



Version 6.1



**REGO-FIX** 









**REGO-FIX**▲

## High-performance toolholding from the inventor of the ER collet

Founded in 1950, REGO-FIX is an internationally active family business with over 350 employees. REGO-FIX, located in Tenniken in the Basel region of Switzerland, has been producing and selling high-precision tool clamping systems for over 75 years.

Sales partners in 50 countries and international subsidiaries ensure global distribution. The products are successfully implemented in the automotive, aerospace, mold and die, machine tool, medical, telecommunications and watchmaking industries.

**A Swiss success story** Its long-term business success is based on promoting employees and enabling them to shape the future together in a fast-paced environment. REGO-FIX

has a great mutual respect and maintains cross-cultural cooperation with the aim of developing innovative toolholding solutions together. Ongoing investments in research and development also lead to constantly new products and ensure a competitive product range. The trademark with the "triangle" is steadily gaining worldwide recognition: Today it is known throughout the industry and stands as a quality label for reliable and innovative products made in Switzerland!





**Products that convince** REGO-FIX unites different toolholding systems: the ER System, nowadays established worldwide as an industry standard according to DIN 6499, is considered to be the original from the inventor. The micRun® MR system is a trend-setting further development of the successful ER System. Thanks to a guaranteed overall system concentricity of  $\leq 3\mu\text{m}$  at  $3\times D$ , it is the perfect solution for all high-performance applications. The powRgrip® system offers excellent concentricity, high vibration damping and simple and safe handling. The uniTec identifies itself as reliable tooling solutions for traditional machining. The common goal of the four systems is to optimize the machining process and to tailor the specific strengths to the individual requirements of modern machining.

**Sustainable and successful** Focused on the future and successful in the long term: REGO-FIX's sustainability strategy is based on a permanent focus on economic, ecological and social aspects. It represents the driver for sustainable corporate development and effectively promotes the corporate vision.



**Driving innovations for over 75 years**

Since 1950, we turn innovative thoughts into revolutionary products.



**Standing together makes us stronger** We manufacture products we can be proud of. Together we aim for excellence in every step we take: from the inspiring idea to the finished product.



**Supreme Swiss quality standard** Our products marked Swiss made are designed and manufactured at our headquarters in Tenniken, Switzerland.

# Your application is our motivation

**Rediscover modern machining** Experience high-performance machining thanks to powRgrip®'s excellent runout, high vibration damping and easy as well as secure handling. Enjoy the advantages for high speeds, difficult-to-handle work materials and generally demanding applications.



**The original from the inventor** When REGO-FIX first introduced the ER System in 1972, it took the machining world by storm. With the DIN 6499 standardization twenty years later, the REGO-FIX ER collet became the industry standard. Today, the ER System is still the most used toolholding system.



**The logical evolution** A grooveless clamping nut for optimal vibration and a total system runout of  $\leq 3\mu\text{m}$  at 3xD offer incomparable precision in a collet-based system. The inventor reinvents the ER collet.



**Tradition is a matter of class** The outstanding product design paired with our experienced engineering offer a wide program of toolholders for traditional machining applications. No compromise for highest quality needs.



**Making precision measurable** Precision is the foundation of high-quality machining. Our solutions make process reliability measurable: concentricity, clamping forces and tool positions are recorded reliably. Our measurement systems are optimally matched to production, intuitive, robust and uncompromisingly precise – for maximum performance in the clamping process.



**Cleanliness for maximum performance** Precision starts at the interface. Our products ensure clean connections between the tool and clamping system – the basis for consistent clamping force, maximum concentricity and long tool life. Dust, oil residues and microparticles are quickly, effectively and reliably removed.



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## ER System

|                  |     |
|------------------|-----|
| ER Toolholder    | 91  |
| ER Collets       | 159 |
| ER Clamping nuts | 189 |

## micRun® System

|                       |     |
|-----------------------|-----|
| micRun® Toolholder    | 225 |
| micRun® Collets       | 243 |
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|                   |     |
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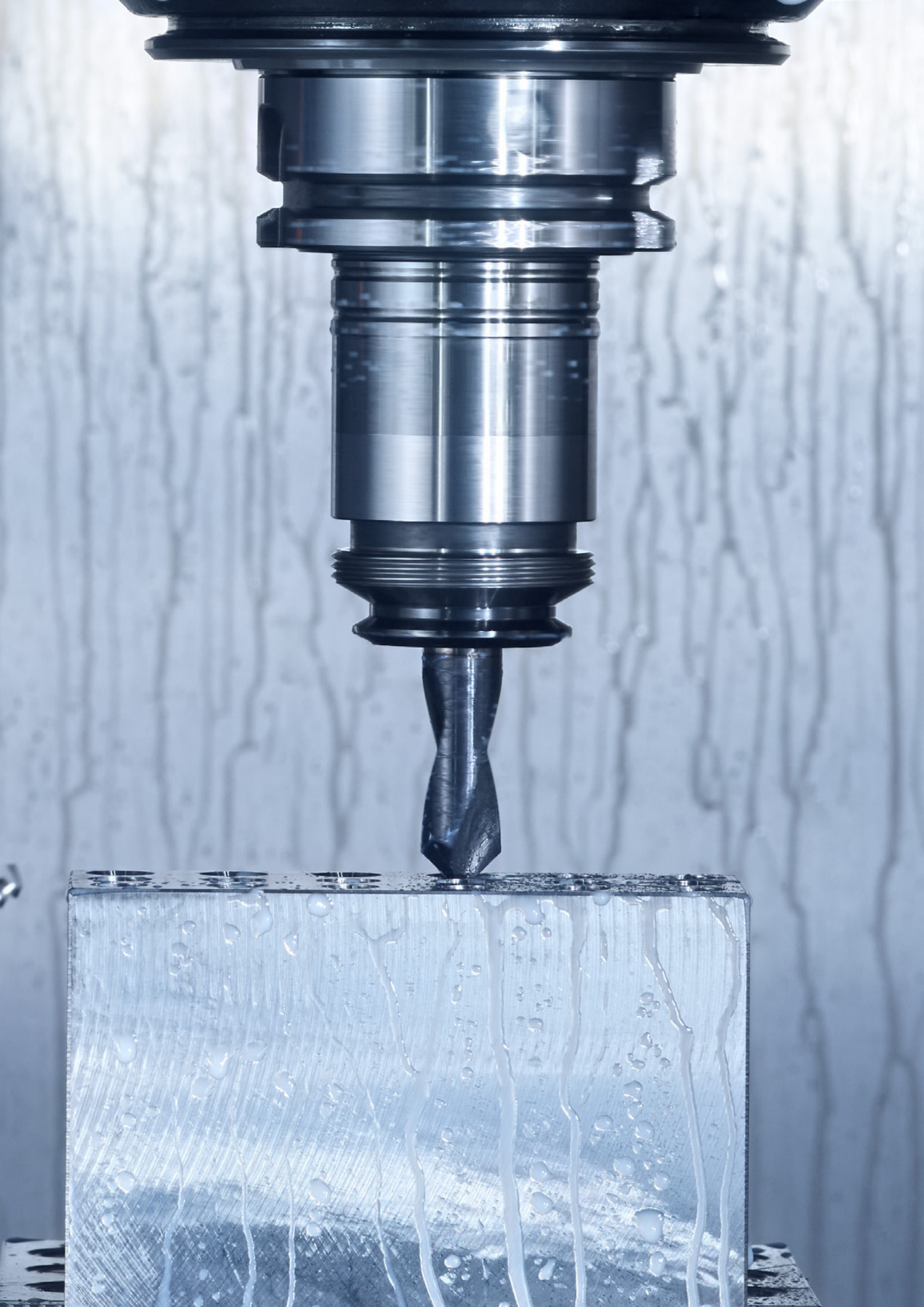
## Cleaning / Accessories

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## Technical information

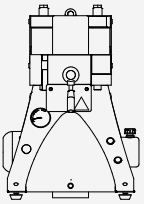
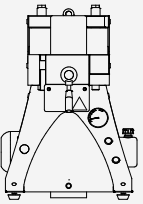
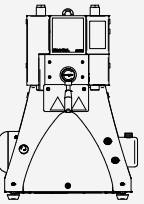
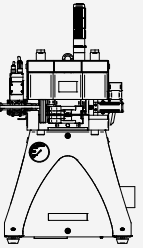
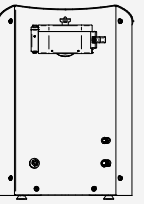
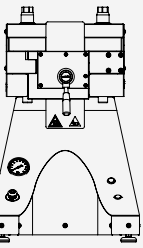
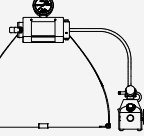
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# Experience the extensive powRgrip® offering

## Clamping units

| PGU 9500                                                                          | PGU 9800                                                                          | PGU 9900 <sup>neo</sup>                                                           | PGA 9500                                                                          | PGS 10 15 25                                                                       | PGS 48                                                                              | PGC 2506                                                                            |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
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## Standard

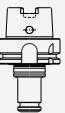
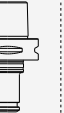
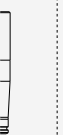
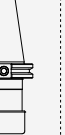
## Cylindrical collet- holders

## Pullout protection secuRgrip®

## Colletholders for tapping

## Grinding spindles

## Collet adapters

| HSK/<br>PG                                                                          | SK/<br>PG                                                                           | BT/<br>PG                                                                           | CAT/<br>PG                                                                          | CAPTO/<br>PG                                                                        | ISO 20/<br>PG                                                                       | CYL/<br>PG                                                                          | PG-SG                                                                               | HSK-A<br>SSY                                                                          | CYL SSY<br>CYL GSF                                                                    | HJNZ                                                                                  | PST, WTO,<br>EWS, MT                                                                  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
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| Micro-machining                                                                     | Standard                                                                            | Cooling                                                                             |                                                                                     | MMS                                                                                 | Long shanks                                                                         | Short shanks                                                                        | Pullout protection<br>secuRgrip®                                                    | Collets for tapping                                                                   | Sealed collet head                                                                    | Extra-short collets                                                                   |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| PG-MB                                                                               | PG                                                                                  | PG-CF                                                                               | PG-CB                                                                               | PG-MQL-N                                                                            | PG-L                                                                                | PG-S                                                                                | PG-SG                                                                               | PG-TAP                                                                                | PG-SC                                                                                 | PGST                                                                                  |
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# Precision and optimum vibration dampening saves time and money

**Ambitious toolholding** Thanks to the unique clamping method, the clamped tools can be used in production quickly and safely. The advanced technology not only increases the work safety for the user, but also reflects our ecological thinking, which manifests itself – among other things – through low energy consumption during the clamping process. The clamping unit clamps the powRgrip® collet into the toolholder with high force.

The pressure fit provided between the collet and toolholder creates a radial force, which is concentrated on the tool shank via the slotted collet and holds the tool safely and with a high degree of concentricity.

## The powRgrip® System consists of:

- // High-precision powRgrip® collet
- // powRgrip® toolholder
- // powRgrip® clamping unit (automatic or manual)

## How the powRgrip® System works

- // Insert the cutting tool into the powRgrip® collet
- // Insert the powRgrip® collet into the powRgrip® toolholder
- // Clamp collet and cutting tool into the powRgrip® toolholder with a powRgrip® clamping unit PGU (automatic) or PGC (manual)



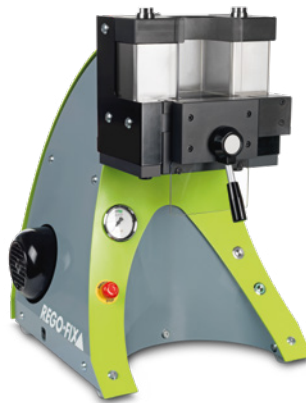
Cutting tool



powRgrip® collet



powRgrip® toolholder



Automatic clamping unit



Manual clamping unit



# Toolholding made fast, safe and easy

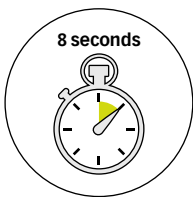
The clamping unit PGU 9500 has been awarded the Red Dot design award for industrial design, highlighting the good usability and outstanding design of the machine.



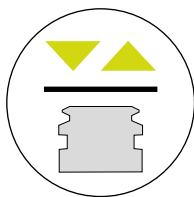
reddot award  
honourable mention industrial design



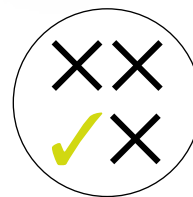
## Key advantages



Clamp the tool safely and securely by pushing just one button. The clamping will take 8 seconds, without the use of heat.



Clamp tools with maximum clamping force and best runout in the powRgrip® collet and toolholder.



Smart System – no setting of parameters required. Clamping pressure is controlled by the insertion of the respective clamping insert (APG). There are five clamping inserts (APG) available for the clamping of different collet sizes.

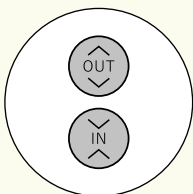
# powRgrip® clamping unit PGU 9500

The **PGU 9500** is designed for maximum precision and efficiency, ensuring consistently high clamping force and optimal process reliability. It operates without heat, improving operator safety and reflecting the company's environmental commitment. Thanks to its unique clamping method, clamped tool

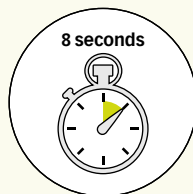
holders can be quickly and safely used in production. With extremely precise concentricity and system-based vibration damping, the powRgrip® system extends tool life while saving time and costs.



## Key advantages



**Simple 2-button operation:**  
Intuitive handling for maximum efficiency.



**Ready-to-use tools in 8 seconds:**  
Fast and precise tool clamping.



**No heat, no toxic fumes:**  
Safe clamping process without health risks for the operator.



**Best-selling PGU:**  
Proven technology with top customer satisfaction.

# Automatic clamping unit PGU 9500

## Clamping inserts APG's for PGU 9500

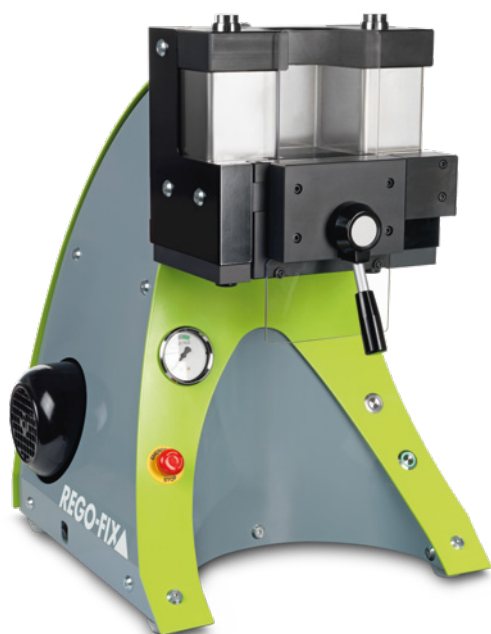
PGU 9500

APG

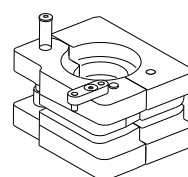
| Type            | Part no.   | Dimensions W x D x H [mm] | Weight [kg] | V / Hz               |
|-----------------|------------|---------------------------|-------------|----------------------|
| <b>PGU 9500</b> |            |                           |             |                      |
| PGU 9500 E      | 7610.95000 | 555 x 454 x 648           | 87          | Europe 230V / 50Hz   |
| PGU 9500 A      | 7610.95100 | 555 x 454 x 648           | 91          | USA 115V / 60Hz      |
| PGU 9500 J      | 7610.95200 | 555 x 454 x 648           | 91          | Japan 100V / 50-60Hz |

Clamping inserts APG not included

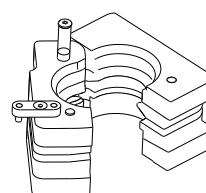
| Type                                             | Part no.   | Dimensions W x D x H [mm] | Weight [kg] | Use for |
|--------------------------------------------------|------------|---------------------------|-------------|---------|
| <b>Clamping inserts APG (incl. TKCP and CPS)</b> |            |                           |             |         |
| APG 906                                          | 7611.06900 | 100 x 95 x 80             | 3           | PG 6    |
| APG 910                                          | 7611.10900 | 100 x 95 x 80             | 3           | PG 10   |
| APG 915                                          | 7611.15900 | 100 x 95 x 80             | 3           | PG 15   |
| APG 925                                          | 7611.25900 | 100 x 95 x 80             | 3           | PG 25   |
| APG 932                                          | 7611.32900 | 100 x 95 x 80             | 3           | PG 32   |



PGU 9500



APG (closed)



APG (opened)



# powRgrip® clamping unit PGU 9800

The **PGU 9800** from REGO-FIX is the logical advancement of the proven PGU 9500, setting new standards in tool clamping technology. Featuring an integrated LED touchscreen display

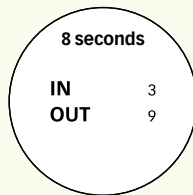
instead of a pressure gauge, it offers even easier operation, monitoring, and analysis.



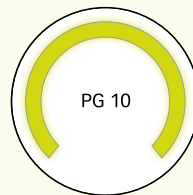
## Key advantages



**LED touchscreen display:**  
Displays key information, statistics, and error messages



**Helpful usage statistics:**  
Fast and precise tool clamping.



**Display of used PG size:**  
Clear information for more efficient use.



**Easily identifiable error codes:**  
Faster error diagnosis



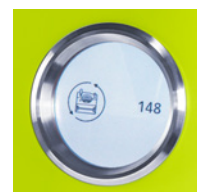
Start screen



"IN" cycles per PG size



Number of mode changes



Total APG changes

# Automatic clamping unit PGU 9800

## Clamping inserts APG's for PGU 9800

PGU 9800

APG

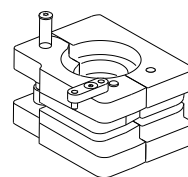
| Type            | Part no.   | Dimensions W x D x H [mm] | Weight [kg] | V / Hz               |
|-----------------|------------|---------------------------|-------------|----------------------|
| <b>PGU 9800</b> |            |                           |             |                      |
| PGU 9800 E      | 7610.98000 | 555 x 454 x 648           | 90          | Europe 230V / 50Hz   |
| PGU 9800 A      | 7610.98100 | 555 x 454 x 648           | 95          | USA 115V / 60Hz      |
| PGU 9800 J      | 7610.98200 | 555 x 454 x 648           | 95          | Japan 100V / 50-60Hz |

Clamping inserts APG not included

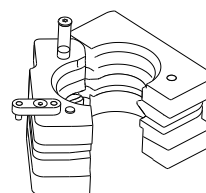
| Type                                             | Part no.   | Dimensions W x D x H [mm] | Weight [kg] | Use for |
|--------------------------------------------------|------------|---------------------------|-------------|---------|
| <b>Clamping inserts APG (incl. TKCP and CPS)</b> |            |                           |             |         |
| APG 906                                          | 7611.06900 | 100 x 95 x 80             | 3           | PG 6    |
| APG 910                                          | 7611.10900 | 100 x 95 x 80             | 3           | PG 10   |
| APG 915                                          | 7611.15900 | 100 x 95 x 80             | 3           | PG 15   |
| APG 925                                          | 7611.25900 | 100 x 95 x 80             | 3           | PG 25   |
| APG 932                                          | 7611.32900 | 100 x 95 x 80             | 3           | PG 32   |



PGU 9800



APG (closed)



APG (opened)

# powRgrip® clamping unit PGU 9900<sup>neo</sup>

The PGU 9900<sup>neo</sup> is the first AI-supported powRgrip® clamping unit from REGO-FIX. Thanks to the internet connection, the clamping process is analyzed by our AI in the cloud, and feedback regarding the clamping quality is provided within seconds on the PGU 9900<sup>neo</sup>. If your system is not properly

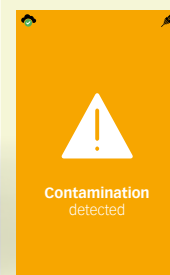
cleaned, damaged, or if other factors affect correct clamping, this is detected by our AI in the cloud and the PGU 9900<sup>neo</sup> is informed. A clamping operation with optimal quality is confirmed by the ULTRA Press symbol, giving you full confidence in the clamping force and system runout.



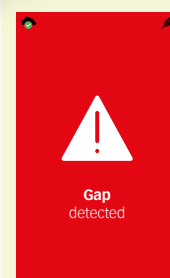
Start screen



Confirmation



Notice

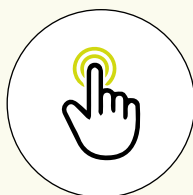


Warning

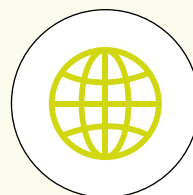
## Key advantages



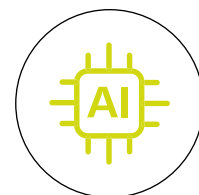
Fulfilled clamping, ensuring highest clamping force at lowest TIR runout – Guaranteed!



Touchscreen display to interact, access data and get video tutorials



Go online by Ethernet, Wi-Fi or LTE/Mobile Network and access your personal dashboard to manage stats, permission groups, charts and cycle information



AI with deep learning technology for best data prediction supported by the REGO-FIX cloud service

# Automatic clamping unit PGU 9900<sup>neo</sup>

## Clamping inserts APG's for PGU 9900<sup>neo</sup>

PGU 9900<sup>neo</sup>

APG

powRgrip®

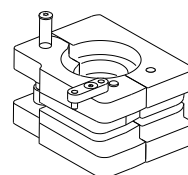
| Type                          | Part no.   | Dimensions W x D x H [mm] | Weight [kg] | V / Hz               |
|-------------------------------|------------|---------------------------|-------------|----------------------|
| <b>PGU 9900<sup>neo</sup></b> |            |                           |             |                      |
| PGU 9900 <sup>neo</sup> E     | 7610.99000 | 555 x 454 x 648           | 90          | Europe 230V / 50Hz   |
| PGU 9900 <sup>neo</sup> A     | 7610.99100 | 555 x 454 x 648           | 95          | USA 115V / 60Hz      |
| PGU 9900 <sup>neo</sup> J     | 7610.99200 | 555 x 454 x 648           | 95          | Japan 100V / 50-60Hz |

Clamping inserts APG not included

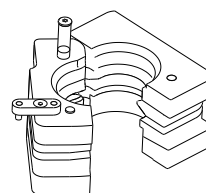
| Type                                             | Part no.   | Dimensions W x D x H [mm] | Weight [kg] | Use for |
|--------------------------------------------------|------------|---------------------------|-------------|---------|
| <b>Clamping inserts APG (incl. TKCP and CPS)</b> |            |                           |             |         |
| APG 906                                          | 7611.06900 | 100 x 95 x 80             | 3           | PG 6    |
| APG 910                                          | 7611.10900 | 100 x 95 x 80             | 3           | PG 10   |
| APG 915                                          | 7611.15900 | 100 x 95 x 80             | 3           | PG 15   |
| APG 925                                          | 7611.25900 | 100 x 95 x 80             | 3           | PG 25   |
| APG 932                                          | 7611.32900 | 100 x 95 x 80             | 3           | PG 32   |



PGU 9900<sup>neo</sup>



APG (closed)



APG (opened)



# powRgrip® clamping unit PGA 9500

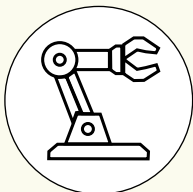
The clamping unit with Ethernet interface for automation systems

**The PGA 9500** from REGO-FIX is the powRgrip® clamping unit specifically developed for integration into modern automation solutions. Bidirectional communication with machine controls

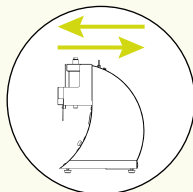
and higher-level automation systems is provided via Ethernet using the OPC UA protocol.



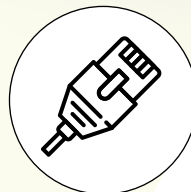
## Key advantages



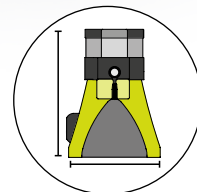
**Compatible with robots:**  
The PGA 9500 can be easily integrated into robotic automation systems, offering maximum flexibility.



**Pneumatic or electronic door opening mechanism:**  
Choose between a pneumatic or electronic mechanism for fast and secure opening of the clamping device.



**Bidirectional communication via Ethernet, OPC UA protocol:**  
The PGA 9500 enables reliable bidirectional communication via Ethernet and the standard OPC UA protocol for precise real-time control.



**Compact size – Easy installation:**  
The compact design allows easy integration into existing automation systems with minimal space requirements.

# Automatic clamping unit PGA 9500

## Clamping inserts APG's for PGA 9500

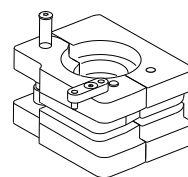
| Type            | Part no.   | Dimensions W x D x H [mm] | Weight [kg] | V / Hz               |
|-----------------|------------|---------------------------|-------------|----------------------|
| <b>PGA 9500</b> |            |                           |             |                      |
| PGA 9500 E      | 7630.95000 | 458 x 625 x 797           | 95          | Europe 230V / 50Hz   |
| PGA 9500 A      | 7630.95100 | 458 x 625 x 797           | 95          | USA 115V / 60Hz      |
| PGA 9500 J      | 7630.95200 | 458 x 625 x 797           | 95          | Japan 100V / 50-60Hz |

Clamping inserts APG not included

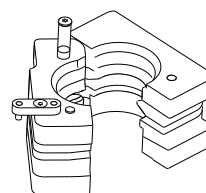
| Type                                             | Part no.   | Dimensions W x D x H [mm] | Weight [kg] | Use for |
|--------------------------------------------------|------------|---------------------------|-------------|---------|
| <b>Clamping inserts APG (incl. TKCP and CPS)</b> |            |                           |             |         |
| APG 906                                          | 7611.06900 | 100 x 95 x 80             | 3           | PG 6    |
| APG 910                                          | 7611.10909 | 100 x 95 x 80             | 3           | PG 10   |
| APG 915                                          | 7611.15900 | 100 x 95 x 80             | 3           | PG 15   |
| APG 925                                          | 7611.25900 | 100 x 95 x 80             | 3           | PG 25   |
| APG 932                                          | 7611.32900 | 100 x 95 x 80             | 3           | PG 32   |



PGA 9500



APG (closed)



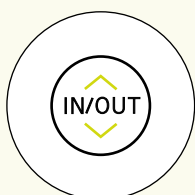
APG (opened)

# powRgrip® clamping unit PGS 10|15|25

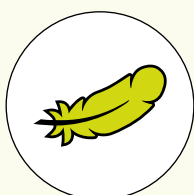
The automatic powRgrip® clamping units for efficient clamping of single powRgrip® sizes



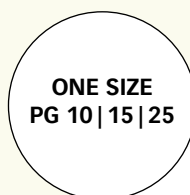
## Key advantages



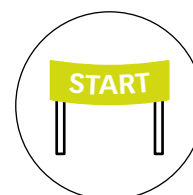
**Simple one-button operation:**  
Tool clamping in just 5 seconds for maximum efficiency.



**Lightweight and compact:**  
Less than 50 kg total weight for flexible use.



**Optimized for single sizes:**  
Perfectly matched to a defined powRgrip® size PG 10 / PG 15 or PG 25.



**Automatic entry-level unit:**  
Fully automatic clamping solution for simple and safe operation.

# Automatic clamping unit PGS 10|15|25

| Type          | Part no.   | Dimensions W x D x H [mm] | Weight [kg] | V / Hz               |
|---------------|------------|---------------------------|-------------|----------------------|
| <b>PGS 10</b> |            |                           |             |                      |
| PGS 10 E      | 7640.10000 | 406 x 531 x 591           | 48          | Europe 230V / 50Hz   |
| PGS 10 A      | 7640.10100 | 406 x 531 x 591           | 48          | USA 115V / 60Hz      |
| PGS 10 J      | 7640.10200 | 406 x 531 x 591           | 48          | Japan 100V / 50-60Hz |
| <b>PGS 15</b> |            |                           |             |                      |
| PGS 15 E      | 7640.15000 | 406 x 531 x 591           | 48          | Europe 230V / 50Hz   |
| PGS 15 A      | 7640.15100 | 406 x 531 x 591           | 48          | USA 115V / 60Hz      |
| PGS 15 J      | 7640.15200 | 406 x 531 x 591           | 48          | Japan 100V / 50-60Hz |
| <b>PGS 25</b> |            |                           |             |                      |
| PGS 25 E      | 7640.25000 | 406 x 531 x 591           | 48          | Europe 230V / 50Hz   |
| PGS 25 A      | 7640.25100 | 406 x 531 x 591           | 48          | USA 115V / 60Hz      |
| PGS 25 J      | 7640.25200 | 406 x 531 x 591           | 48          | Japan 100V / 50-60Hz |



PGS 10/15/25



# powRgrip® clamping unit PGS 48

The automatic clamping unit for large diameters



All PG 48 tool holders are supplied with a secuRgrip® nut.

## Key advantages



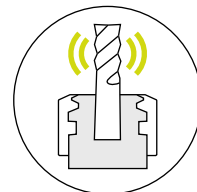
**Process-reliable clamping of tools up to Ø 40 mm in just 20 seconds:**  
Fast and reliable tool clamping for maximum efficiency.



**Energy-efficient with large tools:**  
Low power consumption during both clamping and unclamping.



**Maximum clamping force for high torques:**  
Transmittable torque up to 2000 Nm for demanding machining tasks.



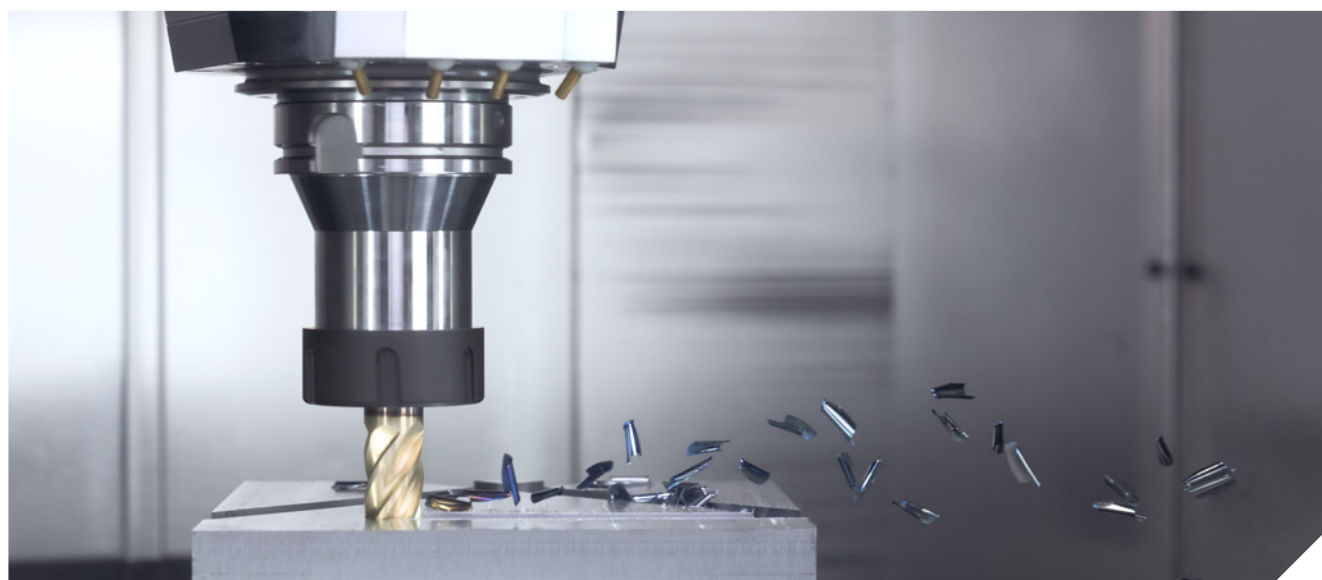
**Optimal vibration damping through collet technology:**  
Reduces vibrations and improves surface quality and tool life.

## Automatic clamping unit PGS 48

| Type          | Part no.   | Dimensions W x D x H [mm] | Weight [kg] | V / Hz               |
|---------------|------------|---------------------------|-------------|----------------------|
| <b>PGS 48</b> |            |                           |             |                      |
| PGS 48 E      | 7640.48000 | 495 x 705 x 758           | 160         | Europe 230V / 50Hz   |
| PGS 48 A      | 7640.48100 | 495 x 705 x 758           | 160         | USA 115V / 60Hz      |
| PGS 48 J      | 7640.48200 | 495 x 705 x 758           | 160         | Japan 100V / 50-60Hz |



PGS 48

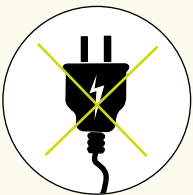


# powRgrip® clamping unit PGC 2506

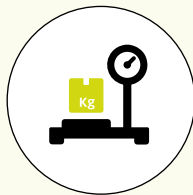
The manual clamping unit – ideal for mobile use and smaller workshops.



## Key advantages



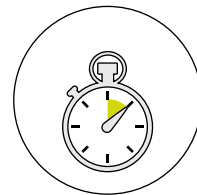
**No electrical connection required:**  
Independent of power sources, perfect for flexible applications.



**Lightweight and mobile:**  
Low weight for easy handling and versatile use.



**System benefits at the best price:**  
The manual clamping unit PGC 2506 offers all the benefits of powRgrip® at the most attractive price.



Ready-to-use tools in 30 seconds

# Manual clamping unit PGC 2506

## Clamping inserts APC's for PGC 2506

| Type         | Part no.   | Dimensions W x D x H [mm] | Weight [kg] |
|--------------|------------|---------------------------|-------------|
| <b>PGC</b>   |            |                           |             |
| SET PGC 2506 | 7621.25069 | 578 x 420 x 43            | 18,2        |

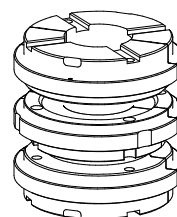
*Includes clamping unit, hand pump and stand. APC not included*

| Type                                             | Part no.   | Dimensions Ø [mm] | Weight [kg] | Use for |
|--------------------------------------------------|------------|-------------------|-------------|---------|
| <b>Clamping inserts APC (incl. TKCP and CPS)</b> |            |                   |             |         |
| APC 6*                                           | 7622.06000 | 30 x 60           | 0,8         | PG 6    |
| APC 10                                           | 7622.10000 | 30 x 60           | 0,8         | PG 10   |
| APC 15                                           | 7622.15000 | 30 x 60           | 0,8         | PG 15   |
| APC 25                                           | 7622.25000 | 30 x 60           | 0,8         | PG 25   |

*\*APC 6 is only suited for SET PGC 2506. All other APC's can be used for SET PGC 2506 and 2510*



PGC 2506



APC



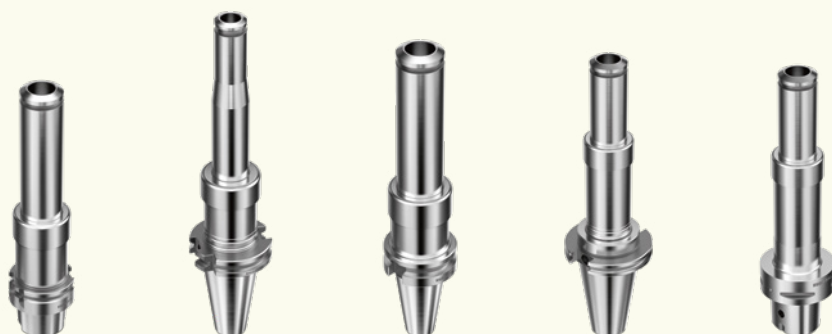
| Standard                                                                          |                                                                                   |                                                                                   |                                                                                   |                                                                                   | Cylindrical<br>collet-<br>holders                                                 | Pullout<br>protection<br>secuRgrip®                                               | Colletholders<br>for tapping                                                      | Grinding<br>spindles                                                                | Collet<br>adapters                                                                  |                                                                                     |                                                                                     |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| HSK/<br>PG                                                                        | SK/<br>PG                                                                         | BT/<br>PG                                                                         | CAT/<br>PG                                                                        | CAPTO/<br>PG                                                                      | ISO 20/<br>PG                                                                     | CYL/<br>PG                                                                        | PG-SG                                                                             | HSK-A<br>SSY                                                                        | CYL SSY<br>CYL GSF                                                                  | HJNZ                                                                                | PST, WTO,<br>EWS, MT                                                                |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Page 24                                                                           | Page 32                                                                           | Page 38                                                                           | Page 46                                                                           | Page 50                                                                           | Page 53                                                                           | Page 54                                                                           | Page 56                                                                           | Page 60                                                                             | Page 60                                                                             | Page 62                                                                             | Page 64                                                                             |



# powRgrip® toolholders in Swiss quality



|                     | <b>HSK/PG</b>                      | <b>SK/PG</b>                       | <b>BT/PG</b>                       | <b>CAT/PG</b>                      | <b>CAPTO/PG</b>                    |
|---------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|
| Norm                | DIN 69893                          | DIN 69871                          | MAS 403<br>JIS B 6339              | ASME B5.50                         | –                                  |
| ISO                 | ISO 12164                          | ISO 7388-1                         | ISO 7388-2                         | –                                  | ISO 26623                          |
| Balancing           | G 2,5 @<br>25,000 rpm<br>or ≤1 gmm | G 2,5 @<br>25,000 rpm<br>or ≤1 gmm | G 2,5 @<br>25,000 rpm<br>or ≤1 gmm | G 2,5 @<br>25,000 rpm<br>or ≤1 gmm | G 2,5 @<br>25,000 rpm<br>or ≤1 gmm |
| Chip hole           | HSK-A                              | •                                  | –                                  | •                                  | –                                  |
| Runout TIR          | ≤0,003 mm                          | ≤0,003 mm                          | ≤0,003 mm                          | ≤0,003 mm                          | ≤0,003 mm                          |
| Taper accuracy      | DIN ISO                            | AT3                                | AT3                                | AT3                                | ISO 26623                          |
| Form A + AD         | –                                  | •                                  | •                                  | •                                  | –                                  |
| Form AD + B         | –                                  | optional                           | optional                           | optional                           | –                                  |
| secuRgrip®          | optional                           | optional                           | optional                           | optional                           | optional                           |
| REGO-PLUS available | –                                  | •                                  | •                                  | •                                  | –                                  |



|                | <b>HSK-A / PG XL</b> | <b>SK / PG XL</b>    | <b>BT / PG XL</b>     | <b>CAT / PG XL</b>   | <b>CAPTO / PG XL</b> |
|----------------|----------------------|----------------------|-----------------------|----------------------|----------------------|
| Norm           | DIN 69893            | DIN 69871            | MAS 403<br>JIS B 6339 | ASME B5.50           | –                    |
| ISO            | ISO 12164            | ISO 7388-1           | ISO 7388-2            | –                    | ISO 26623            |
| Balancing      | G 2,5 @<br>5,000 rpm | G 2,5 @<br>5,000 rpm | G 2,5 @<br>5,000 rpm  | G 2,5 @<br>5,000 rpm | G 2,5 @<br>5,000 rpm |
| Chip hole      | HSK-A                | •                    | –                     | –                    | –                    |
| Runout TIR     | ≤0,01 mm             | ≤0,01 mm             | ≤0,01 mm              | ≤0,01 mm             | ≤0,01 mm             |
| Taper accuracy | DIN ISO              | AT3                  | AT3                   | AT3                  | ISO 26623            |
| MFD*           | •                    | •                    | •                     | •                    | •                    |
| Form A + AD    | –                    | •                    | •                     | •                    | –                    |
| Form AD + B    | –                    | optional             | optional              | optional             | –                    |
| secuRgrip®     | optional             | optional             | optional              | optional             | optional             |

\*Micro friction dampening technology

# HSK toolholders

Designed for rotating applications, all our HSK toolholders are suited for high-speed applications where consistent performance is key.

DIN 69893/ISO 12164

## Features and benefits

### Total system runout TIR $\leq 3 \mu\text{m}$ @ 3xD

Our holistic system consists of a powRgrip® toolholder and collet. All components together ensure best runout and accuracy.

### Toolholder runout TIR $\leq 1 \mu\text{m}$

Measured from collet cavity to outer taper.

### Surface finish max. Ra 0.25

Achieve high clamping force and high transferable torque.

### Hi-Q® balancing system

REGO-FIX HSK/PG toolholders are balanced to G 2.5 @ 25,000 rpm / <1gmm. Type H toolholders are ready to accept Hi-Q® balancing rings which allow precision-balancing of the system including cutting tool up to 80,000 rpm depending on the balancing rings used.

### XL toolholders

Runout TIR  $\leq 10 \mu\text{m}$

100% balanced to G 2.5 @ 5,000 rpm.

### Vibration damping

Our holders offer excellent vibration damping to sustain a high surface finish and can prevent cutting force alterations.

### Matched tooling system for best fit

For highest precision and best results the entire machining system counts. Therefore our components are carefully matched for optimum fit and accuracy. This guarantees the best runout and balance.

### ID chip hole (only HSK form A)

In accordance with DIN 69873 for 10 mm diameter. Other HSK-forms available on request.

Accessories are not included in delivery. Other XL sizes available on request.

### Balancing specifications

|                 |                        |
|-----------------|------------------------|
| HSK-EZ / ATC 15 | balanced to 90,000 rpm |
| HSK 20          | balanced to 90,000 rpm |
| HSK 25          | balanced to 90,000 rpm |
| HSK 32          | balanced to 60,000 rpm |
| HSK 40          | balanced to 45,000 rpm |
| HSK 50          | balanced to 36,000 rpm |
| HSK 63          | G 2.5 @ 25,000 rpm     |
| HSK 80          | G 2.5 @ 25,000 rpm     |
| HSK 100         | G 2.5 @ 25,000 rpm     |
| HSK 125         | G 2.5 @ 25,000 rpm     |



### Expert advice

For all HSK-A and HSK-E form toolholders a range of coolant tubes (KSR) is available.

For KSR part numbers please refer to page 345.

# HSK-A toolholders

| HSK-AB     | HSK-A     |
|------------|-----------|
| ISO 12164  | DIN 69893 |
| compatible | ISO 12164 |

| Type                    | Part no.   | Dimensions [mm] |     |     |     |     |     | Accessory |
|-------------------------|------------|-----------------|-----|-----|-----|-----|-----|-----------|
|                         |            | BD1             | BD2 | BD3 | LPR | LB1 | LB2 | FWR *     |
| HSK-A 32                |            |                 |     |     |     |     |     |           |
| HSK-A 32/PG 10 x 060    | 2532.71020 | 16              | –   | –   | 60  | –   | –   | –         |
| HSK-A 32/PG 15 x 075    | 2532.71530 | 24              | –   | –   | 75  | –   | –   | –         |
| HSK-A 40                |            |                 |     |     |     |     |     |           |
| HSK-A 40/PG 6 x 048     | 2540.70610 | 10              | –   | –   | 48  | –   | –   | –         |
| HSK-A 40/PG 6 x 080 H   | 4540.70640 | 10              | –   | –   | 80  | –   | –   | 225       |
| HSK-A 40/PG 10 x 062    | 2540.71020 | 16              | –   | –   | 62  | –   | –   | –         |
| HSK-A 40/PG 10 x 080 H  | 4540.71040 | 16              | –   | –   | 80  | –   | –   | 225       |
| HSK-A 40/PG 10 x 100 H  | 4540.71050 | 16              | –   | –   | 100 | –   | –   | 225       |
| HSK-A 40/PG 10 x 120 H  | 4540.71060 | 16              | –   | –   | 120 | –   | –   | 225       |
| HSK-A 40/PG 15 x 074    | 2540.71530 | 24              | –   | –   | 74  | –   | –   | –         |
| HSK-A 40/PG 15 x 080 H  | 4540.71540 | 24              | –   | –   | 80  | –   | –   | 285       |
| HSK-A 40/PG 15 x 100    | 4540.71550 | 24              | –   | –   | 100 | –   | –   | –         |
| HSK-A 40 / PG 25 x 090  | 2540.72540 | 40              | –   | –   | 90  | –   | –   | –         |
| HSK-A 40/PG 25 x 100 H  | 4540.72550 | 40              | –   | –   | 100 | –   | –   | 405       |
| HSK-A 50                |            |                 |     |     |     |     |     |           |
| HSK-A 50/PG 10 x 080 H  | 4550.71040 | 16              | –   | –   | 80  | –   | –   | 285       |
| HSK-A 50/PG 10 x 100 H  | 4550.71050 | 16              | –   | –   | 100 | –   | –   | 285       |
| HSK-A 50/PG 10 x 120 H  | 4550.71060 | 16              | –   | –   | 120 | –   | –   | 285       |
| HSK-A 50/PG 15 x 080 H  | 4550.71540 | 24              | –   | –   | 80  | –   | –   | 285       |
| HSK-A 50/PG 25 x 090 NL | 2550.72540 | 40              | –   | –   | 90  | –   | –   | –         |
| HSK-A 50/PG 25 x 100 H  | 4550.72550 | 40              | –   | –   | 100 | –   | –   | 405       |
| HSK-A 63                |            |                 |     |     |     |     |     |           |
| HSK-A 63/PG 6 x 080 H   | 4563.70640 | 10              | –   | –   | 80  | –   | –   | 225       |
| HSK-A 63/PG 10 x 080 H  | 4563.71040 | 16              | –   | –   | 80  | –   | –   | 325       |
| HSK-A 63/PG 10 x 100 H  | 4563.71050 | 16              | –   | –   | 100 | –   | –   | 325       |
| HSK-A 63/PG 10 x 120 H  | 4563.71060 | 16              | –   | –   | 120 | –   | –   | 325       |
| HSK-A 63/PG 10 x 160 H  | 4563.71080 | 16              | –   | –   | 160 | –   | –   | 325       |
| HSK-A 63/PG 10 x 200 H  | 4563.71090 | 16              | –   | –   | 200 | –   | –   | 325       |
| HSK-A 63/PG 10 x 240 XL | 8865.71070 | 16              | 28  | 46  | 240 | 31  | 140 | –         |
| HSK-A 63/PG 10 x 260 XL | 8865.71090 | 16              | 28  | 46  | 260 | 31  | 140 | –         |
| HSK-A 63/PG 10 x 300 XL | 8865.71130 | 16              | 28  | 46  | 300 | 31  | 140 | –         |
| HSK-A 63/PG 10 x 340 XL | 8865.71170 | 16              | 28  | 46  | 340 | 31  | 240 | –         |
| HSK-A 63/PG 10 x 360 XL | 8865.71190 | 16              | 28  | 46  | 360 | 31  | 240 | –         |
| HSK-A 63/PG 10 x 400 XL | 8865.71230 | 16              | 28  | 46  | 400 | 31  | 240 | –         |
| HSK-A 63/PG 15 x 080 H  | 4563.71540 | 24              | –   | –   | 80  | –   | –   | 325       |
| HSK-A 63/PG 15 x 100 H  | 4563.71550 | 24              | –   | –   | 100 | –   | –   | 325       |
| HSK-A 63/PG 15 x 120 H  | 4563.71560 | 24              | –   | –   | 120 | –   | –   | 325       |
| HSK-A 63/PG 15 x 160 H  | 4563.71580 | 24              | –   | –   | 160 | –   | –   | 325/285   |
| HSK-A 63/PG 15 x 200 H  | 4563.71590 | 24              | –   | –   | 200 | –   | –   | 325/285   |
| HSK-A 63/PG 15 x 240 XL | 8865.73070 | 24              | 28  | 46  | 240 | 55  | 140 | –         |
| HSK-A 63/PG 15 x 260 XL | 8865.73090 | 24              | 28  | 46  | 260 | 55  | 140 | –         |

\*Balancing rings H: Ready to accept balancing rings



# HSK-A toolholders

| HSK-AB     | HSK-A     |
|------------|-----------|
| ISO 12164  | DIN 69893 |
| compatible | ISO 12164 |

| Type                        | Part no.   | Dimensions [mm] |     |     |     |     |     | Accessory |
|-----------------------------|------------|-----------------|-----|-----|-----|-----|-----|-----------|
|                             |            | BD1             | BD2 | BD3 | LPR | LB1 | LB2 | FWR *     |
| HSK-A 63/PG 15 x 300 XL     | 8865.73130 | 24              | 28  | 46  | 300 | 55  | 140 | –         |
| HSK-A 63/PG 15 x 340 XL     | 8865.73170 | 24              | 28  | 46  | 340 | 55  | 240 | –         |
| HSK-A 63/PG 15 x 360 XL     | 8865.73190 | 24              | 28  | 46  | 360 | 55  | 240 | –         |
| HSK-A 63/PG 15 x 400 XL     | 8865.73230 | 24              | 28  | 46  | 400 | 55  | 240 | –         |
| HSK-A 63/PG 25 x 085 H NL** | 4563.72540 | 40              | –   | –   | 85  | –   | –   | 405       |
| HSK-A 63/PG 25 x 100 H      | 4563.72550 | 40              | –   | –   | 100 | –   | –   | 405       |
| HSK-A 63/PG 25 x 120 H      | 4563.72560 | 40              | –   | –   | 120 | –   | –   | 405       |
| HSK-A 63/PG 25 x 160 H      | 4563.72580 | 40              | –   | –   | 160 | –   | –   | 405 / 405 |
| HSK-A 63/PG 25 x 200 H      | 4563.72590 | 40              | –   | –   | 200 | –   | –   | 405 / 405 |
| HSK-A 63/PG 25 x 240 XL     | 8865.76070 | 40              | –   | 55  | 240 | –   | 140 | –         |
| HSK-A 63/PG 25 x 260 XL     | 8865.76090 | 40              | –   | 55  | 260 | –   | 140 | –         |
| HSK-A 63/PG 25 x 340 XL     | 8865.76170 | 40              | –   | 55  | 340 | –   | 240 | –         |
| HSK-A 63/PG 25 x 360 XL     | 8865.76190 | 40              | –   | 55  | 360 | –   | 240 | –         |
| HSK-A 63/PG 25 x 440 XL     | 8865.76270 | 40              | –   | 55  | 440 | –   | 340 | –         |
| HSK-A 63/PG 25 x 460 XL     | 8865.76290 | 40              | –   | 55  | 460 | –   | 340 | –         |
| HSK-A 63/PG 32 x 100        | 2563.73250 | 50              | –   | –   | 100 | –   | –   | –         |
| HSK-A 63/PG 32 x 120 H      | 4563.73260 | 50              | –   | –   | 120 | –   | –   | 505       |
| HSK-A 63/PG 32 x 240 XL     | 8865.78070 | 50              | –   | 58  | 240 | –   | 140 | –         |
| HSK-A 63/PG 32 x 260 XL     | 8865.78090 | 50              | –   | 58  | 260 | –   | 140 | –         |
| HSK-A 63/PG 32 x 340 XL     | 8865.78170 | 50              | –   | 58  | 340 | –   | 240 | –         |
| HSK-A 63/PG 32 x 360 XL     | 8865.78190 | 50              | –   | 58  | 360 | –   | 240 | –         |
| HSK-A 63/PG 32 x 440 XL     | 8865.78270 | 50              | –   | 58  | 440 | –   | 340 | –         |
| HSK-A 63/PG 32 x 460 XL     | 8865.78290 | 50              | –   | 58  | 460 | –   | 340 | –         |

## HSK-A 63 toolVibe\*\*\*

|                              |            |    |   |   |     |   |   |   |
|------------------------------|------------|----|---|---|-----|---|---|---|
| HSK-A 63/PG 15 x 120 TV      | 5563.91560 | 24 | – | – | 120 | – | – | – |
| HSK-A 63/PG 25 x 120 TV      | 5563.92560 | 40 | – | – | 120 | – | – | – |
| HSK-A 63/PG 32 x 120 NL TV** | 5563.93260 | 50 | – | – | 120 | – | – | – |

## HSK-A 80

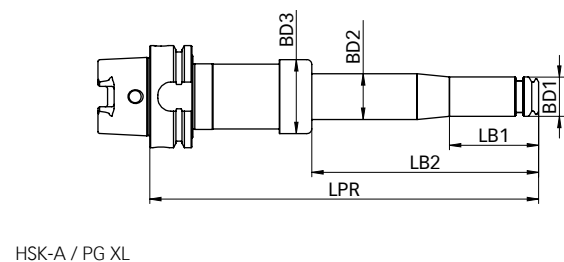
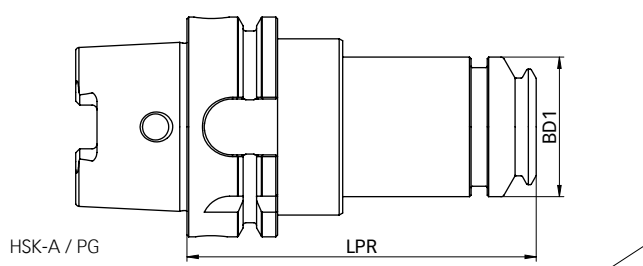
|                        |            |    |   |   |     |   |   |     |
|------------------------|------------|----|---|---|-----|---|---|-----|
| HSK-A 80/PG 15 x 085 H | 4580.71540 | 24 | – | – | 85  | – | – | 325 |
| HSK-A 80/PG 25 x 100 H | 4580.72550 | 40 | – | – | 100 | – | – | 505 |
| HSK-A 80/PG 32 x 105 H | 4580.73250 | 50 | – | – | 105 | – | – | 505 |

\*Balancing rings H: Ready to accept balancing rings

\*\*Collets PG-L, PG-MQL and PG-CRYO cannot be used

\*\*\*For more information on toolVibe, see page 304.

HSK-A: Hole for data carrier DIN STD 69873 in the flange available on request.



# HSK-A toolholders

| HSK-AB     | HSK-A     |
|------------|-----------|
| ISO 12164  | DIN 69893 |
| compatible | ISO 12164 |

| Type                     | Part no.   | Dimensions [mm] |     |     |     |     |     | Accessory |
|--------------------------|------------|-----------------|-----|-----|-----|-----|-----|-----------|
|                          |            | BD1             | BD2 | BD3 | LPR | LB1 | LB2 | FWR *     |
| HSK-A 100                |            |                 |     |     |     |     |     |           |
| HSK-A 100/PG 10 x 085 H  | 4500.71040 | 16              | –   | –   | 85  | –   | –   | 405       |
| HSK-A 100/PG 10 x 160 H  | 4500.71080 | 16              | –   | –   | 160 | –   | –   | 405       |
| HSK-A 100/PG 10 x 240 XL | 8885.71070 | 16              | 28  | 46  | 240 | 31  | 140 | –         |
| HSK-A 100/PG 10 x 300 XL | 8885.71130 | 16              | 28  | 46  | 300 | 31  | 140 | –         |
| HSK-A 100/PG 10 x 340 XL | 8885.71170 | 16              | 28  | 46  | 340 | 31  | 240 | –         |
| HSK-A 100/PG 10 x 400 XL | 8885.71230 | 16              | 28  | 46  | 400 | 31  | 240 | –         |
| HSK-A 100/PG 15 x 085 H  | 4500.71540 | 24              | –   | –   | 85  | –   | –   | 405       |
| HSK-A 100/PG 15 x 120 H  | 4500.71560 | 24              | –   | –   | 120 | –   | –   | 405       |
| HSK-A 100/PG 15 x 160 H  | 4500.71580 | 24              | –   | –   | 160 | –   | –   | 405/285   |
| HSK-A 100/PG 15 x 240 XL | 8885.73070 | 24              | 28  | 46  | 240 | 55  | 140 | –         |
| HSK-A 100/PG 15 x 300 XL | 8885.73110 | 24              | 28  | 46  | 300 | 55  | 140 | –         |
| HSK-A 100/PG 15 x 340 XL | 8885.73170 | 24              | 28  | 46  | 340 | 55  | 240 | –         |
| HSK-A 100/PG 15 x 400 XL | 8885.73230 | 24              | 28  | 46  | 400 | 55  | 240 | –         |
| HSK-A 100/PG 25 x 100 H  | 4500.72550 | 40              | –   | –   | 100 | –   | –   | 505       |
| HSK-A 100/PG 25 x 120 H  | 4500.72560 | 40              | –   | –   | 120 | –   | –   | 505       |
| HSK-A 100/PG 25 x 160 H  | 4500.72580 | 40              | –   | –   | 160 | –   | –   | 505/405   |
| HSK-A 100/PG 25 x 200 H  | 4500.72590 | 40              | –   | –   | 200 | –   | –   | 505/405   |
| HSK-A 100/PG 25 x 246 XL | 8885.76070 | 40              | –   | 55  | 246 | –   | 140 | –         |
| HSK-A 100/PG 25 x 260 XL | 8885.76090 | 40              | –   | 55  | 260 | –   | 140 | –         |
| HSK-A 100/PG 25 x 300 XL | 8885.76130 | 40              | –   | 55  | 300 | –   | 140 | –         |
| HSK-A 100/PG 25 x 346 XL | 8885.76170 | 40              | –   | 55  | 346 | –   | 240 | –         |
| HSK-A 100/PG 25 x 360 XL | 8885.76190 | 40              | –   | 55  | 360 | –   | 240 | –         |
| HSK-A 100/PG 25 x 400 XL | 8885.76230 | 40              | –   | 55  | 400 | –   | 240 | –         |
| HSK-A 100/PG 25 x 440 XL | 8885.76270 | 40              | –   | 55  | 440 | –   | 240 | –         |
| HSK-A 100/PG 25 x 460 XL | 8885.76290 | 40              | –   | 55  | 460 | –   | 340 | –         |
| HSK-A 100/PG 25 x 500 XL | 8885.76330 | 40              | –   | 55  | 500 | –   | 340 | –         |
| HSK-A 100/PG 25 x 540 XL | 8885.76370 | 40              | –   | 55  | 540 | –   | 340 | –         |
| HSK-A 100/PG 32 x 106 H  | 4500.73250 | 50              | –   | –   | 106 | –   | –   | 505       |
| HSK-A 100/PG 32 x 120 H  | 4500.73260 | 50              | –   | –   | 120 | –   | –   | 505       |
| HSK-A 100/PG 32 x 160 H  | 4500.73280 | 50              | –   | –   | 160 | –   | –   | 505       |
| HSK-A 100/PG 32 x 200 H  | 4500.73290 | 50              | –   | –   | 200 | –   | –   | 505/505   |
| HSK-A 100/PG 32 x 246 XL | 8885.78070 | 50              | –   | 58  | 246 | –   | 140 | –         |
| HSK-A 100/PG 32 x 260 XL | 8885.78090 | 50              | –   | 58  | 260 | –   | 140 | –         |
| HSK-A 100/PG 32 x 300 XL | 8885.78130 | 50              | –   | 58  | 300 | –   | 140 | –         |
| HSK-A 100/PG 32 x 340 XL | 8885.78170 | 50              | –   | 58  | 340 | –   | 140 | –         |
| HSK-A 100/PG 32 x 360 XL | 8885.78190 | 50              | –   | 58  | 360 | –   | 240 | –         |
| HSK-A 100/PG 32 x 400 XL | 8885.78230 | 50              | –   | 58  | 400 | –   | 240 | –         |
| HSK-A 100/PG 32 x 440 XL | 8885.78270 | 50              | –   | 58  | 440 | –   | 240 | –         |
| HSK-A 100/PG 32 x 460 XL | 8885.78290 | 50              | –   | 58  | 460 | –   | 340 | –         |
| HSK-A 100/PG 32 x 500 XL | 8885.78330 | 50              | –   | 58  | 500 | –   | 340 | –         |
| HSK-A 100/PG 32 x 540 XL | 8885.78370 | 50              | –   | 58  | 540 | –   | 340 | –         |

\*Balancing rings H: Ready to accept balancing rings

\*\*For more information on toolVibe®, see page 304.

HSK-A: Hole for data carrier DIN STD 69873 in the flange available on request.

# HSK-A toolholders

| HSK-AB     | HSK-A     |
|------------|-----------|
| ISO 12164  | DIN 69893 |
| compatible | ISO 12164 |

| Type                     | Part no.   | Dimensions [mm] |     |     |     |     |     | Accessory |
|--------------------------|------------|-----------------|-----|-----|-----|-----|-----|-----------|
|                          |            | BD1             | BD2 | BD3 | LPR | LB1 | LB2 | FWR *     |
| HSK-A 100 toolVibe**     |            |                 |     |     |     |     |     |           |
| HSK-A 100/PG 32 x 125 TV | 5500.93260 | 50              | –   | –   | 125 | –   | –   | –         |
| HSK-A 125                |            |                 |     |     |     |     |     |           |
| HSK-A 125/PG 15 x 245 XL | 8895.73070 | 24              | 28  | 46  | 245 | 55  | 140 | –         |
| HSK-A 125/PG 15 x 345 XL | 8895.73170 | 24              | 28  | 46  | 345 | 55  | 240 | –         |
| HSK-A 125/PG 25 x 252 XL | 8895.76080 | 40              | –   | 55  | 252 | –   | 140 | –         |
| HSK-A 125/PG 25 x 352 XL | 8895.76180 | 40              | –   | 55  | 352 | –   | 240 | –         |
| HSK-A 125/PG 32 x 252 XL | 8895.78080 | 50              | –   | 58  | 252 | –   | 140 | –         |
| HSK-A 125/PG 32 x 352 XL | 8895.78180 | 50              | –   | 58  | 352 | –   | 240 | –         |

\*Balancing rings H: Ready to accept balancing rings  
 \*\*For more information on toolVibe®, see page 304.

HSK-A: Hole for data carrier DIN STD 69873 in the flange available on request.





# HSK-E toolholders

| HSK-EZ 15      | HSK-AB     | HSK-E     |
|----------------|------------|-----------|
| ATC-E 15       | ISO 12164  | DIN 69893 |
| DIN SPEC 28999 | compatible | ISO 12164 |

| Type                          | Part no.   | Dimensions [mm] |     |     |     |     |     | Accessory |
|-------------------------------|------------|-----------------|-----|-----|-----|-----|-----|-----------|
|                               |            | BD1             | BD2 | BD3 | LPR | LB1 | LB2 | FWR *     |
| ATC-E 15                      |            |                 |     |     |     |     |     |           |
| ATC-E 15/PG 6 x 034           | 2915.70600 | 10              | –   | –   | 34  | –   | –   | –         |
| HSK-EZ 15                     |            |                 |     |     |     |     |     |           |
| HSK-EZ 15/PG 6 x 034          | 2515.70604 | 10              | –   | –   | 34  | –   | –   |           |
| HSK-E 20                      |            |                 |     |     |     |     |     |           |
| HSK-E 20/PG 6 x 043           | 2520.70614 | 10              | –   | –   | 43  | –   | –   | –         |
| HSK-E 25                      |            |                 |     |     |     |     |     |           |
| HSK-E 25/PG 6 x 043           | 2525.70614 | 10              | –   | –   | 43  | –   | –   | –         |
| HSK-E 25/PG 10 x 055          | 2525.71014 | 16              | –   | –   | 55  | –   | –   | –         |
| HSK-E 32                      |            |                 |     |     |     |     |     |           |
| HSK-E 32/PG 6 x 048           | 2532.70614 | 10              | –   | –   | 48  | –   | –   | –         |
| HSK-E 32/PG 6 x 080           | 2532.70644 | 10              | –   | –   | 80  | –   | –   | –         |
| HSK-E 32/PG 10 x 060          | 2532.71024 | 16              | –   | –   | 60  | –   | –   | –         |
| HSK-E 32/PG 10 x 080          | 2532.71044 | 16              | –   | –   | 80  | –   | –   | –         |
| HSK-E 32/PG 10 x 080 H        | 4532.71044 | 16              | –   | –   | 80  | –   | –   | 225       |
| HSK-E 32/PG 15 x 075          | 2532.71534 | 24              | –   | –   | 75  | –   | –   | –         |
| HSK-E 40                      |            |                 |     |     |     |     |     |           |
| HSK-E 40/PG 6 x 048           | 2540.70614 | 10              | –   | –   | 48  | –   | –   | –         |
| HSK-E 40/PG 6 x 080 H         | 4540.70644 | 10              | –   | –   | 80  | –   | –   | 225       |
| HSK-E 40 NCT/PG 10 x 052**    | 2540.71018 | 16              | –   | –   | 52  | –   | –   |           |
| HSK-E 40/PG 10 x 062          | 2540.71024 | 16              | –   | –   | 62  | –   | –   | –         |
| HSK-E 40/PG 10 x 080 H        | 4540.71044 | 16              | –   | –   | 80  | –   | –   | 225       |
| HSK-E 40/PG 10 x 100 H        | 4540.71054 | 16              | –   | –   | 100 | –   | –   | 225       |
| HSK-E 40/PG 10 x 120 H        | 4540.71064 | 16              | –   | –   | 120 | –   | –   | 225       |
| HSK-E 40/PG 10 x 160 H        | 4540.71084 | 16              | –   | –   | 160 | –   | –   | 285       |
| HSK-E 40 NCT/PG 15 x 064 NL** | 2540.71528 | 24              | –   | –   | 64  | –   | –   | –         |
| HSK-E 40/PG 15 x 074          | 2540.71534 | 24              | –   | –   | 74  | –   | –   | –         |
| HSK-E 40/PG 15 x 080 H        | 4540.71544 | 24              | –   | –   | 80  | –   | –   | 285       |
| HSK-E 40/PG 15 x 100 H        | 4540.71554 | 24              | –   | –   | 100 | –   | –   | 285       |
| HSK-E 40/PG 15 x 120 H        | 4540.71564 | 24              | –   | –   | 120 | –   | –   | 285       |
| HSK-E 40/PG 25 x 090          | 2540.72544 | 40              | –   | –   | 90  | –   | –   | –         |
| HSK-E 40/PG 25 x 100 H        | 4540.72554 | 40              | –   | –   | 100 | –   | –   | 405       |

\*Balancing rings H: Ready to accept balancing rings

\*\*\*For more information on toolVibe, see page 304.

\*\*Without thread for coolant tube

## Expert advice

All ATC-E 15 products are compatible with HSK-EZ according to DIN SPEC 28999:2023-5.



## HSK-E toolholders

| HSK-AB     | HSK-E     |
|------------|-----------|
| ISO 12164  | DIN 69893 |
| compatible | ISO 12164 |

| Type                   | Part no.   | Dimensions [mm] |     |     |     |     |     | Accessory |
|------------------------|------------|-----------------|-----|-----|-----|-----|-----|-----------|
|                        |            | BD1             | BD2 | BD3 | LPR | LB1 | LB2 | FWR *     |
| HSK-E 50               |            |                 |     |     |     |     |     |           |
| HSK-E 50/PG 6 x 080 H  | 4550.70644 | 10              | –   | –   | 80  | –   | –   | 225       |
| HSK-E 50/PG 10 x 067   | 2550.71024 | 16              | –   | –   | 67  | –   | –   | –         |
| HSK-E 50/PG 10 x 080 H | 4550.71044 | 16              | –   | –   | 80  | –   | –   | 285       |
| HSK-E 50/PG 10 x 120 H | 4550.71064 | 16              | –   | –   | 120 | –   | –   | 285       |
| HSK-E 50/PG 10 x 160 H | 4550.71084 | 16              | –   | –   | 160 | –   | –   | 285       |
| HSK-E 50/PG 15 x 080 H | 4550.71544 | 24              | –   | –   | 80  | –   | –   | 285       |
| HSK-E 50/PG 15 x 100 H | 4550.71554 | 24              | –   | –   | 100 | –   | –   | 285       |
| HSK-E 50/PG 15 x 120 H | 4550.71564 | 24              | –   | –   | 120 | –   | –   | 285       |
| HSK-E 50/PG 25 x 100 H | 4550.72554 | 40              | –   | –   | 100 | –   | –   | 405       |

|                        |            |    |   |   |     |   |   |     |
|------------------------|------------|----|---|---|-----|---|---|-----|
| <b>HSK-E 63</b>        |            |    |   |   |     |   |   |     |
| HSK-E 63/PG 15 x 080 H | 4563.71544 | 24 | – | – | 80  | – | – | 325 |
| HSK-E 63/PG 25 x 100 H | 4563.72554 | 40 | – | – | 100 | – | – | 405 |

\*Balancing rings H: Ready to accept balancing rings

\*\*Without thread for coolant tube

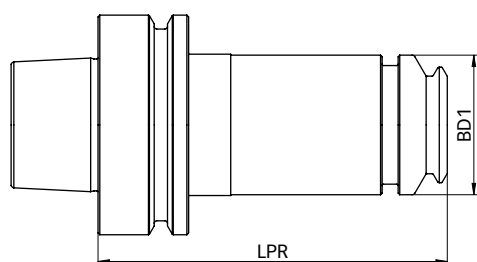
\*\*\*For more information on toolVibe, see page 304.

## HSK-F toolholders

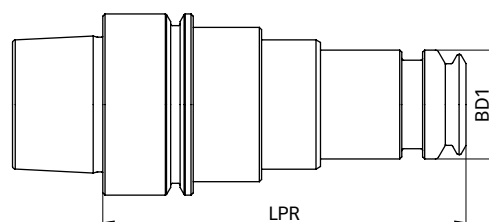
| HSK-ES     | HSK-F     |
|------------|-----------|
| ISO 12164  | DIN 69893 |
| compatible | ISO 12164 |

| Type                   | Part no.   | Dimensions [mm] |     |     |     |     |     | Accessory |
|------------------------|------------|-----------------|-----|-----|-----|-----|-----|-----------|
|                        |            | BD1             | BD2 | BD3 | LPR | LB1 | LB2 | FWR *     |
| HSK-F 63               |            |                 |     |     |     |     |     |           |
| HSK-F 63/PG 10 x 080 H | 4563.71045 | 16              | –   | –   | 80  | –   | –   | 325       |
| HSK-F 63/PG 10 x 120 H | 4563.71065 | 16              | –   | –   | 120 | –   | –   | 325       |
| HSK-F 63/PG 10 x 160 H | 4563.71085 | 16              | –   | –   | 160 | –   | –   | 325       |
| HSK-F 63/PG 15 x 080 H | 4563.71545 | 24              | –   | –   | 80  | –   | –   | 325       |
| HSK-F 63/PG 15 x 120 H | 4563.71565 | 24              | –   | –   | 120 | –   | –   | 325       |
| HSK-F 63/PG 15 x 160 H | 4563.71585 | 24              | –   | –   | 160 | –   | –   | 325/285   |
| HSK-F 63/PG 25 x 100 H | 4563.72555 | 40              | –   | –   | 100 | –   | –   | 405       |
| HSK-F 63/PG 25 x 160 H | 4563.72585 | 40              | –   | –   | 160 | –   | –   | 405       |
| HSK-F 63/PG 32 x 100   | 2563.73255 | 50              | –   | –   | 100 | –   | –   | –         |

\*Balancing rings H: Ready to accept balancing rings



HSK-F / PG



HSK-E / PG

# SK steep taper toolholders

Universally suitable for different machining applications

DIN 69871 / DIN ISO 7388-1

## Features and benefits

### Total system runout TIR $\leq 3 \mu\text{m}$ @ 3xD

Our holistic system consists of a powRgrip® toolholder and collet. All components together ensure best runout and accuracy.

### Toolholder runout TIR $\leq 1 \mu\text{m}$

Measured from collet cavity to outer taper.

### Taper accuracy AT3

Better spindle-to-holder fit and accuracy.

### Surface finish max. Ra 0.25

Achieve high clamping force and high transferable torque.

### Balancing

100% balanced to G 2.5 @ 25,000 rpm / < 1gmm.

### XL toolholders

Runout TIR  $\leq 10 \mu\text{m}$

100% balanced to G 2.5 @ 5,000 rpm.

### Hi-Q® balancing system

Ready to accept Hi-Q® balancing rings which allow for the offset of the imbalance introduced by the cutting tool up to 80,000 rpm depending on the balancing rings used. All toolholders with the additional type information "H" in the part number are designed for balancing rings.

### Vibration damping

Our holders offer excellent vibration damping to sustain a high surface finish and can help prevent chatter.

### ID chip hole

In accordance with DIN 69873 for 10 mm diameter.

### Balancing specifications

|       |                        |
|-------|------------------------|
| SK 30 | balanced to 30,000 rpm |
| SK 40 | G 2.5 @ 25,000 rpm     |
| SK 50 | G 2.5 @ 25,000 rpm     |



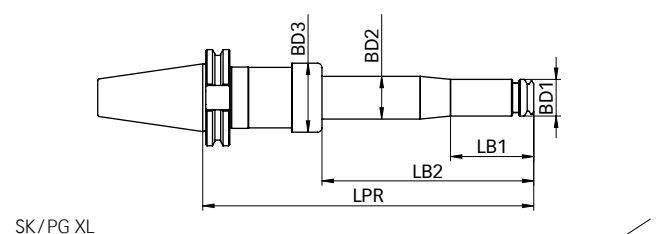
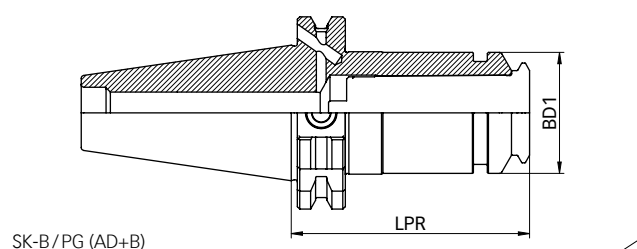
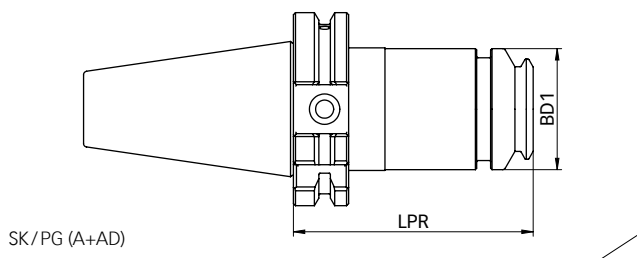
Accessories are not included in delivery. Other XL sizes available on request.

| Type                 | Part no.   | Dimensions [mm] |     |     |     |     |     | Accessory |
|----------------------|------------|-----------------|-----|-----|-----|-----|-----|-----------|
|                      |            | BD1             | BD2 | BD3 | LPR | LB1 | LB2 | FWR *     |
| SK 30                |            |                 |     |     |     |     |     |           |
| SK 30/PG 6 x 080 H   | 4230.70640 | 10              | –   | –   | 80  | –   | –   | 225       |
| SK 30/PG 10 x 060    | 2230.71020 | 16              | –   | –   | 60  | –   | –   | –         |
| SK 30/PG 10 x 073 H  | 4230.71030 | 16              | –   | –   | 73  | –   | –   | 285       |
| SK 30/PG 15 x 060    | 2230.71520 | 24              | –   | –   | 60  | –   | –   | –         |
| SK 30/PG 15 x 080 H  | 4230.71540 | 24              | –   | –   | 80  | –   | –   | 285       |
| SK 30/PG 25 x 080    | 2230.72540 | 40              | –   | –   | 80  | –   | –   | –         |
| SK 30/PG 25 x 160 H  | 4230.72580 | 40              | –   | –   | 160 | –   | –   | 405       |
| SK 40                |            |                 |     |     |     |     |     |           |
| SK 40/PG 6 x 080 H   | 4240.70640 | 10              | –   | –   | 80  | –   | –   | 225       |
| SK 40/PG 10 x 080 H  | 4240.71040 | 16              | –   | –   | 80  | –   | –   | 285       |
| SK 40/PG 10 x 120 H  | 4240.71060 | 16              | –   | –   | 120 | –   | –   | 285       |
| SK 40/PG 10 x 160 H  | 4240.71080 | 16              | –   | –   | 160 | –   | –   | 325       |
| SK 40/PG 10 x 220 XL | 8842.71050 | 16              | 28  | 46  | 220 | 31  | 140 | –         |
| SK 40/PG 10 x 260 XL | 8842.71090 | 16              | 28  | 46  | 260 | 31  | 140 | –         |
| SK 40/PG 10 x 300 XL | 8842.71130 | 16              | 28  | 46  | 300 | 31  | 140 | –         |
| SK 40/PG 10 x 320 XL | 8842.71150 | 16              | 28  | 46  | 320 | 31  | 240 | –         |
| SK 40/PG 10 x 360 XL | 8842.71190 | 16              | 28  | 46  | 360 | 31  | 240 | –         |
| SK 40/PG 10 x 400 XL | 8842.71230 | 16              | 28  | 46  | 400 | 31  | 240 | –         |
| SK 40/PG 15 x 072    | 2240.71530 | 24              | –   | –   | 72  | –   | –   | –         |
| SK 40/PG 15 x 080 H  | 4240.71540 | 24              | –   | –   | 80  | –   | –   | 285       |
| SK 40/PG 15 x 120 H  | 4240.71560 | 24              | –   | –   | 120 | –   | –   | 325       |
| SK 40/PG 15 x 160 H  | 4240.71580 | 24              | –   | –   | 160 | –   | –   | 325/285   |
| SK 40/PG 15 x 220 XL | 8842.73050 | 24              | 28  | 46  | 220 | 55  | 140 | –         |
| SK 40/PG 15 x 260 XL | 8842.73090 | 24              | 28  | 46  | 260 | 55  | 140 | –         |
| SK 40/PG 15 x 300 XL | 8842.73130 | 24              | 28  | 46  | 300 | 55  | 140 | –         |
| SK 40/PG 15 x 320 XL | 8842.73150 | 24              | 28  | 46  | 320 | 55  | 240 | –         |
| SK 40/PG 15 x 360 XL | 8842.73190 | 24              | 28  | 46  | 360 | 55  | 240 | –         |
| SK 40/PG 15 x 400 XL | 8842.73230 | 24              | 28  | 46  | 400 | 55  | 240 | –         |
| SK 40/PG 25 x 072    | 2240.72530 | 40              | –   | –   | 72  | –   | –   | –         |
| SK 40/PG 25 x 080 H  | 4240.72540 | 40              | –   | –   | 80  | –   | –   | 405       |
| SK 40/PG 25 x 120 H  | 4240.72560 | 40              | –   | –   | 120 | –   | –   | 405       |
| SK 40/PG 25 x 160 H  | 4240.72580 | 40              | –   | –   | 160 | –   | –   | 405/405   |
| SK 40/PG 25 x 220 XL | 8842.76050 | 40              | –   | 55  | 220 | –   | 140 | –         |
| SK 40/PG 25 x 320 XL | 8842.76150 | 40              | –   | 55  | 320 | –   | 240 | –         |
| SK 40/PG 32 x 080    | 2240.73240 | 50              | –   | –   | 80  | –   | –   | –         |

\*Balancing rings H: Ready to accept balancing rings

| Type                  | Part no.   | Dimensions [mm] |     |     |     |     |     | Accessory |
|-----------------------|------------|-----------------|-----|-----|-----|-----|-----|-----------|
|                       |            | BD1             | BD2 | BD3 | LPR | LB1 | LB2 | FWR *     |
| SK-B 40               |            |                 |     |     |     |     |     |           |
| SK-B 40/PG 10 x 080 H | 4240.71043 | 16              | –   | –   | 80  | –   | –   | 285       |
| SK-B 40/PG 10 x 120 H | 4240.71063 | 16              | –   | –   | 120 | –   | –   | 285       |
| SK-B 40/PG 15 x 080 H | 4240.71543 | 24              | –   | –   | 80  | –   | –   | 285       |
| SK-B 40/PG 15 x 120 H | 4240.71563 | 24              | –   | –   | 120 | –   | –   | 325       |
| SK-B 40/PG 15 x 160 H | 4240.71583 | 24              | –   | –   | 160 | –   | –   | 325/285   |
| SK-B 40/PG 25 x 072   | 2240.72533 | 40              | –   | –   | 72  | –   | –   | –         |
| SK-B 40/PG 25 x 080 H | 4240.72543 | 40              | –   | –   | 80  | –   | –   | 405       |
| SK-B 40/PG 25 x 120 H | 4240.72563 | 40              | –   | –   | 120 | –   | –   | 405       |
| SK-B 40/PG 25 x 160 H | 4240.72583 | 40              | –   | –   | 160 | –   | –   | 405/405   |
| SK-B 40/PG 32 x 080   | 2240.73243 | 50              | –   | –   | 80  | –   | –   | –         |

\*Balancing rings H: Ready to accept balancing rings



# SK toolholders

## SK-B toolholders

| SK             | SK-B           |
|----------------|----------------|
| DIN 69871      | DIN 69871      |
| DIN ISO 7388-1 | DIN ISO 7388-1 |

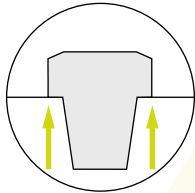
| Type                  | Part no.   | Dimensions [mm] |     |     |     |     |     | Accessory |
|-----------------------|------------|-----------------|-----|-----|-----|-----|-----|-----------|
|                       |            | BD1             | BD2 | BD3 | LPR | LB1 | LB2 | FWR *     |
| SK 50                 |            |                 |     |     |     |     |     |           |
| SK 50/PG 10 x 240 XL  | 8852.71070 | 16              | 28  | 46  | 240 | 31  | 140 | –         |
| SK 50/PG 10 x 300 XL  | 8852.71130 | 16              | 28  | 46  | 300 | 31  | 140 | –         |
| SK 50/PG 10 x 340 XL  | 8852.71170 | 16              | 28  | 46  | 340 | 31  | 240 | –         |
| SK 50/PG 10 x 400 XL  | 8852.71230 | 16              | 28  | 46  | 400 | 31  | 240 | –         |
| SK 50/PG 15 x 120 H   | 4250.71560 | 24              | 32  | –   | 120 | –   | 42  | 325       |
| SK 50/PG 15 x 240 XL  | 8852.73070 | 24              | 28  | 46  | 240 | 55  | 140 | –         |
| SK 50/PG 15 x 300 XL  | 8852.73130 | 24              | 28  | 46  | 300 | 55  | 140 | –         |
| SK 50/PG 15 x 340 XL  | 8852.73170 | 24              | 28  | 46  | 340 | 55  | 240 | –         |
| SK 50/PG 15 x 400 XL  | 8852.73230 | 24              | 28  | 46  | 400 | 55  | 240 | –         |
| SK 50/PG 25 x 081     | 2250.72540 | 40              | –   | –   | 81  | –   | –   | –         |
| SK 50/PG 25 x 100 H   | 4250.72550 | 40              | –   | –   | 100 | –   | –   | 505       |
| SK 50/PG 25 x 120 H   | 4250.72560 | 40              | –   | –   | 120 |     |     | 505       |
| SK 50/PG 25 x 160 H   | 4250.72580 | 40              | –   | –   | 160 | –   | –   | 505 / 405 |
| SK 50/PG 25 x 200 H   | 4250.72590 | 40              | –   | –   | 200 | –   | –   | 505 / 405 |
| SK 50/PG 25 x 300 XL  | 8852.76130 | 40              | –   | 55  | 300 | –   | 140 | –         |
| SK 50/PG 25 x 320 XL  | 8852.76150 | 40              | –   | 55  | 320 | –   | 240 | –         |
| SK 50/PG 25 x 400 XL  | 8852.76230 | 40              | –   | 55  | 400 | –   | 240 | –         |
| SK 50/PG 25 x 420 XL  | 8852.76250 | 40              | –   | 55  | 420 | –   | 340 | –         |
| SK 50/PG 25 x 500 XL  | 8852.76330 | 40              | –   | 55  | 500 | –   | 340 | –         |
| SK 50/PG 32 x 080     | 2250.73240 | 50              | –   | –   | 80  | –   | –   | –         |
| SK 50/PG 32 x 160 H   | 4250.73280 | 50              | –   | –   | 160 | –   | –   | 505       |
| SK 50/PG 32 x 220 XL  | 8852.78050 | 50              | –   | 58  | 220 | –   | 140 | –         |
| SK 50/PG 32 x 300 XL  | 8852.78130 | 50              | –   | 58  | 300 | –   | 140 | –         |
| SK 50/PG 32 x 320 XL  | 8852.78150 | 50              | –   | 58  | 320 | –   | 240 | –         |
| SK 50/PG 32 x 400 XL  | 8852.78230 | 50              | –   | 58  | 400 | –   | 240 | –         |
| SK 50/PG 32 x 420 XL  | 8852.78250 | 50              | –   | 58  | 420 | –   | 340 | –         |
| SK 50/PG 32 x 500 XL  | 8852.78330 | 50              | –   | 58  | 500 | –   | 340 | –         |
| SK-B 50               |            |                 |     |     |     |     |     |           |
| SK-B 50/PG 25 x 081   | 2250.72543 | 40              | –   | –   | 81  | –   | –   | –         |
| SK-B 50/PG 25 x 100 H | 4250.72553 | 40              | –   | –   | 100 | –   | –   | 505       |
| SK-B 50/PG 25 x 160 H | 4250.72583 | 40              | –   | –   | 160 | –   | –   | 505 / 405 |
| SK-B 50/PG 25 x 200 H | 4250.72593 | 40              | –   | –   | 200 | –   | –   | 505 / 405 |
| SK-B 50/PG 32 x 080   | 2250.73243 | 50              | –   | –   | 80  | –   | –   |           |

\*Balancing rings H: Ready to accept balancing rings

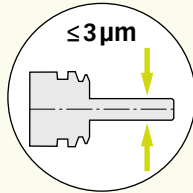


# REGO-FIX SK+ dual contact toolholders

## Key advantages



Higher collet holder stiffness due to taper (AT1) and face contact



Improved machining accuracy and better surface finish

**Certified** The BIG PLUS SYSTEM – licensed by BIG Daishowa – is manufactured at REGO-FIX in Switzerland under license according to BIG PLUS specifications.

DIN 69871 / DIN ISO 7388-1

## Features and benefits

### Total system runout TIR $\leq 0.0001''$ (3 $\mu\text{m}$ )

Our holistic system consists of a powRgrip® toolholder and collet. All components together ensure best runout and accuracy.

### Surface finish max. Ra 0.25

Achieve high clamping force and high transferable torque.

### Balancing

100% balanced to G 2.5 @ 25,000 rpm/ $\leq 1$  gmm.

### Hi-Q® balancing system

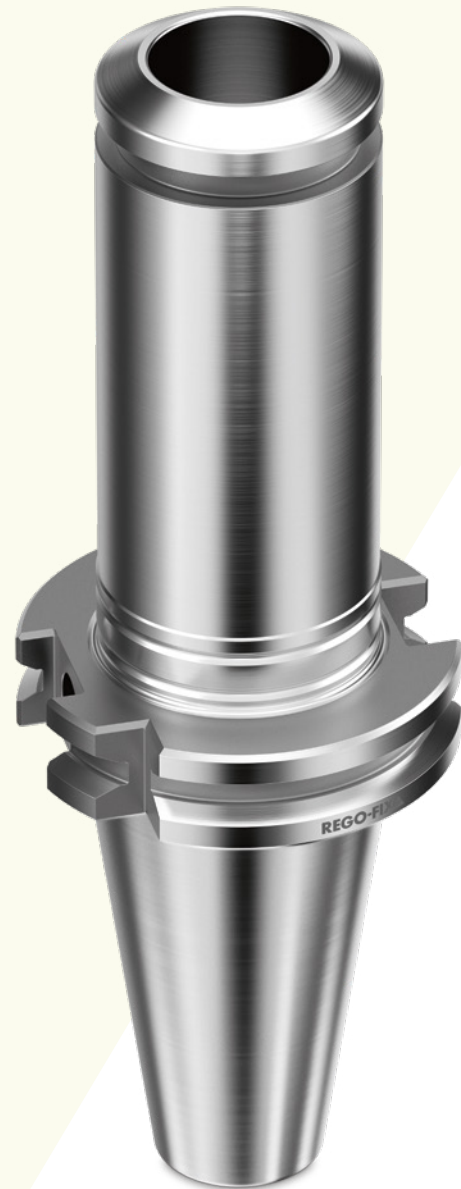
Ready to accept Hi-Q® balancing rings which allow for the offset of the imbalance introduced by the cutting tool up to 80,000 rpm depending on the balancing rings used. All collets holders with the additional type information "H" in the article name are designed for balancing rings.

### Vibration damping

Our holders offer excellent vibration damping to sustain a high surface finish and can help prevent chatter.

### ID chip hole

In accordance DIN 69873 with diameter 10 mm.



*Accessories are not included in delivery. Form B available on request.*

| Type                   | Part no.   | Dimensions [mm] |     | Accessory |
|------------------------|------------|-----------------|-----|-----------|
|                        |            | BD1             | LPR | FWR*      |
| SK+ 40                 |            |                 |     |           |
| SK+ 40/PG 10 x 080 H   | 4240.71046 | 16              | 80  | 285       |
| SK+ 40/PG 15 x 080 H   | 4240.71546 | 24              | 80  | 285       |
| SK+ 40/PG 15 x 120 H   | 4240.71566 | 24              | 120 | 285       |
| SK+ 40 / PG 25 x 080 H | 4240.72546 | 40              | 80  | 405       |
| SK+ 40/PG 25 x 120 H   | 4240.72566 | 40              | 120 | 405       |
| SK+ 40 / PG 32 x 080   | 2240.73246 | 50              | 80  |           |

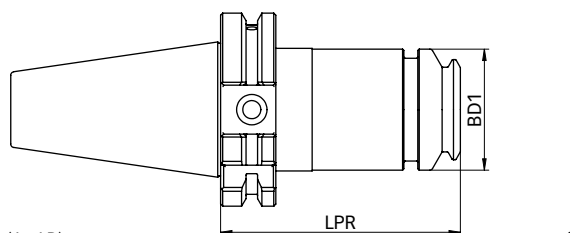
|                            |            |    |     |   |
|----------------------------|------------|----|-----|---|
| <b>SK+ 40 toolVibe**</b>   |            |    |     |   |
| SK+ 40 / PG 25 x 120 TV*** | 5540.92566 | 40 | 120 | – |

|                               |            |    |     |   |
|-------------------------------|------------|----|-----|---|
| <b>SK+ 50 toolVibe**</b>      |            |    |     |   |
| SK+ 50 / PG 25 x 105 NL TV*** | 5550.92556 | 40 | 105 | – |

\*Balancing rings H: Ready to accept balancing rings

\*\*For more information on toolVibe, see page 304.

\*\*\*Also fits standard spindle without dual contact.



SK+ / PG (A+AD)

# BT steep taper toolholders

Universally suitable for different machining applications, the BT interface toolholders cater to different machining needs.

MAS 403/JIS B 6339/DIN ISO 7388-2

## Features and benefits

### Total system runout TIR $\leq 3 \mu\text{m}$ @ 3xD

Our holistic system consists of a powRgrip® toolholder and collet. All components together ensure best runout and accuracy.

### Toolholder runout TIR $\leq 1 \mu\text{m}$

Measured from collet cavity to outer taper.

### Taper accuracy AT3

Better spindle-to-holder fit and accuracy.

### Surface finish max. Ra 0.25

Achieve high clamping force and high transferable torque.

### Balancing

100% balanced to G 2.5 @ 25,000 rpm / < 1gmm.

### XL toolholders

Runout TIR  $\leq 10 \mu\text{m}$

100% balanced to G 2.5 @ 5,000 rpm.

### Hi-Q® balancing system

Ready to accept Hi-Q® balancing rings which allow for the offset of the imbalance introduced by the cutting tool up to 80,000 rpm depending on the balancing rings used. All toolholders with the additional type information "H" in the part number are designed for balancing rings.

### Vibration damping

Our holders offer excellent vibration damping to sustain a high surface finish and can help prevent chatter.

### Balancing specifications

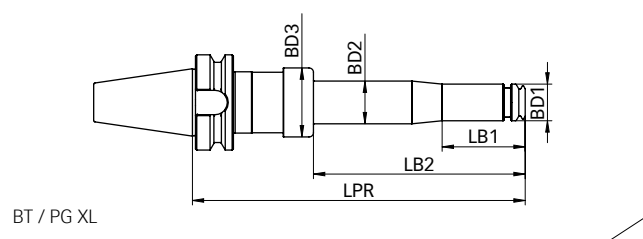
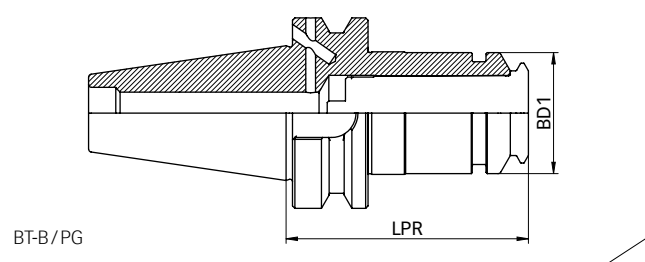
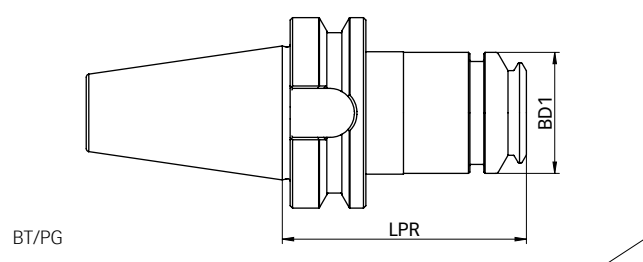
|       |                        |
|-------|------------------------|
| BT 30 | balanced to 30,000 rpm |
| BT 40 | G 2.5 @ 25,000 rpm     |
| BT 50 | G 2.5 @ 25,000 rpm     |



Accessories are not included in delivery. Other XL sizes available on request.

| Type                | Part no.   | Dimensions [mm] |     |     |     |     |     | Accessory |
|---------------------|------------|-----------------|-----|-----|-----|-----|-----|-----------|
|                     |            | BD1             | BD2 | BD3 | LPR | LB1 | LB2 | FWR *     |
| BT 30               |            |                 |     |     |     |     |     |           |
| BT 30/PG 6 x 050    | 2130.70610 | 10              | –   | –   | 50  | –   | –   | –         |
| BT 30/PG 6 x 080 H  | 4130.70640 | 10              | –   | –   | 80  | –   | –   | 225       |
| BT 30/PG 10 x 062   | 2130.71020 | 16              | –   | –   | 62  | –   | –   | –         |
| BT 30/PG 10 x 080 H | 4130.71040 | 16              | –   | –   | 80  | –   | –   | 285       |
| BT 30/PG 10 x 120 H | 4130.71060 | 16              | –   | –   | 120 | –   | –   | 285       |
| BT 30/PG 10 x 160 H | 4130.71080 | 16              | –   | –   | 160 | –   | –   | 285       |
| BT 30/PG 15 x 065   | 2130.71520 | 24              | –   | –   | 65  | –   | –   | –         |
| BT 30/PG 15 x 070 H | 4130.71530 | 24              | –   | –   | 70  | –   | –   | 285       |
| BT 30/PG 15 x 120 H | 4130.71560 | 24              | –   | –   | 120 | –   | –   | 285       |
| BT 30/PG 25 x 075   | 2130.72530 | 40              | –   | –   | 75  | –   | –   | –         |
| BT 30/PG 25 x 080 H | 4130.72540 | 40              | –   | –   | 80  | –   | –   | 405       |
| BT 30/PG 25 x 120 H | 4130.72560 | 40              | –   | –   | 120 | –   | –   | 405       |
| BT 30/PG 25 x 160 H | 4130.72580 | 40              | –   | –   | 160 | –   | –   | 405/405   |

\*Balancing rings H: Ready to accept balancing rings



# BT toolholders

## BT-B toolholders

| BT             | BT-B           |
|----------------|----------------|
| MAS 403        | MAS 403        |
| JIS B 6339     | JIS B 6339     |
| DIN ISO 7388-2 | DIN ISO 7388-2 |

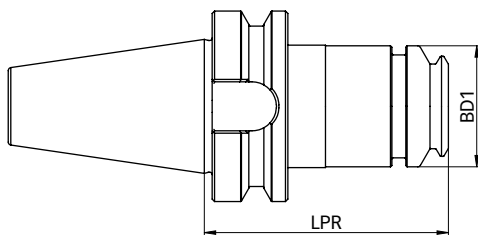
| Type                  | Part no.   | Dimensions [mm] |     |     |     |     |     | Accessory |
|-----------------------|------------|-----------------|-----|-----|-----|-----|-----|-----------|
|                       |            | BD1             | BD2 | BD3 | LPR | LB1 | LB2 | FWR *     |
| BT 40                 |            |                 |     |     |     |     |     |           |
| BT 40/PG 10 x 080 H   | 4140.71040 | 16              | –   | –   | 80  | –   | –   | 285       |
| BT 40/PG 10 x 120 H   | 4140.71060 | 16              | –   | –   | 120 | –   | –   | 325       |
| BT 40/PG 10 x 160 H   | 4140.71080 | 16              | –   | –   | 160 | –   | –   | 325       |
| BT 40/PG 10 x 220 XL  | 8841.71050 | 16              | 28  | 46  | 220 | 31  | 140 |           |
| BT 40/PG 10 x 260 XL  | 8841.71090 | 16              | 28  | 46  | 260 | 31  | 140 |           |
| BT 40/PG 10 x 300 XL  | 8841.71130 | 16              | 28  | 46  | 300 | 31  | 140 | –         |
| BT 40/PG 10 x 320 XL  | 8841.71150 | 16              | 28  | 46  | 320 | 31  | 240 | –         |
| BT 40/PG 10 x 360 XL  | 8841.71190 | 16              | 28  | 46  | 360 | 31  | 240 | –         |
| BT 40/PG 10 x 400 XL  | 8841.71230 | 16              | 28  | 46  | 400 | 31  | 240 | –         |
| BT 40/PG 15 x 075     | 2140.71530 | 24              | –   | –   | 75  | –   | –   | –         |
| BT 40/PG 15 x 080 H   | 4140.71540 | 24              | –   | –   | 80  | –   | –   | 285       |
| BT 40/PG 15 x 120 H   | 4140.71560 | 24              | –   | –   | 120 | –   | –   | 325       |
| BT 40/PG 15 x 160 H   | 4140.71580 | 24              | –   | –   | 160 | –   | –   | 325/285   |
| BT 40/PG 15 x 220 XL  | 8841.73050 | 24              | 28  | 46  | 220 | 55  | 140 | –         |
| BT 40/PG 15 x 260 XL  | 8841.73090 | 24              | 28  | 46  | 260 | 55  | 140 | –         |
| BT 40/PG 15 x 300 XL  | 8841.73130 | 24              | 28  | 46  | 300 | 55  | 140 | –         |
| BT 40/PG 15 x 320 XL  | 8841.73150 | 24              | 28  | 46  | 320 | 55  | 240 | –         |
| BT 40/PG 15 x 360 XL  | 8841.73190 | 24              | 28  | 46  | 360 | 55  | 240 | –         |
| BT 40/PG 15 x 400 XL  | 8841.73230 | 24              | 28  | 46  | 400 | 55  | 240 | –         |
| BT 40/PG 25 x 080 H   | 4140.72540 | 40              | –   | –   | 80  | –   | –   | 405       |
| BT 40/PG 25 x 120 H   | 4140.72560 | 40              | –   | –   | 120 | –   | –   | 405       |
| BT 40/PG 25 x 160 H   | 4140.72580 | 40              | –   | –   | 160 | –   | –   | 405/405   |
| BT 40/PG 25 x 226 XL  | 8841.76050 | 40              | –   | 55  | 226 | –   | 140 | –         |
| BT 40/PG 25 x 326 XL  | 8841.76150 | 40              | –   | 55  | 326 | –   | 240 | –         |
| BT 40/PG 32 x 086     | 2140.73240 | 50              | –   | –   | 86  | –   | –   |           |
| BT-B 40               |            |                 |     |     |     |     |     |           |
| BT-B 40/PG 10 x 080 H | 4140.71043 | 16              | –   | –   | 80  | –   | –   | 285       |
| BT-B 40/PG 10 x 120 H | 4140.71063 | 16              | –   | –   | 120 | –   | –   | 325       |
| BT-B 40/PG 15 x 075   | 2140.71533 | 24              | –   | –   | 75  | –   | –   | –         |
| BT-B 40/PG 15 x 080 H | 4140.71543 | 24              | –   | –   | 80  | –   | –   | 285       |
| BT-B 40/PG 15 x 120 H | 4140.71563 | 24              | –   | –   | 120 | –   | –   | 325       |
| BT-B 40/PG 15 x 160 H | 4140.71583 | 24              | –   | –   | 160 | –   | –   | 325/285   |
| BT-B 40/PG 25 x 080 H | 4140.72543 | 40              | –   | –   | 80  | –   | –   | 405       |
| BT-B 40/PG 25 x 120 H | 4140.72563 | 40              | –   | –   | 120 | –   | –   | 405       |
| BT-B 40/PG 25 x 160 H | 4140.72583 | 40              | –   | –   | 160 | –   | –   | 405/405   |
| BT-B 40/PG 32 x 086   | 2140.73243 | 50              | –   | –   | 86  | –   | –   |           |

\*Balancing rings H: Ready to accept balancing rings

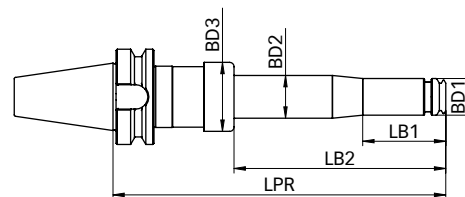


| Type                 | Part no.   | Dimensions [mm] |     |     |     |     |     | Accessory |
|----------------------|------------|-----------------|-----|-----|-----|-----|-----|-----------|
|                      |            | BD1             | BD2 | BD3 | LPR | LB1 | LB2 | FWR *     |
| BT 50                |            |                 |     |     |     |     |     |           |
| BT 50/PG 10 x 120 H  | 4150.71060 | 16              | –   | –   | 120 | –   | –   | 405       |
| BT 50/PG 10 x 160 H  | 4150.71080 | 16              | –   | –   | 160 | –   | –   | 405       |
| BT 50/PG 10 x 240 XL | 8851.71070 | 16              | 28  | 46  | 240 | 31  | 140 |           |
| BT 50/PG 10 x 260 XL | 8851.71090 | 16              | 28  | 46  | 260 | 31  | 140 | –         |
| BT 50/PG 10 x 300 XL | 8851.71130 | 16              | 28  | 46  | 300 | 31  | 140 | –         |
| BT 50/PG 10 x 340 XL | 8851.71170 | 16              | 28  | 46  | 340 | 31  | 240 | –         |
| BT 50/PG 10 x 360 XL | 8851.71190 | 16              | 28  | 46  | 360 | 31  | 240 | –         |
| BT 50/PG 10 x 400 XL | 8851.71230 | 16              | 28  | 46  | 400 | 31  | 240 | –         |
| BT 50/PG 15 x 120 H  | 4150.71560 | 24              | –   | –   | 120 | –   | –   | 325       |
| BT 50/PG 15 x 160 H  | 4150.71580 | 24              | –   | –   | 160 | –   | –   | 325       |
| BT 50/PG 15 x 240 XL | 8851.73070 | 24              | 28  | 46  | 240 | 55  | 140 | –         |
| BT 50/PG 15 x 260 XL | 8851.73090 | 24              | 28  | 46  | 260 | 55  | 140 | –         |
| BT 50/PG 15 x 300 XL | 8851.73130 | 24              | 28  | 46  | 300 | 55  | 140 | –         |
| BT 50/PG 15 x 340 XL | 8851.73170 | 24              | 28  | 46  | 340 | 55  | 240 | –         |
| BT 50/PG 15 x 360 XL | 8851.73190 | 24              | 28  | 46  | 360 | 55  | 240 | –         |
| BT 50/PG 15 x 400 XL | 8851.73230 | 24              | 28  | 46  | 400 | 55  | 240 | –         |
| BT 50/PG 25 x 100    | 2150.72550 | 40              | –   | –   | 100 | –   | –   | –         |
| BT 50/PG 25 x 120 H  | 4150.72560 | 40              | –   | –   | 120 | –   | –   | 505       |
| BT 50/PG 25 x 160 H  | 4150.72580 | 40              | –   | –   | 160 | –   | –   | 505/405   |
| BT 50/PG 25 x 200 H  | 4150.72590 | 40              | –   | –   | 200 | –   | –   | 505/405   |
| BT 50/PG 25 x 240 XL | 8851.76070 | 40              | –   | 55  | 240 | –   | 140 | –         |
| BT 50/PG 25 x 340 XL | 8851.76170 | 40              | –   | 55  | 340 | –   | 240 | –         |
| BT 50/PG 25 x 440 XL | 8851.76270 | 40              | –   | 55  | 440 | –   | 340 | –         |
| BT 50/PG 32 x 100    | 2150.73250 | 50              | –   | –   | 100 | –   | –   | –         |
| BT 50/PG 32 x 240 XL | 8851.78070 | 50              | –   | 58  | 240 | –   | 140 | –         |
| BT 50/PG 32 x 340 XL | 8851.78170 | 50              | –   | 58  | 340 | –   | 240 | –         |
| BT 50/PG 32 x 440 XL | 8851.78270 | 50              | –   | 58  | 440 | –   | 340 | –         |

\*Balancing rings H: Ready to accept balancing rings



BT / PG



BT / PG XL

## BT-OM toolholders

| Type                   | Part no.   | Dimensions [mm] |     |     |     | Accessory |
|------------------------|------------|-----------------|-----|-----|-----|-----------|
|                        |            | BD1             | BD2 | LPR | LB1 | FWR*      |
| BT-OM                  |            |                 |     |     |     |           |
| BT-OM 30/PG 10 x 062   | 2130.71028 | 16              | –   | 62  | –   | –         |
| BT-OM 30/PG 15 x 070 H | 4130.71538 | 24              | –   | 70  | –   | 285       |
| BT-OM 30/PG 25 x 080 H | 4130.72548 | 40              | –   | 80  | –   | 405       |

\*Balancing rings H: Ready to accept balancing rings

### Information

## BT-OM / PG toolholders without drive slots

### Applications

This special toolholder without drive slots is designed for use on HAAS and HURCO CNC-machining centers, for High Speed Cutting (HSC) and High Performance Cutting (HPC). Use up to the max. power limit of the processing machine. The anti-vibration characteristics of the BT-OM / PG toolholder reduce the wear of spindle and tool.

### Balancing

REGO-FIX BT-OM / PG toolholders are balanced to G 2.5 @ 30,000 rpm / <1gmm. Type H toolholders are compatible with Hi-Q® balancing rings which allow precision balancing of the entire system including cutting tool up to 80,000 rpm depending on the balancing rings used.

### Cooling options

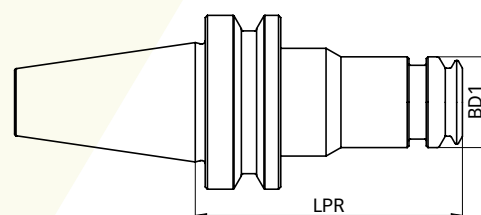
PG standard collets for tools with an internal coolant supply (metallic sealed).  
Coolant flush collets PG-CF for peripheral cooling.

### Matched tooling system for best fit

For highest precision and best results the entire machining system counts. Therefore REGO-FIX components are carefully matched for optimum fit and accuracy. This guarantees the best runout and balance.

*For the influence of runout on tool life, please refer to page 353.*

*Accessories are not included in delivery.*



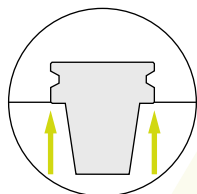
BT-OM / PG



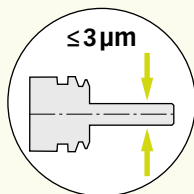


# REGO-FIX BT+ dual contact toolholders

## Key advantages



Higher collet holder stiffness due to taper (AT1) and face contact



Improved machining accuracy and better surface finish

**Certified** The BIG PLUS SYSTEM – licensed by BIG Daishowa – is manufactured at REGO-FIX in Switzerland under license according to BIG PLUS specifications.

## Features and benefits

### Total system runout TIR ≤ 0.0001" (3 μm)

Our holistic system consists of a powRgrip® toolholder and collet. All components together ensure best runout and accuracy.

### Surface finish max. Ra 0.25

Achieve high clamping force and high transferable torque.

### Balancing

100 % balanced to G 2.5 @ 25,000 rpm/≤ 1 gmm.

### Hi-Q® balancing system

Ready to accept Hi-Q® balancing rings which allow for the offset of the imbalance introduced by the cutting tool up to 80,000 rpm depending on the balancing rings used. All collets holders with the additional type information "H" in the article name are designed for balancing rings.

### Vibration damping

Our holders offer excellent vibration damping to sustain a high surface finish and can help prevent chatter.

## Balancing specifications

|        |                        |
|--------|------------------------|
| BT+ 30 | balanced to 30,000 rpm |
| BT+ 40 | G 2.5 @ 25,000 rpm     |
| BT+ 50 | G 2.5 @ 25,000 rpm     |



Accessories are not included in delivery. Form B available on request.

| Type                 | Part no.   | Dimensions [mm] |     | Accessory |
|----------------------|------------|-----------------|-----|-----------|
|                      |            | BD1             | LPR | FWR*      |
| BT+ 30               |            |                 |     |           |
| BT+ 30/PG 6 x 080 H  | 4130.70646 | 10              | 80  | 225       |
| BT+ 30/PG 6 x 100 H  | 4130.70656 | 10              | 100 | 225       |
| BT+ 30/PG 10 x 080 H | 4130.71046 | 16              | 80  | 285       |
| BT+ 30/PG 10 x 120 H | 4130.71066 | 16              | 120 | 285       |
| BT+ 30/PG 15 x 070 H | 4130.71536 | 24              | 70  | 285       |
| BT+ 30/PG 15 x 120 H | 4130.71566 | 24              | 120 | 285       |
| BT+ 30/PG 25 x 080 H | 4130.72546 | 40              | 80  | 405       |
| BT+ 30/PG 25 x 160 H | 4130.72586 | 40              | 160 | 405/405   |

|                           |            |    |     |   |
|---------------------------|------------|----|-----|---|
| <b>BT+ 30 toolVibe**</b>  |            |    |     |   |
| BT+ 30 / PG15 x 100 TV*** | 5130.91556 | 24 | 100 | – |

|                      |            |    |     |           |
|----------------------|------------|----|-----|-----------|
| <b>BT+ 40</b>        |            |    |     |           |
| BT+ 40/PG 10 x 080 H | 4140.71046 | 16 | 80  | 285       |
| BT+ 40/PG 10 x 120 H | 4140.71066 | 16 | 120 | 325       |
| BT+ 40/PG 15 x 080 H | 4140.71546 | 24 | 80  | 285       |
| BT+ 40/PG 15 x 120 H | 4140.71566 | 24 | 120 | 325       |
| BT+ 40/PG 25 x 080 H | 4140.72546 | 40 | 80  | 405       |
| BT+ 40/PG 25 x 120 H | 4140.72566 | 40 | 120 | 405       |
| BT+ 40/PG 25 x 160 H | 4140.72586 | 40 | 160 | 405 / 405 |
| BT+ 40/PG 32 x 086   | 2140.73246 | 50 | 86  | –         |

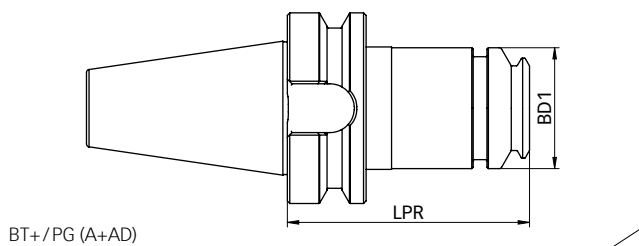
|                            |            |    |     |   |
|----------------------------|------------|----|-----|---|
| <b>BT+ 40 toolVibe**</b>   |            |    |     |   |
| BT+ 40 / PG 25 x 120 TV*** | 5140.92556 | 40 | 120 | – |

|                      |            |    |     |           |
|----------------------|------------|----|-----|-----------|
| <b>BT+ 50</b>        |            |    |     |           |
| BT+ 50/PG 25 x 120 H | 4150.72566 | 40 | 120 | 505       |
| BT+ 50/PG 25 x 160 H | 4150.72586 | 40 | 160 | 505 / 405 |

\*Balancing rings H: Ready to accept balancing rings

\*\*For more information on toolVibe, see page 304.

\*\*\*Also fits standard spindle without dual contact.





# CAT steep taper toolholders

Universally suitable for different machining applications

ASME B5.50

## Features and benefits

### **Total system runout TIR $\leq 0.0001"$ (3 $\mu\text{m}$ )**

Our holistic system consists of a powRgrip® toolholder and collet. All components together ensure best runout and accuracy.

### **Toolholder runout TIR $\leq 1 \mu\text{m}$**

Measured from collet cavity to outer taper.

### **Taper accuracy AT3**

Better spindle-to-holder fit and accuracy.

### **Surface finish max. Ra 0.25**

Achieve high clamping force and high transferable torque.

### **Balancing**

100% balanced to G 2.5 @ 25,000 rpm.

### **Balancing in XL toolholders**

Runout TIR  $\leq 10 \mu\text{m}$

100% balanced to G 2.5 @ 5,000 rpm.

### **Hi-Q® balancing system**

Ready to accept Hi-Q® balancing rings which allow for the offset of the imbalance introduced by the cutting tool up to 80,000 rpm depending on the balancing rings used. All toolholders with the additional type information "H" in the part number are designed for balancing rings.

### **Vibration damping**

Our holders offer excellent vibration damping to sustain a high surface finish and can help prevent chatter.

### **ID chip hole**

In accordance with DIN 69873 for 10 mm diameter.



*Accessories are not included in delivery. Other XL sizes available on request.*

# CAT toolholders

CAT

ASME B5.50

CAT-B

ASME B5.50

| Type                    | Part no.   | Dimensions  |             |             |               |             |               | Accessory |
|-------------------------|------------|-------------|-------------|-------------|---------------|-------------|---------------|-----------|
|                         |            | BD1<br>[mm] | BD2<br>[mm] | BD3<br>[mm] | LPR<br>[inch] | LB1<br>[mm] | LB2<br>[inch] | FWR *     |
| CAT 40                  |            |             |             |             |               |             |               |           |
| CAT 40/PG 6 x 3" H**    | 4340.70631 | 10          | –           | –           | 3"            | –           | –             | 285       |
| CAT 40/PG 10 x 3,5" H   | 4340.71001 | 16          | –           | –           | 3,5"          | –           | –             | 285       |
| CAT 40/PG 10 x 5" H     | 4340.71061 | 16          | –           | –           | 5"            | –           | –             | 285       |
| CAT 40/PG 10 x 6" H     | 4340.71071 | 16          | –           | –           | 6"            | –           | –             | 285       |
| CAT 40/PG 10 x 8" XL    | 8843.71031 | 16          | 28          | 42          | 8"            | 31          | 4"            | –         |
| CAT 40/PG 10 x 10" XL   | 8843.71081 | 16          | 28          | 42          | 10"           | 31          | 4"            | –         |
| CAT 40/PG 10 x 12" XL   | 8843.71131 | 16          | 28          | 42          | 12"           | 31          | 8"            | –         |
| CAT 40/PG 10 x 14" XL   | 8843.71181 | 16          | 28          | 42          | 14"           | 31          | 8"            | –         |
| CAT 40/PG 15 x 3,15" H  | 4340.71541 | 24          | –           | –           | 3,15"         | –           | –             | 285       |
| CAT 40/PG 15 x 4" H     | 4340.71551 | 24          | –           | –           | 4"            | –           | –             | 285       |
| CAT 40/PG 15 x 5" H     | 4340.71561 | 24          | –           | –           | 5"            | –           | –             | 285       |
| CAT 40/PG 15 x 6" H     | 4340.71571 | 24          | –           | –           | 6"            | –           | –             | 325/285   |
| CAT 40/PG 15 x 8" XL    | 8843.73031 | 24          | 28          | 42          | 8"            | 55          | 4"            | –         |
| CAT 40/PG 15 x 10" XL   | 8843.73081 | 24          | 28          | 42          | 10"           | 55          | 4"            | –         |
| CAT 40/PG 15 x 12" XL   | 8843.73131 | 24          | 28          | 42          | 12"           | 55          | 8"            | –         |
| CAT 40/PG 15 x 14" XL   | 8843.73181 | 24          | 28          | 42          | 14"           | 55          | 8"            | –         |
| CAT 40/PG 25 x 2,8"     | 2340.72531 | 40          | –           | –           | 2,8"          | –           | –             | –         |
| CAT 40/PG 25 x 3,15" H  | 4340.72541 | 40          | –           | –           | 3,15"         | –           | –             | 405       |
| CAT 40/PG 25 x 4" H     | 4340.72551 | 40          | –           | –           | 4"            | –           | –             | 405       |
| CAT 40/PG 25 x 6" H     | 4340.72571 | 40          | –           | –           | 6"            | –           | –             | 405/405   |
| CAT 40/PG 25 x 8" H**   | 4340.72591 | 40          | –           | –           | 8"            | –           | –             | 405/405   |
| CAT 40/PG 25 x 10" XL** | 8843.76081 | 40          | –           | 55          | 10"           | –           | 4"            | –         |
| CAT 40/PG 25 x 14" XL   | 8843.76181 | 40          | –           | 55          | 14"           | –           | 8"            | –         |
| CAT 40/PG 32 x 3,5"     | 2340.73201 | 50          | –           | –           | 3,5"          | –           | –             | –         |
| CAT 40/PG 32 x 4,3" H   | 4340.73251 | 50          | –           | –           | 4,3"          | –           | –             | 505       |
| CAT 40/PG 32 x 6" H     | 4340.73271 | 50          | –           | –           | 6"            | –           | –             | 505/505   |

|                          |            |    |   |   |       |   |   |         |
|--------------------------|------------|----|---|---|-------|---|---|---------|
| <b>CAT-B 40</b>          |            |    |   |   |       |   |   |         |
| CAT-B 40/PG 10 x 3,5" H  | 4340.71004 | 16 | – | – | 3,5"  | – | – | 285     |
| CAT-B 40/PG 10 x 6" H    | 4340.71074 | 16 | – | – | 6"    | – | – | 285     |
| CAT-B 40/PG 15 x 3,15" H | 4340.71544 | 24 | – | – | 3,15" | – | – | 285     |
| CAT-B 40/PG 15 x 4" H    | 4340.71554 | 24 | – | – | 4"    | – | – | 285     |
| CAT-B 40/PG 15 x 6" H    | 4340.71574 | 24 | – | – | 6"    | – | – | 325/285 |
| CAT-B 40/PG 25 x 2,8"*** | 2340.72534 | 40 | – | – | 2,8"  | – | – | –       |
| CAT-B 40/PG 25 x 3,15" H | 4340.72544 | 40 | – | – | 3,15" | – | – | 405     |
| CAT-B 40/PG 25 x 4" H    | 4340.72554 | 40 | – | – | 4"    | – | – | 405     |
| CAT-B 40/PG 25 x 6" H    | 4340.72574 | 40 | – | – | 6"    | – | – | 405/405 |
| CAT-B 40/PG 32 x 4,3" H  | 4340.73254 | 50 | – | – | 4,3"  | – | – | 505     |
| CAT-B 40/PG 32 x 6" H    | 4340.73274 | 50 | – | – | 6"    | – | – | 505/505 |

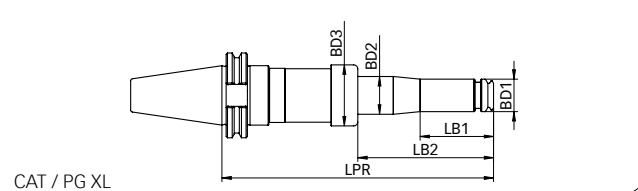
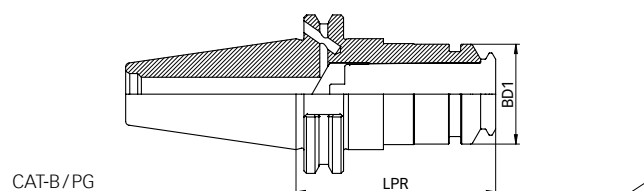
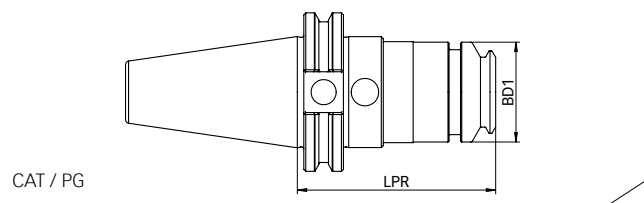
\*Balancing rings H: Ready to accept balancing rings

\*\*USA only

| Type                     | Part no.   | Dimensions  |             |             |               |             |               | Accessory |
|--------------------------|------------|-------------|-------------|-------------|---------------|-------------|---------------|-----------|
|                          |            | BD1<br>[mm] | BD2<br>[mm] | BD3<br>[mm] | LPR<br>[inch] | LB1<br>[mm] | LB2<br>[inch] | FWR *     |
| CAT 50                   |            |             |             |             |               |             |               |           |
| CAT 50/PG 10 x 4" H      | 4350.71051 | 16          | –           | –           | 4"            | –           | –             | 405       |
| CAT 50/PG 10 x 8" XL     | 8853.71031 | 16          | 28          | 46          | 8"            | 31          | 4"            |           |
| CAT 50/PG 10 x 10" XL    | 8853.71081 | 16          | 28          | 46          | 10"           | 31          | 4"            | –         |
| CAT 50/PG 10 x 12" XL    | 8853.71131 | 16          | 28          | 46          | 12"           | 31          | 8"            | –         |
| CAT 50/PG 10 x 14" XL    | 8853.71181 | 16          | 28          | 46          | 14"           | 31          | 8"            | –         |
| CAT 50/PG 15 x 4" H      | 4350.71551 | 24          | –           | –           | 4"            | –           | –             | 405       |
| CAT 50/PG 15 x 8" XL     | 8853.73031 | 24          | 28          | 46          | 8"            | 55          | 4"            | –         |
| CAT 50/PG 15 x 10" XL    | 8853.73081 | 24          | 28          | 46          | 10"           | 55          | 4"            | –         |
| CAT 50/PG 15 x 12" XL    | 8853.73131 | 24          | 28          | 46          | 12"           | 55          | 8"            | –         |
| CAT 50/PG 15 x 14" XL    | 8853.73181 | 24          | 28          | 46          | 14"           | 55          | 8"            | –         |
| CAT 50/PG 25 x 4" H      | 4350.72551 | 40          | –           | –           | 4"            | –           | –             | 505       |
| CAT 50/PG 25 x 6" H      | 4350.72571 | 40          | –           | –           | 6"            | –           | –             | 505/405   |
| CAT 50/PG 25 x 8,3" XL** | 8853.76041 | 40          | –           | 55          | 8,3"          | –           | 4"            | –         |
| CAT 50/PG 25 x 10" XL    | 8853.76081 | 40          | –           | 55          | 10"           | –           | 4"            | –         |
| CAT 50/PG 25 x 14" XL    | 8853.76181 | 40          | –           | 55          | 14"           | –           | 8"            | –         |
| CAT 50/PG 25 x 17,69" XL | 8853.76271 | 40          | –           | 55          | 17.69"        | –           | 13.39"        | –         |
| CAT 50/PG 25 x 19,39" XL | 8853.76321 | 40          | –           | 55          | 19.39"        | –           | 13.39"        |           |
| CAT 50/PG 32 x 3,1"      | 2350.73231 | 50          | –           | –           | 3,1"          | –           | –             | –         |
| CAT 50/PG 32 x 4,3" H    | 4350.73251 | 50          | –           | –           | 4,3"          | –           | –             | 505       |
| CAT 50/PG 32 x 6" H      | 4350.73271 | 50          | –           | –           | 6"            | –           | –             | 505/505   |
| CAT 50/PG 32 x 9,81" XL  | 8853.78071 | 50          | –           | 58          | 9,81"         | –           | –             | –         |
| CAT 50/PG 32 x 11,51" XL | 8853.78121 | 50          | –           | 58          | 11,51"        | –           | –             | –         |
| CAT 50/PG 32 x 13,75" XL | 8853.78171 | 50          | –           | 58          | 13,75"        | –           | –             | –         |
| CAT 50/PG 32 x 15,45" XL | 8853.78221 | 50          | –           | 58          | 15,45"        | –           | –             | –         |
| CAT 50/PG 32 x 17,69" XL | 8853.78271 | 50          | –           | 58          | 17.69"        | –           | 13.69"        | –         |
| CAT 50/PG 32 x 19,39" XL | 8853.78321 | 50          | –           | 58          | 19.39"        | –           | 13.69"        |           |

\*Balancing rings H: Ready to accept balancing rings

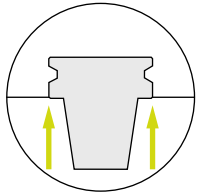
\*\*USA only



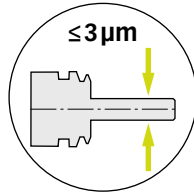
# REGO-FIX CAT+ dual contact toolholders

REGO-PLUS  
dual contact

## Key advantages



Higher toolholder stiffness due to taper (AT1) and face contact



Total system runout  
TIR ≤ 3µm at 3xD

**Certified** The BIG PLUS SYSTEM – licensed by BIG Daishowa – is manufactured at REGO-FIX in Switzerland under license according to BIG PLUS specifications.

| Type                    | Part no.   | Dimensions  |             |             |               |             |               | Accessory |
|-------------------------|------------|-------------|-------------|-------------|---------------|-------------|---------------|-----------|
|                         |            | BD1<br>[mm] | BD2<br>[mm] | BD3<br>[mm] | LPR<br>[inch] | LB1<br>[mm] | LB2<br>[inch] | FWR *     |
| CAT+ 40**               |            |             |             |             |               |             |               |           |
| CAT+ 40/PG 10 x 3,5" H  | 4340.71006 | 16          | –           | –           | 3,5"          | –           | –             | 285       |
| CAT+ 40/PG 10 x 4" H    | 4340.71056 | 16          | –           | –           | 4"            | –           | –             | 285       |
| CAT+ 40/PG 10 x 6" H    | 4340.71076 | 16          | –           | –           | 6"            | –           | –             | 285       |
| CAT+ 40/PG 15 x 3,15" H | 4340.71546 | 24          | –           | –           | 3,15"         | –           | –             | 285       |
| CAT+ 40/PG 15 x 4" H    | 4340.71556 | 24          | –           | –           | 4"            | –           | –             | 285       |
| CAT+ 40/PG 15 x 6" H    | 4340.71576 | 24          | –           | –           | 6"            | –           | –             | 325/285   |
| CAT+ 40/PG 25 x 3,15" H | 4340.72546 | 40          | –           | –           | 3,15"         | –           | –             | 405       |
| CAT+ 40/PG 25 x 4" H    | 4340.72556 | 40          | –           | –           | 4"            | –           | –             | 405       |
| CAT+ 40/PG 25 x 6" H    | 4340.72576 | 40          | –           | –           | 6"            | –           | –             | 405/405   |
| CAT+ 40/PG 32 x 3,5"    | 2340.73206 | 50          | –           | –           | 3,5"          | –           | –             | –         |
| CAT+ 40/PG 32 x 4"      | 4340.73246 | 50          | –           | –           | 4"            | –           | –             | 505       |
| CAT+ 40/PG 32 x 6" H    | 4340.73276 | 50          | –           | –           | 6"            | –           | –             | 505       |

|                                       |            |    |   |   |      |   |   |   |
|---------------------------------------|------------|----|---|---|------|---|---|---|
| <b>CAT+ 40 toolVibe***</b>            |            |    |   |   |      |   |   |   |
| CAT+ 40/PG 15 x 4" TV <sup>1)</sup>   | 5340.91556 | 24 | – | – | 4"   | – | – | – |
| CAT+ 40/PG 25 x 4,3" TV <sup>1)</sup> | 5340.92556 | 40 | – | – | 4,3" | – | – | – |

|                        |            |    |   |   |      |   |   |         |
|------------------------|------------|----|---|---|------|---|---|---------|
| <b>CAT+ 50**</b>       |            |    |   |   |      |   |   |         |
| CAT+ 50/PG 10 x 4" H   | 4350.71056 | 16 | – | – | 4"   | – | – | 405     |
| CAT+ 50/PG 15 x 4" H   | 4350.71556 | 24 | – | – | 4"   | – | – | 405     |
| CAT+ 50/PG 15 x 6" H   | 4350.71576 | 24 | – | – | 6"   | – | – | 405     |
| CAT+ 50/PG 25 x 4" H   | 4350.72556 | 40 | – | – | 4"   | – | – | 505     |
| CAT+ 50/PG 25 x 6" H   | 4350.72576 | 40 | – | – | 6"   | – | – | 505/405 |
| CAT+ 50/PG 32 x 4,3" H | 4350.73256 | 50 | – | – | 4,3" | – | – | 505     |
| CAT+ 50/PG 32 x 6" H   | 4350.73276 | 50 | – | – | 6"   | – | – | 505/505 |

\*Balancing rings H: Ready to accept balancing rings

\*\*\*For more information on toolVibe, see page 304.

<sup>1)</sup> Also fits standard spindle without dual contact.

\*\*USA only

# REGO-FIX CAPTO toolholders

These self-centering and balanced toolholders enable high-torque transmission and show a high-bending strength.

ISO 12164

## Features and benefits

### Total system runout TIR $\leq 3 \mu\text{m}$ @ 3xD

Our holistic system consists of a powRgrip® toolholder and collet. All components together ensure best runout and accuracy.

### Toolholder runout TIR $\leq 1 \mu\text{m}$

Measured from collet cavity to outer taper.

### Surface finish max. Ra 0.25

Achieve high clamping force and high transferable torque.

### Balancing

100% balanced to G 2.5 @ 25,000 rpm / < 1gmm.

### XL toolholders

Runout TIR  $\leq 10 \mu\text{m}$

100% balanced to G 2.5 @ 5,000 rpm.

### Hi-Q® balancing system

Ready to accept Hi-Q® balancing rings which allow for the offset of the imbalance introduced by the cutting tool up to 80,000 rpm depending on the balancing rings used. All toolholders with the additional type information "H" in the part number are designed for balancing rings.

### Vibration damping

Our holders offer excellent vibration damping to sustain a high surface finish and can prevent cutting force alterations.

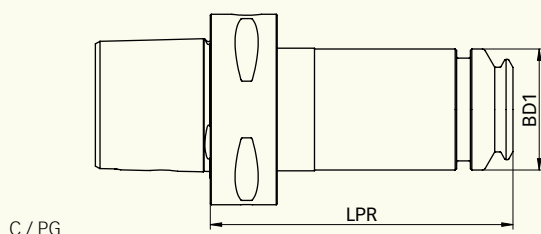
### Balancing specifications

|    |                        |
|----|------------------------|
| C3 | balanced to 60,000 rpm |
| C4 | balanced to 45,000 rpm |
| C5 | balanced to 36,000 rpm |
| C6 | G 2.5 @ 25,000 rpm     |
| C8 | G 2.5 @ 25,000 rpm     |

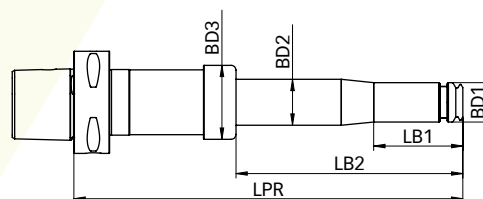
**Certified** REGO-FIX CAPTO – licensed by Sandvik Coromant – is manufactured at REGO-FIX Switzerland under license according to CAPTO specifications.



Accessories are not included in delivery. Other XL sizes available on request.



C / PG



C / PG XL



| Type              | Part no.   | Dimensions [mm] |     |     |     |     |     | Accessory |
|-------------------|------------|-----------------|-----|-----|-----|-----|-----|-----------|
|                   |            | BD1             | BD2 | BD3 | LPR | LB1 | LB2 | FWR *     |
| C3                |            |                 |     |     |     |     |     |           |
| C3/PG 6 x 045     | 2803.70610 | 10              | –   | –   | 45  | –   | –   | –         |
| C3/PG 10 x 055    | 2803.71010 | 16              | –   | –   | 55  | –   | –   | –         |
| C3/PG 15 x 067    | 2803.71520 | 24              | –   | –   | 67  | –   | –   | –         |
| C4                |            |                 |     |     |     |     |     |           |
| C4/PG 6 x 048     | 2804.70610 | 10              | –   | –   | 48  | –   | –   | –         |
| C4/PG 10 x 060    | 2804.71020 | 16              | –   | –   | 60  | –   | –   | –         |
| C4/PG 10 x 080 H  | 4804.71040 | 16              | –   | –   | 80  | –   | –   | 225       |
| C4/PG 15 x 062    | 2804.71520 | 24              | –   | –   | 62  | –   | –   | –         |
| C4/PG 15 x 080 H  | 4804.71540 | 24              | –   | –   | 80  | –   | –   | 285       |
| C5                |            |                 |     |     |     |     |     |           |
| C5/PG 6 x 080 H   | 4805.70640 | 10              | –   | –   | 80  | –   | –   | 225       |
| C5/PG 10 x 060    | 2805.71020 | 16              | –   | –   | 60  | –   | –   | –         |
| C5/PG 10 x 080 H  | 4805.71040 | 16              | –   | –   | 80  | –   | –   | 285       |
| C5/PG 10 x 120 H  | 4805.71060 | 16              | –   | –   | 120 | –   | –   | 285       |
| C5/PG 15 x 065    | 2805.71520 | 24              | –   | –   | 65  | –   | –   | –         |
| C5/PG 15 x 080 H  | 4805.71540 | 24              | –   | –   | 80  | –   | –   | 285       |
| C5/PG 15 x 120 H  | 4805.71560 | 24              | –   | –   | 120 | –   | –   | 325       |
| C5/PG 25 x 080    | 2805.72540 | 40              | –   | –   | 80  | –   | –   | –         |
| C5/PG 25 x 100 H  | 4805.72550 | 40              | –   | –   | 100 | –   | –   | 405       |
| C6                |            |                 |     |     |     |     |     |           |
| C6/PG 10 x 070    | 2806.71030 | 16              | –   | –   | 70  | –   | –   | –         |
| C6/PG 10 x 080 H  | 4806.71040 | 16              | –   | –   | 80  | –   | –   | 325       |
| C6/PG 10 x 120 H  | 4806.71060 | 16              | –   | –   | 120 | –   | –   | 325       |
| C6/PG 10 x 160 H  | 4806.71080 | 16              | –   | –   | 160 | –   | –   | 325       |
| C6/PG 10 x 225 XL | 8886.71050 | 16              | 28  | 46  | 225 | 31  | 140 | –         |
| C6/PG 10 x 240 XL | 8886.71070 | 16              | 28  | 46  | 240 | 31  | 140 | –         |
| C6/PG 10 x 260 XL | 8886.71090 | 16              | 28  | 46  | 260 | 31  | 140 | –         |
| C6/PG 10 x 300 XL | 8886.71130 | 16              | 28  | 46  | 300 | 31  | 140 | –         |
| C6/PG 10 x 325 XL | 8886.71150 | 16              | 28  | 46  | 325 | 31  | 240 | –         |
| C6/PG 10 x 340 XL | 8886.71170 | 16              | 28  | 46  | 340 | 31  | 240 | –         |
| C6/PG 10 x 360 XL | 8886.71190 | 16              | 28  | 46  | 360 | 31  | 240 | –         |
| C6/PG 10 x 400 XL | 8886.71230 | 16              | 28  | 46  | 400 | 31  | 240 | –         |

\*Balancing rings H: Ready to accept balancing rings

All REGO-FIX CAPTO holders are also available with an ID chip hole on request

| Type              | Part no.   | Dimensions [mm] |     |     |     |     |     | Accessory |
|-------------------|------------|-----------------|-----|-----|-----|-----|-----|-----------|
|                   |            | BD1             | BD2 | BD3 | LPR | LB1 | LB2 | FWR *     |
| C6/PG 15 x 071    | 2806.71530 | 24              | –   | –   | 71  | –   | –   | –         |
| C6/PG 15 x 080 H  | 4806.71540 | 24              | –   | –   | 80  | –   | –   | 325       |
| C6/PG 15 x 120 H  | 4806.71560 | 24              | –   | –   | 120 | –   | –   | 325       |
| C6/PG 15 x 160 H  | 4806.71580 | 24              | –   | –   | 160 | –   | –   | 325       |
| C6/PG 15 x 225 XL | 8886.73050 | 24              | 28  | 46  | 225 | 55  | 140 | –         |
| C6/PG 15 x 240 XL | 8886.73070 | 24              | 28  | 46  | 240 | 55  | 140 | –         |
| C6/PG 15 x 260 XL | 8886.73090 | 24              | 28  | 46  | 260 | 55  | 140 | –         |
| C6/PG 15 x 300 XL | 8886.73130 | 24              | 28  | 46  | 300 | 55  | 140 | –         |
| C6/PG 15 x 325 XL | 8886.73150 | 24              | 28  | 46  | 325 | 55  | 240 | –         |
| C6/PG 15 x 340 XL | 8886.73170 | 24              | 28  | 46  | 340 | 55  | 240 | –         |
| C6/PG 15 x 360 XL | 8886.73190 | 24              | 28  | 46  | 360 | 55  | 240 | –         |
| C6/PG 15 x 400 XL | 8886.73230 | 24              | 28  | 46  | 400 | 55  | 240 | –         |
| C6/PG 25 x 085    | 2806.72540 | 40              | –   | –   | 85  | –   | –   | –         |
| C6/PG 25 x 100 H  | 4806.72550 | 40              | –   | –   | 100 | –   | –   | 405       |
| C6/PG 25 x 120 H  | 4806.72560 | 40              | –   | –   | 120 | –   | –   | 405       |
| C6/PG 25 x 160 H  | 4806.72580 | 40              | –   | –   | 160 | –   | –   | 405       |
| C6/PG 25 x 230 XL | 8886.76060 | 40              | –   | 55  | 230 | –   | 140 | –         |
| C6/PG 25 x 330 XL | 8886.76160 | 40              | –   | 55  | 330 | –   | 240 | –         |
| C6/PG 32 x 090    | 2806.73240 | 50              | –   | –   | 90  | –   | –   | –         |
| C6/PG 32 x 230 XL | 8886.78060 | 50              | –   | 58  | 230 | –   | 140 | –         |
| C6/PG 32 x 330 XL | 8886.78160 | 50              | –   | 58  | 330 | –   | 240 | –         |

## C6 toolVibe\*\*

|                   |            |    |   |   |     |   |   |   |
|-------------------|------------|----|---|---|-----|---|---|---|
| C6/PG 25 x 120 TV | 5806.92560 | 40 | – | – | 120 | – | – | – |
|-------------------|------------|----|---|---|-----|---|---|---|

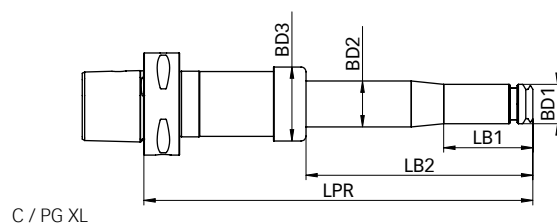
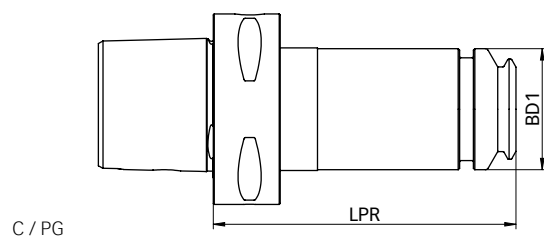
## C8

|                   |            |    |    |    |     |    |     |   |
|-------------------|------------|----|----|----|-----|----|-----|---|
| C8/PG 10 x 232 XL | 8888.71060 | 16 | 28 | 46 | 232 | 31 | 140 | – |
| C8/PG 10 x 332 XL | 8888.71160 | 16 | 28 | 46 | 332 | 31 | 240 | – |
| C8/PG 15 x 232 XL | 8888.73060 | 24 | 28 | 46 | 232 | 55 | 140 | – |
| C8/PG 15 x 332 XL | 8888.73160 | 24 | 28 | 46 | 332 | 55 | 240 | – |
| C8/PG 25 x 092    | 2808.72540 | 40 | –  | –  | 92  | –  | –   | – |
| C8/PG 25 x 230 XL | 8888.76060 | 40 | –  | 55 | 230 | –  | 140 | – |
| C8/PG 25 x 330 XL | 8888.76160 | 40 | –  | 55 | 330 | –  | 240 | – |
| C8/PG 32 x 090    | 2808.73240 | 50 | –  | –  | 90  | –  | –   | – |
| C8/PG 32 x 230 XL | 8888.78060 | 50 | –  | 58 | 230 | –  | 140 | – |
| C8/PG 32 x 330 XL | 8888.78160 | 50 | –  | 58 | 330 | –  | 240 | – |

\*Balancing rings H: Ready to accept balancing rings

All REGO-FIX CAPTO holders are also available with an ID chip hole on request

\*\*For more information on toolVibe, see page 304.



# ISO 20 toolholder



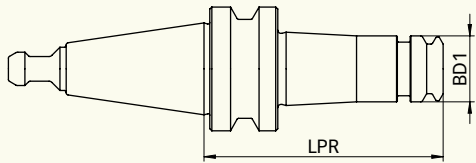
**Applications** The REGO-FIX ISO 20 toolholders are designed to work with the HAAS Office Mill. To utilize the full potential of your machine, use the REGO-FIX brand of holders and collets to see the difference quality can achieve in your machining operations

**Balancing**

// 100% balanced to 50,000 rpm.

**Matched tooling system for best fit** For highest precision and best results the whole system counts. Therefore REGO-FIX components are carefully matched for optimum fit and accuracy. This guarantees the best runout and balance.

*More information about the influence of TIR on tool life see page 353.*



ISO-HAAS / PG

| Type                      | Part no.   | Dimensions [mm] |     |
|---------------------------|------------|-----------------|-----|
|                           |            | BD1             | LPR |
| ISO                       |            |                 |     |
| ISO-HAAS 20 / PG 6 x 075* | 8020.24207 | 10              | 75  |
| ISO-HAAS 20 / PG 10 x 058 | 2420.71015 | 16              | 58  |

\*USA only

# Cylindrical shank toolholders CYL

## CYL

### Features and benefits

#### Total system runout TIR $\leq 3 \mu\text{m}$ @ $3 \times D$

Our holistic system consists of a powRgrip® toolholder and collet. All components together ensure best runout and accuracy.

#### Toolholder runout TIR $\leq 1 \mu\text{m}$

Measured from collet cavity to outer shank.

#### Surface finish max. Ra 0.25

Achieve high clamping force and high transferable torque.

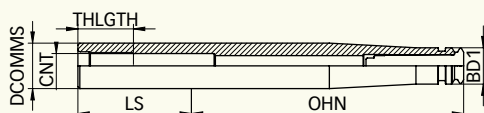
#### Minimal outside dimensions

Slim design provides more machining flexibility.

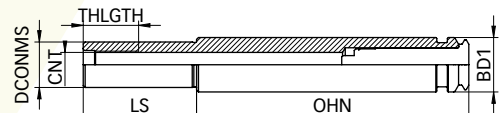
#### Extra length possible

CYL 10/PG and CYL 20/PG can be used as extensions.

When using cylindrical toolholders as extensions, the entire toolholder combination is subject to the same application limits as XL toolholders, regarding maximum permissible speeds and recommended machining methods.



Drawing 1



Drawing 2

| Type                | Part no.   | Dimensions [mm] |     |    |        | THLGTH | CNT      | Drawing |
|---------------------|------------|-----------------|-----|----|--------|--------|----------|---------|
|                     |            | BD1             | OHN | LS | DCONMS |        |          |         |
| CYL 10              |            |                 |     |    |        |        |          |         |
| CYL 10/PG 6 x 120   | 2610.70620 | 10              | 120 | 30 | 10     | 13     | M 5      | 1       |
| CYL 10/PG 10 x 120  | 2610.71020 | 16              | 120 | 40 | 10     | 13     | M 5      | 2       |
| CYL 20              |            |                 |     |    |        |        |          |         |
| CYL 20/PG 10 x 120  | 2620.71020 | 16              | 120 | 50 | 20     | 25     | M 12 x 1 | 1       |
| CYL 20/PG 10 x 160  | 2620.71040 | 16              | 160 | 50 | 20     | 25     | M 12 x 1 | 1       |
| CYL 20/PG 10 x 200  | 2620.71060 | 16              | 200 | 50 | 20     | 25     | M 12 x 1 | 1       |
| CYL 20/PG 15 x 120  | 2620.71520 | 24              | 120 | 50 | 20     | 25     | M 12 x 1 | 2       |
| CYL 25              |            |                 |     |    |        |        |          |         |
| CYL 25/PG 15 x 160  | 2625.71540 | 24              | 160 | 56 | 25     | 25     | M 12 x 1 | 1       |
| CYL 25/PG 15 x 240* | 8020.26257 | 24              | 240 | 56 | 25     | 25     | M 12 x 1 | 1       |
| CYL 25/PG 25 x 080* | 8020.25080 | 40              | 80  | 56 | 25     | 25     | M 12 x 1 | 2       |
| CYL 25/PG 25 x 100* | 8020.25100 | 40              | 100 | 56 | 25     | 25     | M 12 x 1 | 2       |
| CYL 25/PG 25 x 120* | 8020.25120 | 40              | 120 | 56 | 25     | 25     | M 12 x 1 | 2       |

\*USA only



# Form-fit for 100% pullout protection

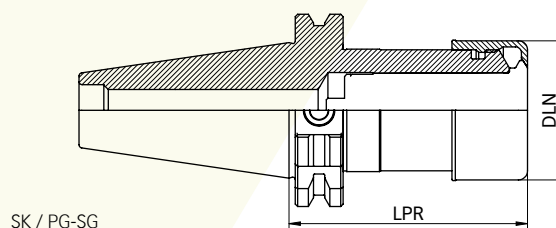
**Form and force-fitting clamping system** Tools and collets are 100% secured against tool pull-out, making secuRgrip® your safety net for successful machining. In high performance cutting (HPC), the tool can pull out of the clamping system during the milling operation and damage the workpiece. We developed the secuRgrip® locking system for operators who require 100% process security.

**Process security** Optimize your machining productivity by securing your processes.

Our secuRgrip® solution fits all standard tools with endmill flat according to DIN 6535-HB (metric). This means that no special tool shank form is required.

## secuRgrip® system elements

- // secuRgrip® threaded insert  
For all shanks with Weldon surface
- // secuRgrip® toolholder with thread
- // secuRgrip® PG 15-SG, PG 25-SG or PG 32-SG collet  
*For all secuRgrip® collet part numbers, please refer to page 84.*
- // secuRgrip® safety nut  
*The tightening torques for the secuRgrip® safety nuts can be found on page 370.*



## Expert advice

Freewheel wrench head, grip bar or torque wrench are required to safely fasten the nut.

*For all secuRgrip® accessories part numbers, please refer to page 338.*

*Included in delivery: secuRgrip® toolholder with secuRgrip® safety nut.*

| Type                           | Part no.   | Dimensions [mm] |     | Accessory |
|--------------------------------|------------|-----------------|-----|-----------|
|                                |            | DLN             | LPR | FWR*      |
| HSK / PG-SG                    |            |                 |     |           |
| HSK-A 63/PG 15-SG x 080 H      | 5563.71540 | 28              | 80  | 325       |
| HSK-A 63/PG 15-SG x 120 H      | 5563.71560 | 28              | 120 | 325       |
| HSK-A 63/PG 25-SG x 085 H NL** | 5563.72540 | 46              | 85  | 405       |
| HSK-A 63/PG 25-SG x 100 H      | 5563.72550 | 46              | 100 | 405       |
| HSK-A 63/PG 25-SG x 120 H      | 5563.72560 | 46              | 120 | 405       |
| HSK-A 63/PG 25-SG x 160 H      | 5563.72580 | 46              | 160 | 405 / 405 |
| HSK-A 63/PG 25-SG x 200 H      | 5563.72590 | 46              | 200 | 405 / 405 |
| HSK-A 63/PG 32-SG x 100        | 5563.73250 | 55              | 100 | –         |
| HSK-A 63/PG 32-SG x 120 H      | 5563.73260 | 55              | 120 | 505       |
| HSK-A 80/PG 32-SG x 105 H      | 5580.73250 | 55              | 105 | 505       |
| HSK-A 100/PG 25-SG x 100 H     | 5500.72550 | 46              | 100 | 505       |
| HSK-A 100/PG 25-SG x 120 H***  | 5500.72560 | 46              | 120 | 505       |
| HSK-A 100/PG 25-SG x 160 H     | 5500.72580 | 46              | 160 | 505 / 405 |
| HSK-A 100/PG 25-SG x 200 H     | 5500.72590 | 46              | 200 | 505 / 405 |
| HSK-A 100/PG 32-SG x 106 H     | 5500.73250 | 55              | 106 | 505       |
| HSK-A 100/PG 32-SG x 120 H***  | 5500.73260 | 55              | 120 | 505       |
| HSK-A 100/PG 32-SG x 160 H     | 5500.73280 | 55              | 160 | 505       |
| HSK-A 100/PG 32-SG x 200 H     | 5500.73290 | 55              | 200 | 505 / 505 |
| HSK-A 100/PG 48-SG x 125       | 5500.74860 | 76              | 125 | –         |
| HSK-A 125/PG 48-SG x 130       | 5502.74860 | 76              | 130 | –         |

|                        |            |    |     |           |
|------------------------|------------|----|-----|-----------|
| <b>SK / PG-SG</b>      |            |    |     |           |
| SK 40/PG 25-SG x 080 H | 5240.72540 | 46 | 80  | 405       |
| SK 40/PG 25-SG x 120 H | 5240.72560 | 46 | 120 | 405       |
| SK 40/PG 25-SG x 160 H | 5240.72580 | 46 | 160 | 405 / 405 |
| SK 40/PG 32-SG x 080   | 5240.73240 | 55 | 80  | –         |
| SK 50/PG 32-SG x 080   | 5250.73240 | 55 | 80  | –         |
| SK 50/PG 48-SG x 120   | 5250.74860 | 76 | 120 | –         |

|                        |            |    |     |     |
|------------------------|------------|----|-----|-----|
| <b>BT / PG-SG</b>      |            |    |     |     |
| BT 40/PG 25-SG x 080 H | 5140.72540 | 46 | 80  | 405 |
| BT 40/PG 25-SG x 120 H | 5140.72560 | 46 | 120 | 405 |
| BT 40/PG 32-SG x 086   | 5140.73240 | 55 | 86  | –   |
| BT 50/PG 25-SG x 100   | 5150.72550 | 46 | 100 | –   |
| BT 50/PG 25-SG x 120 H | 5150.72560 | 46 | 120 | 505 |
| BT 50/PG 32-SG x 100   | 5150.73250 | 55 | 100 | –   |
| BT 50/PG 48-SG x 115   | 5150.74850 | 76 | 115 | –   |

|                         |            |    |     |     |
|-------------------------|------------|----|-----|-----|
| <b>BT+ / PG-SG</b>      |            |    |     |     |
| BT+ 50/PG 25-SG x 120 H | 5150.72566 | 46 | 120 | 505 |

\*Balancing rings H: Ready to accept balancing rings  
\*\*\*USA only

\*\*Collets PG-L, PG-MQL and PG-Cryo cannot be used.  
Additional lengths and interfaces available on request

| Type                       | Part no.   | Dimensions [mm] |            | Accessory |
|----------------------------|------------|-----------------|------------|-----------|
|                            |            | DLN [mm]        | LPR [inch] | FWR*      |
| C/PG-SG                    |            |                 |            |           |
| C6/PG 25-SG x 100 H        | 5806.72550 | 46              | 100        | 405       |
| C6/PG 32-SG x 090          | 5806.73240 | 55              | 90         | –         |
| C8/PG 25-SG x 092          | 5808.72540 | 46              | 92         | –         |
| C8/PG 32-SG x 090          | 5808.73240 | 55              | 90         |           |
| CAT/PG-SG**                |            |                 |            |           |
| CAT 40/PG 25-SG x 2,8"     | 5340.72531 | 46              | 2,8"       | –         |
| CAT 40/PG 25-SG x 3,15" H  | 5340.72541 | 46              | 3,15"      | 405       |
| CAT 40/PG 25-SG x 4" H     | 5340.72551 | 46              | 4"         | 405       |
| CAT 40/PG 25-SG x 6" H     | 5340.72571 | 46              | 6"         | 405/405   |
| CAT 40/PG 32-SG x 3,5"     | 5340.73201 | 55              | 3,5"       | –         |
| CAT 40/PG 32-SG x 4,3" H   | 5340.73251 | 55              | 4,3"       | 505       |
| CAT 40/PG 32-SG x 6" H     | 5340.73271 | 55              | 6"         | 505/505   |
| CAT 50/PG 25-SG x 4" H     | 5350.72551 | 46              | 4"         | 405       |
| CAT 50/PG 25-SG x 6" H     | 5350.72571 | 46              | 6"         | 405/405   |
| CAT 50/PG 32-SG x 3,1" H   | 5350.73231 | 55              | 3,1"       | 505       |
| CAT 50/PG 32-SG x 4,3" H   | 5350.73251 | 55              | 4,3"       | 505       |
| CAT 50/PG 32-SG x 6" H     | 5350.73271 | 55              | 6"         | 505/505   |
| CAT 50/PG 48-SG x 4"       | 5350.74851 | 76              | 4"         | –         |
| CAT-B/PG-SG**              |            |                 |            |           |
| CAT-B 50/PG 25-SG x 4" H   | 5350.72554 | 46              | 4"         | 405       |
| CAT-B 50/PG 25-SG x 6" H   | 5350.72574 | 46              | 6"         | 405/405   |
| CAT-B 50/PG 32-SG x 4,3" H | 5350.73254 | 55              | 4,3"       | 505       |
| CAT-B 50/PG 32-SG x 6" H   | 5350.73274 | 55              | 6"         | 505/505   |
| CAT+ /PG-SG**              |            |                 |            |           |
| CAT+ 40/PG 25-SG x 3,15" H | 5340.72546 | 46              | 3,15"      | 405       |
| CAT+ 40/PG 25-SG x 4" H    | 5340.72556 | 46              | 4"         | 405       |
| CAT+ 40/PG 25-SG x 6" H    | 5340.72576 | 46              | 6"         | 405/405   |
| CAT+ 40/PG 32-SG x 3,5"    | 5340.73206 | 55              | 3,5"       | –         |
| CAT+ 40/PG 32-SG x 4" H    | 5340.73246 | 55              | 4"         | 505       |
| CAT+ 40/PG 32-SG x 6" H    | 5340.73276 | 55              | 6"         | 505/505   |
| CAT+ 50/PG 25-SG x 4" H    | 5350.72556 | 46              | 4"         | 405       |
| CAT+ 50/PG 25-SG x 6" H    | 5350.72576 | 46              | 6"         | 405/405   |
| CAT+ 50/PG 32-SG x 4,3" H  | 5350.73256 | 55              | 4,3"       | 505       |
| CAT+ 50/PG 32-SG x 6" H    | 5350.73276 | 55              | 6"         | 505/505   |

\*Balancing rings H: Ready to accept balancing rings

\*\*USA only

Included in delivery: secuRgrip® toolholder with secuRgrip® safety nut

Additional lengths and interfaces available on request.

**PG HD-SG Holders** Heavy Duty secuRgrip® toolholders are up to two times more rigid than standard holders. They include secuRgrip® safety nut for 100% protection against tool pullout.

## Features

- // Includes secuRgrip® design to prevent pullout
- // Most designs retain the use of balance rings
- // Fits existing powRgrip® clamping units

## Key Advantages

- // Up to 2 times more rigid than standard holders
- // Increases feed rates to maximize tooling efficiency
- // Better surface finish with less deflection

*The tightening torques for the secuRgrip® safety nuts can be found on page 370.*



| Type                               | Part no.   | Dimensions |          |            | Accessory |
|------------------------------------|------------|------------|----------|------------|-----------|
|                                    |            | DLN [mm]   | LPR [mm] | LPR [inch] | FWR*      |
| HSK-A/PG HD-SG                     |            |            |          |            |           |
| HSK-A 63/PG 25 HD-SG x 100 H       | 5563.82550 | 46         | 100      | –          | 405       |
| HSK-A 100/PG 25 HD-SG x 100 H      | 5500.82550 | 46         | 100      | –          | 405       |
| HSK-A 100/PG 32 HD-SG x 106 H      | 5500.83250 | 55         | 106      | –          | 505       |
| HSK-A 100/PG 32 HD-SG x 160 H**    | 8020.55007 | 55         | 160      | –          | 505       |
| HSK-A 125/PG 25 HD-SG x 105 H      | 5502.82550 | 46         | 105      | –          | 405       |
| HSK-A 125/PG 32 HD-SG x 112 H      | 5502.83250 | 55         | 112      | –          | 505       |
| HSK-FP 80/PG HD-SG                 |            |            |          |            |           |
| HSK-FP 80/PG 25 HD-SG x 085 H K*** | 8070.80250 | 46         | 85       | –          | 405       |
| HSK-FP 80/PG 32 HD-SG x 095 H K*** | 8070.80320 | 55         | 95       | –          | 505       |
| CAT/PG HD-SG**                     |            |            |          |            |           |
| CAT 50/PG 25 HD-SG x 6" H          | 5350.82571 | 46         | –        | 6"         | 405       |
| CAT 50/PG 32 HD-SG x 4,3" H        | 5350.83251 | 55         | –        | 4,3"       | 505       |
| CAT 50/PG 32 HD-SG x 6" H          | 5350.83271 | 55         | –        | 6"         | 505       |

\*Balancing rings H: Ready to accept balancing rings

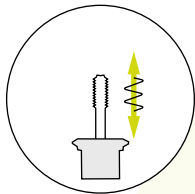
\*\*USA only

\*\*\*Supplied with pre-installed KSR coolant pipe

# PG thread-cutting solutions

## CYL SSY/HSK-A SSY Softsynchro® tapping holder

- // With **minimum length compensation**
- // Eliminates small synchronization errors of machines (Rigid Tapping)

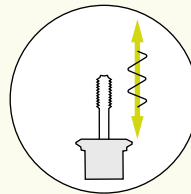


### Applications

- // Machines for direct thread cutting
- // For all tapping tools with h9 shanks
- // The turning movement of the spindles can be offset with the feed axis and thus synchronized
- // Synchronization errors are created by the dynamics of the spindle and linear drives. The tapping holder is equipped with the minimum length compensation and compensates the synchronization errors
- // Depending on the application, the service life for the customer can be increased by up to 150%
- // Guides coolant with up to 50 bar / 725 PSI of pressure to the tap, without compromising length compensation

## CYL GSF tapping holder

- // With **length compensation**
- // Used on machines in which the feed movement is not synchronized with the thread pitch during processing

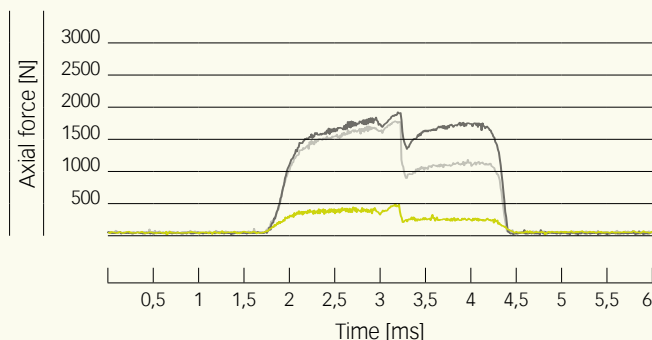


### Applications

- // For machines without a tapping option
- // Ensures the compensation of differences between the thread pitch and spindle feed
- // Features a pressure-point mechanism
- // Safe tap cutting
- // Uniform, reproducible thread depths
- // Guides coolant with up to 50 bar / 725 PSI of pressure to the tap, without compromising length compensation
- // Universal use thanks to its compact design and low gauge length

### Comparative axial force testing

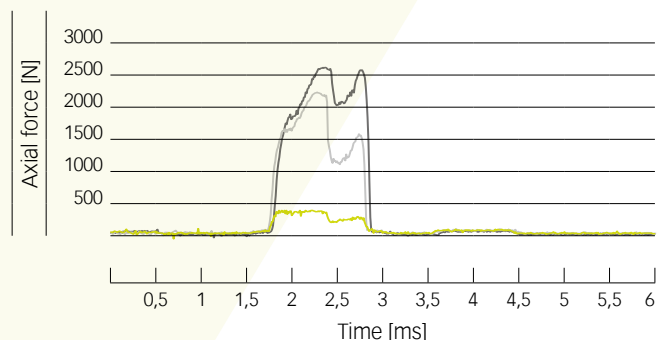
Occurring axial forces with thread forms M10 in St37, Speed 500 rpm.  
Source: In-house testing



**Summary** The axial forces increase with increasing speed. With a rigid toolholder, the forces occurring when forming threads are considerably higher than with the Softsynchro® tapping holder. This allows for the optimum use of the synchronous spindle with the best possible service life and thread surface quality.

### Comparative axial force testing

Occurring axial forces with thread forms M10 in St37, Speed 2.000 rpm.  
Source: In-house testing



- REGO-FIX Softsynchro® tapping holders
- Competitor synchronous toolholder
- Rigid toolholder

# PG tapping holders

HSK-A SSY

69893-A

ISO 12164

CYL SSY

DIN 1835 B+E

CYL GSF

DIN 1835 B+E

| Type                 | Part no.   | Dimensions [mm] |       | LCOMP |       |
|----------------------|------------|-----------------|-------|-------|-------|
|                      |            | BD1             | LPR   | [mm]  | [mm]  |
| HSK-A SSY            |            |                 |       |       |       |
| HSK-A 63 SSY / PG 15 | 2563.61507 | 24              | 114,5 | - 0,5 | + 0,5 |
| HSK-A 63 SSY / PG 25 | 2563.62507 | 40              | 131   | - 0,5 | + 0,5 |

For tapping collets, please refer to page 85.

| Type               | Part no.   | Dimensions [mm] |        |       |    | LCOMP |       |
|--------------------|------------|-----------------|--------|-------|----|-------|-------|
|                    |            | BD1             | DCONMS | OHN   | LS | [mm]  | [mm]  |
| CYL SSY            |            |                 |        |       |    |       |       |
| CYL 25 SSY / PG 15 | 2625.61507 | 24              | 25     | 92    | 57 | - 0,5 | + 0,5 |
| CYL 25 SSY / PG 25 | 2625.62507 | 40              | 25     | 109,5 | 57 | - 0,5 | + 0,5 |

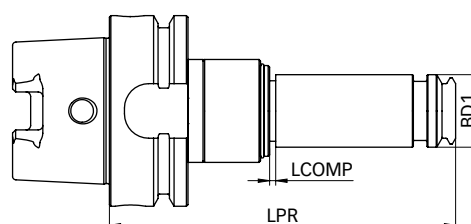
For tapping collets, please refer to page 85.

| Type               | Part no.   | Dimensions [mm] |        |      |    | LCOMP |       |
|--------------------|------------|-----------------|--------|------|----|-------|-------|
|                    |            | BD1             | DCONMS | OHN  | LS | [mm]  | [mm]  |
| CYL GSF            |            |                 |        |      |    |       |       |
| CYL 25 GSF / PG 15 | 2625.61508 | 24              | 25     | 99,5 | 57 | - 5   | + 7,5 |
| CYL 25 GSF / PG 25 | 2625.62508 | 40              | 25     | 134  | 57 | - 7   | + 10  |

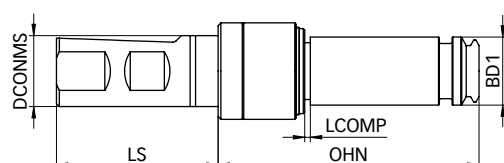
For tapping collets, please refer to page 85.



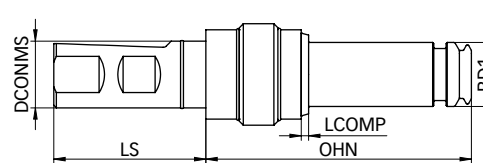
HSK-A SSY / CYL SSY / CYL GSF



HSK-A SSY / PG



CYL SSY / PG



CYL GSF / PG



# HJNZ interface

Grinding pins perfectly clamped with powRgrip®

## Features and benefits

### **Total system runout $\leq 3 \mu\text{m}$ @ $3 \times D$**

Our complete system consists of a powRgrip® collet holder and a collet. Together, these components ensure best-in-class runout and highest precision.

### **Surface finish max. Ra 0.25**

For increased clamping force and higher transmittable torque.

### **Imbalance compensation**

100% precision-balanced to  
G 2.5 @ 25,000 rpm /  $\leq 1 \text{ gmm}$ .

### **Vibration damping**

Our collet holders provide optimal vibration damping, contributing to superior surface finish and preventing chatter marks.



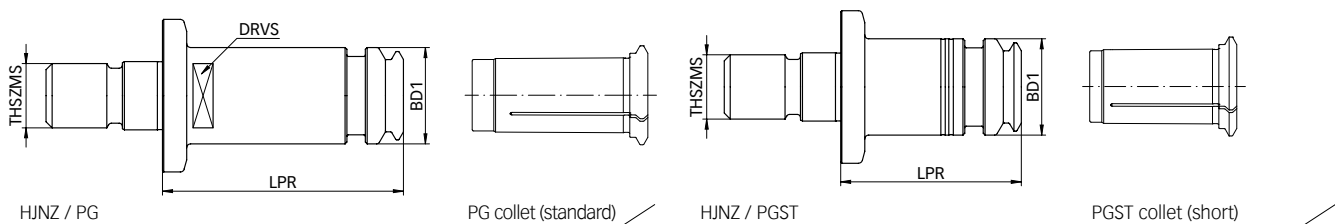
**Advantages** The advantages of powRgrip® in grinding applications with HSK interfaces have been proven many times. HJNZ holders, developed in close cooperation with grinding machine manufacturers, offer significant advantages over commonly used ER and expansion mandrel solutions.

**Runout accuracy** High runout accuracy improves the dressing process, while vibration damping ensures significantly better surface finishes. The high rigidity enables increased cutting parameters and more reliable dimensional accuracy. In addition, various cooling options in the powRgrip® collets ensure optimal coolant delivery.

In combination with the newly developed, extra-short PGST collets, a compact overall length is achieved. HJNZ holders are manufactured according to specifications from Fischer Spindle.

| Type                   | Part no.   | Dimensions [mm] |     |     |      | Nm |
|------------------------|------------|-----------------|-----|-----|------|----|
|                        |            | THSZMS          | BD1 | LPR | DRVS |    |
| HJNZ 60                |            |                 |     |     |      |    |
| HJNZ 60/PG 6 x 033     | 8267.60060 | M7              | 10  | 33  | 10   | 16 |
| HJNZ 50                |            |                 |     |     |      |    |
| HJNZ 50/PG 6 x 033     | 8267.50060 | M8              | 10  | 33  | 10   | 16 |
| HJNZ 50/PG 10 x 049    | 8267.50101 | M8              | 16  | 49  | 17   | 16 |
| HJNZ 28                |            |                 |     |     |      |    |
| HJNZ 28/PG 15 x 060    | 8267.28152 | M16x1.5         | 24  | 60  | –    | 53 |
| HJNZ 28/PG 25 x 075    | 8267.28253 | M16x1.5         | 40  | 75  | –    | 53 |
| HJNZ 28/PGST 15 x 045* | 8267.28151 | M16x1.5         | 24  | 45  | –    | 53 |
| HJNZ 28/PGST 25 x 055* | 8267.28251 | M16x1.5         | 40  | 55  | –    | 53 |
| HJNZ 21                |            |                 |     |     |      |    |
| HJNZ 21/PG 15 x 060    | 8267.21152 | M22x1.5         | 24  | 60  | 24   | 72 |
| HJNZ 21/PG 25 x 075    | 8267.21253 | M22x1.5         | 40  | 75  | –    | 72 |
| HJNZ 21/PGST 25 x 055* | 8267.21251 | M22x1.5         | 40  | 55  | –    | 72 |

\*only with PGST collets



| Type                          | Part no.   | Type                         | Part no.   |
|-------------------------------|------------|------------------------------|------------|
| <b>Freewheel wrench heads</b> |            | <b>Grip bars</b>             |            |
| A-FLS Ø 24/MMR 16 (PG 15)     | 7855.16800 | G-A                          | 7655.99900 |
| A-FLS Ø 40/MMR 25 (PG 25)     | 7855.25000 | TORCO-FIX II (40.0-200.0 Nm) | 7150.20200 |

Items without wrench size DRVS require a freewheel wrench with a corresponding torque wrench.  
Items with wrench size DRVS can be tightened with standard hexagonal torque wrenches.

# powRgrip® collet adapters

Our powRgrip® collet adapters for various quick-change systems

## Features and benefits

### Total system runout $\leq 3 \mu\text{m}$ @ 3 x D

Our complete system consists of a powRgrip® collet holder and a collet. Together, these components ensure optimal runout and the highest precision.

### Surface finish max. Ra 0.25

For higher clamping force and therefore greater transmittable torque.

### Vibration damping

Our collet holders offer excellent vibration damping, contributing to high surface quality and eliminating chatter marks.



PST – ISO 26623



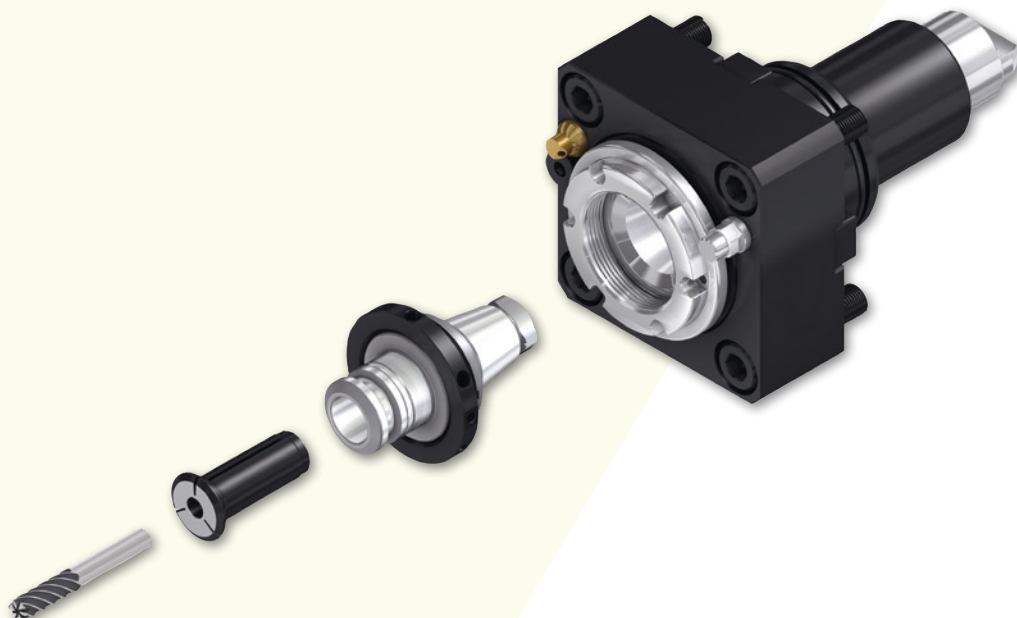
WTO – QF



EWS – Varia VX



MTSK – MT Marchetti



Dimensions [mm]

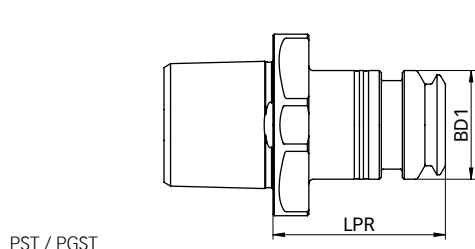
| Type                         | Part no.   | BD1 | BD2 | LPR | THSZMS |
|------------------------------|------------|-----|-----|-----|--------|
| <b>PST Adapter ISO 26623</b> |            |     |     |     |        |
| PST 3/PGST 15 x 038*         | 2803.71500 | 24  | –   | 38  | –      |
| PST 4/PGST 15 x 038*         | 2804.71500 | 24  | –   | 38  | –      |

## WTO QF-Adapter

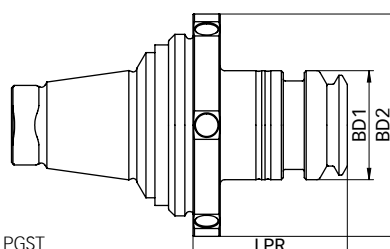
|                                     |            |    |    |    |   |
|-------------------------------------|------------|----|----|----|---|
| WTO ER 20-QF/PGST 15*               | 8040.20150 | 24 | 36 | 34 | – |
| WTO ER 25-QF/PGST 15*               | 8040.25150 | 24 | 49 | 35 | – |
| WTO ER 32-QF/PGST 25* <sup>1)</sup> | 8040.32250 | 40 | 58 | 47 | – |
| WTO ER 40-QF/PGST 25* <sup>2)</sup> | 8040.40250 | 40 | 71 | 48 | – |

<sup>1)</sup> compatible only with PGC / PGU 9XXX <sup>2)</sup> compatible only with PGU 9XXX \*only with PGST collets

Only PGST collets can be used with powRgrip® PST adapters according to ISO 26623 and powRgrip® WTO QF adapters. PGST collets are up to 25% shorter than the conventional PG system.



PST / PGST



WTO ER-QF / PGST

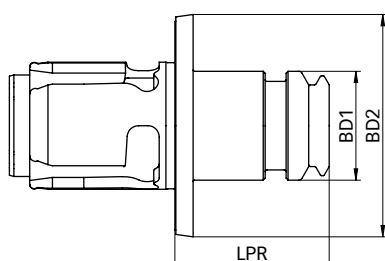
Dimensions [mm]

| Type                           | Part no.   | BD1 | BD2 | LPR | THSZMS |
|--------------------------------|------------|-----|-----|-----|--------|
| <b>EWS Varia VX-Adapter</b>    |            |     |     |     |        |
| VX 3/PG 15 x 034               | 8350.03150 | 24  | 49  | 34  | –      |
| VX 4/PG 25 x 045 <sup>2)</sup> | 8350.04251 | 40  | 64  | 45  | –      |

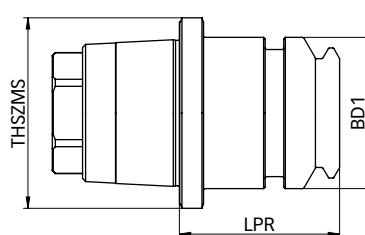
## MT Marchetti MTSK

|                        |            |    |   |    |           |
|------------------------|------------|----|---|----|-----------|
| MTSK 50/PG 25 x 040 NL | 8999.00901 | 40 | – | 40 | M50 x 1,5 |
| MTSK 63/PG 32 x 053    | 8999.00902 | 50 | – | 53 | M63 x 2,0 |

<sup>1)</sup> compatible only with PGC / PGU 9XXX <sup>2)</sup> compatible only with PGU 9XXX



EWS VX / PG



MTSK / PG

| Micro-machining                                                                     | Standard                                                                            | Cooling                                                                             |                                                                                     | MMS                                                                                 | Long shanks                                                                         | Short shanks                                                                        | Pullout protection secuRgrip®                                                       | Collets for tapping                                                                   | Sealed collet head                                                                    | Extra-short collets                                                                   |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| PG-MB                                                                               | PG                                                                                  | PG-CF                                                                               | PG-CB                                                                               | PG-MQL-N                                                                            | PG-L                                                                                | PG-S                                                                                | PG-SG                                                                               | PG-TAP                                                                                | PG-SC                                                                                 | PGST                                                                                  |
|  |  |  |  |  |  |  |  |  |  |  |
| Page 70                                                                             | Page 71                                                                             | Page 74                                                                             | Page 77                                                                             | Page 80                                                                             | Page 81                                                                             | Page 82                                                                             | Page 84                                                                             | Page 85                                                                               | Page 86                                                                               | Page 87                                                                               |
|                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                       |                                                                                       |                                                                                       |



# powRgrip® collets

Precision and process reliability at the highest level – our holistic system approach ensures powerful clamping with a total system runout of less than 3 µm.

Maximum clamping force, excellent runout accuracy and consistently high process reliability – that's powRgrip® from REGO-FIX. Our innovative clamping system is designed to deliver top performance and efficiency

in machining. Thanks to its highly precise, vibration-damping tool clamping, powRgrip® ensures outstanding machining results and optimal tool life.

## The advantages of powRgrip®

- // **High runout accuracy**  
≤ 3 µm at 3 x D for maximum precision.
- // **Reliable clamping force**  
Consistently high holding forces for safe and repeatable clamping.
- // **Durability and stability**  
Constant clamping force over the entire service life with no material fatigue.
- // **Efficient handling**  
Tool changes in seconds with intuitive operation for minimal setup times.

## Tailor-made solutions for every application

powRgrip® collets are available in various designs to meet the specific requirements of your production. With different sizes and types, the powRgrip® system offers the ideal solution for every challenge.

Choose top quality and Swiss engineering – with powRgrip® from REGO-FIX, you invest in precision, reliability and efficiency.





# powRgrip® collets in Swiss quality



MB



Std.



CF



CB



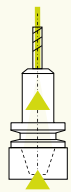
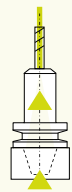
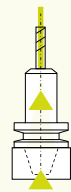
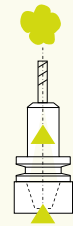
L



S

|                                           | microbore                   | standard                    | coolant flush               | coolant flush               | long                     | short                       |
|-------------------------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|--------------------------|-----------------------------|
| Main machining use                        | micromachining              | general machining           | peripheral cooling          | peripheral cooling          | longer than DIN 6535     | shorter than DIN 6535       |
| PG size                                   | 6–10                        | 6–48                        | 6–48                        | 15–32                       | 15–32                    | 6–32                        |
| Shaft diameter range                      | 0,2–0,9                     | 1–40                        | 2–40                        | 4–20                        | 4–25,4                   | 3–25,4                      |
| Shaft tolerance                           | h6                          | h6                          | h6                          | h6                          | h6                       | h6                          |
| For tools with internal coolant supply    | –                           | •                           | –                           | –                           | •                        | •                           |
| Metallic sealed                           | –                           | •                           | –                           | –                           | •                        | •                           |
| Internal square                           | –                           | –                           | –                           | –                           | –                        | –                           |
| secuRgrip® thread to prevent tool pullout | –                           | –                           | –                           | –                           | –                        | –                           |
| Technical illustration of cooling         | –                           |                             |                             |                             |                          |                             |
| Warranty                                  | 5 Years<br>20,000 Cycles    | 5 Years<br>20,000 Cycles    | 5 Years<br>20,000 Cycles    | 5 Years<br>20,000 Cycles    | 5 Years<br>20,000 Cycles | 5 Years<br>20,000 Cycles    |
| Additional features                       | Screw for length presetting | Screw for length presetting | Screw for length presetting | Screw for length presetting | Without stop screw       | Screw for length presetting |

\*CO<sub>2</sub>-compatible collets available on request

|                                           |    |    |    |   |    |
|-------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                                           | <b>PG-SC</b>                                                                        | <b>SG</b>                                                                           | <b>TAP</b>                                                                          | <b>MQL-N*</b>                                                                       | <b>PGST</b>                                                                           |
|                                           | <b>Sealed collet head</b>                                                           | <b>secuRgrip®</b>                                                                   | <b>tapping collet</b>                                                               | <b>minimum quantity lubrication</b>                                                 | <b>Shortened collet</b>                                                               |
| Main machining use                        | Graphite, glass, carbide, ceramic                                                   | heavy machining                                                                     | rigid tapping                                                                       | milling                                                                             | Driven tools                                                                          |
| PG size                                   | 10–15                                                                               | 15–32                                                                               | 15–25                                                                               | 15–25                                                                               | 15–25                                                                                 |
| Shaft diameter range                      | 3–10                                                                                | 10–25,4                                                                             | 3,5–16                                                                              | 5–20                                                                                | 3–20                                                                                  |
| Shaft tolerance                           | h6                                                                                  | h6                                                                                  | h9                                                                                  | h6                                                                                  | h6                                                                                    |
| For tools with internal coolant supply    | •                                                                                   | •                                                                                   | •                                                                                   | •                                                                                   | •                                                                                     |
| Metallic sealed                           | •                                                                                   | •                                                                                   | –                                                                                   | •                                                                                   | •                                                                                     |
| Internal square                           | –                                                                                   | –                                                                                   | •                                                                                   | –                                                                                   | –                                                                                     |
| secuRgrip® thread to prevent tool pullout | –                                                                                   | •                                                                                   | –                                                                                   | –                                                                                   | –                                                                                     |
| Technical illustration of cooling         |  |  |  |  |  |
| Warranty                                  | 5 Years<br>20,000 Cycles                                                            | 5 Years<br>20,000 Cycles                                                            | 5 Years<br>20,000 Cycles                                                            | 5 Years<br>20,000 Cycles                                                            | 5 Years<br>20,000 Cycles                                                              |
| Additional features                       | Screw for length presetting                                                         | For all tools with endmill flat as per DIN 535-HB                                   | Screw for length presetting                                                         | for MQL                                                                             | Without stop screw                                                                    |

\*CO<sub>2</sub>-compatible collets available on request

| Type          | Part no.   | Ø    |                |        |
|---------------|------------|------|----------------|--------|
|               |            | [mm] | [decimal inch] | [inch] |
| PG 6-MB [mm]  |            |      |                |        |
| Ø 0,2 mm      | 1706.00209 | 0,2  | 0,0079         | —      |
| Ø 0,3 mm      | 1706.00309 | 0,3  | 0,0118         | —      |
| Ø 0,4 mm      | 1706.00409 | 0,4  | 0,0157         | —      |
| Ø 0,5 mm      | 1706.00509 | 0,5  | 0,0197         | —      |
| Ø 0,6 mm      | 1706.00609 | 0,6  | 0,0236         | —      |
| Ø 0,7 mm      | 1706.00709 | 0,7  | 0,0276         | —      |
| Ø 0,8 mm      | 1706.00809 | 0,8  | 0,0315         | —      |
| Ø 0,9 mm      | 1706.00909 | 0,9  | 0,0354         | —      |
| PG 10-MB [mm] |            |      |                |        |
| Ø 0,2 mm      | 1710.00209 | 0,2  | 0,0079         | —      |
| Ø 0,3 mm      | 1710.00309 | 0,3  | 0,0118         | —      |
| Ø 0,4 mm      | 1710.00409 | 0,4  | 0,0157         | —      |
| Ø 0,5 mm      | 1710.00509 | 0,5  | 0,0197         | —      |
| Ø 0,6 mm      | 1710.00609 | 0,6  | 0,0236         | —      |
| Ø 0,7 mm      | 1710.00709 | 0,7  | 0,0276         | —      |
| Ø 0,8 mm      | 1710.00809 | 0,8  | 0,0315         | —      |
| Ø 0,9 mm      | 1710.00909 | 0,9  | 0,0354         | —      |



| Type      | Part no.   | Ø    |                |        |
|-----------|------------|------|----------------|--------|
|           |            | [mm] | [decimal inch] | [inch] |
| PG 6 [mm] |            |      |                |        |
| Ø 1,0 mm  | 1706.01000 | 1,0  | 0,0394         | –      |
| Ø 1,5 mm  | 1706.01500 | 1,5  | 0,1181         | –      |
| Ø 2,0 mm  | 1706.02000 | 2,0  | 0,0787         | –      |
| Ø 2,5 mm  | 1706.02500 | 2,5  | 0,0984         | –      |
| Ø 3,0 mm  | 1706.03000 | 3,0  | 0,1181         | –      |
| Ø 4,0 mm  | 1706.04000 | 4,0  | 0,1574         | –      |

|                    |            |       |        |       |
|--------------------|------------|-------|--------|-------|
| <b>PG 6 [inch]</b> |            |       |        |       |
| Ø 1/16"            | 1706.01591 | 1,59  | 0,0625 | 1/16" |
| Ø 1/8"             | 1706.03181 | 3,175 | 0,125  | 1/8"  |

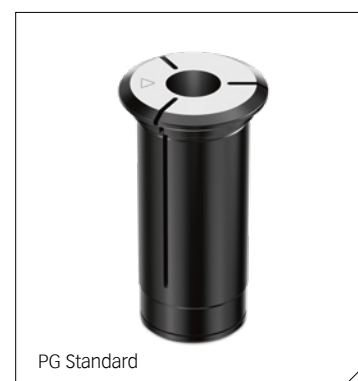
|                   |            |     |        |   |
|-------------------|------------|-----|--------|---|
| <b>PG 10 [mm]</b> |            |     |        |   |
| Ø 1,0 mm          | 1710.01000 | 1,0 | 0,0394 | – |
| Ø 1,5 mm          | 1710.01500 | 1,5 | 0,1181 | – |
| Ø 2,0 mm          | 1710.02000 | 2,0 | 0,0787 | – |
| Ø 2,5 mm          | 1710.02500 | 2,5 | 0,0984 | – |
| Ø 3,0 mm          | 1710.03000 | 3,0 | 0,1181 | – |
| Ø 3,5 mm          | 1710.03500 | 3,5 | 0,1378 | – |
| Ø 4,0 mm          | 1710.04000 | 4,0 | 0,1575 | – |
| Ø 4,5 mm          | 1710.04500 | 4,5 | 0,1772 | – |
| Ø 5,0 mm          | 1710.05000 | 5,0 | 0,1969 | – |
| Ø 5,5 mm          | 1710.05500 | 5,5 | 0,2165 | – |
| Ø 6,0 mm          | 1710.06000 | 6,0 | 0,2362 | – |

|                     |            |       |        |       |
|---------------------|------------|-------|--------|-------|
| <b>PG 10 [inch]</b> |            |       |        |       |
| Ø 1/16"             | 1710.01591 | 1,59  | 0,0625 | 1/16" |
| Ø 1/8"              | 1710.03181 | 3,175 | 0,125  | 1/8"  |
| Ø 3/16"             | 1710.04761 | 4,763 | 0,1875 | 3/16" |
| Ø 1/4"              | 1710.06351 | 6,35  | 0,25   | 1/4"  |

|                   |            |      |        |   |
|-------------------|------------|------|--------|---|
| <b>PG 15 [mm]</b> |            |      |        |   |
| Ø 3,0 mm          | 1715.03000 | 3,0  | 0,1181 | – |
| Ø 3,5 mm          | 1715.03500 | 3,5  | 0,1378 | – |
| Ø 4,0 mm          | 1715.04000 | 4,0  | 0,1575 | – |
| Ø 4,5 mm          | 1715.04500 | 4,5  | 0,1772 | – |
| Ø 5,0 mm          | 1715.05000 | 5,0  | 0,1969 | – |
| Ø 5,5 mm          | 1715.05500 | 5,5  | 0,2165 | – |
| Ø 6,0 mm          | 1715.06000 | 6,0  | 0,2362 | – |
| Ø 7,0 mm          | 1715.07000 | 7,0  | 0,2756 | – |
| Ø 8,0 mm          | 1715.08000 | 8,0  | 0,315  | – |
| Ø 9,0 mm          | 1715.09000 | 9,0  | 0,3543 | – |
| Ø 10,0 mm         | 1715.10000 | 10,0 | 0,3937 | – |

|                      |            |      |        |   |
|----------------------|------------|------|--------|---|
| <b>PG 15-TW [mm]</b> |            |      |        |   |
| Ø 12,00              | 1715.12006 | 12,0 | 0,4724 | – |

TW: Thin-wall collets are guaranteed 1 year or 2000 clamping cycles



| Type         | Part no.   | Ø     |                |        |
|--------------|------------|-------|----------------|--------|
|              |            | [mm]  | [decimal inch] | [inch] |
| PG 15 [inch] |            |       |                |        |
| Ø 1/8"       | 1715.03181 | 3,175 | 0,125          | 1/8"   |
| Ø 3/16"      | 1715.04761 | 4,763 | 0,1875         | 3/16"  |
| Ø 1/4"       | 1715.06351 | 6,35  | 0,25           | 1/4"   |
| Ø 5/16"      | 1715.07941 | 7,938 | 0,3125         | 5/16"  |
| Ø 3/8"       | 1715.09521 | 9,525 | 0,375          | 3/8"   |

|                        |            |      |     |      |
|------------------------|------------|------|-----|------|
| <b>PG 15-TW [inch]</b> |            |      |     |      |
| Ø 1/2"                 | 1715.12706 | 12,7 | 0,5 | 1/2" |

TW: Thin-wall collets are guaranteed 1 year or 500 clamping cycles

|                   |            |      |        |   |
|-------------------|------------|------|--------|---|
| <b>PG 25 [mm]</b> |            |      |        |   |
| Ø 3,0 mm          | 1725.03000 | 3,0  | 0,1181 | – |
| Ø 3,5 mm          | 1725.03500 | 3,5  | 0,1378 | – |
| Ø 4,0 mm          | 1725.04000 | 4,0  | 0,1575 | – |
| Ø 4,5 mm          | 1725.04500 | 4,5  | 0,1772 | – |
| Ø 5,0 mm          | 1725.05000 | 5,0  | 0,1969 | – |
| Ø 5,5 mm          | 1725.05500 | 5,5  | 0,2165 | – |
| Ø 6,0 mm          | 1725.06000 | 6,0  | 0,2362 | – |
| Ø 7,0 mm          | 1725.07000 | 7,0  | 0,2756 | – |
| Ø 8,0 mm          | 1725.08000 | 8,0  | 0,315  | – |
| Ø 9,0 mm          | 1725.09000 | 9,0  | 0,3543 | – |
| Ø 10,0 mm         | 1725.10000 | 10,0 | 0,3937 | – |
| Ø 11,0 mm         | 1725.11000 | 11,0 | 0,4331 | – |
| Ø 12,0 mm         | 1725.12000 | 12,0 | 0,4724 | – |
| Ø 13,0 mm         | 1725.13000 | 13,0 | 0,5118 | – |
| Ø 14,0 mm         | 1725.14000 | 14,0 | 0,5512 | – |
| Ø 15,0 mm         | 1725.15000 | 15,0 | 0,5906 | – |
| Ø 16,0 mm         | 1725.16000 | 16,0 | 0,63   | – |
| Ø 18,0 mm         | 1725.18000 | 18,0 | 0,7087 | – |
| Ø 20,0 mm         | 1725.20000 | 20,0 | 0,7874 | – |

|                     |            |         |        |        |
|---------------------|------------|---------|--------|--------|
| <b>PG 25 [inch]</b> |            |         |        |        |
| Ø 1/8"              | 1725.03181 | 3,175   | 0,125  | 1/8"   |
| Ø 3/16"             | 1725.04761 | 4,763   | 0,1875 | 3/16"  |
| Ø 1/4"              | 1725.06351 | 6,35    | 0,25   | 1/4"   |
| Ø 5/16"             | 1725.07941 | 7,938   | 0,3125 | 5/16"  |
| Ø 3/8"              | 1725.09521 | 9,525   | 0,375  | 3/8"   |
| Ø 7/16"             | 1725.11111 | 11,113  | 0,4375 | 7/16"  |
| Ø 1/2"              | 1725.12701 | 12,7    | 0,5    | 1/2"   |
| Ø 9/16"             | 1725.14291 | 14,288  | 0,5625 | 9/16"  |
| Ø 5/8"              | 1725.15881 | 15,875  | 0,625  | 5/8"   |
| Ø 11/16"*           | 1725.17461 | 17,4625 | 0,6875 | 11/16" |
| Ø 3/4"              | 1725.19051 | 19,05   | 0,75   | 3/4"   |

\*USA only

| Type       | Part no.   | Ø    |                |        |
|------------|------------|------|----------------|--------|
|            |            | [mm] | [decimal inch] | [inch] |
| PG 32 [mm] |            |      |                |        |
| Ø 6,0 mm   | 1732.06000 | 6,0  | 0,2362         | –      |
| Ø 7,0 mm   | 1732.07000 | 7,0  | 0,2756         | –      |
| Ø 8,0 mm   | 1732.08000 | 8,0  | 0,315          | –      |
| Ø 9,0 mm   | 1732.09000 | 9,0  | 0,3543         | –      |
| Ø 10,0 mm  | 1732.10000 | 10,0 | 0,3937         | –      |
| Ø 11,0 mm  | 1732.11000 | 11,0 | 0,4331         | –      |
| Ø 12,0 mm  | 1732.12000 | 12,0 | 0,4724         | –      |
| Ø 14,0 mm  | 1732.14000 | 14,0 | 0,5512         | –      |
| Ø 16,0 mm  | 1732.16000 | 16,0 | 0,63           | –      |
| Ø 18,0 mm  | 1732.18000 | 18,0 | 0,7087         | –      |
| Ø 20,0 mm  | 1732.20000 | 20,0 | 0,7874         | –      |
| Ø 22,0 mm  | 1732.22000 | 22,0 | 0,8661         | –      |
| Ø 25,0 mm  | 1732.25000 | 25,0 | 0,9843         | –      |

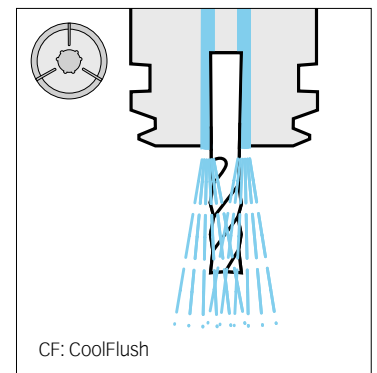
|                     |            |        |        |       |
|---------------------|------------|--------|--------|-------|
| <b>PG 32 [inch]</b> |            |        |        |       |
| Ø 1/4"              | 1732.06351 | 6,35   | 0,25   | 1/4"  |
| Ø 5/16"             | 1732.07941 | 7,938  | 0,3125 | 5/16" |
| Ø 3/8"              | 1732.09521 | 9,525  | 0,375  | 3/8"  |
| Ø 7/16"             | 1732.11111 | 11,113 | 0,4375 | 7/16" |
| Ø 1/2"              | 1732.12701 | 12,7   | 0,5    | 1/2"  |
| Ø 9/16"             | 1732.14291 | 14,288 | 0,5625 | 9/16" |
| Ø 5/8"              | 1732.15881 | 15,875 | 0,625  | 5/8"  |
| Ø 3/4"              | 1732.19051 | 19,05  | 0,75   | 3/4"  |
| Ø 7/8"              | 1732.22231 | 22,225 | 0,875  | 7/8"  |
| Ø 1"                | 1732.25401 | 25,4   | 1,0    | 1"    |

|                   |            |      |        |   |
|-------------------|------------|------|--------|---|
| <b>PG 48 [mm]</b> |            |      |        |   |
| Ø 20,0 mm         | 1748.20000 | 20,0 | 0,7874 | – |
| Ø 25,0 mm         | 1748.25000 | 25,0 | 0,9843 | – |
| Ø 32,0 mm         | 1748.32000 | 32,0 | 1,2598 | – |
| Ø 40,0 mm         | 1748.40000 | 40,0 | 1,5748 | – |

|                     |            |       |      |        |
|---------------------|------------|-------|------|--------|
| <b>PG 48 [inch]</b> |            |       |      |        |
| Ø 3/4"              | 1748.19051 | 19,05 | 0,75 | 3/4"   |
| Ø 1"                | 1748.25401 | 25,4  | 1,0  | 1"     |
| Ø 1 1/4"            | 1748.31751 | 31,75 | 1,25 | 1 1/4" |
| Ø 1 1/2"            | 1748.38101 | 38,1  | 1,5  | 1 1/2" |



| Type            | Part no.   | [mm]  | [decimal inch] | [inch] |
|-----------------|------------|-------|----------------|--------|
| PG 6-CF [mm]    |            |       |                |        |
| Ø 2,0 mm        | 1706.02002 | 2,0   | 0,0787         | –      |
| Ø 3,0 mm        | 1706.03002 | 3,0   | 0,1181         | –      |
| PG 6-CF [inch]  |            |       |                |        |
| Ø 1/8"          | 1706.03183 | 3,175 | 0,125          | 1/8"   |
| PG 10-CF [mm]   |            |       |                |        |
| Ø 2,0 mm        | 1710.02002 | 2,0   | 0,0787         | –      |
| Ø 2,5 mm        | 1710.02502 | 2,5   | 0,0984         | –      |
| Ø 3,0 mm        | 1710.03002 | 3,0   | 0,1181         | –      |
| Ø 4,0 mm        | 1710.04002 | 4,0   | 0,1575         | –      |
| Ø 5,0 mm        | 1710.05002 | 5,0   | 0,1969         | –      |
| Ø 6,0 mm        | 1710.06002 | 6,0   | 0,2362         | –      |
| PG 10-CF [inch] |            |       |                |        |
| Ø 1/8"          | 1710.03183 | 3,175 | 0,125          | 1/8"   |
| Ø 3/16"         | 1710.04763 | 4,763 | 0,1875         | 3/16"  |
| Ø 1/4"          | 1710.06353 | 6,35  | 0,25           | 1/4"   |
| PG 15-CF [mm]   |            |       |                |        |
| Ø 3,0 mm        | 1715.03002 | 3,0   | 0,1181         | –      |
| Ø 4,0 mm        | 1715.04002 | 4,0   | 0,1575         | –      |
| Ø 5,0 mm        | 1715.05002 | 5,0   | 0,1969         | –      |
| Ø 6,0 mm        | 1715.06002 | 6,0   | 0,2362         | –      |
| Ø 7,0 mm        | 1715.07002 | 7,0   | 0,2756         | –      |
| Ø 8,0 mm        | 1715.08002 | 8,0   | 0,315          | –      |
| Ø 9,0 mm        | 1715.09002 | 9,0   | 0,3543         | –      |
| Ø 10,0 mm       | 1715.10002 | 10,0  | 0,3937         | –      |
| PG 15-CF [inch] |            |       |                |        |
| Ø 1/8"          | 1715.03183 | 3,175 | 0,125          | 1/8"   |
| Ø 3/16"         | 1715.04763 | 4,763 | 0,1875         | 3/16"  |
| Ø 1/4"          | 1715.06353 | 6,35  | 0,25           | 1/4"   |
| Ø 5/16"         | 1715.07943 | 7,938 | 0,3125         | 5/16"  |
| Ø 3/8"          | 1715.09523 | 9,525 | 0,375          | 3/8"   |



| Type            | Part no.   | Ø      |                |        |
|-----------------|------------|--------|----------------|--------|
|                 |            | [mm]   | [decimal inch] | [inch] |
| PG 25-CF [mm]   |            |        |                |        |
| Ø 3,0 mm        | 1725.03002 | 3,0    | 0,1181         | –      |
| Ø 4,0 mm        | 1725.04002 | 4,0    | 0,1575         | –      |
| Ø 5,0 mm        | 1725.05002 | 5,0    | 0,1969         | –      |
| Ø 6,0 mm        | 1725.06002 | 6,0    | 0,2362         | –      |
| Ø 7,0 mm        | 1725.07002 | 7,0    | 0,2756         | –      |
| Ø 8,0 mm        | 1725.08002 | 8,0    | 0,315          | –      |
| Ø 9,0 mm        | 1725.09002 | 9,0    | 0,3543         | –      |
| Ø 10,0 mm       | 1725.10002 | 10,0   | 0,3937         | –      |
| Ø 11,0 mm       | 1725.11002 | 11,0   | 0,4331         | –      |
| Ø 12,0 mm       | 1725.12002 | 12,0   | 0,4724         | –      |
| Ø 13,0 mm       | 1725.13002 | 13,0   | 0,5118         | –      |
| Ø 14,0 mm       | 1725.14002 | 14,0   | 0,5512         | –      |
| Ø 15,0 mm       | 1725.15002 | 15,0   | 0,5906         | –      |
| Ø 16,0 mm       | 1725.16002 | 16,0   | 0,63           | –      |
| Ø 18,0 mm       | 1725.18002 | 18,0   | 0,7087         | –      |
| Ø 20,0 mm       | 1725.20002 | 20,0   | 0,7874         | –      |
| PG 25-CF [inch] |            |        |                |        |
| Ø 1/8"          | 1725.03183 | 3,175  | 0,125          | 1/8"   |
| Ø 3/16"         | 1725.04763 | 4,763  | 0,1875         | 3/16"  |
| Ø 1/4"          | 1725.06353 | 6,35   | 0,25           | 1/4"   |
| Ø 5/16"         | 1725.07943 | 7,938  | 0,3125         | 5/16"  |
| Ø 3/8"          | 1725.09523 | 9,525  | 0,375          | 3/8"   |
| Ø 7/16"         | 1725.11113 | 11,113 | 0,4375         | 7/16"  |
| Ø 1/2"          | 1725.12703 | 12,7   | 0,5            | 1/2"   |
| Ø 9/16"         | 1725.14293 | 14,288 | 0,5625         | 9/16"  |
| Ø 5/8"          | 1725.15883 | 15,875 | 0,625          | 5/8"   |
| Ø 3/4"          | 1725.19053 | 19,05  | 0,75           | 3/4"   |

| Type          | Part no.   | Ø    |                |        |
|---------------|------------|------|----------------|--------|
|               |            | [mm] | [decimal inch] | [inch] |
| PG 32-CF [mm] |            |      |                |        |
| Ø 6,0 mm      | 1732.06002 | 6,0  | 0,2362         | –      |
| Ø 7,0 mm      | 1732.07002 | 7,0  | 0,2756         | –      |
| Ø 8,0 mm      | 1732.08002 | 8,0  | 0,315          | –      |
| Ø 9,0 mm      | 1732.09002 | 9,0  | 0,3543         | –      |
| Ø 10,0 mm     | 1732.10002 | 10,0 | 0,3937         | –      |
| Ø 11,0 mm     | 1732.11002 | 11,0 | 0,4331         | –      |
| Ø 12,0 mm     | 1732.12002 | 12,0 | 0,4724         | –      |
| Ø 14,0 mm     | 1732.14002 | 14,0 | 0,5512         | –      |
| Ø 16,0 mm     | 1732.16002 | 16,0 | 0,63           | –      |
| Ø 18,0 mm     | 1732.18002 | 18,0 | 0,7087         | –      |
| Ø 20,0 mm     | 1732.20002 | 20,0 | 0,7874         | –      |
| Ø 22,0 mm     | 1732.22002 | 22,0 | 0,8661         | –      |
| Ø 25,0 mm     | 1732.25002 | 25,0 | 0,9843         | –      |

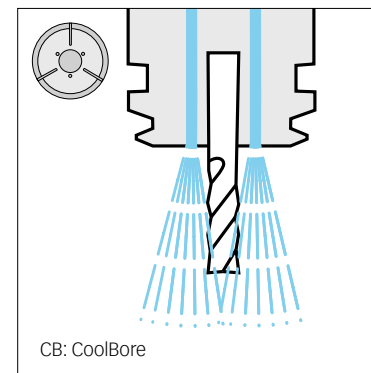
|                        |            |        |        |       |
|------------------------|------------|--------|--------|-------|
| <b>PG 32-CF [inch]</b> |            |        |        |       |
| Ø 1/4"                 | 1732.06353 | 6,35   | 0,25   | 1/4"  |
| Ø 5/16"                | 1732.07943 | 7,938  | 0,3125 | 5/16" |
| Ø 3/8"                 | 1732.09523 | 9,525  | 0,375  | 3/8"  |
| Ø 7/16"                | 1732.11113 | 11,113 | 0,4375 | 7/16" |
| Ø 1/2"                 | 1732.12703 | 12,7   | 0,5    | 1/2"  |
| Ø 9/16"                | 1732.14293 | 14,288 | 0,5625 | 9/16" |
| Ø 5/8"                 | 1732.15883 | 15,875 | 0,625  | 5/8"  |
| Ø 3/4"                 | 1732.19053 | 19,05  | 0,75   | 3/4"  |
| Ø 7/8"                 | 1732.22233 | 22,225 | 0,875  | 7/8"  |
| Ø 1"                   | 1732.25403 | 25,4   | 1,0    | 1"    |

|                      |            |      |        |   |
|----------------------|------------|------|--------|---|
| <b>PG 48-CF [mm]</b> |            |      |        |   |
| Ø 20,0 mm            | 1748.20002 | 20,0 | 0,7874 | – |
| Ø 25,0 mm            | 1748.25002 | 25,0 | 0,9843 | – |
| Ø 32,0 mm            | 1748.32002 | 32,0 | 1,2598 | – |
| Ø 40,0 mm            | 1748.40002 | 40,0 | 1,5748 | – |

|                        |            |       |      |        |
|------------------------|------------|-------|------|--------|
| <b>PG 48-CF [inch]</b> |            |       |      |        |
| Ø 3/4"                 | 1748.19053 | 19,05 | 0,75 | 3/4"   |
| Ø 1"                   | 1748.25403 | 25,4  | 1,0  | 1"     |
| Ø 1 1/4"               | 1748.31753 | 31,75 | 1,25 | 1 1/4" |
| Ø 1 1/2"               | 1748.38103 | 38,1  | 1,5  | 1 1/2" |

| Type             | Part no.   | [mm]  | [decimal inch] | [inch] |
|------------------|------------|-------|----------------|--------|
| PG 15-CB [mm]    |            |       |                |        |
| Ø 4,0 mm         | 1715.04009 | 4,0   | 0,1575         | –      |
| Ø 6,0 mm         | 1715.06009 | 6,0   | 0,2362         | –      |
| Ø 8,0 mm         | 1715.08009 | 8,0   | 0,3150         | –      |
| PG 15-CB* [inch] |            |       |                |        |
| Ø 1/8"           | 1715.03189 | 3,175 | 0,125          | 1/8"   |
| Ø 3/16"          | 1715.04769 | 4,763 | 0,1875         | 3/16"  |
| Ø 1/4"           | 1715.06359 | 6,35  | 0,25           | 1/4"   |
| PG 25-CB [mm]    |            |       |                |        |
| Ø 6,0 mm         | 1725.06009 | 6,00  | 0,2362         | –      |
| Ø 8,0 mm         | 1725.08009 | 8,00  | 0,3150         | –      |
| Ø 10,0 mm        | 1725.10009 | 10,00 | 0,3937         | –      |
| Ø 12,0 mm        | 1725.12009 | 12,00 | 0,4724         | –      |
| Ø 16,0 mm        | 1725.16009 | 16,00 | 0,6300         | –      |
| PG 25-CB [inch]  |            |       |                |        |
| Ø 1/4"           | 1725.06359 | 6,35  | 0,2500         | 1/4"   |
| Ø 3/8"           | 1725.09529 | 9,53  | 0,3750         | 3/8"   |
| Ø 1/2"           | 1725.12709 | 12,70 | 0,5000         | 1/2"   |
| Ø 5/8"           | 1725.15889 | 15,88 | 0,6250         | 5/8"   |
| PG 32-CB [mm]    |            |       |                |        |
| Ø 12,0 mm        | 1732.12009 | 12,00 | 0,4724         | –      |
| Ø 16,0 mm        | 1732.16009 | 16,00 | 0,6300         | –      |
| Ø 20,0 mm        | 1732.20009 | 20,00 | 0,7874         | –      |
| PG 32-CB [inch]  |            |       |                |        |
| Ø 1/2"           | 1732.12709 | 12,70 | 0,5000         | 1/2"   |
| Ø 5/8"           | 1732.15889 | 15,88 | 0,6250         | 5/8"   |
| Ø 3/4"           | 1732.19059 | 19,05 | 0,7500         | 3/4"   |

\*USA only

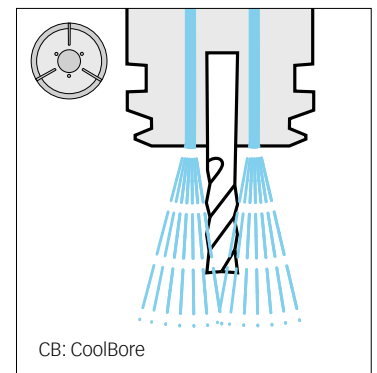


# Collets for short shank tools with coolant channels for peripheral cooling PG-S-CB

PG-S-CB

| Type               | Part no.   | [mm]  | [decimal inch] | [inch] |
|--------------------|------------|-------|----------------|--------|
| PG 15-S-CB* [mm]   |            |       |                |        |
| Ø 4 mm             | 8415.04007 | 3,0   | 0,1575         |        |
| Ø 6 mm             | 8145.06007 | 6,0   | 0,2362         | –      |
| Ø 8 mm             | 8415.08007 | 8,0   | 0,315          | –      |
| PG 15-S-CB* [inch] |            |       |                |        |
| Ø 1/8"             | 8415.03187 | 3,175 | 0,125          | 1/8"   |
| Ø 3/16"            | 8415.04767 | 4,763 | 0,1875         | 3/16"  |
| Ø 1/4"             | 8415.06357 | 6,35  | 0,25           | 1/4"   |
| PG 25-S-CB* [inch] |            |       |                |        |
| Ø 1/8"             | 8425.03187 | 3,175 | 0,125          | 1/8"   |
| Ø 3/16"            | 8425.04767 | 4,763 | 0,1875         | 3/16"  |
| Ø 1/4"             | 8425.06357 | 6,35  | 0,25           | 1/4"   |
| Ø 5/16"            | 8425.07947 | 7,94  | 0,3126         | 5/16"  |
| Ø 3/8"             | 8425.09527 | 9,52  | 0,3748         | 3/8"   |
| Ø 1/2"             | 8425.12707 | 12,7  | 0,5            | 1/2"   |
| Ø 5/8"             | 8425.15887 | 15,88 | 0,6252         | 5/8"   |

\*USA only



CB: CoolBore



PG-S-CB



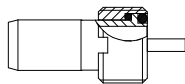


# Collets for minimum quantity lubrication PG-MQL-N

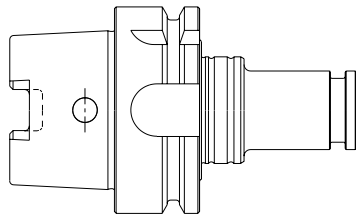
PG-MQL-N

Minimum quantity lubrication (MQL) refers to cooling lubrication systems that use a mixture of compressed air and a very small amount of oil (<50 ml/h) to ensure optimal machining.

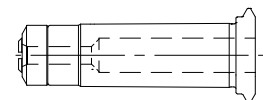
The powRgrip® solution for MQL applications consists of a coolant tube with lance, which guides the mixture through the collet directly to the tool. It is suitable for single-channel MQL systems and tool shanks according to DIN 69090-3.



Coolant tube KSR-MQL



Toolholder



PG MQL-N collet

| Type                      | Part no.   | Ø<br>[mm] | Ø<br>[decimal inch] | Ø<br>[inch] |
|---------------------------|------------|-----------|---------------------|-------------|
| <b>PG 15-MQL-N [mm]</b>   |            |           |                     |             |
| Ø 5,0 mm                  | 8415.05001 | 5,00      | 0,1969              | –           |
| Ø 6,0 mm                  | 8415.06001 | 6,00      | 0,2362              | –           |
| Ø 8,0 mm                  | 8415.08001 | 8,00      | 0,3150              | –           |
| Ø 10,0 mm                 | 8415.10001 | 10,00     | 0,3937              | –           |
| <b>PG 25-MQL-N [mm]</b>   |            |           |                     |             |
| Ø 10,0 mm                 | 8425.10001 | 10,00     | 0,3937              | –           |
| Ø 12,0 mm                 | 8425.12001 | 12,00     | 0,4724              | –           |
| Ø 16,0 mm                 | 8425.16001 | 16,00     | 0,6300              | –           |
| Ø 20,0 mm                 | 8425.20001 | 20,00     | 0,7874              | –           |
| <b>PG 25-MQL-N [inch]</b> |            |           |                     |             |
| Ø 1/4"                    | 8425.06351 | 6,35      | 0,2500              | 1/4"        |
| Ø 1/2"                    | 8425.12701 | 12,70     | 0,5000              | 1/2"        |
| Ø 5/8"                    | 8425.15881 | 15,88     | 0,6250              | 5/8"        |



PG-MQL-N

| Type                              | Part no.   | Suitable for toolholder | L1     |
|-----------------------------------|------------|-------------------------|--------|
| <b>MQL-Cooling lubricant tube</b> |            |                         |        |
| KSR 40-MQL PG 15 x 074            | 7211.40153 | HSK 40 / PG 15 x 074    | 42 mm  |
| KSR 40-MQL PG 15 x 080            | 7211.40154 | HSK 40 / PG 15 x 080    | 48 mm  |
| KSR 40-MQL PG 15 x 100            | 7211.40155 | HSK 40 / PG 15 x 100    | 68 mm  |
| KSR 40-MQL PG 15 x 120            | 7211.40156 | HSK 40 / PG 15 x 120    | 88 mm  |
| KSR 50-MQL PG 15 x 080            | 7211.50154 | HSK 50 / PG 15 x 080    | 48 mm  |
| KSR 50-MQL PG 15 x 100            | 7211.50155 | HSK 50 / PG 15 x 100    | 71 mm  |
| KSR 50-MQL PG 15 x 120            | 7211.50156 | HSK 50 / PG 15 x 120    | 90 mm  |
| KSR 50-MQL PG 25 x 100            | 7211.50255 | HSK 50 / PG 25 x 100    | 57 mm  |
| KSR 63-MQL PG 15 x 080            | 7211.63154 | HSK 63 / PG 15 x 080    | 49 mm  |
| KSR 63-MQL PG 15 x 120            | 7211.63156 | HSK 63 / PG 15 x 120    | 89 mm  |
| KSR 63-MQL PG 15 x 160            | 7211.63158 | HSK 63 / PG 15 x 160    | 129 mm |
| KSR 63-MQL PG 25 x 100            | 7211.63255 | HSK 63 / PG 25 x 100    | 58 mm  |
| KSR 63-MQL PG 25 x 120            | 7211.63256 | HSK 63 / PG 25 x 120    | 78 mm  |
| KSR 63-MQL PG 25 x 160            | 7211.63258 | HSK 63 / PG 25 x 160    | 118 mm |



KSR-MQL

| Type                | Part no.   | Ø<br>[mm] | [decimal inch] | [inch] |
|---------------------|------------|-----------|----------------|--------|
| <b>PG 15-L [mm]</b> |            |           |                |        |
| Ø 4,0 mm            | 1715.04001 | 4,0       | 0,1575         | –      |
| Ø 5,0 mm            | 1715.05001 | 5,0       | 0,1969         | –      |
| Ø 6,0 mm            | 1715.06001 | 6,0       | 0,2362         | –      |
| Ø 8,0 mm            | 1715.08001 | 8,0       | 0,315          | –      |
| Ø 10,0 mm           | 1715.10001 | 10,0      | 0,3937         | –      |

|                       |            |      |        |       |
|-----------------------|------------|------|--------|-------|
| <b>PG 15-L [inch]</b> |            |      |        |       |
| Ø 1/4"                | 1715.06350 | 6,35 | 0,25   | 1/4"  |
| Ø 5/16"               | 1715.07940 | 7,94 | 0,3126 | 5/16" |
| Ø 3/8"                | 1715.09520 | 9,52 | 0,3748 | 3/8"  |

|                     |            |      |        |   |
|---------------------|------------|------|--------|---|
| <b>PG 25-L [mm]</b> |            |      |        |   |
| Ø 6,0 mm            | 1725.06001 | 6,0  | 0,2362 | – |
| Ø 8,0 mm            | 1725.08001 | 8,0  | 0,315  | – |
| Ø 10,0 mm           | 1725.10001 | 10,0 | 0,3937 | – |
| Ø 12,0 mm           | 1725.12001 | 12,0 | 0,4724 | – |
| Ø 14,0 mm           | 1725.14001 | 14,0 | 0,5512 | – |
| Ø 16,0 mm           | 1725.16001 | 16,0 | 0,6299 | – |
| Ø 20,0 mm           | 1725.20001 | 20,0 | 0,7874 | – |

|                       |            |       |        |       |
|-----------------------|------------|-------|--------|-------|
| <b>PG 25-L [inch]</b> |            |       |        |       |
| Ø 1/4"                | 1725.06350 | 6,35  | 0,25   | 1/4"  |
| Ø 5/16"               | 1725.07940 | 7,94  | 0,3126 | 5/16" |
| Ø 3/8"                | 1725.09520 | 9,52  | 0,3748 | 3/8"  |
| Ø 1/2"                | 1725.12700 | 12,7  | 0,5    | 1/2"  |
| Ø 5/8"                | 1725.15880 | 15,88 | 0,6252 | 5/8"  |
| Ø 3/4"                | 1725.19050 | 19,05 | 0,75   | 3/4"  |

|                     |            |      |        |   |
|---------------------|------------|------|--------|---|
| <b>PG 32-L [mm]</b> |            |      |        |   |
| Ø 12,0 mm           | 1732.12001 | 12,0 | 0,4724 | – |
| Ø 16,0 mm           | 1732.16001 | 16,0 | 0,6299 | – |
| Ø 20,0 mm           | 1732.20001 | 20,0 | 0,7874 | – |
| Ø 25,0 mm           | 1732.25001 | 25,0 | 0,9843 | – |

|                       |            |       |      |      |
|-----------------------|------------|-------|------|------|
| <b>PG 32-L [inch]</b> |            |       |      |      |
| Ø 1/2"                | 1732.12700 | 12,7  | 0,5  | 1/2" |
| Ø 3/4"                | 1732.19050 | 19,05 | 0,75 | 3/4" |
| Ø 1"                  | 1732.25400 | 25,4  | 1,0  | 1"   |



| Type           | Part no.   | [mm]  | [decimal inch] | [inch] |
|----------------|------------|-------|----------------|--------|
| PG 6-S [mm]    |            |       |                |        |
| Ø 3,0 mm       | 1706.03008 | 3,0   | 0,1181         | –      |
| PG 6-S [inch]  |            |       |                |        |
| Ø 1/8"         | 1706.03188 | 3,175 | 0,125          | 1/8"   |
| PG 10-S [mm]   |            |       |                |        |
| Ø 3,0 mm       | 1710.03008 | 3,0   | 0,1181         | –      |
| Ø 4,0 mm       | 1710.04008 | 4,0   | 0,1575         | –      |
| Ø 6,0 mm       | 1710.06008 | 6,0   | 0,2362         | –      |
| PG 10-S [inch] |            |       |                |        |
| Ø 1/8"         | 1710.03188 | 3,175 | 0,125          | 1/8"   |
| Ø 3/16"        | 1710.04768 | 4,763 | 0,1875         | 3/16"  |
| Ø 1/4"         | 1710.06358 | 6,35  | 0,25           | 1/4"   |
| PG 15-S [mm]   |            |       |                |        |
| Ø 4,0 mm       | 1715.04008 | 4,0   | 0,1575         | –      |
| Ø 5,0 mm       | 1715.05008 | 5,0   | 0,1969         | –      |
| Ø 6,0 mm       | 1715.06008 | 6,0   | 0,2362         | –      |
| Ø 8,0 mm       | 1715.08008 | 8,0   | 0,315          | –      |
| Ø 10,0 mm      | 1715.10008 | 10,0  | 0,3937         | –      |
| PG 15-S [inch] |            |       |                |        |
| Ø 1/8"         | 1715.03188 | 3,175 | 0,125          | 1/8"   |
| Ø 3/16"        | 1715.04768 | 4,763 | 0,1875         | 3/16"  |
| Ø 1/4"         | 1715.06358 | 6,35  | 0,25           | 1/4"   |
| Ø 5/16"        | 1715.07948 | 7,94  | 0,3126         | 5/16"  |
| Ø 3/8"         | 1715.09528 | 9,52  | 0,3748         | 3/8"   |
| PG 25-S [mm]   |            |       |                |        |
| Ø 4,0 mm       | 1725.04008 | 4,0   | 0,1575         | –      |
| Ø 6,0 mm       | 1725.06008 | 6,0   | 0,2362         | –      |
| Ø 8,0 mm       | 1725.08008 | 8,0   | 0,315          | –      |
| Ø 10,0 mm      | 1725.10008 | 10,0  | 0,3937         | –      |
| Ø 12,0 mm      | 1725.12008 | 12,0  | 0,4724         | –      |
| Ø 14,0 mm      | 1725.14008 | 14,0  | 0,5512         | –      |
| Ø 16,0 mm      | 1725.16008 | 16,0  | 0,6299         | –      |
| Ø 20,0 mm      | 1725.20008 | 20,0  | 0,7874         | –      |

| Type           | Part no.   | Ø     |                |        |
|----------------|------------|-------|----------------|--------|
|                |            | [mm]  | [decimal inch] | [inch] |
| PG 25-S [inch] |            |       |                |        |
| Ø 1/8"         | 1725.03188 | 3,175 | 0,125          | 1/8"   |
| Ø 3/16"        | 1725.04768 | 4,763 | 0,1875         | 3/16"  |
| Ø 1/4"         | 1725.06358 | 6,358 | 0,2503         | 1/4"   |
| Ø 5/16"        | 1725.07948 | 7,94  | 0,3126         | 5/16"  |
| Ø 3/8"         | 1725.09528 | 9,52  | 0,3748         | 3/8"   |
| Ø 1/2"         | 1725.12708 | 12,7  | 0,5            | 1/2"   |
| Ø 5/8"         | 1725.15888 | 15,88 | 0,6252         | 5/8"   |
| Ø 3/4"         | 1725.19058 | 19,05 | 0,75           | 3/4"   |
| PG 32-S [mm]   |            |       |                |        |
| Ø 12,0 mm      | 1732.12008 | 12,0  | 0,4724         | –      |
| Ø 16,0 mm      | 1732.16008 | 16,0  | 0,6299         | –      |
| Ø 20,0 mm      | 1732.20008 | 20,0  | 0,7874         | –      |
| Ø 25,0 mm      | 1732.25008 | 25,0  | 0,9843         | –      |
| PG 32-S [inch] |            |       |                |        |
| Ø 1/2"         | 1732.12708 | 12,7  | 0,5            | 1/2"   |
| Ø 3/4"         | 1732.19058 | 19,05 | 0,75           | 3/4"   |
| Ø 1"           | 1732.25408 | 25,4  | 1,0            | 1"     |



PG-S

| Type                     | Part no.   | [mm]                       | [decimal inch] | [inch] |
|--------------------------|------------|----------------------------|----------------|--------|
| PG 15-SG [mm]            |            |                            |                |        |
| Ø 10,0 mm                | 1715.10004 | 10,0                       | 0,3937         | –      |
| PG 25-SG [mm]            |            |                            |                |        |
| Ø 10,0 mm                | 1725.10004 | 10,0                       | 0,3937         | –      |
| Ø 12,0 mm                | 1725.12004 | 12,0                       | 0,4724         | –      |
| Ø 14,0 mm                | 1725.14004 | 14,0                       | 0,5512         | –      |
| Ø 16,0 mm                | 1725.16004 | 16,0                       | 0,63           | –      |
| Ø 18,0 mm                | 1725.18004 | 18,0                       | 0,7087         | –      |
| Ø 20,0 mm                | 1725.20004 | 20,0                       | 0,7874         | –      |
| PG 25-SG [inch]          |            |                            |                |        |
| Ø 1/2"                   | 1725.12704 | 12,7                       | 0,5            | 1/2"   |
| Ø 5/8"                   | 1725.15884 | 15,875                     | 0,625          | 5/8"   |
| Ø 3/4"                   | 1725.19054 | 19,05                      | 0,75           | 3/4"   |
| PG 32-SG [mm]            |            |                            |                |        |
| Ø 10,0 mm                | 1732.10004 | 10,0                       | 0,3937         | –      |
| Ø 12,0 mm                | 1732.12004 | 12,0                       | 0,4724         | –      |
| Ø 14,0 mm                | 1732.14004 | 14,0                       | 0,5512         | –      |
| Ø 16,0 mm                | 1732.16004 | 16,0                       | 0,63           | –      |
| Ø 18,0 mm                | 1732.18004 | 18,0                       | 0,7087         | –      |
| Ø 20,0 mm                | 1732.20004 | 20,0                       | 0,7874         | –      |
| Ø 25,0 mm                | 1732.25004 | 25,0                       | 0,9843         | –      |
| PG 32-SG [inch]          |            |                            |                |        |
| Ø 1/2"                   | 1732.12704 | 12,7                       | 0,5            | 1/2"   |
| Ø 5/8"                   | 1732.15884 | 15,875                     | 0,625          | 5/8"   |
| Ø 3/4"                   | 1732.19054 | 19,05                      | 0,75           | 3/4"   |
| Ø 1"                     | 1732.25404 | 25,4                       | 1,0            | 1"     |
| Threaded insert SGI [mm] |            | Threaded insert SGI [inch] |                |        |
| Ø 10,0 mm                | 7694.10000 | Ø 1/2"                     | 7694.12700     |        |
| Ø 12,0 mm                | 7694.12000 | Ø 5/8"                     | 7694.15880     |        |
| Ø 14,0 mm                | 7694.14000 | Ø 3/4"                     | 7694.19050     |        |
| Ø 16,0 mm                | 7694.16000 | Ø 1"                       | 7694.25400     |        |
| Ø 18,0 mm                | 7694.18000 |                            |                |        |
| Ø 20,0 mm                | 7694.20000 |                            |                |        |
| Ø 25,0 mm                | 7694.25000 |                            |                |        |



PG-SG



Threaded insert SGI

[Learn more](#)

For more information about secuRgrip® see page 361.

# Tapping collet PG-TAP

## PG-TAP

DIN 371

DIN 376

ANSI

| Type                  | Part no.   | Ø [mm] | Square [mm] | DIN norm |
|-----------------------|------------|--------|-------------|----------|
| <b>PG 15-TAP [mm]</b> |            |        |             |          |
| Ø 3,5/□ 2,7 mm        | 1715.03505 | 3,5    | 2,7         | 371/376  |
| Ø 4,5/□ 3,4 mm        | 1715.04505 | 4,5    | 3,4         | 371/376  |
| Ø 6,0/□ 4,9 mm        | 1715.06005 | 6,0    | 4,9         | 371/376  |
| Ø 7,0/□ 5,5 mm        | 1715.07005 | 7,0    | 5,5         | 371/376  |
| Ø 8,0/□ 6,2 mm        | 1715.08005 | 8,0    | 6,2         | 371/376  |
| Ø 9,0/□ 7,0 mm        | 1715.09005 | 9,0    | 7,0         | 371/376  |
| Ø 10,0/□ 8,0 mm       | 1715.10005 | 10,0   | 8,0         | 371      |

|                       |            |      |      |         |
|-----------------------|------------|------|------|---------|
| <b>PG 25-TAP [mm]</b> |            |      |      |         |
| Ø 6,0/□ 4,9 mm        | 1725.06005 | 6,0  | 4,9  | 371/376 |
| Ø 8,0/□ 6,2 mm        | 1725.08005 | 8,0  | 6,2  | 371/376 |
| Ø 9,0/□ 7,0 mm        | 1725.09005 | 9,0  | 7,0  | 371/376 |
| Ø 10,0/□ 8,0 mm       | 1725.10005 | 10,0 | 8,0  | 371     |
| Ø 11,0/□ 9,0 mm       | 1725.11005 | 11,0 | 9,0  | 371/376 |
| Ø 12,0/□ 9,0 mm       | 1725.12005 | 12,0 | 9,0  | 371/376 |
| Ø 14,0/□ 11,0 mm      | 1725.14005 | 14,0 | 11,0 | 371/376 |
| Ø 16,0/□ 12,0 mm      | 1725.16005 | 16,0 | 12,0 | 371/376 |

| Type                    | Part no.   | Ø [inch] | Square [inch] | DIN norm |
|-------------------------|------------|----------|---------------|----------|
| <b>PG 15-TAP [inch]</b> |            |          |               |          |
| Ø 0,141" / □ 0,110"     | 1715.03585 | 0,141    | 0,110         | ANSI     |
| Ø 0,168" / □ 0,131"     | 1715.04275 | 0,168    | 0,131         | ANSI     |
| Ø 0,194" / □ 0,152"     | 1715.04935 | 0,194    | 0,152         | ANSI     |
| Ø 0,220" / □ 0,165"     | 1715.05595 | 0,220    | 0,165         | ANSI     |
| Ø 0,255" / □ 0,191"     | 1715.06485 | 0,255    | 0,191         | ANSI     |

|                         |            |       |       |      |
|-------------------------|------------|-------|-------|------|
| <b>PG 25-TAP [inch]</b> |            |       |       |      |
| Ø 0,318" / □ 0,238"     | 1725.08085 | 0,318 | 0,238 | ANSI |
| Ø 0,367" / □ 0,275"     | 1725.09325 | 0,367 | 0,275 | ANSI |
| Ø 0,381" / □ 0,286"     | 1725.09685 | 0,381 | 0,286 | ANSI |

### Expert advice

For imperial thread sizes and corresponding squares [□] see page 420.



PG-TAP



The sealed PG-SC collets provide optimal protection against contamination of the toolholder. Machining demanding materials such as ceramic, sintered carbide, graphite or glass places high demands on both tool and machine. The role of the toolholder as the connecting element is a crucial part of efficient machining. In addition to the highest and most consistent runout accuracy, the vibration-damping properties

of the powRgrip® system significantly improve tool life and surface quality. Another challenge is the chips and dust particles generated during machining, which can penetrate the smallest gaps and accumulate over time. PG-SC collets with a completely sealed head prevent such deposits and ensure long service life and consistent performance.

| Type          | Part no.   | Ø     |                |        |
|---------------|------------|-------|----------------|--------|
|               |            | [mm]  | [decimal inch] | [inch] |
| PG 10-SC [mm] |            |       |                |        |
| Ø 3,0 mm      | 8410.03004 | 3,00  | 0,1181         | –      |
| Ø 4,0 mm      | 8410.04004 | 4,00  | 0,1575         | –      |
| PG 15-SC [mm] |            |       |                |        |
| Ø 3,0 mm      | 8415.03004 | 3,00  | 0,1181         | –      |
| Ø 4,0 mm      | 8415.04004 | 4,00  | 0,1575         | –      |
| Ø 6,0 mm      | 8415.06004 | 6,00  | 0,2362         | –      |
| Ø 8,0 mm      | 8415.08004 | 8,00  | 0,3150         | –      |
| Ø 10,0 mm     | 8415.10004 | 10,00 | 0,3937         | –      |

**Due to their design, PG 15-TW collets have no through-slots and are therefore sealed.**

|                      |            |      |        |   |
|----------------------|------------|------|--------|---|
| <b>PG 15-TW [mm]</b> |            |      |        |   |
| Ø 12,00              | 1715.12006 | 12,0 | 0,4724 | – |

*TW: Thin-wall collets are guaranteed 1 year or 2000 clamping cycles*

|                        |            |      |     |      |
|------------------------|------------|------|-----|------|
| <b>PG 15-TW [inch]</b> |            |      |     |      |
| Ø 1/2"                 | 1715.12706 | 12,7 | 0,5 | 1/2" |

*TW: Thin-wall collets are guaranteed 1 year or 500 clamping cycles*



# Extra-short collets for PGST collet holders

PGST

powRgrip®

The extra-short PGST collets are up to 25 % shorter than the conventional PG system. This enables a compact assembly length. Available for PST, HJNZ and WTO QuickFlex® collet holders with powRgrip® interface.

| Type         | Part no.   | Ø     |                |        |
|--------------|------------|-------|----------------|--------|
|              |            | [mm]  | [decimal inch] | [inch] |
| PGST 15 [mm] |            |       |                |        |
| Ø 3,0 mm     | 1715.03006 | 3,00  | 0,1181         | –      |
| Ø 4,0 mm     | 1715.04006 | 4,00  | 0,1575         | –      |
| Ø 6,0 mm     | 1715.06006 | 6,00  | 0,2362         | –      |
| Ø 8,0 mm     | 1715.08006 | 8,00  | 0,3150         | –      |
| Ø 10,0 mm    | 1715.10006 | 10,00 | 0,3937         | –      |

|                       |            |      |        |       |
|-----------------------|------------|------|--------|-------|
| <b>PGST 15 [inch]</b> |            |      |        |       |
| Ø 1/8"                | 1715.03186 | 3,18 | 0,1250 | 1/8"  |
| Ø 3/16"               | 1715.04766 | 4,76 | 0,1875 | 3/16" |
| Ø 1/4"                | 1715.06356 | 6,35 | 0,2500 | 1/4"  |
| Ø 5/16"               | 1715.07946 | 7,94 | 0,3125 | 5/16" |
| Ø 3/8"                | 1715.09526 | 9,53 | 0,3750 | 3/8"  |

|                     |            |       |        |   |
|---------------------|------------|-------|--------|---|
| <b>PGST 25 [mm]</b> |            |       |        |   |
| Ø 3,0 mm            | 1725.03006 | 3,00  | 0,1181 | – |
| Ø 4,0 mm            | 1725.04006 | 4,00  | 0,1575 | – |
| Ø 6,0 mm            | 1725.06006 | 6,00  | 0,2362 | – |
| Ø 8,0 mm            | 1725.08006 | 8,00  | 0,3150 | – |
| Ø 10,0 mm           | 1725.10006 | 10,00 | 0,3937 | – |
| Ø 12,0 mm           | 1725.12006 | 12,00 | 0,4724 | – |
| Ø 16,0 mm           | 1725.16006 | 16,00 | 0,6299 | – |
| Ø 20,0 mm           | 1725.20006 | 20,00 | 0,7874 | – |

|                       |            |       |        |       |
|-----------------------|------------|-------|--------|-------|
| <b>PGST 25 [inch]</b> |            |       |        |       |
| Ø 1/8"                | 1725.03186 | 3,18  | 0,1250 | 1/8"  |
| Ø 3/16"               | 1725.04766 | 4,76  | 0,1875 | 3/16" |
| Ø 1/4"                | 1725.06356 | 6,35  | 0,2500 | 1/4"  |
| Ø 5/16"               | 1725.07946 | 7,94  | 0,3125 | 5/16" |
| Ø 3/8"                | 1725.09526 | 9,53  | 0,3750 | 3/8"  |
| Ø 1/2"                | 1725.12706 | 12,70 | 0,5000 | 1/2"  |
| Ø 5/8"                | 1725.15886 | 15,88 | 0,6250 | 5/8"  |
| Ø 3/4"                | 1725.19056 | 19,05 | 0,7500 | 3/4"  |



**Note** PGST collets may only be used with corresponding PGST toolholders. These toolholders are visually marked by 2 grooves on the outer diameter.

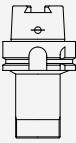
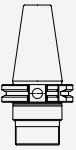
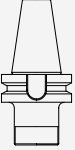
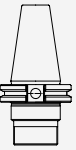
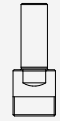
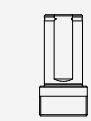
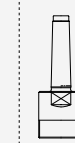
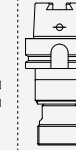
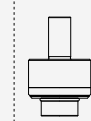


PGST



REGO-FIX▲

# Experience the widest ER range

| Standard                                                                         |                                                                                   |                                                                                   |                                                                                   |                                                                                   | Cylindrical collets                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | Collet holders for tapping                                                        |                                                                                    |                                                                                     | Floating chucks                                                                     |                                                                                     | Collet reductions                                                                   |                                                                                     |
|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| HSK/ER                                                                           | SK/ER                                                                             | BT/ER                                                                             | CAT/ER                                                                            | CAPTO/ER                                                                          | CYL/ER                                                                            | CYL/ERM(X)<br>CYL-F/ERM(X)                                                        | CYL/ER NC                                                                         | CYL-DF/ERM<br>CYL-DF/ERM(X)                                                       | MK/ER                                                                             | SH/ER                                                                             | ISO 20/ER                                                                          | HSK-A SSY                                                                           | CYL SSY<br>CYL GSF                                                                  | PH/ER<br>PHC-C/ER                                                                   | MPH/ERM<br>MPHC/ERM(X)                                                              | ER(M)/ERM<br>ER(MX)/ERM(X)                                                          |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Page 94                                                                          | Page 100                                                                          | Page 106                                                                          | Page 114                                                                          | Page 120                                                                          | Page 124                                                                          | Page 128                                                                          | Page 133                                                                          | Page 134                                                                          | Page 136                                                                          | Page 138                                                                          | Page 140                                                                           | Page 142                                                                            | Page 142                                                                            | Page 145                                                                            | Page 149                                                                            | Page 153                                                                            |

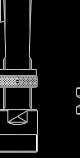
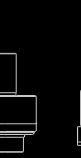
| SR collet                                                                          | Micro-machining                                                                     | Standard and ultraprecision                                                         | micRun®                                                                             | Corrosion-resistant                                                                 | Metallic sealed                                                                     | CoolBore                                                                            | Pullout protection secuRgrip®                                                         | Collets for tapping                                                                   |                                                                                       |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| SR                                                                                 | ER-MB / ER-MBX                                                                      | ER-Standard / ER-UP                                                                 | ER-MR                                                                               | ER-INOX                                                                             | ER-DM                                                                               | ER-CB                                                                               | ER-SG                                                                                 | ER-GB                                                                                 | PCM ET1                                                                               |
|  |  |  |  |  |  |  |  |  |  |
| Page 162                                                                           | Page 162                                                                            | Page 163                                                                            | Page 243                                                                            | Page 172                                                                            | Page 174                                                                            | Page 179                                                                            | Page 180                                                                              | Page 181                                                                              | Page 184                                                                              |

| Standard                                                                            |                                                                                     | Standard with bearing                                                               |                                                                                     | Mini nut                                                                            |                                                                                     | Slip-off proof mini nut                                                             |                                                                                     | External thread                                                                     |                                                                                     |                                                                                      |                                                                                       | Sealing and coolant flush disks                                                       |                                                                                       |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Hi-Q®/ER                                                                            | Hi-Q®/ERC                                                                           | Hi-Q®/ERB                                                                           | Hi-Q®/ERBC                                                                          | Hi-Q®/ERM                                                                           | Hi-Q®/ERMC                                                                          | Hi-Q®/ERMX<br>intRlox®                                                              | Hi-Q®/ERMXC<br>intRlox®                                                             | ER MS                                                                               | Hi-Q®/ERAX                                                                          | Hi-Q®/ERAXC                                                                          | reCool®<br>RCR/RCS                                                                    | reCool®<br>RCR/ERAX                                                                   | DS/ER                                                                                 | KS/ER                                                                                 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Page 190                                                                            | Page 192                                                                            | Page 194                                                                            | Page 194                                                                            | Page 196                                                                            | Page 196                                                                            | Page 198                                                                            | Page 198                                                                            | Page 200                                                                            | Page 202                                                                            | Page 202                                                                             | Page 208                                                                              | Page 213                                                                              | Page 322                                                                              | Page 330                                                                              |

B: bearing C: cooling M: mini thread X: slip-off proof A: external thread

DS: sealing disk KS: coolant flush disk



| Standard                                                                          |                                                                                   |                                                                                   |                                                                                   |                                                                                   | Colletholders for tapping                                                         |                                                                                   |                                                                                   | Floating chucks                                                                    |                                                                                     | Collet reductions                                                                   |                                                                                     |                                                                                     |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| HSK/ER                                                                            | SK/ER                                                                             | BT/ER                                                                             | CAT/ER                                                                            | CAPTO/ER                                                                          | MK/ER                                                                             | SH/ER                                                                             | ISO 20/ER                                                                         | HSK-A SSY                                                                          | CYL SSY<br>CYL GSF                                                                  | PH/ER<br>PHC/ER<br>PHC-C/ER                                                         | MPH/ERM<br>ERMV<br>MPHC/ERMV                                                        | ER(M)/ERM<br>ER(MV)/ERMV                                                            |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Page 94                                                                           | Page 100                                                                          | Page 106                                                                          | Page 114                                                                          | Page 120                                                                          | Page 136                                                                          | Page 138                                                                          | Page 140                                                                          | Page 142                                                                           | Page 142                                                                            | Page 145                                                                            | Page 149                                                                            | Page 153                                                                            |



# Swiss quality ER toolholders



|                                              | HSK/ER                | SK/ER                   | BT/ER                   | BT+/ER                | CAT/ER                  | CAT+/ER               | CAPTO/ER              |
|----------------------------------------------|-----------------------|-------------------------|-------------------------|-----------------------|-------------------------|-----------------------|-----------------------|
| Norm                                         | DIN 69893             | DIN 69871               | MAS 403<br>JIS B 6339   | –                     | ASME B5.50              | –                     | –                     |
| ISO                                          | ISO 12164             | ISO 7388-1              | ISO 7388-2              | –                     | –                       | –                     | ISO 26623             |
| Balancing                                    | G 2,5 @<br>25 000 rpm | G 2,5 @<br>25 000 rpm   | G 2,5 @<br>25 000 rpm   | G 2,5 @<br>25 000 rpm | G 2,5 @<br>25 000 rpm   | G 2,5 @<br>25 000 rpm | G 2,5 @<br>25 000 rpm |
| Chip hole                                    | HSK-A                 | •                       | –                       | –                     | •                       | •                     | –                     |
| Runout TIR<br>(outer taper to<br>inner cone) | ≤0,003 mm             | ≤0,003 mm               | ≤0,003 mm               | ≤0,003 mm             | ≤0,003 mm               | ≤0,003 mm             | ≤0,003 mm             |
| Taper tolerance                              | DIN ISO               | AT3                     | AT3                     | AT1                   | AT3                     | AT1                   | ISO 26623             |
| MFD*                                         | –                     | –                       | –                       | –                     | –                       | –                     | –                     |
| Form A + AD                                  | –                     | •                       | •                       | •                     | •                       | •                     | –                     |
| Form AD + B                                  | –                     | available<br>on request | available<br>on request | –                     | available<br>on request | –                     | –                     |

\*Micro friction dampening technology



|                                              | HSK-A/ER XL          | SK/ER XL             | BT/ER XL              | CAT/ER XL            | CAPTO/ER XL          |
|----------------------------------------------|----------------------|----------------------|-----------------------|----------------------|----------------------|
| Norm                                         | DIN 69893            | DIN 69871            | MAS 403<br>JIS B 6339 | ASME B5.50           | ISO 26623            |
| ISO                                          | ISO 12164            | ISO 7388-1           | ISO 7388-2            | –                    | ISO 26623            |
| Balancing                                    | G 2,5 @<br>5 000 rpm | G 2,5 @<br>5 000 rpm | G 2,5 @<br>5 000 rpm  | G 2,5 @<br>5 000 rpm | G 2,5 @<br>5 000 rpm |
| Chip hole                                    | HSK-A                | •                    | –                     | •                    | –                    |
| Runout TIR<br>(outer taper to<br>inner cone) | ≤0,01 mm             | ≤0,01 mm             | ≤0,01 mm              | ≤0,01 mm             | ≤0,01 mm             |
| Taper tolerance                              | DIN ISO              | AT3                  | AT3                   | AT3                  | ISO 26623            |
| MFD*                                         | •                    | •                    | •                     | •                    | •                    |
| Form A + AD                                  | –                    | •                    | •                     | •                    | –                    |
| Form AD + B                                  | –                    | –                    | –                     | –                    | –                    |

\*Micro friction dampening technology

---

### Cylindrical collets

CYL/  
ER

CYL/  
ERM(X)  
CYL-F/  
ERM(X)

CYL/  
ER NC

CYL-DF/  
ERM  
CYL-DF/  
ERMX



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# Swiss quality ER toolholders



|                            | CYL/ER    | CYL/ERM   | CYL/ERMX  | CYL-F/ERM |
|----------------------------|-----------|-----------|-----------|-----------|
| Shank tolerance            | h6        | h6        | h6        | h6        |
| Runout TIR (shank to cone) | ≤0,003 mm | ≤0,003 mm | ≤0,003 mm | ≤0,003 mm |
| Rotary applications        | •         | •         | •         | –         |
| Clamping flat              | –         | –         | –         | •         |
| Double ER                  | –         | –         | –         | –         |
| Slip-off proof             | –         | –         | •         | –         |
| Minimal outer diameter     | –         | •         | •         | •         |



|                            | CYL-F/ERMX | CYL-DF/ERM | CYL-DF/ERMX | CYL/ERNC  |
|----------------------------|------------|------------|-------------|-----------|
| Shank tolerance            | h6         | h6         | h6          | h6        |
| Runout TIR (shank to cone) | ≤0,005 mm  | ≤0,005 mm  | ≤0,005 mm   | ≤0,005 mm |
| Rotary applications        | –          | –          | –           | –         |
| Clamping flat              | •          | •          | •           | •         |
| Double ER                  | –          | •          | •           | –         |
| Slip-off proof             | •          | –          | •           | –         |
| Minimal outer diameter     | •          | •          | •           | –         |

# HSK toolholders

Designed for rotating applications, all our HSK toolholders are suited for high-speed applications where consistent performance is key.

DIN 69893/ISO 12164

## Features and benefits

### Runout TIR $\leq 3 \mu\text{m}$

Measured from inner taper to outer taper.

### Surface finish max. Ra 0.25

Achieve high clamping force and high transferable torque.

### Balancing

100% balanced to G 2.5 @ 25,000 rpm/<1gmm.

### XL toolholders

100% balanced to G 2.5 @ 5,000 rpm.  
TIR from inner to outer taper <10  $\mu\text{m}$ .

### Hi-Q® balancing system

Ready to accept Hi-Q® balancing rings which allow for the offset of the imbalance introduced by the cutting tool up to 80,000 rpm depending on the balancing rings used. All toolholders with the additional type information "H" in the article name are designed for balancing rings.

### Hi-Q®|ER clamping nut included in delivery

Guarantees highest clamping force and best balancing.

### Vibration damping

Our holders offer a good vibration damping to sustain a high surface finish and can prevent cutting force alterations.

### Special applications

When extra high clamping force is needed, e.g., when tapping with ER-GB, we recommend to use our friction-bearing clamping nuts Hi-Q®|ERB and Hi-Q®|ERBC.

### ID chip hole (only HSK form A)

In accordance with DIN 69873 for 10 mm diameter.  
Other HSK-forms available on request.

*Accessories are not included in delivery. HSK-A 125 available on request.  
Other XL sizes available on request.*

## Balancing specifications

|           |                        |
|-----------|------------------------|
| HSK-AZ 15 | balanced to 90,000 rpm |
| ATC-E 15  | balanced to 90,000 rpm |
| HSK-EZ 15 | balanced to 90,000 rpm |
| HSK 25    | balanced to 90,000 rpm |
| HSK 32    | balanced to 60,000 rpm |
| HSK 40    | balanced to 45,000 rpm |
| HSK 50    | balanced to 36,000 rpm |
| HSK 63    | G 2.5 @ 25,000 rpm     |
| HSK 80    | G 2.5 @ 25,000 rpm     |
| HSK 100   | G 2.5 @ 25,000 rpm     |
| HSK 125   | G 2.5 @ 25,000 rpm     |



## Expert advice

For all HSK-A and HSK-E form toolholders a range of coolant tubes (KSR) is available.

*For KSR part numbers please refer to page 345.*

# HSK-A toolholders

| HSK-AB     | HSK-A     |
|------------|-----------|
| ISO 12164  | DIN 69893 |
| compatible | ISO 12164 |

| Type                    | Part no.   | Dimensions [mm] |     |     |     | Accessories |            |
|-------------------------|------------|-----------------|-----|-----|-----|-------------|------------|
|                         |            | DLN             | BD2 | LPR | LB1 | FWR*        | Wrench     |
| HSK-A 32                |            |                 |     |     |     |             |            |
| HSK-A 32/ER 11 x 050    | 2532.11110 | 19              | –   | 50  | –   | –           | 7112.11010 |
| HSK-A 32/ER 16 x 060    | 2532.11620 | 28              | –   | 60  | –   | –           | 7112.16010 |
| HSK-A 32/ER 20 x 060    | 2532.12020 | 34              | –   | 60  | –   | –           | 7112.20010 |
| HSK-A 32/ER 25 x 065    | 2532.12520 | 42              | –   | 65  | –   | –           | 7111.25000 |
|                         |            |                 |     |     |     |             |            |
| HSK-A 40                |            |                 |     |     |     |             |            |
| HSK-A 40/ER 16 x 060 H  | 4540.11620 | 28              | –   | 60  | –   | 225         | 7112.16010 |
| HSK-A 40/ER 16 x 080 H  | 4540.11640 | 28              | –   | 80  | –   | 225         | 7112.16010 |
| HSK-A 40/ER 25 x 080 H  | 4540.12540 | 42              | –   | 80  | –   | 325         | 7111.25000 |
|                         |            |                 |     |     |     |             |            |
| HSK-A 50                |            |                 |     |     |     |             |            |
| HSK-A 50/ER 16 x 100 H  | 4550.11650 | 28              | –   | 100 | –   | 325         | 7112.16010 |
| HSK-A 50/ER 25 x 080 H  | 4550.12540 | 42              | –   | 80  | –   | 325         | 7111.25000 |
| HSK-A 50/ER 25 x 100 H  | 4550.12550 | 42              | –   | 100 | –   | 325         | 7111.25000 |
| HSK-A 50/ER 32 x 100 H  | 4550.13250 | 50              | –   | 100 | –   | 405         | 7111.32000 |
|                         |            |                 |     |     |     |             |            |
| HSK-A 63                |            |                 |     |     |     |             |            |
| HSK-A 63/ER 11 x 100 H  | 4563.11150 | 19              | –   | 100 | –   | 325         | 7112.11010 |
| HSK-A 63/ER 16 x 080 H  | 4563.11640 | 28              | –   | 80  | –   | 325         | 7112.16010 |
| HSK-A 63/ER 16 x 100 H  | 4563.11650 | 28              | –   | 100 | –   | 325         | 7112.16010 |
| HSK-A 63/ER 16 x 160 H  | 4563.11680 | 28              | –   | 160 | –   | 325/225     | 7112.16010 |
| HSK-A 63/ER 16 x 240 XL | 8865.13070 | 28              | 46  | 240 | 140 | –           | 7112.16010 |
| HSK-A 63/ER 16 x 260 XL | 8865.13090 | 28              | 46  | 260 | 140 | –           | 7112.16010 |
| HSK-A 63/ER 16 x 300 XL | 8865.13130 | 28              | 46  | 300 | 140 | –           | 7112.16010 |
| HSK-A 63/ER 16 x 340 XL | 8865.13170 | 28              | 46  | 340 | 240 | –           | 7112.16010 |
| HSK-A 63/ER 16 x 360 XL | 8865.13190 | 28              | 46  | 360 | 240 | –           | 7112.16010 |
| HSK-A 63/ER 16 x 400 XL | 8865.13230 | 28              | 46  | 400 | 240 | –           | 7112.16010 |
| HSK-A 63/ER 20 x 075    | 2563.12030 | 34              | –   | 75  | –   | –           | 7112.20010 |
| HSK-A 63/ER 25 x 080 H  | 4563.12540 | 42              | –   | 80  | –   | 325         | 7111.25000 |
| HSK-A 63/ER 25 x 100 H  | 4563.12550 | 42              | –   | 100 | –   | 325         | 7111.25000 |
| HSK-A 63/ER 25 x 160 H  | 4563.12580 | 42              | –   | 160 | –   | 325         | 7111.25000 |
| HSK-A 63/ER 25 x 200 H  | 4563.12590 | 42              | –   | 200 | –   | 405/325     | 7111.25000 |
| HSK-A 63/ER 32 x 080 H  | 4563.13240 | 50              | –   | 80  | –   | 405         | 7111.32000 |
| HSK-A 63/ER 32 x 100 H  | 4563.13250 | 50              | –   | 100 | –   | 405         | 7111.32000 |
| HSK-A 63/ER 32 x 160 H  | 4563.13280 | 50              | –   | 160 | –   | 405         | 7111.32000 |
| HSK-A 63/ER 32 x 200 H  | 4563.13290 | 50              | –   | 200 | –   | 405/405     | 7111.32000 |
| HSK-A 63/ER 32 x 240 XL | 8865.16070 | 50              | 55  | 240 | 140 | –           | 7111.32000 |
| HSK-A 63/ER 32 x 260 XL | 8865.16090 | 50              | 55  | 260 | 140 | –           | 7111.32000 |
| HSK-A 63/ER 32 x 340 XL | 8865.16170 | 50              | 55  | 340 | 240 | –           | 7111.32000 |
| HSK-A 63/ER 32 x 360 XL | 8865.16190 | 50              | 55  | 360 | 240 | –           | 7111.32000 |

\*Balancing rings H: Ready to accept balancing rings

Included in delivery: Toolholders with Hi-Q®|ER clamping nut and back-up screw

# HSK-A toolholders

| HSK-AB     | HSK-A     |
|------------|-----------|
| ISO 12164  | DIN 69893 |
| compatible | ISO 12164 |

| Type                   | Part no.   | Dimensions [mm] |     |     |     | Accessories |            |
|------------------------|------------|-----------------|-----|-----|-----|-------------|------------|
|                        |            | DLN             | BD2 | LPR | LB1 | FWR*        | Wrench     |
| HSK-A 63/ER 40 x 080   | 2563.14040 | 63              | –   | 80  | –   | –           | 7111.40000 |
| HSK-A 63/ER 40 x 120 H | 4563.14060 | 63              | –   | 120 | –   | 505         | 7111.40000 |
| HSK-A 63/ER 40 x 160 H | 4563.14080 | 63              | –   | 160 | –   | 505         | 7111.40000 |

## HSK-A 80

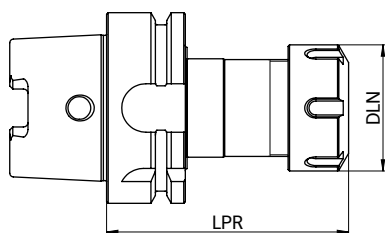
|                        |            |    |   |     |   |         |            |
|------------------------|------------|----|---|-----|---|---------|------------|
| HSK-A 80/ER 16 x 100 H | 4580.11650 | 28 | – | 100 | – | 325     | 7112.16010 |
| HSK-A 80/ER 16 x 160 H | 4580.11680 | 28 | – | 160 | – | 325/225 | 7112.16010 |
| HSK-A 80/ER 32 x 100 H | 4580.13250 | 50 | – | 100 | – | 405     | 7111.32000 |
| HSK-A 80/ER 40 x 120 H | 4580.14060 | 63 | – | 120 | – | 505     | 7111.40000 |

## HSK-A 100

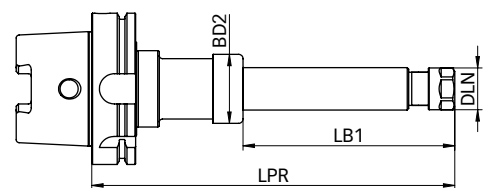
|                          |            |    |    |     |     |         |            |
|--------------------------|------------|----|----|-----|-----|---------|------------|
| HSK-A 100/ER 16 x 100 H  | 4500.11650 | 28 | –  | 100 | –   | 405     | 7112.16010 |
| HSK-A 100/ER 16 x 160 H  | 4500.11680 | 28 | –  | 160 | –   | 405/225 | 7112.16010 |
| HSK-A 100/ER 16 x 200 H  | 4500.11690 | 28 | –  | 200 | –   | 405/225 | 7112.16010 |
| HSK-A 100/ER 16 x 240 XL | 8885.13070 | 28 | 46 | 240 | 140 | –       | 7112.16010 |
| HSK-A 100/ER 16 x 300 XL | 8885.13130 | 28 | 46 | 300 | 140 | –       | 7112.16010 |
| HSK-A 100/ER 16 x 340 XL | 8885.13170 | 28 | 46 | 340 | 240 | –       | 7112.16010 |
| HSK-A 100/ER 16 x 400 XL | 8885.13230 | 28 | 46 | 400 | 240 | –       | 7112.16010 |
| HSK-A 100/ER 25 x 100 H  | 4500.12550 | 42 | –  | 100 | –   | 405     | 7111.25000 |
| HSK-A 100/ER 25 x 160 H  | 4500.12580 | 42 | –  | 160 | –   | 405/325 | 7111.25000 |
| HSK-A 100/ER 25 x 200 H  | 4500.12590 | 42 | –  | 200 | –   | 405/325 | 7111.25000 |
| HSK-A 100/ER 32 x 100 H  | 4500.13250 | 50 | –  | 100 | –   | 405     | 7111.32000 |
| HSK-A 100/ER 32 x 160 H  | 4500.13280 | 50 | –  | 160 | –   | 405     | 7111.32000 |
| HSK-A 100/ER 32 x 246 XL | 8885.16070 | 50 | 55 | 246 | 140 | –       | 7111.32000 |
| HSK-A 100/ER 32 x 346 XL | 8885.16170 | 50 | 55 | 346 | 240 | –       | 7111.32000 |
| HSK-A 100/ER 40 x 120 H  | 4500.14060 | 63 | –  | 120 | –   | 505     | 7111.40000 |
| HSK-A 100/ER 40 x 200 H  | 4500.14090 | 63 | –  | 200 | –   | 505/505 | 7111.40000 |

\*Balancing rings H: Ready to accept balancing rings  
 HSK-A: Hole for data carrier DIN STD 69873 in the flange

Included in delivery: Toolholders with Hi-Q®|ER clamping nut and back-up screw



HSK-A/ER



HSK-A/ER XL

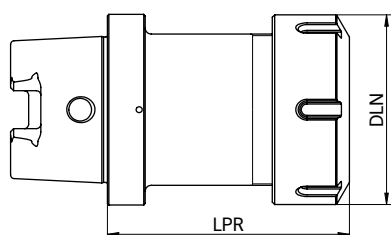
# HSK-C toolholders

| HSK-CB     | HSK-C     |
|------------|-----------|
| ISO 12164  | DIN 69893 |
| compatible | ISO 12164 |

| Type                 | Part no.   | Dimensions [mm] |     |     |     | Accessories |            |
|----------------------|------------|-----------------|-----|-----|-----|-------------|------------|
|                      |            | DLN             | BD2 | LPR | LB1 | FWR*        | Wrench     |
| HSK-C 32             |            |                 |     |     |     |             |            |
| HSK-C 32/ER 16 x 060 | 2532.11622 | 28              | –   | 60  | –   | –           | 7112.16010 |
| HSK-C 32/ER 20 x 060 | 2532.12022 | 34              | –   | 60  | –   | –           | 7112.20010 |
| HSK-C 32/ER 25 x 070 | 2532.12532 | 42              | –   | 70  | –   | –           | 7111.25000 |
| HSK-C 40             |            |                 |     |     |     |             |            |
| HSK-C 40/ER 20 x 060 | 2540.12022 | 34              | –   | 60  | –   | –           | 7112.20010 |
| HSK-C 40/ER 25 x 070 | 2540.12532 | 42              | –   | 70  | –   | –           | 7111.25000 |
| HSK-C 40/ER 32 x 075 | 2540.13232 | 50              | –   | 75  | –   | –           | 7111.32000 |
| HSK-C 50             |            |                 |     |     |     |             |            |
| HSK-C 50/ER 25 x 070 | 2550.12532 | 42              | –   | 70  | –   | –           | 7111.25000 |
| HSK-C 50/ER 32 x 075 | 2550.13232 | 50              | –   | 75  | –   | –           | 7111.32000 |
| HSK-C 50/ER 40 x 080 | 2550.14042 | 63              | –   | 80  | –   | –           | 7111.40000 |
| HSK-C 63             |            |                 |     |     |     |             |            |
| HSK-C 63/ER 32 x 075 | 2563.13232 | 50              | –   | 75  | –   | –           | 7111.32000 |
| HSK-C 63/ER 40 x 080 | 2563.14042 | 63              | –   | 80  | –   | –           | 7111.40000 |

\*Balancing rings H: Ready to accept balancing rings

Included in delivery: Toolholders with Hi-Q® | ER clamping nut and back-up screw



HSK-C/ER

# HSK-E toolholders

# HSK-F toolholders

| HSK-AZ 15 | HSK-EZ 15      | HSK-EB     | HSK-E     |
|-----------|----------------|------------|-----------|
| REGO-FIX  | ATC-E 15       | ISO 12164  | DIN 69893 |
|           | DIN SPEC 28999 | compatible | ISO 12164 |

| Type                    | Part no.   | Dimensions [mm] |     |     |     | Accessories |            |
|-------------------------|------------|-----------------|-----|-----|-----|-------------|------------|
|                         |            | DLN             | BD2 | LPR | LB1 | FWR*        | Wrench     |
| HSK-EZ 15               |            |                 |     |     |     |             |            |
| HSK-EZ 15/SR 6 x 022    | 5515.20604 | 10              | –   | 22  | –   | –           | 7864.06000 |
| HSK-EZ 15/ERMS 8 x 021  | 2515.10804 | 12              | –   | 21  | –   | –           | 7114.08000 |
| HSK-EZ 15/ERMS 11 x 024 | 2515.11104 | 16              | –   | 24  | –   | –           | 7114.11000 |
| ATC-E 15                |            |                 |     |     |     |             |            |
| ATC-E 15/SR 6 x 022     | 5915.20600 | 10              | –   | 22  | –   | –           | 7864.06000 |
| ATC-E 15/ERMS 8 x 021   | 2915.10800 | 12              | –   | 21  | –   | –           | 7114.08000 |
| ATC-E 15/ERMS 11 x 024  | 2915.11100 | 16              | –   | 24  | –   | –           | 7114.11000 |
| HSK-AZ 15               |            |                 |     |     |     |             |            |
| HSK-AZ 15/ERMS 8 x 021  | 2915.10807 | 12              | –   | 21  | –   | –           | 7114.08000 |
| HSK-AZ 15/ERMS 11 x 024 | 2915.11107 | 16              | –   | 24  | –   | –           | 7114.11000 |
| HSK-E 25                |            |                 |     |     |     |             |            |
| HSK-E 25/ERM 16 x 048   | 2525.11618 | 22              | –   | 48  | –   | –           | 7113.16000 |
| HSK-E 32                |            |                 |     |     |     |             |            |
| HSK-E 32/ERMS 11 x 038  | 2532.11109 | 16              | –   | 38  | –   | –           | 7114.11000 |
| HSK-E 32/ERM 16 x 060   | 2532.11628 | 22              | –   | 60  | –   | –           | 7113.16000 |
| HSK-E 32/ERM 20 x 060   | 2532.12028 | 28              | –   | 60  | –   | –           | 7113.20000 |
| HSK-E 40                |            |                 |     |     |     |             |            |
| HSK-E 40/ER 11 x 060 H  | 4540.11124 | 19              | –   | 60  | –   | 225         | 7112.11010 |
| HSK-E 40/ER 16 x 060 H  | 4540.11624 | 28              | –   | 60  | –   | 225         | 7112.16010 |
| HSK-E 40/ER 16 x 080 H  | 4540.11644 | 28              | –   | 80  | –   | 225         | 7112.16010 |
| HSK-E 40/ERM 20 x 075 H | 4540.12038 | 28              | –   | 75  | –   | 285         | 7113.20000 |
| HSK-E 40/ERM 25 x 080 H | 4540.12548 | 35              | –   | 80  | –   | 325         | 7113.25000 |
| HSK-E 50                |            |                 |     |     |     |             |            |
| HSK-E 50/ER 11 x 100 H  | 4550.11154 | 19              | –   | 100 | –   | –           | 7112.11010 |
| HSK-E 50/ER 16 x 060    | 2550.11624 | 28              | –   | 60  | –   | –           | 7112.16010 |
| HSK-E 50/ER 16 x 100 H  | 4550.11654 | 28              | –   | 100 | –   | 325         | 7112.16010 |
| HSK-E 50/ER 16 x 160 H  | 4550.11684 | 28              | –   | 160 | –   | 325/225     | 7112.16010 |
| HSK-E 50/ER 20 x 070 H  | 4550.12034 | 34              | –   | 70  | –   | 325         | 7112.20010 |
| HSK-E 50/ER 25 x 080 H  | 4550.12544 | 42              | –   | 80  | –   | 325         | 7111.25000 |
| HSK-E 50/ER 25 x 100 H  | 4550.12554 | 42              | –   | 100 | –   | 325         | 7111.25000 |
| HSK-E 50/ER 32 x 100 H  | 4550.13254 | 50              | –   | 100 | –   | 405         | 7111.32000 |

\*Balancing rings H: Ready to accept balancing rings

Included in delivery: Toolholders with Hi-Q®|ER clamping nut and back-up screw

## Expert advice

All ATC-E 15 products are compatible with HSK-EZ according to DIN SPEC 28999:2023-5.



# HSK-E toolholders

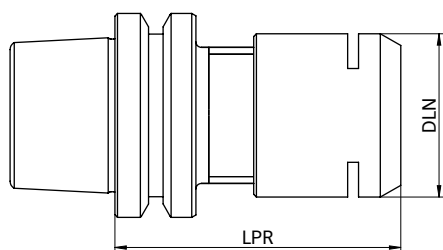
# HSK-F toolholders

| HSK-EB     | HSK-ES     | HSK-F     |
|------------|------------|-----------|
| ISO 12164  | ISO 12164  | DIN 69893 |
| compatible | compatible | ISO 12164 |

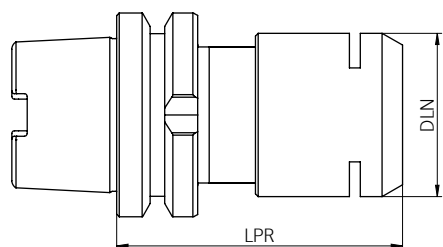
| Type                   | Part no.   | Dimensions [mm] |     |     |     | Accessories |            |
|------------------------|------------|-----------------|-----|-----|-----|-------------|------------|
|                        |            | DLN             | BD2 | LPR | LB1 | FWR*        | Wrench     |
| HSK-E 63               |            |                 |     |     |     |             |            |
| HSK-E 63/ER 32 x 090 H | 4563.13244 | 50              | –   | 90  | –   | 405         | 7111.32000 |
| HSK-E 63/ER 40 x 080   | 2563.14044 | 63              | –   | 80  | –   | –           | 7111.40000 |
| HSK-E 63/ER 40 x 120 H | 4563.14064 | 63              | –   | 120 | –   | 505         | 7111.40000 |
| HSK-F 63               |            |                 |     |     |     |             |            |
| HSK-F 63/ER 16 x 100 H | 4563.11655 | 28              | –   | 100 | –   | 325         | 7112.16010 |
| HSK-F 63/ER 25 x 100 H | 4563.12555 | 42              | –   | 100 | –   | 325         | 7111.25000 |
| HSK-F 63/ER 32 x 100 H | 4563.13255 | 50              | –   | 100 | –   | 405         | 7111.32000 |
| HSK-F 63/ER 40 x 120 H | 4563.14065 | 63              | –   | 120 | –   | 505         | 7111.40000 |

\*Balancing rings H: Ready to accept balancing rings

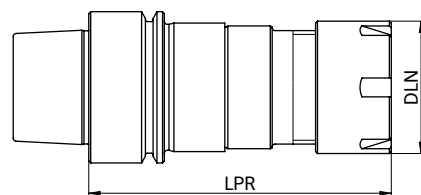
Included in delivery: Toolholders with Hi-Q® | ER clamping nut and back-up screw



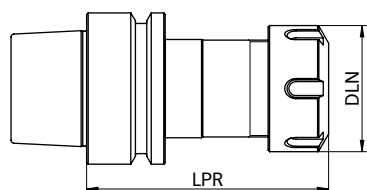
HSK-EZ 15 / ERMS | ATC-E 15 / ERMS



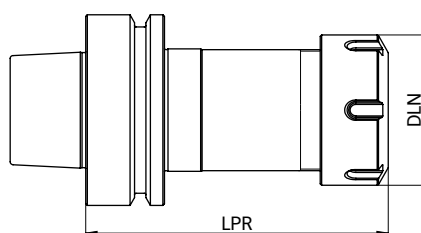
HSK-AZ / ERMS



HSK-E / ERM



HSK-E / ER



HSK-F / ER

# Steep taper toolholders SK

Universally suitable for different machining applications

DIN 69871 / DIN ISO 7388-1

## Features and benefits

### **Runout TIR $\leq 3 \mu\text{m}$**

Measured from inner taper to outer taper.

### **Taper accuracy AT3**

Better spindle-to-holder fit and accuracy.

### **Surface finish max. Ra 0.25**

Achieve high clamping force and high transferable torque.

### **Balancing**

100% balanced to G 2.5 @ 25,000 rpm / <1gmm.

### **XL toolholders**

100% balanced to G 2.5 @ 5,000 rpm.

TIR from inner to outer taper <10  $\mu\text{m}$ .

### **Hi-Q® balancing system**

Ready to accept Hi-Q® balancing rings which allow for the offset of the imbalance introduced by the cutting tool up to 80,000 rpm depending on the balancing rings used. All toolholders with the additional type information "H" in the article name are designed for balancing rings.

### **Hi-Q®|ER clamping nut included in delivery**

Guarantees highest clamping force and best balancing.

### **Vibration damping**

Our holders offer good vibration damping to sustain a high surface finish and can help prevent chatter.

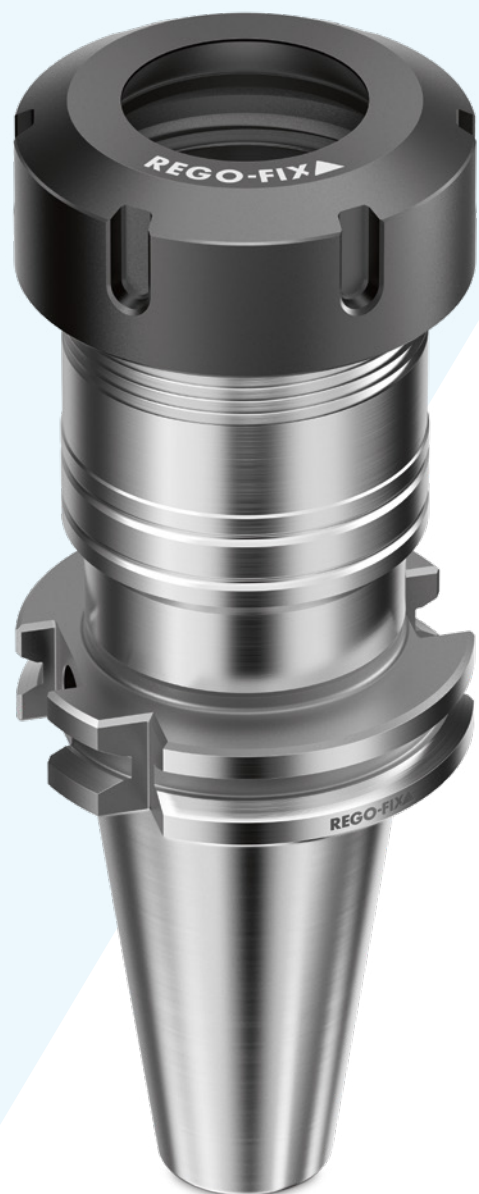
### **ID chip hole**

In accordance with DIN 69873 for 10 mm diameter.

*Accessories are not included in delivery. Other XL sizes available on request.*

### **Balancing specifications**

|       |                        |
|-------|------------------------|
| SK 30 | balanced to 30,000 rpm |
| SK 40 | G 2.5 @ 25,000 rpm     |
| SK 50 | G 2.5 @ 25,000 rpm     |



# SK toolholders

## ERA-Zero-Z® toolholders

SK

DIN 69871

DIN ISO 7388-1

| Type                 | Part no.   | Dimensions [mm] |     |     |     | Accessories |            |
|----------------------|------------|-----------------|-----|-----|-----|-------------|------------|
|                      |            | DLN             | BD2 | LPR | LB1 | FWR*        | Wrench     |
| SK 30                |            |                 |     |     |     |             |            |
| SK 30/ER 16 x 070 H  | 4230.11630 | 28              | –   | 70  | –   | 285         | 7112.16010 |
| SK 30/ER 16 x 100 H  | 4230.11650 | 28              | –   | 100 | –   | 285         | 7112.16010 |
| SK 30/ER 25 x 060 H  | 4230.12520 | 42              | –   | 60  | –   | 325         | 7111.25000 |
| SK 30/ER 32 x 065    | 2230.13220 | 50              | –   | 65  | –   | –           | 7111.32000 |
| SK 40                |            |                 |     |     |     |             |            |
| SK 40/ER 11 x 100 H  | 4240.11150 | 19              | –   | 100 | –   | 325         | 7112.11010 |
| SK 40/ER 11 x 160 H  | 4240.11180 | 19              | –   | 160 | –   | 325         | 7112.11010 |
| SK 40/ER 16 x 070 H  | 4240.11630 | 28              | –   | 70  | –   | 405         | 7112.16010 |
| SK 40/ER 16 x 100 H  | 4240.11650 | 28              | –   | 100 | –   | 405         | 7112.16010 |
| SK 40/ER 16 x 160 H  | 4240.11680 | 28              | –   | 160 | –   | 405 / 225   | 7112.16010 |
| SK 40/ER 16 x 200 H  | 4240.11690 | 28              | –   | 200 | –   | 405 / 225   | 7112.16010 |
| SK 40/ER 16 x 260 XL | 8842.13090 | 28              | 46  | 260 | 140 | –           | 7112.16010 |
| SK 40/ER 16 x 300 XL | 8842.13130 | 28              | 46  | 300 | 140 | –           | 7112.16010 |
| SK 40/ER 16 x 320 XL | 8842.13150 | 28              | 46  | 320 | 240 | –           | 7112.16010 |
| SK 40/ER 16 x 360 XL | 8842.13190 | 28              | 46  | 360 | 240 | –           | 7112.16010 |
| SK 40/ER 16 x 400 XL | 8842.13230 | 28              | 46  | 400 | 240 | –           | 7112.16010 |
| SK 40/ER 20 x 070 H  | 4240.12030 | 34              | –   | 70  | –   | 325         | 7112.20010 |
| SK 40/ER 20 x 100 H  | 4240.12050 | 34              | –   | 100 | –   | 325         | 7112.20010 |
| SK 40/ER 25 x 070 H  | 4240.12530 | 42              | –   | 70  | –   | 405         | 7111.25000 |
| SK 40/ER 25 x 100 H  | 4240.12550 | 42              | –   | 100 | –   | 405         | 7111.25000 |
| SK 40/ER 25 x 160 H  | 4240.12580 | 42              | –   | 160 | –   | 405 / 325   | 7111.25000 |
| SK 40/ER 25 x 200 H  | 4240.12590 | 42              | –   | 200 | –   | 405 / 325   | 7111.25000 |
| SK 40/ERAX 32 x 019  | 2240.13207 | –               | –   | 19  | –   | –           | 7117.32000 |
| SK 40/ER 32 x 070 H  | 4240.13230 | 50              | –   | 70  | –   | 405         | 7111.32000 |
| SK 40/ER 32 x 100 H  | 4240.13250 | 50              | –   | 100 | –   | 405         | 7111.32000 |
| SK 40/ER 32 x 160 H  | 4240.13280 | 50              | –   | 160 | –   | 405 / 405   | 7111.32000 |
| SK 40/ER 32 x 200 H  | 4240.13290 | 50              | –   | 200 | –   | 405 / 405   | 7111.32000 |
| SK 40/ER 32 x 320 XL | 8842.16150 | 50              | 55  | 320 | 240 | –           | 7111.32000 |
| SK 40/ER 40 x 080    | 2240.14040 | 63              | –   | 80  | –   | –           | 7111.40000 |
| SK 40/ER 40 x 100 H  | 4240.14050 | 63              | –   | 100 | –   | 405         | 7111.40000 |
| SK 40/ER 40 x 160 H  | 4240.14080 | 63              | –   | 160 | –   | 505 / 505   | 7111.40000 |

\*Balancing rings H: Ready to accept balancing rings

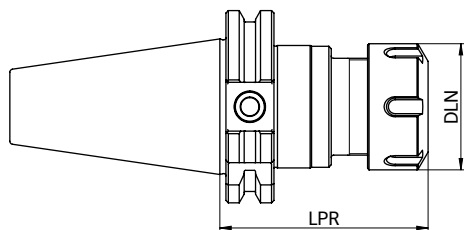
Included in delivery: ER toolholders come with Hi-Q®|ER clamping nut. ERA toolholders come with Hi-Q®|ERAX clamping nuts

| Type                  | Part no.   | Dimensions [mm] |     |     |     | Accessories |            |
|-----------------------|------------|-----------------|-----|-----|-----|-------------|------------|
|                       |            | DLN             | BD2 | LPR | LB1 | FWR*        | Wrench     |
| SK-B 40               |            |                 |     |     |     |             |            |
| SK-B 40/ER 11 x 100 H | 4240.11153 | 19              | –   | 100 | –   | 325         | 7112.11010 |
| SK-B 40/ER 11 x 160 H | 4240.11183 | 19              | –   | 160 | –   | 325         | 7112.11010 |
| SK-B 40/ER 16 x 070 H | 4240.11633 | 28              | –   | 70  | –   | 405         | 7112.16010 |
| SK-B 40/ER 16 x 100 H | 4240.11653 | 28              | –   | 100 | –   | 405         | 7112.16010 |
| SK-B 40/ER 16 x 160 H | 4240.11683 | 28              | –   | 160 | –   | 405 / 225   | 7112.16010 |
| SK-B 40/ER 20 x 070 H | 4240.12033 | 34              | –   | 70  | –   | 325         | 7112.20010 |
| SK-B 40/ER 25 x 070 H | 4240.12533 | 42              | –   | 70  | –   | 405         | 7111.25000 |
| SK-B 40/ER 25 x 100 H | 4240.12553 | 42              | –   | 100 | –   | 405         | 7111.25000 |
| SK-B 40/ER 25 x 160 H | 4240.12583 | 42              | –   | 160 | –   | 405 / 325   | 7111.25000 |
| SK-B 40/ER 32 x 070 H | 4240.13233 | 50              | –   | 70  | –   | 405         | 7111.32000 |
| SK-B 40/ER 32 x 100 H | 4240.13253 | 50              | –   | 100 | –   | 405         | 7111.32000 |
| SK-B 40/ER 40 x 080   | 2240.14043 | 63              | –   | 80  | –   | –           | 7111.40000 |

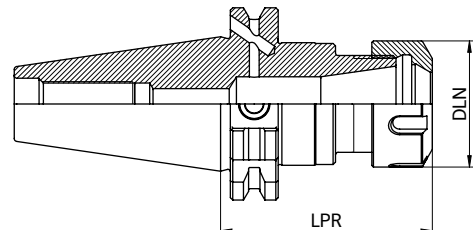
\*Balancing rings

Included in delivery: ER toolholders come with Hi-Q®|ER clamping nut. ERA toolholders come with Hi-Q®|ERAX clamping nuts

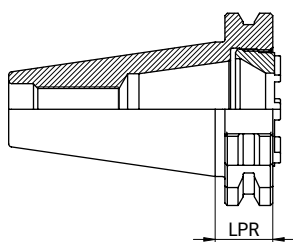
H: Ready to accept balancing rings



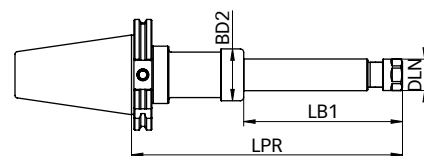
SK/ER (form A+AD)



SK-B/ER (form AD+B)



SK/ERA



SK/ER XL (form A+AD)

# SK toolholders

## SK-B toolholders

| SK             | SK-B           |
|----------------|----------------|
| DIN 69871      | DIN 69871      |
| DIN ISO 7388-1 | DIN ISO 7388-1 |

| Type                  | Part no.   | Dimensions [mm] |     |     |     | Accessories |            |
|-----------------------|------------|-----------------|-----|-----|-----|-------------|------------|
|                       |            | DLN             | BD2 | LPR | LB1 | FWR*        | Wrench     |
| SK 50                 |            |                 |     |     |     |             |            |
| SK 50/ER 16 x 100 H   | 4250.11650 | 28              | –   | 100 | –   | 505         | 7112.16010 |
| SK 50/ER 16 x 160 H   | 4250.11680 | 28              | –   | 160 | –   | 505/225     | 7112.16010 |
| SK 50/ER 16 x 200 H   | 4250.11690 | 28              | –   | 200 | –   | 505/225     | 7112.16010 |
| SK 50/ER 16 x 240 XL  | 8852.13070 | 28              | 46  | 240 | 140 | –           | 7112.16010 |
| SK 50/ER 16 x 300 XL  | 8852.13130 | 28              | 46  | 300 | 140 | –           | 7112.16010 |
| SK 50/ER 16 x 340 XL  | 8852.13170 | 28              | 46  | 340 | 240 | –           | 7112.16010 |
| SK 50/ER 16 x 400 XL  | 8852.13230 | 28              | 46  | 400 | 240 | –           | 7112.16010 |
| SK 50/ER 20 x 070 H   | 4250.12030 | 34              | –   | 70  | –   | 325         | 7112.20010 |
| SK 50/ER 25 x 070 H   | 4250.12530 | 42              | –   | 70  | –   | 405         | 7111.25000 |
| SK 50/ER 25 x 100 H   | 4250.12550 | 42              | –   | 100 | –   | 405         | 7111.25000 |
| SK 50/ER 25 x 160 H   | 4250.12580 | 42              | –   | 160 | –   | 405/325     | 7111.25000 |
| SK 50/ER 25 x 200 H   | 4250.12590 | 42              | –   | 200 | –   | 405/325     | 7111.25000 |
| SK 50/ER 32 x 100 H   | 4250.13250 | 50              | –   | 100 | –   | 505         | 7111.32000 |
| SK 50/ER 32 x 160 H   | 4250.13280 | 50              | –   | 160 | –   | 505/405     | 7111.32000 |
| SK 50/ER 32 x 200 H   | 4250.13290 | 50              | –   | 200 | –   | 505/405     | 7111.32000 |
| SK 50/ER 32 x 320 XL  | 8852.16150 | 50              | 55  | 320 | 240 | –           | 7111.32000 |
| SK 50/ER 40 x 100 H   | 4250.14050 | 63              | –   | 100 | –   | 505         | 7111.40000 |
| SK 50/ER 40 x 160 H   | 4250.14080 | 63              | –   | 160 | –   | 505/505     | 7111.40000 |
| SK 50/ER 50 x 100     | 2250.15050 | 78              | –   | 100 | –   | –           | 7111.50000 |
| SK-B 50               |            |                 |     |     |     |             |            |
| SK-B 50/ER 16 x 160 H | 4250.11683 | 28              | –   | 160 | –   | 505/225     | 7112.16010 |
| SK-B 50/ER 20 x 070 H | 4250.12033 | 34              | –   | 70  | –   | 325         | 7112.20010 |
| SK-B 50/ER 25 x 070 H | 4250.12533 | 42              | –   | 70  | –   | 405         | 7111.25000 |
| SK-B 50/ER 32 x 100 H | 4250.13253 | 50              | –   | 100 | –   | 505         | 7111.32000 |
| SK-B 50/ER 32 x 160 H | 4250.13283 | 50              | –   | 160 | –   | 505/405     | 7111.32000 |
| SK-B 50/ER 40 x 100 H | 4250.14053 | 63              | –   | 100 | –   | 505         | 7111.40000 |

\*Balancing rings

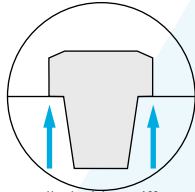
Included in delivery: ER toolholders come with Hi-Q®|ER clamping nut. ERA toolholders come with Hi-Q®|ERAX clamping nuts

H: Ready to accept balancing rings

# REGO-FIX SK+ toolholders

**Certified** The BIG PLUS SYSTEM – licensed by BIG Daishowa – is manufactured at REGO-FIX in Switzerland under license according to BIG PLUS specifications.

## Key advantages



Higher collet holder stiffness due to taper (AT1) and face contact

DIN 69871 / ISO 7388-2

## Features and benefits

### Runout TIR $\leq 3 \mu\text{m}$

Measured from inner taper to outer taper.

### Surface finish max. Ra 0.25

Better spindle-to-holder fit and accuracy.

### Balancing

100% balanced to G 2.5 @ 25,000 rpm/<1gmm.

### Hi-Q® balancing system

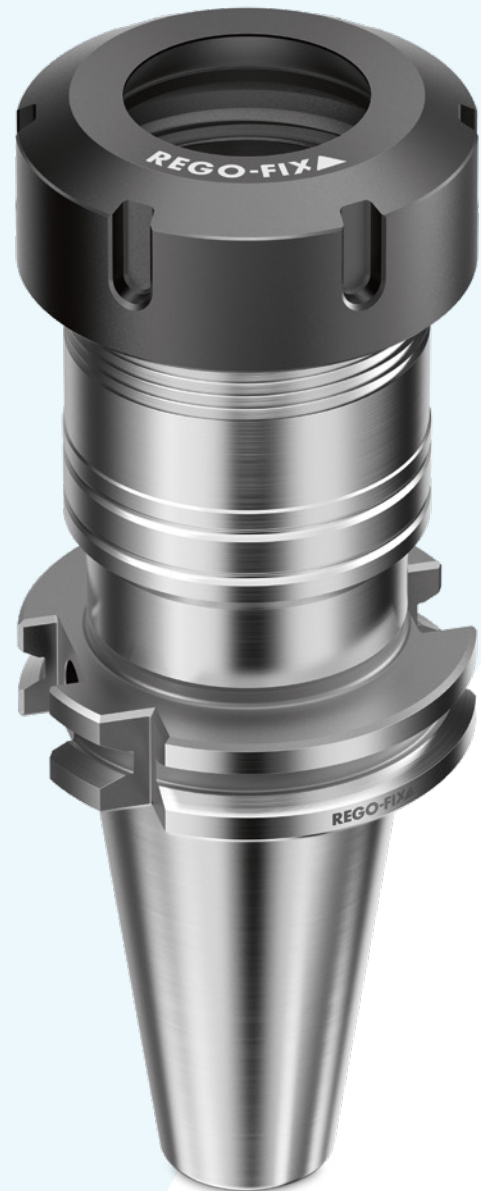
Ready to accept Hi-Q® balancing rings which allow for the offset of the imbalance introduced by the cutting tool up to 80,000 rpm depending on the balancing rings used. All toolholders with the additional type information "H" in the article name are designed for balancing rings.

### Hi-Q® ER clamping nut included in delivery

Guarantees highest clamping force and best balancing.

### Vibration damping

Our holders offer good vibration damping to sustain a high surface finish and can help prevent chatter.

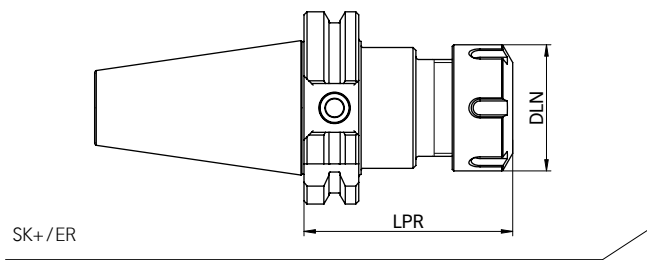


*Accessories are not included in delivery. Form B available on request*

| Type                 | Part no.   | Dimensions [mm] |     |     |     | Accessories |            |
|----------------------|------------|-----------------|-----|-----|-----|-------------|------------|
|                      |            | DLN             | BD2 | LPR | LB1 | FWR*        | Wrench     |
| SK+ 40               |            |                 |     |     |     |             |            |
| SK+ 40/ER 16 x 100 H | 4240.11656 | 28              | –   | 100 | –   | 405         | 7112.16010 |
| SK+ 40/ER 32 x 070 H | 4240.13236 | 50              | –   | 70  | –   | 405         | 7111.32000 |

\*Balancing rings H: Ready to accept balancing rings

Included in delivery: ER toolholders come with Hi-Q®|ER clamping nut. ERA toolholders come with Hi-Q®|ERAX clamping nuts





# Steep taper toolholders BT

Universally suitable for different machining applications, the BT interface toolholders cater for different machining needs

MAS 403/JIS B 6339/DIN ISO 7388-2

## Features and benefits

### Runout TIR $\leq 3 \mu\text{m}$

Measured from inner taper to outer taper.

### Taper accuracy AT3

Better spindle-to-holder fit and accuracy.

### Surface finish max. Ra 0.25

Achieve high clamping force and high transferable torque.

### Balancing

100% balanced to G 2.5 @ 25,000 rpm/ $<1\text{gmm}$ .

### XL toolholders

100% balanced to G 2.5 @ 5,000 rpm.  
TIR from inner to outer taper  $<10 \mu\text{m}$ .

### Hi-Q® balancing system

Ready to accept Hi-Q® balancing rings which allow for the offset of the imbalance introduced by the cutting tool up to 80,000 rpm depending on the balancing rings used. All toolholders with the additional type information "H" in the article name are designed for balancing rings.

### Hi-Q®|ER clamping nut included in delivery

Guarantees highest clamping force and best balancing.

### Vibration damping

Our holders offer good vibration damping to sustain a high surface finish and can help prevent chatter.

*Accessories are not included in delivery. HSK-A 125 available on request. Other XL sizes available on request.*

### Balancing specifications

|       |                        |
|-------|------------------------|
| BT 30 | balanced to 30,000 rpm |
| BT 40 | G 2.5 @ 25,000 rpm     |
| BT 50 | G 2.5 @ 25,000 rpm     |



# BT toolholders

## ERA Zero-Z® toolholders

BT

MAS 403

JIS B 6339

DIN ISO 7388-2

| Type                | Part no.   | Dimensions [mm] |     |     |     | Accessories |            |
|---------------------|------------|-----------------|-----|-----|-----|-------------|------------|
|                     |            | DLN             | BD2 | LPR | LB1 | FWR*        | Wrench     |
| BT 30               |            |                 |     |     |     |             |            |
| BT 30/ER 11 x 050   | 2130.11110 | 19              | –   | 50  | –   | –           | 7112.11010 |
| BT 30/ER 11 x 100 H | 4130.11150 | 19              | –   | 100 | –   | 225         | 7112.11010 |
| BT 30/ER 16 x 050   | 2130.11610 | 28              | –   | 50  | –   | –           | 7112.16010 |
| BT 30/ER 16 x 080 H | 4130.11640 | 28              | –   | 80  | –   | 285         | 7112.16010 |
| BT 30/ER 16 x 100 H | 4130.11650 | 28              | –   | 100 | –   | 285         | 7112.16010 |
| BT 30/ERAX 20 x 022 | 2130.12007 | –               | –   | 22  | –   | –           | 7117.20000 |
| BT 30/ER 20 x 050   | 2130.12010 | 34              | –   | 50  | –   | –           | 7112.20010 |
| BT 30/ER 20 x 070 H | 4130.12030 | 34              | –   | 70  | –   | 325         | 7112.20010 |
| BT 30/ER 20 x 100 H | 4130.12050 | 34              | –   | 100 | –   | 325         | 7112.20010 |
| BT 30/ER 25 x 060 H | 4130.12520 | 42              | –   | 60  | –   | 325         | 7111.25000 |
| BT 30/ER 25 x 100 H | 4130.12550 | 42              | –   | 100 | –   | 325         | 7111.25000 |
| BT 30/ER 32 x 060   | 2130.13220 | 50              | –   | 60  | –   | –           | 7111.32000 |
| BT 30/ER 32 x 100 H | 4130.13250 | 50              | –   | 100 | –   | 405         | 7111.32000 |

### BT 30 ERM\*\*

|                      |            |    |   |     |   |     |            |
|----------------------|------------|----|---|-----|---|-----|------------|
| BT 30/ERM 8 x 100    | 2130.10855 | 12 | – | 100 | – | –   | 7113.08000 |
| BT 30/ERM 11 x 100 H | 4130.11155 | 16 | – | 100 | – | 225 | 7113.11000 |

\*Balancing rings

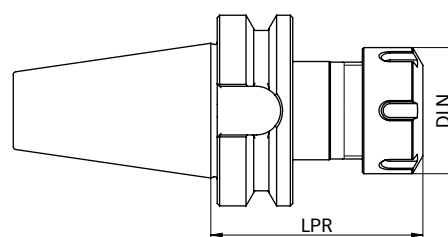
Included in delivery: ER toolholders come with Hi-Q®|ER clamping nut. ERA toolholders come with Hi-Q®|ERAX clamping nuts

H: Ready to accept balancing rings

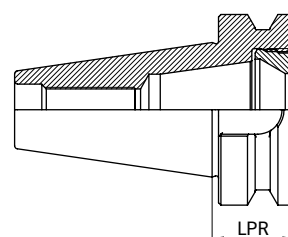
\*\*USA only



BT/ER



BT/ER (form A+AD)



BT/ERAX

# BT toolholders

## ERA Zero-Z® toolholders

BT

MAS 403

JIS B 6339

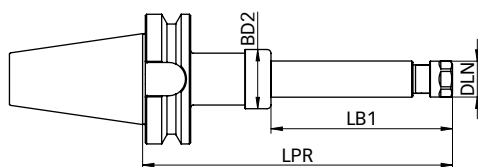
DIN ISO 7388-2

| Type                 | Part no.   | Dimensions [mm] |     |     |     | Accessories |            |
|----------------------|------------|-----------------|-----|-----|-----|-------------|------------|
|                      |            | DLN             | BD2 | LPR | LB1 | FWR*        | Wrench     |
| BT 40                |            |                 |     |     |     |             |            |
| BT 40/ER 11 x 100 H  | 4140.11150 | 19              | –   | 100 | –   | 285         | 7112.11010 |
| BT 40/ER 11 x 160 H  | 4140.11180 | 19              | –   | 160 | –   | 285         | 7112.11010 |
| BT 40/ER 16 x 070 H  | 4140.11630 | 28              | –   | 70  | –   | 285         | 7112.16010 |
| BT 40/ER 16 x 100 H  | 4140.11650 | 28              | –   | 100 | –   | 285         | 7112.16010 |
| BT 40/ER 16 x 160 H  | 4140.11680 | 28              | –   | 160 | –   | 285/225     | 7112.16010 |
| BT 40/ER 16 x 220 XL | 8841.13050 | 28              | 46  | 220 | 140 | –           | 7112.16010 |
| BT 40/ER 16 x 260 XL | 8841.13090 | 28              | 46  | 260 | 140 | –           | 7112.16010 |
| BT 40/ER 16 x 300 XL | 8841.13130 | 28              | 46  | 300 | 140 | –           | 7112.16010 |
| BT 40/ER 16 x 320 XL | 8841.13150 | 28              | 46  | 320 | 240 | –           | 7112.16010 |
| BT 40/ER 16 x 360 XL | 8841.13190 | 28              | 46  | 360 | 240 | –           | 7112.16010 |
| BT 40/ER 16 x 400 XL | 8841.13230 | 28              | 46  | 400 | 240 | –           | 7112.16010 |
| BT 40/ER 20 x 070 H  | 4140.12030 | 34              | –   | 70  | –   | 325         | 7112.20010 |
| BT 40/ER 20 x 100 H  | 4140.12050 | 34              | –   | 100 | –   | 285         | 7112.20010 |
| BT 40/ER 20 x 160 H  | 4140.12080 | 34              | –   | 160 | –   | 405/285     | 7112.20010 |
| BT 40/ER 25 x 070 H  | 4140.12530 | 42              | –   | 70  | –   | 325         | 7111.25000 |
| BT 40/ER 25 x 100 H  | 4140.12550 | 42              | –   | 100 | –   | 405         | 7111.25000 |
| BT 40/ER 25 x 160 H  | 4140.12580 | 42              | –   | 160 | –   | 405/325     | 7111.25000 |
| BT 40/ERAX 32 x 027  | 2140.13207 | –               | –   | 27  | –   | –           | 7117.32000 |
| BT 40/ER 32 x 070 H  | 4140.13230 | 50              | –   | 70  | –   | 405         | 7111.32000 |
| BT 40/ER 32 x 100 H  | 4140.13250 | 50              | –   | 100 | –   | 405         | 7111.32000 |
| BT 40/ER 32 x 160 H  | 4140.13280 | 50              | –   | 160 | –   | 405/405     | 7111.32000 |
| BT 40/ER 32 x 226 XL | 8841.16050 | 50              | 55  | 226 | 140 | –           | 7111.32000 |
| BT 40/ER 32 x 326 XL | 8841.16150 | 50              | 55  | 326 | 240 | –           | 7111.32000 |
| BT 40/ER 40 x 080    | 2140.14040 | 63              | –   | 80  | –   | –           | 7111.40000 |
| BT 40/ER 40 x 100 H  | 4140.14050 | 63              | –   | 100 | –   | 505         | 7111.40000 |
| BT 40/ER 40 x 160 H  | 4140.14080 | 63              | –   | 160 | –   | 505/505     | 7111.40000 |

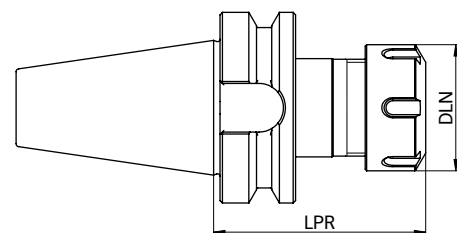
\*Balancing rings

Included in delivery: ER toolholders come with Hi-Q®|ER clamping nut. ERA toolholders come with Hi-Q®|ERAX clamping nuts

H: Ready to accept balancing rings



BT/ER XL



BT/ER (form A+AD)

# BT / BT-B toolholders

| BT             | BT-B |
|----------------|------|
| MAS 403        |      |
| JIS B 6339     |      |
| DIN ISO 7388-2 |      |

| Type                  | Part no.   | Dimensions [mm] |     |     |     | Accessories |            |
|-----------------------|------------|-----------------|-----|-----|-----|-------------|------------|
|                       |            | DLN             | BD2 | LPR | LB1 | FWR*        | Wrench     |
| BT-B 40               |            |                 |     |     |     |             |            |
| BT-B 40/ER 16 x 070 H | 4140.11633 | 28              | –   | 70  | –   | 285         | 7112.16010 |
| BT-B 40/ER 16 x 100 H | 4140.11653 | 28              | –   | 100 | –   | 285         | 7112.16010 |
| BT-B 40/ER 16 x 160 H | 4140.11683 | 28              | –   | 160 | –   | 285/225     | 7112.16010 |
| BT-B 40/ER 20 x 070 H | 4140.12033 | 34              | –   | 70  | –   | 325         | 7112.20010 |
| BT-B 40/ER 25 x 070 H | 4140.12533 | 42              | –   | 70  | –   | 325         | 7111.25000 |
| BT-B 40/ER 25 x 100 H | 4140.12553 | 42              | –   | 100 | –   | 405         | 7111.25000 |
| BT-B 40/ER 25 x 160 H | 4140.12583 | 42              | –   | 160 | –   | 405/325     | 7111.25000 |
| BT-B 40/ER 32 x 070 H | 4140.13233 | 50              | –   | 70  | –   | 405         | 7111.32000 |
| BT-B 40/ER 32 x 100 H | 4140.13253 | 50              | –   | 100 | –   | 405         | 7111.32000 |
| BT-B 40/ER 32 x 160 H | 4140.13283 | 50              | –   | 160 | –   | 405/405     | 7111.32000 |
| BT-B 40/ER 40 x 080   | 2140.14043 | 63              | –   | 80  | –   | –           | 7111.40000 |
| BT 50                 |            |                 |     |     |     |             |            |
| BT 50/ER 16 x 100 H   | 4150.11650 | 28              | –   | 100 | –   | 505         | 7112.16010 |
| BT 50/ER 16 x 160 H   | 4150.11680 | 28              | –   | 160 | –   | 505/225     | 7112.16010 |
| BT 50/ER 16 x 240 XL  | 8851.13070 | 28              | 46  | 240 | 140 | –           | 7112.16010 |
| BT 50/ER 16 x 260 XL  | 8851.13090 | 28              | 46  | 260 | 140 | –           | 7112.16010 |
| BT 50/ER 16 x 300 XL  | 8851.13130 | 28              | 46  | 300 | 140 | –           | 7112.16010 |
| BT 50/ER 16 x 340 XL  | 8851.13170 | 28              | 46  | 340 | 240 | –           | 7112.16010 |
| BT 50/ER 16 x 360 XL  | 8851.13190 | 28              | 46  | 360 | 240 | –           | 7112.16010 |
| BT 50/ER 16 x 400 XL  | 8851.13230 | 28              | 46  | 400 | 240 | –           | 7112.16010 |
| BT 50/ER 20 x 070     | 2150.12030 | 34              | –   | 70  | –   | –           | 7112.20010 |
| BT 50/ER 20 x 100 H   | 4150.12050 | 34              | –   | 100 | –   | 325         | 7112.20010 |
| BT 50/ER 25 x 070     | 2150.12530 | 42              | –   | 70  | –   | –           | 7111.25000 |
| BT 50/ER 25 x 100 H   | 4150.12550 | 42              | –   | 100 | –   | 405         | 7111.25000 |
| BT 50/ER 25 x 160 H   | 4150.12580 | 42              | –   | 160 | –   | 405/325     | 7111.25000 |
| BT 50/ER 32 x 100 H   | 4150.13250 | 50              | –   | 100 | –   | 505         | 7111.32000 |
| BT 50/ER 32 x 160 H   | 4150.13280 | 50              | –   | 160 | –   | 505/405     | 7111.32000 |
| BT 50/ER 32 x 240 XL  | 8851.16070 | 50              | 55  | 240 | 140 | –           | 7111.32000 |
| BT 50/ER 32 x 340 XL  | 8851.16170 | 50              | 55  | 340 | 240 | –           | 7111.32000 |
| BT 50/ER 40 x 100 H   | 4150.14050 | 63              | –   | 100 | –   | 505         | 7111.40000 |
| BT 50/ER 40 x 160 H   | 4150.14080 | 63              | –   | 160 | –   | 505/505     | 7111.40000 |
| BT 50/ER 50 x 100     | 2150.15050 | 78              | –   | 100 | –   | –           | 7111.50000 |

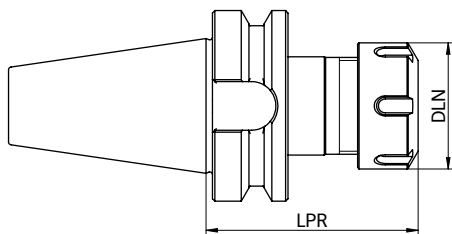
\*Balancing rings

Included in delivery: ER toolholders come with Hi-Q®|ER clamping nut. ERA toolholders come with Hi-Q®|ERAX clamping nuts

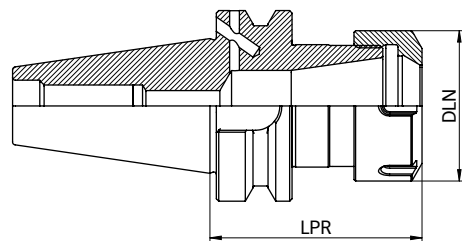
H: Ready to accept balancing rings

| Type                  | Part no.   | Dimensions [mm] |     |     |     | Accessories |            |
|-----------------------|------------|-----------------|-----|-----|-----|-------------|------------|
|                       |            | DLN             | BD2 | LPR | LB1 | FWR*        | Wrench     |
| BT-B 50               |            |                 |     |     |     |             |            |
| BT-B 50/ER 16 x 160 H | 4150.11683 | 28              | –   | 160 | –   | 505 / 225   | 7112.16010 |
| BT-B 50/ER 20 x 100 H | 4150.12053 | 34              | –   | 100 | –   | 325         | 7112.20010 |
| BT-B 50/ER 32 x 100 H | 4150.13253 | 50              | –   | 100 | –   | 505         | 7111.32000 |
| BT-B 50/ER 40 x 100 H | 4150.14053 | 63              | –   | 100 | –   | 505         | 7111.40000 |

\*Balancing rings  
Included in delivery: ER toolholders come with Hi-Q®|ER clamping nut. ERA toolholders come with Hi-Q®|ERAX clamping nuts  
H: Ready to accept balancing rings



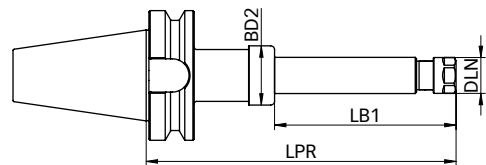
BT/ER (form A+AD)



BT-B/ER (form AD+B)

Expert advice

What is the difference between form A+AD and AD+B?  
Form A+AD: coolant supply through the taper  
Form AD+B: coolant supply through the flange



BT/ER XL

# BT-OM toolholders

## ERA Zero-Z® toolholder

BT-OM

HAAS

HURCO

### Information

## BT-OM/ER toolholders without drive slots

### Applications

This special toolholder without drive slots is designed for use on HAAS and HURCO CNC-machining centers.

### Special applications

When extra high clamping force is needed, e.g., when tapping with ER-GB, we recommend to use our friction-bearing clamping nuts Hi-Q®|ERB\* and Hi-Q®|ERBC\*.

*\*Not for use with ERA toolholders.*

### Balancing

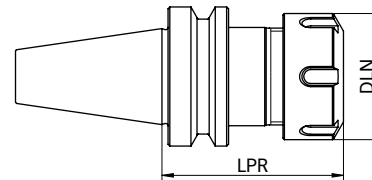
REGO-FIX BT-OM/ER(A) toolholders are balanced to G 2.5 @ 25,000 rpm/<1gmm. Type H toolholders are compatible with Hi-Q® balancing rings which allow precision balancing of the entire system including cutting tool up to 80,000 rpm depending on the balancing rings used.

### Matched tooling system for best fit

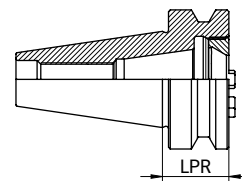
For highest precision and best results the entire machining system counts. Therefore REGO-FIX components are carefully matched for optimum fit and accuracy. This guarantees the best runout and balance.

*For the influence of runout on tool life, please refer to page 384.*

*Accessories are not included in delivery.*



BT-OM/ER



BT-OM/ERAX

| Type                   | Part no.   | Dimensions [mm] |     |     |     | Accessories |            |
|------------------------|------------|-----------------|-----|-----|-----|-------------|------------|
|                        |            | DLN             | BD2 | LPR | LB1 | FWR*        | Wrench     |
| BT-OM                  |            |                 |     |     |     |             |            |
| BT-OM 30/ER 16 x 080 H | 4130.11648 | 28              | –   | 80  | –   | 285         | 7112.16010 |
| BT-OM 30/ER 25 x 060 H | 4130.12528 | 42              | –   | 60  | –   | 325         | 7111.25000 |
| BT-OM 30/ERAX 20 x 022 | 2130.12008 | –               | –   | 22  | –   | –           | 7117.20000 |

\*Balancing rings

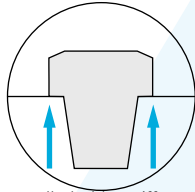
Included in delivery: ER toolholders come with Hi-Q®|ER clamping nut. ERA toolholders come with Hi-Q®|ERAX clamping nuts

H: Ready to accept balancing rings

# REGO-FIX BT+ toolholders

**Certified** The BIG PLUS SYSTEM – licensed by BIG Daishowa – is manufactured at REGO-FIX in Switzerland under license according to BIG PLUS specifications.

## Key advantages



Higher collet holder stiffness due to taper (AT1) and face contact

MAS 403 / JIS B 6339 / DIN ISO 7388-2

## Features and benefits

### Runout TIR $\leq 3 \mu\text{m}$

Measured from inner taper to outer taper.

### Surface finish max. Ra 0.25

Better spindle-to-holder fit and accuracy.

### Balancing

100% balanced to G 2.5 @ 25,000 rpm / <1gmm.

### Hi-Q® balancing system

Ready to accept Hi-Q® balancing rings which allow for the offset of the imbalance introduced by the cutting tool up to 80,000 rpm depending on the balancing rings used. All toolholders with the additional type information "H" in the article name are designed for balancing rings.

### Hi-Q® ER clamping nut included in delivery

Guarantees highest clamping force and best balancing.

### Vibration damping

Our holders offer good vibration damping to sustain a high surface finish and can help prevent chatter.



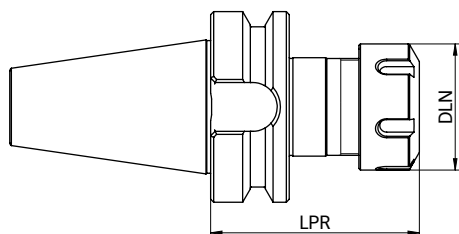
*Accessories are not included in delivery. Form B available on request*



| Type                 | Part no.   | Dimensions [mm] |     |     |     | Accessories |            |
|----------------------|------------|-----------------|-----|-----|-----|-------------|------------|
|                      |            | DLN             | BD2 | LPR | LB1 | FWR*        | Wrench     |
| BT+ 30               |            |                 |     |     |     |             |            |
| BT+ 30/ER 11 x 100 H | 4130.11156 | 19              | –   | 100 | –   | 225         | 7112.11010 |
| BT+ 30/ER 16 x 050   | 2130.11616 | 28              | –   | 50  | –   | –           | 7112.16010 |
| BT+ 30/ER 16 x 080 H | 4130.11646 | 28              | –   | 80  | –   | 285         | 7112.16010 |
| BT+ 30/ER 20 x 050   | 2130.12016 | 34              | –   | 50  | –   | –           | 7112.20010 |
| BT+ 30/ER 20 x 070 H | 4130.12036 | 34              | –   | 70  | –   | 325         | 7112.20010 |
| BT+ 30/ER 25 x 060 H | 4130.12526 | 42              | –   | 60  | –   | 325         | 7111.25000 |
| BT+ 30/ER 32 x 060   | 2130.13226 | 50              | –   | 60  | –   | –           | 7111.32000 |
| BT+ 40               |            |                 |     |     |     |             |            |
| BT+ 40/ER 16 x 070 H | 4140.11636 | 28              | –   | 70  | –   | 285         | 7112.16010 |
| BT+ 40/ER 16 x 100 H | 4140.11656 | 28              | –   | 100 | –   | 285         | 7112.16010 |
| BT+ 40/ER 20 x 070 H | 4140.12036 | 34              | –   | 70  | –   | 325         | 7112.20010 |
| BT+ 40/ER 25 x 070 H | 4140.12536 | 42              | –   | 70  | –   | 325         | 7111.25000 |
| BT+ 40/ER 32 x 070 H | 4140.13236 | 50              | –   | 70  | –   | 405         | 7111.32000 |
| BT+ 40/ER 32 x 100 H | 4140.13256 | 50              | –   | 100 | –   | 405         | 7111.32000 |
| BT+ 40/ER 32 x 160 H | 4140.13286 | 50              | –   | 160 | –   | 405 / 405   | 7111.32000 |
| BT+ 50               |            |                 |     |     |     |             |            |
| BT+ 50/ER 32 x 100 H | 4150.13256 | 50              | –   | 100 | –   | 505         | 7111.32000 |
| BT+ 50/ER 32 x 160 H | 4150.13286 | 50              | –   | 160 | –   | 505 / 405   | 7111.32000 |

\*Balancing rings H: Ready to accept balancing rings

Included in delivery: toolholders come with Hi-Q® | ER clamping nut



BT+/ER (A+AD)

# Steep taper toolholders CAT

Universally suitable for different machining applications

ASME B5.50

## Features and benefits

### Runout $\leq 3\mu\text{m}$

Measured from inner taper to outer taper.

### Taper accuracy AT3

Better spindle-to-holder fit and accuracy.

### Surface finish max. Ra 0.25

Achieve high clamping force and high transferable torque.

### Balancing

100% balanced to G 2.5 @ 25,000 rpm.

### Balancing in XL toolholders

100% balanced to G 2.5 @ 5,000 rpm.

### Hi-Q® balancing system

Ready to accept Hi-Q® balancing rings which allow for the offset of the imbalance introduced by the cutting tool up to 80,000 rpm depending on the balancing rings used. All toolholders with the additional type information "H" in the article name are designed for balancing rings.

### Hi-Q®|ER clamping nut included in delivery

Guarantees highest clamping force and best balancing.

### Vibration damping

Our holders offer good vibration damping to sustain a high surface finish and can help prevent chatter.

*Accessories are not included in delivery. Form B available on request*



# CAT toolholders

## ERA Zero-Z® toolholder

CAT

ASME B5.50

| Type                  | Part no.   | Dimensions |          |            |            | Accessories |            |
|-----------------------|------------|------------|----------|------------|------------|-------------|------------|
|                       |            | DLN [mm]   | BD2 [mm] | LPR [inch] | LB1 [inch] | FWR*        | Wrench     |
| CAT 40                |            |            |          |            |            |             |            |
| CAT 40/ER 11 x 3" H   | 4340.11131 | 19         | –        | 3          | –          | 325         | 7112.11010 |
| CAT 40/ER 11 x 6" H   | 4340.11171 | 19         | –        | 6          | –          | 325         | 7112.11010 |
| CAT 40/ER 16 x 3" H   | 4340.11631 | 28         | –        | 3          | –          | 325         | 7112.16010 |
| CAT 40/ER 16 x 4" H   | 4340.11651 | 28         | –        | 4          | –          | 285         | 7112.16010 |
| CAT 40/ER 16 x 6" H   | 4340.11671 | 28         | –        | 6          | –          | 325/225     | 7112.16010 |
| CAT 40/ER 16 x 8" XL  | 8843.13031 | 28         | 46       | 8          | 4          | –           | 7112.16010 |
| CAT 40/ER 16 x 10" XL | 8843.13101 | 28         | 46       | 10         | 4          | –           | 7112.16010 |
| CAT 40/ER 16 x 12" XL | 8843.13131 | 28         | 46       | 12         | 8          | –           | 7112.16010 |
| CAT 40/ER 16 x 14" XL | 8843.13181 | 28         | 46       | 14         | 8          | –           | 7112.16010 |
| CAT 40/ER 20 x 3" H   | 4340.12031 | 34         | –        | 3          | –          | 285         | 7112.20010 |
| CAT 40/ER 20 x 4" H   | 4340.12051 | 34         | –        | 4          | –          | 325         | 7112.20010 |
| CAT 40/ER 20 x 6" H   | 4340.12071 | 34         | –        | 6          | –          | 405/285     | 7112.20010 |
| CAT 40/ER 25 x 4" H   | 4340.12551 | 42         | –        | 4          | –          | 325         | 7111.25000 |
| CAT 40/ER 25 x 6" H   | 4340.12571 | 42         | –        | 6          | –          | 405/325     | 7111.25000 |
| CAT 40/ERAX 32 x 019  | 2340.13200 | 35         | –        | 19 mm      | –          | –           | 7117.32000 |
| CAT 40/ER 32 x 3" H   | 4340.13231 | 50         | –        | 3          | –          | 405         | 7111.32000 |
| CAT 40/ER 32 x 4" H   | 4340.13251 | 50         | –        | 4          | –          | 405         | 7111.32000 |
| CAT 40/ER 32 x 5" H   | 4340.13261 | 50         | –        | 5          | –          | 405         | 7111.32000 |
| CAT 40/ER 32 x 6" H   | 4340.13271 | 50         | –        | 6          | –          | 405/405     | 7111.32000 |
| CAT 40/ER 32 x 10" XL | 8843.16081 | 50         | 55       | 10         | 4          | –           | 7111.32000 |
| CAT 40/ER 32 x 14" XL | 8843.16141 | 50         | 55       | 14         | 8          | –           | 7111.32000 |
| CAT 40/ER 40 x 3.5" H | 4340.14041 | 63         | –        | 3,5        | –          | 505         | 7111.40000 |
| CAT 40/ER 40 x 6" H   | 4340.14071 | 63         | –        | 6          | –          | 505/505     | 7111.40000 |

\*Balancing rings

H: Ready to accept balancing rings

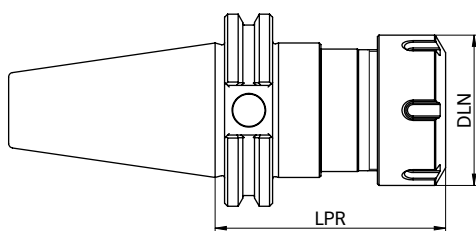
Included in delivery: ER toolholders come with Hi-Q®|ER clamping nut. ERA toolholders come with Hi-Q®|ERA clamping nuts

| Type                    | Part no.   | Dimensions |          |            |            | Accessories |            |
|-------------------------|------------|------------|----------|------------|------------|-------------|------------|
|                         |            | DLN [mm]   | BD2 [mm] | LPR [inch] | LB1 [inch] | FWR*        | Wrench     |
| CAT-B 40                |            |            |          |            |            |             |            |
| CAT-B 40/ER 11 x 3" H   | 4340.11134 | 19         | –        | 3          | –          | 325         | 7112.11010 |
| CAT-B 40/ER 11 x 6" H   | 4340.11174 | 19         | –        | 6          | –          | 325         | 7112.11010 |
| CAT-B 40/ER 16 x 3" H   | 4340.11634 | 28         | –        | 3          | –          | 325         | 7112.16010 |
| CAT-B 40/ER 16 x 4" H   | 4340.11654 | 28         | –        | 4          | –          | 285         | 7112.16010 |
| CAT-B 40/ER 16 x 6" H   | 4340.11674 | 28         | –        | 6          | –          | 325/225     | 7112.16010 |
| CAT-B 40/ER 20 x 3" H   | 4340.12034 | 34         | –        | 3          | –          | 285         | 7112.20010 |
| CAT-B 40/ER 20 x 4" H   | 4340.12054 | 34         | –        | 4          | –          | 325         | 7112.20010 |
| CAT-B 40/ER 20 x 6" H   | 4340.12074 | 34         | –        | 6          | –          | 405/285     | 7112.20010 |
| CAT-B 40/ER 25 x 4" H   | 4340.12554 | 42         | –        | 4          | –          | 325         | 7111.25000 |
| CAT-B 40/ER 25 x 6" H   | 4340.12574 | 42         | –        | 6          | –          | 405/325     | 7111.25000 |
| CAT-B 40/ER 32 x 3" H   | 4340.13234 | 50         | –        | 3          | –          | 405         | 7111.32000 |
| CAT-B 40/ER 32 x 4" H   | 4340.13254 | 50         | –        | 4          | –          | 405         | 7111.32000 |
| CAT-B 40/ER 32 x 5" H   | 4340.13264 | 50         | –        | 5          | –          | 405         | 7111.32000 |
| CAT-B 40/ER 32 x 6" H   | 4340.13274 | 50         | –        | 6          | –          | 405/405     | 7111.32000 |
| CAT-B 40/ER 40 x 3.5" H | 4340.14044 | 63         | –        | 3,5        | –          | 505         | 7111.40000 |
| CAT-B 40/ER 40 x 6" H   | 4340.14074 | 63         | –        | 6          | –          | 505/505     | 7111.40000 |

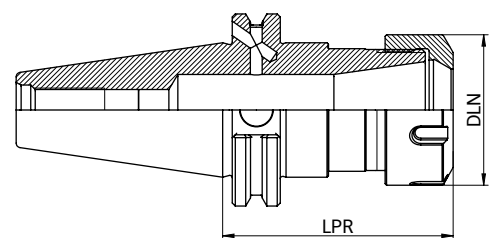
\*Balancing rings

Included in delivery: ER toolholders come with Hi-Q®|ER clamping nut. ERA toolholders come with Hi-Q®|ERA clamping nuts

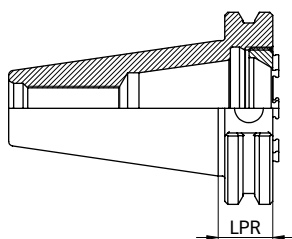
H: Ready to accept balancing rings



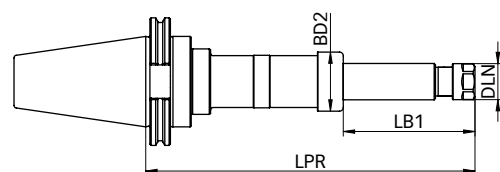
CAT/ER (Form A+AD)



CAT-B/ER (Form AD+B)



CAT/ERAX



CAT/ER XL (Form A+AD)

# CAT toolholders

## CAT-B toolholders

CAT

CAT-B

| Type                  | Part no.   | Dimensions |          |            |            | Accessories |            |
|-----------------------|------------|------------|----------|------------|------------|-------------|------------|
|                       |            | DLN [mm]   | BD2 [mm] | LPR [inch] | LB1 [inch] | FWR*        | Wrench     |
| CAT 50                |            |            |          |            |            |             |            |
| CAT 50/ER 16 x 4" H   | 4350.11651 | 28         | –        | 4          | –          | 505         | 7112.16010 |
| CAT 50/ER 16 x 6" H   | 4350.11671 | 28         | –        | 6          | –          | 505/225     | 7112.16010 |
| CAT 50/ER 16 x 8" XL  | 8853.13031 | 28         | 42       | 8          | 4          | –           | 7112.16010 |
| CAT 50/ER 16 x 10" XL | 8853.13081 | 28         | 42       | 10         | 4          | –           | 7112.16010 |
| CAT 50/ER 16 x 12" XL | 8853.13131 | 28         | 42       | 12         | 8          | –           | 7112.16010 |
| CAT 50/ER 16 x 14" XL | 8853.13181 | 28         | 42       | 14         | 8          | –           | 7112.16010 |
| CAT 50/ER 20 x 4" H   | 4350.12051 | 34         | –        | 4          | –          | 505         | 7112.20010 |
| CAT 50/ER 20 x 6" H   | 4350.12071 | 34         | –        | 6          | –          | 505/285     | 7112.20010 |
| CAT 50/ER 25 x 4" H   | 4350.12551 | 42         | –        | 4          | –          | 505         | 7111.25000 |
| CAT 50/ER 25 x 6" H   | 4350.12571 | 42         | –        | 6          | –          | 505/325     | 7111.25000 |
| CAT 50/ER 32 x 4" H   | 4350.13251 | 50         | –        | 4          | –          | 505         | 7111.32000 |
| CAT 50/ER 32 x 6" H   | 4350.13271 | 50         | –        | 6          | –          | 505/405     | 7111.32000 |
| CAT 50/ER 32 x 10" XL | 8853.16081 | 50         | 52       | 10         | 4          | –           | 7111.32000 |
| CAT 50/ER 32 x 14" XL | 8853.16181 | 50         | 52       | 14         | 8          | –           | 7111.32000 |
| CAT 50/ERAX 40 x 019  | 2350.14007 | 44         | –        | 19 mm      | –          | –           | 7117.40000 |
| CAT 50/ER 40 x 4" H   | 4350.14051 | 63         | –        | 4          | –          | 505         | 7111.40000 |
| CAT 50/ER 40 x 6" H   | 4350.14071 | 63         | –        | 6          | –          | 505/505     | 7111.40000 |
| CAT-B 50              |            |            |          |            |            |             |            |
| CAT-B 50/ER 16 x 4" H | 4350.11654 | 28         | –        | 4          | –          | 505         | 7112.16010 |
| CAT-B 50/ER 16 x 6" H | 4350.11674 | 28         | –        | 6          | –          | 505/225     | 7112.16010 |
| CAT-B 50/ER 20 x 4" H | 4350.12054 | 34         | –        | 4          | –          | 505         | 7112.20010 |
| CAT-B 50/ER 20 x 6" H | 4350.12074 | 34         | –        | 6          | –          | 505/285     | 7112.20010 |
| CAT-B 50/ER 25 x 4" H | 4350.12554 | 42         | –        | 4          | –          | 505         | 7111.25000 |
| CAT-B 50/ER 25 x 6" H | 4350.12574 | 42         | –        | 6          | –          | 505/325     | 7111.25000 |
| CAT-B 50/ER 32 x 4" H | 4350.13254 | 50         | –        | 4          | –          | 505         | 7111.32000 |
| CAT-B 50/ER 32 x 6" H | 4350.13274 | 50         | –        | 6          | –          | 505/405     | 7111.32000 |
| CAT-B 50/ER 40 x 4" H | 4350.14054 | 63         | –        | 4          | –          | 505         | 7111.40000 |
| CAT-B 50/ER 40 x 6" H | 4350.14074 | 63         | –        | 6          | –          | 505/505     | 7111.40000 |

\*Balancing rings

Included in delivery: ER toolholders come with Hi-Q®|ER clamping nut. ERA toolholders come with Hi-Q®|ERA clamping nuts

H: Ready to accept balancing rings

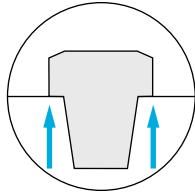
### Expert advice

For additional technical drawings and details, see the REGO-FIX website at [www.rego-fix.com](http://www.rego-fix.com)

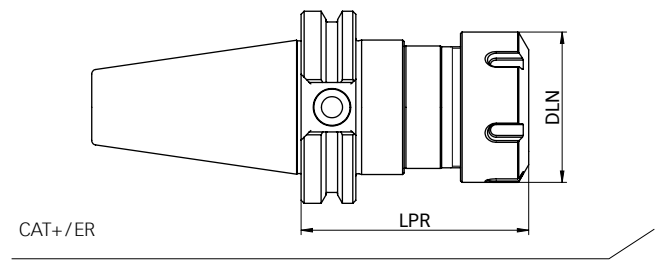
# REGO-FIX CAT+ toolholders

**Certified** The BIG PLUS SYSTEM – licensed by BIG Daishowa – is manufactured at REGO-FIX in Switzerland under license according to BIG PLUS specifications.

## Key advantages



Higher collotholder stiffness due to taper (AT1) and face contact



| Type                 | Part no. AD+B | Dimensions |          |            |            | Accessories |            |
|----------------------|---------------|------------|----------|------------|------------|-------------|------------|
|                      |               | DLN [mm]   | BD2 [mm] | LPR [inch] | LB1 [inch] | FWR*        | Wrench     |
| CAT+ 40**            |               |            |          |            |            |             |            |
| CAT+ 40/ER 11 x 3" H | 4340.11136    | 19         | –        | 3          | –          | 285         | 7112.11010 |
| CAT+ 40/ER 16 x 3" H | 4340.11636    | 28         | –        | 3          | –          | 325         | 7112.16010 |
| CAT+ 40/ER 16 x 6" H | 4340.11676    | 28         | –        | 6          | –          | 325/225     | 7112.16010 |
| CAT+ 40/ER 20 x 3" H | 4340.12036    | 34         | –        | 3          | –          | 285         | 7112.20010 |
| CAT+ 40/ER 20 x 6" H | 4340.12076    | 34         | –        | 6          | –          | 405/285     | 7112.20010 |
| CAT+ 40/ER 25 x 4" H | 4340.12556    | 42         | –        | 4          | –          | 325         | 7111.25000 |
| CAT+ 40/ER 25 x 6" H | 4340.12576    | 42         | –        | 6          | –          | 405/325     | 7111.25000 |
| CAT+ 40/ER 32 x 3" H | 4340.13236    | 50         | –        | 3          | –          | 405         | 7111.32000 |
| CAT+ 40/ER 32 x 6" H | 4340.13276    | 50         | –        | 6          | –          | 405/405     | 7111.32000 |
| CAT+ 50**            |               |            |          |            |            |             |            |
| CAT+ 50/ER 16 x 4" H | 4350.11656    | 28         | –        | 4          | –          | 505         | 7112.16010 |
| CAT+ 50/ER 16 x 6" H | 4350.11676    | 28         | –        | 6          | –          | 505/225     | 7112.16010 |
| CAT+ 50/ER 20 x 4" H | 4350.12056    | 34         | –        | 4          | –          | 505         | 7112.20010 |
| CAT+ 50/ER 25 x 4" H | 4350.12556    | 42         | –        | 4          | –          | 505         | 7111.25000 |
| CAT+ 50/ER 32 x 4" H | 4350.13256    | 50         | –        | 4          | –          | 505         | 7111.32000 |
| CAT+ 50/ER 32 x 6" H | 4350.13276    | 50         | –        | 6          | –          | 505/405     | 7111.32000 |
| CAT+ 50/ER 40 x 4" H | 4350.14056    | 63         | –        | 4          | –          | 505         | 7111.40000 |

\*Balancing rings

\*\*USA only

Included in delivery: ER toolholders come with Hi-Q®|ER clamping nut. ERA toolholders come with Hi-Q®|ERA clamping nuts

H: Ready to accept balancing rings







# REGO-FIX CAPTO toolholders

These self-centering and balanced toolholders enable high-torque transmission and show a high-bending strength.

ISO 12164

## Features and benefits

### Runout TIR $\leq 3 \mu\text{m}$

Measured from inner taper to outer taper.

### Surface finish max. Ra 0.25

Achieve high clamping force and high transferable torque.

### Balancing

100% balanced to G 2.5 @ 25,000 rpm/<1gmm.

### XL toolholders

100% balanced to G 2.5 @ 5,000 rpm.

TIR from inner to outer taper <10  $\mu\text{m}$ .

### Hi-Q® balancing system

Ready to accept Hi-Q® balancing rings which allow for the offset of the imbalance introduced by the cutting tool up to 80,000 rpm depending on the balancing rings used. All toolholders with the additional type information "H" in the article name are designed for balancing rings.

### Hi-Q®|ER clamping nut included in delivery

Guarantees highest clamping force and best balancing.

### Vibration damping

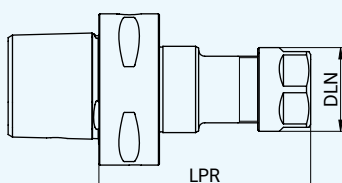
Our holders offer good vibration damping to sustain a high surface finish and can help prevent chatter.

*Accessories are not included in delivery. Other XL sizes available on request. All REGO-FIX CAPTO toolholders are available with chip hole on request.*

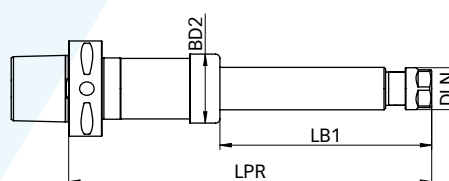
### Balancing specifications

|    |                        |
|----|------------------------|
| C3 | balanced to 60,000 rpm |
| C4 | balanced to 45,000 rpm |
| C5 | balanced to 36,000 rpm |
| C6 | G 2.5 @ 25,000 rpm     |
| C8 | G 2.5 @ 25,000 rpm     |

**Certified** REGO-FIX CAPTO – licensed by Sandvik Coromant – is manufactured at REGO-FIX Switzerland under license according to CAPTO specifications.



C/ER



C/ER XL

| Type              | Part no.   | Dimensions [mm] |     |     |     | Accessories |            |
|-------------------|------------|-----------------|-----|-----|-----|-------------|------------|
|                   |            | DLN             | BD2 | LPR | LB1 | FWR*        | Wrench     |
| C3                |            |                 |     |     |     |             |            |
| C3/ER 16 x 045    | 2803.11610 | 28              | –   | 45  | –   | –           | 7112.16010 |
| C3/ER 20 x 045    | 2803.12010 | 34              | –   | 45  | –   | –           | 7112.20010 |
| C4                |            |                 |     |     |     |             |            |
| C4/ER 16 x 070    | 2804.11630 | 28              | –   | 70  | –   | –           | 7112.16010 |
| C4/ER 20 x 052    | 2804.12010 | 34              | –   | 52  | –   | –           | 7112.20010 |
| C4/ER 25 x 052    | 2804.12510 | 42              | –   | 52  | –   | –           | 7111.25000 |
| C4/ER 32 x 054    | 2804.13210 | 50              | –   | 54  | –   | –           | 7111.32000 |
| C5                |            |                 |     |     |     |             |            |
| C5/ER 16 x 070 H  | 4805.11630 | 28              | –   | 70  | –   | 285         | 7112.16010 |
| C5/ER 16 x 100 H  | 4805.11650 | 28              | –   | 100 | –   | 285         | 7112.16010 |
| C5/ER 20 x 055    | 2805.12010 | 34              | –   | 55  | –   | –           | 7112.20010 |
| C5/ER 20 x 100 H  | 4805.12050 | 34              | –   | 100 | –   | 325         | 7112.20010 |
| C5/ER 25 x 055    | 2805.12510 | 42              | –   | 55  | –   | –           | 7111.25000 |
| C5/ER 25 x 100 H  | 4805.12550 | 42              | –   | 100 | –   | 405         | 7111.25000 |
| C5/ER 32 x 057    | 2805.13210 | 50              | –   | 57  | –   | –           | 7111.32000 |
| C5/ER 32 x 070 H  | 4805.13230 | 50              | –   | 70  | –   | 405         | 7111.32000 |
| C5/ER 32 x 100H   | 4805.13250 | 50              | –   | 100 | –   | 405         | 7111.32000 |
| C6                |            |                 |     |     |     |             |            |
| C6/ER 11 x 150 H  | 4806.11170 | 19              | –   | 150 | –   | 325         | 7112.11010 |
| C6/ER 16 x 070 H  | 4806.11630 | 28              | –   | 70  | –   | 325         | 7112.16010 |
| C6/ER 16 x 100 H  | 4806.11650 | 28              | –   | 100 | –   | 325         | 7112.16010 |
| C6/ER 16 x 150 H  | 4806.11670 | 28              | –   | 150 | –   | 325         | 7112.16010 |
| C6/ER 16 x 225 XL | 8886.13050 | 28              | 46  | 225 | 140 | –           | 7112.16010 |
| C6/ER 16 x 240 XL | 8886.13070 | 28              | 46  | 240 | 140 | –           | 7112.16010 |
| C6/ER 16 x 260 XL | 8886.13090 | 28              | 46  | 260 | 140 | –           | 7112.16010 |
| C6/ER 16 x 300 XL | 8886.13130 | 28              | 46  | 300 | 140 | –           | 7112.16010 |
| C6/ER 16 x 325 XL | 8886.13150 | 28              | 46  | 325 | 240 | –           | 7112.16010 |
| C6/ER 16 x 340 XL | 8886.13170 | 28              | 46  | 340 | 240 | –           | 7112.16010 |
| C6/ER 16 x 360 XL | 8886.13190 | 28              | 46  | 360 | 240 | –           | 7112.16010 |
| C6/ER 16 x 400 XL | 8886.13230 | 28              | 46  | 400 | 240 | –           | 7112.16010 |
| C6/ER 20 x 060    | 2806.12020 | 34              | –   | 60  | –   | –           | 7112.20010 |

\*Balancing rings H: Ready to accept balancing rings

Included in delivery: toolholders come with Hi-Q® | ER clamping nut  
All REGO-FIX CAPTO toolholders are available with chip hole on request.

| Type              | Part no.   | Dimensions [mm] |     |     |     | Accessories |            |
|-------------------|------------|-----------------|-----|-----|-----|-------------|------------|
|                   |            | DLN             | BD2 | LPR | LB1 | FWR*        | Wrench     |
| C6 continued      |            |                 |     |     |     |             |            |
| C6/ER 25 x 060    | 2806.12520 | 42              | –   | 60  | –   | –           | 7111.25000 |
| C6/ER 25 x 100 H  | 4806.12550 | 42              | –   | 100 | –   | 405         | 7111.25000 |
| C6/ER 25 x 130 H  | 4806.12560 | 42              | –   | 130 | –   | 405         | 7111.25000 |
| C6/ER 32 x 060    | 2806.13220 | 50              | –   | 60  | –   | –           | 7111.32000 |
| C6/ER 32 x 070 H  | 4806.13230 | 50              | –   | 70  | –   | 405         | 7111.32000 |
| C6/ER 32 x 100 H  | 4806.13250 | 50              | –   | 100 | –   | 505         | 7111.32000 |
| C6/ER 32 x 230 XL | 8886.16060 | 50              | 55  | 230 | 140 | –           | 7111.32000 |
| C6/ER 32 x 330 XL | 8886.16160 | 50              | 55  | 330 | 240 | –           | 7111.32000 |
| C6/ER 40 x 065    | 2806.14020 | 63              | –   | 65  | –   | –           | 7111.40000 |

|                   |            |    |    |     |     |   |            |
|-------------------|------------|----|----|-----|-----|---|------------|
| <b>C8</b>         |            |    |    |     |     |   |            |
| C8/ER 16 x 232 XL | 8888.13060 | 28 | 46 | 232 | 140 | – | 7112.16010 |
| C8/ER 16 x 332 XL | 8888.13160 | 28 | 46 | 332 | 240 | – | 7112.16010 |
| C8/ER 25 x 070    | 2808.12530 | 42 | –  | 70  | –   | – | 7111.25000 |
| C8/ER 32 x 070    | 2808.13230 | 50 | –  | 70  | –   | – | 7111.32000 |
| C8/ER 32 x 230 XL | 8888.16060 | 50 | 55 | 230 | 140 | – | 7111.32000 |
| C8/ER 32 x 330 XL | 8888.16160 | 50 | 55 | 330 | 240 | – | 7111.32000 |
| C8/ER 40 x 070    | 2808.14030 | 63 | –  | 70  | –   | – | 7111.40000 |
| C8/ER 50 x 080    | 2808.15040 | 78 | –  | 80  | –   | – | 7111.50000 |

\*Balancing rings H: Ready to accept balancing rings

Included in delivery: toolholders come with Hi-Q® |ER clamping nut  
All REGO-FIX CAPTO toolholders are available with chip hole on request



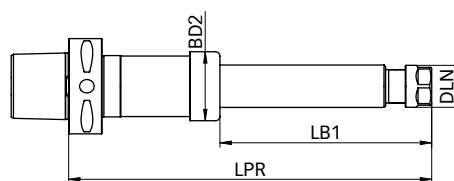
C/ER

## Expert advice

We recommend tightening the clamping nuts with our TORCO-BLOCK or torque wrench. Get the best accuracy by respecting the suitable tightening forces.

For more information on TORCO-BLOCK, see page 342.

For tightening torque recommendations, please refer to page 377.



C/ER XL





# Cylindrical shank toolholders CYL

CYL/CYL-F/CYL-DF

## Features and benefits

**Runout TIR  $\leq 3\text{ }\mu\text{m}$  for CYL/ERM and CYL/ERMX**

Measured from inner taper to outer shank.

**Runout TIR  $\leq 5\text{ }\mu\text{m}$  for CYL-F/ERM and CYL-F/ERMX**

Measured from inner taper to outer shank.

**Runout TIR  $\leq 5\text{ }\mu\text{m}$  for CYL-DF/ERM and CYL-DF/ERMX**

Measured from inner taper to outer shank.

**Surface finish max. Ra 0.25**

Achieve high clamping force and high transferable torque.

### Sizes

ER 8–ER 40

h6 tolerance on shanks

### Types

- // With or without clamping flat
- // Double-ended ER holders

*Accessories are not included in delivery.*

## Expert advice

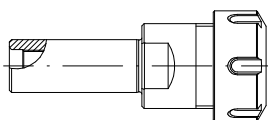
We recommend tightening the clamping nuts with our torque wrench.

*For tightening torque recommendations, please refer to page 377.*



# Available CYL toolholders and their key characteristics

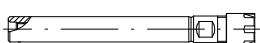
Cylindrical REGO-FIX toolholders are designed for automatic turning machines and can also be utilized as extensions. We offer many different product types to fit your machining needs.



CYL/ER

**CYL/ER** The short versions are particularly used on turret lathes, where a short overhang is often required.

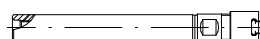
*For technical dimensions, please refer to page 126.*



CYL/ERM

**CYL/ERM** This type is suited for Swiss automatic machines, machining centers and conventional machines. Can be used as extension.

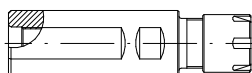
*For technical dimensions, please refer to page 128.*



CYL/ERMX

**CYL/ERMX** This type is suited for Swiss automatic machines, machining centers and conventional machines. The slip-off proof mini clamping nut intRlox® prevents injuries caused by slipping off while tightening the nut. Can be used as extension.

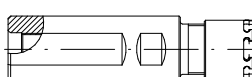
*For technical dimensions, please refer to page 128.*



CYL-F/ERM

**CYL-F/ERM** The line of cylindrical toolholders with clamping flat is particularly designed for Swiss automatic CNC machines, e.g., Citizen, Manurhin, Star or Tornos. Cannot be used as extension.

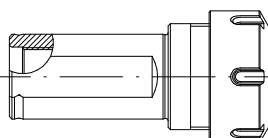
*For technical dimensions, please refer to page 130.*



CYL-F/ERMX

**CYL-F/ERMX** The line of cylindrical toolholders with clamping flat is particularly designed for Swiss automatic CNC machines, e.g., Citizen, Manurhin, Star or Tornos. The slip-off proof mini clamping nut intRlox® prevents injuries caused by slipping off while tightening the nut. Cannot be used as extension.

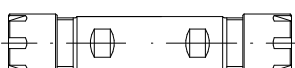
*For technical dimensions, please refer to page 130.*



CYL-NC/ER

**CYL-NC/ER** These toolholders are particularly suitable on Swiss automatic CNC turning machines, but can also be used on other turning machines.

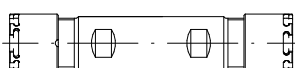
*For technical dimensions, please refer to page 133.*



CYL-DF/ERM

**CYL-DF/ERM** The line of double-ended toolholders with clamping flat has been designed for Swiss automatic CNC machines, e.g., Citizen, Manurhin, Star or Tornos and offers the possibility to hold two cutting tools on the same toolholder.

*For technical dimensions, please refer to page 134.*



CYL-DF/ERMX

**CYL-DF/ERMX** The line of double toolholders with clamping flat has been designed for Swiss Automatic CNC machines, e.g., Citizen, Manurhin, Star or Tornos, and offers the possibility to hold two cutting tools on the same toolholder. The slip-off proof mini clamping nut intRlox® prevents injuries caused by slipping off while tightening the nut.

*For technical dimensions, please refer to page 134.*

| Type                 | Part no.   | Dimensions [mm] |           |     |      |            | CNT | THLGTH     | THID       | Accessories |
|----------------------|------------|-----------------|-----------|-----|------|------------|-----|------------|------------|-------------|
|                      |            | DLN             | DCONMS h6 | LS  | OHN  | Wrench     |     |            |            |             |
| CYL 1/2 [inch]       |            |                 |           |     |      |            |     |            |            |             |
| CYL 1/2" x 070/ER 11 | 2613.11141 | 19              | 12,7      | 70  | 28,5 | M 6        | 15  | M 6        | 7112.11010 |             |
| CYL 1/2" x 100/ER 16 | 2613.11661 | 28              | 12,7      | 100 | 36   | M 6        | 15  | M 6        | 7112.16010 |             |
| CYL 1/2" x 100/ER 20 | 2613.12061 | 34              | 12,7      | 100 | 44,5 | M 6        | 15  | M 6        | 7112.20010 |             |
| CYL 16 [mm]          |            |                 |           |     |      |            |     |            |            |             |
| CYL 16 x 060/ER 16   | 2616.11630 | 28              | 16        | 60  | 36,5 | M 8 x 1    | 46  | –          | 7112.16010 |             |
| CYL 5/8 [inch]       |            |                 |           |     |      |            |     |            |            |             |
| CYL 5/8" x 060/ER 16 | 2616.11631 | 28              | 15,875    | 60  | 36,5 | M 8 x 1    | 66  | –          | 7112.16010 |             |
| CYL 5/8" x 100/ER 20 | 2616.12061 | 34              | 15,875    | 100 | 44,5 | M 8 x 1    | 20  | M 8 x 1    | 7112.20010 |             |
| CYL 3/4 [inch]       |            |                 |           |     |      |            |     |            |            |             |
| CYL 3/4" x 050/ER 16 | 2619.11621 | 28              | 19,05     | 50  | 30,5 | M 12 x 1   | 45  | –          | 7112.16010 |             |
| CYL 3/4" x 100/ER 16 | 2619.11661 | 28              | 19,05     | 100 | 30,5 | M 12 x 1   | 40  | M 11 x 1   | 7112.16010 |             |
| CYL 3/4" x 060/ER 20 | 2619.12031 | 34              | 19,05     | 60  | 36,5 | M 12 x 1   | 60  | –          | 7112.20010 |             |
| CYL 3/4" x 050/ER 25 | 2619.12521 | 42              | 19,05     | 50  | 47   | M 12 x 1   | 55  | –          | 7111.25000 |             |
| CYL 20 [mm]          |            |                 |           |     |      |            |     |            |            |             |
| CYL 20 x 050/ER 16   | 2620.11620 | 28              | 20        | 50  | 30,5 | M 12 x 1   | 45  | –          | 7112.16010 |             |
| CYL 20 x 100/ER 16   | 2620.11660 | 28              | 20        | 100 | 30,5 | M 12 x 1   | 40  | M 11 x 1   | 7112.16010 |             |
| CYL 20 x 030/ER 20   | 2620.12010 | 34              | 20        | 30  | 36,5 | M 12 x 1   | 30  | –          | 7112.20010 |             |
| CYL 20 x 060/ER 20   | 2620.12030 | 34              | 20        | 60  | 36,5 | M 12 x 1   | 60  | –          | 7112.20010 |             |
| CYL 20 x 050/ER 25   | 2620.12520 | 42              | 20        | 50  | 47   | M 12 x 1   | 55  | –          | 7111.25000 |             |
| CYL 20 x 100/ER 25   | 2620.12560 | 42              | 20        | 100 | 47   | M 12 x 1   | 25  | M 12 x 1   | 7111.25000 |             |
| CYL 20 x 050/ER 32   | 2620.13220 | 50              | 20        | 50  | 54   | M 12 x 1   | 55  | –          | 7111.32000 |             |
| CYL 20 x 100/ER 32   | 2620.13260 | 50              | 20        | 100 | 54   | M 12 x 1   | 25  | M 12 x 1   | 7111.32000 |             |
| CYL 25 [mm]          |            |                 |           |     |      |            |     |            |            |             |
| CYL 25 x 050/ER 25   | 2625.12520 | 42              | 25        | 50  | 47   | M 18 x 1,5 | 60  | –          | 7111.25000 |             |
| CYL 25 x 100/ER 25   | 2625.12560 | 42              | 25        | 100 | 47   | M 18 x 1,5 | 41  | M 18 x 1,5 | 7111.25000 |             |
| CYL 25 x 050/ER 32   | 2625.13220 | 50              | 25        | 50  | 54   | M 18 x 1,5 | 56  | –          | 7111.32000 |             |
| CYL 25 x 050/ER 40   | 2625.14020 | 63              | 25        | 50  | 60   | M 18 x 1,5 | 53  | –          | 7111.40000 |             |

Included in delivery: toolholders come with Hi-Q® |ER clamping nut and back-up screw



| Type               | Part no.   | Dimensions [mm] |           |     |      |            | CNT | THLGTH     | THID       | Accessories |
|--------------------|------------|-----------------|-----------|-----|------|------------|-----|------------|------------|-------------|
|                    |            | DLN             | DCONMS h6 | LS  | OHN  | Wrench     |     |            |            |             |
| CYL 1 [inch]       |            |                 |           |     |      |            |     |            |            |             |
| CYL 1" x 100/ER 20 | 2625.12061 | 34              | 25,4      | 100 | 39.5 | M 14 x 1   | 40  | M 14 x 1   | 7112.20010 |             |
| CYL 1" x 050/ER 25 | 2625.12521 | 42              | 25,4      | 50  | 47   | M 18 x 1,5 | 55  | –          | 7111.25000 |             |
| CYL 1" x 100/ER 25 | 2625.12561 | 42              | 25,4      | 100 | 47   | M 18 x 1,5 | 41  | M 18 x 1,5 | 7111.25000 |             |
| CYL 1" x 050/ER 32 | 2625.13221 | 50              | 25,4      | 50  | 53   | M 18 x 1,5 | 55  | –          | 7111.32000 |             |
| CYL 1" x 050/ER 40 | 2625.14021 | 63              | 25,4      | 50  | 60   | M 18 x 1,5 | 55  | –          | 7111.40000 |             |

|                         |            |    |       |    |    |  |            |    |   |            |
|-------------------------|------------|----|-------|----|----|--|------------|----|---|------------|
| <b>CYL 1 1/4 [inch]</b> |            |    |       |    |    |  |            |    |   |            |
| CYL 1 1/4" x 060/ER 32  | 2632.13231 | 50 | 31,75 | 60 | 53 |  | M 22 x 1,5 | 56 | – | 7111.32000 |

Included in delivery: toolholders come with Hi-Q®|ER clamping nut and back-up screw



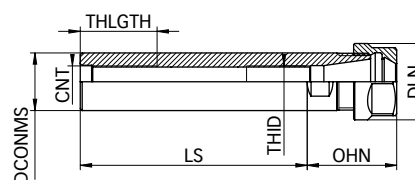
CYL/ER

#### Coolant adapters\*

|                         |            |
|-------------------------|------------|
| CGA M 12 x 1/1/8" NPT   | 7239.12181 |
| CGA M 14 x 1/1/4" NPT   | 7239.14141 |
| CGA M 18 x 1,5/1/4" NPT | 7239.18141 |
| CGA M 22 x 1,5/1/4" NPT | 7239.22141 |

Converts back-up screw threads to coolant port for through coolant applications

\*USA only



CYL/ER

## CYL/ERM toolholders (mini clamping nut)

CYL

## CYL/ERMX toolholders with intRlox® (slip-off proof mini clamping nut)

| Type                   | Part no.   | Dimensions [mm] |           |     |      |         | CNT | THLGTH  | THID | Slip-off<br>proof | Accessories |
|------------------------|------------|-----------------|-----------|-----|------|---------|-----|---------|------|-------------------|-------------|
|                        |            | DLN             | DCONMS h6 | LS  | OHN  | Wrench  |     |         |      |                   |             |
| CYL 6 [mm]             |            |                 |           |     |      |         |     |         |      |                   |             |
| CYL 6 x 045/ERM 11     | 2606.21120 | 16              | 6         | 45  | 26,5 | –       | 0   | –       | –    |                   | 7113.11000  |
| CYL 6 x 045/ERMX 11    | 4606.21120 | 16              | 6         | 45  | 26,5 | –       | 0   | –       | •    |                   | 7118.11000  |
| CYL 7 [mm]             |            |                 |           |     |      |         |     |         |      |                   |             |
| CYL 7 x 045/ERM 11     | 2607.21120 | 16              | 7         | 45  | 26,5 | –       | 0   | –       | –    |                   | 7113.11000  |
| CYL 7 x 045/ERMX 11    | 4607.21120 | 16              | 7         | 45  | 26,5 | –       | 0   | –       | •    |                   | 7118.11000  |
| CYL 8 [mm]             |            |                 |           |     |      |         |     |         |      |                   |             |
| CYL 8 x 080/ERM 8      | 2608.20850 | 12              | 8         | 80  | 26   | M 5     | 13  | –       | –    |                   | 7113.08000  |
| CYL 8 x 080/ERMX 8     | 4608.20850 | 12              | 8         | 80  | 26   | M 5     | 13  | –       | •    |                   | 7118.08000  |
| CYL 8 x 056/ERM 11     | 2608.21130 | 16              | 8         | 56  | 26,5 | M 5     | 13  | –       | –    |                   | 7113.11000  |
| CYL 8 x 056/ERMX 11    | 4608.21130 | 16              | 8         | 56  | 26,5 | M 5     | 13  | –       | •    |                   | 7118.11000  |
| CYL 3/8 [inch]         |            |                 |           |     |      |         |     |         |      |                   |             |
| CYL 3/8" x 070/ERM 8   | 2609.20841 | 12              | 9,525     | 70  | 23   | M 5     | 13  | M 5     | –    |                   | 7113.08000  |
| CYL 3/8" x 070/ERMX 8  | 4609.20841 | 12              | 9,525     | 70  | 23   | M 5     | 13  | M 5     | •    |                   | 7118.08000  |
| CYL 10 [mm]            |            |                 |           |     |      |         |     |         |      |                   |             |
| CYL 10 x 060/ERM 16    | 2610.21630 | 22              | 10        | 60  | 38,5 | M 5     | 13  | –       | –    |                   | 7113.16000  |
| CYL 10 x 060/ERMX 16   | 4610.21630 | 22              | 10        | 60  | 38,5 | M 5     | 13  | –       | •    |                   | 7118.16000  |
| CYL 12 [mm]            |            |                 |           |     |      |         |     |         |      |                   |             |
| CYL 12 x 080/ERM 8     | 2612.20850 | 12              | 12        | 80  | 17   | M 5     | 13  | –       | –    |                   | 7113.08000  |
| CYL 12 x 080/ERMX 8    | 4612.20850 | 12              | 12        | 80  | 17   | M 5     | 13  | –       | •    |                   | 7118.08000  |
| CYL 12 x 080/ERM 16    | 2612.21650 | 22              | 12        | 80  | 38,5 | M 5     | 13  | –       | –    |                   | 7113.16000  |
| CYL 12 x 080/ERMX 16   | 4612.21650 | 22              | 12        | 80  | 38,5 | M 5     | 13  | –       | •    |                   | 7118.16000  |
| CYL 1/2 [inch]         |            |                 |           |     |      |         |     |         |      |                   |             |
| CYL 1/2" x 140/ERM 11  | 2613.21191 | 16              | 12,7      | 140 | 29,5 | M 6     | 15  | M 6     | –    |                   | 7113.11000  |
| CYL 1/2" x 140/ERMX 11 | 4613.21191 | 16              | 12,7      | 140 | 29,5 | M 6     | 15  | M 6     | •    |                   | 7118.11000  |
| CYL 1/2" x 140/ERM 16  | 2613.21691 | 22              | 12,7      | 140 | 37   | M 6     | 15  | M 6     | –    |                   | 7113.16000  |
| CYL 1/2" x 140/ERMX 16 | 4613.21691 | 22              | 12,7      | 140 | 37   | M 6     | 15  | M 6     | •    |                   | 7118.16000  |
| CYL 16 [mm]            |            |                 |           |     |      |         |     |         |      |                   |             |
| CYL 16 x 150/ERM 11    | 2616.21190 | 16              | 16        | 150 | 21   | M 8 x 1 | 143 | M 8 x 1 | –    |                   | 7113.11000  |
| CYL 16 x 150/ERMX 11   | 4616.21190 | 16              | 16        | 150 | 21   | M 8 x 1 | 40  | M 8 x 1 | •    |                   | 7118.11000  |
| CYL 16 x 100/ERM 20    | 2616.22060 | 28              | 16        | 100 | 42,5 | M 8 x 1 | 20  | –       | –    |                   | 7113.20000  |
| CYL 16 x 100/ERMX 20   | 4616.22060 | 28              | 16        | 100 | 42,5 | M 8 x 1 | 20  | –       | •    |                   | 7118.20000  |

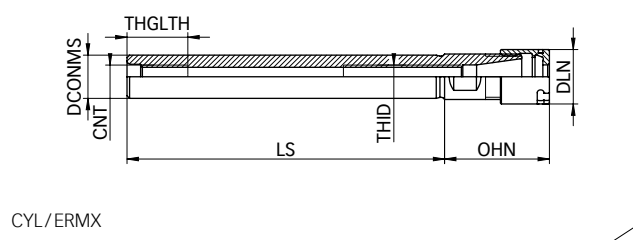
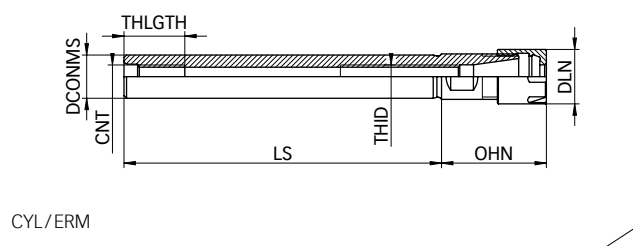
# CYL/ERM toolholders (mini clamping nut)

CYL

# CYL/ERMX toolholders with intrRlox® (slip-off proof mini clamping nut)

| Type                   | Part no.   | Dimensions [mm] |           |     |      |          | CNT | THLGTH   | THID | Slip-off proof | Accessories |
|------------------------|------------|-----------------|-----------|-----|------|----------|-----|----------|------|----------------|-------------|
|                        |            | DLN             | DCONMS h6 | LS  | OHN  |          |     |          |      |                | Wrench      |
| CYL 5/8 [inch]         |            |                 |           |     |      |          |     |          |      |                |             |
| CYL 5/8" x 150/ERM 11  | 2616.21191 | 16              | 15,875    | 150 | 19,5 | M 8 x 1  | 40  | M 8 x 1  | –    |                | 7113.11000  |
| CYL 5/8" x 150/ERMX 11 | 4616.21191 | 16              | 15,875    | 150 | 19,5 | M 8 x 1  | 40  | M 8 x 1  | •    |                | 7118.11000  |
| CYL 3/4 [inch]         |            |                 |           |     |      |          |     |          |      |                |             |
| CYL 3/4" x 155/ERM 16  | 2619.21691 | 22              | 19,05     | 155 | 26,5 | M 12 x 1 | 40  | –        | –    |                | 7113.16000  |
| CYL 3/4" x 155/ERMX 16 | 4619.21691 | 22              | 19,05     | 155 | 26,5 | M 12 x 1 | 40  | –        | •    |                | 7118.16000  |
| CYL 3/4" x 100/ERM 25  | 2619.22561 | 35              | 19,05     | 100 | 47   | M 12 x 1 | 40  | M 12 x 1 | –    |                | 7113.25000  |
| CYL 3/4" x 100/ERMX 25 | 4619.22561 | 35              | 19,05     | 100 | 47   | M 12 x 1 | 40  | M 12 x 1 | •    |                | 7118.25000  |
| CYL 20 [mm]            |            |                 |           |     |      |          |     |          |      |                |             |
| CYL 20 x 155/ERM 16    | 2620.21690 | 22              | 20        | 155 | 25,5 | M 12 x 1 | 40  | M 11 x 1 | –    |                | 7113.16000  |
| CYL 20 x 155/ERMX 16   | 4620.21690 | 22              | 20        | 155 | 25,5 | M 12 x 1 | 40  | M 11 x 1 | •    |                | 7118.16000  |
| CYL 25 [mm]            |            |                 |           |     |      |          |     |          |      |                |             |
| CYL 25 x 155/ERM 20    | 2625.22090 | 28              | 25        | 155 | 27   | M 14 x 1 | 40  | M 14 x 1 | –    |                | 7113.20000  |
| CYL 25 x 155/ERMX 20   | 4625.22090 | 28              | 25        | 155 | 27   | M 14 x 1 | 40  | M 14 x 1 | •    |                | 7118.20000  |
| CYL 1 [inch]           |            |                 |           |     |      |          |     |          |      |                |             |
| CYL 1" x 155/ERM 20    | 2625.22091 | 28              | 25,4      | 155 | 27   | M 14 x 1 | 40  | M 14 x 1 | –    |                | 7113.20000  |
| CYL 1" x 155/ERMX 20   | 4625.22091 | 28              | 25,4      | 155 | 27   | M 14 x 1 | 40  | M 14 x 1 | •    |                | 7118.20000  |

Included in delivery: toolholders come with Hi-Q®|ERM or Hi-Q®|ERMX clamping nut and back-up screw



## CYL-F/ERM toolholders (mini clamping nut)

CYL-F

## CYL-F/ERMX toolholders with intRlox® (slip-off proof mini clamping nut)

| Type                     | Part no.   | Dimensions [mm] |           |     |      |          | CNT | THLGTH   | THID | Slip-off<br>proof | Accessories |
|--------------------------|------------|-----------------|-----------|-----|------|----------|-----|----------|------|-------------------|-------------|
|                          |            | DLN             | DCONMS h6 | LS  | OHN  | Wrench   |     |          |      |                   |             |
| CYL-F 12 [mm]            |            |                 |           |     |      |          |     |          |      |                   |             |
| CYL-F 12 x 043/ERM 8     | 2612.20822 | 12              | 12        | 43  | 17   | M 5      | 13  | –        | –    | 7113.08000        |             |
| CYL-F 12 x 043/ERMX 8    | 4612.20822 | 12              | 12        | 43  | 17   | M 5      | 13  | –        | •    | 7118.08000        |             |
| CYL-F 5/8 [inch]         |            |                 |           |     |      |          |     |          |      |                   |             |
| CYL-F 5/8" x 043/ERM 8   | 2616.20811 | 12              | 15,875    | 43  | 15,5 | M 5      | 13  | M 5      | –    | 7113.08000        |             |
| CYL-F 5/8" x 043/ERMX 8  | 4616.20811 | 12              | 15,875    | 43  | 15,5 | M 5      | 13  | M 5      | •    | 7118.08000        |             |
| CYL-F 16 [mm]            |            |                 |           |     |      |          |     |          |      |                   |             |
| CYL-F 16 x 038/ERM 11    | 2616.21112 | 16              | 16        | 38  | 19,5 | M 8 x 1  | 30  | –        | –    | 7113.11000        |             |
| CYL-F 16 x 038/ERMX 11   | 4616.21112 | 16              | 16        | 38  | 16   | M 8 x 1  | 30  | –        | •    | 7118.11000        |             |
| CYL-F 16 x 050/ERM 11    | 2616.21122 | 16              | 16        | 50  | 16   | M 8 x 1  | 38  | –        | –    | 7113.11000        |             |
| CYL-F 16 x 050/ERMX 11   | 4616.21122 | 16              | 16        | 50  | 16   | M 8 x 1  | 38  | –        | •    | 7118.11000        |             |
| CYL-F 16 x 140/ERM 11    | 2616.21192 | 16              | 16        | 140 | 19,5 | M 8 x 1  | 40  | M 8 x 1  | –    | 7113.11000        |             |
| CYL-F 16 x 140/ERMX 11   | 4616.21192 | 16              | 16        | 140 | 19,5 | M 8 x 1  | 40  | M 8 x 1  | •    | 7118.11000        |             |
| CYL-F 16 x 035/ERM 16    | 2616.21612 | 22              | 16        | 35  | 36   | M 8 x 1  | 37  | –        | –    | 7113.16000        |             |
| CYL-F 16 x 035/ERMX 16   | 4616.21612 | 22              | 16        | 35  | 36   | M 8 x 1  | 38  | –        | •    | 7118.16000        |             |
| CYL-F 3/4 [inch]         |            |                 |           |     |      |          |     |          |      |                   |             |
| CYL-F 3/4" x 115/ERM 11  | 2619.21173 | 16              | 19,05     | 115 | 19,5 | M 8 x 1  | 40  | M 8 x 1  | –    | 7113.11000        |             |
| CYL-F 3/4" x 115/ERMX 11 | 4619.21173 | 16              | 19,05     | 115 | 19,5 | M 8 x 1  | 40  | M 8 x 1  | •    | 7118.11000        |             |
| CYL-F 3/4" x 038/ERM 16  | 2619.21613 | 22              | 19,05     | 38  | 27,5 | M 12 x 1 | 29  | –        | –    | 7113.16000        |             |
| CYL-F 3/4" x 038/ERMX 16 | 4619.21613 | 22              | 19,05     | 38  | 27,5 | M 12 x 1 | 29  | –        | •    | 7118.16000        |             |
| CYL-F 3/4" x 050/ERM 16  | 2619.21623 | 22              | 19,05     | 50  | 25   | M 12 x 1 | 41  | –        | –    | 7113.16000        |             |
| CYL-F 3/4" x 050/ERMX 16 | 4619.21623 | 22              | 19,05     | 50  | 25   | M 12 x 1 | 41  | –        | •    | 7118.16000        |             |
| CYL-F 3/4" x 070/ERM 16  | 2619.21643 | 22              | 19,05     | 70  | 29,5 | M 12 x 1 | 61  | –        | –    | 7113.16000        |             |
| CYL-F 3/4" x 070/ERMX 16 | 4619.21643 | 22              | 19,05     | 70  | 29,5 | M 12 x 1 | 61  | –        | •    | 7118.16000        |             |
| CYL-F 3/4" x 120/ERM 16  | 2619.21683 | 22              | 19,05     | 120 | 27,5 | M 12 x 1 | 40  | M 11 x 1 | –    | 7113.16000        |             |
| CYL-F 3/4" x 120/ERMX 16 | 4619.21683 | 22              | 19,05     | 120 | 27,5 | M 12 x 1 | 40  | M 11 x 1 | •    | 7118.16000        |             |
| CYL-F 3/4" x 140/ERM 16  | 2619.21693 | 22              | 19,05     | 140 | 27,5 | M 12 x 1 | 40  | M 11 x 1 | –    | 7113.16000        |             |
| CYL-F 3/4" x 140/ERMX 16 | 4619.21693 | 22              | 19,05     | 140 | 27,5 | M 12 x 1 | 40  | M 11 x 1 | •    | 7118.16000        |             |

Included in delivery: toolholders come with Hi-Q®|ERM or Hi-Q®|ERMX clamping nut and back-up screw

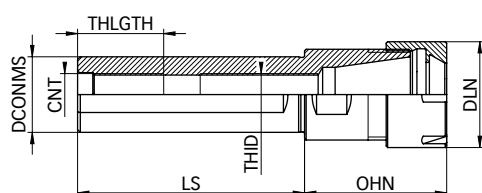
# CYL-F/ERM toolholders (mini clamping nut)

CYL-F

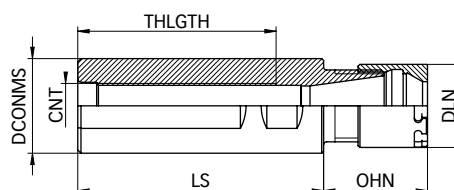
# CYL-F/ERMX toolholders with intRlox® (slip-off proof mini clamping nut)

| Type                   | Part no.   | Dimensions [mm] |           |     |      |          | CNT  | THLGTH   | THID | Slip-off proof | Accessories |
|------------------------|------------|-----------------|-----------|-----|------|----------|------|----------|------|----------------|-------------|
|                        |            | DLN             | DCONMS h6 | LS  | OHN  | Wrench   |      |          |      |                |             |
| CYL-F 20 [mm]          |            |                 |           |     |      |          |      |          |      |                |             |
| CYL-F 20 x 060/ERM 11  | 2620.21132 | 16              | 20        | 60  | 19,5 | M 8 x 1  | 51   | –        | –    |                | 7113.11000  |
| CYL-F 20 x 060/ERMX 11 | 4620.21132 | 16              | 20        | 60  | 19,5 | M 8 x 1  | 51   | –        | •    |                | 7118.11000  |
| CYL-F 20 x 038/ERM 16  | 2620.21612 | 22              | 20        | 38  | 26,5 | M 12 x 1 | 25   | –        | –    |                | 7113.16000  |
| CYL-F 20 x 038/ERMX 16 | 4620.21612 | 22              | 20        | 38  | 26,5 | M 12 x 1 | 25   | –        | •    |                | 7118.16000  |
| CYL-F 20 x 050/ERM 16  | 2620.21622 | 22              | 20        | 50  | 27,5 | M 12 x 1 | 41   | –        | –    |                | 7113.16000  |
| CYL-F 20 x 050/ERMX 16 | 4620.21622 | 22              | 20        | 50  | 27,5 | M 12 x 1 | 41   | –        | •    |                | 7118.16000  |
| CYL-F 20 x 070/ERM 16  | 2620.21642 | 22              | 20        | 70  | 27,5 | M 12 x 1 | 61   | –        | –    |                | 7113.16000  |
| CYL-F 20 x 070/ERMX 16 | 4620.21642 | 22              | 20        | 70  | 27,5 | M 12 x 1 | 61   | –        | •    |                | 7118.16000  |
| CYL-F 20 x 120/ERM 16  | 2620.21682 | 22              | 20        | 120 | 27,5 | M 12 x 1 | 40   | M 11 x 1 | –    |                | 7113.16000  |
| CYL-F 20 x 120/ERMX 16 | 4620.21682 | 22              | 20        | 120 | 27,5 | M 12 x 1 | 40   | M 11 x 1 | •    |                | 7118.16000  |
| CYL-F 20 x 140/ERM 16  | 2620.21692 | 22              | 20        | 140 | 27,5 | M 12 x 1 | 40   | M 11 x 1 | –    |                | 7113.16000  |
| CYL-F 20 x 140/ERMX 16 | 4620.21692 | 22              | 20        | 140 | 27,5 | M 12 x 1 | 40   | M 11 x 1 | •    |                | 7118.16000  |
| CYL-F 22 [mm]          |            |                 |           |     |      |          |      |          |      |                |             |
| CYL-F 22 x 038/ERM 16  | 2622.21612 | 22              | 22        | 38  | 27,5 | M 12 x 1 | 27.5 | –        | –    |                | 7113.16000  |
| CYL-F 22 x 038/ERMX 16 | 4622.21612 | 22              | 22        | 38  | 27,5 | M 12 x 1 | 27.5 | –        | •    |                | 7118.16000  |
| CYL-F 22 x 070/ERM 16  | 2622.21642 | 22              | 22        | 70  | 27,5 | M 12 x 1 | 59.5 | –        | –    |                | 7113.16000  |
| CYL-F 22 x 070/ERMX 16 | 4622.21642 | 22              | 22        | 70  | 27,5 | M 12 x 1 | 59.5 | –        | •    |                | 7118.16000  |
| CYL-F 22 x 100/ERM 16  | 2622.21662 | 22              | 22        | 100 | 27,5 | M 12 x 1 | 40   | M 11 x 1 | –    |                | 7113.16000  |
| CYL-F 22 x 100/ERMX 16 | 4622.21662 | 22              | 22        | 100 | 27,5 | M 12 x 1 | 40   | M 11 x 1 | •    |                | 7118.16000  |
| CYL-F 22 x 080/ERM 20  | 2622.22052 | 28              | 22        | 80  | 39   | M 12 x 1 | 40   | M 12 x 1 | –    |                | 7113.20000  |
| CYL-F 22 x 080/ERMX 20 | 4622.22052 | 28              | 22        | 80  | 39   | M 12 x 1 | 40   | M 12 x 1 | •    |                | 7118.20000  |

Included in delivery: toolholders come with Hi-Q®|ERM or Hi-Q®|ERMX clamping nut and sealing back-up screw



CYL-F/ERM



CYL-F/ERMX

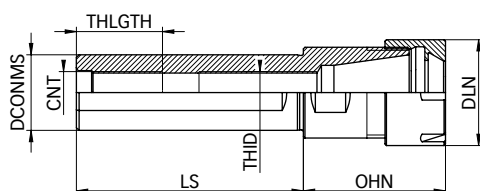
# CYL-F/ERM toolholders (mini clamping nut)

CYL-F

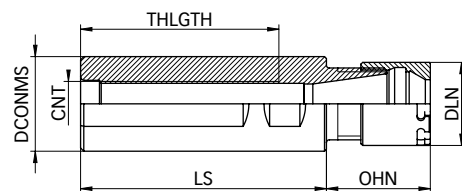
# CYL-F/ERMX toolholders with intrRlox® (slip-off proof mini clamping nut)

| Type                   | Part no.   | Dimensions [mm] |           |     |      |            | CNT  | THLGTH   | THID | Slip-off<br>proof | Accessories |
|------------------------|------------|-----------------|-----------|-----|------|------------|------|----------|------|-------------------|-------------|
|                        |            | DLN             | DCONMS h6 | LS  | OHN  | Wrench     |      |          |      |                   |             |
| CYL-F 25 [mm]          |            |                 |           |     |      |            |      |          |      |                   |             |
| CYL-F 25 x 065/ERM 16  | 2625.21642 | 22              | 25        | 65  | 27,5 | M 12 x 1   | 54   | –        | –    | 7113.16000        |             |
| CYL-F 25 x 065/ERMX 16 | 4625.21642 | 22              | 25        | 65  | 27,5 | M 12 x 1   | 54   | –        | •    | 7118.16000        |             |
| CYL-F 25 x 100/ERM 20  | 2625.22062 | 28              | 25        | 100 | 28   | M 14 x 1   | 40   | M 14 x 1 | –    | 7113.20000        |             |
| CYL-F 25 x 100/ERMX 20 | 4625.22062 | 28              | 25        | 100 | 28   | M 14 x 1   | 40   | M 14 x 1 | •    | 7118.20000        |             |
| CYL-F 25 x 154/ERM 20  | 2625.22002 | 28              | 25        | 154 | 28   | M 14 x 1   | 40   | M 14 x 1 | –    | 7113.20000        |             |
| CYL-F 25 x 154/ERMX 20 | 4625.22002 | 28              | 25        | 154 | 28   | M 14 x 1   | 40   | M 14 x 1 | •    | 7118.20000        |             |
| CYL-F 25 x 075/ERM 25  | 2625.22552 | 35              | 25        | 75  | 47   | M 14 x 1   | 29   | M 14 x 1 | –    | 7113.25000        |             |
| CYL-F 25 x 075/ERMX 25 | 4625.22552 | 35              | 25        | 75  | 47   | M 14 x 1   | 29   | M 14 x 1 | •    | 7118.25000        |             |
| CYL-F 25 x 145/ERM 25  | 2625.22592 | 35              | 25        | 145 | 36   | M 14 x 1   | 29   | M 14 x 1 | –    | 7113.25000        |             |
| CYL-F 25 x 145/ERMX 25 | 4625.22592 | 35              | 25        | 145 | 36   | M 14 x 1   | 29   | M 14 x 1 | •    | 7118.25000        |             |
| CYL-F 1 [inch]         |            |                 |           |     |      |            |      |          |      |                   |             |
| CYL-F 1" x 033/ERM 16  | 2625.21613 | 22              | 25,4      | 33  | 28   | M 12 x 1   | 25.5 | –        | –    | 7113.16000        |             |
| CYL-F 1" x 033/ERMX 16 | 4625.21613 | 22              | 25,4      | 33  | 28   | M 12 x 1   | 25   | –        | •    | 7118.16000        |             |
| CYL-F 1" x 065/ERM 16  | 2625.21643 | 22              | 25,4      | 65  | 27,5 | M 12 x 1   | 54   | –        | –    | 7113.16000        |             |
| CYL-F 1" x 065/ERMX 16 | 4625.21643 | 22              | 25,4      | 65  | 27,5 | M 12 x 1   | 54   | –        | •    | 7118.16000        |             |
| CYL-F 1" x 075/ERM 16  | 2625.21653 | 22              | 25,4      | 75  | 27,5 | M 12 x 1   | 64   | –        | –    | 7113.16000        |             |
| CYL-F 1" x 075/ERMX 16 | 4625.21653 | 22              | 25,4      | 75  | 27,5 | M 12 x 1   | 64   | –        | •    | 7118.16000        |             |
| CYL-F 1" x 100/ERM 16  | 2625.21663 | 22              | 25,4      | 100 | 27,5 | M 12 x 1   | 40   | M 11 x 1 | –    | 7113.16000        |             |
| CYL-F 1" x 100/ERMX 16 | 4625.21663 | 22              | 25,4      | 100 | 27,5 | M 12 x 1   | 40   | M 11 x 1 | •    | 7118.16000        |             |
| CYL-F 1" x 100/ERM 20  | 2625.22063 | 28              | 25,4      | 100 | 27,5 | M 14 x 1   | 40   | M 14 x 1 | –    | 7113.20000        |             |
| CYL-F 1" x 100/ERMX 20 | 4625.22063 | 28              | 25,4      | 100 | 27,5 | M 14 x 1   | 40   | M 14 x 1 | •    | 7118.20000        |             |
| CYL-F 1" x 140/ERM 20  | 2625.22093 | 28              | 25,4      | 140 | 27,5 | M 14 x 1   | 40   | M 14 x 1 | –    | 7113.20000        |             |
| CYL-F 1" x 140/ERMX 20 | 4625.22093 | 28              | 25,4      | 140 | 27,5 | M 14 x 1   | 40   | M 14 x 1 | •    | 7118.20000        |             |
| CYL-F 32 [mm]          |            |                 |           |     |      |            |      |          |      |                   |             |
| CYL-F 32 x 070/ERM 25  | 2632.22542 | 35              | 32        | 70  | 30   | M 18 x 1,5 | 60   | –        | –    | 7113.25000        |             |
| CYL-F 32 x 070/ERMX 25 | 4632.22542 | 35              | 32        | 70  | 30   | M 18 x 1,5 | 60   | –        | •    | 7118.25000        |             |

Included in delivery: toolholders come with Hi-Q®|ERM or Hi-Q®|ERMX clamping nut and back-up screw



CYL-F/ERM

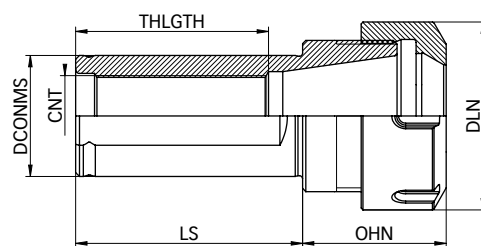


CYL-F/ERMX

| Type                      | Part no.   | Dimensions [mm] |           |    |     |            |        | Accessories |  |
|---------------------------|------------|-----------------|-----------|----|-----|------------|--------|-------------|--|
|                           |            | DLN             | DCONMS h6 | LS | OHN | CNT        | THLGTH | Wrench      |  |
| CYL-NC 1 1/4 [inch]*      |            |                 |           |    |     |            |        |             |  |
| CYL-NC 1 1/4" x 060/ER 25 | 2632.12533 | 42              | 31,75     | 60 | 32  | M 18 x 1,5 | 0      | 7111.25000  |  |
| CYL-NC 1 1/4" x 060/ER 32 | 2632.13233 | 50              | 31,75     | 60 | 38  | M 22 x 1,5 | 52     | 7111.32000  |  |
| CYL-NC 32 [mm]            |            |                 |           |    |     |            |        |             |  |
| CYL-NC 32 x 060/ER 25     | 2632.12532 | 42              | 32        | 60 | 32  | M 18 x 1,5 | 54     | 7111.25000  |  |
| CYL-NC 32 x 060/ER 32     | 2632.13232 | 50              | 32        | 60 | 38  | M 22 x 1,5 | 54     | 7111.32000  |  |
| CYL-NC 1 1/2 [inch]*      |            |                 |           |    |     |            |        |             |  |
| CYL-NC 1 1/2" x 080/ER 32 | 2638.13253 | 50              | 38,1      | 80 | 33  | M 22 x 1,5 | 65     | 7111.32000  |  |
| CYL-NC 1 1/2" x 075/ER 40 | 2638.14053 | 63              | 38,1      | 75 | 55  | M 22 x 1,5 | 75     | 7111.40000  |  |
| CYL-NC 40 [mm]            |            |                 |           |    |     |            |        |             |  |
| CYL-NC 40 x 080/ER 32     | 2640.13252 | 50              | 40        | 80 | 39  | M 22 x 1,5 | 65     | 7111.32000  |  |
| CYL-NC 40 x 075/ER 40     | 2640.14052 | 63              | 40        | 75 | 55  | M 22 x 1,5 | 75     | 7111.40000  |  |

Included in delivery: toolholders come with Hi-Q®|ER clamping nut and back-up screw

\*USA only





## CYL-DF/ERM toolholders (mini clamping nut)

CYL-DF

## CYL-DF/ERMX toolholders with intrRlox® (slip-off proof mini clamping nut)

| Type                      | Part no.   | Dimensions [mm] |           |    |     |     |        | Slip-off proof | Accessories |
|---------------------------|------------|-----------------|-----------|----|-----|-----|--------|----------------|-------------|
|                           |            | DLN             | DCONMS h6 | LS | OHN | CNT | THLGTH |                | Wrench      |
| CYL-DF 12 [mm]            |            |                 |           |    |     |     |        |                |             |
| CYL-DF 12 x 015/ERM 8     | 2612.20804 | 12              | 12        | 15 | 46  | –   | –      | –              | 7113.08000  |
| CYL-DF 12 x 015/ERMX 8    | 4612.20804 | 12              | 12        | 15 | 46  | –   | –      | •              | 7118.08000  |
| CYL-DF 12 x 025/ERM 8     | 2612.20814 | 12              | 12        | 25 | 56  | –   | –      | –              | 7113.08000  |
| CYL-DF 12 x 025/ERMX 8    | 4612.20814 | 12              | 12        | 25 | 56  | –   | –      | •              | 7118.08000  |
| CYL-DF 5/8 [inch]         |            |                 |           |    |     |     |        |                |             |
| CYL-DF 5/8" x 025/ERM 8   | 2616.20895 | 12              | 15,875    | 25 | 56  | –   | –      | –              | 7113.08000  |
| CYL-DF 5/8" x 025/ERMX 8  | 4616.20895 | 12              | 15,875    | 25 | 56  | –   | –      | •              | 7118.08000  |
| CYL-DF 16 [mm]            |            |                 |           |    |     |     |        |                |             |
| CYL-DF 16 x 040/ERM 11    | 2616.21114 | 16              | 16        | 40 | 79  | –   | –      | –              | 7113.11000  |
| CYL-DF 16 x 040/ERMX 11   | 4616.21114 | 16              | 16        | 40 | 79  | –   | –      | •              | 7118.11000  |
| CYL-DF 16 x 050/ERM 11    | 2616.21124 | 16              | 16        | 50 | 89  | –   | –      | –              | 7113.11000  |
| CYL-DF 16 x 050/ERMX 11   | 4616.21124 | 16              | 16        | 50 | 89  | –   | –      | •              | 7118.11000  |
| CYL-DF 3/4 [inch]         |            |                 |           |    |     |     |        |                |             |
| CYL-DF 3/4" x 040/ERM 11  | 2619.21125 | 16              | 19,05     | 40 | 79  | –   | –      | –              | 7113.11000  |
| CYL-DF 3/4" x 040/ERMX 11 | 4619.21125 | 16              | 19,05     | 40 | 79  | –   | –      | •              | 7118.11000  |
| CYL-DF 3/4" x 070/ERM 11  | 2619.21145 | 16              | 19,05     | 70 | 109 | –   | –      | –              | 7113.11000  |
| CYL-DF 3/4" x 070/ERMX 11 | 4619.21145 | 16              | 19,05     | 70 | 109 | –   | –      | •              | 7118.11000  |
| CYL-DF 3/4" x 090/ERM 11  | 2619.21165 | 16              | 19,05     | 90 | 129 | –   | –      | –              | 7113.11000  |
| CYL-DF 3/4" x 090/ERMX 11 | 4619.21165 | 16              | 19,05     | 90 | 129 | –   | –      | •              | 7118.11000  |
| CYL-DF 3/4" x 055/ERM 16  | 2619.21635 | 22              | 19,05     | 55 | 107 | –   | –      | –              | 7113.16000  |
| CYL-DF 3/4" x 055/ERMX 16 | 4619.21635 | 22              | 19,05     | 55 | 107 | –   | –      | •              | 7118.16000  |
| CYL-DF 20 [mm]            |            |                 |           |    |     |     |        |                |             |
| CYL-DF 20 x 030/ERM 11    | 2620.21114 | 16              | 20        | 30 | 69  | –   | –      | –              | 7113.11000  |
| CYL-DF 20 x 030/ERMX 11   | 4620.21114 | 16              | 20        | 30 | 69  | –   | –      | •              | 7118.11000  |
| CYL-DF 20 x 050/ERM 11    | 2620.21124 | 16              | 20        | 50 | 89  | –   | –      | –              | 7113.11000  |
| CYL-DF 20 x 050/ERMX 11   | 4620.21124 | 16              | 20        | 50 | 89  | –   | –      | •              | 7118.11000  |
| CYL-DF 20 x 055/ERM 16    | 2620.21634 | 22              | 20        | 55 | 107 | –   | –      | –              | 7113.16000  |
| CYL-DF 20 x 055/ERMX 16   | 4620.21634 | 22              | 20        | 55 | 107 | –   | –      | •              | 7118.16000  |

Included in delivery: toolholders come with two Hi-Q®|ERM or Hi-Q®|ERMX clamping nuts and back-up screw

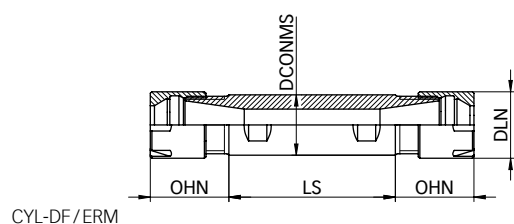
## CYL-DF/ERM toolholders (mini clamping nut)

CYL-DF

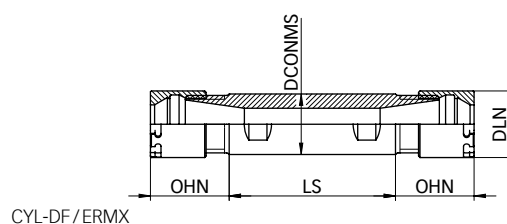
## CYL-DF/ERMX toolholders with intrRlox® (slip-off proof mini clamping nut)

| Type                    | Part no.   | Dimensions [mm] |           |     |     |        | CNT | THLGTH | Slip-off proof | Accessories |
|-------------------------|------------|-----------------|-----------|-----|-----|--------|-----|--------|----------------|-------------|
|                         |            | DLN             | DCONMS h6 | LS  | OHN | Wrench |     |        |                |             |
| CYL-DF 22 [mm]          |            |                 |           |     |     |        |     |        |                |             |
| CYL-DF 22 x 150/ERM 11  | 2622.21194 | 16              | 22        | 150 | 189 | –      | –   | –      | 7113.11000     |             |
| CYL-DF 22 x 055/ERM 16  | 2622.21634 | 22              | 22        | 55  | 110 | –      | –   | –      | 7113.16000     |             |
| CYL-DF 22 x 055/ERMX 16 | 4622.21634 | 22              | 22        | 55  | 110 | –      | –   | •      | 7118.16000     |             |
| CYL-DF 22 x 075/ERM 16  | 2622.21654 | 22              | 22        | 75  | 130 | –      | –   | –      | 7113.16000     |             |
| CYL-DF 22 x 075/ERMX 16 | 4622.21654 | 22              | 22        | 75  | 130 | –      | –   | •      | 7118.16000     |             |
| CYL-DF 25 [mm]          |            |                 |           |     |     |        |     |        |                |             |
| CYL-DF 25 x 062/ERM 16  | 2625.21634 | 22              | 25        | 62  | 117 | –      | –   | –      | 7113.16000     |             |
| CYL-DF 25 x 062/ERMX 16 | 4625.21634 | 22              | 25        | 62  | 117 | –      | –   | •      | 7118.16000     |             |
| CYL-DF 1 [inch]         |            |                 |           |     |     |        |     |        |                |             |
| CYL-DF 1" x 030/ERM 16  | 2625.21615 | 22              | 25,4      | 30  | 86  | –      | –   | –      | 7113.16000     |             |
| CYL-DF 1" x 030/ERMX 16 | 4625.21615 | 22              | 25,4      | 30  | 86  | –      | –   | •      | 7118.16000     |             |
| CYL-DF 1" x 062/ERM 16  | 2625.21635 | 22              | 25,4      | 62  | 117 | –      | –   | –      | 7113.16000     |             |
| CYL-DF 1" x 062/ERMX 16 | 4625.21635 | 22              | 25,4      | 62  | 117 | –      | –   | •      | 7118.16000     |             |
| CYL-DF 32 [mm]          |            |                 |           |     |     |        |     |        |                |             |
| CYL-DF 32 x 055/ERM 20  | 2632.22034 | 28              | 32        | 55  | 110 | –      | –   | –      | 7113.20000     |             |
| CYL-DF 32 x 055/ERMX 20 | 4632.22034 | 28              | 32        | 55  | 110 | –      | –   | •      | 7118.20000     |             |
| CYL-DF 32 x 075/ERM 20  | 2632.22054 | 28              | 32        | 75  | 130 | –      | –   | –      | 7113.20000     |             |
| CYL-DF 32 x 075/ERMX 20 | 4632.22054 | 28              | 32        | 75  | 130 | –      | –   | •      | 7118.20000     |             |

Included in delivery: toolholders come with two Hi-Q®|ERM or Hi-Q®|ERMX clamping nuts and back-up screw



CYL-DF/ERM



CYL-DF/ERMX

# Morse taper toolholders MK



**Applications** Morse taper toolholders are designed for drawbar thread application. They can be used on milling or combined drilling-milling machines as well as on boring machines. For drilling machines we supply the corresponding tangs (ATL) on request.

**Special applications** When extra high clamping force is needed, e.g., when tapping with ER-GB, we recommend the use of our friction-bearing clamping nuts Hi-Q®|ERB and Hi-Q®|ERBC.

**Matched tooling system for best fit** For highest precision and best results the whole system counts. Therefore REGO-FIX components are carefully matched for optimum fit and accuracy. This guarantees the best runout and balance.

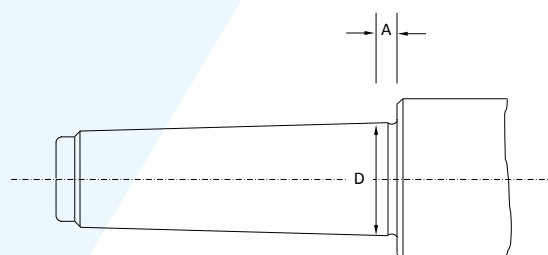
*For the influence of runout on tool life see the graph page 354.  
Accessories are not included in delivery.*

## Expert advice

We recommend tightening the clamping nuts with our torque wrench.

*For tightening torque recommendations, please refer to page 377.*

| Type      | Dimensions [mm] |     |
|-----------|-----------------|-----|
|           | D               | A   |
| <b>MK</b> |                 |     |
| MK 1      | 12.06           | 3.5 |
| MK 2      | 17.78           | 5.0 |
| MK 3      | 23.82           | 5.0 |
| MK 4      | 31.26           | 6.5 |
| MK 5      | 44.39           | 6.5 |



MK 1 – 5

# Morse taper toolholders MK

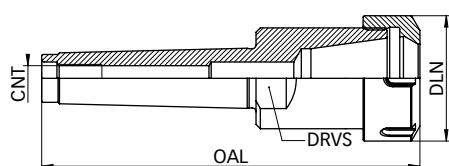
## Tangs ATL

**MK**

**DIN 228-A**

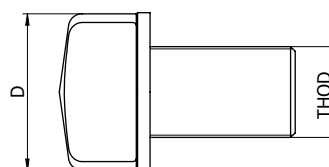
| Type             | Part no.   | Dimensions [mm] |       | CNT  | DRVS | Accessories |
|------------------|------------|-----------------|-------|------|------|-------------|
|                  |            | DLN             | OAL   |      |      | Wrench      |
| MK 1             |            |                 |       |      |      |             |
| MK 1/ER 16 x 041 | 2701.11600 | 28              | 93,5  | M 6  | 17   | 7112.16010  |
| MK 2             |            |                 |       |      |      |             |
| MK 2/ER 20 x 049 | 2702.12000 | 34              | 111,5 | M 10 | 22   | 7112.20010  |
| MK 2/ER 25 x 052 | 2702.12500 | 42              | 115   | M 10 | 27   | 7111.25000  |
| MK 2/ER 32 x 060 | 2702.13200 | 50              | 123   | M 10 | 32   | 7111.32000  |
| MK 3             |            |                 |       |      |      |             |
| MK 3/ER 25 x 052 | 2703.12500 | 42              | 132   | M 12 | 27   | 7111.25000  |
| MK 3/ER 32 x 070 | 2703.13200 | 50              | 150   | M 12 | 32   | 7111.32000  |
| MK 4             |            |                 |       |      |      |             |
| MK 4/ER 32 x 060 | 2704.13200 | 50              | 161,5 | M 16 | 32   | 7111.32000  |
| MK 4/ER 40 x 082 | 2704.14000 | 63              | 183   | M 16 | 41   | 7111.40000  |
| MK 5             |            |                 |       |      |      |             |
| MK 5/ER 40 x 064 | 2705.14000 | 63              | 192   | M 20 | 41   | 7111.40000  |

Included in delivery: toolholders come with Hi-Q® ER clamping nut and back-up screw



MK/ER

| Type        | Part no.   | Dimensions [mm] |      |
|-------------|------------|-----------------|------|
|             |            | D               | THOD |
| Tangs ATL   |            |                 |      |
| ATL 6/MK 1  | 7221.01000 | 8,5             | M 6  |
| ATL 10/MK 2 | 7221.02000 | 13,5            | M 10 |
| ATL 12/MK 3 | 7221.03000 | 18,5            | M 12 |
| ATL 16/MK 4 | 7221.04000 | 24,5            | M 16 |
| ATL 20/MK 5 | 7221.05000 | 35              | M 20 |



ATL/MK

# Automotive shank toolholders SH



**Applications** Automotive shank toolholders with trapezoidal thread are supplied with a setting nut. With this type of toolholder, ER, ER-GB and PCM ET1 collets can be used.

**Special applications** A quick-change setting nut according to system BILZ is available as an option. This option must be ordered separately. When extra high clamping force is needed, e.g., when tapping with ER-GB, we recommend the use of our friction-bearing clamping nuts Hi-Q®|ERB and Hi-Q®|ERBC.

**Matched tooling system for best fit** For highest precision and best results the whole system counts. Therefore REGO-FIX components are carefully matched for optimum fit and accuracy. This guarantees the best runout and balance.

*For the influence of runout on tool life see the graph page 354.  
Accessories are not included in delivery.*

## Expert advice

We recommend tightening the clamping nuts with our torque wrench.

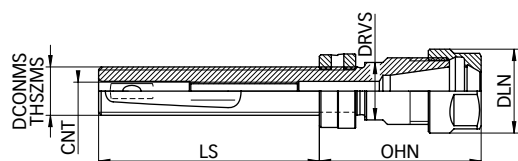
*For tightening torque recommendations, please refer to page 377.*

| Type              | Part no.   | Dimensions [mm] |     |      | THSZMS      | CNT      | DRVS | Accessories |
|-------------------|------------|-----------------|-----|------|-------------|----------|------|-------------|
|                   |            | DLN             | OHN | LS   |             |          |      | Wrench      |
| SH 12             |            |                 |     |      |             |          |      |             |
| SH 12 x 050/ER 11 | 2612.11104 | 19              | 50  | 46,6 | Tr 12 x 1,5 | M 5      | 12   | 7112.11010  |
| SH 16             |            |                 |     |      |             |          |      |             |
| SH 16 x 073/ER 16 | 2616.11604 | 28              | 73  | 53,5 | Tr 16 x 1,5 | M 6      | 19   | 7112.16010  |
| SH 20             |            |                 |     |      |             |          |      |             |
| SH 20 x 076/ER 20 | 2620.12004 | 34              | 76  | 59,5 | Tr 20 x 2   | M 8      | 22   | 7112.20010  |
| SH 28             |            |                 |     |      |             |          |      |             |
| SH 28 x 083/ER 25 | 2628.12504 | 42              | 83  | 57   | Tr 28 x 2   | M 18 x 2 | 28   | 7111.25000  |

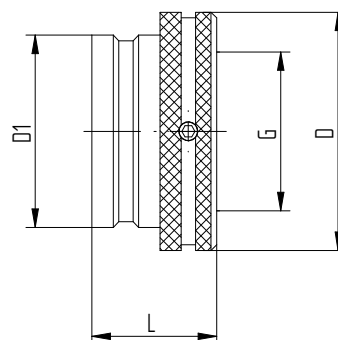
Included in delivery: toolholders come with Hi-Q®|ER clamping nut, back-up screw, setting nut and Woodruff-key

Save time with our quick-change setting nut.

| Type                                   | Part no.   | Dimensions [mm] |      |      | G           |
|----------------------------------------|------------|-----------------|------|------|-------------|
|                                        |            | D               | D1   | L    |             |
| Quick-change setting nut (System BILZ) |            |                 |      |      |             |
| SSM 12                                 | 7238.12000 | 22              | 16,4 | 18   | Tr 12 x 1,5 |
| SSM 16                                 | 7238.16000 | 26              | 19,9 | 18,5 | Tr 16 x 1,5 |
| SSM 20                                 | 7238.20000 | 33              | 25,4 | 20   | Tr 20 x 2   |
| SSM 28                                 | 7238.28000 | 42              | 33,9 | 22   | Tr 28 x 2   |



SH/ER



SSM

# ISO 20 toolholders



**Applications** The REGO-FIX ISO 20 toolholders are designed to work with the HAAS Office Mill. To utilize the full potential of your machine, use the REGO-FIX brand of holders and collets to see the difference quality can achieve in your machining operations.

## Balancing

// 100 % balanced to 50,000 rpm.

**Matched tooling system for best fit** For highest precision and best results the whole system counts. Therefore REGO-FIX components are carefully matched for optimum fit and accuracy. This guarantees the best runout and balance.

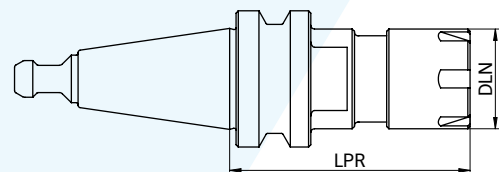
*For the influence of runout on tool life see the graph page 354.*

*Accessories are not included in delivery.*

## Expert advice

We recommend tightening the clamping nuts with our torque wrench.

*For tightening torque recommendations, please refer to page 377.*



ISO-HAAS/ERM

| Type                     | Part no.   | Dimensions [mm] |     | Accessories |
|--------------------------|------------|-----------------|-----|-------------|
|                          |            | DLN             | LPR | Wrench      |
| ISO-HAAS 20              |            |                 |     |             |
| ISO-HAAS 20/ERM 11 x 048 | 2420.11116 | 16              | 48  | 7113.11000  |
| ISO-HAAS 20/ERM 16 x 053 | 2420.11616 | 22              | 53  | 7113.16000  |
| ISO-HAAS 20/ERM 20 x 055 | 2420.12016 | 28              | 55  | 7113.20000  |

*Included in delivery: ISO toolholder comes with Hi-Q®|ERM mini clamping nut and integral pull stud*

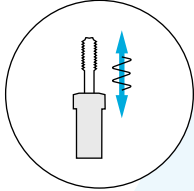




# ER thread-cutting solutions

## CYL SSY/HSK-A SSY Softsynchro® tapping holder

- // With **minimum length compensation**
- // Eliminates small synchronization errors of machines (Rigid Tapping)

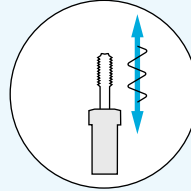


### Applications

- // Machines for direct thread cutting
- // For all tapping tools with h9 shanks
- // The turning movement of the spindles can be offset with the feed axis and thus synchronized
- // Synchronization errors are created by the dynamics of the spindle and linear drives. The tapping holder is equipped with the minimum length compensation and compensates the synchronization errors
- // Depending on the application, the service life for the customer can be increased by up to 150%
- // Guides coolant with up to 50 bar / 725 PSI of pressure to the tap, without compromising length compensation

## CYL GSF tapping holder

- // With **length compensation**
- // Used on machines in which the feed movement is not synchronized with the thread pitch during processing

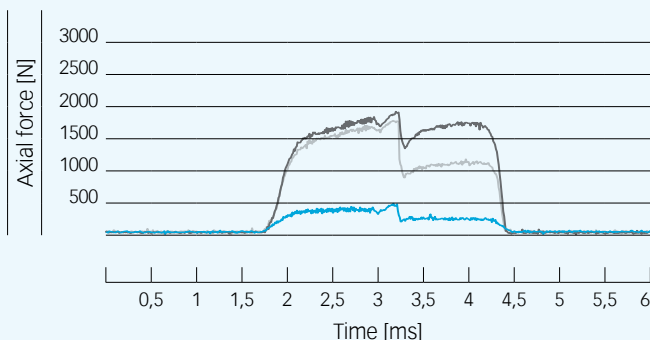


### Applications

- // For machines without a tapping option
- // Ensures the compensation of differences between the thread pitch and spindle feed
- // Features a pressure-point mechanism
- // Safe tap cutting
- // Uniform, reproducible thread depths
- // Guides coolant with up to 50 bar / 725 PSI of pressure to the tap, without compromising length compensation
- // Universal use thanks to its compact design and low gauge length

### Comparative axial force testing

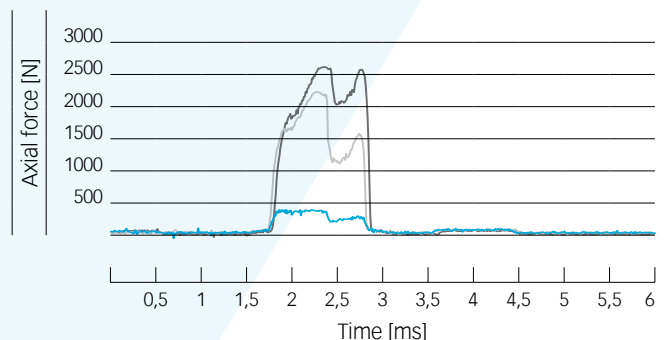
Occurring axial forces with thread forms M10 in St37, Speed 500 rpm.  
Source: In-house testing



**Summary** The axial forces increase with increasing speed. With a rigid toolholder, the forces occurring when forming threads are considerably higher than with the Softsynchro® tapping holder. This allows for the optimum use of the synchronous spindle with the best possible service life and thread surface quality.

### Comparative axial force testing

Occurring axial forces with thread forms M10 in St37, Speed 2.000 rpm.  
Source: In-house testing



- REGO-FIX Softsynchro® tapping holders
- Competitor synchronous toolholder
- Rigid toolholder

# ER tapping holders

HSK-A SSY

69893-A

ISO 12164

CYL SSY

DIN 1835 B+E

CYL GSF

DIN 1835 B+E

| Type                | Part no.   | Dimensions [mm] |       | LCOMP |       | DRVS | Accessories |
|---------------------|------------|-----------------|-------|-------|-------|------|-------------|
|                     |            | DLN             | LPR   | [mm]  | [mm]  |      | Wrench      |
| HSK-A 63 SSY        |            |                 |       |       |       |      |             |
| HSK-A 63 SSY/ERC 20 | 2563.62000 | 34              | 95,5  | - 0,5 | + 0,5 | 19   | 7112.20010  |
| HSK-A 63 SSY/ERC 32 | 2563.63200 | 50              | 108,8 | - 0,5 | + 0,5 | 32   | 7111.32000  |

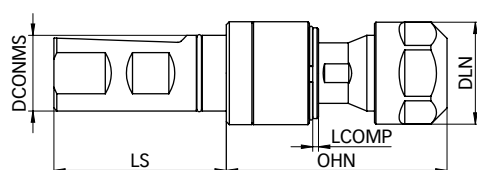
Included in delivery: Tapping holder comes with Hi-Q®|ERC clamping nut

| Type                | Part no.   | Dimensions [mm] |        |      |    | LCOMP |       | DRVS | Accessories |
|---------------------|------------|-----------------|--------|------|----|-------|-------|------|-------------|
|                     |            | DLN             | DCONMS | OHN  | LS | [mm]  | [mm]  |      | Wrench      |
| CYL 25 SSY          |            |                 |        |      |    |       |       |      |             |
| CYL 25 SSY / ERC 20 | 2625.62000 | 34              | 25     | 73   | 57 | - 0,5 | + 0,5 | 19   | 7112.20010  |
| CYL 25 SSY / ERC 32 | 2625.63200 | 50              | 25     | 87,5 | 57 | - 0,5 | + 0,5 | 32   | 7111.32000  |

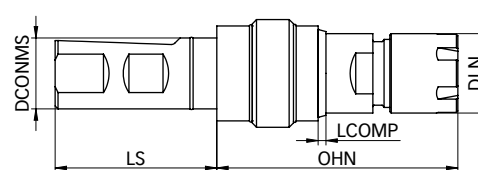
Included in delivery: Tapping holder comes with Hi-Q®|ERC clamping nut

| Type                | Part no.   | Dimensions [mm] |        |     |    | LCOMP |       | DRVS | Accessories |
|---------------------|------------|-----------------|--------|-----|----|-------|-------|------|-------------|
|                     |            | DLN             | DCONMS | OHN | LS | [mm]  | [mm]  |      | Wrench      |
| CYL 25 GSF          |            |                 |        |     |    |       |       |      |             |
| CYL 25 GSF /ERMC 20 | 2625.62001 | 28              | 25     | 85  | 57 | - 5   | + 7,5 | 28   | 7113.20000  |
| CYL 25 GSF /ERC 32  | 2625.63201 | 50              | 25     | 115 | 57 | - 7   | + 10  | 34   | 7111.32000  |

Included in delivery: Tapping holder comes with Hi-Q®|ERC or Hi-Q®|ERMC clamping nut



CYL SSY/ERC



CYL GSF/ERMC

# ER floating chucks

When using reamers on lathes it is often necessary to compensate for axis error between the chuck and the bore to be machined. This error can be corrected by using a self-centering floating chuck.

PH/PHC/PHC-C/MPH

## Features and benefits

### Adjustable floating resistance

Continuously adjustable between auto-centering and free-floating. No restriction of the floating movement.

### Adjustment for tool weight

Optimal setup by adjustment of floating resistance is possible.

### Vertical and horizontal application

Adjustable self-centering keeps the tool at the center of the floating chuck, even in the horizontal position. Prevents chatter marks and extends tool life.

### Combined ball- and friction-bearing

Combined ball and friction-bearing for easy floating:

- // Ball bearing for smooth reaming at low load applications
- // Friction-bearing to withstand high pressures at high load applications

### Double sealing against dirt

Prevents coolant and chips from entering the floating chuck.

### Excellent bore quality

Only parallel floatation of tool possible.

## Floating chuck PH/ER

**Features** REGO-FIX floating chucks are excellent tools for reaming and tapping:

- // They are specially designed so the tool is self-centering in a vertical and horizontal position
- // The self-centering feature allows very precise positioning of the reaming or tapping tool. This is especially important in horizontal applications, where on ordinary floating chucks the weight of the tool tends to dislocate the tool from the rotational axis
- // The float is always parallel to the rotational axis and the rotation is both clockwise and counter clockwise

## Floating chuck PHC/ER for coolant through tools

**Features** Floating chucks PHC/ER for coolant through tools are especially designed for internal cooling and have the same advantages as the PH/ER floating chucks.

## Floating chuck PHC-C/ER REGO-FIX CAPTO

**Features** These REGO-FIX CAPTO floating chucks are manufactured with polygon interface – licensed by Sandvik Coromant.

## Floating chuck MPH/ERMX for tight spaces

**Application** REGO-FIX MPH/ERMX floating chucks are an efficient solution for tight space applications.

## MPHC/ERMXC for tight spaces with internal cooling

**Application** The MPHC floating chuck is the mini version with internal cooling, common with modern reaming applications.

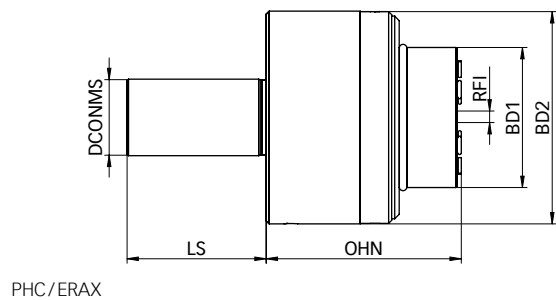


# PH floating chucks for non coolant through tools

PH

| Type             | Part no.   | Dimensions [mm] |           |     |     |    | Accessories |            |
|------------------|------------|-----------------|-----------|-----|-----|----|-------------|------------|
|                  |            | BD1             | DCONMS h6 | BD2 | OHN | LS | RFI         | Wrench     |
| PH 5/8 [inch]    |            |                 |           |     |     |    |             |            |
| PH 5/8" /ERAX 11 | 2616.91102 | 22              | 15,88     | 38  | 36  | 34 | 0,8         | 7117.11000 |
| PH 16 [mm]       |            |                 |           |     |     |    |             |            |
| PH 16/ERAX 11    | 2616.91100 | 22              | 16        | 38  | 36  | 34 | 0,8         | 7117.11000 |
| PH 3/4 [inch]    |            |                 |           |     |     |    |             |            |
| PH 3/4" /ERAX 11 | 2619.91102 | 22              | 19,05     | 38  | 36  | 34 | 0,8         | 7117.11000 |
| PH 20 [mm]       |            |                 |           |     |     |    |             |            |
| PH 20/ERAX 11    | 2620.91100 | 22              | 20        | 38  | 36  | 34 | 0,8         | 7117.11000 |

Included in delivery: Floating holder comes with Hi-Q®|ER clamping nut and wrench



# PHC floating chucks for coolant through tools

PHC

| Type                | Part no.   | Dimensions [mm] |           |     |      |    | Accessories |            |
|---------------------|------------|-----------------|-----------|-----|------|----|-------------|------------|
|                     |            | BD1             | DCONMS h6 | BD2 | OHN  | LS | RFI         | Wrench     |
| PHC 5/8 [inch]      |            |                 |           |     |      |    |             |            |
| PHC 5/8" /ERAX 20   | 2616.92004 | 33              | 15,88     | 56  | 53,5 | 38 | 1           | 7117.20000 |
| PHC 16 [mm]         |            |                 |           |     |      |    |             |            |
| PHC 16/ERAX 20      | 2616.92003 | 33              | 16        | 56  | 53,5 | 38 | 1           | 7117.20000 |
| PHC 3/4 [inch]      |            |                 |           |     |      |    |             |            |
| PHC 3/4" /ERAX 20   | 2619.92004 | 33              | 19,05     | 56  | 53,5 | 38 | 1           | 7117.20000 |
| PHC 3/4" /ERAX 32   | 2619.93204 | 46              | 19,05     | 70  | 64,5 | 46 | 1,5         | 7117.32000 |
| PHC 20 [mm]         |            |                 |           |     |      |    |             |            |
| PHC 20/ERAX 20      | 2620.92003 | 33              | 20        | 56  | 53,5 | 38 | 1           | 7117.20000 |
| PHC 20/ERAX 32      | 2620.93203 | 46              | 20        | 70  | 64,5 | 46 | 1,5         | 7117.32000 |
| PHC 22 [mm]         |            |                 |           |     |      |    |             |            |
| PHC 22/ERAX 20      | 2622.92003 | 33              | 22        | 56  | 53,5 | 38 | 1           | 7117.20000 |
| PHC 25 [mm]         |            |                 |           |     |      |    |             |            |
| PHC 25/ERAX 20      | 2625.92003 | 33              | 25        | 56  | 53,5 | 38 | 1           | 7117.20000 |
| PHC 25/ERAX 32      | 2625.93203 | 46              | 25        | 70  | 64,5 | 46 | 1,5         | 7117.32000 |
| PHC 1 [inch]        |            |                 |           |     |      |    |             |            |
| PHC 1" /ERAX 20     | 2625.92004 | 33              | 25,4      | 56  | 53,5 | 38 | 1           | 7117.20000 |
| PHC 1" /ERAX 32     | 2625.93204 | 46              | 25,4      | 70  | 64,5 | 46 | 1,5         | 7117.32000 |
| PHC 1 1/4 [inch]    |            |                 |           |     |      |    |             |            |
| PHC 1 1/4" /ERAX 32 | 2632.93204 | 46              | 31,75     | 70  | 64,5 | 46 | 1,5         | 7117.32000 |
| PHC 32 [mm]         |            |                 |           |     |      |    |             |            |
| PHC 32/ERAX 32      | 2632.93203 | 46              | 32        | 70  | 64,5 | 46 | 1,5         | 7117.32000 |

Included in delivery: Floating holder comes with Hi-Q®|ERAX clamping nut, wrench and adjusting key

## Expert advice

When using coolant through tools please order Hi-Q®|ERAXC clamping nuts and the corresponding sealing disks.

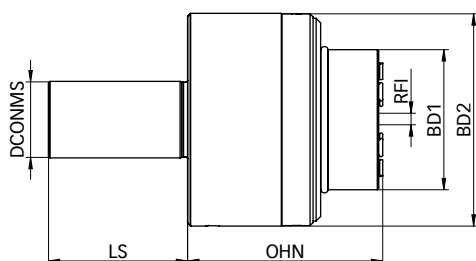
# Floating holder with internal coolant supply for VDI interface

PHC-F

Quick clamping and unclamping of floating holders in VDI interfaces via adapter

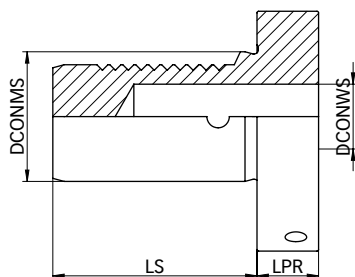
| Type             | Part no.   | Dimensions [mm] |           |     |      |    | RFI | Accessories |
|------------------|------------|-----------------|-----------|-----|------|----|-----|-------------|
|                  |            | BD1             | DCONMS h6 | BD2 | OHN  | LS |     | Wrench      |
| PHC-F 16 [mm]    |            |                 |           |     |      |    |     |             |
| PHC-F 16/ERAX 20 | 2616.92002 | 33              | 16        | 56  | 53,5 | 38 | 1   | 7117.20000  |
| PHC-F 20 [mm]    |            |                 |           |     |      |    |     |             |
| PHC-F 20/ERAX 20 | 2620.92002 | 33              | 20        | 56  | 53,5 | 38 | 1   | 7117.20000  |
| PHC-F 20/ERAX 32 | 2620.93202 | 46              | 20        | 70  | 64,5 | 46 | 1,5 | 7117.32000  |

Included in delivery: Floating holder comes with Hi-Q®/ERAX clamping nut, wrench and adjusting key

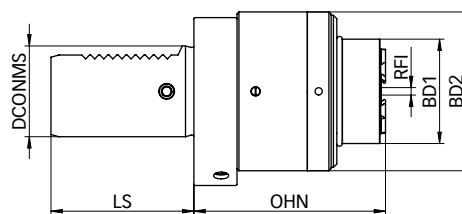


PHC/ERAX

| Type               | Part no.   | Compatible floating holder PHC-F |
|--------------------|------------|----------------------------------|
| <b>VDI adapter</b> |            |                                  |
| ADP VDI 30/16      | 2930.31600 | 2616.92002                       |
| ADP VDI 40/20      | 2940.32000 | 2620.92002, 2620.93202           |



ADP VDI



ADP VDI with PHC-F

## Expert advice

To ensure internal cooling, a flat surface is required on the shank. Other floating holders can also be clamped in the VDI adapter if they feature a flat (see MPHC 16 and MPHC 20).

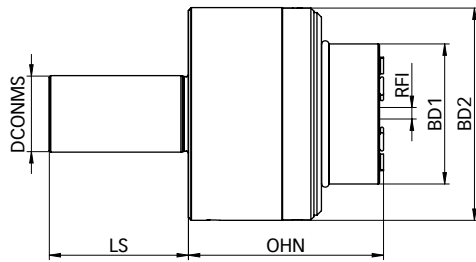


# PHC floating chucks for coolant through tools with REGO-FIX CAPTO interface

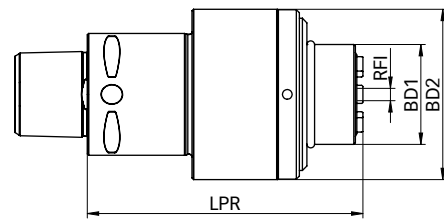
PHC-C

| Type           | Part no.   | Dimensions [mm] |     |     | RFI | Accessories |
|----------------|------------|-----------------|-----|-----|-----|-------------|
|                |            | BD1             | BD2 | LPR |     | Wrench      |
| PHC C3         |            |                 |     |     |     |             |
| PHC C3/ERAX 20 | 2803.92003 | 33              | 56  | 91  | 0,8 | 7117.20000  |
| PHC C4         |            |                 |     |     |     |             |
| PHC C4/ERAX 20 | 2804.92003 | 33              | 56  | 91  | 0,8 | 7117.20000  |
| PHC C4/ERAX 32 | 2804.93203 | 46              | 70  | 100 | 0,8 | 7117.32000  |

Included in delivery: Floating holder comes with Hi-Q®|ERAX clamping nut and wrench



PHC/ERAX



PHC C/ERAX

**Certified** REGO-FIX CAPTO – licensed by Sandvik Coromant – is manufactured at REGO-FIX Switzerland under license according to CAPTO specifications.

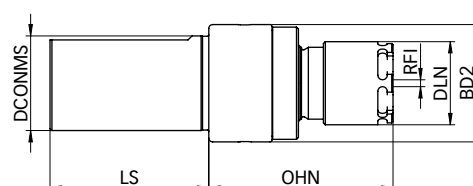
# MPH mini floating chucks with intRlox®

(slip-off proof mini clamping nut)

MPH

| Type              | Part no.   | Dimensions [mm] |           |     |      |    | Accessories |            |
|-------------------|------------|-----------------|-----------|-----|------|----|-------------|------------|
|                   |            | DLN             | DCONMS h6 | BD2 | OHN  | LS | RFI         | Wrench     |
| MPH 8 [mm]        |            |                 |           |     |      |    |             |            |
| MPH 8/ERMX 11     | 4608.91107 | 16              | 8         | 25  | 35,5 | 42 | 0,5         | 7118.11000 |
| MPH 10 [mm]       |            |                 |           |     |      |    |             |            |
| MPH 10/ERMX 11    | 4610.91107 | 16              | 10        | 25  | 35,5 | 42 | 0,5         | 7118.11000 |
| MPH 16 [mm]       |            |                 |           |     |      |    |             |            |
| MPH 16/ERMX 11    | 4616.91107 | 16              | 16        | 25  | 35,5 | 42 | 0,5         | 7118.11000 |
| MPH 3/4 [inch]    |            |                 |           |     |      |    |             |            |
| MPH 3/4" /ERMX 11 | 4619.91108 | 16              | 19,05     | 25  | 35,5 | 70 | 0,5         | 7118.11000 |
| MPH 20 [mm]       |            |                 |           |     |      |    |             |            |
| MPH 20/ERMX 11    | 4620.91107 | 16              | 20        | 25  | 35,5 | 42 | 0,5         | 7118.11000 |
| MPH 22 [mm]       |            |                 |           |     |      |    |             |            |
| MPH 22/ERMX 11    | 4622.91107 | 16              | 22        | 25  | 35,5 | 42 | 0,5         | 7118.11000 |
| MPH 25 [mm]       |            |                 |           |     |      |    |             |            |
| MPH 25/ERMX 11    | 4625.91107 | 16              | 25        | 25  | 35,5 | 42 | 0,5         | 7118.11000 |
| MPH 1 [inch]      |            |                 |           |     |      |    |             |            |
| MPH 1" /ERMX 11   | 4625.91108 | 16              | 25,4      | 25  | 35,5 | 42 | 0,5         | 7118.11000 |

Included in delivery: Floating holder comes with Hi-Q®/ERMX clamping nut and wrench



MPHC/ERMX

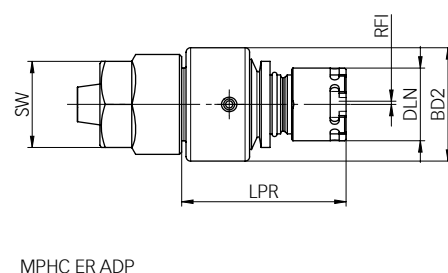
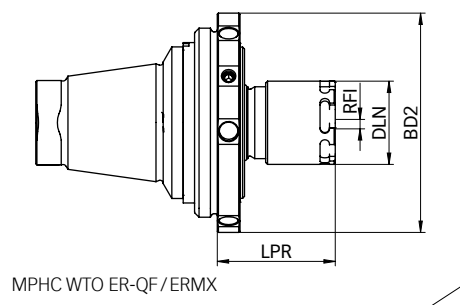
# MPHC mini floating chucks with intRlox®

(slip-off proof mini clamping nut)

MPHC

| Type                        | Part no.   | Dimensions [mm] |           |      |      |     | RFI | Accessories |
|-----------------------------|------------|-----------------|-----------|------|------|-----|-----|-------------|
|                             |            | DLN             | DCONMS h6 | BD2  | OHN  | LS  |     | Wrench      |
| MPHC 8 [mm]                 |            |                 |           |      |      |     |     |             |
| MPHC 8/ERMX 11              | 4608.91105 | 16              | 8         | 25   | 35,5 | 42  | 0,5 | 7118.11000  |
| MPHC 10 [mm]                |            |                 |           |      |      |     |     |             |
| MPHC 10/ERMX 11             | 4610.91105 | 16              | 10        | 25   | 35,5 | 42  | 0,5 | 7118.11000  |
| MPHC 10/ERMX 16             | 4610.91605 | 22              | 10        | 31   | 48,7 | 42  | 0,5 | 7118.16000  |
| MPHC 16 [mm]                |            |                 |           |      |      |     |     |             |
| MPHC 16/ERMX 16             | 4616.91605 | 22              | 16        | 31   | 48,7 | 42  | 0,5 | 7118.16000  |
| MPHC 3/4 [inch]             |            |                 |           |      |      |     |     |             |
| MPHC 3/4" / ERMX 11         | 4619.91106 | 16              | 19,05     | 25   | 35,5 | 42  | 0,5 | 7118.11000  |
| MPHC 3/4" / ERMX 16         | 4619.91606 | 22              | 19,05     | 31   | 48,7 | 42  | 0,5 | 7118.16000  |
| MPHC 20 [mm]                |            |                 |           |      |      |     |     |             |
| MPHC 20/ERMX 11             | 4620.91105 | 16              | 20        | 25   | 35,5 | 42  | 0,5 | 7118.11000  |
| MPHC 20/ERMX 16             | 4620.91605 | 22              | 20        | 31   | 48,7 | 42  | 0,5 | 7118.16000  |
| MPHC 22 [mm]                |            |                 |           |      |      |     |     |             |
| MPHC 22/ERMX 16             | 4622.91605 | 22              | 22        | 31   | 48,7 | 42  | 0,5 | 7118.16000  |
| MPHC 25 [mm]                |            |                 |           |      |      |     |     |             |
| MPHC 25/ERMX 16             | 4625.91605 | 22              | 25        | 31   | 48,7 | 42  | 0,5 | 7118.16000  |
| MPHC 1 [inch]               |            |                 |           |      |      |     |     |             |
| MPH 1" / ERMX 16            | 4625.91606 | 22              | 25,4      | 31   | 48,7 | 42  | 0,5 | 7118.16000  |
| Type                        | Part no.   | DLN             | SW        | BD2  | L    | LPR | RFI | Wrench      |
| MPHC ER ADP                 |            |                 |           |      |      |     |     |             |
| MPHC ER 11 / ERMX 11        | 7168.11110 | 16              | 19        | 25   | –    | 24  | 0,5 | 7118.11000  |
| MPHC ERM 11 / ERMX 11       | 7169.11110 | 16              | 19        | 25   | –    | 24  | 0,5 | 7118.11000  |
| Type                        | Part no.   | DLN             | SW        | BD2  | L    | LPR | RFI | Wrench      |
| MPHC WTO ER ADP             |            |                 |           |      |      |     |     |             |
| MPHC WTO ER 25-QF / ERMX 11 | 8040.25115 | 16              | –         | 49,5 | –    | 24  | 0.5 | 7118.16000  |
| MPHC WTO ER 32-QF / ERMX 16 | 8040.32165 | 22              | –         | 58   | –    | 33  | 0.5 | 7118.16000  |

Included in delivery: Mini holder, Hi-Q® / ERMX nut and wrench



# Maintenance instructions for floating chucks

## There are two main versions of floating chucks

MPHC

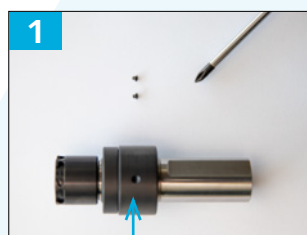
MPH



With 2 screws on the side of the flange.



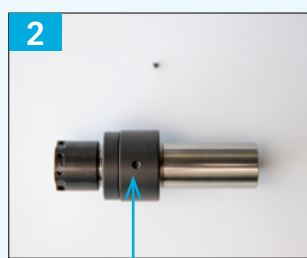
With one screw in the cylindrical shaft on the back of the floating chuck.



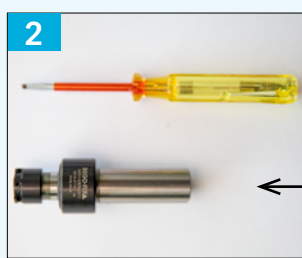
1 Take both screws out with a fitting screwdriver (PH0). Blow out with dry pressurized air.



1 Take the screw in the cylinder out with a fitting screwdriver (hex screw). Blow out with dry pressurized air. Fill with 10 drops of thin oil.



2 Put one screw back. Fill with 10 drops of thin oil.



2 Put the screw back in the back (do not forget the spring). Re-adjust the spring tension in the cylinder shaft.



3 Put the second screw back.

# Collet reductions

ER/ERM ERM/ERM ER/ERM ERMX/ERM

## Features and benefits

### Surface finish max. Ra 0.25

Higher clamping force and higher transferable torque.

### Applications

The collet reductions are mainly used on Swiss machines with live tooling.

### Quick change system

Best suited for quick tool change as the cutting tools can be preinstalled

### Length presetting

Tools can be preset outside of the machine.

### Minimal external dimensions

Achieve minimal external dimensions by using Hi-Q®|ERM or Hi-Q®|ERM clamping nuts.

*Accessories are not included in delivery.*



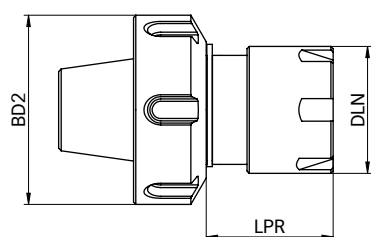
## Expert advice

We recommend tightening the clamping nuts with our torque wrench.

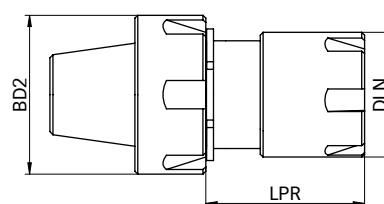
*For tightening torque recommendations, please refer to page 377.*

| Type          | Part no.   | Dimensions [mm] |     |      | Accessories             |
|---------------|------------|-----------------|-----|------|-------------------------|
|               |            | DLN             | BD2 | LPR  | Wrench                  |
| ER 11         |            |                 |     |      |                         |
| ER 11/ERM 8   | 7162.11080 | 12              | 19  | 16,5 | 7112.11010 / 7113.08000 |
| ER 16         |            |                 |     |      |                         |
| ER 16/ERM 11  | 7162.16110 | 16              | 28  | 18,5 | 7112.16010 / 7113.11000 |
| ER 20         |            |                 |     |      |                         |
| ER 20/ERM 11* | 7162.20110 | 16              | 34  | 16.5 | 7112.20010 / 7112.11010 |
| ER 20/ERM 16  | 7162.20160 | 22              | 34  | 28   | 7112.20010 / 7113.16000 |
| ER 25         |            |                 |     |      |                         |
| ER 25/ERM 11* | 7162.25110 | 16              | 42  | 16,5 | 7111.25000 / 7113.11000 |
| ER 25/ERM 16  | 7162.25160 | 22              | 42  | 28   | 7111.25000 / 7113.16000 |
| ER 25/ERM 20  | 7162.25200 | 28              | 42  | 28   | 7111.25000 / 7113.20000 |
| ERM 11        |            |                 |     |      |                         |
| ERM 11/ERM 8  | 7161.11080 | 12              | 16  | 16,5 | 7113.11000 / 7113.08000 |
| ERM 16        |            |                 |     |      |                         |
| ERM 16/ERM 11 | 7161.16110 | 16              | 23  | 18,5 | 7113.11000 / 7113.11000 |
| ERM 20        |            |                 |     |      |                         |
| ERM 20/ERM 16 | 7161.20160 | 22              | 28  | 28   | 7113.20000 / 7113.16000 |
| ERM 25        |            |                 |     |      |                         |
| ERM 25/ERM 11 | 7161.25110 | 16              | 35  | 22   | 7113.25000 / 7113.11000 |
| ERM 25/ERM 16 | 7161.25160 | 22              | 35  | 28   | 7113.25000 / 7113.16000 |
| ERM 25/ERM 20 | 7161.25200 | 28              | 35  | 28   | 7113.25000 / 7113.20000 |
| ER 32*        |            |                 |     |      |                         |
| ER 32/ER 16   | 7160.32160 | 28              | 50  | 29,5 | 7111.32000 / 7112.16010 |

\*USA only



ER /ERM



ERM/ERM

# Collet reductions with intRlox®

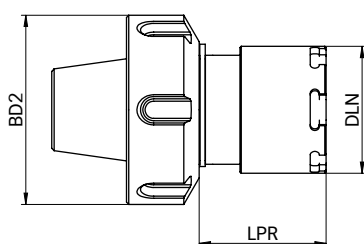
(slip-off proof mini clamping nut)

ER/ERMX

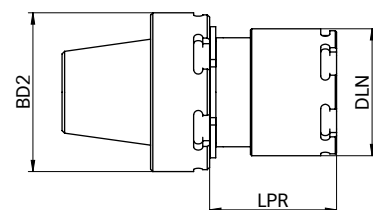
ERMX/ERMX

| Type            | Part no.   | Dimensions [mm] |     |      | Accessories             |
|-----------------|------------|-----------------|-----|------|-------------------------|
|                 |            | DLN             | BD2 | LPR  | Wrench                  |
| ER 11           |            |                 |     |      |                         |
| ER 11/ERMX 8    | 7165.11080 | 12              | 19  | 16,5 | 7112.11010 / 7118.08000 |
| ER 16           |            |                 |     |      |                         |
| ER 16/ERMX 11   | 7165.16110 | 16              | 28  | 18,5 | 7112.16010 / 7118.11000 |
| ER 20           |            |                 |     |      |                         |
| ER 20/ERMX 11   | 7165.20110 | 16              | 34  | 16,5 | 7112.20010 / 7118.11000 |
| ER 20/ERMX 16   | 7165.20160 | 22              | 34  | 28   | 7112.20010 / 7118.16000 |
| ER 25           |            |                 |     |      |                         |
| ER 25/ERMX 16   | 7165.25160 | 22              | 42  | 28   | 7111.25000 / 7118.16000 |
| ER 25/ERMX 20   | 7165.25200 | 28              | 42  | 28   | 7111.25000 / 7118.20000 |
| ERMX 11         |            |                 |     |      |                         |
| ERMX 11/ERMX 8  | 7164.11080 | 12              | 16  | 16,5 | 7118.11000 / 7118.08000 |
| ERMX 16         |            |                 |     |      |                         |
| ERMX 16/ERMX 11 | 7164.16110 | 16              | 23  | 18,5 | 7118.16000 / 7118.11000 |
| ERMX 20         |            |                 |     |      |                         |
| ERMX 20/ERMX 16 | 7164.20160 | 22              | 28  | 28   | 7118.20000 / 7118.16000 |
| ERMX 25         |            |                 |     |      |                         |
| ERMX 25/ERMX 16 | 7164.25160 | 22              | 35  | 28   | 7118.25000 / 7118.16000 |

\*USA only



ER/ERMX



ERMX/ERMX



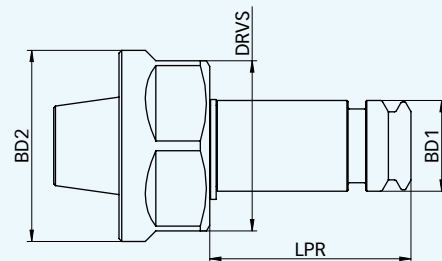


# swissQuick powRgrip® adapter



**What is it?** The swissQuick ER-to-PG adapter is a short “mini-holder” with a solid ER body profile on the back, with a powRgrip® collet cavity on the front. This unique design allows for quick tool changes with an ER fixture while still receiving the benefits of the powRgrip® system.

**Locking ring** The swissQuick is configured with a special locking ring to ensure that the collet body is removed with the nut.



ER-to-PG swissQuick

| Type                    | Part no.   | Dimensions [mm] |     |      |      |               |
|-------------------------|------------|-----------------|-----|------|------|---------------|
|                         |            | BD1             | BD2 | LPR  | DRVS | ER nut thread |
| ER/PG*                  |            |                 |     |      |      |               |
| ER 20/PG 10 swissQuick  | 7660.20100 | 16              | 34  | 35,5 | 30   | M 25 x 1,5    |
| ER 25/PG 15 swissQuick  | 7660.25150 | 24              | 42  | 36   | –    | M 32 x 1,5    |
| ERM/PG*                 |            |                 |     |      |      |               |
| ERM 20/PG 10 swissQuick | 7661.20100 | 16              | 28  | 35,5 | –    | M 24 x 1      |
| ERM 25/PG 15 swissQuick | 7661.25150 | 24              | 35  | 36   | –    | M 30 x 1      |

\*USA only





| SR collet                                                                           | Micro-<br>machining                                                                 | Standard and<br>ultraprecision                                                      | micRun®                                                                             | Corrosion-<br>resistant                                                             | Metallic<br>sealed                                                                  | CoolBore                                                                             | Pullout protection<br>secuRgrip®                                                      | Collets for tapping                                                                   |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| SR                                                                                  | ER-MB /<br>ER-MBX                                                                   | ER-Standard/<br>ER-UP                                                               | ER-MR                                                                               | ER-INOX                                                                             | ER-DM                                                                               | ER-CB                                                                                | ER-SG                                                                                 | ER-GB                                                                                 | PCM ET1                                                                               |
|  |  |  |  |  |  |  |  |  |  |
| Page 162                                                                            | Page 162                                                                            | Page 163                                                                            | Page 243                                                                            | Page 172                                                                            | Page 174                                                                            | Page 179                                                                             | Page 180                                                                              | Page 181                                                                              | Page 184                                                                              |



# ER collets

Choose the original ER collet! Outstanding design combined with our experience and technical know-how makes our ER products one of the most successful tool holding solutions worldwide.

Our broad product range offers the perfect collet for every application. ER collets are available in various versions to meet individual production requirements. With a wide range of sizes and variants, the ER system offers the ideal solution for every challenge.

## // Applications

ER collets stand out for their high adaptability, as they can be tailored to the specific demands of each application. With customised solutions, they deliver optimal performance and precision in a wide variety of uses.

## // Runout

ER collets are available in different runout accuracies to suit a wide range of application needs. This enables precise and reliable machining in any given situation.

## // Corrosion protection

Some ER collets feature special corrosion protection to ensure reliable performance even in harsh environments. This coating ensures a longer service life and consistent performance under challenging conditions.

## // Cooling options

ER collets offer a choice of different cooling methods, including both internal and peripheral cooling. Two solutions are available for each option.



# Swiss quality ER collets



**SR**

**Microbore**



**MB**

**Microbore**



**MBX**

**Microbore**



**Std.**

**Standard**



**UP**

**Ultra-precision**



**MR**

**micRun®**

|                                           |                 |                 |                 |                      |                      |                |
|-------------------------------------------|-----------------|-----------------|-----------------|----------------------|----------------------|----------------|
| Main machining use                        | micro-machining | micro-machining | micro-machining | all                  | high precision       | high precision |
| DIN ISO 15488: form ...                   | –               | A               | B               | B                    | B                    | B              |
| ER size                                   | SR 6            | 8               | 11 – 16         | 8 – 50               | 8 – 50               | 11 – 32        |
| Shaft diameter range                      | 1,0 – 3,17      | 0,2 – 0,9       | 0,2 – 1,0       | 1,0 – 36,0           | 1,0 – 36,0           | 1,0 – 20,0     |
| Clamping range (mm) or tolerance          | h9              | h7              | 0,05            | 1                    | 1                    | h11            |
| Runout (max)*                             | 5 µm            | 6 µm            | 6 µm            | 10 µm                | 5 µm                 | 2 µm           |
| Anti-corrosion coating                    | –               | –               | –               | available on request | available on request | –              |
| Metallic sealed                           | –               | –               | –               | –                    | –                    | –              |
| Peripheral cooling with CoolBore          | –               | –               | –               | –                    | –                    | –              |
| Internal square                           | –               | –               | –               | –                    | –                    | –              |
| Length compensation                       | –               | –               | –               | –                    | –                    | –              |
| secuRgrip® thread to prevent tool pullout | –               | –               | –               | –                    | –                    | –              |
| Collet-locking system                     | –               | –               | –               | •                    | •                    | •              |

\*For information about our measuring values, please refer to page 355.

## Expert advice

Please note that DM collets are not compatible with Weldon or Whistle notch shafts.

To achieve internal cooling with Weldon or Whistle notch shafts, use the REGO-FIX sealing disks ER/DS with your REGO-FIX ER collet.

|                                           |  |  |  |  |  |  |
|-------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                                           | <b>DM</b>                                                                         | <b>CB</b>                                                                         | <b>INOX</b>                                                                       | <b>SG</b>                                                                          | <b>GB</b>                                                                           | <b>PCM ET1</b>                                                                      |
|                                           | <b>Metallic sealed</b>                                                            | <b>CoolBore</b>                                                                   | <b>Corrosion-resistant</b>                                                        | <b>secuRgrip®</b>                                                                  | <b>Tapping collet</b>                                                               | <b>Tapping collet</b>                                                               |
| Main machining use                        | internal cooling                                                                  | internal cooling                                                                  | Challenging environment                                                           | heavy machining                                                                    | rigid tapping                                                                       | rigid tapping with length compensation                                              |
| DIN ISO 15488: form ...                   | B                                                                                 | B                                                                                 | B                                                                                 | B                                                                                  | A                                                                                   | A                                                                                   |
| ER size                                   | 11–40                                                                             | 16–32                                                                             | 11–16                                                                             | 32–40                                                                              | 11–50                                                                               | 11–40                                                                               |
| Shaft diameter range                      | 3,0–26,0                                                                          | 3,0–20,0                                                                          | 1,5–6,0                                                                           | 10,0–25,4                                                                          | 2,5–32,0                                                                            | 1,4–17,0                                                                            |
| Clamping range (mm) or tolerance          | 0,5                                                                               | 0,5                                                                               | 0.25                                                                              | h6                                                                                 | h9                                                                                  | h9                                                                                  |
| Runout (max)*                             | 6µm                                                                               | 6µm                                                                               | 10µm                                                                              | 5µm                                                                                | 10µm                                                                                | 10µm                                                                                |
| Anti-corrosion coating                    | available on request                                                              | available on request                                                              | •                                                                                 | –                                                                                  | available on request                                                                | –                                                                                   |
| Metallic sealed                           | •                                                                                 | –                                                                                 | –                                                                                 | –                                                                                  | –                                                                                   | –                                                                                   |
| Peripheral cooling with CoolBore          | –                                                                                 | •                                                                                 | –                                                                                 | –                                                                                  | –                                                                                   | –                                                                                   |
| Internal square                           | –                                                                                 | –                                                                                 | –                                                                                 | –                                                                                  | •                                                                                   | •                                                                                   |
| Length compensation                       | –                                                                                 | –                                                                                 | –                                                                                 | –                                                                                  | –                                                                                   | •                                                                                   |
| secuRgrip® thread to prevent tool pullout | –                                                                                 | –                                                                                 | –                                                                                 | •                                                                                  | –                                                                                   | –                                                                                   |
| Collet-locking system                     | •                                                                                 | •                                                                                 | •                                                                                 | •                                                                                  | •                                                                                   | –                                                                                   |

\*For information about our measuring values, please refer to page 355.



| Type     | Part no.   | Clamping range h7 |                |
|----------|------------|-------------------|----------------|
|          |            | [mm]              | [decimal inch] |
| ER 8-MB  |            |                   |                |
| Ø 0,2 mm | 1308.00200 | 0,2               | 0,0079         |
| Ø 0,3 mm | 1308.00300 | 0,3               | 0,0118         |
| Ø 0,4 mm | 1308.00400 | 0,4               | 0,0157         |
| Ø 0,5 mm | 1308.00500 | 0,5               | 0,0197         |
| Ø 0,6 mm | 1308.00600 | 0,6               | 0,0236         |
| Ø 0,7 mm | 1308.00700 | 0,7               | 0,0276         |
| Ø 0,8 mm | 1308.00800 | 0,8               | 0,0315         |
| Ø 0,9 mm | 1308.00900 | 0,9               | 0,0354         |

|                  |            |            |                 |
|------------------|------------|------------|-----------------|
| <b>ER 11-MBX</b> |            |            |                 |
| Ø 0,2 mm         | 1311.00201 | 0,2 – 0,15 | 0,0079 – 0,0059 |
| Ø 0,25 mm        | 1311.00251 | 0,25 – 0,2 | 0,0098 – 0,0079 |
| Ø 0,3 mm         | 1311.00301 | 0,3 – 0,25 | 0,0118 – 0,0098 |
| Ø 0,35 mm        | 1311.00351 | 0,35 – 0,3 | 0,0138 – 0,0118 |
| Ø 0,4 mm         | 1311.00401 | 0,4 – 0,35 | 0,0157 – 0,0138 |
| Ø 0,45 mm        | 1311.00451 | 0,45 – 0,4 | 0,0177 – 0,0157 |
| Ø 0,5 mm         | 1311.00501 | 0,5 – 0,45 | 0,0197 – 0,0177 |
| Ø 0,55 mm        | 1311.00551 | 0,55 – 0,5 | 0,0217 – 0,0197 |
| Ø 0,6 mm         | 1311.00601 | 0,6 – 0,55 | 0,0237 – 0,0217 |
| Ø 0,65 mm        | 1311.00651 | 0,65 – 0,6 | 0,0256 – 0,0237 |
| Ø 0,7 mm         | 1311.00701 | 0,7 – 0,65 | 0,0276 – 0,0256 |
| Ø 0,75 mm        | 1311.00751 | 0,75 – 0,7 | 0,0295 – 0,0275 |
| Ø 0,8 mm         | 1311.00801 | 0,8 – 0,75 | 0,0315 – 0,0295 |
| Ø 0,85 mm        | 1311.00851 | 0,85 – 0,8 | 0,0335 – 0,0315 |
| Ø 0,9 mm         | 1311.00901 | 0,9 – 0,85 | 0,0354 – 0,0335 |
| Ø 0,95 mm        | 1311.00951 | 0,95 – 0,9 | 0,0374 – 0,0354 |
| Ø 1,0 mm         | 1311.01001 | 1,0 – 0,95 | 0,0394 – 0,0374 |

|                  |            |            |                 |
|------------------|------------|------------|-----------------|
| <b>ER 16-MBX</b> |            |            |                 |
| Ø 0,2 mm         | 1316.00201 | 0,2 – 0,15 | 0,0079 – 0,0059 |
| Ø 0,25 mm        | 1316.00251 | 0,25 – 0,2 | 0,0098 – 0,0079 |
| Ø 0,3 mm         | 1316.00301 | 0,3 – 0,25 | 0,0118 – 0,0098 |
| Ø 0,35 mm        | 1316.00351 | 0,35 – 0,3 | 0,0138 – 0,0118 |
| Ø 0,4 mm         | 1316.00401 | 0,4 – 0,35 | 0,0157 – 0,0138 |
| Ø 0,45 mm        | 1316.00451 | 0,45 – 0,4 | 0,0177 – 0,0157 |
| Ø 0,5 mm         | 1316.00501 | 0,5 – 0,45 | 0,0197 – 0,0177 |
| Ø 0,55 mm        | 1316.00551 | 0,55 – 0,5 | 0,0217 – 0,0197 |
| Ø 0,6 mm         | 1316.00601 | 0,6 – 0,55 | 0,0237 – 0,0217 |
| Ø 0,65 mm        | 1316.00651 | 0,65 – 0,6 | 0,0256 – 0,0237 |
| Ø 0,7 mm         | 1316.00701 | 0,7 – 0,65 | 0,0276 – 0,0256 |
| Ø 0,75 mm        | 1316.00751 | 0,75 – 0,7 | 0,0295 – 0,0275 |
| Ø 0,8 mm         | 1316.00801 | 0,8 – 0,75 | 0,0315 – 0,0295 |
| Ø 0,85 mm        | 1316.00851 | 0,85 – 0,8 | 0,0335 – 0,0315 |
| Ø 0,9 mm         | 1316.00901 | 0,9 – 0,85 | 0,0354 – 0,0335 |
| Ø 0,95 mm        | 1316.00951 | 0,95 – 0,9 | 0,0374 – 0,0354 |
| Ø 1,0 mm         | 1316.01001 | 1,0 – 0,95 | 0,0394 – 0,0374 |

For further technical information, please refer to page 384

| Type     | Part no.   | Clamping range h9 |                |
|----------|------------|-------------------|----------------|
|          |            | [mm]              | [decimal inch] |
| SR 6     |            |                   |                |
| Ø 1.0 mm | 1606.01000 | 1                 | 0,0394         |
| Ø 1.5 mm | 1606.01500 | 1,5               | 0,0591         |
| Ø 2.0 mm | 1606.02000 | 2                 | 0,0787         |
| Ø 3.0 mm | 1606.03000 | 3                 | 0,1181         |
| Ø 1/8"   | 1606.03180 | 1/8"              | 0,1250         |

## Expert advice

Microbore collets have a runout of  $\leq 6 \mu\text{m}$ . They have been developed by REGO-FIX especially for smallest tool shank diameters.

For tool shanks with nominal diameter h7 tolerance only.

## Expert advice

Various ER collets are available on request with an anti-corrosion coating for improved collet lifetime.



ER 8-MB

# ER standard collets and ultraprecision collets ER-UP

| ER std.    | ER-UP      |
|------------|------------|
| DIN 6499-B | DIN 6499-B |
| ISO 15488  | ISO 15488  |

|               | Part no.    |            | Clamping range |                |          |                 |
|---------------|-------------|------------|----------------|----------------|----------|-----------------|
| Type          | ER standard | ER-UP      | [mm]           | [decimal inch] | Ø [inch] | Included in set |
| ER 8 [mm]     |             |            |                |                |          |                 |
| SET ER 8      | 1108.00000  | 1108.00001 | 0,5–5,0        | 0,0197–0,1969  | –        | –               |
| Ø 1,0 mm      | 1108.01000  | 1108.01001 | 1,0–0,5        | 0,0394–0,0197  | 1/32"    | •               |
| Ø 1,25 mm     | 1108.01250  | –          | 1,25–0,75      | 0,0492–0,0295  | –        | –               |
| Ø 1,5 mm      | 1108.01500  | 1108.01501 | 1,5–1,0        | 0,0591–0,0394  | –        | •               |
| Ø 1,75 mm     | 1108.01750  | –          | 1,75–1,25      | 0,0688–0,0492  | –        | –               |
| Ø 2,0 mm      | 1108.02000  | 1108.02001 | 2,0–1,5        | 0,0787–0,0591  | 1/16"*   | •               |
| Ø 2,25 mm     | 1108.02250  | –          | 2,25–1,75      | 0,0885–0,0688  | –        | –               |
| Ø 2,5 mm      | 1108.02500  | 1108.02501 | 2,5–2,0        | 0,0984–0,0787  | 3/32"    | •               |
| Ø 3,0 mm      | 1108.03000  | 1108.03001 | 3,0–2,5        | 0,1181–0,0984  | –        | •               |
| Ø 3,5 mm      | 1108.03500  | 1108.03501 | 3,5–3,0        | 0,1378–0,1181  | 1/8"*    | •               |
| Ø 4,0 mm      | 1108.04000  | 1108.04001 | 4,0–3,5        | 0,1575–0,1378  | 5/32"    | •               |
| Ø 4,5 mm      | 1108.04500  | 1108.04501 | 4,5–4,0        | 0,1772–0,1575  | –        | •               |
| Ø 5,0 mm      | 1108.05000  | 1108.05001 | 5,0–4,5        | 0,1969–0,1772  | 3/16"*   | •               |
| ER 8 [inch]   |             |            |                |                |          |                 |
| INCH SET ER 8 | 1108.00002  | 1108.00003 | 1,09–4,76      | 0,0429–0,1875  | –        | –               |
| Ø 1/16"       | 1108.01592  | 1108.01593 | 1,59–1,09      | 0,0625–0,0429  | –        | •               |
| Ø 1/8"        | 1108.03182  | 1108.03183 | 3,18–2,68      | 0,125–0,1055   | –        | •               |
| Ø 3/16"       | 1108.04762  | 1108.04763 | 4,76–4,25      | 0,1875–0,1675  | –        | •               |
| ER 11 [mm]    |             |            |                |                |          |                 |
| SET ER 11     | 1111.00000  | 1111.00001 | 0,5–7,0        | 0,0197–0,2756  | –        | –               |
| Ø 1,0 mm      | 1111.01000  | 1111.01001 | 1,0–0,5        | 0,0394–0,0197  | 1/32"    | •               |
| Ø 1,25 mm     | 1111.01250  | –          | 1,25–0,75      | 0,0492–0,0295  | –        | –               |
| Ø 1,5 mm      | 1111.01500  | 1111.01501 | 1,5–1,0        | 0,0591–0,0394  | –        | •               |
| Ø 1,75 mm     | 1111.01750  | –          | 1,75–1,25      | 0,0688–0,0492  | –        | –               |
| Ø 2,0 mm      | 1111.02000  | 1111.02001 | 2,0–1,5        | 0,0787–0,0591  | 1/16"*   | •               |
| Ø 2,25 mm     | 1111.02250  | –          | 2,25–1,75      | 0,0885–0,0688  | –        | –               |
| Ø 2,5 mm      | 1111.02500  | 1111.02501 | 2,5–2,0        | 0,0984–0,0787  | 3/32"*   | •               |
| Ø 3,0 mm      | 1111.03000  | 1111.03001 | 3,0–2,5        | 0,1181–0,0984  | –        | •               |
| Ø 3,5 mm      | 1111.03500  | 1111.03501 | 3,5–3,0        | 0,1378–0,1181  | 1/8"*    | •               |
| Ø 4,0 mm      | 1111.04000  | 1111.04001 | 4,0–3,5        | 0,1575–0,1378  | 5/32"*   | •               |
| Ø 4,5 mm      | 1111.04500  | 1111.04501 | 4,5–4,0        | 0,1772–0,1575  | –        | •               |
| Ø 5,0 mm      | 1111.05000  | 1111.05001 | 5,0–4,5        | 0,1969–0,1772  | 3/16"*   | •               |
| Ø 5,5 mm      | 1111.05500  | 1111.05501 | 5,5–5,0        | 0,2165–0,1969  | –        | •               |
| Ø 6,0 mm      | 1111.06000  | 1111.06001 | 6,0–5,5        | 0,2362–0,2165  | 7/32"*   | •               |
| Ø 6,0 mm – ND | 1111.06005  | –          | h11            | 0,2362         | –        | –               |
| Ø 6,5 mm      | 1111.06500  | 1111.06501 | 6,5–6,0        | 0,2559–0,2362  | 1/4"*    | •               |
| Ø 7,0 mm      | 1111.07000  | 1111.07001 | 7,0–6,5        | 0,2756–0,2559  | –        | •               |

Included in the ER sets are all marked collets within that size and the matching collet tray ZWT  
For further technical information, please refer to page 379

\*Approx. inch sizing

# ER standard collets and ultraprecision collets ER-UP

| ER std.    | ER-UP      |
|------------|------------|
| DIN 6499-B | DIN 6499-B |
| ISO 15488  | ISO 15488  |

| Type           | Part no.    |            | Clamping range |                | Ø [inch] | Included in set |
|----------------|-------------|------------|----------------|----------------|----------|-----------------|
|                | ER standard | ER-UP      | [mm]           | [decimal inch] |          |                 |
| ER 11 [inch]   |             |            |                |                |          |                 |
| INCH SET ER 11 | 1111.00002  | 1111.00003 | 1,09–6,35      | 0,0429–0,25    | –        | –               |
| Ø 1/16"        | 1111.01592  | 1111.01593 | 1,59–1,09      | 0,0625–0,0429  | 1/16"    | •               |
| Ø 3/32"        | 1111.02382  | 1111.02383 | 2,38–1,87      | 0,0938–0,0738  | 3/32"    | •               |
| Ø 1/8"         | 1111.03182  | 1111.03183 | 3,18–2,67      | 0,125–0,105    | 1/8"     | •               |
| Ø 5/32"        | 1111.03972  | 1111.03973 | 3,97–3,46      | 0,1563–0,1363  | 5/32"    | •               |
| Ø 3/16"        | 1111.04762  | 1111.04763 | 4,76–4,25      | 0,1875–0,1675  | 3/16"    | •               |
| Ø 7/32"        | 1111.05562  | 1111.05563 | 5,56–5,04      | 0,2188–0,1988  | 7/32"    | •               |
| Ø 1/4"         | 1111.06352  | 1111.06353 | 6,35–5,84      | 0,25–0,23      | 1/4"     | •               |

|                   |            |            |            |                 |         |   |
|-------------------|------------|------------|------------|-----------------|---------|---|
| <b>ER 16 [mm]</b> |            |            |            |                 |         |   |
| SET ER 16         | 1116.00000 | 1116.00001 | 0,5 – 10,0 | 0,0197 – 0,3937 | –       | – |
| Ø 1,0 mm          | 1116.01000 | 1116.01001 | 1,0 – 0,5  | 0,0394 – 0,0197 | 1/32"   | • |
| Ø 1,5 mm          | 1116.01500 | 1116.01501 | 1,5 – 1,0  | 0,0591 – 0,0394 | –       | – |
| Ø 2,0 mm          | 1116.02000 | 1116.02001 | 2,0 – 1,0  | 0,0787 – 0,0394 | 1/16"*  | • |
| Ø 2,5 mm          | 1116.02500 | 1116.02501 | 2,5 – 1,5  | 0,0984 – 0,0591 | 3/32"*  | – |
| Ø 3,0 mm          | 1116.03000 | 1116.03001 | 3,0 – 2,0  | 0,1181 – 0,0787 | –       | • |
| Ø 3,5 mm          | 1116.03500 | 1116.03501 | 3,5 – 2,5  | 0,1378 – 0,0984 | 1/8"*   | – |
| Ø 4,0 mm          | 1116.04000 | 1116.04001 | 4,0 – 3,0  | 0,1575 – 0,1181 | 5/32"*  | • |
| Ø 4,5 mm          | 1116.04500 | 1116.04501 | 4,5 – 3,5  | 0,1772 – 0,1378 | –       | – |
| Ø 5,0 mm          | 1116.05000 | 1116.05001 | 5,0 – 4,0  | 0,1969 – 0,1575 | 3/16"*  | • |
| Ø 5,5 mm          | 1116.05500 | 1116.05501 | 5,5 – 4,5  | 0,2165 – 0,1772 | –       | – |
| Ø 6,0 mm          | 1116.06000 | 1116.06001 | 6,0 – 5,0  | 0,2362 – 0,1969 | 7/32"*  | • |
| Ø 6,5 mm          | 1116.06500 | 1116.06501 | 6,5 – 5,5  | 0,2559 – 0,2165 | 1/4"*   | – |
| Ø 7,0 mm          | 1116.07000 | 1116.07001 | 7,0 – 6,0  | 0,2756 – 0,2362 | –       | • |
| Ø 7,5 mm          | 1116.07500 | 1116.07501 | 7,5 – 6,5  | 0,2953 – 0,2559 | 9/32"*  | – |
| Ø 8,0 mm          | 1116.08000 | 1116.08001 | 8,0 – 7,0  | 0,315 – 0,2756  | 5/16"*  | • |
| Ø 8,5 mm          | 1116.08500 | 1116.08501 | 8,5 – 7,5  | 0,3346 – 0,2953 | –       | – |
| Ø 9,0 mm          | 1116.09000 | 1116.09001 | 9,0 – 8,0  | 0,3543 – 0,315  | 11/32"* | • |
| Ø 9,5 mm          | 1116.09500 | 1116.09501 | 9,5 – 8,5  | 0,374 – 0,3346  | –       | – |
| Ø 10,0 mm         | 1116.10000 | 1116.10001 | 10,0 – 9,0 | 0,3937 – 0,3543 | 3/8"*   | • |

|                     |            |            |              |                 |       |   |
|---------------------|------------|------------|--------------|-----------------|-------|---|
| <b>ER 16 [inch]</b> |            |            |              |                 |       |   |
| INCH SET ER 16      | 1116.00002 | 1116.00003 | 1,09 – 10,32 | 0,0429 – 0,4063 | –     | – |
| Ø 1/16"             | 1116.01592 | 1116.01593 | 1,59 – 1,09  | 0,0625 – 0,0429 | 1/16" | • |
| Ø 3/32"             | 1116.02382 | 1116.02383 | 2,38 – 1,87  | 0,0938 – 0,0738 | 3/32" | • |
| Ø 1/8"              | 1116.03182 | 1116.03183 | 3,18 – 2,16  | 0,125 – 0,085   | 1/8"  | • |
| Ø 5/32"             | 1116.03972 | 1116.03973 | 3,97 – 2,95  | 0,1563 – 0,1163 | 5/32" | • |
| Ø 3/16"             | 1116.04762 | 1116.04763 | 4,76 – 3,75  | 0,1875 – 0,1475 | 3/16" | • |
| Ø 7/32"             | 1116.05562 | 1116.05563 | 5,56 – 4,54  | 0,2188 – 0,1788 | 7/32" | • |

Included in the ER sets are all marked collets within that size and the matching collet tray ZWT

\*Approx. inch sizing

# ER standard collets and ultraprecision collets ER-UP

| ER std.    | ER-UP      |
|------------|------------|
| DIN 6499-B | DIN 6499-B |
| ISO 15488  | ISO 15488  |

| Type     | Part no.    |            | Clamping range |                 | Ø [inch] | Included in set |
|----------|-------------|------------|----------------|-----------------|----------|-----------------|
|          | ER standard | ER-UP      | [mm]           | [decimal inch]  |          |                 |
| Ø 1/4"   | 1116.06352  | 1116.06353 | 6,35 – 5,33    | 0,25 – 0,21     | 1/4"     | •               |
| Ø 9/32"  | 1116.07142  | 1116.07143 | 7,15 – 6,13    | 0,2813 – 0,2413 | 9/32"    | •               |
| Ø 5/16"  | 1116.07942  | 1116.07943 | 7,94 – 6,92    | 0,3125 – 0,2725 | 5/16"    | •               |
| Ø 11/32" | 1116.08732  | 1116.08733 | 8,73 – 7,72    | 0,3438 – 0,3038 | 11/32"   | •               |
| Ø 3/8"   | 1116.09532  | 1116.09533 | 9,53 – 8,51    | 0,375 – 0,335   | 3/8"     | •               |
| Ø 13/32" | 1116.10322  | 1116.10323 | 10,32 – 9,3    | 0,4063 – 0,3663 | 13/32"   | •               |

| ER 20 [mm] |            |            |             |                 |        |   |
|------------|------------|------------|-------------|-----------------|--------|---|
| SET ER 20  | 1120.00000 | 1120.00001 | 1,0 – 13,0  | 0,0394 – 0,5118 | –      | – |
| Ø 1,0 mm   | 1120.01000 | 1120.01001 | 1,0 – 0,5   | 0,0394 – 0,0197 | 1/32"  | – |
| Ø 1,5 mm   | 1120.01500 | 1120.01501 | 1,5 – 1,0   | 0,0591 – 0,0394 | –      | – |
| Ø 2,0 mm   | 1120.02000 | 1120.02001 | 2,0 – 1,0   | 0,0787 – 0,0394 | 1/16"  | • |
| Ø 2,5 mm   | 1120.02500 | 1120.02501 | 2,5 – 1,5   | 0,0984 – 0,0591 | 3/32"  | – |
| Ø 3,0 mm   | 1120.03000 | 1120.03001 | 3,0 – 2,0   | 0,1181 – 0,0787 | –      | • |
| Ø 3,5 mm   | 1120.03500 | 1120.03501 | 3,5 – 2,5   | 0,1378 – 0,0984 | 1/8"   | – |
| Ø 4,0 mm   | 1120.04000 | 1120.04001 | 4,0 – 3,0   | 0,1575 – 0,1181 | 5/32"  | • |
| Ø 4,5 mm   | 1120.04500 | 1120.04501 | 4,5 – 3,5   | 0,1772 – 0,1378 | –      | – |
| Ø 5,0 mm   | 1120.05000 | 1120.05001 | 5,0 – 4,0   | 0,1969 – 0,1575 | 3/16"  | • |
| Ø 5,5 mm   | 1120.05500 | 1120.05501 | 5,5 – 4,5   | 0,2165 – 0,1772 | –      | – |
| Ø 6,0 mm   | 1120.06000 | 1120.06001 | 6,0 – 5,0   | 0,2362 – 0,1969 | 7/32"  | • |
| Ø 6,5 mm   | 1120.06500 | 1120.06501 | 6,5 – 5,5   | 0,2559 – 0,2165 | 1/4"   | – |
| Ø 7,0 mm   | 1120.07000 | 1120.07001 | 7,0 – 6,0   | 0,2756 – 0,2362 | –      | • |
| Ø 7,5 mm   | 1120.07500 | 1120.07501 | 7,5 – 6,5   | 0,2953 – 0,2559 | 9/32"  | – |
| Ø 8,0 mm   | 1120.08000 | 1120.08001 | 8,0 – 7,0   | 0,315 – 0,2756  | 5/16"  | • |
| Ø 8,5 mm   | 1120.08500 | 1120.08501 | 8,5 – 7,5   | 0,3346 – 0,2953 | –      | – |
| Ø 9,0 mm   | 1120.09000 | 1120.09001 | 9,0 – 8,0   | 0,3543 – 0,315  | 11/32" | • |
| Ø 9,5 mm   | 1120.09500 | 1120.09501 | 9,5 – 8,5   | 0,374 – 0,3346  | –      | – |
| Ø 10,0 mm  | 1120.10000 | 1120.10001 | 10,0 – 9,0  | 0,3937 – 0,3543 | 3/8"   | • |
| Ø 10,5 mm  | 1120.10500 | 1120.10501 | 10,5 – 9,5  | 0,4134 – 0,374  | 13/32" | – |
| Ø 11,0 mm  | 1120.11000 | 1120.11001 | 11,0 – 10,0 | 0,4331 – 0,3937 | –      | • |
| Ø 11,5 mm  | 1120.11500 | 1120.11501 | 11,5 – 10,5 | 0,4528 – 0,4134 | 7/16"  | – |
| Ø 12,0 mm  | 1120.12000 | 1120.12001 | 12,0 – 11,0 | 0,4724 – 0,433  | 15/32" | • |
| Ø 12,5 mm  | 1120.12500 | 1120.12501 | 12,5 – 11,5 | 0,4921 – 0,4528 | –      | – |
| Ø 13,0 mm  | 1120.13000 | 1120.13001 | 13,0 – 12,0 | 0,5118 – 0,4724 | 1/2"   | • |

Included in the ER sets are all marked collets within that size and the matching collet tray ZWT  
For further technical information, please refer to page 379

\*Approx. inch sizing

# ER standard collets and ultraprecision collets ER-UP

| ER std.    | ER-UP      |
|------------|------------|
| DIN 6499-B | DIN 6499-B |
| ISO 15488  | ISO 15488  |

|                | Part no.    |            | Clamping range |                 |          |                 |
|----------------|-------------|------------|----------------|-----------------|----------|-----------------|
| Type           | ER standard | ER-UP      | [mm]           | [decimal inch]  | Ø [inch] | Included in set |
| ER 20 [inch]   |             |            |                |                 |          |                 |
| INCH SET ER 20 | 1120.00002  | 1120.00003 | 2,16 – 12,7    | 0,085 – 0,5     | –        | –               |
| Ø 1/8"         | 1120.03182  | 1120.03183 | 3,18 – 2,18    | 0,125 – 0,085   | 1/8"     | •               |
| Ø 3/16"        | 1120.04762  | 1120.04763 | 4,76 – 3,76    | 0,1875 – 0,1475 | 3/16"    | •               |
| Ø 1/4"         | 1120.06352  | 1120.06353 | 6,35 – 5,35    | 0,25 – 0,21     | 1/4"     | •               |
| Ø 5/16"        | 1120.07942  | 1120.07943 | 7,94 – 6,94    | 0,3125 – 0,2725 | 5/16"    | •               |
| Ø 3/8"         | 1120.09532  | 1120.09533 | 9,53 – 8,53    | 0,375 – 0,335   | 3/8"     | •               |
| Ø 7/16"        | 1120.11112  | 1120.11113 | 11,11 – 10,11  | 0,4375 – 0,3975 | 7/16"    | •               |
| Ø 1/2"         | 1120.12702  | 1120.12703 | 12,7 – 11,7    | 0,5 – 0,46      | 1/2"     | •               |
| ER 25 [mm]     |             |            |                |                 |          |                 |
| SET ER 25      | 1125.00000  | 1125.00001 | 2,0 – 16,0     | 0,0787 – 0,6299 | –        | –               |
| Ø 1,0 mm       | 1125.01000  | 1125.01001 | 1,0 – 0,5      | 0,0394 – 0,0197 | 1/32"    | –               |
| Ø 1,5 mm       | 1125.01500  | 1125.01501 | 1,5 – 1,0      | 0,0591 – 0,0394 | –        | –               |
| Ø 2,0 mm       | 1125.02000  | 1125.02001 | 2,0 – 1,0      | 0,0787 – 0,0394 | 1/16"    | •               |
| Ø 2,5 mm       | 1125.02500  | 1125.02501 | 2,5 – 1,5      | 0,0984 – 0,0591 | 3/32"    | –               |
| Ø 3,0 mm       | 1125.03000  | 1125.03001 | 3,0 – 2,0      | 0,1181 – 0,0787 | –        | •               |
| Ø 3,5 mm       | 1125.03500  | 1125.03501 | 3,5 – 2,5      | 0,1378 – 0,0984 | 1/8"*    | –               |
| Ø 4,0 mm       | 1125.04000  | 1125.04001 | 4,0 – 3,0      | 0,1575 – 0,1181 | 5/32"    | •               |
| Ø 4,5 mm       | 1125.04500  | 1125.04501 | 4,5 – 3,5      | 0,1772 – 0,1378 | –        | –               |
| Ø 5,0 mm       | 1125.05000  | 1125.05001 | 5,0 – 4,0      | 0,1969 – 0,1575 | 3/16"*   | •               |
| Ø 5,5 mm       | 1125.05500  | 1125.05501 | 5,5 – 4,5      | 0,2165 – 0,1772 | –        | –               |
| Ø 6,0 mm       | 1125.06000  | 1125.06001 | 6,0 – 5,0      | 0,2362 – 0,1969 | 7/32"    | •               |
| Ø 6,5 mm       | 1125.06500  | 1125.06501 | 6,5 – 5,5      | 0,2559 – 0,2165 | 1/4"*    | –               |
| Ø 7,0 mm       | 1125.07000  | 1125.07001 | 7,0 – 6,0      | 0,2756 – 0,2362 | –        | •               |
| Ø 7,5 mm       | 1125.07500  | 1125.07501 | 7,5 – 6,5      | 0,2953 – 0,2559 | 9/32"    | –               |
| Ø 8,0 mm       | 1125.08000  | 1125.08001 | 8,0 – 7,0      | 0,315 – 0,2756  | 5/16"*   | •               |
| Ø 8,5 mm       | 1125.08500  | 1125.08501 | 8,5 – 7,5      | 0,3346 – 0,2953 | –        | –               |
| Ø 9,0 mm       | 1125.09000  | 1125.09001 | 9,0 – 8,0      | 0,3543 – 0,315  | 11/32"   | •               |
| Ø 9,5 mm       | 1125.09500  | 1125.09501 | 9,5 – 8,5      | 0,374 – 0,3346  | –        | –               |
| Ø 10,0 mm      | 1125.10000  | 1125.10001 | 10,0 – 9,0     | 0,3937 – 0,3543 | 3/8"*    | •               |
| Ø 10,5 mm      | 1125.10500  | 1125.10501 | 10,5 – 9,5     | 0,4134 – 0,374  | 13/32"   | –               |
| Ø 11,0 mm      | 1125.11000  | 1125.11001 | 11,0 – 10,0    | 0,4331 – 0,3937 | –        | •               |
| Ø 11,5 mm      | 1125.11500  | 1125.11501 | 11,5 – 10,5    | 0,4528 – 0,4134 | 7/16"*   | –               |
| Ø 12,0 mm      | 1125.12000  | 1125.12001 | 12,0 – 11,0    | 0,4724 – 0,4331 | 15/32"   | •               |
| Ø 12,5 mm      | 1125.12500  | 1125.12501 | 12,5 – 11,5    | 0,4921 – 0,4528 | –        | –               |
| Ø 13,0 mm      | 1125.13000  | 1125.13001 | 13,0 – 12,0    | 0,5118 – 0,4724 | 1/2"*    | •               |
| Ø 13,5 mm      | 1125.13500  | 1125.13501 | 13,5 – 12,5    | 0,5315 – 0,4921 | 17/32"   | –               |
| Ø 14,0 mm      | 1125.14000  | 1125.14001 | 14,0 – 13,0    | 0,5512 – 0,5118 | –        | •               |
| Ø 14,5 mm      | 1125.14500  | 1125.14501 | 14,5 – 13,5    | 0,5709 – 0,5315 | 9/16"*   | –               |
| Ø 15,0 mm      | 1125.15000  | 1125.15001 | 15,0 – 14,0    | 0,5906 – 0,5512 | –        | •               |
| Ø 15,5 mm      | 1125.15500  | 1125.15501 | 15,5 – 14,5    | 0,6102 – 0,5709 | 19/32"   | –               |
| Ø 16,0 mm      | 1125.16000  | 1125.16001 | 16,0 – 15,0    | 0,6299 – 0,5905 | 5/8"*    | •               |
| Ø 17,0 mm      | 1125.17000  | 1125.17001 | 17,0 – 16,0    | 0,6693 – 0,6299 | 21/32"   | –               |

Included in the ER sets are all marked collets within that size and the matching collet tray ZWT

\*Approx. inch sizing

# ER standard collets and ultraprecision collets ER-UP

| ER std.    | ER-UP      |
|------------|------------|
| DIN 6499-B | DIN 6499-B |
| ISO 15488  | ISO 15488  |

|                | Part no.    |            | Clamping range |                  |          |                 |
|----------------|-------------|------------|----------------|------------------|----------|-----------------|
| Type           | ER standard | ER-UP      | [mm]           | [decimal inch]   | Ø [inch] | Included in set |
| ER 25 [inch]   |             |            |                |                  |          |                 |
| INCH SET ER 25 | 1125.00002  | 1125.00003 | 2,16 – 15,88   | 0,085 – 0,625    | –        | –               |
| Ø 1/8"         | 1125.03182  | 1125.03183 | 3,18 – 2,16    | 0,125 – 0,085    | 1/8"     | •               |
| Ø 3/16"        | 1125.04762  | 1125.04763 | 4,76 – 3,75    | 0,1875 – 0,1475  | 3/16"    | •               |
| Ø 1/4"         | 1125.06352  | 1125.06353 | 6,35 – 5,33    | 0,25 – 0,21      | 1/4"     | •               |
| Ø 5/16"        | 1125.07942  | 1125.07943 | 7,94 – 6,92    | 0,3125 – 0,2725  | 5/16"    | •               |
| Ø 3/8"         | 1125.09532  | 1125.09533 | 9,53 – 8,51    | 0,375 – 0,335    | 3/8"     | •               |
| Ø 7/16"        | 1125.11112  | 1125.11113 | 11,11 – 10,11  | 0,4375 – 0,3975  | 7/16"    | •               |
| Ø 1/2"         | 1125.12702  | 1125.12703 | 12,70 – 11,68  | 0,5 – 0,46       | 1/2"     | •               |
| Ø 9/16"        | 1125.14292  | 1125.14293 | 14,29 – 13,27  | 0,5625 – 0,5225  | 9/16"    | •               |
| Ø 5/8"         | 1125.15882  | 1125.15883 | 15,88 – 14,78  | 0,625 – 0,582    | 5/8"     | •               |
| ER 32 [mm]     |             |            |                |                  |          |                 |
| SET ER 32      | 1132.00000  | 1132.00001 | 2,0 – 20,0     | 0,0787 – 0,7874  | –        | –               |
| Ø 2,0 mm       | 1132.02000  | 1132.02001 | 2,0 – 1,0      | 0,0787 – 0,0394  | 1/16"    | –               |
| Ø 2,5 mm       | 1132.02500  | 1132.02501 | 2,5 – 1,5      | 0,0984 – 0,0591  | 3/32"    | –               |
| Ø 3,0 mm       | 1132.03000  | 1132.03001 | 3,0 – 2,0      | 0,1181 – 0,0787  | –        | •               |
| Ø 3,5 mm       | 1132.03500  | 1132.03501 | 3,5 – 2,5      | 0,1378 – 0,0984  | 1/8"*    | –               |
| Ø 4,0 mm       | 1132.04000  | 1132.04001 | 4,0 – 3,0      | 0,1575 – 0,1181  | 5/32"    | •               |
| Ø 4,5 mm       | 1132.04500  | 1132.04501 | 4,5 – 3,5      | 0,1772 – 0,1378  | –        | –               |
| Ø 5,0 mm       | 1132.05000  | 1132.05001 | 5,0 – 4,0      | 0,1969 – 0,1575  | 3/16"*   | •               |
| Ø 5,5 mm       | 1132.05500  | 1132.05501 | 5,5 – 4,5      | 0,2165 – 0,1772  | –        | –               |
| Ø 6,0 mm       | 1132.06000  | 1132.06001 | 6,0 – 5,0      | 0,2362 – 0,1969  | 7/32"    | •               |
| Ø 6,5 mm       | 1132.06500  | 1132.06501 | 6,5 – 5,5      | 0,2559 – 0,2165  | 1/4"*    | –               |
| Ø 7,0 mm       | 1132.07000  | 1132.07001 | 7,0 – 6,0      | 0,2756 – 0,2362  | –        | •               |
| Ø 7,5 mm       | 1132.07500  | 1132.07501 | 7,5 – 6,5      | 0,2953 – 0,2559  | 9/32"    | –               |
| Ø 8,0 mm       | 1132.08000  | 1132.08001 | 8,0 – 7,0      | 0,315 – 0,2756   | 5/16"*   | •               |
| Ø 8,5 mm       | 1132.08500  | 1132.08501 | 8,5 – 7,5      | 0,3346 – 0,2953  | –        | –               |
| Ø 9,0 mm       | 1132.09000  | 1132.09001 | 9,0 – 8,0      | 0,3543 – 0,315   | 11/32"   | •               |
| Ø 9,5 mm       | 1132.09500  | 1132.09501 | 9,5 – 8,5      | 0,374 – 0,3346   | –        | –               |
| Ø 10,0 mm      | 1132.10000  | 1132.10001 | 10,0 – 9,0     | 0,3937 – 0,3543  | 3/8"*    | •               |
| Ø 10,5 mm      | 1132.10500  | 1132.10501 | 10,5 – 9,5     | 0,4134 – 0,374   | 13/32"   | –               |
| Ø 11,0 mm      | 1132.11000  | 1132.11001 | 11,0 – 10,0    | 0,4331 – 0,3937  | –        | •               |
| Ø 11,5 mm      | 1132.11500  | 1132.11501 | 11,5 – 10,5    | 0,4528 – 0,4134  | 7/16"*   | –               |
| Ø 12,0 mm      | 1132.12000  | 1132.12001 | 12,0 – 11,0    | 0,4724 – 0,4331  | 15/32"   | •               |
| Ø 12,5 mm      | 1132.12500  | 1132.12501 | 12,5 – 11,5    | 0,4921 – 0,4528  | –        | –               |
| Ø 13,0 mm      | 1132.13000  | 1132.13001 | 13,0 – 12,0    | 0,5118 – 0,4724  | 1/2"*    | •               |
| Ø 13,5 mm      | 1132.13500  | 1132.13501 | 13,5 – 12,5    | 0,5315 – 0,4921  | 17/32"   | –               |
| Ø 14,0 mm      | 1132.14000  | 1132.14001 | 14,0 – 13,0    | 0,5512 – 0,5118  | –        | •               |
| Ø 14,5 mm      | 1132.14500  | 1132.14501 | 14,5 – 13,5    | 0,5709 – 0,5315  | 9/16"*   | –               |
| Ø 15,0 mm      | 1132.15000  | 1132.15001 | 15,0 – 14,0    | 0,5906 – 0,5512  | –        | •               |
| Ø 15,5 mm      | 1132.15500  | 1132.15501 | 15,5 – 14,5    | 0,6102 – 0,5709  | 19/32"   | –               |
| Ø 16,0 mm      | 1132.16000  | 1132.16001 | 16,0 – 15,0    | 0,63299 – 0,5906 | 5/8"*    | •               |
| Ø 16,5 mm      | 1132.16500  | 1132.16501 | 16,5 – 15,5    | 0,6496 – 0,6102  | –        | –               |

Included in the ER sets are all marked collets within that size and the matching collet tray ZWT  
For further technical information, please refer to page 379

\*Approx. inch sizing

# ER standard collets and ultraprecision collets ER-UP

| ER std.    | ER-UP      |
|------------|------------|
| DIN 6499-B | DIN 6499-B |
| ISO 15488  | ISO 15488  |

| Type                 | Part no.    |            | Clamping range |                | Ø [inch] | Included in set |
|----------------------|-------------|------------|----------------|----------------|----------|-----------------|
|                      | ER standard | ER-UP      | [mm]           | [decimal inch] |          |                 |
| ER 32 [mm] continued |             |            |                |                |          |                 |
| Ø 17,0 mm            | 1132.17000  | 1132.17001 | 17,0–16,0      | 0,6693–0,6299  | 21/32"   | •               |
| Ø 17,5 mm            | 1132.17500  | 1132.17501 | 17,5–16,5      | 0,689–0,6496   | 11/16"*  | –               |
| Ø 18,0 mm            | 1132.18000  | 1132.18001 | 18,0–17,0      | 0,7087–0,6693  | –        | •               |
| Ø 18,5 mm            | 1132.18500  | 1132.18501 | 18,5–17,5      | 0,7283–0,689   | 23/32"   | –               |
| Ø 19,0 mm            | 1132.19000  | 1132.19001 | 19,0–18,0      | 0,748–0,7078   | –        | •               |
| Ø 19,5 mm            | 1132.19500  | 1132.19501 | 19,5–18,5      | 0,7677–0,7284  | 3/4"*    | –               |
| Ø 20,0 mm            | 1132.20000  | 1132.20001 | 20,0–19,0      | 0,7874–0,748   | 25/32"   | •               |
| Ø 21,0 mm            | 1132.21000  | 1132.21001 | 21,0–20,0      | 0,8268–0,7874  | 13/16"*  | –               |
| Ø 22,0 mm            | 1132.22000  | 1132.22001 | 22,0–21,0      | 0,8661–0,8268  | –        | –               |

|                     |            |            |               |                 |        |   |
|---------------------|------------|------------|---------------|-----------------|--------|---|
| <b>ER 32 [inch]</b> |            |            |               |                 |        |   |
| INCH SET ER 32      | 1132.00002 | 1132.00003 | 2,16 – 20,64  | 0,085 – 0,8125  | –      | – |
| Ø 1/8"              | 1132.03182 | 1132.03183 | 3,18 – 2,16   | 0,125 – 0,085   | 1/8"   | • |
| Ø 3/16"             | 1132.04762 | 1132.04763 | 4,76 – 3,75   | 0,1875 – 0,1475 | 3/16"  | • |
| Ø 1/4"              | 1132.06352 | 1132.06353 | 6,35 – 5,33   | 0,25 – 0,21     | 1/4"   | • |
| Ø 5/16"             | 1132.07942 | 1132.07943 | 7,94 – 6,92   | 0,3125 – 0,2725 | 5/16"  | • |
| Ø 3/8"              | 1132.09532 | 1132.09533 | 9,53 – 8,51   | 0,375 – 0,335   | 3/8"   | • |
| Ø 7/16"             | 1132.11112 | 1132.11113 | 11,11 – 10,1  | 0,4375 – 0,3975 | 7/16"  | • |
| Ø 1/2"              | 1132.12702 | 1132.12703 | 12,7 – 11,68  | 0,5 – 0,46      | 1/2"   | • |
| Ø 9/16"             | 1132.14292 | 1132.14293 | 14,29 – 13,27 | 0,5625 – 0,5225 | 9/16"  | • |
| Ø 5/8"              | 1132.15882 | 1132.15883 | 15,88 – 14,86 | 0,625 – 0,585   | 5/8"   | • |
| Ø 11/16"            | 1132.17462 | 1132.17463 | 17,46 – 16,45 | 0,6875 – 0,6475 | 11/16" | • |
| Ø 3/4"              | 1132.19052 | 1132.19053 | 19,05 – 18,03 | 0,75 – 0,71     | 3/4"   | • |
| Ø 13/16"            | 1132.20642 | 1132.20643 | 20,64 – 19,62 | 0,8125 – 0,7725 | 13/16" | • |

Included in the ER sets are all marked collets within that size and the matching collet tray ZWT

\*Approx. inch sizing



# ER standard collets and ultraprecision collets ER-UP

| ER std.    | ER-UP      |
|------------|------------|
| DIN 6499-B | DIN 6499-B |
| ISO 15488  | ISO 15488  |

|            | Part no.    |            | Clamping range |                |          |                 |
|------------|-------------|------------|----------------|----------------|----------|-----------------|
| Type       | ER standard | ER-UP      | [mm]           | [decimal inch] | Ø [inch] | Included in set |
| ER 40 [mm] |             |            |                |                |          |                 |
| SET ER 40  | 1140.00000  | 1140.00001 | 3,0–26,0       | 0,1181–1,0236  | –        | –               |
| Ø 3,0 mm   | 1140.03000  | 1140.03001 | 3,0–2,0        | 0,1181–0,0787  | 3/32"    | –               |
| Ø 3,5 mm   | 1140.03500  | 1140.03501 | 3,5–2,5        | 0,1378–0,0984  | 1/8"*    | –               |
| Ø 4,0 mm   | 1140.04000  | 1140.04001 | 4,0–3,0        | 0,1575–0,1181  | 5/32"    | •               |
| Ø 4,5 mm   | 1140.04500  | 1140.04501 | 4,5–3,5        | 0,1772–0,1378  | –        | –               |
| Ø 5,0 mm   | 1140.05000  | 1140.05001 | 5,0–4,0        | 0,1969–0,1575  | 3/16"*   | •               |
| Ø 5,5 mm   | 1140.05500  | 1140.05501 | 5,5–4,5        | 0,2165–0,1772  | –        | –               |
| Ø 6,0 mm   | 1140.06000  | 1140.06001 | 6,0–5,0        | 0,2362–0,1969  | 7/32"    | •               |
| Ø 6,5 mm   | 1140.06500  | 1140.06501 | 6,5–5,5        | 0,2559–0,2165  | 1/4"*    | –               |
| Ø 7,0 mm   | 1140.07000  | 1140.07001 | 7,0–6,0        | 0,2756–0,2362  | –        | •               |
| Ø 7,5 mm   | 1140.07500  | 1140.07501 | 7,5–6,5        | 0,2953–0,2559  | 9/32"    | –               |
| Ø 8,0 mm   | 1140.08000  | 1140.08001 | 8,0–7,0        | 0,315–0,2756   | 5/16"*   | •               |
| Ø 8,5 mm   | 1140.08500  | 1140.08501 | 8,5–7,5        | 0,3346–0,2953  | –        | –               |
| Ø 9,0 mm   | 1140.09000  | 1140.09001 | 9,0–8,0        | 0,3543–0,315   | –        | •               |
| Ø 9,5 mm   | 1140.09500  | 1140.09501 | 9,5–8,5        | 0,374–0,3346   | 11/32"   | –               |
| Ø 10,0 mm  | 1140.10000  | 1140.10001 | 10,0–9,0       | 0,3937–0,3543  | 3/8"*    | •               |
| Ø 10,5 mm  | 1140.10500  | 1140.10501 | 10,5–9,5       | 0,4134–0,374   | 13/32"   | –               |
| Ø 11,0 mm  | 1140.11000  | 1140.11001 | 11,0–10,0      | 0,4331–0,3937  | –        | •               |
| Ø 11,5 mm  | 1140.11500  | 1140.11501 | 11,5–10,5      | 0,4528–0,4134  | 7/16"*   | –               |
| Ø 12,0 mm  | 1140.12000  | 1140.12001 | 12,0–11,0      | 0,4724–0,4331  | 15/32"   | •               |
| Ø 12,5 mm  | 1140.12500  | 1140.12501 | 12,5–11,5      | 0,4921–0,4528  | –        | –               |
| Ø 13,0 mm  | 1140.13000  | 1140.13001 | 13,0–12,0      | 0,5118–0,4724  | 1/2"*    | •               |
| Ø 13,5 mm  | 1140.13500  | 1140.13501 | 13,5–12,5      | 0,5315–0,4921  | 17/32"   | –               |
| Ø 14,0 mm  | 1140.14000  | 1140.14001 | 14,0–13,0      | 0,5512–0,5118  | –        | •               |
| Ø 14,5 mm  | 1140.14500  | 1140.14501 | 14,5–13,5      | 0,5709–0,5315  | 9/16"*   | –               |
| Ø 15,0 mm  | 1140.15000  | 1140.15001 | 15,0–14,0      | 0,5906–0,5512  | –        | •               |
| Ø 15,5 mm  | 1140.15500  | 1140.15501 | 15,5–14,5      | 0,6102–0,5709  | 19/32"   | –               |
| Ø 16,0 mm  | 1140.16000  | 1140.16001 | 16,0–15,0      | 0,6299–0,5906  | 5/8"*    | •               |
| Ø 16,5 mm  | 1140.16500  | 1140.16501 | 16,5–15,5      | 0,6496–0,6102  | –        | –               |
| Ø 17,0 mm  | 1140.17000  | 1140.17001 | 17,0–16,0      | 0,6693–0,6299  | 21/32"   | •               |
| Ø 17,5 mm  | 1140.17500  | 1140.17501 | 17,5–16,5      | 0,689–0,6496   | 11/16"*  | –               |
| Ø 18,0 mm  | 1140.18000  | 1140.18001 | 18,0–17,0      | 0,7078–0,6693  | –        | •               |
| Ø 18,5 mm  | 1140.18500  | 1140.18501 | 18,5–17,5      | 0,7283–0,689   | 23/32"   | –               |
| Ø 19,0 mm  | 1140.19000  | 1140.19001 | 19,0–18,0      | 0,748–0,7078   | –        | •               |
| Ø 19,5 mm  | 1140.19500  | 1140.19501 | 19,5–18,5      | 0,7677–0,7283  | 3/4"*    | –               |
| Ø 20,0 mm  | 1140.20000  | 1140.20001 | 20,0–19,0      | 0,7874–0,748   | 25/32"   | •               |
| Ø 20,5 mm  | 1140.20500  | 1140.20501 | 20,5–19,5      | 0,8071–0,7677  | –        | –               |
| Ø 21,0 mm  | 1140.21000  | 1140.21001 | 21,0–20,0      | 0,8268–0,7874  | 13/16"*  | •               |
| Ø 21,5 mm  | 1140.21500  | 1140.21501 | 21,5–20,5      | 0,8465–0,8071  | 27/32"   | –               |
| Ø 22,0 mm  | 1140.22000  | 1140.22001 | 22,0–21,0      | 0,8661–0,8268  | –        | •               |
| Ø 22,5 mm  | 1140.22500  | 1140.22501 | 22,5–21,5      | 0,8858–0,8465  | 7/8"*    | –               |
| Ø 23,0 mm  | 1140.23000  | 1140.23001 | 23,0–22,0      | 0,9055–0,8661  | –        | •               |
| Ø 23,5 mm  | 1140.23500  | 1140.23501 | 23,5–22,5      | 0,9252–0,8858  | 29/32"   | –               |

Included in the ER sets are all marked collets within that size and the matching collet tray ZWT  
For further technical information, please refer to page 379

\*Approx. inch sizing

# ER standard collets and ultraprecision collets ER-UP

| ER std.    | ER-UP      |
|------------|------------|
| DIN 6499-B | DIN 6499-B |
| ISO 15488  | ISO 15488  |

| Type                 | Part no.    |            | Clamping range |                | Ø [inch]  | Included in set |
|----------------------|-------------|------------|----------------|----------------|-----------|-----------------|
|                      | ER standard | ER-UP      | [mm]           | [decimal inch] |           |                 |
| ER 40 [mm] continued |             |            |                |                |           |                 |
| Ø 24,0 mm            | 1140.24000  | 1140.24001 | 24,0–23,0      | 0,9449–0,9055  | 15/16"    | •               |
| Ø 24,5 mm            | 1140.24500  | 1140.24501 | 24,5–23,5      | 0,9646–0,9252  | –         | –               |
| Ø 25,0 mm            | 1140.25000  | 1140.25001 | 25,0–24,0      | 0,9843–0,9449  | 31/32"    | •               |
| Ø 25,5 mm            | 1140.25500  | 1140.25501 | 25,5–24,5      | 1,0039–0,9646  | 1"*       | –               |
| Ø 26,0 mm            | 1140.26000  | 1140.26001 | 26,0–25,0      | 1,0236–0,9843  | –         | •               |
| Ø 27,0 mm            | 1140.27000  | 1140.27001 | 27,0–26,0      | 1,063–1,0236   | 1 – 1/16" | –               |
| Ø 28,0 mm            | 1140.28000  | 1140.28001 | 28,0–27,0      | 1,1024–1,063   | 1 – 3/32" | –               |
| Ø 29,0 mm            | 1140.29000  | 1140.29001 | 29,0–28,0      | 1,1417–1,1024  | 1 – 1/8"  | –               |
| Ø 30,0 mm            | 1140.30000  | 1140.30001 | 30,0–29,0      | 1,1811–1,1417  | 1 – 5/32" | –               |

| <b>ER 40 [inch]</b> |            |            |             |               |        |   |
|---------------------|------------|------------|-------------|---------------|--------|---|
| INCH SET ER 40      | 1140.00002 | 1140.00003 | 2,16–25,4   | 0,085–1,0     | –      | – |
| Ø 1/8"              | 1140.03182 | 1140.03183 | 3,18–2,16   | 0,125–0,085   | 1/8"   | • |
| Ø 3/16"             | 1140.04762 | 1140.04763 | 4,76–3,75   | 0,1875–0,1475 | 3/16"  | • |
| Ø 1/4"              | 1140.06352 | 1140.06353 | 6,35–5,33   | 0,25–0,21     | 1/4"   | • |
| Ø 5/16"             | 1140.07942 | 1140.07943 | 7,94–6,92   | 0,3125–0,2725 | 5/16"  | • |
| Ø 3/8"              | 1140.09532 | 1140.09533 | 9,53–8,51   | 0,375–0,335   | 3/8"   | • |
| Ø 7/16"             | 1140.11112 | 1140.11113 | 11,11–10,1  | 0,4375–0,3975 | 7/16"  | • |
| Ø 1/2"              | 1140.12702 | 1140.12703 | 12,70–11,68 | 0,5–0,46      | 1/2"   | • |
| Ø 9/16"             | 1140.14292 | 1140.14293 | 14,29–13,27 | 0,5625–0,5225 | 9/16"  | • |
| Ø 5/8"              | 1140.15882 | 1140.15883 | 15,88–14,86 | 0,625–0,585   | 5/8"   | • |
| Ø 11/16"            | 1140.17462 | 1140.17463 | 17,46–16,45 | 0,6875–0,6475 | 11/16" | • |
| Ø 3/4"              | 1140.19052 | 1140.19053 | 19,05–18,03 | 0,75–0,71     | 3/4"   | • |
| Ø 13/16"            | 1140.20642 | 1140.20643 | 20,64–19,62 | 0,8125–0,7725 | 13/16" | • |
| Ø 7/8"              | 1140.22232 | 1140.22233 | 22,23–21,21 | 0,875–0,835   | 7/8"   | • |
| Ø 1"                | 1140.25402 | 1140.25403 | 25,40–24,38 | 1,0–0,96      | 1"     | • |

Included in the ER sets are all marked collets within that size and the matching collet tray ZWT

\*Approx. inch sizing

# ER standard collets and ultraprecision collets ER-UP

| ER std.    | ER-UP      |
|------------|------------|
| DIN 6499-B | DIN 6499-B |
| ISO 15488  | ISO 15488  |

| Type       | Part no.    |            | Clamping range |                | Ø [inch]  | Included in set |
|------------|-------------|------------|----------------|----------------|-----------|-----------------|
|            | ER standard | ER-UP      | [mm]           | [decimal inch] |           |                 |
| ER 50 [mm] |             |            |                |                |           |                 |
| SET ER 50  | 1150.00000  | 1150.00001 | 10,0–34,0      | 0,2362–1,3386  | –         | –               |
| Ø 6,0 mm   | 1150.06000  | 1150.06001 | 6,0–4,0        | 0,2362–0,1575  | 3/16"     | –               |
| Ø 8,0 mm   | 1150.08000  | 1150.08001 | 8,0–6,0        | 0,315–0,2362   | 1/4"      | –               |
| Ø 10,0 mm  | 1150.10000  | 1150.10001 | 10,0–8,0       | 0,3937–0,315   | 3/8"      | –               |
| Ø 12,0 mm  | 1150.12000  | 1150.12001 | 12,0–10,0      | 0,4724–0,3937  | 7/16"     | •               |
| Ø 14,0 mm  | 1150.14000  | 1150.14001 | 14,0–12,0      | 0,5512–0,4724  | 1/2"      | •               |
| Ø 16,0 mm  | 1150.16000  | 1150.16001 | 16,0–14,0      | 0,63–0,5512    | 5/8"      | •               |
| Ø 18,0 mm  | 1150.18000  | 1150.18001 | 18,0–16,0      | 0,7087–0,6299  | 11/16"    | •               |
| Ø 20,0 mm  | 1150.20000  | 1150.20001 | 20,0–18,0      | 0,7874–0,7087  | 3/4"      | •               |
| Ø 22,0 mm  | 1150.22000  | 1150.22001 | 22,0–20,0      | 0,8661–0,7874  | 13/16"    | •               |
| Ø 24,0 mm  | 1150.24000  | 1150.24001 | 24,0–22,0      | 0,9449–0,8661  | 7/8"      | •               |
| Ø 25,0 mm  | 1150.25000  | 1150.25001 | 25,0–23,0      | 0,9843–0,9055  | 31/32"    | –               |
| Ø 26,0 mm  | 1150.26000  | 1150.26001 | 26,0–24,0      | 1,0236–0,9449  | 1"        | •               |
| Ø 28,0 mm  | 1150.28000  | 1150.28001 | 28,0–26,0      | 1,1024–1,0236  | 1 – 1/16" | •               |
| Ø 30,0 mm  | 1150.30000  | 1150.30001 | 30,0–28,0      | 1,1811–1,1024  | 1 – 1/8"  | •               |
| Ø 32,0 mm  | 1150.32000  | 1150.32001 | 32,0–30,0      | 1,2598–1,1811  | 1 – 1/4"  | •               |
| Ø 34,0 mm  | 1150.34000  | 1150.34001 | 34,0–32,0      | 1,3386–1,2598  | 1 – 5/16" | •               |
| Ø 36,0 mm  | 1150.36000  | 1150.36001 | 36,0–34,0      | 1,4173–1,3386  | 1 – 3/8"  | –               |

Included in the ER sets are all marked collets within that size and the matching collet tray ZWT  
For further technical information, please refer to page 379

\*Approx. inch sizing



ER standard and ER-UP

# Corrosion-resistant ER-INOX collets

Universally usable for a wide range of machining operations

DIN ISO 15488

## Features and benefits

### **Stainless**

REGO-FIX has introduced a broad range of stainless ER collets. They provide full corrosion protection in aggressive fluids and acidic or alkaline solutions.

### **For challenging environments**

Corrosion can occur in many environments – including machining with fluids or EDM. A coating (plasma nitriding) on standard collets is often not sufficient to ensure long-term protection.

### **ER-INOX**

Complete corrosion resistance thanks to high-quality martensitic stainless steel 1.4122 (X39CrMo17-1). Combine all the benefits of the ER collet with full corrosion protection – made in Switzerland.

### **Availability**

All permanently corrosion-resistant ER-INOX collets are available from stock.



# Corrosion-resistant ER-INOX collets

ER Inox

DIN 6499-B

ISO 15488

| Type            | Part no.   | Clamping range |                | Ø [inch] | Included in set |
|-----------------|------------|----------------|----------------|----------|-----------------|
|                 |            | [mm]           | [decimal inch] |          |                 |
| ER 11-INOX [mm] |            |                |                |          |                 |
| Ø 1.5 mm        | 1111.01504 | 1.5–1.25       | 0.0591–0.0492  | –        | –               |
| Ø 2.0 mm        | 1111.02004 | 2.0–1.75       | 0.0787–0.0689  | 1/16"    | –               |
| Ø 2.5 mm        | 1111.02504 | 2.5–2.25       | 0.0984–0.0886  | 3/32"    | –               |
| Ø 3.0 mm        | 1111.03004 | 3.0–2.75       | 0.1181–0.1082  | –        | –               |
| Ø 1/8"          | 1111.03184 | 3.18–2.93      | 0.125–0.1154   | 1/8"     | –               |
| Ø 4.0 mm        | 1111.04004 | 4.0–3.75       | 0.1575–0.1476  | 5/32"    | –               |
| Ø 6.0 mm        | 1111.06004 | 6.0–5.75       | 0.2362–0.2264  | 7/32"    | –               |
| Ø 6.5 mm        | 1111.06504 | 6.5–6.25       | 0.2559–0.2461  | 1/4"     | –               |
| ER 16-INOX [mm] |            |                |                |          |                 |
| Ø 3.0 mm        | 1116.03004 | 3.0–2.5        | 0.1181         | –        | –               |
| Ø 4.0 mm        | 1116.04004 | 4.0–3.5        | 0.1575         | 5/32"    | –               |
| Ø 6.0 mm        | 1116.06004 | 6.0–5.5        | 0.2362         | 7/32"    | –               |

## Corrosion testing

Corrosion testing determines the resistance of materials to corrosion under certain environmental conditions as temperature, humidity and salt water. This examination helps to identify different corrodents and environmental factors responsible for corrosion problems. In the following test, collet raw material steels have been tested under an intensive 360 hours duration test process.

Test duration: **360 hours**



Standard ER Collet  
Material: Conventional Spring Steel



Competitor Stainless Steel ER Collet  
(Germany). Material: DIN 1.4034



REGO-FIX Stainless Steel ER Collet  
Material: DIN 1.4122

| Type            | Part no.   | Clamping range |                | Ø [inch] | Included in set |
|-----------------|------------|----------------|----------------|----------|-----------------|
|                 |            | [mm]           | [decimal inch] |          |                 |
| ER 11-DM [mm]   |            |                |                |          |                 |
| Ø 3,0 mm        | 1211.03000 | 3,0–2,75       | 0,1181–0,1083  | –        | –               |
| Ø 4,0 mm        | 1211.04000 | 4,0–3,75       | 0,1575–0,1476  | –        | –               |
| Ø 5,0 mm        | 1211.05000 | 5,0–4,75       | 0,1969–0,187   | –        | –               |
| Ø 6,0 mm        | 1211.06000 | 6,0–5,75       | 0,2362–0,2264  | –        | –               |
| Ø 7,0 mm        | 1211.07000 | 7,0–6,75       | 0,2756–0,2657  | –        | –               |
| ER 11-DM [inch] |            |                |                |          |                 |
| Ø 1/8"          | 1211.03182 | 3,18–2,93      | 0,125–0,1154   | 1/8"     | –               |
| Ø 3/16"         | 1211.04762 | 4,76–4,51      | 0,1875–0,1776  | 3/16"    | –               |
| Ø 7/32"         | 1211.05562 | 5,56–5,31      | 0,2188–0,2091  | 7/32"    | –               |
| Ø 1/4"          | 1211.06352 | 6,35–6,1       | 0,25–0,2402    | 1/4"     | –               |
| ER 16-DM [mm]   |            |                |                |          |                 |
| SET ER 16-DM    | 1216.00000 | 3,0–10,0       | 0,1181–0,3937  | –        | –               |
| Ø 3,0 mm        | 1216.03000 | 3,0 h9         | 0,1181 h9      | –        | •               |
| Ø 4,0 mm        | 1216.04000 | 4,0 h9         | 0,1575 h9      | –        | •               |
| Ø 5,0 mm        | 1216.05000 | 5,0–4,5        | 0,1969–0,1772  | –        | •               |
| Ø 6,0 mm        | 1216.06000 | 6,0–5,5        | 0,2362–0,2165  | –        | •               |
| Ø 7,0 mm        | 1216.07000 | 7,0–6,5        | 0,2756–0,2559  | –        | •               |
| Ø 8,0 mm        | 1216.08000 | 8,0–7,5        | 0,315–0,2953   | –        | •               |
| Ø 9,0 mm        | 1216.09000 | 9,0–8,5        | 0,3543–0,3346  | –        | •               |
| Ø 10,0 mm       | 1216.10000 | 10,0–9,5       | 0,3937–0,374   | –        | •               |

For further technical information, please refer to page 379

## Expert advice

Please note that the ER-DM collets are not suitable for use with reCool®.

| Type              | Part no.   | Clamping range |                 | Ø [inch] | Included in set |
|-------------------|------------|----------------|-----------------|----------|-----------------|
|                   |            | [mm]           | [decimal inch]  |          |                 |
| ER 16-DM [inch]   |            |                |                 |          |                 |
| INCH SET ER 16-DM | 1216.00002 | 3,18 – 10,32   | 0,125 – 0,4063  | –        | –               |
| Ø 1/8"            | 1216.03182 | 3,18 h9        | 0,125 h9        | 1/8"     | •               |
| Ø 5/32"           | 1216.03972 | 3,97 h9        | 0,1563 h9       | 5/32"    | –               |
| Ø 3/16"           | 1216.04762 | 4,76 h9        | 0,1875 h9       | 3/16"    | •               |
| Ø 7/32"           | 1216.05562 | 5,56 – 5,06    | 0,2188 – 0,1991 | 7/32"    | –               |
| Ø 1/4"            | 1216.06352 | 6,35 – 5,85    | 0,25 – 0,2303   | 1/4"     | •               |
| Ø 9/32"           | 1216.07142 | 7,14 – 6,64    | 0,2813 – 0,2616 | 9/32"    | –               |
| Ø 5/16"           | 1216.07942 | 7,94 – 7,44    | 0,3125 – 0,2928 | 5/16"    | •               |
| Ø 11/32"          | 1216.08732 | 8,73 – 8,23    | 0,3438 – 0,3241 | 11/32"   | –               |
| Ø 3/8"            | 1216.09532 | 9,53 – 9,02    | 0,375 – 0,3553  | 3/8"     | •               |
| Ø 13/32"          | 1216.10322 | 10,32 – 9,82   | 0,4063 – 0,3866 | 13/32"   | –               |

|                      |            |             |                 |   |   |
|----------------------|------------|-------------|-----------------|---|---|
| <b>ER 20-DM [mm]</b> |            |             |                 |   |   |
| SET ER 20-DM         | 1220.00000 | 3,0 – 13,0  | 0,1181 – 0,5118 | – | – |
| Ø 3,0 mm             | 1220.03000 | 3,0 h9      | 0,1181 h9       | – | • |
| Ø 4,0 mm             | 1220.04000 | 4,0 h9      | 0,1575 h9       | – | • |
| Ø 5,0 mm             | 1220.05000 | 5,0 h9      | 0,1969 h9       | – | • |
| Ø 6,0 mm             | 1220.06000 | 6,0 h9      | 0,2362 h9       | – | • |
| Ø 7,0 mm             | 1220.07000 | 7,0 – 6,5   | 0,2756 – 0,2559 | – | • |
| Ø 8,0 mm             | 1220.08000 | 8,0 – 7,5   | 0,315 – 0,2953  | – | • |
| Ø 9,0 mm             | 1220.09000 | 9,0 – 8,5   | 0,3543 – 0,3346 | – | • |
| Ø 10,0 mm            | 1220.10000 | 10,0 – 9,5  | 0,3937 – 0,374  | – | • |
| Ø 11,0 mm            | 1220.11000 | 11,0 – 10,5 | 0,4331 – 0,4134 | – | • |
| Ø 12,0 mm            | 1220.12000 | 12,0 – 11,5 | 0,4724 – 0,4528 | – | • |
| Ø 13,0 mm            | 1220.13000 | 13,0 – 12,5 | 0,5118 – 0,4921 | – | • |

|                        |            |               |                 |        |   |
|------------------------|------------|---------------|-----------------|--------|---|
| <b>ER 20-DM [inch]</b> |            |               |                 |        |   |
| INCH SET ER 20-DM      | 1220.00002 | 3,18 – 12,7   | 0,125 – 0,5     | –      | – |
| Ø 1/8"                 | 1220.03182 | 3,18 h9       | 0,125 h9        | 1/8"   | • |
| Ø 5/32"                | 1220.03972 | 3,97 h9       | 0,1563 h9       | 5/32"  | – |
| Ø 3/16"                | 1220.04762 | 4,76 h9       | 0,1875 h9       | 3/16"  | • |
| Ø 7/32"                | 1220.05562 | 5,56 h9       | 0,2188 h9       | 7/32"  | – |
| Ø 1/4"                 | 1220.06352 | 6,35 h9       | 0,25 h9         | 1/4"   | • |
| Ø 9/32"                | 1220.07142 | 7,14 – 6,64   | 0,2813 – 0,2616 | 9/32"  | – |
| Ø 5/16"                | 1220.07942 | 7,94 – 7,44   | 0,3125 – 0,2928 | 5/16"  | • |
| Ø 11/32"               | 1220.08732 | 8,73 – 8,23   | 0,3438 – 0,3241 | 11/32" | – |
| Ø 3/8"                 | 1220.09532 | 9,53 – 9,02   | 0,375 – 0,3553  | 3/8"   | • |
| Ø 13/32"               | 1220.10322 | 10,32 – 9,82  | 0,4063 – 0,3866 | 13/32" | – |
| Ø 7/16"                | 1220.11112 | 11,11 – 10,61 | 0,4375 – 0,4178 | 7/16"  | • |
| Ø 15/32"               | 1220.11912 | 11,91 – 11,41 | 0,4687 – 0,4491 | 15/32" | – |
| Ø 1/2"                 | 1220.12702 | 12,7 – 12,2   | 0,5 – 0,4803    | 1/2"   | • |



| Type              | Part no.   | Clamping range |                 | Ø [inch] | Included in set |
|-------------------|------------|----------------|-----------------|----------|-----------------|
|                   |            | [mm]           | [decimal inch]  |          |                 |
| ER 25-DM [mm]     |            |                |                 |          |                 |
| SET ER 25-DM      | 1225.00000 | 6,0 – 16,0     | 0,2362 – 0,6299 | –        | –               |
| Ø 6,0 mm          | 1225.06000 | 6,0 h9         | 0,2362 h9       | –        | •               |
| Ø 7,0 mm          | 1225.07000 | 7,0 h9         | 0,2756 h9       | –        | –               |
| Ø 8,0 mm          | 1225.08000 | 8,0 – 7,5      | 0,315 – 0,2953  | –        | •               |
| Ø 9,0 mm          | 1225.09000 | 9,0 – 8,5      | 0,3543 – 0,3347 | –        | –               |
| Ø 10,0 mm         | 1225.10000 | 10,0 – 9,5     | 0,3937 – 0,374  | –        | •               |
| Ø 11,0 mm         | 1225.11000 | 11,0 – 10,5    | 0,4331 – 0,4134 | –        | –               |
| Ø 12,0 mm         | 1225.12000 | 12,0 – 11,5    | 0,4724 – 0,4528 | –        | •               |
| Ø 13,0 mm         | 1225.13000 | 13,0 – 12,5    | 0,5118 – 0,4921 | –        | –               |
| Ø 14,0 mm         | 1225.14000 | 14,0 – 13,5    | 0,5512 – 0,5315 | –        | •               |
| Ø 15,0 mm         | 1225.15000 | 15,0 – 14,5    | 0,5906 – 0,5709 | –        | –               |
| Ø 16,0 mm         | 1225.16000 | 16,0 – 15,5    | 0,6299 – 0,6102 | –        | •               |
| ER 25-DM [inch]   |            |                |                 |          |                 |
| INCH SET ER 25-DM | 1225.00002 | 6,35 – 15,88   | 0,25 – 0,625    | –        | –               |
| Ø 7/32"           | 1225.05562 | 5,56 h9        | 0,2188 h9       | 7/32"    | –               |
| Ø 1/4"            | 1225.06352 | 6,35 h9        | 0,2500 h9       | 1/4"     | •               |
| Ø 9/32"           | 1225.07142 | 7,14 h9        | 0,2813 h9       | 9/32"    | –               |
| Ø 5/16"           | 1225.07942 | 7,94 – 7,44    | 0,3125 – 0,2928 | 5/16"    | •               |
| Ø 11/32"          | 1225.08732 | 8,73 – 8,23    | 0,3438 – 0,3241 | 11/32"   | –               |
| Ø 3/8"            | 1225.09532 | 9,53 – 9,02    | 0,375 – 0,3553  | 3/8"     | •               |
| Ø 13/32"          | 1225.10322 | 10,32 – 9,82   | 0,4063 – 0,3866 | 13/32"   | –               |
| Ø 7/16"           | 1225.11112 | 11,11 – 10,61  | 0,4375 – 0,4178 | 7/16"    | •               |
| Ø 15/32"          | 1225.11912 | 11,91 – 11,41  | 0,4687 – 0,4491 | 15/32"   | –               |
| Ø 1/2"            | 1225.12702 | 12,7 – 12,2    | 0,5 – 0,4803    | 1/2"     | •               |
| Ø 17/32"          | 1225.13492 | 13,49 – 12,99  | 0,5313 – 0,5116 | 17/32"   | –               |
| Ø 9/16"           | 1225.14292 | 14,29 – 13,79  | 0,5625 – 0,5428 | 9/16"    | •               |
| Ø 19/32"          | 1225.15082 | 15,08 – 14,58  | 0,5934 – 0,5741 | 19/32"   | –               |
| Ø 5/8"            | 1225.15882 | 15,88 – 15,38  | 0,625 – 0,6055  | 5/8"     | •               |
| ER 32-DM [mm]     |            |                |                 |          |                 |
| SET ER 32-DM      | 1232.00000 | 6,0 – 20,0     | 0,2362 – 0,7874 | –        | –               |
| Ø 6,0 mm          | 1232.06000 | 6,0 h9         | 0,2362 h9       | –        | •               |
| Ø 7,0 mm          | 1232.07000 | 7,0 h9         | 0,2756 h9       | –        | –               |
| Ø 8,0 mm          | 1232.08000 | 8,0 – 7,5      | 0,315 – 0,2953  | –        | •               |
| Ø 9,0 mm          | 1232.09000 | 9,0 – 8,5      | 0,3543 – 0,3346 | –        | –               |
| Ø 10,0 mm         | 1232.10000 | 10,0 – 9,5     | 0,3937 – 0,374  | –        | •               |
| Ø 11,0 mm         | 1232.11000 | 11,0 – 10,5    | 0,4331 – 0,4134 | –        | –               |
| Ø 12,0 mm         | 1232.12000 | 12,0 – 11,5    | 0,4724 – 0,4528 | –        | •               |
| Ø 13,0 mm         | 1232.13000 | 13,0 – 12,5    | 0,5118 – 0,4921 | –        | –               |
| Ø 14,0 mm         | 1232.14000 | 14,0 – 13,5    | 0,5512 – 0,5315 | –        | •               |
| Ø 15,0 mm         | 1232.15000 | 15,0 – 14,5    | 0,5906 – 0,5709 | –        | –               |
| Ø 16,0 mm         | 1232.16000 | 16,0 – 15,5    | 0,6299 – 0,6102 | –        | •               |

| Type      | Part no.   | Clamping range |                 | Ø [inch] | Included in set |
|-----------|------------|----------------|-----------------|----------|-----------------|
|           |            | [mm]           | [decimal inch]  |          |                 |
| Ø 17,0 mm | 1232.17000 | 17,0 – 16,5    | 0,6693 – 0,6496 | –        | –               |
| Ø 18,0 mm | 1232.18000 | 18,0 – 17,5    | 0,7087 – 0,689  | –        | •               |
| Ø 19,0 mm | 1232.19000 | 19,0 – 18,5    | 0,748 – 0,7283  | –        | –               |
| Ø 20,0 mm | 1232.20000 | 20,0 – 19,5    | 0,7874 – 0,7677 | –        | •               |

## ER 32-DM [inch]

|                   |            |               |                 |        |   |
|-------------------|------------|---------------|-----------------|--------|---|
| INCH SET ER 32-DM | 1232.00002 | 6,35 – 19,05  | 0,25 – 0,75     | –      | – |
| Ø 1/4"            | 1232.06352 | 6,35 h9       | 0,25 h9         | 1/4"   | • |
| Ø 9/32"           | 1232.07142 | 7,15 h9       | 0,2813 h9       | 9/32"  | – |
| Ø 5/16"           | 1232.07942 | 7,94 – 7,44   | 0,3125 – 0,2928 | 5/16"  | • |
| Ø 11/32"          | 1232.08732 | 8,73 – 8,23   | 0,3438 – 0,3241 | 11/32" | – |
| Ø 3/8"            | 1232.09532 | 9,53 – 9,02   | 0,375 – 0,3553  | 3/8"   | • |
| Ø 13/32"          | 1232.10322 | 10,32 – 9,82  | 0,4063 – 0,3866 | 13/32" | – |
| Ø 7/16"           | 1232.11112 | 11,11 – 10,61 | 0,4375 – 0,4178 | 7/16"  | • |
| Ø 15/32"          | 1232.11912 | 11,91 – 11,41 | 0,4687 – 0,4491 | 15/32" | – |
| Ø 1/2"            | 1232.12702 | 12,7 – 12,2   | 0,5 – 0,4803    | 1/2"   | • |
| Ø 17/32"          | 1232.13492 | 13,5 – 12,99  | 0,5313 – 0,5116 | 17/32" | – |
| Ø 9/16"           | 1232.14292 | 14,29 – 13,79 | 0,5625 – 0,5428 | 9/16"  | • |
| Ø 19/32"          | 1232.15082 | 15,07 – 14,58 | 0,5934 – 0,5741 | 19/32" | – |
| Ø 5/8"            | 1232.15882 | 15,88 – 15,38 | 0,625 – 0,6055  | 5/8"   | • |
| Ø 21/32"          | 1232.16672 | 16,67 – 16,17 | 0,6563 – 0,6366 | 21/32" | – |
| Ø 11/16"          | 1232.17462 | 17,46 – 16,96 | 0,6875 – 0,6678 | 11/16" | • |
| Ø 23/32"          | 1232.18262 | 18,26 – 17,76 | 0,7188 – 0,6991 | 23/32" | – |
| Ø 3/4"            | 1232.19052 | 19,05 – 18,55 | 0,75 – 0,7303   | 3/4"   | • |

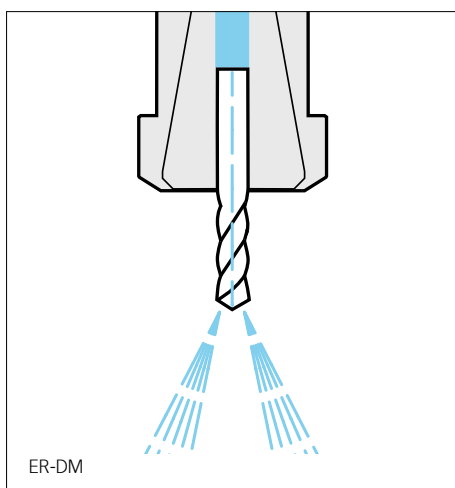
## ER 40-DM [mm]

|           |            |             |                 |   |   |
|-----------|------------|-------------|-----------------|---|---|
| Ø 6,0 mm  | 1240.06000 | 6,0 h9      | 0,2362 h9       | – | – |
| Ø 8,0 mm  | 1240.08000 | 8,0 h9      | 0,3150 h9       | – | – |
| Ø 10,0 mm | 1240.10000 | 10,0 – 9,5  | 0,3937 – 0,374  | – | – |
| Ø 11,0 mm | 1240.11000 | 11,0 – 10,5 | 0,4331 – 0,4134 | – | – |
| Ø 12,0 mm | 1240.12000 | 12,0 – 11,5 | 0,4724 – 0,4528 | – | – |
| Ø 13,0 mm | 1240.13000 | 13,0 – 12,5 | 0,5118 – 0,4921 | – | – |
| Ø 14,0 mm | 1240.14000 | 14,0 – 13,5 | 0,5512 – 0,5315 | – | – |
| Ø 15,0 mm | 1240.15000 | 15,0 – 14,5 | 0,5906 – 0,5709 | – | – |
| Ø 16,0 mm | 1240.16000 | 16,0 – 15,5 | 0,6299 – 0,6102 | – | – |
| Ø 17,0 mm | 1240.17000 | 17,0 – 16,5 | 0,6693 – 0,6496 | – | – |
| Ø 18,0 mm | 1240.18000 | 18,0 – 17,5 | 0,7087 – 0,689  | – | – |
| Ø 19,0 mm | 1240.19000 | 19,0 – 18,5 | 0,748 – 0,7283  | – | – |
| Ø 20,0 mm | 1240.20000 | 20,0 – 19,5 | 0,7874 – 0,7677 | – | – |
| Ø 21,0 mm | 1240.21000 | 21,0 – 20,5 | 0,8268 – 0,8071 | – | – |
| Ø 22,0 mm | 1240.22000 | 22,0 – 21,5 | 0,8661 – 0,8465 | – | – |
| Ø 23,0 mm | 1240.23000 | 23,0 – 22,5 | 0,9055 – 0,8858 | – | – |
| Ø 24,0 mm | 1240.24000 | 24,0 – 23,5 | 0,9449 – 0,9252 | – | – |
| Ø 25,0 mm | 1240.25000 | 25,0 – 24,5 | 0,9843 – 0,9646 | – | – |
| Ø 26,0 mm | 1240.26000 | 26,0 – 25,5 | 1,0236 – 1,0039 | – | – |

For further technical information, please refer to page 379

| Type            | Part no.   | Clamping range |                 | Ø [inch] | Included in set |
|-----------------|------------|----------------|-----------------|----------|-----------------|
|                 |            | [mm]           | [decimal inch]  |          |                 |
| ER 40-DM [inch] |            |                |                 |          |                 |
| Ø 1/4"          | 1240.06352 | 6,35 h9        | 0,25 h9         | 1/4"     | –               |
| Ø 5/16"         | 1240.07942 | 7,94 h9        | 0,3125 h9       | 5/16"    | –               |
| Ø 3/8"          | 1240.09532 | 9,53 – 9,02    | 0,375 – 0,3553  | 3/8"     | –               |
| Ø 7/16"         | 1240.11112 | 11,11 – 10,61  | 0,4375 – 0,4178 | 7/16"    | –               |
| Ø 1/2"          | 1240.12702 | 12,7 – 12,2    | 0,5 – 0,4803    | 1/2"     | –               |
| Ø 9/16"         | 1240.14292 | 14,29 – 13,79  | 0,5625 – 0,5428 | 9/16"    | –               |
| Ø 5/8"          | 1240.15882 | 15,88 – 15,38  | 0,62 – 0,6055   | 5/8"     | –               |
| Ø 11/16"        | 1240.17462 | 17,46 – 16,96  | 0,6875 – 0,6678 | 11/16"   | –               |
| Ø 3/4"          | 1240.19052 | 19,05 – 18,55  | 0,75 – 0,7303   | 3/4"     | –               |
| Ø 13/16"        | 1240.20642 | 20,64 – 20,14  | 0,8123 – 0,7928 | 13/16"   | –               |
| Ø 7/8"          | 1240.22232 | 22,23 – 21,72  | 0,875 – 0,8553  | 7/8"     | –               |
| Ø 1"            | 1240.25402 | 25,4 – 24,9    | 1,0 – 0,9803    | 1"       | –               |

For further technical information, please refer to page 379



## Expert advice

Please note that DM collets are not compatible with Weldon or Whistle notch shafts.

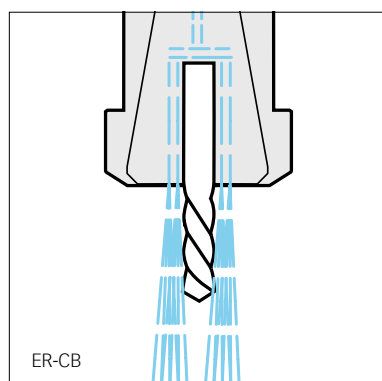
To achieve internal cooling with Weldon or Whistle notch shafts, use the REGO-FIX sealing disks ER/DS with your REGO-FIX ER collet.

# Collets with coolant channels for peripheral cooling ER-CB

ER-CB

| Type      | Part no.   | Clamping range |                | Ø [inch] | Included in set |
|-----------|------------|----------------|----------------|----------|-----------------|
|           |            | [mm]           | [decimal inch] |          |                 |
| ER 16-CB  |            |                |                |          |                 |
| Ø 3,0 mm  | 1216.03009 | 3,0 h9         | 0,1181         |          | 0,5 mm          |
| Ø 1/8"    | 1216.03189 | 3,18 h9        | –              | 1/8"     | 0,5 mm          |
| Ø 4,0 mm  | 1216.04009 | 4,0 h9         | 0,1575         |          | 0,5 mm          |
| Ø 6,0 mm  | 1216.06009 | 6,0–5,5        | 0,2362         |          | 0,5 mm          |
| Ø 1/4"    | 1216.06359 | 6,35–5,85      | –              | 1/4"     | 0,5 mm          |
| Ø 8,0 mm  | 1216.08009 | 8,0–7,5        | 0,3150         |          | 0,5 mm          |
| ER 20-CB  |            |                |                |          |                 |
| Ø 3,0 mm  | 1220.03009 | 3,0 h9         | 0,1181         | –        | 0,5 mm          |
| Ø 4,0 mm  | 1220.04009 | 4,0 h9         | 0,1575         | –        | 0,5 mm          |
| Ø 6,0 mm  | 1220.06009 | 6,0 h9         | 0,2362         | –        | 0,5 mm          |
| Ø 8,0 mm  | 1220.08009 | 8,0–7,5        | 0,3150         | –        | 0,5 mm          |
| Ø 10,0 mm | 1220.10009 | 10,0–9,5       | 0,3937         | –        | 0,5 mm          |
| ER 25-CB  |            |                |                |          |                 |
| Ø 6,0 mm  | 1225.06009 | 6,0 h9         | 0,2362         | –        | 0,5 mm          |
| Ø 8,0 mm  | 1225.08009 | 8,0–7,5        | 0,3150         | –        | 0,5 mm          |
| Ø 3/8"    | 1225.09539 | 9,53–9,02      | –              | 3/8"     | 0,5 mm          |
| Ø 10,0 mm | 1225.10009 | 10,0–9,5       | 0,3937         | –        | 0,5 mm          |
| Ø 12,0 mm | 1225.12009 | 12,0–11,5      | 0,4724         | –        | 0,5 mm          |
| Ø 1/2"    | 1225.12709 | 12,7–12,2      | –              | 1/2"     | 0,5 mm          |
| Ø 16,0 mm | 1225.16009 | 16,0–15,5      | 0,6299         |          | 0,5 mm          |
| ER 32-CB  |            |                |                |          |                 |
| Ø 6,0 mm  | 1232.06009 | 6,0 h9         | 0,2362         | –        | 0,5 mm          |
| Ø 8,0 mm  | 1232.08009 | 8,0–7,5        | 0,3150         | –        | 0,5 mm          |
| Ø 10,0 mm | 1232.10009 | 10,0–9,5       | 0,3937         | –        | 0,5 mm          |
| Ø 12,0 mm | 1232.12009 | 12,0–11,5      | 0,4724         | –        | 0,5 mm          |
| Ø 1/2"    | 1232.12709 | 12,7–12,2      | –              | 1/2"     | 0,5 mm          |
| Ø 5/8"    | 1232.15889 | 15,88–15,38    | –              | 5/8"     | 0,5 mm          |
| Ø 16,0 mm | 1232.16009 | 16,0–15,5      | 0,6299         | –        | 0,5 mm          |
| Ø 3/4"    | 1232.19059 | 19,05–18,55    | –              | 3/4"     | 0,5 mm          |
| Ø 20,0 mm | 1232.20009 | 20,0–19,5      | 0,7874         | –        | 0,5 mm          |

For further technical information, please refer to page 379



| Type                 | Part no.   | $\emptyset$<br>[mm] | $\emptyset$<br>[decimal inch] |
|----------------------|------------|---------------------|-------------------------------|
| <b>ER 32-SG [mm]</b> |            |                     |                               |
| $\emptyset$ 10,0 mm  | 1332.10004 | 10                  | –                             |
| $\emptyset$ 12,0 mm  | 1332.12004 | 12                  | –                             |
| $\emptyset$ 16,0 mm  | 1332.16004 | 16                  | –                             |

|                        |            |       |      |
|------------------------|------------|-------|------|
| <b>ER 32-SG [inch]</b> |            |       |      |
| $\emptyset$ 1/2"       | 1332.12704 | 12,7  | 1/2" |
| $\emptyset$ 5/8"       | 1332.15884 | 15,88 | 5/8" |

|                      |            |    |   |
|----------------------|------------|----|---|
| <b>ER 40-SG [mm]</b> |            |    |   |
| $\emptyset$ 16,0 mm  | 1340.16004 | 16 | – |
| $\emptyset$ 20,0 mm  | 1340.20004 | 20 | – |
| $\emptyset$ 25,0 mm  | 1340.25004 | 25 | – |

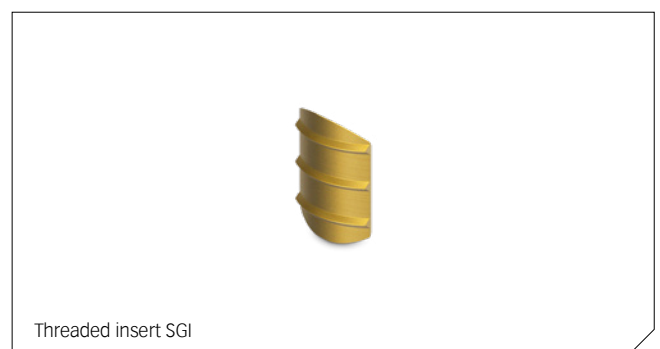
|                        |            |       |      |
|------------------------|------------|-------|------|
| <b>ER 40-SG [inch]</b> |            |       |      |
| $\emptyset$ 5/8"       | 1340.15884 | 15,88 | 5/8" |
| $\emptyset$ 3/4"       | 1340.19054 | 19,05 | 3/4" |
| $\emptyset$ 1"         | 1340.25404 | 25,4  | 1"   |

|                                 |            |
|---------------------------------|------------|
| <b>Threaded insert SGI [mm]</b> |            |
| $\emptyset$ 10,0 mm             | 7694.10000 |
| $\emptyset$ 12,0 mm             | 7694.12000 |
| $\emptyset$ 14,0 mm             | 7694.14000 |
| $\emptyset$ 16,0 mm             | 7694.16000 |
| $\emptyset$ 18,0 mm             | 7694.18000 |
| $\emptyset$ 20,0 mm             | 7694.20000 |
| $\emptyset$ 25,0 mm             | 7694.25000 |

|                                   |            |
|-----------------------------------|------------|
| <b>Threaded insert SGI [inch]</b> |            |
| $\emptyset$ 1/2"                  | 7694.12700 |
| $\emptyset$ 5/8"                  | 7694.15880 |
| $\emptyset$ 3/4"                  | 7694.19050 |
| $\emptyset$ 1"                    | 7694.25400 |

[Learn more](#)

For further information on secuRgrip®, please refer to page 361.



# ER tapping collets ER-GB

Manufactured with a form-fitting internal square, the ER-GB collets successfully prevent the tap from slipping.

## Tapping collets without axial compensation

### Swiss quality

Made in Switzerland to ISO 9001/ISO 14001.

### Marking

Type and size (reduced collet selection errors).

### Traceability

Lot number marking on all products for traceability through the entire manufacturing process.

### Original REGO-FIX

Our long-lasting machining experience results in a well-engineered system. When buying REGO-FIX products pay attention to our quality seal: The triangle is our seal for outstanding quality made in Switzerland.

### Interchangeable

With standard ER collet DIN 6499/ISO 15488. No additional toolholders and clamping nuts necessary.

### Wide product range

Sizes: ER-GB 11 to 50.

Standards: DIN, ISO, JIS, ANSI, NPT.

### Strength: Square for tight grip of tap

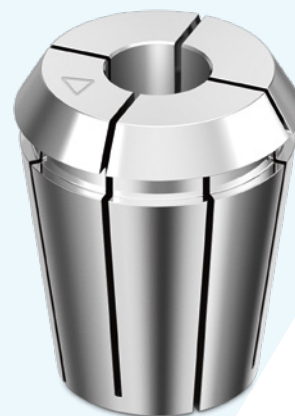
Eliminates tap slippage in collets.

### Matched tooling system for best fit

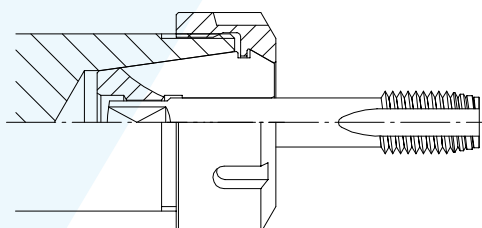
The compatibility of the entire system results in maximum precision, balance and tool life.

**Tapping collets ER-GB** These rigid tapping collets are compatible with taps per DIN, ISO, JIS and ANSI standards. The REGO-FIX ER-GB tapping collets are manufactured with an internal square. They are intended for use on CNC machines that have synchronized machine spindle speed and feed rate. Machines that have such rigid tapping capabilities require only minimal compensation. We recommend the use of our SSY Softsynchro® tapping holders. They compensate minimal synchronizing differences of CNC machines.

*For machines without tapping option we recommend the use of our axial compensating GSF tapping holders. Please refer to page 142 for more information. For additional technical information and dimensions of taps on ER-GB, please refer to pages 383 and 420.*



ER-GB

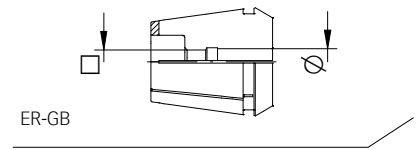


ER-GB

# ER tapping collets

ER-GB [mm]

ER-GB



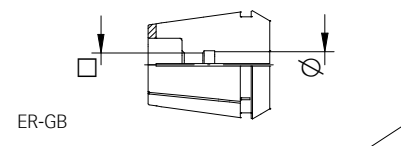
| Dimensions [mm] |           | ER-GB      |            |            |            |            |            |            | Standard        |
|-----------------|-----------|------------|------------|------------|------------|------------|------------|------------|-----------------|
| Ø               | □         | 11         | 16         | 20         | 25         | 32         | 40         | 50         |                 |
| 2,5             | 2,1/2,0   | 1411.02500 | –          | –          | –          | –          | –          | –          | DIN / ISO       |
| 2,8             | 2,1       | 1411.02800 | 1416.02800 | –          | –          | –          | –          | –          | DIN             |
| 3,5             | 2,7       | 1411.03500 | 1416.03500 | 1420.03500 | –          | –          | –          | –          | DIN             |
| 4,0             | 3,0       | 1411.04000 | –          | –          | –          | –          | –          | –          | DIN             |
| 4,0             | 3,15/3,2  | 1411.04002 | 1416.04002 | 1420.04002 | 1425.04002 | 1432.04002 | –          | –          | ISO / JIS       |
| 4,5             | 3,4       | 1411.04500 | 1416.04500 | 1420.04500 | 1425.04500 | 1432.04500 | –          | –          | DIN             |
| 5,0             | 4,0       | 1411.05002 | 1416.05002 | 1420.05002 | 1425.05002 | 1432.05002 | –          | –          | ISO / JIS       |
| 5,5             | 4,3       | –          | 1416.05500 | 1420.05500 | 1425.05500 | 1432.05500 | –          | –          | DIN             |
| 5,5             | 4,5       | –          | 1416.05501 | 1420.05501 | 1425.05501 | 1432.05501 | –          | –          | JIS             |
| 6,0             | 4,5       | –          | 1416.06001 | 1420.06001 | 1425.06001 | 1432.06001 | 1440.06001 | –          | JIS             |
| 6,0             | 4,9       | 1411.06000 | 1416.06000 | 1420.06000 | 1425.06000 | 1432.06000 | 1440.06000 | –          | DIN             |
| 6,2             | 5,0       | –          | 1416.06201 | 1420.06201 | 1425.06201 | 1432.06201 | 1440.06201 | –          | JIS             |
| 7,0             | 5,5       | –          | 1416.07000 | 1420.07000 | 1425.07000 | 1432.07000 | 1440.07000 | –          | DIN / JIS       |
| 8,0             | 6,2/6,3   | –          | 1416.08000 | 1420.08000 | 1425.08000 | 1432.08000 | 1440.08000 | –          | DIN / ISO       |
| 8,5             | 6,5       | –          | 1416.08501 | 1420.08501 | 1425.08501 | 1432.08501 | 1440.08501 | –          | JIS             |
| 9,0             | 7,0/7,1   | –          | 1416.09000 | 1420.09000 | 1425.09000 | 1432.09000 | 1440.09000 | –          | DIN / ISO       |
| 10,0            | 8,0       | –          | –          | 1420.10000 | 1425.10000 | 1432.10000 | 1440.10000 | –          | DIN / ISO       |
| 10,5            | 8,0       | –          | –          | 1420.10501 | 1425.10501 | 1432.10501 | 1440.10501 | –          | JIS             |
| 11,0            | 9,0       | –          | –          | 1420.11000 | 1425.11000 | 1432.11000 | 1440.11000 | –          | DIN             |
| 12,0            | 9,0       | –          | –          | 1420.12000 | 1425.12000 | 1432.12000 | 1440.12000 | –          | DIN             |
| 12,5            | 10,0      | –          | –          | –          | 1425.12502 | 1432.12502 | 1440.12502 | –          | ISO / JIS       |
| 14,0            | 11,0/11,2 | –          | –          | –          | 1425.14000 | 1432.14000 | 1440.14000 | –          | DIN / ISO / JIS |
| 15,0            | 12,0      | –          | –          | –          | –          | 1432.15001 | 1440.15001 | –          | JIS             |
| 16,0            | 12,0/12,5 | –          | –          | –          | 1425.16000 | 1432.16000 | 1440.16000 | –          | DIN / ISO       |
| 17,0            | 13,0      | –          | –          | –          | –          | 1432.17001 | –          | –          | JIS             |
| 18,0            | 14,0/14,5 | –          | –          | –          | –          | 1432.18000 | 1440.18000 | –          | DIN / ISO       |
| 20,0            | 16,0      | –          | –          | –          | –          | 1432.20000 | 1440.20000 | –          | DIN / ISO       |
| 22,0            | 18,0      | –          | –          | –          | –          | –          | 1440.22000 | 1450.22000 | DIN             |
| 25,0            | 20,0      | –          | –          | –          | –          | –          | –          | 1450.25000 | DIN             |
| 28,0            | 22,0      | –          | –          | –          | –          | –          | –          | 1450.28000 | DIN             |
| 32,0            | 24,0      | –          | –          | –          | –          | –          | –          | 1450.32000 | DIN             |



# ER tapping collets

ER-GB [inch]

ER-GB



| Dimensions [decimal inch] |        | ER-GB      |            |            |            |            |            |            |            |
|---------------------------|--------|------------|------------|------------|------------|------------|------------|------------|------------|
| Ø                         | □      | 11         | 16         | 20         | 25         | 32         | 40         | 50         | Standard   |
| 0,141"                    | 0,11"  | 1411.03585 | 1416.03585 | –          | –          | –          | –          | –          | ANSI       |
| 0,168"                    | 0,131" | 1411.04275 | 1416.04275 | 1420.04275 | 1425.04275 | 1432.04275 | –          | –          | ANSI       |
| 0,194"                    | 0,152" | 1411.04935 | 1416.04935 | 1420.04935 | 1425.04935 | 1432.04935 | –          | –          | ANSI       |
| 0,220"                    | 0,165" | –          | 1416.05595 | 1420.05595 | 1425.05595 | 1432.05595 | –          | –          | ANSI       |
| 0,255"                    | 0,191" | –          | 1416.06485 | 1420.06485 | 1425.06485 | 1432.06485 | 1440.06485 | –          | ANSI       |
| 0,318"                    | 0,238" | –          | 1416.08085 | 1420.08085 | 1425.08085 | 1432.08085 | –          | –          | ANSI       |
| 0,323"                    | 0,242" | –          | –          | 1420.08215 | 1425.08215 | 1432.08215 | 1440.08215 | –          | ANSI       |
| 0,367"                    | 0,275" | –          | –          | 1420.09325 | 1425.09325 | 1432.09325 | 1440.09325 | –          | ANSI       |
| 0,381"                    | 0,286" | –          | –          | 1420.09685 | 1425.09685 | 1432.09685 | 1440.09685 | –          | ANSI       |
| 0,429"                    | 0,322" | –          | –          | –          | 1425.10905 | 1432.10905 | 1440.10905 | –          | ANSI       |
| 0,437"                    | 0,328" | –          | –          | –          | 1425.11104 | 1432.11104 | 1440.11104 | –          | ANSI / NPT |
| 0,480"                    | 0,36"  | –          | –          | –          | 1425.12195 | 1432.12195 | 1440.12195 | –          | ANSI       |
| 0,542"                    | 0,406" | –          | –          | –          | –          | 1432.13775 | 1440.13775 | –          | ANSI       |
| 0,562"                    | 0,421" | –          | –          | –          | –          | 1432.14274 | 1440.14274 | –          | ANSI / NPT |
| 0,590"                    | 0,442" | –          | –          | –          | 1425.14995 | 1432.14995 | 1440.14995 | –          | ANSI       |
| 0,652"                    | 0,489" | –          | –          | –          | –          | 1432.16565 | 1440.16565 | –          | ANSI       |
| 0,687"                    | 0,515" | –          | –          | –          | –          | –          | 1440.17454 | –          | ANSI / NPT |
| 0,697"                    | 0,523" | –          | –          | –          | –          | –          | 1440.17705 | –          | ANSI       |
| 0,700"                    | 0,531" | –          | –          | –          | –          | –          | 1440.17784 | –          | ANSI / NPT |
| 0,760"                    | 0,57"  | –          | –          | –          | –          | –          | 1440.19305 | –          | ANSI       |
| 0,800"                    | 0,600" | –          | –          | –          | –          | –          | 1440.20325 | –          | ANSI       |
| 0,896"                    | 0,672" | –          | –          | –          | –          | –          | –          | 1450.22765 | ANSI       |
| 1,021"                    | 0,766" | –          | –          | –          | –          | –          | –          | 1450.25935 | ANSI       |
| 1,108"                    | 0,831" | –          | –          | –          | –          | –          | –          | 1450.28145 | ANSI       |
| 1,233"                    | 0,925" | –          | –          | –          | –          | –          | –          | 1450.31325 | ANSI       |

| Thread   | Ø [inch] | □      | Thread | Ø [inch] | □      | Thread | Ø [inch] | □      |
|----------|----------|--------|--------|----------|--------|--------|----------|--------|
| No 0 – 6 | 0,141"   | 0,110" | 7/16   | 0,323"   | 0,242" | PT 1/2 | 0,687"   | 0,515" |
| 1/16     | 0,141"   | 0,110" | 1/2    | 0,367"   | 0,275" | 7/8    | 0,697"   | 0,523" |
| 3/32     | 0,141"   | 0,110" | 3/8    | 0,381"   | 0,286" | PT 3/8 | 0,700"   | 0,531" |
| 1/8      | 0,141"   | 0,110" | 9/16   | 0,429"   | 0,322" | 15/16  | 0,760"   | 0,570" |
| 5/32     | 0,168"   | 0,131" | PT 1/8 | 0,437"   | 0,328" | 1      | 0,800"   | 0,600" |
| No 8     | 0,168"   | 0,131" | 5/8    | 0,480"   | 0,360" | 1 1/8  | 0,896"   | 0,672" |
| 3/16     | 0,194"   | 0,152" | 11/16  | 0,542"   | 0,406" | 1 1/16 | 0,896"   | 0,672" |
| No 10    | 0,194"   | 0,152" | PT 1/4 | 0,562"   | 0,421" | 1 1/4  | 1,021"   | 0,766" |
| No 12    | 0,220"   | 0,165" | 3/4    | 0,590"   | 0,442" | 1 3/8  | 1,108"   | 0,831" |
| 1/4      | 0,255"   | 0,191" | 13/16  | 0,652"   | 0,489" | 1 1/2  | 1,233"   | 0,925" |
| 5/16     | 0,318"   | 0,238" |        |          |        |        |          |        |

PT = Pipe tap

# ER tapping collets PCM ET1

PCM ET1 tapping collets with axial compensation offer a smart and cost-effective toolholding option for machines which need axial compensation for tapping.

## Tapping collets with axial compensation

### Interchangeable

With REGO-FIX standard ER collet DIN 6499/ISO 15488.

### Compatibility

PCM ET1-12 is compatible with ER11 toolholders.

### Cost saving

No expensive tapping tools necessary.

### Spring tension

Adapted to tap size.

### Compact

Very robust design with smallest space requirement.

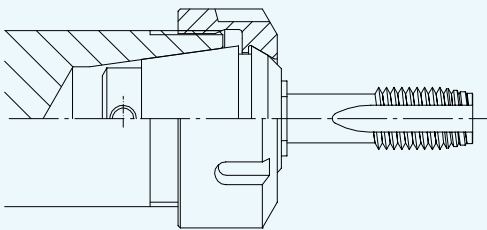
**Directions for use** The following tapping process is recommended for tapping collets PCM ET1:

Fast approach, then tapping feed with approximately 95% of the pitch value, which uses 20 to 30% of the compensation stroke when the spindle rotation and the feed movement are simultaneously reversed.

Return feed must be made with 100% of the pitch, which maintains the sleeve of the tapping collet in the compensation stroke up to the tap disengagement; quick return can then be programmed with usual stroke security. The relatively long axial compensation assists easy programming.

When tapping with very high speed, an appropriate programming compensation may be necessary to balance the differences of inertia between the spindle and the feed movement on reverse. In order to not disturb the axial compensation, use external coolant supply only.

*Please refer to page 142 for additional information on REGO-FIX tapping holders. For additional technical information and dimensions of taps on PCM ET1, please refer to pages 384.*



PCM ET1



PCM ET1

### Expert advice

Not for coolant through tools and not for applications with sealing disks.

### Expert advice

Further information about shaft diameters can be found on page 420.

# ER tapping collets

PCM ET1

## PCM ET1 [mm]

| Shank Ø |            | PCM ET1    |            |            |            |            | Standard        |
|---------|------------|------------|------------|------------|------------|------------|-----------------|
| [mm]    | 12         | 16         | 20         | 25         | 32         | 40         |                 |
| 1,4     | 1512.01400 | 1516.01400 | –          | –          | –          | –          | DIN / ISO       |
| 1,6     | 1512.01600 | 1516.01600 | –          | –          | –          | –          | DIN             |
| 1,8     | 1512.01800 | 1516.01800 | –          | –          | –          | –          | DIN             |
| 2,0     | 1512.02000 | 1516.02000 | –          | –          | –          | –          | DIN             |
| 2,2     | 1512.02200 | 1516.02200 | 1520.02200 | –          | –          | –          | ISO / JIS       |
| 2,24    | 1512.02240 | 1516.02240 | 1520.02240 | –          | –          | –          | DIN             |
| 2,5     | 1512.02500 | 1516.02500 | 1520.02500 | 1525.02500 | –          | –          | ISO / JIS       |
| 2,8     | 1512.02800 | 1516.02800 | 1520.02800 | 1525.02800 | –          | –          | DIN             |
| 3,0     | 1512.03000 | 1516.03000 | 1520.03000 | 1525.03000 | –          | –          | JIS             |
| 3,15    | 1512.03150 | 1516.03150 | 1520.03150 | 1525.03150 | –          | –          | JIS             |
| 3,5     | 1512.03500 | 1516.03500 | 1520.03500 | 1525.03500 | –          | –          | DIN             |
| 3,55    | 1512.03550 | 1516.03550 | 1520.03550 | 1525.03550 | –          | –          | JIS             |
| 4,0     | –          | 1516.04000 | 1520.04000 | 1525.04000 | –          | –          | ISO             |
| 4,5     | –          | 1516.04500 | 1520.04500 | 1525.04500 | 1532.04500 | –          | DIN / JIS       |
| 5,0     | –          | 1516.05000 | 1520.05000 | 1525.05000 | 1532.05000 | –          | ISO             |
| 5,5     | –          | 1516.05500 | 1520.05500 | 1525.05500 | 1532.05500 | –          | DIN / ISO       |
| 5,6     | –          | 1516.05600 | 1520.05600 | 1525.05600 | 1532.05600 | –          | JIS             |
| 6,0     | –          | 1516.06000 | 1520.06000 | 1525.06000 | 1532.06000 | 1540.06000 | DIN / ISO       |
| 6,2     | –          | 1516.06200 | 1520.06200 | 1525.06200 | 1532.06200 | 1540.06200 | DIN / ISO       |
| 6,3     | –          | 1516.06300 | 1520.06300 | 1525.06300 | 1532.06300 | 1540.06300 | JIS             |
| 7,0     | –          | –          | 1520.07000 | 1525.07000 | 1532.07000 | 1540.07000 | DIN             |
| 7,1     | –          | –          | –          | 1525.07100 | 1532.07100 | 1540.07100 | ISO             |
| 8,0     | –          | –          | –          | 1525.08000 | 1532.08000 | 1540.08000 | DIN             |
| 8,5     | –          | –          | –          | 1525.08500 | 1532.08500 | 1540.08500 | ISO / JIS       |
| 9,0     | –          | –          | –          | 1525.09000 | 1532.09000 | 1540.09000 | DIN / ISO / JIS |
| 10,0    | –          | –          | –          | 1525.10000 | 1532.10000 | 1540.10000 | JIS             |
| 10,5    | –          | –          | –          | –          | 1532.10500 | 1540.10500 | DIN / ISO       |
| 11,0    | –          | –          | –          | –          | 1532.11000 | 1540.11000 | JIS             |
| 11,2    | –          | –          | –          | –          | 1532.11200 | 1540.11200 | DIN / ISO       |
| 12,0    | –          | –          | –          | –          | 1532.12000 | 1540.12000 | DIN / ISO       |
| 12,5    | –          | –          | –          | –          | 1532.12500 | 1540.12500 | DIN             |
| 14,0    | –          | –          | –          | –          | –          | 1540.14000 | DIN             |
| 15,0    | –          | –          | –          | –          | –          | 1540.15000 | DIN             |
| 16,0    | –          | –          | –          | –          | –          | 1540.16000 | DIN             |
| 17,0    | –          | –          | –          | –          | –          | 1540.17000 | JIS             |

PCM ET1-ER 12 is technically identical to ER 11 and fits all ER11 toolholders

# ER tapping collets

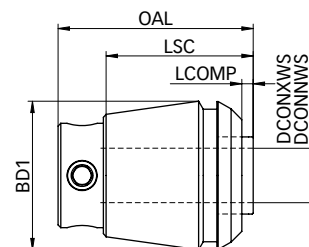
## PCM ET1 [inch]

PCM ET1

| Shank Ø |        | PCM ET1    |            |            |            |            |            |
|---------|--------|------------|------------|------------|------------|------------|------------|
| [inch]  | [mm]   | 12         | 16         | 20         | 25         | 32         | 40         |
| 0,141   | 3,580  | 1512.03581 | 1516.03581 | 1520.03581 | 1525.03581 | 1532.03581 | 1540.03581 |
| 0,168   | 4,270  | –          | 1516.04271 | 1520.04271 | 1525.04271 | 1532.04721 | 1540.04271 |
| 0,194   | 4,930  | –          | 1516.04931 | 1520.04931 | 1525.04931 | 1532.04931 | 1540.04931 |
| 0,220   | 5,590  | –          | 1516.05591 | 1520.05591 | 1525.05591 | 1532.05591 | 1540.05591 |
| 0,255   | 6,480  | –          | –          | 1520.06481 | 1525.06481 | 1532.06481 | 1540.06481 |
| 0,318   | 8,080  | –          | –          | –          | 1525.08081 | 1532.08081 | 1540.08081 |
| 0,323   | 8,205  | –          | –          | –          | 1525.08211 | 1532.08211 | 1540.08211 |
| 0,367   | 9,320  | –          | –          | –          | 1525.09321 | 1532.09321 | 1540.09321 |
| 0,381   | 9,680  | –          | –          | –          | 1525.09681 | 1532.09681 | 1540.09681 |
| 0,429   | 10,900 | –          | –          | –          | –          | 1532.10901 | 1540.10901 |
| 0,437   | 11,113 | –          | –          | –          | –          | 1532.11111 | 1540.11111 |
| 0,480   | 12,192 | –          | –          | –          | –          | 1532.12191 | 1540.12191 |
| 0,542   | 13,770 | –          | –          | –          | –          | –          | 1540.13771 |
| 0,562   | 14,290 | –          | –          | –          | –          | –          | 1540.14291 |
| 0,590   | 14,990 | –          | –          | –          | –          | –          | 1540.14991 |
| 0,652   | 16,560 | –          | –          | –          | –          | –          | 1540.16561 |
| 0,697   | 17,700 | –          | –          | –          | –          | –          | 1540.17701 |

PCM ET1-ER 12 is technically identical to ER 11 and fits all ER11 toolholders

| Type       | Dimensions [mm] |    |      |    |      |     |    |     |
|------------|-----------------|----|------|----|------|-----|----|-----|
|            | d               | D1 | D2   | L  | L1   | L2  | L3 | L4  |
| PCM ET1-12 | 3,55            | 7  | 11,5 | 18 | 16,5 | 2,5 | 5  | 5,5 |
| PCM ET1-16 | 6,3             | 11 | 17   | 22 | 20   | 2,8 | 7  | 7   |
| PCM ET1-20 | 7,1             | 14 | 21   | 24 | 23   | 2,8 | 8  | 7   |
| PCM ET1-25 | 10              | 19 | 26   | 26 | 24   | 3   | 10 | 8   |
| PCM ET1-32 | 12,5            | 23 | 33   | 33 | 32   | 3   | 1  | 10  |
| PCM ET1-40 | 17              | 28 | 41   | 42 | 42   | 3   | 12 | 13  |



PCM ET1

| Thread   | Ø [inch] | □     |
|----------|----------|-------|
| No 0 – 6 | 0,141    | 0,110 |
| 1/16     | 0,141    | 0,110 |
| 3/32     | 0,141    | 0,110 |
| 1/8      | 0,141    | 0,110 |
| 5/32     | 0,168    | 0,131 |
| No 8     | 0,168    | 0,131 |
| 3/16     | 0,194    | 0,152 |
| No 9     | 0,194    | 0,152 |

| Thread | Ø [inch] | □     |
|--------|----------|-------|
| No 10  | 0,194    | 0,152 |
| 1/4    | 0,255    | 0,191 |
| 5/16   | 0,318    | 0,238 |
| 3/8    | 0,381    | 0,286 |
| 7/16   | 0,323    | 0,242 |
| 1/2    | 0,367    | 0,275 |
| 9/16   | 0,429    | 0,322 |

| Thread | Ø [inch] | □     |
|--------|----------|-------|
| 5/8    | 0,480    | 0,360 |
| 11/16  | 0,542    | 0,406 |
| 3/4    | 0,590    | 0,442 |
| 13/16  | 0,652    | 0,489 |
| 7/8    | 0,697    | 0,523 |
| 15/16  | 0,760    | 0,570 |
| 1      | 0,800    | 0,600 |

### Expert advice

Do not use for coolant through tools and for applications with sealing disks.







| Standard                                                                            |                                                                                     | Standard with bearing                                                               |                                                                                     | Mini nut                                                                            |                                                                                     | Slip-off proof mini nut                                                             |                                                                                     |                                                                                     | External thread                                                                     |                                                                                      |                                                                                       |                                                                                       | Sealing and coolant flush disks                                                       |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Hi-Q®/ER                                                                            | Hi-Q®/ERC                                                                           | Hi-Q®/ERB                                                                           | Hi-Q®/ERBC                                                                          | Hi-Q®/ERM                                                                           | Hi-Q®/ERMC                                                                          | Hi-Q®/ERMX<br>intrIlox®                                                             | Hi-Q®/ERMXC<br>intrIlox®                                                            | ER MS                                                                               | Hi-Q®/ERAX                                                                          | Hi-Q®/ERAXC                                                                          | reCool®<br>RCR/RCS                                                                    | reCool®<br>RCR/ERAX                                                                   | DS/ER                                                                                 | KS/ER                                                                                 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Page 190                                                                            | Page 192                                                                            | Page 194                                                                            | Page 194                                                                            | Page 196                                                                            | Page 196                                                                            | Page 198                                                                            | Page 198                                                                            | Page 200                                                                            | Page 202                                                                            | Page 202                                                                             | Page 208                                                                              | Page 213                                                                              | Page 322                                                                              | Page 330                                                                              |

B: bearing C: cooling M: mini thread X: slip-off proof A: external thread

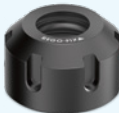
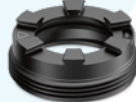
DS: sealing disk KS: coolant flush disk

# Swiss quality ER clamping nuts

|                        |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| ER nuts                |  |  |  |  |  |  |
|                        | <b>Hi-Q® ER</b>                                                                   | <b>Hi-Q® ERB</b>                                                                  | <b>Hi-Q® ERM</b>                                                                  | <b>Hi-Q® ERMX intrRlox®</b>                                                        | <b>Hi-Q® ERAX</b>                                                                   | <b>ER MS</b>                                                                        |
| Main feature           | Standard nut                                                                      | with friction-bearing for higher clamping force                                   | Mini clamping nut                                                                 | Slip-off proof mini clamping nut                                                   | External thread and slip-off proof                                                  | up to 80,000 rpm                                                                    |
| Sizes                  | ER 11 – ER 50                                                                     | ER 16 – ER 50                                                                     | ER 8 – ER 25                                                                      | ER 8 – ER 25                                                                       | ER 11 – ER 40                                                                       | ER 8 – ER 20                                                                        |
| Compatibility          | Compatible with all REGO-FIX ER collets                                           |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Minimal outer diameter | –                                                                                 | –                                                                                 | •                                                                                 | •                                                                                  | –                                                                                   | •                                                                                   |
| Slip-off proof         | –                                                                                 | –                                                                                 | –                                                                                 | •                                                                                  | •                                                                                   | –                                                                                   |
| Surface protection     | •                                                                                 | •                                                                                 | •                                                                                 | •                                                                                  | •                                                                                   | –                                                                                   |
| Suitable wrench        | A-E, E P, E, A-E P                                                                | A-E, E P, E, A-E P                                                                | A-E M, E M                                                                        | A-E MX, E MX                                                                       | A-E AX, E AX                                                                        | A-E MS, E MS                                                                        |
| Collet Locking System* | •                                                                                 | •                                                                                 | •                                                                                 | •                                                                                  | •                                                                                   | –                                                                                   |

A: external thread B: bearing M: mini thread X: slip-off proof

\*Collet Locking System is not available for size 8

|                                          |                                                                                           |                                                                                     |                                                                                     |                                                                                       |                                                                                       |
|------------------------------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| ER nuts<br>Type C<br>for coolant through |        |  |  |  |  |
|                                          | <b>Hi-Q® ERC</b>                                                                          | <b>Hi-Q® ERBC</b>                                                                   | <b>Hi-Q® ERMC</b>                                                                   | <b>Hi-Q® ERMXC intrRlox®</b>                                                          | <b>Hi-Q® ERAXC</b>                                                                    |
| Main feature                             | Standard nut                                                                              | with friction-bearing for higher clamping force                                     | Mini clamping nut                                                                   | Slip-off proof mini clamping nut                                                      | External thread and slip-off proof                                                    |
| Cooling option                           | Internal cooling with DS disks and peripheral cooling with KS disks to 150 bar / 2100 PSI |                                                                                     |                                                                                     |                                                                                       |                                                                                       |
| Sizes                                    | ER 11 – ER 50                                                                             | ER 16 – ER 50                                                                       | ER 11 – ER 25                                                                       | ER 11 – ER 25                                                                         | ER 11 – ER 40                                                                         |
| Compatibility                            | Compatible with all REGO-FIX ER collets, except PCM ET1 collets                           |                                                                                     |                                                                                     |                                                                                       |                                                                                       |
| Minimal outer diameter                   | –                                                                                         | –                                                                                   | •                                                                                   | •                                                                                     | –                                                                                     |
| Slip-off proof                           | –                                                                                         | –                                                                                   | –                                                                                   | •                                                                                     | •                                                                                     |
| Surface protection                       | •                                                                                         | •                                                                                   | •                                                                                   | •                                                                                     | •                                                                                     |
| Suitable wrench                          | A-E, E P, E, A-E P                                                                        | A-E, E P, E, A-E P                                                                  | A-E M, E M                                                                          | A-E MX, E MX                                                                          | A-E AX, E AX                                                                          |
| Collet Locking System*                   | •                                                                                         | •                                                                                   | •                                                                                   | •                                                                                     | •                                                                                     |

A: external thread B: bearing M: mini thread X: slip-off proof

## Expert advice

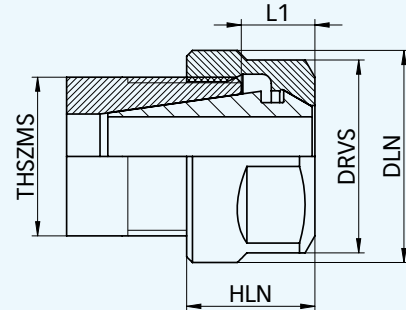
We recommend tightening the clamping nuts with our TORCO-BLOCK or torque wrench.

For more information on TORCO-BLOCK, see page 342. For tightening torque recommendations, please refer to page 377.

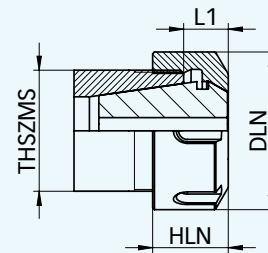


# Hi-Q® | ER standard clamping nuts

**Standard** Hi-Q® |ER clamping nuts with corrosion-resistant surface are the standard nuts on all REGO-FIX ER toolholders.



Hi-Q® |ER 11 – ER 20



Hi-Q® |ER 25 – ER 50

## Expert advice

Higher clamping force of the clamping nut at the same time means higher stress on the toolholder. We recommend the use of REGO-FIX torque wrench. REGO-FIX will not be responsible for damages to toolholders or spindles of other manufacturers.

| Type          | Part no.   | Dimensions [mm] |      |           |      | THSZMS         | Accessories |
|---------------|------------|-----------------|------|-----------|------|----------------|-------------|
|               |            | DLN             | HLN  | L1        | DRVS |                | Wrench      |
| Hi-Q® ER 11   |            |                 |      |           |      |                |             |
| Hi-Q® ER 11   | 3411.00000 | 19              | 11,3 | 4,9–6,6   | 17   | M 14 x 0,75    | 7112.11010  |
| Hi-Q® ER 11 L | 3411.02000 | 19              | 11,3 | 4,9–6,6   | 17   | M 14 x 0,75-LH | 7112.11010  |
| Hi-Q® ER 16   |            |                 |      |           |      |                |             |
| Hi-Q® ER 16   | 3416.00000 | 28              | 17,5 | 7,0–10,5  | 25   | M 22 x 1,5     | 7112.16010  |
| Hi-Q® ER 16 L | 3416.02000 | 28              | 17,5 | 7,0–10,5  | 25   | M 22 x 1,5-LH  | 7112.16010  |
| Hi-Q® ER 20   |            |                 |      |           |      |                |             |
| Hi-Q® ER 20   | 3420.00000 | 34              | 19   | 8,0–11,5  | 30   | M 25 x 1,5     | 7112.20010  |
| Hi-Q® ER 20 L | 3420.02000 | 34              | 19   | 8,0–11,5  | 30   | M 25 x 1,5-LH  | 7112.20010  |
| Hi-Q® ER 25   |            |                 |      |           |      |                |             |
| Hi-Q® ER 25   | 3425.00000 | 42              | 20   | 8,5–12,0  | –    | M 32 x 1,5     | 7111.25000  |
| Hi-Q® ER 25 L | 3425.02000 | 42              | 20   | 8,5–12,0  | –    | M 32 x 1,5-LH  | 7111.25000  |
| Hi-Q® ER 32   |            |                 |      |           |      |                |             |
| Hi-Q® ER 32   | 3432.00000 | 50              | 22,5 | 9,5–13,0  | –    | M 40 x 1,5     | 7111.32000  |
| Hi-Q® ER 32 L | 3432.02000 | 50              | 22,5 | 9,5–13,0  | –    | M 40 x 1,5-LH  | 7111.32000  |
| Hi-Q® ER 40   |            |                 |      |           |      |                |             |
| Hi-Q® ER 40   | 3440.00000 | 63              | 25,5 | 11,5–15,0 | –    | M 50 x 1,5     | 7111.40000  |
| Hi-Q® ER 40 L | 3440.02000 | 63              | 25,5 | 11,5–15,0 | –    | M 50 x 1,5-LH  | 7111.40000  |
| Hi-Q® ER 50   |            |                 |      |           |      |                |             |
| Hi-Q® ER 50   | 3450.00000 | 78              | 35,3 | 14,0–21,0 | –    | M 64 x 2       | 7111.50000  |

L = left-threaded nuts

# Hi-Q®|ERC for coolant through tools

**Application with sealing disk/coolant flush disk** The Hi-Q®|ERC clamping nut is intended for use with the sealing disk system DS/ER and the cool flush system KS/ER. The disk system allows the use of all standard ER collets, ultra-precision collets and tapping collets for coolant through tools.

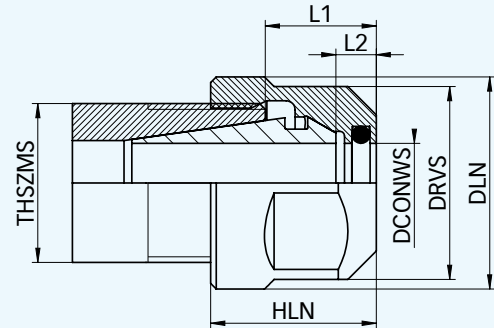
- // Up to 150 bar / 2100 PSI coolant pressure
- // Prevents dirt and chips from entering the collet

**Hi-Q®|ERC 11** This clamping nut is recommended for use where minimal external diameters are important. The Hi-Q®|ERC 11 clamping nut for coolant through tools is the internal cooling version of the Hi-Q®|ER 11 clamping nut.

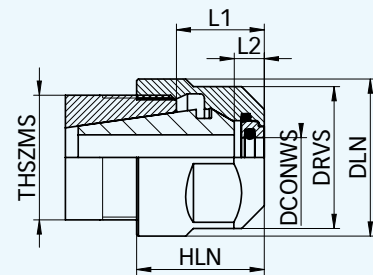
**Hi-Q®|ERC 11 does not require sealing disks** The sealing system is built into the clamping nut.

- // Up to 150 bar / 2100 PSI coolant pressure
- // Prevents dirt and chips from entering the collet

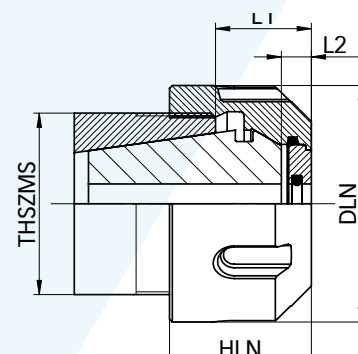
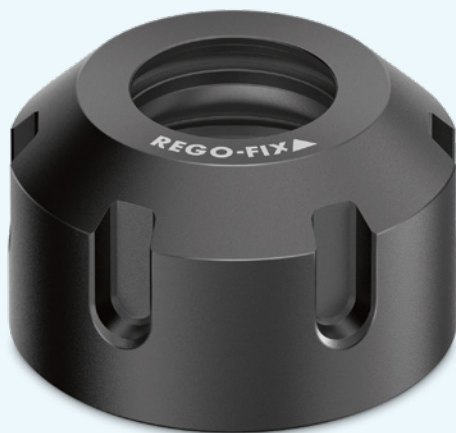
*For peripheral cooling of non coolant through tools we recommend the coolant flush disks KS/ER. Please refer to page 330. Accessories are not included in delivery.*



Hi-Q®|ERC 11



Hi-Q®|ERC 16 – ERC 20



Hi-Q®|ERC 25 – ERC 50

| Type                  | Part no.   | Dimensions [mm] |      |         |     |      |             | DCONWS  |        | Accessories |
|-----------------------|------------|-----------------|------|---------|-----|------|-------------|---------|--------|-------------|
|                       |            | DLN             | HLN  | L1      | L2  | DRVS | THSZMS      | [mm]    | [inch] | Wrench      |
| Hi-Q® ERC 11          |            |                 |      |         |     |      |             |         |        |             |
| Hi-Q® ERC 11 Ø 3,0 mm | 3411.20300 | 19              | 14,6 | 8,1–9,8 | 3,5 | 17   | M 14 x 0,75 | 3,0–2,5 | 3/32"  | 7112.11010  |
| Hi-Q® ERC 11 Ø 3,5 mm | 3411.20350 | 19              | 14,6 | 8,1–9,8 | 3,5 | 17   | M 14 x 0,75 | 3,5–3,0 | 1/8"   | 7112.11010  |
| Hi-Q® ERC 11 Ø 4,0 mm | 3411.20400 | 19              | 14,6 | 8,1–9,8 | 3,5 | 17   | M 14 x 0,75 | 4,0–3,5 | 5/32"  | 7112.11010  |
| Hi-Q® ERC 11 Ø 4,5 mm | 3411.20450 | 19              | 14,6 | 8,1–9,8 | 3,5 | 17   | M 14 x 0,75 | 4,5–4,0 | –      | 7112.11010  |
| Hi-Q® ERC 11 Ø 5,0 mm | 3411.20500 | 19              | 14,6 | 8,1–9,8 | 3,5 | 17   | M 14 x 0,75 | 5,0–4,5 | 3/16"  | 7112.11010  |
| Hi-Q® ERC 11 Ø 5,5 mm | 3411.20550 | 19              | 14,6 | 8,1–9,8 | 3,5 | 17   | M 14 x 0,75 | 5,5–5,0 | 7/32"  | 7112.11010  |
| Hi-Q® ERC 11 Ø 6,0 mm | 3411.20600 | 19              | 14,6 | 8,1–9,8 | 3,5 | 17   | M 14 x 0,75 | 6,0–5,5 | –      | 7112.11010  |
| Hi-Q® ERC 11 Ø 6,5 mm | 3411.20650 | 19              | 14,6 | 8,1–9,8 | 3,5 | 17   | M 14 x 0,75 | 6,5–6,0 | 1/4"   | 7112.11010  |
| Hi-Q® ERC 11 Ø 7,0 mm | 3411.20700 | 19              | 14,6 | 8,1–9,8 | 3,5 | 17   | M 14 x 0,75 | 7,0–6,5 | –      | 7112.11010  |

|                     |            |    |      |         |     |    |             |         |   |            |
|---------------------|------------|----|------|---------|-----|----|-------------|---------|---|------------|
| <b>Hi-Q® ERC 11</b> |            |    |      |         |     |    |             |         |   |            |
| Hi-Q® ERC 11        | 3411.20000 | 19 | 14,6 | 8,1–9,8 | 3,5 | 17 | M 14 x 0,75 | 3,0–6,0 | – | 7112.11010 |

|                     |            |    |      |           |   |    |            |      |   |            |
|---------------------|------------|----|------|-----------|---|----|------------|------|---|------------|
| <b>Hi-Q® ERC 16</b> |            |    |      |           |   |    |            |      |   |            |
| Hi-Q® ERC 16        | 3416.20000 | 28 | 22,5 | 12,0–15,5 | 5 | 25 | M 22 x 1,5 | 22,5 | – | 7112.16010 |

|                     |            |    |    |           |   |    |            |    |   |            |
|---------------------|------------|----|----|-----------|---|----|------------|----|---|------------|
| <b>Hi-Q® ERC 20</b> |            |    |    |           |   |    |            |    |   |            |
| Hi-Q® ERC 20        | 3420.20000 | 34 | 24 | 13,0–16,5 | 5 | 30 | M 25 x 1,5 | 24 | – | 7112.20010 |

|                     |            |    |    |           |   |   |            |    |   |            |
|---------------------|------------|----|----|-----------|---|---|------------|----|---|------------|
| <b>Hi-Q® ERC 25</b> |            |    |    |           |   |   |            |    |   |            |
| Hi-Q® ERC 25        | 3425.20000 | 42 | 25 | 13,5–17,0 | 5 | – | M 32 x 1,5 | 25 | – | 7111.25000 |

|                     |            |    |      |           |   |   |            |      |   |            |
|---------------------|------------|----|------|-----------|---|---|------------|------|---|------------|
| <b>Hi-Q® ERC 32</b> |            |    |      |           |   |   |            |      |   |            |
| Hi-Q® ERC 32        | 3432.20000 | 50 | 27,5 | 14,5–18,0 | 5 | – | M 40 x 1,5 | 27,5 | – | 7111.32000 |

|                     |            |    |      |           |   |   |            |      |   |            |
|---------------------|------------|----|------|-----------|---|---|------------|------|---|------------|
| <b>Hi-Q® ERC 40</b> |            |    |      |           |   |   |            |      |   |            |
| Hi-Q® ERC 40        | 3440.20000 | 63 | 30,5 | 16,5–20,0 | 5 | – | M 50 x 1,5 | 30,5 | – | 7111.40000 |

|                     |            |    |      |           |   |   |          |      |   |            |
|---------------------|------------|----|------|-----------|---|---|----------|------|---|------------|
| <b>Hi-Q® ERC 50</b> |            |    |      |           |   |   |          |      |   |            |
| Hi-Q® ERC 50        | 3450.20000 | 78 | 42,5 | 19,0–26,0 | 5 | – | M 64 x 2 | 40,3 | – | 7111.50000 |

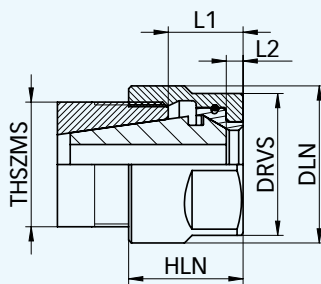
# Hi-Q® | ERB friction-bearing Hi-Q® | ERBC for coolant through tools

**Application** The Hi-Q® | ERB is a friction-bearing nut that offers the highest clamping force available. It is interchangeable with all other nuts per DIN 6499.

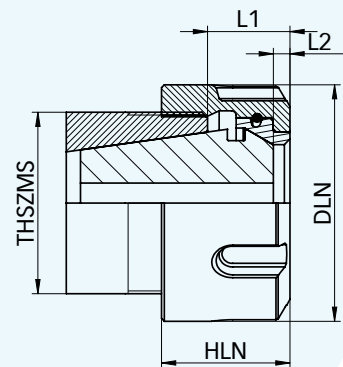
**Application with sealing disk/coolant flush disk** The Hi-Q® | ERBC clamping nut is intended for use with the sealing disk system DS/ER and the cool flush system KS/ER. The disk system allows the use of all standard ER collets, ultraprecision collets and tapping collets for coolant through tools.

- // Up to 150 bar / 2100 PSI coolant pressure
- // Prevents dirt and chips from entering the collet

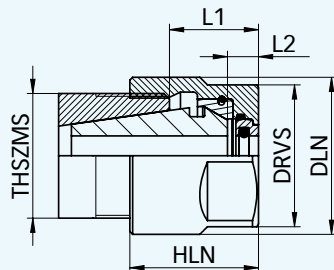
*For peripheral cooling of non coolant through tools we recommend the coolant flush disks KS/ER. Please refer to page 330. Accessories are not included in delivery.*



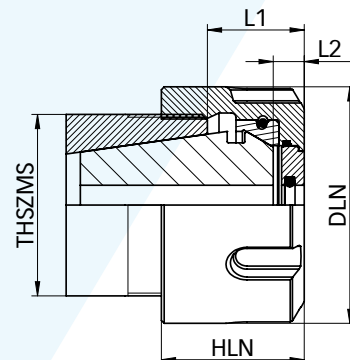
Hi-Q® | ERB 16 – ERB 20



Hi-Q® | ERB 25 – ERB 50



Hi-Q® | ERBC 16 – ERBC 20



Hi-Q® | ERBC 25 – ERBC 40

| Type         | Part no.   | Dimensions [mm] |      |           |    |      | THSZMS     | Accessories |
|--------------|------------|-----------------|------|-----------|----|------|------------|-------------|
|              |            | DLN             | HLN  | L1        | L2 | DRVS |            | Wrench      |
| Hi-Q® ERB 16 |            |                 |      |           |    |      |            |             |
| Hi-Q® ERB 16 | 3416.30000 | 28              | 20,2 | 10,0–13,6 | 3  | 25   | M 22 x 1,5 | 7112.16010  |
| Hi-Q® ERB 20 |            |                 |      |           |    |      |            |             |
| Hi-Q® ERB 20 | 3420.30000 | 34              | 21,7 | 11,0–14,5 | 3  | 30   | M 25 x 1,5 | 7112.20010  |
| Hi-Q® ERB 25 |            |                 |      |           |    |      |            |             |
| Hi-Q® ERB 25 | 3425.30000 | 42              | 22,6 | 11,5–15,0 | 3  | –    | M 32 x 1,5 | 7111.25000  |
| Hi-Q® ERB 32 |            |                 |      |           |    |      |            |             |
| Hi-Q® ERB 32 | 3432.30000 | 50              | 25   | 12,5–16,0 | 3  | –    | M 40 x 1,5 | 7111.32000  |
| Hi-Q® ERB 40 |            |                 |      |           |    |      |            |             |
| Hi-Q® ERB 40 | 3440.30000 | 63              | 28,2 | 14,5–18,0 | 3  | –    | M 50 x 1,5 | 7111.40000  |
| Hi-Q® ERB 50 |            |                 |      |           |    |      |            |             |
| Hi-Q® ERB 50 | 3450.30000 | 78              | 38,1 | 17,0–24,0 | 3  | –    | M 64 x 2   | 7111.50000  |

| Type          | Part no.   | Dimensions [mm] |      |           |     |      | THSZMS     | Accessories |
|---------------|------------|-----------------|------|-----------|-----|------|------------|-------------|
|               |            | DLN             | HLN  | L1        | L2  | DRVS |            | Wrench      |
| Hi-Q® ERBC 16 |            |                 |      |           |     |      |            |             |
| Hi-Q® ERBC 16 | 3416.40000 | 28              | 22,7 | 12,5–16,0 | 5,5 | 25   | M 22 x 1,5 | 7112.16010  |
| Hi-Q® ERBC 20 |            |                 |      |           |     |      |            |             |
| Hi-Q® ERBC 20 | 3420.40000 | 34              | 24,2 | 13,5–17,0 | 5,5 | 30   | M 25 x 1,5 | 7112.20010  |
| Hi-Q® ERBC 25 |            |                 |      |           |     |      |            |             |
| Hi-Q® ERBC 25 | 3425.40000 | 42              | 25,2 | 14,0–17,5 | 5,5 | –    | M 32 x 1,5 | 7111.25000  |
| Hi-Q® ERBC 32 |            |                 |      |           |     |      |            |             |
| Hi-Q® ERBC 32 | 3432.40000 | 50              | 27,4 | 15,0–18,5 | 5,5 | –    | M 40 x 1,5 | 7111.32000  |
| Hi-Q® ERBC 40 |            |                 |      |           |     |      |            |             |
| Hi-Q® ERBC 40 | 3440.40000 | 63              | 30,7 | 17,0–20,5 | 5,5 | –    | M 50 x 1,5 | 7111.40000  |

# Hi-Q® | ERM minimal external diameter Hi-Q® | ERMC for coolant through tools

**Application** The mini clamping nut Hi-Q®|ERM is recommended for use where minimal external diameters are essential (e.g., machining space is very limited). Thus, it is ideally suitable for multispindle drilling heads and toolholder extensions. The corresponding wrenches have the same external dimensions as the clamping nuts.

**Application with sealing disk/coolant flush disk** The Hi-Q®|ERMC clamping nut is intended for use with the sealing disk system DS/ER and the coolant flush system KS/ER. The disk system allows the use of all standard ER collets, ultraprecision collets and tapping collets for coolant through tools.

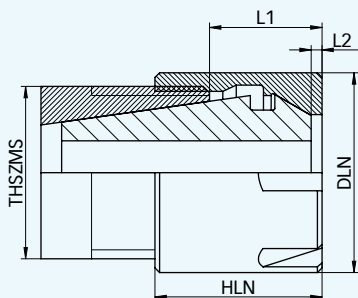
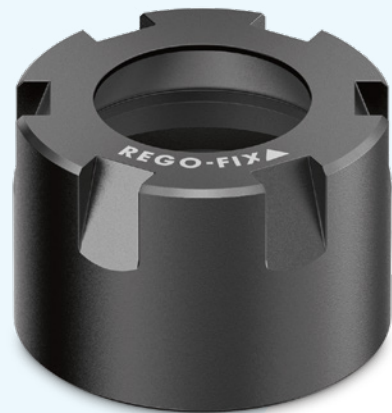
- // Up to 150 bar / 2100 PSI coolant pressure
- // Prevents dirt and chips from entering the collet

*For peripheral cooling of non coolant through tools we recommend the coolant flush disks KS/ER. Please refer to page 330. Accessories are not included in delivery.*

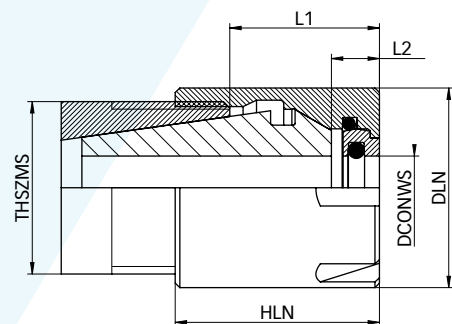
**Hi-Q®|ERMC 11** This clamping nut is recommended for use where minimal external diameters are important. It is the coolant through tools version of the Hi-Q®|ERM 11 clamping nut.

**Hi-Q®|ERMC 11 does not require sealing disks** The sealing system is built into the clamping nut.

- // Up to 150 bar / 2100 PSI coolant pressure
- // Prevents dirt and chips from entering the collet
- // Not interchangeable with nuts according to DIN 6499 / ISO 15488



Hi-Q®|ERM



Hi-Q®|ERMC



| Type           | Part no.   | Dimensions [mm] |      |          |     | THSZMS         | DCONWS |        | Accessories |
|----------------|------------|-----------------|------|----------|-----|----------------|--------|--------|-------------|
|                |            | DLN             | HLN  | L1       | L2  |                | [mm]   | [inch] |             |
| Hi-Q® ERM 8    |            |                 |      |          |     |                |        |        |             |
| Hi-Q® ERM 8    | 3508.00000 | 12              | 10,8 | 4,3–6,1  | 1,5 | M 10 x 0,75    | –      | –      | 7113.08000  |
| Hi-Q® ERM 8 L  | 3508.02000 | 12              | 10,8 | 4,3–6,1  | 1,5 | M 10 x 0,75-LH | –      | –      | 7113.08000  |
| Hi-Q® ERM 11   |            |                 |      |          |     |                |        |        |             |
| Hi-Q® ERM 11   | 3511.00000 | 16              | 12   | 5,7–7,5  | 0,4 | M 13 x 0,75    | –      | –      | 7113.11000  |
| Hi-Q® ERM 11 L | 3511.02000 | 16              | 12   | 5,7–7,5  | 0,4 | M 13 x 0,75-LH | –      | –      | 7113.11000  |
| Hi-Q® ERM 16   |            |                 |      |          |     |                |        |        |             |
| Hi-Q® ERM 16   | 3516.00000 | 22              | 18,4 | 8,0–11,5 | 0,9 | M 19 x 1       | –      | –      | 7113.16000  |
| Hi-Q® ERM 16 L | 3516.02000 | 22              | 18,4 | 8,0–11,5 | 0,9 | M 19 x 1-LH    | –      | –      | 7113.16000  |
| Hi-Q® ERM 20   |            |                 |      |          |     |                |        |        |             |
| Hi-Q® ERM 20   | 3520.00000 | 28              | 19   | 8,0–11,5 | –   | M 24 x 1       | –      | –      | 7113.20000  |
| Hi-Q® ERM 20 L | 3520.02000 | 28              | 19   | 8,0–11,5 | –   | M 24 x 1-LH    | –      | –      | 7113.20000  |
| Hi-Q® ERM 25   |            |                 |      |          |     |                |        |        |             |
| Hi-Q® ERM 25   | 3525.00000 | 35              | 20   | 8,5–12,0 | –   | M 30 x 1       | –      | –      | 7113.25000  |
| Hi-Q® ERM 25 L | 3525.02000 | 35              | 20   | 8,5–12,0 | –   | M 30 x 1-LH    | –      | –      | 7113.25000  |

L = left-threaded nuts

| Type                   | Part no.   | Dimensions [mm] |      |           |     | THSZMS      | DCONWS  |        | Accessories |
|------------------------|------------|-----------------|------|-----------|-----|-------------|---------|--------|-------------|
|                        |            | DLN             | HLN  | L1        | L2  |             | [mm]    | [inch] | Wrench      |
| Hi-Q® ERMC 11          |            |                 |      |           |     |             |         |        |             |
| Hi-Q® ERMC 11 Ø 3,0 mm | 3511.20300 | 16              | 14,6 | 8,1–9,8   | 3,5 | M 13 x 0,75 | 3,0–2,5 | 3/32"  | 7113.11000  |
| Hi-Q® ERMC 11 Ø 3,5 mm | 3511.20350 | 16              | 14,6 | 8,1–9,8   | 3,5 | M 13 x 0,75 | 3,5–3,0 | 1/8"   | 7113.11000  |
| Hi-Q® ERMC 11 Ø 4,0 mm | 3511.20400 | 16              | 14,6 | 8,1–9,8   | 3,5 | M 13 x 0,75 | 4,0–3,5 | 5/32"  | 7113.11000  |
| Hi-Q® ERMC 11 Ø 4,5 mm | 3511.20450 | 16              | 14,6 | 8,1–9,8   | 3,5 | M 13 x 0,75 | 4,5–4,0 | –      | 7113.11000  |
| Hi-Q® ERMC 11 Ø 5,0 mm | 3511.20500 | 16              | 14,6 | 8,1–9,8   | 3,5 | M 13 x 0,75 | 5,0–4,5 | 3/16"  | 7113.11000  |
| Hi-Q® ERMC 11 Ø 5,5 mm | 3511.20550 | 16              | 14,6 | 8,1–9,8   | 3,5 | M 13 x 0,75 | 5,5–5,0 | 7/32"  | 7113.11000  |
| Hi-Q® ERMC 11 Ø 6,0 mm | 3511.20600 | 16              | 14,6 | 8,1–9,8   | 3,5 | M 13 x 0,75 | 6,0–5,5 | –      | 7113.11000  |
| Hi-Q® ERMC 11 Ø 6,5 mm | 3511.20650 | 16              | 14,6 | 8,1–9,8   | 3,5 | M 13 x 0,75 | 6,5–6,0 | 1/4"   | 7113.11000  |
| Hi-Q® ERMC 11 Ø 7,0 mm | 3511.20700 | 16              | 14,6 | 8,1–9,8   | 3,5 | M 13 x 0,75 | 7,0–6,5 | –      | 7113.11000  |
| Hi-Q® ERMC 16          |            |                 |      |           |     |             |         |        |             |
| Hi-Q® ERMC 16          | 3516.20000 | 22              | 22   | 11,5–15,0 | 4,5 | M 19 x 1    | –       | –      | 7113.16000  |
| Hi-Q® ERMC 20          |            |                 |      |           |     |             |         |        |             |
| Hi-Q® ERMC 20          | 3520.20000 | 28              | 24   | 13–16,5   | 5   | M 24 x 1    | –       | –      | 7113.20000  |
| Hi-Q® ERMC 25          |            |                 |      |           |     |             |         |        |             |
| Hi-Q® ERMC 25          | 3525.20000 | 35              | 25   | 13,5–17,0 | 5   | M 30 x 1    | –       | –      | 7113.25000  |

# Hi-Q® | ERMX and Hi-Q® | ERMXC intRlox® Slip-off proof mini clamping nuts

**Application** For REGO-FIX ER toolholders with mini thread and cylindrical holders.

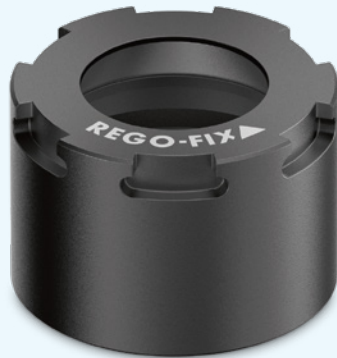
**Key advantages**

- // Design is ideally suited for lathes and Swiss turning machines
- // Very slim sizing proofs suitable for machines where space is limited
- // Safe handling thanks to the patented intRlox® profile
- // Slip-off proof design with all advantages of the regular mini clamping nuts
- // Easy and safe clamping with the MX wrench

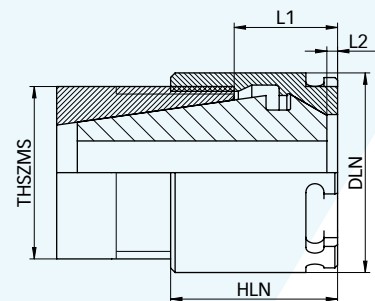
**Application with sealing disk/coolant flush disk** The Hi-Q® / ERMXC clamping nut is intended for use with the sealing disk system DS/ER and the coolant flush system KS/ER. The disk system allows the use of all standard ER collets, ultraprecision collets and tapping collets for coolant through tools.

- // Up to 150 bar / 2100 PSI coolant pressure
- // Prevents dirt and chips from entering the collet

*For peripheral cooling of non coolant through tools we recommend the coolant flush disks KS/ER. Please refer to page 330. Accessories are not included in delivery.*



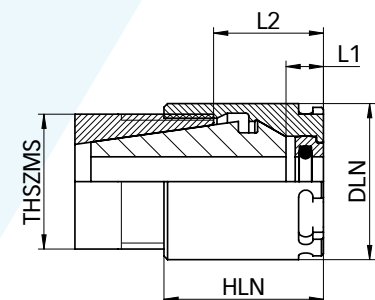
Hi-Q® | ERMX



Hi-Q® | ERMX



Hi-Q® | ERMXC



Hi-Q® | ERMXC

| Type            | Part no.   | Dimensions [mm] |      |          |     | THSZMS      | Accessories |
|-----------------|------------|-----------------|------|----------|-----|-------------|-------------|
|                 |            | DLN             | HLN  | L1       | L2  |             | Wrench      |
| Hi-Q®   ERMX 8  |            |                 |      |          |     |             |             |
| Hi-Q®   ERMX 8  | 3508.60000 | 12              | 11   | 4,3–6,1  | 0,4 | M 10 x 0,75 | 7118.08000  |
| Hi-Q®   ERMX 11 |            |                 |      |          |     |             |             |
| Hi-Q®   ERMX 11 | 3511.60000 | 16              | 12   | 5,7–7,5  | 0,4 | M 13 x 0,75 | 7118.11000  |
| Hi-Q®   ERMX 16 |            |                 |      |          |     |             |             |
| Hi-Q®   ERMX 16 | 3516.60000 | 22              | 18,4 | 8,0–11,5 | 0,9 | M 19 x 1    | 7118.16000  |
| Hi-Q®   ERMX 20 |            |                 |      |          |     |             |             |
| Hi-Q®   ERMX 20 | 3520.60000 | 28              | 19   | 8,0–11,5 | 0,0 | M 24 x 1    | 7118.20000  |
| Hi-Q®   ERMX 25 |            |                 |      |          |     |             |             |
| Hi-Q®   ERMX 25 | 3525.60000 | 35              | 20   | 8,5–12,0 | 0,0 | M 30 x 1    | 7118.25000  |

| Type           | Part no.   | Dimensions [mm] |      |           |     | THSZMS      | Accessories |
|----------------|------------|-----------------|------|-----------|-----|-------------|-------------|
|                |            | DLN             | HLN  | L1        | L2  |             | Wrench      |
| Hi-Q® ERMXC 11 |            |                 |      |           |     |             |             |
| Hi-Q® ERMXC 11 | 3511.70000 | 16              | 14,6 | 7,5–9,3   | 3,5 | M 13 x 0,75 | 7118.11000  |
| Hi-Q® ERMXC 16 |            |                 |      |           |     |             |             |
| Hi-Q® ERMXC 16 | 3516.70000 | 22              | 22,5 | 11,5–15,0 | 4,5 | M 19 x 1    | 7118.16000  |
| Hi-Q® ERMXC 20 |            |                 |      |           |     |             |             |
| Hi-Q® ERMXC 20 | 3520.70000 | 28              | 24   | 13,0–16,5 | 5   | M 24 x 1    | 7118.20000  |
| Hi-Q® ERMXC 25 |            |                 |      |           |     |             |             |
| Hi-Q® ERMXC 25 | 3525.70000 | 35              | 25   | 13,0–17,0 | 5   | M 30 x 1    | 7118.25000  |

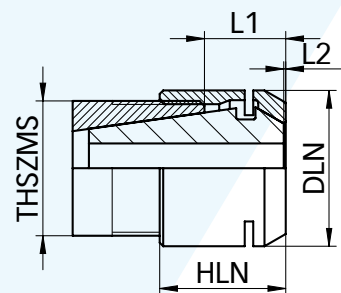
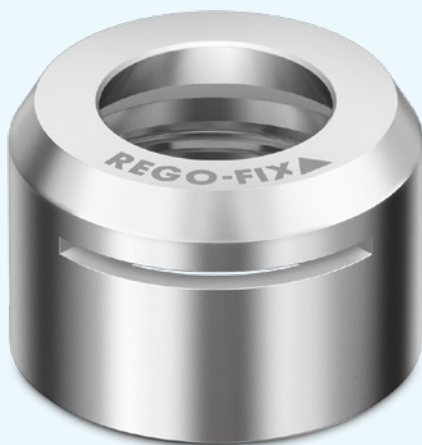
# ER MS clamping nuts for highest RPM

**Application** The ER MS clamping nut for highest RPM with minimal external diameter does not have the collet-locking system and all the contours are ground. This provides best balancing for critical high-speed machining applications.

The collet is released with the corresponding E MS wrench. ER MS nuts are also interchangeable with the Hi-Q®|ERM and Hi-Q®|ERMC nuts. With the ER MS clamping nuts we recommend using ER-UP (ultra-precision) collets to achieve the highest runout TIR.

## Key advantages

- // Precision-machined contours on all sides
- // Minimal residual unbalance
- // For high rpm up to 80,000



ER MS

| Type     | Part no.   | Dimensions [mm] |      |          |     | THSZMS      | Accessories |
|----------|------------|-----------------|------|----------|-----|-------------|-------------|
|          |            | DLN             | HLN  | L1       | L2  |             | Wrench      |
| ER 6 MS  |            |                 |      |          |     |             |             |
| SR 6 MS  | 3806.00000 | 10              | 9,5  | –        | –   | M 8 x 0,75  | 7864.06000  |
| ER 8 MS  |            |                 |      |          |     |             |             |
| ER 8 MS  | 3208.50000 | 12              | 10,8 | 4,3–6,1  | 1,5 | M 10 x 0,75 | 7114.08000  |
| ER 11 MS |            |                 |      |          |     |             |             |
| ER 11 MS | 3211.50000 | 16              | 11,5 | 4,6–6,8  | 0,4 | M 13 x 0,75 | 7114.11000  |
| ER 16 MS |            |                 |      |          |     |             |             |
| ER 16 MS | 3216.50000 | 22              | 17,8 | 6,1–10,5 | 0,3 | M 19 x 1    | 7114.16000  |
| ER 20 MS |            |                 |      |          |     |             |             |
| ER 20 MS | 3220.50000 | 28              | 19   | 7,1–11,5 | 0,6 | M 24 x 1    | 7114.20000  |

# Hi-Q® | ERAX with external thread Hi-Q® | ERAXC for coolant through tools

**Application** For REGO-FIX floating chucks and other ER toolholders with internal thread, e.g., ERA holders. These nuts can also be used on driven tools with internal threads.

*Please refer to page 101 for the SK / ERA Zero-Z® toolholder.*

*Please refer to page 107 for the SK / ERA Zero-Z® toolholder.*

*Please refer to page 111 for the BT-OM / ERA-Zero-Z® toolholder.*

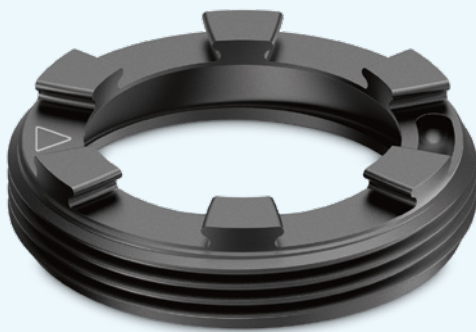
## Key advantages

- // Space-saving design for ideal use on long-turning machines
- // intRlox wrench is self-centering on the nut and prevents slipping off while tightening the nut

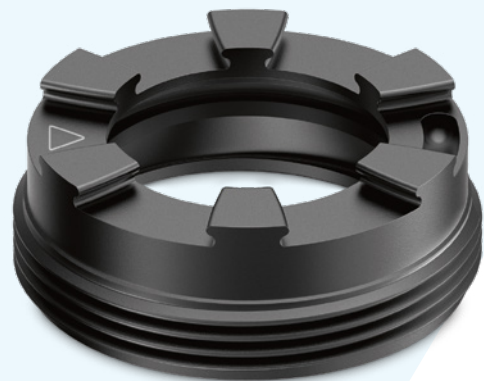
**Application with sealing disk / coolant flush disk** The Hi-Q® / ERAXC clamping nut is intended for use with the sealing disk system DS / ER and the coolant flush system KS / ER. The disk system allows the use of all standard ER collets, ultraprecision collets and tapping collets for coolant through tools.

- // Up to 150 bar / 2100 PSI coolant pressure
- // Prevents dirt and chips from entering the collet

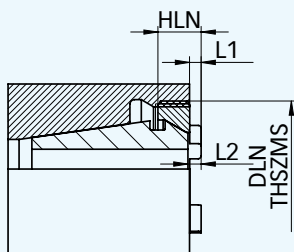
*For peripheral cooling of non coolant through tools we recommend the coolant flush disks KS / ER. Please refer to page 330.*



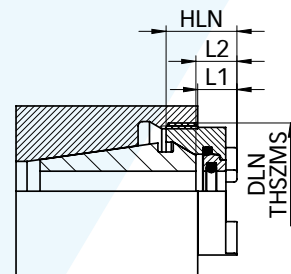
Hi-Q® | ERAX



Hi-Q® | ERAXC



Hi-Q® | ERAX



Hi-Q® | ERAXC

| Type          | Part no.   | Dimensions [mm] |         |     | THSZMS     | Accessories |
|---------------|------------|-----------------|---------|-----|------------|-------------|
|               |            | HLN             | L1      | L2  |            | Wrench      |
| Hi-Q® ERAX 11 |            |                 |         |     |            |             |
| Hi-Q® ERAX 11 | 3311.60000 | 7,5             | 1,0–3,2 | 3,9 | M 18 x 1   | 7117.11000  |
| Hi-Q® ERAX 16 |            |                 |         |     |            |             |
| Hi-Q® ERAX 16 | 3316.60000 | 7,6             | 0–2,6   | 2,3 | M 24 x 1   | 7117.16000  |
| Hi-Q® ERAX 20 |            |                 |         |     |            |             |
| Hi-Q® ERAX 20 | 3320.60000 | 8,5             | 0–2,5   | 2,3 | M 28 x 1,5 | 7117.20000  |
| Hi-Q® ERAX 25 |            |                 |         |     |            |             |
| Hi-Q® ERAX 25 | 3325.60000 | 8,8             | 0–1,9   | 2,3 | M 32 x 1,5 | 7117.25000  |
| Hi-Q® ERAX 32 |            |                 |         |     |            |             |
| Hi-Q® ERAX 32 | 3332.60000 | 9,8             | 0–1,1   | 2,5 | M 40 x 1,5 | 7117.32000  |
| Hi-Q® ERAX 40 |            |                 |         |     |            |             |
| Hi-Q® ERAX 40 | 3340.60000 | 11,7            | 0–1,0   | 2,4 | M 50 x 1,5 | 7117.40000  |

| Type           | Part no.   | Dimensions [mm] |         |     | THSZMS     | Accessories |
|----------------|------------|-----------------|---------|-----|------------|-------------|
|                |            | HLN             | L1      | L2  |            | Wrench      |
| Hi-Q® ERAXC 11 |            |                 |         |     |            |             |
| Hi-Q® ERAXC 11 | 3311.70000 | 9,2             | 2,7–4,9 | 6,1 | M 18 x 1   | 7117.11000  |
| Hi-Q® ERAXC 16 |            |                 |         |     |            |             |
| Hi-Q® ERAXC 16 | 3316.70000 | 12,5            | 3,1–7,5 | 7,2 | M 24 x 1   | 7117.16000  |
| Hi-Q® ERAXC 20 |            |                 |         |     |            |             |
| Hi-Q® ERAXC 20 | 3320.70000 | 13,5            | 3,1–7,5 | 7,3 | M 28 x 1,5 | 7117.20000  |
| Hi-Q® ERAXC 25 |            |                 |         |     |            |             |
| Hi-Q® ERAXC 25 | 3325.70000 | 13,8            | 2,5–6,9 | 7,3 | M 32 x 1,5 | 7117.25000  |
| Hi-Q® ERAXC 32 |            |                 |         |     |            |             |
| Hi-Q® ERAXC 32 | 3332.70000 | 14,9            | 1,8–6,2 | 7,6 | M 40 x 1,5 | 7117.32000  |
| Hi-Q® ERAXC 40 |            |                 |         |     |            |             |
| Hi-Q® ERAXC 40 | 3340.70000 | 16,6            | 1,5–5,9 | 7,3 | M 50 x 1,5 | 7117.40000  |



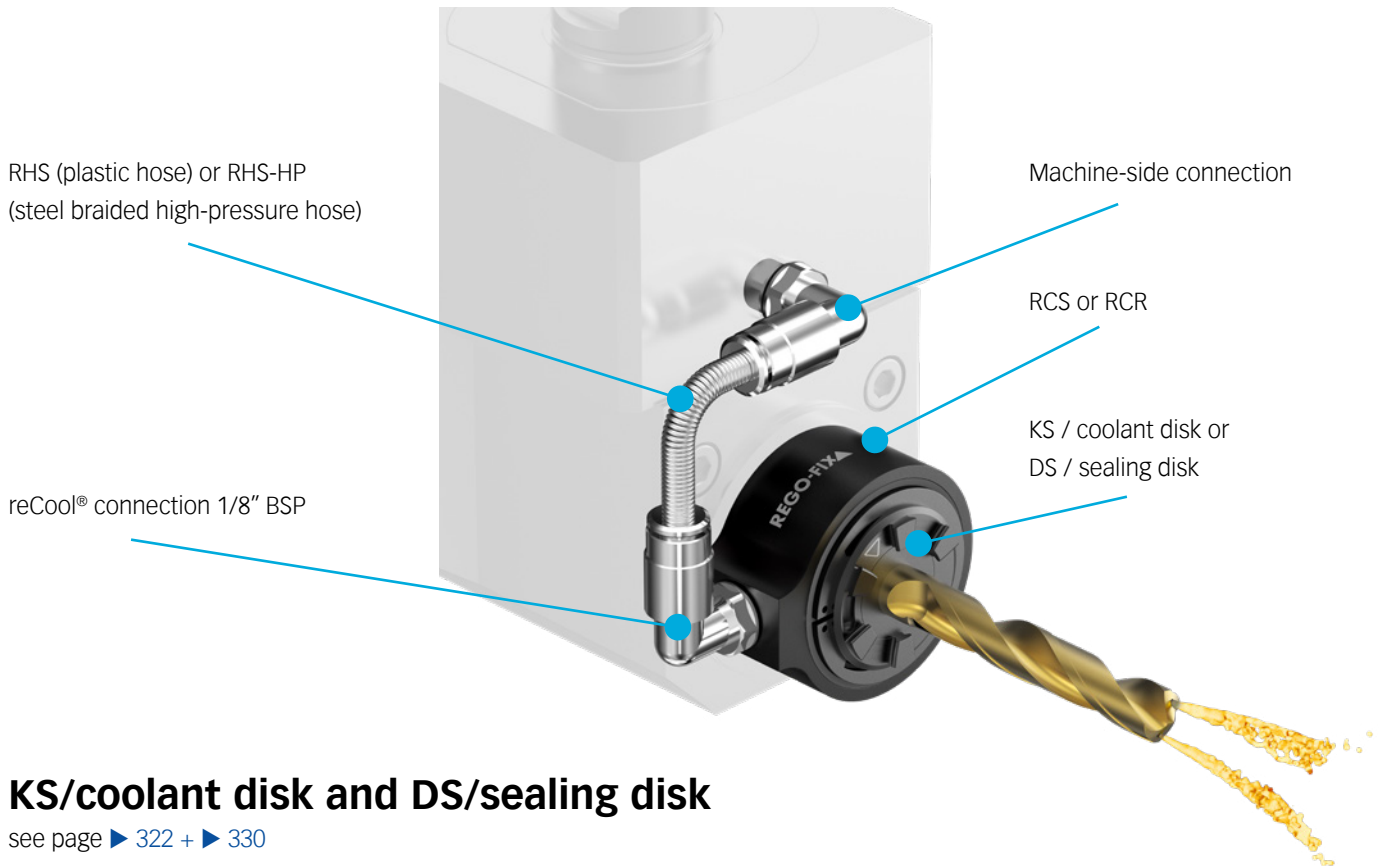




# reCool® RCR and RCS

RCS/RCR

Easy retrofit to internal coolant supply



## KS/coolant disk and DS/sealing disk

see page ► 322 + ► 330

The reCool® system can be configured for internal cooling using sealing disks or for peripheral cooling using coolant disks.

Sealed collets (ER-DM) and collets with coolant holes (ER-CB) **cannot be used.**

## Machine-side connection

see page ► 214

For applications up to 100 bar, the following connectors can be used:

- // RVG – straight quick coupling
- // RVA – 90° quick coupling
- // RBA – ball head adapter
- // RRA – aluminium ring adapter

For applications up to 150 bar, the connectors are factory-crimped to the hose.

## reCool® connection

see page ► 214

- // RVG – straight quick coupling
- // RVA – 90° quick coupling

For applications up to 150 bar, the connectors are factory-crimped to the hose.

## Hose

see page ► 214

- // RHS – plastic hose with anti-kink spring, up to 100 bar.  
Can be shortened by user.
- // RHS-HP – steel braided hose for high-pressure applications up to 150 bar. **Cannot be shortened.**

# reCool® RCR and RCS

Easy retrofit to internal coolant supply

| Type                          | Part no.   | Ø     |
|-------------------------------|------------|-------|
| <b>Ball head adapter RBA*</b> |            |       |
| RBA 10                        | 3799.93100 | 10 mm |
| RBA 11                        | 3799.93110 | 11 mm |
| RBA 12                        | 3799.93120 | 12 mm |
| RBA 13                        | 3799.93130 | 13 mm |
| RBA 14                        | 3799.93140 | 14 mm |
| RBA 15                        | 3799.93150 | 15 mm |
| RBA 16                        | 3799.93160 | 16 mm |

\* 1/8" BSP



| Type                              | Part no.   |
|-----------------------------------|------------|
| <b>Threaded fittings*</b>         |            |
| SET RVG-100 1/8" – 0°             | 3799.96180 |
| SET RVG-100 M8 x 1 – 0°           | 3799.96810 |
| <small>* 2 pieces per set</small> |            |


| Type                              | Part no.   |
|-----------------------------------|------------|
| <b>Threaded fittings*</b>         |            |
| SET RVA-100 1/8" – 90°            | 3799.96189 |
| <small>* 2 pieces per set</small> |            |

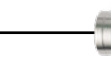

| Type                              | Part no.   |
|-----------------------------------|------------|
| <b>Threaded fittings*</b>         |            |
| SET RVG-100 1/8" – 0°             | 3799.96180 |
| <small>* 2 pieces per set</small> |            |


| Type                              | Part no.   |
|-----------------------------------|------------|
| <b>Threaded fittings*</b>         |            |
| SET RVA-100 1/8" – 90°            | 3799.96189 |
| <small>* 2 pieces per set</small> |            |

| Type                          | Part no.   | Ø     |
|-------------------------------|------------|-------|
| <b>Ball head adapter RBA*</b> |            |       |
| RBA 10                        | 3799.93100 | 10 mm |
| RBA 11                        | 3799.93110 | 11 mm |
| RBA 12                        | 3799.93120 | 12 mm |
| RBA 13                        | 3799.93130 | 13 mm |
| RBA 14                        | 3799.93140 | 14 mm |
| RBA 15                        | 3799.93150 | 15 mm |
| RBA 16                        | 3799.93160 | 16 mm |

\* 1/8" BSP



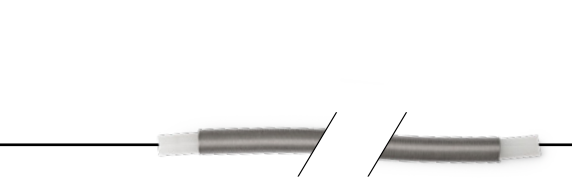
| Type                              | Part no.   | Ø     |
|-----------------------------------|------------|-------|
| <b>Aluminum ring adapter RRA*</b> |            |       |
| RRA 10                            | 3799.94100 | 10 mm |
| RRA 11                            | 3799.94110 | 11 mm |
| RRA 12                            | 3799.94120 | 12 mm |
| RRA 13                            | 3799.94130 | 13 mm |
| RRA 14                            | 3799.94140 | 14 mm |
| RRA 15                            | 3799.94150 | 15 mm |
| RRA 16                            | 3799.94160 | 16 mm |

\* 1/8" BSP

| Type                          | Part no.   | Ø     |
|-------------------------------|------------|-------|
| <b>Ball head adapter RBA*</b> |            |       |
| RBA 10                        | 3799.93100 | 10 mm |
| RBA 11                        | 3799.93110 | 11 mm |
| RBA 12                        | 3799.93120 | 12 mm |
| RBA 13                        | 3799.93130 | 13 mm |
| RBA 14                        | 3799.93140 | 14 mm |
| RBA 15                        | 3799.93150 | 15 mm |
| RBA 16                        | 3799.93160 | 16 mm |

\* 1/8" BSP

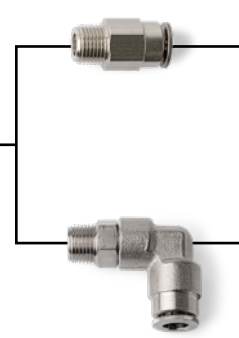




**Standard hose set RHS\***

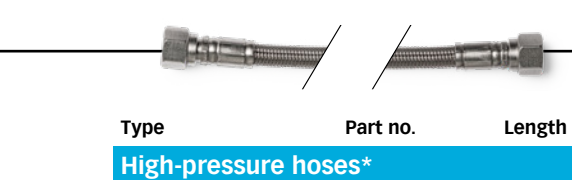
|             |            |      |
|-------------|------------|------|
| SET RHS-100 | 3799.95000 | 400* |
|-------------|------------|------|

\* ≤100 bar; incl. spiral spring  
Length can be individually shortened between  
50 – 400 mm



RCR | ER  
RCR | ERM  
RCR | Hi-S  
RCS | ERMX

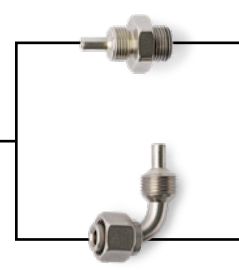
- ER collets ▶ 163
- Coolant disk ▶ 330
- Sealing disk ▶ 322
- Wrenches ▶ 335



| Type                        | Part no. | Length |
|-----------------------------|----------|--------|
| <b>High-pressure hoses*</b> |          |        |

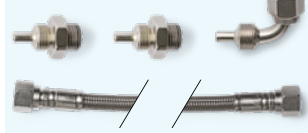
|                 |            |        |
|-----------------|------------|--------|
| SET RHS-HP L100 | 3799.97100 | 100 mm |
| SET RHS-HP L200 | 3799.97200 | 200 mm |
| SET RHS-HP L300 | 3799.97300 | 300 mm |
| SET RHS-HP L400 | 3799.97400 | 400 mm |
| SET RHS-HP L500 | 3799.97500 | 500 mm |
| SET RHS-HP L600 | 3799.97600 | 600 mm |
| SET RHS-HP L700 | 3799.97700 | 700 mm |

\* ≤150 bar; incl. 1/8" threaded fitting



RCR | ER  
RCR | ERM  
RCS | ERMX

Included in the set:

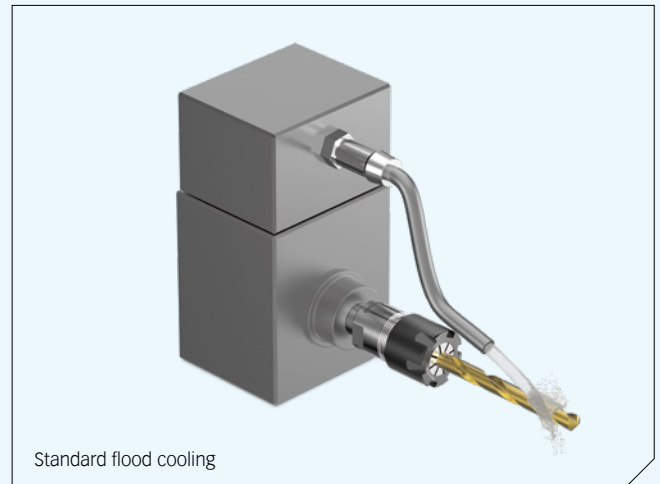


- ER collets ▶ 163
- Coolant disk ▶ 330
- Sealing disk ▶ 322
- Wrenches ▶ 335

# Fast and easy retrofitting: From external flood cooling to internal cooling



Retrofitted reCool® static RCS



Standard flood cooling

## Key features of reCool® static RCS for use with static holders

- // Cost-friendly conversion of existing static tooling systems to through coolant in only two minutes
- // For ER collets (DIN 6499 / ISO 15488) in stationary toolholders with external fine threads
- // Coolant pressures of up to 150 bar / 2100 PSI\*
- // RCS/ERMx for emulsion and oil coolants
- // Low-maintenance design
- // For coolant through tools (with sealing disks DS) and for peripheral cooling (with coolant flush disks KS)
- // Not for use with sealed collets DM

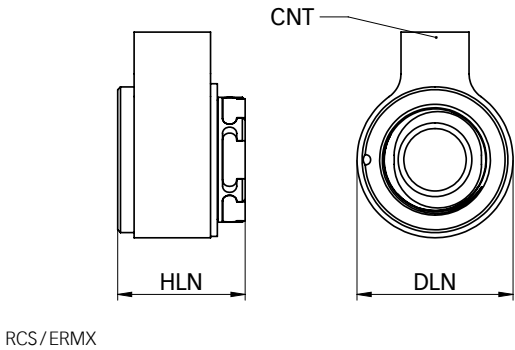
\* With high-pressure hoses RHS-HP: 100 bar / 1400 PSI with standard hose  
Accessories are not included in delivery.

## Advantages of internal cooling with reCool®

- // Optimized coolant supply to the cutting edge: increases tool life and reduces cycle time
- // Best chip removal
- // No scattering or spray losses

| Type                                                | Part no.   | Dimensions [mm] |      | CNT      | Accessories |
|-----------------------------------------------------|------------|-----------------|------|----------|-------------|
|                                                     |            | HLN             | DLN  |          | Wrench      |
| Set RCS (for emulsion- and oil-based coolants)      |            |                 |      |          |             |
| SET RCS/ERMX 16                                     | 3716.50000 | 22,5            | 27,5 | M 19 x 1 | 7118.16000  |
| SET RCS/ERMX 20                                     | 3720.50000 | 24              | 34,5 | M 24 x 1 | 7118.20000  |
| RCS/ERMX nut (for emulsion- and oil-based coolants) |            |                 |      |          |             |
| RCS/ERMX 16                                         | 3716.59000 | 22,5            | 27,5 | M 19 x 1 | 7118.16000  |
| RCS/ERMX 20                                         | 3720.59000 | 24              | 34,5 | M 24 x 1 | 7118.20000  |

| Included in set RCS    |     |
|------------------------|-----|
| Type                   | Ex. |
| RCS/ERMX 16/20         | 1   |
| SET RHS x 400          | 1   |
| SET RVG / 1/8" BSP     | 2   |
| SET RVA 90° / 1/8" BSP | 2   |



reCool® sets overview

reCool® RCS and reCool® RCR sets



RCS/ERMX



RCR/ER

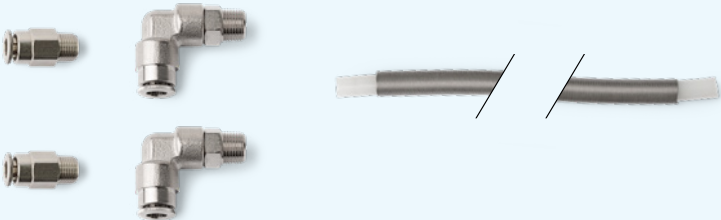


RCR/ERM

+

+

+

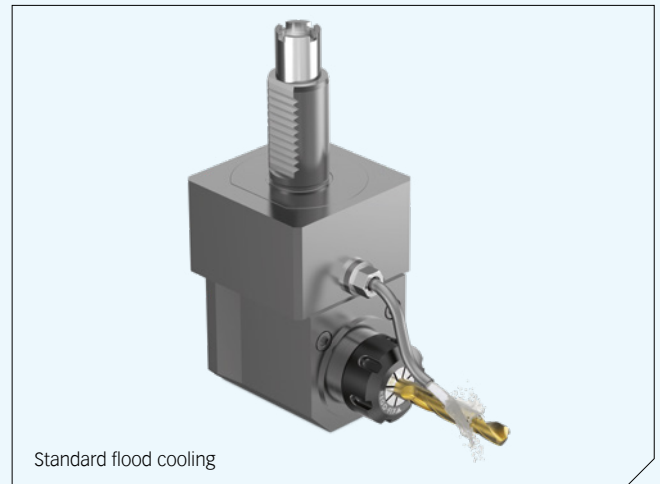


When ordering a set ("SET" in type name) you will receive the indicated reCool® nut as well as the accessories shown here.

# Low-cost retrofitting to internal cooling



Retrofitted with reCool® rotary RCR/ER, RCR/ERM



## Key features of reCool® rotary RCR for use with spindles

- // Cost-friendly conversion of existing driven tooling systems to through coolant in only two minutes
- // For ER and ERM thread in driven tools and turning machines and for ER collets to DIN 6499/ISO 15488
- // Speeds up to 12.000 rpm\*
- // Coolant pressures up to 150 bar with high-pressure hose, standard hose max. 100 bar / 1400 PSI
- // Low-maintenance coolant lubricated bearings
- // For coolant through tools (with sealing disks DS/ER) and for peripheral cooling (with coolant flush disks KS/ER)
- // RCR/ER(M) for emulsion and oil coolants
- // Not for use with sealed collets DM

\* 6.000 rpm with RCR/ER 40.

Accessories are not included in delivery.

## Advantages of internal cooling with reCool®

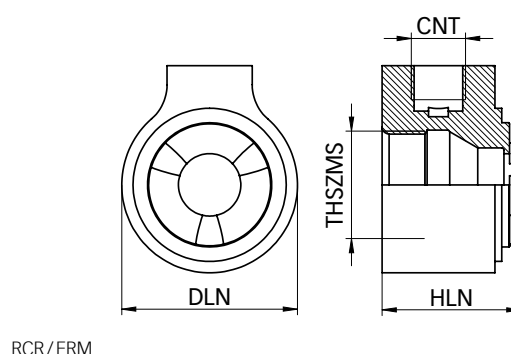
- // Optimized coolant supply to the cutting edge: increases tool life and reduces cycle time
- // Best chip removal
- // No scattering or spray losses



| Type                                              | Part no.   | Dimensions [mm] |       | THSZMS      | Accessories |
|---------------------------------------------------|------------|-----------------|-------|-------------|-------------|
|                                                   |            | HLN             | DLN   |             | Wrench      |
| Set RCR/ER (for emulsion- and oil-based coolants) |            |                 |       |             |             |
| SET RCR/ER 11                                     | 3711.10000 | 16,6            | 21,75 | M 14 x 0,75 | 7117.11000  |
| SET RCR/ER 16                                     | 3716.10000 | 24,5            | 34    | M 22 x 1,5  | 7117.16000  |
| SET RCR/ER 20                                     | 3720.10000 | 26              | 40    | M 25 x 1,5  | 7117.20000  |
| SET RCR/ER 25                                     | 3725.10000 | 27              | 50    | M 32 x 1,5  | 7117.25000  |
| SET RCR/ER 32                                     | 3732.10000 | 29,5            | 62,5  | M 40 x 1,5  | 7117.32000  |
| SET RCR/ER 40                                     | 3740.10000 | 32,5            | 72,5  | M 50 x 1,5  | 7117.40000  |

| Included in set RCR    |     |
|------------------------|-----|
| Type                   | Ex. |
| RCR/ER 11–40           | 1   |
| SET RHS x 400          | 1   |
| SET RVG / 1/8" BSP     | 2   |
| SET RVA 90° / 1/8" BSP | 2   |

|                                                          |            |      |       |             |            |
|----------------------------------------------------------|------------|------|-------|-------------|------------|
| <b>RCR/ER nut (for emulsion- and oil-based coolants)</b> |            |      |       |             |            |
| RCR/ER 11                                                | 3711.19000 | 16,6 | 21,75 | M 14 x 0,75 | 7117.11000 |
| RCR/ER 16                                                | 3716.19000 | 24,5 | 34    | M 22 x 1,5  | 7117.16000 |
| RCR/ER 20                                                | 3720.19000 | 26   | 40    | M 25 x 1,5  | 7117.20000 |
| RCR/ER 25                                                | 3725.19000 | 27   | 50    | M 32 x 1,5  | 7117.25000 |
| RCR/ER 32                                                | 3732.19000 | 29,5 | 62,5  | M 40 x 1,5  | 7117.32000 |
| RCR/ER 40                                                | 3740.19000 | 32,5 | 72,5  | M 50 x 1,5  | 7117.40000 |



| Type                                               | Part no.   | Dimensions [mm] |       | THSZMS      | Accessories |
|----------------------------------------------------|------------|-----------------|-------|-------------|-------------|
|                                                    |            | HLN             | DLN   |             | Wrench      |
| Set RCR/ERM (for emulsion- and oil-based coolants) |            |                 |       |             |             |
| SET RCR/ERM 11                                     | 3711.30000 | 16,6            | 21,75 | M 13 x 0,75 | 7117.11000  |
| SET RCR/ERM 16                                     | 3716.30000 | 24,5            | 31    | M 19 x 1    | 7117.16000  |
| SET RCR/ERM 20                                     | 3720.30000 | 26              | 38    | M 24 x 1    | 7117.20000  |
| SET RCR/ERM 25                                     | 3725.30000 | 27              | 46    | M 30 x 1    | 7117.25000  |

| Included in set RCR    |     |
|------------------------|-----|
| Type                   | Ex. |
| RCR/ERM 11–25          | 1   |
| SET RHS x 400          | 1   |
| SET RVG / 1/8" BSP     | 2   |
| SET RVA 90° / 1/8" BSP | 2   |

|                                                          |            |      |       |             |            |
|----------------------------------------------------------|------------|------|-------|-------------|------------|
| <b>RCR/ER nut (for emulsion- and oil-based coolants)</b> |            |      |       |             |            |
| RCR/ERM 11                                               | 3711.39000 | 16,6 | 21,75 | M 13 x 0,75 | 7117.11000 |
| RCR/ERM 16                                               | 3716.39000 | 24,5 | 31    | M 19 x 1    | 7117.16000 |
| RCR/ERM 20                                               | 3720.39000 | 26   | 38    | M 24 x 1    | 7117.20000 |
| RCR/ERM 25                                               | 3725.39000 | 27   | 46    | M 30 x 1    | 7117.25000 |

# reCool® Hi-Speed

RCR Hi-S

Retrofit high-speed spindles to internal cooling

## Features and benefits

### Easy

High-speed spindles can now be easily retrofitted for internal cooling.

### Fast

Improved design for higher speeds on high-speed and high-frequency spindles.

### reCool® Hi-Speed

The patented solution for retrofitting spindles for internal cooling – new and improved.



Before

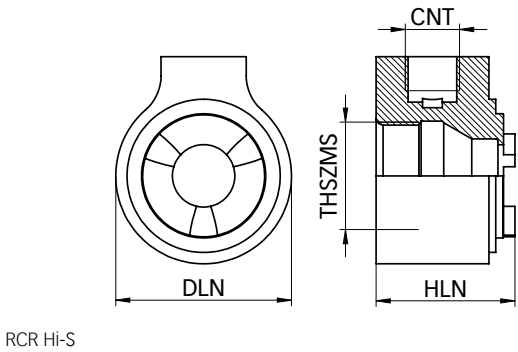


After

- // For high speed spindles
- // Tools shank diameter 3–10 mm
- // Maximum pressure 100 bar
- // Suited for emulsion and oil

- // Maximum RPM 40000 min<sup>-1</sup>
- // For ER 11 and ER 16 including ERM (Mini)
- // Ceramic coating for reduced friction
- // To be used with KS/DS coolant disks

| Type                                                     | Part no.   | Dimensions [mm] |       | THSZMS      | Accessories | Included in set RCR    |     |
|----------------------------------------------------------|------------|-----------------|-------|-------------|-------------|------------------------|-----|
|                                                          |            | HLN             | DLN   |             | Wrench      | Type                   | Ex. |
| Set RCR Hi-S / ER (for emulsion- and oil-based coolants) |            |                 |       |             |             | RCR/ER 11 – 40         | 1   |
| SET RCR Hi-S   ER 11                                     | 3711.60000 | 16,6            | 21,75 | M 14 x 0.75 | 7117.11000  | SET RHS x 400          | 1   |
| SET RCR Hi-S   ERM 11                                    | 3711.70000 | 16,6            | 21,75 | M 13 x 0.75 | 7117.11000  | SET RVG / 1/8" BSP     | 2   |
| SET RCR Hi-S   ER 16                                     | 3716.60000 | 24,5            | 34    | M 22 x 1.5  | 7117.16000  | SET RVA 90° / 1/8" BSP | 2   |
| SET RCR Hi-S   ERM 16                                    | 3716.70000 | 24,5            | 34    | M 19 x 1    | 7117.16000  |                        |     |
| RCR Hi-S / ER nut (for emulsion- and oil-based coolants) |            |                 |       |             |             |                        |     |
| RCR Hi-S   ER 11                                         | 3711.69000 | 16,6            | 21,75 | M 14 x 0.75 | 7117.11000  |                        |     |
| RCR Hi-S   ERM 11                                        | 3711.79000 | 16,6            | 21,75 | M 13 x 0.75 | 7117.11000  |                        |     |
| RCR Hi-S   ER 16                                         | 3716.69000 | 24,5            | 34    | M 22 x 1.5  | 7117.16000  |                        |     |
| RCR Hi-S   ERM 16                                        | 3716.79000 | 24,5            | 34    | M 19 x 1    | 7117.16000  |                        |     |



| Type                                                                           | Part no.   | Length [mm] |
|--------------------------------------------------------------------------------|------------|-------------|
| <b>High-pressure hoses (<math>\leq 150</math> bar) with threaded 1/8" ends</b> |            |             |
| SET RHS-HP x 100                                                               | 3799.97100 | 100         |
| SET RHS-HP x 200                                                               | 3799.97200 | 200         |
| SET RHS-HP x 300                                                               | 3799.97300 | 300         |
| SET RHS-HP x 400                                                               | 3799.97400 | 400         |
| SET RHS-HP x 500                                                               | 3799.97500 | 500         |
| SET RHS-HP x 600                                                               | 3799.97600 | 600         |
| SET RHS-HP x 700                                                               | 3799.97700 | 700         |

**Standard hose set ( $\leq 100$  bar) incl. steel spiral**

|               |            |      |
|---------------|------------|------|
| SET RHS x 400 | 3799.95000 | 400* |
|---------------|------------|------|

\*The length can be shortened individually between 50 - 400 mm

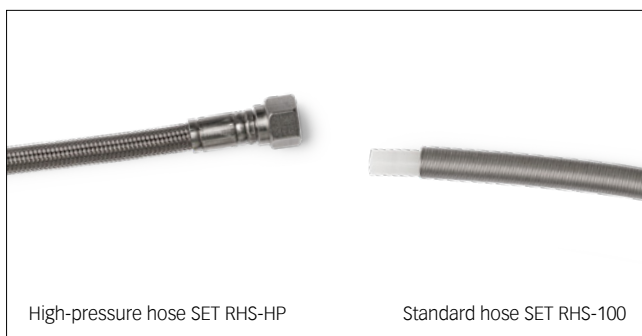
**Fitting sets (2 pieces each)**

|                        |            |   |
|------------------------|------------|---|
| SET RVG / 1/8" BSP     | 3799.96180 | – |
| SET RVA 90° / 1/8" BSP | 3799.96189 | – |
| SET RVG / M8 x 1       | 3799.96810 | – |

| Type                                | Part no.   | Ø [mm] | Length [mm] |
|-------------------------------------|------------|--------|-------------|
| <b>Ball adapters RBA (1/8" BSP)</b> |            |        |             |
| RBA 10                              | 3799.93100 | 10     | –           |
| RBA 11                              | 3799.93110 | 11     | –           |
| RBA 12                              | 3799.93120 | 12     | –           |
| RBA 12 / M5 x 0.5                   | 3799.93125 | 12     | –           |
| RBA 13                              | 3799.93130 | 13     | –           |
| RBA 14                              | 3799.93140 | 14     | –           |
| RBA 15                              | 3799.93150 | 15     | –           |
| RBA 16                              | 3799.93160 | 16     | –           |

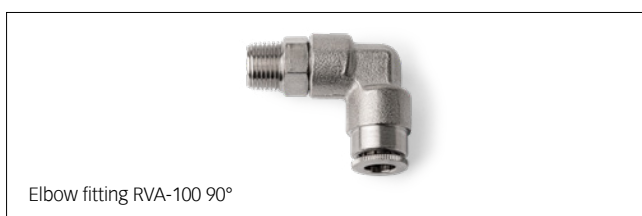
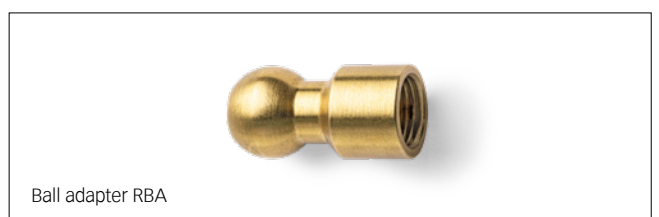
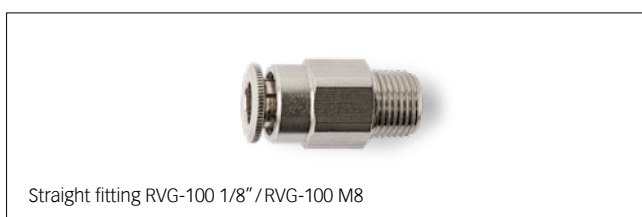
**Aluminum ring adapters RRA (1/8" BSP)**

|        |            |    |   |
|--------|------------|----|---|
| RRA 10 | 3799.94100 | 10 | – |
| RRA 11 | 3799.94110 | 11 | – |
| RRA 12 | 3799.94120 | 12 | – |
| RRA 13 | 3799.94130 | 13 | – |
| RRA 14 | 3799.94140 | 14 | – |
| RRA 15 | 3799.94150 | 15 | – |
| RRA 16 | 3799.94160 | 16 | – |

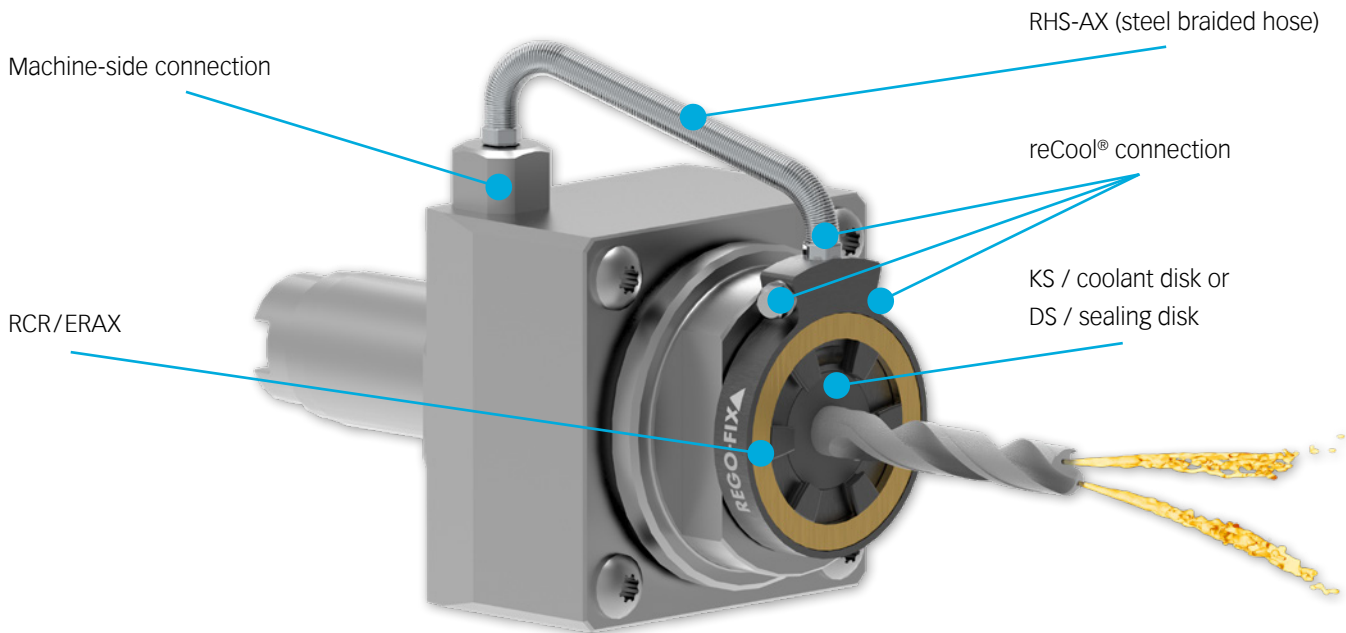

Expert advice

The ball adapter **RBA** is used when the driven tool has a ball connection. The fitting can then be used on the hose.

The aluminum ring adapter **RRA** can be used when the driven tool cooling connection uses the "press-in" principle.



Easy retrofit to internal coolant supply



## KS/coolant disk and DS/sealing disk

see page ► 322 + ► 330

The reCool® system can be configured for internal cooling using sealing disks or for peripheral cooling using coolant disks.

Sealed collets (ER-DM) and collets with coolant holes (ER-CB) **cannot be used.**

## Machine-side connection

see page ► 218

- // HB – Hollow bolts
- // RBA – Ball head adapter

## reCool® connection

see page ► 218

- // Direct connection with RHS-AX steel braided hose

## Hose

see page ► 218

- // RHS-AX – steel braided hose for applications up to 100 bar.  
The hose length **cannot** be shortened by the user.

# reCool® RCR/ERAX

Easy retrofit to internal coolant supply

| Type                          | Part no.   | Ø     |
|-------------------------------|------------|-------|
| <b>Ball head adapter RBA*</b> |            |       |
| RBA 10                        | 3799.93100 | 10 mm |
| RBA 11                        | 3799.93110 | 11 mm |
| RBA 12                        | 3799.93120 | 12 mm |
| RBA 13                        | 3799.93130 | 13 mm |
| RBA 14                        | 3799.93140 | 14 mm |
| RBA 15                        | 3799.93150 | 15 mm |
| RBA 16                        | 3799.93160 | 16 mm |

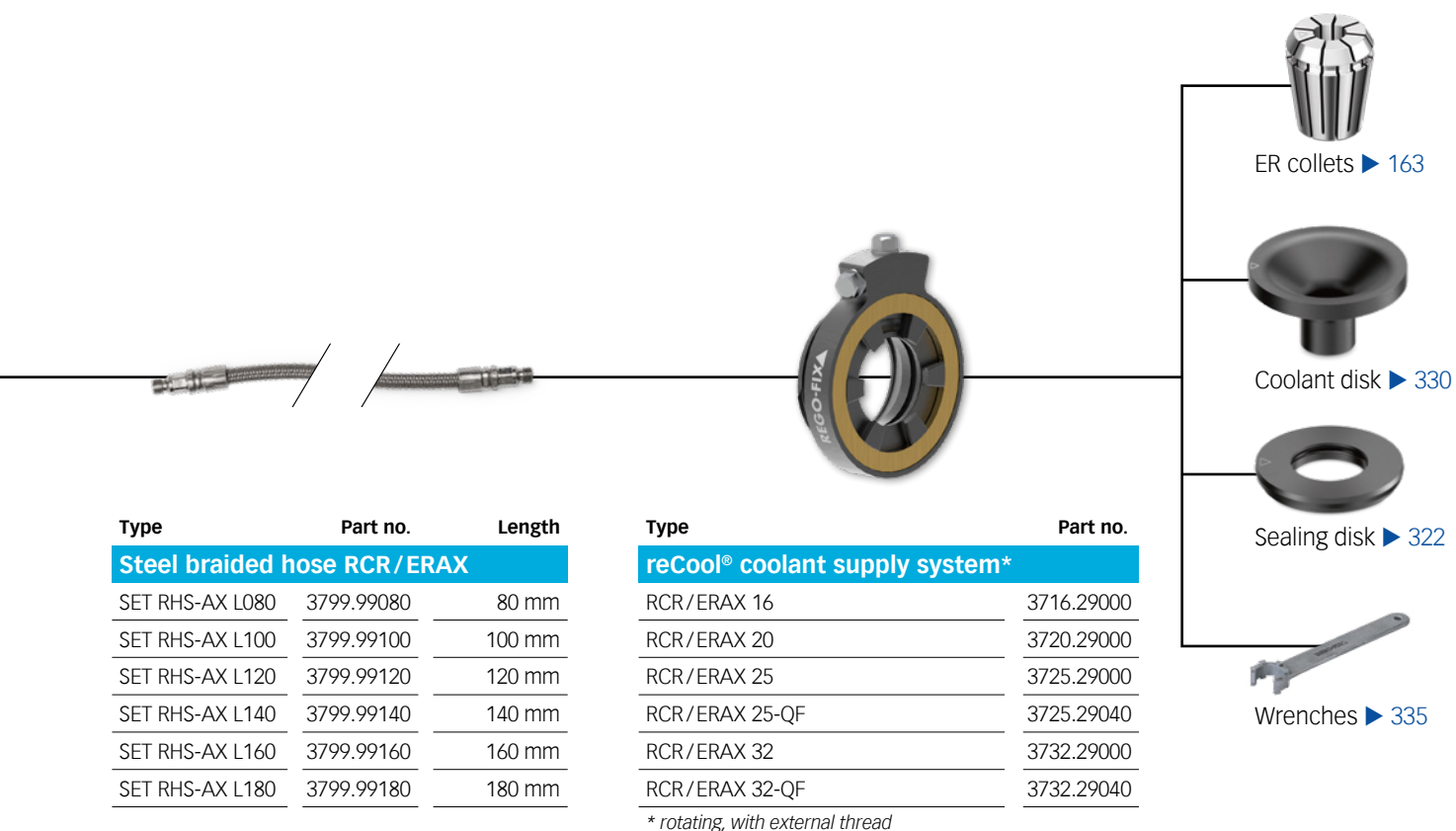
\* 1/8" BSP

| Type                                   | Part no.   | Ø     |
|----------------------------------------|------------|-------|
| <b>Ball head adapter RBA 1/8" BSP*</b> |            |       |
| RBA 12, M5x0.5                         | 3799.93125 | 12 mm |

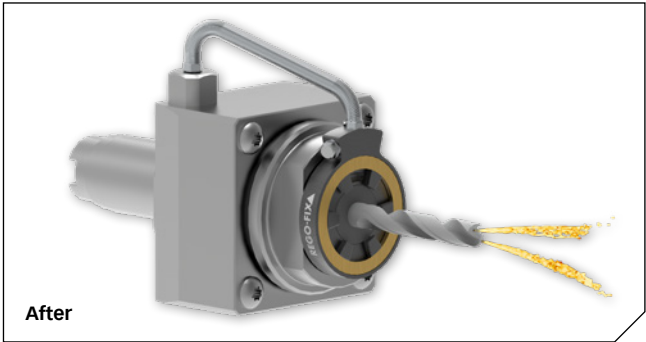
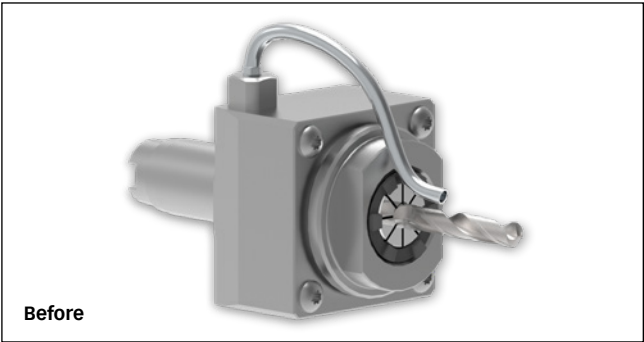
\*No RCR/ERAX QF included in the delivery.

| Type                            | Part no.   |
|---------------------------------|------------|
| <b>Hollow screws RCR / ERAX</b> |            |
| SET HB-AX M6 x 1                | 3799.90606 |
| SET HB-AX M8 x 1                | 3799.90808 |
| SET HB-AX M8 x 1,25             | 3799.90818 |
| SET HB-AX M10 x 1               | 3799.91010 |
| SET HB-AX / 1/8" BSP            | 3799.91810 |

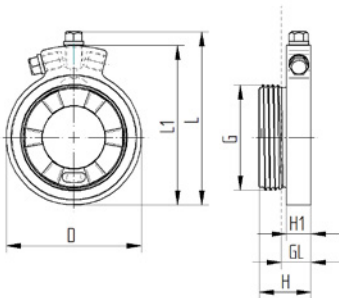
| Type                          | Part no.   |
|-------------------------------|------------|
| <b>Hollow screws RCR/ERAX</b> |            |
| SET HB-AX / 1/8" BSP          | 3799.91810 |







- // For driven tools with inner thread
- // Short design: optimising machining range
- // Maximum pressure 100 bar
- // Maximum RPM 12000 min<sup>-1</sup>
- // Tools shank diameter 3 - 20 mm
- // Suited for emulsion and oil
- // For ER collets to ISO 15488/DIN 6499
- // To be used with KS/DS disks



| Type                                                | Part no.   | d [mm] | L [mm] | L1 [mm] | H [mm] | H1 [mm] | GL [mm] | G       |
|-----------------------------------------------------|------------|--------|--------|---------|--------|---------|---------|---------|
| Coolant supply system with outer thread, rotational |            |        |        |         |        |         |         |         |
| RCR/ERAX 16                                         | 3716.29000 | 34,0   | 46,0   | 41,5    | 14,5   | 7,6     | 9,0     | M24x1,0 |
| RCR/ERAX 20                                         | 3720.29000 | 37,5   | 49,5   | 45,0    | 15,5   | 7,6     | 9,0     | M28x1,5 |
| RCR/ERAX 25                                         | 3725.29000 | 41,0   | 53,0   | 48,5    | 15,8   | 7,6     | 9,0     | M32x1,5 |
| RCR/ERAX 32                                         | 3732.29000 | 49,0   | 61,0   | 56,5    | 16,9   | 7,6     | 9,0     | M40x1,5 |

Included in delivery:  
RBA12 M5x0.5, coolant connection suitable for WTO QuickFlex®, tool holders.



RCR/ERAX

| Type                                                | Part no.   | d [mm] | L [mm] | L1 [mm] | H [mm] | H1 [mm] | GL [mm] | G       |
|-----------------------------------------------------|------------|--------|--------|---------|--------|---------|---------|---------|
| Coolant supply system with outer thread, rotational |            |        |        |         |        |         |         |         |
| RCR/ERAX 25-QF                                      | 3725.29040 | 41,0   | 52,7   | 48,5    | 15,95  | 7,6     | 9,0     | M40x1,5 |
| RCR/ERAX 32-QF                                      | 3732.29040 | 50,0   | 61,2   | 57,0    | 18,05  | 7,6     | 9,0     | M50x1,5 |

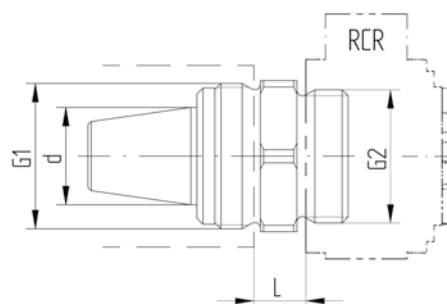
Included in delivery:  
RBA12 M5x0.5, coolant connection suitable for WTO QuickFlex®, tool holders.

# Matching accessories for your reCool®

| Type            | Part no.   | Dimensions [mm] |     | Thread G1  | Thread G2  | Accessories |
|-----------------|------------|-----------------|-----|------------|------------|-------------|
|                 |            | d               | L   |            |            | Wrench      |
| reCool® adapter |            |                 |     |            |            |             |
| RC-ADP 16       | 3799.81600 | 16              | 8,7 | M 24 x 1   | M 22 x 1,5 | 7112.16010  |
| RC-ADP 20       | 3799.82000 | 20              | 8,2 | M 28 x 1,5 | M 25 x 1,5 | 7112.20010  |
| RC-ADP 25       | 3799.82500 | 25              | 7,9 | M 32 x 1,5 | M 32 x 1,5 | 7111.25000  |
| RC-ADP 32       | 3799.83200 | 32              | 8,7 | M 40 x 1,5 | M 40 x 1,5 | 7111.32000  |
| RC-ADP 40       | 3799.84000 | 40              | 9,6 | M 50 x 1,5 | M 50 x 1,5 | 7111.40000  |

**reCool® adapter** The reCool® adapter RC-ADP easily converts inner-threaded driven tools to outer-threaded ones which enables the use of the reCool® rotary coolant supply system RCR with different types of driven tooling.

**How to use?** Just screw the adapter with advised tightening torque into the driven tool, use the correctly installed reCool® rotary coolant supply system RCR and clamp the tool.



RC-ADP

| Type                               | Part no.   | Length | Included                     |
|------------------------------------|------------|--------|------------------------------|
| <b>Steelflex hose for RCR/ERAX</b> |            |        |                              |
| SET RHS-AX x 080                   | 3799.99080 | 80 mm  | Hollow bolt SET HB-AX M6 x 1 |
| SET RHS-AX x 100                   | 3799.99100 | 100 mm | Hollow bolt SET HB-AX M6 x 1 |
| SET RHS-AX x 120                   | 3799.99120 | 120 mm | Hollow bolt SET HB-AX M6 x 1 |
| SET RHS-AX x 140                   | 3799.99140 | 140 mm | Hollow bolt SET HB-AX M6 x 1 |
| SET RHS-AX x 160                   | 3799.99160 | 160 mm | Hollow bolt SET HB-AX M6 x 1 |
| SET RHS-AX x 180                   | 3799.99180 | 180 mm | Hollow bolt SET HB-AX M6 x 1 |



Steelflex hose

| Type                            | Part no.   | Description                                        |
|---------------------------------|------------|----------------------------------------------------|
| <b>Hollow bolt for RCR/ERAX</b> |            |                                                    |
| SET HB-AX M8 x 1                | 3799.90808 | Hollow bolt M8x1.00 mm and ringfitting Ø 8.00 mm   |
| SET HB-AX M8 x 1.25             | 3799.90818 | Hollow bolt M8x1.25 mm and ringfitting Ø 8.00 mm   |
| SET HB-AX M6 x 1                | 3799.90606 | Hollow bolt M6x1.00 mm and ringfitting Ø 6.00 mm   |
| SET HB-AX M10 x 1               | 3799.91010 | Hollow bolt M10x1.00 mm and ringfitting Ø 10.00 mm |
| SET HB-AX / 1/8" BSP            | 3799.91810 | Hollow bolt M 1/8" and ringfitting Ø 10.00 mm      |



Hollow bolt set

## Expert advice

reCool® is only applicable with the use of our sealing DS/ER and Coolant flush disks KS/ER. Please note, that neither DS/ER nor KS/ER are included in the reCool® sets.

Please refer to page 322 for sealing disks and to page 330 for coolant flush disks.

# Use conditions RCR reCool®

reCool® is used exclusively for clamping tools with ER collets (DIN 6499 / ISO 15488). Only original collets, sealing and cooling disks REGO-FIX® are recommended to be used.

## Technical data

The following parameters apply to reCool® rotation:

Max. Rotation speed: 12,000 rpm (6000 rpm with ER40)

Max. coolant pressure: 150 bar / 2175 PSI\* (with high pressure hose)

Min. coolant pressure: depending on the rotational speed (see table)

|            | ≤ 3,000 rpm    | ≤ 6,000 rpm       | ≤ 9,000 rpm      | ≤ 12,000 rpm     |
|------------|----------------|-------------------|------------------|------------------|
| RCR/ER 11  | 5 bar / 73 PSI | 7,5 bar / 109 PSI | 10 bar / 145 PSI | 15 bar / 218 PSI |
| RCR/ER 16  | 5 bar / 73 PSI | 7,5 bar / 109 PSI | 10 bar / 145 PSI | 15 bar / 218 PSI |
| RCR/ER 20  | 5 bar / 73 PSI | 7,5 bar / 109 PSI | 10 bar / 145 PSI | 15 bar / 218 PSI |
| RCR/ER 25  | 5 bar / 73 PSI | 7,5 bar / 109 PSI | 10 bar / 145 PSI | 15 bar / 218 PSI |
| RCR/ER 32  | 5 bar / 73 PSI | 7,5 bar / 109 PSI | 10 bar / 145 PSI | 15 bar / 218 PSI |
| RCR/ER 40  | 5 bar / 73 PSI | 7,5 bar / 109 PSI | –                | –                |
| RCR/ERM 11 | 5 bar / 73 PSI | 7,5 bar / 109 PSI | 10 bar / 145 PSI | 15 bar / 218 PSI |
| RCR/ERM 16 | 5 bar / 73 PSI | 7,5 bar / 109 PSI | 10 bar / 145 PSI | 15 bar / 218 PSI |
| RCR/ERM 20 | 5 bar / 73 PSI | 7,5 bar / 109 PSI | 10 bar / 145 PSI | 15 bar / 218 PSI |
| RCR/ERM 25 | 5 bar / 73 PSI | 7,5 bar / 109 PSI | 10 bar / 145 PSI | 15 bar / 218 PSI |

Cooling medium: Emulsion or oil up to viscosity ≤ ISO VG 46 (46 mm²/s 40°C) and filtered 20µm

Working temperature: 10° C to 60° C

**\* The supplied hose and fittings are designed and tested for maximum coolant pressure of 100 bar / 1450 PSI.  
For higher coolant pressures the High-pressure hose is mandatory.**

## Dimensions

| Type       | Clamping range [mm] | D [mm] | L [mm] | H [mm] | G          |
|------------|---------------------|--------|--------|--------|------------|
| RCR/ER 11  | 3,00 – 6,00         | 21,75  | 29,50  | 16,50  | M14 x 0,75 |
| RCR/ER 16  | 3,00 – 10,00        | 34,00  | 39,50  | 24,50  | M22 x 1,5  |
| RCR/ER 20  | 3,00 – 13,00        | 40,00  | 44,50  | 26,00  | M25 x 1,5  |
| RCR/ER 25  | 3,00 – 16,00        | 50,00  | 53,50  | 27,00  | M32 x 1,5  |
| RCR/ER 32  | 3,00 – 20,00        | 62,50  | 64,75  | 29,50  | M40 x 1,5  |
| RCR/ER 40  | 3,00 – 26,00        | 72,50  | 74,75  | 32,50  | M50 x 1,5  |
| RCR/ERM 11 | 3,00 – 6,00         | 21,75  | 29,50  | 16,50  | M13 x 0,75 |
| RCR/ERM 16 | 3,00 – 10,00        | 31,00  | 36,50  | 24,50  | M19 x 1    |
| RCR/ERM 20 | 3,00 – 13,00        | 38,00  | 43,00  | 26,00  | M24 x 1    |
| RCR/ERM 25 | 3,00 – 17,00        | 46,00  | 50,50  | 27,00  | M30 x 1    |

# Cleaning instructions

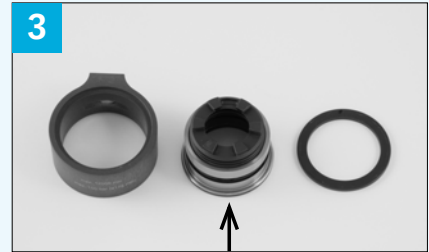
reCool® is designed with a wear resistant coating, eliminating the need for extensive maintenance. The only time cleaning is needed is when the RCR system no longer rotates lightly by hand.



Mark the position of the inner part to outer ring.



Remove the retaining ring with pliers.



Now slide out inner part.



Remove the disk.



Clean all parts intensively with a standard industrial cleaning agent.



Lightly oil the bearing surfaces with thin lubricating oil.



Put the parts in the correct position together.



Mount this retaining ring.



Pay attention that it snaps into place.



reCool® parts may not be swapped out. Original configuration must be maintained.



Never let the reCool® system run dry.



When starting the machine, make sure that coolant flows out of the tool or the coolant flush disk before rotating the reCool® System.



A coolant pressure below minimum may lead to inadequate cooling/lubrication and therefore could damage the reCool® bearings.



Inadequate coolant pressure results in considerable impairment in cooling the tool and chip removal.



Stop screws with coolant through bores must be replaced!



If the stop screw is not sealed nor replaced, there is danger that the coolant may get inside the gears which may result in damages of the driven tool.



For best cooling do not exploit the clamping range of the collet. E.g. clamp a Ø 6mm tool shank in Ø 6.0 – 5.0 mm collet.

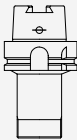
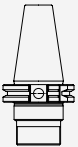
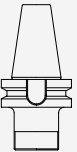
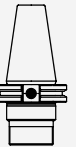
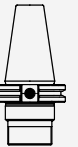


Do not use metallic sealed ER-DM collets with reCool, because the coolant cannot reach the tool.



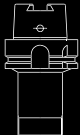


# Experience the highest-precision ER toolholding

| Standard                                                                          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | Cylindrical<br>colletholders                                                        |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| HSK/MR<br>HSK/MRM                                                                 | SK/<br>MR                                                                         | BT/<br>MR                                                                         | BT+/<br>MR                                                                        | CAT/<br>MR                                                                        | CAT+/<br>MR                                                                       | CYL/MR<br>CYL/MRM                                                                   |
|  |  |  |  |  |  |  |
| Page 226                                                                          | Page 230                                                                          | Page 232                                                                          | Page 234                                                                          | Page 236                                                                          | Page 238                                                                          | Page 240                                                                            |

| Collets                                                                             |
|-------------------------------------------------------------------------------------|
| ER-MR                                                                               |
|  |
| Page 243                                                                            |

| Standard                                                                            |                                                                                     | Mini nut                                                                            |                                                                                     | Sealing and<br>coolant flush disks                                                  |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| MR                                                                                  | MRC                                                                                 | MRM                                                                                 | MRMC                                                                                | DS/MR                                                                               | KS/MR                                                                                 |
|  |  |  |  |  |  |
| Page 248                                                                            | Page 248                                                                            | Page 248                                                                            | Page 248                                                                            | Page 322                                                                            | Page 330                                                                              |

| Standard                                                                          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | Cylindrical<br>colletholders                                                        |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| HSK/MR<br>HSK/MRM                                                                 | SK/<br>MR                                                                         | BT/<br>MR                                                                         | BT+/<br>MR                                                                        | CAT/<br>MR                                                                        | CAT+/<br>MR                                                                       | CYL/MR<br>CYL/MRM                                                                   |
|  |  |  |  |  |  |  |
| Page 226                                                                          | Page 230                                                                          | Page 232                                                                          | Page 234                                                                          | Page 236                                                                          | Page 238                                                                          | Page 240                                                                            |





# Toolholders in Swiss quality



|                 | <b>HSK/MR</b>          | <b>SK/MR</b>                | <b>BT/MR</b>                            | <b>BT+/MR</b>         | <b>CAT/MR</b>              | <b>CAT+/MR</b>        | <b>CYL/MR</b> | <b>CYL/MRM</b> |
|-----------------|------------------------|-----------------------------|-----------------------------------------|-----------------------|----------------------------|-----------------------|---------------|----------------|
| Norm            | DIN 69893<br>ISO 12164 | DIN 69871<br>DIN ISO 7388-1 | MAS 403<br>JIS B 6339<br>DIN-ISO 7388-2 | –                     | DIN 6871<br>DIN ISO 7388-1 | –                     | –             | –              |
| Balancing       | G 2,5 @<br>25 000 rpm  | G 2,5 @<br>25 000 rpm       | G 2,5 @<br>25 000 rpm                   | G 2,5 @<br>25 000 rpm | G 2,5 @<br>25 000 rpm      | G 2,5 @<br>25 000 rpm | –             | –              |
| Chip hole       | •                      | •                           | –                                       | –                     | •                          | •                     | –             | –              |
| Runout TIR      | ≤0,003 mm              | ≤0,003 mm                   | ≤0,003 mm                               | ≤0,003 mm             | ≤0,003 mm                  | ≤0,003 mm             | ≤0,003 mm     | ≤0,003 mm      |
| Taper accuracy  | DIN ISO                | AT3                         | AT3                                     | AT1                   | AT3                        | AT1                   | –             | –              |
| Form A + AD     | –                      | •                           | •                                       | •                     | •                          | •                     | –             | –              |
| Form AD + B     | –                      | –                           | –                                       | –                     | –                          | –                     | –             | –              |
| Shank tolerance | –                      | –                           | –                                       | –                     | –                          | –                     | h6            | h6             |

# HSK toolholders

Designed for rotating applications, all our HSK toolholders are suited for high-speed applications where a consistent performance is key.

DIN 69893/ISO 12164

## Features and benefits

### **Total system runout TIR $\leq 3 \mu\text{m}$ @ 3xD**

Our holistic system consists of an micRun® toolholder, collet and clamping nut. All components together ensure best runout and accuracy.

### **Toolholder runout TIR $\leq 1 \mu\text{m}$**

Measured from inner taper to outer taper.

### **Surface finish max. Ra 0.25**

Achieve high clamping force and high transferable torque.

### **Balancing**

100% balanced to G 2.5 @ 25,000 rpm/<1gmm.

### **MR clamping nut included in delivery**

Guarantees highest clamping force and best balancing.

### **Vibration damping**

Our holders offer good vibration damping to sustain a high surface finish and can help prevent chatter.

*Accessories are not included in delivery*

### **Balancing specifications**

|         |                        |
|---------|------------------------|
| HSK 25  | balanced to 90,000 rpm |
| HSK 32  | balanced to 60,000 rpm |
| HSK 40  | balanced to 45,000 rpm |
| HSK 50  | balanced to 36,000 rpm |
| HSK 63  | G 2.5 @ 25,000 rpm     |
| HSK 80  | G 2.5 @ 25,000 rpm     |
| HSK 100 | G 2.5 @ 25,000 rpm     |
| HSK 125 | G 2.5 @ 25,000 rpm     |



### Expert advice

For all HSK-A and HSK-E form toolholders a range of coolant tubes (KSR) is available.

*For KSR part numbers please refer to page 345.*

# HSK-A toolholders

HSK-AB

ISO 12164

compatible

HSK-A

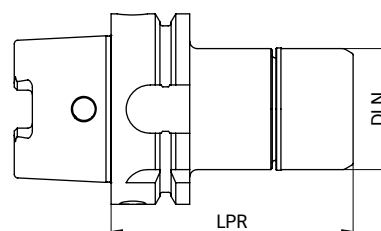
DIN 69893

ISO 12164

| Type                  | Part no.   | Dimensions [mm] |     | Accessories           |
|-----------------------|------------|-----------------|-----|-----------------------|
|                       |            | DLN             | LPR | Freewheel wrench head |
| HSK-A 32              |            |                 |     |                       |
| HSK-A 32/MRM 16 x 060 | 5532.11620 | 24              | 60  | 7855.16800            |
| HSK-A 32/MRM 16 x 100 | 5532.11650 | 24              | 100 | 7855.16800            |
| HSK-A 40              |            |                 |     |                       |
| HSK-A 40/MR 11 x 050  | 5540.11110 | 16              | 50  | 7855.11000            |
| HSK-A 40/MR 16 x 060  | 5540.11620 | 28              | 60  | 7855.16000            |
| HSK-A 40/MR 16 x 100  | 5540.11650 | 28              | 100 | 7855.16000            |
| HSK-A 40/MRM 16 x 055 | 5540.11617 | 24              | 55  | 7855.16800            |
| HSK-A 40/MR 25 x 080  | 5540.12540 | 40              | 80  | 7855.25000            |
| HSK-A 50              |            |                 |     |                       |
| HSK-A 50/MR 16 x 100  | 5550.11650 | 28              | 100 | 7855.16000            |
| HSK-A 50/MR 25 x 080  | 5550.12540 | 40              | 80  | 7855.25000            |
| HSK-A 63              |            |                 |     |                       |
| HSK-A 63/MR 11 x 100  | 5563.11150 | 16              | 100 | 7855.11000            |
| HSK-A 63/MR 11 x 160  | 5563.11180 | 16              | 160 | 7855.11000            |
| HSK-A 63/MR 16 x 100  | 5563.11650 | 28              | 100 | 7855.16000            |
| HSK-A 63/MR 25 x 080  | 5563.12540 | 40              | 80  | 7855.25000            |
| HSK-A 63/MR 25 x 160  | 5563.12580 | 40              | 160 | 7855.25000            |
| HSK-A 63/MR 32 x 070  | 5563.13230 | 50              | 70  | 7855.32000            |
| HSK-A 63/MR 32 x 100  | 5563.13250 | 50              | 100 | 7855.32000            |

Included in delivery: MR toolholders come with Hi-Q®/MR clamping nut

HSK-A: Hole for data carrier DIN STD 69873 in the flange available on request

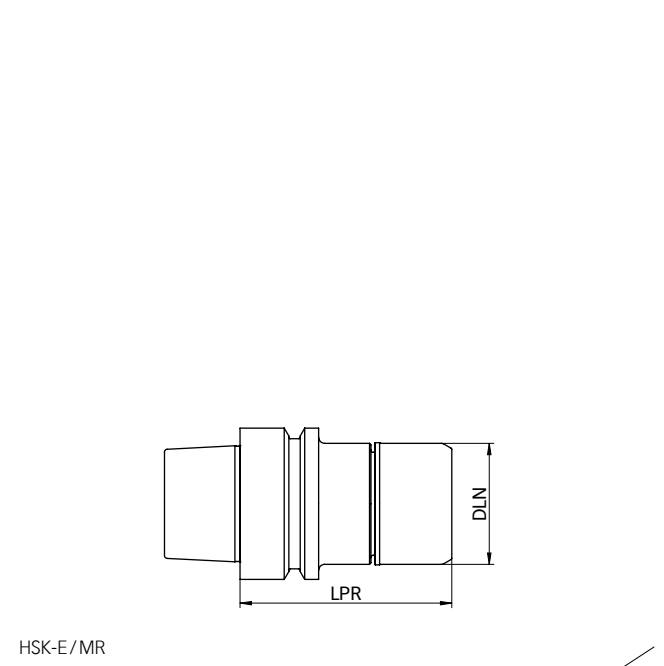


# HSK-E toolholders

| HSK-EB     | HSK-E     |
|------------|-----------|
| ISO 12164  | DIN 69893 |
| compatible | ISO 12164 |

| Type                  | Part no.   | Dimensions [mm] |     | Accessories           |
|-----------------------|------------|-----------------|-----|-----------------------|
|                       |            | DLN             | LPR | Freewheel wrench head |
| HSK-E 25              |            |                 |     |                       |
| HSK-E 25/MR 11 x 045  | 5525.11114 | 16              | 45  | 7855.11000            |
| HSK-E 25/MRM 16 x 045 | 5525.11618 | 24              | 45  | 7855.16800            |
| HSK-E 32              |            |                 |     |                       |
| HSK-E 32/MR 11 x 060  | 5532.11124 | 16              | 60  | 7855.11000            |
| HSK-E 32/MRM 16 x 055 | 5532.11618 | 24              | 55  | 7855.16800            |
| HSK-E 40              |            |                 |     |                       |
| HSK-E 40/MR 11 x 050  | 5540.11114 | 16              | 50  | 7855.11000            |
| HSK-E 40/MR 11 x 100  | 5540.11154 | 16              | 100 | 7855.11000            |
| HSK-E 40/MRM 16 x 055 | 5540.11618 | 24              | 55  | 7855.16800            |
| HSK-E 40/MRM 16 x 080 | 5540.11648 | 24              | 80  | 7855.16800            |
| HSK-E 40/MR 25 x 065  | 5540.12520 | 40              | 65  | 7855.25000            |
| HSK-E 50              |            |                 |     |                       |
| HSK-E 50/MR 16 x 100  | 5550.11654 | 28              | 100 | 7855.16000            |
| HSK-E 50/MR 25 x 070  | 5550.12534 | 40              | 70  | 7855.25000            |

Included in delivery: MR toolholders come with Hi-Q®/MR clamping nut







# Steep taper toolholders SK

Universally suitable for different machining applications

DIN 69871 / DIN ISO 7388-1

## Features and benefits

### Total system runout TIR $\leq 3 \mu\text{m}$ @ 3xD

Our holistic system consists of an micRun® toolholder, collet and clamping nut. All components together ensure best runout and accuracy.

### Toolholder runout TIR $\leq 1 \mu\text{m}$

Measured from inner taper to outer taper.

### Taper accuracy AT3

Better spindle-to-holder fit and accuracy.

### Surface finish max. Ra 0.25

Achieve high clamping force and high transferable torque.

### Balancing

100% balanced to G 2.5 @ 25,000 rpm / <1gmm.

### MR clamping nut included in delivery

Guarantees highest clamping force and best balancing.

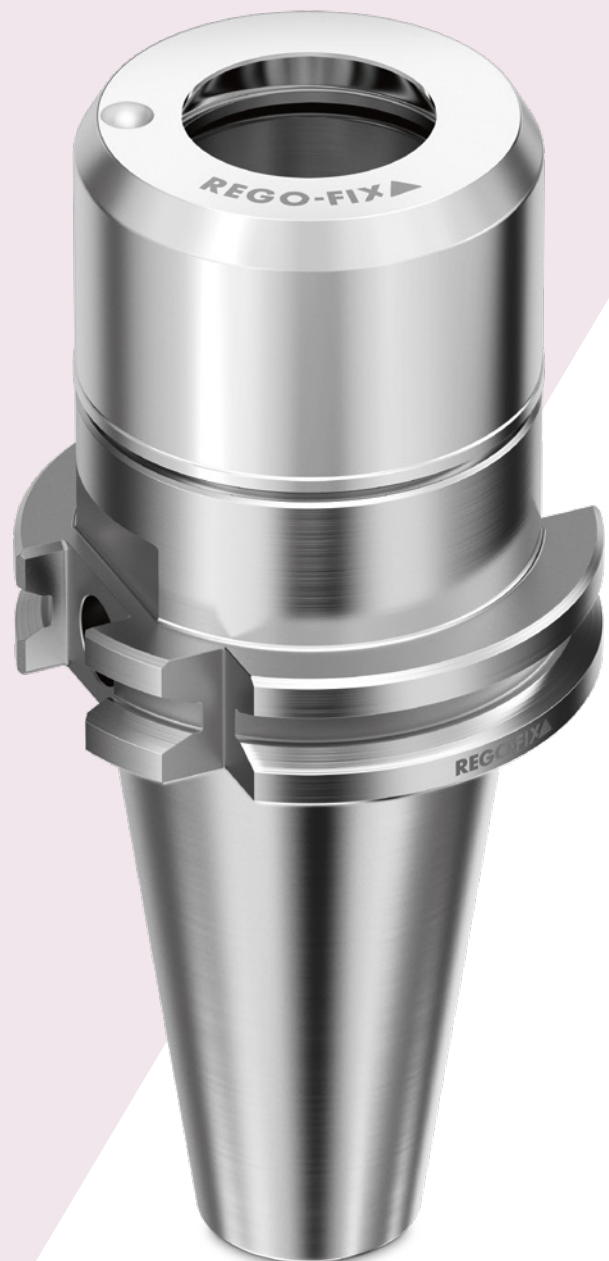
### Vibration damping

Our holders offer good vibration damping to sustain a high surface finish and can help prevent chatter.

*Accessories are not included in delivery*

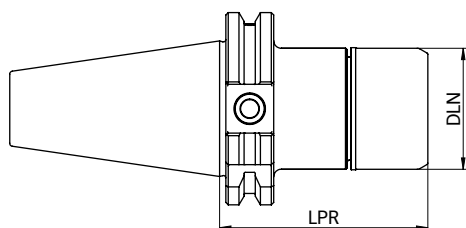
### Balancing specifications

|       |                        |
|-------|------------------------|
| SK 30 | balanced to 30,000 rpm |
| SK 40 | G 2.5 @ 25,000 rpm     |
| SK 50 | G 2.5 @ 25,000 rpm     |



| Type              | Part no.   | Dimensions [mm] |     | Accessories           |
|-------------------|------------|-----------------|-----|-----------------------|
|                   |            | DLN             | LPR | Freewheel wrench head |
| SK 30             |            |                 |     |                       |
| SK 30/MR 16 x 050 | 5230.11610 | 28              | 50  | 7855.16000            |
| SK 30/MR 16 x 100 | 5230.11650 | 28              | 100 | 7855.16000            |
| SK 30/MR 25 x 070 | 5230.12530 | 40              | 70  | 7855.25000            |
| SK 30             |            |                 |     |                       |
| SK 40/MR 11 x 100 | 5240.11150 | 16              | 100 | 7855.11000            |
| SK 40/MR 16 x 070 | 5240.11630 | 28              | 70  | 7855.16000            |
| SK 40/MR 16 x 100 | 5240.11650 | 28              | 100 | 7855.16000            |
| SK 40/MR 16 x 160 | 5240.11680 | 28              | 160 | 7855.16000            |
| SK 40/MR 25 x 070 | 5240.12530 | 40              | 70  | 7855.25000            |
| SK 40/MR 25 x 100 | 5240.12550 | 40              | 100 | 7855.25000            |
| SK 40/MR 25 x 160 | 5240.12580 | 40              | 160 | 7855.25000            |
| SK 40/MR 32 x 070 | 5240.13230 | 50              | 70  | 7855.32000            |
| SK 40/MR 32 x 100 | 5240.13250 | 50              | 100 | 7855.32000            |
| SK 40/MR 32 x 160 | 5240.13280 | 50              | 160 | 7855.32000            |

Included in delivery: MR toolholders come with Hi-Q®/MR clamping nut



SK/MR (Form A+AD)

## Expert advice

We recommend tightening the clamping nuts with our TORCO-BLOCK or torque wrench. Get the best accuracy by respecting the suitable tightening forces.

For recommended REGO-FIX accessories, please refer to page 342.



# Steep taper toolholders BT

Universally suitable different machining applications, the BT interface toolholders cater to different machining needs.

MAS 403/JIS B 6339/DIN ISO 7388-2

## Features and benefits

### Total system runout TIR $\leq 3 \mu\text{m}$ @ 3xD

Our holistic system consists of an micRun® toolholder, collet and clamping nut. All components together ensure best runout and accuracy.

### Toolholder runout TIR $\leq 1 \mu\text{m}$

Measured from inner taper to outer taper.

### Taper accuracy AT3

Better spindle-to-holder fit and accuracy.

### Surface finish max. Ra 0.25

Achieve high clamping force and high transferable torque.

### Balancing

100% balanced to G 2.5 @ 25,000 rpm/<1gmm.

### MR clamping nut included in delivery

Guarantees highest clamping force and best balancing.

### Vibration damping

Our holders offer good vibration damping to sustain a high surface finish and can help prevent chatter.

*Accessories are not included in delivery*

### Balancing specifications

|       |                        |
|-------|------------------------|
| BT 30 | balanced to 30,000 rpm |
| BT 40 | G 2.5 @ 25,000 rpm     |



# BT toolholders

BT

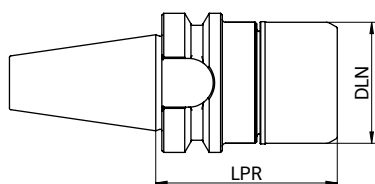
MAS 403

JIS B 6339

DIN ISO 7388-2

| Type              | Part no.   | Dimensions [mm] |     | Accessories           |
|-------------------|------------|-----------------|-----|-----------------------|
|                   |            | DLN             | LPR | Freewheel wrench head |
| BT 30             |            |                 |     |                       |
| BT 30/MR 11 x 050 | 5130.11110 | 16              | 50  | 7855.11000            |
| BT 30/MR 11 x 100 | 5130.11150 | 16              | 100 | 7855.11000            |
| BT 30/MR 16 x 050 | 5130.11610 | 28              | 50  | 7855.16000            |
| BT 30/MR 16 x 080 | 5130.11640 | 28              | 80  | 7855.16000            |
| BT 30/MR 16 x 100 | 5130.11650 | 28              | 100 | 7855.16000            |
| BT 30/MR 25 x 060 | 5130.12520 | 40              | 60  | 7855.25000            |
| BT 30/MR 25 x 100 | 5130.12550 | 40              | 100 | 7855.25000            |
| BT 30/MR 32 x 060 | 5130.13220 | 50              | 60  | 7855.32000            |
| BT 40             |            |                 |     |                       |
| BT 40/MR 11 x 100 | 5140.11150 | 16              | 100 | 7855.11000            |
| BT 40/MR 16 x 070 | 5140.11630 | 28              | 70  | 7855.16000            |
| BT 40/MR 16 x 100 | 5140.11650 | 28              | 100 | 7855.16000            |
| BT 40/MR 25 x 070 | 5140.12530 | 40              | 70  | 7855.25000            |
| BT 40/MR 25 x 100 | 5140.12550 | 40              | 100 | 7855.25000            |
| BT 40/MR 32 x 070 | 5140.13230 | 50              | 70  | 7855.32000            |
| BT 40/MR 32 x 100 | 5140.13250 | 50              | 100 | 7855.32000            |

Included in delivery: MR toolholders come with Hi-Q®/MR clamping nut



BT /MR (Form A+AD)

## Expert advice

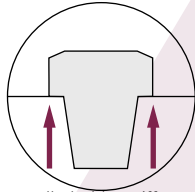
We recommend tightening the clamping nuts with our TORCO-BLOCK or torque wrench. Get the best accuracy by respecting the suitable tightening forces.

For recommended REGO-FIX accessories, please refer to page 342.

# REGO-FIX dual contact toolholder BT+

**Certified** The BIG PLUS SYSTEM – licensed by BIG Daishowa – is manufactured at REGO-FIX in Switzerland under license according to BIG PLUS specifications.

## Key advantages



Higher collet stiffness due to taper (AT1) and face contact

MAS 403 / JIS B 6339 / DIN ISO 7388-2

## Features and benefits

### Runout TIR $\leq 3 \mu\text{m}$

Measured from inner taper to outer taper.

### Surface finish max. Ra 0.25

Better spindle-to-holder fit and accuracy.

### Balancing

100% balanced to G 2.5 @ 25,000 rpm / <1gmm.

### Hi-Q® balancing system

Ready to accept Hi-Q® balancing rings which allow for the offset of the imbalance introduced by the cutting tool up to 80,000 rpm depending on the balancing rings used. All toolholders with the additional type information "H" in the article name are designed for balancing rings.

### Hi-Q® / MR clamping nut included in delivery

Guarantees highest clamping force and best balancing.

### Vibration damping

Our holders offer good vibration damping to sustain a high surface finish and can help prevent chatter.



*Accessories are not included in delivery. Form B available on request*

# BT+ dual contact toolholder

licensed by BIG Daishowa

BT+

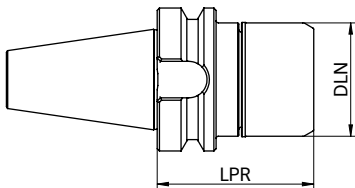
MAS 403

JIS B 6339

DIN ISO 7388-2

| Type               | Part no.   | Dimensions [mm] |     | Accessories           |
|--------------------|------------|-----------------|-----|-----------------------|
|                    |            | DLN             | LPR | Freewheel wrench head |
| BT+ 30             |            |                 |     |                       |
| BT+ 30/MR 11 x 100 | 5130.11156 | 16              | 100 | 7855.11000            |
| BT+ 30/MR 16 x 080 | 5130.11646 | 28              | 80  | 7855.16000            |
| BT+ 30/MR 25 x 060 | 5130.12526 | 40              | 60  | 7855.25000            |
| BT+ 30/MR 32 x 060 | 5130.13226 | 50              | 60  | 7855.32000            |
| BT+ 40             |            |                 |     |                       |
| BT+ 40/MR 11 x 100 | 5140.11156 | 16              | 100 | 7855.11000            |
| BT+ 40/MR 16 x 100 | 5140.11656 | 28              | 100 | 7855.16000            |
| BT+ 40/MR 25 x 070 | 5140.12536 | 40              | 70  | 7855.25000            |
| BT+ 40/MR 32 x 070 | 5140.13236 | 50              | 70  | 7855.32000            |

Included in delivery: MR toolholders come with Hi-Q®/MR clamping nut



BT+ /MR (Form A+AD)

# Steep taper toolholders CAT

Universally suitable for different machining applications

ASME B5.50

## Features and benefits

### **Total system runout TIR $\leq 0.0001''$ (3 $\mu\text{m}$ )**

Our holistic system consists of an micRun® toolholder, collet and clamping nut. All components together ensure best runout and accuracy.

### **Toolholder runout TIR $\leq 1 \mu\text{m}$**

Measured from inner taper to outer taper.

### **Taper accuracy AT3**

Better spindle-to-holder fit and accuracy.

### **Surface finish max. Ra 0.25**

Achieve high clamping force and high transferable torque.

### **Balancing**

100% balanced to G 2.5 @ 25,000 rpm.

### **MR clamping nut included in delivery**

Guarantees highest clamping force and best balancing.

### **Vibration damping**

Our holders offer good vibration damping to sustain a high surface finish and can help prevent chatter.

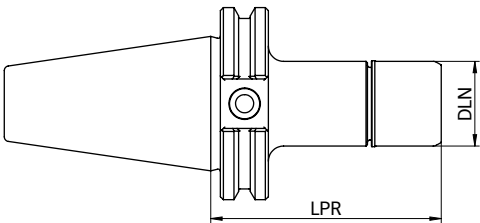
*Accessories are not included in delivery*



| Type              | Part no.   | Dimensions [mm] |     | Accessories           |
|-------------------|------------|-----------------|-----|-----------------------|
|                   |            | DLN             | LPR | Freewheel wrench head |
| CAT 40*           |            |                 |     |                       |
| CAT 40/MR 16 x 3" | 5340.11631 | 28              | 3"  | 7855.16000            |
| CAT 40/MR 16 x 6" | 5340.11671 | 28              | 6"  | 7855.16000            |
| CAT 40/MR 32 x 3" | 5340.13231 | 50              | 3"  | 7855.32000            |

\*USA only

Included in delivery: MR toolholders come with Hi-Q®/MR clamping nut

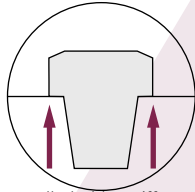


CAT /MR (form A+AD)

# REGO-FIX dual contact toolholder CAT+

**Certified** The BIG PLUS SYSTEM – licensed by BIG Daishowa – is manufactured at REGO-FIX in Switzerland under license according to BIG PLUS specifications.

## Key advantages



Higher colletholder stiffness due to taper (AT1) and face contact

MAS 403 / JIS B 6339 / DIN ISO 7388-2

## Features and benefits

### Runout TIR $\leq 3 \mu\text{m}$

Measured from inner taper to outer taper.

### Surface finish max. Ra 0.25

Better spindle-to-holder fit and accuracy.

### Balancing

100% balanced to G 2.5 @ 25,000 rpm / <1gmm.

### Hi-Q® balancing system

Ready to accept Hi-Q® balancing rings which allow for the offset of the imbalance introduced by the cutting tool up to 80,000 rpm depending on the balancing rings used. All toolholders with the additional type information "H" in the article name are designed for balancing rings.

### Hi-Q® / MR clamping nut included in delivery

Guarantees highest clamping force and best balancing.

### Vibration damping

Our holders offer good vibration damping to sustain a high surface finish and can help prevent chatter.



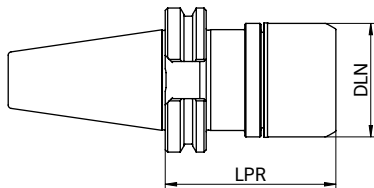
*Accessories are not included in delivery. Form B available on request*



| Type               | Part no.   | Dimensions [mm] |     | Accessories           |
|--------------------|------------|-----------------|-----|-----------------------|
|                    |            | DLN             | LPR | Freewheel wrench head |
| CAT+ 40*           |            |                 |     |                       |
| CAT+ 40/MR 16 x 3" | 5340.11636 | 28              | 3"  | 7855.16000            |
| CAT+ 40/MR 16 x 6" | 5340.11676 | 28              | 6"  | 7855.16000            |
| CAT+ 40/MR 32 x 3" | 5340.13236 | 50              | 3"  | 7855.32000            |

\*USA only

Included in delivery: MR toolholders come with Hi-Q®/MR clamping nut



CAT+ / MR (form A+AD)

# Cylindrical shank toolholders CYL

## CYL

### Features and benefits

#### **Total system runout TIR $\leq 3 \mu\text{m}$ @ 3xD**

Our holistic system consists of an micRun® toolholder, collet and clamping nut. All components together ensure best runout and accuracy.

#### **Toolholder runout TIR $\leq 1 \mu\text{m}$**

Measured from inner taper to cylindrical shank.

#### **Surface finish max. Ra 0.25**

Achieve high clamping force and high transferable torque.

#### **Sizes**

CYL/MR 11 and CYL/MRM 16

#### **Application**

CYL/MR is suited for Swiss automatic machines, machining centers and conventional machines.

#### **MR clamping nut included in delivery**

Guarantees maximum precision combined with slimmest diameter.

#### **Vibration damping**

Our holders offer good vibration damping to sustain a high surface finish and can help prevent chatter.

*Accessories are not included in delivery*

## Expert advice

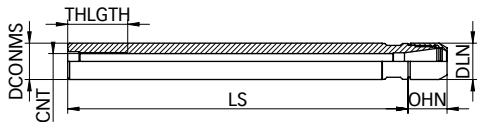
We recommend tightening the clamping nuts using a torque wrench. Get the best accuracy by respecting the suitable tightening forces.

*For tightening torque recommendations, please refer to page 377.*



| Type                | Part no.   | Dimensions [mm] |        |     |      |        |                       | CNT        | Accessories |
|---------------------|------------|-----------------|--------|-----|------|--------|-----------------------|------------|-------------|
|                     |            | DLN             | DCONMS | LS  | OHN  | THLGTH | Freewheel wrench head |            |             |
| CYL 16              |            |                 |        |     |      |        |                       |            |             |
| CYL 16 x 150/MR 11  | 5616.11190 | 16              | 16     | 150 | 17,2 | 20     | M 8 x 1               | 7855.11000 |             |
| CYL 16 x 200/MR 11  | 5616.11100 | 16              | 16     | 200 | 17,2 | 20     | M 8 x 1               | 7855.11000 |             |
| CYL 20              |            |                 |        |     |      |        |                       |            |             |
| CYL 20 x 150/MRM 16 | 5620.21690 | 24              | 20     | 150 | 25,2 | 25     | M 12 x 1              | 7855.16800 |             |
| CYL 20 x 200/MRM 16 | 5620.21600 | 24              | 20     | 200 | 25,2 | 25     | M 12 x 1              | 7855.16800 |             |

Included in delivery: MR toolholders come with Hi-Q®/MR clamping nut



CYL/MR



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## Collets

ER-MR



Page 243

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# Swiss quality MR collets

MR

| Type            | Part no.   | Ø     |        | max. Shank tolerance |
|-----------------|------------|-------|--------|----------------------|
|                 |            | [mm]  | [inch] |                      |
| ER 11-MR [mm]   |            |       |        |                      |
| Ø 1,0 mm        | 1111.01006 | 1,0   | –      | h11                  |
| Ø 2,0 mm        | 1111.02006 | 2,0   | –      | h11                  |
| Ø 3,0 mm        | 1111.03006 | 3,0   | –      | h11                  |
| Ø 4,0 mm        | 1111.04006 | 4,0   | –      | h11                  |
| Ø 5,0 mm        | 1111.05006 | 5,0   | –      | h11                  |
| Ø 6,0 mm        | 1111.06006 | 6,0   | –      | h11                  |
| ER 11-MR [inch] |            |       |        |                      |
| Ø 1/8"          | 1111.03186 | 3,175 | 1/8"   | h11                  |
| Ø 3/16"         | 1111.04766 | 4,763 | 3/16"  | h11                  |
| Ø 1/4"          | 1111.06356 | 6,35  | 1/4"   | h11                  |
| ER 16-MR [mm]   |            |       |        |                      |
| Ø 1,0 mm        | 1116.01006 | 1,0   | –      | h11                  |
| Ø 2,0 mm        | 1116.02006 | 2,0   | –      | h11                  |
| Ø 3,0 mm        | 1116.03006 | 3,0   | –      | h11                  |
| Ø 4,0 mm        | 1116.04006 | 4,0   | –      | h11                  |
| Ø 5,0 mm        | 1116.05006 | 5,0   | –      | h11                  |
| Ø 6,0 mm        | 1116.06006 | 6,0   | –      | h11                  |
| Ø 8,0 mm        | 1116.08006 | 8,0   | –      | h11                  |
| Ø 10,0 mm       | 1116.10006 | 10,0  | –      | h11                  |
| ER 16-MR [inch] |            |       |        |                      |
| Ø 1/8"          | 1116.03186 | 3,175 | 1/8"   | h11                  |
| Ø 3/16"         | 1116.04766 | 4,763 | 3/16"  | h11                  |
| Ø 1/4"          | 1116.06356 | 6,35  | 1/4"   | h11                  |
| Ø 5/16"         | 1116.07946 | 7,938 | 5/16"  | h11                  |
| Ø 3/8"          | 1116.09536 | 9,525 | 3/8"   | h11                  |

## Expert advice

The micRun® MR collet represents the benchmark in precision: With a runout at (maximum) 2µm, it is the most accurate collet in the REGO-FIX lineup. MR collets are compatible with genuine REGO-FIX ER toolholders and increase the TIR of the entire system.

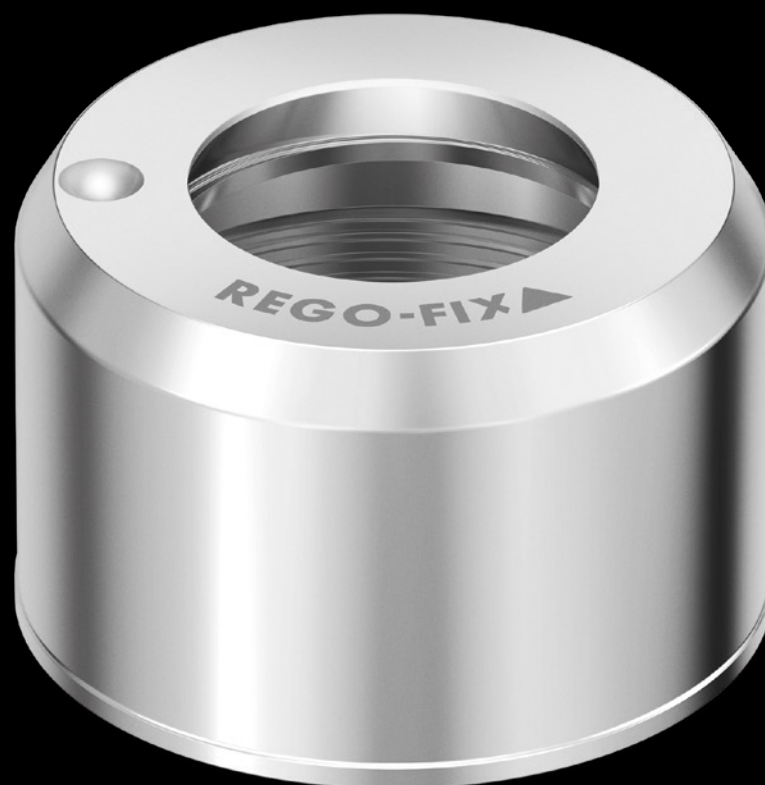
| Type            | Part no.   | Ø      |        | max. Shank tolerance |
|-----------------|------------|--------|--------|----------------------|
|                 |            | [mm]   | [inch] |                      |
| ER 25-MR [mm]   |            |        |        |                      |
| Ø 1,0 mm        | 1125.01006 | 1,0    | –      | h11                  |
| Ø 2,0 mm        | 1125.02006 | 2,0    | –      | h11                  |
| Ø 3,0 mm        | 1125.03006 | 3,0    | –      | h11                  |
| Ø 4,0 mm        | 1125.04006 | 4,0    | –      | h11                  |
| Ø 5,0 mm        | 1125.05006 | 5,0    | –      | h11                  |
| Ø 6,0 mm        | 1125.06006 | 6,0    | –      | h11                  |
| Ø 8,0 mm        | 1125.08006 | 8,0    | –      | h11                  |
| Ø 10,0 mm       | 1125.10006 | 10,0   | –      | h11                  |
| Ø 12,0 mm       | 1125.12006 | 12,0   | –      | h11                  |
| Ø 14,0 mm       | 1125.14006 | 14,0   | –      | h11                  |
| Ø 16,0 mm       | 1125.16006 | 16,0   | –      | h11                  |
| ER 25-MR [inch] |            |        |        |                      |
| Ø 1/8"          | 1125.03186 | 3,175  | 1/8"   | h11                  |
| Ø 1/4"          | 1125.06356 | 6,35   | 1/4"   | h11                  |
| Ø 5/16"         | 1125.07946 | 7,938  | 5/16"  | h11                  |
| Ø 3/8"          | 1125.09536 | 9,525  | 3/8"   | h11                  |
| Ø 7/16"         | 1125.11116 | 11,113 | 7/16"  | h11                  |
| Ø 1/2"          | 1125.12706 | 12,7   | 1/2"   | h11                  |
| Ø 9/16"         | 1125.14296 | 14,288 | 9/16"  | h11                  |
| Ø 5/8"          | 1125.15886 | 15,875 | 5/8"   | h11                  |
| ER 32-MR [mm]   |            |        |        |                      |
| Ø 2,0 mm        | 1132.02006 | 2,0    | –      | h11                  |
| Ø 3,0 mm        | 1132.03006 | 3,0    | –      | h11                  |
| Ø 4,0 mm        | 1132.04006 | 4,0    | –      | h11                  |
| Ø 5,0 mm        | 1132.05006 | 5,0    | –      | h11                  |
| Ø 6,0 mm        | 1132.06006 | 6,0    | –      | h11                  |
| Ø 8,0 mm        | 1132.08006 | 8,0    | –      | h11                  |
| Ø 10,0 mm       | 1132.10006 | 10,0   | –      | h11                  |
| Ø 12,0 mm       | 1132.12006 | 12,0   | –      | h11                  |
| Ø 14,0 mm       | 1132.14006 | 14,0   | –      | h11                  |
| Ø 16,0 mm       | 1132.16006 | 16,0   | –      | h11                  |
| Ø 18,0 mm       | 1132.18006 | 18,0   | –      | h11                  |
| Ø 20,0 mm       | 1132.20006 | 20,0   | –      | h11                  |

| Type            | Part no.   | Ø      |        | max. Shank tolerance |
|-----------------|------------|--------|--------|----------------------|
|                 |            | [mm]   | [inch] |                      |
| ER 32-MR [inch] |            |        |        |                      |
| Ø 1/4"          | 1132.06356 | 6,35   | 1/4"   | h11                  |
| Ø 5/16"         | 1132.07946 | 7,938  | 5/16"  | h11                  |
| Ø 3/8"          | 1132.09536 | 9,525  | 3/8"   | h11                  |
| Ø 7/16"         | 1132.11116 | 11,113 | 7/16"  | h11                  |
| Ø 1/2"          | 1132.12706 | 12,7   | 1/2"   | h11                  |
| Ø 9/16"         | 1132.14296 | 14,288 | 9/16"  | h11                  |
| Ø 5/8"          | 1132.15886 | 15,875 | 5/8"   | h11                  |
| Ø 11/16"        | 1132.17466 | 17,463 | 11/16" | h11                  |
| Ø 3/4"          | 1132.19056 | 19,05  | 3/4"   | h11                  |



MR 32





| Standard                                                                            |                                                                                     | Mini nut                                                                            |                                                                                     | Sealing and<br>coolant flush disks                                                  |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| MR                                                                                  | MRC                                                                                 | MRM                                                                                 | MRMC                                                                                | DS/MR                                                                               | KS/MR                                                                                 |
|  |  |  |  |  |  |
| Page 248                                                                            | Page 248                                                                            | Page 248                                                                            | Page 248                                                                            | Page 322                                                                            | Page 330                                                                              |

# Grooveless MR nuts for high-end machining



**Hi-Q/MR**



**Hi-Q/MRC**



**Hi-Q/MRM**



**Hi-Q/MRMC**

|                        |                      |                                 |                  |                                      |
|------------------------|----------------------|---------------------------------|------------------|--------------------------------------|
| Main feature           | Standard micRun® nut | micRun® nut for coolant through | micRun® mini nut | micRun® mini nut for coolant through |
| Sizes                  | MR 11/16/25/32       | MR 11/16/25/32                  | MRM 16           | MRM 16                               |
| Minimal outer diameter | –                    | –                               | •                | •                                    |
| Grooveless             | •                    | •                               | •                | •                                    |
| Suitable wrench        | A-FLS                | A-FLS                           | A-FLS            | A-FLS                                |
| Compatible with DS     | –                    | •                               | –                | •                                    |
| Compatible with KS     | –                    | •                               | –                | •                                    |

## Expert advice

Due to the thread, micRun® MR-clamping nuts are only compatible with MR-toolholders.

## MR Clamping nuts

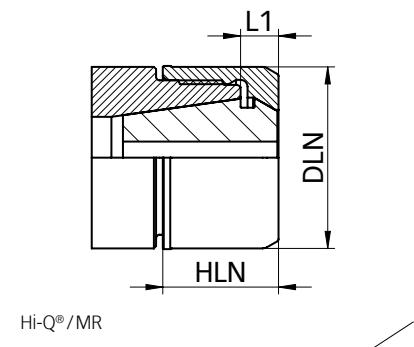
MR

## MRM Mini clamping nuts

## MRC and MRMC clamping nuts for coolant through tools (DS/KS)

| Type         | Part no.   | Dimensions [mm] |      |     | Accessories           |
|--------------|------------|-----------------|------|-----|-----------------------|
|              |            | DLN             | HLN  | L1  | Freewheel wrench head |
| MR 11        |            |                 |      |     |                       |
| Hi-Q   MR 11 | 3611.00000 | 16              | 16,2 | 4,5 | 7855.11000            |
| MR 16        |            |                 |      |     |                       |
| Hi-Q   MR 16 | 3616.00000 | 28              | 23,1 | 6,7 | 7855.16000            |
| MR 25        |            |                 |      |     |                       |
| Hi-Q   MR 25 | 3625.00000 | 40              | 25,5 | 8,1 | 7855.25000            |
| MR 32        |            |                 |      |     |                       |
| Hi-Q   MR 32 | 3632.00000 | 50              | 31,8 | 9,1 | 7855.32000            |

| Type          | Part no.   | Dimensions [mm] |      |     | Accessories           |
|---------------|------------|-----------------|------|-----|-----------------------|
|               |            | DLN             | HLN  | L1  | Freewheel wrench head |
| MRM 16        |            |                 |      |     |                       |
| Hi-Q   MRM 16 | 3616.80000 | 24              | 23,1 | 6,7 | 7855.16800            |



## MR Clamping nuts

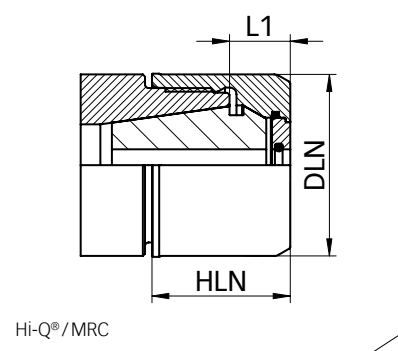
MR

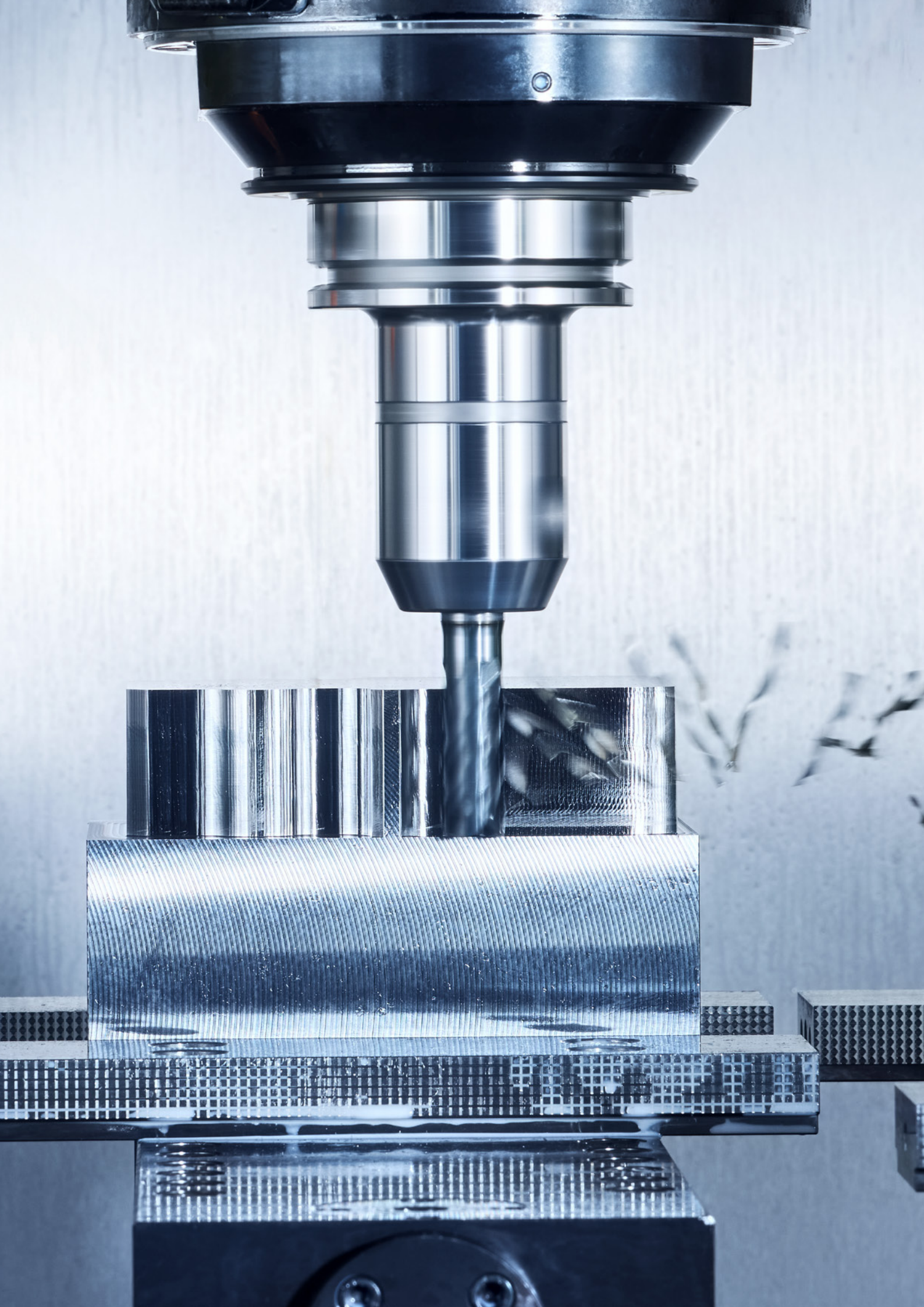
## MRM Mini clamping nuts

## MRC and MRMC clamping nuts for coolant through tools (DS/KS)

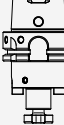
| Type          | Part no.   | Dimensions [mm] |      |      | Accessories           |
|---------------|------------|-----------------|------|------|-----------------------|
|               |            | DLN             | HLN  | L1   | Freewheel wrench head |
| MRC 16        |            |                 |      |      |                       |
| Hi-Q   MRC 16 | 3616.20000 | 28              | 28,1 | 11,7 | 7855.16000            |
| MRC 25        |            |                 |      |      |                       |
| Hi-Q   MRC 25 | 3625.20000 | 40              | 30,5 | 13,1 | 7855.25000            |
| MRC 32        |            |                 |      |      |                       |
| Hi-Q   MRC 32 | 3632.20000 | 50              | 36,8 | 14,1 | 7855.32000            |

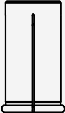
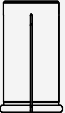
| Type           | Part no.   | Dimensions [mm] |      |      | Accessories           |
|----------------|------------|-----------------|------|------|-----------------------|
|                |            | DLN             | HLN  | L1   | Freewheel wrench head |
| MRMC 16        |            |                 |      |      |                       |
| Hi-Q   MRMC 16 | 3616.90000 | 24              | 28,1 | 11,7 | 7855.16800            |





# Experience uniTec

| HSK holders                                                                       |                                                                                   |                                                                                   | SK holders                                                                        |                                                                                   |                                                                                   | BT holders                                                                        |                                                                                   |                                                                                    | CAPTO holders                                                                       |                                                                                     |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| HSK/<br>WD-CB                                                                     | HSK/<br>MA-CB                                                                     | HSK/<br>KBF                                                                       | SK/<br>WD-CB                                                                      | SK/<br>MA-CB                                                                      | SK/<br>KBF                                                                        | BT/<br>WD-CB                                                                      | BT/<br>MA-CB                                                                      | BT/<br>KBF                                                                         | CAPTO/<br>WD                                                                        | CAPTO/<br>MA                                                                        |
|  |  |  |  |  |  |  |  |  |  |  |
| Page 256                                                                          | Page 258                                                                          | Page 259                                                                          | Page 260                                                                          | Page 262                                                                          | Page 263                                                                          | Page 264                                                                          | Page 266                                                                          | Page 267                                                                           | Page 268                                                                            | Page 272                                                                            |

| Reduction sleeves<br>for hydro chucks                                               |                                                                                     |                                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| HS                                                                                  | HS-CF<br>with coolant flush                                                         | HS-MB<br>Micro-Bore                                                                 |
|  |  |  |
| Page 275                                                                            | Page 275                                                                            | Page 275                                                                            |



| HSK holders                                                                       |                                                                                   |                                                                                   | SK holders                                                                        |                                                                                   |                                                                                   | BT holders                                                                        |                                                                                   |                                                                                     | CAPTO holders                                                                       |                                                                                     |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| HSK/<br>WD-CB                                                                     | HSK/<br>MA-CB                                                                     | HSK/<br>KBF                                                                       | SK/<br>WD-CB                                                                      | SK/<br>MA-CB                                                                      | SK/<br>KBF                                                                        | BT/<br>WD-CB                                                                      | BT/<br>MA-CB                                                                      | BT/<br>KBF                                                                          | CAPTO/<br>WD                                                                        | CAPTO/<br>MA                                                                        |
|  |  |  |  |  |  |  |  |  |  |  |
| Page 256                                                                          | Page 258                                                                          | Page 259                                                                          | Page 260                                                                          | Page 262                                                                          | Page 263                                                                          | Page 264                                                                          | Page 266                                                                          | Page 267                                                                            | Page 268                                                                            | Page 272                                                                            |





# Toolholders



**WD-CB**



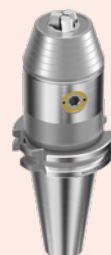
**MA-CB**



**WD**



**MA**



**KBF**

|                |                    |                    |                    |                    |                    |
|----------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| CoolBore       | •                  | •                  | –                  | –                  | –                  |
| HSK            | •                  | •                  | –                  | –                  | •                  |
| SK             | •                  | •                  | –                  | –                  | •                  |
| BT             | •                  | •                  | –                  | –                  | •                  |
| CAPTO          | –                  | –                  | •                  | •                  | –                  |
| Balancing      | Balanced by design | Balanced by design | Balanced by design | Balanced by design | Balanced by design |
| Diameter range | 6–32               | 16–40              | 6–40               | 16–40              | 1–13               |

# uniTec Weldon holders and shell mill arbors with CB – CoolBore



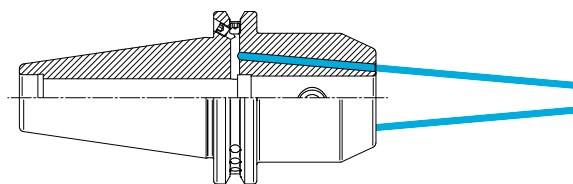
## Features and benefits WD-CB

### Application

Ideally suited for use with tools without internal coolant supply and for machining workpieces with poor chip evacuation.

### Design

Two holes in the wall of the Weldon holder guide the coolant directly to the cutting edge of the tool.



### Scope of delivery

With clamping screw and two M3 screw plugs to close the CoolBore holes if required (VS-CB).

### Accessories

The diameter of the CoolBore holes can be reduced with two reducing nozzles. This allows a higher coolant pressure to be achieved (RD-CB).

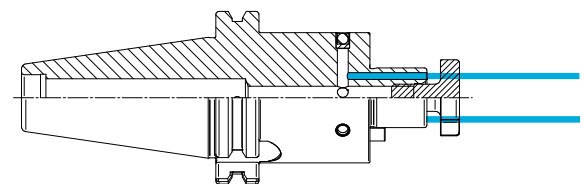
## Features and benefits MA-CB

### Application

For holding milling cutters with a cross groove, such as shell mill cutters. CoolBore allows the coolant to be fed through the tool directly to the cutting edge.

### Design

Four holes in the holder to guide the coolant into the milling arbor.



### Scope of delivery

With tensioning screw and permanently installed driving keys.

### Expert advice

For all HSK Weldon holders and shell mill arbors a range of coolant tubes (KSR) is available.

## Fitting the screw plug and reducing nozzle

Screw plugs or reducing nozzles can be screwed in through the threads in the CoolBore holes. The VS-CB and RD-CB are fitted using an Allen key.



**25 bar**



**40 bar**



If cooling through the tool shank is required, the screw plugs must be fitted. In addition, the outlet diameter of the CoolBore holes can be reduced to 0.5mm using reducing nozzles. This will increase the effect of the coolant jet.

uniTec CB

PG-CB

ER-CB



// Discover the CoolBore features also in powRgrip® and ER products.

# Weldon end mill holders HSK/WD-CB

Designed for rotating applications, all our HSK holders are suited for high-speed applications where a consistent performance is key.

DIN 69893/ISO 12164

## Features of end mill holders (Weldon)

### **Runout TIR $\leq 3 \mu\text{m}$**

Measured from inner bore to outer taper.

### **Precision side locking screw**

For highest transferable torque.

### **ID chip hole (only HSK form A)**

In accordance with DIN 69873 for 10 mm diameter.

Other HSK-forms available on request.



### Expert advice

For all HSK tool holders a range of coolant tubes (KSR) is available.

*For KSR part numbers please refer to page 345.*

# Weldon end mill holders HSK-A/WD-CB

HSK/WD-CB

DIN 69893

ISO 12164

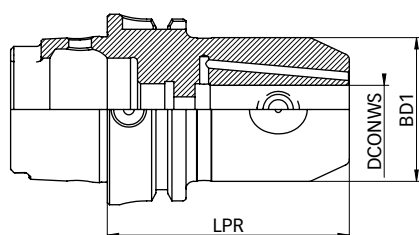
| Type                      | Part no.   | Dimensions [mm] |     |     |
|---------------------------|------------|-----------------|-----|-----|
|                           |            | DCONWS          | BD1 | LPR |
| HSK-A 40                  |            |                 |     |     |
| HSK-A 40 / WD 6-CB x 060  | 5540.30630 | 6               | 25  | 60  |
| HSK-A 40 / WD 8-CB x 060  | 5540.30830 | 8               | 28  | 60  |
| HSK-A 40 / WD 10-CB x 060 | 5540.31030 | 10              | 35  | 60  |
| HSK-A 40 / WD 12-CB x 070 | 5540.31240 | 12              | 42  | 70  |
| HSK-A 40 / WD 16-CB x 075 | 5540.31640 | 16              | 48  | 75  |

|                           |            |    |    |     |
|---------------------------|------------|----|----|-----|
| <b>HSK-A 63</b>           |            |    |    |     |
| HSK-A 63 / WD 6-CB x 065  | 5563.30630 | 6  | 25 | 65  |
| HSK-A 63 / WD 6-CB x 120  | 5563.30670 | 6  | 25 | 120 |
| HSK-A 63 / WD 8-CB x 065  | 5563.30830 | 8  | 28 | 65  |
| HSK-A 63 / WD 8-CB x 120  | 5563.30870 | 8  | 28 | 120 |
| HSK-A 63 / WD 10-CB x 065 | 5563.31030 | 10 | 35 | 65  |
| HSK-A 63 / WD 10-CB x 120 | 5563.31070 | 10 | 35 | 120 |
| HSK-A 63 / WD 12-CB x 080 | 5563.31250 | 12 | 42 | 80  |
| HSK-A 63 / WD 12-CB x 120 | 5563.31270 | 12 | 42 | 120 |
| HSK-A 63 / WD 16-CB x 080 | 5563.31650 | 16 | 48 | 80  |
| HSK-A 63 / WD 16-CB x 120 | 5563.31670 | 16 | 48 | 120 |
| HSK-A 63 / WD 20-CB x 080 | 5563.32050 | 20 | 52 | 80  |
| HSK-A 63 / WD 20-CB x 120 | 5563.32070 | 20 | 52 | 120 |
| HSK-A 63 / WD 25-CB x 110 | 5563.32560 | 25 | 65 | 110 |
| HSK-A 63 / WD 32-CB x 110 | 5563.33260 | 32 | 72 | 110 |

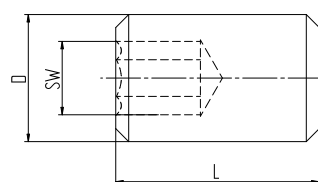
|                            |            |    |    |     |
|----------------------------|------------|----|----|-----|
| <b>HSK-A 100</b>           |            |    |    |     |
| HSK-A 100 / WD 12-CB x 080 | 5500.31250 | 12 | 42 | 80  |
| HSK-A 100 / WD 16-CB x 100 | 5500.31660 | 16 | 48 | 100 |
| HSK-A 100 / WD 20-CB x 100 | 5500.32060 | 20 | 52 | 100 |
| HSK-A 100 / WD 25-CB x 100 | 5500.32560 | 25 | 65 | 100 |
| HSK-A 100 / WD 32-CB x 100 | 5500.33260 | 32 | 72 | 100 |

| Type                    | Part no.   | Dimensions [mm] |   |     |
|-------------------------|------------|-----------------|---|-----|
|                         |            | D               | L | SW  |
| CoolBore nozzle         |            |                 |   |     |
| SET VS-CB M3*           | 7781.03000 | M3              | 6 | 1.5 |
| SET RD-CB M3   Ø 0.5 mm | 7788.03050 | M3              | 6 | 1.5 |

\*Included in delivery with each holder (2 pcs.)



HSK-A/WD-CB



VS-CB M3

# Shell mill arbor HSK-A/MA-CB

HSK/MA-CB

DIN 69893

ISO 12164

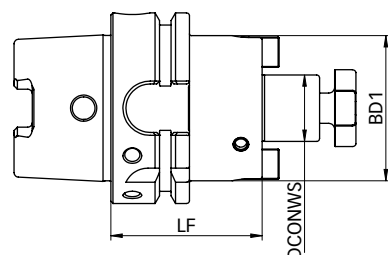
| Type                       | Part no.   | Dimensions [mm] |     |     | Accessories |
|----------------------------|------------|-----------------|-----|-----|-------------|
|                            |            | DCONWS          | BD1 | LF  | Wrench      |
| HSK-A 63                   |            |                 |     |     |             |
| HSK-A 63 / MA 16-CB x 050  | 5563.01620 | 16              | 38  | 50  | FDS 16      |
| HSK-A 63 / MA 16-CB x 100  | 5563.01660 | 16              | 38  | 100 | FDS 16      |
| HSK-A 63 / MA 22-CB x 050  | 5563.02220 | 22              | 48  | 50  | FDS 22      |
| HSK-A 63 / MA 22-CB x 100  | 5563.02260 | 22              | 48  | 100 | FDS 22      |
| HSK-A 63 / MA 27-CB x 060  | 5563.02730 | 27              | 60  | 60  | FDS 27      |
| HSK-A 63 / MA 27-CB x 100  | 5563.02760 | 27              | 60  | 100 | FDS 27      |
| HSK-A 63 / MA 32-CB x 060  | 5563.03230 | 32              | 78  | 60  | FDS 32      |
| HSK-A 63 / MA 32-CB x 100  | 5563.03260 | 32              | 78  | 100 | FDS 32      |
| HSK-A 63 / MA 40-CB x 060  | 5563.04030 | 40              | 89  | 60  | FDS 40      |
| HSK-A 63 / MA 40-CB x 100  | 5563.04060 | 40              | 89  | 100 | FDS 40      |
| HSK-A 100                  |            |                 |     |     |             |
| HSK-A 100 / MA 16-CB x 050 | 5500.01620 | 16              | 38  | 50  | FDS 16      |
| HSK-A 100 / MA 22-CB x 050 | 5500.02220 | 22              | 48  | 50  | FDS 22      |
| HSK-A 100 / MA 27-CB x 050 | 5500.02720 | 27              | 60  | 50  | FDS 27      |
| HSK-A 100 / MA 32-CB x 050 | 5500.03220 | 32              | 78  | 50  | FDS 32      |
| HSK-A 100 / MA 40-CB x 060 | 5500.04030 | 40              | 89  | 60  | FDS 40      |

Included in delivery: Shell mill arbor and lock screw

HSK-A: Hole for data carrier DIN STD 69873 in the flange available on request



HSK-A/MA-CB



HSK-A/MA-CB

# Drill chucks HSK-A/KBF

HSK-A/KBF

DIN 69893

ISO 12164

| Type                       | Part no.   | Dimensions [mm] |     |     |
|----------------------------|------------|-----------------|-----|-----|
|                            |            | DCONWS          | BD1 | LPR |
| HSK-A 63/KBF               |            |                 |     |     |
| HSK-A 63/KBF 1.0 – 13.0 mm | 2563.50100 | 1–13            | 50  | 104 |

HSK-A: Hole for data carrier DIN STD 69873 in the flange available on request

Drill chucks HSK-A/KBF

## Features and benefits

### Clamping range

1–13 mm

### Runout TIR

0.03 mm

### Maximum tightening torque

20 Nm

### Clamping force (at 20 Nm tightening torque)

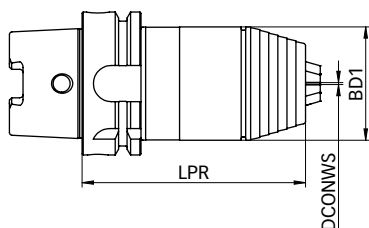
80 Nm

### Maximum rpm

35 000 rpm



HSK-A/KBF



HSK-A/KBF



# Weldon end mill holders SK/WD-CB

Universally suitable for different machining applications

DIN 69871 / DIN ISO 7388-1

## Features of end mill holders (Weldon)

### **Runout TIR $\leq 3 \mu\text{m}$**

Measured from inner bore to outer taper.

### **Taper accuracy AT3**

Better spindle-to-holder fit and accuracy.

### **Precision side locking screw**

For highest transferable torque.

### **Coolant supply**

All toolholders with form AD/AF can be used for cooling. Form AD/AF delivers the coolant supply through the taper or via the flange at the gripper groove.

### **ID chip hole**

In accordance with DIN 69873 for 10 mm diameter.



# Weldon end mill holders SK/WD-CB

SK/WD-CB

DIN 69871

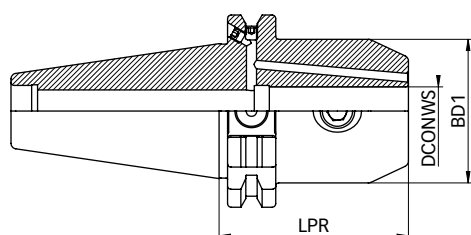
DIN ISO 7388-1

| Type                   | Part no.   | Dimensions [mm] |     |     | Form AD/AF |
|------------------------|------------|-----------------|-----|-----|------------|
|                        |            | DCONWS          | BD1 | LPR |            |
| SK 40                  |            |                 |     |     |            |
| SK 40 / WD 6-CB x 050  | 5240.30620 | 6               | 25  | 50  | •          |
| SK 40 / WD 6-CB x 100  | 5240.30660 | 6               | 25  | 100 | •          |
| SK 40 / WD 8-CB x 050  | 5240.30820 | 8               | 28  | 50  | •          |
| SK 40 / WD 8-CB x 100  | 5240.30860 | 8               | 28  | 100 | •          |
| SK 40 / WD 10-CB x 050 | 5240.31020 | 10              | 35  | 50  | •          |
| SK 40 / WD 10-CB x 100 | 5240.31060 | 10              | 35  | 100 | •          |
| SK 40 / WD 12-CB x 050 | 5240.31220 | 12              | 42  | 50  | •          |
| SK 40 / WD 12-CB x 100 | 5240.31260 | 12              | 42  | 100 | •          |
| SK 40 / WD 16-CB x 063 | 5240.31630 | 16              | 48  | 63  | •          |
| SK 40 / WD 16-CB x 100 | 5240.31660 | 16              | 48  | 100 | •          |
| SK 40 / WD 20-CB x 063 | 5240.32030 | 20              | 52  | 63  | •          |
| SK 40 / WD 20-CB x 100 | 5240.32060 | 20              | 52  | 100 | •          |
| SK 40 / WD 25-CB x 100 | 5240.32560 | 25              | 65  | 100 | •          |
| SK 40 / WD 32-CB x 100 | 5240.33260 | 32              | 72  | 100 | •          |

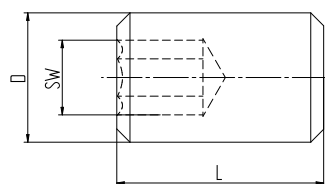
|                        |            |    |    |     |   |
|------------------------|------------|----|----|-----|---|
| <b>SK 50</b>           |            |    |    |     |   |
| SK 50 / WD 12-CB x 063 | 5250.31230 | 12 | 42 | 63  | • |
| SK 50 / WD 16-CB x 063 | 5250.31630 | 16 | 48 | 63  | • |
| SK 50 / WD 20-CB x 063 | 5250.32030 | 20 | 52 | 63  | • |
| SK 50 / WD 25-CB x 080 | 5250.33250 | 25 | 65 | 80  | • |
| SK 50 / WD 32-CB x 100 | 5250.33260 | 32 | 72 | 100 | • |

| Type                    | Part no.   | Dimensions [mm] |   |     |                                         |
|-------------------------|------------|-----------------|---|-----|-----------------------------------------|
|                         |            | D               | L | SW  |                                         |
| CoolBore nozzle         |            |                 |   |     |                                         |
| SET VS-CB M3*           | 7781.03000 | M3              | 6 | 1.5 | Screw plug for CoolBore drill hole      |
| SET RD-CB M3   Ø 0.5 mm | 7788.03050 | M3              | 6 | 1.5 | Reducing nozzle for CoolBore drill hole |

\*Included in delivery with each holder (2 pcs.)



SK/WD-CB



VS-CB M3

# Shell mill arbor SK / MA-CB

SK/MA-CB

DIN 69871

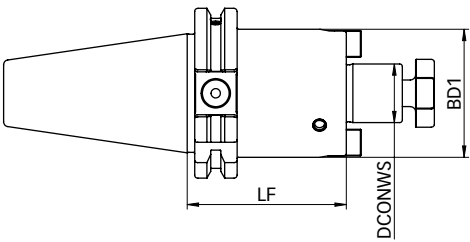
DIN ISO 7388-1

| Type                   | Part no.   | Dimensions [mm] |     |    |            | Accessories |
|------------------------|------------|-----------------|-----|----|------------|-------------|
|                        |            | DCONWS          | BD1 | LF | Form AD/AF | Wrench      |
| SK 40                  |            |                 |     |    |            |             |
| SK 40 / MA 16-CB x 060 | 5240.01630 | 16              | 38  | 60 | •          | FDS 16      |
| SK 40 / MA 22-CB x 060 | 5240.02230 | 22              | 48  | 60 | •          | FDS 22      |
| SK 40 / MA 27-CB x 060 | 5240.02730 | 27              | 50  | 60 | •          | FDS 27      |
| SK 40 / MA 32-CB x 070 | 5240.03240 | 32              | 78  | 70 | •          | FDS 32      |
| SK 40 / MA 40-CB x 070 | 5240.04040 | 40              | 89  | 70 | •          | FDS 40      |

Included in delivery: Shell mill arbor and lock screw



SK / MA-CB



SK / MA-CB

# Drill chucks SK / KBF

**SK / KBF**

**DIN 69871**

**DIN ISO 7388-1**

| Type                      | Part no.   | Dimensions [mm] |     |     | Form A | Form A+AD |
|---------------------------|------------|-----------------|-----|-----|--------|-----------|
|                           |            | DCONWS          | BD1 | LPR |        |           |
| SK 30                     |            |                 |     |     |        |           |
| SK 30 / KBF 1.0 – 13.0 mm | 2230.50100 | 1–13            | 50  | 111 | •      | –         |
| SK 40                     |            |                 |     |     |        |           |
| SK 40 / KBF 1.0 – 13.0 mm | 2240.50103 | 1–13            | 50  | 90  | –      | •         |
| SK 50                     |            |                 |     |     |        |           |
| SK 50 / KBF 1.0 – 13.0 mm | 2250.50103 | 1–13            | 50  | 106 | –      | •         |

Drill chucks SK / KBF

## Features and benefits

### Clamping range

1–13 mm

### Runout TIR

0.03 mm

### Maximum tightening torque

20 Nm

### Clamping force (at 20 Nm tightening torque)

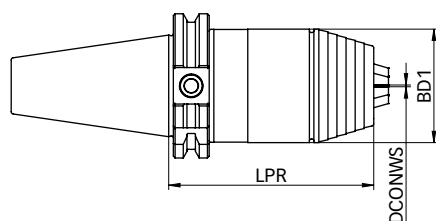
80 Nm

### Maximum rpm

35 000 rpm



SK / KBF



SK / KBF

# Weldon end mill holders BT /WD-CB

Universally suitable different machining applications, the BT interface toolholders cater to various machining needs.

MAS 403 / JIS B 6339 / DIN ISO 7388-2

## Features of end mill holders (Weldon)

### Runout TIR $\leq 3 \mu\text{m}$

Measured from inner bore to outer taper.

### Taper accuracy AT3

Better spindle-to-holder fit and accuracy.

### Precision side locking screw

For highest transferable torque.

### Coolant supply

All toolholders with form JD/JF can be used for cooling. Form JD/JF delivers the coolant supply through the taper or via the flange at the gripper groove.



# Weldon end mill holders BT /WD-CB

**BT /WD-CB**

MAS 403

JIS B 6339

DIN ISO 7388-2

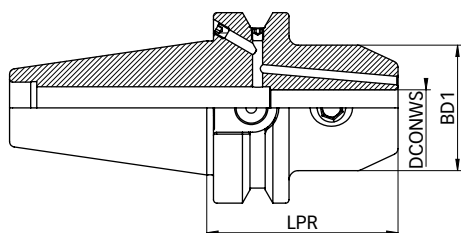
| Type                   | Part no.   | Dimensions [mm] |     |     | Form JD/JF |
|------------------------|------------|-----------------|-----|-----|------------|
|                        |            | DCONWS          | BD1 | LPR |            |
| BT 30                  |            |                 |     |     |            |
| BT 30 / WD 6-CB x 050  | 5130.30620 | 6               | 25  | 50  | •          |
| BT 30 / WD 8-CB x 050  | 5130.30820 | 8               | 28  | 50  | •          |
| BT 30 / WD 10-CB x 050 | 5130.31020 | 10              | 35  | 50  | •          |
| BT 30 / WD 12-CB x 052 | 5130.31220 | 12              | 42  | 52  | •          |
| BT 30 / WD 16-CB x 063 | 5130.31630 | 16              | 48  | 63  | •          |
| BT 30 / WD 20-CB x 063 | 5130.32030 | 20              | 52  | 63  | •          |

|                        |            |    |    |     |   |
|------------------------|------------|----|----|-----|---|
| <b>BT 40</b>           |            |    |    |     |   |
| BT 40 / WD 6-CB x 050  | 5140.30620 | 6  | 25 | 50  | • |
| BT 40 / WD 8-CB x 050  | 5140.30820 | 8  | 28 | 50  | • |
| BT 40 / WD 10-CB x 063 | 5140.31030 | 10 | 35 | 63  | • |
| BT 40 / WD 12-CB x 063 | 5140.31230 | 12 | 42 | 63  | • |
| BT 40 / WD 16-CB x 063 | 5140.31630 | 16 | 48 | 63  | • |
| BT 40 / WD 20-CB x 063 | 5140.32030 | 20 | 52 | 63  | • |
| BT 40 / WD 25-CB x 090 | 5140.32550 | 25 | 65 | 90  | • |
| BT 40 / WD 32-CB x 100 | 5140.33260 | 32 | 72 | 100 | • |

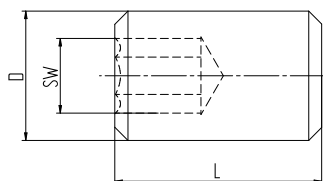
|                        |            |    |    |     |   |
|------------------------|------------|----|----|-----|---|
| <b>BT 50</b>           |            |    |    |     |   |
| BT 50 / WD 16-CB x 080 | 5150.31650 | 16 | 48 | 80  | • |
| BT 50 / WD 20-CB x 080 | 5150.32050 | 20 | 52 | 80  | • |
| BT 50 / WD 25-CB x 100 | 5150.32560 | 25 | 65 | 100 | • |
| BT 50 / WD 32-CB x 105 | 5150.33260 | 32 | 72 | 105 | • |
| BT 50 / WD 40-CB x 110 | 5150.34060 | 40 | 80 | 110 | • |

| Type                    | Part no.   | Dimensions [mm] |   |     |                                         |
|-------------------------|------------|-----------------|---|-----|-----------------------------------------|
|                         |            | D               | L | SW  |                                         |
| CoolBore nozzle         |            |                 |   |     |                                         |
| SET VS-CB M3*           | 7781.03000 | M3              | 6 | 1.5 | Screw plug for CoolBore drill hole      |
| SET RD-CB M3   Ø 0.5 mm | 7788.03050 | M3              | 6 | 1.5 | Reducing nozzle for CoolBore drill hole |

\*Included in delivery with each holder (2 pcs.)



BT/WD-CB



VS-CB M3

# Shell mill arbor BT / MA-CB

**BT / MA-CB**

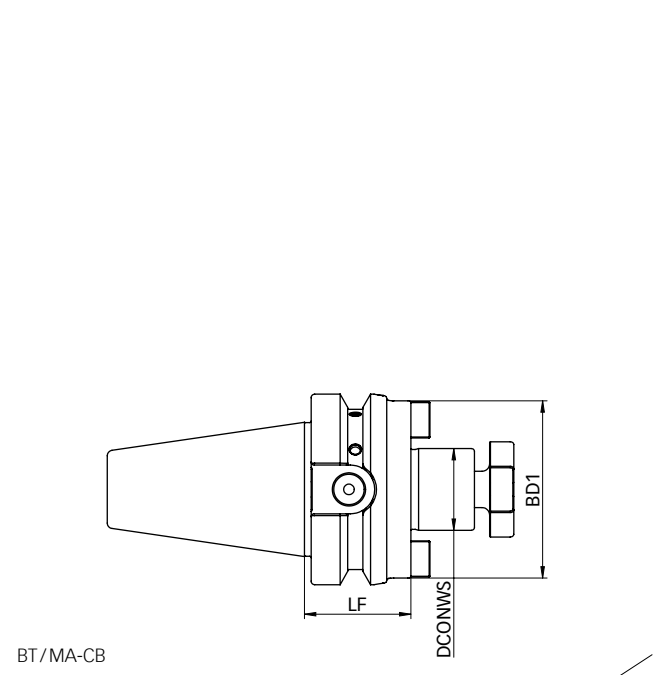
MAS 403

JIS B 6339

DIN ISO 7388-2

| Type                   | Part no.   | Dimensions [mm] |     |     | Form JD/JF | Accessories |
|------------------------|------------|-----------------|-----|-----|------------|-------------|
|                        |            | DCONWS          | BD1 | LF  |            | Wrench      |
| BT 30                  |            |                 |     |     |            |             |
| BT 30 / MA 16-CB x 035 | 5130.01610 | 16              | 38  | 35  | •          | FDS 16      |
| BT 30 / MA 22-CB x 035 | 5130.02210 | 22              | 48  | 35  | •          | FDS 22      |
| BT 30 / MA 27-CB x 035 | 5130.02710 | 27              | 60  | 35  | •          | FDS 27      |
| BT 40                  |            |                 |     |     |            |             |
| BT 40 / MA 16-CB x 035 | 5140.01610 | 16              | 38  | 35  | •          | FDS 16      |
| BT 40 / MA 16-CB x 100 | 5140.01660 | 16              | 38  | 100 | •          | FDS 16      |
| BT 40 / MA 22-CB x 035 | 5140.02210 | 22              | 48  | 35  | •          | FDS 22      |
| BT 40 / MA 22-CB x 100 | 5140.02260 | 22              | 48  | 100 | •          | FDS 22      |
| BT 40 / MA 27-CB x 035 | 5140.02710 | 27              | 60  | 35  | •          | FDS 27      |
| BT 40 / MA 27-CB x 100 | 5140.02760 | 27              | 60  | 100 | •          | FDS 27      |
| BT 40 / MA 32-CB x 050 | 5140.03220 | 32              | 78  | 50  | •          | FDS 32      |
| BT 40 / MA 32-CB x 100 | 5140.03260 | 32              | 78  | 100 | •          | FDS 32      |
| BT 40 / MA 40-CB x 050 | 5140.04020 | 40              | 89  | 50  | •          | FDS 40      |
| BT 50                  |            |                 |     |     |            |             |
| BT 50 / MA 22-CB x 055 | 5150.02220 | 22              | 48  | 55  | •          | FDS 22      |
| BT 50 / MA 27-CB x 055 | 5150.02720 | 27              | 60  | 55  | •          | FDS 27      |
| BT 50 / MA 32-CB x 055 | 5150.03220 | 32              | 78  | 55  | •          | FDS 32      |
| BT 50 / MA 40-CB x 055 | 5150.04020 | 40              | 89  | 55  | •          | FDS 40      |

Included in delivery: Shell mill arbor and lock screw





# Drill chucks BT /KBF

**BT /KBF**

MAS 403

JIS B 6339

DIN ISO 7388-2

| Type                    | Part no.   | Dimensions [mm] |     |     | Form A | Form A+AD |
|-------------------------|------------|-----------------|-----|-----|--------|-----------|
|                         |            | DCONWS          | BD1 | LPR |        |           |
| BT 30                   |            |                 |     |     |        |           |
| BT 30/KBF 1.0 – 13.0 mm | 2130.50100 | 1–13            | 50  | 95  | •      | –         |
| BT 40                   |            |                 |     |     |        |           |
| BT 40/KBF 1.0 – 13.0 mm | 2140.50103 | 1– 13           | 50  | 98  | –      | •         |
| BT 50                   |            |                 |     |     |        |           |
| BT 50/KBF 1.0 – 13.0 mm | 2150.50103 | 1– 13           | 50  | 100 | –      | •         |

Drill chucks BT /KBF

## Features and benefits

### Clamping range

1–13 mm

### Runout TIR

0.03 mm

### Maximum tightening torque

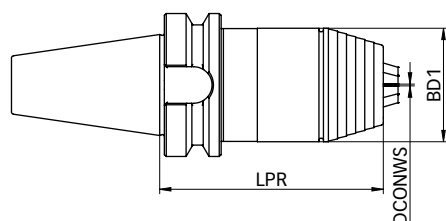
20 Nm

### Clamping force (at 20 Nm tightening torque)

80 Nm

### Maximum rpm

35 000 rpm



BT /KBF

# REGO-FIX CAPTO licensed by Sandvik Coromant Weldon end mill holders REGO-FIX C/WD

These self-centering and balanced holders enable a high torque transmission and show a high bending strength.

ISO 26623

## Features of end mill holders (Weldon)

### Runout TIR $\leq 3 \mu\text{m}$

Measured from inner bore to outer taper.

### Precision side locking screw

For highest transferable torque.

**Certified** REGO-FIX CAPTO – licensed by Sandvik Coromant – is manufactured at REGO-FIX Switzerland under license according to CAPTO specifications.



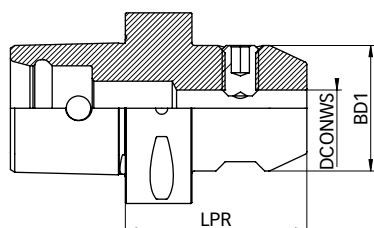
# REGO-FIX CAPTO holders licensed by Sandvik Coromant

## Weldon end mill holders REGO-FIX C/WD

C/WD

ISO 26623

| Type           | Part no.   | Dimensions [mm] |     |     |
|----------------|------------|-----------------|-----|-----|
|                |            | DCONWS          | BD1 | LPR |
| C3             |            |                 |     |     |
| C3/WD 6 x 045  | 2803.30610 | 6               | 25  | 45  |
| C3/WD 8 x 045  | 2803.30810 | 8               | 28  | 45  |
| C3/WD 10 x 050 | 2803.31020 | 10              | 35  | 50  |
| C3/WD 12 x 055 | 2803.31220 | 12              | 42  | 55  |
| C4             |            |                 |     |     |
| C4/WD 6 x 050  | 2804.30620 | 6               | 25  | 50  |
| C4/WD 8 x 050  | 2804.30820 | 8               | 28  | 50  |
| C4/WD 10 x 050 | 2804.31020 | 10              | 35  | 50  |
| C4/WD 12 x 055 | 2804.31220 | 12              | 42  | 55  |
| C4/WD 14 x 055 | 2804.31420 | 14              | 44  | 55  |
| C4/WD 16 x 055 | 2804.31620 | 16              | 48  | 55  |
| C5             |            |                 |     |     |
| C5/WD 6 x 050  | 2805.30620 | 6               | 25  | 50  |
| C5/WD 8 x 050  | 2805.30820 | 8               | 28  | 50  |
| C5/WD 10 x 055 | 2805.31020 | 10              | 35  | 55  |
| C5/WD 12 x 060 | 2805.31230 | 12              | 42  | 60  |
| C5/WD 14 x 060 | 2805.31430 | 14              | 44  | 60  |
| C5/WD 16 x 060 | 2805.31630 | 16              | 48  | 60  |
| C5/WD 18 x 060 | 2805.31830 | 18              | 50  | 60  |
| C5/WD 20 x 060 | 2805.32030 | 20              | 52  | 60  |
| C5/WD 25 x 080 | 2805.32550 | 25              | 65  | 80  |



C/WD

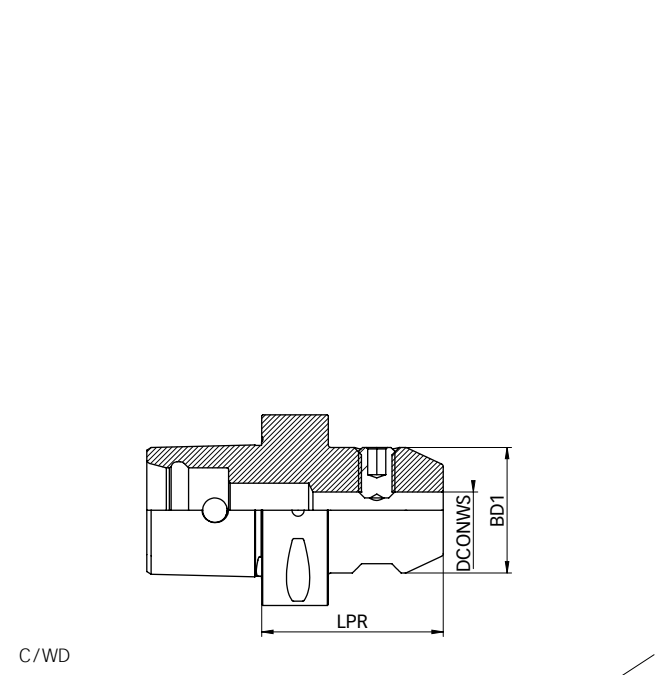
# REGO-FIX CAPTO holders licensed by Sandvik Coromant

## Weldon end mill holders REGO-FIX C/WD

**C/WD**  
ISO 26623

| Type           | Part no.   | Dimensions [mm] |     |     |
|----------------|------------|-----------------|-----|-----|
|                |            | DCONWS          | BD1 | LPR |
| C6             |            |                 |     |     |
| C6/WD 6 x 055  | 2806.30620 | 6               | 25  | 55  |
| C6/WD 8 x 055  | 2806.30820 | 8               | 28  | 55  |
| C6/WD 10 x 060 | 2806.31030 | 10              | 35  | 60  |
| C6/WD 12 x 060 | 2806.31230 | 12              | 42  | 60  |
| C6/WD 14 x 060 | 2806.31430 | 14              | 44  | 60  |
| C6/WD 16 x 065 | 2806.31630 | 16              | 48  | 65  |
| C6/WD 18 x 065 | 2806.31830 | 18              | 50  | 65  |
| C6/WD 20 x 065 | 2806.32030 | 20              | 52  | 65  |
| C6/WD 25 x 080 | 2806.32550 | 25              | 65  | 80  |
| C6/WD 32 x 090 | 2806.33250 | 32              | 72  | 90  |
| C6/WD 40 x 100 | 2806.34060 | 40              | 80  | 100 |

|                |            |    |    |     |
|----------------|------------|----|----|-----|
| <b>C8</b>      |            |    |    |     |
| C8/WD 6 x 070  | 2808.30640 | 6  | 25 | 70  |
| C8/WD 8 x 070  | 2808.30840 | 8  | 28 | 70  |
| C8/WD 10 x 070 | 2808.31040 | 10 | 35 | 70  |
| C8/WD 12 x 070 | 2808.31240 | 12 | 42 | 70  |
| C8/WD 14 x 070 | 2808.31440 | 14 | 44 | 70  |
| C8/WD 16 x 070 | 2808.31640 | 16 | 48 | 70  |
| C8/WD 18 x 070 | 2808.31840 | 18 | 50 | 70  |
| C8/WD 20 x 070 | 2808.32040 | 20 | 52 | 70  |
| C8/WD 25 x 080 | 2808.32550 | 25 | 65 | 80  |
| C8/WD 32 x 080 | 2808.33250 | 32 | 72 | 80  |
| C8/WD 40 x 110 | 2808.34060 | 40 | 80 | 110 |



# REGO-FIX CAPTO holders licensed by Sandvik Coromant

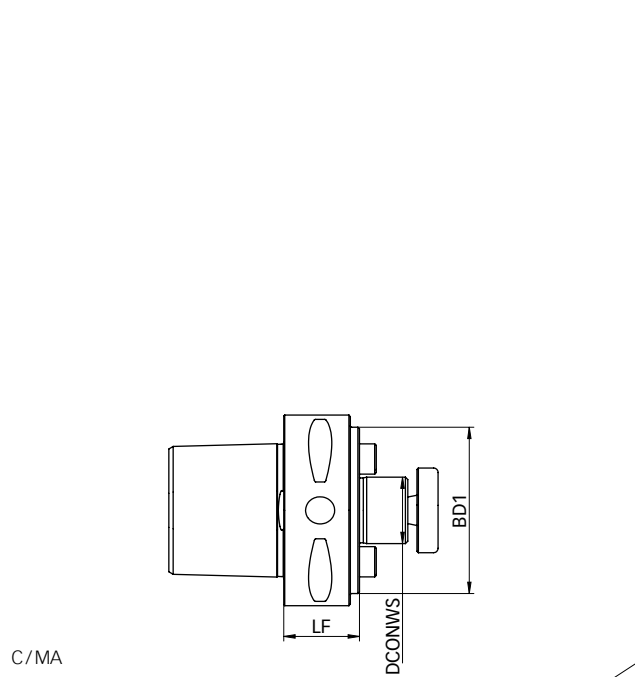
## Shell mill arbor REGO-FIX C/MA

**C/MA**

ISO 26623

| Type           | Part no.   | Dimensions [mm] |     |    |
|----------------|------------|-----------------|-----|----|
|                |            | DCONWS          | BD1 | LF |
| C3             |            |                 |     |    |
| C3/MA 16 x 030 | 2803.01610 | 16              | 36  | 30 |
| C4             |            |                 |     |    |
| C4/MA 16 x 032 | 2804.01610 | 16              | 36  | 32 |
| C4/MA 16 x 055 | 2804.01620 | 16              | 36  | 55 |
| C4/MA 22 x 025 | 2804.02210 | 22              | 48  | 25 |
| C4/MA 22 x 055 | 2804.02220 | 22              | 48  | 55 |
| C5             |            |                 |     |    |
| C5/MA 16 x 035 | 2805.01610 | 16              | 36  | 35 |
| C5/MA 16 x 070 | 2805.01640 | 16              | 36  | 70 |
| C5/MA 22 x 025 | 2805.02210 | 22              | 50  | 25 |
| C5/MA 22 x 070 | 2805.02240 | 22              | 48  | 70 |
| C5/MA 27 x 025 | 2805.02710 | 27              | 56  | 25 |
| C5/MA 32 x 040 | 2805.03210 | 32              | 65  | 40 |

Included in delivery: Shell mill arbor and lock screw



# REGO-FIX CAPTO holders licensed by Sandvik Coromant

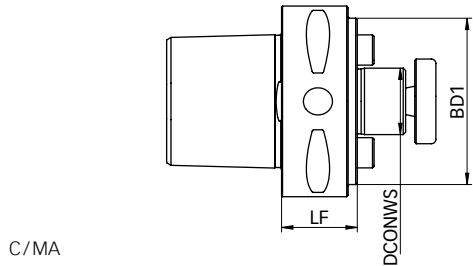
## Shell mill arbor REGO-FIX C/MA

C/MA

ISO 26623

| Type           | Part no.   | Dimensions [mm] |     |    |
|----------------|------------|-----------------|-----|----|
|                |            | DCONWS          | BD1 | LF |
| C6             |            |                 |     |    |
| C6/MA 16 x 040 | 2806.01610 | 16              | 36  | 40 |
| C6/MA 22 x 025 | 2806.02210 | 22              | 55  | 25 |
| C6/MA 27 x 025 | 2806.02710 | 27              | 63  | 25 |
| C6/MA 32 x 025 | 2806.03210 | 32              | 65  | 25 |
| C6/MA 40 x 040 | 2806.04010 | 40              | 80  | 40 |
| C8             |            |                 |     |    |
| C8/MA 16 x 050 | 2808.01620 | 16              | 36  | 50 |
| C8/MA 22 x 030 | 2808.02210 | 22              | 55  | 30 |
| C8/MA 27 x 030 | 2808.02710 | 27              | 65  | 30 |
| C8/MA 32 x 030 | 2808.03210 | 32              | 80  | 30 |
| C8/MA 40 x 030 | 2808.04010 | 40              | 80  | 30 |

*Included in delivery: Shell mill arbor and lock screw*









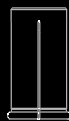
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**Reduction sleeves  
for hydro chucks**

HS

HS-CF  
with coolant flush

HS-MB  
Micro-Bore



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# Reduction sleeves for hydro chucks

Reduction sleeves are designed to fit hydro chucks of different manufacturers. They are specially suited for high-precision clamping of cylindrical tool shanks.

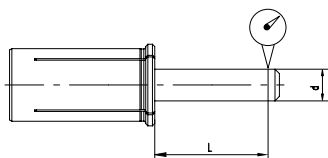
**Reduction sleeves for hydro chucks** Our reduction sleeves are designed to fit hydro chucks of different manufacturers. They are specially suited for high-precision clamping of cylindrical tool shanks per DIN 6535 form HA, HB and HE, as well as tool shanks per DIN 1835 form B, C, D and E.

The special design of REGO-FIX reduction sleeves allows an efficient use of coolant through cutting tools. This self-sealing system works with the most common hydraulic expansion chucks.

**Correct assembly** Improper assembly can damage the concentricity of the reduction sleeve.

- // Insert tools the full length of the reduction sleeve
- // Only clamp h6 tool shanks
- // Do not clamp reduction sleeve without a tool, as this could result in a damaged reduction sleeve

## Concentricity (TIR) of REGO-FIX HS type reduction sleeves



| Clamping diameter d [mm] |      |    | max. TIR |
|--------------------------|------|----|----------|
| > d                      | ≤ d  | L  | [mm]     |
| 3,0                      | 6,0  | 16 | 0,003    |
| 6,0                      | 10,0 | 25 | 0,003    |
| 10,0                     | 18,0 | 40 | 0,003    |
| 18,0                     | 26,0 | 50 | 0,003    |



## Swiss quality standard

Our products marked Swiss made are manufactured at our headquarters in Tenniken, Switzerland.

## Reductions sleeves for hydro chucks HS

### Features and benefits

#### Accurate precision

Runout TIR < 3 μm

#### High flexibility

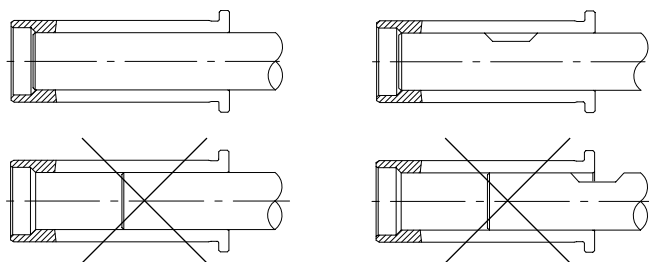
Clamp different tool shank diameters in hydro chucks: 12, 20, 25 and 32 mm.

#### Standard version HS suited for internal cooling

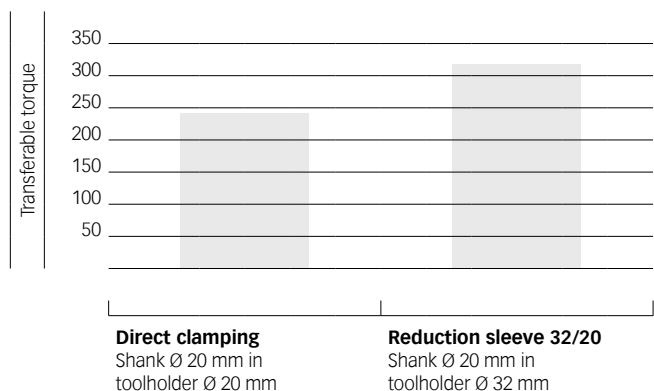
Metal-to-metal seal for cutting tools with internal coolant channels.

#### HS-CF suited for peripheral cooling

The coolant flush reductions sleeves HS-CF can be used for peripheral cooling due to their coolant channels.



## Comparison of transferable torque at Ø 20 mm



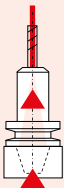
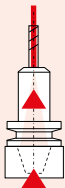
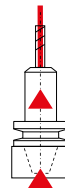
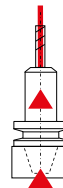
# Reduction sleeves HS, HS-CF and HS-MB

A wide standard range of high-precision reduction sleeves: cutting tools with shanks from 1.0 mm to 25 mm can be reliably and securely clamped in any hydraulic chuck.

## Metric

|                                    | HS 6                                                                                  | HS 8                                                                               | HS 12-MB                                                                           | HS 12                                                                              | HS 12-CF                                                                           | HS 16                                                                              | HS 20                                                                               | HS 20-CF                                                                             | HS 25                                                                                | HS 32                                                                                | HS 32-CF                                                                             |
|------------------------------------|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Outer diameter                     | Ø 6                                                                                   | Ø 8                                                                                | Ø 12                                                                               | Ø 12                                                                               | Ø 12                                                                               | Ø 16                                                                               | Ø 20                                                                                | Ø 20                                                                                 | Ø 25                                                                                 | Ø 32                                                                                 | Ø 32                                                                                 |
| Shank diameter                     | 1–4 mm                                                                                | 6 mm                                                                               | 1–2.5 mm                                                                           | 3–10 mm                                                                            | 3–8 mm                                                                             | 3–12 mm                                                                            | 3–18 mm                                                                             | 3–16 mm                                                                              | 3–20 mm                                                                              | 3–25 mm                                                                              | 6–25 mm                                                                              |
| Shank tolerance [mm]               | All reduction sleeves are designed for tools with shank tolerance h6 or more accurate |                                                                                    |                                                                                    |                                                                                    |                                                                                    |                                                                                    |                                                                                     |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| For internal coolant               | •                                                                                     | •                                                                                  |                                                                                    | •                                                                                  |                                                                                    | •                                                                                  | •                                                                                   |                                                                                      | •                                                                                    | •                                                                                    |                                                                                      |
| For peripheral coolant             |                                                                                       |                                                                                    | •                                                                                  |                                                                                    | •                                                                                  |                                                                                    |                                                                                     | •                                                                                    |                                                                                      |                                                                                      | •                                                                                    |
| Technical illustrations of cooling |     |  |  |  |  |  |  |  |  |  |  |
| Safety note                        | Never clamp reduction sleeves without a tool, it can be permanently damaged           |                                                                                    |                                                                                    |                                                                                    |                                                                                    |                                                                                    |                                                                                     |                                                                                      |                                                                                      |                                                                                      |                                                                                      |

## Inch

|                                    | HS 12                                                                                 | HS 20                                                                               | HS 25                                                                               | HS 32                                                                               | HS 1/2"                                                                              | HS 3/4"                                                                               | HS 1"                                                                                 | HS 1 1/4"                                                                             |
|------------------------------------|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Outer diameter                     | Ø 12 mm                                                                               | Ø 20 mm                                                                             | Ø 25 mm                                                                             | Ø 32 mm                                                                             | Ø 1/2"                                                                               | Ø 3/4"                                                                                | Ø 1"                                                                                  | Ø 1 1/4"                                                                              |
| Shank diameter                     | 1/8–3/8"                                                                              | 1/8–5/8"                                                                            | 1/8–13/16"                                                                          | 3/16–1"                                                                             | 1/8–3/8"                                                                             | 1/8–5/8"                                                                              | 1/8–3/4"                                                                              | 3/16–1"                                                                               |
| Shank tolerance [mm]               | All reduction sleeves are designed for tools with shank tolerance h6 or more accurate |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                       |
| For internal coolant               | •                                                                                     | •                                                                                   | •                                                                                   | •                                                                                   | •                                                                                    | •                                                                                     | •                                                                                     | •                                                                                     |
| Technical illustrations of cooling |    |  |  |  |  |  |  |  |
| Safety note                        | Never clamp reduction sleeves without a tool, it can be permanently damaged           |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                       |

# Reduction sleeves HS and HS-CF [metric]

HS

| Ø bore |            |            |             |            |            |            |            |            |            |            | Part no.   |
|--------|------------|------------|-------------|------------|------------|------------|------------|------------|------------|------------|------------|
| [mm]   | HS 6       | HS 8       | HS 12-MB    | HS 12      | HS 12-CF   | HS 16      | HS 20      | HS 20-CF   | HS 25      | HS 32      | HS 32-CF   |
| 1,0    | 1906.01000 | –          | 1912.01009* | –          | –          | –          | –          | –          | –          | –          | –          |
| 1,5    | –          | –          | 1912.01509* | –          | –          | –          | –          | –          | –          | –          | –          |
| 2,0    | 1906.02000 | –          | 1912.02009* | –          | –          | –          | –          | –          | –          | –          | –          |
| 2,5    | –          | –          | 1912.02509* | –          | –          | –          | –          | –          | –          | –          | –          |
| 3,0    | 1906.03000 | –          | –           | 1912.03000 | 1912.03002 | 1916.03000 | 1920.03000 | 1920.03002 | 1925.03000 | 1932.03000 | –          |
| 4,0    | 1906.04000 | –          | –           | 1912.04000 | 1912.04002 | 1916.04000 | 1920.04000 | 1920.04002 | 1925.04000 | 1932.04000 | –          |
| 5,0    | –          | –          | –           | 1912.05000 | 1912.05002 | –          | 1920.05000 | 1920.05002 | 1925.05000 | 1932.05000 | –          |
| 6,0    | –          | 1908.06000 | –           | 1912.06000 | 1912.06002 | 1916.06000 | 1920.06000 | 1920.06002 | 1925.06000 | 1932.06000 | 1932.06002 |
| 7,0    | –          | –          | –           | 1912.07000 | –          | –          | 1920.07000 | –          | 1925.07000 | 1932.07000 | –          |
| 8,0    | –          | –          | –           | 1912.08000 | 1912.08002 | 1916.08000 | 1920.08000 | 1920.08002 | 1925.08000 | 1932.08000 | 1932.08002 |
| 9,0    | –          | –          | –           | 1912.09000 | –          | –          | 1920.09000 | –          | 1925.09000 | 1932.09000 | –          |
| 10,0   | –          | –          | –           | 1912.10000 | –          | 1916.10000 | 1920.10000 | 1920.10002 | 1925.10000 | 1932.10000 | 1932.10002 |
| 11,0   | –          | –          | –           | –          | –          | –          | 1920.11000 | –          | –          | 1932.11000 | –          |
| 12,0   | –          | –          | –           | –          | –          | 1916.12000 | 1920.12000 | 1920.12002 | 1925.12000 | 1932.12000 | 1932.12002 |
| 13,0   | –          | –          | –           | –          | –          | –          | 1920.13000 | –          | –          | 1932.13000 | –          |
| 14,0   | –          | –          | –           | –          | –          | –          | 1920.14000 | 1920.14002 | 1925.14000 | 1932.14000 | 1932.14002 |
| 15,0   | –          | –          | –           | –          | –          | –          | 1920.15000 | –          | –          | 1932.15000 | –          |
| 16,0   | –          | –          | –           | –          | –          | –          | 1920.16000 | 1920.16002 | 1925.16000 | 1932.16000 | 1932.16002 |
| 17,0   | –          | –          | –           | –          | –          | –          | –          | –          | –          | 1932.17000 | –          |
| 18,0   | –          | –          | –           | –          | –          | –          | 1920.18000 | –          | 1925.18000 | 1932.18000 | 1932.18002 |
| 19,0   | –          | –          | –           | –          | –          | –          | –          | –          | –          | 1932.19000 | –          |
| 20,0   | –          | –          | –           | –          | –          | –          | –          | –          | 1925.20000 | 1932.20000 | 1932.20002 |
| 21,0   | –          | –          | –           | –          | –          | –          | –          | –          | –          | –          | –          |
| 22,0   | –          | –          | –           | –          | –          | –          | –          | –          | –          | 1932.22000 | –          |
| 23,0   | –          | –          | –           | –          | –          | –          | –          | –          | –          | –          | –          |
| 24,0   | –          | –          | –           | –          | –          | –          | –          | –          | –          | –          | –          |
| 25,0   | –          | –          | –           | –          | –          | –          | –          | –          | –          | 1932.25000 | 1932.25002 |

\*not metallic sealing

For further technical information, please refer to page 385 and 387



# Reduction sleeves HS [inch]

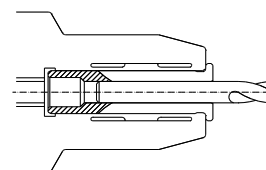
HS

| Ø bore         |        | Part no.   |            |            |            |
|----------------|--------|------------|------------|------------|------------|
| [decimal inch] | [inch] | HS 12      | HS 20      | HS 25      | HS 32      |
| 0,125          | 1/8"   | 1912.03181 | 1920.03181 | 1925.03181 | –          |
| 0,1875         | 3/16"  | 1912.04761 | 1920.04761 | –          | 1932.04761 |
| 0,25           | 1/4"   | 1912.06351 | 1920.06351 | 1925.06351 | 1932.06351 |
| 0,3125         | 5/16"  | 1912.07941 | 1920.07941 | 1925.07941 | 1932.07941 |
| 0,375          | 3/8"   | 1912.09521 | 1920.09521 | –          | 1932.09521 |
| 0,4375         | 7/16"  | –          | 1920.11111 | 1925.11111 | 1932.11111 |
| 0,5            | 1/2"   | –          | 1920.12701 | 1925.12701 | 1932.12701 |
| 0,5625         | 9/16"  | –          | 1920.14291 | 1925.14291 | 1932.14291 |
| 0,625          | 5/8"   | –          | 1920.15881 | 1925.15881 | 1932.15881 |
| 0,6875         | 11/16" | –          | –          | –          | 1932.17461 |
| 0,75           | 3/4"   | –          | –          | 1925.19051 | 1932.19051 |
| 0,8125         | 13/16" | –          | –          | –          | 1932.20631 |
| 0,875          | 7/8"   | –          | –          | –          | 1932.22221 |
| 0,9375         | 15/16" | –          | –          | –          | 1932.23811 |
| 1,0            | 1"     | –          | –          | –          | 1932.25401 |

For further technical information, please refer to page 385 and 387

## Expert advice

The outer diameter of the reduction sleeves corresponds to each type, e.g. HS 12 equals diameter 12 mm.



Drawing 1 HSK-A/WD-CB

| Ø bore         |        | Part no.   |            |            |            |
|----------------|--------|------------|------------|------------|------------|
| [decimal inch] | [inch] | HS 1/2"    | HS 3/4"    | HS 1"      | HS 1 1/4"  |
| 0,125          | 1/8"   | 1913.03182 | 1919.03182 | 1926.03182 | –          |
| 0,1875         | 3/16"  | 1913.04762 | 1919.04762 | 1926.04762 | 1931.04762 |
| 0,25           | 1/4"   | 1913.06352 | 1919.06352 | –          | 1931.06352 |
| 0,3125         | 5/16"  | 1913.07942 | 1919.07942 | 1926.07942 | 1931.07942 |
| 0,375          | 3/8"   | 1913.09522 | 1919.09522 | 1926.09522 | 1931.09522 |
| 0,4375         | 7/16"  | –          | 1919.11112 | 1926.11112 | 1931.11112 |
| 0,5            | 1/2"   | –          | 1919.12702 | 1926.12702 | 1931.12702 |
| 0,5625         | 9/16"  | –          | 1919.14292 | 1926.14292 | 1931.14292 |
| 0,625          | 5/8"   | –          | 1919.15882 | –          | 1931.15882 |
| 0,6875         | 11/16" | –          | –          | 1926.17462 | –          |
| 0,75           | 3/4"   | –          | –          | –          | 1931.19052 |
| 0,8125         | 13/16" | –          | –          | –          | –          |
| 0,875          | 7/8"   | –          | –          | –          | –          |
| 0,9375         | 15/16" | –          | –          | –          | –          |
| 1,0            | 1"     | –          | –          | –          | 1931.25402 |

For further technical information, please refer to page 385 and 387

## Expert advice

Our chip cover is ideally suited for the removal of chips. The cover can simply be clicked-in at the head of our reduction sleeves.

For part numbers and more information, please refer to page 279.

## Expert advice

The coolant flush reductions sleeves HS-CF can be used for peripheral cooling due to their coolant channels.

Easy removing of the reduction sleeve from hydro chucks thanks to the extractor EHS.

For part numbers and more information, please refer to page 279.

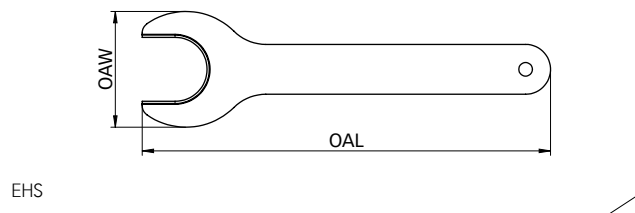
# Extractors for reduction sleeves EHS

## Chip covers for reduction sleeves CC CC-HS

EHS

CC-HS

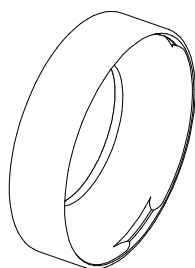
| Type                                        | Part no.   | OAW [mm] | OAL [mm] |
|---------------------------------------------|------------|----------|----------|
| <b>Extractors for reduction sleeves EHS</b> |            |          |          |
| EHS 12   1/2"                               | 7321.12000 | 24       | 100      |
| EHS 20   3/4"                               | 7321.20000 | 38       | 160      |
| EHS 25   1"                                 | 7321.25000 | 51       | 180      |
| EHS 32   1 1/4"                             | 7321.32000 | 63       | 200      |



EHS

| Type                                       | Part no.   | Reduction sleeve Ø |      |            |
|--------------------------------------------|------------|--------------------|------|------------|
|                                            |            | Fits               | [mm] | [inch]     |
| Chip covers for reduction sleeves CC-HS 12 |            |                    |      |            |
| CC-HS 12   1/2" / Ø 4.0 mm                 | 7331.04200 | HS 12, HS 1/2"     | 3–4  | 1/8"       |
| CC-HS 12   1/2" / Ø 6.0 mm                 | 7331.06600 | HS 12, HS 1/2"     | 5–6  | 3/16"–1/4" |
| CC-HS 12   1/2" / Ø 10.0 mm                | 7331.10200 | HS 12, HS 1/2"     | 7–10 | 5/16"–3/8" |

|                                                   |            |                |       |            |
|---------------------------------------------------|------------|----------------|-------|------------|
| <b>Chip covers for reduction sleeves CC-HS 20</b> |            |                |       |            |
| CC-HS 20   3/4" / Ø 4.0 mm                        | 7333.04200 | HS 20, HS 3/4" | 3-4   | 1/8"       |
| CC-HS 20   3/4" / Ø 6.0 mm                        | 7333.06600 | HS 20, HS 3/4" | 5-6   | 1/16"-1/4" |
| CC-HS 20   3/4" / Ø 10.0 mm                       | 7333.10200 | HS 20, HS 3/4" | 7-10  | 5/16"-3/8" |
| CC-HS 20   3/4" / Ø 14.0 mm                       | 7333.14200 | HS 20, HS 3/4" | 11-14 | 7/16"-1/2" |
| CC-HS 20   3/4" / Ø 16.0 mm                       | 7333.16200 | HS 20, HS 3/4" | 15-16 | 9/16"-5/8" |
| CC-HS 20   3/4" / Ø 18.0 mm                       | 7333.18200 | HS 20, HS 3/4" | 18    | -          |



CC-HS

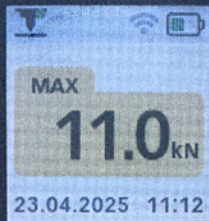




REGO-FIX▲

FMA/HSK50  
7532.50500 102  
Swiss made

REGO-FIX▲



Swiss made



# Discover our diverse range of metrology products

## ForceMaster

FMA

BT/BT+

CAT/CAT+

SK/SK+

HSK

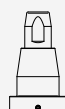
CAPTO



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## MasterBar

ST

BT+

CAT

HSK-A

HSK-E



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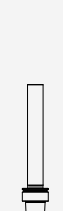
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## 3D-EdgeMaster

3D EMA-Metric

3D EMA-Inch

TE EMA-Short

TE EMA-Long

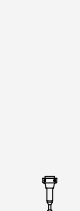
TE EMA-Cone



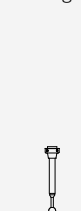
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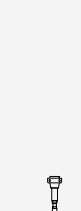
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## Dial Test Indicator

DTI 0.002

MIB 287

MIB 11"



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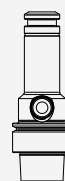


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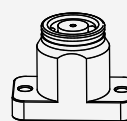
## toolVibe®

Toolholder

Vibrations Sensor



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ForceMaster

FMA

BT/BT+

CAT/CAT+

SK/SK+

HSK

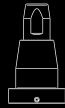
CAPTO



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# ForceMaster FMA



|                            | FMA        |
|----------------------------|------------|
| Measuring range            | 0-100 [kN] |
| Accuracy                   | ± 0,5 [kN] |
| Enclosure protection class | IP67       |
| Charging interface         | USB Typ C  |



|               | HSK                    | SK                      | BT                                  | CAT           | PST       |
|---------------|------------------------|-------------------------|-------------------------------------|---------------|-----------|
| Fits standard | DIN 69893<br>ISO 12164 | DIN 69871<br>ISO 7388-1 | MAS 403<br>JIS B 6339<br>ISO 7388-2 | ASME B5.50    | ISO 26623 |
| Sizes         | 25 – 100               | 30 – 50                 | 30 – 50                             | 40 – 50       | 4 – 8     |
| Shape         | A/B/C/D/E/F/T          | Standard/Plus           | Standard/Plus                       | Standard/Plus | –         |

# REGO-FIX ForceMaster

An intact spindle is crucial to ensure consistent clamping force and maintain high quality.

## Features and benefits

### Modular

A versatile measuring device with adapters for all common spindle interfaces. It allows quick switching between machines and ensures maximum flexibility in various production environments.

### Reliable

Accurate measurement of spindle pull force with a maximum deviation of  $\pm 0.5\%$  of the permissible force.

### App Features

The optional app offers comprehensive machine fleet management tools, a real-time monitoring dashboard, data management and export, and allows detailed PDF measurement reports to be generated.

### Industry 4.0

Easily integrates into digital production environments to optimize manufacturing processes.

### Swiss Made

Developed and manufactured in Switzerland.



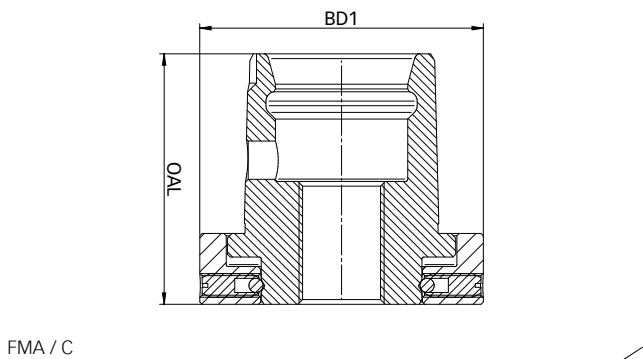
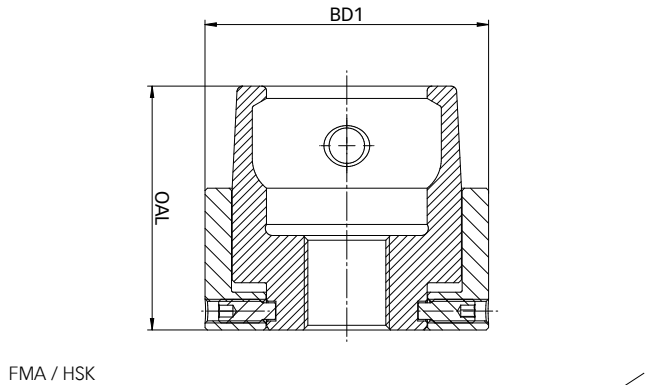
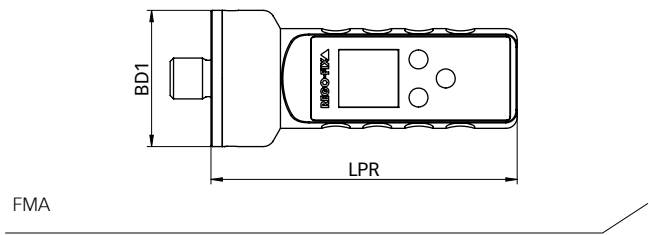
# ForceMaster and available adapters

The right adapter for every interface

| Type        | Part no.   | Dimensions [mm] |     |
|-------------|------------|-----------------|-----|
|             |            | BD1             | LPR |
| ForceMaster |            |                 |     |
| FMA         | 7530.00000 | 60              | 155 |

| Type          | Part no.   | Dimensions [mm] |     | Interface                       |
|---------------|------------|-----------------|-----|---------------------------------|
|               |            | BD1             | OAL |                                 |
| FMA HSK       |            |                 |     |                                 |
| FMA / HSK 25  | 7532.25500 | 60              | 47  | HSK-A C E T 25 + HSK-B D F 32   |
| FMA / HSK 32  | 7532.32500 | 60              | 49  | HSK-A C E T 32 + HSK-B D F 40   |
| FMA / HSK 40  | 7532.40500 | 60              | 52  | HSK-A C E T 40 + HSK-B D F 50   |
| FMA / HSK 50  | 7532.50500 | 60              | 61  | HSK-A C E T 50 + HSK-B D F 63   |
| FMA / HSK 63  | 7532.63500 | 60              | 52  | HSK-A C E T 63 + HSK-B D F 80   |
| FMA / HSK 100 | 7532.00500 | 86              | 69  | HSK-A C E T 100 + HSK-B D F 125 |

|                  |            |    |    |   |
|------------------|------------|----|----|---|
| <b>FMA CAPTO</b> |            |    |    |   |
| FMA / C4         | 7832.04400 | 60 | 39 | – |
| FMA / C5         | 7832.05400 | 60 | 45 | – |
| FMA / C6         | 7832.06400 | 60 | 53 | – |
| FMA / C8         | 7832.08400 | 80 | 78 | – |

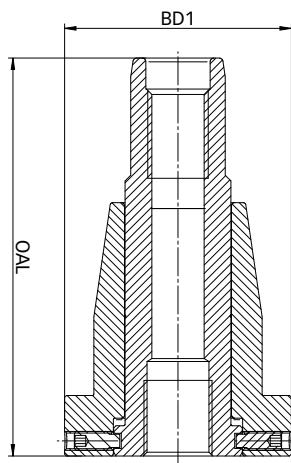


# ForceMaster and available adapters

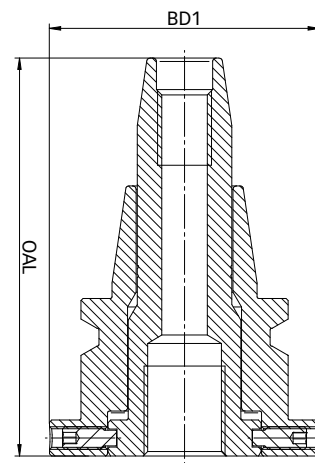
The right adapter for every interface

| Type         | Part no.   | Dimensions [mm] |     | Interface        |
|--------------|------------|-----------------|-----|------------------|
|              |            | BD1             | OAL |                  |
| FMA CAT      |            |                 |     |                  |
| FMA / CAT 40 | 7832.40300 | 60              | 105 | CAT 40   CAT+ 40 |
| FMA / CAT 50 | 7832.50300 | 70              | 129 | CAT 50   CAT+ 50 |
| FMA SK       |            |                 |     |                  |
| FMA / SK 30  | 7832.30200 | 60              | 88  | SK 30   SK+ 30   |
| FMA / SK 40  | 7832.40200 | 60              | 105 | SK 40   SK+ 40   |
| FMA / SK 50  | 7832.50200 | 70              | 129 | SK 50   SK+ 50   |
| FMA BT       |            |                 |     |                  |
| FMA / BT 30* | 7832.30100 | 60              | 89  | BT 30   BT+ 30   |
| FMA / BT 40  | 7832.40100 | 60              | 102 | BT 40   BT+ 40   |
| FMA / BT 50  | 7832.50100 | 70              | 129 | BT 50   BT+ 50   |

\*Compatible with automatic tool change systems

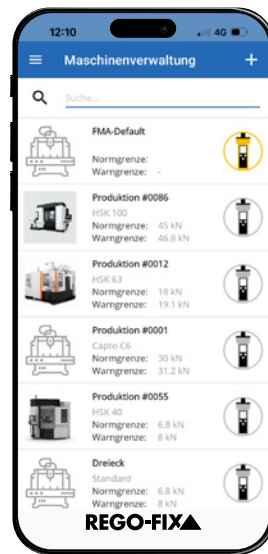


FMA / SK | BT | CAT



FMA / BT 30

# ForceMaster App



Download the app here:



## // Machine fleet management

Multiple machines can be added, and measurements are easily assigned via the app.

## // Dashboard

The device screen can be mirrored to conveniently take measurements remotely.

## // Data management and export

Measurements can be exported as non-editable PDF files for secure handling – especially useful for service staff.

## // Measurement reports

Detailed reports can be generated directly in the app.

## // Graphical display

Measurement results can be viewed and analyzed using clear graphics.

## // Device documentation

Calibration certificate, user manual, and support are always accessible through the app.

## // Swiss made

Developed and manufactured in Switzerland.

## Nominal values for interfaces

| Type    | Force [kN] | Force [ft-lb] |
|---------|------------|---------------|
| HSK 25  | 1.5        | 340           |
| HSK 32  | 5          | 1120          |
| HSK 40  | 6.8        | 1530          |
| HSK 50  | 11         | 2470          |
| HSK 63  | 18         | 4050          |
| HSK 80  | 28         | 6300          |
| HSK 100 | 45         | 10120         |
| SK 30   | 6          | 1350          |
| SK 40   | 12         | 2700          |
| SK 50   | 25         | 5620          |

| Type     | Force [kN] | Force [ft-lb] |
|----------|------------|---------------|
| CAT 40   | 12         | 2700          |
| CAT 50   | 25         | 5620          |
| BT 30    | 6          | 1350          |
| BT 40    | 12         | 2700          |
| BT 50    | 25         | 5620          |
| Capto C3 | 15         | 3370          |
| Capto C4 | 20         | 4500          |
| Capto C5 | 25         | 5620          |
| Capto C6 | 30         | 6740          |
| Capto C8 | 40         | 8990          |



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**MasterBar**

ST



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BT+



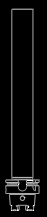
Page 290

CAT



Page 290

HSK-A



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HSK-E

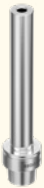


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# MasterBar MBA

|          |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|----------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|          |  |  |  |  |  |
|          | <b>ST</b>                                                                         | <b>BT+</b>                                                                        | <b>CAT</b>                                                                        | <b>HSK-A</b>                                                                        | <b>HSK-E</b>                                                                        |
| Standard |                                                                                   | MAS 403<br>JIS B 6339<br>ISO 7388-2                                               | ASME B5.50                                                                        | DIN 69893<br>ISO 12164                                                              | DIN 69893<br>ISO 12164                                                              |
| Sizes    | 40/50                                                                             | 30/40                                                                             | 40                                                                                | 50 – 100                                                                            | 15 – 40                                                                             |
| Shape    | Standard                                                                          | Standard/Plus                                                                     | Standard/Plus                                                                     | A                                                                                   | E (EZ)                                                                              |

# MasterBar MBA

Increases process reliability and minimizes the risk of undetected spindle damage

## Features and benefits

### Precise

An intact spindle is the foundation of precision. Any runout deviation causes vibrations, reduced surface quality, and increased tool wear, up to tool breakage.

### Test certificate

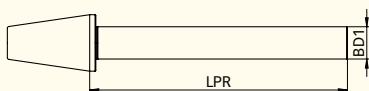
The MBA comes with both a printed and digital test certificate. This ensures traceable quality control and availability of results at any time.

### QR code and serial number

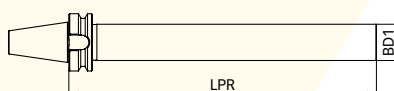
Product data and the certificate can be conveniently accessed using the QR code and unique serial number.

### Periodic inspection

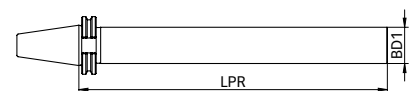
Regular checks improve process safety, help detect wear early, extend spindle life, and prevent costly breakdowns.



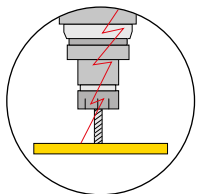
ST / MBA



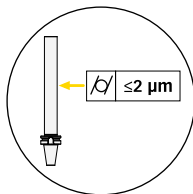
BT+ / MBA



CAT / MBA



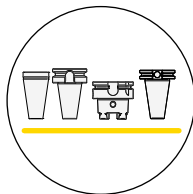
Avoid spindle errors thanks to regular inspection



Cylindricity of the test arbor  $\leq 2 \mu\text{m}$



QR-Code and serial number on removable ring



Various interfaces, manufacturer-independent

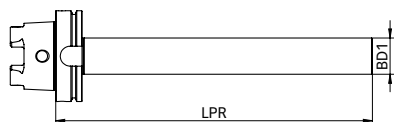


| Type                                | Part no.   | Dimensions [mm] |     |
|-------------------------------------|------------|-----------------|-----|
|                                     |            | BD1             | LPR |
| MasterBar ST                        |            |                 |     |
| ST 40 / MBA 40 x 330*               | 7550.40000 | 40              | 330 |
| ST 50 / MBA 40 x 320*               | 7550.50000 | 40              | 320 |
| MasterBar BT+                       |            |                 |     |
| BT+ 30 / MBA 32 x 235**             | 7551.30600 | 32              | 235 |
| BT+ 40 / MBA 40 x 340**             | 7551.40600 | 40              | 340 |
| MasterBar CAT                       |            |                 |     |
| CAT 40 / MBA 40 x 340               | 7553.40000 | 40              | 340 |
| MasterBar HSK-A                     |            |                 |     |
| HSK-A 50 / MBA 32 x 240             | 7555.50000 | 32              | 240 |
| HSK-A 63 / MBA 40 x 350             | 7555.63000 | 40              | 350 |
| HSK-A 100 / MBA 40 x 349            | 7555.00300 | 40              | 349 |
| MasterBar HSK-E                     |            |                 |     |
| ATC-E   HSK-EZ 15 / MBA 10 x 070*** | 7556.15900 | 10              | 70  |
| HSK-E 20 / MBA 15 x 090***          | 7556.20400 | 15              | 90  |
| HSK-E 25 / MBA 20 x 175***          | 7556.25400 | 20              | 175 |
| HSK-E 32 / MBA 24 x 180             | 7556.32400 | 24              | 180 |
| HSK-E 40 / MBA 24 x 180             | 7556.40400 | 24              | 180 |

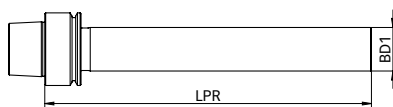
\*ST stands for Steep Taper, usable with SK/CAT and BT with appropriate pull stud.

\*\*BT+ is compatible with BT spindles.

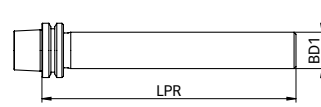
\*\*\*No removable ring for dimensional reasons, serial number on flange.



HSK-A / MBA



HSK-E / MBA



ATC-E / MBA

3D-EdgeMaster

3D EMA-  
Metric



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3D EMA-  
Inch



Page 294

TE EMA-  
Short



Page 295

TE EMA-  
Long



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TE EMA-  
Cone



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# 3D-EdgeMaster EMA



**E3 EMA Metric**

**E3 EMA Inch**

**TE EMA Short**

**TE EMA Long**

**TE EMA Cone**

|                  |           |           |       |         |   |
|------------------|-----------|-----------|-------|---------|---|
| Scale            | 0,01 mm   | 0,0005"   | –     | –       | – |
| Repeatability    | ≤ 0,01 mm | ≤ 0,0005" | –     | –       | – |
| Operating length | –         | –         | 29 mm | 53,5 mm | – |

# 3D-EdgeMaster EMA

Reduced setup time and higher precision

## Features and benefits

### Metric and Imperial

The 3D-EdgeMaster is available in metric or imperial versions. The shank diameter is Ø 16 mm or Ø 5/8 inch, with a matching dial indicator.

### Aluminum Housing

The aluminum body has a milled surface for improved grip and safe handling.

### Test Certificate

Supplied with printed and digital test certificate.

### QR Code and Serial Number

QR code and serial number allow digital access to product information and certificates.

### Touch Probes

Short, long, and conical touch probes available as accessories for flexible application.

### Safety Break Point

A ceramic break point protects the internal mechanics from damage.

### Storage Case

Delivered in a high-quality case for safe storage and transport of the 3D-EdgeMaster and accessories.



### Expert advice

Check the runout every time you change the probe tip to avoid incorrect measurements.

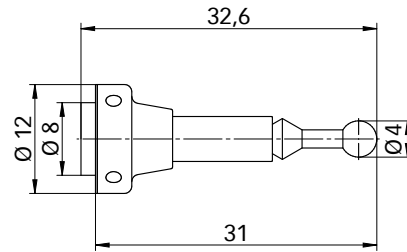


# Probes for 3D EdgeMaster

The right probe for your application

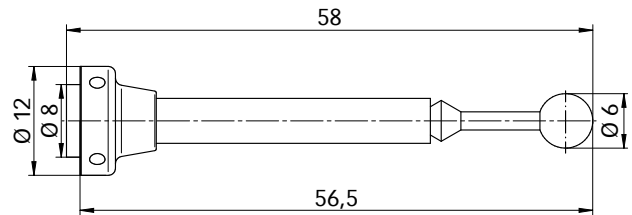
## Flexibility for your application

**Short** The TE EMA Short is the standard probe for the EdgeMaster. With a usable length of 29 mm, it is suitable for most applications and offers a solid and reliable solution.



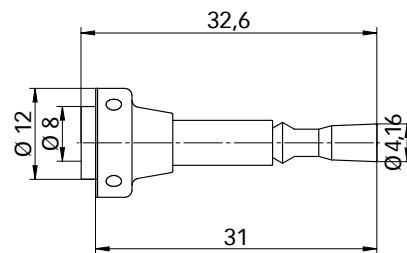
TE EMA Short

**Long** The TE EMA Long, with a usable length of 53.5 mm, is suitable for measurements that the Short version cannot perform. Its extended design allows access to hard-to-reach contours, making it ideal for measuring deeper or more complex geometries.



TE EMA Long

**Cone** The TE EMA Cone is the ideal solution for lathes without integrated tool measurement. Its conical shape enables precise tool measurement in X, Y, and Z axes. The probe ensures accurate positioning and reduces the need for manual adjustments. It can also be used for very thin workpieces, expanding its application range.



TE EMA Cone

# The SET 3D-EdgeMaster includes:



| Type                 | Part. No.  | Description                                           | Sizes Ø / L      |
|----------------------|------------|-------------------------------------------------------|------------------|
| <b>3D-EdgeMaster</b> |            |                                                       |                  |
| SET 3D EMA-METRIC    | 7510.00005 | 3D edge finder Metric, 2 short + 2 long probe inserts | Ø 16 mm          |
| 3D EMA-METRIC        | 7510.00000 | 3D edge finder Metric + probe insert short            | Ø 16 mm          |
| SET 3D EMA-INCH      | 7510.00105 | 3D edge finder Inch, 2 short + 2 long probe inserts   | Ø 5/8"           |
| 3D EMA-INCH          | 7510.00100 | 3D edge finder Inch + probe insert short              | Ø 5/8"           |
| TE EMA-SHORT         | 7515.00000 | Probe insert short for 3D EMA                         | Ø 4 / L 31 mm    |
| TE EMA-LONG          | 7515.00300 | Probe insert long for 3D EMA                          | Ø 6 / L 56.5 mm  |
| TE EMA-CONE          | 7515.00800 | Probe insert cone for 3D EMA                          | Ø 4.16 / L 31 mm |



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## Dial Test Indicator

DTI 0.002



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MIB 287



Page 301

MIB 11"



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# Dial Test Indicator DTI

## Magnetic Indicator Base MIB



DTI 0.002



MIB 287



MIB 11"

|                                |        |        |         |
|--------------------------------|--------|--------|---------|
| Holding force<br>jointed arm   | –      | >5 kg  | >11 lb  |
| Holding force<br>magnetic base | –      | 800 N  | 180 lbf |
| Range of motion                | –      | 287 mm | 11"     |
| Scale                          | 2 µm   | –      | –       |
| Measuring travel               | 0,2 mm | –      | –       |

# μ-touch Dial Indicator

For maximum measuring accuracy

## Features and benefits

### Clear Display

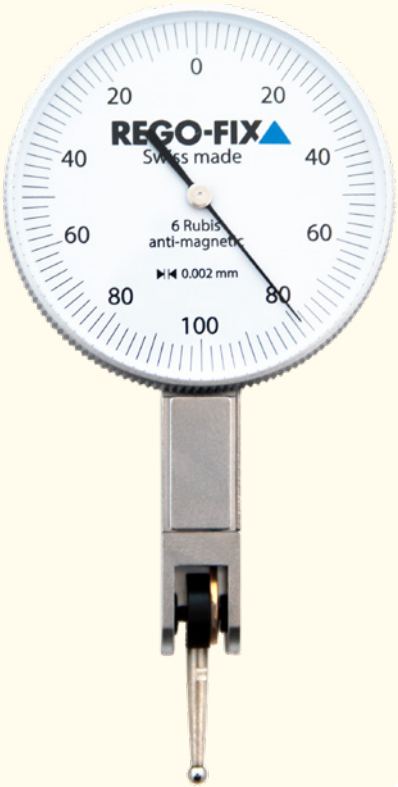
Large dial Ø 37 mm with 2 μm graduation ensures easy and accurate reading. Mounting via dovetail guide or Ø 8 mm stem.

### Precise

With a repeatability of 1 μm and a total deviation of max. 3.5 μm, the REGO-FIX dial indicator is the ideal tool for precise measurements.

### μ-touch Dial Test Indicator

Lever-type indicators are used to check tolerances, align machine tools, and inspect workpieces for deviations.



| Type                               | Part. No.  | Description                                | Probe insert Ø/L |
|------------------------------------|------------|--------------------------------------------|------------------|
| <b>μ-touch Dial Test Indicator</b> |            |                                            |                  |
| DTI 0.002                          | 7565.00200 | μ-touch dial test indicator, 0.002mm scale | Ø 2 / L 12.5mm   |

# Articulated stand with magnetic base

For quick and easy positioning of your dial indicator

## Features and benefits

### User-friendly

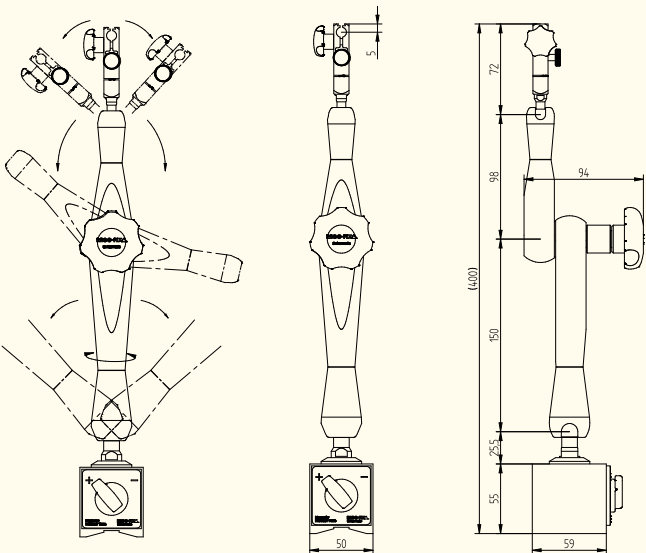
Simple and precise positioning via a single grip that locks the joints. The magnetic base provides a stable foundation.

### Flexible

Dovetail mount and clamping diameter (Ø 8 mm or 3/8") offer maximum flexibility for mounting dial indicators or test indicators.

### Magnetic indicator base

Ideal for use in production or quality control, where precise measurements are required. Easy operation allows for quick and accurate alignment of the dial indicator.



Movement range of the articulated stand

| Type                           | Part. No.  | Description                                         | Operating range |
|--------------------------------|------------|-----------------------------------------------------|-----------------|
| <b>Magnetic Indicator Base</b> |            |                                                     |                 |
| MIB 287                        | 7561.00000 | Magnetic Indicator Base with fine adjustment Metric | 287 mm          |
| MIB 11"                        | 7561.00100 | Magnetic Indicator Base with fine adjustment Inch   | 11"             |



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toolVibe®

Toolholder    Vibrations Sensor



Page 304



Page 304





Toolholder



Vibration Sensor



toolVibe® set

|                                   |                                  |                  |                                                                                                   |
|-----------------------------------|----------------------------------|------------------|---------------------------------------------------------------------------------------------------|
| Interface                         | HSK-A   E / SK+ / BT+ / CAT+ / C | Magnets or 2x M5 | –                                                                                                 |
| powRgrip® size                    | PG 15 – PG 32                    | –                | –                                                                                                 |
| Wireless connection to tablet     | •                                | •                | –                                                                                                 |
| Maximum external coolant pressure | 20 bar                           | 20 bar           | –                                                                                                 |
| Maximum internal coolant pressure | 80 bar                           | –                | –                                                                                                 |
| Scope of delivery                 | Toolholder                       | Vibration sensor | Charging cable toolVibe®<br>Charging cable tablet<br>toolVibe® software<br>Operating instructions |

# REGO-FIX toolVibe®

Monitors the machining process in real time and delivers precise sensor data.

## Features and benefits

### Optimization

toolVibe® is an ideal tool to optimize workpiece clamping, cutting data, and machining strategies.

### Monitoring

Tool, workpiece, and machine can be monitored using toolVibe®.

### Cooling

The rotating and static toolVibe® products are IP67-rated and withstand high coolant pressures.

### Temperature

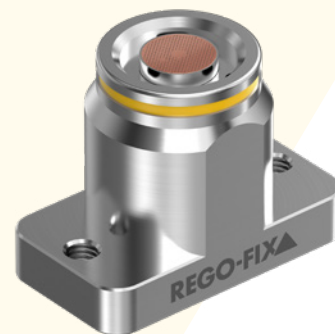
Data is reliably recorded within a temperature range of 20 – 60 °C.

### Balance quality

All toolholders are balanced to at least G2.5 @ 25,000 rpm. Maximum speed: 30,000 rpm.

### Software

Enables configuration of process parameters for automatic recording.



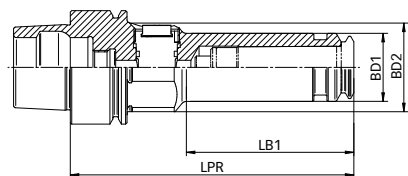
### Expert advice

SK+, BT+ and CAT+ toolholders are also compatible with spindles without a contact face.

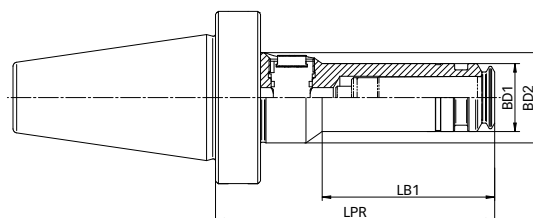
# toolVibe® program overview

| Type                                        | Part no.   | Balance quality            | BD1 [mm] | BD2 [mm] | LPR [mm] | LB1 [mm] |
|---------------------------------------------|------------|----------------------------|----------|----------|----------|----------|
| <b>toolVibe® Tool holder</b>                |            |                            |          |          |          |          |
| HSK-A 63/PG 15 × 120 TV                     | 5563.91560 | balanced G2.5 @ 25,000 rpm | 24       | 32       | –        | 42       |
| HSK-A 63/PG 25 × 120 TV                     | 5563.92560 | balanced G2.5 @ 25,000 rpm | 40       | –        | 120      | –        |
| HSK-A 63/PG 32 × 120 NL TV <sup>2)</sup>    | 5563.93260 | balanced G2.5 @ 25,000 rpm | 50       | –        | 120      | –        |
| HSK-A 100/PG 32 × 125 TV                    | 5500.93260 | balanced G2.5 @ 25,000 rpm | 50       | –        | 125      | –        |
| HSK-E 40/PG 15 × 100 TV                     | 5540.91550 | balanced to 30,000 rpm     | 24       | 32       | 100      | 55       |
| SK+ 40/PG 25 × 120 TV <sup>1)</sup>         | 5540.92566 | balanced G2.5 @ 25,000 rpm | 40       | –        | 120      | –        |
| SK+ 50/PG 25 × 105 NL TV <sup>1) 2)</sup>   | 5550.92556 | balanced G2.5 @ 25,000 rpm | 40       | 44.5     | 105      | 60       |
| BT+ 30/PG 15 × 100 TV <sup>1)</sup>         | 5130.91556 | balanced to 30,000 rpm     | 24       | 32       | 100      | 55       |
| BT+ 40/PG 25 × 120 TV <sup>1)</sup>         | 5140.92566 | balanced G2.5 @ 25,000 rpm | 40       | –        | 120      | –        |
| CAT+ 40/PG 15 × 4" TV <sup>1)</sup>         | 5340.91556 | balanced G2.5 @ 25,000 rpm | 24       | 32       | 101.6    | 56       |
| CAT+ 40/PG 25 × 4.3" NL TV <sup>1) 2)</sup> | 5340.92556 | balanced G2.5 @ 25,000 rpm | 40       | 44.5     | 109.22   | 60       |
| C6/PG 25 × 120 TV                           | 5806.92560 | balanced G2.5 @ 25,000 rpm | 40       | 44.5     | 120      | 70       |

<sup>1)</sup> Also fits standard spindle without dual contact    <sup>2)</sup> Collets PG-L, PG-MQL and PG-Cryo cannot be used

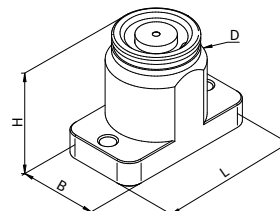


HSK



SK+, BT+, CAT+ (Interface simplified)

| Type                               | Part no.   | L [mm] | B [mm] | H [mm] | D [mm] | Note                                   |
|------------------------------------|------------|--------|--------|--------|--------|----------------------------------------|
| <b>toolVibe® Vibrations Sensor</b> |            |        |        |        |        |                                        |
| VS 22 × 40 TV                      | 7581.22400 | 40     | 22     | 30     | 24     | Mounting: Magnets or via 2× M5 threads |



VS – Vibrations Sensor

| Type                          | Part no.   | Description                                                                                |
|-------------------------------|------------|--------------------------------------------------------------------------------------------|
| <b>toolVibe® Set Contents</b> |            |                                                                                            |
| SET toolVibe®                 | 7580.00000 | Software with tablet including integrated receiving station, charging cable, and hard case |











## Cleaning

|                       |     |
|-----------------------|-----|
| Taper Cleaning Device | 310 |
| Spindle Taper Cleaner | 312 |
| Cleaning Swabs        | 314 |
| Ultrasonic Cleaner    | 316 |

## Accessories

|                          |     |
|--------------------------|-----|
| powRgrip® accessories    | 318 |
| Balancing rings          | 321 |
| Sealing disks            | 322 |
| Coolant flush disks      | 330 |
| Wrenches                 | 335 |
| Torque wrenches          | 338 |
| Toolholding fixtures     | 340 |
| Mobile workbench for PGU | 341 |
| TORCO-BLOCK              | 342 |
| Coolant tubes KSR        | 345 |
| Trays for collets        | 346 |

The colored dots show the system affiliation.

Various products can be used with multiple systems.

- powRgrip®-System
- ER-System
- micRun®-System
- uniTec-System





**REGO-FIX** ▲ **STC/HSK-E 50**  
Swiss made 7831.50300

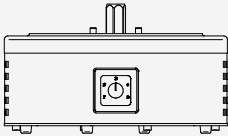


# Discover our cleaning technology products

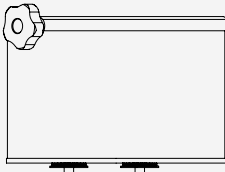
### TCD Taper Cleaning Device

Base Unit

Cleaning attachments



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### STC Spindle Taper Cleaner

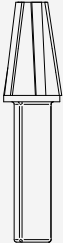
SK

HSK-A

HSK-E

STC-MK

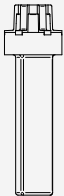
HSK-EZ



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### CSW Cleaning Swabs

3mm

6 mm

11 mm



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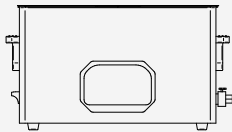
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### UCD Ultrasonic Cleaner

UCD 22



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REGO-FIX▲ Accessories

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# TCD – Taper Cleaning Device

For effortless cleaning and removal of dried emulsion, cutting oil and other partially hardened contaminants.

## Features and benefits

### Clean

Clean toolholders and undamaged spindles are essential for precise machining. Contamination at the spindle interface can impair accuracy. Regular cleaning extends toolholder life and ensures consistently high machining quality.

### Standards-compliant

Common spindle interfaces are cleaned quickly and in accordance with tolerance standards. Cleaning is manufacturer-independent and works with all standardized toolholders.

### Benefits

Solvent-free mechanical cleaning extends toolholder life and reduces replacement costs. This makes production more efficient and reduces operating costs.



### Expert advice

Without proper cleaning, toolholders and spindles may be damaged.

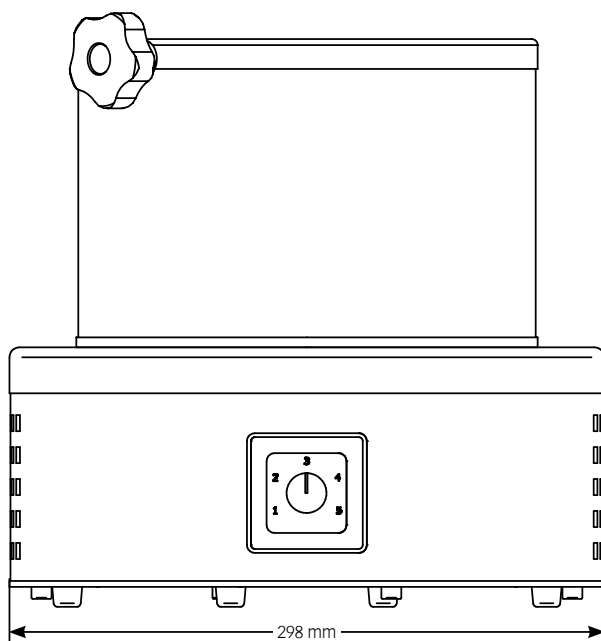
# Taper cleaner



Cleaning Adapter



Base Unit



TCD - Taper cleaner

## Type

## Part no.

### Taper Cleaning Device (Base Unit)

|        |            |
|--------|------------|
| TCD-BU | 7821.00000 |
|--------|------------|

### TCD / SK

|              |            |
|--------------|------------|
| TCD / SK 30* | 7822.30100 |
| TCD / SK 40* | 7822.40100 |
| TCD / SK 50* | 7822.50100 |

### TCD / HSK-A | C | E

|                         |            |
|-------------------------|------------|
| TCD / HSK-A   C   E 25  | 7822.25300 |
| TCD / HSK-A   C   E 32  | 7822.32300 |
| TCD / HSK-A   C   E 40  | 7822.40300 |
| TCD / HSK-A   C   E 50  | 7822.50300 |
| TCD / HSK-A   C   E 63  | 7822.63300 |
| TCD / HSK-A   C   E 80  | 7822.80300 |
| TCD / HSK-A   C   E 100 | 7822.00300 |

### TCD / HSK-B | D | F

|                        |            |
|------------------------|------------|
| TCD / HSK-B   D   F 50 | 7822.50400 |
| TCD / HSK-B   D   F 63 | 7822.63400 |

### TCD / CAPTO

|          |            |
|----------|------------|
| TCD / C4 | 7822.04700 |
| TCD / C5 | 7822.05700 |
| TCD / C6 | 7822.06700 |

\*SK is compatible with all Steep taper like BT / CAT / ISO  
Other cleaning adapters available on request

# STC – Spindle Taper Cleaner

The tool for fast and easy spindle cleaning

## Features and benefits

### Clean

Regular spindle cleaning extends the life of both toolholders and the spindle itself. Only clean and undamaged interfaces ensure reliable machining and optimal part quality.

### Precise

Perfect contact between the toolholder and spindle is critical for precise runout and efficient power transmission, ensuring maximum accuracy and performance in machining.

### Benefits

Solvent-free spindle cleaning extends the life of toolholders and spindles while significantly reducing replacement and repair costs.



### Expert advice

To ensure consistent cleaning performance of the STC, clean or replace it regularly. Use a material-compatible, grease-dissolving cleaner and keep the cleaning temperature below 40 °C.



| Type                                          | Description             | Part. No.  |
|-----------------------------------------------|-------------------------|------------|
| <b>Spindle taper cleaner – ST</b>             |                         |            |
| STC/ST 30                                     | For BT/SK/CAT 30        | 7831.30100 |
| STC/ST 40                                     | For BT/SK/CAT 40        | 7831.40100 |
| STC/ST 50                                     | For BT/SK/CAT 50        | 7831.50100 |
| <b>Spindle taper cleaner – HSK-A+C</b>        |                         |            |
| STC/HSK-A+C 40                                | For HSK-A 40/HSK-C 40   | 7831.40200 |
| STC/HSK-A+C 63                                | For HSK-A 63/HSK-C 63   | 7831.63200 |
| STC/HSK-A+C 100                               | For HSK-A 100/HSK-C 100 | 7831.00200 |
| <b>Spindle taper cleaner – HSK-E</b>          |                         |            |
| STC/HSK-E 25                                  | For HSK-E 25            | 7831.25300 |
| STC/HSK-E 32                                  | For HSK-E 32            | 7831.32300 |
| STC/HSK-E 40                                  | For HSK-E 40            | 7831.40300 |
| STC/HSK-E 50                                  | For HSK-E 50            | 7831.50300 |
| <b>Spindle taper cleaner – ATC-E / HSK-EZ</b> |                         |            |
| STC/ATC-E 15                                  | For ATC-E 15/HSK-EZ 15  | 7831.15300 |
| <b>Spindle taper cleaner – MK</b>             |                         |            |
| STC/MK 2                                      | For MK 2                | 7831.02900 |
| STC/MK 3                                      | For MK 3                | 7831.03900 |
| STC/MK 4                                      | For MK 4                | 7831.04900 |



# CSW – Cleaning Swabs

Sustainable cleaning even in hard-to-reach areas

## Features and benefits

### Properties

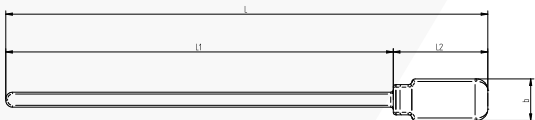
The material is extremely durable and withstands mechanical stress well. It releases very few particles or fibers, making it ideal for applications where cleanliness is critical. At the same time, it remains soft and non-abrasive to protect sensitive surfaces.

### Benefits

The foam is thermally bonded to the handle, eliminating the need for adhesives that could cause contamination. This strong bond ensures high durability, even under mechanical stress. The foam is robust but allows gentle cleaning and protects against scratches or damage from excessive pressure.

### Applications

The material is ideal for cleaning mechanical parts and assemblies that require precise and gentle handling. It effectively removes residues such as lubricants, dust, or small particles and enables maintenance of sensitive mechanical components to ensure their functionality and cleanliness.



Cleaning Swabs

| Type           | Part no.   | Contents [pcs.] | Dimensions [mm] |       |    |    |     |
|----------------|------------|-----------------|-----------------|-------|----|----|-----|
|                |            |                 | L               | L1    | L2 | B  | H   |
| Cleaning Swabs |            |                 |                 |       |    |    |     |
| CSW Ø 3.0 mm   | 7841.03000 | 100             | 70,5            | 59,6  | 11 | 3  | 3,4 |
| CSW Ø 6.0 mm   | 7841.06000 | 100             | 163,0           | 145   | 18 | 6  | 5   |
| CSW Ø 12.0 mm  | 7841.12000 | 50              | 127,5           | 102,5 | 25 | 12 | 8   |







# UCD – Ultrasonic Cleaner

Easy cleaning even in hard-to-reach areas

## Features and benefits

### Deep cleaning

An ultrasonic cleaning bath provides thorough yet gentle cleaning of toolholders and collets. High-frequency vibrations remove even the smallest particles and stubborn residues from inaccessible areas, ensuring precise fit and consistent machining quality.

### Increased efficiency

The ultrasonic bath enables the simultaneous cleaning of multiple toolholders, speeding up the overall process. This reduces workload and machine downtime, enhancing production efficiency and lowering operating costs.

### Versatile application

The device has a 22-liter capacity, with adjustable cleaning time and temperature control. The variable ultrasonic frequency allows adaptation to different materials and levels of contamination, making it suitable for both delicate and heavily soiled tools. An integrated heating element accelerates fluid warming, improving cleaning effectiveness and shortening the process.



### Expert advice

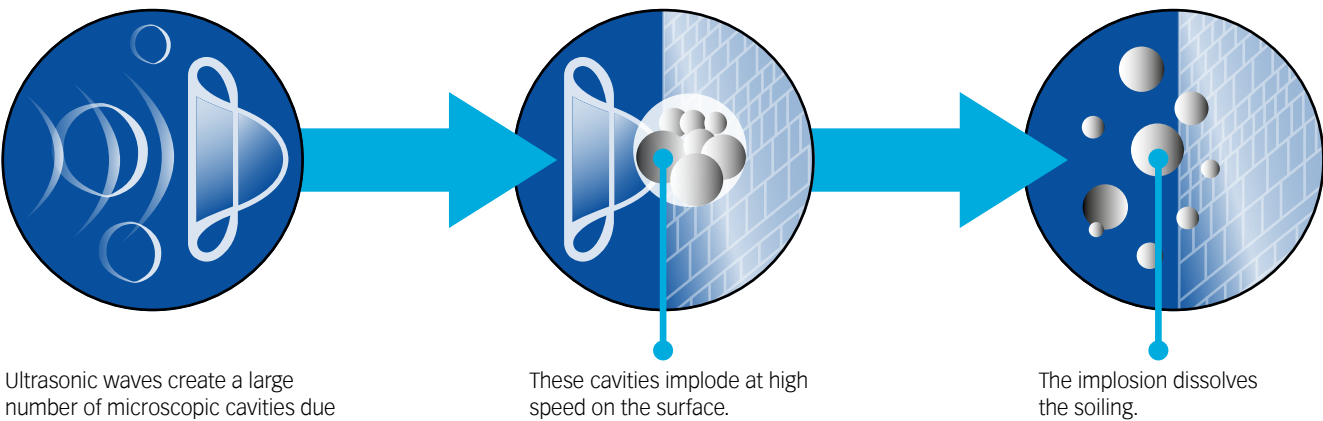
We recommend a cleaner with the following properties:

- // Water-based concentrate for removing oils, greases, and residues
- // Compatible with iron, steel, aluminum, non-ferrous metals, and sensitive surfaces
- // Low-foaming formula – ideal for immersion and ultrasonic baths
- // Thermally stable and effective even at high temperatures
- // Temporary corrosion protection after cleaning

# Ultrasonic cleaning principle

Ultrasonic cleaning works by using high-frequency sound waves that create tiny gas bubbles in a liquid. These bubbles collapse due to changing pressure, generating microscopic shock waves that loosen contaminants such as oil, grease or metal chips from surfaces. As the process works without mechanical friction, even sensitive components are cleaned gently.

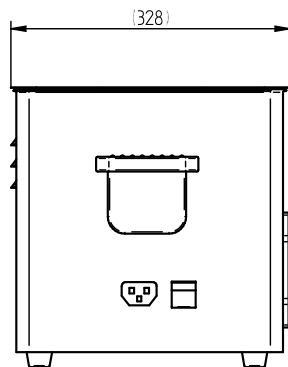
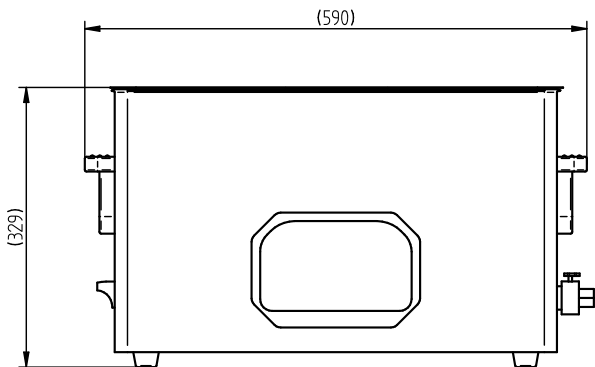
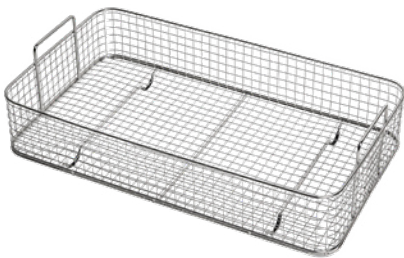
In the manufacturing industry, this technology is primarily used for precision parts. It reliably removes production residues and enables uniform cleaning even in hard-to-reach areas. By automating the cleaning process and reducing the use of chemical cleaning agents, it also contributes to efficient and more environmentally friendly production processes.



| Type               | Part no.   | Volumen               | V/Hz               | Outer Dimensions [mm] |     |     |
|--------------------|------------|-----------------------|--------------------|-----------------------|-----|-----|
|                    |            |                       |                    | W                     | D   | H   |
| Ultrasonic Cleaner |            |                       |                    |                       |     |     |
| UCD 22 E           | 7825.22000 | 5.8 Gallons/22 Litres | 230V / 50Hz        | 590                   | 328 | 329 |
| UCD 22 A/J         | 7825.22100 | 5.8 Gallons/22 Litres | 100–120V / 50–60Hz | 590                   | 328 | 329 |

Scope of delivery: unit, lid, basket, and power cable

| Type                           | Part no.   | Inner Dimensions [mm] |     |    |
|--------------------------------|------------|-----------------------|-----|----|
|                                |            | W                     | D   | H  |
| Ultrasonic Cleaner accessories |            |                       |     |    |
| B-UCD 22                       | 7825.22999 | 450                   | 250 | 80 |



UCD 22 – Ultrasonic Cleaner 22 Litres

# powRgrip® taper cleaner TKCP

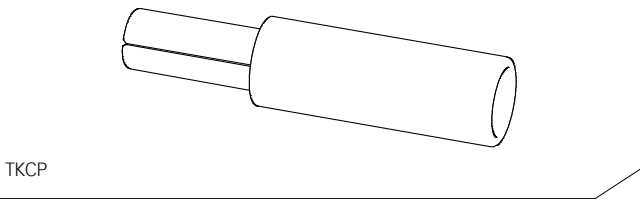
## Cleaning paper set CPS

TKCP

CPS

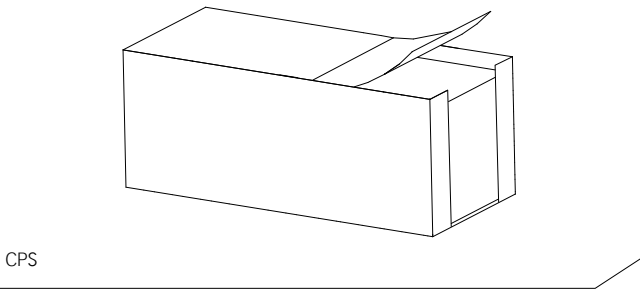
| Type               | Part no.   | Use for |
|--------------------|------------|---------|
| Taper cleaner TKCP |            |         |
| TKCP 6             | 7657.06000 | PG 6    |
| TKCP 10            | 7657.10000 | PG 10   |
| TKCP 15            | 7657.15000 | PG 15   |
| TKCP 25            | 7657.25000 | PG 25   |
| TKCP 32            | 7657.32000 | PG 32   |

Includes taper cleaner and cleaning paper set.



| Type                   | Part no.   |
|------------------------|------------|
| Cleaning paper set CPS |            |
| CPS 6                  | 7658.06000 |
| CPS 10                 | 7658.10000 |
| CPS 15                 | 7658.15000 |
| CPS 25                 | 7658.25000 |
| CPS 32                 | 7658.32000 |

Each CPS contains 250 sheets. For single use only.

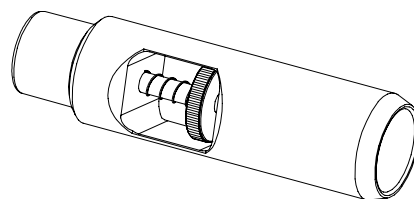
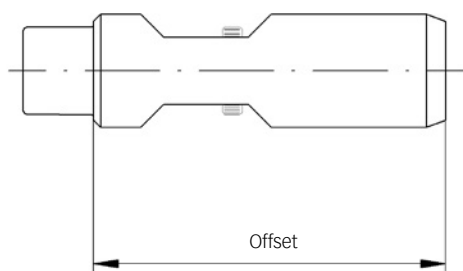






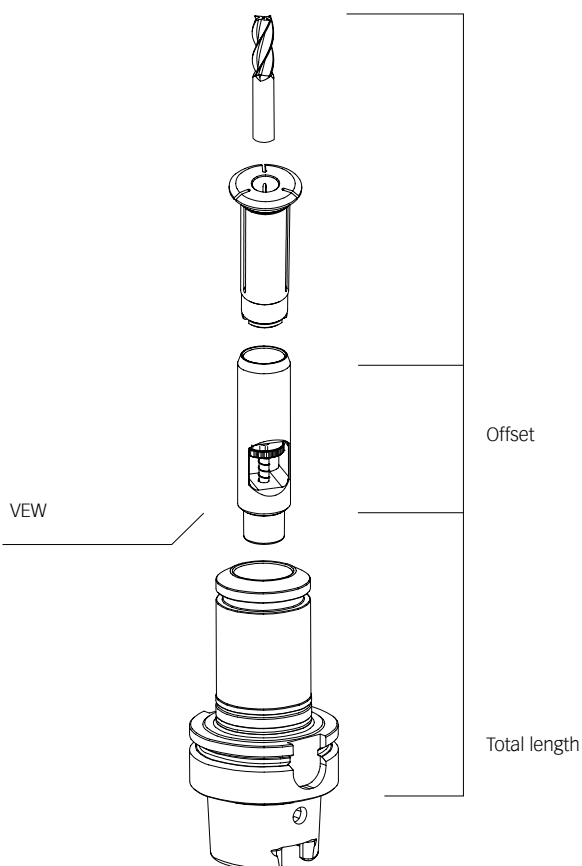
| Type                       | Part no.   | Offset |
|----------------------------|------------|--------|
| Length-presetting tool VEW |            | [mm]   |
| VEW 6                      | 7619.06000 | 80     |
| VEW 10                     | 7619.10000 | 100    |
| VEW 15                     | 7619.15000 | 100    |
| VEW 25                     | 7619.25000 | 100    |
| VEW 32                     | 7619.32000 | 100    |

**Precise tool adjusting** The powRgrip® presetting tool accommodates the powRgrip® collet and is inserted into the toolholder. The presetting tool has an adjustment wheel for precise tool adjustments.



VEW

## Length-presetting tool VEW



### How it works

- // Insert the length-presetting tool VEW into the powRgrip® toolholder
- // Insert the powRgrip® collet into the length presetting tool
- // Insert the cutting tool into the powRgrip® collet
- // Adjust the tool length by turning the adjustment wheel
- // Measure the total length of the cutting tool and subtract the length of the VEW (80 mm / 100 mm) from the total length
- // Remove the length-presetting tool VEW
- // Clamp collet and cutting tool into the powRgrip® toolholder with the powRgrip® clamping unit

# Hi-Q® balancing rings FWR

## Torque screwdriver TSD

FWR

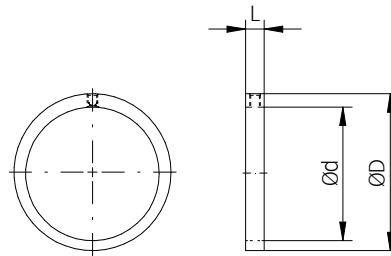
TSD

| Type                      | Part no.   | Dimensions [mm] |      |   | Balancing capacity [gmm] |            | max. rpm | System |
|---------------------------|------------|-----------------|------|---|--------------------------|------------|----------|--------|
|                           |            | D               | d    | L | FWR Set                  | single FWR |          |        |
| Hi-Q® balancing rings FWR |            |                 |      |   |                          |            |          |        |
| SET FWR 225               | 7490.22500 | 30,5            | 22,5 | 6 | 16                       | 8          | 80 000   | ●●     |
| SET FWR 285               | 7490.28500 | 36,5            | 28,5 | 6 | 32                       | 16         | 70 000   | ●●     |
| SET FWR 325               | 7490.32500 | 40,5            | 32,5 | 6 | 44                       | 22         | 60 000   | ●●     |
| SET FWR 405               | 7490.40500 | 48,5            | 40,5 | 6 | 52                       | 26         | 50 000   | ●●     |
| SET FWR 505               | 7490.50500 | 60,5            | 50,5 | 7 | 130                      | 65         | 42 000   | ●●     |

Included in set: two Hi-Q® balancing rings per set



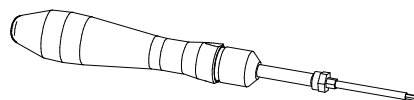
Balancing rings SET FWR



Single balancing ring

\*Rotational diameter

| Type                           | Part no.   |
|--------------------------------|------------|
| TSD TORX 8 for balancing rings |            |
| TSD 0.9 Nm                     | 7159.09000 |



TSD

### Expert advice

The torque screwdriver is a special TORX style wrench that is preset to the recommended torque rating of 0.9 Nm for tightening the REGO-FIX Hi-Q® balancing rings.



# Effective solution for internal cooling

Our sealing disks allow you to use your regular collet for internal cooling, saving the need for new collets.

## Key advantages

### Swiss quality product

#### Sealing range

0.5 mm

ER 11 has no sealing range and can only be used nominally. Assembling with mounting tool MWZ.

#### High pressure

For applications up to 150 bar / 2100 PSI.

#### Protection

Protects against all kind of dirt and chips entering the slots of the collet.

#### Matched tooling system for best fit

Our long-lasting machining experience results in a well-engineered system. All components are fitted together to one system to maximize your machining potential.

#### Coolant resistant

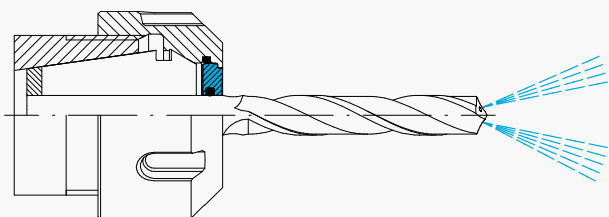
O-ring for aggressive coolant (VITON®-quality).

#### Interchangeable

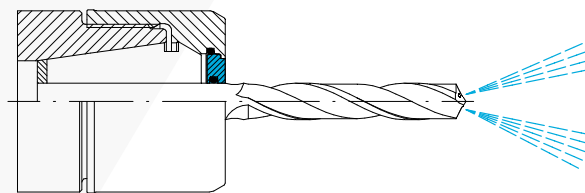
Quick change of sealing disks according to required tool shank diameter.

#### Coolant through

For better cooling and lubrication. Extends tool life and supports chip removal.

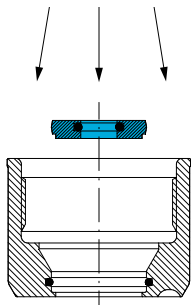


DS/ER



DS/MR

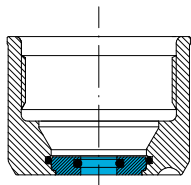




Assembling

**Assembling** Insert the small diameter of the disk into the center of the coolant nut. Apply an even pressure until the disk is properly seated into the nut.

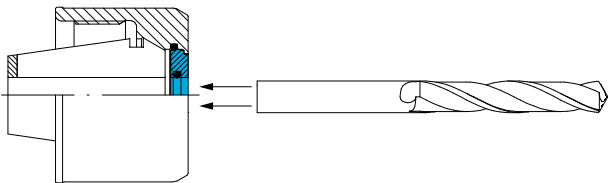
**Removing** To remove the disk, simply press on the outside of the disk evenly until it snaps out.



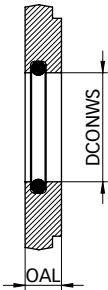
Inserted DS

Expert advice

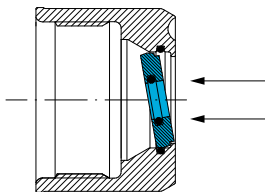
Insert tool with the shank side first. O-ring might be damaged if cutting tool is inserted from the back with the cutting edge side.



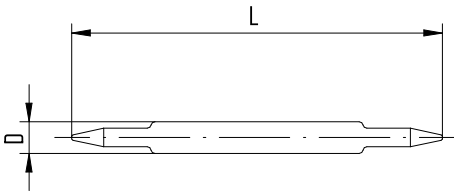
Insert tool



DS / ER



Disk removal



MWZ 11

| Type                                   | Part no.   | D [mm] | L [mm] | System |
|----------------------------------------|------------|--------|--------|--------|
| MWZ 11 mounting tool for sealing disks |            |        |        |        |
| MWZ 11                                 | 3911.88888 | 12     | 140    | •      |



# Sealing disks for ER/MR

DS / ER

DS / MR

| Type           | Part no.   | Tool diameter |      |                | Incl. in set | System |
|----------------|------------|---------------|------|----------------|--------------|--------|
|                |            | Ø [inch]      | [mm] | [decimal inch] |              |        |
| DS/ER 11       |            |               |      |                |              |        |
| Ø 3,0 mm       | 3911.00300 | –             | 3,0  | –              | –            | •      |
| Ø 1/8"         | 3911.00318 | 1/8"          | –    | –              | –            | •      |
| Ø 4,0 mm       | 3911.00400 | 5/32"         | 4,0  | –              | –            | •      |
| Ø 3/16"        | 3911.00476 | 3/16"         | –    | –              | –            | •      |
| Ø 5,0 mm       | 3911.00500 | –             | 5,0  | –              | –            | •      |
| Ø 6,0 mm       | 3911.00600 | –             | 6,0  | –              | –            | •      |
| Ø 1/4"         | 3911.00635 | 1/4"          | –    | –              | –            | •      |
| BLANK DS/ER 11 | 3911.09999 | –             | –    | –              | –            | •      |

ER 11 has no sealing range and can only be used nominally. Assembling with mounting tool MWZ.

|                        |            |        |          |               |   |    |
|------------------------|------------|--------|----------|---------------|---|----|
| <b>DS/ER 16</b>        |            |        |          |               |   |    |
| SET DS/ER 16 (14 pcs.) | 3916.00000 | –      | 3,0–10,0 | 0,1378–0,3937 | – | •• |
| Ø 3,0 mm               | 3916.00300 | 3/32"  | 3,0–2,5  | 0,1181–0,0984 | – | •• |
| Ø 3,5 mm               | 3916.00350 | 1/8"   | 3,5–3,0  | 0,1378–0,1181 | • | •• |
| Ø 4,0 mm               | 3916.00400 | 5/32"  | 4,0–3,5  | 0,1575–0,1378 | • | •• |
| Ø 4,5 mm               | 3916.00450 | –      | 4,5–4,0  | 0,1772–0,1575 | • | •• |
| Ø 5,0 mm               | 3916.00500 | 3/16"  | 5,0–4,5  | 0,1969–0,1772 | • | •• |
| Ø 5,5 mm               | 3916.00550 | 7/32"  | 5,5–5,0  | 0,2165–0,1969 | • | •• |
| Ø 6,0 mm               | 3916.00600 | –      | 6,0–5,5  | 0,2362–0,2165 | • | •• |
| Ø 6,5 mm               | 3916.00650 | 1/4"   | 6,5–6,0  | 0,2559–0,2362 | • | •• |
| Ø 7,0 mm               | 3916.00700 | –      | 7,0–6,5  | 0,2756–0,2559 | • | •• |
| Ø 7,5 mm               | 3916.00750 | 9/32"  | 7,5–7,0  | 0,2953–0,2756 | • | •• |
| Ø 8,0 mm               | 3916.00800 | 5/16"  | 8,0–7,5  | 0,315–0,2953  | • | •• |
| Ø 8,5 mm               | 3916.00850 | –      | 8,5–8,0  | 0,3346–0,315  | • | •• |
| Ø 9,0 mm               | 3916.00900 | 11/32" | 9,0–8,5  | 0,3543–0,3346 | • | •• |
| Ø 9,5 mm               | 3916.00950 | 3/8"   | 9,5–9,0  | 0,374–0,3543  | • | •• |
| Ø 10,0 mm              | 3916.01000 | –      | 10,0–9,5 | 0,3937–0,374  | • | •• |
| BLANK DS/ER 16         | 3916.09999 | –      | –        | –             | – | •• |

Included in the DS/ER sets are all marked disks within that ER size and the matching disk try DSR

|                        |            |       |          |               |   |   |
|------------------------|------------|-------|----------|---------------|---|---|
| <b>DS/ER 20</b>        |            |       |          |               |   |   |
| SET DS/ER 20 (20 pcs.) | 3920.00000 | –     | 3,0–13,0 | 0,1378–0,5118 | – | • |
| Ø 3,0 mm               | 3920.00300 | 3/32" | 3,0–2,5  | 0,1181–0,0984 | – | • |
| Ø 3,5 mm               | 3920.00350 | 1/8"  | 3,5–3,0  | 0,1378–0,1181 | • | • |
| Ø 4,0 mm               | 3920.00400 | 5/32" | 4,0–3,5  | 0,1575–0,1378 | • | • |
| Ø 4,5 mm               | 3920.00450 | –     | 4,5–4,0  | 0,2165–0,1969 | • | • |
| Ø 5,0 mm               | 3920.00500 | 3/16" | 5,0–4,5  | 0,1969–0,1772 | • | • |
| Ø 5,5 mm               | 3920.00550 | 7/32" | 5,5–5,0  | 0,1772–0,1575 | • | • |
| Ø 6,0 mm               | 3920.00600 | –     | 6,0–5,5  | 0,2362–0,2165 | • | • |
| Ø 6,5 mm               | 3920.00650 | 1/4"  | 6,5–6,0  | 0,2559–0,2362 | • | • |
| Ø 7,0 mm               | 3920.00700 | –     | 7,0–6,5  | 0,2756–0,2559 | • | • |
| Ø 7,5 mm               | 3920.00750 | 9/32" | 7,5–7,0  | 0,2953–0,2756 | • | • |
| Ø 8,0 mm               | 3920.00800 | 5/16" | 8,0–7,5  | 0,315–0,2953  | • | • |
| Ø 8,5 mm               | 3920.00850 | –     | 8,5–8,0  | 0,3346–0,315  | • | • |

# Sealing disks for ER/MR

DS / ER

DS / MR

| Type           | Part no.   | Tool diameter |           |                | Incl. in set | System |
|----------------|------------|---------------|-----------|----------------|--------------|--------|
|                |            | Ø [inch]      | [mm]      | [decimal inch] |              |        |
| Ø 9,0 mm       | 3920.00900 | 11/32"        | 9,0–8,5   | 0,3543–0,3346  | •            | •      |
| Ø 9,5 mm       | 3920.00950 | 3/8"          | 9,5–9,0   | 0,374–0,3543   | •            | •      |
| Ø 10,0 mm      | 3920.01000 | –             | 10,0–9,5  | 0,3937–0,374   | •            | •      |
| Ø 10,5 mm      | 3920.01050 | 13/32"        | 10,5–10,0 | 0,4134–0,3937  | •            | •      |
| Ø 11,0 mm      | 3920.01100 | –             | 11,0–10,5 | 0,433–0,4134   | •            | •      |
| Ø 11,5 mm      | 3920.01150 | 7/16"         | 11,5–11,0 | 0,4528–0,4331  | •            | •      |
| Ø 12,0 mm      | 3920.01200 | 15/32"        | 12,0–11,5 | 0,4724–0,4528  | •            | •      |
| Ø 12,5 mm      | 3920.01250 | –             | 12,5–12,0 | 0,4921–0,4724  | •            | •      |
| Ø 13,0 mm      | 3920.01300 | 1/2"          | 13,0–12,5 | 0,5118–0,4921  | •            | •      |
| BLANK DS/ER 20 | 3920.09999 | –             | –         | –              | –            | •      |

Included in the DS/ER sets are all marked disks within that ER size and the matching disk try DSR

| DS/ER 25               |            |        |           |               |   |    |
|------------------------|------------|--------|-----------|---------------|---|----|
| SET DS/ER 25 (26 pcs.) | 3925.00000 | –      | 3,0–16,0  | 0,1181–0,6299 | – | •• |
| Ø 3,0 mm               | 3925.00300 | 3/32"  | 3,0–2,5   | 0,1181–0,0984 | – | •• |
| Ø 3,5 mm               | 3925.00350 | 1/8"   | 3,5–3,0   | 0,1378–0,1181 | • | •• |
| Ø 4,0 mm               | 3925.00400 | 5/32"  | 4,0–3,5   | 0,1575–0,1378 | • | •• |
| Ø 4,5 mm               | 3925.00450 | –      | 4,5–4,0   | 0,1772–0,1575 | • | •• |
| Ø 5,0 mm               | 3925.00500 | 3/16"  | 5,0–4,5   | 0,1969–0,1772 | • | •• |
| Ø 5,5 mm               | 3925.00550 | 7/32"  | 5,5–5,0   | 0,2165–0,1969 | • | •• |
| Ø 6,0 mm               | 3925.00600 | –      | 6,0–5,5   | 0,2362–0,2165 | • | •• |
| Ø 6,5 mm               | 3925.00650 | 1/4"   | 6,5–6,0   | 0,2559–0,2362 | • | •• |
| Ø 7,0 mm               | 3925.00700 | –      | 7,0–6,5   | 0,2756–0,2559 | • | •• |
| Ø 7,5 mm               | 3925.00750 | 9/32"  | 7,5–7,0   | 0,2953–0,2756 | • | •• |
| Ø 8,0 mm               | 3925.00800 | 5/16"  | 8,0–7,5   | 0,315–0,2953  | • | •• |
| Ø 8,5 mm               | 3925.00850 | –      | 8,5–8,0   | 0,3346–0,315  | • | •• |
| Ø 9,0 mm               | 3925.00900 | 11/32" | 9,0–8,5   | 0,3543–0,3347 | • | •• |
| Ø 9,5 mm               | 3925.00950 | 3/8"   | 9,5–9,0   | 0,374–0,3543  | • | •• |
| Ø 10,0 mm              | 3925.01000 | –      | 10,0–9,5  | 0,3937–0,374  | • | •• |
| Ø 10,5 mm              | 3925.01050 | 13/32" | 10,5–10,0 | 0,4134–0,3937 | • | •• |
| Ø 11,0 mm              | 3925.01100 | –      | 11,0–10,5 | 0,433–0,4134  | • | •• |
| Ø 11,5 mm              | 3925.01150 | 7/16"  | 11,5–11,0 | 0,4528–0,433  | • | •• |
| Ø 12,0 mm              | 3925.01200 | 15/32" | 12,0–11,5 | 0,4724–0,4528 | • | •• |
| Ø 12,5 mm              | 3925.01250 | –      | 12,5–12,0 | 0,4921–0,4724 | • | •• |
| Ø 13,0 mm              | 3925.01300 | 1/2"   | 13,0–12,5 | 0,5118–0,4921 | • | •• |
| Ø 13,5 mm              | 3925.01350 | 17/32" | 13,5–13,0 | 0,5315–0,5118 | • | •• |
| Ø 14,0 mm              | 3925.01400 | –      | 14,0–13,5 | 0,5512–0,5315 | • | •• |
| Ø 14,5 mm              | 3925.01450 | 9/16"  | 14,5–14,0 | 0,5709–0,5512 | • | •• |
| Ø 15,0 mm              | 3925.01500 | –      | 15,0–14,5 | 0,5906–0,5709 | • | •• |
| Ø 15,5 mm              | 3925.01550 | 19/32" | 15,5–15,0 | 0,6102–0,5906 | • | •• |
| Ø 16,0 mm              | 3925.01600 | 5/8"   | 16,0–15,5 | 0,6299–0,6102 | • | •• |
| BLANK DS/ER 25         | 3925.09999 | –      | –         | –             | – | •• |

Included in the DS/ER sets are all marked disks within that ER size and the matching disk try DSR



# Sealing disks for ER/MR

DS / ER

DS / MR

| Type                   | Part no.   | Tool diameter |           |                | Incl. in set | System |
|------------------------|------------|---------------|-----------|----------------|--------------|--------|
|                        |            | Ø [inch]      | [mm]      | [decimal inch] |              |        |
| DS / ER 32             |            |               |           |                |              |        |
| DS/ER 32 SET (34 pcs.) | 3932.00000 | –             | 3,0–20,0  | 0,1181–0,7874  | –            | ••     |
| Ø 3,0 mm               | 3932.00300 | 3/32"         | 3,0–2,5   | 0,1181–0,0984  | –            | ••     |
| Ø 3,5 mm               | 3932.00350 | 1/8"          | 3,5–3,0   | 0,1378–0,1181  | •            | ••     |
| Ø 4,0 mm               | 3932.00400 | 5/32"         | 4,0–3,5   | 0,1575–0,1378  | •            | ••     |
| Ø 4,5 mm               | 3932.00450 | –             | 4,5–4,0   | 0,1772–0,1575  | •            | ••     |
| Ø 5,0 mm               | 3932.00500 | 3/16"         | 5,0–4,5   | 0,1969–0,1772  | •            | ••     |
| Ø 5,5 mm               | 3932.00550 | 7/32"         | 5,5–5,0   | 0,2165–0,1969  | •            | ••     |
| Ø 6,0 mm               | 3932.00600 | –             | 6,0–5,5   | 0,2362–0,2165  | •            | ••     |
| Ø 6,5 mm               | 3932.00650 | 1/4"          | 6,5–6,0   | 0,2559–0,2362  | •            | ••     |
| Ø 7,0 mm               | 3932.00700 | –             | 7,0–6,5   | 0,2756–0,2559  | •            | ••     |
| Ø 7,5 mm               | 3932.00750 | 9/32"         | 7,5–7,0   | 0,2953–0,2756  | •            | ••     |
| Ø 8,0 mm               | 3932.00800 | 5/16"         | 8,0–7,5   | 0,315–0,2953   | •            | ••     |
| Ø 8,5 mm               | 3932.00850 | –             | 8,5–8,0   | 0,3346–0,315   | •            | ••     |
| Ø 9,0 mm               | 3932.00900 | 11/32"        | 9,0–8,5   | 0,3543–0,3346  | •            | ••     |
| Ø 9,5 mm               | 3932.00950 | 3/8"          | 9,5–9,0   | 0,374–0,3543   | •            | ••     |
| Ø 10,0 mm              | 3932.01000 | –             | 10,0–9,5  | 0,3937–0,374   | •            | ••     |
| Ø 10,5 mm              | 3932.01050 | 13/32"        | 10,5–10,0 | 0,4134–0,3937  | •            | ••     |
| Ø 11,0 mm              | 3932.01100 | –             | 11,0–10,5 | 0,4331–0,4134  | •            | ••     |
| Ø 11,5 mm              | 3932.01150 | 7/16"         | 11,5–11,0 | 0,4528–0,4331  | •            | ••     |
| Ø 12,0 mm              | 3932.01200 | 15/32"        | 12,0–11,5 | 0,4724–0,4528  | •            | ••     |
| Ø 12,5 mm              | 3932.01250 | –             | 12,5–12,0 | 0,4921–0,4724  | •            | ••     |
| Ø 13,0 mm              | 3932.01300 | 1/2"          | 13,0–12,5 | 0,5118–0,4921  | •            | ••     |
| Ø 13,5 mm              | 3932.01350 | 17/32"        | 13,5–13,0 | 0,5315–0,5118  | •            | ••     |
| Ø 14,0 mm              | 3932.01400 | –             | 14,0–13,5 | 0,5512–0,5315  | •            | ••     |
| Ø 14,5 mm              | 3932.01450 | 9/16"         | 14,5–14,0 | 0,5709–0,5512  | •            | ••     |
| Ø 15,0 mm              | 3932.01500 | –             | 15,0–14,5 | 0,5905–0,5709  | •            | ••     |
| Ø 15,5 mm              | 3932.01550 | 19/32"        | 15,5–15,0 | 0,6102–0,5906  | •            | ••     |
| Ø 16,0 mm              | 3932.01600 | 5/8"          | 16,0–15,5 | 0,6299–0,6102  | •            | ••     |
| Ø 16,5 mm              | 3932.01650 | –             | 16,5–16,0 | 0,6496–0,6299  | •            | ••     |
| Ø 17,0 mm              | 3932.01700 | 21/32"        | 17,0–16,5 | 0,6693–0,6496  | •            | ••     |
| Ø 17,5 mm              | 3932.01750 | 11/16"        | 17,5–17,0 | 0,689–0,6693   | •            | ••     |
| Ø 18,0 mm              | 3932.01800 | –             | 18,0–17,5 | 0,7087–0,689   | •            | ••     |
| Ø 18,5 mm              | 3932.01850 | 23/32"        | 18,5–18,0 | 0,7283–0,7087  | •            | ••     |
| Ø 19,0 mm              | 3932.01900 | 3/4"          | 19,0–18,5 | 0,748–0,7283   | •            | ••     |
| Ø 19,5 mm              | 3932.01950 | –             | 19,5–19,0 | 0,7677–0,748   | •            | ••     |
| Ø 20,0 mm              | 3932.02000 | 25/32"        | 20,0–19,5 | 0,7874–0,7677  | •            | ••     |
| BLANK DS / ER 32       | 3932.09999 | –             | –         | –              | –            | ••     |

Included in the DS/ER sets are all marked disks within that ER size and the matching disk try DSR

| Type                   | Part no.   | Tool diameter |           |                | Incl. in set | System |
|------------------------|------------|---------------|-----------|----------------|--------------|--------|
|                        |            | Ø [inch]      | [mm]      | [decimal inch] |              |        |
| DS / ER 40             |            |               |           |                |              |        |
| DS/ER 40 SET (46 pcs.) | 3940.00000 | –             | 3,0–26,0  | 0,1181–1,0236  | –            | •      |
| Ø 3,0 mm               | 3940.00300 | 3/32"         | 3,0–2,5   | 0,1181–0,0984  | –            | •      |
| Ø 3,5 mm               | 3940.00350 | 1/8"          | 3,5–3,0   | 0,1378–0,1181  | •            | •      |
| Ø 4,0 mm               | 3940.00400 | 5/32"         | 4,0–3,5   | 0,1575–0,1378  | •            | •      |
| Ø 4,5 mm               | 3940.00450 | –             | 4,5–4,0   | 0,1772–0,1575  | •            | •      |
| Ø 5,0 mm               | 3940.00500 | 3/16"         | 5,0–4,5   | 0,1969–0,1772  | •            | •      |
| Ø 5,5 mm               | 3940.00550 | 7/32"         | 5,5–5,0   | 0,2165–0,1969  | •            | •      |
| Ø 6,0 mm               | 3940.00600 | –             | 6,0–5,5   | 0,2362–0,2165  | •            | •      |
| Ø 6,5 mm               | 3940.00650 | 1/4"          | 6,5–6,0   | 0,2559–0,2362  | •            | •      |
| Ø 7,0 mm               | 3940.00700 | –             | 7,0–6,5   | 0,2756–0,2559  | •            | •      |
| Ø 7,5 mm               | 3940.00750 | 9/32"         | 7,5–7,0   | 0,2953–0,2756  | •            | •      |
| Ø 8,0 mm               | 3940.00800 | 5/16"         | 8,0–7,5   | 0,315–0,2953   | •            | •      |
| Ø 8,5 mm               | 3940.00850 | –             | 8,5–8,0   | 0,3347–0,315   | •            | •      |
| Ø 9,0 mm               | 3940.00900 | 11/32"        | 9,0–8,5   | 0,3543–0,3347  | •            | •      |
| Ø 9,5 mm               | 3940.00950 | 3/8"          | 9,5–9,0   | 0,374–0,3543   | •            | •      |
| Ø 10,0 mm              | 3940.01000 | –             | 10,0–9,5  | 0,3937–0,374   | •            | •      |
| Ø 10,5 mm              | 3940.01050 | 13/32"        | 10,5–10,0 | 0,4134–0,3937  | •            | •      |
| Ø 11,0 mm              | 3940.01100 | –             | 11,0–10,5 | 0,433–0,4134   | •            | •      |
| Ø 11,5 mm              | 3940.01150 | 7/16"         | 11,5–11,0 | 0,4528–0,433   | •            | •      |
| Ø 12,0 mm              | 3940.01200 | 15/32"        | 12,0–11,5 | 0,4724–0,4528  | •            | •      |
| Ø 12,5 mm              | 3940.01250 | –             | 12,5–12,0 | 0,4921–0,4724  | •            | •      |
| Ø 13,0 mm              | 3940.01300 | 1/2"          | 13,0–12,5 | 0,5118–0,4921  | •            | •      |
| Ø 13,5 mm              | 3940.01350 | 17/32"        | 13,5–13,0 | 0,5315–0,5118  | •            | •      |
| Ø 14,0 mm              | 3940.01400 | –             | 14,0–13,5 | 0,5512–0,5315  | •            | •      |
| Ø 14,5 mm              | 3940.01450 | 9/16"         | 14,5–14,0 | 0,5709–0,5512  | •            | •      |
| Ø 15,0 mm              | 3940.01500 | –             | 15,0–14,5 | 0,5905–0,5709  | •            | •      |
| Ø 15,5 mm              | 3940.01550 | 19/32"        | 15,5–15,0 | 0,6102–0,5905  | •            | •      |
| Ø 16,0 mm              | 3940.01600 | 5/8"          | 16,0–15,5 | 0,6299–0,6102  | •            | •      |
| Ø 16,5 mm              | 3940.01650 | –             | 16,5–16,0 | 0,6496–0,6299  | •            | •      |
| Ø 17,0 mm              | 3940.01700 | 21/32"        | 17,0–16,5 | 0,6693–0,6496  | •            | •      |
| Ø 17,5 mm              | 3940.01750 | 11/16"        | 17,5–17,0 | 0,689–0,6693   | •            | •      |
| Ø 18,0 mm              | 3940.01800 | –             | 18,0–17,5 | 0,7087–0,689   | •            | •      |
| Ø 18,5 mm              | 3940.01850 | 23/32"        | 18,5–18,0 | 0,7283–0,7087  | •            | •      |
| Ø 19,0 mm              | 3940.01900 | 3/4"          | 19,0–18,5 | 0,748–0,7283   | •            | •      |
| Ø 19,5 mm              | 3940.01950 | –             | 19,5–19,0 | 0,7677–0,748   | •            | •      |
| Ø 20,0 mm              | 3940.02000 | 23/32"        | 20,0–19,5 | 0,7874–0,7677  | •            | •      |
| Ø 20,5 mm              | 3940.02050 | –             | 20,5–20,0 | 0,8071–0,7874  | •            | •      |
| Ø 21,0 mm              | 3940.02100 | 13/16"        | 21,0–20,5 | 0,8268–0,8071  | •            | •      |
| Ø 21,5 mm              | 3940.02150 | 25/32"        | 21,5–21,0 | 0,8465–0,8268  | •            | •      |



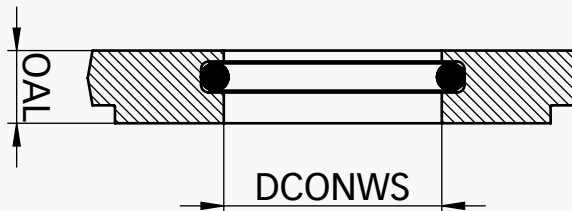
| Type           | Part no.   | Tool diameter |           |                | Incl. in set | System |
|----------------|------------|---------------|-----------|----------------|--------------|--------|
|                |            | Ø [inch]      | [mm]      | [decimal inch] |              |        |
| Ø 22,0 mm      | 3940.02200 | –             | 22,0–21,5 | 0,8661–0,8465  | •            | •      |
| Ø 22,5 mm      | 3940.02250 | 7/8"          | 22,5–22,0 | 0,8858–0,8268  | •            | •      |
| Ø 23,0 mm      | 3940.02300 | 29/32"        | 23,0–22,5 | 0,9055–0,8858  | •            | •      |
| Ø 23,5 mm      | 3940.02350 | –             | 23,5–23,0 | 0,9252–0,9055  | •            | •      |
| Ø 24,0 mm      | 3940.02400 | 15/16"        | 24,0–23,5 | 0,9449–0,9252  | •            | •      |
| Ø 24,5 mm      | 3940.02450 | –             | 24,5–24,0 | 0,9646–0,9449  | •            | •      |
| Ø 25,0 mm      | 3940.02500 | 31/32"        | 25,0–24,5 | 0,9843–0,9646  | •            | •      |
| Ø 25,5 mm      | 3940.02550 | 1"            | 25,5–25,0 | 1,0039–0,9843  | •            | •      |
| Ø 26,0 mm      | 3940.02600 | –             | 26,0–25,5 | 1,0236–1,0039  | •            | •      |
| BLANK DS/ER 40 | 3940.09999 | –             | –         | –              | –            | •      |

Included in the DS/ER sets are all marked disks within that ER size and the matching disk try DSR

## DS/ER 50

|                          |            |   |           |               |   |   |
|--------------------------|------------|---|-----------|---------------|---|---|
| ADP ERC 50 / DS   KS 40* | 3950.40000 | – | 3,0–26,0  | 0,1181–1,0236 | – | • |
| Ø 22,0 mm                | 3950.02200 | – | 22,0–21,5 | 0,8661–0,8465 | – | • |
| Ø 25,0 mm                | 3950.02500 | – | 25,0–24,5 | 0,9842–0,9645 | – | • |
| Ø 28,0 mm                | 3950.02800 | – | 28,0–27,5 | 1,1023–1,0827 | – | • |
| Ø 32,0 mm                | 3950.03200 | – | 32,0–31,5 | 1,2598–1,2402 | – | • |
| Ø 36,0 mm                | 3950.03600 | – | 36,0–35,5 | 1,4173–1,3976 | – | • |

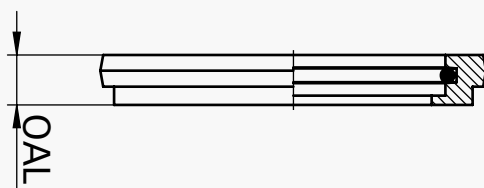
\*The ADP ER 50-DS/ER 40 only works in combination with a sealing disk DS/ER 40. DS/ER 40 is not included in delivery



DS / ER

### Expert advice

The BLANK DS/ER is used as machining blank for specific sizes or as sealing disk for double-sided driven tools.



ADP ERC / DS | KS

### Expert advice

The adapter ADP ER 50–DS / ER 40 allows the use of DS/ER-40 sealing disks in ER-50 clamping nuts.







# Our solution for peripheral cooling

The design of our coolant flush disks leads the coolant along the edge of the cutting tool, providing you with an easy way to achieve peripheral cooling.

## Key advantages

### **Swiss quality product**

#### **Universal use**

For all REGO-FIX collets and coolant nuts with interchangeable disk.

#### **Interchangeable**

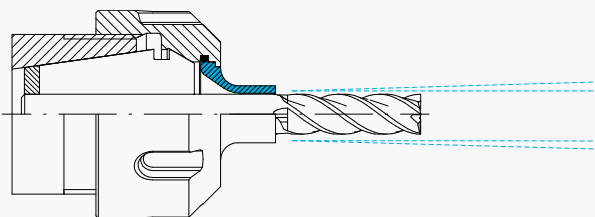
Quick change of coolant flush disks according to required tool shank diameter.

#### **Peripheral cooling**

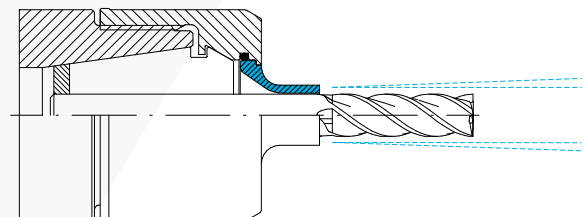
For better cooling and lubrication.  
Extends tool life and supports chip removal.

#### **Original REGO-FIX**

Our long-lasting machining experience results in a well-engineered system. When buying ER coolant flush disks please pay attention to the REGO-FIX quality seal on the coolant flush disk: The triangle is our seal for outstanding quality made in Switzerland.



KS/ER

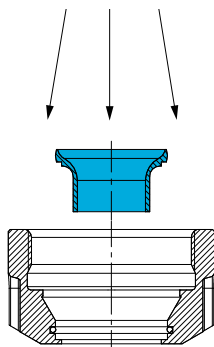


KS/MR

## Coolant flush disks for ER/MR

KS / ER

KS / MR

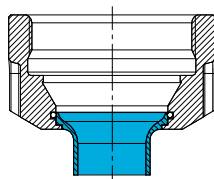


Assembling

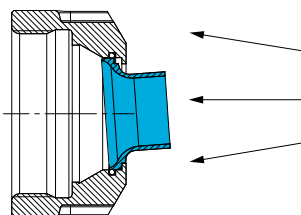
**Assembling** Insert the small diameter of the disk into the center of the coolant nut. Apply an even pressure until the disk is properly seated into the nut.

The disk must be flush with the outside of the nut and the marking on the disk must be visible inside of the nut.

**Removing** To remove the disk, simply press on the outside of the disk evenly until it snaps out.



Inserted KS/ER



Disk removal



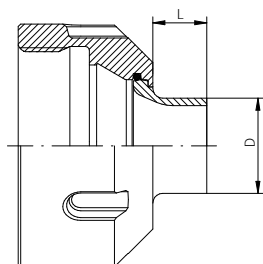
# Coolant flush disks for ER / MR

KS / ER

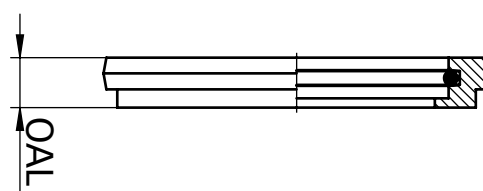
KS / MR

| Type                 | Part no.   | Dimensions [mm] |     | Ø     |        | System |
|----------------------|------------|-----------------|-----|-------|--------|--------|
|                      |            | D               | L   | [mm]  | [inch] |        |
| KS/ER 11 [mm]/[inch] |            |                 |     |       |        |        |
| Ø 3,0 mm / 1/8"      | 3911.30318 | 5,6             | 5,5 | 3     | 1/8"   | •      |
| Ø 4,0 mm             | 3911.20400 | 6,4             | 5,5 | 4     | –      | •      |
| Ø 5,0 mm / 3/16"     | 3911.20500 | 7,5             | 5,5 | 5     | 3/16"  | •      |
| Ø 6,0 mm / 1/4"      | 3911.30635 | 7,5             | 5,5 | 6     | 1/4"   | •      |
| BLANK KS / ER 11*    | 3911.29999 | 7,5             | 8   | –     | –      | •      |
| KS/ER 16 [mm]        |            |                 |     |       |        |        |
| Ø 3,0 mm             | 3916.20300 | 6,4             | 11  | 3     | –      | ••     |
| Ø 4,0 mm             | 3916.20400 | 7,4             | 11  | 4     | –      | ••     |
| Ø 5,0 mm             | 3916.20500 | 8,4             | 11  | 5     | –      | ••     |
| Ø 6,0 mm             | 3916.20600 | 9,4             | 11  | 6     | –      | ••     |
| Ø 7,0 mm             | 3916.20700 | 11              | 11  | 7     | –      | ••     |
| Ø 8,0 mm             | 3916.20800 | 11              | 11  | 8     | –      | ••     |
| Ø 9,0 mm             | 3916.20900 | 11              | 2   | 9     | –      | ••     |
| Ø 10,0 mm            | 3916.21000 | 11              | 2   | 10    | –      | ••     |
| BLANK KS / ER 16*    | 3916.29999 | 11              | 12  | –     | –      | ••     |
| KS/ER 16 [inch]      |            |                 |     |       |        |        |
| Ø 1/8"               | 3916.30318 | 6,6             | 11  | 3,175 | 1/8"   | ••     |
| Ø 3/16"              | 3916.30476 | 8,2             | 11  | 4,763 | 3/16"  | ••     |
| Ø 1/4"               | 3916.30635 | 9,7             | 11  | 6,35  | 1/4"   | ••     |
| Ø 5/16"              | 3916.30794 | 11              | 11  | 7,938 | 5/16"  | ••     |
| Ø 3/8"               | 3916.30953 | 11              | 2   | 9,525 | 3/8"   | ••     |
| KS/ER 20 [mm]        |            |                 |     |       |        |        |
| Ø 3,0 mm             | 3920.20300 | 6,4             | 11  | 3     | –      | •      |
| Ø 4,0 mm             | 3920.20400 | 7,4             | 11  | 4     | –      | •      |
| Ø 5,0 mm             | 3920.20500 | 8,4             | 11  | 5     | –      | •      |
| Ø 6,0 mm             | 3920.20600 | 9,4             | 11  | 6     | –      | •      |
| Ø 7,0 mm             | 3920.20700 | 10,4            | 11  | 7     | –      | •      |
| Ø 8,0 mm             | 3920.20800 | 11,4            | 11  | 8     | –      | •      |
| Ø 9,0 mm             | 3920.20900 | 12,4            | 11  | 9     | –      | •      |
| Ø 10,0 mm            | 3920.21000 | 14              | 11  | 10    | –      | •      |
| Ø 12,0 mm            | 3920.21200 | 14              | 3   | 12    | –      | •      |
| BLANK KS / ER 20*    | 3920.29999 | 14              | 12  | –     | –      | •      |

\*Work material: 42CrMoS4 (1.7227)



KS/ER



ADP ERC / DS | KS

# Coolant flush disks for ER/MR

KS / ER

KS / MR

| Type                   | Part no.   | Dimensions [mm] |        | Ø      | System |
|------------------------|------------|-----------------|--------|--------|--------|
|                        |            | D               | L      |        |        |
|                        |            | [mm]            | [inch] |        |        |
| <b>KS/ER 20 [inch]</b> |            |                 |        |        |        |
| Ø 1/8"                 | 3920.30318 | 6,6             | 11     | 3,175  | 1/8"   |
| Ø 3/16"                | 3920.30476 | 8,2             | 11     | 4,763  | 3/16"  |
| Ø 1/4"                 | 3920.30635 | 9,7             | 11     | 6,35   | 1/4"   |
| Ø 5/16"                | 3920.30794 | 11,3            | 11     | 7,983  | 5/16"  |
| Ø 3/8"                 | 3920.30953 | 14              | 11     | 9,525  | 3/8"   |
| Ø 7/16"                | 3920.31111 | 14              | 11     | 11,113 | 7/16"  |
| Ø 1/2"                 | 3920.31270 | 14              | 3      | 12,7   | 1/2"   |
| <b>KS/ER 25 [mm]</b>   |            |                 |        |        |        |
| Ø 3,0 mm               | 3925.20300 | 6,4             | 11     | 3      | —      |
| Ø 4,0 mm               | 3925.20400 | 7,4             | 11     | 4      | —      |
| Ø 5,0 mm               | 3925.20500 | 8,4             | 11     | 5      | —      |
| Ø 6,0 mm               | 3925.20600 | 9,4             | 11     | 6      | —      |
| Ø 7,0 mm               | 3925.20700 | 10,4            | 11     | 7      | —      |
| Ø 8,0 mm               | 3925.20800 | 11,4            | 11     | 8      | —      |
| Ø 9,0 mm               | 3925.20900 | 12,4            | 11     | 9      | —      |
| Ø 10,0 mm              | 3925.21000 | 13,4            | 11     | 10     | —      |
| Ø 12,0 mm              | 3925.21200 | 15,4            | 11     | 12     | —      |
| Ø 14,0 mm              | 3925.21400 | 17,4            | 11     | 14     | —      |
| Ø 16,0 mm              | 3925.21600 | 19              | 11     | 16     | —      |
| BLANK KS / ER 25*      | 3925.29999 | 19              | 12     | —      | —      |
| <b>KS/ER 25 [inch]</b> |            |                 |        |        |        |
| Ø 1/8"                 | 3925.30318 | 6,6             | 11     | 3,175  | 1/8"   |
| Ø 3/16"                | 3925.30476 | 8,2             | 11     | 4,763  | 3/16"  |
| Ø 1/4"                 | 3925.30635 | 9,7             | 11     | 6,35   | 1/4"   |
| Ø 5/16"                | 3925.30794 | 11,3            | 11     | 7,938  | 5/16"  |
| Ø 3/8"                 | 3925.30953 | 12,9            | 11     | 9,525  | 3/8"   |
| Ø 7/16"                | 3925.31111 | 14,5            | 11     | 11,113 | 7/16"  |
| Ø 1/2"                 | 3925.31270 | 16,1            | 11     | 12,7   | 1/2"   |
| Ø 9/16"                | 3925.31429 | 17,7            | 11     | 14,288 | 9/16"  |
| Ø 5/8"                 | 3925.31588 | 19              | 11     | 15,875 | 5/8"   |

\*Work material: 42CrMoS4 (1.7227)



# Coolant flush disks for ER / MR

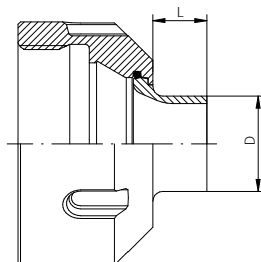
KS / ER

KS / MR

| Type              | Part no.   | Dimensions [mm] |    | Ø      |        | System |
|-------------------|------------|-----------------|----|--------|--------|--------|
|                   |            | D               | L  | [mm]   | [inch] |        |
| KS / ER 32 [mm]   |            |                 |    |        |        |        |
| Ø 3,0 mm          | 3932.20300 | 6,4             | 11 | 3      | –      | ••     |
| Ø 4,0 mm          | 3932.20400 | 7,4             | 11 | 4      | –      | ••     |
| Ø 5,0 mm          | 3932.20500 | 8,4             | 11 | 5      | –      | ••     |
| Ø 6,0 mm          | 3932.20600 | 9,4             | 11 | 6      | –      | ••     |
| Ø 7,0 mm          | 3932.20700 | 10,4            | 11 | 7      | –      | ••     |
| Ø 8,0 mm          | 3932.20800 | 11,4            | 11 | 8      | –      | ••     |
| Ø 9,0 mm          | 3932.20900 | 12,4            | 11 | 9      | –      | ••     |
| Ø 10,0 mm         | 3932.21000 | 13,4            | 11 | 10     | –      | ••     |
| Ø 12,0 mm         | 3932.21200 | 15,4            | 11 | 12     | –      | ••     |
| Ø 14,0 mm         | 3932.21400 | 17,4            | 11 | 14     | –      | ••     |
| Ø 16,0 mm         | 3932.21600 | 19,4            | 11 | 16     | –      | ••     |
| Ø 18,0 mm         | 3932.21800 | 21,4            | 11 | 18     | –      | ••     |
| Ø 20,0 mm         | 3932.22000 | 24              | 11 | 20     | –      | ••     |
| BLANK KS / ER 32* | 3932.29999 | 24              | 12 | –      | –      | ••     |
| KS / ER 32 [inch] |            |                 |    |        |        |        |
| Ø 1/8"            | 3932.30318 | 6,6             | 11 | 3,175  | 1/8"   | ••     |
| Ø 3/16"           | 3932.30476 | 8,2             | 11 | 4,763  | 3/16"  | ••     |
| Ø 1/4"            | 3932.30635 | 9,7             | 11 | 6,35   | 1/4"   | ••     |
| Ø 5/16"           | 3932.30794 | 11,3            | 11 | 7,938  | 5/16"  | ••     |
| Ø 3/8"            | 3932.30953 | 12,9            | 11 | 9,525  | 3/8"   | ••     |
| Ø 7/16"           | 3932.31111 | 14,5            | 11 | 11,113 | 7/16"  | ••     |
| Ø 1/2"            | 3932.31270 | 16,1            | 11 | 12,7   | 1/2"   | ••     |
| Ø 9/16"           | 3932.31429 | 17,7            | 11 | 14,288 | 9/16"  | ••     |
| Ø 5/8"            | 3932.31588 | 19,3            | 11 | 15,875 | 5/8"   | ••     |
| Ø 3/4"            | 3932.31905 | 24              | 11 | 19,05  | 3/4"   | ••     |

\*Work material: 42CrMoS4 (1.7227).

|                         |            |   |   |      |             |   |
|-------------------------|------------|---|---|------|-------------|---|
| <b>KS/ER 40</b>         |            |   |   |      |             |   |
| ADP ERC 40 / DS   KS 32 | 3940.32000 | – | – | 3-20 | 1/8" - 3/4" | • |



KS/ER

# Wrenches

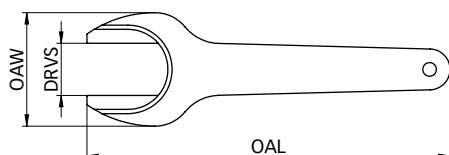
E MS

E AX

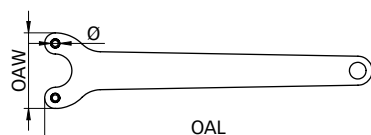
E A

| Type    | Part no.   | OAW [mm] | OAL [mm] | DRVS | Suited wrench for Hi-Q® |      |       | System |
|---------|------------|----------|----------|------|-------------------------|------|-------|--------|
|         |            |          |          |      | ER MS                   | ERAX | ERAXC |        |
| E MS    |            |          |          |      |                         |      |       |        |
| WMS 6   | 7864.06000 | 19       | 76       | 5.75 | ●                       | –    | –     | ●      |
| E 8 MS  | 7114.08000 | 19       | 76       | 7    | ●                       | –    | –     | ●      |
| E 11 MS | 7114.11000 | 22       | 100      | 10   | ●                       | –    | –     | ●      |
| E 16 MS | 7114.16000 | 33       | 130      | 15   | ●                       | –    | –     | ●      |
| E 20 MS | 7114.20000 | 42       | 140      | 18.5 | ●                       | –    | –     | ●      |
| E AX    |            |          |          |      |                         |      |       |        |
| E 11 AX | 7117.11000 | 16       | 108      |      | –                       | ●    | –     | ●      |
| E 16 AX | 7117.16000 | 22       | 131      |      | –                       | ●    | ●     | ●      |
| E 20 AX | 7117.20000 | 26       | 148      |      | –                       | ●    | ●     | ●      |
| E 25 AX | 7117.25000 | 30       | 165      |      | –                       | ●    | ●     | ●      |
| E 32 AX | 7117.32000 | 37       | 196      |      | –                       | ●    | ●     | ●      |
| E 40 AX | 7117.40000 | 47       | 220      |      | –                       | ●    | ●     | ●      |
| Ø [mm]  |            |          |          |      |                         |      |       |        |
| E A     |            |          |          |      |                         |      |       |        |
| E 11 A  | 7115.11000 | 18,6     | 96       |      | –                       | –    | –     | 3      |
| E 16 A  | 7115.16000 | 25       | 108      |      | –                       | –    | –     | 3      |
| E 20 A  | 7115.20000 | 28       | 123      |      | –                       | –    | –     | 3      |
| E 25 A  | 7115.25000 | 30,5     | 139      |      | –                       | –    | –     | 4      |
| E 32 A  | 7115.32000 | 42       | 182      |      | –                       | –    | –     | 4      |

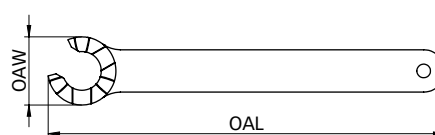
Ø [mm]



E MS



EA



E AX



# Wrenches

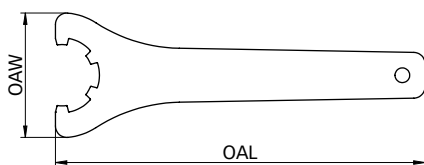
E

E P

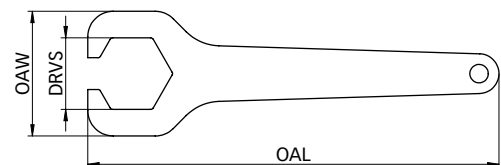
E M

E MX

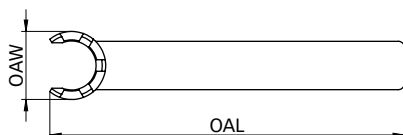
| Type    | Part no.   | Dimensions [mm] |     |      | Suited wrench for Hi-Q® |     |     |      |      |      |       | System |
|---------|------------|-----------------|-----|------|-------------------------|-----|-----|------|------|------|-------|--------|
|         |            | OAW             | OAL | DRVS | ER                      | ERC | ERB | ERBC | ERMC | ERMX | ERMXC |        |
| E       |            |                 |     |      |                         |     |     |      |      |      |       |        |
| E 16    | 7111.16000 | 55              | 163 |      | —                       | —   | —   | —    | —    | —    | —     | ●      |
| E 20    | 7111.20000 | 60              | 183 |      | —                       | —   | —   | —    | —    | —    | —     | ●      |
| E 25    | 7111.25000 | 70              | 203 |      | ●                       | ●   | ●   | ●    | —    | —    | —     | ●      |
| E 32    | 7111.32000 | 80              | 253 |      | ●                       | ●   | ●   | ●    | —    | —    | —     | ●      |
| E 40    | 7111.40000 | 96              | 283 |      | ●                       | ●   | ●   | ●    | —    | —    | —     | ●      |
| E 50    | 7111.50000 | 111             | 350 |      | ●                       | —   | ●   | —    | —    | —    | —     | ●      |
| E P     |            |                 |     |      |                         |     |     |      |      |      |       |        |
| E 11 P  | 7112.11010 | 32              | 95  | 19   | ●                       | ●   | —   | —    | —    | —    | —     | ●      |
| E 16 P  | 7112.16010 | 44              | 145 | 28   | ●                       | ●   | ●   | ●    | —    | —    | —     | ●      |
| E 20 P  | 7112.20010 | 52              | 170 | 34   | ●                       | ●   | ●   | ●    | —    | —    | —     | ●      |
| E M     |            |                 |     |      |                         |     |     |      |      |      |       |        |
| E 8 M   | 7113.08000 | 12              | 74  |      | —                       | —   | —   | —    | —    | —    | —     | ●      |
| E 11 M  | 7113.11000 | 17              | 95  |      | —                       | —   | —   | —    | ●    | —    | —     | ●      |
| E 16 M  | 7113.16000 | 22              | 117 |      | —                       | —   | —   | —    | ●    | —    | —     | ●      |
| E 20 M  | 7113.20000 | 29              | 129 |      | —                       | —   | —   | —    | ●    | —    | —     | ●      |
| E 25 M  | 7113.25000 | 36              | 141 |      | —                       | —   | —   | —    | ●    | —    | —     | ●      |
| E MX    |            |                 |     |      |                         |     |     |      |      |      |       |        |
| E 8 MX  | 7118.08000 | 12              | 74  |      | —                       | —   | —   | —    | —    | ●    | —     | ●      |
| E 11 MX | 7118.11000 | 17              | 95  |      | —                       | —   | —   | —    | —    | ●    | ●     | ●      |
| E 16 MX | 7118.16000 | 22,5            | 117 |      | —                       | —   | —   | —    | —    | ●    | ●     | ●      |
| E 20 MX | 7118.20000 | 29              | 129 |      | —                       | —   | —   | —    | —    | ●    | ●     | ●      |
| E 25 MX | 7118.25000 | 36              | 141 |      | —                       | —   | —   | —    | —    | ●    | ●     | ●      |



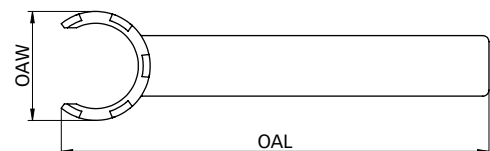
E



EP



EM



EMX



# Wrench heads

A-E

A-E P

A-E M

A-E MX

A-E MS

A-E AX

| Type       | Part no.   | OAW [mm] | OAL [mm] | DRVS [mm] | DCON | System |
|------------|------------|----------|----------|-----------|------|--------|
| <b>A-E</b> |            |          |          |           |      |        |
| A-E 16     | 7151.16000 | 55       | 62       |           | 16   | •      |
| A-E 20     | 7151.20000 | 60       | 62       |           | 16   | •      |
| A-E 25     | 7151.25000 | 70       | 72       |           | 16   | •      |
| A-E 32     | 7151.32000 | 80       | 72       |           | 16   | •      |
| A-E 40     | 7151.40000 | 96       | 82       |           | 16   | •      |
| A-E 50     | 7151.50000 | 111      | 94       |           | 16   | •      |

|             |            |  |  |  |    |     |
|-------------|------------|--|--|--|----|-----|
| <b>A-SG</b> |            |  |  |  |    |     |
| A-SG 48     | 7653.48000 |  |  |  | 16 | • • |

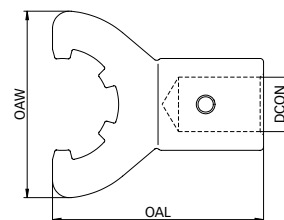
|              |            |    |    |    |    |   |
|--------------|------------|----|----|----|----|---|
| <b>A-E P</b> |            |    |    |    |    |   |
| A-E 11 P     | 7152.11010 | 32 | 57 | 19 | 16 | • |
| A-E 16 P     | 7152.16010 | 44 | 70 | 28 | 16 | • |
| A-E 20 P     | 7152.20010 | 52 | 80 | 34 | 16 | • |

|              |            |    |    |  |    |   |
|--------------|------------|----|----|--|----|---|
| <b>A-E M</b> |            |    |    |  |    |   |
| A-E 8 M      | 7153.08000 | 12 | 53 |  | 16 | • |
| A-E 11 M     | 7153.11000 | 17 | 54 |  | 16 | • |
| A-E 16 M     | 7153.16000 | 22 | 56 |  | 16 | • |
| A-E 20 M     | 7153.20000 | 29 | 68 |  | 16 | • |
| A-E 25 M     | 7153.25000 | 36 | 70 |  | 16 | • |

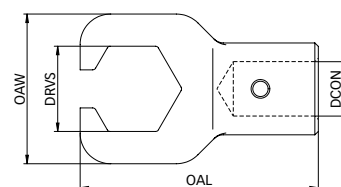
|               |            |    |    |  |    |   |
|---------------|------------|----|----|--|----|---|
| <b>A-E MX</b> |            |    |    |  |    |   |
| A-E 8 MX      | 7158.08000 | 12 | 53 |  | 16 | • |
| A-E 11 MX     | 7158.11000 | 17 | 54 |  | 16 | • |
| A-E 16 MX     | 7158.16000 | 22 | 56 |  | 16 | • |
| A-E 20 MX     | 7158.20000 | 29 | 68 |  | 16 | • |
| A-E 25 MX     | 7158.25000 | 36 | 70 |  | 16 | • |

|               |            |    |    |  |    |   |
|---------------|------------|----|----|--|----|---|
| <b>A-E MS</b> |            |    |    |  |    |   |
| A-E 8 MS      | 7154.08000 | 19 | 51 |  | 16 | • |
| A-E 11 MS     | 7154.11000 | 22 | 57 |  | 16 | • |
| A-E 16 MS     | 7154.16000 | 33 | 60 |  | 16 | • |
| A-E 20 MS     | 7154.20000 | 42 | 73 |  | 16 | • |

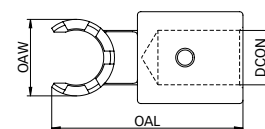
|               |            |    |    |  |    |   |
|---------------|------------|----|----|--|----|---|
| <b>A-E AX</b> |            |    |    |  |    |   |
| A-E 11 AX     | 7157.11000 | 16 | 62 |  | 16 | • |
| A-E 16 AX     | 7157.16000 | 22 | 63 |  | 16 | • |
| A-E 20 AX     | 7157.20000 | 26 | 64 |  | 16 | • |
| A-E 25 AX     | 7157.25000 | 29 | 93 |  | 16 | • |
| A-E 32 AX     | 7157.32000 | 37 | 95 |  | 16 | • |
| A-E 40 AX     | 7157.40000 | 47 | 99 |  | 16 | • |



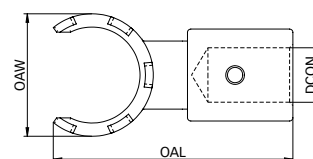
A-E



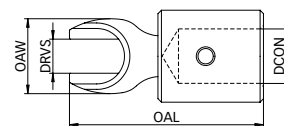
A-E P



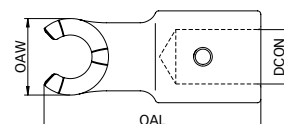
A-E M



A-E MX



A-E MS



A-E AX

# Torque wrenches TORCO-FIX

## Freewheel wrench heads A-FLS

### Grip bar for wrench heads G-A

TORCO-FIX

A-FLS

G-A

| Type             | Part no.   | L [mm] | Range [Nm] | Range [ft-lbs] | System |
|------------------|------------|--------|------------|----------------|--------|
| <b>TORCO-FIX</b> |            |        |            |                |        |
| TORCO-FIX 0      | 7150.02025 | 290    | 5–25       | 3,5–18         | ••     |
| TORCO-FIX I      | 7150.05050 | 335    | 10–50      | 7,5–36,5       | ••     |
| TORCO-FIX II     | 7150.20200 | 465    | 40–200     | 26,5–147       | •••    |
| TORCO-FIX III    | 7150.60300 | 565    | 60–300     | 44,5–221       | ••     |

| Type                                | Part no.   | D [mm] | D1 [mm] | System |
|-------------------------------------|------------|--------|---------|--------|
| <b>Freewheel wrench heads A-FLS</b> |            |        |         |        |
| A-FLS 16 / MR 11                    | 7855.11000 | 16     | 34      | •      |
| A-FLS 24 / MRM 16                   | 7855.16800 | 24     | 47      | •      |
| A-FLS 28 / MR 16   SG 15            | 7855.16000 | 28     | 47      | ••     |
| A-FLS 40 / MR 25                    | 7855.25000 | 40     | 61      | •      |
| A-FLS 46 / SG 25                    | 7655.25000 | 46     | 68      | •      |
| A-FLS 50 / MR 32                    | 7855.32000 | 50     | 77      | •      |
| A-FLS 55 / SG 32                    | 7655.32000 | 55     | 77      | •      |

| Type                                 | Part no.   | L [mm] | System |
|--------------------------------------|------------|--------|--------|
| <b>Grip bar for wrench heads G-A</b> |            |        |        |
| G-A                                  | 7655.99900 | 308    | •••    |
| G-AS                                 | 7655.99500 | 120    | •      |

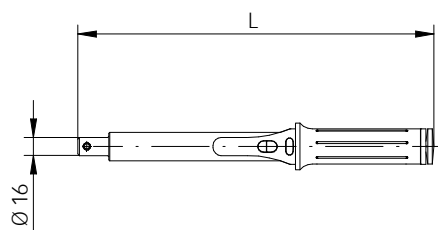
#### Expert advice

Grip bar short G-AS is specially designed to be used with:

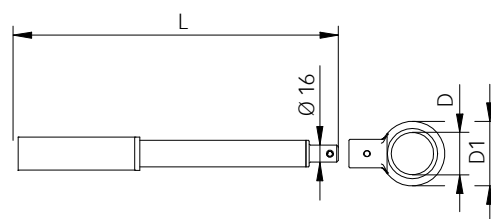
A-FLS ø 16/MR 11

A-FLS ø 24/MRM 16

A-FLS ø 28/MR 16



TORCO-FIX



G-A/G-AS with A-FLS

# Slip-off proof extension V-E AX for E AX and A-E AX

## Slip-off proof extension V-E MX for E MX and A-E MX

### Wrenches for universal shell / face mill holders FDS

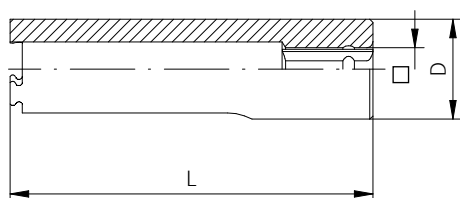
V-E AX

V-E MX

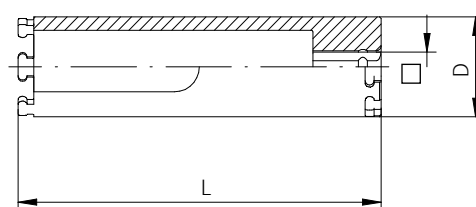
FDS

| Type      | Part no.   | D [mm] | L [mm] | Square □ |        | System |
|-----------|------------|--------|--------|----------|--------|--------|
|           |            |        |        | [mm]     | [inch] |        |
| V-E AX    |            |        |        |          |        |        |
| V-E 11 AX | 7155.11000 | 16,5   | 60     | 6,35     | 1/4"   | •      |
| V-E 16 AX | 7155.16000 | 22,5   | 80     | 6,35     | 1/4"   | •      |
| V-E 20 AX | 7155.20000 | 26     | 95     | 9,525    | 3/8"   | •      |
| V-E 25 AX | 7155.25000 | 29,5   | 105    | 12,7     | 1/2"   | •      |
| V-E 32 AX | 7155.32000 | 37,5   | 115    | 12,7     | 1/2"   | •      |

| Type      | Part no.   | D [mm] | L [mm] | Square □ |        | System |
|-----------|------------|--------|--------|----------|--------|--------|
|           |            |        |        | [mm]     | [inch] |        |
| V-E MX    |            |        |        |          |        |        |
| V-E 8 MX  | 7159.08000 | 17     | 60     | 6,35     | 1/4"   | •      |
| V-E 11 MX | 7159.11000 | 17     | 60     | 6,35     | 1/4"   | •      |
| V-E 16 MX | 7159.16000 | 22,5   | 80     | 6,35     | 1/4"   | •      |
| V-E 20 MX | 7159.20000 | 29     | 95     | 12,7     | 1/2"   | •      |
| V-E 25 MX | 7159.25000 | 35     | 105    | 19,05    | 3/4"   | •      |

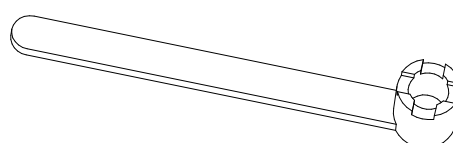


V-E AX



V-E MX

| Type                | Part no.   | System |
|---------------------|------------|--------|
| <b>Wrenches FDS</b> |            |        |
| FDS 16              | 7711.16000 | •      |
| FDS 22              | 7711.22000 | •      |
| FDS 27              | 7711.27000 | •      |
| FDS 32              | 7711.32000 | •      |
| FDS 40              | 7711.40000 | •      |
| FDS 50              | 7711.50000 | •      |



FDS



# Toolholding fixtures

WMH

WA / SK

WA / HSK

WA / C

| Type                     | Part no.   | Fits this interface |
|--------------------------|------------|---------------------|
| <b>Tool assembly WMH</b> |            |                     |
| WMH-RF 45°               | 7813.00088 | –                   |

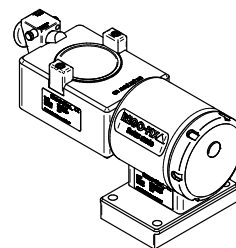
|                             |            |                  |
|-----------------------------|------------|------------------|
| <b>Tool adapter WA / SK</b> |            |                  |
| WA/SK 30                    | 7814.30100 | BT / CAT / SK 30 |
| WA/SK 40                    | 7814.40100 | BT / CAT / SK 40 |
| WA/SK 50                    | 7814.50100 | BT / CAT / SK 50 |

|                                        |            |                  |
|----------------------------------------|------------|------------------|
| <b>Tool adapter WA / HSK-A / C / E</b> |            |                  |
| WA / HSK-A   C   E 25                  | 7814.25300 | HSK-A / C / E 25 |

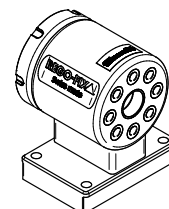
|                                |            |           |
|--------------------------------|------------|-----------|
| <b>Tool adapter WA / HSK-A</b> |            |           |
| WA / HSK-A 32                  | 7814.32200 | HSK-A 32  |
| WA / HSK-A 40                  | 7814.40200 | HSK-A 40  |
| WA / HSK-A 50                  | 7814.50200 | HSK-A 50  |
| WA / HSK-A 63                  | 7814.63200 | HSK-A 63  |
| WA / HSK-A 80                  | 7814.80200 | HSK-A 80  |
| WA / HSK-A 100                 | 7814.00200 | HSK-A 100 |

|                                    |            |              |
|------------------------------------|------------|--------------|
| <b>Tool adapter WA / HSK-C / E</b> |            |              |
| WA / HSK-C   E 32                  | 7814.32500 | HSK-C / E 32 |
| WA / HSK-C   E 40                  | 7814.40500 | HSK-C / E 40 |
| WA / HSK-C   E 50                  | 7814.50500 | HSK-C / E 50 |
| WA / HSK-C   E 63                  | 7814.63500 | HSK-C / E 63 |

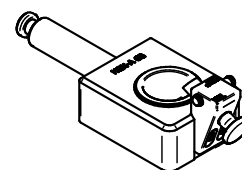
|                                  |            |          |
|----------------------------------|------------|----------|
| <b>Tool adapter WA / C Capto</b> |            |          |
| WA / C3                          | 7814.03700 | CAPTO C3 |
| WA / C4                          | 7814.04700 | CAPTO C4 |
| WA / C5                          | 7814.05700 | CAPTO C5 |
| WA / C6                          | 7814.06700 | CAPTO C6 |
| WA / C8                          | 7814.08700 | CAPTO C8 |



WMH / WA



WMH – RF 45°



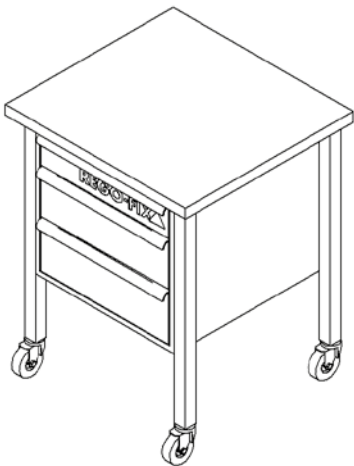
WA

# Mobile workbench for PGU

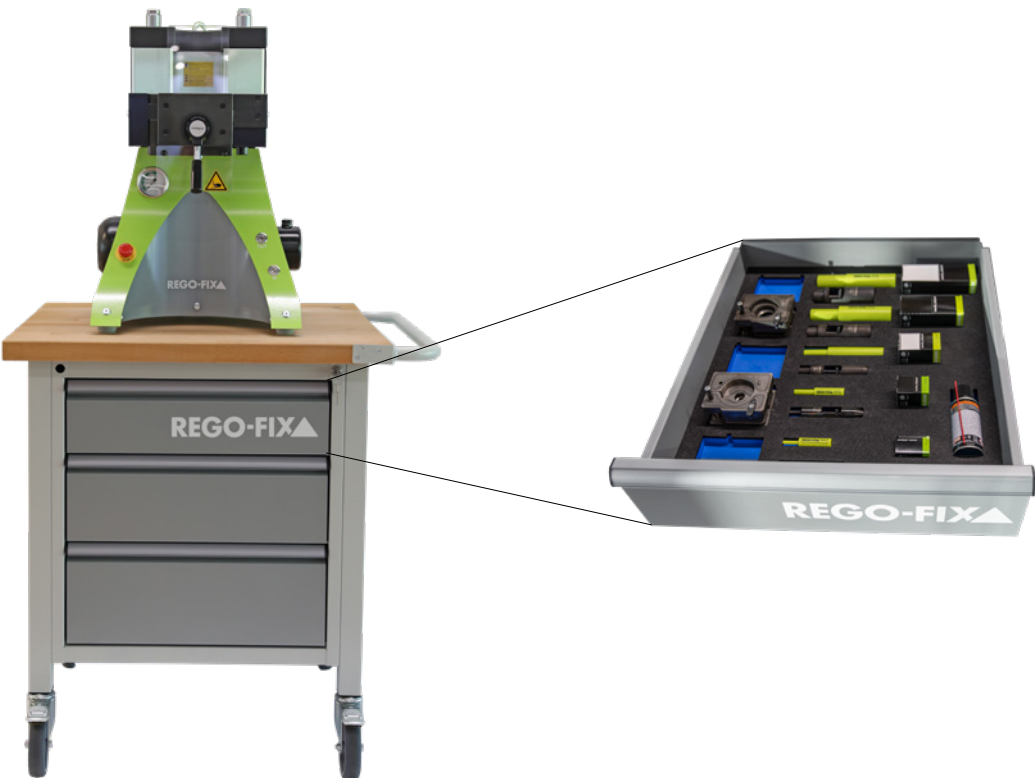
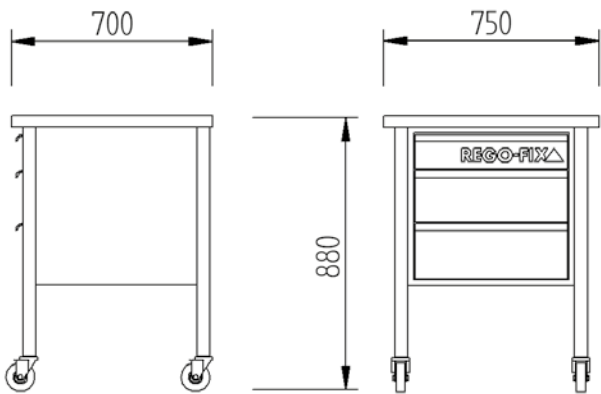
**Description** Mobile workbench for PGU with drawer-insert for APG and taper cleaner.

| Type                     | Part no.   | Width  | Height | Depth  |
|--------------------------|------------|--------|--------|--------|
| Mobile workbench for PGU |            |        |        |        |
| MWB                      | 7688.00000 | 750 mm | 880 mm | 700 mm |

Back panel on request



MWB



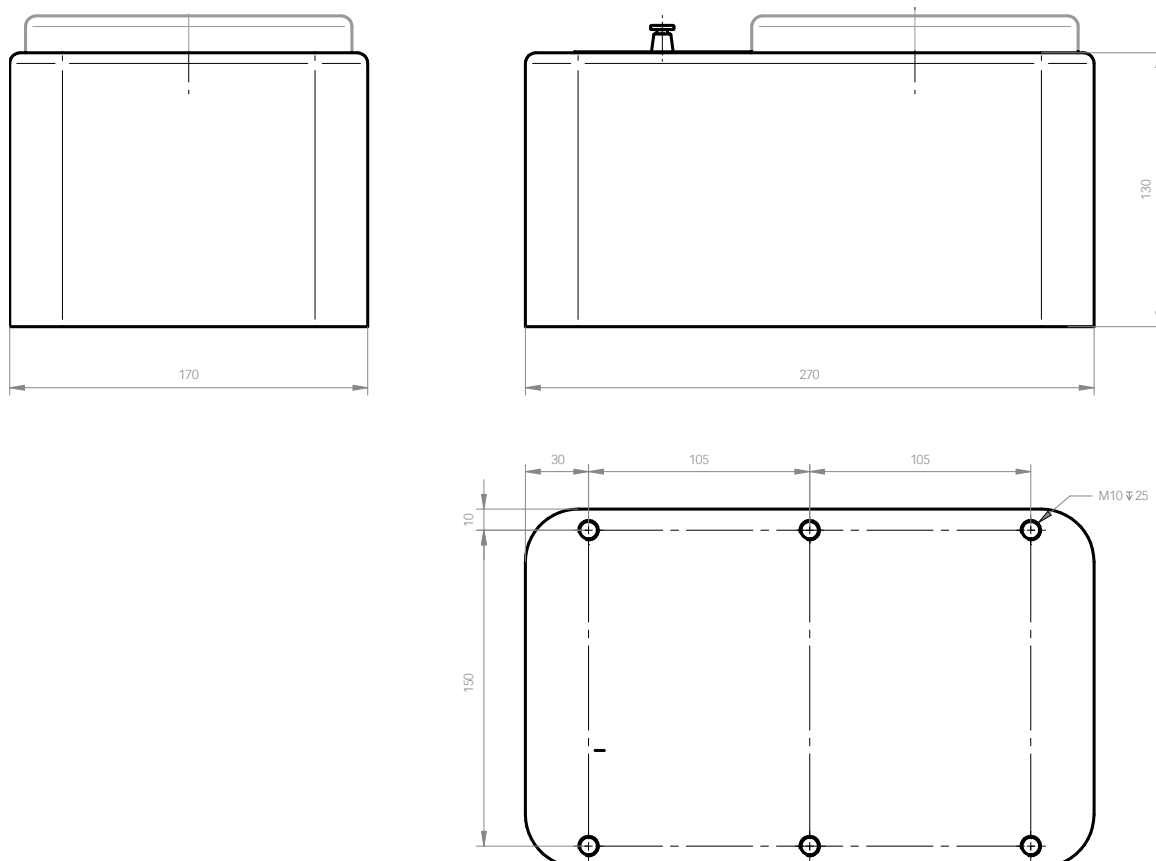
# Achieve perfect torque with any wrench

**TORCO-BLOCK** The only tool assembly device in the market that is comfortable and safe to use with integrated torque measuring. Usability is given for all collet based systems and available for all standard machine interfaces.

## TORCO-BLOCK provides

- // Use any wrench and still be able to correctly measure tightening torque
- // Minimal effort for toolclamping needed
- // Toolholder will not be overtorqued
- // Correct tightening torque guaranteed, no bad runout due to overtorquing
- // Quick-change function for different taper interfaces with only one 4 mm Allen-key within seconds
- // Safe assembling of cutting tools
- // Easy and quick toolholder and adapter handling
- // Required footprint 170 x 270 mm
- // Correct installation of pull studs with standard wrenches
- // Full or overhang mounting on a workbench possible
- // TORCO-BLOCK supplied inclusive 10 indicator rings TB/IR

*Unit needs a stable workbench to be attached to with at least four M10 screws.*



# TORCO-BLOCK and it's components

| Type                                  | Part no. |
|---------------------------------------|----------|
| Tool assembly with torque measurement |          |

|             |            |
|-------------|------------|
| TORCO-BLOCK | 7815.00000 |
|-------------|------------|

*Included in delivery: TORCO-BLOCK and indicator ring set (no tool adapters).*

## Indicator ring set / 11 rings

|           |            |
|-----------|------------|
| SET TB/IR | 7816.99999 |
|-----------|------------|

## Tool adapter for CAT spindle interfaces

|                   |            |
|-------------------|------------|
| TB/BT 30 + CAT 30 | 7816.30100 |
| TB/SK 40 + CAT 40 | 7816.40200 |
| TB/CAT 50         | 7816.50300 |

## Tool adapter for SK spindle interface

|                   |            |
|-------------------|------------|
| TB/SK 30          | 7816.30200 |
| TB/SK 40 + CAT 40 | 7816.40200 |
| TB/SK 50          | 7816.50200 |

## Tool adapter for BT spindle interface

|                        |            |
|------------------------|------------|
| TB/BT 30 + CAT 30      | 7816.30100 |
| TB/HSK 63 + C6 + BT 40 | 7816.63500 |
| TB/HSK 100 + BT 50     | 7816.00500 |

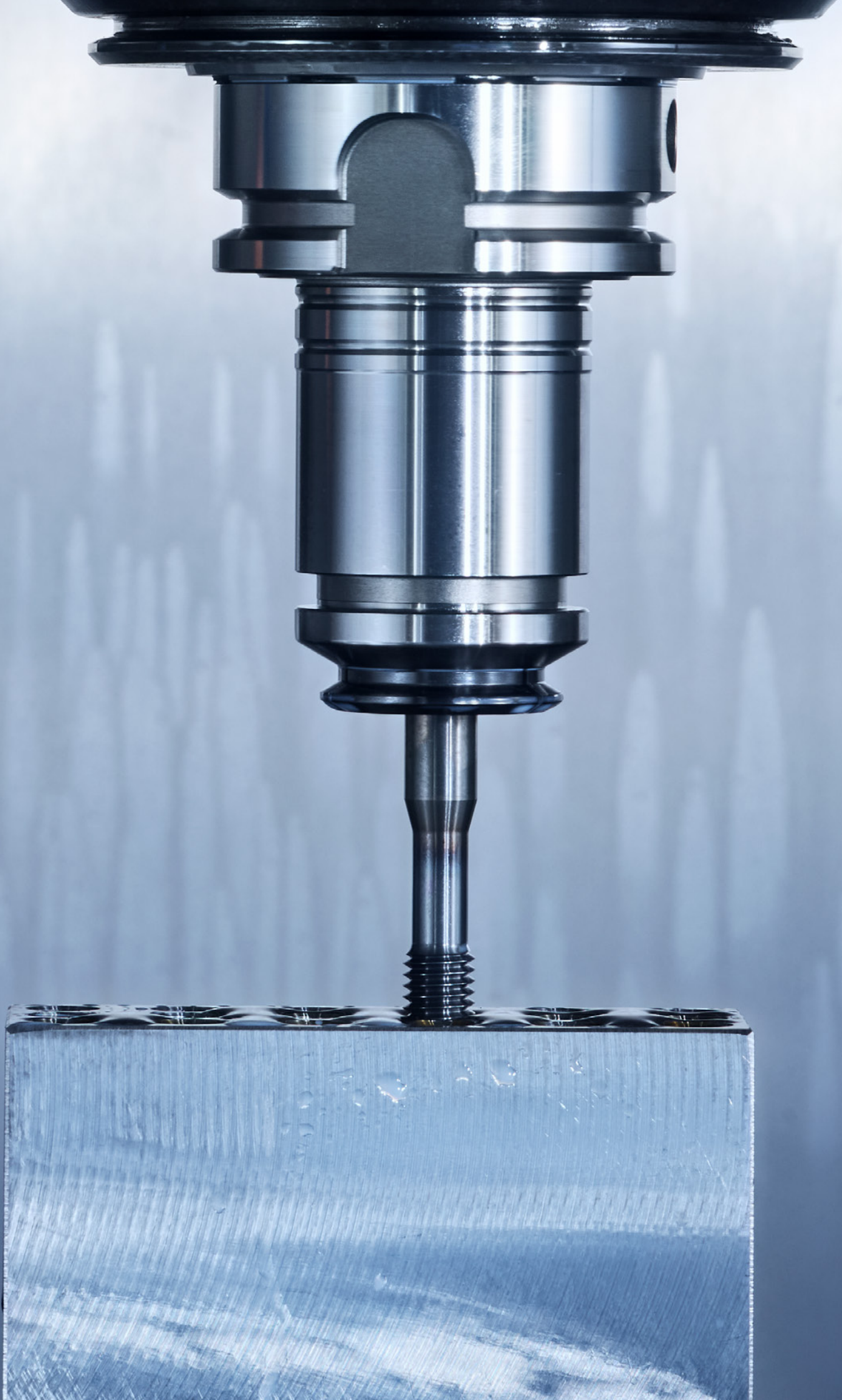
| Type                                  | Part no. |
|---------------------------------------|----------|
| Tool adapter for HSK + REGO-FIX CAPTO |          |

|                        |            |
|------------------------|------------|
| TB/HSK 25              | 7816.25500 |
| TB/HSK 32 + C3         | 7816.32500 |
| TB/HSK 40 + C4         | 7816.40500 |
| TB/HSK 50 + C5         | 7816.50500 |
| TB/HSK 63 + C6 + BT 40 | 7816.63500 |
| TB/HSK 80 + C8         | 7816.80500 |
| TB/HSK 100 + BT 50     | 7816.00500 |

*REGO-FIX CAPTO – licensed by Sandvik Coromant.*







# Coolant tubes KSR

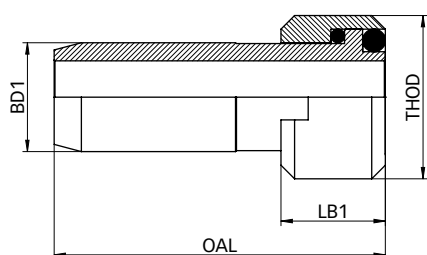
## Wrenches for coolant tubes SKR

KSR

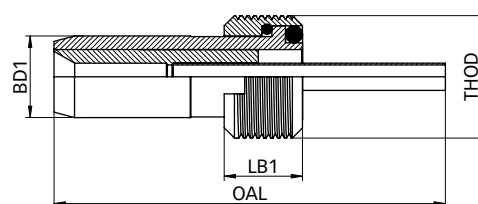
SKR

| Type              | Part no.   | Dimensions [mm] |      |      | THOD       | System                                                                              |
|-------------------|------------|-----------------|------|------|------------|-------------------------------------------------------------------------------------|
|                   |            | BD1             | LB1  | OAL  |            |                                                                                     |
| Coolant tubes KSR |            |                 |      |      |            |                                                                                     |
| KSR 25            | 7211.25000 | 5               | 4,5  | 17   | M 8 x 1    |  |
| KSR 32            | 7211.32000 | 6               | 5,5  | 25,7 | M 10 x 1   |  |
| KSR 40            | 7211.40000 | 8               | 7,5  | 29,2 | M 12 x 1   |  |
| KSR 50            | 7211.50000 | 10              | 9,5  | 32,7 | M 16 x 1   |  |
| KSR 63            | 7211.63000 | 12              | 11,5 | 36,2 | M 18 x 1   |  |
| KSR 80            | 7211.80000 | 14              | 13,5 | 39,7 | M 20 x 1,5 |  |
| KSR 100           | 7211.00000 | 16              | 15,5 | 43,6 | M 24 x 1,5 |  |
| KSR 125           | 7211.12500 | 16              | 15,5 | 43,6 | M 24 x 1,5 |  |

|                              |            |    |      |      |          |   |
|------------------------------|------------|----|------|------|----------|---|
| <b>Coolant tubes KSR-MQL</b> |            |    |      |      |          |   |
| KSR 40-MQL PG 15 x 074       | 7211.40153 | 8  | 7,5  | 42   | M 12 x 1 | • |
| KSR 40-MQL PG 15 x 080       | 7211.40154 | 8  | 7,5  | 48   | M 12 x 1 | • |
| KSR 40-MQL PG 15 x 100       | 7211.40155 | 8  | 7,5  | 68   | M 12 x 1 | • |
| KSR 40-MQL PG 15 x 120       | 7211.40156 | 8  | 7,5  | 88   | M 12 x 1 | • |
| KSR 50-MQL PG 15 x 080       | 7211.50154 | 10 | 9,5  | 48,5 | M 16 x 1 | • |
| KSR 50-MQL PG 15 x 100       | 7211.50155 | 10 | 9,5  | 70,5 | M 16 x 1 | • |
| KSR 50-MQL PG 15 x 120       | 7211.50156 | 10 | 9,5  | 90,5 | M 16 x 1 | • |
| KSR 50-MQL PG 25 x 100       | 7211.50255 | 10 | 9,5  | 57,5 | M 16 x 1 | • |
| KSR 63-MQL PG 15 x 080       | 7211.63154 | 12 | 11,5 | 49   | M 18 x 1 | • |
| KSR 63-MQL PG 15 x 120       | 7211.63156 | 12 | 11,5 | 89   | M 18 x 1 | • |
| KSR 63-MQL PG 15 x 160       | 7211.63158 | 12 | 11,5 | 129  | M 18 x 1 | • |
| KSR 63-MQL PG 25 x 100       | 7211.63255 | 12 | 11,5 | 58   | M 18 x 1 | • |
| KSR 63-MQL PG 25 x 120       | 7211.63256 | 12 | 11,5 | 78   | M 18 x 1 | • |
| KSR 63-MQL PG 25 x 160       | 7211.63258 | 12 | 11,5 | 118  | M 18 x 1 | • |
| KSR 63-MQL PG 32 x 100       | 7211.63325 | 12 | 11,5 | 52,5 | M 18 x 1 | • |

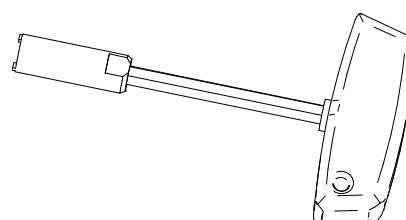


KSR



KSR-MQL

| Type                | Part no.   | System |
|---------------------|------------|--------|
| <b>Wrenches SKR</b> |            |        |
| SKR 25              | 7212.25000 | •••••  |
| SKR 32              | 7212.32000 | •••••  |
| SKR 40              | 7212.40000 | •••••  |
| SKR 50              | 7212.50000 | •••••  |
| SKR 63              | 7212.63000 | •••••  |
| SKR 80              | 7212.80000 | •••••  |
| SKR 100             | 7212.00000 | •••••  |
| SKR 125             | 7212.12500 | •••••  |



SKR

# Trays for ER collet sets ZWT

## Trays for ER collet sets ZZT [inch]

## Trays for sealing disk sets DSR

## Trays for PG collets CTPG

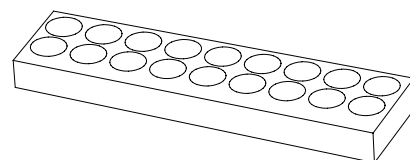
ZWT

ZZT

DSR

CTPG

| Type                         | Part no.   | fits ... items | System |
|------------------------------|------------|----------------|--------|
| Trays for ER collet sets ZWT |            |                |        |
| ZWT 8                        | 7121.08000 | 9              | •      |
| ZWT 11                       | 7121.11000 | 13             | ••     |
| ZWT 16                       | 7121.16000 | 10             | ••     |
| ZWT 20                       | 7121.20000 | 12             | •      |
| ZWT 25                       | 7121.25000 | 15             | ••     |
| ZWT 32                       | 7121.32000 | 18             | ••     |
| ZWT 40                       | 7121.40000 | 23             | •      |
| ZWT 50                       | 7121.50000 | 12             | •      |

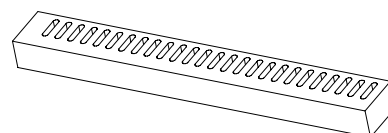


ZWT / ZZT

|                               |            |    |    |
|-------------------------------|------------|----|----|
| Trays for ER collet sets ZZT* |            |    |    |
| ZZT 8                         | 7121.08300 | 9  | •  |
| ZZT 11                        | 7121.11300 | 13 | •• |
| ZZT 16                        | 7121.16300 | 10 | •• |
| ZZT 20                        | 7121.20300 | 12 | •  |
| ZZT 25                        | 7121.25300 | 15 | •• |
| ZZT 32                        | 7121.32300 | 18 | •• |
| ZZT 40                        | 7121.40300 | 23 | •  |

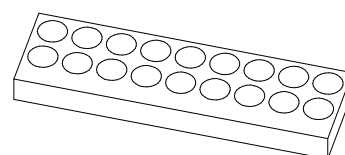
\*USA only

|                                 |            |    |    |
|---------------------------------|------------|----|----|
| Trays for sealing disk sets DSR |            |    |    |
| DSR 16                          | 7122.16000 | 14 | •• |
| DSR 20                          | 7122.20000 | 20 | •  |
| DSR 25                          | 7122.25000 | 26 | •• |
| DSR 32                          | 7122.32000 | 34 | •• |
| DSR 40                          | 7122.40000 | 46 | •  |



DSR

|                           |            |    |   |
|---------------------------|------------|----|---|
| Trays for PG collets CTPG |            |    |   |
| CTPG 6                    | 7698.06000 | 20 | • |
| CTPG 10                   | 7698.10000 | 14 | • |
| CTPG 15                   | 7698.15000 | 15 | • |
| CTPG 25                   | 7698.25000 | 16 | • |
| CTPG 32                   | 7698.32000 | 12 | • |



CTPG



# Become a REGO-FIX▲ fan

## Precision

at REGO-FIX is more than a standard – it's part of our identity and the foundation of our work. With our carefully selected merchandise items, you can express these values beyond the production floor.

Whether at the office, on the go or in your personal life – each product stands for quality, functionality and the unique character of REGO-FIX. Show your connection to a brand that represents innovation and precision.

**Join our community and represent what REGO-FIX stands for.**



 Additional merchandise items are available.



# Meet our bestsellers



## Technology meets play – the REGO-FIX PGU as a LEGO model

A small highlight with a big impact: to marvel at, build, and be inspired. The REGO-FIX PGU LEGO model is a detailed miniature version of our powRgrip® tool holding system – now available as a build-it-yourself set. A must-have for tech enthusiasts, apprentices, and partners who want to experience REGO-FIX up close.

- // **Special feature:** Limited edition
- // **Material:** Original LEGO® bricks
- // **Dimensions:** approx. 180×80×120 mm (L × W × H)
- // **Weight:** 295 g
- // **Part no.:** 0364.00346

*Special*  
**LIMITED EDITION**



## The REGO-FIX powRgrip® workplace mat – comfort and safety combined.

This high-quality mat combines ergonomic design with functionality: the textured surface ensures slip resistance, even when exposed to oil or chemicals. The comfort layer made from nitrile/PVC foam provides pleasant standing comfort, even during long shifts – ideal for workshops, production, or trade fair use.

- // **Special feature:** Structured surface with excellent resistance to oil and chemicals  
Anti-slip profile for maximum footing safety
- // **Material:** Surface: statically dissipative nitrile rubber  
Underside: high-density nitrile/PVC comfort foam
- // **Dimensions:** approx. 830 × 590 × 13 mm (L × W × H)
- // **Weight:** 2,385 kg
- // **Branding:** powRgrip®: green, REGO-FIX: white
- // **Color:** black
- // **Part no.:** 6000.12014



## The REGO-FIX pocket knife – compact, versatile, essential.

With seven practical functions, this original Swiss knife is the perfect companion for your daily work and on the go. Blade, scissors, screwdriver – with the REGO-FIX pocket knife, you always have what matters most in a compact format.

- // **Functions:** Blade, file, scissors, screwdriver, tweezers, toothpick
- // **Material:** ABS/Cellidor
- // **Dimensions:** approx. 58 × 18 × 9 mm (L × W × H)
- // **Weight:** 34 g (21 g)
- // **Branding:** white engraving
- // **Color:** blue
- // **Part no.:** 6000.08837

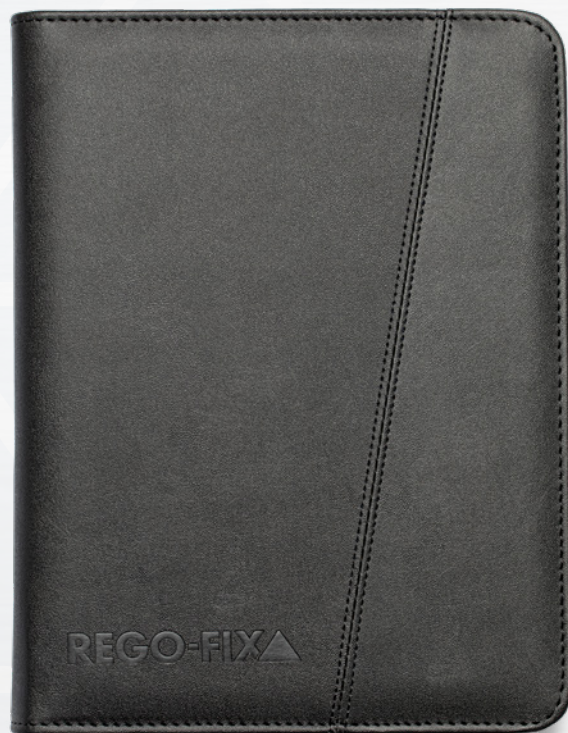




### REGO-FIX conference folder – stylish and organized on the go.

Whether at customer meetings, trade fairs or in the office – this elegant conference folder combines functionality with a professional look. Featuring an inner pocket, card holder and pen loop, it keeps all essentials neatly organized. The embossed REGO-FIX logo adds a subtle and classy touch.

- // **Special feature:** Elegant, durable, representative
- // **Functions:** Inner pocket, pen loop, card holder
- // **Material:** Synthetic leather, REGO-FIX logo embossed
- // **Dimensions:** approx. 200 × 255 × 30 mm (L × W × H)
- // **Weight:** 340 g
- // **Branding:** black engraving
- // **Color:** black
- // **Part no.:** 0361.00086



### REGO-FIX keychain – small, practical, unmistakable.

Whether on your keyring, backpack or tool case – this embroidered REGO-FIX keychain shows your commitment to precision and Swiss quality. Sturdy, lightweight and finely stitched – a stylish everyday companion.

- // **Material:** Polyester
- // **Dimensions:** approx. 130 × 30 mm (L × W)
- // **Weight:** 7 g
- // **Branding:** white embroidery
- // **Color:** blue
- // **Part no.:** 0364.00235

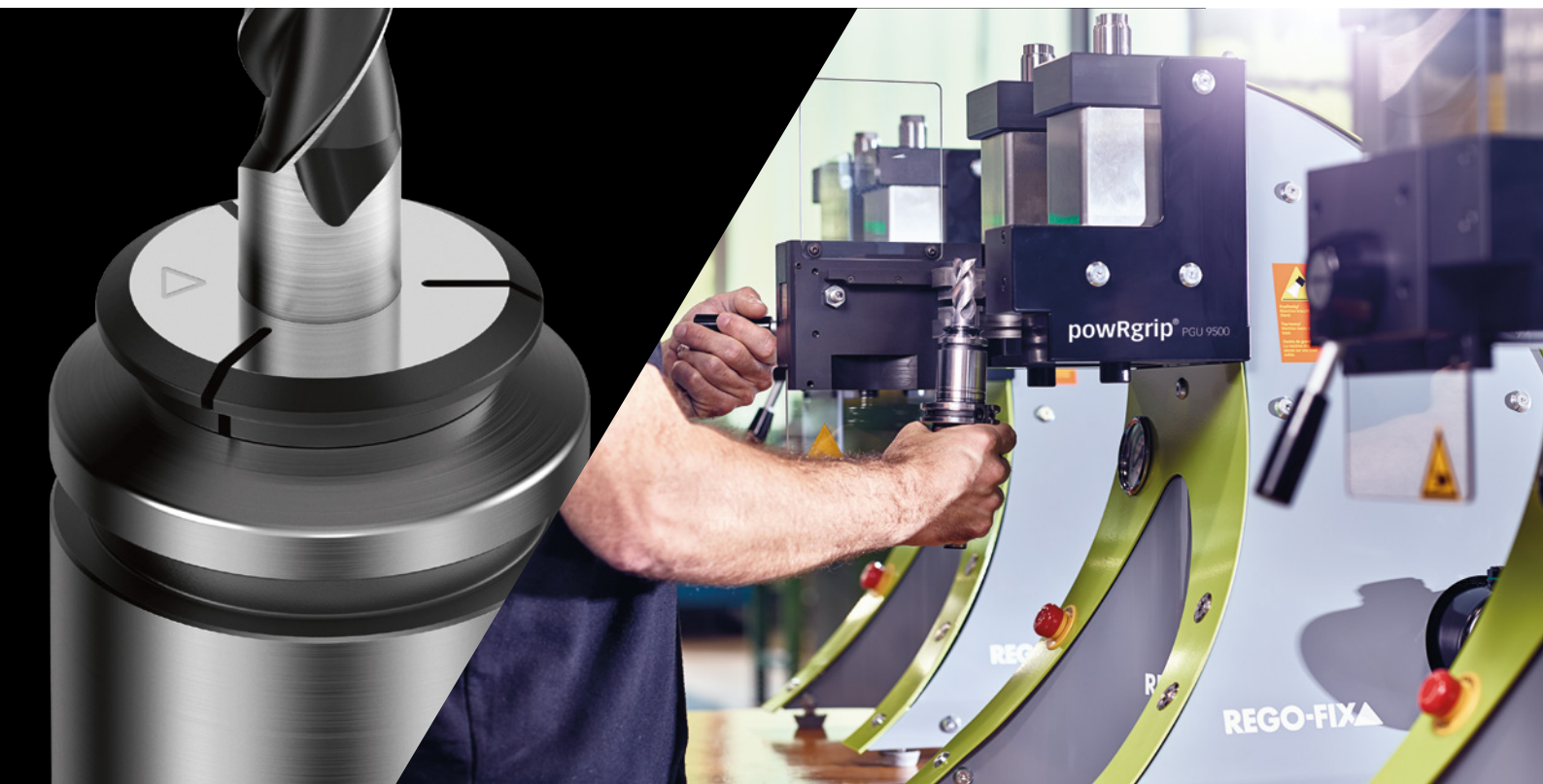






## Technical information

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| Tapping collets ER-GB                                    | 383 | Shank diameter of taps                           | 420 |
| Tapping collets PCM ET1                                  | 384 | Material comparison chart                        | 421 |
| Microbore collets ER-MB                                  | 384 | Terminology                                      | 435 |



## Meeting high machining demands

The powRgrip® System provides excellent runout, high vibration damping as well as easy and secure handling for demanding high-speed milling and drilling.

**Power and precision combined** An outstanding tool runout is one of the most positive influences on enhancing your tool life.

### SIMPLE

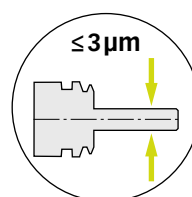
Tool is clamped in 8 seconds by pushing only one single button.

### SAFE

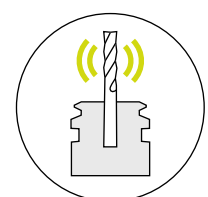
No heat up – high clamping force.

### powRgrip®

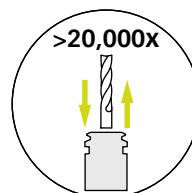
The tool clamping system of today and the future.



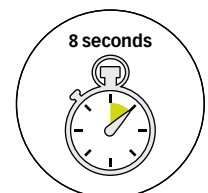
Total system runout TIR  
≤3µm at 3xD



Excellent  
vibration damping



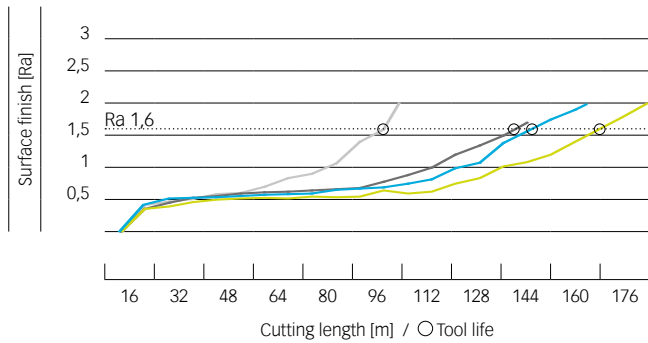
Maximum clamping  
force and low runout, even  
after 20,000 tool change



Tool ready for use in  
8 seconds with PGU 9500

### Increased cutter tool life with the powRgrip® System

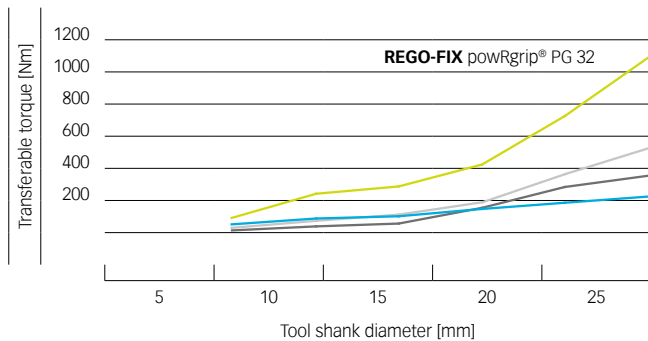
Influence of tool runout on tool life / Source: In-house testing.



- powRgrip®
- REGO-FIX ER system with Hi-Q® clamping nut
- Shrink-fit
- Hydro-chuck

### Transferable torque of the powRgrip® System

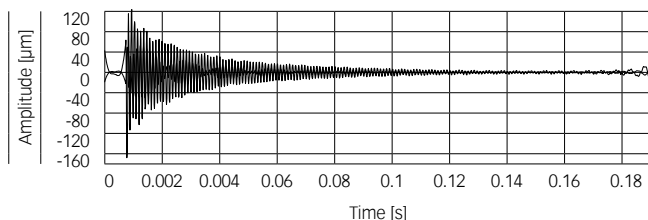
Measured transferable torque per shank diameter / Source: In-house testing.



- powRgrip® PG 32
- Shrink-fit
- Hydro-chuck
- REGO-FIX ER 40

### Measurement of vibrations | powRgrip®

Amplitude indication of the REGO-FIX powRgrip®-toolholder



Test and comparison done by:



### All tool shanks are clampable

All kind of materials such as carbide or HSS as of cylindrical, WELDON or Whistle notch can be clamped with powRgrip®.



### Extensive collet range

Tools with shaft diameters from 0.2 up to 25.4 mm (1") can be clamped for milling, reaming, drilling and as well for turning applications. The possibilities of MQL, peripheral or internal cooling are given.

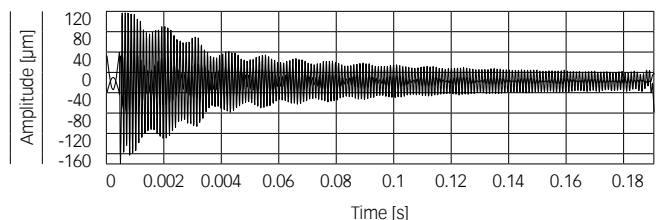


### Wide range of toolholders

powRgrip®-toolholders are available for many spindle interfaces e.g. REGO-FIX CAPTO, BT, BT+, SK, SK+, HSK, CAT or cylindrical spindle interfaces. Discover our wide product range at [www.rego-fix.com](http://www.rego-fix.com).

### Measurement of vibrations | Shrink-fit holder

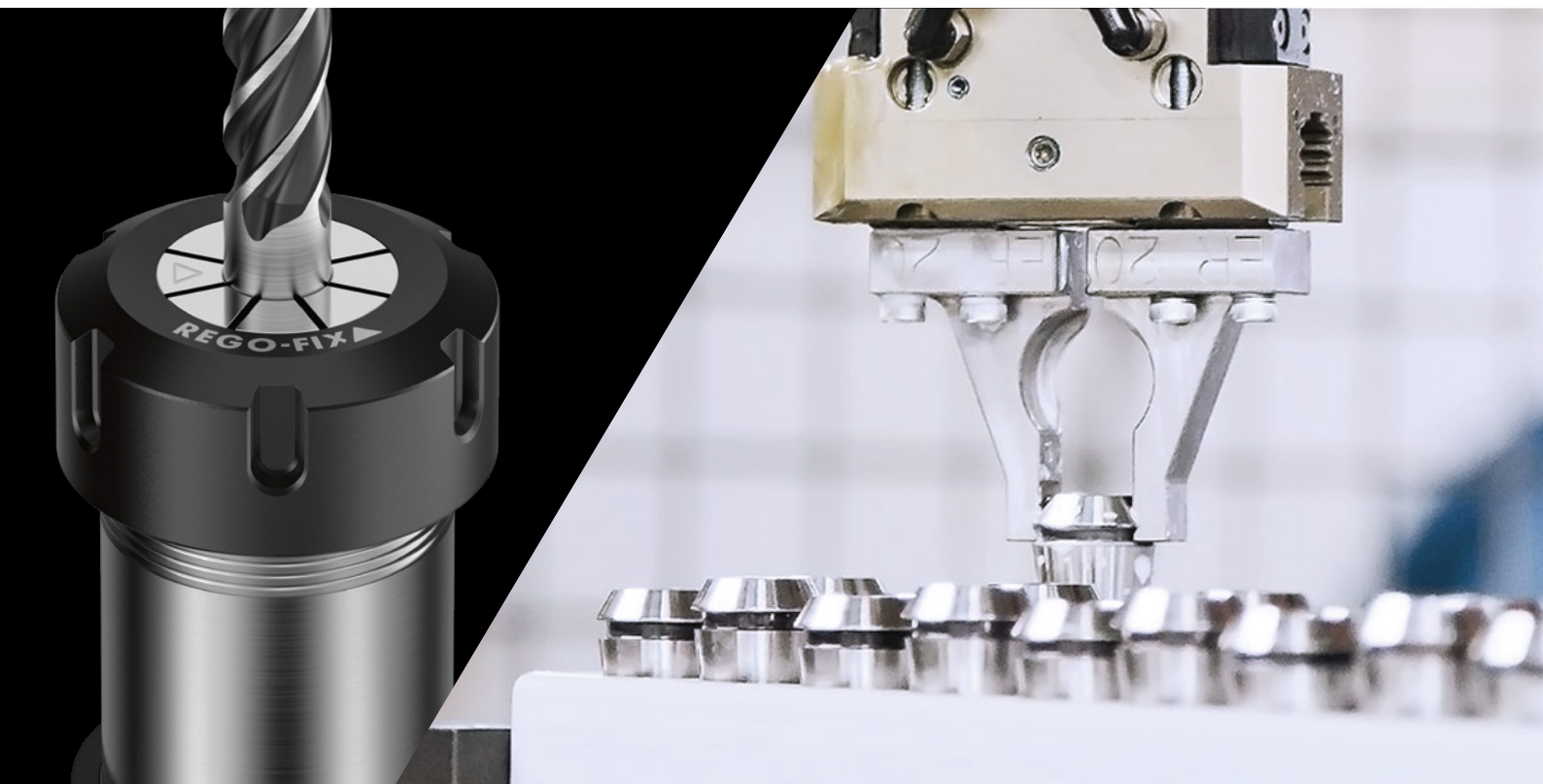
Amplitude indication of a standard shrink-fit holder



### Expert advice

Test powRgrip® free of charge! Get more information at [try.rego-fix.ch/toollife](http://try.rego-fix.ch/toollife).





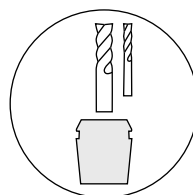
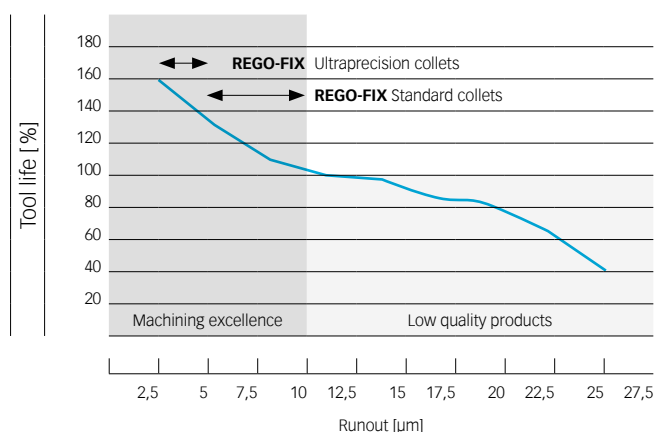
## Defining toolholding standards

When REGO-FIX first introduced the ER System in 1972, it took the machining world by storm. With the DIN 6499 standardization twenty years later, the REGO-FIX ER collet became the industry standard. Today, the ER System is still the most used toolholding system worldwide.

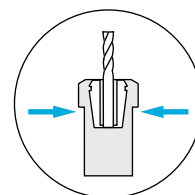
**High quality matters** An outstanding tool runout is one of the most positive influences on enhancing your tool life.

### Extend tool life with the REGO-FIX ER range

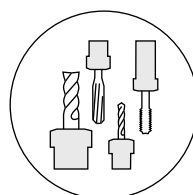
Influence of tool runout on tool life / Source: In-house testing.



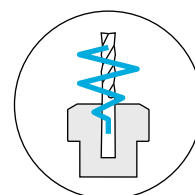
The widest ER product range: clamps all diameters from 0.2 mm–36 mm



Safe and accurate toolholding of all shank types and materials



Outstanding flexibility for use with all tool types



High vibration-damping results in longer tool life and best surface finish

# Successful clamping since 1972

Combine our ER toolholders with our ER collets to ensure maximum precision and balance to maximize your tool life. All our products bear the REGO-FIX triangle – our seal for outstanding Swiss quality.

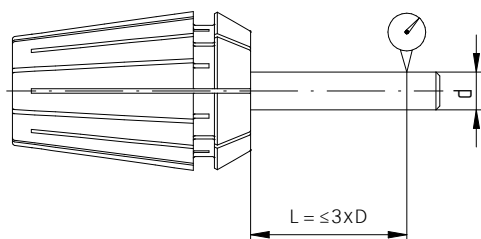
**Meet highest requirements defined by Swiss standards** Swiss people are known to be humble and conservative: All our measuring data are to be considered as maximum values. Many other manufacturers are showing the common

measured total internal runout (TIR average). With us, you get maximum guaranteed values – To your advantage most of the values are even considerably lower.

## Runout TIR of ER standard, ER-UP and MR collets

| Clamping diameter d [mm] |     |    | TIR max. [mm] |          |        |       |
|--------------------------|-----|----|---------------|----------|--------|-------|
| >                        | ≤   | L  | DIN 6499      | ΔER-Std. | ΔER-UP | ΔMR   |
|                          |     |    | ISO 15488 B   |          |        |       |
| 1                        | 1,6 | 6  | 0,015         | 0,01     | 0,005  | 0,002 |
| 1,6                      | 3   | 10 | 0,015         | 0,01     | 0,005  | 0,002 |
| 3                        | 6   | 16 | 0,015         | 0,01     | 0,005  | 0,002 |
| 6                        | 10  | 25 | 0,015         | 0,01     | 0,005  | 0,002 |
| 10                       | 18  | 40 | 0,02          | 0,01     | 0,005  | 0,002 |
| 18                       | 26  | 50 | 0,02          | 0,01     | 0,005  | 0,002 |
| 26                       | 36  | 60 | 0,025         | 0,01     | 0,005  | 0,002 |

$L = \leq 3 \times D$



### Key advantages

## Rely on the original

### Wide clamping range

The slot design allows for a wide clamping range with best runout TIR along the entire clamping range.

### Broad range of products

We offer sizes from ER 8 up to ER 50 and diameters from 0.2 mm up to 36 mm.

### Up to 20 % more clamping length

Improve your runout with up to 20 % more clamping length in smaller diameters.

### Matched tooling system for best fit

The compatibility of the entire system results in maximum precision, balance and tool life.

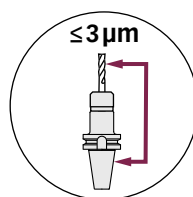


## Every micron counts

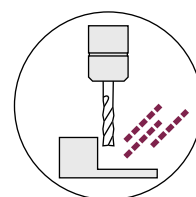
Closing the gap between the powRgrip® and the ER System, the micRun® System performs with a total system runout of  $\leq 3\mu\text{m}$ .

**Swiss high precision** An excellent runout accuracy paired with superior vibration damping, not only increases your machining quality, but enhances your overall productivity. It also increased your tool life, thus successfully lowering your cutter costs. With a total system runout of  $\leq 3\mu\text{m}$  at  $3\times D$ , the micRun® System provides all the benefits of excellent runout accuracy.

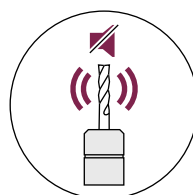
This is why micRun® is the ideal system for all micro machining applications and is successfully used in industries like watch-making or medical engineering. In addition, our unique collet-locking system retains the collet safely inside the nut. This minimizes your risk of faulty operations or possible damages which may occur if the collet accidentally falls to the ground. Another great benefit of our collet-locking system is the tool-free removal of the collet.



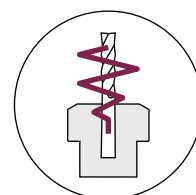
Total system TIR  
 $\leq 3\mu\text{m}$  at  $3\times D$



Designed for  
high-speed cutting.



Silent and low vibration due  
to grooveless clamping nut



High vibration-damping  
results in longer tool life and  
best surface finish



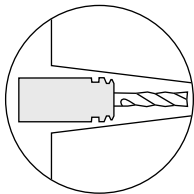




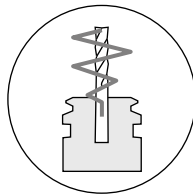
# XL vibration damping

Optimize your surface finish and extend tool life by minimizing occurring vibrations during machining.

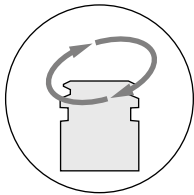
**Minimize tool vibrations** The MICRO-FRICTION Damping™ (MFD) technology (pat. pend.) by REGO-FIX allows our XL toolholders to dissipate vibrations faster than standard long-reach toolholders. Damping the vibrations faster means that your cutting tool, part and spindle will see less vibrations resulting in better surface finishes, longer tool life and less spindle wear. All REGO-FIX XL toolholders are balanced to G 2.5 @ 5,000 rpm.



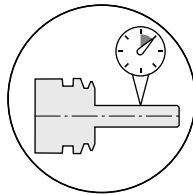
Minimal outside dimensions:  
long and slim design



Exclusive  
vibration-damping design



Balanced by design

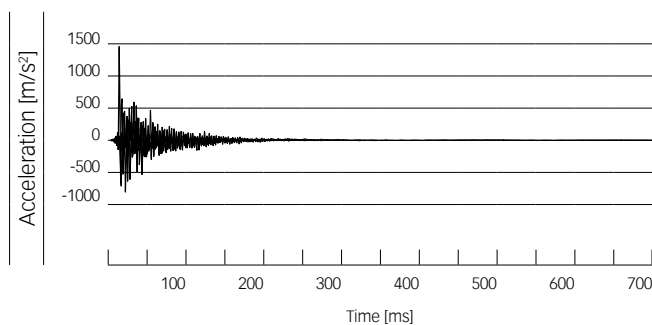


Total system runout  
 $TIR \leq 10 \mu m$  at 3xD



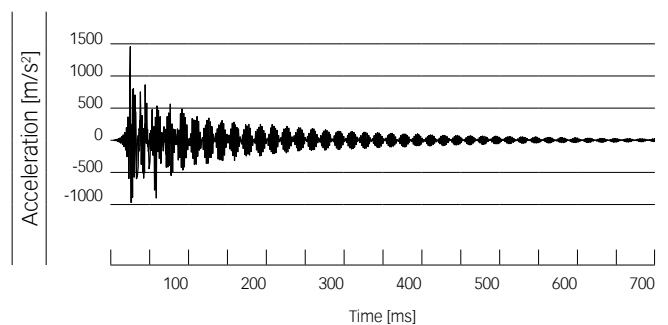
## Vibration chart

Decay of REGO-FIX XL toolholder **with vibration-damping design**  
Source: In-house testing.



## Vibration chart

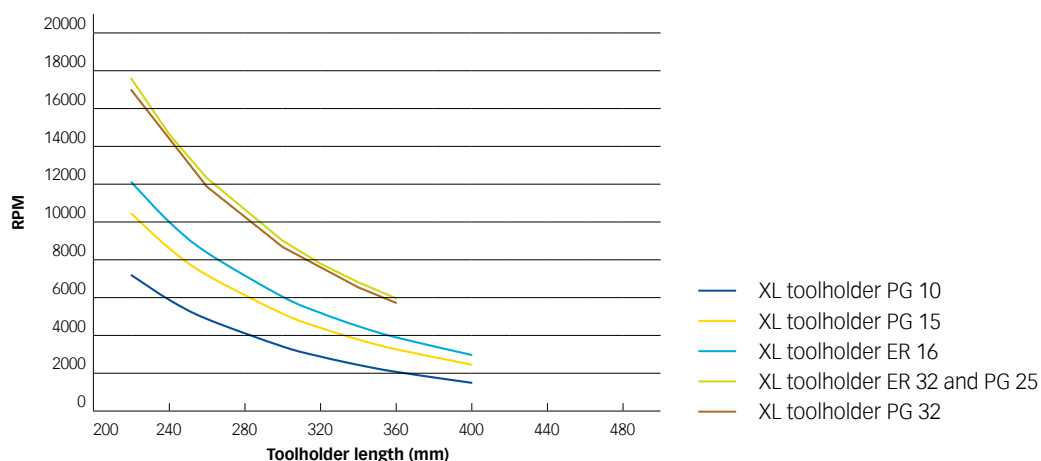
Monoblock standard toolholder **without vibration-damping design**  
Source: In-house testing.





## RPM recommendations for XL toolholders

Thanks to a wide XL toolholder program, we offer for each of your applications the right solution. Unleash the full potential by respecting the appropriate working conditions.



Calculation of the maximum speed of a shaft with cantilever bearing. Calculated values without consideration of:

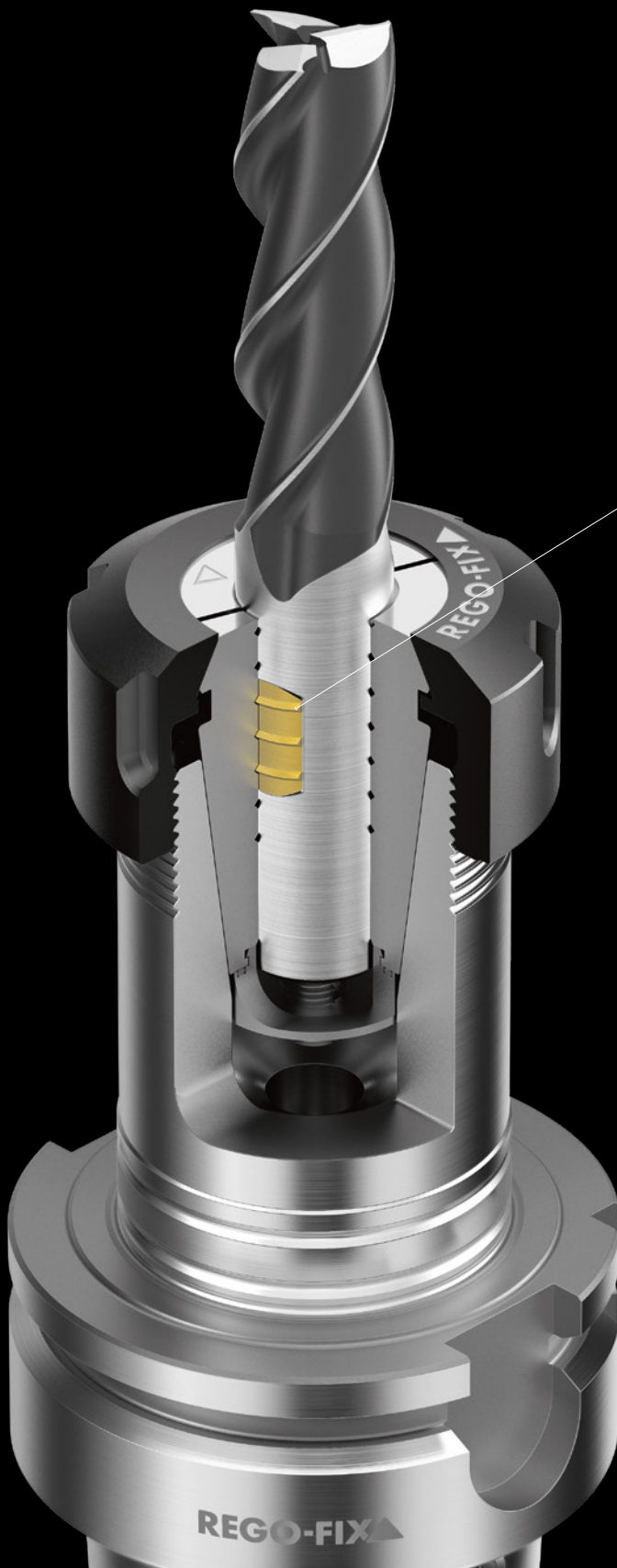
- // Balancing quality (Overall-system)
- // Machine spindle (Stability)
- // Projection length of the cutting tools

*The maximum speeds are directly dependent on the properties of the spindle and the machining forces.*

*These are standard guidelines for REGO-FIX Xtended Length toolholders. No guarantee can be given for the maximum speeds of the entire system.*

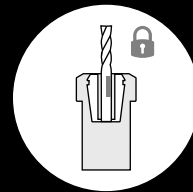
# Form-fit for 100 % pullout protection

With our innovative secuRgrip® solution, we offer a total tool pullout protection for the ER and powRgrip® System.

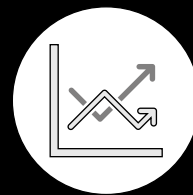


Threaded insert for end mill flat

## Key advantages

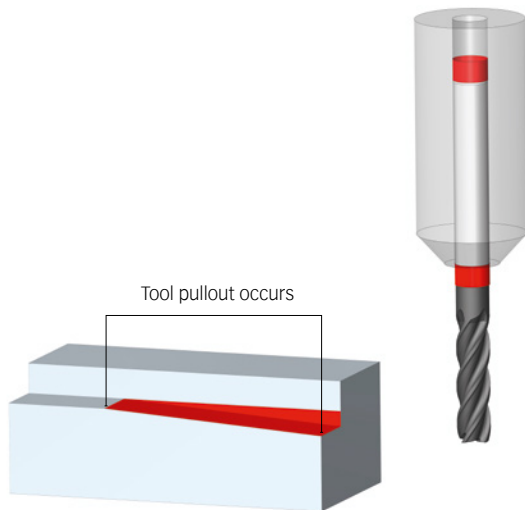


SecuRgrip® is available for all standard tools with Weldon flat (10 – 25.4 mm), without additional modifications.

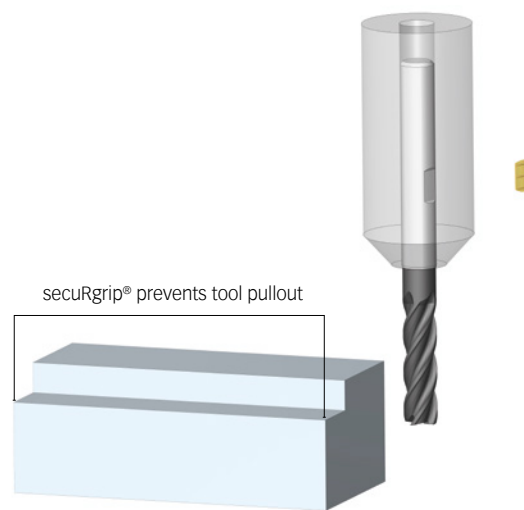


Increase productivity through process reliability.

# Safe machining even for difficult-to-handle workpieces



Length alterations can lead to damage of the workpiece.



Prevent workpiece damage by using REGO-FIX secuRgrip®.

**Full protection where you need it** The secuRgrip® threaded insert is designed to fit in any tool with a Weldon flat. This way you can use the tool of your choice. In combination with our secuRgrip® collet, we offer the ultimate tool pullout protection at a competitive price.

Avoiding length alterations caused by tool pullout results in improved process reliability and ultimately improves your overall machining productivity. Our secuRgrip® solution is available for ER 32 and ER 40 as well as for PG 15, PG 25 and PG 32 – just the right sizes when it comes to rough machining.

- // No additional costs for replacing damaged tools, thanks to ER and PG secuRgrip®
- // No modification of the tool shank is required
- // Extra protection for worry-free machining, especially with expensive work pieces

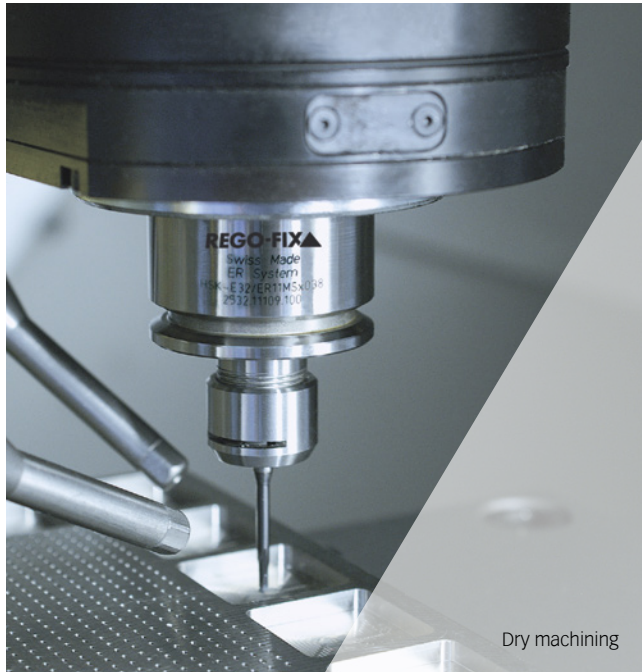
## Expert advice

secuRgrip® is available for ER and powRgrip®.



# Mastering both wet and dry applications

We offer efficient solutions for specific machining techniques and different work materials to maximize your machining.



Dry machining is mainly used for specific machining techniques and work materials, such as carbon, high-tensile plastics or wood.

## Pros

- // Reduced initial machine investment costs
- // Simple and easy cleaning
- // Clear sight on point of action between tool and workpiece

## Cons

- // Inadequate heat dissipation can lead to a reduced tool life
- // Increased tooling costs due to earlier wear and tear
- // Extended production cycles due to slower possible production speed



The cutting edge is subject to thermal strains. Wet machining thus helps to regulate the impact of high heat that occurs during milling, ultimately protecting the tool against total tool failure.

## Pros

- // Fast and effective heat dissipation
- // Improved surfaces thanks to lubrication of cutting edge
- // Clean and easy chip removal
- // Production cycles can be increased leading to an overall increase of productivity
- // Lowered tool costs

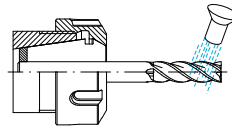
## Cons

- // Additional costs for the acquisition of a pump
- // Limited view on point of action
- // Wet surroundings may present as an ideal bacteria breeding ground

# Supplying the right amount of coolant to where it matters



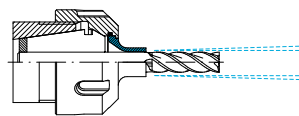
## Key features of external flood cooling



- // Universal application possibilities
- // Problems may arise with deep cavities
- // Reduction of tool life because cooling is not right on the cutting edge
- // Suboptimal chip deflection
- // Limited adjustment of nozzles due to different tool lengths and diameters



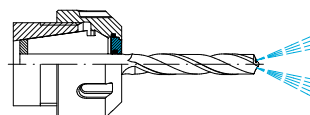
## Key features of peripheral cooling



- // Coolant is fed along the side of the tool to the cutting edge
- // Can be used for moderate cavities
- // Achieve peripheral cooling with reCool® and the use of our coolant flush disk KS / ER or PG-CF collet



## Key features of internal cooling



- // Precise cooling at the cutting edge and improved chip removal
- // Particularly suitable for deep cavities
- // Deep hole drilling and threading
- // Lubrication of cutting edge and cooling
- // Best surface quality
- // Achieve internal cooling with reCool® and the use of our sealing disk DS / ER



## Cryogen: Coolant at the right spot

### COOL

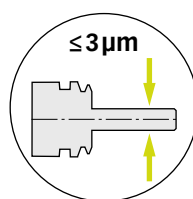
CO<sub>2</sub> cools the cutting edge in a safe and clean way, thanks to powRgrip® with an optimum dosage.

### CLEAN

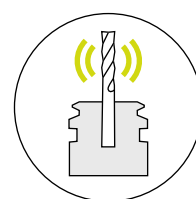
No contamination at all, therefore no necessity to do additional cleaning of the workpiece afterwards.

### CRYO-powRgrip®

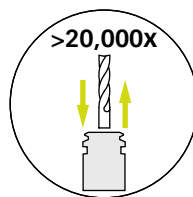
PG-CRYO collets offer the latest tool cooling technology for a clean chipping of workpieces (i.e. medical industries).



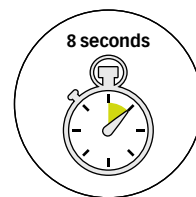
Total system runout TIR  
≤ 3µm at 3xD



Excellent  
vibration damping



Maximum clamping  
force and low runout, even  
after 20,000 tool change

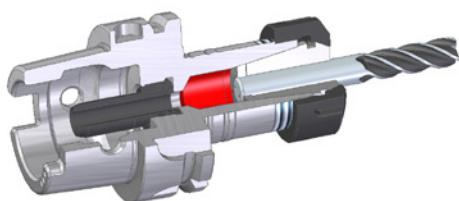


Tool ready for use in  
8 seconds with PGU 9500



# The major difference of toolholding systems

Solution: reducing of the condensation space



## ER toolholder

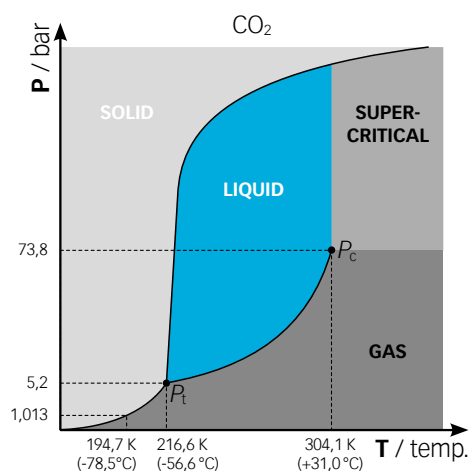
Typical tool clamping system, with the risk of icing of the holder, due to the gaseous state behaviour of CO<sub>2</sub>.



## PG-CRYO toolholder

The cooling medium will be directly led to the cutting edge through the cutting tool. The CO<sub>2</sub> expands at the cutting edge and the ice snow provides an efficient and clean chipping

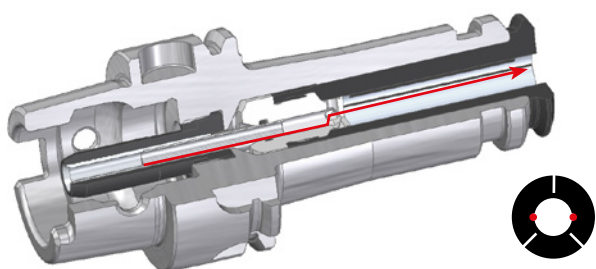
## State of aggregation diagram CO<sub>2</sub>



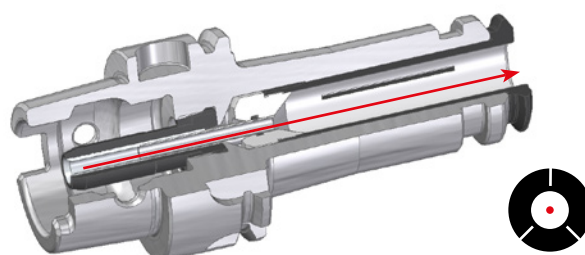
## Benefit of CRYO-powRgrip®

- // Perfect guidance of the cooling medium to the cutting edge
- // Tool life increase
- // Productivity increase, due to higher cutting parameters
- // Better surface finishing
- // No disposal of the cooling fluid necessary
- // No necessity of workpiece cleaning
- // 100% recycling of the chips

## For peripheral external cooling

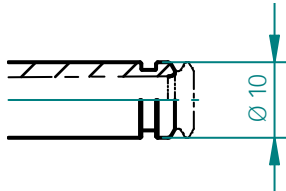


## For internal cooling



# powRgrip® System and secuRgrip® nose diameter comparison

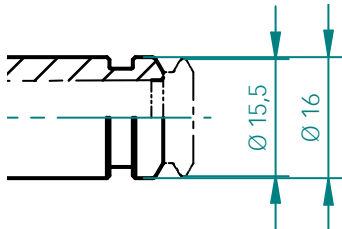
## Standard nose diameter comparison



### PG 6

Collet diameters:  
0,2 – 4,0 mm / 1/16 – 1/8"

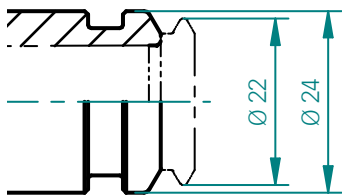
Collet options:  
Std, CF, CB, L, S, SG, TAP,  
SC, MQL, PGST



### PG 10

Collet diameters:  
0,2 – 6,0 mm / 1/16 – 1/4"

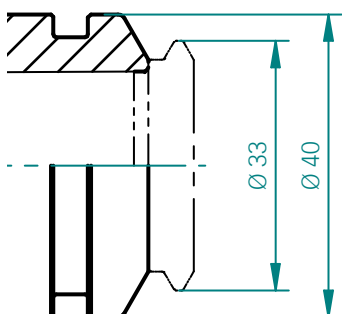
Collet options:  
Std, CF, S, MB, SC



### PG 15

Collet diameters:  
3,0 – 12,0 mm / 1/8 – 1/2"

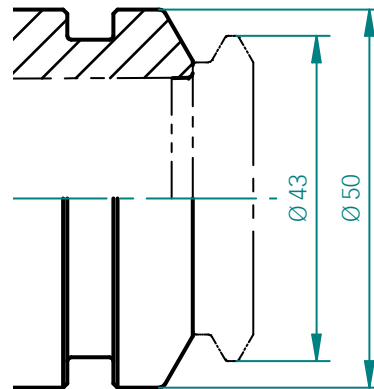
Collet options:  
Std, CF, CB, L, S, SG, TAP,  
SC, MQL, PGST



### PG 25

Collet diameters:  
3,0 – 20,0 mm / 1/8 – 3/4"

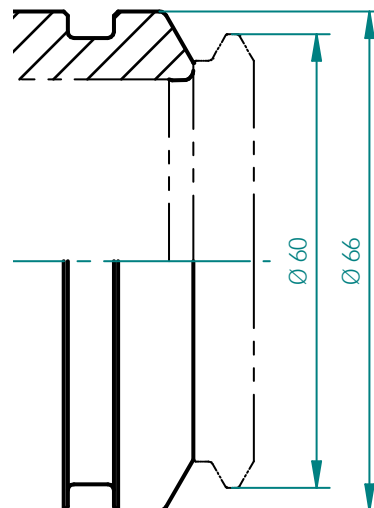
Collet options:  
Std, CF, CB, L, S, SG, TAP,  
MQL, PGST



### PG 32

Collet diameters:  
6,0 – 25,0 mm / 1/4 – 1"

Collet options:  
Std, CF, CB, L, S, SG, PGST

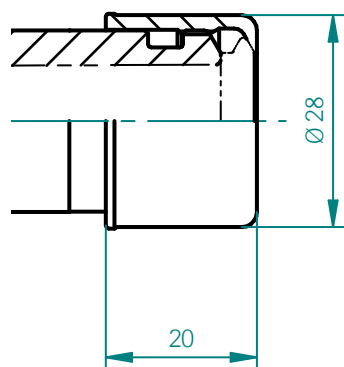


### PG 48

Collet diameters:  
20,0 – 40,0 mm / 3/4 – 1 1/2"

Collet options:  
Std, CF

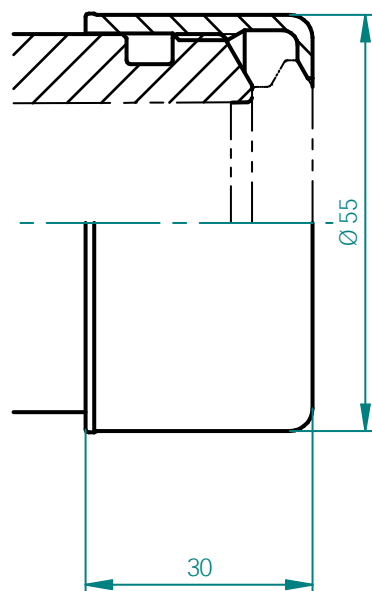
## secuRgrip® nose diameter comparison



### PG/SG 15

Collet diameters:  
3,0 – 12,0mm / 1/8 – 1/2"

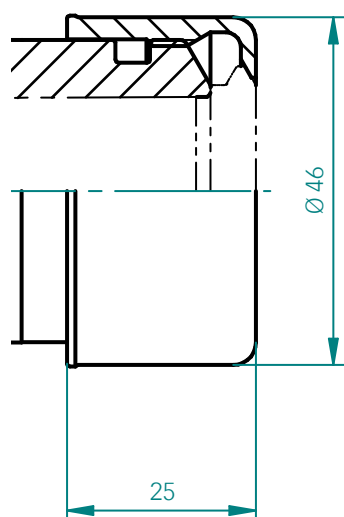
Collet options:  
Std, CF, CB, L, S, SG, TAP,  
SC, MQL, PGST



### PG/SG 32

Collet diameters:  
6,0 – 25,0mm / 1/4 – 1"

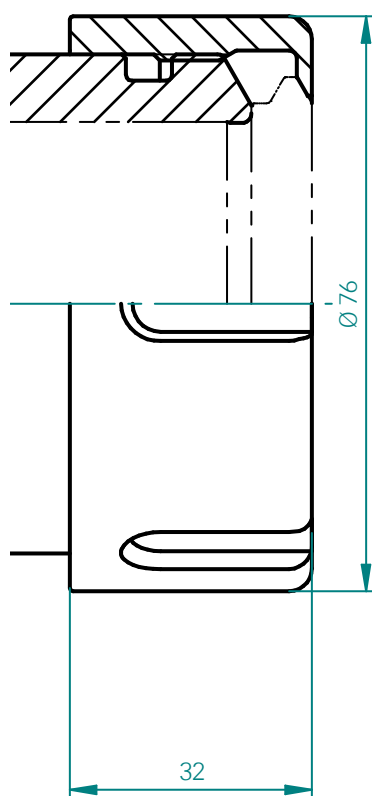
Collet options:  
Std, CF, CB, L, S, SG, PGST



### PG/SG 25

Collet diameters:  
3,0 – 20,0mm / 1/8 – 3/4"

Collet options:  
Std, CF, CB, L, S, SG, TAP,  
MQL, PGST



### PG/SG 48

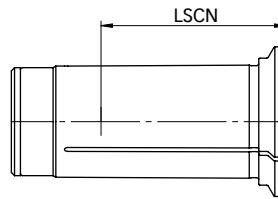
Collet diameters:  
20,0 – 40,0mm / 3/4 – 1 1/2"

Collet options:  
Std, CF

# Presetting range of powRgrip® collets

|         |        | PG 6<br>Std./CF |       | PG 6<br>S |      | PG 10<br>Std./CF/SC |      | PG 10<br>S |      | PG 15<br>Std./TW/<br>CF/CB/<br>MQL/SC/SG |      | PG 15<br>S |      | PG 15<br>L** |      | PG 25<br>Std./CF/<br>CB/MQL/SG |      |
|---------|--------|-----------------|-------|-----------|------|---------------------|------|------------|------|------------------------------------------|------|------------|------|--------------|------|--------------------------------|------|
| DCONXWS |        | LSCN [mm]       |       | LSCN [mm] |      | LSCN [mm]           |      | LSCN [mm]  |      | LSCN [mm]                                |      | LSCN [mm]  |      | LSCN [mm]    |      | LSCN [mm]                      |      |
| [mm]    | [inch] | min.            | max.  | min.      | max. | min.                | max. | min.       | max. | min.                                     | max. | min.       | max. | min.         | max. | min.                           | max. |
| 0,2-1,0 | -      | 21,5            | 26,5* | -         | -    | 20                  | 24*  | -          | -    | -                                        | -    | -          | -    | -            | -    | -                              | -    |
| 1,5     | -      | 23,5            | 26,5* | -         | -    | 16                  | 20*  | -          | -    | -                                        | -    | -          | -    | -            | -    | -                              | -    |
| -       | 1/16"  | 23,5            | 26,5* | -         | -    | 16                  | 20*  | -          | -    | -                                        | -    | -          | -    | -            | -    | -                              | -    |
| 2,0     | -      | 24              | 26,5  | -         | -    | 25                  | 30   | -          | -    | -                                        | -    | -          | -    | -            | -    | -                              | -    |
| 2,5     | -      | 24              | 26,5* | -         | -    | 25                  | 30   | -          | -    | -                                        | -    | -          | -    | -            | -    | -                              | -    |
| 3,0     | -      | 24              | 26,5  | 17        | 20   | 25,5                | 30   | 20,5       | 26   | 25                                       | 30   | -          | -    | -            | -    | 25                             | 32,5 |
| -       | 1/8"   | 24              | 26,5  | 17        | 20   | 25,5                | 30   | 20,5       | 26   | 25                                       | 30   | 18         | 25   | -            | -    | 25                             | 32,5 |
| 3,5     | -      | -               | -     | -         | -    | 25,5                | 30   | -          | -    | 25                                       | 30   | -          | -    | -            | -    | 25                             | 32,5 |
| 4,0     | -      | 23,5            | 26,5* | -         | -    | 25,5                | 30   | 20,5       | 26   | 25                                       | 30   | 18         | 25   | 25           | 53   | 25                             | 32,5 |
| 4,5     | -      | -               | -     | -         | -    | 25,5                | 30   | -          | -    | 25                                       | 30   | -          | -    | -            | -    | 25                             | 32,5 |
| -       | 3/16"  | -               | -     | -         | -    | 25,5                | 30   | 20,5       | 26   | 25                                       | 30   | 18         | 25   | -            | -    | 25                             | 32,5 |
| 5,0     | -      | -               | -     | -         | -    | 25,5                | 30   | -          | -    | 25                                       | 30   | 18         | 25   | 25           | 53   | 25                             | 32,5 |
| 5,5     | -      | -               | -     | -         | -    | 25,5                | 30   | -          | -    | 25                                       | 30   | -          | -    | -            | -    | 25                             | 32,5 |
| 6,0     | -      | -               | -     | -         | -    | 30                  | 35   | 23,5       | 29   | 33                                       | 38   | 26         | 33   | 33           | 53   | 33                             | 40,5 |
| -       | 1/4"   | -               | -     | -         | -    | 30                  | 35   | 23,5       | 29   | 33                                       | 38   | 26         | 33   | 33           | 53   | 33                             | 40,5 |
| 7,0     | -      | -               | -     | -         | -    | -                   | -    | -          | -    | 33                                       | 38   | -          | -    | -            | -    | 33                             | 40,5 |
| -       | 5/16"  | -               | -     | -         | -    | -                   | -    | -          | -    | 33                                       | 38   | 26         | 33   | 33           | 53   | 33                             | 40,5 |
| 8,0     | -      | -               | -     | -         | -    | -                   | -    | -          | -    | 33                                       | 38   | 26         | 33   | 33           | 53   | 33                             | 40,5 |
| 9,0     | -      | -               | -     | -         | -    | -                   | -    | -          | -    | 33                                       | 38   | -          | -    | -            | -    | 33                             | 40,5 |
| -       | 3/8"   | -               | -     | -         | -    | -                   | -    | -          | -    | 37                                       | 40,5 | 31         | 38   | 37           | 53   | 37                             | 44,5 |
| 10,0    | -      | -               | -     | -         | -    | -                   | -    | -          | -    | 37                                       | 40,5 | 31         | 38   | 37           | 53   | 37                             | 44,5 |
| 11,0    | -      | -               | -     | -         | -    | -                   | -    | -          | -    | -                                        | -    | -          | -    | -            | -    | 37                             | 44,5 |
| -       | 7/16"  | -               | -     | -         | -    | -                   | -    | -          | -    | -                                        | -    | -          | -    | -            | -    | 37                             | 44,5 |
| 12,0    | -      | -               | -     | -         | -    | -                   | -    | -          | -    | 41,5*                                    | 45*  | -          | -    | -            | -    | 42                             | 49,5 |
| -       | 1/2"   | -               | -     | -         | -    | -                   | -    | -          | -    | 41,5*                                    | 45*  | -          | -    | -            | -    | 42                             | 49,5 |
| 13,0    | -      | -               | -     | -         | -    | -                   | -    | -          | -    | -                                        | -    | -          | -    | -            | -    | 42                             | 49,5 |
| 14,0    | -      | -               | -     | -         | -    | -                   | -    | -          | -    | -                                        | -    | -          | -    | -            | -    | 42                             | 49,5 |
| -       | 9/16"  | -               | -     | -         | -    | -                   | -    | -          | -    | -                                        | -    | -          | -    | -            | -    | 42                             | 49,5 |
| 15,0    | -      | -               | -     | -         | -    | -                   | -    | -          | -    | -                                        | -    | -          | -    | -            | -    | 42                             | 49,5 |
| -       | 5/8"   | -               | -     | -         | -    | -                   | -    | -          | -    | -                                        | -    | -          | -    | -            | -    | 45,5                           | 50   |
| 16,0    | -      | -               | -     | -         | -    | -                   | -    | -          | -    | -                                        | -    | -          | -    | -            | -    | 45,5                           | 50   |
| 18,0    | -      | -               | -     | -         | -    | -                   | -    | -          | -    | -                                        | -    | -          | -    | -            | -    | 45,5                           | 50   |
| -       | 3/4"   | -               | -     | -         | -    | -                   | -    | -          | -    | -                                        | -    | -          | -    | -            | -    | 47,5                           | 50   |
| 20,0    | -      | -               | -     | -         | -    | -                   | -    | -          | -    | -                                        | -    | -          | -    | -            | -    | 47,5                           | 50   |
| 22,0    | -      | -               | -     | -         | -    | -                   | -    | -          | -    | -                                        | -    | -          | -    | -            | -    | -                              | -    |
| -       | 7/8"   | -               | -     | -         | -    | -                   | -    | -          | -    | -                                        | -    | -          | -    | -            | -    | -                              | -    |
| 25,0    | -      | -               | -     | -         | -    | -                   | -    | -          | -    | -                                        | -    | -          | -    | -            | -    | -                              | -    |
| -       | 1"     | -               | -     | -         | -    | -                   | -    | -          | -    | -                                        | -    | -          | -    | -            | -    | -                              | -    |
| -       | 1 1/4" | -               | -     | -         | -    | -                   | -    | -          | -    | -                                        | -    | -          | -    | -            | -    | -                              | -    |
| 32,0    | -      | -               | -     | -         | -    | -                   | -    | -          | -    | -                                        | -    | -          | -    | -            | -    | -                              | -    |
| -       | 1 1/2" | -               | -     | -         | -    | -                   | -    | -          | -    | -                                        | -    | -          | -    | -            | -    | -                              | -    |
| 40,0    | -      | -               | -     | -         | -    | -                   | -    | -          | -    | -                                        | -    | -          | -    | -            | -    | -                              | -    |

\*CF not available \*\*PG-L without stop screw



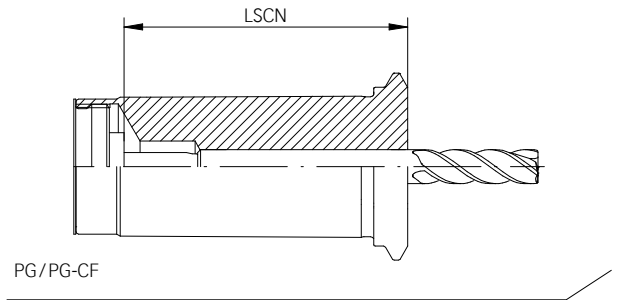
|         |        | PG 25<br>S |      | PG 25<br>L** |      | PG 32<br>Std./CF/<br>CB/SG |      | PG 32<br>S |      | PG 32<br>L** |      | PG 48<br>Std./CF |      | PGST<br>15 | PGST<br>25 |
|---------|--------|------------|------|--------------|------|----------------------------|------|------------|------|--------------|------|------------------|------|------------|------------|
| DCONXWS |        | LSCN [mm]  |      | LSCN [mm]    |      | LSCN [mm]                  |      | LSCN [mm]  |      | LSCN [mm]    |      | LSCN [mm]        |      | LSCN [mm]  |            |
| [mm]    | [inch] | min.       | max. | min.         | max. | min.                       | max. | min.       | max. | min.         | max. | min.             | max. |            |            |
| 0,2-1,0 | -      | -          | -    | -            | -    | -                          | -    | -          | -    | -            | -    | -                | -    | -          | -          |
| 1,5     | -      | -          | -    | -            | -    | -                          | -    | -          | -    | -            | -    | -                | -    | -          | -          |
| -       | 1/16"  | -          | -    | -            | -    | -                          | -    | -          | -    | -            | -    | -                | -    | -          | -          |
| 2,0     | -      | -          | -    | -            | -    | -                          | -    | -          | -    | -            | -    | -                | -    | -          | -          |
| 2,5     | -      | -          | -    | -            | -    | -                          | -    | -          | -    | -            | -    | -                | -    | -          | -          |
| 3,0     | -      | -          | -    | -            | -    | -                          | -    | -          | -    | -            | -    | -                | -    | 28         | 28         |
| -       | 1/8"   | 18         | 25   | -            | -    | -                          | -    | -          | -    | -            | -    | -                | -    | 28         | 28         |
| 3,5     | -      | -          | -    | -            | -    | -                          | -    | -          | -    | -            | -    | -                | -    | -          | -          |
| 4,0     | -      | 18         | 25   | -            | -    | -                          | -    | -          | -    | -            | -    | -                | -    | 28         | 28         |
| 4,5     | -      | -          | -    | -            | -    | -                          | -    | -          | -    | -            | -    | -                | -    | -          | -          |
| -       | 3/16"  | 18         | 25   | -            | -    | -                          | -    | -          | -    | -            | -    | -                | -    | 28         | 28         |
| 5,0     | -      | -          | -    | -            | -    | -                          | -    | -          | -    | -            | -    | -                | -    | -          | -          |
| 5,5     | -      | -          | -    | -            | -    | -                          | -    | -          | -    | -            | -    | -                | -    | -          | -          |
| 6,0     | -      | 26         | 33   | 33           | 65   | 33,5                       | 40,9 | -          | -    | -            | -    | -                | -    | 36         | 36         |
| -       | 1/4"   | 26         | 33   | 33           | 65   | 33,5                       | 40,9 | -          | -    | -            | -    | -                | -    | 36         | 36         |
| 7,0     | -      | -          | -    | -            | -    | 33,5                       | 40,9 | -          | -    | -            | -    | -                | -    | -          | -          |
| -       | 5/16"  | 26         | 33   | 33           | 65   | 33,5                       | 40,9 | -          | -    | -            | -    | -                | -    | 36         | 36         |
| 8,0     | -      | 26         | 33   | 33           | 65   | 33,5                       | 40,9 | -          | -    | -            | -    | -                | -    | 36         | 36         |
| 9,0     | -      | -          | -    | -            | -    | 33,5                       | 40,9 | -          | -    | -            | -    | -                | -    | -          | -          |
| -       | 3/8"   | 30         | 38   | 37           | 65   | 35,5                       | 44,9 | -          | -    | -            | -    | -                | -    | 40         | 40         |
| 10,0    | -      | 30         | 38   | 37           | 65   | 35,5                       | 44,9 | -          | -    | -            | -    | -                | -    | 40         | 40         |
| 11,0    | -      | -          | -    | -            | -    | 35,5                       | 44,9 | -          | -    | -            | -    | -                | -    | -          | -          |
| -       | 7/16"  | -          | -    | -            | -    | 35,5                       | 44,9 | -          | -    | -            | -    | -                | -    | -          | -          |
| 12,0    | -      | 35         | 43   | 42           | 65   | 40,5                       | 49,9 | 32         | 40,5 | 40,5         | 69   | -                | -    | -          | 45         |
| -       | 1/2"   | 35         | 43   | 42           | 65   | 40,5                       | 49,9 | 32         | 40,5 | 40,5         | 69   | -                | -    | -          | 45         |
| 13,0    | -      | -          | -    | -            | -    | 40,5                       | 49,9 | -          | -    | -            | -    | -                | -    | -          | -          |
| 14,0    | -      | 35         | 43   | 42           | 65   | 40,5                       | 49,9 | 35         | 43   | 40,5         | 69   | -                | -    | -          | -          |
| -       | 9/16"  | -          | -    | -            | -    | 40,5                       | 49,9 | -          | -    | -            | -    | -                | -    | -          | -          |
| 15,0    | -      | -          | -    | -            | -    | 40,5                       | 49,9 | -          | -    | -            | -    | -                | -    | -          | -          |
| -       | 5/8"   | 38         | 46   | 45,5         | 65   | 43,5                       | 52,9 | 35         | 43,5 | -            | -    | -                | -    | -          | 48         |
| 16,0    | -      | 38         | 46   | 45,5         | 65   | 43,5                       | 52,9 | 35         | 43,5 | 43,5         | 69   | -                | -    | -          | 48         |
| 18,0    | -      | -          | -    | -            | -    | 43,5                       | 52,9 | -          | -    | -            | -    | -                | -    | -          | -          |
| -       | 3/4"   | 40         | 47,5 | 47,5         | 65   | 45,5                       | 54,9 | 37         | 45,5 | 45,5         | 69   | 44               | 52   | -          | 48         |
| 20,0    | -      | 40         | 47,5 | 47,5         | 65   | 45,5                       | 54,9 | 37         | 45,5 | 45,5         | 69   | 44               | 52   | -          | 48         |
| 22,0    | -      | -          | -    | -            | -    | 45,5                       | 54,9 | -          | -    | -            | -    | -                | -    | -          | -          |
| -       | 7/8"   | -          | -    | -            | -    | 45,5                       | 54,9 | -          | -    | -            | -    | -                | -    | -          | -          |
| 25,0    | -      | -          | -    | -            | -    | 49,5                       | 58   | 41         | 49,5 | 49,5         | 69   | 52               | 60,5 | -          | -          |
| -       | 1"     | -          | -    | -            | -    | 49,5                       | 58   | 41         | 49,5 | 49,5         | 69   | 57               | 65,5 | -          | -          |
| -       | 1 1/4" | -          | -    | -            | -    | -                          | -    | -          | -    | -            | -    | 57               | 65,5 | -          | -          |
| 32,0    | -      | -          | -    | -            | -    | -                          | -    | -          | -    | -            | -    | 57               | 65,5 | -          | -          |
| -       | 1 1/2" | -          | -    | -            | -    | -                          | -    | -          | -    | -            | -    | 68               | 74   | -          | -          |
| 40,0    | -      | -          | -    | -            | -    | -                          | -    | -          | -    | -            | -    | 68               | 74   | -          | -          |

\*CF not available \*\*PG-L without stop screw

## Maximum presetting range for powRgrip® standard collets and PG-CF collets

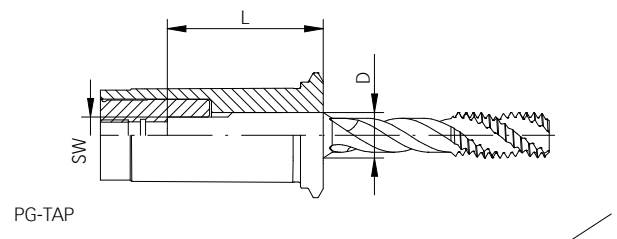
| Sizes     | PG 6 | PG 10 | PG 15 | PG 25 | PG 32 |
|-----------|------|-------|-------|-------|-------|
| LSCN max. | 26,5 | 35    | 40,5  | 50    | 58    |

LSCN: maximum depth (without stop screw)



## Presetting range of PG-TAP collets with internal square

| Dimensions [mm/inch] |        | PG 15-TAP [mm] |           | PG 25-TAP [mm] |           |
|----------------------|--------|----------------|-----------|----------------|-----------|
| DCONXWS              | □      | LSCN min.      | LSCN max. | LSCN min.      | LSCN max. |
| 3.5                  | 2.7    | 27             | 29        | –              | –         |
| 0.141"               | 0.110" | 27             | 29        | –              | –         |
| 0.168"               | 0.131" | 27             | 29        | –              | –         |
| 4.5                  | 3.4    | 27             | 29        | –              | –         |
| 0.194"               | 0.152" | 27             | 29        | –              | –         |
| 0.220"               | 0.165" | 28             | 30        | –              | –         |
| 6                    | 4.9    | 29             | 31        | 33             | 35        |
| 0.255"               | 0.191" | 29             | 31        | –              | –         |
| 7                    | 5.5    | 29             | 31        | –              | –         |
| 8                    | 6.2    | 34             | 36        | 34             | 36        |
| 0.318"               | 0.238" | –              | –         | 34             | 36        |
| 9                    | 7      | 35             | 37        | 35             | 37        |
| 0.367"               | 0.275" | –              | –         | 35             | 37        |
| 0.381"               | 0.286" | –              | –         | 39             | 41        |
| 10                   | 8      | 36             | 38        | 39             | 41        |
| 11                   | 9      | –              | –         | 40             | 42        |
| 12                   | 9      | –              | –         | 40             | 42        |
| 14                   | 11     | –              | –         | 42             | 44        |
| 16                   | 12     | –              | –         | 43             | 45        |



## Recommended tightening torque for secuRgrip® safety nuts

| Safety nut type | Nut Ø [mm] | Recommended torque | Freewheel wrench head | TORCO-FIX |
|-----------------|------------|--------------------|-----------------------|-----------|
| PG 15/SGN 15    | 28,00      | 50 Nm              | A-FLS Ø 28,0/SG 15    | II        |
| PG 25/SGN 25    | 46,00      | 70 Nm              | A-FLS Ø 46,0/SG 25    | II        |
| PG 32/SGN 32    | 55,00      | 80 Nm              | A-FLS Ø 55,0/SG 32    | II        |









# The unbeatable advantages from the inventor of the ER collet

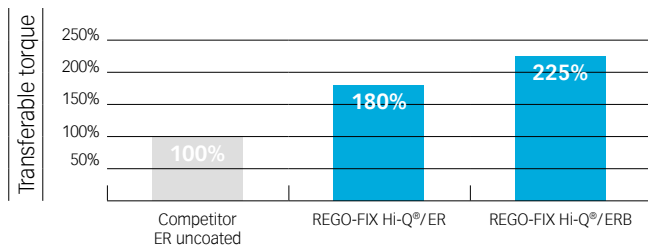
## Wide selection available

- // Includes friction-bearing for higher clamping force
- // Available with sealing disk for coolant through tools
- // Mini nut with minimal external diameter
- // Clamping nut for high rpm
- // Externally threaded clamping nut for floating chucks, ERA Zero-Z® toolholder and live tooling
- // Slip-off proof mini clamping nut intrRlox® for safe assembling

## Torque comparison of different clamping nuts

REGO-FIX Hi-Q®/ER and Hi-Q®/ERB vs. competitor nuts

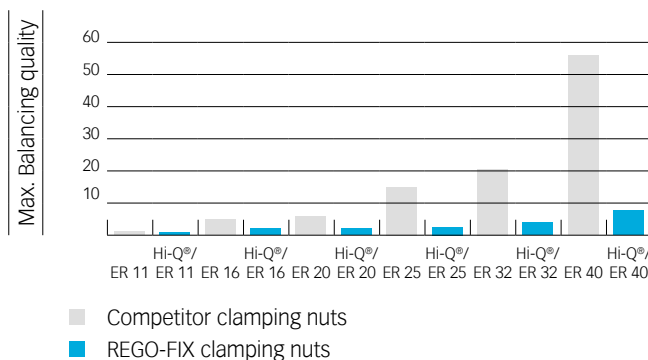
Source: In-house testing.



## Balancing quality overview [gmm]

REGO-FIX clamping nuts vs. competitor nuts

Source: In-house testing.



## Key advantages

### Hi-Q® /ER System

#### Collet locking system

Retains collet in nut for easier assembly.

#### Balancing

Ideal for high-speed applications.

#### Higher transferable torque

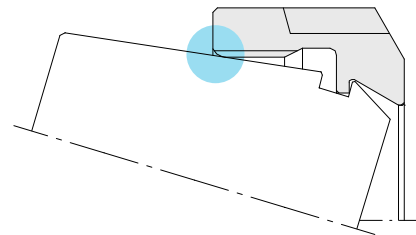
Lower frictional forces resulting in up to 80% higher gripping force over standard non-treated clamping nuts. With friction bearing nut up to 125%.

#### Protection against corrosion

With a special surface treatment for longer life.

#### Optimal contour

Rounded thread start prevents damaging of collets on tool changes.



## Swiss quality standard

Our products marked Swiss made are manufactured at our headquarters in Tenniken, Switzerland.

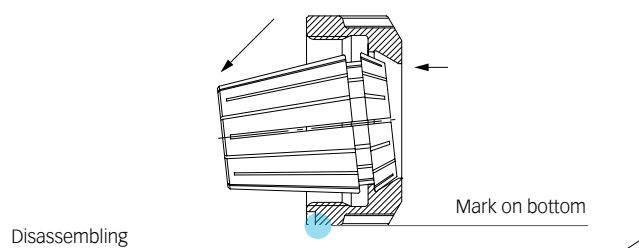
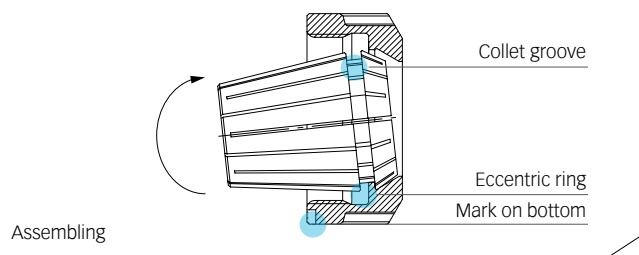
# Assembly instructions for ER and MR collets

## Collets ER 11–ER 50 and MR 11–MR 32 (with collet locking system)

**Assembling** Insert groove of the collet into eccentric ring of the clamping nut at the mark on the bottom of the nut. Push collet in the direction of the arrow until it clicks in. Insert tool. Screw nut with collet onto toolholder.

**Disassembling** After the nut is unscrewed from the toolholder, press on the face of the collet while simultaneously pushing sideways on the back of the collet opposite the mark until it disengages from the clamping nut.

**Important** Improper assembly can permanently damage the runout TIR of the collet and may result in the destruction of the clamping nut. Only mount nuts with correctly inserted collets. Never place the collet into the holder without first assembling into the nut.

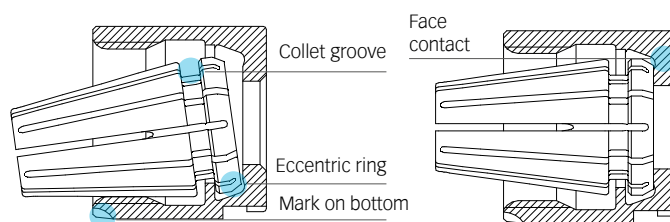
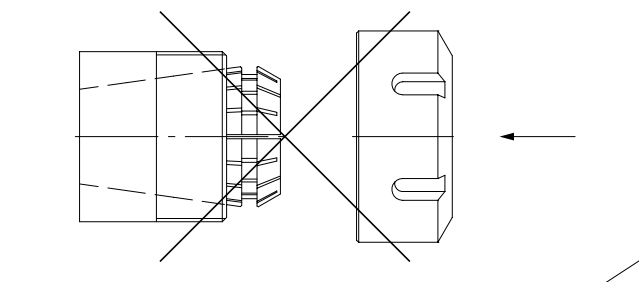


## Collets ER 8 (without collet locking system)

**Assembling** Insert groove of the collet into eccentric ring of the clamping nut at the mark on the bottom of the nut. Insert tool. Hold nut with collet in horizontal position and screw onto toolholder.

**Disassembling** After unscrewing the clamping nut from the tool holder, the collet can easily be removed from the clamping nut.

**Important** The face of the ER 8 collet chuck must fit cleanly against the inner surface of the clamping nut. (ER 8 collets do not feature a 30° cone.)

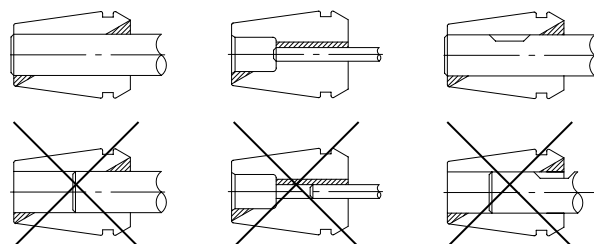


### Expert advice

Never insert the tool less than  $\frac{2}{3}$  of the collet length. We recommend tightening the clamping nuts with our TORCO-BLOCK or torque wrench.

For more information on TORCO-BLOCK, see page 342.

For tightening torque recommendations, please refer to page 377.



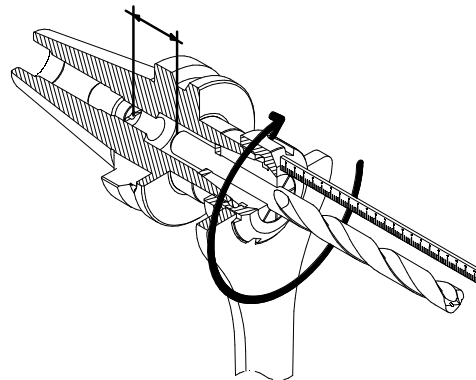
# Instructions for correct clamping of tool shanks

## Note

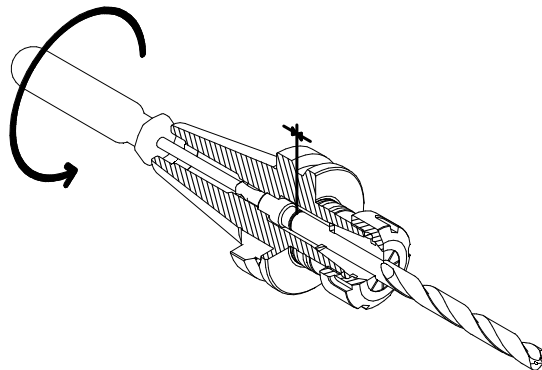
- // ER collet chucks – Exception: Toolholders with cylindrical shanks – are supplied without stop screws
- // Stop screws are supplied upon request
- // If ordering stop screw, specifying part no. (XXXX.XXXXX) and LOT no. (YYY). YYY of the toolholder is mandatory

## Advice

- // Stop screws are used to secure tool shanks against axial displacement and may not be used as length adjustment screws
- // For trouble-free operation of the ER collet system, clamp tool shank first, then set stop screw
- // Incorrect handling of the stop screw may reduce runout accuracy and clamping force of the collet system
- // The use of stop screws may increase imbalance of the collet system



Set tool length with clearance to the stop screw, then clamp tool.



Apply stop screw to tool shank.

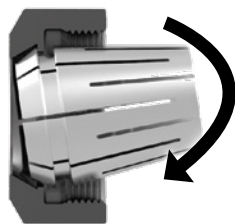
# Increase collet and tool life

Optimize your surface finishes and extend tool life by minimizing occurring vibrations during machining.

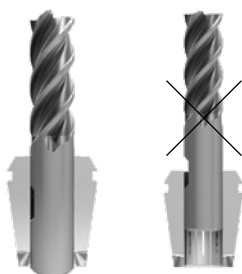
## Always assemble correctly

First, clip the collet in the nut. Second, insert the tool shank more than  $\frac{2}{3}$  into the collet.

1.



2.



## Listen to the click

Do not tighten the torque wrench further after the first click is heard.



Get your TORCO-FIX. Check page 338 for order details.

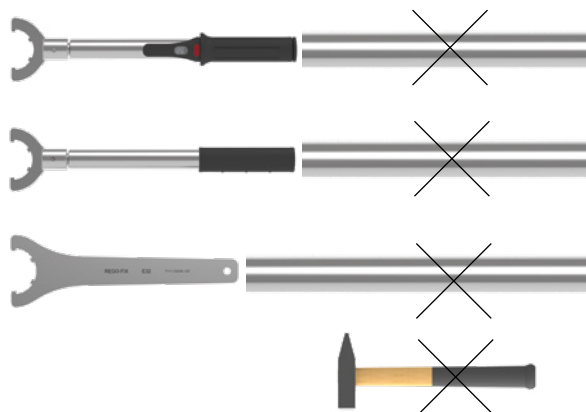
## Only use REGO-FIX wrenches

To mount the collet in the toolholder please use one of these special wrenches- preferably the torque wrench, since it displays the amount of applied force.



Regular wrenches can also be used. Be aware that only the torque wrench will display the exact amount of applied force, making it the most exact tool to mount toolholders professionally.

## Never use any extensions or hammers





# Recommended tightening torque for ER and MR clamping nuts

## Maximum torques for retention knobs (Nm)

|             |          |                  | Hi-Q®/ER clamping nuts |       |          |       |          |       |            |       |            |       |              |           |
|-------------|----------|------------------|------------------------|-------|----------|-------|----------|-------|------------|-------|------------|-------|--------------|-----------|
|             |          |                  | ER/ERC                 |       | ERB/ERBC |       | ERM/ERMC |       | ERMx/ERMxC |       | ERAX/ERAXC |       | ER MS        |           |
|             |          |                  | Collets [Nm]           |       |          |       |          |       |            |       |            |       | Collets [Nm] |           |
| Collet size | Ø [mm]   | Ø [decimal inch] | ER*                    | ER-GB | ER*      | ER-GB | ER*      | ER-GB | ER*        | ER-GB | ER*        | ER-GB | ER*          | TORCO-FIX |
| ER 8 MB     | 0,2–0,9  | 0,0078–0,035     | –                      | –     | –        | –     | 6        | –     | 6          | –     | –          | –     | 6            | 0         |
| ER 8        | 1,0–5,0  | 0,039–0,196      | –                      | –     | –        | –     | 6        | –     | 6          | –     | –          | –     | 6            | 0         |
| ER 11 MB    | 0,2–0,9  | 0,0078–0,035     | 8                      | –     | –        | –     | 8        | –     | 8          | –     | 8          | –     | 8            | 0, I      |
| ER 11       | 1,0–2,9  | 0,039–0,098      | 8                      | 8     | –        | –     | 8        | 8     | 8          | 8     | 8          | 8     | 10           | 0, I      |
|             | 3,0–7,0  | 0,118–0,256      | 24                     | 16    | –        | –     | 16       | 13    | 16         | 13    | 24         | 21    | 10           | 0, I      |
| ER 16 MB    | 0,2–0,9  | 0,0078–0,035     | 8                      | –     | –        | –     | 8        | –     | 8          | –     | 8          | –     | 12           | 0, I      |
| ER 16       | 1,0      | 0,039            | 8                      | –     | 6,4      | –     | 8        | –     | 8          | –     | 8          | –     | 12           | 0, I      |
|             | 1,5–3,5  | 0,059–0,138      | 20                     | –     | 16       | –     | 20       | –     | 20         | –     | 20         | –     | 20           | 0, I      |
|             | 4,0–4,5  | 0,157–0,177      | 40                     | 40    | 32       | 32    | 24       | –     | 24         | –     | 40         | 40    | 20           | I, II     |
|             | 5,0–10,0 | 0,197–0,394      | 56                     | 44    | 56       | 44    | 24       | –     | 24         | –     | 40         | 40    | 20           | I, II     |
| ER 20       | 1,0      | 0,039            | 16                     | –     | 12       | –     | 16       | –     | 16         | –     | 16         | –     | 12           | 0, I      |
|             | 1,5–6,5  | 0,059–0,256      | 32                     | 32    | 24       | 24    | 28       | 28    | 28         | 28    | 52         | 35    | 20           | I, II     |
|             | 7,0–13,0 | 0,276–0,512      | 80                     | 35    | 80       | 24    | 28       | 28    | 28         | 28    | 52         | 35    | 20           | I, II     |
| ER 25       | 1,0–3,5  | 0,059–0,138      | 24                     | –     | 20       | –     | 24       | –     | 24         | –     | 24         | –     | –            | I, II     |
|             | 4,0–4,5  | 0,157–0,177      | 56                     | 56    | 48       | 48    | 32       | 32    | 32         | 32    | 56         | 56    | –            | I, II     |
|             | 5,0–7,5  | 0,196–0,295      | 80                     | 80    | 72       | 72    | 32       | 32    | 32         | 32    | 80         | 80    | –            | II, III   |
|             | 8,0–17,0 | 0,315–0,669      | 104                    | 80    | 104      | 79    | 32       | 32    | 32         | 32    | 80         | 80    | –            | II, III   |
| ER 32       | 2,0–2,5  | 0,078–0,098      | 24                     | 24    | 20       | –     | –        | –     | –          | –     | 24         | –     | –            | I, II     |
|             | 3,0–7,5  | 0,118–0,291      | 136                    | 136   | 128      | 90    | –        | –     | –          | –     | 104        | 90    | –            | II, III   |
|             | 8,0–22,0 | 0,315–0,787      | 136                    | 136   | 136      | 90    | –        | –     | –          | –     | 104        | 90    | –            | II, III   |
| ER 40       | 3,0–26,0 | 0,118–1,023      | 176                    | 176   | 176      | 176   | –        | –     | –          | –     | 128        | 128   | –            | II, III   |
| ER 50       | 6,0–36,0 | 0,236–1,417      | 240                    | 300   | 240      | 300   | –        | –     | –          | –     | –          | –     | –            | III       |

\*Includes ER standard and ER-UP

|             |          |                  | micRun® clamping nuts |     |            |      |                                                                                                 |                           |
|-------------|----------|------------------|-----------------------|-----|------------|------|-------------------------------------------------------------------------------------------------|---------------------------|
|             |          |                  | MR / MRC              |     | MRM / MRMC |      |                                                                                                 |                           |
|             |          |                  | micRun® collets [Nm]  |     |            |      |                                                                                                 |                           |
| Collet size | Ø [mm]   | Ø [decimal inch] | MR                    | MRC | MRM        | MRMC | Steep taper                                                                                     | maximum tightening torque |
| MR 11       | 1,0–2,9  | 0,039–0,098      | 8                     | 8   | –          | –    | SK, BT, CAT 30                                                                                  | 25 Nm                     |
|             | 3,0–7,0  | 0,118–0,256      | 16                    | 16  | –          | –    | SK, BT, CAT 40                                                                                  | 50 Nm                     |
| MR 16       | 1,0      | 0,039            | 8                     | 8   | 8          | 8    | SK, BT, CAT 50                                                                                  | 100 Nm                    |
|             | 1,5–3,5  | 0,059–0,138      | 20                    | 20  | 20         | 20   | Higher tightening torques can lead to deformation of the steep taper and therefor to bad runout |                           |
|             | 4,0–4,5  | 0,157–0,177      | 40                    | 40  | 24         | 24   |                                                                                                 |                           |
|             | 5,0–10,0 | 0,197–0,394      | 56                    | 56  | 24         | 24   |                                                                                                 |                           |
| MR 25       | 1,0–3,5  | 0,059–0,138      | 24                    | 24  | –          | –    |                                                                                                 |                           |
|             | 4,0–4,5  | 0,157–0,177      | 56                    | 56  | –          | –    |                                                                                                 |                           |
|             | 5,0–7,5  | 0,196–0,295      | 80                    | 80  | –          | –    |                                                                                                 |                           |
|             | 8,0–17,0 | 0,315–0,669      | 80                    | 80  | –          | –    |                                                                                                 |                           |
| MR 32       | 2,0–2,5  | 0,078–0,098      | 24                    | 24  | –          | –    |                                                                                                 |                           |
|             | 3,0–22,0 | 0,118–0,2917     | 136                   | 136 | –          | –    |                                                                                                 |                           |

Expert advice

We recommend tightening the clamping nuts with our TORCO-BLOCK or torque wrench

### Expert advice

We recommend tightening the clamping nuts with our TORCO-BLOCK or torque wrench.

Original REGO-FIX accessories can be found on page 307.



# Recommended tightening torque for ER and MR clamping nuts

## Maximum torques for retention knobs (ft-lbs)

|             |          |                  | Hi-Q®/ER clamping nuts |       |          |       |          |       |            |       |            |       |                  |            |
|-------------|----------|------------------|------------------------|-------|----------|-------|----------|-------|------------|-------|------------|-------|------------------|------------|
|             |          |                  | ER/ERC                 |       | ERB/ERBC |       | ERM/ERMC |       | ERMx/ERMxC |       | ERAx/ERAXC |       | ER MS            |            |
|             |          |                  | Collets [ft-lbs]       |       |          |       |          |       |            |       |            |       | Collets [ft-lbs] |            |
| Collet size | Ø [mm]   | Ø [decimal inch] | ER*                    | ER-GB | ER*      | ER-GB | ER*      | ER-GB | ER*        | ER-GB | ER*        | ER-GB | ER*              | TORCO-FIX* |
| ER 8 MB     | 0,2–0,9  | 0,0078–0,035     | –                      | –     | –        | –     | 4        | –     | 4          | –     | –          | –     | 4                | Micro      |
| ER 8        | 1,0–5,0  | 0,039–0,196      | –                      | –     | –        | –     | 4        | –     | 4          | –     | –          | –     | 4                | Micro      |
| ER 11 MB    | 0,2–0,9  | 0,0078–0,035     | 6                      | –     | –        | –     | 6        | –     | 6          | –     | 6          | –     | 6                | Micro, S   |
| ER 11       | 1,0–2,9  | 0,039–0,098      | 6                      | 6     | –        | –     | 6        | 6     | 6          | 6     | 6          | 6     | 7                | Micro, S   |
|             | 3,0–7,0  | 0,118–0,256      | 24                     | 16    | –        | –     | 16       | 13    | 16         | 13    | 24         | 21    | 7                | Micro, S   |
| ER 16 MB    | 0,2–0,9  | 0,0078–0,035     | 6                      | –     | –        | –     | 6        | –     | 6          | –     | 6          | –     | 9                | Micro, S   |
| ER 16       | 1,0      | 0,039            | 6                      | –     | 5        | –     | 6        | –     | 6          | –     | 6          | –     | 9                | Micro, S   |
|             | 1,5–3,5  | 0,059–0,138      | 15                     | –     | 12       | –     | 15       | –     | 15         | –     | 15         | –     | 15               | Micro, S   |
|             | 4,0–4,5  | 0,157–0,177      | 30                     | 30    | 25       | 25    | 18       | –     | 18         | –     | 30         | 30    | 15               | S, M       |
|             | 5,0–10,0 | 0,197–0,394      | 46                     | 32    | 40       | 21    | 18       | –     | 18         | –     | 30         | 30    | –                | M          |
| ER 20       | 1,0      | 0,039            | 12                     | –     | 10       | –     | 12       | –     | 12         | –     | 12         | –     | 9                | Micro, S   |
|             | 1,5–6,5  | 0,059–0,256      | 25                     | 25    | 20       | 20    | 21       | 21    | 21         | 21    | 40         | 25    | 14               | S, M       |
|             | 7,0–13,0 | 0,276–0,512      | 60                     | 60    | 60       | 60    | 21       | 21    | 21         | 21    | 40         | 25    | 14               | S, M       |
| ER 25       | 1,0–3,5  | 0,059–0,138      | 18                     | –     | 15       | –     | 18       | –     | 18         | –     | 18         | –     | –                | S, M       |
|             | 4,0–4,5  | 0,157–0,177      | 40                     | 40    | 35       | 35    | 24       | 24    | 24         | 24    | 40         | 40    | –                | S, M       |
|             | 5,0–7,5  | 0,196–0,295      | 60                     | 60    | 55       | 55    | 24       | 24    | 24         | 24    | 60         | 60    | –                | M, L       |
|             | 8,0–17,0 | 0,315–0,669      | 80                     | 60    | 80       | 60    | 24       | 24    | 24         | 24    | 60         | 60    | –                | M, L       |
| ER 32       | 2,0–2,5  | 0,078–0,098      | 18                     | 18    | 15       | –     | –        | –     | –          | –     | 20         | –     | –                | S, M       |
|             | 3,0–7,5  | 0,118–0,291      | 100                    | 100   | 95       | 65    | –        | –     | –          | –     | 80         | 65    | –                | M, L       |
|             | 8,0–22,0 | 0,315–0,787      | 100                    | 100   | 100      | 65    | –        | –     | –          | –     | 80         | 65    | –                | M, L       |
| ER 40       | 3,0–26,0 | 0,118–1,023      | 130                    | 130   | 130      | 130   | –        | –     | –          | –     | 95         | 95    | –                | M, L       |
| ER 50       | 6,0–36,0 | 0,236–1,417      | 180                    | 220   | 180      | 220   | –        | –     | –          | –     | –          | –     | –                | L          |

\*Includes ER standard and ER-UP

|             |          |                  | micRun® clamping nuts    |     |            |      |                                                                                                        |                           |
|-------------|----------|------------------|--------------------------|-----|------------|------|--------------------------------------------------------------------------------------------------------|---------------------------|
|             |          |                  | MR / MRC                 |     | MRM / MRMC |      |                                                                                                        |                           |
|             |          |                  | micRun® collets [ft-lbs] |     |            |      |                                                                                                        |                           |
| Collet size | Ø [mm]   | Ø [decimal inch] | MR                       | MRC | MRM        | MRMC | Steep taper                                                                                            | maximum tightening torque |
| MR 11       | 1,0–2,9  | 0,039–0,098      | 6                        | 6   | –          | –    | SK, BT, CAT 30                                                                                         | 18 ft-lbs                 |
|             | 3,0–7,0  | 0,118–0,256      | 12                       | 12  | –          | –    | SK, BT, CAT 40                                                                                         | 36 ft-lbs                 |
| MR 16       | 1,0      | 0,039            | 6                        | 6   | 6          | 6    | SK, BT, CAT 50                                                                                         | 72 ft-lbs                 |
|             | 1,5–3,5  | 0,059–0,138      | 15                       | 15  | 15         | 15   | <i>Higher tightening torques can lead to deformation of the steep taper and therefor to bad runout</i> |                           |
|             | 4,0–4,5  | 0,157–0,177      | 30                       | 30  | 18         | 18   |                                                                                                        |                           |
|             | 5,0–10,0 | 0,197–0,394      | 41                       | 41  | 18         | 18   |                                                                                                        |                           |
| MR 20       | 1,0      | 0,039            | 12                       | 12  | –          | –    |                                                                                                        |                           |
|             | 1,5–6,5  | 0,059–0,256      | 24                       | 24  | –          | –    |                                                                                                        |                           |
|             | 7,0–13,0 | 0,276–0,512      | 60                       | 60  | –          | –    |                                                                                                        |                           |
| MR 25       | 1,0–3,5  | 0,059–0,138      | 18                       | 18  | –          | –    |                                                                                                        |                           |
|             | 4,0–4,5  | 0,157–0,177      | 42                       | 42  | –          | –    |                                                                                                        |                           |
|             | 5,0–7,5  | 0,196–0,295      | 60                       | 60  | –          | –    |                                                                                                        |                           |
|             | 8,0–17,0 | 0,315–0,669      | 78                       | 78  | –          | –    |                                                                                                        |                           |
| MR 32       | 2,0–2,5  | 0,078–0,098      | 18                       | 18  | –          | –    |                                                                                                        |                           |
|             | 3,0–22,0 | 0,118–0,2917     | 100                      | 100 | –          | –    |                                                                                                        |                           |

Expert advice

We recommend tightening the clamping nuts with our TORCO-BLOCK or torque wrench.

*Original REGO-FIX accessories can be found on page 307.*

Higher tightening torques can lead to deformation of the steep taper and therefor to bad runout

### Expert advice

We recommend tightening the clamping nuts with our TORCO-BLOCK or torque wrench.

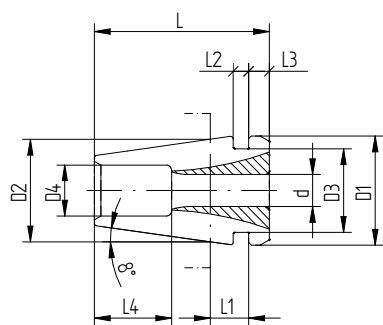
Original REGO-FIX accessories can be found on page 307.

# ER collets dimensions

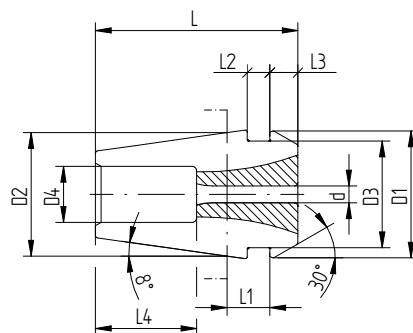
| Size [mm] | Dimensions [mm] |      |    |      |     |      |      |    |     |     |    | Drawing |
|-----------|-----------------|------|----|------|-----|------|------|----|-----|-----|----|---------|
| D2        | d               | D1   | D2 | D3   | D4  | L    | L1** | LF | L2  | L3  | L4 |         |
| ER 8      | 1,0–2,5         | 8,5  | 8  | 6,5  | 4   | 13,6 | 2,98 |    | 1,2 | 1,5 | 6  | 1       |
| ER 8      | 3,0–5,0         | 8,5  | 8  | 6,5  | –   | 13,6 | 2,98 |    | 1,2 | 1,5 | –  | 2       |
| ER 11     | 1,0–2,5         | 11,5 | 11 | 9,5  | 5   | 18   | 3,8  |    | 2   | 2,5 | 9  | 3       |
| ER 11     | 3,0–7,0         | 11,5 | 11 | 9,5  | –   | 18   | 3,8  |    | 2   | 2,5 | –  | 4       |
| ER 16     | 1,0–1,59        | 17   | 16 | 13,8 | 7,5 | 27,5 | 6,26 |    | 2,7 | 4   | 13 | 3       |
| ER 16     | 2,0–4,76        | 17   | 16 | 13,8 | 7,5 | 27,5 | 6,26 |    | 2,7 | 4   | 10 | 3       |
| ER 16     | 5,0–10,0        | 17   | 16 | 13,8 | –   | 27,5 | 6,26 |    | 2,7 | 4   | –  | 4       |
| ER 16     | 9,5–10,0        | 17   | 16 | 13,8 | –   | 26*  | 6,26 |    | 2,7 | 4   | –  | 4       |
| ER 20     | 1,0–1,59        | 21   | 20 | 17,4 | 9   | 31,5 | 6,36 |    | 2,8 | 4,8 | 16 | 3       |
| ER 20     | 2,0–6,50        | 21   | 20 | 17,4 | 9   | 31,5 | 6,36 |    | 2,8 | 4,8 | 13 | 3       |
| ER 20     | 7,0–13,0        | 21   | 20 | 17,4 | –   | 31,5 | 6,36 |    | 2,8 | 4,8 | –  | 4       |
| ER 25     | 1,0–1,59        | 26   | 25 | 22   | 12  | 34   | 6,66 |    | 3,1 | 5   | 18 | 3       |
| ER 25     | 2,0–7,50        | 26   | 25 | 22   | 12  | 34   | 6,66 |    | 3,1 | 5   | 15 | 3       |
| ER 25     | 8,0–17,0        | 26   | 25 | 22   | –   | 34   | 6,66 |    | 3,1 | 5   | –  | 4       |
| ER 32     | 2,0–4,76        | 33   | 32 | 29,2 | 15  | 40   | 7,16 |    | 3,6 | 5,5 | 20 | 3       |
| ER 32     | 5,0–7,5         | 33   | 32 | 29,2 | 15  | 40   | 7,16 |    | 3,6 | 5,5 | 15 | 3       |
| ER 32     | 8,0–22,0        | 33   | 32 | 29,2 | –   | 40   | 7,16 |    | 3,6 | 5,5 | –  | 4       |
| ER 40     | 3,0–4,76        | 41   | 40 | 36,2 | 20  | 46   | 7,66 |    | 4,1 | 7   | 24 | 3       |
| ER 40     | 5,0–8,5         | 41   | 40 | 36,2 | 20  | 46   | 7,66 |    | 4,1 | 7   | 18 | 3       |
| ER 40     | 9,0–30,0        | 41   | 40 | 36,2 | –   | 46   | 7,66 |    | 4,1 | 7   | –  | 4       |
| ER 50     | 6,0–10,0        | 52   | 50 | 46   | 20  | 60   | 12,6 |    | 5,5 | 8,5 | 32 | 3       |
| ER 50     | 12,0–36,0       | 52   | 50 | 46   | –   | 60   | 12,6 |    | 5,5 | 8,5 | –  | 4       |

\*Up to 27.5 available, depending on production

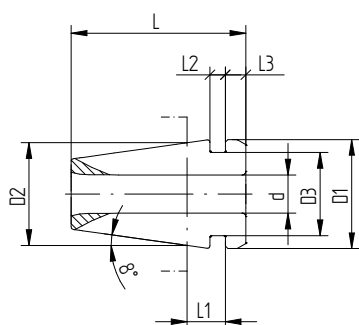
\*\*L1 references to the top length of the ER collet in the toolholder.



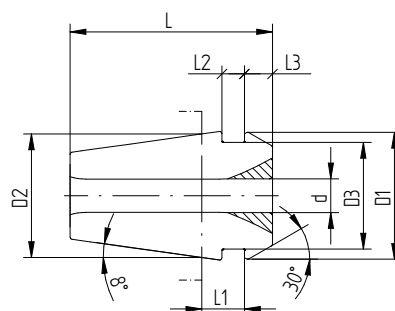
Drawing 1



Drawing 2



Drawing 3

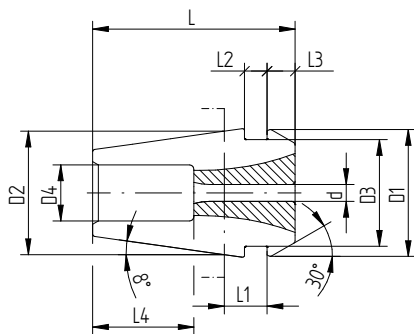


Drawing 4

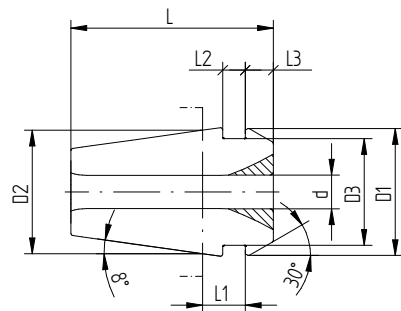
# ER collets dimensions

| Size [mm] | Dimensions [mm] |      |    |      |     |      |      |    |     |     | Drawing |   |
|-----------|-----------------|------|----|------|-----|------|------|----|-----|-----|---------|---|
| D2        | d               | D1   | D2 | D3   | D4  | L    | L1   | L2 | L3  | L4  |         |   |
| MR 11     | 1,0 – 2,0       | 11,5 | 11 | 9,5  | 5   | 18   | 3,8  |    | 2   | 2,5 | 9       | 1 |
| MR 11     | 3,0 – 6,35      | 11,5 | 11 | 9,5  | –   | 18   | 3,8  |    | 2   | 2,5 | –       | 2 |
| MR 16     | 1,0             | 17   | 16 | 13,8 | 7,5 | 27,5 | 6,26 |    | 2,7 | 4   | 13      | 1 |
| MR 16     | 2,0 – 4,0       | 17   | 16 | 13,8 | 7,5 | 27,5 | 6,26 |    | 2,7 | 4   | 10      | 1 |
| MR 16     | 5,0 – 10,0      | 17   | 16 | 13,8 | –   | 26*  | 6,25 |    | 2,7 | 4   | –       | 2 |
| MR 25     | 1,0             | 26   | 25 | 22   | 12  | 34   | 6,66 |    | 3,1 | 5   | 18      | 1 |
| MR 25     | 2,0 – 6,35      | 26   | 25 | 22   | 12  | 34   | 6,66 |    | 3,1 | 5   | 15      | 1 |
| MR 25     | 8,0 – 16,0      | 26   | 25 | 22   | –   | 34   | 6,66 |    | 3,1 | 5   | –       | 2 |
| MR 32     | 2,0 – 4,0       | 33   | 32 | 29,2 | 15  | 40   | 7,2  |    | 3,6 | 5,5 | 20      | 1 |
| MR 32     | 5,0 – 6,35      | 33   | 32 | 29,2 | 15  | 40   | 7,2  |    | 3,6 | 5,5 | 15      | 1 |
| MR 32     | 8,0 – 20,0      | 33   | 32 | 29,2 | –   | 40   | 7,2  |    | 3,6 | 5,5 | –       | 2 |

\*Up to 27.5 available, depending on production



Drawing 1

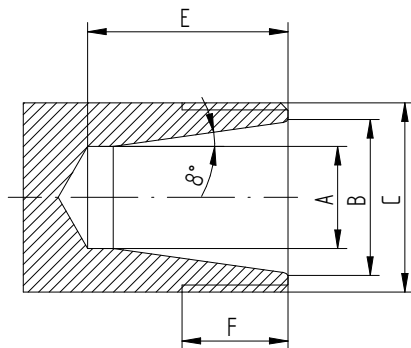


Drawing 2

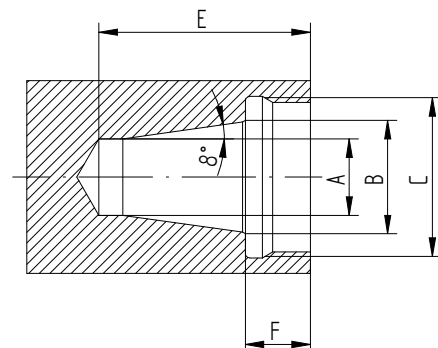


# Dimensions for ER collet cavities in machine spindles and matching clamping nuts

| ER size | Diameter range [mm] | Hi-Q® |     |     |      |     |      |      |       |    |     | Dimensions [mm] |    |             |      |      |
|---------|---------------------|-------|-----|-----|------|-----|------|------|-------|----|-----|-----------------|----|-------------|------|------|
|         |                     | ER    | ERC | ERB | ERBC | ERM | ERMC | ERMx | ERMxC | AX | AXC | A               | B  | C           | E    | F    |
| 11      | 0,5–7,0             | •     | •   | –   | –    | –   | –    | –    | –     | –  | –   | 7,5             | 11 | M 14 x 0,75 | 17   | 10   |
| 16      | 0,5–10,0            | •     | •   | •   | •    | –   | –    | –    | –     | –  | –   | 10,5            | 16 | M 22 x 1,5  | 22   | 13   |
| 20      | 0,5–13,0            | •     | •   | •   | •    | –   | –    | –    | –     | –  | –   | 13,5            | 20 | M 25 x 1,5  | 26,5 | 13,5 |
| 25      | 0,5–17,0            | •     | •   | •   | •    | –   | –    | –    | –     | –  | –   | 18,0            | 25 | M 32 x 1,5  | 29   | 14   |
| 32      | 1,0–22,0            | •     | •   | •   | •    | –   | –    | –    | –     | –  | –   | 23,5            | 32 | M 40 x 1,5  | 34   | 16   |
| 40      | 2,0–30,0            | •     | •   | •   | •    | –   | –    | –    | –     | –  | –   | 30,5            | 40 | M 50 x 1,5  | 38   | 17   |
| 50      | 4,0–36,0            | •     | •   | •   | •    | –   | –    | –    | –     | –  | –   | 38              | 50 | M 64 x 2    | 48   | 24   |
| 8       | 0,5–5,0             | –     | –   | –   | –    | •   | –    | •    | –     | –  | –   | 5,2             | 8  | M 10 x 0,75 | 13   | 8    |
| 11      | 0,5–7,0             | –     | –   | –   | –    | •   | •    | •    | •     | –  | –   | 7,5             | 11 | M 13 x 0,75 | 17   | 8,5  |
| 16      | 0,5–10,0            | –     | –   | –   | –    | •   | •    | •    | •     | –  | –   | 10,5            | 16 | M 19 x 1    | 22   | 13   |
| 20      | 0,5–13,0            | –     | –   | –   | –    | •   | •    | •    | •     | –  | –   | 13,5            | 20 | M 24 x 1    | 26,5 | 13,5 |
| 25      | 0,5–17,0            | –     | –   | –   | –    | •   | •    | •    | •     | –  | –   | 18              | 25 | M 30 x 1    | 29   | 14   |
| 11      | 0,5–7,0             | –     | –   | –   | –    | –   | –    | –    | –     | •  | –   | 7,5             | 11 | M 18 x 1    | 23   | 7    |
| 16      | 0,5–10,0            | –     | –   | –   | –    | –   | –    | –    | –     | •  | •   | 10,5            | 16 | M 24 x 1    | 32   | 10   |
| 20      | 0,5–13,0            | –     | –   | –   | –    | –   | –    | –    | –     | •  | •   | 13,5            | 20 | M 28 x 1,5  | 37,5 | 11   |
| 25      | 0,5–17,0            | –     | –   | –   | –    | –   | –    | –    | –     | •  | •   | 18              | 25 | M 32 x 1,5  | 41   | 12   |
| 32      | 1,0–22,0            | –     | –   | –   | –    | –   | –    | –    | –     | •  | •   | 23,5            | 32 | M 40 x 1,5  | 48   | 12   |
| 40      | 2,0–30,0            | –     | –   | –   | –    | –   | –    | –    | –     | •  | •   | 30,5            | 40 | M 50 x 1,5  | 54   | 16   |



All other standard ER cavities



ER AX and ER AXC cavities

# Technical information for tapping collets ER-GB

ER-GB

X: not available

| X: not available |              |                          | ER 11-GB                                       |      | ER 16-GB                                       |      | ER 20-GB                                       |      | ER 25-GB                                       |      | ER 32-GB                                       |      | ER 40-GB                                       |      | ER 50-GB                                        |      |
|------------------|--------------|--------------------------|------------------------------------------------|------|------------------------------------------------|------|------------------------------------------------|------|------------------------------------------------|------|------------------------------------------------|------|------------------------------------------------|------|-------------------------------------------------|------|
|                  |              |                          | L = 18,0<br>L1 = 2,0<br>D1 = 11,3<br>D2 = 11,0 |      | L = 27,5<br>L1 = 2,7<br>D1 = 16,8<br>D2 = 16,0 |      | L = 31,5<br>L1 = 2,8<br>D1 = 20,8<br>D2 = 20,0 |      | L = 34,0<br>L1 = 3,1<br>D1 = 25,8<br>D2 = 25,0 |      | L = 40,0<br>L1 = 3,6<br>D1 = 32,8<br>D2 = 32,0 |      | L = 46,0<br>L1 = 4,1<br>D1 = 40,8<br>D2 = 40,0 |      | L = 60,0<br>L1 = 8,75<br>D1 = 51,8<br>D2 = 51,0 |      |
| d                | SW           | L2                       | L3                                             | D3   | L3                                             | D3   | L3                                             | D3   | L3                                             | D3   | L3                                             | D3   | L3                                             | D3   | L3                                              | D3   |
| [mm]             | [mm]         | [mm]                     | [mm]                                           | [mm] | [mm]                                           | [mm] | [mm]                                           | [mm] | [mm]                                           | [mm] | [mm]                                           | [mm] | [mm]                                           | [mm] | [mm]                                            | [mm] |
| 2.5              | 2.1          | 12                       | 2.8                                            | 4.0  | x                                              | x    | x                                              | x    | x                                              | x    | x                                              | x    | x                                              | x    | x                                               | x    |
| 2,8              | 2,1          | 12                       | 2,8                                            | 4,0  | x                                              | x    | x                                              | x    | x                                              | x    | x                                              | x    | x                                              | x    | x                                               | x    |
| 3,5              | 2,7          | 14                       | 2,8                                            | 4,0  | x                                              | x    | x                                              | x    | x                                              | x    | x                                              | x    | x                                              | x    | x                                               | x    |
| 4                | 3            | 14                       | 1,8                                            | 4,5  | x                                              | x    | x                                              | x    | x                                              | x    | x                                              | x    | x                                              | x    | x                                               | x    |
| 4                | 3,15/<br>3,2 | ER 11=14<br>ER 16–32=15  | –                                              | –    | 4,8                                            | 7,5  | 9,8                                            | 9    | 11,8                                           | 12   | 17,8                                           | 15   | x                                              | x    | x                                               | x    |
| 4,5              | 3,4          | ER 11=14<br>ER 16–32=15  | –                                              | –    | 4,8                                            | 7,5  | 9,8                                            | 9    | 11,8                                           | 12   | 17,8                                           | 15   | x                                              | x    | x                                               | x    |
| 5                | 4            | ER 11=14<br>ER 16–32=18  | –                                              | –    | 4,8                                            | 7,5  | 9,8                                            | 9    | 11,8                                           | 12   | 17,8                                           | 15   | x                                              | x    | x                                               | x    |
| 5,5              | 4,3          | 18                       | –                                              | –    | 4,8                                            | 7,5  | 9,8                                            | 9    | 11,8                                           | 12   | 17,8                                           | 15   | x                                              | x    | x                                               | x    |
| 5,5              | 4,5          | 18                       | –                                              | –    | 4,8                                            | 7,5  | 9,8                                            | 9    | 11,8                                           | 12   | 17,8                                           | 15   | x                                              | x    | x                                               | x    |
| 6                | 4,5          | 18                       | –                                              | –    | 4,8                                            | 7,5  | 8,8                                            | 9    | 10,8                                           | 12   | 16,8                                           | 15   | 22,8                                           | 20   | x                                               | x    |
| 6                | 4,9          | ER 11=14<br>ER 16–40=18  | –                                              | –    | 4,8                                            | 7,5  | 8,8                                            | 9    | 10,8                                           | 12   | 16,8                                           | 15   | 22,8                                           | 20   | x                                               | x    |
| 6,2              | 5            | 18                       | x                                              | x    | 4,8                                            | 7,5  | 8,8                                            | 9    | 10,8                                           | 12   | 16,8                                           | 15   | 22,8                                           | 20   | x                                               | x    |
| 6,3              | 5            | 18                       | x                                              | x    | 4,8                                            | 7,5  | 8,8                                            | 9    | 10,8                                           | 12   | 16,8                                           | 15   | 22,8                                           | 20   | x                                               | x    |
| 7                | 5,5          | 18                       | x                                              | x    | 3,8                                            | 8,0  | 7,8                                            | 9    | 9,8                                            | 12   | 15,8                                           | 15   | 21,8                                           | 20   | x                                               | x    |
| 7,1              | 5,6          | 18                       | x                                              | x    | 3,8                                            | 8,0  | 7,8                                            | 9    | 9,8                                            | 12   | 15,8                                           | 15   | 21,8                                           | 20   | x                                               | x    |
| 8                | 6,2/<br>6,3  | 22                       | x                                              | x    | –                                              | –    | 2,8                                            | 10   | 4,8                                            | 12   | 10,8                                           | 15   | 16,8                                           | 20   | x                                               | x    |
| 8,5              | 6,5          | 22                       | x                                              | x    | –                                              | –    | 2,8                                            | 10   | 4,8                                            | 12   | 10,8                                           | 15   | 16,8                                           | 20   | x                                               | x    |
| 9                | 7/<br>7,1    | 22                       | x                                              | x    | –                                              | –    | 2,8                                            | 10   | 3,8                                            | 12   | 9,8                                            | 15   | 15,8                                           | 20   | x                                               | x    |
| 10               | 8            | 25                       | x                                              | x    | x                                              | x    | –                                              | –    | –                                              | –    | 6,8                                            | 15   | 12,8                                           | 20   | x                                               | x    |
| 10,5             | 8            | 25                       | x                                              | x    | x                                              | x    | –                                              | –    | –                                              | –    | 6,8                                            | 15   | 12,8                                           | 20   | x                                               | x    |
| 11               | 9            | 25                       | x                                              | x    | x                                              | x    | –                                              | –    | –                                              | –    | 5,8                                            | 15   | 11,8                                           | 20   | x                                               | x    |
| 11,2             | 9            | 25                       | x                                              | x    | x                                              | x    | –                                              | –    | –                                              | –    | 5,8                                            | 15   | 11,8                                           | 20   | x                                               | x    |
| 12               | 9            | 25                       | x                                              | x    | x                                              | x    | –                                              | –    | –                                              | –    | 5,8                                            | 15   | 11,8                                           | 20   | x                                               | x    |
| 12,5             | 10           | 25                       | x                                              | x    | x                                              | x    | x                                              | x    | –                                              | –    | 4,8                                            | 15   | 10,8                                           | 20   | x                                               | x    |
| 14               | 11/<br>11,2  | 25                       | x                                              | x    | x                                              | x    | x                                              | x    | –                                              | –    | 3,8                                            | 17   | 9,8                                            | 20   | x                                               | x    |
| 15               | 12           | 25                       | x                                              | x    | x                                              | x    | x                                              | x    | –                                              | –    | 3,8                                            | 17   | 9,8                                            | 20   | x                                               | x    |
| 16               | 12/<br>12,5  | 25                       | x                                              | x    | x                                              | x    | x                                              | x    | –                                              | –    | 2,8                                            | 18   | 8,8                                            | 20   | x                                               | x    |
| 17               | 13           | 25                       | x                                              | x    | x                                              | x    | x                                              | x    | x                                              | x    | 2,8                                            | 19,5 | 8,8                                            | 20   | x                                               | x    |
| 18               | 14,5         | 25                       | x                                              | x    | x                                              | x    | x                                              | x    | x                                              | x    | 2,8                                            | 21   | 7,8                                            | 21   | x                                               | x    |
| 20               | 16           | 28                       | x                                              | x    | x                                              | x    | x                                              | x    | x                                              | x    | 2,8                                            | 21,5 | 3,8                                            | 22   | x                                               | x    |
| 22               | 18           | ER 40 = 28<br>ER 50 = 41 | x                                              | x    | x                                              | x    | x                                              | x    | x                                              | x    | –                                              | –    | 3,8                                            | 24   | x                                               | x    |
| 25               | 20           | 41                       | x                                              | x    | x                                              | x    | x                                              | x    | x                                              | x    | x                                              | x    | –                                              | –    | –                                               | –    |
| 28               | 22           | 41                       | x                                              | x    | x                                              | x    | x                                              | x    | x                                              | x    | x                                              | x    | x                                              | x    | –                                               | –    |
| 32               | 24           | 41                       | x                                              | x    | x                                              | x    | x                                              | x    | x                                              | x    | x                                              | x    | x                                              | x    | –                                               | –    |



| Type       | Dimensions [mm] |    |      |    |      |     |    |     |
|------------|-----------------|----|------|----|------|-----|----|-----|
|            | d               | D1 | D2   | L  | L1   | L2  | L3 | L4  |
| PCM ET1-12 | 3,55            | 7  | 11,5 | 18 | 16,5 | 2,5 | 5  | 5,5 |
| PCM ET1-16 | 6,3             | 11 | 17   | 22 | 20   | 2,8 | 7  | 7   |
| PCM ET1-20 | 7,1             | 14 | 21   | 24 | 23   | 2,8 | 8  | 7   |
| PCM ET1-25 | 10              | 19 | 26   | 26 | 24   | 3   | 10 | 8   |
| PCM ET1-32 | 12,5            | 23 | 33   | 33 | 32   | 3   | 1  | 10  |
| PCM ET1-40 | 17              | 28 | 41   | 42 | 42   | 3   | 12 | 13  |

## Expert advice

Do not use for coolant through tools and for applications with sealing disks.

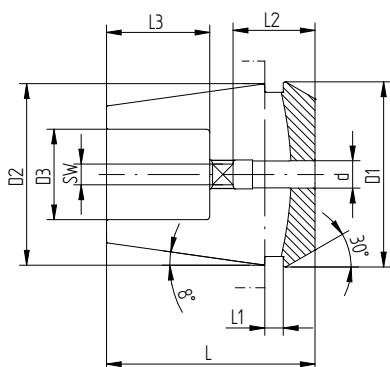
# Technical information for microbore collets

| Type      | Dimensions [mm] |      |    |      |     |      |     |     |     |    |
|-----------|-----------------|------|----|------|-----|------|-----|-----|-----|----|
|           | d               | D1   | D2 | D3   | D4  | L    | L1  | L2  | L3  | L4 |
| ER 8-MB   | 0,2-0,9         | 8,5  | 8  | 6,5  | 4   | 13,5 | 1,2 | 1,2 | 1,5 | 6  |
| ER 11-MBX | 0,2-0,9         | 11,5 | 11 | 9,5  | 5   | 18   | 2   | 2   | 2,5 | 9  |
| ER 16-MBX | 0,2-0,9         | 17   | 16 | 13,8 | 7,5 | 27,5 | 6,3 | 2,7 | 4   | 13 |

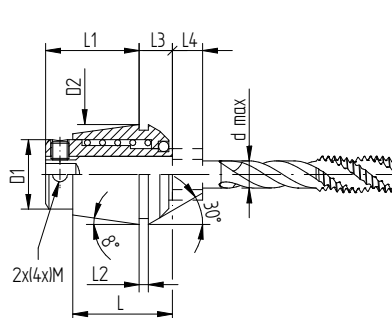
## Expert advice

ER-MB collets have no clamping range.

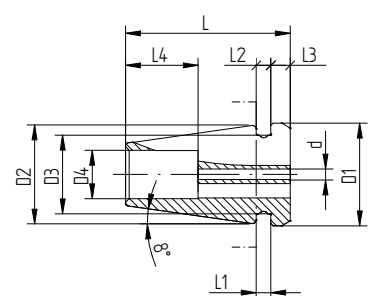
Only nominal diameters h7 can be clamped.



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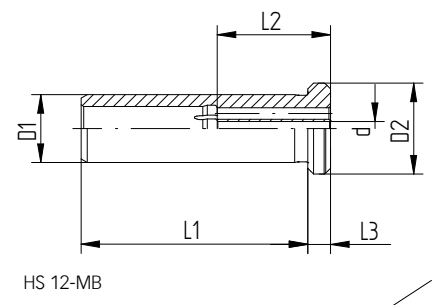
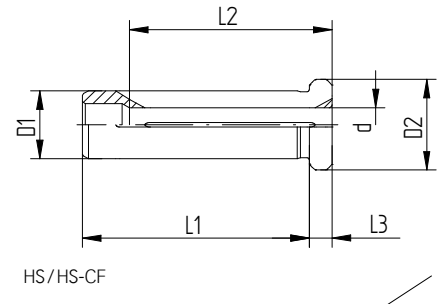


PCM ET1

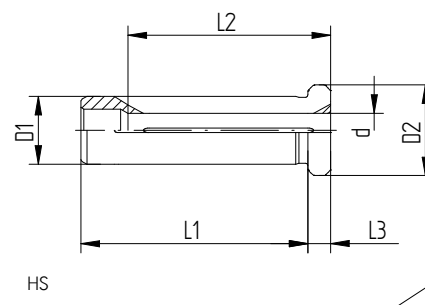


ER-MB

| Type                  | Dimensions [mm] |      |    |    |    |      |    |
|-----------------------|-----------------|------|----|----|----|------|----|
|                       | d               | d    | D1 | D2 | L1 | L2   | L3 |
| <b>HS 12 HS 12-CF</b> |                 |      |    |    |    |      |    |
| Ø 3,0                 | 3               | –    | 12 | 16 | 40 | 29   | 4  |
| Ø 1/8"                | 3,175           | 1/8  | 12 | 16 | 40 | 29   | 4  |
| Ø 4,0                 | 4               | –    | 12 | 16 | 40 | 29   | 4  |
| Ø 3/16"               | 4,763           | 3/16 | 12 | 16 | 40 | 29   | 4  |
| Ø 5,0                 | 5               | –    | 12 | 16 | 40 | 29   | 4  |
| Ø 6,0                 | 6               | –    | 12 | 16 | 40 | 36   | 4  |
| Ø 1/4"                | 6,35            | 1/4  | 12 | 16 | 40 | 36   | 4  |
| Ø 7,0                 | 7               | –    | 12 | 16 | 40 | 37   | 4  |
| Ø 5/16"               | 7,938           | 5/16 | 12 | 16 | 40 | 37   | 4  |
| Ø 8,0                 | 8               | –    | 12 | 16 | 40 | 37   | 4  |
| Ø 9,0                 | 9               | –    | 12 | 16 | 40 | 37   | 4  |
| Ø 3/8"                | 9,525           | 3/8  | 12 | 16 | 40 | 40   | 4  |
| Ø 10,0                | 10              | –    | 12 | 16 | 40 | 40   | 4  |
| <b>HS 12-MB</b>       |                 |      |    |    |    |      |    |
| Ø 1,0                 | 1               | –    | 12 | 16 | 40 | 20   | 4  |
| Ø 1,5                 | 1,5             | –    | 12 | 16 | 40 | 20   | 4  |
| Ø 2,0                 | 2               | –    | 12 | 16 | 40 | 20   | 4  |
| Ø 2,5                 | 2,5             | –    | 12 | 16 | 40 | 20   | 4  |
| <b>HS 16</b>          |                 |      |    |    |    |      |    |
| Ø 3                   | 3               | -    | 16 | 20 | 46 | 29   | 4  |
| Ø 4                   | 4               | -    | 16 | 20 | 46 | 30   | 4  |
| Ø 6                   | 6               | -    | 16 | 20 | 46 | 35,5 | 4  |
| Ø 8                   | 8               | -    | 16 | 20 | 46 | 37   | 4  |
| Ø 10                  | 10              | -    | 16 | 20 | 46 | 41   | 4  |
| Ø 12                  | 12              | -    | 16 | 20 | 46 | 37   | 4  |
| <b>HS 20 HS 20-CF</b> |                 |      |    |    |    |      |    |
| Ø 3,0                 | 3               | –    | 20 | 25 | 50 | 28   | 4  |
| Ø 1/8"                | 3,175           | 1/8  | 20 | 25 | 50 | 28   | 4  |
| Ø 4,0                 | 4               | –    | 20 | 25 | 50 | 28   | 4  |
| Ø 3/16"               | 4,763           | 3/16 | 20 | 25 | 50 | 28   | 4  |
| Ø 5,0                 | 5               | –    | 20 | 25 | 50 | 28   | 4  |
| Ø 6,0                 | 6               | –    | 20 | 25 | 50 | 36   | 4  |
| Ø 1/4"                | 6,35            | 1/4  | 20 | 25 | 50 | 36   | 4  |
| Ø 7,0                 | 7               | –    | 20 | 25 | 50 | 38   | 4  |
| Ø 5/16"               | 7,938           | 5/16 | 20 | 25 | 50 | 37   | 4  |
| Ø 8,0                 | 8               | –    | 20 | 25 | 50 | 37   | 4  |
| Ø 9,0                 | 9               | –    | 20 | 25 | 50 | 38   | 4  |
| Ø 3/8"                | 9,525           | 3/8  | 20 | 25 | 50 | 36   | 4  |
| Ø 10,0                | 10              | –    | 20 | 25 | 50 | 40   | 4  |



| Type   | Dimensions [mm] |     |    |    |    |    |    |
|--------|-----------------|-----|----|----|----|----|----|
|        | d               | d   | D1 | D2 | L1 | L2 | L3 |
| Ø 11,0 | 11              | –   | 20 | 25 | 50 | 40 | 4  |
| Ø 12,0 | 12              | –   | 20 | 25 | 50 | 45 | 4  |
| Ø 1/2" | 12,7            | 1/2 | 20 | 25 | 50 | 45 | 4  |
| Ø 13,0 | 13              | –   | 20 | 25 | 50 | 45 | 4  |
| Ø 14,0 | 14              | –   | 20 | 25 | 50 | 45 | 4  |
| Ø 15,0 | 15              | –   | 20 | 25 | 50 | 45 | 4  |
| Ø 5/8" | 15,875          | 5/8 | 20 | 25 | 50 | 48 | 4  |
| Ø 16,0 | 16              | –   | 20 | 25 | 50 | 48 | 4  |

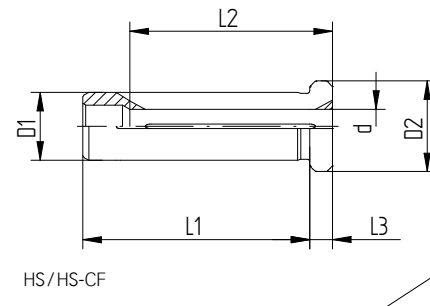


| HS 25    |        |       |    |    |    |    |   |
|----------|--------|-------|----|----|----|----|---|
| Ø 3,0    | 3      | –     | 25 | 30 | 56 | 29 | 4 |
| Ø 1/8"   | 3,175  | 1/8   | 25 | 30 | 56 | 29 | 4 |
| Ø 4,0    | 4      | –     | 25 | 30 | 56 | 29 | 4 |
| Ø 3/16"  | 4,763  | 3/16  | 25 | 30 | 56 | 29 | 4 |
| Ø 5,0    | 5      | –     | 25 | 30 | 56 | 29 | 4 |
| Ø 6,0    | 6      | –     | 25 | 30 | 56 | 37 | 4 |
| Ø 1/4"   | 6,35   | 1/4   | 25 | 30 | 56 | 37 | 4 |
| Ø 7,0    | 7      | –     | 25 | 30 | 56 | 37 | 4 |
| Ø 5/16"  | 7,938  | 5/16  | 25 | 30 | 56 | 37 | 4 |
| Ø 8,0    | 8      | –     | 25 | 30 | 56 | 37 | 4 |
| Ø 9,0    | 9      | –     | 25 | 30 | 56 | 38 | 4 |
| Ø 3/8"   | 9,525  | 3/8   | 25 | 30 | 56 | 38 | 4 |
| Ø 10,0   | 10     | –     | 25 | 30 | 56 | 40 | 4 |
| Ø 7/16"  | 11,112 | 7/16  | 25 | 30 | 56 | 40 | 4 |
| Ø 12,0   | 12     | –     | 25 | 30 | 56 | 46 | 4 |
| Ø 1/2"   | 12,7   | 1/2   | 25 | 30 | 56 | 46 | 4 |
| Ø 14,0   | 14     | –     | 25 | 30 | 56 | 47 | 4 |
| Ø 9/16"  | 14,288 | 9/16  | 25 | 30 | 56 | 47 | 4 |
| Ø 5/8"   | 15,875 | 5/8   | 25 | 30 | 56 | 48 | 4 |
| Ø 16,0   | 16     | –     | 25 | 30 | 56 | 48 | 4 |
| Ø 11/16" | 17,461 | 11/16 | 25 | 30 | 56 | 48 | 4 |
| Ø 18,0   | 18     | –     | 25 | 30 | 56 | 48 | 4 |
| Ø 3/4"   | 19,05  | 3/4   | 25 | 30 | 56 | 48 | 4 |
| Ø 20,0   | 20     | –     | 25 | 30 | 56 | 50 | 4 |
| Ø 13/16" | 20,638 | 13/16 | 25 | 30 | 56 | 50 | 4 |

## Expert advice

Reduction sleeve may be damaged, if clamped without a tool.

| Type           | Dimensions [mm] |       |    |    |    |    |    |
|----------------|-----------------|-------|----|----|----|----|----|
|                | d               | d     | D1 | D2 | L1 | L2 | L3 |
| HS 32 HS 32-CF |                 |       |    |    |    |    |    |
| Ø 3/16"        | 4,763           | 3/16  | 32 | 36 | 60 | 29 | 4  |
| Ø 5,0          | 5               | –     | 32 | 36 | 60 | 29 | 4  |
| Ø 6,0          | 6               | –     | 32 | 36 | 60 | 36 | 4  |
| Ø 1/4"         | 6,35            | 1/4   | 32 | 36 | 60 | 36 | 4  |
| Ø 7,0          | 7               | –     | 32 | 36 | 60 | 37 | 4  |
| Ø 5/16"        | 7,938           | 5/16  | 32 | 36 | 60 | 36 | 4  |
| Ø 8,0          | 8               | –     | 32 | 36 | 60 | 36 | 4  |
| Ø 9,0          | 9               | –     | 32 | 36 | 60 | 37 | 4  |
| Ø 3/8"         | 9,525           | 3/8   | 32 | 36 | 60 | 37 | 4  |
| Ø 10,0         | 10              | –     | 32 | 36 | 60 | 40 | 4  |
| Ø 11,0         | 11              | –     | 32 | 36 | 60 | 40 | 4  |
| Ø 7/16"        | 11,112          | 7/16  | 32 | 36 | 60 | 45 | 4  |
| Ø 12,0         | 12              | –     | 32 | 36 | 60 | 45 | 4  |
| Ø 1/2"         | 12,7            | 1/2   | 32 | 36 | 60 | 45 | 4  |
| Ø 13,0         | 13              | –     | 32 | 36 | 60 | 45 | 4  |
| Ø 14,0         | 14              | –     | 32 | 36 | 60 | 46 | 4  |
| Ø 9/16"        | 14,288          | 9/16  | 32 | 36 | 60 | 46 | 4  |
| Ø 15,0         | 15              | –     | 32 | 36 | 60 | 46 | 4  |
| Ø 5/8"         | 15,875          | 5/8   | 32 | 36 | 60 | 46 | 4  |
| Ø 16,0         | 16              | –     | 32 | 36 | 60 | 48 | 4  |
| Ø 17,0         | 17              | –     | 32 | 36 | 60 | 48 | 4  |
| Ø 11/16"       | 17,461          | 11/16 | 32 | 36 | 60 | 48 | 4  |
| Ø 18,0         | 18              | –     | 32 | 36 | 60 | 49 | 4  |
| Ø 19,0         | 19              | –     | 32 | 36 | 60 | 49 | 4  |
| Ø 3/4"         | 19,05           | 3/4   | 32 | 36 | 60 | 50 | 4  |
| Ø 20,0         | 20              | –     | 32 | 36 | 60 | 50 | 4  |
| Ø 13/16"       | 20,638          | 13/16 | 32 | 36 | 60 | 50 | 4  |
| Ø 22,0         | 22              | –     | 32 | 36 | 60 | 50 | 4  |
| Ø 7/8"         | 22,225          | 7/8   | 32 | 36 | 60 | 50 | 4  |
| Ø 15/16"       | 23,813          | 15/16 | 32 | 36 | 60 | 52 | 4  |
| Ø 25,0         | 25              | –     | 32 | 36 | 60 | 56 | 4  |
| Ø 1"           | 25,4            | 1     | 32 | 36 | 60 | 56 | 4  |



# Spindle interface norms

HSK

DIN 69893

SK

DIN 69871

BT

MAS 403

CAPTO

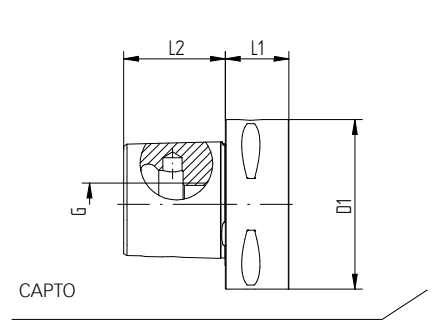
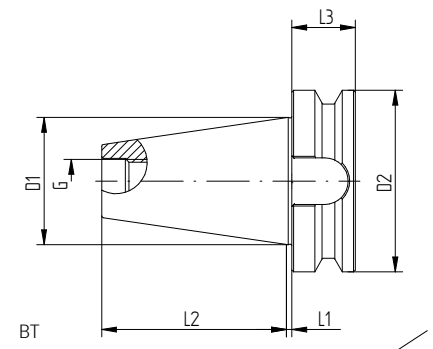
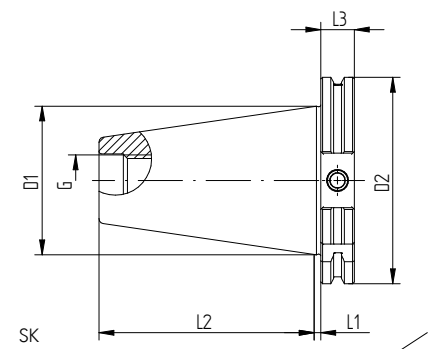
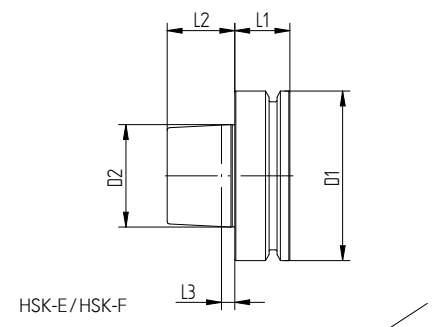
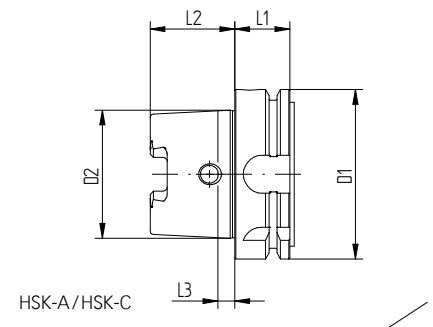
ISO 26623

| Type          | Dimensions [mm] |    |      |    |     | G |
|---------------|-----------------|----|------|----|-----|---|
|               | D1              | D2 | L1   | L2 | L3  |   |
| HSK DIN 69893 |                 |    |      |    |     |   |
| HSK-A 25      | 25              | 19 | 10   | 13 | 2,5 | – |
| HSK-C 25      | 25              | 19 | 8    | 13 | 2,5 | – |
| HSK-E 25      | 25              | 19 | 10   | 13 | 2,5 | – |
| HSK-A 32      | 32              | 24 | 20   | 16 | 3,2 | – |
| HSK-C 32      | 32              | 24 | 10   | 16 | 3,2 | – |
| HSK-E 32      | 32              | 24 | 20   | 16 | 3,2 | – |
| HSK-A 40      | 40              | 30 | 20   | 20 | 4   | – |
| HSK-C 40      | 40              | 30 | 10   | 20 | 4   | – |
| HSK-E 40      | 40              | 30 | 20   | 20 | 4   | – |
| HSK-A 50      | 50              | 38 | 26   | 25 | 5   | – |
| HSK-C 50      | 50              | 38 | 12,5 | 25 | 5   | – |
| HSK-E 50      | 50              | 38 | 26   | 25 | 5   | – |
| HSK-F 50      | 50              | 30 | 26   | 20 | 4   | – |
| HSK-A 63      | 63              | 48 | 26   | 32 | 6,3 | – |
| HSK-C 63      | 63              | 48 | 12,5 | 32 | 6,3 | – |
| HSK-E 63      | 63              | 48 | 26   | 32 | 6,3 | – |
| HSK-F 63      | 63              | 38 | 26   | 25 | 5   | – |
| HSK-A 80      | 80              | 60 | 26   | 40 | 8   | – |
| HSK-C 80      | 80              | 60 | 16   | 40 | 8   | – |
| HSK-F 80      | 80              | 48 | 26   | 32 | 6,3 | – |
| HSK-A 100     | 100             | 75 | 29   | 50 | 10  | – |
| HSK-C 100     | 100             | 75 | 16   | 50 | 10  | – |
| HSK-E 100     | 100             | 70 | 29   | 50 | 10  | – |

|                     |       |       |     |        |       |      |
|---------------------|-------|-------|-----|--------|-------|------|
| <b>SK DIN 69871</b> |       |       |     |        |       |      |
| SK 30               | 31,75 | 50    | 3,2 | 47,8   | 15,85 | M 12 |
| SK 40               | 44,45 | 63,55 | 3,2 | 68,4   | 15,85 | M 16 |
| SK 50               | 69,85 | 97,5  | 3,2 | 101,75 | 15,85 | M 24 |

|                   |       |     |   |       |    |      |
|-------------------|-------|-----|---|-------|----|------|
| <b>BT MAS 403</b> |       |     |   |       |    |      |
| BT 30             | 31,75 | 46  | 2 | 48,4  | 20 | M 12 |
| BT 40             | 44,45 | 63  | 2 | 65,4  | 25 | M 16 |
| BT 50             | 69,85 | 100 | 3 | 101,8 | 35 | M 24 |

|                                      |    |   |    |    |   |            |
|--------------------------------------|----|---|----|----|---|------------|
| <b>Polygon shank CAPTO ISO 26623</b> |    |   |    |    |   |            |
| Polygonschaft C3                     | 32 | – | 15 | 19 | – | M 12 x 1,5 |
| Polygonschaft C4                     | 40 | – | 20 | 24 | – | M 14 x 1,5 |
| Polygonschaft C5                     | 50 | – | 20 | 30 | – | M 16 x 1,5 |
| Polygonschaft C6                     | 63 | – | 22 | 38 | – | M 20 x 2   |
| Polygonschaft C8                     | 80 | – | 30 | 48 | – | M 20 x 2   |

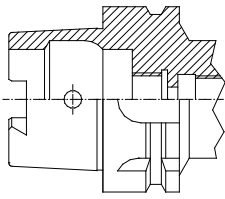


# HSK forms and their key characteristics

HSK

DIN 69893

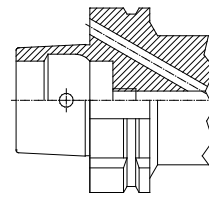
ISO 12164



## Form A\*

- // Standard type for machining centers and milling machines
- // For automatic tool change
- // Coolant supply through center via coolant tube
- // Drive keys at the end of HSK taper
- // Hole for data carrier DIN STD 69873 in the flange is available on request

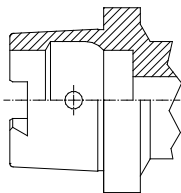
*\*Also usable in form C applications with side hole for manual tool change*



## Form B

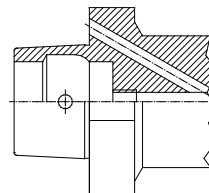
- // For machining centers, milling and turning machines
- // With enlarged flange size for higher radial rigidity
- // For automatic tool change
- // Coolant supply through the flange
- // Drive keys at the flange

*Available on request*



## Form C

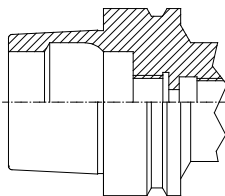
- // For transfer lines, special machines and modular tooling systems
- // For manual tool change
- // Drive keys at the end of HSK taper



## Form D

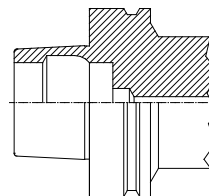
- // For special machines
- // With enlarged flange size for higher radial rigidity
- // For manual tool change
- // Coolant supply through the flange
- // Drive keys at the flange

*Available on request*



## Form E

- // For high-speed applications
- // For automatic tool change
- // Coolant supply through center via coolant tube
- // Without any drive keys for absolute symmetry



## Form F

- // For high-speed applications
- // With enlarged flange size for higher radial rigidity
- // For automatic tool change
- // Without any drive keys for absolute symmetry

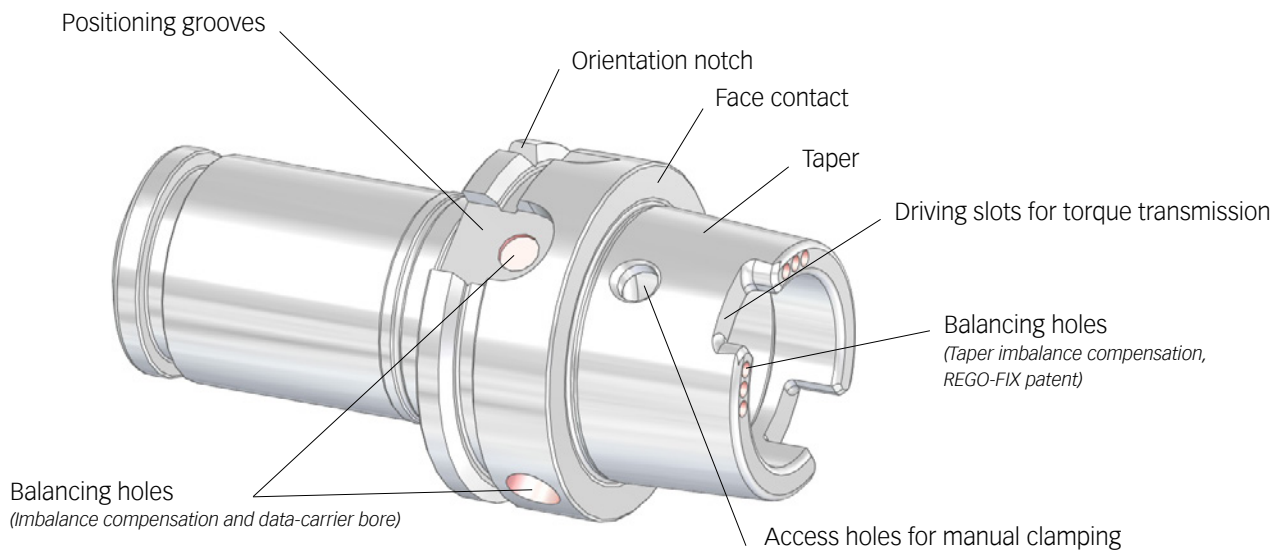


# HSK interface

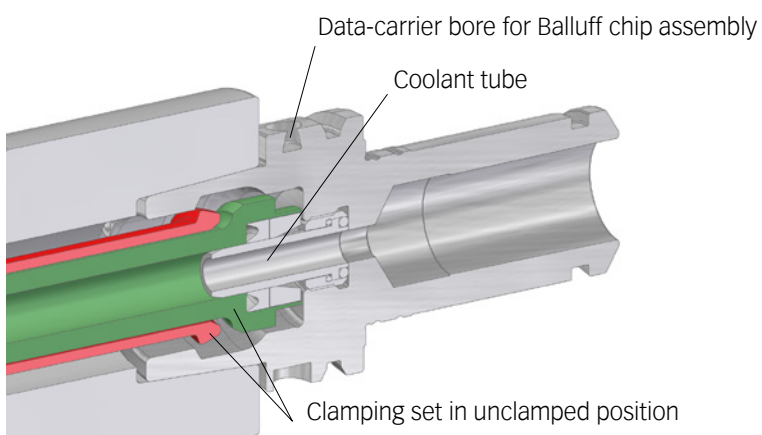
HSK

DIN 69893

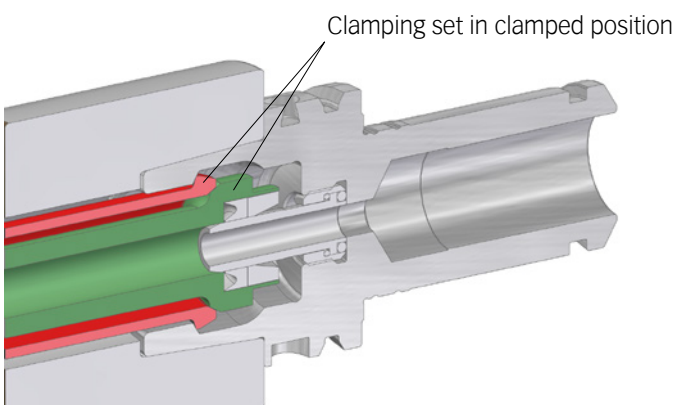
ISO 12164

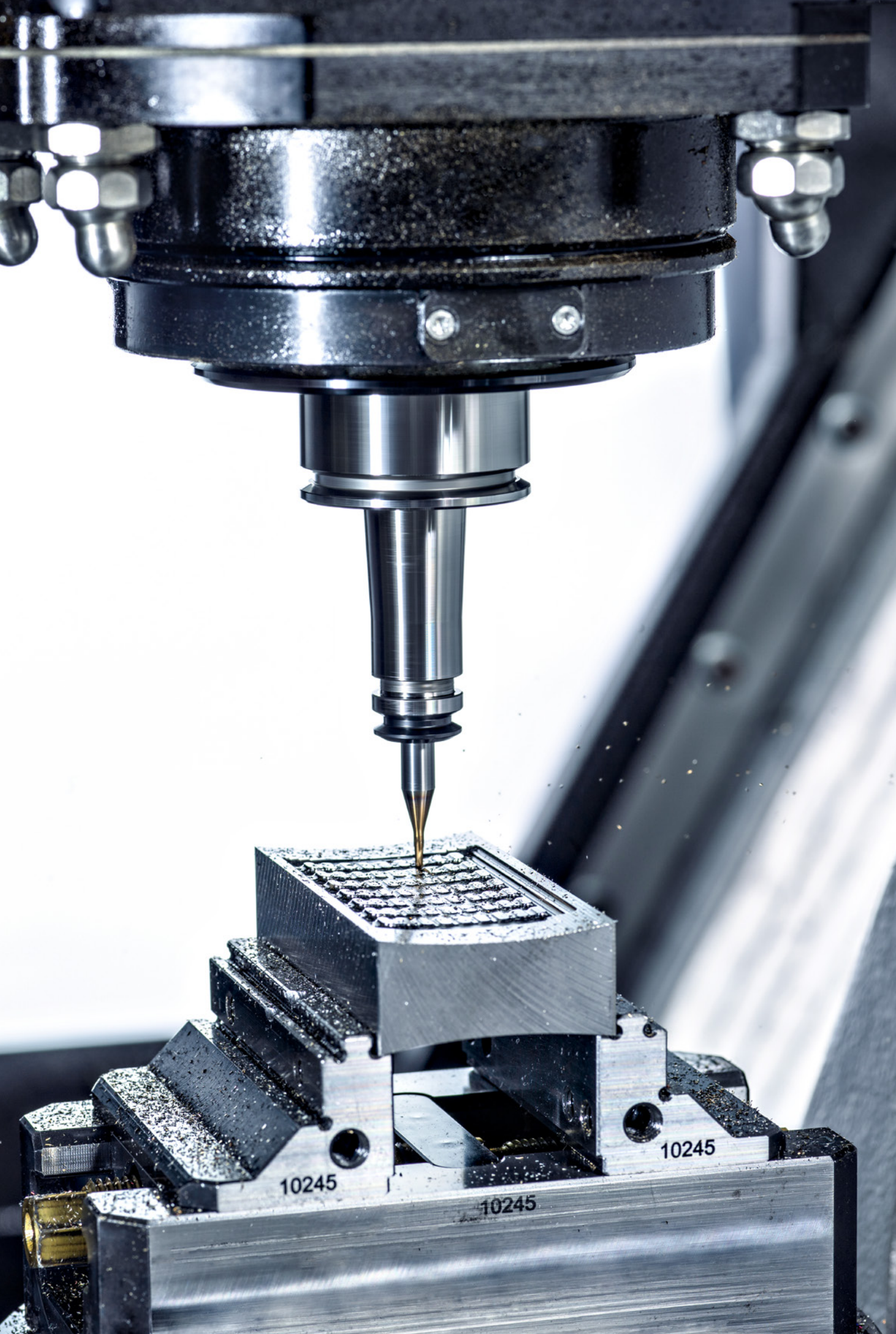


## Position with unclamped HSK toolholder



## Position with clamped HSK toolholder









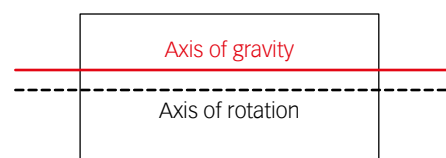
## Balancing

The experience of REGO-FIX in the development and manufacturing of tool holding systems has provided us a large knowledge basis on the subject of balancing.

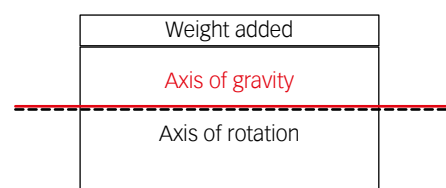
In our production we have the latest manufacturing equipment and testing methods available, but as with other manufacturers the physical limits of balancing have to be considered. Furthermore, it has to be considered whether a process is economically feasible and the imbalance measurable. The weights and interaction of the individual components of the tool holding system determines which options for balancing are practical. Therefore, we recommend that the entire assembly be considered as a whole, as it is stipulated in the DIN 69888.

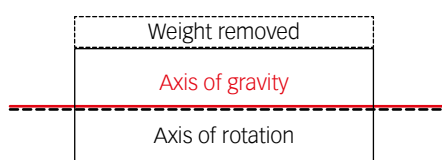
**What is imbalance** Imbalance occurs when the mass of a rotating body is not distributed rotationally symmetric. This leads to vibration and can cause increased wear or damage to cutting tools and or machine bearing components. The weight of each part of the tool holding system is critical to the question: At what speed is balancing economically producible? Speeds have a great influence on the centrifugal forces. Due to its nature the centrifugal force increase exponentially, which means when you double the speed you get four times the centrifugal force.

**Static imbalance** A static unbalance results when the axis of rotation does not pass through the center of gravity axis of the rotary body. The axis of rotation is parallel to the axis of gravity, but is displaced by some amount. This displacement (called eccentricity) produces a rotational circular vibration perpendicular to the rotational axis. This imbalance can be measured in a stationary position.



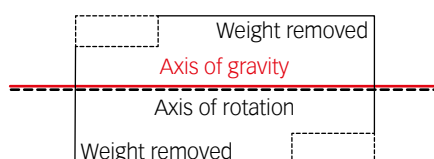
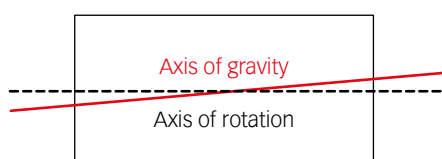
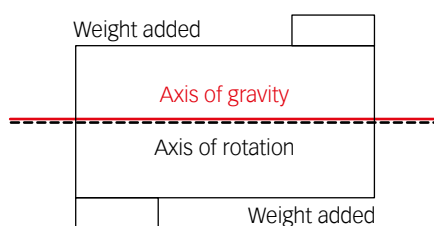
To reduce a static imbalance an appropriate weight is removed or adjusted perpendicular to the rotational axis.





To balance a dynamic imbalance, weight added, removed or adjusted at two levels.

**Dynamic imbalance** Dynamic imbalance occurs only during operation. It manifests itself in an unbalanced moment on the axis of rotation producing coupled forces and orbital oscillations. The center of gravity of the rotating body is in the rest position, while the axis for the coupled forces rotates in circular motions.



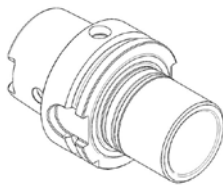
# Influences on the imbalance

The whole toolholding system and spindle should be considered as well as any external influences such as dried-coolant film or dirt that has collected on the spindle. The weight of the individual components and the speeds are important factors to consider as well.



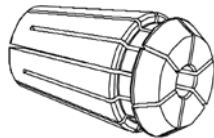
## Machine spindle

The spindle rotors are supported in the spindle housing in several locations and have for the most part a weight of about 15 kg. Therefore, they can be balanced much more accurately than a small rotating body such as a toolholder of only 200 g.



## Toolholder

The toolholder is the largest component in the interface between the spindle and the tool. These are balanced according to the manufacturer at the factory.



## Collet

These are usually rotationally symmetrical parts and do not have to be balanced. Installation error (eg. not correct clamping) or pollution (chips, dried coolant etc.) can cause an imbalance.



## Clamping nut

These are balanced according to manufacturer. Dirt, debris or damage can cause an imbalance.



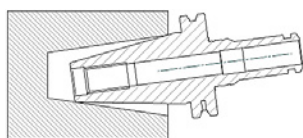
## Accessories for clamping system

Accessories, such as coolant tubes, stop screws, pull studs, sealing and cooling disks may cause an additional imbalance.



## Tool

Cutting tool design may (eg. single-edged, Weldon clamping surface, etc.) already have an imbalance.



## Positioning error/Taper fit

The tool change position accuracy of toolholders can play a large role in the balancing and repeatability of the measured imbalance. An HSK holder has a position repeatability of between 2-4 microns while most steep taper holders can be up to 5 microns. Impurities on the cone or on the mating surface between the toolholder and the spindle can also lead to an imbalance and larger position inaccuracies. So as can be seen it is very important to clean all surfaces thoroughly as to minimize the position error that can occur.

# Balancing quality

In recent years the cutting speeds have increased because of better materials and processes. This has resulted in new requirements on the balance of the whole system (machine spindle, clamping tool and tool).

General informations can be read in the Norm DIN ISO 19499:2008-03 "Mechanical vibration – Balancing – Guidance on the use and application of balancing standards".

## Norms

### Selection of DIN ISO 1940

This standard specifies the requirements on balancing as regulated grades of rotors in a constant (rigid) state. This standard is not applicable for tooling systems for the following reasons entire.

Spindles, tool holder systems and cutting tools have, in contrast to other rigid rotors (such as electric motor armatures, etc.) essential differences:

- Spindle, tool holder and cutting tool form a system with high temporal variation (for example, frequent tool change machining centers).
- Due to the radial angle and tension-related inaccuracies a repeated change of tool in the spindle leads to a change in the balancing state of the entire system.
- Fit tolerances of individual components (spindle, tool holder and cutting tool) set limits for balancing.

### Selection of DIN 69888:2008-09

This standard specifies balancing requirements for tooling systems with HSK 25 to HSK 100 according DIN 69063-1, DIN 69063-2, DIN 69063-5, DIN 69063-6, DIN 69893-1, DIN 69893-2, DIN 69893-5 and DIN 69893-6 firmly based on their particular operating speed. In this standard the HSK 125 and HSK 160 are not given any consideration, so it is recommended to apply the limits for HSK 100. Correspondingly, the standard tool for systems with interfaces and tapers such as ABS, CAPTO, KM, SK and cylindrical shank are used. Here, the type-specific aspects of the interfaces and holders are taken into account.

The standard applies under the following conditions:

- In the area of operating speeds the tool systems are considered to be rigid.
- The limit of vibration mechanical stress is defined by the permissible bearing load of the machine spindle.
- So as not to unbalance-related impairments in the production is given in compliance with the procedures specified in the standard requirements (load bearing and thus the vibration velocity).

### Importance of balance of quality

By balancing quality value G, the weight of the rotor (M), the speed (n) and the conversion factor (9.549), the permissible residual unbalance U<sub>zul</sub> is calculated in gmm. It tells us how much mass asymmetrically distributed in the radial direction from the axis of rotation is still permissible. With the calculated value, the distance of this mass may be recalculated to gravitational axis.

## Formulas

$$G = e \times w = \frac{U}{M} \times \frac{2 \times \pi \times n}{60} = \frac{U \times \pi \times n}{M \times 30}$$

$$\text{Result} \quad U = \frac{G \times M \times 30}{\pi \times n}$$

$$\text{Conversion factor} = 9.549$$

$$U_{zul} = \frac{G \times M \times 9.549}{n}$$

$$e_{zul} = \frac{U_{zul}}{M}$$

$$u = \frac{U_{zul}}{R}$$

$$\begin{array}{ll} U & = \text{Unbalance of the rotor} \quad (\text{gmm}) \\ G & = \text{Balance quality} \quad (\text{mm/s}) \end{array}$$

$$\begin{array}{ll} M & = \text{Weight of the rotor} \quad (\text{g}) \\ n & = \text{Speed of the rotors} \quad (1/\text{min}) \end{array}$$

$$\begin{array}{ll} e & = \text{Eccentricity of gravity} \quad (\mu\text{m}) \\ w & = \text{Angular speed} \quad (1/\text{sec}) \end{array}$$

$$\begin{array}{ll} U_{zul} & = \text{Permitted residual unbalance of the rotor} \quad (\text{gmm}) \\ e_{zul} & = \text{Permitted eccentricity} \quad (\mu\text{m}) \end{array}$$

$$u = \text{Unbalance mass on the largest outer radius} \quad (\text{g})$$

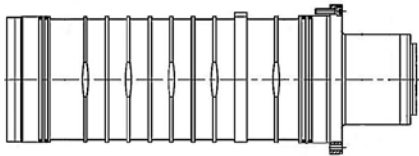
$$R = \text{Radius at which the balancing is done} \quad (\text{mm})$$



# Comparison

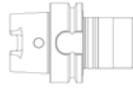
The comparison between the overall system and a single toolholder demonstrates that the balance of the individual component has a very small effect on the overall system.

## Overall system



Machine spindle  
for HSK-A 63

15 000 g



Toolholder  
HSK-A 63  
ER32X080-H  
1035 g



Collet  
ER 32-UP  
6,00 – 5,00  
150 g



Seal disk  
DS/ER 32  
6,00 – 5,50  
15 g



Clamping nut  
Hi-Q® ERC 32  
15 g



Cutter with  
internal cooling  
ø 6 mm  
30 g

|                                            |            |            |
|--------------------------------------------|------------|------------|
| Weight                                     | 16398 g    |            |
| Radius (R)                                 | 31,5 mm    |            |
| Speed                                      | 10 000 rpm | 42 000 rpm |
| Balance quality (G)                        | 2,5        | 2,5        |
| Permitted residual unbalance ( $U_{zul}$ ) | 39,146 gmm | 9,321 gmm  |
| Permitted eccentricity ( $e_{zul}$ )       | 2,387 µm   | 0,568 µm   |

$$U_{zul10000} = \frac{2,5 \times 16398 \times 9,549}{10000} = 39,146 \text{ gmm}$$

$$U_{zul42000} = \frac{2,5 \times 16398 \times 9,549}{42000} = 9,321 \text{ gmm}$$

$$e_{zul10000} = \frac{39,146}{16398} = 2,387 \text{ µm}$$

$$e_{zul42000} = \frac{9,321}{16398} = 0,568 \text{ µm}$$

$$U_{10000} = \frac{39,146}{31,5} = 1,2 \text{ g}$$

$$U_{42000} = \frac{9,321}{31,5} = 0,3 \text{ g}$$

By calculation the entire system is allowed 1.2 g at 10,000 rpm and 0.3 g at 42,000 rpm and the permissible unbalanced mass is at its greatest diameter (in this case the spindle rotor). The following calculation is used to demonstrate how little unbalanced mass of a toolholder HSK-A 63/ER32 x 080 is acceptable in comparison to the overall system:

|                                            |            |            |
|--------------------------------------------|------------|------------|
| Weight                                     | 1035 g     |            |
| Radius (R)                                 | 31,5 mm    |            |
| Speed                                      | 10 000 rpm | 42 000 rpm |
| Balance quality (G)                        | 2,5        | 2,5        |
| Permitted residual unbalance ( $U_{zul}$ ) | 2,471 gmm  | 0,588 gmm  |
| Permitted eccentricity ( $e_{zul}$ )       | 2,387 µm   | 0,568 µm   |

$$U_{zul10000} = \frac{2,5 \times 1035 \times 9,549}{10000} = 2,471 \text{ gmm}$$

$$U_{zul42000} = \frac{2,5 \times 1035 \times 9,549}{42000} = 0,588 \text{ gmm}$$

$$e_{zul10000} = \frac{2,471}{1035} = 2,380 \text{ µm}$$

$$e_{zul42000} = \frac{0,588}{1035} = 0,568 \text{ µm}$$

$$U_{10000} = \frac{2,471}{31,5} = 0,078 \text{ g}$$

$$U_{42000} = \frac{0,588}{31,5} = 0,019 \text{ g}$$

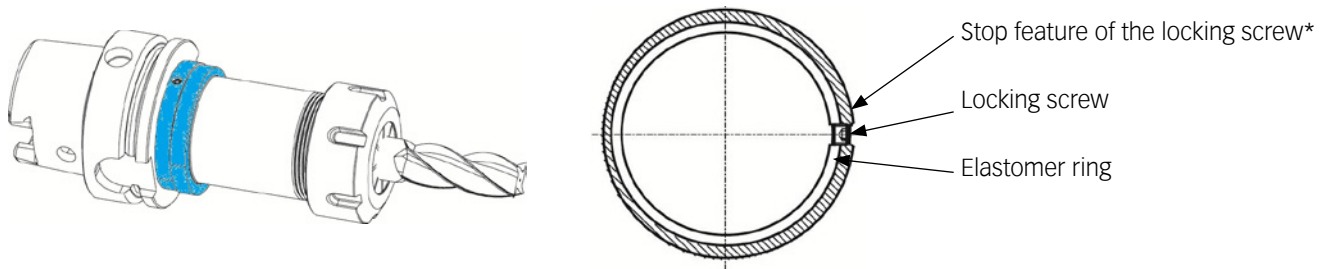
If now the allowable imbalance masses are compared, it is evident that in the overall system may be about 15 times larger than in the toolholder alone. The current state of balancing technology is not economically producible when just looking at the toolholder, but when the entire system is considered it may not necessary. An imbalance caused by positioning error can't be corrected or accounted for.

# Balancing at REGO-FIX

All toolholders and clamping nuts from the production of REGO-FIX are balanced at the factory by design. In addition, the toolholders are fine balanced and 100% customized. The balancing data refer only to the toolholder. Most REGO-FIX toolholders are designed to accommodate the REGO-FIX Hi-Q® balancing rings for fine balancing when required.

## Fine balance with Hi-Q® balancing rings

REGO-FIX Hi-Q® balancing rings (patented) are mounted on the grooves designed into the toolholder, making all the clamping system (holder, nut, tool, etc.) balanceable.



*\*The locking set screw has a feature that prevents it from backing out and being thrown into the machine, which can at high speeds and the resulting centrifugal forces cause serious injury and damage to machinery.*

# Details of the balance values of toolholders

The stated REGO-FIX balance values (noted in packaging, catalogs, brochures, etc.) are the actual measured values from the state-of-the-art-balancers.

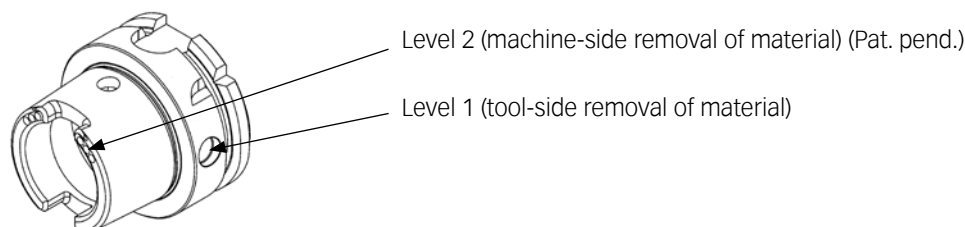
## Toolholder

These toolholders are under production on a Level (static) as standard balanced at:

|                        |                                                                                                                      |
|------------------------|----------------------------------------------------------------------------------------------------------------------|
| G 2.5 @ 25,000 rpm     | SK 40 BT 40 CAT 40 SK 50 BT 50 CAT 50 CAT 50+ CAT 40+ BT 50+ BT 40+<br>HSK 100 HSK 125 HSK 80 HSK 63 Capto C6 and C8 |
| balanced to 30,000 rpm | BT 30 SK 30 CAT 30 BT 30+ BT-OM 30                                                                                   |
| balanced to 33,000 rpm | HSK 80 F HSK 80 FP                                                                                                   |
| balanced to 36,000 rpm | HSK 50 Capto C5                                                                                                      |
| balanced to 45,000 rpm | HSK 40 Capto C4                                                                                                      |
| balanced to 50,000 rpm | ISO 20 (HAAS) HSK 32-25/PG 6 x 046                                                                                   |
| balanced to 60,000 rpm | HSK 32 Capto C3                                                                                                      |
| balanced to 90,000 rpm | HSK 20/HSK 25                                                                                                        |
| G 2.5 @ 5,000 rpm      | all XL toolholders                                                                                                   |

## HSK – Toolholder

These toolholders are balanced by a special process (Pat. pend.), in which two axially spaced staggered levels material ablated.



\*Other balance qualities are available on request at an additional cost. It can't be guaranteed that these values are reproducible due to positioning error and taper fit. See the section on Positioning Error and Taper Fit for more details, page 399.

## Hi-Q® – Clamping nut

The REGO-FIX-Hi-Q® clamping nuts are balanced due to its design (patented) and are continuously tested during production.

## Collets

Collets are rotationally symmetric and do not require balancing. To enable the best possible concentricity collets must be cleaned before each use.

## Accessories (sealing disks, coolant disks, etc.)

These are rotationally symmetric and do not require balancing. To enable the best possible concentricity the accessories must be cleaned before each use. By improper handling or installation can lead to imbalance.

# Interpreting the DIN 69888:2008-09

The accuracy of balancing machines is only partially dependent on the tool mass, i.e. for small tool masses (< 1,5kg), the inaccuracy of balancing machines is much more noticeable.

In addition to the error of the balancing machines, there is also the influence of the interface between the holder and the balancing machine. The following assumptions can be made:

## Repeatable residual imbalances per balancing plane

| max. mass of test piece (rotor) kg | repeatable residual unbalance <sup>a</sup> $U_{wm}$ gmm |
|------------------------------------|---------------------------------------------------------|
| < 7.0                              | 0.75                                                    |
| > 7.0 to 16.0                      | 1.5                                                     |

<sup>a</sup> Depending on the clamping accuracy in the machine.

The clamping accuracy of the balancing machine is greater than that of the machine.

In addition to the repeated residual imbalances on a balancing machine ( $U_{wm}$ ), further error lies in the limited repeatability of interfaces. As reference values for the common HSK interfaces, the values specified in the table can be assumed.

## Joining accuracy of the HSK interface

| HSK       | 25 | 32 | 40 | 50 | 63 | 80 | 100 |
|-----------|----|----|----|----|----|----|-----|
| $e_{HSK}$ | 2  | 2  | 2  | 2  | 2  | 3  | 4   |

In micrometers

Thus, the repeated achievable residual unbalance of the overall system can be calculated:

$$U_{min} \geq (m_{wkz} \cdot e_{HSK}) + U_{wm}$$

### Example 1

Toolholder type: HSK-E 40/PG 10 x 062  
 Mass of toolholder:  $m_{wkz} = 0,250$  kg  
 Joining accuracy HSK interface:  $e_{HSK} = 2$   $\mu$ m for HSK 40  
 Reproducible residual unbalance:  $U_{wm} = 0,75$  gmm for mass < 7,0 kg

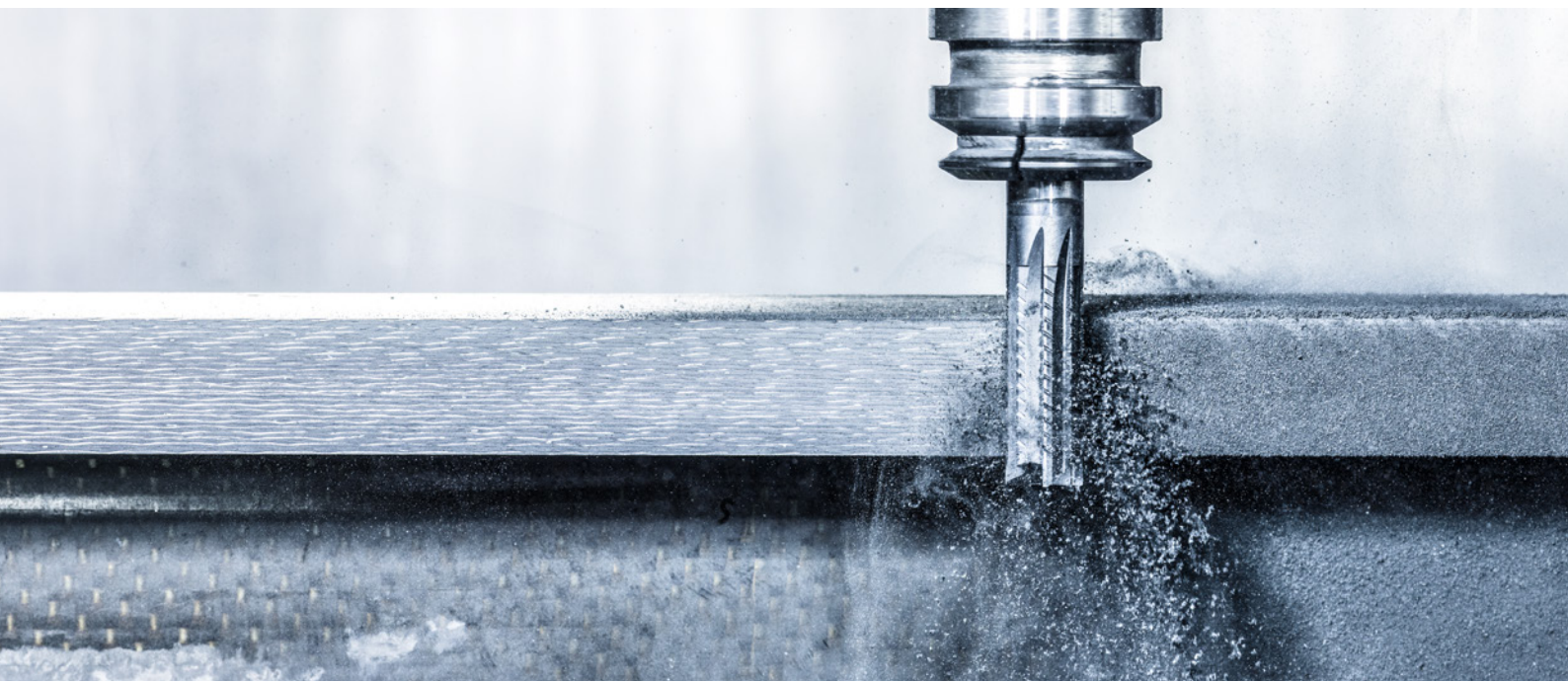
$$U_{min} \geq (0,25 \text{ kg} \cdot 2 \mu\text{m}) + 0,75 \text{ gmm} = 1,250 \text{ gmm}$$

### Example 2

Toolholder type: HSK-A 63/PG 32 x 100  
 Mass of toolholder:  $m_{wkz} = 1,228$  kg  
 Joining accuracy HSK interface:  $e_{HSK} = 2$   $\mu$ m for HSK 63  
 Reproducible residual unbalance:  $U_{wm} = 0,75$  gmm for mass < 7,0 kg

$$U_{min} \geq (1,228 \text{ kg} \cdot 2 \mu\text{m}) + 0,75 \text{ gmm} = 3,206 \text{ gmm}$$

Compared to the permissible residual unbalance, which results at G 2.5 @ 25000 min<sup>-1</sup>, the values calculated above for the reproducible residual unbalance are partially higher. As a result, not all G values are reproducible.



## Milling strategies

Which milling strategy is the most suitable for my application? HSC, HPC or trochoidal milling? Am I focusing on a high chip removal rate or a perfectly finished surface? Choosing the most efficient method and reaching the maximum performance is the key to successful machining.

Depending on the type of machine, lot size, clamping equipment and many other factors, the fastest strategy might not be the most efficient. Sometimes, a conventional approach is faster for smaller quantities than a perfectly optimized CAM-program following the latest development.

**Machines – 3, 5 or 5-axis simultaneous** 3-axis and 5-axis are essentially different types of milling machines. The definition stands for the number of axes the machine can move, on a 3-axis machine it is usually X, Y and Z. If you add a rotary head and table to the machine, often called A- and C-axis, it becomes a 5-axis machine. It allows you to machine up to 5 sides of a workpiece in a single clamping as well as applications at any angle necessary. A 5-axis simultaneous machine is able to move all of its axes at the same time and is used for workpieces with complex 3D contours.

**Down-milling** In almost any application, down milling is the preferred method and base of modern milling strategies. Following the “thick to thin” rule, the feed is in the same direction as the rotation of the cutting tool. The maximum chip thickness is reached at the start of the cut and slowly decreases until the end of the cut. Results are better surface quality, longer tool life and less burr formation.

**Up-milling** If the cutting tool is fed in the opposite direction of the cutting tool rotation, an up-milling strategy is applied. The slowly increasing chip thickness causes high temperatures and a burnishing or rubbing effect due to friction, resulting in a reduced tool life. Different than in down-milling, the tool gets pulled towards the workpiece which was a welcoming effect in earlier years of milling machines. As the precision of spindles and guides couldn't reach modern standards, it helped stabilizing the milling process. In today's machining, up milling is used in workpieces with hardened, abrasive or forged surfaces, allowing the tool to start the cut in softer material to increase tool life.

**Roughing** The roughing process is mostly used at the beginning of a workpiece. Aiming at removing a large amount of material in the fastest and most process-safe way and get as close as possible to the final shape. Surface quality and dimensional accuracy are secondary requirements.

**Finishing** Following the roughing process, finishing operations are used to achieve the required specifications regarding dimensional and geometrical accuracy, surface quality, deburring and an optimal preparation for following processes such as grinding and surface treatments. Finishing tools are designed specifically for this purpose, allowing higher cutting speeds and developed to reach a long tool life for a stable process.

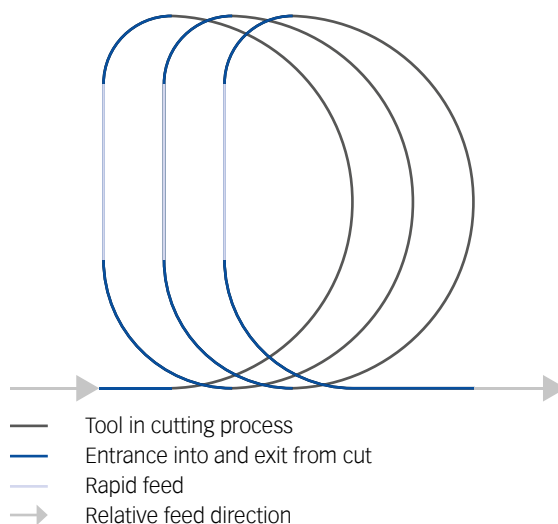




**HSC** HSC, short for High Speed Cutting, essentially increases the metal removal rate  $Q$  by practicing exceedingly higher speeds and feeds up to 10 times and very low cutting depth and width. Compared to conventional milling methods, HSC results in an up to 30% higher material removal rate while at the same time achieving better surface quality, lower cutting forces and less heat development due to short contact times. Applications can be found in thin-walled structural parts for the aerospace industry, turbine blades, moulds or electrodes. While HSC is generating lower forces on the spindle, the tooling machine has the requirement to be able to withstand high rpm and fast movements on long term.

**HPC** High Performance Cutting also has its target in reaching the highest possible metal removal rate  $Q$ , although using a different strategy. While the cutting speed  $V_c$  will not reach the levels of HSC, the increased cutting depth and cutting width will make the difference. While the rotational speeds and the feeds are suitable for almost any type of machines, strong forces will appear to the spindle. As the surface quality mostly is lower than in High Speed Cutting, HPC is mainly used in the roughing process. Also, it has fewer requirements to CAM and programming-systems.

**Trochoidal Milling** Similar to HSC, trochoidal milling is based on high speeds and feeds, small  $A_e$  and maximal  $A_p$ . Mainly used in roughing and semi-roughing, its application is found in slots, corners and deep pockets. Due to a constant circular-like movement it creates a flowing process that positively affects the spindle and guides. The small chip thickness allows narrower flutes and a close pitch on the milling tool, resulting in a stronger core and increased stability to prevent vibrations.





## Troubleshooting when milling with end mill

## Possible corrective measures when milling with end mill

|                                   | Adjust cutting speed (Vc) | Adjust feed per tooth (fz) | Increase milling depth | Reduce coolant supply | Review projecting length | Reduce tooling system | Review work mounting | Check lateral infeed | Review cooling strategy | Review tool wear | Review milling strategy* |                                                                                                |
|-----------------------------------|---------------------------|----------------------------|------------------------|-----------------------|--------------------------|-----------------------|----------------------|----------------------|-------------------------|------------------|--------------------------|------------------------------------------------------------------------------------------------|
| Problem                           |                           |                            |                        |                       |                          |                       |                      |                      |                         |                  |                          | REGO-FIX Expert advice                                                                         |
| Vibrations                        | ↓                         | ↑                          |                        |                       | •                        | •                     | •                    | •                    | •                       |                  |                          | • Strive for stable region (see stability chart) Improve result with the powRgrip® System      |
| Low stability                     |                           |                            |                        |                       |                          | •                     | •                    | •                    |                         |                  |                          | Improve result with the powRgrip® System                                                       |
| Hevy deflection                   |                           | ↓                          |                        |                       |                          | •                     | •                    |                      | •                       | •                |                          | Use more stable tooling system (powRgrip®)                                                     |
| Poor surface quality              | ↑                         | ↓                          |                        |                       | •                        | •                     | •                    | •                    | •                       | •                |                          | Improve runout and tool rigidity with the powRgrip® System                                     |
| High tool wear                    | ↓                         | ↓                          |                        |                       | •                        | •                     | •                    | •                    | •                       |                  |                          | Improve runout with precision tools from REGO-FIX (ER, MR, powRgrip®)                          |
| Built-up edge                     | ↑                         | ↑                          |                        |                       | •                        |                       |                      | •                    |                         | •                |                          |                                                                                                |
| Cutting edge chipping             | ↑                         | ↓                          |                        |                       | •                        |                       | •                    | •                    |                         |                  | •                        |                                                                                                |
| Tool breakage                     | ↓                         | ↓                          |                        |                       | •                        | •                     | •                    | •                    | •                       |                  |                          | •                                                                                              |
| Edge breakage on workpiece        |                           | ↓                          |                        |                       |                          |                       | •                    | •                    | •                       | •                |                          |                                                                                                |
| Burrs                             | ↓                         | ↑                          |                        |                       |                          |                       |                      |                      |                         | •                |                          |                                                                                                |
| Uneven surface                    |                           |                            |                        |                       |                          | •                     | •                    |                      |                         | •                |                          | •                                                                                              |
| Non-parallel surface              |                           |                            |                        |                       |                          | •                     | •                    |                      |                         | •                |                          | •                                                                                              |
| Insufficient chip removal         |                           | ↑                          |                        |                       | •                        |                       |                      | •                    | •                       |                  | •                        | • For peripheral cooling use CF collet (powRgrip® System) or Coolant flush disk KS (ER System) |
| Chip jam (only with slot milling) |                           | ↓                          |                        | •                     | •                        |                       |                      |                      |                         |                  |                          | •                                                                                              |

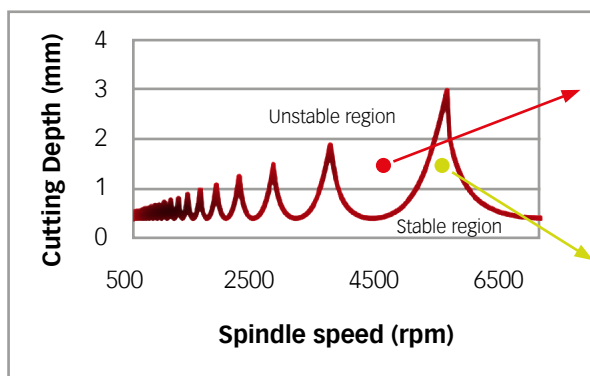
- *Corrective measures*

↑ Increase values    ↓ Lower values

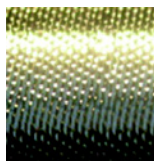
\*Milling strategies:

- Down-milling
- Up-milling
- High Performance Cutting (HPC)
- High Speed Cutting (HSC)
- Trochoidal Milling (TBC)

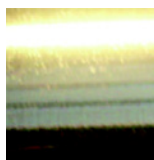
### Stability chart



## Chatter



## No Chatter



## Troubleshooting when drilling

## Possible corrective measures when drilling

|                       | Adjust cutting speed (Vc) | Increase feed per rotation (f) | Reduce coolant supply | Re-check choice or drilling tool | Review tooling length | Review choice or drilling system | Review spot-drilling data | Review cutting data | Check tool wear |   |                                                                               |
|-----------------------|---------------------------|--------------------------------|-----------------------|----------------------------------|-----------------------|----------------------------------|---------------------------|---------------------|-----------------|---|-------------------------------------------------------------------------------|
| Problem               |                           |                                |                       |                                  |                       |                                  |                           |                     |                 |   | REGO-FIX Expert advice                                                        |
| Vibrations            | ↓                         | ↑                              |                       | •                                | •                     |                                  |                           |                     | •               | • | Improve result with the vibration-damping and high-precision powRgrip® System |
| Deflection            |                           | ↓                              |                       | •                                | •                     | •                                | •                         |                     |                 | • |                                                                               |
| Poor surface quality  | ↑                         | ↓                              | •                     | •                                | •                     |                                  |                           |                     | •               | • | Improve runout and tool rigidity with the powRgrip® System                    |
| High tool wear        | ↓                         | ↓                              | •                     | •                                | •                     | •                                |                           |                     | •               | • | Improve runout with precision tools from REGO-FIX (ER, MR, powRgrip®)         |
| Tool breakage         | ↓                         | ↓                              | •                     |                                  | •                     | •                                |                           |                     | •               | • |                                                                               |
| Bore out-of-center    |                           | ↓                              |                       | •                                | •                     | •                                | •                         |                     |                 | • | •                                                                             |
| Bore diameter too big | ↓                         | ↓                              | •                     | •                                | •                     |                                  |                           |                     | •               | • | •                                                                             |
| Cutting edge chipping | ↓                         | ↓                              | •                     |                                  |                       |                                  | •                         |                     | •               |   |                                                                               |
| Built-up edge         | ↑                         | ↑                              | •                     |                                  |                       |                                  | •                         |                     | •               |   |                                                                               |
| Burrs                 |                           | ↓                              |                       |                                  |                       |                                  |                           |                     |                 |   | •                                                                             |
| Long chips            | ↓                         | ↑                              |                       |                                  |                       |                                  | •                         |                     |                 |   |                                                                               |
| Chip jam              | ↑                         | ↓                              | •                     |                                  |                       |                                  | •                         |                     |                 |   | Use tools with internal cooling, together with REGO-FIX sealing disks DS      |

• Corrective measures

↑ Increase values

↓ Lower values

# Troubleshooting when reaming

Possible corrective measures when reaming

|                                                                  | Adjust cutting speed (Vc) | Adjust feed per rotation (f) | Reduce projecting length | Increase bore diameter | Review coolant supply | Extend cutting data | Check tool wear | Check pilot bore depth | Check axial offset |                                                                         |
|------------------------------------------------------------------|---------------------------|------------------------------|--------------------------|------------------------|-----------------------|---------------------|-----------------|------------------------|--------------------|-------------------------------------------------------------------------|
| Problem                                                          |                           |                              |                          |                        |                       |                     |                 |                        |                    | REGO-FIX Expert advice                                                  |
| Vibrations                                                       | ↓                         | ↑                            |                          |                        | •                     | •                   | •               |                        |                    |                                                                         |
| Poor surface quality                                             |                           |                              | ↓                        |                        | •                     | •                   | •               | •                      | •                  | Improve result with the self-centering REGO-FIX floating chuck          |
| Built-up edge                                                    | ↑                         | ↑                            |                          |                        |                       |                     | •               |                        |                    |                                                                         |
| Cutting edge chipping                                            | ↓                         | ↓                            | ↑                        |                        | •                     | •                   | •               |                        | •                  |                                                                         |
| Tool breakage                                                    |                           |                              | ↑                        |                        | •                     | •                   |                 | •                      | •                  | Improve result with the self-centering REGO-FIX floating chuck          |
| High tool wear                                                   | ↓                         | ↓                            |                          |                        | •                     | •                   |                 |                        | •                  |                                                                         |
| Bore not cylindrical                                             |                           |                              |                          |                        |                       |                     |                 | •                      | •                  | Improve result with the self-centering REGO-FIX floating chuck          |
| Bore too small                                                   | ↑                         | ↓                            | ↑                        |                        |                       |                     | •               | •                      | •                  | Eliminate radial forces with the self-centering REGO-FIX floating chuck |
| Bore too big                                                     | ↓                         | ↑                            | ↓                        | •                      |                       |                     |                 | •                      | •                  | Eliminate radial forces with the self-centering REGO-FIX floating chuck |
| Chip jam                                                         | ↓                         | ↓                            |                          |                        | •                     | •                   |                 | •                      |                    |                                                                         |
| • Corrective measures      ↑ Increase values      ↓ Lower values |                           |                              |                          |                        |                       |                     |                 |                        |                    |                                                                         |

## Troubleshooting when tapping

## Possible corrective measures when tapping

|                       | Review feedrate or spindle synchronization | Check runout (TIR) | Review chamfering | Review tap tolerance | Review tool wear | Check tap supply | Increase coolant | Increase core hole diameter | Adjust cutting speed (Vc) |                                                          |
|-----------------------|--------------------------------------------|--------------------|-------------------|----------------------|------------------|------------------|------------------|-----------------------------|---------------------------|----------------------------------------------------------|
| <b>Problem</b>        |                                            |                    |                   |                      |                  |                  |                  |                             |                           | <b>REGO-FIX Expert advice</b>                            |
| Toolshank is spinning |                                            |                    |                   | •                    | ↑                |                  |                  |                             |                           | Use REGO-FIX ER-GB/PCM ET1/PG-TAP tapping collets        |
| Thread too big        |                                            | •                  |                   |                      |                  | •                |                  |                             | ↓                         | Improve dimensional accuracy with REGO-FIX tapping tools |
| Thread too small      |                                            |                    | •                 | •                    |                  |                  |                  |                             | ↑                         | Improve dimensional accuracy with REGO-FIX tapping tools |
| Axial miscut thread   |                                            |                    |                   |                      |                  | •                |                  |                             |                           | • Use REGO-FIX tapping tools with axial compensation     |
| Rough thread sides    |                                            |                    | •                 | •                    |                  |                  |                  |                             | ↑                         | Use REGO-FIX tapping tools with axial compensation       |
| High tool wear        |                                            |                    |                   |                      |                  |                  |                  |                             | ↓                         | Use REGO-FIX tapping tools with axial compensation       |
| Cutting edge chipping |                                            |                    | •                 |                      |                  |                  |                  |                             |                           | • Use REGO-FIX tapping tools with axial compensation     |
| Tool breakage         |                                            |                    |                   | •                    | •                |                  |                  |                             | ↓                         | • Use REGO-FIX tapping tools with axial compensation     |

• Corrective measures      ↑ Increase values      ↓ Lower values

# Formulas for cutting data

## End mills

- $d_1$  Diameter of the cutting edge [mm]
- $Z$  Number of cutting edges
- $a_p$  Axial infeed depth [mm]
- $a_e$  Radial infeed depth [mm]
- $v_c$  Cutting speed [m/min]
- $f_z$  Feed per tooth and revolution [mm]
- $n$  Spindle speed [min<sup>-1</sup>]
- $v_f$  Feed rate [mm/min]
- $f$  Feed per rotation [mm]
- $Q$  Material removal rate [cm<sup>3</sup>/min]
- $d_{eff}$  Effective engagement diameter [mm]
- $\beta$  Setting angle «Beta» [° – DEG]

|                       |                                                                                            |
|-----------------------|--------------------------------------------------------------------------------------------|
| Spindle speed         | $n = \frac{V_c \times 1000}{d_1 \times \pi} \left[ \frac{1}{\text{min}} \right]$           |
| Cutting speed         | $V_c = \frac{d_1 \times n \times \pi}{1000} \left[ \frac{\text{m}}{\text{min}} \right]$    |
| Feed rate             | $V_f = f_z \times Z \times n \left[ \frac{\text{mm}}{\text{min}} \right]$                  |
| Feed per tooth        | $f_z = \frac{V_f}{Z \times n} \left[ \text{mm} \right]$                                    |
| Feed per revolution   | $f = f_z \times Z \left[ \text{mm} \right]$                                                |
| Material removal rate | $Q = \frac{a_p \times a_e \times V_f}{1000} \left[ \frac{\text{cm}^3}{\text{min}} \right]$ |

## Drills

- $d_1$  Diameter of the cutting edge [mm]
- $v_c$  Cutting speed [m/min]
- $f$  Feed per rotation [mm]
- $n$  Spindle speed [min<sup>-1</sup>]
- $v_f$  Feed rate [mm/min]
- $Q$  Material removal rate [cm<sup>3</sup>/min]
- $T$  Primary processing time for the maximum drill depth of the tool [sec]
- $L$  Effective drill depth [mm]

|                         |                                                                                                       |
|-------------------------|-------------------------------------------------------------------------------------------------------|
| Spindle speed           | $n = \frac{V_c \times 1000}{d_1 \times \pi} \left[ \frac{1}{\text{min}} \right]$                      |
| Cutting speed           | $V_c = \frac{d_1 \times n \times \pi}{1000} \left[ \frac{\text{m}}{\text{min}} \right]$               |
| Feed rate               | $V_f = f \times n \left[ \frac{\text{mm}}{\text{min}} \right]$                                        |
| Material removal rate   | $Q = \frac{d_1^2 \times \pi \times V_f}{4 \times 1000} \left[ \frac{\text{cm}^3}{\text{min}} \right]$ |
| Primary processing time | $T = \frac{L}{V_f} \times 60 \left[ \text{sec} \right]$                                               |

## Taps

- $a$  Dimension of square end
- $d$  Nominal diameter of the thread
- $n$  Spindle speed
- $P$  Thread pitch
- $v_c$  Cutting speed
- $v_f$  Feed rate

|               |                                                                                       |
|---------------|---------------------------------------------------------------------------------------|
| Spindle speed | $n = \frac{V_c \times 1000}{d \times \pi} \left[ \frac{1}{\text{min}} \right]$        |
| Cutting speed | $V_c = \frac{d \times \pi \times n}{1000} \left[ \frac{\text{m}}{\text{min}} \right]$ |
| Feed rate     | $V_f = P \times n \left[ \frac{\text{mm}}{\text{min}} \right]$                        |

# Cutting speed conversion table for threading

| Ø d <sub>1</sub> | Vc m/min |     |     |      |      |      |      |      |      |      |      |      |      |       |       |       |
|------------------|----------|-----|-----|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|
|                  | 1        | 2   | 3   | 4    | 5    | 6    | 8    | 10   | 12   | 15   | 20   | 25   | 30   | 40    | 50    | 60    |
| rpm              |          |     |     |      |      |      |      |      |      |      |      |      |      |       |       |       |
| 1                | 318      | 637 | 955 | 1273 | 1592 | 1910 | 2546 | 3183 | 3820 | 4775 | 6366 | 7958 | 9549 | 12732 | 15915 | 19099 |
| 2                | 159      | 318 | 477 | 637  | 796  | 955  | 1273 | 1592 | 1910 | 2387 | 3183 | 3979 | 4775 | 6366  | 7958  | 9549  |
| 3                | 106      | 212 | 318 | 424  | 531  | 637  | 849  | 1051 | 1273 | 1592 | 2122 | 2653 | 3183 | 2144  | 5305  | 6366  |
| 4                | 80       | 159 | 239 | 318  | 398  | 477  | 637  | 796  | 955  | 1194 | 1592 | 1989 | 2387 | 3163  | 3979  | 4775  |
| 5                | 64       | 127 | 191 | 255  | 318  | 382  | 509  | 637  | 764  | 955  | 1273 | 1592 | 1910 | 2546  | 3183  | 3820  |
| 6                | 53       | 106 | 159 | 212  | 265  | 318  | 424  | 531  | 637  | 796  | 1061 | 1326 | 1592 | 2122  | 26553 | 3183  |
| 8                | 40       | 80  | 119 | 159  | 199  | 239  | 318  | 398  | 477  | 597  | 796  | 995  | 1194 | 1592  | 1989  | 2387  |
| 10               | 32       | 64  | 95  | 127  | 159  | 191  | 255  | 318  | 382  | 477  | 637  | 796  | 955  | 1273  | 1592  | 1910  |
| 12               | 27       | 53  | 80  | 106  | 133  | 159  | 212  | 265  | 318  | 398  | 531  | 663  | 796  | 1061  | 1326  | 1592  |
| 14               | 23       | 45  | 68  | 91   | 114  | 136  | 183  | 227  | 273  | 341  | 455  | 568  | 682  | 909   | 1137  | 1364  |
| 16               | 20       | 40  | 60  | 80   | 99   | 119  | 159  | 199  | 239  | 298  | 398  | 497  | 597  | 796   | 995   | 1194  |
| 18               | 18       | 35  | 53  | 71   | 86   | 106  | 141  | 177  | 212  | 265  | 354  | 442  | 531  | 707   | 884   | 1061  |
| 20               | 16       | 32  | 48  | 64   | 80   | 95   | 127  | 159  | 191  | 239  | 318  | 398  | 477  | 637   | 796   | 955   |
| 25               | 13       | 25  | 38  | 51   | 64   | 76   | 102  | 127  | 153  | 191  | 255  | 318  | 382  | 509   | 637   | 764   |
| 30               | 11       | 21  | 32  | 42   | 53   | 64   | 85   | 106  | 127  | 159  | 212  | 265  | 318  | 424   | 531   | 637   |
| 35               | 9        | 18  | 27  | 36   | 45   | 55   | 73   | 91   | 109  | 136  | 182  | 227  | 273  | 364   | 455   | 546   |
| 40               | 8        | 16  | 24  | 32   | 40   | 48   | 64   | 80   | 95   | 119  | 159  | 199  | 239  | 318   | 398   | 477   |
| 45               | 7        | 14  | 21  | 28   | 35   | 42   | 57   | 71   | 85   | 106  | 141  | 177  | 212  | 283   | 354   | 424   |
| 50               | 6        | 13  | 19  | 25   | 32   | 38   | 51   | 64   | 76   | 95   | 127  | 159  | 191  | 255   | 318   | 382   |



# Hardness comparison chart

| HRC<br>Hardness Rockwell | HB<br>Hardness Brinell | HV<br>Hardness Vickers | N / mm <sup>2</sup> Mpa<br>Tensile strenght |
|--------------------------|------------------------|------------------------|---------------------------------------------|
| 25                       | 253                    | 266                    | 854                                         |
| 26                       | 254                    | 273                    | 873                                         |
| 27                       | 265                    | 279                    | 897                                         |
| 28                       | 272                    | 286                    | 914                                         |
| 29                       | 274                    | 294                    | 944                                         |
| 30                       | 287                    | 302                    | 970                                         |
| 31                       | 295                    | 310                    | 995                                         |
| 32                       | 302                    | 318                    | 1024                                        |
| 33                       | 311                    | 327                    | 1052                                        |
| 34                       | 320                    | 336                    | 1082                                        |
| 35                       | 329                    | 345                    | 1111                                        |
| 36                       | 337                    | 355                    | 1139                                        |
| 37                       | 346                    | 364                    | 1168                                        |
| 38                       | 354                    | 373                    | 1198                                        |
| 39                       | 363                    | 382                    | 1227                                        |
| 40                       | 373                    | 392                    | 1262                                        |
| 41                       | 382                    | 402                    | 1296                                        |
| 42                       | 392                    | 412                    | 1327                                        |
| 43                       | 402                    | 423                    | 1362                                        |
| 44                       | 413                    | 434                    | 1401                                        |
| 45                       | 424                    | 446                    | 1442                                        |
| 46                       | 436                    | 459                    | 1481                                        |
| 47                       | 448                    | 471                    | 1524                                        |
| 48                       | 460                    | 484                    | 1572                                        |
| 49                       | 474                    | 499                    | 1625                                        |
| 50                       | 488                    | 513                    | 1668                                        |
| 51                       | 502                    | 528                    | 1733                                        |
| 52                       | 518                    | 545                    | 1793                                        |
| 53                       | 532                    | 560                    | 1845                                        |
| 54                       | 548                    | 578                    | 1912                                        |
| 55                       | 566                    | 596                    | 1979                                        |
| 56                       | 585                    | 615                    | 2050                                        |
| 57                       | 603                    | 634                    | 2121                                        |
| 58                       |                        | 654                    |                                             |
| 59                       |                        | 675                    |                                             |
| 60                       |                        | 698                    |                                             |

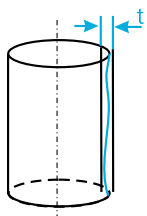
Conversion chart for hardness values, according to DIN 50150

# Conversion table / inch-metric

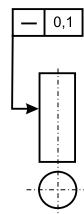
| 0"<br>d <sub>1</sub> | Ø<br>mm | 0"<br>d <sub>1</sub> | Ø<br>mm | 0"<br>d <sub>1</sub> | Ø<br>mm | 0"<br>d <sub>1</sub> | Ø<br>mm | 0"<br>d <sub>1</sub> | Ø<br>mm | 0"<br>d <sub>1</sub> | Ø<br>mm |
|----------------------|---------|----------------------|---------|----------------------|---------|----------------------|---------|----------------------|---------|----------------------|---------|
| 0                    | 0       | 2-1/16               | 52.3876 | 4-1/16               | 103.188 | 6-1/16               | 153.988 | 8-1/16               | 204.788 | 10-1/16              | 255.588 |
| 1/16                 | 1.5875  | 2-1/8                | 53.9751 | 4-1/8                | 104.775 | 6-1/8                | 155.575 | 8-1/8                | 206.375 | 10-1/8               | 257.176 |
| 3/32                 | 2.3812  | 2-3/16               | 55.5626 | 4-3/16               | 106.363 | 6-3/16               | 157.163 | 8-3/16               | 207.963 | 10-3/16              | 258.763 |
| 1/8                  | 3.1750  | 2-1/4                | 57.1501 | 4-1/4                | 107.950 | 6-1/4                | 158.750 | 8-1/4                | 209.550 | 10-1/4               | 260.351 |
| 5/32                 | 3.9687  | 2-5/16               | 58.7376 | 4-5/16               | 109.538 | 6-5/16               | 160.338 | 8-5/16               | 211.138 | 10-5/16              | 261.938 |
| 3/16                 | 4.7625  | 2-3/8                | 60.3251 | 4-3/8                | 111.125 | 6-3/8                | 161.925 | 8-3/8                | 212.725 | 10-3/8               | 263.526 |
| 7/32                 | 5.5562  | 2-7/16               | 61.9126 | 4-7/16               | 112.713 | 6-7/16               | 163.513 | 8-7/16               | 214.313 | 10-7/16              | 265.113 |
| 1/4                  | 6.3500  | 2-1/2                | 63.5001 | 4-1/2                | 114.300 | 6-1/2                | 165.100 | 8-1/2                | 215.900 | 10-1/2               | 266.701 |
| 5/16                 | 7.9375  | –                    | –       | –                    | –       | –                    | –       | –                    | –       | –                    | –       |
| 3/8                  | 9.5250  | –                    | –       | –                    | –       | –                    | –       | –                    | –       | –                    | –       |
| 7/16                 | 11.1125 | –                    | –       | –                    | –       | –                    | –       | –                    | –       | –                    | –       |
| 1/2                  | 12.7000 | –                    | –       | –                    | –       | –                    | –       | –                    | –       | –                    | –       |
| 9/16                 | 14.2875 | 2-9/16               | 65.0876 | 4-9/16               | 115.888 | 6-9/16               | 166.688 | 8-9/16               | 217.488 | 10-9/16              | 268.288 |
| 5/8                  | 15.8750 | 2-5/8                | 66.6751 | 4-5/8                | 117.475 | 6-5/8                | 168.275 | 8-5/8                | 219.075 | 10-5/8               | 269.876 |
| 11/16                | 17.4625 | 2-11/16              | 68.2626 | 4-11/16              | 119.063 | 6-11/16              | 169.863 | 8-11/16              | 220.663 | 10-11/16             | 271.463 |
| 3/4                  | 19.0500 | 2-3/4                | 69.8501 | 4-3/4                | 120.650 | 6-3/4                | 171.450 | 8-3/4                | 222.250 | 10-3/4               | 273.051 |
| 13/16                | 20.6375 | 2-13/16              | 71.4376 | 4-13/16              | 122.238 | 6-13/16              | 173.038 | 8-13/16              | 223.838 | 10-13/16             | 274.638 |
| 7/8                  | 22.2250 | 2-7/8                | 73.0251 | 4-7/8                | 123.825 | 6-7/8                | 174.625 | 8-7/8                | 225.425 | 10-7/8               | 276.226 |
| 15/16                | 23.8125 | 2-15/16              | 74.6126 | 4-15/16              | 125.413 | 6-15/16              | 176.213 | 8-15/16              | 227.013 | 10-15/16             | 277.813 |
| 1                    | 25.4001 | 3                    | 76.2002 | 5                    | 127.00  | 7                    | 177.800 | 9                    | 228.600 | 11                   | 279.401 |
| 1-1/16               | 26.9876 | 3-1/16               | 77.7877 | 5-1/16               | 128.588 | 7-1/16               | 179.388 | 9-1/16               | 230.188 | 11-1/16              | 280.988 |
| 1-1/8                | 28.5751 | 3-1/8                | 79.3752 | 5-1/8                | 130.175 | 7-1/8                | 180.975 | 9-1/8                | 231.775 | 11-1/8               | 282.576 |
| 1-3/16               | 30.1626 | 3-3/16               | 80.9627 | 5-3/16               | 131.763 | 7-3/16               | 182.563 | 9-3/16               | 233.363 | 11-3/16              | 284.163 |
| 1-1/4                | 31.7501 | 3-1/4                | 82.5502 | 5-1/4                | 133.350 | 7-1/4                | 184.150 | 9-1/4                | 234.950 | 11-1/4               | 285.751 |
| 1-5/16               | 33.3376 | 3-5/16               | 84.1377 | 5-5/16               | 134.938 | 7-5/16               | 184.738 | 9-5/16               | 236.538 | 11-5/16              | 287.338 |
| 1-3/8                | 34.9251 | 3-3/8                | 85.7252 | 5-3/8                | 136.525 | 7-3/8                | 187.325 | 9-3/8                | 238.125 | 11-3/8               | 288.926 |
| 1-7/16               | 36.5126 | 3-7/16               | 87.3127 | 5-7/16               | 138.113 | 7-7/16               | 188.913 | 9-7/16               | 239.713 | 11-7/16              | 290.513 |
| 1-1/2                | 38.1001 | 3-1/2                | 88.9002 | 5-1/2                | 139.700 | 7-1/2                | 190.500 | 9-1/2                | 241.300 | 11-1/2               | 292.101 |
| 1-9/16               | 39.6876 | 3-9/16               | 90.4877 | 5-9/16               | 141.288 | 7-9/16               | 192.088 | 9-9/16               | 242.888 | 11-9/16              | 293.688 |
| 1-5/8                | 41.2751 | 3-5/8                | 92.0752 | 5-5/8                | 142.875 | 7-5/8                | 193.675 | 9-5/8                | 244.475 | 11-5/8               | 295.276 |
| 1-11/16              | 42.8626 | 3-11/16              | 93.6627 | 5-11/16              | 144.463 | 7-11/16              | 195.263 | 9-11/16              | 246.063 | 11-11/16             | 296.863 |
| 1-3/4                | 44.4501 | 3-3/4                | 95.2502 | 5-3/4                | 146.051 | 7-3/4                | 196.850 | 9-3/4                | 247.650 | 11-3/4               | 298.451 |
| 1-13/16              | 46.0376 | 3-13/16              | 96.8377 | 5-13/16              | 147.638 | 7-13/16              | 198.438 | 9-13/16              | 249.238 | 11-13/16             | 300.038 |
| 1-7/8                | 47.6251 | 3-7/8                | 98.4252 | 5-7/8                | 149.225 | 7-7/8                | 200.025 | 9-7/8                | 250.825 | 11-7/8               | 301.626 |
| 1-15/16              | 49.2126 | 3-15/16              | 100.013 | 5-15/16              | 150.813 | 7-15/16              | 201.613 | 9-15/16              | 252.413 | 11-15/16             | 303.213 |
| 2                    | 50.8001 | 4                    | 101.600 | 6                    | 152.400 | 8                    | 203.200 | 10                   | 254.001 | 12                   | 304.801 |

# Form and position tolerances in practice

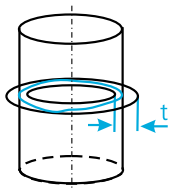
## Form tolerances according to DIN EN ISO 1101



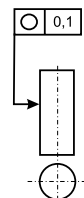
**Straightness** The tolerance zone is limited by two parallel lines at a distance  $t$  apart. Every envelope line of the tolerated cylinder must be between these two parallel lines.



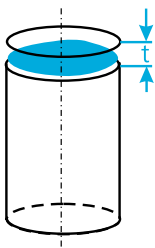
**Example** Every envelope line of the tolerated cylinder surface must be between two parallel lines at a distance apart of 0.1.



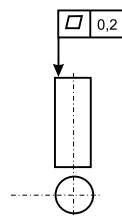
**Roundness** The tolerance zone is limited by two concentric circles at a distance  $t$  apart. The circumference line of the tolerated cylinder must be within a circle ring of the zone width  $t$ , in every radial section plane.



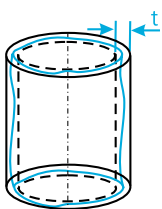
**Example** The circumference line of the tolerated cylinder must be within a circle ring of the zone width 0.1 in every radial section plane.



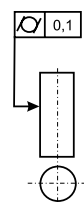
**Flatness** The tolerance zone is limited by two parallel planes at a distance  $t$  apart, the dimensions of which correspond to those of the tolerated area. The real workpiece area must be between the two parallel planes at distance  $t$  apart.



**Example** The real workpiece area must be between two parallel planes at a distance apart of 0.2.

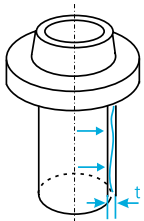


**Cylindricity** The tolerance zone for the cylinder envelope area limits the deviation of the roundness, the straightness of the envelope line and the parallelism of the envelope line to the cylinder axis. It is formed by two coaxial cylinders with the radial distance  $t$ .

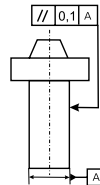


**Example** The tolerated cylindrical area must be between two coaxial cylinders with a radial distance of 0.1.

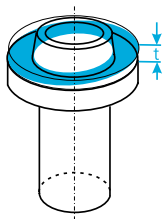
# Position tolerances according to DIN EN ISO 1101



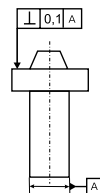
**Parallelism** The tolerance zone within which the envelope lines of the tolerated cylinder must lie is limited by two parallel lines at a distance  $t$  apart which run parallel to the datum plane.



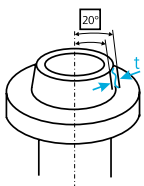
**Example** Every single envelope line of the tolerated area must be between two parallel lines that are at a distance of 0.1 apart, and are parallel to the center axis.



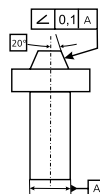
**Perpendicularity** The tolerance zone is limited by two parallel planes at a distance  $t$  apart, which are perpendicular to the datum axis. The tolerated plane face must be between these two planes.



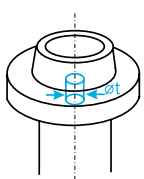
**Example** All points/circle lines of the tolerated area must be between two parallel planes that are at a distance of 0.1 apart, and are perpendicular to the datum plane.



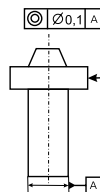
**Angularity** The tolerance zone is limited by two parallel planes at a distance  $t$  apart at the nominal angle to the datum axis.



**Example** All points of the tolerated area must be between two parallel planes that are at a distance apart of 0.1, and are angled at  $20^\circ$  to the datum axis.

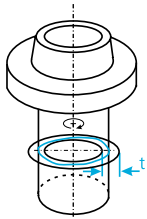


**Coaxiality** The tolerance zone is limited by a cylinder of diameter  $t$ , the axis of which matches the datum axis. The actual axis of the tolerated element must be within the tolerance zone.

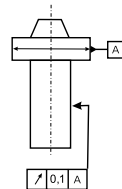


**Example** The axis of the tolerated cylinder must be within a cylinder that has a diameter of 0.1 and is coaxial to the datum axis A.

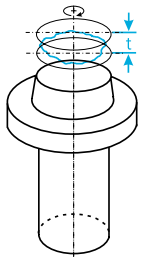
# Run-out tolerances according to DIN EN ISO 1101



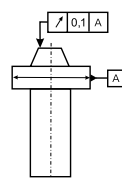
**Radial run-out** In every radial section plane perpendicular to the surface, the tolerance zone is limited by two concentric circles at a distance  $t$  apart, the common center point of which is on the datum axis. The radial run-out tolerance applies generally for a full revolution of the tolerated element around the datum axis.



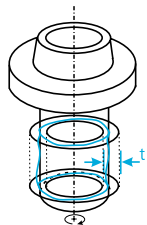
**Example** The circumference line of every radial section plane of the tolerated cylindrical area must be between two concentric circles at a distance apart of 0.1 with their common center point on the datum axis A.



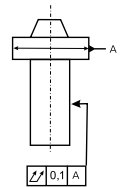
**Axial run-out** The tolerance zone is limited in every radial distance of two circles at a distance  $t$  apart. The circles are in a cylinder, the axis of which matches the datum axis. The diameter of the cylinder can adopt any value of the diameter of the plane face.



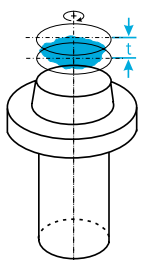
**Example** Every circle line of the tolerated area must be between two parallel circle planes at a distance apart of 0.1 with their common center point on the datum axis A.



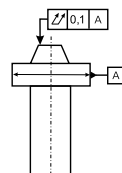
**Total radial run-out** The tolerance zone is limited by two coaxial cylinders at a distance  $t$  apart, the axes of which match the datum axis. After several rotations around the datum axis and axial shift of the transducer all points of the tolerated element must be within the tolerance zone.



**Example** The tolerated cylindrical area must be between two coaxial cylinders with a radial distance apart of 0.1 with their common axis on the datum axis.



**Total axial run-out** The tolerance zone is limited by two parallel planes at a distance  $t$  apart, which are perpendicular to the datum (rotational) axis. After several rotations round the datum axis and radial shift of the transducer, all points of the surface of the tolerance plane face must be within the tolerance zone.



**Example** The tolerated area must be between two parallel circle planes at a distance apart of 0.1 with their common center point on the datum axis A.







# Tolerance charts

## Outside dimensions (Shafts)

Tolerances on dimensions in  $\mu\text{m}$

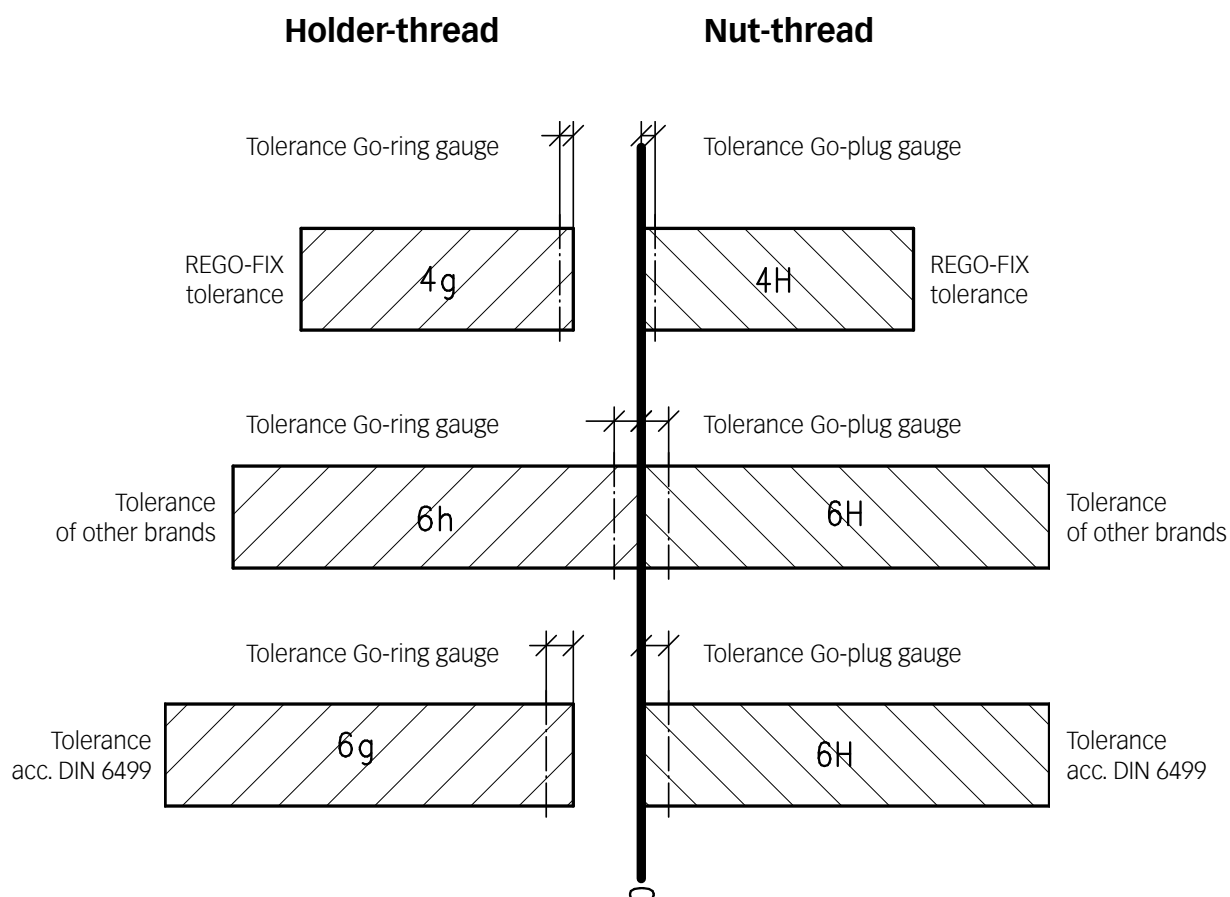
| Nominal size<br>range in mm |    | g4  | g5  | g6  | g7  | h4 | h5  | h6  | h7  | h8  | h9  | h10  | h11  | h13  |
|-----------------------------|----|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|------|------|------|
| from                        | 1  | -2  | -2  | -2  | -2  | 0  | 0   | 0   | 0   | 0   | 0   | 0    | 0    | 0    |
| to                          | 3  | -5  | -6  | -8  | -12 | -3 | -4  | -6  | -10 | -14 | -25 | -40  | -60  | -140 |
| over                        | 3  | -4  | -4  | -4  | -4  | 0  | 0   | 0   | 0   | 0   | 0   | 0    | 0    | 0    |
| to                          | 6  | -8  | -9  | -12 | -16 | -4 | -5  | -8  | -12 | -18 | -30 | -48  | -75  | -180 |
| over                        | 6  | -5  | -5  | -5  | -5  | 0  | 0   | 0   | 0   | 0   | 0   | 0    | 0    | 0    |
| to                          | 10 | -9  | -11 | -14 | -20 | -4 | -6  | -9  | -15 | -22 | -36 | -58  | -90  | -220 |
| over                        | 10 | -6  | -6  | -6  | -6  | 0  | 0   | 0   | 0   | 0   | 0   | 0    | 0    | 0    |
| to                          | 18 | -11 | -14 | -17 | -24 | -5 | -8  | -11 | -18 | -27 | -43 | -70  | -110 | -270 |
| over                        | 18 | -7  | -7  | -7  | -7  | 0  | 0   | 0   | 0   | 0   | 0   | 0    | 0    | 0    |
| to                          | 30 | -13 | -16 | -20 | -28 | -6 | -9  | -13 | -21 | -33 | -52 | -84  | -130 | -330 |
| over                        | 30 | -9  | -9  | -9  | -9  | 0  | 0   | 0   | 0   | 0   | 0   | 0    | 0    | 0    |
| to                          | 50 | -16 | -25 | -20 | -34 | -7 | -11 | -16 | -25 | -39 | -62 | -100 | -160 | -390 |

## Inside dimensions (Bores)

Tolerances on dimensions in  $\mu\text{m}$

| Nominal size<br>range in mm |    | G4  | G5  | G6  | G7  | H4 | H5  | H6  | H7  | H8  | H9  | H10  | H11  | H13  |
|-----------------------------|----|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|------|------|------|
| from                        | 1  | +5  | +6  | +8  | +12 | +3 | +4  | +6  | +10 | +14 | +25 | +40  | +60  | +140 |
| to                          | 3  | +2  | +2  | +2  | +2  | 0  | 0   | 0   | 0   | 0   | 0   | 0    | 0    | 0    |
| over                        | 3  | +8  | +9  | +12 | +16 | +4 | +5  | +8  | +12 | +18 | +30 | +48  | +75  | +180 |
| to                          | 6  | +4  | +4  | +4  | +4  | 0  | 0   | 0   | 0   | 0   | 0   | 0    | 0    | 0    |
| over                        | 6  | +9  | +11 | +14 | +20 | +4 | +6  | +9  | +15 | +22 | +36 | +58  | +90  | +220 |
| to                          | 10 | +5  | +5  | +5  | +5  | 0  | 0   | 0   | 0   | 0   | 0   | 0    | 0    | 0    |
| over                        | 10 | +11 | +14 | +17 | +24 | +5 | +8  | +11 | +18 | +27 | +43 | +70  | +110 | +270 |
| to                          | 18 | +6  | +6  | +6  | +6  | 0  | 0   | 0   | 0   | 0   | 0   | 0    | 0    | 0    |
| over                        | 18 | +13 | +16 | +20 | +28 | +6 | +9  | +13 | +21 | +33 | +52 | +84  | +130 | +330 |
| to                          | 30 | +7  | +7  | +7  | +7  | 0  | 0   | 0   | 0   | 0   | 0   | 0    | 0    | 0    |
| over                        | 30 | +16 | +25 | +20 | +34 | +7 | +11 | +16 | +25 | +39 | +62 | +100 | +160 | +390 |
| to                          | 50 | +9  | +9  | +9  | +9  | 0  | 0   | 0   | 0   | 0   | 0   | 0    | 0    | 0    |

# Thread tolerances



# Core hole diameters for thread cutting

## M DIN 13, ISO 261, \*5H/6H

| d1   | mm   | Ø mini | Ø maxi | Ø guide line |
|------|------|--------|--------|--------------|
| *1   | 0.25 | 0.729  | 0.785  | 0.75         |
| *1.1 | 0.25 | 0.829  | 0.885  | 0.85         |
| *1.2 | 0.25 | 0.929  | 0.985  | 0.95         |
| *1.4 | 0.30 | 1.075  | 1.142  | 1.10         |
| 1.6  | 0.35 | 1.221  | 1.321  | 1.25         |
| 1.7  | 0.35 | 1.321  | 1.421  | 1.35         |
| 1.8  | 0.35 | 1.421  | 1.521  | 1.45         |
| 2    | 0.40 | 1.567  | 1.679  | 1.60         |
| 2.2  | 0.45 | 1.713  | 1.838  | 1.75         |
| 2.3  | 0.40 | 1.867  | 1.979  | 1.90         |
| 2.5  | 0.45 | 2.013  | 2.138  | 2.05         |
| 2.6  | 0.45 | 2.113  | 2.238  | 2.15         |
| 3    | 0.50 | 2.459  | 2.599  | 2.50         |
| 3.5  | 0.60 | 2.850  | 3.010  | 2.90         |
| 4    | 0.70 | 3.242  | 3.422  | 3.30         |
| 4.5  | 0.75 | 3.688  | 3.878  | 3.75         |
| 5    | 0.80 | 4.134  | 4.334  | 4.20         |
| 6    | 1.00 | 4.917  | 5.153  | 5.00         |
| 7    | 1.00 | 5.917  | 6.153  | 6.00         |
| 8    | 1.25 | 6.647  | 6.912  | 6.80         |
| 9    | 1.25 | 7.647  | 7.912  | 7.80         |
| 10   | 1.50 | 8.376  | 8.676  | 8.50         |
| 11   | 1.50 | 9.376  | 9.676  | 9.50         |
| 12   | 1.75 | 10.106 | 10.441 | 10.20        |
| 14   | 2.00 | 11.835 | 12.210 | 12.00        |
| 16   | 2.00 | 13.835 | 14.210 | 14.00        |
| 18   | 2.50 | 15.294 | 15.744 | 15.50        |
| 20   | 2.50 | 17.294 | 17.744 | 17.50        |
| 22   | 2.50 | 19.294 | 19.744 | 19.50        |
| 24   | 3.00 | 20.752 | 21.252 | 21.00        |
| 27   | 3.00 | 23.752 | 24.252 | 24.00        |
| 30   | 3.50 | 26.211 | 26.771 | 26.50        |
| 33   | 3.50 | 29.211 | 29.771 | 29.50        |
| 36   | 4.00 | 31.670 | 32.270 | 32.00        |
| 39   | 4.00 | 34.670 | 35.270 | 35.00        |
| 42   | 4.50 | 37.129 | 37.799 | 37.50        |
| 45   | 4.50 | 40.129 | 40.799 | 40.50        |
| 48   | 5.00 | 42.587 | 43.297 | 43.00        |
| 52   | 5.00 | 46.587 | 47.297 | 47.00        |
| 56   | 5.50 | 50.046 | 50.796 | 50.50        |

## MF DIN 13, ISO 261, 6H

| d1  | mm   | Ø mini | Ø maxi | Ø guide line |
|-----|------|--------|--------|--------------|
| 4.5 | 0.50 | 3.959  | 4.099  | 4.00         |
| 5   | 0.50 | 4.459  | 4.599  | 4.50         |
| 5.5 | 0.50 | 4.959  | 5.099  | 5.00         |
| 6   | 0.75 | 5.188  | 5.378  | 5.25         |
| 7   | 0.75 | 6.188  | 6.378  | 6.25         |
| 8   | 0.75 | 7.188  | 7.378  | 7.25         |
| 8   | 1.00 | 6.917  | 7.153  | 7.00         |
| 9   | 0.75 | 8.188  | 8.378  | 8.25         |
| 9   | 1.00 | 7.917  | 8.153  | 8.00         |
| 10  | 0.75 | 9.188  | 9.378  | 9.25         |
| 10  | 1.00 | 8.917  | 9.153  | 9.00         |
| 10  | 1.25 | 8.647  | 8.912  | 8.80         |
| 11  | 0.75 | 10.188 | 10.378 | 10.25        |
| 11  | 1.00 | 9.917  | 10.153 | 10.00        |
| 12  | 1.00 | 10.917 | 11.153 | 11.00        |
| 12  | 1.25 | 10.647 | 10.912 | 10.80        |
| 12  | 1.50 | 10.376 | 10.676 | 10.50        |
| 14  | 1.00 | 12.917 | 13.153 | 13.00        |
| 14  | 1.25 | 12.647 | 12.912 | 12.80        |
| 14  | 1.50 | 12.376 | 12.676 | 12.50        |
| 15  | 1.00 | 13.917 | 14.153 | 14.00        |
| 15  | 1.50 | 13.376 | 13.676 | 13.50        |
| 16  | 1.00 | 14.917 | 15.153 | 15.00        |
| 16  | 1.50 | 14.376 | 14.676 | 14.50        |
| 17  | 1.00 | 15.917 | 16.153 | 16.00        |
| 17  | 1.50 | 15.376 | 15.676 | 15.50        |
| 18  | 1.00 | 16.917 | 17.153 | 17.00        |
| 18  | 1.50 | 16.376 | 16.676 | 16.50        |
| 18  | 2.00 | 15.835 | 16.210 | 16.00        |
| 20  | 1.00 | 18.917 | 19.153 | 19.00        |
| 20  | 1.50 | 18.376 | 18.676 | 18.50        |
| 20  | 2.00 | 17.835 | 18.210 | 18.00        |
| 22  | 1.00 | 20.917 | 21.153 | 21.00        |
| 22  | 1.50 | 20.376 | 20.676 | 20.50        |
| 22  | 2.00 | 19.835 | 20.210 | 20.00        |
| 24  | 1.00 | 22.917 | 23.153 | 23.00        |
| 24  | 1.50 | 22.376 | 22.676 | 22.50        |
| 24  | 2.00 | 21.835 | 22.210 | 22.00        |
| 25  | 1.00 | 23.917 | 24.153 | 24.00        |
| 25  | 1.50 | 23.376 | 23.676 | 23.50        |
| 25  | 2.00 | 22.835 | 23.210 | 23.00        |
| 27  | 1.50 | 25.376 | 25.676 | 25.50        |
| 27  | 2.00 | 24.835 | 25.210 | 25.00        |
| 28  | 1.00 | 26.917 | 27.153 | 27.00        |
| 28  | 1.50 | 26.376 | 26.676 | 26.50        |
| 28  | 2.00 | 25.835 | 26.210 | 26.00        |
| 30  | 1.00 | 28.917 | 29.153 | 29.00        |

## MF DIN 13, ISO 261, 6H

| d1  | mm   | Ø mini | Ø maxi | Ø guide line |
|-----|------|--------|--------|--------------|
| 2.5 | 0.35 | 2.121  | 2.221  | 2.15         |
| 3   | 0.35 | 2.621  | 2.721  | 2.65         |
| 3.5 | 0.35 | 3.121  | 3.221  | 3.15         |
| 4   | 0.50 | 3.459  | 3.599  | 3.50         |

## MF DIN 13, ISO 261, 6H

| d1 | mm   | Ø mini | Ø maxi | Ø guide line |
|----|------|--------|--------|--------------|
| 30 | 1.50 | 28.376 | 28.676 | 28.50        |
| 30 | 2.00 | 27.835 | 28.210 | 28.00        |
| 32 | 1.50 | 30.376 | 30.676 | 30.50        |
| 32 | 2.00 | 29.835 | 30.210 | 30.00        |
| 33 | 1.50 | 31.376 | 31.676 | 31.50        |
| 33 | 2.00 | 30.835 | 31.210 | 31.00        |
| 35 | 1.50 | 33.376 | 33.676 | 33.50        |
| 36 | 1.50 | 34.376 | 34.676 | 34.50        |
| 36 | 2.00 | 33.835 | 34.210 | 34.00        |
| 36 | 3.00 | 32.752 | 33.252 | 33.00        |
| 39 | 1.50 | 37.376 | 37.676 | 37.50        |
| 39 | 2.00 | 36.835 | 37.210 | 37.00        |
| 39 | 3.00 | 35.752 | 36.252 | 36.00        |
| 40 | 1.50 | 38.376 | 38.676 | 38.50        |
| 40 | 2.00 | 37.835 | 38.210 | 38.00        |
| 40 | 3.00 | 36.752 | 37.252 | 37.00        |
| 42 | 1.50 | 40.376 | 40.676 | 40.50        |
| 42 | 2.00 | 39.835 | 40.210 | 40.00        |
| 42 | 3.00 | 38.752 | 39.252 | 39.00        |
| 45 | 1.50 | 43.376 | 43.676 | 43.50        |
| 45 | 2.00 | 42.835 | 43.210 | 43.00        |
| 45 | 3.00 | 41.752 | 42.252 | 42.00        |
| 48 | 1.50 | 46.376 | 46.676 | 46.50        |
| 48 | 2.00 | 45.835 | 46.210 | 46.00        |
| 48 | 3.00 | 44.752 | 45.252 | 45.00        |
| 50 | 1.50 | 48.376 | 48.676 | 48.50        |
| 50 | 2.00 | 47.835 | 48.210 | 48.00        |
| 50 | 3.00 | 46.752 | 47.252 | 47.00        |
| 52 | 1.50 | 50.376 | 50.676 | 50.50        |
| 52 | 2.00 | 49.835 | 50.210 | 50.00        |
| 52 | 3.00 | 48.752 | 49.252 | 49.00        |
| 55 | 2.00 | 52.835 | 53.210 | 53.00        |
| 60 | 2.00 | 57.835 | 58.210 | 58.00        |

## MF EN 60423:1994, 7H

| d1 | mm   | Ø mini | Ø maxi | Ø guide line |
|----|------|--------|--------|--------------|
| 8  | 1.00 | 6.917  | 7.217  | 7.00         |
| 10 | 1.00 | 8.917  | 9.217  | 9.00         |
| 12 | 1.50 | 10.376 | 10.751 | 10.50        |
| 16 | 1.50 | 14.376 | 14.751 | 14.50        |
| 20 | 1.50 | 18.376 | 18.751 | 18.50        |
| 25 | 1.50 | 23.376 | 23.751 | 23.50        |
| 32 | 1.50 | 30.376 | 30.751 | 30.50        |
| 40 | 1.50 | 38.376 | 38.751 | 38.50        |
| 63 | 1.50 | 61.376 | 61.751 | 61.50        |

## UNC ANSI B1.1, 2B

| d1     | TPI | mm    | Ø mini | Ø maxi | Ø guide line |
|--------|-----|-------|--------|--------|--------------|
| 1      | 64  | 0.397 | 1.425  | 1.582  | 1.45         |
| 2      | 56  | 0.454 | 1.695  | 1.871  | 1.75         |
| 3      | 48  | 0.529 | 1.941  | 2.146  | 2.00         |
| 4      | 40  | 0.635 | 2.157  | 2.385  | 2.25         |
| 5      | 40  | 0.635 | 2.487  | 2.697  | 2.55         |
| 6      | 32  | 0.794 | 2.642  | 2.895  | 2.75         |
| 8      | 32  | 0.794 | 3.302  | 3.530  | 3.40         |
| 10     | 24  | 1.058 | 3.683  | 3.962  | 3.80         |
| 12     | 24  | 1.058 | 4.344  | 4.597  | 4.40         |
| 1/4"   | 20  | 1.270 | 4.979  | 5.257  | 5.10         |
| 5/16"  | 18  | 1.411 | 6.401  | 6.731  | 6.50         |
| 3/8"   | 16  | 1.588 | 7.798  | 8.153  | 8.00         |
| 7/16"  | 14  | 1.814 | 9.144  | 9.550  | 9.30         |
| 1/2"   | 13  | 1.954 | 10.592 | 11.023 | 10.80        |
| 9/16"  | 12  | 2.117 | 11.989 | 12.446 | 12.20        |
| 5/8"   | 11  | 2.309 | 13.386 | 13.868 | 13.60        |
| 3/4"   | 10  | 2.540 | 16.307 | 16.840 | 16.60        |
| 7/8"   | 9   | 2.822 | 19.177 | 19.761 | 19.50        |
| 1"     | 8   | 3.175 | 21.971 | 22.606 | 22.30        |
| 1 1/8" | 7   | 3.629 | 24.638 | 25.349 | 25.00        |
| 1 1/4" | 7   | 3.629 | 27.813 | 28.524 | 28.20        |
| 1 3/8" | 6   | 4.233 | 30.353 | 31.115 | 30.80        |
| 1 1/2" | 6   | 4.233 | 33.528 | 34.290 | 34.00        |
| 1 3/4" | 5   | 5.080 | 38.964 | 39.827 | 39.50        |
| 2"     | 4.5 | 5.644 | 44.679 | 45.593 | 45.30        |

## UNJC ISO 3161:1999, 3B

| d1    | TPI | mm    | Ø mini | Ø maxi | Ø guide line |
|-------|-----|-------|--------|--------|--------------|
| 4     | 40  | 0.635 | 2.228  | 2.393  | 2.30         |
| 5     | 40  | 0.635 | 2.558  | 2.723  | 2.60         |
| 6     | 32  | 0.794 | 2.733  | 2.939  | 2.80         |
| 8     | 32  | 0.794 | 3.393  | 3.599  | 3.45         |
| 10    | 24  | 1.058 | 3.795  | 4.064  | 3.90         |
| 12    | 24  | 1.058 | 4.455  | 4.704  | 4.55         |
| 1/4"  | 20  | 1.270 | 5.113  | 5.387  | 5.20         |
| 5/16" | 18  | 1.411 | 6.563  | 6.833  | 6.70         |
| 3/8"  | 16  | 1.588 | 7.978  | 8.255  | 8.10         |
| 7/16" | 14  | 1.814 | 9.347  | 9.639  | 9.40         |
| 1/2"  | 13  | 1.954 | 10.798 | 11.095 | 10.90        |
| 9/16" | 12  | 2.117 | 12.228 | 12.482 | 12.40        |
| 5/8"  | 11  | 2.309 | 13.627 | 13.904 | 13.80        |
| 3/4"  | 10  | 2.540 | 16.576 | 16.881 | 16.70        |

# Core hole diameters for thread cutting

## UNF ANSI B1.1, 2B

| d1     | TPI | mm    | Ø mini | Ø maxi | Ø guide line |
|--------|-----|-------|--------|--------|--------------|
| 0      | 80  | 0.318 | 1.182  | 1.305  | 1.20         |
| 1      | 72  | 0.353 | 1.474  | 1.612  | 1.50         |
| 2      | 64  | 0.397 | 1.756  | 1.912  | 1.80         |
| 3      | 56  | 0.454 | 2.025  | 2.197  | 2.10         |
| 4      | 48  | 0.529 | 2.271  | 2.458  | 2.35         |
| 5      | 44  | 0.577 | 2.551  | 2.740  | 2.60         |
| 6      | 40  | 0.635 | 2.820  | 3.022  | 2.90         |
| 8      | 36  | 0.706 | 3.404  | 3.606  | 3.50         |
| 10     | 32  | 0.794 | 3.963  | 4.165  | 4.05         |
| 12     | 28  | 0.907 | 4.496  | 4.724  | 4.60         |
| 1/4"   | 28  | 0.907 | 5.360  | 5.588  | 5.50         |
| 5/16"  | 24  | 1.058 | 6.782  | 7.035  | 6.90         |
| 3/8"   | 24  | 1.058 | 8.382  | 8.636  | 8.50         |
| 7/16"  | 20  | 1.270 | 9.729  | 10.033 | 9.80         |
| 1/2"   | 20  | 1.270 | 11.329 | 11.607 | 11.40        |
| 9/16"  | 18  | 1.411 | 12.751 | 13.081 | 12.90        |
| 5/8"   | 18  | 1.411 | 14.351 | 14.681 | 14.50        |
| 3/4"   | 16  | 1.588 | 17.323 | 17.678 | 17.50        |
| 7/8"   | 14  | 1.814 | 20.270 | 20.675 | 20.40        |
| 1"     | 12  | 2.117 | 23.114 | 23.571 | 23.30        |
| 1 1/8" | 12  | 2.117 | 26.289 | 26.746 | 26.50        |
| 1 1/4" | 12  | 2.117 | 29.464 | 29.921 | 29.70        |
| 1 3/8" | 12  | 2.117 | 32.639 | 33.096 | 32.80        |
| 1 1/2" | 12  | 2.117 | 35.814 | 36.271 | 36.00        |

## UNJF ISO 3161:1999, 3B

| d1    | TPI | mm    | Ø mini | Ø maxi | Ø guide line |
|-------|-----|-------|--------|--------|--------------|
| 0     | 80  | 0.318 | 1.217  | 1.298  | 1.25         |
| 1     | 72  | 0.353 | 1.511  | 1.603  | 1.55         |
| 2     | 64  | 0.397 | 1.798  | 1.902  | 1.85         |
| 3     | 56  | 0.454 | 2.073  | 2.189  | 2.15         |
| 4     | 48  | 0.529 | 2.329  | 2.466  | 2.35         |
| 5     | 44  | 0.577 | 2.614  | 2.764  | 2.70         |
| 6     | 40  | 0.635 | 2.888  | 3.053  | 2.95         |
| 8     | 36  | 0.706 | 3.480  | 3.663  | 3.60         |
| 10    | 32  | 0.794 | 4.054  | 4.255  | 4.10         |
| 12    | 28  | 0.907 | 4.602  | 4.816  | 4.70         |
| 1/4"  | 28  | 0.907 | 5.466  | 5.662  | 5.55         |
| 5/16" | 24  | 1.058 | 6.906  | 7.109  | 7.00         |
| 3/8"  | 24  | 1.058 | 8.494  | 8.679  | 8.60         |
| 7/16" | 20  | 1.270 | 9.876  | 10.084 | 10.00        |
| 1/2"  | 20  | 1.270 | 11.463 | 11.661 | 11.55        |
| 9/16" | 18  | 1.411 | 12.913 | 13.122 | 13.05        |
| 5/8"  | 18  | 1.411 | 14.501 | 14.702 | 14.60        |
| 3/4"  | 16  | 1.588 | 17.506 | 17.722 | 17.60        |
| 7/8"  | 14  | 1.814 | 20.460 | 20.706 | 20.50        |
| 1"    | 12  | 2.117 | 23.340 | 23.594 | 23.40        |

## UNEF ANSI B1.1, 2B

| d1     | TPI | mm    | Ø mini | Ø maxi | Ø guide line |
|--------|-----|-------|--------|--------|--------------|
| 12     | 32  | 0.794 | 4.623  | 4.826  | 4.70         |
| 1/4"   | 32  | 0.794 | 5.487  | 5.689  | 5.60         |
| 5/16"  | 32  | 0.794 | 7.087  | 7.264  | 7.20         |
| 3/8"   | 32  | 0.794 | 8.662  | 8.864  | 8.75         |
| 7/16"  | 28  | 0.907 | 10.135 | 10.337 | 10.25        |
| 1/2"   | 28  | 0.907 | 11.710 | 11.938 | 11.85        |
| 9/16"  | 24  | 1.058 | 13.132 | 13.385 | 13.20        |
| 5/8"   | 24  | 1.058 | 14.732 | 14.986 | 14.80        |
| 11/16" | 24  | 1.058 | 16.307 | 16.560 | 16.40        |
| 3/4"   | 20  | 1.270 | 17.679 | 17.957 | 17.80        |
| 13/16" | 20  | 1.270 | 19.254 | 19.558 | 19.40        |
| 7/8"   | 20  | 1.270 | 20.854 | 21.132 | 21.00        |
| 1"     | 20  | 1.270 | 24.029 | 24.307 | 24.10        |

## UN ANSI B1.1, 2B

| d1     | TPI | mm    | Ø mini | Ø maxi | Ø guide line |
|--------|-----|-------|--------|--------|--------------|
| 5/16"  | 20  | 1.270 | 6.554  | 6.858  | 6.70         |
| 3/8"   | 20  | 1.270 | 8.154  | 8.432  | 8.30         |
| 9/16"  | 20  | 1.270 | 12.904 | 13.208 | 13.00        |
| 5/8"   | 20  | 1.270 | 14.504 | 14.782 | 14.60        |
| 1 1/8" | 8   | 3.175 | 25.146 | 25.781 | 25.50        |
| 1 1/4" | 8   | 3.175 | 28.321 | 28.956 | 28.70        |
| 1 3/8" | 8   | 3.175 | 31.496 | 32.131 | 31.80        |
| 1 1/2" | 8   | 3.175 | 34.671 | 35.306 | 35.00        |
| 1 5/8" | 8   | 3.175 | 37.846 | 38.481 | 38.20        |
| 1 3/4" | 8   | 3.175 | 41.021 | 41.656 | 41.40        |
| 1 7/8" | 8   | 3.175 | 44.196 | 44.831 | 44.50        |
| 2"     | 8   | 3.175 | 47.371 | 48.006 | 47.70        |
| 2 1/4" | 8   | 3.175 | 53.721 | 54.356 | 54.10        |
| 2 1/2" | 8   | 3.175 | 60.071 | 60.706 | 60.40        |

## UNS ANSI B1.1, 2B

| d1    | TPI | mm    | Ø mini | Ø maxi | Ø guide line |
|-------|-----|-------|--------|--------|--------------|
| 10    | 36  | 0.706 | 4.064  | 4.216  | 4.10         |
| 10    | 40  | 0.635 | 4.141  | 4.292  | 4.20         |
| 10    | 56  | 0.454 | 4.344  | 4.445  | 4.40         |
| 1/4"  | 36  | 0.706 | 5.588  | 5.740  | 5.65         |
| 1/4"  | 40  | 0.635 | 5.665  | 5.816  | 5.70         |
| 1/4"  | 48  | 0.529 | 5.766  | 5.892  | 5.80         |
| 1/4"  | 56  | 0.454 | 5.868  | 5.969  | 5.90         |
| 5/16" | 36  | 0.706 | 7.163  | 7.340  | 7.25         |
| 3/8"  | 36  | 0.706 | 8.763  | 8.940  | 8.80         |
| 7/16" | 24  | 1.058 | 9.957  | 10.210 | 10.00        |
| 1/2"  | 24  | 1.058 | 11.557 | 11.811 | 11.60        |
| 1"    | 14  | 1.814 | 23.445 | 23.825 | 23.60        |

## G (BSP) DIN ISO 228

| d1     | TPI | mm    | Ø mini | Ø maxi | Ø guide line |
|--------|-----|-------|--------|--------|--------------|
| 1/16"  | 28  | 0.907 | 6.561  | 6.843  | 6.75         |
| 1/8"   | 28  | 0.907 | 8.566  | 8.848  | 8.75         |
| 1/4"   | 19  | 1.337 | 11.445 | 11.890 | 11.60        |
| 3/8"   | 19  | 1.337 | 14.950 | 15.395 | 15.20        |
| 1/2"   | 14  | 1.814 | 18.631 | 19.172 | 18.90        |
| 5/8"   | 14  | 1.814 | 20.587 | 21.128 | 20.90        |
| 3/4"   | 14  | 1.814 | 24.117 | 24.658 | 24.40        |
| 7/8"   | 14  | 1.814 | 27.877 | 28.418 | 28.20        |
| 1"     | 11  | 2.309 | 30.291 | 30.931 | 30.70        |
| 1 1/8" | 11  | 2.309 | 34.939 | 35.579 | 35.30        |
| 1 1/4" | 11  | 2.309 | 38.952 | 39.592 | 39.30        |
| 1 3/8" | 11  | 2.309 | 41.365 | 42.005 | 41.80        |
| 1 1/2" | 11  | 2.309 | 44.845 | 45.485 | 45.20        |
| 1 3/4" | 11  | 2.309 | 50.788 | 51.428 | 51.20        |
| 2"     | 11  | 2.309 | 56.656 | 57.296 | 57.00        |
| 2 1/4" | 11  | 2.309 | 62.752 | 63.392 | 63.10        |
| 2 1/2" | 11  | 2.309 | 72.226 | 72.866 | 72.60        |
| 3"     | 11  | 2.309 | 84.926 | 85.566 | 85.30        |

## W (BSW) BS 84, (DIN11-1970)

| d1    | TPI | mm    | Ø mini | Ø maxi | Ø guide line |
|-------|-----|-------|--------|--------|--------------|
| 3/32" | 48  |       |        |        | 1.80         |
| 1/8"  | 40  | 0.635 | 2.362  | 2.591  | 2.50         |
| 5/32" | 32  |       |        |        | 3.10         |
| 3/16" | 24  | 1.058 | 3.406  | 3.744  | 3.60         |
| 7/32" | 24  |       |        |        | 4.40         |
| 1/4"  | 20  | 1.270 | 4.724  | 5.156  | 4.90         |
| 5/16" | 18  | 1.411 | 6.129  | 6.588  | 6.40         |
| 3/8"  | 16  | 1.588 | 7.493  | 7.988  | 7.70         |
| 7/16" | 14  | 1.814 | 8.791  | 9.332  | 9.10         |
| 1/2"  | 12  | 2.117 | 9.987  | 10.589 | 10.30        |
| 5/8"  | 11  | 2.309 | 12.918 | 13.558 | 13.30        |
| 3/4"  | 10  | 2.540 | 15.799 | 16.484 | 16.20        |
| 7/8"  | 9   | 2.822 | 18.613 | 19.355 | 19.25        |
| 1"    | 8   | 3.175 | 21.336 | 22.149 | 21.90        |

## PG DIN 40430

| d1   | TPI | mm    | Ø mini | Ø maxi | Ø guide line |
|------|-----|-------|--------|--------|--------------|
| 7    | 20  | 1.270 | 11.28  | 11.43  | 11.35        |
| 9    | 18  | 1.411 | 13.86  | 14.01  | 13.90        |
| 11   | 18  | 1.411 | 17.26  | 17.41  | 17.30        |
| 13.5 | 18  | 1.411 | 19.06  | 19.21  | 19.10        |
| 16   | 18  | 1.411 | 21.16  | 21.31  | 21.20        |
| 21   | 16  | 1.588 | 26.78  | 27.03  | 26.80        |
| 29   | 16  | 1.588 | 35.48  | 35.73  | 35.50        |
| 36   | 16  | 1.588 | 45.48  | 45.73  | 45.50        |
| 42   | 16  | 1.588 | 52.48  | 52.73  | 52.50        |
| 48   | 16  | 1.588 | 57.78  | 58.03  | 57.80        |

## TR ISO 2901-2904, DIN 103, 7H

| d1 | TPI | mm | Ø mini | Ø maxi | Ø guide line |
|----|-----|----|--------|--------|--------------|
| 10 | 2   |    | 8      | 8.236  | 8.20         |
| 12 | 3   |    | 9      | 9.315  | 9.25         |
| 14 | 3   |    | 11     | 11.315 | 11.25        |
| 16 | 4   |    | 12     | 12.375 | 12.25        |
| 18 | 4   |    | 14     | 14.375 | 14.25        |
| 20 | 4   |    | 16     | 16.375 | 16.25        |
| 22 | 5   |    | 17     | 17.450 | 17.25        |
| 24 | 5   |    | 19     | 19.450 | 19.25        |
| 26 | 5   |    | 21     | 21.450 | 21.25        |
| 28 | 5   |    | 23     | 23.450 | 23.25        |
| 30 | 6   |    | 24     | 24.500 | 24.25        |
| 32 | 6   |    | 26     | 26.500 | 26.25        |



# Shank diameter of taps

| Thread |        | ISO 529* |      | ISO 2283 |      | DIN 371 |     | DIN 357/376 |      | DIN 352 |      | JIS B 4430 1998 |     | ASME B 94,9 1999 |       |
|--------|--------|----------|------|----------|------|---------|-----|-------------|------|---------|------|-----------------|-----|------------------|-------|
| [mm]   | [inch] | [Ø]      | [□]  | [Ø]      | [□]  | [Ø]     | [□] | [Ø]         | [□]  | [Ø]     | [□]  | [Ø]             | [□] | [Ø]              | [□]   |
| M 1    | –      | 2,5      | 2    | –        | –    | 2,5     | 2,1 | –           | –    | 2,5     | 2,1  | 3               | 2,5 | –                | –     |
| M 1,1  | –      | 2,5      | 2    | –        | –    | 2,5     | 2,1 | –           | –    | 2,5     | 2,1  | 3               | 2,5 | –                | –     |
| M 1,2  | –      | 2,5      | 2    | –        | –    | 2,5     | 2,1 | –           | –    | 2,5     | 2,1  | 3               | 2,5 | –                | –     |
| M 1,4  | –      | 2,5      | 2    | –        | –    | 2,5     | 2,1 | –           | –    | 2,5     | 2,1  | 3               | 2,5 | –                | –     |
| M 1,6  | 1/16   | 2,5      | 2    | –        | –    | 2,5     | 2,1 | –           | –    | 2,5     | 2,1  | 3               | 2,5 | 0,141            | 0,11  |
| M 1,7  | –      | –        | 2    | –        | –    | 2,5     | 2,1 | –           | –    | 2,5     | 2,1  | 3               | 2,5 | –                | –     |
| M 1,8  | –      | 2,5      | 2    | –        | –    | 2,5     | 2,1 | –           | –    | 2,5     | 2,1  | 3               | 2,5 | 0,141            | 0,11  |
| M 2    | –      | 2,5      | 2    | –        | –    | 2,8     | 2,1 | –           | –    | 2,8     | 2,1  | 3               | 2,5 | 0,141            | 0,11  |
| M 2,2  | –      | 2,8      | 2,24 | –        | –    | 2,8     | 2,1 | –           | –    | 2,8     | 2,1  | 3               | 2,5 | 0,141            | 0,11  |
| M 2,3  | –      | –        | –    | –        | –    | 2,8     | 2,1 | –           | –    | 2,8     | 2,1  | 3               | 2,5 | –                | –     |
| M 2,5  | 3/32   | 2,8      | 2,25 | –        | –    | 2,8     | 2,1 | –           | –    | 2,8     | 2,1  | 3               | 2,5 | 0,141            | 0,11  |
| M 2,6  | –      | –        | –    | –        | –    | 2,8     | 2,1 | –           | –    | 2,8     | 2,1  | 3               | 2,5 | –                | –     |
| M 3    | 1/8    | 3,15     | 2,5  | 2,24     | 1,8  | 3,5     | 2,7 | 2,2         | –    | 3,5     | 2,1  | 4               | 3,2 | 0,141            | 0,11  |
| M 3,5  | –      | 3,55     | 2,8  | 2,5      | 2    | 4       | 3   | 2,5         | 2,1  | 4       | 3    | 4               | 3,2 | 0,141            | 0,11  |
| M 4    | 5/32   | 4        | 3,15 | 3,15     | 2,5  | 4,5     | 3,4 | 2,8         | 2,1  | 4,5     | 3,4  | 5               | 4   | 0,168            | 0,131 |
| M 4,5  | 3/16   | 4,5      | 3,55 | 3,55     | 2,8  | 6       | 4,9 | 3,5         | 2,7  | 6       | 4,9  | 5               | 4   | 0,194            | 0,152 |
| M 5    | –      | 5        | 4    | 4        | 3,15 | 6       | 4,9 | 3,5         | 2,7  | 6       | 4,9  | 5,5             | 4,5 | 0,194            | 0,152 |
| M 6    | 1/4    | 6,3      | 5    | 4,5      | 3,55 | 6       | 4,9 | 4,5         | 3,4  | 6       | 4,9  | 6               | 4,5 | 0,255            | 0,191 |
| M 7    | 5/16   | 7,1      | 5,6  | 5,6      | 4,5  | 7       | 5,5 | 5,5         | 4,3  | 6       | 4,9  | 6,2             | 5   | 0,318            | 0,238 |
| M 8    | –      | 8        | 6,3  | 6,3      | 5    | 8       | 6,2 | 6           | 4,9  | 6       | 4,9  | 6,2             | 5   | 0,318            | 0,238 |
| M 9    | –      | 9        | 7,1  | 7,1      | 5,6  | 9       | 7   | 7           | 5,5  | 7       | 5,5  | 7               | 5,5 | –                | –     |
| M 10   | 3/8    | 10       | 8    | 8        | 6,3  | 10      | 8   | 7           | 5,5  | 7       | 5,5  | 7               | 5,5 | 0,318            | 0,286 |
| M 11   | –      | 8        | 6,3  | 8        | 6,3  | –       | –   | 8           | 6,2  | 8       | 6,2  | 8               | 6   | –                | –     |
| M 12   | 1/2    | 9        | 7,1  | 9        | 7,1  | –       | –   | 9           | 7    | 9       | 7    | 8,5             | 6,5 | 0,367            | 0,275 |
| M 14   | 9/16   | 11,2     | 9    | 11,2     | 9    | –       | –   | 11          | 9    | 11      | 9    | 10,5            | 8   | 0,429            | 0,322 |
| M 16   | 5/8    | 12,5     | 10   | 12,5     | 10   | –       | –   | 12          | 9    | 12      | 9    | 12,5            | 10  | 0,48             | 0,36  |
| M 18   | 11/16  | 14       | 11,2 | 14       | 11,2 | –       | –   | 14          | 11   | 14      | 11   | 14              | 11  | 0,542            | 0,406 |
| M 20   | 13/16  | 14       | 11,2 | 14       | 11,2 | –       | –   | 16          | 12   | 16      | 12   | 15              | 12  | 0,652            | 0,489 |
| M 22   | 7/8    | 16       | 12,5 | 16       | 12,5 | –       | –   | 18          | 14,5 | 18      | 14,5 | 17              | 13  | 0,697            | 0,523 |
| M 24   | 15/16  | 18       | 14   | 18       | 14   | –       | –   | 18          | 14,5 | 18      | 14,5 | 19              | 15  | 0,76             | 0,571 |
| M 27   | 1/16   | 20       | 16   | –        | –    | –       | –   | 20          | 16   | 20      | 16   | 20              | 15  | 0,896            | 0,672 |

All dimensions in mm (except US standard ASME B 94.9 in inch)

\*M3–M10 with reinforced shank

# Material comparison chart

| Material No. | DIN               | AFNOR        | BS       | GOST            | USA         |
|--------------|-------------------|--------------|----------|-----------------|-------------|
| 1.2002       | 125Cr1            | C120E3UCr4   | –        | –               | –           |
| 1.2008       | 140 Cr 3          | 130 C 3      | –        | –               | –           |
| 1.2067       | 102Cr6            | 100Cr6       | BL 3     | X (LUX15)       | L 3 (AISI)  |
| 1.2080       | X210Cr12          | X200Cr12     | BD 3     | X12             | D 3 (AISI)  |
| 1.2083       | X40Cr14           | X40Cr144     | –        | 40X13           | –           |
| 1.2201       | G-X 165 Cr V 12   | –            | –        | –               | –           |
| 1.2208       | 31 Cr V 3         | –            | –        | 3X $\phi$       | –           |
| 1.2210       | 115CrV3           | –            | –        | X $\phi$        | L 2 (AISI)  |
| 1.2235       | 80CrV2            | –            | –        | 8X $\phi$       | –           |
| 1.2241       | 51CrMnV4          | –            | –        | 5X $\phi$       | –           |
| 1.2249       | 45SiCrV6          | 45SiCrV6     | –        | –               | –           |
| 1.2303       | 100CrMo5          | –            | –        | –               | L 7 (AISI)  |
| 1.2316       | X36CrMo17         | –            | –        | 40X16M          | –           |
| 1.2323       | 48CrMoV6-7        | 45 CDV 6     | –        | 5XM $\phi$      | –           |
| 1.2330       | 35CrMo4           | –            | BP 20    | –               | P 20 (AISI) |
| 1.2341       | 6CrMo15-5         | –            | –        | –               | P 4 (AISI)  |
| 1.2343       | X37CrMoV5-1       | X38CrMoV5    | BH 11    | 4Ch5MFS         | H 11 (AISI) |
| 1.2344       | X40CrMoV5-1       | X40CrMoV5    | BH 13    | 4Ch5MF1S        | H 13 (AISI) |
| 1.2357       | 50CrMoV13-14      | 50 CDV 13    | –        | –               | –           |
| 1.2363       | X100CrMoV5        | X100CrMoV5   | BA 2     | X5ГМ            | A 2 (AISI)  |
| 1.2365       | 32CrMoV12-28      | 32 CDV 12-28 | BH 10    | 3Ch3M3F         | H 10 (AISI) |
| 1.2367       | X38CrMoV5-3       | X38CrMoV5-3  | –        | 4X5M3 $\phi$    | –           |
| 1.2369       | 81MoCrV42-16      | –            | –        | –               | 613 (AISI)  |
| 1.2379       | X153CrMoV12       | X160CrMoV12  | BD 2     | X12M $\phi$     | D 2 (AISI)  |
| 1.2419       | 105WCr6           | 105 WC 13    | –        | XБГ             | –           |
| 1.2436       | X210CrW12         | X210CrW12-1  | –        | X12B            | –           |
| 1.2510       | 100MnCrW4         | 90 MWCV 5    | BO 1     | XГБ $\phi$      | O 1 (AISI)  |
| 1.2542       | 45WCrV7           | 45 WCV 20    | BS 1     | 5XB2C $\phi$    | S 1 (AISI)  |
| 1.2550       | 60WCrV7           | –            | –        | 6XB2C $\phi$    | –           |
| 1.2567       | 30WCrV17-2        | X32WCrV5     | –        | 3X2B4 $\phi$    | –           |
| 1.2581       | X30WCrV9-3        | X30WCrV9     | BH 21    | 3X2B8 $\phi$    | H 21 (AISI) |
| 1.2606       | X37CrMoW5-1       | X35CrWMoV5   | BH 12    | H 12 (AISI)     | –           |
| 1.2662       | X30WCrCoV9-3      | –            | –        | 4Ch3M2WFGS      | –           |
| 1.2706       | X 3 NiCoMo 18 8 5 | –            | –        | 03N18K8M5T-WD   | –           |
| 1.2709       | X3NiCoMoTi18-9-5  | –            | –        | 03N18K9M5T-WD   | –           |
| 1.2713       | 55NiCrMoV6        | 55 NCDV 7    | BH 224/5 | 5XH2M $\phi$ -Y | L 6 (AISI)  |
| 1.2714       | 55NiCrMoV7        | –            | –        | 5XH2M $\phi$    | L 6 (AISI)  |

| Material No. | DIN                 | AFNOR          | BS    | GOST       | USA            |
|--------------|---------------------|----------------|-------|------------|----------------|
| 1.2735       | 15NiCr14            | –              | –     | –          | P 6 (AISI)     |
| 1.2742       | 55CrNiMoV4-2-4      | 55 CNDV 4      | –     | –          | –              |
| 1.2764       | X19NiCrMo4          | –              | –     | 20XH4M     | –              |
| 1.2766       | 35NiCrMo16          | –              | BP 30 | 35XH4M     | –              |
| 1.2767       | 45NiCrMo16          | –              | –     | 45X2H4M    | –              |
| 1.2769       | G45CrNiMo4-2        | –              | –     | –          | –              |
| 1.2779       | X6NiCrTi26-15       | –              | –     | –          | 660 (AISI)     |
| 1.2782       | X16CrNiSi25-20      | X15CrNiSi25-20 | –     | –          | –              |
| 1.2786       | X13NiCrSi36-16      | X15NiCrSi37-18 | –     | –          | –              |
| 1.2787       | X23CrNi17           | X21CrNi17      | –     | –          | –              |
| 1.2833       | 100V1               | 100V2          | BW 2  | –          | W 210 (AISI)   |
| 1.2842       | 90MnCrV8            | 90 MV 8        | BO 2  | 9Г2Φ       | O 2 (AISI)     |
| 1.2880       | G-X 165 Cr Co Mo 12 | –              | –     | –          | –              |
| 1.3202       | HS12-1-4-5          | –              | BT 15 | P12MΦ4K5   | T 15 (AISI)    |
| 1.3207       | HS10-4-3-10         | 10-4-3-10      | BT 42 | P10M4Φ3K10 | –              |
| 1.3243       | HS6-5-2-5           | 6-5-2-5        | BM 35 | R6M5K5     | –              |
| 1.3245       | HS6-5-2-5S          | –              | –     | –          | –              |
| 1.3246       | HS7-4-2-5           | 7-4-2-5        | –     | –          | 41 (AISI)      |
| 1.3247       | HS2-9-1-8           | 2-9-1-8        | BM 42 | P2M10K8Φ   | M 42 (AISI)    |
| 1.3249       | HS2-9-2-8           | –              | BM 34 | –          | M 33 (AISI)    |
| 1.3255       | HS18-1-2-5          | 18-1-1-5       | BT 4  | P18MΦ2K5   | T 4 (AISI)     |
| 1.3257       | HS18-1-2-15         | –              | –     | –          | –              |
| 1.3265       | HS18-1-2-10         | –              | BT 5  | –          | T 5 (AISI)     |
| 1.3302       | HS12-1-4            | –              | –     | P12MΦ4     | –              |
| 1.3318       | HS12-1-2            | –              | –     | P12MΦ2     | –              |
| 1.3333       | HS3-3-2             | –              | –     | P12MΦ2     | –              |
| 1.3339       | HS6-5-2             | –              | –     | –          | –              |
| 1.3340       | HS6-5-2CS           | –              | –     | –          | –              |
| 1.3341       | HS6-5-2S            | –              | –     | –          | –              |
| 1.3342       | HS6-5-2C            | 6-5-2 HC       | –     | P6M5Φ3     | 3 Class 1      |
| 1.3343       | HS6-5-2             | 06.05.02       | BM 2  | R6M5       | 611 (AISI)     |
| 1.3344       | HS6-5-3             | 06.05.03       | –     | P6M5Φ3     | M 3 Class 1    |
| 1.3345       | HS6-5-3C            | –              | –     | –          | –              |
| 1.3346       | HS2-9-1             | 02.08.01       | BM 1  | P2M9Φ      | H 41 (AISI)    |
| 1.3348       | HS2-9-2             | 02.09.02       | –     | P2M9Φ2     | M 7 (AISI)     |
| 1.3355       | HS18-0-1            | 18-0-1         | BT 1  | R18        | T 1 (AISI)     |
| 1.3401       | X120Mn12            | –              | BW 10 | 110G13L    | –              |
| 1.3402       | X110Mn14            | –              | –     | Np-G13A    | –              |
| 1.3501       | 100Cr2              | 100Cr2         | –     | WX4        | E 50100 (SAE)  |
| 1.3503       | 105 Cr 4            | –              | –     | –          | E 51100 (AISI) |

| Material No. | DIN             | AFNOR           | BS             | GOST      | USA           |
|--------------|-----------------|-----------------|----------------|-----------|---------------|
| 1.3505       | 100Cr6          | 100 C 6         | 2 S.135        | WX15      | E 52100 (SAE) |
| 1.3520       | 100CrMn6        | 100 CM 6        | –              | WX15CГ    | –             |
| 1.4000       | X6Cr13          | X6Cr13          | 403 S 17       | 08X13     | 403 (AISI)    |
| 1.4001       | G-X 7 Cr 13     | –               | –              | –         | 410 S (AISI)  |
| 1.4002       | X6CrAl13        | X6CrAl13        | 405 S 17       | –         | 405 (AISI)    |
| 1.4003       | X 2 Cr 11       | X2CrNi12        | X2CrNi12       | –         | –             |
| 1.4005       | X12CrS13        | X12CrS13        | 416 S 21       | 12X13-Y   | 416 (AISI)    |
| 1.4006       | X12Cr13         | X12Cr13         | 1630 grade A   | 12X13     | 410 (AISI)    |
| 1.4007       | X35Cr14         | –               | –              | Np-40Ch13 | –             |
| 1.4008       | GX7CrNiMo12-1   | GX7CrNiMo12-1   | GX7CrNiMo12-1  | –         | –             |
| 1.4010       | X2Cr17          | X2Cr17          | –              | –         | –             |
| 1.4011       | GX12Cr12        | GX12Cr12        | GX12Cr12       | –         | –             |
| 1.4016       | X6Cr17          | X6Cr17          | 430 S 15       | 08X17     | 430 (AISI)    |
| 1.4017       | X6CrNi17-1      | X6CrNi17-1      | X6CrNi17-1     | –         | –             |
| 1.4021       | X20Cr13         | X20Cr13         | 420 S 37       | 20X13     | 420 (AISI)    |
| 1.4024       | X15Cr13         | Z 12 C 13 M     | 420 S 29       | 20X13     | 420 (SAE)     |
| 1.4027       | GX20Cr14        | X30Cr13         | 1630 grade B   | 28ГМ      | –             |
| 1.4028       | X30Cr13         | X29CrS13        | 420 S 45       | 30X13     | –             |
| 1.4029       | X29CrS13        | X39Cr13         | X29CrS13       | –         | –             |
| 1.4031       | X39Cr13         | X46Cr13         | X39Cr13        | 40X13     | –             |
| 1.4034       | X46Cr13         | X45CrS13        | X46Cr13        | 46X13     | –             |
| 1.4035       | X45CrS13        | –               | –              | –         | –             |
| 1.4037       | X65Cr13         | X17CrNi16-2     | –              | 65Ch13    | –             |
| 1.4057       | X17CrNi16-2     | Z 20 CN 17.2 M  | 431 S 29       | 17X16H2   | 431 (AISI)    |
| 1.4059       | GX22CrNi17      | –               | ANC 2          | –         | –             |
| 1.4086       | GX120Cr29       | X6CrNiMo12      | 1648 grade B 1 | –         | –             |
| 1.4102       | X6CrNiMo12      | X14CrMoS17      | –              | –         | –             |
| 1.4104       | X14CrMoS17      | X14CrMoS17      | X14CrMoS17     | –         | 430 F (AISI)  |
| 1.4105       | X6CrMoS17       | X6CrMoS17       | X6CrMoS17      | –         | –             |
| 1.4106       | X2CrMoSiS18-2-1 | X2CrMoSiS18-2-1 | –              | –         | –             |
| 1.4107       | GX8CrNi12       | –               | GX8CrNi12      | –         | –             |
| 1.4109       | X70CrMo15       | X70CrMo15       | X70CrMo15      | –         | –             |
| 1.4110       | X55CrMo14       | Z 50 CD 15 Cl   | –              | –         | –             |
| 1.4112       | X90CrMoV18      | X 89 CrMoV 18-1 | X90CrMoV18     | 90X18Mφ   | 440 B (AISI)  |
| 1.4114       | X6CrMoS19-2     | X6CrMoS19-2     | –              | –         | –             |
| 1.4116       | X50CrMoV15      | X50CrMoV15      | X50CrMoV15     | –         | –             |
| 1.4118       | X40CrMo15       | X40CrMo15       | –              | 20XГМ     | –             |
| 1.4120       | GX20CrMo13      | –               | –              | –         | –             |
| 1.4121       | X22CrMoNiS13-1  | X22CrMoNiS13-1  | –              | –         | –             |
| 1.4122       | GX35CrMo17      | X38CrMo16-1     | X39CrMo17-1    | 39X17M    | –             |

| Material No. | DIN              | AFNOR            | BS               | GOST             | USA            |
|--------------|------------------|------------------|------------------|------------------|----------------|
| 1.4125       | X105CrMo17       | X105CrMo17       | X105CrMo17       | 110Ch18M-SchD    | 440 C (AISI)   |
| 1.4136       | GX70CrMo29-2     | Z 60 CD 29.2 M   | –                | –                | –              |
| 1.4300       | X 12 CrNi 18 8   | –                | 302 S 25         | –                | –              |
| 1.4301       | X5CrNi18-10      | X5CrNi18-10      | 302 S 17         | 08Ch18N10        | 304 (AISI)     |
| 1.4302       | X5CrNi19-9       | –                | 308 S 96         | Sw-04Ch19N9      | –              |
| 1.4303       | X4CrNi18-12      | X4CrNi18-12      | 305 S 17         | 06Ch18N11        | 305 (L) (AISI) |
| 1.4305       | X8CrNiS18-9      | X8CrNiS18-9      | 303 S 22         | 10X18H9-Y        | 303 (AISI)     |
| 1.4306       | X2CrNi19-11      | X2CrNi19-11      | 1631 grade C     | 03Ch18N11        | 304 L (AISI)   |
| 1.4307       | X2CrNi18-9       | X2CrNi18-9       | X2CrNi18-9       | 03X18H9          | –              |
| 1.4308       | GX5CrNi19-10     | GX5CrNi19-10     | 1631 grade A     | 07Ch18N9L        | 304 H (SAE)    |
| 1.4309       | GX2CrNi19-11     | GX2CrNi19-11     | 1631 grade C     | –                | –              |
| 1.4310       | X 12 CrNi 17 7   | X10CrNi18-8      | 301 S 21         | –                | 301 (AISI)     |
| 1.4311       | X2CrNiN18-10     | X2CrNiN18-10     | 304 S 61         | –                | 304 LN (AISI)  |
| 1.4312       | GX10CrNi18-8     | Z 10 CN 18.9 M   | 1631 grade D     | 10Ch18N9L        | –              |
| 1.4313       | X3CrNiMo13-4     | X3CrNiMo13-4     | 425 C 11         | 03X13H4M         | S 41500 (AISI) |
| 1.4316       | X1CrNi19-9       | Z 1 CN 20-10     | 308 S 92         | Sw-01Ch19N9      | –              |
| 1.4317       | GXZ5CrNi13-4     | X4CrNi13-4       | 425 C 11         | –                | –              |
| 1.4318       | X2CrNiN18-7      | X2CrNiN18-7      | X2CrNiN18-7      | –                | –              |
| 1.4319       | X3CrNiN17-8      | X3CrNiN17-8      | 301 S 26         | –                | –              |
| 1.4324       | –                | –                | 302 S 26         | –                | 302 (SAE)      |
| 1.4332       | X2CrNi24-12      | Z 2 CNS 25-13    | 309 S 92         | –                | –              |
| 1.4333       | X 5 NiCr 32 21   | –                | –                | –                | 330 (AISI)     |
| 1.4335       | X1CrNi25-21      | X1CrNi25-21      | X1CrNi25-21      | –                | –              |
| 1.4337       | X10CrNi30-9      | Z 10 CN 30-09    | 312 S 94         | –                | –              |
| 1.4347       | GX6CrNiN26-7     | GX6CrNiN26-7     | GX6CrNiN26-7     | –                | –              |
| 1.4361       | X1CrNiSi18-15-4  | X1CrNiSi18-15-4  | X1CrNiSi18-15-4  | –                | –              |
| 1.4362       | X2CrNiN23-4      | X2CrNiN23-4      | X2CrNiN23-4      | –                | –              |
| 1.4370       | X15CrNiMn18-8    | Z 8 CNM 19-09-07 | 307 S 98         | –                | –              |
| 1.4371       | X2CrMnNiN17-7-5  | X2CrMnNiN17-7-5  | 202 S 16         | –                | 202 (AISI)     |
| 1.4372       | X12CrMnNiN17-7-5 | X12CrMnNiN17-7-5 | X12CrMnNiN17-7-5 | –                | –              |
| 1.4373       | X12CrMnNiN18-9-5 | X12CrMnNiN18-9-5 | 284 S 16         | –                | –              |
| 1.4375       | X2CrMnNiN20-9-7  | X2CrMnNiN20-9-7  | –                | –                | S 21904 (AISI) |
| 1.4401       | X5CrNiMo17-12-2  | X5CrNiMo17-12-2  | 316 S 17         | 08X17H13M2       | 316 (AISI)     |
| 1.4403       | X5CrNiMo19-11    | –                | 316 S 96         | –                | –              |
| 1.4404       | X2CrNiMo17-12-2  | X2CrNiMo17-12-2  | 1632 grade F     | 03X17H13M2       | –              |
| 1.4405       | GX4CrNiMo16-5-1  | GX4CrNiMo16-5-1  | 1632 grade F     | –                | –              |
| 1.4406       | X2CrNiMoN17-11-2 | X2CrNiMoN17-11-2 | 316 S 61         | –                | 316 LN (AISI)  |
| 1.4408       | GX5CrNiMo19-11-2 | GX5CrNiMo19-11-2 | 1632 grade B     | 07Ch18N10G2S2M2L | –              |
| 1.4409       | GX2CrNiMo19-11-2 | GX2CrNiMo19-11-2 | GX2CrNiMo19-11-2 | –                | –              |
| 1.4410       | X2CrNiMoN25-7-4  | X2CrNiMoN25-7-4  | X2CrNiMoN25-7-4  | –                | S 32750 (AISI) |

| Material No. | DIN                 | AFNOR                | BS                 | GOST            | USA             |
|--------------|---------------------|----------------------|--------------------|-----------------|-----------------|
| 1.4411       | GX4CrNiMo16-5-2     | GX4CrNiMo16-5-2      | GX4CrNiMo16-5-2    | –               | –               |
| 1.4412       | GX5CrNiMo19-11-3    | GX5CrNiMo19-11-3     | GX5CrNiMo19-11-3   | –               | –               |
| 1.4413       | X 3 CrNiMo 13 4     | X3CrNiMo13-4         | –                  | –               | S 41500 (AISI)  |
| 1.4416       | GX2NiCrMoN25-20-5   | GX2NiCrMoN25-20-5    | GX2NiCrMoN25-20-5  | –               | –               |
| 1.4417       | GX2CrNiMoN25-7-3    | GX2CrNiMoN25-7-3     | GX2CrNiMoN25-7-3   | –               | S 31500 (AISI)  |
| 1.4418       | X4CrNiMo16-5-1      | X4CrNiMo16-5-1       | X4CrNiMo16-5-1     | –               | –               |
| 1.4420       | X 5 CrNiMo 18 11    | –                    | 315 S 16           | –               | –               |
| 1.4429       | X2CrNiMoN17-13-3    | X2CrNiMoN17-13-3     | 316 S 63           | –               | 316 LN (AISI)   |
| 1.4430       | X2CrNiMo19-12       | Z 2 CND 19-12-03     | 316 S 92           | –               | –               |
| 1.4431       | X12CrNiMo19-10      | Z 8 CND 18.10.3 M    | –                  | –               | –               |
| 1.4432       | X2CrNiMo17-12-3     | X2CrNiMo17-12-3      | 316 S 12           | 06Ch17N13M3-WD  | –               |
| 1.4434       | X2CrNiMoN18-12-4    | X2CrNiMoN18-12-4     | X2CrNiMoN18-12-4   | –               | –               |
| 1.4435       | X2CrNiMo18-14-3     | X2CrNiMo18-14-3      | 1632 grade F       | 03Ch17N14M3     | 316 L (AISI)    |
| 1.4436       | X3CrNiMo17-13-3     | X3CrNiMo17-13-3      | 316 S 19           | 05X17H13M3      | 316 (AISI)      |
| 1.4437       | GX6CrNiMo18-12      | Z 4 CND 19.13 M      | –                  | 08X17H13M2      | 316 (SAE)       |
| 1.4438       | X2CrNiMo18-15-4     | X2CrNiMo18-15-4      | 317 S 12           | –               | 317 L (AISI)    |
| 1.4439       | GX3CrNiMoN17-13-5   | X2CrNiMoN17-13-5     | X2CrNiMoN17-13-5   | –               | –               |
| 1.4441       | X2CrNiMo18-15-3     | X2CrNiMo18-15-3      | –                  | –               | –               |
| 1.4442       | X2CrNiMoN18-15-4    | Z 3 CND 19-14 Az     | –                  | –               | –               |
| 1.4446       | GX2CrNiMoN17-13-4   | GX2CrNiMoN17-13-4    | GX2CrNiMoN17-13-4  | –               | –               |
| 1.4448       | GX6CrNiMo17-13      | –                    | 1632 grade A       | –               | –               |
| 1.4449       | X3CrNiMo18-12-3     | –                    | 317 S 16           | –               | 317 (AISI)      |
| 1.4454       | –                   | –                    | –                  | –               | S 21900 (AISI)  |
| 1.4458       | GX2NiCrMo28-20-2    | GX2NiCrMo28-20-2     | GX2NiCrMo28-20-2   | –               | –               |
| 1.4459       | X8CrNiMo23-13       | Z 3 CND 22-15-03     | –                  | –               | –               |
| 1.4460       | X3CrNiMoN27-5-2     | X3CrNiMoN27-5-2      | X3CrNiMoN27-5-2    | 10Ch26N5M       | 329 (AISI)      |
| 1.4462       | X2CrNiMoN22-5-3     | X2CrNiMoN22-5-3      | 318 S 13           | 03X22H5AM3      | S 31803 (AISI)  |
| 1.4465       | X1CrNiMoN25-25-2    | –                    | –                  | 02Ch25N22AM2-PT | 310 MoLN (AISI) |
| 1.4466       | X1CrNiMoN25-22-2    | X1CrNiMoN25-22-2     | X1CrNiMoN25-22-2   | –               | –               |
| 1.4468       | GX2CrNiMoN25-6-3    | GX2CrNiMoN25-6-3     | GX2CrNiMoN25-6-3   | 03Ch24N6AM3     | –               |
| 1.4469       | GX2CrNiMoN26-7-4    | GX2CrNiMoN26-7-4     | GX2CrNiMoN26-7-4   | –               | S 32615 (AISI)  |
| 1.4470       | GX2CrNiMoN22-5-3    | GX2CrNiMoN22-5-3     | GX2CrNiMoN22-5-3   | –               | –               |
| 1.4500       | GX7NiCrMoCuNb25-20  | Z 3 NCDU 25.20 M     | 332 C 11           | –               | –               |
| 1.4501       | X2CrNiMoCuWN25-7-4  | X2CrNiMoCuWN25-7-4   | X2CrNiMoCuWN25-7-4 | –               | –               |
| 1.4502       | X8CrTi18            | X8CrTi18             | –                  | –               | –               |
| 1.4504       | –                   | –                    | –                  | –               | 631 (AISI)      |
| 1.4507       | X2CrNiMoCuN25-6-3   | X2CrNiMoCuN25-6-3    | X2CrNiMoCuN25-6-3  | –               | –               |
| 1.4508       | GX2CrNiMoCuWN25-8-4 | Z 4 CNUD 17-11-03 FF | –                  | –               | –               |
| 1.4509       | X2CrTiNb18          | X2CrTiNb18           | X2CrTiNb18         | –               | –               |
| 1.4510       | X3CrTi17            | X3CrTi17             | X3CrTi17           | 05X17T          | 430 Ti (AISI)   |



| Material No. | DIN                    | AFNOR                | BS                   | GOST        | USA            |
|--------------|------------------------|----------------------|----------------------|-------------|----------------|
| 1.4511       | X3CrNb17               | X3CrNb17             | X3CrNb17             | –           | –              |
| 1.4512       | X2CrTi12               | X2CrTi12             | 409 S 19             | –           | 409 (AISI)     |
| 1.4513       | X2CrMoTi17-1           | X2CrMoTi17-1         | X2CrMoTi17-1         | –           | –              |
| 1.4516       | X6CrNiTi12             | X6CrNiTi12           | X6CrNiTi12           | –           | –              |
| 1.4517       | GX2CrNiMoCuN25-6-3-3   | GX2CrNiMoCuN25-6-3-3 | GX2CrNiMoCuN25-6-3-3 | –           | –              |
| 1.4519       | X2CrNiMoCu20-25        | –                    | 904 S 92             | –           | –              |
| 1.4520       | X2CrTi17               | X2CrTi17             | X2CrTi17             | –           | –              |
| 1.4521       | X2CrMoTi18-2           | X2CrMoTi18-2         | X2CrMoTi18-2         | 20XH2M      | 443 (AISI)     |
| 1.4522       | X2CrMoNb18-2           | –                    | –                    | –           | 443 (AISI)     |
| 1.4523       | X2CrMoTiS18-2          | X2CrMoTiS18-2        | X2CrMoTiS18-2        | –           | –              |
| 1.4525       | GX5CrNiCu16-4          | GX5CrNiCu16-4        | GX5CrNiCu16-4        | –           | –              |
| 1.4526       | X6CrMoNb17-1           | X6CrMoNb17-1         | X6CrMoNb17-1         | –           | –              |
| 1.4527       | GX4NiCrCuMo30-20-4     | GX4NiCrCuMo30-20-4   | GX4NiCrCuMo30-20-4   | –           | –              |
| 1.4529       | X1NiCrMoCuN25-20-7     | X1CrNiMoCuN25-20-7   | X1NiCrMoCuN25-20-7   | –           | N 08926 (AISI) |
| 1.4532       | X8CrNiMoAl15-7-2       | X8CrNiMoAl15-7-2     | X8CrNiMoAl15-7-2     | –           | 631 (AISI)     |
| 1.4533       | X6CrNiTi18-10S         | –                    | –                    | 05Ch18N10T  | –              |
| 1.4534       | X3CrNiMoAl13-8-2       | –                    | –                    | –           | –              |
| 1.4537       | X1CrNiMoCuN25-25-5     | X1CrNiMoCuN25-25-5   | X1CrNiMoCuN25-25-5   | –           | –              |
| 1.4539       | X1NiCrMoCu25-20-5      | X1NiCrMoCu25-20-5    | 904 S 13             | –           | 904 L (AISI)   |
| 1.4540       | GX4CrNiCuNb16-4        | Z 4 CNUNb 16.4 M     | –                    | –           | –              |
| 1.4541       | X6CrNiTi18-10          | X6CrNiTi18-10        | 321 S 12             | 08X18H10T   | 321 (AISI)     |
| 1.4542       | X5CrNiCuNb16-4         | X5CrNiCuNb16-4       | X5CrNiCuNb16-4       | –           | 630 (AISI)     |
| 1.4543       | X3CrNiCuTi12-9         | –                    | 2 T.66               | –           | –              |
| 1.4544       | –                      | –                    | 2 S.129              | 08X18H10T   | 321 (SAE)      |
| 1.4545       | –                      | –                    | –                    | –           | S 15500 (AISI) |
| 1.4546       | X5CrNiNb18-10          | –                    | 2 S.130              | –           | 347 (SAE)      |
| 1.4547       | X1CrNiMoCuN20-18-7     | X1CrNiMoCuN20-18-7   | X1CrNiMoCuN20-18-7   | –           | S 31254 (AISI) |
| 1.4548       | X5CrNiCuNb17-4-4       | –                    | –                    | –           | 630 (AISI)     |
| 1.4550       | X6CrNiNb18-10          | X6CrNiNb18-10        | 347 S 20             | 08Ch18N12B  | 347 (AISI)     |
| 1.4551       | X5CrNiNb19-9           | Z 6 CNNb 20-10       | –                    | –           | –              |
| 1.4552       | GX5CrNiNb19-11         | GX5CrNiNb19-11       | 1631 grade B         | –           | –              |
| 1.4555       | X2CrNiNb21-10          | –                    | 347 S 96             | –           | –              |
| 1.4557       | GX2CrNiMoCuN20-18-6    | GX2CrNiMoCuN20-18-6  | GX2CrNiMoCuN20-18-6  | –           | –              |
| 1.4559       | G-X 7 NiCrMoCuNb 42 20 | –                    | –                    | –           | –              |
| 1.4560       | X3CrNiCu19-9-2         | X3CrNiCu19-9-2       | X3CrNiCu19-9-2       | –           | –              |
| 1.4563       | X1NiCrMoCu31-27-4      | X1NiCrMoCu31-27-4    | X1NiCrMoCu31-27-4    | –           | –              |
| 1.4564       | –                      | –                    | –                    | –           | 631 (AISI)     |
| 1.4565       | X2CrNiMnMoNbN25-18-5-4 | –                    | –                    | –           | S 34565 (AISI) |
| 1.4567       | X 3 CrNiCu 18 9        | X3CrNiCu18-9-4       | 394 S 17             | –           | –              |
| 1.4568       | X7CrNiAl17-7           | X7CrNiAl17-7         | 301 S 81             | 09Ch17N7Ju1 | 631 (AISI)     |

| Material No. | DIN                   | AFNOR               | BS                  | GOST         | USA            |
|--------------|-----------------------|---------------------|---------------------|--------------|----------------|
| 1.4570       | X6CrNiCuS18-9-2       | X6CrNiCuS18-9-2     | X6CrNiCuS18-9-2     | –            | –              |
| 1.4571       | X6CrNiMoTi17-12-2     | X6CrNiMoTi17-12-2   | 320 S 18            | 08Ch16N11M3T | 316 Ti (AISI)  |
| 1.4573       | GX3CrNiMoCuN24-6-5    | –                   | 320 S 33            | 08Ch17N13M2T | 316 Ti (AISI)  |
| 1.4574       | –                     | Z 9 CNDA 15-07      | –                   | –            | 631 (AISI)     |
| 1.4575       | X1CrNiMoNb28-4-2      | –                   | –                   | –            | S 32803 (AISI) |
| 1.4576       | X5CrNiMoNb19-12       | Z 4 CNDSNb 19-12-03 | 18 S 96             | –            | –              |
| 1.4578       | X3CrNiCuMo17-11-3-2   | X3CrNiCuMo17-11-3-2 | X3CrNiCuMo17-11-3-2 | –            | –              |
| 1.4580       | G-X 10 CrNiMoNb 18 10 | X6CrNiMoNb17-12-2   | 318 S 17            | 08X17H13M2T  | 316 Cb (AISI)  |
| 1.4581       | X5CrNiMoNb19-11-2     | GX5CrNiMoNb19-11-2  | 1632 grade C        | –            | –              |
| 1.4583       | GX10CrNiMoNb18-12     | –                   | –                   | –            | –              |
| 1.4584       | GX2NiCrMoCu25-20-5    | GX2NiCrMoCu25-20-5  | GX2NiCrMoCu25-20-5  | –            | –              |
| 1.4587       | GX2NiCrMoCuN29-25-5   | GX2NiCrMoCuN29-25-5 | GX2NiCrMoCuN29-25-5 | –            | –              |
| 1.4588       | GX2NiCrMoCuN25-20-6   | GX2NiCrMoCuN25-20-6 | GX2NiCrMoCuN25-20-6 | –            | –              |
| 1.4590       | X2CrNbZr17            | X2CrNbZr17          | X2CrNbZr17          | –            | –              |
| 1.4592       | X2CrMoTi29-4          | X2CrMoTi29-4        | X2CrMoTi29-4        | –            | –              |
| 1.4594       | X5CrNiMoCuNb14-5      | X5CrNiMoCuNb14-5    | X5CrNiMoCuNb14-5    | –            | –              |
| 1.4601       | X6CrNb12              | –                   | –                   | –            | –              |
| 1.4602       | X4CrCu17-1            | –                   | –                   | –            | –              |
| 1.4603       | X1CrTi17              | –                   | –                   | –            | –              |
| 1.4604       | X2CrTi20              | –                   | –                   | –            | –              |
| 1.4605       | X2CrAlTi18-2          | –                   | X2CrAlTi18-2        | –            | –              |
| 1.4650       | X2CrNiCu19-10         | –                   | –                   | –            | –              |
| 1.4651       | 6CrNiCuS18-9-4        | –                   | –                   | –            | HNV 2 (SAE)    |
| 1.4704       | 45SiCr16-11           | –                   | –                   | –            | –              |
| 1.4710       | GX30CrSi6             | –                   | –                   | –            | –              |
| 1.4713       | X10CrAl7              | –                   | X10CrAlSi7          | 12X7CIO      | –              |
| 1.4718       | G-X 45 CrSi 9 3       | X45CrSi9-3          | 401 S 45            | 45X9C3       | HNV 3 (SAE)    |
| 1.4720       | X7CrTi12              | –                   | –                   | –            | 409 (AISI)     |
| 1.4724       | X10CrAl13             | Z 13 C 13           | X10CrAlSi13         | 10Ch13SJü    | –              |
| 1.4725       | CrAl 14 4             | –                   | –                   | –            | –              |
| 1.4731       | X40CrSiMo10-2         | X40CrSiMo10-2       | X40CrSiMo10-2       | 40Ch10S2M    | –              |
| 1.4736       | X3CrAlTi18-2          | –                   | X3CrAlTi18-2        | –            | –              |
| 1.4742       | X10CrAl18             | Z 12 CAS 18         | X10CrAlSi18         | 15Ch18SJü    | –              |
| 1.4745       | GX40CrSi23            | –                   | –                   | –            | –              |
| 1.4747       | X 80 CrNiSi 20        | –                   | –                   | –            | HNV 6 (SAE)    |
| 1.4748       | X85CrMoV18-2          | X85CrMoV18-2        | X85CrMoV18-2        | –            | –              |
| 1.4749       | X18CrN28              | –                   | X18CrN28            | –            | –              |
| 1.4762       | X10CrAl24             | Z 12 CAS 25         | X10CrAlSi25         | –            | 446 (AISI)     |
| 1.4763       | X8Cr24                | X8Cr24              | –                   | –            | –              |
| 1.4765       | CrAl 25 5             | –                   | –                   | Ch23Ju5T     | –              |

| Material No. | DIN               | AFNOR            | BS                | GOST         | USA            |
|--------------|-------------------|------------------|-------------------|--------------|----------------|
| 1.4767       | CrAl 20 5         | –                | –                 | –            | –              |
| 1.4768       | CrAl 21 6         | –                | –                 | –            | –              |
| 1.4776       | GX40CrSi28        | –                | –                 | –            | –              |
| 1.4818       | X6CrNiSiNc19-10   | –                | X6CrNiSiNc19-10   | –            | S 30415 (AISI) |
| 1.4820       | G-X 12 CrNi 26 5  | –                | –                 | –            | –              |
| 1.4821       | X15CrNiSi25-4     | –                | X15CrNiSi25-4     | –            | –              |
| 1.4825       | GX25CrNiSi18-9    | –                | –                 | –            | 302 mod. (SAE) |
| 1.4826       | GX40CrNiSi22-10   | –                | –                 | –            | –              |
| 1.4828       | X15CrNiSi20-12    | Z 17 CNS 20-12   | 309 S 24          | 20Ch20N14S2  | 309 (AISI)     |
| 1.4829       | X12CrNi22-12      | –                | 309 S 94          | –            | –              |
| 1.4832       | GX25CrNiSi20-14   | –                | –                 | 20Ch20N14S2L | –              |
| 1.4833       | X 7 CrNi 23 14    | Z 15 CN 23-13    | 309 S 24          | –            | 309 S (AISI)   |
| 1.4835       | X9CrNiSiNc21-11-2 | –                | X9CrNiSiNc21-11-2 | –            | S 30815 (AISI) |
| 1.4837       | GX40CrNiSi25-12   | –                | 1648 grade E      | 40Ch24N12SL  | –              |
| 1.4840       | GX15CrNi25-20     | –                | –                 | 15Ch23N18L   | –              |
| 1.4841       | X15CrNiSi25-20    | Z 15 CNS 25-20   | 314 S 25          | 20Ch25N20S2  | 310 (AISI)     |
| 1.4842       | X12CrNi25-20      | Z 12 CN 26-21    | 310 S 94          | –            | –              |
| 1.4843       | CrNi 25 20        | –                | –                 | ChN20JuS     | –              |
| 1.4845       | X12CrNi25-21      | Z 12 CN 26-21    | 310 S 16          | 08X25H10     | 310 S (AISI)   |
| 1.4846       | X40CrNi25-21      | –                | 310 S 98          | –            | –              |
| 1.4847       | X8CrNiAlTi20-20   | –                | –                 | –            | 334 (AISI)     |
| 1.4848       | GX40CrNiSi25-20   | –                | 1648 grade F      | –            | –              |
| 1.4849       | GX40NiCrSiNb38-18 | –                | –                 | –            | –              |
| 1.4852       | G40NiCrSiNb35-26  | –                | –                 | –            | –              |
| 1.4854       | X6NiCrSiNc35-25   | –                | X6NiCrSiNc35-25   | –            | –              |
| 1.4855       | GX30CrNiSiNb24-24 | –                | –                 | –            | –              |
| 1.4857       | GX40NiCrSi35-25   | –                | –                 | –            | –              |
| 1.4859       | GX10NiCrNb32-20   | –                | –                 | –            | –              |
| 1.4860       | NiCr 30 20        | –                | –                 | –            | –              |
| 1.4864       | X12NiCrSi35-16    | Z 20 NCS 33-16   | NA 17             | –            | 330 (AISI)     |
| 1.4865       | GX40NiCrSi38-18   | –                | 330 C 11          | –            | –              |
| 1.4866       | X33CrNiMnN23-8    | X33CrNiMnN23-8   | X33CrNiMnN23-8    | –            | EV 16 (SAE)    |
| 1.4870       | X53CrMnNiNbN21-9  | X53CrMnNiNbN21-9 | 352 S 52          | –            | –              |
| 1.4871       | X53CrMnNiN21-9    | X53CrMnNiN21-9   | 349 S 52          | 55Ch20G9AN4  | EV 8 (SAE)     |
| 1.4872       | X25CrMnNiN25-9-7  | –                | X25CrMnNiN25-9-7  | –            | –              |
| 1.4873       | X45CrNiW18-9      | –                | –                 | –            | –              |
| 1.4875       | X55CrMnNiN20-8    | X55CrMnNiN20-8   | X55CrMnNiN20-8    | –            | EV 12 (SAE)    |
| 1.4876       | X10NiCrAlTi32-20  | Z 10 NC 32-21    | NA 15             | –            | N 08800 (AISI) |
| 1.4877       | X6NiCrNbCe32-27   | –                | X6NiCrNbCe32-27   | –            | –              |
| 1.4878       | X12CrNiTi18-9     | Z 6 CNT 18-10    | 321 S 31          | –            | –              |

| Material No. | DIN                    | AFNOR                  | BS                     | GOST       | USA            |
|--------------|------------------------|------------------------|------------------------|------------|----------------|
| 1.4882       | X50CrMnNiNbN21-9       | –                      | X50CrMnNiNbN21-9       | –          | XEV-F (SAE)    |
| 1.4886       | X10NiCrSi35-19         | –                      | X10NiCrSi35-19         | –          | –              |
| 1.4887       | X10NiCrSiNb35-22       | –                      | X10NiCrSiNb35-22       | –          | –              |
| 1.4891       | X 4 CrNiSiN 18 10      | –                      | –                      | –          | S 30415 (AISI) |
| 1.4893       | X 8 CrNiSiN 21 11      | –                      | –                      | –          | S 30815 (AISI) |
| 1.4903       | X10CrMoVNb9-1          | X10CrMoV9-1            | –                      | –          | –              |
| 1.4909       | X2CrNiMoN17-12-2       | –                      | S.161                  | –          | –              |
| 1.4910       | X3CrNiMoBN17-13-3      | –                      | X3CrNiMoBN17-13-3      | –          | –              |
| 1.4911       | X8CrCoNiMo10-6         | Z 9 CKD 11             | S.152                  | –          | –              |
| 1.4912       | X7CrNiNb18-10          | X7CrNiNb18-10          | –                      | –          | –              |
| 1.4913       | X19CrMoNbVN11-1        | Z 21 CDNbV 11          | X19CrMoNbVN11-1        | –          | –              |
| 1.4919       | X6CrNiMo17-13          | X6CrNiMoB17-12-2       | 316 S 50               | 10X18H13M2 | 316 H (AISI)   |
| 1.4922       | X20CrMoV11-1           | X20CrMoV11-1           | 762                    | –          | –              |
| 1.4923       | X22CrMoV12-1           | X19CrMoNbVN11-1        | X22CrMoV12-1           | –          | –              |
| 1.4928       | G-X 12 CrNiMoCoVN 12   | –                      | –                      | –          | –              |
| 1.4931       | GX23CrMoV12-1          | GX23CrMoV12-1          | –                      | –          | –              |
| 1.4935       | X20CrMoWV12-1          | –                      | –                      | –          | 422 (AISI)     |
| 1.4938       | X11CrNiMoN12           | X12CrNiMoV12-3         | X12CrNiMoV12-3         | –          | –              |
| 1.4939       | X12CrNiMo12            | Z 12 CNDV 12-03        | S.151                  | –          | S 64152 (AISI) |
| 1.4941       | X6CrNiTiB18-10         | X6CrNiTiB18-10         | 321 S 51               | –          | –              |
| 1.4943       | X4NiCrTi25-15          | Z 5 NCTDV 25-15 B      | HR 251                 | –          | 660 (AISI)     |
| 1.4944       | –                      | –                      | HR 51                  | –          | 660 (AISI)     |
| 1.4948       | X6CrNi18-10            | X6CrNi18-10            | 304 S 50               | 10X20H10   | 304 H (AISI)   |
| 1.4949       | X3CrNiN18-11           | –                      | 304 S 51               | –          | –              |
| 1.4958       | X5NiCrAlTi31-20        | Z 8 NC 33-21           | NA 15                  | –          | N 08810 (AISI) |
| 1.4959       | X8NiCrAlTi32-21        | Z 8 NC 33-21           | NA 15                  | –          | –              |
| 1.4961       | X8CrNiNb16-13          | –                      | 347 S 51               | –          | –              |
| 1.4971       | X12CrCoNi21-20         | –                      | –                      | –          | 661 (AISI)     |
| 1.4980       | X5NiCrTi26-15          | –                      | –                      | –          | –              |
| 1.4982       | X10CrNiMoMnNbVB15-10-1 | X10CrNiMoMnNbVB15-10-1 | X10CrNiMoMnNbVB15-10-1 | –          | –              |
| 1.4986       | X7CrNiMoBNb16-16       | X7CrNiMoBNb16-16       | X7CrNiMoBNb16-16       | –          | –              |
| 1.4988       | G-X 8 CrNiMoVNb 16 13  | –                      | –                      | –          | –              |
| 1.5023       | 38Si7                  | 40Si7                  | –                      | –          | –              |
| 1.5024       | 46Si7                  | 46 S 7                 | –                      | –          | –              |
| 1.5025       | 51Si7                  | 50 S 7                 | –                      | –          | –              |
| 1.5026       | 55Si7                  | 55 S 7                 | 251 A 58               | 55S2       | 9255 (SAE)     |
| 1.5027       | 60Si7                  | 60 S 7                 | 251 A 60               | 60S2       | 9260 (SAE)     |
| 1.5029       | 71Si7                  | –                      | –                      | 70S2ChA    | –              |
| 1.5069       | 36Mn7                  | –                      | –                      | –          | 1340 H (SAE)   |
| 1.5121       | 46MnSi4                | –                      | –                      | –          | –              |

| Material No. | DIN         | AFNOR     | BS        | GOST   | USA           |
|--------------|-------------|-----------|-----------|--------|---------------|
| 1.5122       | 37MnSi5     | 38 MS 5   | –         | –      | –             |
| 1.5128       | 10 MnSi 4 4 | –         | –         | –      | –             |
| 1.5403       | 17MnMoV6-4  | –         | 271       | –      | –             |
| 1.5406       | 17MoV8-4    | –         | –         | –      | –             |
| 1.5415       | 15 Mo 3     | 15 D 3    | 16Mo3     | 15M    | –             |
| 1.5419       | G20Mo5      | –         | 243-430   | –      | 4422 (SAE)    |
| 1.5422       | G18Mo5      | –         | G18Mo5    | –      | –             |
| 1.5423       | 16Mo5       | –         | –         | –      | 4419 (SAE)    |
| 1.5430       | G8MnMo7-4   | –         | –         | –      | –             |
| 1.5506       | 17MnB3      | –         | 9/0       | –      | –             |
| 1.5509       | 23B2        | 25 B 3    | –         | –      | –             |
| 1.5510       | 28B2        | 25 B 3    | –         | –      | –             |
| 1.5511       | 35B2        | 35 B 3    | 35B2      | –      | –             |
| 1.5523       | 19MnB4      | 19MnB4    | 19MnB4    | –      | 15B21 H (SAE) |
| 1.5527       | 40MnB4      | –         | 10. Jan   | –      | –             |
| 1.5530       | 20MnB5      | 20 MB 5   | 20MnB5    | –      | –             |
| 1.5531       | 30MnB5      | 30 MB 5   | 30MnB5    | –      | –             |
| 1.5532       | 38MnB5      | 38 MB 5   | 38MnB5    | 40GR   | –             |
| 1.5621       | G10Ni6      | –         | –         | –      | –             |
| 1.5622       | 14Ni6       | 16 N 6    | –         | –      | –             |
| 1.5633       | 24Ni8       | 20 N 8    | –         | –      | –             |
| 1.5636       | G9Ni10      | –         | G9Ni10    | –      | –             |
| 1.5637       | 10 Ni 14    | 12 N 14   | 12Ni14    | –      | –             |
| 1.5638       | G9Ni14      | –         | 503 LT 60 | –      | –             |
| 1.5639       | 16 Ni 14    | –         | –         | –      | 2317 (SAE)    |
| 1.5662       | G-X 8 Ni 9  | 9 Ni      | 502-650   | –      | –             |
| 1.5663       | X7Ni9       | X7Ni9     | 510       | –      | –             |
| 1.5680       | 12Ni19      | 12Ni19    | 12Ni19    | –      | 2515 (SAE)    |
| 1.5681       | GS-10 Ni 19 | –         | –         | –      | 2512 (SAE)    |
| 1.5710       | 36 NiCr 6   | 30 NC 6   | –         | –      | 3135 (SAE)    |
| 1.5711       | 40NiCr6     | –         | –         | 40ChN  | 3140 (SAE)    |
| 1.5713       | 13NiCr6     | –         | –         | –      | 3115 (SAE)    |
| 1.5714       | 16NiCr4     | 16NiCr4   | 16NiCr4   | 16XГН  | –             |
| 1.5715       | 16NiCrS4    | 16NiCrS4  | 16XГН-Y   | –      | –             |
| 1.5732       | 14NiCr10    | 16 NC 11  | –         | –      | 3415 (SAE)    |
| 1.5736       | 36NiCr10    | 30 NC 11  | –         | –      | 3435 (SAE)    |
| 1.5737       | 30NiCr11    | 30 NC 12  | –         | –      | –             |
| 1.5752       | 14NiCr14    | 10 NC 12  | 15NiCr13  | 17XH3  | 3310 (SAE)    |
| 1.5755       | 31 NiCr 14  | 18 NC 13  | –         | –      | –             |
| 1.5805       | 10NiCr5-4   | 10NiCr5-4 | 10NiCr5-4 | 10XГН1 | –             |

| Material No. | DIN            | AFNOR         | BS            | GOST      | USA        |
|--------------|----------------|---------------|---------------|-----------|------------|
| 1.6523       | 20NiCrMo2-2    | 20 NCD 2      | 20NiCrMo2-2   | 20XГНМ    | 8615 (SAE) |
| 1.6526       | 20NiCrMoS2-2   | 20NiCrMoS2-2  | 20NiCrMoS2-2  | 20XГНМ-Y  | –          |
| 1.6528       | GS-60 NiCrMo 2 | –             | –             | –         | 8660 (SAE) |
| 1.6541       | 23MnNiCrMo5-2  | 23 MNCD 5     | –             | –         | –          |
| 1.6543       | 21 NiCrMo 2 2  | –             | 805 A 20      | –         | 8622 (SAE) |
| 1.6545       | 30NiCrMo2-2    | 30 NCD 2      | –             | –         | 8630 (SAE) |
| 1.6546       | 40NiCrMo2-2    | 40 NCD 2      | 7             | 38ChГНМ   | 8640 (SAE) |
| 1.6552       | G24CrNiMo3-2-5 | –             | –             | –         | –          |
| 1.6562       | 40 NiCrMo 8 4  | –             | 817 M 40      | –         | 4337 (SAE) |
| 1.6563       | 41NiCrMo7-3-2  | 41NiCrMo7-3-2 | 41NiCrMo7-3-2 | –         | –          |
| 1.6565       | 40NiCrMo6      | –             | 818 M 40      | 40XГН2М   | 4340 (SAE) |
| 1.6566       | 17NiCrMo6-4    | 17NiCrMo6-4   | 17NiCrMo6-4   | 17XГН1М   | –          |
| 1.6569       | 17NiCrMoS6-4   | 17NiCrMoS6-4  | 17NiCrMoS6-4  | 17XГН1М-Y | –          |
| 1.6570       | G30NiCrMo8-5   | –             | –             | –         | –          |
| 1.6571       | 20NiCrMoS6-4   | 20NiCrMoS6-4  | 20NiCrMoS6-4  | 20XГН2М-Y | –          |
| 1.6580       | 30CrNiMo8      | 30 CND 8      | 30CrNiMo8     | 30X2H2М   | –          |
| 1.6582       | 34CrNiMo6      | 34CrNiMo6     | 34CrNiMo6     | 34X2H2М   | –          |
| 1.6587       | 17CrNiMo6      | 18 CND 6      | 18CrNiMo7-6   | 18X2ГН2М  | –          |
| 1.6655       | 32NiCrMo12-5   | 30 NCD 12     | –             | –         | –          |
| 1.6657       | 14NiCrMo13-4   | 14NiCrMo13-4  | 14NiCrMo13-4  | 14XH3М    | 9310 (SAE) |
| 1.7015       | 15Cr3          | 12 C 3        | 523 M 15      | –         | 5015 (SAE) |
| 1.7016       | 17Cr3          | 17Cr3         | 17Cr3         | 17XГ      | 5117 (SAE) |
| 1.7023       | 38CrS2         | 38 C 2 u      | 38 C 2 u      | 38X-Y     | –          |
| 1.7025       | 46CrS2         | 46CrS2        | 46CrS2        | 46X-Y     | –          |
| 1.7030       | 28Cr4          | 28Cr4         | 28Cr4         | 28XГ      | 5130 (SAE) |
| 1.7033       | 34Cr4          | 32 C 4        | 32 C 4        | 35X       | 5132 (SAE) |
| 1.7034       | 37Cr4          | 37Cr4         | 37Cr4         | 37X       | 5135 (SAE) |
| 1.7035       | 41Cr4          | 41Cr4         | 41Cr4         | 40X       | 5140 (SAE) |
| 1.7036       | 28CrS4         | 28CrS4        | 28CrS4        | 28XГ-Y    | –          |
| 1.7037       | 34CrS4         | 32 C 4 u      | 34CrS4        | 34X-Y     | –          |
| 1.7038       | 37CrS4         | 37CrS4        | 37CrS4        | 37X-Y     | –          |
| 1.7039       | 41CrS4         | 41CrS4        | 41CrS4        | 40X-Y     | –          |
| 1.7102       | 54SiCr6        | 54SiCr6       | –             | –         | 9254 (SAE) |
| 1.7106       | 55SiCr7        | –             | 251 A 60      | –         | –          |
| 1.7108       | 60SiCr7        | 56SiCr7       | –             | –         | 9261 (SAE) |
| 1.7117       | 52SiCrNi5      | 52SiCrNi5     | –             | –         | –          |
| 1.7131       | 16MnCr5        | 16 MC 5       | 16MnCr5       | 16XГ      | 5115 (SAE) |
| 1.7137       | 60MnCrB3       | –             | –             | –         | –          |
| 1.7138       | 52MnCrB3       | –             | –             | –         | –          |
| 1.7139       | 16MnCrS5       | 16MnCrS5      | 16MnCrS5      | 16XГ-Y    | –          |

| Material No. | DIN          | AFNOR      | BS         | GOST        | USA         |
|--------------|--------------|------------|------------|-------------|-------------|
| 1.7147       | 20MnCr5      | 20 MC 5    | 20MnCr5    | 20XГ        | 5120 (SAE)  |
| 1.7149       | 20MnCrS5     | 20MnCrS5   | 20MnCrS5   | 20XГ-Y      | –           |
| 1.7150       | G20MnCr5     | –          | –          | 16XГP       | –           |
| 1.7160       | 16MnCrB5     | 16MnCrB5   | 16MnCrB5   | –           | –           |
| 1.7176       | 55Cr3        | 55 C 3     | 525 A 58   | 50ChGA      | 5155 (SAE)  |
| 1.7182       | 27MnCrB5-2   | 27MnCrB5-2 | 27MnCrB5-2 | –           | –           |
| 1.7185       | 33MnCrB5-2   | 33MnCrB5-2 | 33MnCrB5-2 | –           | –           |
| 1.7189       | 39MnCrB6-2   | 39MnCrB6-2 | 39MnCrB6-2 | –           | –           |
| 1.7190       | 58 CrMnB 4   | –          | –          | –           | 51B60 (SAE) |
| 1.7213       | 25CrMoS4     | 25 CD 4 u  | 25CrMoS4   | 25XM-Y      | –           |
| 1.7214       | –            | –          | 2 S.142    | –           | –           |
| 1.7218       | 25CrMo4      | 25 CD 4    | 25CrMo4    | 25XM        | 4130 (SAE)  |
| 1.7220       | 34CrMo4      | 34 CD 4    | 34CrMo4    | 34XM        | 4130 (SAE)  |
| 1.7221       | G26CrMo4     | –          | –          | –           | –           |
| 1.7222       | 42CrMoPb4    | –          | –          | 35ChML      | –           |
| 1.7223       | 41CrMo4      | –          | 05. Jan    | 40ChFA      | 4142 (SAE)  |
| 1.7225       | 42CrMo4      | 40 CD 4    | 42CrMo4    | 42XM        | 4140 (SAE)  |
| 1.7226       | 34CrMoS4     | 34 CD 3 u  | 34CrMoS4   | 34XM-Y 35XM | –           |
| 1.7227       | 42CrMoS4     | 42 CD 4 u  | 42CrMoS4   | 42XM-Y      | –           |
| 1.7228       | 50CrMo4      | 50CrMo4    | 50CrMo4    | 50XM        | 4147 (SAE)  |
| 1.7233       | 42CrMo5-6    | 42CrMo5-6  | 42CrMo5-6  | –           | –           |
| 1.7242       | 16CrMo4      | 15 CD 3.5  | –          | –           | –           |
| 1.7243       | 18CrMo4      | 18 CD 4    | 18CrMo4    | 18XM        | –           |
| 1.7244       | 18CrMoS4     | 18CrMoS4   | 18CrMoS4   | 18XM-Y      | –           |
| 1.7262       | 15CrMo5      | 12 CD 4 FF | –          | –           | –           |
| 1.7276       | 10CrMo11     | CD 10      | –          | –           | –           |
| 1.7281       | 16CrMo9-3    | 20 CD 8    | –          | –           | –           |
| 1.7311       | 20 CrMo 2    | –          | –          | –           | –           |
| 1.7315       | 37 CrMo 3    | –          | –          | –           | –           |
| 1.7319       | 20MoCrS3     | 20MoCrS3   | 20MoCrS3   | 20XM-Y      | –           |
| 1.7320       | 20MoCr3      | 20MoCr3    | 20MoCr3    | 20XM        | –           |
| 1.7321       | 20MoCr4      | 20MoCr4    | 20MoCr4    | 20XГM       | 4118 (SAE)  |
| 1.7323       | 20MoCrS4     | 20MoCrS4   | 20MoCrS4   | 20XГM-Y     | –           |
| 1.7333       | 22CrMoS3-5   | 22CrMoS3-5 | 22CrMoS3-5 | 22XГM-Y     | –           |
| 1.7335       | 13 CrMo 4 4  | 13CrMo4-5  | 13CrMo4-5  | 13X;        | –           |
| 1.7341       | G34CrMo4-4   | –          | –          | –           | –           |
| 1.7353       | 1.7353       | –          | B 5        | –           | –           |
| 1.7354       | G22CrMo5-4   | –          | –          | –           | –           |
| 1.7355       | G17CrMnMo5-5 | –          | –          | –           | –           |
| 1.7357       | G17CrMo5-5   | –          | 621        | –           | –           |



| Material No. | DIN              | AFNOR          | BS            | GOST      | USA            |
|--------------|------------------|----------------|---------------|-----------|----------------|
| 1.7361       | 32CrMo12         | –              | 722 M 24      | –         | –              |
| 1.7362       | 12 CrMo 19 5     | X16CrMo5-1     | 625           | 12X5M     | 501 (AISI)     |
| 1.7363       | GS-12 CrMo 19 5  | –              | –             | –         | –              |
| 1.7365       | GX15CrMo5        | –              | 625           | –         | –              |
| 1.7375       | 12CrMo9-10       | 12CrMo9-10     | –             | –         | –              |
| 1.7377       | G15CrMo9-10      | –              | –             | –         | –              |
| 1.7379       | G17CrMo9-10      | –              | 622           | –         | –              |
| 1.7380       | 10CrMo9-10       | 10CrMo9-10     | 10CrMo9-10    | 10X2M     | –              |
| 1.7381       | 12CrMo12-10      | 12 CD 12.10    | –             | –         | –              |
| 1.7383       | 11CrMo9-10       | 10 CD 9-10     | 11CrMo9-10    | –         | –              |
| 1.7386       | X12CrMo9-1       | –              | 629-470       | –         | 504 (AISI)     |
| 1.7389       | G-X 12 CrMo 10 1 | –              | B 6           | –         | –              |
| 1.7390       | X15CrMo5-1       | X15CrMo5-1     | X15CrMo5-1    | –         | –              |
| 1.7503       | 67 CrV 2 2       | –              | –             | 70ChGFA   | –              |
| 1.7511       | 22CrV3           | –              | –             | –         | 6118 (SAE)     |
| 1.7701       | 51CrMoV4         | 51 CDV 4       | –             | –         | –              |
| 1.7706       | G17CrMoV5-10     | –              | G17CrMoV5-10  | –         | –              |
| 1.7707       | 30CrMoV9         | –              | –             | 30Ch3MF   | –              |
| 1.7709       | 21CrMoV5-7       | 21CrMoV5-7     | 21CrMoV5-7    | –         | –              |
| 1.7711       | 40CrMoV4-6       | 40CrMoV4-6     | 40CrMoV4-6    | –         | –              |
| 1.7715       | 14MoV6-3         | 14Mo6          | 660           | –         | –              |
| 1.8159       | 50 CrV 4         | 50 CV 4        | 51CrV4        | 50XГФ     | 6150 (SAE)     |
| 1.8507       | 34CrAlMo5        | CAD 6.12       | –             | –         | –              |
| 1.8509       | 41CrAlMo7        | –              | 905 M 39      | 38Ch2MJuA | E 71400 (SAE)  |
| 2.4631       | NiCr20TiAl       | –              | 2 HR 201      | –         | HEV 5 (SAE)    |
| 2.4632       | NiCr20Co18Ti     | –              | 2 HR 2        | –         | HEV 6 (SAE)    |
| 2.4636       | NiCo15Cr15MoAlTi | –              | HR 4          | –         | –              |
| 2.4639       | SG-NiCr20        | –              | NA 34         | –         | –              |
| 2.4650       | NiCo20Cr20MoTi   | –              | 2 HR 1        | –         | –              |
| 2.4652       | EL-NiCr26Mo      | –              | –             | –         | S 32654 (AISI) |
| 2.4654       | NiCr19Co14Mo4Ti  | –              | –             | –         | XEV-H (SAE)    |
| 2.4660       | NiCr20CuMo       | –              | –             | –         | N 08020 (AISI) |
| 2.4665       | NiCr22Fe18Mo     | –              | HR 204        | –         | –              |
| 2.4667       | SG-NiCr19NbMoTi  | –              | NA 51         | –         | –              |
| 2.4668       | NiCr19Fe19Nb5Mo3 | –              | –             | –         | XEV-I (SAE)    |
| 2.4669       | NiCr15Fe7TiAl    | NiCr15Fe7TiAl  | NiCr15Fe7TiAl | –         | 688 (AISI)     |
| 2.4806       | SG-NiCr20Nb      | –              | NA 35         | –         | –              |
| 2.4810       | NiMo 30          | Ni-Mo 28       | ANC 15        | –         | –              |
| 2.4816       | NiCr15Fe         | –              | HR 208        | –         | –              |
| 2.4819       | NiMo16Cr15W      | Ni-Mo 16 Cr 15 | –             | –         | –              |

| Material No. | DIN            | AFNOR | BS           | GOST    | USA            |
|--------------|----------------|-------|--------------|---------|----------------|
| 2.4831       | SG-NiCr21Mo9Nb | –     | –            | –       | –              |
| 2.4851       | NiCr23Fe       | –     | NiCr23Fe     | –       | –              |
| 2.4854       | NiFe33Cr25Co   | –     | –            | –       | S 35315 (AISI) |
| 2.4856       | NiCr22Mo9Nb    | –     | NA 21        | –       | –              |
| 2.4858       | NiCr21Mo       | –     | NA 16        | –       | –              |
| 2.4867       | NiCr60-15      | –     | –            | Ch15N60 | –              |
| 2.4869       | NiCr 80 20     | –     | –            | Ch20N80 | –              |
| 2.4886       | SG-NiMo16Cr16W | –     | NA 48        | –       | –              |
| 1.4889       | NiCr28FeSiCe   | –     | NiCr28FeSiCe | –       | –              |
| 2.4951       | NiCr20Ti       | –     | 2 HR 504     | –       | –              |

# Terminology A–E

|          |                                                           |             |                                                               |
|----------|-----------------------------------------------------------|-------------|---------------------------------------------------------------|
| <b>A</b> |                                                           | <b>D</b>    |                                                               |
| A-E      | Wrench head for standard locknut                          | DS          | Sealing disk                                                  |
| A-E AX   | Wrench head for slip-off proof locknut                    | DSR         | Tray for Sealing disks                                        |
| A-E M    | Wrench head for Mini locknut                              | DTI         | Dial test indicator                                           |
| A-E MS   | Wrench head for Mini Speed locknut                        |             |                                                               |
| A-E MX   | Wrench head for intRlox® locknut                          | <b>E</b>    |                                                               |
| A-E P    | Wrench head with profile for hexagon locknut              | E           | Wrench for standard locknut                                   |
| A-FLS    | Roller-wrench-head                                        | E A         | Wrench for locknut with external thread                       |
| ANSI     | American national standards institute                     | E AX        | Wrench for slip-off proof locknut                             |
| APC      | Clamping insert for manual powRgrip® clamping unit PGC    | E M         | Wrench for Mini locknut                                       |
| APG      | Clamping insert for automatic powRgrip® clamping unit PGU | EMA         | 3D EdgeMaster edge finder                                     |
| AT1      | Taper angle tolerance – gauge quality                     | E MS        | Wrench for Mini Speed locknut                                 |
| AT3      | taper angle tolerance                                     | E MX        | Wrench for intRlox® locknut                                   |
| ATC      | Interface for Meyrat spindles                             | E P         | Wrench with profile for hexagon locknut                       |
| ATL      | Tangs for Morsetaper shanks DIN 228-C                     | EHS         | Extraction tool for reduction sleeves                         |
| <b>B</b> |                                                           | ER          | ER standard collet runout ≤ 10 µm                             |
| BT       | Steep taper Norm BT MAS 403                               | ER          | ER collet DIN 6499 (E collet REGO-FIX)                        |
| BT+      | Steep taper Norm BT+ licensed by BIG Daishowa Seiki       | ER MS       | ER locknut Mini Speed                                         |
| <b>C</b> |                                                           | ER NC       | Cylindrical toolholder with shank NC lathe                    |
| C3 – C8  | REGO-FIX CAPTO sizes                                      | ERA/Zero-Z® | Toolholder with minimal gauge length and internal locknut     |
| CAPTO    | Interface standard Capto licensed by Sandvik Coromant     | ERAX        | Slip-off proof locknut with external thread                   |
| CAT      | Steep taper norm CAT (ASME 5.50)                          | ERAXC       | Slip-off proof locknut with external thread for sealing disks |
| CB       | CoolBore                                                  | ERB         | Locknut with friction bearing                                 |
| CC       | Chip cover for reduction sleeves                          | ERBC        | Locknut with friction bearing for sealing disks               |
| CF       | Coolant Flush                                             | ERC         | Locknut for sealing disks                                     |
| CGA      | Coolant thread adapter for cylindrical toolholders        | ER-CB       | ER collet with cooling holes for peripheral cooling           |
| CHC      | toolVibe® charging cable                                  | ER-DM       | ER collet metalically sealed                                  |
| CPS      | Cleaning paper set for powRgrip® taper cleaner            | ER-GB       | Tapping Collets with square without axial compensation        |
| CRYO     | Cryogen coolant                                           | ERM         | Locknut with Mini thread                                      |
| CSW      | Cleaning swab                                             | ERMC        | Locknut with Mini thread for sealing disks                    |
| CTPG     | Collet tray for powRgrip® collets                         | ERMX        | Slip-off proof Mini locknut intRlox®                          |
| CYL      | Cylindrical shank toolholder                              | ERMXC       | Slip-off proof Mini locknut intRlox® for sealing disks        |
| CYL-DF   | Cylindrical double collet holder with clamping surface    | ER-UP       | ER ultra precision collet runout ≤ 5 µm                       |
| CYL-F    | Cylindrical collet holder with clamping surface           |             |                                                               |
| CYL-NC   | Cylindrical collet holder with clamping surface           |             |                                                               |

# Terminology F–P

## F

|     |                                                   |
|-----|---------------------------------------------------|
| FDS | Wrench for Universal Shellmill / Facemill Holders |
| FMA | ForceMaster pull-out force measuring device       |
| FWR | Balancing ring                                    |

## G

|      |                |
|------|----------------|
| G-A  | Grip bar       |
| G-AS | Grip bar short |
| GSF  | Tapping holder |

## H

|        |                                                         |
|--------|---------------------------------------------------------|
| H      | Designed for FWR                                        |
| HB     | Hollow screw for reCool®                                |
| HD     | Heavy duty                                              |
| Hi-Q®  | Clamping nut balanced and surface treated (impregnated) |
| HJNZ   | Interface for Fischer grinding spindles                 |
| HPC    | High-performance-cutting                                |
| HS     | Reduction sleeve                                        |
| HSC    | High-speed-cutting                                      |
| HSK    | Hollow taper shank norm DIN 69893 / ISO 12164           |
| HSK-FP | Hollow taper shank form F with pin                      |

## I

|             |                                  |
|-------------|----------------------------------|
| IKZ         | Coolant trough                   |
| INOX        | Stainless steel                  |
| intRlox®    | Slip-off proof nut and wrench    |
| ISO 20 HAAS | Toolholders for HAAS Office Mill |

## K

|     |                                        |
|-----|----------------------------------------|
| K   | Tool holder with built-in coolant pipe |
| KBF | Drill chuck                            |
| KFD | Universal Shellmill / Facemill Holders |
| KS  | Coolant disk                           |
| KSR | Coolant tube                           |

## L

|   |                                      |
|---|--------------------------------------|
| L | Clamping nut with left handed thread |
|---|--------------------------------------|

## M

|       |                                                              |
|-------|--------------------------------------------------------------|
| MA    | Shell Mill Arbor                                             |
| MA-CB | Shell Mill Arbor with cooling holes                          |
| MB    | Microbore collet                                             |
| MBA   | MasterBar test arbors for machine spindles                   |
| MBX   | Microbore collet with clamping range – stainless             |
| MFD   | Micro friction dampening                                     |
| MIB   | Articulated stand with magnetic base for dial test indicator |
| MK    | Morse Taper DIN 228                                          |
| ML    | Multi Line                                                   |
| MPH   | Mini floating chuck                                          |
| MPHC  | Mini floating chuck for internal coolant supply              |
| MQL   | Minimum quantity lubrication                                 |
| MR    | micRun® collet runout ≤ 2 µm                                 |
| MRC   | micRun® locknut for sealing disks                            |
| MRM   | micRun® Mini locknut                                         |
| MRMC  | micRun® Mini locknut for sealing disks                       |
| MTSK  | MT Marchetti quick change system                             |
| MWB   | Mobile workbench                                             |
| MWZ   | Assembly tool for sealing disks DS / ER 11                   |

## N

|     |                                            |
|-----|--------------------------------------------|
| NC  | Cylindrical toolholder with shank NC lathe |
| NCT | No thread for coolant tube                 |
| NL  | powRgrip® collets PG-L cannot be used      |
| Nm  | Newton meter                               |

## O

|    |                                                 |
|----|-------------------------------------------------|
| OM | Steep taper toolholders without drive key slots |
|----|-------------------------------------------------|

## P

|            |                                                                   |
|------------|-------------------------------------------------------------------|
| PCM ET1    | Tapping collet with axial compensation                            |
| PG         | powRgrip®                                                         |
| PGA        | Automatic powRgrip® clamping unit for automated applications      |
| PGA .... A | powRgrip® clamping unit for automated applications USA (115 V)    |
| PGA .... E | powRgrip® clamping unit for automated applications Europe (230 V) |
| PGA .... J | powRgrip® clamping unit for automated applications Japan (100 V)  |

# Terminology P–W

|            |                                                              |
|------------|--------------------------------------------------------------|
| PGC        | Manual powRgrip® clamping unit                               |
| PG-CB      | powRgrip® collet with cooling holes for peripheral cooling   |
| PG-CF      | powRgrip® collet with cooling grooves for peripheral cooling |
| PG-L       | powRgrip® collet for long tool shanks                        |
| PG-MB      | powRgrip® microbore collet                                   |
| PG-MQL-N   | powRgrip® collet for minimum quantity lubrication            |
| PG-S       | powRgrip® collet for short tool shanks                       |
| PGS        | Automatic powRgrip® clamping unit for single sizes           |
| PGS ... A  | powRgrip® clamping unit for single sizes USA (115 V)         |
| PGS ... E  | powRgrip® clamping unit for single sizes Europe (230 V)      |
| PGS ... J  | powRgrip® clamping unit for single sizes Japan (100 V)       |
| PG-SC      | powRgrip® collet with sealed head                            |
| PG-SG      | powRgrip® secuRgrip® collet for pull-out protection          |
| PGST       | powRgrip® shortened collet for PGST system                   |
| PG-TAP     | powRgrip® collet for threading tools                         |
| PG-TW      | powRgrip® collet thin walled with limited life-time          |
| PGU        | Automatic powRgrip® clamping unit                            |
| PGU .... A | powRgrip® clamping unit USA (115 V)                          |
| PGU .... E | powRgrip® clamping unit Europe (230 V)                       |
| PGU .... J | powRgrip® clamping unit Japan (100 V)                        |
| PH         | Floating chuck                                               |
| PHC        | Floating chuck for internal coolant supply                   |
| PHC-C      | REGO-FIX CAPTO floating chuck for internal coolant supply    |
| PST        | Polygon interface compatible with ISO 12164                  |

|          |                                    |
|----------|------------------------------------|
| <b>Q</b> |                                    |
| QF       | WTO QuickFlex® quick change system |

|           |                                       |
|-----------|---------------------------------------|
| <b>R</b>  |                                       |
| Ra        | Unit for surface finishing            |
| RBA       | reCool® ball adapter                  |
| RCR       | reCool® rotary                        |
| RCR ERAX  | reCool® rotating with external thread |
| RCR Hi-S® | reCool® rotating for high speeds      |
| RCS       | reCool® static                        |
| RD-CB     | Reducer nozzle for WD-CB              |

|          |                                          |
|----------|------------------------------------------|
| REGO-FIX | Swiss company for tool holding solutions |
| RHS      | reCool® hose with protector spring       |
| RRA      | reCool® aluminium ring adapter           |
| RVA      | reCool® 90° elbow push-in fitting        |
| RVG      | reCool® straight push-in fitting         |

|          |                                              |
|----------|----------------------------------------------|
| <b>S</b> |                                              |
| SG       | secuRgrip® available for PG and ER           |
| SGI      | secuRgrip® threaded insert                   |
| SGN-PG   | secuRgrip® safety nut                        |
| SH       | Automotive Shank toolholders DIN 6327-C      |
| SK       | Steep taper norme DIN 69871 / DIN ISO 7388-1 |
| SKR      | Key for coolant tube                         |
| SSM      | Quick-change setting ring                    |
| SSY      | Soft-Synchro tapping holder                  |
| STC      | Spindle taper cleaner                        |

|          |                                             |
|----------|---------------------------------------------|
| <b>T</b> |                                             |
| TB       | TORCO-BLOCK tool assembly aid               |
| TCD      | Brush head for taper cleaning device        |
| TCD-BU   | Base unit taper cleaning device             |
| TE       | Probe insert for 3D-EMA edge finder         |
| TKCP     | powRgrip® taper cleaner with cleaning paper |
| TSD      | TORX Torque screwdriver                     |
| TV       | toolVibe® sensory toolholder                |

|          |                            |
|----------|----------------------------|
| <b>U</b> |                            |
| UCD      | Ultrasonic cleaning device |

|          |                                           |
|----------|-------------------------------------------|
| <b>V</b> |                                           |
| V-E AX   | Slip-off proof extension                  |
| V-E MX   | Slip-off proof extension intrRlox®        |
| VEW      | Presetting tool for powRgrip® toolholders |
| VS       | toolVibe® magnetic vibration sensor       |
| VS-CB    | Sealing screw for WD-CB                   |
| VX       | EWS Varia VX quick-change system          |

|          |                                       |
|----------|---------------------------------------|
| <b>W</b> |                                       |
| WA       | Tool adapter                          |
| WD       | Endmill toolholder (Weldon)           |
| WD-CB    | Weldon tool holder with cooling holes |
| WMH      | Tool assembly indexing                |

# Terminology X–Z

## **X**

|    |                       |
|----|-----------------------|
| X  | Slip-off proof        |
| XL | Extra long toolholder |

## **Z**

|     |                              |
|-----|------------------------------|
| ZWT | Tray for ER collets (metric) |
| ZZT | Tray for ER collets (inch)   |

# Terminology ISO A–Z

## B

|     |                             |
|-----|-----------------------------|
| BBD | Balanced by design          |
| BBR | Balanced by rotational test |
| BD  | Body diameter               |

## C

|         |                           |
|---------|---------------------------|
| CND     | Coolant entry diameter    |
| CNSC    | Coolant entry style code  |
| COATING | Coating                   |
| CNT     | Coolant entry thread size |
| CP      | Coolant pressure          |

## D

|         |                                            |
|---------|--------------------------------------------|
| DCOB    | Recess diameter                            |
| DCON    | Connection diameter                        |
| DCONMS  | Connection diameter machine side           |
| DCONWS  | Connection diameter workpiece side         |
| DCONNWS | Connection diameter minimum workpiece side |
| DCONXWS | Connection diameter maximum workpiece side |
| DCSFMS  | Contact surface diameter machine side      |
| DCSFWS  | Contact surface diameter workpiece side    |
| DFC     | Functional diameter                        |
| DLN     | Diameter lock nut                          |
| DRVS    | Drive size                                 |

## H

|     |                 |
|-----|-----------------|
| HLN | Height lock nut |
|-----|-----------------|

## L

|       |                              |
|-------|------------------------------|
| LB    | Body length                  |
| LCOB  | Recess length                |
| LCOMP | Length compensation          |
| LDG   | Functional diameter distance |
| LF    | Functional length            |
| LFSF  | Distance to face             |
| LPR   | Protruding length            |
| LS    | Shank length                 |
| LSC   | Clamping length              |

|      |                         |
|------|-------------------------|
| LSCN | Clamping length minimum |
| LSCX | Clamping length maximum |
| LSD  | Shank length            |

## M

|     |                  |
|-----|------------------|
| MKG | Morse taper size |
|-----|------------------|

## O

|     |                  |
|-----|------------------|
| OAH | Overall height   |
| OAL | Overall length   |
| OAW | Overall width    |
| OHN | Overhang minimum |
| OHX | Overhang maximum |

## R

|      |                          |
|------|--------------------------|
| RPMX | Rotational speed maximum |
|------|--------------------------|

## T

|        |                             |
|--------|-----------------------------|
| TD     | Thread diameter             |
| TDZ    | Thread diameter size        |
| THFT   | Form type                   |
| THID   | Internal thread designation |
| THLGTH | Thread length               |
| THSZMS | Thread size machine side    |
| TP     | Thread pitch                |
| TPI    | Threads per inch            |
| TPIN   | Threads per inch minimum    |
| TPIX   | Threads per inch maximum    |
| TPN    | Thread pitch minimum        |
| TPX    | Maximum thread pitch        |
| TQ     | Torque                      |

## W

|    |                |
|----|----------------|
| WT | Weight of item |
|----|----------------|





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ISO 9001 for quality management / since 1996

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