

M A S TER C A T ALO G

## HAIMER.

HAIMER.

## LOCKNUTS FOR ER COLLET CHUCKS



Locknuts ER:

- Highest runout accuracy
- No wear and high clamping force due to special slide coating
- Small vibrations due to pre-balancing
- Version HS fine-balanced



## LOCKNUTS FOR POWER COLLET CHUCKS



Power Collet locknuts:

- Highest runout accuracy
- No wear and high clamping force due to special slide coating
- Less vibrations due to pre-balancing

| ER |  | ER 16 | ER 25 | ER 32 |
| :--- | :--- | :--- | :--- | :--- |
| Order No. | $\mathbf{8 3 . 9 1 4 . . .}$ | $\mathbf{1 6}$ | .25 | .32 |
| $\boldsymbol{\emptyset}$ D1 |  | 28 | 42 | 50 |
| M | $M 23 \times 1.5$ | $M 34 \times 1.5$ | $M 42 \times 1.5$ |  |
| B | 17.8 | 20 | 22.5 |  |

SMOOTH LOCKNUTS FOR HIGH PRECISION COLLET CHUCKS


High Precision Smooth Locknuts ER:

- Highest runout accuracy
- No wear and high clamping force due to special slide coating
- Less vibrations due to pre-balancing
- Noise reducing

| ER |  | ER $\mathbf{1 6}$ | ER 25 | ER 32 |
| :--- | :--- | :--- | :--- | :--- |
| Order No. | $\mathbf{8 3 . 9 1 4 . . .}$ | .16 .1 | .25 .1 | . $\mathbf{3 2 . 1}$ |
| Ø D1 |  | 28 | 42 | 50 |
| Ø D2 | 27 | 40 | 48 |  |
| M | M $23 \times 1.5$ | M $34 \times 1.5$ | M $42 \times 1.5$ |  |
| B | 17.8 | 20 | 22.5 |  |

TORQUE MASTER TORQUE WRENCH FOR HAIMER POWER COLLET CHUCKS AND STANDARD ER CHUCKS


Two-armed clamping wrench and torque wrench for Collet Chucks:

- For highest runout accuracy, no one-sided clamping
- Optimal power transmission by consistent force application
- Torque wrench for highest clamping accuracy and repeatability
with dial gauge
- Maximum torque for highest clamping force
- No overloading of smaller clamping diameters
- Changeable inserts, useable also for standard ER Collets

| Torque Master Torque Wrench | Order No. |
| :--- | ---: |
| Torque Master with case | $\mathbf{8 4 . 6 0 0 . 0 0}$ |
| Torque Master without case | $\mathbf{8 4 . 6 0 0 . 0 0 . 5}$ |
| Torque Master torque wrench set with case and 3 inserts for Standard ER Chucks in ER16, ER25, ER32 | $\mathbf{8 4 . 6 0 0 . 0 0 . A K ~}$ |

INSERTS FOR TORQUE MASTER TORQUE WRENCH


| Inserts for Torque Master Wrench |  |  |
| :---: | :---: | :---: |
| for Power Collet Chucks | Size |  |
| Order No. |  |  |
| 84.610 .16 | ER 16 |  |
| 84.610 .25 | ER 25 |  |
| 84.610 .32 | ER 32 |  |
| for Standard ER Chucks | Size | Wrench size SW |
| 84.620 .11 | ER 11 | SW 17 |
| 84.620 .16 | ER 16 | SW 25 |
| 84.620 .20 | ER 20 | SW 30 |
| 84.620 .25 | ER 25 |  |
| 84.620 .32 | ER 32 |  |
| for Standard ER Chucks ER Mini | Size | Wrench size SW |
| 84.620.16.1 | ER 16 Mini |  |

## WRENCHES



| Power Collet clamping wrench for ER 16, ER 25 and ER 32 |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- |
| ER |  | ER 16 | ER 25 | ER 32 |
| Order No. | $84.650 \ldots$ | .16 | .25 | .32 |



Wrench for locknuts ER 11, ER 16 and ER 20

| Wrench for locknuts ER 11, ER 16 and ER 20 |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- |
| ER |  | ER 11 | ER 16 | ER 20 |
| Wrench size |  | 17 | 25 | 30 |
| Order No. | $84.200 \ldots$ | .11 | .16 | .20 |



Wrench for locknuts ER 25-40

| ER |  | ER 25 | ER 32 | ER 40 | ER 50 |
| :--- | :--- | :--- | :--- | :--- | :--- |
| Order No. | $\mathbf{8 4 . 2 0 0} \ldots$ | .25 | .32 | .40 | .50 |



Wrench for tightening bolts for face mill arbors and combination shell end mill adapters $\emptyset$ 16-60


ROLLER BEARING WRENCH FOR HIGH PRECISION COLLET CHUCKS


Roller bearing wrench for clamping of locknuts for High Precision Collet Chucks.

| ER |  | ER 16 | ER 25 | ER 32 |
| :--- | :--- | :--- | :--- | :--- |
| Order No. $84.650 \ldots$ | .16 .1 | .25 .1 | .32 .1 |  |




HG Collets
For clamping tools with cylindrical shank with utmost precision in High-Precision Chucks.
For tools with shank tolerance h6.


## Spindle wiper

For cleaning tool holder I.D. of High-Precision Chucks

| HG |  | for HG 01 | for HG 02 | for HG 03 |
| :--- | :--- | :--- | :--- | :--- |
| Order No. | $82.590 \ldots$ | .01 | .02 | 03 |



For fine-balancing all tool holders with balancing threads M6 (e.g. shrink fit chucks from HAIMER).

The screws have different weights in a fine graduation.
They are screwed into the balancing threads of the tool holder so that their weight compensates the unbalance of the tool holder.

- Set consisting of screws in 11 different sizes and weights
- Screws are screwed to the bottom of the thread and tightened.

No additional fixing of screws necessary

- Balance quickly and precisely
- No damage to tool holders
- Can be repeated as often as necessary
- Suitable for tool holders of all brands
- The balancing machine calculates the necessary weight of the screws (e.g. HAIMER Tool Dynamic)
- Included in delivery: Case with $11 \times 10$ balancing screws, screw driver

| Accessories | Order No. |
| :--- | :---: |
| Set of Balancing Screws | $\mathbf{8 0 . 2 0 3 . 0 0}$ |

HEAVY METAL BALANCING SCREWS


Heavy metal balancing screws (thread M6) for manual balancing of tool holders.

| Length L [mm] |  | 07 | 07 | 08 | 08 | 10 | 10 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Size G [mm] <br> Mass <br> Order No. | 85.502... | $\begin{aligned} & \text { M6x7 } \\ & \text { ca. } 2.3 \mathrm{~g} \\ & .7 .0 \end{aligned}$ | M6x7 <br> (5 pcs.) <br> ca. 2.3 g <br> .7.0.SET | $\begin{aligned} & \text { M6x8 } \\ & \text { ca. } 2.7 \mathrm{~g} \\ & .8 .0 \end{aligned}$ | M6x8 <br> (5 pcs.) <br> ca. 2.7 g <br> 8.0.SET | $\begin{aligned} & \text { M6x10 } \\ & \text { ca. } 3.5 \mathrm{~g} \\ & .10 .0 \end{aligned}$ | M6x10 <br> ( 5 pcs.) <br> ca. 3.5 g <br> .10.0.SET |

## BALANCING RINGS



For fine-balancing all tool holders with cylindrical outer diameter (diam. A).
The balancing index rings have a defined unbalance in themselves. They are turned in such a position that the unbalance of the tool holder will be compensated. There are always 2 rings needed per balancing plane.

- Balancing quickly and precisely
- No damage to tool holder
- Can be repeated as often as necessary
- Simply fixed by clamping screw
- Suitable for tool holders of all brands
- The balancing machine determines the position of the rings
- Included in delivery: 2 balancing index rings with screws (without hex wrench)
- Tightening torque: $1 \mathrm{ft} \mathrm{lb}(1.4 \mathrm{Nm})$

| Order No. | Ø A [mm] | Ø A [inch] | unbalance ${ }^{1 /}$ | rpm [1/min] |
| :---: | :---: | :---: | :---: | :---: |
| 79.350 .15 | 15 | 0.59 | $14 \mathrm{~g} \cdot \mathrm{~mm}$ | max. 55,000 |
| 79.350 .16 | 16 | 0.63 | $14 \mathrm{~g} \cdot \mathrm{~mm}$ | max. 55,000 |
| 79.350 .17 | 17 | 0.67 | $16 \mathrm{~g} \cdot \mathrm{~mm}$ | max. 55,000 |
| 79.350 .18 | 18 | 0.71 | $17 \mathrm{~g} \cdot \mathrm{~mm}$ | max. 55,000 |
| 79.350 .19 | 19 | 0.75 | $19 \mathrm{~g} \cdot \mathrm{~mm}$ | max. 55,000 |
| 79.350 .20 | 20 | 0.79 | $21 \mathrm{~g} \cdot \mathrm{~mm}$ | max. 55,000 |
| 79.350 .22 | 22 | 0.87 | $23 \mathrm{~g} \cdot \mathrm{~mm}$ | max. 55,000 |
| 79.350 .23 | 23 | 0.91 | $25 \mathrm{~g} \cdot \mathrm{~mm}$ | max. 55,000 |
| 79.350 .24 | 24 | 0.94 | $27 \mathrm{~g} \cdot \mathrm{~mm}$ | max. 55,000 |
| 79.350 .25 | 25 | 0.98 | $28 \mathrm{~g} \cdot \mathrm{~mm}$ | max. 55,000 |
| 79.350 .26 | 26 | 1.02 | $32 \mathrm{~g} \cdot \mathrm{~mm}$ | max. 50,000 |
| 79.350 .27 | 27 | 1.06 | $32.5 \mathrm{~g} \cdot \mathrm{~mm}$ | max. 50,000 |
| 79.350 .28 | 28 | 1.10 | $34 \mathrm{~g} \cdot \mathrm{~mm}$ | max. 50,000 |
| 79.350 .30 | 30 | 1.18 | $37 \mathrm{~g} \cdot \mathrm{~mm}$ | max. 45,000 |
| 79.350 .32 | 32 | 1.26 | $43 \mathrm{~g} \cdot \mathrm{~mm}$ | max. 45,000 |
| 79.350 .34 | 34 | 1.34 | $46 \mathrm{~g} \cdot \mathrm{~mm}$ | max. 40,000 |
| 79.350 .35 | 35 | 1.38 | $48 \mathrm{~g} \cdot \mathrm{~mm}$ | max. 40,000 |
| 79.350 .36 | 36 | 1.42 | $51 \mathrm{~g} \cdot \mathrm{~mm}$ | max. 40,000 |
| 79.350 .38 | 38 | 1.50 | $56 \mathrm{~g} \cdot \mathrm{~mm}$ | max. 35,000 |
| 79.350 .40 | 40 | 1.57 | $60 \mathrm{~g} \cdot \mathrm{~mm}$ | max. 35,000 |
| 79.350 .42 | 42 | 1.65 | $65 \mathrm{~g} \cdot \mathrm{~mm}$ | max. 35,000 |
| 79.350 .43 | 43 | 1.69 | $69 \mathrm{~g} \cdot \mathrm{~mm}$ | max. 35,000 |
| 79.350.1.71Z | 43.45 | 1.71 | $68 \mathrm{~g} \cdot \mathrm{~mm}$ | max. 35,000 |
| 79.350 .44 | 44 | 1.73 | $72 \mathrm{~g} \cdot \mathrm{~mm}$ | max. 35,000 |
| 79.350 .46 | 46 | 1.81 | $80 \mathrm{~g} \cdot \mathrm{~mm}$ | max. 35,000 |
| 79.350 .48 | 48 | 1.89 | $85 \mathrm{~g} \cdot \mathrm{~mm}$ | max. 30,000 |
| 79.350 .50 | 50 | 1.97 | $90 \mathrm{~g} \cdot \mathrm{~mm}$ | max. 30,000 |
| 79.350 .52 | 52 | 2.05 | $100 \mathrm{~g} \cdot \mathrm{~mm}$ | max. 30,000 |
| 79.350 .53 | 53 | 2.09 | $100 \mathrm{~g} \cdot \mathrm{~mm}$ | max. 30,000 |
| 79.350 .54 | 54 | 2.13 | $103 \mathrm{~g} \cdot \mathrm{~mm}$ | max. 30,000 |


| Order No. | Ø A [mm] | Ø A [inch] | unbalance ${ }^{\text {11 }}$ | rpm [1/min] |
| :---: | :---: | :---: | :---: | :---: |
| 79.350 .55 | 55 | 2.17 | 105 g .mm | max. 30,000 |
| 79.350 .56 | 56 | 2.20 | $110 \mathrm{~g} . \mathrm{mm}$ | max. 30,000 |
| 79.350 .58 | 58 | 2.28 | $120 \mathrm{~g} . \mathrm{mm}$ | max. 30,000 |
| 79.350 .60 | 60 | 2.36 | $128 \mathrm{~g} \cdot \mathrm{~mm}$ | max. 25,000 |
| 79.350 .62 | 62 | 2.44 | $132 \mathrm{~g} \cdot \mathrm{~mm}$ | max. 25,000 |
| 79.350 .63 | 63 | 2.48 | $135 \mathrm{~g} . \mathrm{mm}$ | max. 25,000 |
| 79.350 .64 | 64 | 2.52 | $147 \mathrm{~g} . \mathrm{mm}$ | max. 25,000 |
| 79.350 .65 | 65 | 2.56 | $147 \mathrm{~g} . \mathrm{mm}$ | max. 25,000 |
| 79.350 .66 | 66 | 2.60 | $145 \mathrm{~g} . \mathrm{mm}$ | max. 25,000 |
| 79.350 .68 | 68 | 2.68 | 161 g .mm | max. 25,000 |
| 79.350 .70 | 70 | 2.76 | $165 \mathrm{~g} . \mathrm{mm}$ | max. 25,000 |
| 79.350 .72 | 72 | 2.83 | 170 g .mm | max. 25,000 |
| 79.350 .74 | 74 | 2.91 | $184 \mathrm{~g} . \mathrm{mm}$ | max. 25,000 |
| 79.350 .76 | 76 | 2.99 | $186 \mathrm{~g} . \mathrm{mm}$ | max. 20,000 |
| 79.350 .78 | 78 | 3.07 | 206 g .mm | max. 20,000 |
| 79.350 .80 | 80 | 3.15 | $215 \mathrm{~g} . \mathrm{mm}$ | max. 20,000 |
| 79.350 .82 | 82 | 3.23 | $213 \mathrm{~g} \cdot \mathrm{~mm}$ | max. 20,000 |
| 79.350 .84 | 84 | 3.31 | $229 \mathrm{~g} \cdot \mathrm{~mm}$ | max. 20,000 |
| 79.350 .86 | 86 | 3.39 | 249 g .mm | max. 20,000 |
| 79.350 .87 | 87 | 3.43 | 256 g .mm | max. 20,000 |
| 79.350 .88 | 88 | 3.46 | $251 \mathrm{~g} \cdot \mathrm{~mm}$ | max. 20,000 |
| 79.350 .89 | 89 | 3.50 | $260 \mathrm{~g} . \mathrm{mm}$ | max. 20,000 |
| 79.350 .90 | 90 | 3.54 | 265 g .mm | max. 20,000 |
| 79.350 .92 | 92 | 3.62 | 275 g .mm | max. 20,000 |
| 79.350 .94 | 94 | 3.70 | 286 g .mm | max. 20,000 |
| 79.350 .96 | 96 | 3.78 | $300 \mathrm{~g} \cdot \mathrm{~mm}$ | max. 20,000 |
| 79.350 .98 | 98 | 3.86 | $305 \mathrm{~g} . \mathrm{mm}$ | max. 20,000 |
| 79.350 .100 | 100 | 3.94 | 320 g . mm | max. 15,000 |
| 79.350.125 | 125 | 4.92 | $500 \mathrm{~g} . \mathrm{mm}$ | max. 15,000 |

CAT40/CAT50
PULL STUD INFORMATION


HAIMER goes far beyond the requirements of CAT40 tooling. Our experience with tool holders and balancing have merged together to successfully create far superior CAT tapered tooling.

In addition to our contact and 100\% inspection process of our tapers, HAIMER has developed a special feature to greatly increase your tool holder balance repeatability and your machine tool spindle draw mechanism repeatability.

We have added a ground pilot in the rear of all our CAT40 tool holders. This ground pilot fits perfectly with the special HAIMER pull stud to maximize your tool holder to machine tool connection. The ground pilot is larger than the standard ANSI dimension, so you can easily use any pull stud from any manufacturer. However, for those serious about balance and machine tool spindle draw repeatability, HAIMER has the answer for you with our special pull stud/pilot connection!

## PULL STUDS

 INCH

Pull studs are an important link between machine and tool.
The requirements concerning accuracy, rigidity and reliability are very high. Pull studs of poor quality not only decrease the performance of the machine, they are even a safety risk. A breaking pull stud might cause severe damage on the machine, work piece and even serious injuries.
Benefits of HAIMER pull studs:

- Made of special steel with high rigidity
- Costly heat treatment in several steps
- High impact strength
- All functional surfaces fine finished after hardening
- Highest security and reliability

Version with ground pilot is used to help consistently locate the pull stud in the tool holder. Great for runout accuracy, balance repeatability and machine tool draw bar consistency.
All HAIMER tool holders are provided with ground center-bore to match pull stud pilot (all standard pull studs can be used as well). All metric pull studs come with a ground pilot.

*Special

PULL STUDS INCH

3.

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| 1. MORI - SEIKI MAS $90^{\circ}$ without coolant through |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Order No. | D1 | D2 | D3 | L1 | L2 | L3 | G1 | $\alpha$ | pilot |
| CAT40 |  |  |  |  |  |  |  |  |  |
| 88.111 .40 | 0.59" | 0.39" | - | 2.25" | 1.27" | 0.99" | 5/8"-11UNC" | $0^{\circ}$ | - |
| 88.121 .40 | 0.59" | 0.39" | 0.67" | 2.25" | 1.27" | 0.99" | 5/8"-11UNC" | $0^{\circ}$ | yes |
| 88.131.40* | 0.59" | 0.39" | - | 1.94" | 0.96" | 0.68" | 5/8"-11UNC" | $0^{\circ}$ | - |
| CAT50 |  |  |  |  |  |  |  |  |  |
| 88.111 .50 | 0.91" | 0.67" | - | 3.35" | 1.78" | 1.39" | 1 "-8UNC" | $0^{\circ}$ | - |
| 88.121 .50 | 0.91" | 0.67" | 1.06" | 3.35" | 1.78 " | 1.39" | 1 "-8UNC" | $0^{\circ}$ | yes |


| 2. MORI - SEIKI MAS $90^{\circ}$ with coolant through |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Order No. | D1 | D2 | D3 | L1 | L2 | L3 | G1 | $\alpha$ | pilot |
| CAT50 88.113.50 | 0.91" | 0.67" | - | 3.35" | 1.78" | 1.39" | 1"8UNC" | $0^{\circ}$ | - |


| 3. JIS B 6339 without coolant through |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Order No. | D1 | D2 | D3 | L1 | L2 | L3 | G1 | $\alpha$ | pilot |
| CAT4O 88.711 .40 | 0.75" | 0.55" | - | 2.01 " | 1.03" | 0.79" | 5/8"11UNC" | $15^{\circ}$ | - |
| CAT50 <br> 88.710 .50 | 1.14 | 0.83" | - | 2.93" | 1.35 " | 0.99" | 1"-8UNC" | $15^{\circ}$ | - |
| 88.720 .50 | $1.1{ }^{\prime \prime}$ | 0.83" | 1.06" | 2.93" | $1.35 "$ | 0.99" | 1"8UNC" | $15^{\circ}$ | yes |


| 4. JJS B 6339 with coolant through |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Order No. | D1 | D2 | D3 | L1 | L2 | L3 | G1 | $\alpha$ | pilot |
| CAT40 <br> 88.710 .40 | 0.75" | 0.55" | - | 2.01 " | 1.03 " | 0.79" | 5/8"11UNC" | $15^{\circ}$ | - |
| 88.720 .40 | 0.75" | 0.55" | 0.67" | 2.01 " | 1.03 " | 0.79" | 5/8"11 UNC" | $15^{\circ}$ | yes |


| 5. ANSI B5.50 Mazak without coolant through |  |  |  |  |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Order No. | D1 | D2 | D3 | L1 | L2 | L3 | G1 | $\alpha$ | pilot |
| CAT40 |  |  |  |  |  |  |  |  |  |
| 88.511 .40 | $0.74^{\prime \prime}$ | $0.49^{\prime \prime}$ | - | $1.62^{\prime \prime}$ | $0.64^{\prime \prime}$ | $0.44^{\prime \prime}$ | $5 / 8^{\prime \prime}-1$ UNC" | $45^{\circ}$ | - |


| 6. ANSI B5.50 Mazak with coolant through |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Order No. | D1 | D2 | D3 | L1 | L2 | L3 | G1 | $\alpha$ | pilot |
| CAT40 <br> 88.510 .40 | 0.74" | 0.49" | - | 1.62" | 0.64" | 0.44" | 5/8"11UNC" | $45^{\circ}$ | - |
| 88.520.40 | 0.74" | 0.49" | 0.67" | 1.62 " | 0.64" | 0.44 " | 5/8-11UNC" | $45^{\circ}$ | yes |


| 7. ANSI B5.50 Mazak without coolant through (Sealing with 0-Ring on face side) |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Order No. | D1 | D2 | D3 | L1 | L2 | L3 | G1 | $\alpha$ | pilot |
| CAT50 <br> 88.51150 | 1.14" | 0.82" | - | 2.57" | 1" | 0.70" | 1"8UNC" | $45^{\circ}$ | - |


| 8. ANSI B5.50 Mazak with coolant through (Sealing with 0-Ring on face side) |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Order No. | D1 | D2 | D3 | L1 | L2 | L3 | G1 | $\alpha$ | pilot |
| CAT50 88.510 .50 | 1.14" | 0.82" | - | 2.57 " | $1 "$ | 0.70" | 1"-8UNC" | $45^{\circ}$ | - |
| 88.520.50 | $1.14{ }^{\prime \prime}$ | 0.82" | 1.06" | $2.57{ }^{\prime \prime}$ | $1{ }^{\prime \prime}$ | 0.70" | 1"-8UNC" | $45^{\circ}$ | yes |

PULL STUDS METRIC


| 1. ISO 7388-3 Form (former norm MAS 4 [mm] |  |  |  |  | 11 | 12 | 13 |  | $\mathrm{w}^{\circ}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| BT30 <br> Order No. 88.604.30 | 11 | 7 | 12.5 | - | 43 | 23 | 18 | M12 | $30^{\circ}$ |
| BT30 <br> Order No. 88.601.30 | 11 | 7 | 12.5 | - | 43 | 23 | 18 | M12 | $45^{\circ}$ |
| BT40 <br> Order No. 88.604.40 | 15 | 10 | 17 | - | 60 | 35 | 28 | M16 | $30^{\circ}$ |
| BT40 <br> Order No. 88.601.40 | 15 | 10 | 17 | - | 60 | 35 | 28 | M16 | $45^{\circ}$ |
| BT50 <br> Order No. 88.604.50 | 23 | 17 | 25 | - | 85 | 45 | 35 | M24 |  |
| BT50 <br> Order No. 88.601.50 | 23 | 17 | 25 | - | 85 | 45 | 35 | M24 |  |


| 2. ISO 7388-3 Form JD with coolant through <br> (former norm MAS 403 <br> [mm] <br> $30^{\circ} / 45^{\circ}$ ) | d1 | d2 | d3 | d4 | I1 | I2 | I3 | G1 | $\mathbf{w}^{\circ}$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| BT30 |  |  |  |  |  |  |  |  |  |
| Order No. 88.605.30 | 11 | 7 | 12.5 | 2.5 | 43 | 23 | 18 | M12 | $30^{\circ}$ |
| BT30 |  |  |  |  |  |  |  |  |  |
| Order No. 88.600.30 | 11 | 7 | 12.5 | 2.5 | 43 | 23 | 18 | M12 | $45^{\circ}$ |
| BT40 <br> Order No. 88.605.40 | 15 | 10 | 17 | 3.5 | 60 | 35 | 28 | M16 | $30^{\circ}$ |
| BT40 <br> Order No. 88.603.40 | 15 | 10 | 17 | 3.5 | 60 | 35 | 28 | M16 | $45^{\circ}$ |
| BT50 <br> Order No. 88.605.50 | 23 | 17 | 25 | 6 | 85 | 45 | 35 | M24 | $30^{\circ}$ |
| BT50 <br> Order No. 88.603.50 | 23 | 17 | 25 | 6 | 85 | 45 | 35 | M24 | $45^{\circ}$ |


| 3. MORI - SEIKI MAS $90^{\circ}$ without coolant through |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| [mm] | d1 | d2 | d3 | d4 | 11 | 12 | 13 | G1 | $\mathbf{w}^{\circ}$ |
| BT40 <br> Order No. 88.101.40 | 15 | 10 | 17 | - | 60 | 35 | 28 | M16 | $0^{\circ}$ |
| BT50 <br> Order No. 88.101.50 | 23 | 17 | 25 | - | 85 | 45 | 35 | M24 | $0^{\circ}$ |
| 4. JIS B 6339 with coolant through [mm] | $\begin{aligned} & \mathrm{h} \\ & \mathrm{~d} 1 \end{aligned}$ | d2 | d3 | d4 | 11 | 12 | 13 | G1 | $w^{\circ}$ |
| BT40 <br> Order No. 88.700.40 | 19 | 14 | 17 | 7 | 54 | 29 | 23 | M16 | $15^{\circ}$ |
| BT50 <br> Order No. 88.700.50 | 28 | 21 | 25 | 10 | 74 | 34 | 25 | M24 | $15^{\circ}$ |

PULL STUDS METRIC
1.

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## 2. Special:

Similar ISO 7388-3 Form JD coolant through
[ mm ] with pilot
d1 d2 d3
BT40 shortened
Order No. 88.702.30
$0.470 .310 .49-1.690 .920 .79 \mathrm{M} 1215^{\circ}$

| 3. ISO 7388-2 Type $A$ [mm] | d1 | $\begin{aligned} & \text { ugh } \\ & \text { d2 } \end{aligned}$ | d3 | d4 | 11 | 12 | 13 | G1 | $\mathrm{w}^{\circ}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SK40 <br> Order No. 88.800.40 | 19 | 14 | 17 | 7 | 54 | 26 | 20 | M16 | $15^{\circ}$ |
| SK50 <br> Order No. 88.800.50 | 28 | 21 | 25 | 11.5 | 74 | 34 | 25 |  | $15^{\circ}$ |


| 4. ANSI B5.50 Mazak with coolant through sealing on face side and pilot |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| [mm] | d1 | d2 | d3 | d4 | 11 | 12 | 13 | G1 | $\mathbf{w}^{\circ}$ |
| CAT40 <br> Order No. 88.500.40 | 18.80 | 12.45 | 17 | 6 | 41.26 | 16.26 | 11.18 | M16 | $45^{\circ}$ |
| CAT40 with pilot Order No. 88.500.40.1 | 18.80 | 12.45 | 17 | 7 | 41.26 | 16.26 | 11.18 | M16 | $45^{\circ}$ |
| CAT50 <br> Order No. 88.501.50N | 28.96 | 20.83 | 25 | 10 | 65.4 | 25.4 | 17.78 |  | $45^{\circ}$ |


| 5. ANSI B5.50 Mazak with coolant through sealing on face side and pilot |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| [mm] | d1 | d2 | d3 | d4 |  | 12 | 13 |  | $\mathrm{w}^{\circ}$ |
| CAT40 extended <br> Order No. 88.900.40.1 | 18.8 | 12.45 |  | 6.4 | 44.1 | 19.11 | 14.03 | M16 |  |


| 6. ANSI B5.50 Mazak with coolant through <br> sealing on face side and pilot <br> [mm] <br> CAT50 <br> CAT <br> Order No. 88.500 .50 |
| :--- |

PULL STUDS METRIC

5.

6.



| 2. ISO 7388-3 Form AF (former norm DIN 698 [mm] |  | d2 | d3 | d4 | [1 | 12 | 13 |  | $\mathrm{w}^{\circ}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SK 40 <br> Order No. 88.202.40 | 19 | 14 | 17 | - | 54 | 26 | 20 | M16 |  |
| SK 50 <br> Order No. 88.202.50 | 28 | 21 | 25 | - | 74 | 34 | 25 | M24 |  |


| 2.1 Special: <br> Similar ISO 7388- |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| [mm] | d1 | d2 | d3 | d4 | 11 | 12 | 13 |  | $w^{\circ}$ |
| BT40 shortened <br> Order No. 88.601.40.1 | 15 | 10 | 17 | - | 57.1 | 32.15 | 25.15 |  |  |



| 4. Ott-groove with inn [mm] |  | d2 | d3 | d4 | 11 | 12 | 13 | G1 | G2 | $\mathrm{w}^{\circ}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SK50 <br> Order No. 88.303.50 | 39.3 | 32 | 25 | 11.5 | 65 |  | 13.35 | M24 | M24 | $15^{\circ}$ |


| 5. ISO 7388-3 Form UD with coolant through (former norm ISO 7388-2 Form B) |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SK 40 <br> Order No. 88.400.40 | 18.95 | 12.95 | 17 | 7 | 44.5 | 16.4 | 11.15 | M16 |  |
| SK 50 <br> Order No. 88.400.50 | 29.1 | 19.6 | 25 | 11.5 | 65.5 | 25.5 | 17.95 | M24 |  |


| 6. ISO 7388-3 Form UF sealed <br> (former norm ISO 7388-2 Form B) <br> [mm] | d1 | d2 | d3 | d4 | I1 | I2 | I3 | G1 | w $^{\circ}$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| SK 40 |  |  |  |  |  |  |  |  |  |
| Order No. 88.402.40 | 18.95 | 12.95 | 17 | - | 44.5 | 16.4 | 11.15 | M16 | $45^{\circ}$ |
| SK 50 <br> Order No. 88.402.50 | 29.1 | 19.6 | 25 | - | 65.5 | 25.55 | 17.95 | M24 | $45^{\circ}$ |

SHRINK FIT BRUSHES


In order to achieve the best possible shrink fit connection, a grease free socket and shank is necessary. The cleaning can be done by a cold solvent (e.g. brake cleaner). An appropriate cleaning brush is necessary to clean the socket of the Shrink Fit Chuck.

| Shrink Fit Brush <br> Order No. | $\emptyset[$ [inch $]$ |  |
| :--- | :--- | :--- |
| $\mathbf{8 6 . 2 0 0 . 0 1}$ | $1 / 8^{\prime \prime} \quad(3.175 \mathrm{~mm})$ |  |
| $\mathbf{8 6 . 2 0 0 . 0 2}$ | $3 / 16^{\prime \prime}(4.762 \mathrm{~mm})$ |  |
| $\mathbf{8 6 . 2 0 0 . 0 3}$ | $1 / 4^{\prime \prime} \quad(6.35 \mathrm{~mm})$ |  |
| $\mathbf{8 6 . 2 0 0 . 0 3}$ | $5 / 16^{\prime \prime}(7.93 \mathrm{~mm})$ |  |
| $\mathbf{8 6 . 2 0 0 . 0 4}$ | $3 / 8^{\prime \prime} \quad(9.525 \mathrm{~mm})$ |  |
| $\mathbf{8 6 . 2 0 0 . 0 4}$ | $7 / 6^{\prime \prime}(11.11 \mathrm{~mm})$ |  |
| $\mathbf{8 6 . 2 0 0 . 0 5}$ | $1 / 2^{\prime \prime} \quad(12.7 \mathrm{~mm})$ |  |
| $\mathbf{8 6 . 2 0 0 . 0 6}$ | $5 / 8^{\prime \prime}$ | $(15.87 \mathrm{~mm})$ |
| $\mathbf{8 6 . 2 0 0 . 0 7}$ | $3 / 4^{\prime \prime}$ | $(19.05 \mathrm{~mm})$ |
| $\mathbf{8 6 . 2 0 0 . 0 8}$ | $1^{\prime \prime}$ | $(25.4 \mathrm{~mm})$ |


| Shrink Fit Brush <br> Order No. | $\emptyset[\mathrm{mm}]$ |
| :--- | :--- |
| $\mathbf{8 6 . 2 0 0 . 0 1}$ | 3 |
| $\mathbf{8 6 . 2 0 0 . 0 2}$ | 3.5 |
| $\mathbf{8 6 . 2 0 0 . 0 2}$ | 4 |
| $\mathbf{8 6 . 2 0 0 . 0 2}$ | 4.5 |
| $\mathbf{8 6 . 2 0 0 . 0 2}$ | 5 |
| $\mathbf{8 6 . 2 0 0 . 0 3}$ | 6 |
| $\mathbf{8 6 . 2 0 0 . 0 3}$ | 8 |
| $\mathbf{8 6 . 2 0 0 . 0 4}$ | 10 |
| $\mathbf{8 6 . 2 0 0 . 0 4}$ | 12 |
| $\mathbf{8 6 . 2 0 0 . 0 6}$ | 14 |
| $\mathbf{8 6 . 2 0 0 . 0 6}$ | 16 |
| $\mathbf{8 6 . 2 0 0 . 0 7}$ | 18 |
| $\mathbf{8 6 . 2 0 0 . 0 7}$ | 20 |
| $\mathbf{8 6 . 2 0 0 . 0 8}$ | 25 |

## COOLANT TUBES



- Dual o-ring design makes tube slightly movable
- Coated steel with smooth surface for trouble-free insertion into the machine spindle
- Fits all brands of HSK holders
- Must be used with all coolant through HSK spindles

| Coolant tube with 20 -rings |  | HSK-A32 | HSK-A40 | HSK-A50 | HSK-A63 | HSK-A80 | HSK-A100 | HSK-A125 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | HSK-E25 | HSK-E32 | HSK-E40 | HSK-E50 |  |  |  |  |
| Order No. 85.700... | . 25 | . 32 | . 40 | . 50 | . 63 | . 80 | . 10 | . 125 |
| Length G [mm] | M8× 1 | M10 $\times 1$ | M12 $\times 1$ | M16 $\times 1$ | M18 $\times 1$ | M20 $\times 1.5$ | M24 $\times 1.5$ | M30 $\times 1.5$ |
| Length D [mm] | 5 | 6 | 8 | 10 | 12 | 14 | 16 | 18 |
| Length L [mm] | 17 | 26 | 29,5 | 33 | 36,5 | 40 | 44 | 48 |

Accessories

| Wrench |  | HSK 25 | HSK 32 | HSK 40 | HSK 50 | HSK 63 | HSK 80 | HSK 100 | HSK 125 |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Order No. $84.500 \ldots$ |  |  | .25 | .32 | .40 | .50 | .63 | .80 | .100 | .125 |

REDUCTION SLEEVES


Use:
For clamping small shanks in chucks with $\varnothing 5 / 16$ " or 8 mm ID's.

For use in all chucks as reducers

- High-Precision chucks
- Collet chucks
- Hydraulic chucks
- Shrink fit chucks
- Other high precision mechanical chucks

| INCH | Ø D | $\varnothing$ D1 | L |  |
| :--- | :--- | :--- | :--- | :--- |
| Order No. | $79.110 .3 / 32 Z$ | $3 / 32^{\prime \prime}$ | $5 / 16^{\prime \prime}$ | $0.27^{\prime \prime}$ |
| Order No. | $79.110 .1 / 8 Z$ | $1 / 8^{\prime \prime}$ | $5 / 16^{\prime \prime}$ | $0.35^{\prime \prime}$ |
| Order No. | $79.110 .5 / 32 Z$ | $5 / 32^{\prime \prime}$ | $5 / 16^{\prime \prime}$ | $0.47^{\prime \prime}$ |
| Order No. | $79.110 .3 / 16 Z$ | $3 / 16^{\prime \prime}$ | $5 / 16^{\prime \prime}$ | $0.56^{\prime \prime}$ |
| Order No. | $79.110 .7 / 32 Z$ | $7 / 32^{\prime \prime}$ | $5 / 16^{\prime \prime}$ | $0.65^{\prime \prime}$ |


| METRIC |  | $\emptyset \mathrm{D}[\mathrm{mm}]$ | $\varnothing \mathrm{D} 1[\mathrm{~mm}]$ | $\mathrm{L}[\mathrm{mm}]$ |
| :--- | :--- | :--- | :--- | :--- |
| Order No. | $\mathbf{7 9 . 1 1 0 . 2 . 5}$ | 2.5 | 8 | 7.5 |
| Order No. | $\mathbf{7 9 . 1 1 0 . 0 3}$ | 3 | 8 | 9 |
| Order No. | 79.110 .3 .5 | 3.5 | 8 | 10.5 |
| Order No. | $\mathbf{7 9 . 1 1 0 . 0 4}$ | 4 | 8 | 12 |
| Order No. | 79.110 .4 .5 | 4.5 | 8 | 13.5 |
| Order No. | 79.110 .05 | 5 | 8 | 15 |
| Order No. | $\mathbf{7 9 . 1 1 0 . 5 . 5}$ | 5.5 | 8 | 16.5 |

## REDUCTION SLEEVES FOR SHRINK FIT CHUCKS



Use:
For clamping small shanks in chucks with 12 mm ID's.
Shank tolerance h6.

First step: Insert reduction sleeve into bore of chuck by shrink process. Second step: clamp tool shank in reduction sleeve.

| METRIC |  | Clamping Ø D [mm] |
| :--- | :--- | :--- |
| Order No. | $\mathbf{7 9 . 1 5 0 . 0 3}$ | 3 |
| Order No. | $\mathbf{7 9 . 1 5 0 . 0 4}$ | 4 |
| Order No. | $\mathbf{7 9 . 1 5 0 . 0 6}$ | 6 |

## MINI SHRINK

SHRINK AND COOLING SLEEVES

## For shrinking and cooling of Mini Shrink chucks.

- Protects Mini Shrink chucks from overheating
- Extends lifetime of shrink fit chucks
- Secure and user friendly handling
- Cooling with standard cooling body $6 \mathrm{~mm}-8 \mathrm{~mm}$


| Shrinking and cooling sleeves for Mini Shrink chucks |  |  |  |  |  |  | Order No. |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Extra slim |  |  |  |  |  |  |  |  |
| Size [mm] | $\emptyset 03$ | $\emptyset 04$ | $\emptyset 05$ | $\emptyset 06$ | $\emptyset 08$ | $\varnothing 10$ | $\emptyset 12$ |  |
| Size [inch] | Ø 1/8 | - | Ø 3/16 | Ø 1/4 | $\emptyset 5 / 16$ | ø 3/8 | Ø 1/2 |  |
| Order No. 80.105.14... | . 2.01 | . 2.02 | . 2.03 | . 2.04 | . 2.05 | . 2.06 | . 2.07 |  |
| Standard |  |  |  |  |  |  |  |  |
| Size [mm] | $\emptyset 03$ | $\emptyset 04$ | $\emptyset 05$ | $\emptyset 06$ | $\emptyset 08$ | $\varnothing 10$ | $\emptyset 12$ | $\emptyset 16$ |
| Size [inch] | Ø 1/8 | - | Ø 3/16 | $\emptyset 1 / 4$ | Ø 5/16 | ø 3/8 | $\emptyset 1 / 2$ | ø 5/8 |
| Order No. 80.105.14... | . 2.04 | . 2.08 | . 2.05 | . 2.09 | .2.10 | .2.11 | . 2.12 | . 2.16 |
| Base |  |  |  |  |  |  | 80.105.14.2.99 |  |
| Set with base (12 pcs., diameter 3-12 mm) |  |  |  |  |  |  | 80.105.14.2.00 |  |

BACK-UP SCREWS
FOR SHRINK FIT CHUCKS \& POWER COLLET CHUCKS


- Hexagon socket on each end - can always be reached
- Flats on sides for optimized coolant drainage
- Fine thread for maximum accuracy

For Shrink Fit Chucks

| Clamping Ø |  | $\begin{aligned} & \text { CAT40/50 } \\ & \text { SK 40/50 } \\ & \text { BT 40/50 } \\ & \hline \end{aligned}$ | $\begin{array}{\|l} \hline \text { HSK-A 32/E } 32 \\ \text { A 40/E } 40 \\ \hline \end{array}$ | $\begin{aligned} & \text { HSK-A50/ } \\ & \text { E50 } \end{aligned}$ | HSK-A63 | HSK-F 63 | HSK-A 80 | HSK-A 100 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $6 \mathrm{~mm} / 1 / 4^{\prime \prime}$ | Length <br> Order No. <br> 85.810... | . 12.1 | . 12.1 | . 12.1 | . 12.1 | . 12.1 | . 12.1 | . 12.1 |
| $8 \mathrm{~mm} / 5 / 16^{\prime \prime}$ |  | . 15.1 | .15.1 | .15.1 | .15.1 | . 15.1 | . 15.1 | . 15.1 |
| $10 \mathrm{~mm} / 3 / 8^{\prime \prime}$ | short | . 18.2 | . 18.2 | . 18.2 | . 18.2 | . 18.2 | . 18.2 | . 18.2 |
|  | other | . 18.2 | . 36.2 | . 36.2 | . 36.2 | . 36.2 | . 36.2 | . 36.2 |
| $12 \mathrm{~mm} / 1 / 2^{\prime \prime}$ | short | . 24.2 | . 24.2 | . 39.2 | . 39.2 | . 39.2 | . 21.2 | . 21.2 |
|  | other | . 24.2 | . 24.2 | . 24.2 | . 24.2 | . 24.2 | . 24.2 | . 24.2 |
| $14 \mathrm{~mm} / 9 / 16{ }^{\prime \prime}$ | short | . 24.2 | . 24.2 | . 39.2 | . 39.2 | - | . 21.2 | . 21.2 |
|  | ZG130/oversize | . 24.2 | . 24.2 | . 24.2 | . 24.2 | - | . 24.2 | . 24.2 |
| $16 \mathrm{~mm} / 5 / 8{ }^{\prime \prime}$ | short | . 46.2 | . 27.2 | . 25.2 | . 25.2 | .25.2 ${ }^{11}$ | . 27.2 | . 40.1 |
|  | ZG130/oversize | . 46.2 | . 27.2 | . 38.2 | . 46.2 | .46.2 ${ }^{11}$ | . 46.2 | . 46.2 |
| 18 mm | short | . 46.2 | - | . 25.2 | . 25.2 | - | . 27.2 | . 40.1 |
|  | ZG130/oversize | . 46.2 | - | . 38.2 | . 46.2 | - | . 46.2 | . 46.2 |
| $20 \mathrm{~mm} / 3 / 4{ }^{\text {" }}$ | short | . 52.2 | - | . 51.2 | .51.2 | .51.2 ${ }^{1 /}$ | .51.2 | . 51.2 |
|  | ZG130/oversize | .52.2 | - | .52.2 | .52.2 | .52.2 ${ }^{1)}$ | . 52.2 | . 52.2 |
| $25 \mathrm{~mm} / 1^{\prime \prime}$ | short | . 52.2 | - | - | .52.2 | .52.2 ${ }^{11}$ | .52.2 | .52.2 |
|  | ZG130/oversize | . 52.2 | - | - | . 52.2 | .52.2 ${ }^{1)}$ | . 52.2 | . 52.2 |
| $32 \mathrm{~mm} / 1^{1 / 4}{ }^{\prime \prime}$ | short | . 52.2 | - | - | .52.2 | - | .52.2 | .52.2 |
|  | ZG130/oversize | .52.2 | - | - | .52.2 | - | .52.2 | .52.2 |

For Shrink Fit Chucks \& Power Collet Chucks

| Order No. | SW1 | SW2 | Thread | Also usable for Power Collet Chucks |
| :---: | :---: | :---: | :---: | :---: |
| 85.810.12.1 | SW2.5 | SW2.5 | M $5 \times 0.8 \times 16$ |  |
| 85.810.15.1 | SW3 | SW3 | M6x1x16 |  |
| 85.810.18.2 | SW3 | SW4 | M $8 \times 1 \times 16$ | ER16 |
| 85.810.24.2 | SW4 | SW5 | M10x1x20 |  |
| 85.810.25.2 | SW5 | SW6 | M12x1x18 | ER25 |
| 85.810.27.2 | SW4 | SW6 | M12x1x18 | ER25 |
| 85.810.36.2 | SW3 | SW4 | M8x1x20 | ER16 |
| 85.810.46.2 | SW6 | SW6 | M12x1x20 | ER25 |


| Order No. | SW1 | SW2 | Thread | Also usable for Power Collet Chucks |
| :---: | :---: | :---: | :---: | :---: |
| 85.810.21.2 | SW4 | SW5 | M10x1x16 |  |
| 85.810.38.2 | SW5 | SW6 | M12x1x22 | ER25 |
| 85.810.39.2 | SW4 | SW5 | M10x1x18 |  |
| 85.810.40.1 | SW6 | SW6 | M12x1x16 | ER25 |
| 85.810.43.2 | SW5 | SW8 | M12x1x18 | ER25 |
| 85.810.44.2 | SW5 | SW8 | M12x1x22 | ER25 |
| 85.810.45.2 | SW6 | SW8 | M12x1x18 | ER25 |
| 85.810.51.2 | SW5 | SW8 | M16x1x18 | ER32 |
| 85.810.52.2 | SW6 | SW8 | M16x1x22 | ER32 |

BACK-UP SCREWS
FOR SHRINK FIT CHUCKS \& POWER COLLET CHUCKS


- Hexagon socket on each end - can always be reached
- Flats on sides for optimized coolant drainage
- Fine thread for maximum accuracy

For Shrink Fit Chucks

| Clamping $\varnothing$ |  | $\begin{array}{\|l} \text { CAT40/50 } \\ \text { SK 40/50 } \\ \text { BT 40/50 } \\ \hline \end{array}$ | $\begin{aligned} & \text { HSK-A 32/E } 32 \\ & \text { A 40/E } 40 \\ & \hline \end{aligned}$ | $\begin{aligned} & \text { HSK-A } 50 \\ & \text { E } 50 \end{aligned}$ | HSK-A 63 | HSK-F 63 | HSK-A 80 | HSK-A 100 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $6 \mathrm{~mm} / 1^{1 / 4}$ | Length Order No. 85.810... | . 12.4 | . 12.4 | . 12.4 | . 12.4 | . 12.4 | . 12.4 | . 12.4 |
| $8 \mathrm{~mm} / 5 / 16^{\prime \prime}$ |  | . 15.4 | . 15.4 | . 15.4 | . 15.4 | . 15.4 | . 15.4 | . 15.4 |
| $10 \mathrm{~mm} / 3 / 8{ }^{\prime \prime}$ |  | . 18.4 | . 18.4 | . 18.4 | . 18.4 | . 18.4 | . 18.4 | . 18.4 |
| $12 \mathrm{~mm} / 1 / 2^{\prime \prime}$ |  | . 21.4 | .21.4 ${ }^{11}$ | . 21.4 | . 21.4 | . 21.4 | . 21.4 | . 21.4 |
| $14 \mathrm{~mm} / 9 / 16^{\prime \prime}$ |  | . 21.4 | . 21.4 | . 21.4 | . 21.4 | . 21.4 | . 21.4 | . 21.4 |
| $16 \mathrm{~mm} / 5 / 8{ }^{\prime \prime}$ | short <br> ZG130/oversize | $\begin{aligned} & .37 .4 \\ & .37 .4 \end{aligned}$ | $\begin{aligned} & .27 .4 \\ & .27 .4 \end{aligned}$ | $\begin{aligned} & .25 .4 \\ & .25 .4 \end{aligned}$ | $\begin{aligned} & .25 .4 \\ & .37 .4 \end{aligned}$ | $\begin{aligned} & .25 .4^{1)} \\ & .37 .4^{1)} \end{aligned}$ | $\begin{aligned} & \hline 27.4 \\ & .37 .4 \end{aligned}$ | $\begin{aligned} & .40 .4 \\ & .37 .4 \end{aligned}$ |
| 18 | short <br> ZG130/oversize | $\begin{aligned} & .37 .4 \\ & .37 .4 \end{aligned}$ | - | $\begin{aligned} & .25 .4 \\ & .25 .4 \end{aligned}$ | $\begin{aligned} & .25 .4 \\ & .37 .4 \end{aligned}$ | $\begin{aligned} & \hline .25 .4^{11} \\ & .37 .4^{1)} \end{aligned}$ | $\begin{array}{r} .27 .4 \\ .37 .4 \\ \hline \end{array}$ | $\begin{array}{r} .40 .4 \\ .37 .4 \\ \hline \end{array}$ |
| $20 \mathrm{~mm} / 3 / 4{ }^{\prime \prime}$ | short ZG130/oversize | $\begin{aligned} & .52 .4 \\ & .52 .4 \end{aligned}$ | - | $\begin{aligned} & .52 .4 \\ & .52 .4 \end{aligned}$ | $\begin{aligned} & .52 .4 \\ & .52 .4 \end{aligned}$ | $\begin{aligned} & .52 .4^{1 \mid} \\ & .52 .4^{1 \mid} \end{aligned}$ | $\begin{aligned} & \hline .52 .4 \\ & .52 .4 \end{aligned}$ | $\begin{aligned} & .52 .4 \\ & .52 .4 \end{aligned}$ |
| $25 \mathrm{~mm} / 1^{\prime \prime}$ |  | . 52.4 | - | - | . 52.4 | .52.4 ${ }^{1 /}$ | . 52.4 | . 52.4 |
| $32 \mathrm{~mm} / 1^{1 / 4}{ }^{\prime \prime}$ |  | . 52.4 | - | - | . 52.4 | .52.4 ${ }^{1)}$ | . 52.4 | . 52.4 |

For Shrink Fit Chucks \& Power Collet Chucks

| Order No. | SW1 | SW2 | Thread | Also usable for Power Collet Chucks |
| :---: | :---: | :---: | :---: | :---: |
| 85.810.12.4 | SW2.5 | SW2.5 | M $5 \times 0.8 \times 24$ |  |
| 85.810.15.4 | SW3 | SW3 | M6x1x24 |  |
| 85.810.18.4 | SW3 | SW4 | M8x1x24 | ER16 |
| 85.810.21.4 | SW4 | SW5 | M10x1x28 |  |
| 85.810.37.4 | SW6 | SW8 | M12x1x34 | ER25 |
| 85.810.43.4 | SW5 | SW8 | M12x1x34 | ER25 |
| 85.810.25.4 | SW5 | SW6 | M12x1x34 | ER25 |
| 85.810.27.4 | SW4 | SW6 | M12x1x34 | ER25 |
| 85.810.52.4 | SW6 | SW8 | M16x1x34 | ER32 |

BACK-UP SCREWS FOR POWER SHRINK CHUCKS


- Optimized for Shrink Fit Chucks with Cool Jet
- Guaranteed coolant supply via transverse groove
- Hexagon socket on each end - can always be reached
- Flats on sides for optimized coolant drainage
- Fine thread for maximum accuracy

| [mm] | Type | $\begin{aligned} & \text { CAT40/50 } \\ & \text { SK40/50 } \\ & \text { BT40/50 } \end{aligned}$ | $\begin{array}{\|l} \text { HSK-A32/E32 } \\ \text { A40/E40 } \end{array}$ | $\begin{aligned} & \text { HSK-A50/ } \\ & \text { E50 } \end{aligned}$ | HSK-A63 | HSK-F63 | HSK-A80 | HSK-A100 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $6 \mathrm{~mm} / 1 / 4{ }^{\prime \prime}$ | Length Order No. 85.810... | . 12.3 | . 12.3 | . 12.3 | . 12.3 | . 12.3 | . 12.3 | . 12.3 |
| $8 \mathrm{~mm} / 5 / 16^{\prime \prime}$ |  | . 15.3 | .15.3 | .15.3 | .15.3 | . 15.3 | .15.3 | .15.3 |
| $10 \mathrm{~mm} / 3 / 8^{\prime \prime}$ |  | . 18.3 | .18.3 | .18.3 | .18.3 | .18.3 | .18.3 | . 18.3 |
| $12 \mathrm{~mm} / 1 / 2{ }^{\prime \prime}$ | ultra short | $\begin{aligned} & \text { 48.3 } \\ & .48 .3 .1 \\ & \hline \end{aligned}$ | $\text { . } 48.3$ | $\text { . } 48.3$ | $\text { . } 48.3$ | $48.3$ | $48.3$ | $48.3$ |
| $14 \mathrm{~mm} / 9 / 16^{\prime \prime}$ |  | . 21.3 | . 21.3 | . 21.3 | . 21.3 | - | . 21.3 | . 21.3 |
| $16 \mathrm{~mm} / 5 / 8{ }^{\prime \prime}$ | ultra short | $\begin{aligned} & .49 .3 \\ & .49 .3 .1 \end{aligned}$ | .49.3 | $\text { . } 49.3$ | .49.3 | $\text { . } 49.3$ | . 49.3 | $\text { . } 49.3$ |
| 18 mm |  | . 40.3 | - | . 40.3 | . 40.3 | - | . 40.3 | . 40.3 |
| $20 \mathrm{~mm} / 3 / 4{ }^{\prime \prime}$ |  | . 51.3 | - | . 51.3 | . 51.3 | . 51.3 | . 51.3 | . 51.3 |
| $25 \mathrm{~mm} / 1^{\prime \prime}$ |  | . 52.3 | - | - | . 52.3 | - | .52.3 | .52.3 |
| $32 \mathrm{~mm} / 1^{11 / 4}$ |  | .52.3 | - | - | .52.3 | - | . 52.3 | .52.3 |


| Order No. | SW | Thread |
| :---: | :---: | :---: |
| 85.810.12.3 | SW2.5 | M5x0.8x16 |
| 85.810.15.3 | SW3 | M6x1x16 |
| 85.810.18.3 | SW4 | M8x1x16 |
| 85.810.21.3 | SW5 | M10x1x16 |
| 85.810.40.3 | SW6 | M12x1×16 |
| 85.810.43.3 | SW6 | M12x1x18 |
| 85.810.46.3 | SW6 | M12x1×20 |
| 85.810.48.3 | SW5 | M10x1x16 |


| Order No. | SW | Thread |
| :--- | :--- | :--- |
| $\mathbf{8 5 . 8 1 0 . 4 8 . 3 . 1}$ | SW5 | M10×1×28 |
| $\mathbf{8 5 . 8 1 0 . 4 9 . 3}$ | SW6 | M12×1×16 |
| $\mathbf{8 5 . 8 1 0 . 4 9 . 3 . 1}$ | SW6 | M12×1×20 |
| $\mathbf{8 5 . 8 1 0 . 5 1 . 3}$ | SW6 | M16x1×18 |
| $\mathbf{8 5 . 8 1 0 . 5 2 . 3}$ | SW6 | M16×1×20 |



| Size $\varnothing[\mathrm{mm}]$ | HSK-32, 40, 50, 63, 80, $\mathbf{1 0 0}$ | SW | L [mm] | Thread |  |
| :--- | :--- | :--- | :--- | :--- | :--- |
| ER 16 | Order No. | $\mathbf{8 5 . 8 0 0 . 3 4}$ | 3 | 25 | M6 |
| ER 20 |  | $\mathbf{8 5 . 8 0 0 . 3 4}$ | 3 | 25 | M6 |
| ER 25 | $\mathbf{8 5 . 8 0 0 . 3 4}$ | 3 | 25 | M6 |  |
| ER 32 | $\mathbf{8 5 . 8 0 0 . 3 5}$ | 5 | 25 | M10 |  |
| ER 40 | $\mathbf{8 5 . 8 0 0 . 3 5}$ | 5 | 25 | M10 |  |

TENSION SPRINGS FOR SHRINK FIT CHUCKS


- Spring is set into clamping bore
- Spring presses tool against stop disk
- Fits all common shrink fit chucks
- Back-up screw can remain in chuck


Tension spring for length presetting

| Tension springs |  |  |  |  |  |  |  |  |  | Order No. |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Size [mm] |  | $\emptyset 6$ | $\varnothing 8$ | $\varnothing 10$ | $\emptyset 12$ | $\emptyset 14$ | $\varnothing 16$ | $\emptyset 18$ | $\varnothing 20$ | $\emptyset 25$ | Ø 32 |
| Size [inch] |  | $\emptyset 1 / 4$ | $\emptyset 5 / 16$ | Ø 3/8 | Ø 1 12 | - | $\emptyset 5 / 8$ | - | $\emptyset 3 / 4$ | $\varnothing 1$ | Ø111/4 |
| Order No. | 85.830... | . 06 | . 08 | . 10 | . 12 | . 14 | . 16 | . 18 | . 20 | . 25 | . 32 |

Tension spring set ( 10 pcs. of each size) incl. pull-out gripper


| Cone wiper CAT, BT, SK | CAT/BT/SK 30 | CAT/BT/SK 40 | CAT/BT/SK 50 |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- |
| Order No. | $86.100 \ldots$ | .30 |  | .40 | .50 |
|  |  |  |  |  |  |
| Cone wiper MK |  | MK 01 | MK 02 | MK 03 | MK 04 |
| Order No. | $86.100 \ldots$ | .01 | .02 | .03 | .04 |



| Cone wiper HG | HG 01 | HG 02 | HG 03 |  |
| :--- | :--- | :--- | :--- | :--- |
| Order No. | $82.590 \ldots$ | .01 | .02 | .03 |

For cleaning the inner cone of HG chucks


Tool Clamp - Tool-assembly device:

- Secure tool assembly with minimal physical effort
- Quick-change function for different taper interfaces without additional tools
- Accident-free assembly of cutting tools
- Elastic locking bolt

[^0]-Required space $140 \times 100 \mathrm{~mm}$


Tool Clamp


Tool holder SK

| Tool Clamp - without tool holder, $4 \times 90^{\circ}$ indexable |  |  |
| :---: | :---: | :---: |
| Order No. |  | 84.700 .00 |
| Tool holder CAT/BT/SK |  |  |
| Order No. | Type |  |
| 84.701 .30 | CAT/BT/SK 30 |  |
| 84.701 .40 | CAT/BT/SK 40 |  |
| 84.701 .50 | CAT/BT/SK 50 |  |
| Tool holder HSK-A |  |  |
| Order No. | Type |  |
| 84.702 .40 | HSK-A40 |  |
| 84.702 .50 | HSK-A50 |  |
| 84.702 .63 | HSK-A63 |  |
| 84.702 .80 | HSK-A80 |  |
| 84.702 .10 | HSK-A100 |  |
| Tool holder HSK-C/HSK-E |  |  |
| Order No. | Type |  |
| 84.703 .25 | HSK-C/E25 |  |
| 84.703 .32 | HSK-C/E32 |  |
| 84.703 .40 | HSK-C/E40 |  |
| 84.703 .50 | HSK-C/E50 |  |
| 84.703 .63 | HSK-C/E63 |  |
| 84.703 .80 | HSK-C/E80 |  |
| Tool holder HSK-F |  |  |
| Order No. | Type |  |
| 84.704.63.M | HSK-F63 MAKINO |  |
| 84.704.80.M | HSK-F80 MAKINO |  |
| Tool holder PSC |  |  |
| Order No. | Type |  |
| 84.705 .32 | PSC 32 |  |
| 84.705 .40 | PSC 40 |  |
| 84.705 .50 | PSC 50 |  |
| 84.705 .60 | PSC 63 |  |
| Tool holder KM4X100* |  |  |
| Order No. | Type |  |
| 84.706.4X100 | KM4X* |  |

[^1]

The mechanical RFID data carrier locking system locks the data carrier by a form and press fit into the tool holder.

## Especially for higher rpm ranges the new system provides

 high process reliability.
## Advantages:

- Process reliability even at high rotations thanks to mechanical locking
-Less integration depth than comparable mechanical locking systems
- Process reliability at the reading/writing process thanks to the reduced integration depth
-Fine balanced tool holder after data carrier assembly
- Immediately ready to use
- Possible also for non-HAIMER holders
-Patent pending


## Delivery includes:

- Modification of the data carrier bore
- Sleeve for the data carrier
- Seal ring
- Mounting of data carrier
-Fine balancing


Mounting on HAIMER holders incl. fine balancing
Mounting on different holders incl. fine balancing

TECHNICAL DATA

TAPER AND HOLDER SPECIFICATIONS

## Features and Benefits:

- Taper: Micron-exact manufacturing (AT3) extends the life of your spindle due to superior taper contact
- All tapers inspected during production to ensure maximum taper contact = maximum accuracy
- All tool holders easily balanceable
- Tapers Form ADF. Central coolant supply through the pull stud (Form AD, pull stud drilled through) and coolant channels through the flange (Form AF, pull stud sealed) which can be sealed again
- Minimal runout
- All holders marked with an identification number
- All holders come standard with pocket for data chip (Except BT, HSK-E and HSK-F tapers)
- Pre-balanced to G 2.5 at 25,000 RPMs
- Fine balancing optional
- Many tapers available
- 3 piece minimum order quantity on specials or discontinued items



[^0]:    - Mechanical security pin
    -Better tool clamping, thanks to optimum ergonomics
    - Replaceable brass inserts protect the taper surface

[^1]:    *KM4X is a registered trademark/tradename of Kennametal Inc.

