

VERTICAL TURNING

# THE FUTURE OF METAL PROCESSING

SCHUSTER LATHES

Innovative machine tools for  
CNC production

# MOVE THE STANDARD



Large series are evolving into small, customized series. Sustainability is the new way to drive economic efficiency. And specific production steps such as processing workpieces are becoming part of an integrated, automated overall process. In short, the transformation to Industry 4.0 is changing the requirements for metal processing as well.

That's why the lathes we developed by us are not simply standard lathes. In close cooperation with our customers in the metalworking industries, we create innovative, future-oriented solutions that advance their interests in a highly customized manner. To do so, we relentlessly question the status quo. We go all out to achieve continuous, advanced development. And we keep pushing the limits of what is possible. For you, too.

This is how we invent the future of metalworking. Together.

## THE SCHUSTER ADVANTAGES:

- + Very compact design saves energy and costs
- + Ergonomic concept makes set-up procedure simple
- + Attractive price-performance ratio: no compromises regarding availability or precision
- + Maximum machine availability
- + High thermal stability means that no external heat compensation is required
- + 100% "Made in Germany" with the expected high Schuster quality from Bavaria
- + Coordinated option packages
- + Up to 36 months warranty
- + NC consultation, including programming of the optimum production process for your component
- + Closely linked service network
- + 40 years of experience in the machine-building industry

## FOR MANY SITUATIONS, A STANDARD APPLIES. BUT IT OFTEN VARIES BASED ON THE INDIVIDUAL CIRCUMSTANCES.

Each turned part requires its own specific machining process. For this reason, we always take upstream and downstream technologies and steps into consideration in the overall process.

That's why all Schuster machines have a modular machine concept based on our extensive process knowledge, which allows the entire machining process to be automated and coordinated perfectly

in accordance with your individual requirements. This also applies with regard to available space and parameters such as material flow, quantities, and production periods as well as geometries and surface qualities, which determine the correct setup and process.

# THE SCHUSTER CONCEPT – OR AS WE SAY: MACHINE ENGINEERING TOGETHER WITH YOU AT EYE LEVEL.

### UPSTREAM PROCESSES

Processes to ensure optimum material flow

### CORE PROCESSES

Turning  
+ drilling  
+ milling  
+ grinding

### DOWNSTREAM PROCESSES

Processes for measurement and optimum part removal

## HOW DO WE COME UP WITH THE RIGHT SOLUTION?

### 1. Determine and analyze the objective and the existing situation:

We examine the challenges that you must tackle in order to reach your goals. These may include obstacles that arise due to available space, batch sizes, geometries, or precision requirements.

### 2. Feasibility testing and solution development:

After we analyze the objectives and challenges, we provide consultation to help you evaluate possible solutions and determine the optimum, realizable structure.

### 3. Initial project planning and estimation of time and costs:

After we determine the best setup, we plan the project, establish goals, and define the optimum parameters for process approval.

### 4. Protecting your investment:

Our process expertise also provides protection for your investment across the entire project life cycle: with close cooperation and ongoing communication during the planning phase. By taking your target parameters into consideration in the approval of the overall process. Through the use of sturdy, proven, and available components during operation. And even beyond with a service strategy customized to your needs.

# HERE EVERYTHING REVOLVES AROUND YOUR WORKPIECE. VERTICALLY.

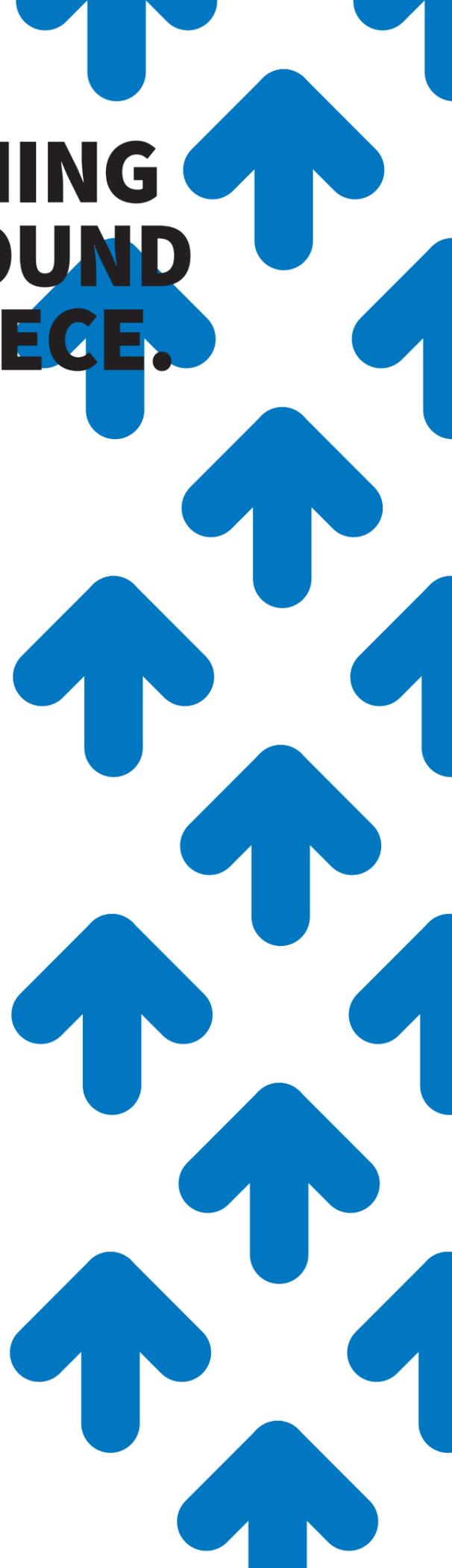
Small changes can have big impacts. This is especially true when you rethink the working axis of a lathe and realign it – not in the conventional horizontal placement, but vertically instead.

In this way, the main spindle performs the key task, and on vertical pick-up lathes, such as the Schuster nxt, the main spindle machines the workpiece (turning, drilling, milling) and takes care of the entire automation. The advantages

are obvious – because all of a sudden, several different process steps can be combined into one process – which ultimately saves a great deal of time. In addition, a much compact design is possible with the vertical working axis, which means that the machine takes up much less space. The result: even more resources and costs are saved because we achieve the greatest possible production capacity even in very small production areas.

## WHY VERTICAL?

- + Significant time savings
- + Compact design and low space requirement
- + Easy handling and setup
- + Good ergonomic features and easy access
- + Simple automation
- + Consistent momentum
- + No interruptions during operation because chips fall down



## They say that customization generates unique solutions. We say that customized solutions produce the series of the future.



**The new nxt series:**  
Pick-up lathes

No matter if it's for the automotive industry or drive technology, or soft or hard machining – at Schuster, a metal processing solution always consists of a modular system for the three system platforms: F series, V series, and the new nxt series. The entire configuration and the equipment, however, are all perfectly adapted for the individual requirements.

This modular machine concept is easy to adapt, offers a high degree of flexibility, and provides you with greater process reliability in comparison with specialized machine building – and ultimately, creates your highly customized solution from a Schuster machine.



**The F series:**  
Flexible lathes



**The V series:**  
Vertical lathes

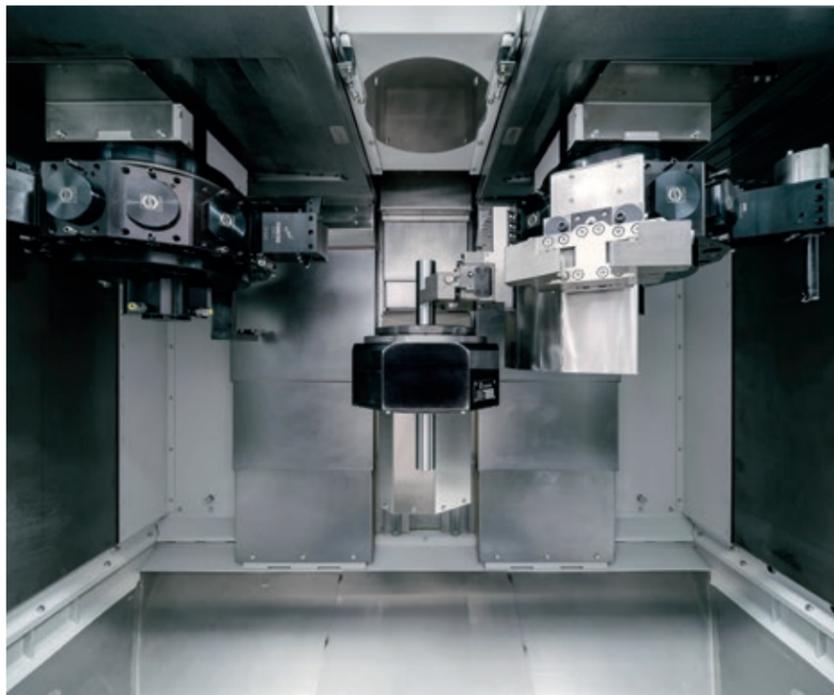
# CENTER DRIVE SPINDLE MAKES HIGH QUANTITIES POSSIBLE



- + Shaft processing with absolute precision
- + Less mounting time results in greater productivity
- + Part of the portfolio for 20 years

The center drive technology developed by Schuster is setting new benchmarks for productivity. Especially with the particularly flexible F series, mounting the component in the center allows for extremely fast processing because both ends of the workpiece – top and bottom, including the end faces – can be machined at almost the same time. In other words, the component can be machined twice as fast with just one clamping process.

And there's more: The center drive spindle is highly efficient and absolutely precise – even with complex contours. Available with various drive units. A basic version is available for shafts from 130 mm to 800 mm in length with diameters from 5 mm to 80 mm.



# 100% POLYMER CONCRETE PROVIDES OUTSTANDING STABILITY



- + Low thermal conductivity
- + Reduces noise
- + Rust-free and resistance to aggressive media (e. g. coolant-lubricant)
- + Very good damping characteristics. Improvements of up to 30% in workpiece surface and increased tool service life when used for cutting processes when compared with machines with gray cast iron bases.
- + Generously sized guide rails on the x-axis and z-axis and a wider guideway result in the greatest stability
- + Large spindle bearing for maximum processing quality

The “heart” of a Schuster lathe is its machine base that consists of polymer concrete. This allows vibration-free machining, which results in long tool service life while maintaining consistently high processing quality.



**SCHUSTER NXT  
READY TO MACHINE**

Even the most basic version of the Schuster nxt has exceptional features. For example, the machine base made of 100% polymer concrete, the guide systems (45 mm guideways in the X and Z directions) and the high-precision spindle with extra-large spindle bearings (120 mm) and an A6 spindle nose.

The highlight is the high-quality Fanuc control system, well-known for its high degree of user-friendliness. The machine is available as either a left-hand or right-hand version, depending on your site situation.

**SCHUSTER NXT  
MILLING WITH A TURRET**

Milling slots and machining cross-bores or key flats on the circumference or on the face are among the operations that can be implemented economically and quickly with our driven tool turret. With a high torque of 63 Nm and an output of up to 10 kW at 4,000 rpm, the tool turret makes it easy to consider complete processing.



**SCHUSTER NXT  
PRECISION DRILLING**

For the greatest precision when drilling holes positioned either within or outside the center of rotation, the Schuster nxt is also available with a HSK63 drilling, milling, or reaming spindle. When combined with Schuster's patented spindle clamping system, this machine version can perform precision drilling that would otherwise not be possible.

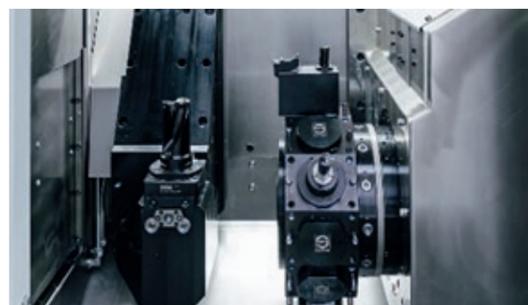
The spindle clamping technology for disconnecting the x-axis (main spindle) operates hydraulically with clamping forces of up to 300 Nm. Its positioning, directly above the spindle nose, suppresses even micro-vibrations perfectly and ensures that precision tolerance requirements down to 15 µm are met.

**SCHUSTER NXT  
HIGH-PERFORMANCE  
DRILLING**

Holes with diameters of up to 65 mm (depending on the workpiece material) can be drilled with no trouble at all with our "high-performance" drilling package. A generously sized coolant-lubricant pump with a capacity of 60 l/min. removes the higher volume of chips that result from machining. With its standardized VDI tool interface, the drilling console, milled out of the complete body and affixed directly to the machine base, is used to meet other requirements, such as force impact or quick tool setup.

# THE PATH TO THE FUTURE STARTS HERE.

The Schuster nxt is available with various optional processing power units and spindle versions with radii up to 200 mm, as well as a variety of loading concepts, so this pick-up solution provides you with many advantages not only for machining workpieces, but also for the overall process. Moreover, it fits into just about any space. The nxt requires an area of just 8 m<sup>2</sup>. If you need more functionality, you can create your own, individual pick-up solution with additions and combinations. For example, an external grinding spindle to achieve the best results from turning, drilling, and grinding even in a very small space.



**For the true heavyweights – the fastest times for the complete drilling of large diameters:**  
The massive Schuster drilling console affixed to the machine base achieves optimum results in a flash. And it can be set up in no time. It's a classic example of our motto, Move the Standard: with appropriate customization, we can offer great variety within the nxt series.



Thanks to numerous options for customization, you can integrate a wide range of further processing steps, all the way to external grinding.

# THE FUTURE IS TWICE AS SMART.

The vertical structure of the V series makes the best use of your resources in terms of production area. Fast, compact, and productive, the V series, with its vertical double spindle units, is outstanding for operations such as twin processing or double-sided machining, ensuring the best results.

## OTHER ADVANTAGES:

- + Greater productivity per minute thanks to the integration of additional tasks into the automated process during non-productive periods.
- + Fits into just about any space. But it is able to “grow” at any time: its modular cell structure requires an area of just 20 m<sup>2</sup> to 24 m<sup>2</sup>.
- + High efficiency. With two modules that are exactly the same, performance remains at a consistent, high level.
- + No brain drain. Protects your intellectual property because it’s 100% “Made in Bavaria.”



**These arms add value:**  
The robot completes loading and unloading tasks at twice the speed. There is no downtime during non-productive periods – instead, the robot performs additional tasks.



**Double spindle machine with milling unit:**  
More prefinished parts mean greater added value and greater productivity in small spaces.



## THE SCHUSTER V SERIES TWICE AS EXCEPTIONAL. THE DOUBLE SPINDLE CONCEPT.

The double spindle machines have two separate rotation modules, so that two rotationally symmetrical components with diameters of up to 200 mm can be machined simultaneously. The same high efficiency – for both simultaneous and classic double-sided processing. The two modules are completely insulated for the greatest precision and stability – making the conduction of vibrations and temperature changes impossible. Moreover, the bases of the machines have high thermal stability because they are made of 100% polymer concrete. As an option, patented spindle clamping technology provides the rigidity required for milling and drilling, which significantly increases the processing quality.



## THE SCHUSTER V SERIES QUALITY PRODUCTION

Because the modules are identical in construction, they ensure high workpiece quality and cutting performance during both soft and hard machining. The modules rely on powerful main spindles with high torque along with tool turrets with 12 tool positions, a high torque of 58 Nm, and an output of up to 18 kW at 9,600 rpm.



## THE SCHUSTER V SERIES OPTIMIZING NON-PRODUCTIVE PERIODS

The V series has a trump card: Additional tasks such as deburring, measuring, brushing, or inscribing can be carried out efficiently during non-productive periods. No matter if it's an NC handling gripper or robot-based automation – both provide you with the maximum scope for action. This is what we call the production of tomorrow.

Part transport can also be carried out quickly in very small spaces due to processing capability. To ensure speed and efficiency, the same conveyor belt is also used to supply and to remove the parts.



## THE SCHUSTER V SERIES A SPACE MIRACLE

Like all Schuster machines, the V series also features a very compact design. That saves costs and space. Machines that are 850 mm wide require an area of just 20 m<sup>2</sup> to 24 m<sup>2</sup>. The switching cabinet, chip conveyor, and coolant-lubricant unit can be positioned as desired.

# EQUIPPED WITH FLEXIBILITY FOR THE FUTURE.

## THE SCHUSTER F SERIES PRODUCTION FLEXIBILITY

Here is just the right solution for you – fast and standardized with the modular Schuster system. From the simple two-axis standard machine all the way to a complex production line, the F series provides the maximum in flexibility and functionality. At the heart of the machine is the extremely sturdy machine base made of 100% polymer concrete. The individual components are mounted on this base. And if you want to expand later, you can convert the machine from a single spindle to a multi-spindle at any time. Because the system has a symmetrical structure, the direction in which the process runs can also be freely determined – to meet the requirements of your production sequence. In addition, it's possible to expand using a plug and play design that makes the adaptation to your quantities simple while saving costs. It cannot be more user-friendly.

## THE SCHUSTER F SERIES AUTOMATION SOLUTIONS

Schuster provides efficient, integrated automation solutions. The hydraulic gripper with an extra-large stroke enables load-bearing capacities of up to 30 kg and achieves optimum processing times. Supplying and removing the components with a conveyor belt takes place really fast – in approx. 10 seconds. And with the quick-change system, the jaws can be replaced in just 30 seconds per gripper. That saves time and money.

## THE SCHUSTER F SERIES HIGH PROCESS RELIABILITY

Direct workpiece transfer together with quick loading and unloading procedures and short setup and conversion times result in high productivity. But not only that – Schuster also offers a truly exceptional feature: The motor spindle is firmly screwed together with the machine base, which damps vibrations and has high thermal stability because it consists of polymer concrete. This ensures a high degree of rigidity and process reliability for professional CNC production. Furthermore, the standard components used are of top quality and provide the highest degree of quality assurance.

## THE SCHUSTER F SERIES HIGH-PERFORMANCE CUTTING

Turning, milling, and grinding as well as gear cutting for shafts and flange components with consistent, high quality. The unique motor spindle concept ensures a high degree of rigidity in that the spindle is affixed to the sturdy machine base made of polymer concrete. The F series also achieves professional and quick results in processes for machining hard materials (HRC machining) and grinding due to the powerful drive that actuates the turret, which has 12 tool positions, a torque of 58 Nm, and an output of up to 18 kW at 9,600 rpm. Efficient four-axis processing and synchronous processing reduce processing times to a minimum, achieving groundbreaking cycle times for vertical lathe processing.

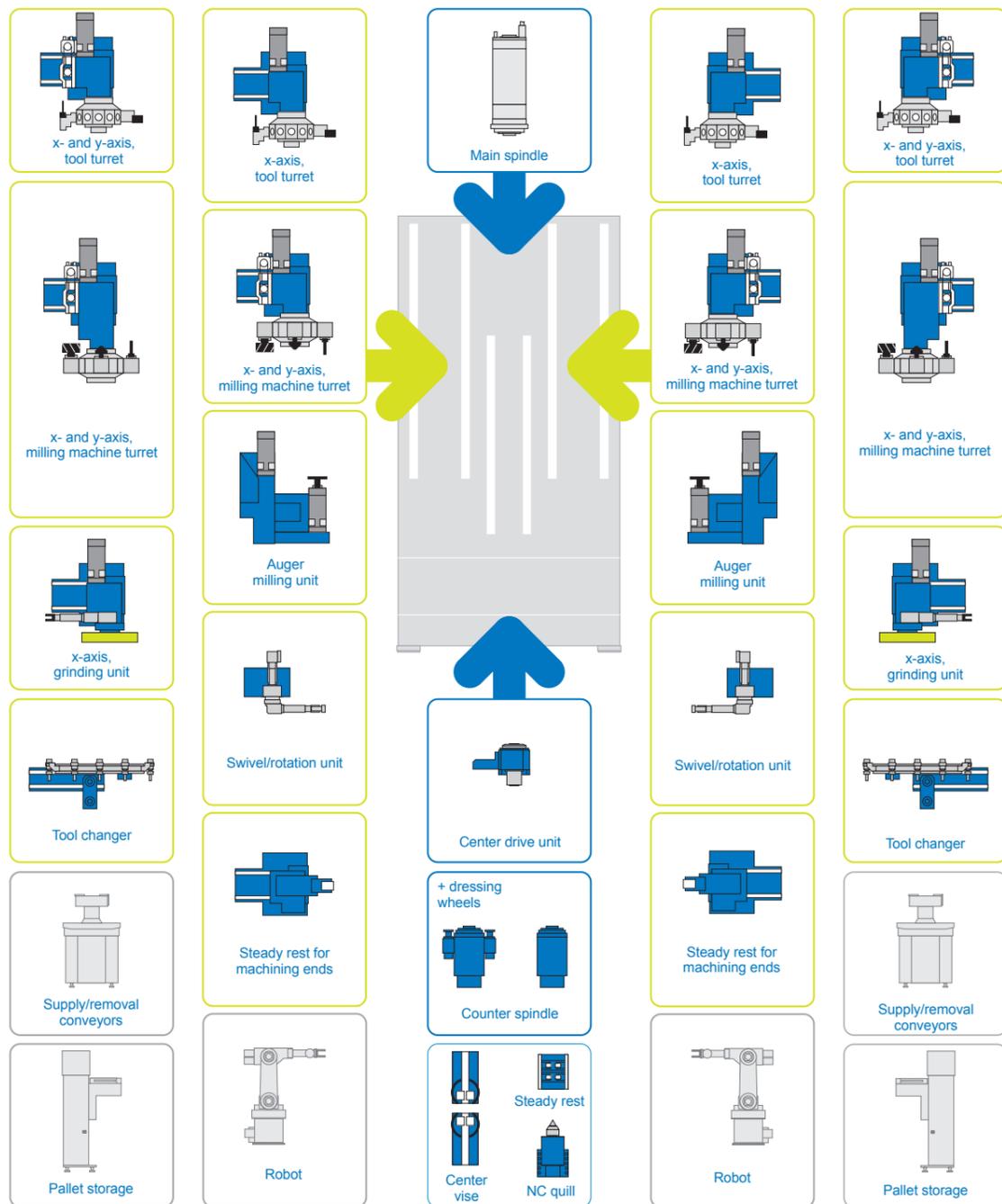
The Schuster F series provides you with more flexibility in the production of shafts in a range from 150 to 800 mm and flange components as well as in end processing. No matter if it's turning, milling, grinding, or gear cutting – with a selection of numerous applications, you're always well equipped. This way you can make a CNC lathe into a flexible combination cell specifically adapted for your applications.



# THERE'S F. AND THERE'S YOUR F.

## A WIDE RANGE OF POSSIBILITIES THANKS TO A MODULAR SYSTEM PLATFORM.

The universal system platform and many standard components provide you with many configuration options to achieve exactly the right solution for you. From the simply configured two-axis machine to the lathe with two revolvers and on to production facilities.



# Combine several individual machines to achieve the highest degree of customization.

To configure the Schuster F so it perfectly meets your needs for shaft production, we provide you not only with a single, outstanding machine, but instead with a combination that functions as a high-performance production system. A single machine, a double machine, or a customized, turnkey solution. Thanks to a wide variety of equipment, we can cover a broad spectrum of possibilities for the highly productive manufacturing of shafts.

SINGLE MACHINE



DOUBLE MACHINE



TURNKEY SOLUTION





# CONTACT

**Schuster Maschinenbau GmbH**

Werner-von-Braun-Str. 7  
86920 Denklingen  
Germany  
+49 (8243) 9680-0  
+49 (8243) 9680-90  
[info@schuster-maschinenbau.de](mailto:info@schuster-maschinenbau.de)