



**THE HSK-FLEX.
FROM RÖHM.**



**TOP PERFORMANCE
WHEN ADAPTING
AND DELIVERING.**

THE HSK-FLEX. FROM RÖHM.



The HSK-FLEX is a tool clamp for automatic clamping machines with a spindle drive. It is installed directly into the machine tool spindle, i.e. into the rotor of the drive motor, which is designed as a hollow shaft for this purpose. Designed in particular for milling machines that operate at high speeds, it is equipped with the HSK tool holder clamping head.

Two features distinguish the HSK-FLEX: It is the first modular tool clamp from RÖHM. It can be quickly configured for various lengths and contour of spindles. The HSK-Flex therefore eliminates an engineering bottle neck in new machine and upgrade design. Secondly, it offers the complete the range of HSK clamping heads from RÖHM.

WHERE?

- Automated metal-cutting machines (e.g., milling machines, grinding machines, woodworking machines and CNC machining centers)
- Other automation applications with HSK clamping and exchange components

FOR WHAT?

- Device for automatic clamping and changing of the tool in the tool spindle
- Initial and subsequent equipping of tool spindles with customized individual length and inner contour

WHY?

- Faster design, production and delivery possible thanks to configured to order rather than engineered to order tool clamps
- Equipping of even very small tool spindles possible – shorter overall length compared to conventional tool clamping systems
- Thanks to the specially designed HSK clamping set, less machining on the spindle rotor is necessary for integration
- Less wear on the tool spindle in the application
- Clamping of the tool with a much lower spring force to achieve the same pull force on the tool holder

HOW MUCH?

- Same performance and service life as conventional tool clamps
- Excellent price-performance ratio

BEST TIMES ARE BEST ACHIEVED IN A TEAM.

The first modular tool clamp from RÖHM allows faster customer-specific solutions



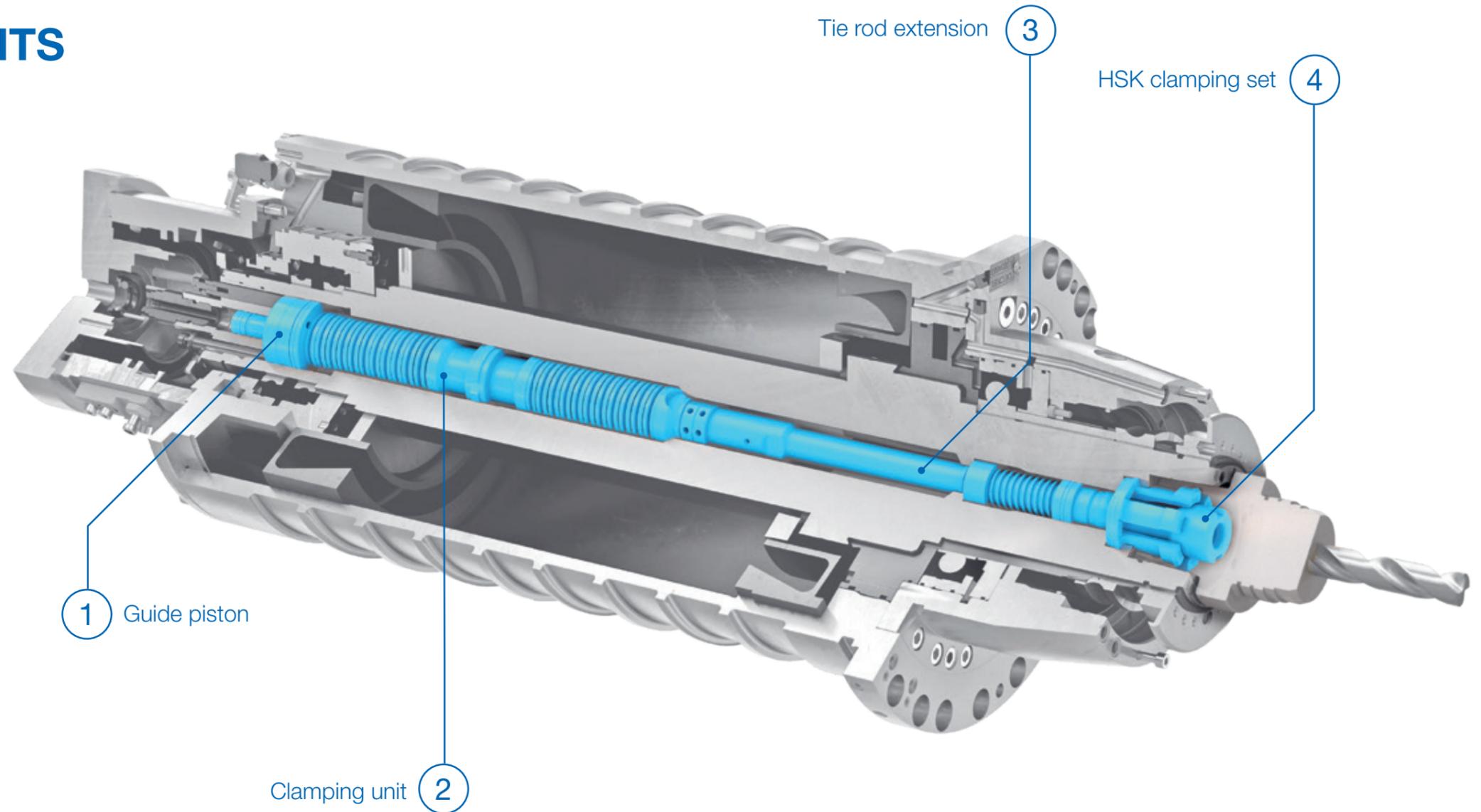
HSK-FLEX from RÖHM
shown in a milling machine

ADVANTAGES

FOUR TOP ELEMENTS AT THE START.

Pre-engineered modules are combined to create a customized assembly.

Tool clamps often constitute a supply bottleneck when equipping machines. Due to their complexity, they are not kept in stock. In particular, however, machine builders have to wait when special lengths are required. Not so at RÖHM. Based on the realization that not everything on a tool clamp has to be individual, it was converted into a modular system. It allows the pre-production of individual components and their efficient assembly into an individual end product. The HSK-FLEX consists of four components.



FROM XS TO XL:
RANGE OF OVERALL
LENGTHS OF THE HSK-FLEX

450 mm* – 800 mm

* 30% shorter, up to 72 cm, than conventional designs

The HSK-FLEX provides access to top-class clamping sets

An HSK interface is an HSK interface, you might think, because there is a standard that regulates everything. But it doesn't. Only the geometries of the clamping set's inner contour and the tool's outer contour are standardized. For example, how the clamping set is designed in detail is a up to the manufacturer. From a mechanical point of view, HSK clamping sets from RÖHM are in a class of their own. The HSK-FLEX provides access to this technology.

Shorter than other tool clamps

Short tool spindles are a particular challenge. Conventional tool clamps reach their technical limitations here: Clamping units need a certain minimum length to generate the necessary spring force. With the HSK-FLEX, it is much shorter. Combined with the special clamping of the HSK clamping set from RÖHM, this allows for shorter overall lengths.

TECHNOLOGY

EVERYONE HAS A JOB TO DO.

Introducing the four modules of the HSK-FLEX.

RÖHM engineers have thus broken down the highly complex tool clamp assembly into modules that harmonize perfectly with each other. Inside, they are designed for either single-channel or dual-channel feed-through of cooling lubricant and blowing air.



MODULE 1

GUIDE PISTON WITH CONNECTION POINT

This generally has the same geometry due to the standardization of the tool spindles. In addition, there are still some special designs.

MODULE 2

CLAMPING UNIT

Is the same short length for all versions of the HSK-FLEX. This is achieved through the special clamping set and the configuration of the high-performance disk springs. They not only allow more compact construction than with traditional helical disk springs but also extend the service life of the tool clamping unit. This makes up to 5 million clamping cycles possible.

MODULE 3

TIE ROD EXTENSION

Used to individually adapt the length of the HSK-FLEX to the spindle length. They are literally "off the shelf" and cut to length for the final configuration.

MODULE 4

HSK CLAMPING SET

Clamping sets from RÖHM have greater power transmission than others and thus allow short clamping units. This is important for modularization.



The components are connected with secure high performance bonding and mechanical pins. The stability and balancing quality correspond to those of the one-piece design.

For more information on the HSK-FLEX, please visit our website at

ROEHM.BIZ/HSK-FLEX

TECHNOLOGY

POWER AND EFFICIENCY DESIGNED IN.

The clamping set of the HSK-FLEX saves energy, machining and wear.

One of the things that is not stipulated is the outer contour of the clamping's HSK head. Thanks to its short design, RÖHM requires hardly any mechanical machining of the spindle fit to ensure that the spindle and clamping set are optimally connected. This means less effort for the customer. And, during the clamping processes, the collet elements hardly come into contact with the spindle due to the special movement guidance, thus avoiding unnecessary wear. Two invaluable advantages of the HSK clamping set from RÖHM.

The biggest difference between the RÖHM HSK clamping set and most other clamping sets is that, due to its design, it has higher power transmission: 1:5 instead of the usual 1:3.5. This means that the clamping unit behind the clamping set needs approx. 30 percent less spring force to achieve the same spindle draw-in force for the tool. As already mentioned, this opens the possibility of miniaturizing the entire tool clamp. As the component subject to the greatest wear, the pressure piece of the clamping set is DLC-coated.

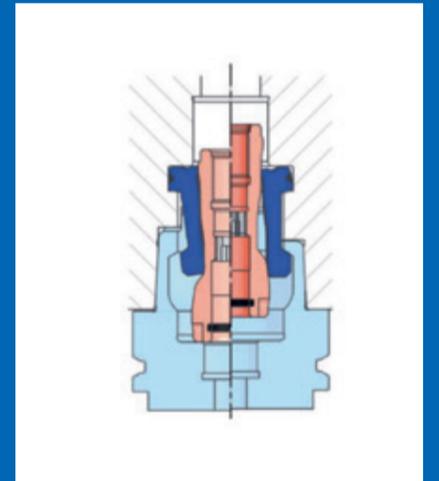


HSK clamping set from RÖHM:
Strictly according to DIN but still special

GOOD TO KNOW

WHAT IS AN HSK INTERFACE?

- Modern type of tool holder in machines – HSK means "hollow shank taper"
- Special geometry that the tool shank and clamping set have
- Meets the high demands of fast-running machines
- Standardized according to DIN 69893 (ISO 12164); widely used worldwide
- Various fine geometries derived from machining tasks are reflected in the A to F shape series; the most common is A63



Further information on the HSK-FLEX can be found on our website at

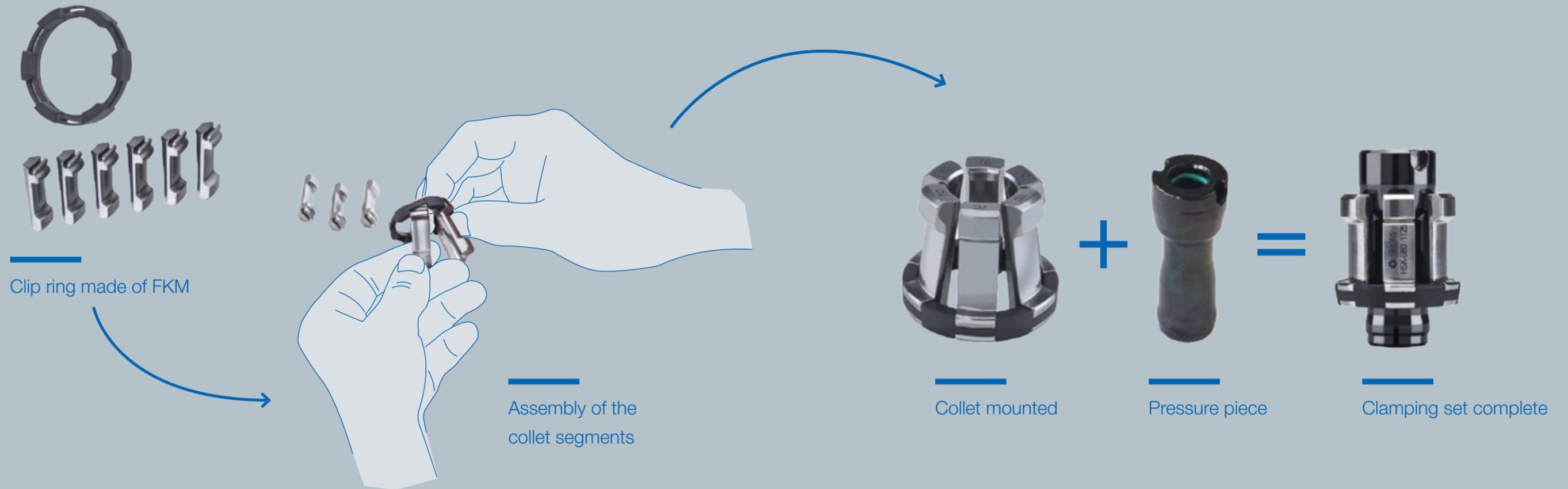
ROEHM.BIZ/HSK-FLEX

REPLACE THE RUNNERS? QUITE SIMPLE.

The HSK-FLEX makes child's play of changing clamping sets.

Most tool spindles are mounted vertically in the machine. For inserting the tool clamp from above, this is good news. Gravity helps to hold it in place. However, the same is not true for the clamping set because it has to be installed from below. And unlike the rest of the tool clamp, should outlive the life of the spindle, the clamping set has to be regularly replaced. To do this, the individual elements of the clamping set must be inserted one after the other overhead into the spindle. The insertion of the collet elements in particular can become a game of skill and patience.

Not so with the HSK-FLEX. Because, with the clamping set from RÖHM, the collet elements are connected to each other by a clip ring made of wear- and chemical-resistant fluororubber (FKM). This allows the clamping set to be preconfigured outside the spindle. Now, all that's needed is the punch-like, special assembly aid tool, and then: click and you're done. The clip ring is patented by RÖHM.



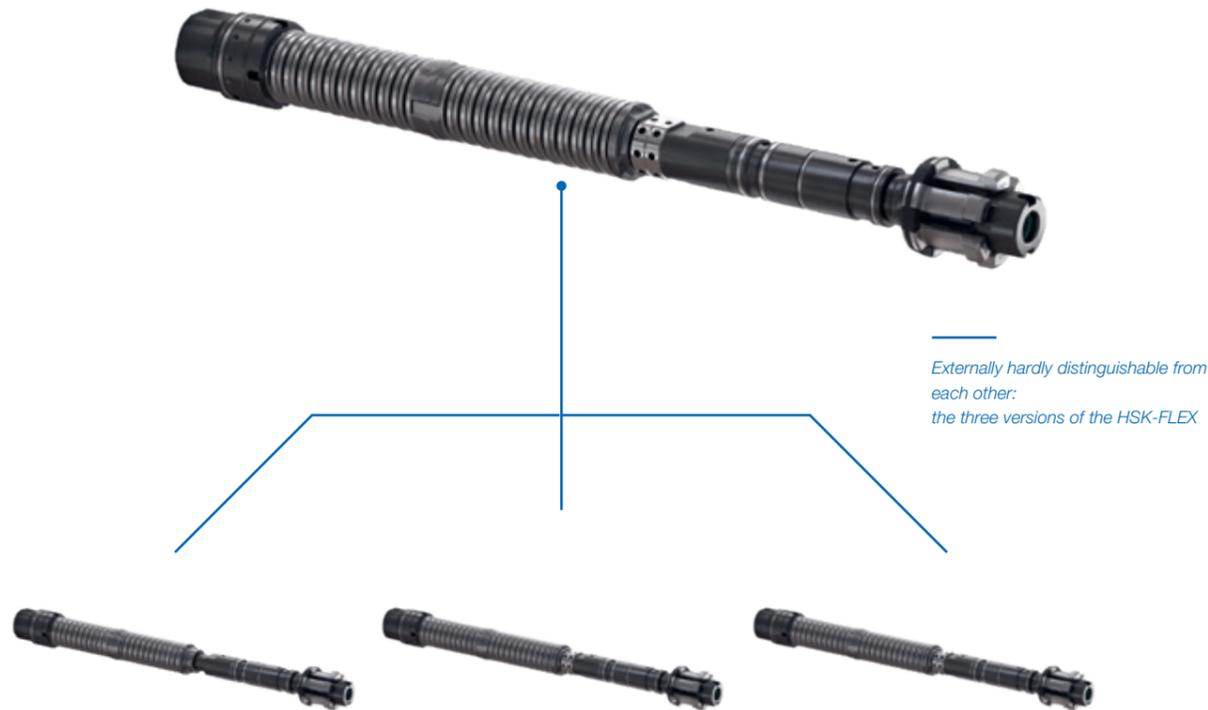
VERSIONS

HOW FAST DO YOU NEED TO GO ROUND THE CURVES?

The HSK-FLEX is available in three versions

As the machine speed increases, so do the demands on the concentricity of the system – on the balancing quality. They are highest for the tool spindle itself. But the tool clamp inside it must also make its contribution. RÖHM takes these requirements into account with design details, especially

in the clamping unit, and offers the HSK-FLEX in three versions matched to the maximum speed. The service life of the tool clamp is also graded. It is measured according to the number of closing and opening operations (clamping cycles) to be handled.



HSK-FLEX ALLROUND

MAXIMUM SPEED:
18,000 rpm

MAXIMUM NUMBER OF CLAMPING CYCLES:
2 million

HSK-FLEX PERFORMANCE

MAXIMUM SPEED:
24,000 rpm

MAXIMUM NUMBER OF CLAMPING CYCLES:
5 million

HSK-FLEX PRECISION

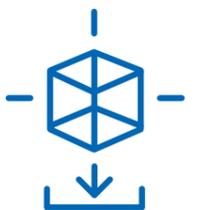
MAXIMUM SPEED:
33,000 rpm

MAXIMUM NUMBER OF CLAMPING CYCLES:
5 million

	HSK-FLEX Allround	HSK-FLEX Performance	HSK-FLEX Precision
Balancing quality	Up to 18,000 rpm	Up to 24,000 rpm	Up to 33,000 rpm
Guide piston*	Steel, surface tempered (nitrided) and ground; standard or special geometry	Steel, surface tempered (nitrided) and ground; standard or special geometry	Steel, surface tempered (nitrided) and ground; standard or special geometry
Clamping unit*	Tie rod made of surface-hardened steel (hard-chrome plated); Disc spring assemblies with special disc springs and an inside diameter tolerance window of 0.05 mm; support disc made of hardened MnCr case-hardened steel; guide disk secured with a snap ring	Tie rod made of surface-hardened steel (hard-chrome plated and ground to closer tolerance); Disc spring assemblies with special disc springs and an inside diameter tolerance window of 0.05 mm; support disk made of hardened MnCr case-hardened steel; guide disc secured with balancing rings	Tie rod made of surface-hardened steel (hard-chrome plated and ground to closer tolerance); High-performance disc spring assemblies with an inside diameter tolerance window of 0.05 mm; support disk made of hardened MnCr case-hardened steel; guide disc secured with balancing rings
Tie rod extension*	Steel, hard-chrome plated, variable length	Steel, hard-chrome plated, variable length	Steel, hard-chrome plated, variable length
HSK interface	A63 (and their equivalents in the shapes B – F)	A63 (and their equivalents in the shapes B – F)	A63 (and their equivalents in the shapes B – F)
Actuating force	4 kN	4 kN	4 kN
Draw-in clamping force	25 kN	25 kN	25 kN

* Optional single or dual channel design, single channel with or without changeover.

CAD data for the HSK-FLEX can be found at
www.roehm.biz/CAD



VERSIONS

FOR FAST AND VERY FAST.

Two versions of the HSK clamping set from RÖHM

In principle, the HSK clamping set supplied with the HSK-FLEX is available in two versions: In most cases, the more robust "Standard" is recommended, which is why RÖHM also supplies it as standard, while the "High Speed", which is designed to be somewhat more stable, is only recommended for selected applications. But you can't really make a wrong decision: Both versions are interchangeable, and changing the HSK-FLEX clamping set is quick and easy.



"STANDARD"

For normal requirements of concentricity and balance quality, for coarser machining tasks and frequent tool changes.

"HIGH SPEED"

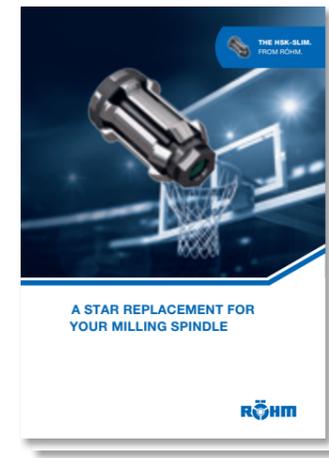
Only for very high requirements of concentricity and balance quality.



HSK-Slim clamping set

For when you want your tool spindle to remain as it is, but you still want to enjoy the convenience and the benefits of RÖHM'S HSK clamping sets: The HSK-Slim clamping set forms the bridge to other tool clamping sets, especially those of the OTT-JAKOB system. It has different external geometry than the "Standard" and "High Speed" versions. However, we don't recommend using the HSK-Slim at the highest speeds, which the "High Speed" version can handle.

Please read our brochure "HSK-Slim" regarding this.



DESIGN AND SCOPE OF DELIVERY

HOW BIG? HOW HEAVY? WHICH APPROACH?

Three facts are enough to design your HSK-FLEX

Hard to believe, but true: Although an HSK-FLEX is such a complex assembly, it only takes a short consultation for RÖHM to get started. This is due to the rigid framework of mechanical engineering standards into which the tool clamp has to fit. That's all we need to know:

Checklist for your HSK-FLEX



Spindle length?



Spindle connection with standard or special geometry?



Maximum speed / maximum torque?



Two customer-specific versions of the HSK-FLEX



ON REQUEST: SPECIAL REAR END.

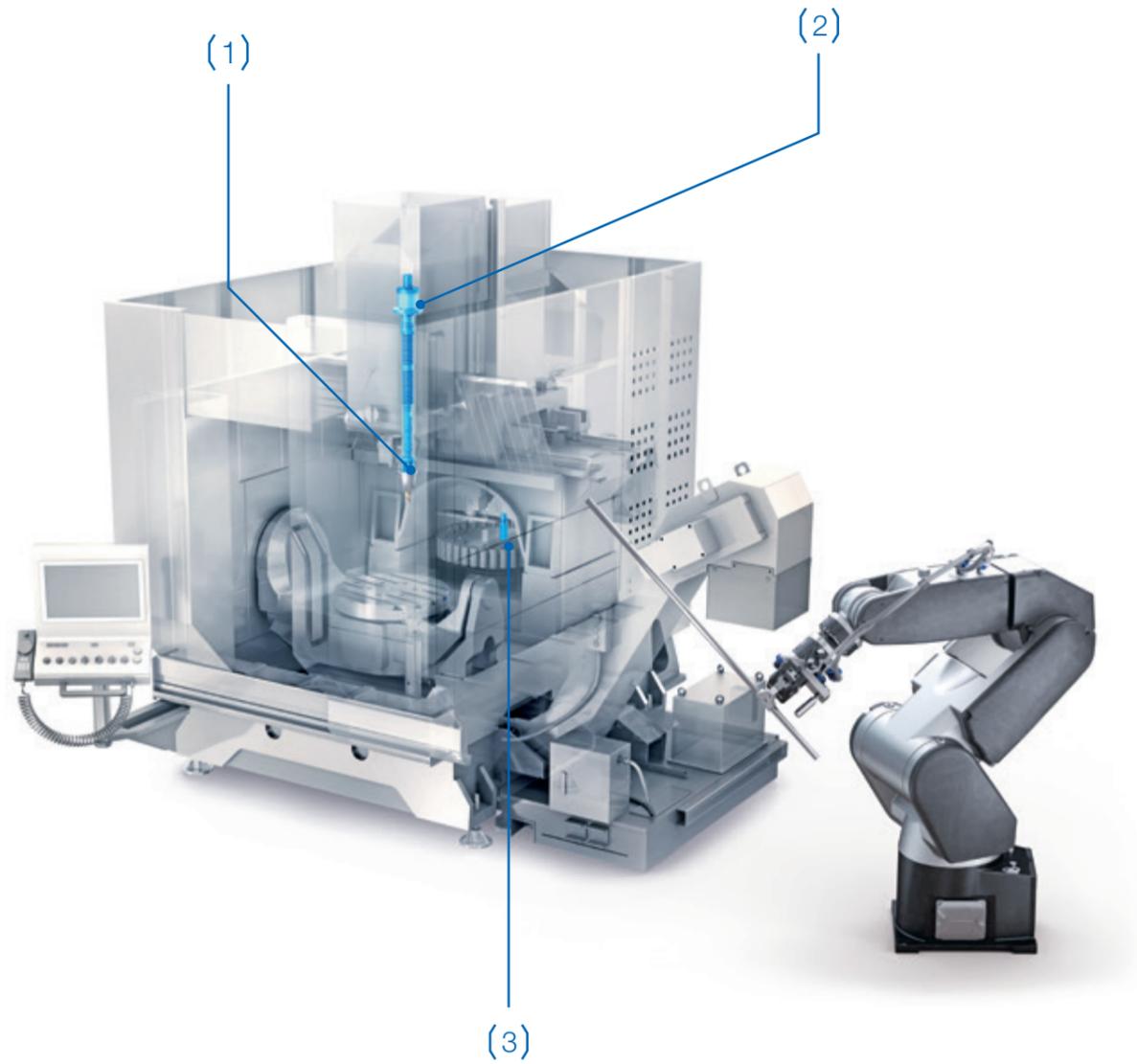
Optional additional components

Two components are connected to the tool clamp inside the machine: the stroke control ring and connecting tube. They form the bridge to two other functionally important components: the release unit for automatic opening of the tool clamp and the rotary feed-through for feeding in cooling lubricant and blowing air. The stroke control ring and connecting tube are often ordered together with the tool clamp; they half-belong to it, so to speak.

There are two reasons why requesting a release unit and rotary feed-through may make sense. The first: You want to be absolutely sure that both will work in harmony with your HSK-FLEX. The second: Your tool clamp is very small, and you also have to pay attention to miniaturization further back for space reasons. Of course, RÖHM offers release units and rotary feed-throughs that satisfy this need.

DO YOU NEED THE WHOLE SYSTEM...

...to be able to use the advantages of your HSK-FLEX properly? RÖHM offers the accessories you need to turn a good product into a great complete system. Here are some important components.



(1)



...to be able to enjoy full convenience when mounting the HSK clamping sets. The assembly aid, which is only available from Röhm, makes it possible. Click and you're done.

(2)



...to continue the advantages of your HSK-FLEX even further into the machine. Order the corresponding release unit and the corresponding rotary feed-through for the tool clamp at the same time.

(4)



...to automatically lubricate your clamping sets. The patented Lubritool® lubrication tool takes care of this.



You can conveniently buy clamping and gripping technology from Röhm 24/7 in our online store:

eshop247.roehm.biz

PERHAPS YOU NEED SOMETHING ELSE...

...because the HSK-FLEX answers your questions about tool clamping, but not about workpiece clamping? RÖHM also has a range of high-quality

products ready for this purpose. Below is a small selection. You can find the entire range on our website.

...because you want to clamp milled parts in automated machining centers with high force? For this purpose, we offer the KZS, a pneumatically or hydraulically controlled centric vice.



...because you want to clamp milled parts in automated machining centers with maximum repeat accuracy? The NC compact centric vice RKE-M makes it possible for you.



...because you want to automatically turn or grind long parts at high speed and high clamping force? The DURO-A hydraulically actuated power chuck with a through-hole is a top product in its class.



...because you need to hold highly sensitive parts for automated machining? The iJAW intelligently measures and controls the clamping force, acceleration and temperature during the process.

