

Micrometer

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



An inspection certificate is supplied as standard. Refer to page U-11 for details.

Outside Micrometers SERIES 103

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



Technical Data

- Parallelism:
($2+R/100$) μm , R=max, range (mm)
[0.00008+0.00004 (R/4)] in, R=max, range (inch)
fraction rounded down
- 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)	Maximum permissible error J_{MPE} (μm)	Measuring force (N)	Flatness (μm)	
103-129	0 - 25	0.001	±2	5 - 10	0.6	
103-130	25 - 50	0.001				
103-139-10	50 - 75	0.01				
103-140-10	75 - 100					
103-141-10	100 - 125					±3
103-142-10	125 - 150					
103-143-10	150 - 175					±4
103-144-10	175 - 200					
103-145-10	200 - 225					±5
103-146-10	225 - 250					
103-147-10	250 - 275		±6			
103-148-10	275 - 300					
103-149	300 - 325	0.01				
103-150	325 - 350			±7		
103-151	350 - 375					
103-152	375 - 400				±8	
103-153	400 - 425					
103-154	425 - 450				±9	
103-155	450 - 475					
103-156	475 - 500				±10	
103-157	500 - 525					
103-158	525 - 550		±11			
103-159	550 - 575					
103-160	575 - 600	±12				
103-161	600 - 625					
103-162	625 - 650	±13				
103-163	650 - 675					
103-164	675 - 700	±14				
103-165	700 - 725					
103-166	725 - 750	±15				
103-167	750 - 775					
103-168	775 - 800					
103-169	800 - 825					
103-170	825 - 850					
103-171	850 - 875					
103-172	875 - 900					
103-173	900 - 925					
103-174	925 - 950					
103-175	950 - 975					
103-176	975 - 1000					

Inch With ratchet stop					
Order No.	Range (in)	Graduation (in)	Maximum permissible error J_{MPE} (in)	Measuring force (N)	Flatness (in)
103-177	0 - 1	0.001	±0.0001	5 - 10	0.000024
103-131		0.0001			
103-178		0.001			
103-132	1 - 2	0.0001	±0.00015	5 - 10	0.000024
103-179		2 - 3			
103-180	3 - 4	0.001	±0.0002	5 - 10	0.000024
103-181	4 - 5				
103-182	5 - 6				
103-183	6 - 7				
103-184	7 - 8				
103-185	8 - 9				
103-186	9 - 10				
103-187	10 - 11				
103-188	11 - 12				
103-189	12 - 13				
103-190	13 - 14	0.001	±0.0003	10 - 15	0.00004
103-191	14 - 15				
103-192	15 - 16				
103-193	16 - 17				
103-194	17 - 18				
103-195	18 - 19				
103-196	19 - 20				
103-197	20 - 21				
103-198	21 - 22				
103-199	22 - 23				
103-200	23 - 24	0.001	±0.00045	10 - 15	0.00004
103-201	24 - 25				
103-202	25 - 26				
103-203	26 - 27				
103-204	27 - 28				
103-205	28 - 29				
103-206	29 - 30				
103-207	30 - 31				
103-208	31 - 32				
103-209	32 - 33				
103-210	33 - 34	0.001	±0.00065	10 - 15	0.00004
103-211	34 - 35				
103-212	35 - 36				
103-213	36 - 37				
103-214	37 - 38				
103-215	38 - 39				
103-216	39 - 40				

Metric With ratchet stop					
Order No.	Range (mm)	Graduation (mm)	Maximum permissible error J_{MPE}^* (μm)	Measuring force (N)	Flatness (μm)
103-137	0 - 25	0.01	±2	5 - 10	0.6
103-138	25 - 50	0.01			

Inch With friction thimble					
Order No.	Range (in)	Graduation (in)	Maximum permissible error J_{MPE} (in)	Measuring force (N)	Flatness (in)
103-135	0 - 1	0.0001	±0.0001	5 - 10	0.000024
103-136	1 - 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 B-74.

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



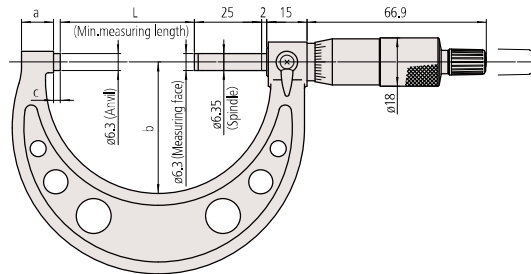
103-906

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

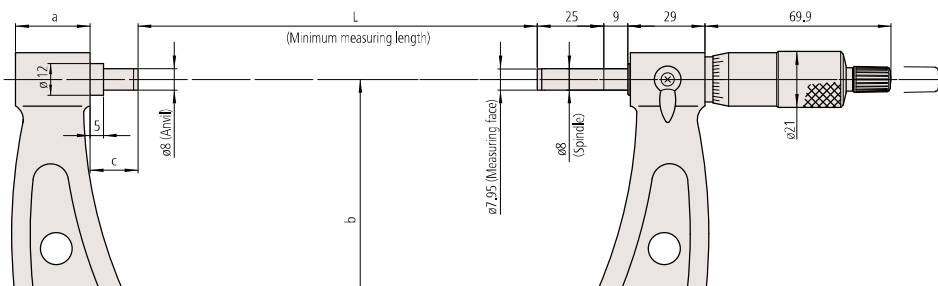
DIMENSIONS

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	
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		212	
375 - 400	375	28	224	18
400 - 425	400		236	
425 - 450	425		248	
450 - 475	450		261	
475 - 500	475		273	

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	