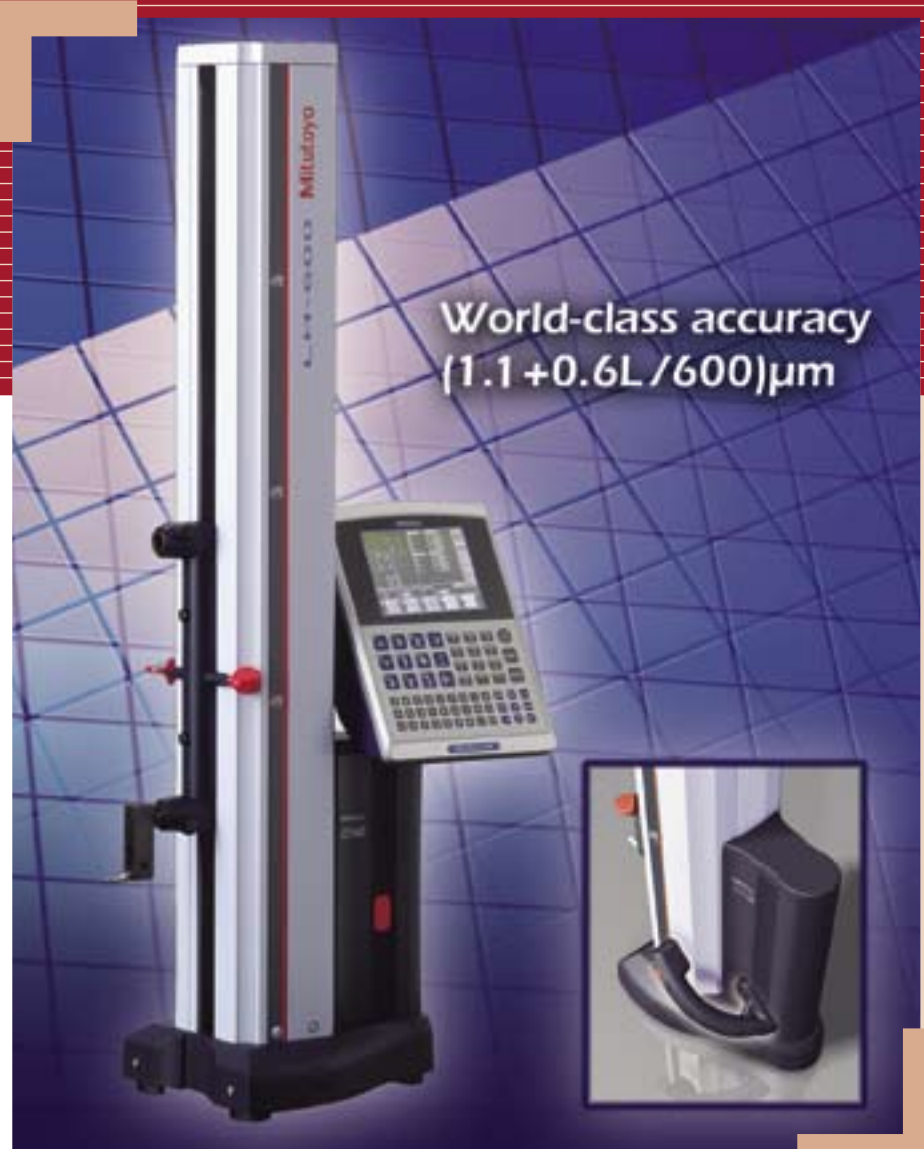


# 1D/2D Measuring Gage LINEAR HEIGHT

CATALOG No. E4162-518



World-class accuracy, cost effective, ergonomic design and optional large-capacity battery pack plus many probe combinations for measurement flexibility.

**Mitutoyo**

# The Linear Height multifunctional height gage makes 2D measurement straightforward and accurate.

Pursuing accuracy and ease of use.

- > World-class accuracy of  $(1.1+0.6L/600)\mu\text{m}$
- > Repeatability of  $0.4\mu\text{m}$  ( $2\sigma$ )
- > Longer battery operation with large-capacity battery pack
- > Ergonomic machine design and power grip operation

The Linear Height offers advanced performance for reliable and simple 2D measurement.



Easy-of-use in measurement

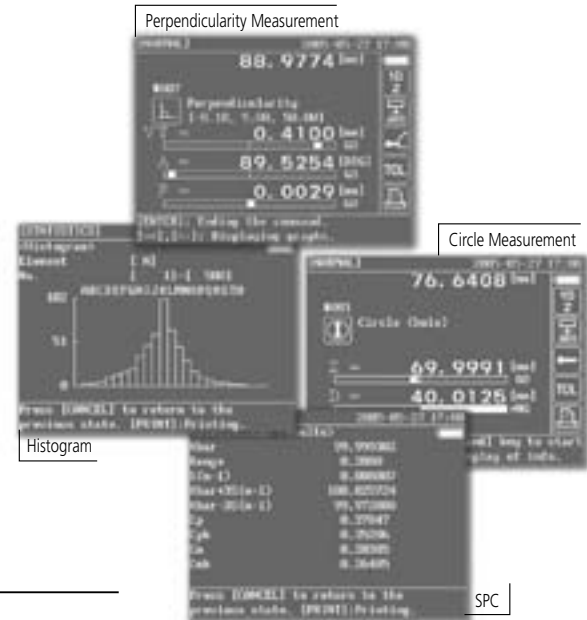
**POWER GRIP**



**Mitutoyo**

## Accuracy in measurement

- > Excellent accuracy of  $(1.1+0.6L/600)\mu\text{m}$  with  $0.1\mu\text{m}/0.4\mu\text{m}$  resolution/repeatability.
- > Perpendicularity (frontal) of  $5\mu\text{m}$  and straightness of  $4\mu\text{m}$  are guaranteed.
- > Pneumatic full/semi-floating system allows adjustment of air-cushion height according to the operation (movement/measurement) to achieve rapid inspection speed while maintaining accuracy.
- > Independent drive/measurement speed setting for quick positioning (max.  $40\text{mm/s}$ ) and careful measuring.



Data processing unit

## Flexibility in measurement

- > Optional large-capacity battery pack for longer battery-powered operation.
- > Extensive probe/stylus selection to suit practically any workpiece.
- > Choice of message language in English, German, French, Spanish, Italian, Dutch, Portuguese, Swedish, Czech, Hungarian, Slovenian, Polish, Mandarin Chinese, Traditional Chinese\*, Korean\*\* and Japanese for user-friendly operation.

\*Optional \*\*518-331K and 518-342K only



## Ease-of-use in measurement

- > One-key operation for running a semi-automatic measurement.
- > Automatic stand-by in repeat measurement mode. The probe automatically moves to the next measurement start position.
- > Data entry from a Digimatic tool. SPC cable: **936937** (1m/40"), **965014** (2m/80")
- > Back up data of the part program or measurement data can be restored by USB-Memory stick or USB-FDD.
- > Basic statistical functions are provided and, additionally, the RS-232C data output provides the option of evaluating measurement data externally with SPC software on a PC.
- > Immediate GO/NG judgment at each measurement.
- > Large memory capacity for 50 measuring programs and 60,000 measurements.
- > Off-line part programming for increased measurement efficiency.
- > 24kg smart body for high mobility.



# Greater convenience and ease of use through the integration of sequential key operations for

The touch of a single key automatically runs the instrument until the last result is displayed. This eliminates the need to execute key operations at each step in the measurement process, allowing you to concentrate 100% on workpiece inspection.



## Single-touch Basic functions

	Measures the height of an upward-facing surface.		Measures the difference between maximum height and minimum height of an upward or downward facing surface
	Measures the height of a downward-facing surface.		Measures the width and center position between two elements.
	Measures the diameter and center of a hole.		Sets the ABS origin (absolute reference origin) or INC origin (incremental origin defined by the user), switches between ABS/INC origins and sets the offset ABS origin
	Measures the diameter and center of a shaft.		Sets the probe type, measures the probe diameter, inputs the probe diameter, saves the probe, loads the probe and shifts the probe position.
	Measures the width and center of an inner diameter.		Performs calculation, including angle.
	Measures the width and center of an outer diameter.		Displays a comment when operations are paused, measures the position of a hole with a tapered probe, inputs measurement from a Digimatic measuring instrument and measures perpendicularity.
	Measures the maximum height of a downward or upward-facing surface.		Suspends or resumes system operation.
	Measures the minimum height of an upward or downward-facing surface.		

## Other functions

### 2D measurement

- > 2D origin setting
- > X/Y axis setting
- > Coordinate system rotation
- > 2D origin translation
- > Coordinate save
- > Coordinate recall
- > Element recall
- > Polar coordinate recall
- > Coordinate distance calculation
- > 2D distance calculation
- > 2 elements intersection-angle calculation
- > 3 elements intersection-angle calculation
- > Pitch-circle calculation
- > Tolerance judgment function
- > Tolerance/nominal value setting
- > Tolerance judgment result output
- > Warning functions

### User-support functions

- > Switching resolution
- > Power saving function
- > Switchable measurement speed
- > Semi-floating measurement
- > Part-program functions
- > Creating/editing/executing a part program

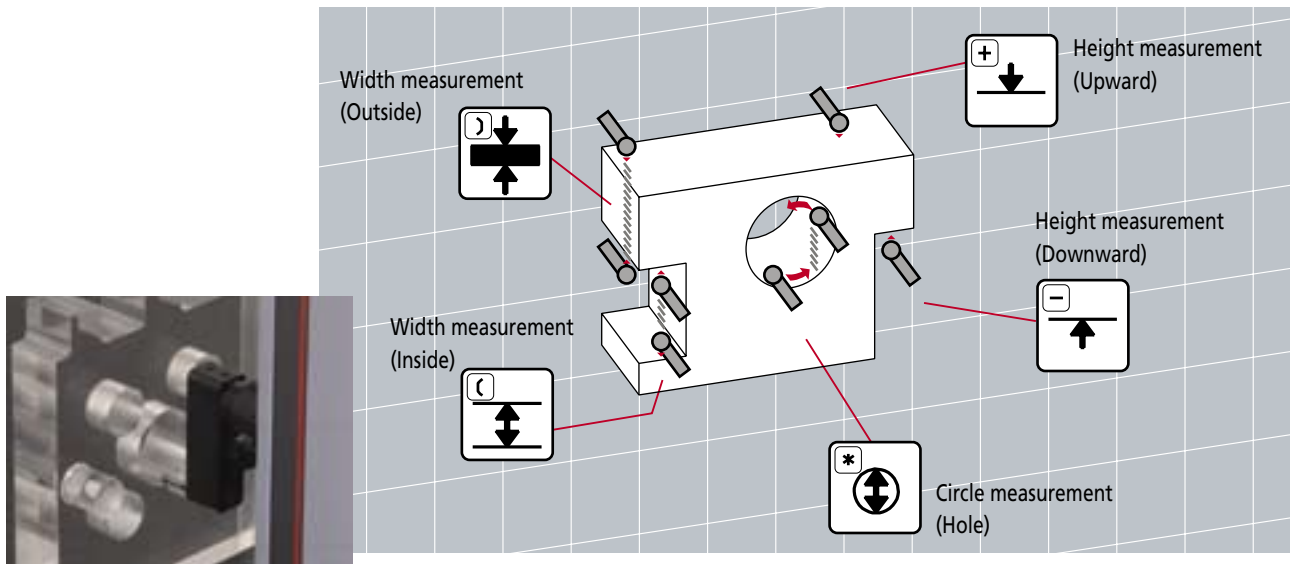
### Statistical processing functions

- > Basic statistical processing
- > Histogram

### Accuracy-compensation functions

- > Temperature compensation
- > Scale factor
- > Setting of workpiece thermal-expansion coefficient

# frequently used measurements.



## Optional accessories

### Receipt printer



> Used to print out measurement results.

### An example of a printout

A thermal printer, which can be attached to the main unit of the Linear Height, is available as an optional accessory. Printouts can also be obtained from a commercially available A4 page printer.

- 12AAA795** Thermal printer (100V)
- 12AAA796** Thermal printer (230V)
- 12AAA797** Thermal printer (120V)
- 12AAA802** Thermal printing paper (10pcs.)
- 12AAA804** Cable for A4 printer\* (2m)
- 12AAA807** RS-232C cable (2m/80")
- 12AAG920** RS-232C cable (3m/118")
- 12AAF712** Battery pack
- 12AAG245** Large capacity battery pack
- 12AAF765** Large capacity battery set

\*Page printer recommended: EPSON LQ-300 or LX-300



Optional Accessories  
Order No. 12AAA802 Recording paper for receipt printer (10 rolls/set)

### USB-FDD Unit

Order No. 12AAH035



### USB-Memory stick

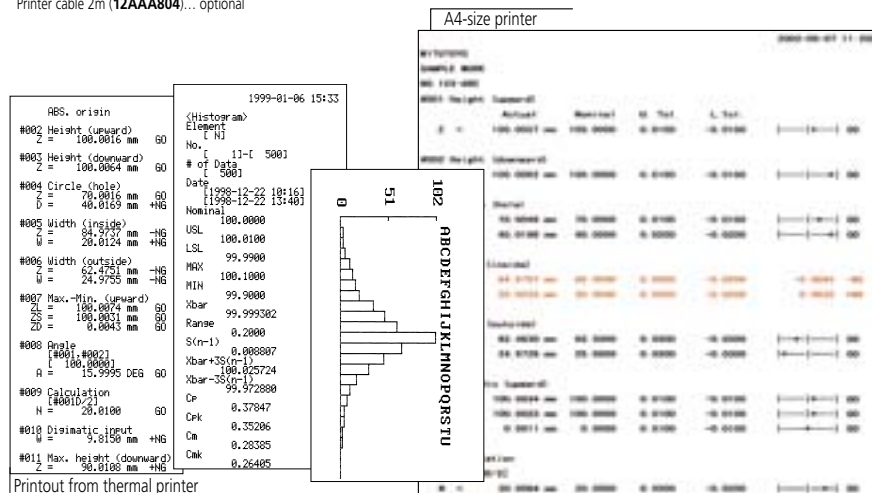
Order No. 12AAH034



> Convenient for saving measurement procedures and measurement result files.

Printing method	Thermal serial dot
Printing digits	40 digits
Maximum print speed	52.5cps (normal characters)
Dimensions (XxDxH)	160mmx170mmx65.5mm (printer body)
Standard accessories	Printer cable, recording paper (1 roll), AC adapter (100V)

\*Supports external printer (color or black & white) for ESP/C  
Printer control code system: ESC/P, MS-DOS 24 pins  
Printer cable 2m (12AAA804)... optional





# Technical data

## Specifications

<b>Order No.</b>	120V/English manual	<b>518-341A-21 / 518-342A-21*</b>
	120V/Spanish manual	<b>518-341A-22 / 518-342A-22*</b>
	220V/English manual	<b>518-341D-21 / 518-342D-21*</b>
	220V/Spanish manual	<b>518-341D-22 / 518-342D-22*</b>
	220V/German manual	<b>518-341D-23 / 518-342D-23*</b>
	220V/French manual	<b>518-341D-24 / 518-342D-24*</b>
	220V/Italian manual	<b>518-341D-25 / 518-342D-25*</b>
	240V/English manual	<b>518-341E-21 / 518-342E-21*</b>
	220V/Chinese manual	<b>518-341DC / 518-342DC*</b>
	220V/Korean manual	<b>518-341K / 518-342K*</b>
Measuring range (stroke)	0 - 972mm (600mm) / 0 - 38" (24")	
Resolution (selectable)	0.0001 / 0.001 / 0.01/0.1mm .000001/.00001/.0001/.001"	
Accuracy Measuring accuracy* <sup>1</sup> at 20°C	(1.1+0.6L/600) µm, L = Measuring length (mm)	
	Repeatability (2σ)* <sup>1</sup> Plane: 0.4µm Bore: 0.9µm	
	Perpendicularity* <sup>2</sup> 5µm	
	Straightness* <sup>2</sup> 4µm	
Drive method	Manual / Motor (5 - 40mm/s, 7 steps)	
Measuring force	1N	
Counterbalance type	Suspended weight	
Main unit suspension method	Full / semi-floating on air	
Air source	Built-in air compressor	
LCD	Monochrome Graphic LCD (with LED backlight)	
Language for display* <sup>3</sup>	English / German / French / Spanish / Italian / Dutch / Portuguese / Swedish / Czech / Hungarian / Slovenian / Polish / Mandarin Chinese / Traditional Chinese / Korean / Japanese	
Number of stored programs	50 (max.)	
Number of stored data items	60,000 (max.)	
Power supply	AC adapter/Battery (Ni-MH)	
Power consumption	43VA	
Battery ( <b>12AAF712</b> )	Approx. 5 hours (Air floating & slider elevation: 25%)	
Mass	24kg / 52.8lb (24.5kg / 53.9lb)	
Standard accessories	ø5 stepped probe ( <b>12AAF634</b> ), block for calibrating probe diameter	

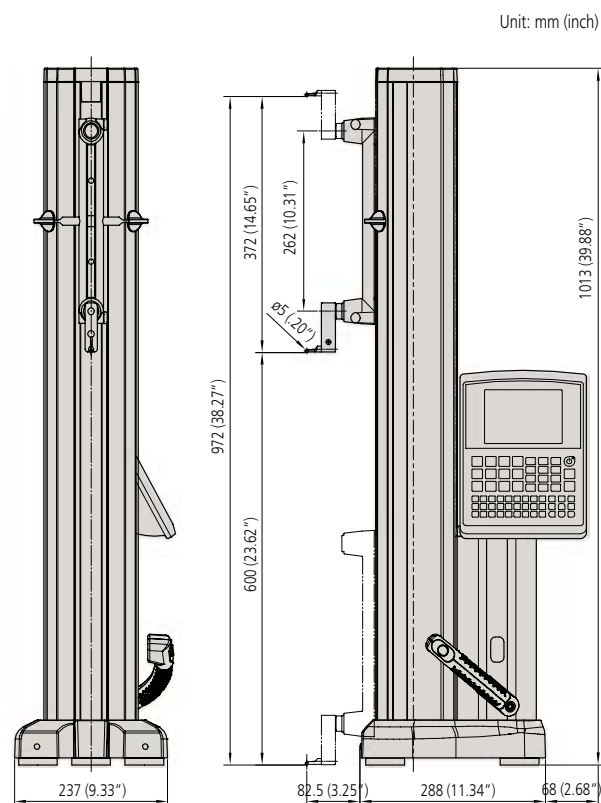
\* With power grip model

\*<sup>1</sup> This accuracy is guaranteed when using the standard eccentric ø5 probe.

\*<sup>2</sup> This accuracy is guaranteed when using a lever head (MLH-421) or Mu-Checker (M-411)

\*<sup>3</sup> Traditional Chinese: Optional  
Korean: 518-331K and 518-322K only

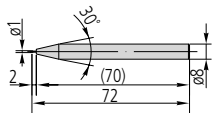
## Dimensions



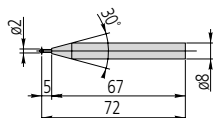
➔ > **For longer battery operation**  
Optional large-capacity battery pack (**12AAF675**)  
for longer battery-powered operation (8 hours).

# Optional probes and calibration block

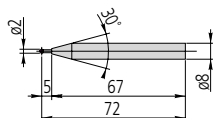
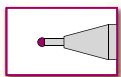
**12AAF666**  
ø1 ball probe



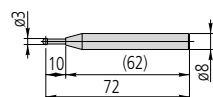
**957261**  
ø2 ball probe



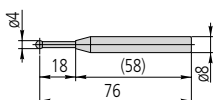
**12AAF667**  
ø2 ruby ball probe



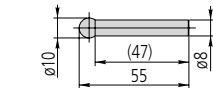
**957262**  
ø3 ball probe



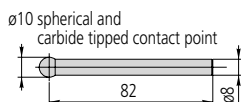
**957263**  
ø4 ball probe



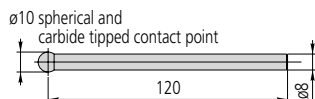
**12AAB552**  
ø10 ball probe, L=55



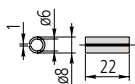
**12AAF668**  
ø10 ball probe, L=82



**12AAF669**  
ø10 ball probe, L=120



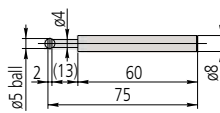
**226116**  
Test indicator (ø6 stem) adapter



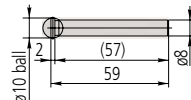
**932361** Mu-checker lever head holder  
CMM ball and disk hard probes  
are available.

**12AAA787** Block for calibrating probe diameter  
(applicable to taper probe)

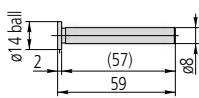
**12AAF670**  
ø5 disk probe



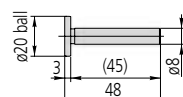
**12AAF671**  
ø10 disk probe



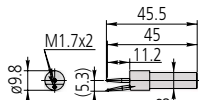
**957264**  
ø14 disk probe



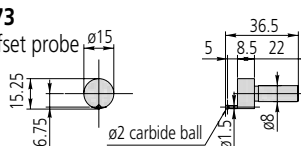
**957265**  
ø20 disk probe



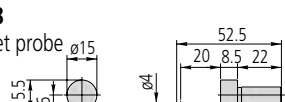
**12AAF672**  
ø1 ball offset probe\*  
\*test indicator stylus  
(103017)



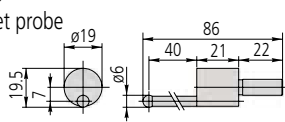
**12AAF673**  
ø2 ball offset probe



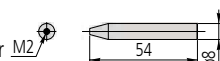
**12AAA788**  
ø4 ball offset probe



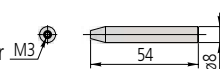
**12AAA789**  
ø6 ball offset probe



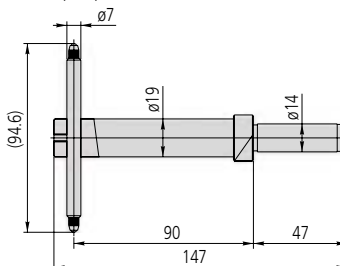
**226117**  
M2 CMM stylus adapter



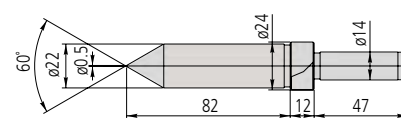
**226118**  
M3 CMM stylus adapter



**12AAC072** Depth probe

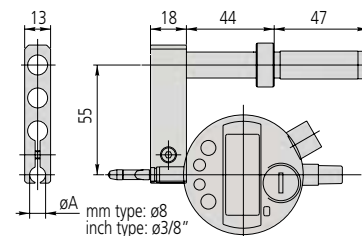


**12AAC073** ø20 taper probe

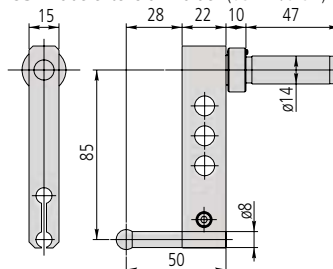


**12AAA792** Dial indicator (ø8 stem) holder

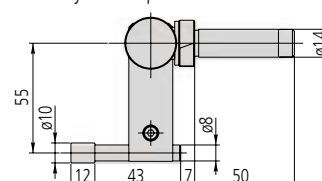
**12AAA837** Dial indicator (ø3/8" stem) holder



**12AAA793** Probe extension holder (85mm/3.3")



**12AAB136** ø10 cylindrical probe





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