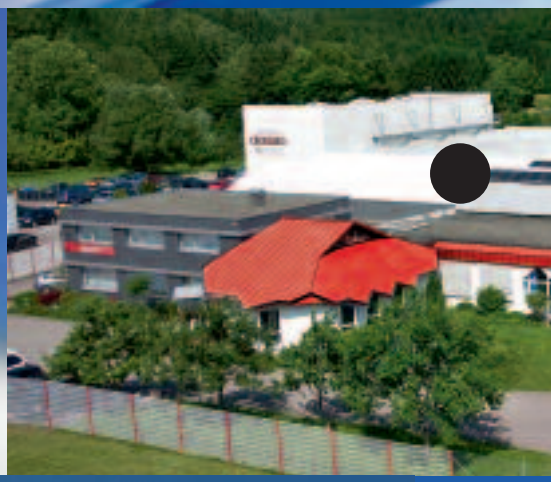
# diebold

## Gauging


Zertifiziertes Managementsystem
MOODY INTERNATIONAL
DIN EN ISO 9001:2008


diebold
50 JAHRE
1952 - 2002




diebold-Messtechnik

*Hermann Diebold*

## *When Quality Counts ™ we are Always One Step Ahead ™ –*

*Simply The Finest ™*

*Diebold, and many other manufacturers of close-tolerance tool holders and highly precise equipment, have been using Diebold Gauging for many years. We are proud to offer our customers "Simply the Finest" in gauges and measurement poducts. These gauges will economically verify the dimensional accuracy of your tool holders, spindles and other precision equipment.*


*Quality gauging demands high precision gauge masters, at Diebold we make our own to statisfy this need. Our plant has gauge masters calibrated and certified by some of the world's most reputable calibration institutes. All of the masters that we manufacture are certified and traceable to the applicable standard.*

*You have made a significate investment in your machinery and tool holders. By utilizing Diebold Gauging you can be sure you will get the most out of your investment!*

*Hermann Diebold, CEO*

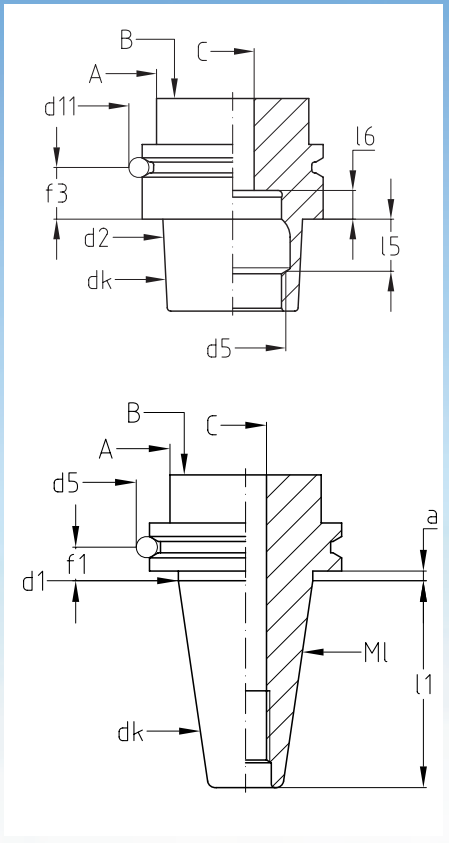
# „Simply the Finest“

## Diebold Introduces Practical Measurement for Tool Holders & Spindles

*Diebold manufactures mechanical gauges for the inspection of tool holders and the machine spindle taper. The masters used to calibrate our high quality gauges are also produced by Diebold, and are certified by the appropriate international standards organizations to guarantee traceability.*

*This gauging system will verify the following:*

- *Toolholder taper diameters and angles*
- *Location of the taper in relation to the flange*
- *Runout of the taper in relation to the flange*
- *Location of the internal gripper-engagement angle*
- *Location of the ejection face in relation to the flange*
- *Location of spindle taper in relation to the spindle face*
- *Parallelism of drive keys*
- *Location of drive keys*
- *Location of Gripper Actuating Cam Angle*




*Meticulously crafted mechanical gauge used to determine the amount of pull force being exerted on a toolholder in a spindle.*

### *Printer*

*To print a read out of digital pull force gauge.*

### *Minimum Suggested Drawbar Pull Force*

| | | |
|---|---|---|
| *Taper Size* | HSK25 | 2,8 kN |
| *Taper Size* | HSK32 | 5 kN |
| *Taper Size* | HSK40 | 6,8 kN |
| *Taper Size* | HSK50 | 11 kN |
| *Taper Size* | HSK63 | 18 kN |
| *Taper Size* | HSK80 | 28 kN |
| *Taper Size* | HSK100 | 45 kN |
| *Taper Size* | SK30/BT30 | 6 kN |
| *Taper Size* | SK40/BT40 | 12 kN |
| *Taper Size* | SK50/BT50 | 25 kN |

*Diebold, the leading manufacturer of HSK tool holders and gauges, produces certified test arbors and measurement devices. If you are looking for the best runout test arbors, you will find what you need with Diebold.*
*We manufacture our gauges in a climate-controlled, sealed facility in Germany.*

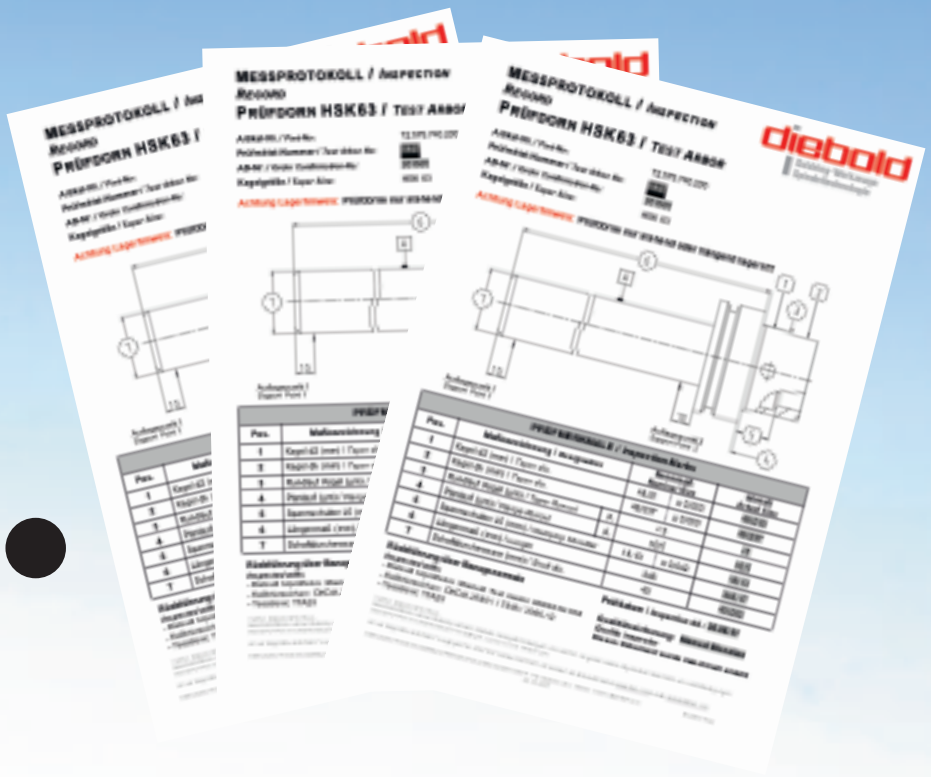
*We calibrate and certify all of our instruments with the finest CMM`s and profile verification equipment available in the machine tool world-industry. Diebold runout test arbors are delivered in a fitted wooden case along with an individual certification of conformity trace-able to the applicable international standard.*

## *Calibration and Re-certification*

*Quality management systems require annual re-certification of gauges, masters and test arbors. Diebold calibrates and certifies all of these products in house and offers this services to other companies.*

***To ensure traceability of our calibration systems we have our test equipment certified by the DKD (Accredited body of the German calibration service).***






# Inspection Gauges Tapers with Face Contact

*For all types of tapered tools with face contact.*

*Gauge for verification of pull stud location and bore straightness.*

*Used to verify parallelism of spacers and rings used in spindles and other precision assemblies.*

# Gauge sets with Pull Force Gauges and Test Arbors for Service Personnel

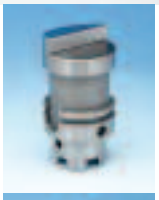
*Assortment as required*

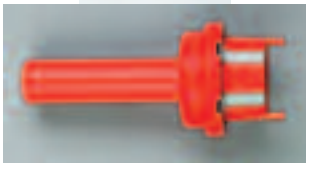
## Tool Taper Inspection Gauges



## Spindle Taper Gauges







## Tool Taper Inspection Gauges

***HSK Tool Holders***
*offer excellent stiffness and repeatability. To check the extremely small tolerances required by the DIN and ISO standards for HSK toolholders, the finest measuring instruments are a necessity not a luxury.*

***With our HSK Gauges the 4 most important dimensions can be checked in one operation:***

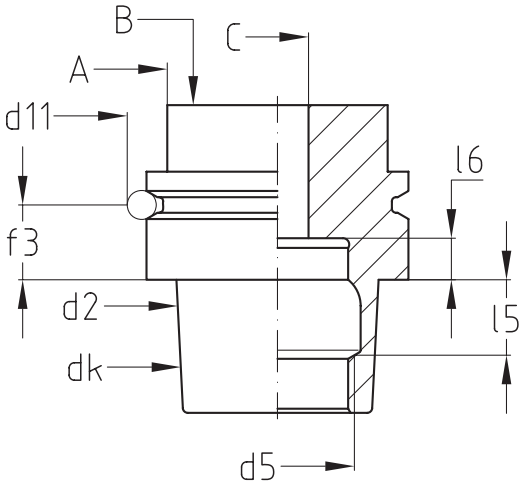
1. $d_2$ *Large taper diameter*
2. $d_k$ *Small taper diameter*
3. $L_5$ *Gripper cam angle location*
4. $L_6$ *Ejection face depth*
   *Roundness:* $d_2$, $d_k$, $d_5$ *by turning the HSK taper in the inspection gauge*

*With the* ***Vee-Flange Adaptor*** *(see page 9)*

5. $d_{11}$ *Half diameter of the Vee-Flange*
6. $f_3$ *Distance from Vee-Flange to the face*

*With the* ***Runout Test Adaptor*** *(see page 9)*
*the runout of the tool holder nosepart can be checked.*

7. ***A*** *Runout OD*
8. ***B*** *Face runout*
9. ***C*** *Runout ID*



## HSK Taper Inspection Gauges

***For verification of:***

$d_2$ *Large taper diameter* } *Conicity*
$d_k$ *Small taper diameter* }
$l_5$ *Gripper cam angle location*
$l_6$ *Ejection face depth*

| Order-No. | for Taper HSK Form A/C/E | for Taper HSK Form B/D/F |
|---|---|---|
| 76.701.025 | 25 | 32 |
| 76.701.032 | 32 | 40 |
| 76.701.040 | 40 | 50 |
| 76.701.050 | 50 | 63 |
| 76.701.063 | 63 | 80 |
| 76.701.080 | 80 | 100 |
| 76.701.100 | 100 | 125 |
| 76.701.125* | 125 | 160 |

** on request*

***Includes:*** *Base unit and taper measuring head with two indicators (metric) for $d_2$ / $d_k$ and one indicator for $l_5$ / $l_6$ in fitted wooden case.*

***Maintenance:*** *Please return gauge for maintenance and/or recalibration in the original packaging.*

## HSK Taper Inspection Gauge

***For verification of:***

$d_2$ *Large taper diameter* } *Conicity*
$d_k$ *Small taper diameter* }

| Order-No. | for Taper HSK Form A/C/E | for Taper HSK Form B/D/F |
|---|---|---|
| 76.711.025 | 25 | 32 |
| 76.711.032 | 32 | 40 |
| 76.711.040 | 40 | 50 |
| 76.711.050 | 50 | 63 |
| 76.711.063 | 63 | 80 |
| 76.711.080 | 80 | 100 |
| 76.711.100 | 100 | 125 |

## Vee-Flange Adaptor

*The Vee-Flange adaptor mounts to the taper measuring head, and is used to verify the location and dimensional accuracy of the vee-flange. (**$d_{11}$** and **$f_3$**).*

| Order-No. | for Taper HSK Form A/E |
|---|---|
| 76.720.025 | 25 |
| 76.720.032 | 32 |
| 76.720.040 | 40 |
| 76.720.050 | 50 |
| 76.720.063 | 63 |
| 76.720.080 | 80 |
| 76.720.100 | 100 |

***Includes:*** *Vee-Flange Adaptor with two indicators (metric).*

## Runout Test Adaptor

*The Runout test adaptor mounts to the taper measuring head, and is used to verify the amount of runout between the I.D. bore of a tool holder, and/or the O.D. of a tool in a tool holder, relative to the taper.*

| Order-No. | |
|---|---|
| 76.730.100 | *One size fits all taper measuring units* |

***Includes:*** *Runout test adaptor with indicator mounting adaptor.*
*Indicator to be ordered separately!*

## High Precision Gauge Masters

***With Certificate of Accuracy and Statement of Tolerance and final dimensions.***

$d_2$ *Large taper diameter*
$d_k$ *Small taper diameter*
$l_5$ *Gripper cam angle*
$l_6$ *Ejection face depth*
$d_{11}$ *Vee-Flange*
$f_3$ *Vee-Flange*

*Diebold gauge masters are made of special stabilized gauge material. All surfaces are coated to resist corrosion. Actual dimensions are laser marked on the master.*

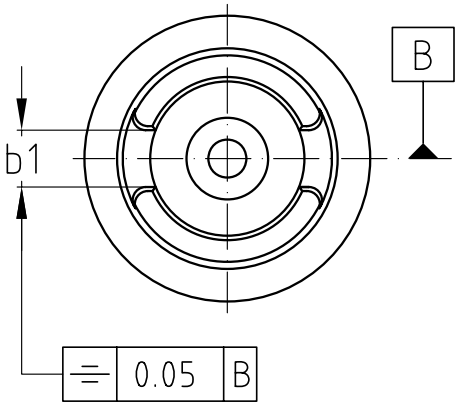
| Order-No. | for Taper HSK Form A/C/E | for Taper HSK Form B/D/F |
|---|---|---|
| 76.750.025 | 25 | 32 |
| 76.750.032 | 32 | 40 |
| 76.750.040 | 40 | 50 |
| 76.750.050 | 50 | 63 |
| 76.750.063 | 63 | 80 |
| 76.750.080 | 80 | 100 |
| 76.750.100 | 100 | 125 |

***Includes:*** *Gauge master with certificate in fitted wooden case.*

***Re-calibration:*** *Please return gauge master to Diebold for annual recalibration.*

## Drive Key Inspection Gauge

### Tool Holders for Form A and Form C

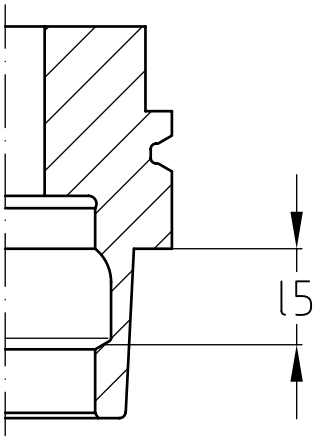



*This **Drive Key Inspection Gauge** is used to verify drive key width (b1), drive key location and symmetry in relation to taper. No gauge master is required.*

| Order-No. | for Taper HSK Form A/C |
|---|---|
| 76.790.025 | 25 |
| 76.790.032 | 32 |
| 76.790.040 | 40 |
| 76.790.050 | 50 |
| 76.790.063 | 63 |
| 76.790.080 | 80 |
| 76.790.100 | 100 |

***Includes:*** *Drive Key Inspection Gauge, with indicator reading 0.01 mm. Contact parts are carbide coated and ground within 0.003 mm.*
*No gauge master is required.*

## HSK Toolholder Cam Angle Gauge



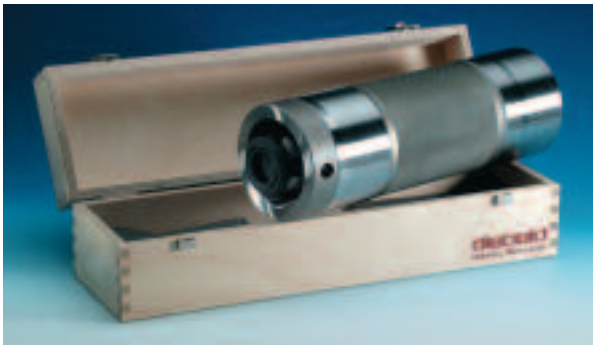

*Used to verify the location of the angle engaged by the clamping unit of the machine in the „tool clamped“ mode. This location is critical to ensure proper pull force.*

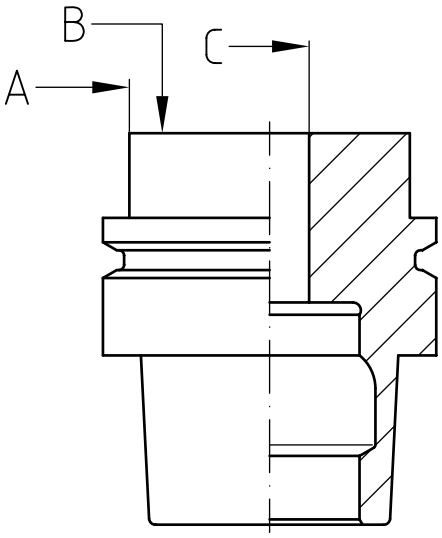
| Order-No. | for Taper HSK Form A/C/E | for Taper HSK Form B/D/F |
|---|---|---|
| 76.761.025 | 25 | 32 |
| 76.761.032 | 32 | 40 |
| 76.761.040 | 40 | 50 |
| 76.761.050 | 50 | 63 |
| 76.761.063 | 63 | 80 |
| 76.761.080 | 80 | 100 |
| 76.761.100 | 100 | 125 |

***Includes:*** *Cam Angle Gauge with indicator in fitted case. Gauge master must be ordered separately!*

***Maintenance:*** *Please return gauge for maintenance and/or recalibration in the original packaging.*

## Certified Runout Test Spindles for HSK Toolholders





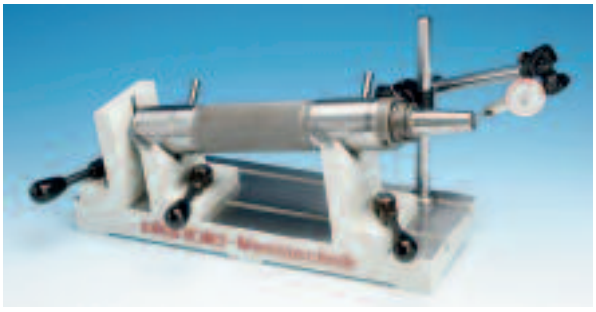

*Runout Test Spindles are supplied with an installed manual HSK gripper unit. The spindle is carried on an angle on vee-blocks set at different heights. Axial movement is eliminated by resting the lower end of the spindle against a hardened ball which is in turn rested against an angle plate or similar object.*

| Order-No. | Taper HSK Form | | Dimensions Ø |
|---|---|---|---|
| 76.741.025 | 25 A/C/E | 32F | 32x250 |
| 76.741.032 | 32 A/C/E | 40F | 42x250 |
| 76.741.040 | 40 A/C/E | 50F | 50x250 |
| 76.741.050 | 50 A/C/E | 63F | 60x300 |
| 76.741.063 | 63 A/C/E | | 70x300 |
| 76.742.080 | 80 A/C | | 85x300 |
| 76.742.100 | 100 A/C | | 103x410 |

***Includes:*** *Certified Runout Test Spindle with installed manual clamping unit and actuating hex-key in fitted wooden case.*

***Re-calibration:*** *Please return test spindles to Diebold for annual recalibration.*

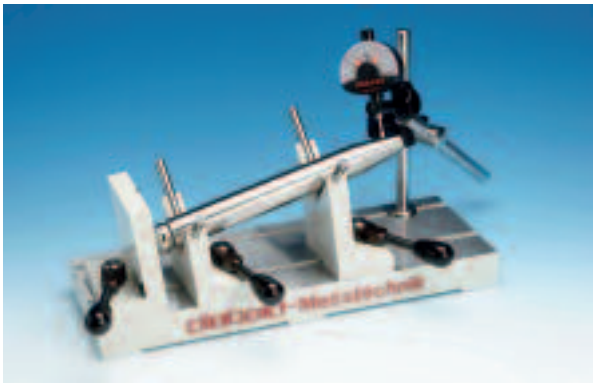
## Vee Block with Plate



*Vee Block and Plate for use with Runout Test Spindels.*

| Order-No. | Application | Dimensions Ø (L/W/H) |
|---|---|---|
| 76.745.420 | *for runout check of test-spindles and test arbors* | 420/155/180 |
| 76.745.720 | *for spindle shafts* | 720/155/180 |

***Includes:*** *Vee-Block only, doesn't include indicator, end-ball, or test-spindle.*



## Taper Gauge for 7/24 Tapers (Steep Taper)

***According to DIN 69871***

*Calibrated with a gauge master, the **Taper Gauge** checks the following:*

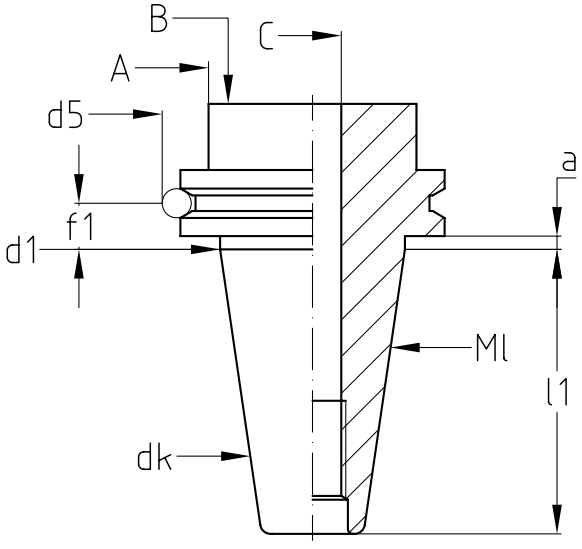
1. $d_1$ *Large taper diameter* } *Conicity*
2. $d_k$ *Small taper diameter* }
3. ***Ml*** *Straightness of the taper*
4. ***a*** *Relationship of the flange to the taper*
5. $l_1$ *Taper length*

*with the **Vee-Flange Adaptor** (see page 14)*

6. $d_5$ *Vee-flange size*
7. $f_1$ *relationship to the taper*

*with the **Runout Test Adaptor** (see page 15)*
*The runout of the cutting tool relative to the tool taper can be checked..*

8. ***A*** *Runout OD*
9. ***B*** *Face Runout*
10. ***C*** *Runout ID*



## Steep Taper Measuring Unit

***Used to verify the following:***

***$d_1$*** *Large taper diameter*
***$d_k$*** *Small taper diameter* } *Conicity*
***MI*** *Straightness of the taper*
***a*** *Relationship of the flange to the taper*
***$l_1$*** *Taper length*

| *Order-No.* | *Taper size SK* |
|---|---|
| 76.701.130 | 30 |
| 76.701.140 | 40 |
| 76.701.150 | 50 |

***Includes:*** *Steep Taper Measuring unit with 3 high resolution indicators and one standard indicator.*

***Maintenance:*** *Please return gauge for maintenance and/or recalibration in the original packaging*

## Vee-Flange Adaptor

*The Vee-Flange Adaptor mounts to the Taper Measuring Head, and is used to verify the location and dimensional accuracy of the vee-flange.*

| *Order-No.* | *Taper size SK* |
|---|---|
| 76.720.130 | 30 |
| 76.720.140 | 40 |
| 76.720.150 | 50 |

**Lieferung:** Messeinrichtung mit 2 Kleinmessuhren.

***Includes:*** *Adaptor Unit with two indicators (metric).*

## Runout Test Adaptor

*The Runout Test Adaptor mounts to the Taper Measuring Head, and is used to verify the amount of runout between the I.D. bore of a toolholder, and/or the O.D. of a tool in a toolholder, relative to the taper.*

| Order-No. | |
|---|---|
| 76.730.100 | *One size fits all Taper Measuring Units* |

***Includes:*** *Runout Test Adaptor with indicator mounting adaptor.*
*Indicator to be ordered separately!*

## High Precision Gauge Masters

*With Certificate of Accuracy and Statement of Tolerance and final dimensions.*
***$d_1$*** *Large Taper Diameter*
***$d_k$*** *Small Taper Diameter*
***MI*** *Straightness of Taper*
*Gauge Masters are made of special stabilized gauge material.*
*All surfaces are coated to resist corrosion.*
*Actual dimensions are laser marked on the Master.*

| Order-No. | Taper size |
|---|---|
| 76.750.130 | SK30 |
| 76.750.140 | SK40 |
| 76.750.150 | SK50 |
| | |
| 76.750.230 | BT30 |
| 76.750.240 | BT40 |
| 76.750.250 | BT50 |

***Includes:*** *Gauge master with certificate in fitted wooden case.*
***Re-calibration:*** *Please return gauge master to Diebold for annual recalibration.*

## Gauges for inspection of HSK Spindle Tapers per DIN69063

*Gauges to check HSK tapers of machine spindles.*

| Order-No. | for Taper HSK Form A | for Taper HSK Form B |
|---|---|---|
| 76.765.025 | 25 | 32 |
| 76.765.032 | 32 | 40 |
| 76.765.040 | 40 | 50 |
| 76.765.050 | 50 | 63 |
| 76.765.063 | 63 | 80 |
| 76.765.080 | 80 | 100 |
| 76.765.100 | 100 | 125 |

***Includes:*** *Gauge Set in fitted wooden case, with taper gauge, gauge master ring with certificate, and high resolution indicator (0,001mm).*

## Runout Test Arbors for HSK Spindles

*Used to measure the runout present in an spindle shaft.*

| Order-No. | Taper Size | d1 | A |
|---|---|---|---|
| 72.560.740.100 | 32A | 24 | 180 |
| 72.565.740.100 | 40A | 24 | 180 |
| 72.570.740.100 | 50A | 32 | 236 |
| 72.575.740.200 | 63A | 40 | 346 |
| 72.580.740.200 | 80A | 40 | 346 |
| 72.585.740.200 | 100A | 40 | 349 |
| | | | |
| 72.555.740.100 | 25C | 20 | 140 |
| 72.556.740.100 | 25E | 20 | 140 |
| 72.573.740.110 | 50E | 24 | 150 |
| | | | |
| 72.579.740.200 | 63F | 40 | 346 |

## Runout Test Arbors for 7/24 Taper Spindles (Steep Taper)

| Order-No. | Taper Size | d1 | | A |
|---|---|---|---|---|
| 72.050.740.100 | SK30 | DIN69871 | 32 | 200 |
| 72.060.740.100 | SK40 | DIN69871 | 40 | 320 |
| 72.070.740.100 | SK50 | DIN69871 | 40 | 320 |
| | | | | |
| 72.005.740.100 | SK30 | DIN2080 | 32 | 200 |
| 72.010.740.200 | SK40 | DIN2080 | 40 | 320 |
| 72.015.740.200 | SK50 | DIN2080 | 40 | 320 |
| | | | | |
| 72.150.740.100* | BT30 | JIS B6339 | 32 | 230 |
| 72.160.740.200 | BT40 | JIS B6339 | 40 | 320 |
| 72.070.740.200 | BT50 | JIS B6339 | 40 | 320 |

** with flange and v-groove*

***Includes:*** *Test arbor with certificate in fitted wooden case.*

***Runout-accuracy:*** *Taper to cylinder shaft < 0,003 mm.*

***Re-calibration:*** *Please return gauge master to Diebold for annual recalibration.*

## Test Arbor with Ball Probe

*Test arbor for testing the RTCP (Rotation Centre Point) of 5-axis spindles.*
*Can also be used as runout test arbor (at the ball probe).*

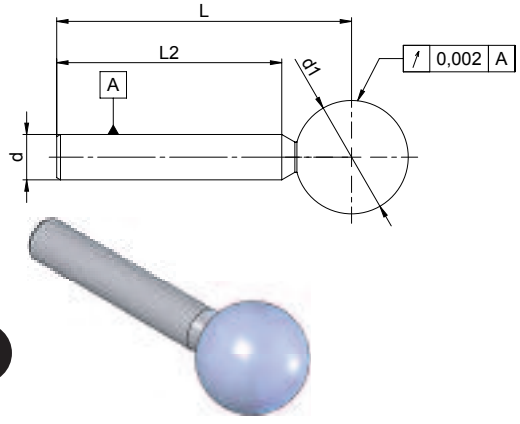
| Order-No. | Taper Size | Ball Ø | A |
|---|---|---|---|
| 72.560.742.100 | HSK32A | 30 | 150 |
| 72.565.742.100 | HSK40A | 30 | 150 |
| 72.570.742.100 | HSK50A | 30 | 150 |
| 72.575.742.100 | HSK63A | 30 | 150 |
| 72.575.742.200 | HSK63A | 30 | 200 |
| 72.579.742.100 | HSK63F | 30 | 150 |
| 72.579.742.200 | HSK63F | 30 | 200 |
| 72.585.742.100 | HSK100A | 30 | 150 |
| 72.585.742.200 | HSK100A | 30 | 200 |
| | | | |
| 72.050.742.200 | SK30 | 30 | 200 |
| 72.060.742.100 | SK40 | 30 | 150 |
| 72.070.742.100 | SK50 | 30 | 150 |
| | | | |
| 72.160.742.100 | BT40 | 30 | 150 |
| 72.170.742.100 | BT50 | 30 | 150 |

***Delivery:*** *Test arbor with certificate in fitted wooden case.*

***Runout-accuracy:*** *Taper to ball probe < 0,01 mm.*

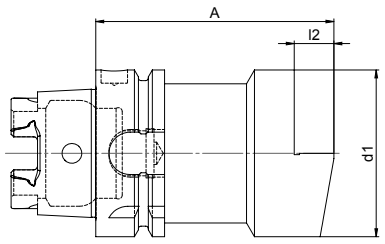
***Re-calibration:*** *Please return gauge master to Diebold for annual recalibration.*

## Test Arbor with Ball Probe




| Order-No. | dxL2 | d1 |
|---|---|---|
| 72.000.742 | 12x60 | 30 |

## Adjustment Gauge



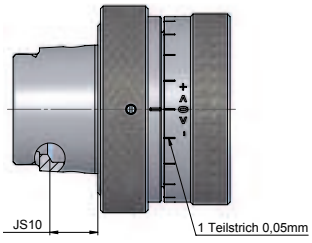

*To check angle position of machine spindles (M19). Can also be used to calibrate optical presetters.*

| Order-No. | Taper Size | d1 | l2 | A |
|---|---|---|---|---|
| 76.772.032 | HSKA32 | 40 | 15 | 70 |
| 76.772.040 | HSKA40 | 50 | 15 | 70 |
| 76.772.050 | HSKA50 | 60 | 15 | 80 |
| 76.772.063 | HSKA63 | 63 | 15 | 90 |
| 76.772.080 | HSKA80 | 80 | 15 | 100 |
| 76.772.100 | HSKA100 | 100 | 15 | 110 |
| | | | | |
| 76.772.140 | SK40 | 50 | 15 | 80 |
| 76.772.150 | SK50 | 60 | 15 | 80 |

***Delivery:*** *with certificate in plastic sleeve*

***Accuracy:*** *Flat ± 0,01mm to center line*
*Parallel to drive keys < 0,01 mm*

## Gauge for Drawbar Sensor Position
***length adjustable***




*To check position the drawbar shaft and to adjust the sensors to identify the drawbar position of spindle units.*
*Steps of 0,05 mm.*

| Order-No. | Taper Size | JS 10 |
|---|---|---|
| 76.773.025 | HSK25 A/C/E | 7,21 |
| 76.773.032 | HSK32 A/C/E | 8,92 |
| 76.773.040 | HSK40 A/C/E | 11,42 |
| 76.773.050 | HSK50 A/C/E | 14,13 |
| 76.773.063 | HSK63 A/C/E | 18,13 |

***Delivery:*** *Gauge for drawbar sensor with certificate in fitted wooden case.*

## Balancing Masters

*Used to verify the amount of unbalance present in a machine-tool spindle.*
*By clamping the Balancing Master in the spindle, the gripper fingers, drawbar and spring pack are held in position for more accurate balancing.*

| Order-No. | Taper Size HSK Form C |
|---|---|
| 72.555.200 | 25 |
| 72.560.200 | 32 |
| 72.565.200 | 40 |
| 72.570.200 | 50 |
| 72.575.200 | 63 |
| 72.580.200 | 80 |
| 72.585.200 | 100 |

***Includes:*** *Balancing master with certificate in fitted wooden case.*

***Re-calibration:*** *Please return gauge master to Diebold for annual recalibration.*

## Balancing Masters

*Used to verify the amount of unbalance present in a machine-tool spindle.*
*By clamping the Balancing Master in the spindle, the gripper fingers, drawbar and spring pack are held in position for more accurate balancing.*

| Order-No. | Taper Size SK |
|---|---|
| 72.050.200 | 30 |
| 72.060.200 | 40 |
| 72.070.200 | 50 |

***Includes:*** *Balancing master with certificate in fitted wooden case.*

***Re-calibration:*** *Please return gauge master to Diebold for annual recalibration.*

## Mechanical Pull Force Gauges

*Meticulously crafted mechanical gauge used to determine the amount of pull force being exerted on a toolholder in a spindle. Fatigued or damaged spring-packs, damaged or corroded internal components, or improper spindle cam angle, machining can result in potentially dangerously low pull force levels! In addition, runout and chatter will increase, and stiffness and repeatability will decrease. Our Mechanical Pull Force Gauge is accurate, robust, and cost-effective.*

| Minimum Suggested Drawbar Pull Force ISO 12164 | | Range of Diebold Pull Force Gauges |
|---|---|---|
| Taper Size HSK25 | 2,8 kN | 0,5 – 10 kN |
| Taper Size HSK32 | 5 kN | 1 – 15 kN |
| Taper Size HSK40 | 6,8 kN | 2 – 20 kN |
| Taper Size HSK50 | 11 kN | 2 – 25 kN |
| Taper Size HSK63 | 18 kN | 5 – 40 kN |
| Taper Size HSK80 | 28 kN | 10 – 50 kN |
| Taper Size HSK100 | 45 kN | 10 – 70 kN |
| Taper Size SK30 | 6 kN | 1 – 15 kN |
| Taper Size SK40 | 12 kN | 2 – 25 kN |
| Taper Size SK50 | 25 kN | 5 – 40 kN |

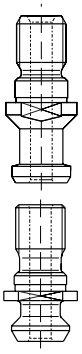
## Mechanical Pull Force Gauge

*With anlalog indicator, scale in kN – data transfer to PC or printer.*

| Order-No. | for Taper Size | for Taper Size |
|---|---|---|
| 76.785.025 | HSK A/C/E 25 | – |
| 76.785.032 | HSK A/C/E 32 | HSK B/D/F 40 |
| 76.785.040 | HSK A/C/E 40 | HSK B/D/F 50 |
| 76.785.050 | HSK A/C/E 50 | HSK B/D/F 63 |
| 76.785.063 | HSK A/C/E 63 | HSK B/D/F 80 |
| 76.785.080 | HSK A/C/E 80 | HSK B/D/F 100 |
| 76.785.100 | HSK A/C/E 100 | HSK B/D/F 125 |
| | | |
| 76.785.130 | SK30/CAT30 | – |
| 76.785.130.BT | BT30 | – |
| 76.785.140 | SK40/CAT40 | – |
| 76.785.140.BT | BT40 | – |
| 76.785.150 | SK50/CAT50 | BT50 |

***Includes:*** *Pull Force Gauge with certificate in fitted wooden case.*

***Re-calibration:*** *Please return gauge master to Diebold for annual recalibration.*



*All Pull Force Gauges with steep taper DIN/ANSI accept the pull stud of your machine. For BT 30 and BT 40 holders we offer short pullstuds for use of the Pull Force Gauge. Please order BT pull studs separate.*

## Accessory for digital Pull Force Gauge

| Order-No. | |
|---|---|
| 76.786.500 | *Data cable* ***for PC*** |
| 76.786.502 | *Data cable* ***for Printer*** |
| 76.786.505 | ***Printer*** |

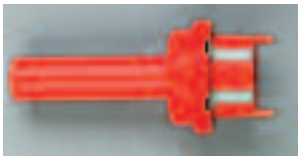
## Taper Cleaners for HSK Tool Tapers

*For cleaning HSK tool tapers.*
*Plastic body with leather inserts.*

| Order-No. | HSK Form A/C/E |
|---|---|
| 76.208.040 | 40 |
| 76.208.050 | 50 |
| 76.208.063 | 63 |

*More sizes on request*

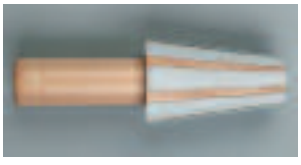
## Taper Cleaners for HSK Spindles



*For cleaning HSK spindle tapers.*
*Plastic body with leather inserts.*

| Order-No. | HSK Form A/C |
|---|---|
| 76.205.032 | 32 |
| 76.205.040 | 40 |
| 76.205.050 | 50 |
| 76.205.063 | 63 |
| 76.205.080 | 80 |
| 76.205.100 | 100 |

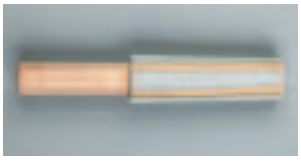
## Taper Cleaners for 7/24 Spindle Tapers (Steep Taper)



*For cleaning 7/24 (Steep Taper) spindle tapers.*
*Plastic body with leather inserts.*

| Order-No. | CAT Size |
|---|---|
| 76.200.030 | 30 |
| 76.200.040 | 40 |
| 76.200.050 | 50 |

## Taper Cleaners for Morse Taper Spindles



*For cleaning Morse style Spindle tapers.*
*Plastic body with leather inserts.*

| Order-No. | Taper Size |
|---|---|
| 76.200.001 | 1 |
| 76.200.002 | 2 |
| 76.200.003 | 3 |
| 76.200.004 | 4 |
| 76.200.005 | 5 |
| 76.200.006 | 6 |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