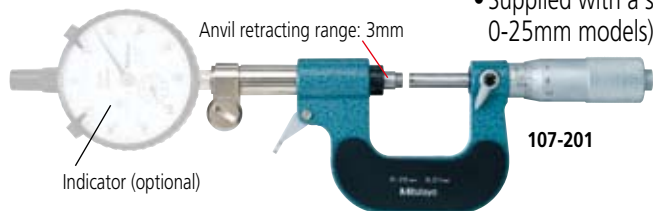


Outside Micrometers

SERIES 107

FEATURES

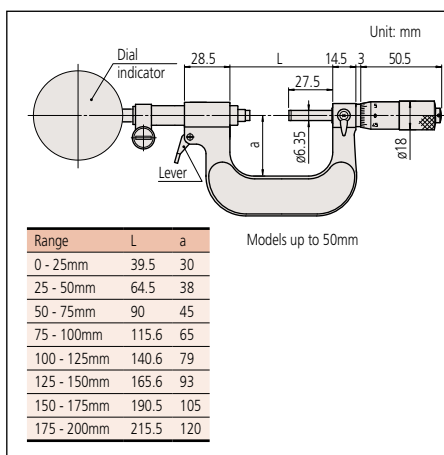
- With dial indicator for direct GO/NG-GO judgment for mass-produced parts.
- Anvil retracting trigger for quick measurement.
- Supplied with a setting standard (except for 0-25mm models).



SPECIFICATIONS

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

DIMENSIONS



Technical Data

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

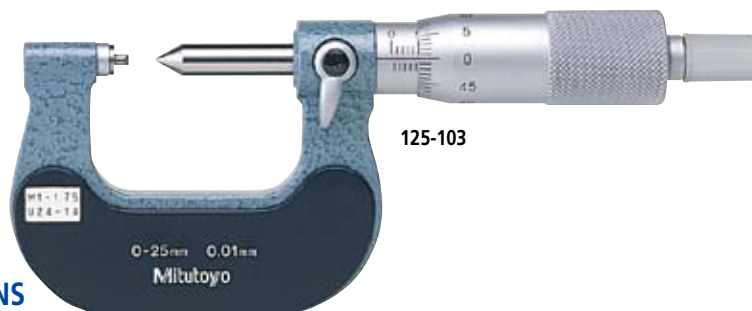


Screw Thread Micrometers

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.
- Supplied with a setting standard (except for 0-25mm models).



SPECIFICATIONS

Metric		
Range	Order No.	Thread to be measured (Metric/Unified)
0 - 25mm	125-101	0.4 - 0.5mm/64 - 48TPI
	125-102	0.6 - 0.9mm/44 - 28TPI
	125-103	1 - 1.75mm/24 - 14TPI
	125-104	2 - 3mm/13 - 9TPI
	125-105	3.5 - 5mm/8 - 5TPI
25 - 50mm	125-106	0.4 - 0.5mm/64 - 48TPI
	125-107	0.6 - 0.9mm/44 - 28TPI
	125-108	1 - 1.75mm/24 - 14TPI
	125-109	2 - 3mm/13 - 9TPI
	125-110	3.5 - 5mm/8 - 5TPI

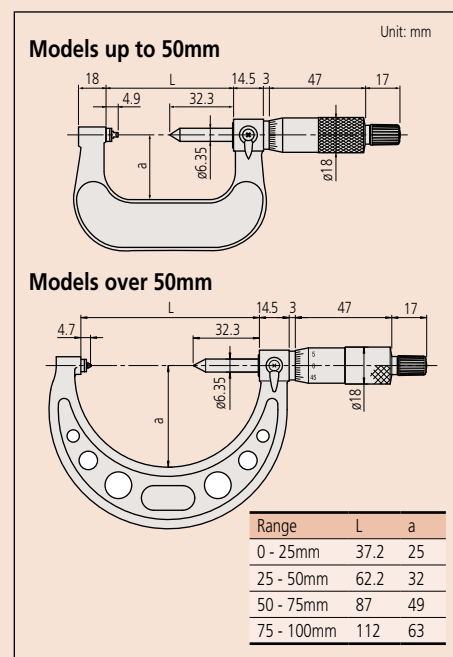
Range	Order No.	Thread to be measured (Metric/Unified)
50 - 75mm	125-111	0.6 - 0.9mm/44 - 28TPI
	125-112	1 - 1.75mm/24 - 14TPI
	125-113	2 - 3mm/13 - 9TPI
	125-114	3.5 - 5mm/8 - 5TPI
	125-115	5.5 - 7mm/4.5 - 3.5TPI
75 - 100mm	125-116	0.6 - 0.9mm/44 - 28TPI
	125-117	1 - 1.75mm/24 - 14TPI
	125-118	2 - 3mm/13 - 9TPI
	125-119	3.5 - 5mm/8 - 5TPI
	125-120	5.5 - 7mm/4.5 - 3.5TPI

Technical Data

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



DIMENSIONS



Screw Thread Micrometers

SERIES 326, 126 — Interchangeable Anvil/Spindle Tip Type



(Refer to page VIII for details.)

Technical Data

Accuracy: Refer to the list of specifications.
(excluding quantizing error for digital models)
Resolution*: 0.001mm or .00005"/0.001mm
Graduation**: 0.01mm or .001"
Spindle feed error: 3µm/0.00015"
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

Functions of Digital Model

Zero-setting, Data hold, 2-point preset, Function lock,
Automatic power ON/OFF, Data output, inch/mm conversion
(inch/mm models)
Alarm: Low voltage, Counting value composition error

Optional Accessories

05CZA662: SPC cable with data switch (1m)*
05CZA663: SPC cable with data switch (2m)*
06ADV380B: USB Input Tool Direct with data switch (2m)
02AZD790B: SPC cable for U-WAVE water-proof model
(160mm)*

*Only for digital models

(See page B-47.): Setting standard for screw thread micrometer

Anvil/spindle-tip matching pair:



For Metric/Unified threads (60° thread angle)

Order No.	Matching anvils/spindle-tips included
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 threads (55° thread angle)

Order No.	Matching anvils/spindle-tips included
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)



FEATURES

- IP65 water/dust protection (326 series).
- Optional anvils/spindle-tips for measuring Metric/Unified or Whitworth screw threads (matching V and cone) are available. These are made of high-grade special steel, hardened and precision ground.
- With Ratchet Stop for constant force.
- SPC output (series 326).



326-251-10

Interchangeable anvils/spindle tips in matching pairs



126-125

SPECIFICATIONS

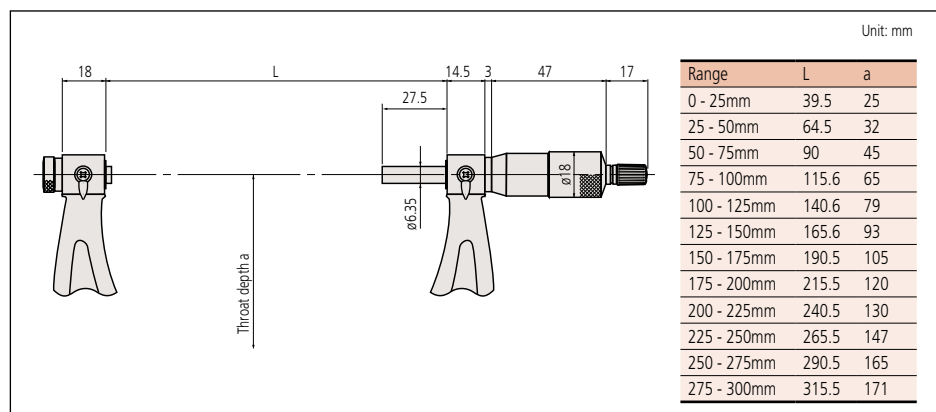
Metric	Digital model	
Range	Order No.	Accuracy
0 - 25mm	326-251-10	±4µm
25 - 50mm	326-252-10	±4µm
50 - 75mm	326-253-10	±4µm
75 - 100mm	326-254-10	±5µm

Inch/Metric	Digital model	
Range	Order No.	Accuracy
0 - 1"	326-351-10	±.0002"
1" - 2"	326-352-10	±.0002"
2" - 3"	326-353-10	±.0002"
3" - 4"	326-354-10	±.00025"

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

Inch		
Range	Order No.	Accuracy
0 - 1"	126-137	±.0002"
1" - 2"	126-138	±.0002"
2" - 3"	126-139	±.0002"
3" - 4"	126-140	±.00025"
4" - 5"	126-141	±.00025"
5" - 6"	126-142	±.00025"
6" - 7"	126-143	±.0003"

DIMENSIONS



Universal Micrometers

SERIES 116 — Interchangeable Anvil Type

FEATURES

- Non-rotating spindle type which accepts seven forms of optional interchangeable anvil/spindle-tip (flat, spline, spherical, point, knife-edge, disk, and blade) for a wide range of applications.
- Optional anvils/spindle-tips for screw thread measurement (matching V and cone) are also available.
- With Ratchet Stop for constant force.



116-101 with matching optional interchangeable anvil and spindle-tip fitted ready for measurement



SPECIFICATIONS

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

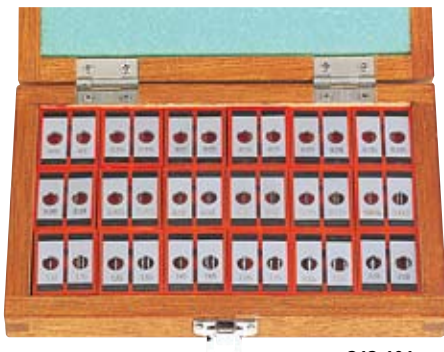
Inch		
Range	Order No.	Accuracy
0 - 1"	116-105	±.0002"
1" - 2"	116-106	±.0002"

3-Wire Units

SERIES 313

FEATURES

- Enables measurement of the pitch diameter of screw threads with a standard micrometer.
- 18 sizes of wire are provided in the set.



313-101

SPECIFICATIONS

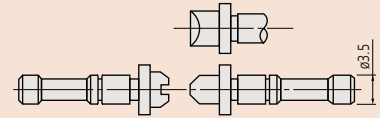
Application	Order No.	Wire units included
ø6.35mm (.25" DIA.)	313-101	0.17mm (952131)
		0.195mm (952132)
		0.22mm (952133)
		0.25mm (952134)
		0.29mm (952135)
		0.335mm (952136)
		0.39mm (952137)
		0.455mm (952138)
		0.53mm (952139)
		0.62mm (952140)
		0.725mm (952141)
		0.895mm (952142)
		1.1mm (952143)
		1.35mm (952144)
		1.65mm (952145)
		2.05mm (952146)
		2.55mm (952147)
		3.2mm (952148)

Technical Data

Accuracy: Refer to the list of specifications.
 Graduation: 0.01mm or .001"
 Spindle feed error: 3µm/.00015"

Optional Accessories

Interchangeable anvils/spindle-tips are available in sets:

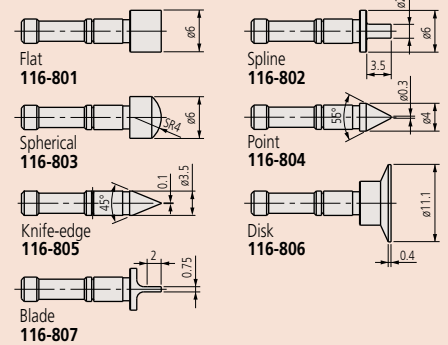


116-830 set style

For Metric/Unified threads

Order No.	Matching anvils/spindle-tips included
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)

Various shapes for general use:



For Metric/Unified threads

Order No.	Matching anvils/spindle-tips included
116-800	Flat (116-801) Spline (116-802) Spherical (116-803) Point (116-804) Knife-edge (116-805) Disk (116-806) Blade (116-807)

Technical Data

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





(Refer to page VIII for details.)

Technical Data

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

Functions of Digital Model

Zero-setting, Data hold, 2-point preset, Function lock,
Automatic power ON/OFF, Data output, inch/mm conversion
(inch/mm models)
Alarm: Low voltage, Counting value composition error

Optional Accessories

- 05CZA662**: SPC cable with data switch (1m)*
- 05CZA663**: SPC cable with data switch (2m)*
- 06ADV380B**: USB Input Tool Direct with data switch (2m)
- 02AZD790B**: SPC cable for U-WAVE water-proof model (160mm)*

*Only for digital models

Interchangeable ball anvil/spindle tip set:

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

*Carbide-tipped type



Gear Tooth Micrometers

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

FEATURES

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



SPECIFICATIONS

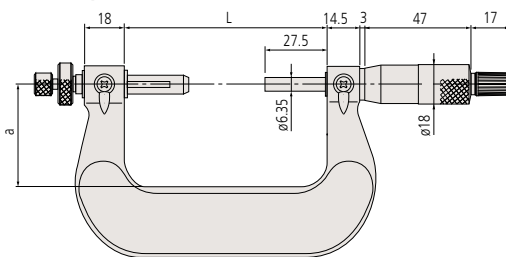
Metric	Digital model	
Range	Order No.	Accuracy
0 - 25mm	324-251-10	±4μm
25 - 50mm	324-252-10	±4μm
50 - 75mm	324-253-10	±4μm
75 - 100mm	324-254-10	±5μm

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

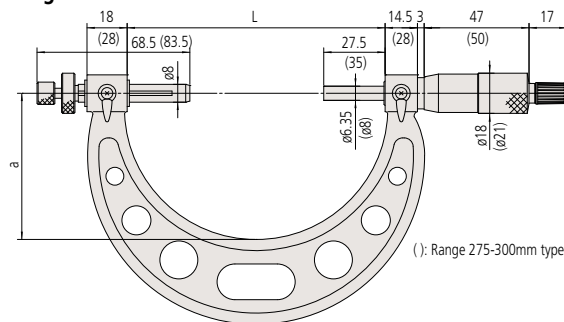
Inch/Metric	Digital model	
Range	Order No.	Accuracy
0 - 1"	324-351-10	±.0002"
1" - 2"	324-352-10	±.0002"
2" - 3"	324-353-10	±.0002"
3" - 4"	324-354-10	±.00025"

DIMENSIONS

Analog models up to 50mm



Analog over 50mm



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

Disk Micrometers

SERIES 323, 223, 123

FEATURES

- Diameter of measuring disk: 20mm (30mm: models over 100mm)
- 0.7mm (1mm: models over 100mm) edge thickness to enter narrow recesses.
- With Ratchet Stop for constant force.
- Supplied with a setting standard (except for 0-25mm/0-1" models).
- SPC output (series 323).
- The 223 series is provided with a mechanical digit counter for quick reading of measurements.



SPECIFICATIONS

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

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

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

*The measuring disks have carbide tips.

Inch/Metric	Digital model	
Range	Order No.	Accuracy
0 - 1"	323-350	±.0002"
1" - 2"	323-351	±.0002"
2" - 3"	323-352	±.0003"
3" - 4"	323-353	±.0003"

Inch	Mechanical counter model	
Range	Order No.	Accuracy
0 - 1"	223-125	±.0002"

Inch		
Range	Order No.	Accuracy
0 - 1"	123-125	±.0002"
1" - 2"	123-126	±.0002"
2" - 3"	123-127	±.0003"
3" - 4"	123-128	±.0003"



(Refer to page VIII for details.)

Technical Data

Accuracy: Refer to the list of specifications.
(excluding quantizing error for digital models)
Resolution*: 0.001mm or .00005"/0.001mm
Graduation**: 0.01mm or .001"
Flatness: 1µm/.00004" for models up to 100mm/4"
1.6µm/.000063" for models over 100mm/4"
Parallelism: 4µm/.00016" for models up to 50mm/2"
6µm/.00024" for models up to 100mm
(5+R/75)µm for models over 100mm,
R = max. range (mm)
fraction rounded up
.00024" for models up to 4"
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

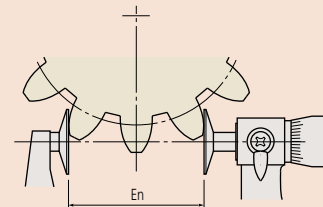
Functions of Digital Model

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

Optional Accessories for Digital Model

- 05CZA662**: SPC cable with data switch (1m)
- 05CZA663**: SPC cable with data switch (2m)
- 06ADV380B**: USB Input Tool Direct with data switch (2m)
- 02AZD790B**: SPC cable for U-WAVE water-proof mode (160mm)

Root tangent length of gear (En)



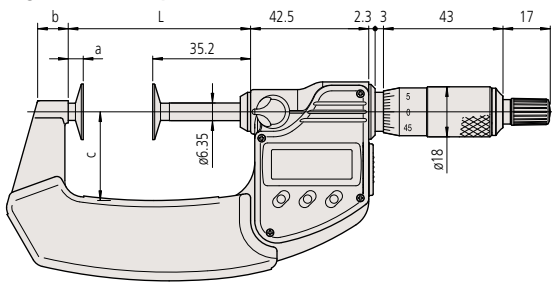
Note: Root tangent length measurement is not applicable to some types of gears.



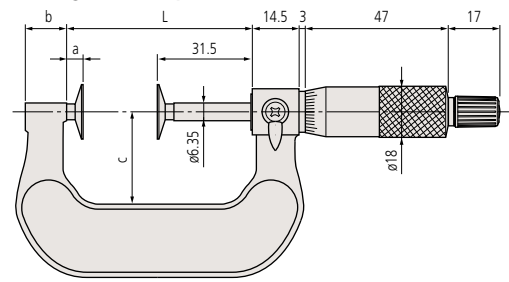
DIMENSIONS

Unit: mm

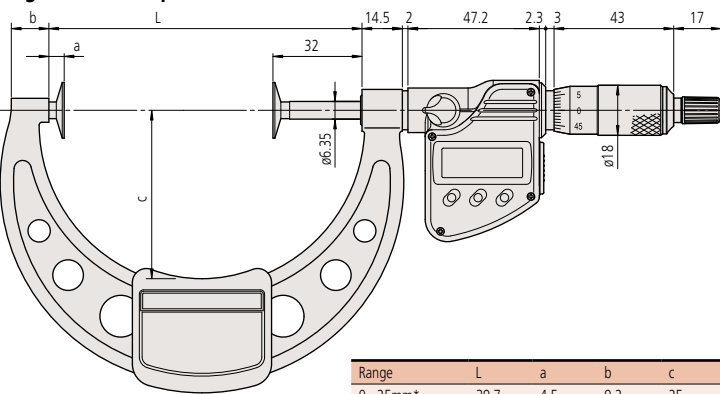
Digital models up to 75mm



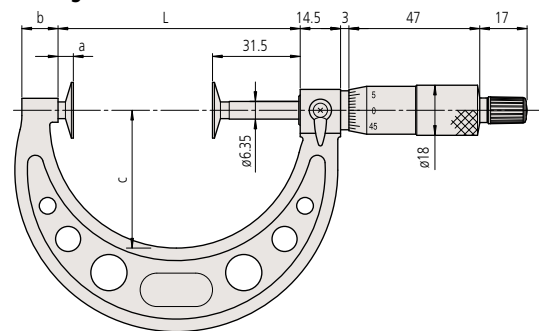
Analog models up to 50mm



Digital models over 75mm

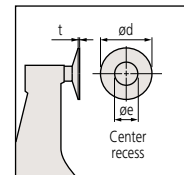


Analog over 50mm



Range	L	a	b	c	d	e	t
0 - 25mm*	39.7	4.5	9.2	25	20	8	0.7
25 - 50mm*	65.6	5.4	11	31	20	8	0.7
50 - 75mm*	90.7	5.5	12.2	50	20	8	0.7
75 - 100mm*	112.5	5.5	13.5	60	20	8	0.7
0 - 25mm	37.5	6	14	25	20	8 (9.8)	0.7 (0.7)
25 - 50mm	62.5	6	14	32	20	8 (9.8)	0.7 (0.7)
50 - 75mm	87	5.5	11	49	20	8 (9.8)	0.7 (0.7)
75 - 100mm	112	5.5	11	63	20	8 (9.8)	0.7 (0.7)
100 - 125mm	137.5	6	12	79	30	12	1
125 - 150mm	162.5	6	15	94	30	12	1
150 - 175mm	187.5	6	16	106	30	12	1
175 - 200mm	212.5	6	15	118	30	12	1
200 - 225mm	237.5	6	14	130	30	12	1
225 - 250mm	262.5	6	14	143	30	12	1
250 - 275mm	287.5	6	15	156	30	12	1
275 - 300mm	312.5	6	15	169	30	12	1

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

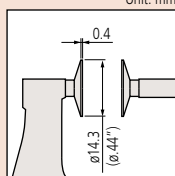


Technical Data

Accuracy: Refer to the list of specifications
 Graduation: 0.01mm or .001"
 Flatness: 1 μ m/.00004"
 Parallelism: 3 μ m/.00012"
 Measuring force: 8 \pm 0.8N



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.

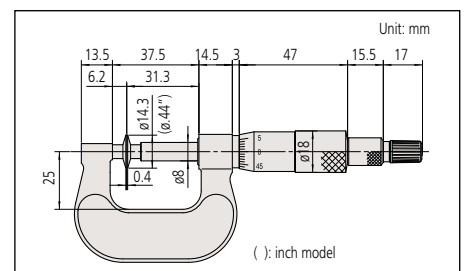


169-101

SPECIFICATIONS

Metric		
Range	Order No.	Accuracy
0 - 25mm	169-101	$\pm 4\mu$ m

DIMENSIONS



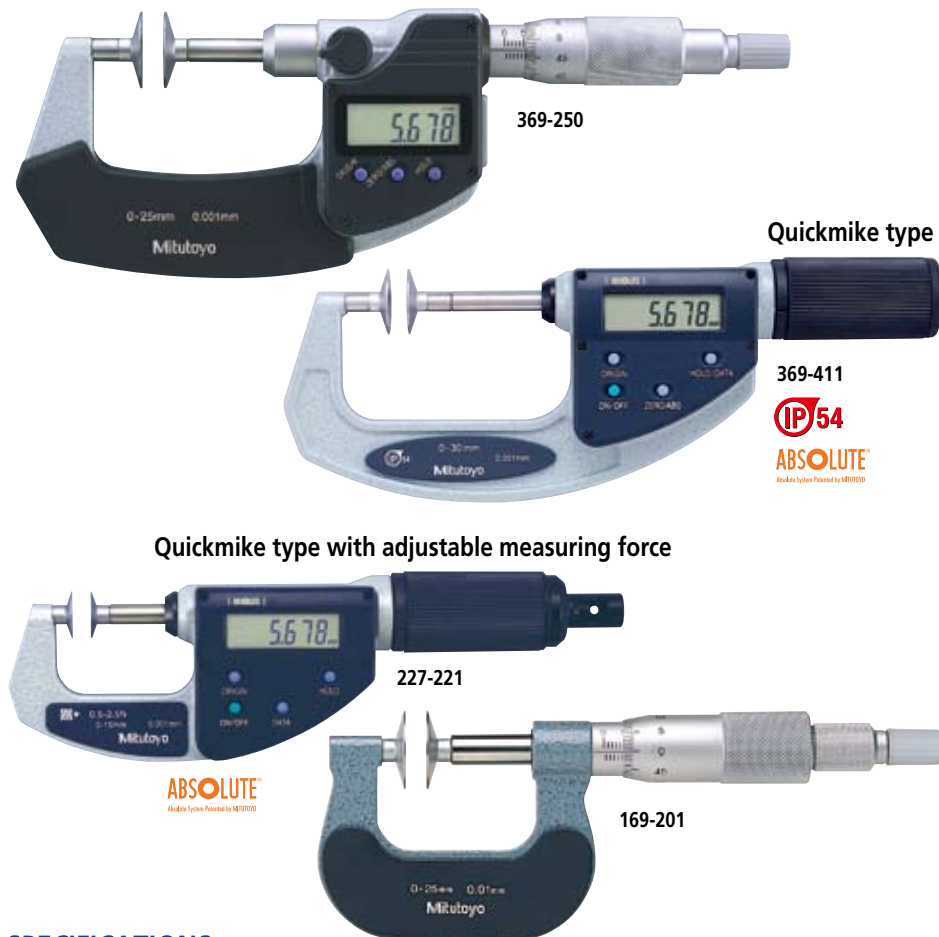
Inch		
Range	Order No.	Accuracy
0 - 1"	169-103	$\pm .0002''$

Disk Micrometers

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

FEATURES

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



Quickmike type with adjustable measuring force



Technical Data

Accuracy: Refer to the list of specifications. (excluding quantizing error for digital models)
 Resolution*: 0.001mm or .00005"/0.001mm
 Graduation***: 0.01mm or .001"
 Flatness: 1µm/.00004"
 Parallelism: 4µm/.00016" for models up to 50mm/2"
 6µm/.00024" for models over 50mm/2"
 (3µm/.00012": Quickmike type with adjustable measuring force)
 Measurable module: 0.5-6,
 (0.4 - 3: Quickmike type with adjustable measuring force)
 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 adjustable measuring force)
 *Digital models **Analog models

Functions of Digital Model

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

Optional Accessories for Digital Model

- 05CZA662**: SPC cable with data switch (1m)
- 05CZA663**: SPC cable with data switch (2m)
- 06ADV380B**: USB Input Tool Direct with data switch (2m)
- 02AZD790B**: SPC cable for U-WAVE water-proof model (160mm)
- 937387**: SPC cable (1m)*
- 965013**: SPC cable (2m)*
- 06ADV380E**: USB Input Tool Direct with data switch (2m)*
- 02AZD790E**: SPC cable for U-WAVE (160mm)*

*Only for Quickmike type

SPECIFICATIONS

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

Inch/Metric	Digital model	
Range	Order No.	Accuracy
0 - 1"	369-350	±.0002"
1" - 2"	369-351	±.0002"
2" - 3"	369-352	±.0003"
3" - 4"	369-353	±.0003"

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

Inch/Metric	Quickmike type	
Range	Order No.	Accuracy
0 - 1.2"	369-421	±.0002"
1" - 2.2"	369-422	±.0002"

Metric	Quickmike type adjustable measuring force		
Range	Order No.	Accuracy	Measuring force
0 - 15mm	227-221	±4µm	0.5N - 2.5N
	227-223	±4µm	2N - 10N

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

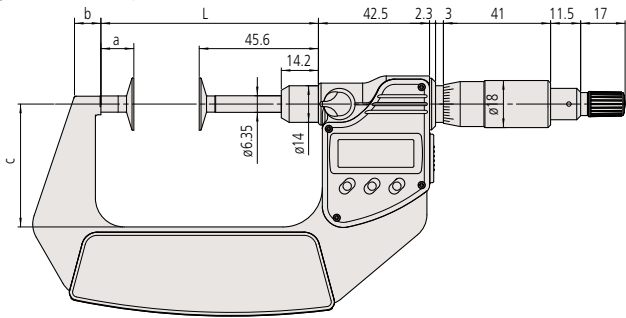
Inch	Quickmike type	
Range	Order No.	Accuracy
0 - 1"	169-203	±.0002"
1" - 2"	169-204	±.0002"
2" - 3"	169-206	±.0003"
3" - 4"	169-208	±.0003"



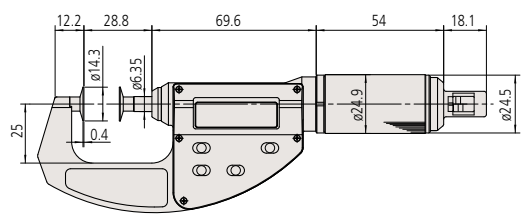
DIMENSIONS

Unit: mm

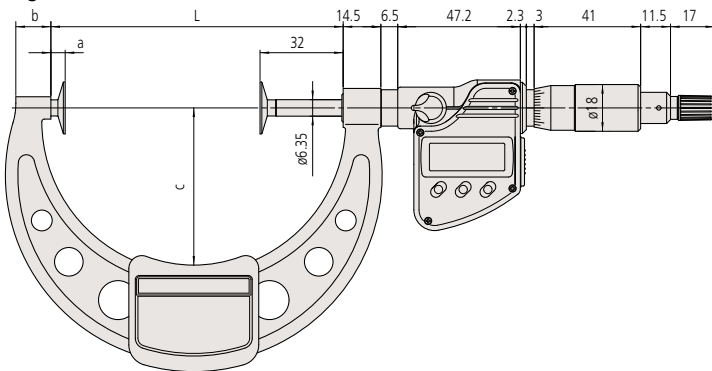
Digital models up to 75mm



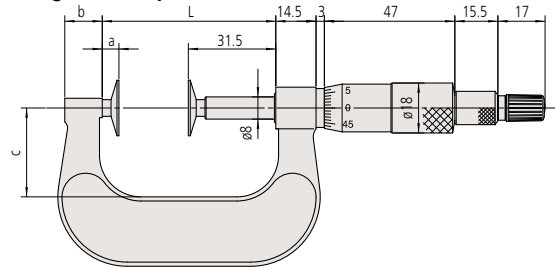
Adjustable measuring force type



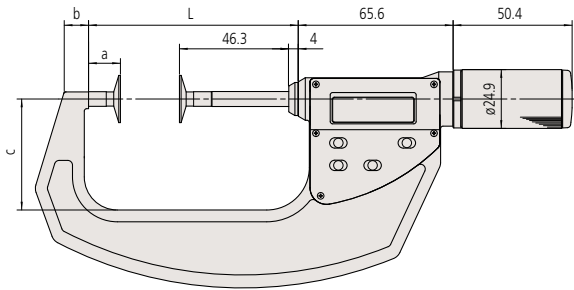
Digital models over 75mm



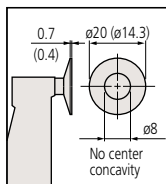
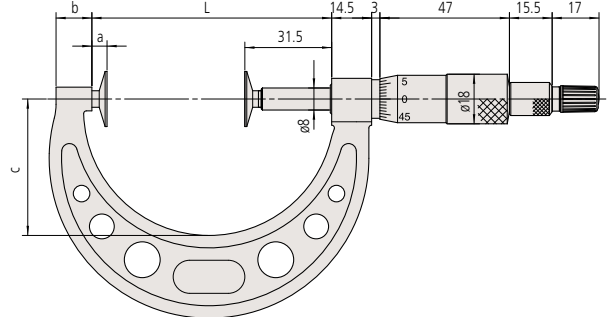
Analog models up to 50mm



Quickmike type



Analog models over 50mm



() : Adjustable measuring force type

Digital model

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

*Quickmike type

Analog model

Range	L	a	b	c
0 - 25mm	37.5	6	13.5	25
25 - 50mm	62.5	6	13.5	32
50 - 75mm	87	5.5	13	49
75 - 100mm	112	5.5	13	63

Sheet Metal Micrometers

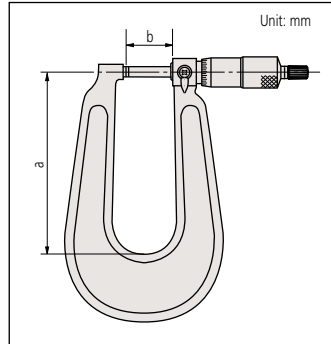
SERIES 389, 119, 118

FEATURES

- Measures thickness of sheet metal, and rubber parts.
- With Ratchet Stop for constant force.
- Supplied with a setting standard (except for 0-25mm/0-1" models).
- IP65 water/dust protection (389 series*).
- *Except for 389-514
- With digit counter (series 189).



DIMENSIONS



SPECIFICATIONS

Metric		Digital model	
Range	Order No.	Accuracy	a/b
0 - 25mm	389-251	±4µm	160/27.5mm
	389-261 ^{S-F}	±4µm	160/27.5mm
	389-271 ^{S-S}	±4µm	160/27.5mm
	389-514	±5µm	330/38.5mm
25 - 50mm	389-252	±4µm	165/27.5mm
	389-262 ^{S-F}	±4µm	165/27.5mm
	389-272 ^{S-S}	±4µm	165/27.5mm

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

Inch/Metric		Digital model	
Range	Order No.	Accuracy	a/b
0 - 1"	389-351	±.0002"	160/27.5mm 6.3"/1.08"
	389-361 ^{S-F}	±.0002"	160/27.5mm 6.3"/1.08"
	389-371 ^{S-S}	±.0002"	160/27.5mm 6.3"/1.08"
	389-714	±.00025"	330/38.5mm 13"/1.52"
	1" - 2"	389-352	±.0002"
389-362 ^{S-F}		±.0002"	165/27.5mm 6.5"/1.08"
389-372 ^{S-S}		±.0002"	165/27.5mm 6.5"/1.08"

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

Metric		Dial reading model	
Range	Order No.	Accuracy	a/b
0 - 25mm	118-101	±4µm	110/27.5mm
	118-102	±4µm	160/27.5mm
	118-114 ^{S-F}	±4µm	160/27.5mm
	118-118 ^{S-S}	±4µm	160/27.5mm
	118-103	±5µm	330/38.5mm
25 - 50mm	118-110	±4µm	165/27.5mm
	118-126 ^{S-S}	±4µm	165/27.5mm

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

Inch		Dial reading model	
Range	Order No.	Accuracy	a/b
0 - 1"	118-129*	±.0002"	160/27.5mm
	118-116 ^{S-F*}	±.0002"	160/27.5mm
	118-120 ^{S-S*}	±.0002"	160/27.5mm
	118-107	±.00025"	330/38.5mm
1" - 2"	118-112	±.0002"	165/27.5mm

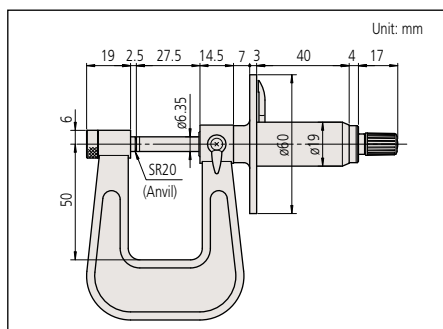
S-F: Spherical anvil and flat spindle
S-S: Spherical anvil and spherical spindle
*.0001" reading is obtained with vernier.

Metric		Dial reading model	
Range	Order No.	Accuracy	Throat
0 - 25mm	119-202 ^{S-F}	±4µm	50mm

S-F: Spherical anvil and flat spindle



DIMENSIONS



(Refer to page VIII for details.)

Anvil-Spindle Combinations



Standard, Flat-Flat



Spherical-Flat (S-F)



Spherical-Spherical (S-S)

Technical Data

- Accuracy: Refer to the list of specifications.
(excluding quantizing error for digital models)
- Resolution*: 0.001mm or .00005"/0.001mm
- Graduation**: 0.01mm, .001" or .0001"
- Flatness: 0.6µm/.000024" for models with 150mm/6" throat
1µm/.00004" for models with 300mm/12" throat
- Parallelism: 3µm/.00012"
- Measuring faces: Carbide
- Display*: LCD
- Battery*: SR44 [1 pc. (2 pcs.: **389-514** and **389-714**), **938882**]
- Battery life*: Approx. 1.2 years under normal use
(1.8 years: **389-514** and **389-714**)
- Dust/Water protection level*: IP65 (except for **389-714** and **389-514**)
- *Digital models **Analog models

Functions of Digital Model

- Origin-set (Preset*), Zero-setting, Data hold, Power ON/OFF*, Data output, inch/mm conversion (inch/mm models)
- Preset zero-setting Power ON/OFF Data hold Data output inch/mm conversion (inch/mm models)
- *Only for **389-514**, **389-714**
- Alarm: Low voltage, Counting value composition error

Optional Accessories for Digital Model

- 05CZA662**: SPC cable with data switch (1m)
- 05CZA663**: SPC cable with data switch (2m)
- 06ADV380B**: USB Input Tool Direct with data switch (2m)
- 02AZD790B**: SPC cable for U-WAVE water-proof model (160mm)
- 04AZB512**: SPC cable (1m)*
- 04AZB513**: SPC cable (2m)*
- 02AZD790E**: SPC cable for U-WAVE (160mm)*
- *Only for **389-514**, **389-714**

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



Spline Micrometers

SERIES 331, 111, 131



(Refer to page VIII for details.)

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.
- SPC output (series 331).



331-251



111-115

Technical Data

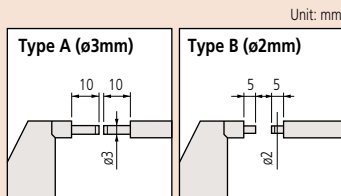
Accuracy: Refer to the list of specifications. (excluding quantizing error for digital models)
 Resolution*: 0.001mm or .00005"/0.001mm
 Graduation**: 0.01mm, .001" or .0001"
 Flatness: 0.3µm/.000012"
 Parallelism: (2+R/100)µm, R = max. range (mm) [0.00008"+.00004(R/4)]" R = max. range (inch) fraction rounded down
 Measuring faces: Carbide
 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

Functions of Digital Model

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

Optional Accessories for Digital Model

- 05CZA662**: SPC cable with data switch (1m)
- 05CZA663**: SPC cable with data switch (2m)
- 06ADV380B**: USB Input Tool Direct with data switch (2m)
- 02AZD790B**: SPC cable for U-WAVE water-proof model (160mm)



SPECIFICATIONS

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

Metric		Mechanical counter model	
Range	Order No.	Accuracy	Remarks
0 - 25mm	131-115	±3µm	Type A

Metric		Digital model	
Range	Order No.	Accuracy	Remarks
0 - 25mm	111-115	±3µm	Type A
	111-215	±3µm	Type B
25 - 50mm	111-116	±3µm	Type A
50 - 75mm	111-117	±3µm	Type A
75 - 100mm	111-118	±4µm	Type A
100 - 125mm	111-119	±4µm	Type A
125 - 150mm	111-120	±4µm	Type A
150 - 175mm	111-121	±5µm	Type A
175 - 200mm	111-122	±5µm	Type A
200 - 225mm	111-123	±5µm	Type A
225 - 250mm	111-124	±6µm	Type A
250 - 275mm	111-125	±6µm	Type A
275 - 300mm	111-126	±6µm	Type A

Inch/Metric		Digital model	
Range	Order No.	Accuracy	Remarks
0 - 1"	331-351	±.0001"	Type A
	331-361	±.0001"	Type B
1" - 2"	331-352	±.0001"	Type A
	331-362	±.0001"	Type B
2" - 3"	331-353	±.0001"	Type A
	331-363	±.0001"	Type B
3" - 4"	331-354	±.00015"	Type A
	331-364	±.00015"	Type B

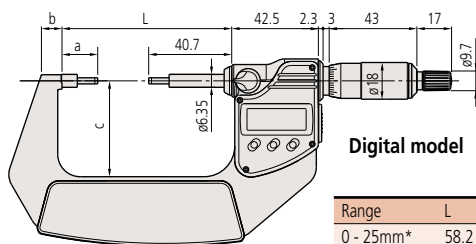
Inch		Mechanical counter model	
Range	Order No.	Accuracy	Remarks
0 - 1"	131-166*	±.00015"	Type A

*.0001" reading is obtained with vernier.

Inch		Digital model	
Range	Order No.	Accuracy	Remarks
0 - 1"	111-166*	±.00015"	Type A

*.0001" reading is obtained with vernier.

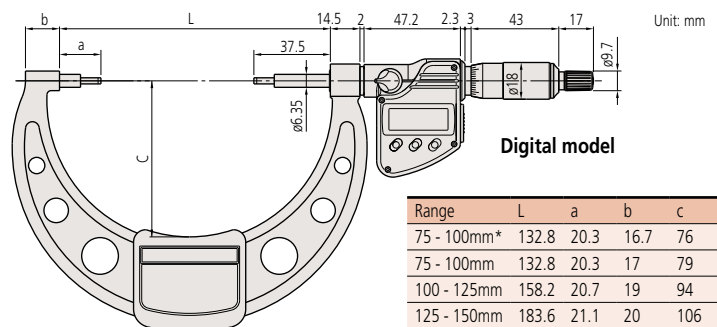
DIMENSIONS



Models up to 75mm

Range	L	a	b	c
0 - 25mm*	58.2	17.5	7.3	32
25 - 50mm*	83.2	17.5	10.1	47
50 - 75mm*	108.2	17.5	11.5	60
0 - 25mm	55	17.5	10	38
25 - 50mm	80	17.5	12	49
50 - 75mm	105	17.5	14	60

*Digital models



Models over 75mm

Range	L	a	b	c
75 - 100mm*	132.8	20.3	16.7	76
75 - 100mm	132.8	20.3	17	79
100 - 125mm	158.2	20.7	19	94
125 - 150mm	183.6	21.1	20	106
150 - 175mm	208.8	21.3	19	118
175 - 200mm	234.2	21.7	18	130

*Digital models

Tube Micrometers

SERIES 395, 295, 115 — Spherical and Cylindrical Anvils

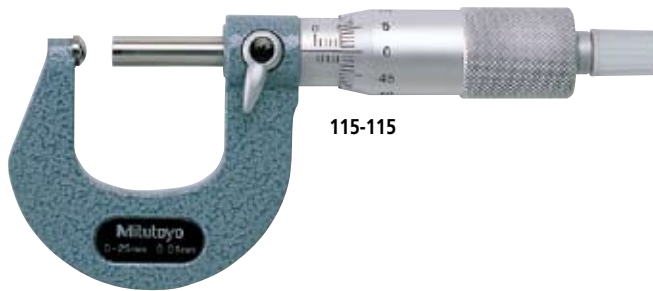
FEATURES

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



395-251

Spherical-flat Type



115-115



395-271

Spherical-spherical Type



115-215



(Refer to page VIII for details.)

Technical Data

Accuracy: Refer to the list of specifications.
(excluding quantizing error for digital models)
Resolution*: 0.001mm or .00005"/0.001mm
Graduation**: 0.01mm, .001" or .0001"
Flatness: 0.6µm/0.00024"
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

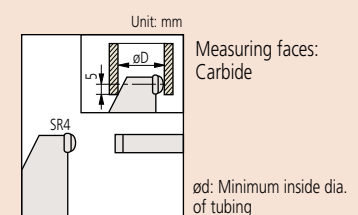
Functions of Digital Model

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

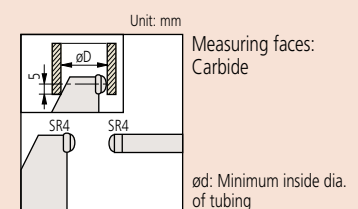
Optional Accessories for Digital Model

- 05CZA662**: SPC cable with data switch (1m)
- 05CZA663**: SPC cable with data switch (2m)
- 06ADV380B**: USB Input Tool Direct with data switch (2m)
- 02AZD790B**: SPC cable for U-WAVE water-proof model (160mm)

Spherical-flat type



Spherical-spherical type

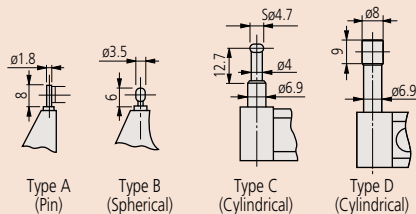


Cylindrical Anvil Type

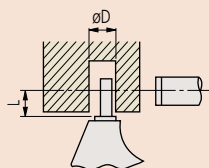


395-261

Cylindrical anvil types



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



øD: Minimum inside dia. of tubing

Spindle face: Carbide

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

SPECIFICATIONS

Metric Digital model with spherical anvil			
Range	Order No.	Accuracy	Remarks
0 - 25mm	395-251 ^{S-F}	±2µm	D: 15mm
	395-271 ^{S-S}	±2µm	D: 15mm
25 - 50mm	395-252 ^{S-F}	±2µm	D: 15mm
	395-272 ^{S-S}	±2µm	D: 15mm
50 - 75mm	395-253 ^{S-F}	±2µm	D: 19mm
	395-273 ^{S-S}	±2µm	D: 19mm
75 - 100mm	395-254 ^{S-F}	±3µm	D: 20mm
	395-274 ^{S-S}	±3µm	D: 20mm

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

Metric Digital model with cylindrical anvil			
Range	Order No.	Accuracy	Remarks
0 - 25mm	395-261	±3µm	Type A
	395-262	±3µm	Type B
	395-263	±3µm	Type C
	395-264	±3µm	Type D

Metric Mechanical counter model with spherical anvil			
Range	Order No.	Accuracy	Remarks
0 - 25mm	295-115 ^{S-F}	±3µm	D: 10mm
	295-215 ^{S-S}	±3µm	D: 10mm

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

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

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

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

Inch/Metric Digital model with spherical anvil			
Range	Order No.	Accuracy	Remarks
0 - 1"	395-351 ^{S-F}	±.0001"	D: .59"
	395-371 ^{S-S}	±.0001"	D: .59"
1" - 2"	395-352 ^{S-F}	±.0001"	D: .59"
	395-372 ^{S-S}	±.0001"	D: .59"
2" - 3"	395-353 ^{S-F}	±.0001"	D: .75"
	395-373 ^{S-S}	±.0001"	D: .75"
3" - 4"	395-354 ^{S-F}	±.00015"	D: .79"
	395-374 ^{S-S}	±.00015"	D: .79"

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

Inch/Metric Digital model with cylindrical anvil			
Range	Order No.	Accuracy	Remarks
0 - 1"	395-362	±.00015"	Type B
	395-363	±.00015"	Type C
	395-364	±.00015"	Type D

Inch Mechanical counter model with spherical anvil			
Range	Order No.	Accuracy	Remarks
0 - 1"	295-153 ^{S-F*}	±.00015"	D: .40"
	295-253 ^{S-S*}	±.00015"	D: .40"

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

Inch With spherical anvil			
Range	Order No.	Accuracy	Remarks
0 - 1"	115-153 ^{S-F*}	±.00015"	D: .40"
	115-253 ^{S-S*}	±.00015"	D: .40"
1" - 2"	115-242 ^{S-S}	±.00015"	D: .44"
2" - 3"	115-243 ^{S-S}	±.00015"	D: .67"

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

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

*.0001" reading is obtained with vernier.

Point Micrometers

SERIES 342, 142, 112

FEATURES

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



342-251



112-201

SPECIFICATIONS

Metric Digital model (with carbide tip)

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

Metric Mechanical counter model

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

Metric

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

*The points do not have carbide tips.

Inch/Metric Digital model (with carbide tip)

Range	Order No.	Accuracy	Point
0 - 1"	342-351	±.0001"	15°
	342-361	±.0001"	30°
1" - 2"	342-352	±.0001"	15°
	342-362	±.0001"	30°
2" - 3"	342-353	±.0001"	15°
	342-363	±.0001"	30°
3" - 4"	342-354	±.00015"	15°
	342-364	±.00015"	30°

Inch Mechanical counter model

Range	Order No.	Accuracy	Point
0 - 1"	142-177	±.00015"	15°
	142-225	±.00015"	30°

Inch

Range	Order No.	Accuracy	Point
0 - 1"	112-189	±.00015"	15°
	112-177*	±.00015"	15°
	112-237	±.00015"	30°
	112-225*	±.00015"	30°
1" - 2"	112-190	±.00015"	15°
	112-178*	±.00015"	15°
	112-238	±.00015"	30°
	112-226*	±.00015"	30°
2" - 3"	112-191	±.00015"	15°

*The points do not have carbide tips.



(Refer to page VIII for details.)

Technical Data

Accuracy: Refer to the list of specifications. (excluding quantizing error for digital models)
 Resolution*: 0.001mm or .00005"/0.001mm
 Graduation**: 0.01mm or .001"
 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

Functions of Digital Model

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

Optional Accessories for Digital Model

- 05CZA662**: SPC cable with data switch (1m)
- 05CZA663**: SPC cable with data switch (2m)
- 06ADV380B**: USB Input Tool Direct with data switch (2m)
- 02AZD790B**: SPC cable for U-WAVE water-proof model (160mm)



Tip angle: 15° (SR0.3mm)



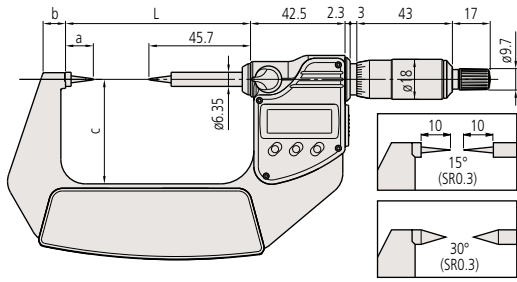
Tip angle: 30° (SR0.3mm)



DIMENSIONS

Unit: mm

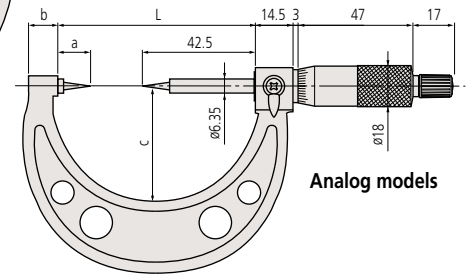
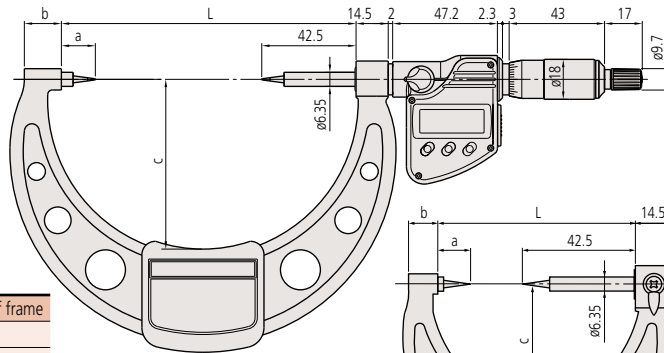
Digital models up to 75mm



Range	L	a	b	c	Thickness of frame
0 - 25mm	58.2 (55)	12.5 (12.5)	7.3 (10)	32 (38)	11.2 (9)
25 - 50mm	83.2 (80)	12.5 (12.5)	10.1 (12)	47 (49)	12.8 (10)
50 - 75mm	108.2 (105)	12.5 (12.5)	11.5 (14)	60 (60)	12.8 (11)
75 - 100mm	132.8 (132.8)	15.3 (15.3)	16.7 (17)	76 (79)	20.8 (13)

() : Analog model
Thickness of frame cover for Digimatic type

Digital models over 75mm



Analog models



(Refer to page VIII for details.)

Technical Data

Accuracy: Refer to the list of specifications.
(excluding quantizing error for digital models)
Resolution*: 0.001mm or .00005"/0.001mm
Graduation**: 0.01mm
Display*: LCD
Battery*: SR44 (1 pc.), **938882**
Battery life*: Approx. 1.2 years under normal use
(3 years: Quickmike type)
Dust/Water protection level*: IP65 (342-271 and 371)
IP54 (342-451)
*Digital models **Analog models

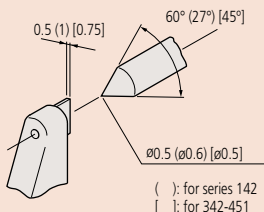
Functions of Digital Model

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

Optional Accessories for Digital Model

05CZA662: SPC cable with data switch (1m)
05CZA663: SPC cable with data switch (2m)
06ADV380B: USB Input Tool Direct with data switch (2m)
02AZD790B: SPC cable for U-WAVE water-proof model (160mm)
937387: SPC cable (1m)*
965013: SPC cable (2m)*
06ADV380E: USB Input Tool Direct with data switch (2m)*
02AZD790E: SPC cable for U-WAVE (160mm)*
*Only for Quickmike type

Unit: mm



Crimp Height Micrometers

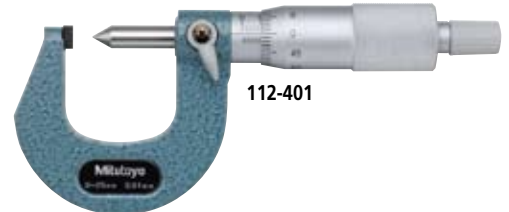
SERIES 342, 142, 112 — Point Spindle and Blade Anvil

FEATURES

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



342-271



112-401



Quickmike type

342-451



SPECIFICATIONS

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

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

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

* 0.001mm reading is obtained with vernier.

Inch/Metric	Digital model	
Range	Order No.	Accuracy
0 - 0.8"	342-371	±.00015"

Metric	Mechanical counter model	
Range	Order No.	Accuracy
0 - 25mm	112-401	±3µm

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) which have three or five flutes.
- With Ratchet Stop for constant force.
- V-anvils with a centerline groove are available. These are useful for measuring pitch diameters of taps which have three or five flutes by using the single-wire method.
- SPC output (series 314).



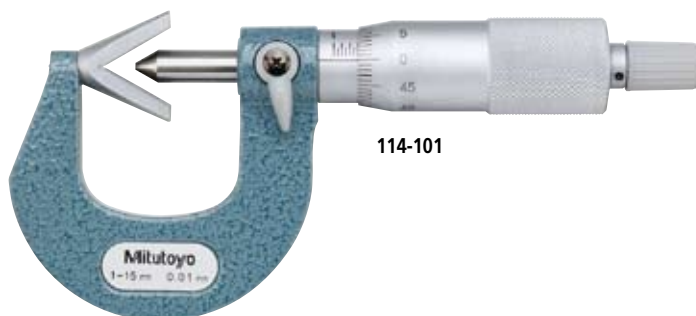
314-251-10



114-121



114-102



114-101

SPECIFICATIONS

Metric		Digital model for 3-flute cutting tools	
Range	Order No.	Accuracy	Remarks
1 - 15mm	314-251-10	±4μm	w/ groove
	314-261-10	±4μm	—
10 - 25mm	314-252-10	±4μm	w/ groove
	314-262-10	±4μm	—
25 - 40mm	314-253-10	±5μm	—

Inch/Metric		Digital model for 3-flute cutting tools	
Range	Order No.	Accuracy	Remarks
.05 - .6"	314-351-10	±.0002"	w/ groove
	314-361-10	±.0002"	—
.4" - 1"	314-352-10	±.0002"	w/ groove
	314-362-10	±.0002"	—
1" - 1.6"	314-353-10	±.00025"	—



Technical Data

Accuracy: Refer to the list of specifications.
(excluding quantizing error for digital models)
Resolution*: 0.001mm or .00005"/0.001mm
Graduation**: 0.01mm, .001" or .0001"
Flatness (spindle/anvil): 0.6μm[.000024"]/1.3μm[.00005"]**
(0.3μm[.000012"]/1μm[.00004"])*
Spindle face: Carbide
Display*: LCD
Battery*: SR44 (1 pc.), 938882
Battery life*: Approx. 1, 2 years under normal use
*Digital models **Analog models

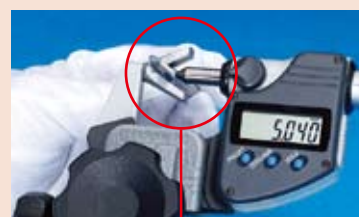
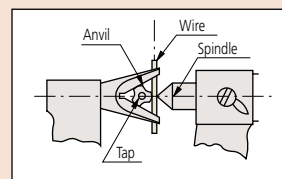
Functions of Digital Model

Zero-setting, Data hold, 2-point preset, Function lock, Automatic power ON/OFF, Data output, inch/mm conversion (inch/mm models)
Alarm: Low voltage, Counting value composition error

Optional Accessories for Digital Model

- 05CZA662: SPC cable with data switch (1m)
- 05CZA663: SPC cable with data switch (2m)
- 06ADV380B: USB Input Tool Direct with data switch (2m)
- 02AZD790B: SPC cable for U-WAVE water-proof model (160mm)

Pitch Diameter Measurement of Tap by Single-wire Method



Metric For 3-flute cutting tools

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

*Carbide-tipped anvil

Inch For 3-flute cutting tools

Range	Order No.	Accuracy	Remarks
.05 - .6"	114-163	±.0002"	—
.09" - 1"	114-202*	±.0002"	—
1" - 1.6"	114-113	±.00025"	—
1.6" - 2.2"	114-114	±.0003"	—

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

Metric For 5-flute cutting tools

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

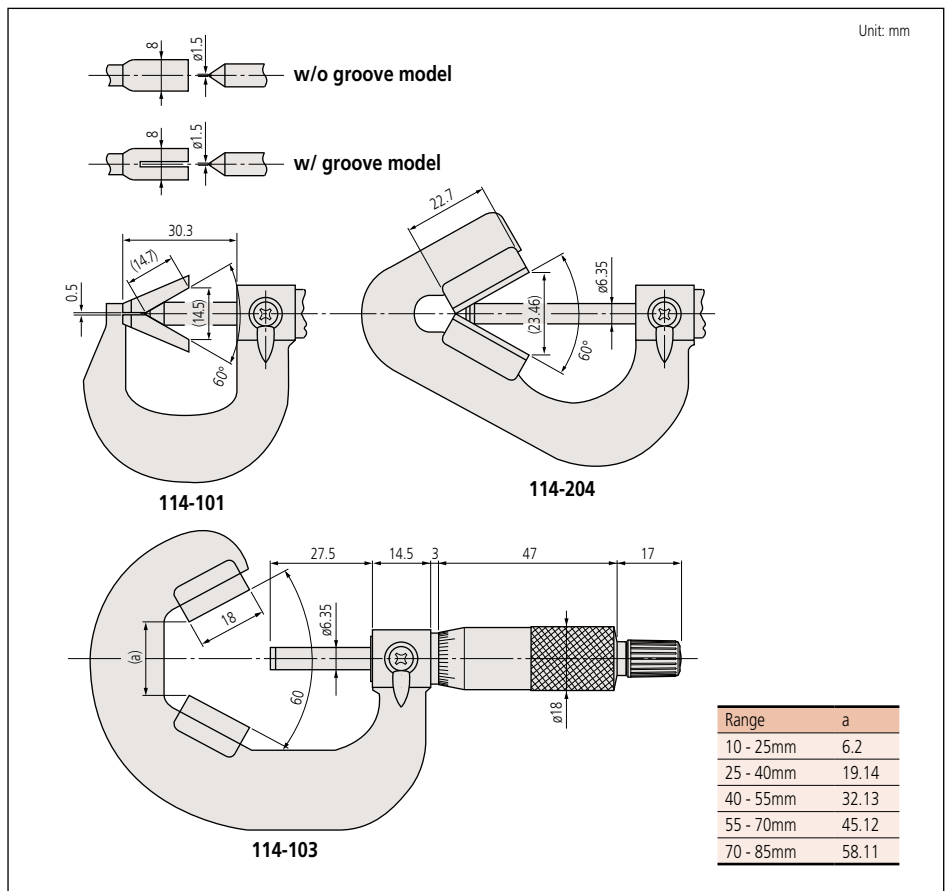
*Carbide-tipped anvil

Inch For 5-flute cutting tools

Range	Order No.	Accuracy	Remarks
.09" - 1"	114-135*	±.0002"	—

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

DIMENSIONS



Blade Micrometers

SERIES 422,122 — Non-Rotating Spindle Type

FEATURES

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



422-230

Quickmike type



422-411

IP54
ABSOLUTE
Absolute System Powered by IPMTD



122-101

SPECIFICATIONS

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

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

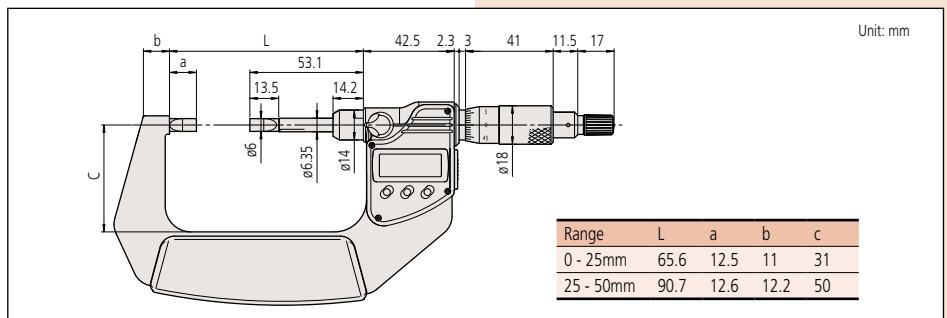
Metric			
Range	Order No.	Accuracy	Remarks
0 - 25mm	122-101	±3µm	Type A
	122-111	±3µm	Type B
	122-161	±3µm	Type C
	122-141	±3µm	Type D
	122-102	±3µm	Type A
25 - 50mm	122-112	±3µm	Type B
	122-162	±3µm	Type C
	122-142	±3µm	Type D
	122-103	±3µm	Type A
75 - 100mm	122-104	±4µm	Type A
100 - 125mm	122-105	±4µm	Type A
125 - 150mm	122-106	±4µm	Type A
150 - 175mm	122-107	±5µm	Type A
175 - 200mm	122-108	±5µm	Type A
200 - 225mm	122-109	±5µm	Type A
225 - 250mm	122-110	±6µm	Type A
250 - 275mm	122-115	±6µm	Type A
275 - 300mm	122-116	±6µm	Type A

Inch/Metric	Digital model		
Range	Order No.	Accuracy	Remarks
0 - 1"	422-330	±.00015"	Type A
	422-360	±.00015"	Type B
	422-370	±.00015"	Type C
	422-371	±.00015"	Type D
	422-331	±.00015"	Type A
1" - 2"	422-361	±.00015"	Type B
	422-332	±.00015"	Type A
2" - 3"	422-333	±.00015"	Type A
3" - 4"	422-333	±.0002"	Type A

Inch/Metric	Quickmike type		
Range	Order No.	Accuracy	
0 - 1.2"	422-421	±.00015"	
1" - 2.2"	422-422	±.00015"	

Inch			
Range	Order No.	Accuracy	Remarks
0 - 1"	122-125	±.00015"	Type A
	122-135	±.00015"	Type B
	122-151	±.00015"	Type D
	122-126	±.00015"	Type A
1" - 2"	122-127	±.00015"	Type A
2" - 3"	122-127	±.00015"	Type A
3" - 4"	122-128	±.0002"	Type A

DIMENSIONS



Technical Data

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

Functions of Digital Model

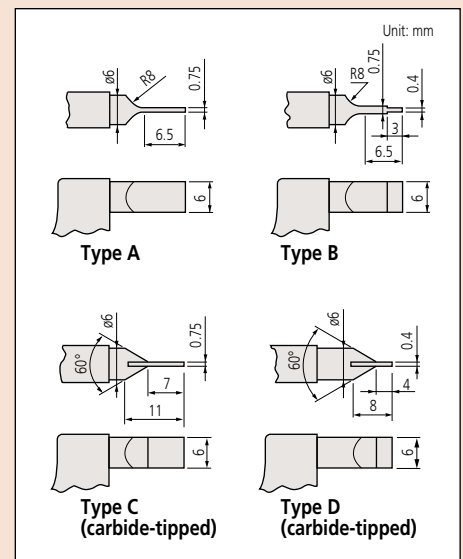
Origin-set, Zero-setting, Data hold, Automatic power ON/OFF, Data output, inch/mm conversion (inch/mm models)
Alarm: Low voltage, Counting value composition error

Optional Accessories for Digital Model

- 05CZA662: SPC cable with data switch (1m)
- 05CZA663: SPC cable with data switch (2m)
- 06ADV380B: USB Input Tool Direct with data switch (2m)
- 02AZD790B: SPC cable for U-WAVE water-proof model (160mm)
- 937387: SPC cable (1m)*
- 965013: SPC cable (2m)*
- 06ADV380E: USB Input Tool Direct with data switch (2m)*
- 02AZD790E: SPC cable for U-WAVE (160mm)*

*Only for Quickmike type

TYPE AND DIMENSIONS



Can Seam Micrometers

SERIES 147

FEATURES

- Measures the width, height, and depth of can seams.
- Three types of micrometer are available (for steel, aluminum and spray cans).

Technical Data

Accuracy: $\pm 3\mu\text{m}/\pm 0.00015''$
 Graduation: 0.01mm or .001''



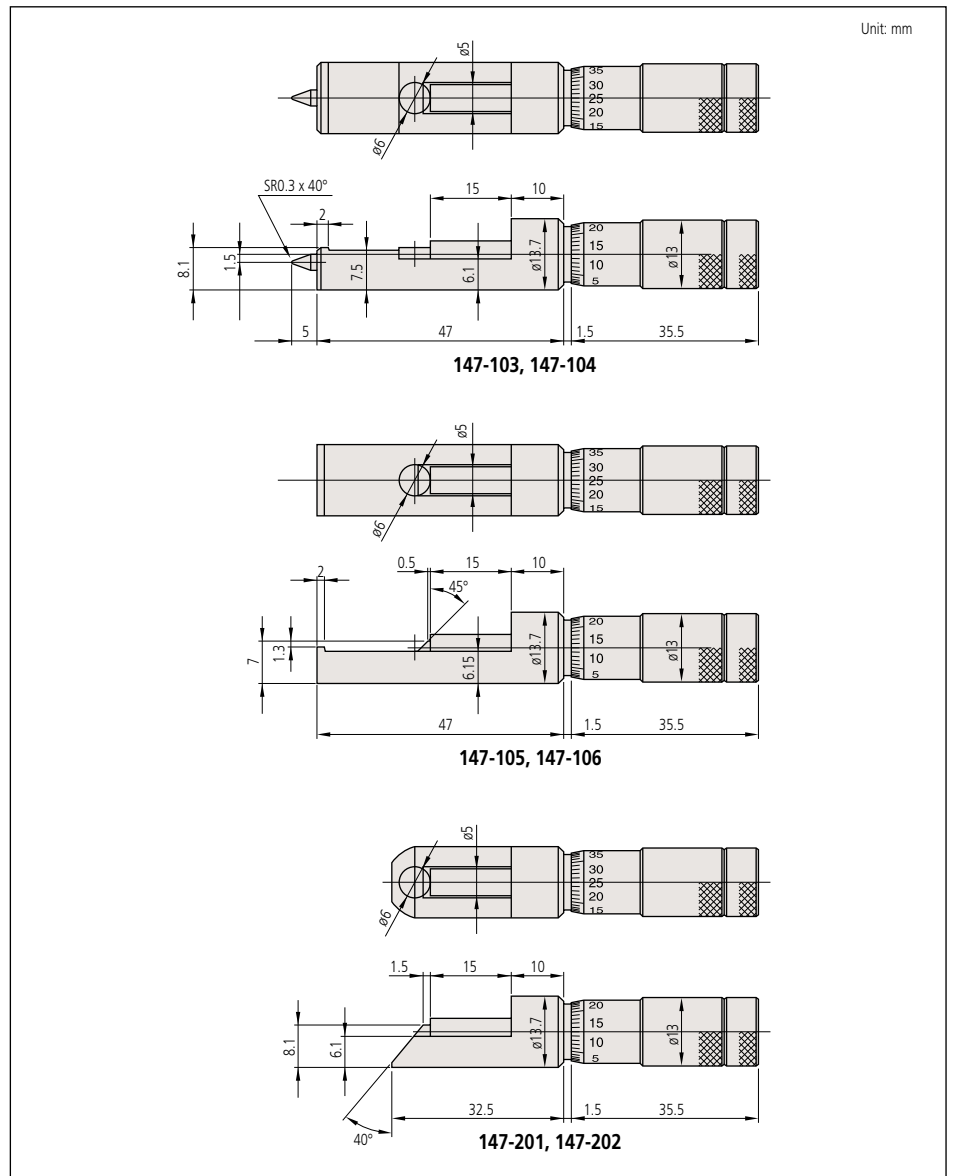
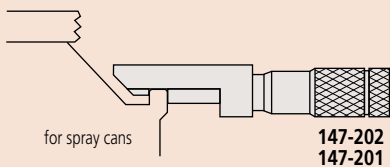
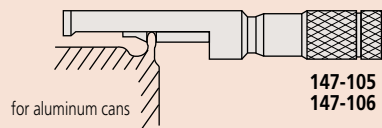
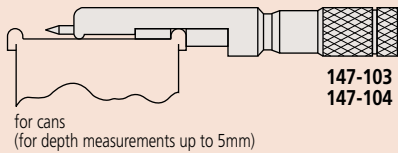
147-103

SPECIFICATIONS

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

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

DIMENSIONS



Hub Micrometers

SERIES 147

FEATURES

- Measures hub thickness and shoulders inside a bore.
- With Ratchet Stop for constant force.
- Supplied with a setting standard (except for 0-25mm/0-1" models).



SPECIFICATIONS

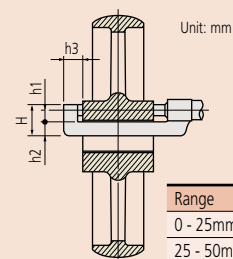
Metric		
Range	Order No.	Accuracy
0 - 25mm	147-301	±2µm
25 - 50mm	147-302	±2µm
50 - 75mm	147-303	±2µm
75 - 100mm	147-304	±3µm

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

Technical Data

Accuracy: Refer to the list of specifications.
 Graduation: 0.01mm or .001"
 Flatness: 0.6µm/0.00024"
 Parallelism: (2+R/100)µm, R = max. range (mm)
 [.00008" + .00004(R/4)]" R = max. range (inch)
 fraction rounded up

Measuring faces: Carbide



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

Wire Micrometers

SERIES 147

FEATURES

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



SPECIFICATIONS

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

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

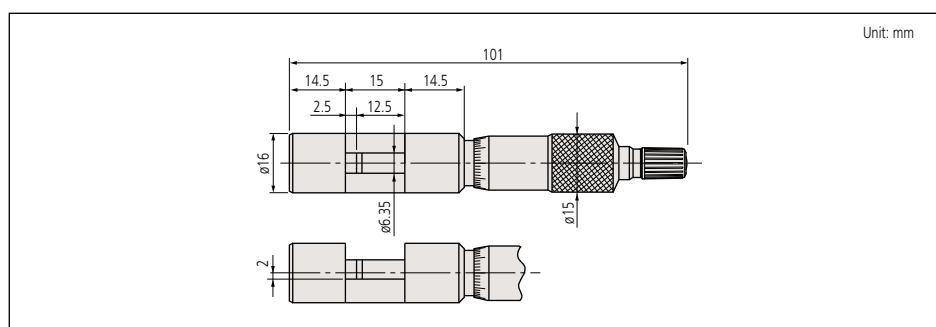
*.0001" reading is obtained with vernier.

Technical Data

Accuracy: Refer to the list of specifications.
 Graduation: 0.01mm or .0001"
 Flatness: 0.6µm/0.00024"
 Parallelism: 1.3µm/0.0005"
 Measuring faces: Carbide



DIMENSIONS



Digit Outside Micrometers

SERIES 193

FEATURES

- Mechanical digit counter with 0.01mm or .001" reading for quick and error-free reading.
- Supplied with a setting standard (except for 0-25mm/0-1" models).



193-101

Technical Data

Accuracy: Refer to the list of specifications.

Counter reading: 0.01mm or .001"

Graduation: 0.01mm, 0.001mm, or .0001"

Flatness: 0.6µm/.000024"

Parallelism: (2+R/100)µm, R = max. range (mm)
[.00008+.00004(R/4)]" R = max. range (inch)
fraction rounded down

Measuring faces: Carbide

SPECIFICATIONS

Metric _____ With ratchet stop		
Range	Order No.	Accuracy
0 - 25mm	193-101	±2µm
	193-111*	±2µm
25 - 50mm	193-102	±2µm
	193-112*	±2µm
50 - 75mm	193-103	±2µm
	193-113*	±2µm
75 - 100mm	193-104	±3µm
	193-114*	±3µm

*0.001mm reading is obtained with vernier.

Inch _____ With ratchet stop		
Range	Order No.	Accuracy
2" - 3"	193-213*	±.0001"
3" - 4"	193-214*	±.00015"

*.0001" reading is obtained with vernier.

Inch _____ With friction thimble		
Range	Order No.	Accuracy
0 - 1"	193-211*	±.0001"
1" - 2"	193-212*	±.0001"

*.0001" reading is obtained with vernier.

Metric _____ Micrometer set		
Range	Order No.	Models included
0 - 75mm (3 pcs./set)	193-901	• 193-101, 193-102, 193-103 • 2 micrometer standards
0 - 100mm (4 pcs./set)	193-902	• 193-101, 193-102, 193-103, 193-104 • 3 micrometer standards

Inch _____ Micrometer set		
Range	Order No.	Models included
0 - 3" (3 pcs./set)	193-923	• 193-211, 193-212, 193-213 • 2 micrometer standards

DIMENSIONS

Unit: mm

Models up to 100mm

Range	L	a	b	c
0 - 25mm	30	2.5	5	26
25 - 50mm	55	2	8	32
50 - 75mm	80	2	9	45
75 - 100mm	105	2	9	57

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

"Uni-Mike"

SERIES 317, 117 — Interchangeable Anvil Type

FEATURES

- IP65 water/dust protection (317 series).
- Measures tubing thickness, shoulder-edge distance, rivet head height, etc., with interchangeable anvils (flat anvil, rod anvil, V-anvil).
- Supplied with Flat Anvil (**201216**) and Rod Anvil: $\varnothing 3$ mm rod anvil (**201217**) for 0-25mm models, $\varnothing 5$ mm (**201379**) for 25-50mm model.
- With special Disk Anvils. The Uni-Mike is used as a height micrometer. The disks have a lapped, mirror-smooth surface.



(Refer to page VIII for details.)

Technical Data

Accuracy: Refer to the list of specifications.
(excluding quantizing error for digital models)
Resolution*: 0.001mm or .00005"/0.001mm
Graduation**: 0.01mm or .0001"
Spindle face: Carbide
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

Functions of Digital Model

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

Optional Accessories

- 05CZA662**: SPC cable with data switch (1m)*
 - 05CZA663**: SPC cable with data switch (2m)*
 - 06ADV380B**: USB Input Tool Direct with data switch (2m)
 - 02AZD790B**: SPC cable for U-WAVE water-proof model (160mm)*
 - 201218**: V-anvil
 - 950758**: Disk anvil for 25m (1") models
- *Only for digital models



317-251



117-101

SPECIFICATIONS

Metric	Digital model with ratchet stop	
Range	Order No.	Accuracy
0 - 25mm	317-251	$\pm 4\mu\text{m}$
25 - 50mm	317-252	$\pm 4\mu\text{m}$

Excluding quantizing error

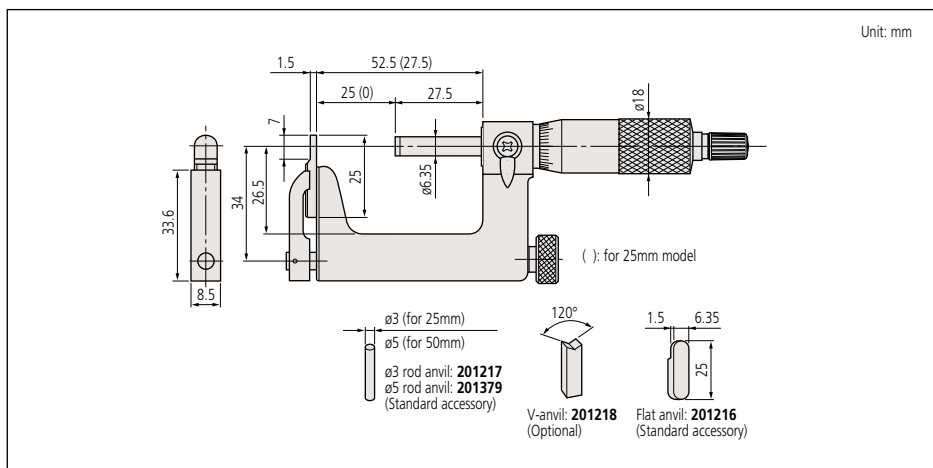
Inch/Metric	Digital model with friction thimble	
Range	Order No.	Accuracy
0 - 1"	317-351	$\pm .0002$ "
1" - 2"	317-352	$\pm .0002$ "

Excluding quantizing error

Metric	With ratchet stop	
Range	Order No.	Accuracy
0 - 25mm	117-101	$\pm 4\mu\text{m}$
25 - 50mm	117-102	$\pm 4\mu\text{m}$

Inch	With friction thimble	
Range	Order No.	Accuracy
0 - 1"	117-107	$\pm .0002$ "
1" - 2"	117-108	$\pm .0002$ "

DIMENSIONS



Limit Micrometers

SERIES 113

FEATURES

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



113-102

Technical Data

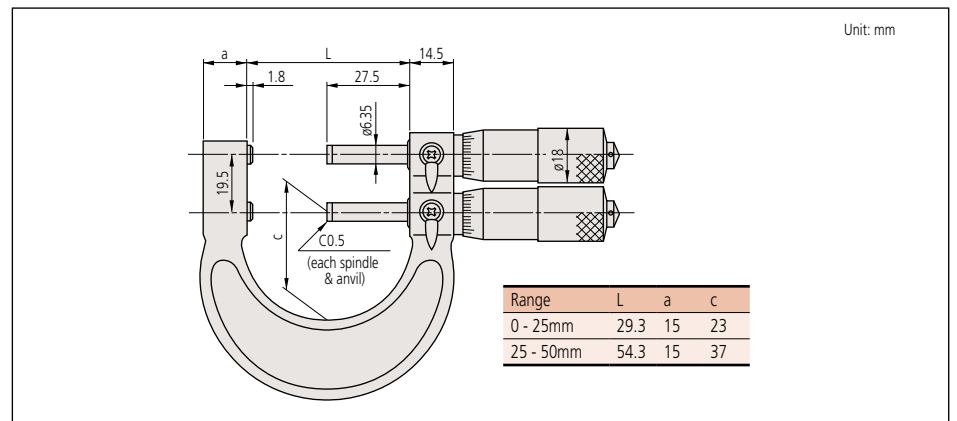
Accuracy: Refer to the list of specifications.
 Graduation: 0.01mm
 Flatness: 0.6μm
 Parallelism: 3μm
 Measuring faces: Carbide

SPECIFICATIONS

Metric

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

DIMENSIONS



Indicating Micrometers

SERIES 510

FEATURES

- Retractable anvil with indicator for three-wire measurements of pitch diameter of precision screws, roundness and parallelism measurements.
- Supplied with a setting standard (except for 0-25mm/0-1" models).
- IP protection level: 54



510-121



Retractable anvil button



510-141



SPECIFICATIONS

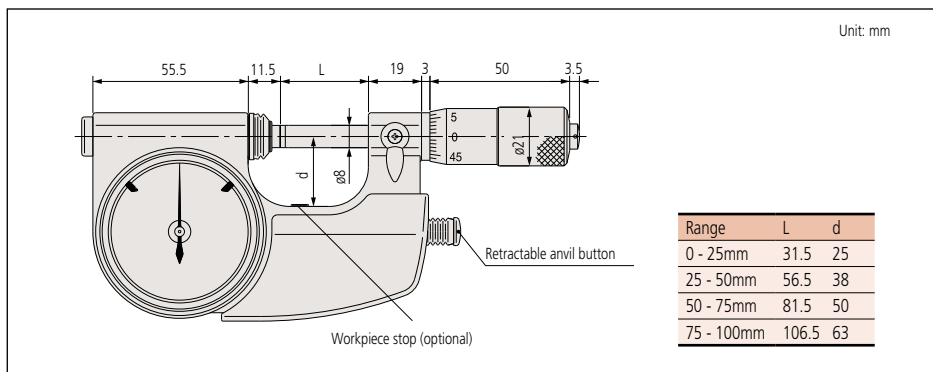
Metric		
Range	Order No.	Indicating range
0 - 25mm	510-141/510-121*	±0.060mm
25 - 50mm	510-122	±0.060mm
50 - 75mm	510-123	±0.060mm
75 - 100mm	510-124	±0.060mm

*Retractable anvil button on the right side.

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

*Retractable anvil button on the right side.

DIMENSIONS

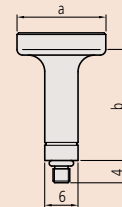


Technical Data

Spindle feed error: 3µm/0.0015"
 Dial indication accuracy: 1µm/0.00005"
 Dispersion of indication: 0.4µm/0.00002"
 Graduation: 0.001mm or .0001"
 Dial reading: 0.001mm or .00005"
 Flatness: 0.3µm/0.00012"
 Parallelism: 0.6µm/0.00024" for models up to 50mm/2"
 1µm/0.0004" for models over 50mm/2"
 Measuring force: 5 - 10N (500 - 1000gf)
 Measuring faces: Carbide

Optional Accessories

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



Unit: mm

	a	b
04AZA124	ø16	23
04AZA125	ø14	20.5
04AZA126	ø14	15

Snap Meters

SERIES 523

Technical Data

Flatness: $0.3\mu\text{m}/.000012''$
 Parallelism: $0.6\mu\text{m}/.000024''$ for models up to $50\text{mm}/2''$
 $1\mu\text{m}/.00004''$ for models over $50\text{mm}/2''$
 Measuring force*: 5 - 10N (500 - 1000gf)
 Measuring faces: Carbide
 *Measured at the position where the anvil is retracted by 1mm from the free position without installing the indicator.

FEATURES

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



523-141

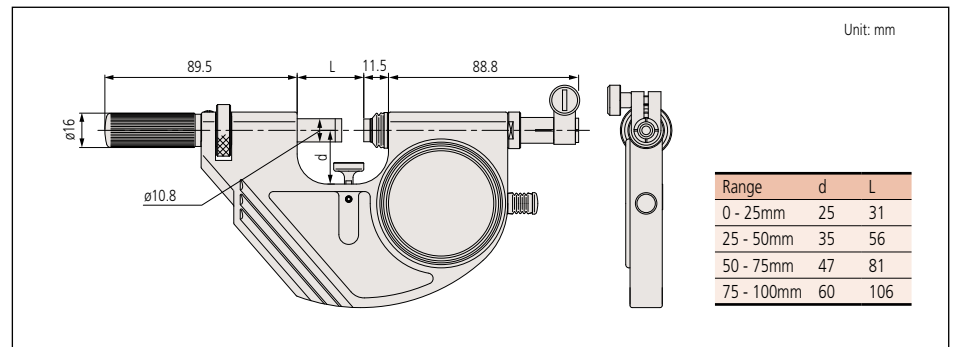


SPECIFICATIONS

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

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

DIMENSIONS



Dial Snap Meters

SERIES 523

FEATURES

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



Technical Data

Dial indication accuracy: $1\mu\text{m}/.00005''$
 Dispersion of indication: $0.4\mu\text{m}/00002''$
 Dial reading: 0.001mm or .00005"
 Flatness: $0.3\mu\text{m}/.000012''$
 Parallelism: $0.6\mu\text{m}/.000024''$ for models up to 50mm/2"
 $1\mu\text{m}/.00004''$ for models over 50mm/2"
 Measuring force: 5 - 10N (500 - 1000gf)
 Measuring faces: Carbide



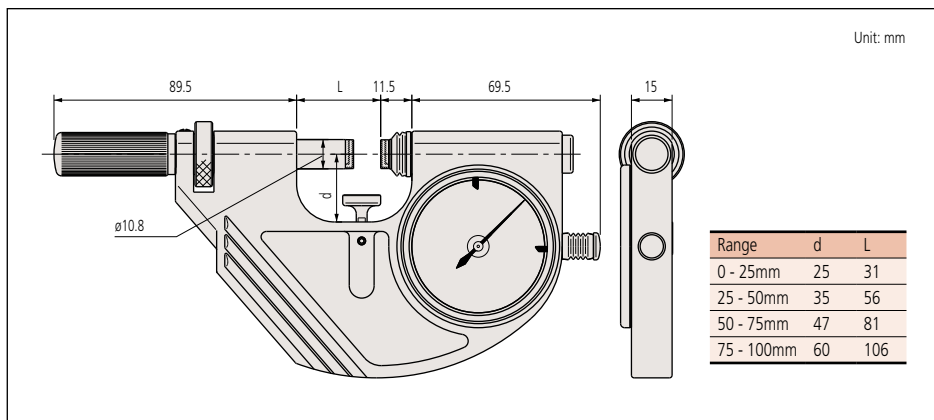
523-121

SPECIFICATIONS

Metric		
Range	Order No.	Indicating range
0 - 25mm	523-121	$\pm 0.060\text{mm}$
25 - 50mm	523-122	$\pm 0.060\text{mm}$
50 - 75mm	523-123	$\pm 0.060\text{mm}$
75 - 100mm	523-124	$\pm 0.060\text{mm}$

Inch		
Range	Order No.	Indicating range
0 - 1"	523-131	$\pm .0023''$
1" - 2"	523-132	$\pm .0023''$
2" - 3"	523-133	$\pm .0023''$
3" - 4"	523-134	$\pm .0023''$

DIMENSIONS



Groove Micrometers

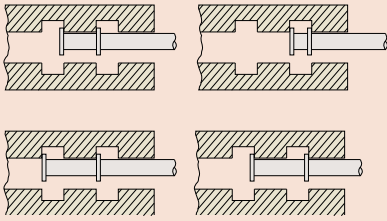
SERIES 146

FEATURES

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

Technical Data

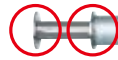
Accuracy: $\pm 10\mu\text{m}/\pm .0004''$
 Parallelism: $10\mu\text{m}/.0004''$



146-122

146-221

Flange (measuring face)



146-222

SPECIFICATIONS

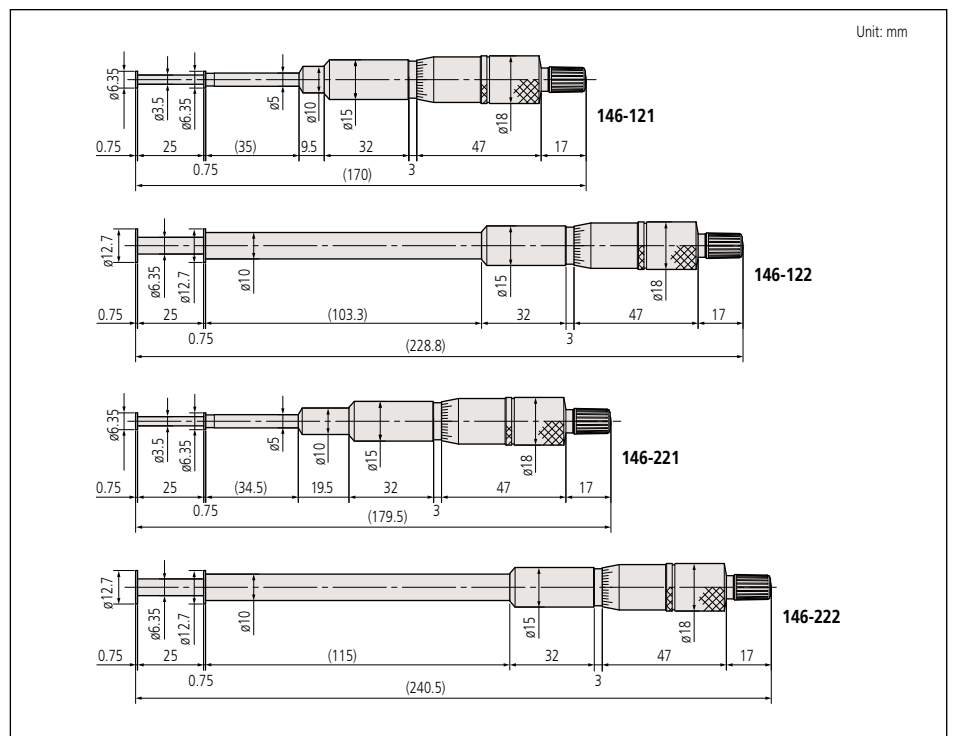
Metric		Rotating spindle type	
Range Outside	Range Inside	Order No.	Flange
0 - 25mm	1.6 - 26.5mm	146-121	$\phi 6.35\text{mm}$
		146-122	$\phi 12.7\text{mm}$
25 - 50mm	26.5 - 51.5mm	146-123	$\phi 12.7\text{mm}$
50 - 75mm	51.5 - 76.5mm	146-124	$\phi 12.7\text{mm}$
75 - 100mm	76.5 - 101.5mm	146-125	$\phi 12.7\text{mm}$

Inch		Rotating spindle type	
Range Outside	Range Inside	Order No.	Flange
0 - 1"	.055" - 1.05"	146-131	$\phi .25''$
		146-132	$\phi .5''$
1" - 2"	1.05" - 2.05"	146-133	$\phi .5''$
2" - 3"	2.05" - 3.05"	146-134	$\phi .5''$
3" - 4"	3.05" - 4.05"	146-135	$\phi .5''$

Metric		Non-rotating spindle type	
Range Outside	Range Inside	Order No.	Flange
0 - 25mm	1.6 - 26.5mm	146-221	$\phi 6.35\text{mm}$
		146-222	$\phi 12.7\text{mm}$
25 - 50mm	26.5 - 51.5mm	146-223	$\phi 12.7\text{mm}$
50 - 75mm	51.5 - 76.5mm	146-224	$\phi 12.7\text{mm}$
75 - 100mm	76.5 - 101.5mm	146-225	$\phi 12.7\text{mm}$

Inch		Non-rotating spindle type	
Range Outside	Range Inside	Order No.	Flange
0 - 1"	.055" - 1.05"	146-231	$\phi .25''$
		146-232	$\phi .5''$
1" - 2"	1.05" - 2.05"	146-233	$\phi .5''$
2" - 3"	2.05" - 3.05"	146-234	$\phi .5''$
3" - 4"	3.05" - 4.05"	146-235	$\phi .5''$

DIMENSIONS



Quick-Mini

SERIES 700

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



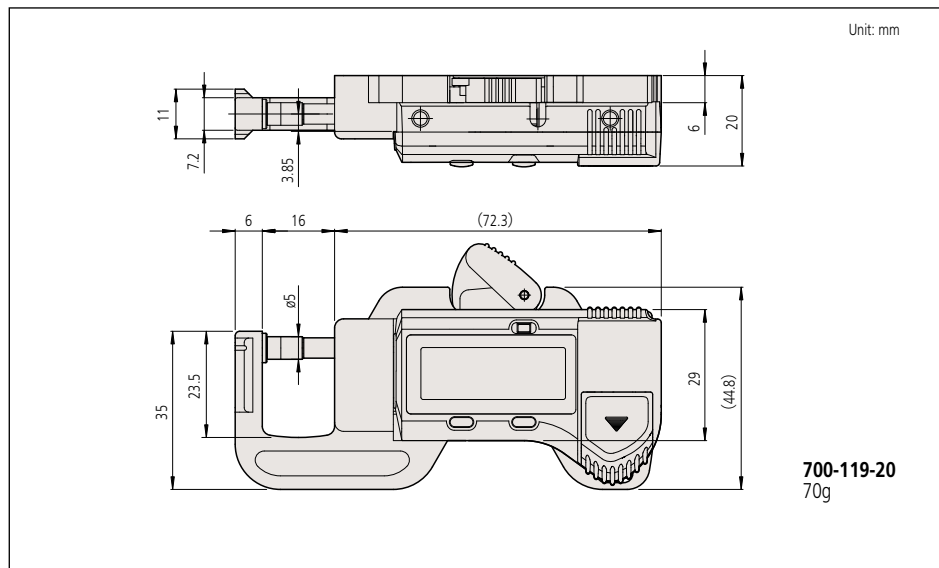
700-119-20

SPECIFICATIONS

Metric		
Range	Order No.	Accuracy
0 - 12mm	700-119-20	±0.02mm

Inch/Metric		
Range	Order No.	Accuracy
0 - .5"/0 - 12mm	700-118-20	±.001"

DIMENSIONS AND MASS



Technical Data

Accuracy: Refer to the list of specifications.
 Resolution: 0.01mm or .0005"/0.01mm
 Display: LCD
 Battery: SR44 (1 pc.), **938882**
 Battery life: Approx. 3.5 years under normal use

Functions

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



Small Hole Gage Set

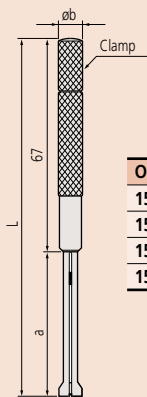
SERIES 154

FEATURES

- Two sprung leaves are fully expanded inside a small hole so that the hole diameter can be measured with an outside micrometer after extraction.
- Each set includes all 4 sizes of gage in a fitted case.
- Extra long for gaging deep and shallow holes, slots, and similar workpieces.
- Gaging surfaces are fully hardened to insure long tool life.



DIMENSIONS



Unit: mm

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



154-902

SPECIFICATIONS

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

Inch		
Total range	Order No.	Gages included
.125" - .5" DIA. (4-gage set)	154-901	ø.125 - .2" (154-105)
		ø.2 - .3" (154-106)
		ø.3 - .4" (154-107)
		ø.4 - .5" (154-108)

Telescoping Gage Set

SERIES 155

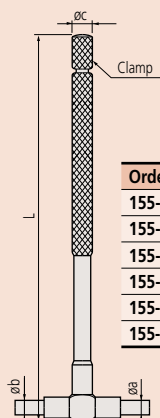
FEATURES

- A spring loaded plunger expands within a bore (or groove) and is locked in place, allowing measurement of diameter (or width) with an outside micrometer after extraction from the feature.
- Knurled finish provides a secure grip and easy locking.
- Each set includes all 6 sizes of gage in a fitted case.



155-905

DIMENSIONS



Unit: mm

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

SPECIFICATIONS

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

Inch		
Total range	Order No.	Gages included
.313" - 6" (6-gage set)*	155-903	.313" - .5" (155-121)
		.5" - .75" (155-122)
		.75" - 1.25" (155-123)
		1.25" - 2.125" (155-124)
		2.125" - 3.5" (155-125)
		3.5" - 6" (155-126)

*4-gage set (Total range: .313" - 2.125" (155-907)) and 5-gage set (Total range: 5" - 6" (155-904)) are also available.