

iwis agrisystems

Solutions for agricultural machinery

iwis

wir bewegen die welt

Specially tailored to meet your needs!





iwis Group

As a **global technology leader** in its areas of expertise, iwis has been manufacturing top-quality products in outstanding precision for over 100 years.



Landsberg

iwis Group – precision, innovation and passion

As a global technology leader in its areas of expertise, iwis has been manufacturing top-quality products in outstanding precision for over 100 years. Our multifaceted portfolio extends from innovative, high-performance chain drive systems through to electrical plug connector technology. iwis technology is availa-

ble worldwide and can be found in applications including but not limited to the automotive industry, construction vehicles, medical and healthcare, printing and food industries, conveyor technology, agricultural equipment and many other industries.

Other corporate divisions in the iwis Group

Automotive



iwis mobility systems

Timing drives, camshaft drives, mass balancing and oil pump drives for the automotive industry

Industry



iwis antriebssysteme

Precision chains, sprockets and chain tensioners for drive and conveyor technology, together with the provision of technical services for industrial drive technology

Contact technology



iwis mechatronics

High-precision metalworking, stamping and bending technology, in particular in the area of electrical connection technology, press-fit technology, IDC insulation displacement connectors and MCS contact technology



In numbers

Sometimes, numbers say more than words. We are constantly striving forwards to stay ahead of the game and remain innovative. After all, we cannot predict the future – but we can help to shape it and turn visions into reality: **the iwis way!**



 **3400**
employees

>50  locations
across the
globe

 **1,400 m**

The longest single conveying distance for which iwis has ever supplied a chain. It is still in use on a car body production line.

The **largest** iwis chain has a pitch

320 mm

The **smallest** pitch of any iwis chain is a mere **4 mm**



60,000,000
individual parts produced
per day

800,000 m

JWTS[®] drive chains produced
at the Munich plant
each year

300,000
chain variants

95,500
in the **JWTS**[®] portfolio

11 product brands
for specific
applications

R&D

57
test rigs

25
pulsators

90
chain technology
engineers across
the globe



Why iwis?

Development

- Dynamic simulation/analysis of chain drive systems with regard to chain load, torsional vibrations and friction losses
- FEM analysis of individual chain drive parts and simulation incl. multi-body simulation
- Testing of new materials, lubricants and manufacturing methods
- Regular testing of chain wear elongation behavior on more than 20 testing rigs
- More than 25 pulser are available for testing dynamic fatigue strength according to different testing methods up to 250 kN.
- Evaluation of chain breaking strength and elongation up to 1000 kN
- Application specific test benches

1

Engineering Services

- Continuous engineering support
- Our own iwis laboratory has the capabilities to carry out many different testing possibilities including microscopy, metallography, evaluation of mechanical properties, chemical composition and qualified analysis of data
- Customer-specific chain configurations for various chain applications
- Lifetime calculation of chains using iwis InduKet as a service or for self-use
- Training on chain design/calculations and general chain technology topics
- CAD data support
- Prototype production (e.g. 3D printing)

2

Quality

- Significantly longer service life
- Very good wear resistance
- Significantly higher breaking load than the standard
- High fatigue strength
- All iwis roller chains are pre-stretched
- Highly effective initial lubrication

3

Chain optimization process

- Feasibility studies in dialogue with customers
- Design/modification of customer-specific attachments
- Application/customer specific chain configurations
- Industry 4.0: Chain Condition Monitoring tools
- Consulting regarding different influences of environmental conditions to increase chain service life

Service

- Webinars
- Chain Innovation Days Events
- Chain Finder
- In-House trainings
- Engineering support
- Online inquiry form for quick responses
- Chain design
- CAD
- Online shop

Worldwide presence

- Worldwide sales and support teams
- Competent field service and distribution partners
- Dedicated Customer Service Support worldwide
- Key Account Manager

4

5

6



iwis agrisystems – Engineering in-depth

When dimensioning a chain, all influencing factors must be considered to determine the lifetime of a chain accurately mechanical. There are three significant factors that determine the operational characteristics of the chains: the tensile strength, the wear resistance and the fatigue strength.



Tensile Strength

Definition

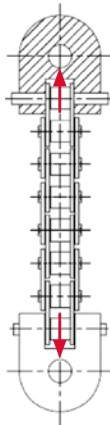
If the load on a chain is increased until the chain breaks, this load is called “Breaking load” and the breakage that occurs in this case is a forced breakage.

Testing method

The breaking load is determined at iwis on an universal testing machine. A chain is clamped at both ends in a tensile test and pulled apart. The breaking load is the force required to break the chain. Caution: The minimum breaking force is not the permissible operating force. However, the breaking force is intended to compare different chain types with each other.

What distinguishes iwis chains?

- **Application-specific chain design**
The consideration of drive-specific, static and dynamic influencing variables when designing a chain drive
- **Chain dimensioning**
Optimum design and selection of individual parts, seamlessly combined for the overall structure of the chain
- **Material**
Selection and control of the material type and quality for the individual materials, as well as the necessary heat and surface treatment processes
- **Processing**
Process control and expert know-how starting in the production processes of chain parts manufacturing going up to assembly precision and initial lubrication



Wear Resistance

Definition

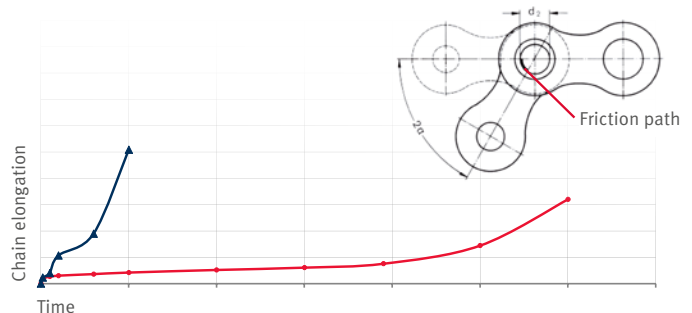
The wear in the chain links and the resulting chain elongation determine the operating conditions and the service life of chains. The wear chain elongation results from the material removal in the chain link, between pin and bush, during the application. The tensile force, the friction joint motion and the lubrication are important factors that affect chain wear.

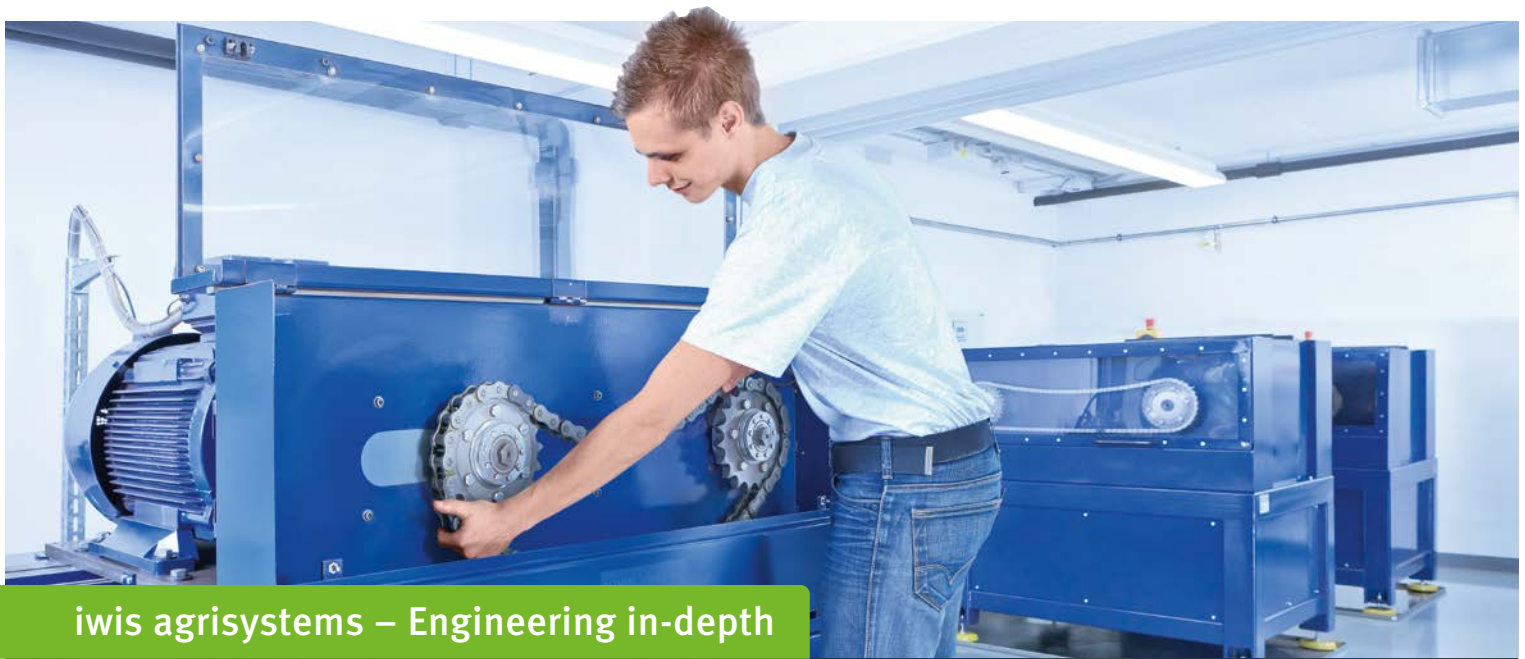
Testing method

The service life expectancy of roller chains is tested on wear test benches under defined and comparable test conditions. The chain elongation occurring is measured at defined intervals.

This is what makes iwis chains so wear-resistant:

- Assistance in dimensioning the center distance and number of teeth of the sprockets to reduce the joint surface pressure and the friction path.
- The increase of the chain’s corrosion resistance
- Recommendation of lubrication according to requirements
- Material pairing in the chain link





iwis agrisystems – Engineering in-depth

The chain drive should be able to withstand operating and peak stresses during it's operation.



Fatigue Strength

Definition

During operation, chains are subjected to dynamic forces which leads to fatigue. The fatigue strengths of chains are the min. dynamic loads that chains can withstand without failure up to 10^7 load cycles.

Testing method

These alternating or threshold loads can be generated on a pulsator to determine the number of load cycles until fracture, the so-called fatigue breakage. The test is repeated with further, reduced loads until finally no more fractures occur. The so-called fatigue strength according to ISO 15654 is determined through through repetitive tests.



Chain Maintenance

Lubrication

Suitable lubrication is an important condition for the durability of a chain whose individual links perform like friction bearings carrying out a pivoting movement. An efficient lubrication system should therefore be used as a matter of course, to ensure that the lubrication film in the link remains intact, thus avoiding unlubricated movements causing a high degree of wear. Inadequate lubrication and un-clean operating conditions leads to lower efficiency and wear.

Chain tensioning

Ensuring the correct maintenance of chain drives reduces the risk of downtimes and prolongs chain service life.

If the slack chain is too small, chain tension is too high. Increased pressure on the bearing causes strong friction, which can result in faster wear elongation. As well as the chain itself, other machine components will be also be subjected to higher loads, which will in turn shorten their service life.

If the slack chain is too large, chain tension is too low. This will not only result in higher noise emissions, but also in an increased risk of the chain jumping off the sprocket and breaking. Considerable transverse oscillations can occur in long, loose chain sections as a result of the superimposed pulse and natural frequencies of the drive.

Therefore regular visual inspections should be carried out. Particular attention should be paid to wear elongation, tension, lubrication and visible signs of wear.



iwis agrisystems

As **the market's leading supplier of agricultural drive chains and components**, iwis offers not only its proven quality and performance but also top-class, expert consulting services. Specially tailored to meet your needs!



iwis agrisystems

iwis agrisystems is a division of iwis antriebsysteme and is responsible for the iwis portfolio of agricultural technology solutions. The agricultural machinery range includes not only gathering and elevator chains for a wide variety of applications, it also encompasses the associated attachments for all the various chain types.

iwis has developed the **HBC series of roller chains** (Heavy Baler Chain) specifically for use in balers. iwis agrisystems' extensive portfolio also includes accessories such as sprockets, pulleys, roller chains and complete application kits for agricultural machinery production.

iwis solutions for agricultural machinery technology



Feederhouse chains

Page 14



Elevator chains

Page 16



Gathering chains

Page 18



Baler chains

Page 20



Roller chains with attachments

Page 22



Drive chains

Page 22



Sprockets and drive components

Page 24



Cast and forged parts

Page 26



Feederhouse chains

Agricultural machinery have to fight with some challenges, due to their constant outdoor use. Components and systems are being exposed to influences such as dust, dirt, cold or wetness. In addition, their operational capability is put to the test after long periods of downtimes during the winter period.

Compare us



Feederhouse chains

Highlights

- Extended service life due to optimized materials and high-precision stamping of the link plates
- Fully harmonised and compatible materials and dimensions in the chain link joint
- Optionally pair-matched
- Special high strength alloy attachments available (HFA)
- Chains supplied individually or with slat as fully assembled set
- **elibUR+** high-performance lubricant

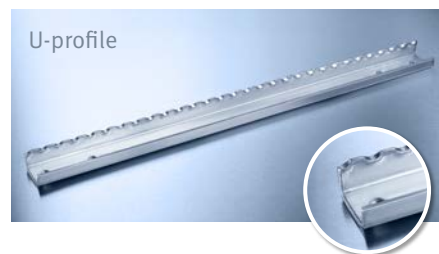
Available accessories

iwis supplies slats to match every type of feederhouse chain. Slats can have T-profiles, U-profiles or can be made from cast materials according to customer requirements.

In passing: Testing facilities

iwis operates the **world's largest testing facilities** for conveyor and drive chains at its headquarters in Munich. In addition to fundamental research, iwis also conducts customer-specific wear, strength or corrosion investigations – both on existing standard test rigs and on custom testing equipment for special applications.

Feasibility studies conducted in collaboration with customers, the design of components and the **conduct of deformation** and **stress analyses** allow us to adapt existing designs to customers' individual requirements or develop entirely new chain drives. At iwis, delivering solutions is our speciality and a part of our corporate philosophy.



Based on our experience in the development and testing of chain drives, **ELITE feederhouse chains** combine **a proven chain design** with optimised technical characteristics and are **unparalleled on the market**.



Elevator chains

ELITE Elevator chains transport the crop gently and safely inside the harvester. The result: safe and loss-free transport in the elevator channel.



Compare us



Elevator chains

Highlights

- Extended service life due to optimized materials and high-precision stamping of the link plates
- Fully harmonised and compatible materials and dimensions in the chain link joint
- Special high strength attachments available (HFA)
- Chains available assembled with paddles
- Optionally supplied with reinforcing plates
- Paddles can optionally be bolted or riveted, available manufactured from rubber, plastic or an alternative material

Paddles for elevator chains

iwis offers a wide range of different paddles to meet all requirements. Rubber tire material as well as belted material and plastic injected molded paddles are available.

In passing: HFA technology

HFA technology increases endurance

The High Fatigue Alloy (HFA) technology developed and patented by iwis consists of a combination of **enhanced alloys** and **innovative heat treatment** methods that increase the endurance of roller chains.

As a result, angled HFA chain links have greater endurance than ordinary basic chains. Alongside increased endurance, this technology offers farmers **greater throughput in corn elevators** without having to increase the size or thickness of the chain's reinforcing links. The HFA attachments have the same dimensions as standard agricultural or roller chains.



Rubber tire material



Belt material



Injection-moulded



Gathering chains

Corn harvests happen under the most diverse conditions in the world. From Siberia to South America, the machines are exposed to the most diverse environmental conditions. In order to meet the requirements, all iwis agricultural machinery chains are checked and released on product-specific test benches and in realistic tests. Temperature ranges, ambient speeds and contamination play an important role here.

Compare us



Gathering chains

Highlights

- Extended service life due to optimized materials and high-precision stamping of the link plates
- Fully harmonised and compatible materials and dimensions in the chain link joint
- For increased wear resistance, special surface coatings and material pairing for pins and bushes are available
- ELITE Gathering chains are optionally available in **an anti-backbend version** – an innovative alternative for demanding applications in the field of agricultural machinery technology

Highlights of the anti-backbend version

- Reduced vibration during chain operation
- Less weight in the cutting unit due to the omission of chain guide elements
- The position of the drive and deflector can be adjusted as required
- Very wide range of material specifications possible
- Compact design for extremely extensive functionality
- Can be used for other applications

In passing: New coating protects against corrosion

Tests prove outstanding effectiveness

To combat the corrosion and wear that can occur under tough outdoor operating conditions, iwis can apply a **zinc flake coating** to drive chains for agricultural technology on request. At only 8-12 µm, this coating is thinner than a human hair and can be thought of as a type of paint that consists of numerous tiny flakes.

Salt mist spray tests performed with zinc flake-coated ELITE chains have revealed a protective effect against corrosion of the basic metal of up to 1,000 hours. The coating is also **temperature-resistant** and **resistant against** many aggressive media.



Baler chain CA650

The **ELITE CA650 chain** is used as a bar chain feeder in the bale chamber. Due to the high compacted densities, the chain is subject to very high stresses in this application. ELITE chains in bar feeders have proven themselves in harvesting applications worldwide.



Compare us

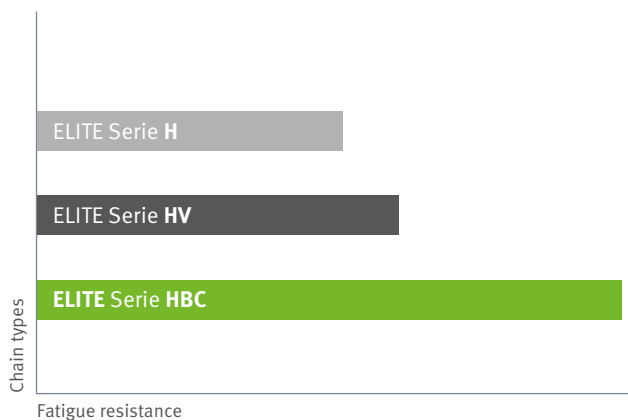


Baler chain CA650

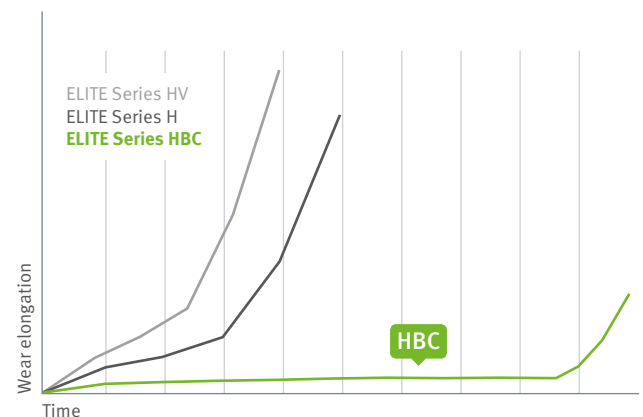
Highlights

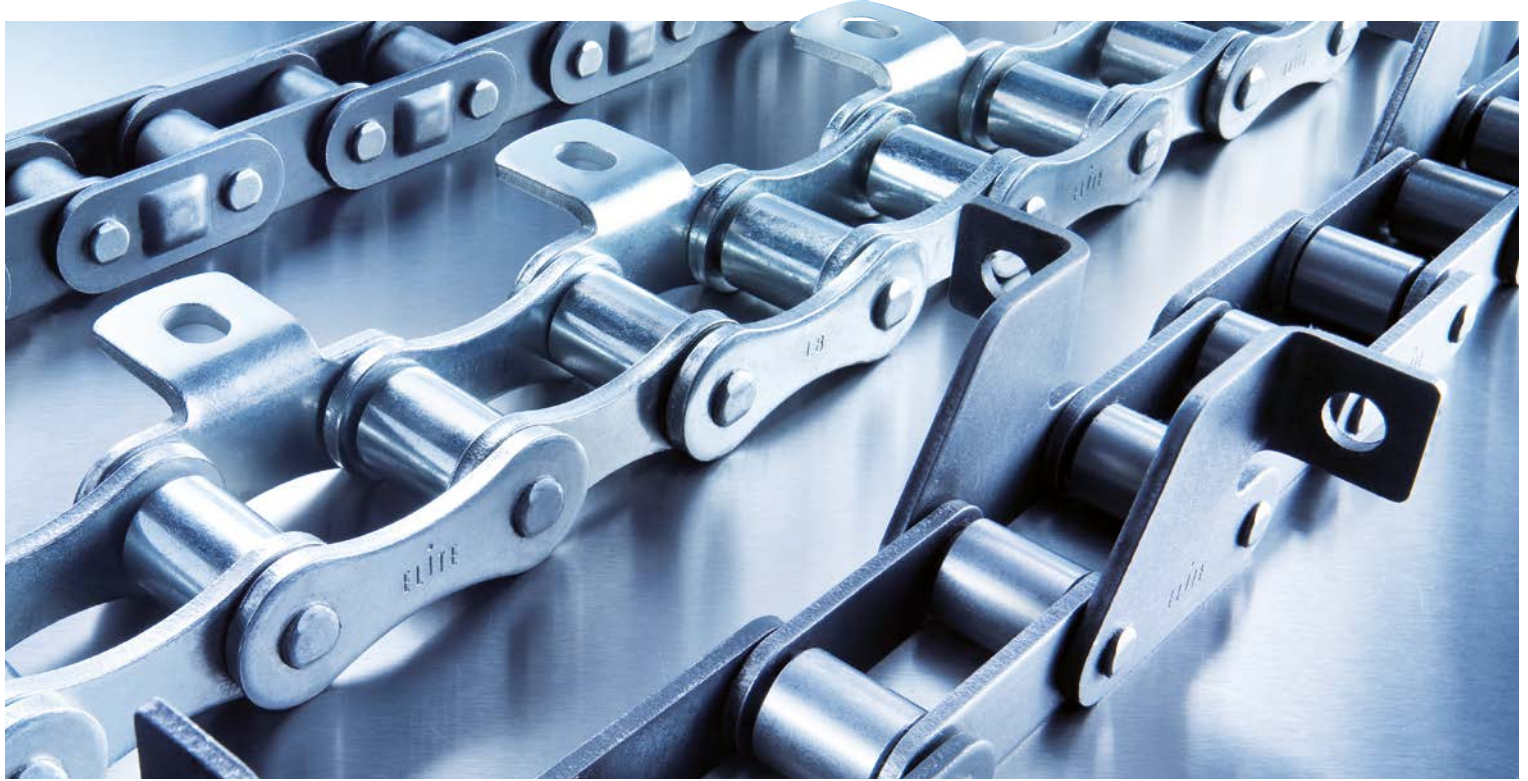
- All link plates with a higher proportion of clean-cut edges offer longer chain service life and higher retention forces for greater stability.
- Reduced wear with no change to chain dimensions due to high performance steels and optimized heat treatment process.
- Optimised plate contours and special materials offer higher fatigue strength compared to the same size of standard chain.
- Premium quality initial lubricant designed to meet the requirements of baler conditions.
- Longer maintenance and chain replacement intervals can be attributed to the best ratio of fatigue strength and wear resistance currently available in the market.
- Pair-matched
- Chains can be supplied individually or as a complete set with traverses

Comparison of fatigue resistance



Wear performance





Roller chains with attachments

ELITE offers a wide range of roller chain products that **fulfil the requirements of a variety of conveyor applications.**

We can supply virtually any special chain version – even the most difficult and complex design – for use in highly diverse application areas.

Highlights

- All ELITE chains have tapered, shot-blasted chain plates and especially high contact ratios
- Seamless, cold-extruded, shot-blasted rollers with extremely regular wall thickness
- Wide product range of bent and flat attachment plates and versions with extended pins available
- Use of standard components keeps production costs low
- Large range of standard sprockets with high availability
- Chains also available in duplex or triplex versions

Drive chains

All ELITE drive roller chains are highly pre-tensioned and treated with our special additive chain oil elidur+, a high-tech initial lubricant. Non-drip elidur+ offers not only the added advantage of improved running characteristics, but also provides better corrosion protection.

Highlights

- ELITE chain plates with optimum geometry are precision-formed and heat-treated. The tapered and shot-blasted chain plates also have particularly high contact ratios.
- Pins have a smooth, extra-hard surface.
- Bushes are absolutely cylindrical and available in seamless or wound versions, depending on application.
- ELITE rollers are seamless, and sizes $\frac{3}{4}$ " and over are tempered for high impact strength.
- Heat-treated, case-hardened steel alloys are used for all chain components.
- Approx. 40% higher breaking strength is applied to pre-stretch our chains by 10% more than required by standard ISO 606.
- Initial lubrication with ensures extremely high wear resistance.
- Low run-in elongation



Sprockets and drive components

A perfectly functioning drive requires the use of suitable **sprockets and drive components**. Alongside the wide range of standard sprockets kept in stock to meet **short-term needs**, iwis combines **state-of-the-art and proven manufacturing processes** to perform individually customised component machining quickly and successfully according to customer drawings or specifications.

Highlights

- Production of keyways in accordance with DIN 6885/1, various special sizes and special dimensions possible
- Conventional internal machining of sprockets and rotating parts
- Press-in ball bearings fitted in drawing-based components together with the manufacture of chain tensioners on hydraulic presses equipped with special equipment
- Wide range of heat treatment capabilities depending on drawing specifications

Your specifications

All products are manufactured exactly according to the OEM's specifications

To guarantee **fast response times**, iwis always has a wide range of standard sprockets (04B-1 to 32B-3) in stock.





Cast and forged parts

As an extension to its product portfolio in the field of drive technology, iwis is also able to supply **cast and forged parts** according to customer drawings. These parts include hubs, spigots, levers, belt pulleys and other components.



Gears and Pulleys



Spigots



Hubs

Highlights

- These components are subject to particularly stringent requirements with regard to dimensional accuracy and technological properties
- iwis has considerable expertise in this area thanks to its many years of experience of the corresponding manufacturing methods which have, for example, also been employed to produce a wide range of sprockets



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