

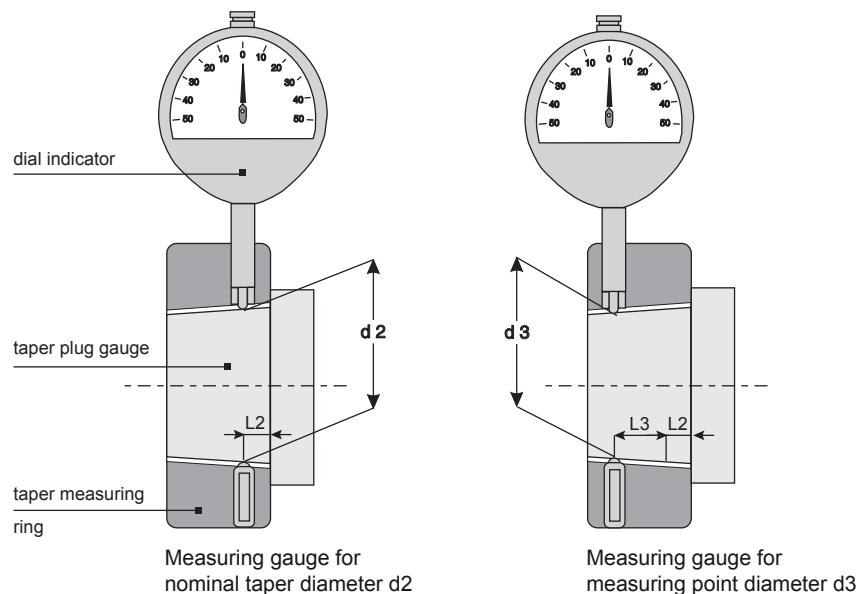
## HSK Measuring Gauges for Tool Holders and Spindles



### A Clever Technology for Intelligent Interfaces

As an interface between machine and tool, HSK requires thought in systems; HSK measuring gauges by KELCH are manufactured exactly according to this: They are based on calibrated and officially certified master gauges and are manufactured according to a specifically coordinated production process. This process guarantees constant high accuracy in all operating ranges.

# Measuring Gauges for HSK Tool Shanks for Mechanical Taper Measuring



Tool shank acc. to ISO 12164-1 type A, C and DIN 69 893 type E	Tool shank acc. to DIN 69 893 type B, D and F	Measuring gauge set Ref.no.	d2 acc. to ISO 12164-1		d3*		L2	L3
HSK 25	HSK 32	<b>280.019</b>	19.000	+ 0.006 + 0.004	18.1500	+ 0.004 + 0.002	2.5	8.5
HSK 32	HSK 40	<b>280.020</b>	24.007	+ 0.002 - 0.002	23.2755	+ 0.002 - 0.002	3.2	7.3
HSK 40	HSK 50	<b>280.021</b>	30.007	+ 0.002 - 0.002	29.0551	+ 0.002 - 0.002	4.0	4.5
HSK 50	HSK 63	<b>280.022</b>	38.009	+ 0.0025 - 0.0025	36.9068	+ 0.0025 - 0.0025	5.0	11.0
HSK 63	HSK 80	<b>280.023</b>	48.010	+ 0.003 - 0.003	46.5370	+ 0.003 - 0.003	6.3	14.7
HSK 80	HSK 100	<b>280.024</b>	60.012	+ 0.004 - 0.004	58.1082	+ 0.004 - 0.004	8.0	19.0
HSK 100	HSK 125	<b>280.025</b>	75.013	+ 0.004 - 0.004	72.6082	+ 0.004 - 0.004	10.0	24.0
HSK 125	HSK 160	<b>280.026</b>	95.016	+ 0.005 - 0.005	91.9600	+ 0.005 - 0.005	12.5	30.5
HSK 160		<b>280.027</b>	120.016	+ 0.005 - 0.005	116.0080	+ 0.005 - 0.005	16.0	40.0

## Use

For periodically direct comparison tests of HSK tool shanks. To obtain optimal benefits when using the HSK system.

## Standard Specification

Measuring gauge set in wooden box including taper plug gauge, taper measuring ring for nominal taper diameter d2 with dial indicator (scale value 0.001 mm), taper measuring ring for measuring point diameter d3 with dial indicator (scale value 0.001 mm) and certificate.

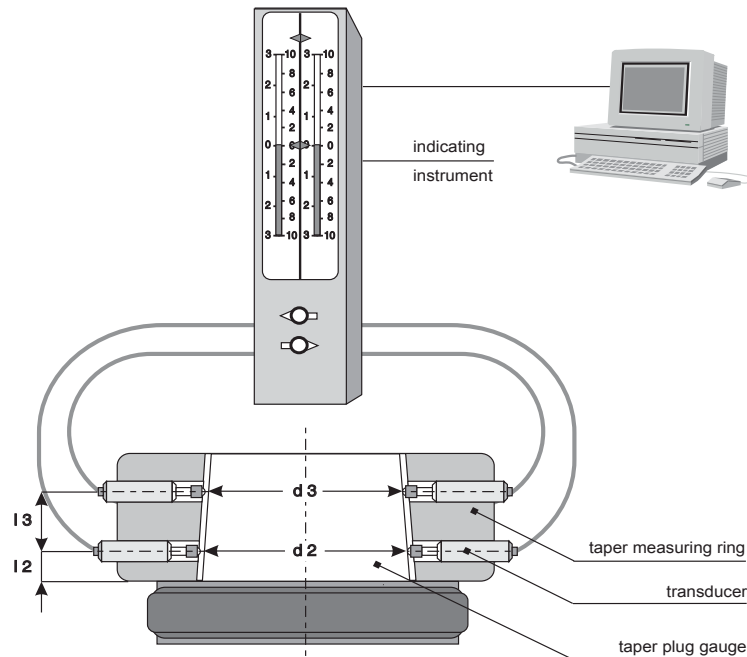
## Function

Both measuring gauges are set to zero with the calibrated taper plug gauge. At the comparison test of HSK tool shanks the deviations of the nominal taper diameter d2 or the measuring point diameter d3 are read off directly at the dial indicator.

## \*Note

Diameter d3 has been calculated with the distance dimension l2 + l3 and is not included in the ISO standard. HSK 25 is not standardized in ISO.

## Measuring Gauges for HSK Tool Shanks for Electronic Measuring (Differential System)



Tool shank acc. to ISO 12164-1 type A, C and DIN 69 893 type E	Tool shank acc. to DIN 69 893 type B, D and F	Measuring gauge set <b>Ref.no.</b>
HSK 25	HSK 32	<b>280.018</b>
HSK 32	HSK 40	<b>280.010</b>
HSK 40	HSK 50	<b>280.011</b>
HSK 50	HSK 63	<b>280.012</b>
HSK 63	HSK 80	<b>280.013</b>
HSK 80	HSK 100	<b>280.014</b>
HSK 100	HSK 125	<b>280.015</b>

### Indicating instrument - Technical data

Measuring range adjustable  $\pm 10$ ;  $\pm 30$ ;  $\pm 100$ ;  
 $\pm 300$ ;  $\pm 1000$

Indicator clips 4, adjustable over the  
entire scale range

Scale length 150 mm,  
300 divisions

Supply voltage 220 V

Dimensions 370 x 50 x 95 mm

**Ref.no. 280.001**

### Use

Gauges to measure tool shanks at determined measuring points in ratio to the contact face.

### Standard Specification

Measuring gauge set in wooden box with taper plug gauge and taper measuring ring with 4 transducers and certificate.

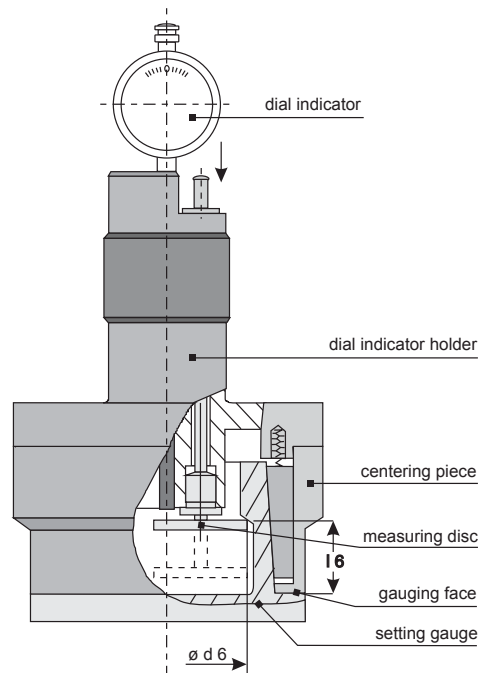
### Function

The measuring ring is provided with 4 inductive transducers. These are used for a differential measurement of the nominal taper diameter  $d_2$  to the nominal taper distance  $l_2$  and the measuring point diameter  $d_3$  to the measuring point distance  $l_3$ . Deviations to the measurements of the calibrated taper plug gauge are simultaneously indicated on the twin indicator columns.

### Note

By connecting the indicating device to a PC, the measuring results can be saved and evaluated.

# Measuring Gauges for HSK Tool Shanks for Measuring the 30° Clamping Slope



Tool shank acc. to ISO 12164-1 type A, C and DIN 69 893 type E	Tool shank acc. to DIN 69 893 type B, D and F	Measuring gauge set Ref.no.	l6 JS 10	d6
HSK 25	HSK 32	<b>281.008</b>	7.21	15
HSK 32	HSK 40	<b>281.000</b>	8.92	19
HSK 40	HSK 50	<b>281.001</b>	11.42	23
HSK 50	HSK 63	<b>281.002</b>	14.13	29
HSK 63	HSK 80	<b>281.003</b>	18.13	37
HSK 80	HSK 100	<b>281.004</b>	22.85	46
HSK 100	HSK 125	<b>281.005</b>	28.56	58
HSK 125	HSK 160	<b>281.006</b>	36.27	73
HSK 160		<b>281.007</b>	45.98	92

## Use

Gauge to measure the theoretical clamping shoulder measuring point at the 30° clamping slope.

## Standard Specification

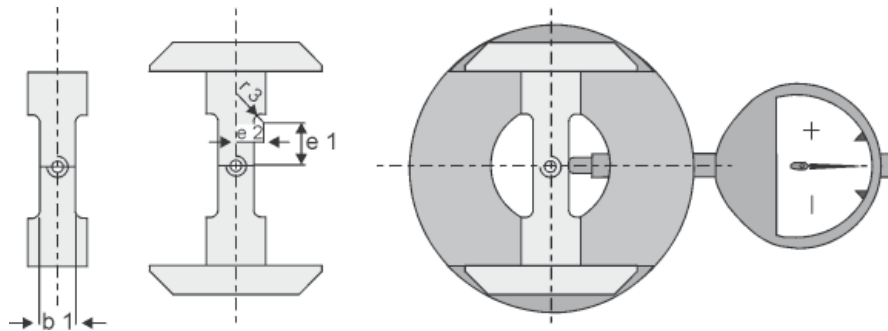
Measuring gauge set in wooden box with dial indicator holder, dial indicator (scale value 0.01 mm), centering piece and setting gauge.

## Function

With a calibrated setting gauge the distance of the clamping point l6 is to be adjusted at the dial indicator holder.

In order to read off the deviation on the dial indicator, the centering piece has to be put onto the tool taper and the dial indicator holder has to be inserted into the taper shank.

## Measuring Gauges for HSK Tool Shanks for Measuring the Driving Grooves



setting gauge for dial indicator

measuring gauge 1 for driving groove

gauge ring with dial indicator and measuring gauge 2 for driving grooves

Tool shank acc. to ISO 12164-1 type A and C	Measuring gauge set Ref.no.	Spares		b1 ± 0.04	e1	e2 -0.05	r3 ± 0.05
		Gauge 1	Gauge 2				
HSK 32	<b>283.011</b>	283.111	283.211	7.05	8.82	10.20	1.38
HSK 40	<b>283.012</b>	283.112	283.212	8.05	11.00	12.88	1.88
HSK 50	<b>283.013</b>	283.113	283.213	10.54	13.88	16.26	2.38
HSK 63	<b>283.014</b>	283.114	283.214	12.54	17.99	20.87	2.88
HSK 80	<b>283.015</b>	283.115	283.215	16.04	21.94	25.82	3.88
HSK 100	<b>283.016</b>	283.116	283.216	20.02	27.37	32.25	4.88
HSK 125	<b>283.017</b>	283.117	283.217	25.02	35.37	41.25	5.88
HSK 160	<b>283.018</b>	283.118	283.218	30.02	44.32	52.20	7.88

### Use

Gauge to measure the eccentricity of the driving groove width as well as the position and form of the groove with the radius to the hollow shank.

### Standard Specification

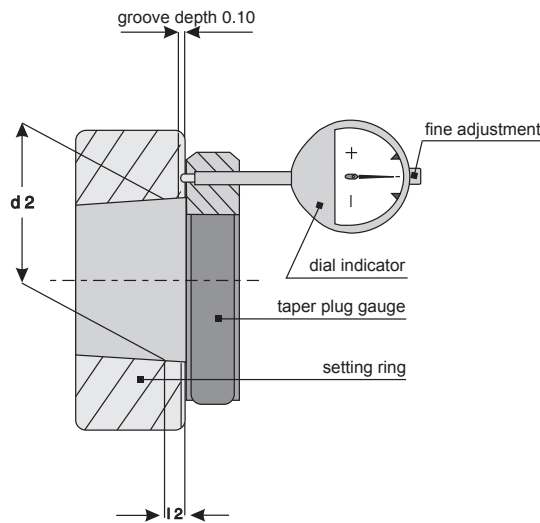
Measuring gauge set in wooden box including measuring ring with dial indicator (scale value 0.001 mm), measuring gauge for lower tolerance deviation and eccentricity measurement, measuring gauge for upper tolerance deviation and eccentricity measurement and setting gauge for dial indicator.

### Function

The setting gauge is to be put in the gauge ring and the dial indicator is to be set to zero (single adjustment). Then the measuring ring is put onto the HSK tool.

The measuring gauge 1 is used to measure the lower tolerance deviation of the driving groove, the measuring gauge 2 is used to measure the upper tolerance deviation.

# Measuring Gauges for HSK Spindles for Mechanical Taper Measuring



Spindle taper acc. to ISO 12164-2 type A, C and DIN 69 063 type E	Spindle taper acc. to DIN 69 063 type B, D and F	Measuring gauge set  Re.no.	d2		l2
HSK 25	HSK 32	<b>280.029</b>	19*	+ 0.003	2.5
HSK 32	HSK 40	<b>280.030</b>	23.998	+ 0.0015 - 0.0015	3.2
HSK 40	HSK 50	<b>280.031</b>	29.998	+ 0.0015 - 0.0015	4.0
HSK 50	HSK 63	<b>280.032</b>	37.998	+ 0.002 - 0.002	5.0
HSK 63	HSK 80	<b>280.033</b>	47.998	+ 0.002 - 0.002	6.3
HSK 80	HSK 100	<b>280.034</b>	59.997	+ 0.0025 - 0.0025	8.0
HSK 100	HSK 125	<b>280.035</b>	74.997	+ 0.003 - 0.003	10.0
HSK 125	HSK 160	<b>280.036</b>	94.996	+ 0.0035 - 0.0035	12.5
HSK 160		<b>280.037</b>	119.995	+ 0.0035 - 0.0035	16.0

## Use

Gauge to measure the inner taper of HSK spindles. Especially suitable for regular measurements.

## Standard Specification

Measuring gauge set in wooden box with taper plug gauge, setting ring, dial indicator (scale value 0.001 mm) and certificate.

## Function

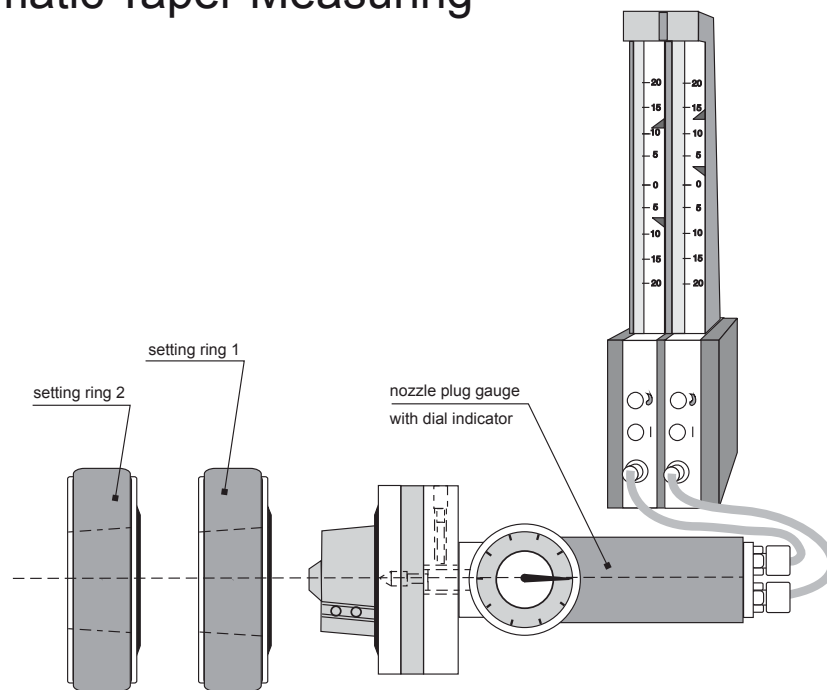
The measuring distance l2 (acc. to ISO 12164-2) in connection with the nominal taper diameter d2 is set to zero (0.00) with the setting ring, the taper plug gauge and the dial indicator. The HSK spindle to be measured will be compared with the data of the taper plug gauge and the dial indicator set to zero.

## Note

The groove at the flat contact surface of the setting ring (0.10) is necessary to measure the deviation at the HSK spindle being above the upper tolerance.

\* The dial indicator shows a distance tolerance of - 0.03 mm for the measurement of the spindle.

## Measuring Gauges for HSK Spindles for Pneumatic Taper Measuring



Spindle taper acc. to ISO 12164-2 type A, C and DIN 69 063 type E	Spindle taper acc. to DIN 69 063 type B, D and F	Measuring gauge set  Ref.no.
HSK 25	HSK 32	<b>282.007</b>
HSK 32	HSK 40	<b>282.001</b>
HSK 40	HSK 50	<b>282.002</b>
HSK 50	HSK 63	<b>282.003</b>
HSK 63	HSK 80	<b>282.004</b>
HSK 80	HSK 100	<b>282.005</b>
HSK 100	HSK 125	<b>282.006</b>

### Pneumatic indicating instrument - Technical data

Measuring range	30 µm
Scale value	1 µm
Amplification	5000 : 1
Scale length	200 µm
Operating pressure	3.5 - 10 bar

**Ref.no. 280.002**

### Use

Gauge to measure the inner taper tolerances of machine spindles, extensions and reducers. Especially important for the production of HSK inner tapers.

### Standard Specification

Measuring gauge set in wooden box including nozzle plug gauge with dial indicator and 2 setting rings.  
Pneumatic indicating instrument, air maintenance unit and coiled hose to be ordered separately.

### Function

Non-contact measuring with measuring nozzles. High measuring accuracy and repeatability (0.001 mm) of measuring results. The large scale divisions allow easy reading of measuring results. The measuring range can be increased with the built-in dial indicator (0.01 mm). This enables to use the gauge during pre-machining of inner taper.

### Accessories

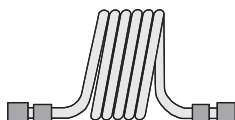


### Air maintenance unit for compressed-air

For a trouble-free, safe conditioning operation.

Air regulator with pressure gauge and sub-micron filter with pressure differential gauge

**Ref.no. 282.011**



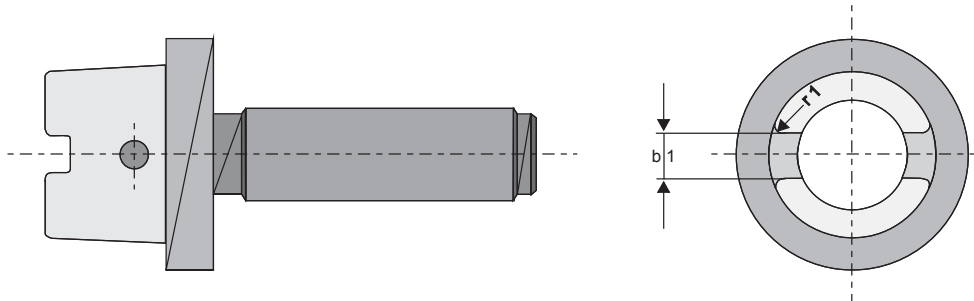
### Coiled hose (1 set = 2 pieces)

Between nozzle plug gauge and pneumatic indicating instrument. Swivel nuts at the end of the pipe with connecting thread M 10 x 0.75.

**1 m length**  
**2 m length**

**Ref.no. 282.013**  
**Ref.no. 282.012**

## Measuring Gauges for HSK Spindles for Measuring Driving Dogs



Spindle taper acc. to ISO 12164-2 type A and C	Measuring gauge set Ref.no.	b1 ± 0.05	r1 -0.05
HSK 32	284.001	6.8	1.5
HSK 40	284.002	7.8	2.0
HSK 50	284.003	10.3	2.5
HSK 63	284.004	12.3	3.0
HSK 80	284.005	15.8	4.0
HSK 100	284.006	19.78	5.8
HSK 125	284.007	24.78	6.0
HSK 160	284.008	29.78	8.0

### Use

Gauge to measure driving dogs and radii of HSK spindles.

### Standard Specification

2 measuring gauges in wooden box consisting of one go plug gauge and one no-go plug gauge.

### Function

When set into the spindle the go plug gauge has to be in contact with the plane surface, the no-go plug gauge must not be in contact with the plane surface.

### Note

The eccentricity of b1 (0.05 mm) is not taken into account.