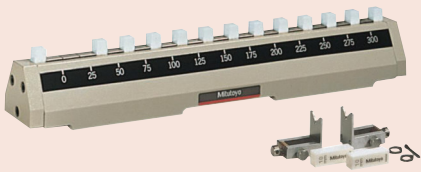
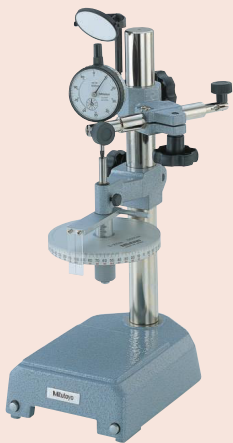


Height Masters  
Page 314



Check Masters  
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Calibration Tools  
Page 322

# Height Masters

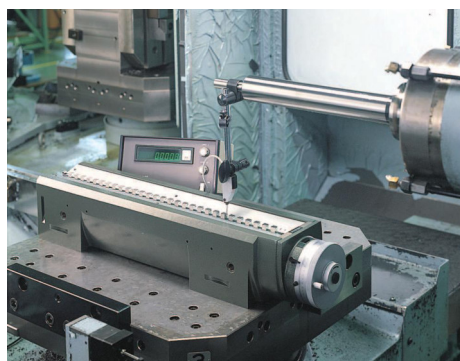
## Series 515

This height master offers you the following benefits:

- You can use it to calibrate and set height gauges and other measuring instruments.
- Models with the staggered arrangement of blocks have two measuring faces on the same level, one facing up and the other down.
- It is supplied in a fitted wooden case.



515-520



Using in horizontal orientation

### Metric

No.	Range [mm]	Graduation [mm]	Block step	Feed error	Retrace error	Mass [kg]
515-520	5 - 610	0,001	10 mm straight	±1,2 μm	1,2 μm	45
515-523	5 - 1010	0,001	10 mm straight	±1,5 μm	1,5 μm	63,5

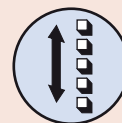
### Specifications

Micrometer adjustment	20 mm
Micrometer feed	0,5 mm
Block pitch accuracy	Range ≤ 310 mm: ±1,5 μm 310 < range ≤ 610 mm: ±2,5 μm 610 < range ≤ 1010 mm: ±3,5 μm
Parallelism of blocks	Range ≤ 610 mm: 1,5 μm 610 < range ≤ 1010 mm: 2 μm

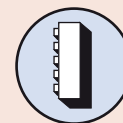
### Optional accessories

No.	Description
515-110	Auxiliary Block Kit for Bore Gauge, for 515-520/515-523
900574	Supporting Base for Vertical Operation, for Height Master

900574 : supplied as a standard for 515-523



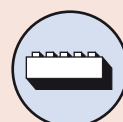
Single-row 10 mm blocks (movable)



Vertical orientation



Riser block (optional)



Horizontal orientation



900574 (optional)  
Supporting base for vertical operation

# Digital Height Masters



## Series 515

This is a standard model with a digital display, that offers you the following benefits:

- It gives you all the essential specifications required for a versatile height standard.
- You can use it to calibrate and set height gauges and other measuring instruments.
- Models have two measuring faces on the same level, one facing up and the other down.
- It is supplied in a fitted wooden case



515-374

### Metric

No.	Range [mm]	Graduation [mm]	Digital step	Block step	Feed error	Retrace error	Mass [kg]
515-374	10 - 310	0,002	0,001 mm	20 mm staggered	±2 µm	2 µm	9,5
515-376	10 - 460	0,002	0,001 mm	20 mm staggered	±2 µm	2 µm	13,6
515-378	10 - 610	0,002	0,001 mm	20 mm staggered	±2,5 µm	2,5 µm	16

Functions	Series 515
DATA (output with cable) / HOLD (display value)	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Data output	●
PRESET	●
ABS / INC (INC ZERO)	●

### Specifications

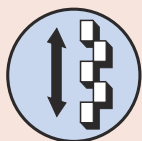
Power supply	2 batteries SR-44
Micrometer adjustment	20 mm
Micrometer feed	0,5 mm
Block pitch accuracy	Range ≤ 310 mm: ±1,5 µm 310 < range ≤ 450 mm: ±2,5 µm 450 < range ≤ 610 mm: ±3,5 µm
Parallelism of blocks	Range ≤ 310 mm: 2 µm 310 < range ≤ 610 mm: 2,5 µm
Battery life	Approx. 1,8 years

### Optional accessories

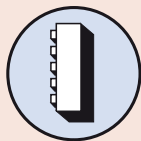
No.	Description
515-111	Auxiliary Block Kit for Bore Gauge, for 515-374/515-376/515-378
959149	Digimatic Cable, Straight, Data Button, 1 m
959150	Digimatic Cable, Straight, Data Button, 2 m
06AFM380C	USB Input Tool Direct (Digimatic to USB), 2m Cable, Digimatic/Digimatic 2, Straight, with Data Button
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD790C	Connection Cable C for U-WAVE, Straight, with Data Button

### Consumable spares

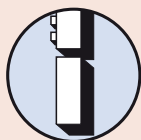
No.	Description
63AAA800	Battery SR44 1,5 V



Staggered 20 mm blocks (movable)



Vertical orientation



Riser block (optional)

# Universal Height Masters

## Series 515

This Universal Height Master offers you the following benefits:

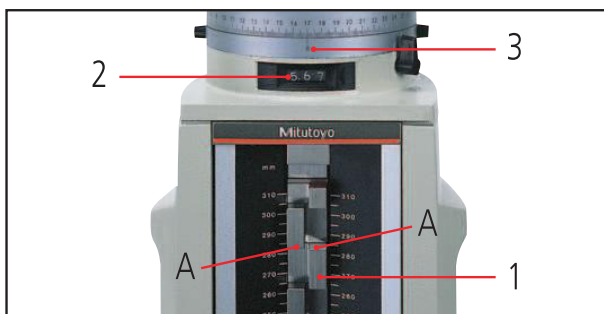
- It is designed for both vertical and horizontal orientations, enabling you to carry out a wide range of applications such as accuracy checking of machine tool table movements.
- It is supplied in a fitted wooden case.



515-322

### Metric

No.	Range [mm]	Graduation [mm]	Block step	Feed error	Retrace error	Mass [kg]
515-322	5 - 310	0,001	20 mm staggered	±1 μm	1 μm	23



- Height A
1. Scale 280 mm
  2. Counter 5.67 mm
  3. Thimble 0 mm

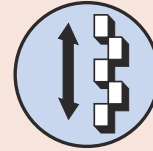
285.67 mm

### Specifications

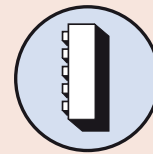
Micrometer adjustment	20 mm
Micrometer feed	0,5 mm
Block pitch accuracy	±1,5 μm
Parallelism of blocks	1 μm

### Optional accessories

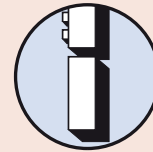
No.	Description
515-112	Auxiliary Block Kit for Bore Gauge, for 515-322



Staggered 20 mm blocks (movable)

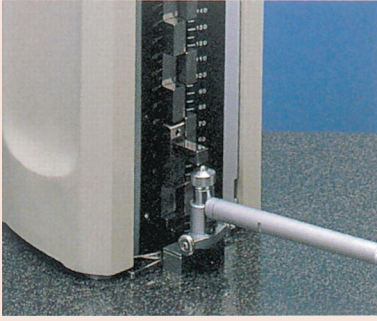


Vertical orientation



Riser block (optional)

# Optional Accessories for Height Master



Bore Gauge Series 511  
reference setting

## Series 515

This is an auxiliary block kit that allows you to efficiently carry out reference-setting of dial bore gauges and tubular inside micrometers (18-150mm).



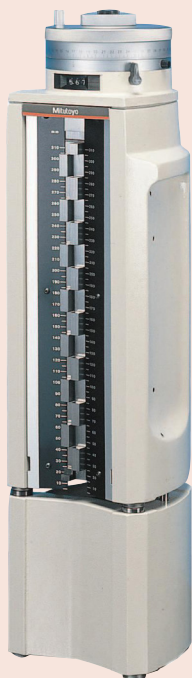
### Metric

No.	Suitable for Height Master	Mass [kg]
515-112	515-322	0,142
515-110	515-520 / 515-523	0,14
515-111	515-374 / 515-376 / 515-378	0,142

## Series 515

These riser blocks offer you the following benefits:

- You can extend the measuring range up to 900mm by using 150, 300 or 600mm riser blocks.
- They can be used with both standard and digital Height Masters.



Sample application



515-113



515-114



515-115

### Metric

No.	Parallelism	Accuracy	Height [mm]	Mass [kg]
515-113	0,6 $\mu\text{m}$	$\pm 0,6 \mu\text{m}$	150	5,7
515-114	0,8 $\mu\text{m}$	$\pm 1 \mu\text{m}$	300	11,3
515-115	1 $\mu\text{m}$	$\pm 2 \mu\text{m}$	600	31

# Check Masters

## Series 515

This Check Master allows you to test precision tool and coordinate measuring machines, and offers you the following benefits:

- You can test the X, Y and Z-coordinate axes of precision tool machines and coordinate measuring machines.
- It consists of rigidly clamped gauge blocks with a step of 10 mm.
- It is supplied in a fitted wooden case.



515-722



515-724

515-723

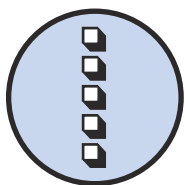
515-722

### Metric

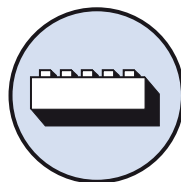
No.	Range [mm]	Mass [kg]
515-720	0 - 310	7
515-721	0 - 450	10
515-722	0 - 610	13
515-723	0 - 1010	22
515-724	0 - 1510	30

### Specifications

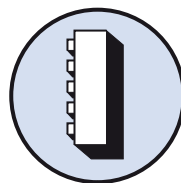
Block step	10 mm
Block pitch accuracy	Range $\leq$ 310 mm: $\pm 2,5 \mu\text{m}$ 310 < range $\leq$ 610 mm: $\pm 3,5 \mu\text{m}$ 610 < range $\leq$ 1010 mm: $\pm 5,0 \mu\text{m}$ 1010 < range $\leq$ 1510 mm: $\pm 8,0 \mu\text{m}$
Parallelism of blocks	Range $\leq$ 310 mm: 1,2 $\mu\text{m}$ 310 < range $\leq$ 610 mm: 1,5 $\mu\text{m}$ 610 < range $\leq$ 1010 mm: 2,0 $\mu\text{m}$ 1010 < range $\leq$ 1510 mm: 2,5 $\mu\text{m}$
Hardness	> 64 HRC
Delivered	In wooden box



Single-row 10 mm blocks



Horizontal orientation

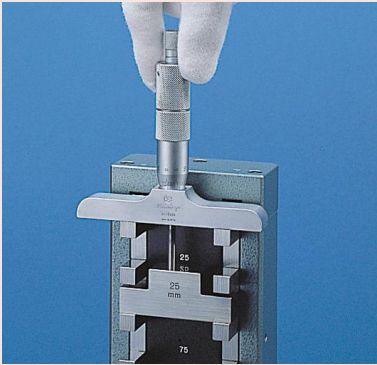


Vertical orientation

# Depth Micro Checkers

## Specifications

Anvil block accuracy	$\pm 0,5 \mu\text{m}$
Block pitch accuracy	$\pm (1+L/150)\mu\text{m}$ L= length to check (mm)



## Series 515

This Depth Micro Checker offers you the following benefits:

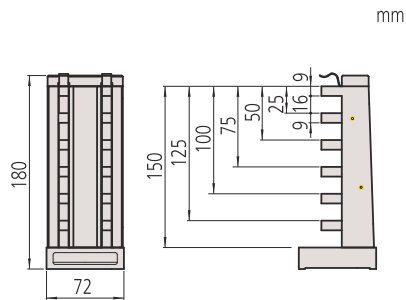
- The Depth Micro Checker is designed to let you check and help set the range-end points of a depth micrometer.
- A 25 mm carbide gauge block is provided as the reference surface.



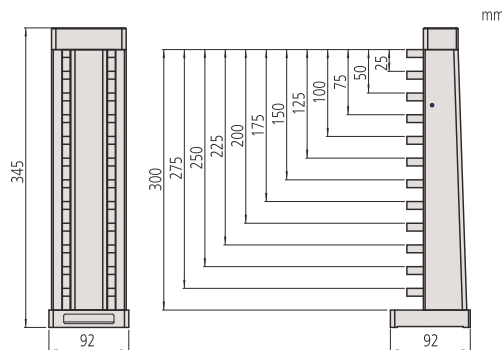
515-571

## Metric

No.	Range [mm]	Reference length	Mass [kg]
515-570	0 - 150	25, 50, 75, 100, 125, 150 mm	3
515-571	0 - 300	25, 50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300 mm	17



515-570



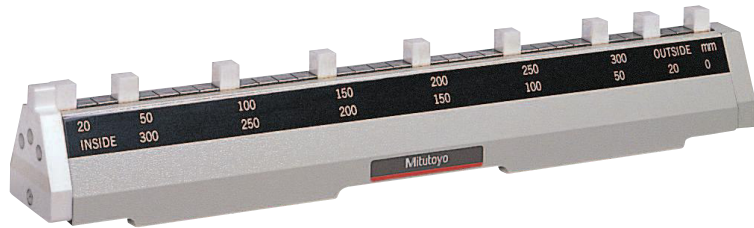
515-571

# CERA Caliper Checkers

## Series 515

This CERA Caliper Checker offers you the following benefits:

- You can set and inspect caliper and height gauges.
- It comes with ceramic gauge blocks.

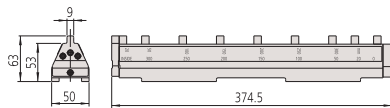


515-555

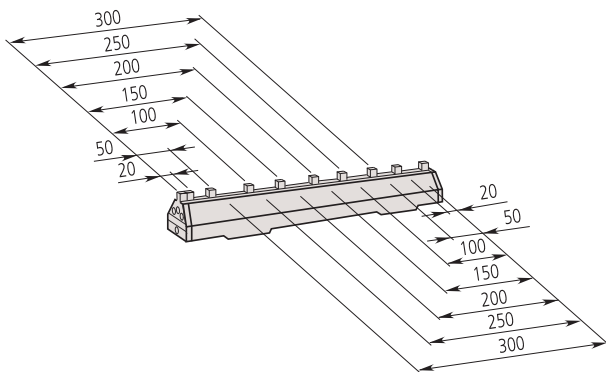
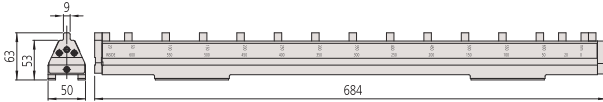
### Metric

No.	Range [mm]	Reference checking lengths available for outside/inside measurement	Mass [kg]
515-555	0 - 300	20, 50, 100, 150, 200, 250 and 300 mm	4
515-556-2	0 - 600	20, 50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550 and 600 mm	8,5

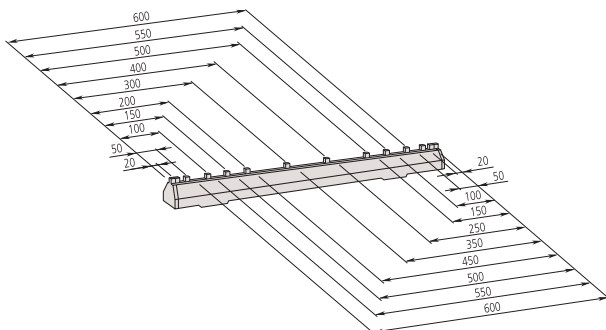
515-555



515-556-2



515-555



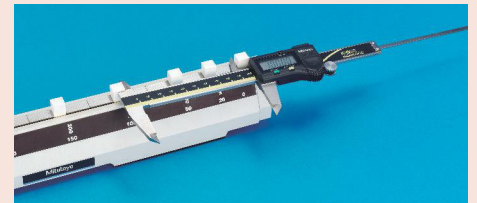
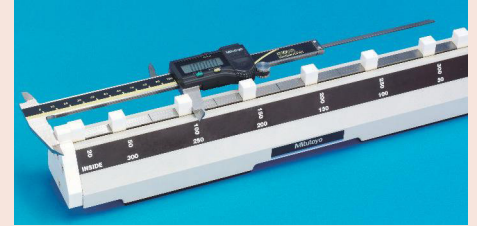
515-556-2

### Specifications

Block pitch accuracy	20 - 300 mm: $\pm 0,005$ mm 350 - 600 mm: $\pm 0,007$ mm
Parallelism of blocks	20 - 300 mm: 0,002 mm 350 - 600 mm: 0,004 mm

### Optional accessories

No.	Description
602162	Wooden Case (300 mm), for Caliper Checker
602164	Wooden Case (600 mm), for Caliper Checker



# Inside Micro Checkers

## Specifications

Block pitch accuracy

$$\pm(1+L/150) \mu\text{m}$$

L = Length to check (mm)

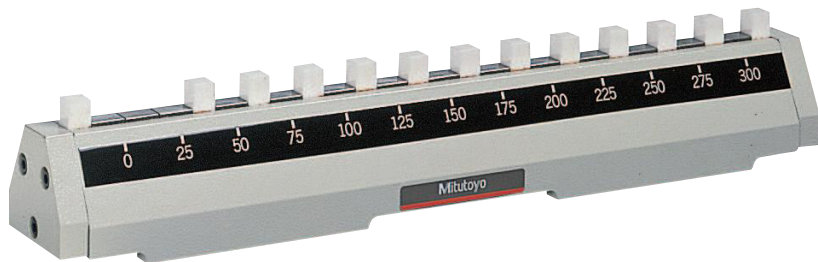


Standard accessories:  
support clamps with 2x 10 mm ceramic gauge blocks  
grade 0

## Series 515

This Inside Micro Checker offers you the following benefits:

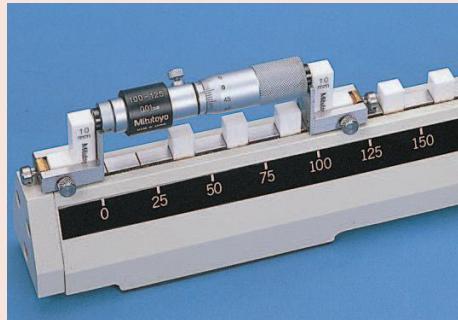
- Applicable for Series 133, 139 and 145 (over 50 mm).
- Not applicable for Series 137, 141, 337 and 339
- It designed to act as a setting standard for inside micrometers.
- It comes with ceramic gauge blocks.



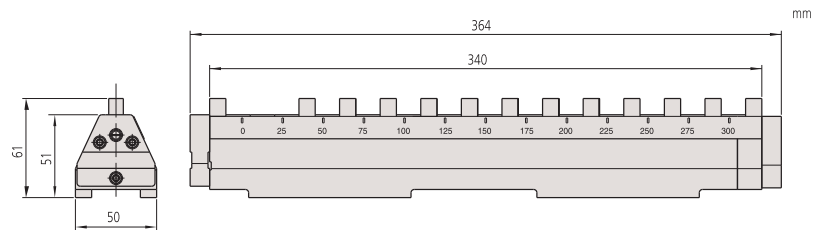
515-585

### Metric

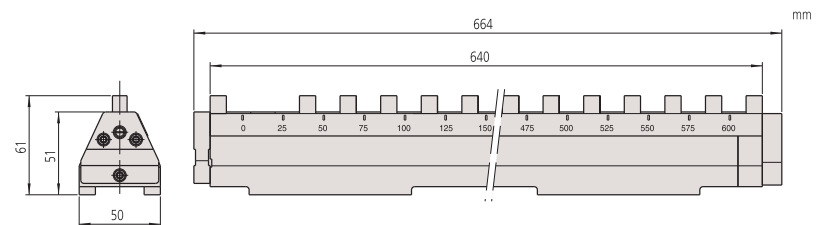
No.	Range [mm]	Graduation [mm]	Reference length	Mass [kg]
515-585	25 - 300	25	25, 50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300 mm	3,9
515-586	25 - 600	25	25, 50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375, 400, 425, 450, 475, 500, 525, 550, 575, 600 mm	7



Application with Series 133



515-585



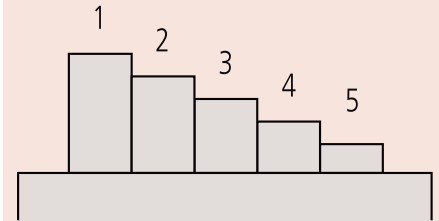
515-586

# Step Masters

## Series 516

The Step Master is a gauge that provides you with four small increments in height and offers you the following benefits:

- It is constructed from an assembly of five highly accurate, steel or ceramic gauge blocks.
- Each adjacent step is calibrated to a resolution of 0,01  $\mu\text{m}$  by using an interferometer with an accuracy tolerance of  $\pm 0,2 \mu\text{m}$ .
- It is supplied in a fitted wooden case.

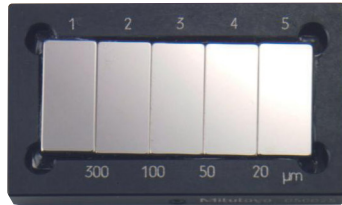


### Step value

	1/2	2/3	3/4	4/5
516-198, 516-498	10 $\mu\text{m}$	5 $\mu\text{m}$	2 $\mu\text{m}$	1 $\mu\text{m}$
516-199, 516-499	300 $\mu\text{m}$	100 $\mu\text{m}$	50 $\mu\text{m}$	20 $\mu\text{m}$



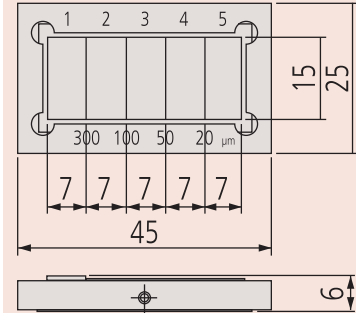
516-499 Ceramic type



516-199 Steel type

### Metric

No.	Block step	Material	Certificate	Mass [kg]
516-198	10, 5, 2, 1 $\mu\text{m}$	Steel	Inspection	0,15
516-198-24	10, 5, 2, 1 $\mu\text{m}$	Steel	Calibration, JCSS	0,15
516-199	300, 100, 50, 20 $\mu\text{m}$	Steel	Inspection	0,15
516-199-24	300, 100, 50, 20 $\mu\text{m}$	Steel	Calibration, JCSS	0,15
516-498	10, 5, 2, 1 $\mu\text{m}$	Ceramic	Inspection	0,14
516-498-24	10, 5, 2, 1 $\mu\text{m}$	Ceramic	Calibration, JCSS	0,14
516-499	300, 100, 50, 20 $\mu\text{m}$	Ceramic	Inspection	0,14
516-499-24	300, 100, 50, 20 $\mu\text{m}$	Ceramic	Calibration, JCSS	0,14



## Specifications

Accuracy	(1,5+2L/1000) μm L = measured length (mm)
Material	Sodium glass
Thermal expansion coefficient	(8±1) x 10 <sup>-6</sup> /K

# Glass Scales

## Series 182

These high precision glass scales offer you the following benefits:

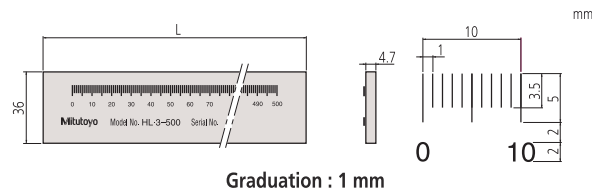
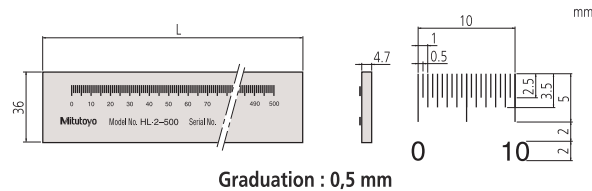
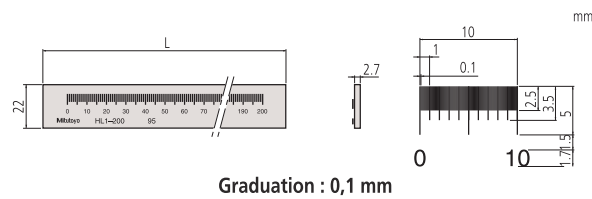
- They are manufactured using Mitutoyo's leading-edge Linear Scale production technology.
- They are ideal for checking the magnification accuracy of profile projectors and microscopes, as well as the table feed accuracy of measuring equipment.
- It is supplied in a fitted wooden case.
- 



182-525-10 / 182-523-10 / 182-522-10 / 182-513-10

## Metric

No.	Range [mm]	Graduation [mm]	Thickness of graduation line [μm]	L [mm]	Mass [kg]
182-511-10	0 - 50	0,1	20	75	0,23
182-512-10	0 - 100	0,1	20	125	0,24
182-521-10	0 - 100	0,5	50	130	0,27
182-513-10	0 - 150	0,1	20	175	0,35
182-514-10	0 - 200	0,1	20	225	0,36
182-522-10	0 - 200	0,5	50	230	0,32
182-531-10	0 - 250	1	100	280	0,55
182-523-10	0 - 300	0,5	50	330	0,57
182-524-10	0 - 400	0,5	50	430	0,71
182-525-10	0 - 500	0,5	50	530	0,86
182-532-10	0 - 500	1	100	530	0,86
182-533-10	0 - 750	1	100	780	1,22
182-534-10	0 - 1000	1	100	1030	1,54



# Low Expansion Glass Scales

## Series 182

These high precision glass scales offer you the following benefits:

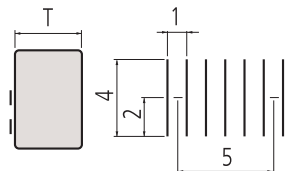
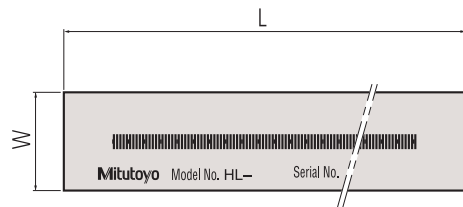
- They are manufactured using Mitutoyo's leading-edge Linear Scale production technology.
- You can use them as a standard for calibrating graduating scales, with high accuracy.
- It is supplied in a fitted wooden case.
- 



182-502-60  
182-501-60

### Metric

No.	Range [mm]	L [mm]	T [mm]	W [mm]	Certificate	Mass [kg]
182-501-50	0 - 250	280	10	20	Inspection	0,75
182-501-60	0 - 250	280	10	20	Calibration, JCSS	0,75
182-502-50	0 - 500	530	20	30	Inspection	1,8
182-502-60	0 - 500	530	20	30	Calibration, JCSS	1,8



mm

### Specifications

Accuracy	(0,5+L/1000) $\mu$ m L = measured length (mm)
Graduation	1 mm
Thickness of graduation line	4 $\mu$ m
Material	Low expansion glass
Thermal expansion coefficient	(0 $\pm$ 0,02) x 10 <sup>-6</sup> /K

# Calibration Testers



## Specifications

Graduation	0.001 mm
Measuring face	Carbide tipped, rotating
Clamping range	Ø 6/8 mm

## Optional accessories

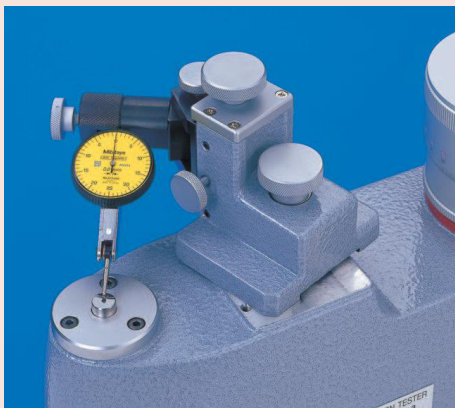
No.	Description
12AAK824	Support for Calibration Tester, Horizontal Application with Bore Gauges



Bore Gauge holder 12AAK821 is standard accessory

## Specifications

Graduation	0.0002 mm
Measuring face	Carbide tipped, non rotating
Clamping range	Ø 4-10 mm



## Series 170

This Calibration Tester offers you the following benefits:

- It enables you to test dial indicators, lever gauges and bore gauges with 0.01mm scale graduation.
- Bore gauges can be supported both horizontally and vertically.



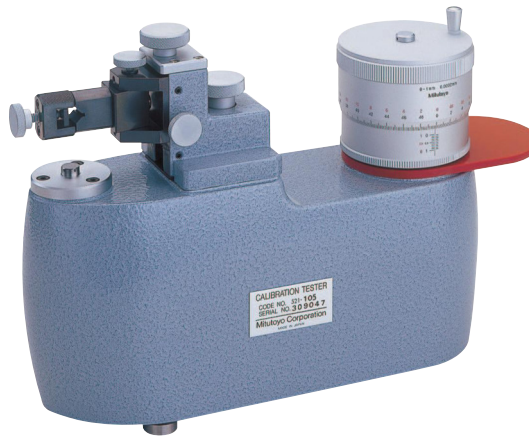
170-102-12

## Metric

No.	Range [mm]	Spindle feed error [ $\mu\text{m}$ ]	Hysteresis	Mass [kg]
170-102-12	0 - 25	$\pm 2$	0,5 $\mu\text{m}$	7,5

## Series 521

This allows the calibration of digital and analogue indicators, lever gauges and measuring probes with a maximum measuring span of 5 mm.



521-105

## Metric

No.	Range [mm]	Spindle feed error [ $\mu\text{m}$ ]	Hysteresis	Mass [kg]
521-103	0 - 1	$\pm 0,2$	0,2 $\mu\text{m}$	7
521-105	0 - 5	$\pm 0,8$	0,8 $\mu\text{m}$	7,5

# Calibration Testers i-Checker 2000

## Series 170

- i-Checker is specially designed to calibrate dial indicators, dial test indicators, bore gauges, electronic digital indicator gauges and other electronic gauges.
- Inspection can be performed 2.5 times faster compared to the previous model.
- This instrument achieves the high accuracy and therefore guarantees ultra-reliable inspection results.
- Digital indicators equipped with a data output function are checked very efficiently due to spindle positioning at the inspection points and recording of measurement results being under fully automatic control.
- Analog type indicators are inspected in semi-automatic mode with the pointer of the indicator being manually adjusted at each measuring point with automatic transfer of inspection results and movement to the next measuring point.



170-402D  
with optional accessories

### Metric

No.	Range [mm]	Digital step	Accuracy	Mass
170-402D	0 - 100	0,01 μm	±(0,1+4L/1000) μm L = measured length (mm)	20 kg



## Specifications

Power supply	100VAC to 240VAC ±10%, 50/60Hz
Max. drive speed	10 mm/s
Drive method	Motor drive, semi automatic, fully automatic only for indicator with data output
Scale	Linear encoder
PC connection	USB

## Optional accessories

No.	Description
02ASK000	Test Indicator Accessory Set, I-Checker, For Ø6mm Stem
02ASK180	Test Indicator Accessory Set, I-Checker, For Ø8mm Stem
02ASK040	Stem Bush for I-Checker, For Ø6mm Stem
02ASL150	Stem Bush for I-Checker, For ø10mm Stem
02ASK060	Stem Bush for I-Checker, For Ø12mm Stem
02ASK070	Stem Bush for I-Checker, For Ø15mm Stem
02ASK080	Stem Bush for I-Checker, For Ø20mm Stem
02ASK710	Stem Bush for I-Checker, For Ø28mm Stem
02ASK090	Stem Bush for I-Checker, For Ø9,525mm (3/8") Stem
02ASU162	Cylinder Gauge Set, IC-2000



Calibration of Dial Test Indicator  
(Lever Type) with optional accessories

# Gauge Block Comparators GBCD-250

## Series 565

This Manual Comparator with Dual Gauge Heads offers you the following benefits:

- It performs gauge block calibration according to EN ISO 3650.
- You can easily compare gauge blocks between 0,1 mm and 250 mm with reference gauge blocks.
- The upper and lower gauging heads give you of easy, high-accuracy measurement.



No.	Range [mm]	Measuring force [N]	Stroke [mm]	Measuring range	Resolution	Measuring unit	Mass [kg]
565-151D-01	0,1 - 250	0,4 N (upper) 0,2 N (lower)	10,5	0,2 - 8,2	0,001 μm	Linear Gauge (upper, lower)	55

# Gauge Block Comparators GBCD-100A

## Series 565

- It performs gauge block calibration according to EN ISO 3650
- Measures the length of rectangular gauge blocks in the size range 0,5 mm to 100 mm. It automatically compares a test block with an appropriate reference gauge block.
- The compensation result is not affected by any warping of thinner gauge blocks due to the use of upper and lower gage heads (dual-head system).
- Measurement configuration: 1 cycle of automatic comparison measurement with a standard gage block.



No.	Range [mm]	Measuring force [N]	Resolution	Measuring unit
565-172	0,5 - 100	0,8 N (upper) 0,4 N (lower)	0,01 μm	Inductive probe (upper, lower)

### Optional accessories

No.	Description
02ASW561	Software GB-PAK-A, Vers. 4X, for New GBCD-250 Installation, English Version
02ASF040	Heat Protection Shield, For GBCD-250
02ASP422	RS-232C Cable
02ASD130	Square Gauge Block Holder, For GBCD-250
601644	Cerastone for Gauge Blocks, 150x50x20mm
158-120	Optical Flat, 15mm, D=60mm, 0,1μm
516-650E	Maintenance Kit for Gauge Blocks
516-145-E2	Calibration Master for GB-Comparator, 11pcs., Refer to EA-10/02

### Optional accessories

No.	Description
02ASW551	Software GB-PAK-A, Vers. 4X, for New GBCD-100A Installation, English Version
601644	Cerastone for Gauge Blocks, 150x50x20mm
601645	Cerastone for Gauge Blocks, 100x25x12mm
158-117	Optical Flat, 12mm, D=45mm, 0,2μm
613615-031	Gauge Block, Metric, Inspection Cert., ISO, Grade 1, Ceramic, 5mm
516-650E	Maintenance Kit for Gauge Blocks
516-146-E2	Calibration Master for GB-Comparator, 12pcs., Eng., GBCD, Cal. Cert., Trace.
02ASQ324	Square Gauge Block Holder, For GBCD-100A