

Our Production Program

ZZ Bevel Gear Units

up to 7000 Nm nominal torque
or 500 kW power. ZZ Servoline® series
for high-dynamic drives

ZZ Screw Jack Units

with trapezoidal or
ball screw spindle
for loading up to 1000 kN

ZZ Indexing Units

as globoid, cylinder- or
radial cam gear units
with pendular or stepping function

ZZ Spiral Bevel Gears

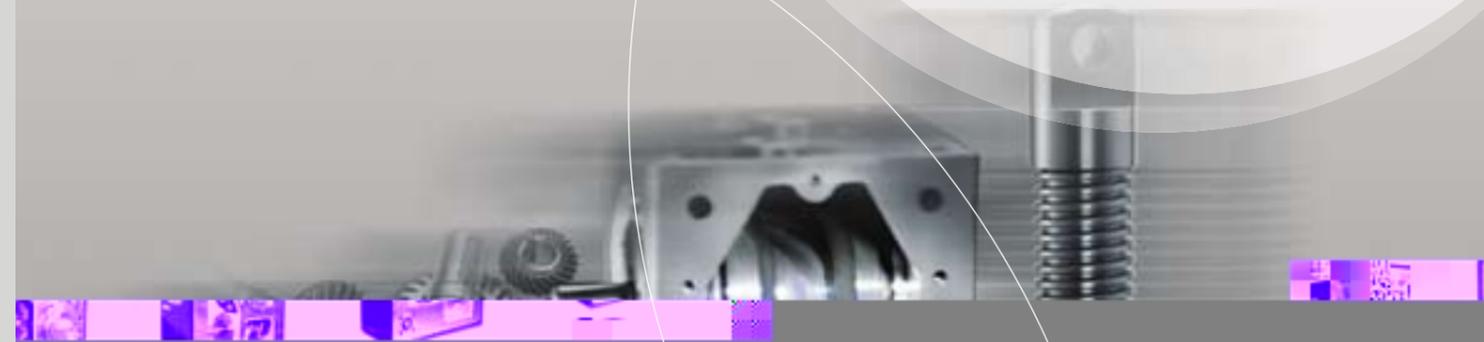
with – palloid gear tooth system
– Cyclo-palloid gear tooth system
– HPG-S gear tooth system

ZZ Cams

as – Globoid cams
– Axial cams
– Radial cams

ZZ Special Gear Units

for versatile use in many
different types of application



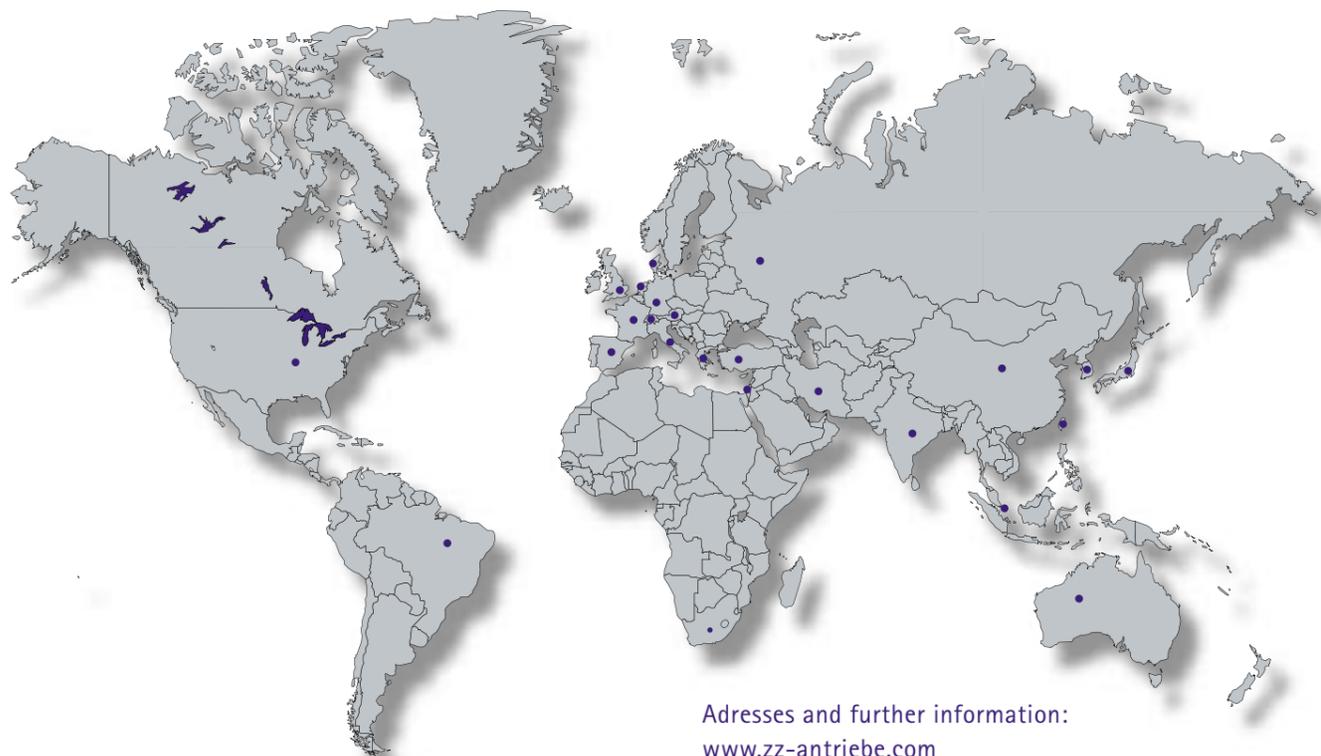


ZZ-Antriebe GmbH is based on the experience gained since 1912 in combination with the corresponding progress and innovation in the field of drive technique. We are devoted to the development, planning, construction and production of custom-designed products according to latest technical standards.

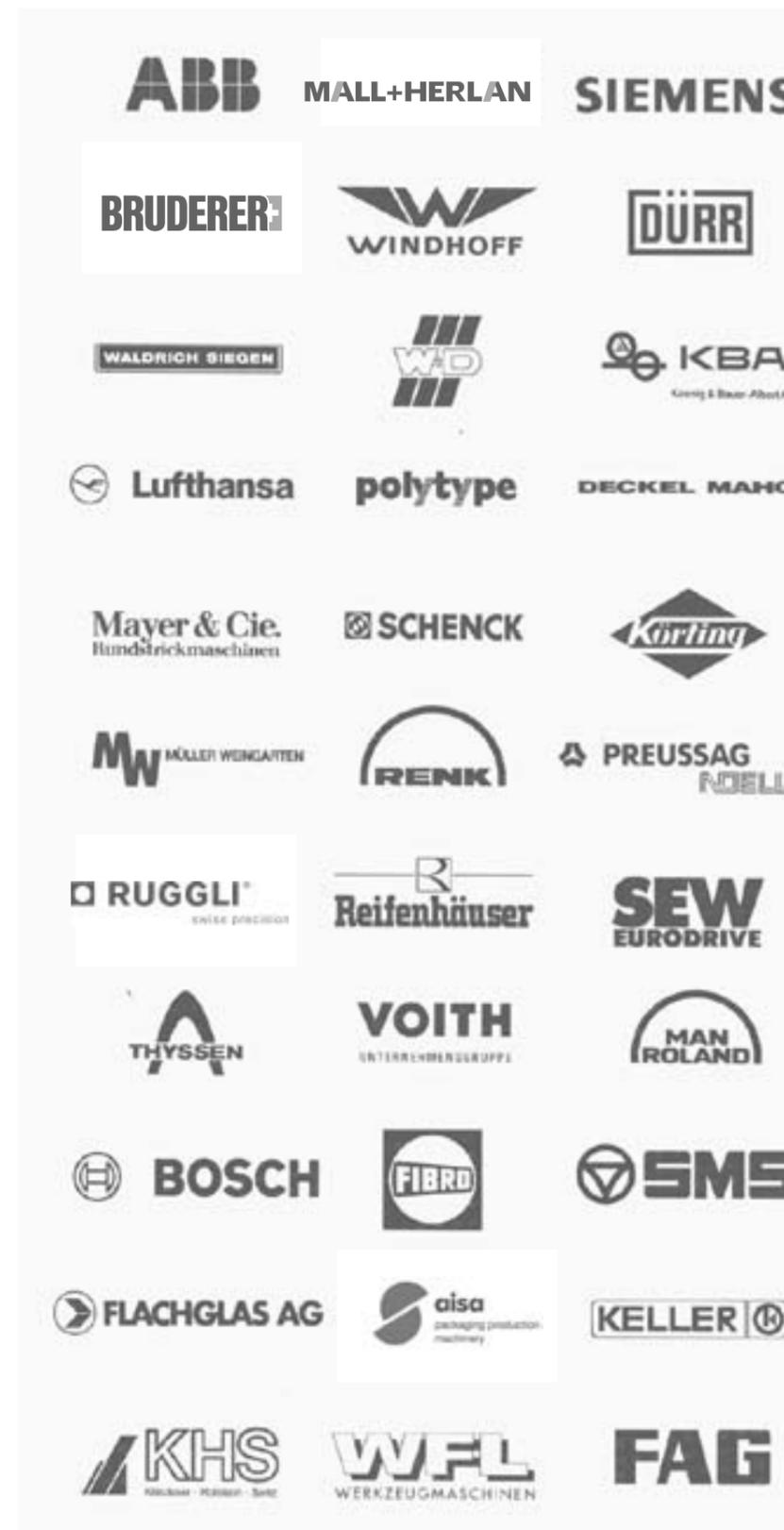
ZZ products can be found in all areas of machine and plant construction both inland and overseas, throughout the world. Our objectives of manufacturing high quality products take top priority in our company policy. Our system of quality control, according to DIN EN ISO 9001:2000, conforms to international requirements. The product range covers individual types of high-

quality gear wheels and indexing units on to complete, manufactured, ZZ-gears. State-of-the-art methods are used in production and construction, including CNC-controlled machine tools in manufacturing and CAD/CAM systems in the development stage.

We have maintained flexibility in order to offer individual and custom-made system solutions. Our highest aim is the satisfaction of our clients and a continuous improvement in our performance to meet the requirements of our customers, today and in the future. We consider ourselves a competent, innovative partner to both our customers and suppliers.



Adresses and further information:
www.zz-antriebe.com





Cams

Using the latest manufacturing techniques ZZ-Antriebe manufactures planar and three-dimensional cams in all common designs. Taking account of the respective application, material and hardening process the cam profiles are milled, skive milled or ground. Today our many years of experience are extended and complemented by the use of comprehensive design programs. The combination of tradition and innovation permits optimum design and manufacturing quality.

Cam type	dimension (mm)	
	diameter	width
Axial cam	400	300
Globoid cam	500	400
Radial cam	600	500
	Alternative dimensions are available upon request	

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Indexing units

Cam gear boxes belong to the group of non-continuous transmitting gear boxes and are mainly used as transmission gear units. They convert a uniform input turning motion into a indexed or oscillating output movement which can be optimised for every application. They are distinguished by robustness, reliability, high repetition accuracy and long service life together with low maintenance effort.

All ZZ-indexing units are fitted with through hardened and ground cams, which is the basis for precision and which guarantees a positioning free from backlash in every phase of the motion sequence. The housings made of cast-iron or aluminium are fully machined.



Function	oscillating function indexing function with 2 ... 24 steps special functions, e.g. step-back function
Versions	type X globoidal indexing units (15 design sizes) type TX globoidal indexing units table design (15 design sizes) type Y parallel shaft indexing units (12 design sizes) ATEX conformity (EG guideline 94/9/EG)
Motion sequences	modified sine curve (sinusoid), partly with constant velocity special motions are freely definable
Cams	through hardened, ground
Torque	up to 8000 Nm
Accessories	- gear brake motor - lifetime lubrication - motor flange / transmission gear - overload clutch - special cams / special motion sequences - varnishing upon request
Special gears units	- e. g. lifting indexing units upon request

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Indexing tables

ZZ-indexing tables have proven their worth in various applications as for example packing machines, printing machines or assembling systems. They allow a high controlled cycle time together with low maintenance effort. They are suitable for absorbing high axial forces as well as large torque and moments of tilt. Within dwell phase there will be an interlock which also permits sensitive process operations on the part – together with high repetition accuracy. The output shaft is provided with a machined surface to take up an assembling platform.



Indexing rings

ZZ-indexing rings are used in handling and assembling systems. Due to the drive unit which is installed on the outer ring and which is based on a cylinder cam an extremely large inner ring diameter and a high position accuracy are possible. At the same time a high dynamic and a soft acceleration process can be realised. The whole unit and especially the ring are very plane.

Function	oscillating function indexing function with 2 ... 32 steps
Versions	type RTX version with globoid cam for accurate applications which are complex in their motion sequence, distance between axes: up to 450 mm type XZ version with cylinder cam with large central output hollow shaft, distance between axes: up to 615 mm ATEX conformity (EG guideline 94/9/EG)
Cams	through hardened and ground
Torque	up to 32000 Nm
Axial forces	up to 250 kN
Accessories	<ul style="list-style-type: none"> - worm gear units respectively gear brake motor - lifetime lubrication - mechanical or inductive end switches - special drilling templates for the table top - overload clutch - special cams / special motion sequences - cam sets with high accuracy
Special gears units	upon request

Function	indexing function with 4 ... 20 steps
Version	type XL
Ring diameter	800 – 2100 mm
Cams	through hardened and ground
Torque	up to 41.800 Nm (within the dwell phase)
Axial forces	up to 280.000 N
Accessories	<ul style="list-style-type: none"> - worm gear units respectively gear brake motor - lifetime lubrication - mechanical or inductive end switches - special drilling templates for the ring - overload clutch



Bevel gear units

ZZ-bevel gear units can be variably designed according to the position and execution of the shaft. The spiral-toothed bevel gears permit both alternating loads and changing senses of rotation and are distinguished by their low-noise run. The housings of high-quality grey iron are rectangular, fully machined and have threaded holes for assembly on all sides. The lubrication level and supply holes are located depending on the installed position.

Spiral bevel gears

Spiral bevel gears are the key items manufactured by ZZ-Antriebe. They form the basis for the success of our company. Our high-quality bevel gears are produced in accordance with the Klingelnberg design and achieve an excellent reputation for quality. They are used in ZZ-bevel gear boxes, servo gear boxes and high-speed screw jack units. Furthermore, they can be optimally implemented in many customised applications (e. g. machine tools, printing machines, bevel spur gear units, etc.).



Design sizes	8
Versions	Universal Line® economic version in industrial standard with palloid-spiral bevel gears, case-hardened and lapped Precision Line® for high-quality demands with back lash < 4 arc min with HPG-S spiral bevel gears ATEX conformity (EG guideline 94/9/EG)
Output shaft	solid shaft or continuous hollow shaft
Power	up to 500 kW
Gear ratios	1:1 to 5:1 (speed decreasing); 1:1,25 to 1:2 (speed increasing)
special ratios	upon request
Torques	up to 7000 Nm
Number of revolutions	up to 3000 min ⁻¹
Efficiency factors	0,95 - 0,98
Accessories	- toe plates / corner feet - lifetime lubrication - motor flange / centering flange
Special gear units	upon request

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Bevel gears	- in Klingelnberg-palloid or cyclo-palloid design - HPG-S high accuracy spiral bevel gears
Module	0,5 - 7 according to type
Diameter	up to 500 mm
Quality DIN 3965	3 - 9
Materials	case-hardened, nitriding and heat-treated steel
Heat treatment	case hardening, hardening and tempering, nitriding, etc.
Miscellaneous	individual calculation and design of gear components internal and external profiles (e. g. DIN 5480) are possible polygon P3 (P3C) and P4 (P4C) milled and ground Ø 12 - 100 mm

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Spur-gears



Spur-gears

Beside the well-known programme of bevel gears ZZ-Antriebe GmbH also offers spur-gears in high-quality design. Optionally, they can be delivered in ground execution with DIN qualities 4 - 5 and - when selecting - as well in DIN quality 3. ZZ-Antriebe GmbH is not only familiar with the production but is able to document the desired quality with the help of most modern measuring machines.

Worm wheel gears

Worm wheel gears

Worm wheel gears are used in applications with requirements for high transmission ratios. Beside standard worm wheel gears ZZ-Antriebe also supplies conical and DUPLEX-worm wheel gears. DUPLEX-worm wheel gears are adjustable in backlash and are used for indexing tables and preceding gear units of servo axles. Conical worm wheel gears permit very high torques.



External toothing	milled: module 0,75 to module 24, $\varnothing < 2250$ mm ground: module 0,75 to module 10, $\varnothing < 800$ mm
Internal toothing	internal toothed module 0,5 to module 6, $\varnothing < 500$ mm
Quality DIN 3965	3 - 8
Materials	case-hardened, nitriding and heat-treated steel
Heat treatment	case hardening, hardening and tempering, nitriding, etc.
Miscellaneous	individual calculation and design of gear components internal and external profiles (e. g. DIN 5480) are possible polygon P3 (P3C) and P4 (P4C) milled and ground $\varnothing 12 - 100$ mm

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Versions	<p>standard module 1-16, pitch circle diameter up to 1250 mm</p> <p>DUPLEX-standard (torsional backlash < 15 arc min)</p> <p>DUPLEX-expert (torsional backlash < 10 arc min)</p> <p>DUPLEX-high-precision (torsional backlash < 2 arc min) module 0,5 - 10, distance between axles up to 710 mm</p> <p>conical worm wheel gears</p>
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Screw Jack Units

ZZ-screw jack units are the ideal drive element for linear movements. Our housings permit oil lubrication and therefore high lifting speeds even with a trapezoidal spindle. With our comprehensive and functional range of accessories you can extend your setup into a complete system. Here we will individually advise and carry out the project design work for the lifting equipment exactly according to your requirements. Due to the fact that we manufacture the complete range of components ourselves we are able to offer you the well-known ZZ-quality in this area as well.



High-speed screw jack units

ZZ-high-speed screw jack units expand our range of lifting spindle gear units. Contrary to our screw jack units (worm gear transmission) our high-speed lifting spindle gear units use spiral bevel gears. High lifting speeds are achieved by specific application of re-circulating ball screws, which have a higher efficiency than trapezoidal threaded spindles. We can carry out the project design work for your individual and complete high-speed screw jack unit requirements.

Design sizes	10
Versions	individual gear units (axial movement of spindle or screw-nut) supply of a complete system with motor and accessories complete lifting systems
Spindle	TR18x4 to TR160x16
Load	up to 1000 kN
Lifting speed	max. 50 mm/s
Accessories	- end plate, rod-end bearing, yoke, cardan end joint, counter bearing plate - toe plates - gaiter, protection tube, spiral spring cover - anti-twist element, cardan adapter, pillow block bearings, joint shafts - end switches and other sensors
Special gear units	stainless steel version of the spindle, etc. upon request

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Design sizes	8
Versions	individual gear units (axial movement of spindle or screw-nut) supply of a complete system with motor and accessories, complete lifting systems
Spindle	ball screw spindle
Load	up to 150 kN
Accessories	- end plate, rod-end bearing, yoke - toe plates - gaiter, protection tube - anti-twist element - end switches and other sensors
Special gear units	upon request

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Servo gear units ZZ-Servoline®

ZZ-Servoline® KN has been designed as a bevel gear unit especially for high-dynamic servo drives in automation techniques. With the hypoid gearing, gear ratio's of up to $i = 15 : 1$ can be realised in one stage. The gear units are suitable for operating in any optional mounting position. The various combinations of shafts and flanges provide facilities for all commonly used servo motors. The gear units are delivered with a maintenance-free lifetime lubrication.

Special gear units

We develop and manufacture customised gear units for variable applications in the drive technology: From ordinary adaptation constructions, options and combinations of different gear unit types to complex drive systems. Based on competence and a wide range of manufacture we are able to offer the required special gear units regarding quality, delivery and efficiency aspects.



Design sizes	6
Gear ratios	8 (from 3:1 to 15:1)
Versions	output shaft as single or double-ended solid shaft output shaft as continuous hollow shaft ATEX conformity (EG guideline 94/9/EG)
Torques	up to 1400 Nm
Number of revolutions	up to 8000 min ⁻¹
Backlash	according to design size < 4 – 6 arc min
Special gear units	combination with planetary gear units

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Special solutions, as combinations of	<ul style="list-style-type: none"> - bevel gear units - indexing units - spur-gear units - servo gear units - planetary gear units - worm gear units - screw jack units - electric motors
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