Toolholding and workholding

Product overview 2024

Hand in hand for tomorrow

More than **11,000**

Standard components

1

Awards

2,000

Customized solutions per year

60

Apprentices & Students per Year

95%

Retention rate

3,700

Employees

Sustainability

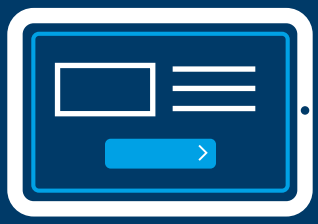
CoLab

Planning and implementation of industrial automation and robotics applications

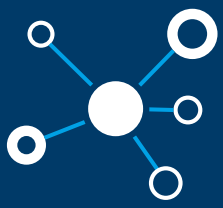
8 Plants

34 Subsidiaries worldwide

Represented in **50** countries



Digital services



Cooperation partner

Visionary leader

1945

Founded by Friedrich Schunk in a garage

Hand in hand for tomorrow

Shaping the future with innovative technologies – that is the claim of SCHUNK. To this end, the experienced automation and production specialist is pushing the further development and digitalization of its product and service portfolio in order to make industrial processes more efficient, transparent and sustainable. The family-owned company with headquarters in Lauffen/Neckar is a global leader in toolholding and workholding, gripping technology and automation technology. Approximately 3,700 employees in 8 plants and 34 directly owned subsidiaries and distribution partners in more than 50 countries throughout the world ensure an intensive market presence.

Reliable clamping technology for your workpieces and tools

Increase the efficiency and performance of your production line with SCHUNK

We offer a wide range of high-quality clamping technologies that can be tailored to the specific requirements of your applications. From proven chuck jaws and innovative lathe chucks to intelligent automation solutions – at SCHUNK you will find everything you need to increase the productivity of your machines and optimize the quality of your manufactured parts. SCHUNK stands for decades of experience, state-of-the-art technology and the highest quality standards. We support you to increase the efficiency of your production – because efficiency is the key to your success!

Trending topics in the focus

Workpiece clamping technology

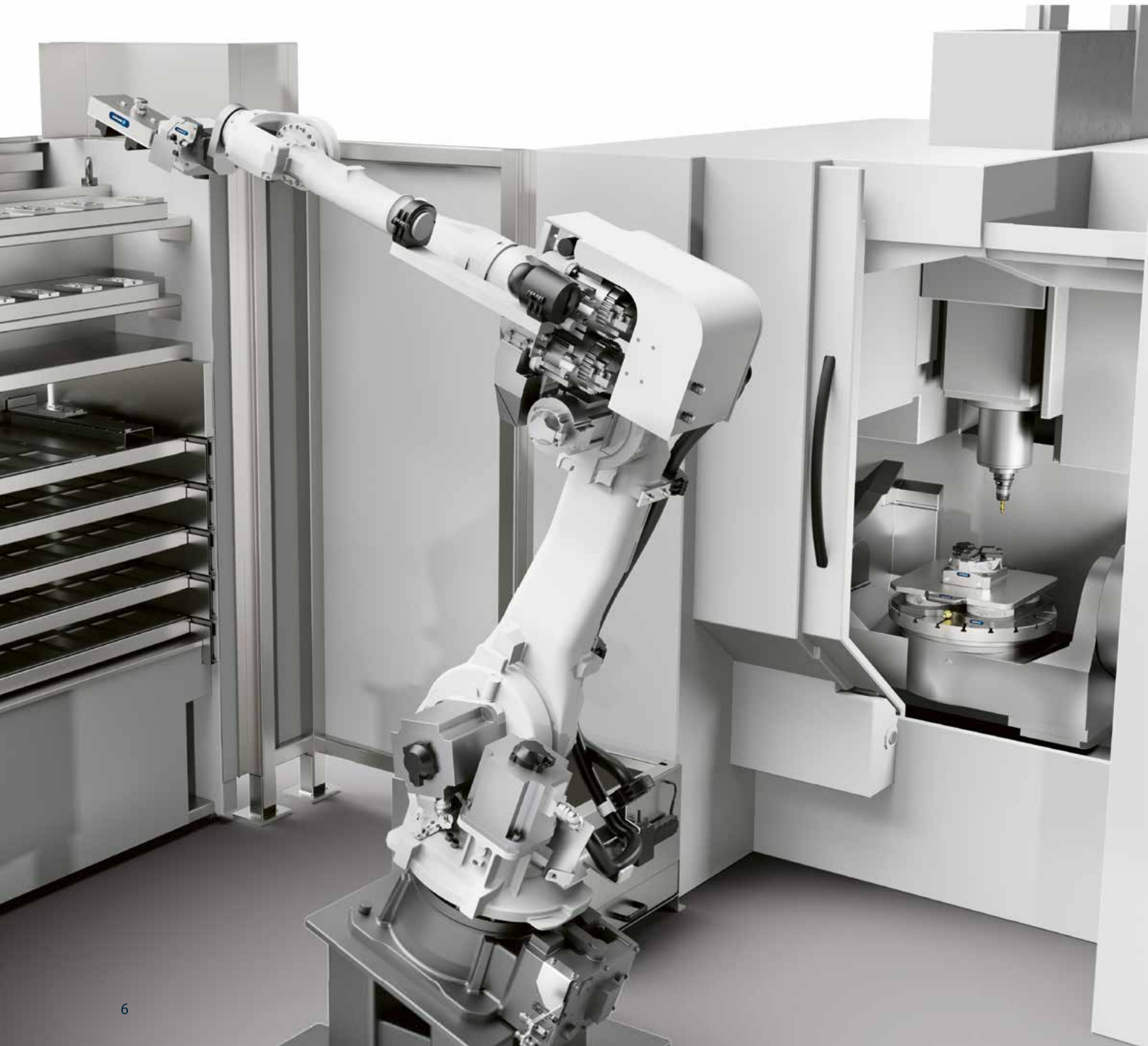
Tool clamping technology

Content

Trending topics in the focus

A future-proof tomorrow with SCHUNK

Discover the pioneering trend topics at SCHUNK that are shaping the future of metal processing. Our automated solutions, intelligent clamping technology, precise process monitoring and convenient product configurators are setting new standards to help you to move forward. With SCHUNK, you are not only shaping the present, but also securing a place at the forefront of the rapidly developing manufacturing landscape – for a future-proof tomorrow.



Industries

In a world full of industry-specific challenges, SCHUNK offers tried-and-tested solutions that are precisely tailored to your needs.

Automation

SCHUNK is the right partner for increasing the productivity of your machine tool. With our broad product portfolio and understanding of the processes, we offer different ways to automate your machine tool.

Intelligent clamping technology

Intelligent clamping devices from SCHUNK allow comprehensive data acquisition and transmission, allowing current clamping situations to be recognized, and wear and maintenance requirements to be identified at any time.

Process monitoring

From smart toolholders to simple process monitoring and integration into the machine control system. In terms of digitalization, SCHUNK is setting standards in the metal-cutting industry with the iTENDO².

Digital services

With our individually configurable standard products, we reduce complexity in system planning and offer individual adaptation options for a wide range of applications.

Industries

Easily implement projects with us

No matter what the challenge is that you are facing in your production process – with SCHUNK you have the right partner at your side. We create individual concepts for your gripping applications, handling tasks and clamping tasks and take care of their validation in our CoLabs. Our holistic approach means fewer interfaces for you. Moreover, we also take care of the design and project planning for your application, noticeably reducing the workload of your day-to-day project work. Another plus point is our in-house production, which is characterized by a high level of vertical integration, reliable process monitoring and complete assembly documentation.

E-mobility

SCHUNK is your reliable partner for production's transition to e-mobility. We are an automation specialist and competence leader for toolholding and workholding, gripping technology and automation technology and supply you with everything from axis systems to robot accessories from a single source. Thanks to the clever combination of our standard products, we always find an individually suitable solution for you. You will benefit from our many years of engineering know-how in the industry. SCHUNK products are already known by all well-known automotive manufacturers and their suppliers. This accelerates integration into new process chains enormously and keeps you in the fast lane from the very beginning when switching to e-mobility.

Automotive

The automotive industry has been a key industry for many years if it comes to implemening new, economic and fully automated production lines for manufacturing vendor parts for the automotive industry. Modern series production in the automotive and its component suppliers requires maximum flexibility in adapting production processes. Quick availability, precision, quality, and process reliability are the deciding factors for success. With decades of experience in equipping automotive production facilities, SCHUNK offers its customers maximum process reliability and performance.

Life science

In the life science sector, biotechnology, medical technology and pharmaceuticals work together. This interdisciplinary collaboration results in new medical technology products, treatment methods and drugs. The manufacturing industry plays a key role here – manufacturing uses modern processes for producing high-quality products in the sectors of medical technology, lab automation and pharmaceuticals. Well-matching product portfolios from SCHUNK meet the strict requirements for manufacturing quality and reliability.

Electronics

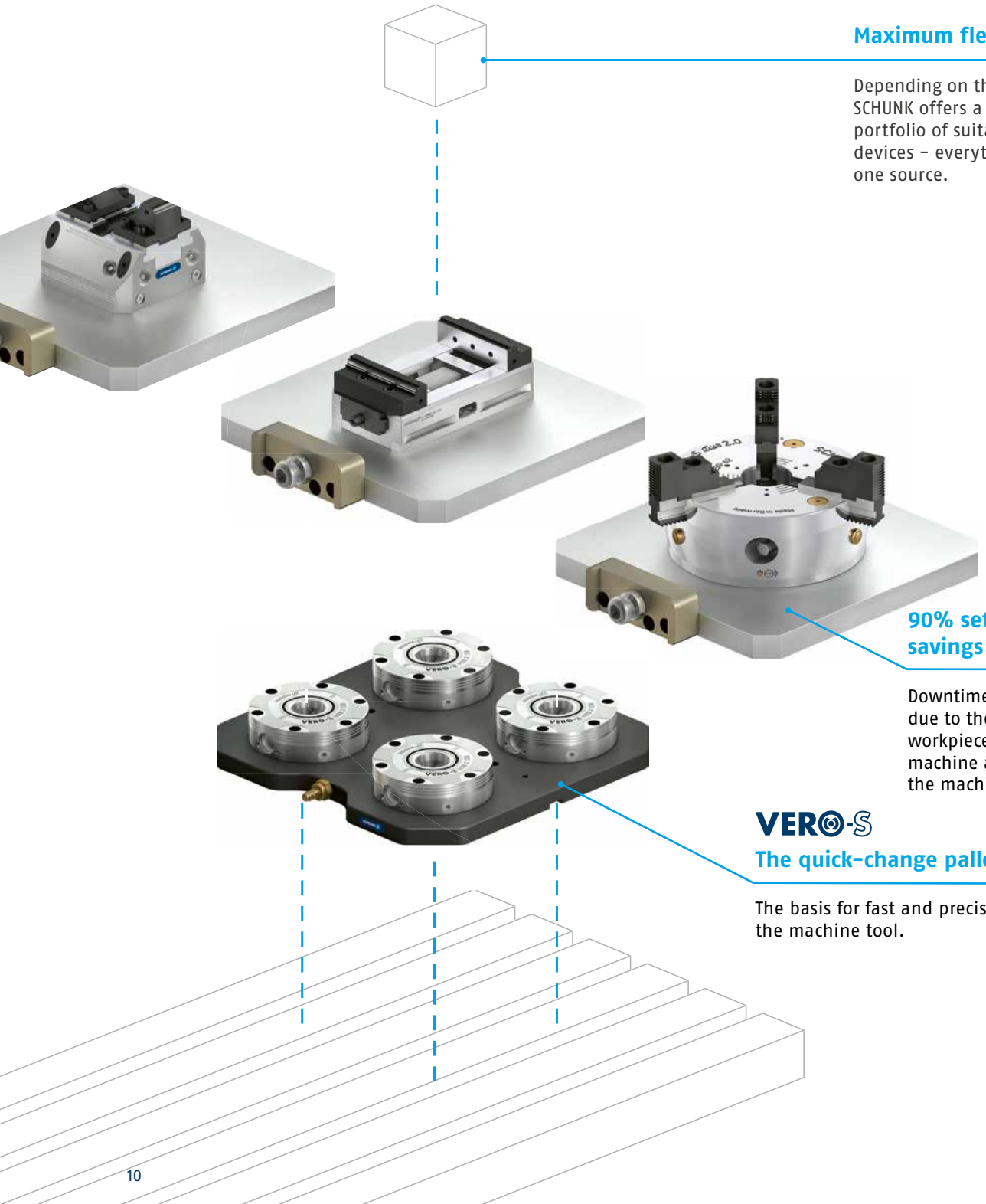
The electronics industry is characterized by continuous technological progress. Precise handling and machining of sensitive electronic components requires highest quality standards and precision. With our many years of experience in depaneling technology, gripping technology and toolholding and workholding, we are your reliable parter when it comes to manufacturing, handling, and final assembly of electronics and electronic products in a wide range of industries.

Aerospace

The aerospace industry is one of the most complex industries as it integrates aspects of information technology, robotics, measurement and control technology, and other areas. Materials, components, and systems must withstand extreme conditions. The quality assurance system ensures that all measures will be taken to avoid errors. In spite of the above-average level of innovation, the time factor also plays a decisive role. SCHUNK is your reliable partner in the aerospace industry. We support aircraft design projects as well as research and development activities for the aerospace industry.

The modular system for your automatic and manual machine loading

Highly standardized – for maximum flexibility



Maximum flexibility

Depending on the workpiece, SCHUNK offers a unique portfolio of suitable clamping devices – everything from one source.

90% set-up cost savings

Downtimes are minimized due to the set-up of the workpieces outside of the machine and in parallel to the machine time.

VERO-S
The quick-change pallet system

The basis for fast and precise retooling on the machine tool.

Modular system for individualists

With the stationary workholding program from SCHUNK, you benefit from the most comprehensive standardized complete modular system for efficient workpiece clamping. Whether pneumatic, hydraulic, manual, electric or magnetic – the SCHUNK line offers you flexible and versatile options for machining different workpiece geometries in a wide variety of processes from one source.

Manual

KONTEC single-acting vises
Powerful single-acting vises with a fixed reference point offer high precision, especially for 0P20 machining.

KONTEC centric clamping vises
Compact centric clamping vises for clamping symmetric workpieces that are clamped into the center.

KONTEC multi clamping vises
Double clamping vises and clamping rails for clamping several workpieces.

Manual lathe chucks
Manually actuated lathe chucks for clamping round and customized workpieces.

Pneumatic

TANDEM 2-jaw clamping force blocks
Compact powerhouses with a wide range of variants with standard stroke, long stroke or fixed jaw.

TANDEM 3-jaw clamping force blocks
Compact powerhouses for cylindrical workpieces with standard stroke and long stroke.

Clamping force blocks and jaw quick-change
Clamping force blocks for manual or automated jaw change via a robot.

Pneumatic power lathe chucks
Lathe chuck with integrated pneumatic cylinder for clamping round and customized workpieces.

Hydraulic

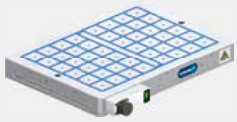
TANDEM 2-jaw clamping force blocks
Compact powerhouses for series production with standard stroke, long stroke or fixed jaw.

TANDEM 3-jaw clamping force blocks
Compact powerhouses for cylindrical workpieces in series production with standard stroke and long stroke.

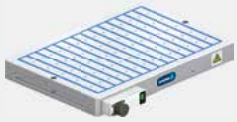
Clamping force blocks with jaw quick-change
Clamping force blocks for manual or automated jaw quick-change via a robot.

Electric

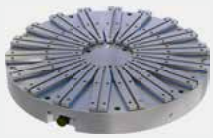
TANDEM 2-jaw clamping force blocks
Electromechanically actuated clamping force blocks with option to preset the jaw position.



MAGNOS square pole plates
Powerful magnetic chucks for rough and fine machining of medum-sized and large workpieces.



MAGNOS square pole plates
Powerful magnetic chucks for machining of thin and small workpieces.



MAGNOS radial pole chucks
Powerful magnetic chucks for turning and grinding operations of rings and disks.

Lathe chucks with jaw quick-change – tool-free and fully automated

The new RAPIDO jaw quick-change system stands for maximum flexibility and the shortest reaction times, and therefore is highly competitive. The exchange can be performed manually or, for selected power lathe chucks, fully automatically by robot – completely tool-free, as well as for O.D. and I.D. clamping. Thanks to the supporting jaws, the RAPIDO can also be quickly and easily retrofitted to existing power lathe chucks with fine serration.


SCHUNK

Fully automatable, tool-free jaw quick-change

The completely tool-free jaw quick-change is an absolute highlight of the new generation of TANDEM clamping force blocks. Thanks to the new jaw quick-change system the jaws can be exchanged manually or automatically via a robot within seconds. This leads to an enormous reduction in set-up time, both in the 2-jaw version and in the soon-to-be-available 3-jaw version.

i4.0 READY
Electrified clamping technology!

By implementing a sensor system for data acquisition and transmission, the intelligent clamping devices from SCHUNK offer all the necessary prerequisites for processes where you require knowledge of the current clamping situation. All sensory and electromagnetic clamping devices from SCHUNK can be integrated into the machine control. Therefore wear and maintenance requirements can be detected at any time.

The energy-efficient alternative to fluid-driven clamping devices

Control via IO-Link

For simple integration in commonly used fieldbus systems

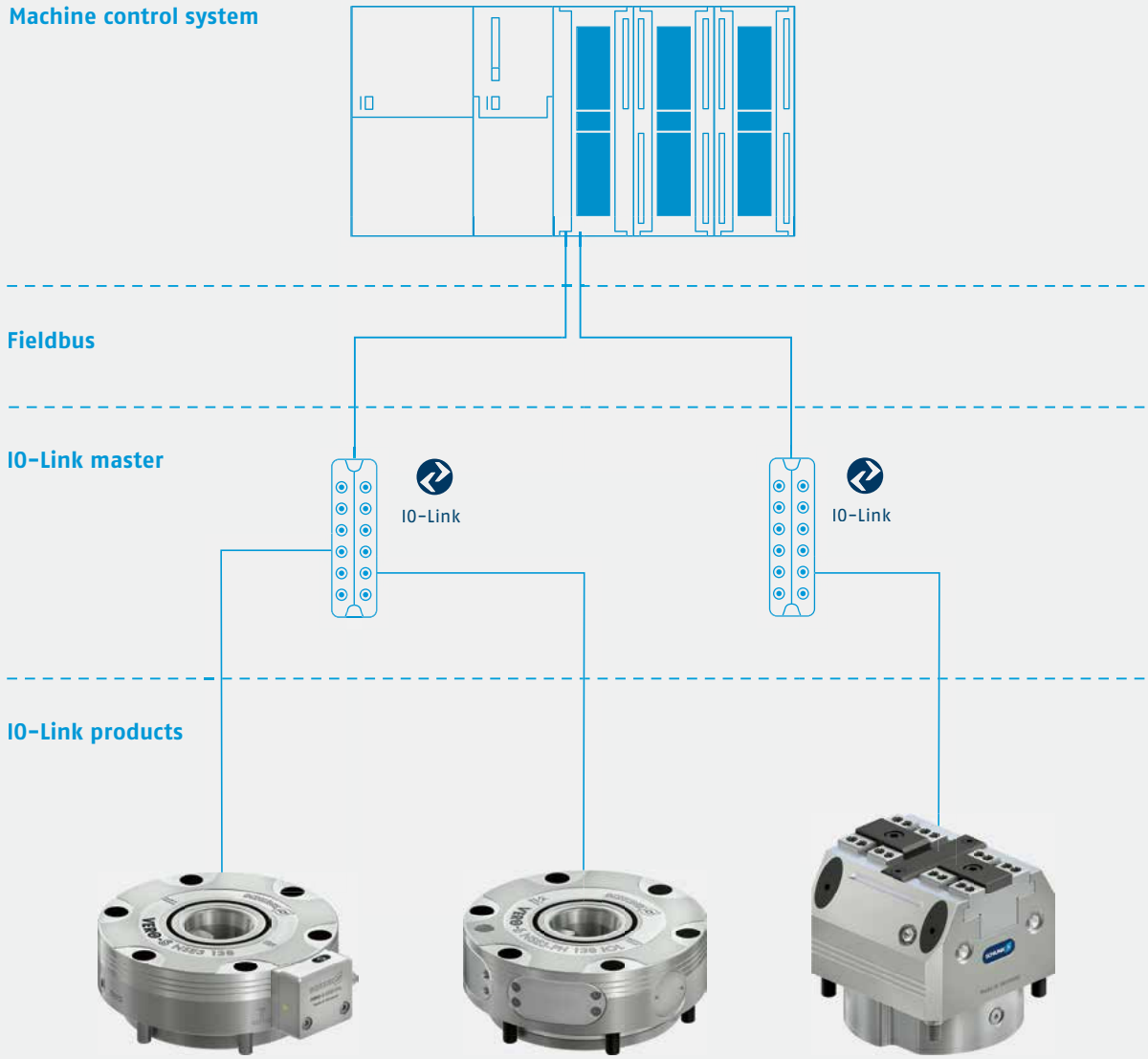
Signal processing occurs exclusively in the clamping device

Integrated electronics, sensor systems and actuators

IO-Link – the universal interface for data transmission

The new sensory and electromechanical clamping systems from SCHUNK communicate via the standardized IO-Link interface (IEC 61131-9). This is a fieldbus-independent point-to-point connection that enables event as well as process and service data to be exchanged between machine control and clamping device. Various clamping devices can be integrated into the machine control system via an IO-Link master using a fieldbus system. A clamping device can be integrated or exchanged quickly and easily via its own IODD. IO-Link technology can be used universally and can be integrated into virtually any fieldbus system.

Modular control concept with IO-Link



VERO-S NSE3 138 + AFS3 IOL 138

VERO-S NSE3-PH 138 IOL

TANDEM KSE3 100 IOL

The intelligent way to the optimum process

iTENDO² easy monitor

The simple, universally applicable monitoring for your process

iTENDO² pad

Optimization of processes

iTENDO² easy connect

The easy connection of smart toolholder technology to your process monitoring system

Easy connection

of the smart toolholder iTENDO² to the machine

Advanced data collection

"closest to the part" for your existing system

High data quality

by direct recording of process data on the last non-wearable part

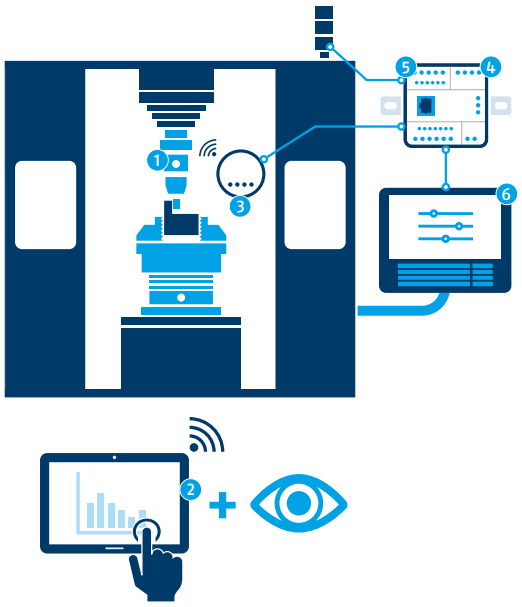
Intuitive operability

through a convenient user interface

Functional diagram

1. **iTENDO²**
2. **iTENDO² pad + easy monitor software extension**
3. **Wireless receiver**
4. **Connect Box**
5. **Monitoring trend limits and alarms**
6. **Integration into the machine control system**

schunk.com/itendo2



Discover the many possibilities of iTENDO² technology

iTENDO² applications

Monitoring

Monitoring of tools

Detection of tool wear and breakage through permanently integrated solutions in the machine control system.

Monitoring of workpieces

Detection of irregularities during processing that have a negative impact on the workpiece produced, such as changes in surface quality or chatter marks.

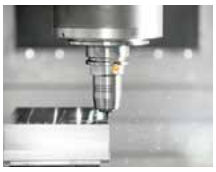
Monitoring of the machine

Detection of changes to the machine and spindle.

Optimization

Optimization of the clamping procedure

Due to the transparency of the vibration behavior during the process, the set-up can be improved.



Optimization of the cutting data

Productivity can be increased or tool wear reduced through the targeted adjustment of cutting data.

Process optimization

Transparency about the vibrations that can occur during different process stages, as an approach to optimize the machine strategy, parameters, cooling or as an aid in tool selection.

iTENDO² easy connect/iTENDO² easy monitor

iTENDO² pad

* As of December 2023

Current/further information on iTENDO²
schunk.com/itendo

Technical data

Series	Analog output [V]	Data rate [Hz]	Memory locations	Digital outputs	Digital inputs
iTENDO² easy connect	0–10	100	64 (iTENDO² preselection)	1) System ready 2) iTENDO² connected 3) iTENDO² battery status	1) Memory selection 2) Connect iTENDO²
iTENDO² easy monitor	0–10	100	64 (iTENDO² preselection and setting the limits)	1) System ready 2) iTENDO² connected 3) iTENDO² battery status 4) Alarm limit 5) Upper trend limit 6) Lower trend limit	1) Memory selection 2) Connect iTENDO² 3) Start process

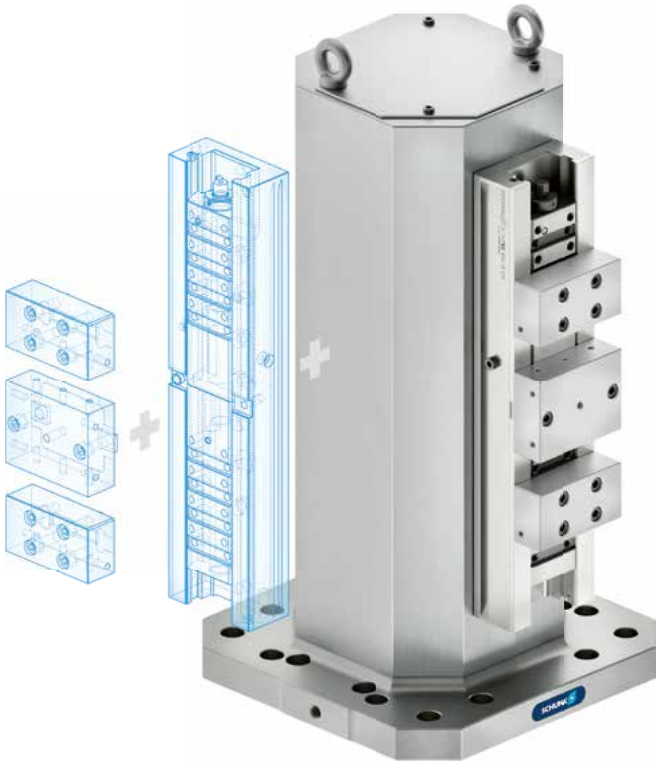
Fast. Online. Customized.

Experience the synergy of efficiency and transparency with our pioneering configurators for toolholder mountings, chuck jaws and manual clamping system. Access is very easy via the web browser, allowing you to not only use the user-friendly configuration, but also to download the CAD data directly. The best thing about it is that there is no development knowledge required, and you can call up information on prices and delivery times, depending on the configurator. Discover a new dimension of customization options and increase the efficiency of your production.

KONTEC Konfigurator

Complete clamping solutions can be combined as desired

NEW



Limitless options

Combine all KONTEC clamping systems and jaws

3D data in real time

Visualize desired product and download as .step data and export parts lists

Preconfigured solutions as a starting aid

Extensive collection of customer solutions to find inspiration for your production

schunk.com/kontec-konfigurator

easy Toolholder

Customized toolholder configuration

schunk.com/easytoolholder

Flexible configuration

Individual adjustment of geometries, selection of clamping diameters, the machine interface, with or without data carrier chip and peripheral cooling

3D data in real time

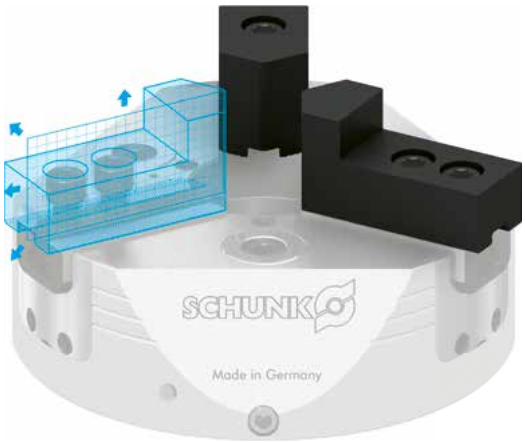
View and download the configuration in different formats in real time

Simple inquiry and order process 24/7

Inquiries and orders are directly processed via the configurator, prices and delivery times are calculated instantly

easyJAW

Individual chuck jaws delivered within 1 to 3 weeks



schunk.com/easyjaw

Flexible configuration

From over 500 standard variants of soft top jaws, intermediate jaws, full grip jaws, monoblock jaws, claw jaws and RAPIDO

Geometries of the chuck jaws can be individually adjusted

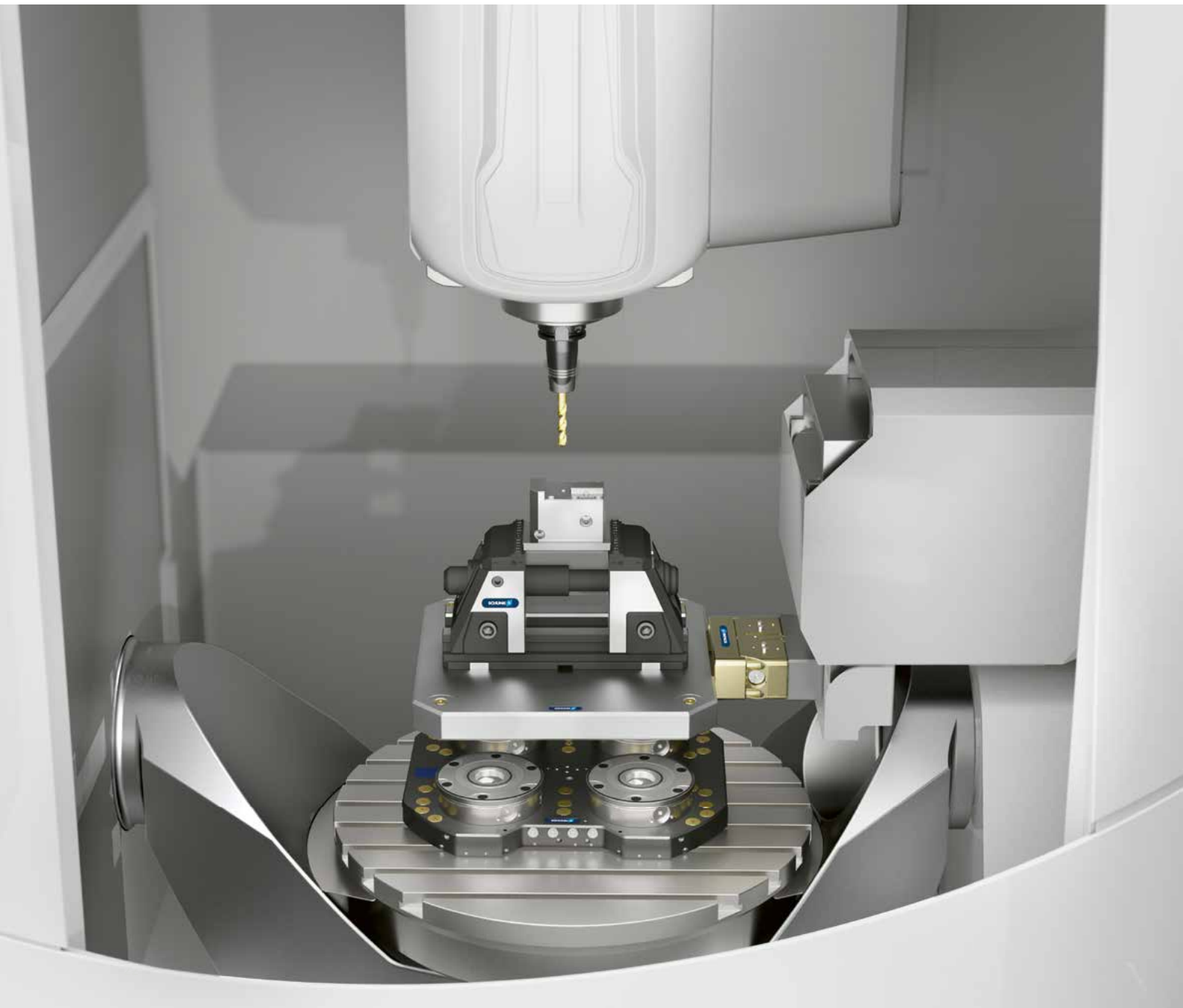
Derived from the respective standard variant, freely configurable

Simple inquiry and order process 24/7

Inquiries and orders directly via the configurator, prices and delivery times are calculated instantly

Efficient, powerful and versatile: Workpiece clamping technology from SCHUNK

Discover the variety of workpiece clamping technology from SCHUNK – from lathe chucks and stationary workholding technology to complete clamping systems with maximum clamping forces. Our products are the result of over 40 years of know-how and innovative technology, manufactured by specialized employees with a focus on outstanding quality. With our quality management system which is in accordance with DIN EN ISO 9001/2015, we are your reliable partner for clamping devices of the highest quality. Our solutions offer you maximum flexibility and efficiency in mastering your clamping tasks. Discover the intelligent solution for your clamping requirements – with SCHUNK.



Chuck jaws

Lathe chucks

Quick-change pallet systems

Clamping force blocks

Manual clamping systems and tombstones

Magnetic clamping technology

Vacuum clamping technology

Chuck jaws

Chuck jaws are the only interface between workpiece and lathe chuck, making them a critical component for increased productivity. Use of the correct chuck jaw guarantees not only perfect power transmission but also reliable workpiece clamping and optimal utilization of machine and tool potentials.

With the extensive range of SCHUNK standard jaws, you will find the perfect clamping solution for your application. Simply determine the relevant parameters based on the workpiece, the machining task and the workpiece clamping in order to select the optimal chuck jaw. SCHUNK chuck jaws are available for most toolholder manufacturers and interfaces, including 1.5 x 60, 1/16 x 90, 3/32 x 90 and metric tongue and groove.

Engineered
Customized

Special chuck jaws. For complex machining tasks, our experts develop tailor-made clamping solutions for you.

- **Suitable for all lathe chuck manufacturers**
- **Maximum performance**
- **Ensuring the correct clamping**

Tech Line
Problem solvers

Tech jaws. Claw jaws with active pull-down, standardized pendulum jaws and QUENTES plastic jaws from SCHUNK enable gentle and secure clamping of thin-walled workpieces that are at risk of deformation.

- **For special clamping tasks**
- **Standardized problem solvers**

Flexible
Jaw quick-change systems

Quick-change systems. SCHUNK jaw quick-change systems excel with their easy handling and reduce set-up times by changing jaws within seconds.

- **Simple set-up**
- **Jaw change in a matter of seconds**
- **Suitable for automated solutions**

Aggressive grip
Raw part machining

Raw part clamping. SCHUNK provides a wide range of hard chuck jaws for machining raw material in the first clamping operation.

- **Maximum holding force**
- **Available for I.D., O.D. and bar clamping**
- **Increased productivity**

Soft grip
Finished parts machining

Finished parts clamping. Chuck jaws made of a resistant material with ground serration ensure a long service life and high accuracy of the chuck jaws.

- **Maximum holding force**
- **Hardenable steel**
- **Ground serrations**
- **High-precision interfaces**

Chuck jaw quickfinder with print option
schunk.com/chuck-jaw-quickfinder

Hydraulic compensation jaw

QUENTES

Pendulum jaws

Pull-down jaws

Jaw quick-change system RAPIDO, manual

Jaw quick-change system RAPIDO-A2, automated

Base jaws

Special base jaws

Claw jaws for O.D. clamping

Claw jaws for I.D. clamping

Claw jaws for bar clamping

Hard stepped jaws

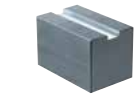
Soft top jaws and jaw blanks

Soft full grip jaws

Serrated bars

Soft monoblock jaws

Chuck jaws

	Chuck jaws		Fields of application: Raw part clamping	Finished part clamping	I.D. clamping	O.D. clamping	Compensation of shape tolerances	Clamping parameter can be adjusted by turning	Low-deformation clamping of rings and fitting disks	Quick jaw change
Tech Line (problem solvers)	Pendulum jaws		●	●		●	●	●	●	◑
	QUENTES plastic jaws			●	●	●		●	●	◑
Flexible (jaw quick-change systems)	Base jaws									●
	Jaw quick-change system RAPIDO/ RAPIDO-A2		●	●	●	●		●		●
Aggressive Grip (raw part machining)	Claw jaws		●		●	●				◑
	Stepped top jaws		●		●	●				◑
	Stepped block jaws		●		●	●				●
Soft Grip (finished party machining)	Serrated bars			●	●	●		●		
	Soft top jaws			●	●	●		●		◑
	Jaw blanks			●	●	●		●		
	Full grip top jaws			●	●	●		●	●	◑
	Monoblock jaws			●	●	●		●		●

● Most suitable ◑ Suitable

Characteristics			
Configurable at schon.com/easyjaw	Jaw interface/type (by defualt)	Available for lathe chuck sizes (by default)	Material
	Fine serration 90° Fine serration 60° Straight and diagonal wedge-bar serration	200 – 500 mm	Case-hardened steel
	Fine serration 90° Fine serration 60° Tongue and groove	160 – 315 mm	Glass-fiber-reinforced plastic
	Straight and diagonal wedge-bar serration	125 – 1000 mm	Hardened and precision ground steel
●	Fine serration 90° Fine serration 60°	160 – 400 mm	Case-hardened steel
●	Fine serration 90° Fine serration 60° Tongue and groove Module 2	140 – 1000 mm	16MnCr5 steel, case-hardened
	Fine serration 90° Fine serration 60° Tongue and groove Module 2	110 – 1200 mm	16MnCr5 steel, case-hardened
	Straight and diagonal wedge-bar serration	160 – 630 mm	16MnCr5 suitable for case hardening or 16MnCrS5K steel
	Fine serration 90° Fine serration 60°	125 – 800 mm	Steel or aluminum
●	Fine serration 90° Fine serration 60° Tongue and groove Module 2	80 – 1200 mm	16MnCr5 steel suitable for case hardening or high-tensile aluminum
●	Fine serration 90° Fine serration 60° Module 2	160 – 800 mm	16MnCr5 steel suitable for case hardening
●	Fine serration 90° Fine serration 60° Tongue and groove	80 – 630 mm	16MnCr5 steel suitable for case hardening or high-tensile aluminum
●	Straight and diagonal wedge-bar serration	140 – 800 mm	C45, tempered, suitable for induction hardening

Lathe chucks

From the universal manual lathe chuck to lathe chucks with jaw quick-change systems and maximum clamping forces, SCHUNK offers the right lathe chucks for any application.

With over 40 years experience in development and production experience at SCHUNK, their lathe chucks meet the requirements of state-of-the-art machining and highly demanding machining tasks in internationally known top quality.

Engineered
Customized

SCHUNK offers complete solutions from the toolholder to the lathe chuck to the drive for your application.

ROTA NCML ▲ ■

ROTA NCM ◆ ● ■

Tech Line
Specialized

Lathe chucks for industry-specific requirements and applications.

ROTA NCE ◆

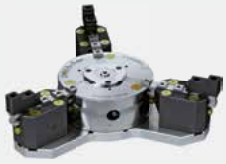
PROTACT

ROTA NCR-A ◆

Flexible
Quick-change systems

Selected lathe chucks that are characterized by high flexibility for small batch sizes.

ROTA-S plus 2.0 ▲



ROTA-S flex ▲

Conventional
Universally

Selected lathe chucks developed to meet the high demands of modern machines for various applications.

ROTA NC plus 2 ◆
3 jaws

ROTA NC plus 2 ◆
2 jaws

Steady rests, quick-change systems, chuck jaws and clamping cylinders complete the product range, which meets the high requirements of modern machining. Through continuous further development of technology and products, as well as consistent compliance with the quality management system DIN EN ISO 9001:2015, SCHUNK is your competent partner for high-quality lathe chucks. SCHUNK provides complete solutions and guarantees maximum flexibility for your clamping task.

ROTA HSA ◆

ROTA DFF ◆

ROTA BEV ◆

ROTA HSH ◆

ROTA NCF plus 2 ◆

ROTA NC plus 2 ◆
4 jaws

ROTA NCO ◆

ROTA NCO2 ◆

ROTA 2B ◆

ROTA NCR ◆

ROTA TB2 | ROTA TB2-LH ●

ROTA-M flex 2+2 ▲

ROTA-ML flex 2+2 ▲

PROTACT

ROTA THW3 ◆

ROTA THW plus ◆

RAPIDO-A2 ◆

ROTA TP ●

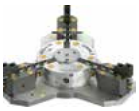
ROTA-G ▲

ZENTRICO THL plus ◆ ●

◆ Hydraulic ● Pneumatic ▲ Manual ■ Magnetic

	Type		Description
Tech Line (Spezialized)	ROTA-M flex 2+2		Extremely flexible 4-jaw manual lathe chuck with patented drive concept. Due to the large compensation stroke, round, cubic and geometrically unshaped workpieces can be clamped without any problems.
	ROTA-ML flex 2+2		
	ROTA NCE		Extremely weight-optimized power lathe chuck with through-hole and up to 40% reduced moment of inertia compared to conventional lathe chucks. Shortened cycle times and energy-efficient machining, especially in the area of high-volume production.
	ROTA NCF plus 2		Power lathe chuck with through-hole and integrated centrifugal force compensation for reducing the loss of clamping force under speed of rotation. This allows the workpieces to be machined at significantly higher speeds.
	ROTA NCF		
	ROTA NCO		Power lathe chuck without through-hole with the longest jaw stroke at the highest jaw clamping force. An absolute problem solver for demanding applications.
	ROTA NCO2		Power lathe chucks without through-hole especially for vertical lathes. Optionally available with centrifugal force compensation or individual jaw adjustment.
	ROTA 2B		2-jaw power lathe chuck without through-hole with long stroke and maximum clamping force at the same time. Ideally suited for workpieces with large interfering contours.
	ROTA NCR		6-jaw compensation chuck for deformation-sensitive clamping of thin-walled workpieces.
	ROTA NCR-A		Sealed 6-jaw compensation chuck for deformation-sensitive clamping of thin-walled workpieces. The sealing system ensures constant clamping forces, minimal maintenance costs and an even wider range of applications.
	ROTA TB2		Power lathe chuck with integrated pneumatic cylinder and very large chuck bore especially for machining large tubes.
	ROTA TB2-LH		Power lathe chuck with integrated pneumatic cylinder and very large chuck bore especially for machining large tubes. A rapid stroke and clamping stroke enable collision-free loading of pipes with large interfering contours.

Sizes	Max. speed of rotation [1/min]	Max. clamping force [kN]	Stroke/jaw [mm]	Compensation stroke/jaw [mm]	Number of jaws
260 – 500	1100 – 2700	100 – 180	9.5 – 17.8	5.1 – 10	4
630 – 1200	600 – 900	150 – 180	14.5 – 17.8	7.9 – 10	4
130 – 315	3500 – 7500	45 – 155	3.2 – 5.8		3
185 – 315	4000 – 6000	72 – 160	5.3		3
400 – 630	1800 – 3300	187 – 300	8 – 11		3
165 – 630	1600 – 6000	72 – 330	6.4 – 15		3
800 – 1400	500 – 900	330	23		3
125 – 400	2000 – 5300	26 – 85	10 – 18		2
165 – 200	3500 – 4000	36 – 50	6	±1	6
190 – 1000	600 – 4000	36 – 300	6 – 25	±1 – ±6	6
470 – 1000	500 – 1700	115 – 240	7 – 12.8		3
470 – 1000	500 – 1300	115 – 240	20 – 38.5		3

	Type		Description
Flexible (quick-change systems)	**ROTA-S plus 2.0**		Manual lathe chuck with jaw quick-change system with diagonally serrated base jaw interface. Can be used even more flexibly in combination with center sleeves or arbors. Also available as a 2-jaw chuck.
	ROTA-S plus		Manual lathe chuck with jaw quick-change system with diagonally serrated base jaw interface.
	ROTA-S flex		Extremely weight-reduced manual lathe chuck for mill/turn centers. Very fast conversions from small to large workpiece diameters due to jaw quick-change system.
	ROTA THW3		Sealed power lathe chuck with jaw quick-change system with straight serrated base jaw interface. A patented sealing system with permanent grease lubrication ensures constant clamping forces, minimal maintenance effort and an even wider range of applications.
	ROTA THW plus		Power lathe chuck with jaw quick-change system with straight serrated base jaw interface.
	RAPIDO-A2		Power lathe chuck with innovative jaw quick-change system. The tool-free jaw change can be done either manually or fully automatically with a robot.
Conventional (Universal)	**ROTA NC plus 2**		Power lathe chuck with through-hole in 2, 3 and 4-jaw design for universal use. This wide range means virtually all customer requirements can be catered for.
	ROTA NC		Power lathe chuck with through-hole in 3-jaw design for universal use.
	ROTA TP		Power lathe chuck with integrated pneumatic cylinder as an alternative if no hydraulics are available on the lathe.
	ROTA SPK		Dirt-resistant jaw boxes for individual clamping solutions on face plates with T-slots running in parallel.

	Type		Description
Steady rests	**ZENTRICO THL plus**		Hydraulically actuated, self-centering steady rests with high clamping forces to support long workpieces on lathes. For a quick change, these can also be combined with a steady rest quick change.

Sizes	Max. speed of rotation [1/min]	Max. clamping force [kN]	Stroke/jaw [mm]	Number of jaws
160 – 315	3400 – 5400	40 – 180	6.5 – 9.9	2/3
400 – 1000	900 – 2200	230 – 270	12 – 15	3
550 – 1400	400 – 1000	100 – 270	7 – 15	3
200 – 630	1700 – 6000	64 – 240	6.7 – 10.5	3
165 – 315	3600 – 6000	45 – 160	5.9 – 8.6	3
210 – 400	1700 – 4000	85 – 187	5.3 – 15	3
185 – 315	2000 – 500	48 – 160	5.3	2/3/4
400 – 630	700 – 2500	187 – 410	8 – 16	3
125 – 350	2200 – 4000	22 – 90	3 – 15	3
180 – 260		55 – 75	75 – 100	1

Sizes	Clamping range [mm]	Max. clamping force [kN]	Centering accuracy [mm]	Repeat accuracy [mm]
100 – 600	4 – 460	1 – 25	0.02 – 0.06	0.005 – 0.02

Clamping modules

The modular system is based on VERO-S quick-change pallet modules, which are either installed directly in the machine table, or attached to it so that the module can be used as a clamping station. With the help of a clamping pallet, pallet coupling and robot module, the clamping device can be automatically inserted and removed by a robot.

The connection between the clamping module and the clamping device or clamping pallet is achieved via clamping pins or clamping rings. With SCHUNK's large portfolio, all mounting screws can currently be replaced by clamping pins, significantly reducing set-up times.

NEW

KVS cone seal

All quick-change pallet modules from the NSE3 generation are equipped for integrating a cone seal by default. The standard plug can easily be replaced by a cone seal at a later point. The cone seal prevents chips or cooling lubricant from entering the clamping pin interface during a clamping device or pallet change. This is particularly crucial for automated machine loading.

Pneumatic

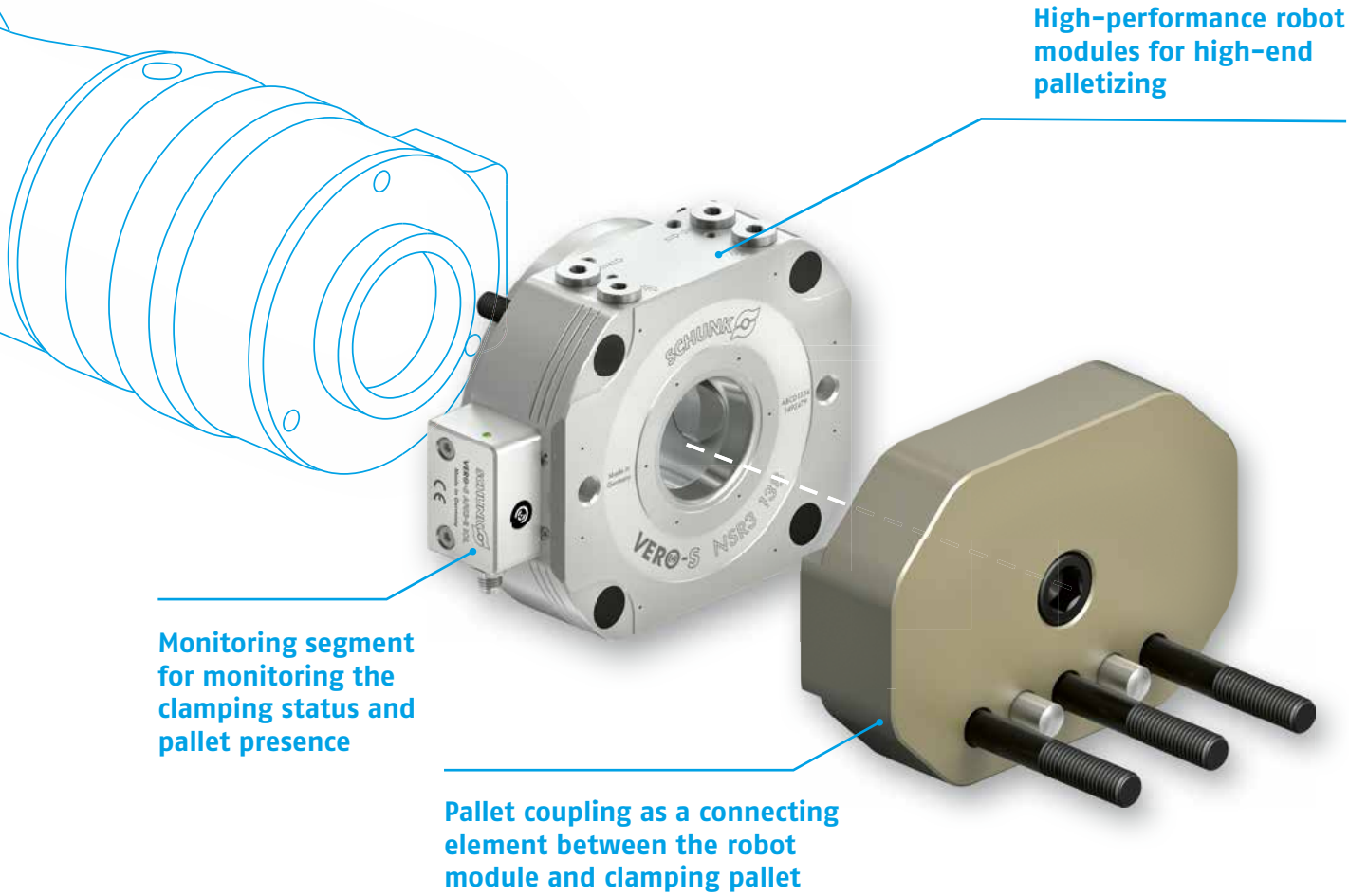
Type		Description
NSE mikro – innovative technology in the smallest spaces with the smallest quick-change pallet modules		
NSE mikro 49		Micro clamping module for universal applications in micro-cutting. Quick-change pallet module with drive via drive ring and three flat clamping slides with patented drive concept.
NSE mikro 49-13		Micro clamping module for universal applications in micro-cutting with significantly increased pull-down force for more power. Quick-change pallet modules with drive via axial pistons and two round clamping slides with patented drive concept.
NSE mini – powerful modules for small variable gauges		
NSE mini 90		Miniature clamping module for applications with light force application such as machining aluminum or plastic or for use on measuring devices. Quick-change pallet modules with drive via drive ring and three flat clamping slides with patented drive concept.
NSE mini 90-25		Miniature clamping module with significantly higher pull-down force for light milling machining. Quick-change pallet modules with drive via axial pistons and two round clamping slides with patented drive concept.
NSE-HT mini 88-20		Miniature clamping module specially designed for high-temperature applications up to 200 °C. The material, drive concept and seals are specially adapted to these temperatures.
NSE3 – the high-performance quick-change pallet system for universal milling		
NSE3 99		Powerful clamping module with high pull-down forces for small gauges. Optionally available with cone seal.
NSE3 138		The most powerful quick-change pallet module par excellence. This premium module serve as the basis for the VERO-S modular system and can be expanded by a unique variety of different equipment. Optionally available with cone seal.
NSE3-T3 138		Powerful quick-change pallet module in tombstone design. Its slim design is particularly suitable for applications with tombstone and swiveling table. Optionally available with cone seal.
NSE3 138-P		Powerful quick-change pallet module with integrated media transfer units. These media transfer units make it possible to transfer pneumatics or hydraulics directly through the module to the clamping device with a max. transfer pressure of 300 bar. Optionally available with cone seal.
VERO-S Automation – powerful quick-change pallet technology for high-end palletizing		
NSE-A3		Fully equipped automation module for automated machine tool loading as well as for applications in handling, assembly and automation technology.
NSA plus **NSA3**		Extremely flat automation module for high-end palletizing. A pallet lift-off function ensures maximum process reliability in interaction with robots.

Clamping pin type/ clamping ring type	Automated machine loading	Manual machine loading	Module height above table [mm]	Weight [kg]	Pull-down force with/without turbo [kN]
SPx mikro 10	Yes	Yes	12	0.2	0.15 0.4
SPx mikro 10	Yes	Yes	13	0.2	0.5 1.5
SPx mini 20	Yes	Yes	20	1	0.5 1.5
SPx mini 20	Yes	Yes	25	1.3	1.5 6
SPx mini 20	Yes	Yes	20	1	0.5 2.5
SPx 40	Yes	Yes	56	2.4	5 18
SPx 40	Yes	Yes	39	4.4	8 28
SPx 40	Yes	Yes	11	3.5	7 24
SPx 40	Yes	Yes	39	4.4	8 28
SPx 40	Yes	Yes	39	4.4	8 28
SRx 120	Yes	Yes	32	2	3 10
SRx 160	Yes	Yes	40	5.8	5 15

Robot modules

The SCHUNK pallet couplings from VERO-S NSR series have become an integral part of automated machine loading. Whether slim and light due to hard-anodized aluminum alloy, or robust and powerful in the two large sizes – there is a suitable module for every application.

The clamping pin is clamped in a self-locking manner through two clamping slides via an integrated spring assembly so that the pull-down force is fully maintained even in the event of pressure drop. A cleaning function is integrated into the standard version and ensures optimal cleaning of the flat work surface, the centering cone, the center bore and the anti-rotation protection.



NEW

VERO-S NSR3 138

The new robot coupling for high-end palletizing with a torque capacity of up to 1,500 Nm: With the VERO-S NSR3 138 robot module, even heavy pallets can now be easily handled by robots. For the first time, the individual clamping statuses can be detected via a monitoring unit and can be transferred in a standardized format to the machine control with IO-Link interface.

	Type		Description
Robot modules	**NSR mikro 60**		Extremely slim robot coupling made of hard-anodized aluminum alloy for handling small pallets with a torque capacity of up to 15 Nm.
	NSR mini 100		Extremely slim robot coupling made of hard-anodized aluminum alloy for handling small pallets with a torque capacity of up to 75 Nm.
	NSR 160		Extremely slim robot coupling made of hard-anodized aluminum alloy for handling pallets with a torque capacity of up to 600 Nm.
	NSR3 138		Robust robot coupling for handling heavy pallets with a torque capacity of up to 1,500 Nm.
	NSR maxi 220		Robust robot coupling for handling heavy pallets with a torque capacity of up to 4,000 Nm.

Accessories media coupling

	Type		Description	ID
One-way mounting	**MDR-NRS-1**		**Coupling nipple for robot module** With one-way media transfer unit for actuating clamping stations and clamping devices via the appropriate coupling strip.	1350336
	MDR-PAL-1		**Coupling strip for clamping pallet** With one-way mounting for the transmission of compressed air from the robot module to the clamping device.	1440495
	MDR-NSL-1		**Coupling strip for clamping station** With one-way mounting for the transmission of compressed air from the robot module to the clamping station.	1350331

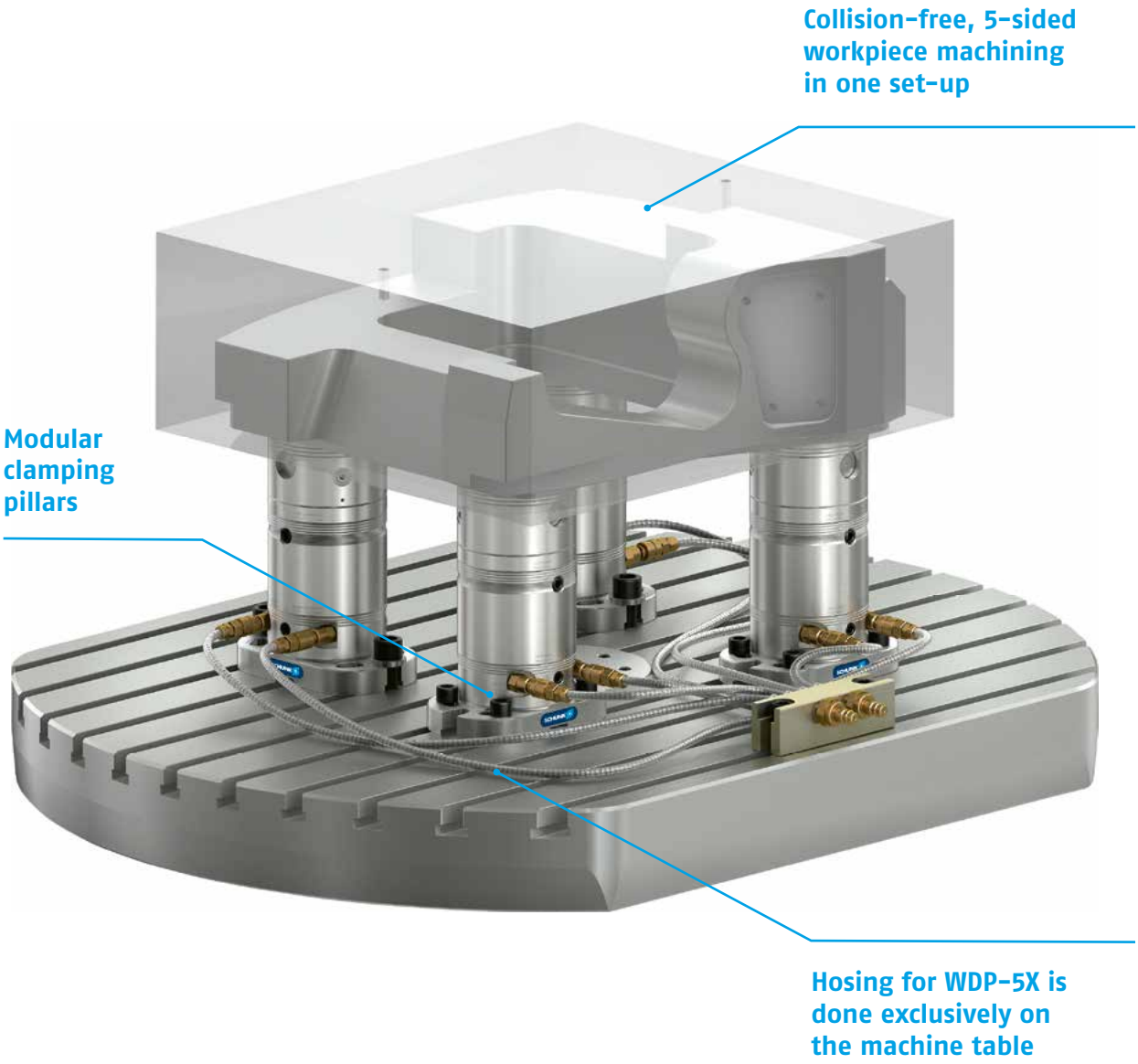
Types of clamping pins	Automated machine loading	Module width [mm]	Weight [kg]	Pull-down force with/without turbo [kN]	Max. moment Mx/Mz [Nm]
SPA mikro 10	Yes	29	0.15	0.5	15
				1.5	32
SPA mini 20	Yes	39.5	0.4	1	75
				4	200
SPA 40	Yes	60	1.6	4	600
				15	1600
SPA 40	Yes	112	3.8	8	1500
				28	1600
SPA 80	Yes	176	21	12	4000
				50	4000

	Type		Description	ID
Two-way mounting	MDR-NSR-2		**Coupling nipple for robot module** With two-way media transfer unit for actuating clamping stations and clamping devices via the appropriate coupling strip.	1350334
	MDR-PAL-2		**Coupling strip for clamping pallet** With two-way mounting for the transmission of compressed air from the robot module to the clamping device.	1426829
	MDR-NSL-2		**Coupling strip for clamping station** With two-way mounting for the transmission of compressed air from the robot module to the clamping station.	1350323

Modular clamping system for direct workpiece clamping

Collision-free clamping without a large interfering contour is becoming increasingly the standard, even for small batches and individual parts. Due to the two modular systems VERO-S WDP-5X (pneumatically actuated) and WDM-5X (manually actuated) workpieces of all types can be directly clamped in seconds without an interfering contour.

With the aid of modular clamping pillars, the workpieces can be lifted off the machine table and secured in a defined clamping situation. Due to the extremely large range of clamping pins, the clamping pillars can be adapted to suit all customer requirements.



NEW

Positioning arbor

Using the positioning arbor, clamped in the machine spindle, the clamping pillars can be positioned quickly, easily and precisely on the machine table or grid plates. The modules do not even have to be opened for this.

	Module type		Description
Pneumatic workpiece direct clamping system WDP-5X	**Basic modules**		Basic modules serve as the basis of the clamping pillars. Depending on the machine table interface, there are different basic modules available.
	Stacking modules		Stacking modules are used to preset the height of the clamping pillars. The modules are available in five standardized heights.
	Clamping modules		Clamping modules serve as an interface to the workpiece in combination with VERO-S clamping pins. They are available in pneumatic or manual versions.
	Compensation modules		In combination with compensation bolts, compensation modules can continuously compensate for height differences of up to 11 mm. They are available in pneumatic or manual versions.
Manual workpiece direct clamping system WDM-5X	**Basic modules**		Basic modules serve as the basis of the clamping pillars. Depending on the machine table, there are different basic modules available.
	DUO basic modules		Robust module with three VERO-S interfaces for superstructures of heavy workpieces and fixtures with wide lateral support.
	VARIO basic modules		Versatile clamping modules with two clamping areas for mounting a VERO-S clamping pin from above and below.
	Stacking modules		Stacking modules are used to preset the height of the clamping pillars. The modules are available in three standardized heights.

Pull-down force/ holding force [kN]	Pull-down force/ holding force with turbo [kN]	Module diameter [mm]	Module height [mm]	Height compensation [mm]	Repeat accuracy module interface [mm]
10 – 25		Ø 99	60		< 0.005
10 – 25		Ø 99	30 – 160		< 0.005
4 – 15	15	Ø 99	70		< 0.005
0.8	4	Ø 99	70	11	< 0.005
15		Ø 80	75 – 175		< 0.005
15		Ø 80	75 – 150		< 0.005
15		Ø 80	100 – 125		< 0.005
15		Ø 80	125 – 175		< 0.005

Clamping pins

Clamping pins with short taper for form-fit connection between workpieces, clamping palettes or devices and the clamping modules. Depending on the series, there are different sizes and designs available – the right solution for any application.

SPA mikro 10

SPA mini 20

SPA 40

SPA 80

Pull-down and holding forces

Pull-down force [N] F Holding force [N] F

	Without turbo function	With turbo function	SPx mikro 10		SPx mini 20		SPx 40		
			M3	M4	M6	M8	M10	M12	M16
NSE mikro 49	150	400	3000	5000					
NSE mikro 49-13	400	1500	3000	5000					
NSE mini 90	500	1500			15000	25000			
NSE mini 90-25	1500	6000			15000	25000			
NSE-HT mini 88	500	2500			15000	25000			
NSE3 99	5000	18000					35000	50000	75000
NSE3 138	8000	28000					35000	50000	75000
NSE3 176	9000	40000					35000	50000	75000
NSE-A3 138	8000	28000					35000	50000	75000

	Type		Description	Version	ID	Suitable for
SPx mikro 10	SPA mikro 10		**Standard clamping pins** Standard clamping pins for form-fit connection between workpieces or devices and clamping modules.	Centering pin	0436610	NSE mikro NSR mikro
	SPB mikro 10			Positioning pin	0436620	
	SPC mikro 10			Holding pin	0436630	
SPx mini 20	SPA mikro 20		**Standard clamping pins** Standard clamping pins for form-fit connection between workpieces or devices and clamping modules.	Centering pin	0435610	NSE mini NSR mini
	SPB mikro 20			Positioning pins	0435620	
	SPC mikro 20			Holding pins	0435630	
SPx 40	SPA 40		**Standard clamping pins** Standard clamping pins for form-fit connection between workpieces or devices and clamping modules.	Centering pin	0471151	NSE3 NSE-A3 NSR3 138 NSR 160
	SPB 40			Positioning pins	0471152	
	SPC 40			Holding pins	0471153	
	SPA-X 40		**Compensation pins** Clamping pins for compensating tolerance variations of the bore hole gauges. SPA-X 40 = compensation in one direction of ±1 mm. SPA-XY 40 = compensation in all directions of ±1 mm.	Compensation pin	0471155	NSE3 NSE-A3
	SPA-XY 40			Compensation pins	0471156	
	SPG 40		**Accuracy pins** Clamping pins with patented flex taper with a repeat accuracy <0.002 mm	Centering pins	0471154	NSE3 NSE-A3
	SPA-S 40		**Dove tail pins** Standard clamping pins for form-fit connection between workpieces or devices and clamping modules.	Centering pins	1310630	NSE3 NSE-A3
	SPB-S 40			Positioning pins	1323856	
	SPC-S 40			Holding pins	1323857	
	SPA-OB 40		**Clamping pins without centering collar** The clamping pin is screwed into the workpiece using a fitting screw.	Centering pins	0471631	NSE3 NSE-A3
	SPB-OB 40			Positioning pins	1316935	
	SPC-OB 40			Holding pins	1316936	
	SPA-F 40		**Heavy-duty pins** Clamping pins with a holding force of 75 kN.	Centering pins	0471171	NSE3 NSE-A3
	SPC-F 40			Holding pins	0471172	
SPx 80	SPA 80-30		**Clamping pins for NSR maxi** Clamping pins for form-fit connections between the NSR maxi robot coupling and the associated pallet coupling.	Centering pins	0471181	NSR maxi

Intelligent clamping technology

With the electromechanical clamping systems, SCHUNK provides an energy-efficient alternative to pneumatic clamping systems that can replace them 1:1. The clamping devices have a high degree of efficiency. They are always supplied from the bottom side, so the line requirement is minimal. The integrated electronics allow all main parameters such as clamping force, clamping position and opening position to be controlled.

Monitoring of pallet presence

possible via inductive proximity switches

Integrated sensor system

no additional interfering contour

Control via IO-Link

for simple integration in commonly used fieldbus systems

Monitoring of the clamping slide positions

for the statuses "Open status", "Locked status" and "Locked status without clamping pin"

Pre-positioning of the jaws

for fast loading and unloading of different workpieces

Integrated electronics and actuators

signal processing is done exclusively in the clamping device

Control via IO-Link

for simple integration in commonly used field bus systems

NEW

VERO-S AFS3 IOL

The new AFS3 IOL monitoring units provide greater transparency during clamping procedures. The clamping statuses "Module open", "Module clamped" and "Module clamped without clamping pin" as well as the pallet presence of the SCHUNK premium modules from the VERO-S NSE3 series can be monitored via an IO-Link signal. An LED light indicates the clamping status, ensuring additional operating safety. The AFS3 IOL monitoring units are available as standard for the NSE3 99, NSE3 138, NSE3 176 and NSE3 100-75 modules, which have mounting threads on the circumference as standard. This smart electronic monitoring system interaction ensures greater safety in automated workpiece clamping for users.

NEW

VERO-S NSE3-PH IOL

VERO-S NSE3-PH IOL is the most innovative clamping device in the field of electromechanical clamping devices – with unbeatable performance. The piezo-hydraulic drive achieves almost the same pull-down forces with an electromechanical quick-change pallet system as with the fluid-actuated clamping device in the same installation space. The entire control and sensor system is fully integrated in the module so that no additional interfering contours are created. In addition to the innovative drive, both the monitoring of the clamping slide positions and the pallet presence are fully integrated in the module. All data is transferred via an IO-Link interface, allowing the module to be easily integrated into all common fieldbus systems.

NEW

TANDEM KSE3 IOL

Electromechanical clamping devices with IO-Link interface now also available for TANDEM clamping force blocks. The SCHUNK KSE3 is the first clamping force block that is electrically controlled and driven by a motor-gearbox combination. Due to the fully integrated electronics and actuators, signal processing takes place exclusively in the clamping device. The special feature of the KSE3 clamping force block is that it has jaw pre-positioning and a variable clamping force in the range of 30 – 100%. In addition, the clamping device signals when lubrication is required.

Intelligent quick-change pallet modules

Type		Description
NSE3-PH 138 IOL		Piezo-hydraulic quick-change pallet module with the same performance values in the same installation space as the current NSE3 138. Drive and data transfer via IO-Link interface.
NSE-E mini 90-25 IOL		Electromechanically actuated quick-change pallet module with integrated electronics. Control and data transmission via IO-Link interface.
NSE-E mini 90		Electromechanically actuated quick-change pallet module with integrated electronics. Control via a 4-PIN connector on the side. Monitoring of clamping slide positions via two external inductive proximity switches.

Intelligent clamping force blocks

Type		Description	
KSE3 IOL		Electromechanically driven 2-jaw clamping force block with integrated electronics for jaw positioning.	**Advantage of standard stroke:** High clamping forces due to the small wedge angle. **Advantage of long stroke:** Long jaw stroke for collision-free loading of workpieces with large interfering contours.
KRE3 IOL		Electromechanically driven 3-jaw clamping force block with integrated electronics for jaw positioning.	**Advantage of standard stroke:** High clamping forces due to the small wedge angle. **Advantage of long stroke:** Long jaw stroke for collision-free loading of workpieces with large interfering contours.

Intelligent monitoring segments

Type		Description
AFS3 IOL		For easy retrofitting to all existing NSE3 modules. Data transfer via IO-Link interface. Monitoring of clamping slide positions and pallet presence.
AFS3-R IOL		For easy retrofitting to the new NSR3 138 robot module. Data transfer via IO-Link interface. Monitoring of clamping slide positions and pallet presence.

Types of clamping pins	Automated machine loading	Manual machine loading	Module height above table [mm]	Weight [kg]	Pull-down force [kN]
SPx 40	Yes	Yes	39	4.5	20
SPx mini 20	Yes	Yes	25	1.5	6
SPx mini 20	Yes	Yes	20	1.7	1.5

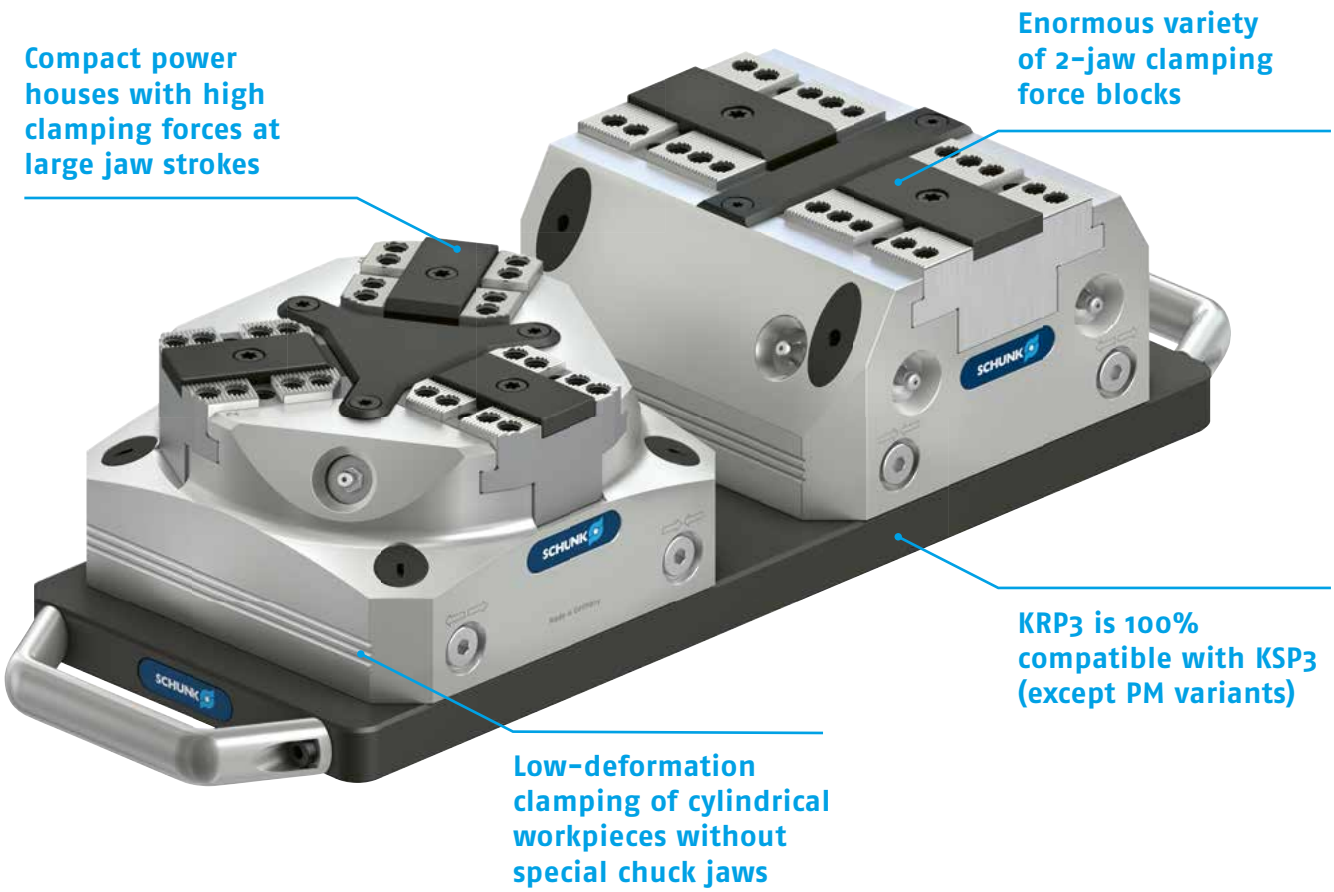
Stroke variant	Stroke/jaw [mm]	Power consumption [W]	Mains voltage [V DC]	Weight [kg]	Clamping force [kN]
Standard stroke	2	50	24	4.5	18
Long stroke (-LH)	6	50	24	4.5	8
Standard stroke	2	50	24	4.5	18
Long stroke	6	50	24	4.5	8

Interface	Mains voltage [V DC]	Weight [kg]	Suitable for
IO-Link	24	0.1	NSE3 modules
IO-Link	24	0.1	NSR3 138

Clamping force blocks

TANDEM3, the new modular system from the pioneer in clamping force blocks. The new series not only replaces the existing TANDEM plus modular system, but also adds numerous new sizes and variants to the portfolio, as well as supplementing the modular system with the 3-jaw clamping force blocks. This means that SCHUNK is able to offer more solutions and services for workpiece clamping in its standard range than any other company, paving the way for use in automated machine loading.

The clamping force blocks of the new generation are 100% compatible with the TANDEM plus vises, so that they can be replaced 1:1. The entire program is supplemented with a variety of system jaws and top jaws, as well as base plates and adapter plates for direct mounting of the clamping force blocks on the VERO-S quick-change pallet system or the machine table. Benefit here from SCHUNK's decades of know-how in the development of clamping force blocks.



Compact. Intelligent. All in. The art of engineering from SCHUNK.

"When breaking new ground, it is important to be brave enough to try out something new."

Philipp Schräder, Head of Development Toolholding and Workholding

	Type		Axes			Description
			3	4	5	
2-jaw clamping force blocks	**Standard stroke**					
	KSP3		x	x	x	Pneumatically actuated clamping force blocks with standard stroke for any type of clamping task – whenever pneumatics are available on the machine. **Advantage of standard stroke:** High clamping forces due to the small wedge angle.
	Long stroke					
	KSP3-LH		x	x	x	Pneumatically actuated clamping force blocks with long stroke for any type of clamping task – whenever pneumatics are available on the machine. **Advantage of long stroke:** Long jaw stroke for collision-free loading of workpieces with large interfering contours.
	with fixed jaw					
	KSP3-F		x	x	x	Pneumatically actuated clamping force blocks with fixed jaw for any type of clamping task – whenever pneumatics are available on the machine. **Advantage of fixed jaw:** Fixed zero point and therefore no offset of the reference point.
3-jaw clamping force blocks	**Standard stroke**					
	KRP3		x	x	x	Pneumatically actuated clamping force blocks with standard stroke for any type of clamping task – whenever pneumatics are available on the machine. **Advantage of standard stroke:** High clamping forces due to the small wedge angle.
	Long stroke					
	KRP3-LH		x	x	x	Pneumatically actuated clamping force blocks with long stroke for any type of clamping task – whenever pneumatics are available on the machine. **Advantage of long stroke:** Long jaw stroke for collision-free loading of workpieces with large interfering contours.
Lean automation vise	**Standard stroke**					
	PGS3		x	x	x	Pneumatically actuated clamping force blocks with standard stroke for automated machining of small workpieces. **Advantage of standard stroke:** High clamping forces due to the small wedge angle.
	Long stroke					
	PGS3-LH		x	x	x	Pneumatically actuated clamping force blocks with long stroke for automated machining of small workpieces. **Advantage of long stroke:** Long jaw stroke for collision-free loading of workpieces with large interfering contours.

Size [mm]	Clamping force at max. operating pressure [kN]	Additional clamping force resulting from spring assembly [kN]	Stroke per jaw [mm]	Max. jaw height [mm]	Repeat accuracy [mm]	Closing/ opening time [s]	Operating pressure [bar]
64	4.5	0.5 – 1.5	2	60	0.01	0.1	2 – 9
100	18	2.5 – 6.5	2	60	0.01	0.2	2 – 9
140	30	4.5 – 9	3	60	0.01	0.3	2 – 9
160	45	5.5 – 11	3	60	0.01	0.4	2 – 9
200	55	8.5 – 16	4	100	0.02	0.6	2 – 9
250	55	10.5 – 20	5	150	0.02	1.6	2 – 6
315	100	16.5 – 32.5	6.5	200	0.02	2	2 – 6
64	2.3	0.4 – 0.8	4	120	0.01	0.1	2 – 9
100	8	1 – 2.5	6	150	0.01	0.2	2 – 9
140	15	2 – 4	7	120	0.01	0.3	2 – 9
160	20	2 – 4.5	8	200	0.01	0.4	2 – 9
200	25	3.5 – 7	10	200	0.02	0.6	2 – 9
250	20	3.5 – 7	15	500	0.02	1.6	2 – 6
315	40	6.5 – 12.5	18	500	0.02	2	2 – 6
64	4.5	0.5 – 1.5	4	60	0.01	0.1	2 – 9
100	18	2.5 – 6.5	4	60	0.01	0.2	2 – 9
140	30	4.5 – 9	6	60	0.01	0.3	2 – 9
160	45	5.5 – 11	6	60	0.01	0.4	2 – 9
200	55	8.5 – 16	8	100	0.01	0.6	2 – 9
250	55	10.5 – 20	10	150	0.01	1.6	2 – 6
315	100	16.5 – 32.5	13	200	0.01	2	2 – 6
100	18	2 – 5	2	60	0.01	0.2	2 – 9
160	45	4 – 8	3	60	0.01	0.4	2 – 9
200	55	6.5 – 12	4	100	0.02	1	2 – 9
250	55	9 – 15	5	150	0.02	1.6	2 – 6
100	8	0.75 – 2	6	150	0.01	0.2	2 – 9
160	20	2 – 3.5	8	200	0.01	0.4	2 – 9
200	25	3 – 5.5	10	200	0.02	1	2 – 9
250	20	3 – 5.5	15	500	0.02	1.6	2 – 6
100	10		2	30	0.02	0.2	2 – 6
140	17		3	30	0.02	0.3	2 – 6
100	4.5		6	45	0.02	0.2	2 – 6
140	8.5		7	45	0.03	0.3	2 – 6

	Type		Axis 3	Axis 4	Axis 5	Description
2-jaw clamping force blocks	**Standard stroke**					
	KSH3		x	x	x	Hydraulically actuated clamping force blocks with standard stroke especially in the field of series production – whenever hydraulics are available on the machine. **Advantage of the standard stroke version:** High clamping forces due to the small wedge angle.
	Long stroke					
	KSH3-LH		x	x	x	Hydraulically actuated clamping force blocks with long stroke especially in the field of series production – whenever hydraulics are available on the machine. **Advantage of the long stroke version:** Long jaw stroke for collision-free loading of workpieces with large interfering contours.
	With fixed jaw					
	KSH3-F		x	x	x	Hydraulically actuated clamping force blocks with fixed jaw especially in the field of series production – whenever hydraulics are available on the machine. **Advantage of fixed jaw version:** Fixed zero point and therefore no offset of the reference point.
3-jaw clamping force blocks	**Standard stroke**					
	KRH3		x	x	x	Hydraulically actuated clamping force blocks with standard stroke especially in the field of series production – whenever hydraulics are available on the machine. **Advantage of the standard stroke version:** High clamping forces due to the small wedge angle.
	Long stroke					
	KRH3-LH		x	x	x	Hydraulically actuated clamping force blocks with long stroke especially in the field of series production – whenever hydraulics are available on the machine. **Advantage of the long stroke version:** Long jaw stroke for collision-free loading of workpieces with large interfering contours.

Size [mm]	Clamping force at max. operating pressure [kN]	Stroke per jaw [mm]	Max. jaw height [mm]	Repeat accuracy [mm]	Closing/ opening time [s]	Operating pressure [bar]
64	4.5	2	60	0.01	0.5	10 – 60
100	18	2	60	0.01	1	10 – 60
140	30	3	60	0.01	1	10 – 60
160	45	3	60	0.01	1.5	10 – 60
200	60	4	100	0.02	1.8	10 – 60
64	4.5	4	60	0.01	0.1	10 – 120
100	16	6	60	0.01	1	10 – 120
140	30	7	60	0.01	1	10 – 120
160	40	8	60	0.01	1.5	10 – 120
200	53	10	200	0.02	1.8	10 – 120
250	50	15	150	0.02	2.5	10 – 60
315	95	18	200	0.02	3.5	10 – 120
64	4	4	60	0.01	0.1	10 – 60
100	18	4	60	0.01	1	10 – 60
140	30	6	60	0.01	1	10 – 60
160	45	6	60	0.01	1.5	10 – 60
200	60	8	100	0.01	1.8	10 – 60
100	18	2	60	0.01	1	10 – 60
160	45	3	60	0.01	1.5	10 – 60
200	60	4	100	0.02	1.8	10 – 60
100	16	6	60	0.01	1	10 – 120
160	40	8	60	0.01	1.5	10 – 120
200	53	10	100	0.02	1.8	10 – 120
250	50	15	150	0.02	2.5	10 – 60

	Type		Axis			Description
			3	4	5	
2-jaw clamping force blocks	**Standard stroke**					
	KSF3		x	x	x	Spring-loaded clamping force blocks with standard stroke especially for tombstone and storage solutions. Clamping force is fully maintained even after compressed air is removed. **Advantage of standard stroke:** High clamping forces due to the small wedge angle.
	Long stroke					
	KSF3-LH		x	x	x	Spring-loaded clamping force blocks with long stroke especially for tombstone and storage solutions. Clamping force is fully maintained even after compressed air is removed. **Advantage of the long stroke version:** Long jaw stroke for collision-free loading of workpieces with large interfering contours.
	With fixed jaw					
	KSF3-F		x	x	x	Spring-loaded clamping force blocks with fixed jaw especially for tombstone and storage solutions. Clamping force is fully maintained even after compressed air is removed. **Advantage of fixed jaw version:** Fixed zero point and therefore no offset of the reference point.
3-jaw clamping force blocks	**Standard stroke**					
	KRF3		x	x	x	Spring-loaded clamping force blocks with standard stroke for tombstone and storage solutions. Due to the clamping via spring force, the clamping force is fully maintained even after removal of the compressed air. **Advantage of standard stroke:** High clamping forces due to the small wedge angle.
	Long stroke					
	KRF3-LH		x	x	x	Spring-loaded clamping force blocks with long stroke for tombstone and storage solutions. Due to the clamping via spring force, the clamping force is fully maintained even after removal of the compressed air. **Advantage of standard stroke version:** High clamping forces due to the small wedge angle.

Size [mm]	Clamping force range [kN]	Clamping force range with turbo [kN]	Stroke per jaw [mm]	Max. jaw height [mm]	Repeat accuracy [mm]	Closing/ opening time [s]	Opening pressure [bar]	Max. turbo pressure [bar]
100	7 – 12		2	60	0.01	0.2	6 – 9	
160	20 – 30		3	60	0.01	0.8	6 – 9	
250	37 – 50		5	150	0.02	1.5	6 – 9	
100	3 – 5	9 – 11	6	150	0.01	0.2	6 – 9	6
160	10 – 15	29 – 34	8	200	0.01	0.4	6 – 9	6
250	15 – 21	40 – 46	15	500	0.02	1.5	6 – 9	6
100	7 – 12		4	60	0.01	0.2	6 – 9	
160	20 – 30		6	60	0.01	0.4	6 – 9	
250	37 – 50		10	150	0.01	1.5	6 – 9	
100	7 – 12		2	60	0.01	0.2	6 – 9	
160	20 – 30		3	60	0.01	0.8	6 – 9	
200	26 – 35		4	100	0.02	1.2	6 – 9	
250	37 – 50		5	150	0.02	1.8	6 – 9	
100	3 – 5	9 – 11	6	150	0.01	0.2	6 – 9	6
160	10 – 15	29 – 34	8	200	0.01	0.8	6 – 9	6
200	11.5 – 15.5	28 – 32	10	200	0.02	1.2	6 – 9	6
250	15 – 21	40 – 46	15	500	0.02	1.6	6 – 9	6

	Type		Axis			Description
			3	4	5	
2-jaw clamping force blocks	**Standard stroke**					
	KSP3 BWA		x	x	x	Pneumatically actuated clamping force blocks with standard stroke and jaw quick change for manual or fully automated jaw change without tools. Preferably for cubic workpieces. **Advantage of standard stroke:** High clamping forces due to the small wedge angle.
	Long stroke					
	KSP3-LH BWA		x	x	x	Pneumatically actuated clamping force blocks with long stroke and jaw quick change for manual or fully automated jaw change without tools. Preferably for cubic workpieces. **Advantage of the long stroke version:** Long jaw stroke for collision-free loading of workpieces with large interfering contours.
3-jaw clamping force blocks	**Standard stroke**					
	KRP3 BWA		x	x	x	Pneumatically actuated clamping force blocks with standard stroke and jaw quick-change system for manual or fully automated jaw change without tools. Preferably for cylindrical workpieces. **Advantage of standard stroke:** High clamping forces due to the small wedge angle.
	Long stroke					
	KRP3 BWA		x	x	x	Pneumatically actuated clamping force blocks with long stroke and jaw quick change for manual or fully automated jaw change without tools. Preferably for cylindrical workpieces. **Advantage of the long stroke version:** Long jaw stroke for collision-free loading of workpieces with large interfering contours.

Size [mm]	Clamping force at max. operating pressure [kN]	Additional clamping force resulting from spring assembly [kN]	Stroke per jaw [mm]	Max. jaw height [mm]	Repeat accuracy [mm]	Closing/ opening time [s]	Operating pressure [bar]
100	18	2.5 – 6.5	2	27	0.01	0.2	2 – 9
140	30	24.5 – 9	3	33	0.01	0.3	2 – 9
160	45	5.5 – 11	3	41	0.01	0.4	2 – 9
250	55	10.5 – 20	5	52	0.02	1.6	2 – 9
100	8	1 – 2.5	6	27	0.01	0.2	2 – 9
140	15	2 – 4	7	33	0.01	0.3	2 – 9
160	20	2 – 4.5	8	41	0.01	0.4	2 – 9
250	20	3.5 – 7	15	52	0.02	1.6	2 – 9
160	45	4 - 8	3		0.01	0.4	2 - 9
250	55	9 - 15	5		0.02	1.6	2 - 9
160	20	2 - 3.5	8		0.01	0.4	3 - 9
250	20	3 - 5.5	15		0.02	1.6	2 - 9

	Type		Axis			Description
			3	4	5	
2-jaw clamping force blocks	**Standard stroke**					
	KSH3 BWA		x	x	x	Hydraulically actuated clamping force blocks with standard stroke and jaw quick-change system for manual or fully automated jaw change without tools. Preferably for cubic workpieces. **Advantage of standard stroke:** High clamping forces due to the small wedge angle.
	Long stroke					
	KSH3-LH BWA		x	x	x	Hydraulically actuated clamping force blocks with long stroke and jaw quick change for manual or fully automated jaw change without tools. Preferably for cubic workpieces. **Advantage of long stroke:** Long jaw stroke for collision-free loading of workpieces with large interfering contours.
3-jaw clamping force blocks	**Standard stroke**					
	KRH3 BWA		x	x	x	Hydraulically actuated clamping force blocks with standard stroke and jaw quick-change system for manual or fully automated jaw change without tools. Preferably for cylindrical workpieces. **Advantage of the standard stroke version:** High clamping forces due to the small wedge angle.
	Long stroke					
	KRH3-LH BWA		x	x	x	Hydraulically actuated clamping force blocks with long stroke and jaw quick change for manual or fully automated jaw change without tools. Preferably for cylindrical workpieces. **Advantage of the long stroke version:** Long jaw stroke for collision-free loading of workpieces with large interfering contours.

Sizes [mm]	Clamping force at max. operating pressure [kN]	Stroke per jaw [mm]	Max. jaw height [mm]	Repeat accuracy [mm]	Closing/ opening time [s]	Operating pressure [bar]
100	18	2	27	0.01	1	10 – 60
140	30	3	33	0.01	1	10 – 60
160	45	3	41	0.01	1.5	10 – 60
100	16	6	27	0.01	1	10 – 120
140	30	7	33	0.01	1	10 – 120
160	40	8	41	0.01	1.5	10 – 120
250	50	15	52	0.02	2.5	10 – 60
160	45	3		0.01	1.5	10 – 60
160	40	8		0.01	1.5	10 – 120
250	50	15		0.02	2.5	10 – 60

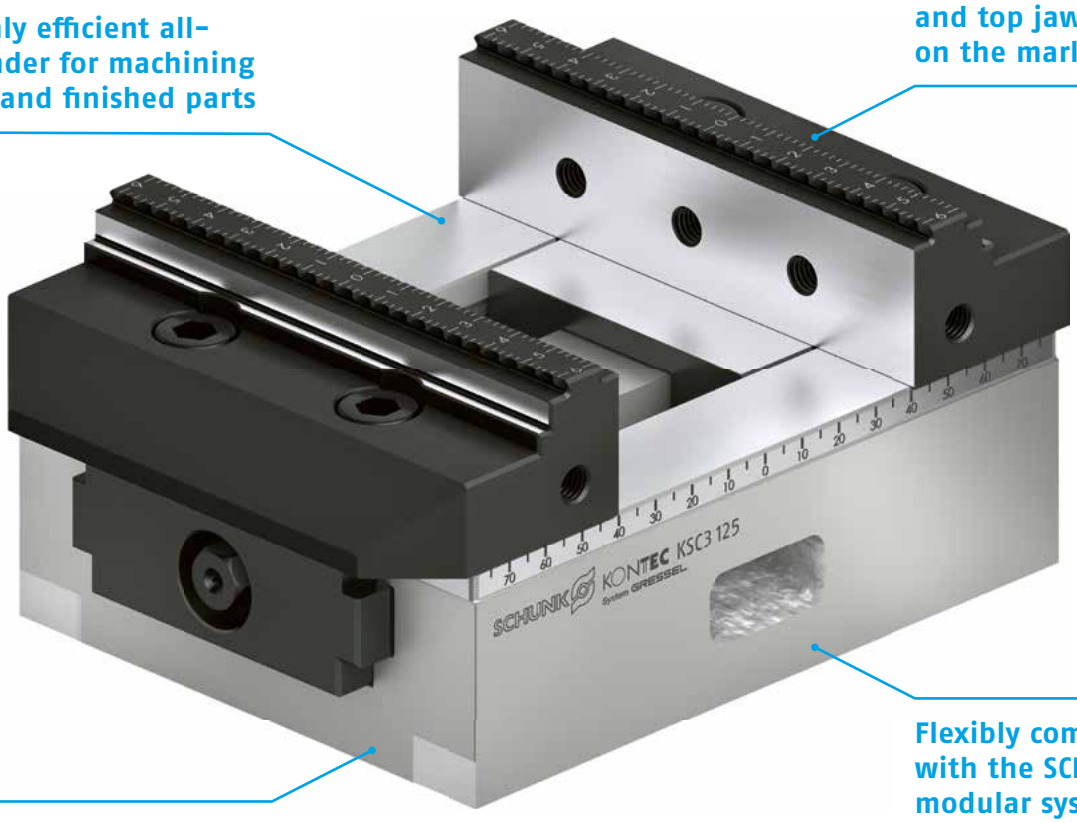
Manual clamping systems

KONTEC manual clamping systems make production on semi/fully automated universal milling machines and machining centers even more efficient. Whether power-amplified single-acting vise, single-acting vise, centric clamping vise or multi-clamping vise – you will be absolutely impressed!

A range of system and top jaws that is unique on the market means that the clamping devices can be adapted to individual customer requirements. The clamping by tension in combination with the integrated VERO-S interface allows the vises to be changed quickly and easily on the SCHUNK quick-change pallet system – with the maximum level of repeat accuracy.

Highly efficient all-rounder for machining raw and finished parts

The range of system and top jaws is unique on the market



Compact clamping devices ideal for use in pallet storage systems

Flexibly combinable with the SCHUNK modular system thanks to standard integrated VERO-S interface

NEW

The new clamping force tester IFT SST for universal use is suitable for measuring 2-jaw clamping force blocks or vises, regardless of the manufacturer. The clamping distance for the measuring head is 55 mm. Data evaluation is carried out wirelessly via an app on an industrial tablet computer or via the subsequent export to other end devices. The measured values can be stored and displayed for each clamping device.

		Type		Axis			Description
				3	4	5	
Single-acting vises	with force amplification	**The machine vise**					
		KSG		x	x	x	Modular machine vise with continuously adjustable clamping force and quick-clamping lever.
		The 5-axis vise					
		KSX		x	x	x	5-axis vises with continuously adjustable clamping force and quick-clamping lever. Due to the high design, very good accessibility of the machine spindle to the workpiece is ensured.
	without amplification	**The 5-axis vise for 6-sided machining**					
		KSX-C2		x	x	x	5-axis vise with jaw quick-change system and adjustable clamping center. A standard integrated pull-down enables complete and precise machining of the sixth side.
		The single-acting vise					
		KSC-F		x	x	x	Extremely flat single-acting vise with quick adjustment of the clamping range and low weight. Ideally suited for use in pallet storage units.
Centric clamping vises	without amplification	**The centric clamping vise**					
		KSC3		x	x	x	Extremely flat centric clamping vise with high clamping forces and a range of system and top jaws that is unique on the market for a flexible range of applications. A nickel-plated base body to protect against corrosion broadens the range of applications significantly.
		The centric vise for small components					
		KSC mini		x	x	x	Centric clamping vise with jaw quick-change system and high clamping forces and with compact dimensions.
Multi-clamping vises	without amplification	**The double vise**					
		KSC-D		x	x	x	Extremely flat double vise with nickel-plated base body and convenient third-hand function – also available as single-acting vise. The third-hand function can be used to insert two workpieces one after the other, and then to fix and securely clamp them.
		The flexible multiple clamping system					
		KSM2		x	x	x	Clamping rails with innovative jaw quick-change system for clamping many on only one clamping device.

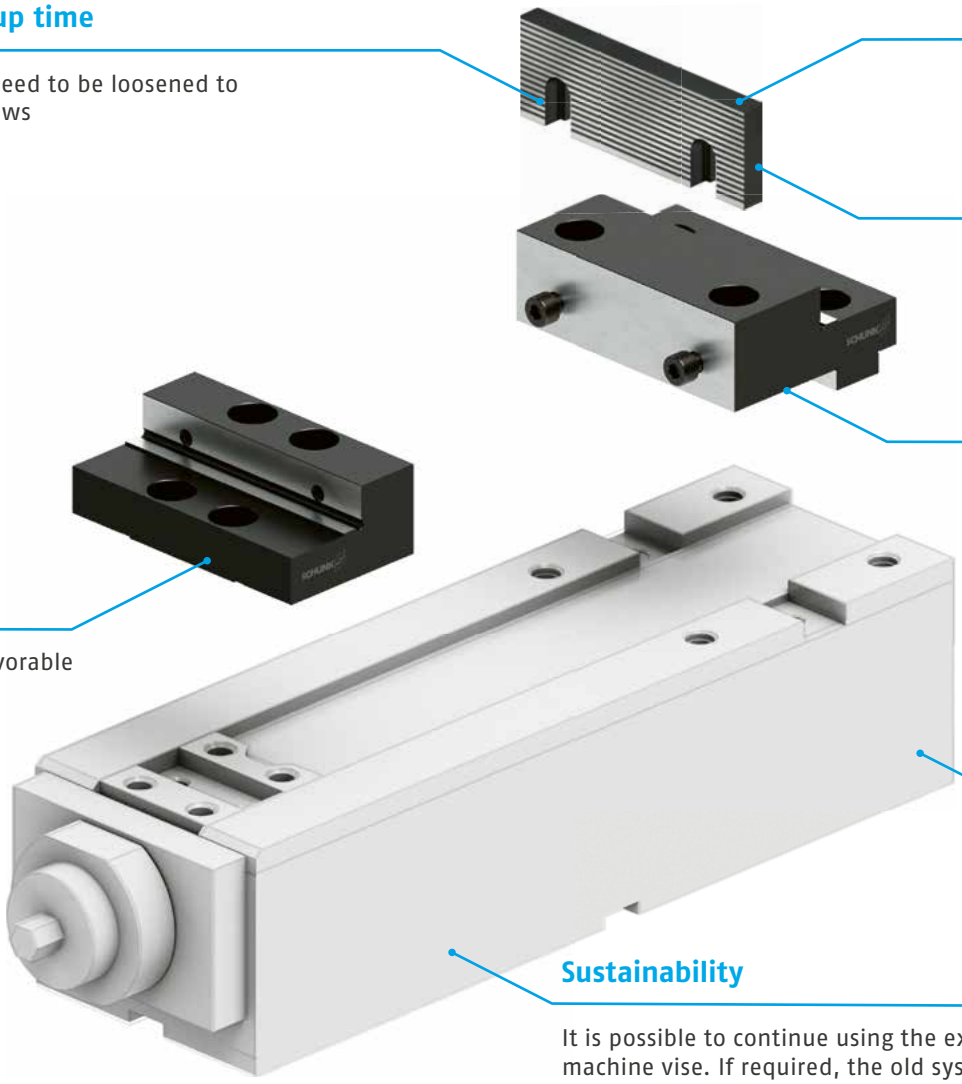
Width of the clamping vise [mm]	Base body length [mm]	Max. clamping range [mm]	Cubic workpieces	Bulky workpieces	Round workpieces	Max. clamping force [kN]
100	305	245				30
125	390	343	x	x	x	40
160	530	506				40
125	265	212				40
125	300	249	x	x	x	40
125	815	749				40
125	330	217				40
125	430	317				40
125	500	387	x	x	x	40
125	630	517				40
125	800	687				40
80	214	192				25
125	362	308	x	x	x	40
125	740	682				40
160	480	434				50
80	130	121				25
80	190	185				25
125	160	163				40
125	235	226	x	x	x	40
125	300	303				40
160	280	251				50
160	480	465				50
70	80	57	x	x	x	16
70	100	77				16
80	300	122				25
125	320	114				40
125	390	149				40
125	460	184	x	x	x	40
125	530	219				40
125	600	254				40
125	670	289				40
125	740	324				40
90	260	134				30
90	400	274				30
90	500	374	x	x	x	30
90	600	474				30
90	650	524				30

Adapter jaws for machine vises

With the SCHUNK adapter jaws, you no longer have to rely on expensive, system-specific top jaws. With the new adapter jaws for your machine vise from Allmatic, Atorn, Garant, Kesel, Röhm or Roemheld Hilma, we offer compatibility with the extensive SCHUNK jaw portfolio.

Optimize set-up time

Only the screws need to be loosened to change the top jaws



Fast amortization

due to a more favorable top jaw portfolio

Sustainability

It is possible to continue using the existing machine vise. If required, the old system jaws can also be unscrewed again and the existing top jaws can be reused.

Type	Description	ID	Jaw width	Type	Suitable for
	**SGAB-F 125-A**	1511698	125	fixed	Almatic NC8 125M/L Garant HipoClamp125/ LC 125 Kesel NCA 125
	SGAB-B 125-A	1511699	125	mobile	
	**SGAB-F 125-B**	1522411	125	fixed	Röhm RKE 125 Atorn MM-G 125
	SGAB-B 125-B	1522412	125	mobile	
	**SGAB-F 125-C**	1541878	125	fixed	Roemheld Hilma KNC 125
	SGAB-B 125-C	1541879	125	mobile	

Extensive standard portfolio

Maximizing the clamping options

Available from stock

SCHUNK top jaws are available from stock

Versatile range of clamping options

You benefit from short delivery times for top jaws from the SCHUNK portfolio

Compatibility

SCHUNK adapter jaws are available for Allmatic, Atorn, Garant, Kesel, Röhm and Roemheld Hilma.

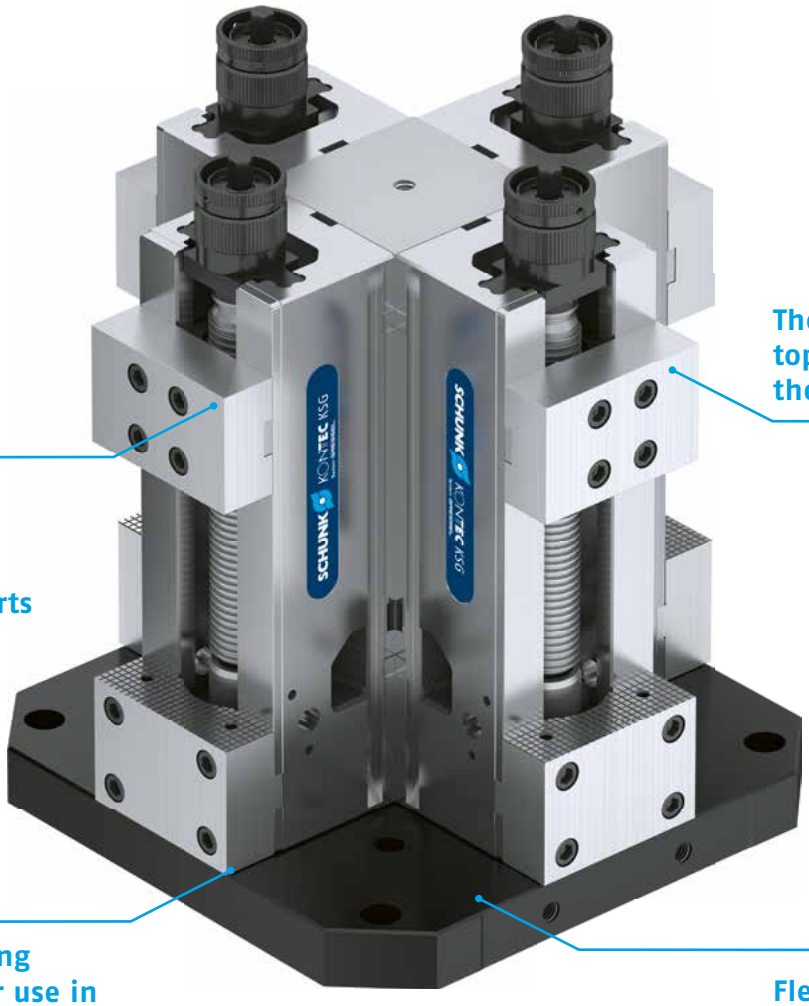
SCHUNK GRESSEL

Large variety of suitable top jaws

Tombstones

Horizontal machining centers do not achieve optimum performance unless combined with the suitable tombstones in combination with the right clamping devices. Due to the enormous variety of clamping and loading options, the machine running times are significantly increased. SCHUNK tombstones also offer optimal accessibility and machining of your workpieces.

The tombstones are available in four different designs with more than 50 standard versions.
The stable hollow body design provides for high rigidity as well as good vibration damping. The base plates with the dimensions 400 x 400 mm and 500 x 500 mm are suitable for standard machine pallets type DIN 55201 and JIS 6337-1980.



The range of system and top jaws is unique on the market

Highly efficient all-rounder for machining raw and finished parts

Compact clamping devices ideal for use in pallet storage systems

Flexible combination with SCHUNK modular system due to the integrated standard VERO-S interface

NEW: Configure yourself now
schunk.com/kontec-konfigurator

VERO-S tombstones

	Type		Description
VERO-S	VAT		Tombstones with integrated VERO-S NSE-T3 138-V1 quick-change pallet modules. This means that clamping devices with a VERO-S interface can be quickly and easily installed and removed from the tombstones.

Tombstones with clamping devises

	Type		Description
Tombstones	SAT		Pre-configured tombstones with SCHUNK clamping devices.
Clamping pillars	SAT		Pre-configured clamping solution with a special interface for all conventional dividing heads.

Tombstones without clamping devices

	Type		Description
Tombstones	SAT		Standardized tombstones with different clamping surfaces. The tombstones are available with: ・ rough clamping surfaces ・ bore hole grid of 50 mm ・ reduced bore hole grid especially for SCHUNK clamping devices

Version	Pallet size [mm]	Tombstone heights [mm]	Installed clamping devices
Double angle	400 x 400 500 x 500	713	NSE-T3 138-V1
Triangle	400 x 400 500 x 500	713	NSE-T3 138-V1
Octagon	400 x 400 500 x 500	713	NSE-T3 138-V1

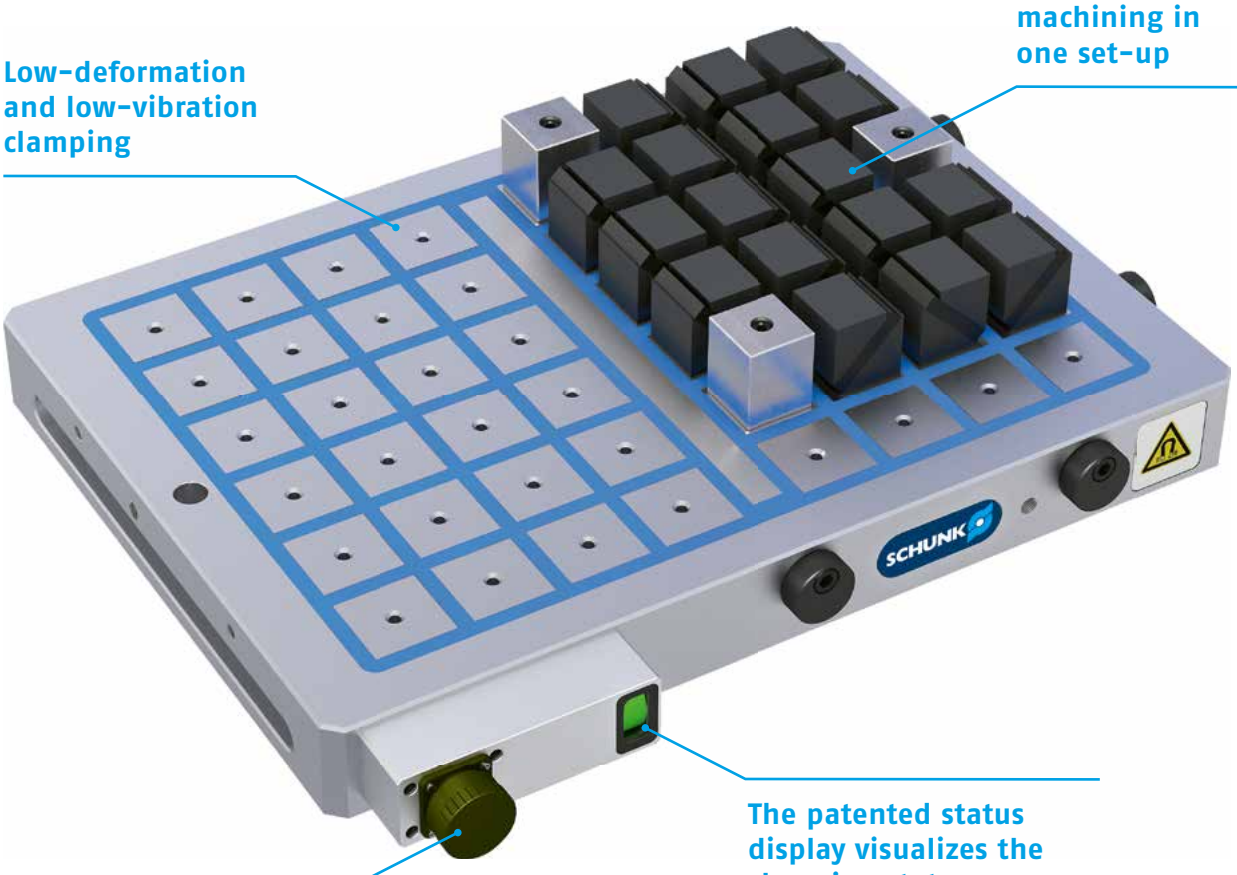
Version	Pallet size [mm]	Tombstone heights [mm]	Installed clamping devices
SAT-KSG	400 x 400 500 x 500	490	KSG 125
SAT-KSC-F	400 x 400 500 x 500	462	KSC-F 125-362
SAT-KSC-D	400 x 400 500 x 500	390 490 560 630	KSC-D 80-300 KSC-D 125-390 KSC-D 125-460 KSC-D 125-530
SAT-KSM2	400 x 400 500 x 500	500 600	KSM2 90-400 KSM2 90-500
SAT-KSF3	400 x 400 500 x 500	523 663	KSF3 100 KSF3 160
SAT-KSC-D	Ø260 Ø320	390 630	KSC-D 80-300 KSC-D 125-530
SAT-KSM2	Ø280 Ø320	430 600	KSM2 90-400 KSM2 90-500

Version	Pallet size [mm]	Tombstone heights [mm]	Installed clamping devices
Double angle	400 x 400 500 x 500	710 1000	Raw Continuous bore hole grids SCHUNK bore hole grids
Triangle	400 x 400 500 x 500	710 1000	Raw Continuous bore hole grids SCHUNK bore hole grids
Cube	400 x 400 500 x 500	600 800 1000	Raw Continuous bore hole grids SCHUNK bore hole grids
Octagon	400 x 400 500 x 500	710 1000	Raw Continuous bore hole grids SCHUNK bore hole grids

Magnetic clamping technology

Modern machine tools and machining centers are designed for complex machining operations carried out during a single set-up. As the workpieces can be placed flat onto the MAGNOS magnetic chucks, all sides of the workpiece can be easily accessed. The permanent magnetic clamping force is uniformly applied across the entire workpiece, thereby effectively minimizing vibrations.

The patented status display for the operating condition of square pole plates allows users to see at a glance whether the MAGNOS magnetic chucks are active or not. This allows accidents to be avoided. The continuous display of the magnetizing state enables reliable clamping and does not depend on the power supply.



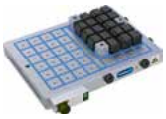
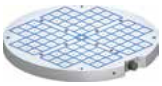
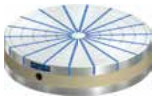
Test the new MAGNOS app. Available for iOS, Android or web-based.

The app makes everyday work with MAGNOS magnetic chucks easier with the simple calculation of holding forces.

If you are interested, please send an e-mail to magnetspanntechnik@de.schunk.com

Our performance promise. Your benefit.

- Simple calculation of holding forces on the PC (web-based version) or via the app
- Optimization of the manufacturing process through prior estimation of the machining data
- For SCHUNK MFPS, MFRS, MGT and MTR magnetic chucks

	Type		Description
Milling applications	**MFRS**		Magnetic chucks with extremely high holding forces for milling applications as an ideal clamping solution for powerful metal cutting processes with simultaneous 5-sided workpiece machining in a single set-up.
	MFPS		Electropermanent magnetic chucks thanks to parallel poles with extremely high lateral holding forces. These are particularly suitable as an ideal clamping solution for powerful metal cutting processes with narrow and long workpieces.
	MFRR		Magnetic chucks in round design specially designed for milling machining of workpieces on round machine tables. The high holding forces of the magnetic chucks enable secure clamping of the workpiece with optimal accessibility.
	MFRS-DM		Flexible double magnets for large machines with integrated rollers on the machine table side for easy positioning on the machine table.
Turning applications	**MGT**		Electropermanent magnetic lathe chuck with demagnetization cycle for the almost deformation-free finishing, precision turning or grinding of rings or discs.
Grinding applications	**MSC-PM60D**		Electropermanent magnetic chucks with parallel poles and large pole pitches for medium and large workpieces.
	MSC-PM62F		Electropermanent magnetic chucks with parallel poles and fine pole pitches for small and thin workpieces.
	MSC-PM15		Manual magnetic chucks with parallel poles and fine pole pitches for small and thin workpieces.
	MSC-PM35		Manual magnetic chucks for machining rings and washers.
EDM applications	**MEF-F-A1**		Electropermanent magnetic modules with high holding forces specifically for EDM applications

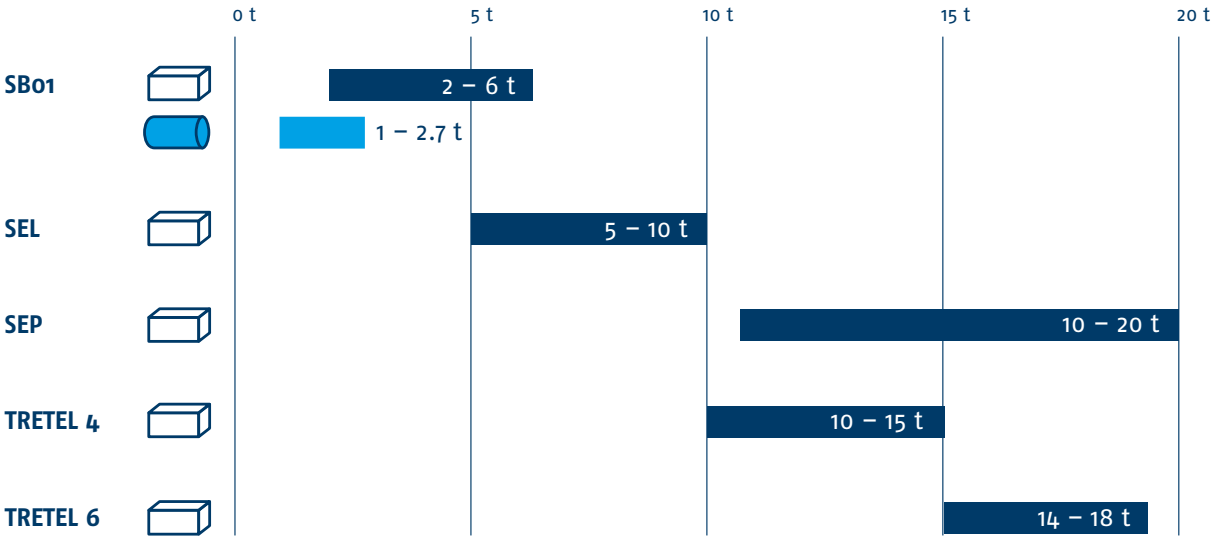
Pole size/pole pitch [mm]	Mains voltage [V]	Max. clamping force [kN/* N/cm²]	Min. material thickness [mm]	Min. workpiece size [mm]	Connection
50 x 50 70 x 70	400/460	39 – 1162	8 – 20	230 x 170	Fast connection
30 + 10	400/460	160*	7	230 x 170	Fast connection
50 x 50	400/460	39 – 1162	8	230 x 170	Fast connection
50 x 50	400/460	24 – 48	8	230 x 170	Fast connection
	400/460	160*	8	Ø 150 – Ø 610	Fast connection
3 + 5	400/460	75*	4	40 x 40	Fixed cable connection
3 + 0.8	400/460	75*	2	40 x 40	Fixed cable connection
1.5 x 0.8		75*	1.5	20 x 20	Hexagon
		80*		Ø 24 – Ø 58	Hexagon
	200/220	75*		20 x 20	Fast connection

Magnetic lifting technology

MAGNOS magnetic lifting technology from SCHUNK is the perfect option for high lifting and safe holding capacity without the need of external energy supply. With a wide range of simple lifting magnets up to high-performance electropermanent lifting devices, MAGNOS provides for easy handling of ferromagnetic workpieces up to 20 tons. Reliably and deformation-free in no time at all.

Magnets for easy lifting

Magnets for heavy lifting



Electropermanent magnetic lifting technology

The electropermanent magnetic lifter ensures absolute process reliability even in the event of a power failure. No additional buffer batteries are required. The load remains on the magnetic lifter indefinitely without changing the clamping force. This system also saves energy, as it only requires the power supply during the MAG and DEMAG cycles.

Self-sufficient

Electropermanent lifting magnets from SCHUNK are self-sufficient, i.e. they only require a short electrical pulse for the MAG/DEMAG process.

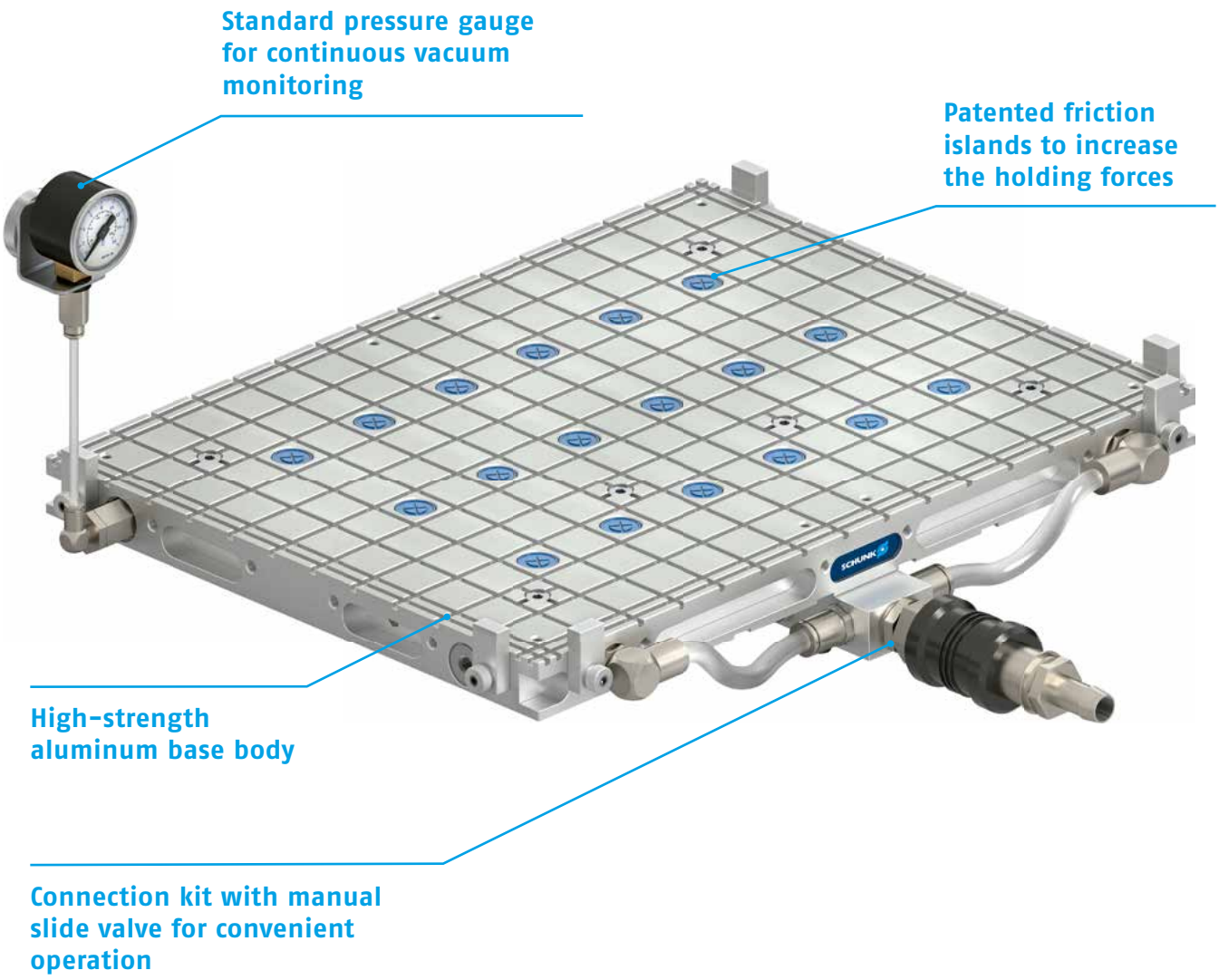
Reliable

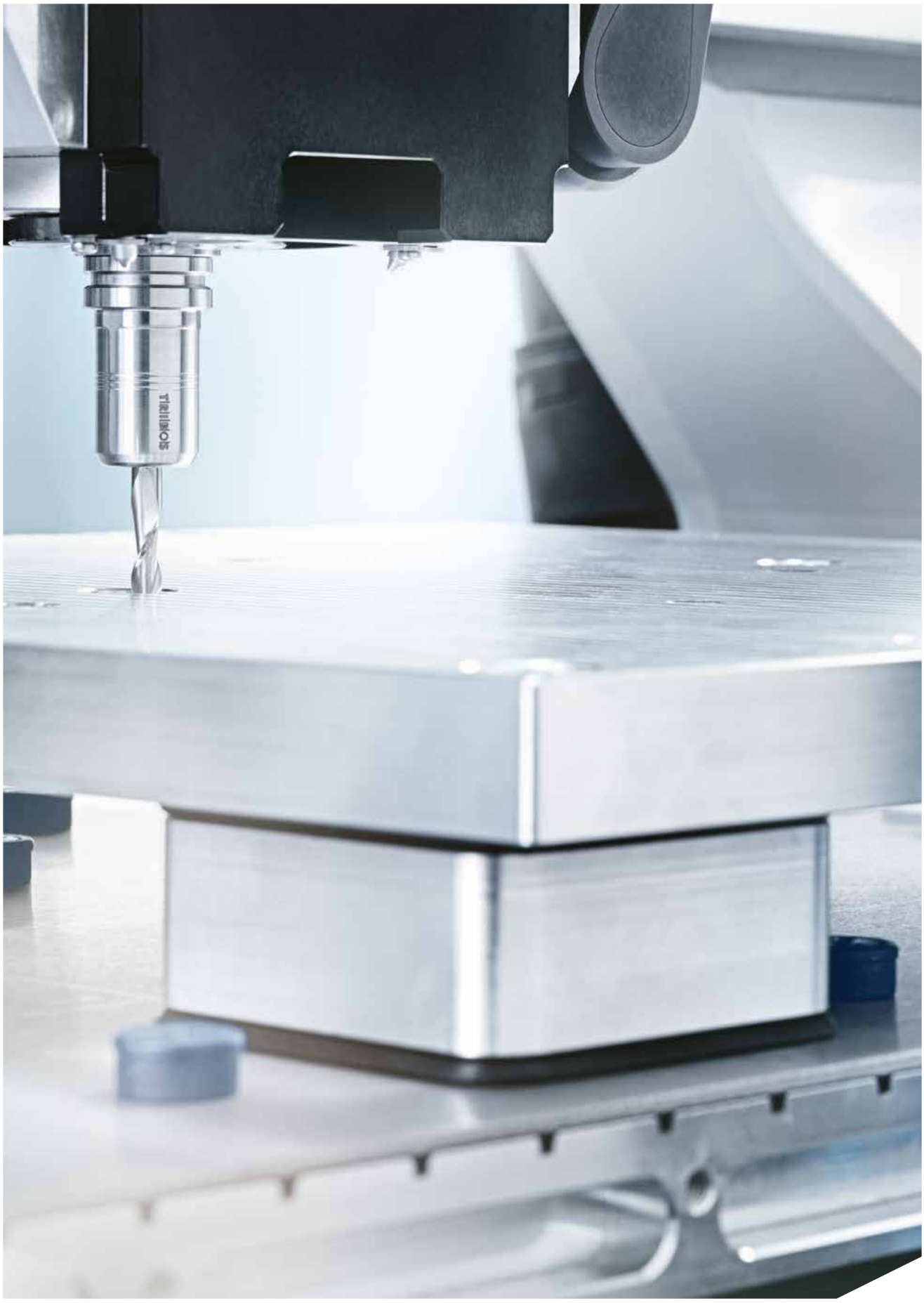
The magnet still holds the workpiece reliably even in the event of an interrupted power connection.

Vacuum clamping technology

Vacuum clamping technology from SCHUNK has a modular design, and is particularly suitable for clamping workpieces made of aluminum and non-ferromagnetic workpieces. The matrix plates ensure minimum set-up times. Even components that are difficult to be mechanically clamped, can be fixed quickly, precisely, and deformation-free using the vacuum clamping system.

For the required vacuum generation, SCHUNK offers special vacuum units that ensure maximum flexibility and process reliability. Even 5-sided machining and workpiece cut-out machining is no problem.




SCHUNK

Matrix plates

	Type		Description
Matrix plates	SMPL		Matrix plates for full-surface clamping of non-ferromagnetic workpieces. Patented friction islands can be integrated to increase the holding forces.

Vacuum units

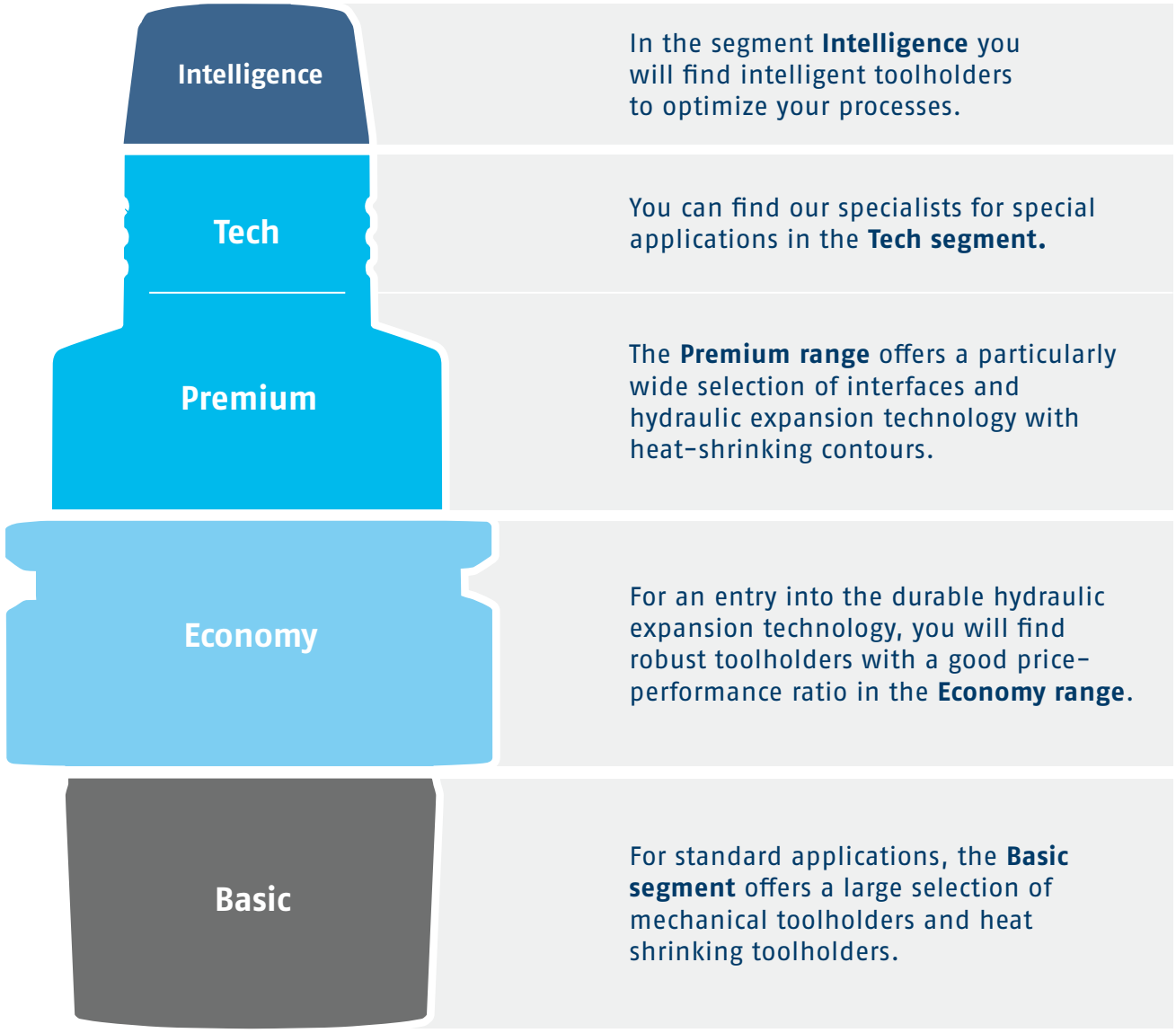
	Type		Description
Vacuum units	SVAGG		Powerful vacuum units for generating the required vacuum. The connected matrix plates can be used in both dry and wet machining.

Size [mm]	Grid spacing [mm]	Slot width/ slot depth [kN]	Number of vacuum openings	Min. suction power of the vacuum unit [m3/h]	Friction islands	To match VERO-S
300 x 200	12.5 x 12.5	3 x 3	4	6		
400 x 300	12.5 x 12.5 25 x 25	3 x 3	8	12	x	x
600 x 400	12.5 x 12.5 25 x 25	3 x 3	12	12	x	x

Size [mm]	Max. clamping surface [cm²]	Max. suction capacity [m³/h]	Storage volume [l]	Max. vacuum [mbar]	Sound level [dB(A)]	Connection diameter [mm]
10	1200	10	30	-980	58.5	12
21	5000	21	30	-980	64	12
40	10000	40	80	-980	63	25
63	20000	63	80	-980	64	25

High-performance toolholders from SCHUNK for any application and any cutting edge

Every specific application has other demands on the toolholder. Particularly when it comes to precision, there can be no compromise. This is where SCHUNK technologies come into play. The innovative and high-precision toolholders cover a unique range of customer requirements. From micro to finest processing, up to heavy-duty and volume machining; we focus on special applications, and find the optimum toolholder for your machining task.



In the segment **Intelligence** you will find intelligent toolholders to optimize your processes.

You can find our specialists for special applications in the **Tech segment.**

The **Premium range** offers a particularly wide selection of interfaces and hydraulic expansion technology with heat-shrinking contours.

For an entry into the durable hydraulic expansion technology, you will find robust toolholders with a good price-performance ratio in the **Economy range**.

For standard applications, the **Basic segment** offers a large selection of mechanical toolholders and heat shrinking toolholders.

Hydraulic expansion toolholder

The durable toolholder for powerful, challenging and precise applications

Hydraulic expansion toolholders

Polygonal clamping technology and expansion technology

Toolholder for a flexible and broad spectrum of use

Polygonal clamping technology and expansion technology

Heat shrinking and mechanical toolholder technology

Toolholder from the BASIC segment for standard use

Heat shrinking and mechanical toolholders

Toolholder accessories

Extensions and intermediate sleeves for maximum flexibility in special applications

Toolholder accessories

Hydraulic expansion toolholders

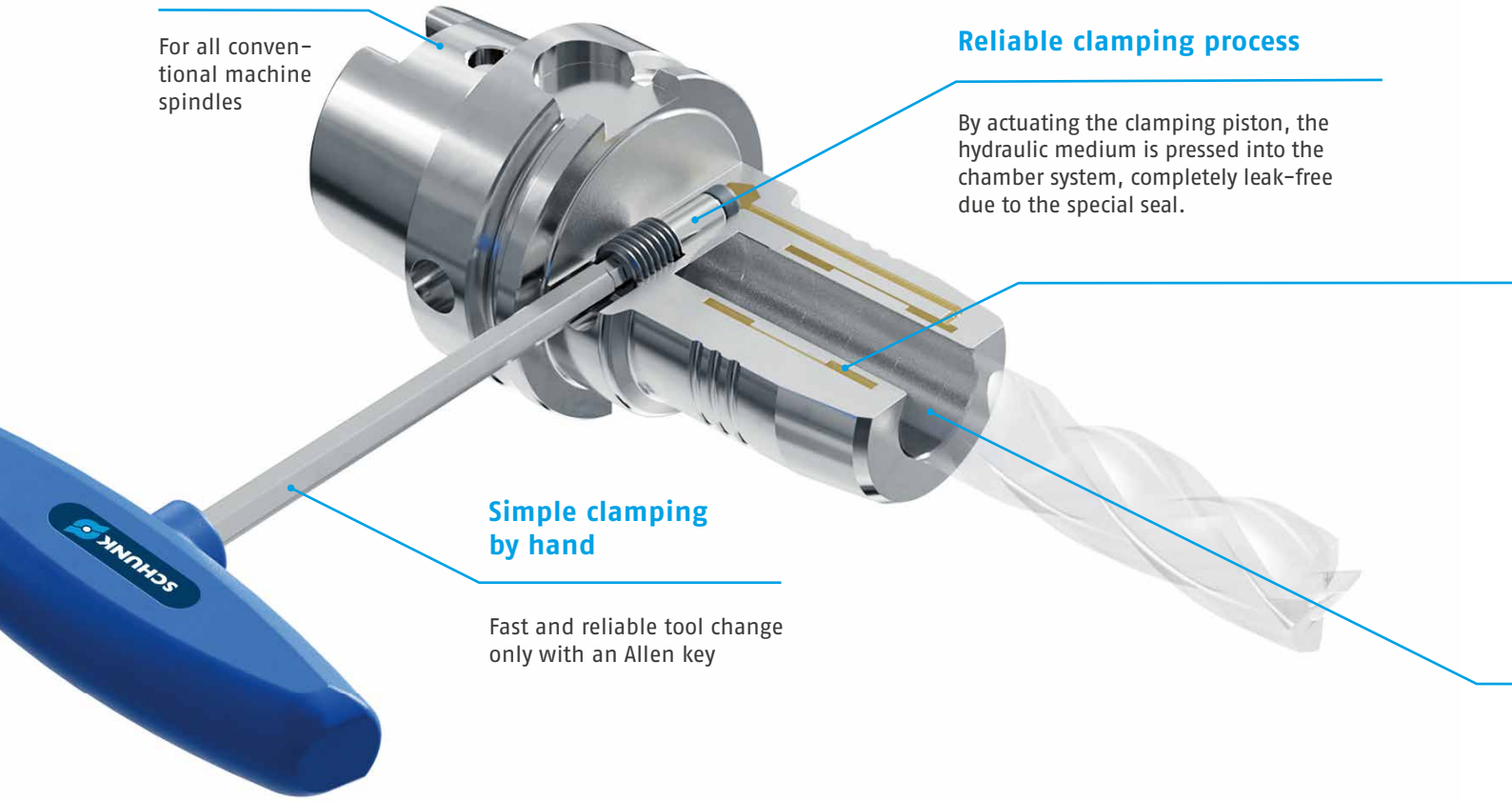
TENDO has been a synonym for highly precise shank tool clamping for many decades. With its continual developments, this forward-looking clamping technology meets the constantly increasing requirements of demanding universal precision machining. TENDO is suitable for all common shank types. The large selection of products ensures that the right solution for almost any application can be found.

Master every challenge with TENDO:

- **Highest run-out and repeat accuracy <0.003 mm**
- **Excellent vibration damping**
- **Exact length adjustment, axially or radially**
- **Set-up times in a matter of seconds**
- **Fine balanced as standard (G2.5/25,000 RPM)**

Interfaces

For all conventional machine spindles



Reliable clamping process

By actuating the clamping piston, the hydraulic medium is pressed into the chamber system, completely leak-free due to the special seal.

Simple clamping by hand

Fast and reliable tool change only with an Allen key

Vibration damping

Variable due to intermediate sleeves

Dirt grooves for reliable torque transmission

Resistant to dirt and cooling lubricants

Vibration dampening

When the chamber system is filled with hydraulic fluid, it has a damping effect on the clamped tool and reduces tool wear.

Process-reliable tool clamping

The tool shank is centered and then clamped powerfully and uniformly across the entire surface with this expansion sleeve.

Available for any application

100% clamping, 100% reliability, 100% universal in its application – that is what the comprehensive TENDO product range stands for. Whether milling, reaming, boring, countersinking, thread milling/tapping, or high-speed machining – precision is ensured.

All commercially available shank types can be clamped for process reliable clamping. In a TENDO hydraulic expansion toolholder, tools with both smooth cylindrical shanks in accordance with DIN 6535, Type HA up to Ø 32 mm, and those with recesses in accordance with:

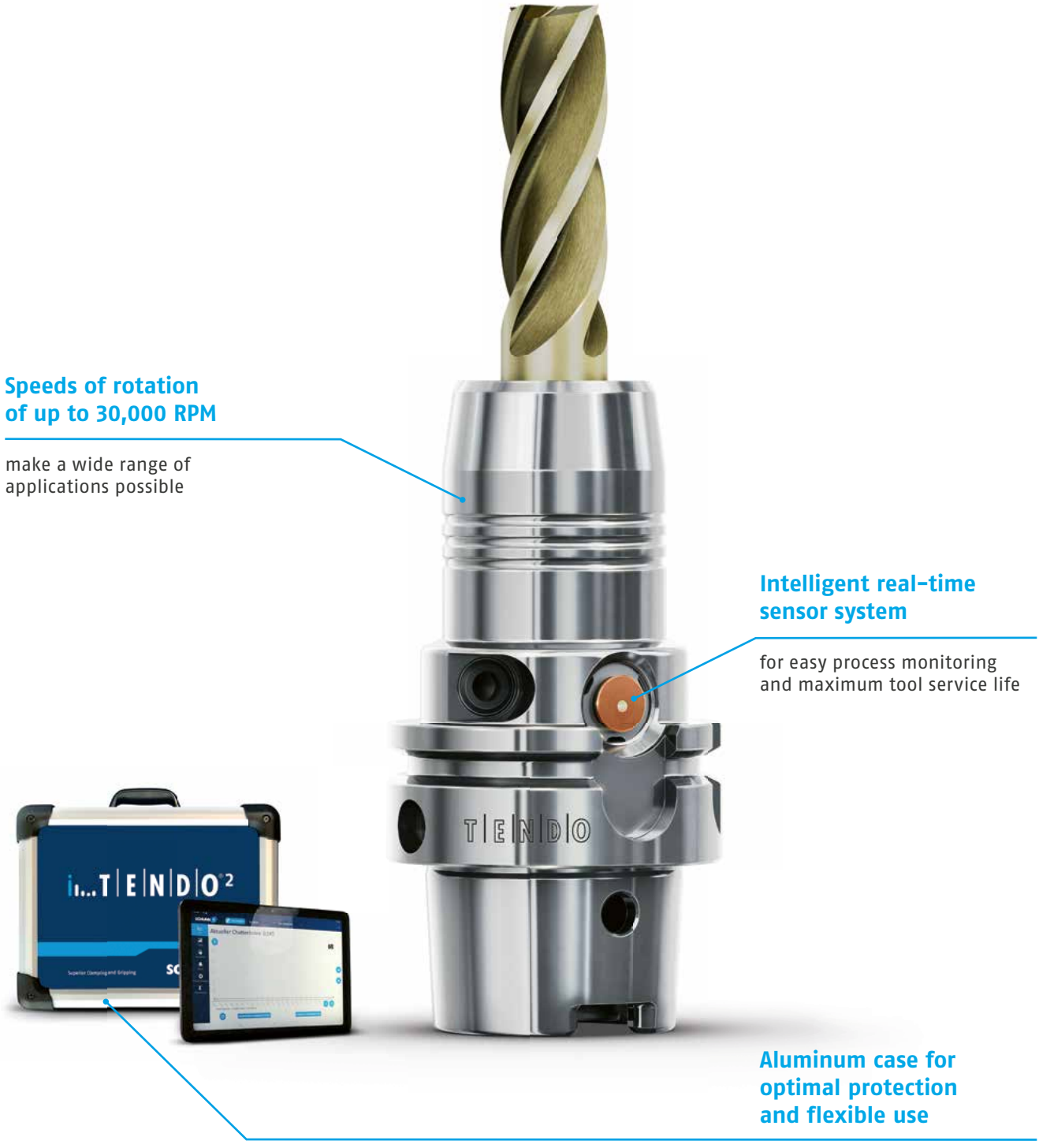
- DIN 1835 Form B, E
- DIN 6535 Form HA, HB, HE

can be clamped directly and flexibly with an intermediate sleeve.

Learn more
schunk.com/tendo

Intelligent toolholders

With our new iTENDO2 we have taken the idea of intelligent toolholders to the next level. Speeds of rotation up to 30,000 RPM and an interfering contour that corresponds 1:1 to that of a SCHUNK standard toolholder make it predestined for use in a wide range of tasks without any of the time-consuming adjustment work. This also makes it a straightforward option for monitoring machining processes in real time.



Speeds of rotation of up to 30,000 RPM

make a wide range of applications possible

Intelligent real-time sensor system

for easy process monitoring and maximum tool service life

Aluminum case for optimal protection and flexible use

Intelligence for any application

iTENDO²
magnet holder

iTENDO² HSK-A63
Ø20x90

iTENDO² Slim
4ax HSK-A 63 Ø12x120

iTENDO² adapter
Ø32-Ø20x69

iTENDO² interfaces

Description	ID	Toolholder interface	Clamping diameter D1	Projecting length L1
iTENDO² Slim 4ax HSK-A 63 Ø12x120	1517499	HSK-A 63	12 mm	120.0 mm
iTENDO² HSK-A63 Ø20x90	1484050	HSK-A 63	20 mm	90.0 mm
iTENDO² HSK-A63 Ø32x125	1519203	HSK-A 63	32 mm	125.0 mm
iTENDO² HSK-A100 Ø32x115	1509955	HSK-A 100	32 mm	115.0 mm
iTENDO² JIS-BT30 Ø20x90	1495389	JIS-BT 30	20 mm	90.0 mm
iTENDO² JIS-BT40 Ø20x110	1509899	JIS-BT 40	20 mm	110.0 mm
iTENDO² SK40 Ø20x110	1484710	SK 40	20 mm	110.0 mm
iTENDO² SK50 Ø32x103.2	1509960	SK 50	32 mm	103.2 mm
iTENDO² CAT40 Ø3/4x4"	1495390	CAT 40	3/4"	101.6 mm
iTENDO² Capto C6 Ø32x110	1509962	SCHUNK CAPTO C6	32 mm	110.0 mm
iTENDO² adapter Ø32-Ø20x69	1484703	universal	20 mm	
iTENDO² magnet holder	1511806	-		

	Hydraulic expansion toolholders		
	Premium		
	TENDO Platinum	**TENDO Slim 4ax**	**TENDO Slim4ax Cool Flow**
			
Advantages			
	Precision all-rounder	Ideal for axial machining and radial fine machining	Enables peripheral cooling by means of cooling channels in the wall; the coolant is fed directly to the cutting edge of the tool
	Compatible for use in any machine tool spindle	Heat-shrinking contour in accordance with DIN 69882-8	Heat-shrinking contour in accordance with DIN 69882-8
	Versatile clamping range due to the use of intermediate sleeves	Application option also with minimum quantity lubrication	Application option also with minimum quantity lubrication
Field of application			
General milling machining	◑	◑	◑
Drilling/countersinking	●	●	●
Reaming	◑	◑	◑
Thread cutting	◑	◑	◑
Roughing			
Finishing	●	●	●
Technical data			
Number of interfaces	29	8	8
Run-out accuracy [µm]	< 3	< 3	< 6
Repeat accuracy [µm]	< 3	< 3	< 6
Damping	●	●	●
Radial rigidity	◑	○	○
Torque	◑	◑	◑
Contour according to DIN ISO 12164-1	●		
Optimized interfering contours		●	●
MQL applications (Minimum Quantity Lubrication)		●	●
Warranty [months]	36	24	24

● = Excellently (suitable) ◑ = Good (suitable) ○ = Suitable

* This is evidenced by a study conducted by the wbk Institue of Production Science at the Karlsruhe Institute of Technology (KIT)

Economy	
TENDO Silver	**TENDO E compact**
	
Low-cost entry into hydraulic expansion technology with DIN contour	Up to 300% longer tool service lives*
Best price-performance ratio for direct clamping	Maximum clamping torque now up to 2,000 Nm with Ø 32 mm under dry clamping conditions; 900 Nm with oily tool shanks
Versatile clamping range due to the use of intermediate sleeves	Perfect surfaces – no chatter marks
◑	●
●	●
◑	◑
◑	●
	●
●	●
9	18
< 3	< 3
< 3	< 3
●	●
◑	●
◑	●
●	
12	12

	Hydraulic expansion toolholders		
	Intelligence	Tech	
	iTENDO²	TENDO Zero	TENDO ES
			
Advantages			
	A combination of hydro-expansion technology with the capabilities of digital process monitioring	The professional toolholder for tight tolerances during drilling, reaming and finish boring	Extremely short toolholder with zero interfering contour
	Wide range of uses in many applications thanks to speeds of up to 30,000 RPM	This enables even minimal run-out errors with tools, mountings, and the machine spindles to be individually compensated	For applications where every centimeter in the machine room counts
	1:1 interchangeable against standard TENDO or heat shrinking toolholder because the interfering contour is the same	Suitable for high speeds and HSC cutting with a balancing grade of G2.5 at 25,000 RPM	Perfectly suited for machining large workpieces and for deep-hole drilling
Field of application			
General milling machining	◑	◑	◑
Drilling/countersinking	●	●	●
Reaming	◑	●	◑
Thread cutting	◑	◑	◑
Roughing	○		◑
Finishing	●	●	●
Technical data			
Number of interfaces	10	12	5
Run-out accuracy [µm]	3	0	6
Repeat accuracy [µm]	< 3	< 3*	6
Damping	●	●	●
Radial rigidity	◑	◑	●
Torque	◑	◑	◑
Contour according to DIN ISO 12164-1	●	●	
Optimized interfering contours	○	◑	●
MQL applications (Minimum Quantity Lubrication)			

● = Excellently (suitable) ◑ = Good (suitable) ○ = Suitable

* Without zero function
** Only for DSE version

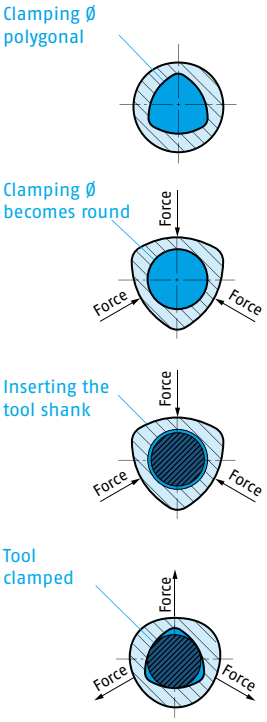
TENDO LSS	TENDO RLA	TENDO Turn
		
Super-slim toolholder with high stability and high radial rigidity	The sensitive adjusting gear set ensures micron-precise positioning of the tool length	The professional for excellent workpiece surfaces
Takes care of the trickiest of tasks when machining at the narrowest of angles and where workpieces are difficult to access	Length adjustment screw equipped with front and back stop	Unique vibration damping as well as run-out accuracy and repeat accuracy of <0.003 mm due to DSE double clamping insert
Ideally suited for boring, reaming, and finish milling machining operations	No position change of the tool due to self-locking adjustment screw	Versatile clamping range due to intermediate sleeves and simple handling
○	◑	◑
●	●	◑
◑	◑	◑
	◑	
◑	●	◑
2	9	8
6	3	< 3**
6	3	< 3
●	●	●
○	◑	◑
◑	◑	◑
●	◑	◑

Polygonal toolholder

Precise micro-cutting and machining of extremely narrow and difficult-to-access workpieces are the strengths of TRIBOS. The patented TRIBOS polygonal clamping technology is available for any conventional machine interface. It is used in the automotive, aviation and watchmaking industries as well as for tool and mold making, medical technology and mechanical and plant engineering. The one-piece mountings are durable and mechanically insensitive, and guarantee clamping that is almost completely maintenance and wear-free.

From micro to macro – TRIBOS at a glance:

- **The best concentricity <0.003 mm for longer service life and the best surfaces**
- **No moving parts, making it absolutely maintenance-free**
- **Large clamping diameter range from 0.3 to 32 mm**
- **Rotationally symmetrical design for machining at maximum speeds**



How polygon clamping technology works

Pressure makes the polygonal clamping diameter of the toolholder to run true and the tool shank can be easily inserted. When the pressure is released, it returns to its polygonal shape and clamps the tool reliably.

TRIBOS SVL extensions

The use of TRIBOS SVL extensions makes it possible to use standard cutting tools instead of expensive special tools. The extension with a run-out accuracy of <0.003 mm and slim interfering contours can be used in combination with various SCHUNK toolholders.

Expansion toolholder

With SINO-R, SCHUNK is offering an expansion toolholder on the basis of expansion technology. Three features make the SINO-R series unbeatable in terms of quality and productivity for thread milling: The high radial rigidity, which prevents the tool from deflecting, the higher torque transmission for full utilization of the tool's performance, and the top vibration damping for the best thread surfaces without chatter marks.

With SINO-R, you not only master thread milling:

- **Monoblock design of the base body for greater stability and rigidity**
- **Outstanding vibration damping**
- **Reinforced expansion sleeve for greater radial rigidity for the heaviest machining tasks with the highest radial forces**

Easy tool change

With the SINO-R C-spanner or spanner wrench, the tool is quickly and securely clamped.

How expansion technology works

In the clamping procedure, the elastic pressure material stretches in the direction of the expansion sleeve and the tool is clamped centrically.

	Polygonal clamping technology & expansion technology		
	Tech		
	TRIBOS-R	**TRIBOS-S**	**TRIBOS-RM**
			
Advantages			
	Due to excellent dynamic run-out properties best results for shape accuracy, surface quality, shape and positional tolerance	Extremely slim design for the tightest machining conditions	Compact toolholder mounting for powerful HSC cutting in micro-cutting processes up to over 85,000 RPM
	Through its unique polygonal honeycomb structure and increased outer diameter, it offers an optimal ratio between radial rigidity and damping	The uniform cutting action improves tool service life	Precise and reliable metal cutting due to the best run-out accuracy of ≤ 0.003 mm and stability due to the anchor structure
	No lateral deflection during the machining process due to excellent vibration damping and stabilization of the overall system	Ideal for difficult to access workpieces	Perfectly suited for use with small, highly dynamic machining centers due to the different sizes
Field of application			
General milling machining	●	◑	●
Drilling/countersinking	●	●	●
Reaming	◑	◑	◑
Thread cutting	◑	◑	◑
Roughing	●	○	
Finishing	◑	●	●
Technical data			
Number of interfaces			
Run-out accuracy [µm]	3	3	3
Repeat accuracy [µm]	3	3	3
Damping	●	●	●
Radial rigidity	●	○	○
Torque	◑	◑	◑
Contour according to DIN ISO 12164-1			
Optimized interfering contours	○	●	◑
MQL applications (Minimum Quantity Lubrication)			

● = Excellently (suitable) ◑ = Good (suitable) ○ = Suitable

TRIBOS-Mini	SINO-R
	
For the most delicate machining of housings, molds, electrodes and engravings	Proven expansion toolholder based on expansion technology
Clamping of extremely small shanks is possible, which means the time-consuming and cost-intensive manufacturing of special tools is no longer needed	Impressive quality and productivity in thread milling
Especially for micro-cutting in medical and electrical engineering as well as in the watch industry or in precision die construction	High radial rigidity, high torque transmission and top vibration damping
	◑
●	◑
◑	
	●
	●
◑	
	9
3	5
3	5
◑	●
○	●
◑	◑
●	○

Heat shrinking and mechanical toolholders

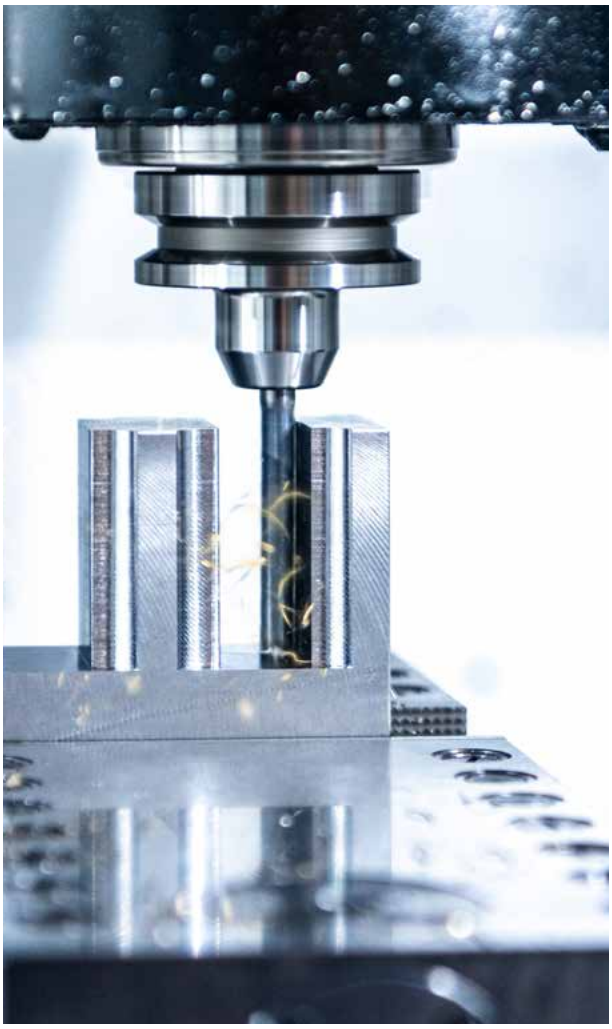
With CELSIO heat shrinking toolholders and extensions, you will have a cost-effective clamping system for individual machining cases which wins you over by virtue of its optimum ratio between radial rigidity, interfering contour, and holding torque. SCHUNK also offers an extensive range of mechanical toolholders with ER collet chucks, Weldon toolholders, combination shell end mill adapters, face mill arbors, as well as CNC short drill chucks.

Advantages of CELSIO:

- **Secure and frictionless clamping for transmission of high torques**
- **Very good ratio between radial rigidity and interfering contour**
- **Universally applicable**

Advantages of mechanical toolholders:

- **The right toolholder is available for any tool shank**
- **No power consumption required for the clamping process**



Full-slot milling with WELDON end mill holders

Full-slot milling with CELSIO heat shrinking toolholder

Roughing with face mill arbors

	Heat shrinking and mechanical toolholders		
	CELSIO	**ER collet chuck**	**ER precision collet chuck**
			
Advantages			
	Economical heat shrinking clamping system for individual processing applications	For clamping tools with cylindrical shanks in collets in accordance with DIN ISO 15488-B	For clamping tools with cylindrical shanks in collets in accordance with DIN ISO 15488-B
	Secure and friction-locked clamping for transmission of high torques	Thanks to the large clamping range of the collets, various shank tolerances can be clamped	The large clamping range of the collets makes it possible for various shank tolerances to be clamped
	Good ratio between radial rigidity and interfering contour		Using a precision collet, highest run-out accuracies of 3 microns can be attained
Field of application			
General milling machining	◑	◑	◑
Drilling/countersinking	●	○	●
Reaming	◑	○	◑
Thread cutting	○	◑	◑
Roughing	◑		○
Finishing	◑	○	◑
Technical data			
Number of interfaces	22 in standard design	22 in standard design	9 in standard design
Run-out accuracy [µm]	3	8	3
Repeat accuracy [µm]	3		
Damping	○	◑	◑
Radial rigidity	◑	◑	●
Torque	●		●
Contour according to DIN ISO 12164-1			
Optimized interfering contours	●	◑	○
MQL applications (Minimum Quantity Lubrication)	on request	no	no

● = Excellently (suitable) ◑ = Good (suitable) ○ = Suitable

	Mechanical toolholders		
	Whistle-Notch mounting	**Face mill arbor**	**Combination shell and end mill adapter**
			
Advantages			
	Safe clamping of tools with lateral clamping surface on the cylindrical shank	For clamping end face mills and face mills, with crosswise slot in accordance with DIN 1880, from clamping diameter Ø 40 in accordance with DIN 2079 (four threaded holes)	Mechanical toolholder for fast clamping of milling cutters with a longitudinal or crosswise slot
	No twisting or pulling out of the tool thanks to the clamping screw	Due to the enlarged contact surface milling cutters with a crosswise slot can be clamped quickly	
	For tools with cylindrical shanks in accordance with DIN 1835E and DIN 6535E		
Field of application			
General milling machining	◑	◑	◑
Drilling/countersinking			
Reaming			
Thread cutting	○		
Roughing	◑	●	●
Finishing		○	○
Technical data			
Number of interfaces	3	7	5
Run-out accuracy [µm]	3	6	6
Repeat accuracy [µm]		6	
Damping	○		
Radial rigidity	◑	●	●
Torque	●		
Contour according to DIN ISO 12164-1			
Optimized interfering contours	○		
MQL applications (Minimum Quantity Lubrication)			

● = Excellently (suitable) ◑ = Good (suitable) ○ = Suitable

CNC short drill chuck	Screw-in milling cutter mounting	Morse taper mounting	WELDON end mill holders
			
For clamping tools with a cylindrical shank in machining centers or CNC machines	For clamping of screw-in milling cutters with thread	Available with tightening thread or tangs	For safe clamping of tools with lateral clamping surface on the cylindrical shank
Seamless and quick tool changes possible in the machine for tools with 1 mm to 16 mm shank diameters		For clamping morse taper tools with tightening thread in accordance with DIN 228A or tangs in accordance with DIN 228B	No twisting or pulling out of the tool due to the clamping screw
Also suitable for tools with inner coolant supply			For tools with cylindrical shanks in accordance with DIN 1835E and DIN 6535E
	◑	○	◑
◑		○	
		○	
		○	○
	◑	○	◑
6	2	2	14
N/A	5	8	3
			3
○		○	○
	◑		●
○		○	●
○	◑	○	○

Tooldholder accessories

The extensive SCHUNK range of accessories such as extensions, intermediate sleeves and clamping devices extends the versatility of our toolholders. Maximum flexibility, reliability, and absolute process reliability is ensured.

TRIBOS SVL

The use of TRIBOS SVL extensions makes it possible to use standard cutting tools instead of expensive special tools.

CELSIO SVL/ER collets SVL

The CELSIO heat shrinking extensions with optimized interfering contours and ER collet chuck extensions offer the universal solution for individual hard-to-access machining cases.

GZB-S KD/PK

SCHUNK intermediate sleeves allow clamping of several, different shank diameters with just one toolholder. The universal intermediate sleeves GZB-S are available in two versions: proven coolant-proof and with innovative peripheral cooling. Both can be used in the SCHUNK toolholding systems TENDO, TRIBOS, SINO-R, and any standard hydraulic expansion toolholders.

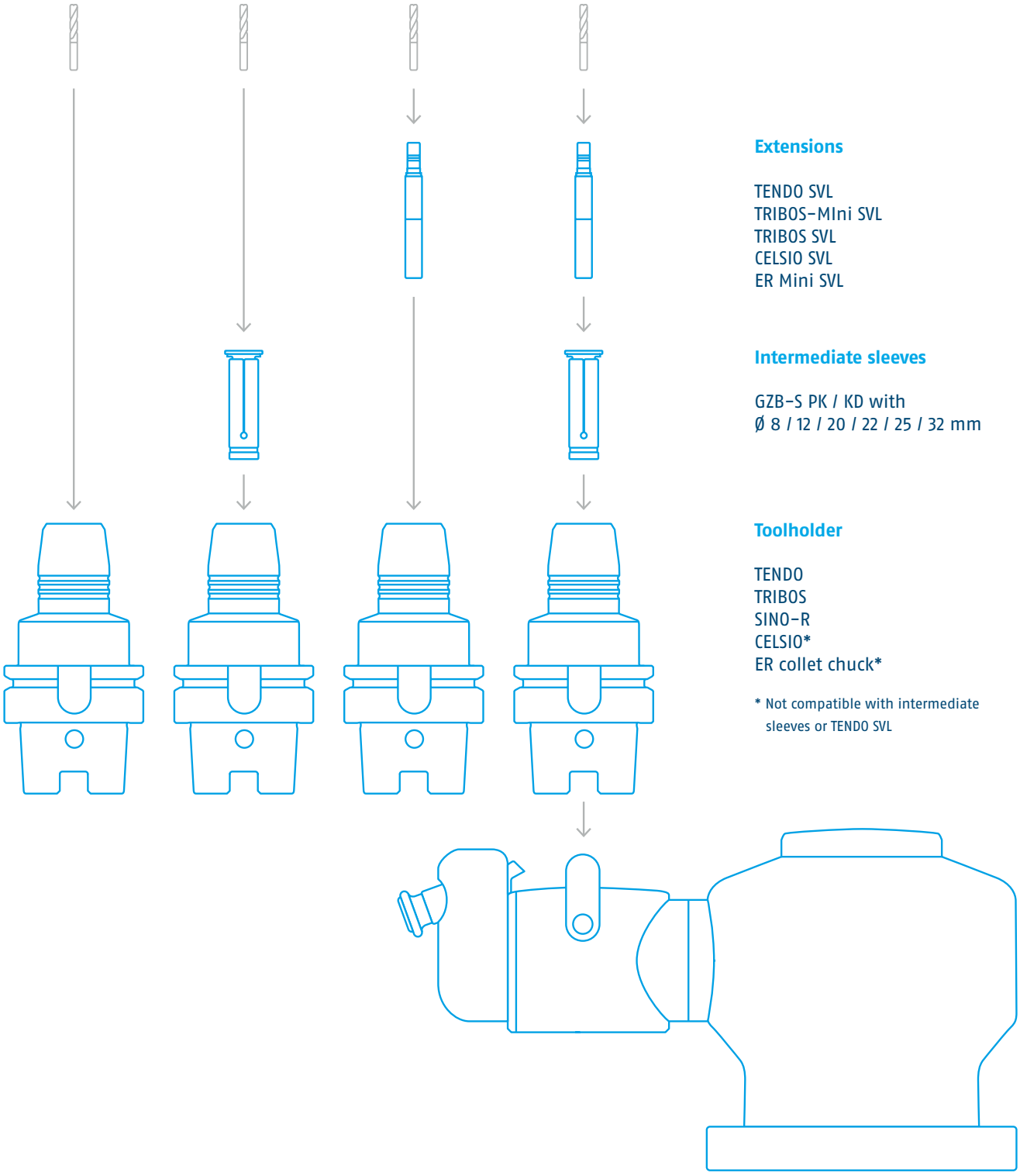
TENDO SVL

The tool extension TENDO SVL is designed for precise machining of difficult-to-access areas where low interfering contours are required.

TOOLFIX Mono WMS-M and TOOLFIX Vario WMS-V

TOOLFIX Mono and Vario are assembly systems for all common types of tool shanks. The tool is automatically secured when it is inserted into the adapter. Locking bolts and automatic snap-in can be used to find the ideal set-up position for ergonomic operation.

Combine the solution that is right for you



Extensions

TENDO SVL
TRIBOS-MIni SVL
TRIBOS SVL
CELSIO SVL
ER Mini SVL

Intermediate sleeves

GZB-S PK / KD with
Ø 8 / 12 / 20 / 22 / 25 / 32 mm

Toolholder

TENDO
TRIBOS
SINO-R
CELSIO*
ER collet chuck*

* Not compatible with intermediate sleeves or TENDO SVL

Toolfix

Toolholders from SCHUNK and third-party manufacturers

Wherever you are located – SCHUNK is close to you!

Headquarters Lauffen/Neckar
SCHUNK SE & Co. KG
Spanntechnik
Greiftechnik
Automatisierungstechnik
Bahnhofstr. 106 – 134
D-74348 Lauffen/Neckar
Tel. +49-7133-103-0
Fax +49-7133-103-2399
info@de.schunk.com

Plant Brackenheim-Hausen
SCHUNK SE & Co. KG
Spanntechnik
Greiftechnik
Automatisierungstechnik
Robert-Bosch-Str. 12
D-74336 Brackenheim-Hausen
Tel. +49-7133-103-0
Fax +49-7133-103-2399
info@de.schunk.com

Plant Mengen
H.-D. SCHUNK GmbH & Co.
Spanntechnik KG
Lothringer Str. 23
D-88512 Mengen
Tel. +49-7572-7614-0
Fax +49-7572-7614-1039
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Plant St. Georgen
SCHUNK Electronic Solutions GmbH
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