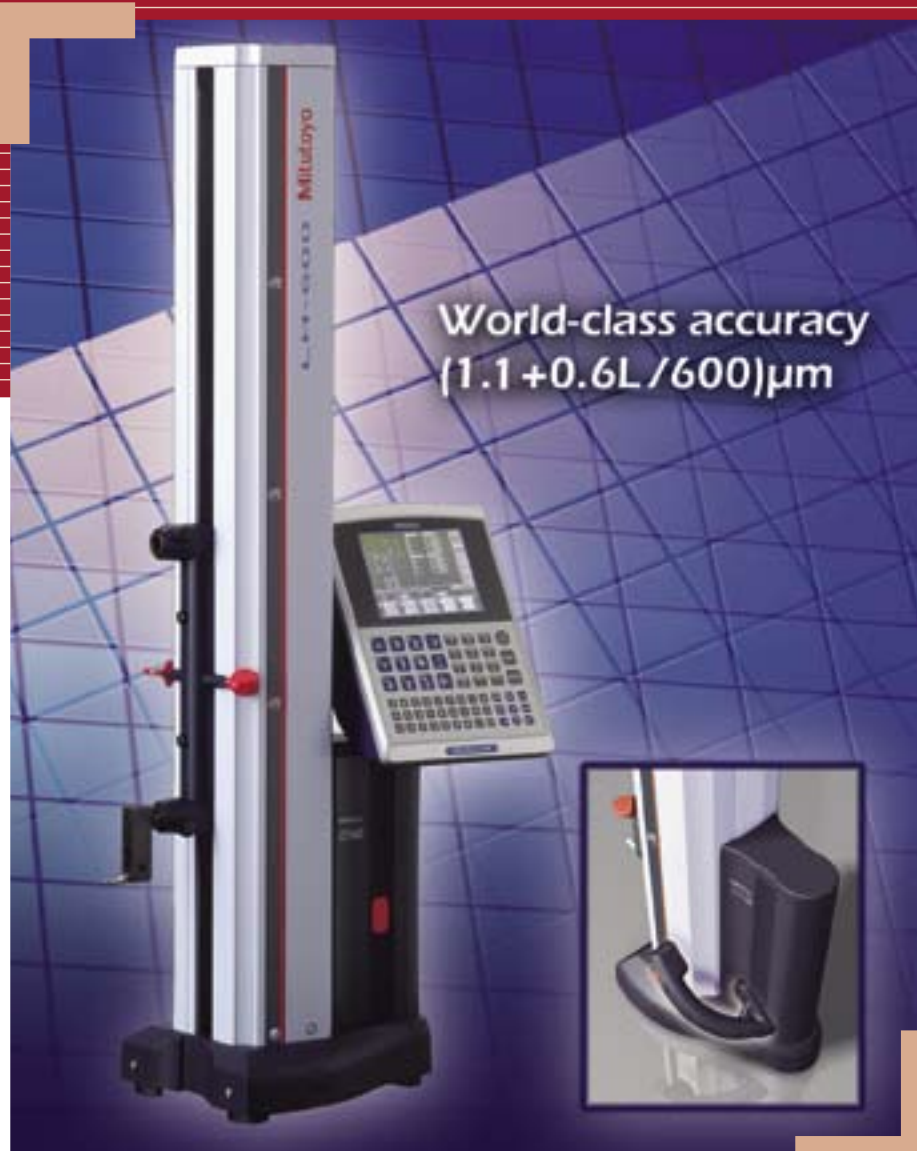


1D/2D Measuring Gage LINEAR HEIGHT

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 $0.4\mu\text{m}$ (2σ)
- > 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



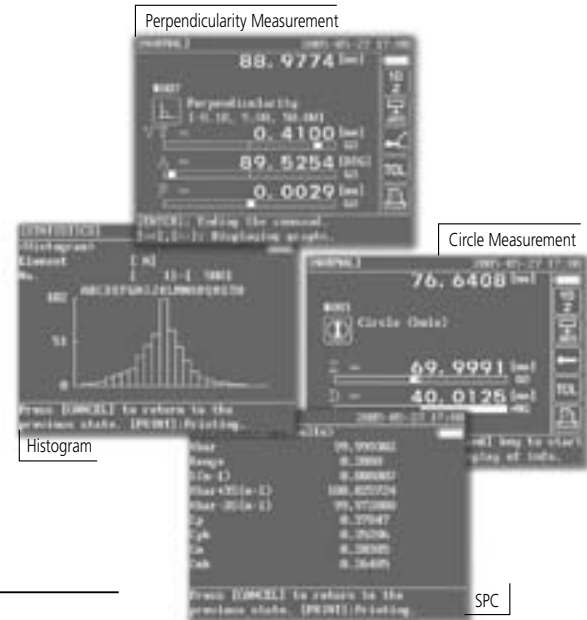
POWER GRIP



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. 40mm/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.

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

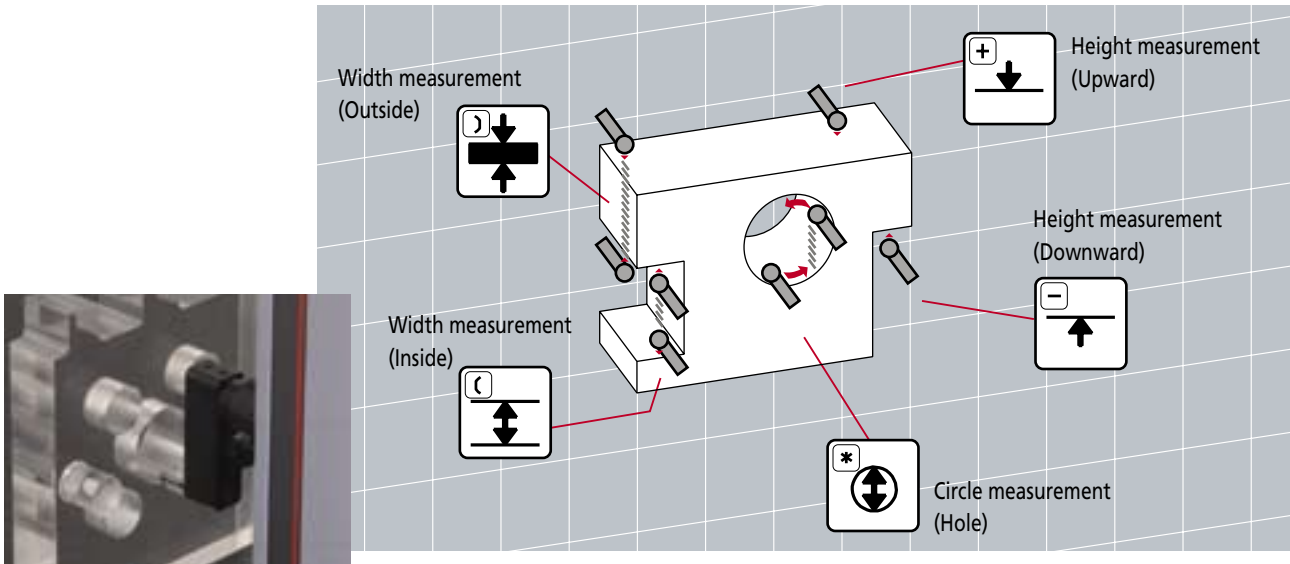
Statistical processing functions

- > 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



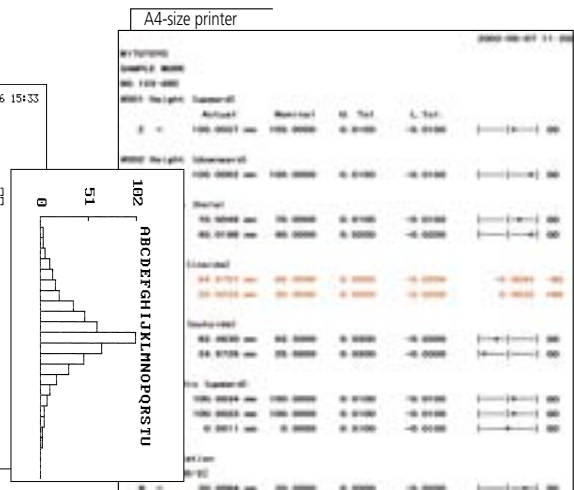
Optional Accessories
Order No. 12AAA802 Recording paper for receipt printer (10 rolls/set)

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

ABS. origin	(Histogram)
#002 Height (upward)	Elapse
Z = 100.0016 mm	No. [1] - [5001
#003 Height (downward)	# of Data
Z = 100.0064 mm	5001
#004 Circle (hole)	Date
D = 70.0016 mm	1999-12-22 10:16:13
D = 40.0169 mm	1998-12-22 13:40:13
#005 Width (inside)	Nominal
Z = 82.9737 mm +HG	100.0000
Z = 20.0124 mm +HG	USL 100.0100
#006 Width (outside)	LSL 99.9900
Z = 62.4761 mm +HG	MAX 99.9900
Z = 24.3755 mm +HG	MIN 100.1000
#007 Max.-Min. (upward)	Xbar 99.99000
ZL = 100.0074 mm	Xbar+3S(n-1)
ZU = 100.0031 mm	100.125724
ZD = 0.0043 mm	Xbar-3S(n-1)
#008 Angle	Cp 99.972880
[#001, #002]	S(n-1) 0.000007
[100.0000]	Xbar+3S(n-1)
A = 15.9995 DEG	100.125724
#009 Calculation	Cpk 0.37847
(#001, #002)	Cmk 0.35206
[#001, #002]	Cm 0.28385
#010 Dimensional input	Cmk 0.26405
D = 0.0150 mm +HG	
#011 Max. height (downward)	
Z = 90.0108 mm +HG	

Printout from thermal printer



USB-FDD Unit Order No. 12AAH035



USB-Memory stick Order No. 12AAH034



> Convenient for saving measurement procedures and measurement result files.

Technical data

Specifications

Order No.	120V/English manual	518-341A-21 / 518-342A-21*
	120V/Spanish manual	518-341A-22 / 518-342A-22*
	220V/English manual	518-341D-21 / 518-342D-21*
	220V/Spanish manual	518-341D-22 / 518-342D-22*
	220V/German manual	518-341D-23 / 518-342D-23*
	220V/French manual	518-341D-24 / 518-342D-24*
	220V/Italian manual	518-341D-25 / 518-342D-25*
	240V/English manual	518-341E-21 / 518-342E-21*
	220V/Chinese manual	518-341DC / 518-342DC*
	220V/Korean manual	518-341K / 518-342K*
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 ^{*1} at 20°C	(1.1+0.6L/600) μm, L = Measuring length (mm)	
Repeatability (2σ) ^{*1}	Plane: 0.4μm Bore: 0.9μm	
Perpendicularity ^{*2}	5μm	
Straightness ^{*2}	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 ^{*3}	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 (12AAF712)	Approx. 5 hours (Air floating & operation time slider elevation: 25%)	
Mass	24kg / 52.8lb (24.5kg / 53.9lb)	
Standard accessories	ø5 stepped probe (12AAF634), block for calibrating probe diameter	

* With power grip model

*1 This accuracy is guaranteed when using the standard eccentric ø5 probe.

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

*3 Traditional Chinese: Optional
Korean: 518-331K and 518-322K only

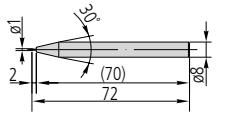
Dimensions



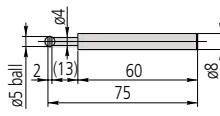
➔ **> For longer battery operation**
Optional large-capacity battery pack (**12AAF675**)
for longer battery-powered operation (8 hours).

Optional probes and calibration block

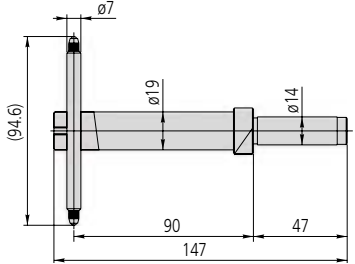
12AAF666
ø1 ball probe



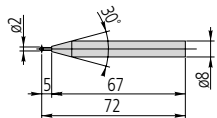
12AAF670
ø5 disk probe



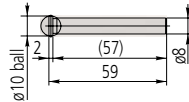
12AAC072 Depth probe



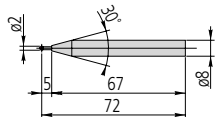
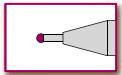
957261
ø2 ball probe



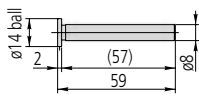
12AAF671
ø10 disk probe



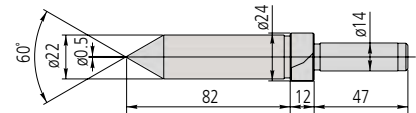
12AAF667
ø2 ruby ball probe



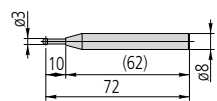
957264
ø14 disk probe



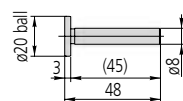
12AAC073 ø20 taper probe



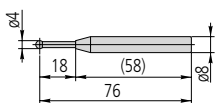
957262
ø3 ball probe



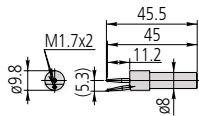
957265
ø20 disk probe



957263
ø4 ball probe

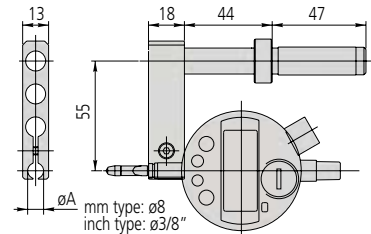


12AAF672
ø1 ball offset probe*
*test indicator stylus (103017)

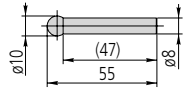


12AAA792 Dial indicator (ø8 stem) holder

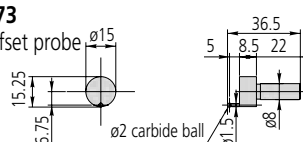
12AAA837 Dial indicator (ø3/8" stem) holder



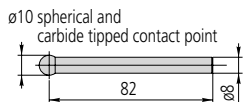
12AAB552
ø10 ball probe, L=55



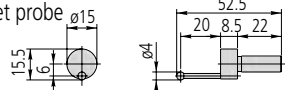
12AAF673
ø2 ball offset probe



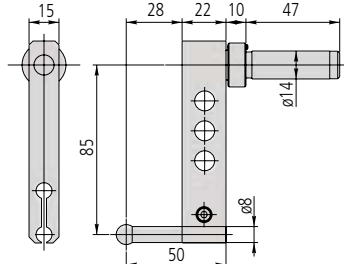
12AAF668
ø10 ball probe, L=82



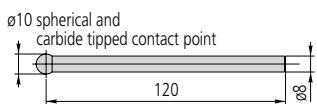
12AAA788
ø4 ball offset probe



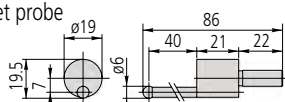
12AAA793 Probe extension holder (85mm/3.3")



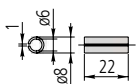
12AAF669
ø10 ball probe, L=120



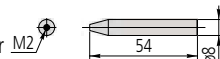
12AAA789
ø6 ball offset probe



226116
Test indicator (ø6 stem) adapter

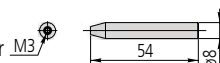


226117
M2 CMM stylus adapter

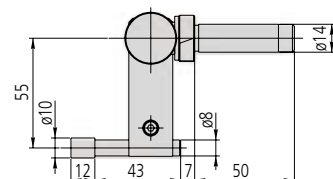


932361 Mu-checker lever head holder
CMM ball and disk hard probes are available.

226118
M3 CMM stylus adapter



12AAB136 ø10 cylindrical probe



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



Our products are classed as regulated items under Japanese Foreign Exchange and Foreign Trade Law. Please consult us in advance if you wish to export our products to any other country. If the purchased product is exported, even though it is not a regulated item (Catch-All controls item), the customer service available for that product may be affected. If you have any questions, please consult your local Mitutoyo sales office.

- Coordinate Measuring Machines
- Vision Measuring Systems
- Form Measurement
- Optical Measuring
- Sensor Systems
- Test Equipment and Seismometers
- Digital Scale and DRO Systems
- Small Tool Instruments and Data Management

Note: All information regarding our products, and in particular the illustrations, drawings, dimensional and performance data contained in this pamphlet, as well as other technical data are to be regarded as approximate average values. We therefore reserve the right to make changes to the corresponding designs, dimensions and weights. The stated standards, similar technical regulations, descriptions and illustrations of the products were valid at the time of printing. Only quotations submitted by ourselves may be regarded as definitive.

Our products are classed as regulated items under Japanese Foreign Exchange and Foreign Trade Law. Please consult us in advance if you wish to export our products to any other country. If the purchased product is exported, even though it is not a regulated item (Catch-All controls item), the customer service available for that product may be affected. If you have any questions, please consult your local Mitutoyo sales office.

Mitutoyo Corporation
 20-1, Sakado 1-Chome,
 Takatsu-ku, Kawasaki-shi,
 Kanagawa 213-8533, Japan
 T +81 (0) 44 813-8230
 F +81 (0) 44 813-8231
<http://www.mitutoyo.co.jp>

