

MADE TO MEASURE. MARGAGE



The latest information on MARGAGE products can be found on our website:

www.mahr.com, WebCode 10397

▶ | In 1871, at the foundation of the German Empire and during the introduction of the metric system, Mahr was already supplying dimensional standards to the weights and measurement office of several individual German states. Today, the measurement standards such as gage blocks are the basis of dimensional metrology, they are used as a setting standard for an indicating measuring instrument or applied in the calibration laboratory as a reference standard. Due to our accreditation from the PTB - Physikalisch-Technischen Bundesanstalt (German metrology institute providing scientific and technical services) and the careful selection of the materials we use, we can grant you the highest possible quality! | ◀

▶ | MarGage. Standards, Gages and Gage Blocks

| | |
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MarGage. Standards, Gages and Gage Blocks

RECTANGULAR GAGES BLOCKS

Application

- As comparison reference and utilization standards in the field of length measurement
- For checking gages and measuring instruments
- For setting devices of all types designed for length measurement and in particular their displays
- Can be used individually or in combinations by wringing several blocks together (see illustration)

Accuracy

The manufacturing process is based on DIN EN ISO 3650, Mahr gage blocks are produced with the utmost care.

Marking

Gage blocks of all grades are clearly and individually marked with an identification number.

Material

Mahr gage blocks are made either of stainless steel or of the ceramic compound zirconium oxide ZrO_2 (Circonimar).

Heat Expansion Coefficient

| | |
|------------|------------------------------|
| Steel | $11.5 \times 10^{-6} K^{-1}$ |
| Circonimar | $9.5 \times 10^{-6} K^{-1}$ |

Calibration Certificate

Gage blocks in sets are supplied with a Mahr calibration certificate stating deviations from the nominal size, this confirms the traceability to National Standards.

For single gage blocks Mahr calibration certificates are available on request.

A calibration certificate from the Mahr DKD Calibration Laboratory is recommended for gage blocks of calibration grade K in the range between 0.5 and 100 mm

Dimensions

| | Nominal dimension mm | Cross section mm |
|------|-------------------------|---------------------|
| from | 0.5 - 10 | 30 x 9 |
| over | 10 - 1000 | 35 x 9 |



DEUTSCHER KALIBRIERDIENST

DKD

GERMAN CALIBRATION SERVICE
Calibration Laboratory for Length
Measurement

ACCREDITED BY THE PHYSIKALISCH-
TECHNISCHE BUNDESANSTALT (PTB)

As a part of the German Calibration Service, the Mahr Calibration Laboratory calibrates steel and ceramic gage blocks of all brands in the range between 0.5 and 100 mm and issues calibration certificates. The gage block sets are marked with the official DKD calibration label.

Calibration is based on the contract concluded between the Physikalisch-Technischen Bundesanstalt in Braunschweig and the company Mahr.

Selection of Rectangular Gage Block Sets

There are three criteria's to be considered:

1 Calibration and Tolerance classes according to DIN EN ISO 3650

Four tolerances classes are available.

Calibration class K

As primary factory standard, particularly for the calibration of subsidiary test laboratories, e.g. for gage blocks of lower tolerance classes. Supplied on request with DKD calibration certificate, indicating the deviation from the nominal size for each gage block.

Calibration class 0

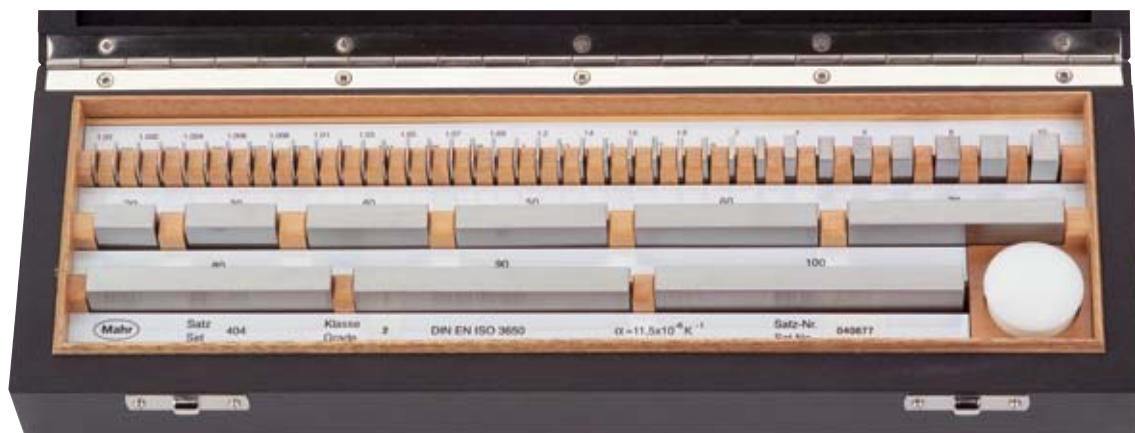
For maximum accuracy requirements. To be used as basic standards in test laboratories and precision inspection rooms, where other gage blocks and high accuracy measuring instruments are calibrated.

Tolerance class 1

For high standards of accuracy. As reference gage block for the inspection room. Designed to perform particularly accurate measurements. For setting indicating measuring instruments and for checking precision gages.

Tolerance class 2

For checking production gages of quality IT 6 and IT 7. For setting indicating measuring instruments and for checking accurate dimensions in the jig and tool industry.



404

2 Material

Steel or ceramic, depending on application.

3 Size of Sets

The gage block sets 404 or 404 C are very convenient, each set contains 46 gage blocks including one for each decimal. Larger sets are particularly suited to inspection rooms and gage testing facilities, since they offer the following advantages:

- A required dimension can be made up quicker as fewer gage blocks are needed
- Several gage block combinations can be formed from the same dimension
- Greater accuracy as individual deviations add up to smaller overall error
- Less wear as a given gage block is not used as often

Rectangular Gage Blocks made of Steel

Sets

- Vertical arrangement to save space
- Scope of supply: wooden case with clear labeling strips, Mahr calibration certificate (see Page 13-2)
- See the following table for nominal sizes, increments and tolerance classes:

| Catalog no. | Tolerance class | Order no. | Quantity per set | Nominal sizes mm | Increments mm | Gage blocks |
|-------------|-----------------|-----------|------------------|---|---------------|-------------|
| 402/K | K | 4800403 | 32 | 1.005 | - | 1 |
| 402/0 | 0 | 4800400 | | 1.01 - 1.09 | 0.01 | 9 |
| 402/1 | 1 | 4800401 | | 1.1 - 1.9 | 0.1 | 9 |
| 402/2 | 2 | 4800402 | | 1 - 9 | 1 | 9 |
| | | | | 10 - 30 | 10 | 3 |
| | | | | 50 | - | 1 |
| 404/K | K | 4800003 | 46 | 1.001 - 1.009 | 0.001 | 9 |
| 404/0 | 0 | 4800000 | | 1.01 - 1.09 | 0.01 | 9 |
| 404/1 | 1 | 4800001 | | 1.1 - 1.9 | 0.1 | 9 |
| 404/2 | 2 | 4800002 | | 1 - 9 | 1 | 9 |
| | | | | 10 - 100 | 10 | 10 |
| 406/K | K | 4800014 | 87 | 0.5 | - | 1 |
| 406/0 | 0 | 4800010 | | 1.001 - 1.009 | 0.001 | 9 |
| 406/1 | 1 | 4800011 | | 1.01 - 1.49 | 0.01 | 49 |
| 406/2 | 2 | 4800012 | | 1 - 9.5 | 0.5 | 18 |
| | | | | 10 - 100 | 10 | 10 |
| 408/K | K | 4800027 | 111 | 0.5 | - | 1 |
| 408/0 | 0 | 4800020 | | 1.001 - 1.009 | 0.001 | 9 |
| 408/1 | 1 | 4800021 | | 1.01 - 1.49 | 0.01 | 49 |
| 408/2 | 2 | 4800022 | | 1 - 24.5 | 0.5 | 48 |
| | | | | 25 - 100 | 25 | 4 |
| 409/K | K | 4800033 | 121 | 0.5 | - | 1 |
| 409/0 | 0 | 4800030 | | 1.001 - 1.009 | 0.001 | 9 |
| 409/1 | 1 | 4800031 | | 1.01 - 1.49 | 0.01 | 49 |
| 409/2 | 2 | 4800032 | | 1.6 - 1.9 | 0.1 | 4 |
| | | | | 1 - 24.5 | 0.5 | 48 |
| | | | | 25, 30, 40, 50, 60, 70, 75, 80, 90, 100 | | 10 |

Test Sets for Calipers

| Catalog no. | Tolerance class | Order no. | Quantity per set | Nominal sizes mm |
|-------------|-----------------|-----------|------------------|---|
| 411/1 | 1 | 4800343 | 5 | 30 / 41.3 / 131.4 / 243.5 / 281.2 |
| 411/2 | 2 | 4800344 | 5 | 30 / 41.3 / 131.4 / 243.5 / 281.2 |
| 415/1 | 1 | 4800339 | 6 | 30 / 41.3 / 131.4 / 243.5 / 281.2 / 481.1 |
| 415/2 | 2 | 4800340 | 6 | 30 / 41.3 / 131.4 / 243.5 / 281.2 / 481.1 |

Individual Rectangular Gage Blocks 417

- Tolerance classes K, 0, 1, 2
- Nominal sizes greater than 125 mm, the gage blocks are supplied in a wooden case
- Special sizes are available on request

| | |
|--------------------------|-------|
| Tolerance Class K | XX=34 |
| Tolerance Class 0 | XX=10 |
| Tolerance Class 1 | XX=12 |
| Tolerance Class 2 | XX=14 |

| | |
|--------------------------|-------|
| Tolerance Class K | XX=35 |
| Tolerance Class 0 | XX=11 |
| Tolerance Class 1 | XX=13 |
| Tolerance Class 2 | XX=15 |

| Nominal sizes | Order no. | Nominal sizes | Order no. | Nominal sizes | Order no. | Nominal sizes | Order no. |
|---------------|-----------|---------------|-----------|---------------|-----------|---------------|-----------|
| 0.50 | 480XX09 | 1.31 | 480XX59 | 10.5 | 480XX00 | 175 | 480XX41 |
| 1 | 480XX19 | 1.32 | 480XX60 | 11 | 480XX01 | 200 | 480XX42 |
| 1.001 | 480XX20 | 1.33 | 480XX61 | 11.5 | 480XX02 | 250 | 480XX43 |
| 1.002 | 480XX21 | 1.34 | 480XX62 | 12 | 480XX03 | 300 | 480XX44 |
| 1.003 | 480XX22 | 1.35 | 480XX63 | 12.5 | 480XX04 | 400 | 480XX46 |
| 1.004 | 480XX23 | 1.36 | 480XX64 | 13 | 480XX05 | 500 | 480XX48 |
| 1.005 | 480XX24 | 1.37 | 480XX65 | 13.5 | 480XX06 | 600 | 480XX49 |
| 1.006 | 480XX25 | 1.38 | 480XX66 | 14 | 480XX07 | 700 | 480XX50 |
| 1.007 | 480XX26 | 1.39 | 480XX67 | 14.5 | 480XX08 | 800 | 480XX51 |
| 1.008 | 480XX27 | 1.40 | 480XX68 | 15 | 480XX09 | 900 | 480XX52 |
| 1.009 | 480XX28 | 1.41 | 480XX69 | 15.5 | 480XX10 | 1000 | 480XX53 |
| 1.01 | 480XX29 | 1.42 | 480XX70 | 16 | 480XX11 | | |
| 1.02 | 480XX30 | 1.43 | 480XX71 | 16.5 | 480XX12 | | |
| 1.03 | 480XX31 | 1.44 | 480XX72 | 17 | 480XX13 | | |
| 1.04 | 480XX32 | 1.45 | 480XX73 | 17.5 | 480XX14 | | |
| 1.05 | 480XX33 | 1.46 | 480XX74 | 18 | 480XX15 | | |
| 1.06 | 480XX34 | 1.47 | 480XX75 | 18.5 | 480XX16 | | |
| 1.07 | 480XX35 | 1.48 | 480XX76 | 19 | 480XX17 | | |
| 1.08 | 480XX36 | 1.49 | 480XX77 | 19.5 | 480XX18 | | |
| 1.09 | 480XX37 | 1.5 | 480XX78 | 20 | 480XX19 | | |
| 1.10 | 480XX38 | 1.6 | 480XX79 | 20.5 | 480XX20 | | |
| 1.11 | 480XX39 | 1.7 | 480XX80 | 21 | 480XX21 | | |
| 1.12 | 480XX40 | 1.8 | 480XX81 | 21.5 | 480XX22 | | |
| 1.13 | 480XX41 | 1.9 | 480XX82 | 22 | 480XX23 | | |
| 1.14 | 480XX42 | 2 | 480XX83 | 22.5 | 480XX24 | | |
| 1.15 | 480XX43 | 2.5 | 480XX84 | 23 | 480XX25 | | |
| 1.16 | 480XX44 | 3 | 480XX85 | 23.5 | 480XX26 | | |
| 1.17 | 480XX45 | 3.5 | 480XX86 | 24 | 480XX27 | | |
| 1.18 | 480XX46 | 4 | 480XX87 | 24.5 | 480XX28 | | |
| 1.19 | 480XX47 | 4.5 | 480XX88 | 25 | 480XX29 | | |
| 1.20 | 480XX48 | 5 | 480XX89 | 30 | 480XX30 | | |
| 1.21 | 480XX49 | 5.5 | 480XX90 | 40 | 480XX31 | | |
| 1.22 | 480XX50 | 6 | 480XX91 | 50 | 480XX32 | | |
| 1.23 | 480XX51 | 6.5 | 480XX92 | 60 | 480XX33 | | |
| 1.24 | 480XX52 | 7 | 480XX93 | 70 | 480XX34 | | |
| 1.25 | 480XX53 | 7.5 | 480XX94 | 75 | 480XX35 | | |
| 1.26 | 480XX54 | 8 | 480XX95 | 80 | 480XX36 | | |
| 1.27 | 480XX55 | 8.5 | 480XX96 | 90 | 480XX37 | | |
| 1.28 | 480XX56 | 9 | 480XX97 | 100 | 480XX38 | | |
| 1.29 | 480XX57 | 9.5 | 480XX98 | 125 | 480XX39 | | |
| 1.30 | 480XX58 | 10 | 480XX99 | 150 | 480XX40 | | |

Rectangular Gage Blocks made of Ceramic



406 C

Features

- Resistant to both impact and breakage. Virtually no warping of material if surfaces become scratched or edges damaged. Longer retention of wringing ability
- Extremely durable, thus providing a long service life as well being highly robust compared to all other materials currently be used in metrology. Therefore the interval between inspections are distinctly greater
- The corrosion-resistant Circonimar is even without protective measures extremely resistant to alkalis, acids, oil, grinding fluid and other aggressive media
- Similar coefficient of expansion to steel, thus allowing unrestricted use even at unfavorable temperatures
- Non-magnetic Circonimar is anti-static, anti-magnetic and non-conductive. It does not attract dust or dirt and is suitable to use in the presence of magnetic fields
- Ideal for all applications. The outstanding features of all ceramic gage blocks from Mahr provide unrivalled flexibility in practical use. Circonimar is equally well suited to inspection-room conditions and the rigors of workshop applications
- Easy to handle. No material is easier to handle than Circonimar; Circonimar has excellent wringing properties, no corrosion, no need for lubrication, low weight and scratch resistant

Sets

- Vertical arrangement to save space
- Scope of supply: wooden case with clear labeling strips, Mahr calibration certificate (see Page 13-2)

Nominal sizes, increments and tolerance classes

Please refer to the table below:

| Catalog no. | Tolerance class | Order no. per set | Quantity mm | Nominal sizes mm | Increments blocks | Gage |
|----------------|-----------------|----------------------|--|---------------------|----------------------|------|
| 402 C/K | K | 4800094 | 32 | 1.005 | - | 1 |
| 402 C/0 | 0 | 4800095 | | 1.01 - 1.09 | 0.01 | 9 |
| 402 C/1 | 1 | 4800096 | | 1.1 - 1.9 | 0.1 | 9 |
| 402 C/2 | 2 | 4800097 | | 1 - 9 | 1 | 9 |
| | | | | 10 - 30 | 10 | 3 |
| | | | | 50 | - | 1 |
| 404 C/K | K | 4800088 | 46 | 1.001 - 1.009 | 0.001 | 9 |
| 404 C/0 | 0 | 4800008 | | 1.01 - 1.09 | 0.01 | 9 |
| 404 C/1 | 1 | 4800009 | | 1.1 - 1.9 | 0.1 | 9 |
| 404 C/2 | 2 | 4800004 | | 1 - 9 | 1 | 9 |
| | | | | 10 - 100 | 10 | 10 |
| 406 C/K | K | 4800016 | 87 | 0.5 | - | 1 |
| 406 C/0 | 0 | 4800018 | | 1.001 - 1.009 | 0.001 | 9 |
| 406 C/1 | 1 | 4800019 | | 1.01 - 1.49 | 0.01 | 49 |
| 406 C/2 | 2 | 4800017 | | 1 - 9.5 | 0.5 | 18 |
| | | | | 10 - 100 | 10 | 10 |
| 408 C/K | K | 4800025 | 111 | 0.5 | - | 1 |
| 408 C/0 | 0 | 4800028 | | 1.001 - 1.009 | 0.001 | 9 |
| 408 C/1 | 1 | 4800029 | | 1.01 - 1.49 | 0.01 | 49 |
| 408 C/2 | 2 | 4800026 | | 1 - 24.5 | 0.5 | 48 |
| | | | | 25 - 100 | 25 | 4 |
| 409 C/K | K | 4800036 | 121 | 0.5 | - | 1 |
| 409 C/0 | 0 | 4800038 | | 1.001 - 1.009 | 0.001 | 9 |
| 409 C/1 | 1 | 4800039 | | 1.01 - 1.49 | 0.01 | 49 |
| 409 C/2 | 2 | 4800037 | | 1.6 - 1.9 | 0.1 | 4 |
| | | | | 1 - 24.5 | 0.5 | 48 |
| | | | 25, 30, 40, 50, 60, 70, 75, 80, 90, 100 | | | |

Individual Rectangular Gage Blocks 417 C

- Tolerance classes K, 0, 1, 2
- Special sizes are available on request

Tolerance Class K XX=46
 Tolerance Class 0 XX=40
 Tolerance Class 1 XX=42
 Tolerance Class 2 XX=44

Tol. Class K XX=47
 Tol. Class 0 XX=41
 Tol. Class 1 XX=43
 Tol. Class 2 XX=45

| Nominal sizes | Order no. | Nominal sizes | Order no. | Nominal sizes | Order no. | Nominal sizes | Order no. |
|---------------|-----------|---------------|-----------|---------------|-----------|---------------|-----------|
| 0.50 | 480XX00 | 1.21 | 480XX40 | 1.7 | 480XX71 | 15 | 480XX00 |
| 1 | 480XX10 | 1.22 | 480XX41 | 1.8 | 480XX72 | 15.5 | 480XX01 |
| 1.001 | 480XX11 | 1.23 | 480XX42 | 1.9 | 480XX73 | 16 | 480XX02 |
| 1.002 | 480XX12 | 1.24 | 480XX43 | 2 | 480XX74 | 16.5 | 480XX03 |
| 1.003 | 480XX13 | 1.25 | 480XX44 | 2.5 | 480XX75 | 17 | 480XX04 |
| 1.004 | 480XX14 | 1.26 | 480XX45 | 3 | 480XX76 | 17.5 | 480XX05 |
| 1.005 | 480XX15 | 1.27 | 480XX46 | 3.5 | 480XX77 | 18 | 480XX06 |
| 1.006 | 480XX16 | 1.28 | 480XX47 | 4 | 480XX78 | 18.5 | 480XX07 |
| 1.007 | 480XX17 | 1.29 | 480XX48 | 4.5 | 480XX79 | 19 | 480XX08 |
| 1.008 | 480XX18 | 1.30 | 480XX49 | 5 | 480XX80 | 19.5 | 480XX09 |
| 1.009 | 480XX19 | 1.31 | 480XX50 | 5.5 | 480XX81 | 20 | 480XX10 |
| 1.01 | 480XX20 | 1.32 | 480XX51 | 6 | 480XX82 | 20.5 | 480XX11 |
| 1.02 | 480XX21 | 1.33 | 480XX52 | 6.5 | 480XX83 | 21 | 480XX12 |
| 1.03 | 480XX22 | 1.34 | 480XX53 | 7 | 480XX84 | 21.5 | 480XX13 |
| 1.04 | 480XX23 | 1.35 | 480XX54 | 7.5 | 480XX85 | 22 | 480XX14 |
| 1.05 | 480XX24 | 1.36 | 480XX55 | 8 | 480XX86 | 22.5 | 480XX15 |
| 1.06 | 480XX25 | 1.37 | 480XX56 | 8.5 | 480XX87 | 23 | 480XX16 |
| 1.07 | 480XX26 | 1.38 | 480XX57 | 9 | 480XX88 | 23.5 | 480XX17 |
| 1.08 | 480XX27 | 1.39 | 480XX58 | 9.5 | 480XX89 | 24 | 480XX18 |
| 1.09 | 480XX28 | 1.40 | 480XX59 | 10 | 480XX90 | 24.5 | 480XX19 |
| 1.10 | 480XX29 | 1.41 | 480XX60 | 10.5 | 480XX91 | 25 | 480XX20 |
| 1.11 | 480XX30 | 1.42 | 480XX61 | 11 | 480XX92 | 30 | 480XX21 |
| 1.12 | 480XX31 | 1.43 | 480XX62 | 11.5 | 480XX93 | 40 | 480XX22 |
| 1.13 | 480XX32 | 1.44 | 480XX63 | 12 | 480XX94 | 50 | 480XX23 |
| 1.14 | 480XX33 | 1.45 | 480XX64 | 12.5 | 480XX95 | 60 | 480XX24 |
| 1.15 | 480XX34 | 1.46 | 480XX65 | 13 | 480XX96 | 70 | 480XX25 |
| 1.16 | 480XX35 | 1.47 | 480XX66 | 13.5 | 480XX97 | 75 | 480XX26 |
| 1.17 | 480XX36 | 1.48 | 480XX67 | 14 | 480XX98 | 80 | 480XX27 |
| 1.18 | 480XX37 | 1.49 | 480XX68 | 14.5 | 480XX99 | 90 | 480XX28 |
| 1.19 | 480XX38 | 1.5 | 480XX69 | | | 100 | 480XX29 |
| 1.20 | 480XX39 | 1.6 | 480XX70 | | | | |

Pair of Protective Rectangular Gage Blocks 418 C

| Catalog no. | Tolerance class | Order no. | Quantity per set | Nominal sizes mm | Increments mm | Gage blocks |
|-------------|-----------------|-----------|------------------|------------------|---------------|-------------|
| 418 C/0 | 0 | 4800085 | 2 | 2 | — | 2 |
| 418 C/1 | 1 | 4800086 | 2 | 2 | — | 2 |

Test Set for Micrometers 419 C (DIN 863)

| Catalog no. | Tolerance class | Order no. | Quantity per set | Nominal sizes mm |
|-------------|-----------------|-----------|------------------|--|
| 419 C/1 | 1 | 4800090 | 10 | 2.5 / 5.1 / 7.7 / 10.3 / 12.9 / 15.0 / 17.6 / 20.2 / 22.8 / 25 plus 1 optical parallel dia. 30 mm |



Accessories for Rectangular Gage Blocks



Rectangular Gage Block Holder and Measuring Jaws Accessory Set 420

- To be used in conjunction with Gage Blocks for gaging both work pieces and fixtures
- To check, set and adjust setting gages and measuring instruments
- For scribing and marking
- Supplied with:
Wooden case

Order no. 4800100

Components include:

- 2 Pairs of Measuring Jaws 420 m
- 1 Scriber Point 420 a
- 1 Centering Point 420 z
- 3 Holder 420 h for Gages Blocks
clamping width 0-70, 0-120, 100-220 mm
- 1 Stand 420 f for Gage Block Holder

Individual Accessories

Components included in the 420 set are also individually available:

Measuring Jaws 420 m

Cross section 9 x 9 mm

For internal and external measurements in conjunction with a Gage Block Holder 420 h and Gage Blocks

| Thickness mm | Order no. |
|------------------|----------------|
| 2 x 2 mm = 4 mm | 4800110 |
| 2 x 5 mm = 10 mm | 4800111 |

Scriber Point 420 a cross section 9 x 9 mm

Centering Point 420 z cross section 9 x 9 mm

Order no. 4800113

Holder 420 h for Rectangular Gage Blocks

| Clamping width mm | Order no. |
|-------------------|----------------|
| 0 - 70 | 4800120 |
| 0 - 120 | 4800121 |
| 100 - 220 | 4800122 |
| 100 - 420 | 4800123 |
| 400 - 820 | 4800124 |

Stand 420 f for Holder 420 h*

Hardened and lapped. Height 25 mm
Tolerance $\pm 2 \mu\text{m}$

Order no. 4800114

* Clamping width up to 420 mm

Optical Flat 421

- To test the surface flatness on precision components or measuring instruments according to the interference principle
- Supplied with:
Wooden case



| Dia. mm | Thickness mm | Flatness deviation μm | Order no. |
|------------|-----------------|--------------------------|----------------|
| 45 | 11 | ≤ 0.1 | 4800140 |
| 100 | 20 | ≤ 0.1 | 4800135 |
| 150 | 30 | ≤ 0.1 | 4800136 |
| 300 | 50 | ≤ 0.4 | 4800137 |

Optical Parallel 421 P

| Dia. mm | Thickness mm | Flatness deviation μm | Parallelism deviation μm | Order no. |
|------------|-----------------|--------------------------|-----------------------------|----------------|
| 30 | 12 | ≤ 0.15 | 0.4 | 4800180 |

Contact Thermometer 422



- For checking/taking the temperature
- With silver contact base, gold-plated to prevent tarnishing
- With a holding magnet to be attached to the thermometer in vertical or on inclined surfaces
- U-shaped with clamping screw
- Supplied with:
Thermometer, magnet and wooden case

Readings 0.2°C
Measuring range 16-26°C

Order no. 4800170

Wooden Tongs 423

- To prevent heat transfer when handling gage blocks
- Self closing. See illustration below.

Order no. 4800142

Maintenance Set 424

- The most important equipment for inspecting and maintaining gage blocks
- Supplied with: Wooden case

Order no. 4800130



Components include:

Optical Flat 421

- To test the surface flatness of measuring surfaces according to the interference principle. Diameter 45 mm

Wooden Tongs 423

- To prevent heat transfer when handling gage block, self closing

Granite Lapping Stone

- To remove burr and other damage on surfaces of gage blocks. High accuracy version

Jar of special Vaseline

- To protect steel gage blocks against the rust

Brush and Suede Cloth

- To clean the gage blocks

Inch Gage Blocks

Features

- Long used as the practical standards of dimensional measurement in precision manufacturing. With accuracies, materials and manufacturing methods greatly refined, gage blocks are now of highest quality and precision.
 - As comparison reference and utilization standards in the field of length measurement.
 - For checking gages and measuring instruments.
 - Used individually or in combinations by wringing several blocks together.
- Mahr Federal gage blocks are available from stock individually and as full sets in inch (rectangular only).
- Sets are manufactured to Grade **0** only, which meet or exceed ASME B89.1.9-2002 specifications.
- Offered in steel to suit a wide range of service conditions. Steel blocks are extremely stable, hardened to Rc 62 minimum, and processed through a thorough seasoning cycle to relieve internal stresses before finish lapping.
- All sets blocks are serialized and supplied in a fitted storage case. Certification priced separately.

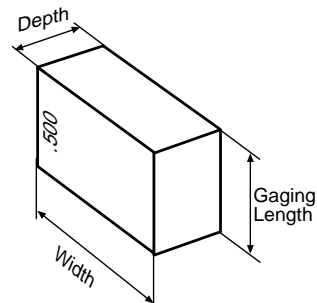


Mahr Federal Calibration System is certified to ISO-17025 and accredited by NVLAP and ISO-9001 certified by NQA

Technical Data

Dimensions – Standard Size Blocks

| Block Style | Gaging Length | Width mm / <i>inch</i> | Depth mm / <i>inch</i> |
|-----------------------|----------------|---------------------------|---------------------------|
| Inch – Rectangular | .400" or less | 30 / 1.181" | 9 / .352" |
| | .400" and over | 35 / 1.378" | 9 / .352" |



Inch Gage Blocks Set

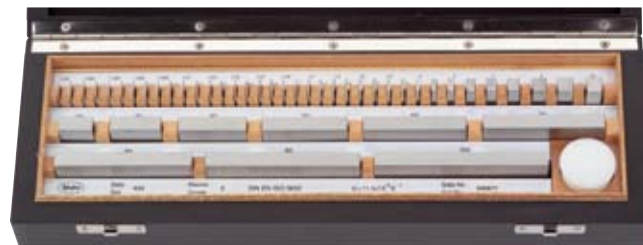
Ordering Information

Inch Rectangular

An 81 block set containing

| Series | Number of blocks | Size |
|--------|------------------|---------------|
| .0001" | 9 | .1001 - .1009 |
| .001" | 49 | .101 - .149 |
| .050" | 19 | .050 - .950 |
| 1.000" | 4 | 1.000 - 4.000 |

Order no. **2176361**



Inch Rectangular

An 49 block set containing

| Series | Number of blocks | Size |
|--------|------------------|---------------|
| .0001" | 9 | .1001 - 1.009 |
| .001" | 9 | .101 - .109 |
| .01" | 9 | .010 - .090 |
| .01" | 9 | .110 - .190 |
| .10" | 9 | .100 - .900 |
| 1.000" | 4 | 1.000 - 4.000 |

Order no. **2176362**

Technical Data

Grade 0 Length Tolerances

Nominal Length

| Greater than equal to | Less than or (1 μinch) | Unit 0.000001" |
|-----------------------|------------------------|----------------|
| 0 | 0.4 | ± 5 |
| 0.4 | 1 | ± 6 |
| 1 | 2 | ± 8 |
| 2 | 3 | ± 10 |
| 3 | 4 | ± 12 |

Pin Gages 426 according to DIN 2269



Features

- To be used as setting standards for indicating measuring instruments, testing the distances between axes, tapers and other work pieces in conjunction with gage blocks. Can also be used for determining pitch diameter of threads or pitch circle diameter on gears and serrations

Pin Gages 426 made from steel, without a handle from dia. 5.01 mm inscribed with diameter on the end face

Wear-resistant gage steel, hardened, multi-aged, ground and **lapped**
Grade 0, DIN 2269

Manufacturing tolerance $\pm 0.5 \mu\text{m}$

426/0

| Length | Increments | |
|---------|------------|-----------|
| | Order no. | Order no. |
| 0.01 mm | 0.01 mm | 0.001 mm |

Wear-resistant gage steel, hardened, multi-aged, ground and **lapped**
Grade 1, DIN 2269

Manufacturing tolerance $\pm 1.0 \mu\text{m}$

426/1

| Length | Increments | |
|---------|------------|-----------|
| | Order no. | Order no. |
| 0.01 mm | 0.01 mm | 0.001 mm |

Wear-resistant gage steel, hardened multi-aged and precision ground
Better than Grade 2, DIN 2269

Manufacturing tolerance $\pm 1.5 \mu\text{m}$

426/2

| Length | Increments | |
|---------|------------|-----------|
| | Order no. | Order no. |
| 0.01 mm | 0.01 mm | 0.01 mm |

| Ø mm | | 426/0 | | 426/1 | | 426/2 | |
|-------|---------|--------|-----------|--------|-----------|--------|-----------|
| | | Length | Order no. | Length | Order no. | Length | Order no. |
| 0.30 | - 0.49 | 30 | 4828103 | 40 | 4828113 | 40 | 4828133 |
| 0.50 | - 0.99 | 30 | 4828104 | 40 | 4828114 | 40 | 4828134 |
| 1.00 | - 2.99 | 60 | 4828105 | 70 | 4828115 | 70 | 4828135 |
| 3.00 | - 5.99 | 60 | 4828106 | 70 | 4828116 | 70 | 4828136 |
| 6.00 | - 9.99 | 60 | 4828107* | 70 | 4828117 | 70 | 4828137 |
| 10.00 | - 11.99 | | | 70 | 4828118 | 70 | 4828138 |
| 12.00 | - 13.99 | | | 70 | 4828119 | 70 | 4828139 |
| 14.00 | - 15.99 | | | 70 | 4828120 | 70 | 4828140 |
| 16.00 | - 18.99 | | | 70 | 4828121 | 70 | 4828141 |
| 19.00 | - 20.00 | | | 70 | 4828122 | 70 | 4828142 |

Pin Gages 426 G made from steel, with a handle

Wear-resistant gage steel, hardened, multi-aged, ground and **lapped**
Grade 0, DIN 2269

Manufacturing tolerance $\pm 0.5 \mu\text{m}$

426 G/0

| Effective Length | Increments | |
|------------------|------------|-----------|
| | Order no. | Order no. |
| 0.01 mm | 0.01 mm | 0.001 mm |

Wear-resistant gage steel, hardened, multi-aged, ground and **lapped**
Grade 1, DIN 2269

Manufacturing tolerance $\pm 1.0 \mu\text{m}$

426 G/1

| Effective Length | Increments | |
|------------------|------------|-----------|
| | Order no. | Order no. |
| 0.01 mm | 0.01 mm | 0.001 mm |

Wear-resistant gage steel, hardened multi-aged and precision ground
Better than Grade 2, DIN 2269

Manufacturing tolerance $\pm 1.5 \mu\text{m}$

426 G/2

| Effective Length | Increments | |
|------------------|------------|-----------|
| | Order no. | Order no. |
| 0.01 mm | 0.01 mm | 0.01 mm |

| Ø mm | | 426 G/0 | | 426 G/1 | | 426 G/2 | |
|------|---------|------------------|-----------|------------------|-----------|------------------|-----------|
| | | Effective Length | Order no. | Effective Length | Order no. | Effective Length | Order no. |
| 0.10 | - 0.19 | 28 | 4828151 | 33 | 4828161 | 33 | 4828171 |
| 0.20 | - 0.29 | 28 | 4828152 | 33 | 4828162 | 33 | 4828172 |
| 0.30 | - 0.49 | 28 | 4828153 | 33 | 4828163 | 33 | 4828173 |
| 0.50 | - 0.99 | 28 | 4828154 | 33 | 4828164 | 33 | 4828174 |
| 1.00 | - 2.99 | 57 | 4828155 | 62 | 4828165 | 62 | 4828175 |
| 3.00 | - 5.99 | 57 | 4828156 | 62 | 4828166 | 62 | 4828176 |
| 6.00 | - 10.00 | 57 | 4828157 | 62 | 4828167 | 62 | 4828177 |

Length of handle see Page 13-16 (426 D)

Accessories

Wooden case with plastic inlay for pin gages up to D = 10 mm

Number of pin gages

Order no.

max. 50 pin gages (without handle)

4827609

max. 50 pin gages (with handle)

4827610

max. 100 pin gages (without handle)

4827611

Pin Gage sets 426 S made of steel, without a handle in a high quality wooden box with pedestral



Technical Data

| | | | Wear-resistant gage steel, hardened, multi-aged, ground and lapped Grade 0, DIN 2269 | | | Wear-resistant gage steel, hardened, multi-aged, ground and lapped Grade 1, DIN 2269 | | | Wear-resistant gage steel, hardened multi-aged and precision ground Better than Grade 2, DIN 2269 | | |
|--------------|------------|----------|---|------------|----------|---|------------|----------|---|--|--|
| | | | Manufacturing tolerance $\pm 0.5 \mu\text{m}$ | | | Manufacturing tolerance $\pm 1.0 \mu\text{m}$ | | | Manufacturing tolerance $\pm 1.5 \mu\text{m}$ | | |
| dia. mm | Increments | Quantity | Order no. | Increments | Quantity | Order no. | Increments | Quantity | Order no. | | |
| 1.00 - 10.00 | | | | 0.1 | 91 | 4828190 | 0.1 | 91 | 4828210 | | |
| 0.10 - 0.50 | 0.01 | 41 | 4828181 | 0.01 | 41 | 4828191 | 0.01 | 41 | 4828211 | | |
| 0.50 - 1.00 | 0.01 | 51 | 4828182 | 0.01 | 51 | 4828192 | 0.01 | 51 | 4828212 | | |
| 0.10 - 1.00 | 0.01 | 91 | 4828183 | 0.01 | 91 | 4828193 | 0.01 | 91 | 4828213 | | |
| 1.00 - 2.00 | 0.01 | 101 | 4828184 | 0.01 | 101 | 4828194 | 0.01 | 101 | 4828214 | | |
| 2.00 - 3.00 | | | | 0.01 | 101 | 4828195 | 0.01 | 101 | 4828215 | | |
| 3.00 - 4.00 | | | | 0.01 | 101 | 4828196 | 0.01 | 101 | 4828216 | | |
| 4.00 - 5.00 | | | | 0.01 | 101 | 4828197 | 0.01 | 101 | 4828217 | | |
| 5.00 - 6.00 | | | | 0.01 | 101 | 4828198 | 0.01 | 101 | 4828218 | | |
| 6.00 - 7.00 | | | | 0.01 | 101 | 4828199 | 0.01 | 101 | 4828219 | | |
| 7.00 - 8.00 | | | | 0.01 | 101 | 4828200 | 0.01 | 101 | 4828220 | | |
| 8.00 - 9.00 | | | | 0.01 | 101 | 4828201 | 0.01 | 101 | 4828221 | | |
| 9.00 - 10.00 | | | | 0.01 | 101 | 4828202 | 0.01 | 101 | 4828222 | | |

Pin gage lengths are the same as the individual pin gages

Individual Plug Gages 426 D made from steel, with a handle

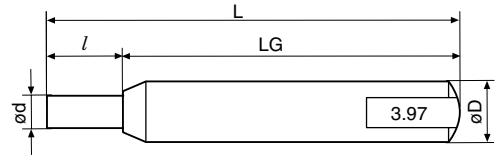


Features

- For testing diameters of small bores
- To be used as setting standards for indicating measuring instruments, testing the distances between axes, grooves and slots on work pieces in conjunction with gage blocks
- Unbreakable plastic handle inscribed with the diameter

Technical Data

Wear-resistant gage steel, hardened, multi-aged, ground and **lapped** plastic handle inscribed with the diameter.
 Manufacturing tolerance $\pm 0.5 \mu\text{m}$
 Increment 0.01 mm



| dia. d mm | Order no. | Dimensions | | | | | |
|--------------|----------------|------------|---------|------|--------|----|------|
| | | dia. d mm | | l mm | dia. D | LG | L |
| 0.06 - 0.09 | 4828230 | 0.06 | - 0.30 | 2.0 | 4 | 32 | 34 |
| 0.10 - 0.19 | 4828231 | > 0.30 | - 0.50 | 3.5 | 4 | 32 | 35.5 |
| 0.20 - 0.29 | 4828232 | > 0.50 | - 1.50 | 5.0 | 4 | 32 | 37 |
| 0.30 - 0.49 | 4828233 | > 1.50 | - 2.00 | 6.0 | 4 | 32 | 38 |
| 0.50 - 0.99 | 4828234 | > 2.00 | - 3.50 | 8.0 | 5 | 35 | 43 |
| 1.00 - 2.99 | 4828235 | > 3.50 | - 6.00 | 10.0 | 8 | 45 | 55 |
| 3.00 - 5.99 | 4828236 | > 6.00 | - 8.00 | 14.0 | 10 | 45 | 59 |
| 6.00 - 10.00 | 4828237 | > 8.00 | - 10.00 | 18.0 | 10 | 45 | 63 |

Plug Gage Sets 426 DS made from steel, with a handle in a high quality wooden box with pedestral

Technical Data

Wear-resistant gage steel, hardened, multi-aged, ground and **lapped** plastic handle inscribed with the diameter.
 Manufacturing tolerance $\pm 0.5 \mu\text{m}$

Supplied with: Wooden case with plastic inlay

| dia. mm | Increment | Quantity | Length | Order no. | dia. mm | Increment | Quantity | Length | Order no. |
|-------------|-----------|----------|--------|----------------|--------------|-----------|----------|--------|----------------|
| 0.06 - 0.50 | 0.01 | 45 | 2* | 4825000 | 5.01 - 5.50 | 0.01 | 50 | 10 | 4825010 |
| 0.51 - 1.00 | 0.01 | 50 | 5 | 4825001 | 5.51 - 6.00 | 0.01 | 50 | 10 | 4825011 |
| 1.01 - 1.50 | 0.01 | 50 | 5 | 4825002 | 6.01 - 6.50 | 0.01 | 50 | 14 | 4825703 |
| 1.51 - 2.00 | 0.01 | 50 | 6 | 4825003 | 6.51 - 7.00 | 0.01 | 50 | 14 | 4825704 |
| 2.01 - 2.50 | 0.01 | 50 | 8 | 4825004 | 7.01 - 7.50 | 0.01 | 50 | 14 | 4825705 |
| 2.51 - 3.00 | 0.01 | 50 | 8 | 4825005 | 7.51 - 8.00 | 0.01 | 50 | 14 | 4825706 |
| 3.01 - 3.50 | 0.01 | 50 | 8 | 4825006 | 8.01 - 8.50 | 0.01 | 50 | 18 | 4825707 |
| 3.51 - 4.00 | 0.01 | 50 | 10 | 4825007 | 8.51 - 9.00 | 0.01 | 50 | 18 | 4825708 |
| 4.01 - 4.50 | 0.01 | 50 | 10 | 4825008 | 9.01 - 9.50 | 0.01 | 50 | 18 | 4825709 |
| 4.51 - 5.00 | 0.01 | 50 | 10 | 4825009 | 9.51 - 10.00 | 0.01 | 50 | 18 | 4825710 |

*dia. > 0.3 mm = 3.5 mm long

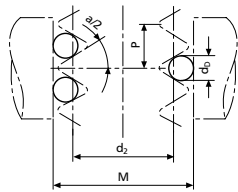
Thread Pin Gages 426 M in holders 426 A with an eyelet



426 M



426 A



Features

426 M

- For determining pitch diameter of external threads according to the three-wire method
 - In conjunction with micrometers, indicating measuring instruments or measuring machines
 - Each pair consists of: 1 holder with 1 pin gage and 1 holder with 2 pin gages
 - Holder has a satin chrome finish, the retainer ring can be locked yet the measuring spindle can still rotate
- Manufacturing tolerance $\pm 0.5 \mu\text{m}$
 Mounting hole 7.5 mm
 (Mounting hole 6.35 mm = 1/4", 6.5 mm and 8 mm on request)

426 MS

Set of thread Pin Gages in Diameter 0.17 - 3.2 mm
 Holder consists of: Delivered in a wooden box
 18 Holder Pairs 426 M

Order no.

4820000
4820003

Mounting hole 7.5 mm
 Mounting hole 6.5 mm

426 A

- For determining pitch diameter of external threads according to the three-wire method
 - Designed to be suspended over a test specimen
 - Set consists of 3 Pin Gages
- Manufacturing tol. $\pm 0.5 \mu\text{m}$
 Pin gage length 32 mm

Technical Data

| Pin Gage | Order no. | | | for thread pitch | | | |
|----------|---------------------------|---------------------------|----------------|------------------|---------------------------|------------------------------|-----------------|
| | 426 M Pair dia. 7.5 mm | 426 M Pair dia. 6.5 mm | 426 A Set | Metric mm | Whitworth range tpi | American UST range tpi | Trapezoid mm |
| 0.17 | 4820010 | 4820132 | 4821000 | 0.25 | 0.3 | | |
| 0.195 | 4820011 | 4820149 | 4821001 | | | 80 | |
| 0.22 | 4820012 | 4820133 | 4821002 | 0.35 | | 72 | |
| 0.25 | 4820013 | 4820131 | 4821003 | 0.4 | | 64 | |
| 0.29 | 4820014 | 4820134 | 4821004 | 0.45 | 0.5 | 56 | |
| 0.335 | 4820015 | 4820135 | 4821005 | 0.6 | | 48 | |
| 0.39 | 4820016 | 4820150 | 4821006 | | | | |
| 0.455 | 4820017 | 4820137 | 4821007 | 0.7 | 0.75 | 0.8 | |
| 0.53 | 4820018 | 4820151 | 4821008 | | | | |
| 0.62 | 4820019 | 4820139 | 4821009 | 1 | | | |
| 0.725 | 4820020 | 4820140 | 4821010 | 1.25 | | | |
| 0.895 | 4820021 | 4820141 | 4821011 | 1.5 | | | |
| 1,1 | 4820022 | 4820142 | 4821012 | 1.75 | | | |
| 1.35 | 4820023 | 4820143 | 4821013 | 2 | | | 2 |
| 1.65 | 4820024 | 4820144 | 4821014 | 2.5 | | | |
| 2.05 | 4820025 | 4820145 | 4821015 | 3 | 3.5 | | |
| 2.55 | 4820026 | 4820146 | 4821016 | 4 | 4.5 | | |
| 3.2 | 4820027 | 4820147 | 4821017 | 5 | 5.5 | | |
| 4 | *4820028 | *4820152 | 4821018 | 6 | | | |

* These holder pairs require the use of a 3 mm gage block for the holder with 2 pin gages to enlarge the measuring face. This gage block is inserted into the holder recess provided.

Setting Standards for indicating measuring instruments

AGD Masters



Master Rings

- Traceable certification and calibration available on request.
- Lapped to size and polished.
- Non-gaging areas black oxidized — ring faces ground.
- Meet all requirements of ANSI Specification B47.1-1988
- Manufactured in accordance with ANSI Specification B89.1.6-1984.

Master Plugs

- Traceable certification and calibration available on request.
- Stabilized and hardened.
- 100 % usable gaging surface.
- Ends ground square
- Lapped finish.

Master Discs AGD Style 3

- Traceable certification and calibration available on request.
- Lapped to size and polished.
- Non-gaging areas black oxidized — ring faces ground.
- Meet all requirements of ANSI Specification B47.1-1988
- Manufactured in accordance with ANSI Specification B89.1.5.
- Furnished with clear insulators.
- All dimensions are AGD style 3.

Setting Standards for indicating measuring instruments

Ring Gages 355 E



Features

- Special wear-resistant gage steel. Hardened and lapped

| | |
|---------------------------------|------------------|
| Dimensions | DIN 2250, Type C |
| Manufacturing tolerance | DIN 2250 |
| Uncertainty of actual deviation | 1/2 IT 1 |
| Nominal diameter | 1 - 200 mm |

Diameter increments 1 mm

| ø mm | Order no. | ø mm | Order no. | ø mm | Order no. | ø mm | Order no. | ø mm | Order no. | ø mm | Order no.* |
|------|-----------|------|-----------|------|-----------|------|-----------|------|-----------|----------|------------|
| 1 | 4710006 | 21 | 4710041 | 41 | 4710061 | 61 | 4710081 | 81 | 4710101 | >100-105 | 4714201* |
| 2 | 4710010 | 22 | 4710042 | 42 | 4710062 | 62 | 4710082 | 82 | 4710102 | >105-110 | 4714202* |
| 3 | 4710014 | 23 | 4710043 | 43 | 4710063 | 63 | 4710083 | 83 | 4710103 | >110-115 | 4714203* |
| 4 | 4710018 | 24 | 4710044 | 44 | 4710064 | 64 | 4710084 | 84 | 4710104 | >115-120 | 4714204* |
| 5 | 4710020 | 25 | 4710045 | 45 | 4710065 | 65 | 4710085 | 85 | 4710105 | >120-124 | 4714205* |
| 6 | 4710022 | 26 | 4710046 | 46 | 4710066 | 66 | 4710086 | 86 | 4710106 | >125-130 | 4714206* |
| 7 | 4710024 | 27 | 4710047 | 47 | 4710067 | 67 | 4710087 | 87 | 4710107 | >130-135 | 4714207* |
| 8 | 4710026 | 28 | 4710048 | 48 | 4710068 | 68 | 4710088 | 88 | 4710108 | >135-140 | 4714208* |
| 9 | 4710028 | 29 | 4710049 | 49 | 4710069 | 69 | 4710089 | 89 | 4710109 | >140-145 | 4714209* |
| 10 | 4710030 | 30 | 4710050 | 50 | 4710070 | 70 | 4710090 | 90 | 4710110 | >145-150 | 4714210* |
| 11 | 4710031 | 31 | 4710051 | 51 | 4710071 | 71 | 4710091 | 91 | 4710111 | >150-155 | 4714211* |
| 12 | 4710032 | 32 | 4710052 | 52 | 4710072 | 72 | 4710092 | 92 | 4710112 | >155-160 | 4714212* |
| 13 | 4710033 | 33 | 4710053 | 53 | 4710073 | 73 | 4710093 | 93 | 4710113 | >160-165 | 4714213* |
| 14 | 4710034 | 34 | 4710054 | 54 | 4710074 | 74 | 4710094 | 94 | 4710114 | >165-170 | 4714214* |
| 15 | 4710035 | 35 | 4710055 | 55 | 4710075 | 75 | 4710095 | 95 | 4710115 | >170-174 | 4714215* |
| 16 | 4710036 | 36 | 4710056 | 56 | 4710076 | 76 | 4710096 | 96 | 4710116 | >175-180 | 4714216* |
| 17 | 4710037 | 37 | 4710057 | 57 | 4710077 | 77 | 4710097 | 97 | 4710117 | >180-185 | 4714217* |
| 18 | 4710038 | 38 | 4710058 | 58 | 4710078 | 78 | 4710098 | 98 | 4710118 | >185-190 | 4714218* |
| 19 | 4710039 | 39 | 4710059 | 59 | 4710079 | 79 | 4710099 | 99 | 4710119 | >190-195 | 4714219* |
| 20 | 4710040 | 40 | 4710060 | 60 | 4710080 | 80 | 4710100 | 100 | 4710120 | >195-200 | 4714220* |
| | | | | | | | | 125 | 4710121 | 175 | 4710122 |

* When placing an order please inform us of the diameter

Setting Standards for indicating measuring instruments

Ring Gages 355 E



Features

- Special wear-resistant gage steel. Hardened and lapped

| | |
|---------------------------------|------------------|
| Dimensions | DIN 2250, Type C |
| Manufacturing tolerance | DIN 2250 |
| Uncertainty of actual deviation | 1/2 IT 1 |
| Nominal diameter | 1 - 200 mm |

Diameter increments 0,001 mm

| ø mm | Order no.* | ø mm | Order no.* | ø mm | Order no.* | ø mm | Order no.* | ø mm | Order no.* |
|--------|----------------|--------|----------------|----------|----------------|----------|----------------|----------|----------------|
| 1-1,8 | 4732600 | >35-40 | 4732607 | >80-85 | 4732616 | >125-130 | 4732638 | >170-175 | 4732629 |
| >1,8-3 | 4732641 | >40-45 | 4732608 | >85-90 | 4732617 | >130-135 | 4732623 | >175-180 | 4732630 |
| >3-5 | 4732642 | >45-50 | 4732609 | >90-95 | 4732618 | >135-140 | 4732639 | >180-185 | 4732631 |
| >5-10 | 4732635 | >50-55 | 4732610 | >95-100 | 4732619 | >140-145 | 4732624 | >185-190 | 4732632 |
| >10-15 | 4732602 | >55-60 | 4732611 | >100-105 | 4732620 | >145-150 | 4732640 | >190-195 | 4732633 |
| >15-20 | 4732603 | >60-65 | 4732612 | >105-110 | 4732636 | >150-155 | 4732625 | >195-200 | 4732634 |
| >20-25 | 4732604 | >65-70 | 4732613 | >110-115 | 4732621 | >155-160 | 4732626 | | |
| >25-32 | 4732605 | >70-75 | 4732614 | >115-120 | 4732637 | >160-165 | 4732627 | | |
| >32-35 | 4732606 | >75-80 | 4732615 | >120-125 | 4732622 | >165-170 | 4732628 | | |

* When placing an order please inform us of the diameter

Calibration Services

International Standards require complete documentation and calibration of all gaging instruments. Mahr Federal Inc., as well as being a manufacturer of quality dimensional measuring instruments, is an established primary source or high accuracy dimensional measurement services.

Mahr Federal offers an inspection and recalibration program for dimensional standards including:

- gage blocks / master rings / master discs and plugs / masterballs (roundness)
- cylindrical form and precision reference specimens surface roughness standards.



For these services, we have created an ideal environment - a metrology laboratory in Providence, Rhode Island that is ranked as one of the world's finest.:

- High quality measurements - 0.06 micron / 2.3 microinch uncertainty of measurement on gage blocks (up to 50 mm / 2" long).
- All measurements traceable to the Standards of the United States.
- Grand Masters/Primary standards used in our Measurement Center have been certified by NIST.
- Calibration system is certified to ISO-9001:2008 by NQA, USA and accredited to ISO 17025 NVLAP Lab Code 200605-0.
- We offer Fast turnaround and competitive prices.



Mahr Federal also specializes in the calibration and certification of the following gages including:

- Dial, Digital & Test Indicators
- Mikrokators®
- Micrometers
- Dial & Vernier Calipers
- Pin & Radius Gages
- Snaps, I.D. / O.D. & Bore Gages
- Dimentron® Plugs
- Plug & Ring Gages
- Groove, Caliper, Thickness
- Air Gages & Magnification Kits
- Electronic Amplifiers & Gage Heads
- Surface Finish Gages
- Level Systems

