Tools that power your business.

Horn USA, Inc.

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Swiss-Type Turning

Groove Broaching on Swiss Type Machines

The Advantages at a Glance:

The traditional milling process for producing external and internal gears and grooves often results in lengthy processing times. W&F's grooving devices, featuring variable ratios (i=5:1/i=10:1) and strokes (8.5mm/17mm), efficiently convert rotational movement into translational movement. This innovation allows for significantly shorter machining times, with stroke rates of up to 1,200 strokes/min. The slotting process not only reduces processing time but also unlocks new processing options with enhanced surface quality.

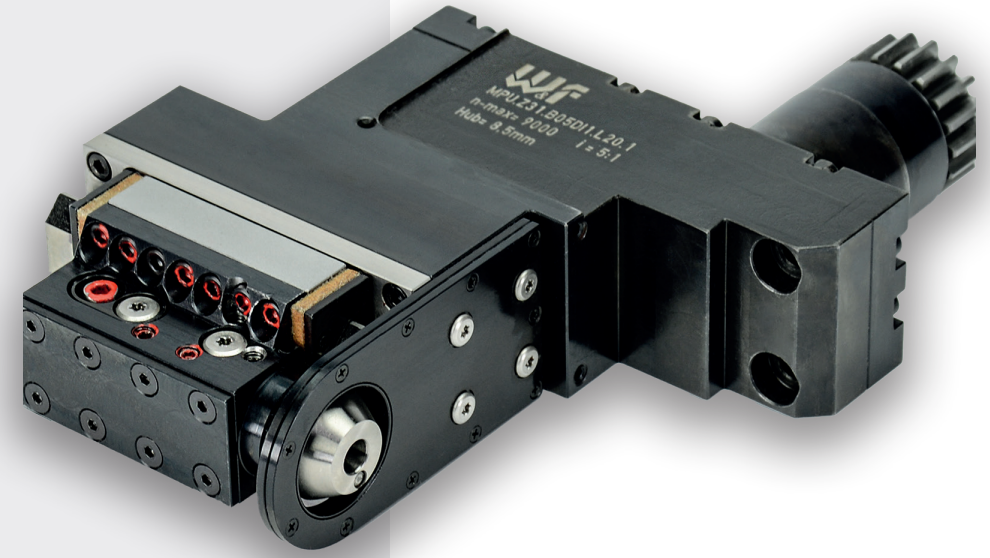
NEW

Broaching

slotting process enables new processing options

Production Examples:

- torx manufacturing
- hexagon socket broaching
- Internal square broaching
- external gears
- internal gears
- fitted key notch
- longitudinal grooves
- chamfering



Use the advantages of the slotting process on your swiss-type lathe.
We will be happy to advise you.

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Swiss-Type Turning

Speeders with Internal Coolant

Speeder Tools for Swiss-Type Machines:

Cutting tool advancements allow for increasingly higher speeds, but machine drive limitations often hinder reaching these speeds. Our high-speed spindles, boasting a ratio of i = 1:4, overcome this constraint, enabling speeds of up to 32,000 rpm (depending on the machine). This allows you to fully leverage your production potential, achieving required cutting speeds even with small-diameter tools.

Innovative Gear Technology:

W&F employs state-of-the-art gear technology with a compact multi-stage gear system in all high-speed machines. This design ensures optimal stability and rigidity of the output spindle within limited space. The bearing arrangement provides ample space between bearings, allowing for effective internal cooling integration without sacrificing stability.

Our multi-stage gear design, in comparison to planetary gear technology, enhances the tool holder's resilience, reducing susceptibility to faults.

Efficiency Through Internal Cooling:

With extensive experience in internally cooled tools, developing high-speed spindles with internal cooling was a natural progression for us. Our reliable sealing technology enables achieving coolant pressures of up to 80 bar for enhanced efficiency.

Advantages of Internally Cooled Speeders:

- increased productivity
- reduced cutting edge wear
- higher cutting data
- better surface finish
- more stable processes

NEW

Speeders

with i=1:4 up to 32,000 rpm
and internal coolant up to 80 bar

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Swiss-Type Turning

Driven Tools

Power Tool Requirements:

Durability

Beyond tool costs, the time-consuming replacement of worn holders incurs additional expenses, resulting in costly machine downtimes and production disruptions.

Our Tools:
Innovative bearing, seal and gear technology

Robustness

Driven tools not only handle drilling but also tackle challenging milling operations within the confines of a lathe.

Our Tools:
Significantly more stable bearing arrangements than standard tools

Precision

Even the most precise lathes cannot maximize their potential unless the connection between the machine and the cutting edge meets accuracy requirements.

Our Tools:
To ensure the highest quality in production parts, each tool is individually adjusted, achieving spindle run-out in the µ range.

Flexibility

Changing the parts to be produced, material and machining processes require driven tools with a wide variety of properties.

Our Tools:
Modular interface with hundreds of different adapters

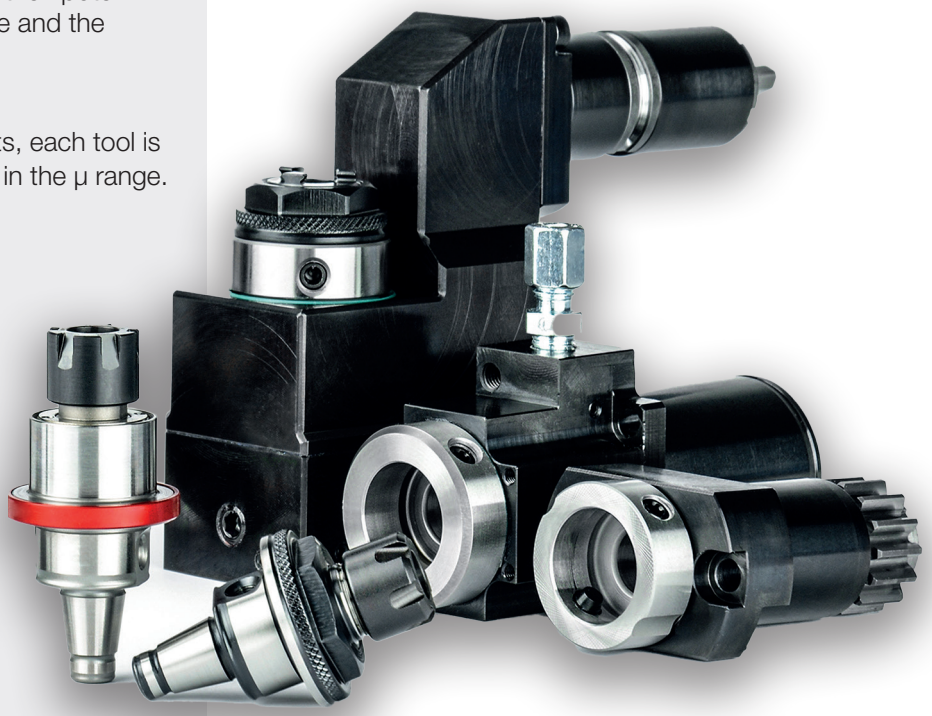
Tool Program:

Our program includes driven tools in a wide variety of designs for all common machine manufacturers and their series.

Swiss-Type Turning

driven tools for swiss lathes

As a technology leader in Swiss-Type Turning, we provide a comprehensive range of tool solutions for common Swiss-type machines. Our offerings include modular turning holders, internally cooled high-speed spindles, polygon tools, and whirling units with internal cooling, catering to nearly every processing case.



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Swiss-Type Turning

Modular Quick-Change System

The Advantages at a Glance:

Economical
Presetting tools parallel to machine running time minimizes machine setup time, nearly eliminating expensive downtimes.

Precise
The cone/face contact with cylindrical support ensures the highest level of accuracy and an absolute form fit.

User Friendly
- low risk injury to hands
- no risk of damaging tool bearings by tightening ER front nuts
- low risk of damaging the expensive tool holder during installation and removal
- precise tool presetting outside the machine
- accurate and repeatable clamping of the adapter with defined torque

Flexible
- use of different clamping technologies on one consistent holder
- the optimum clamping system can be selected for every machining process
- fewer variety of power tools required
- adapters on driven and also on static tools usable

Features of the WFB Interface

- large flat contact forms a form fit together with the cone shell
- stable “full cone jacket” ensures enormous rigidity.
- support collar prevents axial movement of the cone under radial loads
- cylindrical shoulder to accommodate the tensioning mechanism
- safe and simple clamping mechanism thanks to two special taper thread pins
- adjusting thread for setting the tool length
- adapter ready for use with internal cooling thanks to coolant hole

WFB

High-precision quick-change system for Swiss-Type machines

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Swiss-Type Turning

Static Holders

Height Adjustable Holders for Backside Operations:

- one-off alignment on the machine
- integrated WFB quick-change system
- integrated internal and external cooling options
- no shifts in position when assembling the different adapters by clamping via radial tapered threaded pins
- no complex coolant lines required (chip catcher)

Round Shank Holders for Stationary Machining Tools:

- 6 different lengths
- 6 different shaft diameters

Versions:
- full round
- with clamping surface

The Perfect Combination:

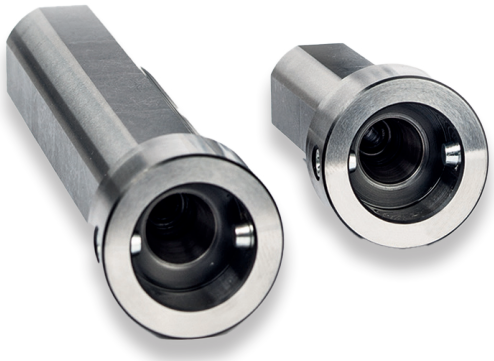
In conjunction with WFB, our modular quick-change system, you achieve the optimal combination:

- economics
- precision
- flexibility

By using a quick-change system, the tool change time per station is reduced by approx. 90%!

Static Holders
type SHT

Round Shank Holder
type WFE



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Swiss-Type Turning

Angle Adjustable Tools

Powered Tools with Angle Adjustment:

Angular swivel units, a specialized design of driven tools, feature stepless mechanical angle adjustment of the output spindle. With an expansive adjustment range of up to 215°, these units excel in addressing inclined bores across various machining scenarios. The infinitely variable angle adjustment enables diverse machining operations with a single unit. W&F swivel units are equipped with a specially designed gear, ensuring smooth operation and easy adjustment, with the output spindle fixable in any position. Internal cooling through the spindle is also supported. The units' compact design allows for versatility, making them suitable for use in even the smallest lathes and introducing new processing options.

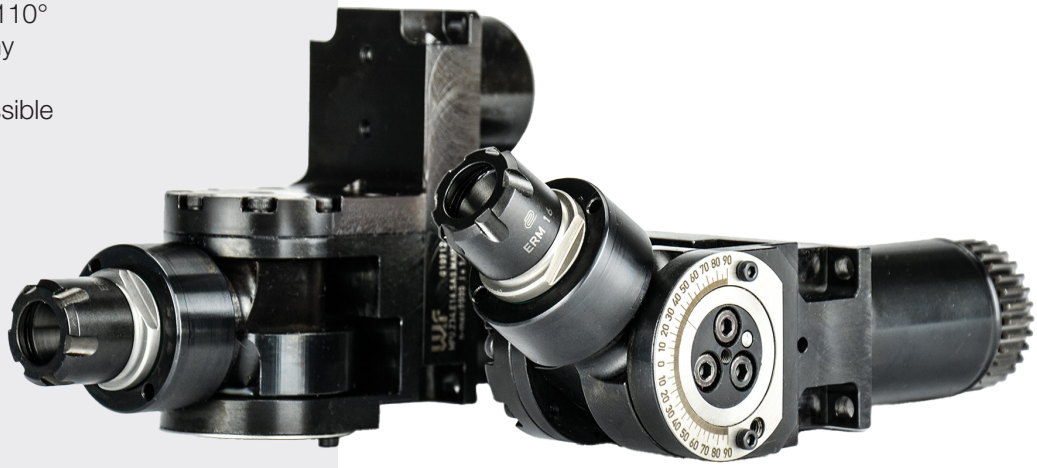
Angle Adjustable Tools from W&F:

Our powered swivel heads excel by the following properties:

- innovative gear technology
- easy angle adjustment
- very smooth running
- adjustment range from + 105°/-110°
- output spindle can be fixed in any position
- internal cooling up to 80 bar possible
- extremly compact design

Swivel Heads

with stepless mechanical angle adjustment



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Swiss-Type Turning

Thread Whirling

Whirling with Internal Coolant

Process Security Through Effective Cooling

Turning tools with internal cooling have become a standard practice, offering the advantage of directing coolant through the holder to the cutting insert. Through collaboration with Paul Horn GmbH, we have pioneered the application of this technology in whirling. This innovation brings significant productivity improvements, especially in screw production for medical technology.

Direct and efficient cooling at the cutting edge reduces wear and allows for higher parameters to be achieved. Additionally, effective chip removal from the cutting edge prevents jamming in the whirling insert. This results in an extended service life for the inserts, combined with our high-precision quick-change system, enhancing both productivity and process reliability.

Jet-Whirling

thread whirling with
internal coolant up to 80 bar

The Advantages at a Glance:

- reduced plate wear
- longer service life
- better surface finish
- fewer chip nests
- higher cutting parameters
- short machine downtimes
- increased productivity
- more stable processes

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Swiss-Type Turning

Thread Whirling

New Opportunities:

The Ratio
Our whirling units offer various transmission ratios, allowing for optimal operation within the machine's speed and torque range based on specific requirements. This flexibility enables more efficient manufacturing of screws with higher cutting data.

The Distance
The goal is to operate as close to the guide bushing as possible to minimize vibrations, enhance screw surface quality, and increase insert lifespan. However, this may not always be achievable due to the swivel angle, flight circle, or machine limitations. Our standard whirling heads come in various heights, allowing for direct whirling on the guide bushing. Optimized adaptation of the whirling head to production conditions further reduces the distance to the guide bushing, resulting in improved processing results.

The Cooling
Efficient cooling at the cutting edge minimizes wear and facilitates higher operating parameters. Additionally, chips are effectively diverted from the cutting edge, preventing jamming in the whirling insert.This leads to an extended service life for the inserts, and when combined with our high-precision quick-change system, enhances both productivity and process reliability.

The Alignment
Our new whirling units can be configured using a dial gauge or our latest digital system. The digital system offers a more convenient and faster method for setting the whirling unit angle. Every new version is equipped for digital angle adjustment, and retrofitting is possible at any time.

Configure Your Tool
- two ratios available
- cutting head height variable
- external or internal cooling
- with and without digital angle system

NEW

The New Generation
the optimal version for each processing scenario

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Swiss-Type Turning

Thread Whirling

Digital Angle Adjustment:

NEW

The angle adjustment on driven tool holders has traditionally relied on engraved scales, which can be challenging in confined spaces with poor visibility. For precise angle settings, the usual method involves checking the angle with a dial gauge and converting measurements using the sine function.

With the introduction of the digital series, W&F now provides a straightforward in-machine setting option for whirling units. The actual display device is located outside the machine. To set the desired angle, the sensor magnetically connects to the tool holder for adjustment. Once set, the sensor is removed, and the entire digital unit can be used for further adjustments on other tool holders. This eliminates disruptive cables or displays in the machine interior.

Digital

thread whirling units
with digital angle adjustment

The Advantages at a Glance:

- quick adjustment of the angle
- a one-off “zero” is sufficient
- no more calculations necessary
- no disturbing cables in the machine space
- display outside the machine
- only one display and scanning unit for any number of whirling units

Tool Program:

Our digital system is compatible with all new-generation whirling units. Each unit in this generation is equipped for digital angle setting, and retrofitting is feasible at any time.

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Swiss-Type Turning

Thread Whirling

The Advantages at a Glance:

Economical

The hassle of installing and removing the whirling device during insert changes and the associated alignment is eliminated with the use of modular thread whirling units. The easily accessible tapered thread screws from the side allow for the straightforward replacement of the whirling insert with a pre-equipped second ring outside the machine. This minimizes machine downtime during tool changes. The high concentricity of the interface ensures even wear of the cutting plates, resulting in a significant increase in the service life of the cutting tools.

Efficiency Through Flexibility

The objective is to operate in close proximity to the guide bushing, minimizing undesirable vibrations, enhancing screw surface quality, and extending insert service life. While factors like swivel angle, flight circle, or machine limitations may pose challenges, our standard whirling heads, available in various heights, enable direct whirling on the guide bushing. Optimized adaptation of the whirling head to production conditions further reduces the distance to the guide bushing, leading to improved processing results.

Our Blank Principle

You can conveniently order our whirling inserts from HORN. They handle the insert design and incorporate the corresponding insert seats into the blank.

Patented Interface for Maximum Precision

The interaction of the cone plane system with a cylindrical collar ensures the highest level of accuracy in the interface and facilitates user-friendly insert changes with just three screws.

Thread Whirling

whirling units with modular quick-change system

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Swiss-Type Turning

Modular Turning Holders

Quick Change System for Tuning Holders:

WF-Micro, the innovative modular quick-change system, empowers you to achieve unparalleled productivity. Specifically designed for static tools on common sliding head lathes and multi-spindle automatic lathes, it addresses the challenge of limited cutting insert changes inherent in machine design. In many cases, the complete basic holder must be removed, resulting in time-consuming processes and extended downtimes

The Advantages at a Glance:

- Basic holders with integrated coolant connection allow versatile positioning in the machine
- Simple one-handed operation ensures safe and easy changes to the indexable insert adapter
- All adapters can be preset and measured outside the machine
- Rapid tool changes within seconds minimize setup and non-productive times, maximizing machine productivity
- The short cone interface with a flat surface and cylindrical support guarantees precise positioning and accuracy in the single-digit µ-range
- The WF-Micro interface's vibration-damping property enhances machining results and extends cutting insert service life.
- One-handed operation at the front reduces the risk of injury

Take advantage of WF-Micro
and increase your productivity.

WF-Micro

modular turning holders
with quick-change system

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Swiss-Type Turning

Gang Plate with CMS

The Advantages at a Glance:

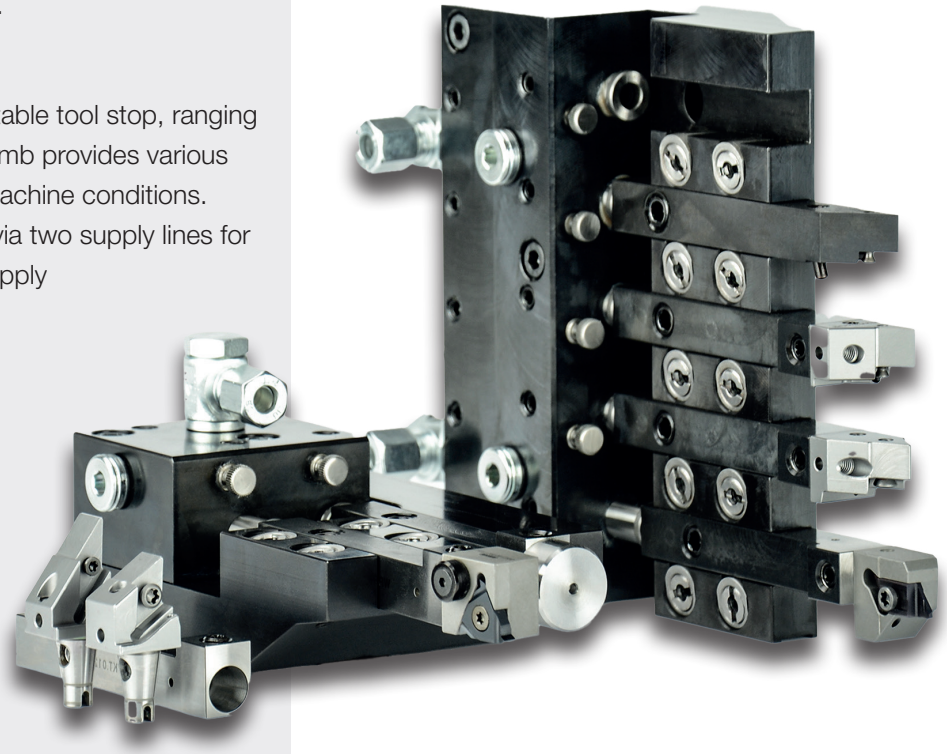
Economical
Existing turning tools from any manufacturer can still be utilized seamlessly. Turning holders with internal cooling can also be employed without any restrictions.

User-Friendly
The tool plate is 1:1 interchangeable with the original tool plate, ensuring a safe and quick clamping process with a one-hand clamping system. Jamming wedges are released automatically.

Strategically Planned
The cooling lubricant quantity can be individually adjusted for each tool station, facilitated by a flexible coolant pipe. The predominantly smooth surfaces and hose-free design contribute to a significant reduction in chip nesting.

Flexible
Each station features a steplessly adjustable tool stop, ranging from 0-15mm or 10-25mm. The tool comb provides various coolant connection options based on machine conditions. Internal cooling can be achieved either via two supply lines for tools 1-3 and 4-5 or through a single supply line for all tools.

Gang Plate
with qiuck-change system
and integrated CMS
(Coolant-Management-System)



The Perfect Combination
Combined with WF-Micro, our modular quick-change system for turning holders, you achieve the optimal combination of:

- economics
- precision
- flexibility

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Power Tool Requirements:

Durability

Irrespective of the tool costs, there are further costs due to the time consuming replacement of worn holders. This leads to expensive machine downtimes and disrupts the production process.

Our Tools:
Innovative bearing, seal and gear technology

Precision

The most accurate lathes cannot reach their potential if the link between the machine and the cutting edge does not meet the accuracy requirements.

Our Tools:
Highest quality of production parts
Each tool is adjusted individually
Spindle run-out in the µ-range

Flexibility

Changing the parts to be produced, material and machining processes require driven tools with a wide variety of properties.

Our Tools:
Modular interface with hundreds of different adapters

Tool Program:

Our program includes driven tools in a wide variety of designs for all common machine manufacturers and their series.

Turning Technology

driven tools for turning centers

In turning technology, W&F provides a wide range of driven tools for various machine manufacturers. Our driven drilling and milling heads feature the high-precision modular WFB quick-change system. Alternatively, we also offer tools in standard monoblock variants. The modular WFB quick-change system for lathes, suitable for small or large series, introduces new and versatile machining options, prioritizing precision and economy.

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Turning Technology

Modular Quick-Change System

The Advantages at a Glance:

Economical

Presetting tools parallel to machine running time minimizes machine setup time, nearly eliminating expensive machine down times.

Precise

The cone/face contact with cylindrical support ensures the highest level of accuracy and an absolute form fit.

User friendly

- Low risk of hand injuries.
- Ellimination of the risk of damaging tool bearings during front nut clamping.
- Low risk of damaging the expensive tool holder during installation and removal.
- Precise tool presetting outside the machine.
- Accurate and repeatable clamping of the adapter with defined torque.

Flexible

- Utilization of different clamping technologies on one consistent holder.
- The ability to select the optimum clamping system for each machining process.
- Reduction in the number of different power tools required.
- Interchangeable adapters on both driven and static tools.

Features of the WFB interface

- Large flat contact forms a form fit together with the cone shell.
- Stable “full cone jacket” ensures maximum rigidity.
- Support collar prevents axial movement of the cone under radial loads.
- Cylindrical shoulder accommodates the tensioning mechanism.
- Safe and simple clamping mechanism thanks to two special taper thread pins.
- Adjusting thread for setting the tool length.
- Adapter ready for use with internal cooling thanks to coolant hole.

WFB

high-precision quick-change system for turning machines

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Turning Technology

Special Tool Solutions

We Make it Possible:

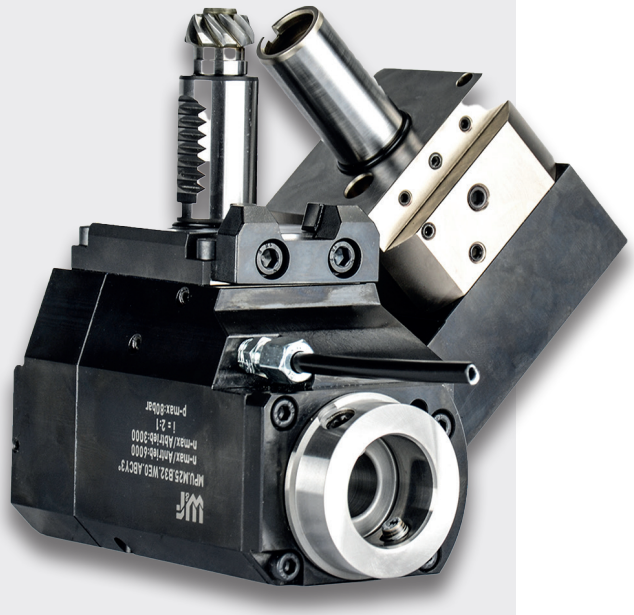
Production-specific challenges drive our commitment to developing innovative products that assist in optimizing your production. Our strength lies in collaborating closely with customers on-site, enabling us to devise special solutions for unique production scenarios.

Special Solutions

for each processing case
the right tool

Product Example:
Index Traub Radial Drilling and Milling Head

Heavy-duty tool holder for the Index ABC machine series, designed for demanding machining. The additional support, extremely stable bearing, and gear structure ensure maximum stability even under heavy loads. The tool holder is configured for internal cooling with up to 80 bar, with optional connections for external cooling available.



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Multi-Spindle Technology

Tool Systems

Modular Tool Systems:

Through close collaboration with our customers, we continually develop solutions to leverage the benefits of modular quick-change systems in the realm of multi-spindle automatic lathes. This effort aims to enhance the profitability of your machines and optimize production processes. Many of these special solutions eventually evolve into standard products.

Range of Services:

- replacement of the original tools with tools with a modular quick-change system
- more stable versions with innovative bearing and sealing technology
- speeders with up to 37,500 rpm
- customer specific special solutions
- complex holistic tool systems
- gear blocks

Tool Program:

We provide solutions for all popular multi-spindle automatic lathes. Additionally, we offer a modern and innovative tool concept tailored to older machine series.

Multi-Spindle Technology

innovative tool systems for multi-spindle automatic lathes

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Clamping Tools

Clamping Tool Program

Tool Holders for Machining Centers:

We at W&F have been manufacturing tool holders for CNC-controlled machines for more than 30 years.

In addition to the standard range, we also offer tool holders in up to five different lengths. Customer-related special solutions are also one of our strengths.

W&F-Line Weldon Additional Considerations:

Weldon for clamping tools
with cylindrical shank DIN 1835 form B

Advantages:

- Overall center of gravity of the tool shank in an optimal position for the machine spindle bearing
- extremely slim design
- high rigidity due to parabolic shape
- weight reduction

Areas of Application

- circular milling
- thread milling
- drilling
- reaming
- countersinking

Versions:

- HSK63 - DIN ISO 12164 A+C
- HSK100 - DIN ISO 12164 A+C
- SK 40 - DIN 69871 AB/ B
- SK 50 - DIN 69871 AB/ B

Clamping Tools

A legacy of quality
spanning 30+ years

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Clamping Tools

Modular Tool Systems

Functional Characteristics of WFU Connection:

The WFU components are interconnected through symmetrical bracing of the cone shell, including face contact, using two opposing (180° pitch) cone thread pins. The tapered thread pins have a 15° tightening angle and a fine thread with a pitch of 1 mm. The face contact features a concave grind (hollow grind), ensuring an optimal contact area in the outer face diameter. The enhancement of the contact area on the cone shell's face is achieved by increasing the cone angle by 40° thereby optimizing the contact area of the larger diameter.

Tensioning the two flat systems with the two tapered threaded pins achieves the contact force. The positive fit "radial/cone surface - axial/face contact" ensures perfect compactness of the connection. This configuration achieves maximum concentricity, even with extremely cantilevered tool structures. For multi-edged tools, this results in even cutting of all tool edges, leading to optimal service life.

The Advantages at a Glance:

- Short cone with a flat system
- Extremely high rigidity due to plan tensioning
- Lateral clamping via two tapered thread pins
- Backlash-free (close to 0µ) between coupled elements
- Highest concentricity and changing accuracy
- Variable use on all common spindle systems
- All holders equipped with internal coolant supply
- Slim design allows machining of narrow and deep holes
- Universal fine balancing with WF balancing elements on all WFU adapters is easy and can be done as often as needed.

Areas of Application:

- heavy machining
- HSC technology
- milling in tool and mold making
- woodworking
- drilling/reaming
- use in transfer lines

WFU

modular tool system for machining centers

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