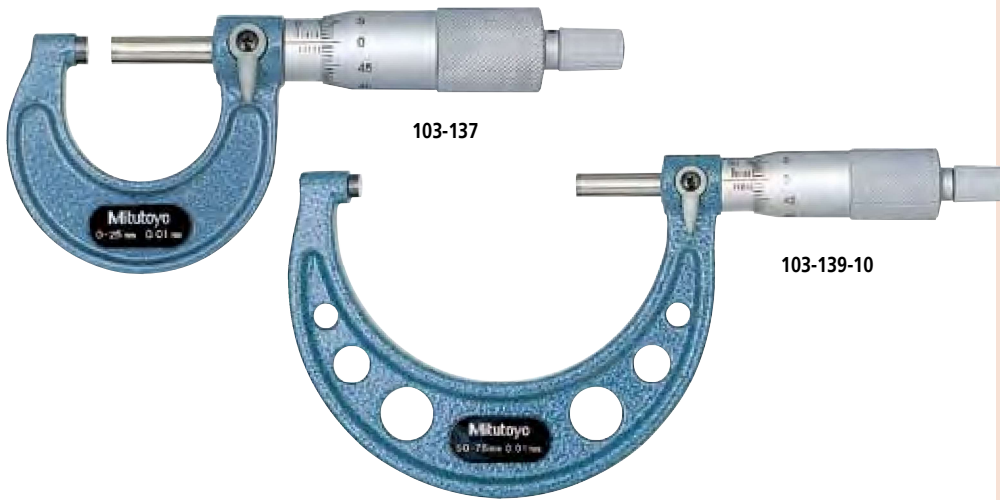


# Micrometer

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 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 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  |          | ±3µm |
| 103-140-10               |              | 75 - 100mm |          |      |
| 103-141-10               | 100 - 125mm  |            |          |      |
| 103-142-10               | 125 - 150mm  |            |          |      |
| 103-143-10               | 150 - 175mm  |            |          |      |
| 103-144-10               | 175 - 200mm  | ±4µm       |          |      |
| 103-145-10               | 200 - 225mm  |            |          |      |
| 103-146-10               | 225 - 250mm  |            |          |      |
| 103-147-10               | 250 - 275mm  |            |          |      |
| 103-148-10               | 275 - 300mm  |            |          |      |
| 103-149                  | 300 - 325mm  |            | ±5µm     |      |
| 103-150                  | 325 - 350mm  |            |          |      |
| 103-151                  | 350 - 375mm  |            |          |      |
| 103-152                  | 375 - 400mm  |            |          |      |
| 103-153                  | 400 - 425mm  |            |          |      |
| 103-154                  | 425 - 450mm  | ±7µm       |          |      |
| 103-155                  | 450 - 475mm  |            |          |      |
| 103-156                  | 475 - 500mm  |            |          |      |
| 103-157                  | 500 - 525mm  |            |          |      |
| 103-158                  | 525 - 550mm  |            |          |      |
| 103-159                  | 550 - 575mm  |            | ±8µm     |      |
| 103-160                  | 575 - 600mm  |            |          |      |
| 103-161                  | 600 - 625mm  |            |          |      |
| 103-162                  | 625 - 650mm  |            |          |      |
| 103-163                  | 650 - 675mm  |            |          |      |
| 103-164                  | 675 - 700mm  | ±10µm      |          |      |
| 103-165                  | 700 - 725mm  |            |          |      |
| 103-166                  | 725 - 750mm  |            |          |      |
| 103-167                  | 750 - 775mm  |            |          |      |
| 103-168                  | 775 - 800mm  |            |          |      |
| 103-169                  | 800 - 825mm  |            | ±11µm    |      |
| 103-170                  | 825 - 850mm  |            |          |      |
| 103-171                  | 850 - 875mm  |            |          |      |
| 103-172                  | 875 - 900mm  |            |          |      |
| 103-173                  | 900 - 925mm  |            |          |      |
| 103-174                  | 925 - 950mm  | ±12µm      |          |      |
| 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"   | ±.00015"   |          |
| 103-180                | 3" - 4"   |            |          |
| 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" | ±.00025"   |          |
| 103-190                | 13" - 14" |            |          |
| 103-191                | 14" - 15" |            |          |
| 103-192                | 15" - 16" |            |          |
| 103-193                | 16" - 17" |            |          |
| 103-194                | 17" - 18" |            | ±.00035" |
| 103-195                | 18" - 19" |            |          |
| 103-196                | 19" - 20" |            |          |
| 103-197                | 20" - 21" |            |          |
| 103-198                | 21" - 22" |            |          |
| 103-199                | 22" - 23" | ±.0004"    |          |
| 103-200                | 23" - 24" |            |          |
| 103-201                | 24" - 25" |            |          |
| 103-202                | 25" - 26" |            |          |
| 103-203                | 26" - 27" |            |          |
| 103-204                | 27" - 28" |            | ±.00045" |
| 103-205                | 28" - 29" |            |          |
| 103-206                | 29" - 30" |            |          |
| 103-207                | 30" - 31" |            |          |
| 103-208                | 31" - 32" |            |          |
| 103-209                | 32" - 33" | ±.0005"    |          |
| 103-210                | 33" - 34" |            |          |
| 103-211                | 34" - 35" |            |          |
| 103-212                | 35" - 36" |            |          |
| 103-213                | 36" - 37" |            |          |
| 103-214                | 37" - 38" |            | ±.00055" |
| 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" |            |          |

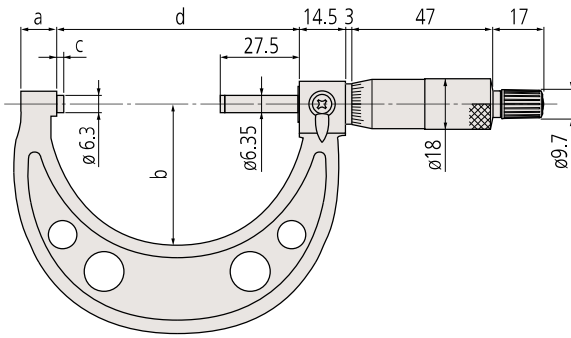
| Metric Micrometer set / With ratchet thimble |                             |  |
|--|-----------------------------|--|
| Order No.                                    | Range                       | Models included  |
| 103-927-10                                   | 0 - 75mm<br>(3 pcs./set)    | 103-137, 103-138, 103-139-10, 2 micrometer standards   |
| 103-913-50                                   | 0 - 150mm<br>(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<br>(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<br>(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"<br>(3 pcs./set)   | 103-177, 103-178, 103-179, 2 micrometer standards                             |
| 103-930                                    | 0 - 4"<br>(4 pcs./set)   | 103-177, 103-178, 103-179, 103-180, 3 micrometer standards                    |
| 103-904-10                                 | 0 - 6"<br>(6 pcs./set)   | 103-177, 103-178, 103-179, 103-180, 103-181, 103-182, 5 micrometer standards  |
| 103-906                                    | 6" - 12"<br>(6 pcs./set) | 103-183, 103-184, 103-185, 103-186, 103-187, 103-188, 6 micrometer standards  |
| 103-905-10                                 | 0 - 12"<br>(12 pcs./set) | All micrometers of 103-904-10 and 103-906 in one set, 11 micrometer standards |

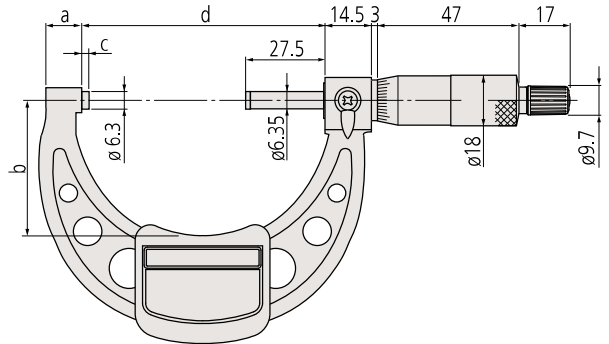
**DIMENSIONS**

Unit: mm

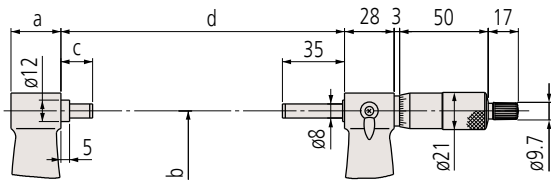
Models up to 75mm measuring range



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  |      |     |