

## Better Milling and productivity increase of 30% with innovative tool holders

Tool clamping is often seen as a subordinate topic on CNC mills. Even experienced users who machine on a high level are not immune to not optimally exploiting their potential.

**Productivity increases of 30%** are not a fabulous number but rather achievable.

In our own production we were able to achieve 35% improvement through:

- Longer tool life
- Better workpiece accuracy
- Better surfaces
- Less machine downtime due to less rework

How can your company significantly improve the milling processes? Answer: By using innovative and, above all, high-quality clamping devices.

### What innovative clamping techniques do we offer today?

#### Shrink Fit Tool Holders and innovative Shrink Units:

Shrink chucks are one-piece tool holders that - if correctly manufactured - have a concentricity of 3  $\mu$ . Diebold currently offers shrink chucks with HSK-E 40 taper for high-speed machining with concentricity of 1micron.



#### Shrink chucks with finesse:

The Diebold shrink chuck program includes chucks with standard DIN contour, TSF slim fit chucks and TUS ultra slim chucks, with TSF and TUS chucks that are coated.

The coating is important for machining of graphite materials so that the chips or the graphite dust does not stick to the tool holder and cause unwanted imbalance. With the Pyroquart® brand, Diebold offers reinforced shrink chucks for heavy-duty machining.

### Innovative Shrink Units Series US 1100:

We offer innovative shrinking devices for shrinking of tool holders. Now these shrinking devices are automated, when equipped with TempControl via Pyrometer coil, they are easy to handle, even for less experienced operators.



### JetSleeve® 2.0 Shrink Fit Chucks with Coolant-Jet-Effect for perfect lubrication:

JetSleeve® is the worldwide unique and patented shrink chuck, in which the cooling medium is fed directly to the milling cutter via nozzle holes on the front.



The trick is tiny nozzle holes with different angles in the face of the golden nozzle ring. Due to the angular adjustment, the coolant flows overlap and create a negative pressure that prevents the medium from being thrown outwards by centrifugal force. This means that cooling and lubrication are always available on the cutting edge, even when milling deep pockets or cavities. As soon as the chips break, they are blown away from the cutting edge and the cutter cannot overrun the

chips. The whole thing works with coolant, with MMS /ADL (Aerosol Dry Lubrication) or with dry processing only with air. JetSleeve® 2.0 is a real green-tech product that combines many advantages.

Today there are many processes in mold making that can only be produced by milling with the help of JetSleeve® technology. Until now, these parts and their contours had to be produced by eroding with the detour via the manufacture of electrodes. As a result, it was necessary to reclamp the workpiece to a machine with a different technology. Today, deep cavities, ribs or other filigree contours can be finished milled with JetSleeve®, and this with enormous cost savings. The tool life can be increased by up to 300%, the "soft costs" such as expensive machine downtime make up a multiple of this saving potential.

### **CentroGrip® High Precision ER Collet Chucks:**

Collet chucks as popular tool holders have very good damping properties with good holding forces. This is exactly where technical progress comes in, by offering collet chucks of a new accuracy class under the name CentroGrip®, in which the chuck body must have a concentricity  $<1\mu$  according to the production specification and the collets specially made for this system also have an accuracy of  $<2\mu$ . The clamping nut is manufactured to very high precision with a special thread that does not impair the concentricity of the overall system, so that the cutter runout in 3xD has a concentricity of  $<3\mu$ .



### **CentroGrip® Collet Chucks**

## UltraGrip® and UltraJet® Power Chucks:

Every cutting process is somehow unstable. It may come from the machine, the clamping of the workpiece, the spindle, the tool holder or the cutting tool. We are dedicated to invent vibration-damping tool holders that help to avoid or at least improve unstable processes.



UltraGrip® 3.0



UltraJet 3.0

DIEBOLD UltraGrip® power chucks have been specially developed for heavy-duty machining. Titan, Inconel and Toolox are materials that are used increasingly in many industries. This requires chucks with the highest possible clamping forces, which also have vibration-damping properties due to their design. The combination of high concentricity, paired with the maximum possible clamping force is unique in this form. The complete area of HPC milling with large cutting depths combined with high feed rates and extreme cutting forces is completely covered. In the aerospace industry such clamping devices are required to machine innovative materials. Milling cutter pull-out protection in the chuck is therefore only necessary in extreme border areas.

## UltraJet® 3.0 Kraftspannfutter mit Coolant-Jet-Effekt:



**UltraJet 3.0** Power Chucks are **UltraGrip® 3.0** power chucks with Coolant-Jet-Effekt for effective cooling and lubrication of the cutters and particularly effective removal of the chips generated during milling.



Videos about **UltraGrip® 3.0** and **UltraJet** Power Chucks can be found on youtube at <https://youtu.be/8x2ueeOCm40> or via QR-Code on any mobile devices.

The milling test on a Hermle CNC at the end of the video shows how the chips in the high-performance machining of Toolox 33 material are thrown out of the milling area by the jet effect.

The jet effect ensures that the chips cannot be overrun by the milling cutter. The tool life increases by up to 300 percent and often even more. Titan, Inconel and Toolox 33 are used in many industries. More and more hard, tough or light, yet strong special steels have to be machined in aviation, medical technology, mold making and many other areas of machining and mechanical engineering. Mold makers and aerospace manufacturers who mill high machining volumes and have to cut deep pockets have great benefits with the UltraJet3.0 power chucks. Up to now you always had to deal with chips jam machining in cavities, this problem is now largely solved.

The high clamping forces of the UltraGrip® 3.0 power chucks are also available without restrictions in the UltraJet® 3.0 chuck. Complemented by the internal coolant supply with the nozzles on the front of the chuck, this solution is a huge step towards improved machining. Whether you work with coolant, with MMS or only with air, the UltraJet® 3.0 system always works.

#### **TER Shrink Collets:**

Other innovative clamping devices from Diebold are TER shrink collets with the well-known ER collet contour. Actually, they are not collets but one-piece shrink holders with ER taper, in the user language they are still called shrink collets.



These collets have a concentricity of  $<3 \mu\text{m}$ , so they are manufactured very precisely. Due to their high holding force as a shrink holder, they transmit high torques and they fit into any ER chuck available to the user. Because they have no slots like classic collets, there is no

contamination in the taper. They allow a short exchange time e.g. when used in driven tools or angle milling heads where a cutter change may take 20-30 minutes until automatic mode with good items is reached. With TER shrink collets this only takes 2-3 minutes. Because the cutter can be preset to length during shrinking with the help of a length adjustment adapter, making it much easier and faster to re-enter the machine program.

TER shrink collets are coolant-tight, making them ideal for use with internally cooled tools. Due to their enormous holding power and the good concentricity, they often ensure a productivity increase of 300-600%. You read correctly, this is not a fake number but a saving that has often been proven in practice. Diebold operates approx. 50 CNC machines, we use over 700 TER shrink collets on the turn-mills and machining centers. They have brought a significant productivity improvement over the classic slotted collet.

Areas of application of TER shrink collets:



#### **DMS Diebold Modular System for optimal damping:**

Under the brand name **DMS Diebold Modular System**, we offer a new type of modular system that offers special damping properties thanks to its modular structure. Here too, the ER collet contour comes into play in the modular structure. One-piece shrink chucks are very rigid, their advantage is the very high clamping force with very good concentricity. In dynamic 5-axis milling where radii are driven at high speed with long and slim tools, one-piece shrink chucks are often too "rigid", which can lead to chattering or increased wear of the milling cutters and contour inaccuracies. The DMS Diebold Modular System ensures that the desired damping is reached.



**And there is an additional advantage:** DMS extensions and reductions can be used in any existing ER collet chuck.

You will find a DMS video at:  
<https://youtu.be/Dirunwhq9vU>



## The Diebold Quality-Check

### Diebold Quality-Check of HSK Tool Holder Tapers

Tool Holders with HSK taper are high precision tools that need to be measured periodically. They may have worn out or have been damaged.

We inspect your tool holders according to the DIN-ISO standards:

- Taper dimensions
- Inner contour
- Runout

Why is precision so important?

- Higher output of your machine
- Better work piece quality
- Less spindle wear and service cost

Things to be avoided:

- Machine down time
- Vibrations during machining
- Quality issues
- Service costs



[www.HSK.com](http://www.HSK.com)

Helmut Diebold GmbH & Co. • Goldring-Werkzeugfabrik • An der Sägmühle 4 • 72417 Jungingen  
Tel.: +49 7477 871-0 • E-Mail: info@hsk.com



#### HSK Tool Holder PLUS-CHECK

- Visual inspection
- Clearing of the tapers
- Measuring with digital gauges in air-conditioned environment
- New packaging

What you get:

- Table of all measurements (electronic)
- Marking of 'no-good' tool holders
- Part-ID, No.
- New packaging

#### HSK Tool Holder PLUS-CHECK

- Visual inspection
- Clearing of the tapers
- Measuring with digital gauges in air-conditioned environment
- New packaging

What you get:

- Table of all measurements (electronic)
- Inspection protocol of all tool holders and dimensions (electronic)
- Laser marked serial no.
- Marking of 'no-good' tool holders
- New packaging

*Only the use of tested and certified tool holders that are according to the standards will make your machining accurate and profitable.*

Price table *	BASIC-CHECK (€) per piece	PLUS-CHECK (€) per piece
10	23,30	24,60
50	19,40	21,40
100	17,20	19,90
500	15,00	17,50

\*Minimum quantity: 100 pcs., price increased and added for shipping

Delivery after receipt (working days)

< 100 Stück	= 5 days
100–200 Stück	= 7 days
> 200 Stück	= 10 days



[www.HSK.com](http://www.HSK.com)

Helmut Diebold GmbH & Co. • Goldring-Werkzeugfabrik • An der Sägmühle 4 • 72417 Jungingen  
Tel.: +49 7477 871-0 • E-Mail: info@hsk.com

An important factor for productivity increases is the quality check of your tool holder, which we offer as a service. During this quality check, the tool holders in use are checked and evaluated for accuracy. Experience has shown that, on average, 30% of the tool holders used by users are not or no longer according to the DIN/ISO tolerances. Not to mention better than DIN / ISO.



This service was developed at the customer's request, because there were and still are calls for help from customers because their tool holders and thus their machining processes cause

problems, but the user cannot identify the causes himself. Many customers have asked us to check their stock of tool holders and to evaluate the measurement results in order to be able to make decisions whether these tool holders can be used for the desired machining results or not.

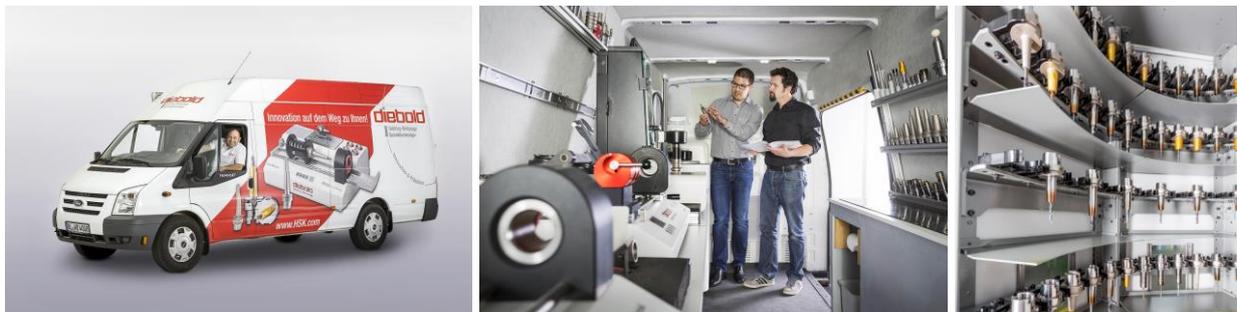
We are happy to carry out these measurements for you. If you are interested and would like to have checked how the condition of your tool holders is, contact please email us at [service@hsk.com](mailto:service@hsk.com) or call 07477-871-712.

So you start looking for the weak points in machining and raise the treasure of cost savings through productivity improvements. We help you with professional expertise. A Quality-check video can be found at: <https://youtu.be/qX1TyF6t2N0> or via QR code on any mobile device.



### Service: Demo-Vans

Our experienced engineers come to your factory with our service and demonstration vehicle and bring the various devices required for this and support. They are experts in analyzing and checking the milling processes, the clamping devices used and the machine spindles. Are you interested? Then you can request our service mobile via [contact@hsk.com](mailto:contact@hsk.com) or simply call us. Our sales and service specialists will be happy to assist you at any time.



Demo Van with Diebold products

### Cost Savings Potential:

With innovative clamping technology, you can always machine more than 5% better, 30% improvements can be achieved without any problems. If you calculate an hourly rate for your machine of € 100 and work in two shifts, you save € 80 a day (16 hours x 5 €, with 5% savings and 100 € hourly rate for the machine). With 200 working days a year the savings add to 16.000 €, only through the use of precision tool holders, **for which you usually do not even have to pay more than for questionable standard quality.**

If you imagine that you can even machine up to 40% better through the consistent use of high-precision chucks, then it is 8 times higher than the previous 5%. With 40% improved machining, the above calculation already shows  $16.000 \times 8 = \text{€ } 128.000$  per year. Calculated over 4 years these savings add to  $\text{€ } 512.000$ , a new machine can be paid in full. Money you can never make with investments in real estate or on the stock exchange.

It is worthwhile for every user to make such a calculation for his processes. We are happy to support and advise you. Because of our expertise in clamping tools, their selection, their optimal use, handling and maintenance, we can help you to significantly improve your milling processes.

### Strong brands stand for high quality products

In the world of tool holders, there are many suppliers, both nationally and internationally, but sometimes with questionable product quality. If you are looking for exceptional quality, then branded products are the first choice. You always get the finest and repeatedly tested branded products from Diebold:



**Goldring-Tool Holders**



**JetSleeve™**



**CentroGrip™**



**UltraGrip™**  
**TubeChiller™**



**UltraJet**



**US1100**



**Diebold Modular System DMS**

**In summary, the USP`s in favor of Diebold's clamping devices:**

1. Innovative branded products with unique selling points
2. Shrinking technology with Pyrometer TempControl for automatic temperature detection
3. Different shrinking machines horizontally and vertically
4. Patented shrinking and cooling technology
5. DMS Diebold Modular System with damping properties
6. JetSleeve™2.0 is the leading solution for innovative machining
7. DMS Modular System with damping properties
8. UltraGrip™3.0 and UltraJet3.0 power chucks with innovative Coolant-Venturi-Effect
9. Production in a fully air-conditioned factory, quality control in class 2 CMM room
10. Guaranteed exact contact of the tool taper with the face contact of the spindle for all Diebold tool holders
11. No loss of clamping force against the face of the spindle because the tool holder tapers are always perfectly ground