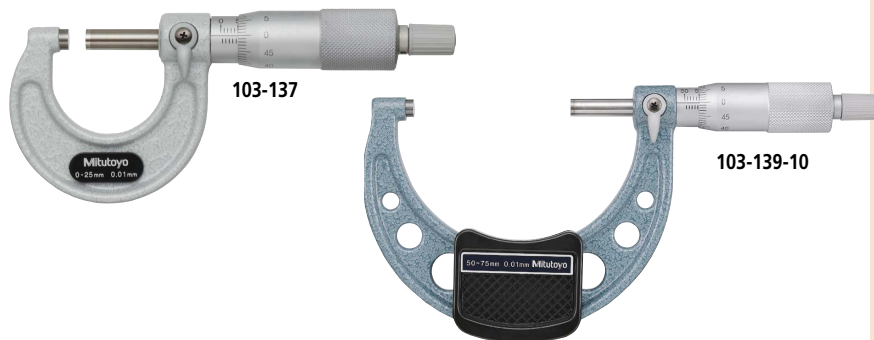


Micrometer

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.



An inspection certificate is supplied as standard.
Refer to page U-9 for details.

Technical Data

- Standard accessories: Reference bar, 1 pc.
(except for measuring range 0 to 25 mm (0 to 1 in) models)
Spanner (**301336**), 1 pc.
(for maximum measuring range up to 300 mm (12 in))
Spanner (**200154**), 1 pc.
(for maximum measuring range 325 mm (13 in) or over)

Metric With ratchet stop						
Order No.	Range (mm)	Graduation (mm)	MPE*1 (μm)	Measuring force (N)	Flatness (μm)	Parallelism (μm)
103-129	0 - 25	0.001	±2	5 - 10	0.6	2
103-130	25 - 50	0.001				
103-139-10	50 - 75					
103-140-10	75 - 100		±3			3
103-141-10	100 - 125					
103-142-10	125 - 150					
103-143-10	150 - 175		±4			4
103-144-10	175 - 200					
103-145-10	200 - 225					
103-146-10	225 - 250		±5			
103-147-10	250 - 275					
103-148-10	275 - 300					
103-149	300 - 325	0.01	±6	10 - 15	1	5
103-150	325 - 350					
103-151	350 - 375					
103-152	375 - 400					
103-153	400 - 425					
103-154	425 - 450		±8			7
103-155	450 - 475					
103-156	475 - 500					
103-157	500 - 525		±9			8
103-158	525 - 550					
103-159	550 - 575					
103-160	575 - 600		±10			9
103-161	600 - 625					
103-162	625 - 650					
103-163	650 - 675		±11			10
103-164	675 - 700					
103-165	700 - 725					
103-166	725 - 750		±12			11
103-167	750 - 775					
103-168	775 - 800					
103-169	800 - 825		±13			12
103-170	825 - 850					
103-171	850 - 875					
103-172	875 - 900		±14			13
103-173	900 - 925					
103-174	925 - 950					
103-175	950 - 975		±15			14
103-176	975 - 1000					

Inch	With ratchet stop					
Order No.	Range (in)	Graduation (in)	MPE*1 (in)	Measuring force (N)	Flatness (in)	Parallelism (in)
103-177	0 - 1	0.001	±0.0001	5 - 10	0.000024	0.00008
103-131		0.0001				
103-178		0.001				
103-132	1 - 2	0.0001	±0.00015			0.00012
103-179	2 - 3	0.0001				
103-180	3 - 4					
103-181	4 - 5		±0.0002			0.00016
103-182	5 - 6					
103-183	6 - 7					
103-184	7 - 8		±0.00025			0.0002
103-185	8 - 9					
103-186	9 - 10					
103-187	10 - 11		±0.0003	0.00024		
103-188	11 - 12					
103-189	12 - 13					
103-190	13 - 14		±0.00035	0.00028		
103-191	14 - 15					
103-192	15 - 16					
103-193	16 - 17		±0.0004	0.00032		
103-194	17 - 18					
103-195	18 - 19					
103-196	19 - 20		±0.00045	0.00036		
103-197	20 - 21					
103-198	21 - 22					
103-199	22 - 23		±0.0005	0.0004		
103-200	23 - 24					
103-201	24 - 25					
103-202	25 - 26		±0.00055	0.00044		
103-203	26 - 27					
103-204	27 - 28					
103-205	28 - 29		±0.0006	0.00048		
103-206	29 - 30					
103-207	30 - 31					
103-208	31 - 32		±0.00065	0.00052		
103-209	32 - 33					
103-210	33 - 34					
103-211	34 - 35		±0.0007	0.00056		
103-212	35 - 36					
103-213	36 - 37					
103-214	37 - 38		±0.00075	0.0006		
103-215	38 - 39					
103-216	39 - 40					

Metric With ratchet stop						
Order No.	Range (mm)	Graduation (mm)	MPE*1 *2 (μm)	Measuring force (N)	Flatness (μm)	Parallelism (μm)
103-137	0 - 25	0.01	±2	5 - 10	0.6	2
103-138	25 - 50	0.01				

Inch With friction thimble						
Order No.	Range (in)	Graduation (in)	MPE*1 *2 (in)	Measuring force (N)	Flatness (in)	Parallelism (in)
103-135	0 - 1	0.0001	±0.0001	5 - 10	0.000024	0.00008
103-136	1 - 2	0.0001				

*1 MPE: Maximum permissible error J_{MPE}

*2 Maximum permissible error of the indication measured by contacting the full measuring face with the object to be measured. J_{MPE} is a term specified by JIS B 7502: 2016 which has been prepared based on ISO 3611: 2010 with some modifications of the technical contents.

The measurement method has not been changed from JIS B 7502: 1994. For details refer to page B-70.

Technical Data

- Standard accessories:
Reference rod 1 pc.
(Excluding the measuring range 0 to 25 mm)
Spanner (**301336**), 1 pc.
(Maximum measuring length Less than 300 mm)
Spanner (**200154**), 1 pc.
(Maximum measuring length More than 325 mm)



103-904-10



103-905-10



103-906

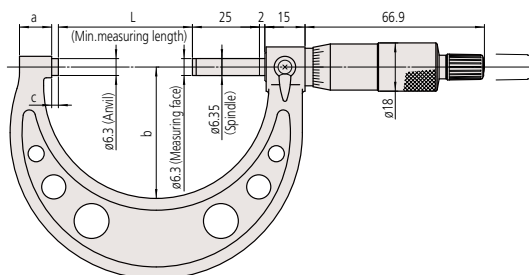
Metric	Micrometer set/With ratchet thimble	
Order No.	Range (mm)	Models included
103-927-10	0 - 75 (3 pcs./set)	103-137, 103-138, 103-139-10, 2 micrometer standards
103-913-50	0 - 150 (6 pcs./set)	103-137, 103-138, 103-139-10, 103-140-10, 103-141-10, 103-142-10, 5 micrometer standards
103-915-10	150 - 300 (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 - 300 (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 (in)	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

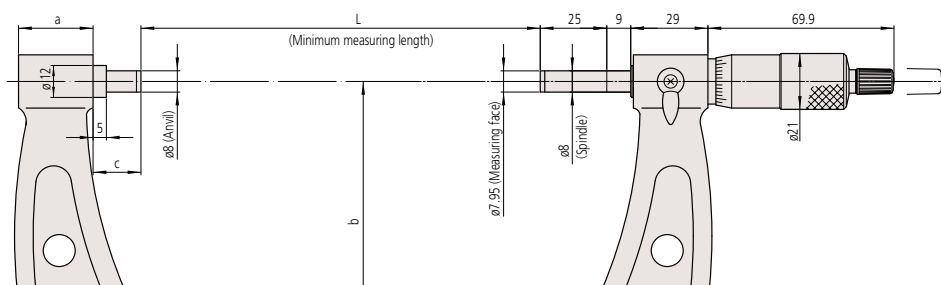
DIMENSIONS

103-137 and 103-138, Models 75 mm to 300 mm

Unit: mm



Models 325 mm to 1000 mm



Range (mm)	L	a	b	c
0 - 25	0	9	28	2.5
25 - 50	25	10	38	
50 - 75	50	12	49	
75 - 100	75	14	60	
100 - 125	100	16.7	79	5.3
125 - 150	125	18.8	94	5.7
150 - 175	150	19.1	106	6.1
175 - 200	175	18.2	118	6.3
200 - 225	200	16.8	130	6.7
225 - 250	225	18	143	5.5

Range (mm)	L	a	b	c
250 - 275	250	18	156	6.5
275 - 300	275		169	
300 - 325	300		187	
325 - 350	325		199	
350 - 375	350	28	212	18
375 - 400	375		224	
400 - 425	400		236	
425 - 450	425		248	
450 - 475	450		261	
475 - 500	475		273	
500 - 525	500		28	15
525 - 550	525			
550 - 575	550			
575 - 600	575			
600 - 625	600			
625 - 650	625			
650 - 675	650			
675 - 700	675			
700 - 725	700			
725 - 750	725			
750 - 775	750			
775 - 800	775			
800 - 825	800			
825 - 850	825			
850 - 875	850			
875 - 900	875			
900 - 925	900			
925 - 950	925			
950 - 975	950			
975 - 1000	975			

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