B

Small Tool Instruments and Data Management

Micrometers

Micrometer Heads

MDH Micrometer

QuantuMike

Ratchet Thimble Micrometer

Digimatic Spline Micrometer

Micrometer Head with spindle clamp

INDEX

Micrometers	
Coolant Proof Micrometer	B-2,3
Digimatic Micrometer	B-4
Digimatic Micrometer- MDC- Lite	B-4
MDH Micrometer	B-5
QuantuMike	B-6
ABSOLUTE Digimatic Micrometers	B-7
Quickmike	B-8
Outside Micrometers	B-9
Ratchet Thimble Micrometer	B-10
Outside Micrometers	B-11-19
Spline Micrometers	B-20
Point Micrometers	B-21
Crimp Height Micrometers	B-22
V-Anvil Micrometers	B-23,24
Limit Micrometers	B-25
Pana Micrometers	B-26
Spherical Face Micrometers	B-27
Tube Micrometers	B-28
Uni-Mike	B-29
Sheet Metal Micrometers	B-30
Blade Micrometers	B-31
Disk Micrometers	B-32
Paper Thickness Micrometers	B-33
Disk Micrometers	B-34,35
Gear Tooth Micrometers	B-36
Screw Thread Micrometers	B-37,38
3-Wire Thread Measuring System	B-39
Can Seam Micrometers	B-40
Hub Micrometers	B-41
Wire Micrometers	B-41
Digit Outside Micrometers	B-42
Indicating Micrometers	B-43
Snap Meters	B-43
Dial Snap Meters	B-44
Caliper Type Micrometers	B-45
Groove Micrometers	B-46
Small Hole Gage Set	B-47
Telescoping Gage Set	B-47
Micrometer Stands	B-48
Color Ratchet & Color Speeder	B-49
Spindle Attachment Tip	B-49
Micrometer Oil	B-49
Optical Parallels	B-50
Optical Flats	B-50
Micrometer Standards	B-51
Standards for Screw Thread Micrometers	B-52
Standards for V-Anvil Micrometers	B-52
Tool Kits	B-53,54
Micrometer Heads	
Micrometer Head Selection Guide	B-55
Digimatic Micrometer Heads	B-56
Digimatic Micrometer Heads	B-57
Micrometer Heads	B-58-71
Digital Micrometer Heads	B-72
Micrometer Heads	B-73
Micro Jack	B-73
Precision Lead Screw	B-74
Fixtures for Micrometer Heads	B-75,76

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.
- Auto power ON/OFF function.
- Certificate of inspection* is included. (2" /50mm or less range models)
  *It is not the type used to obtain calibration certificates.
- With a standard bar except for 0-1"/0-25mm model.
- Supplied in fitted case. Plastic case up to 6"/150mm, Wooden box over 6"/150mm

293-340

293-352

Certificate of inspection

Technical Data

Accuracy: Refer to the list of specifications.
Resolution: .00005"/0.001mm or 0.001mm (up to 4" models)
.0001" / 0.001mm (over 4" models)
Flatness: .000012"/0.3µm
Parallelism: .00004"/1µm for models up to 2"/50mm
.00008"/2µm for models up to 4"/100mm
.00012"/3µm for models up to 7"/175mm
.00016"/4µm for models up to 11"/275mm
.0002"/5µm for models over 12"/300mm
Measuring faces: Carbide tipped
Display: LCD
Battery: SR44 (1 pc.), **938882**
Battery life: Approx. 1.2 years under normal use
(8 months: over 4"/100mm models)
Dust/Water protection level: IP65

Function

Origin-set, Zero / ABS, Hold, Auto power on/off,
Data output (output models),
inch/mm conversion (on inch/metric models only)
Alarm: Low voltage, Counting value composition error

Optional Accessories

05CZA662: SPC cable with data switch (40"/1m)
05CZA663: SPC cable with data switch (80"/2m)

SPC cable with data switch

Oil-resistance materials are used in all plastic components.

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

SPECIFICATIONS

Metric With ratchet stop

Range	Resolution	Order No.	Accuracy
0 - 25mm	0.001mm	**293-230 / 293-240***	±1µm
25 - 50mm	0.001mm	**293-231 / 293-241***	±1µm
50 - 75mm	0.001mm	**293-232 / 293-242***	±1µm
75 - 100mm	0.001mm	**293-233 / 293-243***	±2µm
100 - 125mm	0.001mm	**293-250-10**	±2µm
125 - 150mm	0.001mm	**293-251-10**	±2µm
150 - 175mm	0.001mm	**293-252-10**	±3µm
175 - 200mm	0.001mm	**293-253-10**	±3µm
200 - 225mm	0.001mm	**293-254-10**	±3µm
225 - 250mm	0.001mm	**293-255-10**	±4µm
250 - 275mm	0.001mm	**293-256-10**	±4µm
275 - 300mm	0.001mm	**293-257-10**	±4µm

*without SPC data output

Metric With ratchet thimble

Range	Resolution	Order No.	Accuracy
0 - 25mm	0.001mm	**293-234 / 293-244***	±1µm
25 - 50mm	0.001mm	**293-235 / 293-245***	±1µm
50 - 75mm	0.001mm	**293-236 / 293-246***	±1µm
75 - 100mm	0.001mm	**293-237 / 293-247***	±2µm

*without SPC data output

Metric With friction thimble

Range	Resolution	Order No.	Accuracy
0 - 25mm	0.001mm	**293-238 / 293-248***	±1µm

*without SPC data output

Inch/Metric With ratchet stop

Range	Resolution	Order No.	Accuracy
0 - 1" / 0 - 25.4mm	.00005" / 0.001mm	**293-330 / 293-340***	±.00005"
1" - 2" / 25.4 - 50.8mm	.00005" / 0.001mm	**293-331 / 293-341***	±.00005"
2" - 3" / 50.8 - 76.2mm	.00005" / 0.001mm	**293-332 / 293-342***	±.00005"
3" - 4" / 76.2 - 101.6mm	.00005" / 0.001mm	**293-333 / 293-343***	±.0001"
4" - 5" / 101.6 - 127.0mm	.0001" / 0.001mm	**293-350-10**	±.0001"
5" - 6" / 127.0 - 152.4mm	.0001" / 0.001mm	**293-351-10**	±.0001"
6" - 7" / 152.4 - 177.8mm	.0001" / 0.001mm	**293-352-10**	±.00015"
7" - 8" / 177.8 - 203.2mm	.0001" / 0.001mm	**293-353-10**	±.00015"
8" - 9" / 203.2 - 228.6mm	.0001" / 0.001mm	**293-354-10**	±.00015"
9" - 10" / 228.6 - 254.0mm	.0001" / 0.001mm	**293-355-10**	±.0002"
10" - 11" / 254.0 - 279.4mm	.0001" / 0.001mm	**293-356-10**	±.0002"
11" - 12" / 279.4 - 304.8mm	.0001" / 0.001mm	**293-357-10**	±.0002"

*without SPC data output

Inch/Metric With ratchet thimble

Range	Resolution	Order No.	Accuracy
0 - 1" / 0 - 25.4mm	.00005" / 0.001mm	**293-334 / 293-344***	±.00005"
0 - 1" / 0 - 25.4mm	.0001" / 0.001mm	**293-349***	±.0001"
1" - 2"/ 25.4 - 50.8mm	.00005" / 0.001mm	**293-345***	±.00005"
2" - 3" / 50.8 - 76.2mm	.00005" / 0.001mm	**293-346***	±.00005"
3" - 4" / 76.2 - 101.6mm	.00005" / 0.001mm	**293-347***	±.0001"

*without SPC data output

Inch/Metric With friction thimble

Range	Resolution	Order No.	Accuracy
0 - 1" / 0 - 25.4mm	.00005" / 0.001mm	**293-335 / 293-348***	±.00005"
1" - 2"/ 25.4 - 50.8mm	.00005" / 0.001mm	**293-336**	±.00005"

*without SPC data output

Metric Micrometer Set

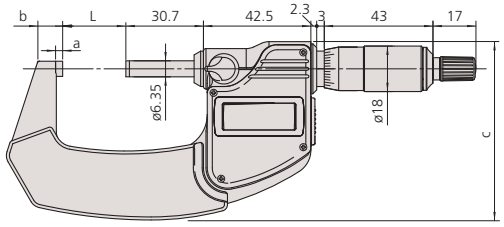
Range	Order No.	Included in set
0-50mm (2pcs. Set)	**293-965**	293-230, 293-231, 1 standard bar, 1m SPC cable in the plastic case
0-100mm (4pcs. Set)	**293-964**	293-230, 293-231, 293-232, 293-234, 3 standard bar, 1m SPC cable in the wooden box

Inch/Metric Micrometer Set .00005" / 0.001mm graduation model

Range	Order No.	Included in set
0 - 3" / 0 - 76.2mm (3 pcs. set)	**293-960**	293-330, 293-331, 293-332, 2 standard bar in the plastic case
0 - 4" / 0 - 101.6mm (4 pcs. set)	**293-961**	293-330, 293-331, 293-332, 293-333 3 standard bar in the wooden box

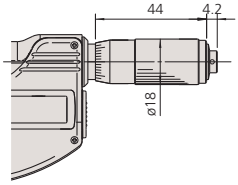
DIMENSIONS AND MASS

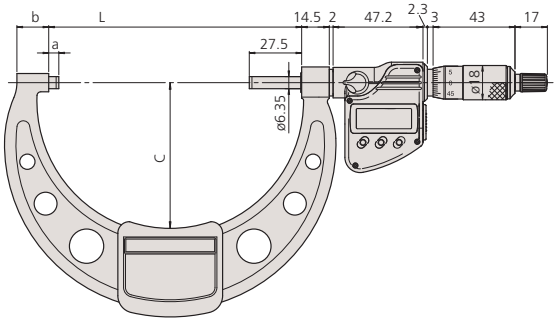
Ratchet stop type (up to 100mm/4")



Ratchet thimble type and friction thimble type

Unit: mm





Range (Metric / Inch)	L	a	b	c	Mass (g)
0 - 25mm / 0-1"	0	2.8	6.2	(59.8)	270
25 - 50mm / 1-2"	25	2.8	7	(70.3)	330
50 - 75mm / 2-3"	50	2.8	9.8	(91.9)	470
75 - 100mm / 3-4"	75	2.8	11.2	(112.9)	625
100 - 125mm / 4-5"	132.8	5.3	16.7	(76.5)	600
125 - 150mm / 5-6"	158.2	5.7	18.8	(91)	740
150 - 175mm / 6-7"	183.6	6.1	19.1	(103.1)	800
175 - 200mm / 7-8"	208.8	6.3	18.2	(115.3)	970
200 - 225mm / 8-9"	234.2	6.7	16.8	(126.8)	1100
225 - 250mm / 9-10"	258	5.5	18	(139.8)	1270
250 - 275mm / 10-11"	284	18	28	(152.3)	1340
275 - 300mm / 11-12"	309	18	28	(166)	1540

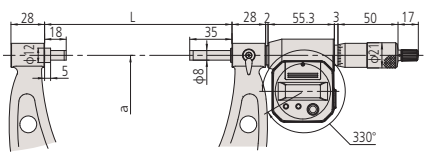
Ratchet stop type (over 100mm/4" to 300mm/12")

Digimatic Micrometer

SERIES 293

DIMENSIONS

Unit: mm



Range	L	a	Mass(g)
300 - 325mm/12-13"	353	187	2000
325 - 350mm/13-14"	378	199	2150
350 - 375mm/14-15"	403	212	2300
375 - 400mm/15-16"	428	224	2450
400 - 425mm/16-17"	453	236	2600
425 - 450mm/17-18"	478	248	2750
450 - 475mm/18-19"	503	261	2900
475 - 500mm/19-20"	528	273	3100

SPECIFICATIONS

Metric With ratchet stop

Range	Resolution	Order No.	Accuracy
300 - 325mm	0.001mm	**293-582**	±6μm
325 - 350mm	0.001mm	**293-583**	±6μm
350 - 375mm	0.001mm	**293-584**	±6μm
375 - 400mm	0.001mm	**293-585**	±7μm
400 - 425mm	0.001mm	**293-586**	±7μm
425 - 450mm	0.001mm	**293-587**	±7μm
450 - 475mm	0.001mm	**293-588**	±8μm
475 - 500mm	0.001mm	**293-589**	±8μm

Inch/Metric With ratchet stop

Range	Resolution	Order No.	Accuracy
12" - 13" / 304.8 - 330.2mm	.0001" / 0.001mm	**293-782**	±.0003"
13" - 14" / 330.2 - 355.6mm	.0001" / 0.001mm	**293-783**	±.0003"
14" - 15" / 355.6 - 381.0mm	.0001" / 0.001mm	**293-784**	±.0003"
15" - 16" / 381.0 - 406.4mm	.0001" / 0.001mm	**293-785**	±.00035"
16" - 17" / 406.4 - 431.8mm	.0001" / 0.001mm	**293-786**	±.00035"
17" - 18" / 431.8 - 457.2mm	.0001" / 0.001mm	**293-787**	±.00035"
18" - 19" / 457.2 - 482.6mm	.0001" / 0.001mm	**293-788**	±.0004"
19" - 20" / 482.6 - 508.0mm	.0001" / 0.001mm	**293-789**	±.0004"

SPC

Technical Data

Accuracy: Refer to the list of specifications.
Resolution: .0001"/0.001mm or 0.001mm
Flatness: .000024" / 0.6μm
Parallelism: .0002"/ 5μm for models up to 15"/ 375mm
.00024"/ 6μm for models up to 19"/ 475mm
.00028"/ 7μm for models over 20"/ 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 (on inch/metric models only)
Alarm: Low voltage, Counting value composition error

Optional Accessories

959149: SPC cable (40"/1m)
959150: SPC cable (80"/2m)
04AZB512: SPC cable L-type (80"/2m)
04AZB513: SPC cable L-type (80"/2m)

Digimatic Micrometer

SERIES 293 MDC- Lite

FEATURES

- Provided only with a zero set and in / mm (inch / metric models only) keys.
- A ratchet stop or friction thimble for a constant measuring force.
- Measurement readout with large characters on the LCD screen.
- No spindle clamp. No data output
- Supplied in fitted plastic case

SPECIFICATIONS

Metric With ratchet stop

Range	Resolution	Order No.	Accuracy
0 - 25mm	0.001mm	**293-821**	±2μm

Inch/Metric With ratchet stop

Range	Resolution	Order No.	Accuracy
0 - 1" / 0 - 25.4mm	.00005" / 0.001mm	**293-831**	±.0001"

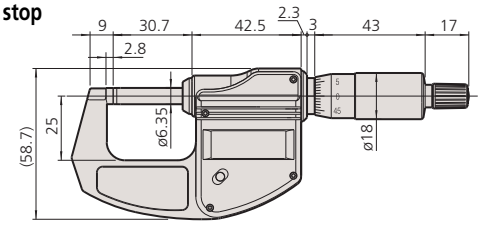
Inch/Metric With friction thimble

Range	Resolution	Order No.	Accuracy
0 - 1" / 0 - 25.4mm	.00005" / 0.001mm	**293-832**	±.0001"

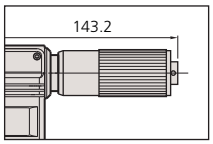
DIMENSIONS AND MASS

Unit: mm

Ratchet stop



Friction thimble



MASS: 275g

Mitutoyo guarantees the product quality
PROPRIETARY INSPECTION CERTIFICATE
Mitutoyo guarantees the product quality

Technical Data

Accuracy: Refer to the list of specifications.
Resolution: .00005"/0.001mm or 0.001mm
Flatness: .000012" / 0.3μm
Parallelism: .00008" / 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 (on inch/metric models only)
Alarm: Low voltage, Counting value composition error

MDH Micrometer

SERIES 293 — High-Accuracy Sub-Micron Digimatic Micrometer

Technical Data

Flatness: 0.3µm/.000012"
Parallelism: 0.6µm/.000024
Measuring force: 7 to 9N
Power supply: Lithium battery (CR2032) x 1
Battery life: Approx. two years when used under normal conditions

Functions

Preset (ABS measurement system)
Zero-setting (INC measurement system)
Hold, Resolution switching, Function lock, On/off, Auto power off, Measurement data output, Error alarm

Optional Accessories

05CZA662: SPC cable with data switch (1m/40")
05CZA663: SPC cable with data switch (2m/80")

Function lock

Heat shield

FEATURES

- Enabling .000005"/ 0.1µm resolution measurement, this micrometer is ideal for customers who need to make highly accurate measurements with a hand-held tool.
- A highly rigid frame and high-performance constant-force mechanism* enable more stable measurement, while the clicks emitted while the workpiece is being measured assure the operator that measurement is proceeding normally.

* Patent pending in Japan, the United States of America, the European Union, and China.

- Body heat transferred to the instrument is reduced by a (removable) heat shield, minimizing the error caused by thermal expansion of the frame when performing handheld measurements.
- The ABS (absolute) rotary sensor also eliminates the need to perform origin setting each time the power is turned on, letting you start measuring straight away. With no possibility of overspeed errors, the High-Accuracy Digimatic Micrometer also delivers a higher level of reliability.

293-130

SPECIFICATIONS

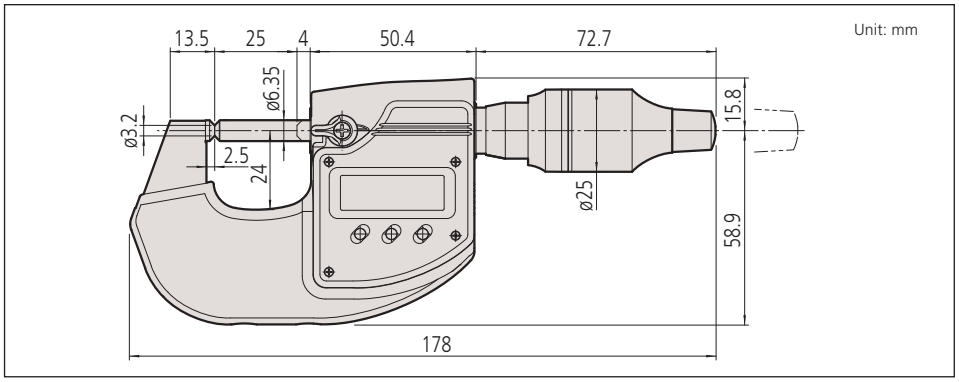
Metric

Order No.	Range	Resolution	Accuracy	Measuring surface	Mass
293-100	0 - 25mm	0.0001mm/ 0.0005mm (switchable)	±0.5µm	ø3.2mm	400g (440g w/Heat shield)

Inch/Metric

Order No.	Range	Resolution	Accuracy	Measuring surface	Mass
293-130	0 - 1" 0 - 25.4mm	.000005"/.00002" 0.0001mm/0.0005mm (switchable)	±.00002"	ø3.2mm	400g (440g w/Heat shield)

DIMENSIONS



QuantuMike

SERIES 293 — Coolant Proof Micrometer

FEATURES

- Faster measurement with 2mm per revolution instead of the standard 0.5mm.
- A patented ratchet thimble mechanism helps ensure repeatability.
- A function lock helps prevent error.
- IP-65 protection level.
- Certificate of inspection provided.
- With a standard bar except for 0-25mm/0-1" model.
- Supplied in fitted plastic case.

293-180

293-142

SPECIFICATIONS

Metric

Range	Resolution	Order No.	Accuracy
0-25mm	0.001mm	**293-140**	1um
0-25mm	0.001mm	**293-145***	1um
25-50mm	0.001mm	**293-141**	1um
25-50mm	0.001mm	**293-146***	1um
50-75mm	0.001mm	**293-142**	2um
50-75mm	0.001mm	**293-147***	2um
75-100mm	0.001mm	**293-143**	2um
75-100mm	0.001mm	**293-148***	2um

* without SPC data output

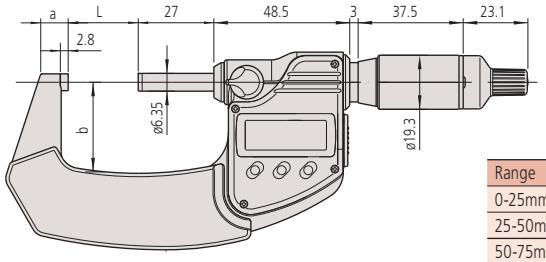
Inch/Metric

Range	Resolution	Order No.	Accuracy
0-1"/0 - 25.4mm	.00005"/0.001mm	**293-180**	.00005"
0-1"/0 - 25.4mm	.00005"/0.001mm	**293-185***	.00005"
1-2"/25.4 - 50.8mm	.00005"/0.001mm	**293-181**	.00005"
1-2"/25.4 - 50.8mm	.00005"/0.001mm	**293-186***	.00005"
2-3"/50.8 - 76.2mm	.00005"/0.001mm	**293-182**	.0001"
2-3"/50.8 - 76.2mm	.00005"/0.001mm	**293-187***	.0001"
3-4"/76.2 - 101.6mm	.00005"/0.001mm	**293-183**	.0001"
3-4"/76.2 - 101.6mm	.00005"/0.001mm	**293-188***	.0001"

* without SPC data output

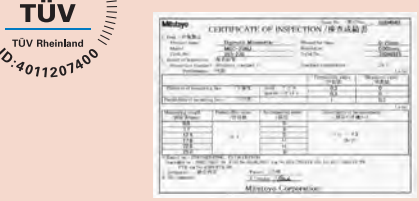
DIMENSIONS AND MASS

Unit: mm



Model=25-50mm/1-2"

Range	L	a	b	Mass(g)
0-25mm/0-1"	0	9	25	265
25-50mm/1-2"	25	9.8	32	325
50-75mm/2-3"	50	12.6	47	465
75-100mm/3-4"	75	14	60	620



Certificate of inspection

Technical Data

Accuracy: Refer to the list of specifications.
Resolution: 0.001mm or .00005"/0.001mm
Flatness: 0.3µm/.000012"
Parallelism: 1µm/.00004" for models up to 50mm/2"
2µm/.00008" for models up to 100mm/4"
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, Zero / ABS, Hold, Function locks, Auto power on/off, Data output (output models), inch/mm conversion (on inch/metric models only)
Alarm: Low voltage, Counting value composition error

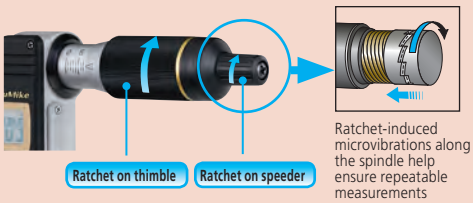
Optional Accessories

05CZA662: SPC cable with data switch (1m/40")
05CZA663: SPC cable with data switch (2m/80")

SPC cable with data switch

516-529-26 Inspection Gage Block Set
Rectangular Steel Gage Block
10 pc. blocks and 1 pc. optical parallel

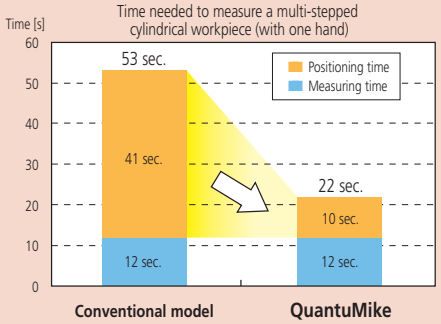
516-319-26 Inspection Gage Block Set
Rectangular Cera Gage Block
10 pc. blocks and 1 pc. optical parallel



Ratchet-induced microvibrations along the spindle help ensure repeatable measurements

Significant reduction in positioning time

Time needed to measure a multi-stepped cylindrical workpiece (with one hand)



ABSOLUTE Digimatic Micrometers

SERIES 227 — with Adjustable Measuring Force

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 by .4"/rev and 10mm/rev for inch/metric model.
- With absolute linear scale.
- With SPC data output.
- With a standard bar to set the origin point (except for 0-15mm, 0-10mm, 0-.6", and 0-4" models).
- Supplied in fitted plastic case.

227-201

Technical Data

Accuracy: Refer to the list of specifications.
Resolution: .00005"/0.001mm or 0.001mm
Flatness: .000012" / 0.3µm
Parallelism: .00008" / 2µm
Accuracy of selected measuring force:
± (0.1+selected measuring force/10)N
for 0.5-2.5N models
± (0.4+selected measuring force/10)N
for 2-10N models

Measuring faces: Carbide tipped
Display: LCD
Battery: SR44 (1 pc.), **938882**
Battery life: Approx. 3 years under normal use
(1 year for .6 - 1.2" / 15-30mm, .4 -.8"/
10-20mm, .8-1.2"/20-30mm range model)

Function

Origin, Hold / Data, ON/OFF, Zero / ABS,
inch/mm conversion (on inch/metric models only)
Alarm: Low voltage, Counting value composition error

Optional Accessories

937387: SPC cable (40"/ 1m)
965013: SPC cable (80"/ 2m)

SPECIFICATIONS

Metric

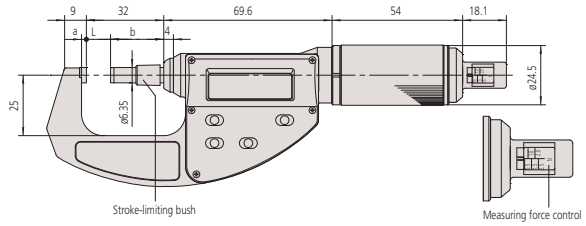
Order No.	Range	Resolution	Accuracy	Measuring Force	Mass(g)
227-201	0-15mm	0.001mm	±2µm	0.5-2.5 (0.5, 1.0, 1.5, 2, 2.5) N	300
227-203	15-30mm	0.001mm	±2µm	0.5-2.5 (0.5, 1.0, 1.5, 2, 2.5) N	380
227-205	0-10mm	0.001mm	±2µm	2-10 (2, 4, 6, 8, 10) N	340
227-206	10-20mm	0.001mm	±2µm	2-10 (2, 4, 6, 8, 10) N	425
227-207	20-30mm	0.001mm	±2µm	2-10 (2, 4, 6, 8, 10) N	415

Inch/Metric

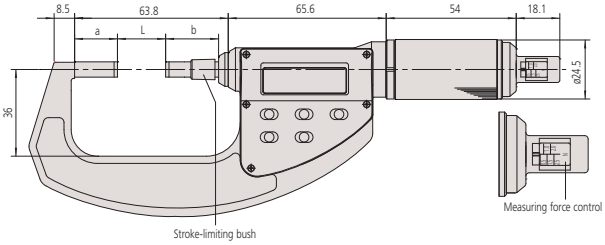
Order No.	Range	Resolution	Accuracy	Measuring Force	Mass(g)
227-211	0-.6"	.00005"/0.001mm	±.0001"	0.5-2.5 (0.5, 1.0, 1.5, 2, 2.5) N	300
227-213	.6-1.2"	.00005"/0.001mm	±.0001"	0.5-2.5 (0.5, 1.0, 1.5, 2, 2.5) N	380
227-215	0-.4"	.00005"/0.001mm	±.0001"	2-10 (2, 4, 6, 8, 10) N	340
227-216	.4-.8"	.00005"/0.001mm	±.0001"	2-10 (2, 4, 6, 8, 10) N	425
227-217	.8-1.2"	.00005"/0.001mm	±.0001"	2-10 (2, 4, 6, 8, 10) N	415

DIMENSIONS AND MASS

Unit: mm



Range	L	a	b
0 - 15mm	15	2	17
0 - 10mm	10	2	22



Range	L	a	b
15 - 30mm	30	12.8	17
10 - 20mm	20	17.8	22
20 - 30mm	30	7.8	22

Quickmike

SERIES 293 — IP-54 ABSOLUTE Digimatic Micrometers

The Quickmike provides a speedy spindle feed of 10mm / .4" per thimble rotation as compared to the conventional micrometer with 0.5mm / .025" per rotation. Its wide 30mm / 1.2" measuring range allows various workpieces with different shapes to be measured quickly.

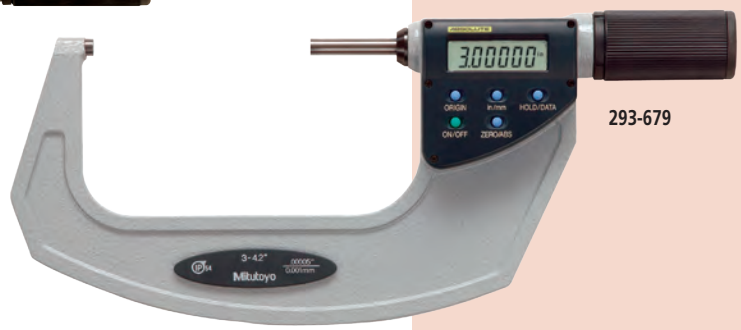
FEATURES

- Non-rotating spindle and the new ratchet friction thimble.
- Speedy spindle feed by 10mm/rev and .4"/rev for inch/metric models.
- 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 / 1.2").
- Supplied in fitted plastic case.

293-676

293-677

293-678



293-679

SPECIFICATIONS

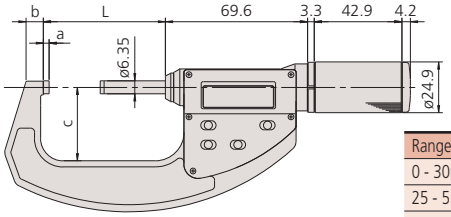
Metric

Range	Resolution	Order No.	Accuracy
0 - 30mm	0.001mm	**293-666**	±2µm
25 - 55mm	0.001mm	**293-667**	±2µm
50 - 80mm	0.001mm	**293-668**	±3µm
75 - 105mm	0.001mm	**293-669**	±3µm

Inch/Metric

Range	Resolution	Order No.	Accuracy
0 - 1.2" / 0 - 30.48mm	.00005" / 0.001mm	**293-676**	±.0001"
1" - 2.2" / 25.4 - 55.88mm	.00005" / 0.001mm	**293-677**	±.0001"
2" - 3.2" / 50.8 - 81.28mm	.00005" / 0.001mm	**293-678**	±.00015"
3" - 4.2" / 76.2 - 106.68mm	.00005" / 0.001mm	**293-679**	±.00015"

DIMENSIONS AND MASS



Unit: mm

Range	L	a	b	c	Mass
0 - 30mm / 0 - 1.2"	34.8	2.8	6.2	25	275
25 - 55mm / 1 - 2.2"	59.8	2.8	8.5	36	355
50 - 80mm / 2 - 3.2"	84.8	2.8	10.3	47	525
75 - 105mm / 3 - 4.2"	109.8	2.8	10.7	60	625

SPC

IP54

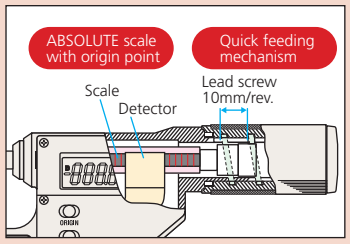
ABSOLUTE®
Absolute System Patented by MITUTOYO

Technical Data

Accuracy: Refer to the list of specifications.
Resolution: 0.001mm or .00005"/0.001mm
Flatness: 0.3µm / .000012"
Parallelism: 2µm / .00008" for models up to 80mm / 3.2"
3µm / .00012" for models up to 105mm / 4.2"
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 / 1.2")
Dust/Water protection level: IP54

Function

Origin, Hold / Data, ON/OFF, Zero / ABS,
inch/mm conversion (on inch/metric models only)
Alarm: Low voltage, Counting value composition error



Optional Accessories

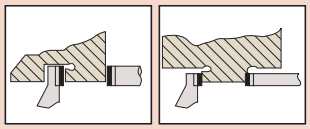
937387: SPC cable (1m / 40")
965013: SPC cable (2m / 80")

Outside Micrometers

SERIES 101

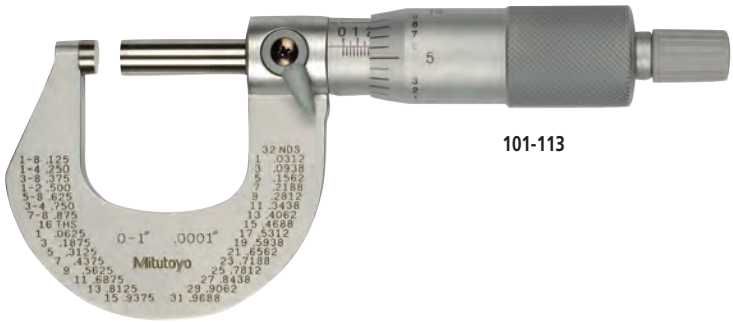
Technical Data

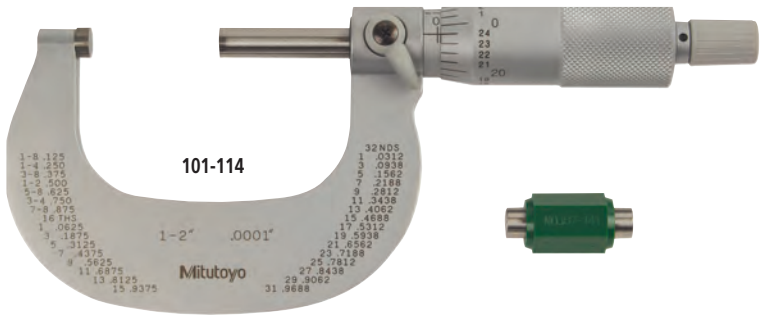
Graduation: .0001"
Flatness: .000024"
Parallelism: .00008" for models up to 3"
.00012" for models over 3"
Measuring faces: Carbide tipped



FEATURES

- Satin-chrome-finished frame, tapered (on the anvil side) for hard-to-reach places.
- With a standard bar except for 0 - 1" models.
- Supplied in fitted plastic case.





SPECIFICATIONS

Inch With friction thimble

Range	Graduation	Order No.	Accuracy	Mass (g)
0 - 1"	.0001"	**101-117***	±.0001"	180
1 - 2"	.0001"	**101-118***	±.0001"	245

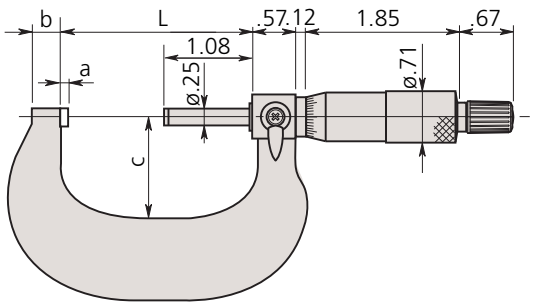
*.0001" reading is obtained with vernier.

Inch With ratchet stop

Range	Graduation	Order No.	Accuracy	Mass (g)
0 - 1"	.0001"	**101-113***	±.0001"	180
1 - 2"	.0001"	**101-114***	±.0001"	245
2 - 3"	.0001"	**101-119***	±.0001"	410
3 - 4"	.0001"	**101-120***	±.00015"	550

*.0001" reading is obtained with vernier.

DIMENSIONS



Unit: inch

Range	L	a	b	c
0 - 1"	1.18	.10	.20	1.10
1 - 2"	2.16	.08	.31	1.28
2 - 3"	3.19	.11	.33	1.77
3 - 4"	4.19	.11	.33	2.28

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

Ratchet Thimble Micrometer

SERIES 101, 102 — New smoother action Ratchet Thimble

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.
- With a standard bar except for 0 - 25mm and 0 - 1" models.
- Supplied in fitted plastic case.

102-701

102-702

SPECIFICATIONS

Metric

Range	Graduation	Order No.	Accuracy
0 - 25mm	0.01mm	**102-701**	±2µm
0 - 25mm	0.001mm	**102-707***	±2µm
25 - 50mm	0.01mm	**102-702**	±2µm
25 - 50mm	0.001mm	**102-708***	±2µm

*0.001mm reading is obtained with vernier.

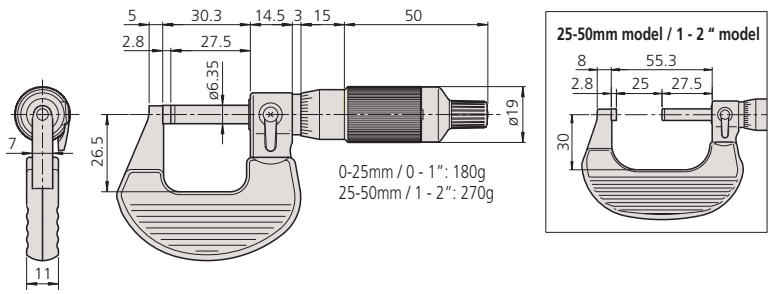
Inch

Range	Graduation	Order No.	Accuracy
0 - 1"	.001"	**101-711**	±.0001"
	.0001"	**101-717***	±.0001"
	.0001"	**102-717***	±.0001"
1 - 2"	.0001"	**102-718***	±.0001"

*.0001" reading is obtained with vernier.

DIMENSIONS AND MASS

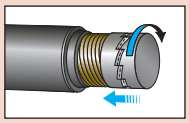
Unit: mm



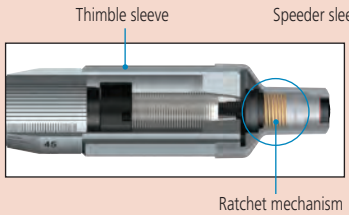
Mitutoyo guarantees the product quality. PROPRIETARY INSPECTION CERTIFICATE Mitutoyo guarantees the product quality.

Technical Data

Graduation: 0.01mm, 0.001mm, .001" or .0001"
Flatness: 0.6µm / .000024"
Parallelism: 2µm / .00008"
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.

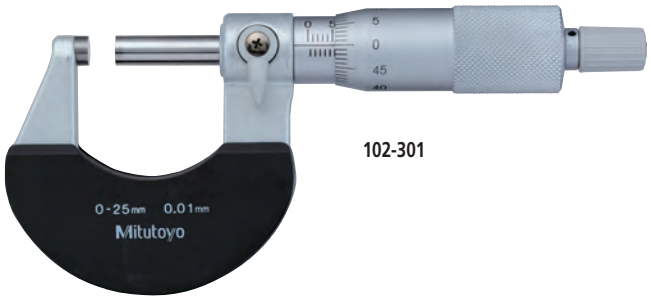


Outside Micrometers

SERIES 102

FEATURES

- Heat-insulated frame, tapered (on the anvil side) for hard-to-reach places.
- With a standard bar except for 0 - 25mm model.
- A ratchet stop for a constant measuring force.
- Supplied in a fitted plastic case.



102-301

Technical Data

Graduation: 0.01mm
Flatness: 0.3µm
Parallelism: 1µm for 25mm model
3µm for models up to 100mm
Measuring faces: Carbide tipped

Ratchet stop type

SPECIFICATIONS

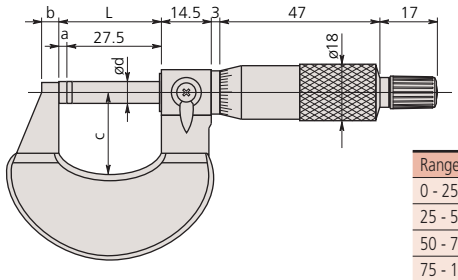
Metric With ratchet stop

Range	Graduation	Order No.	Accuracy
0 - 25mm	0.01mm	**102-301**	±2µm
25 - 50mm	0.01mm	**102-302**	±2µm
50 - 75mm	0.01mm	**102-303**	±2µm
75 - 100mm	0.01mm	**102-304**	±3µm

Metric Micrometer set 0.01mm Graduation model

Range	Order No.	Included in set
0 - 100mm (4 pcs/set)	**102-911-40**	• **102-301** **102-302** **102-303** **102-304** • 3 micrometer standards

DIMENSIONS AND MASS



Unit: mm

Range	L	a	b	c	d	Mass (g)
0 - 25mm	30.3	2.8	5	26	6.35	180
25 - 50mm	55.3	2.8	8	32	6.35	270
50 - 75mm	80.3	2.8	9	45	6.35	375
75 - 100mm	105.3	2.8	10	58	6.35	490

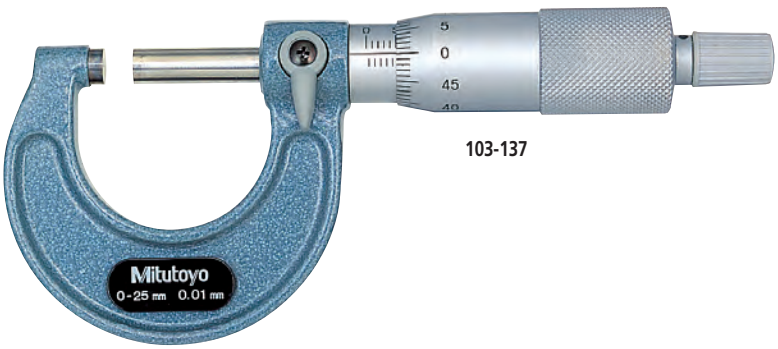
Outside Micrometers

SERIES 103

PROPRIETARY INSPECTION CERTIFICATE
Mitutoyo guarantees the product quality. Mitutoyo guarantees the product quality.

FEATURES

- Hammertone, baked-enamel-finished frame.
- Ratchet Stop for exact repetitive readings.
- With a standard bar except for 0-25mm model.



103-137

Technical Data

Graduation: 0.01mm, 0.001mm
Flatness: 0.6 µm for models up to 300mm"
1µ for models over 300mm
Parallelism: (2+R/100)µm, R=max, range (mm)
Measuring faces: Carbide tipped

SPECIFICATIONS

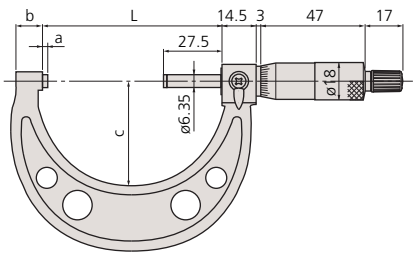
Metric With ratchet stop

Range	Order No.	Accuracy	Mass (g)
0 - 25mm	**103-137**	±2µm	175
	103-129*	±2µm	175
25 - 50mm	**103-138**	±2µm	215
	103-130*	±2µm	215
50 - 75mm	**103-139-10**	±2µm	315
75 - 100mm	**103-140-10**	±3µm	375
100 - 125mm	**103-141-10**	±3µm	515
125 - 150mm	**103-142-10**	±3µm	665
150 - 175mm	**103-143-10**	±4µm	720
175 - 200mm	**103-144-10**	±4µm	920
200 - 225mm	**103-145-10**	±4µm	1080
225 - 250mm	**103-146-10**	±5µm	1255
250 - 275mm	**103-147-10**	±5µm	1405
275 - 300mm	**103-148-10**	±5µm	1565
300 - 325mm	**103-149**	±6µm	1985
325 - 350mm	**103-150**	±6µm	2155
350 - 375mm	**103-151**	±6µm	2305
375 - 400mm	**103-152**	±7µm	2455
400 - 425mm	**103-153**	±7µm	2715
425 - 450mm	**103-154**	±7µm	2965
450 - 475mm	**103-155**	±8µm	3215
475 - 500mm	**103-156**	±8µm	3450
(Models with a range up to 1000mm are available.)			

*0.001mm reading is obtained with vernier.

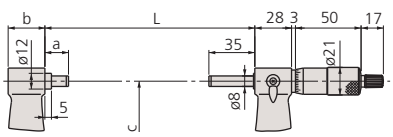
DIMENSIONS AND MASS

Up to 300mm / 12"



Range	L	a	b	c
0 - 25mm / 0 - 1"	30.3	2.8	9	28
25 - 50mm / 1 - 2"	55.3	2.8	10	38
50 - 75mm / 2 - 3"	80.3	2.8	12	49
75 - 100mm / 3 - 4"	105.3	2.8	14	60
100 - 125mm / 4 - 5"	132.8	5.3	17	79
125 - 150mm / 5 - 6"	158.2	5.7	19	94
150 - 175mm / 6 - 7"	183.6	6.1	20	106
175 - 200mm / 7 - 8"	208.8	6.3	19	118
200 - 225mm / 8 - 9"	234.2	6.7	18	130
225 - 250mm / 9 - 10"	258	5.5	18	143
250 - 275mm / 10 - 11"	284	6.5	18	156
275 - 300mm / 11 - 12"	309	6.5	18	169

Over 300mm / 12"



Range	L	a	b	c
300 - 325mm / 12-13"	353	18	28	187
325 - 350mm / 13-14"	378	18	28	199
350 - 375mm / 14-15"	403	18	28	212
375 - 400mm / 15-16"	428	18	28	224
400 - 425mm / 16-17"	453	18	28	236
425 - 450mm / 17-18"	478	18	28	248
450 - 475mm / 18-19"	503	18	28	261
475 - 500mm / 19-20"	528	18	28	273

Metric Micrometer set

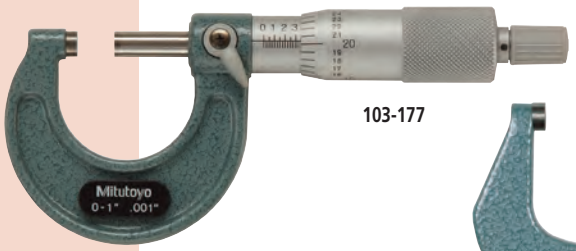
Range	Order No.	Included in set	Mass (g)
0 - 75mm (3 mikes/set)	**103-927-10**	**103-137, 103-138, 103-139-10,** 2 micrometer standards	750
0 - 150mm (6 mikes/set)	**103-913-50**	**103-137, 103-138, 103-139-10, 103-140-10, 103-141-10, 103-142-10,** 5 micrometer standards	2260
150 - 300mm (6 mikes/set)	**103-915-10**	**103-143-10, 103-144-10, 103-145-10, 103-146-10, 103-147-10, 103-148-10**, 6 micrometer standards	7695
0 - 300mm (12 mikes/set)	**103-915-50**	All micrometers of **103-913-50** and **103-915-10** in one set, 11 micrometer standards	9300

Outside Micrometers

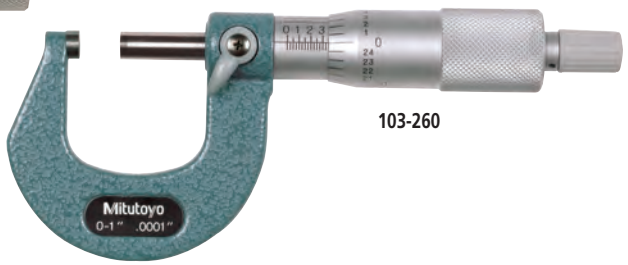
SERIES 103— Inch Models

FEATURES

- Hammertone, baked-enamel-finished frame.
- Ratchet Stop or Friction Thimble for exact repetitive readings.
- With a standard bar except for 0-1″model.



103-177



103-260

Technical Data (Inch Model)

Accuracy: Refer to the list of specifications.
Graduation: .001" or .0001"
Flatness: .000024″ for models up to 12″
.00004″ for models over 12″
Parallelism: [.00008 + .00004 (L/4)]″ L= max range (inch)
Measuring faces: Carbide tipped

SPECIFICATIONS

Inch With ratchet stop

Range	Graduation	Order No.	Accuracy	Mass (g)
0 - 1"	.001"	**103-177**	±.0001"	175
		103-259	±.0001"	175
1 - 2"	.001"	**103-178**	±.0001"	215
2 - 3"	.001"	**103-179**	±.0001"	315
3 - 4"	.001"	**103-180**	±.00015"	375
4 - 5"	.001"	**103-181**	±.00015"	515
5 - 6"	.001"	**103-182**	±.00015"	665
6 - 7"	.001"	**103-183**	±.0002"	720
7 - 8"	.001"	**103-184**	±.0002"	920
8 - 9"	.001"	**103-185**	±.0002"	1080
9 - 10"	.001"	**103-186**	±.00025"	1255
10 - 11"	.001"	**103-187**	±.00025"	1405
11 - 12"	.001"	**103-188**	±.00025"	1565
12 - 13"	.001"	**103-189**	±.0003"	1985
13 - 14"	.001"	**103-190**	±.0003"	2155
14 - 15"	.001"	**103-191**	±.0003"	2305
15 - 16"	.001"	**103-192**	±.00035"	2455
16 - 17"	.001"	**103-193**	±.00035"	2715
17 - 18"	.001"	**103-194**	±.00035"	2965
18 - 19"	.001"	**103-195**	±.0004"	3215
19 - 20"	.001"	**103-196**	±.0004"	3450
20 - 21"	.001"	**103-197**	±.0004"	4060
21 - 22"	.001"	**103-198**	±.00045"	4080
22 - 23"	.001"	**103-199**	±.00045"	4500
23 - 24"	.001"	**103-200**	±.00045"	4525
24 - 25"	.001"	**103-201**	±.0005	4915
25 - 26"	.001"	**103-202**	±.0005"	4930
26 - 27"	.001"	**103-203**	±.0005"	5200
27 - 28"	.001"	**103-204**	±.00055"	5215
28 - 29"	.001"	**103-205**	±.00055"	5835
29 - 30"	.001"	**103-206**	±.00055"	5860
30 - 31"	.001"	**103-207**	±.0006"	6385
31 - 32"	.001"	**103-208**	±.0006"	6410
32 - 33"	.001"	**103-209**	±.0006"	6925
33 - 34"	.001"	**103-210**	±.00065"	6940
34 - 35"	.001"	**103-211**	±.00065"	7565
35 - 36"	.001"	**103-212**	±.00065"	7590
36 - 37"	.001"	**103-213**	±.0007"	8215
37 - 38"	.001"	**103-214**	±.0007"	8240
38 - 39"	.001"	**103-215**	±.0007"	8860
39 - 40"	.001"	**103-216**	±.00075"	8880

Inch With friction thimble

Range	Graduation	Order No.	Accuracy	Mass (g)
0 - 1"	.001"	**103-127**	±.0001"	175
	.0001"	**103-135**	±.0001"	175
1 - 2"	.001"	**103-128**	±.0001"	215
	.0001"	**103-136**	±.0001"	215

Inch With ratchet stop

Range	Graduation	Order No.	Accuracy	Mass (g)
0 - 1"	.0001"	**103-260***	±.0001"	175
0 - 1"	.0001"	**103-131***	±.0001"	175
1 - 2"	.0001"	**103-262***	±.0001"	215
1 - 2"	.0001"	**103-132***	±.0001"	215
2 - 3"	.0001"	**103-217***	±.0001"	315
3 - 4"	.0001"	**103-218***	±.00015"	375
4 - 5"	.0001"	**103-219***	±.00015"	515
5 - 6"	.0001"	**103-220***	±.00015"	665
6 - 7"	.0001"	**103-221***	±.0002"	720
7 - 8"	.0001"	**103-222***	±.0002"	920
8 - 9"	.0001"	**103-223***	±.0002"	1080
9 - 10"	.0001"	**103-224***	±.00025"	1255
10 - 11"	.0001"	**103-225***	±.00025"	1405
11 - 12"	.0001"	**103-226***	±.00025"	1565

*.0001"Reading is obtained with vernier

Outside Micrometers

SERIES 103 — Inch model set

Inch Micrometer Set .001" Graduation Model

Range	Order No.	Included in set	Mass (g)
0 - 3" (3pcs./set)	**103-929**	103-177, 103-178, 103-179, 2 Micrometer Standards	750
0 - 4" (4pcs./set)	**103-930**	103-177, 103-178, 103-179, 103-180, 3 Micrometer Standards	1600
0 - 6" (6pcs./set)	**103-904-10**	103-177, 103-178, 103-179, 103-180, 103-181, 103-182, 5 Micrometer Standards	2200
0 - 12" (12pcs./set)	**103-905-10**	103-177, 103-178, 103-179, 103-180, 103-181, 103-182, 103-183, 103-184, 103-185, 103-186, 103-187, 103-188, 11 Micrometer Standards	9000
6 - 12" (6pcs./set)	**103-906**	103-183, 103-184, 103-185, 103-186, 103-187, 103-188, 6 Micrometer Standards	7695

103-905-10

Inch Micrometer Set .0001" Graduation Model

Range	Order No.	Included in set	Mass (g)
0 - 3" (3pcs./set)	**103-922**	103-135, 103-136, 103-217, 2pcs. Micrometer Standards	705
0 - 4" (4pcs./set)	**103-931**	103-135, 103-136, 103-217, 103-218, 3pcs. Micrometer Standards	1600
0 - 6" (6pcs./set)	**103-907-40**	103-135, 103-136, 103-217, 103-218, 103-219, 103-220, 5 Micrometer Standards	2200
0 - 12" (12pcs./set)	**103-908-40**	102-135, 103-136, 103-217, 103-218, 103-219, 103-220, 103-221, 103-222, 103-223, 103-224, 103-225, 103-226, 11pcs. Micrometer Standards	9000
6 - 12" (6pcs./set)	**103-909**	103-221, 103-222, 103-223, 103-224, 103-225, 103-226, 6pcs. Micrometer Standards	6945

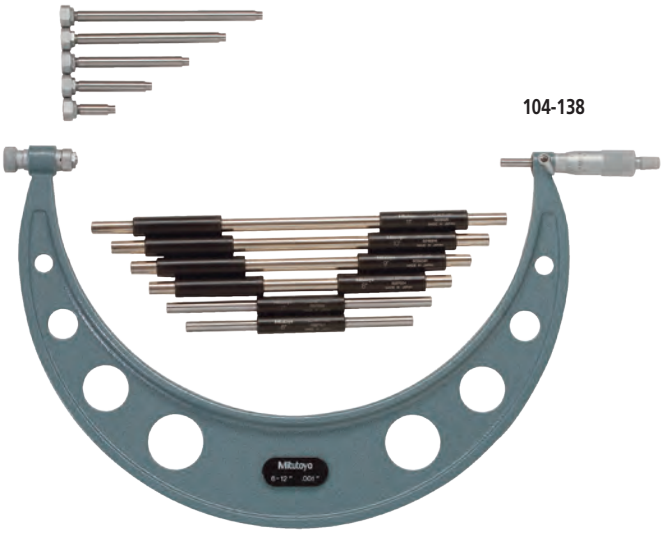
103-904-10

Outside Micrometers

SERIES 340, 104 — with Interchangeable Anvils, Inch model

FEATURES

- IP65 water/dust protection (Series 340*).
  *Models with a range up to12" / 300mm.
- Wide measuring range with interchangeable anvils.
- With a Ratchet Stop for constant force.
- Supplied with zero-setting standards bar for each range.
- With SPC output (Series 340).
- Supplied in fitted wooden case.



104-138

Technical Data

Accuracy: ±[.00016" +.00004 (L/3)"] L = Max Range (Inch)
Resolution*: .0001"/0.001mm
(**340-351-10**: .00005"/0.001mm)
Graduation**: .001" (**104-165**: is .0001")
Flatness: .000024" for models up to 12"
.00004" for models over 12"
Parallelism: .00008" for models up to 3"
.00012" for models up to 6"
±[.00008" + .00004 (L/4)"] L= Max range (inch)
Measuring faces: Carbide tipped (spindle only)
Display*: LCD
Battery*: SR44 (1 pc.), **938882**
Battery life*: Approx. 1.2 years under normal use
Dust/Water protection level*: IP65 (up to 12" / 300mm)
*Digital models **Analog models

Function of Digital Model

Zero / ABS, Data hold, Preset, Data output,
inch/mm conversion (on inch/metric models only)
Alarm: Low voltage, Counting value composition error
Function Lock***
2 Presets***
*** 4 - 12" / 100 - 300mm Models

Optional Accessories for Digital Model

05CZA662: SPC cable with data switch (40" / 1m)
05CZA663: SPC cable with data switch (80" / 2m)

SPECIFICATIONS

Inch/Metric Digital model

Range	Resolution	Order No.	Mass (kg)	Remarks
0-6" / 0-152.4mm	.00005" / 0.001mm	**340-351-10**	0.96	with 6 anvils & 5 standards
6-12" / 152.4 - 304.8mm	.0001" / 0.001mm	**340-352-10**	1.88	with 6 anvils & 6 standards
12-18" / 304.8 - 457.2mm	.0001" / 0.001mm	**340-720**	4.75	with 6 anvils & 6 standards
18-24" / 457.2 - 609.6mm	.0001" / 0.001mm	**340-721**	6.62	with 6 anvils & 6 standards
24-30" / 609.6 - 762.0mm	.0001" / 0.001mm	**340-722**	10.06	with 6 anvils & 6 standards
30-36" / 762.0 - 914.4mm	.0001" / 0.001mm	**340-723**	11.98	with 6 anvils & 6 standards

Inch

Range	Graduation	Order No.	Mass(kg)	Remarks
0-2"	.0001"	**104-165***	0.32	with 1" anvil & 1 standard
0-6"	.001"	**104-137**	1.35	with 6 anvils & 5 standards
6-12"	.001"	**104-138**	2.65	with 6 anvils & 6 standards
12-16"	.001"	**104-152**	3.31	with 4 anvils & 4 standards
12-18"	.001"	**104-201**	4.69	with 6 anvils & 6 standards
16-20"	.001"	**104-153**	4.81	with 4 anvils & 4 standards
18-24"	.001"	**104-202**	6.51	with 6 anvils & 6 standards
20-24"	.001"	**104-154**	6.35	with 4 anvils & 4 standards
24-28"	.001"	**104-155**	7.72	with 4 anvils & 4 standards
24-30"	.001"	**104-203**	9.95	with 6 anvils & 6 standards
28-32"	.001"	**104-156**	9.08	with 4 anvils & 4 standards
30-36"	.001"	**104-204**	11.87	with 6 anvils & 6 standards
32-36"	.001"	**104-157**	10.41	with 4 anvils & 4 standards
36-40"	.001"	**104-158**	11.78	with 4 anvils & 4 standards
36-42"	.001"	**104-205**	13.68	with 6 anvils & 6 standards

*.0001" reading is obtained with vernier.

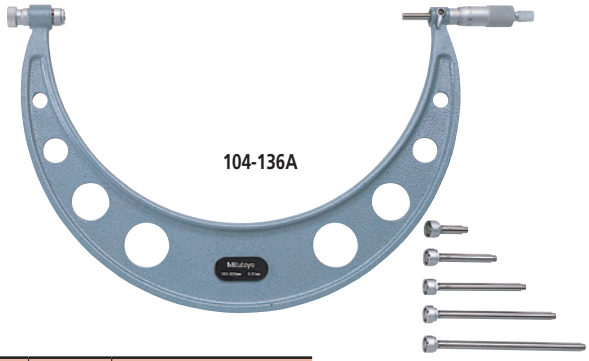
Outside Micrometers

SERIES 340, 104 — with Interchangeable Anvils, Metric Model

FEATURES

- IP65 water/dust protection (Series 340*).
  *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 bar for each range.
- With SPC output (Series 340).
- Supplied in fitted wooden case.

Digital model



SPECIFICATIONS

Metric Digital model

Range	Resolution	Order No.	Mass (kg)	Remarks
0 - 150mm	0.001mm	**340-251-10**	0.96	with 6 anvils & 5 standards
150 - 300mm	0.001mm	**340-252-10**	1.88	with 6 anvils & 6 standards
300 - 400mm	0.001mm	**340-520**	3.31	with 4 anvils & 4 standards
400 - 500mm	0.001mm	**340-521**	4.81	with 4 anvils & 4 standards
500 - 600mm	0.001mm	**340-522**	6.35	with 4 anvils & 4 standards
600 - 700mm	0.001mm	**340-523**	7.72	with 4 anvils & 4 standards
700 - 800mm	0.001mm	**340-524**	9.08	with 4 anvils & 4 standards
800 - 900mm	0.001mm	**340-525**	10.41	with 4 anvils & 4 standards
900 - 1000mm	0.001mm	**340-526**	11.78	with 4 anvils & 4 standards

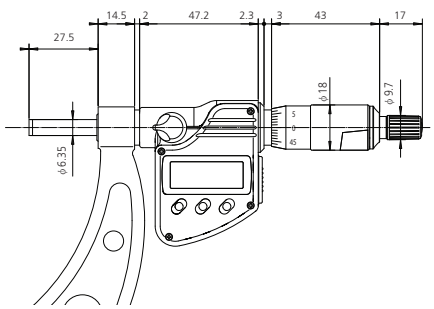
Metric

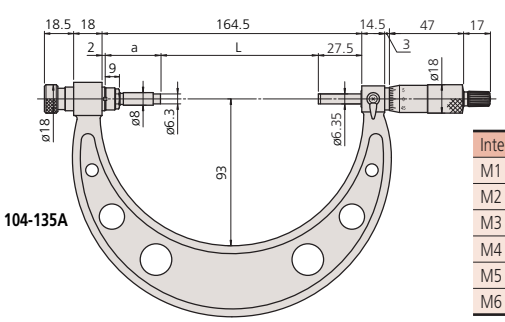
Range	Graduation	Order No.	Mass (kg)	Remarks
0 - 50mm	0.01mm	**104-171***	0.32	with 2 anvils & 1 standards
0 - 100mm	0.01mm	**104-139A**	0.79	with 4 anvils & 3 standards
0 - 150mm	0.01mm	**104-135A**	1.35	with 6 anvils & 5 standards
50 - 150mm	0.01mm	**104-161A**	1.35	with 4 anvils & 4 standards
100 - 200mm	0.01mm	**104-140A**	1.38	with 4 anvils & 4 standards
150 - 300mm	0.01mm	**104-136A**	2.65	with 6 anvils & 6 standards
200 - 300mm	0.01mm	**104-141A**	2.22	with 4 anvils & 4 standards
300 - 400mm	0.01mm	**104-142A**	3.31	with 4 anvils & 4 standards
400 - 500mm	0.01mm	**104-143A**	4.81	with 4 anvils & 4 standards
500 - 600mm	0.01mm	**104-144A**	6.35	with 4 anvils & 4 standards
600 - 700mm	0.01mm	**104-145A**	7.72	with 4 anvils & 4 standards
700 - 800mm	0.01mm	**104-146A**	9.08	with 4 anvils & 4 standards
800 - 900mm	0.01mm	**104-147A**	10.41	with 4 anvils & 4 standards
900 - 1000mm	0.01mm	**104-148A**	11.78	with 4 anvils & 4 standards

*The frame is in a heat insulated cover

DIMENSIONS

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)
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 over 150mm, R=max. range (mm)
Measuring faces: Carbide tipped (spindle only)
Display*: LCD
Battery*: SR44 (1 pc.), **938882**
Battery life*: Approx. 1.2 years under normal use
Dust/Water protection level*: IP65 (up to 300mm)
*Digital models **Analog models

Function of Digital Model

Zero / ABS, Data hold, Preset, Data output, inch/mm conversion (on inch/metric models only)
Alarm: Low voltage, Counting value composition error
Function Lock***
2 Presets***
***4 - 12" / 100 - 300mm Models

Optional Accessories for Digital Model

05CZA662: SPC cable with data switch (40" / 1m)
05CZA663: SPC cable with data switch (80" / 2m)

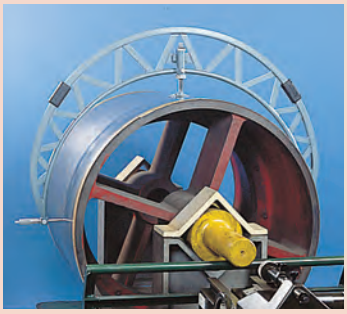
Outside Micrometers

SERIES 105 — with Extension Anvil Collars

Technical Data

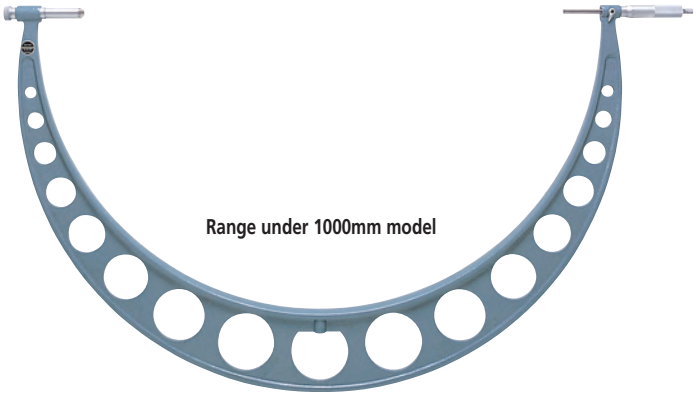
Accuracy: ±(6+R/75)µm, R=max. range (mm)
Graduation: .001" / 0.01mm
Flatness: .000052" / 1.3µm
Parallelism: [.00016"+.00004 (L/4)"] L=max. range (inch)
(2+R/100)µm, R=max. range (mm)
Measuring faces: Carbide tipped

Extension anvil collar

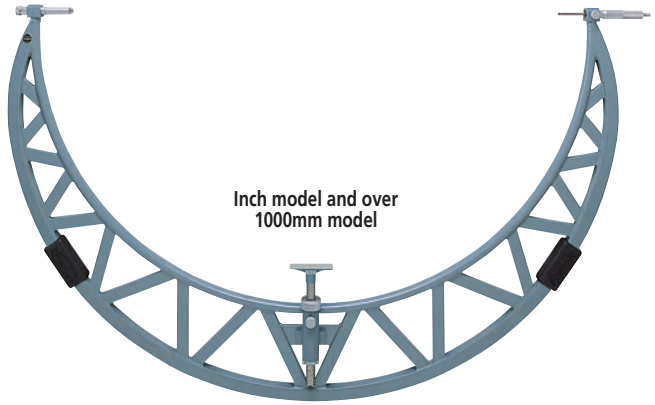


FEATURES

- Wide measuring range with extension anvil collars.
- 50mm spindle stroke.
- With Ratchet Stop for constant force.
- Supplied with zero-setting standards bar 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).
- Supplied in a fitted wooden case.



Range under 1000mm model



Inch model and over 1000mm model

SPECIFICATIONS

Metric

Range	Order No.	Extension collars	Mass (kg)
500 - 600mm	**105-103**	50mm	5.53
600 - 700mm	**105-104**	50mm	6.35
700 - 800mm	**105-105**	50mm	7.17
800 - 900mm	**105-106**	50mm	7.99
900 - 1000mm	**105-107**	50mm	8.81
1000 - 1100mm	**105-408**	50mm	6.37
1100 - 1200mm	**105-409**	50mm	7.08
1000 - 1200mm	**105-418**	50mm, 100mm	13.77
1200 - 1300mm	**105-410**	50mm	7.79
1300 - 1400mm	**105-411**	50mm	8.50
1200 - 1400mm	**105-419**	50mm, 100mm	15.77
1400 - 1500mm	**105-412**	50mm	9.21
1500 - 1600mm	**105-413**	50mm	10.17
1400 - 1600mm	**105-420**	50mm, 100mm	17.91
1600 - 1700mm	**105-414**	50mm	11.13
1700 - 1800mm	**105-415**	50mm	12.09
1600 - 1800mm	**105-421**	50mm, 100mm	20.80
1800 - 1900mm	**105-416**	50mm	13.05
1900 - 2000mm	**105-417**	50mm	14.01
1800 - 2000mm	**105-422**	50mm, 100mm	22.76

Inch

Range	Order No.	Extension collars	Mass (kg)
40 - 44"	**105-428**	2"	10.0
44 - 48"	**105-429**	2"	10.9
48 - 52"	**105-430**	2"	11.4
52 - 56"	**105-431**	2"	11.9
56 - 60"	**105-432**	2"	12.6
60 - 64"	**105-433**	2"	13.2
64 - 68"	**105-434**	2"	14.1
68 - 72"	**105-435**	2"	14.9
72 - 76"	**105-436**	2"	15.8
76 - 80"	**105-437**	2"	16.7

Outside Micrometers

SERIES 406 — Non-Rotating Spindle Type

FEATURES

- With a standard bar except for 0 -1″ / 0 - 25mm model.
- With SPC output.
- Supplied in a fitted plastic case.

406-350

SPECIFICATIONS

Metric Digital model with ratchet stop

Range	Resolution	Order No.	Accuracy
0 - 25mm	0.001mm	**406-250**	±3µm
25 - 50mm	0.001mm	**406-251**	±3µm
50 - 75mm	0.001mm	**406-252**	±3µm
75 - 100mm	0.001mm	**406-253**	±4µm

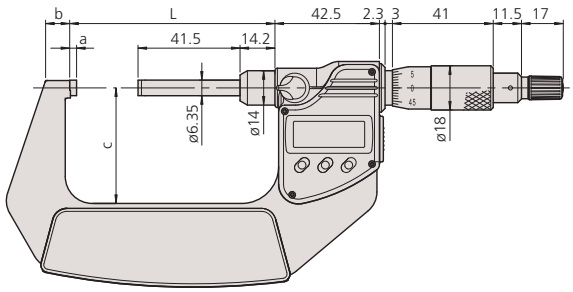
Inch/Metric Digital model with ratchet stop

Range	Resolution	Order No.	Accuracy
0 - 1"/0 - 25.4mm	.00005"/0.001mm	**406-350**	±.00015"
1 - 2"/25.4 - 50.8mm	.00005"/0.001mm	**406-351**	±.00015"
2 - 3"/50.8 - 72.6mm	.00005"/0.001mm	**406-352**	±.00015"
3 - 4"/76.2 - 101.6mm	.00005"/0.001mm	**406-353**	±.0002"

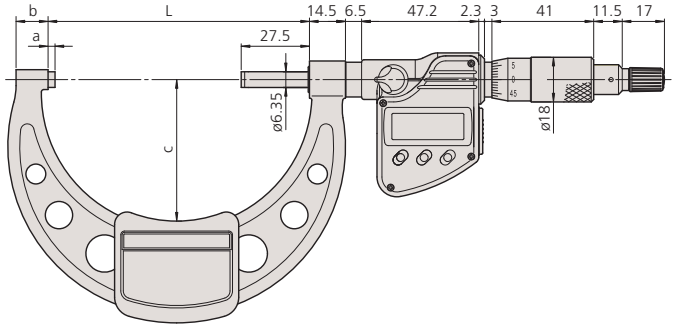
DIMENSIONS AND MASS

Digital models (up to 75mm)

Unit: mm



Digital models (over 75mm)



SPC

Technical Data

Accuracy: Refer to the list of specifications.
Resolution: .00005″/0.001mm or 0.001mm
Flatness: 0.3µm / .000012″
Parallelism: .00012″ / 3µm for models up to 3″ / 75mm*
.000016″ / 4µm for models over 3″ / 75mm*
.000063″ / 1.6µm for models up to 2″ / 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

Function of Digital Model

Origin-set, Zero / ABS, Data hold, Data output, inch/mm conversion (on inch/metric models only)
Alarm: Low voltage, Counting value composition error

Optional Accessories for Digital Model

05CZA662: SPC cable with data switch (40″ / 1m)
05CZA663: SPC cable with data switch (80″ / 2m)

Outside Micrometers

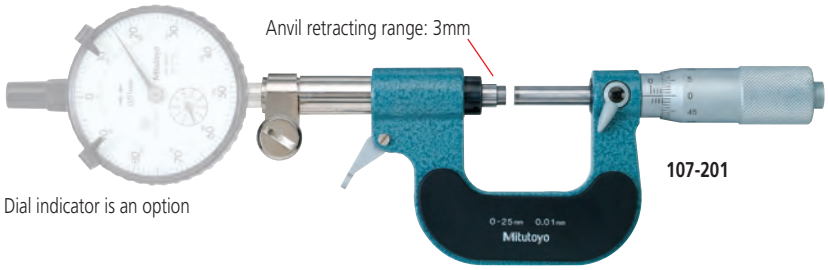
SERIES 107

FEATURES

- Uses dial indicator for direct GO/NG-GO judgment for mass-produced parts.
- Anvil retracting trigger for quick measurement.
- With a standard bar except for 0 - 25mm models.
- Supplied in fitted plastic case.

Technical Data

Graduation: 0.01mm (thimble)
Flatness: 0.6µm
Parallelism: (2+R/100)µm, R=max. range (mm)
Measuring faces: Carbide tipped

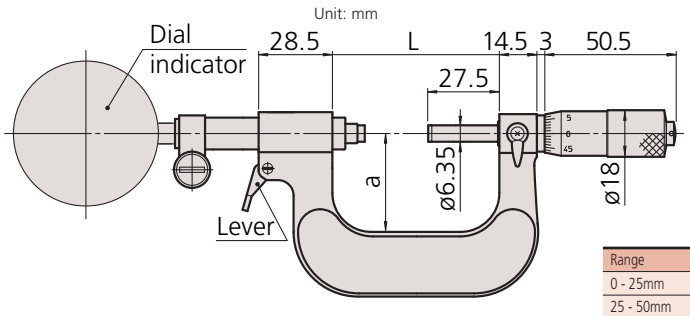


SPECIFICATIONS

Metric

Range	Graduation	Order No.	Accuracy
0 - 25mm	0.01mm	**107-201**	±2µm
25 - 50mm	0.01mm	**107-202**	±2µm
50 - 75mm	0.01mm	**107-203**	±2µm
75 - 100mm	0.01mm	**107-204**	±3µm
100 - 125mm	0.01mm	**107-205**	±3µm
125 - 150mm	0.01mm	**107-206**	±3µm
150 - 175mm	0.01mm	**107-207**	±4µm
175 - 200mm	0.01mm	**107-208**	±4µm

DIMENSIONS AND MASS



Range	L	a	MASS (g)
0 - 25mm	39.5	30	480
25 - 50mm	64.5	38	520
50 - 75mm	90	45	585
75 - 100mm	115.6	65	630
100 - 125mm	140.6	79	725
125 - 150mm	165.6	93	810
150 - 175mm	190.5	105	1050
175 - 200mm	215.5	120	1170

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).
- With a standard bar except 0-1″ and 0-25mm model.
- Supplied in fitted plastic case.

331-351

111-115

Technical Data

Accuracy: Refer to the list of specifications.
Resolution*: .00005″/0.001mm or 0.001mm
Graduation**: .0001″ or 0.01mm, .001"
Flatness: .000012″ / 0.3µm
Parallelism: (2+R/100)µm, R=max. range (mm) [.00008″ + .00004″ (L/4″)]
L = max. range (inch)
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, Data output, inch/mm conversion (on inch/metric models only)
Alarm: Low voltage, Counting value composition error

Optional Accessories for Digital Model

05CZA662: SPC cable with data switch (40″ / 1m)
05CZA663: SPC cable with data switch (80″/ 2m)

SPECIFICATIONS

Metric Digital model

Range	Resolution	Order No.	Accuracy	Remarks	Mass (g)
0 - 25mm	0.001mm	**331-251**	±2µm	Type A	330
		331-261	±2µm	Type B	330
25 - 50mm	0.001mm	**331-252**	±2µm	Type A	470
		331-262	±2µm	Type B	470
50 - 75mm	0.001mm	**331-253**	±2µm	Type A	625
		331-263	±2µm	Type B	625
75 - 100mm	0.001mm	**331-254**	±3µm	Type A	565
		331-264	±3µm	Type B	565

Inch/Metric Digital model

Range	Resolution	Order No.	Accuracy	Remarks	Mass (g)
0 - 1"/ 0 - 25.4mm	.00005" / 0.001mm	**331-351**	±.0001"	Type A	330
		331-361	±.0001"	Type B	330
1 - 2"/ 25.4-50.8mm	.00005" / 0.001mm	**331-352**	±.0001"	Type A	470
		331-362	±.0001"	Type B	470
2 - 3" / 50.8-76.2mm	.00005" / 0.001mm	**331-353**	±.0001"	Type A	625
		331-363	±.0001"	Type B	625
3 - 4" / 76.2-101.6mm	.00005" / 0.001mm	**331-354**	±.00015"	Type A	565
		331-364	±.00015"	Type B	565

Metric

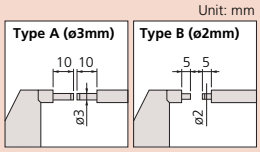
Range	Graduation	Order No.	Accuracy	Remarks	Mass (g)
0 - 25mm	0.01mm	**111-115**	±3µm	Type A	205
		111-215	±3µm	Type B	205
25 - 50mm	0.01mm	**111-116**	±3µm	Type A	305
50 - 75mm	0.01mm	**111-117**	±3µm	Type A	370
75 - 100mm	0.01mm	**111-118**	±4µm	Type A	500
100 - 125mm	0.01mm	**111-119**	±4µm	Type A	655
125 - 150mm	0.01mm	**111-120**	±4µm	Type A	710
150 - 175mm	0.01mm	**111-121**	±5µm	Type A	900
175 - 200mm	0.01mm	**111-122**	±5µm	Type A	1040

Inch

Range	Graduation	Order No.	Accuracy	Remarks	Mass (g)
0 - 1"	.0001"	**111-166***	±.00015"	Type A	205

* .0001" reading is obtained with vernier.

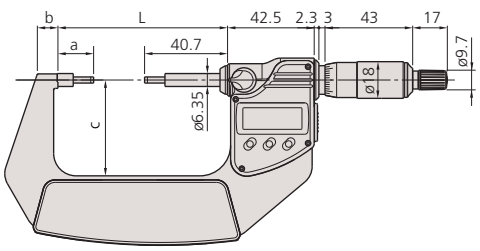
Unit: mm



DIMENSIONS

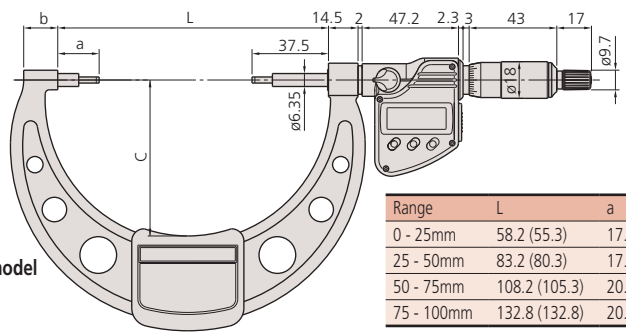
Unit: mm

Models up to 75mm



Digital model

Models over 75mm



Digital model

Range	L	a	b	c
0 - 25mm	58.2 (55.3)	17.5 (17.8)	7.3 (10)	32 (38)
25 - 50mm	83.2 (80.3)	17.5 (17.8)	10.1 (12)	47 (49)
50 - 75mm	108.2 (105.3)	20.3 (17.8)	11.5 (14)	60 (60)
75 - 100mm	132.8 (132.8)	20.3 (20.3)	16.7 (17)	76.5 (79)

Point Micrometers

SERIES 342, 142, 112

FEATURES

- IP65 water/dust protection (Series 342).
- 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 have approximately 0.3mm / .012" radius.
- With Ratchet Stop for constant force.
- With SPC output (Series 342).
- With digit counter (Series 142).
- With a standard bar except 0 - 1" and 0 - 25mm model.
- Supplied in fitted plastic case.

342-351

112-201

Technical Data

Accuracy: Refer to the list of specifications.
Resolution*: .00005"/0.001mm or 0.001mm
Graduation**: .001" or 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

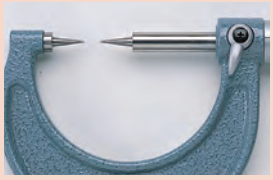
Function of Digital Model

Origin-set, Zero / ABS, Data hold,
inch/mm conversion (on inch/metric models only)
Alarm: Low voltage, Counting value composition error

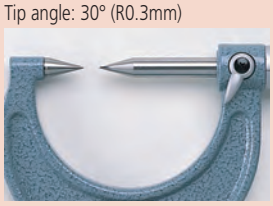
Optional Accessories for Digital Model

05CZA662: SPC cable with data switch (40" / 1m)
05CZA663: SPC cable with data switch (80" / 2m)

Tip angle: 15° (R0.3mm)



Tip angle: 30° (R0.3mm)



SPECIFICATIONS

Metric Digital model (with carbide tip)

Range	Resolution	Order No.	Accuracy	Point	Mass (g)
0 - 25mm	0.001mm	**342-251**	±2µm	15°	330
		342-261	±2µm	30°	330
25 - 50mm	0.001mm	**342-252**	±2µm	15°	470
		342-262	±2µm	30°	470
50 - 75mm	0.001mm	**342-253**	±2µm	15°	625
		342-263	±2µm	30°	625
75 - 100mm	0.001mm	**342-254**	±3µm	15°	565
		342-264	±3µm	30°	565

Inch/Metric Digital model (with carbide tip)

Range	Resolution	Order No.	Accuracy	Point	Mass (g)
0 - 1"/ 0 -25.4mm	.00005" / 0.001mm	**342-351**	±.0001"	15°	330
		342-361	±.0001"	30°	330
1" - 2" / 25.4 - 50.8mm	.00005" / 0.001mm	**342-352**	±.0001"	15°	470
		342-362	±.0001"	30°	470
2" - 3" / 50.8 - 76.2mm	.00005" / 0.001mm	**342-353**	±.0001"	15°	625
		342-363	±.0001"	30°	625
3" - 4" / 76.2 - 101.6mm	.00005" / 0.001mm	**342-354**	±.00015"	15°	565
		342-364	±.00015"	30°	565

Metric Mechanical Counter Model

Range	Graduation	Order No.	Accuracy	Point	Mass (g)
0 - 25mm	0.01mm	**142-153***	±3µm	15°	260
		142-201*	±3µm	30°	260

*The points don't have carbide steel tips.

Inch Mechanical Counter Model

Range	Graduation	Order No.	Accuracy	Point	Mass (g)
0 - 1"	.001"	**142-177***	±.00015"	15°	260
		142-225*	±.00015"	30°	260

*The points don't have carbide steel tips.

Metric

Range	Graduation	Order No.	Accuracy	Point	Mass (g)
0 - 25mm	0.01mm	**112-165**	±3µm	15°	205
		112-153*	±3µm	15°	205
		112-213	±3µm	30°	205
		112-201*	±3µm	30°	205
25 - 50mm	0.01mm	**112-166**	±3µm	15°	305
		112-154*	±3µm	15°	305
		112-214	±3µm	30°	305
		112-202*	±3µm	30°	305
50 - 75mm	0.01mm	**112-167**	±3µm	15°	370
		112-155*	±3µm	15°	370
		112-215	±3µm	30°	370
		112-203*	±3µm	30°	370
75 - 100mm	0.01mm	**112-168**	±4µm	15°	500
		112-156*	±4µm	15°	500
		112-216	±4µm	30°	500
		112-204*	±4µm	30°	500

*The points don't have carbide steel tips.

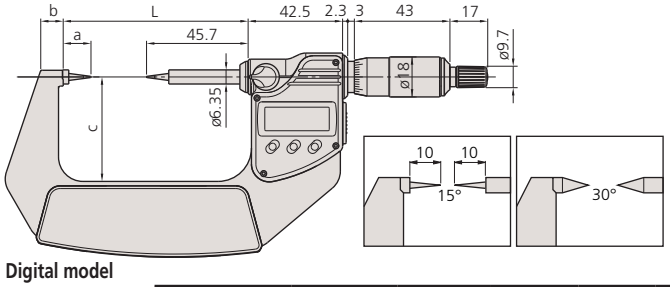
Inch

Range	Graduation	Order No.	Accuracy	Point	Mass (g)
0 - 1"	.001"	**112-189**	±.00015"	15°	205
		112-177*	±.00015"	15°	205
		112-237	±.00015"	30°	205
		112-225*	±.00015"	30°	205
1 - 2"	.001"	**112-190**	±.00015"	15°	305
		112-178*	±.00015"	15°	305
		112-238	±.00015"	30°	305
		112-226*	±.00015"	30°	305
2 - 3"	.001"	**112-191**	±.00015"	15°	370

*The points don't have carbide steel tips.

DIMENSIONS

Models up to 75mm

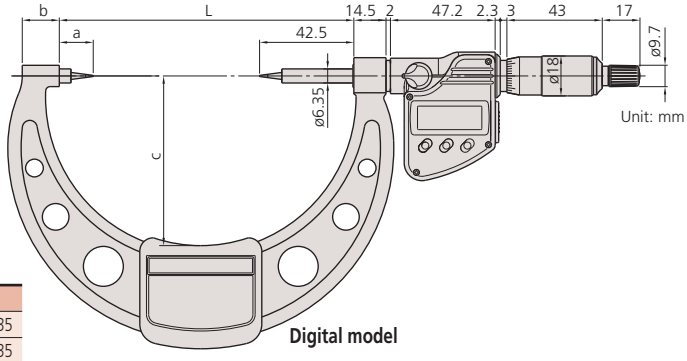


Digital model

Range	L	a	b	c	d
0 - 1" / 0 - 25mm	58.2 (55.3)	12.5 (12.8)	7.3 (10)	32 (38)	6.35
1 - 2" / 25 - 50mm	83.2 (80.3)	12.5 (12.8)	10.1 (12)	47 (49)	6.35
2 - 3" / 50 - 75mm	108.2 (105.3)	12.5 (15.3)	11.5 (14)	60 (60)	6.35
3 - 4" / 75 -100mm	132.8 (132.8)	15.3 (15.3)	16.7 (17)	76.5 (79)	6.35

( ): Analog model

Models over 75mm



Unit: mm

Digital model

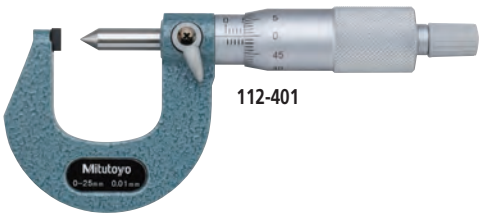
Crimp Height Micrometers

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

FEATURES

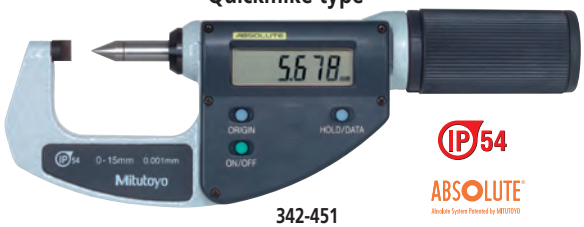
- IP54/65 water/dust protection (Series 342).
- Measures the height of crimp contacts.
- With Ratchet Stop for constant force.
- With SPC output (Series 342).
- With digit counter (Series 142).
- Supplied in fitted plastic case.

342-371



112-401

Quickmike type



342-451

SPECIFICATIONS

Metric Digital model

Range	Resolution	Order No.	Accuracy	Mass (g)
0 - 20mm	0.001mm	**342-271**	±3µm	270

Metric Quickmike type

Range	Resolution	Order No.	Accuracy	Mass (g)
0 - 15mm	0.001mm	**342-451**	±3µm	275

Metric Mechanical counter model

Range	Graduation	Order No.	Accuracy	Mass (g)
0 - 25mm	0.01mm	**142-402**	±3µm	200
0 - 25mm	0.001mm	**142-403***	±3µm	200

* 0.001mm reading is obtained with vernier.

Inch/Metric Digital model

Range	Resolution	Order No.	Accuracy	Mass (g)
0 - 0.8" / 0 - 20mm	.00005" / 0.001mm	**342-371**	±.00015"	270

Metric

Range	Graduation	Order No.	Accuracy	Mass (g)
0 - 25mm	0.01mm	**112-401**	±3µm	165

SPC

www.tuv.com TÜV TÜV Rheinland ID:40112074400

IP65

Technical Data

Accuracy: Refer to the list of specifications.
Resolution*: .00005" / 0.001mm or 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 / IP54
*Digital models **Analog models

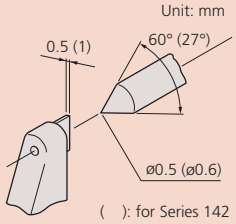
Function of Digital Model

Origin-set, Zero / ABS (342-271 342-371), Data hold, Data output,
inch/mm conversion (on inch/metric models only)
Alarm: Low voltage, Counting value composition error

Optional Accessories for Digital Model

05CZA662: SPC cable with data switch (40" / 1m)
05CZA663: SPC cable with data switch (80" / 2m)
937387: SPC cable for Quickmike type (40"/ 1m)
965013: SPC cable for Quickmike type (80" / 2m)

Unit: mm



( ): for Series 142

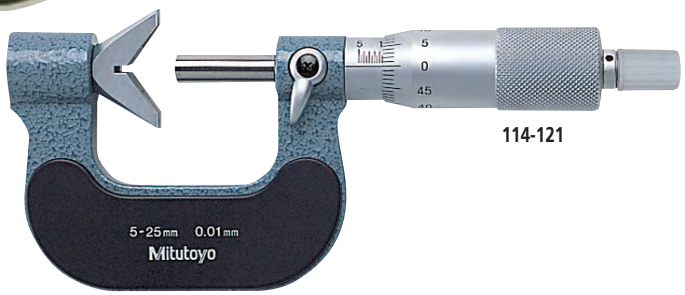
V-Anvil Micrometers

SERIES 314, 114 — 3 Flutes and 5 Flutes

FEATURES

- Measures the outside diameter of cutting tools (such as taps, reamers, end mills) with an odd number of flutes.
- With Ratchet Stop for constant force.
- Supplied with setting standard.
- 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).
- Supplied in fitted plastic case.

314-351-10



114-121

114-202

114-204

Technical Data

Accuracy: Refer to the list of specifications.
Resolution*: .00005" / 0.001mm or 0.001mm
Graduation**: .001" or .0001", 0.01mm
Flatness (spindle/anvil):
Analog model: .000024" / 0.6µm, .00005" / 1.3µm
Digital Model: .000012" / 0.3µm, .00004" / 1µm
Spindle face: Carbide tipped
Display*: LCD
Battery*: SR44 (1 pc.), **938882**
Battery life*: Approx. 1.2 years under normal use
*Digital models **Analog models

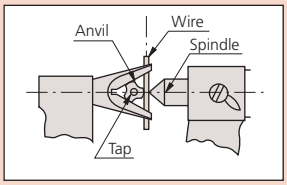
Function of Digital Model

Zero / ABS, Data hold, Data output, Preset, inch/mm conversion (on inch/metric models only)
Alarm: Low voltage, Counting value composition error
Function lock
2 Presets

Optional Accessories for Digital Model

05CZA662: SPC cable with data switch (40" / 1m)
05CZA663: SPC cable with data switch (80" / 2m)

Pitch Diameter Measurement of Tap by Single-wire Method Inch/Metric



SPECIFICATIONS

Metric Digital model for 3 flutes cutting head

Range	Resolution	Order No.	Accuracy	Remarks	Setting Standard	Mass (g)
1 - 15mm	0.001mm	**314-251-10**	±4µm	w/Groove	ø5mm	275
		314-261-10	±4µm	—	ø5mm	275
10 - 25mm	0.001mm	**314-252-10**	±4µm	w/Groove	ø10mm	410
		314-262-10	±4µm	—	ø10mm	410
25 - 40mm	0.001mm	**314-253-10**	±5µm	—	ø25mm	465

Inch/Metric Digital model for 3 flutes cutting head

Range	Resolution	Order No.	Accuracy	Remarks	Setting Standard	Mass (g)
.05 - .6"/ 1.27 - 15.24mm	.00005" / 0.001mm	**314-351-10**	±.0002"	w/Groove	ø.2"	275
		314-361-10	±.0002"	—	ø.2"	275
.4" - 1"/ 10.16 - 25.4mm	.00005" / 0.001mm	**314-352-10**	±.0002"	w/Groove	ø.4"	410
		314-362-10	±.0002"	—	ø.4"	410
1" - 1.6"/ 25.4 - 40.64mm	.00005" / 0.001mm	**314-353-10**	±.00025"	—	ø 1"	465

SPECIFICATIONS

Metric For 3 flutes cutting head

Range	Graduation	Order No.	Accuracy	Setting Standard	Remarks	Mass (g)
1 - 15mm	0.01mm	**114-101**	±4µm	ø5mm	w/Groove	120
		114-161	±4µm	ø5mm	—	120
10 - 25mm	0.01mm	**114-102**	±4µm	ø10mm	w/Groove	280
		114-162	±4µm	ø10mm	—	280
2.3 - 25mm	0.01mm	**114-204***	±4µm	ø5mm	—	290
25 - 40mm	0.01mm	**114-103**	±5µm	ø25mm	—	400
40 - 55mm	0.01mm	**114-104**	±6µm	ø40mm	—	465
55 - 70mm	0.01mm	**114-105**	±6µm	ø55mm	—	675
70 - 85mm	0.01mm	**114-106**	±7µm	ø70mm	—	910

*Carbide-tipped anvil

Inch For 3 flutes cutting head

Range	Graduation	Order No.	Accuracy	Setting Standard	Mass (g)
.05 - .6"	.001"	**114-163**	±.0002"	ø.2"	120
.09 - 1"	.0001"	**114-202***	±.0002"	ø.2"	280
1 - 1.6"	.001"	**114-113**	±.00025"	ø1"	400
1.6 - 2.2"	.001"	**114-114**	±.0003"	ø1.6"	465

*Carbide-tipped anvil and .0001" reading is obtained with vernier

Metric For 5 flutes cutting head

Range	Graduation	Order No.	Accuracy	Setting Standard	Remarks	Mass (g)
5 - 25mm	0.01mm	**114-121**	±4µm	ø5mm	w/Groove	255
		114-165	±4µm	ø5mm	—	255
2.3 - 25mm	0.01mm	**114-137***	±4µm	ø5mm	—	220
25 - 45mm	0.01mm	**114-122**	±5µm	ø25mm	—	400
45 - 65mm	0.01mm	**114-123**	±6µm	ø55mm	—	540
65 - 85mm	0.01mm	**114-124**	±7µm	ø70mm	—	760

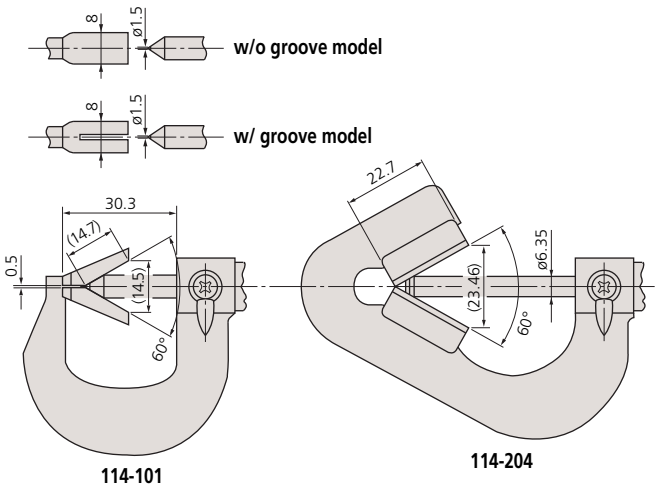
*Carbide-tipped anvil

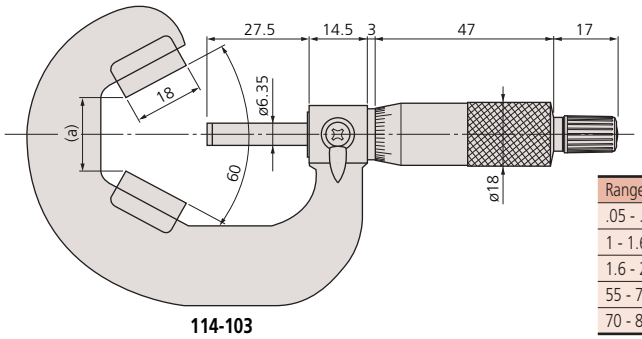
Inch For 5 flutes cutting head

Range	Graduation	Order No.	Accuracy	Setting Standard	Mass (g)
.09 - 1"	.0001"	**114-135**	±.0002"	ø.2"	255

DIMENSIONS

Unit: mm





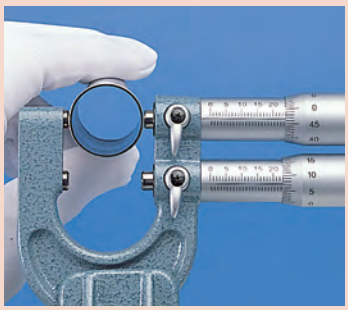
Range	a
.05 - .6" / 10 - 25mm	6.2
1 - 1.6" / 25 - 40mm	19.14
1.6 - 2.2" / 40 - 55mm	32.13
55 - 70mm	45.12
70 - 85mm	58.11

Limit Micrometers

SERIES 113

FEATURES

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



113-102

Technical Data

Graduation: 0.01mm
Flatness: 0.6µm
Parallelism: (3+R/100)µm, R=max. range (mm)
Measuring faces: Carbide tipped

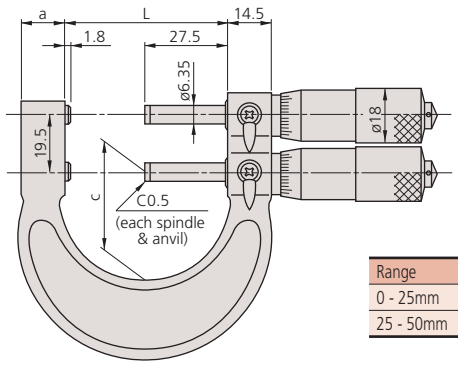
SPECIFICATIONS

Metric

Range	Graduation	**Order No.**	Accuracy
0 - 25mm	0.01mm	**113-102**	±3µm
25 - 50mm	0.01mm	**113-103**	±3µm

DIMENSIONS AND MASS

Unit: mm



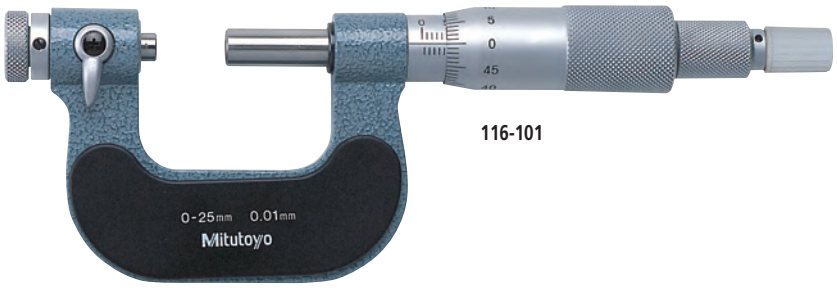
Range	L	a	c	Mass (G)
0 - 25mm	29.3	15	23	340
25 - 50mm	54.3	15	37	380

Pana Micrometers

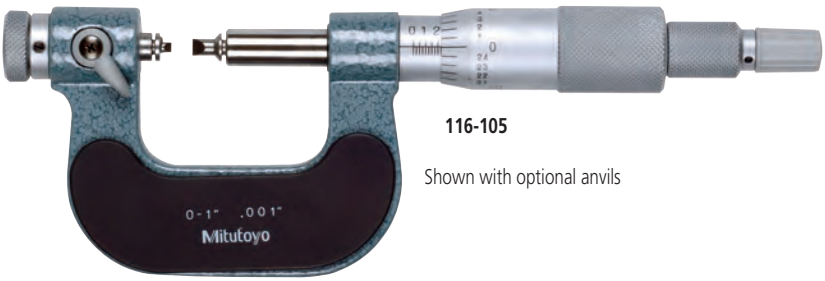
SERIES 116 — Interchangeable Anvil Type

FEATURES

- Non-rotating spindle with optional seven interchangeable anvils (flat, spline, spherical, point, knife-edge, disk, and blade) for a wide range of applications.
- Interchangeable anvils (pair) are optional.
- With a standard bar except 0-1″ and 0 - 25 mm model.
- V-anvils and conical spindle tips (matching pair) for screw thread measurement are also available.
- With Ratchet Stop for constant force.



116-101



116-105

Shown with optional anvils

SPECIFICATIONS

Metric

Range	Graduation	Order No.	Accuracy
0 - 25mm	0.01mm	**116-101**	±4µm
25 - 50mm	0.01mm	**116-102**	±4µm

Inch

Range	Graduation	Order No.	Accuracy
0 - 1"	.001"	**116-105**	±.0002"
1" - 2"	.001"	**116-106**	±.0002"

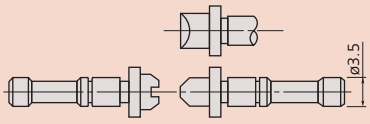
Technical Data

Graduation: .001″ or 0.01mm
Spindle feed error: .00012″ / 3µm

Optional Accessories

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

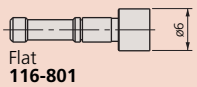
Order No.	Assortment of anvils and tips
116-830	0.4 - 0.5mm/64 - 48TPI (**116-831**) 0.6 - 0.9mm/44 - 28TPI (**116-832**) 1 - 1.75mm/24 - 14TPI (**116-833**) 2 - 3mm/13 - 9TPI (**116-834**) 3.5 - 5mm/8 - 5TPI (**116-835**) 5.5 - 7mm/4.5 - 3.5TPI (**116-836**)



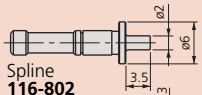
116-830

Interchangeable anvils set

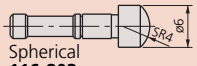
Order No.	Assortment of anvils
116-800	Flat anvils (**116-801**) Spline anvils (**116-802**) Spherical anvils (**116-803**) Point anvils (**116-804**) Knife-edge anvils (**116-805**) Disk anvils (**116-806**) Blade anvils (**116-807**)



Flat
116-801

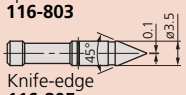


Spline
116-802

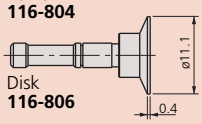


Spherical
116-803

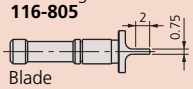
Point
116-804



Knife-edge
116-805



Disk
116-806



Blade
116-807

Spherical Face Micrometers

SERIES 395, 295, 115

Technical Data

Accuracy: Refer to the list of specifications.
Flatness: .000024" / 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

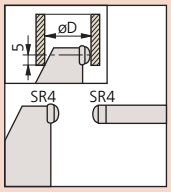
Function of Digital Model

Origin-set, Zero / ABS, Data hold, Data output, inch/mm conversion (on inch/metric models only)
Alarm: Low voltage, Counting value composition error

Optional Accessories for Digital Model

05CZA662: SPC cable with data switch (40" / 1m)
05CZA663: SPC cable with data switch (80" / 2m)

Spherical anvil-spindle type



Measuring faces: Carbide tipped

ød: Mini. inside dia. of tubing

FEATURES

- IP65 water/dust protection (Series 395).
- Designed to measure the wall thickness of various tubing.
- With Ratchet Stop for constant force.
- With SPC output (Series 395).
- With digit counter (Series 295).
- With a standard bar except 0 -1" and 0 - 25mm model.
- Supplied in fitted plastic case.

115-153

IP65

395-371

SPECIFICATIONS

Metric Digital model with spherical anvil

Range	Resolution	Order No.	Accuracy	Remarks	Mass (g)
0 - 25mm	0.001mm	**395-251**S-F	±2µm	D: 15mm	270
		395-271S-S	±2µm	D: 15mm	270
25 - 50mm	0.001mm	**395-252**S-F	±2µm	D: 15mm	330
		395-272S-S	±2µm	D: 15mm	330
50 - 75mm	0.001mm	**395-253**S-F	±2µm	D: 19mm	470
		395-273S-S	±2µm	D: 19mm	470
75 - 100mm	0.001mm	**395-254**S-F	±3µm	D: 20mm	625
		395-274S-S	±3µm	D: 20mm	625

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

Inch/Metric Digital model with spherical anvil

Range	Resolution	Order No.	Accuracy	Remarks	Mass (g)
0 - 1"/ 0 - 25.4mm	.00005" / 0.001mm	**395-351**S-F	±.0001"	D: .59"	270
		395-371S-S	±.0001"	D: .59"	270
1" - 2"/ 25.4- 50.8mm	.00005" / 0.001mm	**395-352**S-F	±.0001"	D: .59"	330
		395-372S-S	±.0001"	D: .59	330
2" - 3"/ 50.8-76.2mm	.00005" / 0.001mm	**395-353**S-F	±.0001"	D: .75"	470
		395-373S-S	±.0001"	D: .75"	470
3" - 4"/ 76.2-101.6mm	.00005" / 0.001mm	**395-354**S-F	±.00015"	D: .79"	625
		395-374S-S	±.00015"	D: .79"	625

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

Metric Mechanical counter model with spherical anvil

Range	Graduation	Order No.	Accuracy	Remarks	Mass (g)
0 - 25mm	0.01mm	**295-115**S-F	±3µm	D: 10mm	220
		295-215S-S	±3µm	D: 10mm	220

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

Inch Mechanical counter model with spherical anvil

Range	Graduation	Order No.	Accuracy	Remarks	Mass (g)
0 - 1"	.0001"	**295-153**S-F*	±.00015"	D: .40"	220
		295-253S-S*	±.00015"	D: .40"	220

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	Graduation	Order No.	Accuracy	Remarks	Mass (g)
0 - 25mm	0.01mm	**115-115**S-F	±3µm	D: 10mm	180
		115-215S-S	±3µm	D: 10mm	180
25 - 50mm	0.01mm	**115-116**S-F	±3µm	D: 11mm	240
		115-216S-S	±3µm	D: 11mm	240
50 - 75mm	0.01mm	**115-117**S-F	±3µm	D: 17mm	315
		115-217S-S	±3µm	D: 17mm	315
75 - 100mm	0.01mm	**115-118**S-F	±4µm	D: 18mm	375
		115-218S-S	±4µm	D: 18mm	375

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

Inch With spherical anvil

Range	Graduation	Order No.	Accuracy	Remarks	Mass (g)
0 - 1"	.0001"	**115-153**S-F*	±.00015"	D: .40"	180
0 - 1"	.0001"	**115-253**S-S*	±.00015"	D: .40"	180
1 - 2"	.001"	**115-242**S-S	±.00015"	D: .44"	240
2 - 3"	.001"	**115-243**S-S	±.00015"	D: .67"	315

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

Tube Micrometers

SERIES 395, 295, 115— Spherical and Cylindrical Anvils

FEATURES

- IP65 water/dust protection (Series 395).
- Designed to measure the wall thickness of various tubing.
- The Tube Micrometers have two combinations of measuring faces (carbide-tipped): spherical-flat type.
- With Ratchet Stop for constant force.
- With SPC output (Series 395).
- With digit counter (Series 295).
- With a standard bar except 0 -1" and 0 - 25mm model.
- Supplied in fitted plastic case.

Pin Anvil Type

395-261

IP65

Technical Data

Accuracy: Refer to the list of specifications.
Flatness: .000024" / 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 / ABS, Data hold, Data output, inch/mm conversion (on inch/metric models only)
Alarm: Low voltage, Counting value composition error

Optional Accessories for Digital Model

05CZA662: SPC cable with data switch (40" / 1m)
05CZA663: SPC cable with data switch (80" / 2m)

Type A

Type B

Type C

Type D

SPECIFICATIONS

Metric Digital model with cylindrical anvil

Range	Resolution	Order No.	Accuracy	Remarks	Mass (g)
0 - 25mm	0.001mm	**395-261**	±3µm	Type A	270
		395-262	±3µm	Type B	270
		395-263	±3µm	Type C	310
		395-264	±3µm	Type D	310

Inch/Metric Digital model with cylindrical anvil

Range	Resolution	Order No.	Accuracy	Remarks	Mass (g)
0 - 1" / 0 - 25.4mm	.00005" / 0.001mm	**395-362**	±.00015"	Type B	270
		395-363	±.00015"	Type C	310
		395-364	±.00015"	Type D	310

Metric Mechanical counter model

Range	Graduation	Order No.	Accuracy	Remarks	Mass (g)
0 - 25mm	0.01mm	**295-302**	±3µm	Type A	210

Inch Mechanical counter model

Range	Graduation	Order No.	Accuracy	Remarks	Mass (g)
0 - 1"	.0001"	**295-313**	±.00015"	Type C	210
		295-314	±.00015"	Type D	210

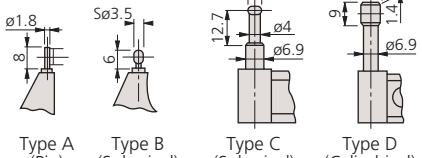
Metric With cylindrical anvil

Range	Graduation	Order No.	Accuracy	Remarks	Mass (g)
0 - 25mm	0.01mm	**115-302**	±3µm	Type A	180
		115-308	±3µm	Type B	180
		115-315	±3µm	Type C	180
		115-316	±3µm	Type D	180
25 - 50mm	0.01mm	**115-303**	±3µm	Type A	240
		115-309	±3µm	Type B	240

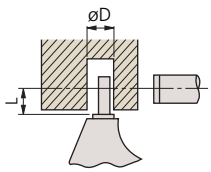
Inch With cylindrical anvil

Range	Graduation	Order No.	Accuracy	Remarks	Mass (g)
0 - 1"	.001"	**115-305**	±.00015"	Type A	180
	.0001"	**115-313***	±.00015"	Type C	180
	.0001"	**115-314***	±.00015"	Type D	180

*.0001" reading is obtained with vernier.



Type A (Pin) Type B (Spherical) Type C (Spherical) Type D (Cylindrical)



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

"Uni-Mike"

SERIES 317, 117 — Interchangeable Anvil Type

FEATURES

- IP65 water/dust protection (Series 317).
- 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: .118"/ø3mm dia. rod anvil (**201217**) for 0-1"/0-25mm models, .197"/ø5mm (**201379**) for 1-2" / 25-50mm model.
- With special Disk Anvils. The Uni-Mike is used as a height micrometer. The disks have a lapped, mirror surface.
- With a standard bar except 0 -1" and 0-25mm model.
- Supplied in fitted plastic case.

317-351

117-107

Technical Data

Accuracy: Refer to the list of specifications.
Resolution*: .00005"/0.001mm or 0.001mm
Graduation**: .0001" or 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

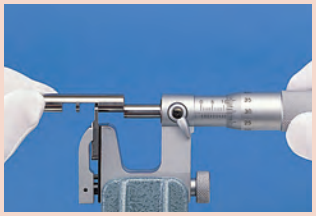
Origin-set, Zero / ABS, Data hold, Data output, inch/mm conversion (on inch/metric models only)
Alarm: Low voltage, Counting value composition error

Optional Accessories

05CZA662: SPC cable with data switch (40"/ 1m)*
05CZA663: SPC cable with data switch (80" / 2m)*
201218: V-anvil
950758: Disc. anvil for 1" / 25m models
950759: Disc. anvil for 2" / 50m models

*Only for digital models

Applications



Using flat anvil (201216)

With the disc. anvil (950758) Shown above, the Uni-Mike is used as a height micrometer

SPECIFICATIONS

Metric Digital model with ratchet stop

Range	Resolution	Order No.	Accuracy	Mass (g)
0 - 25mm	0.001mm	**317-251**	±4µm	335
25 - 50mm	0.001mm	**317-252**	±4µm	360

Excluding quantizing error

Inch/Metric Digital model with friction thimble

Range	Resolution	Order No.	Accuracy	Mass (g)
0 - 1" / 0 - 25.4mm	.00005" / 0.001mm	**317-351**	±.0002"	340
1 - 2" /25.4 - 50.8mm	.00005" / 0.001mm	**317-352**	±.0002"	365

Excluding quantizing error

Metric With ratchet stop

Range	Graduation	Order No.	Accuracy	Mass (g)
0 - 25mm	0.01mm	**117-101**	±4µm	255
25 - 50mm	0.01mm	**117-102**	±4µm	320

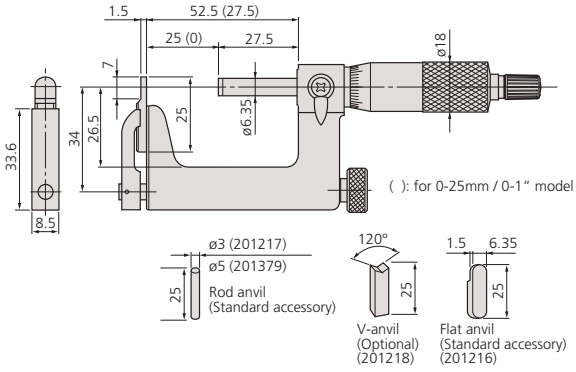
Inch With friction thimble

Range	Graduation	Order No.	Accuracy	Mass (g)
0 - 1"	.0001"	**117-107***	±.0002"	255
1 - 2"	.0001"	**117-108***	±.0002"	320

* .0001" reading is obtained with vernier

DIMENSIONS

Unit: mm



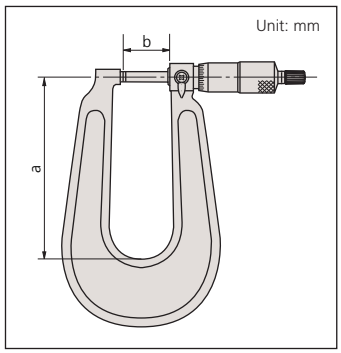
Sheet Metal Micrometers

SERIES 389, 119, 118

FEATURES

- Measures thickness of sheet metal, paper, plastic, and rubber parts.
- With Ratchet Stop for constant force.
- With a standard bar except for 0 - 1″ / 0 - 25mm model.
- IP65 water/dust protection (Series 389*).
  *Except for **389-514 / 389-714.**
- Supplied in fitted plastic case.

DIMENSIONS



Technical Data

Accuracy: Refer to the list of specifications.
Resolution*: .00005"/0.001mm or 0.001mm
Graduation**: 0.01mm, .001" or .0001"
Flatness: .000024″ / 0.6µm for models with 6″ / 150mm throat
.00004″ / 1µm for models with 12″ / 300mm throat
Parallelism: .00012″ / 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, Zero-setting, Data hold, Data output, inch/mm conversion (on inch/metric models only)
Alarm: Low voltage, Counting value composition error

Optional Accessories for Digital Model

05CZA662: SPC cable with data switch (40″ / 1m)
05CZA663: SPC cable with data switch (80″ / 2m)
937387: SPC cable for **389-513/389-713** (40″ / 1m)
965013: SPC cable for **389-513/389-713** (80″ / 2m)

SPECIFICATIONS

Metric Digital model

Range	Resolution	Order No.	Accuracy	a/b
0 - 25mm	0.001mm	**389-251**	±4µm	160/27.5mm
0 - 25mm	0.001mm	**389-261**S-F	±4µm	160/27.5mm
0 - 25mm	0.001mm	**389-271**S-S	±4µm	160/27.5mm
0 - 25mm	0.001mm	**389-514**	±5µm	330/35mm
25 - 50mm	0.001mm	**389-252**	±4µm	165/27.5mm
25 - 50mm	0.001mm	**389-262**S-F	±4µm	165/27.5mm
25 - 50mm	0.001mm	**389-272**S-S	±4µm	165/27.5mm

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

Inch/Metric Digital model

Range	Resolution	Order No.	Accuracy	a/b
0 - 1" / 0 - 25.4mm	.00005" / 0.001mm	**389-351**	±.0002"	6.3"/1.08"
		389-361S-F	±.0002"	6.3"/1.08"
		389-371S-S	±.0002"	6.3"/1.08"
		389-714	±.00025"	13"/1.38"
1 - 2" / 25.4 - 50.8mm	.00005" / 0.001mm	**389-352**	±.0002"	6.5"/1.08"
		389-362S-F	±.0002"	6.5"/1.08"
		389-372S-S	±.0002"	6.5"/1.08"

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

Anvil-Spindle Combinations

Standard, Flat-Flat

Spherical-Flat (S-F)

Spherical-Spherical (S-S)

Metric

Range	Graduation	Order No.	Accuracy	a/b
0 - 25mm	0.01mm	**118-101**	±4µm	110/27.5mm
0 - 25mm	0.01mm	**118-102**	±4µm	160/27.5mm
0 - 25mm	0.01mm	**118-114**S-F	±4µm	160/27.5mm
0 - 25mm	0.01mm	**118-118**S-S	±4µm	160/27.5mm
0 - 25mm	0.01mm	**118-103**	±5µm	330/35mm
25 - 50mm	0.01mm	**118-110**	±4µm	165/27.5mm

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

Inch

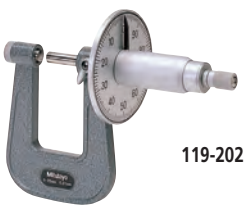
Range	Graduation	Order No.	Accuracy	a/b
0 - 1"	.0001"	**118-129**	±.0002"	6.3"/1.08"
		118-116S-F	±.0002"	6.3"/1.08"
		118-120S-S	±.0002"	6.3"/1.08"
	.001"	**118-107**	±.00025"	13"/1.38"
1" - 2"	.001"	**118-112**	±.0002"	6.5"/1.08"

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

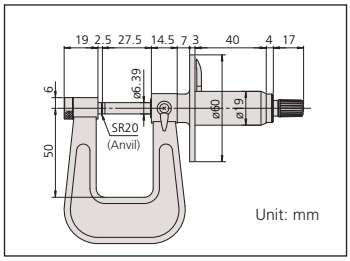
Metric Dial reading model

Range	Graduation	Order No.	Accuracy	Throat
0 - 25mm	0.01mm	**119-202**S-F	±4µm	50mm

S-F: Spherical anvil and flat spindle


119-202

DIMENSIONS AND MASS



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

Blade Micrometers

SERIES 422,122 — Non-Rotating Spindle Type

Technical Data

Accuracy: Refer to the list of specifications.
Resolution*: .00005"/0.001mm or 0.001mm
Graduation**: .0001" or 0.01mm
Parallelism: .00012" / 3µm for models up to 3" / 75mm
(3+R/100)µm for models over 75mm,
R=max. range (mm) .00016" for 4" models
Display*: LCD
Battery*: SR44 (1 pc.), **938882**
Battery life*: Approx. 1.2 years under normal use
*Digital models **Analog models

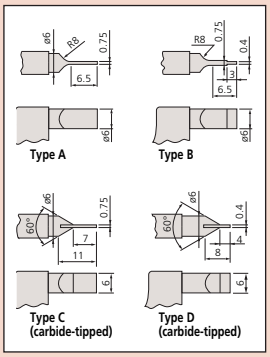
Function of Digital Model

Origin-set, Zero / ABS, Data hold, Data output,
inch/mm conversion (on inch/metric models only)
Alarm: Low voltage, Counting value composition error

Optional Accessories for Digital Model

05CZA662: SPC cable with data switch (1m / 40")
05CZA663: SPC cable with data switch (2m / 80")
937387: SPC cable for Quickmike type (1m / 40")
965013: SPC cable for Quickmike type (2m / 80")

TYPE AND DIMENSIONS



FEATURES

- The anvil and the spindle have a blade for measuring the groove diameter of shafts, keyways, and other hard-to-reach areas.
- With Ratchet Stop for constant force.
- Speedy spindle feed of .4"/10mm /rev. (Quickmike type).
- With a standard bar except 0 - 1" and 0 -25mm model.
- Supplied in fitted plastic case.

Quickmike type

422-421

IP54

ABSOLUTE

422-330

122-125

SPECIFICATIONS

Metric Digital model

Range	Resolution	Order No.	Accuracy	Remarks	Mass (g)
0 - 25mm	0.001mm	**422-230**	±3µm	Type A	365
		422-260	±3µm	Type B	365
		422-270	±3µm	Type C	365
		422-271	±3µm	Type D	365
25 - 50mm	0.001mm	**422-231**	±3µm	Type A	565
		422-261	±3µm	Type B	565
50 - 75mm	0.001mm	**422-232**	±3µm	Type A	465
75 - 100mm	0.001mm	**422-233**	±4µm	Type A	580

Metric Quickmike type

Range	Resolution	Order No.	Accuracy	Mass (g)
0 - 30mm	0.001mm	**422-411**	±3µm	350
25 - 55mm	0.001mm	**422-412**	±3µm	490

Metric

Range	Graduation	Order No.	Accuracy	Remarks	Mass (g)
0 - 25mm	0.01mm	**122-101**	±3µm	Type A	260
		122-111	±3µm	Type B	260
		122-161	±3µm	Type C	275
		122-141	±3µm	Type D	275
25 - 50mm	0.01mm	**122-102**	±3µm	Type A	300
		122-112	±3µm	Type B	300
		122-162	±3µm	Type C	315
		122-142	±3µm	Type D	315
50 - 75mm	0.01mm	**122-103**	±3µm	Type A	360
75 - 100mm	0.01mm	**122-104**	±4µm	Type A	525
100 - 125mm	0.01mm	**122-105**	±4µm	Type A	670
125 - 150mm	0.01mm	**122-106**	±4µm	Type A	775
150 - 175mm	0.01mm	**122-107**	±5µm	Type A	950
175 - 200mm	0.01mm	**122-108**	±5µm	Type A	1140

Inch/Metric Digital model

Range	Resolution	Order No.	Accuracy	Remarks	Mass (g)
0 - 1" / 0 - 25.4mm	.00005" / 0.001mm	**422-330**	±.00015"	Type A	365
		422-360	±.00015"	Type B	365
		422-370	±.00015"	Type C	365
		422-371	±.00015"	Type D	365
1 - 2" / 25.4 - 50.8mm	.00005" / 0.001mm	**422-331**	±.00015"	Type A	565
		422-361	±.00015"	Type B	565
2 - 3" / 50.8 - 76.2mm	.00005" / 0.001mm	**422-332**	±.00015"	Type A	465
3 - 4" / 76.2 - 101.6mm	.00005" / 0.001mm	**422-333**	±.0002"	Type A	580

Inch/Metric Quickmike type

Range	Resolution	Order No.	Accuracy	Remarks	Mass (g)
0 - 1.2" / 0 - 30.48mm	.00005" / 0.001mm	**422-421**	±.00015"	Type A	350
1 - 2.2" / 25.4 - 55.88mm	.00005" / 0.001mm	**422-422**	±.00015"	Type A	490

Inch

Range	Graduation	Order No.	Accuracy	Remarks	Mass (g)
0 - 1"	.0001"	**122-125**	±.00015"	Type A	260
		122-135	±.00015"	Type B	260
		122-151	±.00015"	Type D	275
1 - 2"	.0001"	**122-126**	±.00015"	Type A	300
2 - 3"	.0001"	**122-127**	±.00015"	Type A	360
3 - 4"	.0001"	**122-128**	±.0002"	Type A	525

Disk Micrometers

SERIES 323, 223, 123 - Rotating Spindle

FEATURES

- Diameter of measuring disk: .787"/ 20mm
- .028"/ 0.7mm (1mm: models over 100mm) edge thickness to enter narrow recesses.
- With Ratchet Stop for constant force.
- With a standard bar except for 0 - 1"/ 0 - 25mm model.
- With SPC output (Series 323).
- The Series 223 is provided with a mechanical digit counter for quick reading of measurements.
- Supplied in fitted plastic case. (Over 100mm models supplied wooden cases)

123-125

323-350

123-103

223-125

Technical Data

Accuracy: Refer to the list of specifications.
Resolution*: .00005"/0.001mm or 0.001mm
Graduation**: .001" or 0.01mm
Flatness: .00004" / 1µm for models up to .00004" /100mm
.000063" / 1.6µm for models over 4" / 100mm
Parallelism: .00016" / 4µm for models up to 2"/ 50mm
.00024" for models up to 4"
(4+R/50)µm for models up to 100mm
(5+R/75)µm for models over 100mm, R=max. range (mm)
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 / ABS, Data hold, Data output, inch/mm conversion (on inch/metric models only)
Alarm: Low voltage, Counting value composition error

Optional Accessories for Digital Model

05CZA662: SPC cable with data switch (40" / 1m)
05CZA663: SPC cable with data switch (80" / 2m)

SPECIFICATIONS

Metric Digital model

Range	Resolution	Order No.	Accuracy	Mass (g)
0 - 25mm	0.001mm	**323-250**	±4µm	290
25 - 50mm	0.001mm	**323-251**	±4µm	355
50 - 75mm	0.001mm	**323-252**	±6µm	555
75 - 100mm	0.001mm	**323-253**	±6µm	610

Inch/Metric Digital model

Range	Resolution	Order No.	Accuracy	Mass (g)
0 - 1"/0 - 25.4mm	.00005"/ 0.001mm	**323-350**	±.0002"	290
1 - 2"/25.4 - 50.8mm	.00005"/0.001mm	**323-351**	±.0002"	355
2 - 3"/50 - 76.2mm	.00005"/0.001mm	**323-352**	±.0003"	555
3 - 4"/76.2 - 101.6mm	.00005"/0.001mm	**323-353**	±.0003"	610

Metric Mechanical counter model

Range	Graduation	Order No.	Accuracy	Mass (g)
0 - 25mm	0.01mm	**223-101**	±4µm	260
25 - 50mm	0.01mm	**223-102**	±4µm	290

Inch Mechanical counter model

Range	Graduation	Order No.	Accuracy	Mass (g)
0 - 1"	.001"	**223-125**	±.0002"	260

Metric

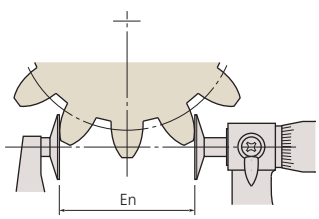
Range	Graduation	Order No.	Accuracy	Mass (g)
0 - 25mm	0.01mm	**123-101**	±4µm	200
		123-113*	±4µm	230
25 - 50mm	0.01mm	**123-102**	±4µm	250
		123-114*	±4µm	270
50 - 75mm	0.01mm	**123-103**	±6µm	300
		123-115*	±6µm	320
75 - 100mm	0.01mm	**123-104**	±6µm	375
		123-116*	±6µm	390
100 - 125mm	0.01mm	**123-105**	±7µm	520
125 - 150mm	0.01mm	**123-106**	±7µm	570
150 - 175mm	0.01mm	**123-107**	±8µm	730
175 - 200mm	0.01mm	**123-108**	±8µm	890
200 - 225mm	0.01mm	**123-109**	±8µm	1000
225 - 250mm	0.01mm	**123-110**	±9µm	1200
250 - 275mm	0.01mm	**123-111**	±9µm	1410
275 - 300mm	0.01mm	**123-112**	±9µm	1680

*The measuring disks have carbide tips.
Note: The disk diameter of models over 100mm is 30mm.

Inch

Range	Graduation	Order No.	Accuracy	Mass (g)
0 - 1"	.001"	**123-125**	±.0002"	200
1 - 2"	.001"	**123-126**	±.0002"	250
2 - 3"	.001"	**123-127**	±.0003"	300
3 - 4"	.001"	**123-128**	±.0003"	375

Root tangent length of gear (En)

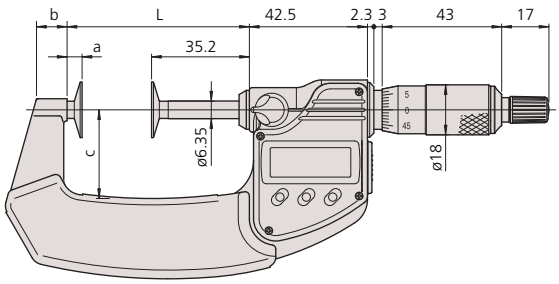


Note: Root tangent length measurement is not available for some types of gears.

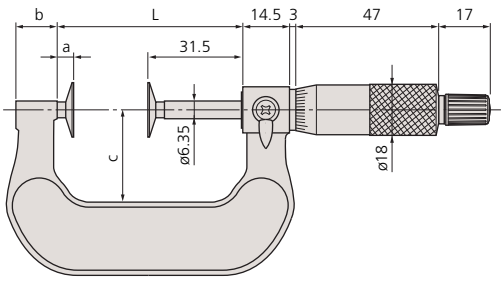
DIMENSIONS

Unit: mm

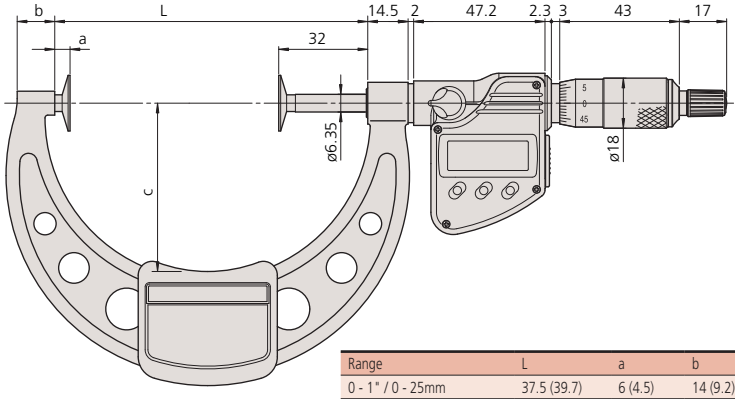
Digital models up to 75mm



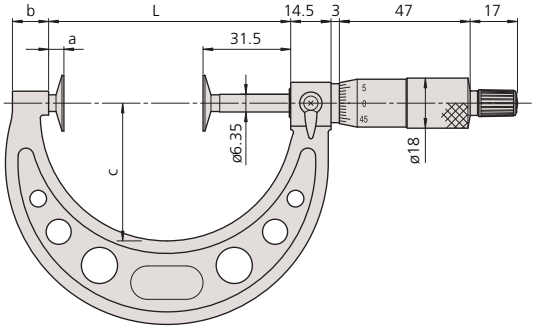
Analog models up to 50mm



Digital models up to 75mm

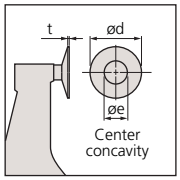


Analog over 50mm



Range	L	a	b	c	ød	øe	t
0 - 1" / 0 - 25mm	37.5 (39.7)	6 (4.5)	14 (9.2)	25 (25.4)	20	8/9.8*	0.7
1 - 2" / 25 - 50mm	62.5 (65.6)	6 (5.4)	14 (11)	32 (31.9)	20	8/9.8*	0.7
2 - 3" / 50 - 75mm	87 (90.7)	5.5 (5.5)	11 (12.2)	49 (50)	20	8/9.8*	0.7
3 - 4" / 75 - 100mm	112 (112.5)	5.5 (5.5)	11 (13.5)	63 (60.5)	20	8/9.8*	0.7
4 - 5" / 100 - 125mm	137.5	6	12	79	30	12	1
5 - 6" / 125 - 150mm	162.5	6	15	94	30	12	1
6 - 7" / 150 - 175mm	187.5	6	16	106	30	12	1
7 -8" / 175 - 200mm	212.5	6	15	118	30	12	1
8 - 9" / 200 - 225mm	237.5	6	14	130	30	12	1
9 - 10" / 225 - 250mm	262.5	6	14	143	30	12	1
10 - 11" / 250 - 275mm	287.5	6	15	156	30	12	1
11 - 12" / 275 - 300mm	312.5	6	15	169	30	12	1

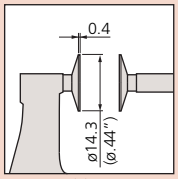
Data in ( ) applies to those with carbide tipped disks.



Technical Data

Graduation: .001" or 0.01mm
Flatness: .00004" / 1µm
Parallelism: .00012" / 3µm
Measuring Force: 8.02 ±0.8N
53.9KPa ±4.9 KPa

Unit: mm



( ): Inch model

Paper Thickness Micrometers

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

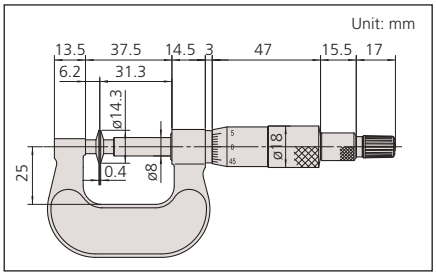
FEATURES

- Non-rotating spindle.
- With Ratchet Stop for constant force.
- Supplied in fitted plastic case.

169-101

DIMENSIONS

Unit: mm



SPECIFICATIONS

Metric

Range	Graduation	Order No.	Accuracy	Mass (g)
0 - 25mm	0.01mm	**169-101**	±4µm	230g

Inch

Range	Graduation	Order No.	Accuracy	Mass (g)
0 - 1"	.001"	**169-103**	±.0002"	230g

Disk Micrometers

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

FEATURES

- The Disk Micrometer is designed to easily measure root tangent length of spur gears and helical gears.
- Non-rotating spindle eliminates torque on workpiece.
- With standard bar except 0 - 15mm, 0 - .6" 0 - 25mm, 0 - 1", 0 - 30mm & 0 - 1.2" model
- Speedy spindle feed of 10mm/rev. (Quickmike type).
- Diameter of measuring disk: .787" / 20mm
- With Ratchet Stop for constant force.
- With SPC output (Series 369).
- Supplied in fitted plastic case

369-350

Quickmike type

369-421

Quickmike type with adjustable measuring force

227-221

169-201

SPECIFICATIONS

Metric Digital model

Range	Resolution	Order No.	Accuracy
0 - 25mm	0.001mm	**369-250**	±4µm
25 - 50mm	0.001mm	**369-251**	±4µm
50 - 75mm	0.001mm	**369-252**	±6µm
75 - 100mm	0.001mm	**369-253**	±6µm

Inch/Metric Digital model

Range	Resolution	Order No.	Accuracy
0 - 1" / 0 - 25.4mm	.00005" / 0.001mm	**369-350**	±.0002"
1 - 2" / 25.4 - 50.8mm	.00005" / 0.001mm	**369-351**	±.0002"
2 - 3" / 50.8 - 76.2mm	.00005" / 0.001mm	**369-352**	±.0003"
3 - 4" / 76.2 - 101.6mm	.00005" / 0.001mm	**369-353**	±.0003"

Metric Quickmike type

Range	Resolution	Order No.	Accuracy
0 - 30mm	0.001mm	**369-411**	±4µm
25 - 55mm	0.001mm	**369-412**	±4µm

Inch/Metric Quickmike type

Range	Resolution	Order No.	Accuracy
0 - 1.2" / 0 - 30.48mm	.00005" / 0.001mm	**369-421**	±.0002"
1 - 2.2" / 25.4 - 55.88mm	.00005" / 0.001mm	**369-422**	±.0002"

Metric Quickmike type with adjustable measuring force

Range	Resolution	Order No.	Accuracy	Measuring force
0 - 10mm	0.001mm	**227-223**	±4µm	2N - 10N
0 - 15mm	0.001mm	**227-221**	±4µm	0.5N - 2.5N

Metric

Range	Graduation	Order No.	Accuracy
0 - 25mm	0.01mm	**169-201**	±4µm
25 - 50mm	0.01mm	**169-202**	±4µm
50 - 75mm	0.01mm	**169-205**	±6µm
75 - 100mm	0.01mm	**169-207**	±6µm

Inch

Range	Graduation	Order No.	Accuracy
0 - 1"	.001"	**169-203**	±.0002"
1 - 2"	.001"	**169-204**	±.0002"
2 - 3"	.001"	**169-206**	±.0003"
3 - 4"	.001"	**169-208**	±.0003"

SPC

Technical Data

Accuracy: Refer to the list of specifications.
Resolution*: .00005"/0.001mm or 0.001mm
Graduation**: .001" or 0.01mm
Flatness: .00004" / 1µm
Parallelism: 4µm / .00016" for models up to 2" / 50mm
6µm / .00024" for models over 2" / 50mm
Measurable module: 0.5-6
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 page B-6 for more information.
*Digital models **Analog models

Function of Digital Model

Origin-set, Zero / ABS, Data hold, Data output, inch/mm conversion (on inch/metric models only)
Alarm: Low voltage, Counting value composition error

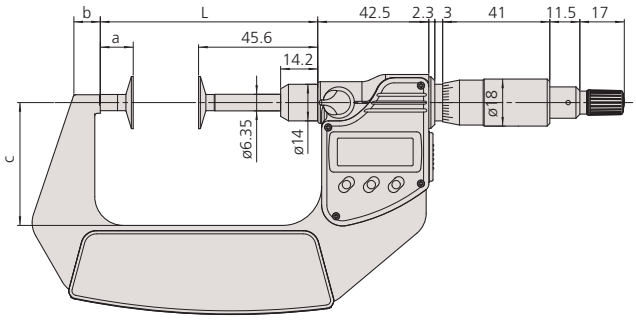
Optional Accessories for Digital Model

05CZA662: SPC cable with data switch (40" / 1m)
05CZA663: SPC cable with data switch (80" / 2m)
937387: SPC cable for Quickmike type (40" / 1m)
965013: SPC cable for Quickmike type (80" / 2m)

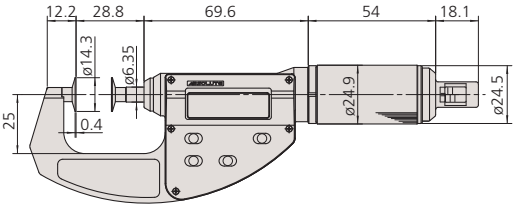
DIMENSIONS AND MASS

Unit: mm

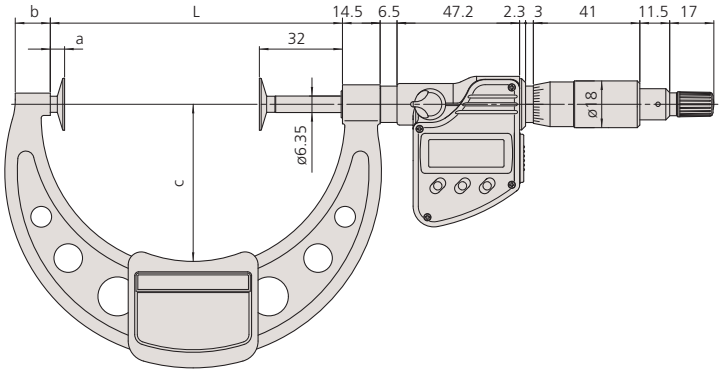
Digital models up to 75mm



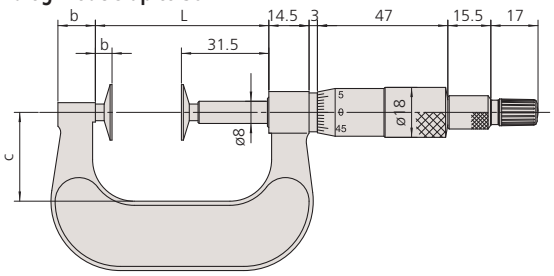
Adjustable measuring force type



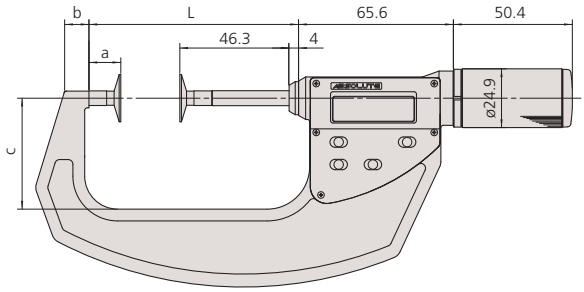
Digital models over 75mm



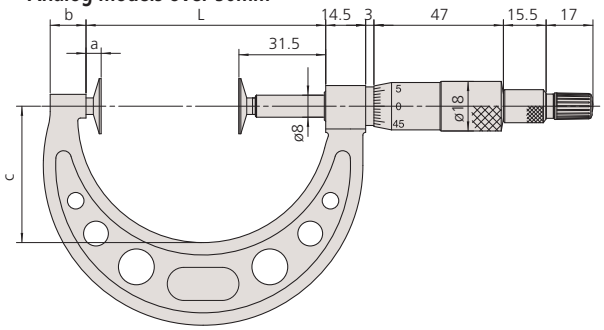
Analog models up to 50mm

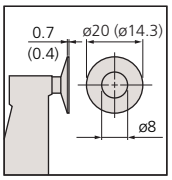


Quickmike type



Analog models over 50mm





( ): Adjustable measuring force type

Digital model

Range	L	a	b	c	Mass (g)
0 - 25mm / 0 - 1"	58.5	12.9	7	32	340
25 - 50mm / 1 - 2"	83.5	12.9	9.8	47	480
50 - 75mm / 2 - 3"	108.5	12.9	11.2	60	635
75 - 100mm / 3 - 4"	112.5	5.5	13.5	60.5	475
0 - 30mm* / 0 - 1.2"	63.8	13.5	8.5	36	360
25 - 55mm* / 1 - 2.2"	88.8	13.5	10.3	47	490

*Quickmike type

Analog model

Range	L	a	b	c	Mass (g)
0 - 25mm / 0 - 1"	37.5	6	13.5	25	230
25 - 50mm / 1 - 2"	62.5	6	13.5	32	280
50 - 75mm / 2 - 3"	87	5.5	13	49.5	315
75 - 100mm / 3 - 4"	112	5.5	13	63.5	400

Gear Tooth Micrometers

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

FEATURES

- IP65 water/dust protection (Series 324).
- Measures over-pin diameter of gears with precision steel (carbide) ball-tipped measuring faces.
- With a standard bar except 0 - 25mm and 0 - 1″ model
- 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).
- Supplied in fitted plastic case (0 - 150mm / 4″ model 008 150mm model are wooden case).

324-351-10
Shown with optional ball anvils

124-173
Shown with optional ball anvils

Technical Data

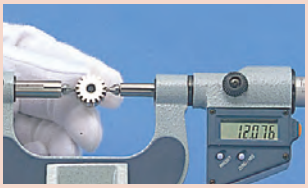
Accuracy: Refer to the list of specifications.
Resolution*: 0.001mm or .00005"/0.001mm
Graduation**: 0.01mm
Display*: LCD
Battery*: SR44 (1 pc.), **938882**
Battery life*: Approx. 1.2 years under normal use
Dust/Water protection level*: IP65
*Digital models **Analog models

Function of Digital Model

Zero / ABS, Data hold, Data output, Preset,
inch/mm conversion (on inch/metric models only)
Alarm: Low voltage, Counting value composition error
Function Lock
2 Presets

Optional Accessories

05CZA662: SPC cable with data switch (1m / 40″)*
05CZA663: SPC cable with data switch (2m / 80″)*
*Only for digital models



SPECIFICATIONS

Metric Digital model

Range	Resolution	Order No.	Accuracy	Mass (g)
0 - 25mm	0.001mm	**324-251-10**	±4µm	400
25 - 50mm	0.001mm	**324-252-10**	±4µm	490
50 - 75mm	0.001mm	**324-253-10**	±4µm	530
75 - 100mm	0.001mm	**324-254-10**	±5µm	600

Inch/Metric Digital model

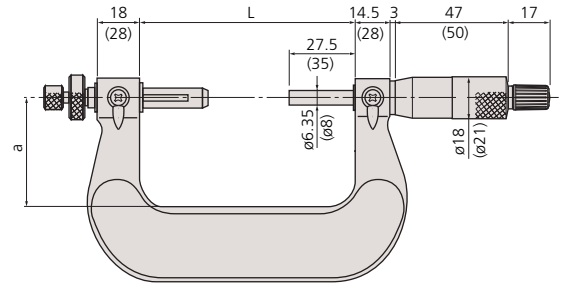
Range	Resolution	Order No.	Accuracy	Mass (g)
0 - 1"/0 - 25mm	.00005"/0.001mm	**324-351-10**	±.0002"	400
1 - 2"/25 - 50mm	.00005"/0.001mm	**324-352-10**	±.0002"	490
2 - 3"/50 - 75mm	.00005"/0.001mm	**324-353-10**	±.0002"	530
3 - 4"/75 - 100mm	.00005"/0.001mm	**324-354-10**	±.00025"	600

Metric

Range	Graduation	Order No.	Accuracy	Mass (g)
0 - 25mm	0.01mm	**124-173**	±4µm	295
25 - 50mm	0.01mm	**124-174**	±4µm	400
50 - 75mm	0.01mm	**124-175**	±4µm	460
75 - 100mm	0.01mm	**124-176**	±5µm	540
100 - 125mm	0.01mm	**124-177**	±5µm	640
125 - 150mm	0.01mm	**124-178**	±5µm	760
150 - 175mm	0.01mm	**124-179**	±6µm	900
175 - 200mm	0.01mm	**124-180**	±6µm	1060
200 - 225mm	0.01mm	**124-181**	±6µm	1230
225 - 250mm	0.01mm	**124-182**	±7µm	1430
250 - 275mm	0.01mm	**124-183**	±7µm	1620
275 - 300mm	0.01mm	**124-195**	±7µm	2070

DIMENSIONS AND MASS

Unit: mm



( ): 275-300mm model

Range	L	a	Mass (g)
0 - 25mm	64.5	32	295
25 - 50mm	90	45	400
50 - 75mm	115.6	65	460
75 - 100mm	140.6	79	540
100 - 125mm	165.6	93	640
125 - 150mm	190.5	105	760
150 - 175mm	215.5	120	900
175 - 200mm	240.5	130	1060
200 - 225mm	265.5	147	1230
225 - 250mm	290.5	165	1430
250 - 275mm	315.5	171	1620
275 - 300mm	353	187	2070

Interchangeable ball anvil-spindle tip set:

Diameter of ball anvil	Order No.	Gear module	Diametral 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

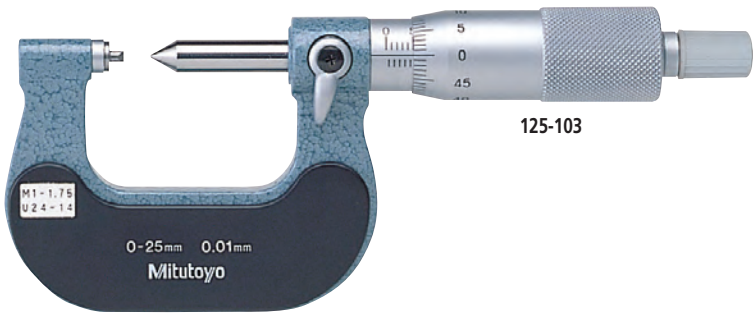
*Carbide-tipped type

Screw Thread Micrometers

SERIES 125

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 bar for zero point adjustment except 0 - 25mm model.
- Supplied in fitted plastic case.



125-103

Technical Data

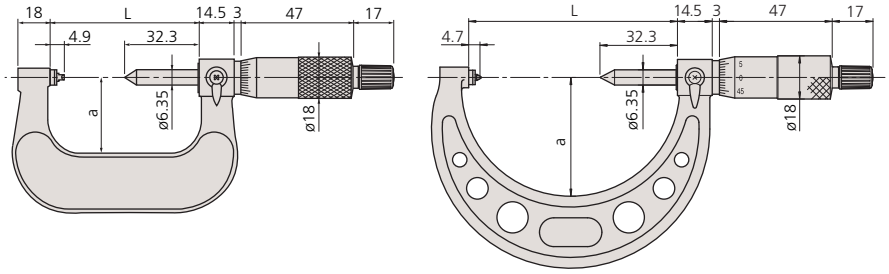
Accuracy: ±(2+R/75)µm, R=max. range (mm)
Graduation: 0.01mm
Spindle feed error: 3µm

SPECIFICATIONS

Metric

Range	Graduation	Order No.	Screw to be measured (Metric/Unified)
0 - 25mm	0.01mm	**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	0.01mm	**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	0.01mm	**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	0.01mm	**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

DIMENSIONS AND MASS



Unit: mm

Range	L	a	Mass (g)
0 - 25mm	37.2	25	200
25 - 50mm	62.2	32	250
50 - 75mm	87	49.5	260
75 - 100mm	112	63.5	330

Screw Thread Micrometers

SERIES 326, 126 — Interchangeable Anvil-Spindle Tip Type

FEATURES

- IP65 water/dust protection (Series 326).
- 60 degree or 55 degree V-anvil and conical spindle (interchangeable) are optional, which are made of high-grade steel, hardened and precision ground.
- With Ratchet Stop for constant force.
- With SPC output (Series 326).
- With a standard bar except 0 - 25mm and 0 - 1" model.
- Supplied in fitted plastic case.

126-125
Shown with optional anvils

326-351-10

SPECIFICATIONS

Metric Digital model

Range	Resolution	Order No.	Accuracy	Mass (g)
0 - 25mm	0.001mm	**326-251-10**	±4µm	350
25 - 50mm	0.001mm	**326-252-10**	±4µm	380
50 - 75mm	0.001mm	**326-253-10**	±4µm	470
75 - 100mm	0.001mm	**326-254-10**	±5µm	510

Inch/Metric Digital model

Range	Resolution	Order No.	Accuracy	Mass (g)
0 - 1" / 0 - 25.4mm	.00005" / 0.001mm	**326-351-10**	±.0002"	350
1 - 2" / 25.4 - 50.8mm	.00005" / 0.001mm	**326-352-10**	±.0002"	380
2 - 3" / 50.8 - 76.2mm	.00005" / 0.001mm	**326-353-10**	±.0002"	470
3 - 4" / 76.2 - 101.6mm	.00005" / 0.001mm	**326-354-10**	±.00025"	510

Metric

Range	Graduation	Order No.	Accuracy	Mass (g)
0 - 25mm	0.01mm	**126-125**	±4µm	240
25 - 50mm	0.01mm	**126-126**	±4µm	290
50 - 75mm	0.01mm	**126-127**	±4µm	390
75 - 100mm	0.01mm	**126-128**	±5µm	450
100 - 125mm	0.01mm	**126-129**	±5µm	530
125 - 150mm	0.01mm	**126-130**	±5µm	620
150 - 175mm	0.01mm	**126-131**	±6µm	730
175 - 200mm	0.01mm	**126-132**	±6µm	860
200 - 225mm	0.01mm	**126-133**	±6µm	1,030
225 - 250mm	0.01mm	**126-134**	±7µm	1,200
250 - 275mm	0.01mm	**126-135**	±7µm	1,370
275 - 300mm	0.01mm	**126-136**	±7µm	1,540

Inch

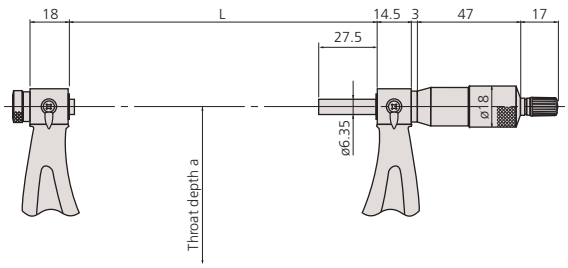
Range	Graduation	Order No.	Accuracy	Mass (g)
0 - 1"	.001"	**126-137**	±.0002"	240
1 - 2"	.001"	**126-138**	±.0002"	290
2 - 3"	.001"	**126-139**	±.0002"	390
3 - 4"	.001"	**126-140**	±.00025"	450
4 - 5"	.001"	**126-141**	±.00025"	530
5 - 6"	.001"	**126-142**	±.00025"	620
6 - 7"	.001"	**126-143**	±.0003"	730

Inch With anvil set (126 - 800)

Range	Graduation	Order No.	Accuracy	Mass (g)
0 - 1"	.001"	**126-901**	±.0002"	240
1 - 2"	.001"	**126-902**	±.0002"	290
2 - 3"	.001"	**126-903**	±.0002"	390
3 - 4"	.001"	**126-904**	±.00025"	450
4 - 5"	.001"	**126-905**	±.00025"	530
5 - 6"	.001"	**126-906**	±.00025"	620

DIMENSIONS

Unit: mm



Range	L	a
0 - 25mm / 0 - 1"	39.5	25
25 - 50mm / 1 - 2"	64.5	32
50 - 75mm / 2 - 3"	90	45
75 - 100mm / 3 - 4"	115.6	65
100 - 125mm / 4 - 5"	140.6	79
125 - 150mm / 5 - 6"	165.6	93
150 - 175mm / 6 - 7"	190.5	105
175 - 200mm / 7 - 8"	215.5	120
200 - 225mm / 8 - 9"	240.5	130
225 - 250mm / 9 -10"	265.5	147
250 - 275mm / 10 - 11"	290.5	165
275 - 300mm / 11 - 12"	315.5	171

Technical Data

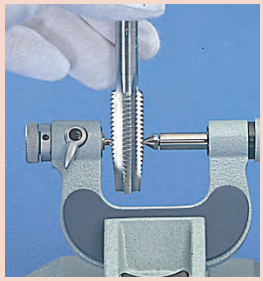
Resolution*: 0.001mm or .00005"/0.001mm
Graduation**: 0.01mm or .001"
Spindle feed error: 3µm / .00012"
Display*: LCD
Battery*: SR44 (1 pc.), **938882**
Battery life*: Approx. 1.2 years under normal use
Dust/Water protection level*: IP65
*Digital models **Analog models

Function of Digital Model

Zero / ABS, Data hold, Data output, 2 Presets, Function Lock.
inch/mm conversion (on inch/metric models only)
Alarm: Low voltage, Counting value composition error

Optional Accessories

05CZA662: SPC cable with data switch (1m / 40")*
05CZA663: SPC cable with data switch (2m / 80")*
*Only for digital models
(See page B-51.): Standard for screw thread micrometer



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

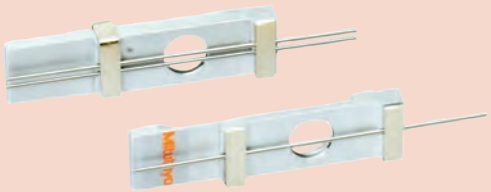
Order No.	Included in set
126-800	0.4 - 0.5mm/64 - 48TPI (**126-801**) 0.6 - 0.9mm/44 - 28TPI (**126-802**) 1 - 1.75mm/24 - 14TPI (**126-803**) 2 - 3mm/13 - 9TPI (**126-804**) 3.5 - 5mm/8 - 5TPI (**126-805**) 5.5 - 7mm/4.5 - 3.5TPI (**126-806**)

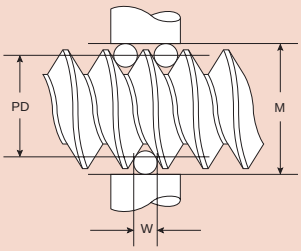
For Whitworth screws (55° threads)

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**)

3-Wire Thread Measuring System

Individual Holder and Wire Set

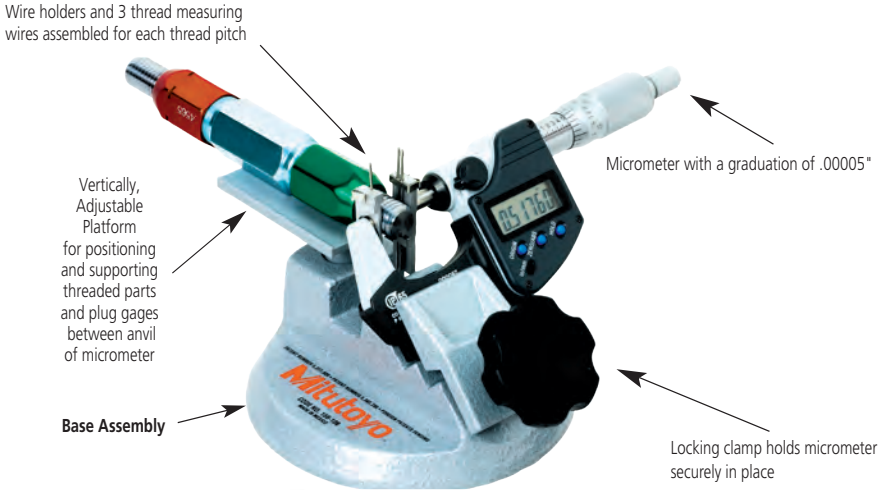




P.D. = Pitch Diameter
M = Measurement over wires
W = Wire diameter
C = Constant
C = .86603 x Pitch (inches) -3W
P.D. = M-C
W = .57735 x P

FEATURES

- Fast and accurate method of thread measuring available for use with Micrometer



Compatible with Micrometers with 0.25" Anvils & Spindles

Stand Assembly
Order No. 156-106

INCH STANDARD HOLDERS AND WIRES SETS

Order No.	Threads Per Inch	Thread Measuring Wire Diameter
64AAA201	120	.00481
64AAA202	100	.00577
64AAA203	95	.00601
64AAA204	90	.00642
64AAA205	80	.00722
64AAA206	72	.00802
64AAA207	64	.00902
64AAA208	56	.01031
64AAA209	50	.01155
64AAA210	48	.01203
64AAA211	44	.01312
64AAA212	40	.01443
64AAA213	36	.01604
64AAA214	32	.01804
64AAA215	30	.01925
64AAA216	28	.02062
64AAA217	27	.02138
64AAA218	26	.02221
64AAA219	24	.02406
64AAA220	22	.02624
64AAA221	20	.02887
64AAA222	18	.03208
64AAA223	16	.03608
64AAA224	14	.04124
64AAA225	13	.04441
64AAA226	12	.04811
64AAA227	11.5	.05020
64AAA228	11	.05249
64AAA229	10	.05774
64AAA230	9	.06415
64AAA231	8	.07217
64AAA232	7.5	.07698
64AAA233	7	.08248
64AAA234	6	.09623
64AAA235	5.5	.10497
64AAA236	5	.11547

METRIC HOLDERS AND WIRES SETS

Order No.	Pitch	mm Diameter	Inch Diameter
64AAA251	.2mm	.1155	.00455
64AAA252	.225mm	.1299	.00511
64AAA253	.25mm	.1443	.00568
64AAA254	.30mm	.1732	.00682
64AAA255	.35mm	.2021	.00796
64AAA256	.40mm	.2309	.00909
64AAA257	.45mm	.2598	.01023
64AAA258	.50mm	.2887	.01137
64AAA259	.55mm	.3175	.01250
64AAA260	.60mm	.3464	.01364
64AAA261	.70mm	.4041	.01591
64AAA262	.75mm	.4330	.01705
64AAA263	.80mm	.4619	.01818
64AAA264	.85mm	.4907	.01932
64AAA265	.90mm	.5196	.02046
64AAA266	1.00mm	.5774	.02273
64AAA267	1.25mm	.7217	.02841
64AAA268	1.50mm	.8660	.03410
64AAA269	1.75mm	1.0104	.03978
64AAA270	2.00mm	1.1547	.04546
64AAA271	2.50mm	1.4434	.05683
64AAA272	3.00mm	1.7321	.06819
64AAA273	3.50mm	2.0207	.07956
64AAA274	4.00mm	2.3094	.09092

Applications

- Measure set of thread plug gages and working thread plug gages
- Monitor the wear on working thread plug gages
- Monitor and control pitch diameter variation during thread fabrication
- Reduce measurement time to a fraction of the time normally taken using the traditional three wire method
- Use in conjunction with "Go" and "No Go" thread ring gages to control thread size to the most demanding specifications
- Determine out of roundness and taper that may exist in threaded parts
- Applications for preplating and post plating thread measurement

Tolerance of Wires:

- Diameter +/- .000010"
- Roundness +/- .000010"
- Surface finish 2 micro inches AA, lapped.
- Hardness HRC 59-64
- Certification of accuracy included.
- Traceable to NIST.
- Meets or exceeds all ANSI and ISO specs.

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.
- Supplied in fitted carton.

147-103

Technical Data

Accuracy: ±.00012″ / ±3µm
Graduation: .001″ / 0.01mm

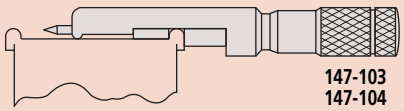
SPECIFICATIONS

Metric

Range	Graduation	Order No.	Remarks
0 - 13mm	0.01mm	**147-103**	for steel cans
		147-105	for aluminum cans
		147-202	for sprayer cans

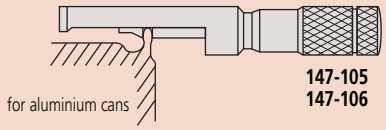
Inch

Range	Graduation	Order No.	Remarks
0 - .5"	.001"	**147-104**	for steel cans
		147-106	for aluminum cans
		147-201	for sprayer cans



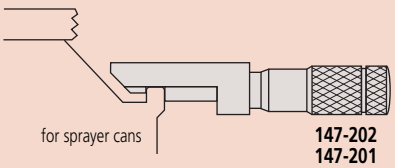
147-103
147-104

for cans
(for depth measurements up to 5mm)



for aluminium cans

147-105
147-106

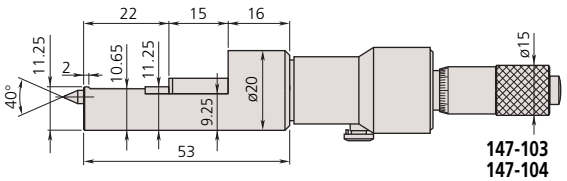


for sprayer cans

147-202
147-201

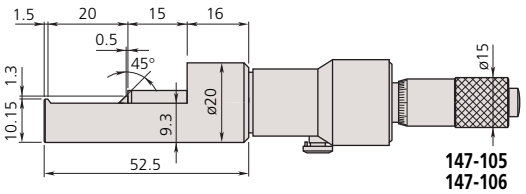
DIMENSIONS AND MASS

Unit: mm



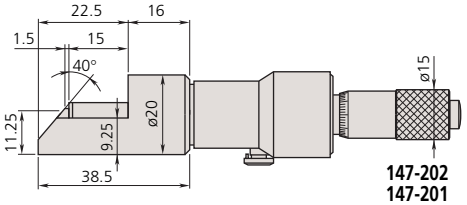
MASS: 65g

147-103
147-104



MASS: 65g

147-105
147-106



MASS: 65g

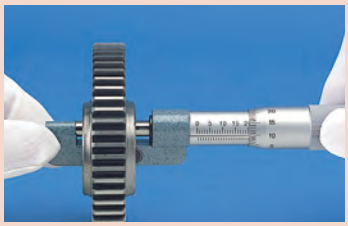
147-202
147-201

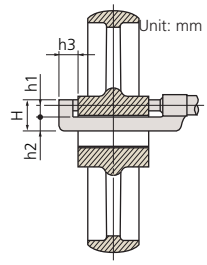
Hub Micrometers

SERIES 147

Technical Data

Accuracy: Refer to the list of specifications.
Graduation: 0.01mm / .001"
Flatness: 0.6µm / .000024"
Parallelism: (2+R/100)µm, R=max. range (mm)
[.00008" + .00004" (L/4)]", L = Max. range (inch).
Measuring faces: Carbide tipped





Range	h1	h2	h3	H	Mass (g)
0 - 1" / 0 - 25mm	6	8.5	13.5	17.5	135
1 - 2" / 25 - 50mm	6.5	11	14	20.5	150
3 - 4" / 50 - 75mm	6.5	11	13	20.5	170
4 - 5" / 75 -100mm	6.5	11	13	20.5	185

FEATURES

- Measures hub thickness and shoulders inside a bore.
- With Ratchet Stop for constant force.
- With a standard bar except for 0 - 1" / 0 - 25mm model.
- Supplied in fitted plastic case.

147-301

147-351

SPECIFICATIONS

Metric

Range	Graduation	Order No.	Accuracy
0 - 25mm	0.01mm	**147-301**	±2µm
25 - 50mm	0.01mm	**147-302**	±2µm
50 - 75mm	0.01mm	**147-303**	±2µm
75 - 100mm	0.01mm	**147-304**	±3µm

Inch

Range	Graduation	Order No.	Accuracy
0 - 1"	.001"	**147-351**	±.0001"
1 - 2"	.001"	**147-352**	±.0001"
2 - 3"	.001"	**147-353**	±.0001"
3 - 4"	.001"	**147-354**	±.00015"

Wire Micrometers

SERIES 147

FEATURES

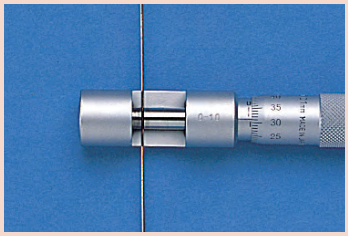
- Designed for measuring wire thickness.
- Also used to measure the diameter of a small ball.
- Supplied in fitted plastic case.

147-402

147-401

Technical Data

Graduation: .0001" or 0.01mm
Flatness: .000024" / 0.6µm
Parallelism: .00005" / 1.3µm
Measuring faces: Carbide tipped



SPECIFICATIONS

Metric

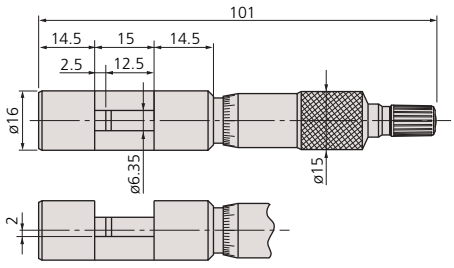
Range	Graduation	Order No.	Accuracy	Mass (g)
0 - 10mm	0.01mm	**147-401**	±3µm	65

Inch

Range	Graduation	Order No.	Accuracy	Mass (g)
0 - .4"	.0001"	**147-402***	±.00015"	65

* .0001" reading is obtained with vernier

DIMENSIONS AND MASS



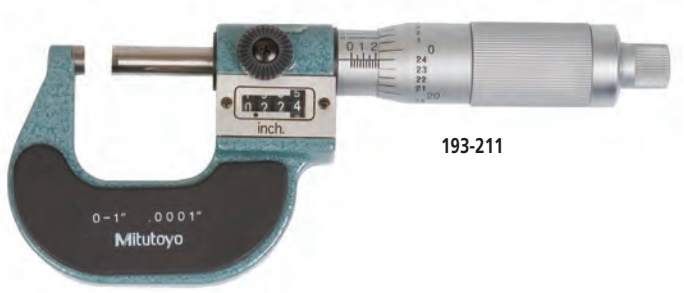
Unit: mm
MASS = 65g

Digit Outside Micrometers

SERIES 193

FEATURES

- Mechanical digit counter with 0.01mm or .001" reading for quick and error-free reading.
- With a standard bar except for 0-25mm / 0 -1" model.
- Supplied in fitted plastic case.



193-211

Technical Data

Counter reading: 0.01mm or .001"
Graduation: 0.01mm, 0.001mm, .001" or .0001"
Flatness: 0.6µm / .000024"
Parallelism: (2+R/100)µm, R=max. range (mm)
[.00008" + .00004" (L/4)]", L= max. range (inch)
Measuring faces: Carbide tipped

193-916

SPECIFICATIONS

Metric With ratchet stop

Range	Graduation	Order No.	Accuracy
0 - 25mm	0.01mm	**193-101**	±2µm
	0.001mm	**193-111***	±2µm
25 - 50mm	0.01mm	**193-102**	±2µm
	0.001mm	**193-112***	±2µm
50 - 75mm	0.01mm	**193-103**	±2µm
	0.001mm	**193-113***	±2µm
75 - 100mm	0.01mm	**193-104**	±3µm
	0.001mm	**193-114***	±3µm

*0.001mm reading is obtained with vernier.

Metric Micrometer sets

Range	Order No.	Included in set
0 - 75mm (3 pcs./set)	**193-901**	• **193-101, 193-102, 193-103** • 2 micrometer standards
0 - 75mm (3 pcs./set)	**193-915**	• **193-111, 193-112, 193-113,** • 2 micrometer standards
0 - 100mm (4 pcs./set)	**193-902**	• **193-101, 193-102, 193-103, 193-104** • 3 micrometer standards
0 - 100mm (4 pcs./set)	**193-916**	• **193-111, 193-112, 193-113, 193-114** • 3 micrometer standards

Inch With ratchet stop

Range	Graduation	Order No.	Accuracy
2 - 3"	.0001"	**193-213***	±.0001"
3 - 4"	.0001"	**193-214***	±.00015"

*.0001" reading is obtained with vernier.

Inch With friction thimble

Range	Graduation	Order No.	Accuracy
0 - 1"	.001"	**193-201**	±.0001"
	.0001"	**193-211***	±.0001"
1 - 2"	.0001"	**193-212***	±.0001"

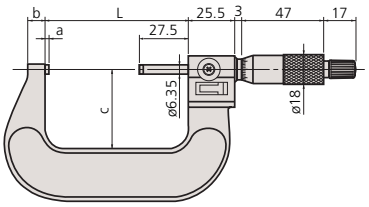
*.0001" reading is obtained with vernier.

Inch Micrometer sets

Range	Order No.	Included in set
0 - 3" (3 pcs./set)	**193-923**	• **193-211, 193-212, 193-213** • 2 micrometer standards

DIMENSIONS AND MASS

Models up to 100mm / 4"



Unit: mm

Range	L	a	b	c	Mass (g)
0 - 25mm / 0 - 1"	30	2.5	5	26	224
25 - 50mm / 1 - 2"	55	2.5	8	32	275
50 - 75mm / 2 - 3"	80	2.5	9	45	379
75 - 100mm / 3 - 4"	105	2.5	9	57	489

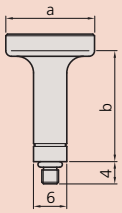
Note: The shape of the thimble changes on the model with Friction Thimble.

Technical Data

Spindle feed error: 3µm / .00012″
Dial indication accuracy: 1µm / .00004″
Dispersion of indication: 0.4µm / .00002″
Graduation: 0.001mm or .0001"
Dial reading: 0.001mm or .00005"
Flatness: 0.3µm / .000012″
Parallelism: 0.6µm / .000024″ for models up to 50mm / 2″
1µm / .00004″ for models over 50mm / 2″
Measuring force: 5 - 10N (500 - 1000gf)
Measuring faces: Carbide tipped

Optional Accessories

04AZA124: ø16mm / ø.63″ workpiece stopper (not available for 25mm / 1″ model)
04AZA125: ø14mm / ø.55" workpiece stopper
04AZA126: ø14mm / ø.55" workpiece stopper

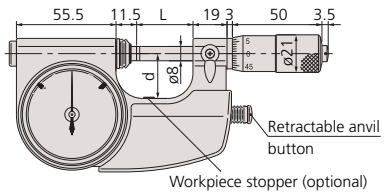


Unit: mm

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

DIMENSIONS AND MASS

Unit: mm



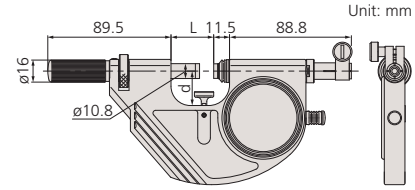
Range	L	d	Mass (g)
0 - 25mm / 0 - 1"	31.5	25	520
25 - 50mm / 1 - 2"	56.5	38	670
50 - 75mm / 2 - 3"	81.5	50	820
75 - 100mm / 3 - 4"	106.5	63	970

Technical Data

Flatness: 0.3µm / .000012″
Parallelism: 0.6µm / .000024″ for models up to 50mm / 2″
1µm / .00004″ for models over 50mm / 2″
Measuring force: 5 - 10N (500 - 1000gf)
Measuring faces: Carbide tipped

DIMENSIONS AND MASS

Unit: mm



Range	d	L	Mass (g)
0 - 25mm / 0 - 1"	25	31	710
25 - 50mm / 1 - 2"	35	56	810
50 - 75mm / 2 - 3"	47.5	81	920
75 - 100mm / 3 - 4"	60	106	1050

Indicating Micrometers

SERIES 510

FEATURES

- Retractable anvil with indicator for three-wire measurements of pitch diameter of precision screws and parallelism measurements.
- With a standard bar except for 0 - 25mm / 0 - 1″ model.
- IP protection level: 54
- Supplied in fitted plastic case.

510-131

SPECIFICATIONS

Metric

Range	Graduation	Order No.	Indicating range
0 - 25mm	0.001mm	**510-121*** **510-141**	±0.060mm
25 - 50mm	0.001mm	**510-122**	±0.060mm
50 - 75mm	0.001mm	**510-123**	±0.060mm
75 - 100mm	0.001mm	**510-124**	±0.060mm

*Retractable anvil button on the right side.

Inch

Range	Graduation	Order No.	Indicating range
0 - 1"	.00005"	**510-131*** **510-151**	±.0023"
1 - 2"	.00005"	**510-132**	±.0023"
2 - 3"	.00005"	**510-133**	±.0023"
3 - 4"	.00005"	**510-134**	±.0023"

*Retractable anvil button on the right side.

Snap Meters

SERIES 523

FEATURES

- Various types of indicators, LVDT's and Linear Gages can be selected according to the measurement applications.
- Supplied in fitted plastic case.

Indicator is optional

523-141

SPECIFICATIONS

Metric Gage stem dia 8mm

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 Gage stem dia 3/8"

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"

Dial Snap Meters

SERIES 523

FEATURES

- Direct GO/NO-GO judgment for mass-produced parts.
- Spindle diameter: .425" / 10.8mm
- IP protection level: 54
- Supplied in fitted plastic case.

523-131

SPECIFICATIONS

Metric

Range	Graduation	Order No.	Indicating range
0 - 25mm	0.001mm	**523-121**	±0.060mm
25 - 50mm	0.001mm	**523-122**	±0.060mm
50 - 75mm	0.001mm	**523-123**	±0.060mm
75 - 100mm	0.001mm	**523-124**	±0.060mm

Inch

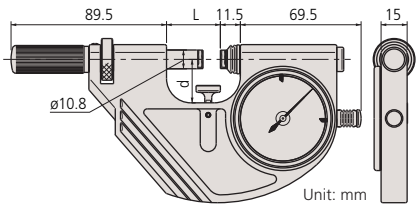
Range	Graduation	Order No.	Indicating range
0 - 1"	.00005"	**523-131**	±.0023"
1 - 2"	.00005"	**523-132**	±.0023"
2 - 3"	.00005"	**523-133**	±.0023"
3 - 4"	.00005"	**523-134**	±.0023"

IP54

Technical Data

Dial indication accuracy: .00005" / 1µm
Indication repeatability: .00002" / 0.4µm
Dial reading: .00005" or 0.001mm
Flatness: .000012" / 0.3µm
Parallelism: .000024" / 0.6µm for models up to 2"/ 50mm
.00004" / 1µm for models over 2" / 50mm
Measuring force: 5 - 10N (500 - 1000gf)
Measuring faces: Carbide tipped

DIMENSIONS AND MASS



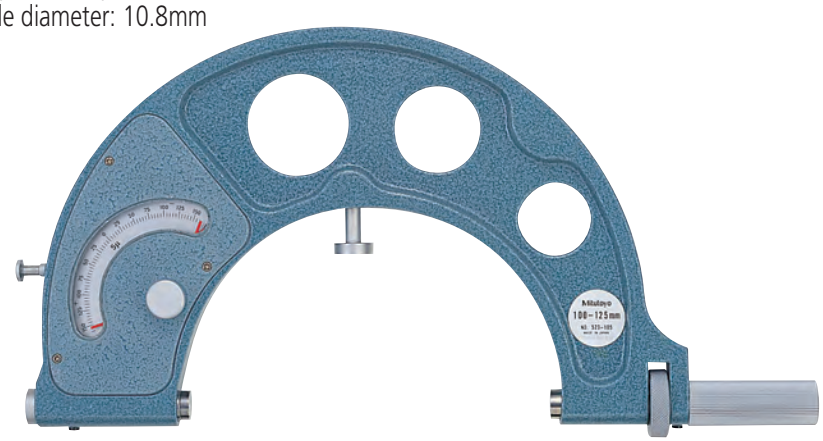
Range (Metric / Inch)	d	L	Mass (g)
0 - 1" / 0 - 25mm	25	31	710
1 - 2" / 25 - 50mm	35	56	810
2 - 3" / 50 - 75mm	47.5	81	920
3 - 4" / 75 - 100mm	60	106	1050

Dial Snap Meters

SERIES 523

FEATURES

- Direct GO/NO-GO judgment for mass-produced parts.
- Spindle diameter: 10.8mm
- Supplied in fitted plastic case (100-150mm models), wooden box (150-200mm models)



523-105

SPECIFICATIONS

Metric

Range	Order No.	Indicating range	Mass (g)
100 - 125mm	**523-105**	±0.15mm	880
125 - 150mm	**523-106**	±0.15mm	980
150 - 175mm	**523-113**	±0.15mm	1,420
175 - 200mm	**523-114**	±0.15mm	1,610

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

Caliper Type Micrometers

SERIES 343, 143

Technical Data

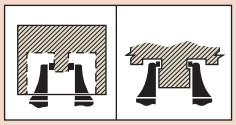
Accuracy: Refer to the list of specifications.
Resolution*: 0.001mm or .00005"/0.001mm
Graduation**: 0.01mm / .001"
Flatness: 0.3µm / .000012"
Parallelism: (3+R/75)µm, R=max. range (mm)
[.00012" + .00004" (L/8)]"
L = Max. range (inch)
Measuring faces: Carbide tipped
Display*: LCD
Battery*: SR44 (1 pc.), **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 (on inch/metric models only)
Alarm: Low voltage, Counting value composition error

Optional Accessories for Digital Model

05CZA662: SPC cable with data switch (1m / 40")
05CZA663: SPC cable with data switch (2m / 80")



FEATURES

- With Ratchet Stop for constant force.
- With SPC output (Series 343).
- With a standard bar except 0 - 25mm and 0 - 1" model.
- Supplied in fitted plastic case.

143-121

343-250

SPECIFICATIONS

Metric Digital model

Range	Resolution	Order No.	Accuracy	Mass (g)
0 - 25mm	0.001mm	**343-250**	±5µm	630
25 - 50mm	0.001mm	**343-251**	±6µm	650
50 - 75mm	0.001mm	**343-252**	±7µm	1040
75 - 100mm	0.001mm	**343-253**	±8µm	1090

Inch / Metric Digital model

Range	Resolution	Order No.	Accuracy	Mass (g)
0 - 1" / 0 - 25.4mm	.00005" / 0.001mm	**343-350**	±.00025"	630
1 - 2" / 25.4 - 50.8mm	.00005" / 0.001mm	**343-351**	±.0003"	650
2 - 3" / 50.8 - 76.2mm	.00005" / 0.001mm	**343-352**	±.00035"	1040
3 - 4" / 76.2 - 101.6mm	.00005" / 0.001mm	**343-353**	±.0004"	1090

Metric

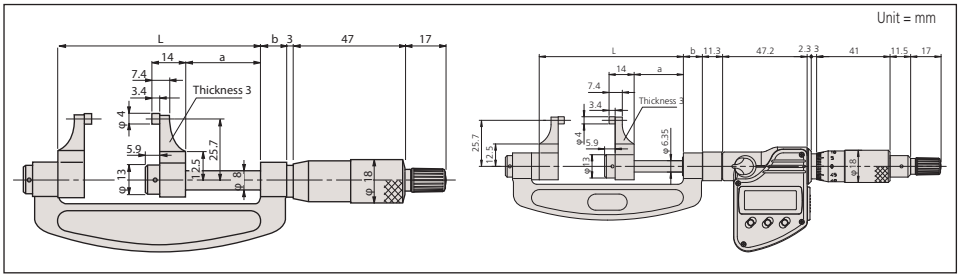
Range	Graduation	Order No.	Accuracy	Mass (g)
0 - 25mm	0.01mm	**143-101**	±5µm	210
25 - 50mm	0.01mm	**143-102**	±6µm	230
50 - 75mm	0.01mm	**143-103**	±7µm	280
75 - 100mm	0.01mm	**143-104**	±8µm	330
Models with a range up to 300mm are available.				

Inch

Range	Graduation	Order No.	Accuracy	Mass (g)
0 - 1"	.001"	**143-121**	±.00025"	210
1 - 2"	.001"	**143-122**	±.0003"	230
2 - 3"	.001"	**143-123**	±.00035"	280

DIMENSIONS

Unit = mm

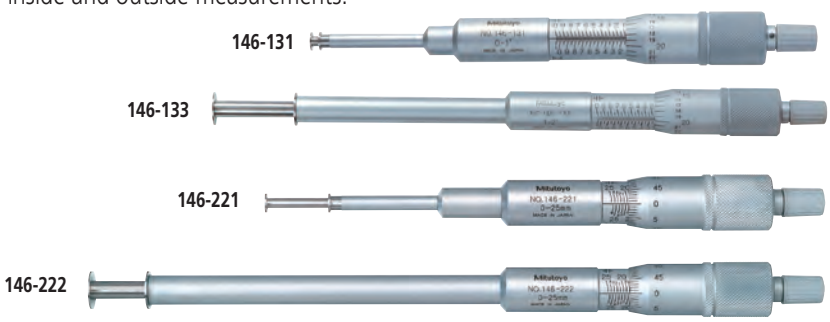


Groove Micrometers

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. (Measuring force: 0.7 - 1.2N)



SPECIFICATIONS

Metric Rotating spindle type

Range Outside	Range Inside	Graduation	Order No.	Flange	Mass (g)
0 - 25mm	1.6 - 26.5mm	0.01mm	**146-121**	ø6.35mm	135
			146-122	ø12.7mm	185
25 - 50mm	26.5 - 51.5mm	0.01mm	**146-123**	ø12.7mm	175
50 - 75mm	51.5 - 76.5mm	0.01mm	**146-124**	ø12.7mm	165
75 - 100mm	76.5 - 101.5mm	0.01mm	**146-125**	ø12.7mm	160

Inch Rotating spindle type

Range Outside	Range Inside	Graduation	Order No.	Flange	Mass (g)
0 - 1"	.055" - 1.05"	.001"	**146-131**	ø.25"	135
			146-132	ø.5"	185
1" - 2"	1.05" - 2.05"	.001"	**146-133**	ø.5"	175
2" - 3"	2.05" - 3.05"	.001"	**146-134**	ø.5"	165
3" - 4"	3.05" - 4.05"	.001"	**146-135**	ø.5"	160

Metric Non-rotating spindle type

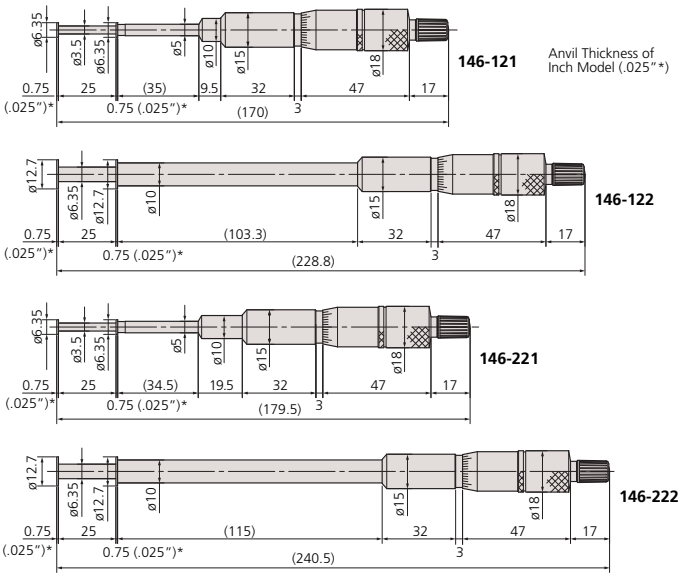
Range Outside	Range Inside	Graduation	Order No.	Flange	Mass (g)
0 - 25mm	1.6 - 26.5mm	0.01mm	**146-221**	ø6.35mm	135
			146-222	ø12.7mm	185
25 - 50mm	26.5 - 51.5mm	0.01mm	**146-223**	ø12.7mm	175
50 - 75mm	51.5 - 76.5mm	0.01mm	**146-224**	ø12.7mm	165
75 - 100mm	76.5 - 101.5mm	0.01mm	**146-225**	ø12.7mm	160

Inch Non-rotating spindle type

Range Outside	Range Inside	Graduation	Order No.	Flange	Mass (g)
0 - 1"	.055" - 1.05"	.001"	**146-231**	ø.25"	135
			146-232	ø.5"	185
1" - 2"	1.05" - 2.05"	.001"	**146-233**	ø.5"	175
2" - 3"	2.05" - 3.05"	.001"	**146-234**	ø.5"	165
3" - 4"	3.05" - 4.05"	.001"	**146-235**	ø.5"	160

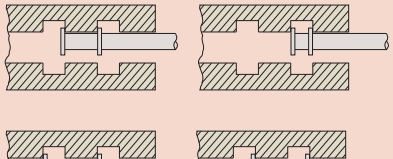
DIMENSIONS

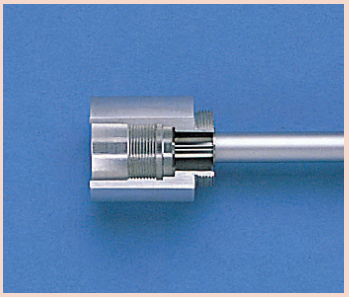
Unit: mm



Technical Data

Accuracy: ± .0004" / ±10µm
Parallelism: .0004" / 10µm





Small Hole Gage Set

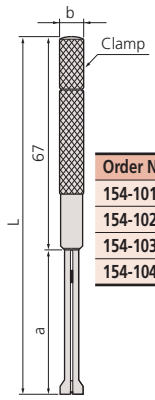
SERIES 154

FEATURES

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

154-901

DIMENSIONS



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

SPECIFICATIONS

Metric

Total range	Set 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**)

Inch

Total range	Set Order No.	Assortment of gages
.125 - .5" DIA. (4-gage set)	**154-901**	.125" - .2" DIA. gage (**154-105**)
		.2" - .3" DIA. gage (**154-106**)
		.3" - .4" DIA. gage (**154-107**)
		.4" - .5" DIA. gage (**154-108**)

Telescoping Gage Set

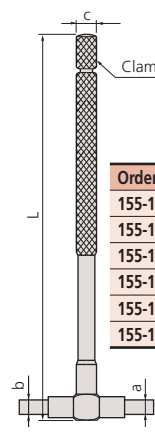
SERIES 155

155-903

FEATURES

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

DIMENSIONS



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

SPECIFICATIONS

Metric

Total range	Set Order No.	Included in set
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**)

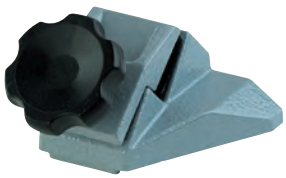
Inch

Total range	Set Order No.	Included in set
.313 - 6" (6-gage set)	**155-903**	.313" - .5" gage (**155-121**)
		.5" - .75" gage (**155-122**)
		.75" - 1.25" gage (**155-123**)
		1.25" - 2.125" gage (**155-124**)
		2.125" - 3.5" gage (**155-125**)
		3.5" - 6" gage (**155-126**)
.50 - 6" (5-gage set)	**155-904**	**155-122, 155-123, 155-124, 155-125, 155-126**
.315 - 2.125" (4-gage set)	**155-907**	**155-121, 155-122, 155-123, 155-124**

Micrometer Stands

SERIES 156

These stands are designed to allow bench-top use with hand micrometers or other gages.

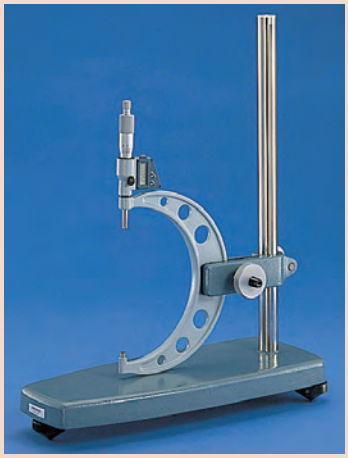


156-105-10

156-106

156-101-10

156-102

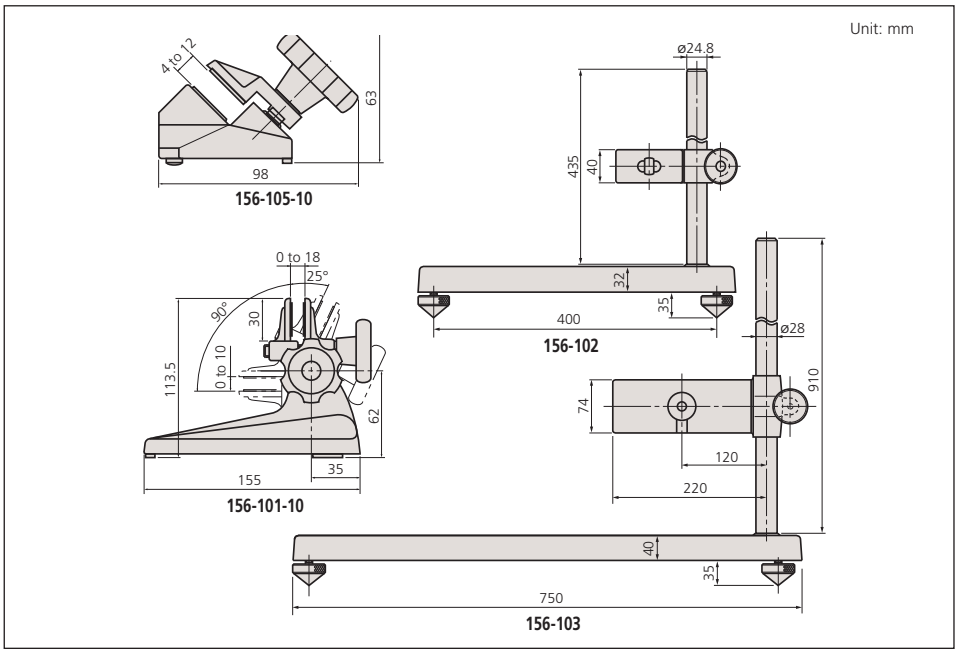


SPECIFICATIONS

Micrometer ranges	Order No.	Remarks
0-1″ / 0-25mm, 1-2″ / 25-50mm	**156-105-10**	Fixed angle type
Up to 4″ / 100mm	**156-101-10**	Adjustable angle type
5-12″ / 125-300mm	**156-102**	Vertical type
12-40″ / 300-1000mm	**156-103**	Vertical type
0-1″ / 0-25mm 1-2″ / 25-50mm	**156-106**	Fixed angle with platform

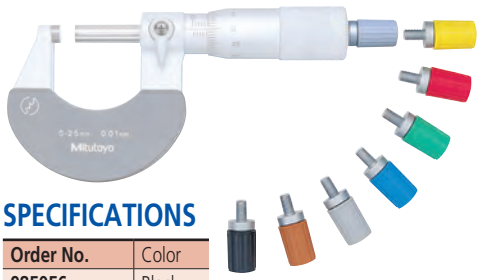
DIMENSIONS

Unit: mm



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
04GZA243***	Gray

*for Series 293 digital model
** up to 300mm / 12"
** over 300mm / 12"

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

101468 (.200" Dia.)
101469 (.250" Dia.)

208062*
208098

208063*
208099

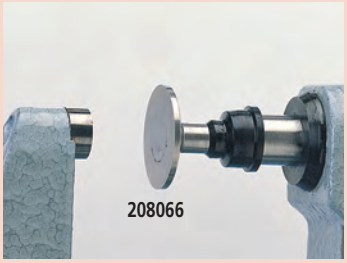
208064*
208100

208065*
208101

208066*
208102

Technical Data

Tip length: For metric 10mm ±5μm
For inch .5" ±.0002"

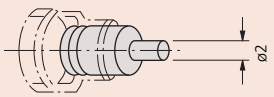
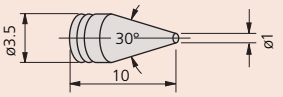
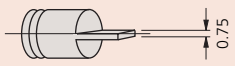


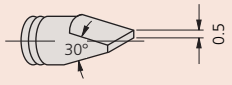
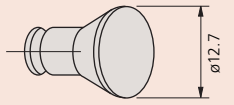
To measure odd workpieces, several convenient anvil attachments are prepared by MITUTOYO. Among them the most often used one is the ball attachment.

The ball attachments are hardened steel balls with .200" and .250" diameters which are placed on the .250" and .315" diameter anvils, respectively, by rubber caps. With these attachments, regular micrometers can measure cylindrical wall thickness, but, .200" or .250" must be subtracted from the readings.

Other attachments shown here are .500" in length. The added amount must be subtracted from the reading.

DIMENSIONS

Order No.	Dimension
208098 208062*	
208099 208063*	
208100 208064*	

Order No.	Dimension
208101 208065*	
208102 208066*	

* For metric micrometer

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 in fitted wooden case.

SPECIFICATIONS

Metric

Range of micrometer to be checked	Order No.	Assortment of parallels (Thickness of parallel)
0-25mm	**157-903**	12.00mm (157-101) 12.12mm (157-102) 12.25mm (157-103) 12.37mm (157-104)
25-50mm	**157-904**	25.00mm (157-105) 25.12mm (157-106) 25.25mm (157-107) 25.37mm (157-108)

Inch

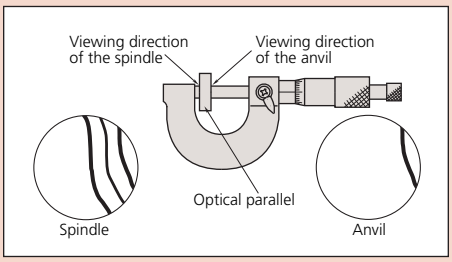
Range of micrometer to be checked	Order No.	Assortment of parallels (Thickness of parallel)
0-1"	**157-901**	.5000" (157-109) .5062" (157-110) .5125" (157-111) .5187" (157-112)
1-2"	**157-902**	1.0000" (157-113) 1.0062" (157-114) 1.0125" (157-115) 1.0187" (157-116)

Technical Data

Flatness: .000004" / 0.1µm
Parallelism: .000008" / 0.2µm
Diameter: 1.18" / 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; place 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 gage block's measuring faces with high accuracy.
- Supplied in fitted wooden case.

SPECIFICATIONS

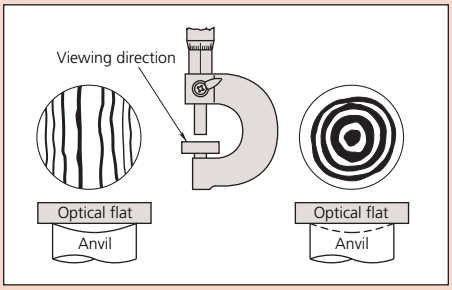
Metric

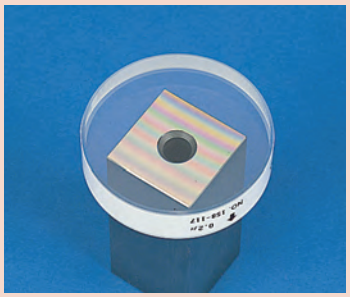
Flatness	Order No.	Diameter/Thickness
0.2µm	**158-117**	45mm/12mm
	158-119	60mm/15mm
0.1µm	**158-118**	45mm/12mm
	158-120	60mm/15mm

Inch

Flatness	Order No.	Diameter/Thickness
.000004"	**158-122**	1.8"/.5"
	158-124	2.4"/.6"

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



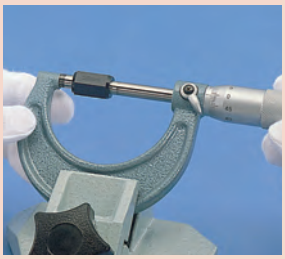


Micrometer Standards

SERIES 167

Technical Data

Flatness: 0.3µm / .000012"
Parallelism: 2µm / .00008"



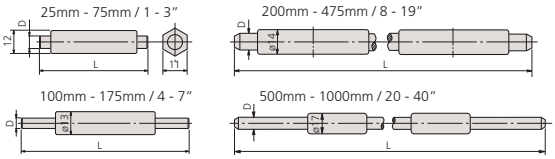
FEATURES

- Used for the zero point setting of outside micrometers.
- Flat and lapped measuring faces.
- Heat insulating handle to prevent expansion due to body temperature.
- Supplied in fitted carton up to 500mm / 20" and wooden case for over 525mm / 21", length.

167-108

167-103

DIMENSION



Unit: mm

SPECIFICATIONS

Inch

Length (L)	Order No.	Diameter (D)	Accuracy
41"	**167-405**	.47"	.0004"
42"	**167-406**	.47"	.0004"
43"	**167-407**	.47"	.0004"
44"	**167-408**	.47"	.0004"
45"	**167-409**	.47"	.0004"
46"	**167-410**	.47"	.0004"
47"	**167-411**	.47"	.0004"
48"	**167-412**	.47"	.0004"
49"	**167-413**	.47"	.0004"
50"	**167-414**	.47"	.0004"
51"	**167-415**	.47"	.0004"
52"	**167-416**	.47"	.0004"
53"	**167-417**	.47"	.0004"
54"	**167-418**	.47"	.0004"
55"	**167-419**	.47"	.0004"
56"	**167-420**	.47"	.0004"
57"	**167-421**	.47"	.0004"
58"	**167-422**	.47"	.0004"
59"	**167-423**	.47"	.0004"
60"	**167-424**	.47"	.0004"
61"	**167-425**	.47"	.0004"
62"	**167-426**	.47"	.0004"
63"	**167-427**	.47"	.0004"
64"	**167-428**	.47"	.0004"
65"	**167-429**	.47"	.0004"
66"	**167-430**	.47"	.0004"
67"	**167-431**	.47"	.0004"
68"	**167-432**	.47"	.0004"
69"	**167-433**	.47"	.0004"
70"	**167-434**	.47"	.0004"
71"	**167-435**	.47"	.0004"
72"	**167-436**	.47"	.0004"
73"	**167-437**	.47"	.0004"
74"	**167-438**	.47"	.0004"
75"	**167-439**	.47"	.0004"
76"	**167-440**	.47"	.0004"
77"	**167-441**	.47"	.0004"
78"	**167-442**	.47"	.0004"
79"	**167-443**	.47"	.0004"

Micrometer Standards Set

Inch

Order No.	Size	Remarks
167-912*	1"-5"	5 pcs. Set (167-141, 142, 143, 144, 145)
167-913*	1"-11"	11 pcs. Set (167-141, 142, 143, 144,145, 146, 147, 148, 149, 150, 151)

Metric

Order No.	Size	Remarks
167-902*	25-125mm	5 pcs. Set (167-101, 102, 103, 104, 105)
167-903*	25-275mm	11 pcs. Set (167-101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111)

*Supplied with fitted carrying case

Metric

Length (L)	Order No.	Diameter (D)	Accuracy
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
625mm	**167-125**	11.9mm	±13.5µm
650mm	**167-126**	11.9mm	±14µm
675mm	**167-127**	11.9mm	±14.5µm
700mm	**167-128**	11.9mm	±15µm
725mm	**167-129**	11.9mm	±15.5µm
750mm	**167-130**	11.9mm	±16µm
775mm	**167-131**	11.9mm	±16.5µm
800mm	**167-132**	11.9mm	±17µm
825mm	**167-133**	11.9mm	±17.5µm
850mm	**167-134**	11.9mm	±18µm
875mm	**167-135**	11.9mm	±18.5µm
900mm	**167-136**	11.9mm	±19µm
925mm	**167-137**	11.9mm	±19.5µm
950mm	**167-138**	11.9mm	±20µm
975mm	**167-139**	11.9mm	±20.5µm
1000mm	**167-140**	11.9mm	±21µm

Inch

Length (L)	Order No.	Diameter (D)	Accuracy
1"	**167-141**	.25"	±.000005"
2"	**167-142**	.25"	±.0001"
3"	**167-143**	.25"	±.0001"
4"	**167-144**	.31"	±.0001"
5"	**167-145**	.31"	±.00015"
6"	**167-146**	.31"	±.00015"
7"	**167-147**	.31"	±.00015"
8"	**167-148**	.37"	±.00015"
9"	**167-149**	.37"	±.0002"
10"	**167-150**	.37"	±.0002"
11"	**167-151**	.37"	±.0002"
12"	**167-152**	.37"	±.00025"
13"	**167-153**	.37"	±.00025"
14"	**167-154**	.37"	±.00025"
15"	**167-155**	.37"	±.00025"
16"	**167-156**	.37"	±.00025"
17"	**167-157**	.37"	±.00025"
18"	**167-158**	.37"	±.00025"
19"	**167-159**	.37"	±.0003"
20"	**167-160**	.47"	±.0003"
21"	**167-161**	.47"	±.0003"
22"	**167-162**	.47"	±.0003"
23"	**167-163**	.47"	±.0003"
24"	**167-164**	.47"	±.0003"
25"	**167-165**	.47"	±.00035"
26"	**167-166**	.47"	±.00035"
27"	**167-167**	.47"	±.00035"
28"	**167-168**	.47"	±.00035"
29"	**167-169**	.47"	±.00035"
30"	**167-170**	.47"	±.00035"
31"	**167-171**	.47"	±.00035"
32"	**167-172**	.47"	±.00035"
33"	**167-173**	.47"	±.00035"
34"	**167-174**	.47"	±.00035"
35"	**167-175**	.47"	±.00035"
36"	**167-176**	.47"	±.00035"
37"	**167-177**	.47"	±.0004"
38"	**167-178**	.47"	±.0004"
39"	**167-179**	.47"	±.0004"
40"	**167-180**	.47"	±.0004"

Standards for Screw Thread Micrometers

SERIES 167 — 60 degree and 55 degree

FEATURES

- Specially designed for the zero point setting of screw thread micrometers.
- Supplied in fitted carton.

167-264 (60°)

167-262 (60°)

SPECIFICATIONS

Metric

Length	Order No.	Thread angle	Accuracy
25mm	**167-261**	60°	±4μm
	167-272	55°	±4μm
50mm	**167-262**	60°	±5μm
	167-273	55°	±5μm
75mm	**167-263**	60°	±6μm
	167-274	55°	±6μm
100mm	**167-264**	60°	±7μm
	167-275	55°	±7μm
125mm	**167-265**	60°	±8μm
	167-276		±8μm
150mm	**167-266**	60°	±9μm
	167-277		±9μm
175mm	**167-267**	60°	±10μm
	167-278		±10μm
200mm	**167-268**	60°	±11μm
	167-279		±11μm
225mm	**167-269**	60°	±12μm
	167-280		±12μm
250mm	**167-270**	60°	±13μm
	167-281		±13μm
275mm	**167-271**	60°	±14μm
	167-282		±14μm

Inch

Length	Order No.	Thread angle	Accuracy
1"	**167-294**	60°	±.00015"
	167-283	55°	±.00015"
2"	**167-295**	60°	±.0002"
	167-284	55°	±.0002"
3"	**167-296**	60°	±.00025"
	167-285	55°	±.00025"
4"	**167-297**	60°	±.0003"
	167-286	55°	±.0003"
5"	**167-298**	60°	±.00035"
	167-287	55°	±.00035"
6"	**167-299**	60°	±.0004"
	167-288	55°	±.0004"

Technical Data

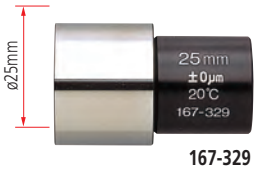
Thread angle: 55° or 60°
Angle Accuracy: ±2°

Standards for V-Anvil Micrometers

SERIES 167

FEATURES

- Specially designed for the zero point setting of V-anvil micrometers.
- Supplied in fitted carton.



167-329

SPECIFICATIONS

Metric

Diameter	Order No.	Type	Accuracy
5mm	**167-327**	Plug	±2μm
10mm	**167-328**	Plug	±2μm
25mm	**167-329**	Plug	±2μm
40mm	**167-330**	Ring	±3μm
55mm	**167-331**	Ring	±3μm
70mm	**167-332**	Ring	±3μm
85mm	**167-333**	Ring	±3μm

Inch

Diameter	Order No.	Type	Accuracy
.2"	**167-337**	Plug	±.0001"
.4"	**167-338**	Plug	±.0001"
1"	**167-339**	Plug	±.0001"
1.6"	**167-340**	Ring	±.00015"
2.2"	**167-341**	Ring	±.00015"
2.8"	**167-342**	Ring	±.00015"
3.4"	**167-343**	Ring	±.00015"

Tool Kits

The Digimatic Tool Kits include Mitutoyo's highly popular 0–1″ / 0–25mm Digimatic Micrometer (choose ratchet or friction type) and 0–6″ / 0–150mm Digimatic Caliper with Absolute Encoder. The case is made of handsome, solid mahogany and has space for gage batteries. The micrometer spanner is a supplied accessory.

Order No. 64PKA068 (Inch Tool Kit)	
Item No.	**Description**
103-135	Outside Micrometer (Friction Thimble Type) (Range: 0–1″, Graduation: .0001″)
505-675	Dial Caliper (Range: 0–6″, Dial Graduation: .001″)
182-204	6″ Full-Flexible Rule (3R)
64PPP932	Mahogany Case

64PKA068

Order No. 64PKA069 (Inch Tool Kit)	
Item No.	**Description**
103-135	Outside Micrometer (Friction Thimble Type) (Range: 0–1″, Graduation: .0001″)
182-202	6″ Full-Flexible Rule (16R)
513-518T	Test Indicator Set (Range: .04″, Graduation: .001″)
505-675	675 Dial Caliper (Range: 0–6″, Dial Graduation: .001″)
050501	Mahogany Case

The very basic measuring instruments recommended for vocational students and machinist apprentices are supplied in this kit.

64PKA069

Order No. 64PKA070 (Inch Tool Kit)	
Item No.	**Description**
101-117	Outside Micrometer (Friction Thimble Type) (Range: 0–1″, Graduation: .0001″)
129-132	Depth Micrometer (with 6 pcs Rods) (Range: 0–6″, Graduation: .001″)
182-202	Full-Flexible Rule (16R)
505-675	Dial Caliper (Range: 0–6″, Graduation: .001″)
050503	Mahogany Case

For operations where depth measurements are a primary concern, this kit is ideal for measuring depths to 6″, in addition to providing the tools for regular precision measurements.

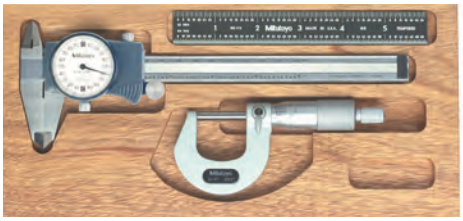
64PKA070

Order No. 64PKA071 (Inch Tool Kit)	
Item No.	**Description**
103-922	Outside Micrometer Set (3 pcs) (Range: 0–3″, Graduation: .0001″)
141-208	Inside Micrometer (with 6 pcs Rods)
180-905U	Combination Set (4R)
182-202	Full-Flexible Rule (16R)
513-518T	Test Indicator Set (Range: .04″, Graduation: .001″)
505-675	Dial Caliper (Range: 0–6″, Dial Graduation: .001″)
2416S	Dial Indicator (Range: 1.0″, Graduation: .001″)
7010S	Magnetic Stand
050504	Mahogany Case

Most every routine inspection assignment can be completed with the eight high-quality MITUTOYO Precision Measuring Instruments provided in this deluxe kit.

64PKA071

Tool Kits



64PKA072

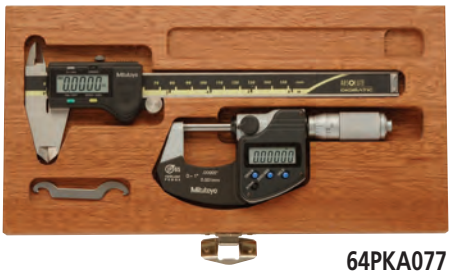
Order No. 64PKA072 (Inch Tool Kit)	
Item No.	**Description**
182-112	6" Black Steel Rule (16R)
103-105	Micrometer (Ratchet Thimble) (Range 0-1", Graduation .001")
505-717	Dial Caliper (Range: 0–6", Dial Graduation: .001")
64PPP932	Mahogany Case

64PKA073

Order No. 64PKA073 (Tool Kit Lite)	
Item No.	**Description**
182-112	6" Black Steel Rule (16R)
700-113-10	0 - 6" / 0 - 150mm MyCal Lite (Resolution: .001" / 0.1mm)
293-831	0 - 1" / 0 - 25.4mm MDC Lite (Ratchet Thimble) (Resolution: .00005" / 0.001mm)
64PPP932	Mahogany Case

64PKA076

Order No. 64PKA076 (Digimatic Tool Kit)	
Item No.	**Description**
293-340	Digimatic Micrometer (Ratchet Stop Type) (Range: 0 - 1" / 0 - 25.4mm, LCD Resolution: .00005" / 0.001mm)
500-196-20	Digimatic Caliper with Absolute Encoder (Range: 0 - 6" / 0 - 150mm, LCD Resolution: .0005" / 0.001mm)
64PPP932	Mahogany Case



64PKA077

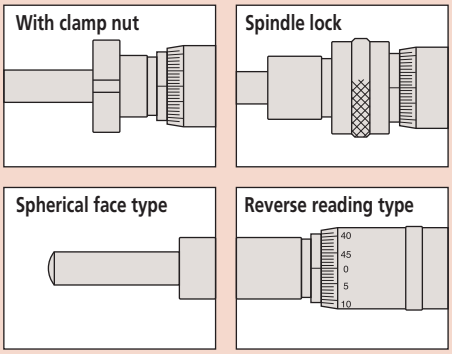
Order No.64PKA077 (Digimatic Tool Kit)	
Item No.	**Description**
293-348	Digimatic Micrometer (Friction Thimble Type) (Range: 0 - 1" / 0 - 25.4mm, LCD Resolution: .00005" / 0.001mm)
500-196-20	Digimatic Caliper with Absolute Encoder (Range: 0 - 6" / 0 - 150mm, LCD Resolution: .0005" / 0.001mm)
64PPP932	Mahogany Case

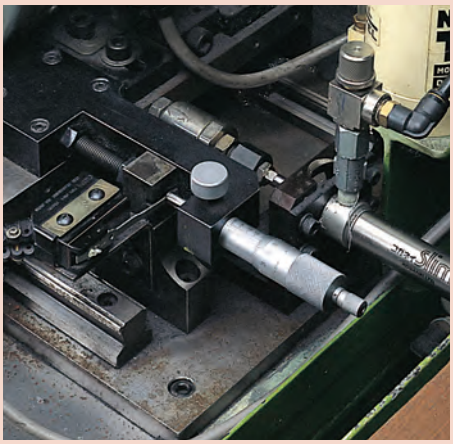
Micrometer Head Selection Guide

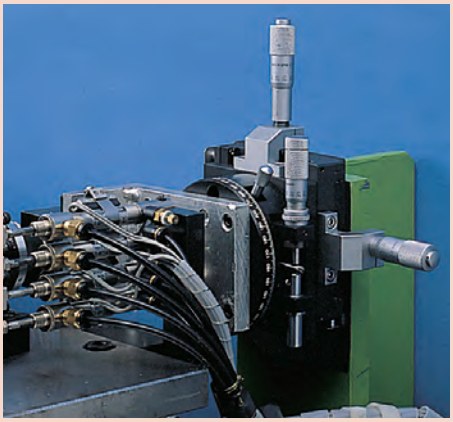
The table below provides an outline of Mitutoyo micrometer heads for each series so you can locate the pages to refer to select the micrometer head most appropriate to your specific application. When selecting consider the following points:

- Dimensions
- Graduation/resolution and accuracy
- With or without spindle lock
- With or without clamping nut
- Normal or reverse reading
- With or without Ratchet Stop

Variety of Specifications







SELECTION TABLE

Range	Series	Remarks	Page
0 - 1mm	110	Differential screw translator (extra-fine feeding) type	B-69
0 - 2.5mm	110	Differential screw translator (extra-fine feeding) type	B-69
0 - 5mm	148	Ultra small type	B-60
0 - 6.5mm	148	Fine spindle feeding of 0.1mm/rev.	B-58
	148	Fine spindle feeding of 0.25mm/rev.	B-59
	148	Small type	B-60
	148	Large thimble diameter for easy reading	B-61
0 - 10mm	152	Fine feeding type	B-68
0 - 13mm	148	Common type in small size	B-62
	148	Spindle feeding of 0.25mm/rev.	B-59
	148	Zero-adjustable thimble type	B-63
	148	Large thimble diameter for easy reading	B-61
	110	Differential screw translator (extra-fine feeding) type	B-69
0 - 15mm	149	with carbide-tipped spindle type	B-64
	153	Non-rotating spindle type	B-67
	152	Quick spindle feeding of 1mm/rev.	B-68
0 - 25mm	164	Digital type	B-72
	350	Compact digital type	B-57
	150	Common type in middle size	B-65
	153	Non-rotating spindle type	B-67
	153	Fine graduation type	B-71
	151	Heavy duty type (ø8mm spindle)	B-66
	152	Quick spindle feeding of 1mm/rev.	B-68
	152	Fine feeding type	B-68
	152	for XY-stage	B-70
	164	High resolution and high accuracy type	B-72
	250	with digit counter type	B-73
0 - 50mm	164	Digital type	B-56
	151	Heavy duty type (ø8mm spindle)	B-66
	152	Quick spindle feeding of 1mm/rev.	B-68
	152	Fine feeding type	B-68
	197	Non-rotating spindle and large thimble	B-71

Digimatic Micrometer Heads

SERIES 164

FEATURES

- The Digimatic Micrometer Heads...
- The display can be rotated up to 330˚ for easy reading in any position.

164-164

SPECIFICATIONS

Metric

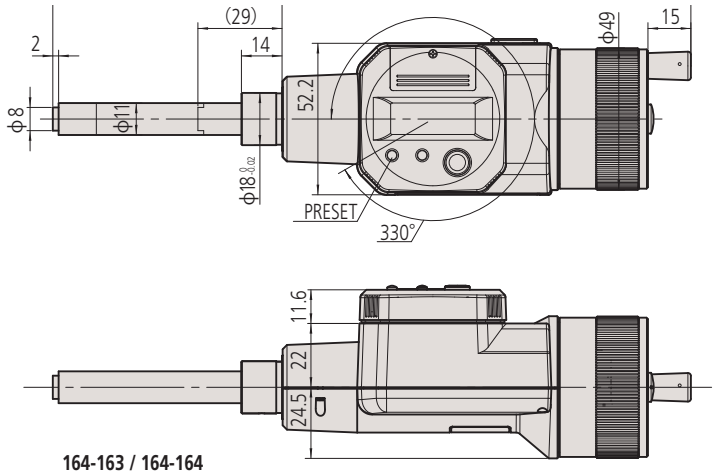
Range	Order No.	Accuracy	Mass (g)
0 - 50mm	**164-163**	±3µm	490

Inch/Metric

Range	Order No.	Accuracy	Mass (g)
0 - 2" / 0 - 50.8mm	**164-164**	±.00015"	490

DIMENSIONS

Unit: mm



164-163 / 164-164

Technical Data

Accuracy: Refer to the list of specifications.

Resolution: 0.001mm or .00005"/0.001mm
Display: LCD
Battery: SR44 (2 pcs.), **938882**
Battery life: 1.8 years:

Function

Zero-setting, Data hold, Data output, Preset, inch/mm conversion (on inch/metric models only)
Alarm: Low voltage, Counting value composition error

Optional Accessories

959149: SPC cable (1m / 40")
959150: SPC cable (2m / 80")

Digimatic Micrometer Heads

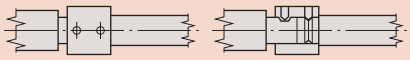
SERIES 350

Measuring force: 5 - 10N

Non-rotating device

350-261-10, 350-361-10

The non-rotating device provides no radial torsion on the workpiece surface so that workpiece wear and deformation are minimized.



Technical Data

Accuracy* ±2µm Metric model
± .0001" Inch / Metric model

Resolution: 0.001mm or .00005"/0.001mm
Display: LCD
Battery: SR44 (1 pc) **938882**
Battery life: Approx. 3 years under normal use
Dust/Water protection level: IP65
350-281-10, 350-282-10, 350-283-10, 350-284-10, 350-261-10
350-381-10, 350-382-10, 350-383-10, 350-384-10, 350-361-10

Function

Preset, inch/mm conversion (on inch/metric models only)
Alarm: Low voltage, Counting value composition error
Function Lock
2 Presets

Optional Accessories

05CZA662: SPC cable with data switch (1m / 40")
05CZA663: SPC cable with data switch (2m / 80")
64PPP035: Stem Bushing (.375" ID/.709" OD)

FEATURES

• The Digimatic Micrometer Heads...

350-251-10

350-281-10

SPECIFICATIONS

Metric

Range	Order No.	Stem	Spindle face	Stem dia.	Remarks
0 - 25mm	**350-251-10**	Plain	Flat (carbide tip)	10mm	
0 - 25mm	**350-252-10**	w/ clamp nut	Flat (carbide tip)	10mm	
0 - 25mm	**350-253-10**	Plain	Spherical (SR4)	10mm	
0 - 25mm	**350-254-10**	w/ clamp nut	Spherical (SR4)	10mm	
0 - 25mm	**350-281-10**	Plain	Flat (carbide tip)	12mm	IP65
0 - 25mm	**350-282-10**	w/ clamp nut	Flat (carbide tip)	12mm	IP65
0 - 25mm	**350-283-10**	Plain	Spherical (SR4)	12mm	IP65
0 - 25mm	**350-284-10**	w/ clamp nut	Spherical (SR4)	12mm	IP65
0 - 25mm	**350-261-10***	Plain	Flat	12mm	IP65

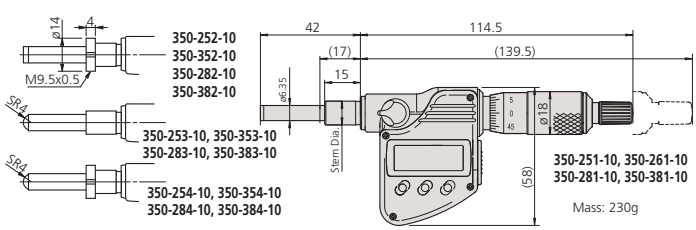
*with non-rotating device and 18mm stem bushing.

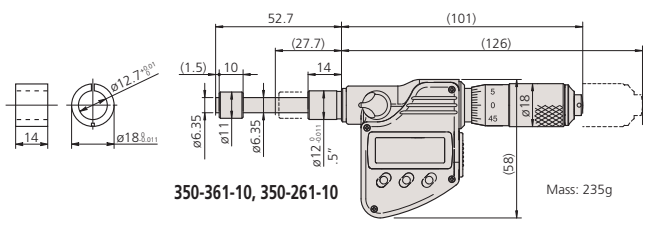
Inch/Metric

Range	Order No.	Stem	Spindle face	Stem dia.	Remarks
0 - 1" / 0 -25.4mm	**350-351-10**	Plain	Flat (carbide tip)	.375"	
0 - 1" / 0 -25.4mm	**350-352-10**	w/ clamp nut	Flat (carbide tip)	.375"	
0 - 1" / 0 -25.4mm	**350-353-10**	Plain	Spherical (SR4)	.375"	
0 - 1" / 0 -25.4mm	**350-354-10**	w/ clamp nut	Spherical (SR4)	.375"	
0 - 1" / 0 -25.4mm	**350-381-10**	Plain	Flat (carbide tip)	.5"	IP65
0 - 1" / 0 -25.4mm	**350-382-10**	w/ clamp nut	Flat (carbide tip)	.5"	IP65
0 - 1" / 0 -25.4mm	**350-383-10**	Plain	Spherical (SR4)	.5"	IP65
0 - 1" / 0 -25.4mm	**350-384-10**	w/ clamp nut	Spherical (SR4)	.5"	IP65
0 - 1" / 0 -25.4mm	**350-361-10***	Plain	Flat	.5"	IP65

*with non-rotating device and 18mm stem bushing.

DIMENSIONS AND MASS





Micrometer Heads

SERIES 148 — Fine Spindle Feeding of 0.1mm/rev

FEATURES

- Fine spindle feeding of just 0.1mm/rev for extra-fine adjustment and positioning.
- External dimensions are compatible with conventional 0.5mm pitch heads.

148-143

148-342

148-243

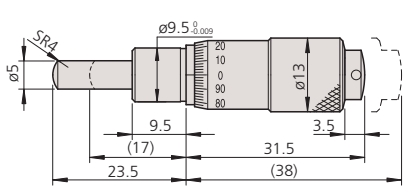
SPECIFICATIONS

Metric

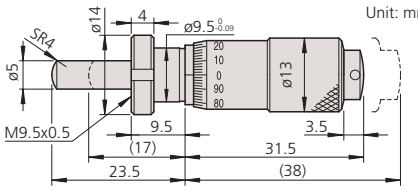
Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 6.5mm	**148-142**	±2µm	9.5mm	Plain	Spherical (SR4)	—
0 - 6.5mm	**148-143**	±2µm	9.5mm	w/clamp nut	Spherical (SR4)	—
0 - 6.5mm	**148-342**	±2µm	9.5mm	Plain	Spherical (SR4)	Thicker & shorter thimble
0 - 6.5mm	**148-343**	±2µm	9.5mm	w/clamp nut	Spherical (SR4)	Thicker & shorter thimble
0 - 6.5mm	**148-242**	±5µm	6mm	Plain	Spherical (SR3)	Small thimble diameter
0 - 6.5mm	**148-243**	±5µm	6mm	w/clamp nut	Spherical (SR3)	Small thimble diameter

DIMENSIONS AND MASS

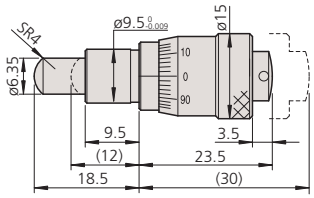
Unit: mm



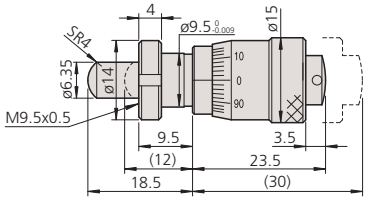
148-142 Mass: 31g



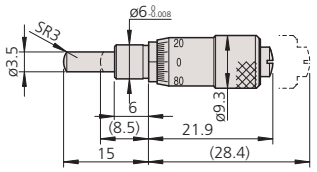
148-143 Mass: 34g



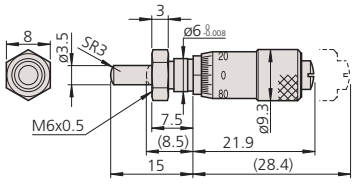
148-342 Mass: 29g



148-343 Mass: 31g



148-242 Mass: 10g



148-243 Mass: 10g

( ): when retracting the spindle until its stroke end.

Technical Data

Graduations: 0.002mm
Spindle pitch: 0.1mm
Spindle face: Spherical of SKS3 (more than HRC60), lapped surface
Scale surface: Hard-chrome plating
Fixture thickness for clamp nut: 6mm (**148-243**: 4mm)

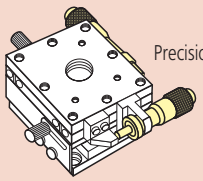
Spindle pitch

Screw Thread pitch= 0.1mm

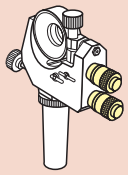
Screw Thread pitch= 0.5mm

Applications

Semiconductor wafer positioning machinery and optical component alignment units, etc.

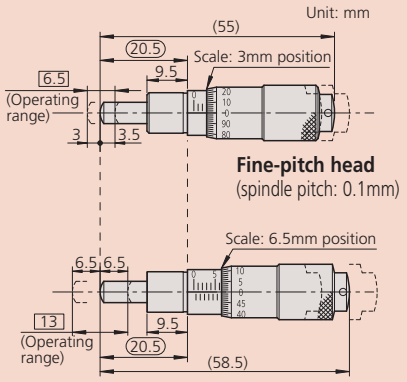


Precision X-Y table positioning



Precision adjustment of mirror in holder

Comparison of mounting dimensions between a standard fine-pitch head and a standard conventional pitch head at the mid-range travel position



While the fine-pitch micrometer head has a measuring range of 6.5mm, the conventional head has a larger range of 13mm. When replacing a conventional head, the fine-pitch type can use the common range in the middle of the spindle travel. The standard and compact types of fine-pitch head are completely interchangeable.

Micrometer Heads

SERIES 148 — Fine Spindle Feeding of 0.25 mm / rev

Technical Data

Graduations: 0.01mm
Spindle pitch: 0.25mm
Spindle face: Spherical of SKS3 (more than HRC60), lapped surface
Scale surface: Hard-chrome plating
Fixture thickness for clamp nut: 6mm

FEATURES

- Fine spindle feeding of just 0.25mm/rev for fine adjustment and positioning.

148-132

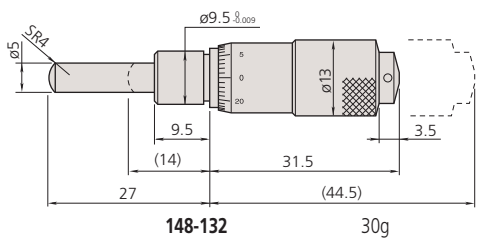
SPECIFICATIONS

Metric

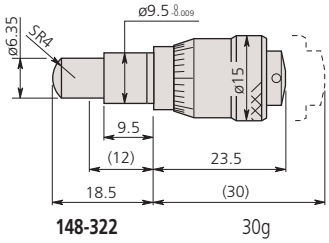
Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face
0 - 13mm	**148-132**	2mm	9.5mm	Plain	Spherical (SR4)
0 - 13mm	**148-133**	2mm	9.5mm	w/clamp nut	Spherical (SR4)
0 - 6.5mm	**148-322**	2mm	9.5mm	Plain	Spherical (SR4)
0 - 6.5mm	**148-323**	2mm	9.5mm	w/ clamp nut	Spherical (SR4)

DIMENSIONS AND MASS

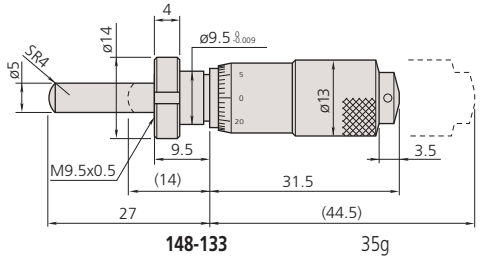
Unit: mm



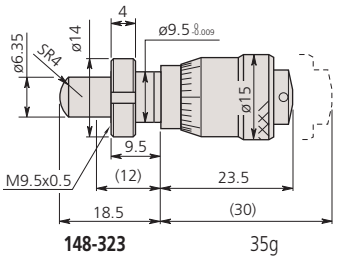
148-132 30g



148-322 30g



148-133 35g



148-323 35g

( ): when retracting the spindle until its stroke end.

Micrometer Heads

SERIES 148 — Ultra-Small/Small Type

FEATURES

- Miniature micrometer heads for ease of incorporating into machines.

148-215 148-201 148-203

Technical Data

Graduations: 0.02mm (**148-215**, **148-216**), 0.01mm or .001"
Spindle pitch: 0.5mm
Spindle face: Flat or spherical of SKS3 (more than HRC60), lapped surface
Scale surface: Hard-chrome plating
Fixture thickness for clamp nut: 3mm (**148-216**, **148-218**), 4mm

Shown actual size

SPECIFICATIONS

Metric

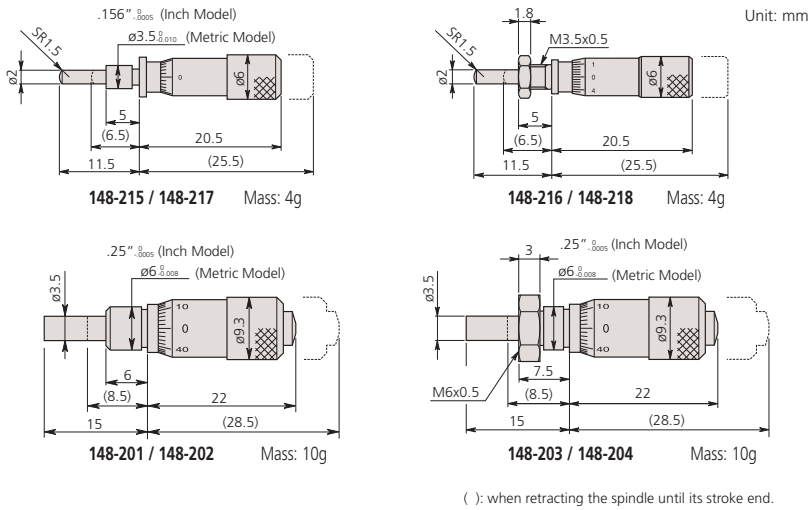
Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 5mm	**148-215**	±5µm	3.5mm	Plain	Spherical (SR1.5)	—
0 - 5mm	**148-216**	±5µm	3.5mm	w/clamp nut	Spherical (SR1.5)	—
0 - 6.5mm	**148-201**	±5µm	6mm	Plain	Flat	—
0 - 6.5mm	**148-203**	±5µm	6mm	w/clamp nut	Flat	—
0 - 6.5mm	**148-205**	±5µm	6mm	Plain	Spherical (SR3)	—
0 - 6.5mm	**148-207**	±5µm	6mm	w/clamp nut	Spherical (SR3)	—
6.5 - 0 mm	**148-209**	±5µm	6mm	Plain	Flat	Reverse reading
6.5 - 0 mm	**148-211**	±5µm	6mm	w/ clamp nut	Flat	Reverse reading

Inch

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - .2"	**148-217**	±5µm	.156"	Plain	Spherical (SR1.5)	—
0 - .2"	**148-218**	±5µm	.156"	w/clamp nut	Spherical (SR1.5)	—
0 -.25"	**148-202**	±5µm	.25"	Plain	Flat	—
0 -.25"	**148-204**	±5µm	.25"	w/clamp nut	Flat	—
0 -.25"	**148-206**	±5µm	.25"	Plain	Spherical (SR3)	—
0 -.25"	**148-208**	±5µm	.25"	w/clamp nut	Spherical (SR3)	—
.25 - 0"	**148-210**	±5µm	.25"	Plain	Flat	Reverse reading
.25 - 0"	**148-212**	±5µm	.25"	w/ clamp nut	Flat	Reverse reading

DIMENSIONS AND MASS

Unit: mm



( ): when retracting the spindle until its stroke end.

Micrometer Heads

SERIES 148 — Large Thimble Diameter for Easy Reading

148-301

148-303

148-305

Technical Data

Graduations: 0.01mm or .001″
Spindle pitch: 0.5mm or .025″
Spindle face: Flat of SKS3 (more than HRC60), lapped surface
Scale surface: Hard-chrome plating
Fixture thickness for clamp nut: 6mm

FEATURES

- Easy reading due to the large thimble diameter. (Three types of thimble diameters can be selected.)

SPECIFICATIONS

Metric

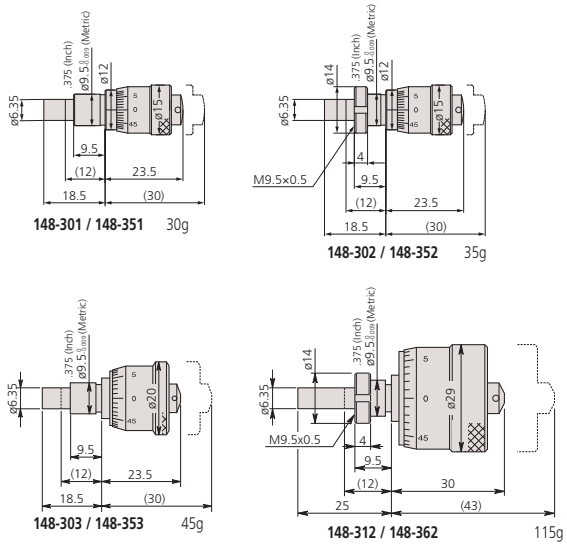
Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Thimble Dia.
0 - 6.5mm	**148-301**	±2µm	9.5mm	Plain	Flat	15mm
0 - 6.5mm	**148-302**	±2µm	9.5mm	w/clamp nut	Flat	15mm
0 - 6.5mm	**148-303**	±2µm	9.5mm	Plain	Flat	20mm
0 - 6.5mm	**148-304**	±2µm	9.5mm	w/clamp nut	Flat	20mm
0 - 6.5mm	**148-305**	±2µm	9.5mm	Plain	Flat	29mm
0 - 6.5mm	**148-306**	±2µm	9.5mm	w/clamp nut	Flat	29mm
0 - 13mm	**148-307**	±2µm	9.5mm	Plain	Flat	15mm
0 - 13mm	**148-308**	±2µm	9.5mm	w/clamp nut	Flat	15mm
0 - 13mm	**148-309**	±2µm	9.5mm	Plain	Flat	20mm
0 - 13mm	**148-310**	±2µm	9.5mm	w/clamp nut	Flat	20mm
0 - 13mm	**148-311**	±2µm	9.5mm	Plain	Flat	29mm
0 - 13mm	**148-312**	±2µm	9.5mm	w/ clamp nut	Flat	29mm

Inch

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Thimble Dia.
0 - .25"	**148-351**	±.0001"	.375"	Plain	Flat	.59"
0 - .25"	**148-352**	±.0001"	.375"	w/clamp nut	Flat	.59"
0 - .25"	**148-353**	±.0001"	.375"	Plain	Flat	.79"
0 - .25"	**148-354**	±.0001"	.375"	w/clamp nut	Flat	.79"
0 - .25"	**148-355**	±.0001"	.375"	Plain	Flat	1.14"
0 - .25"	**148-356**	±.0001"	.375"	w/clamp nut	Flat	1.14"
0 - .5"	**148-357**	±.0001"	.375"	Plain	Flat	.59"
0 - .5"	**148-358**	±.0001"	.375"	w/clamp nut	Flat	.59"
0 - .5"	**148-359**	±.0001"	.375"	Plain	Flat	.79"
0 - .5"	**148-360**	±.0001"	.375"	w/clamp nut	Flat	.79"
0 - .5"	**148-361**	±.0001"	.375"	Plain	Flat	1.14"
0 - .5"	**148-362**	±.0001"	.375"	w/ clamp nut	Flat	1.14"

DIMENSIONS AND MASS

Unit: mm



148-301 / 148-351 30g

148-302 / 148-352 35g

148-303 / 148-353 45g

148-312 / 148-362 115g

( ): when retracting the spindle until its stroke end.

Micrometer Heads

SERIES 148 — Common Type in Small Size

SPECIFICATIONS

Metric

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 13mm	**148-104**	±2µm	9.5mm	Plain	Flat	—
0 - 13mm	**148-103**	±2µm	9.5mm	w/clamp nut	Flat	—
0 - 13mm	**148-121**	±2µm	9.5mm	Plain*	Flat	—
0 - 13mm	**148-120**	±2µm	9.5mm	w/clamp nut*	Flat	—
0 - 13mm	**148-801**	±2µm	9.5mm	Plain	Spherical (SR4)	—
0 - 13mm	**148-802**	±2µm	9.5mm	w/clamp nut	Spherical (SR4)	—
0 - 13mm	**148-803**	±2µm	9.5mm	Plain*	Spherical (SR4)	—
0 - 13mm	**148-804**	±2µm	9.5mm	w/clamp nut*	Spherical (SR4)	—
13mm - 0	**148-821**	±2µm	9.5mm	Plain	Flat	Reverse reading
13mm - 0	**148-822**	±2µm	9.5mm	w/clamp nut	Flat	Reverse reading
13mm - 0	**148-823**	±2µm	9.5mm	Plain*	Flat	Reverse reading
13mm - 0	**148-824**	±2µm	9.5mm	w/ clamp nut*	Flat	Reverse reading

*with spindle lock

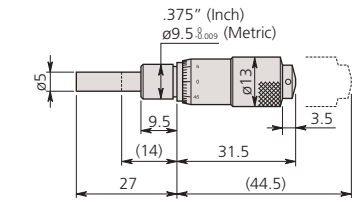
Inch

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - .5"	**148-112**	±.0001"	.375"	Plain	Flat	—
0 - .5"	**148-111**	±.0001"	.375"	w/clamp nut	Flat	—
0 - .5"	**148-123**	±.0001"	.375"	Plain*	Flat	—
0 - .5"	**148-122**	±.0001"	.375"	w/clamp nut*	Flat	—
0 - .5"	**148-811**	±.0001"	.375"	Plain	Spherical (SR4)	—
0 - .5"	**148-812**	±.0001"	.375"	w/clamp nut	Spherical (SR4)	—
0 - .5"	**148-813**	±.0001"	.375"	Plain*	Spherical (SR4)	—
0 - .5"	**148-814**	±.0001"	.375"	w/clamp nut*	Spherical (SR4)	—
.5" - 0	**148-831**	±.0001"	.375"	Plain	Flat	Reverse reading
.5" - 0	**148-832**	±.0001"	.375"	w/clamp nut	Flat	Reverse reading
.5" - 0	**148-833**	±.0001"	.375"	Plain*	Flat	Reverse reading
.5" - 0	**148-834**	±.0001"	.375"	w/ clamp nut*	Flat	Reverse reading

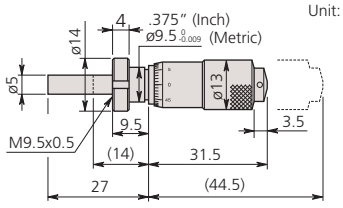
*with spindle lock

DIMENSIONS AND MASS

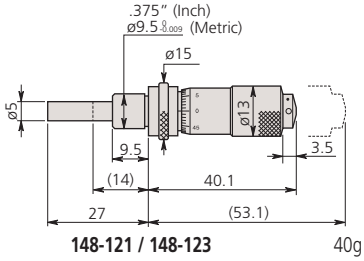
Unit: mm



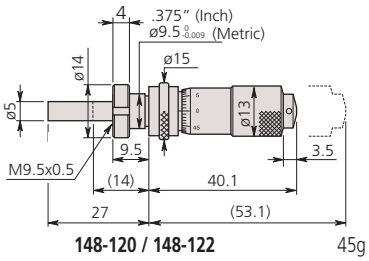
148-104 / 148-112 30g



148-103 / 148-111 35g



148-121 / 148-123 40g



148-120 / 148-122 45g

( ): when retracting the spindle until its stroke end.

Technical Data

Graduations: 0.01mm or .001"
Spindle pitch: 0.5mm
Spindle face: Flat or spherical of SKS3 (more than HR60), lapped surface
Scale surface: Hard-chrome plating
Fixture thickness for clamp nut: 6mm

Micrometer Heads

SERIES 148 — Common Type in Small Size with Zero-Adjustable Thimble

148-503

148-504

FEATURES

- The thimble can be set to zero at any position by loosening the setscrew

SPECIFICATIONS

Metric

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 13mm	**148-503**	±2µm	9.5mm	Plain	Flat	—
0 - 13mm	**148-513**	±2µm	9.5mm	Plain	Flat	Stainless steel throughout
0 - 13mm	**148-508**	±2µm	9.5mm	w/clamp nut	Flat	—
0 - 13mm	**148-506**	±2µm	9.5mm	Plain*	Flat	—
0 - 13mm	**148-504**	±2µm	9.5mm	w/clamp nut*	Flat	—
0 - 13mm	**148-853**	±2µm	9.5mm	Plain	Spherical (SR4)	—
0 - 13mm	**148-854**	±2µm	9.5mm	w/clamp nut*	Spherical (SR4)	—
13mm - 0	**148-863**	±2µm	9.5mm	Plain	Flat	Reverse reading
13mm - 0	**148-864**	±2µm	9.5mm	w/ clamp nut*	Flat	Reverse reading

*with spindle lock

Inch

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - .5"	**148-501**	±.0001"	.375"	Plain	Flat	—
0 - .5"	**148-511**	±.0001"	.375"	Plain	Flat	Stainless steel throughout
0 - .5"	**148-507**	±.0001"	.375"	w/clamp nut	Flat	—
0 - .5"	**148-505**	±.0001"	.375"	Plain*	Flat	—
0 - .5"	**148-502**	±.0001"	.375"	w/clamp nut*	Flat	—
0 - .5"	**148-851**	±.0001"	.375"	Plain	Spherical (SR4)	—
0 - .5"	**148-852**	±.0001"	.375"	w/clamp nut*	Spherical (SR4)	—
.5"- 0	**148-861**	±.0001"	.375"	Plain	Flat	Reverse reading
.5"- 0	**148-862**	±.0001"	.375"	w/ clamp nut*	Flat	Reverse reading

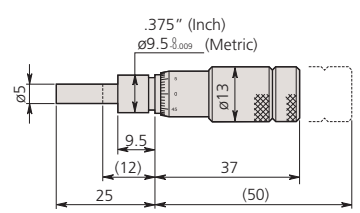
*with spindle lock

Technical Data

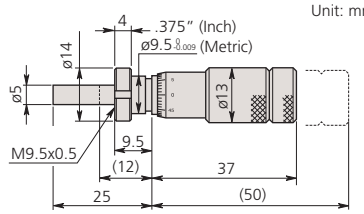
Graduations: 0.01mm or .001"
Spindle pitch: 0.5mm
Spindle face: Flat or spherical of SKS3 (more than HRC60), lapped surface
Scale surface: Hard-chrome plating
Fixture thickness for clamp nut: 6mm

DIMENSIONS AND MASS

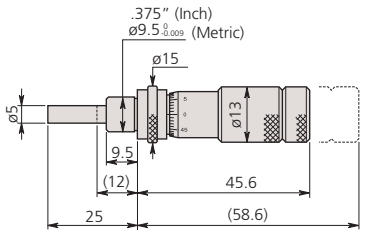
Unit: mm



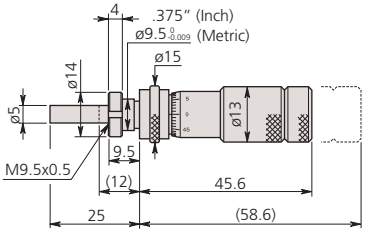
148-503 / 148-501 35g



148-508 / 148-507 40g



148-506 / 148-505 35g



148-504 / 148-502 40g

( ): when retracting the spindle until its stroke end.

Micrometer Heads

SERIES 149 — Common Type in Small Size with Carbide-Tipped Spindle

FEATURES

• Carbide tipped measuring face.

149-132

149-184

SPECIFICATIONS

Metric

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 15mm	**149-132**	±2µm	9.5mm	Plain	Flat (carbide tip)	—
0 - 15mm	**149-131**	±2µm	9.5mm	w/clamp nut	Flat (carbide tip)	—
0 - 15mm	**149-183**	±2µm	9.5mm	Plain*	Flat (carbide tip)	With spindle lock
0 - 15mm	**149-184**	±2µm	9.5mm	w/clamp nut*	Flat (carbide tip)	With spindle lock
0 - 15mm	**149-801**	±2µm	9.5mm	Plain	Spherical (SR4)	—
0 - 15mm	**149-802**	±2µm	9.5mm	w/clamp nut	Spherical (SR4)	—
15mm - 0	**149-821**	±2µm	9.5mm	Plain	Flat (carbide tip)	Reverse reading
15mm - 0	**149-822**	±2µm	9.5mm	w/ clamp nut	Flat (carbide tip)	Reverse reading

*with spindle lock.

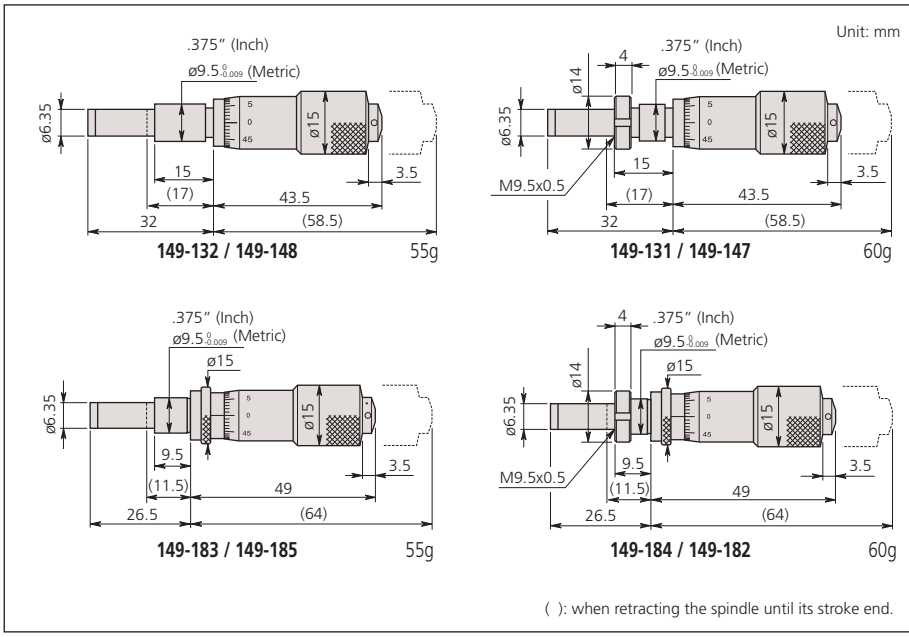
Inch

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - .5"	**149-148**	±.0001"	.375"	Plain	Flat (carbide tip)	—
0 - .5"	**149-147**	±.0001"	.375"	w/clamp nut	Flat (carbide tip)	—
0 - .5"	**149-185**	±.0001"	.375"	Plain*	Flat (carbide tip)	With spindle lock
0 - .5"	**149-182**	±.0001"	.375"	w/clamp nut*	Flat (carbide tip)	With spindle lock
0 - .5"	**149-811**	±.0001"	.375"	Plain	Spherical (SR4)	—
0 - .5"	**149-812**	±.0001"	.375"	w/clamp nut	Spherical (SR4)	—
.5" - 0	**149-831**	±.0001"	.375"	Plain	Flat (carbide tip)	Reverse reading
.5" - 0	**149-832**	±.0001"	.375"	w/ clamp nut	Flat (carbide tip)	Reverse reading

*with spindle lock.

DIMENSIONS AND MASS

Unit: mm



( ): when retracting the spindle until its stroke end.

Technical Data

Graduations: 0.01mm or .001"
Spindle pitch: 0.5mm
Spindle face: Flat with carbide tip (more than HRA90) or spherical, lapped surface
Scale surface: Hard-chrome plating
Fixture thickness for clamp nut: 6mm
(**149-131**, **149-147**: 11.5mm)

Micrometer Heads

SERIES 150 — Common Type in Middle Size

FEATURES

- Ratchet stop for constant force.
- Long spindle type is available for a variety of applications.
- Carbide tipped measuring face.

SPECIFICATIONS

Metric

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 25mm	**150-192**	±2µm	10mm	Plain	Flat (carbide tip)	—
0 - 25mm	**150-191**	±2µm	10mm	w/clamp nut	Flat (carbide tip)	—
0 - 25mm	**150-209**	±2µm	10mm	Plain*	Flat (carbide tip)	—
0 - 25mm	**150-210**	±2µm	10mm	w/clamp nut*	Flat (carbide tip)	—
0 - 25mm	**150-801**	±2µm	10mm	Plain	Spherical (SR4)	—
0 - 25mm	**150-802**	±2µm	10mm	w/clamp nut	Spherical (SR4)	—
0 - 25mm	**150-821**	±2µm	10mm	Plain	Flat (carbide tip)	Reverse reading
0 - 25mm	**150-822**	±2µm	10mm	w/clamp nut	Flat (carbide tip)	Reverse reading
0 - 25mm	**150-190**	±2µm	10mm	Plain	Flat (carbide tip)	w/ vernier (0.001mm)
0 - 25mm	**150-189**	±2µm	10mm	w/clamp nut	Flat (carbide tip)	w/ vernier (0.001mm)
0 - 25mm	**150-196**	±2µm	10mm	Plain*	Flat (carbide tip)	w/ vernier (.0001mm)
0 - 25mm	**150-195**	±2µm	10mm	w/clamp nut*	Flat (carbide tip)	w/ vernier (.0001mm)
0 - 25mm	**150-211**	±2µm	10mm	Plain*	Flat (carbide tip)	w/o ratchet stop
0 - 25mm	**150-212**	±2µm	10mm	w/clamp nut*	Flat (carbide tip)	w/o ratchet stop
0 - 25mm	**150-219**	±2µm	10mm	Plain	Flat	Long spindle
0 - 25mm	**150-220**	±2µm	10mm	w/ clamp nut	Flat	Long spindle

*with spindle lock

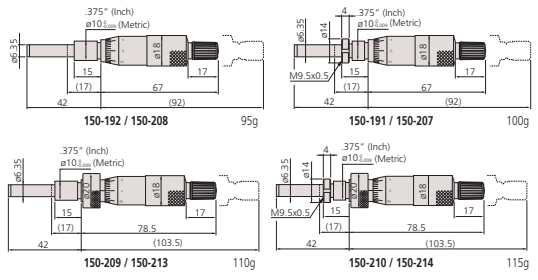
Inch

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 1"	**150-208**	±.0001"	.375"	Plain	Flat (carbide tip)	—
0 - 1"	**150-198**	±.0001"	.375"	Plain	Flat (carbide tip)	w/o ratchet stop
0 - 1"	**150-207**	±.0001"	.375"	w/clamp nut	Flat (carbide tip)	—
0 - 1"	**150-197**	±.0001"	.375"	w/clamp nut	Flat (carbide tip)	w/o ratchet stop
0 - 1"	**150-213**	±.0001"	.375"	Plain*	Flat (carbide tip)	—
0 - 1"	**150-214**	±.0001"	.375"	w/clamp nut*	Flat (carbide tip)	—
0 - 1"	**150-811**	±.0001"	.375"	Plain	Spherical (SR4)	—
0 - 1"	**150-812**	±.0001"	.375"	w/clamp nut	Spherical (SR4)	—
0 - 1"	**150-831**	±.0001"	.375"	Plain	Flat (carbide tip)	Reverse reading
0 - 1"	**150-832**	±.0001"	.375"	w/clamp nut	Flat (carbide tip)	Reverse reading
0 - 1"	**150-206**	±.0001"	.375"	Plain	Flat (carbide tip)	w/ vernier (.0001")
0 - 1"	**150-205**	±.0001"	.375"	w/clamp nut	Flat (carbide tip)	w/ vernier (.0001")
0 - 1"	**150-215**	±.0001"	.375"	Plain*	Flat (carbide tip)	w/ vernier (.0001")
0 - 1"	**150-216**	±.0001"	.375"	w/clamp nut*	Flat (carbide tip)	w/ vernier (.0001")
0 - 1"	**150-217**	±.0001"	.375"	Plain*	Flat (carbide tip)	w/o ratchet stop
0 - 1"	**150-218**	±.0001"	.375"	w/clamp nut*	Flat (carbide tip)	w/o ratchet stop
0 - 1"	**150-221**	±.0001"	.375"	Plain	Flat	Long spindle
0 - 1"	**150-222**	±.0001"	.375"	w/ clamp nut	Flat	Long spindle

*with spindle lock

DIMENSIONS AND MASS

Unit: mm



( ): when retracting the spindle until its stroke end.

Technical Data

Graduations: 0.01mm, 0.001mm, .001" or .0001"
Spindle pitch: 0.5mm
Spindle face: Flat with carbide tip* (more than HRA90) or spherical, lapped surface
*Long spindle type: SKS3 (more than HRC60)
Scale surface: Hard-chrome plating
Fixture thickness for clamp nut: 11.5mm

Micrometer Heads

SERIES 151 — Common Type in Middle Size with 8mm Diameter Spindle

FEATURES

- 8mm diameter spindle for heavy duty use.
- Ratchet stop for constant force.
- Carbide tipped measuring face.

SPECIFICATIONS

Metric

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 25mm	**151-224**	±2µm	12mm	Plain	Flat (carbide tip)	—
0 - 25mm	**151-223**	±2µm	12mm	w/clamp nut	Flat (carbide tip)	—
0 - 25mm	**151-214**	±2µm	12mm	Plain*	Flat (carbide tip)	—
0 - 25mm	**151-213**	±2µm	12mm	w/clamp nut*	Flat (carbide tip)	—
0 - 25mm	**151-222**	±2µm	12mm	Plain	Flat (carbide tip)	w/ vernier (0.001mm)
0 - 25mm	**151-221**	±2µm	12mm	w/clamp nut	Flat (carbide tip)	w/ vernier (0.001mm)
0 - 25mm	**151-212**	±2µm	12mm	Plain*	Flat (carbide tip)	w/ vernier (0.001mm)
0 - 25mm	**151-211**	±2µm	12mm	w/clamp nut*	Flat (carbide tip)	w/ vernier (0.001mm)
0 - 25mm	**151-227**	±2µm	12mm	Plain	Flat (carbide tip)	w/o ratchet stop
0 - 25mm	**151-228**	±2µm	12mm	w/clamp nut	Flat (carbide tip)	w/o ratchet stop
0 - 25mm	**151-225**	±2µm	12mm	Plain*	Flat (carbide tip)	w/o ratchet stop
0 - 25mm	**151-226**	±2µm	12mm	w/clamp nut*	Flat (carbide tip)	w/o ratchet stop
0 - 50mm	**151-256**	±4µm	12mm	Plain	Flat (carbide tip)	—
0 - 50mm	**151-255**	±4µm	12mm	w/clamp nut	Flat (carbide tip)	—
0 - 50mm	**151-260**	±4µm	12mm	Plain	Flat (carbide tip)	w/o ratchet stop
0 - 50mm	**151-259**	±4µm	12mm	w/ clamp nut	Flat (carbide tip)	w/o ratchet stop

*with spindle lock

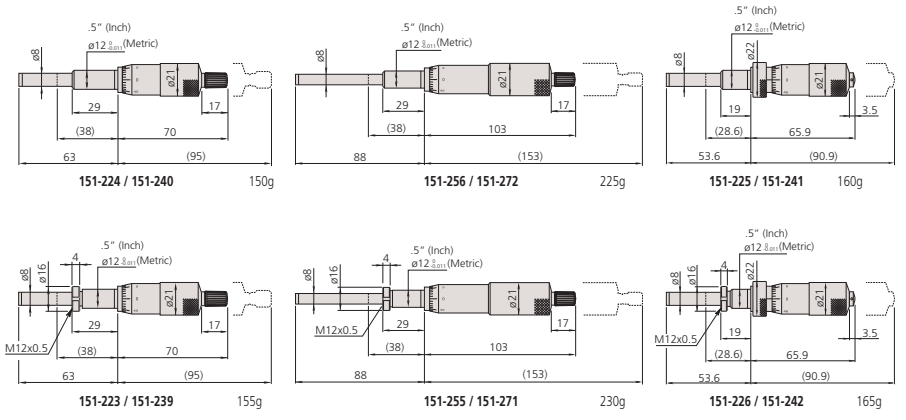
Inch

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 1"	**151-240**	±.0001"	.5"	Plain	Flat (carbide tip)	—
0 - 1"	**151-239**	±.0001"	.5"	w/clamp nut	Flat (carbide tip)	—
0 - 1"	**151-238**	±.0001"	.5"	Plain	Flat (carbide tip)	w/ vernier (.0001")
0 - 1"	**151-237**	±.0001"	.5"	w/clamp nut	Flat (carbide tip)	w/ vernier (.0001")
0 - 1"	**151-243****	±.0001"	.5"	Plain*	Flat (carbide tip)	w/ vernier (.0001")
0 - 1"	**151-244****	±.0001"	.5"	w/clamp nut*	Flat (carbide tip)	w/ vernier (.0001")
0 - 1"	**151-241**	±.0001"	.5"	Plain*	Flat (carbide tip)	w/o ratchet stop
0 - 1"	**151-242**	±.0001"	.5"	w/clamp nut*	Flat (carbide tip)	w/o ratchet stop
0 - 2"	**151-272**	±.0002"	.5"	Plain	Flat (carbide tip)	—
0 - 2"	**151-271**	±.0002"	.5"	w/clamp nut	Flat (carbide tip)	—

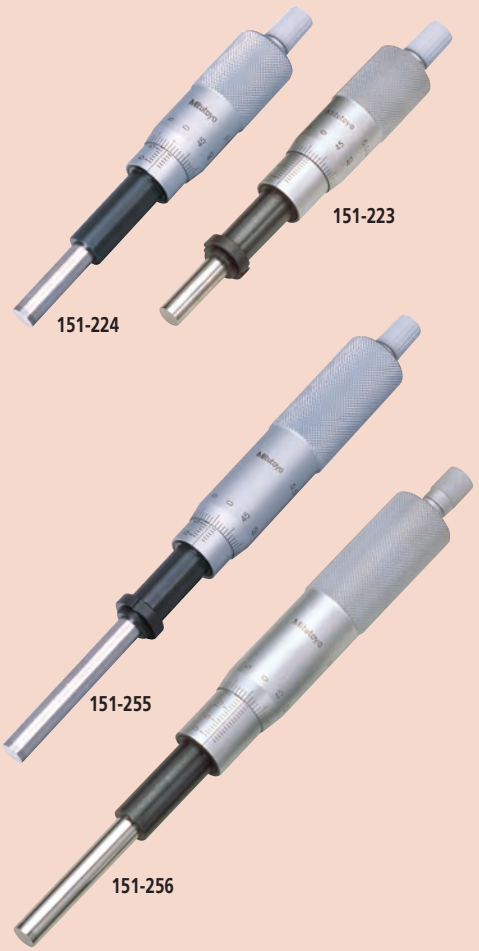
*with spindle lock **with ratchet stop

DIMENSIONS AND MASS

Unit: mm



( ): when retracting the spindle until its stroke end.



Technical Data

Graduations: 0.01mm, 0.001mm, .001" or .0001"
Spindle pitch: 0.5mm
Spindle face: Flat with carbide tip (more than HRA90), lapped surface
Scale surface: Hard-chrome plating
Fixture thickness for clamp nut: 25.5mm

Micrometer Heads

SERIES 153 — Non-Rotating Spindle Type

FEATURES

- Carbide tipped measuring face.
- Non-rotating spindle.

SPECIFICATIONS

Metric

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 15mm	**153-101**	±3µm	9.5mm	Plain	Flat (carbide tip)	w/ vernier (0.001mm)
0 - 25mm	**153-201***	±3µm	12mm	Plain	Flat (carbide tip)	—
0 - 25mm	**153-202***	±3µm	12mm	Plain	Flat (carbide tip)	w/ vernier (0.001mm)
0 - 25mm	**153-203**	±3µm	12mm	Plain	Flat (carbide tip)	—
0 - 25mm	**153-204**	±3µm	12mm	Plain	Flat (carbide tip)	w/ vernier (0.001mm)

*with ratchet stop

Inch

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - .5"	**153-108**	±.00015"	.375"	Plain	Flat (carbide tip)	w/ vernier (.0001")
0 - 1"	**153-205***	±.00015"	.5"	Plain	Flat (carbide tip)	—
0 - 1"	**153-206***	±.00015"	.5"	Plain	Flat (carbide tip)	w/ vernier (.0001")
0 - 1"	**153-207**	±.00015"	.5"	Plain	Flat (carbide tip)	—
0 - 1"	**153-208**	±.00015"	.5"	Plain	Flat (carbide tip)	w/ vernier (.0001")

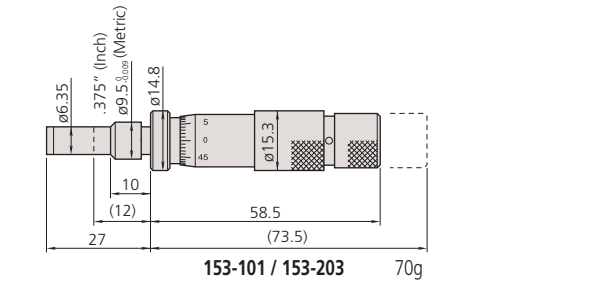
*with ratchet stop

Technical Data

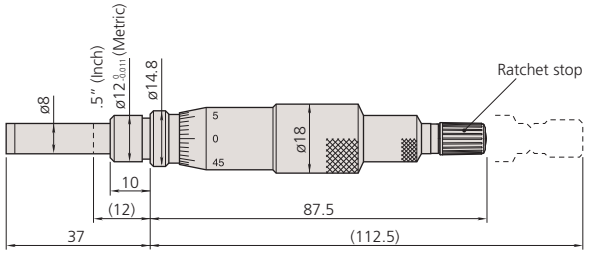
Graduations: 0.01mm, 0.001mm, .001" or .0001"
Spindle pitch: 0.5mm
Spindle face: Flat with carbide tip (more than HRA90), lapped surface
Scale surface: Hard-chrome plating

DIMENSIONS AND MASS

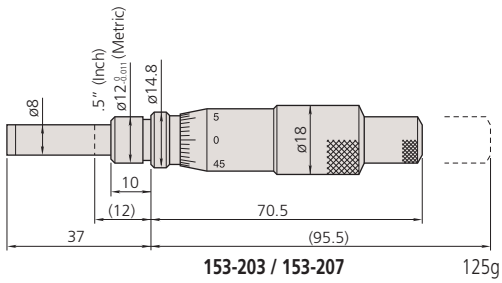
Unit: mm



153-101 / 153-203 70g



153-201 / 153-205 125g



153-203 / 153-207 125g

( ): when retracting the spindle until its stroke end.

Micrometer Heads

SERIES 152 — Quick Spindle Feeding of 1mm/rev.

FEATURES

- Quick spindle feeding of 1mm/rev.
- Carbide tipped measuring face.

152-102

Technical Data

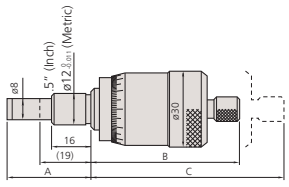
Graduations: 0.01mm
Spindle pitch: 1mm
Spindle face: Flat with carbide tip (more than HRA90), lapped surface
Scale surface: Hard-chrome plating

SPECIFICATIONS

Metric

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 15mm	**152-101**	±2µm	12mm	Plain	Flat (carbide tip)	—
0 - 25mm	**152-102**	±2µm	12mm	Plain	Flat (carbide tip)	—
0 - 50mm	**152-103**	±4µm	12mm	Plain	Flat (carbide tip)	—

DIMENSIONS AND MASS



152-101

( ): when retracting the spindle until its stroke end.

Unit: mm

Range	A	B	C	Mass (g)
0 - 15mm	34	60	75	205
0 - 25mm	44	69	94	230
0 - 50mm	69	94	144	355

Micrometer Heads

SERIES 152 — Large Thimble Type for Fine Feeding

FEATURES

- The large diameter thimble for fine adjustment and positioning.
- Carbide tipped measuring face.

152-283

Technical Data

Graduations: 0.002mm or .0001"
Spindle pitch: 1mm
Spindle face: Flat with carbide tip (more than HRA90), lapped surface
Scale surface: White anodized aluminum
Fixture thickness for clamp nut: 22.5mm

SPECIFICATIONS

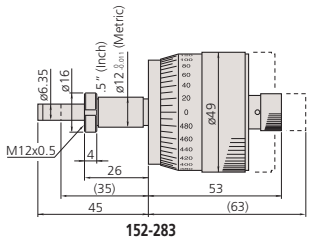
Metric

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 10mm	**152-283**	±2µm	12mm	w/clamp nut	Flat (carbide tip)	—
0 - 25mm	**152-332**	±2µm	12mm	Plain	Flat (carbide tip)	—
0 - 25mm	**152-348**	±2µm	12mm	Plain	Flat (carbide tip)	Bidirectional graduation
0 - 50mm	**152-380**	±4µm	12mm	Plain	Flat (carbide tip)	Bidirectional graduation

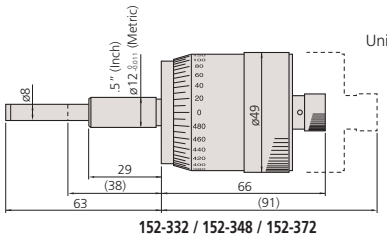
Inch

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 1"	**152-372**	±.0001"	.5"	Plain	Flat (carbide tip)	Bidirectional graduation
0 - 2"	**152-388**	±.0002"	.5"	Plain	Flat (carbide tip)	Bidirectional graduation

DIMENSIONS AND MASS



152-283



152-332 / 152-348 / 152-372

Unit: mm

Micrometer Heads

SERIES 110 — Differential Screw Translator (Extra-Fine Feeding) Type

Technical Data

Graduations: 0.001mm, 0.0005mm, 0.0001mm, .00005" or .00002", .000005"
Spindle pitch: 0.05mm or 0.025mm
Spindle face: Flat with carbide tip (more than HRA90) or spherical, lapped surface
Scale surface: Hard-chrome plating
Fixture thickness for clamp nut: 9.5mm (11.5mm*)
*110-502, 110-504

FEATURES

- Differential movements of spindle threads and units allow fine spindle feeding (0.05mm/rev*), resulting in high resolution measurements.
  *110-502, 110-504: 0.025mm/rev / .001"/rev (fine feeding)
- Carbide tipped measuring face.
- Non-rotating spindle.

SPECIFICATIONS

Metric

Range	Order No.	Graduation	Accuracy*	Stem dia.	Stem	Spindle face
0 - 1mm	**110-105**	0.001mm	±3 / ±1.5µm	12mm	w/clamp nut	Flat (carbide tip)
0 - 1mm	**110-106**	0.0001mm	±3 / ±1.5µm	12mm	w/clamp nut	Flat (carbide tip)
0 - 1mm	**110-107**	0.001mm	±3 / ±1.5µm	12mm	w/clamp nut	Flat (carbide tip)
0 - 1mm	**110-108**	0.0001mm	±3 / ±1.5µm	12mm	w/clamp nut	Flat (carbide tip)
0 - 2.5mm	**110-101**	0.001mm	±3 / ±1.5µm	12mm	w/clamp nut	Spherical (SR8)
0 - 2.5mm	**110-102**	0.0001mm	±3 / ±1.5µm	12mm	w/clamp nut	Spherical (SR8)
0 - 13mm	**110-502***	0.0005mm 0.01mm	±3 / ±1.5µm	9.5mm	w/clamp nut	Spherical (SR3)

* Narrow range: 0.2mm

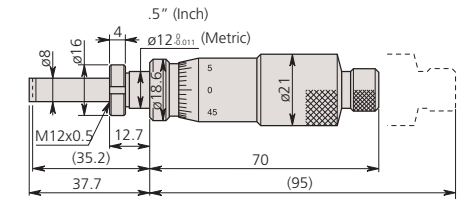
Inch

Range	Order No.	Graduation	Accuracy*	Stem dia.	Stem	Spindle face
0 - .02"	**110-115**	.00005"	±.00015" / ±.00006"	.5"	w/clamp nut	Flat (carbide tip)
0 - .02"	**110-116**	.000005"	±.00015" / ±.00006"	.5"	w/clamp nut	Flat (carbide tip)
0 - .02"	**110-117**	.00005"	±.00015" / ±.00006"	.5"	w/clamp nut	Flat (carbide tip)
0 - .02"	**110-118**	.000005"	±.00015" / ±.00006"	.5"	w/clamp nut	Flat (carbide tip)
0 - .05"	**110-111**	.00005"	±.0002" / ±.00006"	.5"	w/clamp nut	Spherical (SR8)
0 - .05"	**110-112**	.000005"	±.0002" / ±.00006"	.5"	w/clamp nut	Spherical (SR8)
0 - .5"	**110-504***	.00002" .001"	±.00015" / ±.00006"	.375"	w/clamp nut	Spherical (SR3)

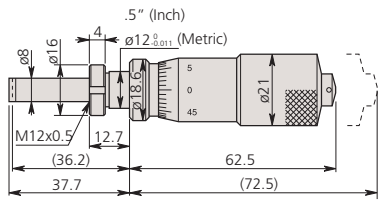
* Narrow range: .006"

DIMENSIONS AND MASS

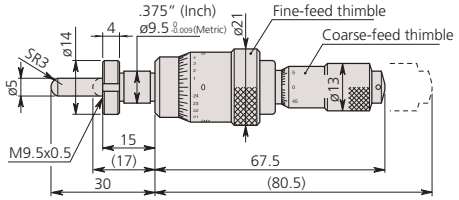
Unit: mm



110-101 / 110-111
110-102 / 110-112 150g



110-105 / 110-115
110-106 / 110-116 150g



110-502 / 110-504 95g

( ): when retracting the spindle until its stroke end.

Micrometer Heads

SERIES 152 — for XY-Stage

FEATURES

152-390, 152-389, 152-391, 152-392

- Non-rotating device is attached to the spindle tip.
- Floating thimble allows easy zero setting at any spindle position.
- Bidirectional graduation for easy reading in both directions.

152-401, 152-402

- Adjustable spindle can be moved with the thimble held at any position, allowing easy zero-setting.

152-390

SPECIFICATIONS

Metric

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 25mm	**152-390**	±2µm	18mm	Plain	Flat (hardened) with non-rotating device	for X-axis, Bidirectional grad.
0 - 25mm	**152-389**	±2µm	18mm	Plain		for Y-axis, Bidirectional grad.
0 - 25mm	**152-402***	±2µm	18mm	Plain	Spherical with carbide tip (SR10)	for X-axis, with vernier
0 - 25mm	**152-401***	±2µm	18mm	Plain		for Y-axis, with vernier

*0.001mm reading is obtained with vernier

Inch

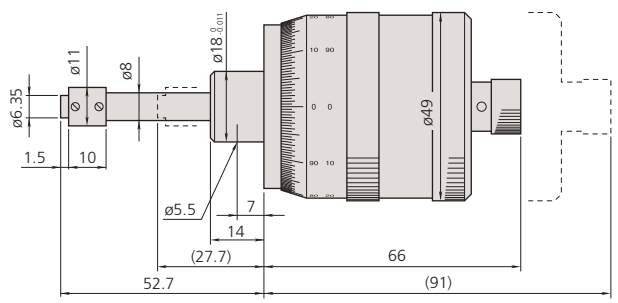
Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 1"	**152-392**	±.0001"	.709"	Plain	Flat (hardened) with non-rotating device	for X-axis, Bidirectional grad.
0 - 1"	**152-391**	±.0001"	.709"	Plain		for Y-axis, Bidirectional grad.

Technical Data

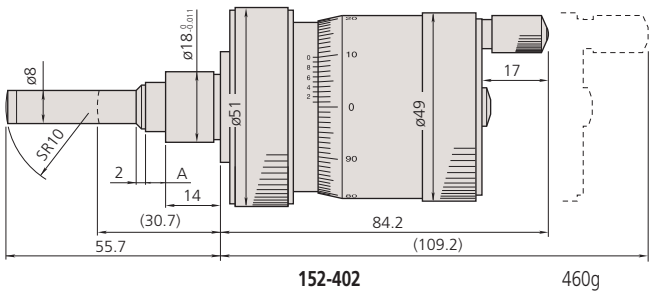
Graduations: 0.005mm, 0.001mm*
*vernier reading
Spindle pitch: 1mm
Spindle face: Flat (hardened) or spherical with carbide tip (more than HRA90), lapped surface
Scale surface: White anodized aluminum

DIMENSIONS AND MASS

Unit: mm



152-390 / 152-392 270g



152-402 460g

( ): when retracting the spindle until its stroke end.

Micrometer Heads

SERIES 197 — Non-Rotating Spindle and Large Thimble

197-101

FEATURES

- Large thimble micrometer head with non-rotating spindle.
- Floating thimble allows easy zero setting at any spindle position.
- Bidirectional graduation for easy reading in both directions.
- Dual-spindle mechanism for quick feeding of 1mm/rev.
- Carbide tipped measuring face.

SPECIFICATIONS

Metric

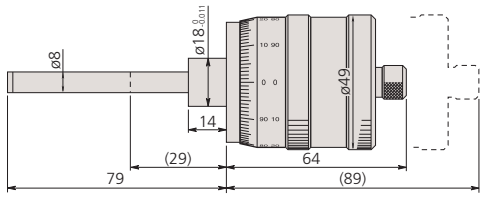
Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 50mm	**197-101**	±5µm	18mm	Plain	Flat (carbide tip)	Bidirectional graduation

Inch

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 2"	**197-201**	±.0002"	.709"	Plain	Flat (carbide tip)	Bidirectional graduation

DIMENSION AND MASS

Unit: mm



( ): when retracting the spindle until its stroke end.

197-101 / 197-201 300g

Technical Data

Graduations: 0.005mm or .0002"
Spindle pitch: 1mm
Spindle face: Flat with carbide tip (more than HRA90), lapped surface
Scale surface: White anodized aluminum

Micrometer Heads

SERIES 153 — Fine Graduation and High Accuracy

153-301

FEATURES

- Fine graduation and high resolution model.
- Large thimble micrometer head with non-rotating spindle.
- Bidirectional graduation for easy reading in both directions.
- Carbide tipped measuring face.

SPECIFICATIONS

Metric

Range	Order No.	Accuracy*	Stem dia.	Stem	Spindle face	Remarks
0 - 25mm	**153-301**	±1 / ±0.5µm	18mm	Plain	Flat (carbide tip)	Bidirectional graduation

*Wide range / narrow range

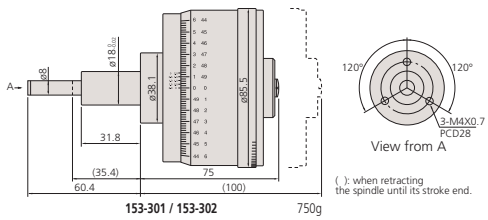
Inch

Range	Order No.	Accuracy*	Stem dia.	Stem	Spindle face	Remarks
0 - 1"	**153-302**	±.00004" / ±.00002"	.709"	Plain	Flat (carbide tip)	Bidirectional graduation

*Wide range / narrow range

DIMENSIONS AND MASS

Unit: mm



( ): when retracting the spindle until its stroke end.

153-301 / 153-302 750g

Technical Data

Graduations: 0.0005mm or .00001"
Spindle pitch: 0.5mm
Spindle face: Flat with carbide tip (more than HRA90), lapped surface
Scale surface: White anodized aluminum

Digital Micrometer Heads

SERIES 164 — High Resolution and High Accuracy

FEATURES

- Connecting with an external display unit, the Electronic Micrometer Head provides the most efficient means of obtaining precision measurement on XY-stages and similar applications.
- External display units (KA Counter) are optional.

164-141

174-173A

Technical Data

Accuracy: ±2µm
Stem diameter: 18mm
Resolution: 0.0001mm
When using the external KA counter (must purchase adapter: **09AAA207**)

SPECIFICATIONS

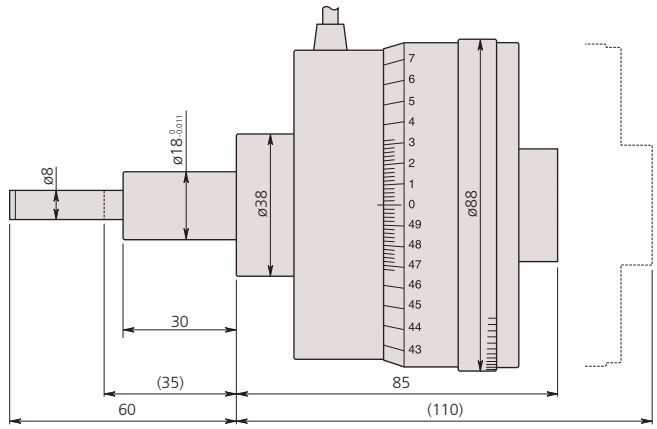
Metric

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 25mm	**164-141**	± 0.001mm / ±.0005mm*	38mm	Plain	Flat (carbide tip)	High accuracy model

*Wide range / narrow range

DIMENSIONS AND MASS

Unit: mm



164-141

( ): when retracting the spindle until its stroke end.

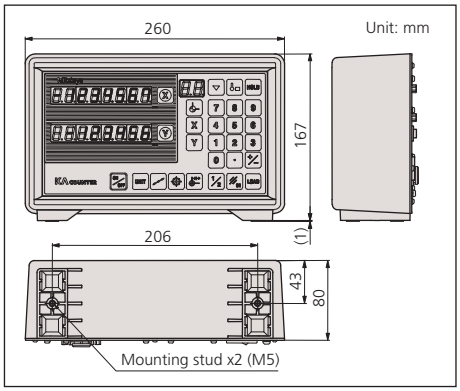
SPECIFICATIONS: KA counter

Order No.	174-173A
Resolution	0.001mm, 0.005mm, .0001", .0005" (selectable)
Mass	1.1kg

09AAA207: Adapter (must purchase)

DIMENSIONS

Unit: mm



Micrometer Heads

SERIES 250 — with Digit Counter

250-301

FEATURES

- Digit counter for easy reading of spindle movement.
- Carbide tipped measuring face.
- Ratchet Stop for constant force.

SPECIFICATIONS

Metric

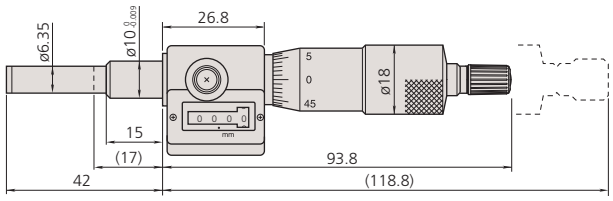
Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 25mm	**250-301**	±2µm	10mm	Plain	Flat (carbide tip)	—

Inch

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 1"	**250-312**	±.0001"	.375"	Plain	Flat (carbide tip)	w / vernier (.0001")

DIMENSIONS AND MASS

Unit: mm



250-301 / 250-312 Mass: 165g

( ): when retracting the spindle with adjustable handle

Technical Data

Graduations: 0.01mm or .0001"
Spindle pitch: 0.5mm
Spindle face: Flat with carbide tip (more than HRA90), lapped surface
Scale surface: Hard-chrome plating

Micro Jack

SERIES 7

FEATURES

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

7850

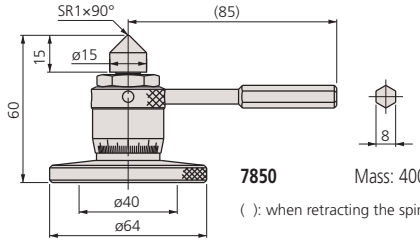
SPECIFICATIONS

Metric

Range	Order No.	Graduation	Max. Load	Remarks
60 - 75mm	**7850**	0.01mm	400kg	adjustable handle

DIMENSIONS AND MASS

Unit: mm



7850 Mass: 400g

( ): when retracting the spindle with adjustable handle

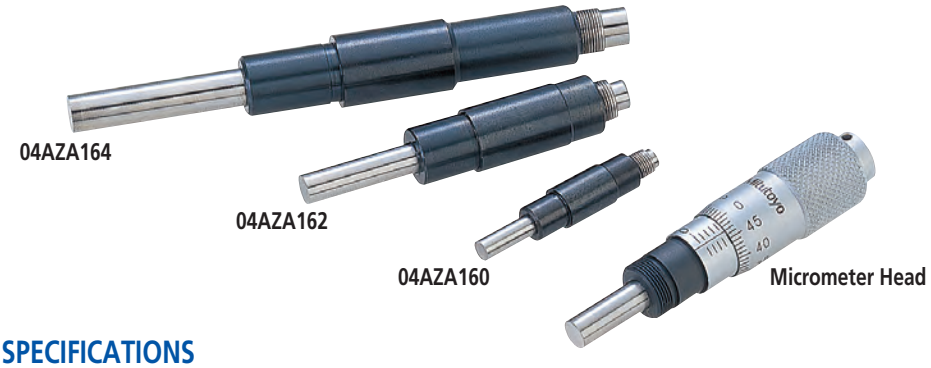
Technical Data

Graduations: 0.01mm

Precision Lead Screw

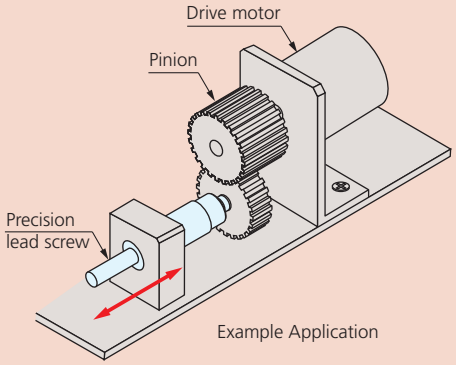
FEATURES

- Mitutoyo manufactures simple and less expensive precision lead screws for precise positioning mechanisms and fine feed mechanisms, in addition to the conventional micrometer heads.
- Mitutoyo also manufactures screws with special specifications, such as 0.25 mm pitch, as well as those with the standard 0.5 mm feed pitch and with dimensions and forms that meet customer's requirements.



Technical Data

- Durability: 100,000 cycles are guaranteed (use condition: 4 kg load; 2 kg for AS-6.5 and BS-6.5)
- Main applications
  - Precision feed stages
  - Fine adjustment of optical elements (mirrors, prisms)
  - Fiber optic centering devices
  - Various assembly and adjustment jigs



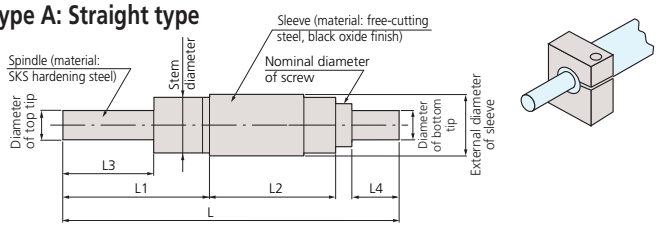
SPECIFICATIONS

Order No.	04AZA160	04AZA161	04AZA162	04AZA163	04AZA164	04AZA165
Model	AS-6.5	BS-6.5	AS-13	BS-13	AS-25	BS-25
Stroke	6.5		13		25	
Feeding pitch	0.5					
Feeding accuracy	±5μm		±2μm			
Stem diameter	ø6 -0.008		ø9.5 -0.009		ø10 -0.009	
Tip diameter	ø3 0 -0.5		ø5 0		ø6 0 -0.35	
Tail diameter	ø3 -0.01		ø5 -0.012		ø6 -0.015	
Screw nominal diameter	M4.5 x 0.5		M7.35 x 0.5			
Sleeve diameter	ø7		ø10.5		ø12	
Measuring face	Hardening				With Carbide tip	
Mass (g)	10	11	27	30	61	64
Others	•AS type: Flat spindle tip without nut •BS type: Spherical spindle tip with nut					

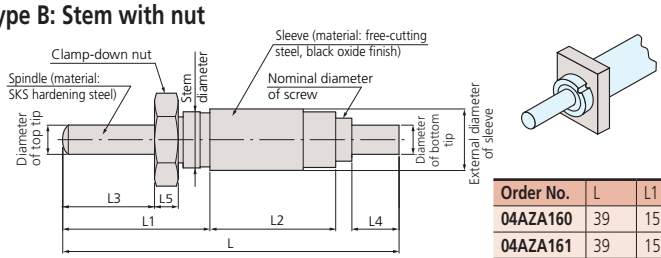
DIMENSIONS

Unit: mm

Type A: Straight type

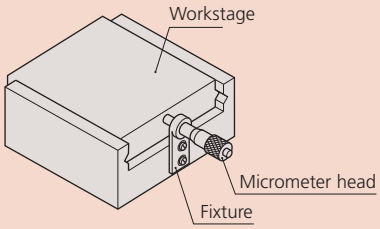


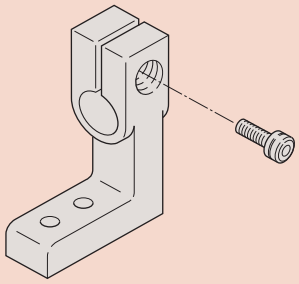
Type B: Stem with nut



Order No.	L	L1	L2	L3	L4	L5
04AZA160	39	15	14.5	9	6	—
04AZA161	39	15	14.5	7.5	6	3
04AZA162	57.5	25	21.5	15.5	8	—
04AZA163	57.5	25	21.5	15.5	8	4
04AZA164	98.5	42	39.5	27	10	—
04AZA165	98.5	42	39.5	27	10	4

Fixtures for Micrometer Heads





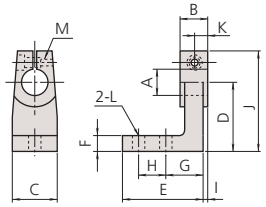
Note: Supplied with a socket head screw (M3x0.5x12mm) for the fixtures to be used with a micrometer head without clamp nut (plain stem type micrometer head).

FEATURES

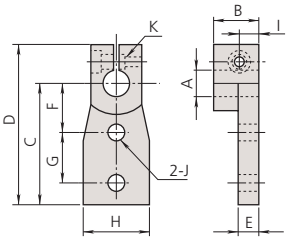
- The act of fabricating brackets to mount micrometer heads for each particular application can be laborious and costly. Mitutoyo offers various types of fixtures for micrometer heads to meet a wide range of applications. These fixtures are made of nickel-plated cast iron.
- There are two types of fixtures for micrometer heads with or without clamping nut on the stem.

DIMENSIONS: Fixtures for plain stem type micrometer heads

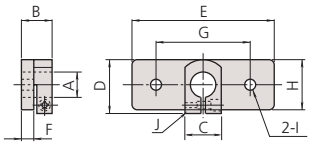
Unit: mm



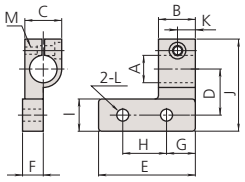
Order No.	303560	303569	303579
A	ø9.5	ø9.5	ø10
B	9	14.5	14.5
C	14.5	19.5	19.5
D	20	30	30
E	23	35	35
F	5	7	7
G	11	16	16
H	8	12	12
I	1.5	3.25	3.25
J	32.5	42.5	42.5
K	4.5	7.25	7.25
L	ø3.4	ø4.5	ø4.5
M	M3x0.5	M3x0.5	M3x0.5



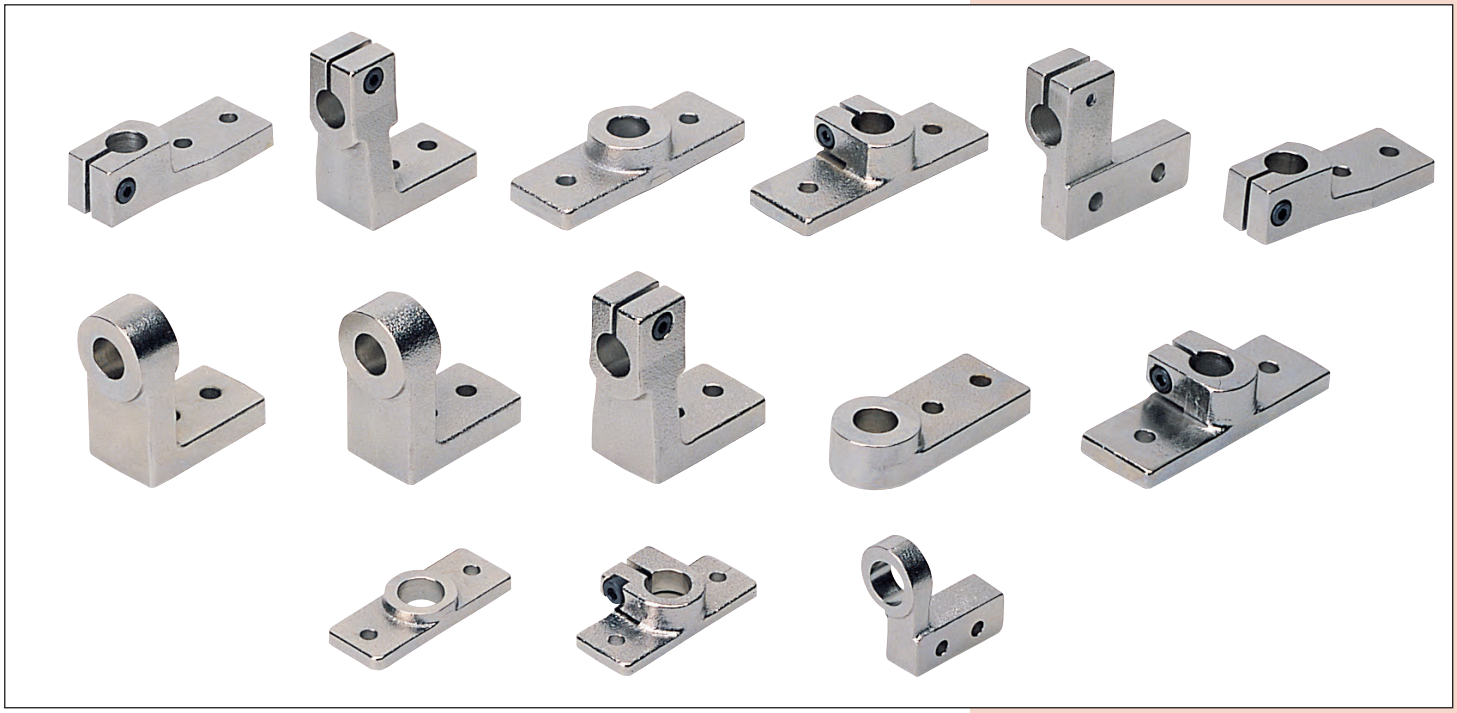
Order No.	303564	303573	303583
A	ø9.5	ø9.5	ø10
B	9	14.5	14.5
C	30	40	40
D	42.5	52.5	52.5
E	4	6	6
F	15	18	18
G	10	15	15
H	15	20	20
I	4.5	7.25	7.25
J	ø3.4	ø4.5	ø4.5
K	M3x0.5	M3x0.5	M3x0.5



Order No.	303562	303571	303581
A	ø9.5	ø9.5	ø10
B	9	14.5	14.5
C	15	15	15
D	20	22.5	22.5
E	40	60	60
F	3	5	5
G	30	40	40
H	15	20	20
I	ø3.4	ø4.5	ø4.5
J	M3x0.5	M3x0.5	M3x0.5

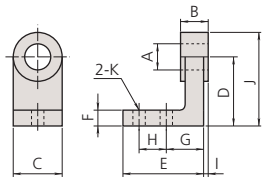


Order No.	303566	303575	303585
A	ø9.5	ø9.5	ø10
B	9	14.5	14.5
C	15	15	15
D	15	20	20
E	25	40	40
F	8.5	8.5	8.5
G	7.5	10	10
H	10	20	20
I	10	15	15
J	32.5	40	40
K	4.5	7.25	7.25
L	ø3.4	ø4.5	ø4.5
M	M3x0.5	M3x0.5	M3x0.5

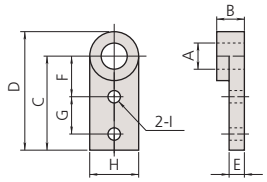


DIMENSIONS: Fixtures for micrometer heads with clamp nut

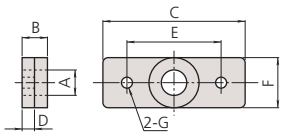
Unit: mm



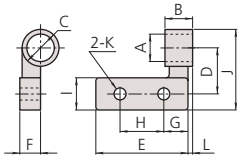
Order No.	303559	303568	303578
A	ø9.5	ø9.5	ø10
B	6	11.5	11.5
C	14.5	19.5	19.5
D	20	30	30
E	24	35	35
F	5	7	7
G	11	16	16
H	8	12	12
I	0.5	1.75	1.75
J	27.5	40	40
K	ø3.4	ø4.5	ø4.5



Order No.	303563	303572	303582
A	ø9.5	ø9.5	ø10
B	6	11.5	11.5
C	30	40	40
D	37.5	50	50
E	4.5	6.5	6.5
F	15	18	18
G	10	15	15
H	15	20	20
I	ø3.4	ø4.5	ø4.5



Order No.	303561	303570	303580
A	ø9.5	ø9.5	ø10
B	6	11.5	11.5
C	40	60	60
D	3.5	5.5	5.5
E	30	40	40
F	15	20	20
G	ø3.4	ø4.5	ø4.5



Order No.	303565	303574	303584
A	ø9.5	ø9.5	ø10
B	6	11.5	11.5
C	ø15	ø15	ø15
D	15	20	20
E	25	40	40
F	8.5	8.5	8.5
G	7.5	10	10
H	10	20	20
I	10	15	15
J	27.5	35	35
K	ø3.4	ø4.5	ø4.5
L	0.75	1.25	1.25