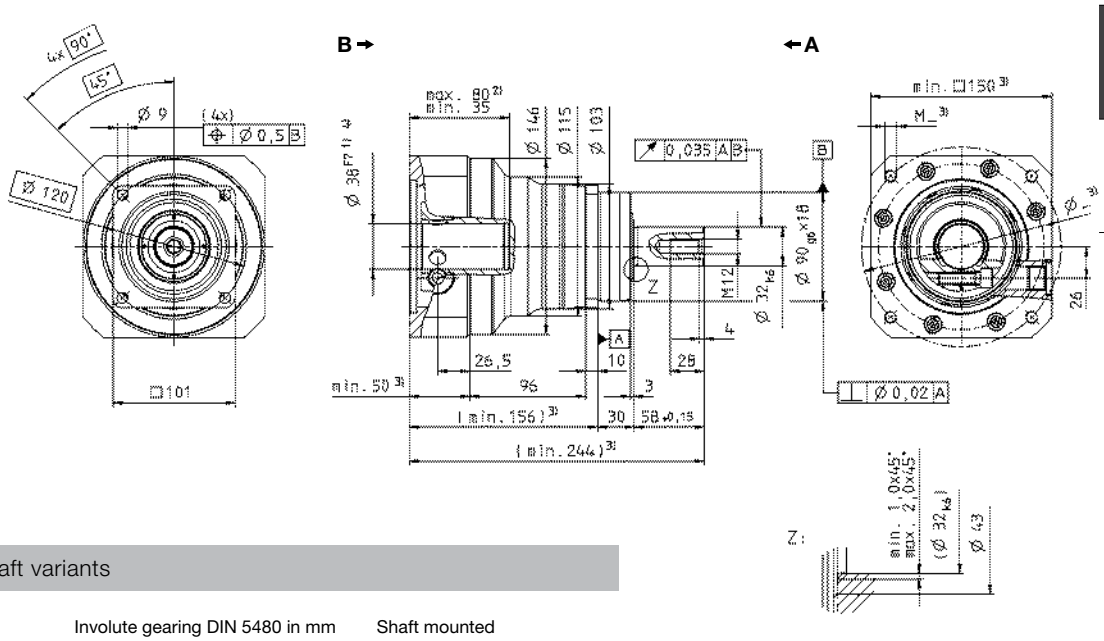
up to 19 [4] (E) clamping hub diameter



up to 24/28 [4] (G/H) clamping hub diameter

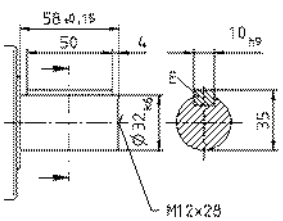


up to 38 [4] (K) clamping hub diameter

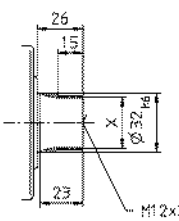


Alternatives: Output shaft variants

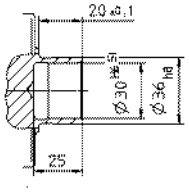
Output shaft with key in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 32 x 1.25 x 30 x 24 x 6m, DIN 5480



Shaft mounted
Mounted via shrink disc



Non-tolerated dimensions ± 1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
5) Tolerance h6 for mounted shaft.

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

Motor mounting according to operating manual

					2-stage								
Ratio [a]			i		**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
cymex®-optimized acceleration torque (please contact us regarding the design)			T_{2Bcym}	Nm	370	370	400	370	400	370	400	330	260
				in.lb	3275	3275	3540	3275	3540	3275	3540	2921	2301
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	315	315	315	315	315	315	315	315	235
				in.lb	2788	2788	2788	2788	2788	2788	2788	2788	2080
Nominal output torque (with n_{1N})			T_{2N}	Nm	180	180	175	180	175	180	175	170	120
				in.lb	1593	1593	1549	1593	1549	1593	1549	1505	1062
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	625	625	625	625	625	625	625	625	500
				in.lb	5531	5531	5531	5531	5531	5531	5531	5531	4425
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b]			n_{1N}	rpm	3100	3100	3100	3100	3100	3100	3500	4200	4200
Max. input speed			n_{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque (with n_1 = 3000 rpm and 20°C gearhead temperature) [c]			T_{012}	Nm	1.5	1.2	1.1	0.9	0.8	0.7	0.6	0.5	0.5
				in.lb	13.3	10.6	9.7	8.8	7.1	6.2	5.3	4.4	4.4
Max. torsional backlash			j_t	arcmin	Standard ≤ 5 / Reduced ≤ 3								
Torsional rigidity			C_{t21}	Nm/ arcmin	31								
				in.lb/ arcmin	274								
Max. axial force [d]			F_{2AMax}	N	5650								
				lb_f	1271								
Max. radial force [d]			F_{2RMax}	N	6600								
				lb_f	1485								
Max. tilting moment			M_{2KMax}	Nm	487								
				in.lb	4310								
Efficiency at full load			η	%	94								
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000								
Weight incl. standardadapter plate			m	kg	7.9								
				lb_m	17.5								
Operating noise (with i=100 and n_1 = 3000 rpm no load)			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								
Paint					Blue RAL 5002								
Direction of rotation					Motor and gearhead same direction								
Protection class					IP 65								
Moment of inertia (relates to the drive)	C	14	J_1	kgcm²	0.64	0.54	0.52	0.43	0.43	0.38	0.38	0.37	0.37
				10^{-3} in.lb.s²	0.57	0.47	0.46	0.38	0.38	0.34	0.33	0.33	0.33
Clamping hub diameter [mm]	E	19	J_1	kgcm²	0.81	0.70	0.69	0.60	0.59	0.55	0.54	0.54	0.54
				10^{-3} in.lb.s²	0.72	0.62	0.61	0.53	0.52	0.48	0.48	0.48	0.47
	G	24	J_1	kgcm²	2.18	2.07	2.05	1.97	1.96	1.92	1.91	1.91	1.91
				10^{-3} in.lb.s²	1.93	1.83	1.82	1.74	1.74	1.70	1.69	1.69	1.69
	H	28	J_1	kgcm²	1,98	1,90	1,88	1,81	1,80	1,76	1,75	1,75	1,75
				10^{-3} in.lb.s²	1,75	1,68	1,66	1,60	1,59	1,56	1,55	1,55	1,55

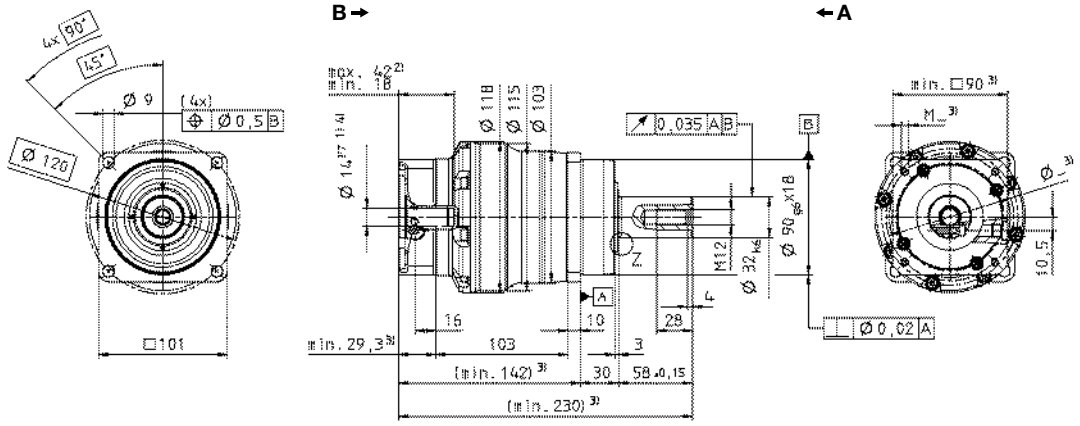
Reduced mass moments of inertia available on request.

[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Valid for clamping hub diameter of 19 mm
[d] Refers to centre of the output shaft or flange

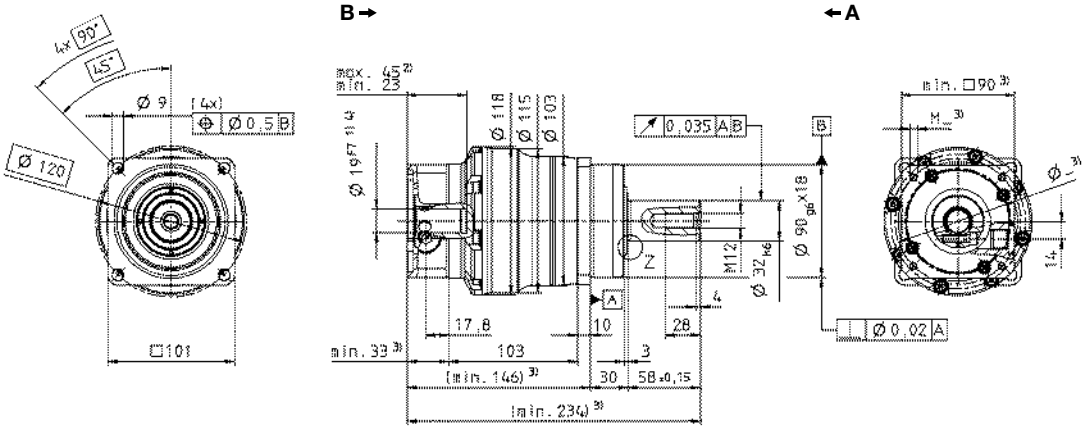
View A | View B

Motor shaft diameter [mm]

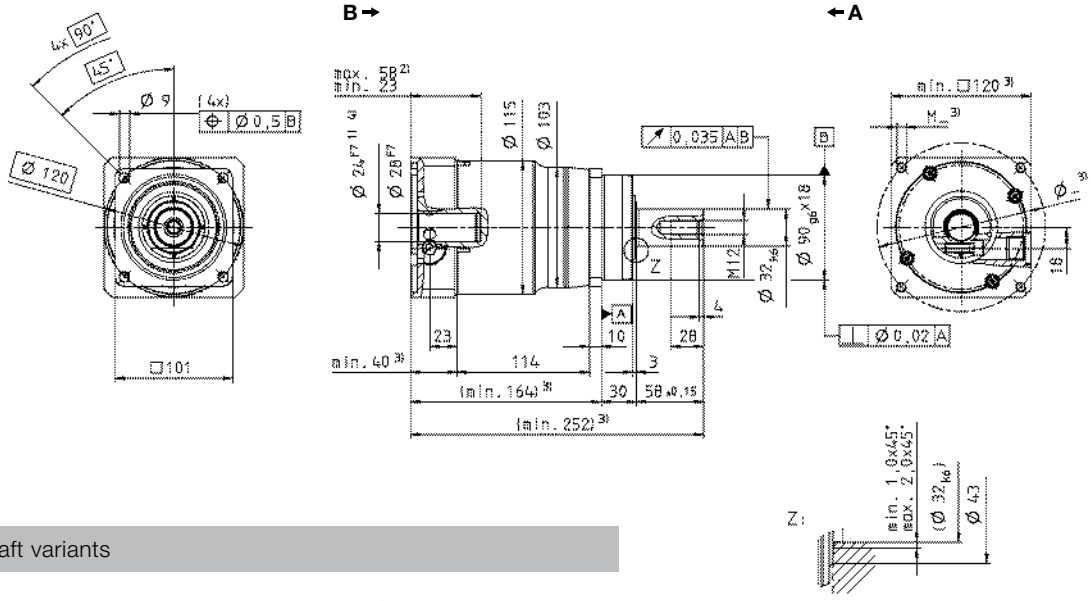
up to 14 [4] (C) clamping hub diameter



up to 19 [4] (E) clamping hub diameter

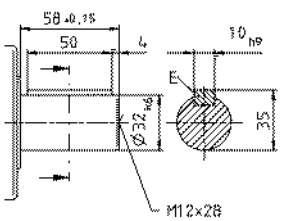


up to 24/28 [4] (G/H) clamping hub diameter

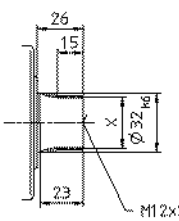


Alternatives: Output shaft variants

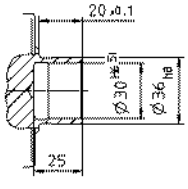
Output shaft with key in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 32 x 1.25 x 30 x 24 x 6m, DIN 5480



Shaft mounted
Mounted via shrink disc



Non-tolerated dimensions ± 1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
5) Tolerance h6 for mounted shaft.

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

Motor mounting according to operating manual

					1-stage			
Ratio [a]			***i***		**3**	**4**	**5**	**7**	**10**
cymex®-optimized acceleration torque (please contact us regarding the design)			T_{2Bcym}	Nm	–	710	755	680	560
				in.lb	–	6284	6682	6018	4956
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	390	660	660	660	530
				in.lb	3451.5	5841	5841	5841	4691
Nominal output torque (with n_{1N})			T_{2N}	Nm	200	360	360	360	220
				in.lb	1770	3186	3186	3186	1947
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	1000	1250	1250	1250	1000
				in.lb	8850	11063	11063	11063	8850
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b]			n_{1N}	rpm	2100	2100	2100	2600	2600
Max. input speed			n_{1Max}	rpm	4000	4000	4000	4000	4000
Mean no load running torque (with n_1 = 3000 rpm and 20°C gearhead temperature) [c]			T_{012}	Nm	7.6	5.8	4.7	3.4	2.5
				in.lb	67	51	42	30	22
Max. torsional backlash			j_t	arcmin	Standard ≤ 3 / Reduced ≤ 1				
Torsional rigidity			C_{t21}	Nm/ arcmin	53				
				in.lb/ arcmin	469				
Max. axial force [d]			F_{2AMax}	N	9870				
				lb_f	2221				
Max. radial force [d]			F_{2RMax}	N	9900				
				lb_f	2228				
Max. tilting moment			M_{2KMax}	Nm	952				
				in.lb	8425				
Efficiency at full load			η	%	97				
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000				
Weight incl. standard adapter plate			*m*	kg	17.2				
				lb_m	38.0				
Operating noise (with *i*=10 and n_1 = 3000 rpm no load)			L_{PA}	dB(A)	≤ 65				
Max. permitted housing temperature				°C	+90				
				F	194				
Ambient temperature				°C	-15 to +40				
				F	5 to 104				
Lubrication					Lubricated for life				
Paint					Blue RAL 5002				
Direction of rotation					Motor and gearhead same direction				
Protection class					IP 65				
Moment of inertia (relates to the drive)	G	24	J_1	kgcm²	10.7	7.82	6.79	5.84	5.28
				10^{-3} in.lb.s²	9.45	6.92	6.01	5.17	4.67
Clamping hub diameter [mm]	I	32	J_1	kgcm²	13.8	11.0	9.95	9.01	8.44
				10^{-3} in.lb.s²	12.3	9.72	8.81	7.97	7.47
	K	38	J_1	kgcm²	14.9	12.1	11.0	10.1	9.51
				10^{-3} in.lb.s²	13.2	10.7	9.76	8.92	8.42
	M	48	J_1	kgcm²	29.5	26.7	25.6	24.7	24.2
				10^{-3} in.lb.s²	26.1	23.6	22.7	21.9	21.4

Reduced mass moments of inertia available on request.

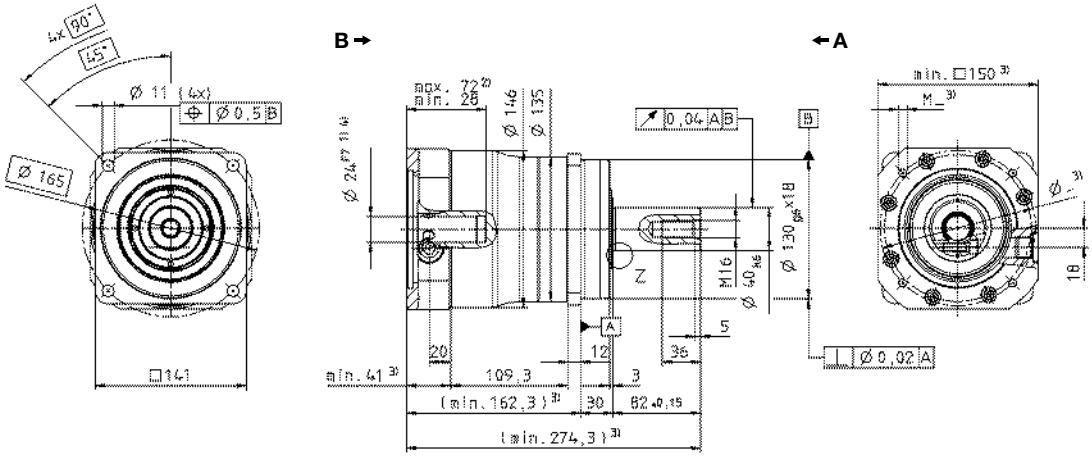
[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Valid for clamping hub diameter of 38 mm
[d] Refers to center of the output shaft or flange

View A

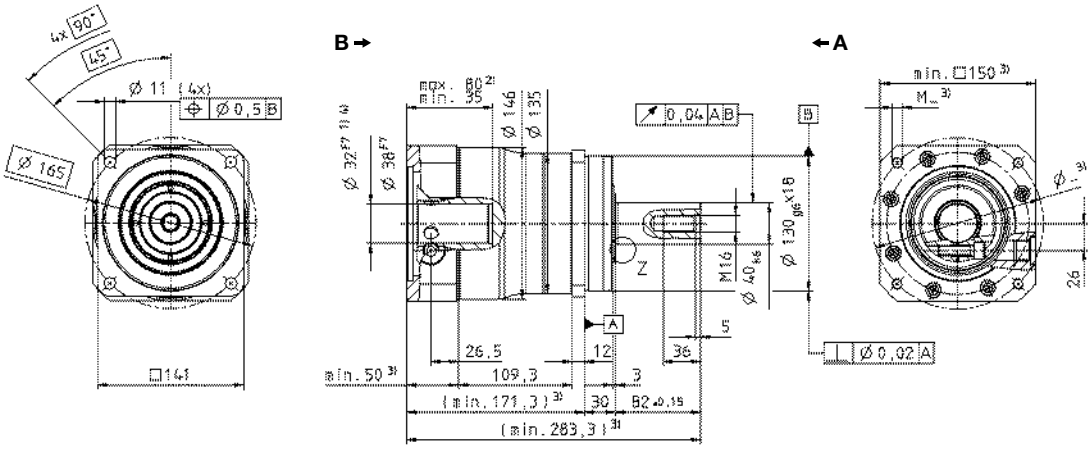
View B

Motor shaft diameter [mm]

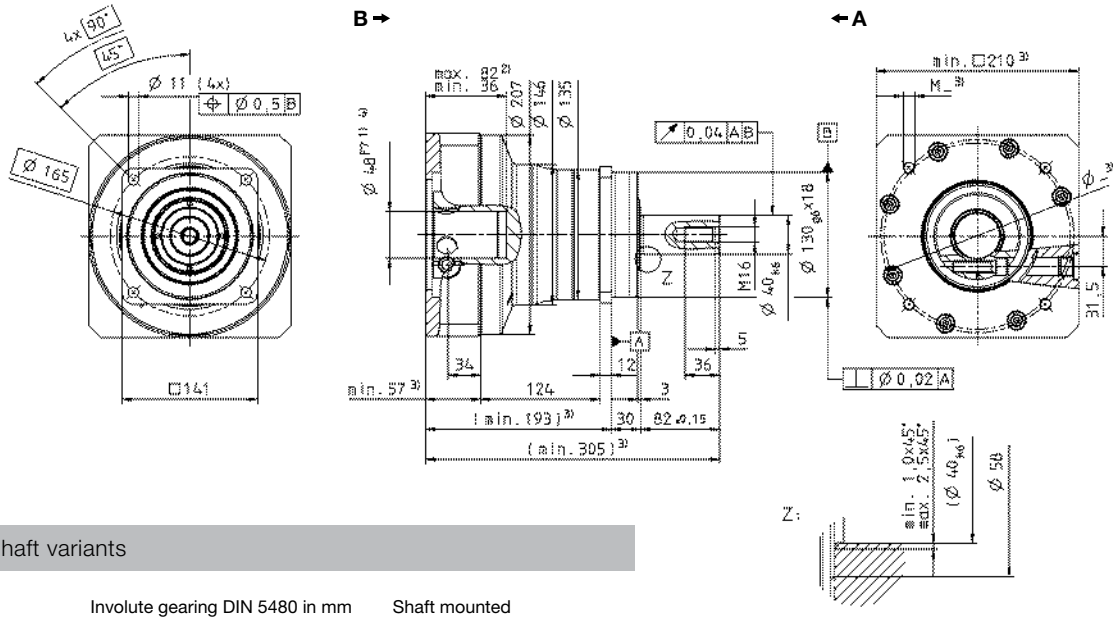
up to 24 [4] (G) clamping hub diameter



up to 32/38 [4] (I/K) clamping hub diameter



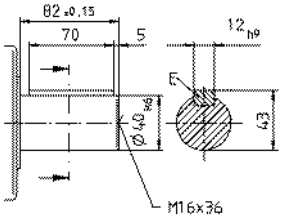
up to 48 [4] (M) clamping hub diameter



Alternatives: Output shaft variants

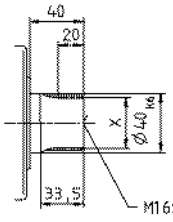
Output shaft with key in mm

E = key as per DIN 6885, sheet 1, form A



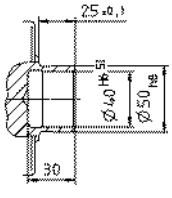
Involute gearing DIN 5480 in mm

X = W 40 x 2 x 30 x 18 x 6m, DIN 5480



Shaft mounted

Mounted via shrink disc



Non-tolerated dimensions ± 1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
5) Tolerance h6 for mounted shaft.

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

Motor mounting according to operating manual

					2-stage								
Ratio [a]			*i*		**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
cymex®-optimized acceleration torque (please contact us regarding the design)			T_{2Bcym}	Nm	710	710	755	710	755	710	755	680	560
				in.lb	6284	6284	6682	6284	6682	6284	6682	6018	4956
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	660	660	660	660	660	660	660	660	530
				in.lb	5841	5841	5841	5841	5841	5841	5841	5841	4691
Nominal output torque (with n_{1N})			T_{2N}	Nm	360	360	360	360	360	360	360	360	220
				in.lb	3186	3186	3186	3186	3186	3186	3186	3186	1947
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	1250	1250	1250	1250	1250	1250	1250	1250	1000
				in.lb	11063	11063	11063	11063	11063	11063	11063	11063	8850
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b]			n_{1N}	rpm	2900	2900	2900	2900	2900	2900	3200	3200	3900
Max. input speed [c]			n_{1Max}	rpm	5000	5000	5000	5000	5000	5000	5000	5000	5000
Mean no load running torque (with n_1 = 3000 rpm and 20°C gearhead temperature) [c]			T_{012}	Nm	3.3	2.7	2.4	1.9	1.8	1.4	1.3	1.2	1.1
				in.lb	29.2	23.9	21.2	16.9	15.9	12.4	11.5	10.6	9.7
Max. torsional backlash			j_t	arcmin	Standard ≤ 5 / Reduced ≤ 3								
Torsional rigidity			C_{t21}	Nm/ arcmin	53								
				in.lb/ arcmin	469								
Max. axial force [d]			F_{2AMax}	N	9870								
				lb_f	2221								
Max. radial force [d]			F_{2RMax}	N	9900								
				lb_f	2228								
Max. tilting moment			M_{2KMax}	Nm	952								
				in.lb	8425								
Efficiency at full load			η	%	94								
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000								
Weight incl. standard adapter plate			*m*	kg	17								
				lb_m	37.6								
Operating noise (with *i*=100 and n_1 = 3000 rpm no load)			L_{PA}	dB(A)	≤ 63								
Max. permitted housing temperature				°C	+90								
				F	194								
Ambient temperature				°C	-15 to +40								
				F	5 to 104								
Lubrication					Lubricated for life								
Paint					Blue RAL 5002								
Direction of rotation					Motor and gearhead same direction								
Protection class					IP 65								
Moment of inertia (relates to the drive)	E	19	J_1	$kgcm^2$	2.50	2.01	1.97	1.65	1.63	1.40	1.39	1.38	1.38
				10^{-3} in.lb.s²	2.21	1.78	1.75	1.46	1.44	1.24	1.23	1.22	1.22
Clamping hub diameter [mm]	G	24	J_1	$kgcm^2$	3.19	2.71	2.67	2.34	2.32	2.10	2.08	2.08	2.07
				10^{-3} in.lb.s²	2.82	2.40	2.36	2.07	2.05	1.85	1.85	1.84	1.83
	K	38	J_1	$kgcm^2$	10.3	9.77	9.73	9.41	9.39	9.16	9.15	9.14	9.14
				10^{-3} in.lb.s²	9.07	8.65	8.61	8.33	8.31	8.11	8.10	8.09	8.09

Reduced mass moments of inertia available on request.

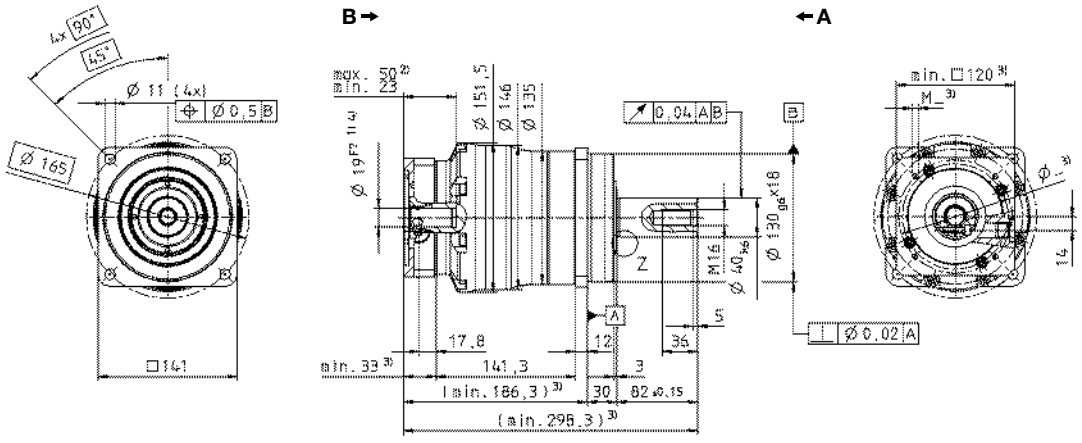
[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Valid for clamping hub diameter of 24 mm
[d] Refers to center of the output shaft or flange

View A

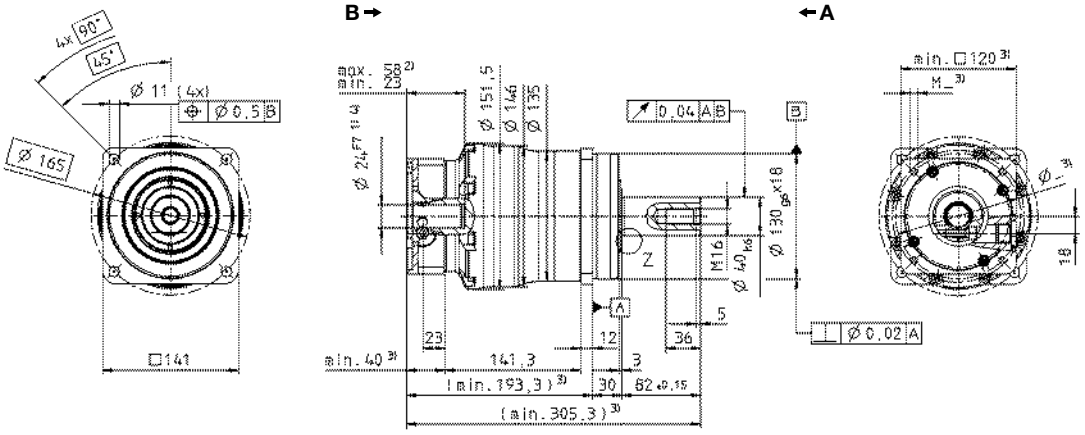
View B

Motor shaft diameter [mm]

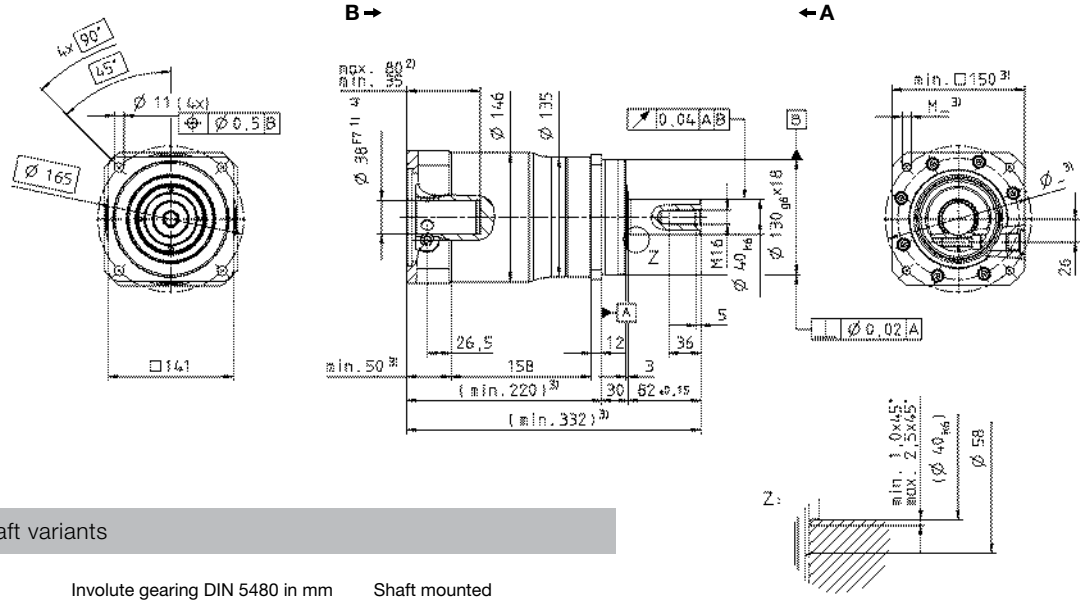
up to 19 [4] (E) clamping hub diameter



up to 24 [4] (G) clamping hub diameter

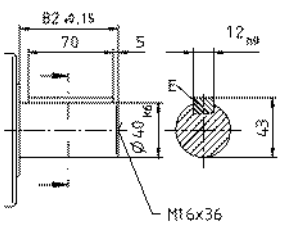


up to 38 [4] (K) clamping hub diameter

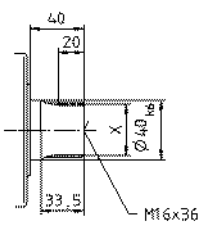


Alternatives: Output shaft variants

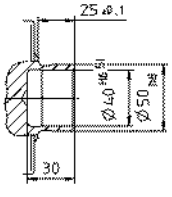
Output shaft with key in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 40 x 2 x 30 x 18 x 6m, DIN 5480



Shaft mounted
Mounted via shrink disc



Non-tolerated dimensions ± 1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
5) Tolerance h6 for mounted shaft.

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

Motor mounting according to operating manual

				1-stage				
Ratio [a]			***i***	**3**	**4**	**5**	**7**	**10**
cymex®-optimized acceleration torque (please contact us regarding the design)			T_{2Bcym} Nm	–	1785	1890	1785	1400
			in.lb	–	15797	16727	15797	12390
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	970	1210	1210	1210	970
			in.lb	8585	10709	10709	10709	8585
Nominal output torque (with n_{1N})			T_{2N} Nm	530	750	750	750	750
			in.lb	4691	6638	6638	6638	6638
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not} Nm	2200	2750	2750	2750	2200
			in.lb	19470	24338	24338	24338	29470
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b]			n_{1N} rpm	1500	1500	1500	2300	2300
Max. input speed			n_{1Max} rpm	3500	3500	3500	3500	3500
Mean no load running torque (with n_1 = 3000 rpm and 20°C gearhead temperature) [c]			T_{012} Nm	14.0	11.0	9.0	6.8	5.0
			in.lb	123.9	97.4	79.7	60.2	44.3
Max. torsional backlash			j_t arcmin	Standard ≤ 3 / Reduced ≤ 1				
Torsional rigidity			C_{t21} Nm/ arcmin	175				
			in.lb/ arcmin	1549				
Max. axial force [d]			F_{2AMax} N	14150				
			lb_f	3184				
Max. radial force [d]			F_{2RMax} N	15400				
			lb_f	3465				
Max. tilting moment			M_{2KMax} Nm	1600				
			in.lb	14160				
Efficiency at full load			η %	97				
Service life (For calculation, see the Chapter "Information")			L_h h	> 20000				
Weight incl. standard adapter plate			*m* kg	34				
			lb_m	75.1				
Operating noise (with *i*=10 and n_1 = 3000 rpm no load)			L_{PA} dB(A)	≤ 66				
Max. permitted housing temperature			°C	+90				
			F	194				
Ambient temperature			°C	-15 to +40				
			F	5 to 104				
Lubrication				Lubricated for life				
Paint				Blue RAL 5002				
Direction of rotation				Motor and gearhead same direction				
Protection class				IP 65				
Moment of inertia (relates to the drive)	K	38	J_1 kgcm²	50.8	33.9	27.9	22.2	19.2
			10^{-3} in.lb.s²	45.0	30.0	24.7	19.7	17.0
Clamping hub diameter [mm]	M	48	J_1 kgcm²	58.2	41.2	35.3	29.6	26.5
			10^{-3} in.lb.s²	51.5	36.5	31.2	26.2	23.5

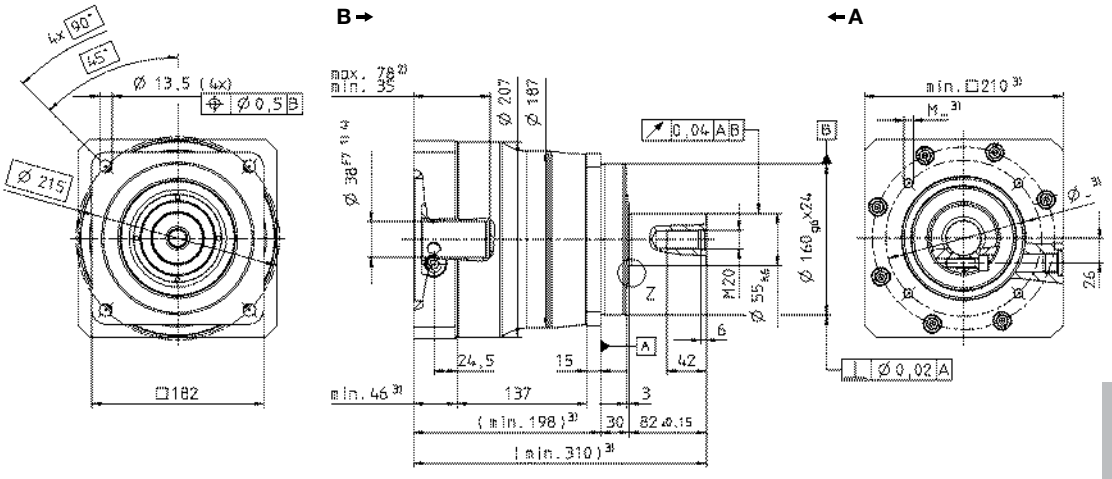
Reduced mass moments of inertia available on request.

[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Valid for clamping hub diameter of 48 mm
[d] Refers to center of the output shaft or flange

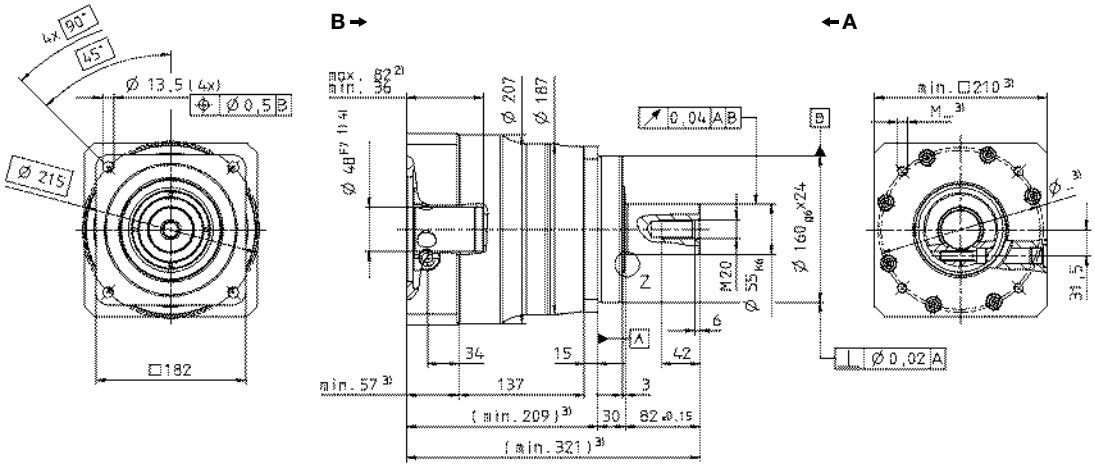
View A | View B

Motor shaft diameter [mm]

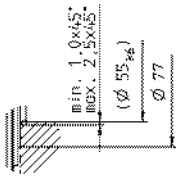
up to 38 [4] (K) clamping hub diameter



up to 48 [4] (M) clamping hub diameter



Z:



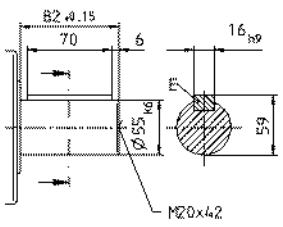
Planetary gearheads **High End**

SP+

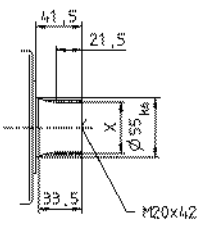
MF

Alternatives: Output shaft variants

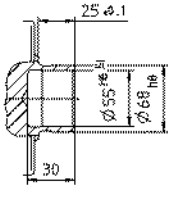
Output shaft with key in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 55 x 2 x 30 x 26 x 6m, DIN 5480



Shaft mounted
Mounted via shrink disc



Non-tolerated dimensions ± 1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
5) Tolerance h6 for mounted shaft.

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

Motor mounting according to operating manual

					2-stage								
Ratio [a]			i		**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
cymex®-optimized acceleration torque (please contact us regarding the design)			T_{2Bcym}	Nm	1785	1785	1890	1785	1890	1785	1800	1785	1400
				in.lb	15797	15797	16727	15797	16727	15797	15930	15797	12390
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	1210	1210	1210	1210	1210	1210	1210	1210	970
				in.lb	10709	10709	10709	10709	10709	10709	10709	10709	8585
Nominal output torque (with n_{1N})			T_{2N}	Nm	750	750	750	750	750	750	750	750	750
				in.lb	6638	6638	6638	6638	6638	6638	6637	6638	6638
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	2750	2750	2750	2750	2750	2750	2750	2750	2200
				in.lb	24338	24338	24338	24338	24338	24338	24338	24338	19470
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b]			n_{1N}	rpm	2700	2700	2700	2700	2700	2700	2900	3200	3400
Max. input speed [c]			n_{1Max}	rpm	4500	4500	4500	4500	4500	4000	4500	4500	4500
Mean no load running torque (with n_1 = 3000 rpm and 20°C gearhead temperature) [c]			T_{012}	Nm	5.3	4.3	3.9	3.1	2.8	2.3	2.1	1.9	1.7
				in.lb	46,9	38,1	34,5	27,4	24,8	20,4	18,6	16,8	15,0
Max. torsional backlash			j_t	arcmin	Standard ≤ 5 / Reduced ≤ 3								
Torsional rigidity			C_{t21}	Nm/ arcmin	175								
				in.lb/ arcmin	1549								
Max. axial force [d]			F_{2AMax}	N	14150								
				lb_f	3184								
Max. radial force [d]			F_{2RMax}	N	15400								
				lb_f	3465								
Max. tilting moment			M_{2KMax}	Nm	1600								
				in.lb	14160								
Efficiency at full load			η	%	94								
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000								
Weight incl. standard adapter plate			m	kg	36.4								
				lb_m	80.4								
Operating noise (with i=100 and n_1 = 3000 rpm no load)			L_{PA}	dB(A)	≤ 66								
Max. permitted housing temperature				°C	+90								
				F	194								
Ambient temperature				°C	-15 to +40								
				F	5 to 104								
Lubrication					Lubricated for life								
Paint					Blue RAL 5002								
Direction of rotation					Motor and gearhead same direction								
Protection class					IP 65								
Moment of inertia (relates to the drive)	G	24	J_1	kgcm²	9.27	7.72	7.48	6.32	6.20	5.51	5.45	5.39	5.36
				10^{-3} in.lb.s²	8.20	6.83	6.62	5.59	5.49	4.88	4.82	4.77	4.74
Clamping hub diameter [mm]	I	32	J_1	kgcm²	12.4	10.9	10.6	9.48	9.36	8.67	8.61	8.55	8.52
				10^{-3} in.lb.s²	11.0	9.63	9.42	8.39	8.28	7.67	7.62	7.57	7.54
	K	38	J_1	kgcm²	13.5	12.0	11.7	10.6	10.4	9.74	9.68	9.63	9.60
				10^{-3} in.lb.s²	12.0	10.6	10.4	9.34	9.23	8.62	8.57	8.52	8.49
	M	48	J_1	kgcm²	28.1	26.6	26.3	25.2	25.1	24.4	24.3	24.3	24.3
				10^{-3} in.lb.s²	24.9	23.5	23.3	22.3	22.2	21.6	21.5	21.5	21.5

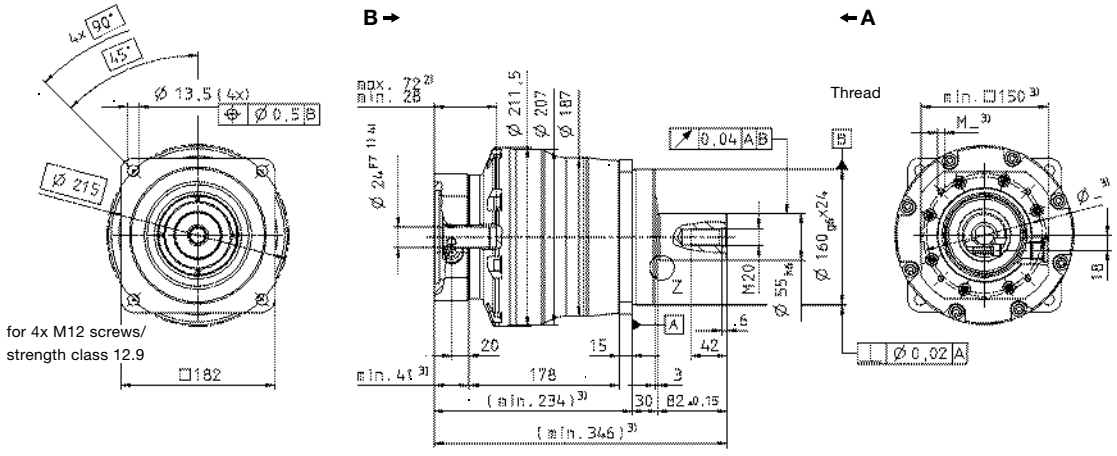
Reduced mass moments of inertia available on request.

[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Valid for clamping hub diameter of 38 mm
[d] Refers to center of the output shaft or flange

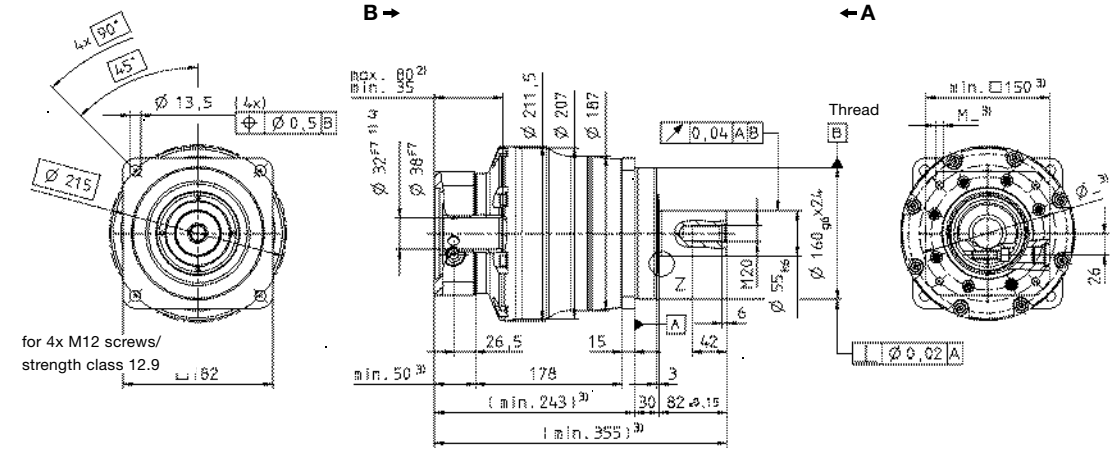
View A | View B

Motor shaft diameter [mm]

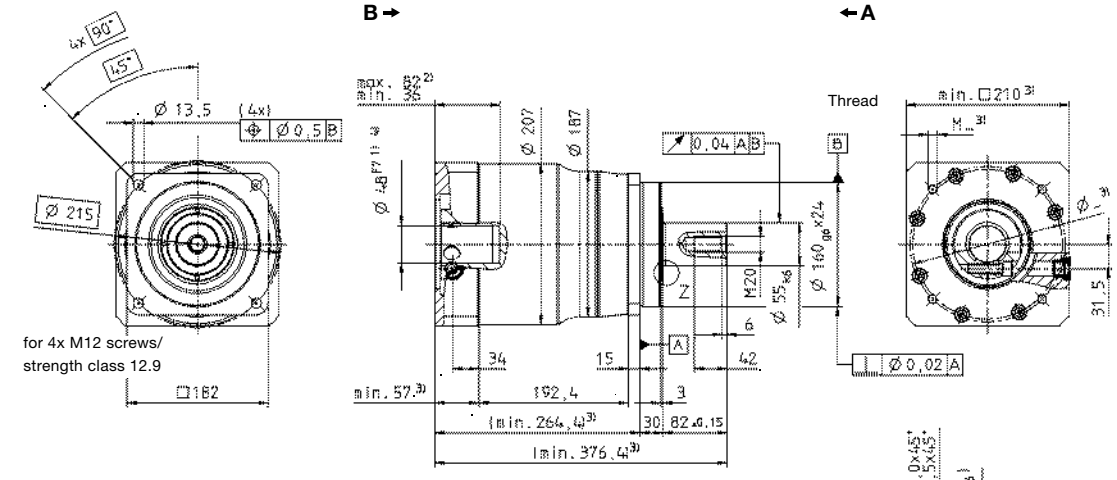
up to 24 [4] (G) clamping hub diameter

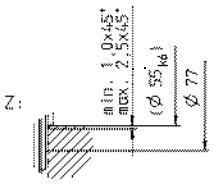


up to 32/38 [4] (I/K) clamping hub diameter



up to 48 [4] (M) clamping hub diameter

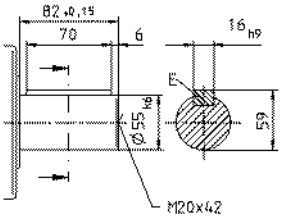




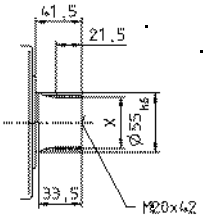
Alternatives: Output shaft variants

Z: Detail

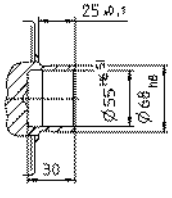
Output shaft with key in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 55 x 2 x 30 x 26 x 6m, DIN 5480



Shaft mounted
Mounted via shrink disc



Connecting part

Non-tolerated dimensions ± 1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
5) Tolerance h6 for mounted shaft.

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

Motor mounting according to operating manual

				1-stage					2-stage								
Ratio [a]			*i*	**3**	**4**	**5**	**7**	**10**	**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
cymex®-optimized acceleration torque (please contact us regarding the design)			T_{2Bcym} Nm	- Please contact us -													
			T_{2Bcym} in.lb														
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	1600	2500	2500	2400	1900	2400	2500	2500	2400	2400	2400	2400	2400	1900
			T_{2B} in.lb	14160	22125	22125	21240	16815	21240	22125	22125	21240	21240	21240	21240	21240	16815
Nominal output torque (with n_{1N})			T_{2N} Nm	1100	1500	1500	1400	1000	1500	1500	1500	1500	1500	1500	1500	1400	1000
			T_{2N} in.lb	9735	13275	13275	12390	8850	13275	13275	13275	13275	13275	13275	13275	12390	8850
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not} Nm	5000	5200	5200	5200	5000	5200	5200	5200	5200	5200	5200	5200	5200	5000
			T_{2Not} in.lb	44250	46020	46020	46020	44250	46020	46020	46020	46020	46020	46020	46020	46020	44250
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b]			n_{1N} rpm	1200	1200	1500	1700	2000	2500	2500	2500	2500	2500	2500	2500	3000	3000
Max. input speed			n_{1Max} rpm	2500	2500	2500	2500	2500	3500	3500	3500	3500	3500	3500	3500	3500	3500
Mean no load running torque (with n_1 = 2000 rpm and 20°C gearhead temperature)			T_{012} Nm	32	22	17	11	7,0	7,0	6,0	5,5	4,5	4,0	3,5	3,5	3,5	3,0
			T_{012} in.lb	283	195	151	97	62	62	53	49	40	35	31	31	31	27
Max. torsional backlash			j_t arcmin	Standard ≤ 3 / Reduced ≤ 1					Standard ≤ 5 / Reduced ≤ 3								
Torsional rigidity			C_{t21} Nm/ arcmin	400					400								
			C_{t21} in.lb/ arcmin	3540					3540								
Max. axial force [c]			F_{2AMax} N	30000					30000								
			F_{2AMax} lb_f	6750					6750								
Max. radial force [c]			F_{2RMax} N	21000					21000								
			F_{2RMax} lb_f	4725					4725								
Max. tilting moment			M_{2KMax} Nm	3100					3100								
			M_{2KMax} in.lb	27435					2744								
Efficiency at full load			η %	97					94								
Service life (For calculation, see the Chapter "Information")			L_h h	> 20000					> 20000								
Weight incl. standard adapter plate			*m* kg	56					53								
			m lb_m	124					117								
Operating noise (with *i*=10 and n_1 = 2000 rpm no load)			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													
Paint				Blue RAL 5002													
Direction of rotation				Motor and gearhead same direction													
Protection class				IP 65													
Moment of inertia (relates to the drive)	M	48	J_1 kgcm²	-	-	-	-	-	34.5	31.5	30.8	30.0	29.7	28.5	28.3	28.1	28.0
			J_1 10^{-3} in.lb.s²						30.5	27.9	27.3	26.6	26.3	25.2	25.0	24.9	24.8
Clamping hub diameter (mm)	N	55	J_1 kgcm²	139.0	94.3	76.9	61.5	53.1	-	-	-	-	-	-	-	-	-
			J_1 10^{-3} in.lb.s²	118.2	80.2	65.4	52.3	45.1									

Reduced mass moments of inertia available on request.

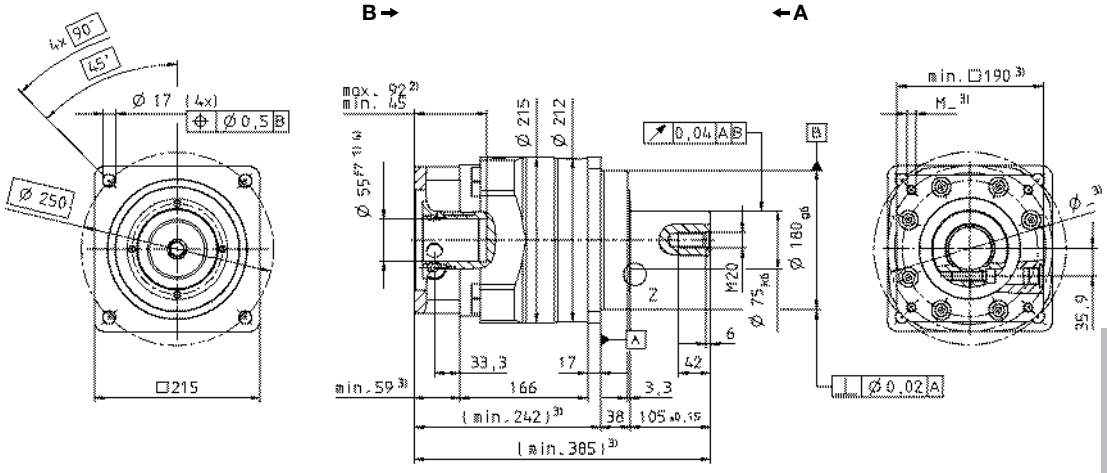
[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Refers to center of the output shaft or flange

View A | View B

Motor shaft diameter [mm]

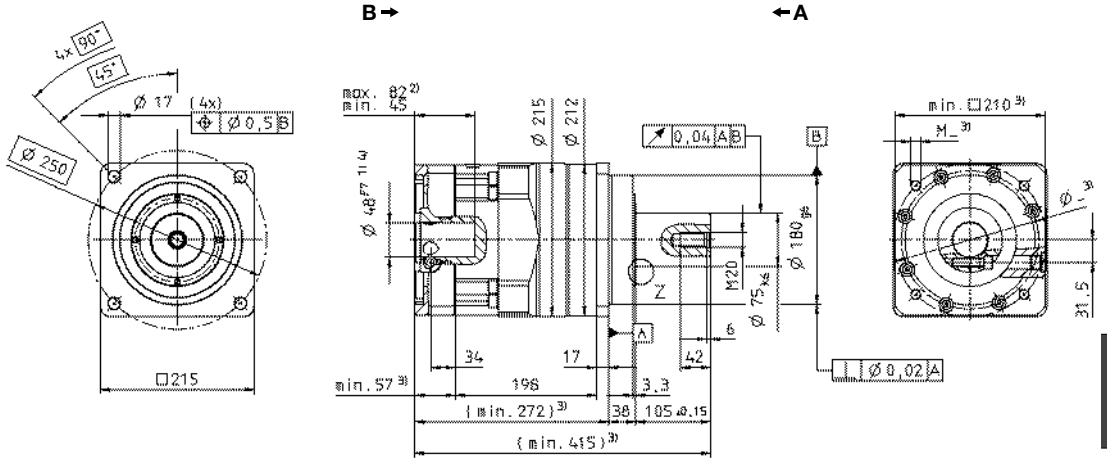
up to 55 [4] (N) clamping hub diameter

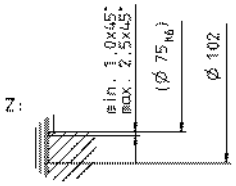
1-stage:



up to 48 [4] (M) clamping hub diameter

2-stage:





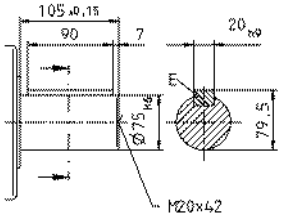
Planetary gearheads **High End**

SP+

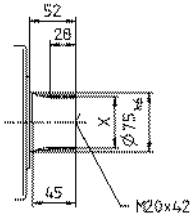
MF

Alternatives: Output shaft variants

Output shaft with key in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 70 x 2 x 30 x 34 x 6m, DIN 5480



Non-tolerated dimensions ± 1.5 mm

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

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

Motor mounting according to operating manual

					1-stage					2-stage								
Ratio [a]			*i*		**3**	**4**	**5**	**7**	**10**	**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
cymex®-optimized acceleration torque (please contact us regarding the design)			T_{2Bcym}	Nm	- Please contact us -													
				in.lb														
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	2750	4500	4500	4300	3400	4500	4500	4500	4500	4500	4000	4300	4300	3400
				in.lb	24338	39825	39825	38055	30090	39825	39825	39825	39825	39825	35400	38055	38055	30090
Nominal output torque (with n_{1N})			T_{2N}	Nm	1500	2500	2500	2300	1700	2500	2500	2500	2500	2500	2500	2500	2300	1700
				in.lb	13275	22125	22125	20355	15045	22125	22125	22125	22125	22125	22125	22125	20355	15045
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	6800	8500	8500	8500	6800	8500	8500	8500	8500	8500	8500	8500	8500	6800
				in.lb	60180	75225	75225	75225	60180	75225	75225	75225	75225	75225	75225	75225	75225	60180
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b]			n_{1N}	rpm	1000	1000	1200	1500	1700	2300	2500	2500	2500	2500	2500	2500	2800	2800
Max. input speed			n_{1Max}	rpm	2500	2500	2500	2500	2500	3500	3500	3500	3500	3500	3500	3500	3500	3500
Mean no load running torque (with n_1 = 2000 rpm and 20°C gearhead temperature)			T_{012}	Nm	45	35	26	16	11	11	9,0	8,0	7,0	6,0	5,0	4,5	4,0	4,0
				in.lb	398	310	230	142	97	97	80	71	62	53	44	40	35	35
Max. torsional backlash			j_t	arcmin	Standard ≤ 3 / Reduced ≤ 1					Standard ≤ 5 / Reduced ≤ 3								
Torsional rigidity			C_{t21}	Nm/ arcmin	550					550								
				in.lb/ arcmin	4868					4868								
Max. axial force [c]			F_{2AMax}	N	33000					33000								
				lb_f	7425					7425								
Max. radial force [c]			F_{2RMax}	N	30000					30000								
				lb_f	6750					6750								
Max. tilting moment			M_{2KMax}	Nm	5000					5000								
				in.lb	44250					44250								
Efficiency at full load			η	%	97					94								
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000					> 20000								
Weight incl. standard adapter plate			*m*	kg	77					76								
				lb_m	170					168								
Operating noise (with *i*=10 and n_1 = 2000 rpm no load)			L_{PA}	dB(A)	≤ 66													
Max. permitted housing temperature				°C	+90													
				F	194													
Ambient temperature				°C	-15 to +40													
				F	5 to 104													
Lubrication					Lubricated for life													
Paint					Blue RAL 5002													
Direction of rotation					Motor and gearhead same direction													
Protection class					IP 65													
Moment of inertia (relates to the drive)	M	48	J_1	kgcm²	-	-	-	-	-	39.2	34.6	33.2	30.5	29.7	28.2	27.9	27.6	27.5
				10^{-3} in.lb.s²						34.7	30.6	29.4	27.0	26.3	25.0	24.7	24.4	24.3
Clamping hub diameter [mm]	O	60	J_1	kgcm²	260.2	198.2	163.0	138,3	124,7	-	-	-	-	-	-	-	-	-
				10^{-3} in.lb.s²	230.3	175.4	144.3	122,4	110,4									

Reduced mass moments of inertia available on request.

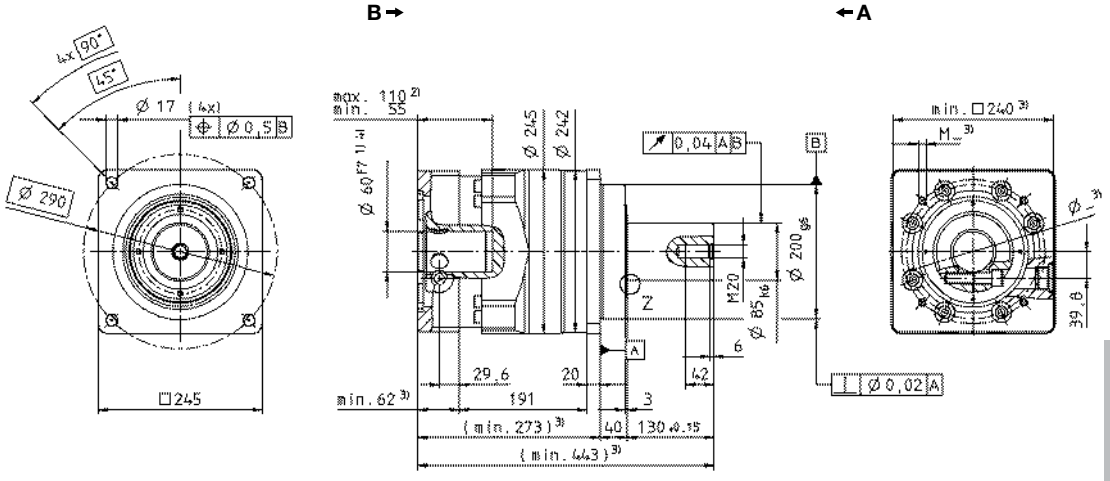
[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Refers to center of the output shaft or flange

View A | View B

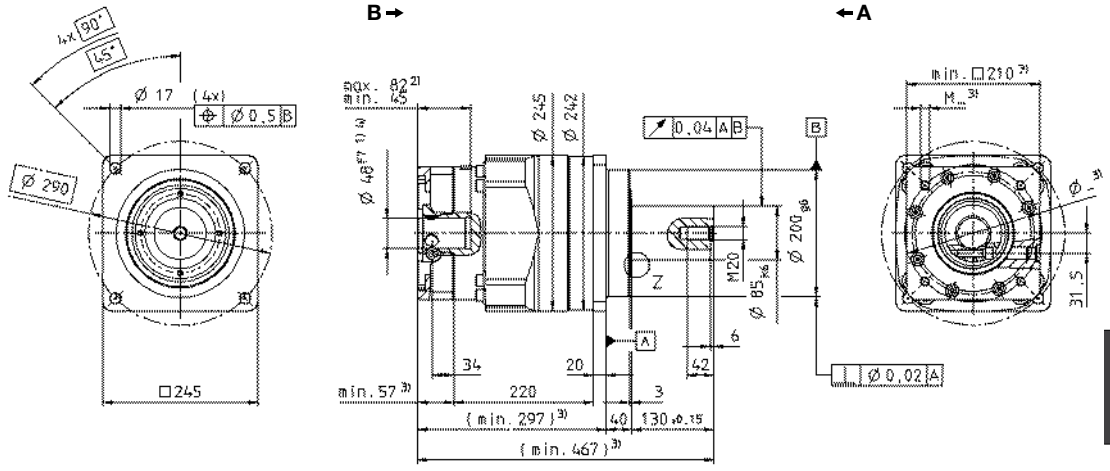
Motor shaft diameter [mm]

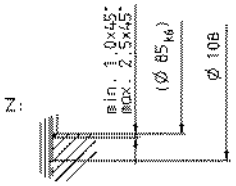
up to 60 [4] (O) clamping hub diameter

1-stage:



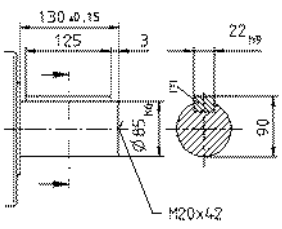
2-stage:



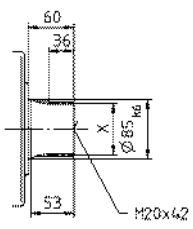


Alternatives: Output shaft variants

Output shaft with key in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 80 x 2 x 30 x 38 x 6m, DIN 5480



Non-tolerated dimensions ± 1.5 mm

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

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

Motor mounting according to operating manual

				1-stage				
Ratio [a]			***i***	**3**	**4**	**5**	**7**	**10**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	68	90	90	90	70
			T_{2B} in.lb	602	797	797	797	620
cymex®-optimized nominal torque (please contact us regarding the design)			T_{2Ncym} Nm	–	60	60	60	35
			T_{2Ncym} in.lb	–	531	531	531	310
Nominal output torque (with n_{1N})			T_{2N} Nm	28	48	48	48	30
			T_{2N} in.lb	248	425	425	425	266
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not} Nm	200	250	250	250	200
			T_{2Not} in.lb	1770	2213	2213	2213	1770
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b]			n_{1N} rpm	4500	4500	4500	4500	4500
Max. input speed			n_{1Max} rpm	6000	6000	6000	6000	6000
Mean no load running torque (with n_1=2000 rpm and 20°C gearhead temperature) [c]			T_{012} Nm	1.4	1.1	0.9	0.6	0.5
			T_{012} in.lb	12.4	9.7	8.0	5.3	4.4
Max. torsional backlash			j_t arcmin	Standard ≤ 6 / Reduced ≤ 4				
Torsional rigidity			C_{t21} Nm/ arcmin	10				
			C_{t21} in.lb/ arcmin	89				
Max. axial force [d]			F_{2AMax} N	3350				
			F_{2AMax} lb_f	754				
Max. radial force [d]			F_{2RMax} N	4200				
			F_{2RMax} lb_f	945				
Max. tilting moment			M_{2KMax} Nm	236				
			M_{2KMax} in.lb	2089				
Efficiency at full load			η %	98.5				
Service life (For calculation, see the Chapter “Information”)			L_h h	> 30000				
Weight incl. standardadapter plate			*m* kg	3.9				
			m lb_m	8.6				
Operating noise (with *i*=10 and n_1=3000 rpm no load)			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				
Paint				Blue RAL 5002				
Direction of rotation				Motor and gearhead same direction				
Protection class				IP 65				
Moment of inertia (relates to the drive)	E	19	J_1 kgcm²	1.03	0.78	0.68	0.59	0.54
			J_1 10^{-3} in.lb.s²	0.91	0.69	0.60	0.52	0.48
Clamping hub diameter [mm]	G	24	J_1 kgcm²	2.40	2.15	2.05	1.96	1.91
			J_1 10^{-3} in.lb.s²	2.12	1.90	1.81	1.73	1.69

Reduced mass moments of inertia available on request.

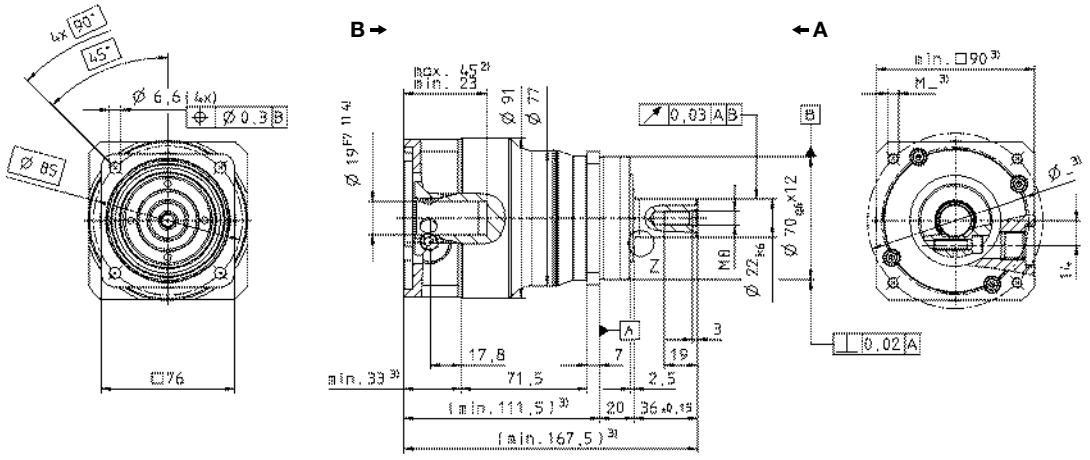
[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Valid for clamping hub diameter of 19 mm
[d] Refers to centre of the output shaft or flange

View A

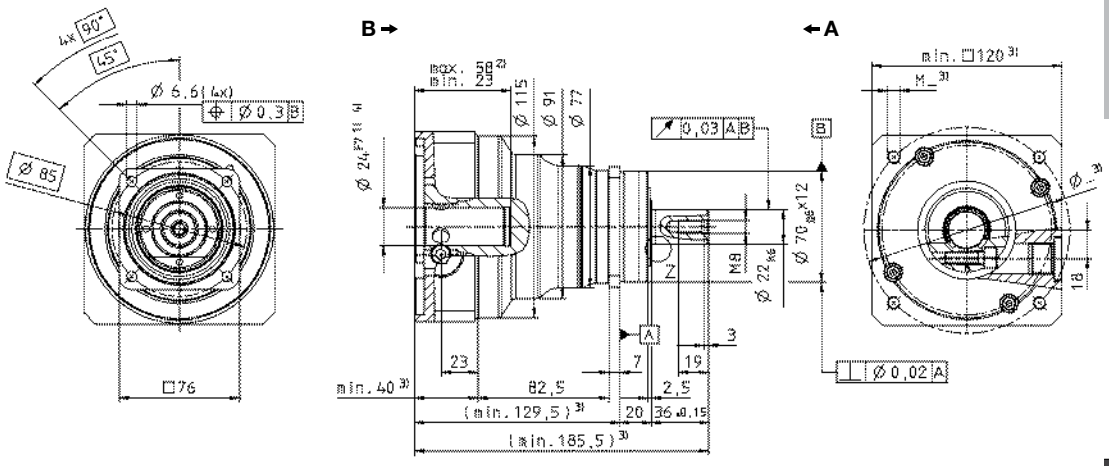
View B

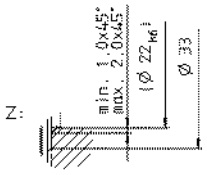
Motor shaft diameter [mm]

up to 19 [4] (E) clamping hub diameter



up to 24 [4] (G) clamping hub diameter





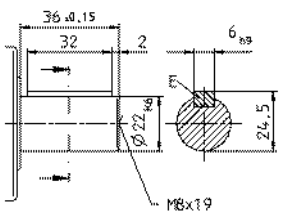
Planetary gearheads **High End**

SP+

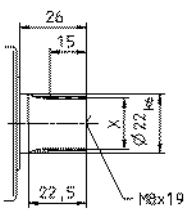
MC

Alternatives: Output shaft variants

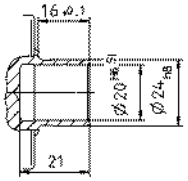
Output shaft with key in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 22 x 1.25 x 30 x 16 x 6m, DIN 5480



Shaft mounted
Mounted via shrink disc



Non-tolerated dimensions ± 1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
5) Tolerance h6 for mounted shaft.

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

Motor mounting according to operating manual

				2-stage								
Ratio [a]			*i*	**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	90	90	90	90	90	90	90	90	70
			T_{2B} in.lb	797	797	797	797	797	797	797	797	620
cymex®-optimized nominal torque (please contact us regarding the design)			T_{2Ncym} Nm	–	–	–	–	–	60	–	–	35
			T_{2Ncym} in.lb						531			310
Nominal output torque (with n_{1N})			T_{2N} Nm	60	60	60	60	60	55	60	60	30
			T_{2N} in.lb	531	531	531	531	531	487	531	531	266
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not} Nm	250	250	250	250	250	250	250	250	200
			T_{2Not} in.lb	2213	2213	2213	2213	2213	2213	2213	2213	1770
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b]			n_{1N} rpm	4500	4500	4500	4500	4500	4500	4500	4500	4500
Max. input speed			n_{1Max} rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque (with n_1 = 2000 rpm and 20°C gearhead temperature) [c]			T_{012} Nm	0.5	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.2
			T_{012} in.lb	4.4	3.5	3.5	2.7	2.7	1.8	1.8	1.8	1.8
Max. torsional backlash			j_t arcmin	Standard ≤ 8 / Reduced ≤ 6								
Torsional rigidity			C_{t21} Nm/ arcmin	10								
			C_{t21} in.lb/ arcmin	89								
Max. axial force [d]			F_{2AMax} N	3350								
			F_{2AMax} lb_f	754								
Max. radial force [d]			F_{2RMax} N	4200								
			F_{2RMax} lb_f	945								
Max. tilting moment			M_{2KMax} Nm	236								
			M_{2KMax} in.lb	2089								
Efficiency at full load			η %	96,5								
Service life (For calculation, see the Chapter "Information")			L_h h	> 30000								
Weight incl. standard adapter plate			*m* kg	3,6								
			m lb_m	8.0								
Operating noise (with *i*=100 and n_1 = 3000 rpm no load)			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								
Paint				Blue RAL 5002								
Direction of rotation				Motor and gearhead same direction								
Protection class				IP 65								
Moment of inertia (relates to the drive)	C	14	J_1 kgcm²	0.23	0.20	0.20	0.18	0.18	0.16	0.16	0.16	0.16
			J_1 10^{-3} in.lb.s²	0.20	0.18	0.18	0.16	0.16	0.15	0.15	0.14	0.14
Clamping hub diameter [mm]	E	19	J_1 kgcm²	0.55	0.53	0.52	0.50	0.50	0.49	0.49	0.49	0.49
			J_1 10^{-3} in.lb.s²	0.49	0.47	0.46	0.45	0.44	0.43	0.43	0.43	0.43

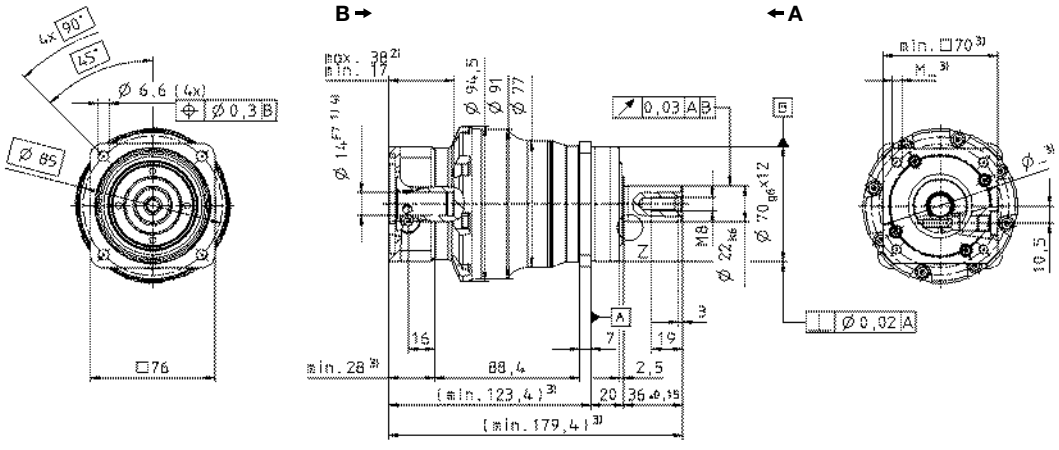
Reduced mass moments of inertia available on request.

[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Valid for clamping hub diameter of 14 mm
[d] Refers to centre of the output shaft or flange

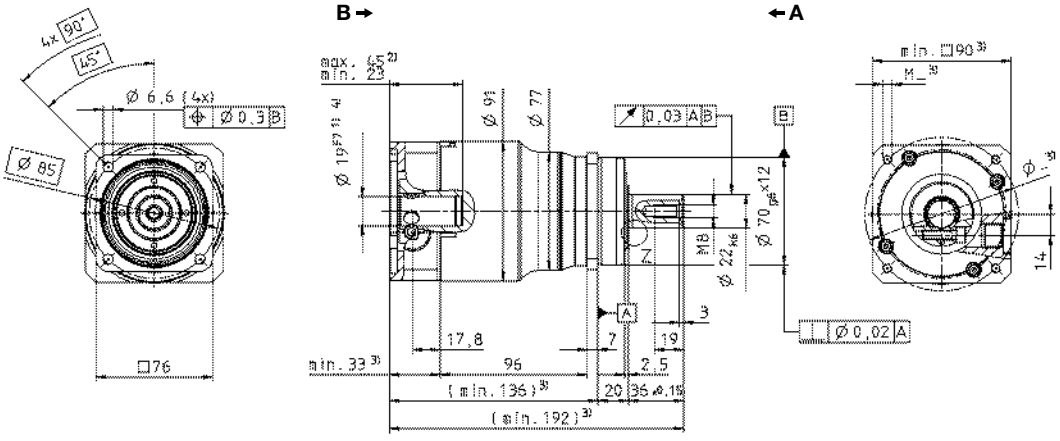
View A View B

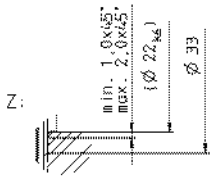
Motor shaft diameter [mm]

up to 14 [4] (C) clamping hub diameter



up to 19 [4] (E) clamping hub diameter





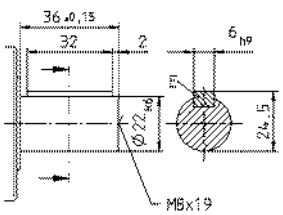
Planetary gearheads **High End**

SP+

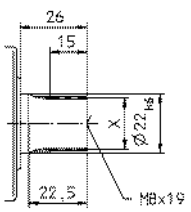
MC

Alternatives: Output shaft variants

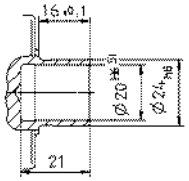
Output shaft with key in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 22 x 1.25 x 30 x 16 x 6m, DIN 5480



Shaft mounted
Mounted via shrink disc



Non-tolerated dimensions ± 1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
5) Tolerance h6 for mounted shaft.

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

Motor mounting according to operating manual

				Standard version MC					Friction optimized version L				
Ratio [a]			***i***	**3**	**4**	**5**	**7**	**10**	**3**	**4**	**5**	**7**	**10**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	180	240	240	240	180	180	240	240	240	180
			T_{2B} in.lb	1593	2124	2124	2124	1593	1593	2124	2124	2124	1593
cymex®-optimized nominal torque (please contact us regarding the design)			T_{2Ncym} Nm	95	135	135	135	90	95	135	135	135	90
			T_{2Ncym} in.lb	841	1195	1195	1195	797	841	1195	1195	1195	797
Nominal output torque (with n_{1N})			T_{2N} Nm	70	100	105	105	80	70	100	105	105	80
			T_{2N} in.lb	620	885	929	929	708	620	885	929	929	708
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not} Nm	500	625	625	625	500	500	625	625	625	500
			T_{2Not} in.lb	4425	5531	5531	5531	4425	4425	5531	5531	5531	4425
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b]			n_{1N} rpm	3500	4000	4500	4500	4500	3500	4000	4500	4500	4500
cymex® optimized speed (please contact us regarding the design)			n_{1Ncym} rpm	–	–	–	–	–	4500	5000	5000	5000	5000
Max. input speed			n_{1Max} rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque (with n_1 = 2000 rpm and 20°C gearhead temperature) [c]			T_{012} Nm	2.4	2.1	1.8	1.1	0.8	0.7	–	–	–	–
			T_{012} in.lb	21.2	18.6	15.9	9.74	7.08	6.2	–	–	–	–
Max. torsional backlash			j_t arcmin	Standard ≤ 4 / Reduced ≤ 2									
Torsional rigidity			C_{t21} Nm/ arcmin	31									
			C_{t21} in.lb/ arcmin	274									
Max. axial force [d]			F_{2AMax} N	5650					–				
			F_{2AMax} lb_f	1271					–				
Max. radial force [d]			F_{2RMax} N	6600					1000				
			F_{2RMax} lb_f	1485					225				
Max. tilting moment			M_{2KMax} Nm	487					72				
			M_{2KMax} in.lb	4310					637				
Efficiency at full load			η %	98.5					99				
Service life (For calculation, see the Chapter "Information")			L_h h	> 30000									
Weight incl. standard adapter plate			m kg	7.7									
			m lb_m	17.0									
Operating noise (with i=10 and n_1=3000 rpm no load)			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									
Paint				Blue RAL 5002									
Direction of rotation				Motor and gearhead same direction									
Protection class				IP 65					IP 52				
Moment of inertia (relates to the drive)	G	24	J_1 kgcm²	3.99	3.04	2.61	2.29	2.07	3.99	3.04	2.61	2.29	2.07
			J_1 10^{-3} in.lb.s²	3.53	2.69	2.31	2.03	1.83	3.53	2.69	2.31	2.03	1.83
Clamping hub diameter [mm]	K	38	J_1 kgcm²	11.1	10.1	9.68	9.36	9.14	11.1	10.1	9.68	9.36	9.14
			J_1 10^{-3} in.lb.s²	9.78	8.95	8.57	8.28	8.09	9.78	8.95	8.57	8.28	8.09

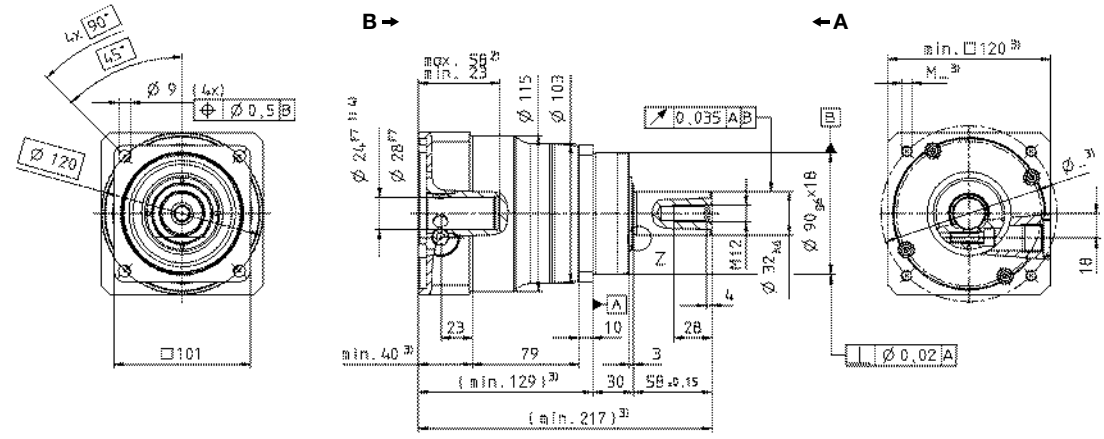
Reduced mass moments of inertia available on request.

[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Valid for clamping hub diameter of 24 mm
[d] Refers to centre of the output shaft or flange

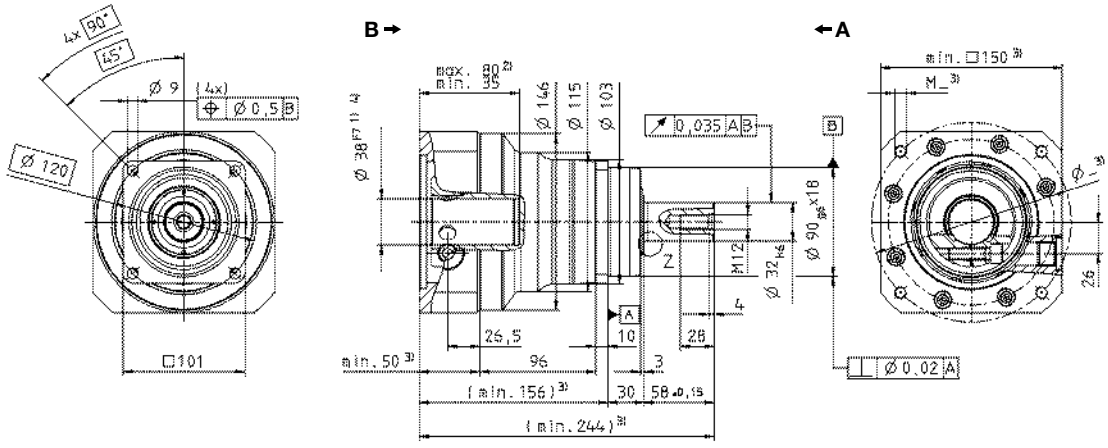
View A | View B

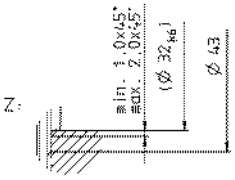
Motor shaft diameter [mm]

up to 24 [4] (G) clamping hub diameter



up to 38 [4] (K) clamping hub diameter



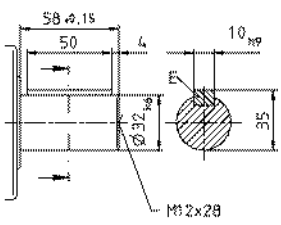


Planetary gearheads **High End**

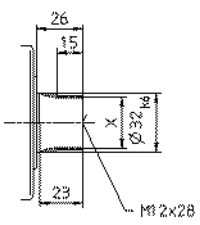
SP+ | MC | MC-L

Alternatives: Output shaft variants

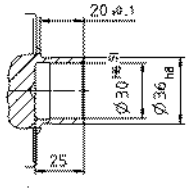
Output shaft with key in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 32 x 1.25 x 30 x 24 x 6m, DIN 5480



Shaft mounted
Mounted via shrink disc



Non-tolerated dimensions ± 1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
5) Tolerance h6 for mounted shaft.

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

Motor mounting according to operating manual

				2-stage								
Ratio [a]			***i***	**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	240	240	240	240	240	240	240	240	180
			T_{2B} in.lb	2124	2124	2124	2124	2124	2124	2124	2124	1593
cymex®-optimized nominal torque (please contact us regarding the design)			T_{2Ncym} Nm	–	–	–	–	–	–	–	–	90
			T_{2Ncym} in.lb									797
Nominal output torque (with n_{1N})			T_{2N} Nm	140	140	140	140	140	140	140	135	80
			T_{2N} in.lb	1239	1239	1239	1239	1239	1239	1239	1195	708
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not} Nm	625	625	625	625	625	625	625	625	500
			T_{2Not} in.lb	5531	5531	5531	5531	5531	5531	5531	5531	4425
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b]			n_{1N} rpm	4500	4500	4500	4500	4500	4500	4500	4500	4500
Max. input speed			n_{1Max} rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque (with n_1 = 2000 rpm and 20°C gearhead temperature) [c]			T_{012} Nm	0.8	0.7	0.6	0.5	0.4	0.4	0.3	0.3	0.3
			T_{012} in.lb	7.1	6.2	5.3	4.4	3.5	3.5	2.7	2.7	2.7
Max. torsional backlash			j_t arcmin	Standard ≤ 6 / Reduced ≤ 4								
Torsional rigidity			C_{t21} Nm/ arcmin	31								
			C_{t21} in.lb/ arcmin	274								
Max. axial force [d]			F_{2AMax} N	5650								
			F_{2AMax} lb_f	1271								
Max. radial force [d]			F_{2RMax} N	6600								
			F_{2RMax} lb_f	1485								
Max. tilting moment			M_{2KMax} Nm	487								
			M_{2KMax} in.lb	4310								
Efficiency at full load			η %	96.5								
Service life (For calculation, see the Chapter "Information")			L_h h	> 30000								
Weight incl. standardadapter plate			*m* kg	7.9								
			m lb_m	17.5								
Operating noise (with *i*=100 and n_1 = 3000 rpm no load)			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								
Paint				Blue RAL 5002								
Direction of rotation				Motor and gearhead same direction								
Protection class				IP 65								
Moment of inertia (relates to the drive)	E	19	J_1 kgcm²	0.81	0.70	0.69	0.60	0.59	0.55	0.54	0.54	0.54
			J_1 10^{-3} in.lb.s²	0.72	0.62	0.61	0.53	0.52	0.48	0.48	0.48	0.47
Clamping hub diameter [mm]	G	24	J_1 kgcm²	2.18	2.07	2.05	1.97	1.96	1.92	1.91	1.91	1.91
			J_1 10^{-3} in.lb.s²	1.93	1.83	1.82	1.74	1.74	1.70	1.69	1.69	1.69

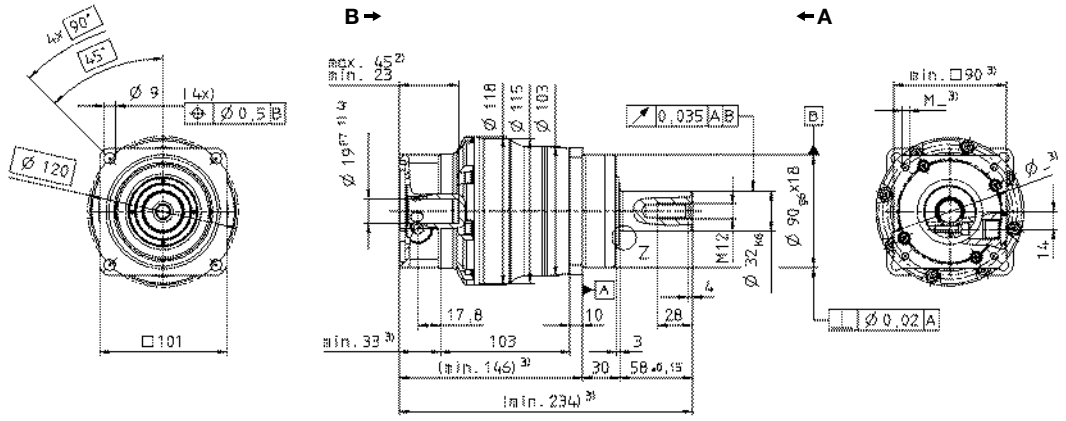
Reduced mass moments of inertia available on request.

[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Valid for clamping hub diameter of 19 mm
[d] Refers to centre of the output shaft or flange

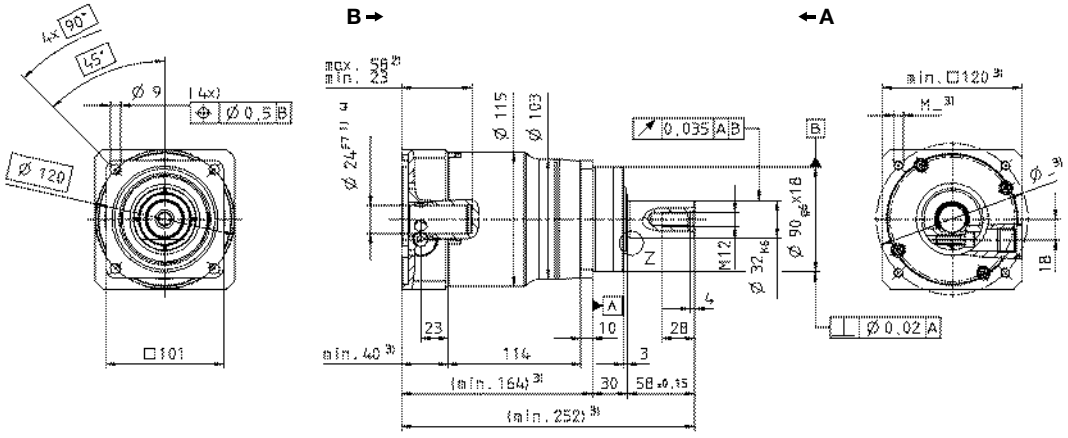
View A | View B

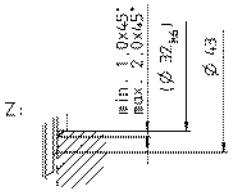
Motor shaft diameter [mm]

up to 19 [4] (E) clamping hub diameter



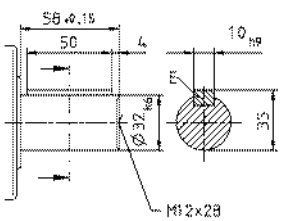
up to 24 [4] (G) clamping hub diameter



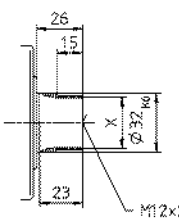


Alternatives: Output shaft variants

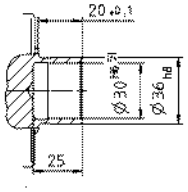
Output shaft with key in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 32 x 1.25 x 30 x 24 x 6m, DIN 5480



Shaft mounted
Mounted via shrink disc



Non-tolerated dimensions ± 1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
5) Tolerance h6 for mounted shaft.

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

Motor mounting according to operating manual

				Standard version MC					Friction optimized version L				
Ratio [a]	i			**3**	**4**	**5**	**7**	**10**	**3**	**4**	**5**	**7**	**10**
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B}	Nm		310	480	480	480	380	310	480	480	480	380
		in.lb		2744	4248	4248	4248	3363	2744	4248	4248	4248	3363
cymex®-optimized nominal torque (please contact us regarding the design)	T_{2Ncym}	Nm		150	240	240	270	180	150	240	240	270	180
		in.lb		1328	2124	2124	2390	1593	2744	4248	4248	4248	3363
Nominal output torque (with n_{1N})	T_{2N}	Nm		130	195	205	210	160	130	195	205	210	160
		in.lb		1151	1726	1814	1859	1416	1151	1726	1814	1859	1416
Emergency stop torque (permitted 1000 times during the service life of the gearhead)	T_{2Not}	Nm		1000	1250	1250	1250	1000	1000	1250	1250	1250	1000
		in.lb		8850	11063	11063	11063	8850	8850	11063	11063	11063	8850
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b]	n_{1N}	rpm		3000	3500	4500	4500	4500	3000	3500	4500	4500	4500
cymex® optimized speed (please contact us regarding the design)	n_{1Ncym}	rpm		–	–	–	–	–	4000	4500	5000	5000	5000
Max. input speed	n_{1Max}	rpm		6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque (with n_1=2000 rpm and 20°C gearhead temperature) [c]	T_{012}	Nm		5.1	3.9	3.1	2.3	1.6	1.0	–	–	–	–
		in.lb		45.1	34.5	27.4	20.4	14.2	8.9	–	–	–	–
Max. torsional backlash	j_t	arcmin		Standard ≤ 4 / Reduced ≤ 2									
Torsional rigidity	C_{t21}	Nm/ arcmin		53									
		in.lb/ arcmin		469									
Max. axial force [d]	F_{2AMax}	N		9870					–				
		lb_f		2221					–				
Max. radial force [d]	F_{2RMax}	N		9900					1200				
		lb_f		2228					270				
Max. tilting moment	M_{2KMax}	Nm		952					110				
		in.lb		8425					974				
Efficiency at full load	η	%		98.5					99				
Service life (For calculation, see the Chapter "Information")	L_h	h		> 30000									
Weight incl. standard adapter plate	m	kg		17.2									
		lb_m		38									
Operating noise (with i=10 and n_1=3000 rpm no load)	L_{PA}	dB(A)		≤ 65									
Max. permitted housing temperature		°C		+90									
		F		194									
Ambient temperature		°C		-15 to +40									
		F		5 to 104									
Lubrication				Lubricated for life									
Paint				Blue RAL 5002									
Direction of rotation				Motor and gearhead same direction									
Protection class				IP 65					IP 52				
Moment of inertia (relates to the drive)	K	38	J_1	kgcm²	14.9	12.1	11.0	10.1	9.51	14.9	12.1	11.0	10.1	9.51
				10^{-3} in.lb.s²	13.2	10.7	9.8	8.9	8.4	13.2	10.7	9.8	8.9	8.4
Clamping hub diameter [mm]	M	48	J_1	kgcm²	29.5	26.7	25.6	24.7	24.2	29.5	26.7	25.6	24.7	24.2
				10^{-3} in.lb.s²	26.1	23.6	22.7	21.9	21.4	26.1	23.6	22.7	21.9	21.4

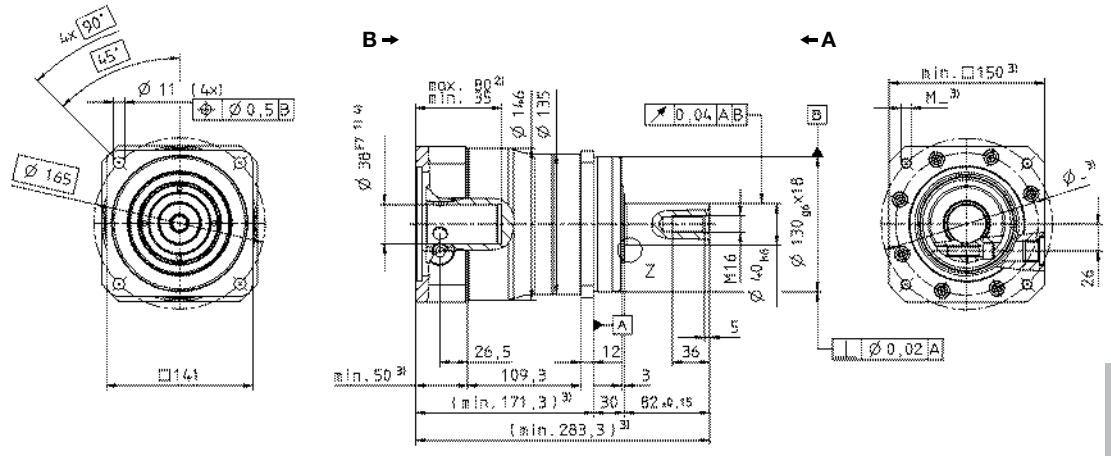
Reduced mass moments of inertia available on request.

[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Valid for clamping hub diameter of 38 mm
[d] Refers to center of the output shaft or flange

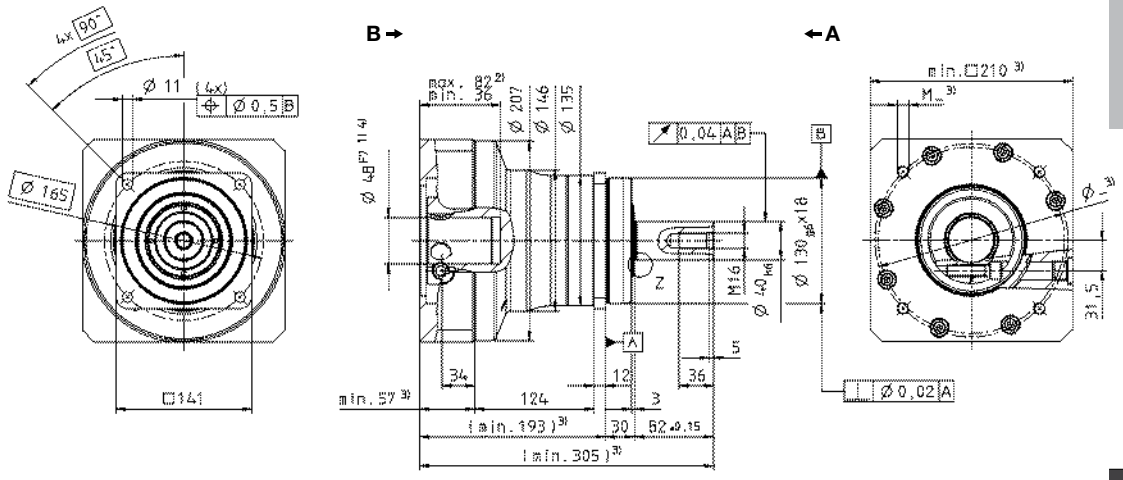
View A View B

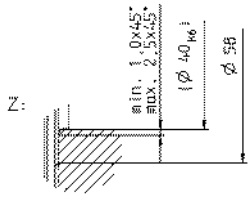
Motor shaft diameter [mm]

up to 38 [4] (K) clamping hub diameter



up to 48 [4] (M) clamping hub diameter





Planetary gearheads **High End**

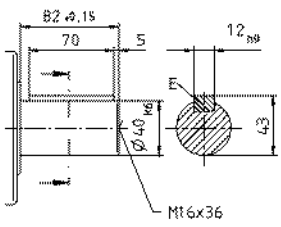
SP+

MC

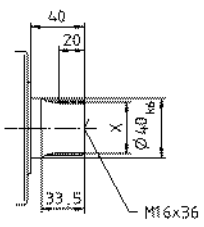
MC-L

Alternatives: Output shaft variants

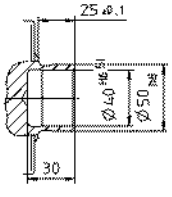
Output shaft with key in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 40 x 2 x 30 x 18 x 6m, DIN 5480



Shaft mounted
Mounted via shrink disc



Non-tolerated dimensions ± 1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
5) Tolerance h6 for mounted shaft.

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

Motor mounting according to operating manual

				2-stage								
Ratio [a]			***i***	**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	480	480	480	480	480	480	480	480	380
			T_{2B} in.lb	4248	4248	4248	4248	4248	4248	4248	4248	3363
cymex®-optimized nominal torque (please contact us regarding the design)			T_{2Ncym} Nm	290	290	290	–	–	–	–	–	–
			T_{2Ncym} in.lb	2567	2567	2567						
Nominal output torque (with n_{1N})			T_{2N} Nm	260	280	280	290	290	290	290	260	180
			T_{2N} in.lb	2301	2478	2478	2567	2567	2567	2567	2301	1593
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not} Nm	1250	1250	1250	1250	1250	1250	1250	1250	1000
			T_{2Not} in.lb	11063	11063	11063	11063	11063	11063	11063	11063	8850
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b]			n_{1N} rpm	4500	4500	4500	4500	4500	4500	4500	4500	4500
Max. input speed			n_{1Max} rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque (with n_1 = 2000 rpm and 20°C gearhead temperature) [c]			T_{012} Nm	1.6	1.3	1.2	1.0	0.9	0.7	0.6	0.5	0.5
			T_{012} in.lb	14.2	11.5	10.6	8.9	8.0	6.2	5.3	4.4	4.4
Max. torsional backlash			j_t arcmin	Standard ≤ 6 / Reduced ≤ 4								
Torsional rigidity			C_{t21} Nm/ arcmin	53								
			C_{t21} in.lb/ arcmin	469								
Max. axial force [d]			F_{2AMax} N	9870								
			F_{2AMax} lb_f	2221								
Max. radial force [d]			F_{2RMax} N	9900								
			F_{2RMax} lb_f	2228								
Max. tilting moment			M_{2KMax} Nm	952								
			M_{2KMax} in.lb	8425								
Efficiency at full load			η %	96.5								
Service life (For calculation, see the Chapter "Information")			L_h h	> 30000								
Weight incl. standard adapter plate			*m* kg	17								
			m lb_m	38								
Operating noise (with *i*=100 and n_1 = 3000 rpm no load)			L_{PA} dB(A)	≤ 63								
Max. permitted housing temperature			°C	+90								
			F	194								
Ambient temperature			°C	-15 to +40								
			F	5 to 104								
Lubrication				Lubricated for life								
Paint				Blue RAL 5002								
Direction of rotation				Motor and gearhead same direction								
Protection class				IP 65								
Moment of inertia (relates to the drive)	G	24	J_1 kgcm²	3.19	2.71	2.67	2.34	2.32	2.10	2.08	2.08	2.07
			J_1 10^{-3} in.lb.s²	2.82	2.40	2.36	2.07	2.05	1.85	1.85	1.84	1.83
Clamping hub diameter [mm]	K	38	J_1 kgcm²	10.3	9.77	9.73	9.41	9.39	9.16	9.15	9.14	9.14
			J_1 10^{-3} in.lb.s²	9.07	8.65	8.61	8.33	8.31	8.11	8.10	8.09	8.09

Reduced mass moments of inertia available on request.

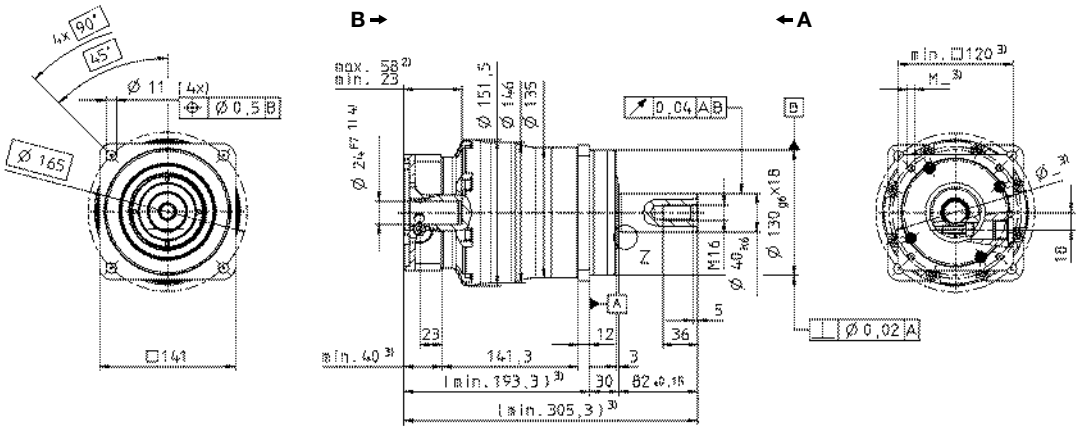
[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Valid for clamping hub diameter of 24 mm
[d] Refers to center of the output shaft or flange

View A

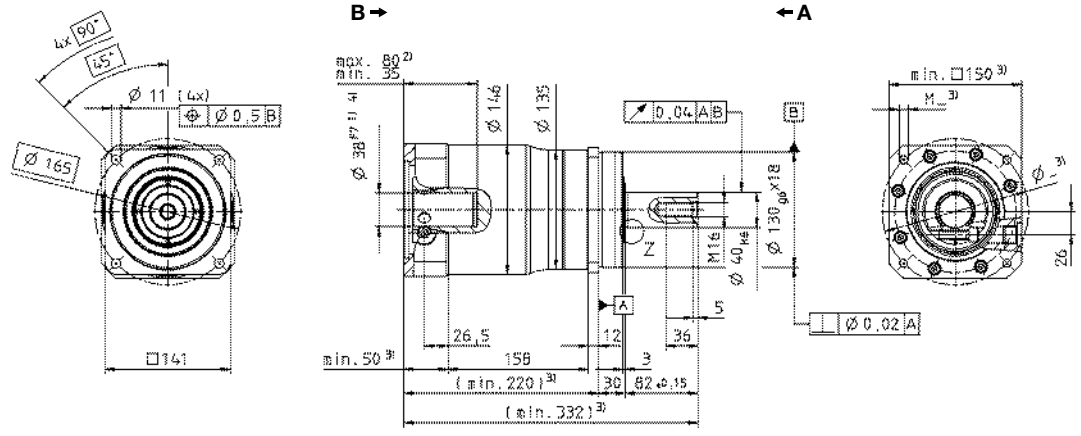
View B

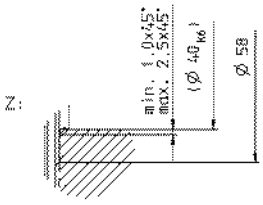
Motor shaft diameter [mm]

up to 24 [4] (G) clamping hub diameter



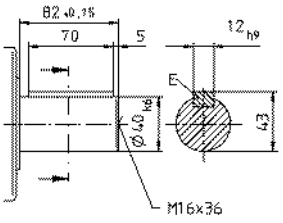
up to 38 [4] (K) clamping hub diameter



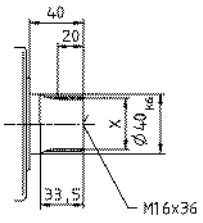


Alternatives: Output shaft variants

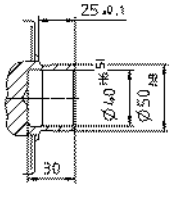
Output shaft with key in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 40 x 2 x 30 x 18 x 6m, DIN 5480



Shaft mounted
Mounted via shrink disc



Non-tolerated dimensions ± 1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
5) Tolerance h6 for mounted shaft.

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

Motor mounting according to operating manual

SP+ 180 MC HIGH SPEED 1-stage

			Standard version MC					Friction optimized version L				
Ratio [a]	***i***		**3**	**4**	**5**	**7**	**10**	**3**	**4**	**5**	**7**	**10**
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B}	Nm	700	880	880	880	700	700	880	880	880	700
		in.lb	6195	7788	7788	7788	6195	6195	7788	7788	7788	6195
cymex®-optimized nominal torque (please contact us regarding the design)	T_{2Ncym}	Nm	350	600	600	600	540	350	600	600	600	540
		in.lb	3098	5310	5310	5310	4779	3098	5310	5310	5310	3098
Nominal output torque (with n_{1N})	T_{2N}	Nm	290	450	440	450	400	290	450	450	450	400
		in.lb	2567	3983	3894	3983	3540	2567	3983	3983	3983	3540
Emergency stop torque (permitted 1000 times during the service life of the gearhead)	T_{2Not}	Nm	2200	2750	2750	2750	2200	2200	2750	2750	2750	2200
		in.lb	19470	24338	24338	24338	19470	19470	24338	24338	24338	19470
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b]	n_{1N}	rpm	3000	3500	4500	4500	4500	3000	3500	4500	4500	4500
cymex® optimized speed (please contact us regarding the design)	n_{1Ncym}	rpm	–	–	–	–	–	4000	4500	5000	5000	5000
Max. input speed	n_{1Max}	rpm	4500	6000	6000	6000	6000	4500	6000	6000	6000	6000
Mean no load running torque (with n_1 = 2000 rpm and 20°C gearhead temperature) [c]	T_{012}	Nm	10.2	7.7	6.2	4.5	3.2	3.0	–	–	–	–
		in.lb	90.3	68.1	54.9	39.8	28.3	26.6	–	–	–	–
Max. torsional backlash	j_t	arcmin	Standard ≤ 4 / Reduced ≤ 2									
Torsional rigidity	C_{t21}	Nm/ arcmin	175									
		in.lb/ arcmin	1549									
Max. axial force [d]	F_{2AMax}	N	14150					–				
		lb_f	3184					–				
Max. radial force [d]	F_{2RMax}	N	15400					2000				
		lb_f	3465					450				
Max. tilting moment	M_{2KMax}	Nm	1600					208				
		in.lb	14160					1841				
Efficiency at full load	η	%	98.5					99				
Service life (For calculation, see the Chapter "Information")	L_h	h	> 30000									
Weight incl. standard adapter plate	m	kg	34									
		lb_m	75									
Operating noise (with i=10 and n_1=3000 rpm no load)	L_{PA}	dB(A)	≤ 66									
Max. permitted housing temperature		°C	+90									
		F	194									
Ambient temperature		°C	-15 to +40									
		F	5 to 104									
Lubrication			Lubricated for life									
Paint			Blue RAL 5002									
Direction of rotation			Motor and gearhead same direction									
Protection class			IP 65					IP 52				
Moment of inertia (relates to the drive) **M** **48** Clamping hub diameter [mm]	J_1	kgcm²	58.5	41.6	35.6	30.0	26.9	58.5	41.6	35.6	30.0	26.9
		10^{-3} in.lb.s²	51.8	36.8	31.5	26.6	23.8	51.8	36.8	31.5	26.6	23.8

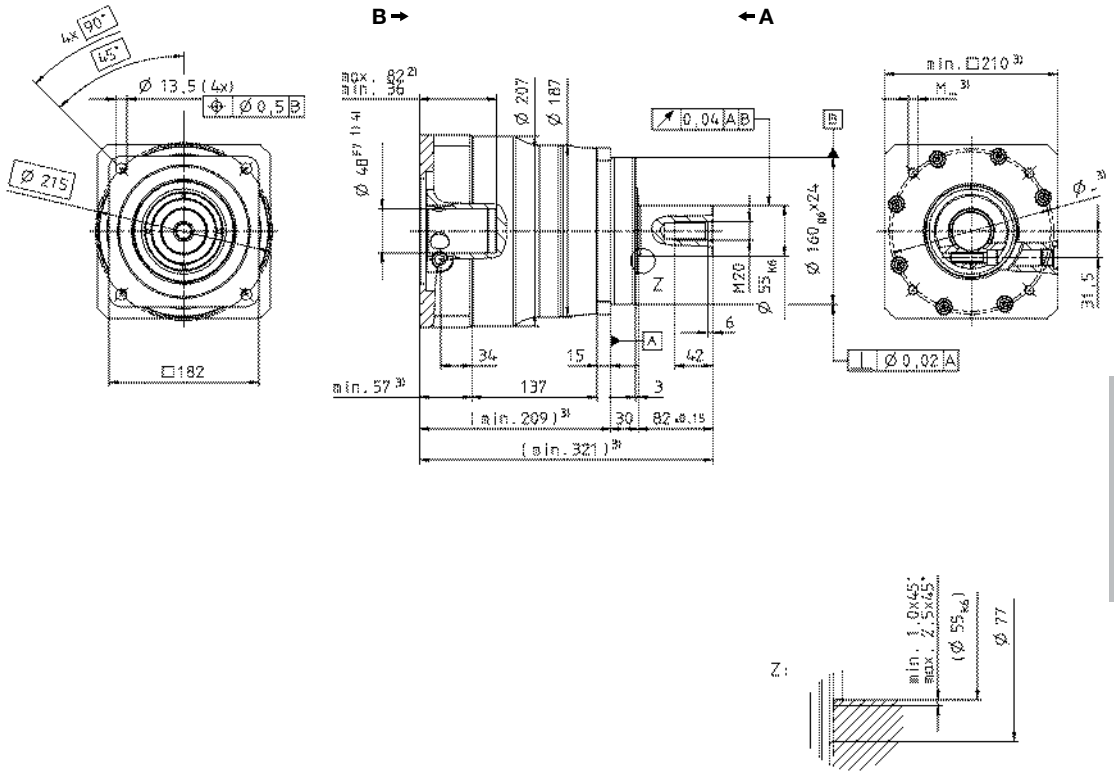
Reduced mass moments of inertia available on request.

[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Valid for clamping hub diameter of 48 mm
[d] Refers to center of the output shaft or flange

View A View B

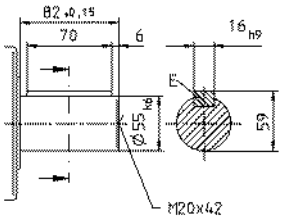
Motor shaft diameter [mm]

up to 48 [4] (M) clamping hub diameter

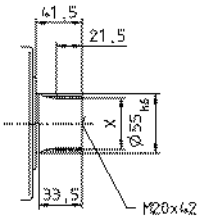


Alternatives: Output shaft variants

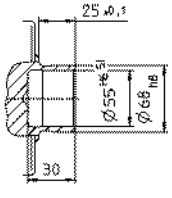
Output shaft with key in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 55 x 2 x 30 x 26 x 6m, DIN 5480



Shaft mounted
Mounted via shrink disc



Non-tolerated dimensions ± 1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
5) Tolerance h6 for mounted shaft.

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

Motor mounting according to operating manual

				2-stage								
Ratio [a]	i			**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B}	Nm		880	880	880	880	880	880	880	880	700
		in.lb		7788	7788	7788	7788	7788	7788	7788	7788	6195
cymex®-optimized nominal torque (please contact us regarding the design)	T_{2Ncym}	Nm		–	–	–	–	–	–	–	–	–
		in.lb										
Nominal output torque (with n_{1N})	T_{2N}	Nm		600	600	600	600	600	600	600	600	600
		in.lb		5310	5310	5310	5310	5310	5310	5310	5310	5310
Emergency stop torque (permitted 1000 times during the service life of the gearhead)	T_{2Not}	Nm		2750	2750	2750	2750	2750	2750	2750	2750	2200
		in.lb		24338	24338	24338	24338	24338	24338	24338	24338	19470
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b]	n_{1N}	rpm		4500	4500	4500	4500	4500	4500	4500	4500	4500
Max. input speed	n_{1Max}	rpm		6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque (with n_1 = 2000 rpm and 20°C gearhead temperature) [c]	T_{012}	Nm		3.2	2.6	2.3	1.9	1.7	1.4	1.2	1.0	0.9
		in.lb		28.3	23.0	20.4	16.8	15.0	12.4	10.6	8.9	8.0
Max. torsional backlash	j_t	arcmin		Standard ≤ 6 / Reduced ≤ 4								
Torsional rigidity	C_{t21}	Nm/ arcmin		175								
		in.lb/ arcmin		149								
Max. axial force [d]	F_{2AMax}	N		14150								
		lb_f		3184								
Max. radial force [d]	F_{2RMax}	N		15400								
		lb_f		3465								
Max. tilting moment	M_{2KMax}	Nm		1600								
		in.lb		14160								
Efficiency at full load	η	%		96.5								
Service life (For calculation, see the Chapter "Information")	L_h	h		> 30000								
Weight incl. standard adapter plate	m	kg		36								
		lb_m		80								
Operating noise (with i=100 and n_1 = 3000 rpm no load)	L_{PA}	dB(A)		≤ 66								
Max. permitted housing temperature		°C		+90								
		F		194								
Ambient temperature		°C		-15 to +40								
		F		5 to 104								
Lubrication				Lubricated for life								
Paint				Blue RAL 5002								
Direction of rotation				Motor and gearhead same direction								
Protection class				IP 65								
Moment of inertia (relates to the drive)	K	38	J_1	kgcm²	13.5	12.0	11.7	10.6	10.4	9.74	9.68	9.63	9.60
Clamping hub diameter [mm]				10^{-3} in.lb.s²	12.0	10.6	10.4	9.34	9.23	8.62	8.57	8.52	8.49

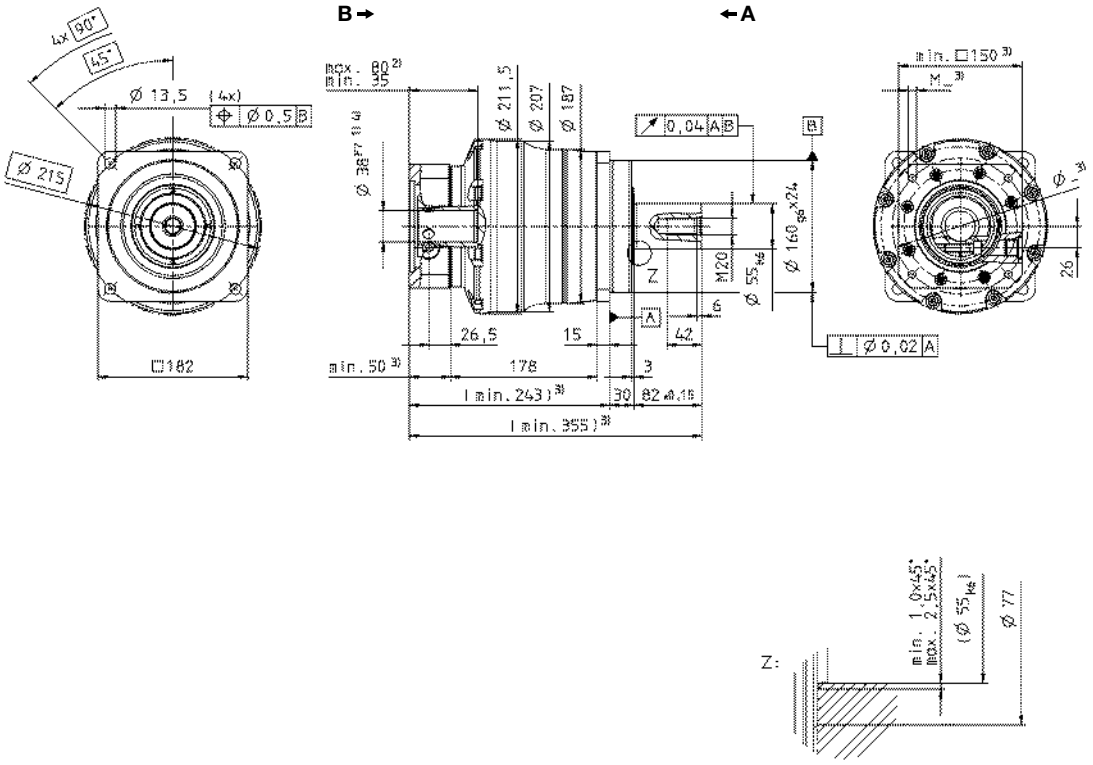
Reduced mass moments of inertia available on request.

[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Valid for clamping hub diameter of 38 mm
[d] Refers to center of the output shaft or flange

View A View B

Motor shaft diameter [mm]

up to 38 [4] (K) clamping hub diameter



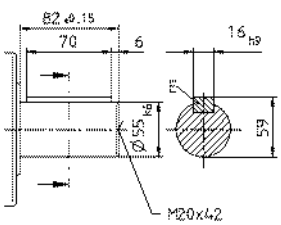
Planetary gearheads **High End**

SP+

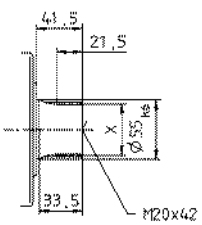
MC

Alternatives: Output shaft variants

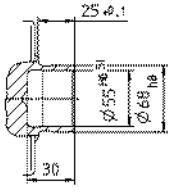
Output shaft with key in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 55 x 2 x 30 x 26 x 6m, DIN 5480



Shaft mounted
Mounted via shrink disc



Non-tolerated dimensions ± 1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
5) Tolerance h6 for mounted shaft.

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

Motor mounting according to operating manual

			Standard version MC					Friction optimized version L				
Ratio [a]	***i***		**3**	**4**	**5**	**7**	**10**	**3**	**4**	**5**	**7**	**10**
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B}	Nm	1200	2000	2000	1700	1200	1200	2000	2000	1700	1200
		in.lb	10620	17700	17700	15045	10620	10620	17700	17700	15045	10620
cymex®-optimized nominal torque (please contact us regarding the design)	T_{2Ncym}	Nm	- Please contact us -									
		in.lb										
Nominal output torque (with n_{1N})	T_{2N}	Nm	900	1300	1150	1000	800	900	1300	1150	1000	800
		in.lb	7965	11505	10178	8850	7080	7965	11505	10178	8850	7080
Emergency stop torque (permitted 1000 times during the service life of the gearhead)	T_{2Not}	Nm	5000	5200	5200	5200	5000	5000	5200	5200	5200	5000
		in.lb	44250	46020	46020	46020	44250	44250	46020	46020	46020	44250
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b]	n_{1N}	rpm	2250	2500	3500	3500	3500	2250	2500	3500	3500	3500
cymex® optimized speed (please contact us regarding the design)	n_{1Ncym}	rpm	–	–	–	–	–	2750	3000	4000	4000	4000
Max. input speed	n_{1Max}	rpm	3400	6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque (with n_1=2000 rpm and 20°C gearhead temperature) [c]	T_{012}	Nm	13.0	9.0	6.5	4.0	2.5	5.5	4.9	4.6	4.0	3.4
		in.lb	115.1	79.7	57.5	35.4	22.1	49	43	41	35	30
Max. torsional backlash	j_t	arcmin	Standard ≤ 4 / Reduced ≤ 2									
Torsional rigidity	C_{t21}	Nm/ arcmin	400									
		in.lb/ arcmin	3540									
Max. axial force [d]	F_{2AMax}	N	30000					8000				
		lb_f	6750					1800				
Max. radial force [d]	F_{2RMax}	N	21000					2500				
		lb_f	4725					563				
Max. tilting moment	M_{2KMax}	Nm	3100					310				
		in.lb	27435					2744				
Efficiency at full load	η	%	98.5					99.0				
Service life (For calculation, see the Chapter "Information")	L_h	h	> 30000									
Weight incl. standard adapter plate	*m*	kg	56									
		lb_m	124									
Operating noise (with *i*=10 and n_1=2000 rpm no load)	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									
Paint			Blue RAL 5002									
Direction of rotation			Motor and gearhead same direction									
Protection class			IP 65					IP 52				
Moment of inertia (relates to the drive) N 55 Clamping hub diameter [mm]	J_1	kgcm²	139.0	94.3	76.9	61.5	53.1	139.0	94.3	76.9	61.5	53.1
		10^{-3} in.lb.s²	123.0	83.5	68.1	54.4	47.0	123.0	83.5	68.1	54.4	47.0

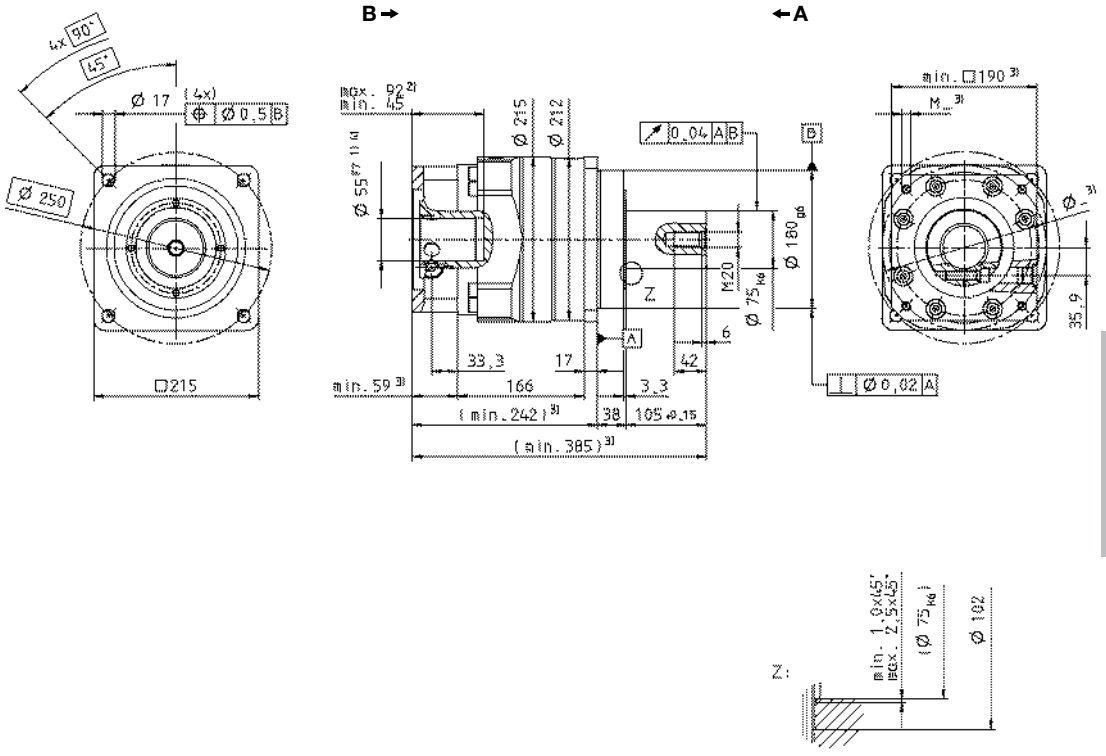
Reduced mass moments of inertia available on request.

[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Valid for clamping hub diameter of 55 mm
[d] Refers to center of the output shaft or flange

View A View B

Motor shaft diameter [mm]

up to 55 [4] (N) clamping hub diameter



Planetary gearheads **High End**

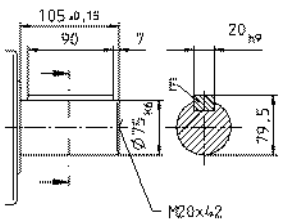
SP+

MC

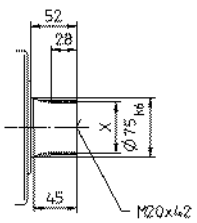
MC-L

Alternatives: Output shaft variants

Output shaft with key in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 70 x 2 x 30 x 34 x 6m, DIN 5480



Non-tolerated dimensions ± 1,5 mm

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

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

Motor mounting according to operating manual

				2-stage								
Ratio [a]	i			**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B}	Nm		1680	1800	2000	1680	1920	1040	1300	1700	1200
		in.lb		14868	15930	17700	14868	16992	9204	11505	15045	10620
cymex®-optimized nominal torque (please contact us regarding the design)	T_{2Ncym}	Nm		- Please contact us -								
		in.lb										
Nominal output torque (with n_{1N})	T_{2N}	Nm		840	780	975	780	975	800	1000	1000	800
		in.lb		7434	6903	8629	6903	8629	7080	8850	8850	7080
Emergency stop torque (permitted 1000 times during the service life of the gearhead)	T_{2Not}	Nm		5200	5200	5200	5200	5200	5200	5200	5200	5000
		in.lb		46020	46020	46020	46020	46020	46020	46020	46020	44250
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b]	n_{1N}	rpm		3500	4500	4500	4500	4500	4500	4500	4500	4500
Max. input speed	n_{1Max}	rpm		6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque (with n_1 = 2000 rpm and 20°C gearhead temperature)	T_{012}	Nm		3.0	2,5	2,5	2,0	2,0	1,5	1,5	1,5	1,5
		in.lb		27	22	22	18	18	13	13	13	13
Max. torsional backlash	j_t	arcmin		Standard ≤ 4 / Reduced ≤ 2								
Torsional rigidity	C_{t21}	Nm/ arcmin		400								
		in.lb/ arcmin		3540								
Max. axial force [c]	F_{2AMax}	N		30000								
		lb_f		6750								
Max. radial force [c]	F_{2RMax}	N		21000								
		lb_f		4725								
Max. tilting moment	M_{2KMax}	Nm		3100								
		in.lb		27435								
Efficiency at full load	η	%		96.5								
Service life (For calculation, see the Chapter “Information”)	L_h	h		> 30000								
Weight incl. standard adapter plate	m	kg		53								
		lb_m		117								
Operating noise (with i=10 and n_1 = 2000 rpm no load)	L_{PA}	dB(A)										
Max. permitted housing temperature		°C										
		F										
Ambient temperature		°C		-15 to +40								
		F		32 to 194								
Lubrication				Lubricated for life								
Paint				Blue RAL 5002								
Direction of rotation				Motor and gearhead same direction								
Protection class												
Moment of inertia (relates to the drive)	M	48	J_1	kgcm²	34.5	31.5	30.8	30.0	29.7	28.5	28.3	28.1	28.0
Clamping hub diameter (mm)				10^{-3} in.lb.s²	30.5	27.9	27.3	26.6	26.3	25.2	25.0	24.9	24.8

Reduced mass moments of inertia available on request.

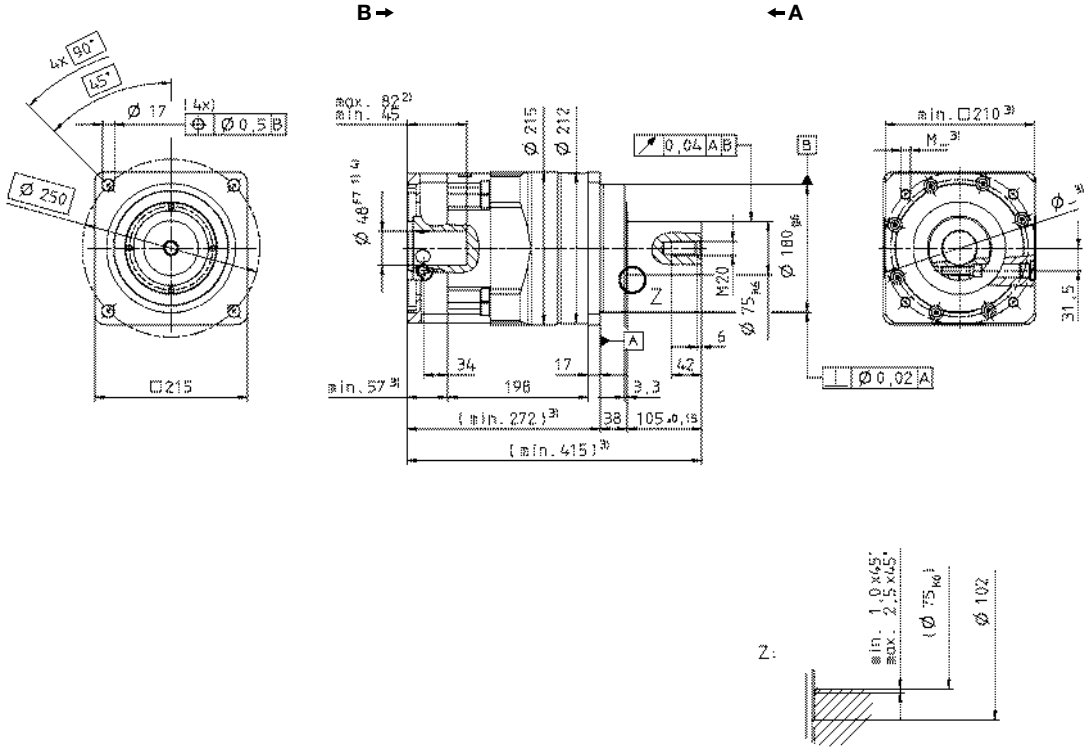
[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Refers to center of the output shaft or flange

View A

View B

Motor shaft diameter [mm]

up to 48 [4] (M) clamping hub diameter



Planetary gearheads **High End**

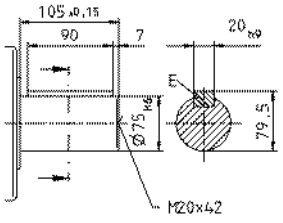
SP+

MC

Alternatives: Output shaft variants

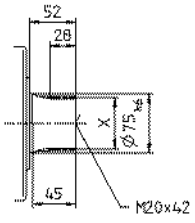
Output shaft with key in mm

E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm

X = W 70 x 2 x 30 x 34 x 6m, DIN 5480



Non-tolerated dimensions ± 1.5 mm

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

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

Motor mounting according to operating manual

			Standard version MC					Friction optimized version L				
Ratio [a]	***i***		**3**	**4**	**5**	**7**	**10**	**3**	**4**	**5**	**7**	**10**
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B}	Nm	1750	3500	3600	2700	1800	1750	3500	3600	2700	1800
		in.lb	15488	30975	31860	23895	15930	15488	30975	31860	23895	15930
cymex®-optimized nominal torque (please contact us regarding the design)	T_{2Ncym}	Nm	- Please contact us -									
		in.lb										
Nominal output torque (with n_{1N})	T_{2N}	Nm	1400	1960	1770	1500	1100	1400	1960	1770	1500	1100
		in.lb	12390	17346	15665	13275	9735	12390	17346	15665	13275	9735
Emergency stop torque (permitted 1000 times during the service life of the gearhead)	T_{2Not}	Nm	6800	8500	8500	8500	6800	6800	8500	8500	8500	6800
		in.lb	60180	75225	75225	75225	60180	60180	75225	75225	75225	60180
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b]	n_{1N}	rpm	1750	2250	3000	3000	3000	1750	2250	3000	3000	3000
cymex® optimized speed (please contact us regarding the design)	n_{1Ncym}	rpm	–	–	–	–	–	2250	2750	3500	3500	3500
Max. input speed	n_{1Max}	rpm	3400	4000	5000	5000	5000	3400	5000	5000	5000	5000
Mean no load running torque (with n_1=2000 rpm and 20°C gearhead temperature) [c]	T_{012}	Nm	24	18	13	7.0	5.0	8.0	7.0	6.0	5.0	4.2
		in.lb	212	159	115	62	44	71	62	53	44	37
Max. torsional backlash	j_t	arcmin	Standard ≤ 4 / Reduced ≤ 2									
Torsional rigidity	C_{t21}	Nm/ arcmin	550									
		in.lb/ arcmin	4868									
Max. axial force [d]	F_{2AMax}	N	33000					10000				
		lb_f	7425					2250				
Max. radial force [d]	F_{2RMax}	N	30000					2000				
		lb_f	6750					450				
Max. tilting moment	M_{2KMax}	Nm	5000					280				
		in.lb	44250					2478				
Efficiency at full load	η	%	98.5					99				
Service life (For calculation, see the Chapter "Information")	L_h	h	> 30000									
Weight incl. standard adapter plate	*m*	kg	77									
		lb_m	170									
Operating noise (with *i*=10 and n_1=2000 rpm no load)	L_{PA}	dB(A)	≤ 66									
Max. permitted housing temperature		°C	+90									
		F	194									
Ambient temperature		°C	-15 to +40									
		F	5 to 104									
Lubrication			Lubricated for life									
Paint			Blue RAL 5002									
Direction of rotation			Motor and gearhead same direction									
Protection class			IP 65					IP 52				
Moment of inertia (relates to the drive)	J_1	kgcm²	260.2	198.2	163.0	138.3	124.7	260.2	198.2	163.0	84.4	70.8
Clamping hub diameter [mm] O 60		10^{-3} in.lb.s²	230.3	175.4	144.3	122.4	110.4	230.3	175.4	144.3	74.7	62.7

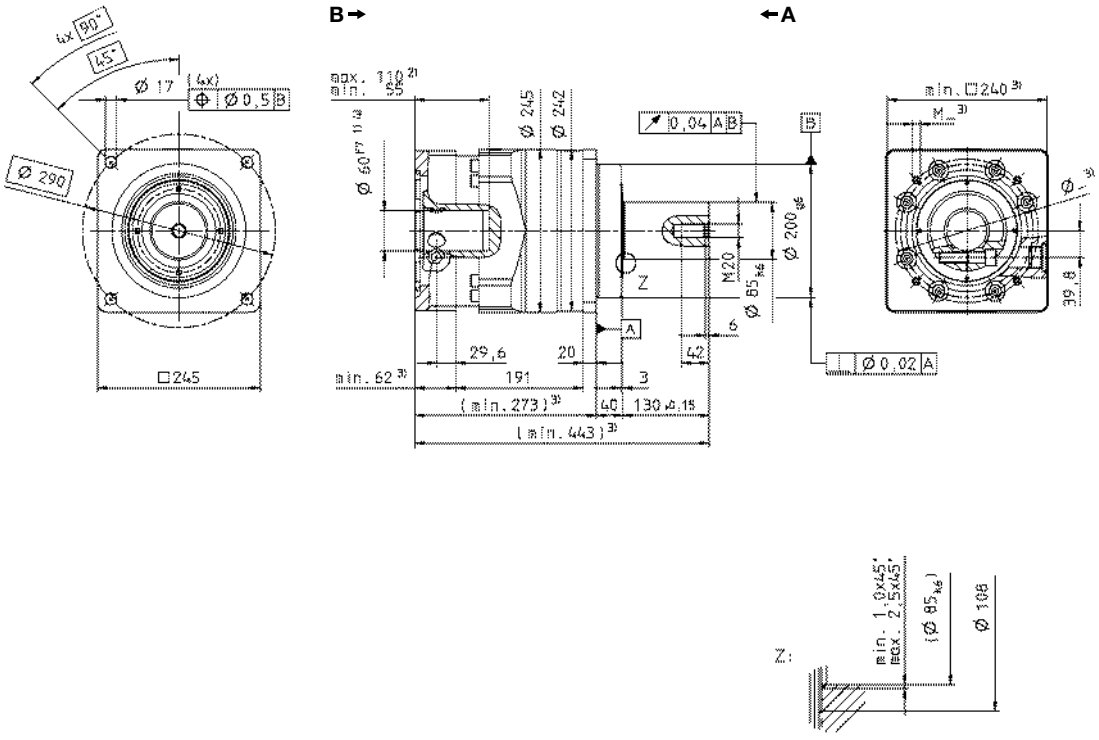
Reduced mass moments of inertia available on request.

[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Valid for clamping hub diameter of 60 mm
[d] Refers to center of the output shaft or flange

View A View B

Motor shaft diameter [mm]

up to 60 [4] (O) clamping hub diameter



Planetary gearheads **High End**

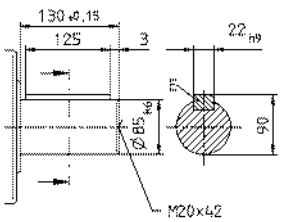
SP+

MC

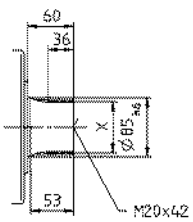
MC-L

Alternatives: Output shaft variants

Output shaft with key in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 80 x 2 x 30 x 38 x 6m, DIN 5480



Non-tolerated dimensions ± 1,5 mm

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

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

Motor mounting according to operating manual

			2-stage								
Ratio [a]	i		**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B}	Nm	3500	3500	3600	2900	3600	1680	2100	2700	1800
		in.lb	30975	30975	31860	25665	31860	14868	18585	23895	15930
cymex®-optimized nominal torque (please contact us regarding the design)	T_{2Ncym}	Nm	- Please contact us -								
		in.lb									
Nominal output torque (with n_{1N})	T_{2N}	Nm	1790	1770	1730	1840	1930	1300	1625	1500	1100
		in.lb	15842	15665	15311	16284	17081	11505	14381	13275	9735
Emergency stop torque (permitted 1000 times during the service life of the gearhead)	T_{2Not}	Nm	8500	8500	8500	8500	8500	8500	8500	8500	6800
		in.lb	75225	75225	75225	75225	75225	75225	75225	75225	60180
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b]	n_{1N}	rpm	3500	4500	4500	4500	4500	4500	4500	4500	4500
Max. input speed	n_{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque (with n_1 = 2000 rpm and 20°C gearhead temperature)	T_{012}	Nm	5,0	4,5	4,0	3,5	3,0	2,5	2,5	2,5	2,0
		in.lb	44	40	35	31	27	22	22	22	18
Max. torsional backlash	j_t	arcmin	Standard ≤ 5 / Reduced ≤ 4								
Torsional rigidity	C_{t21}	Nm/ arcmin	550								
		in.lb/ arcmin	4868								
Max. axial force [c]	F_{2AMax}	N	33000								
		lb_f	7425								
Max. radial force [c]	F_{2RMax}	N	30000								
		lb_f	6750								
Max. tilting moment	M_{2KMax}	Nm	5000								
		in.lb	44250								
Efficiency at full load	η	%	96.5								
Service life (For calculation, see the Chapter “Information”)	L_h	h	> 30000								
Weight incl. standard adapter plate	m	kg	76								
		lb_m	168								
Operating noise (with i=10 and n_1 = 2000 rpm no load)	L_{PA}	dB(A)	≤ 66								
Max. permitted housing temperature		°C	+90								
		F	194								
Ambient temperature		°C	-15 to +40								
		F	5 to 104								
Lubrication			Lubricated for life								
Paint			Blue RAL 5002								
Direction of rotation			Motor and gearhead same direction								
Protection class			IP 65								
Moment of inertia (relates to the drive) **Clamping hub diameter [mm]** **M** **48**	J_1	$kgcm^2$	39.2	34.6	33.2	30.5	29.7	28.2	27.9	27.6	27.5
		10^{-3} in.lb.s^2	34.7	30.6	29.4	27.0	26.3	25.0	24.7	24.4	24.3

Reduced mass moments of inertia available on request.

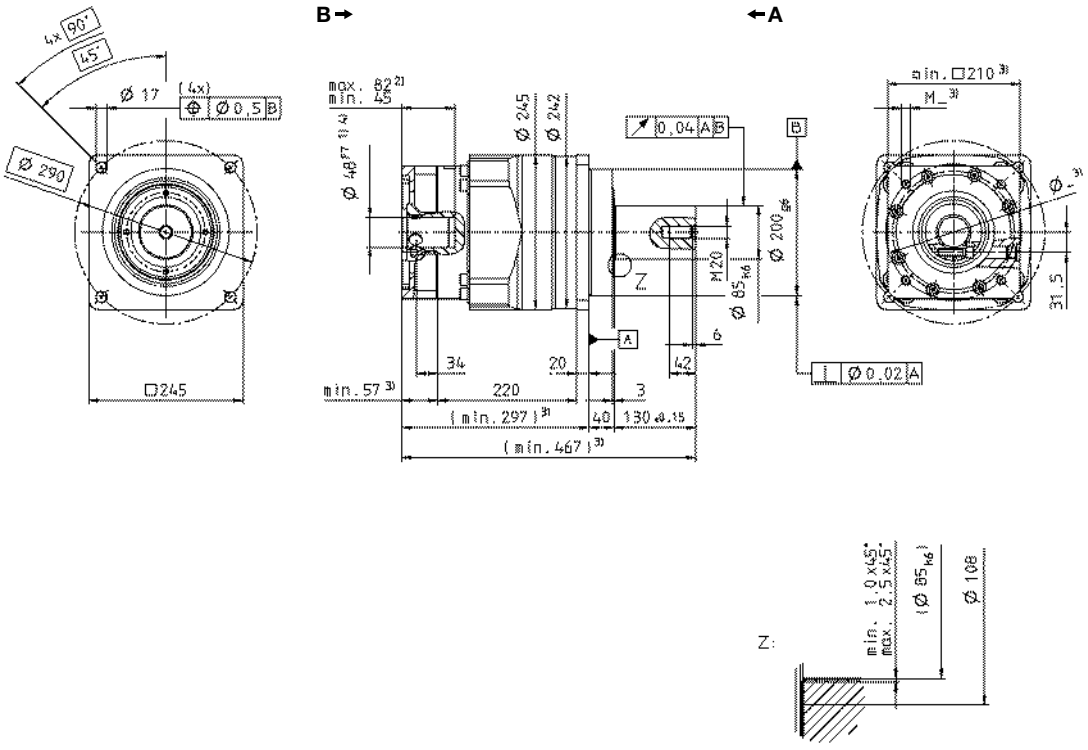
[a] Other ratios available on request
[b] For higher ambient temperatures, please reduce input speed
[c] Refers to center of the output shaft or flange

View A

View B

Motor shaft diameter [mm]

up to 48 [4] (M) clamping hub diameter



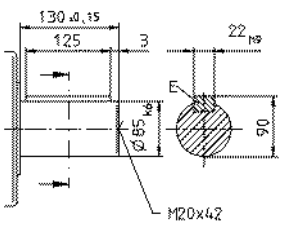
Planetary gearheads **High End**

SP+

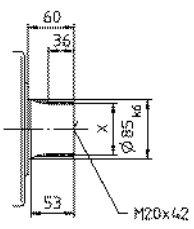
MC

Alternatives: Output shaft variants

Output shaft with key in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 80 x 2 x 30 x 38 x 6m, DIN 5480



Non-tolerated dimensions ± 1.5 mm

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

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

Motor mounting according to operating manual

Low backlash planetary gearheads Economy

LP⁺ Generation 3
Economical multitalent

- Low backlash planetary gearhead with output shaft
- Applications in cyclic or continuous operation
- Torsional backlash ≤ 8 arcmin
- Ratio: 3-100

Product highlights
- Large range of ratios
- High nominal speeds
- Optionally available with belt pulley

LPB⁺ Generation 3
Economical multitalent

- Low backlash planetary gearhead with output flange
- Cyclic or continuous operation
- Torsional backlash ≤ 8 arcmin
- Ratio: 3-100

Product highlights
- Large range of ratios
- High nominal speeds
- Optionally available with belt pulley

Power density ◄

Versatile installation

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

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

Extended boundaries

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

alphira®
Economical entry-level model

- Low backlash planetary gearhead with output shaft
- Applications in cyclic or continuous operation
- Torsional backlash ≤ 20 arcmin
- Ratio: 4-100

Product highlights
- Lightweight aluminum
- Available from our online shop: www.alphira.de (DE/AT/CH)

Just in time

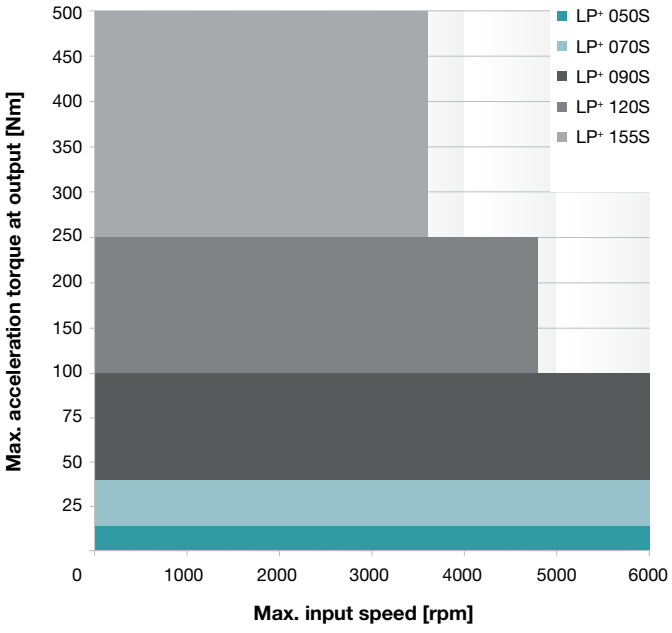
With our Economy range, this is not merely a slogan. With our Economy range products, we set new standards with regard to delivery times and delivery reliability.

LP+/LPB+ Generation 3 – Economical multitalent

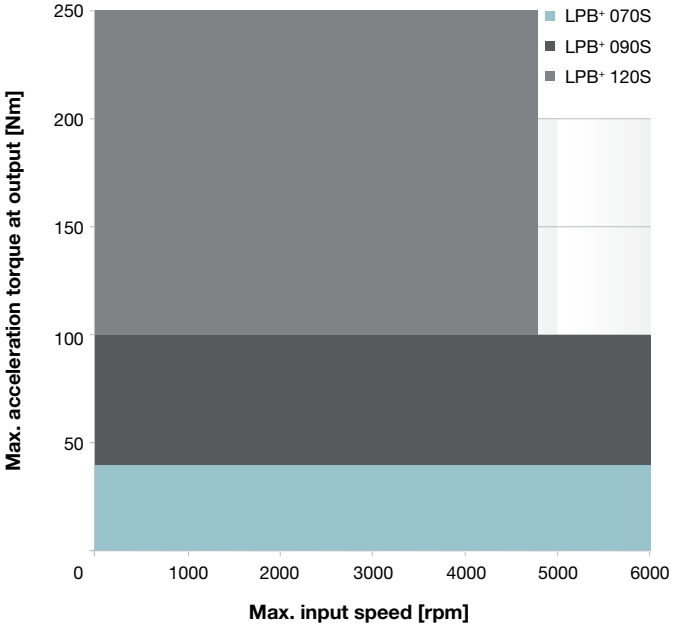
Low backlash planetary gearheads with output shaft or output flange. The LP+/LPB+ Generation 3 gearhead series combines maximum quality with economical precision. The LPB+ Generation 3 is especially suitable for compact belt drives.

Quick size selection

LP+ Generation 3 MF (example for i = 5)
For applications in cyclic operation (DC ≤ 60%)
or in continuous operation (DC ≥ 60%)



LPB+ Generation 3 MF (example for i = 5)
For applications in cyclic operation (DC ≤ 60%)
or in continuous operation (DC ≥ 60%)



Versions and Applications

Features	LP+ Generation 3 MF version page 122	LPB+ Generation 3 MF version page 134
Power density	••	••
Positioning accuracy	•	••
High input speeds	••	••
Torsional rigidity	•	••
Space-saving design	••	•••

Product features

Ratios [c]		3 – 100	3 – 100
Torsional backlash [arcmin] [c]	Standard	≤ 8	≤ 8
	Reduced	–	–
Output type			
Smooth output shaft		•	
Keywayed output shaft		•	
Output flange			•
Input type			
Motor mounted version		•	•
Type			
Food-grade lubrication [a] [b]		•	•
Accessories			
Coupling		•	
Rack		•	
Pinion		•	
Belt pulley			•
B5 flange		•	

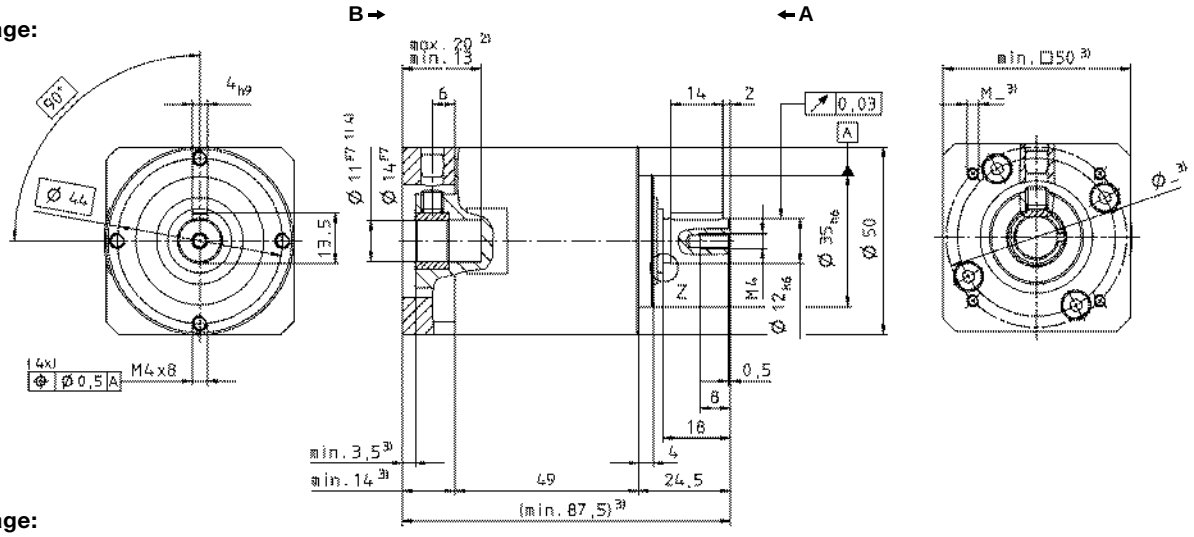
[a] Power reduction: technical data available upon request [b] Please contact WITTENSTEIN alpha [c] In relation to reference sizes

				1-stage				2-stage						
Ratio			***i***	**4**	**5**	**7**	**10**	**16**	**20**	**25**	**35**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	13	14	14	13	13	13	14	14	14	14	13
			in.lb	120	120	120	120	120	120	120	120	120	120	120
Nominal output torque (with n_{1N})			T_{2N} Nm	6	6.5	6.5	6	6	6	6.5	6.5	6.5	6.5	6
			in.lb	53	58	58	53	53	53	58	58	58	58	53
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not} Nm	26	26	26	26	26	26	26	26	26	26	26
			in.lb	230	230	230	230	230	230	230	230	230	230	230
Nominal input speed (with T_{2N} and 20°C ambient temperature) [a]			n_{1N} rpm	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
Max. input speed			n_{1Max} rpm	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000
Mean no load running torque (with n_1 = 3000 rpm and 20°C gearhead temperature)			T_{012} Nm	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
			in.lb	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Max. torsional backlash			j_t arcmin	≤ 10				≤ 13						
Torsional rigidity			C_{t21} Nm/ arcmin	1.5	1.2	1.2	0.9	1.5	1.5	1.2	1.2	1.2	1.2	0.9
			in.lb/ arcmin	13	11	11	8	13	13	11	11	11	11	8
Max. axial force [b]			F_{2AMax} N	700				700						
			lb_f	160				160						
Max. radial force [b]			F_{2RMax} N	650				650						
			lb_f	150				150						
Efficiency at full load			η %	97				95						
Service life (For calculation, see the Chapter "Information")			L_h h	> 20000				> 20000						
Weight incl. standard adapter plate			*m* kg	0.75				0.95						
			lb_m	1.7				2.1						
Operating noise for i=10 and n_1 = 3000 rpm without load			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										
Paint				Blue RAL 5002										
Direction of rotation				Motor and gearhead same direction										
Protection class				IP 64										
Moment of inertia (relates to the drive)	B	11	J_1 kgcm²	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
			10^{-3} in.lb.s²	0.05	0.04	0.04	0.04	0.05	0.04	0.04	0.04	0.04	0.04	0.04
Clamping hub diameter (mm)	C	14	J_1 kgcm²	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
			10^{-3} in.lb.s²	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2

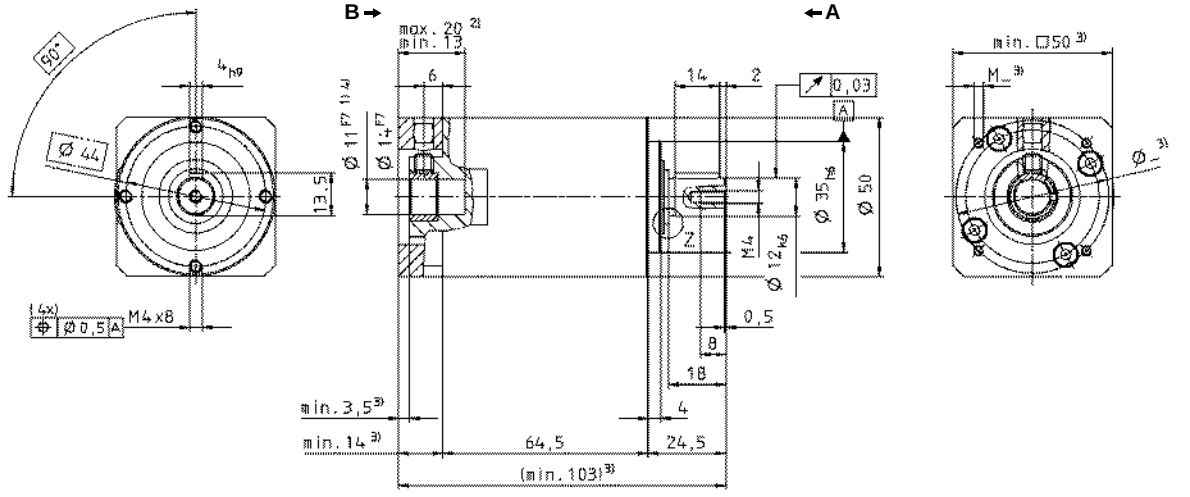
[a] For higher ambient temperatures, please reduce input speed
[b] Refers to center of the output shaft, if n_2 = 100 rpm

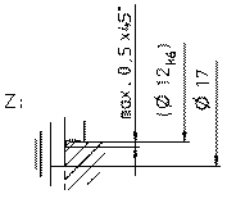
View A View B

LP+ 1-stage:



LP+ 2-stage:





Non-tolerated dimensions ±1mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing. Motor shaft diameters up to 14mm available – please contact WITTENSTEIN alpha

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

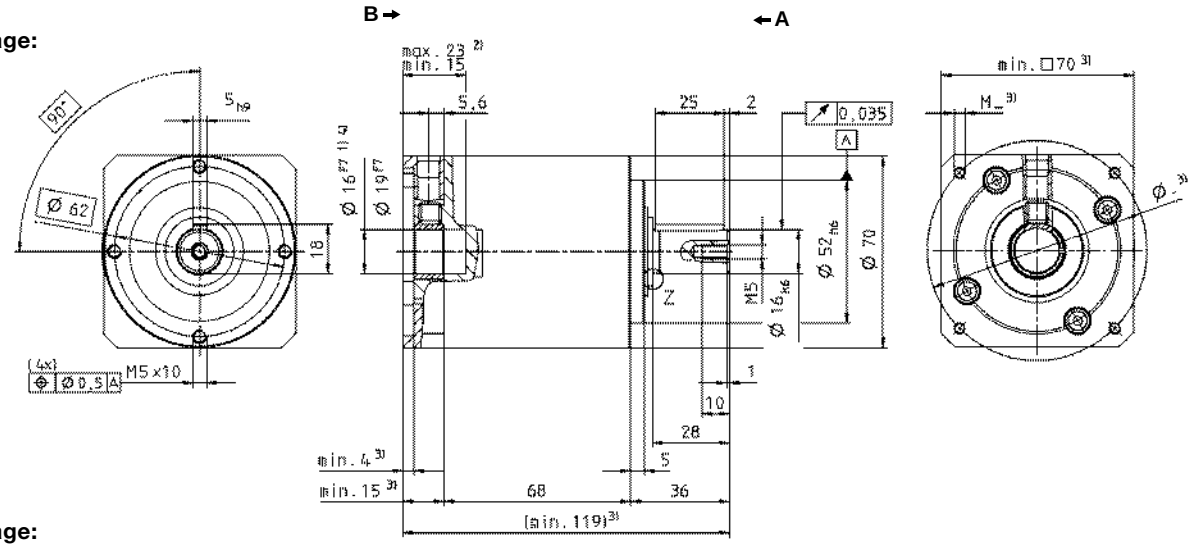
Motor mounting according to operating manual

				1-stage					2-stage									
Ratio [a]			*i*	**3**	**4**	**5**	**7**	**10**	**9**	**12**	**16**	**20**	**25**	**30**	**40**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	55	42	40	40	37	55	55	42	42	40	55	42	40	40	37
			in.lb	490	370	350	350	330	490	490	490	370	350	490	370	350	350	330
Nominal output torque (with n_{1N})			T_{2N} Nm	29	22	21	21	19	29	29	22	22	21	29	22	21	21	19
			in.lb	260	190	190	190	170	260	260	260	190	190	260	190	190	190	170
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not} Nm	65	75	75	75	75	75	75	75	75	75	75	75	75	75	75
			in.lb	580	660	660	660	660	660	660	660	660	660	660	660	660	660	660
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b]			n_{1N} rpm	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700
Max. input speed			n_{1Max} rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque (with n_1 = 3000 rpm and 20°C gearhead temperature)			T_{012} Nm	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
			in.lb	2.7	2.2	1.8	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	0.9
Max. torsional backlash			j_t arcmin	≤ 8					≤ 10									
Torsional rigidity			C_{t21} Nm/ arcmin	4	4	3.3	3.3	2.8	4.0	4.0	4.0	4.0	4.0	4.0	3.3	3.3	3.3	2.8
			in.lb/ arcmin	35	35	29	29	25	35	35	35	35	35	35	29	29	29	25
Max. axial force [c]			F_{2AMax} N	1550					1550									
			lb_f	349					349									
Max. radial force [c]			F_{2RMax} N	1450					1450									
			lb_f	326					326									
Efficiency at full load			η %	97					95									
Service life (For calculation, see the Chapter "Information")			L_h h	> 20000					> 20000									
Weight incl. standard adapter plate			*m* kg	2.0					2.4									
			lb_m	4.4					5.3									
Operating noise for i=10 and n_1 = 3000 rpm without load			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														
Paint				Blue RAL 5002														
Direction of rotation				Motor and gearhead same direction														
Protection class				IP 64														
Moment of inertia (relates to the drive)	D	16	J_1 kgcm²	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
			10^{-3} in.lb.s²	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Clamping hub diameter (mm)	E	19	J_1 kgcm²	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
			10^{-3} in.lb.s²	0.5	0.5	0.5	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.4	0.5	0.4	0.4	0.4

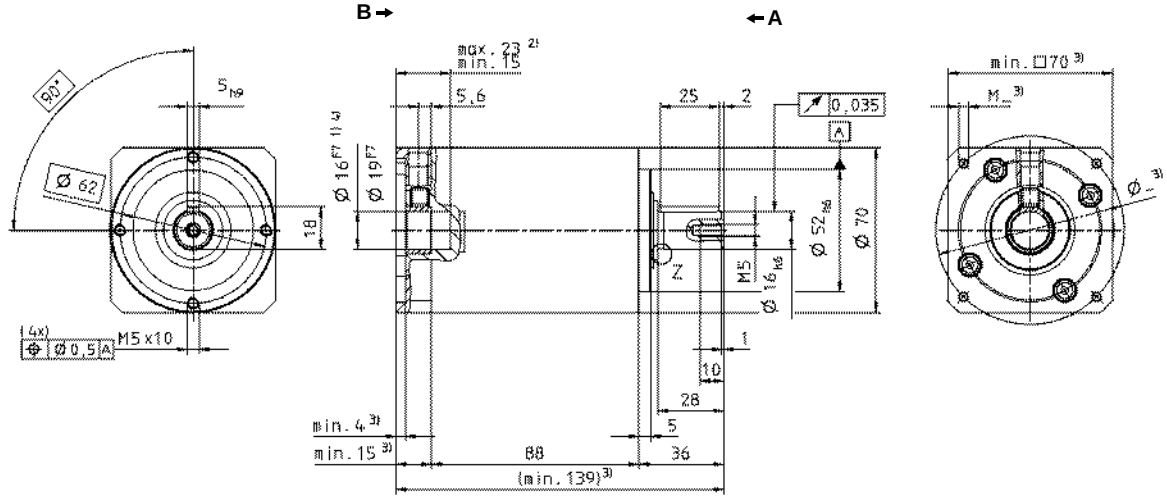
[a] Other ratios are available on request: i = 15, 21, 28 and 35.
[b] For higher ambient temperatures, please reduce input speed
[c] Refers to center of the output shaft, if n_2 = 100 rpm

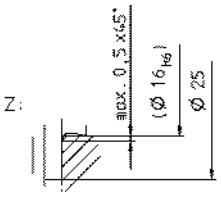
View A View B

LP+ 1-stage:



LP+ 2-stage:





Non-tolerated dimensions ±1mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing. Motor shaft diameters up to 19mm available – please contact WITTENSTEIN alpha

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

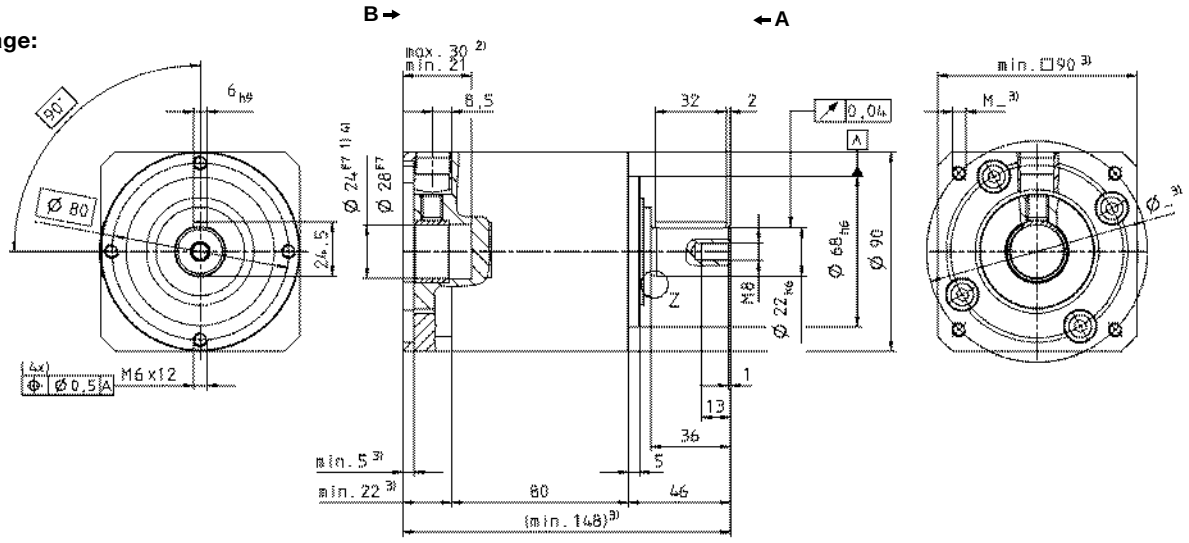
Motor mounting according to operating manual

				1-stage					2-stage									
Ratio [a]			*i*	**3**	**4**	**5**	**7**	**10**	**9**	**12**	**16**	**20**	**25**	**30**	**40**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	125	115	100	100	90	125	125	115	115	100	125	115	100	100	90
			T_{2B} in.lb	1110	1020	890	890	800	1110	1110	1020	1020	890	1110	1020	890	890	800
Nominal output torque (with n_{1N})			T_{2N} Nm	63	58	50	50	45	63	63	58	58	50	63	58	50	50	45
			T_{2N} in.lb	560	510	440	440	400	560	560	510	510	440	560	510	440	440	400
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not} Nm	185	190	190	190	190	190	190	190	190	190	190	190	190	190	190
			T_{2Not} in.lb	1640	1680	1680	1680	1680	1680	1680	1680	1680	1680	1680	1680	1680	1680	1680
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b]			n_{1N} rpm	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400
Max. input speed			n_{1Max} rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque (with n_1 = 3000 rpm and 20°C gearhead temperature)			T_{012} Nm	0.6	0.6	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
			T_{012} in.lb	5.3	4.9	4.4	3.5	3.4	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.2	2.2	2.2
Max. torsional backlash			j_t arcmin	≤ 8					≤ 10									
Torsional rigidity			C_{t21} Nm/ arcmin	12	12	9.5	9.5	8.5	12	12	12	12	9.5	9.5	12	9.5	9.5	8.5
			C_{t21} in.lb/ arcmin	106	106	84	84	75	106	106	106	106	84	84	106	84	84	75
Max. axial force [c]			F_{2AMax} N	1900					1900									
			F_{2AMax} lb_f	430					430									
Max. radial force [c]			F_{2RMax} N	2400					2400									
			F_{2RMax} lb_f	540					540									
Efficiency at full load			η %	97					95									
Service life (For calculation, see the Chapter "Information")			L_h h	> 20000					> 20000									
Weight incl. standard adapter plate			*m* kg	4.0					5.0									
			m lb_m	8.8					11									
Operating noise for i=10 and n_1 = 3000 rpm without load			L_{PA} dB(A)	≤66														
Max. permitted housing temperature			°C	+90														
			F	194														
Ambient temperature			°C	-15 to +40														
			F	5 to 104														
Lubrication				Lubricated for life														
Paint				Blue RAL 5002														
Direction of rotation				Motor and gearhead same direction														
Protection class				IP 64														
Moment of inertia (relates to the drive)	G	24	J_1 kgcm²	1.8	1.6	1.6	1.5	1.4	1.5	1.5	1.6	1.6	1.5	1.5	1.4	1.4	1.4	1.4
			J_1 10^{-3} in.lb.s²	1.6	1.4	1.4	1.3	1.3	1.3	1.3	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3
Clamping hub diameter (mm)	H	28	J_1 kgcm²	2.1	1.9	1.9	1.8	1.7	1.8	1.8	1.9	1.9	1.8	1.8	1.7	1.7	1.7	1.7
			J_1 10^{-3} in.lb.s²	1.9	1.7	1.6	1.6	1.5	1.6	1.6	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.5

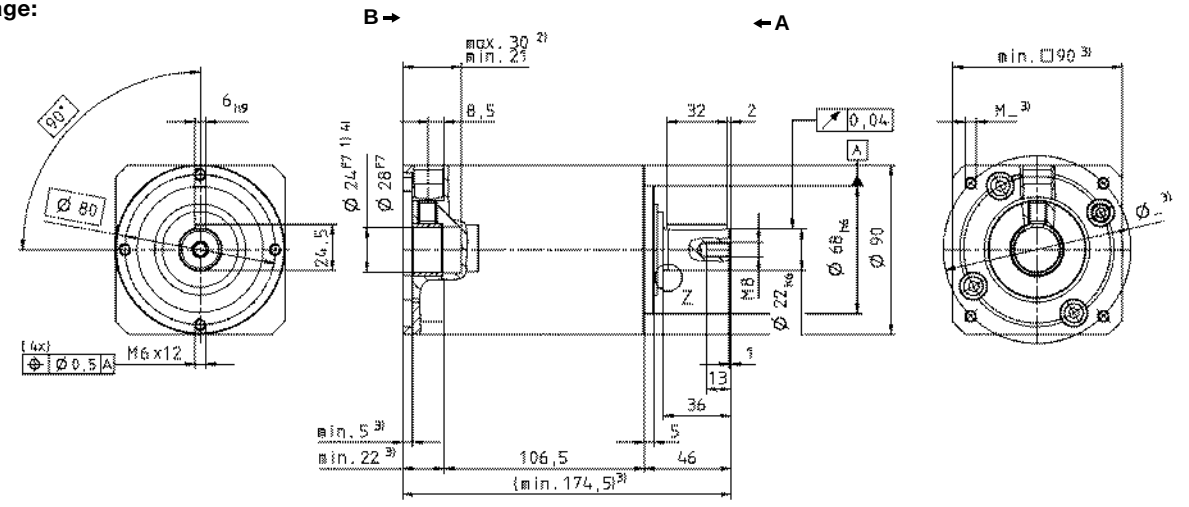
[a] Other ratios are available on request: i = 15, 21, 28 and 35.
[b] For higher ambient temperatures, please reduce input speed
[c] Refers to center of the output shaft, if n_2 = 100 rpm

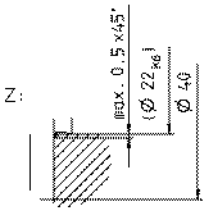
View A View B

LP+ 1-stage:



LP+ 2-stage:





Non-tolerated dimensions ±1mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing. Motor shaft diameters up to 28mm available – please contact WITTENSTEIN alpha

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

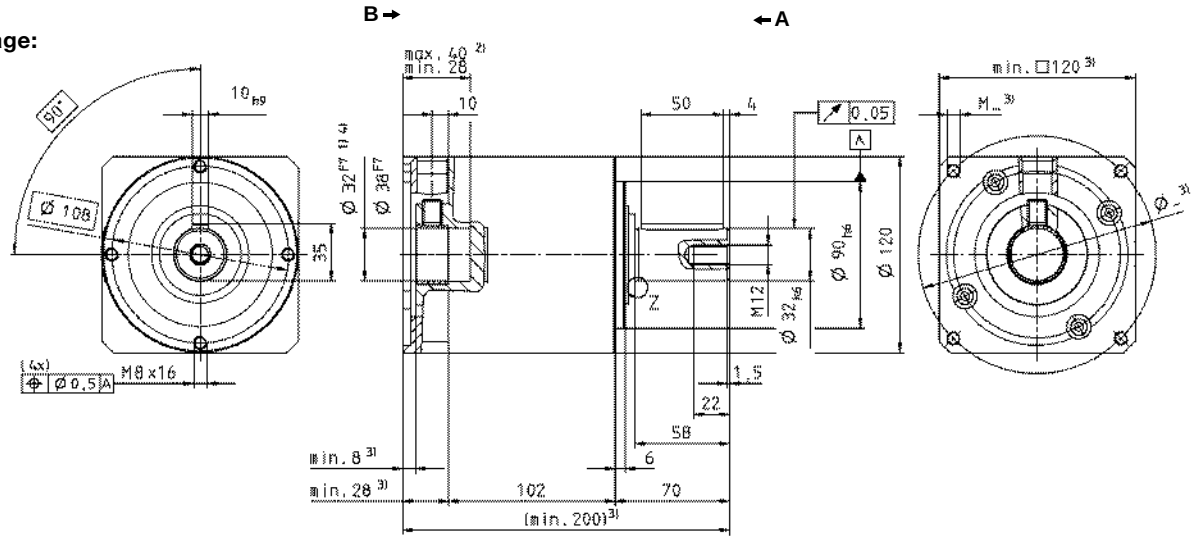
Motor mounting according to operating manual

					1-stage					2-stage									
Ratio [a]			*i*		**3**	**4**	**5**	**7**	**10**	**9**	**12**	**16**	**20**	**25**	**30**	**40**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	305	305	250	250	220	305	305	305	305	250	305	305	250	250	220
				in.lb	2700	2700	2210	2210	1950	2700	2700	2700	2700	2210	2700	2700	2210	2210	1950
Nominal output torque (with n_{1N})			T_{2N}	Nm	155	155	125	125	110	155	155	155	155	125	155	155	125	125	110
				in.lb	1370	1370	1110	1110	970	1370	1370	1370	1370	1110	1370	1370	1110	1110	970
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	400	480	480	480	480	480	480	480	480	480	480	480	480	480	480
				in.lb	3540	4250	4250	4250	4250	4250	4250	4250	4250	4250	4250	4250	4250	4250	4250
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b]			n_{1N}	rpm	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600
Max. input speed			n_{1Max}	rpm	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800
Mean no load running torque (with n_1 =3000 rpm and 20°C gearhead temperature)			T_{012}	Nm	1.1	1.0	0.9	0.8	0.8	0.6	0.6	0.6	0.5	0.5	0.4	0.5	0.4	0.4	0.4
				in.lb	9.7	8.9	8.0	7.1	7.1	5.3	5.3	4.9	4.4	4.4	3.5	4.4	3.5	3.5	3.5
Max. torsional backlash			j_t	arcmin	≤ 8					≤ 10									
Torsional rigidity			C_{t21}	Nm/ arcmin	30	30	25	25	22	30	30	30	30	25	25	30	25	25	22
				in.lb/ arcmin	270	270	220	220	190	270	270	270	270	220	220	270	220	220	190
Max. axial force [c]			F_{2AMax}	N	4000					4000									
				lb_f	900					900									
Max. radial force [c]			F_{2RMax}	N	4600					4600									
				lb_f	1035					1035									
Efficiency at full load			η	%	97					95									
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000					> 20000									
Weight incl. standard adapter plate			*m*	kg	8.6					11.0									
				lb_m	19.0					24.3									
Operating noise for i=10 and n_1 = 3000 rpm without load			L_{PA}	dB(A)	≤ 68														
Max. permitted housing temperature				°C	+90														
				F	194														
Ambient temperature				°C	-15 to +40														
				F	5 to 104														
Lubrication					Lubricated for life														
Paint					Blue RAL 5002														
Direction of rotation					Motor and gearhead same direction														
Protection class					IP 64														
Moment of inertia (relates to the drive)	I	32	J_1	kgcm²	6.9	5.9	5.6	5.2	5.1	5.4	5.4	5.5	5.5	5.3	5.3	5.0	5.0	5.0	5.0
				10^{-3} in.lb.s²	6.1	5.3	4.9	4.6	4.5	4.7	4.7	4.9	4.9	4.7	4.7	4.4	4.4	4.4	4.4
Clamping hub diameter (mm)	K	38	J_1	kgcm²	7.8	6.8	6.4	6.1	5.9	6.2	6.2	6.4	6.4	6.2	6.2	5.9	5.9	5.9	5.9
				10^{-3} in.lb.s²	6.9	6.0	5.7	5.4	5.2	5.5	5.5	5.7	5.7	5.5	5.5	5.2	5.2	5.2	5.2

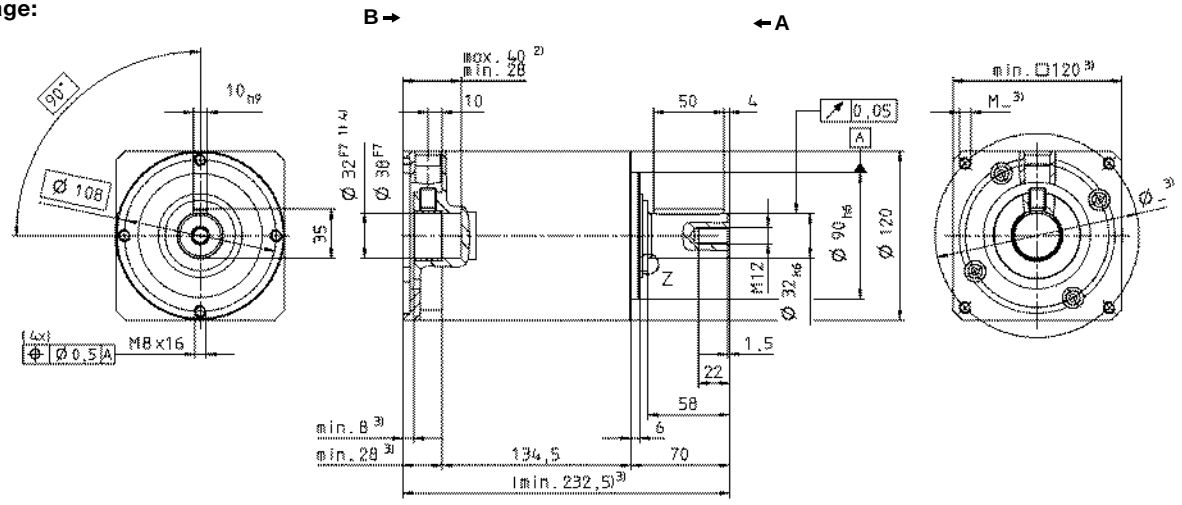
[a] Other ratios are available on request: i = 15, 21, 28 and 35.
[b] For higher ambient temperatures, please reduce input speed
[c] Refers to center of the output shaft, if n_2 = 100 rpm

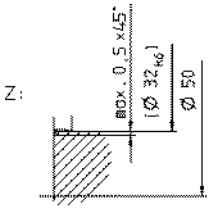
View A View B

LP⁺ 1-stage:



LP⁺ 2-stage:





Non-tolerated dimensions ±1mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing. Motor shaft diameters up to 38mm available – please contact WITTENSTEIN alpha

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

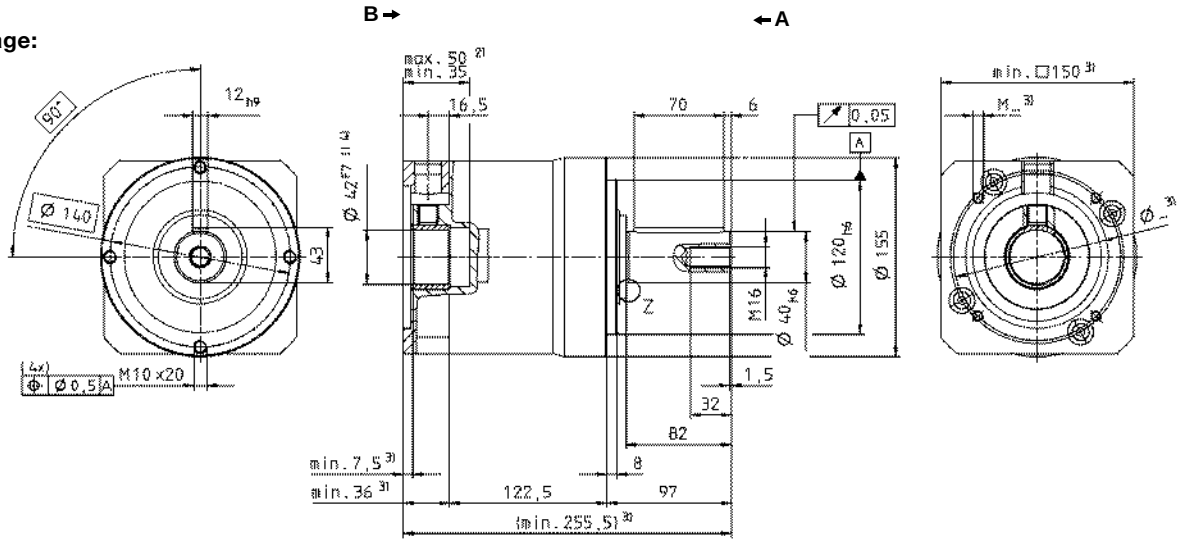
Motor mounting according to operating manual

					1-stage		2-stage		
Ratio			**i**		**5**	**10**	**25**	**50**	**100**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	500	400	500	500	400
				in.lb	4430	3540	4430	4430	3540
Nominal output torque (with n_{1N})			T_{2N}	Nm	350	200	350	350	200
				in.lb	3100	1770	3100	3100	1770
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	1000	1000	1000	1000	1000
				in.lb	8850	8850	8850	8850	8850
Nominal input speed (with T_{2N} and 20°C ambient temperature) [a]			n_{1N}	rpm	2000	2000	2000	2000	2000
Max. input speed			n_{1Max}	rpm	3600	3600	3600	3600	3600
Mean no load running torque (with n_1 = 3000 rpm and 20°C gearhead temperature)			T_{012}	Nm	2.8	2.5	1.0	0.8	0.7
				in.lb	25	22	8.9	7.1	6.2
Max. torsional backlash			j_t	arcmin	≤ 8		≤ 10		
Torsional rigidity			C_{t21}	Nm/ arcmin	55	44	55	55	44
				in.lb/ arcmin	490	390	490	490	390
Max. axial force [b]			F_{2AMax}	N	6000		6000		
				lb_f	1350		1350		
Max. radial force [b]			F_{2RMax}	N	7500		7500		
				lb_f	1690		1690		
Efficiency at full load			η	%	97		95		
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000		> 20000		
Weight incl. standard adapter plate			m	kg	17		21		
				lb_m	38		46		
Operating noise for i=10 and n_1 = 3000 rpm without load			L_{PA}	dB(A)	≤69				
Max. permitted housing temperature				°C	+90				
				F	194				
Ambient temperature				°C	-15 to +40				
				F	5 to 104				
Lubrication					Lubricated for life				
Paint					Blue RAL 5002				
Direction of rotation					Motor and gearhead same direction				
Protection class					IP 64				
Moment of inertia (relates to the drive) Clamping hub diameter (mm)	L	42	J_1	$kgcm^2$	17	16	–	–	–
				10^{-3} in.lb.s²	15	14	–	–	–
	I	32	J_1	$kgcm^2$	–	–	5.4	5.0	5.0
				10^{-3} in.lb.s²	–	–	4.8	4.4	4.4
	K	38	J_1	$kgcm^2$	–	–	6.3	5.9	5.9
				10^{-3} in.lb.s²	–	–	5.5	5.2	5.2

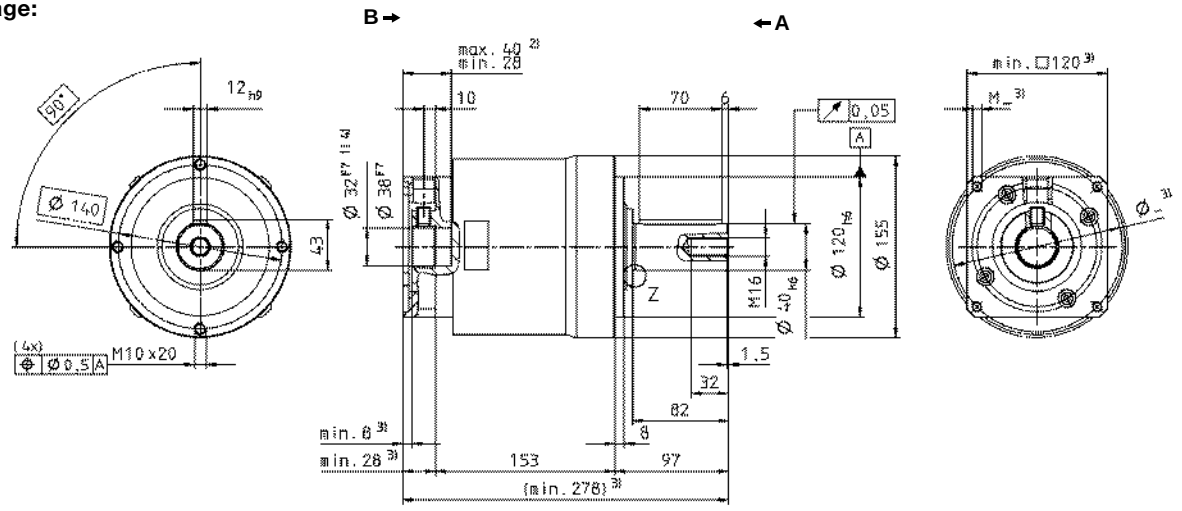
[a] For higher ambient temperatures, please reduce input speed
[b] Refers to center of the output shaft, if n_2 = 100 rpm

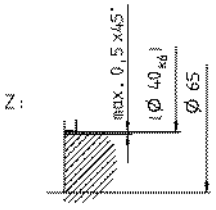
View A View B

LP⁺ 1-stage:



LP⁺ 2-stage:





Non-tolerated dimensions ±1mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing. LP⁺ 2-stage: Motor shaft diameters up to 38mm available – please contact WITTENSTEIN alpha

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

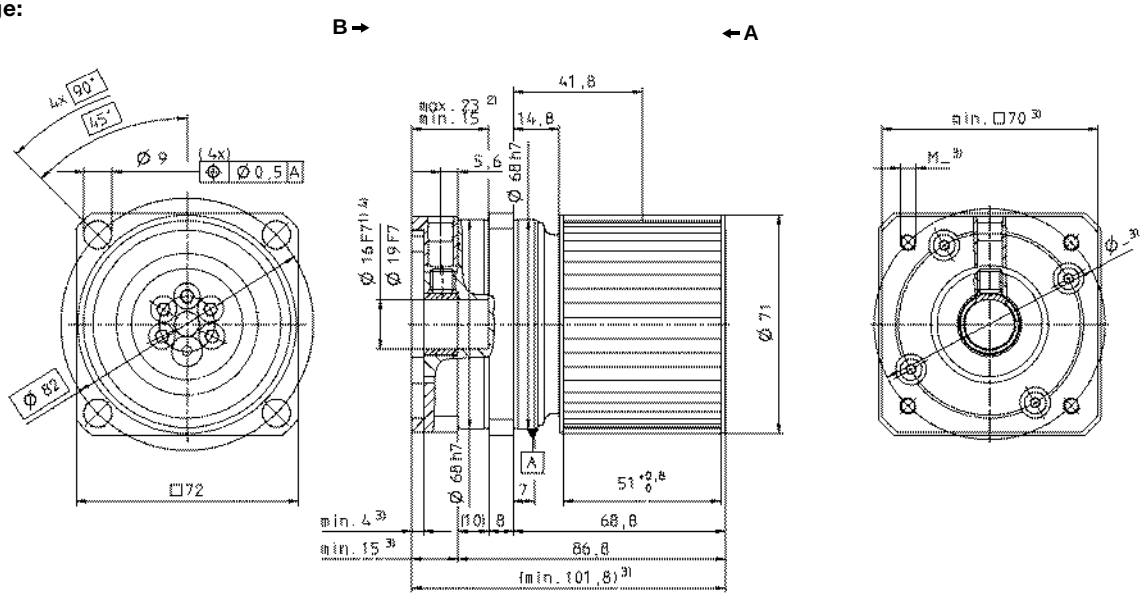
Motor mounting according to operating manual

					1-stage					2-stage									
Ratio [d]			*i*		**3**	**4**	**5**	**7**	**10**	**9**	**12**	**16**	**20**	**25**	**30**	**40**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	55	42	40	40	37	55	55	42	42	40	55	42	40	40	37
				in.lb	490	370	350	350	330	490	490	370	370	350	490	370	350	350	330
Nominal output torque (with n_{1N})			T_{2N}	Nm	29	22	21	21	19	29	29	22	22	21	29	22	21	21	19
				in.lb	260	190	190	190	170	260	260	190	190	190	260	190	190	190	170
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	65	75	75	75	75	75	75	75	75	75	75	75	75	75	75
				in.lb	580	660	660	660	660	660	660	660	660	660	660	660	660	660	660
Nominal input speed (with T_{2N} and 20°C ambient temperature) [a]			n_{1N}	rpm	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700
Max. input speed			n_{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque (with n_1 = 3000 rpm and 20°C gearhead temperature)			T_{012}	Nm	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
				in.lb	2.7	2.2	1.8	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	0.9
Max. torsional backlash			j_t	arcmin	≤ 8					≤ 10									
Torsional rigidity			C_{t21}	Nm/ arcmin	6.4	6.4	4.8	4.8	3.8	6.4	6.4	6.4	6.4	4.8	6.4	6.4	4.8	4.8	3.8
				in.lb/ arcmin	55	55	40	40	35	55	55	55	55	40	55	55	40	40	35
Max. axial force [b]			F_{2AMax}	N	1550					1550									
				lb_f	350					350									
Max. radial force [c]			F_{2RMax}	N	3000					3000									
				lb_f	680					680									
Efficiency at full load			η	%	97					95									
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000					> 20000									
Weight incl. standard adapter plate			*m*	kg	1.6					2									
				lb_m	3.5					4.4									
Operating noise for i=10 and n_1 = 3000 rpm without load			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														
Paint					Blue RAL 5002														
Direction of rotation					Motor and gearhead same direction														
Protection class					IP 64														
Moment of inertia (relates to the drive)	D	16	J_1	kgcm²	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
				10^{-3} in.lb.s²	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Clamping hub diameter (mm)	E	19	J_1	kgcm²	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
				10^{-3} in.lb.s²	0.5	0.5	0.5	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4

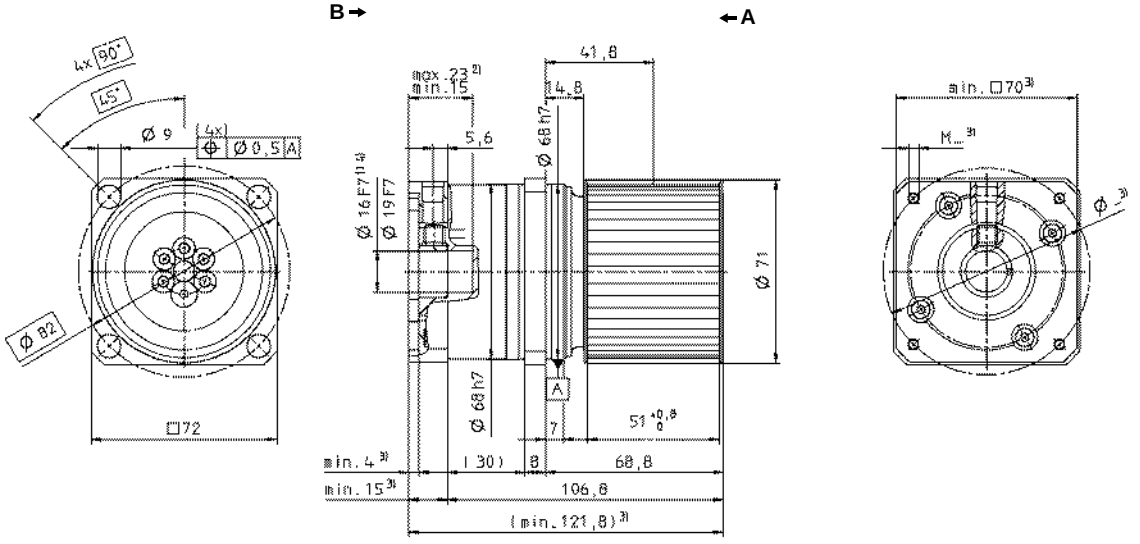
[a] For higher ambient temperatures, please reduce input speed
[b] Based on the center of the output flange at n_2 = 100 rpm
[c] With mounted PLPB+ belt pulley and 100 rpm
[d] Other ratios are available on request: i = 15, 21, 28 and 35.

View A View B

LPB⁺ 1-stage:



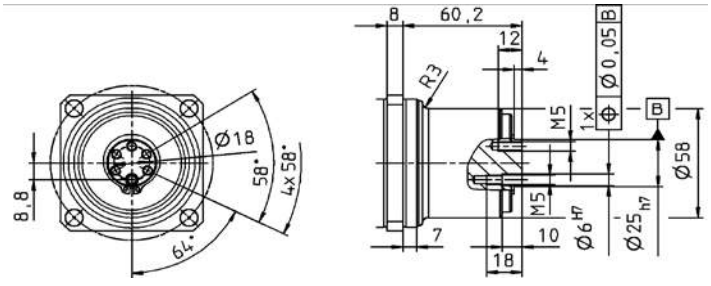
LPB⁺ 2-stage:



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

Belt Pulley PLPB+ 070 Profile AT5-0			
Pitch	*p*	mm	5
Number of teeth	*z*		43
Circumference	*z* * *p*	mm/rotation	215
Inertia	*J*	kgcm²	3.86
Mass	*m*	kg	0.48

Illustration: Output flange without belt pulley



Non-tolerated dimensions ±1mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing. Motor shaft diameters up to 19mm available – please contact WITTENSTEIN alpha

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

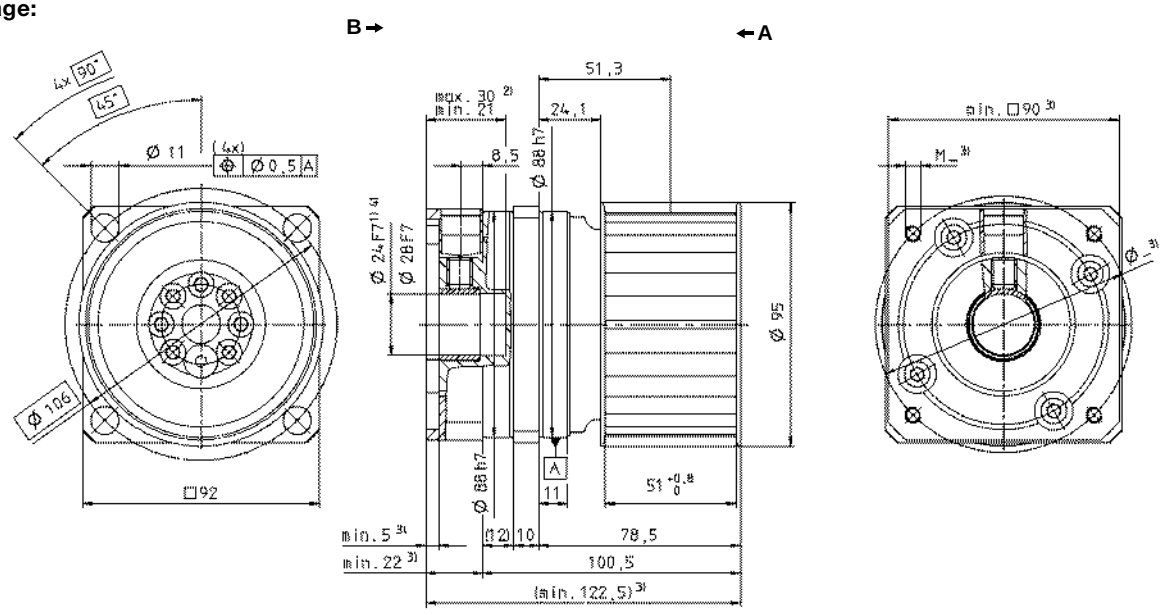
Motor mounting according to operating manual

LPB+ 090 MF 1/2-stage

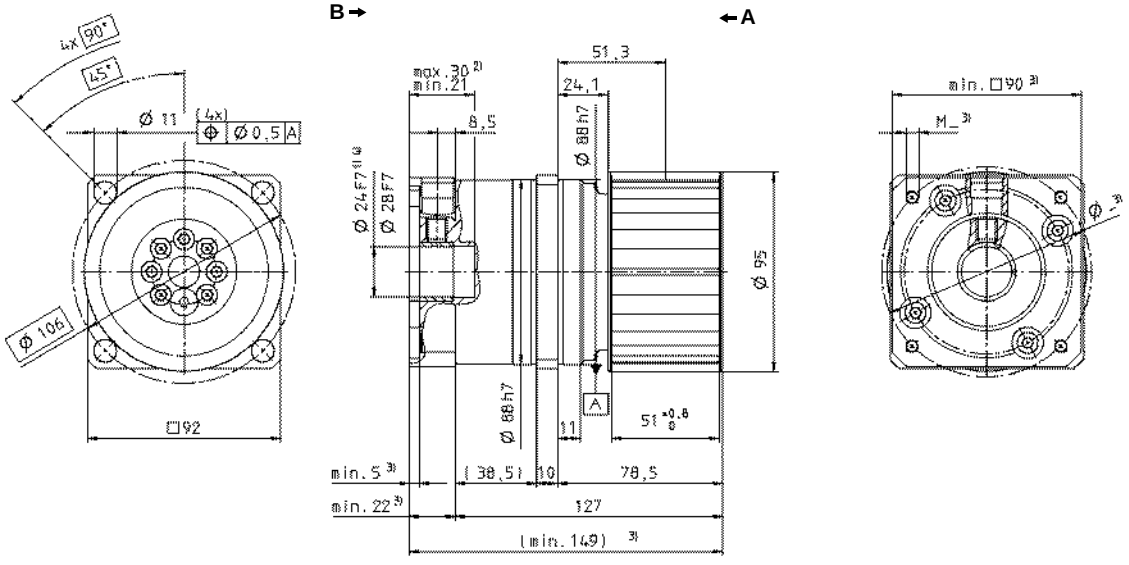
					1-stage					2-stage									
Ratio [d]			*i*		**3**	**4**	**5**	**7**	**10**	**9**	**12**	**16**	**20**	**25**	**30**	**40**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	125	115	100	100	90	125	125	115	115	100	125	115	100	100	90
				in.lb	1110	1020	890	890	800	1110	1110	1020	1020	890	1110	1020	890	890	800
Nominal output torque (with n_{1N})			T_{2N}	Nm	63	58	50	50	45	63	63	58	58	50	63	58	50	50	45
				in.lb	560	510	440	440	400	560	560	510	510	440	560	510	440	440	400
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	185	190	190	190	190	190	190	190	190	190	190	190	190	190	190
				in.lb	1640	1680	1680	1680	1680	1680	1680	1680	1680	1680	1680	1680	1680	1680	1680
Nominal input speed (with T_{2N} and 20°C ambient temperature) [a]			n_{1N}	rpm	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400
Max. input speed			n_{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque (with n_1 = 3000 rpm and 20°C gearhead temperature)			T_{012}	Nm	0.6	0.6	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
				in.lb	5.3	4.9	4.4	3.5	3.4	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.2	2.2	2.2
Max. torsional backlash			j_t	arcmin	≤ 8					≤ 10									
Torsional rigidity			C_{t21}	Nm/ arcmin	20	20	14	14	12	20	20	20	20	14	20	20	14	14	12
				in.lb/ arcmin	180	180	120	120	110	180	180	180	180	120	180	180	120	120	110
Max. axial force [b]			F_{2AMax}	N	1900					1900									
				lb_f	430					430									
Max. radial force [c]			F_{2RMax}	N	4300					4300									
				lb_f	970					970									
Efficiency at full load			η	%	97					95									
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000					> 20000									
Weight incl. standard adapter plate			*m*	kg	3.3					4.3									
				lb_m	7.3					10									
Operating noise for i=10 and n_1 = 3000 rpm without load			L_{PA}	dB(A)	≤ 66														
Max. permitted housing temperature				°C	+90														
				F	194														
Ambient temperature				°C	-15 to +40														
				F	5 to 104														
Lubrication					Lubricated for life														
Paint					Blue RAL 5002														
Direction of rotation					Motor and gearhead same direction														
Protection class					IP 64														
Moment of inertia (relates to the drive)	G	24	J_1	kgcm²	1.8	1.6	1.5	1.5	1.4	1.5	1.5	1.6	1.6	1.5	1.5	1.4	1.4	1.4	1.4
				10^{-3} in.lb.s²	1.6	1.4	1.4	1.3	1.3	1.3	1.3	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3
Clamping hub diameter (mm)	H	28	J_1	kgcm²	2	1.9	1.8	1.8	1.7	1.8	1.8	1.9	1.9	1.8	1.8	1.7	1.7	1.7	1.7
				10^{-3} in.lb.s²	1.9	1.7	1.6	1.6	1.5	1.6	1.6	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.5

[a] For higher ambient temperatures, please reduce input speed
[b] Based on the center of the output flange at n_2 = 100 rpm
[c] With mounted PLPB+ belt pulley and 100 rpm
[d] Other ratios are available on request: i = 15, 21, 28 and 35.

LPB⁺ 1-stage:

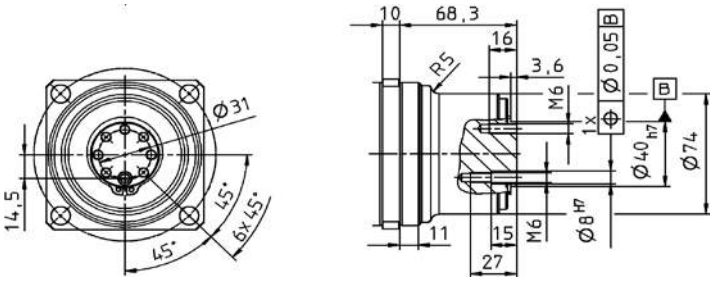


LPB⁺ 2-stage:



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

Illustration: Output flange without belt pulley



Belt Pulley PLPB⁺ 090 Profile AT10-0			
Pitch	*p*	mm	10
Number of teeth	*z*		28
Circumference	*z* * *p*	mm/rotation	280
Inertia	*J*	kgcm²	10.95
Mass	*m*	kg	0.82

Non-tolerated dimensions ±1mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing. Motor shaft diameters up to 28mm available – please contact WITTENSTEIN alpha

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

Motor mounting according to operating manual

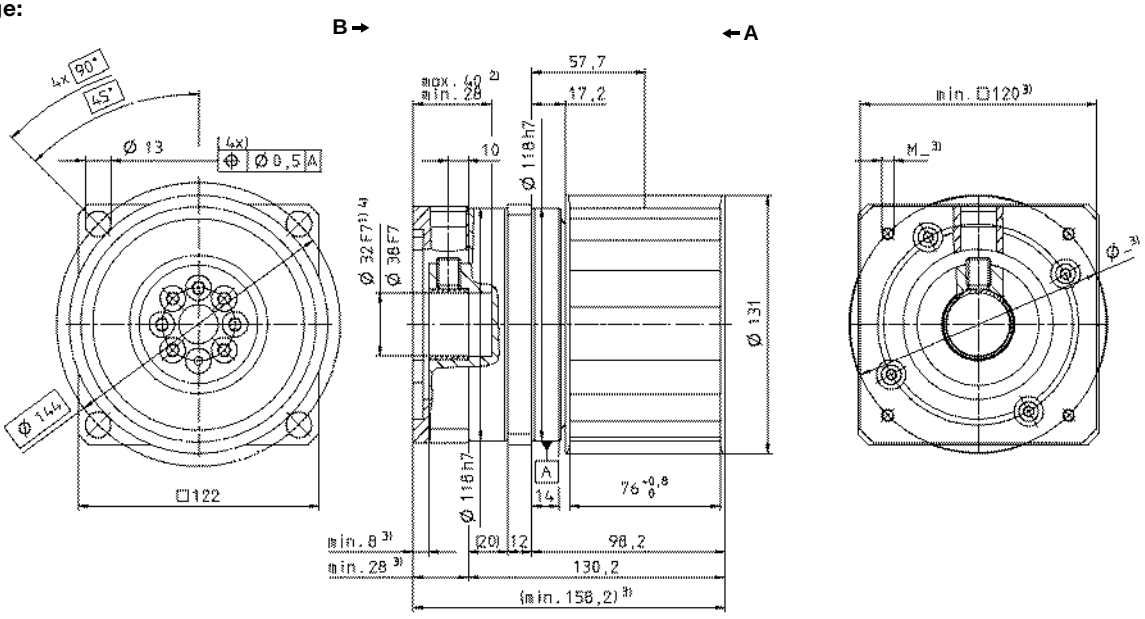
LPB+ 120 MF 1/2-stage

					1-stage					2-stage									
Ratio [d]			*i*		**3**	**4**	**5**	**7**	**10**	**9**	**12**	**16**	**20**	**25**	**30**	**40**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	305	305	250	250	220	305	305	305	305	250	305	305	250	250	220
				in.lb	2700	2700	2210	2210	1950	2700	2700	2700	2700	2210	2700	2700	2210	2210	1950
Nominal output torque (with n_{1N})			T_{2N}	Nm	155	155	125	125	110	155	155	155	155	125	155	155	125	125	110
				in.lb	1370	1370	1110	1110	970	1370	1370	1370	1370	1110	1370	1370	1110	1110	970
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	400	480	480	480	480	480	480	480	480	480	480	480	480	480	480
				in.lb	3540	4250	4250	4250	4250	4250	4250	4250	4250	4250	4250	4250	4250	4250	4250
Nominal input speed (with T_{2N} and 20°C ambient temperature) [a]			n_{1N}	rpm	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600
Max. input speed			n_{1Max}	rpm	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800
Mean no load running torque (with n_1 = 3000 rpm and 20°C gearhead temperature)			T_{012}	Nm	1.1	1.0	0.9	0.8	0.8	0.6	0.6	0.6	0.5	0.5	0.4	0.5	0.4	0.4	0.4
				in.lb	9.7	8.9	8.0	7.1	7.1	5.3	5.3	4.9	4.4	4.4	3.5	4.4	3.5	3.5	3.5
Max. torsional backlash			j_t	arcmin	≤ 8					≤ 10									
Torsional rigidity			C_{t21}	Nm/ arcmin	47	47	36	36	30	47	47	47	47	36	47	47	36	36	30
				in.lb/ arcmin	420	420	320	320	270	420	420	420	420	320	420	420	320	320	270
Max. axial force [b]			F_{2AMax}	N	4000					4000									
				lb_f	900					900									
Max. radial force [c]			F_{2RMax}	N	9500					9500									
				lb_f	2140					2140									
Efficiency at full load			η	%	97					95									
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000					> 20000									
Weight incl. standard adapter plate			*m*	kg	7.3					9.7									
				lb_m	16					21									
Operating noise for i=10 and n_1 = 3000 rpm without load			L_{PA}	dB(A)	≤ 68														
Max. permitted housing temperature				°C	+90														
				F	194														
Ambient temperature				°C	-15 to +40														
				F	5 to 104														
Lubrication					Lubricated for life														
Paint					Blue RAL 5002														
Direction of rotation					Motor and gearhead same direction														
Protection class					IP 64														
Moment of inertia (relates to the drive)	I	32	J_1	kgcm²	6.8	5.9	5.6	5.2	5.1	5.4	5.4	5.5	5.5	5.3	5.3	5.0	5.0	5.0	5.0
				10^{-3} in.lb.s²	6.1	5.2	4.9	4.6	4.5	4.7	4.7	4.9	4.9	4.7	4.7	4.4	4.4	4.4	4.4
Clamping hub diameter (mm)	K	38	J_1	kgcm²	7.7	6.8	6.4	6.1	5.9	6.2	6.2	6.4	6.4	6.2	6.2	5.9	5.9	5.9	5.9
				10^{-3} in.lb.s²	6.8	6.0	5.7	5.4	5.2	5.5	5.5	5.7	5.7	5.5	5.5	5.2	5.2	5.2	5.2

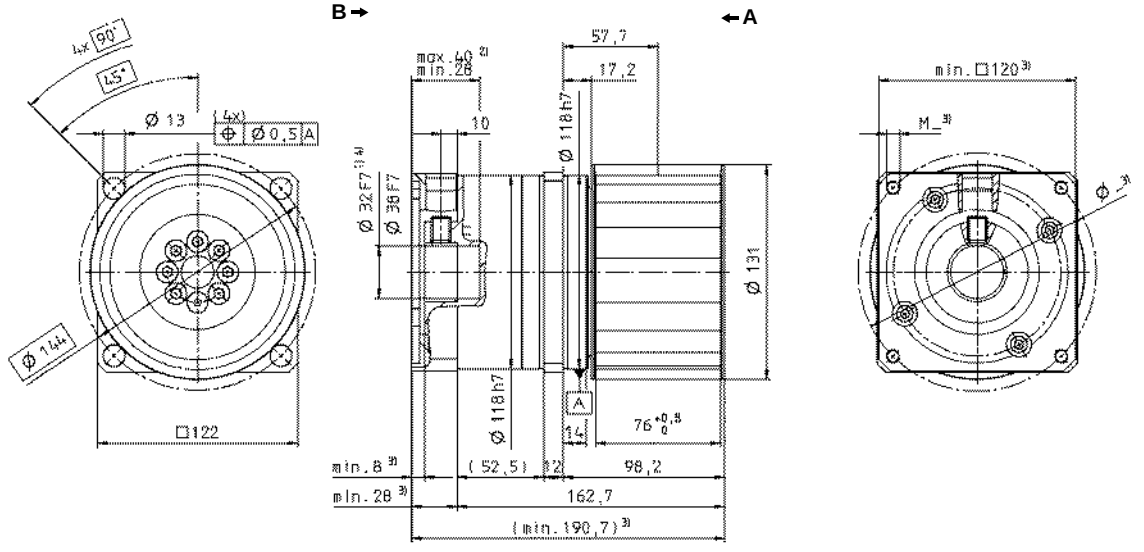
[a] For higher ambient temperatures, please reduce input speed
[b] Based on the center of the output flange at n_2 = 100 rpm
[c] With mounted PLPB+ belt pulley and 100 rpm
[d] Other ratios are available on request: i = 28.

View A View B

LPB⁺ 1-stage:

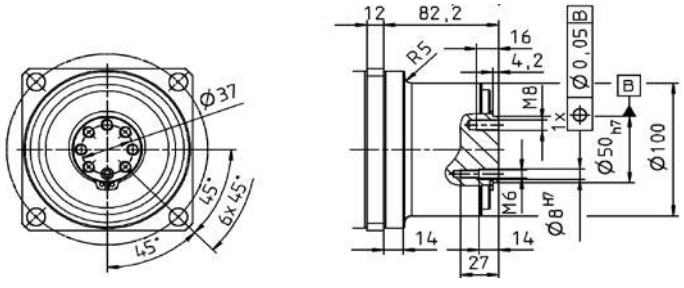


LPB⁺ 2-stage:



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

Illustration: Output flange without belt pulley



Belt Pulley PLPB⁺ 120 Profile AT20-0			
Pitch	*p*	mm	20
Number of teeth	*z*		19
Circumference	*z* * *p*	mm/rotation	380
Inertia	*J*	kgcm²	50.62
Mass	*m*	kg	2.61

Non-tolerated dimensions ±1mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing. Motor shaft diameters up to 38mm available – please contact WITTENSTEIN alpha

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

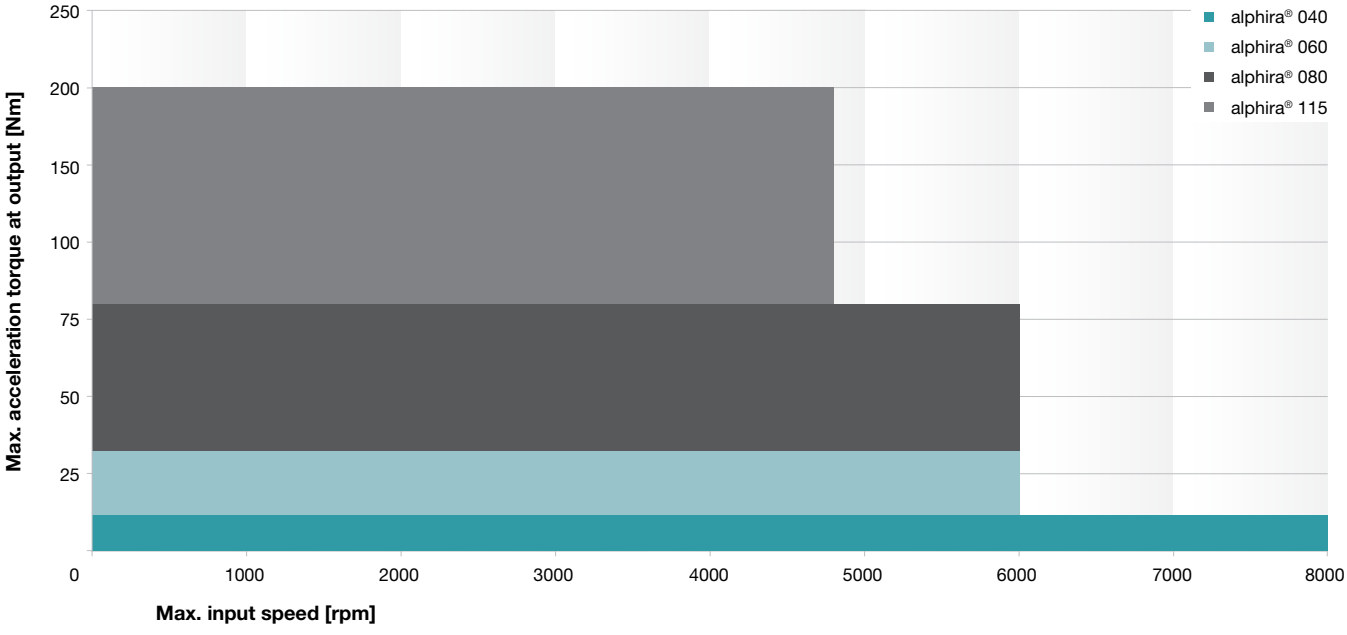
Motor mounting according to operating manual

alphira® – Economical entry-level model

The low backlash planetary gearhead with output shaft. This economical entry level model is suitable for simple applications. The alphira® impresses through its quality, availability, and reliability.

Quick size selection

alphira® (example for i = 5)
For applications in cyclic operation (DC ≤ 60%) or continuous operation (DC ≥ 60%)



Versions and Applications

Features	**alphira®** MO version Catalog page 142
Power density	•
Positioning accuracy	•
High input speeds	• •
Torsional rigidity	•
Space-saving design	• •
Low weight	• • •

Product features

Ratios [c]		4 – 100
Torsional backlash [arcmin] [c]	Standard	≤ 20
	Reduced	–
Output type		
Keywayed output shaft		•
Input type		
Motor mounted version		•
Type		
Food-grade lubrication [a] [b]		•
Accessories		
Coupling		•
B5 flange		•

[a] Power reduction: technical data available upon request [b] Please contact WITTENSTEIN alpha [c] In relation to reference sizes

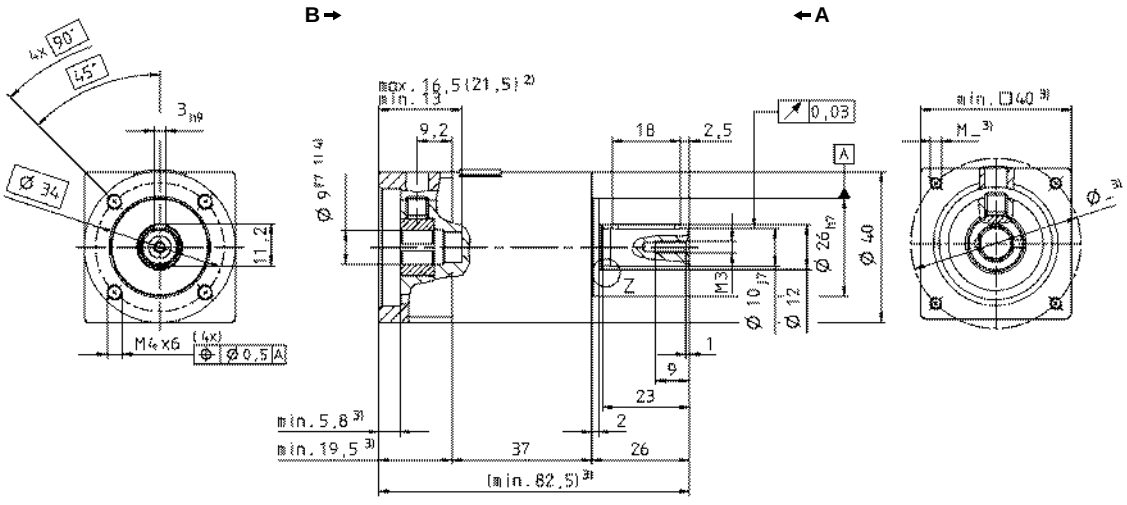
			1-stage				2-stage						
Ratio	***i***		**4**	**5**	**7**	**10**	**16**	**20**	**25**	**35**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B}	Nm	10.5	11.5	11.5	10.5	10.5	10.5	11.5	11.5	11.5	11.5	10.5
		in.lb	93	102	102	93	93	93	102	102	102	102	93
Nominal output torque (with n_{1N})	T_{2N}	Nm	5.2	5.7	5.7	5.2	5.2	5.2	5.7	5.7	5.7	5.7	5.2
		in.lb	46	50	50	46	46	46	50	50	50	50	46
Emergency stop torque (permitted 1000 times during the service life of the gearhead)	T_{2Not}	Nm	26	26	26	26	26	26	26	26	26	26	26
		in.lb	230	230	230	230	230	230	230	230	230	230	230
Nominal input speed (with T_{2N} and 20°C ambient temperature) [a]	n_{1N}	rpm	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
Max. input speed	n_{1Max}	rpm	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000
Mean no load running torque (with n_1 = 3000 rpm and 20°C gearhead temperature)	T_{012}	Nm	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
		in.lb	0.05	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44
Max. torsional backlash	j_t	arcmin	≤ 20				≤ 25						
Torsional rigidity	C_{t21}	Nm/ arcmin	0.58	0.58	0.58	0.52	0.58	0.58	0.58	0.58	0.58	0.58	0.52
		in.lb/ arcmin	5.1	5.1	5.1	4.6	5.1	5.1	5.1	5.1	5.1	5.1	4.6
Max. axial force [b]	F_{2AMax}	N	230				230						
		lb_f	51				51						
Max. radial force [b]	F_{2RMax}	N	200				200						
		lb_f	45				45						
Efficiency at full load	η	%	97				95						
Service life (For calculation, see the Chapter “Information”)	L_h	h	> 20000				> 20000						
Weight incl. standard adapter plate	m	kg	0.31				0.52						
		lb_m	0.69				1.15						
Operating noise (with n_1 = 3000 rpm no load)	L_{PA}	dB(A)	≤ 66										
Max. permitted housing temperature		°C	+90										
		F	194										
Ambient temperature		°C	-15 to +40										
		F	5 to 104										
Lubrication			Lubricated for life										
Paint			Aluminum										
Direction of rotation			Motor and gearhead same direction										
Protection class			IP 64										
Moment of inertia (relates to the drive)	J_1	kgcm²	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
		10^{-3} in.lb.s²	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036

[a] For higher ambient temperatures, please reduce input speed

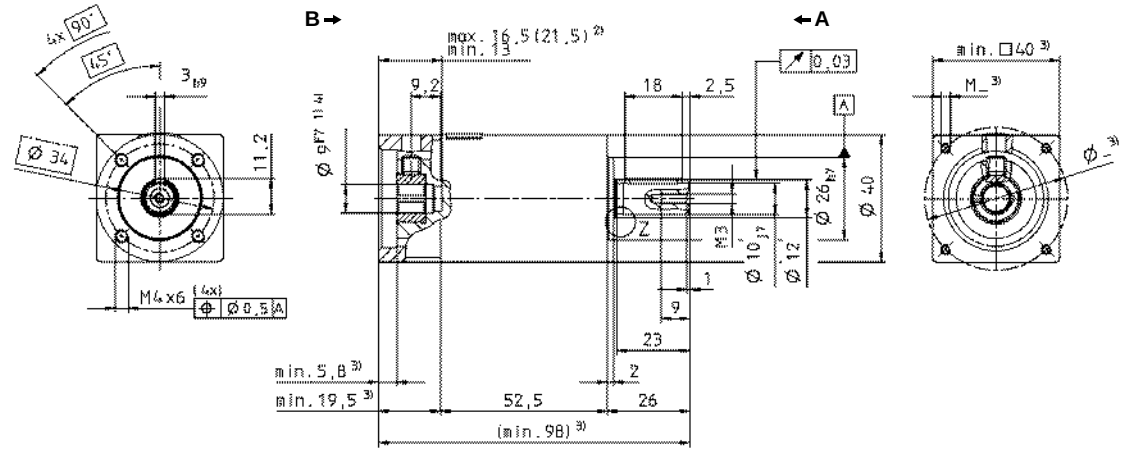
[b] Relates to center of the output shaft or flange, at 100 rpm

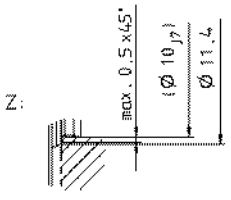
View A View B

1-stage:



2-stage:





Non-tolerated dimensions ±1mm

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

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

Motor mounting according to operating manual

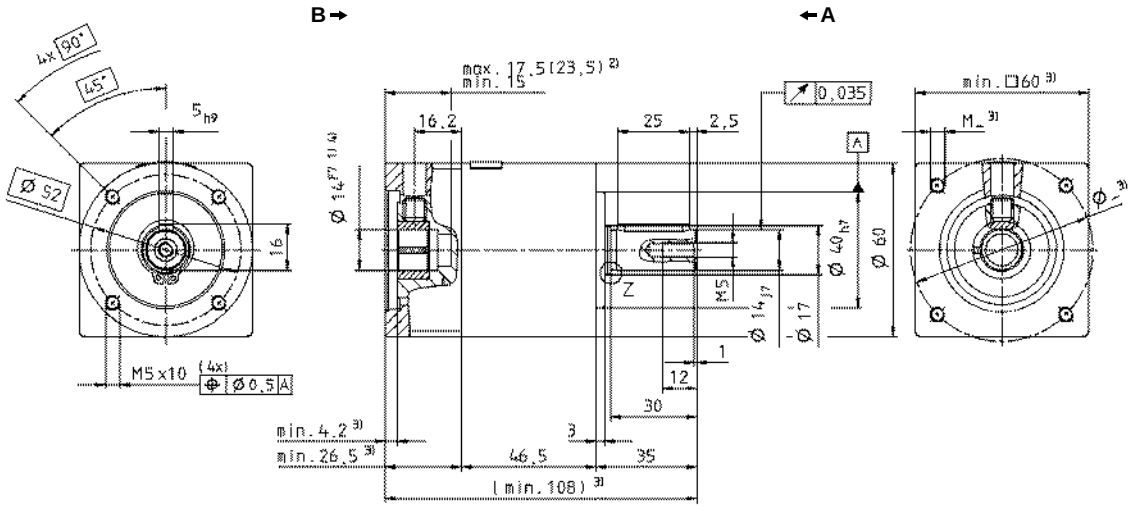
			1-stage				2-stage						
Ratio	***i***		**4**	**5**	**7**	**10**	**16**	**20**	**25**	**35**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B}	Nm	32	32	32	29	32	32	32	32	32	32	29
		in.lb	283	283	283	257	283	283	283	283	283	283	257
Nominal output torque (with n_{1N})	T_{2N}	Nm	16	16	16	15	16	16	16	16	16	16	15
		in.lb	142	142	142	133	142	142	142	142	142	142	133
Emergency stop torque (permitted 1000 times during the service life of the gearhead)	T_{2Not}	Nm	75	75	75	75	75	75	75	75	75	75	75
		in.lb	664	664	664	664	664	664	664	664	664	664	664
Nominal input speed (with T_{2N} and 20°C ambient temperature) [a]	n_{1N}	rpm	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700
Max. input speed	n_{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque (with n_1 = 3000 rpm and 20°C gearhead temperature)	T_{012}	Nm	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
		in.lb	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Max. torsional backlash	j_t	arcmin	≤ 20				≤ 25						
Torsional rigidity	C_{t21}	Nm/ arcmin	2.1	2.1	2.1	1.9	2.1	2.1	2.1	2.1	2.1	2.1	1.9
		in.lb/ arcmin	19	19	19	17	19	19	19	19	19	19	17
Max. axial force [b]	F_{2AMax}	N	750				750						
		lb_f	169				169						
Max. radial force [b]	F_{2RMax}	N	650				650						
		lb_f	146				146						
Efficiency at full load	η	%	97				95						
Service life (For calculation, see the Chapter “Information”)	L_h	h	> 20000				> 20000						
Weight incl. standard adapter plate	*m*	kg	0.88				1.1						
		lb_m	1.9				2.4						
Operating noise (with n_1 = 3000 rpm no load)	L_{PA}	dB(A)	≤ 68										
Max. permitted housing temperature		°C	+90										
		F	194										
Ambient temperature		°C	-15 to +40										
		F	5 to 104										
Lubrication			Lubricated for life										
Paint			Aluminum										
Direction of rotation			Motor and gearhead same direction										
Protection class			IP 64										
Moment of inertia (relates to the drive)	J_1	$kgcm^2$	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
		10^{-3} in.lb.s²	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15

[a] For higher ambient temperatures, please reduce input speed

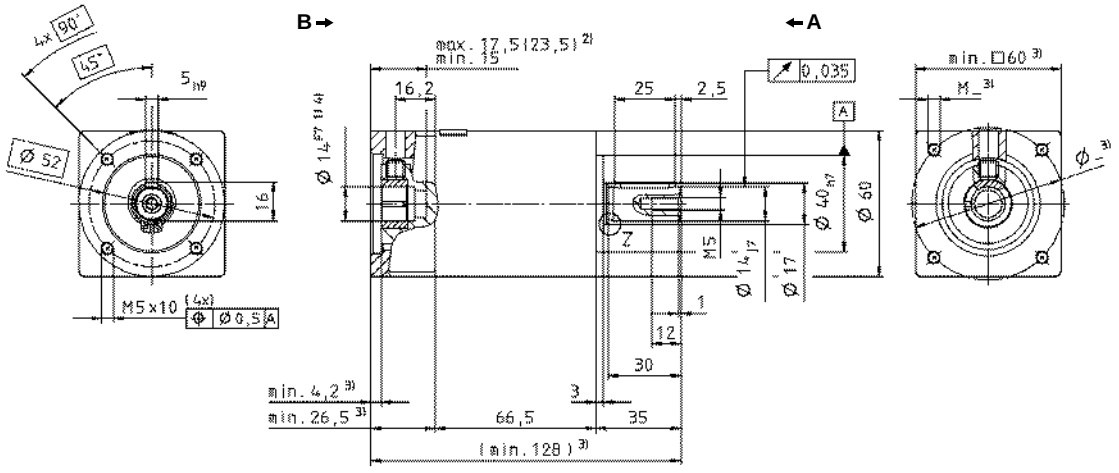
[b] Relates to center of the output shaft or flange, at 100 rpm

View A View B

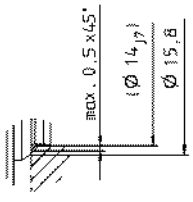
1-stage:



2-stage:



Z:



Non-tolerated dimensions ±1mm

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

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

Motor mounting according to operating manual

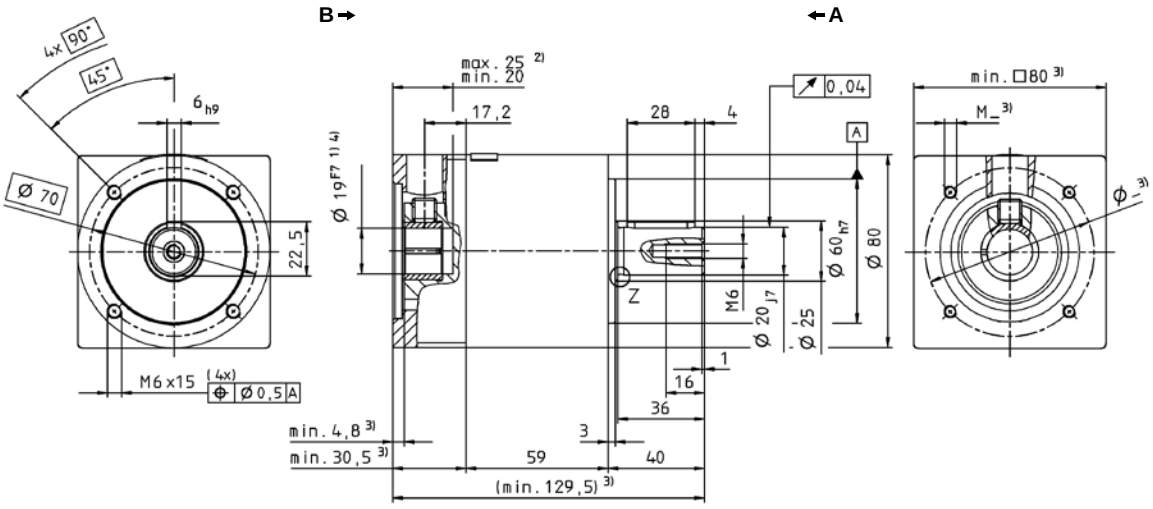
			1-stage				2-stage						
Ratio	***i***		**4**	**5**	**7**	**10**	**16**	**20**	**25**	**35**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B}	Nm	80	80	80	72	80	80	80	80	80	80	72
		in.lb	708	708	708	637	708	708	708	708	708	708	637
Nominal output torque (with n_{1N})	T_{2N}	Nm	40	40	40	35	40	40	40	40	40	40	35
		in.lb	354	354	354	310	354	354	354	354	354	354	310
Emergency stop torque (permitted 1000 times during the service life of the gearhead)	T_{2Not}	Nm	190	190	190	190	190	190	190	190	190	190	190
		in.lb	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682
Nominal input speed (with T_{2N} and 20°C ambient temperature) [a]	n_{1N}	rpm	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400
Max. input speed	n_{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque (with n_1 = 3000 rpm and 20°C gearhead temperature)	T_{012}	Nm	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28
		in.lb	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Max. torsional backlash	j_t	arcmin	≤ 20				≤ 25						
Torsional rigidity	C_{t21}	Nm/ arcmin	6.1	6.1	6.1	5.5	6.1	6.1	6.1	6.1	6.1	6.1	5.5
		in.lb/ arcmin	54	54	54	49	54	54	54	54	54	54	49
Max. axial force [b]	F_{2AMax}	N	1600				1600						
		lb_f	360				360						
Max. radial force [b]	F_{2RMax}	N	1200				1200						
		lb_f	270				270						
Efficiency at full load	η	%	97				95						
Service life (For calculation, see the Chapter "Information")	L_h	h	> 20000				> 20000						
Weight incl. standard adapter plate	*m*	kg	2.1				2.8						
		lb_m	4.6				6.2						
Operating noise (with n_1 = 3000 rpm no load)	L_{PA}	dB(A)	≤ 70										
Max. permitted housing temperature		°C	+90										
		F	194										
Ambient temperature		°C	-15 to +40										
		F	5 to 104										
Lubrication			Lubricated for life										
Paint			Aluminum										
Direction of rotation			Motor and gearhead same direction										
Protection class			IP 64										
Moment of inertia (relates to the drive)	J_1	kgcm²	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54
		10^{-3} in.lb.s²	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48

[a] For higher ambient temperatures, please reduce input speed

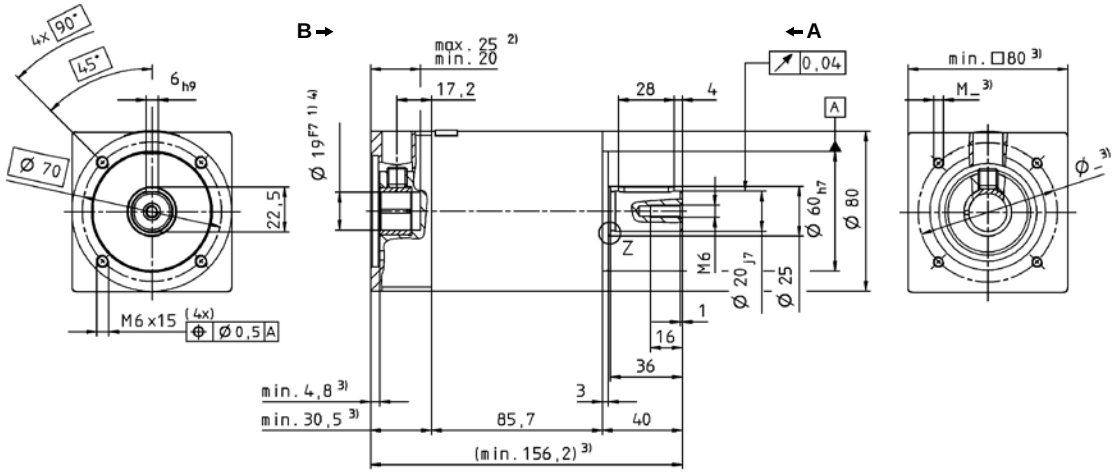
[b] Relates to center of the output shaft or flange, at 100 rpm

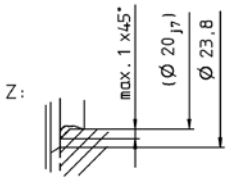
View A View B

1-stage:



2-stage:





Non-tolerated dimensions ±1mm

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

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

Motor mounting according to operating manual

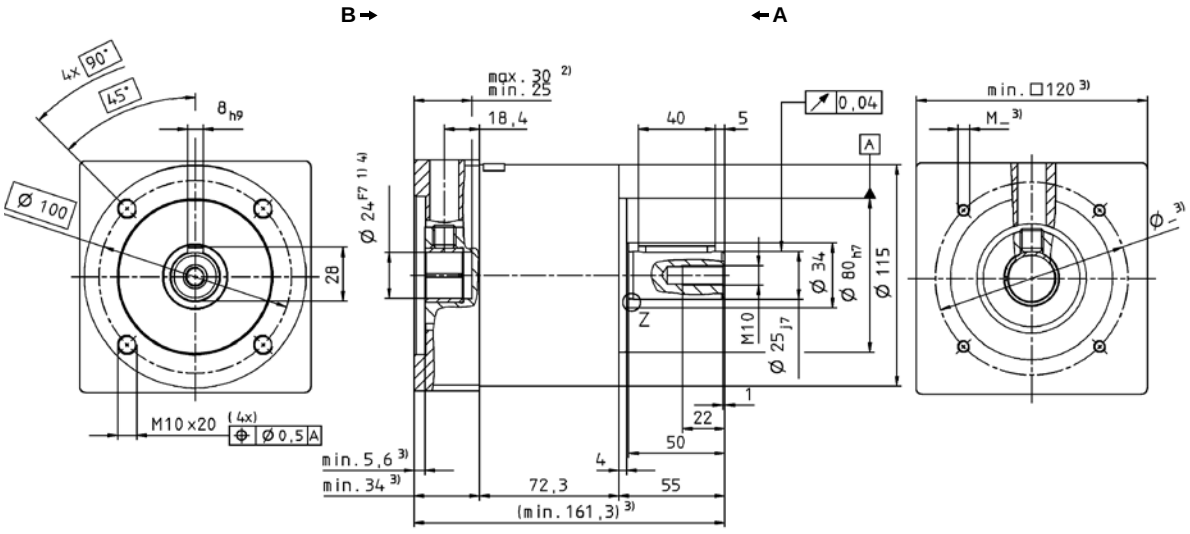
			1-stage				2-stage						
Ratio	***i***		**4**	**5**	**7**	**10**	**16**	**20**	**25**	**35**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B}	Nm	200	200	200	180	200	200	200	200	200	200	180
		in.lb	1770	1770	1770	1593	1770	1770	1770	1770	1770	1770	1593
Nominal output torque (with n_{1N})	T_{2N}	Nm	100	100	100	90	100	100	100	100	100	100	90
		in.lb	885	885	885	797	885	885	885	885	885	885	797
Emergency stop torque (permitted 1000 times during the service life of the gearhead)	T_{2Not}	Nm	480	480	480	480	480	480	480	480	480	480	480
		in.lb	4248	4248	4248	4248	4248	4248	4248	4248	4248	4248	4248
Nominal input speed (with T_{2N} and 20°C ambient temperature) [a]	n_{1N}	rpm	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600
Max. input speed	n_{1Max}	rpm	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800
Mean no load running torque (with n_1 = 3000 rpm and 20°C gearhead temperature)	T_{012}	Nm	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
		in.lb	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
Max. torsional backlash	j_t	arcmin	≤ 20				≤ 25						
Torsional rigidity	C_{t21}	Nm/ arcmin	16.5	16.5	16.5	14.5	16.5	16.5	16.5	16.5	16.5	16.5	14.5
		in.lb/ arcmin	146	146	146	128	146	146	146	146	146	146	128
Max. axial force [b]	F_{2AMax}	N	2100				2100						
		lb_f	472				472						
Max. radial force [b]	F_{2RMax}	N	1550				1550						
		lb_f	349				349						
Efficiency at full load	η	%	97				95						
Service life (For calculation, see the Chapter "Information")	L_h	h	> 20000				> 20000						
Weight incl. standard adapter plate	m	kg	5.2				6.9						
		lb_m	11.5				15.2						
Operating noise (with n_1 = 3000 rpm no load)	L_{PA}	dB(A)	≤ 72										
Max. permitted housing temperature		°C	+90										
		F	194										
Ambient temperature		°C	-15 to +40										
		F	5 to 104										
Lubrication			Lubricated for life										
Paint			Aluminum										
Direction of rotation			Motor and gearhead same direction										
Protection class			IP 64										
Moment of inertia (relates to the drive)	J_1	$kgcm^2$	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
		10^{-3} in.lb.s²	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6

[a] For higher ambient temperatures, please reduce input speed

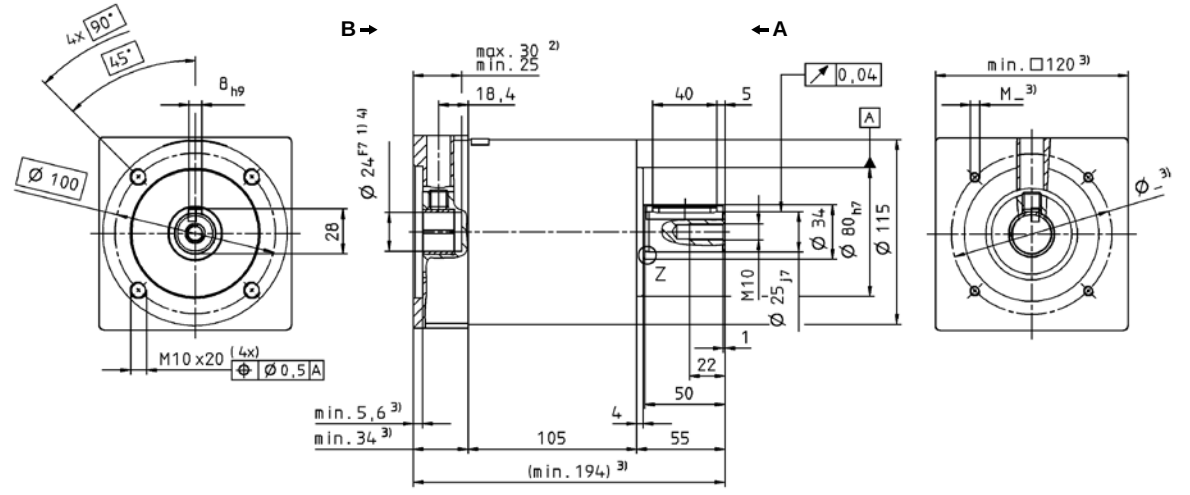
[b] Relates to center of the output shaft or flange, at 100 rpm

View A View B

1-stage:



2-stage:



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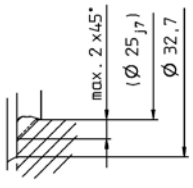


Non-tolerated dimensions ±1mm

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

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

Motor mounting according to operating manual

Servo right-angle gearheads High End

RPK+
Around corners with power and precision

- Low backlash hypoid gearhead with output flange
- Cyclic operation
- Torsional backlash: ≤ 1 arcmin
- Ratio: 48-5,500

Product highlights:
- High torsional rigidity
- High axial and radial forces
- Easy installation
- Optimized for rack and pinion applications

TK+, TPK+ and TPK+ HIGH TORQUE
Space-saving right-angle precision with output flange

- Low backlash right-angle gearhead with output flange
- Applications in cyclic or continuous operation
- Torsional backlash: ≤ 1.3 arcmin
- Ratio: 3-10,000

Product highlights:
- Large range of ratios
- High torque capacity (MA)
- Optionally available as a hollow shaft version
- Flexibility thanks to various output configurations

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

- Low backlash hypoid gearhead with output shaft
- Applications in cyclic or continuous operation
- Torsional backlash < 2 arcmin
- Ratio: 3-10,000

Product highlights:
- Diverse range of transmission ratios
- Flexibility thanks to various types of output

Power density ◄

Increased productivity

Do you need a machine that operates at maximum productivity? Your servo right-angle gearhead offers 200% more torque, 100% faster speeds than equivalent products and thus creates the perfect conditions for maximum manufacturing efficiency.

Simple and convenient

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

HG+
Precise hollow shaft solution

- Low backlash hypoid gearhead with hollow shaft
- Applications in cyclic or continuous operation
- Torsional backlash: ≤ 4 arcmin
- Ratio: 3-100

Product highlights:
- Hollow shaft version
- Flexibility thanks to various types of output

SC+ / SPC+/ TPC+
High performance with low ratios

- Low backlash bevel gears with output shaft or output flange
- Applications in cyclic or continuous operation
- Torsional backlash ≤ 2 arcmin
- Ratio: 1-20

Product highlights:
- High power density
- High output speeds
- Efficiency 97%

V-Drive+
Strong torque but quiet running

- Low backlash servo worm gearhead with output shaft, hollow shaft and hollow shaft flange
- Applications in cyclic or continuous operation
- Torsional backlash: ≤ 2 arcmin
- Ratios: 4-40

Product highlights:
- Hollow shaft version
- Single-stage up to i=40
- Smooth running
- Good synchronization

Reliable and accurate

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

Maximum durability

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

RPK+ – Around the corner with power and precision

Sets standards in terms of power density, modularity and easy installation.

The new standard, also available as a right-angle version

Low backlash hypoid gearhead with output flange. The RPK+ impresses through its extremely high torsional rigidity, compactness and power density. Thanks to their easy installation and ability to absorb high axial and radial forces, these gearheads are ideal for rack and pinion applications.

The RPK+ impresses with maximum power density

- If your drive requires maximum performance
- If you value world-class engineering
- If you require an even more compact system

Performance data for right-angle version

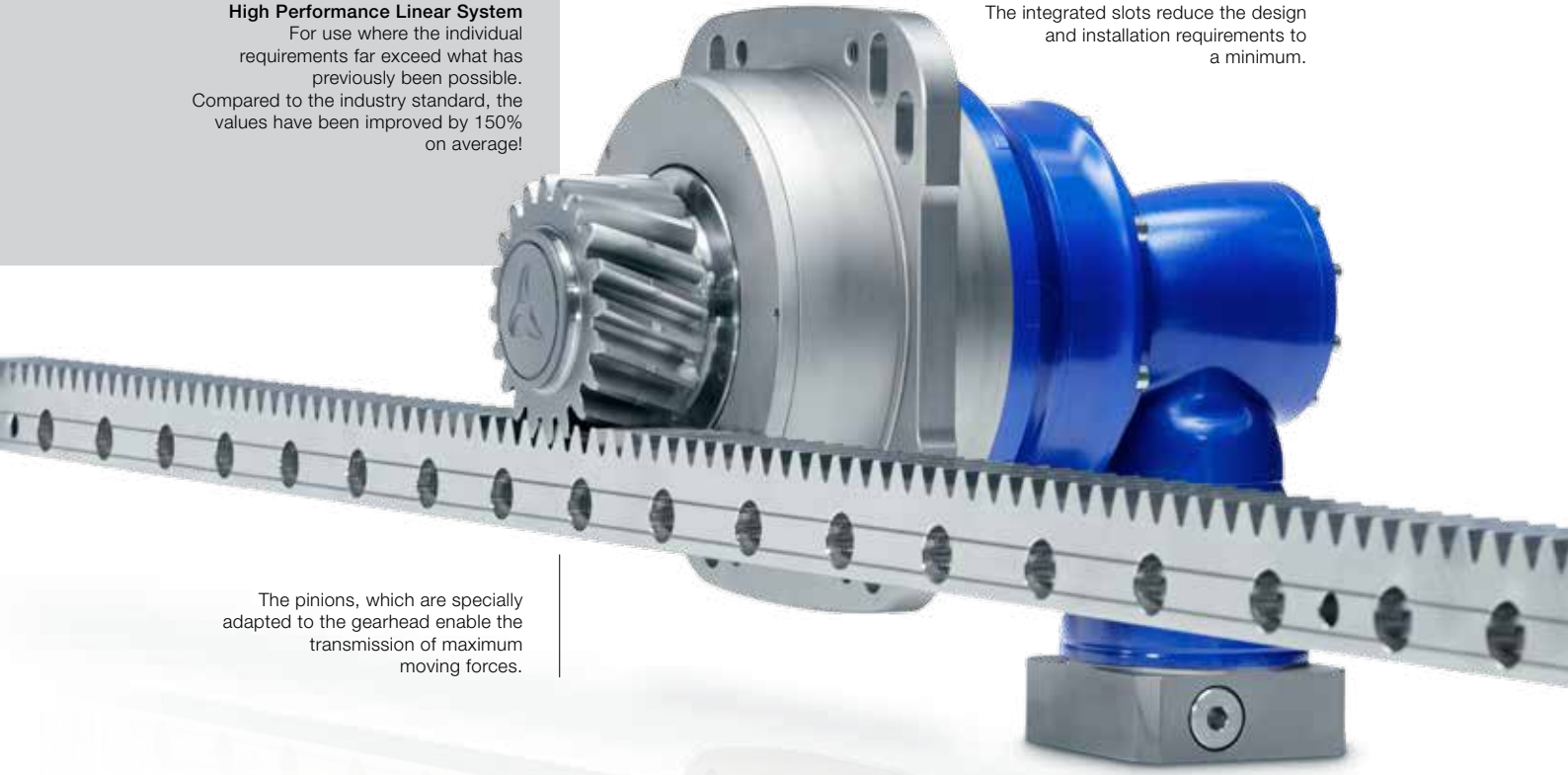
Torsional backlash [arcmin]	< 3
Ratios [-]	66-5,500
Max. torque [N]	10,000
Max. input speed [rpm]	6,000
Efficiency [%]	≤ 92

The geometry of the RPK+ output flange is perfectly adapted to the high power density.

The RPK+ high performance right-angle gearhead is optimized for rack and pinion applications.

High Performance Linear System
For use where the individual requirements far exceed what has previously been possible. Compared to the industry standard, the values have been improved by 150% on average!

The integrated slots reduce the design and installation requirements to a minimum.



The pinions, which are specially adapted to the gearhead enable the transmission of maximum moving forces.

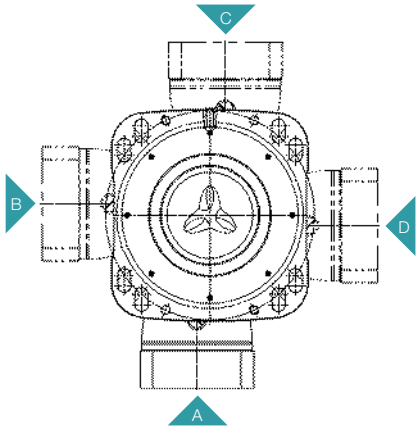
Further information is available in the High Performance Linear System catalog or on the Internet at www.rack-pinion.com

Performance data for linear system

Positioning accuracy [µm]	< 5*
Ratios [-]	66-5,500
Max. moving force per drive [N]	112,000
Movement speed [m/min]	30
Efficiency [%]	≤ 92

* Direct measuring system required

Flexibility during installation



The RP+ is also available as the RPM+ actuator version. The RPM+ combines the advantages of the RP+ series in an even more compact design. Thanks to its special design, the permanently excited servo motor ensures maximum power density.

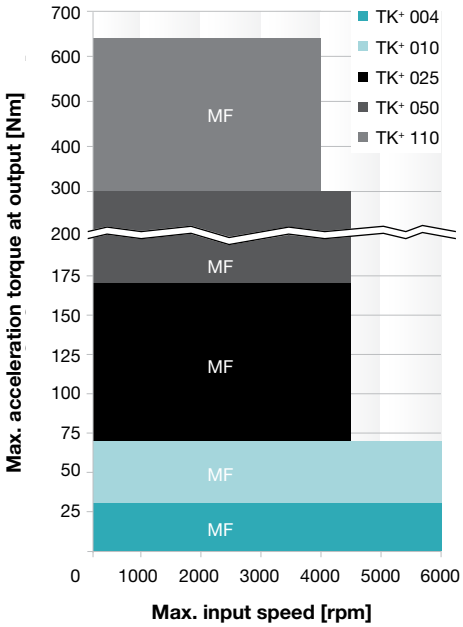
Sets standards in terms of power density, modularity and easy installation.

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

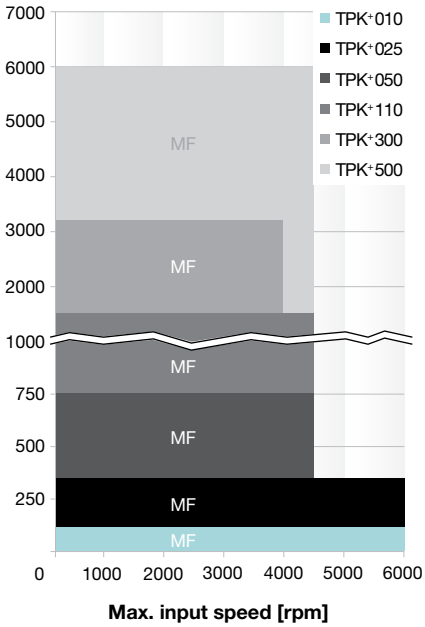
The representatives of our versatile hypoid gearhead with TP+ compatible output flange and hollow shaft.
TPK+/TPK+ HIGH TORQUE gearheads with planetary stage are especially suitable for high-precision applications requiring higher power and torsional rigidity.

Quick size selection

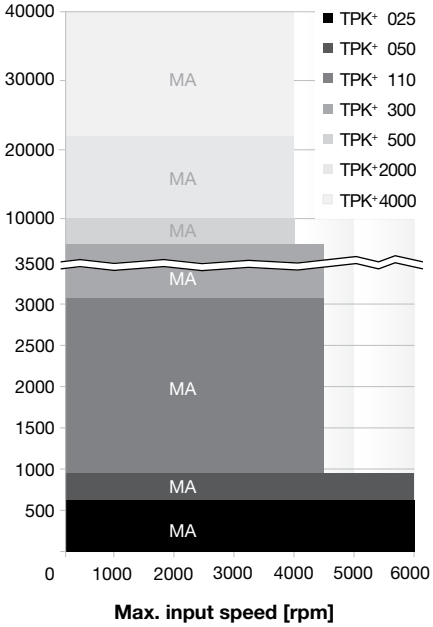
TK+ MF (ex. i = 5)
For applications in cyclic operation (ED ≤ 60%)



TPK+ MF (ex. i = 25)
For applications in cyclic operation (ED ≤ 60%)



TPK+ HIGH TORQUE MA (ex. i = 88)
For applications in cyclic operation (ED ≤ 60%)



Versions and Applications

Features	TK+ MF version page 156	TPK+ MF version page 166	TPK+ HIGH TORQUE MA version page 192
Power density	••	••	•••
Positioning accuracy (e.g clamped drives)	••	•••	•••
Highly dynamic applications	•••	•••	•••
Torsional rigidity	••	••	•••

Product features

Ratios [c]		3 - 100	12 - 10000	66 - 5500
Torsional backlash [arcmin] [c]	Standard	≤ 4	≤ 4	≤ 1,3
	Reduced	-	≤ 2	-
Output type				
Smooth output shaft, rear side		•	•	•
Keywayed output shaft, rear side		•	•	•
Output flange			•	•
Hollow shaft interface, rear side Connected via shrink disc		•	•	•
Flanged hollow shaft		•		
Closed cover, rear side		•	•	•
System output with pinion			•	•
Input type				
Motor mounted version		•	•	•
Type				
ATEX [a]		•		
Food-grade lubrication [a] [b]		•	•	•
Corrosion resistant [a] [b]		•	•	•
Accessories				
Coupling		•	•	•
Rack		•	•	•
Pinion		•	•	•
Shrink disc		•	•	•
torqXis sensor flange		•	•	•
Flange shaft		•	•	•
Intermediate plate for cooling connection		•	•	•
Spindle system		•		

[a] Power reduction: technical data available upon request [b] Please contact WITTENSTEIN alpha [c] In relation to reference sizes

TK+ 004 MF 1/2-stage

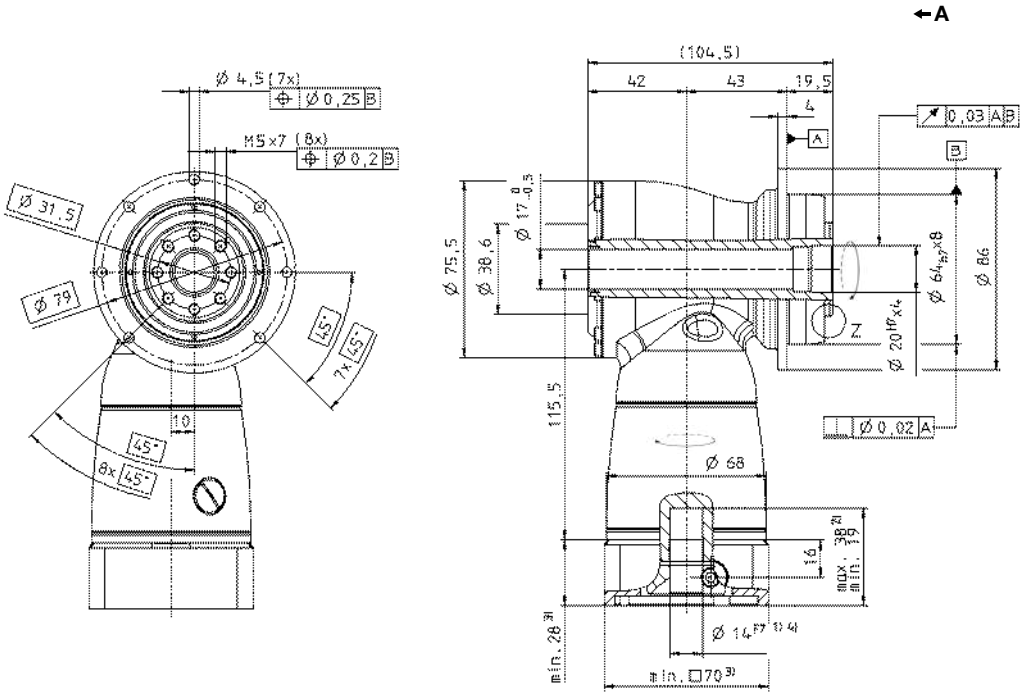
					1-stage					2-stage									
Ratio [a]			*i*		**3**	**4**	**5**	**7**	**10**	**12**	**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	30	30	30	25	20	30	30	30	30	30	30	30	30	25	20
				in.lb	266	266	266	221	177	266	266	266	266	266	266	266	266	221	177
Nominal output torque (with n_{1N})			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 (permitted 1000 times during the service life of the gearhead)			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
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b), c)]			n_{1N}	rpm	2200	2400	2700	2700	2700	4400	4400	4400	4400	4400	4400	4400	4800	5500	5500
Max. continuous speed (with 20 % T_{2N} and 20 °C ambient temperature)			n_{1Ncym}	rpm	2700	3100	3600	3100	3100	5000	5000	5000	5000	5000	5000	5000	5000	5500	5500
Max. input speed			n_{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque (with n_1 = 3000 rpm and 20 °C gearhead temperature) [d)]			T_{012}	Nm	1.4	1.3	1.2	1.4	1.3	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1
				in.lb	12.4	11.5	10.6	12.4	11.5	1.8	1.8	1.8	1.8	1.8	1.8	0.9	0.9	0.9	0.9
Max. torsional backlash			j_t	arcmin	≤ 5														
Torsional rigidity			C_{t21}	Nm/ arcmin	2.6	2.8	3.0	2.6	2.3	2.8	2.8	2.8	2.8	2.8	2.8	2.8	3.0	2.6	2.3
				in.lb/ arcmin	23	25	26	23	20	25	25	25	25	25	25	25	26	23	20
Max. axial force [e)]			F_{2AMax}	N	2400														
				lb_f	540														
Max. radial force [e)]			F_{2RMax}	N	2700														
				lb_f	608														
Max. tilting moment			M_{2KMax}	Nm	251														
				in.lb	2220														
Efficiency at full load			η	%	96					94									
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000														
Weight incl. standard adapter plate			*m*	kg	2.9					3.2									
				lb_m	6.4					7.1									
Operating noise (with n_1 = 3000 rpm no load)			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														
Paint					Blue RAL 5002														
Direction of rotation					Motor and gearhead opposite directions														
Protection class					IP 65														
Moment of inertia (relates to the drive) Clamping hub diameter [mm]	B	11	J_1	kgcm²	–	–	–	–	–	0.09	0.09	0.08	0.07	0.06	0.06	0.06	0.06	0.06	0.06
				10^{-3} in.lb.s²						0.08	0.08	0.07	0.07	0.06	0.06	0.05	0.05	0.05	0.05
	C	14	J_1	kgcm²	0.57	0.46	0.41	0.37	0.35	0.21	0.20	0.19	0.19	0.18	0.18	0.17	0.17	0.17	0.17
				10^{-3} in.lb.s²	0.50	0.41	0.36	0.33	0.31	0.18	0.18	0.17	0.16	0.16	0.16	0.15	0.15	0.15	0.15
	E	19	J_1	kgcm²	0.92	0.82	0.76	0.72	0.70	–	–	–	–	–	–	–	–	–	–
				10^{-3} in.lb.s²	0.81	0.72	0.68	0.64	0.62										

Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

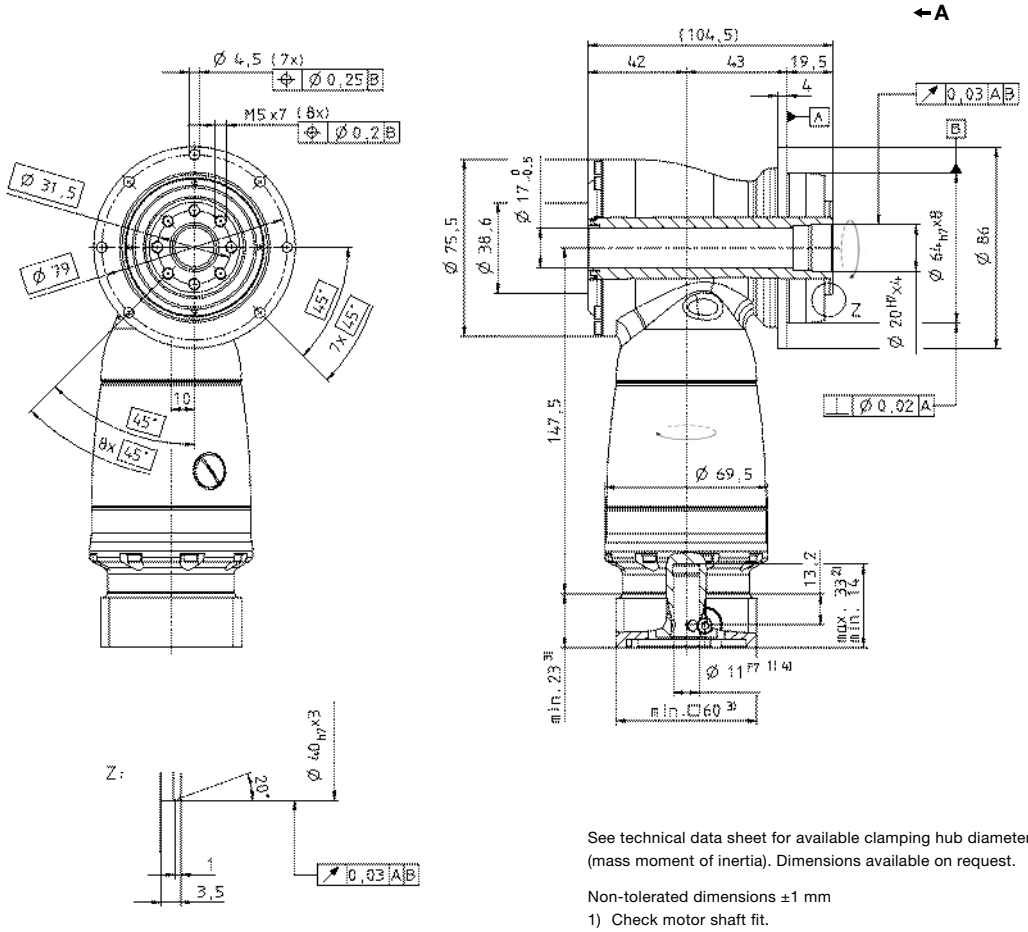
[a)] Other ratios available on request
[b)] Higher speeds are possible if the nominal torque is reduced
[c)] For higher ambient temperatures, please reduce input speed
[d)] Idling torques decrease during operation
[e)] Refers to center of the output shaft or flange

All technical data for front output side applies.
Technical data for rearward output versions, see page 422.

1-stage:



2-stage:



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

Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

TK+ 010 MF 1/2-stage

					1-stage					2-stage									
Ratio [a]			*i*		**3**	**4**	**5**	**7**	**10**	**12**	**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
Max. acceleration torque (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	531	443
Nominal output torque (with n_{1N})			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	398	354
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			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	974	885
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b), c)]			n_{1N}	rpm	2100	2200	2500	2500	2500	3500	3500	3500	3500	3500	3500	3500	3800	4500	4500
Max. continuous speed (with 20 % T_{2N} and 20 °C ambient temperature)			n_{1Ncym}	rpm	2700	3100	3600	3100	3100	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	6000	6000	6000	6000
Mean no load running torque (with n_1 = 3000 rpm and 20 °C gearhead temperature) [d)]			T_{012}	Nm	2.4	2.0	1.8	2.4	2.2	0.4	0.4	0.3	0.3	0.3	0.3	0.1	0.1	0.1	0.1
				in.lb	21	18	16	21	19	3.5	3.5	2.7	2.7	2.7	2.7	0.9	0.9	0.9	0.9
Max. torsional backlash			j_t	arcmin	≤ 4														
Torsional rigidity			C_{t21}	Nm/ arcmin	6.0	7.0	8.0	8.0	8.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	8.0	8.0	8.0
				in.lb/ arcmin	53	62	71	71	71	62	62	62	62	62	62	62	71	71	71
Max. axial force [e)]			F_{2AMax}	N	3400														
				lb_f	765														
Max. radial force [e)]			F_{2RMax}	N	4000														
				lb_f	900														
Max. tilting moment			M_{2KMax}	Nm	437														
				in.lb	3867														
Efficiency at full load			η	%	96					94									
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000														
Weight incl. standard adapter plate			*m*	kg	5.3					6.1									
				lb_m	11.7					13.5									
Operating noise (with n_1 = 3000 rpm no load)			L_{PA}	dB(A)	≤ 66														
Max. permitted housing temperature				°C	+90														
				F	+194														
Ambient temperature				°C	0 to +40														
				F	32 to 104														
Lubrication					Lubricated for life														
Paint					Blue RAL 5002														
Direction of rotation					Motor and gearhead opposite directions														
Protection class					IP 65														
Moment of inertia (relates to the drive) Clamping hub diameter [mm]	C	14	J_1	kgcm²	–	–	–	–	–	0.31	0.28	0.24	0.23	0.21	0.20	0.19	0.18	0.18	0.18
				10^{-3} in.lb.s²						0.27	0.25	0.21	0.21	0.18	0.18	0.17	0.16	0.16	0.16
	E	19	J_1	kgcm²	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.s²	1.60	1.23	1.05	0.90	0.82	0.64	0.64	0.61	0.60	0.59	0.55	0.56	0.56	0.55	0.55
	H	28	J_1	kgcm²	3.22	2.80	2.60	2.43	2.34	–	–	–	–	–	–	–	–	–	–
				10^{-3} in.lb.s²	2.85	2.48	2.30	2.15	2.07										

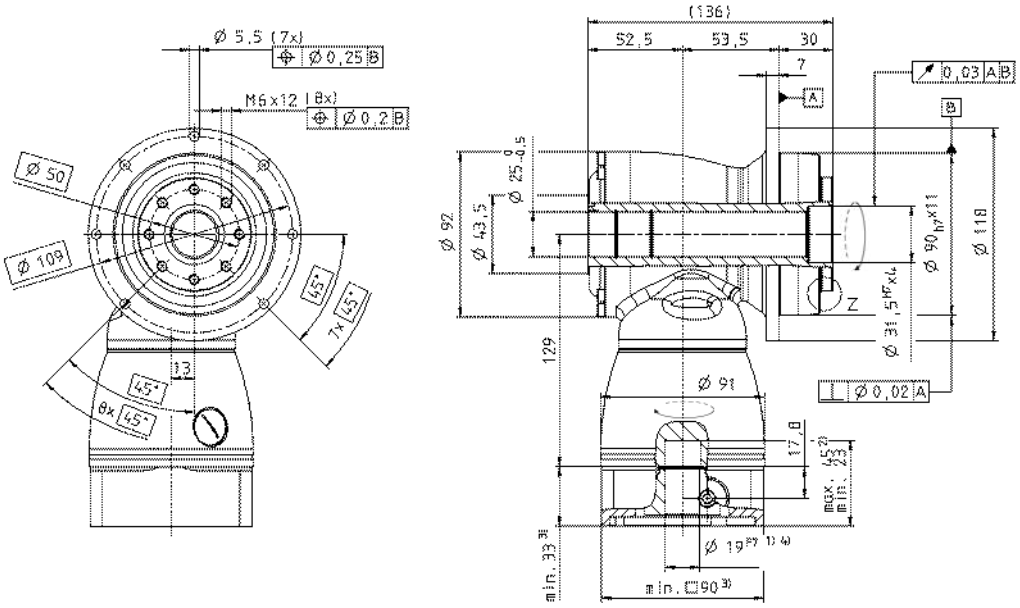
Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

[a)] Other ratios available on request
[b)] Higher speeds are possible if the nominal torque is reduced
[c)] For higher ambient temperatures, please reduce input speed
[d)] Idling torques decrease during operation
[e)] Refers to center of the output shaft or flange

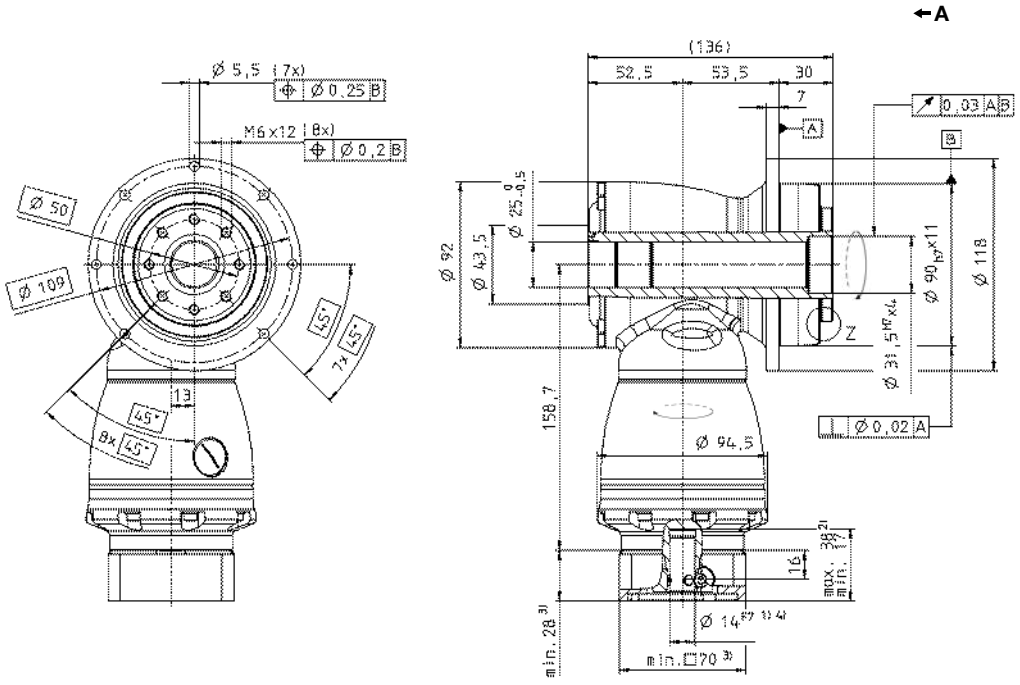
All technical data for front output side applies.
Technical data for rearward output versions, see page 422.

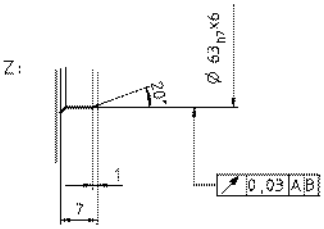
View A

1-stage:



2-stage:





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

Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

TK+ 025 MF 1/2-stage

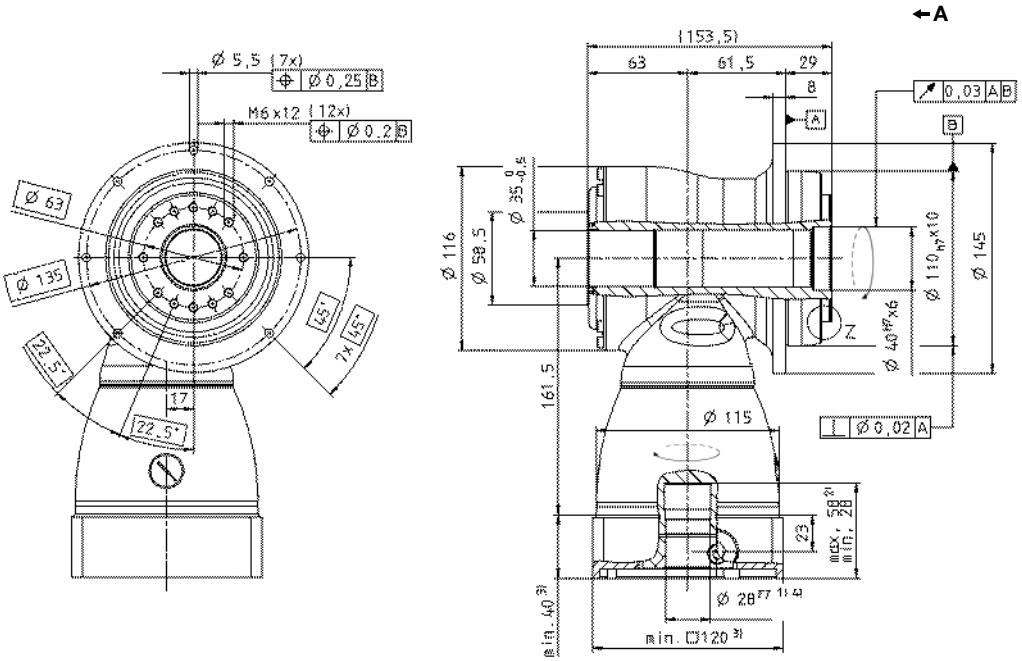
					1-stage					2-stage									
Ratio [a]			*i*		**3**	**4**	**5**	**7**	**10**	**12**	**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	170	170	170	145	125	170	170	170	170	170	170	170	170	145	125
				in.lb	1505	1505	1505	1283	1106	1505	1505	1505	1505	1505	1505	1505	1505	1283	1106
Nominal output torque (with n_{1N})			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	797	708
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			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	2257	2213
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b), c)]			n_{1N}	rpm	2000	2100	2400	2200	2200	3100	3100	3100	3100	3100	3100	3100	3500	4200	4200
Max. continuous speed (with 20 % T_{2N} and 20 °C ambient temperature)			n_{1Ncym}	rpm	2700	3000	3400	3000	3000	4000	4000	4000	4000	4000	4000	4000	4000	4200	4200
Max. input speed			n_{1Max}	rpm	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
Mean no load running torque (with n_1 = 3000 rpm and 20 °C gearhead temperature) [d)]			T_{012}	Nm	4.6	3.6	2.8	4.2	3.4	0.7	0.7	0.6	0.5	0.5	0.4	0.2	0.2	0.2	0.2
				in.lb	41	32	25	37	30	6.2	6.2	5.3	4.4	4.4	3.5	1.8	1.8	1.8	1.8
Max. torsional backlash			j_t	arcmin	≤ 4														
Torsional rigidity			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 [e)]			F_{2AMax}	N	5700														
				lb_f	1283														
Max. radial force [e)]			F_{2RMax}	N	6300														
				lb_f	1418														
Max. tilting moment			M_{2KMax}	Nm	833														
				in.lb	7370														
Efficiency at full load			η	%	96					94									
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000														
Weight incl. standardadapter plate			*m*	kg	8.9					10.6									
				lb_m	20					23									
Operating noise (with n_1 = 3000 rpm no load)			L_{PA}	dB(A)	≤ 66														
Max. permitted housing temperature				°C	+90														
				F	+194														
Ambient temperature				°C	0 to +40														
				F	32 to 104														
Lubrication					Lubricated for life														
Paint					Blue RAL 5002														
Direction of rotation					Motor and gearhead opposite directions														
Protection class					IP 65														
Moment of inertia (relates to the drive) Clamping hub diameter [mm]	E	19	J_1	kgcm²	–	–	–	–	–	1.08	1.01	0.88	0.85	0.76	0.75	0.70	0.69	0.69	0.68
				10^{-3} in.lb.s²						0.96	0.89	0.78	0.75	0.67	0.66	0.62	0.66	0.61	0.60
	G	24	J_1	kgcm²	–	–	–	–	–	2.65	2.57	2.44	2.42	2.32	2.31	2.26	2.25	2.25	2.25
				10^{-3} in.lb.s²						2.34	2.28	2.16	2.14	2.06	2.05	2.00	2.00	1.99	1.99
	H	28	J_1	kgcm²	5.50	4.30	3.60	3.10	2.90	–	–	–	–	–	–	–	–	–	–
				10^{-3} in.lb.s²	4.83	3.77	3.22	2.77	2.54										
	K	38	J_1	kgcm²	12.7	11.5	10.9	10.4	10.1	–	–	–	–	–	–	–	–	–	–
				10^{-3} in.lb.s²	11.2	10.2	9.63	9.19	8.95										

Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

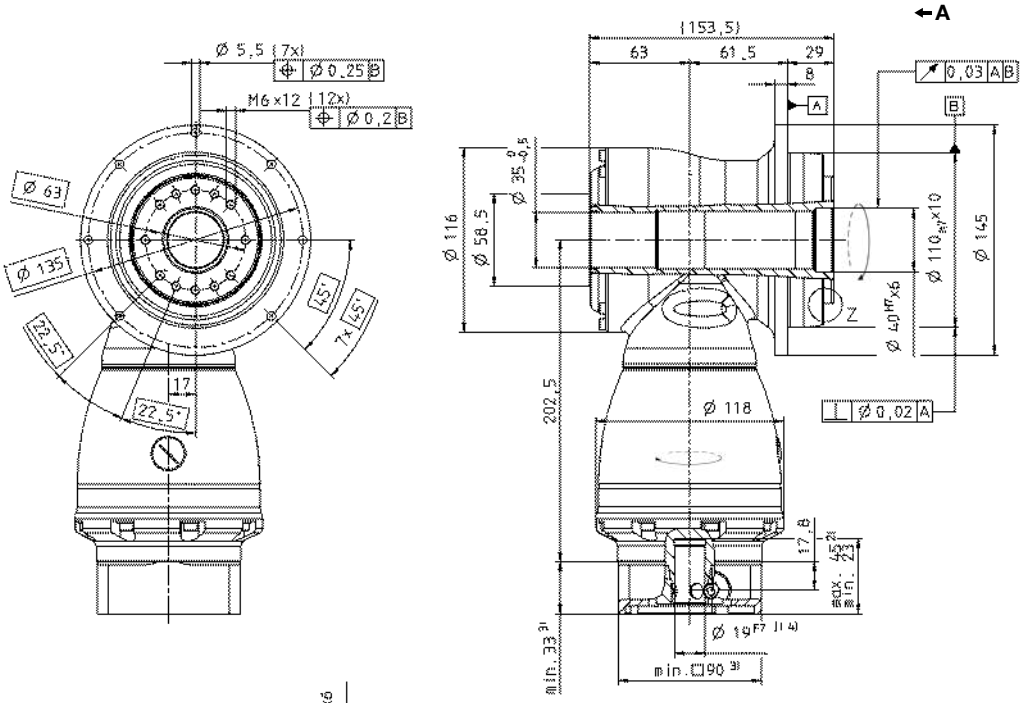
[a)] Other ratios available on request
[b)] Higher speeds are possible if the nominal torque is reduced
[c)] For higher ambient temperatures, please reduce input speed
[d)] Idling torques decrease during operation
[e)] Refers to center of the output shaft or flange

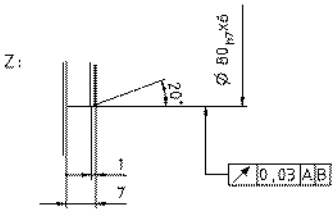
All technical data for front output side applies.
Technical data for rearward output versions, see page 422.

1-stage:



2-stage:





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

Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

TK+ 050 MF 1/2-stage

			1-stage					2-stage									
Ratio [a]	i		**3**	**4**	**5**	**7**	**10**	**12**	**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
Max. acceleration torque (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 output torque (with n_{1N})	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 (permitted 1000 times during the service life of the gearhead)	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
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b], [c]	n_{1N}	rpm	1700	1800	2000	1800	1800	2900	2900	2900	2900	2900	2900	2900	3200	3200	3900
Max. continuous speed (with 20 % T_{2N} and 20 °C ambient temperature)	n_{1Ncym}	rpm	2200	2500	2800	2500	2500	4000	4000	4000	4000	4000	4000	4000	4200	4200	4200
Max. input speed	n_{1Max}	rpm	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
Mean no load running torque (with n_1 = 3000 rpm and 20 °C gearhead temperature) [d]	T_{012}	Nm	8.4	6.2	5.4	9.0	6.6	1.7	1.1	0.8	0.6	0.6	0.5	0.5	0.4	0.4	0.4
		in.lb	74	55	48	80	58	15.0	9.7	7.1	5.3	5.3	4.4	4.4	3.5	3.5	3.5
Max. torsional backlash	j_t	arcmin	≤ 4														
Torsional rigidity	C_{t21}	Nm/ arcmin	36	40	46	44	42	40	40	40	40	40	40	40	46	44	42
		in.lb/ arcmin	315	356	405	387	376	356	356	356	356	356	356	356	405	387	376
Max. axial force [e]	F_{2AMax}	N	9900														
		lb_f	2228														
Max. radial force [e]	F_{2RMax}	N	9500														
		lb_f	2138														
Max. tilting moment	M_{2KMax}	Nm	1692														
		in.lb	14974														
Efficiency at full load	η	%	96					94									
Service life (For calculation, see the Chapter "Information")	L_h	h	> 20000														
Weight incl. standardadapter plate	m	kg	22					26									
		lb_m	49					57									
Operating noise (with n_1 = 3000 rpm no load)	L_{PA}	dB(A)	≤ 68														
Max. permitted housing temperature		°C	+90														
		F	+194														
Ambient temperature		°C	0 to +40														
		F	32 to 104														
Lubrication			Lubricated for life														
Paint			Blue RAL 5002														
Direction of rotation			Motor and gearhead opposite directions														
Protection class			IP 65														
Moment of inertia (relates to the drive) **Clamping hub diameter [mm]**	G 24	J_1	kgcm²	–	–	–	–	–	4.43	3.97	3.36	3.22	2.82	2.75	2.50	2.47	2.44	2.42
			10^{-3} in.lb.s²						3.92	3.51	2.97	2.85	2.50	2.44	2.22	2.18	2.16	2.14
	K 38	J_1	kgcm²	28.4	21.0	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.s²	25.1	18.6	15.5	13.0	11.6	10.0	9.63	9.09	8.96	8.62	8.55	8.33	8.30	8.28	8.26

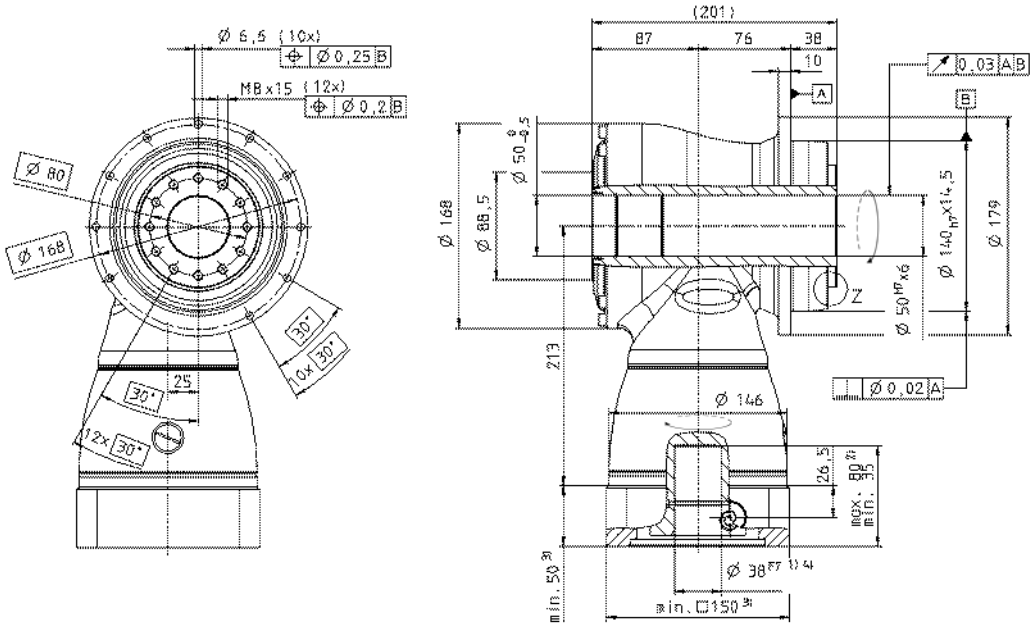
Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

[a] Other ratios available on request
[b] Higher speeds are possible if the nominal torque is reduced
[c] For higher ambient temperatures, please reduce input speed
[d] Idling torques decrease during operation
[e] Refers to center of the output shaft or flange

All technical data for front output side applies.
Technical data for rearward output versions, see page 422.

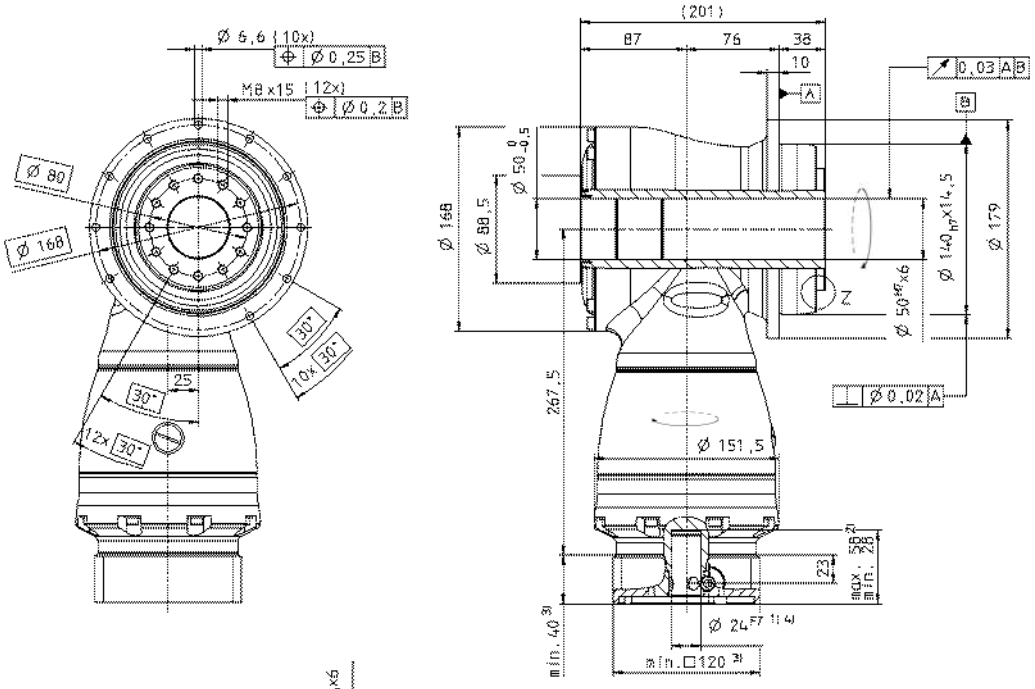
1-stage:

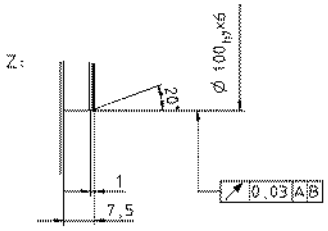
←A



2-stage:

←A





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

Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

TK+ 110 MF 1/2-stage

					1-stage					2-stage									
Ratio [a]			i		**3**	**4**	**5**	**7**	**10**	**12**	**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
Max. acceleration torque (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	5664	5664	5664	4868	4160	5664	5664	5664	5664	5664	5664	5664	5664	4868	4160
Nominal output torque (with n_{1N})			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 (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	900	1050	1050	970	900	1050	1050	1050	1050	1050	1050	1050	1050	970	900
				in.lb	7965	9293	9293	8585	7965	9293	9293	9293	9293	9293	9293	9293	9293	8585	7965
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b), c)]			n_{1N}	rpm	1400	1600	1800	1600	1600	2700	2700	2700	2700	2700	2700	2700	2900	3200	3400
Max. continuous speed (with 20 % T_{2N} and 20 °C ambient temperature)			n_{1Ncym}	rpm	1800	2100	2500	2200	2200	3500	3500	3500	3500	3500	3500	3500	3500	3800	3800
Max. input speed			n_{1Max}	rpm	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
Mean no load running torque (with n_1 = 3000 rpm and 20 °C gearhead temperature) [d)]			T_{012}	Nm	17.5	14.5	12.0	18.0	15.0	3.6	2.8	2.2	1.9	1.6	1.4	1.1	1.1	1.1	1.1
				in.lb	155	128	106	159	133	31.9	24.8	19.5	16.8	14.2	12.4	9.7	9.7	9.7	9.7
Max. torsional backlash			j_t	arcmin	≤ 4														
Torsional rigidity			C_{t21}	Nm/ arcmin	76	87	99	97	96	87	87	87	87	87	87	87	99	97	96
				in.lb/ arcmin	676	766	874	860	847	766	766	766	766	766	766	766	874	860	847
Max. axial force [e)]			F_{2AMax}	N	14200														
				lb_f	3195														
Max. radial force [e)]			F_{2RMax}	N	14700														
				lb_f	3308														
Max. tilting moment			M_{2KMax}	Nm	3213														
				in.lb	28435														
Efficiency at full load			η	%	96					94									
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000														
Weight incl. standardadapter plate			m	kg	48					54									
				lb_m	106					119									
Operating noise (with n_1 = 3000 rpm no load)			L_{PA}	dB(A)	≤ 68														
Max. permitted housing temperature				°C	+90														
				F	+194														
Ambient temperature				°C	0 to +40														
				F	32 to 104														
Lubrication					Lubricated for life														
Paint					Blue RAL 5002														
Direction of rotation					Motor and gearhead opposite directions														
Protection class					IP 65														
Moment of inertia (relates to the drive) Clamping hub diameter [mm]	K	38	J_1	kgcm²	–	–	–	–	–	16.8	14.8	12.9	12.3	11.2	10.9	10.3	10.1	10.0	9.93
				10^{-3} in.lb.s²						14.8	13.1	11.4	10.9	9.88	9.63	9.08	8.95	8.84	8.79
	M	48	J_1	kgcm²	96.5	64.6	50.5	38.2	31.8	31.5	29.5	27.6	27.0	25.9	25.6	25.0	24.8	24.7	24.6
				10^{-3} in.lb.s²	85.4	57.2	44.7	33.8	28.1	27.9	26.1	24.4	23.9	22.9	22.6	22.1	22.0	21.9	21.8

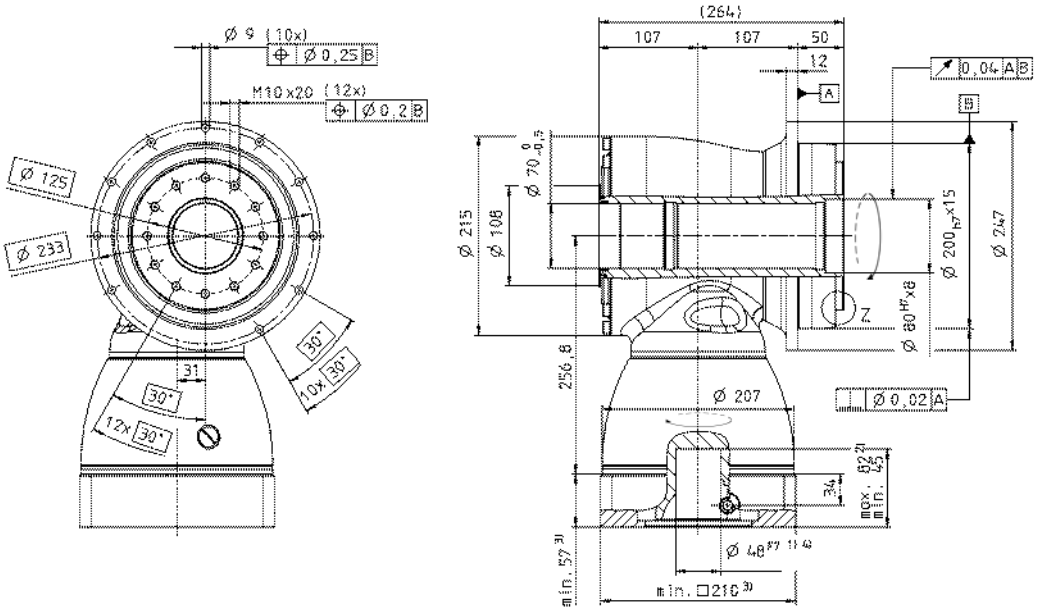
Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

[a)] Other ratios available on request
[b)] Higher speeds are possible if the nominal torque is reduced
[c)] For higher ambient temperatures, please reduce input speed
[d)] Idling torques decrease during operation
[e)] Refers to center of the output shaft or flange

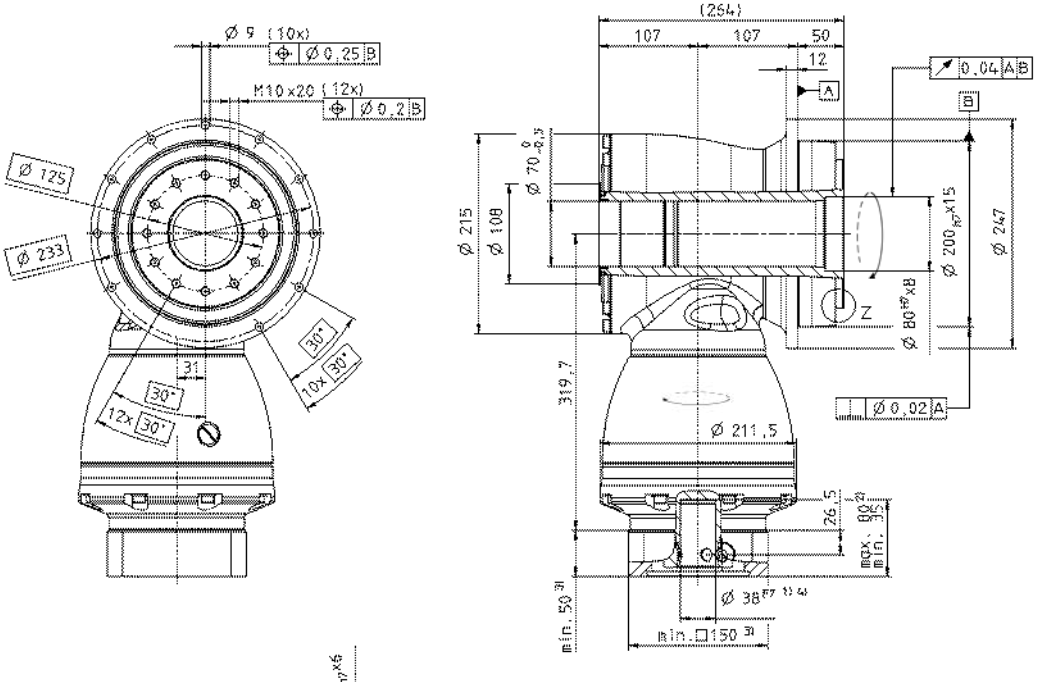
All technical data for front output side applies.
Technical data for rearward output versions, see page 422.

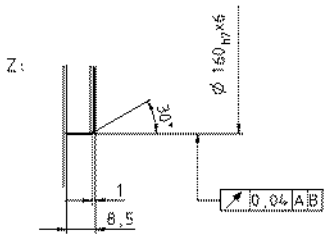
View A

1-stage:



2-stage:





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

Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

				2-stage										
Ratio [a]			*i*	**12**	**16**	**20**	**25**	**28**	**35**	**40**	**49**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	120	120	130	130	130	130	80	130	100	130	100
			T_{2B} in.lb	1.062	1.062	1.151	1.151	1.151	1.151	708	1.151	885	1.151	885
Nominal output torque (with n_{1N})			T_{2N} Nm	75	75	75	75	75	75	60	75	75	75	60
			T_{2N} in.lb	664	664	664	664	664	664	531	664	664	664	531
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not} Nm	160	200	250	250	250	250	160	250	200	250	250
			T_{2Not} in.lb	1416	1770	2213	2213	2213	2213	1416	2213	1770	2213	2213
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b), c)]			n_{1N} rpm	2000	2400	2400	2700	2400	2500	2500	2500	2500	2500	2500
Max. continuous speed (with 20 % T_{2N} and 20 °C ambient temperature)			n_{1Ncym} rpm	3000	3400	3400	3800	3400	3200	3200	3200	3200	3200	3200
Max. input speed			n_{1Max} rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque (with n_1 = 3000 rpm and 20 °C gearhead temperature) [d)]			T_{012} Nm	1.5	1.3	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3
			T_{012} in.lb	13.3	11.5	10.6	10.6	10.6	11.5	11.5	11.5	11.5	11.5	11.5
Max. torsional backlash			j_t arcmin	Standard ≤ 5 / Reduced ≤ 3										
Torsional rigidity			C_{t21} Nm/ arcmin	16	16	20	21	23	24	15	23	19	22	27
			C_{t21} in.lb/ arcmin	142	142	177	186	204	212	133	204	168	195	239
Tilting rigidity			C_{2K} Nm/ arcmin	225										
			C_{2K} in.lb/ arcmin	1991										
Max. axial force [e)]			F_{2AMax} N	2150										
			F_{2AMax} lb_f	484										
Max. tilting moment			M_{2KMax} Nm	235										
			M_{2KMax} in.lb	2080										
Efficiency at full load			η %	94										
Service life (For calculation, see the Chapter "Information")			L_h h	> 20000										
Weight incl. standard adapter plate			*m* kg	5.2										
			m lb_m	11.5										
Operating noise (with n_1 = 3000 rpm no load)			L_{PA} dB(A)	≤ 66										
Max. permitted housing temperature			°C	+90										
			F	+194										
Ambient temperature			°C	0 to +40										
			F	32 to 104										
Lubrication				Lubricated for life										
Paint				Blue RAL 5002										
Direction of rotation				Motor and gearhead opposite directions										
Protection class				IP 65										
Moment of inertia (relates to the drive) Clamping hub diameter [mm]	C	14	J_1 kgcm²	0.55	0.46	0.44	0.39	0.43	0.36	0.34	0.37	0.34	0.34	0.34
			J_1 10^{-3} in.lb.s²	0.49	0.40	0.39	0.35	0.38	0.32	0.30	0.33	0.30	0.30	0.30
	E	19	J_1 kgcm²	0.90	0.81	0.79	0.75	0.78	0.71	0.70	0.72	0.70	0.69	0.69
			J_1 10^{-3} in.lb.s²	0.80	0.72	0.70	0.66	0.69	0.63	0.62	0.64	0.62	0.61	0.61

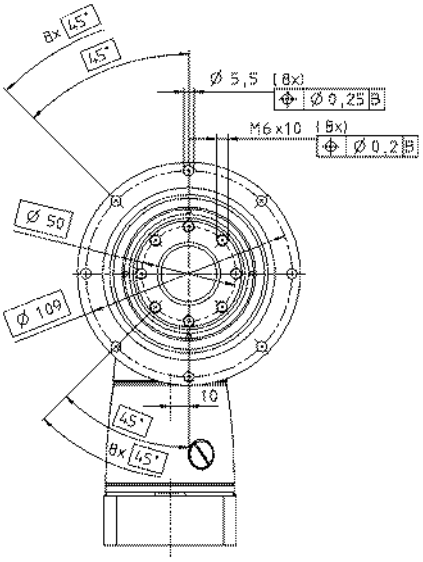
Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

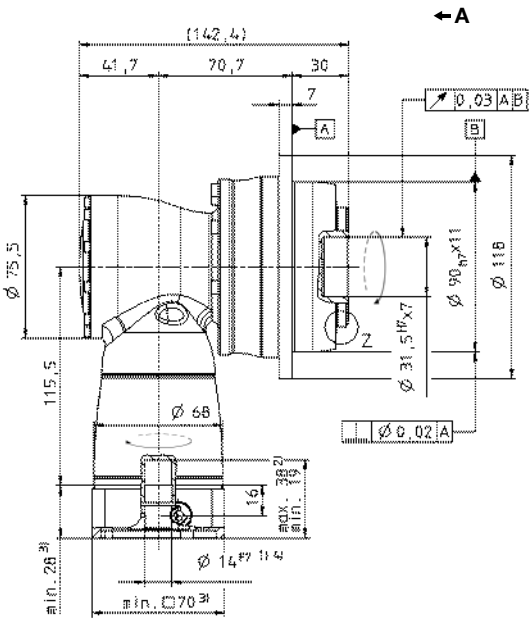
[a)] Other ratios up to i=1000 available on request
[b)] Higher speeds are possible if the nominal torque is reduced
[c)] For higher ambient temperatures, please reduce input speed
[d)] Idling torques decrease during operation
[e)] Refers to center of the output shaft or flange

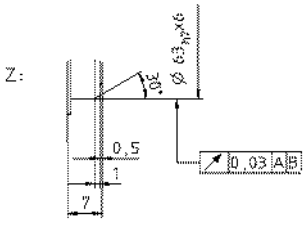
All technical data for front output side applies.
Technical data for rearward output versions, see page 422.

View A

2-stage:







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

Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

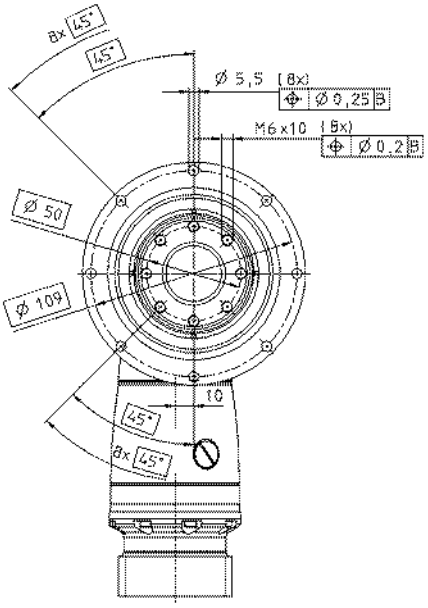
				3-stage													
Ratio [a]			*i*	**64**	**84**	**100**	**125**	**140**	**175**	**200**	**250**	**280**	**350**	**400**	**500**	**700**	**1000**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	120	120	130	130	130	130	130	130	130	130	80	100	130	100
			T_{2B} in.lb	1062	1062	1151	1151	1151	1151	1151	1151	1151	1151	708	885	1151	885
Nominal output torque (with n_{1N})			T_{2N} Nm	85	85	90	90	90	90	90	90	75	90	60	75	90	60
			T_{2N} in.lb	752	752	797	797	797	797	797	797	664	797	531	664	797	531
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not} Nm	200	160	250	250	250	250	250	250	250	250	160	200	250	250
			T_{2Not} in.lb	1770	1416	2213	2213	2213	2213	2213	2213	2213	2213	1416	1770	2213	2213
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b), c)]			n_{1N} rpm	4400	4400	4400	4400	4400	4400	4400	4800	4400	4800	5500	5500	5500	5500
Max. continuous speed (with 20 % T_{2N} and 20 °C ambient temperature)			n_{1Ncym} rpm	5000	5000	5000	5000	5000	5000	5000	5000	5000	5500	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 (with n_1 = 3000 rpm and 20 °C gearhead temperature) [d)]			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
			T_{012} 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. torsional backlash			j_t arcmin	Standard ≤ 5 / Reduced ≤ 3													
Torsional rigidity			C_{t21} Nm/ arcmin	16	16	20	21	20	21	20	21	23	24	15	19	22	27
			C_{t21} in.lb/ arcmin	142	142	177	186	177	186	177	186	204	212	133	168	195	239
Tilting rigidity			C_{2K} Nm/ arcmin	225													
			C_{2K} in.lb/ arcmin	1991													
Max. axial force [e)]			F_{2AMax} N	2150													
			F_{2AMax} lb_f	484													
Max. tilting moment			M_{2KMax} Nm	235													
			M_{2KMax} in.lb	2080													
Efficiency at full load			η %	92													
Service life (For calculation, see the Chapter "Information")			L_h h	> 20000													
Weight incl. standard adapter plate			*m* kg	5,5													
			m lb_m	12,2													
Operating noise (with n_1 = 3000 rpm no load)			L_{PA} dB(A)	≤ 66													
Max. permitted housing temperature			°C	+90													
			F	+194													
Ambient temperature			°C	0 to +40													
			F	32 to 104													
Lubrication				Lubricated for life													
Paint				Blue RAL 5002													
Direction of rotation				Motor and gearhead opposite directions													
Protection class				IP 65													
Moment of inertia (relates to the drive) Clamping hub diameter [mm]	B	11	J_1 kgcm²	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	0.06
			J_1 10^{-3} in.lb.s²	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	0.05
	C	14	J_1 kgcm²	0.20	0.18	0.19	0.19	0.18	0.18	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
			J_1 10^{-3} in.lb.s²	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	0.15

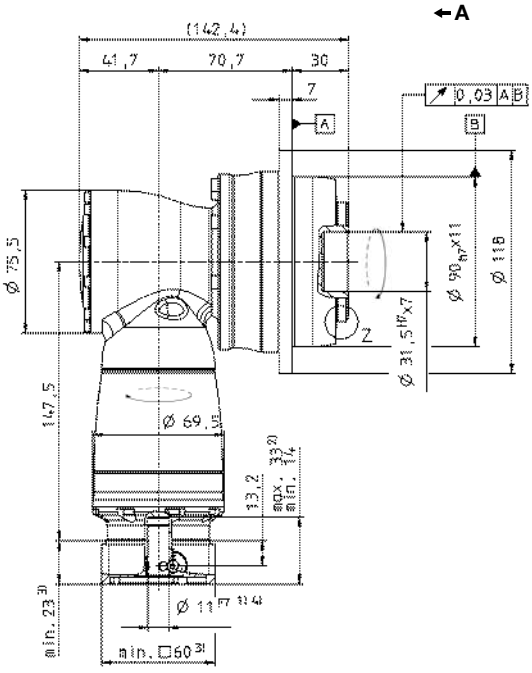
Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

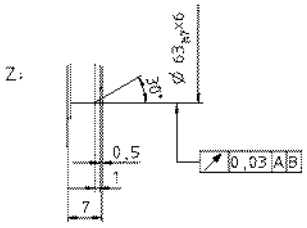
[a)] Other ratios available on request
[b)] Higher speeds are possible if the nominal torque is reduced
[c)] For higher ambient temperatures, please reduce input speed
[d)] Idling torques decrease during operation
[e)] Refers to center of the output shaft or flange

All technical data for front output side applies.
Technical data for rearward output versions, see page 422.

3-stage:







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

Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

				2-stage										
Ratio [a]			*i*	**12**	**16**	**20**	**25**	**28**	**35**	**40**	**49**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	280	280	350	350	350	330	330	330	265	400	400
			T_{2B} in.lb	2478	2478	3098	3098	3098	2921	1770	2921	2213	2921	2345
Nominal output torque (with n_{1N})			T_{2N} Nm	170	170	170	170	170	170	160	170	170	170	120
			T_{2N} in.lb	1505	1505	1505	1505	1505	1505	1416	1505	1505	1505	1062
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not} Nm	400	575	575	500	625	625	400	625	500	625	625
			T_{2Not} in.lb	3540	5089	5089	5089	5531	5531	3540	5531	4425	5531	5531
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b), c)]			n_{1N} rpm	2000	2400	2400	2700	2400	2500	2500	2500	2500	2500	2500
Max. continuous speed (with 20 % T_{2N} and 20 °C ambient temperature)			n_{1Ncym} rpm	3000	3400	3400	3800	3400	3200	3200	3200	3200	3200	3200
Max. input speed			n_{1Max} rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque (with n_1 = 3000 rpm and 20 °C gearhead temperature) [d)]			T_{012} Nm	2.5	2.1	2.0	1.8	2.0	1.8	2.0	2.2	2.0	2.0	2.0
			T_{012} in.lb	22.1	18.6	17.7	15.9	17.7	15.9	17.7	19.5	17.7	17.7	17.7
Max. torsional backlash			j_t arcmin	Standard ≤ 4 / Reduced ≤ 2										
Torsional rigidity			C_{t21} Nm/ arcmin	40	42	53	55	59	60	44	60	55	60	56
			C_{t21} in.lb/ arcmin	354	372	469	487	522	531	389	531	487	531	496
Tilting rigidity			C_{2K} Nm/ arcmin	550										
			C_{2K} in.lb/ arcmin	4868										
Max. axial force [e)]			F_{2AMax} N	4150										
			F_{2AMax} lb_f	934										
Max. tilting moment			M_{2KMax} Nm	413										
			M_{2KMax} in.lb	3655										
Efficiency at full load			η %	94										
Service life (For calculation, see the Chapter "Information")			L_h h	> 20000										
Weight incl. standard adapter plate			*m* kg	9.0										
			m lb_m	19.9										
Operating noise (with n_1 = 3000 rpm no load)			L_{PA} dB(A)	≤ 68										
Max. permitted housing temperature			°C	+90										
			F	+194										
Ambient temperature			°C	0 to +40										
			F	32 to 104										
Lubrication				Lubricated for life										
Paint				Blue RAL 5002										
Direction of rotation				Motor and gearhead opposite directions										
Protection class				IP 65										
Moment of inertia (relates to the drive) Clamping hub diameter [mm]	E	19	J_1 kgcm²	1.43	1.18	1.16	1.04	1.14	0.94	0.89	0.95	0.89	0.89	0.89
			J_1 10^{-3} in.lb.s²	1.27	1.04	1.02	0.92	1.01	0.83	0.79	0.84	0.79	0.79	0.78
	H	28	J_1 kgcm²	2.85	2.59	2.57	2.45	2.56	2.40	2.31	2.37	2.30	2.30	2.30
			J_1 10^{-3} in.lb.s²	2.52	2.29	2.27	2.17	2.26	2.08	2.04	2.10	2.04	2.04	2.04

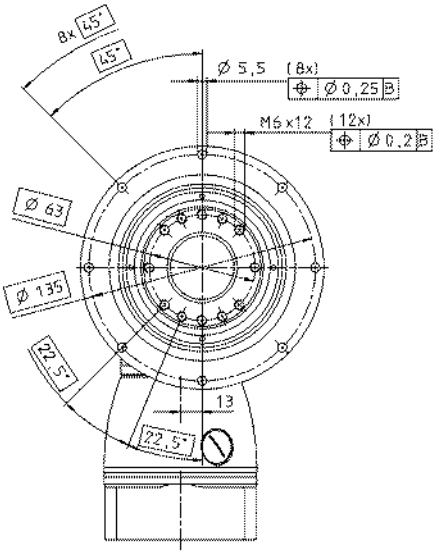
Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

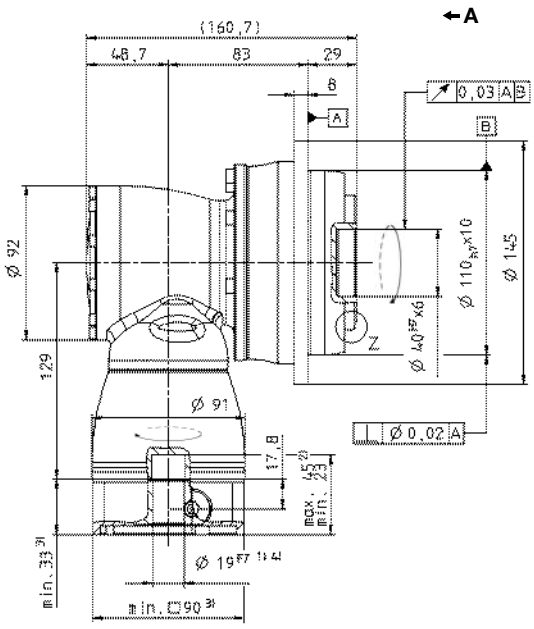
[a)] Other ratios up to i=1000 available on request
[b)] Higher speeds are possible if the nominal torque is reduced
[c)] For higher ambient temperatures, please reduce input speed
[d)] Idling torques decrease during operation
[e)] Refers to center of the output shaft or flange

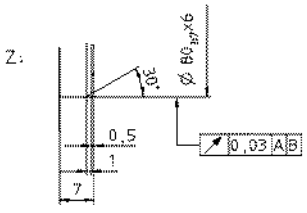
All technical data for front output side applies.
Technical data for rearward output versions, see page 422.

View A

2-stage:







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

Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

TPK+ 025 MF 3-stage

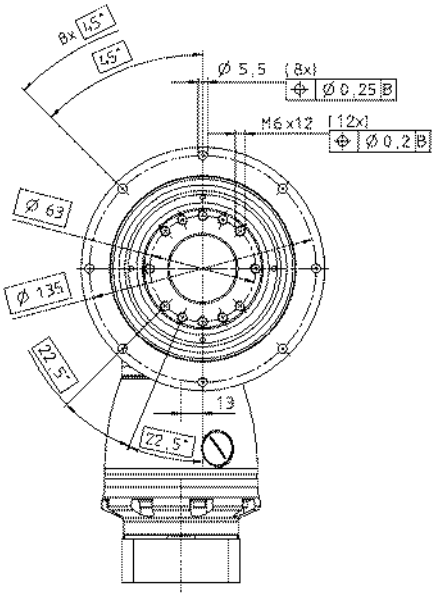
				3-stage													
Ratio [a]			*i*	**64**	**84**	**100**	**125**	**140**	**175**	**200**	**250**	**280**	**350**	**400**	**500**	**700**	**1000**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	280	280	350	350	350	350	350	350	350	330	200	250	330	265
			T_{2B} in.lb	2478	2478	3098	3098	3098	3098	3098	3098	3098	2921	1770	2213	2921	2345
Nominal output torque (with n_{1N})			T_{2N} Nm	200	170	200	200	200	200	200	200	210	200	160	200	200	120
			T_{2N} in.lb	1770	1505	1770	1770	1770	1770	1770	1770	1859	1770	1416	1770	1770	1062
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not} Nm	460	400	575	575	575	575	575	575	625	625	400	500	625	625
			T_{2Not} in.lb	4071	3540	5089	5089	5089	5089	5089	5089	5531	5531	3540	4425	5531	5531
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b), c)]			n_{1N} rpm	3500	3500	3500	3500	3500	3500	3500	3800	3500	3800	4500	4500	4500	4500
Max. continuous speed (with 20 % T_{2N} and 20 °C ambient temperature)			n_{1Ncym} rpm	4500	4500	4500	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	6000	6000	6000
Mean no load running torque (with n_1 = 3000 rpm and 20 °C gearhead temperature) [d)]			T_{012} Nm	0.4	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
			T_{012} in.lb	3.5	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. torsional backlash			j_t arcmin	Standard ≤ 4 / Reduced ≤ 2													
Torsional rigidity			C_{t21} Nm/ arcmin	42	40	53	55	53	55	53	55	59	60	44	55	60	56
			C_{t21} in.lb/ arcmin	372	354	469	487	469	487	469	487	522	531	389	487	531	496
Tilting rigidity			C_{2K} Nm/ arcmin	550													
			C_{2K} in.lb/ arcmin	4868													
Max. axial force [e)]			F_{2AMax} N	4150													
			F_{2AMax} lb_f	934													
Max. tilting moment			M_{2KMax} Nm	413													
			M_{2KMax} in.lb	3655													
Efficiency at full load			η %	92													
Service life (For calculation, see the Chapter "Information")			L_h h	> 20000													
Weight incl. standard adapter plate			*m* kg	9,8													
			m lb_m	21,7													
Operating noise (with n_1 = 3000 rpm no load)			L_{PA} dB(A)	≤ 68													
Max. permitted housing temperature			°C	+90													
			F	+194													
Ambient temperature			°C	0 to +40													
			F	32 to 104													
Lubrication				Lubricated for life													
Paint				Blue RAL 5002													
Direction of rotation				Motor and gearhead opposite directions													
Protection class				IP 65													
Moment of inertia (relates to the drive) Clamping hub diameter [mm]	C	14	J_1 kgcm²	0.28	0.23	0.24	0.23	0.21	0.20	0.19	0.18	0.19	0.18	0.18	0.18	0.18	0.18
			J_1 10^{-3} in.lb.s²	0.25	0.20	0.21	0.20	0.19	0.18	0.17	0.16	0.17	0.16	0.16	0.16	0.16	0.16
	E	19	J_1 kgcm²	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	0.63
			J_1 10^{-3} in.lb.s²	0.64	0.56	0.60	0.60	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56

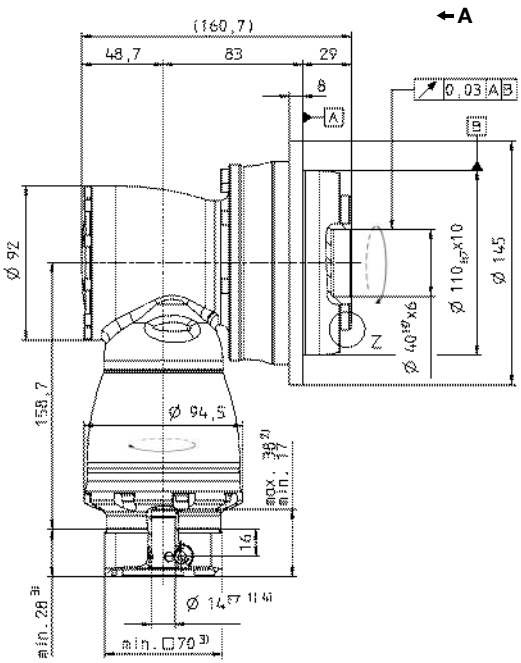
Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

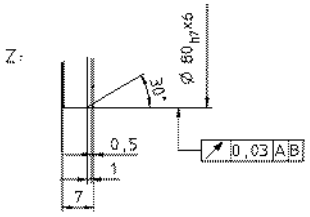
[a)] Other ratios available on request
[b)] Higher speeds are possible if the nominal torque is reduced
[c)] For higher ambient temperatures, please reduce input speed
[d)] Idling torques decrease during operation
[e)] Refers to center of the output shaft or flange

All technical data for front output side applies.
Technical data for rearward output versions, see page 422.

3-stage:







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

Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

TPK+ 050 MF 2-stage

				2-stage										
Ratio [a]			*i*	**12**	**16**	**20**	**25**	**28**	**35**	**40**	**49**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	680	680	750	750	700	700	500	700	625	700	540
			T_{2B} in.lb	6018	6018	6638	6638	6195	6416	4425	6195	5531	6195	4779
Nominal output torque (with n_{1N})			T_{2N} Nm	370	370	370	370	370	370	320	370	370	370	240
			T_{2N} in.lb	3275	3275	3275	3275	3275	3275	2832	3275	3275	3275	2124
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not} Nm	1000	1000	1250	1250	1250	1250	1000	1250	1250	1250	1250
			T_{2Not} in.lb	8850	8850	11063	11063	11063	11063	8850	11063	11063	11063	11063
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b), c)]			n_{1N} rpm	1900	2300	2300	2600	2300	2300	2300	2300	2300	2300	2300
Max. continuous speed (with 20 % T_{2N} and 20 °C ambient temperature)			n_{1Ncym} rpm	2700	3100	3100	3500	3100	3000	3000	3000	3000	3000	3000
Max. input speed			n_{1Max} rpm	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
Mean no load running torque (with n_1 = 3000 rpm and 20 °C gearhead temperature) [d)]			T_{012} Nm	4.0	3.7	3.6	2.8	3.5	2.8	3.1	3.9	3.1	3.1	3.1
			T_{012} in.lb	35.4	32.7	31.9	24.8	31.0	24.8	27.4	34.5	27.4	27.4	27.4
Max. torsional backlash			j_t arcmin	Standard ≤ 4 / Reduced ≤ 2										
Torsional rigidity			C_{t21} Nm/ arcmin	87	91	111	119	123	127	96	127	115	125	112
			C_{t21} in.lb/ arcmin	770	805	982	1053	1089	1124	850	1124	1018	1106	991
Tilting rigidity			C_{2K} Nm/ arcmin	560										
			C_{2K} in.lb/ arcmin	4956										
Max. axial force [e)]			F_{2AMax} N	6130										
			F_{2AMax} lb_f	1379										
Max. tilting moment			M_{2KMax} Nm	1295										
			M_{2KMax} in.lb	11461										
Efficiency at full load			η %	94										
Service life (For calculation, see the Chapter "Information")			L_h h	> 20000										
Weight incl. standard adapter platee			*m* kg	17.0										
			m lb_m	38										
Operating noise (with n_1 = 3000 rpm no load)			L_{PA} dB(A)	≤ 68										
Max. permitted housing temperature			°C	+90										
			F	+194										
Ambient temperature			°C	0 to +40										
			F	32 to 104										
Lubrication				Lubricated for life										
Paint				Blue RAL 5002										
Direction of rotation				Motor and gearhead opposite directions										
Protection class				IP 65										
Moment of inertia (relates to the drive) Clamping hub diameter [mm]	H	28	J_1 kgcm²	4.56	3.76	3.71	3.28	3.66	3.00	2.79	3.10	2.78	2.77	2.77
			J_1 10^{-3} in.lb.s²	4.04	3.32	3.28	2.90	3.24	2.61	2.47	2.74	2.46	2.45	2.45
	K	38	J_1 kgcm²	11.7	10.9	10.9	10.4	10.8	10.3	9.95	10.4	9.94	9.94	9.93
			J_1 10^{-3} in.lb.s²	10.38	9.67	9.62	9.24	9.58	8.96	8.81	9.20	8.80	8.80	8.79

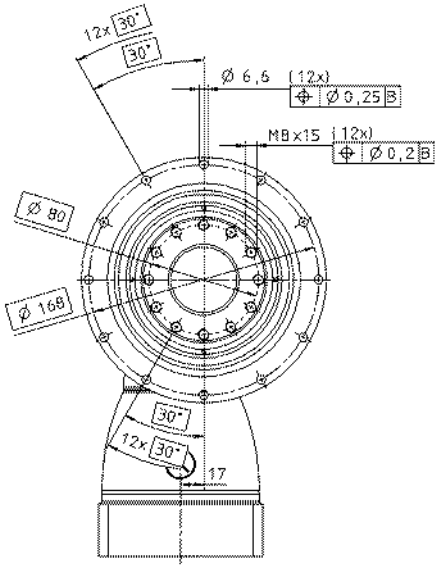
Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

[a)] Other ratios up to i=1000 available on request
[b)] Higher speeds are possible if the nominal torque is reduced
[c)] For higher ambient temperatures, please reduce input speed
[d)] Idling torques decrease during operation
[e)] Refers to center of the output shaft or flange

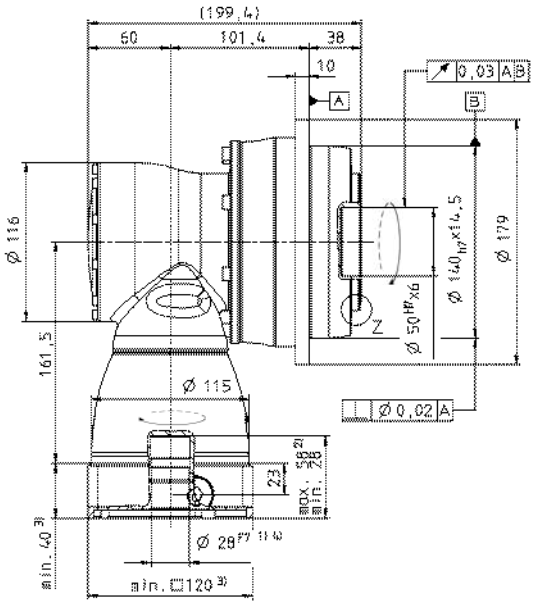
All technical data for front output side applies.
Technical data for rearward output versions, see page 422.

View A

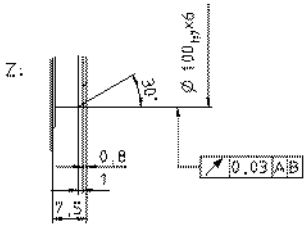
2-stage:



←A



Z:



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

Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

TPK+ 050 MF 3-stage

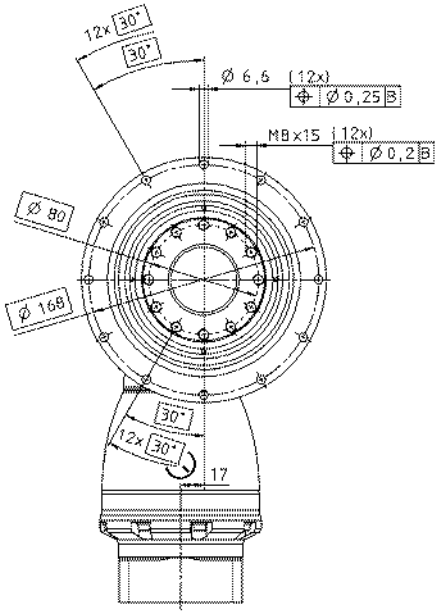
				3-stage													
Ratio [a]	*i*			**64**	**84**	**100**	**125**	**140**	**175**	**200**	**250**	**280**	**350**	**400**	**500**	**700**	**1000**
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B}	Nm		680	680	750	750	750	750	750	750	700	700	500	625	700	540
		in.lb		6018	6018	6638	6638	6638	6638	6638	6638	6195	6195	4425	5531	6195	4779
Nominal output torque (with n_{1N})	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 (permitted 1000 times during the service life of the gearhead)	T_{2Not}	Nm		1000	1000	1250	1250	1250	1250	1250	1250	1250	1250	1000	1250	1250	1250
		in.lb		8850	8850	11063	11063	11063	11063	11063	11063	11063	11063	8850	11063	11063	11063
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b), c)]	n_{1N}	rpm		3100	3100	3100	3100	3100	3100	3100	3500	3100	3500	4200	4200	4200	4200
Max. continuous speed (with 20 % T_{2N} and 20 °C ambient temperature)	n_{1Ncym}	rpm		4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	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 (with n_1 = 3000 rpm and 20 °C gearhead temperature) [d)]	T_{012}	Nm		0.7	0.4	0.6	0.5	0.5	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		in.lb		6.2	3.5	5.3	4.4	4.4	3.5	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
Max. torsional backlash	j_t	arcmin		Standard ≤ 4 / Reduced ≤ 2													
Torsional rigidity	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 [e)]	F_{2AMax}	N		6130													
		lb_f		1379													
Max. tilting moment	M_{2KMax}	Nm		1295													
		in.lb		11461													
Efficiency at full load	η	%		92													
Service life (For calculation, see the Chapter "Information")	L_h	h		> 20000													
Weight incl. standard adapter plate	*m*	kg		18,7													
		lb_m		41,3													
Operating noise (with n_1 = 3000 rpm no load)	L_{PA}	dB(A)		≤ 68													
Max. permitted housing temperature		°C		+90													
		F		+194													
Ambient temperature		°C		0 to +40													
		F		32 to 104													
Lubrication				Lubricated for life													
Paint				Blue RAL 5002													
Direction of rotation				Motor and gearhead opposite directions													
Protection class				IP 65													
Moment of inertia (relates to the drive) Clamping hub diameter [mm]	E 19	J_1	kgcm²	1.01	0.76	0.88	0.85	0.76	0.75	0.70	0.69	0.70	0.69	0.69	0.69	0.69	0.69
			10^{-3} in.lb.s²	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	0.61
	G 24	J_1	kgcm²	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	2.25
			10^{-3} in.lb.s²	2.27	2.05	2.16	2.14	2.05	2.04	2.00	1.99	2.00	1.99	1.99	1.99	1.99	1.99

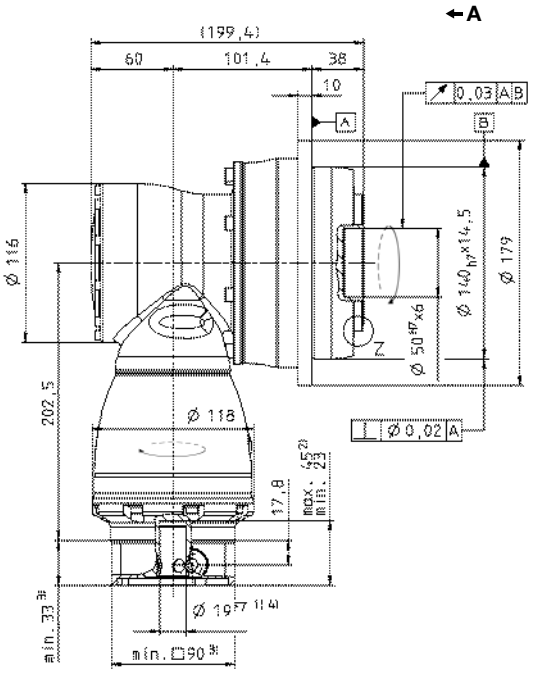
Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

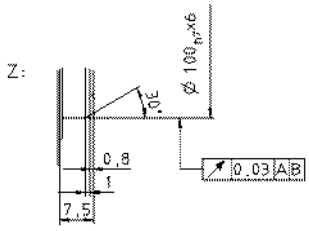
[a)] Other ratios available on request
[b)] Higher speeds are possible if the nominal torque is reduced
[c)] For higher ambient temperatures, please reduce input speed
[d)] Idling torques decrease during operation
[e)] Refers to center of the output shaft or flange

All technical data for front output side applies.
Technical data for rearward output versions, see page 422.

3-stage:







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

Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

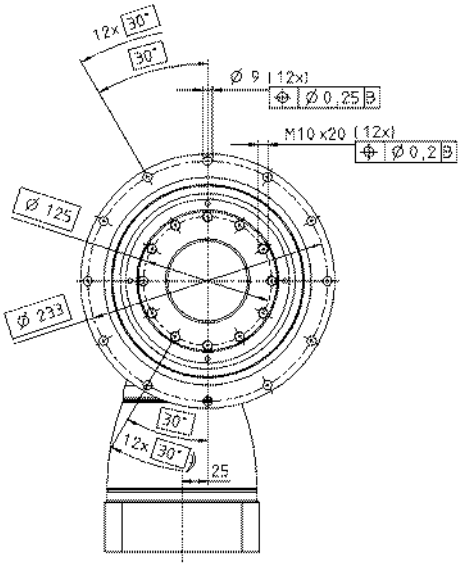
				2-stage										
Ratio [a]			*i*	**12**	**16**	**20**	**25**	**28**	**35**	**40**	**49**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	1200	1200	1500	1500	1600	1600	840	1600	1050	1470	1400
			T_{2B} in.lb	10620	10620	13275	13275	14160	14160	7434	14160	9293	13010	12390
Nominal output torque (with n_{1N})			T_{2N} Nm	700	700	750	750	750	750	640	750	750	750	750
			T_{2N} in.lb	6195	6195	6638	6638	6638	6638	5664	6638	6638	6638	6638
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not} Nm	1600	2000	2500	2500	2750	2750	1600	2750	2000	2750	2750
			T_{2Not} in.lb	14160	17700	22125	22125	24338	24338	14160	24338	17700	24338	24338
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b), c)]			n_{1N} rpm	1600	1900	1900	2100	1900	2100	2100	2100	2100	2100	2100
Max. continuous speed (with 20 % T_{2N} and 20 °C ambient temperature)			n_{1Ncym} rpm	2300	2600	2600	2800	2600	3000	3000	3000	3000	3000	3000
Max. input speed			n_{1Max} rpm	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
Mean no load running torque (with n_1 = 3000 rpm and 20 °C gearhead temperature) [d)]			T_{012} Nm	9.0	6.5	6.5	5.5	6.0	6.0	6.0	8.0	6.0	6.0	6.0
			T_{012} in.lb	79.7	57.5	57.5	48.7	53.1	53.1	53.1	70.8	53.1	53.1	53.1
Max. torsional backlash			j_t arcmin	Standard ≤ 4 / Reduced ≤ 2										
Torsional rigidity			C_{t21} Nm/ arcmin	253	269	336	346	400	407	274	410	341	404	389
			C_{t21} in.lb/ arcmin	2239	2381	2974	3062	3540	3602	2425	3629	3018	3575	3443
Tilting rigidity			C_{2K} Nm/ arcmin	1452										
			C_{2K} in.lb/ arcmin	12850										
Max. axial force [e)]			F_{2AMax} N	10050										
			F_{2AMax} lb_f	2261										
Max. tilting moment			M_{2KMax} Nm	3064										
			M_{2KMax} in.lb	27116										
Efficiency at full load			η %	94										
Service life (For calculation, see the Chapter "Information")			L_h h	> 20000										
Weight incl. standard adapter plate			*m* kg	41.0										
			m lb_m	91										
Operating noise (with n_1 = 3000 rpm no load)			L_{PA} dB(A)	≤ 70										
Max. permitted housing temperature			°C	+90										
			F	+194										
Ambient temperature			°C	0 to +40										
			F	32 to 104										
Lubrication				Lubricated for life										
Paint				Blue RAL 5002										
Direction of rotation				Motor and gearhead opposite directions										
Protection class				IP 65										
Moment of inertia (relates to the drive)	K	38	J_1 $kgcm^2$	24.3	19.0	18.7	16.1	18.5	15.7	12.8	17.5	12.7	12.7	12.7
Clamping hub diameter [mm]			J_1 10^{-3} in.lb.s^2	21.5	16.8	16.6	14.2	16.4	12.3	11.3	15.5	11.3	11.2	11.2

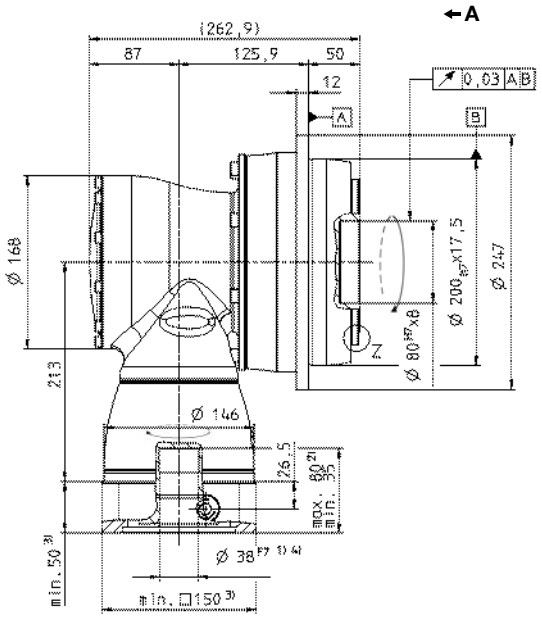
Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

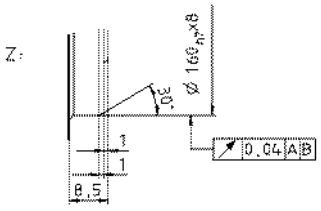
[a)] Other ratios up to i=1000 available on request
[b)] Higher speeds are possible if the nominal torque is reduced
[c)] For higher ambient temperatures, please reduce input speed
[d)] Idling torques decrease during operation
[e)] Refers to center of the output shaft or flange

All technical data for front output side applies.
Technical data for rearward output versions, see page 422.

2-stage:







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

Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

				3-stage													
Ratio [a]			*i*	**64**	**84**	**100**	**125**	**140**	**175**	**200**	**250**	**280**	**350**	**400**	**500**	**700**	**1000**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	1200	1200	1500	1500	1500	1500	1500	1500	1600	1600	840	1050	1470	1400
			T_{2B} in.lb	10620	10620	13275	13275	13275	13275	13275	13275	14160	14160	7434	9293	13010	12390
Nominal output torque (with n_{1N})			T_{2N} Nm	700	700	950	950	950	950	950	950	1120	1250	640	750	1120	800
			T_{2N} in.lb	6195	6195	8408	8408	8408	8408	8408	8408	9912	11063	5664	6638	9912	7080
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not} Nm	1600	1600	2500	2500	2500	2500	2500	2500	2750	2750	1600	2000	2750	2750
			T_{2Not} in.lb	14160	14160	22125	22125	22125	22125	22125	22125	24338	24338	14160	17700	24338	24338
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b), c)]			n_{1N} rpm	2900	2900	2900	2900	2900	2900	2900	3200	2900	3200	3900	3900	3900	3900
Max. continuous speed (with 20 % T_{2N} and 20 °C ambient temperature)			n_{1Ncym} rpm	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	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 (with n_1 = 3000 rpm and 20 °C gearhead temperature) [d)]			T_{012} Nm	1	0.5	0.8	0.6	0.6	0.5	0.5	0.4	0.5	0.4	0.4	0.4	0.4	0.4
			T_{012} in.lb	8.9	4.4	7.1	5.3	5.3	4.4	4.4	3.5	4.4	3.5	3.5	3.5	3.5	3.5
Max. torsional backlash			j_t arcmin	Standard ≤ 4 / Reduced ≤ 2													
Torsional rigidity			C_{t21} Nm/ arcmin	269	252	336	346	336	346	336	346	400	407	274	341	404	389
			C_{t21} in.lb/ arcmin	2381	2230	2974	3062	2974	3062	2974	3062	3540	3602	2425	3018	3575	3443
Tilting rigidity			C_{2K} Nm/ arcmin	1452													
			C_{2K} in.lb/ arcmin	12850													
Max. axial force [e)]			F_{2AMax} N	10050													
			F_{2AMax} lb_f	2261													
Max. tilting moment			M_{2KMax} Nm	3064													
			M_{2KMax} in.lb	27116													
Efficiency at full load			η %	92													
Service life (For calculation, see the Chapter "Information")			L_h h	> 20000													
Weight incl. standard adapter plate			*m* kg	45,4													
			m lb_m	100,3													
Operating noise (with n_1 = 3000 rpm no load)			L_{PA} dB(A)	≤ 70													
Max. permitted housing temperature			°C	+90													
			F	+194													
Ambient temperature			°C	0 to +40													
			F	32 to 104													
Lubrication				Lubricated for life													
Paint				Blue RAL 5002													
Direction of rotation				Motor and gearhead opposite directions													
Protection class				IP 65													
Moment of inertia (relates to the drive) Clamping hub diameter [mm]	G	24	J_1 kgcm²	3.97	2.82	3.36	3.22	2.82	2.75	2.50	2.47	2.50	2.44	2.42	2.42	2.42	2.42
			J_1 10^{-3} in.lb.s²	3.51	2.50	2.97	2.85	2.50	2.43	2.21	2.19	2.21	2.16	2.14	2.14	2.14	2.14
	K	38	J_1 kgcm²	10.90	9.74	10.30	10.10	9.74	9.66	9.41	9.38	9.41	9.38	9.33	9.33	9.33	9.33
			J_1 10^{-3} in.lb.s²	9.65	8.62	9.12	8.94	8.62	8.55	8.33	8.30	8.33	8.30	8.26	8.26	8.26	8.26

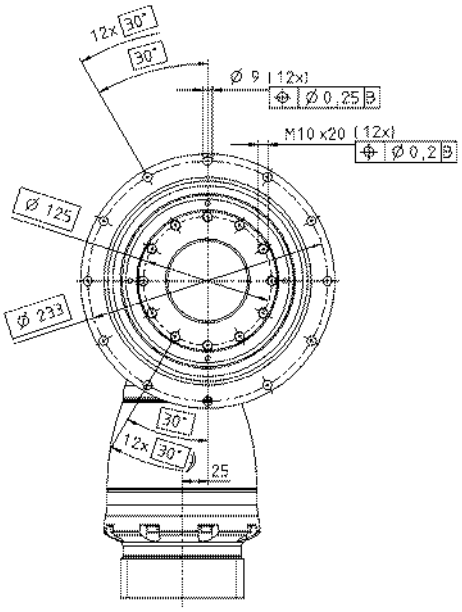
Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

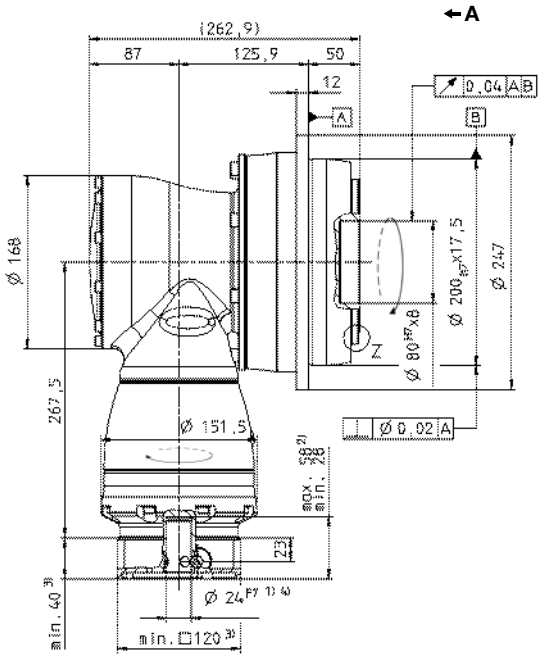
[a)] Other ratios available on request
[b)] Higher speeds are possible if the nominal torque is reduced
[c)] For higher ambient temperatures, please reduce input speed
[d)] Idling torques decrease during operation
[e)] Refers to center of the output shaft or flange

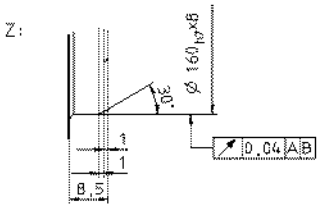
All technical data for front output side applies.
Technical data for rearward output versions, see page 422.

View A

3-stage:







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

Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

				2-stage							
Ratio [a]	*i*			**15**	**20**	**25**	**35**	**49**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B}	Nm		3200	3200	3200	3300	3300	2350	3300	2800
		in.lb		28320	28320	28320	29205	29205	20798	29205	24780
Nominal output torque (with n_{1N})	T_{2N}	Nm		2000	2000	2000	1800	1800	1800	1800	1600
		in.lb		17.700	17.700	17.700	15.930	15.930	15.930	15.930	14.160
Emergency stop torque (permitted 1000 times during the service life of the gearhead)	T_{2Not}	Nm		4500	5250	5250	7350	6800	4500	6300	8750
		in.lb		39825	46463	46463	65048	60180	39825	55755	77438
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b), c)]	n_{1N}	rpm		1500	1700	1900	1900	1700	1700	1700	1700
Max. continuous speed (with 20 % T_{2N} and 20 °C ambient temperature)	n_{1Ncym}	rpm		1900	2300	2700	2700	2400	2400	2400	2400
Max. input speed	n_{1Max}	rpm		4000	4000	4000	4000	4000	4000	4000	4000
Mean no load running torque (with n_1 = 3000 rpm and 20 °C gearhead temperature) [d)]	T_{012}	Nm		18.5	15.0	13.0	12.0	12.0	15.0	14.0	13.0
		in.lb		163.7	132.8	115.1	106.2	106.2	132.8	123.9	115.1
Max. torsional backlash	j_t	arcmin		Standard ≤ 4 / Reduced ≤ 2							
Torsional rigidity	C_{t21}	Nm/ arcmin		615	640	664	730	728	658	727	642
		in.lb/ arcmin		5.443	5.664	5.876	6.461	6.443	5.823	6.434	5.682
Tilting rigidity	C_{2K}	Nm/ arcmin		5560							
		in.lb/ arcmin		49206							
Max. axial force [e)]	F_{2AMax}	N		33000							
		lb_f		7425							
Max. tilting moment	M_{2KMax}	Nm		5900							
		in.lb		52215							
Efficiency at full load	η	%		94							
Service life (For calculation, see the Chapter "Information")	L_h	h		> 20000							
Weight incl. standard adapter plate	*m*	kg		83							
		lb_m		183							
Operating noise (with n_1 = 3000 rpm no load)	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							
Paint				Blue RAL 5002							
Direction of rotation				Motor and gearhead opposite directions							
Protection class				IP 65							
Moment of inertia (relates to the drive) **Clamping hub diameter [mm]**	J_1	kgcm²	M 48	74.00	52.00	43.00	43.00	35.00	30.00	30.00	30.00
		10^{-3} in.lb.s²		65.49	46.02	38.06	38.06	30.98	26.55	26.55	26.55

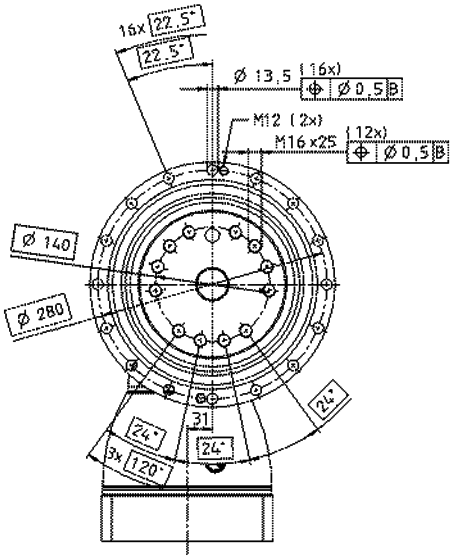
Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

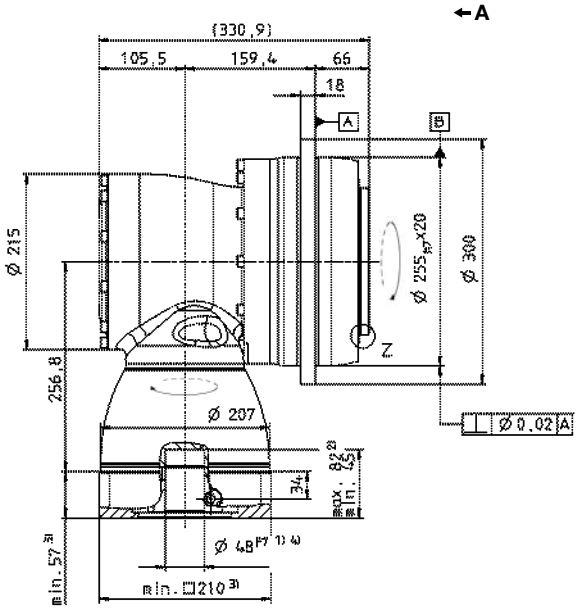
[a)] Other ratios available on request
[b)] Higher speeds are possible if the nominal torque is reduced
[c)] For higher ambient temperatures, please reduce input speed
[d)] Idling torques decrease during operation
[e)] Refers to center of the output shaft or flange

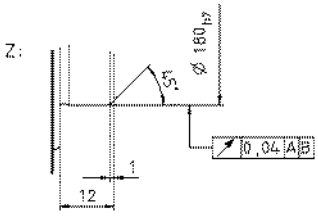
All technical data for front output side applies.
Technical data for rearward output versions, see page 422.

View A

2-stage:







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

Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

				3-stage											
Ratio [a]			*i*	**63**	**100**	**125**	**140**	**175**	**200**	**250**	**280**	**350**	**500**	**700**	**1000**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	3300	3200	3200	3200	3200	3200	3200	3300	3300	2350	3300	2800
			in.lb	29205	28320	28320	28320	28320	28320	28320	29205	29205	20798	29205	24780
Nominal output torque (with n_{1N})			T_{2N} Nm	1800	2000	2000	2000	2000	2000	2000	1800	1800	1800	1800	1600
			in.lb	15.930	17.700	17.700	17.700	17.700	17.700	17.700	15.930	15.930	15.930	15.930	14.160
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not} Nm	6300	5250	5250	5250	5250	5250	5250	7350	7350	4500	6300	8750
			in.lb	55755	46463	46463	46463	46463	46463	46463	65048	65048	39825	55755	77438
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b), c)]			n_{1N} rpm	2700	2700	2700	2700	2700	2700	2900	2700	2900	3400	3400	3400
Max. continuous speed (with 20 % T_{2N} and 20 °C ambient temperature)			n_{1Ncym} rpm	3200	3500	3500	3500	3500	3500	3500	3500	3500	3800	3800	3800
Max. input speed			n_{1Max} rpm	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
Mean no load running torque (with n_1 = 3000 rpm and 20 °C gearhead temperature) [d)]			T_{012} Nm	5.4	3.0	2.5	2.1	1.9	1.5	1.4	1.3	1.2	1.1	1.1	1.0
			in.lb	47.8	26.6	22.1	18.6	16.8	13.3	12.4	0.0	10.6	9.7	9.7	8.9
Max. torsional backlash			j_t arcmin	Standard ≤ 4 / Reduced ≤ 2											
Torsional rigidity			C_{t21} Nm/ arcmin	699	640	664	640	664	640	664	715	730	658	727	642
			in.lb/ arcmin	6.186	5.664	5.876	5.664	5.876	5.664	5.876	6.328	6.461	5.823	6.434	5.682
Tilting rigidity			C_{2K} Nm/ arcmin	5560											
			in.lb/ arcmin	49210											
Max. axial force [e)]			F_{2AMax} N	33000											
			lb_f	7425											
Max. tilting moment			M_{2KMax} Nm	5900											
			in.lb	52215											
Efficiency at full load			η %	92											
Service life (For calculation, see the Chapter "Information")			L_h h	> 20000											
Weight incl. standard adapter plate			*m* kg	87											
			lb_m	192											
Operating noise (with n_1 = 3000 rpm no load)			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											
Paint				Blue RAL 5002											
Direction of rotation				Motor and gearhead opposite directions											
Protection class				IP 65											
Moment of inertia (relates to the drive) Clamping hub diameter [mm]	K	38	J_1 kgcm²	17.80	14.10	12.10	11.00	10.80	10.20	10.10	10.10	10.00	9.90	9.90	9.90
			10^{-3} in.lb.s²	15.75	12.48	10.71	9.74	9.56	9.03	8.94	8.94	8.85	8.76	8.76	8.76
	M	48	J_1 kgcm²	32.50	28.80	26.80	25.70	25.50	24.90	24.80	24.90	24.80	24.60	24.60	24.60
			10^{-3} in.lb.s²	28.76	25.49	23.72	22.74	22.57	22.04	21.95	22.04	21.95	21.77	21.77	21.77

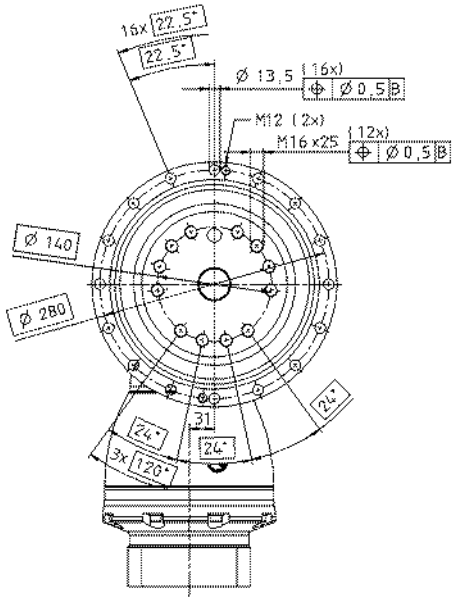
Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

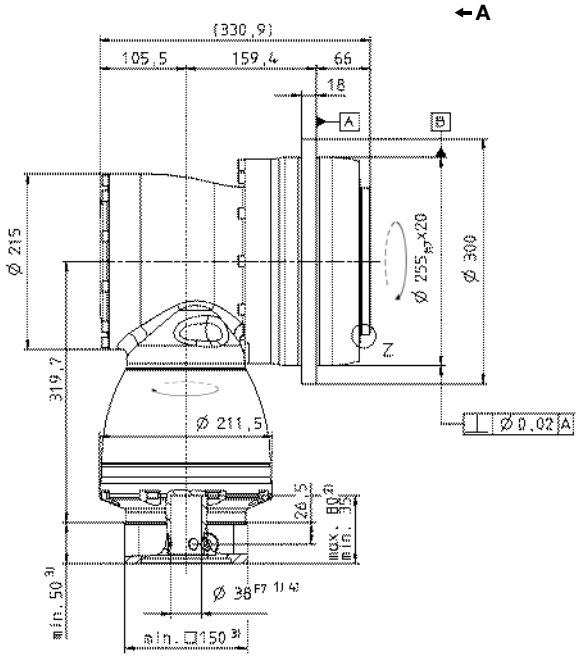
[a)] Other ratios available on request
[b)] Higher speeds are possible if the nominal torque is reduced
[c)] For higher ambient temperatures, please reduce input speed
[d)] Idling torques decrease during operation
[e)] Refers to center of the output shaft or flange

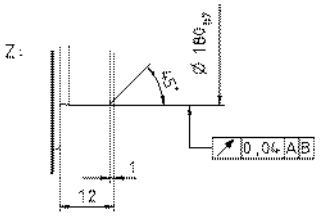
All technical data for front output side applies.
Technical data for rearward output versions, see page 422.

View A

3-stage:







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

Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

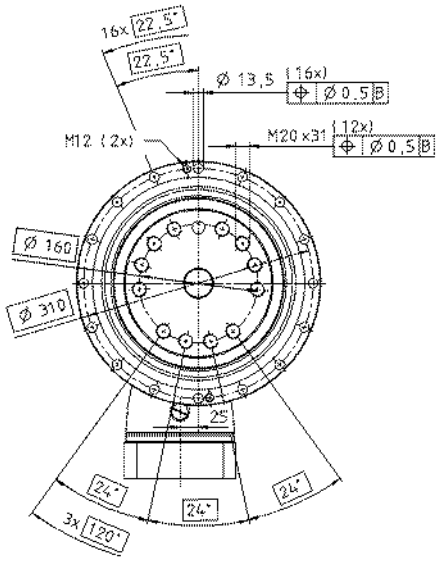
				3-stage									
Ratio [a]	*i*			**100**	**125**	**140**	**175**	**200**	**250**	**350**	**500**	**700**	**1000**
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B}	Nm		6000	6000	5000	6000	4200	5250	6000	4500	5000	4800
		in.lb		53100	53100	44250	53100	37170	46463	53100	39825	44250	42480
Nominal output torque (with n_{1N})	T_{2N}	Nm		3350	3800	3350	3800	3350	3800	3800	2900	2800	2900
		in.lb		29648	33630	29648	33630	29648	33630	33630	25665	24780	25665
Emergency stop torque (permitted 1000 times during the service life of the gearhead)	T_{2Not}	Nm		10000	12500	9000	11250	8000	10000	14000	15000	15000	15000
		in.lb		88500	110625	79650	99563	70800	88500	123900	132750	132750	132750
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b), c)]	n_{1N}	rpm		2100	2100	1900	1900	1900	1900	1900	1900	1900	1900
Max. continuous speed (with 20 % T_{2N} and 20 °C ambient temperature)	n_{1Ncym}	rpm		2900	2900	2600	2600	2600	2600	2600	2600	2600	2600
Max. input speed	n_{1Max}	rpm		4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
Mean no load running torque (with n_1 = 3000 rpm and 20 °C gearhead temperature) [d)]	T_{012}	Nm		5.5	5.5	8.5	8.5	6.0	6.0	6.0	6.0	6.0	6.0
		in.lb		48.7	48.7	75.2	75.2	53.1	53.1	53.1	53.1	53.1	53.1
Max. torsional backlash	j_t	arcmin		Standard ≤ 3,3 / Reduced ≤ 2,3									
Torsional rigidity	C_{t21}	Nm/ arcmin		1250	1350	1250	1350	1250	1350	1350	1280	1240	1050
		in.lb/ arcmin		11063	11948	11063	11948	11063	11948	11948	11328	10974	9293
Tilting rigidity	C_{2K}	Nm/ arcmin		9480									
		in.lb/ arcmin		83898									
Max. axial force [e)]	F_{2AMax}	N		50000									
		lb_f		11250									
Max. tilting moment	M_{2KMax}	Nm		8800									
		in.lb		77880									
Efficiency at full load	η	%		92									
Service life (For calculation, see the Chapter "Information")	L_h	h		> 20000									
Weight incl. standard adapter plate	*m*	kg		96									
		lb_m		212									
Operating noise (with n_1 = 3000 rpm no load)	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									
Paint				Blue RAL 5002									
Direction of rotation				Motor and gearhead opposite directions									
Protection class				IP 65									
Moment of inertia (relates to the drive) **Clamping hub diameter [mm]**	K	38	J_1	kgcm²	16.70	16.70	16.50	16.50	16.40	16.40	16.40	16.40	16.40	16.40
				10^{-3} in.lb.s²	14.78	14.78	14.60	14.60	14.51	14.51	14.51	14.51	14.51	14.51

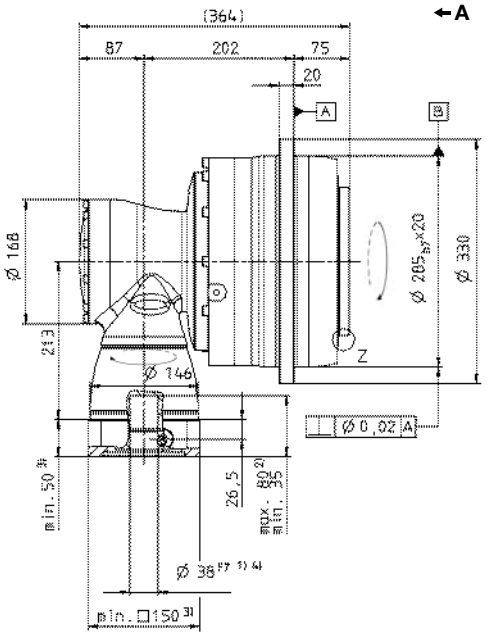
Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

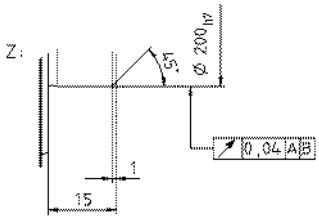
[a)] Other ratios available on request
[b)] Higher speeds are possible if the nominal torque is reduced
[c)] For higher ambient temperatures, please reduce input speed
[d)] Idling torques decrease during operation
[e)] Refers to center of the output shaft or flange

All technical data for front output side applies.
Technical data for rearward output versions, see page 422.

3-stage:







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

Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

TPK+ 500 MF 4-stage i=180-1000

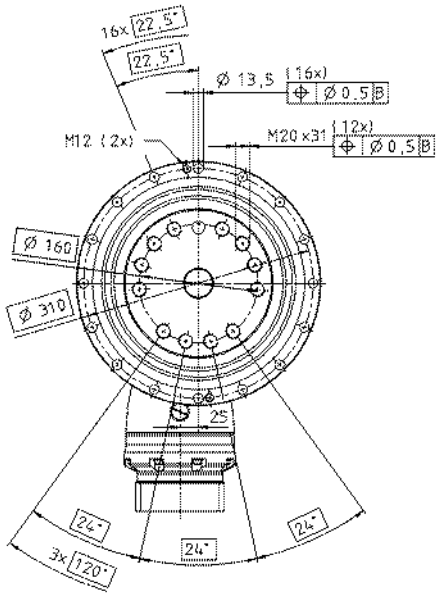
				4-stage											
Ratio [a]			***i***	**180**	**240**	**300**	**375**	**420**	**500**	**560**	**600**	**700**	**800**	**875**	**1000**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
			T_{2B} in.lb	53100	53100	53100	53100	53100	53100	53100	53100	53100	53100	53100	53100
Nominal output torque (with n_{1N})			T_{2N} Nm	3350	3350	3350	3800	3350	3350	3350	3350	3350	3350	3800	3350
			T_{2N} in.lb	29648	29648	29648	33630	29648	29648	29648	29648	29648	29648	33630	29648
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not} Nm	10000	10000	10000	12500	10000	10000	10000	10000	10000	10000	12500	10000
			T_{2Not} in.lb	88500	88500	88500	110625	88500	88500	88500	88500	88500	88500	110625	88500
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b), c)]			n_{1N} rpm	2700	2900	2900	2900	2900	2900	2900	2900	2900	2900	2900	3200
Max. continuous speed (with 20 % T_{2N} and 20 °C ambient temperature)			n_{1Ncym} rpm	3800	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4200
Max. input speed			n_{1Max} rpm	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
Mean no load running torque (with n_1 = 3000 rpm and 20 °C gearhead temperature) [d)]			T_{012} Nm	3.4	2.5	1.6	1.4	1.1	1	1	0.8	0.8	0.7	0.7	0.6
			T_{012} in.lb	30.1	22.1	14.2	12.4	9.7	8.9	8.9	7.1	7.1	6.2	6.2	5.3
Max. torsional backlash			j_t arcmin	Standard ≤ 3,3 / Reduced ≤ 2,3											
Torsional rigidity			C_{t21} Nm/ arcmin	1250	1250	1250	1300	1250	1350	1250	1250	1262	1250	1350	1250
			C_{t21} in.lb/ arcmin	11063	11063	11063	11505	11063	11948	11063	11063	11169	11063	11948	11063
Tilting rigidity			C_{2K} Nm/ arcmin	9480											
			C_{2K} in.lb/ arcmin	83906											
Max. axial force [e)]			F_{2AMax} N	50000											
			F_{2AMax} lb_f	11250											
Max. tilting moment			M_{2KMax} Nm	8800											
			M_{2KMax} in.lb	77880											
Efficiency at full load			η %	90											
Service life (For calculation, see the Chapter "Information")			L_h h	> 20000											
Weight incl. standard adapter plate			m kg	99											
			m lb_m	219											
Operating noise (with n_1 = 3000 rpm no load)			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											
Paint				Blue RAL 5002											
Direction of rotation				Motor and gearhead opposite directions											
Protection class				IP 65											
Moment of inertia (relates to the drive) Clamping hub diameter [mm]	G	24	J_1 kgcm²	5.93	4.29	3.33	3.32	2.81	3.19	2.80	2.50	2.74	2.49	2.74	2.46
			J_1 10^{-3} in.lb.s²	5.25	3.79	2.95	2.94	2.49	2.82	2.48	2.21	2.42	2.20	2.42	2.18
	K	38	J_1 kgcm²	12.84	11.18	10.24	10.23	9.72	10.10	9.71	9.41	9.65	9.40	9.65	9.37
			J_1 10^{-3} in.lb.s²	11.37	9.89	9.06	9.06	8.60	8.94	8.59	8.33	8.54	8.32	8.54	8.29

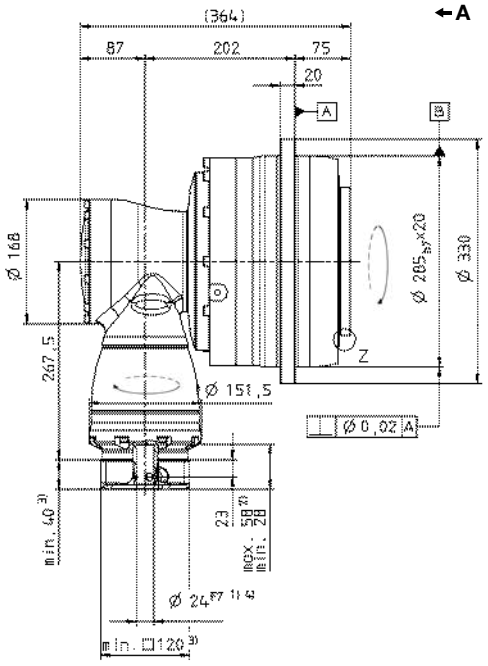
Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

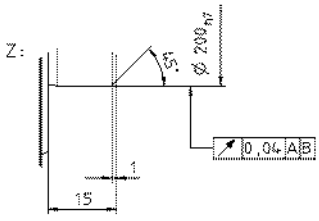
[a)] Other ratios available on request
[b)] Higher speeds are possible if the nominal torque is reduced
[c)] For higher ambient temperatures, please reduce input speed
[d)] Idling torques decrease during operation
[e)] Refers to center of the output shaft or flange

All technical data for front output side applies.
Technical data for rearward output versions, see page 422.

4-stage:







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

Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

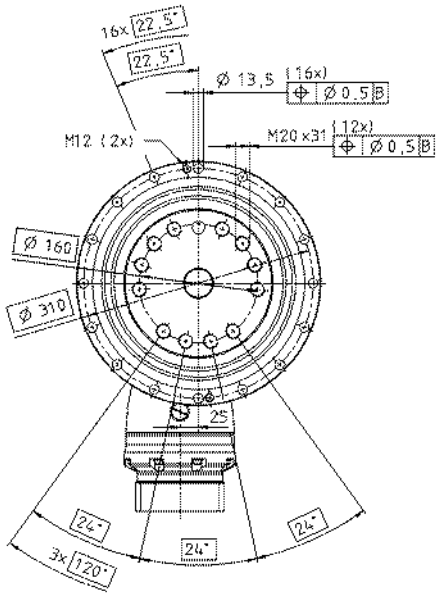
				4-stage								
Ratio [a]	*i*			**1225**	**1400**	**1750**	**2000**	**2800**	**3500**	**5000**	**7000**	**10000**
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B}		Nm	6000	6000	6000	4200	5000	6000	4500	5000	4800
			in.lb	53100	53100	53100	37170	44250	53100	39825	44250	42480
Nominal output torque (with n_{1N})	T_{2N}		Nm	3800	3800	3800	3200	2800	3800	2900	2800	2900
			in.lb	33630	33630	33630	28320	24780	33630	25665	24780	25665
Emergency stop torque (permitted 1000 times during the service life of the gearhead)	T_{2Not}		Nm	15000	15000	15000	8000	11200	14000	15000	15000	15000
			in.lb	132750	132750	132750	70800	99120	123900	132750	132750	132750
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b), c)]	n_{1N}		rpm	2900	2900	3200	3900	3900	3900	3900	3900	3900
Max. continuous speed (with 20 % T_{2N} and 20 °C ambient temperature)	n_{1Ncym}		rpm	4000	4000	4200	4200	4200	4200	4200	4200	4200
Max. input speed	n_{1Max}		rpm	4500	4500	4500	4500	4500	4500	4500	4500	4500
Mean no load running torque (with n_1 = 3000 rpm and 20 °C gearhead temperature) [d)]	T_{012}		Nm	0.6	0.6	0.4	0.4	0.4	0.4	0.4	0.4	0.4
			in.lb	5.3	5.3	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Max. torsional backlash	j_t		arcmin	Standard ≤ 3,3 / Reduced ≤ 2,3								
Torsional rigidity	C_{t21}		Nm/ arcmin	1350	1350	1350	1250	1250	1350	1250	1250	1050
			in.lb/ arcmin	11948	11948	11948	11063	11063	11948	11063	11063	9293
Tilting rigidity	C_{2K}		Nm/ arcmin	9480								
			in.lb/ arcmin	83906								
Max. axial force [e)]	F_{2AMax}		N	50000								
			lb_f	11250								
Max. tilting moment	M_{2KMax}		Nm	8800								
			in.lb	77880								
Efficiency at full load	η		%	90								
Service life (For calculation, see the Chapter "Information")	L_h		h	> 20000								
Weight incl. standard adapter plate	*m*		kg	99								
			lb_m	219								
Operating noise (with n_1 = 3000 rpm no load)	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								
Paint				Blue RAL 5002								
Direction of rotation				Motor and gearhead opposite directions								
Protection class				IP 65								
Moment of inertia (relates to the drive) Clamping hub diameter [mm]	G	24	J_1	kgcm²	2.73	2.49	2.46	2.42	2.42	2.42	2.42	2.42	2.42
				10^{-3} in.lb.s²	2.42	2.20	2.17	2.14	2.14	2.14	2.14	2.14	2.14
	K	38	J_1	kgcm²	9.64	9.40	9.37	9.33	9.33	9.33	9.33	9.33	9.33
				10^{-3} in.lb.s²	8.53	8.32	8.29	8.26	8.26	8.26	8.26	8.26	8.26

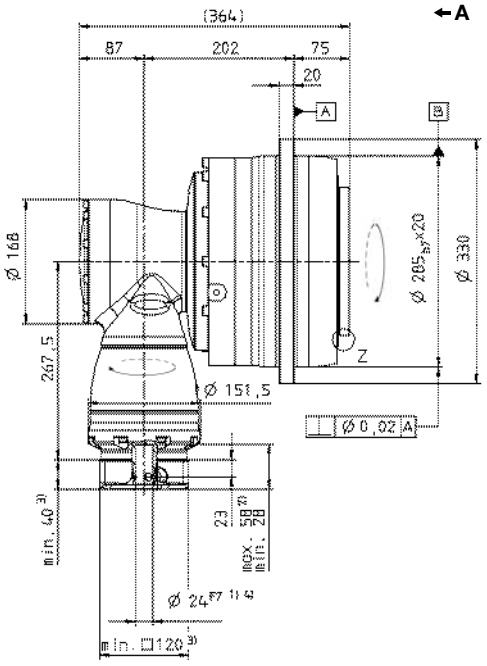
Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

[a)] Other ratios available on request
[b)] Higher speeds are possible if the nominal torque is reduced
[c)] For higher ambient temperatures, please reduce input speed
[d)] Idling torques decrease during operation
[e)] Refers to center of the output shaft or flange

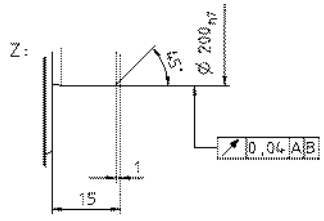
All technical data for front output side applies.
Technical data for rearward output versions, see page 422.

4-stage:





←A



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

Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

TPK+ 025 MA HIGH TORQUE 3-/4-stage

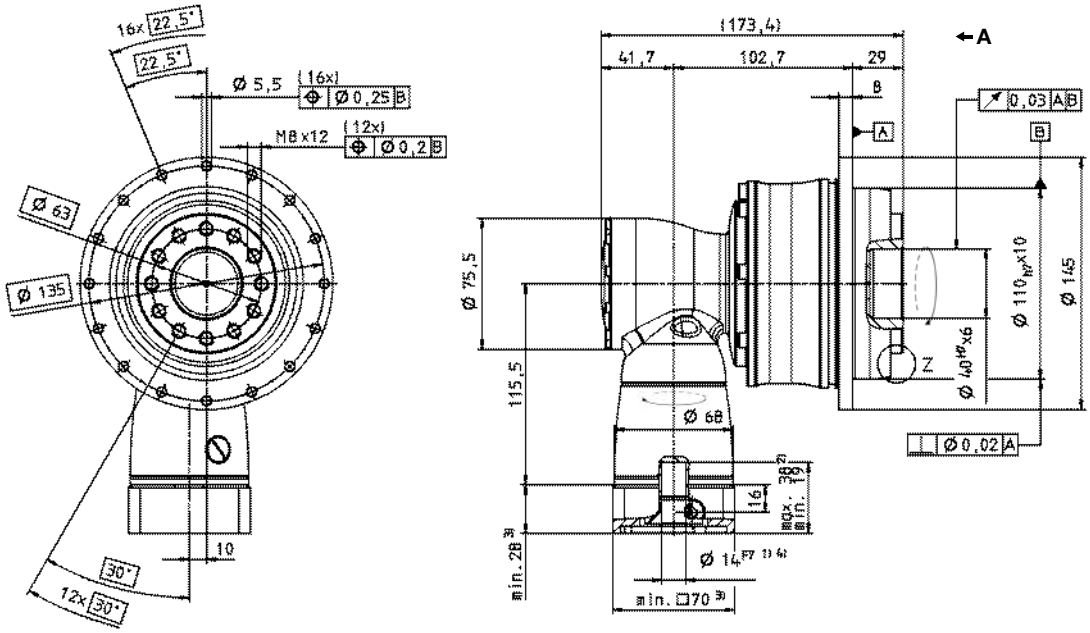
						3-stage							4-stage								
Ratio [a]					***i***	**66**	**88**	**110**	**137.5**	**154**	**220**	**385**	**330**	**462**	**577.5**	**770**	**1078**	**1540**	**2695**	**3850**	**5500**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm		530	530	530	530	530	440	530	530	530	530	530	530	530	530	530	530
				in.lb		4691	4691	4691	4691	4691	3894	4691	4691	4691	4691	4691	4691	4691	4691	4691	4691
Nominal output torque (with n_{1N})			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 (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm		880	1100	1100	1100	990	880	1200	880	1200	1100	1200	1200	1200	1200	1200	1200
				in.lb		7788	9735	9735	9735	8762	7788	10620	7788	10620	9735	10620	10620	10620	10620	10620	10620
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b), c)]			n_{1N}	rpm		2400	2600	2900	2900	2900	2900	2900	4300	4300	4300	4300	4300	4300	5400	5400	5400
Max. continuous speed (with 20 % T_{2N} and 20 °C ambient temperature)			n_{1Ncym}	rpm		2800	3300	3800	3800	3300	3300	3300	4800	4800	4800	4800	4800	4800	5400	5400	5400
Max. input speed			n_{1Max}	rpm		6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque (with n_1 = 3000 rpm and 20 °C gearhead temperature) [d)]			T_{012}	Nm		1.6	1.4	1.2	1.2	1.4	1.2	1.2	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1
				in.lb		13.9	12.2	10.8	10.6	12.0	10.7	10.4	2.4	2.4	2.2	2.1	2.0	1.1	1.0	1.0	0.9
Max. torsional backlash			j_t	arcmin		≤1.3															
Torsional rigidity			C_{t21}	Nm/ arcmin		95	95	96	99	95	94	101	95	101	98	98	102	102	101	101	98
				in.lb/ arcmin		838	842	846	874	838	829	894	838	897	869	872	899	899	897	894	869
Tilting rigidity			C_{2K}	Nm/ arcmin		550															
				in.lb/ arcmin		4868															
Max. axial force [e)]			F_{2AMax}	N		4150															
				lb_f		934															
Max. tilting moment			M_{2KMax}	Nm		550															
				in.lb		4868															
Efficiency at full load			η	%		92							90								
Service life (For calculation, see the Chapter "Information")			L_h	h		> 20.000															
Weight incl. standard adapter plate			m	kg		–															
				lb_m		–															
Operating noise (with n_1 = 3000 rpm no load)			L_{PA}	dB(A)		≤ 66															
Max. permitted housing temperature				°C		+90															
				F		+194															
Ambient temperature				°C		0 to +40															
				F		32 to 104															
Lubrication						Lubricated for life															
Paint						Blue RAL 5002															
Direction of rotation						Motor and gearhead opposite directions															
Protection class						IP 65															
Moment of inertia (relates to the drive) Clamping hub diameter [mm]	B	11	J_1	kgcm²		–	–	–	–	–	–	–	0.08	0.09	0.06	0.06	0.06	0.06	0.06	0.06	0.06
				10^{-3} in.lb.s²		–	–	–	–	–	–	–	0.07	0.08	0.06	0.06	0.06	0.05	0.05	0.05	0.05
	C	14	J_1	kgcm²		0.56	0.46	0.41	0.40	0.37	0.35	0.34	0.19	0.20	0.18	0.18	0.18	0.17	0.17	0.17	0.17
				10^{-3} in.lb.s²		0.50	0.41	0.36	0.36	0.33	0.31	0.31	0.17	0.18	0.16	0.16	0.16	0.15	0.15	0.15	0.15
	E	19	J_1	kgcm²		0.91	0.81	0.76	0.76	0.72	0.70	0.70	–	–	–	–	–	–	–	–	–
				10^{-3} in.lb.s²		0.81	0.72	0.67	0.67	0.64	0.62	0.62	–	–	–	–	–	–	–	–	–

Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

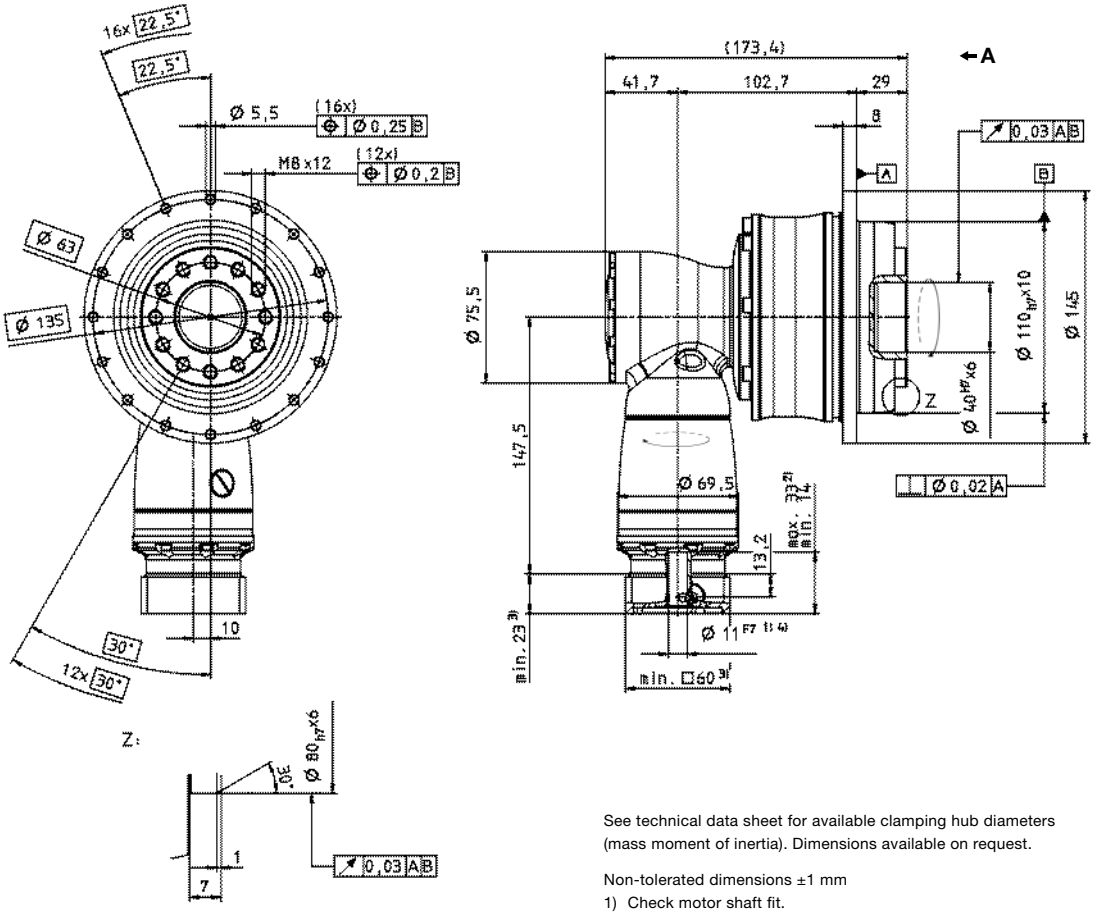
[a)] Other ratios available on request
[b)] Higher speeds are possible if the nominal torque is reduced
[c)] For higher ambient temperatures, please reduce input speed
[d)] Idling torques decrease during operation
[e)] Refers to center of the output shaft or flange

All technical data for front output side applies.
Technical data for rearward output versions, see page 422.

3-stage:



4-stage:



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

Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

TPK+ 050 MA HIGH TORQUE 3/4-stage

					3-stage							4-stage								
Ratio [a]			***i***		**66**	**88**	**110**	**137,5**	**154**	**220**	**385**	**330**	**462**	**577,5**	**770**	**1078**	**1540**	**2695**	**3850**	**5500**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	950	950	950	950	950	950	950	950	950	950	950	950	950	950	950	950
				in.lb	8408	8408	8408	8408	8408	8408	8408	8408	8408	8408	8408	8408	8408	8408	8408	8408
Nominal output torque (with n_{1N})			T_{2N}	Nm	675	675	675	675	675	675	675	675	675	675	675	675	675	675	675	675
				in.lb	5.974	5.974	5.974	5.974	5.974	5.974	5.974	5.974	5.974	5.974	5.974	5.974	5.974	5.974	5.974	5.974
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	2100	2375	2375	2375	2375	2200	2375	2100	2375	2375	2375	2375	2375	2375	2375	2375
				in.lb	18585	21019	21019	21019	21019	19470	21019	18585	21019	21019	21019	21019	21019	21019	21019	21019
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b), c)]			n_{1N}	rpm	2200	2400	2700	2700	2700	2700	2700	3400	3400	3400	3400	3400	3400	4400	4400	4400
Max. continuous speed (with 20 % T_{2N} and 20 °C ambient temperature)			n_{1Ncym}	rpm	2800	3300	3800	3800	3300	3300	3300	4300	4300	4300	4300	4300	4300	4400	4400	4400
Max. input speed			n_{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque (with n_1 = 3000 rpm and 20 °C gearhead temperature) [d)]			T_{012}	Nm	2.9	2.4	2.0	2.1	2.4	2.1	2.0	0.4	0.5	0.3	0.3	0.3	0.2	0.1	0.1	0.1
				in.lb	25.7	21.0	18.1	18.4	21.1	18.3	17.7	3.4	4.1	3.0	2.7	2.4	1.3	1.1	1.1	1.0
Max. torsional backlash			j_t	arcmin	≤ 1,3															
Torsional rigidity			C_{t21}	Nm/ arcmin	202	203	205	210	205	205	215	202	214	208	209	214	214	215	215	217
				in.lb/ arcmin	1785	1798	1810	1857	1810	1810	1900	1785	1891	1840	1849	1896	1896	1900	1900	1924
Tilting rigidity			C_{2K}	Nm/ arcmin	560															
				in.lb/ arcmin	4956															
Max. axial force [e)]			F_{2AMax}	N	6130															
				lb_f	1379															
Max. tilting moment			M_{2KMax}	Nm	1335															
				in.lb	11815															
Efficiency at full load			η	%	92							90								
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000															
Weight incl. standardadapter plate			m	kg	-															
				lb_m																
Operating noise (with n_1 = 3000 rpm no load)			L_{PA}	dB(A)	≤ 68															
Max. permitted housing temperature				°C	+90															
				F	+194															
Ambient temperature				°C	0 to +40															
				F	32 to 104															
Lubrication					Lubricated for life															
Paint					Blue RAL 5002															
Direction of rotation					Motor and gearhead opposite directions															
Protection class					IP 65															
Moment of inertia (relates to the drive)	E	19	J_1	kgcm²	-	-	-	-	-	-	-	0,24	0,29	0,20	0,20	0,20	0,19	0,18	0,18	0,18
Clamping hub diameter [mm]				10^{-3} in.lb.s²	-	-	-	-	-	-	-	0,21	0,26	0,18	0,18	0,18	0,16	0,16	0,16	0,16
	G	24	J_1	kgcm²	1,65	1,30	1,13	1,11	0,99	0,91	0,90	0,68	0,73	0,63	0,63	0,63	0,63	0,63	0,63	0,63
				10^{-3} in.lb.s²	1,46	1,15	1,00	0,98	0,87	0,81	0,80	0,61	0,65	0,56	0,56	0,56	0,56	0,55	0,55	0,55
	H	28	J_1	kgcm²	3,07	2,71	2,54	2,53	2,40	2,33	2,32	-	-	-	-	-	-	-	-	-
				10^{-3} in.lb.s²	2,72	2,40	2,25	2,24	2,13	2,06	2,05	-	-	-	-	-	-	-	-	-

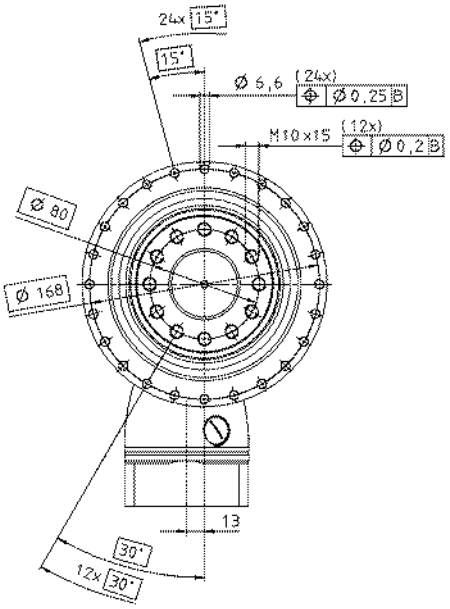
Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

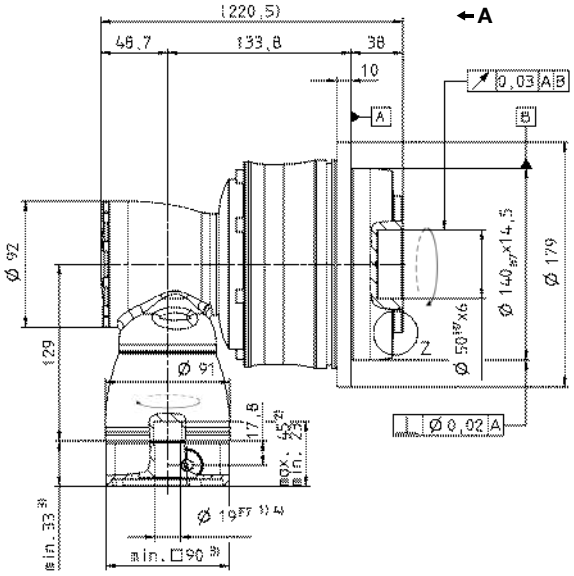
[a)] Other ratios available on request
[b)] Higher speeds are possible if the nominal torque is reduced
[c)] For higher ambient temperatures, please reduce input speed
[d)] Idling torques decrease during operation
[e)] Refers to center of the output shaft or flange

All technical data for front output side applies.
Technical data for rearward output versions, see page 422.

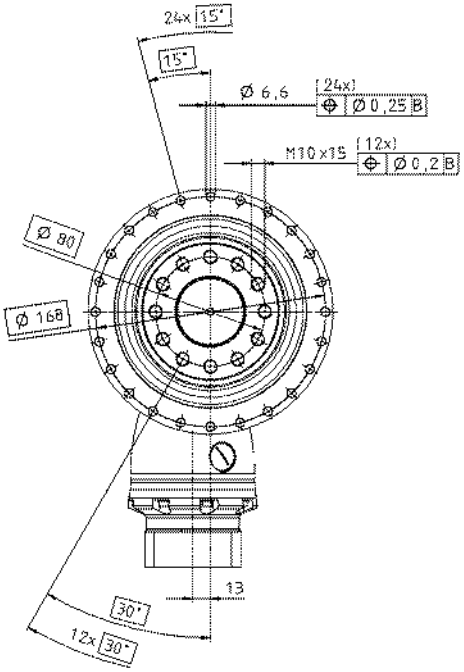
View A

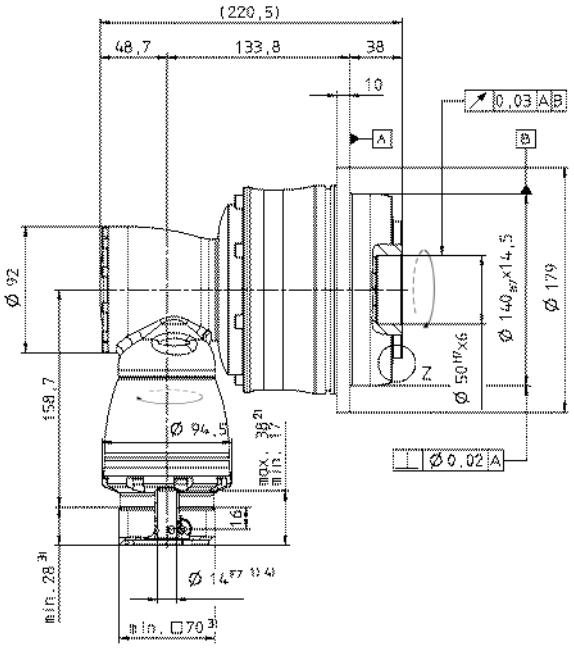
3-stage:

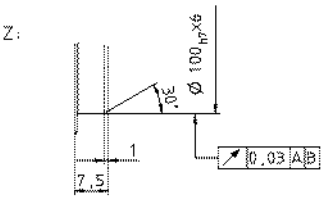




4-stage:







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

Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

					3-stage							4-stage								
Ratio [a]			i		**66**	**88**	**110**	**137,5**	**154**	**220**	**385**	**330**	**462**	**577,5**	**770**	**1078**	**1540**	**2695**	**3850**	**5500**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	3100	3100	3100	3100	3100	2750	3100	3100	3100	3100	3100	3100	3100	3100	3100	2000
				in.lb	27435	27435	27435	27435	27435	24338	27435	27435	27435	27435	27435	27435	27435	27435	27435	17700
Nominal output torque (with n_{1N})			T_{2N}	Nm	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1400
				in.lb	14603	14603	14603	14603	14603	14603	14603	14603	14603	14603	14603	14603	14603	14603	14603	12390
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	4800	5700	5700	6500	5600	5500	6500	4800	6500	6000	6500	6500	6500	6500	6500	6500
				in.lb	42480	50445	50445	57525	49560	48675	57525	42480	57525	53100	57525	57525	57525	57525	57525	57525
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b), c)]			n_{1N}	rpm	2100	2300	2600	2600	2400	2400	2400	3000	3000	3000	3000	3000	3000	4100	4100	4100
Max. continuous speed (with 20 % T_{2N} and 20 °C ambient temperature)			n_{1Ncym}	rpm	2800	3200	3600	3600	3200	3200	3200	3800	3800	3800	3800	3800	3800	4100	4100	4100
Max. input speed			n_{1Max}	rpm	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
Mean no load running torque (with n_1 = 3000 rpm and 20 °C gearhead temperature) [d)]			T_{012}	Nm	6.0	4.6	3.6	3.4	4.4	3.5	3.3	0.9	1.0	0.7	0.6	0.6	0.3	0.3	0.2	0.2
				in.lb	53.1	40.7	31.9	30.1	38.9	31.0	29.2	8.0	8.9	6.2	5.3	5.3	2.7	2.7	1.8	1.8
Max. torsional backlash			j_t	arcmin	≤ 1,3															
Torsional rigidity			C_{t21}	Nm/ arcmin	634	642	654	675	654	648	687	634	682	662	667	685	685	689	687	658
				in.lb/ arcmin	5614	5681	5789	5976	5789	5739	6083	5614	6037	5855	5902	6062	6062	6101	6083	5822
Tilting rigidity			C_{2K}	Nm/ arcmin	1452															
				in.lb/ arcmin	12850															
Max. axial force [e)]			F_{2AMax}	N	10050															
				lb_f	2261															
Max. tilting moment			M_{2KMax}	Nm	3280															
				in.lb	29028															
Efficiency at full load			η	%	92							90								
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000															
Weight incl. standardadapter plate			m	kg	-															
				lb_m																
Operating noise (with n_1 = 3000 rpm no load)			L_{PA}	dB(A)	≤ 70															
Max. permitted housing temperature				°C	+90															
				F	+194															
Ambient temperature				°C	0 to +40															
				F	32 to 104															
Lubrication					Lubricated for life															
Paint					Blue RAL 5002															
Direction of rotation					Motor and gearhead opposite directions															
Protection class					IP 65															
Moment of inertia (relates to the drive) Clamping hub diameter [mm]	E	19	J_1	kgcm²	-	-	-	-	-	-	-	0.89	1.06	0.76	0.76	0.76	0.69	0.68	0.68	0.68
				10^{-3} in.lb.s²	-	-	-	-	-	-	-	0.79	0.94	0.68	0.67	0.67	0.61	0.61	0.60	0.60
	G	24	J_1	kgcm²	-	-	-	-	-	-	-	2.46	2.63	2.33	2.32	2.32	2.26	2.25	2.25	2.25
				10^{-3} in.lb.s²	-	-	-	-	-	-	-	2.17	2.33	2.06	2.06	2.05	2.00	1.99	1.99	1.99
	H	28	J_1	kgcm²	5.48	4.27	3.64	3.58	3.14	2.87	2.84	-	-	-	-	-	-	-	-	-
				10^{-3} in.lb.s²	4.85	3.78	3.22	3.17	2.78	2.54	2.51	-	-	-	-	-	-	-	-	-
	K	38	J_1	kgcm²	12.72	11.52	10.89	10.83	10.39	10.12	10.09	-	-	-	-	-	-	-	-	-
				10^{-3} in.lb.s²	11.26	10.19	9.64	9.58	9.19	8.95	8.93	-	-	-	-	-	-	-	-	-

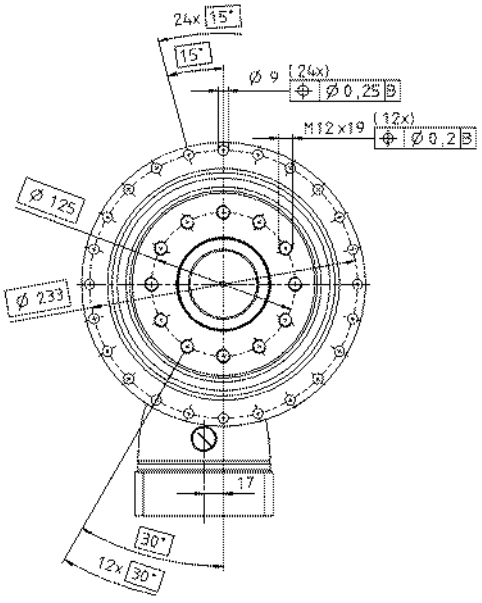
Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

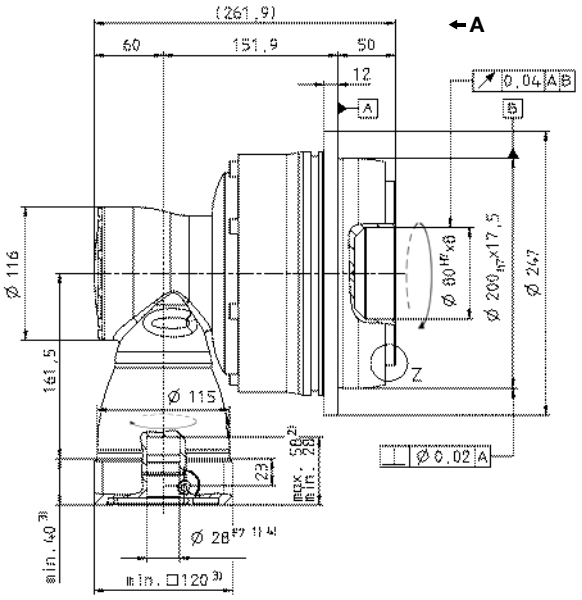
[a)] Other ratios available on request
[b)] Higher speeds are possible if the nominal torque is reduced
[c)] For higher ambient temperatures, please reduce input speed
[d)] Idling torques decrease during operation
[e)] Refers to center of the output shaft or flange

All technical data for front output side applies.
Technical data for rearward output versions, see page 422.

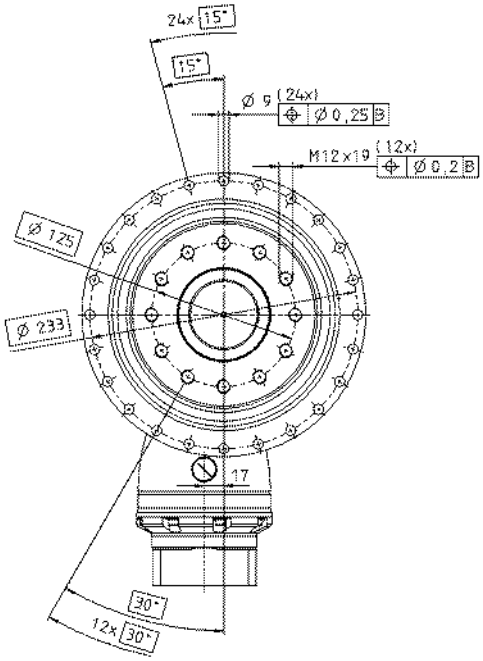
View A

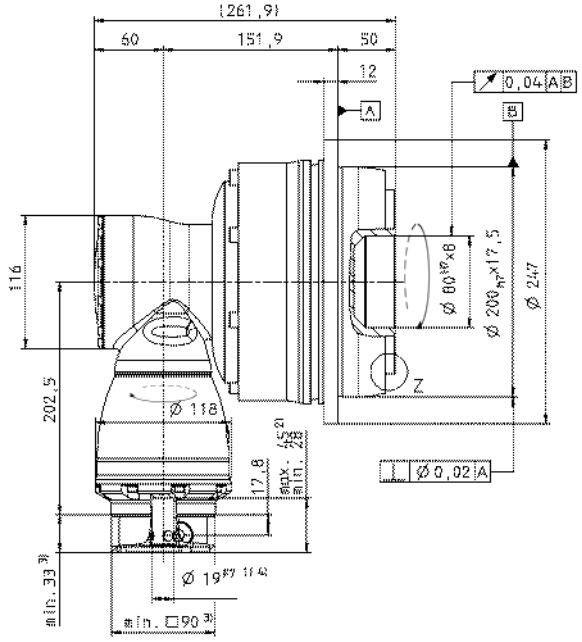
3-stage:

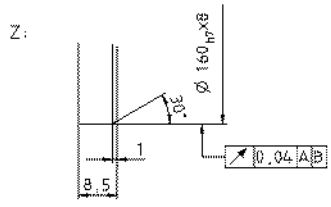




4-stage:







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

Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

TPK+ 300 MA HIGH TORQUE 3/4-stage

					3-stage							4-stage								
Ratio [a]			*i*		**66**	**88**	**110**	**137.5**	**154**	**220**	**385**	**330**	**462**	**577.5**	**770**	**1078**	**1540**	**2695**	**3850**	**5500**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	5500	5500	5500	5500	5500	4600	5500	5500	5500	5500	5500	5500	5500	5500	5500	3900
				in.lb	48675	48675	48675	48675	48675	40710	48675	48675	48675	48675	48675	48675	48675	48675	48675	34515
Nominal output torque (with n_{1N})			T_{2N}	Nm	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500
				in.lb	30975	30975	30975	30975	30975	30975	30975	30975	30975	30975	30975	30975	30975	30975	30975	30975
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	8800	11000	11000	11000	9900	8800	13250	8800	13250	11000	13250	13250	13250	13250	13250	13250
				in.lb	77880	97350	97350	97350	87615	77880	117263	77880	117263	97350	117263	117263	117263	117263	117263	117263
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b), c)]			n_{1N}	rpm	1800	1900	2100	2100	1900	1900	1900	2800	2800	2800	2800	2800	2800	3100	3800	3800
Max. continuous speed (with 20 % T_{2N} and 20 °C ambient temperature)			n_{1Ncym}	rpm	2300	2600	2900	2900	2600	2600	2600	3800	3800	3800	3800	3800	3800	4000	4000	4000
Max. input speed			n_{1Max}	rpm	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
Mean no load running torque (with n_1 = 3000 rpm and 20 °C gearhead temperature) [d)]			T_{012}	Nm	11.0	8.2	6.9	6.5	9.2	6.7	6.4	1.5	2.2	1.0	0.9	0.8	0.6	0.4	0.4	0.4
				in.lb	97.4	72.6	61.1	57.5	81.4	59.3	56.6	13.3	19.5	8.9	8.0	7.1	5.3	3.5	3.5	3.5
Max. torsional backlash			j_t	arcmin	Standard ≤3,3 / Reduced ≤1,8															
Torsional rigidity			C_{t21}	Nm/ arcmin	1099	1108	1114	960	1114	1111	979	1099	976	953	958	978	978	979	979	989
				in.lb/ arcmin	9727	9809	9856	8499	9856	9834	8662	9727	8634	8437	8476	8655	8655	8667	8662	8757
Tilting rigidity			C_{2K}	Nm/ arcmin	5560															
				in.lb/ arcmin	49210															
Max. axial force [e)]			F_{2AMax}	N	33000															
				lb_f	7425															
Max. tilting moment			M_{2KMax}	Nm	6500															
				in.lb	57525															
Efficiency at full load			η	%	92							90								
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000															
Weight incl. standardadapter plate			*m*	kg	83							87								
				lb_m	183							192								
Operating noise (with n_1 = 3000 rpm no load)			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															
Paint					Blue RAL 5002															
Direction of rotation					Motor and gearhead opposite directions															
Protection class					IP 65															
Moment of inertia (relates to the drive)	G	24	J_1	kgcm²	-	-	-	-	-	-	-	3.32	4.24	2.80	2.79	2.79	2.49	2.43	2.42	2.42
				10^{-3} in.lb.s²	-	-	-	-	-	-	-	2.94	3.75	2.48	2.47	2.47	2.20	2.15	2.14	2.14
Clamping hub diameter [mm]	K	38	J_1	kgcm²	26.04	19.71	16.71	16.58	14.26	12.89	12.83	10.23	11.15	9.71	9.70	9.70	9.40	9.34	9.33	9.33
				10^{-3} in.lb.s²	23.05	17.44	14.78	14.67	12.62	11.41	11.36	9.06	9.87	8.59	8.59	8.58	8.32	8.27	8.26	8.26

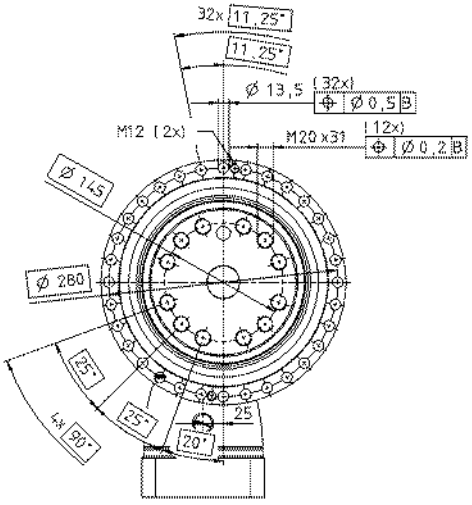
Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

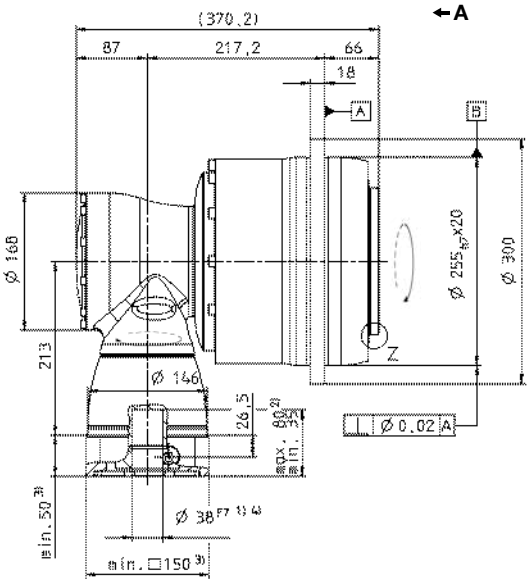
[a)] Other ratios available on request
[b)] Higher speeds are possible if the nominal torque is reduced
[c)] For higher ambient temperatures, please reduce input speed
[d)] Idling torques decrease during operation
[e)] Refers to center of the output shaft or flange

All technical data for front output side applies.
Technical data for rearward output versions, see page 422.

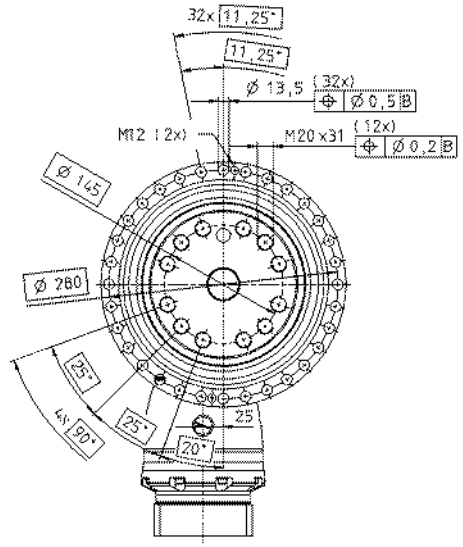
View A

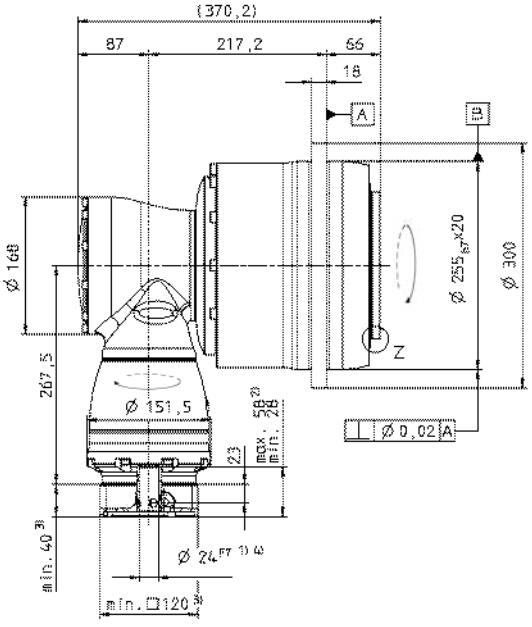
3-stage:

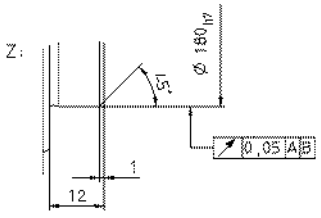




4-stage:







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

Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

TPK+ 500 MA HIGH TORQUE 3/4-stage

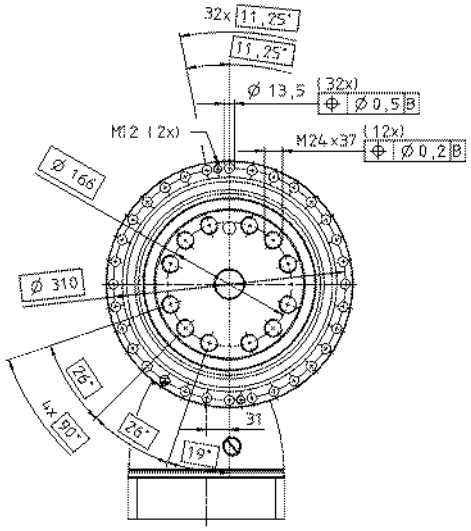
				3-stage							4-stage								
Ratio [a]			*i*	**66**	**88**	**110**	**137,5**	**154**	**220**	**385**	**330**	**462**	**577,5**	**770**	**1078**	**1540**	**2695**	**3850**	**5500**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	7200
			T_{2B} in.lb	88500	88500	88500	88500	88500	88500	88500	88500	88500	88500	88500	88500	88500	88500	88500	63720
Nominal output torque (with n_{1N})			T_{2N} Nm	5400	5400	5400	5400	5400	5400	5400	5400	5400	5400	5400	5400	5400	5400	5400	5400
			T_{2N} in.lb	47790	47790	47790	47790	47790	47790	47790	47790	47790	47790	47790	47790	47790	47790	47790	47790
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not} Nm	19800	23000	23000	25000	21300	19800	25000	19800	25000	25000	25000	25000	25000	25000	25000	25000
			T_{2Not} in.lb	175230	203550	203550	221250	188505	175230	221250	175230	221250	221250	221250	221250	221250	221250	221250	221250
Nominal input speed (with T_{2N} and 20 °C ambient temperature) [b), c)]			n_{1N} rpm	1500	1700	1900	1900	1700	1700	1700	2600	2600	2600	2600	2600	2600	3100	3300	3300
Max. continuous speed (with 20 % T_{2N} and 20 °C ambient temperature)			n_{1Ncym} rpm	1800	2200	2600	2600	2300	2300	3100	3300	3300	3300	3300	3300	3300	3600	3600	3600
Max. input speed			n_{1Max} rpm	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
Mean no load running torque (with n_1 = 3000 rpm and 20 °C gearhead temperature) [d)]			T_{012} Nm	20.5	16.5	13.6	12.8	17.6	14.3	13.7	3.0	4.0	2.0	1.8	1.7	1.2	1.1	1.0	1.0
			T_{012} in.lb	181.4	146.0	120.4	113.3	155.8	126.6	121.2	26.6	35.4	17.7	15.9	15.0	10.6	9.7	8.9	8.9
Max. torsional backlash			j_t arcmin	Standard ≤3,3 / Reduced ≤1,8															
Torsional rigidity			C_{t21} Nm/ arcmin	1879	1890	1901	1747	1899	1898	1772	1879	1766	1735	1742	1770	1770	1772	1772	1786
			C_{t21} in.lb/ arcmin	16626	16727	16820	15464	16809	16799	15683	16626	15633	15359	15413	15662	15662	15686	15683	15808
Tilting rigidity			C_{2K} Nm/ arcmin	9480															
			C_{2K} in.lb/ arcmin	83906															
Max. axial force [e)]			F_{2AMax} N	50000															
			F_{2AMax} lb_f	11250															
Max. tilting moment			M_{2KMax} Nm	9500															
			M_{2KMax} in.lb	84075															
Efficiency at full load			η %	92							90								
Service life (For calculation, see the Chapter "Information")			L_h h	> 20000															
Weight incl. standardadapter plate			*m* kg	120							124								
			m lb_m	265							274								
Operating noise (with n_1 = 3000 rpm no load)			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															
Paint				Blue RAL 5002															
Direction of rotation				Motor and gearhead opposite directions															
Protection class				IP 65															
Moment of inertia (relates to the drive) Clamping hub diameter [mm]	K	38	J_1 kgcm²	-	-	-	-	-	-	-	12.43	15.36	10.93	10.92	10.91	10.13	9.95	9.91	9.91
			J_1 10^{-3} in.lb.s²	-	-	-	-	-	-	-	11.00	13.59	9.67	9.66	9.66	8.96	8.81	8.77	8.77
	M	48	J_1 kgcm²	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
			J_1 10^{-3} in.lb.s²	66.85	46.76	38.01	37.76	30.41	26.43	26.31	24.02	26.61	22.69	22.68	22.68	21.98	21.83	21.79	21.79

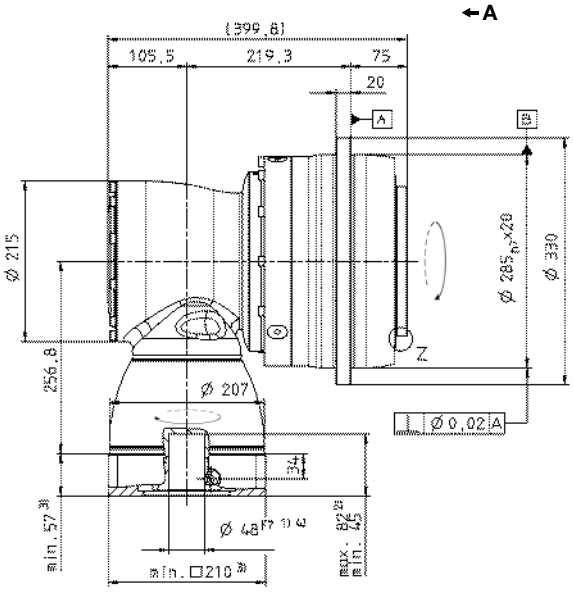
Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

[a)] Other ratios available on request
[b)] Higher speeds are possible if the nominal torque is reduced
[c)] For higher ambient temperatures, please reduce input speed
[d)] Idling torques decrease during operation
[e)] Refers to center of the output shaft or flange

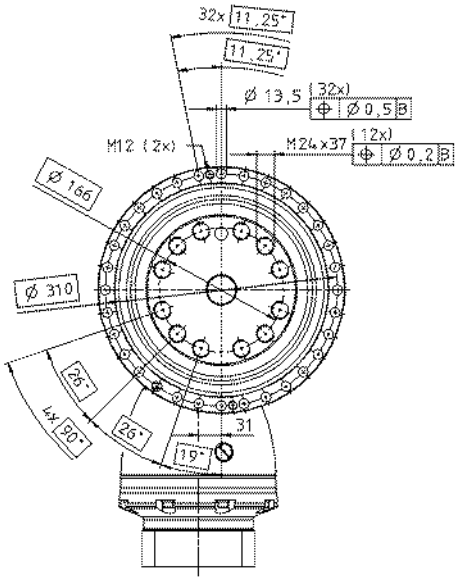
All technical data for front output side applies.
Technical data for rearward output versions, see page 422.

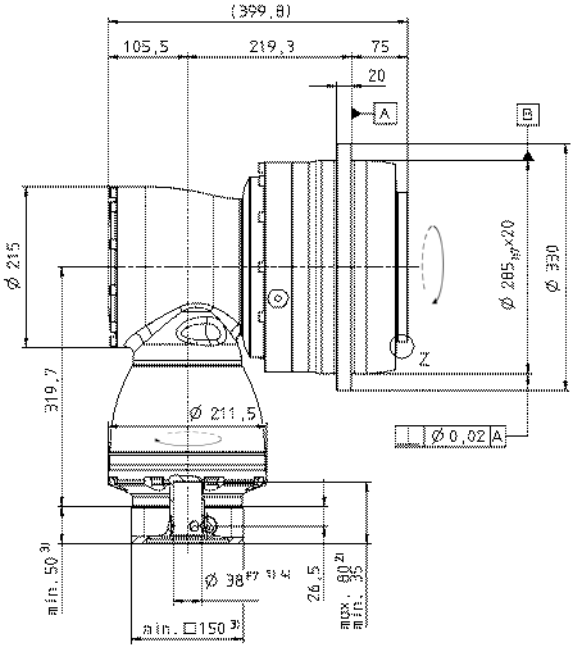
3-stage:

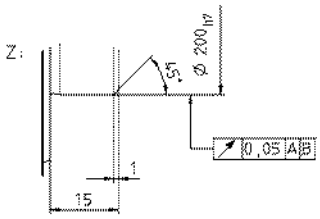




4-stage:







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

Non-tolerated dimensions ±1 mm

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

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

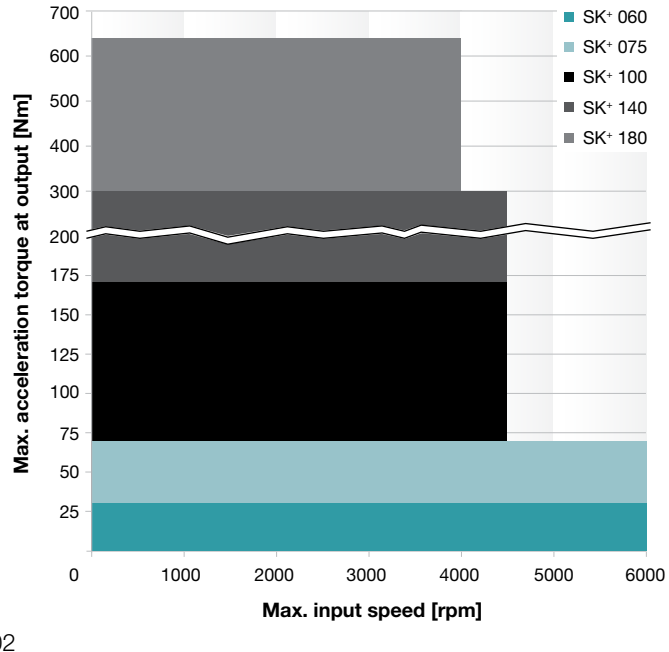
Motor mounting according to operating manual

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

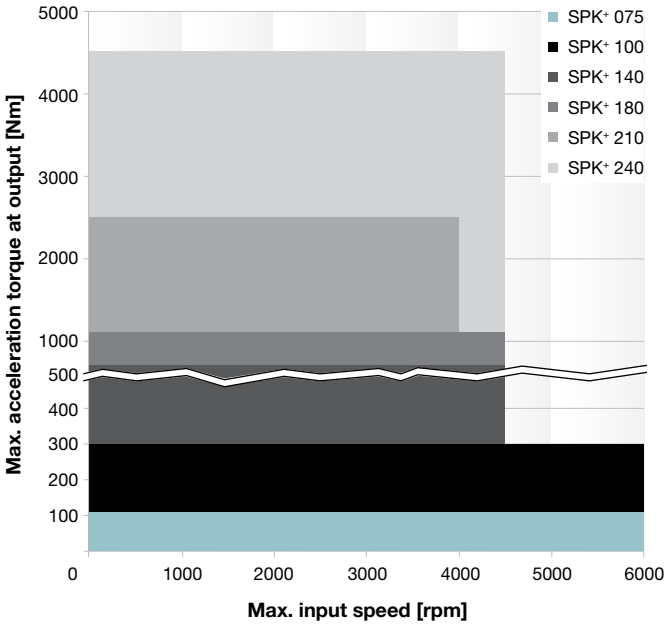
The representatives of our versatile hypoid gearhead with SP+ compatible output shaft. SPK+ gearheads with planetary stage are especially suitable for high-precision applications requiring higher power and torsional rigidity.

Quick size selection

SK+ MF (example for i = 5)
For applications in cyclic operation (DC ≤ 60%)
or continuous operation (DC ≥ 60%)



SPK+ MF (example for i = 25)
For applications in cyclic operation (DC ≤ 60%)
or continuous operation (DC ≥ 60%)



Versions and Applications

Features	SK+ MF version page 204	SPK+ MF version page 214
Power density	••	••
Positioning accuracy (e.g clamped drives)	••	•••
Highly dynamic applications	••	••
Torsional rigidity	••	••

Product features

Ratios [c]		3 – 100	12 – 10000
Torsional backlash [arcmin] [c]	Standard	≤ 4	≤ 4
	Reduced	–	≤ 2
Output type			
Smooth output shaft		•	•
Smooth output shaft, rear side		•	•
Keywayed output shaft		•	•
Keywayed output shaft, rear side		•	•
Output shaft with involute gearing		•	•
Hollow shaft interface, rear side Connected via shrink disc		•	•
Mounted shaft Connected via shrink disc			•
Closed cover, rear side		•	•
Input type			
Motor mounted version		•	•
Type			
ATEX [a]		•	
Food-grade lubrication [a] [b]		•	•
Corrosion resistant [a] [b]		•	•
Accessories			
Coupling		•	•
Rack		•	•
Pinion		•	•
Shrink disc		•	•
torqXis sensor flange		•	•
Intermediate plate for cooling connection		•	•

[a] Power reduction: technical data available upon request [b] Please contact WITTENSTEIN alpha [c] In relation to reference sizes

SK+ 060 MF 1/2-stage

					1-stage					2-stage									
Ratio [a]			*i*		**3**	**4**	**5**	**7**	**10**	**12**	**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
Max. acceleration torque (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 output torque (with n_{1N})			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 (permitted 1000 times during the service life of the gearhead)			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
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b), c)]			n_{1N}	rpm	2500	2700	3000	3000	3000	4400	4400	4400	4400	4400	4400	4400	4800	5500	5500
Max. continuous speed (with 20% T_{2N} and 20°C ambient temperature)			n_{1Ncym}	rpm	3000	3500	4000	3500	3500	5000	5000	5000	5000	5000	5000	5000	5000	5500	5500
Max. input speed			n_{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque (with n_1 = 3000 rpm and 20°C gearhead temperature) [d)]			T_{012}	Nm	1.2	1.1	1.0	1.2	1.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1
				in.lb	10.6	9.7	8.9	10.6	9.7	1.8	1.8	1.8	1.8	1.8	1.8	0.9	0.9	0.9	0.9
Max. torsional backlash			j_t	arcmin	≤ 5														
Torsional rigidity			C_{t21}	Nm/ arcmin	2.0	2.1	2.2	2.0	1.8	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.0	1.8
				in.lb/ arcmin	18	19	19	18	16	19	19	19	19	19	19	19	19	18	16
Max. axial force [e)]			F_{2AMax}	N	2400														
				lb_f	540														
Max. radial force [e)]			F_{2RMax}	N	2700														
				lb_f	608														
Max. tilting moment			M_{2KMax}	Nm	251														
				in.lb	2220														
Efficiency at full load			η	%	96					94									
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000														
Weight incl. standard adapter plate			*m*	kg	2.9					3.2									
				lb_m	6.4					7.1									
Operating noise (with n_1 = 3000 rpm no load)			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														
Paint					Blue RAL 5002														
Direction of rotation					Motor and gearhead opposite directions														
Protection class					IP 65														
Moment of inertia (relates to the drive) Clamping hub diameter [mm]	B	11	J_1	kgcm²	–	–	–	–	–	0.09	0.09	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.06
				10^{-3} in.lb.s²						0.08	0.08	0.07	0.06	0.06	0.06	0.05	0.05	0.05	0.05
	C	14	J_1	kgcm²	0.52	0.44	0.40	0.36	0.34	0.20	0.20	0.19	0.19	0.18	0.18	0.17	0.17	0.17	0.17
				10^{-3} in.lb.s²	0.46	0.39	0.35	0.32	0.30	0.18	0.18	0.17	0.16	0.16	0.16	0.15	0.15	0.15	0.15
	E	19	J_1	kgcm²	0.87	0.79	0.75	0.71	0.70	–	–	–	–	–	–	–	–	–	–
				10^{-3} in.lb.s²	0.77	0.70	0.66	0.63	0.62										

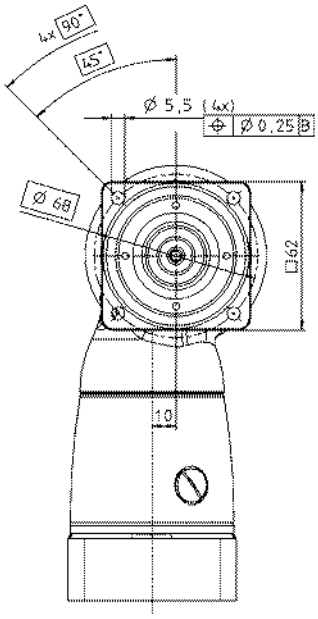
Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

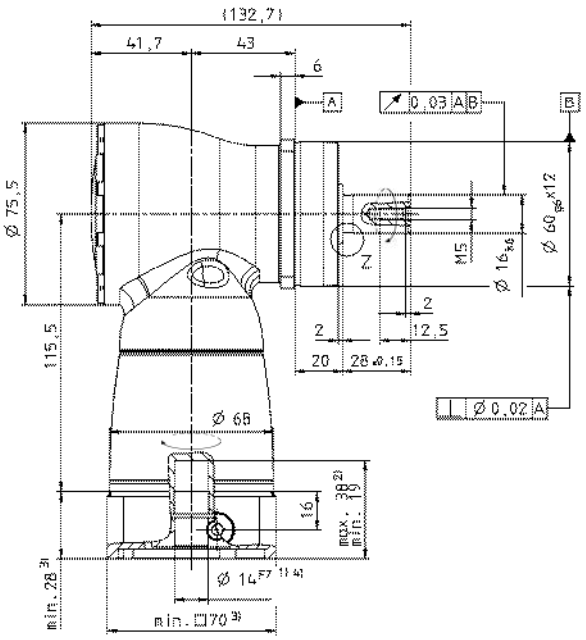
[a)] Other ratios available on request
[b)] Higher speeds are possible if the nominal torque is reduced
[c)] For higher ambient temperatures, please reduce input speed
[d)] Idling torques decrease during operation
[e)] Refers to center of the output shaft or flange

All technical data for front output side applies.
Technical data for rearward output versions, see page 422.

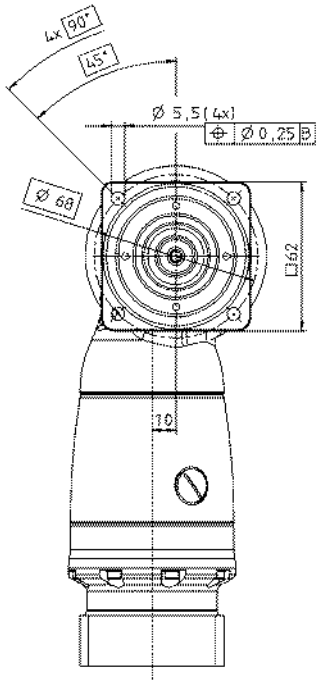
View A

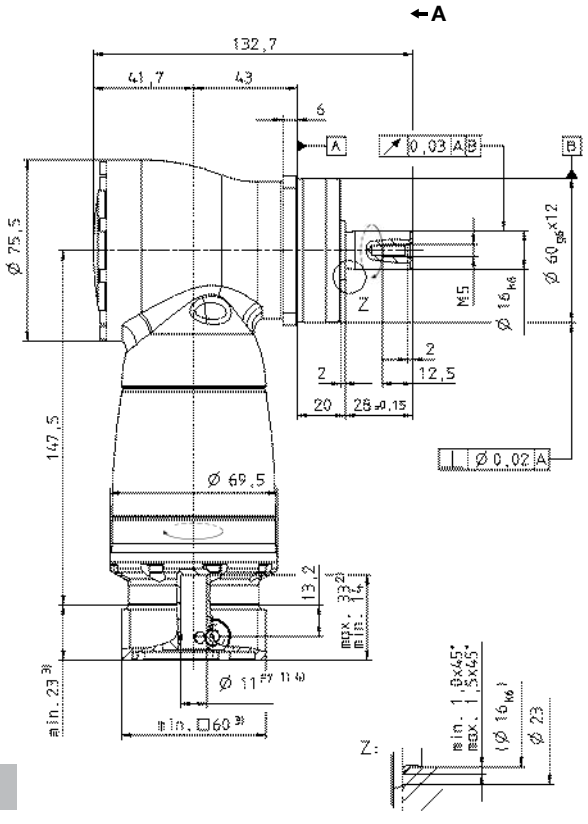
1-stage:





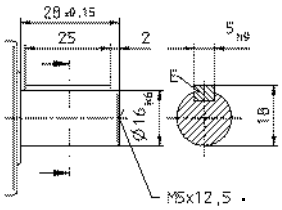
2-stage:



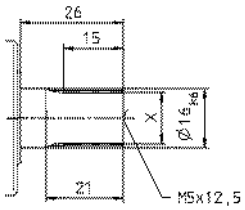


Alternatives: Output shaft variants

Keywayed output shaft in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480
X = W 16 x 0,8 x 30 x 18 x 6m, DIN 5480



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

Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

SK+ 075 MF 1/2-stage

					1-stage					2-stage									
Ratio [a]			*i*		**3**	**4**	**5**	**7**	**10**	**12**	**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
Max. acceleration torque (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	531	443
Nominal output torque (with n_{1N})			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	398	354
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			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	974	885
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b), c)]			n_{1N}	rpm	2300	2500	2800	2800	2800	3500	3500	3500	3500	3500	3500	3500	3800	4500	4500
Max. continuous speed (with 20% T_{2N} and 20°C ambient temperature)			n_{1Ncym}	rpm	3000	3500	4000	3500	3500	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	6000	6000	6000	6000
Mean no load running torque (with n_1 = 3000 rpm and 20°C gearhead temperature) [d)]			T_{012}	Nm	2.0	1.7	1.5	2.0	1.8	0.3	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1
				in.lb	18	15	13	18	16	2.7	2.7	1.8	1.8	1.8	1.8	0.9	0.9	0.9	0.9
Max. torsional backlash			j_t	arcmin	≤ 4														
Torsional rigidity			C_{t21}	Nm/ arcmin	5.0	5.5	6.0	6.0	6.0	5.5	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0	6.0
				in.lb/ arcmin	44	49	53	53	53	49	49	49	49	49	49	49	53	53	53
Max. axial force [e)]			F_{2AMax}	N	3400														
				lb_f	765														
Max. radial force [e)]			F_{2RMax}	N	4000														
				lb_f	900														
Max. tilting moment			M_{2KMax}	Nm	437														
				in.lb	3867														
Efficiency at full load			η	%	96					94									
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000														
Weight incl. standard adapter plate			*m*	kg	4.8					5.4									
				lb_m	10.6					11.9									
Operating noise (with n_1 = 3000 rpm no load)			L_{PA}	dB(A)	≤ 66														
Max. permitted housing temperature				°C	+90														
				F	194														
Ambient temperature				°C	0 to +40														
				F	32 to 104														
Lubrication					Lubricated for life														
Paint					Blue RAL 5002														
Direction of rotation					Motor and gearhead opposite directions														
Protection class					IP 65														
Moment of inertia (relates to the drive) Clamping hub diameter [mm]	C	14	J_1	kgcm²	–	–	–	–	–	0.28	0.27	0.23	0.23	0.20	0.20	0.18	0.18	0.18	0.18
				10^{-3} in.lb.s²						0.25	0.24	0.21	0.20	0.18	0.18	0.16	0.16	0.16	0.16
	E	19	J_1	kgcm²	1.46	1.19	1.06	0.95	0.90	0.73	0.71	0.68	0.67	0.63	0.62	0.63	0.63	0.63	0.63
				10^{-3} in.lb.s²	1.29	1.05	0.94	0.84	0.79	0.64	0.63	0.60	0.59	0.55	0.55	0.56	0.55	0.55	0.55
	H	28	J_1	kgcm²	2.88	2.61	2.47	2.37	2.31	–	–	–	–	–	–	–	–	–	–
				10^{-3} in.lb.s²	2.55	2.31	2.19	2.10	2.04										

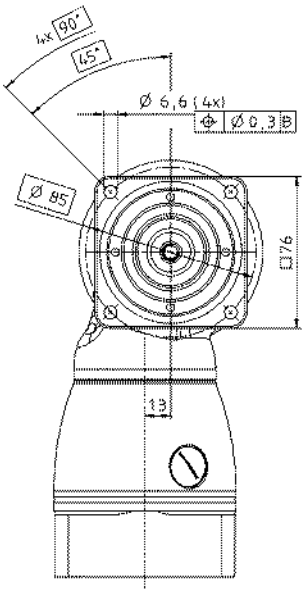
Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

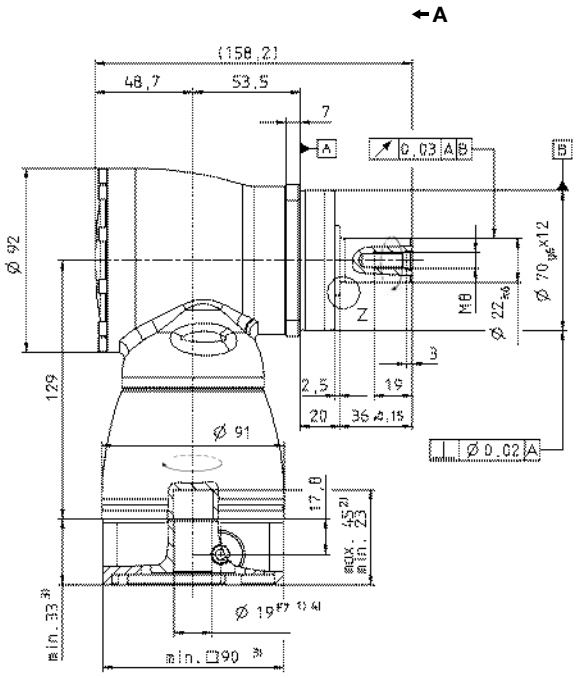
[a)] Other ratios available on request
[b)] Higher speeds are possible if the nominal torque is reduced
[c)] For higher ambient temperatures, please reduce input speed
[d)] Idling torques decrease during operation
[e)] Refers to center of the output shaft or flange

All technical data for front output side applies.
Technical data for rearward output versions, see page 422.

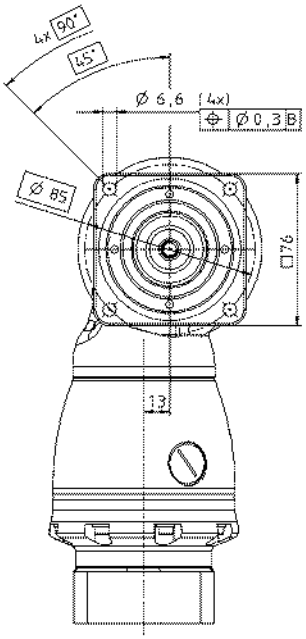
View A

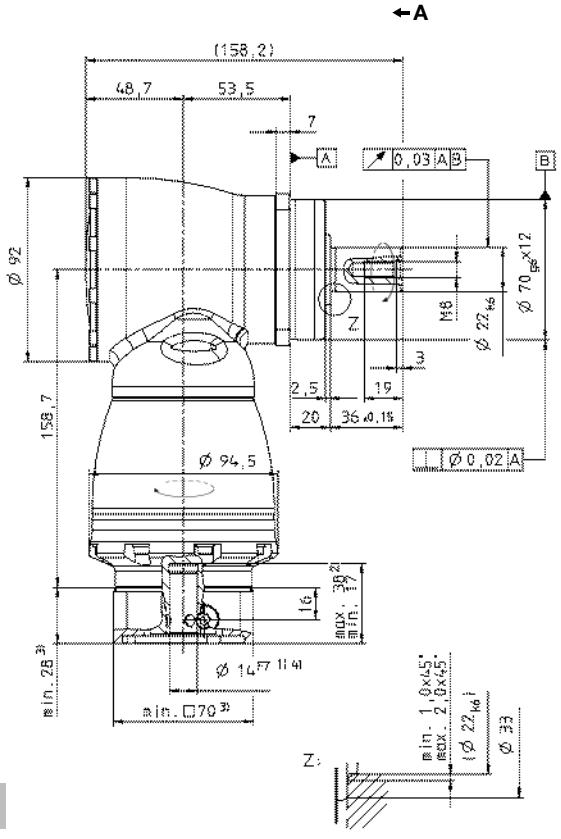
1-stage:





2-stage:

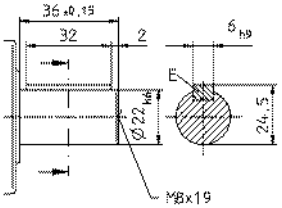




Alternatives: Output shaft variants

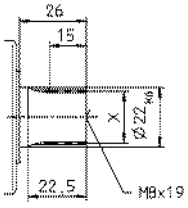
Keywayed output shaft in mm

E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm

X = W 22 x 1.25 x 30 x 16 x 6m



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

Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

SK+ 100 MF 1/2-stage

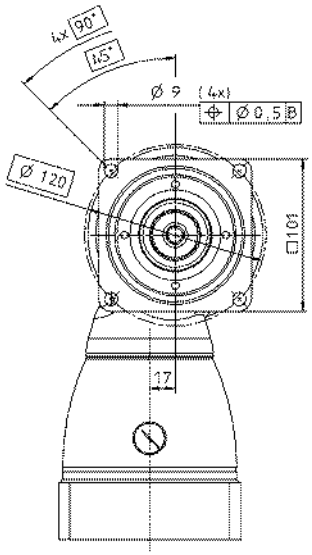
					1-stage					2-stage									
Ratio [a]			*i*		**3**	**4**	**5**	**7**	**10**	**12**	**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	170	170	170	145	125	170	170	170	170	170	170	170	170	145	125
				in.lb	1505	1505	1505	1283	1106	1505	1505	1505	1505	1505	1505	1505	1505	1283	1106
Nominal output torque (with n_{1N})			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	797	708
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			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	2257	2213
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b), c)]			n_{1N}	rpm	2200	2400	2700	2500	2500	3100	3100	3100	3100	3100	3100	3100	3500	4200	4200
Max. continuous speed (with 20% T_{2N} and 20°C ambient temperature)			n_{1Ncym}	rpm	3000	3400	3800	3400	3400	4000	4000	4000	4000	4000	4000	4000	4000	4200	4200
Max. input speed			n_{1Max}	rpm	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
Mean no load running torque (with n_1 = 3000 rpm and 20°C gearhead temperature) [d)]			T_{012}	Nm	3.8	3.0	2.3	3.5	2.8	0.6	0.6	0.5	0.4	0.4	0.3	0.2	0.2	0.2	0.2
				in.lb	34	27	20	31	25	5.3	5.3	4.4	3.5	3.5	2.7	1.8	1.8	1.8	1.8
Max. torsional backlash			j_t	arcmin	≤ 4														
Torsional rigidity			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 [e)]			F_{2AMax}	N	5700														
				lb_f	1283														
Max. radial force [e)]			F_{2RMax}	N	6300														
				lb_f	1418														
Max. tilting moment			M_{2KMax}	Nm	833														
				in.lb	7370														
Efficiency at full load			η	%	96					94									
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000														
Weight incl. standardadapter plate			*m*	kg	9.3					10.0									
				lb_m	21					22									
Operating noise (with n_1 = 3000 rpm no load)			L_{PA}	dB(A)	≤ 66														
Max. permitted housing temperature				°C	+90														
				F	194														
Ambient temperature				°C	0 to +40														
				F	32 to 104														
Lubrication					Lubricated for life														
Paint					Blue RAL 5002														
Direction of rotation					Motor and gearhead opposite directions														
Protection class					IP 65														
Moment of inertia (relates to the drive) Clamping hub diameter [mm]	E	19	J_1	kgcm²	–	–	–	–	–	1.02	0.97	0.86	0.84	0.75	0.74	0.69	0.69	0.68	0.68
				10^{-3} in.lb.s²						0.91	0.86	0.76	0.74	0.66	0.66	0.61	0.61	0.60	0.60
	G	24	J_1	kgcm²	–	–	–	–	–	2.59	2.54	2.42	2.40	2.31	2.30	2.26	2.25	2.25	2.25
				10^{-3} in.lb.s²						2.29	2.25	2.14	2.13	2.05	2.04	2.00	1.99	1.99	1.99
	H	28	J_1	kgcm²	4.64	3.80	3.34	2.98	2.79	–	–	–	–	–	–	–	–	–	–
				10^{-3} in.lb.s²	4.10	3.36	2.95	2.64	2.47										
	K	38	J_1	kgcm²	11.9	11.0	10.6	10.2	10.0	–	–	–	–	–	–	–	–	–	–
				10^{-3} in.lb.s²	10.5	9.77	9.37	9.05	8.89										

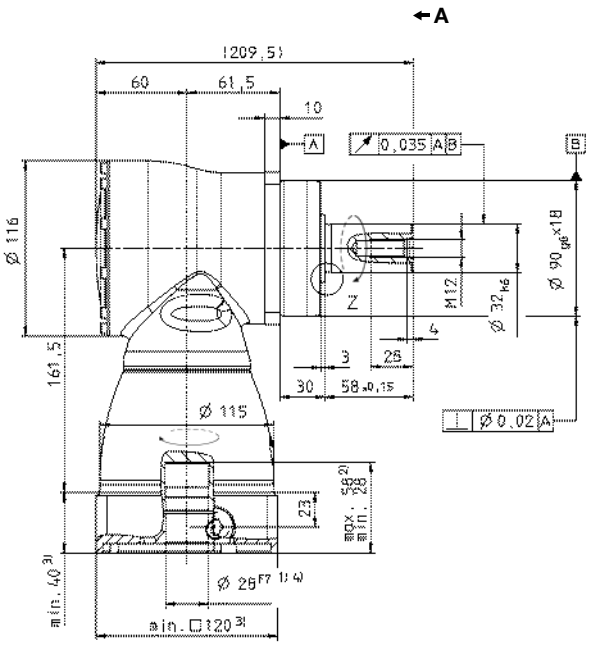
Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

[a)] Other ratios available on request
[b)] Higher speeds are possible if the nominal torque is reduced
[c)] For higher ambient temperatures, please reduce input speed
[d)] Idling torques decrease during operation
[e)] Refers to center of the output shaft or flange

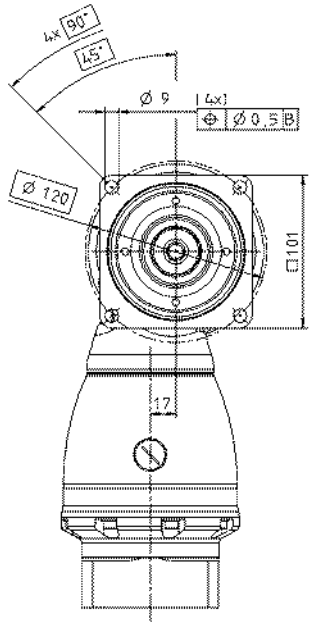
All technical data for front output side applies.
Technical data for rearward output versions, see page 422.

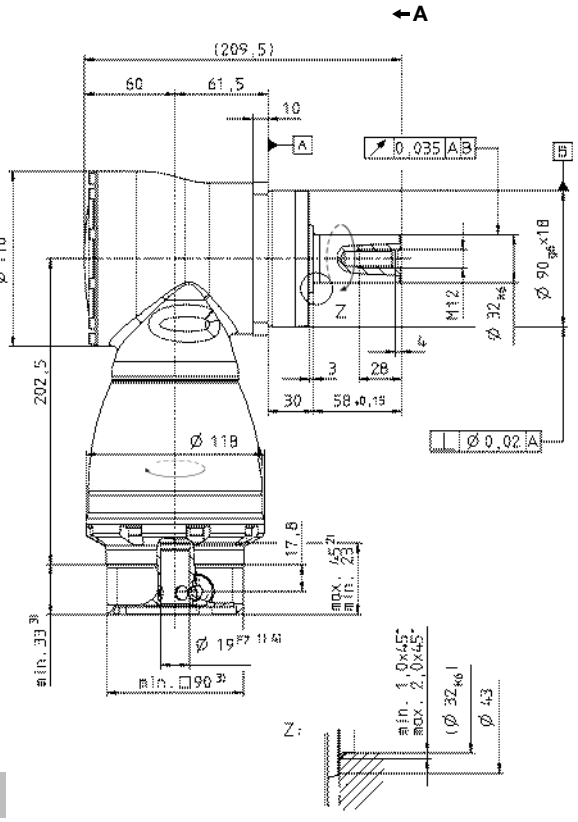
1-stage:





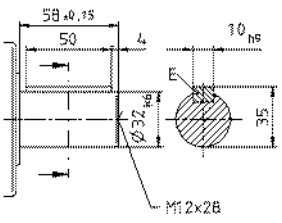
2-stage:



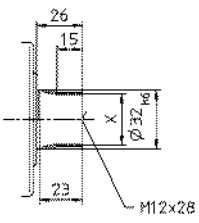


Alternatives: Output shaft variants

Keywayed output shaft in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480
X = W 32 x 1.25 x 30 x 24 x 6m



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

Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

SK+ 140 MF 1/2-stage

				1-stage					2-stage									
Ratio [a]			*i*	**3**	**4**	**5**	**7**	**10**	**12**	**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
Max. acceleration torque (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 output torque (with n_{1N})			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	1419
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			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
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b), c)]			n_{1N} rpm	1900	2000	2200	2000	2000	2900	2900	2900	2900	2900	2900	2900	3200	3200	3900
Max. continuous speed (with 20% T_{2N} and 20°C ambient temperature)			n_{1Ncym} rpm	2500	2800	3100	2800	2800	4000	4000	4000	4000	4000	4000	4000	4200	4200	4200
Max. input speed			n_{1Max} rpm	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
Mean no load running torque (with n_1 = 3000 rpm and 20°C gearhead temperature) [d)]			T_{012} Nm	7.0	5.2	4.5	7.5	5.5	1.4	0.9	0.7	0.5	0.5	0.4	0.4	0.3	0.3	0.3
			in.lb	62	46	40	66	49	12.4	8	6.2	4.4	4.4	3.5	3.5	2.7	2.7	2.7
Max. torsional backlash			j_t arcmin	≤ 4														
Torsional rigidity			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 [e)]			F_{2AMax} N	9900														
			lb_f	2228														
Max. radial force [e)]			F_{2RMax} N	9500														
			lb_f	2138														
Max. tilting moment			M_{2KMax} Nm	1692														
			in.lb	14974														
Efficiency at full load			η %	96					94									
Service life (For calculation, see the Chapter "Information")			L_h h	> 20000														
Weight incl. standardadapter plate			*m* kg	22.6					25.0									
			lb_m	50					55									
Operating noise (with n_1 = 3000 rpm without load)			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														
Paint				Blue RAL 5002														
Direction of rotation				Motor and gearhead opposite directions														
Protection class				IP 65														
Moment of inertia (relates to the drive) Clamping hub diameter [mm]	G	24	J_1 kgcm²	–	–	–	–	–	4.21	3.85	3.28	3.17	2.78	2.73	2.48	2.46	2.43	2.42
			10^{-3} in.lb.s²						3.73	3.41	2.90	2.80	2.46	2.41	2.20	2.17	2.15	2.14
	K	38	J_1 kgcm²	25.0	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.s²	22.1	16.9	14.4	12.4	11.3	9.83	9.51	9.01	8.92	8.58	8.53	8.31	8.29	8.27	8.26

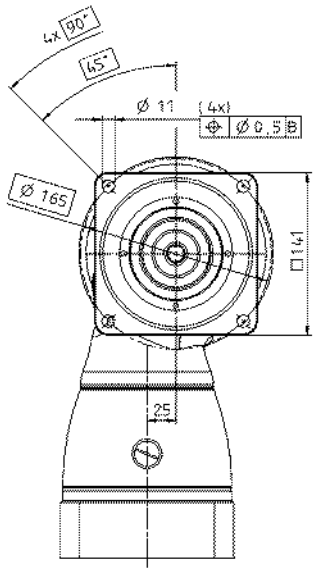
[a)] Other ratios available on request
[b)] Higher speeds are possible if the nominal torque is reduced
[c)] For higher ambient temperatures, please reduce input speed
[d)] Idling torques decrease during operation
[e)] Refers to center of the output shaft or flange

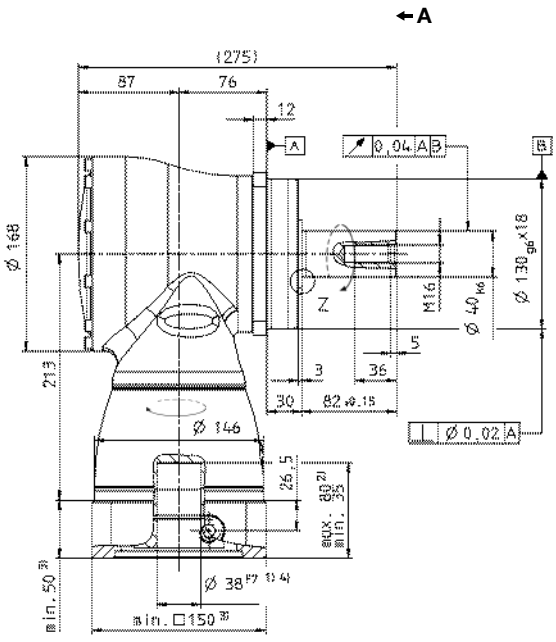
All technical data for front output side applies.
Technical data for rearward output versions, see page 422.

Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

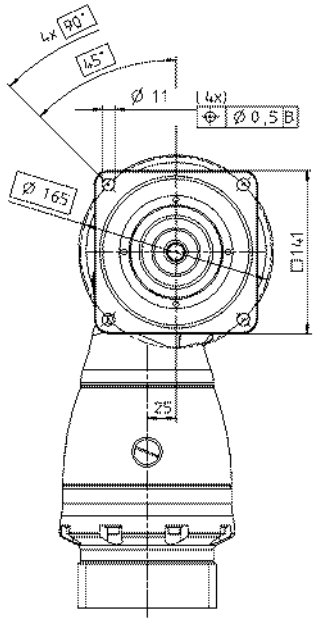
View A

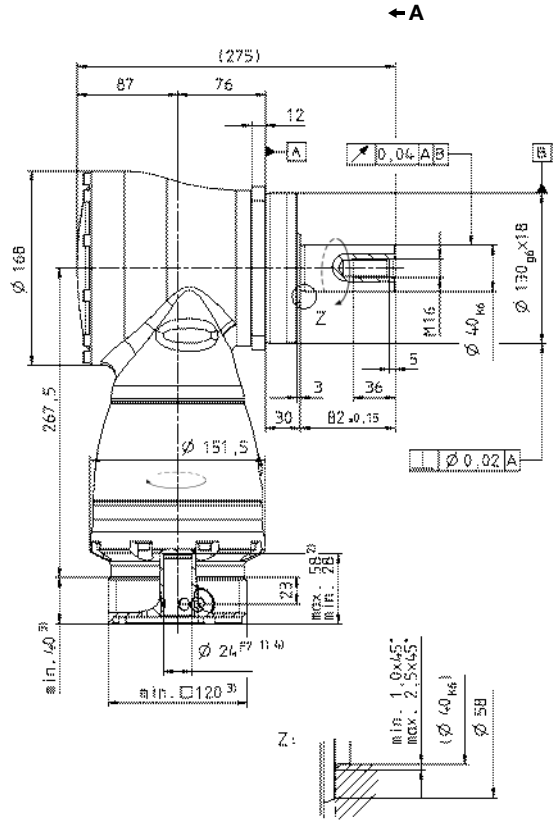
1-stage:





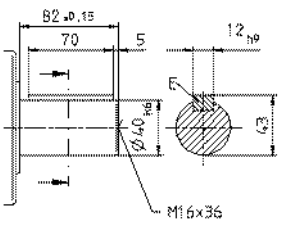
2-stage:



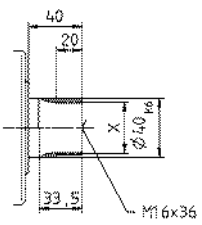


Alternatives: Output shaft variants

Keywayed output shaft in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480
X = W 40 x 2 x 30 x 18 x 6m



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

Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

SK+ 180 MF 1/2-stage

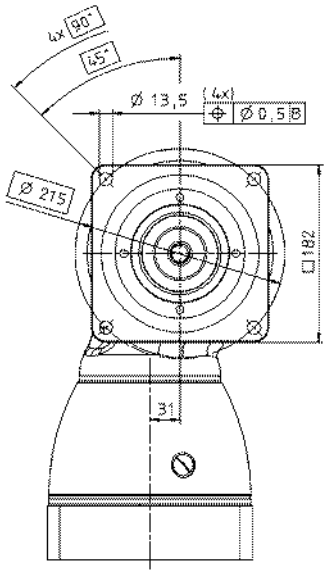
				1-stage					2-stage									
Ratio [a]			*i*	**3**	**4**	**5**	**7**	**10**	**12**	**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	640	640	640	550	470	640	640	640	640	640	640	640	640	550	470
			T_{2B} in.lb	5664	5664	5664	4868	4160	5664	5664	5664	5664	5664	5664	5664	5664	4868	4160
Nominal output torque (with n_{1N})			T_{2N} Nm	400	400	400	380	360	400	400	400	400	400	400	400	400	380	360
			T_{2N} in.lb	3540	3540	3540	3363	3186	3540	3540	3540	3540	3540	3540	3540	3540	3363	3186
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not} Nm	900	1050	1050	970	900	1050	1050	1050	1050	1050	1050	1050	1050	970	900
			T_{2Not} in.lb	7965	9293	9293	8585	7965	9293	9293	9293	9293	9293	9293	9293	9293	8585	7965
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b), c)]			n_{1N} rpm	1600	1800	2000	1800	1800	2700	2700	2700	2700	2700	2700	2700	2900	3200	3400
Max. continuous speed (with 20% T_{2N} and 20°C ambient temperature)			n_{1Ncym} rpm	2000	2400	2800	2500	2500	3500	3500	3500	3500	3500	3500	3500	3500	3800	3800
Max. input speed			n_{1Max} rpm	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
Mean no load running torque (with n_1 = 3000 rpm and 20°C gearhead temperature) [d)]			T_{012} Nm	14.5	12.0	10.0	15.0	12.5	3.0	2.3	1.8	1.6	1.3	1.2	0.9	0.9	0.9	0.9
			T_{012} in.lb	128	106	89	133	111	26.6	20.4	15.9	14.2	11.5	10.6	8.0	8.0	8.0	8.0
Max. torsional backlash			j_t arcmin	≤ 4														
Torsional rigidity			C_{t21} Nm/ arcmin	64	71	79	78	77	71	71	71	71	71	71	71	78	78	78
			C_{t21} in.lb/ arcmin	566	628	699	690	681	628	628	628	628	628	628	628	690	690	690
Max. axial force [e)]			F_{2AMax} N	14200														
			F_{2AMax} lb_f	3195														
Max. radial force [e)]			F_{2RMax} N	14700														
			F_{2RMax} lb_f	3308														
Max. tilting moment			M_{2KMax} Nm	3213														
			M_{2KMax} in.lb	28435														
Efficiency at full load			η %	96					94									
Service life (For calculation, see the Chapter "Information")			L_h h	> 20000														
Weight incl. standardadapter plate			*m* kg	45.4					48									
			m lb_m	100					106									
Operating noise (with n_1 = 3000 rpm no load)			L_{PA} dB(A)	≤ 68														
Max. permitted housing temperature			°C	+90														
			F	194														
Ambient temperature			°C	0 to +40														
			F	32 to 104														
Lubrication				Lubricated for life														
Paint				Blue RAL 5002														
Direction of rotation				Motor and gearhead opposite directions														
Protection class				IP 65														
Moment of inertia (relates to the drive) Clamping hub diameter [mm]	K	38	J_1 kgcm²	–	–	–	–	–	15.3	14.0	12.3	12.0	10.9	10.7	10.1	10.0	9.95	9.91
			J_1 10^{-3} in.lb.s²						13.6	12.3	10.9	10.6	9.65	9.48	8.96	8.88	8.81	8.77
	M	48	J_1 kgcm²	73.3	51.6	42.1	34.0	29.7	30.0	28.7	27.1	26.7	25.6	25.4	24.8	24.7	24.7	24.6
			J_1 10^{-3} in.lb.s²	64.9	45.6	37.3	30.1	26.3	26.6	25.4	23.9	23.6	22.7	22.5	22.0	21.9	21.8	21.8

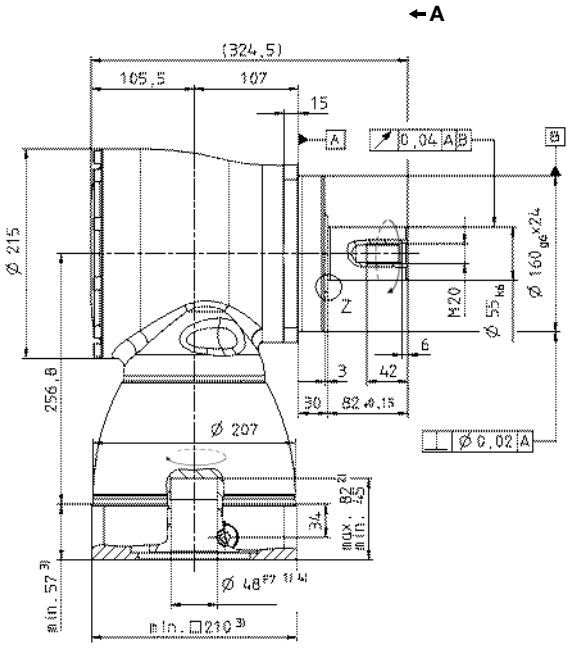
[a)] Other ratios available on request
[b)] Higher speeds are possible if the nominal torque is reduced
[c)] For higher ambient temperatures, please reduce input speed
[d)] Idling torques decrease during operation
[e)] Refers to center of the output shaft or flange

All technical data for front output side applies.
Technical data for rearward output versions, see page 422.

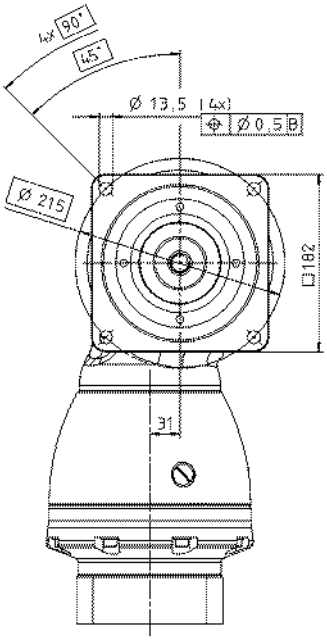
Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

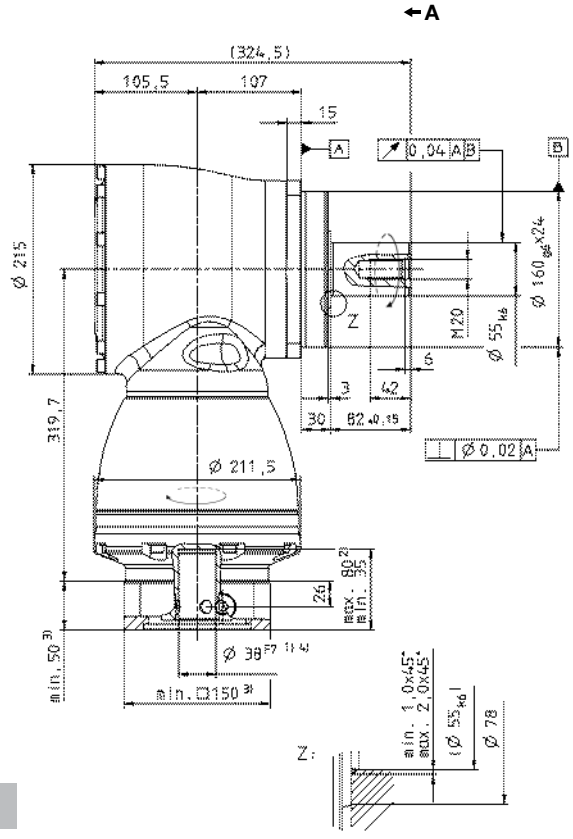
1-stage:





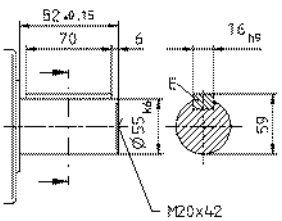
2-stage:



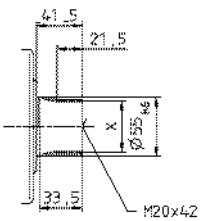


Alternatives: Output shaft variants

Keywayed output shaft in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480
X = W 55 x 2 x 30 x 26 x 6m



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

Non-tolerated dimensions ±1 mm

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

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

Motor mounting according to operating manual

				2-stage									
Ratio [a]			*i*	**12**	**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	110	110	110	110	110	110	80	100	110	90
			in.lb	974	974	974	974	974	974	974	885	974	797
Nominal output torque (with n_{1N})			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 (permitted 1000 times during the service life of the gearhead)			T_{2Not} Nm	160	160	200	200	250	175	120	150	210	200
			in.lb	1416	1416	1770	1770	2213	1549	1062	1328	1859	1770
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b), c)]			n_{1N} rpm	2000	2400	2400	2700	2400	2500	2500	2500	2500	2500
Max. continuous speed (with 20% T_{2N} and 20°C ambient temperature)			n_{1Ncym} rpm	3000	3400	3400	3800	3400	3200	3200	3200	3200	3200
Max. input speed			n_{1Max} rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque (with n_1 = 3000 rpm and 20°C gearhead temperature) [d)]			T_{012} Nm	1.5	1.3	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3
			in.lb	13.3	11.5	10.6	10.6	10.6	11.5	11.5	11.5	11.5	11.5
Max. torsional backlash			j_t arcmin	Standard ≤ 5 / Reduced ≤ 3									
Torsional rigidity			C_{t21} Nm/ arcmin	10									
			in.lb/ arcmin	89									
Max. axial force [e)]			F_{2AMax} N	3350									
			lb_f	753									
Max. radial force [e)]			F_{2RMax} N	4000									
			lb_f	900									
Max. tilting moment			M_{2KMax} Nm	236									
			in.lb	2089									
Efficiency at full load			η %	94									
Service life (For calculation, see the Chapter "Information")			L_h h	> 20000									
Weight incl. standard adapter plate			*m* kg	5.2									
			lb_m	11.5									
Operating noise (with n_1 = 3000 rpm no load)			L_{PA} dB(A)	≤ 66									
Max. permitted housing temperature			°C	+90									
			F	194									
Ambient temperature			°C	0 to +40									
			F	32 to 104									
Lubrication				Lubricated for life									
Paint				Blue RAL 5002									
Direction of rotation				Motor and gearhead opposite directions									
Protection class				IP 65									
Moment of inertia (relates to the drive) Clamping hub diameter [mm]	C	14	J_1 kgcm²	0.54	0.45	0.44	0.40	0.44	0.36	0.35	0.34	0.34	0.34
			10^{-3} in.lb.s²	0.48	0.40	0.39	0.35	0.39	0.32	0.31	0.30	0.30	0.30
	E	19	J_1 kgcm²	0.89	0.80	0.79	0.75	0.79	0.71	0.70	0.70	0.70	0.69
			10^{-3} in.lb.s²	0.79	0.71	0.70	0.66	0.70	0.63	0.62	0.62	0.62	0.61

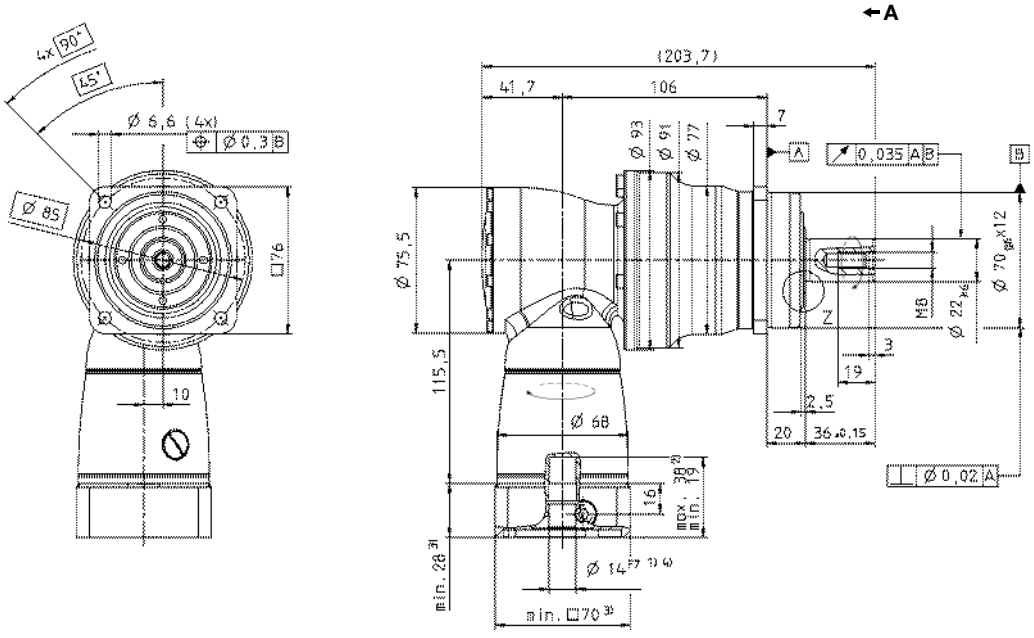
[a)] Other ratios up to i=1000 available on request
[b)] Higher speeds are possible if the nominal torque is reduced
[c)] For higher ambient temperatures, please reduce input speed
[d)] Idling torques decrease during operation
[e)] Refers to center of the output shaft or flange

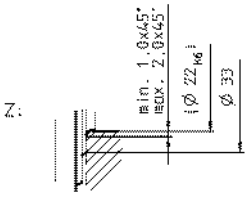
All technical data for front output side applies.
Technical data for rearward output versions, see page 422.

Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

View A

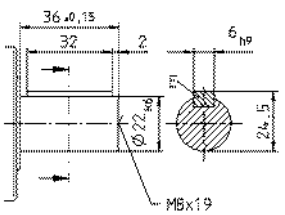
2-stage:



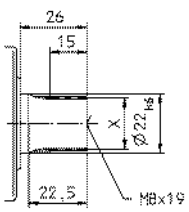


Alternatives: Output shaft variants

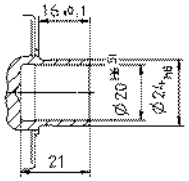
Keywayed output shaft in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 22 x 1.25 x 30 x 16 x 6m, DIN 5480



Shaft mounted
Mounted via shrink disc



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

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

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

Motor mounting according to operating manual

SPK+ 075 MF 3-stage

				3-stage													
Ratio [a]			*i*	**64**	**84**	**100**	**125**	**140**	**175**	**200**	**250**	**280**	**350**	**400**	**500**	**700**	**1000**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	110	110	110	110	110	110	110	110	110	110	80	100	110	90
			T_{2B} in.lb	974	974	974	974	974	974	974	974	974	974	708	885	974	797
Nominal output torque (with n_{1N})			T_{2N} Nm	75	75	75	75	75	75	75	75	75	75	60	75	75	52
			T_{2N} in.lb	664	664	664	664	664	664	664	664	664	664	531	664	664	460
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not} Nm	160	160	200	200	200	200	200	200	250	175	120	150	210	200
			T_{2Not} in.lb	1416	1416	1770	1770	1770	1770	1770	1770	2213	1549	1062	1328	1859	1770
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b), c)]			n_{1N} rpm	4400	4400	4400	4400	4400	4400	4400	4800	4400	4800	5500	5500	5500	5500
Max. continuous speed (with 20% T_{2N} and 20°C ambient temperature)			n_{1Ncym} rpm	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	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 (with n_1 = 3000 rpm and 20°C gearhead temperature) [d)]			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
			T_{012} 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. torsional backlash			j_t arcmin	Standard ≤ 5 / Reduced ≤ 3													
Torsional rigidity			C_{t21} Nm/ arcmin	10													
			C_{t21} in.lb/ arcmin	89													
Max. axial force [e)]			F_{2AMax} N	3350													
			F_{2AMax} lb_f	754													
Max. radial force [e)]			F_{2RMax} N	4000													
			F_{2RMax} lb_f	900													
Max. tilting moment			M_{2KMax} Nm	236													
			M_{2KMax} in.lb	2089													
Efficiency at full load			η %	92													
Service life (For calculation, see the Chapter "Information")			L_h h	> 20000													
Weight incl. standard adapter plate			*m* kg	5.5													
			m lb_m	12.2													
Operating noise (with n_1 = 3000 rpm no load)			L_{PA} dB(A)	≤ 66													
Max. permitted housing temperature			°C	+90													
			F	194													
Ambient temperature			°C	0 to +40													
			F	32 to 104													
Lubrication				Lubricated for life													
Paint				Blue RAL 5002													
Direction of rotation				Motor and gearhead opposite directions													
Protection class				IP 65													
Moment of inertia (relates to the drive) Clamping hub diameter [mm]	B	11	J_1 kgcm²	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	0.06
			J_1 10^{-3} in.lb.s²	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	0.05
	C	14	J_1 kgcm²	0.20	0.18	0.19	0.19	0.18	0.18	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
			J_1 10^{-3} in.lb.s²	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	0.15

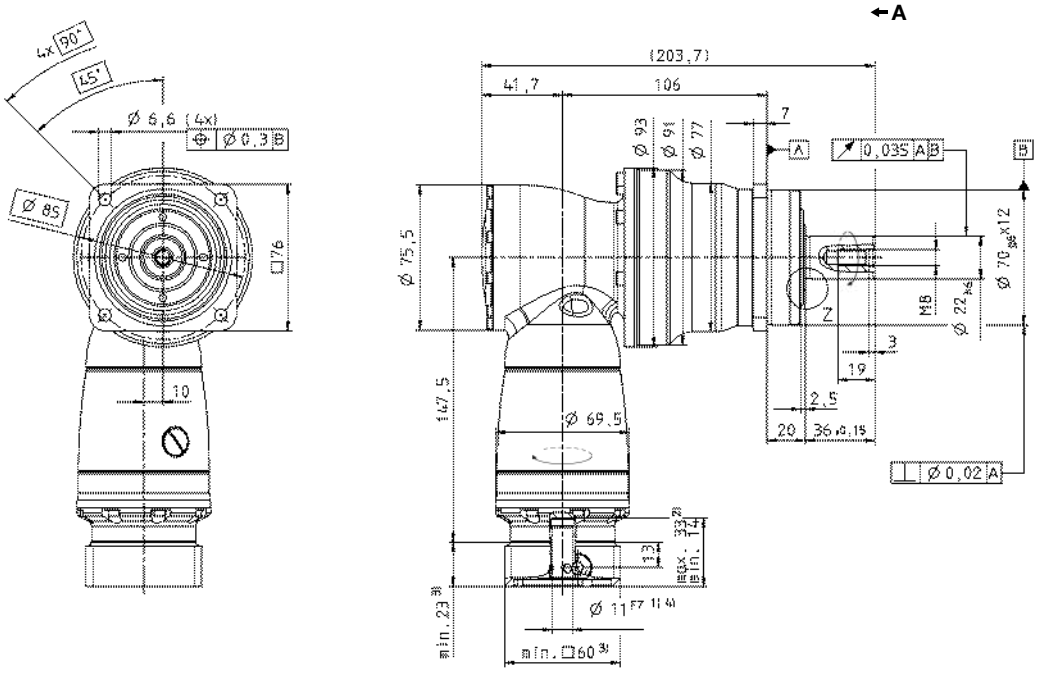
[a)] Other ratios up to i=1000 available on request
[b)] Higher speeds are possible if the nominal torque is reduced
[c)] For higher ambient temperatures, please reduce input speed
[d)] Idling torques decrease during operation
[e)] Refers to center of the output shaft or flange

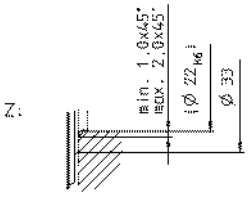
All technical data for front output side applies.
Technical data for rearward output versions, see page 422.

Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

View A

3-stage:



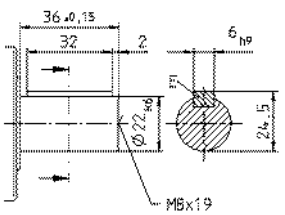


Right-angle gearheads
High End

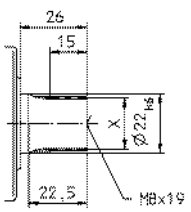
SPK+

Alternatives: Output shaft variants

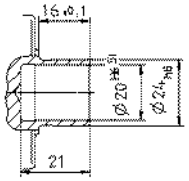
Keywayed output shaft in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 22 x 1.25 x 30 x 16 x 6m, DIN 5480



Shaft mounted
Mounted via shrink disc



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

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

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

Motor mounting according to operating manual

					2-stage									
Ratio [a]			*i*		**12**	**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	280	280	300	300	300	300	200	250	300	225
				in.lb	2478	2478	2655	2655	2655	2655	1770	2213	2655	1991
Nominal output torque (with n_{1N})			T_{2N}	Nm	180	180	175	175	170	175	160	175	170	120
				in.lb	1593	1593	1549	1549	1505	1549	1416	1549	1505	1062
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	400	400	500	500	625	500	400	500	625	500
				in.lb	3540	3540	4425	4425	5531	4425	3540	4425	5531	4425
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b), c)]			n_{1N}	rpm	2000	2400	2400	2700	2400	2500	2500	2500	2500	2500
Max. continuous speed (with 20% T_{2N} and 20°C ambient temperature)			n_{1Ncym}	rpm	3000	3400	3400	3800	3400	3200	3200	3200	3200	3200
Max. input speed			n_{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque (with n_1 = 3000 rpm and 20°C gearhead temperature) [d)]			T_{012}	Nm	2.5	2.1	2.0	1.8	2.0	2.2	2.0	2.0	2.0	2.0
				in.lb	22.1	18.6	17.7	15.9	17.7	19.5	17.7	17.7	17.7	17.7
Max. torsional backlash			j_t	arcmin	Standard ≤ 4 / Reduced ≤ 2									
Torsional rigidity			C_{t21}	Nm/ arcmin	31									
				in.lb/ arcmin	274									
Max. axial force [e)]			F_{2AMax}	N	5650									
				lb_f	1271									
Max. radial force [e)]			F_{2RMax}	N	6300									
				lb_f	1418									
Max. tilting moment			M_{2KMax}	Nm	487									
				in.lb	4310									
Efficiency at full load			η	%	94									
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000									
Weight incl. standard adapter plate			*m*	kg	9.7									
				lb_m	21.4									
Operating noise (with n_1 = 3000 rpm no load)			L_{PA}	dB(A)	≤ 68									
Max. permitted housing temperature				°C	+90									
				F	194									
Ambient temperature				°C	0 to +40									
				F	32 to 104									
Lubrication					Lubricated for life									
Paint					Blue RAL 5002									
Direction of rotation					Motor and gearhead opposite directions									
Protection class					IP 65									
Moment of inertia (relates to the drive) Clamping hub diameter [mm]	E	19	J_1	kgcm²	1.48	1.20	1.17	1.05	1.15	0.95	0.90	0.89	0.89	0.89
				10^{-3} in.lb.s²	1.31	1.06	1.04	0.93	1.02	0.84	0.79	0.79	0.79	0.78
	H	28	J_1	kgcm²	2.89	2.62	2.59	2.46	2.56	2.36	2.31	2.31	2.30	2.30
				10^{-3} in.lb.s²	2.56	2.31	2.29	2.18	2.27	2.09	2.05	2.04	2.04	2.04

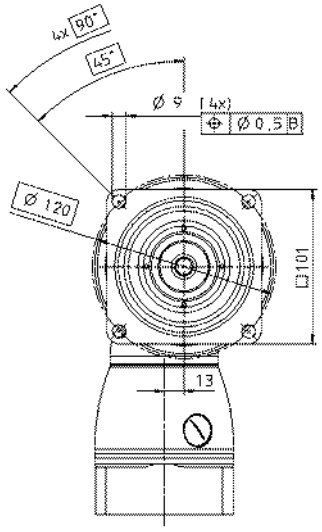
[a)] Other ratios up to i=1000 available on request
[b)] Higher speeds are possible if the nominal torque is reduced
[c)] For higher ambient temperatures, please reduce input speed
[d)] Idling torques decrease during operation
[e)] Refers to center of the output shaft or flange

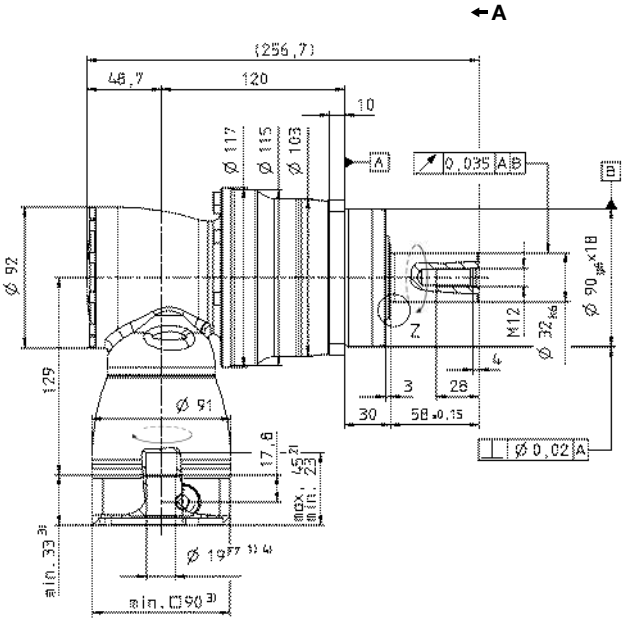
All technical data for front output side applies.
Technical data for rearward output versions, see page 422.

Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

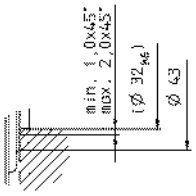
View A

2-stage:



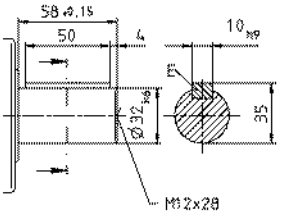


Z:

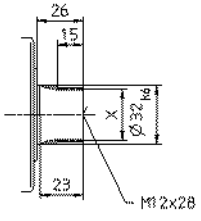


Alternatives: Output shaft variants

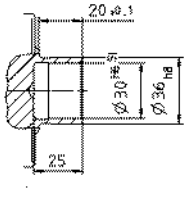
Keywayed output shaft in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 32 x 1.25 x 30 x 24 x 6m, DIN 5480



Shaft mounted
Mounted via shrink disc



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

Non-tolerated dimensions ±1 mm

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2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
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4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.

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

Motor mounting according to operating manual