bilz

Innovation meets Precision

Manufacturing quality at the highest level

Our expertise and our culture of continuous development offer our international customers manufacturing quality at the highest level.

Through the use of highly automated production machines and the intuitive skill of our specialists, we view complex challenges as an opportunity to continuously improve existing processes through knowledge and expertise. Put us to the test!

bilz

Precision in Tool Clamping

For decades Bilz Werkzeugfabrik has stood for technological expertise and top-tier quality in clamping technology. Our products are the result of continuous research, advanced manufacturing technologies and close cooperation with users worldwide. With our innovative solutions in shrink and tapping technology, we provide the foundation for maximum process reliability, efficiency and precision in machining.

This brochure presents seven selected highlight products that clearly demonstrate Bilz's claim to technological leadership.

★★★★★★★

ThermoGrip® **ISG1200**

Designed for maximum process reliability. ISG1200 prevents overheating of tool holders and offers a wide clamping range from 3 to 32 mm. It's completely maintenance-free and compact, it's easy to use and features simple operation via barcode scanner. Highly versitile entry-level model at an affordable price.

ThermoGrip® **Bionics**

Inspired by nature, this form optimized tool holder combines a rigidity and flexibility allowing it to neutralize machining stresses under load while maintaining with exceptional stability. Engineered for high material removal rates, it is fully tunable for precise fine-balancing and features integrated, resealable Cool Jet nozzles for efficient cooling.

ThermoGrip® **Corona Jet**$^{2.0}$

The latest nozzle-ring technology in the standard shrink-fit chucks ensures optimal cooling through precisely aligned nozzles thus eliminating thermal cycling of the cutting edge and therefore increasing cutter tool life. Fine-tuned for both contour and surface machining, it delivers maximum finishing efficiency while significantly reducing processing costs. Suitable for range of cooling methods including single-channel MQL systems.

ThermoGrip® **TMG**

This versatile shrink holder combines multiple collets with exceptionally high torque transmission, far surpassing conventional shrink fit chuck solutions.
Its all-encompassing design accommodates trochoidal milling, large-volume material removal, and standard milling, extending tool life by up to 40%—effectively replacing at least four standard holders.

The featured highlighted products demonstrate how Bilz combines innovative technologies with practical, real-world abilities. Whether in shrink technology or thread cutting technology, our solutions ensure the highest levels of precision, process stability and efficiency in modern machining.

As a trusted industrial partner, we stand for “Made in Germany” quality and support our customers worldwide in solution development, even for the most demanding manufacturing processes.

Bilz—your reliable specialist in clamping technology.

S3D Synchro Chuck — HIGH PERFORMANCE

A maintenance-free, vibration-damped synchro tapping chuck suitable for coolant and wash-down environments. Advanced performance technology allows significantly higher cutting parameters while reducing costs. The standard version offers wide variability and is optimized for minimal interference in complex machining setups.

Nano Synchro Tapping Chuck

Incorporating advanced micro-technology, this vibration-damped synchro chuck is ideal for the watchmaking, electronics, precision engineering or medical industries. It is designed to handle the smallest thread sizes, from M0.5 to M4.

STA Synchro Tapping Adaptor

The Synchro tapping adaptor absorbs peak loads to prevent tool breakage and is designed for optimized thread-form gauging. It allows quick tool changes via a simple quick-change coupling and supports higher cutting parameters, providing increased safety during threading. A highly cost-effective solution for reliable, process-secure tapping applications, especially suited against rigid tapping.

Discover Our Latest Top Products:

Thermogrip® ISG 1200

Affordable, Compact Entry-Level Shrink Machine
Supports tools from Ø 3 mm to 32 mm

Parameter Scanning

ISG 1200 Accessories
Pre-Set Length Adjustment

Smooth Entry into Shrink Fit Technology

ISG 1200 is designed for maximum process reliability. This model prevents overheating of tool holders and offers a wide clamping range from 3 to 32 mm. It's completely maintenance-free and compact, it's easily upgradable and features simple operation via barcode scanner. Highly versatile entry-level model at affordable price.

- Fast cycle times thanks to powerful induction technology
- Consistent process stability through reproducible shrinking
- Integrated cooling station for quick tool changes
- Quick and simple alternative cooling design options available
- Compact design for universal application

- Simple input of shrink parameters via barcode scanning
- Energy-efficient induction technology ensures long tool life
- Precise tool centering
- Compact design for mobile use
- Maximum durability and lasting performance, even in oily environments
- Clamping range Ø 3–32 mm for all shrink holders T, TSF, TB (HSS Ø 6–20 mm / HM Ø 3–32 mm)
- Integrated air cooling (optional cooling adapter available)
- Maximum tool length from taper zero line: 450 mm @ HSK-A63
- Cooling length: 200 mm
- Optional contact cooling and liquid cooling units available

Position the shrink chuck

Scan barcode

Insert the pole disc

Move the coil down to the shrink chuck

Press the start button

Insert or remove tool

Thermogrip® BIONICS

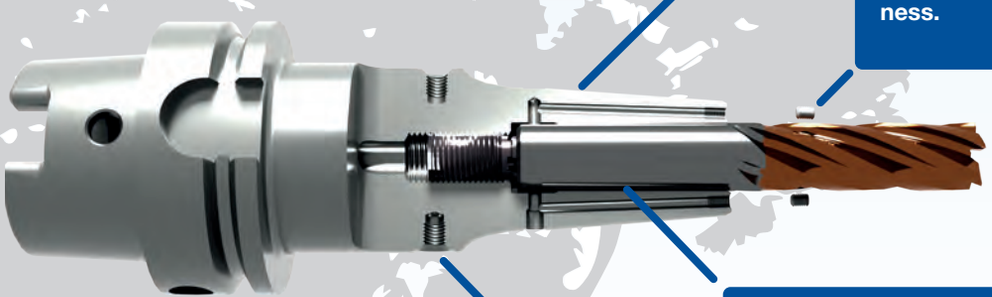
Inspired by nature, this form optimized tool holder combines the rigidity and flexibility allowing it to neutralize machinning stresses under load while maintaining with exceptional stability. Engineered for high matierial removal rates, it is fully tunable for precise fine-balance and resealable Cool Jet nozzles for efficitent cooling.

Maximum rigidity with minimal interference and enhanced vibration reduction

The innovative design achieves an optimized combination of high rigidity and minimal interference geometry, while simultaneously improving vibration damping.

Targeted coolant delivery for greater efficiency

With resealable Cool Jet coolant nozzles, a single tool holder allows both internal cooling of the tool **and direct peripheral cooling at the cutting edge, maximizing effective-ness.**



Increased clamping forces

Increasing the interference fit between our Thermogrip® Bionics holder and the cutting tool results in consistently higher clamping forces.

Optional precision balancing for high-speed machining

Integrated threaded holes allow precise balancing with the tool installed, ensuring perfect surface finishes even at the highest rotational speeds.

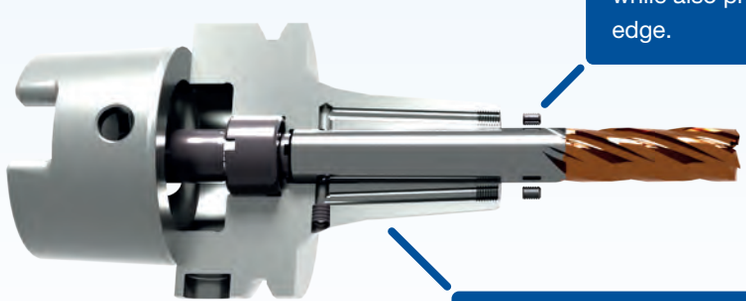
T-BIONICS

Thermogrip® BIONICS

Maximum Rigidity with Minimal Interference
Improved Vibration Damping

- Maximum rigidity with minimal interference
- Improved vibration damping
- Increased clamping forces
- Extremely short overhang lengths available
- Single holder suitable for both internal tool cooling and peripheral cooling
- Spindle-friendly design through precision balancing
- Cutting edge and flute perfectly aligned

The Thermogrip® Bionics Shrink Chuck combines advanced material technology with a bionically optimized design geometry.



Shrink holder compatible with internal and peripheral coolant supply

With resealable Cool Jet coolant nozzles, a single tool holder can accommodate through the spindle cooled tools while also providing direct peripheral cooling at the cutting edge.

Extremely short overhang lengths available

The Thermogrip® Bionics is also offered in a highly compact design with very short overhangs, creating an exceptionally rigid overall system—ideal for the demands of high-performance machining.

Mechanical Engineering

Medical & Dental Technology

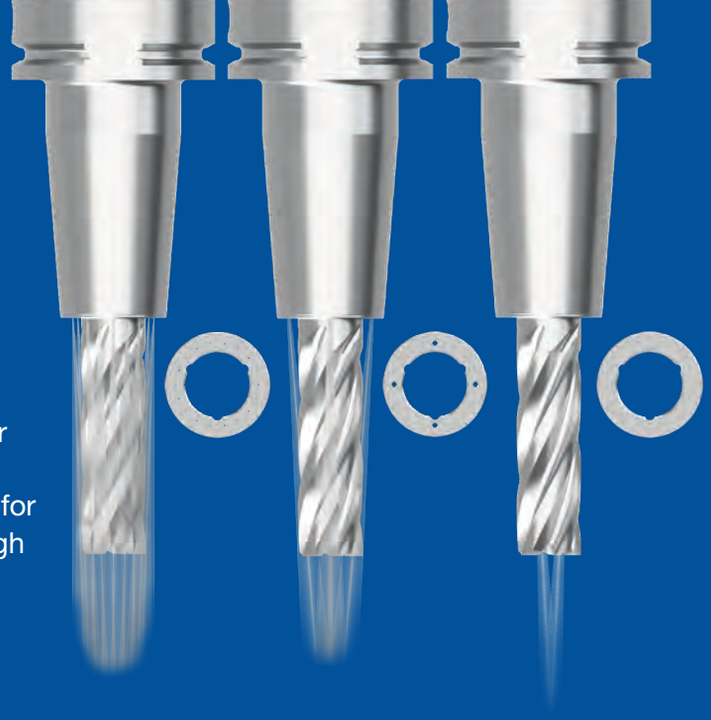
Die & Mold Making

Renewable Energy

Aviation and Aerospace

Ship & Propeller

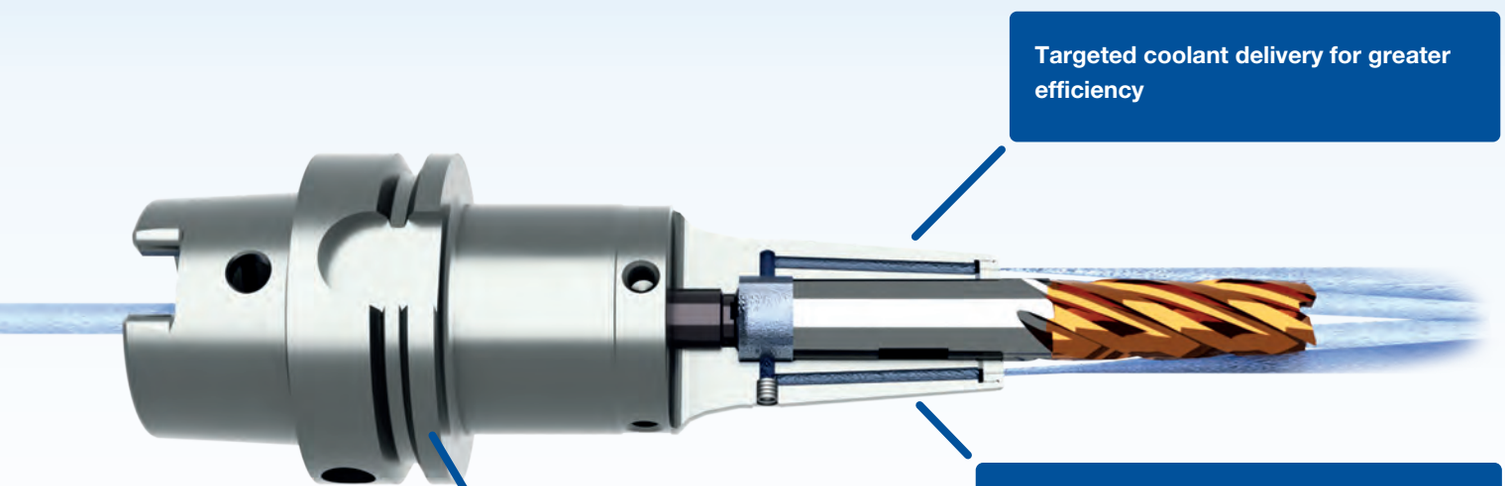
Thermogrip® Corona Jet 2.0



Latest Nozzle Technology in the Shrink Chuck Segment

Optimally aligned nozzles ensure perfect cooling of the cutting edge. The technology is optimized for both contour and surface machining, delivering maximum efficiency in finishing operations and significant cost savings. Versatile for a wide range of applications, it supports air cooling, through cooling with emulsion and single-channel MQL systems.

“ Ideal for tools without internal coolant channels, delivering excellent machining results on metal, wood, and composite materials. Particularly effective for peripheral milling, circular pocket milling and deep cavities.



Targeted coolant delivery for greater efficiency

Flute washing and flushing for enhanced chip removal and offers efficient constant coolant flow directly to the working area - No thermal cycling

Time-Tested Standard ThermoGrip® Design

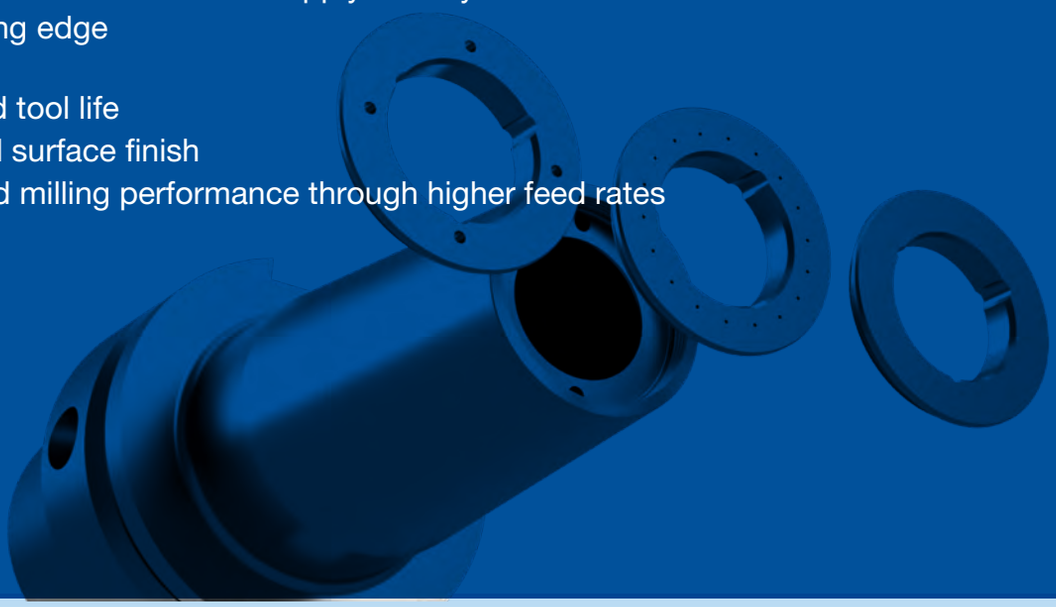
Illustration:
Rachet Wrench

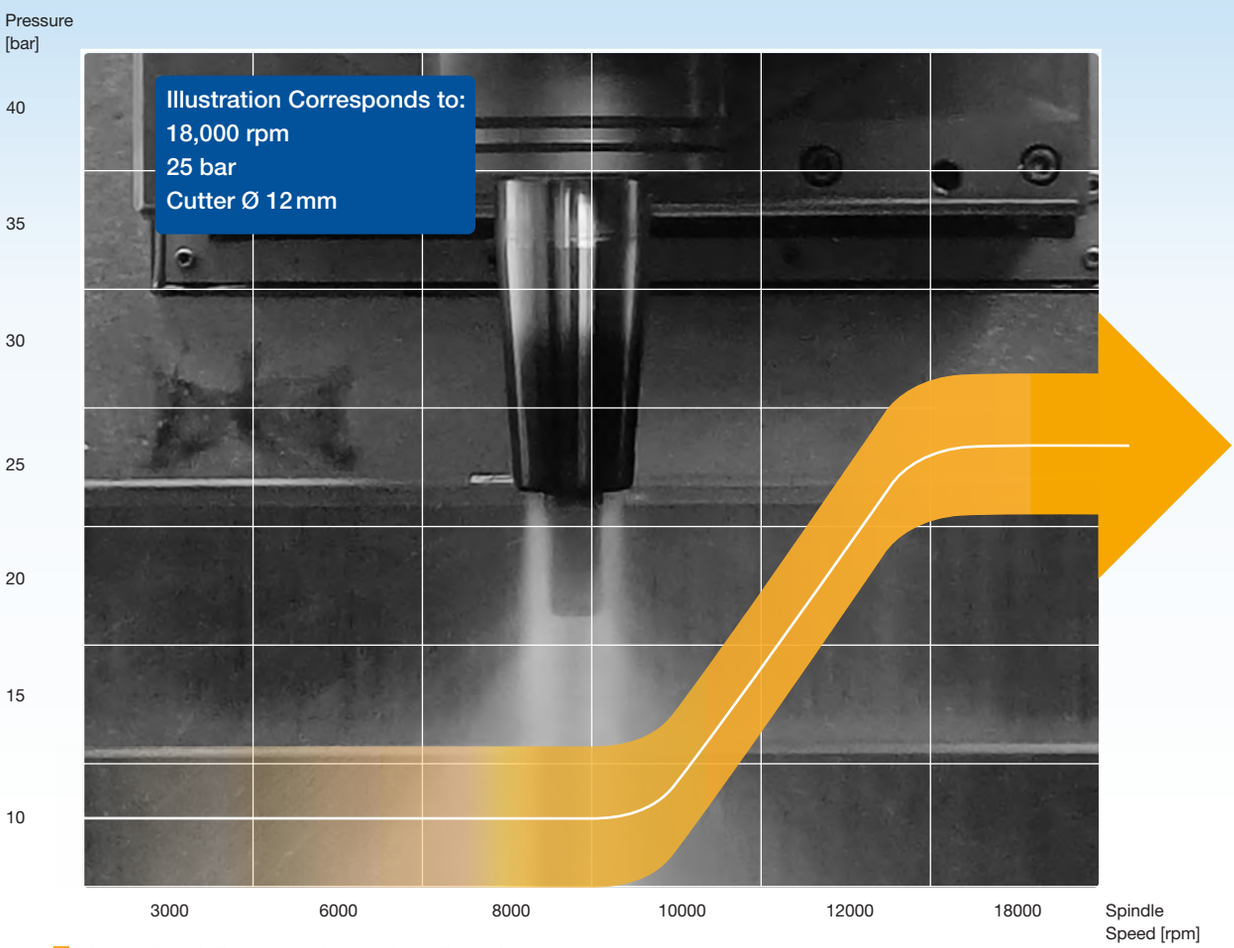
Illustration:
Nozzle Rings

Thermogrip® Corona Jet 2.0

Optimal coolant and lubricant supply directly to the cutting edge

- Increased tool life
- Improved surface finish
- Enhanced milling performance through higher feed rates





Optimal Coolant Pressure and Spindle Speed Parameters

Mechanical Engineering

Medical & Dental Technology

Die & Mold Making

Renewable Energy

Aviation and Aerospace

Ship & Propeller

Thermogrip® TMG

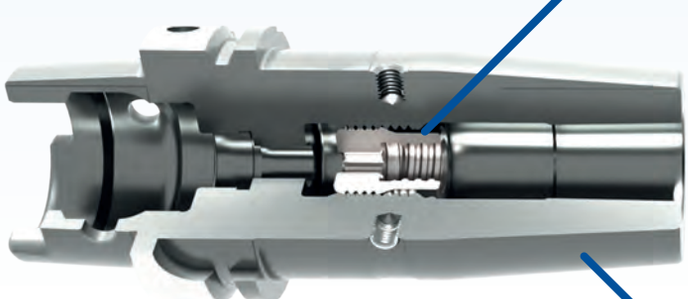
The TMG Thermogrip® Multigrip combines maximum flexibility and versatility in a single tool holder. Its hybrid clamping system merges the advantages of shrink technology with those of collet clamping.

- Single tool holder for Ø 3–32 mm (HSS and HM)
- Consistently high clamping forces, regardless of tool shank tolerance from H4 to H9
- Single tool holder compatible with any coolant system
- Increased material removal rates
- Improved surface finish and reduced tool wear through enhanced damping
- Enhances and optimizes machine ultra-fine precision balancing

Extreme Clamping Forces – Unmatched flexibility, high rigidity and optimized vibration damping define our new TMG.

The heating of the tool holder and the insertion of the collet are precisely synchronized.

Collet – variety of sizes available
Both the collet and the tool are installed while cold.



Collet available with retention machanism

One Base Holder for All Diameters
TMG-optimized external geometry for high rigidity!

A Single tool holder for all applications – One Size Fits All!

One tool holder for every coolant system

A single tool holder allows you to use a wide variety of coolant solutions. From internally cooled tools to various peripheral cooling systems and even minimum quantity lubrication (MQL), all can be achieved with just one holder.

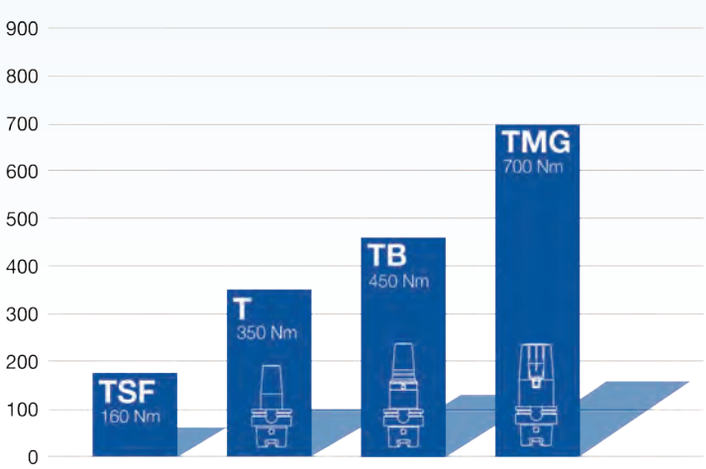
This vibration-absorbing shrink chuck provides multiple tool retention safeguards and transmits torque far beyond anything previously available. Its versatility covers applications from trochoidal milling and large material removal to standard milling operations, enabling up to a 40% increase in tool life. In other words, this single chuck can replace at least four standard holders in your current setup.

The new Bilz TMG clamping system combines the strength of shrink chuck technology with the flexibility of collet solutions. The system consists of base holder and specially coated collets. Cutter shanks (HSS) from 3 to 32 mm can be clamped with unprecedented clamping forces—for example, over 950 Nm for a Ø 20 mm tool shank when automated with our ISG 3460 shrink machine, the latest and most advanced model available.

Safe tool clamping and unclamping is achieved through a fully automatic or manual process on our induction shrink macines starting from the ISG3XXX series. Both the shrinking process and the associated holders are patented and exclusively available from Bilz.

Diagram

Torque transmission for 16 mm shank



Installing the retention mechanism

Mechanical Engineering

Medical & Dental Technology

Die & Mold Making

Renewable Energy

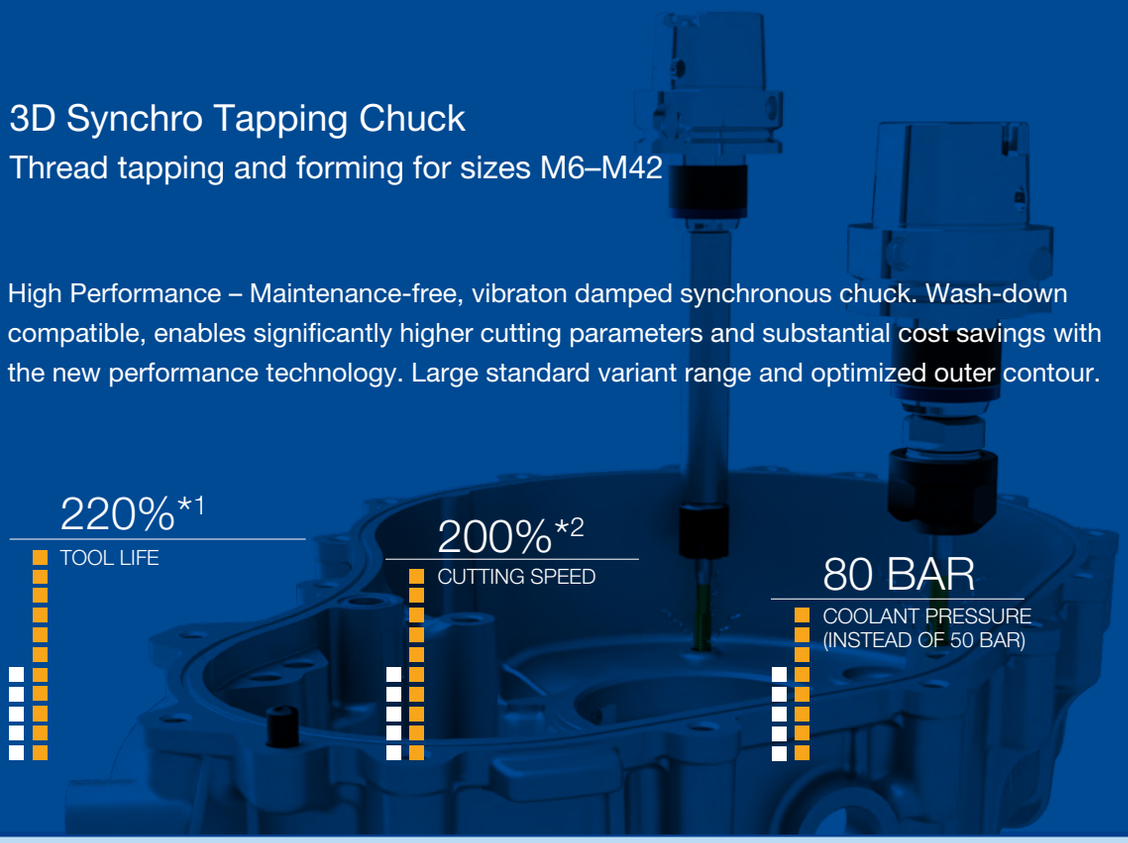
Aviation and Aerospace

Ship & Propeller

3D Synchro Tapping Chuck

Thread tapping and forming for sizes M6–M42

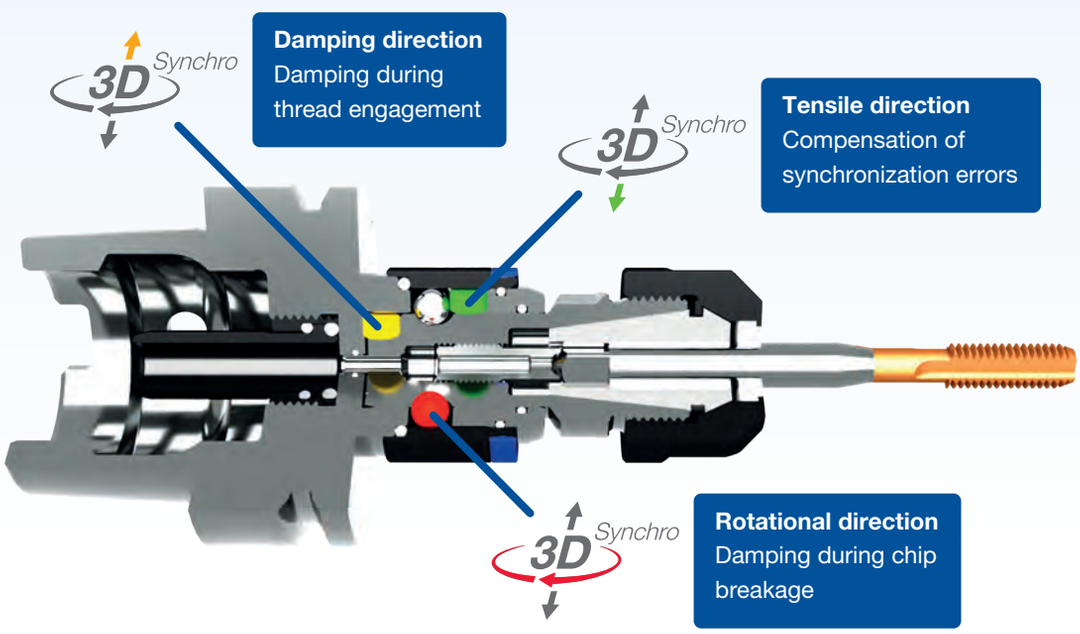
High Performance – Maintenance-free, vibraton damped synchronous chuck. Wash-down compatible, enables significantly higher cutting parameters and substantial cost savings with the new performance technology. Large standard variant range and optimized outer contour.



3D Synchro

PATENTED DAMPENING TECHNOLOGY REDUCES LOADS DURING TAPPING AND THREAD FORMING.

Axial compensation movements offset minor deviations, preventing tool breakage and ensuring consistently high thread quality. It is the economical solution for reliable tapping in series production.



Mechanical Engineering | Renewable Engergy | Automotive | Electronics | Optics | Precision Engineering | Toolmaking

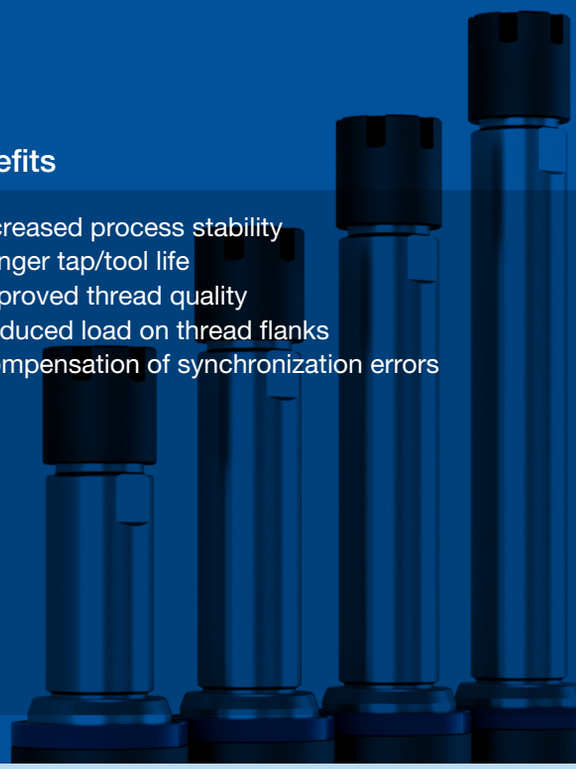
3D Synchro Tapping Chuck

Features

- Minimal axial compensation in both tensile and compressive directions ±0.5 mm
- Ball-bearing effecting rotational torque-independent advantages for taps and holders alike
- Suitable for internal coolant supply up to 80 bar
- Compatible with taps and thread formers
- Suitable for right- and left-hand threads
- Optimized synchronization technology (±0.5 mm) – 3D Synchro
- Fully encapsulated working area (washable up to 80 °C)
- Optimized sealing (comparable to IP68)
- 100% SCK compatible
- Now also available in a slim design

Benefits

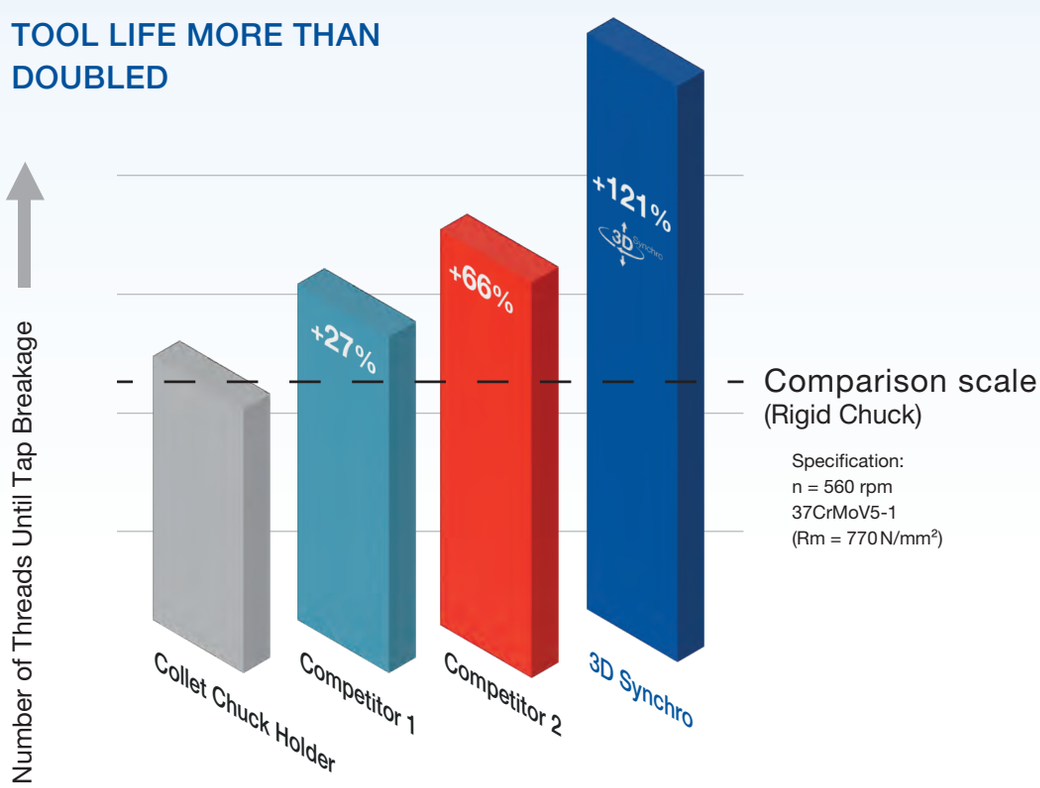
- Increased process stability
- Longer tap/tool life
- Improved thread quality
- Reduced load on thread flanks
- Compensation of synchronization errors



The latest generation S3D Synchro Chuck has been adapted to meet current market requirements. Tool pre-setting is possible from both the machine and tool sides and the lubricant supply has been optimized to ensure leak-free delivery to the tap.

Axial compensation in both tensile and compressive directions (e.g., ±0.5 mm), along with damping in the rotational direction, compensates for even the smallest synchronization errors and positional deviations. This reduces the load on the tool's thread flanks and minimizes the required cutting torque.

TOOL LIFE MORE THAN DOUBLED



*1 220% tool life of the M8 tap during continuous testing at n = 560 rpm in X37CrMoV5-1 (Rm = 770 N/mm²) with the S3D Synchro Chuck, compared to 100% tool life with a standard collet holder.

*2 200% cutting speed = 25 m/min with an M10 tap in gray cast iron GG20 (Rm > 200 N/mm²) using the S3D Synchro Chuck, compared to 100% = 12.5 m/min with a standard collet holder, while maintaining thread quality and tolerance. With the standard collet holder, cutting speed could not be increased without exceeding tolerance limits.

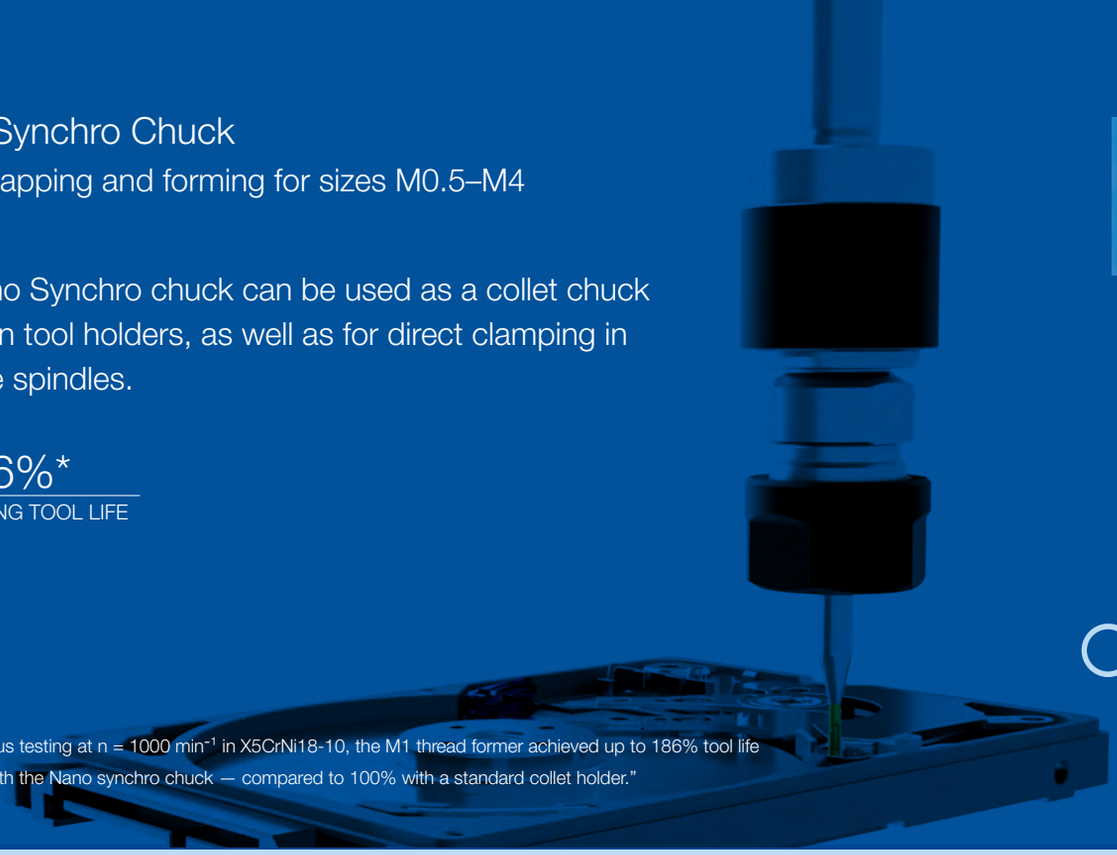
Nano Synchro Chuck

Thread tapping and forming for sizes M0.5–M4

Our Nano Synchro chuck can be used as a collet chuck for driven tool holders, as well as for direct clamping in machine spindles.

186%*

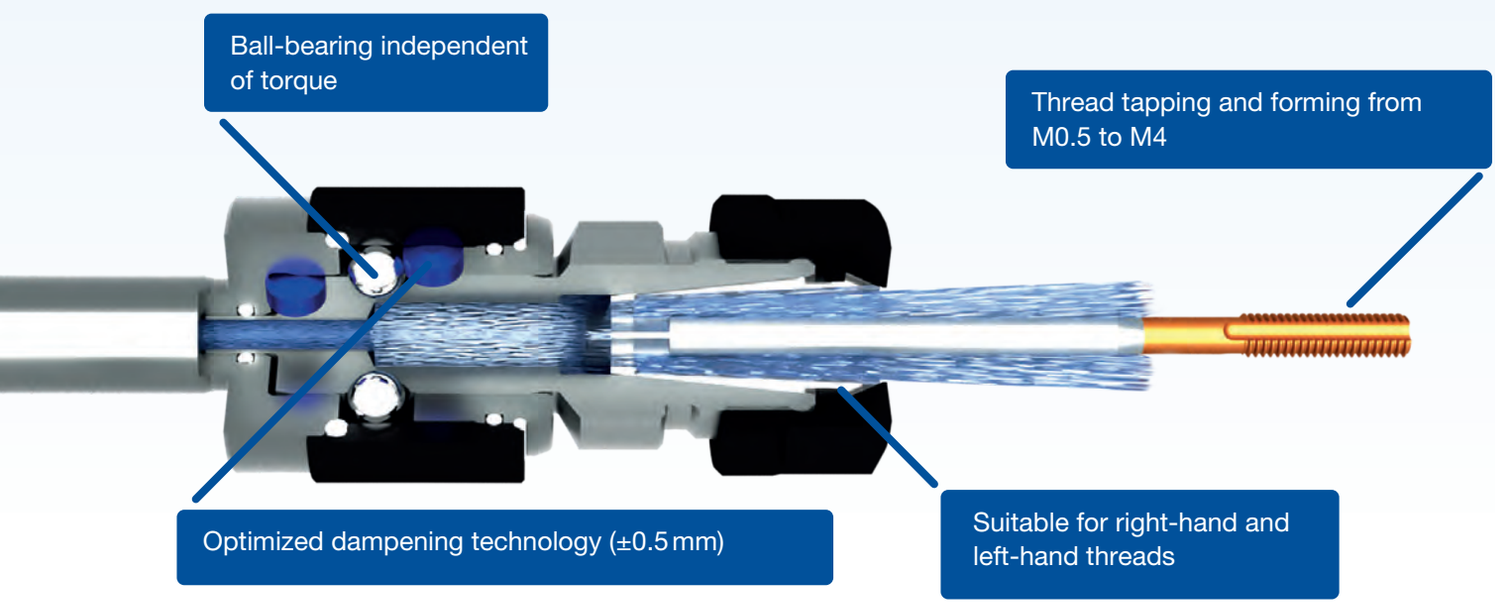
TAPPING TOOL LIFE



* “In continuous testing at n = 1000 min^{-1} in X5CrNi18-10, the M1 thread former achieved up to 186% tool life when used with the Nano synchro chuck — compared to 100% with a standard collet holder.”

The NANO Synchro Tapping Chuck was specifically developed for the precise machining of very small threads. Its compact design and sensitive synchronization technology enables safe operation even in hard-to-reach machining situations.

By precisely compensating for feed deviations, the risk of tool breakage is drastically reduced, ensuring process reliability even in the most delicate applications.



Electronics

Optics

Precision Engineering

Toolmaking

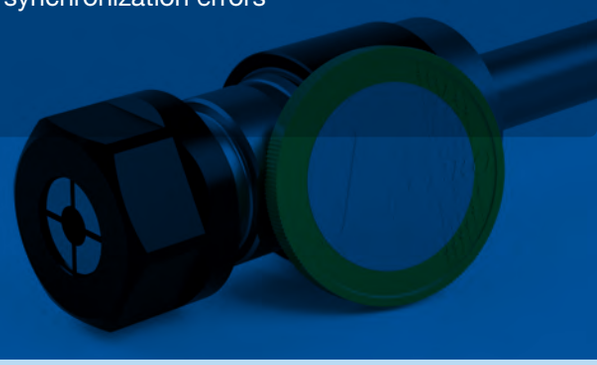
Nano Synchro Tapping Chuck

Features

- Minimal axial compensation in both compressive and tensile directions
- Ball-bearing securing torque-independence
- Suitable for taps and thread formers
- Compatible with right- and left-hand threads
- Optimized dampening technology (±0.5 mm)
- Suitable for external coolant supply

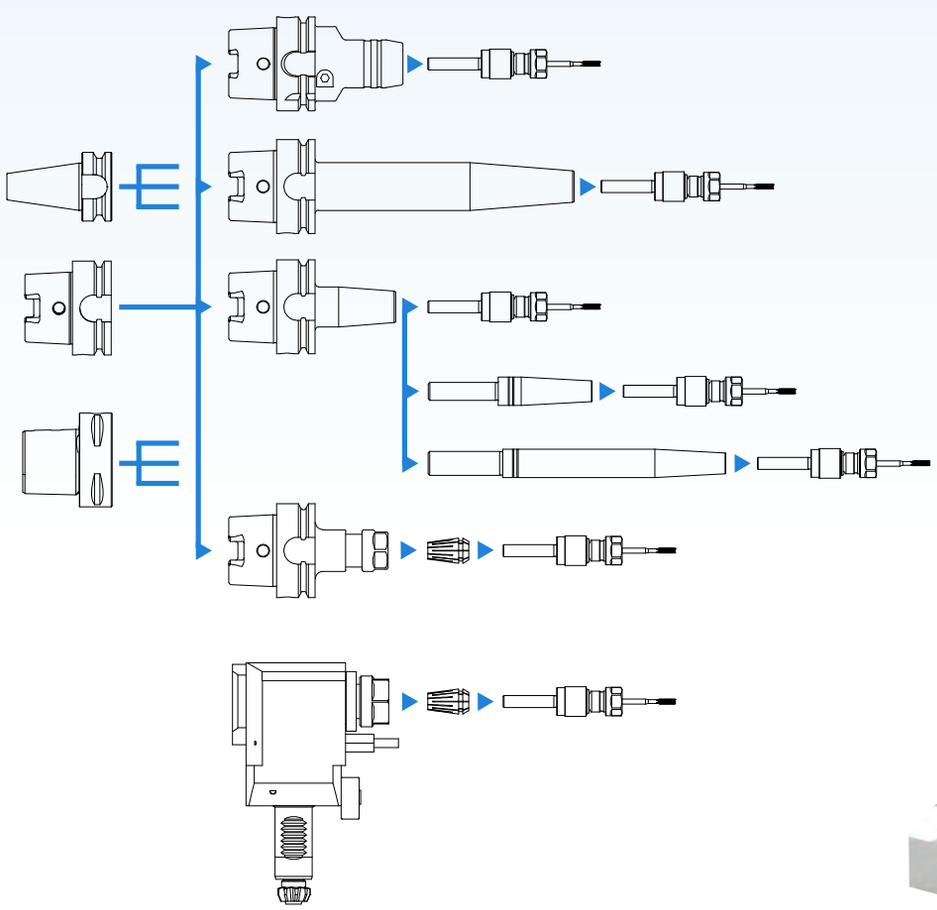
Benefits

- Increased process stability
- Longer tap/tool life
- Improved thread quality
- Reduced load on thread flanks
- Compensation of synchronization errors



CLAMPING, SECURING, SHRINKING OR PRESSING

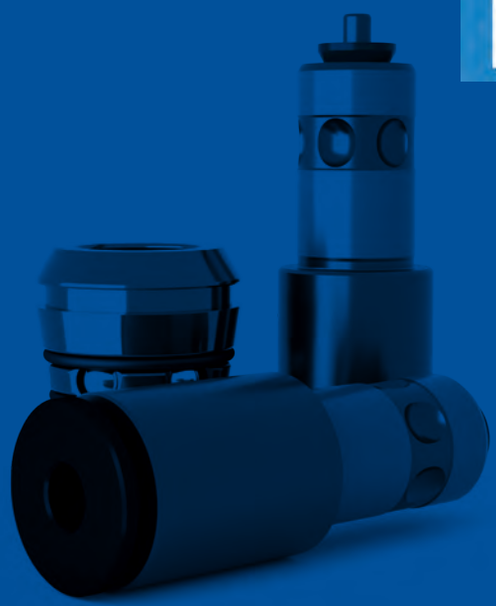
Modular combination options allow you to integrate our Synchro Nano Tapping Chuck into your process using your existing clamping tools.



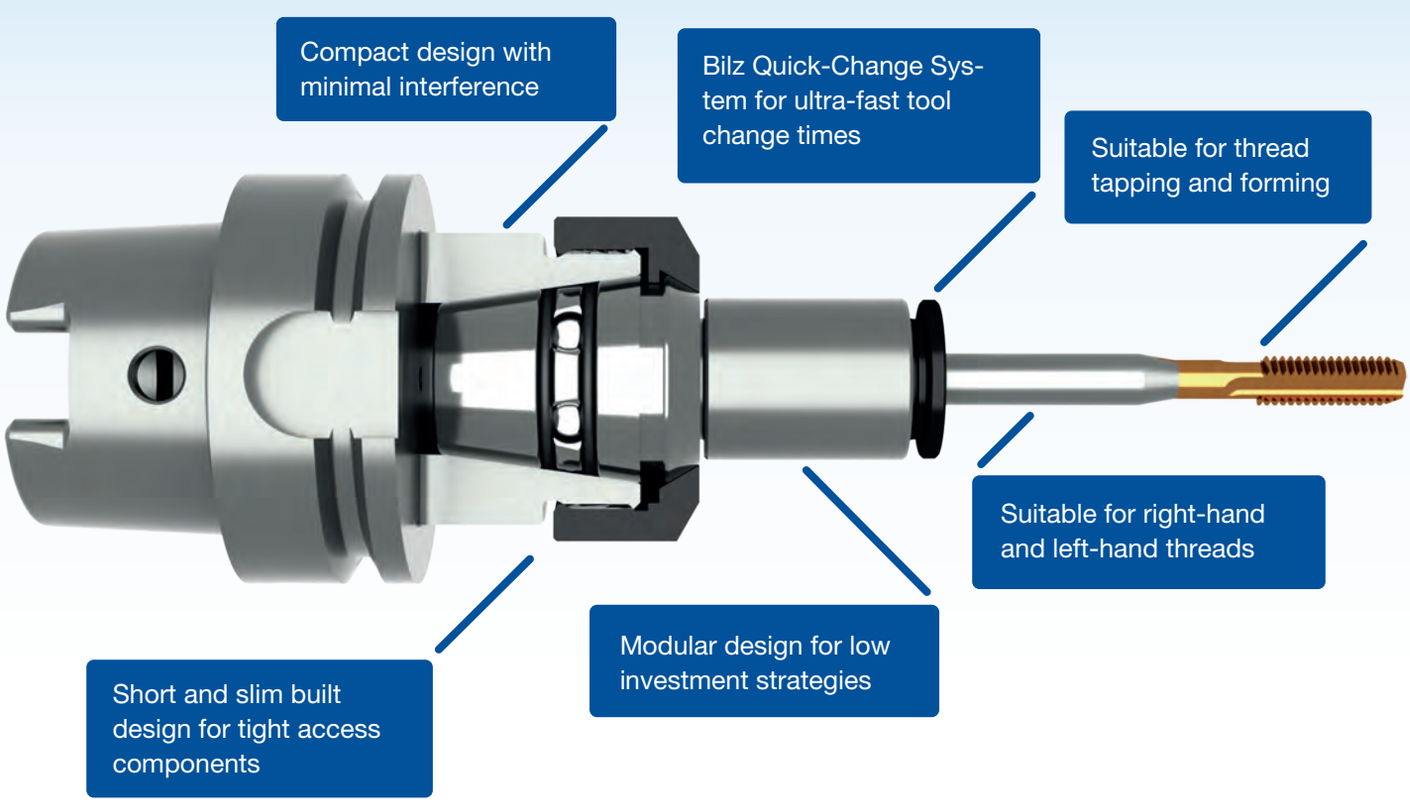
STA Synchro Tapping Adaptor

Features:

- Compatible with all tool types, with or without internal coolant
- Enables quick tool changes
- Minimal axial compensation in both compressive and tensile directions
- Optimal damping
- Compact design
- Patent pending



IMPROVED THREAD QUALITY AND LONGER TOOL LIFE THROUGH SIGNIFICANTLY REDUCED AXIAL FORCE



General Engineering | Renewable Energy | Automotive | Electronics | Optics | Precision Engineering | Toolmaking

STA Synchro Tapping Adaptor

Faster tool changes and significantly longer tool life

-41%
TOOL CHANGE TIME

20 MIN
PRODUCTIVITY INCREASE
WITH 100 TOOL CHANGES

ADVANTAGES

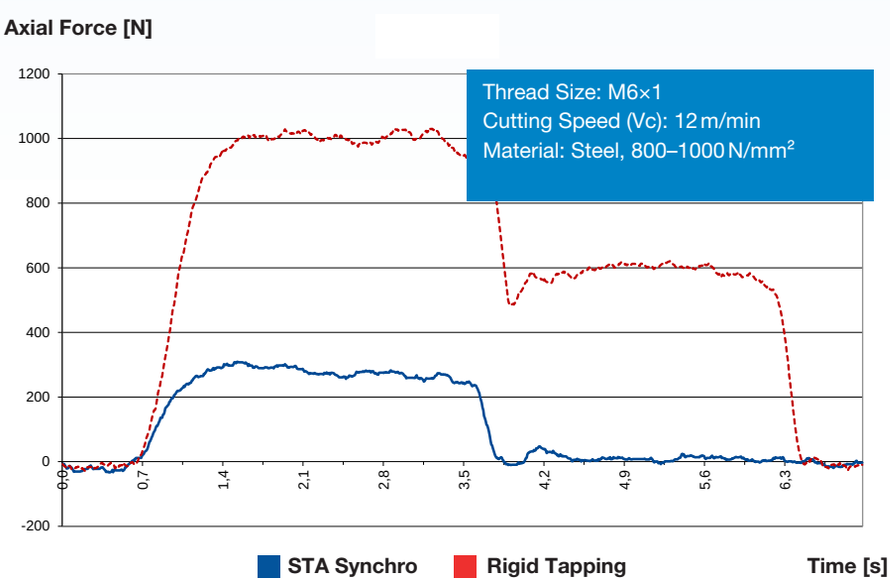
- Compensation of synchronization errors
- Prevents generation of high axial forces
- Minimal load on thread flanks
- Improved thread quality
- Suitable for use in tight spindle spaces
- Low maintenance

BENEFITS

- Increased productivity through fast tool changes
- Significant increase in tool life and process reliability
- Reduced risk of tool breakage
- Cost savings due to lower tool requirements
- Reduced spindle maintenance
- Enhanced process safety

The new STA Synchro (Synchro Tapping Adaptor) was specially developed for collet chucks to enables tapping and thread forming on machines with a synchronized spindle.

Test Results of STA Synchro vs. Rigid Tapping:
Significantly Reduced Axial Forces



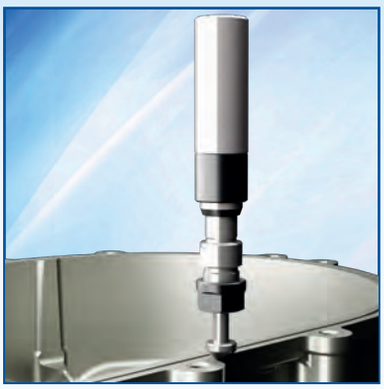
STA Synchro Tapping Adaptor

- For collet chucks and driven tools according to ISO 15488 (DIN 6499)
- For synchronized threading
- Minimal axial compensation: +0.5 mm / -0.2 mm
- Coolant pressure: max. 50 bar

Customer oriented and
innovation driven since 1919

Thermogrip® Shrink Machines
Thread Clamping
Floating Holders
Special Tools & Shrink-Fit Holders
Your Complete Tool Clamping Solution

Our Innovations at a Glance



- Engraving Chuck – ET0
  Engraving on almost any surface
- Deburring Tool Holder – DTH
  Flexible deburring on CNC machines
- AOCS Quick-Change System for Industrial Robots - Easy coupling and uncoupling of machining tools
- ThermoGrip® Premiumline
  Thermal tool clamping meets Industry 4.0

**Visit us on www.bilz.com
or scan the QR code.**

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