

# BOLLHOFF

## 360° Joining technology

Products and services





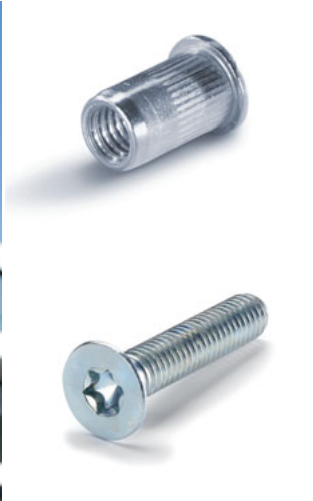
Michael W. Böllhoff and Wilhelm A. Böllhoff

## The Böllhoff Group

Böllhoff is your partner for 360° joining technology with assembly and logistics solutions – worldwide.

As a family-owned company we have been standing for long-term success through innovative capacity and local presence since 1877. We know the specific needs of our customers from all industries and support them in enabling successful connections.

Around 3,300 employees continuously shape the future of joining technology – both at our headquarters in Bielefeld, Germany, and in our subsidiaries around the world.



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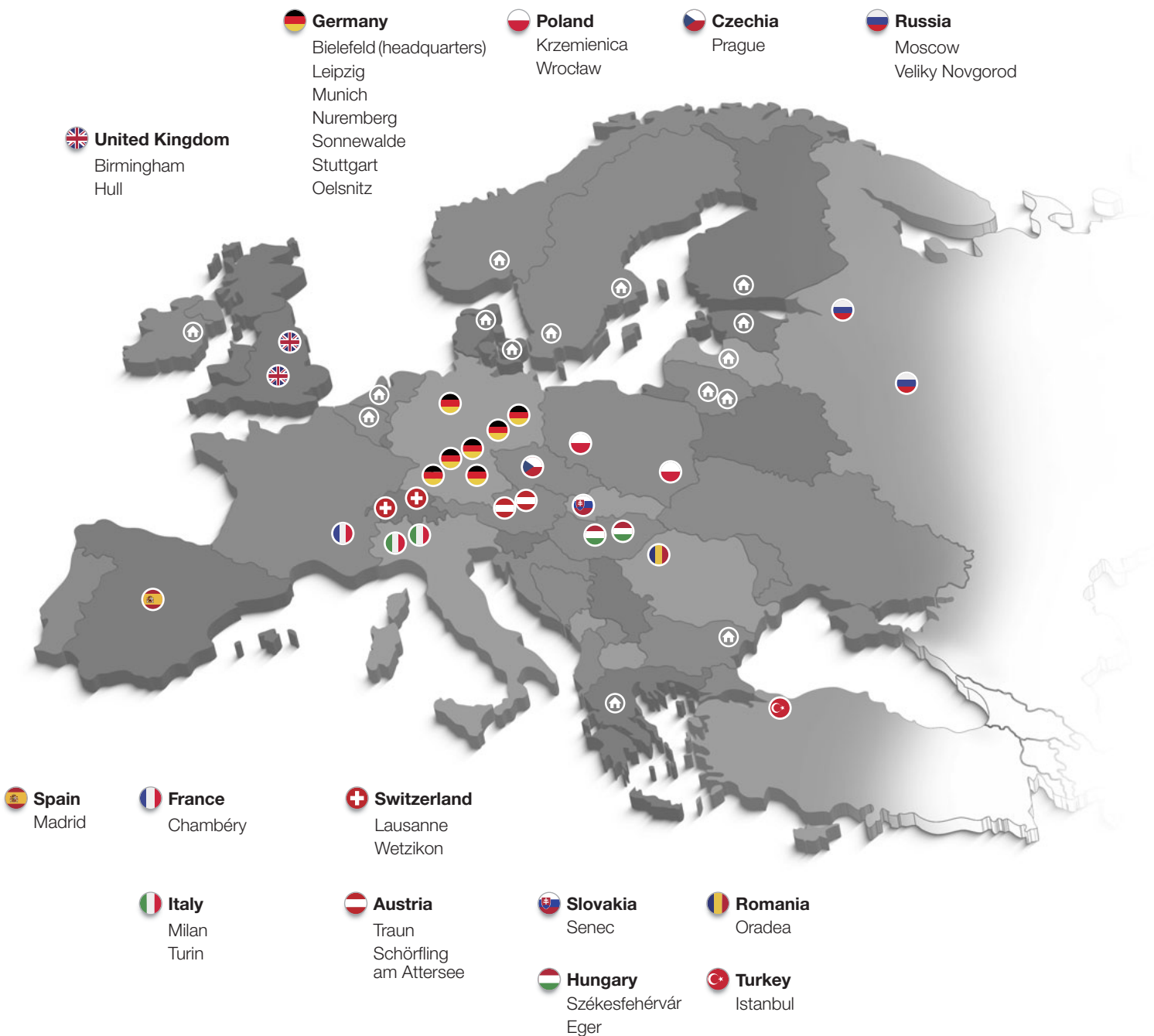
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# Local to our customers

We provide our customers with comprehensive local support through a network of sales offices and logistics centres. These range from logistical services and customised advice, to customer-specific product developments.

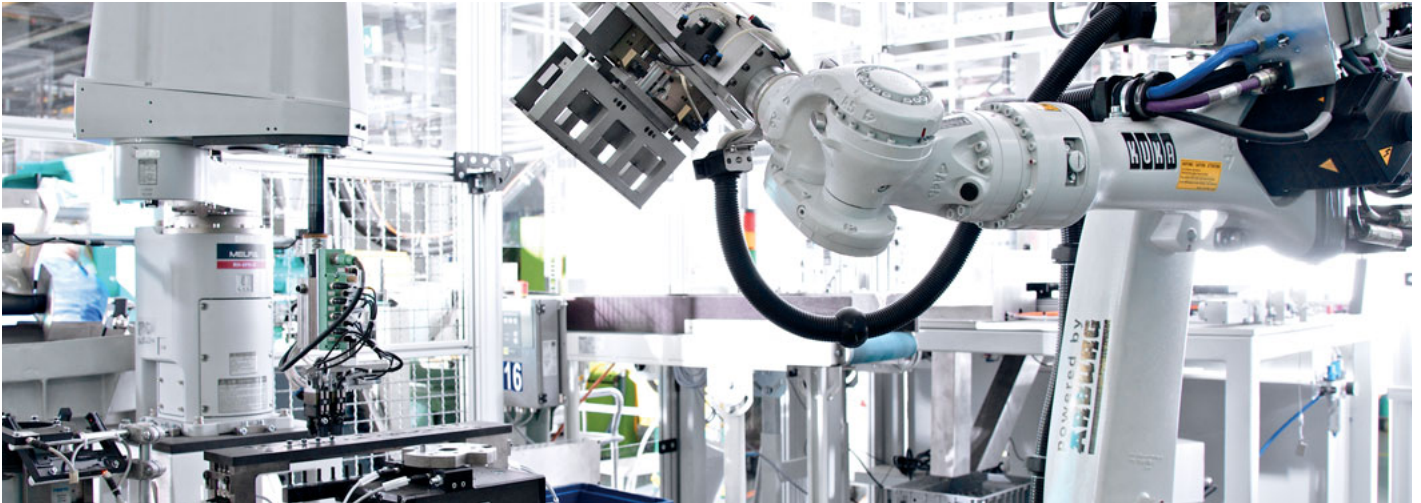
Our customers are assured of speedy and economic solutions exactly where they are needed through local expertise and quick decisions. We aim to inspire our customers day after day with outstanding products and premium services.

## The Böllhoff Group in Europe



 Local representation by agents

## Manufacturer's expertise



We produce fasteners and assembly technology ourselves. In Germany, France, Italy, Great Britain, Austria, Switzerland, the USA, Brazil, India and China we have 12 modern production facilities for the manufacture of high-quality products.

- Injection moulding
- Turning
- Cold forming
- Wire winding
- Machinery and plant engineering

## Partner to many industries



We always work in close collaboration with our customers to develop and select our production range.

This mutual dialogue is a strong basis for our product competence and proximity to market. We also offer a clearly structured range of services, geared to the needs of our target market, which guarantees that users from all industries always have a competent advisor to turn to.

## Hexagonal bolts



We deliver over 50,000 DIN and ISO fasteners made from steel, stainless steel, brass and plastic, direct from stock.



Comprehensive range of screws with hexagonal and square head in all standard thread types.

### Your benefits at a glance

- Steel strength classes from 3.6 to 12.9
- Various Cr(VI)-free surfaces
- Stainless steel in A1, A2, A4
- Certified Böllhoff quality
- All products are also available to order online

### Our ranges

- Hexagon head bolts, self-locking screws
- Self-drilling screws, threaded self-tapping screws
- Tapping screws
- Locking screws
- Tolerance bolts
- and many more

## Cap screws with internal driving feature



Comprehensive range of screws with various internal driving features and different thread types.

## Other screws



Exclusive range of screws for a wide range of special customer requirements.

### Our ranges

- Cylinder screws, self-locking screws
- Self-drilling screws, thread-rolling screws
- Tapping screws, slotted set screws
- Pan head screws, flanged button head screws
- Countersunk bolts, locking screws
- and many more

### Our ranges

- Mushroom head bolts, wing screws
- Ring bolts, eyebolts
- Countersunk bolts, studs
- Threaded self-tapping screws, knurled screws
- T-head bolts, stud bolts
- and many more

## Nuts

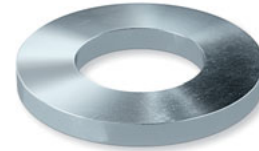


Huge range of nuts for various applications.

### Our ranges

- Hexagon nuts, self-locking nuts
- Square nuts, wing nuts
- Hexagon weld nuts
- Insert nuts, knurled nuts
- Eye nuts, hexagon cap nuts
- and many more

## Washers



Wide range of washers and sealing rings in numerous sizes and versions.

### Our ranges

- Washers, lock washers
- Spring washers, spring lock washers
- Shim rings, tooth lock washers
- Serrated lock washers
- Sealing rings
- and many more

## Pins, rivets and wedges



Extensive range of pins, rivets and wedges for many different applications.

### Our ranges

- Blind rivets, expanding blind rivets
- Round head rivets, blind rivet nuts
- Mandrels, pins
- Mandrel holders
- Countersunk head rivets
- and many more

## Other fasteners



Wide range of other C-parts – from threaded rods to hose clips.

### Our ranges

- Threaded rods, cylinder rods
- Lock rings, adjusting rings
- Turnbuckle nuts, spring pins
- Spring cotters, conical grease nipples
- Hose clips
- and many more

## HELICOIL® Thread inserts



Thread inserts for high load-bearing resilient joints in metal materials with low shear strength.

### Your benefits at a glance

- High thread loading
- Adds quality and value
- Wear-resistant, low and constant thread friction
- Highly resilient
- Corrosion temperature-resistant

## KOBSERT® Thread bushes



Thread inserts for creating vibration-resistant and torsion-proof nut threads in metal materials with low shear strength.

### Your benefits at a glance

- Highly resilient and wear-resistant
- Vibration-resistant and torsion-proof
- Suitable for thread repair
- Sealing (version with sealing ring)

## HELICOIL® Kits Thread repair

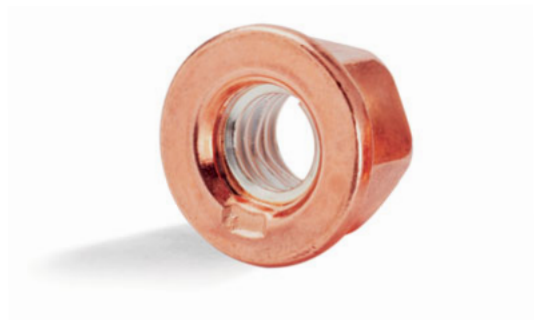


HELICOIL® Plus thread inserts are the fast way to repair damaged threads.

### Typical applications

- Oil drain threads
- Spark plug threads
- Lambda probe threads
- Wheel bearing threads
- Injector screw threads

## HELICOIL® Self-locking nuts



Highly durable, reliable joining of steels, aluminium and plastics.

### Your benefits at a glance

- Consistent clamping torque even when reused
- Consistent load and stress distribution
- High thermal stability
- Constant thread friction
- Reduced residual dirt



**SEAL LOCK®**  
Sealing nuts



Sealing from gaseous and liquid media subject to high pressure.

**KAPTI NUT®**  
Insert nuts



High-strength, captive joints for thin steel, aluminium and stainless steel sheets.

**Your benefits at a glance**

- One-piece element
- Double sealing action
- High preload force
- Up to 5 repeat fastenings
- Thermal stability from -40°C to 110°C

**Your benefits at a glance**

- Captive threaded element
- High mechanical strength
- Can be used on both sides
- Inserts in one action

**IMTEC®**  
Moulded inserts



Moulded inserts especially for thermoset and thermoplastic materials as well as CFRP composites.

**AMTEC®**  
Thread inserts



High-strength brass thread inserts for plastic parts.

**Your benefits at a glance**

- Maximises usable thread length
- Corrosion and acid resistance
- Greater technical cleanliness (minimises residual dirt)
- High pull-out force
- Weight reduction of the component

**Your benefits at a glance**

- Shorter injection cycles
- Lower manufacturing costs for plastic parts
- Secure, stress-free anchoring
- High pull-out and torsion values
- Infinitely repeatable screw fastening unlike self-forming screws

## RIVKLE®

Blind rivet nuts and screws



Blind rivet nuts and screws for securing load-bearing nut and bolt threads to thin-walled components.

## RIVQUICK®

Blind rivets



Strong and high-strength, non-detachable joints for metal and plastic components.

### Your benefits at a glance

- Load-bearing thread on thin-walled components
- Assembly with access from only one side (blind assembly)
- Flexible use in every stage of production
- No thermal stress to workpiece – consequently no warping

### Your benefits at a glance

- For joining thin-walled components
- No thermal stress to workpiece – consequently no warping
- Also suitable for coated components
- Wide range of materials for the fastening element (aluminium, steel, stainless steel, etc.)
- Fast, low-emission

## RIVKLE® Kit

Repair solution for thin-walled components

Example: Range with setting tool for manual riveting.

### Example: Contents of each kit

- 50 blind rivet nuts M 6
- 25 blind rivet nuts M 8
- 25 blind rivet nuts M 10
- RIVKLE® M2007 setting tool
- 1 mandrel and 1 nozzle for each size



**RIVSET®**  
Self-pierce rivets



Highly durable, reliable joining of steels, aluminium and plastics.

**RIVTAC®**  
Tacks



High-speed tack for joining mixed, multilayer and hybrid joints.

**Your benefits at a glance**

- High-strength
- Suitable for visual inspection
- Reproducible
- No pre-drilling
- Watertight and airtight

**Your benefits at a glance**

- Join without pre-punching with access from one side only
- Joining and cycle times reduced to a minimum
- Perfect joining of high-strength materials
- Can be optimally combined with adhesion technology

**RIVQUICK® Kit**  
Repair solution for thin-walled components

Example: Assortment with setting tool for manual riveting.

**Example: Contents of each kit**

- BRS 02 setting tool
- A variety of blind rivets made of aluminium with steel mandrel
- 4 nozzles
- 2 drills



## QUICKLOC®

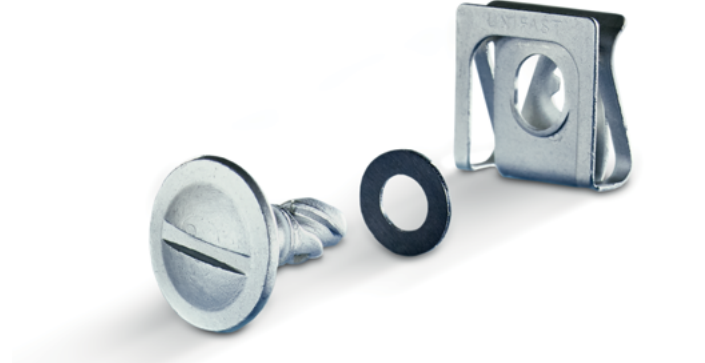
Quick-release fasteners



Clamping, turning and pressure fasteners for repeatedly releasable joints.

## FAST TURN

Quick-release fasteners



Fastening elements for repeatedly releasable joints.

### Your benefits at a glance

- Quick subassembly installation without tools
- Open clockwise and counter-clockwise
- Easy locking by turning or axial pressure
- Resistant to dirt

### Your benefits at a glance

- Opens and closes quickly
- Easy installation
- Easy operation
- Perfect solution for large-scale production

## ONSERT®

Adhesive fasteners



Fast and reliable adhesive bonding of various functional elements using a base made of transparent plastic with light-curing adhesive.

### Your benefits at a glance

- Full mechanical load capacity immediately after irradiation
- Short curing times (< 4 seconds)
- Fastening elements cannot be seen in plastics or thin-walled components (design)
- Adhere to a wide range of materials
- Flexible use, even after surface treatments (painting/cathodic electrodeposition coating)

Decoupling and tolerance compensation technology

**RIVKLE® Elastic**  
Blind rivet nuts



Blind rivet nuts for vibration and noise-decoupling.

**SNAPLOC®**  
Decoupling plug-in connections



Fasteners and fastening systems for absorbing vibration and noise.

**Your benefits at a glance**

- Resilient thread body on thin-walled components
- Vibration and noise-decoupling
- Thermal and electrical isolation
- Easy installation

**Your benefits at a glance**

- Quick and easy assembly/disassembly
- Vibration and noise-decoupling
- Tolerance compensation in centre distances
- Wide range of fastening options
- Easy integration

**FLEXITOL®**  
Tolerance compensation systems



A cost-effective technical solution for the stepless compensation of tolerances.

**Your benefits at a glance**

- High functional reliability
- Access required from one side only
- Easily integrated into a wide range of applications
- High end product quality
- Quick and easy assembly
- Prevents warping during assembly

## Screw locking

### **NORD-LOCK®**

#### Screw locking



NORD-LOCK® wedge-locking washers are locking elements that comply with DIN 25 201 and which lock the threaded connection by preload force instead of friction.

##### Your benefits at a glance

- Optimal locking solution under strong vibrations and dynamic loads
- Locking effect even under low preload
- Suitable for applications up to screw strength class 12.9
- Suitable for multiple reuse without losing effectiveness
- Reliable locking element for rail and construction

### **Chemical thread locking**



Chemical thread retention is an alternative to anaerobic adhesives. The coatings can be adhesive, locking and sealing.

##### Your benefits at a glance

- Good, reliable locking and clamping effect
- Simple, safe assembly
- Effective seal
- No change in component geometry
- Removable

### **RIPP LOCK®**

#### Screw locking



During assembly of the fastener, the radial ribs of the RIPP LOCK® fasteners press into the respective mating surface. The resulting form fit reliably prevents self-loosening of the joint.

##### Your benefits at a glance

- Reliable anti-rotation lock
- Suitable for applications up to screw strength class 12.9
- Also suitable for sensitive surfaces
- Suitable for multiple reuse
- High corrosion and heat resistance

**HELICOIL® Screwlock**  
Thread inserts with screw locking function



These thread inserts also have an additional screw-locking section. The clamping torques are comparable with those specified in ISO 2320.

**HELICOIL®**  
Locknuts



Highly durable, reliable joining of steels, aluminium and plastics.

**Your benefits at a glance**

- High thread loading
- Integrated screw locking function
- Corrosion-resistant and temperature-resistant
- Different versions for varying requirements
- Highly resilient and wear-resistant

**Your benefits at a glance**

- Consistent clamping torque even when reused
- Uniform load and stress distribution
- High thermal stability
- Constant thread friction
- Reduced residual dirt

**U-Nut**  
Locknuts



U-Nut nuts secure bolted connections effectively and efficiently, even under high vibration and dynamic loads and under low preload.

**Fine U-Nut**  
Locknuts



Fine U-Nuts reliably secure shaft bearings, gears and other machine parts against loosening. This is achieved by a plate spring integrated in the nut.

**Your benefits at a glance**

- High security against loosening of the connection
- No additional safety element necessary
- Good re-screwability
- High material and variant width
- Ready standard assortment

**Your benefits at a glance**

- High security against loosening of the connection
- Easy mounting
- Constant assembly parameters
- No additional safety element necessary
- No keyway milling necessary

## Self-tapping fasteners

### **EJOT DELTA PT®**

Self-tapping fasteners for plastics



These are thread-forming/thread-rolling screws for easy and secure self-tapping fastening in thermoplastic materials.

#### Your benefits at a glance

- Highly resilient self-tapping fastening in plastics
- High fatigue strength
- Reliable thanks to high tensile, torsional and vibration resistance
- Minimal radial stress
- Wide range of tightening speeds available

### **EJOT ALtracs® Plus**

Self tapping fastener for lite alloys



Direct screwing without additional thread cutting process and securely and durably connect components. This is the principle of the EJOT ALtracs® Plus. The elimination of the previous insertion of a standard thread saves additional tool costs and time.

#### Your benefits at a glance

- Low loss of preload under high dynamic and thermal pollution
- Very good vibration resistance without additional safety elements
- High mounting safety due to low grooving torques
- Multiple repeat screwing possible

### **AMTEC®**

Self-tapping fasteners for plastics



AMTEC® screws are thread-forming fasteners which are suitable for the direct screw fastening of thermoplastic components.

#### Your benefits at a glance

- Highly resilient self-tapping fastening in plastics
- High pull-out forces
- Reliable screw fastening
- Releasable and reusable
- Special solutions available on request

### **QUICK FLOW®**

Self-tapping fasteners for thin sheets



QUICK FLOW® screws are ideal for joining particularly thin sheets and components.

#### Your benefits at a glance

- No predrilling or punching of material required
- No guide thread required
- Elevated overtorque values ensure good process reliability during assembly
- Repeated loosening and tightening possible
- Secure, long-lasting fastening



## Additional product ranges

### SEALING PLUG

Plug seals



The plug seals are made of two all-metal components. They are used to permanently seal holes in pneumatic and hydraulic components.

#### Your benefits at a glance

- Easy installation
- Reliable and efficient
- Operating pressures up to 500 bar
- Complies with RoHs
- Wide range of items

### PARRYPLUG®

Tamper-resistant elements



PARRYPLUG® is a locking element for internal drives to prevent tampering with thread connections by unauthorised staff.

#### Your benefits at a glance

- Easy and convenient to install
- Perfectly tight fit provides maximum protection against tampering
- Can be removed with appropriate tool
- Wide temperature range (-50°C to +200°C)
- Customised colouring available

### Custom-made parts made of metal and special materials

We offer you the best solution for your application from both a technical and economic point of view while taking into account requirements regarding material, manufacturing processes and surface finishes. For us at Böllhoff, providing advice is as important as meeting customer requirements quickly and reliably. We offer support right from the design stage, through the creation of prototypes, to serial production.

#### Your benefits at a glance

- Fasteners in all dimensions, lengths and diameters
- In all batch sizes – from 1 to over 1,000,000 units
- Individually assembled, labelled and packaged on request
- Including inspection certificates
- Maximum quality



**TEPRO® and ELASTEC®**

Custom-made engineering parts and assemblies made of plastics, silicones and elastomers

Solutions for virtually any application.

We are the perfect partner for customised solutions to meet high demands. We develop and manufacture these products for the automotive, aerospace and many other industries.



**Your benefits at a glance**

- Focus on individual customer benefits
- Customised products
- In-house development, design and prototype manufacture
- State-of-the-art tool making



## HELICOIL®



### Electric screwdriver type E-PSG with prewinder

For quick and accurate processing of all HELICOIL® types.



#### Your benefits at a glance

- Automatic reversal when insertion depth is reached
- Infinitely variable: Speed/torque
- Compatible with existing tool systems (exchange unit)
- Ease of use
- Ergonomic design and compact size
- Quiet operation

## QUICKSERT®\*



### Pneumatic installation tool type P-S 1216

For quick processing of self-tapping thread inserts in thermoplastic and thermoset materials.



#### Your benefits at a glance

- Increased concentricity
- Infinitely variable stop clutch
- Ease of use
- Low maintenance

\* QUICKSERT® is part of the AMTEC® product group.

## ONSERT®



### Battery-operated ONSERT® Portable manual tool

For manual processing of ONSERT® fasteners.



#### Your benefits at a glance

- Ergonomic two-component housing: secure grip and non-slip
- Tailored lamp geometry ensures optimal curing
- USB connection for process monitoring
- 3-position pushbutton for fast and reliable positioning



We can also supply the appropriate assembly solutions for our fasteners. You can find a selection of our processing systems here.



**RIVKLE®**  
RIVKLE® P2007  
pneumatic setting tool

For the fast, force-monitored processing of blind rivet nuts and studs.

**Your benefits at a glance**

- Just one force setting for different component thicknesses
- Long service life due to optimal force setting
- Multiple riveting possible
- Extra light (2 kg)
- Pressure setting method
- Flexible and versatile

**RIVQUICK®**  
RIVQUICK® P2000 hydraulic-  
pneumatic setting tool



For quick processing of blind rivets.

**Your benefits at a glance**

- Reliable
- Lightweight and ergonomic
- Long service life
- Compact design





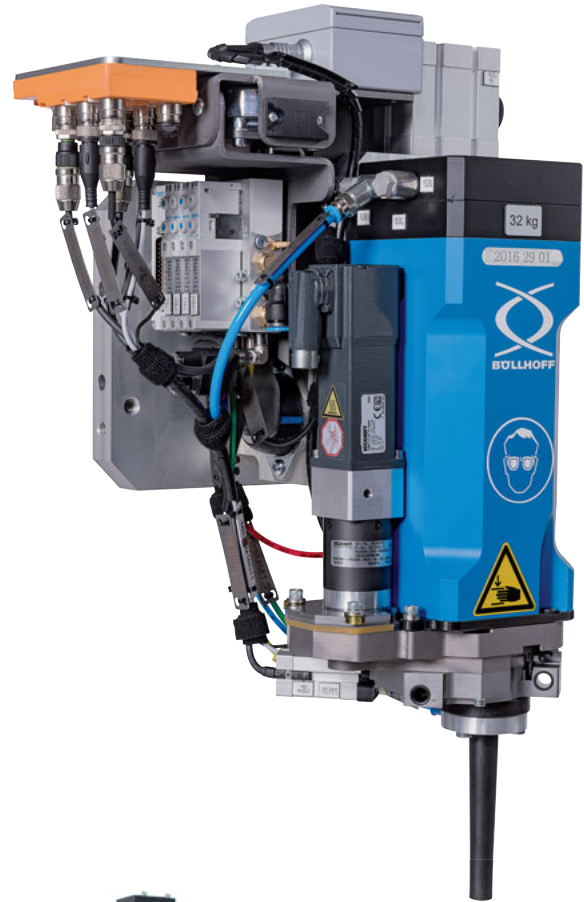
## RIVTAC®

Fully automated system with RIVTAC® Automation P process monitoring

For innovative tack-setting at high speed.

### Your benefits at a glance

- Maximum flexibility in production planning
- Modular design allows flexible positioning
- Quick and easy maintenance
- Compact setting tool for optimum access to application point
- Quick response times



## RIVCLINCH®

PASS series with RIVCLINCH® 4006 P50 PASS hydraulic drive and compressed air booster

For surface-friendly joining without a fastener.

### Your benefits at a glance

- Powerful all-purpose clinch machine
- Joins the most common material combinations up to a total thickness of 4 mm
- "Passive Approach Stroke System" for secure and lightweight tool positioning
- High process speed for series of high quality clinch joints
- Quick and easy maintenance
- Highly reliable





**RIVSET®**   
 Electric-hydraulic RIVSET® Automation EH  
 self-pierce technology

For efficient processing of semi-tubular self-pierce rivets.

**Your benefits at a glance**

- Long service life with maximum availability
- Minimal maintenance costs
- Modular and extensive machine models
- Machine configuration via Plug&Play
- Remote access to control software
- Fast and powerful CPU

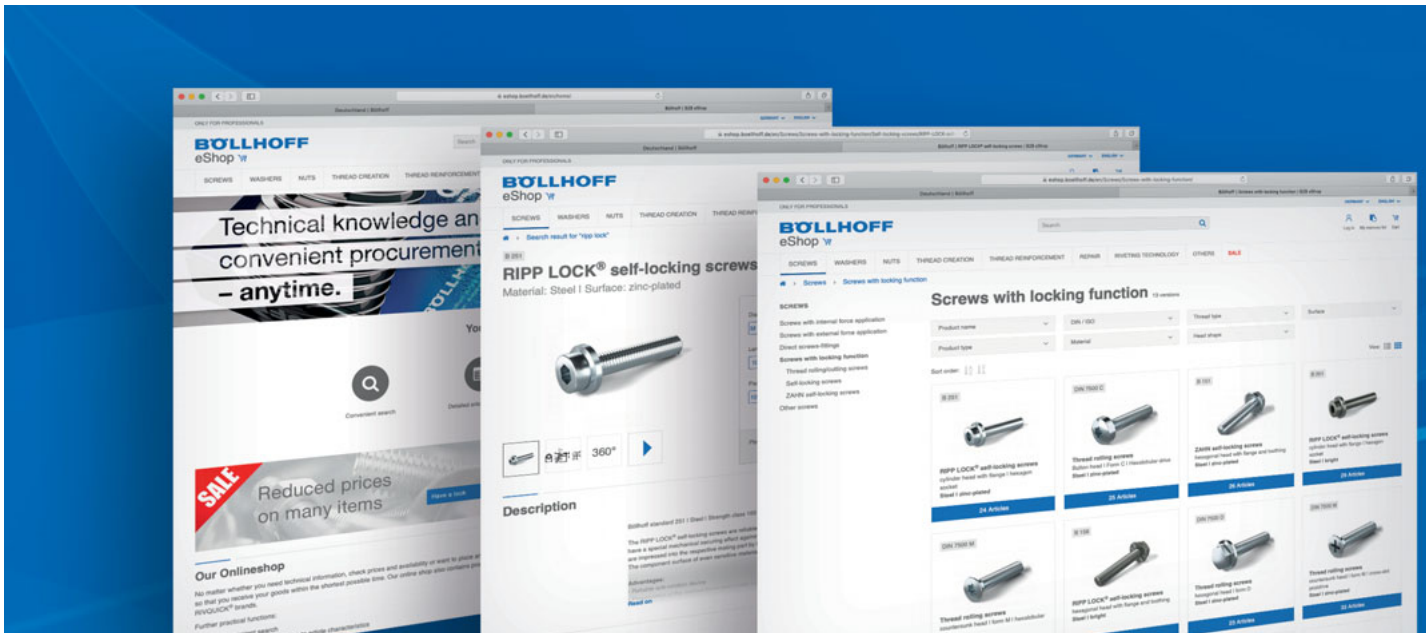


**RIVKLE®**   
 Pressure-regulated, path-monitored tool  
 with integrated RIVKLE® EPK C quality  
 control

For process-monitored setting of RIVKLE® blind rivet nuts and studs.

**Your benefits at a glance**

- 100% process control
- Pressure-regulated tool
- Suitable for large production series
- Multilingual touchscreen
- Adjustable alarm and safety devices



## eShop – Technical knowledge and convenient procurement – for every time.

Our eShop offers over 40,000 DIN and standard fasteners, as well as HELICOIL® thread inserts and RIVKLE® blind rivet nuts. The eShop features all the functionalities of a modern shop system. It also offers everything you would expect of a web-based technical manual for fasteners. There are a variety of options for the technically-minded user – product illustrations, technical specifications, interactive 3D visualisations and CAD downloads.

### Your benefits at a glance

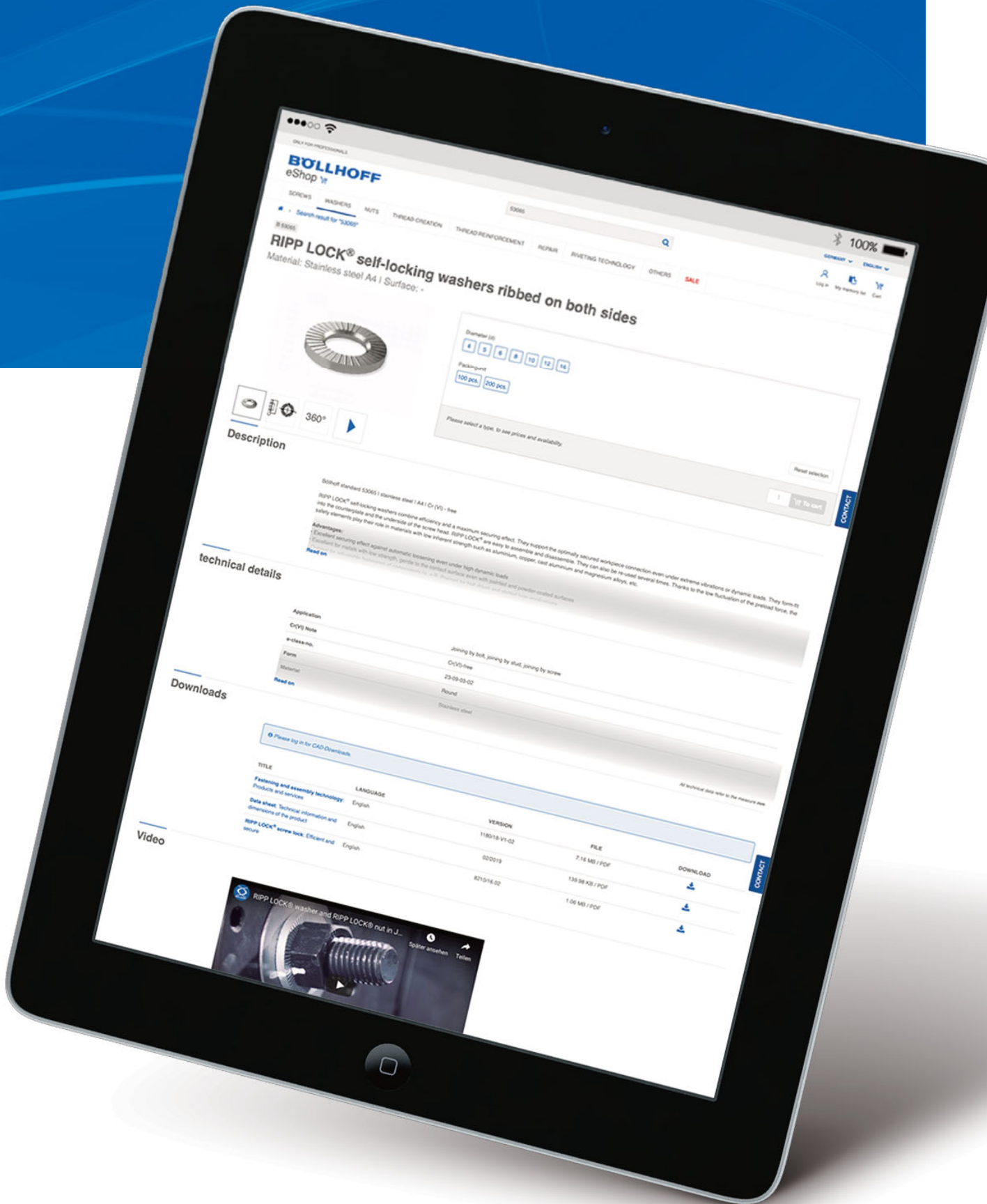
- A good overview of our extensive Product range
- detailed technical information, incl. product videos and data sheets
- Product illustrations and technical drawings
- Up-to-date information on prices and availabilities
- A comfortable ordering process - all around the clock



## Electronic Data Interchange

EDI is the most important and by far the biggest mainstay of global transfer of electronic data volumes. Electronic data interfaces provide an efficient link between your systems and ours. Worldwide there are countless different structures for EDI messages (e.g. EDIFAC, OFTP, VDA) and we work confidently with them all.





**RIPP LOCK® self-locking washers ribbed on both sides**  
 Material: Stainless steel A4 | Surface: -



Diameter (Ø)

Part quantity

100 pcs | 500 pcs

Please select a type, to see prices and availability.

**Description**

Both standard 53065 | stainless steel | A4 | Cr(VI) - free

RIPP LOCK® self-locking washers combine efficiency and a maximum securing effect. They support the optimally secured workpiece connection even under extreme vibrations or dynamic loads. They form fits into the counterplate and the underside of the screw head. RIPP LOCK® are easy to assemble and disassemble. They can also be re-used several times. Thanks to the low fluctuation of the prestress force, the safety elements play their role in materials with low inherent strength such as aluminum, copper, cast aluminum and magnesium alloys, etc.

**Advantages:**  
 - Excellent securing effect against automatic loosening even under high dynamic loads  
 - Suitable for metals with low strength, thanks to the contact surface even with painted and powder-coated surfaces  
 - Suitable for materials with low inherent strength, such as aluminum, copper, cast aluminum and magnesium alloys, etc.

**technical details**

Application	Joining by bolt, joining by stud, joining by screw
Cr(VI) Note	Cr(VI)-free
Accessories	
Form	Round
Material	Stainless steel

**Downloads**

Please log in for CAD Downloads

TITLE	LANGUAGE	VERSION	FILE	DOWNLOAD
Fastening and assembly technology Products and services	English	118018-V1-02	7.16 MB / PDF	
Data sheet: Technical information and dimensions of the product	English	020019	139.98 KB / PDF	
RIPP LOCK® screw lock. Efficient and secure	English	821016.02	1.06 MB / PDF	

**Video**



## ECOPACK – Economic packaging



## One-stop shop for products and packaging

In addition to provision of fastenings to meet your needs, we are also an expert partner for bagging solutions. We will discuss your packaging requirements face to face to discover the perfect technical and most economical solution.

### Our range of services

Our range of services includes automatic packing by computer-controlled packaging machines and customer-specific packaging solutions.

### Bag packaging labelling

- Printing with
  - logos
  - barcodes
  - information
 by thermal transfer
- Labelling of bags and cardboard boxes
- Package slip dispenser up to DIN A4

### Continuous quality control

- Inspection by light barrier
- Final weight checking using check weighers
- Random sampling
- Inspection by camera

### Your benefits at a glance

- Supplier reduction
- Customised packaging solutions
- Expert advice on customer-specific packaging concepts
- Reliable order processing to deadline





## ECOSIT® (ECONomic Supply In Time)

With our ECOSIT® service package we take over the complete supply chain of our customers: from disposition, procurement, quality control and warehousing until the goods are distributed to the assembly line. The ECOSIT® product family in overview:

### RFID Box

All the relevant data is stored on RFID labels. As soon as stocks start getting low, the label is simply thrown into the RFID Box. The order is triggered and the procurement process begins. The 15" touchscreen also allows access to the central database, the control of electronic shelf displays and quick help via the video hotline.

### ECOBin

The small load carriers of the ECOBin container series can be placed freely on the shelf thanks to the multi-sided access possibilities. The all-round rounded inner edges of the containers additionally facilitate the removal of the articles. Thanks to the special waffle base, the containers can also be stacked safely and stably in a composite stack.

### ECOLABEL

ECOLABEL allows flexible marking of all articles in the ECOSIT® system and accelerates the processes on site via pick-by-signal. If an article is to be picked, an optical signal on the ECOLABEL guides the worker directly to the respective container – for faster location of the articles and fewer mistakes.

### ECOPORTAL

In ECOPORTAL you always have an overview of the most important data concerning your delivery system. Whether you want to call up master data, view the shelf occupancy plan or download further documents: ECOPORTAL is your fast and flexible access to all relevant information. Comprehensive reporting provides you with numerous approaches to increase the efficiency of the system - for more transparency and independence.

### ECOFREIGHT

Mobile pallets with integrated load securing allow a comfortable transport of the loaded ECOBin containers.

Due to the combination of pallet, handle and trailer coupling, no lift truck is necessary. The absence of wood, paper and cardboard also protects the environment – for more sustainability in logistics.

#### Your benefits at a glance

- Easy and fast shelving and technology installation
- Systematic, clear storage
- Reduction of warehouse and contingency stocks
- High security of supply
- Express deliveries during demand peaks
- Online order process control
- Video hotline

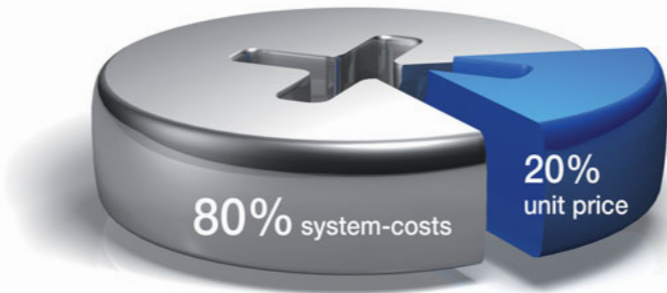


## Potential savings

The cost efficiency of joints does not depend as much on the price of the fastener as it does on the costs for preparation and assembly of the parts to be joined. The main cost drivers in the process are: design, procurement, quality control, logistics, storage, assembly and commitment of capital.

Compared to this, the unit price of the fastener, at 20%, is relatively low.

The future manufacturing costs of a product are, to a large extent, determined at the design stage of a new development. The general rule is: the earlier the fastening technology specialists are brought in, the better.



## Our range of services

Our priority is always to improve customer products while cutting the costs of production.

We offer the following services:

- Design and engineering of fasteners
- Design and supply of customised special articles
- Application engineering tests in a certified laboratory
- In-house prototyping
- Standardisation of fasteners
- Optimisation of product lines
- Specialist publications about fastening technology
- Customer seminars

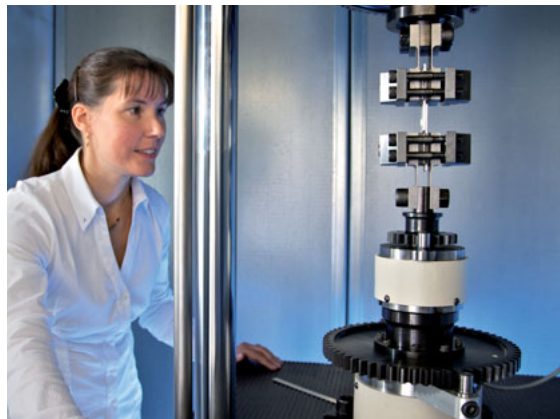


## Technical analyses

With our accredited laboratory we offer comprehensive support for the customer's design departments:

- Preload force measurements
- Friction steel measurements
- Material analysis
- Compression behaviour
- Insertion tests
- Corrosion protection tests
- Tensile tests
- Dynamic strength testing

We also produce our own prototypes for custom-made fasteners as part of our range of application technology services.



### Cr<sup>6+</sup>-free fasteners

We have chosen a range (VZD) in the field of galvanised zinc surfaces which ensures corrosion protection equivalent to a sophisticated surface in accordance with DIN ISO 4042 = A3C. The corrosion resistance in the salt spray test is greater than 72 hours at zinc corrosion resistance and a minimum of 144 hours until the base metal corrodes. The appearance is iridescent silver. We have many DIN and standard fasteners from the VZD range available from stock.

### Antiseize coating

Screwed joints in which both the screw and nut, as well as the clamping parts, are made of stainless steel materials are prone to so-called galling or seizing. The antiseize coating effectively prevents cold welding. Currently DIN 934 nuts and DIN 985 self-locking nuts in A2 are available as standard with the antiseize coating. Other nuts, as well as screws, can be supplied at any time on request.





### Quality guaranteed

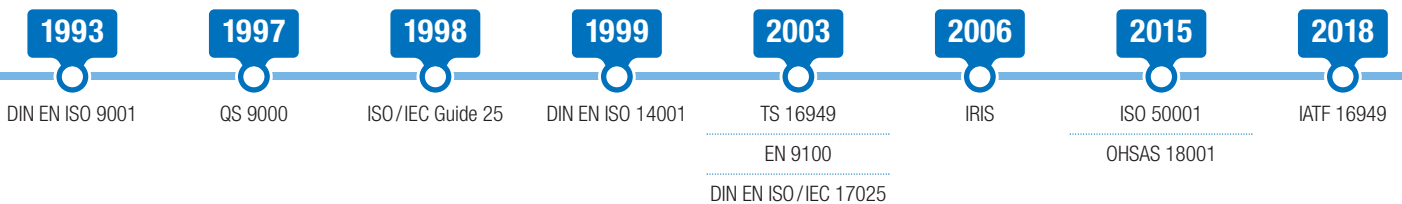
Fulfilling the quality specifications of our customers – high as they may be – has always been particularly important to us.

Böllhoff has always been among those companies which see customer-specific requirements as a challenge and have always been certified to the latest specifications in quality and environmental management. Our customers benefit directly from the resulting continuous improvements.

### Accredited laboratory and certification



Böllhoff was among the first companies to be successfully certified to ISO/TS 16949 – the world’s highest standard for the automotive industry. Böllhoff has its own accredited test laboratory certified to DIN EN ISO / IEC 17025 and the company is certified to DIN EN ISO 14001, further proof of our strong commitment to quality and the environment. These certifications attest to the highly competent testing of our products and our environmentally conscious actions that protect resources.





## Specialist publications

In our daily dealings with a wide range of fasteners we frequently encounter “out-of-the-ordinary” questions from customers and interested parties. The answers can be found in the seventh edition of “The Manual of Fastening Technology”,

grouped as follows:

- Selecting and calculating a screwed joint
- Standards
- Materials
- Manufacture
- Threads
- Assembly
- Self-tapping fasteners
- Fastener retention
- Corrosion protection



Products and markets develop at great speed. Increasing competition and new laws present manufacturers with the challenge of developing alternative technical solutions. We regularly inform our customers about the latest technical developments – in the field of fastener technology, corrosion protection or screw locking, for example. Our specialist publications “The Manual of Fastening Technology”, Böllhoff Bulletin and Böllhoff News are longestablished and valued reference works in the market.



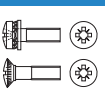
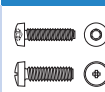
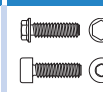

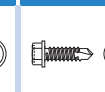
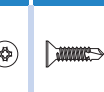
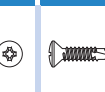
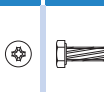
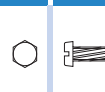
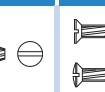
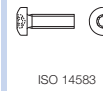

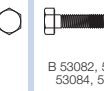
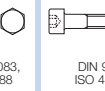
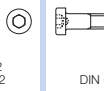
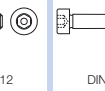
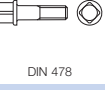
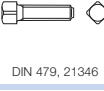
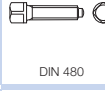
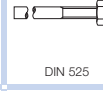

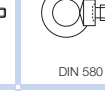
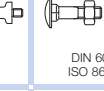
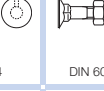
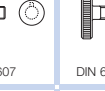


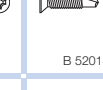
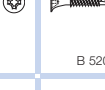





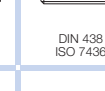
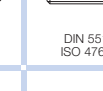


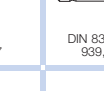





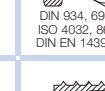

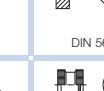









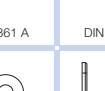
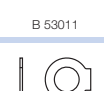


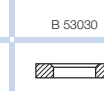
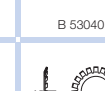

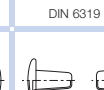
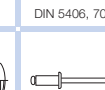
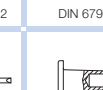
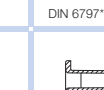
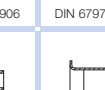
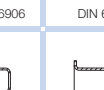
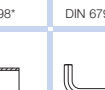


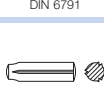

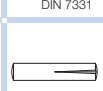
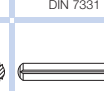
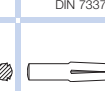
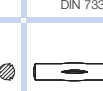
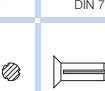
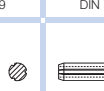




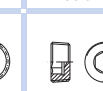

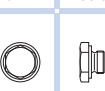
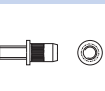
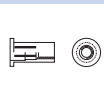
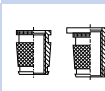
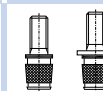
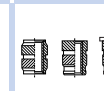
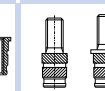
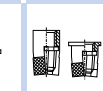
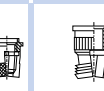

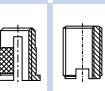
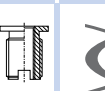






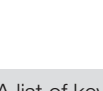
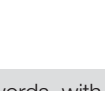
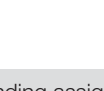
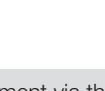

## Böllhoff Academy

The aim of our Academy programme is to help our customers make their fastening and assembly technology as efficient as possible and to constantly produce reliable joints. The courses we offer are geared towards people in both technical and business roles and include technical seminars on fastening and assembly technology, hardness tests in our accredited laboratory, joining technology for plant operators and all aspects of screwing technology for sales staff.

# Overview of our product range

	A	B	C	D	E	F	G	H	I	K	L	M	
1	DIN 84 ISO 1207	DIN 85 ISO 1580	DIN 404	DIN 920	DIN 921	DIN 922	DIN 923	DIN 924, 925	DIN 963 ISO 2009	DIN 964 ISO 2010	DIN 965 ISO 7046	DIN 966 ISO 7047	
2	DIN 7516	DIN 7516	DIN 7516	DIN 7985 ISO 7045	DIN 558, 933, 961 ISO 4017, 4018, 8676	DIN 561	DIN 564	DIN 609, 610*, 7968	DIN 501, 931, 960, 6914, DIN EN 14399-4, ISO 4014, 4016, 8765	DIN 7990	DIN 7964	DIN 6900	
3	DIN 7991 ISO 10642	B 52100	ISO 7380-1	ISO 7380-2	ISO 7380-2 (TX)	B 50500	DIN 186, 261, 7992, 25192	DIN 188	DIN 316	B 316	DIN 444	DIN 464, 58531	
4	DIN 6304, 6306	DIN 6367	DIN 6378	DIN 7969	DIN 11014, 25195	DIN 15237	DIN 25193	DIN 6901	DIN 6901 ISO 10510	DIN 7976 ISO 1479	DIN 7981 ISO 7049	ISO 14585	
5	DIN 571	DIN 7995	DIN 7996	DIN 7997	B 7505	B 7505	B 52004	B 52005	B 52006	E 1411	E 1412	E 1413	
6	DIN 915 ISO 4028	DIN 916 ISO 4029	DIN 926	DIN 927	DIN 976	DIN 2509	DIN 2510	DIN 2510	DIN 315	B 315	DIN 431, 80705	DIN 439, 936* ISO 4035, 8675	
7	DIN 929	DIN 935	DIN 979	DIN 980, 982, 985, 6924, 6925	DIN 981, 1804, 70851, 70852	DIN 986	DIN 1478	DIN 1479	DIN 1480	DIN 1587	DIN 1816	DIN 2510, 30387	
8	DIN 80701	DIN 80704	B 193, 196, 53012	B 317, 318	B 466	B 467	B 50400	B 51010	B 51011	B 51012	B 53001	B 53002	
9	ISO 7089, 7091, 7092, 7094, 8738, 10669, 10673	DIN 7989, 9021 ISO 7093 B 1052, 9022	DIN EN 14399-6 DIN 125, 6916 ISO 7090	DIN 7603	DIN 127*, 7980*	DIN 128*, 6905*	DIN 74361 C	DIN 137*, 6904*	DIN 432	DIN 434, 435, 6917, 6918	DIN 436	DIN 440 ISO 7094	
10	DIN 6913*	B 53060	B 53061	B 53062	B 53065	B 53070	B 53072	B 53077	DIN 124, 660	DIN 302, 661	DIN 662	DIN 674	
11	B 50502	B 51020, 51021	B 51022	DIN 1 ISO 2339	DIN 7 ISO 2338	DIN 94 ISO 1234	DIN 11024	DIN 258, 7977 ISO 8737	DIN 1433, 1443 ISO 2340	DIN 1434, 1435 ISO 2341	DIN 1436, 1444 ISO 2341	DIN 1445	
12	DIN 7344 ISO 8748	DIN 7346 ISO 13337	DIN 7978 ISO 8736	DIN 7979 ISO 8733, 8735	DIN 6881	DIN 6883, 6886	DIN 6884, 6887	DIN 6885	DIN 6886	DIN 6888	DIN 6889	DIN 705*	
13	DIN 442	DIN 443	DIN 470	DIN 3017	DIN 71412	DIN 8140, B 610004, 620004	B 610005, 620005	B 70100, 70101, 70102, 70300	B 70200, 70201, 70202, 70400	B 70500	B 71100, 71101	B 71200, 71300, 71301	

\* Note: Norm is withdrawn

N	O	P	R	S	T	U	V	W	X	Y	Z
 DIN 6900	 DIN 7500	 DIN 7500	 DIN 7500	 E 5151	 DIN 7504 Form K ISO 15480	 DIN 7504 Form M ISO 15481	 DIN 7504 Form O ISO 15482	 DIN 7504 Form R ISO 15483	 DIN 7513	 DIN 7513	 DIN 7513
 DIN 6900	 DIN 6921 EN 1665	 DIN 34800	 ISO 14583	 B 151, 158, 53085	 B 251	 B 53081	 B 53082, 53083, 53084, 53088	 DIN 912 ISO 4762	 DIN 6912	 DIN 7379	 DIN 7984
 DIN 478	 DIN 479, 21346	 DIN 480	 DIN 525	 DIN 529	 DIN 580	 B 581	 DIN 603 ISO 8677	 DIN 604	 DIN 605, 608	 DIN 607	 DIN 653, 58530
 DIN 7982 ISO 7050	 DIN 7983 ISO 7051	 B 51001, 51003	 B 51002, 51004	 B 52010, 52011, 52012	 B 52013	 B 52014	 B 52020	 B 52021	 DIN 95	 DIN 96	 DIN 97
 E 1452	 E 5451	 E 5454	 DIN 417 ISO 7435	 DIN 427 ISO 2342	 DIN 438 ISO 7436	 DIN 551 ISO 4766	 DIN 553 ISO 7434	 DIN 797	 DIN 835, 938, 939, 940	 DIN 913 ISO 4026	 DIN 914 ISO 4027
 DIN 466, 58521	 DIN 467, 6303	 DIN 546	 DIN 547	 DIN 548	 DIN 934, 6915, ISO 4032, 8673 DIN EN 14399-4	 DIN 557	 DIN 562	 DIN 582	 DIN 798	 DIN 917	 DIN 928
 DIN 6305, 6307	 DIN 6331, 6923	 DIN 6926, 6927	 DIN 6330	 DIN 6334	 DIN 7965	 DIN 7967*	 DIN 16903	 DIN 28129	 DIN 30389	 DIN 74361 A	 DIN 74361 B
 B 53010	 B 53011	 B 53003	 DIN 6923	 B 53030	 B 53040	 B 53050, 53051	 B 65080	 B 66000	 B 67000	 DIN 93*	 DIN 125, 126, 433, 440, 988, 1440, 1441, 6902, 6903, 6340, 7349
 DIN 462	 DIN 463*	 DIN 526*	 DIN 2093, 6796, 6908	 DIN 6319	 DIN 5406, 70952	 DIN 6797*	 DIN 6797*, 6906	 DIN 6797*, 6906	 DIN 6798*	 DIN 6798*, 6907*	 DIN 6798*
 DIN 675	 DIN 6791	 DIN 6792	 DIN 7331	 DIN 7331	 DIN 7337	 DIN 7338	 DIN 7338	 DIN 7339	 DIN 7340	 DIN 911*	 DIN 6911
 DIN 1469	 DIN 1470 ISO 8739	 DIN 1471 ISO 8744	 DIN 1472 ISO 8745	 DIN 1473 ISO 8740	 DIN 1474 ISO 8741	 DIN 1475 ISO 8742	 DIN 1476 ISO 8746	 DIN 1477 ISO 8747	 DIN 1481 ISO 8752	 DIN 6325 ISO 8734	 DIN 7343 ISO 8750, 8751
 DIN 471	 DIN 472	 DIN 983	 DIN 984	 DIN 6799	 DIN 7993, 9045*	 DIN 906	 DIN 907	 DIN 908	 DIN 910	 DIN 5586	 DIN 7604
 B 72100	 Type 6687	 Type 931, 932	 Type 940, 941	 Type 730, 733, 734	 Type 743, 744	 Type 230, 231, 232	 Type 235	 Type 831, 832, 833	 Type 835, 837	 Type 1433, 1434 1437, 1438	 BÖLLHOFF

**i** A list of keywords, with the corresponding assignment via the coordinate system, can be found on the following pages.

# Overview of our product range

Description	DIN/ISO/B/Type	Coordinates	Description	DIN/ISO/B/Type	Coordinates	Description	DIN/ISO/B/Type	Coordinates
<b>A</b>			<b>D</b>			<b>Description</b>		
Adjusting screws for drawing instruments	DIN 58530	Z 3	Countersunk head wood screws with cross recess H	DIN 7997	D 5	Hexagon couplings	DIN 6334	S 7
AMTEC® screws for plastic materials countersunk head, cross recess Z	B 52005	H 5	Cross recessed raised countersunk head wood screws	DIN 7995	B 5	Hexagon domed cap nuts, high type	DIN 1587	K 7
AMTEC® screws for plastic materials raised countersunk head, cross recess Z	B 52004	G 5	Cup head nib bolts	DIN 607	Y 3	Hexagon domed cap nuts, low type	DIN 917	Y 6
AMTEC® screws for plastic materials raised countersunk head, with washer, cross recess Z	B 52006	I 5	Cutter retaining screws	DIN 6367	B 4	Hexagon domed cap nuts, self locking	DIN 986	F 7
AMTEC® screws, cross recess Z, countersunk head	B 52005	H 5	Cylindrical pins	DIN 7 / ISO 2338	E 11	Hexagon fitted bolts for steel constructions	DIN 7968	H 2
AMTEC® screws, cross recess Z, raised countersunk head	B 52004	G 5	<b>D</b>			Hexagon fitted bolts with short and long thread	DIN 609, 610	H 2
AMTEC® screws, cross recess Z, raised countersunk head with washer	B 52006	I 5	Disc springs	DIN 2093	R 9	Hexagon flange bolts	DIN 6921 / EN 1665	O 2
AMTEC® thread inserts, EXPANSIONINSERT 1	Type 230, 231, 232	U 13	Double end studs with full shank	DIN 2509	F 6	Hexagon flange nuts	DIN 6923	O 7
AMTEC® thread inserts, EXPANSIONINSERT 2	Type 235	V 13	Double end studs with reduced shank, type KU and ZU	DIN 2510	H 6	Hexagon head pipe plugs	DIN 7604	Z 12
AMTEC® thread inserts, HITSERT®, through hole	Type 932	P 13	Double end studs with reduced shank, type L, K, and Z	DIN 2510	G 6	Hexagon head screws for steel constructions	DIN 7990	K 2
AMTEC® thread inserts, HITSERT®, with bolt and flange	Type 940, 941	R 13	Dowel pins with internal thread	DIN 7979 / ISO 8733, 8735	D 12	Hexagon head screws with partial fine thread	DIN 960 / ISO 8765	I 2
AMTEC® thread inserts, HITSERT®, with flange, through hole	Type 931	P 13	Dry wall screws Self-drilling tapping screws thread, cross recess H	B 52021	W 4	Hexagon head screws with partial thread	DIN 601, 931 / ISO 4014, 4016	I 2
AMTEC® thread inserts, QUICKSERT® Hex, with flange and hexagon shape, reverse locking	Type 1437, 1438	Y 13	Dry wall screws, cross recess H	B 52020	V 4	Hexagon head screws, fully threaded	DIN 558, 933 / ISO 4017, 4018	E 2
AMTEC® thread inserts, SONICSERT®, through hole	Type 730, 733	S 13	<b>E</b>			Hexagon head screws, fully threaded, metric fine thread	DIN 961 / ISO 8676	E 2
AMTEC® thread inserts, SONICSERT®, with bolt and flange	Type 743, 744	T 13	EJOT® ALtracs® Plus-screw, TORX, with pressed washer	E 5151	S 1	Hexagon head tapping screws	DIN 7976 / ISO 1479	K 4
AMTEC® thread inserts, SONICSERT®, with flange, through hole	Type 734	S 13	EJOT® ALtracs® Plus-screw for light metal materials	E 5151	S 1	Hexagon head wood screws	DIN 571	A 5
AMTEC® thread inserts, SPREDSERT® 1	Type 831, 832, 833	W 13	EJOT®-Delta PT-screws, TORX, countersunk head	E 5454	P 5	Hexagon locking screws with flange and toothing	B 53085	S 2
AMTEC® thread inserts, SPREDSERT®, with retaining flange	Type 835, 837	X 13	EJOT®-Delta PT-screws, TORX, with pressed washer	E 5451	O 5	Hexagon nuts	DIN 934 / ISO 4032, 8673	T 6
<b>B</b>			EJOT®-PT-screws, cross recess H, countersunk head	E 1413	M 5	Hexagon nuts for high strength constructions	DIN 6915, DIN EN 14399-4	T 6
Blind rivet nuts RIVKLE®, countersunk head round body, linear knurls in grip range, open and closed end, steel, stainless steel, aluminium	B 70200, 70201, 70202, 70400	I 13	EJOT®-PT-screws, cross recess H, pan head	E 1412	L 5	Hexagon nuts for high strength constructions	DIN 6915 / DIN EN 14399-4	T 6
Blind rivet nuts RIVKLE®, extra-small countersunk head hexagonal body, open end, stainless steel, steel	B 71200, 71300, 71301	M 13	EJOT®-PT-screws, cross recess H, raised countersunk head with washer	E 1411	K 5	Hexagon nuts with flange and clamp	DIN 6926, 6927	P 7
Blind rivet nuts RIVKLE®, extra-small countersunk head, countersinking round body, open end, stainless steel, steel	B 71100, 71101	L 13	EJOT®-PT-screws, cross recess H, with pressed washer	E 1411	K 5	Hexagon nuts with flange and toothing	B 53012	C 8
Blind rivet nuts RIVKLE®, flat head, full hexagonal body, open and closed end, stainless steel, steel	B 70500	K 13	EJOT®-PT-screws, TORX, countersunk head	E 5454	P 5	Hexagon nuts with flange, self-locking, all-metal	B 53021	R 8
Blind rivet nuts RIVKLE®, flat head, round body, linear knurls in grip range, opened and closed end, steel, stainless steel, aluminium	B 70100, 70101, 70102, 70300	H 13	EJOT®-PT-screws, TORX, pan head	E 1452	N 5	Hexagon set nuts	B 51010	H 8
Blind rivet nuts RIVKLE®, slotted round body, open end, steel	Type 6687	O 13	EJOT®-PT-screws, TORX, raised countersunk head with washer	E 5451	O 5	Hexagon set screws with full dog point	DIN 561	F 2
Blind rivet studs RIVKLE®, flat head knurled round body, steel	B 72100	N 13	Elevator Bolts	DIN 15237	F 4	Hexagon set screws with half dog point, cone end	DIN 564	G 2
Blind rivets head shape A and B	DIN 7337	T 10	Eye bolts	DIN 444	L 3	Hexagon socket head cap screws	DIN 912 / ISO 4762	W 2
Bow nuts for Shipbuilding	DIN 80704	B 8	<b>F</b>			Hexagon socket head cap screws low head with pilot recess	DIN 6912	X 2
Butterfly nuts for shipbuilding	DIN 80701	A 8	Fine U-Nut self-locking nuts material nuts (1.0503), material insert: stainless steel metric fine thread	B 53050, 53051	U 8	Hexagon socket head cap screws with low head	DIN 7984	Z 2
Buttonhead wood screws with cross recess	DIN 7996	C 5	Flange button head socket screws with hexalobular drive	B 53062	D 10	Hexagon socket head shoulder screws	ISO 7379	Y 2
<b>C</b>			Flange button head hexagon head socket screws	LFS (TX)	E 3	Hexagon socket screw plugs conical thread	DIN 906	U 12
Cage nuts	B 51012	K 8	Flat countersunk head bolts with two nibs	DIN 11014	E 4	Hexagon socket screw plugs with collar and ventilation	DIN 5586	Y 12
Cap nuts	DIN 2510	G 6	Flat countersunk rivets	DIN 675	N 10	Hexagon socket screw plugs with collar cylindrical pipe thread	DIN 910	X 12
Castle nuts	DIN 935	B 7	Flat countersunk square neck bolts, long square	DIN 605, 608	X 3	Hexagon socket set screws with collar cylindrical thread	DIN 908	W 12
Castle nuts hexagon, slotted thin type	DIN 979	C 7	Foundation bolts	DIN 797	W 5	Hexagon socket set screws with cone point	DIN 914 / ISO 4027	Z 5
Chipboard screws countersunk head cross recess Z	B 7505	E 5	Foundation nuts	DIN 798	X 6	Hexagon socket set screws with cup point	DIN 916 / ISO 4029	B 6
Chipboard screws, countersunk head, cross recess Z	B 7505, 7510	E 5	Fujiok self-locking nuts material nuts	B 53030	S 8	Hexagon socket set screws with dog point	DIN 915 / ISO 4028	A 6
Chipboard screws, pan head, cross recess Z	B 7505, 7510	F 5	<b>G</b>			Hexagon socket set screws with flat point	DIN 913 / ISO 4026	Y 5
Chipboard screws, raised countersunk head, cross recess Z	B 7505, 7510	F 5	Gib-head keys	DIN 6887	G 12	Hexagon thin nuts	DIN 439, 936 / ISO 4035, 8675	M 6
Clamping screws for drawing instruments	DIN 58531	M 3	Gib-head saddle keys	DIN 6889	L 12	Hexagon weld nuts	DIN 929	A 7
Clevis pins with head and threaded portion	DIN 1445	M 11	Grooved pins	DIN 1474 / ISO 8741	T 11	Hexalobular external driving head screws	DIN 34800	P 2
Clevis pins with large head	DIN 1436, 1444 / ISO 2341	L 11	Grooved pins countersunk head	DIN 1477 / ISO 8747	W 11	Hollow keys, one-piece	DIN 7339	W 10
Clevis pins with small head, type M and MG	DIN 1434, 1435	K 11	Grooved pins with gorge	DIN 1469	N 11	Hollow keys, two-parts, type A	DIN 7331	R 10
Clevis pins without head	DIN 1433, 1443 / ISO 2340	I 11	Grooved pins with round head	DIN 1476 / ISO 8746	V 11	Hollow keys, two-parts, type B	DIN 7331	S 10
Coating 3M, Scotch Grip 2353	B 53084	V 2	Grooved pins, centre grooved	DIN 1475 / ISO 8742	U 11	Hook bolt	DIN 6378	C 4
Coating Plas-Bolt	B 53081	U 2	Grooved pins, full length parallel grooved with chamfer	DIN 1473 / ISO 8740	S 11	Hose clamps	DIN 3017	D 1
Coating Precote 30 / 80	B 53082, 53083	V 2	Grooved pins, full length parallel grooved with chamfer and pilot	DIN 1470 / ISO 8739	O 11	<b>I</b>		
Coating Precote 85	B 53088	V 2	Grooved pins, half-length taper grooved	DIN 1472 / ISO 8745	R 11	Insert nuts for plastic moulding	DIN 16903	V 7
Conical spring washers for screw joints	DIN 6796, 6908	R 9	Grooved taper pins	DIN 1471 / ISO 8744	P 11	Internal tab washers	DIN 462	N 9
Core plugs	DIN 907	V 12	<b>H</b>			<b>K</b>		
Countersunk flat head screws with cross recess H	DIN 965 / ISO 7046	L 1	Hardened dowel pins	DIN 6325 / ISO 8734	Y 11	Knurled nuts	DIN 6303	O 6
Countersunk flat head screws with nib	DIN 604	W 3	Hexagon socket screws security-screws with dog point similar ISO 7380	B 50500	F 3	Knurled nuts for drawing instruments	DIN 58521	N 6
Countersunk head rivets	DIN 302, 661	K 10	HELICOIL® Plus, thread inserts for metals	DIN 8140	F 13	Knurled thumb nuts, high type	DIN 466	N 6
Countersunk head screws with forged slot for steel structures	DIN 7969	D 4	HELICOIL® Plus, type free running, thread inserts for metals	B 610004	F 13	Knurled thumb nuts, high type, type F, polyamide	B 466	E 8
Countersunk head screws with hexagon drive	DIN 7991 / ISO 10642	A 3	HELICOIL® Plus, type screwlock, thread inserts for metals	B 620004/10	F 13	Knurled thumb nuts, thin type, type F, polyamide	DIN 467	O 6
Countersunk head screws with hexalobular drive	B 52100	B 3	HELICOIL® Tangfree, type free running, thread inserts for metals	B 610005	G 13	Knurled thumb screws, high type	DIN 464	M 3
			HELICOIL® Tangfree, type screwlock, thread inserts for metals	B 620005	G 13	Knurled thumb screws, thin type	DIN 653	Z 3
			HELICOIL® lock nuts	B 67000	X 8	<b>L</b>		
			Hex head bolts with reduced shank	DIN 7964	L 2	Lifting eye bolts	DIN 580	T 31
			Hexagon and castle nuts with knuckle thread	DIN 30389	X 7	Lifting eye bolts, high quality tempered, octagonal	B 581	U 3
			Hexagon bolts for high-tensile structural bolting	DIN 6914 / DIN EN 14399-4	I 2	Lifting eye nuts	DIN 582	W 6
			Hexagon bolts with large cross flats for high-tensile structural bolting	DIN 6914, DIN EN 14399-4	I 2	Lifting nuts	DIN 28129	W 7
						Locking washers polyamide	B 53061	C 10
						Locking washers type S	B 53070	F 10
						Locknuts	B 53001, 53002, 53030 / DIN 980, 982, 985	L 8 / M 8 / S 8 / D 7
						Locknuts basis DIN 934 all metal	B 53001	L 8
						Locknuts basis DIN 934 all metal, provided with thread on both sides	B 53002	M 8
						Locknuts, all metal	B 53020	P 8
						Lubricating nipples	DIN 71412	E 13

**Description DIN/ISO/B/Type Coordinates**

Description	DIN/ISO/B/Type	Coordinates
<b>M</b>		
Masonry bolts	DIN 529	S 3
Mushroom head anchor bolts	DIN 25193	G 4
Mushroom head screws, with square neck	DIN 603 / ISO 8677	V 3
Mushroom head square neck bolts	DIN 603 / ISO 8677	V 3
<b>N</b>		
NORD-LOCK® – Locking washers	B 53074	H 10
Nuts with captive washer with undetachable, loose washer	B 53010	N 8
Nuts with flat collar, type B	DIN 74361	Z 7
Nuts with spherical collar, type A	DIN 74361	Y 7
<b>P</b>		
Pan head screws with hexalobular drive	ISO 14583	R 2
Parallel keys	DIN 6883	F 12
Parallel keys, type A	DIN 6886	I 12
Parallel keys, type B	DIN 6886	F 12
Pipe nuts	DIN 431	L 6
Pipe nuts with flat head, type A	DIN 7340	X 10
Plain washers medium finish for clevis pins	DIN 1440, 1441	Z 8
Plain washers tolerance according to DIN ISO 4759.3 class C	B 9022	B 9
Plain washers, class 140 HV	DIN 125, 126	Z 8
Plain washers, class 200 HV	ISO 7093	B 9
Plain washers, class 200 HV and 300 HV	ISO 7089	A 9
Plastic caps, black, only for DIN 571	B 571	A 5
Prevailing torque type hexagon locknuts	DIN 6924, 6925	D 7
Prevailing torque type hexagon locknuts, all metal	DIN 980	D 7
Prevailing torque type hexagon nuts with nylon insert, high and low type	DIN 982, 985	D 7
<b>R</b>		
Raised cheese head screws, cross recess H	DIN 7985 / ISO 7045	D 2
Raised countersunk flat head screws, cross recess H	DIN 966 / ISO 7047	M 1
Raised countersunk head rivets	DIN 662	L 10
Raised countersunk head screws with hexagon socket head	ISO 7380	C 3
Reinforcement window screw, countersunk head, cross recess H	B 52010	S 4
Reinforcement window screw, special point, countersunk head, cross recess H	B 52011	S 4
Reinforcement window screw, countersunk head, drilling bit, metric thread, cross recess H	B 52014	U 4
Reinforcement window screw, countersunk head, drilling bit, tapping screw thread, cross recess H	B 52013	T 4
Reinforcement window screw, countersunk head, Hi-lo-thread, cross recess H	B 52012	S 4
Retaining rings for bores	DIN 984	R 12
Retaining rings for shafts	DIN 983	P 12
Retaining rings for shafts type A	DIN 471	N 12
Retaining rings for shafts type I	DIN 472	O 12
Retaining washers for shafts spring steel	DIN 6799	S 12
RIPP LOCK® hexagon locking screws	B 158	S 2
RIPP LOCK® lock washers	B 53065	E 10
RIPP LOCK® locking screws with internal hexagon socket	B 251	T 2
RIPP LOCK® locking washers ripped on both sides	B 53065	E 10
RIPP LOCK® lock nuts	B 193	C 8
Rivets for brake and clutch lining	DIN 7338	U 10 / V 10
Round couplings	B 50400	G 8
Round head rivets	DIN 124, 660	I 10
Round nuts slotted for hook spanners	DIN 70851, 70852	E 7
Round nuts with drilled holes in one face	DIN 547	R 6
Round nuts with set pin holes	DIN 1816	L 7
Round nuts with set pin holes in side	DIN 548	S 6
Round washers type R = round hole for wood construction	DIN 440	Z 8
Round washers type V = square hole for wood constructions	DIN 440/ISO 7094	M 9
Round-ended feather keys	DIN 6885	H 12
<b>S</b>		
Safety cup	DIN 526	P 9
Screw and washer assemblies	DIN 6900	N 1
Screwdriver bits	B 51020, 51021, 51022	B 11 / C 11
Screwdriver bits with hexalobular drive	B 51022	C 11
Screwdriver bits, cross recess H and Z	B 51020, 51021	B 11
Screwed inserts	DIN 7965	T 7
Sealing nuts SEAL LOCK®	B 66000	W 8
Sealing push-on caps for pressing	DIN 443	B 13
Sealing push-on caps for rolling	DIN 442	A 13
Sealing washers	DIN 470	C 13
Self-drilling tapping screws countersunk head, cross recess H	DIN 7504 ISO 15482	O / V 1
Self-drilling tapping screws screw and washer assembly, type C	DIN 6901	H 4
Self-drilling tapping screws screw and washer assembly, type F	DIN 6901 / ISO 10510	I 4

**Description DIN/ISO/B/Type Coordinates**

Description	DIN/ISO/B/Type	Coordinates
Self-drilling tapping screws screws, countersunk head, cross recess H	DIN 7504 ISO 15482	O / V 1
Self-drilling tapping screws screws, hexagon head with collar	DIN 7504 ISO 15480	K / T 1
Self-drilling tapping screws screws, pan head, cross recess H	DIN 7504 ISO 15481	M / U 1
Self-drilling tapping screws screws, pan head, cross recess H	DIN 7504 ISO 15483	R / W 1
Self-drilling tapping screws, hexagon head with flange	DIN 7504 ISO 15480	K / T 1
Self-drilling tapping screws, pan head, cross recess H	DIN 7504 ISO 15481	M / U 1
Self-drilling tapping screws, raised countersunk head, cross recess H	DIN 7504 ISO 15483	R / W 1
Self-locking counter nuts (PAL-nuts)	DIN 7967	U 7
Self-locking nuts with captive washer	B 53011	O 8
Semi-tubular rivets with countersunk head	DIN 6792	P 10
Semi-tubular rivets with truss head	DIN 6791	O 10
Serrated lock washers for screw assemblies, type A	DIN 6798, 6907	Y 9
Serrated lock washers, type J	DIN 6798	X 9
Serrated lock washers, type V	DIN 6798	Z 9
Set collars	DIN 705	M 12
Shaft lock-down devices	B 53060	B 10
Shim rings and supporting rings	DIN 988	Z 8
Shoulder nut with metric fine screw thread or trapezoidal thread	DIN 30387	M 7
Slotted capstan screws	DIN 404	C 1
Slotted cheese head screws	DIN 84 / ISO 1207	A 1
Slotted countersunk flat head screws	DIN 963 / ISO 2009	I 1
Slotted countersunk head screws with full dog point	DIN 925	H 1
Slotted countersunk head wood screws	DIN 97	Z 4
Slotted headless screws with chamfered end	DIN 427 / ISO 2342	S 5
Slotted pan head screws	DIN 85 / ISO 1580	B 1
Slotted pan head screws, with large head	DIN 921	E 1
Slotted pan head screws, with shoulder	DIN 923	G 1
Slotted pan head screws, with small head	DIN 920	D 1
Slotted pan head screws, with small head and dog point	DIN 922	F 1
Slotted raised countersunk head screws	DIN 964 / ISO 2010	K 1
Slotted raised countersunk head screws with full dog point	DIN 924	H 1
Slotted raised countersunk head wood screws	DIN 95	X 4
Slotted round head wood screws	DIN 96	Y 4
Slotted round nuts	DIN 546	P 6
Slotted round nuts for hook-spanner	DIN 981, 1804	E 7
Slotted set screws with cone point	DIN 553 / ISO 7434	V 5
Slotted set screws with cup point	DIN 438 / ISO 7436	T 5
Slotted set screws with flat point	DIN 551 / ISO 4766	U 5
Slotted set screws with full dog point	DIN 417 / ISO 7435	R 5
Slotted set screws with full dog point	DIN 926	C 6
Slotted shoulder screws	DIN 927	B 6
Snap head rivet	DIN 674	M 10
Snap nuts for tapping screws	B 51011	I 8
Snap rings	DIN 9045	T 12
Snap rings for shafts and bores	DIN 7993	T 12
Socket wrenches	DIN 911	Y 10
Socket wrenches for B 50500	B 50502	A 11
Socket wrenches for DIN 6912	DIN 6911	Z 10
Spherical springwashers, centering rings	DIN 74361	G 9
Spherical washers, type C	DIN 6319	S 9
Spiral type pins rule type spring steel	DIN 7343 / ISO 8750, 8751	Z 11
Spiral type pins, heavy type	DIN 7344 / ISO 8748	A 12
Split pins	DIN 94 / ISO 1234	F 11
Spring cotter	DIN 11024	G 11
Spring type straight pins heavy type spring steel	DIN 1481/ISO 8752	X 11
Spring type straight pins light type spring steel	DIN 7346 / ISO 13337	B 12
Spring washers	DIN 137	H 9
Spring washers for screw assemblies	DIN 6905	F 9
Spring washers for screw assemblies	DIN 6904	H 9
Spring washers for screws with cylindrical heads	DIN 7980	E 9
Spring washers with safety ring	DIN 6913	A 10
Spring washers, bent up or flat	DIN 127	E 9
Spring washers, convex or curved	DIN 128	F 9
Square head bolts for shaft guides	DIN 21346	O 3
Square nuts	DIN 557	U 6
Square nuts, thin type	DIN 562	V 6
Square taper washers for high-strength constructions	DIN 6917, 6918	K 9
Square taper washers for U-section	DIN 434, 435, 6917, 6918	K 9
Square washers for wood construction	DIN 436	L 9
Square weld nuts	DIN 928	Z 6
Square-head screws with collar	DIN 478	N 3
Square-head screws with collar and dog point cap	DIN 480	P 3
Square-head screws with half dog point	DIN 479	O 3
Studs, metal end = 1d, 1,25 d, 2,5 d	DIN 938, 939, 940, 835	X 5

**Description DIN/ISO/B/Type Coordinates**

Description	DIN/ISO/B/Type	Coordinates
<b>T</b>		
Tab washers for slotted round nuts	DIN 5406, 70952	T 9
Tab washers with long tab	DIN 93	Y 8
Tab washers with long tab and wing	DIN 463	O 9
Taper keys with grip head	DIN 6884	G 12
Taper pin with thread and constant threaded part	DIN 7977	H 11
Taper pins with internal thread	DIN 7978 / ISO 8736	C 12
Taper pins with threaded end	DIN 258 / ISO 8737	H 11
Taper pins, type B	DIN 1 / ISO 2339	D 11
Tapper keys	DIN 6881	E 12
Tapping screws for facing, type A and BZ	B 51001, 51002, 51003, 51004	P 4 / R 4
Tapping screws, countersunk head with cross recess H	DIN 7982 / ISO 7050	N 4
Tapping screws, pan head with cross recess H	DIN 7981 / ISO 7049	L 4
Tapping screws, pan head with hexalobular drive	ISO 14585	M 4
Tapping screws, raised countersunk head with cross recess H	DIN 7983 / ISO 7051	O 4
Tee nuts with prong	B 65080	V 8
T-head bolts	DIN 261	G 3
T-head bolts for railed vehicles	DIN 25192	G 3
T-head bolts with large head	DIN 7992	G 3
T-head bolts with nib	DIN 188	H 3
T-head bolts with square neck, type B	DIN 186	G 3
Thick hexagon nuts 1,5 d	DIN 6330	R 7
Thick hexagon nuts with collar 1,5 d	DIN 6331	O 7
Thin nut for shipbuilding	DIN 80705	L 6
Thread cutting screws, type A	DIN 7513	X 1
Thread cutting screws, type A, cross recess H	DIN 7516	A 2
Thread cutting screws, type B	DIN 7513	Y 1
Thread cutting screws, type D, cross recess H	DIN 7516	B 2
Thread cutting screws, type E, cross recess H	DIN 7516	C 2
Thread cutting screws, type F and G	DIN 7513	Z 1
Thread forming screws for metric ISO-thread	DIN 7500	O 1 / P 1 / R 1
Thread inserts, self cutting with flange QUICKCERT®	Type 1433, 1434	Y 13
Threaded rods	DIN 976	E 6
Tommy nuts with fixed Tommy	DIN 6305	N 7
Tommy nuts with not fixed Tommy	DIN 6307	N 7
Tommy screws with fixed Tommy	DIN 6304	A 4
Tommy screws with not fixed Tommy	DIN 6306	A 4
Toothed lock washers, type A	DIN 6797	U 9
Toothed lock washers, type I	DIN 6797	V 9
Toothed lock washers, type V	DIN 6797	W 9
Toothed washer for screw assemblies, type A	DIN 6906	V 9
Toothed washer for screw assemblies, type V	DIN 6906	W 9
Turnbuckle nuts made from hexagon bar	DIN 1479	H 7
Turnbuckle nuts made from steel tube	DIN 1478	G 7
Turnbuckles with two weld stud ends (left and right-hand thread)	DIN 1480	I 7
<b>V</b>		
Vargal nuts self-locking nuts clip material: phosphated spring steel	B 53040	T 8
<b>W</b>		
Washers	DIN 125 / ISO 7089, 7090	C 9
Washers for bolts with heavy spring pins	DIN 7349	Z 8
Washers for cheese head screws	DIN 433	Z 8
Washers for clamping devices	DIN 6340	Z 8
Washers for hex and machine screws	B 53072	G 10
Washers for hex and machine screws form B (wide)	B 53072	G 10
Washers for high-strength constructions	DIN 6916 / DIN EN 14399-6	B 9
Washers for high-tensile structural bolting	DIN EN 14399-6	C 9
Washers for steel constructions	DIN 7989	B 9
Washers for tapping screw assemblies	DIN 6902, 6903	Z 8
Washers for wood constructions	B 1052	B 9
Washers outside diameter ≈ 3 d	DIN 9021	B 9
Washers with external tab	DIN 432	I 9
Welding studs, with hexagon nut	DIN 525	R 3
Wing nuts	DIN 315	I 6
Wing nuts, American type	DIN 315	K 6
Wing nuts, polyamide	B 317, 318	D 8
Wing screws	DIN 316	I 3
Wing screws, American type	DIN 316	K 3
Woodruff keys	DIN 6888	K 12
<b>Z</b>		
ZAHN locking screws	B 151	S 2
ZAHN Locknuts	B 196	C 8

(Technical specifications are subject to change without notice)

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