Mitutoyo

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Measuring Instruments Catalog

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Input Tools

SERIES 264 — Digimatic Gage/PC Data Input Device

FEATURES

- The input tool is an interface enabling you to easily input measurement data from a Mitutoyo measuring instrument with the digimatic output feature to your PC.
- An USB keyboard signal conversion input tool, IT-012U converts measurement data to keyboard signals and directly inputs them to cells in off-the-shelf spreadsheet software such as Excel. An RS-232C communication input tool, IT-007R is also available to input data through RS-232C communication.
- More accurate measurement is possible using an optional foot switch.

264-005

264-007

264-012

USB keyboard signal conversion model
Order No.: **264-012-10**
Input: Digimatic signal x 1 channel
Output: USB keyboard signal x 1 channel (USB 2.0)
Power supply: 5V from the PC bus power
Weight: 61g (including cable)

PS/2 keyboard signal conversion model
Order No.: **264-005**
Input: Digimatic signal x 1 channel
Output: PS/2 keyboard signal x 1 channel
Power supply: 5V from the PC bus power
Weight: 70g (including cable)

RS-232C conversion model
Order No.: **264-007**
Input: Digimatic signal x 1 channel
Output: RS-232C x 1 channel
Power supply: 12V from the PC bus power (power storage)
Weight: 91g (including cable)

Common to all models
DATA switch: Switch life of one million times
Dimensions (W x D x H): 72 x 44 x 23.5mm (main body)

Optional Accessory

937179T: Foot switch
939039: Gage selector

Connection Configuration

Refer to the Input Tools leaflet (E4250) for more details.

* When you use an optional gage selector 3 (refer to page 16), you can connect up to three measuring gages and select an input by switching them. When using **264-012**, you can connect multiple input tools at the same time with an off-the-shelf USB hub. Simultaneous input, however, is not supported.
For cables used to connect each measuring gage and input tool, refer to page 22.

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Multiplexer-10F

SERIES 264 — Digimatic/RS-232C Interface Unit

FEATURES

- A measurement data transfer device, multiplexer MUX-10F converts digimatic output measurement data to RS-232C and outputs it to an external device such as PC.
- Up to four measuring instruments with the digimatic output feature can be connected.

264-002

Usage Example

Data input using the data switch on the digimatic gage

- If the digimatic gage has a data switch, press it to input data, convert it according to the RS-232C specifications and output it.

Data input using the load switch

- If the digimatic gage does not have a data switch or when you perform simultaneous measurement, use the load switch to input data from the measuring gage selected by the tool selection switch, convert it according to the RS-232C specifications and output it.
- If multiple measuring gages are selected by the tool selection switch, data is input in the order of channels 1 through 4.
- Optional foot switch (937179T) is available for quick data entry.

Data input using the external commands

- You can input data from the specified measuring gage connected with MUX-10F (ch 1 - 4) by inputting a command on your PC.

Commands (ASCII)	Transfer channels
1 (ASCII corde31) CR	1
2 (ASCII corde32) CR	2
3 (ASCII corde33) CR	3
4 (ASCII corde34) CR	4
A (ASCII corde41) CR	1, 2, 3, 4
B (ASCII corde42) CR	1, 2, 4
C (ASCII corde43) CR	1, 3, 4
D (ASCII corde44) CR	2, 3, 4
E (ASCII corde45) CR	1, 2, 3
F (ASCII corde46) CR	1, 2
G (ASCII corde47) CR	1, 3
H (ASCII corde48) CR	1, 4
I (ASCII corde49) CR	2, 3
J (ASCII corde50) CR	2, 4
K (ASCII corde51) CR	3, 4

Order No.

264-002: (w/100V AC adaptor)
264-002A: (w/120V AC adaptor)
264-002D: (w/220V AC adaptor)
264-002E: (w/240-220V AC adaptor)

Technical Data

Data input port: 4 channels for Digimatic gages
Data output: Via RS-232C interface
Data output format: RS-232C (D-SUB 9P in connector)
Data transmission method: Half-duplex transmission
Data transmission code: ASCII/JIS
Data length: 8 bits
Start bit: 1 bit
Stop bit: 1 bit
Parity check: Non
Synchronizing method: Start-stop system
Data transmission speed: 300bps, 600bps, 1200bps, 2400bps, 9600bps, 19200bps
Power supply: AC adapter
Dimensions (W x D x H): 91.4 x 92.5 x 50.4mm

Optional Accessory

937179T: Foot switch

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DP-1VR

SERIES 264 — Digimatic Mini-Processor

FEATURES

- This is a palm-sized printer used to print measurement data from the digimatic gage or to perform statistical analysis.
- This printer offers excellent functionality. You can use it not only to print measurement data, perform a variety of statistical analyses, and draw a histogram or D chart but also to perform complicated operations for X-R control chart.
- Equipped with RS-232C output and GO/NG judgment output as standard functions, this processor ensures high reliability as an advanced quality inspection machine.
- The line thermal printer enables fast and quiet printing.

264-504

Order No.

264-504: (w/100V AC adaptor)
264-504A: (w/120V AC adaptor)
264-504D: (w/220V AC adaptor)
264-504E: (w/240-220V AC adaptor)

Technical Data

Printing method: Thermal line printer
Printing dot: 384dot (8dot/mm)
Printing speed: 6.5mm/s (using AC adapter)
Printing paper: 48m
Printing line: Approx. 6500 lines for large characters
Approx. 12000 lines for normal characters
Processing capacity: 9999 data (mode 1/2/3)
100000 data (mode 0)
Printing data: Measurement data, GO/±NG judgment,
No. of data, Max/min value, Range, Average,
Standard deviation, No. of defective, Fraction defective, Process capability index,
Histogram, D-chart, Control chart generation
for Xd-bar and control limit data, date and time
Output function: Output the measuring data (RS232C) or
GO/±NG judgment
Input timer: 0.25s, 1s, 5s, 30s, 1min, 30min, 60min
Power: AC adapter 6V
Electric battery: LR6 (alkaline), Ni-Mh (AA size)
Battery life: 10 years (clock battery), 10000 lines (1600mA 1time/5 sec. using the nickel hydrofluoric battery)
Dimensions (W x D x H): 94 x 201 x 75.2mm
Mass: 390g

Optional Accessory

09EAA084*: RS-232C changing cable (1m, 9pin)
965516*: GO/±NG judgment cable
937179T: Foot switch
*It is impossible to use the both RS-232C cable and GO/±NG judgment cable at the same time.

Refer to the DP-1VR leaflet (0) for more details.

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Gage Selector 3

3-channel Switching Box for Data Transmission

FEATURES

- 3 Digimatic gages can be connected.
- You can specify the gage which outputs the data with the channel switch.

Examples of Connections

939039

Order No.

939039:

Technical Data

Connection: Up to three gages
Signal: Digimatic code format
Connection: Bidirectional
External dimensions (W x D x H): 100 x 70 x 33mm

EC Counter

SERIES 542 — Low-cost, Assembly Type Display Unit

FEATURES

- Compact panel mounting type and DIN size. It can be easily incorporated into each system.

DIMENSION

542-007

Unit: mm

Order No.

542-007

Technical Data

Applicable gage: LGD, LGS
Resolution: 0.001mm, 0.01mm
No. of gage input: 1
Display: 6-digit LED and a negative [-] sign
Function: Preset
GO/±NG judgment
Output (open-collector): 3-step limit signal, Normal signal
External control : Preset, Data hold
Power supply : Via AC adaptor
Dimensions (W x D x H) : 96 x 48 x 84.6mm
Mass: 50g

Digimatic Multi-Unit

SERIES 572 — 6-channel Multi-point Measuring Unit

FEATURES

- The Digimatic Multi-Unit receives measurement data from multiple (up to six) Digimatic gages.
- By connecting a Display Unit (EC Counter) measurement from each gage can be displayed, and max, min, and range measurements can be made for the connected gages. Also possible are GO/±NG judgments on the measurement data individually or collectively.

572-052

Order No.

572-052: (w/100V AC adaptor)
572-052A: (w/120V AC adaptor)
572-052D: (w/220V AC adaptor)
572-052E: (w/240-220V AC adaptor)

Technical Data

Data input port: 6
Functions: MAX/MIN measurement
Range (MAX-MIN) measurement
Zero-Setting
Presetting
GO/±NG judgment
(Buzzer and LED)
GO/±NG signal output
Error alarm
SPC data output
Power supply: 9V DC, 500mA (via AC adaptor)
Dimensions (W x D x H): 236 x 120 x 66mm
Mass: 1.3kg

Optional Accessory

936937: SPC cable for data output (1m)
965014: SPC cable for data output (1m)
907020: GO/±NG signal output cable (2m)
937179T: Foot switch

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Digimatic Difference/Sum Unit

SERIES 542 — For Multiple-gage Measurements

572-041

Order No.

572-041: (w/100V AC adaptor)
572-041A: (w/120V AC adaptor)
572-041D: (w/220V AC adaptor)
572-041E: (w/240-220V AC adaptor)

Technical Data

Data input port: 2
Calculation mode: A+B, A-B, A, B
Functions: Zero-Setting
SPC data output
Power supply : 9V DC, 500mA (via AC adaptor)
Dimensions (W x D x H): 76 x 120 x 66mm
Mass: 0.55kg

Optional Accessory

936937: SPC cable for data output (1m)
965014: SPC cable for data output (1m)
907020: GO/±NG signal output cable (2m)
937179T: Foot switch

FEATURES

- The Digimatic Difference/Sum Unit will add or subtract the measurements from two Digimatic gages and output results to a display Unit or SPC data processor.

Examples of Connections

Note: Data output can be sent to a Mitutoyo Data Processor directly or indirectly through the Digimatic Display Unit.

SPC Connecting Cables

- These cables are used to output measurement data from the digimatic gage with the output feature to the digimatic mini processor, digimatic display unit, multiplexer or other device.
- Cables of one or two meters are available.
- Note that the shape of connector differs depending on the model.

Order No.	Order No.
Straight type 905338: 1m (40") 905409: 2m (80")	With data out switch type 959149: 1m (40") 959150: 2m (80")
Back type 905689: 1m (40") 905690: 2m (80")	With data out switch type 05CZA624: 1m (40") 05CZA625: 2m (80")
Right type 905691: 1m (40") 905692: 2m (80")	With data out switch type 05CZA662: 1m (40") 05CZA663: 2m (80")
Left type 905693: 1m (40") 905694: 2m (80")	6 pins type 937387: 1m (40") 965013: 2m (80")
Flat type 21EAA192: 1m (40") 21EAA190: 2m (80")	10 pins type 936937: 1m (40") 965014: 2m (80")

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Coolant Proof Micrometer

SERIES 293 — with Dust/Water Protection Conforming to IP65 Level

FEATURES

- IP65 protection level, enabling use in environments exposed to cutting oil, etc*.
  *Anti-corrosion treatment is required after use.
- Measurement data output function is available with a water-resistant connection cable.
- Oil-resistance materials are used in all plastic components.
- ±1µm instrumental error (75mm or less range models)
- Auto power ON/OFF function.
- Certificate of inspection* is included. (50mm or less range models)
  *It is not the type used to obtain calibration certificates.

293-230

293-252

Oil-resistance materials are used in all plastic components.

Certificate of inspection

Technical Data

Accuracy: Refer to the list of specifications. (excluding quantizing error)
Resolution: 0.001mm, .00005"/0.001mm (up to 4")
Flatness: 0.3µm
Parallelism: 1µm for models up to 50mm
2µm for models up to 100mm
3µm for models up to 175mm
4µm for models up to 275mm
5µm for models over 275mm
Measuring faces: Carbide tipped
Display: LCD
Battery: SR44 (1 pc.), 938882
Battery life: Approx. 1.2 years under normal use (8 months: over 100mm models)
Dust/Water protection level: IP65

Function

Origin-set, Preset (over 100mm models), Zero-setting, Automatic power ON/OFF, Data hold, Data output, inch/mm conversion (inch/mm models)
Alarm: Low voltage, Counting value composition error

Optional Accessory

05CZA662: SPC cable with data switch (1m)
05CZA663: SPC cable with data switch (2m)

SPC cable with data switch

Measurement data output function is available with a water-resistant connection cable.

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SPECIFICATIONS

Metric With ratchet stop

Range	Order No.	Accuracy
0 - 25mm	293-230 / 293-240*	±1µm
25 - 50mm	293-231 / 293-241*	±1µm
50 - 75mm	293-232 / 293-242*	±1µm
75 - 100mm	293-233 / 293-243*	±2µm
100 - 125mm	293-250	±2µm
125 - 150mm	293-251	±2µm
150 - 175mm	293-252	±3µm
175 - 200mm	293-253	±3µm
200 - 225mm	293-254	±3µm
225 - 250mm	293-255	±4µm
250 - 275mm	293-256	±4µm
275 - 300mm	293-257	±4µm

*without SPC data output

Inch/Metric With ratchet stop

Range	Order No.	Accuracy
0 - 1”	293-330 / 293-340*	± .00005”
1” - 2”	293-331 / 293-341*	± .00005”
2” - 3”	293-332 / 293-342*	± .00005”
3” - 4”	293-333 / 293-343*	± .0001”

*without SPC data output

DIMENSION AND MASS

Unit: mm

Ratchet stop type up to 100mm

Ratchet stop type over 100mm

Range	L	a	b	c	Mass
0 - 25mm	0	2.8	9	(25)	270g
25 - 50mm	25	2.8	9.8	(32)	330g
50 - 75mm	50	2.8	12.6	(47)	470g
75 - 100mm	75	2.8	14	(60)	625g
100 - 125mm	132.8	5.3	16.7	(76.5)	600g
125 - 150mm	158.2	5.7	18.8	(91)	740g
150 - 175mm	183.6	6.1	19.1	(103.1)	800g
175 - 200mm	208.8	6.3	18.2	(115.3)	970g
200 - 225mm	234.2	6.7	16.8	(126.8)	1100g
225 - 250mm	258	5.5	18	(139.8)	1270g
250 - 275mm	284	6.5	18	(152.3)	1340g
275 - 300mm	309	6.5	18	(166)	1540g

Digimatic Micrometer

SERIES 293

FEATURES

293-571

SPC

Technical Data

Accuracy: Refer to the list of specifications. (excluding quantizing error)
Resolution: 0.001mm
Flatness: 0.6µm
Parallelism: 5µm for models up to 375mm
6µm for models up to 475mm
7µm for models over 500mm
Measuring faces: Carbide tipped
Display: LCD
Battery: SR44 (2 pcs.), 938882
Battery life: Approx. 1.8 years under normal use

Function

Preset, Zero-setting, Power ON/OFF, Data hold, Data output, inch/mm conversion (inch/mm models)
Alarm: Low voltage, Counting value composition error

Optional Accessory

937387: SPC cable (1m)
965013: SPC cable (2m)

SPECIFICATIONS

Metric With ratchet stop

With ratchet stop

Range	Order No.	Accuracy
300 - 325mm	293-571	±6µm
325 - 350mm	293-572	±6µm
350 - 375mm	293-573	±6µm
375 - 400mm	293-574	±7µm
400 - 425mm	293-575	±7µm
425 - 450mm	293-576	±7µm
450 - 475mm	293-577	±8µm
475 - 500mm	293-578	±8µm

Digimatic Micrometer

SERIES 293

FEATURES

- Simply measures 0 through 25mm with resolution to 0.001mm.
- Provided only with a origin-set key for easy origin setting.
- A ratchet stop or friction thimble for a constant measuring force.
- Measurement readout with large characters on the LCD screen.

293-821

SPECIFICATIONS

Metric With ratchet stop

Range	Order No.	Accuracy
0 - 25mm	293-821	±2μm

Inch/Metric With ratchet stop

Range	Order No.	Accuracy
0 - 1"	293-831	±.0001"

DIMENSION AND MASS

ABSOLUTE Digimatic Micrometers

SERIES 227 — with Constant & Adjustable Fine-loading Device

FEATURES

- Constant and low measuring force mechanism in the thimble.
- Adjustable measuring force* accommodates various kind of work materials.
  *0.5-2.5N or 2-10N
- The measurement-value hold function automatically retains the data at a specified measuring force, ensuring accuracy.
- Non-rotating spindle and the new ratchet friction thimble.
- Speedy spindle feed of 10mm/rev.
- With absolute linear scale.
- With SPC data output.
- With a standard bar to set the origin point (for models with 15 - 30mm range).

227-201

SPECIFICATION

Metric

Range	Order No.	Accuracy	Measuring force
0 - 15mm	227-201	±2μm	0.5N - 2.5N
	227-202	±2μm	2N - 10N
15 - 30mm	227-203	±2μm	0.5N - 2.5N
	227-204	±2μm	2N - 10N

Inch/Metric

Range	Order No.	Accuracy	Measuring force
0 - .6"	227-211	±.0001"	0.5N - 2.5N
	227-212	±.0001"	2N - 10N
.6" - 1.2"	227-213	±.0001"	0.5N - 2.5N
	227-214	±.0001"	2N - 10N

DIMENSION AND MASS

Mitutoyo

Mitutoyo guarantees the product quality. PROPRIETARY INSPECTION CERTIFICATE

Technical Data

Accuracy: Refer to the list of specifications. (excluding quantizing error)
Resolution: 0.001mm or .00005"/0.001mm
Flatness: 0.3μm
Parallelism: 2μm
Measuring faces: Carbide tipped
Display: LCD
Battery: SR44 (1 pc.), 938882
Battery life: Approx. 1.2 years under normal use

Function

Origin-set, Automatic power on/off, inch/mm conversion (inch/mm models)
Alarm: Low voltage, Counting value composition error

SPC

ABSOLUTE® Absolute System Patented by MITUTOYO

Technical Data

Accuracy: Refer to the list of specifications. (excluding quantizing error)
Resolution: 0.001mm
Flatness: 0.3μm
Parallelism: 2μm
Measuring faces: Carbide tipped
Display: LCD
Battery: SR44 (1 pc.), 938882
Battery life: Approx. 3 years under normal use (1 year for 15-30mm range model)

Function

Origin-set, Power ON/OFF, Data hold, Data output, Preset (15-30mm range model), inch/mm conversion (inch/mm models)
Alarm: Low voltage, Counting value composition error

Optional Accessory

937387: SPC cable (1m)
965013: SPC cable (2m)

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Quickmike

SERIES 293 — IP-54 ABSOLUTE Digimatic Micrometers

The Quickmike provides a speedy spindle feed of 10mm per thimble rotation as compared to the conventional micrometer with 0.5mm per rotation. Its wide 30mm measuring range allows various workpieces with different shapes to be measured quickly.

FEATURES

- Non-rotating spindle and the new ratchet friction thimble.
- Speedy spindle feed of 10mm/rev.
- With absolute linear scale.
- IP54 dust/water protection (when not connected with data output cable).
- With SPC data output.
- With a standard bar to set the origin point (for models with a range over 30mm).

293-666

293-667

293-668

293-669

Technical Data

Accuracy: Refer to the list of specifications. (excluding quantizing error)
Resolution: 0.001mm
Flatness: 0.3μm
Parallelism: 2μm for models up to 80mm
3μm for models up to 105mm
Measuring faces: Carbide tipped
Display: LCD
Battery: SR44 (1 pc.), 938882
Battery life: Approx. 3 years under normal use (1 year for models over 30mm)
Dust/Water protection level: IP54

Function

Origin-set, Zero-setting, Power ON/OFF, Data hold, Data output, inch/mm conversion (inch/mm models)
Alarm: Low voltage, Counting value composition error

Optional Accessory

937387: SPC cable (1m)
965013: SPC cable (2m)

SPECIFICATION

Metric

Range	Order No.	Accuracy
0 - 30mm	293-666	±2μm
	293-661-10*	±2μm
25 - 55mm	293-667	±2μm
50 - 80mm	293-668	±3μm
75 - 105mm	293-669	±3μm

*Without SPC data output

DIMENSION AND MASS

Unit: mm

Range	L	a	b	c	Mass
0 - 30mm	34.8	2.8	6.2	25	275g
25 - 55mm	59.8	2.8	8.5	36	355g
50 - 80mm	84.8	2.8	10.3	47	525g
75 - 105mm	109.8	2.8	10.7	60	625g

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Outside Micrometers

SERIES 102

FEATURES

- Heat-insulated frame, tapered (on the anvil side) for hard-to-reach places.
- With a standard except for 25mm model.
- A ratchet stop or friction thimble for a constant measuring force.

102-301

102-309

PROPRIETARY INSPECTION CERTIFICATE
Mitutoyo guarantees the product quality

Technical Data

Accuracy: Refer to the list of specifications.
Graduation: 0.01mm, 0.001mm, .001" or .0001"
Flatness: 0.6μm
Parallelism: 2μm for 25mm model
3μm for models up to 100mm
Measuring faces: Carbide tipped

Ratchet stop type

SPECIFICATIONS

Metric With ratchet stop

Range	Order No.	Accuracy
0 - 25mm	102-301	±2μm
	102-307*	±2μm
25 - 50mm	102-302	±2μm
	102-308*	±2μm
50 - 75mm	102-303	±2μm
75 - 100mm	102-304	±3μm

*0.001mm reading is obtained with vernier.

Inch With ratchet stop

Range	Order No.	Accuracy
0 - 1"	102-321	±.0001"
	102-327*	±.0001"
1" - 2"	102-322	±.0001"
	102-328*	±.0001"
2" - 3"	102-323	±.0001"
3" - 4"	102-324	±.00015"

*.0001" reading is obtained with vernier.

Metric With friction thimble

Range	Order No.	Accuracy
0 - 25mm	102-305	±2μm
	102-309*	±2μm
25 - 50mm	102-306	±2μm
	102-310*	±2μm

*0.001mm reading is obtained with vernier

Inch With friction thimble

Range	Order No.	Accuracy
0 - 1"	102-325	±.0001"
	102-329*	±.0001"
1" - 2"	102-326	±.0001"
	102-330*	±.0001"

*.0001" reading is obtained with vernier.

Metric Micrometer set

Range	Order No.	Assortment of micrometers
0 - 100mm (4 mikes/set)	102-911-01	• 102-701* 102-302 102-303 102-304 • 3 micrometer standards

*Ratchet thimble micrometer.

DIMENSION

Unit: mm

Range	L	a	b	c	d
0 - 25mm	30.3	2.8	5	26	6.35
25 - 50mm	55.3	2.8	8	32	6.35
50 - 75mm	80.3	2.8	9	45	6.35
75 - 100mm	105.3	2.8	10	58	6.35

Note: The shape of the thimble changes on the model with friction thimble.

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Outside Micrometers

SERIES 103

FEATURES

- Hammertone-green, baked-enamel-finished frame.
- Ratchet Stop or Friction Thimble for exact repetitive readings.
- With a standard except for 25mm model.

103-137

Technical Data

Accuracy: Refer to the list of specifications.
Graduation: 0.01mm, 0.001mm, .001" or .0001"
Flatness: 0.6µm for models up to 300mm
1µm for models over 300mm
Parallelism: (2+R/100)µm, R = max. range (mm)
*fraction rounded down
Measuring faces: Carbide tipped

DIMENSION AND MASS

Unit: mm

Models up to 300mm

Models over 300mm

Range	L	a	b	c	d
0 - 25mm	30.3	2.8	9	28	ø6.35
25 - 50mm	55.3	2.8	10	38	ø6.35
50 - 75mm	80.3	2.8	12	49	ø6.35
75 - 100mm	105.3	2.8	14	60	ø6.35
100 - 125mm	132.8	5.3	17	79	ø6.35
125 - 150mm	158.2	5.7	19	94	ø6.35
150 - 175mm	183.6	6.1	20	106	ø6.35
175 - 200mm	208.8	6.3	19	118	ø6.35
200 - 225mm	234.2	6.7	18	130	ø6.35

Range	L	a	b	c	d
225 - 250mm	258	5.5	18	143	ø6.35
250 - 275mm	284	6.5	18	156	ø6.35
275 - 300mm	309	6.5	18	169	ø6.35
300 - 325mm	353	18	28	187	ø8
325 - 350mm	378	18	28	199	ø8
350 - 375mm	403	18	28	212	ø8
375 - 400mm	428	18	28	224	ø8
400 - 425mm	453	18	28	236	ø8
425 - 450mm	478	18	28	248	ø8
450 - 475mm	503	18	28	261	ø8
475 - 500mm	528	18	28	273	ø8

SPECIFICATIONS

Inch With ratchet stop

Range	Order No.	Accuracy
0 - 1"	103-177	±.0001"
	103-131*	±.0001"
1" - 2"	103-178	±.0001"
	103-132*	±.0001"
2" - 3"	103-179	±.0001"
3" - 4"	103-180	±.00015"
4" - 5"	103-181	±.00015"
5" - 6"	103-182	±.00015"

*.0001" reading is obtained with vernier.

Metric With ratchet stop

Range	Order No.	Accuracy
0 - 25mm	103-137	±2µm
	103-129*	±2µm
25 - 50mm	103-138	±2µm
	103-130*	±2µm
50 - 75mm	103-139-10	±2µm
75 - 100mm	103-140-10	±3µm
100 - 125mm	103-141-10	±3µm
125 - 150mm	103-142-10	±3µm
150 - 175mm	103-143-10	±4µm
175 - 200mm	103-144-10	±4µm
200 - 225mm	103-145-10	±4µm
225 - 250mm	103-146-10	±5µm
250 - 275mm	103-147-10	±5µm
275 - 300mm	103-148-10	±5µm
300 - 325mm	103-149	±6µm
325 - 350mm	103-150	±6µm
350 - 375mm	103-151	±6µm
375 - 400mm	103-152	±7µm
400 - 425mm	103-153	±7µm
425 - 450mm	103-154	±7µm
450 - 475mm	103-155	±8µm
475 - 500mm	103-156	±8µm
(Models with a range up to 1000mm are available.)		

*0.001mm reading is obtained with vernier.

Metric Micrometer set

Range	Order No.	Assortment of micrometers
0 - 75mm (3 pcs./set)	103-927-10	103-137, 103-138, 103-139-10, 2 micrometer standards
0 - 150mm (6 pcs./set)	103-913-31	102-701*, 103-138, 103-139-10, 103-140-10, 103-141-10, 103-142-10, 5 micrometer standards
150 - 300mm (6 pcs./set)	103-915-10	103-143-10, 103-144-10, 103-145-10, 103-146-10, 103-147-10, 103-148-10, 6 micrometer standards
0 - 300mm (12 pcs./set)	103-914-31	All micrometers of 103-913-31 and 103-915-10 in one set, 11 micrometer standards

*Ratchet thimble micrometer

Mitutoyo

Digit Outside Micrometers

SERIES 193

FEATURES

- Mechanical digit counter with 0.01mm or .001" reading for quick and error-free reading.
- With a standard except for 25mm model.

193-101

Technical Data

Accuracy: Refer to the list of specifications.
Counter reading: 0.01mm
Graduation: 0.01mm, 0.001mm
Flatness: 0.6μm
Parallelism: (2+R/100)μm, R = max. range (mm)
*fraction rounded down
Measuring faces: Carbide tipped

193-916

SPECIFICATIONS

Metric With ratchet stop

Range	Order No.	Accuracy
0 - 25mm	193-101	±2μm
	193-111*	±2μm
25 - 50mm	193-102	±2μm
	193-112*	±2μm
50 - 75mm	193-103	±2μm
	193-113*	±2μm
75 - 100mm	193-104	±3μm
	193-114*	±3μm
100 - 125mm	193-305	±3μm
125 - 150mm	193-306	±3μm
150 - 175mm	193-307	±4μm
175 - 200mm	193-308	±4μm
200 - 225mm	193-309	±4μm
225 - 250mm	193-310	±5μm

*0.001mm reading is obtained with vernier.

Metric Micrometer set

Range	Order No.	Assortment of micrometers
0 - 75mm (3 pcs./set)	193-901	• 193-101, 193-102, 193-103 • 2 micrometer standards
0 - 100mm (4 pcs./set)	193-902	• 193-101, 193-102, 193-103, 193-104 • 3 micrometer standards
0 - 150mm (6 pcs./set)	193-908	• 193-101, 193-102, 193-103, 193-104, 193-305, 193-306 • 5 micrometer standards

DIMENSION

Unit: mm

Models up to 100mm

Models over 100mm

Range	L	a	b	c
0 - 25mm	30	2.5	5	26
25 - 50mm	55	2	8	32
50 - 75mm	80	2	9	45
75 - 100mm	105	2	9	57
100 - 125mm	132.8	5.3	17	79
125 - 150mm	158.2	5.7	19	94
150 - 175mm	183.6	6.1	19	106
175 - 200mm	208.8	6.3	18	118
200 - 225mm	234.2	6.7	17	130
225 - 250mm	258.0	5.5	18	143

Note: The shape of the thimble changes on the model with Friction Thimble.

Mitutoyo

Ratchet Thimble Micrometer

SERIES 102 — New smoother action Ratchet Thimble

PROPRIETARY INSPECTION CERTIFICATE
Mitutoyo guarantees the product quality.

FEATURES

- Ratchet function works both from the thimble and the speeder, allowing easy one-handed operation.
- Clearly audible ratchet operation for reassurance that measurement is being performed at constant, preset force.
- Provided with a Certificate of Inspection.

Technical Data

Accuracy: Refer to the list of specifications.
Graduation: 0.01mm, 0.001mm
Flatness: 0.6μm
Parallelism: 2μm
Measuring faces: Carbide tipped
Measuring force: 5 - 10N

Rotating the thimble/speeder sleeve when the workpiece is between the anvil and spindle causes the ratchet mechanism to tap the spindle and apply a constant measuring force to the workpiece.

102-701

102-707

SPECIFICATIONS

Metric

Range	Order No.	Accuracy
0 - 25mm	102-701	±2μm
	102-707*	±2μm
25 - 50mm	102-702	±2μm
	102-708*	±2μm

*0.001mm reading is obtained with vernier.

DIMENSION AND MASS

Unit: mm

Mitutoyo

Outside Micrometers

SERIES 406, 106 — Non-Rotating Spindle Type

SPC

FEATURES

- Easy-to-read with large vernier on the thimble (series 106).
- With a standard except for 25mm model.
- With SPC output (series 406).

406-250

106-101

Technical Data

Accuracy: Refer to the list of specifications. (excluding quantizing error for digital models)
Resolution*: 0.001mm
Graduation**: 0.001mm
Flatness: 0.3µm
Parallelism: 3µm for models up to 75mm*
4µm for models over 75mm*
1.6µm for models up to 50mm**
2µm for models over 50mm**
Measuring faces: Carbide tipped
Display*: LCD
Battery*: SR44 (1 pc.), 938882
Battery life*: Approx. 1.2 years under normal use
*Digital models **Analog models

Function of Digital Model

Origin-set, Zero-setting, Data hold, Data output, inch/mm conversion (inch/mm models), Automatic power ON/OFF
Alarm: Low voltage, Counting value composition error

Optional Accessory for Digital Model

05CZA662: SPC cable with data switch (1m)
05CZA663: SPC cable with data switch (2m)

SPECIFICATIONS

Metric Digital model with ratchet stop

Range	Order No.	Accuracy
0 - 25mm	406-250	±3µm
25 - 50mm	406-251	±3µm
50 - 75mm	406-252	±3µm
75 - 100mm	406-253	±4µm

Metric With ratchet thimble

Range	Order No.	Accuracy
0 - 25mm	106-101	±2µm
25 - 50mm	106-103	±2µm
50 - 75mm	106-105	±3µm
75 - 100mm	106-106	±3µm

DIMENSION

Unit: mm

Digital models up to 75mm

Analog models up to 50mm

Analog models over 50mm

Digital models over 75mm

Range	L	a	b	c
0 - 25mm	58.2	2.5	7.3	32
25 - 50mm	83.2	2.5	10.1	47
50 - 75mm	108.2	2.5	11.5	60
75 - 100mm	105.3	2.8	14.1	57
0 - 25mm*	30	2.5	5	25.8
25 - 50mm*	55	2.5	8	32.3
50 - 75mm*	80.3	2.8	10.3	45
75 - 100mm*	105.3	2.8	10.7	58

*Analog model

Mitutoyo

Quick-Setting Outside Micrometers

SERIES 293,102

SPC

Technical Data

Accuracy: Refer to the list of specifications. (excluding quantizing error for digital models)
Resolution*: 0.001mm
Graduation**: 0.01mm
Flatness: 0.6μm
Parallelism: 1μm (digital), 2μm (analog)
Measuring faces: Carbide tipped
Display*: LCD
Battery*: SR44 (1pc.), 938882
Battery life*: Approx. 1.2 years under normal use
*Digital models **Analog models

Function of Digital Model

Origin-set, Zero-setting, Data hold, Data output
Alarm: Low voltage, Counting value composition error

Optional Accessory for Digital Model

937387: SPC cable (1m)
965013: SPC cable (2m)

FEATURES

- 1mm spindle thread pitch for quick setting.
- The measurement can be read directly from the thimble due to the 100 step graduation.
- With Ratchet Thimble or Ratchet Stop for constant force.
- With a standard except for 25mm model.
- With SPC output (series 293).

102-450

102-650

SPECIFICATIONS

Metric — Digital model with ratchet stop

Range	Order No.	Accuracy
0 - 25mm	293-151-30	±1μm
25 - 50mm	293-152-30	±1μm
50 - 75mm	293-153-30	±1μm
75 - 100mm	293-154-30	±2μm

Metric — With ratchet thimble

Range	Order No.	Accuracy
0 - 25mm	102-650	±2μm
25 - 50mm	102-651	±2μm
50 - 75mm	102-652	±2μm
75 - 100mm	102-653	±3μm

Metric — With ratchet stop

Range	Order No.	Accuracy
0 - 25mm	102-450	±2μm
25 - 50mm	102-451	±2μm

DIMENSION

Unit: mm

Range	L	a	b	c	d
0 - 25mm	30	2.5	8	23	8
25 - 50mm	55	2.5	8	30	8
50 - 75mm	80	2.5	9	45	8
75 - 100mm	105	2.5	9	58	8

Note: The shape of the thimble changes on the digital model.

Mitutoyo

Outside Micrometers

SERIES 340, 104 — with Interchangeable Anvils

FEATURES

- IP65 water/dust protection (340 series*).
  *Models with a range up to 300mm.
- Wide measuring range with interchangeable anvils.
- With a Ratchet Stop for constant force.
- Supplied with zero-setting standards for each range.
- With SPC output (series 340).

Digital model

SPECIFICATIONS

Metric — Digital model

Range	Order No.	Interchangeable anvils
0 - 150mm	340-251	0, 25, 50, 75, 100, 125mm
150 - 300mm	340-252	0, 25, 50, 75, 100, 125mm
300 - 400mm	340-513	0, 25, 50, 75mm
400 - 500mm	340-514	0, 25, 50, 75mm
500 - 600mm	340-515	0, 25, 50, 75mm
600 - 700mm	340-516	0, 25, 50, 75mm
700 - 800mm	340-517	0, 25, 50, 75mm
800 - 900mm	340-518	0, 25, 50, 75mm
900 - 1000mm	340-519	0, 25, 50, 75mm

Metric

Range	Order No.	Interchangeable anvils
0 - 50mm	104-171*	0, 25mm
0 - 100mm	104-139A	0, 25, 50, 75mm
0 - 150mm	104-135A	0, 25, 50, 75, 100, 125mm
50 - 150mm	104-161A	0, 25, 50, 75mm
100 - 200mm	104-140A	0, 25, 50, 75mm
150 - 300mm	104-136A	0, 25, 50, 75, 100, 125mm
200 - 300mm	104-141A	0, 25, 50, 75mm
300 - 400mm	104-142A	0, 25, 50, 75mm
400 - 500mm	104-143A	0, 25, 50, 75mm
500 - 600mm	104-144A	0, 25, 50, 75mm
600 - 700mm	104-145A	0, 25, 50, 75mm
700 - 800mm	104-146A	0, 25, 50, 75mm
800 - 900mm	104-147A	0, 25, 50, 75mm
900 - 1000mm	104-148A	0, 25, 50, 75mm

*The frame in a heat insulating cover

DIMENSION

Unit: mm

Interchangeable anvil	L	a
M1	0	135
M2	25	110
M3	50	85
M4	75	60
M5	100	35
M6	125	10

Technical Data

Accuracy: ±(4+R/75)µm, R = max. range (mm) (excluding quantizing error for digital models) *fraction rounded up
Resolution*: 0.001mm
Graduation**: 0.01mm
Flatness: 0.6µm for models up to 300mm
1µm for models over 300mm
Parallelism: 2µm for models up to 75mm
3µm for models up to 150mm
(2+R/100)µm for models over150mm, R = max. range (mm) *fraction rounded up
Measuring faces: Carbide tipped
Display*: LCD
Battery*: SR44 (2 pc.), 938882 (1 pc.: 340-251, 252, 340-351, 352)
Battery life*: Approx. 1.8 years under normal use (8 months for 340-251, 252, 340-351, 352)
Dust/Water protection level*: IP65
*Digital models **Analog models

Function of Digital Model

Zero-setting, Data hold, Preset, Power ON/OFF*, Data output, inch/mm conversion (inch/mm models)
*Not available for 340-251, 252, 340-351, 352
Alarm: Low voltage, Counting value composition error

Optional Accessory for Digital Model

05CZA662: SPC cable with data switch (1m)
05CZA663: SPC cable with data switch (2m)

Mitutoyo

Outside Micrometers

SERIES 105 — with Extension Anvil Collars

FEATURES

- Wide measuring range with extension anvil collars.
- 50mm spindle stroke.
- With Ratchet Stop for constant force.
- Supplied with zero-setting standards for each range.
- Square and round pipes are combined for light weight and rigid frame (for models over 1000mm range).
- Workpiece stopper (for models over 1000mm range).

Technical Data

Accuracy: ±(6+R/75)µm, R = max. range (mm)
*fraction rounded up
Graduation: 0.01mm
Flatness: 1.3µm
Parallelism: (2+R/100)µm, R = max. range (mm)
*fraction rounded down
Measuring faces: Carbide tipped

Extension anvil collar

105-105

105-408

SPECIFICATIONS

Metric

Range	Order No.	Extension collars
500 - 600mm	105-103	50mm
600 - 700mm	105-104	50mm
700 - 800mm	105-105	50mm
800 - 900mm	105-106	50mm
900 - 1000mm	105-107	50mm
1000 - 1100mm	105-408	50mm
1100 - 1200mm	105-409	50mm
1000 - 1200mm	105-418	50mm, 100mm
1200 - 1300mm	105-410	50mm
1300 - 1400mm	105-411	50mm
1200 - 1400mm	105-419	50mm, 100mm
1400 - 1500mm	105-412	50mm
1500 - 1600mm	105-413	50mm
1400 - 1600mm	105-420	50mm, 100mm
1600 - 1700mm	105-414	50mm
1700 - 1800mm	105-415	50mm
1600 - 1800mm	105-421	50mm, 100mm
1800 - 1900mm	105-416	50mm
1900 - 2000mm	105-417	50mm
1800 - 2000mm	105-422	50mm, 100mm

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Outside Micrometers

SERIES 107

FEATURES

- With dial indicator for direct GO/NG-GO judgment for mass-produced parts.
- Anvil retracting trigger for quick measurement.
- With a standard except for 25mm model.

SPECIFICATIONS

Metric

Range	Order No.	Accuracy
0 - 25mm	107-201	±2µm
25 - 50mm	107-202	±2µm
50 - 75mm	107-203	±2µm
75 - 100mm	107-204	±3µm
100 - 125mm	107-205	±3µm
125 - 150mm	107-206	±3µm
150 - 175mm	107-207	±4µm
175 - 200mm	107-208	±4µm

DIMENSION

Unit: mm

Range	L	a
0 - 25mm	39.5	30
25 - 50mm	64.5	38
50 - 75mm	90	45
75 - 100mm	115.6	65
100 - 125mm	140.6	79
125 - 150mm	165.6	93
150 - 175mm	190.5	105
175 - 200mm	215.5	120

Models up to 50mm

Technical Data

Accuracy: Refer to the list of specifications.
Graduation: 0.01mm (thimble)
Flatness: 0.6µm
Parallelism: (2+R/100)µm, R = max. range (mm)
Measuring faces: Carbide tipped

Caliper Type Micrometers

SERIES 343, 143

FEATURES

- With Ratchet Stop for constant force.
- With SPC output (series 343).

SPECIFICATIONS

Metric

Range	Order No.	Accuracy
0 - 25mm	343-250	±5µm
25 - 50mm	343-251	±6µm
50 - 75mm	343-252	±7µm
75 - 100mm	343-253	±8µm

Metric

Range	Order No.	Accuracy
0 - 25mm	143-101	±5µm
25 - 50mm	143-102	±6µm
50 - 75mm	143-103	±7µm
75 - 100mm	143-104	±8µm
100 - 125mm	143-105	±9µm
Models with a range up to 300mm are available.		

SPC

Technical Data

Accuracy: Refer to the list of specifications. (excluding quantizing error for digital models)
Resolution*: 0.001mm
Graduation**: 0.01mm
Flatness: 0.3µm
Parallelism: (3+R/75)µm, R = max. range (mm)
*Fraction rounded down
Measuring faces: Carbide tipped
Display*: LCD
Battery*: SR44 (1 pc.), 938882
Battery life*: Approx. 1.2 years under normal use
*Digital models **Analog models

Function of Digital Model

Origin-set, Zero-setting, Automatic power ON/OFF, Data hold, Data output, inch/mm conversion (inch/mm models)
Alarm: Low voltage, Counting value composition error

Optional Accessory for Digital Model

05CZA662: SPC cable with data switch (1m)
05CZA663: SPC cable with data switch (2m)

Mitutoyo

Screw Thread Micrometers

SERIES 125

Technical Data

Accuracy: ±(2+R/75)µm, R = max. range (mm)
*fraction rounded up
Graduation: 0.01mm
Spindle feed error: 3µm

FEATURES

- Provided with a 60 degree V-anvil and conical spindle for easily measuring pitch diameters of metric or unified screw threads.
- With Ratchet Stop for constant force.
- With a standard for zero point adjustment.

125-103

SPECIFICATIONS

Metric

Range	Order No.	Screw to be measured (Metric/Unified)
0 - 25mm	125-101	0.4 - 0.5mm/64 - 48TPI
	125-102	0.6 - 0.9mm/44 - 28TPI
	125-103	1 - 1.75mm/24 - 14TPI
	125-104	2 - 3mm/13 - 9TPI
	125-105	3.5 - 5mm/8 - 5TPI
25 - 50mm	125-106	0.4 - 0.5mm/64 - 48TPI
	125-107	0.6 - 0.9mm/44 - 28TPI
	125-108	1 - 1.75mm/24 - 14TPI
	125-109	2 - 3mm/13 - 9TPI
	125-110	3.5 - 5mm/8 - 5TPI
50 - 75mm	125-111	0.6 - 0.9mm/44 - 28TPI
	125-112	1 - 1.75mm/24 - 14TPI
	125-113	2 - 3mm/13 - 9TPI
	125-114	3.5 - 5mm/8 - 5TPI
	125-115	5.5 - 7mm/4.5 - 3.5TPI
75 - 100mm	125-116	0.6 - 0.9mm/44 - 28TPI
	125-117	1 - 1.75mm/24 - 14TPI
	125-118	2 - 3mm/13 - 9TPI
	125-119	3.5 - 5mm/8 - 5TPI
	125-120	5.5 - 7mm/4.5 - 3.5TPI

DIMENSION

Models up to 50mm

Models over 50mm

Unit: mm

Range	L	a
0 - 25mm	37.2	25
25 - 50mm	62.2	32
50 - 75mm	87	49.5
75 - 100mm	112	63.5

Mitutoyo

Screw Thread Micrometers

SERIES 326, 126 — Interchangeable Anvil-Spindle Tip Type

FEATURES

- IP65 water/dust protection (326 series).
- 60 degree or 55 degree V-anvil and conical spindle (interchangeable) are optional, which are made of high-grade special steel, hardened and precision ground.
- With Ratchet Stop for constant force.
- With SPC output (series 326).

326-251

126-125

SPECIFICATIONS

Metric Digital model

Range	Order No.	Accuracy
0 - 25mm	326-251	±4µm
25 - 50mm	326-252	±4µm
50 - 75mm	326-253	±4µm
75 - 100mm	326-254	±5µm

Inch/Metric Digital model

Range	Order No.	Accuracy
0 - 1"	326-351	±.0002"
1" - 2"	326-352	±.0002"
2" - 3"	326-353	±.0002"
3" - 4"	326-354	±.00025"

Metric

Range	Order No.	Accuracy
0 - 25mm	126-125	±4µm
25 - 50mm	126-126	±4µm
50 - 75mm	126-127	±4µm
75 - 100mm	126-128	±5µm
100 - 125mm	126-129	±5µm
125 - 150mm	126-130	±5µm
150 - 175mm	126-131	±6µm
175 - 200mm	126-132	±6µm
200 - 225mm	126-133	±6µm
225 - 250mm	126-134	±7µm
250 - 275mm	126-135	±7µm
275 - 300mm	126-136	±7µm

Inch

Range	Order No.	Accuracy
0 - 1"	126-137	±.0002"
1" - 2"	126-138	±.0002"
2" - 3"	126-139	±.0002"
3" - 4"	126-140	±.00025"
(Models with a range up to 7" are available.)		

DIMENSION

Unit: mm

Range	L	a
0 - 25mm	39.5	25
25 - 50mm	64.5	32
50 - 75mm	90	45
75 - 100mm	115.6	65
100 - 125mm	140.6	79
125 - 150mm	165.6	93
150 - 175mm	190.5	105
175 - 200mm	215.5	120
200 - 225mm	240.5	130
225 - 250mm	265.5	147
250 - 275mm	290.5	165
275 - 300mm	315.5	171

Technical Data

Accuracy: Refer to the list of specifications. (excluding quantizing error for digital models)
Resolution*: 0.001mm or .00005"/0.001mm
Graduation**: 0.01mm or .001"
Spindle feed error: 3µm
Display*: LCD
Battery*: SR44 (1 pc.), 938882
Battery life*: Approx. 8 months under normal use
Dust/Water protection level*: IP65
*Digital models **Analog models

Function of Digital Model

Zero-setting, Data hold, Automatic power ON/OFF, Data output, Preset, inch/mm conversion (inch/mm models)
Alarm: Low voltage, Counting value composition error

Optional Accessory

05CZA662: SPC cable with data switch (1m)*
05CZA663: SPC cable with data switch (2m)*
*Only for digital models

(See page 69.): Standard for screw thread micrometer

Anvil-spindle tip set:
For Metric/Unified screws (60° threads)

Order No.	Assortment of anvil-spindle tips
126-800	0.4 - 0.5mm/64 - 48TPI (126-801) 0.6 - 0.9mm/44 - 28TPI (126-802) 1 - 1.75mm/24 - 14TPI (126-803) 2 - 3mm/13 - 9TPI (126-804) 3.5 - 5mm/8 - 5TPI (126-805) 5.5 - 7mm/4.5 - 3.5TPI (126-806)

For Whitworth screws (55° threads)

Order No.	Assortment of anvil-spindle tips
126-810	60 - 48TPI (126-811) 48 - 40TPI (126-812) 40 - 32TPI (126-813) 32 - 24TPI (126-814) 24 - 18TPI (126-815) 18 - 14TPI (126-816) 14 - 10TPI (126-817) 10 - 7TPI (126-818) 7- 4.5TPI (126-819) 4.5 - 3.5TPI (126-820)

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Universal Micrometers

SERIES 116 — Interchangeable Anvil Type

FEATURES

- Non-rotating spindle with seven interchangeable anvils (flat, spline, spherical, point, knife-edge, disk, and blade) for a wide range of applications.
- Interchangeable anvils (pair) are optional.
- V-anvils and conical spindle tips (matching pair) for screw thread measurement are also available.
- With Ratchet Stop for constant force.

116-101

SPECIFICATIONS

Metric

Range	Order No.	Accuracy
0 - 25mm	116-101	±4μm
25 - 50mm	116-102	±4μm

Inch

Range	Order No.	Accuracy
0 - 1"	116-105	±.0002"
1" - 2"	116-106	±.0002"

Technical Data

Accuracy: Refer to the list of specifications.
Graduation: 0.01mm or .001"
Spindle feed error: 3μm

Optional Accessory

Interchangeable V-anvil and conical spindle tip set:
For Metric/Unified screw

Order No.	Assortment of anvils and tips
116-830	0.4 - 0.5mm/64 - 48TPI (116-831) 0.6 - 0.9mm/44 - 28TPI (116-832) 1 - 1.75mm/24 - 14TPI (116-833) 2 - 3mm/13 - 9TPI (116-834) 3.5 - 5mm/8 - 5TPI (116-835) 5.5 - 7mm/4.5 - 3.5TPI (116-836)

For Whitworth screw

Order No.	Assortment of anvils and tip
116-840	60 - 48TPI (116-841) 48 - 40TPI (116-842) 40 - 32TPI (116-843) 32 - 24TPI (116-844) 24 - 18TPI (116-845) 18 - 14TPI (116-846) 14 - 10TPI (116-847) 10 - 7TPI (116-848) 7 - 4.5TPI (116-849) 4.5 - 3.5TPI (116-850)

116-830

Interchangeable anvils set

Order No.	Assortment of anvils
116-800	Flat anvils (116-801) Spline anvils (116-802) Spherical anvils (116-803) Point anvils (116-804) Knife-edge anvils (116-805) Disk anvils (116-806) Blade anvils (116-807)

3-Wire Units

SERIES 313

FEATURES

- Facilitates measurement of the pitch diameter of screw threads with a standard micrometer.
- 18 sizes of wires are assorted in a set.

313-101

SPECIFICATIONS

Application	Order No.	Assortment of wire units
ø6.35mm (.25" DIA.)	313-101	0.17mm (952131), 0.195mm(952132), 0.22mm (952133), 0.25mm (952134), 0.29mm (952135), 0.335mm(952136), 0.39mm (952137), 0.455mm(952138), 0.53mm (952139), 0.62mm (952140), 0.725mm(952141), 0.895mm(952142), 1.1mm (952143), 1.35mm (952144), 1.65mm (952145), 2.05mm (952146), 2.55mm (952147), 3.2mm (952148)
ø8mm (.315" DIA.)	313-102	0.17mm (952149), 0.195mm(952150), 0.22mm (952151), 0.25mm (952152), 0.29mm (952153), 0.335mm(952154), 0.39mm (952155), 0.455mm(952156), 0.53mm (952157), 0.62mm (952158), 0.725mm(952159), 0.895mm(952160), 1.1mm (952161), 1.35mm (952162), 1.65mm (952163), 2.05mm (952164), 2.55mm (952165), 3.2mm (952166)

Technical Data

Roundness of wire: within 0.5μm
Cylindricity of wire: within 1μm
Hardness of wire: 63-66 HRC
Accuracy of wire diameter: ±2μm

Gear Tooth Micrometers

SERIES 324, 124 — Interchangeable Ball Anvil-Spindle Tip Type

FEATURES

- IP65 water/dust protection (324 series).
- Measures over-pin diameter of gears with precision steel (carbide) ball-tipped measuring faces.
- Interchangeable ball anvil-spindle tips for various gear modules (0.5 - 5.25) are optional.
- With Ratchet Stop for constant force.
- With SPC output (series 324).

324-251

124-173

SPECIFICATIONS

Metric Digital model

Range	Order No.	Accuracy
0 - 25mm	324-251	±4µm
25 - 50mm	324-252	±4µm
50 - 75mm	324-253	±4µm
75 - 100mm	324-254	±5µm

Inch/Metric Digital model

Range	Order No.	Accuracy
0 - 1"	324-351	±.0002"
1" - 2"	324-352	±.0002"
2" - 3"	324-353	±.0002"
3" - 4"	324-354	±.00025"

Metric

Range	Order No.	Accuracy
0 - 25mm	124-173	±4µm
25 - 50mm	124-174	±4µm
50 - 75mm	124-175	±4µm
75 - 100mm	124-176	±5µm
100 - 125mm	124-177	±5µm
125 - 150mm	124-178	±5µm
150 - 175mm	124-179	±6µm
175 - 200mm	124-180	±6µm
200 - 225mm	124-181	±6µm
225 - 250mm	124-182	±7µm
250 - 275mm	124-183	±7µm
275 - 300mm	124-195	±7µm

DIMENSION

Unit: mm

( ): 275-300mm model

Range	L	a
0 - 25mm	64.5	32
25 - 50mm	90	45
50 - 75mm	115.6	65
75 - 100mm	140.6	79
100 - 125mm	165.6	93
125 - 150mm	190.5	105
150 - 175mm	215.5	120
175 - 200mm	240.5	130
200 - 225mm	265.5	147
225 - 250mm	290.5	165
250 - 275mm	315.5	171
275 - 300mm	353	187

Mitutoyo

SPC

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IP65

Technical Data

Accuracy: Refer to the list of specifications. (excluding quantizing error for digital models)
Resolution*: 0.001mm or .00005"/0.001mm
Graduation**: 0.01mm
Display*: LCD
Battery*: SR44 (1 pc.), 938882
Battery life*: Approx. 8 months under normal use
Dust/Water protection level*: IP65
*Digital models **Analog models

Function of Digital Model

Zero-setting, Data hold, Automatic power ON/OFF, Data output, Preset, inch/mm conversion (inch/mm models)
Alarm: Low voltage, Counting value composition error

Optional Accessory

05CZA662: SPC cable with data switch (1m)*
05CZA663: SPC cable with data switch (2m)*
*Only for digital models

Interchangeable ball anvil-spindle tip set:

Diameter	Order No.	Gear module	Dia. pitch
0.8mm	124-801*	0.5 - 0.55	50
1mm	124-802*	0.6 - 0.65	45
1.191mm (3/64")	124-803*	0.7 - 0.8	35 - 30
1.5mm	124-821*	0.9 - 1	28 - 26
1.588mm (1/16")	124-804*	0.9 - 1	28 - 26
2mm	124-805*	1.25	22
2.381mm (3/32")	124-806	1.5	17
2.5mm	124-822	1.5	17
3mm	124-807	1.75	15
3.175mm (1/8")	124-808	—	14
3.5mm	124-823	2	13
3.969mm (5/32")	124-809	2	13
4mm	124-810	2.25	11
4.5mm	124-824	2.5	10
4.763mm (3/16")	124-811	2.5	10
5mm	124-812	2.75	9
5.556mm (7/32")	124-813	3.0 - 3.25	8
6mm	124-814	3.5	7
6.35mm (1/4")	124-815	3.75	7
7mm	124-816	4.0	6.5
7.144mm (9/32")	124-817	4.25	6
7.938mm (5/16")	124-818	4.5	5.5
8mm	124-819	4.75	5.5
8.731mm (11/32")	124-820	5.0 - 5.25	5

*Carbide-tipped type

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Disk Micrometers

SERIES 323, 223, 123

SPC

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IP65

FEATURES

- Diameter of measuring disk: 20mm (30mm: models over 100mm)
- 0.7mm (1mm: models over 100mm) edge thickness to enter narrow recesses.
- With Ratchet Stop for constant force.
- With a standard except for 25mm model.
- With SPC output (series 323).
- The 223 series is provided with a mechanical digit counter for quick reading of measurements.

123-101

323-250

123-103

Technical Data

Accuracy: Refer to the list of specifications. (excluding quantizing error for digital models)
Resolution*: 0.001mm
Graduation**: 0.01mm
Flatness: 1μm for models up to 100mm
1.6μm for models over 100mm
Parallelism: 4μm for models up to 50mm
(4+R/50)μm for models up to 100mm
(5+R/75)μm for models over 100mm,
R = max. range (mm)
* Fraction rounded up
Measurable module: 0.5 - 6 (0.7 - 11: models over 100mm)
Display*: LCD
Battery*: SR44 (1 pc.), 938882
Battery life*: Approx. 1.2 years under normal use
*Digital models **Analog models

Function of Digital Model

Origin-set, Zero-setting, Data hold, Data output, inch/mm conversion (inch/mm models), Automatic power ON/OFF
Alarm: Low voltage, Counting value composition error

Optional Accessory for Digital Model

05CZA662: SPC cable with data switch (1m)
05CZA663: SPC cable with data switch (2m)

Root tangent length of gear (En)

Note: Root tangent length measurement is not available for some types gears.

SPECIFICATIONS

Metric — Digital model

Range	Order No.	Accuracy
0 - 25mm	323-250	±4μm
25 - 50mm	323-251	±4μm
50 - 75mm	323-252	±6μm
75 - 100mm	323-253	±6μm

Metric — Mechanical counter model

Range	Order No.	Accuracy
0 - 25mm	223-101	±4μm
25 - 50mm	223-102	±4μm

Metric

Range	Order No.	Accuracy
0 - 25mm	123-101	±4μm
	123-113*	±4μm
25 - 50mm	123-102	±4μm
	123-114*	±4μm
50 - 75mm	123-103	±6μm
	123-115*	±6μm
75 - 100mm	123-104	±6μm
	123-116*	±6μm
100 - 125mm	123-105	±7μm
125 - 150mm	123-106	±7μm
150 - 175mm	123-107	±8μm
175 - 200mm	123-108	±8μm
200 - 225mm	123-109	±8μm
225 - 250mm	123-110	±9μm
250 - 275mm	123-111	±9μm
275 - 300mm	123-112	±9μm

*The measuring disks have carbide tips.

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DIMENSION

Unit: mm

Digital models up to 75mm

Analog models up to 50mm

Digital models up to 75mm

Analog over 50mm

Range	L	a	b	c	d	e	t
0 - 25mm*	39.7	4.5	9.2	25.4	20	8	0.7
25 - 50mm*	65.6	5.4	11	31.9	20	8	0.7
50 - 75mm*	90.7	5.5	12.2	50	20	8	0.7
75 - 100mm*	112.5	5.5	13.5	60.5	20	8	0.7
0 - 25mm	37.5	6	14	25	20	8 (9.8)	0.7 (0.7)
25 - 50mm	62.5	6	14	32	20	8 (9.8)	0.7 (0.7)
50 - 75mm	87	5.5	11	49	20	8 (9.8)	0.7 (0.7)
75 - 100mm	112	5.5	11	63	20	8 (9.8)	0.7 (0.7)
100 - 125mm	137.5	6	12	79	30	12	1
125 - 150mm	162.5	6	15	94	30	12	1
150 - 175mm	187.5	6	16	106	30	12	1
175 - 200mm	212.5	6	15	118	30	12	1
200 - 225mm	237.5	6	14	130	30	12	1
225 - 250mm	262.5	6	14	143	30	12	1
250 - 275mm	287.5	6	15	156	30	12	1
275 - 300mm	312.5	6	15	169	30	12	1

Data in ( ) applies to those with carbide tipped disks. *Digital models

Paper Thickness Micrometers

SERIES 169 — Non-Rotating Spindle Type Designed for Paper Thickness Measurement

FEATURES

- Non-rotating spindle.
- With Ratchet Stop for constant force.

DIMENSION

SPECIFICATIONS

Metric

Range	Order No.	Accuracy
0 - 25mm	169-101	±4µm

Inch

Range	Order No.	Accuracy
0 - 1"	169-103	±.0002"

Technical Data

Accuracy: Refer to the list of specifications
Graduation: 0.01mm
Flatness: 1µm
Parallelism: 3µm

Unit: mm

( ): Inch model

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Disk Micrometers

SERIES 369, 227, 169 — Non-Rotating Spindle Type

SPC

FEATURES

- The Disk Micrometer is designed to easily measure root tangent length of spur gears and herical gears.
- Non-rotating spindle eliminates torque on workpiece.
- Speedy spindle feed of 10mm/rev. (Quickmike type).
- Diameter of measuring disk: 20mm
- With Ratchet Stop for constant force.
- With SPC output (series 369).

369-250

Quickmike type

369-411

IP54

ABSOLUTE

Quickmike type with fine-loading

227-221

ABSOLUTE

169-201

Technical Data

Accuracy:	Refer to the list of specifications. (excluding quantizing error for digital models)
Resolution*:	0.001mm
Graduation**:	0.01mm
Flatness:	1μm
Parallelism:	4μm for models up to 50mm 6μm for models over 50mm (3μm: Quickmike type with fineloading)
Measurable module:	0.5-6, (0.4 - 3: Quickmike type with fineloading)
Display*:	LCD
Battery*:	SR44 (1 pc.), 938882
Battery life*:	Approx. 1.2 years under normal use (1 year: Quickmike type, 3 years:
Quickmike	type with fine-loading)
Series 227:	Refer to the page 27 for more information.

*Digital models **Analog models

Function of Digital Model

Origin-set, Zero-setting, Data hold, Automatic power ON/OFF, Data output, inch/mm conversion (inch/mm models)

Alarm:	Low voltage, Counting value composition error

Optional Accessory for Digital Model

05CZA662:	SPC cable with data switch (1m)
05CZA663:	SPC cable with data switch (2m)
937387:	SPC cable for Quickmike type (1m)
965013:	SPC cable for Quickmike type (2m)

SPECIFICATIONS

Metric — Digital model

Range	Order No.	Accuracy
0 - 25mm	369-250	±4μm
25 - 50mm	369-251	±4μm
50 - 75mm	369-252	±6μm
75 - 100mm	369-253	±6μm

Metric — Quickmike type with fine-loading

Range	Order No.	Accuracy	Measuring force
0 - 15mm	227-221	±4μm	0.5N - 2.5N
	227-222	±4μm	2N - 10N

Metric — Quickmike type

Range	Order No.	Accuracy
0 - 30mm	369-411	±4μm
25 - 55mm	369-412	±4μm

Metric

Range	Order No.	Accuracy
0 - 25mm	169-201	±4μm
25 - 50mm	169-202	±4μm
50 - 75mm	169-205	±6μm
75 - 100mm	169-207	±6μm

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DIMENSION

Unit: mm

Digital models up to 75mm

Fine-loading type

Digital models over 75mm

Analogl models up to 50mm

Quickmike type

Analogl models over 50mm

( ): Fine-loading type

Digital model

Range	L	a	b	c
0 - 25mm	58.5	12.9	7	32
25 - 50mm	83.5	12.9	9.8	47
50 - 75mm	108.5	12.9	11.2	60
75 - 100mm	112.5	5.5	13.5	60.5
0 - 30mm*	63.8	13.5	8.5	36
25 - 55mm*	88.8	13.5	10.3	47

*Quickmike type

Analog model

Range	L	a	b	c
0 - 25mm	37.5	6	13.5	25
25 - 50mm	62.5	6	13.5	32
50 - 75mm	87	5.5	13	49.5
75 - 100mm	112	5.5	13	63.5

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Sheet Metal Micrometers

SERIES 389, 189, 119, 118

SPC

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IP65

Anvil-Spindle Combinations

Standard, Flat-Flat

Spherical-Flat (S-F)

Spherical-Spherical (S-S)

FEATURES

- Measures thickness of sheet metal, and rubber parts.
- With Ratchet Stop for constant force.
- With a standard except for 25mm model.
- IP65 water/dust protection (389 series*).
  *Except for 389-513
- With digit counter (series 189).

389-251

118-102

DIMENSION

Technical Data

Accuracy: Refer to the list of specifications. (excluding quantizing error for digital models)
Resolution*: 0.001mm
Graduation**: 0.01mm
Flatness: 0.6μm for models with 150mm throat
1μm for models with 300mm throat
Parallelism: 3μm
Measuring faces: Carbide tipped
Display*: LCD
Battery*: SR44 [1 pc. (2 pcs.: 389-513 and 389-713)], 938882
Battery life*: Approx. 1.2 years under normal use (1.8 years: 389-513 and 389-713)
Dust/Water protection level*: IP65
*Digital models **Analog models

Function of Digital Model

Origin-set (Preset*), Zero-setting, Data hold, Power ON/OFF*, Data output, inch/mm conversion (inch/mm models)
Preset zero-setting Power ON/OFF Data hold Data output inch/mm conversion (inch/mm models) *Only for 389-513, 389-713
Alarm: Low voltage, Counting value composition error

Optional Accessory for Digital Model

05CZA662: SPC cable with data switch (1m)
05CZA663: SPC cable with data switch (2m)
937387: SPC cable for 389-513/389-713 (1m)
965013: SPC cable for 389-513/389-713 (2m)

The 119 series is provided with a dial for making easy and quick reading.

SPECIFICATIONS

Metric — Digital model

Range	Order No.	Accuracy	a/b
0 - 25mm	389-251	±4μm	160/27.5mm
	389-261 S-F	±4μm	160/27.5mm
	389-271 S-S	±4μm	160/27.5mm
	389-513	±5μm	330/35mm
25 - 50mm	389-252	±4μm	165/27.5mm
	389-262 S-F	±4μm	165/27.5mm
	389-272 S-S	±4μm	165/27.5mm

S-F: Spherical anvil and flat spindle
S-S: Spherical anvil and spherical spindle

Metric

Range	Order No.	Accuracy	a/b
0 - 25mm	118-101	±4μm	110/27.5mm
	118-102	±4μm	160/27.5mm
	118-114 S-F	±4μm	160/27.5mm
	118-118 S-S	±4μm	160/27.5mm
	118-103	±5μm	330/35mm
25 - 50mm	118-110	±4μm	165/27.5mm

S-F: Spherical anvil and flat spindle
S-S: Spherical anvil and spherical spindle

Metric — Mechanical counter model

Range	Order No.	Accuracy	a/b
0 - 25mm	189-102	±4μm	160/27.5mm

Metric — Dial reading model

Range	Order No.	Accuracy	Throat
0 - 25mm	119-202 S-F	±4μm	50mm

S-F: Spherical anvil and flat spindle

119-202

DIMENSION

Mitutoyo

Spline Micrometers

SERIES 331, 111

FEATURES

- IP65 water/dust protection (series 331).
- The anvil and spindle have a small diameter for measuring splined shafts, slots, and keyways.
- With Ratchet Stop for constant force.
- With SPC output (series 331).

331-251

111-115

Technical Data

Accuracy: Refer to the list of specifications. (excluding quantizing error for digital models)
Resolution*: 0.001mm
Graduation**: 0.01mm
Flatness: 0.3µm
Parallelism: (2+R/100)µm, R = max. range (mm)
*fraction rounded up
Measuring faces: Carbide tipped
Display*: LCD
Battery*: SR44 (1 pc.), 938882
Battery life*: Approx. 1.2 years under normal use
Dust/Water protection level*: IP65
*Digital models **Analog models

Function of Digital Model

Origin-set, Zero-setting, Data hold, Automatic power ON/OFF, Data output, inch/mm conversion (inch/mm models)
Alarm: Low voltage, Counting value composition error

Optional Accessory for Digital Model

05CZA662: SPC cable with data switch (1m)
05CZA663: SPC cable with data switch (2m)

SPECIFICATIONS

Metric — Digital model

Range	Order No.	Accuracy	Remarks
0 - 25mm	331-251	±2µm	Type A
	331-261	±2µm	Type B
25 - 50mm	331-252	±2µm	Type A
	331-262	±2µm	Type B
50 - 75mm	331-253	±2µm	Type A
	331-263	±2µm	Type B
75 - 100mm	331-254	±3µm	Type A
	331-264	±3µm	Type B

Metric

Range	Order No.	Accuracy	Remarks
0 - 25mm	111-115	±3µm	Type A
	111-215	±3µm	Type B
25 - 50mm	111-116	±3µm	Type A
50 - 75mm	111-117	±3µm	Type A
75 - 100mm	111-118	±4µm	Type A
100 - 125mm	111-119	±4µm	Type A
125 - 150mm	111-120	±4µm	Type A
150 - 175mm	111-121	±5µm	Type A
175 - 200mm	111-122	±5µm	Type A

Unit: mm

DIMENSION

Unit: mm

Digital model

Models up to 75mm

Range	L	a	b	c
0 - 25mm*	58.2	17.5	7.3	32
25 - 50mm*	83.2	17.5	10.1	47
50 - 75mm*	108.2	17.5	11.5	60
0 - 25mm	55.3	17.8	10	38
25 - 50mm	80.3	17.8	12	49
50 - 75mm	105.3	17.8	14	60

*Digital models

Digital model

Models over 75mm

Range	L	a	b	c
75 - 100mm*	132.8	17.5	16.7	76.5
75 - 100mm	132.8	20.3	17	79
100 - 125mm	158.2	20.7	19	94
125 - 150mm	183.6	21.1	20	106
150 - 175mm	208.8	21.3	19	118
175 - 200mm	234.2	21.7	18	130

*Digital models

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Tube Micrometers

SERIES 395, 295, 115 — Spherical and Cylindrical Anvils

FEATURES

- IP65 water/dust protection (395 series).
- Designed to measure the wall thickness of various tubing.
- The Tube Micrometers have two combinations of measuring faces (carbide-tipped): spherical-flat type, and spherical-spherical type.
- Cylindrical anvils (perpendicular) are also available.
- With Ratchet Stop for constant force.
- With SPC output (series 395).
- With digit counter (series 295).

Technical Data

Accuracy: Refer to the list of specifications. (excluding quantizing error for digital models)
Resolution*: 0.001mm
Graduation**: 0.01mm
Flatness: 0.6μm
Display*: LCD
Battery*: SR44 (1 pc.), 938882
Battery life*: Approx. 1.2 years under normal use
Dust/Water protection level*: IP65
*Digital models **Analog models

Function of Digital Model

Origin-set, Zero-setting, Data hold, Automatic power ON/OFF, Data output, inch/mm conversion (inch/mm models)
Alarm: Low voltage, Counting value composition error

Optional Accessory for Digital Model

05CZA662: SPC cable with data switch (1m)
05CZA663: SPC cable with data switch (2m)

Spherical anvil type

Measuring faces: Carbide tipped

ød: Mini. inside dia. of tubing

Spherical anvil-spindie type

Measuring faces: Carbide tipped

ød: Mini. inside dia. of tubing

395-251

Spherical Anvil Type

115-115

395-271

115-215

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Cylindrical Anvil Type

395-261

Cylindrical anvil type

SPECIFICATIONS

Metric Digital model with spherical anvil

Range	Order No.	Accuracy	Remarks
0 - 25mm	395-251S-F	±2μm	D: 15mm
	395-271S-S	±2μm	D: 15mm
25 - 50mm	395-252S-F	±2μm	D: 15mm
	395-272S-S	±2μm	D: 15mm
50 - 75mm	395-253S-F	±2μm	D: 19mm
	395-273S-S	±2μm	D: 19mm
75 - 100mm	395-254S-F	±3μm	D: 20mm
	395-274S-S	±3μm	D: 20mm

S-F: Spherical anvil and flat spindle
S-S: Spherical anvil and spherical spindle

Inch/Metric Digital model with spherical anvil

Range	Order No.	Accuracy	Remarks
0 - 1"	395-351S-F	±.0001"	D: .59"
	395-371S-S	±.0001"	D: .59"
1" - 2"	395-352S-F	±.0001"	D: .59"
	395-372S-S	±.0001"	D: .59
2" - 3"	395-353S-F	±.0001"	D: .75"
	395-373S-S	±.0001"	D: .75"
3" - 4"	395-354S-F	±.00015"	D: .79"
	395-374S-S	±.00015"	D: .79"

S-F: Spherical anvil and flat spindle
S-S: Spherical anvil and spherical spindle

Metric Digital model with cylindrical anvil

Range	Order No.	Accuracy	Remarks
0 - 25mm	395-261	±3μm	Type A
	395-262	±3μm	Type B
	395-263	±3μm	Type C
	395-264	±3μm	Type D

Inch/Metric Digital model with cylindrical anvil

Range	Order No.	Accuracy	Remarks
0 - 1"	395-362	±.00015"	Type B
	395-363	±.00015"	Type C
	395-364	±.00015"	Type D

Metric Mechanical counter model with spherical anvil

Range	Order No.	Accuracy	Remarks
0 - 25mm	295-115S-F	±3μm	D: 10mm
	295-215S-S	±3μm	D: 10mm

S-F: Spherical anvil and flat spindle
S-S: Spherical anvil and spherical spindle

Inch Mechanical counter model with spherical anvil

Range	Order No.	Accuracy	Remarks
0 - 1"	295-153S-F*	±.00015"	D: .40"
	295-253S-S*	±.00015"	D: .40"

S-F: Spherical anvil and flat spindle
S-S: Spherical anvil and spherical spindle
*.0001" reading is obtained with vernier.

Metric With spherical anvil

Range	Order No.	Accuracy	Remarks
0 - 25mm	115-115S-F	±3μm	D: 10mm
	115-215S-S	±3μm	D: 10mm
25 - 50mm	115-116S-F	±3μm	D: 11mm
	115-216S-S	±3μm	D: 11mm
50 - 75mm	115-117S-F	±3μm	D: 17mm
	115-217S-S	±3μm	D: 17mm
75 - 100mm	115-118S-F	±4μm	D: 18mm
	115-218S-S	±4μm	D: 18mm

S-F: Spherical anvil and flat spindle
S-S: Spherical anvil and spherical spindle

Inch With spherical anvil

Range	Order No.	Accuracy	Remarks
0 - 1"	115-153S-F*	±.00015"	D: .40"
	115-253S-S*	±.00015"	D: .40"
1" - 2"	115-242S-S	±.00015"	D: .44"
2" - 3"	115-243S-S	±.00015"	D: .67"

S-F: Spherical anvil and flat spindle
S-S: Spherical anvil and spherical spindle
*.0001" reading is obtained with vernier.

Metric With cylindrical anvil

Range	Order No.	Accuracy	Remarks
0 - 25mm	115-302	±3μm	Type A
	115-308	±3μm	Type B
	115-315	±3μm	Type C
	115-316	±3μm	Type D
25 - 50mm	115-303	±3μm	Type A
	115-309	±3μm	Type B

Inch With cylindrical anvil

Range	Order No.	Accuracy	Remarks
0 - 1"	115-305	±.00015"	Type A
	115-313*	±.00015"	Type C
	115-314*	±.00015"	Type D

*.0001" reading is obtained with vernier.

øD: Mini. inside dia. of tubing

Spindle face: Carbide tipped

Anvil	D	L
Type A	2	4
Type B	3.6	4
Type C	4.8	12
Type D	8.2	22

Mitutoyo

Point Micrometers

SERIES 342, 142, 112

FEATURES

- IP65 water/dust protection (342 series).
- Pointed spindle and anvil for measuring the web thickness of drills, small grooves, keyways, and other hard-to-reach dimensions.
- 15 degree and 30 degree measuring points are available.
- The measuring points (carbide-tipped) have approximately 0.3mm radius.
- With Ratchet Stop for constant force.
- With SPC output (series 342).
- With digit counter (series 142).

342-251

112-201

Technical Data

Accuracy: Refer to the list of specifications. (excluding quantizing error for digital models)
Resolution*: 0.001mm
Graduation**: 0.01mm
Display*: LCD
Battery*: SR44 (1 pc.), 938882
Battery life*: Approx. 1.2 years under normal use
Dust/Water protection level*: IP65
*Digital models **Analog models

Function of Digital Model

Origin-set, Zero-setting, Data hold, Automatic power ON/OFF, inch/mm conversion (inch/mm models) Data hold
Alarm: Low voltage, Counting value composition error

Optional Accessory for Digital Model

05CZA662: SPC cable with data switch (1m)
05CZA663: SPC cable with data switch (2m)

Tip angle: 15° (SR0.3)

Tip angle: 30° (SR0.3)

SPECIFICATIONS

Metric — Digital model

Range	Order No.	Accuracy	Point
0 - 25mm	342-251	±2μm	15°
	342-261	±2μm	30°
25 - 50mm	342-252	±2μm	15°
	342-262	±2μm	30°
50 - 75mm	342-253	±2μm	15°
	342-263	±2μm	30°
75 - 100mm	342-254	±3μm	15°
	342-264	±3μm	30°

Metric

Range	Order No.	Accuracy	Point
0 - 25mm	142-153	±3μm	15°
	142-201	±3μm	30°

Metric

Range	Order No.	Accuracy	Point
0 - 25mm	112-165	±3μm	15°
	112-153*	±3μm	15°
	112-213	±3μm	30°
	112-201*	±3μm	30°
25 - 50mm	112-166	±3μm	15°
	112-154*	±3μm	15°
	112-214	±3μm	30°
	112-202*	±3μm	30°
50 - 75mm	112-167	±3μm	15°
	112-155*	±3μm	15°
	112-215	±3μm	30°
	112-203*	±3μm	30°
75 - 100mm	112-168	±4μm	15°
	112-156*	±4μm	15°
	112-216	±4μm	30°
	112-204*	±4μm	30°

*The points have not carbide tips.

Mitutoyo

DIMENSION

Unit: mm

Range	L	a	b	c
0 - 25mm	58.2 (55.3)	12.5 (12.8)	7.3 (10)	32 (38)
25 - 50mm	83.2 (80.3)	12.5 (12.8)	10.1 (12)	47 (49)
50 - 75mm	108.2 (105.3)	12.5 (12.8)	11.5 (14)	60 (60)
75 - 100mm	132.8 (132.8)	15.3 (15.3)	16.7 (17)	76.5 (79)

( ): Analog model

Crimp Height Micrometers

SERIES 342, 142, 112 — Point Spindle and Blade Anvil

SPC

www.tuv.com TÜV TÜV Rheinland ID:4011207400

IP65

FEATURES

- IP54/65 water/dust protection (342 series).
- Measures the height of crimp contacts.
- With Ratchet Stop for constant force.
- With SPC output (series 342).
- With digit counter (series 142).

342-271

IP65

112-401

Quickmike type

342-451

IP54

ABSOLUTE

Technical Data

Accuracy: Refer to the list of specifications. (excluding quantizing error for digital models)
Resolution*: 0.001mm
Graduation**: 0.01mm
Display*: LCD
Battery*: SR44 (1 pc.), 938882
Battery life*: Approx. 1.2 years under normal use (3 years: Quickmike type)
Dust/Water protection level*: IP65
*Digital models **Analog models

Function of Digital Model

Origin-set, Zero-setting, Data hold, Power ON/OFF*, Data output, inch/mm conversion (inch/mm models)
*Only for Quickmike type
Alarm: Low voltage, Counting value composition error

Optional Accessory for Digital Model

05CZA662: SPC cable with data switch (1m)
05CZA663: SPC cable with data switch (2m)
937387: SPC cable for Quickmike type (1m)
965013: SPC cable for Quickmike type (2m)

SPECIFICATIONS

Metric — Digital model

Range	Order No.	Accuracy
0 - 20mm	342-271	±3µm

Metric — Quickmike type

Range	Order No.	Accuracy
0 - 15mm	342-451	±3µm

Metric — Mechanical counter model

Range	Order No.	Accuracy
0 - 25mm	142-402/142-403*	±3µm

* 0.001mm reading is obtained with vernier.

Metric

Range	Order No.	Accuracy
0 - 25mm	112-401	±3µm

Unit: mm

Mitutoyo

V-Anvil Micrometers

SERIES 314, 114 — 3 Flutes and 5 Flutes

FEATURES

- Measures the outside diameter of cutting heads (such as taps, reamers, end mills) with an odd number of flutes.
- With Ratchet Stop for constant force.
- V-anvils with a centerline groove are available. They are useful for measuring pitch diameters of taps which have a small diameter by using single-wire method.
- With SPC output (series 314).

SPC

Technical Data

Accuracy: Refer to the list of specifications. (excluding quantizing error for digital models)
Resolution*: 0.001mm
Graduation**: 0.01mm
Flatness (spindle/anvil): 0.6µm /1.3µm** (0.3µm /1.0µm)*
Spindle face: Carbide tipped
Display*: LCD
Battery*: SR44 (1 pc.), 938882
Battery life*: Approx. 8 months under normal use
*Digital models **Analog models

Function of Digital Model

Zero-setting, Data hold, Preset, Automatic power ON/OFF, Data output, inch/mm conversion (inch/mm models)
Alarm: Low voltage, Counting value composition error

Optional Accessory for Digital Model

05CZA662: SPC cable with data switch (1m)
05CZA663: SPC cable with data switch (2m)

Pitch Diameter Measurement of Tap by Single-wire Method

SPECIFICATIONS

Metric — Digital model for 3 flutes cutting head

Range	Order No.	Accuracy	Remarks
1 - 15mm	314-251	±4µm	w/ groove
	314-261	±4µm	—
10 - 25mm	314-252	±4µm	w/ groove
	314-262	±4µm	—
25 - 40mm	314-253	±5µm	—

Metric — For 3 flutes cutting head

Range	Order No.	Accuracy	Remarks
1 - 15mm	114-101	±4µm	w/ groove
	114-161	±4µm	—
10 - 25mm	114-102	±4µm	w/ groove
	114-162	±4µm	—
2.3 - 25mm	114-204*	±4µm	—
25 - 40mm	114-103	±5µm	—
40 - 55mm	114-104	±6µm	—
55 - 70mm	114-105	±6µm	—
70 - 85mm	114-106	±7µm	—

*Carbide-tipped anvil

Metric — For 5 flutes cutting head

Range	Order No.	Accuracy	Remarks
5 - 25mm	114-121	±4µm	w/ groove
	114-165	±4µm	—
2.3 - 25mm	114-137*	±4µm	—
25 - 45mm	114-122	±5µm	—
45 - 65mm	114-123	±6µm	—
65 - 85mm	114-124	±7µm	—

*Carbide-tipped anvil

DIMENSION

Unit: mm

Range	a
10 - 25mm	6.2
25 - 40mm	19.14
40 - 55mm	32.13
55 - 70mm	45.12
70 - 85mm	58.11

Mitutoyo

Blade Micrometers

SERIES 422,122 — Non-Rotating Spindle Type

FEATURES

- The anvil and the spindle have a blade for measuring the groove diameter of shafts, keyways, and other hard-to-reach portions.
- With Ratchet Stop for constant force.
- Speedy spindle feed of 10mm/rev. (Quickmike type).

422-230

Quickmike type

422-411

IP54

ABSOLUTE

122-101

SPECIFICATIONS

Metric — Digital model

Range	Order No.	Accuracy	Remarks
0 - 25mm	422-230	±3μm	Type A
	422-260	±3μm	Type B
	422-270	±3μm	Type C
	422-271	±3μm	Type D
25 - 50mm	422-231	±3μm	Type A
	422-261	±3μm	Type B
50 - 75mm	422-232	±3μm	Type A
75 - 100mm	422-233	±4μm	Type A

Metric — Quickmike type

Range	Order No.	Accuracy
0 - 30mm	422-411	±3μm
25 - 55mm	422-412	±3μm

Metric

Range	Order No.	Accuracy	Remarks
0 - 25mm	122-101	±3μm	Type A
	122-111	±3μm	Type B
	122-161	±3μm	Type C
	122-141	±3μm	Type D
25 - 50mm	122-102	±3μm	Type A
	122-112	±3μm	Type B
	122-162	±3μm	Type C
	122-142	±3μm	Type D
50 - 75mm	122-103	±3μm	Type A
75 - 100mm	122-104	±4μm	Type A
100 - 125mm	122-105	±4μm	Type A
125 - 150mm	122-106	±4μm	Type A
150 - 175mm	122-107	±5μm	Type A
175 - 200mm	122-108	±5μm	Type A

SPC

Technical Data

Accuracy: Refer to the list of specifications. (excluding quantizing error for digital models)
Resolution*: 0.001mm
Graduation**: 0.01mm
Parallelism: 3μm for models up to 75mm
(3+R/100)μm for models over 75mm, R = max. range (mm) *fraction rounded up
Display*: LCD
Battery*: SR44 (1 pc.), 938882
Battery life*: Approx. 1.2 years under normal use
*Digital models **Analog models

Function of Digital Model

Origin-set, Zero-setting, Data hold, Automatic power ON/OFF, Data output, inch/mm conversion (inch/mm models)
Alarm: Low voltage, Counting value composition error

Optional Accessory for Digital Model

05CZA662: SPC cable with data switch (1m)
05CZA663: SPC cable with data switch (2m)
937387: SPC cable for Quickmike type (1m)
965013: SPC cable for Quickmike type (2m)

TYPE AND DIMENSION

Mitutoyo

Can Seam Micrometers

SERIES 147

FEATURES

- Measures the width, height, and depth of can seams.
- Three types of micrometers are available for: steel cans, aluminum cans, and sprayer cans.

147-103

Technical Data

Accuracy: ±3µm
Graduation: 0.01mm

147-103
147-104

for cans
(for depth measurements up to 5mm)

147-105
147-106

for aluminium cans

147-202
147-201

for sprayer cans

SPECIFICATIONS

Metric

Range	Order No.	Remarks
0 - 13mm	147-103	for steel cans
	147-105	for aluminum cans
	147-202	for sprayer cans

Inch

Range	Order No.	Remarks
0 - .5"	147-104	for steel cans
	147-106	for aluminum cans
	147-201	for sprayer cans

DIMENSION

Unit: mm

147-103, 147-104

147-105, 147-106

147-201, 147-202

Mitutoyo

Hub Micrometers

SERIES 147

FEATURES

- Measures hub thickness and shoulders inside a bore.
- With Ratchet Stop for constant force.
- With a standard except for 25mm model.

147-301

SPECIFICATIONS

Metric

Range	Order No.	Accuracy
0 - 25mm	147-301	±2µm
25 - 50mm	147-302	±2µm
50 - 75mm	147-303	±2µm
75 - 100mm	147-304	±3µm

Inch

Range	Order No.	Accuracy
0 - 1"	147-351	±.0001"
1" - 2"	147-352	±.0001"
2" - 3"	147-353	±.0001"
3" - 4"	147-354	±.00015"

Technical Data

Accuracy: Refer to the list of specifications.
Graduation: 0.01mm
Flatness: 0.6µm
Parallelism: (2+R/100)µm, R = max. range (mm)
*fraction rounded up
Measuring faces: Carbide tipped

Range	h1	h2	h3	H
0 - 25mm	6	8.5	13.5	17.5
25 - 50mm	6.5	11	14	20.5
50 - 75mm	6.5	11	13	20.5
75 -100mm	6.5	11	13	20.5

Wire Micrometers

SERIES 147

FEATURES

- Designed for measuring wire thickness.
- Also used to measure the diameter of a small ball.

147-401

SPECIFICATIONS

Metric

Range	Order No.	Accuracy
0 - 10mm	147-401	±3µm

Inch

Range	Order No.	Accuracy
0 - .4"	147-402	±.00015"

*.0001" reading is obtained with vernier.

DIMENSION

Technical Data

Accuracy: Refer to the list of specifications.
Graduation: 0.01mm
Flatness: 0.6µm
Parallelism: 1.3µm
Measuring faces: Carbide tipped

Mitutoyo

"Uni-Mike"

SERIES 317, 117 — Interchangeable Anvil Type

FEATURES

- IP65 water/dust protection (317 series).
- Measures tubing thickness, shoulder-edge distance, rivet head height, etc. with interchangeable anvils (flat anvil, rod anvil, V-anvil).
- Supplied with Flat Anvil (201216) and Rod Anvil: ø3mm rod anvil (201217) for 0-25mm models, ø5mm (201379) for 25-50mm model.
- With special Disk Anvils. The Uni-Mike is used as a height micrometer. The disks have a lapped, mirror surface.

317-251

117-101

Technical Data

Accuracy: Refer to the list of specifications. (excluding quantizing error for digital models)
Resolution*: 0.001mm
Graduation**: 0.01mm
Spindle face: Carbide tipped
Display*: LCD
Battery*: SR44 (1 pc.), 938882
Battery life*: Approx. 1.2 years under normal use
Dust/Water protection level*: IP65
*Digital models **Analog models

Function of Digital Model

Origin-set, Zero-setting, Data hold, Automatic power ON/OFF, Data output, inch/mm conversion (inch/mm models)
Alarm: Low voltage, Counting value composition error

Optional Accessory

05CZA662: SPC cable with data switch (1m)*
05CZA663: SPC cable with data switch (2m)*
201218: V-anvil
950758: Disk anvil for 25m (1") models
950759: Disk anvil for 50m (2") models

*Only for digital models

SPECIFICATIONS

Metric — Digital model with ratchet stop

Range	Order No.	Accuracy
0 - 25mm	317-251	±4µm
25 - 50mm	317-252	±4µm

Excluding quantizing error

Inch/Metric — Digital model with friction thimble

Range	Order No.	Accuracy
0 - 1"	317-351	±.0002"
1" - 2"	317-352	±.0002"

Excluding quantizing error

Metric — With ratchet stop

Range	Order No.	Accuracy
0 - 25mm	117-101	±4µm
25 - 50mm	117-102	±4µm

Inch — With friction thimble

Range	Order No.	Accuracy
0 - 1"	117-107	±.0002"
1" - 2"	117-108	±.0002"

DIMENSION

Mitutoyo

Limit Micrometers

SERIES 113

FEATURES

- Can be used as a GO/±NG gage by setting the upper and lower limits.
- Provided with a standard for 25mm - 50mm model.

113-102

SPECIFICATIONS

Metric

Range	Order No.	Accuracy
0 - 25mm	113-102	±3µm
25 - 50mm	113-103	±3µm

DIMENSION

Unit: mm

Range	L	a	c
0 - 25mm	29.3	15	23
25 - 50mm	54.3	15	37

Technical Data

Accuracy: Refer to the list of specifications.
Graduation: 0.01mm
Flatness: 0.6µm
Parallelism: (3+R/100)µm, R = max. range (mm)
*fraction rounded down
Measuring faces: Carbide tipped

Indicating Micrometers

SERIES 510

FEATURES

- Retractable anvil with indicator for three-wire measurements of pitch diameter of precision screws, roundness and parallelism measurements.
- With a standard except for 25mm model.
- IP protection level: 54

510-121

Retractable anvil button

SPECIFICATIONS

Metric

Range	Order No.	Indicating range
0 - 25mm	510-141/510-121*	±0.060mm
25 - 50mm	510-122	±0.060mm
50 - 75mm	510-123	±0.060mm
75 - 100mm	510-124	±0.060mm

*Retractable anvil button on the right side.

IP54

Technical Data

Spindle feed error: 3µm
Dial indication accuracy: 1µm
Dispersion of indication: 0.4µm
Graduation: 0.001mm
Dial reading: 0.001mm
Flatness: 0.3µm
Parallelism: 0.6µm for models up to 50mm
1µm for models over 50mm
Measuring force: 5 - 10N (500 - 1000gf)
Measuring faces: Carbide tipped

Optional Accessory

04AZA124: ø16mm workpiece stopper (not available for 25mm model)
04AZA125: ø14mm workpiece stopper
04AZA126: ø14mm workpiece stopper

Unit: mm

	a	b
04AZA124	16	23
04AZA125	14	20.5
04AZA126	14	15

DIMENSION

Unit: mm

Range	L	d
0 - 25mm	31.5	25
25 - 50mm	56.5	38
50 - 75mm	81.5	50
75 - 100mm	106.5	63

Mitutoyo

Snap Meters

SERIES 523

Technical Data

Flatness: 0.3μm
Parallelism: 0.6μm for models up to 50mm
1μm for models over 50mm
Measuring force*: 5 - 10N (500 - 1000gf)
Measuring faces: Carbide tipped
*Measured at the position where the anvil is retracted by 1mm from the free position without installing the indicator.

DIMENSION

Unit: mm

Range	d	L
0 - 25mm	25	31
25 - 50mm	35	56
50 - 75mm	47.5	81
75 - 100mm	60	106

FEATURES

- Various types of indicator can be selected according to the measurement applications.

523-141

SPECIFICATIONS

Metric

Range	Order No.	Anvil movement
0 - 25mm	523-141	2mm
25 - 50mm	523-142	2mm
50 - 75mm	523-143	2mm
75 - 100mm	523-144	2mm

Inch

Range	Order No.	Anvil movement
0 - 1"	523-151	.078"
1" - 2"	523-152	.078"
2" - 3"	523-153	.078"
3" - 4"	523-154	.078"

IP54

Dial Snap Meters

SERIES 523

Technical Data

Dial indication accuracy: 1μm
Dispersion of indication: 0.4μm
Dial reading: 0.001mm or .00005"
Flatness: 0.3μm
Parallelism: 0.6μm for models up to 50mm
1μm for models over 50mm
Measuring force: 5 - 10N (500 - 1000gf)
Measuring faces: Carbide tipped

DIMENSION

Unit: mm

Range	d	L
0 - 25mm	25	31
25 - 50mm	35	56
50 - 75mm	47.5	81
75 - 100mm	60	106

FEATURES

- Direct GO/NO-GO judgment for mass-produced parts.
- Spindle diameter: 10.8mm (.425")
- IP protection level: 54

523-121

SPECIFICATIONS

Metric

Range	Order No.	Indicating range
0 - 25mm	523-121	±0.060mm
25 - 50mm	523-122	±0.060mm
50 - 75mm	523-123	±0.060mm
75 - 100mm	523-124	±0.060mm

Mitutoyo

Dial Snap Meters

SERIES 523

FEATURES

- Direct GO/NO-GO judgment for mass-produced parts.
- Spindle diameter: 10.8mm (.425")

523-105

SPECIFICATIONS

Metric

Range	Order No.	Indicating range
100 - 125mm	523-105	±0.15mm
125 - 150mm	523-106	±0.15mm
150 - 175mm	523-113	±0.15mm
175 - 200mm	523-114	±0.15mm

Technical Data

Accuracy: ±2.5µm for up to ±50µm range
±5µm for ±50µm to ±150µm range
(including dispersion of indication)
Dial reading: 0.005mm
Flatness: 0.3µm
Parallelism: 1.3µm for models up to 150mm
1.6µm for models over 150mm
Measuring force: 5 - 15N (500 - 1500gf)
Measuring faces: Carbide tipped

Digimatic Bench Micrometer

SERIES 121 — Interchangeable Anvil Type

SPC

FEATURES

- The LCD panel rotates within 330 degrees for use in horizontal or vertical position.
- Interchangeable anvils allow a wide measuring range of 50mm.
- With a ratchet stop for constant force.
- Provided with a standard to set the origin for 25-50mm measurement.

121-145

SPECIFICATION

Metric

Range	Order No.	Accuracy
0 - 50mm	121-145	±2µm

Excluding quantizing error

Technical Data

Accuracy: Refer to the list of specifications.
Resolution: 0.001mm
Measuring force: 6 – 10N (600 – 1000gf)
Display rotation: 330°
Display: LCD
Battery: SR44 (2 pcs.), 938882
Battery life: Approx. 1.8 years under normal use

Function

Zero-setting, Preset, Data hold, Power ON/OFF, Data output, inch/mm conversion (inch/mm models)
Alarm: Low voltage, Counting value composition error

Optional Accessory

937387: SPC cable (1m)
965013: SPC cable (2m)

Mitutoyo

Groove Micrometers

SERIES 146

FEATURES

- Flanged spindle for measuring width, depth, and location of grooves inside/outside bores, and tubes.
- Provided with two types of graduations for inside and outside measurements.
- Non-rotating spindle type has two-directional ratchet stop.

146-122

146-221

146-222

Technical Data

Accuracy: ±10µm
Parallelism: 10µm

SPECIFICATIONS

Metric Rotating spindle type

Range Outside	Range Inside	Order No.	Flange
0 - 25mm	1.6 - 26.5mm	146-121	ø6.35mm
		146-122	ø12.7mm
25 - 50mm	26.5 - 51.5mm	146-123	ø12.7mm
50 - 75mm	51.5 - 76.5mm	146-124	ø12.7mm
75 - 100mm	76.5 - 101.5mm	146-125	ø12.7mm

Metric Non-rotating spindle type

Range Outside	Range Inside	Order No.	Flange
0 - 25mm	1.6 - 26.5mm	146-221	ø6.35mm
		146-222	ø12.7mm
25 - 50mm	26.5 - 51.5mm	146-223	ø12.7mm
50 - 75mm	51.5 - 76.5mm	146-224	ø12.7mm
75 - 100mm	76.5 - 101.5mm	146-225	ø12.7mm

DIMENSION

Unit: mm

Mitutoyo

Quick-Mini

SERIES 700

A compact comparator designed for carrying convenience, it is very suited for quick inspection of paper thickness, leather, wires, plastic parts, etc. The digital display provides error-free reading with 0.01mm resolution.

700-117

700-121

Technical Data

Accuracy: Refer to the list of specifications.
Resolution: 0.01mm or .0005"/0.01mm
Display: LCD
Battery: SR44 (1 pc.), 938882
Battery life: Approx. 2 years under normal use

Function

Zero-setting, Data hold, Power ON/OFF, inch/mm conversion (inch/mm models)

SPECIFICATIONS

Metric

Range	Order No.	Accuracy
0 - 12mm	700-119	±0.02mm
0 - 25mm	700-121	±0.02mm

Inch/Metric

Range	Order No.	Accuracy
0 - .5"/0 - 12mm	700-118	±.001"
0 - 1"/0 - 25mm	700-122	±001"

DIMENSION AND MASS

Unit: mm

700-118
70g

700-121
120g

Small Hole Gage Set

SERIES 154

FEATURES

- Used with an outside micrometer for measuring inside diameter of bores.
- 4 sizes of gages are supplied in a fitted case.
- Extra long for gaging deep and shallow holes, slots, and similar workpieces.
- Gaging surface is fully hardened to insure long tool life.

154-902

DIMENSION

Unit: mm

Order No.	L	a	b
154-101 / 105	90	22.5	5.5
154-102 / 106	97.6	30	5.5
154-103 / 107	102.8	35	8.5
154-104 / 108	108	40	8.5

SPECIFICATIONS

Metric

Total range	Order No.	Assortment of gages
ø3 - 13mm (4-gage set)	154-902	ø3 - 5mm gage (154-101)
		ø5 - 7.5mm gage (154-102)
		ø7.5 - 10mm gage (154-103)
		ø10 - 13mm gage (154-104)

Telescoping Gage Set

SERIES 154

FEATURES

- Spring-loaded plunger expands within the bore (or groove), allowing determination of the internal diameter (or groove width).
- With a knurled clamp.

155-905

DIMENSION

Unit: mm

Order No.	L	a	b	c
155-127 / 121	110	4	3	5
155-128 / 122	110	5	3.5	5.5
155-129 / 123	110	5	3.5	5.5
155-130 / 124	150	7.5	6	8
155-131 / 125	150	7.5	6	8
155-132 / 126	150	7.5	6	8

SPECIFICATIONS

Metric

Total range	Order No.	Assortment of gages
8 - 150mm (6-gage set)	155-905	8 - 12.7mm gage (155-127)
		12.7 - 19mm gage (155-128)
		19 - 32mm gage (155-129)
		32 - 54mm gage (155-130)
		54 - 90mm gage (155-131)
		90 - 150mm gage (155-132)

Mitutoyo

Color Ratchet & Color Speeder

Color ratchet

SPECIFICATIONS

Order No.	Color
985056	Black
985061	Red
985081	Blue
985071	Yellow
985076	Green
985066	Brown
04GZA241*	Gray
04GZA239	Gray

*for 293 series digital model

Color speeder for Ratchet Thimble Micrometer

SPECIFICATIONS

Order No.	Color
04GAA899	Black
04GAA900	Red
04GAA901	Yellow
04GAA902	Green
04GAA903	Blue
04AAB208	Gray

Spindle Attachment Tip

208062 208063 208064 208065 208066

DIMENSION

Order No.	Dimension
208062	
208063	
208064	

Order No.	Dimension
208065	
208066	

Technical Data

Tip length: 10mm ±5µm

Micrometer Oil

207000 (30ml)

Optical Parallels

SERIES 157

FEATURES

- Designed to inspect parallelism and flatness of measuring faces of micrometers.
- Each set consists of 4 thicknesses.
- Supplied with fitted carrying case.

SPECIFICATIONS

Metric

Range of micrometer to be checked	Order No.	Assortment of parallels (Thickness of parallel)
0-25mm	157-903	12.00, 12.12, 12.25, 12.37mm
25-50mm	157-904	25.00, 25.12, 25.25, 25.37mm

Technical Data

Flatness: 0.1µm
Parallelism: 0.2µm
Diameter: 30mm

Parallelism Check between Measuring Faces by Means of Interference Fringe Produced by an Optical Parallel

The parallelism between the measuring faces can be determined as follows; wring the optical parallel to the anvil and observe the number of interference fringes produced on the spindle side under the measuring force of the micrometers. The parallelism is about 1µm (0.32µm x 3 = 0.96µm).
Fringe on the anvil side must not be more than one.

Optical Flats

SERIES 158

FEATURES

- Used for inspecting the flatness of micrometer's or gauge block's measuring faces with high accuracy.

SPECIFICATIONS

Metric

Flatness	Order No.	Diameter/Thickness
0.2µm	158-117	45mm/12mm
	158-119	60mm/15mm
0.1µm	158-118	45mm/12mm
	158-120	60mm/15mm

Flatness Check of Measuring Faces Using Interference Fringe Pattern Produced by an Optical Flat

Micrometer Standards

SERIES 167

FEATURES

- Used for the zero point setting of outside micrometers.
- Flat and lapped measuring faces.
- Heat insulating handle for preventing expansion due to body temperature.

167-108

167-103

DIMENSION

Mitutoyo

Technical Data

Tolerance*: Refer to the list of specifications.
*Tolerance on deviation of measured central length from nominal at 20°C
Flatness: 0.3µm
Parallelism: 2µm

SPECIFICATIONS

Metric

Length (L)	Order No.	Diameter (D)	Tolerance
25mm	167-101	6.35mm	±1.5µm
50mm	167-102	6.35mm	±2.0µm
75mm	167-103	6.35mm	±2.5µm
100mm	167-104	7.9mm	±3µm
125mm	167-105	7.9mm	±3.5µm
150mm	167-106	7.9mm	±4µm
175mm	167-107	7.9mm	±4.5µm
200mm	167-108	9.4mm	±5.0µm
225mm	167-109	9.4mm	±5.5µm
250mm	167-110	9.4mm	±6.0µm
275mm	167-111	9.4mm	±6.5µm
300mm	167-112	9.4mm	±7µm
325mm	167-113	9.4mm	±7.5µm
350mm	167-114	9.4mm	±8µm
375mm	167-115	9.4mm	±8.5µm
400mm	167-116	9.4mm	±9µm
425mm	167-117	9.4mm	±9.5µm
450mm	167-118	9.4mm	±1.0µm
475mm	167-119	9.4mm	±10.5µm
500mm	167-120	11.9mm	±11µm
525mm	167-121	11.9mm	±11.5µm
550mm	167-122	11.9mm	±12µm
575mm	167-123	11.9mm	±12.5µm
600mm	167-124	11.9mm	±13µm

Available up to 2000mm.

Micrometer Stands

SERIES 156

These stands are designed to allow bench-top use with hand micrometers or other gages which have frame area sufficient to grab onto.

156-105

156-101

156-102

SPECIFICATIONS

Micrometer ranges	Order No.	Remarks
0-25mm (0-1"), 25-50mm (1"-2")	156-105	Fixed angle type
Up to 100mm (4")	156-101	Adjustable angle type
125-300mm (5"-12")	156-102	Vertical type
300-1000mm (12"-40")	156-103	Vertical type

DIMENSION

Micro Jack

SERIES 7

FEATURES

- Used for accurate leveling of machines, surface plates, and other precision instruments.
- Easy adjustment under heavy load.

Technical Data

Graduation : 0.01 mm or .001"

SPECIFICATIONS

Micrometer ranges	Order No.	Remarks
60-75mm	7850	Max. load : 400kg

DIMENSION AND MASS