

Micrometer

The origin of Mitutoyo's trustworthy brand of small tool instruments

Outside Micrometers SERIES 102

- Heat-insulated frame.
- Cut-away frame (behind anvil) for measuring in hard-to-reach places.
- A ratchet stop or a friction thimble for a constant measuring force.
- Measuring faces: Carbide

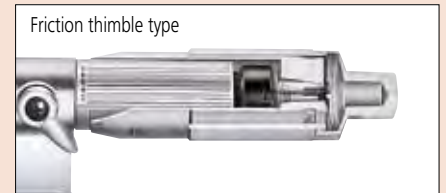
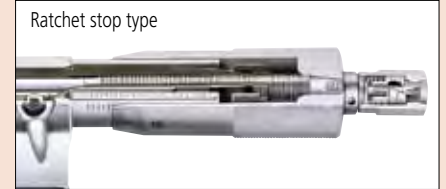


Ratchet stop
102-301



An inspection certificate is supplied as standard. Refer to page X for details.

Common specifications:
Standard accessories: Reference bar, 1 pc (except for measuring range 0-25mm models)
Spanner (301336), 1 pc (for measuring range 0-25mm/25-50mm models)
Spanner (200877), 1 pc (for measuring range 50-75mm/75-100mm models)

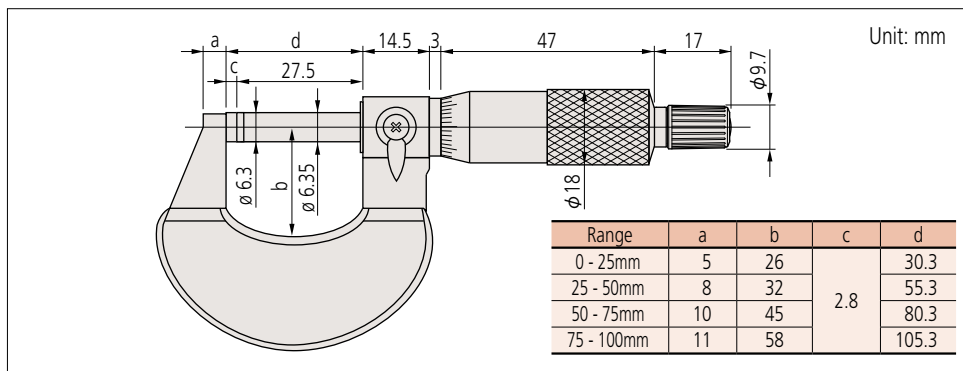


SPECIFICATIONS

Metric						
Order No.	Range	Graduation	Accuracy	Flatness	Parallelism	Constant-force device
102-301	0 - 25mm	0.01mm	$\pm 2\mu\text{m}$	$0.6\mu\text{m}$	$2\mu\text{m}$	Ratchet stop
102-311		0.001mm	$\pm 1\mu\text{m}$	$0.3\mu\text{m}$	$1\mu\text{m}$	friction thimble
102-313						
102-302	25 - 50mm	0.01mm	$\pm 2\mu\text{m}$	$0.6\mu\text{m}$	$2\mu\text{m}$	Ratchet stop
102-312		0.001mm	$\pm 1\mu\text{m}$	$0.3\mu\text{m}$	$1\mu\text{m}$	
102-303	50 - 75mm	0.01mm	$\pm 2\mu\text{m}$	$0.6\mu\text{m}$	$2\mu\text{m}$	
102-304	75 - 100mm		$\pm 3\mu\text{m}$		$3\mu\text{m}$	

Metric		
Order No.	Range	Models included
102-911-40	0 - 100mm (Four micrometers per set)	<ul style="list-style-type: none"> • 102-301 • 102-302 • 102-303 • 102-304 • 3 micrometer standards

DIMENSIONS

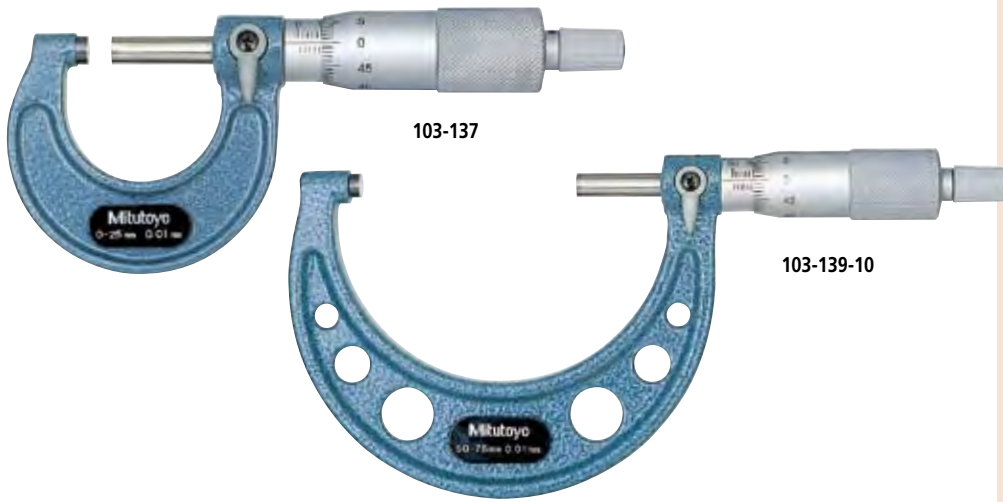


Micrometer

The origin of Mitutoyo's trustworthy brand of small tool instruments

Outside Micrometers SERIES 103

- Baked-enamel-finished frame.
- Measuring faces: Carbide
- Equipped with Ratchet Stop for constant measuring force.



Metric	With ratchet stop			
Order No.	Range	Graduation	Accuracy	
103-137	0 - 25mm	0.01mm	±2μm	
103-129		0.001mm		
103-138	25 - 50mm	0.01mm		
103-130		0.001mm		
103-139-10	50 - 75mm	0.01mm		±3μm
103-140-10	75 - 100mm			
103-141-10	100 - 125mm			
103-142-10	125 - 150mm			
103-143-10	150 - 175mm			±4μm
103-144-10	175 - 200mm			
103-145-10	200 - 225mm			
103-146-10	225 - 250mm		±5μm	
103-147-10	250 - 275mm			
103-148-10	275 - 300mm		±6μm	
103-149	300 - 325mm			
103-150	325 - 350mm	±7μm		
103-151	350 - 375mm			
103-152	375 - 400mm	±8μm		
103-153	400 - 425mm			
103-154	425 - 450mm	±9μm		
103-155	450 - 475mm			
103-156	475 - 500mm	±10μm		
103-157	500 - 525mm			
103-158	525 - 550mm	±11μm		
103-159	550 - 575mm			
103-160	575 - 600mm	±12μm		
103-161	600 - 625mm			
103-162	625 - 650mm	±13μm		
103-163	650 - 675mm			
103-164	675 - 700mm	±14μm		
103-165	700 - 725mm			
103-166	725 - 750mm	±15μm		
103-167	750 - 775mm			
103-168	775 - 800mm			
103-169	800 - 825mm			
103-170	825 - 850mm			
103-171	850 - 875mm			
103-172	875 - 900mm			
103-173	900 - 925mm			
103-174	925 - 950mm			
103-175	950 - 975mm			
103-176	975 - 1000mm			

Inch	With ratchet stop			
Order No.	Range	Graduation	Accuracy	
103-177	0 - 1"	.001"	±.0001"	
103-131		.0001"		
103-178	1" - 2"	.001"		
103-132		.0001"		
103-179	2" - 3"	.001"		±.00015"
103-180	3" - 4"			
103-181	4" - 5"			
103-182	5" - 6"			
103-183	6" - 7"			±.0002"
103-184	7" - 8"			
103-185	8" - 9"		±.00025"	
103-186	9" - 10"			
103-187	10" - 11"		±.0003"	
103-188	11" - 12"			
103-189	12" - 13"	±.00035"		
103-190	13" - 14"			
103-191	14" - 15"	±.0004"		
103-192	15" - 16"			
103-193	16" - 17"	±.00045"		
103-194	17" - 18"			
103-195	18" - 19"	±.0005"		
103-196	19" - 20"			
103-197	20" - 21"	±.00055"		
103-198	21" - 22"			
103-199	22" - 23"	±.0006"		
103-200	23" - 24"			
103-201	24" - 25"	±.00065"		
103-202	25" - 26"			
103-203	26" - 27"	±.0007"		
103-204	27" - 28"			
103-205	28" - 29"	±.00075"		
103-206	29" - 30"			
103-207	30" - 31"			
103-208	31" - 32"			
103-209	32" - 33"			
103-210	33" - 34"			
103-211	34" - 35"			
103-212	35" - 36"			
103-213	36" - 37"			
103-214	37" - 38"			
103-215	38" - 39"			
103-216	39" - 40"			

Inch	With friction thimble		
Order No.	Range	Graduation	Accuracy
103-135	0 - 1"	.0001"	±.0001"
103-136	1" - 2"		



An inspection certificate is supplied as standard. Refer to page X for details.

Technical Data

Flatness: 0.6μm/.000024" for models up to 300mm/12"
1μm/.00004" for models over 300mm/12"

Parallelism:

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

Standard accessories: Reference bar, 1 pc

(except for measuring range 0-25mm (0-1") models)

Spanner (301336), 1 pc

(for maximum measuring range up to 300mm (12"))

Spanner (200154), 1 pc

(for maximum measuring range 325mm (13") or over)



103-904-10



103-905-10



103-906

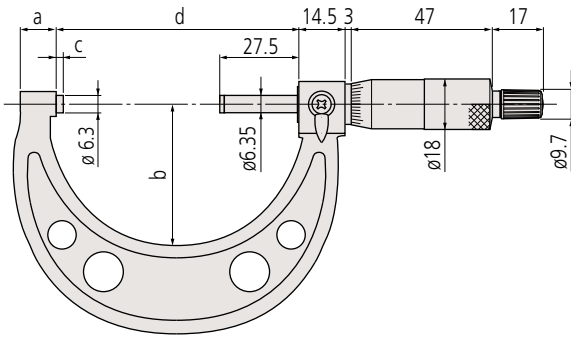
Metric Micrometer set / With ratchet thimble		
Order No.	Range	Models included
103-927-10	0 - 75mm (3 pcs./set)	103-137, 103-138, 103-139-10, 2 micrometer standards
103-913-50	0 - 150mm (6 pcs./set)	103-137, 103-138, 103-139-10, 103-140-10, 103-141-10, 103-142-10, 5 micrometer standards
103-915-10	150 - 300mm (6 pcs./set)	103-143-10, 103-144-10, 103-145-10, 103-146-10, 103-147-10, 103-148-10, 6 micrometer standards
103-914-50	0 - 300mm (12 pcs./set)	All micrometers of 103-913-50 and 103-915-10 in one set, 11 micrometer standards

Inch Micrometer set / With ratchet thimble		
Order No.	Range	Models included
103-929	0 - 3" (3 pcs./set)	103-177, 103-178, 103-179, 2 micrometer standards
103-930	0 - 4" (4 pcs./set)	103-177, 103-178, 103-179, 103-180, 3 micrometer standards
103-904-10	0 - 6" (6 pcs./set)	103-177, 103-178, 103-179, 103-180, 103-181, 103-182, 5 micrometer standards
103-906	6" - 12" (6 pcs./set)	103-183, 103-184, 103-185, 103-186, 103-187, 103-188, 6 micrometer standards
103-905-10	0 - 12" (12 pcs./set)	All micrometers of 103-904-10 and 103-906 in one set, 11 micrometer standards

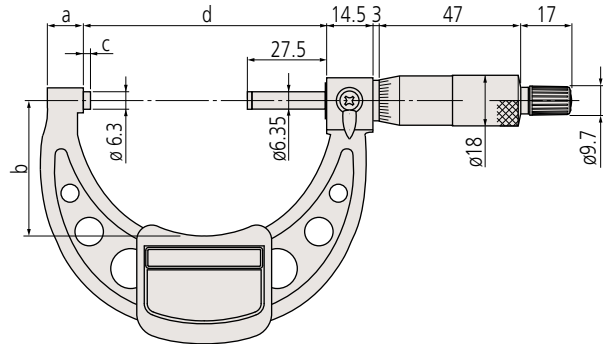
DIMENSIONS

Unit: mm

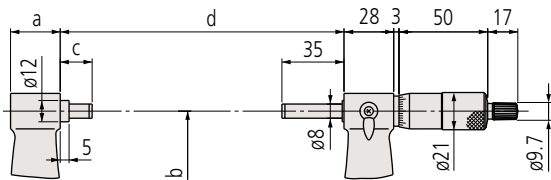
Models up to 75mm measuring range



Models 75mm to 300mm



Models over 300mm measuring range



Range	a	b	c	d
0 - 25mm	9	28	2.5	30
25 - 50mm	10	38		55
50 - 75mm	12	47		80
75 - 100mm	14	58		105
100 - 125mm	16.7	77	5.3	132.8
125 - 150mm	18.8	92	5.7	158.2
150 - 175mm	19.1	104	6.1	183.6
175 - 200mm	18.2	115	6.3	208.8
200 - 225mm	16.8	128	6.7	234.2
225 - 250mm	18	141	5.5	258

Range	a	b	c	d
250 - 275mm	18	153	6.5	284
275 - 300mm		166		309
300 - 325mm		187		353
325 - 350mm		199		378
350 - 375mm	28	212	18	403
375 - 400mm		224		428
400 - 425mm		236		453
425 - 450mm		248		478
450 - 475mm		261		503
475 - 500mm		273		528

Range	a	b	c	d
500 - 525mm	28	307	40	575
525 - 550mm			15	
550 - 575mm		332	40	625
575 - 600mm			15	
600 - 625mm		355	40	675
625 - 650mm			15	
650 - 675mm		382	40	725
675 - 700mm			15	
700 - 725mm		405	40	775
725 - 750mm			15	
750 - 775mm		430	40	825
775 - 800mm			15	
800 - 825mm	455	40	875	
825 - 850mm		15		
850 - 875mm	480	40	925	
875 - 900mm		15		
900 - 925mm	505	40	975	
925 - 950mm		15		
950 - 975mm	530	40	1025	
975 - 1000mm		15		