WITTENSTEIN | alpha

alpha Premium Line
Product brochure

Unique
Individual
Highly efficient

YOUR WORLD ... ... IS OUR DRIVE

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

PERFORMANCE

Performance where it counts:
High torque, outstanding precision and high power density – essential for our products and systems.

FUTURE PROOF

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

SCALABILITY

You never make compromises:
Whatever the performance area – we offer solutions that grow with your requirements.

EFFICIENCY

We like it „lean“:
We offer products and systems that are energy-efficient and require minimal installation space in machines.

AVAILABILITY

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

CONNECTIVITY

We think in terms of interfaces:
All of our systems can be integrated in a wide range of peripherals.

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alpha Premium Line – unique, individual solutions that offer unparalleled power density

The requirements for highly complex applications used in machine tools or laser technology, for example, are becoming increasingly demanding and standard products are often unable to meet them. The alpha Premium Line is a completely new product program developed to meet the most demanding requirements. In addition to the products, we primarily focus on offering comprehensive consultancy services to ensure that your requirements are taken into full consideration and maximum machine utilization is achieved. We aim to provide unique "Best in Class" solutions that significantly exceed current standards and help you design your plants more efficiently.

Maximum power density

We increased the performance of our gearboxes by up to 200 % compared to other commercially available standard gearboxes. Our Premium products therefore make a direct contribution to enhancing the performance of your plant.

Maximum positioning accuracy

On request, the Premium planetary gearboxes are available with torsional backlash of less than one arc minute. In combination with maximum torsional rigidity, this backlash guarantees outstanding positioning accuracy.

Easy installation

Specially designed output configurations allow for quick and easy installation.

Top engineering and expert consultation

We use our extensive engineering expertise to develop unique solutions and produce the perfect design for your drive train. Our highly qualified employees provide support and advice from the initial idea and throughout the entire life cycle of your application.

alpha Premium solutions. Tailored precisely to meet your needs.

More performance in less space
- if you require an even more compact drive
- if you wish to enhance the performance of your machine
- if you require high-performance linear systems

"We develop pioneering solutions for demanding applications in close dialog with our customers."

Sven Sanitz, Sales

Reaching new heights: the alpha Premium Line

Planetary gearboxes

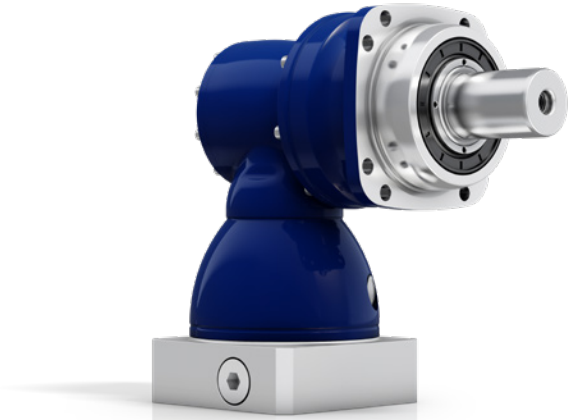
The unique capabilities of planetary gearboxes from the alpha Premium Line are setting new standards on the market. These compact gearboxes are characterized by a power density far above the current industry standard. Your application can benefit directly from this increase in performance.

XP+

RP+

Hypoid gearboxes

Maximum power density and high modularity are just two of the special characteristics of our hypoid gearboxes. Furthermore, gearboxes from the alpha Premium Line are characterized by an extremely robust overall design that guarantees a high degree of reliability and a long service life.



XPK+

RPK+

Premium Line

Bevel gearboxes

The low backlash bevel drives from our alpha Premium Line offer outstanding performance at low ratios during both cyclic and continuous operation. The perfect solution for dynamic applications with demanding requirements with regard to precision, torque and output speed. Increases in the performance of your plant can easily be achieved with a 97 % degree of efficiency.

XPC+

RPC+

XP+ – Perfection in a new dimension

XP+

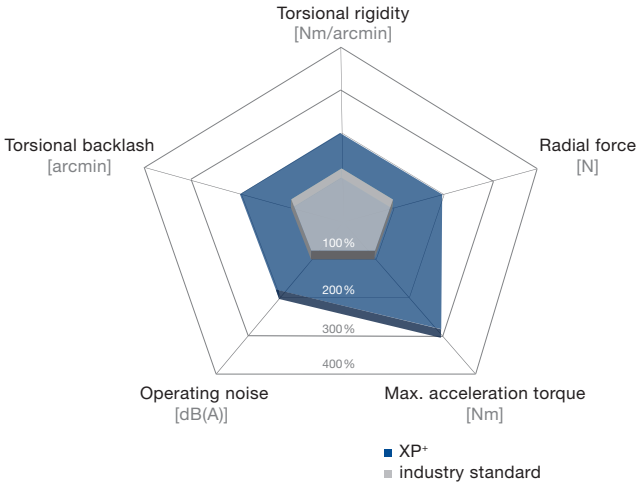
The XP+ with specially designed output and extremely compact design offers new dimensions in power transmission that far exceed industry standards. The optimized interfaces on the output can generate much higher torques that directly benefit your application.

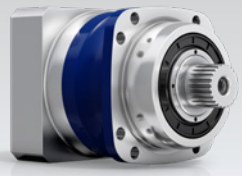
The XP+ impresses with maximum power density
- if you require an even more compact drive
- if you wish to enhance the performance of your machine
- if you require high-performance linear systems

Product highlights

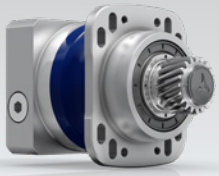
- **Max. torsional backlash** [arcmin] ≤ 1
- **Maximum power density**
- **High axial and radial forces**

The XP+ compared to the industry standard

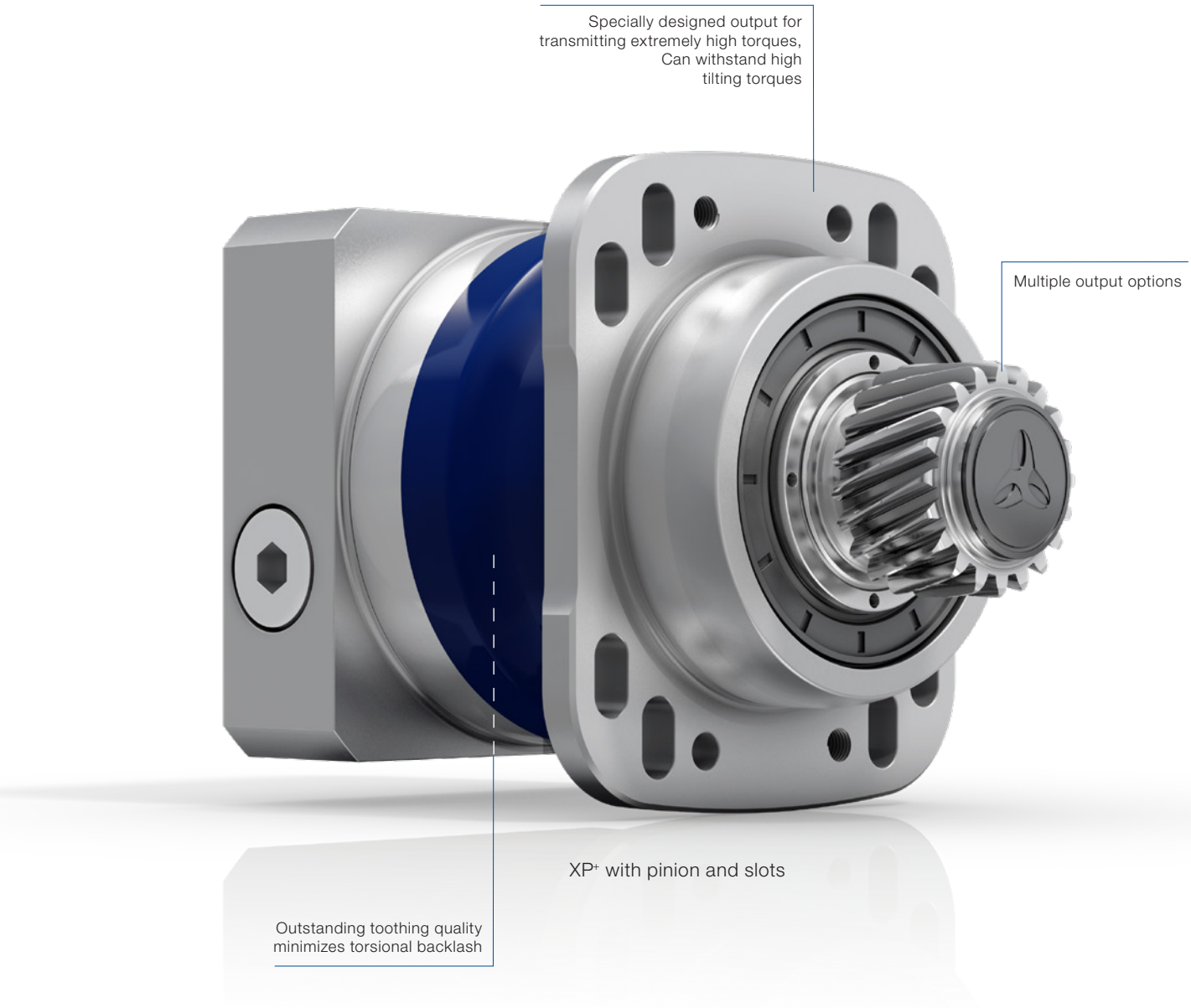




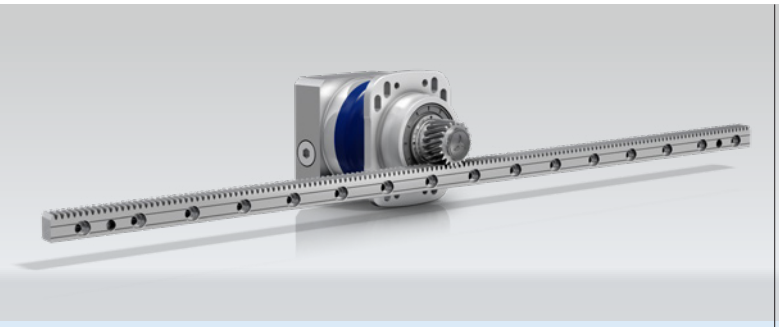
XP+ with splined shaft



XP+ with pinion and slots



XP+ with pinion and slots



XP+ with pinion, slots and rack

premo® High Line with pinion

XP+ – Product features

Your benefits

	XP+ MF-Version / MC-Version
Features	
Power density	++++
Positioning accuracy (e.g. clamped drives)	++++
Highly dynamic applications	+++
Torsional rigidity	++++
Space-saving design	+++
Easy assembly	++++

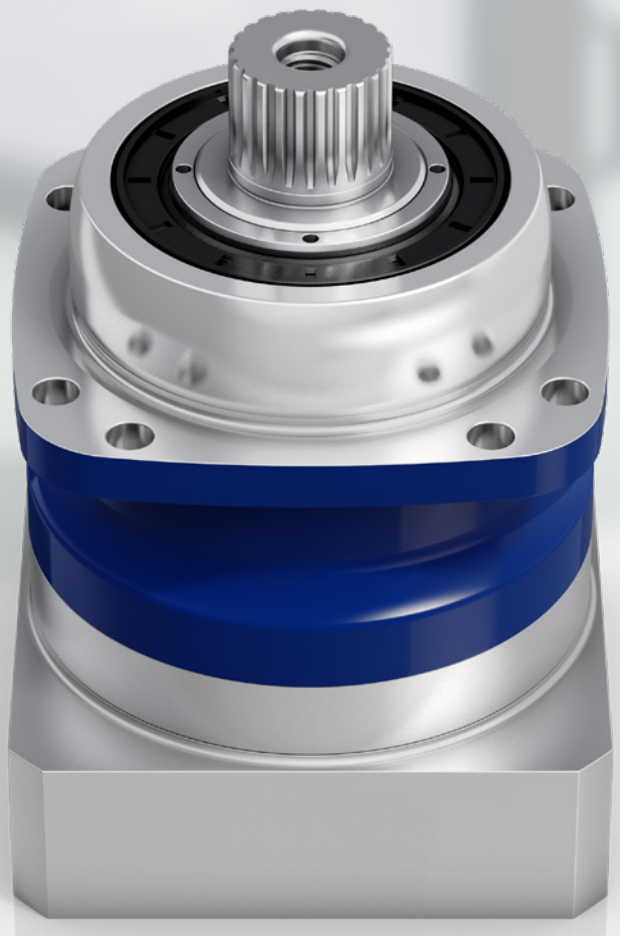
Technical data

		XP+ MF-Version / MC-Version
Ratio	i	3 – 100
Number of sizes		5
Max. torsional backlash	j_t [Nm/arcmin]	Standard ≤ 3
		Reduced ≤ 1
Max. torque	$T_{2\alpha}$ [Nm]	42 – 3840
Max. input speed	n_{1Max} [rpm]	8500
Max. tilting moment	M_{2KMax} [Nm]	3256
Torsional rigidity	C_{t21}[Nm/armin]	5 – 290

Options

	XP+ MF-Version / MC-Version
Output type	
Smooth shaft	✓
Shaft with key	✓
Splined shaft (DIN 5480)	✓
Blind hollow shaft	✓
System output with pinion	✓
Input type	
Motor-mounted version	✓
Input shaft	✓
Design	
Food-grade lubrication [a) b)]	✓
Optimized mass inertia	✓
Accessories	
Coupling	✓
Rack	✓
Pinion	✓
Shrink disc	✓

a) Power reduction: Technical data available on request
b) Please contact WITTENSTEIN alpha



RP+ – The high-precision powerhouse

RP+

This gearbox series sets standards in terms of power density, modularity and easy installation. It is used in all applications where the individual requirements far exceed what has previously been possible. RP+ gearboxes combine all the advantages of the familiar gearbox series:

- Reduced backlash of ≤ 1 arcmin
- Maximum power density
- Extremely smooth-running thanks to helical toothing
- 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

Product highlights

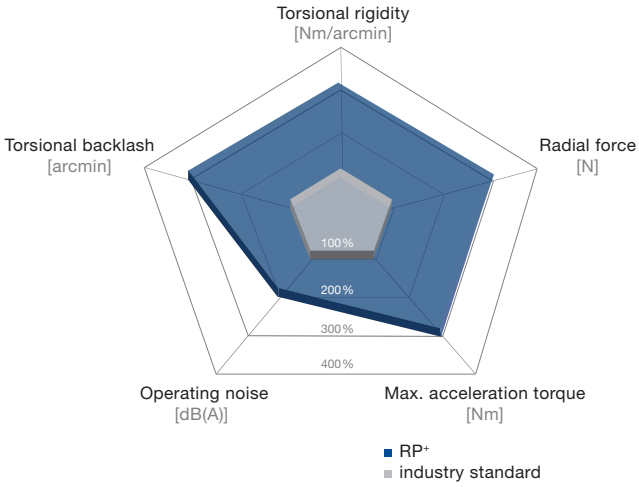
Max. torsional backlash [arcmin] ≤ 1

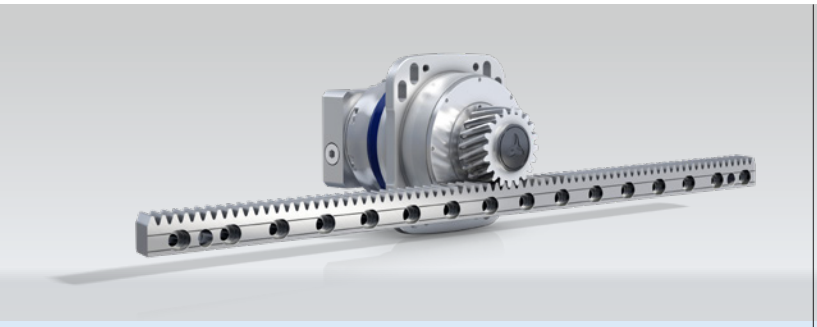
High axial and radial forces

Easy installation

Optimized for rack and pinion applications

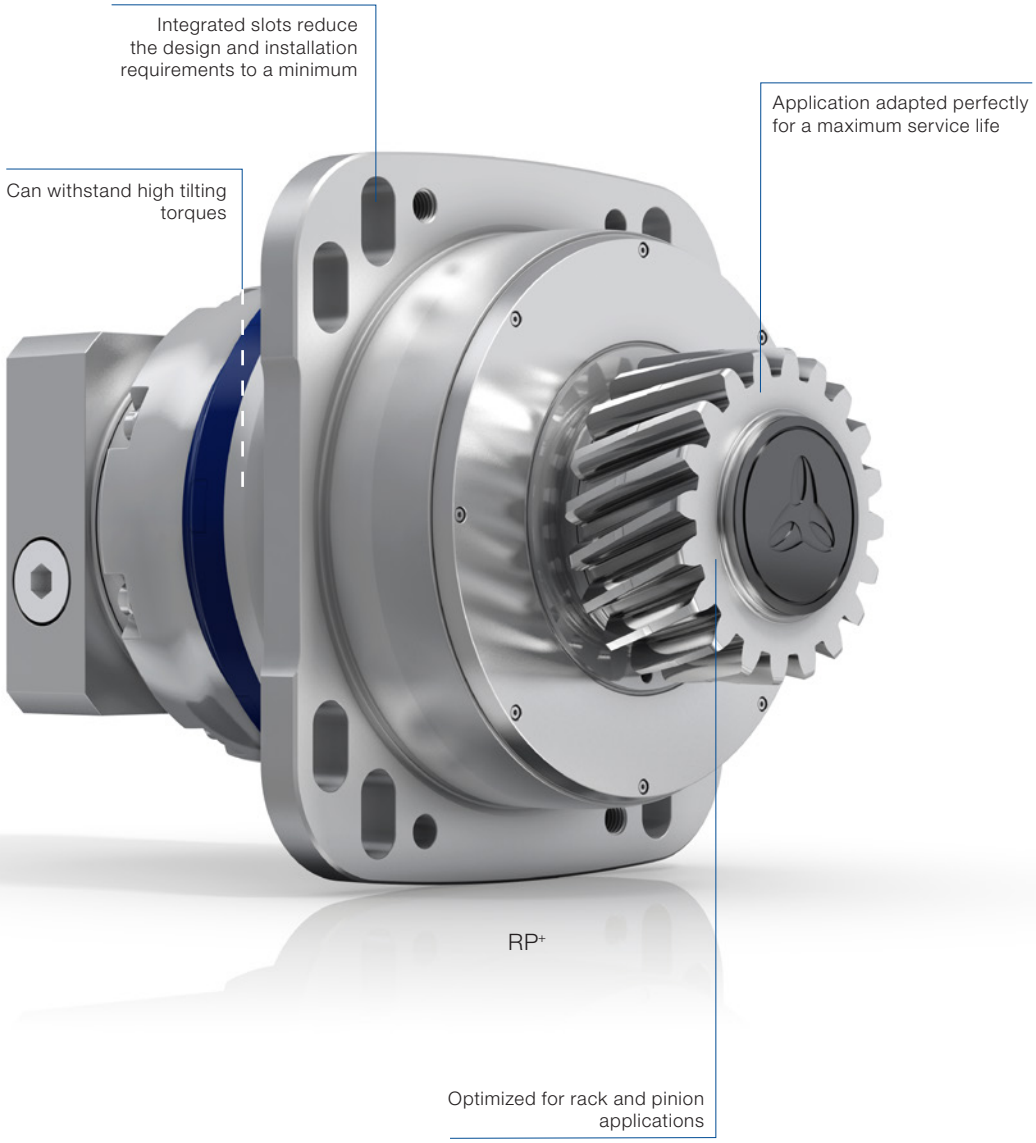
The RP+ compared to the industry standard



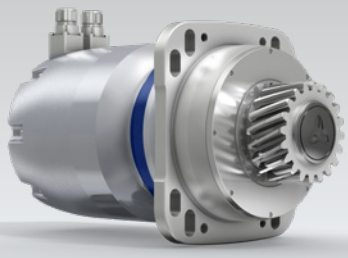


RP+ with rack and pinion

RPK+ with hypoid angle section



Further information is available in the "alpha Linear Systems" catalog or online at www.wittenstein-alpha.com



RP+ available as RPM+ actuator version (series in an even more compact design)

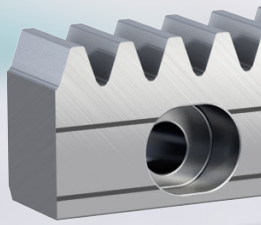
RP+ – Product features

Your benefits

	RP+ MF-Version / MA-Version
Features	
Power density	++++
Positioning accuracy (e.g. clamped drives)	++++
Highly dynamic applications	+++
Torsional rigidity	++++
Space-saving design	+++
Easy assembly	++++

Technical data

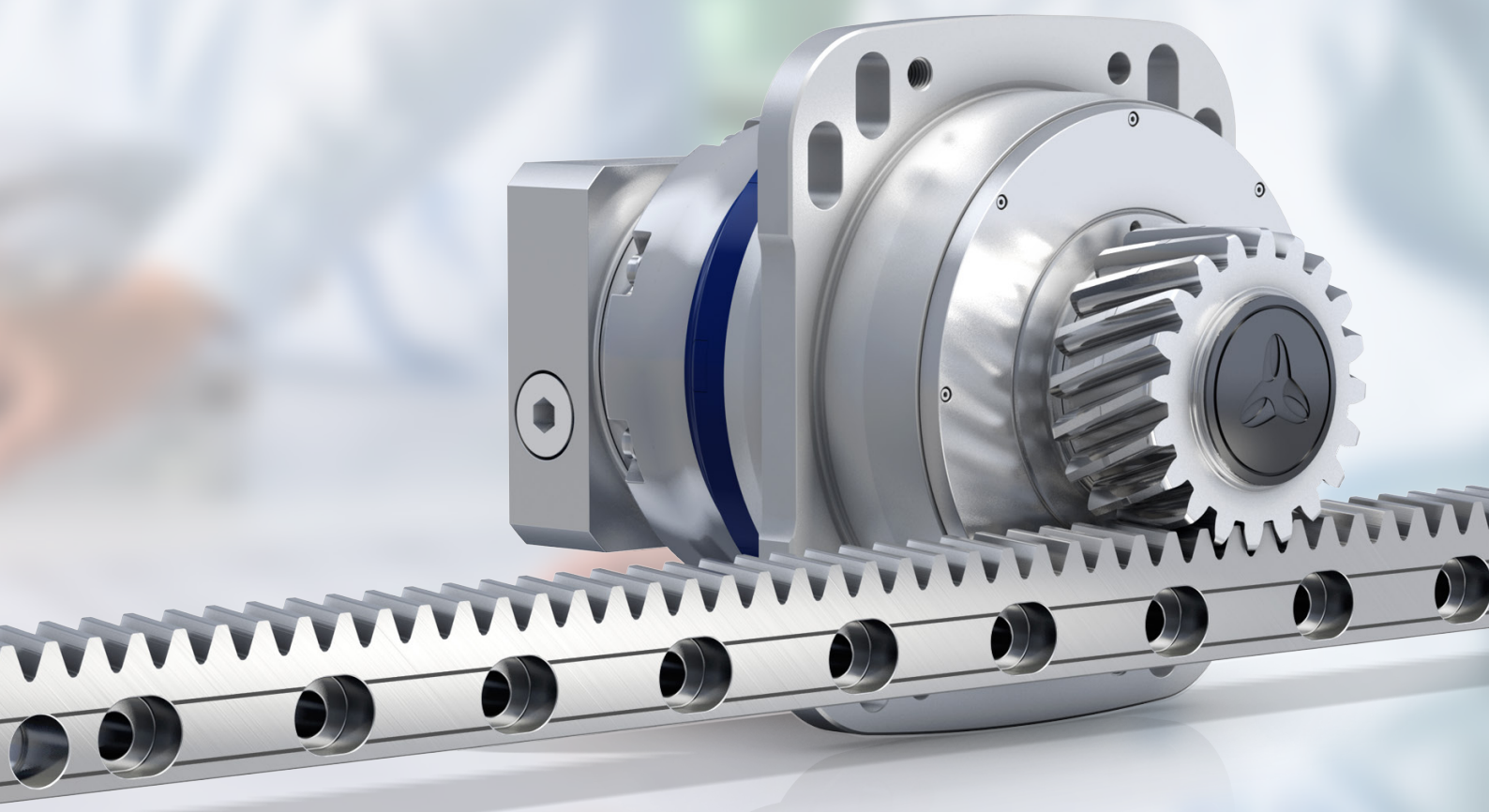
		RP+ MF-Version / MA-Version
Ratio	i	3 – 220
Number of sizes		5
Max. torsional backlash	j_t [Nm/arcmin]	Standard ≤ 1
		Reduced ≤ 1
Max. torque	$T_{2\alpha}$ [Nm]	540 – 10450
Max. input speed	n_{1Max} [rpm]	6250
Max. tilting moment	M_{2KMax} [Nm]	34000
Torsional rigidity	C_{t21}[Nm/armin]	123 – 2000



Options

	RP+ MF-Version / MA-Version
Output type	
Flange	✓
System output with pinion	✓
Input type	
Motor-mounted version	✓
Design	
Food-grade lubrication [a) b)]	✓
Optimized mass inertia	✓
Accessories	
Rack	✓
Pinion	✓

a) Power reduction: Technical data available on request
b) Please contact WITTENSTEIN alpha



XPK+/RPK+ – Power and precision in a compact design

XPK+

New standard now also available as a hypoid version

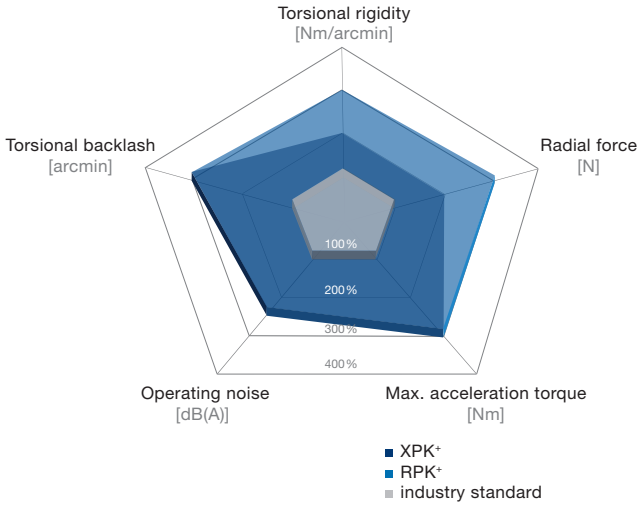
Both the XP+ and RP+ Premium planetary gearboxes are now available in a right-angle version with hypoid gearing. The axis offset of hypoid gearboxes allows both higher ratios in one section (ratio i = 3 – 10) as well as higher torques compared to bevel gearboxes. The high torque density allows for an extremely compact, space-saving design. The mesh frequency and high torsional rigidity of the gearbox are also extremely impressive since they ensure a higher degree of positioning accuracy and extremely smooth operation.

Product highlights

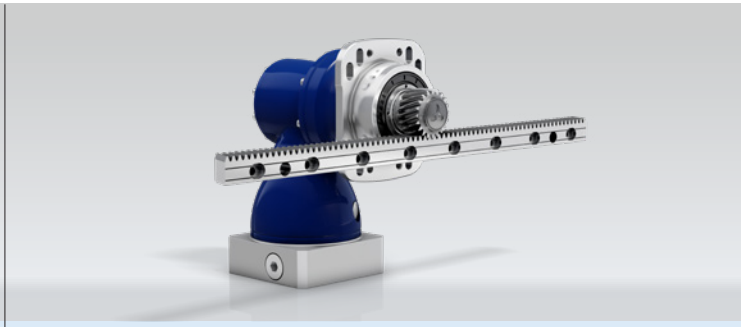
XPK+: Max. torsional backlash [arcmin] ≤ 2
RPK+: Max. torsional backlash [arcmin] ≤ 1.8

XPK+ and RPK+:
Range of transmission ratios: i = 12 – 5,500
High axial and radial forces
High torsional rigidity
Maximum performance in small installation space
Optimized for rack and pinion applications

XPK+ and RPK+ compared to industry standard



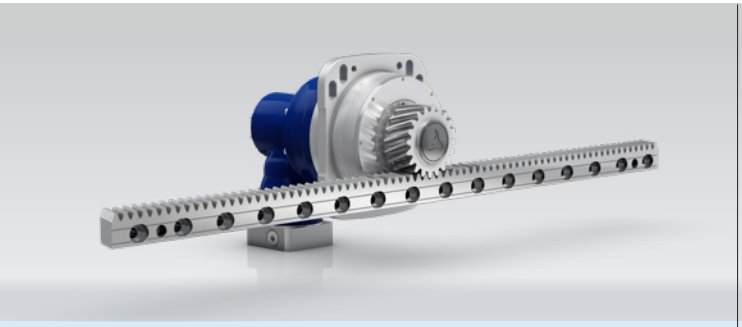
XPK+ with pinion and slots



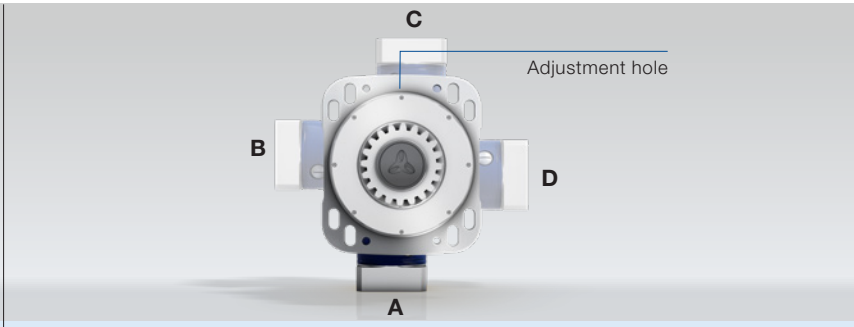
XPK+ with pinion, slots and rack

The ideal partnership

High-performance linear systems with the XPK+ or RPK+ are used in all applications where the individual requirements far exceed what has previously been possible. Compared to the industry standard, the values of the RPK+ have been improved by 150 % on average.



RPK+ with rack and pinion



Flexibility during installation

XPK+ – Product features

Your benefits

	XPK+ MF-Version
Features	
Power density	++++
Positioning accuracy (e.g. clamped drives)	++++
Highly dynamic applications	+++
Torsional rigidity	++++
Space-saving design	++++
Easy assembly	++++

Options

	XPK+ MF-Version
Output type	
Smooth shaft	✓
Shaft with key	✓
Splined shaft (DIN 5480)	✓
Blind hollow shaft	✓
System output with pinion	✓
Input type	
Motor-mounted version	✓
Design	
Food-grade lubrication [a) b)]	✓
Accessories	
Coupling	✓
Rack	✓
Pinion	✓
Shrink disc	✓

a) Power reduction: Technical data available on request
b) Please contact WITTENSTEIN alpha

Technical data

		XPK+ MF-Version
Ratio	i	12 – 1000
Number of sizes		4
Max. torsional backlash	j_t [Nm/arcmin]	Standard ≤ 4
		Reduced ≤ 2
Max. torque	T_{2a} [Nm]	80 – 2520
Max. input speed	n_{1Max} [rpm]	7500
Max. tilting moment	M_{2KMax} [Nm]	3256
Torsional rigidity	C_{t21}[Nm/armin]	11 – 226

RPK+ – Product features

Your benefits

	RPK+ MA-Version
Features	
Power density	++++
Positioning accuracy (e.g. clamped drives)	++++
Highly dynamic applications	+++
Torsional rigidity	++++
Space-saving design	++++
Easy assembly	++++

Options

	RPK+ MA-Version
Output type	
Flange	✓
System output with pinion	✓
Input type	
Motor-mounted version	✓
Design	
Food-grade lubrication [a) b)]	✓
Accessories	
Rack	✓
Pinion	✓

a) Power reduction: Technical data available on request
b) Please contact WITTENSTEIN alpha

Technical data

		RPK+ MA-Version
Ratio	i	48 – 5500
Number of sizes		4
Max. torsional backlash	j_t [Nm/arcmin]	Standard ≤ 1,3
		Reduced ≤ 1,8
Max. torque	T_{2a} [Nm]	1100 – 10540
Max. input speed	n_{1Max} [rpm]	7500
Max. tilting moment	M_{2KMax} [Nm]	34000
Torsional rigidity	C_{t21}[Nm/armin]	202 – 1901

XPC+/RPC+ – High precision and low ratios around the corner

XPC+

New performance standard, also available in the bevel version

Both the XP+ and RP+ Premium planetary gearboxes are now available in a right-angle version with bevel toothing. Bevel gearboxes are primarily characterized by low gear ratios (ratio 1 and 2) in the angle section. Consequently, right-angle and planetary gearbox combinations can achieve the same low ratios as planetary gearboxes. The product design has a positive influence on temperature development in the gearbox and reduces overall heat development in the system as a result. The overall system achieves a higher degree of positioning accuracy as a consequence.

Product highlights

RPC+: Max. torsional backlash [arcmin] ≤ 1.8

XPC+: Max. torsional backlash [arcmin] ≤ 2

RPC+ and XPC+:

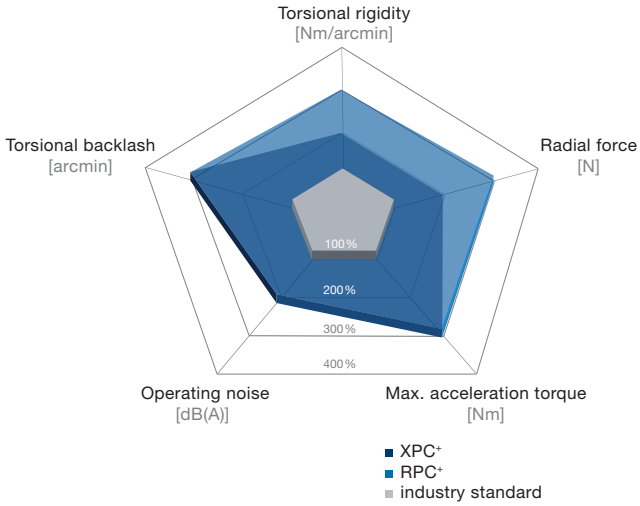
Low ratios of i = 4 – 88 possible

Optimized temperature distribution, even at high speeds

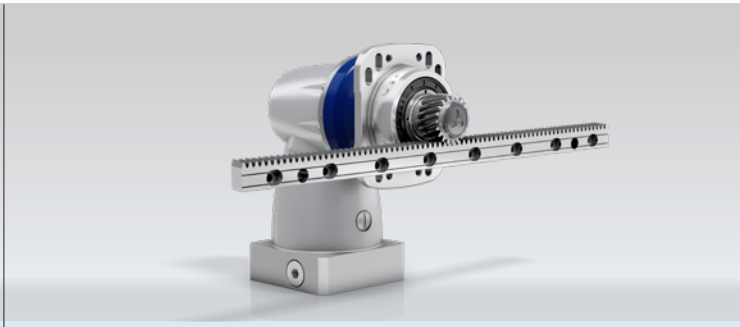
High tilting moments and torsional rigidity

Optimized for rack and pinion applications

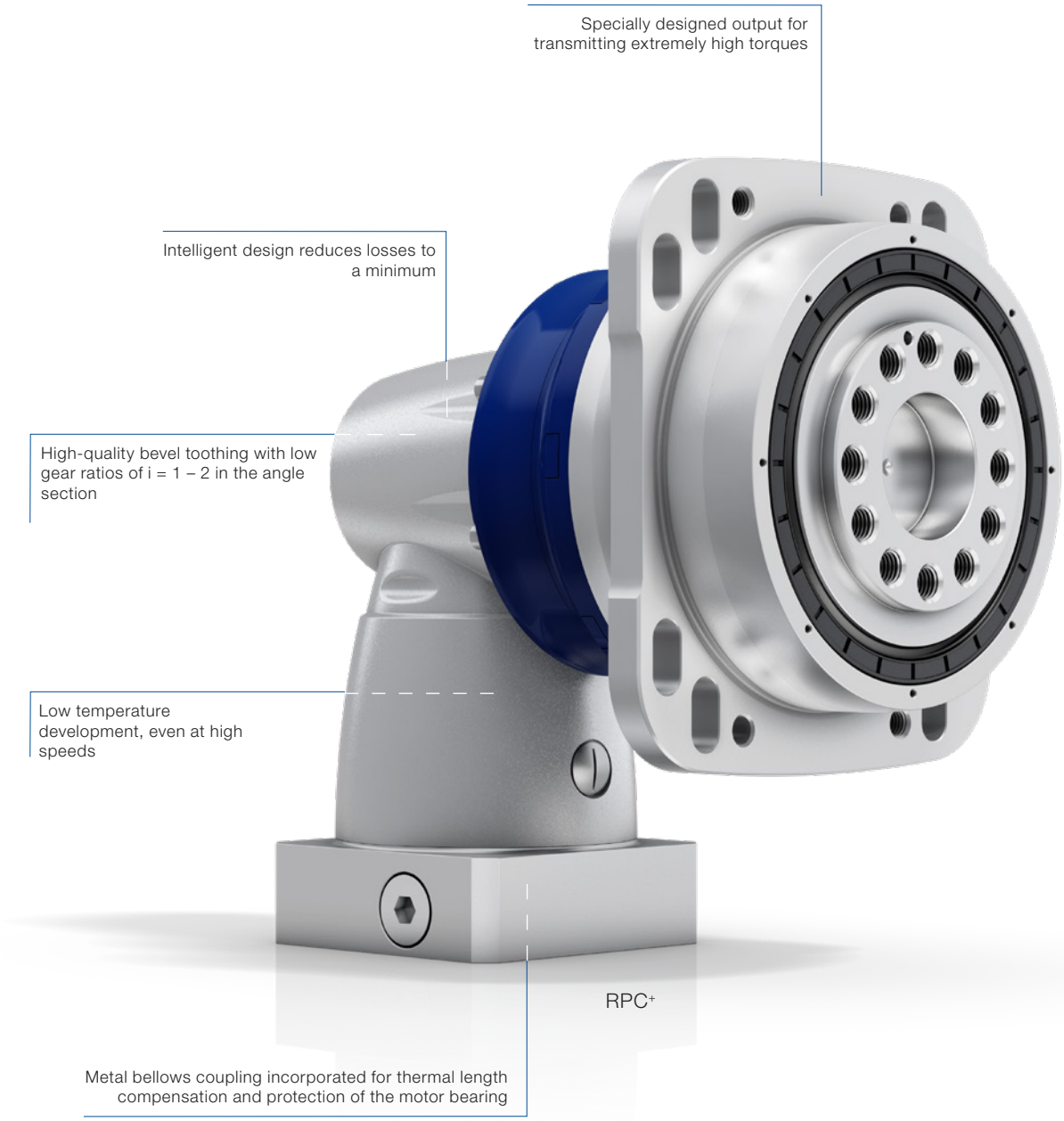
XPC+ and RPC+ compared to industry standard



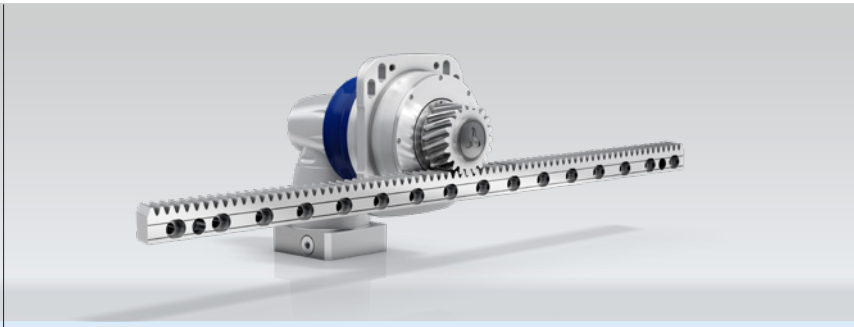
XPC+ with pinion and slots



XPC+ with pinion, slots and rack



RPC+ with pinion



RPC+ with rack and pinion

XPC+ – Product features

Your benefits

	XPC+ MF-Version
Features	
Power density	++++
Positioning accuracy (e.g. clamped drives)	++++
Highly dynamic applications	+++
Torsional rigidity	++++
Space-saving design	++++
Easy assembly	++++

Options

	XPC+ MF-Version
Output type	
Smooth shaft	✓
Shaft with key	✓
Splined shaft (DIN 5480)	✓
Blind hollow shaft	✓
System output with pinion	✓
Input type	
Motor-mounted version	✓
Design	
Food-grade lubrication [a) b)]	✓
Accessories	
Coupling	✓
Rack	✓
Pinion	✓
Shrink disc	✓

a) Power reduction: Technical data available on request
b) Please contact WITTENSTEIN alpha

Technical data

		XPC+ MF-Version
Ratio	i	4 – 20
Number of sizes		5
Max. torsional backlash	j_t [Nm/arcmin]	Standard ≤ 4
		Reduced ≤ 2
Max. torque	$T_{2\alpha}$ [Nm]	48 – 2646
Max. input speed	n_{1Max} [rpm]	6000
Max. tilting moment	M_{2KMax} [Nm]	3256
Torsional rigidity	C_{t21}[Nm/armin]	3,1 – 215

RPC+ – Product features

Your benefits

	RPC+ MA-Version
Features	
Power density	++++
Positioning accuracy (e.g. clamped drives)	++++
Highly dynamic applications	+++
Torsional rigidity	++++
Space-saving design	++++
Easy assembly	++++

Options

	RPC+ MA-Version
Output type	
Flange	✓
System output with pinion	✓
Input type	
Motor-mounted version	✓
Design	
Food-grade lubrication [a) b)]	✓
Accessories	
Rack	✓
Pinion	✓

a) Power reduction: Technical data available on request
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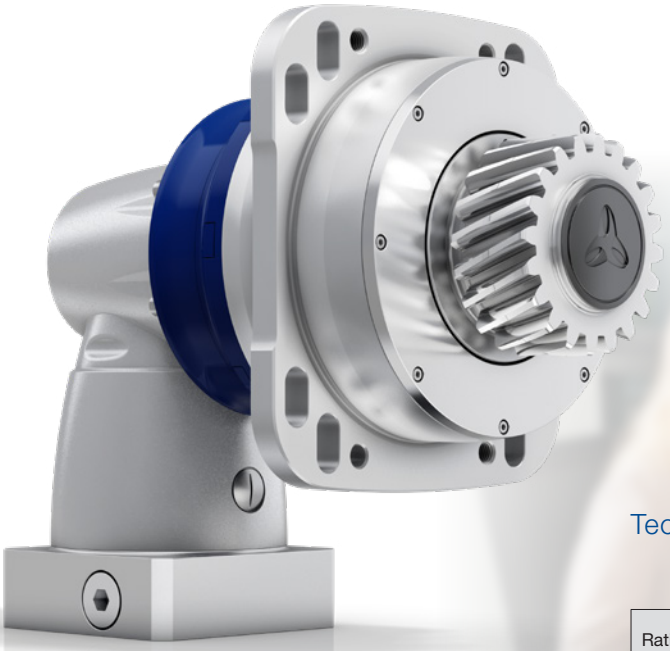


Technical data

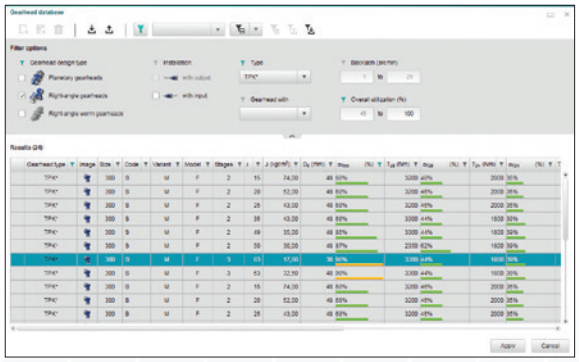
		RPC+ MA-Version
Ratio	i	22 – 55
Number of sizes		3
Max. torsional backlash	j_t [Nm/arcmin]	Standard ≤ 1,3
Max. torque	T_{2a} [Nm]	1400 – 7535
Max. input speed	n_{1Max} [rpm]	4500
Max. tilting moment	M_{2KMax} [Nm]	34000
Torsional rigidity	C_{t21}[Nm/armin]	194 – 1171

cymex®5 – The perfect sizing tool

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

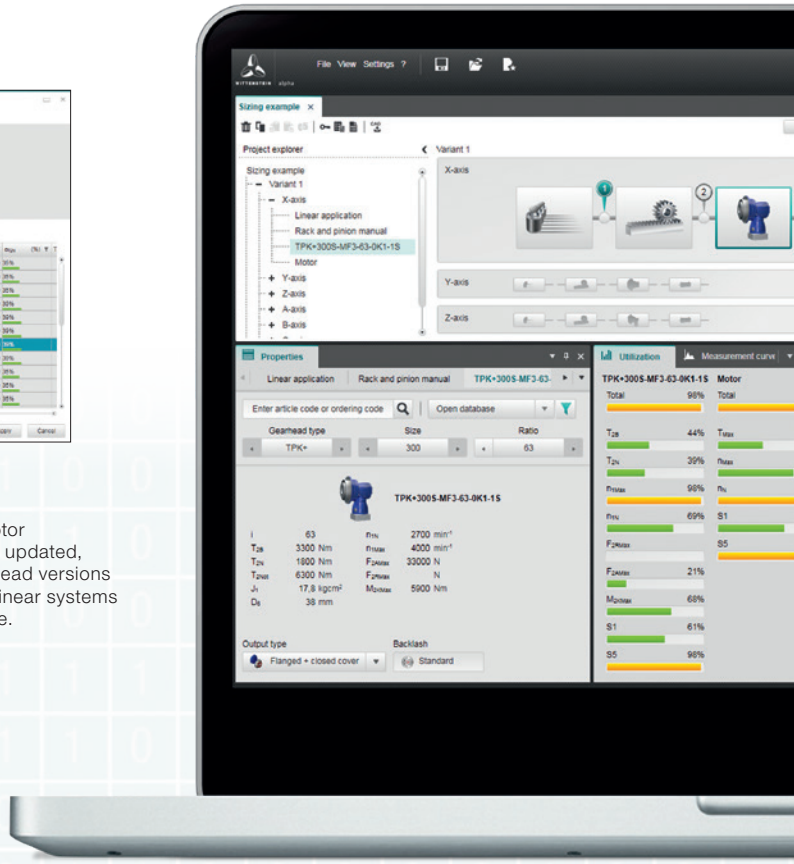
cymex® 5 can define any number of axes simultaneously

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



cymex® 5 has an extremely extensive database

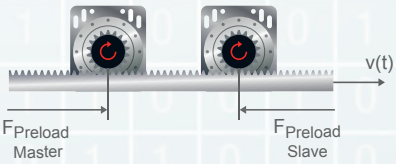
More than 14,000 motors from the 50 most prominent motor manufacturers are stored in the design tool. Continuously updated, always state-of-the-art. Moreover, more than 8,000 gearhead versions from WITTENSTEIN alpha and over 200 combinations of linear systems with all relevant technical specifications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



Free download

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

www.wittenstein-cymex.de



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

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

*Premium function, on request.

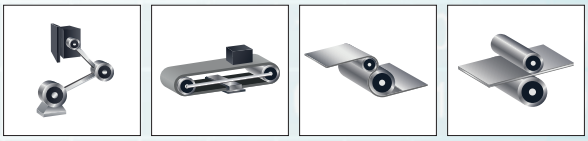
cymex®5

cymex® 5 has a unique optimization calculator*

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

cymex® 5 offers comprehensive documentation

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



11 languages

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

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

Support at each interaction stage

With the WITTENSTEIN alpha service concept, we are also setting new standards in the field of customer support.

Global presence

Our global consultation network will help you overcome your complex challenges through our extensive experience, a variety of design tools and individual engineering services.

Speed counts

Our speedline® team guarantees fast response times in the area of logistics. We provide on-site support during the installation and commissioning of mechanical systems to give you a sustained competitive edge.

Personal consultation

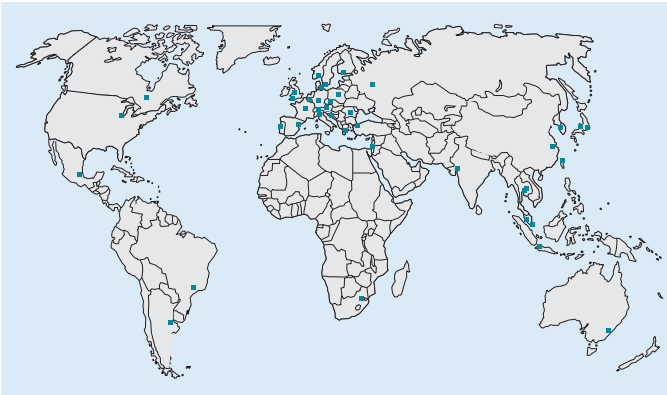
Our highly qualified and committed expert personnel will accompany you throughout the entire product lifecycle - around the clock. When it comes to customer support, you can count on us!

Design

Consultation
Info & CAD Finder
SIZING ASSISTANT
Sizing software cymex®
Engineering

Installation

speedline® delivery
Installation on-site
Operating & installation instructions
Pick-up & return service



We are happy to advise you:

24 h service hotline: +49 7931 493-12900

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Maintenance

24 h service hotline
Maintenance and inspection
Repair
cymex® statistics
Modernization

Training

Product training
Sizing training
Installation training
Service training

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WITTENSTEIN alpha – Intelligent drive systems

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The entire world of drive technology – Catalogs available on request or online at www.wittenstein-alpha.de/download/kataloge.

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