

Height Gage

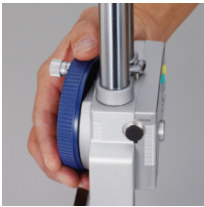
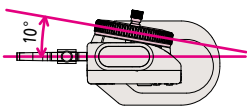
A standard measuring tool of industry

Digimatic Height Gage SERIES 192 — Multi-function Type with SPC Data Output

MeasurLink[®] ENABLED

Data Management Software by Mitutoyo

- Double-column structure ensures high measuring accuracy.
- Ergonomic base fits comfortably in the hand.
- A bidirectional touch-trigger probe is available as an optional accessory for **192-663-10, 192-664-10, 192-665-10, 192-670-10, 192-671-10, 192-672-10** and **192-673-10**.
- Better readability is provided thanks to display of measurement result with a large character height (11 mm) and high-contrast LCD.
- Inclined handle improves slider ergonomics.
- Allows integration into statistical process control and measurement systems. Refer to page A-3.
- Battery: **SR44** (1 pc), **938882**. For initial operational checks (standard accessory)
- Battery life is 3,500 hours in continuous use.
- Carbide-tipped long scribe (**905200** with overall length of 150 mm) is provided as a standard accessory for **192-663-10, 192-664-10** and **192-665-10**.
- For precision Black Granite Surface Plates, refer to page E-49.



SPECIFICATIONS

Metric							
Order No.	Range	Resolution	Accuracy*	Repeatability	Max. response speed	Height	Mass
192-663-10	0 - 300 mm	0.01 mm (0.005 mm)	±0.02 mm	0.01 mm	500 mm/s	510 mm	5.7 kg
192-664-10	0 - 600 mm		±0.04 mm			802 mm	8.3 kg
192-665-10	0 - 1000 mm		±0.06 mm			1228 mm	15.7 kg
192-613-10	0 - 300 mm		±0.02 mm			475 mm	4.7 kg
192-614-10	0 - 600 mm		±0.05 mm			802 mm	8.3 kg
192-615-10	0 - 1000 mm		±0.07 mm			1228 mm	15.7 kg

* Excluding quantizing error of ±1 count

Inch/Metric							
Order No.	Range	Resolution	Accuracy*	Repeatability	Max. response speed	Height	Mass
192-670-10	0 - 12 in	0.0005 in / 0.01 mm (0.0002 in / 0.005 mm)	±0.001 in	0.01 mm	500 mm/s	510 mm	5.7 kg
192-671-10	0 - 18 in		±0.0015 in			649 mm	7.5 kg
192-672-10	0 - 24 in		±0.0015 in			802 mm	8.3 kg
192-673-10	0 - 40 in		±0.0025 in			1228 mm	15.7 kg
192-630-10	0 - 12 in		±0.001 in			475 mm	4.7 kg
192-631-10	0 - 18 in		±0.002 in			649 mm	7.5 kg
192-632-10	0 - 24 in		±0.002 in			802 mm	8.3 kg
192-633-10	0 - 40 in		±0.003 in			1228 mm	15.7 kg

* Excluding quantizing error of ±1 count

Mitutoyo

D-45

MeasurLink[®] ENABLED
Data Management Software by Mitutoyo

Products equipped with the measurement data output function can be connected to the measurement data network system MeasurLink (refer to page A-5 for details).

Functions

Origin-setting (ABS measurement mode):

Any arbitrary value can be stored as the origin point.

Zero-setting (INC measurement mode):

Displayed value can be set to zero at any arbitrary position of the slider.

Origin restoration:

Previously set origin is restored when switching back to ABS mode.

Presetting (ABS INC measurement mode):

Displayed value can be set to any arbitrary value, including negative values.

Measuring direction

Measuring direction can be switched at the press of a button.

Data hold

Display value can be held. Reverts to ABS or INC mode when cancelled.

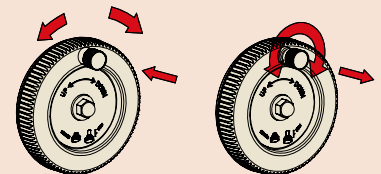
Alarm: Error message is displayed when overflow or overspeed of displayed value arises and measurement is stopped.

Data output:

Allows integration into statistical process control and measurement systems. (Refer to page A-3.)

Fine and coarse height adjustment through knob and wheel combination.

Slider height adjustment wheel allows fine and coarse height adjustment.



Coarse adjustment

Fine adjustment

Push the small fine-adjustment knob in to disengage gearing and then turn the large wheel.

Pull the fine-adjustment knob out to engage gearing and then turn this knob, which then slowly turns the wheel.

Low-voltage alert:

When battery voltage becomes low, a warning appears in the display.

Probe-tip diameter compensation:

An adjustment is applied to the raw measurement data to compensate for the effect of the size of the spherical contact point used by the bidirectional touch-trigger probe.

Presetting (2 positions)

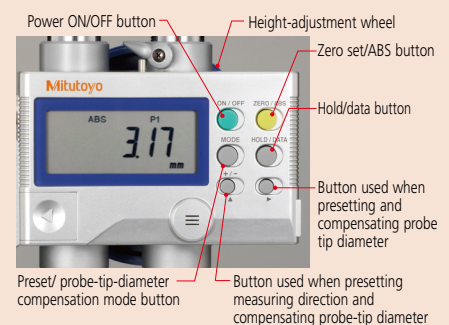
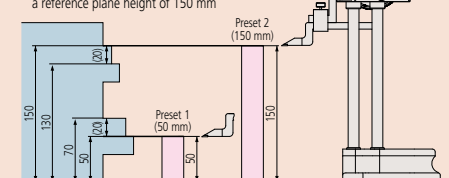
With two preset functions, two reference heights can be used relative to a surface plate.

• **Example of preset 1**

To measure a height of 70 mm, with a reference plane height of 50 mm

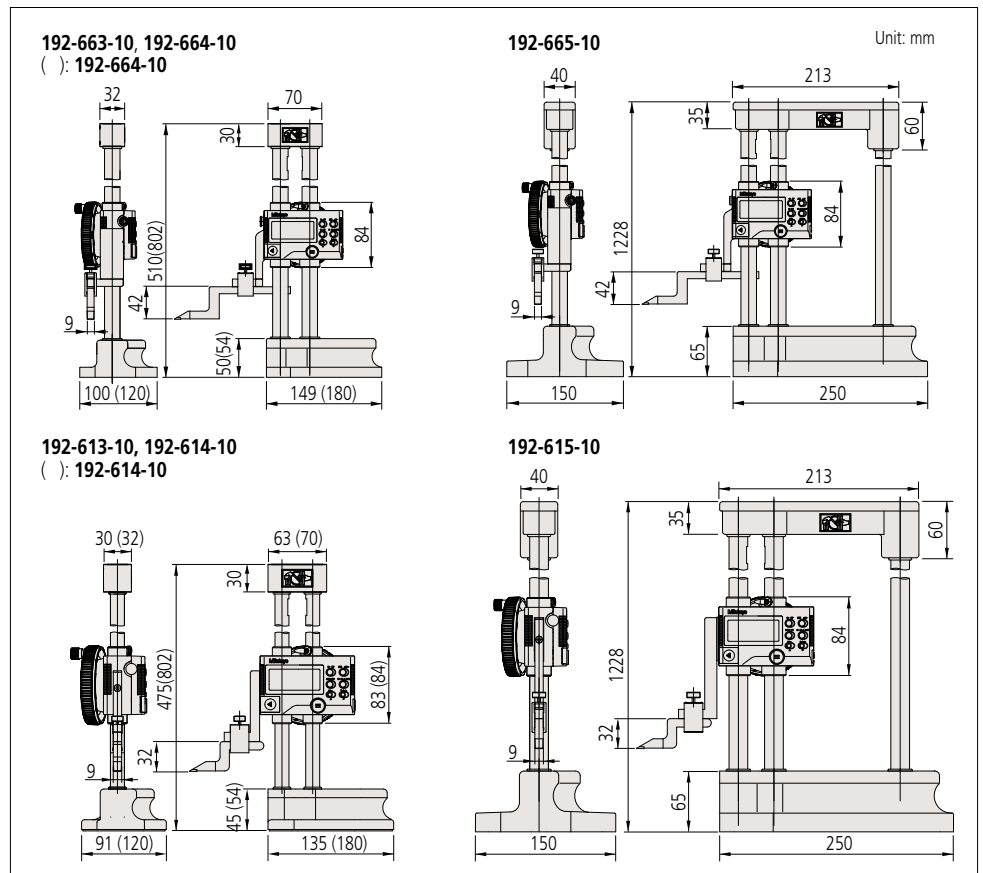
• **Example of preset 2**

To measure a height of 130 mm, with a reference plane height of 150 mm



* Probe-tip-diameter compensation mode is a function provided for **192-663-10/192-664-10/192-665-10/192-670-10/192-671-10/192-672-10/192-673-10**.

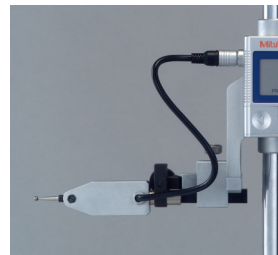
DIMENSIONS



Optional Accessory

Bidirectional touch-trigger probe

Improves accuracy in step, internal thickness, and outside width measurement by minimizing reproducibility error. A bidirectional touch-trigger probe is available as an optional accessory for **192-663-10, 192-664-10, 192-665-10, 192-670-10, 192-671-10, 192-672-10** and **192-673-10**.



SPECIFICATIONS

Metric							
Order No.	Measuring direction	Relay contact type	Probe overtravel	Probe size	Repeatability	Measuring force	Standard accessories
192-007	Bidirectional	Normally Open	1.5 mm	ø3 mm	σ : 2 μ m	0.4 N	Holder arm, Clamp
Inch							
Order No.	Measuring direction	Relay contact type	Probe overtravel	Probe size	Repeatability	Measuring force	Standard accessories
192-008	Bidirectional	Normally Open	1.5 mm	ø3 mm	σ : 2 μ m	0.4 N	Holder arm, Clamp

For details of the connecting cable, refer to page A-25, and for the holder arm and clamp, refer to page F-69.

Connecting cables for IT/DP/MUX

905338: SPC cable (1 m)
905409: SPC cable (2 m)



USB Input Tool Direct

06AFM380F: SPC cable for USB-ITN-F (2 m)

Connecting cables for U-WAVE-T

02AZD790F: SPC cable for U-WAVE (160 mm)

02AZE140F: SPC cable for footswitch

953638: Holding bar*

902053: Swivel clamp*

*A test indicator can be mounted on a height gage using a holding bar and clamp.

Height Gage

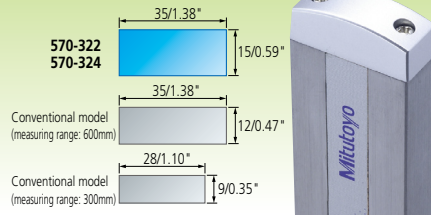
A standard measuring tool of industry

ABSOLUTE Digimatic Height Gage SERIES 570 — with Ergonomic Base

MeasurLink[®] ENABLED
Data Management Software by Mitutoyo

- Allows smooth elevation by the slider adjustment wheel, which is the same as the well-established double-column structure height gage.
- Large slider-clamp lever ensures positive and accurate clamping action.
- High durability and high accuracy are ensured by an improved column design (35x15 mm).
- Due to the built-in ABSOLUTE scale function, origin setting is not required each time power is turned ON.
- Allows integration into statistical process control and measurement systems. Refer to page A-3.
- Battery: **SR44** (1 pc), **938882**. For initial operational checks (standard accessory)
- Battery life is 20,000 hours under normal use.
- For precision Black Granite Surface Plates, refer to page E-49.

Dimensions of column cross section



- Character height of the LCD display is 10 mm.
- Ergonomic and stylish base fits comfortably in the hand.



SPECIFICATIONS

Metric

Order No.	Range	Resolution	Accuracy*	Repeatability	Max. response speed	Mass
570-322	0 - 300 mm	0.01 mm	±0.03 mm	0.01 mm	Unlimited	4.6 kg
570-324	0 - 600 mm		±0.05 mm			6.4 kg

* Excluding quantizing error of ±1 count

Inch/Metric

Order No.	Range	Resolution	Accuracy*	Repeatability	Max. response speed	Mass
570-312	0 - 12 in	0.0005 in / 0.01 mm	±0.0015 in	0.01 mm	Unlimited	4.6 kg
570-313	0 - 18 in		±0.002 in			5.9 kg
570-314	0 - 24 in		±0.002 in			6.4 kg

* Excluding quantizing error of ±1 count

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Products equipped with the measurement data output function can be connected to the measurement data network system MeasurLink (refer to page A-5 for details).

ABSOLUTE[™]

(Refer to page X for details.)

Functions

Origin-setting:

Any convenient reference surface, such as a surface plate, etc., can be stored as the absolute origin point.

Absolute measurement:

After power is turned ON, measurement can be started without zero-setting if origin-setting was previously performed. Absolute origin position can be changed by ORIGIN button.

Incremental measurement: Allows origin setting at any arbitrary position. In this case, the origin point is not stored after turning off the power.

Data hold

Display value can be held.

Data output:

Allows integration into statistical process control and measurement systems. (Refer to page A-3.)

Low-voltage alert:

Low-voltage alert: If the battery voltage becomes low, a "B" appears in the display to alert the user before measurement is no longer possible so that the battery can be changed in good time.

Standard accessories

For **570-322, 324**

07GZA000 Scriber

05GZA033 Scriber clamp

For **570-312** and **570-313, 570-314**

900258 Scriber

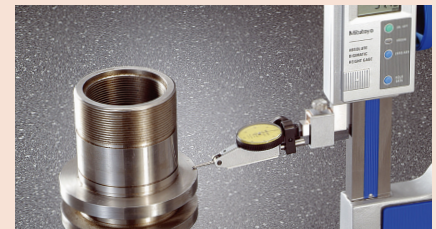
901385 Scriber clamp

05GZA033



07GZA000

(Refer to page F-69 for details)



Optional accessories

For details, refer to page D-39.

Connecting cables for IT/DP/MUX

905338: SPC cable with data button (1 m)

905409: SPC cable with data button (2 m)

USB Input Tool Direct

06AFM380F: SPC cable for **USB-ITN-F** (2 m)

Connecting cables for **U-WAVE-T**

02AZD790F: SPC cable for **U-WAVE** with data button (160 mm)

02AZE140F: SPC cable for footswitch



Slider height adjustment wheel

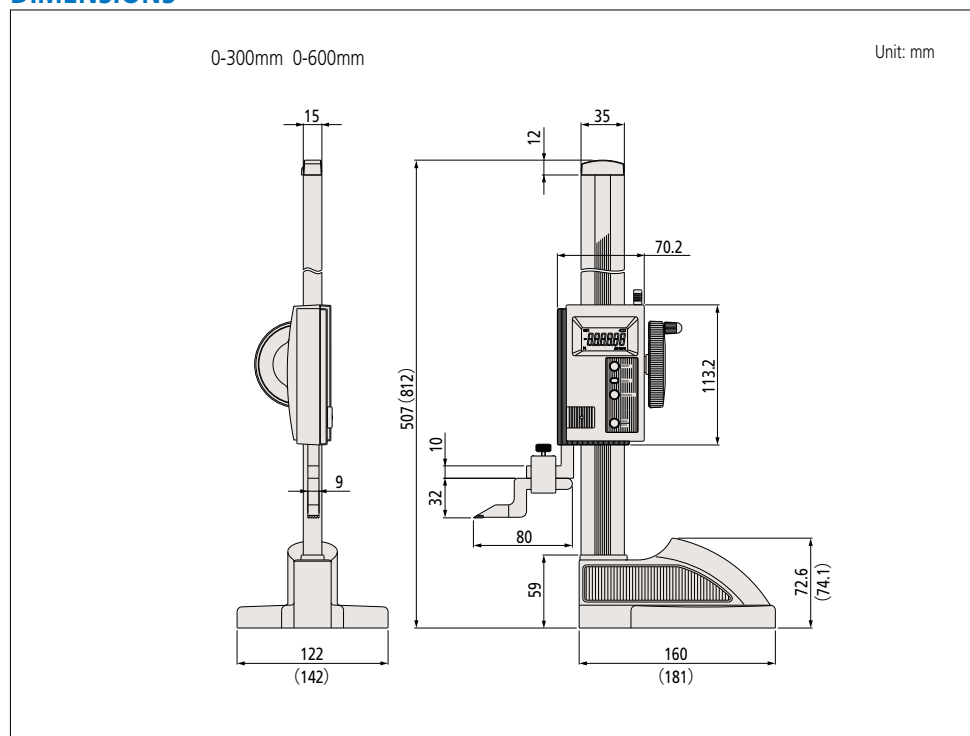


Large clamp lever



Base that fits the hand comfortably

DIMENSIONS



Height Gage

A standard measuring tool of industry

ABSOLUTE Digimatic Height Gage SERIES 570 — Standard model

- ABS and INC measurement modes allow efficient operation.
- Rigid structure makes instrument suitable for use in severe work environments.
- The +/- measurement function widens the application range.
- Allows integration into statistical process control and measurement systems. Refer to page A-3.
- Battery: **SR44** (1 pc), **938882**. For initial operational checks (standard accessory)
- Battery life is 5,000 hours under normal use.
- Carbide-tipped scriber (**900173** for **570-227** and **244**, and **905200** for **570-230** and **248**) is provided as a standard accessory. (Standard accessory: scriber clamp **901338** for **570-227** and **244**, and **05GZA033** for **570-230** and **248**)
- When a dial indicator or test indicator is used with **570-227**, the dedicated holding bar (**953639**, overall length 50 mm) is recommended for use. However, instrumental error may be larger because the measurement point is further from the beam.
- For precision Black Granite Surface Plates, refer to page E-49.



570-227

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Products equipped with the measurement data output function can be connected to the measurement data network system MeasurLink (refer to page A-5 for details).

ABSOLUTE™

(Refer to page X for details.)

Functions

Zero-setting
+/- directional measurement
Data hold
Data output
Presetting
inch/mm reading (inch/mm models)
Preset value memory
Origin restoration
Low battery voltage alert
Counting value composition error alert

Optional accessories

For details, refer to page D-39.

Connecting cables for IT/DP/MUX

905338: SPC cable with data button (1 m)

905409: SPC cable with data button (2 m)

USB Input Tool Direct

06AFM380F: SPC cable for **USB-ITN-F** (2 m)

Connecting cables for **U-WAVE-T**

02AZD790F: SPC cable for **U-WAVE** with data button (160 mm)

02AZE140F: SPC cable for footswitch

SPECIFICATIONS

Metric

Order No.	Range	Resolution	Fine feed	Accuracy*	Repeatability	Height	Mass
570-227	0 - 200 mm	0.01 mm	4 mm	±0.03 mm	0.01 mm	355 mm	1.4 kg
570-230	0 - 1000 mm		6 mm	±0.07 mm		1260 mm	16.8 kg

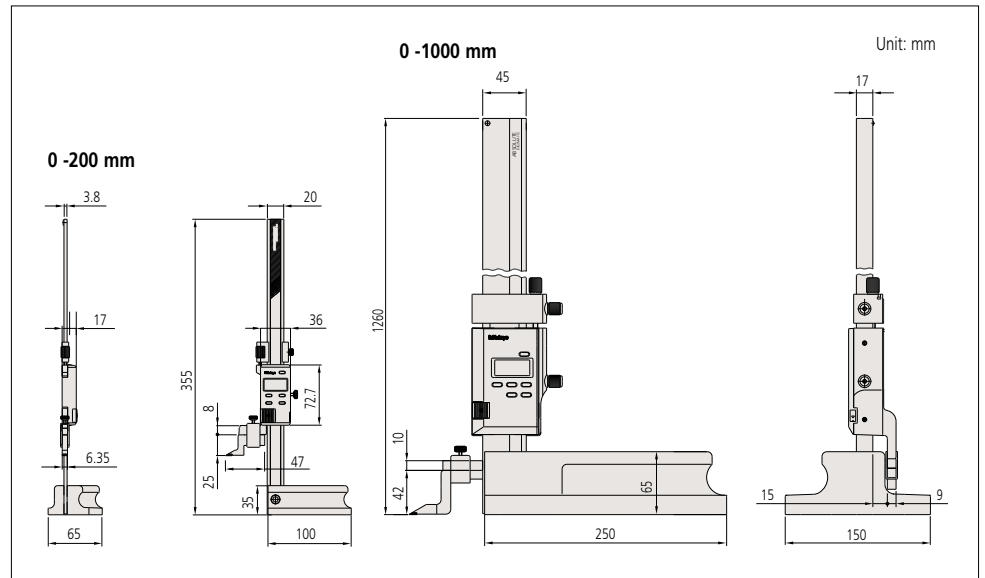
* Excluding quantizing error of ±1 count

Inch/Metric

Order No.	Range	Resolution	Fine feed	Accuracy*	Repeatability	Height	Mass
570-244	0 - 8 in	0.0005 in / 0.01 mm	0.16 in	±0.002 in	0.01 mm	355 mm	1.4 kg
570-248	0 - 40 in		0.24 in	±0.003 in		1260 mm	16.8 kg

* Excluding quantizing error of ±1 count

DIMENSIONS



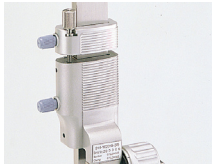
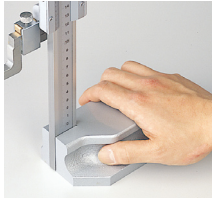
Height Gage

A standard measuring tool of industry

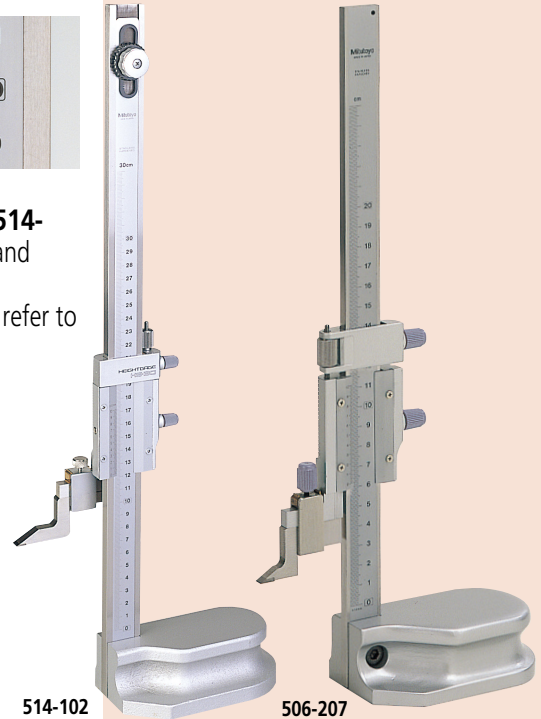
Vernier Height Gage

SERIES 514, 506 — Standard Height Gage with Adjustable Main Scale

- Fits comfortably in the hand and moves easily on the surface plate.
- The main scale slides and clamps within the column for quick and convenient zero-setting.
- Large locking knobs are used both for the slider and fine adjustment clamps to make clamping easy and secure.
- Operability of slider has been improved.
- Large main-scale engraving for fatigue-free working.



- Carbide-tipped scriber (**07GZA000** for **514-102/104/106/103/105/107, 905200** for **514-108** and **109**, and **900390** for **514-170**) is provided as a standard accessory. (Scriber clamp **05GZA033** for **514-102/104/106/108/103/105/107/109**, and **905008** for **514-170**)
- For precision Black Granite Surface Plates, refer to page E-49.



514-102

506-207

SPECIFICATIONS

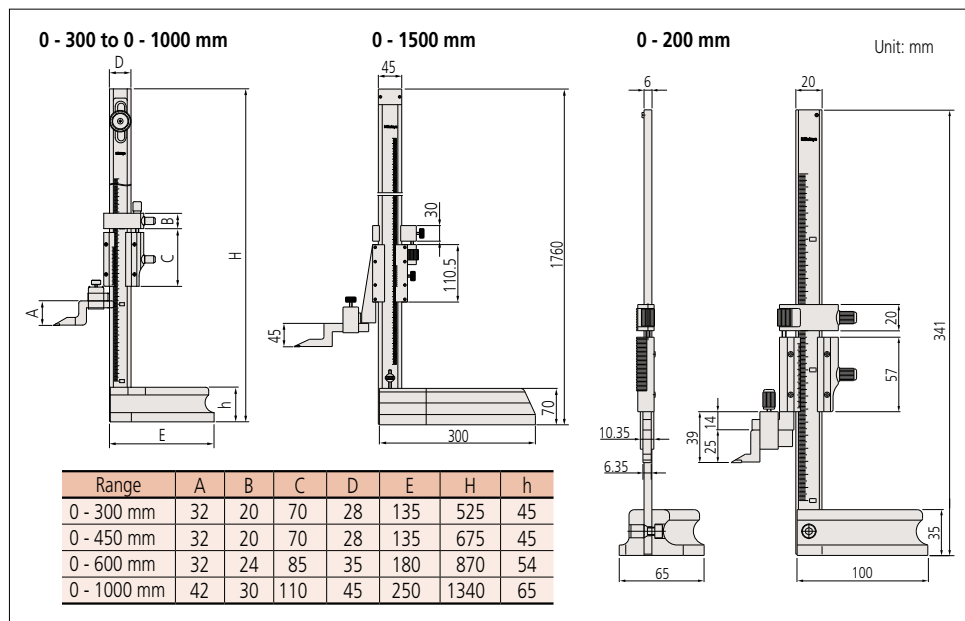
Metric

Order No.	Range	Minimum reading	Accuracy	Scale adjustment	Fine feed	Height	Mass	Remarks
506-207	0 - 200 mm	0.02 mm	±0.03 mm	15 mm	4 mm	341 mm	1.4 kg	—
514-102	0 - 300 mm		±0.04 mm			525 mm	3.1 kg	—
514-104	0 - 450 mm		±0.05 mm			675 mm	3.4 kg	—
514-106	0 - 600 mm		±0.07 mm			870 mm	7.4 kg	—
514-108	0 - 1000 mm	0.05 mm	±0.07 mm	25 mm	6 mm	1340 mm	20 kg	—
514-170	0 - 1500 mm		±0.18 mm		20 mm	1760 mm	26 kg	with magnifier

Inch/Metric

Order No.	Range	Minimum reading	Accuracy	Scale adjustment	Fine feed	Height	Mass	Remarks
506-208	0 - 8 in	0.001 in / 0.02 mm	±0.001 in	0.6 in	0.16 in	341 mm	1.4 kg	—
514-103	0 - 12 in		±0.002 in			525 mm	3.1 kg	—
514-105	0 - 18 in		±0.002 in			675 mm	3.4 kg	—
514-107	0 - 24 in		±0.003 in		0.27 in	870 mm	7.4 kg	—
514-109	0 - 40 in		±0.003 in	1 in	0.24 in	1340 mm	20.0 kg	—

DIMENSIONS



Optional accessories

07GZA000: Scriber

953638: Holding bar for test indicator (length: 50 mm)

900209: Holding bar for test indicator (length: 100 mm)

953639: Holding bar for test indicator (length: 2 in)

900306: Holding bar for test indicator (length: 4 in)

900321: Swivel clamp used with holding bar (metric)

900322: Swivel clamp used with holding bar (inch)

902053: Clamp (with dovetail groove, $\varnothing 6$ and $\varnothing 8$ holes)

Note: A test indicator can be mounted on a height gage using a holding bar and clamp.

Dial Height Gage SERIES 192 — With digital counter

- Easy and error-free reading with both up and down digital counters as well as a dial.



- Fits comfortably in the hand and moves easily on the surface plate.



- Can be zero-set at any arbitrary position.
- Provided with a large adjustment wheel for easy height adjustment.
- Clamp can be operated easily and securely.



192-130

- Carbide tipped scriber (**07GZA000**) is attached as standard. (Standard accessory: Scriber clamp **05GZA033**)
- For precision Black Granite Surface Plates, refer to page E-49.

SPECIFICATIONS

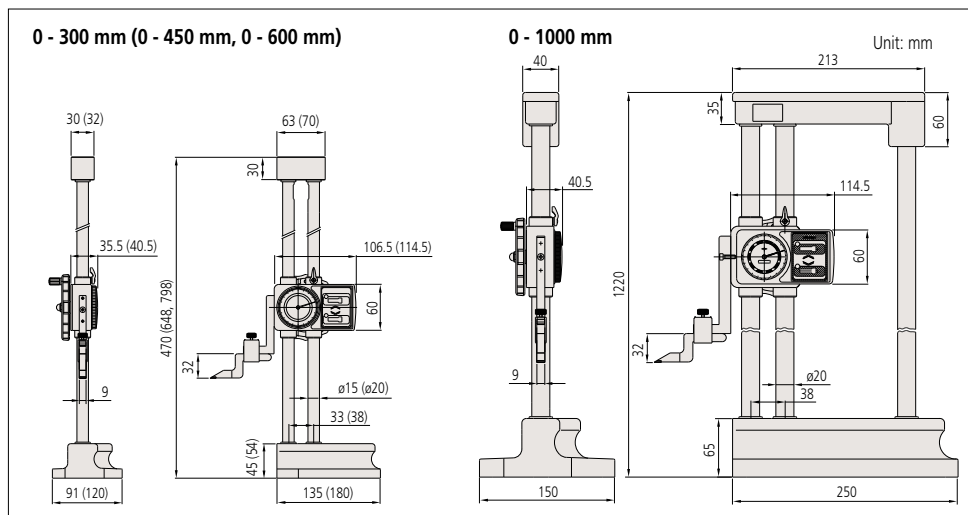
Metric

Order No.	Range	Accuracy	Graduation	Height	Mass
192-130	0 - 300 mm	±0.03 mm	0.01 mm	470 mm	4.2 kg
192-131	0 - 450 mm	±0.05 mm		648 mm	9.2 kg
192-132	0 - 600 mm			798 mm	9.8 kg
192-133	0 - 1000 mm	±0.07 mm		1220 mm	17.0 kg

Inch

Order No.	Range	Accuracy	Graduation	Height	Mass
192-150	0 - 12 in	±0.0015 in	0.001 in	470 mm	4.2 kg
192-151	0 - 18 in	±0.002 in		648 mm	9.2 kg
192-152	0 - 24 in			798 mm	9.8 kg
192-153	0 - 40 in	±0.003 in		1220 mm	17.0 kg

DIMENSIONS

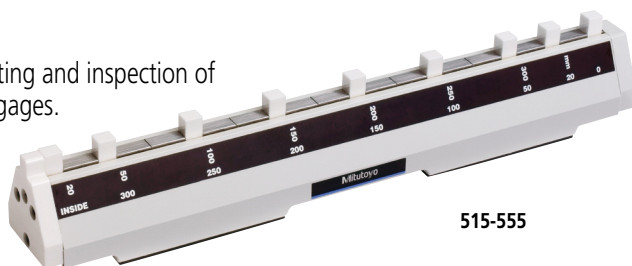


Height Gage

A standard measuring tool of industry

CERA Caliper Checker SERIES 515

- Enables efficient setting and inspection of calipers and height gages.



515-555

SPECIFICATIONS

Metric

Order No.	Range	Block pitch accuracy*		Parallelism of blocks*		Mass
		20 - 300 mm	350 - 600 mm	20 - 300 mm	350 - 600 mm	
515-555	0 - 300 mm	±5.0 μm	—	2.0 μm	—	4 kg
515-556-2	0 - 600 mm		±7.0 μm		4.0 μm	

* The block accuracy and the parallelism of blocks are based on the following:

Outside caliper and height gage: lower end reference plane

Inside caliper: inside reference plane

Inch

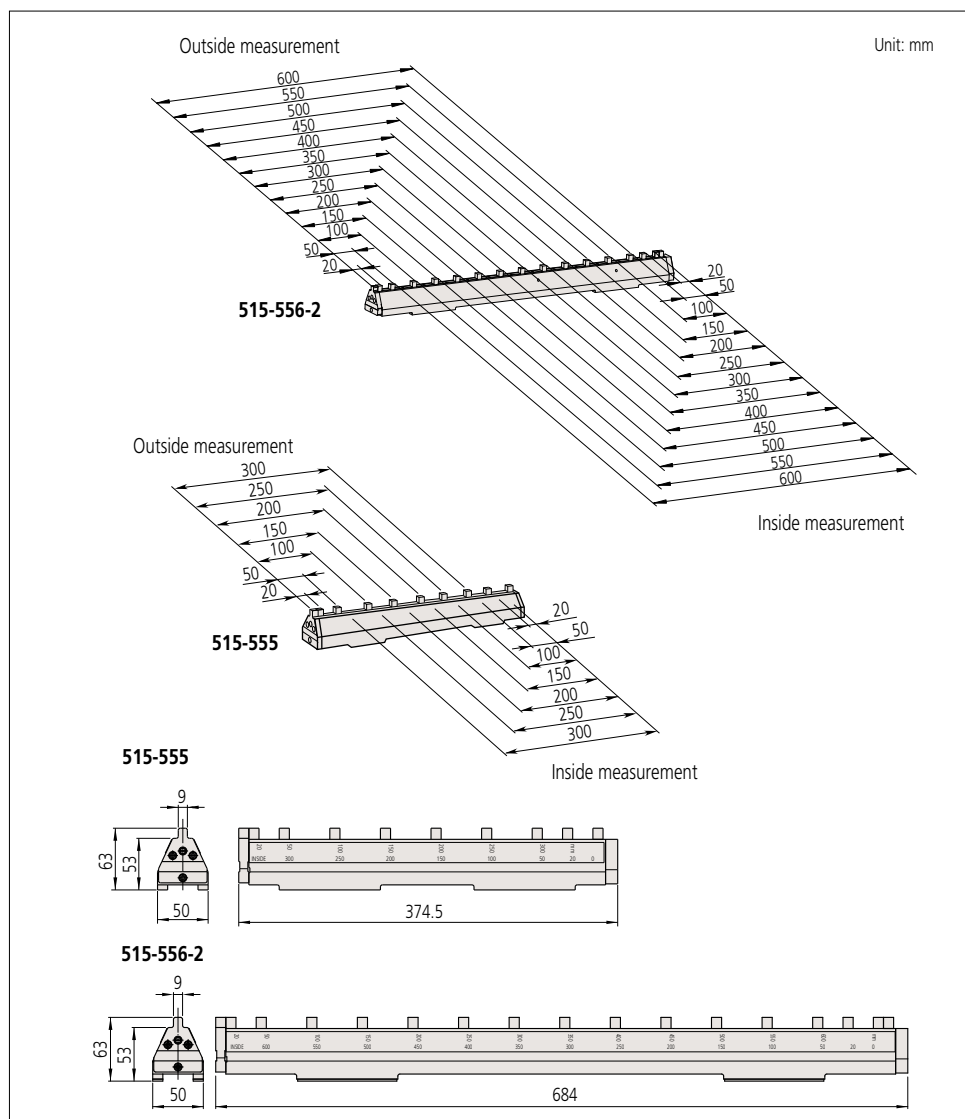
Order No.	Range	Block pitch accuracy*		Parallelism of blocks*		Mass
		1 - 12 in	1 - 12 in	1 - 12 in	1 - 12 in	
515-565	0 - 12 in	±0.0002 in		0.00008 in		4 kg

* The block accuracy and the parallelism of blocks are based on the following:

Outside caliper and height gage: lower end reference plane

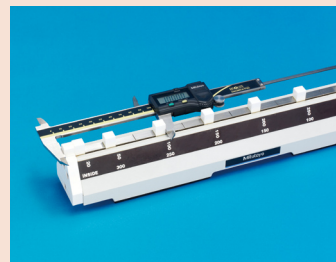
Inside caliper: inside reference plane

DIMENSIONS

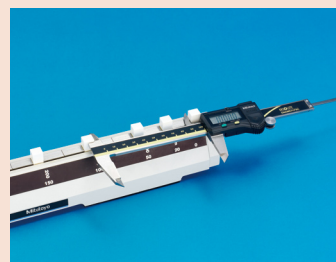


An inspection certificate is supplied as standard.
Refer to page X for details.

Applications



Checking accuracy of caliper (outside measurement)



Checking accuracy of caliper (inside measurement)



Checking accuracy of height gage

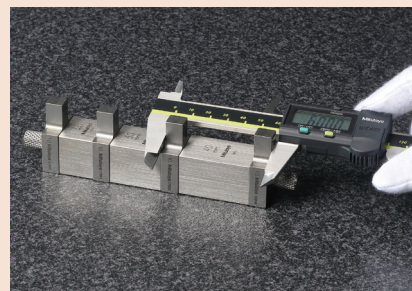
Optional accessories

602162: Wooden case for 300 mm, 12 inch model

602164: Wooden case for 600 mm model

Alternative solution using a Square Gauge Block Accessories Set

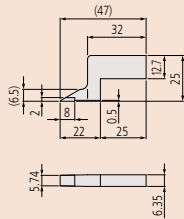
If such an accessories set is available, then an instrument equivalent to the CERA Calibration Checker may be assembled, as shown below, if additional elements are obtained (particularly plain jaws, **619072**). For details, refer to pages E-25/26. Note that such an assembly will not have the corrosion resistance of the CERA Calibration Checker and, therefore, more care will be required in use and storage.



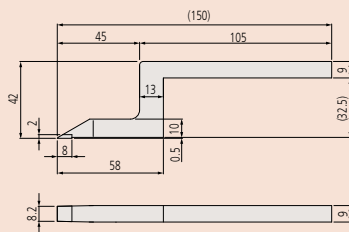
Scriber DIMENSIONS

900173

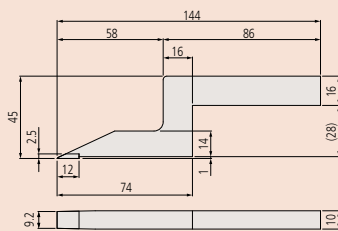
Unit: mm



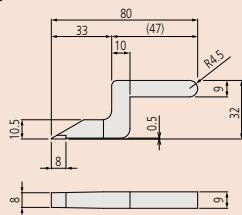
905200



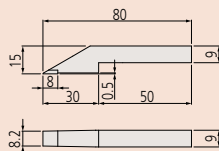
900390



07GZA000



900168



Height Gage Optional accessories for height gages

SPECIFICATIONS

Metric	
Order No.	Applicable Height Gages
07GZA000	192 Series Digimatic Height Gages (192-613-10, 192-614-10, 192-615-10)
	570 Series Digimatic Height Gages (570-302, 570-304)
	192 Series Dial Height Gages (192-130, 192-131, 192-132, 192-133)
	514 Series Vernier Height Gages (514-102, 514-104, 514-106, 514-103, 514-105, 514-107)
	574 Series Heightmatic (574-112-1, 574-111-1, 574-110-1)
905200	192 Series Digimatic Height Gages (192-663-10, 192-664-10, 192-665-10)
	570 Series Digimatic Height Gages (570-230)
	514 Series Vernier Height Gages (514-108, 514-109)
900390	514 Series Vernier Height Gage (514-170)

Inch	
Order No.	Applicable Height Gages
900173	570 Series Digimatic Height Gages (570-227, 570-244)
	506 Series Vernier Height Gages (506-207, 506-208)
900258	192 Series Digimatic Height Gages (192-630-10, 192-631-10, 192-632-10, 192-633-10)
	570 Series Digimatic Height Gages (570-312, 570-313, 570-314)
	574 Series Heightmatic (574-212-1, 574-211-1, 574-210-1)
905201	192 Series Digimatic Height Gages (192-670-10, 192-671-10, 192-672-10, 192-673-10)
	570 Series Digimatic Height Gages (570-248)

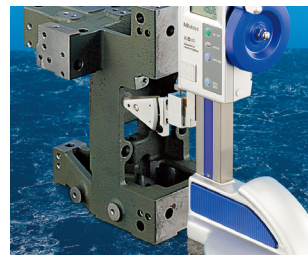
Contact Sensor



900872

- The contact sensor eliminates errors caused by non-contact of the slider with a workpiece while making measurements. When the scriber of a height gage touches a conductive workpiece, an indicator lights up to indicate that a measurement can be taken, which results in consistent results.
- Magnet is incorporated.
- Battery (PR44, 2 pcs required) is not included.
- For precision Black Granite Surface Plates, refer to page E-49.

Center Probe



951144

- Allows quick measurement of center-to-center distance between holes.
- Measurable hole diameters: 1 - 38 mm
- Mounting position dimension: 99 mm

Depth Gage Attachment



900764

- Attaches to a height gage for measuring groove and hole depth.
- Minimum hole diameter: 5.5 mm
- Maximum distance from the bottom of the holding bar to the contact point: 80 mm (metric type), 2.95 inch (inch type)
- Dial indicator contact points are usable. (Refer to pages F-51.)
- Mounting position dimension: 99 mm
- Holding bar length: 100 mm

Height Gage

A standard measuring tool of industry

Linear Height

SERIES 518 — High Performance 2D Measurement System

- Excellent accuracy of $(1.1+0.6L/600)$ μm with $0.1 \mu\text{m} / 0.4 \mu\text{m}$ resolution/repeatability.
- High-accuracy Height Gage incorporating a wide range of measurement functions.
- To achieve best-in-class accuracy, a high-accuracy reflective-type linear encoder and high-accuracy guide are used.
- Measurement can be implemented by icon-based commands that also support easy one-key operation.
- Perpendicularity (frontal) of $5 \mu\text{m}$ and straightness of $4 \mu\text{m}$ are guaranteed.
- The TFT LCD provides excellent visibility and operability.
- Pneumatic full/semi-floating system allows adjustment of air-cushion height.
- Basic statistical functions are provided and, additionally, RS-232C data output provides the option of evaluating measurement data externally with SPC software on a PC.
- For precision Black Granite Surface Plates, refer to page E-49.
- Backup/Restore of data and measurement part programs can be implemented using USB storage devices (FAT16/32 format compatible).



518-351A-21



With power grip
518-352A-21

SPECIFICATIONS

Inch/Metric	Model without power grip
Order No.	Remarks
518-351A-21	Model for North America, English manual
518-351A-22	Model for South America, Spanish manual
518-351D-21	Model for EU, English manual
518-351E-21	Model for the UK, English manual
518-351DC	Model for China, Chinese manual
518-351K	Model for Korea, Korean manual

Inch/Metric	Model with power grip
Order No.	Remarks
518-352A-21	Model for North America, English manual
518-352A-22	Model for South America, Spanish manual
518-352D-21	Model for EU, English manual
518-352E-21	Model for the UK, English manual
518-352DC	Model for China, Chinese manual
518-352K	Model for Korea, Korean manual



An inspection certificate is supplied as standard.
Refer to page X for details.

Technical Data

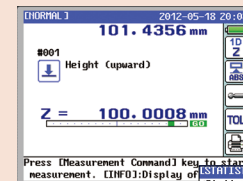
Measuring range: 0 - 977 mm
Slider stroke: 600 mm
Resolution: 0.0001 in / 0.001 / 0.01 / 0.1 mm or (switchable) 0.00001 in / 0.00001 in / 0.0001 in / 0.001 in
Accuracy at 20°C *1: $(1.1+0.6L/600) \mu\text{m}$
L = Measuring length (mm)
Repeatability (2 σ) *1: Plane: 0.4 μm , Bore: 0.9 μm
Perpendicularity *2: 5 μm (after compensation)
Straightness *2: 4 μm (mechanical straightness)
Drive method: Manual / motor (5 - 40 mm/s, 7 steps)
Measuring force: 1N
Balancing method: Counter balance
Floating method: Full / semi-floating with built-in air compressor
Display: 5.7-inch color TFT LCD
Language for display: Japanese, English, German, French, Italian, Spanish, Dutch, Portuguese, Swedish, Czech, Hungarian, Slovene, Polish, Traditional Chinese, Korean, and Simplified Chinese
No. of stored programs: 50 (max.)
No. of stored data: 60,000 (max.)
Power supply: AC adapter / battery (Ni-MH)
Battery operation time: Approx. 5 hours
(air floating & slider elevation: 25% duty cycle)

*1 Guaranteed when using the standard eccentric $\phi 5$ mm probe

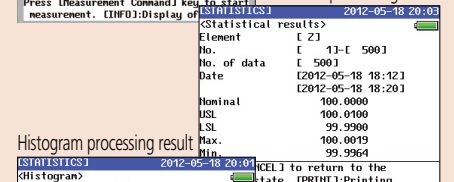
*2 Guaranteed when using the Lever Head (MLH-521) or Mu-checker (M-511)

Screenshot examples

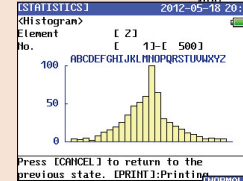
Measurement screen



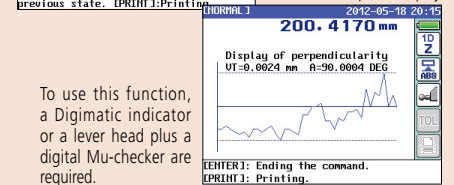
Statistical processing result



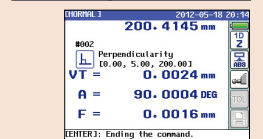
Histogram processing result



Squareness measurement result:
Graphical display



To use this function, a Digimatic indicator or a lever head plus a digital Mu-checker are required.



Squareness measurement result:
Numeric display

Standard accessories

12AAF634 5-step probe

12AAA715 Ball-diameter corrected block

*When the correction is performed by using the taper type contact point, the ball-diameter corrected block 12AAA787 (for taper type contact point) is required.

12AAF674 Auxiliary weight

Thickness measurement (Outside)

Height measurement (Upward facing)

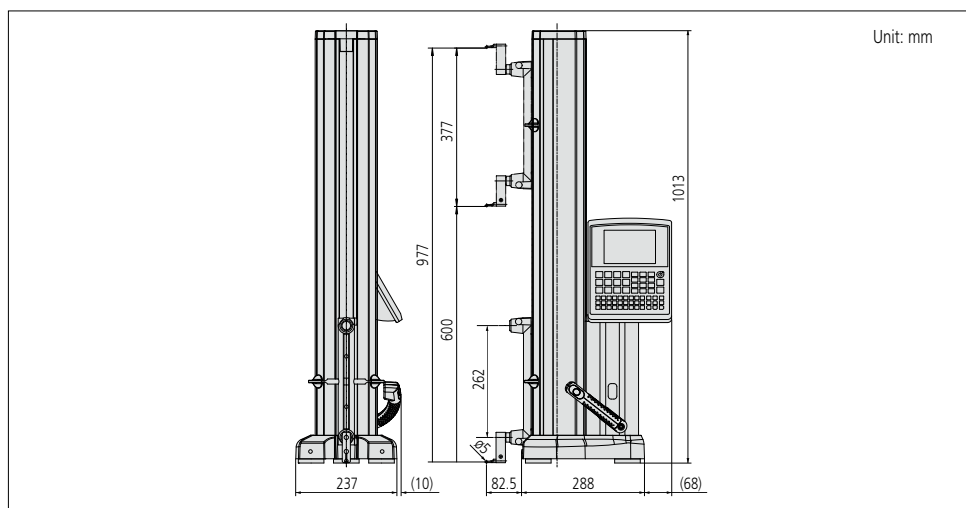
Height measurement (Downward facing)

Width measurement (Inside)

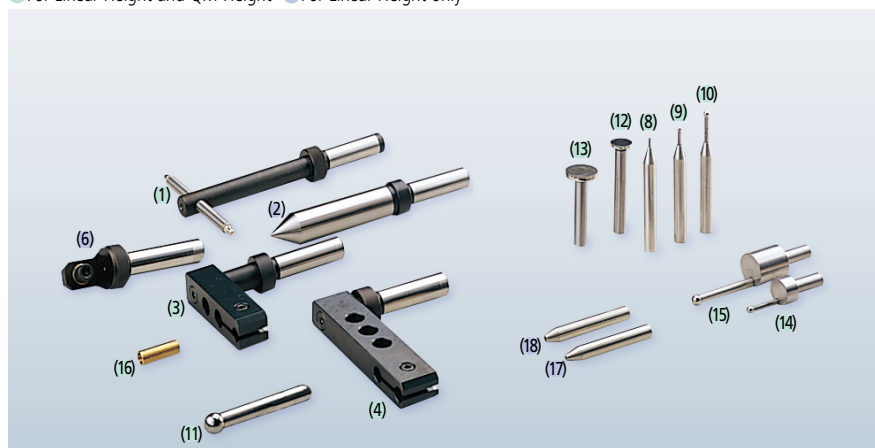
Diameter measurement (Hole)



DIMENSIONS



● For Linear Height and QM-Height ● For Linear Height only



- (1) **12AAC072:** Depth probe
- (2) **12AAC073:** ø20 mm taper probe
- (3) **12AAA792:** Dial indicator (ø8 mm stem) holder
- (4) **12AAA793:** Probe extension holder (85 mm/3.3 in)
- **12AAB136:** ø10 mm cylindrical probe
- (6) **932361:** Mu-checker lever head holder*
*Additional auxiliary weights are required (total 4 pcs).
- **12AAF666:** ø1mm ball probe (coaxial type)
- **12AAF667:** ø2 mm ruby ball probe (coaxial type)
- (8) **957261:** ø2 mm ball probe (coaxial type)
- (9) **957262:** ø3 mm ball probe (coaxial type)
- (10) **957263:** ø4 mm ball probe (coaxial type)
- (11) **12AAB552:** ø10 mm ball probe, L = 55 mm (coaxial type)
- **12AAF668:** ø10 mm ball probe, L = 82 mm (coaxial type)
- **12AAF669:** ø10 mm ball probe, L = 120 mm (coaxial type)
- **12AAF670:** ø5 mm disk probe
- **12AAF671:** ø10 mm disk probe
- (12) **957264:** ø14 mm disk probe
- (13) **957265:** ø20 mm disk probe
- **12AAF672:** ø1 mm ball offset probe
- (14) **12AAA788:** ø4 mm ball offset probe
- **ø5 mm ball offset probe 05HAA394**
- (15) **12AAA789:** ø6 mm ball offset probe
- (16) **226116:** Test indicator (ø6 mm stem) adapter
- Sample workpiece **12AAA879**
- (17) **226117:** M2 CMM stylus adapter*¹
- (18) **226118:** M3 CMM stylus adapter*¹
- CMM ball and disk hard probes are available.
ø2 **932377A**, ø3 **932378A**
ø5 **932379A**, ø6 **932380A**
ø10 **532328**
Disc probe
ø20 **532345**, ø30 **930803**
- **12AAF712:** Battery pack

- **12AAN048**⁺² Receipt printer (for Japan)
- **12AAN049**⁺² Receipt printer (for North America)
- **12AAN050**⁺² Receipt printer (for EU; excluded U.K.)
- **12AAN051**⁺² Receipt printer (for U.K.)
- **12AAN052**: Receipt paper (10-roll set)
- **12AAA804**: Cable for page printer (2 m)
- **12AAA807**: RS-232C cable (2 m/80 in)
- **12AAG920**: RS-232C cable (3 m/118 in)
- Digimatic cable **936937** (1 m)
- **965014** (2 m)

*2 Attachment for fixing the connecting cable is provided as standard.

Height Gage

A standard measuring tool of industry

QM-Height SERIES 518 — High Precision ABSOLUTE Digital Height Gage

- Best-in-class accuracy $\pm(2.4+2.1L/600)$ μm
- Newly developed high accuracy and high resolution ABSOLUTE linear encoder for position detection. Once origin is set, origin setting is not required each time you turn the power ON (except in the case of a large environmental temperature change).
- GO/ \pm NG judgment is performed by setting upper and lower tolerances. If a judgment result is out of tolerance, the display

backlighting changes from green to red, so tolerance judgment can be made at a glance



- Frequent-use measurement such as inside/outside diameter and pitch calculation can be implemented by icon-based commands that also support easy one-key operation.
- Possible to measure inside/outside diameters via a unique method (detect the circle apex and process by tracing measurement*).
- * Tracing measurement stroke is approx. 1 mm upwards and downwards from the measurement start point.
- Built-in air-suspension feature mechanism using an internal pump enables smooth movement over a surface plate. However, measurement in the floating state is not available due to possibility of error occurrence. (Lower-cost version without air suspension also available.)
- With SPC and RS-232C output.
- Continuous battery life of 300 hours*⁵ using four alkaline batteries. (Also works with four NiMH AA/HR6 rechargeable batteries.)



SPECIFICATIONS

Metric				
Order No.	518-230	518-232	518-234	518-236
Measuring range (stroke)	0 - 465 mm (350 mm)	0 - 715 mm (600 mm)	0 - 465 mm (350 mm)	0 - 715 mm (600 mm)
Resolution (selectable)	0.001 mm/ 0.005 mm	0.001 mm/ 0.005 mm	0.001 mm/ 0.005 mm	0.001 mm/ 0.005 mm
Accuracy at 20°C	$\pm(2.4+2.1L/600)$ μm			
Repeatability* ¹	$2\sigma \leq 1.8$ μm			
Perpendicularity* ² (20°C)	7 μm	12 μm	7 μm	12 μm
Guiding method	Roller bearing			
Drive method	Manual (wheel)			
Measurement principle	Electromagnetic induction absolute encoder			
Measuring force	1.5 \pm 0.5 N			
Data output ports	Digimatic / USB* ³			
Air-suspension feature	Not included	Not included	Included (for positioning only)* ⁴	Included (for positioning only)* ⁴
Power supply	Alkaline AA/LR6 batteries \times 4 (standard accessories) / AC adapter (optional accessory) / Supports NiMH (HR6) rechargeable batteries \times 4			
Battery life guidelines* ⁵	Approx. 300 hours (continuous use) LED: Other than full-time illumination Approx. 100 hours (continuous use) LED: Full-time illumination	Approx. 300 hours (continuous use) LED: Other than full-time illumination Approx. 100 hours (continuous use) LED: Full-time illumination	Approx. 300 hours (continuous use) LED: Other than full-time illumination Approx. 3.3 days when the air-suspension feature is used for 0.5 hours/day	Approx. 300 hours (continuous use) LED: Other than full-time illumination Approx. 3.3 days when the air-suspension feature is used for 0.5 hours/day
Mass	25 kg	29 kg	25 kg	29 kg
Size (mm)	Stroke 350 mm type: 280(W) \times 273(D) \times 784(H) mm Stroke 600 mm type: 280(W) \times 273(D) \times 1016(H) mm			
Operating temperature range (recommended)	0 - 40 °C (10 - 30 °C)			
Operating humidity range	20 - 80%RH (non-condensing)			
Storage temperature range	-10°C - 50 °C			
Storage humidity range	5 - 90 % RH (non-condensing)			

*1 The indication accuracy and repeatability represent the values obtained from the height measurement of a flat surface using the standard holder with $\phi 5$ ball contact point. In the case of diameter, minimum (maximum) value, circle pitch or difference measurement, measuring errors may be larger than the accuracy ratings listed in the table due to variations in measuring force during a scanning measurement, which differs from height measurement.

*2 Indicates the value obtained from the measurement of a straight surface placed perpendicular to the the base reference surface using the Lever Head (MLH-321) and Mu-checker (M-411).

*3 Requires special communication driver and software. Consult your local Mitutoyo Sales Office for details. These can be downloaded from the Mitutoyo web site. <http://www.mitutoyo.co.jp/eng/>

*4 When using a model with the air-suspension feature, it is advisable to use a JIS 1 class, or higher, surface plate. Using on surfaces with scratches or unevenness may prevent the system operating to the specified performance.

*5 Battery life depends on the operating conditions. In particular, it is more economical to use the optional AC adapter to power the instrument if the application requires prolonged use of the air-suspension feature.

MeasurLink ENABLED
Data Management Software by Mitutoyo

Products equipped with the measurement data output function can be connected to the measurement data network system MeasurLink (refer to page A-5 for details).

ABSOLUTE™

(Refer to page X for details.)



An inspection certificate is supplied as standard. Refer to page X for details.

Standard accessories

- 05HZA148** 5-stepped probe
- 12AAA715** Ball-diameter corrected block
- Auxiliary grip

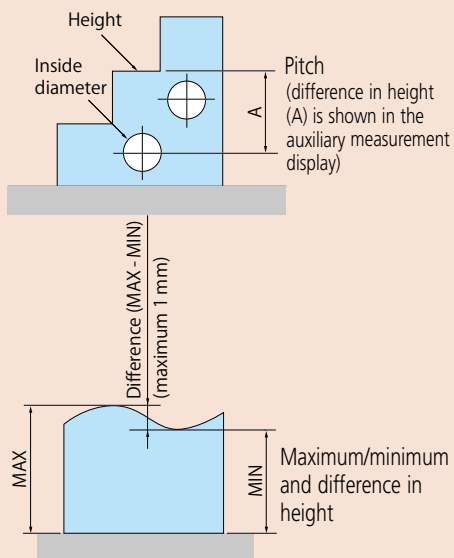
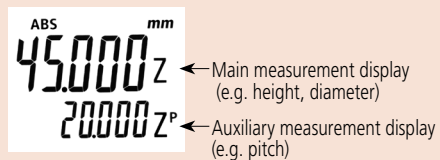
Optional accessories

- 12AAC072** Depth probe
- 12AAA792** Dial indicator ($\phi 8$ mm stem) holder
- 12AAA793** Probe extension holder (85 mm/3.3 in)
- 12AAF667** $\phi 2$ mm ruby ball probe (coaxial type)
- 957261** $\phi 2$ mm ball probe (coaxial type)
- 957262** $\phi 3$ mm ball probe (coaxial type)
- 957263** $\phi 4$ mm ball probe (coaxial type)
- 957264** $\phi 14$ mm disk probe
- 957265** $\phi 20$ mm disk probe
- 12AAA788** $\phi 4$ mm ball offset probe
- 12AAA789** $\phi 6$ mm ball offset probe
- 226116** Test indicator ($\phi 6$ mm stem) adapter
- Sample workpiece **12AAA879**
- Scriber **05HZA173**
- Digimatic connecting cable
- 936937** (1 m)
- 965014** (2 m)
- AC Adapter **06AEG180JA/D/E/K/DC**
- 05HZA143** 9x9 adapter (clamp 901385 is required)
- 05GZA033** Clamp (for 9x9 adapter)
- 05HZA144** 6.35x12.7 adapter (clamp assy. 901385 is required)
- 901385** Clamp assy. (for 6.35x12.7 adapter)
- 02AZE990** U-WAVE mounting plate

Inch/Metric

Order No.	518-231	518-233	518-235	518-237
Measuring range	0-465 mm (0-350 mm / 0-14 in)	0-715 mm (0-600 mm / 0-24 in)	0-465 mm (0-350 mm / 0-14 in)	0-715 mm (0-600 mm / 0-24 in)
Resolution (selectable)	0.001 mm / 0.005 mm / 0.0005 in / 0.001 in / 0.0002 in	0.001 mm / 0.005 mm / 0.0005 in / 0.001 in / 0.0002 in	0.001 mm / 0.005 mm / 0.0005 in / 0.001 in / 0.0002 in	0.001 mm / 0.005 mm / 0.0005 in / 0.001 in / 0.0002 in
Accuracy at 20°C	$\pm(2.4+2.1L/600)$ μm			
Repeatability* ¹	$2\sigma \leq 1.8$ μm			
Perpendicularity* ² (20°C)	7 μm	12 μm	7 μm	12 μm
Guiding method	Roller bearing			
Drive method	Manual (wheel)			
Measurement principle	Electromagnetic induction absolute encoder			
Measuring force	1.5 \pm 0.5 N			
Data output ports	Digimatic / USB* ³			
Air-suspension feature	Not included	Not included	Included (for positioning only)* ⁴	Included (for positioning only)* ⁴
Power supply	Alkaline AA/LR6 batteries \times 4 (standard accessories) / AC adapter (optional accessory) / Supports NiMH (HR6) rechargeable batteries \times 4			
Battery life guidelines* ⁵	Approx. 300 hours (continuous use) LED: Other than full-time illumination Approx. 100 hours (continuous use) LED: Full-time illumination	Approx. 300 hours (continuous use) LED: Other than full-time illumination Approx. 100 hours (continuous use) LED: Full-time illumination	Approx. 300 hours (continuous use) LED: Other than full-time illumination Approx. 3.3 days when the air-suspension feature is used for 0.5 hours/day	Approx. 300 hours (continuous use) LED: Other than full-time illumination Approx. 3.3 days when the air-suspension feature is used for 0.5 hours/day
Mass	25 kg	29 kg	25 kg	29 kg
Size (mm)	Stroke 350 mm type: 280(W) \times 273(D) \times 784(H) mm Stroke 600 mm type: 280(W) \times 273(D) \times 1016(H) mm			
Operating temperature range (recommended)	0 - 40 °C (10 - 30 °C)			
Operating humidity range	20 - 80%RH (non-condensing)			
Storage temperature range	-10 °C - 50 °C			
Storage humidity range	5 - 90% RH (non-condensing)			

Measurement example



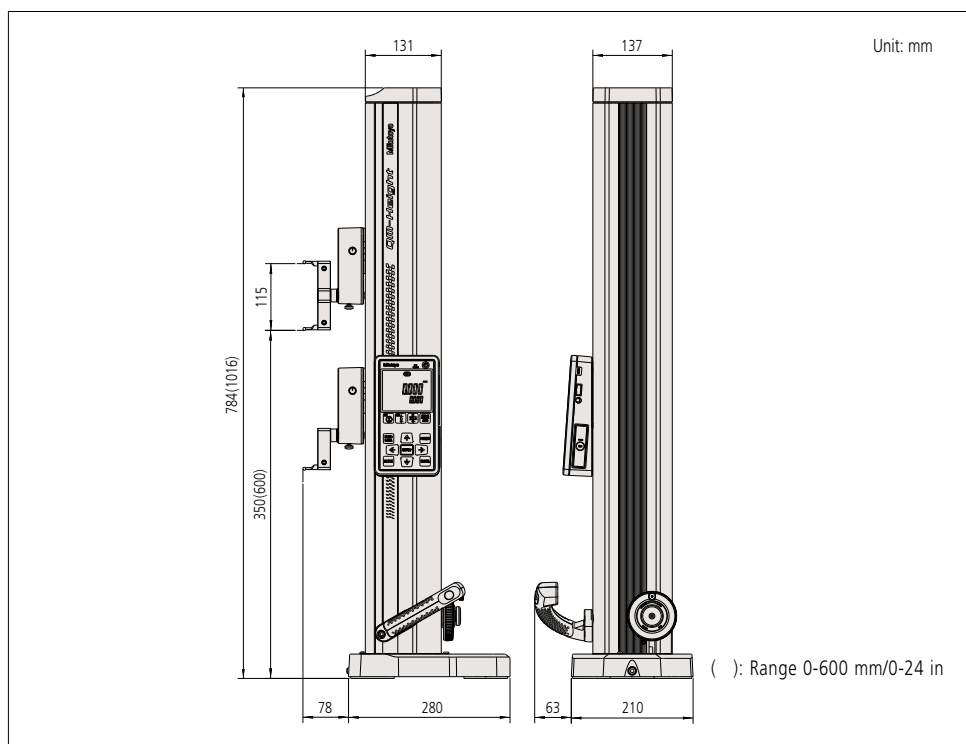
Inside diameter measurement



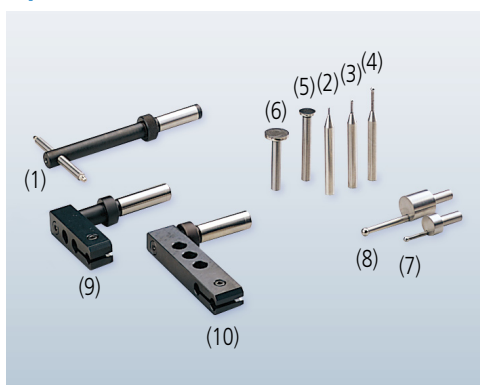
Height measurement



DIMENSIONS



Optional accessories



No.	Order No.	品名
Depth probe		
(1)	12AAC072	Depth probe
Interchangeable probes for ø5 stepped probe		
(2)	957261	ø2 mm ball probe (coaxial type)
(3)	957262	ø3 mm ball probe (coaxial type)
(4)	957263	ø4 mm ball probe (coaxial type)
(5)	957264	ø14 mm disk probe
(6)	957265	ø20 mm disk probe
(7)	12AAA788	ø4 mm ball offset probe
(8)	12AAA789	ø6 mm ball offset probe
Special holder and probes		
(9)	12AAA792	Dial indicator (ø8 mm stem) holder
(10)	12AAA793	Probe extension holder (85 mm/3.3 in)
AC adapter		
06AEG180J/A/D/E/K/DC		
Digimatic cable		
	936937	1 m
	965014	2 m
Others		
	05HZA143	9x9 adapter (clamp assy. 901385 is required)
	05GZA033	Clamp (for 9x9 adapter)
	05HZA144	6.35x12.7 adapter (clamp assy. 901385 is required)
	901385	Clamp assy. (for 6.35x12.7 adapter)
	02AZE990	U-WAVE mounting plate
	05HZA173	Scriber*

A gauge block may be required for zero-set depending on the probe or contact point to be used.

* It is for measurement, and cannot be used for scribing.