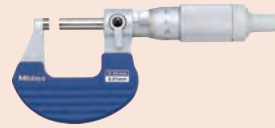


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# Digimatic Micrometer QuantuMike IP65

## Series 293



Only for 0-25, 25-50 mm, 0-1" and 1-2"

- Speedy measurement is achieved thanks to 2mm of spindle feed for every thimble revolution !
- The dual function offered by the ratchet on the thimble and the fast drive mechanism ensure easy single-handed or stand operation.



293-140



Coloured ratchet caps

# QuantuMike

| Functions           | Series 293 |
|---------------------|------------|
| ORIGIN until 100 mm | ●          |
| ZERO/ABS            | ●          |
| Auto Power OFF      | ●          |
| HOLD                | ●          |
| Low voltage alarm   | ●          |
| Function lock       | ●          |

### Specifications

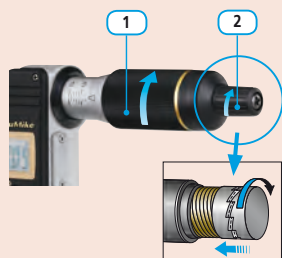
|                    |   |
|--------------------|---|
| Accuracy           | Refer to the list of specifications (excluding quantizing error)                    |
| Resolution         | 0,001 mm or 0,001 mm/0.00005"   |
| Flatness           | 0,3 µm/0.000012"  |
| Parallelism        | 1 µm/0.00004" for models up to 50 mm/2"<br>2 µm/0.00008" for models up to 100 mm/4" |
| Measuring surfaces | Carbide tipped, micro-lap finish  |
| Frame              | Enamelled   |
| Measuring force    | 7-12 N  |
| Delivered          | Including box, key, 1 battery, setting standard (from 25 mm upward)                 |

### Optional accessories

| No.       | Description                          |
|-----------|--------------------------------------|
| 04AAB208  | Grey ratchet cap                     |
| 05CZA662  | Signal cable 1 m with data button    |
| 05CZA663  | Signal cable 2 m with data button    |
| 04GAA900  | Red ratchet cap                      |
| 04GAA901  | Yellow ratchet cap                   |
| 04GAA902  | Green ratchet cap                    |
| 04GAA903  | Blue ratchet cap                     |
| 02AZD790B | Signal cable U-Wave with data button |
| 06ADV380B | Signal cable 2 m USB                 |

### Consumable spares

| No.      | Description       |
|----------|-------------------|
| 04GAA899 | Black ratchet cap |
| 938882   | Battery SR44      |



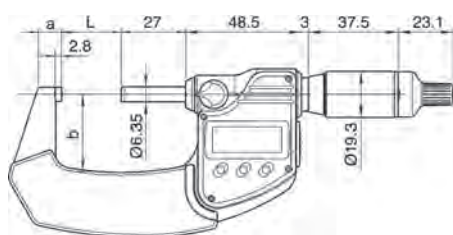
- 1 : Ratchet on thimble  
2 : Ratchet on speeder

### Metric

| No.     | Range     | Accuracy | Data Output | L mm | a mm | b mm | Mass g |
|---------|-----------|----------|-------------|------|------|------|--------|
| 293-140 | 0-25 mm   | ±1 µm    | ●           | 0    | 9    | 25   | 265    |
| 293-145 | 0-25 mm   | ±1 µm    | ●           | 0    | 9    | 25   | 265    |
| 293-141 | 25-50 mm  | ±1 µm    | ●           | 25   | 9.8  | 32   | 325    |
| 293-146 | 25-50 mm  | ±1 µm    | ●           | 25   | 9.8  | 32   | 325    |
| 293-142 | 50-75 mm  | ±1 µm    | ●           | 50   | 12.6 | 47   | 465    |
| 293-147 | 50-75 mm  | ±1 µm    | ●           | 50   | 12.6 | 47   | 465    |
| 293-143 | 75-100 mm | ±2 µm    | ●           | 75   | 14   | 60   | 620    |
| 293-148 | 75-100 mm | ±2 µm    | ●           | 75   | 14   | 60   | 620    |

### Inch/Metric

| No.      | Range          | Accuracy       | Data Output | L mm | a mm | b mm | Mass g |
|----------|----------------|----------------|-------------|------|------|------|--------|
| 293-180  | 0-25 mm/0-1"   | ±1 µm/0.00005" | ●           | 0    | 9    | 25   | 265    |
| 293-185  | 0-25 mm/0-1"   | ±1 µm/0.00005" | ●           | 0    | 9    | 25   | 265    |
| 293-181  | 25-50 mm/1-2"  | ±1 µm/0.00005" | ●           | 25   | 9.8  | 32   | 325    |
| 293-186* | 25-50 mm/1-2"  | ±1 µm/0.00005" | ●           | 25   | 9.8  | 32   | 325    |
| 293-182* | 50-75 mm/2-3"  | ±1 µm/0.00005" | ●           | 50   | 12.6 | 47   | 465    |
| 293-187* | 50-75 mm/2-3"  | ±1 µm/0.00005" | ●           | 50   | 12.6 | 47   | 465    |
| 293-183* | 75-100 mm/3-4" | ±2 µm/0.0001"  | ●           | 75   | 14   | 60   | 620    |
| 293-188* | 75-100 mm/3-4" | ±2 µm/0.0001"  | ●           | 75   | 14   | 60   | 620    |



# Digimatic Micrometer IP65

## Series 293

- With and without data output.



Only for 0-25, 25-50 mm



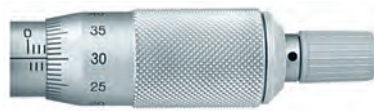
293-230



293-252-10



With friction thimble and ratchet thimble



With ratchet stop

### Metric

With ratchet stop

| No.        | Range      | Accuracy | Data Output | L mm  | a mm | b mm | c mm | Mass g |
|------------|------------|----------|-------------|-------|------|------|------|--------|
| 293-230    | 0-25 mm    | ±1 µm    | ●           | 0     | 2.8  | 9    | 25   | 270    |
| 293-240    | 0-25 mm    | ±1 µm    |             | 0     | 2.8  | 9    | 25   | 270    |
| 293-231    | 25-50 mm   | ±1 µm    | ●           | 25    | 2.8  | 9.8  | 32   | 330    |
| 293-241    | 25-50 mm   | ±1 µm    |             | 25    | 2.8  | 9.8  | 32   | 330    |
| 293-232    | 50-75 mm   | ±1 µm    | ●           | 50    | 2.8  | 12.6 | 47   | 470    |
| 293-242    | 50-75 mm   | ±1 µm    |             | 50    | 2.8  | 12.6 | 47   | 470    |
| 293-233    | 75-100 mm  | ±2 µm    | ●           | 75    | 2.8  | 14   | 60   | 625    |
| 293-243    | 75-100 mm  | ±2 µm    |             | 75    | 2.8  | 14   | 60   | 625    |
| 293-250-10 | 100-125 mm | ±2 µm    | ●           | 132.8 | 5.3  | 16.7 | 76.5 | 600    |
| 293-251-10 | 125-150 mm | ±2 µm    | ●           | 158.2 | 5.7  | 18.8 | 91   | 740    |
| 293-252-10 | 150-175 mm | ±3 µm    | ●           | 183.6 | 6.1  | 19.1 | 102  | 800    |
| 293-253-10 | 175-200 mm | ±3 µm    | ●           | 208.8 | 6.3  | 18.2 | 115  | 970    |
| 293-254-10 | 200-225 mm | ±3 µm    | ●           | 234.2 | 6.7  | 16.8 | 127  | 1,100  |
| 293-255-10 | 225-250 mm | ±4 µm    | ●           | 258   | 5.5  | 18   | 139  | 1,270  |
| 293-256-10 | 250-275 mm | ±4 µm    | ●           | 284   | 6.5  | 18   | 152  | 1,340  |
| 293-257-10 | 275-300 mm | ±4 µm    | ●           | 309   | 6.5  | 18   | 166  | 1,540  |

### Metric

With ratchet thimble

| No.      | Range     | Accuracy | Data Output | L mm | a mm | b mm | c mm | Mass g |
|----------|-----------|----------|-------------|------|------|------|------|--------|
| 293-234  | 0-25 mm   | ±1 µm    | ●           | 0    | 2.8  | 9    | 25   | 270    |
| 293-244* | 0-25 mm   | ±1 µm    |             | 0    | 2.8  | 9    | 25   | 270    |
| 293-235  | 25-50 mm  | ±1 µm    | ●           | 25   | 2.8  | 9.8  | 32   | 330    |
| 293-245  | 25-50 mm  | ±1 µm    |             | 25   | 2.8  | 9.8  | 32   | 330    |
| 293-236  | 50-75 mm  | ±1 µm    | ●           | 50   | 2.8  | 12.6 | 47   | 470    |
| 293-246* | 50-75 mm  | ±1 µm    |             | 50   | 2.8  | 12.6 | 47   | 470    |
| 293-237  | 75-100 mm | ±2 µm    | ●           | 75   | 2.8  | 14   | 60   | 625    |
| 293-247* | 75-100 mm | ±2 µm    |             | 75   | 2.8  | 14   | 60   | 625    |

### Metric

With friction thimble

| No.      | Range   | Accuracy | Data Output | L mm | a mm | b mm | c mm | Mass g |
|----------|---------|----------|-------------|------|------|------|------|--------|
| 293-238  | 0-25 mm | ±1 µm    | ●           | 0    | 2.8  | 9    | 25   | 270    |
| 293-248* | 0-25 mm | ±1 µm    |             | 0    | 2.8  | 9    | 25   | 270    |

| Functions                 | Series 293 |
|---------------------------|------------|
| ORIGIN until 100 mm       | ●          |
| ZERO/ABS                  | ●          |
| Auto Power OFF            | ●          |
| HOLD                      | ●          |
| Low voltage alarm         | ●          |
| 2 x PRESET over 100 mm    | ●          |
| Function lock over 100 mm | ●          |

### Specifications

|                    |  |
|--------------------|--|
| Accuracy           | Refer to the list of specifications (excluding quantizing error)   |
| Resolution         | 0,001 mm   |
| Scales             | Thimble and sleeve satin chrome finish, ø18 mm   |
| Flatness           | 0,3 µm   |
| Parallelism        | 1 µm for models up to 50 mm<br>2 µm for models up to 100 mm<br>3 µm for models up to 175 mm<br>4 µm for models up to 275 mm<br>5 µm for models over 300 mm |
| Measuring surfaces | Carbide tipped, micro-lap finish   |
| Frame              | Enamelled  |
| Measuring spindle  | With spindle lock ø6,35 mm   |
| Measuring force    | 5-10 N   |
| Delivered          | Including box, key, 1 battery, setting standard (from 25 mm upward)  |

### Optional accessories

| No.       | Description                          |
|-----------|--------------------------------------|
| 05CZA662  | Signal cable 1 m with data button    |
| 05CZA663  | Signal cable 2 m with data button    |
| 02AZD790B | Signal cable U-Wave with data button |
| 06ADV380B | Signal cable 2 m USB                 |

### Consumable spares

| No.    | Description  |
|--------|--------------|
| 938882 | Battery SR44 |

# Digimatic Micrometer IP65



## Series 293

- With data output.

### Metric

Set/With ratchet stop

| No.     | Range    | Data Output | Set combination   |
|---------|----------|-------------|---|
| 293-966 | 0-50 mm  | ●           | 293-230 / 293-231 + setting standard 25 mm made of ceramics                     |
| 293-962 | 0-75 mm  | ●           | 293-230 / 293-231 / 293-232 + setting standard 25 mm and 50 mm                  |
| 293-963 | 0-100 mm | ●           | 293-230 / 293-231 / 293-232 / 293-233 + setting standard 25 mm, 50 mm and 75 mm |

| Functions                 | Series 293 |
|---------------------------|------------|
| ORIGIN until 100 mm       | ●          |
| ZERO/ABS                  | ●          |
| Auto Power OFF            | ●          |
| HOLD                      | ●          |
| Low voltage alarm         | ●          |
| 2 x PRESET over 100 mm    | ●          |
| Function lock over 100 mm | ●          |

### Specifications

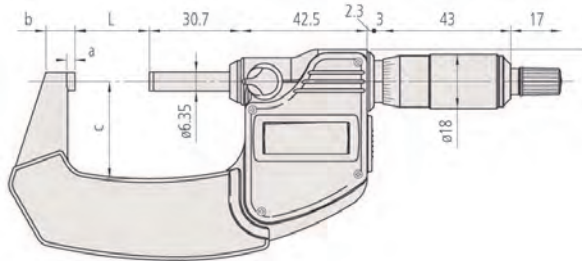
|                    |   |
|--------------------|---|
| Accuracy           | Refer to the list of specifications (excluding quantizing error)  |
| Resolution         | 0,001 mm  |
| Scales             | Thimble and sleeve satin chrome finish, $\varnothing 18$ mm   |
| Flatness           | 0,3 $\mu\text{m}$   |
| Parallelism        | 1 $\mu\text{m}$ for models up to 50 mm<br>2 $\mu\text{m}$ for models up to 100 mm<br>3 $\mu\text{m}$ for models up to 175 mm<br>4 $\mu\text{m}$ for models up to 275 mm<br>5 $\mu\text{m}$ for models over 300 mm |
| Measuring surfaces | Carbide tipped, micro-lap finish  |
| Frame              | Enamelled   |
| Measuring spindle  | With spindle lock $\varnothing 6,35$ mm   |
| Measuring force    | 5-10 N  |
| Delivered          | Including box, key, 1 battery, setting standard (from 25 mm upward)   |

### Optional accessories

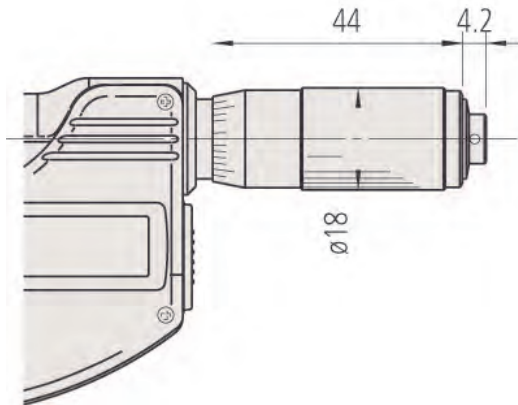
| No.       | Description                          |
|-----------|--------------------------------------|
| 05CZA662  | Signal cable 1 m with data button    |
| 05CZA663  | Signal cable 2 m with data button    |
| 02AZD790B | Signal cable U-Wave with data button |
| 06ADV380B | Signal cable 2 m USB                 |

### Consumable spares

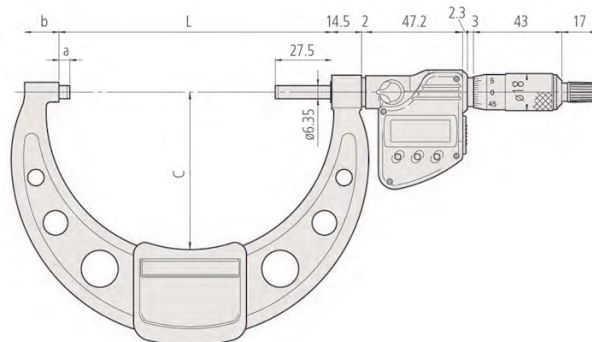
| No.    | Description  |
|--------|--------------|
| 938882 | Battery SR44 |



Ratchet stop type up to 100 mm



Ratchet thimble type / Friction thimble type



Ratchet stop type over 100 mm

# Digimatic Micrometer IP65

## Series 293

- With and without data output.



293-334



With ratchet thimble



With ratchet stop

### Inch/Metric With ratchet stop

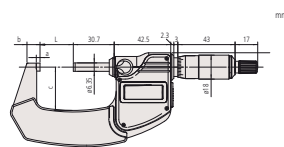
| No.        | Range             | Accuracy       | Data Output | L mm  | a mm | b mm | c mm | Mass g |
|------------|-------------------|----------------|-------------|-------|------|------|------|--------|
| 293-330    | 0-25 mm/0-1"      | ±1 µm/0.00005" | ●           | 0     | 2.8  | 9    | 25   | 270    |
| 293-340    | 0-25 mm/0-1"      | ±1 µm/0.00005" | ●           | 0     | 2.8  | 9    | 25   | 270    |
| 293-331    | 25-50 mm/1-2"     | ±1 µm/0.00005" | ●           | 25    | 2.8  | 9.8  | 32   | 330    |
| 293-341    | 25-50 mm/1-2"     | ±1 µm/0.00005" | ●           | 25    | 2.8  | 9.8  | 32   | 330    |
| 293-332    | 50-75 mm/2-3"     | ±1 µm/0.00005" | ●           | 50    | 2.8  | 12.6 | 47   | 470    |
| 293-342    | 50-75 mm/2-3"     | ±1 µm/0.00005" | ●           | 50    | 2.8  | 12.6 | 47   | 470    |
| 293-333    | 75-100 mm/3-4"    | ±2 µm/0.0001"  | ●           | 75    | 2.8  | 14   | 60   | 625    |
| 293-343*   | 75-100 mm/3-4"    | ±2 µm/0.0001"  | ●           | 75    | 2.8  | 14   | 60   | 625    |
| 293-350-10 | 100-125 mm/4-5"   | ±2 µm/0.0001"  | ●           | 132.8 | 5.3  | 16.7 | 76   | 600    |
| 293-351-10 | 100-125 mm/4-5"   | ±2 µm/0.0001"  | ●           | 158.2 | 5.7  | 18.8 | 90   | 740    |
| 293-352-10 | 150-175 mm/6-7"   | ±3 µm/0.00015" | ●           | 183.6 | 6.1  | 19.1 | 102  | 800    |
| 293-353-10 | 175-200 mm/7-8"   | ±3 µm/0.00015" | ●           | 208.8 | 6.3  | 18.2 | 115  | 970    |
| 293-354-10 | 200-225 mm/8-9"   | ±3 µm/0.00015" | ●           | 234.2 | 6.7  | 16.8 | 127  | 1,100  |
| 293-355-10 | 225-250 mm/9-10"  | ±4 µm/0.0002"  | ●           | 258   | 5.5  | 18   | 139  | 1,270  |
| 293-356-10 | 250-275 mm/10-11" | ±4 µm/0.0002"  | ●           | 284   | 6.5  | 18   | 152  | 1,340  |
| 293-357-10 | 275-300 mm/11-12" | ±4 µm/0.0002"  | ●           | 309   | 6.5  | 18   | 166  | 1,540  |

### Inch/Metric With ratchet thimble

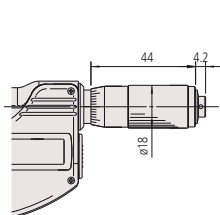
| No.     | Range          | Accuracy       | Data Output | L mm | a mm | b mm | c mm | Mass g |
|---------|----------------|----------------|-------------|------|------|------|------|--------|
| 293-334 | 0-25 mm/0-1"   | ±1 µm/0.00005" | ●           | 0    | 2.8  | 9    | 25   | 270    |
| 293-344 | 0-25 mm/0-1"   | ±1 µm/0.00005" | ●           | 0    | 2.8  | 9    | 25   | 270    |
| 293-345 | 25-50 mm/1-2"  | ±1 µm/0.00005" | ●           | 25   | 2.8  | 9.8  | 32   | 330    |
| 293-346 | 50-75 mm/2-3"  | ±1 µm/0.00005" | ●           | 50   | 2.8  | 12.6 | 47   | 470    |
| 293-347 | 75-100 mm/3-4" | ±2 µm/0.0001"  | ●           | 75   | 2.8  | 14   | 60   | 625    |

### Inch/Metric With friction thimble

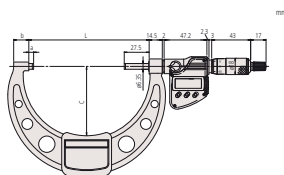
| No.      | Range         | Accuracy       | Data Output | L mm | a mm | b mm | c mm | Mass g |
|----------|---------------|----------------|-------------|------|------|------|------|--------|
| 293-335  | 0-25 mm/0-1"  | ±1 µm/0.00005" | ●           | 0    | 2.8  | 9    | 25   | 270    |
| 293-348* | 0-25 mm/0-1"  | ±1 µm/0.00005" | ●           | 0    | 2.8  | 9    | 25   | 270    |
| 293-336* | 25-50 mm/1-2" | ±1 µm/0.00005" | ●           | 25   | 2.8  | 9.8  | 32   | 330    |



Ratchet stop type up to 100 mm



Ratchet thimble type / Friction thimble type



Ratchet stop type over 100 mm

| Functions                 | Series 293 |
|---------------------------|------------|
| ORIGIN until 100 mm       | ●          |
| ZERO/ABS                  | ●          |
| Auto Power OFF            | ●          |
| HOLD                      | ●          |
| Low voltage alarm         | ●          |
| 2 x PRESET over 100 mm    | ●          |
| Function lock over 100 mm | ●          |

### Specifications

|                    |   |
|--------------------|---|
| Accuracy           | Refer to the list of specifications (excluding quantizing error)  |
| Resolution         | 0,001 mm/0.00005" (up to 4") or 0,001 mm/0.0001" (over 4")  |
| Scales             | Thimble and sleeve satin chrome finish, ø18 mm  |
| Flatness           | 0,3 µm/0.000012"  |
| Parallelism        | 1 µm/0.00004" for models up to 50 mm/2"<br>2 µm/0.00008" for models up to 100 mm/4"<br>3 µm/0.00012" for models up to 175 mm/7"<br>4 µm/0.00016" for models up to 275 mm/11"<br>5 µm/0.0002" for models over 300 mm/12" |
| Measuring surfaces | Carbide tipped, micro-lap finish  |
| Frame              | Enamelled   |
| Measuring spindle  | With spindle lock ø6,35 mm  |
| Measuring force    | 5-10 N  |
| Delivered          | Including box, key, 1 battery, setting standard (from 25 mm upward)   |

### Optional accessories

| No.       | Description                          |
|-----------|--------------------------------------|
| 05CZA662  | Signal cable 1 m with data button    |
| 05CZA663  | Signal cable 2 m with data button    |
| 02AZD790B | Signal cable U-Wave with data button |
| 06ADV380B | Signal cable 2 m USB                 |

### Consumable spares

| No.    | Description  |
|--------|--------------|
| 938882 | Battery SR44 |

# MDC Lite Digital Micrometer

## Series 293

- A cost-effective model with simplified functionality for less-demanding applications.
- Available with a ratchet stop or friction thimble for a constant measuring force.
- Measurement results displayed on a large character LCD for easy reading.



| Functions         | Series 293 |
|-------------------|------------|
| ORIGIN            | ●          |
| Auto Power OFF    | ●          |
| Low voltage alarm | ●          |

### Specifications

|                    |  |
|--------------------|--|
| Accuracy           | Refer to the list of specifications (excluding quantizing error) |
| Resolution         | 0,001 mm or 0,001 mm/0.00005"                                    |
| Scales             | Thimble and sleeve satin chrome finish $\phi$ 18 mm              |
| Flatness           | 0,3 $\mu$ m/0.000012"  |
| Parallelism        | 2 $\mu$ m/0.00008"   |
| Measuring surfaces | Carbide tipped, micro-lap finish                                 |
| Measuring force    | 5-10 N   |
| Delivered          | Including box, key, 1 battery                                    |

### Consumable spares

| No.    | Description  |
|--------|--------------|
| 938882 | Battery SR44 |



293-821

### Metric With ratchet stop

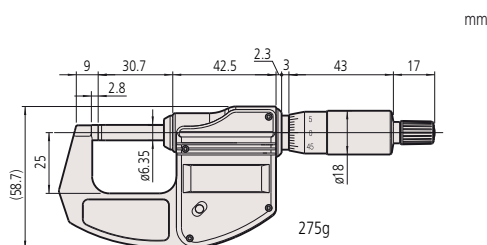
| No.     | Range   | Accuracy      | Mass g |
|---------|---------|---------------|--------|
| 293-821 | 0-25 mm | $\pm 2 \mu$ m | 275    |

### Inch/Metric With ratchet stop

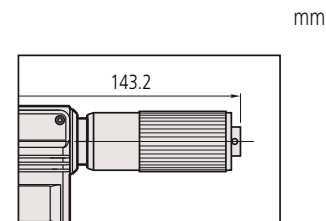
| No.     | Range        | Accuracy              | Mass g |
|---------|--------------|-----------------------|--------|
| 293-831 | 0-25 mm/0-1" | $\pm 2 \mu$ m/0.0001" | 275    |

### Inch/Metric With friction thimble

| No.     | Range        | Accuracy              | Mass g |
|---------|--------------|-----------------------|--------|
| 293-832 | 0-25 mm/0-1" | $\pm 2 \mu$ m/0.0001" | 275    |



Ratchet stop



Friction thimble

# MDC Lite Digital Micrometer

## Series 293

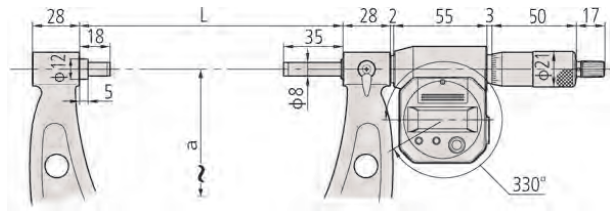
- Digimatic standard micrometer, measuring range 300-500 mm.



293-582

### Metric

| No.      | Range      | Accuracy | L mm | a mm |
|----------|------------|----------|------|------|
| 293-582  | 300-325 mm | ±6 μm    | 353  | 187  |
| 293-583  | 325-350 mm | ±6 μm    | 378  | 199  |
| 293-584  | 350-375 mm | ±6 μm    | 403  | 212  |
| 293-585  | 375-400 mm | ±7 μm    | 428  | 224  |
| 293-586  | 400-425 mm | ±7 μm    | 453  | 236  |
| 293-587  | 425-450 mm | ±7 μm    | 478  | 248  |
| 293-588* | 450-475 mm | ±8 μm    | 503  | 261  |
| 293-589* | 475-500 mm | ±8 μm    | 528  | 273  |



| Functions         | Series 293 |
|-------------------|------------|
| Data Output       | ●          |
| ZERO/ABS          | ●          |
| PRESET            | ●          |
| Auto Power OFF    | ●          |
| HOLD              | ●          |
| Low voltage alarm | ●          |

### Specifications

|                    |   |
|--------------------|---|
| Accuracy           | Refer to the list of specifications (excluding quantizing error)                            |
| Resolution         | 0,001 mm  |
| Scales             | Thimble and sleeve satin chrome finish  |
| Flatness           | 0,6 μm  |
| Parallelism        | 5 μm for models up to 375 mm<br>6 μm for models up to 475 mm<br>7 μm for models over 500 mm |
| Measuring surfaces | Carbide tipped, micro lap finish  |
| Frame              | Enamelled   |
| Measuring spindle  | ø8 mm, spindle pitch 0,5 mm with spindle lock   |
| Measuring force    | 10-14 N   |
| Delivered          | Including box, setting standard, key, 2 batteries   |

### Optional accessories

| No.       | Description                              |
|-----------|--|
| 04AZB512  | SPC cable 1 m with data switch           |
| 04AZB513  | SPC cable 2 m with data switch           |
| 02AZD790C | Signal cable for U-Wave with data switch |
| 06ADV380C | Signal cable 2 m USB                     |

### Consumable spares

| No.    | Description  |
|--------|--------------|
| 938882 | Battery SR44 |

# ABSOLUTE Digimatic Micrometer QuickMike

ABSOLUTE  
Absolute System Patented by MITUTOYO

IP54

## Series 293

### Quick-action type with non-rotating spindle.

- 10 mm feed per revolution gives 20x faster adjustment speed than standard type.
- Non-rotating spindle enables a wider range of application.
- IP54 protection allows a wider of operating environment (only applies when data cable not fitted).
- ABSOLUTE linear scale means no restriction on adjustment speed.
- Greater measuring range - 30 mm (1.2") compared with 25 mm (1") for standard micrometer.



293-666



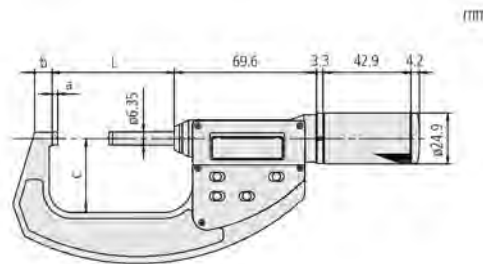
293-669

### Metric

| No.        | Range     | Accuracy | L mm  | a mm | b mm | c mm | Mass g |
|------------|-----------|----------|-------|------|------|------|--------|
| 293-661-10 | 0-30 mm   | ±2 µm    | 34.8  | 2.8  | 6.2  | 25   | 275    |
| 293-666    | 0-30 mm   | ±2 µm    | 34.8  | 2.8  | 6.2  | 25   | 275    |
| 293-667    | 25-55 mm  | ±2 µm    | 59.8  | 2.8  | 8.5  | 36   | 355    |
| 293-668    | 50-80 mm  | ±3 µm    | 84.8  | 2.8  | 10.3 | 47   | 525    |
| 293-669    | 75-105 mm | ±3 µm    | 109.8 | 2.8  | 10.7 | 60   | 625    |

### Inch/Metric

| No.      | Range            | Accuracy       | L mm  | a mm | b mm | c mm | Mass g |
|----------|------------------|----------------|-------|------|------|------|--------|
| 293-676  | 0-30 mm/0-1.2"   | ±2 µm/0.0001"  | 34.8  | 2.8  | 6.2  | 25   | 275    |
| 293-677* | 25-55 mm/1-2.2"  | ±2 µm/0.0001"  | 59.8  | 2.8  | 8.5  | 36   | 355    |
| 293-678* | 50-80 mm/2-3.2"  | ±3 µm/0.00015" | 84.8  | 2.8  | 10.3 | 47   | 525    |
| 293-679* | 75-105 mm/3-4.2" | ±3 µm/0.00015" | 109.8 | 2.8  | 10.7 | 60   | 625    |



| Series 293        |  | 293-661-10 | 293-666<br>293-676 | 293-667<br>up to<br>293-679 |
|-------------------|--|------------|--------------------|-----------------------------|
| <b>Functions</b>  |  |            |                    |                             |
| Data Output       |  |            | ●                  | ●                           |
| ORIGIN            |  | ●          | ●                  | ●                           |
| ZERO/ABS          |  |            |                    | ●                           |
| ON/OFF            |  | ●          | ●                  | ●                           |
| HOLD              |  |            | ●                  | ●                           |
| Low voltage alarm |  | ●          | ●                  | ●                           |

### Specifications

|                    |   |
|--------------------|---|
| Accuracy           | Refer to the list of specifications (excluding quantizing error)                        |
| Resolution         | 0,001 mm or 0,001 mm/0.00005"   |
| Flatness           | 0,3 µm/0.000012"  |
| Parallelism        | 2 µm/0.00008" for models up to 80 mm/3.2"<br>3 µm/0.00012" for models up to 105 mm/4.2" |
| Measuring surfaces | Carbide tipped, micro-lap finish  |
| Frame              | Enamelled   |
| Measuring spindle  | ø6,35 mm, non-rotating, pitch 10 mm   |
| Measuring force    | 5-10 N  |
| Delivered          | Including box, setting standard (from 25 mm upward), 1 battery                          |

### Optional accessories

| No.       | Description          |
|-----------|----------------------|
| 937387    | Signal cable 1 m     |
| 965013    | Signal cable 2 m     |
| 06ADV380E | Signal cable 2 m USB |
| 02AZD790E | Signal cable U-Wave  |

### Consumable spares

| No.    | Description  |
|--------|--------------|
| 938882 | Battery SR44 |



# ABSOLUTE Digimatic Micrometer QuickMike

## Series 227

- Constant and low measuring force mechanism in the thimble.
- Adjustable measuring force to suit various kinds of workpiece.
- Non-rotating spindle and the new ratchet friction thimble.
- Speedy spindle feed of 10 mm/rev.



227-201



227-204

### Metric

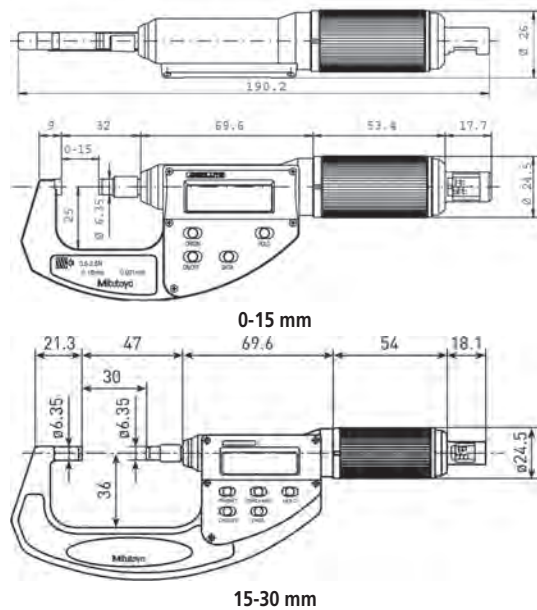
| No.     | Range    | Accuracy | Measuring force (N) settings <sup>(1)</sup> | Measuring force accuracy (N) <sup>(1)</sup> | Mass g |
|---------|----------|----------|---|---|--------|
| 227-201 | 0-15 mm  | ±2 µm    | 0,5; 1,0; 1,5; 2,0; 2,5                     | 0,1 + (force setting/10)                    | 300    |
| 227-202 | 0-15 mm  | ±2 µm    | 2; 4; 6; 8; 10                              | 0,4 + (force setting/10)                    | 300    |
| 227-203 | 15-30 mm | ±2 µm    | 0,5; 1,0; 1,5; 2,0; 2,5                     | 0,1 + (force setting/10)                    | 380    |
| 227-204 | 15-30 mm | ±2 µm    | 2; 4; 6; 8; 10                              | 0,4 + (force setting/10)                    | 380    |

<sup>(1)</sup> Only valid for instrument orientation within 3 degrees of horizontal when measuring (gravitational influence).

### Inch/Metric

| No.      | Range             | Accuracy      | Measuring force (N) settings <sup>(1)</sup> | Measuring force accuracy (N) <sup>(1)</sup> | Mass g |
|----------|-------------------|---------------|---|---|--------|
| 227-211  | 0-15 mm/0-0.6"    | ±2 µm/0.0001" | 0,5; 1,0; 1,5; 2,0; 2,5                     | 0,1 + (force setting/10)                    | 300    |
| 227-212* | 0-15 mm/0-0.6"    | ±2 µm/0.0001" | 2; 4; 6; 8; 10                              | 0,4 + (force setting/10)                    | 300    |
| 227-213* | 15-30 mm/0.6-1.2" | ±2 µm/0.0001" | 0,5; 1,0; 1,5; 2,0; 2,5                     | 0,1 + (force setting/10)                    | 380    |
| 227-214* | 15-30 mm/0.6-1.2" | ±2 µm/0.0001" | 2; 4; 6; 8; 10                              | 0,4 + (force setting/10)                    | 380    |

<sup>(1)</sup> Only valid for instrument orientation within 3 degrees of horizontal when measuring (gravitational influence).



| Functions         | Series 227 |         |         |         |
|-------------------|------------|---------|---------|---------|
|                   | 227-201    | 227-202 | 227-203 | 227-204 |
| Data Output       |            | ●       |         | ●       |
| ORIGIN            |            | ●       |         | ●       |
| ZERO/ABS          |            |         |         | ●       |
| PRESET            |            |         |         | ●       |
| ON/OFF            |            | ●       |         | ●       |
| HOLD              |            | ●       |         | ●       |
| Low voltage alarm |            | ●       |         | ●       |

### Specifications

|                     |   |
|---------------------|---|
| Accuracy            | Refer to the list of specifications (excluding quantizing error)              |
| Resolution          | 0,001 mm or 0,001 mm/0.00005"   |
| Flatness            | 0,3 µm/0.00012"   |
| Parallelism         | 2 µm/0.00008"   |
| Measuring surfaces  | Carbide tipped, micro-lap finish  |
| Frame               | Enamelled   |
| Measuring direction | Horizontal  |
| Delivered           | Including box, setting standard (for 15-30 mm models), screwdriver, 1 battery |

### Optional accessories

| No.       | Description          |
|-----------|----------------------|
| 937387    | Signal cable 1 m     |
| 965013    | Signal cable 2 m     |
| 02AZD790E | Signal cable U-Wave  |
| 06ADV380E | Signal cable 2 m USB |

### Consumable spares

| No.    | Description  |
|--------|--------------|
| 938882 | Battery SR44 |



Measuring force adjustable

# Outside Micrometer non-rotating spindle type

## Series 406

- Ratchet stop and SPC output



406-250

### Metric

| No.      | Range     | Accuracy | L mm  | a mm | b mm | c mm | Mass g |
|----------|-----------|----------|-------|------|------|------|--------|
| 406-250  | 0-25 mm   | ±3 μm    | 58.2  | 2.5  | 7.3  | 32   | 330    |
| 406-251  | 25-50 mm  | ±3 μm    | 83.2  | 2.5  | 10.1 | 47   | 470    |
| 406-252* | 50-75 mm  | ±3 μm    | 108.2 | 2.5  | 11.5 | 60   | 625    |
| 406-253* | 75-100 mm | ±4 μm    | 105.3 | 2.8  | 14.1 | 57   | 460    |

### Inch/Metric

| No.      | Range          | Accuracy       | L mm  | a mm | b mm | c mm | Mass g |
|----------|----------------|----------------|-------|------|------|------|--------|
| 406-350* | 0-25 mm/0-1"   | ±3 μm/0.00015" | 58.2  | 2.5  | 7.3  | 32   | 330    |
| 406-351* | 25-50 mm/1-2"  | ±3 μm/0.00015" | 83.2  | 2.5  | 10.1 | 47   | 470    |
| 406-352* | 50-75 mm/2-3"  | ±3 μm/0.00015" | 108.2 | 2.5  | 11.5 | 60   | 625    |
| 406-353* | 75-100 mm/3-4" | ±4 μm/0.0002"  | 105.3 | 2.8  | 14.1 | 57   | 460    |

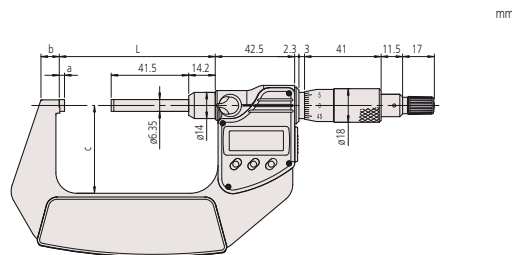
| Functions         | Series 406 |
|-------------------|------------|
| Data Output       | ●          |
| ORIGIN            | ●          |
| ZERO/ABS          | ●          |
| Auto Power OFF    | ●          |
| HOLD              | ●          |
| Low voltage alarm | ●          |

### Specifications

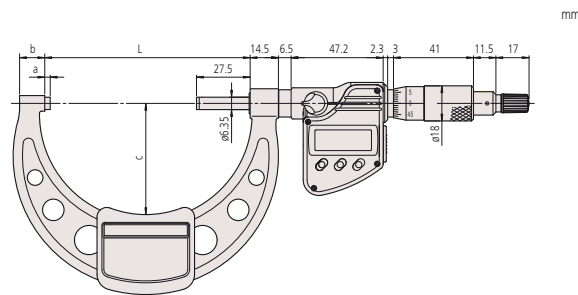
|                    |   |
|--------------------|---|
| Accuracy           | Refer to the list of specifications (excluding quantizing error)                  |
| Resolution         | 0,001 mm or 0,001 mm/0.00005"   |
| Flatness           | 0,3 μm  |
| Parallelism        | 3 μm/0.00012" for models up to 75 mm/3"<br>4 μm/0.00016" for models over 75 mm/3" |
| Measuring surfaces | Carbide tipped, micro-lap finish  |
| Frame              | Enamelled   |
| Measuring spindle  | ∅6,35 mm  |
| Measuring force    | 3-8 N   |
| Delivered          | Including box, setting standard (from 25 mm upward), key                          |

### Optional accessories

| No.       | Description                          |
|-----------|--------------------------------------|
| 05CZA662  | Signal cable 1 m with data button    |
| 05CZA663  | Signal cable 2 m with data button    |
| 02AZD790B | Signal cable U-Wave with data button |
| 06ADV380B | Signal cable 2 m USB                 |



0-75 mm



75-100 mm

# Outside Micrometer

## Series 101

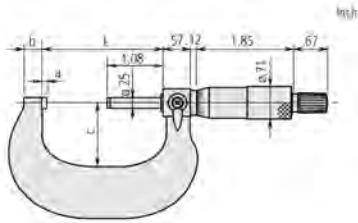
- Satin-chrome-finished frame, tapered (on the anvil side) for hard-to-reach places.

**Inch** With ratchet stop

| No.      | Range | Accuracy  | L"   | a"   | b"   | c"   | Mass g |
|----------|-------|-----------|------|------|------|------|--------|
| 101-113* | 0-1"  | ±0.0001"  | 1.18 | 0.1  | 0.2  | 1.1  | 180    |
| 101-114* | 1-2"  | ±0.0001"  | 2.16 | 0.08 | 0.31 | 1.28 | 245    |
| 101-120* | 3-4"  | ±0.00015" | 4.19 | 0.11 | 0.33 | 2.28 | 525    |

**Inch** With friction thimble

| No.      | Range | Accuracy | L"   | a"   | b"   | c"   | Mass g |
|----------|-------|----------|------|------|------|------|--------|
| 101-117* | 0-1"  | ±0.0001" | 1.18 | 0.1  | 0.2  | 1.1  | 180    |
| 101-118* | 1-2"  | ±0.0001" | 2.16 | 0.08 | 0.31 | 1.28 | 245    |



## Series 102

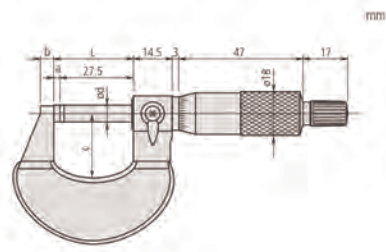
- Heat-insulated frame, tapered (behind the anvil) for hard-to-reach places.
- Ratchet stop type.



Only for 0-25, 25-50 mm



102-301



## Metric

| No.     | Range     | Accuracy | L mm  | a mm | b mm | c mm | d mm | Mass g |
|---------|-----------|----------|-------|------|------|------|------|--------|
| 102-301 | 0-25 mm   | ±2 μm    | 30.3  | 2.8  | 5    | 26   | 6.35 | 180    |
| 102-302 | 25-50 mm  | ±2 μm    | 55.3  | 2.8  | 8    | 32   | 6.35 | 270    |
| 102-303 | 50-75 mm  | ±2 μm    | 80.3  | 2.8  | 9    | 45   | 6.35 | 375    |
| 102-304 | 75-100 mm | ±3 μm    | 105.3 | 2.8  | 10   | 58   | 6.35 | 490    |

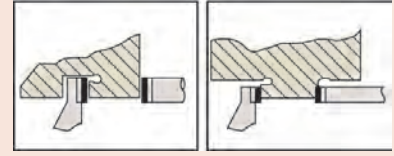
## Metric

Micrometer set

| No.        | Range    | Mass g |
|------------|----------|--------|
| 102-911-01 | 0-100 mm | 1,315  |

## Specifications

|                    |  |
|--------------------|--|
| Accuracy           | Refer to the list of specifications                          |
| Graduation         | 0.0001"  |
| Flatness           | 0.000024"  |
| Parallelism        | 0.00008" for models up to 3",<br>0.00012" for models over 3" |
| Measuring surfaces | Carbide  |



## Specifications

|                    |  |
|--------------------|--|
| Accuracy           | Refer to the list of specifications  |
| Graduation         | 0,01 mm  |
| Scales             | Thimble and sleeve satin chrome finish ø18 mm  |
| Flatness           | 0,6 μm   |
| Parallelism        | 2 μm for 0 to 75 mm model<br>3 μm for models 75-100 mm   |
| Measuring surfaces | Carbide tipped, micro-lap finish   |
| Frame              | Enamelled  |
| Measuring spindle  | Spindle pitch 0,5 mm with spindle lock, ø6,35 mm   |
| Measuring force    | 5-10 N   |
| Delivered          | Including box, setting standard (from 25 mm upward), up to 50 mm with factory certificate, key |



# Outside Micrometer

## Series 103

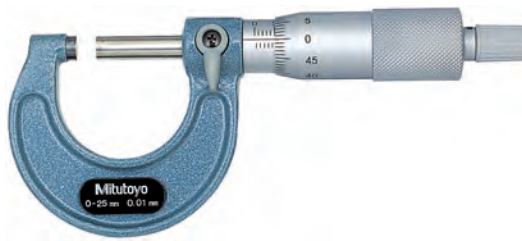
- Lightweight workshop design.
- With ratchet stop.



Only for 0-25 and 25-50 mm

### Specifications

|                    |   |
|--------------------|---|
| Accuracy           | Refer to the list of specifications                           |
| Graduation         | 0,01 mm, 0,001 mm (103-129/103-130)                           |
| Scales             | Thimble and sleeve satin chrome finish                        |
| Flatness           | 0,6 µm for models up to 300 mm<br>1 µm for models over 300 mm |
| Parallelism        | (2+L/100) µm (mm), L = max. range                             |
| Measuring surfaces | Carbide tipped, micro-lap finish                              |
| Frame              | Enamelled   |
| Measuring spindle  | spindle pitch 0,5 mm with spindle lock                        |
| Measuring force    | 5-10 N (from 100 mm upward : 5-15 N)                          |
| Delivered          | Including box, setting standard (from 25 mm upward), key      |



103-137

### Metric

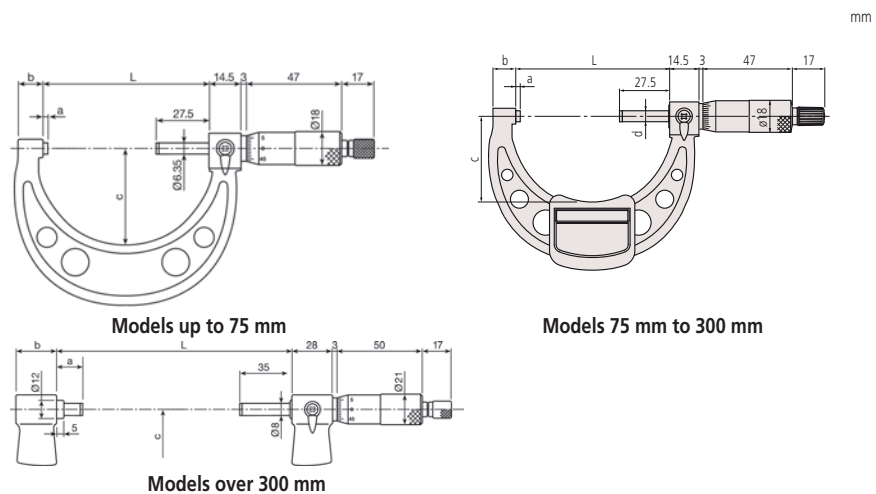
Graduation 0,001 mm

| No.     | Range    | Accuracy | L mm | a mm | b mm | c mm | d mm | Mass g |
|---------|----------|----------|------|------|------|------|------|--------|
| 103-129 | 0-25 mm  | ±2 µm    | 30.3 | 2.8  | 9    | 28   | 6.35 | 175    |
| 103-130 | 25-50 mm | ±2 µm    | 55.3 | 2.8  | 10   | 38   | 6.35 | 215    |

### Metric

Graduation 0,01 mm

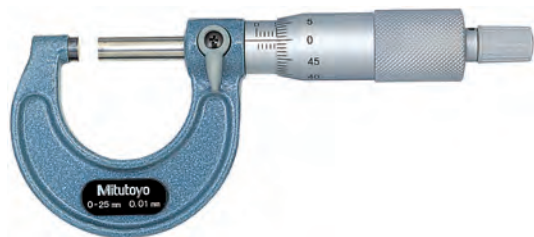
| No.        | Range      | Accuracy | L mm  | a mm | b mm | c mm | d mm | Mass g |
|------------|------------|----------|-------|------|------|------|------|--------|
| 103-137    | 0-25 mm    | ±2 µm    | 30.3  | 2.8  | 9    | 28   | 6.35 | 175    |
| 103-138    | 25-50 mm   | ±2 µm    | 55.3  | 2.8  | 10   | 38   | 6.35 | 215    |
| 103-139-10 | 50-75 mm   | ±2 µm    | 80.3  | 2.8  | 12   | 49   | 6.35 | 315    |
| 103-140-10 | 75-100 mm  | ±3 µm    | 105.3 | 2.8  | 14   | 60   | 6.35 | 375    |
| 103-141-10 | 100-125 mm | ±3 µm    | 132.8 | 5.3  | 17   | 79   | 6.35 | 515    |
| 103-142-10 | 125-150 mm | ±3 µm    | 158.2 | 5.7  | 19   | 94   | 6.35 | 665    |
| 103-143-10 | 150-175 mm | ±4 µm    | 183.6 | 6.1  | 20   | 106  | 6.35 | 720    |
| 103-144-10 | 175-200 mm | ±4 µm    | 208.8 | 6.3  | 19   | 118  | 6.35 | 920    |
| 103-145-10 | 200-225 mm | ±4 µm    | 234.2 | 6.7  | 18   | 130  | 6.35 | 1,080  |
| 103-146-10 | 225-250 mm | ±5 µm    | 258   | 5.5  | 18   | 143  | 6.35 | 1,255  |
| 103-147-10 | 250-275 mm | ±5 µm    | 284   | 6.5  | 18   | 156  | 6.35 | 1,405  |
| 103-148-10 | 275-300 mm | ±5 µm    | 309   | 6.5  | 18   | 169  | 6.35 | 1,565  |
| 103-149    | 300-325 mm | ±6 µm    | 353   | 18   | 28   | 187  | 8    | 1,985  |
| 103-150    | 325-350 mm | ±6 µm    | 378   | 18   | 28   | 199  | 8    | 2,155  |
| 103-151    | 350-375 mm | ±6 µm    | 403   | 18   | 28   | 212  | 8    | 2,305  |
| 103-152    | 375-400 mm | ±7 µm    | 428   | 18   | 28   | 224  | 8    | 2,455  |
| 103-153    | 400-425 mm | ±7 µm    | 453   | 18   | 28   | 236  | 8    | 2,715  |
| 103-154    | 425-450 mm | ±7 µm    | 478   | 18   | 28   | 248  | 8    | 2,965  |
| 103-155    | 450-475 mm | ±8 µm    | 503   | 18   | 28   | 261  | 8    | 3,215  |
| 103-156    | 475-500 mm | ±8 µm    | 528   | 18   | 28   | 273  | 8    | 3,450  |



# Outside Micrometer

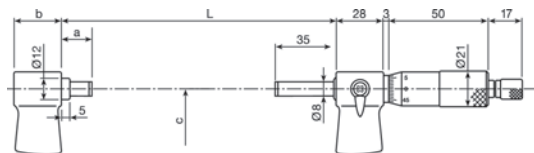
## Series 103

- Lightweight workshop design.
- With ratchet stop.



Metric Graduation 0,01 mm

| No.      | Range       | Accuracy | L mm  | a mm | b mm | c mm | d mm | Mass g |
|----------|-------------|----------|-------|------|------|------|------|--------|
| 103-157  | 500-525 mm  | ±9 μm    | 575   | 40   | 28   | 307  | 8    | 4,060  |
| 103-158  | 525-550 mm  | ±9 μm    | 575   | 15   | 28   | 307  | 8    | 4,080  |
| 103-159  | 550-575 mm  | ±9 μm    | 625   | 40   | 28   | 332  | 8    | 4,500  |
| 103-160  | 575-600 mm  | ±9 μm    | 625   | 15   | 28   | 332  | 8    | 4,525  |
| 103-161  | 600-625 mm  | ±9 μm    | 675   | 40   | 28   | 355  | 8    | 4,915  |
| 103-162  | 625-650 mm  | ±9 μm    | 675   | 15   | 28   | 355  | 8    | 4,930  |
| 103-163  | 650-675 mm  | ±9 μm    | 725   | 40   | 28   | 382  | 8    | 5,200  |
| 103-164  | 675-700 mm  | ±9 μm    | 725   | 15   | 28   | 382  | 8    | 5,215  |
| 103-165  | 700-725 mm  | ±9 μm    | 775   | 40   | 28   | 405  | 8    | 5,835  |
| 103-166* | 725-750 mm  | ±9 μm    | 775   | 15   | 28   | 405  | 8    | 5,860  |
| 103-167* | 750-775 mm  | ±9 μm    | 825   | 40   | 28   | 430  | 8    | 6,385  |
| 103-168* | 775-800 mm  | ±9 μm    | 825   | 15   | 28   | 430  | 8    | 6,410  |
| 103-169* | 800-825 mm  | ±9 μm    | 875   | 40   | 28   | 455  | 8    | 6,925  |
| 103-170* | 825-850 mm  | ±9 μm    | 875   | 15   | 28   | 455  | 8    | 6,940  |
| 103-171* | 850-875 mm  | ±9 μm    | 925   | 40   | 28   | 480  | 8    | 7,565  |
| 103-172* | 875-900 mm  | ±9 μm    | 925   | 15   | 28   | 480  | 8    | 7,590  |
| 103-173* | 900-925 mm  | ±9 μm    | 975   | 40   | 28   | 505  | 8    | 8,215  |
| 103-174* | 925-950 mm  | ±9 μm    | 975   | 15   | 28   | 505  | 8    | 8,240  |
| 103-175* | 950-975 mm  | ±9 μm    | 1,025 | 40   | 28   | 530  | 8    | 8,860  |
| 103-176* | 975-1000 mm | ±9 μm    | 1,025 | 15   | 28   | 530  | 8    | 8,880  |



Models 500 to 1000 mm

## Specifications

|                    |   |
|--------------------|---|
| Accuracy           | Refer to the list of specifications                           |
| Graduation         | 0,01 mm   |
| Scales             | Thimble and sleeve satin chrome finish                        |
| Flatness           | 0,6 μm for models up to 300 mm<br>1 μm for models over 300 mm |
| Parallelism        | (2+L/100) μm (mm), L = max. range                             |
| Measuring surfaces | Carbide tipped, micro-lap finish                              |
| Frame              | Enamelled   |
| Measuring spindle  | spindle pitch 0,5 mm with spindle lock                        |
| Measuring force    | 5-15 N  |
| Delivered          | Including box, setting standard, key                          |

# Outside Micrometer Inch

## Series 103

- Lightweight workshop design.



Only for 0-1" and 1-2"



### Specifications

|                    |  |
|--------------------|--|
| Accuracy           | Refer to the list of specifications                            |
| Graduation         | 0.001" or 0.0001"  |
| Scales             | Thimble and sleeve satin chrome finish                         |
| Flatness           | 0.000024" for models up to 12"<br>0.00004" for models over 12" |
| Parallelism        | [0.00008+0.00004(L/4)]"  |
| Measuring surfaces | Carbide tipped, micro-lap finish                               |
| Frame              | Enamelled  |
| Measuring spindle  | Spindle pitch 0.025" with spindle lock                         |
| Measuring force    | 5-10 N (from 4" upward : 5-15 N)                               |
| Delivered          | Including box, setting standard (from 1" upward), key          |

### Inch Graduation 0,0001" / With ratchet stop

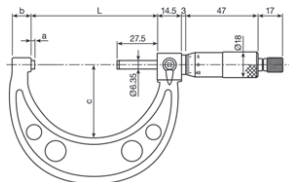
| No.      | Range | Accuracy | L mm | a mm | b mm | c mm | Mass g |
|----------|-------|----------|------|------|------|------|--------|
| 103-131  | 0-1"  | ±0.0001" | 30.3 | 2.8  | 9    | 28   | 175    |
| 103-132* | 1-2"  | ±0.0001" | 55.3 | 2.8  | 10   | 38   | 215    |

### Inch Graduation 0,0001" / With friction thimble

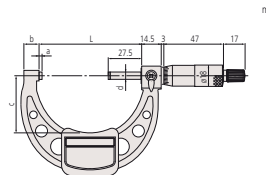
| No.      | Range | Accuracy | L mm | a mm | b mm | c mm | Mass g |
|----------|-------|----------|------|------|------|------|--------|
| 103-135* | 0-1"  | ±0.0001" | 30.3 | 2.8  | 9    | 28   | 175    |
| 103-136* | 1-2"  | ±0.0001" | 55.3 | 2.8  | 10   | 38   | 215    |

### Inch Graduation 0,001" / With ratchet stop

| No.      | Range  | Accuracy  | L mm  | a mm | b mm | c mm | d mm | Mass g |
|----------|--------|-----------|-------|------|------|------|------|--------|
| 103-177  | 0-1"   | ±0.0001"  | 30.3  | 2.8  | 9    | 28   |      | 175    |
| 103-178  | 1-2"   | ±0.0001"  | 55.3  | 2.8  | 10   | 35   |      | 215    |
| 103-179  | 2-3"   | ±0.0001"  | 80.3  | 2.8  | 12   | 49   |      | 315    |
| 103-180  | 3-4"   | ±0.00015" | 105.3 | 2.8  | 14   | 60   | 6.35 | 375    |
| 103-181* | 4-5"   | ±0.00015" | 132.8 | 5.3  | 17   | 76   | 6.35 | 515    |
| 103-182* | 5-6"   | ±0.00015" | 158.2 | 5.7  | 19   | 90   | 6.35 | 665    |
| 103-183* | 6-7"   | ±0.0002"  | 183.6 | 6.1  | 20   | 102  | 6.35 | 720    |
| 103-184  | 7-8"   | ±0.0002"  | 208.8 | 6.3  | 19   | 115  | 6.35 | 920    |
| 103-185  | 8-9"   | ±0.0002"  | 234.2 | 6.7  | 18   | 127  | 6.35 | 1,080  |
| 103-186  | 9-10"  | ±0.00025" | 258   | 5.5  | 18   | 139  | 6.35 | 1,255  |
| 103-187* | 10-11" | ±0.00025" | 284   | 6.5  | 18   | 152  | 6.35 | 1,405  |
| 103-188  | 11-12" | ±0.00025" | 309   | 6.5  | 18   | 166  | 6.35 | 1,565  |
| 103-189* | 12-13" | ±0.0003"  | 353   | 18   | 28   | 187  |      | 1,985  |
| 103-190* | 13-14" | ±0.0003"  | 378   | 18   | 28   | 199  |      | 2,155  |
| 103-191* | 14-15" | ±0.0003"  | 403   | 18   | 28   | 212  |      | 2,305  |
| 103-192* | 15-16" | ±0.00035" | 428   | 18   | 28   | 224  |      | 2,455  |
| 103-193  | 16-17" | ±0.00035" | 453   | 18   | 28   | 236  |      | 2,715  |
| 103-194* | 17-18" | ±0.00035" | 478   | 18   | 28   | 248  |      | 2,965  |
| 103-195* | 18-19" | ±0.0004"  | 503   | 18   | 28   | 261  |      | 3,215  |
| 103-196  | 19-20" | ±0.0004"  | 528   | 18   | 28   | 273  |      | 3,450  |



Models up to 3"



Models 3" to 12"



Models over 12"

# Outside Micrometers in set

## Series 103

- Lightweight workshop design supplied as a boxed set.
- Drawings see page Series 103



103-913-31

## Specifications

|                    |  |
|--------------------|--|
| Accuracy           | See ref. 103-137 page  |
| Graduation         | 0,01 mm  |
| Scales             | Thimble and sleeve satin chrome finish, ø18 mm               |
| Measuring surfaces | Carbide tipped, micro-lap finish                             |
| Frame              | Enamelled  |
| Measuring spindle  | ø6,35 mm, spindle pitch 0,5 mm (or 0.025") with spindle lock |
| Measuring force    | 5-10 N   |
| Delivered          | Including box, setting standard (from 25 mm upward), key     |

## Metric

### Micrometer set

| No.        | Range      | Models included   | Mass g |
|------------|------------|---|--------|
| 103-927-10 | 0-75 mm    | 103-137, 103-138, 103-139-10, 2 setting standards   | 750    |
| 103-913-31 | 0-150 mm   | 102-701 <sup>(1)</sup> , 103-138, 103-139-10, 103-140-10, 103-141-10, 103-142-10, 5 setting standards | 2,435  |
| 103-915-10 | 150-300 mm | 103-143-10, 103-144-10, 103-145-10, 103-146-10, 103-147-10, 103-148-10, 6 setting standards           | 7,695  |
| 103-914-31 | 0-300 mm   | All micrometers of 103-913-31 and 103-915-10 in one set, 11 setting standards                         | 10,130 |

<sup>(1)</sup> Ratchet thimble micrometer

## Inch

### Micrometer set

| No.         | Range | Models included   | Mass g |
|-------------|-------|---|--------|
| 103-929*    | 0-3"  | 103-177, 103-178, 103-179, 2 setting standards  | 750    |
| 103-930*    | 0-4"  | 103-177, 103-178, 103-179, 103-180, 3 setting standards                                   | 1,600  |
| 103-904-01* | 0-6"  | 101-711 <sup>(1)</sup> , 101-106, 103-179, 103-180, 103-181, 103-182, 5 setting standards | 2,435  |
| 103-906*    | 6-12" | 103-183, 103-184, 103-185, 103-186, 103-187, 103-188, 6 setting standards                 | 7,695  |
| 103-905-01  | 0-12" | All micrometers of 103-904-01 and 103-906 in one set, 11 setting standards                | 10,130 |

<sup>(1)</sup> Ratchet thimble micrometer

# Ratchet Thimble Micrometer

## Series 102

- Ratchet function works both from the thimble and the speeder, allowing easy one-handed operation.
- Clearly audible ratchet operation for reassurance that measurement is being performed at constant, preset measuring force.



102-701



102-702

### Metric

| No.     | Range    | Accuracy | Graduation | Mass g |
|---------|----------|----------|------------|--------|
| 102-701 | 0-25 mm  | ±2 µm    | 0,01 mm    | 180    |
| 102-707 | 0-25 mm  | ±2 µm    | 0,001 mm   | 180    |
| 102-702 | 25-50 mm | ±2 µm    | 0,01 mm    | 270    |
| 102-708 | 25-50 mm | ±2 µm    | 0,001 mm   | 270    |

### Inch

| No.     | Range | Accuracy | Graduation | Mass g |
|---------|-------|----------|------------|--------|
| 102-717 | 0-1"  | ±0.0001" | 0.0001"    | 180    |
| 102-718 | 1-2"  | ±0.0001" | 0.0001"    | 270    |

## Specifications

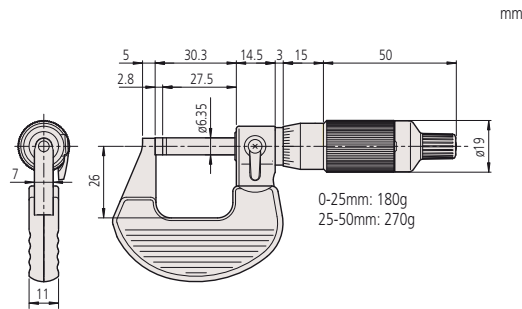
|                    |  |
|--------------------|--|
| Accuracy           | Refer to the list of specifications                          |
| Graduation         | 0,01 mm, 0,001 mm or 0.0001"                                 |
| Scales             | Thimble and sleeve satin chrome finish ø19 mm                |
| Flatness           | 0,6 µm/0.000024"   |
| Parallelism        | 2 µm/0.00008"  |
| Measuring surfaces | Carbide tipped, micro-lap finish                             |
| Frame              | Enamelled  |
| Measuring spindle  | Spindle pitch 0,5 mm (or 0.025") with spindle lock, ø6,35 mm |
| Measuring force    | 5-10 N   |
| Delivered          | Including box, key, setting standard (from 25 mm upward)     |

## Optional accessories

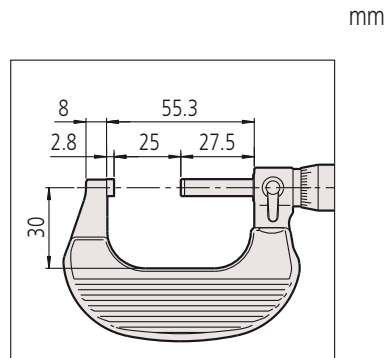
| No.      | Description        |
|----------|--------------------|
| 04GAA899 | Black ratchet cap  |
| 04GAA900 | Red ratchet cap    |
| 04GAA901 | Yellow ratchet cap |
| 04GAA902 | Green ratchet cap  |
| 04GAA903 | Blue ratchet cap   |

## Consumable spares

| No.      | Description      |
|----------|------------------|
| 04AAB208 | Grey ratchet cap |



0-25 mm



25-50 mm



# Digit Outside Micrometer

## Series 193

### Outside Micrometer with Mechanical Counter

- Direct-reading outside micrometer for quick and easy reading.



193-101

#### Metric With ratchet stop (reading 0,01 mm)

| No.     | Range     | Accuracy | L mm | a mm | b mm | c mm | d ø mm | e ø mm | Mass g |
|---------|-----------|----------|------|------|------|------|--------|--------|--------|
| 193-101 | 0-25 mm   | ±2 µm    | 30   | 2.5  | 5    | 26   | 6.35   | 18     | 224    |
| 193-102 | 25-50 mm  | ±2 µm    | 55   | 2    | 8    | 32   | 6.35   | 18     | 275    |
| 193-103 | 50-75 mm  | ±2 µm    | 80   | 2    | 9    | 45   | 6.35   | 18     | 379    |
| 193-104 | 75-100 mm | ±3 µm    | 105  | 2    | 9    | 57   | 6.35   | 18     | 489    |

#### Metric With ratchet stop (reading 0,001 mm)

| No.     | Range     | Accuracy | L mm | a mm | b mm | c mm | d ø mm | e ø mm | Mass g |
|---------|-----------|----------|------|------|------|------|--------|--------|--------|
| 193-111 | 0-25 mm   | ±2 µm    | 30   | 2.5  | 5    | 26   | 6.35   | 18     | 224    |
| 193-112 | 25-50 mm  | ±2 µm    | 55   | 2    | 8    | 32   | 6.35   | 18     | 275    |
| 193-113 | 50-75 mm  | ±2 µm    | 80   | 2    | 9    | 45   | 6.35   | 18     | 379    |
| 193-114 | 75-100 mm | ±3 µm    | 105  | 2    | 9    | 57   | 6.35   | 18     | 489    |

#### Metric Micrometer set

| No.     | Range    | Models included  | Mass g |
|---------|----------|--|--------|
| 193-901 | 0-75 mm  | 193-101, 193-102, 193-103<br>2 micrometers standard          | 820    |
| 193-902 | 0-100 mm | 193-101, 193-102, 193-103, 193-104<br>3 micrometers standard | 1,280  |

#### Inch With friction thimble (reading 0.0001")

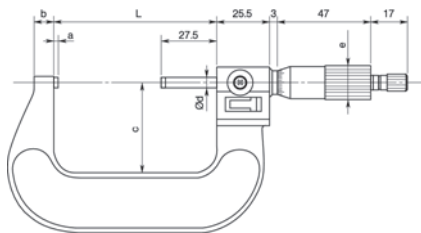
| No.     | Range | Accuracy | L mm | a mm | b mm | c mm | d ø mm | e ø mm | Mass g |
|---------|-------|----------|------|------|------|------|--------|--------|--------|
| 193-211 | 0-1"  | ±0.0001" | 30   | 2.5  | 5    | 26   | 6.35   | 18     | 222    |
| 193-212 | 1-2"  | ±0.0001" | 55   | 2    | 8    | 32   | 6.35   | 18     | 270    |

#### Inch With ratchet stop (reading 0.0001")

| No.      | Range | Accuracy  | L mm | a mm | b mm | c mm | d ø mm | e ø mm | Mass g |
|----------|-------|-----------|------|------|------|------|--------|--------|--------|
| 193-213  | 2-3"  | ±0.0001"  | 80   | 2    | 9    | 45   | 6.35   | 18     | 379    |
| 193-214* | 3-4"  | ±0.00015" | 105  | 2    | 9    | 57   | 6.35   | 18     | 489    |

#### Inch Micrometer set

| No.      | Range | Models included                                     | Mass g |
|----------|-------|---|--------|
| 193-923* | 0-3"  | 193-211, 193-212, 193-213<br>2 micrometers standard | 878    |



## Specifications

|                    |  |
|--------------------|--|
| Accuracy           | Refer to the list of specifications  |
| Counter reading    | 0,01 mm or 0.001"  |
| Graduation         | 0,01mm, 0,001mm, 0.0001"   |
| Scales             | Thimble and sleeve satin chrome finish   |
| Flatness           | 0,6 µm/0.000024"   |
| Parallelism        | (2+L/100) µm, L = max. range (mm)<br>[0.00008+0.00004(L/4)]",<br>L = max. range (inch) |
| Measuring surfaces | Carbide tipped, micro-lap finish   |
| Frame              | Forged, enamelled  |
| Measuring spindle  | Spindle pitch 0,5 mm with spindle lock   |
| Measuring force    | 5-10 N   |
| Delivered          | Including box, setting standard (from 25 mm upward), key                               |



193-902

# Digimatic Micrometer with interchangeable anvils



## Series 340

- Interchangeable anvils provide a wide measuring range.



340-251-10

### Metric

| No.        | Range       | Interchangeable anvils | Protection IP65 | Applicable Standards | Mass kg |
|------------|-------------|------------------------|-----------------|----------------------|---------|
| 340-251-10 | 0-150 mm    | 6 pcs                  | ●               | 5 pcs                | 0.96    |
| 340-252-10 | 150-300 mm  | 6 pcs                  | ●               | 6 pcs                | 1.88    |
| 340-520    | 300-400 mm  | 4 pcs                  |                 | 4 pcs                | 2.6     |
| 340-521    | 400-500 mm  | 4 pcs                  |                 | 4 pcs                | 4.1     |
| 340-522    | 500-600 mm  | 4 pcs                  |                 | 4 pcs                | 5.5     |
| 340-523    | 600-700 mm  | 4 pcs                  |                 | 4 pcs                | 6.8     |
| 340-524    | 700-800 mm  | 4 pcs                  |                 | 4 pcs                | 8.2     |
| 340-525    | 800-900 mm  | 4 pcs                  |                 | 4 pcs                | 9.5     |
| 340-526    | 900-1000 mm | 4 pcs                  |                 | 4 pcs                | 10.9    |

### Inch/Metric

| No.        | Range             | Interchangeable anvils | Protection IP65 | Applicable Standards | Mass kg |
|------------|-------------------|------------------------|-----------------|----------------------|---------|
| 340-351-10 | 0-150 mm/0-6"     | 6 pcs                  | ●               | 5 pcs                | 0.96    |
| 340-352-10 | 150-300 mm/6-12"  | 6 pcs                  | ●               | 6 pcs                | 1.88    |
| 340-720    | 300-400 mm/12-18" | 6 pcs                  |                 | 6 pcs                | 2.6     |
| 340-721    | 400-500 mm/18-24" | 6 pcs                  |                 | 6 pcs                | 4.1     |
| 340-722*   | 500-600 mm/24-30" | 6 pcs                  |                 | 6 pcs                | 5.5     |
| 340-723*   | 600-700 mm/30-36" | 6 pcs                  |                 | 6 pcs                | 6.8     |



|                   | 340-251-10<br>up to<br>340-352-10 | 340-520<br>up to<br>340-723 |
|-------------------|-----------------------------------|-----------------------------|
| <b>Functions</b>  |                                   |                             |
| Data Output       | ●                                 | ●                           |
| ZERO/ABS          | ●                                 | ●                           |
| PRESET            |                                   | ●                           |
| ON/OFF            |                                   | ●                           |
| Auto power OFF    | ●                                 | ●                           |
| HOLD              | ●                                 | ●                           |
| 2 x PRESET        | ●                                 |                             |
| Low voltage alarm | ●                                 | ●                           |
| Function lock     | ●                                 |                             |

### Specifications

|                    |   |
|--------------------|---|
| Accuracy           | $\pm(4+L/75) \mu\text{m}$ , L = max. range (mm)<br>$\pm[0.00016"+0.00004 (L/3)]$ , L = max. range (inch)<br>(excluding quantizing error for digital models)   |
| Resolution         | 0,001 mm or 0,001 mm/0.0001"  |
| Scales             | Thimble and sleeve satin chrome finish<br>$\varnothing 18$ mm (up to 300 mm)<br>$\varnothing 21$ mm (over 300 mm)   |
| Flatness           | 0,6 $\mu\text{m}/0.000024"$ for models up to 300 mm/12"<br>1 $\mu\text{m}/0.00004"$ for models over 300 mm/12"  |
| Parallelism        | 2 $\mu\text{m}/0.00008"$ for models up to 75 mm/3"<br>3 $\mu\text{m}/0.00012"$ for models up to 150 mm/6"<br>(2+L/100) $\mu\text{m}$ for models over 150 mm, L = max. range (mm)<br>$\pm[0.00008"+0.00004(L/4)]"$ for models over 6"<br>L = max. range (inch) |
| Measuring surfaces | Hardened, lapped (Anvil), carbide tipped, lapped (Spindle side)   |
| Frame              | Lightweight construction, enamelled   |
| Measuring spindle  | $\varnothing 6,35$ mm (up to 300 mm), $\varnothing 8$ mm (over 300 mm), spindle pitch 0,5 mm, with spindle lock   |
| Measuring force    | 5-10 N (10-14 N for measuring range of 300 mm and more)   |
| Delivered          | Including box, setting standard, anvils, key, 1 battery   |

### Optional accessories

| No.       | Description                              |
|-----------|--|
| 04AZB512  | SPC cable 1 m with data switch           |
| 04AZB513  | SPC cable 2 m with data switch           |
| 05CZA662  | Signal cable 1 m with data button        |
| 05CZA663  | Signal cable 2 m with data button        |
| 02AZD790B | Signal cable U-Wave with data button     |
| 06ADV380B | Signal cable 2 m USB                     |
| 02AZD790C | Signal cable for U-Wave with data switch |
| 06ADV380C | Signal cable 2 m USB                     |

05CZA662/05CZA663/02AZD790B/06ADV380B for 340-25X/-35X

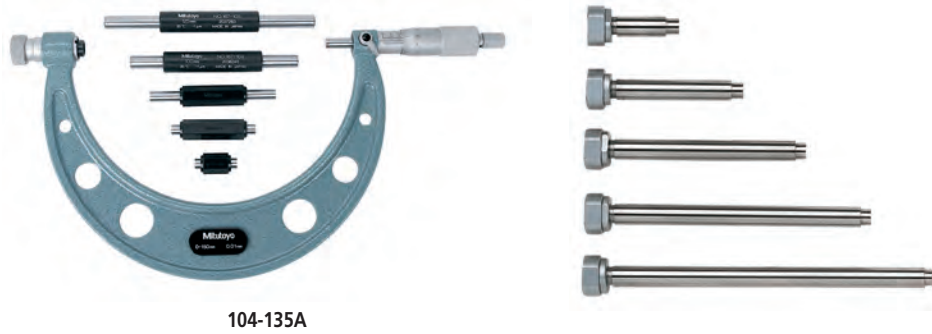
### Consumable spares

| No.    | Description  |
|--------|--------------|
| 938882 | Battery SR44 |

# Outside Micrometer with interchangeable anvils

## Series 104

- Interchangeable anvils provide a wide measuring range.



104-135A

### Metric

| No.      | Range       | Interchangeable anvils | Applicable Standards | Mass kg |
|----------|-------------|------------------------|----------------------|---------|
| 104-171  | 0-50 mm     | 1 pcs                  | -                    | 0.32    |
| 104-139A | 0-100 mm    | 4 pcs                  | 3                    | 0.79    |
| 104-135A | 0-150 mm    | 6 pcs                  | 5                    | 1.35    |
| 104-161A | 50-150 mm   | 4 pcs                  | 4                    | 1.35    |
| 104-140A | 100-200 mm  | 4 pcs                  | 4                    | 1.38    |
| 104-136A | 150-300 mm  | 6 pcs                  | 6                    | 2.65    |
| 104-141A | 200-300 mm  | 4 pcs                  | 4                    | 2.22    |
| 104-142A | 300-400 mm  | 4 pcs                  | 4                    | 3.31    |
| 104-143A | 400-500 mm  | 4 pcs                  | 4                    | 4.81    |
| 104-144A | 500-600 mm  | 4 pcs                  | 4                    | 6.35    |
| 104-145A | 600-700 mm  | 4 pcs                  | 4                    | 7.72    |
| 104-146A | 700-800 mm  | 4 pcs                  | 4                    | 9.08    |
| 104-147A | 800-900 mm  | 4 pcs                  | 4                    | 10.41   |
| 104-148A | 900-1000 mm | 4 pcs                  | 4                    | 11.78   |

### Inch

| No.      | Range  | Interchangeable anvils | Applicable Standards | Mass kg |
|----------|--------|------------------------|----------------------|---------|
| 104-165* | 0-2"   | 1 pcs                  | -                    | 0.32    |
| 104-149  | 0-4"   | 4 pcs                  | 3                    | 0.79    |
| 104-137  | 0-6"   | 6 pcs                  | 5                    | 1.35    |
| 104-162* | 2-6"   | 4 pcs                  | 4                    | 1.35    |
| 104-150  | 4-8"   | 4 pcs                  | 4                    | 1.38    |
| 104-138  | 6-12"  | 6 pcs                  | 6                    | 2.65    |
| 104-151  | 8-12"  | 4 pcs                  | 4                    | 2.22    |
| 104-152  | 12-16" | 4 pcs                  | 4                    | 3.31    |
| 104-201* | 12-18" | 6 pcs                  | 6                    | 4.65    |
| 104-153  | 16-20" | 4 pcs                  | 4                    | 4.805   |
| 104-202* | 18-24" | 6 pcs                  | 6                    | 6.515   |
| 104-154  | 20-24" | 4 pcs                  | 4                    | 6.35    |
| 104-155  | 24-28" | 4 pcs                  | 4                    | 7.715   |
| 104-203* | 24-30" | 6 pcs                  | 6                    | 9.96    |
| 104-156  | 28-32" | 4 pcs                  | 4                    | 9.075   |
| 104-204* | 30-36" | 6 pcs                  | 6                    | 11.88   |
| 104-157* | 32-36" | 4 pcs                  | 4                    | 10.405  |
| 104-158  | 36-40" | 4 pcs                  | 4                    | 11.78   |
| 104-205* | 36-42" | 6 pcs                  | 6                    | 13.7    |

### Specifications

|                    |   |
|--------------------|---|
| Accuracy           | $\pm(4+L/75) \mu\text{m}$ , L = max. range (mm)<br>$\pm[0.00016''+0.00004(L/3)]$ ,<br>L = max. range (inch)   |
| Graduation         | 0,01 mm/0.001"  |
| Scales             | Thimble and sleeve satin chrome finish<br>$\varnothing 18$ mm (up to 300 mm)<br>$\varnothing 21$ mm (over 300 mm)   |
| Flatness           | 0,6 $\mu\text{m}/0.000024''$ for models up to 300 mm/12"<br>1 $\mu\text{m}/0.00004''$ for models over 300 mm/12"  |
| Parallelism        | 2 $\mu\text{m}/0.00008''$ for models up to 75 mm/3"<br>3 $\mu\text{m}/0.00012''$ for models up to 150 mm/6"<br>(2+L/100) $\mu\text{m}$ for models over 150 mm<br>L = max. range (mm)<br>$\pm[0.00008''+0.00004(L/4)]''$ for models over 6"<br>L = max. range (inch) |
| Measuring surfaces | Hardened, lapped (Anvil), carbide tipped, lapped (Spindle side)   |
| Frame              | Lightweight construction, enamelled   |
| Measuring spindle  | $\varnothing 6,35$ mm (up to 300 mm)<br>$\varnothing 8$ mm (over 300 mm)<br>Spindle pitch 0,5 mm (or 0.025")<br>with spindle lock   |
| Measuring force    | 5-10 N (10-14 N for measuring range of 300 mm and more)   |
| Delivered          | Including box, setting standard, anvils, key  |

# Outside Micrometer with interchangeable anvils

## Series 104/340

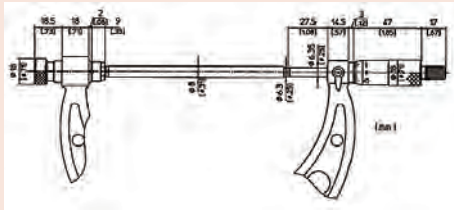
Optional interchangeable anvils for 104 and 340 series

0 - 300 mm

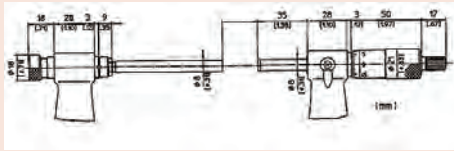
| Interchangeable anvil ident | M1 mm <sup>°</sup> | M2 mm   | M3 mm   | M4 mm   | M5 mm   | M6 mm   |
|-----------------------------|--------------------|---------|---------|---------|---------|---------|
| No.                         | 303950             | 303951  | 303952  | 303953  | 303954  | 303955  |
| 0/150 mm                    | 0-25               | 25-50   | 50-75   | 75-100  | 100-125 | 125-150 |
| 150/300 mm                  | 150-175            | 175-200 | 200-225 | 225-250 | 250-275 | 275-300 |

300 - 1000 mm

| Interchangeable anvil ident | M3 mm   | M4 mm   | M5 mm   | M6 mm    | L mm | B mm |
|-----------------------------|---------|---------|---------|----------|------|------|
| No.                         | 304001  | 304002  | 304003  | 304004   | L    | B    |
| 300/400 mm                  | 300-325 | 325-350 | 350-375 | 375-400  | 425  | 224  |
| 400/500 mm                  | 400-425 | 425-450 | 450-475 | 475-500  | 525  | 273  |
| 500/600 mm                  | 500-525 | 525-550 | 550-575 | 575-600  | 625  | 332  |
| 600/700 mm                  | 600-625 | 625-650 | 650-675 | 675-700  | 725  | 382  |
| 700/800 mm                  | 700-725 | 725-750 | 750-775 | 775-800  | 825  | 430  |
| 800/900 mm                  | 800-825 | 825-850 | 850-875 | 875-900  | 925  | 480  |
| 900/1000 mm                 | 900-925 | 925-950 | 950-975 | 975-1000 | 1025 | 530  |
| A mm                        | 87      | 62      | 37      | 12       | -    | -    |

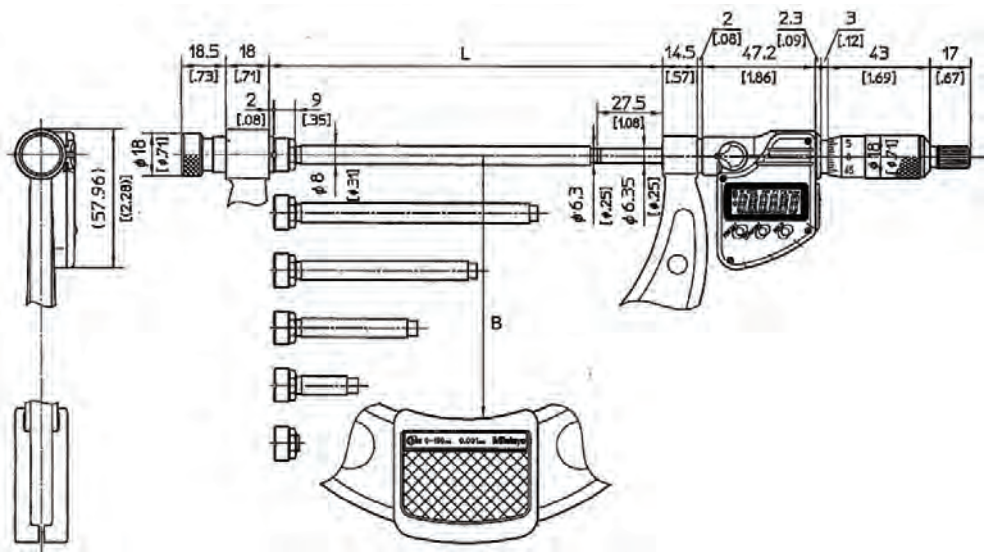


Series 104  
0-300 mm/0-12"

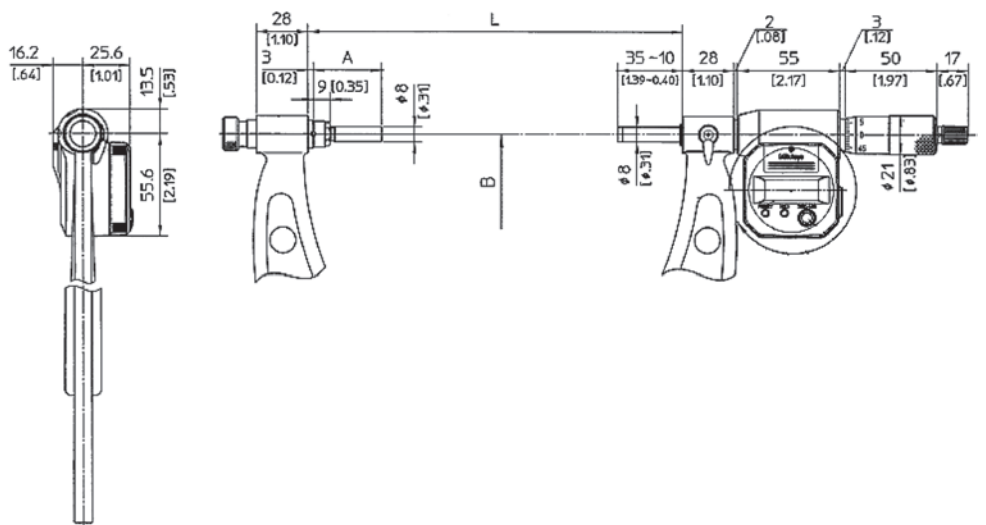


Series 104  
300-1000 mm/12-42"

<sup>°</sup> Except for 104-171 and 104-165



Series 340  
0-150 mm = L 164 mm / B 90 mm  
150-300 mm = L 314 mm / B 166 mm



Series 340  
300-1000 mm/12-42"  
Dimensions in parentheses apply to inch models

# Outside Micrometer with adjustable anvil

## Series 105

- Stable and rugged lightweight rectangular-tube construction is ideal for large micrometers.
- 50 mm (or 2") spindle stroke provides extended range compared to standard spindle types.
- Anvil collars extend the measuring range even further.
- Setting standards supplied cover the whole measuring range.



105-105

### Metric

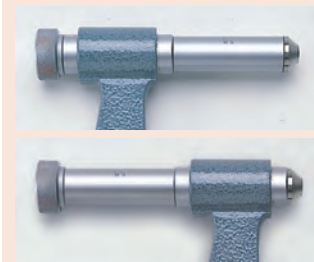
| No.      | Range        | Extension collars | Mass kg |
|----------|--------------|-------------------|---------|
| 105-103* | 500-600 mm   | 50 mm             | 5.53    |
| 105-104* | 600-700 mm   | 50 mm             | 6.35    |
| 105-105* | 700-800 mm   | 50 mm             | 7.17    |
| 105-106* | 800-900 mm   | 50 mm             | 7.99    |
| 105-107* | 900-1000 mm  | 50 mm             | 8.81    |
| 105-408  | 1000-1100 mm | 50 mm             | 10.49   |
| 105-409  | 1100-1200 mm | 50 mm             | 11.28   |
| 105-418* | 1000-1200 mm | 50 mm, 100 mm     | 13.77   |
| 105-410  | 1200-1300 mm | 50 mm             | 12.05   |
| 105-411  | 1300-1400 mm | 50 mm             | 12.72   |
| 105-419* | 1200-1400 mm | 50 mm, 100 mm     | 15.77   |
| 105-412  | 1400-1500 mm | 50 mm             | 13.4    |
| 105-413  | 1500-1600 mm | 50 mm             | 14.33   |
| 105-420* | 1400-1600 mm | 50 mm, 100 mm     | 17.91   |
| 105-414* | 1600-1700 mm | 50 mm             | 15.26   |
| 105-415  | 1700-1800 mm | 50 mm             | 16.44   |
| 105-421* | 1600-1800 mm | 50 mm, 100 mm     | 20.8    |
| 105-416  | 1800-1900 mm | 50 mm             | 18.1    |
| 105-417  | 1900-2000 mm | 50 mm             | 19.76   |
| 105-422* | 1800-2000 mm | 50 mm, 100 mm     | 22.76   |

### Inch

| No.      | Range  | Extension collars | Mass kg |
|----------|--------|-------------------|---------|
| 105-428* | 40-44" | 2"                | 10      |
| 105-429* | 44-48" | 2"                | 10.9    |
| 105-430* | 48-52" | 2"                | 11.4    |
| 105-431* | 52-56" | 2"                | 11.9    |
| 105-432* | 56-60" | 2"                | 12.6    |
| 105-433* | 60-64" | 2"                | 13.2    |
| 105-434* | 64-68" | 2"                | 14.1    |
| 105-435* | 68-72" | 2"                | 14.9    |
| 105-436* | 72-76" | 2"                | 15.8    |
| 105-437* | 76-80" | 2"                | 16.7    |

## Specifications

|                    |   |
|--------------------|---|
| Accuracy           | $\pm(6+L/75) \mu\text{m}$ , L = max. range (mm)<br>$\pm[0.0003''+0.00005(L/3)]$ ,<br>L = max. range (inch)            |
| Graduation         | 0,01 mm/0.001"  |
| Scales             | Thimble and sleeve satin chrome finish,<br>$\varnothing 21$ mm  |
| Flatness           | 1,3 $\mu\text{m}/0.00052''$   |
| Parallelism        | $(2+L/100) \mu\text{m}$ (mm),<br>L = max. range (mm)<br>$[0.00008''+0.00004(L/4)]''$ (inch),<br>L = max. range (inch) |
| Measuring surfaces | Carbide tipped, micro-lap finish  |
| Frame              | Lightweight welded, enamelled   |
| Measuring spindle  | $\varnothing 8$ mm<br>Spindle pitch 0,5 mm (or 0.025")  |
| Measuring force    | 5-10 N  |
| Delivered          | Including box, setting standards (2 pieces), adjustable stop (for models over 1000 mm/40" range)                      |



Anvil extension collar

# Digimatic Sheet Metal Micrometer



## Series 389

- Designed with a deep frame for measuring the thickness of sheet material at a greater distance from the edge than is possible with a standard micrometer.



389-251

### Metric

| No.      | Range    | Accuracy | Anvil/Tip | Mass g |
|----------|----------|----------|-----------|--------|
| 389-251  | 0-25 mm  | ±4 µm    | A         | 840    |
| 389-261  | 0-25 mm  | ±4 µm    | B         | 840    |
| 389-271  | 0-25 mm  | ±4 µm    | C         | 840    |
| 389-514  | 0-25 mm  | ±5 µm    | A         | 4,500  |
| 389-252  | 25-50 mm | ±4 µm    | A         | 920    |
| 389-262* | 25-50 mm | ±4 µm    | B         | 920    |
| 389-272* | 25-50 mm | ±4 µm    | C         | 920    |

### Inch/Metric

| No.      | Range         | Accuracy       | Anvil/Tip | Mass g |
|----------|---------------|----------------|-----------|--------|
| 389-351  | 0-25 mm/0-1"  | ±4 µm/0.0002"  | A         | 840    |
| 389-361* | 0-25 mm/0-1"  | ±4 µm/0.0002"  | B         | 840    |
| 389-371  | 0-25 mm/0-1"  | ±4 µm/0.0002"  | C         | 840    |
| 389-714* | 0-25 mm/0-1"  | ±5 µm/0.00025" | A         | 4,500  |
| 389-352  | 25-50 mm/1-2" | ±4 µm/0.0002"  | A         | 920    |
| 389-362* | 25-50 mm/1-2" | ±4 µm/0.0002"  | B         | 920    |
| 389-372* | 25-50 mm/1-2" | ±4 µm/0.0002"  | C         | 920    |

| Functions         | Series 389 |
|-------------------|------------|
| Data Output       | ●          |
| ORIGIN            | ●          |
| ZERO/ABS          | ●          |
| Auto Power OFF    | ●          |
| HOLD              | ●          |
| Low voltage alarm | ●          |

### Specifications

|                    |  |
|--------------------|--|
| Accuracy           | Refer to the list of specifications (excluding quantizing error)                                     |
| Resolution         | 0,001 mm or 0,001 mm/0.00005"  |
| Scales             | Thimble and sleeve satin chrome finish, ø18 mm   |
| Flatness           | 0,6 µm/0.000024" for models with 150 mm/6" throat<br>1 µm/0.00004" for models with 300 mm/12" throat |
| Parallelism        | 3 µm/0.00012"  |
| Measuring surfaces | Carbide tipped, micro-lap finish   |
| Frame              | Enamelled  |
| Measuring spindle  | ø6,35 mm, spindle pitch 0,5 mm, with spindle lock  |
| Measuring force    | 3-8 N  |
| Delivered          | Including box, key, 1 battery  |

### Optional accessories

| No.       | Description                              |
|-----------|--|
| 04AZB512  | SPC cable 1 m with data switch           |
| 04AZB513  | SPC cable 2 m with data switch           |
| 05CZA662  | Signal cable 1 m with data button        |
| 05CZA663  | Signal cable 2 m with data button        |
| 02AZD790B | Signal cable U-Wave with data button     |
| 06ADV380B | Signal cable 2 m USB                     |
| 02AZD790C | Signal cable for U-Wave with data switch |
| 06ADV380C | Signal cable 2 m USB                     |

04AZB512/04AZB513/02AZD790C/06ADV380C only for No. 389-514/389-714

### Consumable spares

| No.    | Description  |
|--------|--------------|
| 938882 | Battery SR44 |



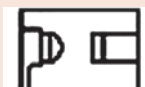
Flat-Flat



Type A  
Flat-Flat



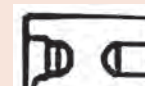
Spherical-Flat



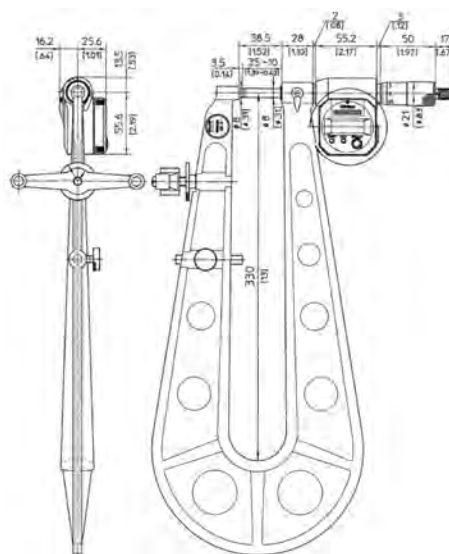
Type B  
Spherical-Flat



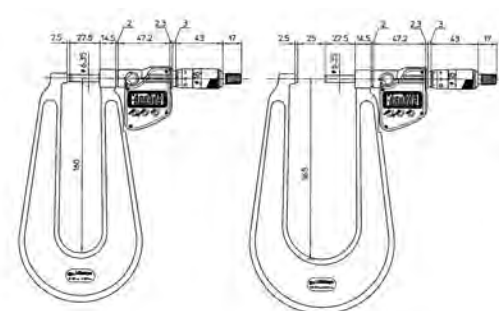
Spherical-Spherical



Type C  
Spherical-Spherical



389-514/389-714 (between brackets)



0-25 mm/25-50 mm

# Sheet Metal Micrometer

Series 118

## Special Purpose Micrometer

- Designed with a deep frame for measuring the thickness of sheet material at a greater distance from the edge than is possible with a standard micrometer.
- Ratchet stop applies constant measuring force for maximum repeatability.



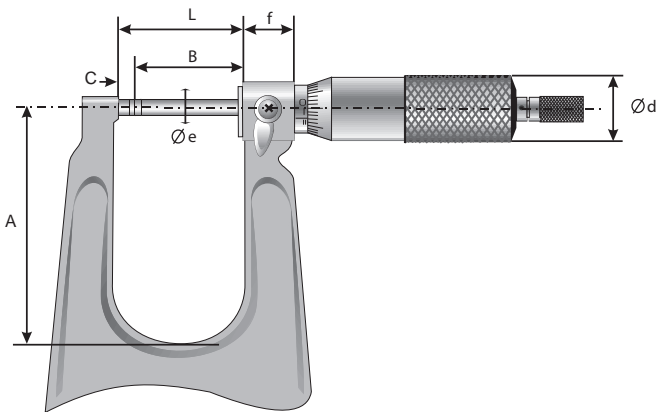
118-102

### Metric

| No.      | Range    | Accuracy | L (mm) | A (mm) | B (mm) | C (mm) | d (mm) | e (mm) | f (mm) | Anvil/Tip | Mass g |
|----------|----------|----------|--------|--------|--------|--------|--------|--------|--------|-----------|--------|
| 118-101* | 0-25 mm  | ±4 μm    | 30,3   | 110    | 27,5   | 2,8    | 18     | 6,35   | 14,5   | A         | 445    |
| 118-102  | 0-25 mm  | ±4 μm    | 30,3   | 160    | 27,5   | 2,8    | 18     | 6,35   | 14,5   | A         | 740    |
| 118-114* | 0-25 mm  | ±4 μm    | 30,3   | 160    | 27,5   | 2,8    | 18     | 6,35   | 14,5   | B         | 740    |
| 118-118  | 0-25 mm  | ±4 μm    | 30,3   | 160    | 27,5   | 2,8    | 18     | 6,35   | 14,5   | C         | 740    |
| 118-103  | 0-25 mm  | ±5 μm    | 38,5   | 330    | 35     | 3,5    | 21     | 8      | 28     | A         | 2,650  |
| 118-110* | 25-50 mm | ±4 μm    | 55,3   | 165    | 27,5   | 2,5    | 18     | 6,35   | 14,5   | A         | 820    |
| 118-126* | 25-50 mm | ±4 μm    | 55,3   | 165    | 27,5   | 2,5    | 18     | 6,35   | 14,5   | C         | 820    |

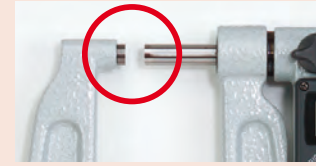
### Inch

| No.      | Range | Accuracy  | Anvil/Tip | Mass g |
|----------|-------|-----------|-----------|--------|
| 118-129* | 0-1"  | ±0.0002"  | A         | 740    |
| 118-116* | 0-1"  | ±0.0002"  | B         | 740    |
| 118-120  | 0-1"  | ±0.0002"  | C         | 740    |
| 118-107* | 0-1"  | ±0.00025" | A         | 2,650  |
| 118-112* | 1-2"  | ±0.0002"  | A         | 820    |

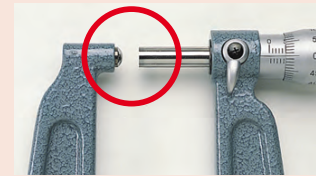


## Specifications

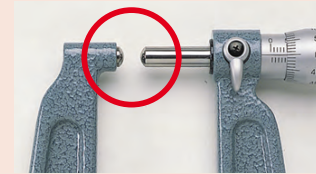
|                    |  |
|--------------------|--|
| Accuracy           | Refer to the list of specifications  |
| Graduation         | 0,01 mm, 0.001" or 0.0001"   |
| Scales             | Thimble and sleeve satin chrome finish, ø18 mm or ø21 mm   |
| Flatness           | 0,6 μm/0.000024" for models with 150 mm/6" throat<br>1 μm/0.00004" for models with 300 mm/12" throat                 |
| Parallelism        | 3 μm/0.00012"  |
| Measuring surfaces | Carbide tipped, micro-lap finish   |
| Frame              | Enamelled  |
| Measuring spindle  | Throat depth up to 150 mm : ø6,35 mm<br>Throat depth up to 300 mm : ø8 mm<br>Spindle pitch 0,5 mm, with spindle lock |
| Measuring force    | 5-10 N   |
| Delivered          | Including box, key   |



Type A  
Flat-Flat



Type B  
Spherical-Flat



Type C  
Spherical-Spherical

# Sheet Metal Micrometer graduated dial

## Series 119

- Features a deep frame and easily read graduated dial for measuring the thickness of sheet material.



119-202

### Metric

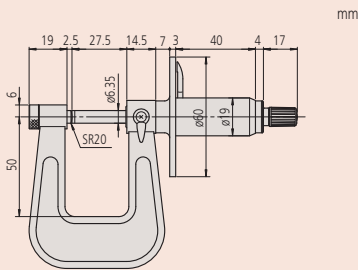
Dial reading model

| No.     | Range   | Accuracy | Throat depth mm      | Mass g |
|---------|---------|----------|----------------------|--------|
| 119-202 | 0-25 mm | ±4 μm    | 50 mm <sup>(1)</sup> | 305    |

<sup>(1)</sup> S-F : Spherical anvil and Flat spindle

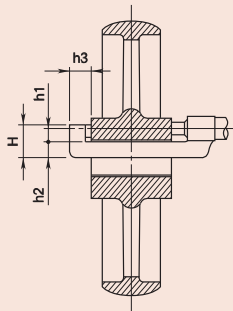
## Specifications

|                    |  |
|--------------------|--|
| Accuracy           | Refer to the list of specifications    |
| Graduation         | 0,01 mm                                |
| Scales             | Thimble and sleeve satin chrome finish |
| Measuring surfaces | Convex anvil and level spindle         |
| Frame              | Enamelled                              |
| Measuring spindle  | ø6,35 mm, with spindle lock            |



## Specifications

|                    |  |
|--------------------|--|
| Accuracy           | Refer to the list of specifications                      |
| Graduation         | 0,01 mm or 0.001"  |
| Scales             | Thimble and sleeve satin chrome finish, ø18 mm           |
| Flatness           | 0,6 μm/0.000024"   |
| Measuring surfaces | Carbide tipped, micro-lap finish                         |
| Frame              | Enamelled  |
| Measuring spindle  | Spindle pitch 0,5 mm                                     |
| Measuring force    | 5-10 N   |
| Delivered          | Including box, setting standard (from 25 mm upward), key |



# Hub Micrometer

## Series 147

### Special Purpose Micrometer

- Designed with a very small throat depth for measuring hub thickness, shouldered features inside a bore, bearing bushings, etc.
- Ratchet stop provides constant measuring force.



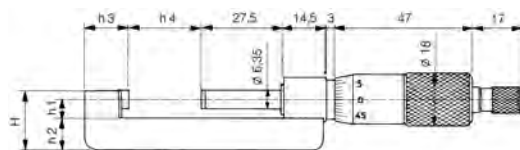
147-301

### Metric

| No.     | Range     | Accuracy | H mm | h1 mm | h2 mm | h3 mm | h4 mm | Mass g |
|---------|-----------|----------|------|-------|-------|-------|-------|--------|
| 147-301 | 0-25 mm   | ±2 μm    | 17.5 | 6     | 8.5   | 13.5  | 0     | 135    |
| 147-302 | 25-50 mm  | ±2 μm    | 20.5 | 6.5   | 11    | 14    | 25    | 150    |
| 147-303 | 50-75 mm  | ±2 μm    | 20.5 | 6.5   | 11    | 13    | 50    | 170    |
| 147-304 | 75-100 mm | ±3 μm    | 20.5 | 6.5   | 11    | 13    | 75    | 185    |

### Inch

| No.      | Range | Accuracy  | H mm | h1 mm | h2 mm | h3 mm | h4 mm | Mass g |
|----------|-------|-----------|------|-------|-------|-------|-------|--------|
| 147-351  | 0-1"  | ±0,0001"  | 17.5 | 6     | 8.5   | 13.5  | 0     | 135    |
| 147-352* | 1-2"  | ±0,0001"  | 20.5 | 6.5   | 11    | 14    | 25.4  | 150    |
| 147-353* | 2-3"  | ±0,0001"  | 20.5 | 6.5   | 11    | 13    | 50.8  | 170    |
| 147-354* | 3-4"  | ±0,00015" | 20.5 | 6.5   | 11    | 13    | 76.2  | 185    |







# Caliper Jaw Micrometer

## Series 143

### Analog Model

- This type of micrometer has been especially designed for measuring in hard-to-reach places.



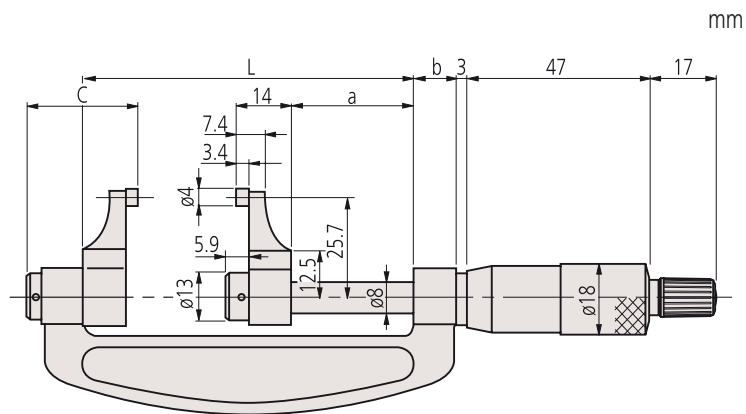
143-101

### Metric

| No.      | Range      | Accuracy | L mm  | a mm | b mm | c mm | Mass g |
|----------|------------|----------|-------|------|------|------|--------|
| 143-101  | 0-25 mm    | ±5 μm    | 59.8  | 31.8 | 10.6 | 28.6 | 210    |
| 143-102  | 25-50 mm   | ±6 μm    | 84.8  | 31.8 | 10.6 | 28.6 | 230    |
| 143-103  | 50-75 mm   | ±7 μm    | 109.8 | 31.8 | 10.6 | 28.6 | 280    |
| 143-104  | 75-100 mm  | ±8 μm    | 134.8 | 31.8 | 10.6 | 28.6 | 330    |
| 143-105  | 100-125 mm | ±9 μm    | 159.8 | 31.8 | 10.6 | 28.6 | 400    |
| 143-106* | 125-150 mm | ±9 μm    | 184.8 | 31.8 | 10.6 | 28.6 | 450    |
| 143-107* | 150-175 mm | ±10 μm   | 209.8 | 31.8 | 10.6 | 28.6 | 520    |
| 143-108* | 175-200 mm | ±10 μm   | 234.8 | 31.8 | 10.6 | 28.6 | 600    |
| 143-109* | 200-225 mm | ±11 μm   | 255.8 | 27.8 | 14.5 | 32.5 | 690    |
| 143-110* | 225-250 mm | ±11 μm   | 280.8 | 27.8 | 14.5 | 32.5 | 790    |
| 143-111* | 250-275 mm | ±12 μm   | 305.8 | 27.8 | 14.5 | 32.5 | 900    |
| 143-112* | 275-300 mm | ±12 μm   | 330.8 | 27.8 | 14.5 | 32.5 | 920    |

### Inch

| No.      | Range | Accuracy  | L mm  | a mm | b mm | c mm | Mass g |
|----------|-------|-----------|-------|------|------|------|--------|
| 143-121  | 0-1"  | ±0.00025" | 59.8  | 31.8 | 10.6 | 28.6 | 210    |
| 143-122* | 1-2"  | ±0.0003"  | 84.8  | 31.8 | 10.6 | 28.6 | 230    |
| 143-123  | 2-3"  | ±0.00035" | 109.8 | 31.8 | 10.6 | 28.6 | 280    |



### Specifications

|                    |  |
|--------------------|--|
| Accuracy           | Refer to the list of specifications  |
| Graduation         | 0,01 mm/0.001"   |
| Scales             | Thimble and sleeve satin chrome finish, ø18 mm   |
| Flatness           | 0,3 μm/0.000012"   |
| Parallelism        | (3+L/75) μm (mm),<br>L = max. range (mm)<br>[0.00012"+0.00004(L/3)]" (inch)<br>L = max. range (inch) |
| Measuring surfaces | Carbide tipped, micro-lap finish   |
| Frame              | Enamelled  |
| Measuring spindle  | ø6,35 mm, spindle pitch 0,5 mm   |
| Delivered          | Including box, setting standard (from 25 mm/1" upward), key  |

# Universal Micrometer

## Series 116

### Accepts various types of anvil and spindle tip

- Non-rotating spindle type which accepts seven forms of optional interchangeable anvil/spindle-tip (flat, spline, spherical, point, knife-edge, disc, 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 measuring force.



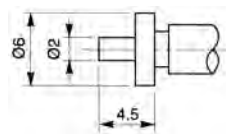
116-101

### Metric

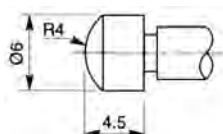
| No.     | Range    | Accuracy | Mass g |
|---------|----------|----------|--------|
| 116-101 | 0-25 mm  | ±4 µm    | 250    |
| 116-102 | 25-50 mm | ±4 µm    | 300    |

### Inch

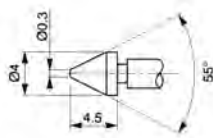
| No.      | Range | Accuracy |
|----------|-------|----------|
| 116-105* | 0-1"  | ±0.0002" |
| 116-106* | 1-2"  | ±0.0002" |



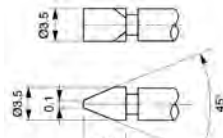
Spline  
116-802



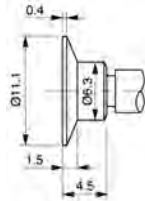
Spherical  
116-803



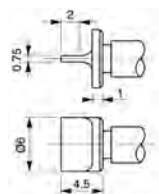
Point  
116-804



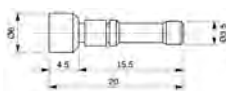
Knife-edge  
116-805



Disc  
116-806



Blade  
116-807



Flat  
116-801

### Specifications

|                    |  |
|--------------------|--|
| Accuracy           | Refer to the list of specifications  |
| Graduation         | 0,01mm or 0.001"   |
| Scales             | Thimble and sleeve satin chrome finish, ø18 mm   |
| Frame              | Enamelled  |
| Measuring spindle  | ø8 mm, spindle pitch 0,5 mm  |
| Spindle feed error | 3 µm/0.00015"  |
| Measuring force    | 5-10 N   |
| Delivered          | Including box, setting standard (from 25 mm upward), key<br>Interchangeable anvils/spindle-tips not included |

### Optional accessories

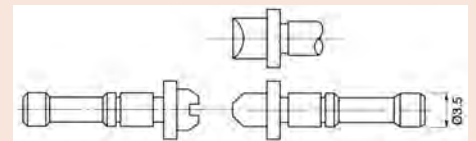
| No.     | Description   |
|---------|---|
| 116-800 | 7 pairs of anvils/spindle-tips No. 116-801 to -807                          |
| 116-801 | Matched pair anvil/spindle-tip (flat)                                       |
| 116-802 | Matched pair anvil/spindle-tip (spline)                                     |
| 116-803 | Matched pair anvil/spindle-tip (spherical)                                  |
| 116-804 | Matched pair anvil/spindle-tip (point)                                      |
| 116-805 | Matched pair anvil/spindle-tip (knife-edge)                                 |
| 116-806 | Matched pair anvil/spindle-tip (disc)                                       |
| 116-807 | Matched pair anvil/spindle-tip (blade)                                      |
| 116-830 | 6 pairs of anvils/spindle-tips for measuring metric threads, pitch 0,4-7 mm |
| 116-840 | 10 pairs of anvils/spindle-tips for whitworth threads                       |

#### 116-830 :

- 0,4-0,5 mm/64-48TPI (116-831)
- 0,6-0,9 mm/44-28TPI (116-832)
- 1-1,75 mm/24-14TPI (116-833)
- 2-3 mm/13-9TPI (116-834)
- 3,5-5mm/8-5TPI (116-835)
- 5,5-7mm/4,5-3,5TPI (116-836)

#### 116-840 :

- 60-48TPI (116-841)
- 48-40TPI (116-842)
- 40-32TPI (116-843)
- 32-24TPI (116-844)
- 24-18TPI (116-845)
- 18-14TPI (116-846)
- 14-10TPI (116-847)
- 10-7TPI (116-848)
- 7-4,5TPI (116-849)
- 4,5-3,5TPI (116-850)



Interchangeable anvils/spindle-tips are available in sets

# Digimatic Screw Thread Micrometer



| Functions         | Series 326 |
|-------------------|------------|
| Data Output       | ●          |
| ZERO/ABS          | ●          |
| Auto Power OFF    | ●          |
| HOLD              | ●          |
| 2 x PRESET        | ●          |
| Low voltage alarm | ●          |
| Function lock     | ●          |

## Specifications

|                    |   |
|--------------------|---|
| Accuracy           | Refer to the list of specifications (excluding quantizing error)          |
| Resolution         | 0,001 mm or 0,001 mm/0.00005"   |
| Scales             | Thimble and sleeve satin chrome finish, ø18 mm                            |
| Frame              | Enamelled   |
| Measuring spindle  | ø6,35 mm, spindle pitch 0,5 mm, with spindle lock                         |
| Measuring force    | 5-10 N  |
| Spindle feed error | 3 µm/0.00015"   |
| Delivered          | Including box, setting standard (60°) (from 25 mm upward), key, 1 battery |

## Standard accessories

| No.     | Description                 |
|---------|-----------------------------|
| 167-261 | Setting standard 25 mm/60°  |
| 167-262 | Setting standard 50 mm/60°  |
| 167-263 | Setting standard 75 mm/60°  |
| 167-264 | Setting standard 100 mm/60° |

## Optional accessories

| No.       | Description                          |
|-----------|--------------------------------------|
| 167-272   | Setting standard 25 mm/55°           |
| 167-273   | Setting standard 50 mm/55°           |
| 167-274   | Setting standard 75 mm/55°           |
| 167-275   | Setting standard 100 mm/55°          |
| 05CZA662  | Signal cable 1 m with data button    |
| 05CZA663  | Signal cable 2 m with data button    |
| 02AZD790B | Signal cable U-Wave with data button |
| 06ADV380B | Signal cable 2 m USB                 |

## Consumable spares

| No.    | Description  |
|--------|--------------|
| 938882 | Battery SR44 |

## Standard accessories for Inch

| No.     | Description             |
|---------|-------------------------|
| 167-294 | Setting standard 1"/60° |
| 167-295 | Setting standard 2"/60° |
| 167-296 | Setting standard 3"/60° |
| 167-297 | Setting standard 4"/60° |

## Optional accessories for Inch

| No.     | Description             |
|---------|-------------------------|
| 167-283 | Setting standard 1"/55° |
| 167-284 | Setting standard 2"/55° |
| 167-285 | Setting standard 3"/55° |
| 167-286 | Setting standard 4"/55° |



Anvil/spindle-tip matching pair

## Series 326

Interchangeable anvil/spindle-tip type.

- Optional, interchangeable, anvils/spindle-tips enable a wide range of Metric/Unified and Whitworth screw-thread pitch diameters to be measured.
- Digimatic data output enables incorporation into an SPC System.



326-251-10



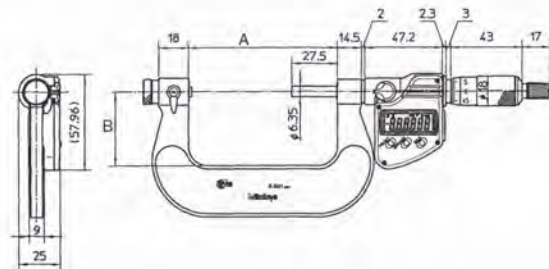
Interchangeable anvils/spindle tips in matching pairs

## Metric

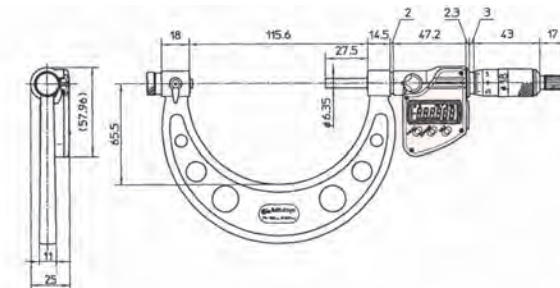
| No.        | Range     | Accuracy | A mm  | B mm | Mass g |
|------------|-----------|----------|-------|------|--------|
| 326-251-10 | 0-25 mm   | ±4 µm    | 39.5  | 25   | 350    |
| 326-252-10 | 25-50 mm  | ±4 µm    | 64.5  | 32   | 380    |
| 326-253-10 | 50-75 mm  | ±4 µm    | 90    | 45   | 470    |
| 326-254-10 | 75-100 mm | ±5 µm    | 115.6 | 65   | 510    |

## Inch/Metric

| No.         | Range          | Accuracy       | A mm  | B mm | Mass g |
|-------------|----------------|----------------|-------|------|--------|
| 326-351-10  | 0-25 mm/0-1"   | ±4 µm/0.0002"  | 39.5  | 25   | 350    |
| 326-352-10  | 25-50 mm/1-2"  | ±4 µm/0.0002"  | 64.5  | 32   | 380    |
| 326-353-10* | 50-75 mm/2-3"  | ±4 µm/0.0002"  | 90    | 45   | 470    |
| 326-354-10* | 75-100 mm/3-4" | ±5 µm/0.00025" | 115.6 | 65   | 510    |



0-75 mm



75-100 mm

# Screw Thread Micrometer

## Series 126

- Optional, interchangeable, anvils/spindle-tips enable a wide range of Metric/Unified and Whitworth screw-thread pitch diameters to be measured.



126-125



Interchangeable anvils/  
spindle tips in matching pairs

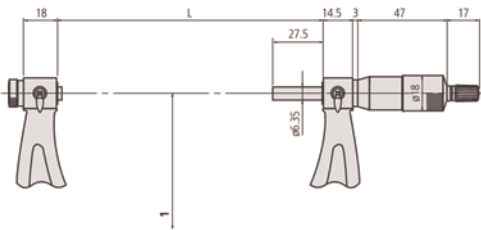
### Metric

| No.      | Range      | Accuracy | L mm  | a mm | Mass g |
|----------|------------|----------|-------|------|--------|
| 126-125  | 0-25 mm    | ±4 μm    | 39.5  | 25   | 240    |
| 126-126  | 25-50 mm   | ±4 μm    | 64.5  | 32   | 290    |
| 126-127  | 50-75 mm   | ±4 μm    | 90    | 45   | 390    |
| 126-128  | 75-100 mm  | ±5 μm    | 115.6 | 65   | 450    |
| 126-129  | 100-125 mm | ±5 μm    | 140.6 | 79   | 530    |
| 126-130  | 125-150 mm | ±5 μm    | 165.6 | 93   | 620    |
| 126-131  | 150-175 mm | ±6 μm    | 190.5 | 105  | 730    |
| 126-132  | 175-200 mm | ±6 μm    | 214.5 | 120  | 860    |
| 126-133  | 200-225 mm | ±6 μm    | 240.5 | 131  | 1,030  |
| 126-134  | 225-250 mm | ±7 μm    | 265.5 | 144  | 1,200  |
| 126-135* | 250-275 mm | ±7 μm    | 290.5 | 156  | 1,370  |
| 126-136  | 275-300 mm | ±7 μm    | 314.5 | 171  | 1,540  |

### Inch

| No.      | Range | Accuracy  | Mass g |
|----------|-------|-----------|--------|
| 126-137  | 0-1"  | ±0.0002"  | 240    |
| 126-138  | 1-2"  | ±0.0002"  | 290    |
| 126-139* | 2-3"  | ±0.0002"  | 390    |
| 126-140* | 3-4"  | ±0.00025" | 450    |
| 126-141* | 4-5"  | ±0.00025" | 530    |
| 126-142  | 5-6"  | ±0.00025" | 620    |

mm



### Specifications

|                    |  |
|--------------------|--|
| Accuracy           | Refer to the list of specifications                            |
| Graduation         | 0.01 mm  |
| Scales             | Thimble and sleeve satin chrome finish, ø18 mm                 |
| Frame              | Enamelled  |
| Measuring spindle  | ø6,35 mm, spindle pitch 0,5 mm, with spindle lock              |
| Measuring force    | 5-10 N   |
| Spindle feed error | 3 μm/0.00015"  |
| Delivered          | Including box, setting standard (60°) (from 25 mm upward), key |

### Standard accessories

| No.     | Description                 |
|---------|-----------------------------|
| 167-261 | Setting standard 25 mm/60°  |
| 167-262 | Setting standard 50 mm/60°  |
| 167-263 | Setting standard 75 mm/60°  |
| 167-264 | Setting standard 100 mm/60° |
| 167-265 | Setting standard 125 mm/60° |
| 167-266 | Setting standard 150 mm/60° |
| 167-267 | Setting standard 175 mm/60° |
| 167-268 | Setting standard 200 mm/60° |
| 167-269 | Setting standard 225 mm/60° |
| 167-270 | Setting standard 250 mm/60° |
| 167-271 | Setting standard 275 mm/60° |

### Optional accessories

| No.     | Description                 |
|---------|-----------------------------|
| 167-272 | Setting standard 25 mm/55°  |
| 167-273 | Setting standard 50 mm/55°  |
| 167-274 | Setting standard 75 mm/55°  |
| 167-275 | Setting standard 100 mm/55° |
| 167-276 | Setting standard 125 mm/55° |
| 167-277 | Setting standard 150 mm/55° |
| 167-278 | Setting standard 175mm/55°  |
| 167-279 | Setting standard 200 mm/55° |
| 167-280 | Setting standard 225 mm/55° |
| 167-281 | Setting standard 250 mm/55° |
| 167-282 | Setting standard 275 mm/55° |

### Standard accessories for Inch

| No.     | Description             |
|---------|-------------------------|
| 167-294 | Setting standard 1"/60° |
| 167-295 | Setting standard 2"/60° |
| 167-296 | Setting standard 3"/60° |
| 167-297 | Setting standard 4"/60° |
| 167-298 | Setting standard 5"/60° |

### Optional accessories for Inch

| No.     | Description             |
|---------|-------------------------|
| 167-283 | Setting standard 1"/55° |
| 167-284 | Setting standard 2"/55° |
| 167-285 | Setting standard 3"/55° |
| 167-286 | Setting standard 4"/55° |
| 167-287 | Setting standard 5"/55° |



Anvil/spindle-tip matching pair

# Screw Thread Micrometer

## Series 126

Optional accessories anvils/spindle-tips



Measuring anvil/spindle-tip set metric UNF (consists of No. 126-801 to 126-806)

| No.     | Designation |
|---------|-------------|
| 126-800 | M1 to M6    |

Measuring anvil/spindle-tip set Whitworth (consists of No. 126-811 to 126-820)

| No.     | Designation |
|---------|-------------|
| 126-810 | W1 to W10   |

Individual measuring anvil/spindle-tip pairs

| No.     | Accuracy | Metric pitch | UNF threads/inch | Whitworth threads/inch | Designation |
|---------|----------|--------------|------------------|------------------------|-------------|
| 126-801 | ±30'     | 0.4-0.5      | 64-48            |                        | M1          |
| 126-802 | ±20'     | 0.6-0.9      | 44-28            |                        | M2          |
| 126-803 | ±15'     | 1-1.75       | 24-14            |                        | M3          |
| 126-804 | ±10'     | 2-3          | 13-9             |                        | M4          |
| 126-805 | ±10'     | 3.5-5        | 8-5              |                        | M5          |
| 126-806 | ±10'     | 5.5-7        | 4.5-3.5          |                        | M6          |
| 126-811 | ±30'     |              |                  | 60-48                  | W1          |
| 126-812 | ±30'     |              |                  | 48-40                  | W2          |
| 126-813 | ±20'     |              |                  | 40-32                  | W3          |
| 126-814 | ±20'     |              |                  | 32-24                  | W4          |
| 126-815 | ±15'     |              |                  | 24-18                  | W5          |
| 126-816 | ±15'     |              |                  | 18-14                  | W6          |
| 126-817 | ±10'     |              |                  | 14-10                  | W7          |
| 126-818 | ±10'     |              |                  | 10-7                   | W8          |
| 126-819 | ±10'     |              |                  | 7-4.5                  | W9          |
| 126-820 | ±10'     |              |                  | 4.5-3.5                | W10         |

# Screw Thread Micrometer

## Series 125

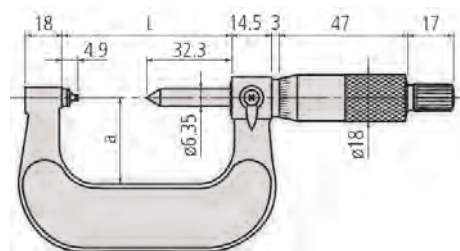
- Provided with a 60 degree V-anvil and conical spindle for easily measuring pitch diameters of metric or unified screw threads.
- With Ratchet Stop for constant measuring force.



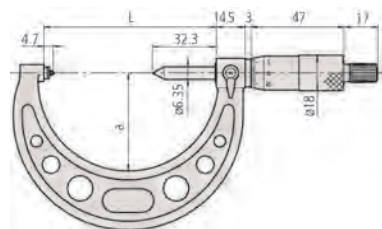
125-103

### Metric

| No.      | Range     | L mm | a mm | Mass g | Thread to be measured (Metric/Unified) |
|----------|-----------|------|------|--------|--|
| 125-101* | 0-25 mm   | 37.2 | 25   | 200    | 0,4-0,5 mm /64-48TPI                   |
| 125-102* | 0-25 mm   | 37.2 | 25   | 200    | 0,6-0,9 mm/44-28TPI                    |
| 125-103* | 0-25 mm   | 37.2 | 25   | 200    | 1-1,75 mm/24-14TPI                     |
| 125-104* | 0-25 mm   | 37.2 | 25   | 200    | 2-3 mm/13-9TPI                         |
| 125-105* | 0-25 mm   | 37.2 | 25   | 200    | 3,5-5 mm/8-5TPI                        |
| 125-106* | 25-50 mm  | 62.2 | 32   | 250    | 0,4-0,5 mm/64-48TPI                    |
| 125-107* | 25-50 mm  | 62.2 | 32   | 250    | 0,6-0,9 mm/44-28TPI                    |
| 125-108* | 25-50 mm  | 62.2 | 32   | 250    | 1-1,75 mm/24-14TPI                     |
| 125-109* | 25-50 mm  | 62.2 | 32   | 250    | 2-3 mm/13-9TPI                         |
| 125-110* | 25-50 mm  | 62.2 | 32   | 250    | 3,5-5 mm/8-5TPI                        |
| 125-111* | 50-75 mm  | 87   | 49   | 260    | 0,6-0,9 mm/44-28TPI                    |
| 125-112* | 50-75 mm  | 87   | 49   | 260    | 1-1,75 mm/24-14TPI                     |
| 125-113* | 50-75 mm  | 87   | 49   | 260    | 2-3 mm/13-9TPI                         |
| 125-114* | 50-75 mm  | 87   | 49   | 260    | 3,5-5 mm/8-5TPI                        |
| 125-115* | 50-75 mm  | 87   | 49   | 260    | 5,5-7 mm/4.5-3.5TPI                    |
| 125-116* | 75-100 mm | 112  | 63   | 330    | 0,6-0,9 mm/44-28TPI                    |
| 125-117* | 75-100 mm | 112  | 63   | 330    | 1-1,75 mm/24-14TPI                     |
| 125-118* | 75-100 mm | 112  | 63   | 330    | 2-3 mm/13-9TPI                         |
| 125-119* | 75-100 mm | 112  | 63   | 330    | 3,5-5 mm/8-5TPI                        |
| 125-120* | 75-100 mm | 112  | 63   | 330    | 5,5-7 mm/4.5-3.5TPI                    |



Models up to 50 mm



Models over 50 mm

## Specifications

|                    |  |
|--------------------|--|
| Accuracy           | $\pm(2+L/75) \mu\text{m}$<br>L = max. range (mm)         |
| Graduation         | 0,01 mm  |
| Spindle feed error | 3 $\mu\text{m}$  |
| Delivered          | Including box, setting standard (from 25 mm upward), key |



# Gear Tooth Micrometer



## Series 324/124

- Interchangeable ball inserts allow measurement of module in the range 0.5-5.25 mm.
- Digimatic data output available on Series 324 models.



324-251-10



124-173

### Metric

Digimatic model

| No.        | Range     | Accuracy | L mm  | a mm | Mass g |
|------------|-----------|----------|-------|------|--------|
| 324-251-10 | 0-25 mm   | ±4 µm    | 64.5  | 32   | 400    |
| 324-252-10 | 25-50 mm  | ±4 µm    | 90    | 45   | 490    |
| 324-253-10 | 50-75 mm  | ±4 µm    | 115.6 | 65   | 530    |
| 324-254-10 | 75-100 mm | ±5 µm    | 140.6 | 79   | 600    |

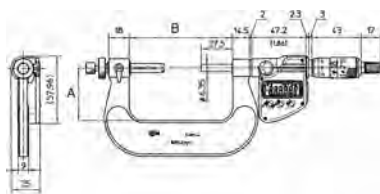
### Metric

| No.      | Range      | Accuracy | L mm  | a mm |
|----------|------------|----------|-------|------|
| 124-173* | 0-25 mm    | ±4 µm    | 64.5  | 32   |
| 124-174* | 25-50 mm   | ±4 µm    | 90    | 45   |
| 124-175* | 50-75 mm   | ±4 µm    | 115.6 | 65   |
| 124-176* | 75-100 mm  | ±5 µm    | 140.6 | 79   |
| 124-177* | 100-125 mm | ±5 µm    | 165.6 | 93   |
| 124-178* | 125-150 mm | ±5 µm    | 190.5 | 105  |
| 124-179* | 150-175 mm | ±6 µm    | 214.5 | 120  |
| 124-180* | 175-200 mm | ±6 µm    | 240.5 | 131  |
| 124-181* | 200-225 mm | ±6 µm    | 265.5 | 144  |
| 124-182* | 225-250 mm | ±7 µm    | 290.5 | 156  |
| 124-183* | 250-275 mm | ±7 µm    | 314.5 | 171  |
| 124-195* | 275-300 mm | ±7 µm    | 353   | 187  |

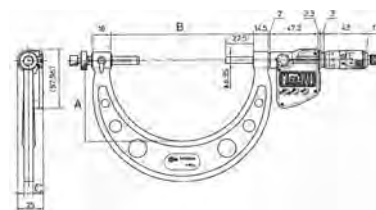
### Inch/Metric

Digimatic model

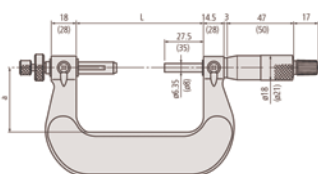
| No.         | Range          | Accuracy       | L mm  | a mm |
|-------------|----------------|----------------|-------|------|
| 324-351-10* | 0-25 mm/0-1"   | ±4 µm/0.0002"  | 64.5  | 32   |
| 324-352-10* | 25-50 mm/1-2"  | ±4 µm/0.0002"  | 90    | 45   |
| 324-353-10* | 50-75 mm/2-3"  | ±4 µm/0.0002"  | 115.6 | 65   |
| 324-354-10* | 75-100 mm/3-4" | ±5 µm/0.00025" | 140.6 | 79   |



Series 324  
0-50 mm



Series 324  
50-100 mm



Series 124

| Series 324/124    |                             |
|-------------------|-----------------------------|
| Functions         | 324-251-10 up to 324-354-10 |
| Data Output       | ●                           |
| ZERO/ABS          | ●                           |
| Auto Power OFF    | ●                           |
| HOLD              | ●                           |
| 2 x PRESET        | ●                           |
| Low voltage alarm | ●                           |
| Function lock     | ●                           |

### Specifications

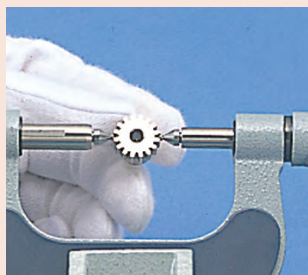
|                   |  |
|-------------------|--|
| Accuracy          | Refer to the list of specifications (excluding quantizing error) |
| Graduation        | 0,01 mm (analogue model)   |
| Resolution        | 0,001 mm or 0,001 mm/0.00005" (digimatic model)                  |
| Scales            | Thimble and sleeve satin chrome finish, ø18 mm                   |
| Frame             | Enamelled  |
| Measuring spindle | ø6,35 mm   |
| Measuring force   | 5-10 N   |
| Delivered         | Including box, key, 1 battery                                    |

### Optional accessories

| No.       | Description                          |
|-----------|--------------------------------------|
| 05CZA662  | Signal cable 1 m with data button    |
| 05CZA663  | Signal cable 2 m with data button    |
| 02AZD790B | Signal cable U-Wave with data button |
| 06ADV380B | Signal cable 2 m USB                 |

### Consumable spares

| No.    | Description  |
|--------|--------------|
| 938882 | Battery SR44 |

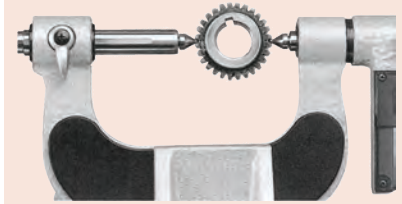




# Interchangeable anvils for micrometer series 324/124

## Series 124

- Optional interchangeable anvils for series 324-25X and 124-17X /-18X /-19X



### Metric

| No.     | Diameter | Gear module | Dia pitch | Remarks              |
|---------|----------|-------------|-----------|----------------------|
| 124-801 | 0,8 mm   | 0,5-0,55    | 50        | Carbide-tipped anvil |
| 124-802 | 1 mm     | 0,6-0,65    | 45        | Carbide-tipped anvil |
| 124-821 | 1,5 mm   | 0,9-1       | 28-26     | Carbide-tipped anvil |
| 124-805 | 2 mm     | 1,25        | 22        | Carbide-tipped anvil |
| 124-822 | 2,5 mm   | 1,5         | 17        |                      |
| 124-807 | 3 mm     | 1,75        | 15        |                      |
| 124-823 | 3,5 mm   | 2           | 13        |                      |
| 124-810 | 4 mm     | 2,25        | 11        |                      |
| 124-824 | 4,5 mm   | 2,5         | 10        |                      |
| 124-812 | 5 mm     | 2,75        | 9         |                      |
| 124-814 | 6 mm     | 3,5         | 7         |                      |
| 124-816 | 7 mm     | 4,0         | 6,5       |                      |
| 124-819 | 8 mm     | 4,75        | 5,5       |                      |

### Inch/Metric

| No.      | Diameter          | Gear module | Dia pitch | Remarks              |
|----------|-------------------|-------------|-----------|----------------------|
| 124-803* | 1,191 mm (3/64")  | 0,7-0,8     | 35-30     | Carbide-tipped anvil |
| 124-804* | 1,588 mm (1/16")  | 0,9-1       | 28-26     | Carbide-tipped anvil |
| 124-806  | 2,381 mm (3/32")  | 1,5         | 17        |                      |
| 124-808* | 3,175 mm (1/8")   | -           | 14        |                      |
| 124-809* | 3,969 mm (5/32")  | 2           | 13        |                      |
| 124-811* | 4,763 mm (3/16")  | 2,5         | 10        |                      |
| 124-813* | 5,556 mm (7/32")  | 3,0-3,25    | 8         |                      |
| 124-815  | 6,35 mm (1/4")    | 3,75        | 7         |                      |
| 124-817* | 7,144 mm (9/32")  | 4,25        | 6         |                      |
| 124-818* | 7,938 mm (5/16")  | 4,5         | 5,5       |                      |
| 124-820* | 8,731 mm (11/32") | 5,0-5,25    | 5         |                      |

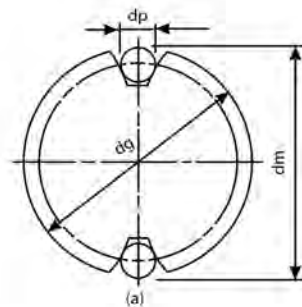
#### For even-numbered teeth:

$$d_m = d_p + d_g = \frac{d_p \cdot z_m \cdot \cos \alpha}{\cos \emptyset}$$

#### For odd-numbered teeth:

$$d_m = d_p + \frac{d_g}{\cos \emptyset} \cdot \cos \left( \frac{90^\circ}{z} \right)$$

$$= d_p + \frac{z_m \cos \alpha}{\cos \emptyset} \cdot \cos \left( \frac{90^\circ}{z} \right)$$



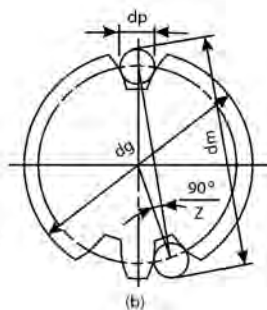
#### While

$$\text{inv} \emptyset = \frac{d_p + \chi}{d_g} \cdot \frac{\pi}{z}$$

$$= \frac{d_p}{z_m \cos \alpha} - \left( \frac{\pi}{2z} - \text{inv} \alpha \right) + \frac{2 \tan \alpha \cdot \chi}{z}$$

You can find the diameter  $\emptyset$  by looking up the conversion table for gear tooth involutes (value (inv  $\emptyset$ )).

- Z: Number of teeth
- $\alpha$ : Pressure angle
- m: Gearing module
- $\chi$ : Tooth height-addendum modification factor



# Digimatic Disc Micrometer



## Series 323

- For measuring base tangent length and module (0,5 to 6) on gears, and recessed features that are difficult to reach with a standard micrometer.



323-250

### Metric

| No.     | Range     | Accuracy | L mm  | a mm | b mm | c mm | d mm | e mm | t mm | Mass g |
|---------|-----------|----------|-------|------|------|------|------|------|------|--------|
| 323-250 | 0-25 mm   | ±4 µm    | 39.7  | 4.5  | 9.2  | 25   | 20   | 8    | 0.7  | 290    |
| 323-251 | 25-50 mm  | ±4 µm    | 65.6  | 5.4  | 11   | 31   | 20   | 8    | 0.7  | 355    |
| 323-252 | 50-75 mm  | ±6 µm    | 90.7  | 5.5  | 12.2 | 50   | 20   | 8    | 0.7  | 555    |
| 323-253 | 75-100 mm | ±6 µm    | 112.5 | 5.5  | 13.5 | 60   | 20   | 8    | 0.7  | 610    |

### Inch/Metric

| No.      | Range          | Accuracy      | L mm  | a mm | b mm | c mm | d mm | e mm | t mm | Mass g |
|----------|----------------|---------------|-------|------|------|------|------|------|------|--------|
| 323-350  | 0-25 mm/0-1"   | ±4 µm/0.0002" | 39.7  | 4.5  | 9.2  | 25   | 20   | 8    | 0.7  | 290    |
| 323-351  | 25-50 mm/1-2"  | ±4 µm/0.0002" | 65.6  | 5.4  | 11   | 31   | 20   | 8    | 0.7  | 355    |
| 323-352* | 50-75 mm/2-3"  | ±6 µm/0.0003" | 90.7  | 5.5  | 12.2 | 50   | 20   | 8    | 0.7  | 555    |
| 323-353* | 75-100 mm/3-4" | ±6 µm/0.0003" | 112.5 | 5.5  | 13.5 | 60   | 20   | 8    | 0.7  | 610    |

| Functions         | Series 323 |
|-------------------|------------|
| Data Output       | ●          |
| ORIGIN            | ●          |
| ZERO/ABS          | ●          |
| Auto Power OFF    | ●          |
| HOLD              | ●          |
| Low voltage alarm | ●          |

### Specifications

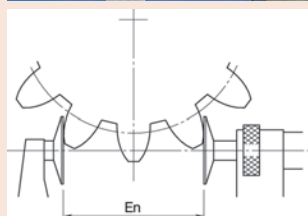
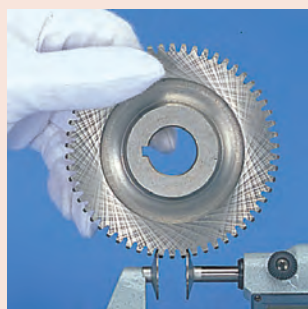
|                   |   |
|-------------------|---|
| Accuracy          | Refer to the list of specifications (excluding quantizing error)  |
| Resolution        | 0,001 mm or 0,001 mm/0.00005"   |
| Flatness          | 1 µm/0.00004"   |
| Parallelism       | 4 µm/0.00016" for models up to 50 mm/2"<br>(4+L/50) µm for models up to 100 mm<br>L = max. range (mm)<br>0.00024" for models up to 4" |
| Frame             | Enamelled   |
| Scales            | Thimble and sleeve satin chrome finish, ø18 mm  |
| Measuring force   | 3-8 N   |
| Measuring spindle | ø6,35 mm, spindle pitch 0,5 mm, with spindle lock   |
| Measurable module | 0.5-6   |
| Delivered         | Including box, setting standard (from 25 mm upward), key, 1 battery   |

### Optional accessories

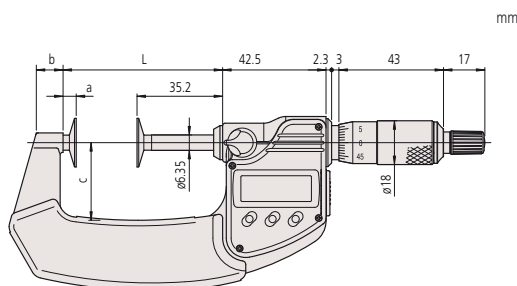
| No.       | Description                          |
|-----------|--------------------------------------|
| 05CZA662  | Signal cable 1 m with data button    |
| 05CZA663  | Signal cable 2 m with data button    |
| 02AZD790B | Signal cable U-Wave with data button |
| 06ADV380B | Signal cable 2 m USB                 |

### Consumable spares

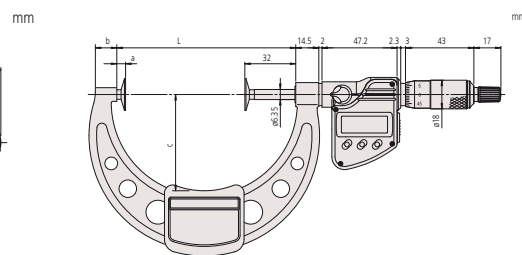
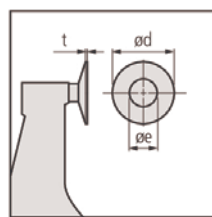
| No.    | Description  |
|--------|--------------|
| 938882 | Battery SR44 |



Root tangent length of gear (En)



Models up to 75 mm



Models over 75 mm

# Disc Micrometer

## Series 123

- For measuring base tangent length and module (0,5 to 6) on gears, and recessed features that are difficult to reach with a standard micrometer.



123-101



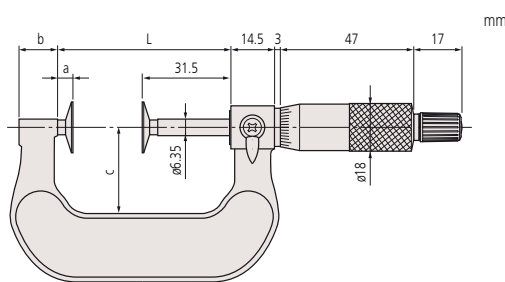
123-103

### Metric

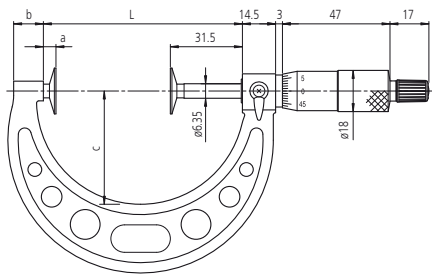
| No.      | Range      | Accuracy | L mm  | a mm | b mm | c mm | d mm | e mm | t mm | Mass g |
|----------|------------|----------|-------|------|------|------|------|------|------|--------|
| 123-101  | 0-25 mm    | ±4 µm    | 37.5  | 6    | 14   | 25   | 20   | 8    | 0.7  | 200    |
| 123-113* | 0-25 mm    | ±4 µm    | 39.7  | 4.5  | 9.2  | 25   | 20   | 8    | 0.7  | 200    |
| 123-102  | 25-50 mm   | ±4 µm    | 62.5  | 6    | 14   | 32   | 20   | 8    | 0.7  | 250    |
| 123-114* | 25-50 mm   | ±4 µm    | 65.6  | 5.4  | 11   | 31   | 20   | 8    | 0.7  | 250    |
| 123-103  | 50-75 mm   | ±6 µm    | 87    | 5.5  | 11   | 49   | 20   | 8    | 0.7  | 300    |
| 123-115* | 50-75 mm   | ±6 µm    | 90.7  | 5.5  | 12.2 | 50   | 20   | 8    | 0.7  | 300    |
| 123-104  | 75-100 mm  | ±6 µm    | 112   | 5.5  | 11   | 63   | 20   | 8    | 0.7  | 375    |
| 123-116* | 75-100 mm  | ±6 µm    | 112.5 | 5.5  | 13.5 | 60   | 20   | 8    | 0.7  | 375    |
| 123-105  | 100-125 mm | ±7 µm    | 137.5 | 6    | 12   | 79   | 30   | 12   | 1    | 520    |
| 123-106  | 125-150 mm | ±7 µm    | 162.5 | 6    | 15   | 94   | 30   | 12   | 1    | 570    |
| 123-107  | 150-175 mm | ±8 µm    | 187.5 | 6    | 16   | 106  | 30   | 12   | 1    | 730    |
| 123-108  | 175-200 mm | ±8 µm    | 212.5 | 6    | 15   | 118  | 30   | 12   | 1    | 890    |
| 123-109  | 200-225 mm | ±8 µm    | 237.5 | 6    | 14   | 130  | 30   | 12   | 1    | 1,000  |
| 123-110  | 225-250 mm | ±9 µm    | 262.5 | 6    | 14   | 143  | 30   | 12   | 1    | 1,200  |
| 123-111  | 250-275 mm | ±9 µm    | 287.5 | 6    | 15   | 156  | 30   | 12   | 1    | 1,410  |
| 123-112  | 275-300 mm | ±9 µm    | 312.5 | 6    | 15   | 169  | 30   | 12   | 1    | 1,680  |

### Inch

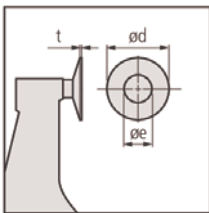
| No.      | Range | Accuracy | L mm | a mm | b mm | c mm | d mm | e mm | t mm | Mass g |
|----------|-------|----------|------|------|------|------|------|------|------|--------|
| 123-125  | 0-1"  | ±0.0002" | 37.5 | 6    | 14   | 25   | 20   | 8    | 0.7  | 200    |
| 123-126  | 1-2"  | ±0.0002" | 62.5 | 6    | 14   | 32   | 20   | 8    | 0.7  | 250    |
| 123-127  | 2-3"  | ±0.0003" | 87   | 5.5  | 11   | 49   | 20   | 8    | 0.7  | 250    |
| 123-128* | 3-4"  | ±0.0003" | 112  | 5.5  | 11   | 63   | 20   | 8    | 0.7  | 250    |



Models up to 50 mm

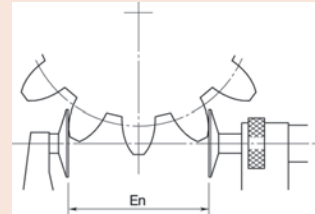


Models over 50 mm



### Specifications

|                   |   |
|-------------------|---|
| Accuracy          | Refer to the list of specifications   |
| Graduation        | 0,01 mm or 0.001"   |
| Scales            | Thimble and sleeve satin chrome finish, ø18 mm  |
| Flatness          | 1 µm/0.00004" for models up to 100 mm/4"<br>1,6 µm/0.000063" for models over 100 mm/4"  |
| Parallelism       | 4 µm/0.00016" for models up to 50 mm/2"<br>(4+L/50) µm for models up to 100 mm<br>(5+L/75) µm for models over 100 mm<br>L = max. range (mm)<br>0.00024" for models up to 4" |
| Frame             | Enamelled   |
| Measuring spindle | ø6,35, spindle pitch 0,5 mm, with spindle lock  |
| Measuring force   | 5-10 N  |
| Measurable module | 0.5-6 (0.7-11 : models over 100 mm)   |
| Delivered         | Including box, setting standard (from 25 mm upward), key  |



Root tangent length of gear (En)

# Digimatic Disc Micrometer non-rotating spindle type

## Series 369

- With non-rotating spindle and disc-shaped measuring surfaces.
- Suitable for measuring felt, rubber, cardboard, fabric etc.

| Functions         | Series 369 |
|-------------------|------------|
| Data Output       | ●          |
| ORIGIN            | ●          |
| ZERO/ABS          | ●          |
| Auto Power OFF    | ●          |
| HOLD              | ●          |
| Low voltage alarm | ●          |

### Specifications

|                   |   |
|-------------------|---|
| Accuracy          | Refer to the list of specifications (excluding quantizing error)  |
| Resolution        | 0,001 mm or 0,001 mm/0.00005"   |
| Scales            | Thimble and sleeve satin chrome finish, $\varnothing 18$ mm   |
| Flatness          | 1 $\mu\text{m}$ /0.00004"   |
| Parallelism       | 4 $\mu\text{m}$ /0.00016" for models up to 50 mm/2"<br>6 $\mu\text{m}$ /0.00024" for models over 50 mm/2" |
| Frame             | Enamelled   |
| Measuring spindle | $\varnothing 6.35$ mm, spindle pitch 0,5 mm, with spindle lock  |
| Measuring force   | 3-8 N   |
| Measurable module | 0.5-6   |
| Delivered         | Including box, setting standard (from 25 mm upward), key, 1 battery                                       |

### Optional accessories

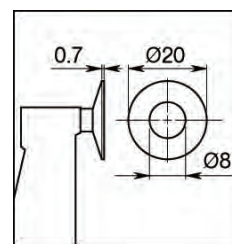
| No.       | Description                          |
|-----------|--------------------------------------|
| 05CZA662  | Signal cable 1 m with data button    |
| 05CZA663  | Signal cable 2 m with data button    |
| 02AZD790B | Signal cable U-Wave with data button |
| 06ADV380B | Signal cable 2 m USB                 |

### Consumable spares

| No.    | Description  |
|--------|--------------|
| 938882 | Battery SR44 |



369-250

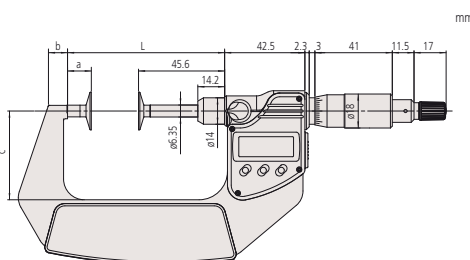


### Metric

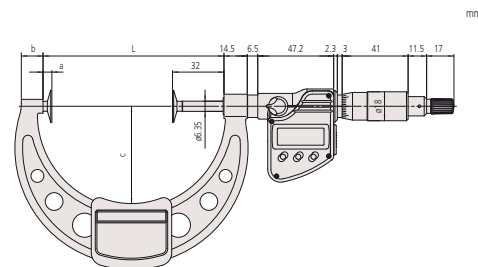
| No.     | Range     | Accuracy            | L mm  | a mm | b mm | c mm | Mass g |
|---------|-----------|---------------------|-------|------|------|------|--------|
| 369-250 | 0-25 mm   | $\pm 4 \mu\text{m}$ | 58.5  | 12.9 | 7    | 32   | 340    |
| 369-251 | 25-50 mm  | $\pm 4 \mu\text{m}$ | 83.5  | 12.9 | 9.8  | 47   | 480    |
| 369-252 | 50-75 mm  | $\pm 6 \mu\text{m}$ | 108.5 | 12.9 | 11.2 | 60   | 635    |
| 369-253 | 75-100 mm | $\pm 6 \mu\text{m}$ | 112.5 | 5.5  | 13.5 | 60   | 775    |

### Inch/Metric

| No.      | Range          | Accuracy                     | L mm  | a mm | b mm | c mm | Mass g |
|----------|----------------|------------------------------|-------|------|------|------|--------|
| 369-350  | 0-25 mm/0-1"   | $\pm 4 \mu\text{m}/0.0002$ " | 58.5  | 12.9 | 7    | 32   | 340    |
| 369-351* | 25-50 mm/1-2"  | $\pm 4 \mu\text{m}/0.0002$ " | 83.5  | 12.9 | 9.8  | 47   | 480    |
| 369-352* | 50-75 mm/2-3"  | $\pm 6 \mu\text{m}/0.0003$ " | 108.5 | 12.9 | 11.2 | 60   | 635    |
| 369-353* | 75-100 mm/3-4" | $\pm 6 \mu\text{m}/0.0003$ " | 112.5 | 5.5  | 13.5 | 60   | 775    |



Models up to 75 mm



Models over 75 mm

# ABSOLUTE Digimatic Disc Micrometer Quickmike

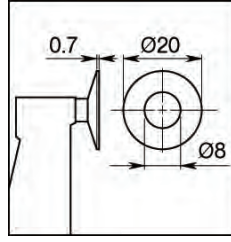
## Series 369

### Quick-action micrometer

- With non-rotating spindle and disc-shaped measuring surfaces.
- Suitable for measuring felt, rubber, cardboard, fabric etc.



369-411

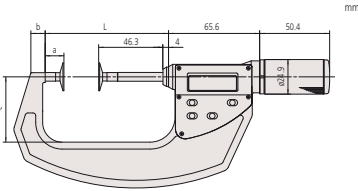


### Metric

| No.     | Range    | Accuracy | L mm | a mm | b mm | c mm | Mass g |
|---------|----------|----------|------|------|------|------|--------|
| 369-411 | 0-30 mm  | ±4 µm    | 63.8 | 13.5 | 8.5  | 36   | 360    |
| 369-412 | 25-55 mm | ±4 µm    | 88.8 | 13.5 | 10.3 | 47   | 490    |

### Inch/Metric

| No.      | Range           | Accuracy      | L mm | a mm | b mm | c mm | Mass g |
|----------|-----------------|---------------|------|------|------|------|--------|
| 369-421* | 0-30 mm/0-1.2"  | ±4 µm/0.0002" | 63.8 | 13.5 | 8.5  | 36   | 360    |
| 369-422* | 25-55 mm/1-2.2" | ±4 µm/0.0002" | 88.8 | 13.5 | 10.3 | 47   | 490    |



## Series 227

- Constant and low measuring force mechanism in the thimble.
- Adjustable measuring force to suit various kinds of workpiece.
- Speedy spindle feed of 10 mm/rev.
- With non-rotating spindle and disc-shaped measuring surfaces.
- Suitable for measuring felt, rubber, cardboard, fabric etc.



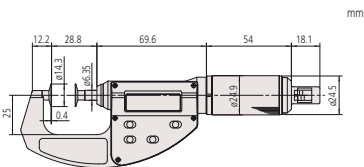
227-221

### Metric

Quickmike type adjustable measuring force

| No.     | Range   | Accuracy | Measuring force (N) settings | Measuring force accuracy (N) (1) | Measuring surface ø mm | Mass g |
|---------|---------|----------|------------------------------|----------------------------------|------------------------|--------|
| 227-221 | 0-15 mm | ±4 µm    | 0,5; 1,0; 1,5; 2,0; 2,5      | 0,1 + (for setting/10)           | 14.3                   | 300    |
| 227-222 | 0-15 mm | ±4 µm    | 2; 4; 6; 8; 10               | 0,4 + (for setting/10)           | 14.3                   | 300    |

(1) Only valid for instrument orientation within 3 degrees of horizontal when measuring (gravitational influence).



| Functions         | Series 369 |
|-------------------|------------|
| Data Output       | ●          |
| ORIGIN            | ●          |
| ZERO/ABS          | ●          |
| ON/OFF            | ●          |
| HOLD              | ●          |
| Low voltage alarm | ●          |

### Specifications

|                   |  |
|-------------------|--|
| Accuracy          | Refer to the list of specifications (excluding quantizing error) |
| Resolution        | 0,001 mm or 0,001 mm/0.00005"                                    |
| Flatness          | 1 µm/0.00004"  |
| Parallelism       | 3 µm/0.00012"  |
| Frame             | Enamelled  |
| Measuring force   | 3-8 N  |
| Measurable module | 0.5-6  |
| Delivered         | Including box, setting standard (from 25 mm upward), 1 battery   |

### Optional accessories

| No.       | Description          |
|-----------|----------------------|
| 937387    | Signal cable 1 m     |
| 965013    | Signal cable 2 m     |
| 02AZD790E | Signal cable U-Wave  |
| 06ADV380E | Signal cable 2 m USB |

### Consumable spares

| No.    | Description  |
|--------|--------------|
| 938882 | Battery SR44 |



| Functions         | Series 227 |
|-------------------|------------|
| Data Output       | ●          |
| ORIGIN            | ●          |
| ZERO/ABS          | ●          |
| ON/OFF            | ●          |
| HOLD              | ●          |
| Low voltage alarm | ●          |

### Specifications

|                     |                                       |
|---------------------|---------------------------------------|
| Accuracy            | Refer to the list of specifications   |
| Resolution          | 0,001 mm                              |
| Flatness            | 1 µm                                  |
| Parallelism         | 3 µm                                  |
| Frame               | Enamelled                             |
| Measurable module   | 0.4-3                                 |
| Measuring direction | Horizontal                            |
| Delivered           | Including box, screwdriver, 1 battery |

### Optional accessories

| No.       | Description          |
|-----------|----------------------|
| 937387    | Signal cable 1 m     |
| 965013    | Signal cable 2 m     |
| 06ADV380E | Signal cable 2 m USB |
| 02AZD790E | Signal cable U-Wave  |

### Consumable spares

| No.    | Description  |
|--------|--------------|
| 938882 | Battery SR44 |

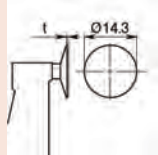
# Disc Micrometer non-rotating spindle type

## Series 169

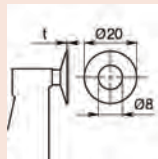
- With non-rotating spindle and disc-shaped measuring surfaces.
- Suitable for measuring felt, rubber, cardboard, fabric etc.

### Specifications

|                   |  |
|-------------------|--|
| Accuracy          | Refer to the list of specifications.   |
| Graduation        | 0,01 mm or 0.001"  |
| Scales            | Thimble and sleeve satin chrome finish, $\varnothing 18$ mm  |
| Flatness          | 1 $\mu\text{m}/0.00004"$   |
| Parallelism       | 4 $\mu\text{m}/0.00016$ for models up to 50 mm/2"<br>6 $\mu\text{m}/0.00024"$ for models over 50 mm/2" |
| Frame             | Enamelled  |
| Measuring spindle | Spindle pitch 0,5 mm   |
| Measuring force   | 5-10 N   |
| Delivered         | Including box, key   |



With circular measuring surfaces  
169-101/103



With annular measuring surfaces  
169-20X



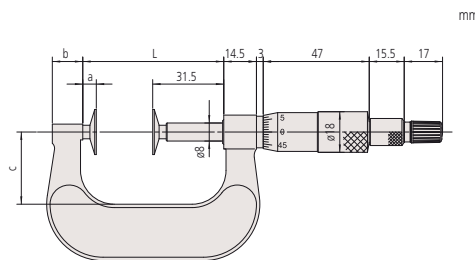
169-201

### Metric

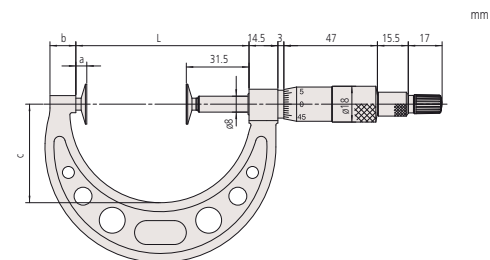
| No.      | Range     | Accuracy            | L mm | a mm | b mm | c mm | Mass g |
|----------|-----------|---------------------|------|------|------|------|--------|
| 169-101  | 0-25 mm   | $\pm 4 \mu\text{m}$ | 37.5 | 6    | 13.5 | 25   | 230    |
| 169-201  | 0-25 mm   | $\pm 4 \mu\text{m}$ | 37.5 | 6    | 13.5 | 25   | 230    |
| 169-202* | 25-50 mm  | $\pm 4 \mu\text{m}$ | 62.5 | 6    | 13.5 | 32   | 280    |
| 169-205* | 50-75 mm  | $\pm 6 \mu\text{m}$ | 87   | 5.5  | 13   | 49   | 315    |
| 169-207* | 75-100 mm | $\pm 6 \mu\text{m}$ | 112  | 5.5  | 13   | 63   | 400    |

### Inch

| No.      | Range | Accuracy      | L mm | a mm | b mm | c mm | Mass g |
|----------|-------|---------------|------|------|------|------|--------|
| 169-103* | 0-1"  | $\pm 0.0002"$ | 37.5 | 6    | 13   | 25   | 230    |
| 169-203  | 0-1"  | $\pm 0.0002"$ | 37.5 | 6    | 13   | 25   | 230    |
| 169-204* | 1-2"  | $\pm 0.0002"$ | 62.5 | 6    | 13.5 | 32   | 280    |
| 169-206* | 2-3"  | $\pm 0.0003"$ | 87   | 5.5  | 13   | 49   | 315    |
| 169-208* | 3-4"  | $\pm 0.0003"$ | 112  | 5.5  | 13   | 63   | 400    |



Models up to 50 mm



Models over 50 mm

# Digimatic Spline Micrometer

Series 331



## Special Purpose Micrometer

- Features stepped measuring surfaces.
- Suitable for measuring grooves, splined shafts, etc.



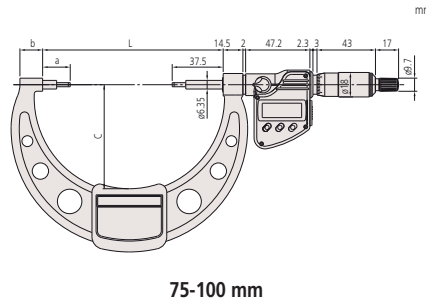
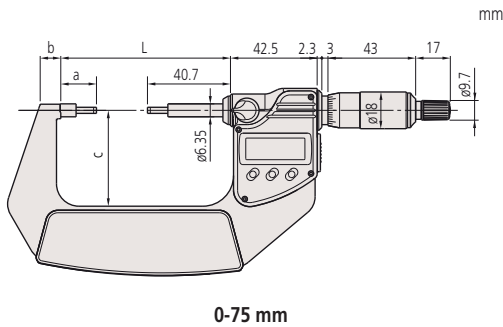
331-251

### Metric

| No.     | Range     | Accuracy | L mm  | a mm | b mm | c mm | Anvil/Tip | Mass g |
|---------|-----------|----------|-------|------|------|------|-----------|--------|
| 331-251 | 0-25 mm   | ±2 µm    | 58.2  | 17.5 | 7.3  | 32   | A         | 330    |
| 331-261 | 0-25 mm   | ±2 µm    | 58.2  | 17.5 | 7.3  | 32   | B         | 330    |
| 331-252 | 25-50 mm  | ±2 µm    | 83.2  | 17.5 | 10.1 | 47   | A         | 470    |
| 331-262 | 25-50 mm  | ±2 µm    | 83.2  | 17.5 | 10.1 | 47   | B         | 470    |
| 331-253 | 50-75 mm  | ±2 µm    | 108.2 | 17.5 | 11.5 | 60   | A         | 625    |
| 331-263 | 50-75 mm  | ±2 µm    | 108.2 | 17.5 | 11.5 | 60   | B         | 625    |
| 331-254 | 75-100 mm | ±3 µm    | 132.8 | 20.3 | 16.7 | 76   | A         | 565    |
| 331-264 | 75-100 mm | ±3 µm    | 132.8 | 20.3 | 16.7 | 76   | B         | 565    |

### Inch/Metric

| No.      | Range          | Accuracy       | L mm  | a mm | b mm | c mm | Anvil/Tip | Mass g |
|----------|----------------|----------------|-------|------|------|------|-----------|--------|
| 331-351  | 0-25 mm/0-1"   | ±2 µm/0.0001"  | 58.2  | 17.5 | 7.3  | 32   | A         | 330    |
| 331-361* | 0-25 mm/0-1"   | ±2 µm/0.0001"  | 58.2  | 17.5 | 7.3  | 32   | B         | 330    |
| 331-352* | 25-50 mm/1-2"  | ±2 µm/0.0001"  | 83.2  | 17.5 | 10.1 | 47   | A         | 470    |
| 331-362* | 25-50 mm/1-2"  | ±2 µm/0.0001"  | 83.2  | 17.5 | 10.1 | 47   | B         | 470    |
| 331-353* | 50-75 mm/2-3"  | ±2 µm/0.0001"  | 108.2 | 17.5 | 11.5 | 60   | A         | 625    |
| 331-363* | 50-75 mm/2-3"  | ±2 µm/0.0001"  | 108.2 | 17.5 | 11.5 | 60   | B         | 625    |
| 331-354* | 75-100 mm/3-4" | ±3 µm/0.00015" | 132.8 | 20.3 | 16.7 | 76   | A         | 565    |
| 331-364* | 75-100 mm/3-4" | ±3 µm/0.00015" | 132.8 | 20.3 | 16.7 | 76   | B         | 565    |



| Functions         | Series 331 |
|-------------------|------------|
| Data Output       | ●          |
| ORIGIN            | ●          |
| ZERO/ABS          | ●          |
| Auto Power OFF    | ●          |
| HOLD              | ●          |
| Low voltage alarm | ●          |

### Specifications

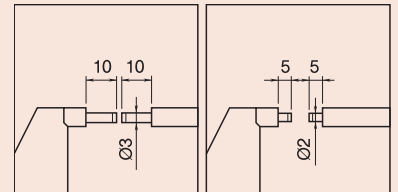
|                    |  |
|--------------------|--|
| Accuracy           | Refer to the list of specifications (excluding quantizing error)                       |
| Resolution         | 0,001 mm or 0,001 mm/0.00005"  |
| Scales             | Thimble and sleeve satin chrome finish, Ø18 mm   |
| Flatness           | 0,3µm/0.000012"  |
| Parallelism        | (2+L/100) µm, L = max. range (mm)<br>[0.00008" + 0.00004 (L/4)]" L = max. range (inch) |
| Measuring surfaces | Carbide tipped, micro-lap finish, stepped  |
| Frame              | Enamelled  |
| Measuring spindle  | Ø6,35 mm, Spindle pitch 0,5 mm, with spindle lock                                      |
| Measuring force    | 5-10 N   |
| Delivered          | Including box, setting standard (from 25 mm upward), key, 1 battery                    |

### Optional accessories

| No.       | Description                          |
|-----------|--------------------------------------|
| 05CZA662  | Signal cable 1 m with data button    |
| 05CZA663  | Signal cable 2 m with data button    |
| 02AZD790B | Signal cable U-Wave with data button |
| 06ADV380B | Signal cable 2 m USB                 |

### Consumable spares

| No.    | Description  |
|--------|--------------|
| 938882 | Battery SR44 |



Type A (Ø3 mm) / Type B (Ø2 mm)

# Spline Micrometer

## Series 111

### Special Purpose Micrometer

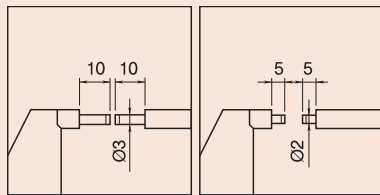
- With stepped measuring surfaces.
- Suitable for measuring grooves, splined shafts, recesses, shaped parts, etc.

### Specifications

|                    |  |
|--------------------|--|
| Accuracy           | Refer to the list of specifications  |
| Graduation         | 0,01 mm, 0.001" or 0.0001"   |
| Scales             | Thimble and sleeve satin chrome finish<br>ø18 mm                                       |
| Flatness           | 0,3 µm/0.000012"   |
| Parallelism        | (2+L/100) µm, L = max. range (mm)<br>[0.00008"+0.00004(L/4)]" L = max.<br>range (inch) |
| Measuring surfaces | Carbide tipped, micro-lap finish,<br>stepped   |
| Frame              | Enamelled  |
| Measuring spindle  | ø6,35 mm, spindle pitch 0,5 mm, with<br>spindle lock                                   |
| Measuring force    | 5-10 N   |
| Delivered          | Including box, setting standard (from<br>25 mm upward), key                            |



111-115



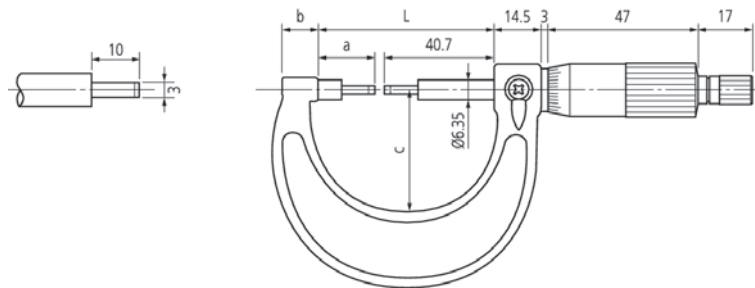
Type A (ø3 mm) / Type B (ø2 mm)

### Metric

| No.      | Range      | Accuracy | L mm  | a mm | b mm | c mm | Anvil/Tip | Mass g |
|----------|------------|----------|-------|------|------|------|-----------|--------|
| 111-115  | 0-25 mm    | ±3 µm    | 55.3  | 17.8 | 10   | 38   | A         | 205    |
| 111-215  | 0-25 mm    | ±3 µm    | 55.3  | 17.8 | 10   | 38   | B         | 205    |
| 111-116  | 25-50 mm   | ±3 µm    | 80.3  | 17.8 | 12   | 49   | A         | 305    |
| 111-117  | 50-75 mm   | ±3 µm    | 105.3 | 17.8 | 14   | 60   | A         | 370    |
| 111-118  | 75-100 mm  | ±4 µm    | 132.8 | 20.3 | 17   | 79   | A         | 500    |
| 111-119* | 100-125 mm | ±4 µm    | 158.2 | 20.7 | 19   | 94   | A         | 655    |
| 111-120* | 125-150 mm | ±4 µm    | 183.6 | 21.1 | 20   | 106  | A         | 710    |
| 111-121* | 150-175 mm | ±5 µm    | 208.8 | 21.3 | 19   | 118  | A         | 900    |
| 111-122* | 175-200 mm | ±5 µm    | 234.2 | 21.7 | 18   | 130  | A         | 1,040  |
| 111-123* | 200-225 mm | ±5 µm    |       |      |      |      | A         | 1,245  |
| 111-124* | 225-250 mm | ±6 µm    |       |      |      |      | A         | 1,395  |
| 111-125* | 250-275 mm | ±6 µm    |       |      |      |      | A         | 1,555  |
| 111-126* | 275-300 mm | ±6 µm    |       |      |      |      | A         | 1,975  |

### Inch

| No.     | Range | Accuracy  | L mm | a mm | b mm | c mm | Anvil/Tip | Mass g |
|---------|-------|-----------|------|------|------|------|-----------|--------|
| 111-166 | 0-1"  | ±0.00015" | 55.3 | 17.8 | 10   | 38   | A         | 205    |





# Digimatic Tube Micrometer

Series 395

## Special Purpose Micrometer

- Suitable for measurements involving curved surfaces such as wall thickness of tubes, bearings, rings, etc.



395-251

### Metric

Model with spherical anvil

| No.     | Range     | Accuracy | a mm  | b mm | c mm | d mm | Anvil/Tip | Remarks  | Mass g |
|---------|-----------|----------|-------|------|------|------|-----------|----------|--------|
| 395-251 | 0-25 mm   | ±2 µm    | 59.8  | 9.6  | 9    | 25   | A         | D: 15 mm | 270    |
| 395-252 | 25-50 mm  | ±2 µm    | 70.3  | 10   | 9.8  | 32   | A         | D: 15 mm | 330    |
| 395-253 | 50-75 mm  | ±2 µm    | 91.9  | 12.6 | 47   |      | A         | D: 19 mm | 470    |
| 395-254 | 75-100 mm | ±3 µm    | 112.9 | 14   | 60   |      | A         | D: 20 mm | 625    |

### Metric

Model with two spherical anvils

| No.      | Range     | Accuracy | a mm  | b mm | c mm | d mm | Anvil/Tip | Remarks  | Mass g |
|----------|-----------|----------|-------|------|------|------|-----------|----------|--------|
| 395-271  | 0-25 mm   | ±2 µm    | 59.8  | 9.6  | 9    | 25   | B         | D: 15 mm | 270    |
| 395-272  | 25-50 mm  | ±2 µm    | 70.3  | 10   | 9.8  | 32   | B         | D: 15 mm | 330    |
| 395-273  | 50-75 mm  | ±2 µm    | 91.9  | 12.6 | 47   |      | B         | D: 19 mm | 470    |
| 395-274* | 75-100 mm | ±3 µm    | 112.9 | 14   | 60   |      | B         | D: 20 mm | 625    |

### Inch/Metric

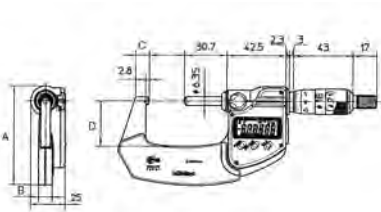
Model with spherical anvil

| No.      | Range          | Accuracy       | a mm  | b mm | c mm | d mm | Anvil/Tip | Remarks  | Mass g |
|----------|----------------|----------------|-------|------|------|------|-----------|----------|--------|
| 395-351  | 0-25 mm/0-1"   | ±2 µm/0.0001"  | 59.8  | 9.6  | 9    | 25   | A         | D: 0.59" | 270    |
| 395-352* | 25-50 mm/1-2"  | ±2 µm/0.0001"  | 70.3  | 10   | 9.8  | 32   | A         | D: 0.59" | 330    |
| 395-353* | 50-75 mm/2-3"  | ±2 µm/0.0001"  | 91.9  | 12.6 | 47   |      | A         | D: 0.75" | 470    |
| 395-354* | 75-100 mm/3-4" | ±3 µm/0.00015" | 112.9 | 14   | 60   |      | A         | D: 0.79" | 625    |

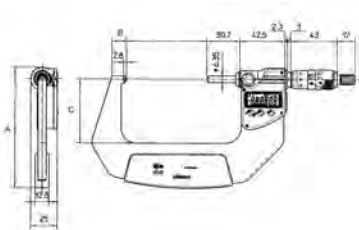
### Inch/Metric

Model with two spherical anvils

| No.      | Range          | Accuracy       | a mm  | b mm | c mm | d mm | Anvil/Tip | Remarks  | Mass g |
|----------|----------------|----------------|-------|------|------|------|-----------|----------|--------|
| 395-371  | 0-25 mm/0-1"   | ±2 µm/0.0001"  | 59.8  | 9.6  | 9    | 25   | B         | D: 0.59" | 270    |
| 395-372  | 25-50 mm/1-2"  | ±2 µm/0.0001"  | 70.3  | 10   | 9.8  | 32   | B         | D: 0.59" | 330    |
| 395-373* | 50-75 mm/2-3"  | ±2 µm/0.0001"  | 91.9  | 12.6 | 47   |      | B         | D: 0.75" | 470    |
| 395-374* | 75-100 mm/3-4" | ±3 µm/0.00015" | 112.9 | 14   | 60   |      | B         | D: 0.79" | 625    |



0-50 mm



50-100 mm

| Functions         | Series 395 |
|-------------------|------------|
| Data Output       | ●          |
| ORIGIN            | ●          |
| ZERO/ABS          | ●          |
| Auto Power OFF    | ●          |
| HOLD              | ●          |
| Low voltage alarm | ●          |

### Specifications

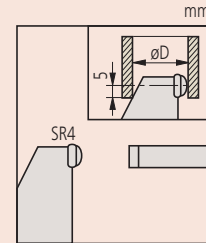
|                    |   |
|--------------------|---|
| Accuracy           | Refer to the list of specifications (excluding quantizing error)    |
| Resolution         | 0,001 mm or 0,001 mm/0.00005"                                       |
| Scales             | Thimble and sleeve satin chrome finish, ø18 mm                      |
| Flatness           | 0,6 µm/0.000024"  |
| Measuring surfaces | Carbide tipped, micro-lap finish                                    |
| Frame              | Enamelled   |
| Measuring spindle  | ø6.35 mm, spindle pitch 0,5 mm, with spindle lock                   |
| Measuring force    | 5-10 N  |
| Delivered          | Including box, setting standard (from 25 mm upward), key, 1 battery |

### Optional accessories

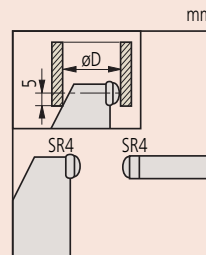
| No.       | Description                          |
|-----------|--------------------------------------|
| 05CZA662  | Signal cable 1 m with data button    |
| 05CZA663  | Signal cable 2 m with data button    |
| 02AZD790B | Signal cable U-Wave with data button |
| 06ADV380B | Signal cable 2 m USB                 |

### Consumable spares

| No.    | Description |
|--------|-------------|
| 938882 | Battery SR4 |



Type A  
0-25 mm + 25-50 mm



Type B  
D15 mm  
50-75 mm - D19 mm  
75-100 mm - D20 mm

# Digimatic Tube Micrometer



## Series 395

### Special Purpose Micrometer

- Suitable for measurements involving curved surfaces such as wall thickness of tubes, bearings, rings, etc.



395-261



395-262



395-263



395-264

| Functions         | Series 395 |
|-------------------|------------|
| Data Output       | ●          |
| ORIGIN            | ●          |
| ZERO/ABS          | ●          |
| Auto Power OFF    | ●          |
| HOLD              | ●          |
| Low voltage alarm | ●          |

### Specifications

|                    |   |
|--------------------|---|
| Accuracy           | Refer to the list of specifications (excluding quantizing error)    |
| Resolution         | 0,001 mm or 0,001 mm/0.00005"                                       |
| Scales             | Thimble and sleeve satin chrome finish, $\varnothing 18$ mm         |
| Flatness           | 0,6 $\mu\text{m}$ /0.000024"  |
| Measuring surfaces | Carbide tipped, micro-lap finish                                    |
| Frame              | Enamelled   |
| Measuring spindle  | $\varnothing 6.35$ mm, spindle pitch 0,5 mm, with spindle lock      |
| Measuring force    | 3-8 N   |
| Delivered          | Including box, setting standard (from 25 mm upward), key, 1 battery |

### Optional accessories

| No.       | Description                          |
|-----------|--------------------------------------|
| 05CZA662  | Signal cable 1 m with data button    |
| 05CZA663  | Signal cable 2 m with data button    |
| 02AZD790B | Signal cable U-Wave with data button |
| 06ADV380B | Signal cable 2 m USB                 |

### Consumable spares

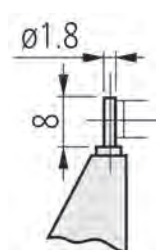
| No.    | Description  |
|--------|--------------|
| 938882 | Battery SR44 |

### Metric

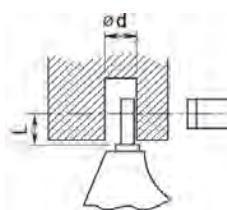
| No.     | Range   | Accuracy            | L mm | d mm | Anvil/Tip | Mass g |
|---------|---------|---------------------|------|------|-----------|--------|
| 395-261 | 0-25 mm | $\pm 3 \mu\text{m}$ | 4    | 2    | A         | 270    |
| 395-262 | 0-25 mm | $\pm 3 \mu\text{m}$ | 4    | 3.6  | B         | 270    |
| 395-263 | 0-25 mm | $\pm 3 \mu\text{m}$ | 12   | 4.8  | C         | 310    |
| 395-264 | 0-25 mm | $\pm 3 \mu\text{m}$ | 22   | 8.2  | D         | 310    |

### Inch/Metric

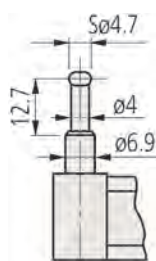
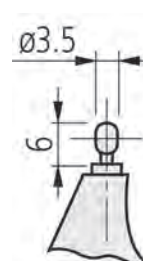
| No.      | Range        | Accuracy                     | L mm | d mm | Anvil/Tip | Mass g |
|----------|--------------|------------------------------|------|------|-----------|--------|
| 395-362* | 0-25 mm/0-1" | $\pm 3 \mu\text{m}/0.00015"$ | 4    | 3.6  | B         | 270    |
| 395-363* | 0-25 mm/0-1" | $\pm 3 \mu\text{m}/0.00015"$ | 12   | 4.8  | C         | 310    |
| 395-364* | 0-25 mm/0-1" | $\pm 3 \mu\text{m}/0.00015"$ | 22   | 8.2  | D         | 310    |



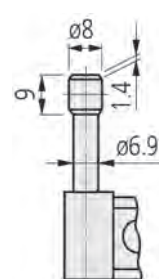
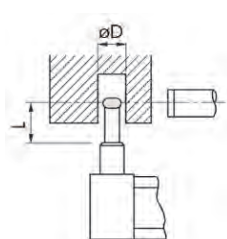
Type A



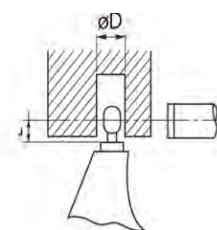
Type B



Type C



Type D



# Tube Micrometer

## Series 115

### Outside Micrometer Special version

- For measurements of all curved surfaces and wall thickness of tubes, bearings, rings, etc.



115-215

#### Metric

Model with spherical anvil

| No.     | Range     | Accuracy | D mm | Mass g |
|---------|-----------|----------|------|--------|
| 115-115 | 0-25 mm   | ±3 μm    | 10   | 180    |
| 115-116 | 25-50 mm  | ±3 μm    | 11   | 240    |
| 115-117 | 50-75 mm  | ±3 μm    | 17   | 315    |
| 115-118 | 75-100 mm | ±4 μm    | 18   | 375    |

#### Metric

Model with spherical anvil and spindle face

| No.     | Range     | Accuracy | D mm | Mass g |
|---------|-----------|----------|------|--------|
| 115-215 | 0-25 mm   | ±3 μm    | 10   | 180    |
| 115-216 | 25-50 mm  | ±3 μm    | 11   | 240    |
| 115-217 | 50-75 mm  | ±3 μm    | 17   | 315    |
| 115-218 | 75-100 mm | ±4 μm    | 18   | 375    |

#### Metric

Model with cylindrical anvil

| No.      | Range    | Accuracy | L mm | D mm | Remarks | Mass g |
|----------|----------|----------|------|------|---------|--------|
| 115-302  | 0-25 mm  | ±3 μm    | 4    | 2    | Type A  | 180    |
| 115-308* | 0-25 mm  | ±3 μm    | 4    | 3.6  | Type B  | 180    |
| 115-315* | 0-25 mm  | ±3 μm    | 12   | 4.8  | Type C  | 180    |
| 115-316* | 0-25 mm  | ±3 μm    | 22   | 8.2  | Type D  | 180    |
| 115-303* | 25-50 mm | ±3 μm    | 4    | 2    | Type A  | 240    |
| 115-309* | 25-50 mm | ±3 μm    | 4    | 3.6  | Type B  | 240    |

#### Inch

Model with spherical anvil

| No.     | Range | Accuracy  | D"  | Mass g |
|---------|-------|-----------|-----|--------|
| 115-153 | 0-1"  | ±0.00015" | 0.4 | 180    |

#### Inch

Model with spherical anvil and spindle face

| No.      | Range | Accuracy  | D"   | Mass g |
|----------|-------|-----------|------|--------|
| 115-253  | 0-1"  | ±0.00015" | 0.4  | 180    |
| 115-242* | 1-2"  | ±0.00015" | 0.44 | 240    |
| 115-243* | 2-3"  | ±0.00015" | 0.67 | 315    |

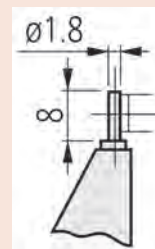
#### Inch

Model with cylindrical anvil

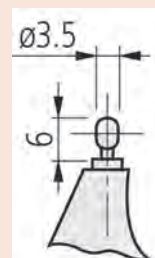
| No.      | Range | Accuracy  | L mm | D mm | Remarks | Mass g |
|----------|-------|-----------|------|------|---------|--------|
| 115-305* | 0-1"  | ±0.00015" | 4    | 2    | Type A  | 180    |
| 115-313* | 0-1"  | ±0.00015" | 12   | 4.8  | Type C  | 180    |
| 115-314* | 0-1"  | ±0.00015" | 22   | 8.2  | Type D  | 180    |

### Specifications

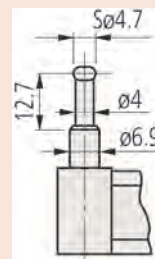
|                    |  |
|--------------------|--|
| Accuracy           | Refer to the list of specifications                      |
| Graduation         | 0,01 mm, 0.001" or 0.0001"                               |
| Scales             | Thimble and sleeve satin chrome finish, ø18 mm           |
| Flatness           | 0,6 μm/0.000024"   |
| Measuring surfaces | Carbide tipped, micro-lap finish                         |
| Frame              | Enamelled  |
| Measuring spindle  | ø6,35 mm, spindle pitch 0,5 mm with spindle lock         |
| Measuring force    | 5-10 N   |
| Delivered          | Including box, setting standard (from 25 mm upward), key |



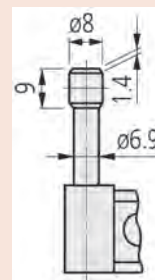
Type A (Pin)



Type B (Spherical)



Type C (Cylindrical)



Type D (Cylindrical)

# Digimatic Point Micrometer



## Series 342

### Special Purpose Micrometer

- Features pointed anvil and spindle, with a choice of included angle, ending in small-radius contact points.
- Suitable for measuring grooves, steps, etc.



342-251

### Metric

| No.      | Range     | Accuracy | L mm  | a mm | b mm | c mm | Point | Mass g |
|----------|-----------|----------|-------|------|------|------|-------|--------|
| 342-251  | 0-25 mm   | ±2 μm    | 58.2  | 12.5 | 7.3  | 32   | 15°   | 330    |
| 342-261  | 0-25 mm   | ±2 μm    | 58.2  | 12.5 | 7.3  | 32   | 30°   | 330    |
| 342-252  | 25-50 mm  | ±2 μm    | 83.2  | 12.5 | 10.1 | 47   | 15°   | 470    |
| 342-262* | 25-50 mm  | ±2 μm    | 83.2  | 12.5 | 10.1 | 47   | 30°   | 470    |
| 342-253  | 50-75 mm  | ±2 μm    | 108.2 | 12.5 | 11.5 | 60   | 15°   | 625    |
| 342-263  | 50-75 mm  | ±2 μm    | 108.2 | 12.5 | 11.5 | 60   | 30°   | 625    |
| 342-254* | 75-100 mm | ±3 μm    | 132.8 | 10   | 16.7 | 76   | 15°   | 565    |
| 342-264  | 75-100 mm | ±3 μm    | 132.8 | 10   | 16.7 | 76   | 30°   | 565    |

### Inch/Metric

| No.      | Range          | Accuracy       | L mm  | a mm | b mm | c mm | Point | Mass g |
|----------|----------------|----------------|-------|------|------|------|-------|--------|
| 342-351  | 0-25 mm/0-1"   | ±2 μm/0.0001"  | 58.2  | 12.5 | 7.3  | 32   | 15°   | 330    |
| 342-361  | 0-25 mm/0-1"   | ±2 μm/0.0001"  | 58.2  | 12.5 | 7.3  | 32   | 30°   | 330    |
| 342-352* | 25-50 mm/1-2"  | ±2 μm/0.0001"  | 83.2  | 12.5 | 10.1 | 47   | 15°   | 470    |
| 342-362  | 25-50 mm/1-2"  | ±2 μm/0.0001"  | 83.2  | 12.5 | 10.1 | 47   | 30°   | 470    |
| 342-353* | 50-75 mm/2-3"  | ±2 μm/0.0001"  | 108.2 | 12.5 | 11.5 | 60   | 15°   | 625    |
| 342-363* | 50-75 mm/2-3"  | ±2 μm/0.0001"  | 108.8 | 12.5 | 11.5 | 60   | 30°   | 625    |
| 342-354* | 75-100 mm/3-4" | ±3 μm/0.00015" | 132.8 | 15.3 | 16.7 | 76   | 15°   | 565    |
| 342-364* | 75-100 mm/3-4" | ±3 μm/0.00015" | 132.8 | 15.3 | 16.7 | 76   | 30°   | 565    |

| Functions         | Series 342 |
|-------------------|------------|
| Data Output       | ●          |
| ORIGIN            | ●          |
| ZERO/ABS          | ●          |
| Auto Power OFF    | ●          |
| Low voltage alarm | ●          |

### Specifications

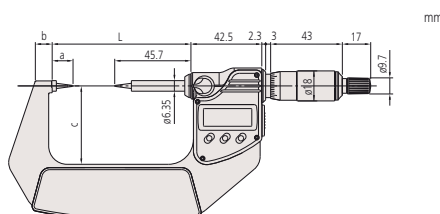
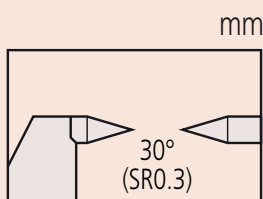
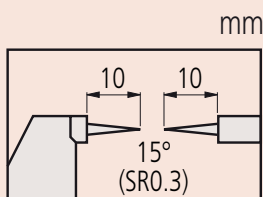
|                    |   |
|--------------------|---|
| Accuracy           | Refer to the list of specifications (excluding quantizing error)                        |
| Resolution         | 0,001 mm or 0,001 mm/0.00005"   |
| Scales             | Thimble and sleeve satin chrome finish, ø18 mm  |
| Measuring surfaces | Hardened and precision ground, conical spindle and anvil, measuring point radius 0,3 mm |
| Frame              | Enamelled   |
| Measuring spindle  | ø6,35 mm, spindle pitch 0,5 mm, with spindle lock                                       |
| Measuring force    | 5-10 N  |
| Delivered          | Including box, setting standard (from 25 mm upward), key, 1 battery                     |

### Optional accessories

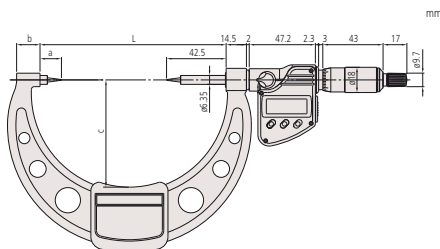
| No.       | Description                          |
|-----------|--------------------------------------|
| 05CZA662  | Signal cable 1 m with data button    |
| 05CZA663  | Signal cable 2 m with data button    |
| 02AZD790B | Signal cable U-Wave with data button |
| 06ADV380B | Signal cable 2 m USB                 |

### Consumable spares

| No.    | Description  |
|--------|--------------|
| 938882 | Battery SR44 |



Models up to 75 mm



Models over 75 mm

# Point Micrometer

Series 112

## Special Purpose Micrometer

- Features pointed anvil and spindle, with a choice of included angle, ending in small-radius contact points.
- Suitable for measuring grooves, steps, etc.



112-201

### Metric

Carbide tip

| No.      | Range     | L mm  | a mm | b mm | c mm | Point | Mass g |
|----------|-----------|-------|------|------|------|-------|--------|
| 112-165  | 0-25 mm   | 55.3  | 12.8 | 10   | 38   | 15°   | 205    |
| 112-213  | 0-25 mm   | 55.3  | 12.8 | 10   | 38   | 30°   | 205    |
| 112-166  | 25-50 mm  | 80.3  | 12.8 | 12   | 49   | 15°   | 305    |
| 112-214* | 25-50 mm  | 80.3  | 12.8 | 12   | 49   | 30°   | 305    |
| 112-167  | 50-75 mm  | 105.3 | 12.8 | 14   | 60   | 15°   | 370    |
| 112-215* | 50-75 mm  | 105.3 | 12.8 | 14   | 60   | 30°   | 370    |
| 112-168  | 75-100 mm | 132.8 | 15.3 | 17   | 79   | 15°   | 500    |
| 112-216* | 75-100 mm | 132.8 | 15.3 | 17   | 79   | 30°   | 500    |

### Metric

Steel tip

| No.      | Range     | L mm  | a mm | b mm | c mm | Point | Mass g |
|----------|-----------|-------|------|------|------|-------|--------|
| 112-153  | 0-25 mm   | 55.3  | 12.8 | 10   | 38   | 15°   | 205    |
| 112-201  | 0-25 mm   | 55.3  | 12.8 | 10   | 38   | 30°   | 205    |
| 112-154  | 25-50 mm  | 80.3  | 12.8 | 12   | 49   | 15°   | 305    |
| 112-202  | 25-50 mm  | 80.3  | 12.8 | 12   | 49   | 30°   | 305    |
| 112-155* | 50-75 mm  | 105.3 | 12.8 | 14   | 60   | 15°   | 370    |
| 112-203* | 50-75 mm  | 105.3 | 12.8 | 14   | 60   | 30°   | 370    |
| 112-156* | 75-100 mm | 132.8 | 15.3 | 17   | 79   | 15°   | 500    |
| 112-204* | 75-100 mm | 132.8 | 15.3 | 17   | 79   | 30°   | 500    |

### Inch

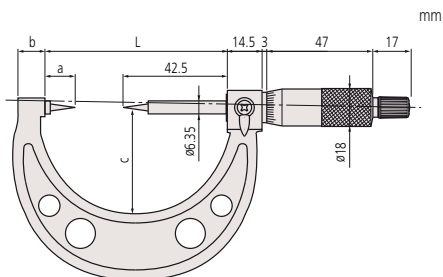
Carbide tip

| No.      | Range | L mm  | a mm | b mm | c mm | Point | Mass g |
|----------|-------|-------|------|------|------|-------|--------|
| 112-189* | 0-1"  | 55.3  | 12.8 | 10   | 38   | 15°   | 205    |
| 112-237  | 0-1"  | 55.3  | 12.8 | 10   | 38   | 30°   | 205    |
| 112-190* | 1-2"  | 80.3  | 12.8 | 12   | 49   | 15°   | 305    |
| 112-238* | 1-2"  | 80.3  | 12.8 | 12   | 49   | 30°   | 305    |
| 112-191* | 2-3"  | 105.3 | 12.8 | 14   | 60   | 15°   | 370    |

### Inch

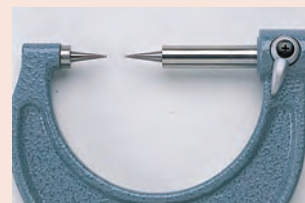
Steel tip

| No.      | Range | L mm | a mm | b mm | c mm | Point | Mass g |
|----------|-------|------|------|------|------|-------|--------|
| 112-177  | 0-1"  | 55.3 | 12.8 | 10   | 38   | 15°   | 205    |
| 112-225  | 0-1"  | 55.3 | 12.8 | 10   | 38   | 30°   | 205    |
| 112-178* | 1-2"  | 80.3 | 12.8 | 12   | 49   | 15°   | 305    |
| 112-226* | 1-2"  | 80.3 | 12.8 | 12   | 49   | 30°   | 305    |

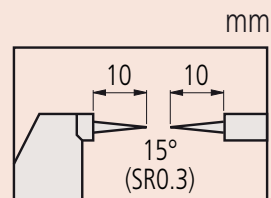


## Specifications

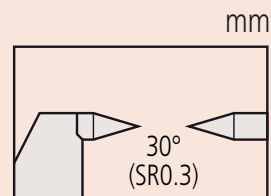
|                    |  |
|--------------------|--|
| Accuracy           | 0-75 mm $\pm 3 \mu\text{m}$<br>75-100 mm $\pm 4 \mu\text{m}$<br>Inch $\pm 0.00015''$ |
| Graduation Scales  | 0,01 mm or 0.001"  |
| Measuring surfaces | Carbide-tipped, pointed spindle and anvil, measuring point radius 0,3 mm             |
| Frame              | Enamelled  |
| Measuring spindle  | $\phi 6,35$ mm, spindle pitch 0,5 with spindle lock                                  |
| Measuring force    | 5-10 N   |
| Delivered          | Including box, setting standard (from 25 mm upward), key                             |



Type angle : 15°



Type angle : 30°



# Digimatic Crimp Height Micrometer

## Series 342

### Special Purpose Micrometer

- Features a flat anvil and pointed spindle for measuring the crimped height of electrical contacts.



342-271



342-451



342-451



342-271



342-451

### Metric Digital model

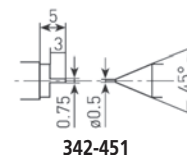
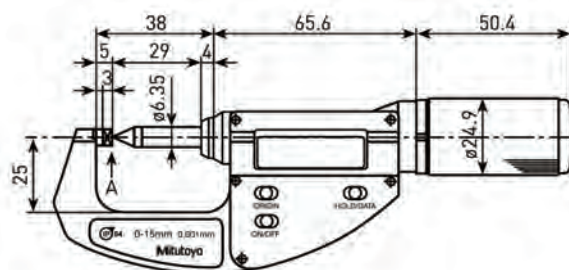
| No.     | Range   | Accuracy | Mass g |
|---------|---------|----------|--------|
| 342-271 | 0-20 mm | ±3 μm    | 270    |

### Metric Quickmike type

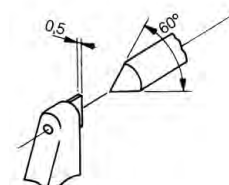
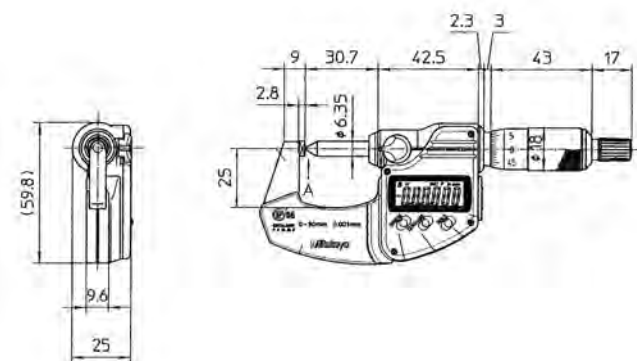
| No.     | Range   | Accuracy | Mass g |
|---------|---------|----------|--------|
| 342-451 | 0-15 mm | ±3 μm    | 275    |

### Inch/Metric Digital model

| No.     | Range          | Accuracy       | Mass g |
|---------|----------------|----------------|--------|
| 342-371 | 0-20 mm/0-0.8" | ±3 μm/0.00015" | 270    |



342-451



342-271/342-371

|                   | Series 342 |         |         |
|-------------------|------------|---------|---------|
|                   | 342-271    | 342-371 | 342-451 |
| <b>Functions</b>  |            |         |         |
| Data Output       | ●          | ●       | ●       |
| ORIGIN            | ●          | ●       | ●       |
| ZERO/ABS          | ●          | ●       | ●       |
| ON/OFF            | ●          | ●       | ●       |
| Auto Power OFF    | ●          | ●       | ●       |
| HOLD              | ●          | ●       | ●       |
| Low voltage alarm | ●          | ●       | ●       |

### Specifications

|                    |   |
|--------------------|---|
| Accuracy           | Refer to the list of specifications (excluding quantizing error)  |
| Resolution         | 0,001 mm or 0,001 mm/0.00005"   |
| Scales             | Thimble and sleeve satin chrome finish, ø18 mm  |
| Measuring surfaces | Hardened and precision ground   |
| Frame              | Enamelled   |
| Measuring spindle  | ø6,35 mm, spindle pitch 0,5 mm with spindle lock (342-271/342-371)<br>ø6,35 mm, spindle pitch 0,5/10 mm (342-451) |
| Measuring force    | 3-8 N<br>4-6 N (342-451)  |
| Delivered          | Including box, 1 battery  |

### Optional accessories

| No.       | Description                          |
|-----------|--------------------------------------|
| 05CZA662  | Signal cable 1 m with data button    |
| 05CZA663  | Signal cable 2 m with data button    |
| 937387    | Signal cable 1 m                     |
| 965013    | Signal cable 2 m                     |
| 02AZD790B | Signal cable U-Wave with data button |
| 06ADV380B | Signal cable 2 m USB                 |
| 02AZD790E | Signal cable U-Wave                  |
| 06ADV380E | Signal cable 2 m USB                 |

937387/965013/06ADV380E/02AZD790E only for 342-451

### Consumable spares

| No.    | Description  |
|--------|--------------|
| 938882 | Battery SR44 |

# Crimp Height Micrometer

Series 112

## Special Purpose Micrometer

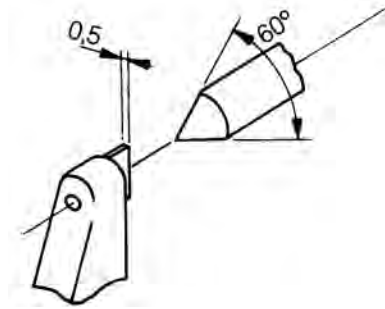
- Features a blade anvil and pointed spindle for measuring the crimped height of electrical contacts.



112-401

Metric

| No.     | Range   | Accuracy            | Mass g |
|---------|---------|---------------------|--------|
| 112-401 | 0-25 mm | $\pm 3 \mu\text{m}$ | 165    |



112-401

## Specifications

|                    |   |
|--------------------|---|
| Accuracy           | Refer to the list of specifications                           |
| Graduation         | 0,01 mm   |
| Scales             | Thimble and sleeve satin chrome finish, $\varnothing 18$ mm   |
| Measuring surfaces | Hardened and precision ground                                 |
| Frame              | Enamelled   |
| Measuring spindle  | $\varnothing 6,35$ mm, spindle pitch 0,5 mm with spindle lock |
| Measuring force    | 5-10 N  |
| Delivered          | Including box   |

# Digimatic Blade Micrometer

## Series 422

### Special Purpose Micrometer

- Anvil and spindle are blade-shaped for measuring the groove diameter of shafts, keyways, and other hard-to reach features.



422-230

### Metric

| No.      | Range     | Accuracy | L mm  | a mm | b mm | c mm | Anvil/Tip | Mass g |
|----------|-----------|----------|-------|------|------|------|-----------|--------|
| 422-230  | 0-25 mm   | ±3 µm    | 65.6  | 12.5 | 11   | 31   | Type A    | 365    |
| 422-260  | 0-25 mm   | ±3 µm    | 65.6  | 12.5 | 11   | 31   | Type B    | 365    |
| 422-270* | 0-25 mm   | ±3 µm    | 65.6  | 12.5 | 11   | 31   | Type C    | 365    |
| 422-271* | 0-25 mm   | ±3 µm    | 65.6  | 12.5 | 11   | 31   | Type D    | 365    |
| 422-231  | 25-50 mm  | ±3 µm    | 90.7  | 12.6 | 12.2 | 50   | Type A    | 565    |
| 422-261  | 25-50 mm  | ±3 µm    | 90.7  | 12.6 | 12.2 | 50   | Type B    | 565    |
| 422-232  | 50-75 mm  | ±3 µm    | 105.3 | 13.5 | 14.1 | 57   | Type A    | 465    |
| 422-233  | 75-100 mm | ±4 µm    | 132.8 | 16   | 16.7 | 76   | Type A    | 580    |

### Inch/Metric

| No.      | Range          | Accuracy       | L mm  | a mm | b mm | c mm | Anvil/Tip | Mass g |
|----------|----------------|----------------|-------|------|------|------|-----------|--------|
| 422-330  | 0-25 mm/0-1"   | ±3 µm/0.00015" | 65.6  | 12.5 | 11   | 31   | Type A    | 365    |
| 422-360* | 0-25 mm/0-1"   | ±3 µm/0.00015" | 65.6  | 12.5 | 11   | 31   | Type B    | 365    |
| 422-370* | 0-25 mm/0-1"   | ±3 µm/0.00015" | 65.6  | 12.5 | 11   | 31   | Type C    | 365    |
| 422-371* | 0-25 mm/0-1"   | ±3 µm/0.00015" | 65.6  | 12.5 | 11   | 31   | Type D    | 365    |
| 422-331  | 25-50 mm/1-2"  | ±3 µm/0.00015" | 90.7  | 12.6 | 12.2 | 50   | Type A    | 565    |
| 422-361* | 25-50 mm/1-2"  | ±3 µm/0.00015" | 90.7  | 12.6 | 12.2 | 50   | Type B    | 565    |
| 422-332  | 50-75 mm/2-3"  | ±3 µm/0.00015" | 105.3 | 13.5 | 14.1 | 57   | Type A    | 465    |
| 422-333* | 75-100 mm/3-4" | ±4 µm/0.0002"  | 132.8 | 16   | 16.7 | 76   | Type A    | 580    |

| Functions         | Series 422 |
|-------------------|------------|
| Data Output       | ●          |
| ORIGIN            | ●          |
| ZERO/ABS          | ●          |
| Auto Power OFF    | ●          |
| HOLD              | ●          |
| Low voltage alarm | ●          |

### Specifications

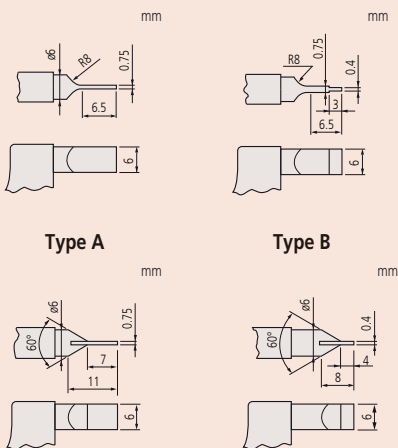
|                   |  |
|-------------------|--|
| Accuracy          | Refer to the list of specifications (excluding quantizing error)   |
| Resolution        | 0,001 mm or 0,001 mm/0.00005"  |
| Scales            | Thimble and sleeve satin chrome finish, ø18 mm   |
| Parallelism       | 3 µm/0.00012" for models up to 75 mm/3"<br>(3+L/100) µm for models over 75 mm, L = max. range (mm)<br>0.00016" for 4" models |
| Frame             | Enamelled  |
| Measuring spindle | ø6,35 mm, spindle pitch 0,5 mm   |
| Measuring force   | 5-10 N   |
| Delivered         | Including box, setting standard (from 25 mm upward), key, 1 battery  |

### Optional accessories

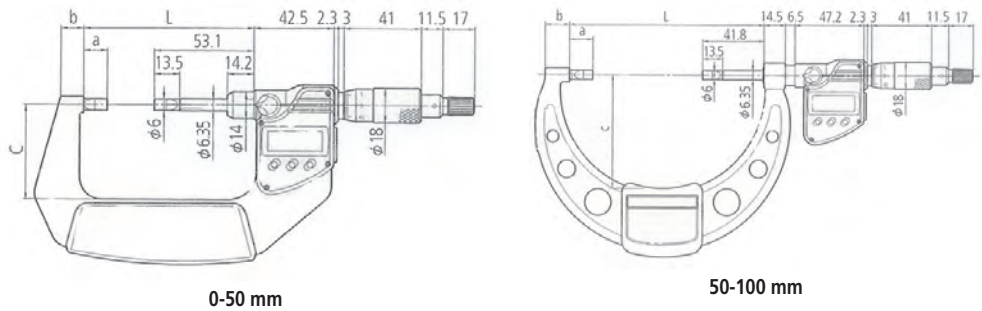
| No.       | Description                          |
|-----------|--------------------------------------|
| 05CZA662  | Signal cable 1 m with data button    |
| 05CZA663  | Signal cable 2 m with data button    |
| 02AZD790B | Signal cable U-Wave with data button |
| 06ADV380B | Signal cable 2 m USB                 |

### Consumable spares

| No.    | Description  |
|--------|--------------|
| 938882 | Battery SR44 |



Type C (carbide-tipped)    Type D (carbide-tipped)



0-50 mm

50-100 mm



# Digimatic Blade Micrometer

Series 422

## Special Purpose Micrometer

- Anvil and spindle are blade-shaped for measuring the groove diameter of shafts, keyways, and other hard-to-reach features.
- Non-rotating spindle and fast spindle feed of 10 mm/rev.

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IP54



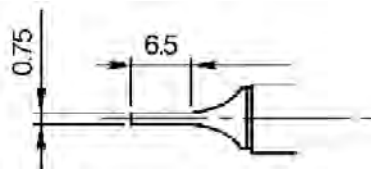
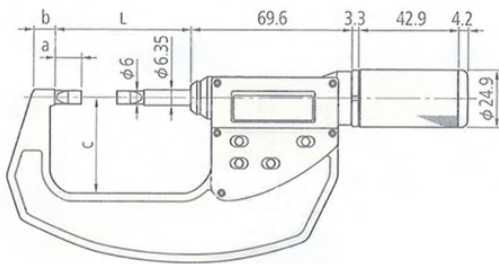
422-411

### Metric

| No.     | Range    | Accuracy | L mm | a mm | b mm | c mm | Mass g |
|---------|----------|----------|------|------|------|------|--------|
| 422-411 | 0-30 mm  | ±3 μm    | 59.8 | 13.5 | 8.5  | 36   | 350    |
| 422-412 | 25-55 mm | ±3 μm    | 84.8 | 13.5 | 10.3 | 47   | 490    |

### Inch/Metric

| No.      | Range           | Accuracy       | L mm | a mm | b mm | c mm | Mass g |
|----------|-----------------|----------------|------|------|------|------|--------|
| 422-421* | 0-30 mm/0-1.2"  | ±3 μm/0.00015" | 59.8 | 13.5 | 8.5  | 36   | 350    |
| 422-422* | 25-55 mm/1-2.2" | ±3 μm/0.00015" | 84.8 | 13.5 | 10.3 | 47   | 490    |



| Functions         | Series 422 |
|-------------------|------------|
| Data Output       | ●          |
| ORIGIN            | ●          |
| ZERO/ABS          | ●          |
| ON/OFF            | ●          |
| HOLD              | ●          |
| Low voltage alarm | ●          |

### Specifications

|                   |  |
|-------------------|--|
| Accuracy          | Refer to the list of specifications (excluding quantizing error)   |
| Resolution        | 0,001 mm or 0,001 mm/0.00005"  |
| Scales            | Thimble and sleeve satin chrome finish, ø18 mm   |
| Parallelism       | 3 μm/0.00012" for models up to 75 mm/3"<br>(3+L/100) μm for models over 75 mm, L = max. range (mm)<br>0.00016" for 4" models |
| Frame             | Enamelled  |
| Measuring spindle | ø6,35 mm, spindle pitch 10 mm  |
| Measuring force   | 5-10 N   |
| Delivered         | Including box, setting standard (from 25 mm upward), 1 battery   |

### Optional accessories

| No.       | Description          |
|-----------|----------------------|
| 937387    | Signal cable 1 m     |
| 965013    | Signal cable 2 m     |
| 02AZD790E | Signal cable U-Wave  |
| 06ADV380E | Signal cable 2 m USB |

### Consumable spares

| No.    | Description  |
|--------|--------------|
| 938882 | Battery SR44 |

# Blade Micrometer

## Series 122

### Special Purpose Micrometer

- Anvil and spindle are blade-shaped for measuring the groove diameter of shafts, keyways, and other hard-to reach features.
- Non-rotating spindle.



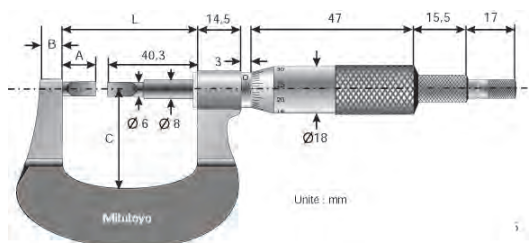
122-101

### Metric

| No.      | Range      | Accuracy | L mm  | a mm | b mm | c mm | Anvil/Tip | Mass g |
|----------|------------|----------|-------|------|------|------|-----------|--------|
| 122-101  | 0-25 mm    | ±3 μm    | 55.3  | 15   | 8    | 30   | A         | 260    |
| 122-111  | 0-25 mm    | ±3 μm    | 55.3  | 15   | 8    | 30   | B         | 260    |
| 122-161  | 0-25 mm    | ±3 μm    | 55.3  | 15   | 8    | 30   | C         | 275    |
| 122-141  | 0-25 mm    | ±3 μm    | 55.3  | 15   | 8    | 30   | D         | 275    |
| 122-102  | 25-50 mm   | ±3 μm    | 80.3  | 15   | 12   | 49   | A         | 300    |
| 122-112  | 25-50 mm   | ±3 μm    | 80.3  | 15   | 12   | 49   | B         | 300    |
| 122-162  | 25-50 mm   | ±3 μm    | 80.3  | 15   | 12   | 49   | C         | 315    |
| 122-142  | 25-50 mm   | ±3 μm    | 80.3  | 15   | 12   | 49   | D         | 315    |
| 122-103  | 50-75 mm   | ±3 μm    | 105.3 | 15   | 13   | 60   | A         | 360    |
| 122-104  | 75-100 mm  | ±4 μm    | 132.8 | 17.5 | 17   | 79   | A         | 525    |
| 122-105  | 100-125 mm | ±4 μm    | 158.2 | 17.9 | 19   | 94   | A         | 670    |
| 122-106  | 125-150 mm | ±4 μm    | 183.6 | 18.3 | 20   | 106  | A         | 775    |
| 122-107  | 150-175 mm | ±5 μm    | 208.8 | 18.5 | 19   | 118  | A         | 950    |
| 122-108  | 175-200 mm | ±5 μm    | 234.2 | 18.9 | 19   | 118  | A         | 1,140  |
| 122-109  | 200-225 mm | ±5 μm    | 258   | 17.7 | 18   | 143  | A         | 1,300  |
| 122-110* | 225-250 mm | ±6 μm    | 284   | 18.7 | 18   | 156  | A         | 1,450  |
| 122-115* | 250-275 mm | ±6 μm    | 309   | 18.7 | 18   | 169  | A         | 1,600  |
| 122-116* | 275-300 mm | ±6 μm    | 334   | 18.7 | 18   | 181  | A         | 2,020  |

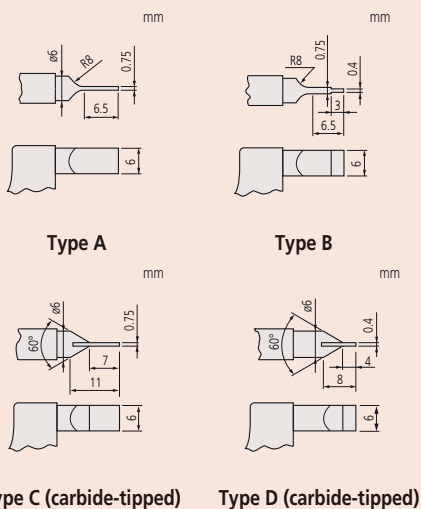
### Inch

| No.      | Range | Accuracy  | L mm  | a mm | b mm | c mm | Anvil/Tip | Mass g |
|----------|-------|-----------|-------|------|------|------|-----------|--------|
| 122-125  | 0-1"  | ±0.00015" | 55.3  | 15   | 8    | 30   | A         | 260    |
| 122-135* | 0-1"  | ±0.00015" | 55.3  | 15   | 8    | 30   | B         | 260    |
| 122-151* | 0-1"  | ±0.00015" | 55.3  | 15   | 8    | 30   | D         | 275    |
| 122-126  | 1-2"  | ±0.00015" | 80.3  | 15   | 12   | 49   | A         | 300    |
| 122-127  | 2-3"  | ±0.00015" | 105.3 | 15   | 13   | 60   | A         | 410    |
| 122-128  | 3-4"  | ±0.0002"  | 132.8 | 17.5 | 17   | 79   | A         | 550    |



### Specifications

|                   |   |
|-------------------|---|
| Accuracy          | Refer to the list of specifications   |
| Graduation        | 0,01 mm or 0.0001"  |
| Scales            | Thimble and sleeve satin chrome finish, ø18 mm  |
| Parallelism       | 3 μm/0.00012" for models up to 75 mm/3"<br>(3+L/100) μm for models over 75 mm, L= max. range (mm)<br>0.00016" for 4" models |
| Frame             | Enamelled   |
| Measuring spindle | ø6,35 mm, spindle pitch 0,5 mm  |
| Delivered         | Including box, setting standard (from 25 mm upward), key  |



# Digimatic V-Anvil Micrometer

## Series 314

- For measurements on 3-fluted taps, drills, reamers, etc.
- V-anvils with a centreline groove are available for measuring the pitch diameter of taps by the single-wire method.



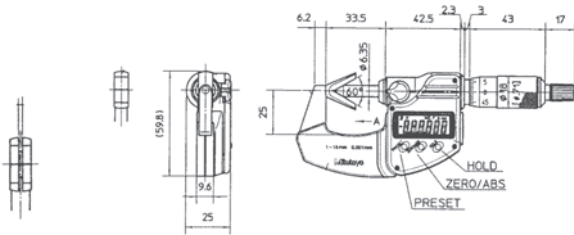
314-251-10

### Metric

| No.        | Range    | Accuracy | Remarks     | Mass g |
|------------|----------|----------|-------------|--------|
| 314-251-10 | 1-15 mm  | ±4 μm    | with groove | 275    |
| 314-261-10 | 1-15 mm  | ±4 μm    | -           | 275    |
| 314-252-10 | 10-25 mm | ±4 μm    | with groove | 410    |
| 314-262-10 | 10-25 mm | ±4 μm    | -           | 410    |
| 314-253-10 | 25-40 mm | ±5 μm    | -           | 465    |

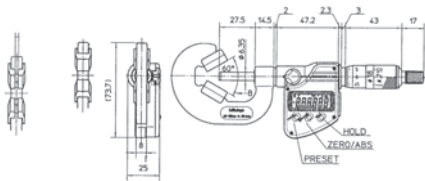
### Inch/Metric

| No.         | Range             | Accuracy       | Remarks     | Mass g |
|-------------|-------------------|----------------|-------------|--------|
| 314-351-10* | 1-15 mm/0.05-0.6" | ±4 μm/0.0002"  | with groove | 275    |
| 314-361-10* | 1-15 mm/0.05-0.6" | ±4 μm/0.0002"  | -           | 275    |
| 314-352-10* | 10-25 mm/0.4-1"   | ±4 μm/0.0002"  | with groove | 410    |
| 314-362-10* | 10-25 mm/0.4-1"   | ±4 μm/0.0002"  | -           | 410    |
| 314-353-10* | 25-40 mm/1-1.6"   | ±5 μm/0.00025" | -           | 465    |



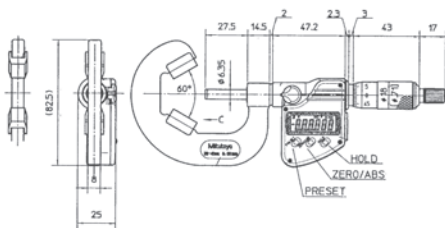
314-251-10/314-351-10

1-15 mm/0.05-0.6"



314-252-10/314-352-10

10-25 mm/0.4-1"



25-40 mm/1-1.6"

| Functions         | Series 314 |
|-------------------|------------|
| Data Output       | ●          |
| ZERO/ABS          | ●          |
| Auto Power OFF    | ●          |
| HOLD              | ●          |
| 2 x PRESET        | ●          |
| Low voltage alarm | ●          |
| Function lock     | ●          |

### Specifications

|                    |  |
|--------------------|--|
| Accuracy           | Refer to the list of specifications (excluding quantizing error) |
| Resolution         | 0,001 mm or 0,001 mm/0,00005"                                    |
| Scales             | Thimble and sleeve satin chrome finish, ø 18 mm                  |
| Flatness           | 3 μm   |
| Parallelism        | (3+L/75) μm  |
| Measuring surfaces | Prism angle 60°  |
| Frame              | Enamelled  |
| Measuring spindle  | ø 6,35 mm, spindle pitch 0,75 mm with spindle lock               |
| Measuring force    | 5-10 N   |
| Delivered          | Including box, setting standard, key, 1 battery                  |

### Optional accessories

| No.       | Description                          |
|-----------|--------------------------------------|
| 05CZA662  | Signal cable 1 m with data button    |
| 05CZA663  | Signal cable 2 m with data button    |
| 06ADV380B | Signal cable 2 m USB                 |
| 02AZD790B | Signal cable U-Wave with data button |

### Consumable spares

| No.    | Description  |
|--------|--------------|
| 938882 | Battery SR44 |

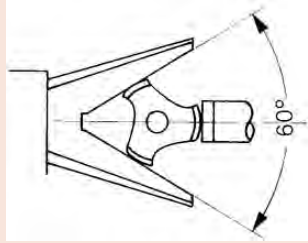
# V-Anvil Micrometer

## Series 114

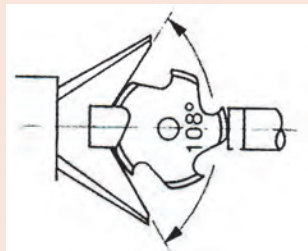
- For measurements on 3- or 5-fluted taps, drills, reamers, etc.
- V-anvils with a centreline groove are available for measuring the pitch diameter of taps by the single-wire method.

### Specifications

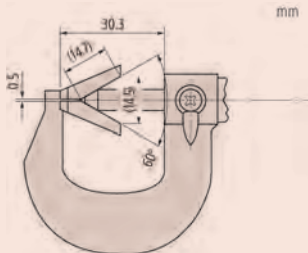
|                    |   |
|--------------------|---|
| Accuracy           | Refer to the list of specifications                         |
| Graduation         | 0,01 mm, 0.001" or 0.0001"                                  |
| Scales             | Thimble and sleeve satin chrome finish, $\varnothing 18$ mm |
| Measuring surfaces | Prism angle 60°   |
| Frame              | Enamelled   |
| Measuring spindle  | $\varnothing 6,35$ mm, with spindle lock                    |
| Measuring force    | 5-10 N  |
| Delivered          | Including box, setting standard, key                        |



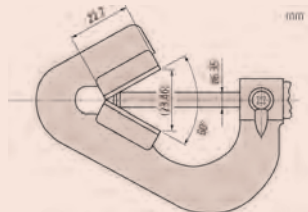
For 3-flute cutting tools



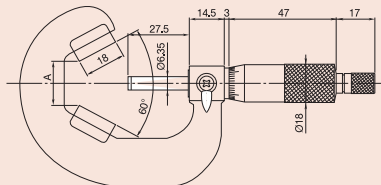
For 5-flute cutting tools



114-101



114-204



114-102 to 114-107



114-102



114-121

### Metric

For 3-flute cutting tools

| No.     | Range                    | Accuracy            | a mm  | Remarks     | Setting standard         | Mass g |
|---------|--------------------------|---------------------|-------|-------------|--------------------------|--------|
| 114-101 | 1-15 mm                  | $\pm 4 \mu\text{m}$ | 0.5   | with groove | 167-327 $\varnothing 5$  | 120    |
| 114-161 | 1-15 mm                  | $\pm 4 \mu\text{m}$ | 0.5   | -           | 167-327 $\varnothing 5$  | 120    |
| 114-204 | 2.3-25 mm <sup>(1)</sup> | $\pm 4 \mu\text{m}$ | 0.5   | -           | 167-327 $\varnothing 5$  | 290    |
| 114-102 | 10-25 mm                 | $\pm 4 \mu\text{m}$ | 6.2   | with groove | 167-328 $\varnothing 10$ | 280    |
| 114-162 | 10-25 mm                 | $\pm 4 \mu\text{m}$ | 6.2   | -           | 167-329 $\varnothing 25$ | 280    |
| 114-103 | 25-40 mm                 | $\pm 5 \mu\text{m}$ | 19.14 | -           | 167-329 $\varnothing 25$ | 400    |
| 114-104 | 40-55 mm                 | $\pm 6 \mu\text{m}$ | 32.13 | -           | 167-330 $\varnothing 40$ | 465    |
| 114-105 | 55-70 mm                 | $\pm 6 \mu\text{m}$ | 45.12 | -           | 167-331 $\varnothing 55$ | 675    |
| 114-106 | 70-85 mm                 | $\pm 7 \mu\text{m}$ | 58.11 | -           | 167-332 $\varnothing 70$ | 910    |
| 114-107 | 85-100 mm                | $\pm 7 \mu\text{m}$ | 71.1  | -           | 167-333 $\varnothing 85$ | 1,160  |

<sup>(1)</sup> Carbide-tipped anvil

### Metric

For 5-flute cutting tools

| No.      | Range                    | Accuracy            | Remarks     | Setting standard         | Mass g |
|----------|--------------------------|---------------------|-------------|--------------------------|--------|
| 114-121  | 5-25 mm                  | $\pm 4 \mu\text{m}$ | with groove | 167-327 $\varnothing 5$  | 255    |
| 114-165  | 5-25 mm                  | $\pm 4 \mu\text{m}$ | -           | 167-328 $\varnothing 10$ | 255    |
| 114-137  | 2.3-25 mm <sup>(1)</sup> | $\pm 4 \mu\text{m}$ | -           | 167-327 $\varnothing 5$  | 220    |
| 114-122  | 25-45 mm                 | $\pm 5 \mu\text{m}$ | -           | 167-329 $\varnothing 25$ | 400    |
| 114-123* | 45-65 mm                 | $\pm 6 \mu\text{m}$ | -           | 167-331 $\varnothing 55$ | 540    |
| 114-124  | 65-85 mm                 | $\pm 7 \mu\text{m}$ | -           | 167-332 $\varnothing 70$ | 760    |

<sup>(1)</sup> Carbide-tipped anvil

### Inch

For 3-flute cutting tools

| No.      | Range                  | Accuracy        | a mm  | Remarks | Setting standard         | Mass g |
|----------|------------------------|-----------------|-------|---------|--------------------------|--------|
| 114-163* | 0.05-0.6"              | $\pm 0.0002$ "  | 0.5   | -       | 167-327 $\varnothing 5$  | 120    |
| 114-202* | 0.09-1" <sup>(1)</sup> | $\pm 0.0002$ "  | 6.2   | -       | 167-327 $\varnothing 5$  | 290    |
| 114-113* | 1-1.6"                 | $\pm 0.00025$ " | 19.14 | -       | 167-329 $\varnothing 25$ | 400    |
| 114-114* | 1.6-2.2"               | $\pm 0.0003$ "  | -     | -       | 167-330 $\varnothing 40$ | 465    |

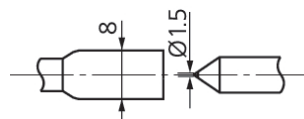
<sup>(1)</sup> Carbide-tipped anvil

### Inch

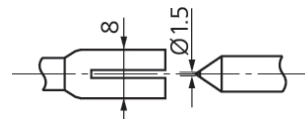
For 5-flute cutting tools

| No.      | Range                  | Accuracy       | a mm | Remarks | Setting standard        | Mass g |
|----------|------------------------|----------------|------|---------|-------------------------|--------|
| 114-135* | 0.09-1" <sup>(1)</sup> | $\pm 0.0002$ " | 6.2  | -       | 167-327 $\varnothing 5$ | 220    |

<sup>(1)</sup> Carbide-tipped anvil



Plain anvil model



Grooved anvil model

# Can Seam Micrometer

## Series 147

### Special Purpose Micrometer

- Designed to measure the width, height and depth of can seams.
- Three types are available (for steel, aluminium and spray cans).

#### Metric

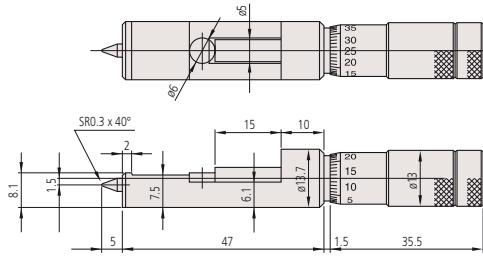
| No.     | Range   | Remarks            | Mass g |
|---------|---------|--------------------|--------|
| 147-103 | 0-13 mm | For steel cans     | 65     |
| 147-105 | 0-13 mm | For aluminium cans | 65     |
| 147-202 | 0-13 mm | For spray cans     | 65     |

#### Inch

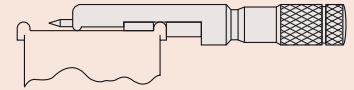
| No.      | Range  | Remarks            | Mass g |
|----------|--------|--------------------|--------|
| 147-104* | 0-0.5" | For steel cans     | 65     |
| 147-106* | 0-0.5" | For aluminium cans | 65     |
| 147-201  | 0-0.5" | For spray cans     | 65     |



147-103



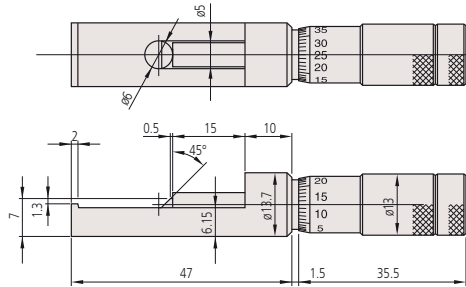
147-103 / 147-104



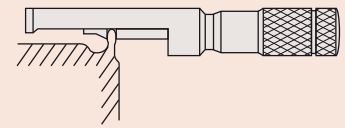
147-103 / 147-104  
For steel cans



147-105



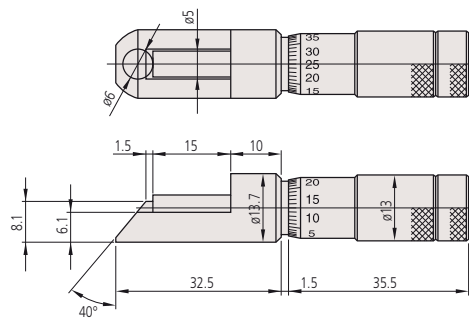
147-105 / 147-106



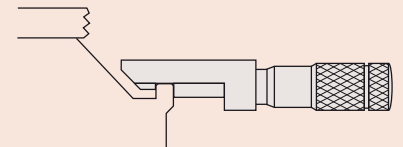
147-105 / 147-106  
For aluminium cans



147-202



147-202 / 147-201



147-202 / 147-201  
For spray cans

### Specifications

|            |   |
|------------|---|
| Accuracy   | $\pm 3 \mu\text{m}/0.00015''$                     |
| Graduation | 0,01 mm or 0.001"                                 |
| Scales     | Thimble and sleeve satin chrome finish,<br>ø18 mm |
| Delivered  | Including box, key                                |



# Wire Micrometer

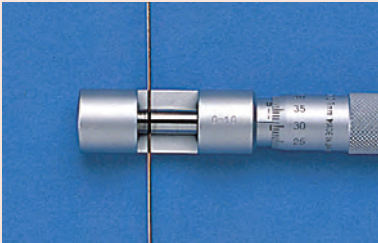
## Series 147

### Special Purpose Micrometer

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

### Specifications

|                    |  |
|--------------------|--|
| Accuracy           | Refer to the list of specifications    |
| Graduation         | 0,01 mm or 0.0001"                     |
| Scales             | Thimble and sleeve satin chrome finish |
| Flatness           | 0,6 $\mu\text{m}$ /0.000024"           |
| Parallelism        | 1,3 $\mu\text{m}$ /0.00005"            |
| Measuring surfaces | Carbide tipped, micro-lap finish       |
| Measuring spindle  | Spindle pitch 0,5 mm                   |
| Measuring force    | 5-10 N                                 |
| Delivered          | Including box, key                     |



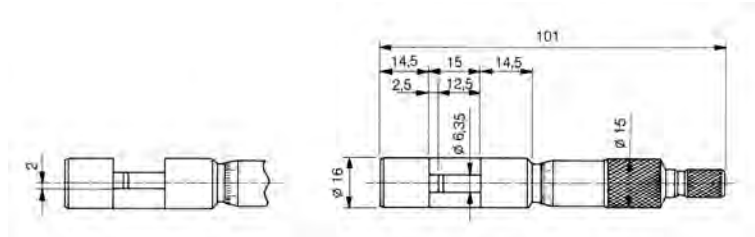
147-401

### Metric

| No.     | Range   | Accuracy            | Mass g |
|---------|---------|---------------------|--------|
| 147-401 | 0-10 mm | $\pm 3 \mu\text{m}$ | 65     |

### Inch

| No.      | Range  | Accuracy        | Mass g |
|----------|--------|-----------------|--------|
| 147-402* | 0-0.4" | $\pm 0.00015$ " | 65     |



# Digimatic Micrometer interchangeable anvil type

Series 317

## Special Purpose Micrometer

- Designed to accept interchangeable anvils shaped for specific tasks.
- For measuring wall thickness of tubes as well as openings and slots from edge to edge and features in hard-to-reach locations.



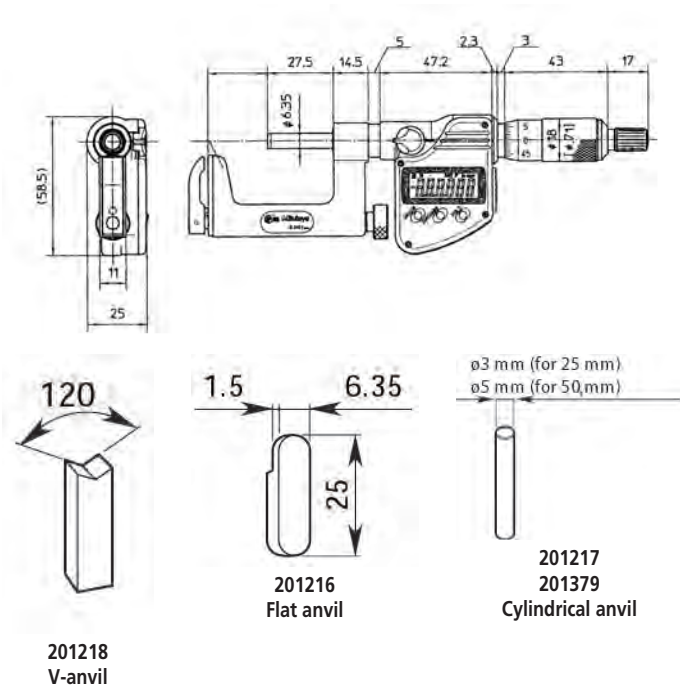
317-251

### Metric

| No.     | Range    | Accuracy | Anvils included | Mass g |
|---------|----------|----------|-----------------|--------|
| 317-251 | 0-25 mm  | ±4 µm    | 201217, 201216  | 400    |
| 317-252 | 25-50 mm | ±4 µm    | 201379, 201216  | 490    |

### Inch/Metric

| No.      | Range         | Accuracy      | Anvils included | Mass g |
|----------|---------------|---------------|-----------------|--------|
| 317-351  | 0-25 mm/0-1"  | ±4 µm/0.0002" | 201217, 201216  | 400    |
| 317-352* | 25-50 mm/1-2" | ±4 µm/0.0002" | 201379, 201216  | 490    |



| Functions         | Series 317 |
|-------------------|------------|
| Data Output       | ●          |
| ORIGIN            | ●          |
| ZERO/ABS          | ●          |
| Auto Power OFF    | ●          |
| HOLD              | ●          |
| Low voltage alarm | ●          |

### Specifications

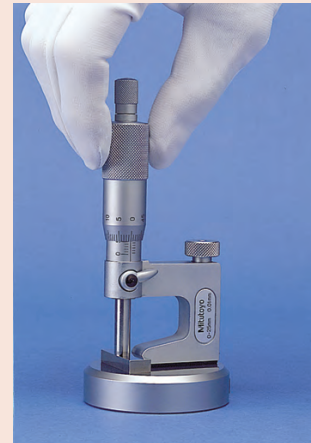
|                    |   |
|--------------------|---|
| Accuracy           | Refer to the list of specifications (excluding quantizing error)    |
| Resolution         | 0,001 mm or 0,001 mm/0.00005"                                       |
| Scales             | Thimble and sleeve satin chrome finish                              |
| Measuring surfaces | Carbide tipped  |
| Frame              | Enamelled   |
| Measuring spindle  | ø6,35 mm, spindle pitch 0,5 mm with spindle lock                    |
| Measuring force    | 5-10 N  |
| Delivered          | Including box, setting standard (from 25 mm upward), key, 1 battery |

### Optional accessories

| No.       | Description                                       |
|-----------|---|
| 05CZA662  | Signal cable 1 m with data button                 |
| 05CZA663  | Signal cable 2 m with data button                 |
| 02AZD790B | Signal cable U-Wave with data button              |
| 06ADV380B | Signal cable 2 m USB                              |
| 201218    | V-anvil   |
| 950758    | Round platten (only for measuring range 0-25 mm)  |
| 950759    | Round platten (only for measuring range 25-50 mm) |

### Consumable spares

| No.    | Description             |
|--------|-------------------------|
| 201216 | Flat anvil              |
| 201217 | Cylindrical anvil ø3 mm |
| 201379 | Cylindrical anvil ø5 mm |
| 938882 | Battery SR44            |



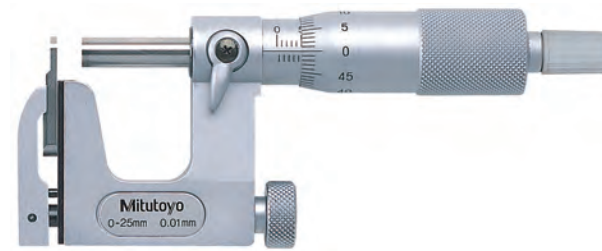
950758

# Micrometer interchangeable anvil type

## Series 117

### Special Purpose Micrometer

- Designed to accept interchangeable anvils shaped for specific tasks.
- For measuring wall thickness of tubes as well as openings and slots from edge to edge and features in hard-to-reach locations.



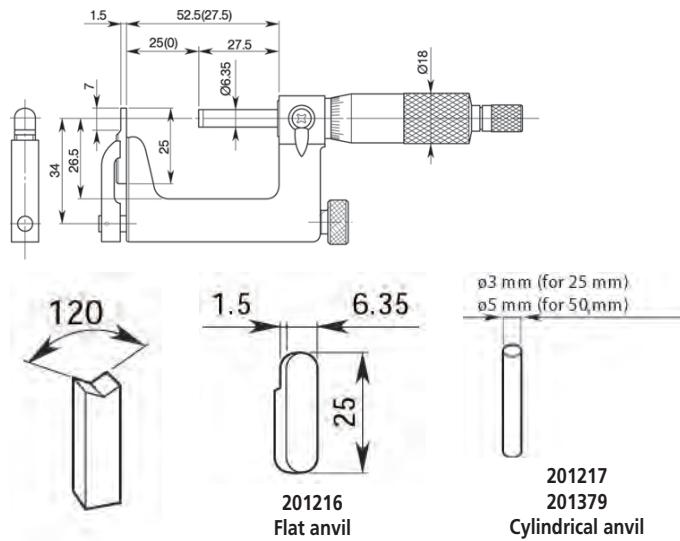
117-101

### Metric

| No.     | Range    | Accuracy | Anvils included | Mass g |
|---------|----------|----------|-----------------|--------|
| 117-101 | 0-25 mm  | ±4 μm    | 201217, 201216  | 255    |
| 117-102 | 25-50 mm | ±4 μm    | 201379, 201216  | 320    |

### Inch

| No.      | Range | Accuracy | Anvils included | Mass g |
|----------|-------|----------|-----------------|--------|
| 117-107  | 0-1"  | ±0.0002" | 201217, 201216  | 255    |
| 117-108* | 1-2"  | ±0.0002" | 201379, 201216  | 320    |



### Specifications

|                    |  |
|--------------------|--|
| Accuracy           | Refer to the list of specifications                      |
| Graduation         | 0,01 mm or 0.0001"                                       |
| Scales             | Thimble and sleeve satin chrome finish                   |
| Measuring surfaces | Carbide tipped   |
| Frame              | Enamelled  |
| Measuring spindle  | ø6,35 mm, spindle pitch 0,5 mm with spindle lock         |
| Measuring force    | 5-10 N   |
| Delivered          | Including box, setting standard (from 25 mm upward), key |

### Optional accessories

| No.    | Description                                       |
|--------|---|
| 201218 | V-anvil   |
| 950758 | Round platten (only for measuring range 0-25 mm)  |
| 950759 | Round platten (only for measuring range 25-50 mm) |

### Consumable spares

| No.    | Description             |
|--------|-------------------------|
| 201216 | Flat anvil              |
| 201217 | Cylindrical anvil ø3 mm |
| 201379 | Cylindrical anvil ø5 mm |





# Limit Micrometer

Series 113

## Special Purpose Micrometer

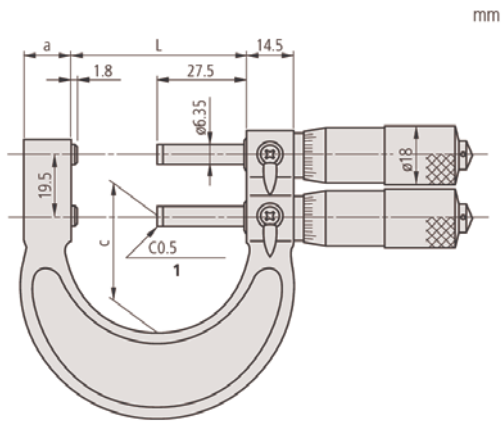
- Designed for use as a GO/±NG gauge by setting to the upper and lower limits of dimension.



113-102

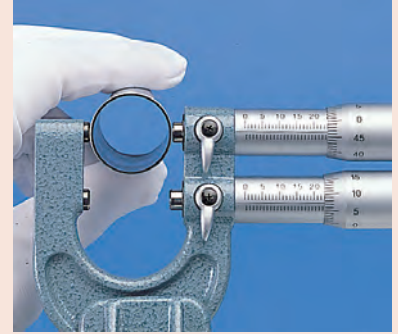
### Metric

| No.     | Range    | Accuracy | L mm | a mm | c mm | Mass g |
|---------|----------|----------|------|------|------|--------|
| 113-102 | 0-25 mm  | ±3 μm    | 29.3 | 15   | 23   | 340    |
| 113-103 | 25-50 mm | ±3 μm    | 54.3 | 15   | 37   | 380    |



### Specifications

|                    |  |
|--------------------|--|
| Accuracy           | Refer to the list of specifications                      |
| Graduation         | 0,01 mm  |
| Scales             | Thimble and sleeve satin chrome finish, ø18 mm           |
| Flatness           | 0,6 μm   |
| Parallelism        | (3+L/100) μm, L = max. range (mm)                        |
| Measuring surfaces | Carbide tipped with chamfer micro-lap finish             |
| Frame              | Enamelled  |
| Measuring spindle  | ø6,35 mm, spindle pitch 0,5 mm with spindle lock         |
| Delivered          | Including box, setting standard (from 25 mm upward), key |



# Indicating Micrometer



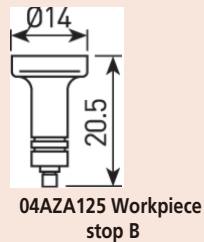
## Specifications

|                          |  |
|--------------------------|--|
| Graduation               | 0,001 mm or 0.0001"  |
| Dial indication accuracy | 1 $\mu\text{m}$ /0.00005"  |
| Dispersion of indication | 0,4 $\mu\text{m}$ /0.00002"  |
| Micrometer accuracy      | 3 $\mu\text{m}$  |
| Dial reading Scales      | 0,001 mm or 0.00005"<br>Thimble and sleeve satin chrome finish   |
| Flatness                 | 0,3 $\mu\text{m}$ /0.000012"   |
| Parallelism              | 0,6 $\mu\text{m}$ /0.000024" for models up to 50 mm/2"<br>1 $\mu\text{m}$ /0.00004" for models over 50 mm/2" |
| Measuring surfaces       | Carbide tipped, micro-lap finish   |
| Measuring force          | 5-10 N   |
| Spindle feed error       | 3 $\mu\text{m}$ /0.00015"  |
| Delivered                | Including box, setting standard (from 25 mm upward), key   |

## Optional accessories

| No.      | Description                        |
|----------|------------------------------------|
| 04AZA124 | $\varnothing$ 16 mm workpiece stop |
| 04AZA125 | $\varnothing$ 14 mm workpiece stop |
| 04AZA126 | $\varnothing$ 14 mm workpiece stop |

| Measuring range mm | N°      | Diameter range of workpiece supported |                    |                    |
|--------------------|---------|---------------------------------------|--------------------|--------------------|
|                    |         | A $\varnothing$ mm                    | B $\varnothing$ mm | C $\varnothing$ mm |
| 0-25               | 510-121 | -                                     | 4-16               | 15-25              |
| 25-50              | 510-122 | 25-37                                 | 30-42              | 41-50              |
| 50-75              | 510-123 | 50-61                                 | 54-66              | 65-75              |
| 75-100             | 510-124 | 75-87                                 | 80-92              | 91-100             |



## Series 510

### Special Purpose Micrometer

- A self-setting micrometer gauge suitable for rapid measurement of workpieces, especially cylindrical, in batch or mass production situations when an indication of where a measurement falls within the tolerance band is desirable.
- Large dial indicator for easy reading.
- Tolerance markers for GO/NG measurements.
- Easy-to-operate retracting button.



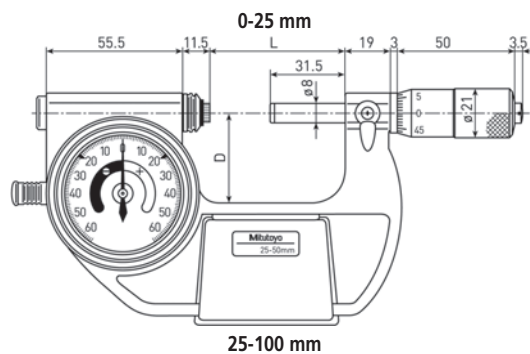
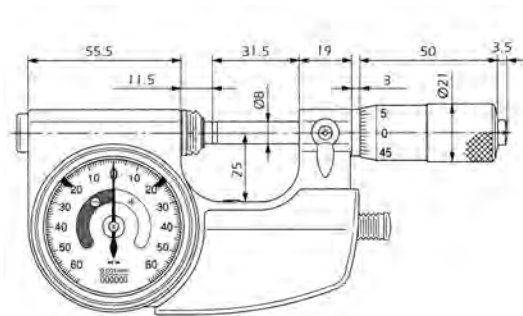
510-121

### Metric

| No.     | Range     | Indicating range | Operating button | L mm | d mm | Mass g |
|---------|-----------|------------------|------------------|------|------|--------|
| 510-121 | 0-25 mm   | $\pm 0,060$ mm   | Right            |      |      | 520    |
| 510-141 | 0-25 mm   | $\pm 0,060$ mm   | Left             |      |      | 520    |
| 510-122 | 25-50 mm  | $\pm 0,060$ mm   | Left             | 38   | 56   | 670    |
| 510-123 | 50-75 mm  | $\pm 0,060$ mm   | Left             | 50   | 81   | 820    |
| 510-124 | 75-100 mm | $\pm 0,060$ mm   | Left             | 63   | 106  | 970    |

### Inch

| No.      | Range | Indicating range | Operating button | L mm | d mm | Mass g |
|----------|-------|------------------|------------------|------|------|--------|
| 510-131  | 0-1"  | $\pm 0.0023$ "   | Right            |      |      | 520    |
| 510-151* | 0-1"  | $\pm 0.0023$ "   | Left             |      |      | 520    |
| 510-132* | 1-2"  | $\pm 0.0023$ "   | Left             | 38   | 56   | 670    |
| 510-133* | 2-3"  | $\pm 0.0023$ "   | Left             | 50   | 81   | 820    |
| 510-134* | 3-4"  | $\pm 0.0023$ "   | Left             | 63   | 106  | 970    |



# Indicating Snap Gauge

## Series 523

- Built-in dial gauge with tolerance markers for convenient gauging.
- Suitable for rapid inspection of workpieces, especially cylindrical, in batch or mass production situations when an indication of where a measurement falls within the tolerance band is desirable.
- Settable with external length standards such as block gauges.
- Easy-to-operate retracting button.



## Specifications

|                          |  |
|--------------------------|--|
| Dial indication accuracy | 1 $\mu\text{m}/0.00005''$  |
| Dispersion of indication | 0,4 $\mu\text{m}/0.00002''$  |
| Dial reading             | 0,001 mm or 0.00005''  |
| Flatness                 | 0,3 $\mu\text{m}/0.000012''$   |
| Parallelism              | 0,6 $\mu\text{m}/0.000024''$ for models up to 50 mm/2"<br>1 $\mu\text{m}/0.00004''$ for models over 50 mm/2" |
| Measuring surfaces       | Carbide tipped, micro-lap finish   |
| Measuring force          | 5-10 N   |
| Delivered                | Including box, workpiece rest  |



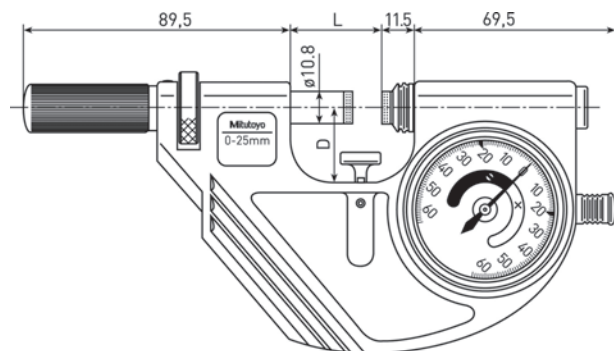
523-121

## Metric

| No.     | Range     | Indicating range | L mm | d mm | Mass g |
|---------|-----------|------------------|------|------|--------|
| 523-121 | 0-25 mm   | $\pm 0,060$ mm   | 31   | 25   | 740    |
| 523-122 | 25-50 mm  | $\pm 0,060$ mm   | 56   | 35   | 840    |
| 523-123 | 50-75 mm  | $\pm 0,060$ mm   | 81   | 47.5 | 950    |
| 523-124 | 75-100 mm | $\pm 0,060$ mm   | 106  | 60   | 1,080  |

## Inch

| No.      | Range | Indicating range | L mm | d mm | Mass g |
|----------|-------|------------------|------|------|--------|
| 523-131  | 0-1"  | $\pm 0.0023$ "   | 31   | 25   | 740    |
| 523-132  | 1-2"  | $\pm 0.0023$ "   | 56   | 35   | 840    |
| 523-133  | 2-3"  | $\pm 0.0023$ "   | 81   | 47.5 | 950    |
| 523-134* | 3-4"  | $\pm 0.0023$ "   | 106  | 60   | 1,080  |



# Snap Gauge

## Series 523

- Designed to mount an indicator to suit the measurement application.
- Suitable for rapid inspection of workpieces, especially cylindrical, in batch or mass production situations when an indicator of where a measurement falls within the tolerance band is desirable.
- Settable with external length standards such as block gauges.
- Easy-to-operate retracting button.

### Specifications

|                      |  |
|----------------------|--|
| Flatness             | 0,3 µm/0.000012"   |
| Parallelism          | 0,6 µm/0.000024" for models up to 50 mm/2"<br>1 µm/0.00004" for models over 50 mm/2" |
| Measuring surfaces   | Carbide tipped, micro-lap finish, ø10,8 mm   |
| Measuring force      | 5-10 N   |
| Delivered            | Including box, workpiece rest  |
| Optional accessories | See dial gauges section  |



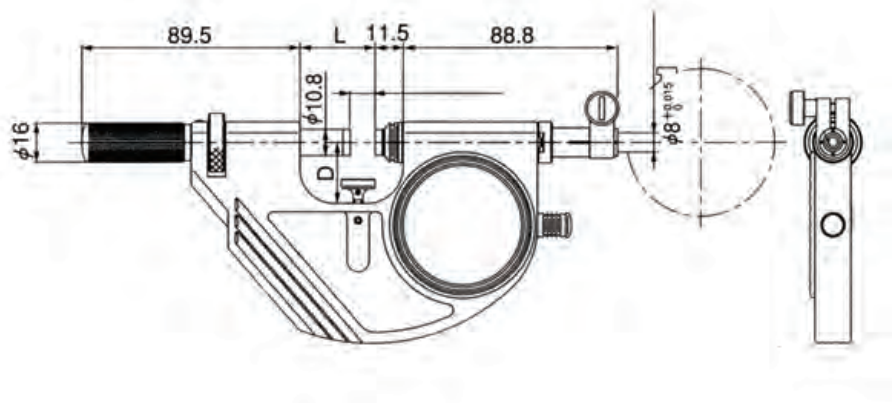
523-141

### Metric

| No.     | Range     | Anvil movement | Error limits (transmission element) µm | L mm | d mm | Mass g |
|---------|-----------|----------------|--|------|------|--------|
| 523-141 | 0-25 mm   | 2 mm           | 0,4                                    | 31   | 25   | 710    |
| 523-142 | 25-50 mm  | 2 mm           | 0,4                                    | 56   | 35   | 810    |
| 523-143 | 50-75 mm  | 2 mm           | 0,4                                    | 81   | 47.5 | 920    |
| 523-144 | 75-100 mm | 2 mm           | 0,4                                    | 106  | 60   | 1,050  |

### Inch

| No.      | Range | Anvil movement | Error limits (transmission element) µm | L mm | d mm | Mass g |
|----------|-------|----------------|--|------|------|--------|
| 523-151* | 0-1"  | 0.078"         | 0,4                                    | 31   | 25   | 710    |
| 523-152* | 1-2"  | 0.078"         | 0,4                                    | 56   | 35   | 810    |
| 523-153* | 2-3"  | 0.078"         | 0,4                                    | 81   | 47.5 | 920    |



# Dial Gauge Micrometer

## Series 107

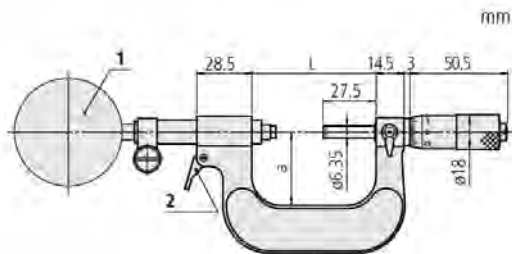
- Designed to mount a standard dial indicator for direct GO/NG judgement for mass-produced parts.
- Anvil retracting trigger for rapid measurement.



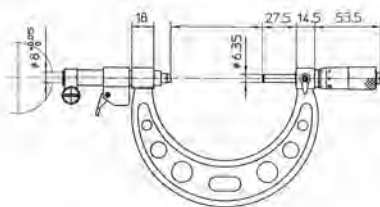
107-201 with optional dial indicator

## Metric

| No.      | Range      | Accuracy | L mm  | a mm | Mass g |
|----------|------------|----------|-------|------|--------|
| 107-201  | 0-25 mm    | ±2 μm    | 39.5  | 30   | 480    |
| 107-202* | 25-50 mm   | ±2 μm    | 64.5  | 38   | 520    |
| 107-203* | 50-75 mm   | ±2 μm    | 90    | 45   | 585    |
| 107-204* | 75-100 mm  | ±3 μm    | 115.6 | 65   | 630    |
| 107-205  | 100-125 mm | ±3 μm    | 140.6 | 79   | 725    |
| 107-206* | 125-150 mm | ±3 μm    | 165.6 | 93   | 810    |
| 107-207  | 150-175 mm | ±4 μm    | 190.5 | 105  | 1,050  |
| 107-208* | 175-200 mm | ±4 μm    | 215.5 | 120  | 1,170  |



1 : Dial indicator  
2 : retracting trigger  
107-201/202



107-203 to 107-208

## Specifications

|                    |  |
|--------------------|--|
| Accuracy           | Refer to the list of specifications                      |
| Graduation         | 0,01 mm  |
| Scales             | Thimble and sleeve satin chrome finish, ø18 mm           |
| Flatness           | 0,6 μm   |
| Parallelism        | (2+L/100) μm, L = max. range (mm)                        |
| Measuring surfaces | Carbide tipped, micro-lap finish                         |
| Frame              | Enamelled  |
| Measuring spindle  | ø6,35 mm, spindle pitch 0,5 mm, with spindle lock        |
| Measuring force    | 5-10 N   |
| Anvil movement     | Retracting range : 3 mm                                  |
| Delivered          | Including box, setting standard (from 25 mm upward), key |



Optional  
See dial indicators section

# Dial Snap Gauges

## Series 201

- Adjustable snap gauges allow for quick and accurate measurement of all kinds of outside diameters up to 300 mm.
- GO/NG evaluations can also be carried out with great ease.



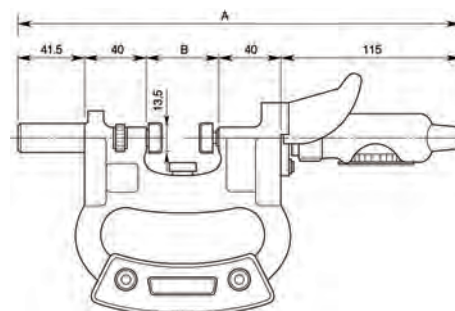
201-101 with optional indicator 543-250B

### Metric

| No.     | Range      | A mm | B mm | Mass g |
|---------|------------|------|------|--------|
| 201-101 | 0-25 mm    | 277  | 42   | 680    |
| 201-102 | 25-50 mm   | 302  | 67   | 730    |
| 201-103 | 50-75 mm   | 328  | 93   | 780    |
| 201-104 | 75-100 mm  | 353  | 118  | 870    |
| 201-105 | 100-125 mm | 379  | 144  | 950    |
| 201-106 | 125-150 mm | 404  | 169  | 1,000  |
| 201-107 | 150-175 mm | 429  | 194  | 1,100  |
| 201-108 | 175-200 mm | 455  | 220  | 1,200  |
| 201-109 | 200-225 mm | 480  | 245  | 1,340  |
| 201-110 | 225-250 mm | 506  | 271  | 1,540  |
| 201-111 | 250-275 mm | 531  | 296  | 1,750  |
| 201-112 | 275-300 mm | 556  | 321  | 2,050  |

### Inch

| No.      | Range  | A mm | B mm | Mass g |
|----------|--------|------|------|--------|
| 201-151* | 0-1"   | 277  | 42   | 680    |
| 201-152* | 1-2"   | 302  | 67   | 730    |
| 201-153* | 2-3"   | 328  | 93   | 780    |
| 201-154* | 3-4"   | 353  | 118  | 870    |
| 201-155* | 4-5"   | 379  | 144  | 950    |
| 201-156* | 5-6"   | 404  | 169  | 1,000  |
| 201-157* | 6-7"   | 429  | 194  | 1,100  |
| 201-158  | 7-8"   | 455  | 220  | 1,200  |
| 201-159* | 8-9"   | 480  | 245  | 1,340  |
| 201-160* | 9-10"  | 506  | 271  | 1,540  |
| 201-161* | 10-11" | 531  | 296  | 1,750  |
| 201-162* | 11-12" | 556  | 321  | 2,050  |



## Specifications

|                                       |   |
|---------------------------------------|---|
| Accuracy                              | Refer to the list of specifications                       |
| Parallelism                           | 5 μm/0.00025" or less                                     |
| Recommended dial indicator (optional) | 2046SB (0,01 mm reading),<br>2109SB-10 (0,001 mm reading) |
| Anvil retracting stroke               | 2 mm/0.078"   |
| Anvil positioning range               | 25 mm/1"  |
| Anvil flatness                        | 1 μm/0.00004"   |
| Measuring force                       | 15N±3N  |
| Delivered                             | Including hand guard                                      |

Micro lapped carbide surfaces  
Easy-moving anvil : 2 mm  
Large measuring surfaces  
Adjustable bit stop  
Suitable for dial indicators with  
ø8 mm stem

## Optional accessories

| No.      | Description                           |
|----------|---------------------------------------|
| 2972     | Analogue Dial Indicator               |
| 21DZA000 | Protector for analogue dial indicator |



201-101 with holder 156-101 and dial indicator

Delivered without dial indicator and without holder

# Internal Groove Micrometer

## Series 146

- Designed to measure the width and location of grooves cut into bore walls.
- Non-rotating spindle models available.



### Metric Rotating spindle type

| No.      | Range Outside | Range Inside  | Diameter of measuring plate | Thickness of measuring plate | l mm  | Mass g |
|----------|---------------|---------------|-----------------------------|------------------------------|-------|--------|
| 146-121  | 0-25 mm       | 1.6-26.5 mm   | 6.35 mm                     | 0.75 mm                      |       | 135    |
| 146-122  | 0-25 mm       | 1.6-26.5 mm   | 12.70 mm                    | 0.75 mm                      | 103.3 | 185    |
| 146-123  | 25-50 mm      | 26.5-51.5 mm  | 12.70 mm                    | 0.75 mm                      | 78.3  | 175    |
| 146-124  | 50-75 mm      | 51.5-76.5 mm  | 12.70 mm                    | 0.75 mm                      | 53.3  | 165    |
| 146-125* | 75-100 mm     | 76.5-101.5 mm | 12.70 mm                    | 0.75 mm                      | 28.3  | 160    |

### Metric Non-rotating spindle type

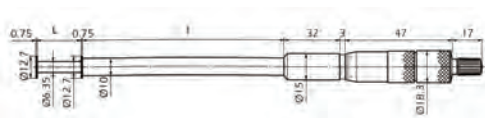
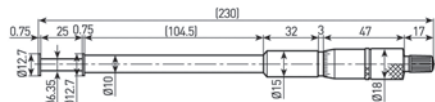
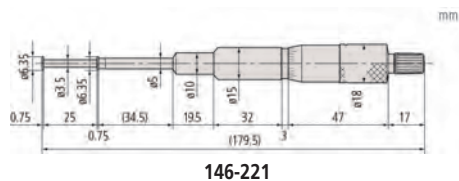
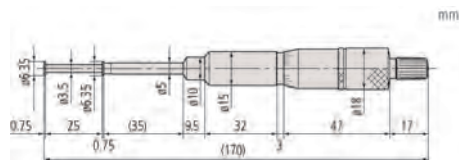
| No.      | Range Outside | Range Inside  | Diameter of measuring plate | Thickness of measuring plate | L mm | l mm | Mass g |
|----------|---------------|---------------|-----------------------------|------------------------------|------|------|--------|
| 146-221  | 0-25 mm       | 1.6-26.5 mm   | 6.35 mm                     | 0.75 mm                      |      |      | 135    |
| 146-222  | 0-25 mm       | 1.6-26.5 mm   | 12.70 mm                    | 0.75 mm                      | 25   | 115  | 185    |
| 146-223  | 25-50 mm      | 26.5-51.5 mm  | 12.70 mm                    | 0.75 mm                      | 50   | 90   | 175    |
| 146-224  | 50-75 mm      | 51.5-76.5 mm  | 12.70 mm                    | 0.75 mm                      | 75   | 65   | 165    |
| 146-225* | 75-100 mm     | 76.5-101.5 mm | 12.70 mm                    | 0.75 mm                      | 100  | 40   | 160    |

### Inch Rotating spindle type

| No.      | Range Outside | Range Inside | Diameter of measuring plate | Thickness of measuring plate | l mm  | Mass g |
|----------|---------------|--------------|-----------------------------|------------------------------|-------|--------|
| 146-131  | 0-1"          | 0.055-1.05"  | 0.25"                       | 0.025"                       |       | 135    |
| 146-132  | 0-1"          | 0.055-4.05"  | 0.5"                        | 0.025"                       | 103.3 | 185    |
| 146-133* | 1-2"          | 1.05-2.05"   | 0.5"                        | 0.025"                       | 78.3  | 175    |
| 146-134* | 2-3"          | 2.05-3.05"   | 0.5"                        | 0.025"                       | 53.3  | 165    |
| 146-135* | 3-4"          | 3.05-4.05"   | 0.5"                        | 0.025"                       | 28.3  | 160    |

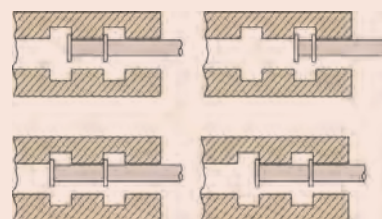
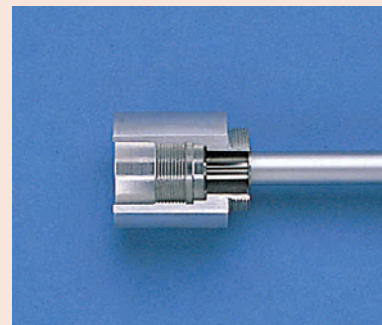
### Inch Non-rotating spindle type

| No.      | Range Outside | Range Inside | Diameter of measuring plate | Thickness of measuring plate | L mm | l mm | Mass g |
|----------|---------------|--------------|-----------------------------|------------------------------|------|------|--------|
| 146-231* | 0-1"          | 0.055-1.05"  | 0.25"                       | 0.025"                       |      |      | 135    |
| 146-232* | 0-1"          | 0.055-1.05"  | 0.5"                        | 0.025"                       | 25   | 115  | 185    |
| 146-233* | 1-2"          | 1.05-2.05"   | 0.5"                        | 0.025"                       | 50   | 90   | 175    |
| 146-234* | 2-3"          | 2.05-3.05"   | 0.5"                        | 0.025"                       | 75   | 65   | 165    |
| 146-235* | 3-4"          | 3.05-4.05"   | 0.5"                        | 0.025"                       | 100  | 40   | 160    |



## Specifications

|                    |  |
|--------------------|--|
| Accuracy           | ±10 μm/0.0004"                                 |
| Graduation         | 0,01 mm  |
| Scales             | Thimble and sleeve satin chrome finish, ø18 mm |
| Parallelism        | 10 μm/0.0004"                                  |
| Measuring surfaces | Hardened                                       |
| Measuring spindle  | Spindle pitch 0,5 mm                           |
| Measuring force    | 5-10 N   |
| Ratchet            | Can be used in both directions                 |
| Delivered          | Including box, key                             |



# Micrometer Setting Standards $\leq 1000$ mm

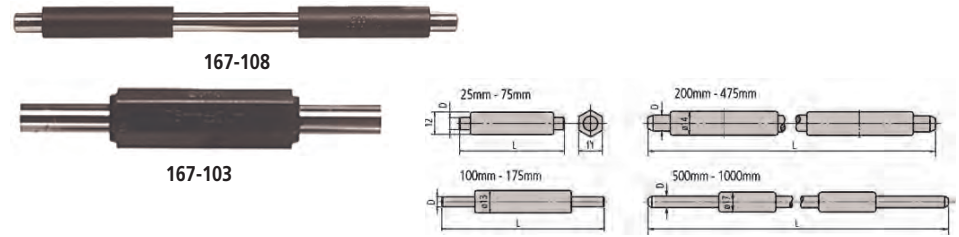
## Specifications

|                       |   |
|-----------------------|---|
| Accuracy              | Refer to the list of specifications<br>(Tolerance on deviation of measured<br>central length from nominal at 20°C.) |
| Flatness              | 0,3 $\mu\text{m}$   |
| Parallelism           | 2 $\mu\text{m}$   |
| Measuring<br>surfaces | Micro-lap finish  |



## Series 167

- Designed for the accurate setting of outside micrometers at one end or the other of the measuring range.



## Metric

| No.      | Length (L) | Diameter (D) | Accuracy               |
|----------|------------|--------------|------------------------|
| 167-101  | 25 mm      | 6.35 mm      | $\pm 1.5 \mu\text{m}$  |
| 167-102  | 50 mm      | 6.35 mm      | $\pm 2.0 \mu\text{m}$  |
| 167-103  | 75 mm      | 6.35 mm      | $\pm 2.5 \mu\text{m}$  |
| 167-104  | 100 mm     | 7.9 mm       | $\pm 3.0 \mu\text{m}$  |
| 167-105  | 125 mm     | 7.9 mm       | $\pm 3.5 \mu\text{m}$  |
| 167-106  | 150 mm     | 7.9 mm       | $\pm 4.0 \mu\text{m}$  |
| 167-107  | 175 mm     | 7.9 mm       | $\pm 4.5 \mu\text{m}$  |
| 167-108  | 200 mm     | 9.4 mm       | $\pm 5.0 \mu\text{m}$  |
| 167-109  | 225 mm     | 9.4 mm       | $\pm 5.5 \mu\text{m}$  |
| 167-110  | 250 mm     | 9.4 mm       | $\pm 6.0 \mu\text{m}$  |
| 167-111  | 275 mm     | 9.4 mm       | $\pm 6.5 \mu\text{m}$  |
| 167-112  | 300 mm     | 9.4 mm       | $\pm 7.0 \mu\text{m}$  |
| 167-113  | 325 mm     | 9.4 mm       | $\pm 7.5 \mu\text{m}$  |
| 167-114  | 350 mm     | 9.4 mm       | $\pm 8.0 \mu\text{m}$  |
| 167-115  | 375 mm     | 9.4 mm       | $\pm 8.5 \mu\text{m}$  |
| 167-116  | 400 mm     | 9.4 mm       | $\pm 9.0 \mu\text{m}$  |
| 167-117  | 425 mm     | 9.4 mm       | $\pm 9.5 \mu\text{m}$  |
| 167-118  | 450 mm     | 9.4 mm       | $\pm 10.0 \mu\text{m}$ |
| 167-119  | 475 mm     | 9.4 mm       | $\pm 10.5 \mu\text{m}$ |
| 167-120  | 500 mm     | 11.9 mm      | $\pm 11.0 \mu\text{m}$ |
| 167-121  | 525 mm     | 11.9 mm      | $\pm 11.5 \mu\text{m}$ |
| 167-122  | 550 mm     | 11.9 mm      | $\pm 12.0 \mu\text{m}$ |
| 167-123  | 575 mm     | 11.9 mm      | $\pm 12.5 \mu\text{m}$ |
| 167-124  | 600 mm     | 11.9 mm      | $\pm 13.0 \mu\text{m}$ |
| 167-125  | 625 mm     | 11.9 mm      | $\pm 13.5 \mu\text{m}$ |
| 167-126  | 650 mm     | 11.9 mm      | $\pm 14.0 \mu\text{m}$ |
| 167-127  | 675 mm     | 11.9 mm      | $\pm 14.5 \mu\text{m}$ |
| 167-128  | 700 mm     | 11.9 mm      | $\pm 15.0 \mu\text{m}$ |
| 167-129* | 725 mm     | 11.9 mm      | $\pm 15.5 \mu\text{m}$ |
| 167-130  | 750 mm     | 11.9 mm      | $\pm 16.0 \mu\text{m}$ |
| 167-131  | 775 mm     | 11.9 mm      | $\pm 16.5 \mu\text{m}$ |
| 167-132  | 800 mm     | 11.9 mm      | $\pm 17.0 \mu\text{m}$ |
| 167-133  | 825 mm     | 11.9 mm      | $\pm 17.5 \mu\text{m}$ |
| 167-134  | 850 mm     | 11.9 mm      | $\pm 18.0 \mu\text{m}$ |
| 167-135  | 875 mm     | 11.9 mm      | $\pm 18.5 \mu\text{m}$ |
| 167-136  | 900 mm     | 11.9 mm      | $\pm 19.0 \mu\text{m}$ |
| 167-137  | 925 mm     | 11.9 mm      | $\pm 19.5 \mu\text{m}$ |
| 167-138* | 950 mm     | 11.9 mm      | $\pm 20.0 \mu\text{m}$ |
| 167-139  | 975 mm     | 11.9 mm      | $\pm 20.5 \mu\text{m}$ |
| 167-140  | 1000 mm    | 11.9 mm      | $\pm 21.0 \mu\text{m}$ |

## Metric

### Sets

| No.     | Length (L) | Number of standards |
|---------|------------|---------------------|
| 167-902 | 25-125 mm  | 5                   |
| 167-903 | 25-275 mm  | 11                  |



# Micrometer Setting Standards > 1000 mm

## Series 167

- Designed for the accurate setting of outside micrometers at one end or the other of the measuring range.



### Metric

| No.      | Length (L) | Diameter (D) |
|----------|------------|--------------|
| 167-365  | 1025 mm    | 11.9 mm      |
| 167-366  | 1050 mm    | 11.9 mm      |
| 167-367  | 1075 mm    | 11.9 mm      |
| 167-368  | 1100 mm    | 11.9 mm      |
| 167-369* | 1125 mm    | 11.9 mm      |
| 167-370  | 1150 mm    | 11.9 mm      |
| 167-371* | 1175 mm    | 11.9 mm      |
| 167-372* | 1200 mm    | 11.9 mm      |
| 167-373  | 1225 mm    | 11.9 mm      |
| 167-374* | 1250 mm    | 11.9 mm      |
| 167-375  | 1275 mm    | 11.9 mm      |
| 167-376  | 1300 mm    | 11.9 mm      |
| 167-377  | 1325 mm    | 11.9 mm      |
| 167-378* | 1350 mm    | 11.9 mm      |
| 167-379  | 1375 mm    | 11.9 mm      |
| 167-380  | 1400 mm    | 11.9 mm      |
| 167-381  | 1425 mm    | 11.9 mm      |
| 167-382* | 1450 mm    | 11.9 mm      |
| 167-383* | 1475 mm    | 11.9 mm      |
| 167-384  | 1500 mm    | 11.9 mm      |
| 167-385* | 1525 mm    | 11.9 mm      |
| 167-386* | 1550 mm    | 11.9 mm      |
| 167-387  | 1575 mm    | 11.9 mm      |
| 167-388* | 1600 mm    | 11.9 mm      |
| 167-389* | 1625 mm    | 11.9 mm      |
| 167-390* | 1650 mm    | 11.9 mm      |
| 167-391* | 1675 mm    | 11.9 mm      |
| 167-392  | 1700 mm    | 11.9 mm      |
| 167-393* | 1725 mm    | 11.9 mm      |
| 167-394* | 1750 mm    | 11.9 mm      |
| 167-395* | 1775 mm    | 11.9 mm      |
| 167-396* | 1800 mm    | 11.9 mm      |
| 167-397* | 1825 mm    | 11.9 mm      |
| 167-398* | 1850 mm    | 11.9 mm      |
| 167-399* | 1875 mm    | 11.9 mm      |
| 167-400  | 1900 mm    | 11.9 mm      |
| 167-401* | 1925 mm    | 11.9 mm      |
| 167-402  | 1950 mm    | 11.9 mm      |
| 167-403* | 1975 mm    | 11.9 mm      |
| 167-404  | 2000 mm    | 11.9 mm      |

### Specifications

|                    |                           |
|--------------------|---------------------------|
| Accuracy           | $\pm(1+L/50) \mu\text{m}$ |
| Flatness           | 0,3 $\mu\text{m}$         |
| Parallelism        | 2 $\mu\text{m}$           |
| Measuring surfaces | Micro-lap finish          |

# Micrometer Setting Standards Inch

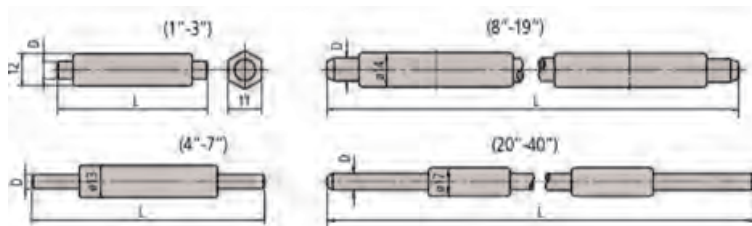
## Series 167

- Designed for the accurate setting of outside micrometers at one end or the other of the measuring range.



### Inch

| No.      | Length (L) | Diameter (D) | Accuracy  |
|----------|------------|--------------|-----------|
| 167-141  | 1"         | 0.25"        | ±0.00005" |
| 167-142  | 2"         | 0.25"        | ±0.0001"  |
| 167-143  | 3"         | 0.25"        | ±0.0001"  |
| 167-144  | 4"         | 0.31"        | ±0.0001"  |
| 167-145  | 5"         | 0.31"        | ±0.00015" |
| 167-146  | 6"         | 0.31"        | ±0.00015" |
| 167-147  | 7"         | 0.31"        | ±0.00015" |
| 167-148  | 8"         | 0.37"        | ±0.00015" |
| 167-149  | 9"         | 0.37"        | ±0.0002"  |
| 167-150  | 10"        | 0.37"        | ±0.0002"  |
| 167-151  | 11"        | 0.37"        | ±0.0002"  |
| 167-152* | 12"        | 0.37"        | ±0.00025" |
| 167-153  | 13"        | 0.37"        | ±0.00025" |
| 167-154* | 14"        | 0.37"        | ±0.00025" |
| 167-155* | 15"        | 0.37"        | ±0.00025" |
| 167-156  | 16"        | 0.37"        | ±0.00025" |
| 167-157* | 17"        | 0.37"        | ±0.00025" |
| 167-158* | 18"        | 0.37"        | ±0.00025" |
| 167-159  | 19"        | 0.37"        | ±0.0003"  |
| 167-160* | 20"        | 0.47"        | ±0.0003"  |
| 167-161* | 21"        | 0.47"        | ±0.0003"  |
| 167-162* | 22"        | 0.47"        | ±0.0003"  |
| 167-163* | 23"        | 0.47"        | ±0.0003"  |
| 167-164* | 24"        | 0.47"        | ±0.0003"  |
| 167-165* | 25"        | 0.47"        | ±0.00035" |
| 167-166* | 26"        | 0.47"        | ±0.00035" |
| 167-167* | 27"        | 0.47"        | ±0.00035" |
| 167-168* | 28"        | 0.47"        | ±0.00035" |
| 167-169* | 29"        | 0.47"        | ±0.00035" |
| 167-170* | 30"        | 0.47"        | ±0.00035" |
| 167-171* | 31"        | 0.47"        | ±0.00035" |
| 167-172* | 32"        | 0.47"        | ±0.00035" |
| 167-173* | 33"        | 0.47"        | ±0.00035" |
| 167-174* | 34"        | 0.47"        | ±0.00035" |
| 167-175* | 35"        | 0.47"        | ±0.00035" |
| 167-176* | 36"        | 0.47"        | ±0.00035" |
| 167-177* | 37"        | 0.47"        | ±0.0004"  |
| 167-178* | 38"        | 0.47"        | ±0.0004"  |
| 167-179* | 39"        | 0.47"        | ±0.0004"  |
| 167-180* | 40"        | 0.47"        | ±0.0004"  |



## Specifications

|                       |   |
|-----------------------|---|
| Accuracy              | Refer to the list of specifications<br>(Tolerance on deviation of measured<br>central length from nominal at 20°C.) |
| Flatness              | 0,3 μm  |
| Parallelism           | 2 μm  |
| Measuring<br>surfaces | Micro-lap finish  |

# Standards for Screw Thread Micrometers

## Series 167

- Specially designed for the accurate setting of Screw Thread Micrometers.



### Metric Angle 55°

| No.      | Length | Accuracy |
|----------|--------|----------|
| 167-272  | 25 mm  | ±4 μm    |
| 167-273  | 50 mm  | ±5 μm    |
| 167-274  | 75 mm  | ±6 μm    |
| 167-275  | 100 mm | ±7 μm    |
| 167-276  | 125 mm | ±8 μm    |
| 167-277* | 150 mm | ±9 μm    |
| 167-278  | 175 mm | ±10 μm   |
| 167-279  | 200 mm | ±11 μm   |
| 167-280* | 225 mm | ±12 μm   |
| 167-281  | 250 mm | ±13 μm   |
| 167-282* | 275 mm | ±14 μm   |

### Metric Angle 60°

| No.      | Length | Accuracy |
|----------|--------|----------|
| 167-261  | 25 mm  | ±4 μm    |
| 167-262  | 50 mm  | ±5 μm    |
| 167-263  | 75 mm  | ±6 μm    |
| 167-264  | 100 mm | ±7 μm    |
| 167-265  | 125 mm | ±8 μm    |
| 167-266  | 150 mm | ±9 μm    |
| 167-267  | 175 mm | ±10 μm   |
| 167-268* | 200 mm | ±11 μm   |
| 167-269* | 225 mm | ±12 μm   |
| 167-270* | 250 mm | ±13 μm   |
| 167-271  | 275 mm | ±14 μm   |

### Inch Angle 55°

| No.      | Length | Accuracy  |
|----------|--------|-----------|
| 167-283* | 1"     | ±0.00015" |
| 167-284* | 2"     | ±0.0002"  |
| 167-285* | 3"     | ±0.00025" |
| 167-286* | 4"     | ±0.0003"  |
| 167-287* | 5"     | ±0.0004"  |

### Inch Angle 60°

| No.      | Length | Accuracy  |
|----------|--------|-----------|
| 167-294* | 1"     | ±0.00015" |
| 167-295* | 2"     | ±0.0002"  |
| 167-296* | 3"     | ±0.00025" |
| 167-297* | 4"     | ±0.0003"  |
| 167-298* | 5"     | ±0.0004"  |

## Specifications

Accuracy Refer to the list of specifications

# Setting Standards for V-Anvil Micrometers

## Specifications

Accuracy Refer to the list of specifications

## Series 167

- Designed for the accurate setting of V-anvil micrometers.



167-329

### Metric

| No.      | Diameter | Accuracy |
|----------|----------|----------|
| 167-327  | 5 mm     | ±2 μm    |
| 167-328  | 10 mm    | ±2 μm    |
| 167-329  | 25 mm    | ±2 μm    |
| 167-330* | 40 mm    | ±3 μm    |
| 167-331* | 55 mm    | ±3 μm    |
| 167-332  | 70 mm    | ±3 μm    |
| 167-333  | 85 mm    | ±3 μm    |

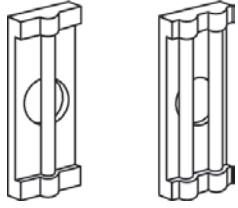
### Inch

| No.      | Diameter | Accuracy  |
|----------|----------|-----------|
| 167-337* | 0.2"     | ±0.0001"  |
| 167-338* | 0.4"     | ±0.0001"  |
| 167-339* | 1"       | ±0.0001"  |
| 167-340* | 1.6"     | ±0.00015" |
| 167-341* | 2.2"     | ±0.00015" |
| 167-342* | 2.8"     | ±0.00015" |
| 167-343* | 3.4"     | ±0.00015" |

# 3-Wire units

## Series 313

- The measuring wires are hardened and precision lapped. They are placed onto spindle and anvil of an outside micrometer.
- The three-wire measuring process is applied to determine the pitch diameter of threads and is considered as one of the most accurate measuring procedures for this application.



313-101

Wire in set

| No.     | Support diameter |
|---------|------------------|
| 313-101 | 6.35             |

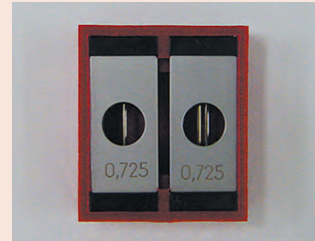
Details of N° 313-101

Wire delivered by pair for ø 6,35

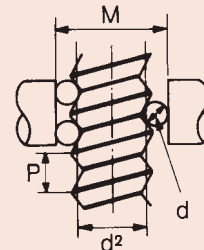
| No.    | Measuring wire ø mm |
|--------|---------------------|
| 952131 | 0.17                |
| 952132 | 0.195               |
| 952133 | 0.22                |
| 952134 | 0.25                |
| 952135 | 0.29                |
| 952136 | 0.335               |
| 952137 | 0.39                |
| 952138 | 0.455               |
| 952139 | 0.53                |
| 952140 | 0.62                |
| 952141 | 0.725               |
| 952142 | 0.895               |
| 952143 | 1.1                 |
| 952144 | 1.35                |
| 952145 | 1.65                |
| 952146 | 2.05                |
| 952147 | 2.55                |
| 952148 | 3.2                 |

## Specifications

|                              |  |
|------------------------------|--|
| Roundness of wires           | 0,5 µm   |
| Cylindricity of wires        | 1 µm   |
| Hardness of wires            | 63-66 HRC  |
| Accuracy of wire diameter    | ±2 µm  |
| Tolerance of measuring wires | ±1 µm  |
| Contents                     | 18 pairs of wires ø 0,170 mm up to ø 3,200 mm (313-101) Including wooden box (313-101) |
| Delivered                    |  |



9521XX



$P$  = thread pitch  
 $d_0$  = measuring wire Ø  
 $d_2$  = pitch diameter  
 $M$  = theoretical dimension at measuring pressure  $\delta$   
 $\alpha$  = pitch angle  
 $\delta$  = Correction factor

$$M = d_2 + \frac{d_0}{\sin \frac{\alpha}{2}} - \frac{P}{2 \tan \frac{\alpha}{2}} + d_0 + \delta$$

$$\delta = \frac{d_0}{2} \frac{p^2}{\pi^2} \frac{\cos \frac{\alpha}{2} \cdot \cot \frac{\alpha}{2}}{d_2^2}$$

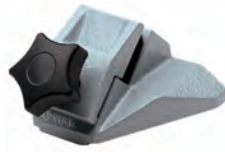
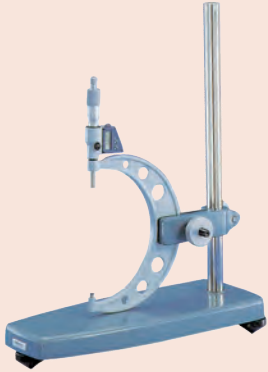
| ø Nominal | Thread pitch P | Pitch ø d2 | Measuring wire ø dD | Measurement over wire M | (M-d2) |
|-----------|----------------|------------|---------------------|-------------------------|--------|
| M 1       | 0,25           | 0,838      | 0,170               | 1,133                   | 0,295  |
| M 1,2     | 0,25           | 1,038      | 0,170               | 1,332                   | 0,294  |
| M 1,4     | 0,30           | 1,205      | 0,170               | 1,456                   | 0,251  |
| M 1,7     | 0,35           | 1,473      | 0,220               | 1,831                   | 0,358  |
| M 2       | 0,40           | 1,740      | 0,250               | 2,145                   | 0,405  |
| M 2,3     | 0,40           | 2,040      | 0,250               | 2,444                   | 0,404  |
| M 2,6     | 0,45           | 2,308      | 0,290               | 2,789                   | 0,481  |
| M 3       | 0,50           | 2,675      | 0,290               | 3,113                   | 0,438  |
| M 3,5     | 0,60           | 3,110      | 0,335               | 3,596                   | 0,486  |
| M 4       | 0,70           | 3,545      | 0,455               | 4,305                   | 0,760  |
| M 5       | 0,80           | 4,480      | 0,455               | 5,153                   | 0,673  |
| M 6       | 1,00           | 5,350      | 0,620               | 6,346                   | 0,996  |
| M 8       | 1,25           | 7,188      | 0,725               | 8,282                   | 1,094  |
| M 10      | 1,50           | 9,026      | 0,895               | 10,414                  | 1,388  |
| M 12      | 1,75           | 10,863     | 1,100               | 12,650                  | 1,787  |

| ø Nominal | Thread pitch P | Pitch ø d2 | Measuring wire ø dD | Measurement over wire M | (M-d2) |
|-----------|----------------|------------|---------------------|-------------------------|--------|
| M 14      | 2,00           | 12,701     | 1,350               | 15,021                  | 2,320  |
| M 16      | 2,00           | 14,701     | 1,350               | 17,021                  | 2,320  |
| M 20      | 2,50           | 18,376     | 1,650               | 21,163                  | 2,787  |
| M 22      | 2,50           | 20,376     | 1,650               | 23,163                  | 2,787  |
| M 24      | 3,00           | 22,051     | 2,050               | 25,606                  | 3,555  |
| M 27      | 3,00           | 25,051     | 2,050               | 28,605                  | 3,554  |
| M 30      | 3,50           | 27,727     | 2,050               | 30,848                  | 3,121  |
| M 33      | 3,50           | 30,727     | 2,050               | 33,848                  | 3,121  |
| M 36      | 4,00           | 33,402     | 2,550               | 37,591                  | 4,189  |
| M 39      | 4,00           | 36,402     | 2,550               | 40,590                  | 4,188  |
| M 42      | 4,50           | 39,077     | 2,550               | 42,832                  | 3,755  |
| M 45      | 4,50           | 42,077     | 2,550               | 45,832                  | 3,755  |
| M 48      | 5,00           | 44,752     | 3,200               | 50,025                  | 5,273  |
| M 52      | 5,00           | 48,752     | 3,200               | 54,024                  | 5,272  |
| M 56      | 5,50           | 52,428     | 3,200               | 57,267                  | 4,839  |
| M 60      | 5,50           | 56,428     | 3,200               | 61,267                  | 4,839  |

# Micrometer Stands

## Series 156

- Keeps both hands free for operating the micrometer and positioning the workpiece.
- Designed for batch or mass production measurements in manufacturing and quality assurance.



156-105-10

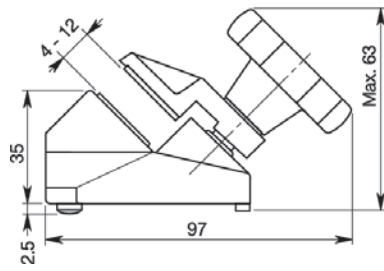


156-101-10

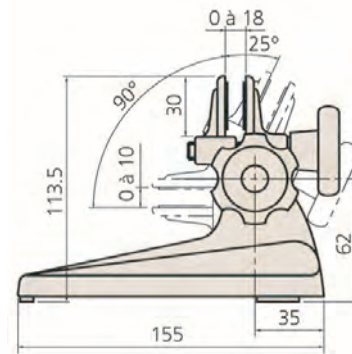


156-102

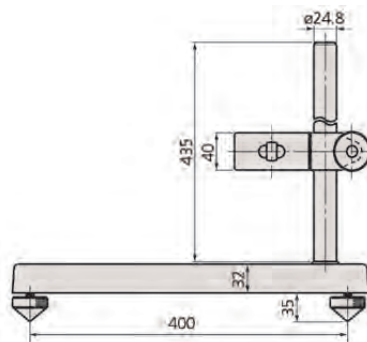
| No.        | Micrometer ranges    | Remarks               | Mass g |
|------------|----------------------|-----------------------|--------|
| 156-105-10 | 0-50 mm (0-2")       | Fixed angle type 45°  | 700    |
| 156-101-10 | Up to 100 mm (4")    | Adjustable angle type | 1,210  |
| 156-102    | 100-300 mm (5-12")   | Vertical type         | 9,000  |
| 156-103*   | 300-1000 mm (12-40") | Vertical type         | 8,500  |



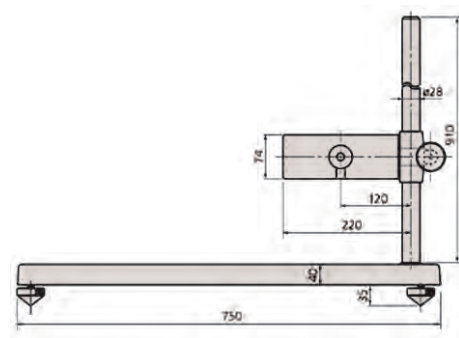
156-105-10



156-101-10



156-102



156-103

# Colour Coded Ratchets and Speeders

## Micrometer accessories



Colour-coded ratchets



Colour-coded speeders for Ratchet Thimble Micrometer series 102-7XX and Quantumike



Colour-coded ratchets for analogue micrometer 0-300 mm

| No.      | Color  |
|----------|--------|
| 985056   | Black  |
| 985061   | Red    |
| 985081   | Blue   |
| 985071   | Yellow |
| 985076   | Green  |
| 985066   | Brown  |
| 04GZA239 | Grey   |

Colour-coded speeders for series 293

| No.      | Color |
|----------|-------|
| 04GZA241 | Grey  |

Colour-coded ratchets for analogue micrometer 300-1000 mm

| No.      | Color |
|----------|-------|
| 04GZA243 | Grey  |

Colour-coded speeders for series 102-7XX and Quantumike

| No.      | Color  |
|----------|--------|
| 04AAB208 | Grey   |
| 04GAA899 | Black  |
| 04GAA900 | Red    |
| 04GAA901 | Yellow |
| 04GAA902 | Green  |
| 04GAA903 | Blue   |

# Micrometer Oil

## Micrometer accessory



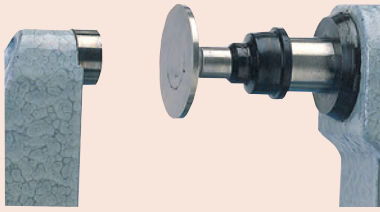
207000

| No.    | Mass g |
|--------|--------|
| 207000 | 30     |

## Specifications

Tip length

10 mm  $\pm$  5  $\mu$ m



208066

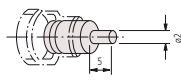
# Spindle attachment tips

## Micrometer accessories

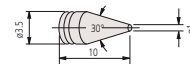
- For use on a micrometer spindle to provide economical adaptation for particular measurement applications.
- To mount on micrometer anvils  $\varnothing$  6,35 mm.
- Available individually.



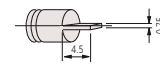
| No.    | Omschrijving |
|--------|--------------|
| 208062 | Spline       |
| 208063 | Spherical    |
| 208064 | Knife edge   |
| 208065 | Knife edge   |
| 208066 | Tray         |



208062



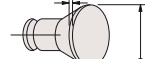
208063



208064



208065



208066

# Ball attachment

## Micrometer accessories

- Ball attachment to fit micrometer anvils ( $\varnothing$  6,35 mm only)



101468E



Sample application

### Metric

| No.      | $\varnothing$ ball |
|----------|--------------------|
| 101468M* | 5 mm               |

### Inch

| No.      | $\varnothing$ ball |
|----------|--------------------|
| 101468E* | 0.2"               |



# Optical parallels

## Series 157

- Designed to inspect the measuring faces of micrometers for parallelism and flatness by optical interference.
- Each set consists of 4 sizes designed for testing at each quarter revolution.



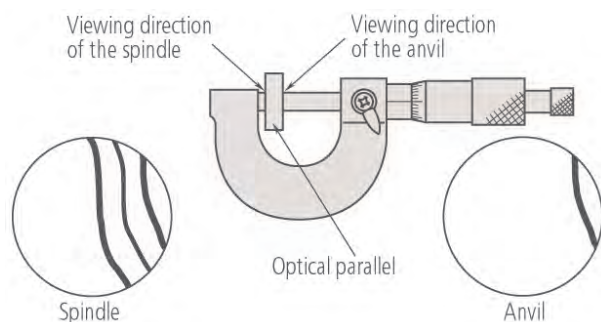
157-903

### Metric

| No.     | Contents | Range of micrometer to be checked | Sizes of parallels included in set |
|---------|----------|-----------------------------------|------------------------------------|
| 157-903 | 157-101  | 0-25 mm                           | 12 mm                              |
|         | 157-102  |                                   | 12.12 mm                           |
|         | 157-103  |                                   | 12.25 mm                           |
|         | 157-104  |                                   | 12.37 mm                           |
| 157-904 | 157-105  | 25-50 mm                          | 25 mm                              |
|         | 157-106  |                                   | 25.12 mm                           |
|         | 157-107  |                                   | 25.25 mm                           |
|         | 157-108  |                                   | 25.37 mm                           |

### Inch

| No.      | Range of micrometer to be checked | Sizes of parallels included in set |
|----------|-----------------------------------|------------------------------------|
| 157-901* | 0-1"                              | 0.5"                               |
|          |                                   | 0.5062"                            |
|          |                                   | 0.5125"                            |
|          |                                   | 0.5187"                            |
| 157-902* | 1-2"                              | 1"                                 |
|          |                                   | 1.0062"                            |
|          |                                   | 1.0125"                            |
|          |                                   | 1.0187"                            |



Testing a micrometer for flatness and parallelism of anvil and spindle faces : flatness is indicated by straightness and regular spacing of interference fringes, and parallelism by how many fringes are visible.

### Specifications

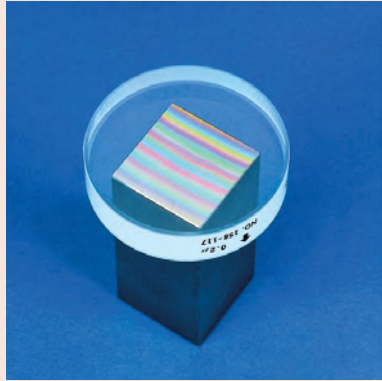
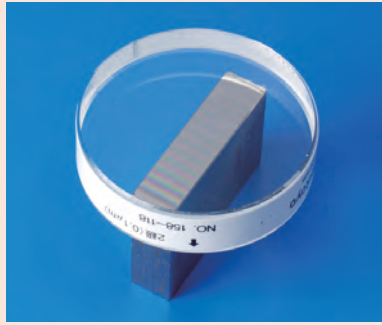
|             |        |
|-------------|--------|
| Flatness    | 0,1 μm |
| Parallelism | 0,2 μm |
| Diameter    | 30 mm  |



# Optical flats

## Series 158

- The essential tool for testing flatness of reflective surfaces such as gauge blocks, setting standards, etc, by the method of optical interference.



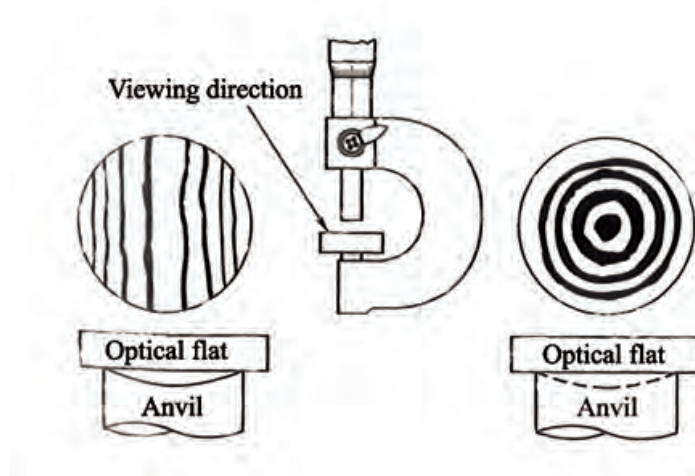
158-118

### Metric

| No.      | Flatness grade    | Diameter/Thickness |
|----------|-------------------|--------------------|
| 158-117* | 0,2 $\mu\text{m}$ | 45 mm/12 mm        |
| 158-119* | 0,2 $\mu\text{m}$ | 60 mm/15 mm        |
| 158-118  | 0,1 $\mu\text{m}$ | 45 mm/12 mm        |
| 158-120  | 0,1 $\mu\text{m}$ | 60 mm/15 mm        |

### Inch

| No.      | Flatness grade | Diameter/Thickness |
|----------|----------------|--------------------|
| 158-121  | 0.000008"      | 1.8"/0.5"          |
| 158-122  | 0.000004"      | 1.8"/0.5"          |
| 158-123  | 0.000008"      | 2.4"/0.6"          |
| 158-124* | 0.000004"      | 2.4"/0.6"          |



# Digimatic Caliper Jaw Inside Micrometer

## Series 345

- Measuring surfaces in carbide, micro-lap finish.



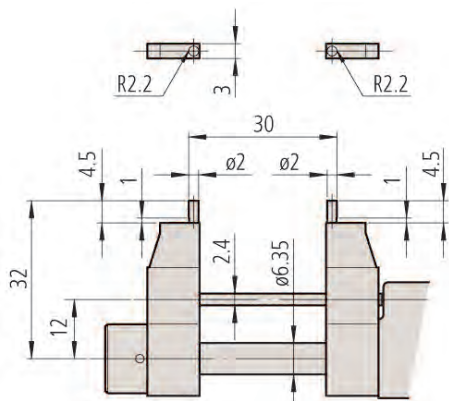
345-250-10

### Metric

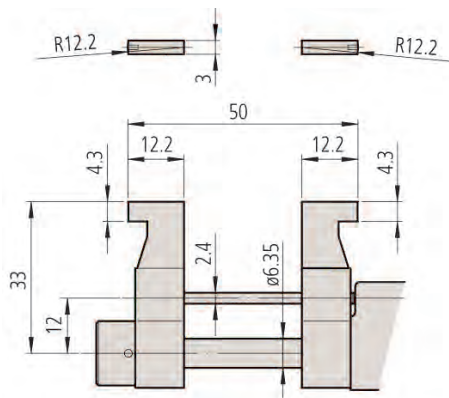
| No.        | Range    | Accuracy | Mass g |
|------------|----------|----------|--------|
| 345-250-10 | 5-30 mm  | ±5 μm    | 305    |
| 345-251-10 | 25-50 mm | ±6 μm    | 310    |

### Inch/Metric

| No.         | Range    | Accuracy  | Mass g |
|-------------|----------|-----------|--------|
| 345-350-10* | 0.2-1.2" | ±0.00025" | 305    |
| 345-351-10* | 1-2"     | ±0.0003"  | 310    |



345-250-10



345-251-10

| Functions         | Series 345 |
|-------------------|------------|
| Data Output       | ●          |
| 2 Preset          | ●          |
| Auto Power OFF    | ●          |
| DATA/HOLD         | ●          |
| Low voltage alarm | ●          |
| Function lock     | ●          |

### Specifications

|                   |  |
|-------------------|--|
| Accuracy          | Refer to the list of specifications (excluding quantizing error) |
| Resolution        | 0,001 mm or 0,001 mm / 0.00005", LCD display                     |
| Scales            | Thimble and sleeve satin chrome finish, ø18 mm                   |
| Measuring spindle | Spindle pitch 0,5 mm with spindle lock                           |
| Measuring force   | 5-10 N   |
| Delivered         | Including box, key, 1 battery                                    |

### Optional accessories

| No.       | Description                          |
|-----------|--------------------------------------|
| 05CZA662  | Signal cable 1 m with data button    |
| 05CZA663  | Signal cable 2 m with data button    |
| 06ADV380B | Signal cable 2 m USB                 |
| 02AZD790B | Signal cable U-Wave with data button |

### Consumable spares

| No.    | Description  |
|--------|--------------|
| 938882 | Battery SR44 |

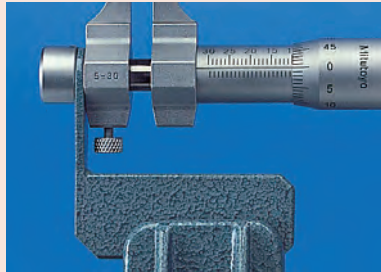
# Caliper Jaw Inside Micrometer

## Series 145

- Measuring jaws are offset to enable inside measurements to be made.
- Measuring surfaces in carbide, micro-lap finish.

## Specifications

|                   |   |
|-------------------|---|
| Accuracy          | Refer to the list of specifications                         |
| Graduation        | 0,001 mm or 0.001"  |
| Scales            | Thimble and sleeve satin chrome finish, $\varnothing 18$ mm |
| Measuring spindle | Spindle pitch 0,5 mm with spindle lock                      |
| Measuring force   | 5-10 N  |
| Delivered         | Including box, key  |



For 145-185, 145-186, 145-193, 145-194



145-185



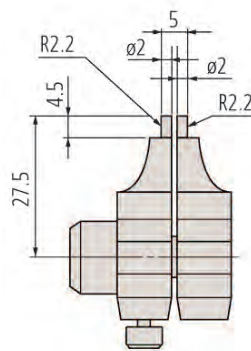
145-187

## Metric

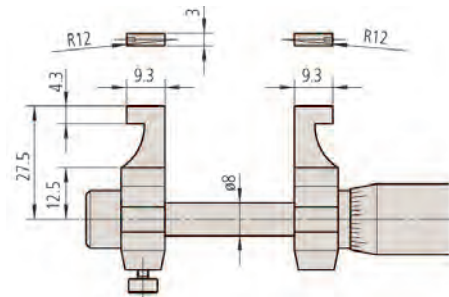
| No.      | Range      | Accuracy             | Mass g |
|----------|------------|----------------------|--------|
| 145-185  | 5-30 mm    | $\pm 5 \mu\text{m}$  | 130    |
| 145-186  | 25-50 mm   | $\pm 6 \mu\text{m}$  | 140    |
| 145-187  | 50-75 mm   | $\pm 7 \mu\text{m}$  | 160    |
| 145-188  | 75-100 mm  | $\pm 8 \mu\text{m}$  | 180    |
| 145-189  | 100-125 mm | $\pm 9 \mu\text{m}$  | 210    |
| 145-190  | 125-150 mm | $\pm 9 \mu\text{m}$  | 230    |
| 145-191  | 150-175 mm | $\pm 10 \mu\text{m}$ | 250    |
| 145-192  | 175-200 mm | $\pm 10 \mu\text{m}$ | 270    |
| 145-217* | 200-225 mm | $\pm 11 \mu\text{m}$ | 310    |
| 145-218* | 225-250 mm | $\pm 11 \mu\text{m}$ | 330    |
| 145-219* | 250-275 mm | $\pm 12 \mu\text{m}$ | 350    |
| 145-220* | 275-300 mm | $\pm 12 \mu\text{m}$ | 370    |

## Inch

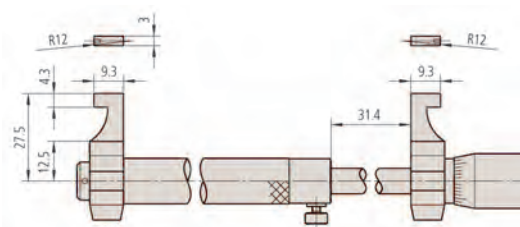
| No.      | Range    | Accuracy        | Mass g |
|----------|----------|-----------------|--------|
| 145-193  | 0.2-1.2" | $\pm 0.00025$ " | 130    |
| 145-194  | 1-2"     | $\pm 0.0003$ "  | 140    |
| 145-195* | 2-3"     | $\pm 0.00035$ " | 160    |
| 145-196* | 3-4"     | $\pm 0.0004$ "  | 180    |



145-185



145-186



50 mm or more

# Inside Micrometer

## Series 133

### Tubular Inside Micrometer

Lightweight design due to tubular construction.



133-147

#### Metric

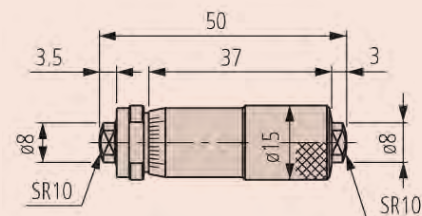
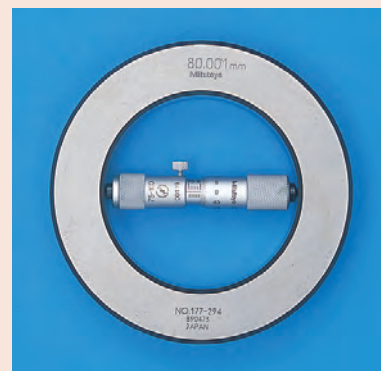
| No.      | Range       | Accuracy | L mm | a mm | b mm | Mass g |
|----------|-------------|----------|------|------|------|--------|
| 133-143  | 50-75 mm    | ±3 μm    |      |      |      | 50     |
| 133-144  | 75-100 mm   | ±4 μm    |      |      |      | 75     |
| 133-145  | 100-125 mm  | ±5 μm    | 100  | 5    | 3    | 130    |
| 133-146  | 125-150 mm  | ±5 μm    | 125  | 5    | 3    | 160    |
| 133-147  | 150-175 mm  | ±5 μm    | 150  | 18   | 15   | 170    |
| 133-148  | 175-200 mm  | ±5 μm    | 175  | 18   | 15   | 180    |
| 133-149  | 200-225 mm  | ±5 μm    | 200  | 18   | 15   | 200    |
| 133-150  | 225-250 mm  | ±6 μm    | 225  | 18   | 15   | 210    |
| 133-151  | 250-275 mm  | ±6 μm    | 250  | 18   | 15   | 235    |
| 133-152  | 275-300 mm  | ±6 μm    | 275  | 18   | 15   | 245    |
| 133-153  | 300-325 mm  | ±7 μm    | 300  | 18   | 15   | 265    |
| 133-154  | 325-350 mm  | ±7 μm    | 325  | 18   | 15   | 285    |
| 133-155  | 350-375 mm  | ±7 μm    | 350  | 18   | 15   | 300    |
| 133-156  | 375-400 mm  | ±8 μm    | 375  | 18   | 15   | 315    |
| 133-157  | 400-425 mm  | ±8 μm    | 400  | 18   | 15   | 330    |
| 133-158* | 425-450 mm  | ±8 μm    | 425  | 18   | 15   | 340    |
| 133-159* | 450-475 mm  | ±9 μm    | 450  | 18   | 15   | 360    |
| 133-160* | 475-500 mm  | ±9 μm    | 475  | 18   | 15   | 370    |
| 133-161* | 500-525 mm  | ±9 μm    | 500  | 18   | 15   | 390    |
| 133-162* | 525-550 mm  | ±10 μm   | 525  | 18   | 15   | 400    |
| 133-163* | 550-575 mm  | ±10 μm   | 550  | 18   | 15   | 410    |
| 133-164* | 575-600 mm  | ±10 μm   | 575  | 18   | 15   | 415    |
| 133-165* | 600-625 mm  | ±11 μm   | 600  | 18   | 15   | 430    |
| 133-166* | 625-650 mm  | ±11 μm   | 625  | 18   | 15   | 450    |
| 133-167* | 650-675 mm  | ±11 μm   | 650  | 18   | 15   | 470    |
| 133-168* | 675-700 mm  | ±12 μm   | 675  | 18   | 15   | 480    |
| 133-169* | 700-725 mm  | ±12 μm   | 700  | 18   | 15   | 500    |
| 133-170* | 725-750 mm  | ±12 μm   | 725  | 18   | 15   | 510    |
| 133-171  | 750-775 mm  | ±13 μm   | 750  | 18   | 15   | 520    |
| 133-172* | 775-800 mm  | ±13 μm   | 775  | 18   | 15   | 540    |
| 133-173* | 800-825 mm  | ±13 μm   | 800  | 18   | 15   | 555    |
| 133-174* | 825-850 mm  | ±14 μm   | 825  | 18   | 15   | 570    |
| 133-175* | 850-875 mm  | ±14 μm   | 850  | 18   | 15   | 590    |
| 133-176* | 875-900 mm  | ±14 μm   | 875  | 18   | 15   | 600    |
| 133-177* | 900-925 mm  | ±15 μm   | 900  | 18   | 15   | 620    |
| 133-178* | 925-950 mm  | ±15 μm   | 925  | 18   | 15   | 630    |
| 133-179* | 950-975 mm  | ±15 μm   | 950  | 18   | 15   | 650    |
| 133-180* | 975-1000 mm | ±16 μm   | 975  | 18   | 15   | 670    |

#### Inch

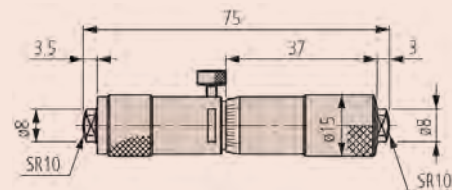
| No.      | Range  | Accuracy  | Mass g |
|----------|--------|-----------|--------|
| 133-223* | 2-3"   | ±0.00015" | 50     |
| 133-224* | 3-4"   | ±0.0002"  | 75     |
| 133-225* | 4-5"   | ±0.00025" | 130    |
| 133-226* | 5-6"   | ±0.00025" | 160    |
| 133-227* | 6-7"   | ±0.00025" | 170    |
| 133-228* | 7-8"   | ±0.00025" | 180    |
| 133-229* | 8-9"   | ±0.00025" | 200    |
| 133-230* | 9-10"  | ±0.0003"  | 210    |
| 133-231* | 10-11" | ±0.0003"  | 235    |
| 133-232* | 11-12" | ±0.0003"  | 245    |

#### Specifications

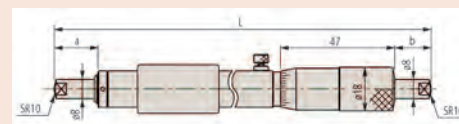
|                    |  |
|--------------------|--|
| Accuracy           | Refer to the list of specifications            |
| Graduation         | 0,01 mm or 0.001"                              |
| Scales             | Thimble and sleeve satin chrome finish, Ø18 mm |
| Measuring surfaces | Carbide tipped, crown lapped                   |
| Measuring spindle  | Spindle pitch 0,5 mm with spindle lock         |
| Delivered          | Including box, insulation (from 100 mm), key   |



133-143



133-144



From 100 mm to 1000 mm

# Inside Micrometer

## Series 133

### Tubular Inside Micrometer

Lightweight design due to tubular construction.

#### Specifications

|                    |  |
|--------------------|--|
| Graduation         | 0,01 mm or 0.001"                              |
| Scales             | Thimble and sleeve satin chrome finish, Ø18 mm |
| Measuring surfaces | Carbide tipped, crown lapped                   |
| Measuring spindle  | Spindle pitch 0,5 mm with spindle lock         |
| Delivered          | Including box, insulation (from 100 mm), key   |



133-902

#### Metric

##### Micrometer set

| No.     | Range     | Models included                    | Mass g |
|---------|-----------|------------------------------------|--------|
| 133-901 | 50-150 mm | 133-143/44/45/46                   | 415    |
| 133-902 | 50-300 mm | 133-143/44/45/46/47/48/49/50/51/52 | 1,655  |

#### Inch

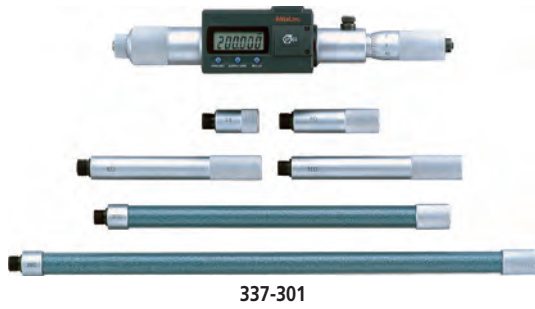
##### Micrometer set

| No.      | Range | Models included                    | Mass g |
|----------|-------|------------------------------------|--------|
| 133-903* | 2-6"  | 133-223/24/25/26                   | 420    |
| 133-904* | 2-12" | 133-223/24/25/26/27/28/29/30/31/32 | 620    |

# Inside Micrometer

## Series 337

- Digimatic type, with data output.
- Measuring surfaces in carbide.

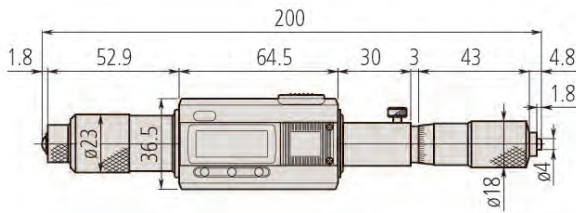


### Metric

| No.     | Range       | Extension rods                        | Mass g |
|---------|-------------|---------------------------------------|--------|
| 337-301 | 200-1000 mm | 6 (25, 50, 100 (2 pcs.), 200, 300 mm) | 1,040  |
| 337-302 | 200-1500 mm | 7 (25, 50, 100, 200, 300 (3 pcs.))    | 1,410  |

### Inch/Metric

| No.      | Range | Extension rods               | Mass g |
|----------|-------|------------------------------|--------|
| 337-303* | 8-40" | 6 (1, 2, 4 (2 pcs.), 8, 12") | 1,040  |
| 337-304* | 8-60" | 7 (1, 2, 4, 8, 12" (3 pcs.)) | 1,410  |



Micrometer Head for series 337

| Functions         | Series 337 |
|-------------------|------------|
| Data Output       | ●          |
| ZERO/ABS          | ●          |
| 2 Preset          | ●          |
| Auto Power OFF    | ●          |
| DATA/HOLD         | ●          |
| Low voltage alarm | ●          |
| Function lock     | ●          |

### Specifications

|                   |  |
|-------------------|--|
| Accuracy          | $\pm(3+n+L/50) \mu\text{m}$ (1)<br>Excluding quantizing error<br>$\pm[0.00015+0.00005n+0.00005 (L/2)]''$<br>(1)n = Number of rod or pipe,<br>L = Maximum measuring length (mm) |
| Resolution        | 0,001 mm or 0,001 mm / 0.0001", LCD display  |
| Scales            | Thimble and sleeve satin chrome finish, $\varnothing 18$ mm  |
| Measuring spindle | Spindle pitch 0,5 mm   |
| Measuring span    | 25 mm or 1"  |
| Extension         | $\varnothing 12,5$ mm  |
| Delivered         | Including box, key, 1 battery  |

### Optional accessories

| No.       | Description                          |
|-----------|--------------------------------------|
| 05CZA662  | Signal cable 1 m with data button    |
| 05CZA663  | Signal cable 2 m with data button    |
| 06ADV380B | Signal cable 2 m USB                 |
| 02AZD790B | Signal cable U-Wave with data button |
| 337-101   | Digimatic Tubular Inside Micrometer  |

### Optional accessory for Inch

|         |                                     |
|---------|-------------------------------------|
| 337-102 | Digimatic Tubular Inside Micrometer |
|---------|-------------------------------------|

### Consumable spares

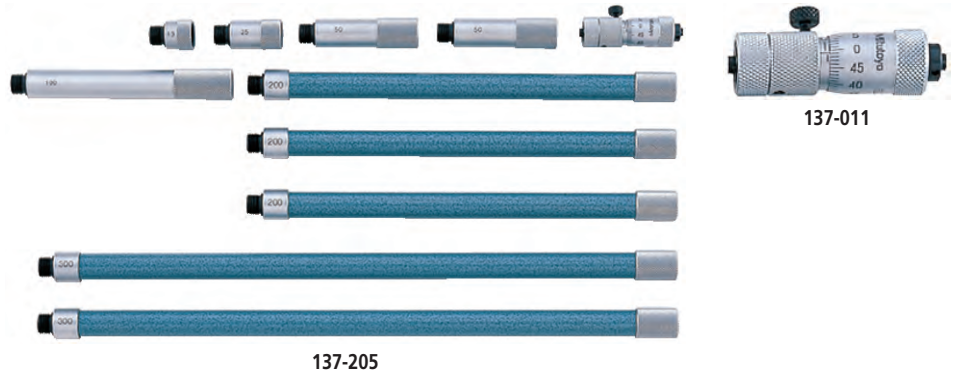
| No.    | Description      |
|--------|------------------|
| 980521 | Extension 25 mm  |
| 980523 | Extension 50 mm  |
| 980525 | Extension 100 mm |
| 980529 | Extension 200 mm |
| 980531 | Extension 300 mm |
| 938882 | Battery SR44     |



# Inside Micrometer

## Series 137

### Extension Rod Type



### Specifications

|                   |   |
|-------------------|---|
| Accuracy          | $\pm(3+n+L/50) \mu\text{m}^{(*)}$<br>$\pm[0.00015+0.00005n+0.00005(L/2)]''$<br>(*)n = Number of rod,<br>L = Maximum measuring length (mm) |
| Graduation        | 0,001 mm or 0.001''   |
| Scales            | Thimble and sleeve satin chrome finish, $\phi 15$ mm  |
| Measuring spindle | Spindle pitch 0,5 mm  |
| Measuring span    | 13 mm or 0.5''  |
| Extension         | $\phi 12,5$ mm  |
| Delivered         | Including box, key  |

### Optional accessories

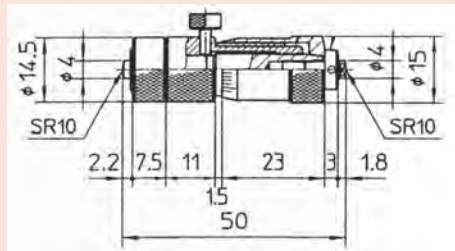
| No.     | Description                                      |
|---------|--|
| 137-011 | Inside Micrometer                                |
| 137-013 | Inside Micrometer with carbide measuring surface |

### Optional accessories for Inch

|         |  |
|---------|--|
| 137-012 | Inside Micrometer                                |
| 137-014 | Inside Micrometer with carbide measuring surface |

### Consumable spares

| No.    | Description      |
|--------|------------------|
| 980505 | Extension 13 mm  |
| 980507 | Extension 25 mm  |
| 980509 | Extension 50 mm  |
| 980511 | Extension 100 mm |
| 980515 | Extension 200 mm |
| 980517 | Extension 300 mm |



Micrometer Head for series 137

### Metric Hardened

| No.     | Range      | Extension rods   | Mass g |
|---------|------------|--|--------|
| 137-201 | 50-150 mm  | 3 (13, 25, 50 mm)  | 145    |
| 137-202 | 50-300 mm  | 5 (13, 25, 50 (2 pcs.), 100 mm)                              | 305    |
| 137-203 | 50-500 mm  | 6 (13, 25, 50 (2 pcs.), 100, 200 mm)                         | 460    |
| 137-204 | 50-1000 mm | 8 (13, 25, 50 (2 pcs.), 100, 200 (2 pcs.), 300 mm)           | 845    |
| 137-205 | 50-1500 mm | 10 (13, 25, 50 (2 pcs.), 100, 200 (3 pcs.), 300 mm (2 pcs.)) | 1,225  |

### Metric With carbide measuring surface

| No.     | Range      | Extension rods   | Mass g |
|---------|------------|--|--------|
| 137-206 | 50-150 mm  | 3 (13, 25, 50 mm)  | 145    |
| 137-207 | 50-300 mm  | 5 (13, 25, 50 (2 pcs.), 100 mm)                              | 305    |
| 137-208 | 50-500 mm  | 6 (13, 25, 50 (2 pcs.), 100, 200 mm)                         | 460    |
| 137-209 | 50-1000 mm | 8 (13, 25, 50 (2 pcs.), 100, 200 (2 pcs.), 300 mm)           | 845    |
| 137-210 | 50-1500 mm | 10 (13, 25, 50 (2 pcs.), 100, 200 (3 pcs.), 300 mm (2 pcs.)) | 1,225  |

### Inch Hardened

| No.      | Range | Extension rods                                       | Mass g |
|----------|-------|--|--------|
| 137-211* | 2-6"  | 3 (0.5, 1, 2")                                       | 145    |
| 137-212  | 2-12" | 5 (0.5, 1, 2 (2 pcs.), 4")                           | 305    |
| 137-213  | 2-20" | 6 (0.5, 1, 2 (2 pcs.), 4, 8")                        | 460    |
| 137-214* | 2-40" | 8 (0.5, 1, 2 (2 pcs.), 4, 8 (2 pcs.), 12")           | 845    |
| 137-215* | 2-60" | 10 (0.5, 1, 2 (2 pcs.), 4, 8 (3 pcs.), 12" (2 pcs.)) | 1,225  |

### Inch With carbide measuring surface

| No.      | Range | Extension rods                                       | Mass g |
|----------|-------|--|--------|
| 137-216* | 2-6"  | 3 (0.5, 1, 2")                                       | 145    |
| 137-217* | 2-12" | 5 (0.5, 1, 2 (2 pcs.), 4")                           | 305    |
| 137-218* | 2-20" | 6 (0.5, 1, 2 (2 pcs.), 4, 8")                        | 460    |
| 137-219* | 2-40" | 8 (0.5, 1, 2 (2 pcs.), 4, 8 (2 pcs.), 12")           | 845    |
| 137-220* | 2-60" | 10 (0.5, 1, 2 (2 pcs.), 4, 8 (3 pcs.), 12" (2 pcs.)) | 1,225  |



# Digimatic Inside Micrometer

## Series 339

- Digimatic type with data output and extension tubes, with heat insulation.
- Measuring surfaces in carbide.

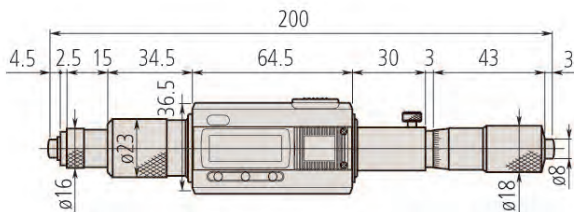


### Metric

| No.     | Range       | Extension rods                                 | Mass g |
|---------|-------------|--|--------|
| 339-301 | 200-1000 mm | 5 (25, 50, 100, 200, 400 mm)                   | 1,050  |
| 339-302 | 200-2000 mm | 8 (25, 50, 100, 200 (2 pcs.), 400 mm (3 pcs.)) | 1,800  |

### Inch/Metric

| No.     | Range | Extension rods                        | Mass g |
|---------|-------|---------------------------------------|--------|
| 339-303 | 8-40" | 5 (1, 2, 4, 8, 16")                   | 1,050  |
| 339-304 | 8-80" | 8 (1, 2, 4, 8 (2 pcs.), 16" (3 pcs.)) | 1,800  |



Micrometer Head for series 339

| Functions         | Series 339 |
|-------------------|------------|
| Data Output       | ●          |
| ZERO/ABS          | ●          |
| 2 Preset          | ●          |
| Auto Power OFF    | ●          |
| DATA/HOLD         | ●          |
| Low voltage alarm | ●          |
| Function lock     | ●          |

### Specifications

|                   |   |
|-------------------|---|
| Accuracy          | $\pm(3+n+L/50) \mu\text{m}^{(1)}$<br>Excluding quantizing error<br>$\pm[0.00015+0.00005n+0.00005 (L/2)]''$<br>( <sup>1</sup> )n = Number of rod or pipe,<br>L = Maximum measuring length (mm) |
| Resolution        | 0,001 mm or 0,001 mm / 0.0001", LCD display   |
| Scales            | Thimble and sleeve satin chrome finish, $\phi 18$ mm  |
| Measuring spindle | Spindle pitch 0,5 mm  |
| Measuring span    | 25 mm or 1"   |
| Extension         | $\phi 17$ mm  |
| Delivered         | Including box, key, 1 battery   |

### Optional accessories

| No.                                | Description                          |
|------------------------------------|--------------------------------------|
| 05CZA662                           | Signal cable 1 m with data button    |
| 05CZA663                           | Signal cable 2 m with data button    |
| 06ADV380E                          | Signal cable 2 m USB                 |
| 02AZD790E                          | Signal cable U-Wave                  |
| 339-101                            | Digimatic Tubular Inside Micrometers |
| <b>Optional accessory for Inch</b> |                                      |
| 339-102                            | Digimatic Tubular Inside Micrometers |

### Consumable spares

| No.    | Description      |
|--------|------------------|
| 938882 | Battery SR44     |
| 981003 | Extension 25 mm  |
| 981005 | Extension 50 mm  |
| 981007 | Extension 100 mm |
| 981009 | Extension 200 mm |
| 981011 | Extension 400 mm |



# Inside Micrometer

## Series 139

### Extension Rod Type



139-177



139-001

### Specifications

|                    |   |
|--------------------|---|
| Accuracy           | $\pm(3+n+L/50) \mu\text{m}^{(1)}$<br>$\pm[0.00015+0.00005n+0.00005(L/2)]''$<br>( <sup>1</sup> )n = Number of rods,<br>L = Maximum measuring length (mm) |
| Graduation         | 0,01 mm or 0.001''  |
| Scales             | Thimble and sleeve satin chrome finish, $\phi 18$ mm  |
| Measuring surfaces | Carbide   |
| Measuring spindle  | Spindle pitch 0,5 mm  |
| Measuring span     | 25 mm or 1''  |
| Extension          | $\phi 17$ mm  |
| Delivered          | Including box, key  |

### Optional accessories

| No.  | Description                            |
|--|--|
| <b>Optional accessories for 139-203/204</b>      |  |
| 139-003  | Analogue inside micrometer for 139-203 |
| 139-005  | Analogue inside micrometer for 139-204 |
| <b>Optional accessory for 139-173 to 139-177</b> |  |
| 139-001  | Analogue inside micrometer for 139-17x |
| <b>Optional accessory for Inch</b>               |  |
| 139-002  | Analogue inside micrometer for Inch    |

### Consumable spares

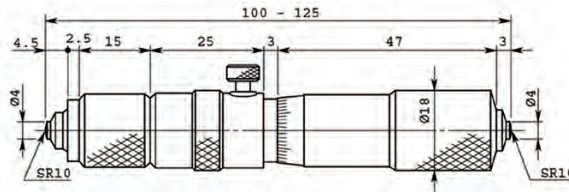
| No.    | Description      |
|--------|------------------|
| 981003 | Extension 25 mm  |
| 981005 | Extension 50 mm  |
| 981007 | Extension 100 mm |
| 981009 | Extension 200 mm |
| 981011 | Extension 400 mm |

### Metric

| No.     | Range       | Extension rods  | Mass g |
|---------|-------------|---|--------|
| 139-173 | 100-500 mm  | 4 (25, 50, 100, 200 mm)                               | 490    |
| 139-174 | 100-900 mm  | 5 (25, 50, 100, 200, 400 mm)                          | 790    |
| 139-175 | 100-1300 mm | 6 (25, 50, 100, 200, 400 mm (2 pcs.))                 | 1,090  |
| 139-176 | 100-1700 mm | 7 (25, 50, 100, 200, 400 mm (3 pcs.))                 | 1,390  |
| 139-177 | 100-2100 mm | 8 (25, 50, 100, 200, 400 mm (4 pcs.))                 | 1,690  |
| 139-203 | 40-300 mm   | 8 (10, 20, 30, 60, 90, 110, 120, 130 mm)              | 240    |
| 139-204 | 100-1000 mm | 10 (25, 50, 75, 150, 225, 300, 350, 400, 425, 450 mm) | 770    |

### Inch

| No.     | Range | Extension rods               | Mass g |
|---------|-------|------------------------------|--------|
| 139-178 | 4-20" | 4 (1, 2, 4, 8")              | 490    |
| 139-179 | 4-36" | 5 (1, 2, 4, 8, 16")          | 790    |
| 139-180 | 4-52" | 6 (1, 2, 4, 8, 16" (2 pcs.)) | 1,090  |
| 139-181 | 4-68" | 7 (1, 2, 4, 8, 16" (3 pcs.)) | 1,390  |
| 139-182 | 4-84" | 8 (1, 2, 4, 8, 16" (4 pcs.)) | 1,690  |

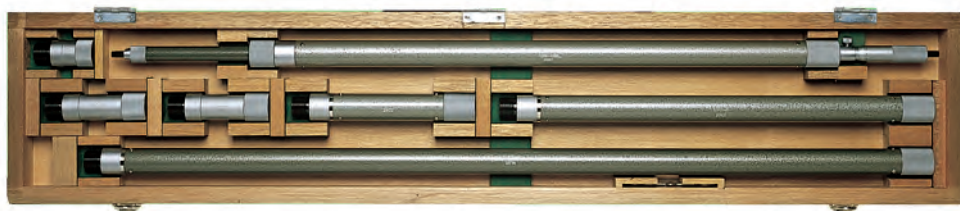


139-001

# Inside Micrometer

## Series 140

- Long range
- Extension Tube Type
- Measuring surfaces in carbide, micro-lap finish



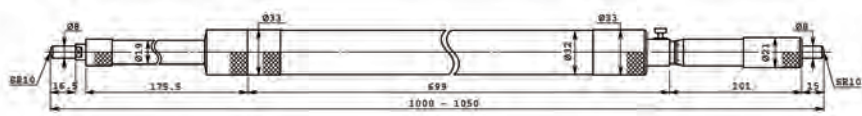
140-158

### Metric

| No.     | Range        | Extension rods                                   | Mass g |
|---------|--------------|--|--------|
| 140-157 | 1000-2000 mm | 5 (50, 100 (2 pcs.), 200, 500 mm)                | 3,700  |
| 140-158 | 1000-3000 mm | 6 (50, 100 (2 pcs.), 200, 500, 1000 mm)          | 5,200  |
| 140-159 | 1000-4000 mm | 7 (50, 100 (2 pcs.), 200, 500, 1000 mm (2 pcs.)) | 6,700  |
| 140-160 | 1000-5000 mm | 8 (50, 100 (2 pcs.) 200, 500, 1000 mm (3 pcs.))  | 8,260  |

### Inch

| No.      | Range   | Extension rods                         | Mass g |
|----------|---------|--|--------|
| 140-161* | 40-80"  | 5 (2, 4, (2 pcs.), 8, 20")             | 3,900  |
| 140-162* | 40-120" | 6 (2, 4 (2 pcs.), 8, 20, 40")          | 5,400  |
| 140-163* | 40-160" | 7 (2, 4 (2 pcs.), 8, 20, 40" (2 pcs.)) | 7,200  |
| 140-164* | 40-200" | 8 (2, 4 (2 pcs.), 8, 20, 40" (3 pcs.)) | 9,000  |



Micrometer Head for series 140

## Specifications

|                   |  |
|-------------------|--|
| Accuracy          | $\pm(7+n+L/50) \mu\text{m}^{(*)}$<br>$\pm[0.00035+0.00005n+0.00005 (L/50)]''$<br>(*)n = Number of rods,<br>L = Maximum measuring length (mm) |
| Graduation        | 0,01 mm  |
| Scales            | Thimble and sleeve satin chrome finish, $\varnothing 21$ mm  |
| Measuring spindle | Spindle pitch 0,5 mm   |
| Measuring span    | 50 mm or 2"  |
| Extension         | $\varnothing 32$ mm  |
| Delivered         | Including box, key   |

## Consumable spares

| No.      | Description       |
|----------|-------------------|
| 04GZA394 | Extension 50 mm   |
| 04GZA396 | Extension 100 mm  |
| 04GZA398 | Extension 200 mm  |
| 04GZA400 | Extension 500 mm  |
| 04GZA402 | Extension 1000 mm |

# Inside Micrometer

## Series 141

- Large range.
- Interchangeable measuring rods enable inside measurements up to 1000 mm / 40'.
- Practical handle to aid measuring deep bores included in sets up to 300 mm range.



When using one of the extension rods supplied

141-101

### Metric

| No.     | Range       | Head adjustment range | Measuring inserts | Extension case | Accessories: inside micrometer (standard in the set) No. | Mass g |
|---------|-------------|-----------------------|-------------------|----------------|--|--------|
| 141-001 | 25-32 mm    | 7 mm                  |                   |                |  | 20     |
| 141-101 | 25-50 mm    | 7 mm                  | 2 (12 mm)         | 1 (6 mm)       | 141-001  | 60     |
| 141-025 | 50-63 mm    | 13 mm                 |                   |                |  | 40     |
| 141-205 | 50-200 mm   | 13 mm                 | 3 (50 mm)         | 1 (12 mm)      | 141-025  | 125    |
| 141-206 | 50-300 mm   | 13 mm                 | 5 (50 mm)         | 1 (12 mm)      | 141-025  | 275    |
| 141-009 | 200-225 mm  | 25 mm                 |                   |                |  | 220    |
| 141-117 | 200-500 mm  | 25 mm                 | 3 (100 mm)        | 2 (25/50 mm)   | 141-009  | 520    |
| 141-118 | 200-1000 mm | 25 mm                 | 8 (100 mm)        | 2 (25/50 mm)   | 141-009  | 1,940  |

### Metric

With carbide measuring surface

| No.      | Range      | Head adjustment range | Measuring inserts | Extension case | Accessories: inside micrometer (standard in the set) No. | Mass g |
|----------|------------|-----------------------|-------------------|----------------|--|--------|
| 141-003  | 25-32 mm   | 7 mm                  |                   |                |  | 20     |
| 141-103  | 25-50 mm   | 7 mm                  | 2 (12 mm)         | 1 (6 mm)       | 141-003  | 60     |
| 141-027  | 50-63 mm   | 13 mm                 |                   |                |  | 40     |
| 141-211* | 50-200 mm  | 13 mm                 | 3 (50 mm)         | 1 (12 mm)      | 141-027  | 125    |
| 141-212  | 50-300 mm  | 13 mm                 | 5 (50 mm)         | 1 (12 mm)      | 141-027  | 275    |
| 141-011* | 200-225 mm | 25 mm                 |                   |                |  | 220    |

### Inch

| No.      | Range   | Head adjustment range | Remarks     | Mass g |
|----------|---------|-----------------------|-------------|--------|
| 141-002* | 1-1.25" | 0.25"                 | -           | 20     |
| 141-102  | 1-2"    | 0.25"                 | With 2 rods | 60     |
| 141-026* | 2-2.5"  | 0.5"                  | -           | 275    |
| 141-208  | 2-8"    | 0.5"                  | With 3 rods | 125    |
| 141-233  | 2-12"   | 0.5"                  | With 5 rods | 275    |
| 141-010* | 8-9"    | 1"                    | -           | 220    |
| 141-121  | 4-20"   | 1"                    | With 3 rods | 520    |
| 141-122  | 4-40"   | 1"                    | With 8 rods | 1,940  |

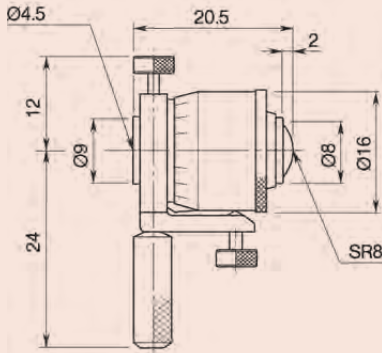
### Inch

With carbide measuring surface

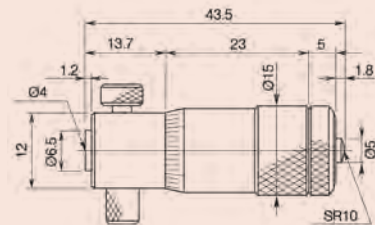
| No.      | Range   | Head adjustment range | Remarks     | Mass g |
|----------|---------|-----------------------|-------------|--------|
| 141-004* | 1-1.25" | 0.25"                 | -           | 20     |
| 141-104* | 1-2"    | 0.25"                 | With 2 rods | 60     |
| 141-028  | 2-2.5"  | 0.5"                  | -           | 125    |
| 141-214* | 2-8"    | 0.5"                  | With 3 rods | 125    |
| 141-215* | 2-12"   | 0.5"                  | With 5 rods | 275    |
| 141-012* | 8-9"    | 1"                    | -           | 220    |

## Specifications

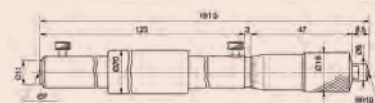
|                    |  |
|--------------------|--|
| Accuracy           | $\pm(6+L/50) \mu\text{m}$ , L = Maximum measuring length (mm)<br>$\pm[0.0003+0.00005 (L/2)]''$ |
| Graduation Scales  | 0,01 mm or 0.001"  |
| Measuring surfaces | Thimble and sleeve satin chrome finish<br>Hardened   |
| Measuring spindle  | Spindle pitch 0,5 mm with spindle lock   |
| Delivered          | Including box, key   |



141-001/003



141-025/027



141-009

# Gauge Set

## Series 154 - Small Hole Gauge Set

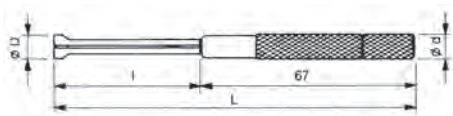
- Designed to be locked in position (with knurled lockscrew) and the diameter measured across the two lobes with a micrometer after withdrawal from the hole.

### Metric

| No.     | Gauges included | Range     | ø D mm   | L     | ø d mm | l mm | Mass g |
|---------|-----------------|-----------|----------|-------|--------|------|--------|
| 154-902 | 154-101         | 3-5 mm    | 2.8-5.2  | 90    | 5.5    | 22.5 | 17     |
|         | 154-102         | 5-7.5 mm  | 4.8-7.8  | 97.6  | 5.5    | 30   | 17     |
|         | 154-103         | 7.5-10 mm | 7.3-10.3 | 102.8 | 8.5    | 35   | 36     |
|         | 154-104         | 10-13 mm  | 9.8-13.2 | 108   | 8.5    | 40   | 45     |

### Inch

| No.     | Gauges included | Range      | ø D mm   | L     | ø d mm | l mm | Mass g |
|---------|-----------------|------------|----------|-------|--------|------|--------|
| 154-901 | 154-105         | 0.125-0.2" | 2.8-5.2  | 90    | 5.5    | 22.5 | 17     |
|         | 154-106         | 0.2-0.3"   | 4.8-7.8  | 97.6  | 5.5    | 30   | 17     |
|         | 154-107         | 0.3-0.4"   | 7.3-10.3 | 102.8 | 8.5    | 35   | 36     |
|         | 154-108         | 0.4-0.5"   | 9.8-13.2 | 108   | 8.5    | 40   | 45     |



## Series 155 - Telescopic Gauge Set

- Self-centering and satin chrome finish.
- Constant spring force on to the measuring surface. Locked in position by knurled lockscrew.

### Metric



| No.     | Gauges included | Range      | a mm | b mm | c mm | d mm | Mass g |
|---------|-----------------|------------|------|------|------|------|--------|
| 155-905 | 155-127         | 8-12.7 mm  | 110  | 4    | 3    | 5    | 15     |
|         | 155-128         | 12.7-19 mm | 110  | 5    | 3.5  | 5.5  | 25     |
|         | 155-129         | 19-32 mm   | 110  | 5    | 3.5  | 5.5  | 35     |
|         | 155-130         | 35-54 mm   | 150  | 7.5  | 6    | 8    | 75     |
|         | 155-131         | 54-90 mm   | 150  | 7.5  | 6    | 8    | 80     |
|         | 155-132         | 90-150 mm  | 150  | 7.5  | 6    | 8    | 100    |

### Inch

| No.     | Gauges included | Range       | a mm | b mm | c mm | d mm | Mass g |
|---------|-----------------|-------------|------|------|------|------|--------|
| 155-903 | 155-121         | 0.313-0.5"  | 110  | 4    | 3    | 5    | 15     |
|         | 155-122         | 0.5-0.75"   | 110  | 5    | 3.5  | 5.5  | 25     |
|         | 155-123         | 0.75-1.25"  | 110  | 5    | 3.5  | 5.5  | 35     |
|         | 155-124         | 1.25-2.125" | 150  | 7.5  | 6    | 8    | 75     |
|         | 155-125         | 2.125-3.5"  | 150  | 7.5  | 6    | 8    | 80     |
|         | 155-126         | 3.5-6"      | 150  | 7.5  | 6    | 8    | 100    |

## Series 184 - Thickness Gauge

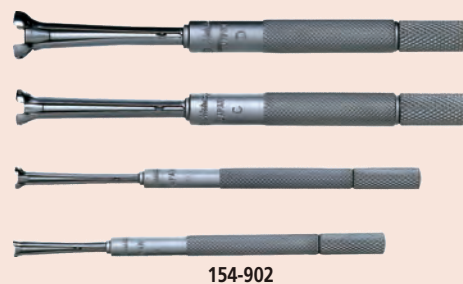
- Size clearly stamped on each leaf.
- Leaves are easy to remove and can be individually locked open.

### Metric

| No.      | Range                        | Number of leaves | Leaf length | Accuracy   |
|----------|------------------------------|------------------|-------------|--|
| 184-304S | 0.05-1.0 mm by 0.05 mm steps | 20               | 150 mm      | 0.05 up to 0.15 mm : ±0.005 mm<br>0.20 up to 0.50 mm : ±0.012 mm<br>0.55 up to 1.00 mm : ±0.020 mm |

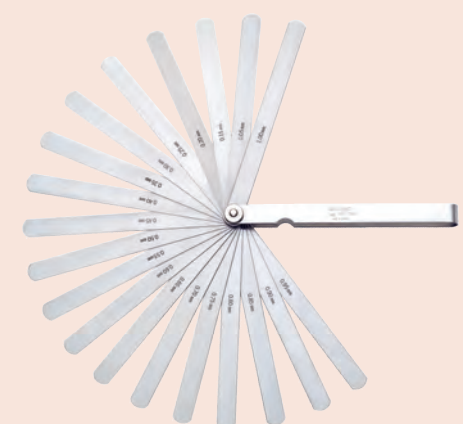
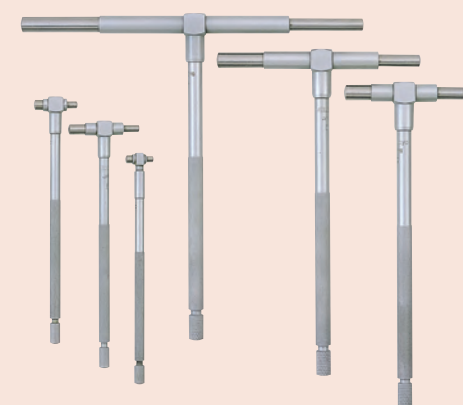
### Specifications

Delivered Including plastic wallet



### Specifications

Delivered Including plastic wallet



# Bore Gauge for Extra Small Holes

## Series 526

- A precision bore gauge for quick and accurate measurement of small hole diameters.
- The analogue indicator fitted to this instrument may be replaced by a customer-supplied Digimatic indicator if required.

### Specifications

|               |  |
|---------------|--|
| Accuracy      | 4 $\mu\text{m}$<br>6 $\mu\text{m}$ for range 10-18 mm/0.4-0.7" |
| Repeatability | 2 $\mu\text{m}$  |
| Delivered     | In box including plastic cover for Dial Indicator              |

### Optional accessories

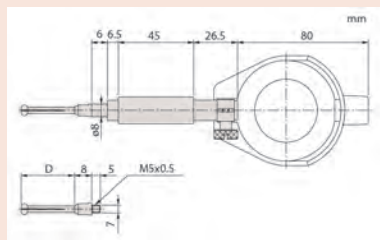
| No.        | Description   |
|------------|---|
| 543-264B   | ABSOLUTE Digimatic Indicator with Min Hold function |
| 215-120-10 | Quick Stand 110 mm                                  |

Setting rings are optional accessories. See Series 177 for details.

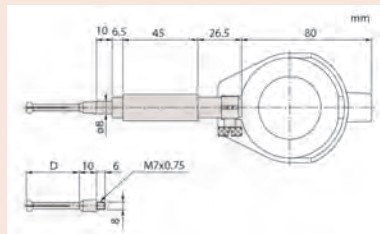


543-264B  
(optional)

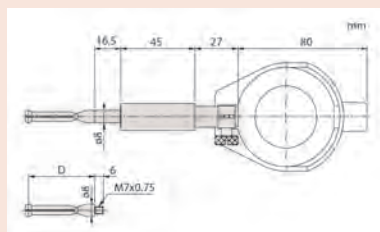
Quick stand (optional)  
No. 215-120-10



0,95 - 4 mm



3,7 - 7,3 mm



7 - 18 mm/0.3 - 0.7"

For details on indicators suitable for use with this instrument, refer to Dial Gauges section.



526-127

526-172-1

Plastic cover for  
Dial Indicator including

### Metric

| No.        | Range        | No. Dial Indicator | Graduation | Number of measuring heads | Measuring Depth (D)         |
|------------|--------------|--------------------|------------|---------------------------|-----------------------------|
| 526-173-1  | 0,95-1,55 mm | 2046SB             | 0,01 mm    | 5                         | 11,5 mm                     |
| 526-163-1* | 1,5-4 mm     | 2046SB             | 0,01 mm    | 9                         | 17,5-22,5 mm <sup>(1)</sup> |
| 526-153-1* | 3,7-7,3 mm   | 2046SB             | 0,01 mm    | 7                         | 32 mm                       |
| 526-126    | 7-10 mm      | 2046SB             | 0,01 mm    | 6                         | 40-56 mm <sup>(2)</sup>     |
| 526-127    | 10-18 mm     | 2046SB             | 0,01 mm    | 8                         | 62 mm                       |
| 526-172-1  | 0,95-1,55 mm | 2109SB-10          | 0,001 mm   | 5                         | 11,5 mm                     |
| 526-162-1* | 1,5-4 mm     | 2109SB-10          | 0,001 mm   | 9                         | 17,5-22,5 mm <sup>(1)</sup> |
| 526-152-1* | 3,7-7,3 mm   | 2109SB-10          | 0,001 mm   | 7                         | 32 mm                       |
| 526-124    | 7-10 mm      | 2109SB-10          | 0,001 mm   | 7                         | 40-56 mm <sup>(2)</sup>     |
| 526-125    | 10-18 mm     | 2109SB-10          | 0,001 mm   | 8                         | 62 mm                       |

<sup>(1)</sup> Holes  $\varnothing \leq 2,25$  mm : measuring depth 17,5 mm / holes  $\varnothing > 2,25$  mm : measuring depth 22,5 mm

<sup>(2)</sup> Holes  $\varnothing \leq 8$  mm : measuring depth 40 mm / holes  $\varnothing > 8$  mm : measuring depth 56 mm

### Inch

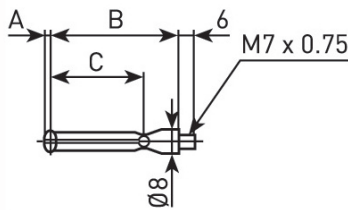
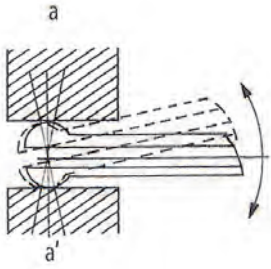
| No.      | Range    | No. Dial Indicator | Graduation | Number of measuring heads | Measuring Depth (D) |
|----------|----------|--------------------|------------|---------------------------|---------------------|
| 526-122  | 0.3-0.4" | 2923SB-10          | 0.0001"    | 6                         | 2.2"                |
| 526-123  | 0.4-0.7" | 2923SB-10          | 0.0001"    | 8                         | 2.4"                |
| 526-119* | 0.3-0.4" | 2922SB             | 0.0005"    | 6                         | 2.2"                |
| 526-120* | 0.4-0.7" | 2922SB             | 0.0005"    | 8                         | 2.4"                |

# Bore Gauge for Extra Small Holes

## Series 526

### Positioning of Bore Gauges

Bore Gauges for small holes feature contact points with a large curvature so they can be easily positioned for measuring the true diameter (in the direction a - a') of a hole. Bore Gauges (except those for small holes) are designed for easy alignment with the axis of the diameter to be measured.



526-124 / 125 / 126 / 127

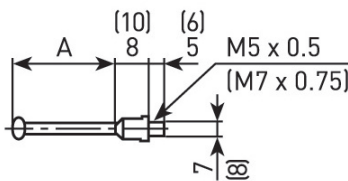
### Replacement contact points for Series 526

Replacement contact points for  
526-124 / 125 / 126 / 127

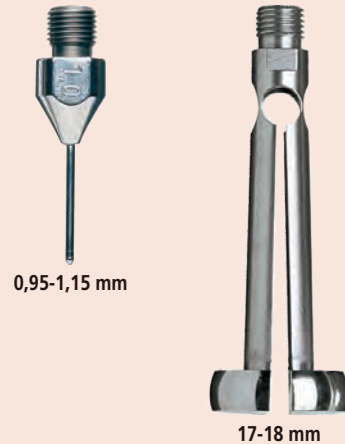
| No.    | Marking on the measuring head (engraved) | Range     | A mm | B mm | C mm |
|--------|--|-----------|------|------|------|
| 102469 | 1  | 7-7,50 mm | 1.8  | 40   | 29.2 |
| 102470 | 2  | 7,5-8 mm  | 1.8  | 40   | 29.2 |
| 102471 | 3  | 8-8,5 mm  | 1.8  | 40   | 29.2 |
| 102472 | 4  | 8,5-9 mm  | 1.8  | 40   | 29.2 |
| 102473 | 5  | 9-9,5 mm  | 1.8  | 40   | 29.2 |
| 102474 | 6  | 9,5-10 mm | 1.8  | 40   | 29.2 |
| 102454 | 1  | 10-12 mm  | 2.1  | 46   | 38   |
| 102455 | 2  | 11-12 mm  | 2.7  | 46   | 38   |
| 102456 | 3  | 12-13 mm  | 2.7  | 46   | 38   |
| 102457 | 4  | 13-14 mm  | 2.7  | 46   | 38   |
| 102458 | 5  | 14-15 mm  | 2.7  | 46   | 38   |
| 102459 | 6  | 15-16 mm  | 2.7  | 46   | 38   |
| 102460 | 7  | 16-17 mm  | 2.7  | 46   | 38   |
| 102461 | 8  | 17-18 mm  | 2.7  | 46   | 38   |

Replacement contact points for  
526-152-1 / 153-1 / 162-1 / 172-1 / 173-1

| No.    | Marking on the measuring head (engraved) | Range        | A mm |
|--------|--|--------------|------|
| 201414 | 1.0                                      | 0,95-1,15 mm | 11.5 |
| 201415 | 1.1                                      | 1,07-1,25 mm | 11.5 |
| 201416 | 1.2                                      | 1,17-1,35 mm | 11.5 |
| 201417 | 1.3                                      | 1,27-1,45 mm | 11.5 |
| 201418 | 1.4                                      | 1,37-1,55 mm | 11.5 |
| 201419 | 1.75                                     | 1,50-1,90 mm | 17.5 |
| 201420 | 2.0                                      | 1,80-2,20 mm | 17.5 |
| 201421 | 2.25                                     | 2,05-2,45 mm | 17.5 |
| 201422 | 2.5                                      | 2,25-2,75 mm | 22.5 |
| 201423 | 2.75                                     | 2,50-3 mm    | 22.5 |
| 201424 | 3.0                                      | 2,75-3,25 mm | 22.5 |
| 201425 | 3.25                                     | 3-3,50 mm    | 22.5 |
| 201426 | 3.5                                      | 3,25-3,75 mm | 22.5 |
| 201427 | 3.75                                     | 3,50-4 mm    | 22.5 |
| 201428 | 4.0                                      | 3,70-4,30 mm | 32   |
| 201429 | 4.5                                      | 4,20-4,80 mm | 32   |
| 201430 | 5.0                                      | 4,70-5,30 mm | 32   |
| 201431 | 5.5                                      | 5,20-5,80 mm | 32   |
| 201432 | 6.0                                      | 5,70-6,30 mm | 32   |
| 201433 | 6.5                                      | 6,20-6,80 mm | 32   |
| 201434 | 7.00                                     | 6,70-7,30 mm | 32   |



526-162-1 / 163-1  
526-172-1 / 173-1  
( ) 526-152-1 / 153-1



# Bore Gauge for Small Holes

## Series 511

- The interchangeable anvils used on this gauge are made of high-grade tool steel.
- The dial indicator is fully protected by a rugged cover.

### Specifications

|               |   |
|---------------|---|
| Accuracy      | 5 $\mu$ m   |
| Repeatability | 2 $\mu$ m   |
| Delivered     | In box including plastic cover for Dial Indicator |

### Optional accessories

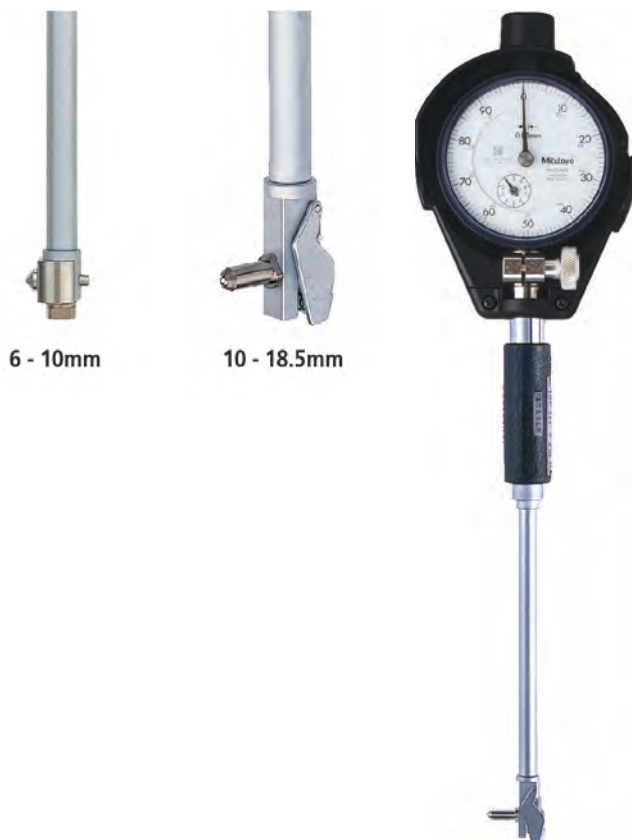
| No.      | Description   |
|----------|---|
| 543-264B | ABSOLUTE Digimatic Indicator with Min Hold function |



543-264B (optional)

See ABSOLUTE Digimatic Indicator ID-C for bore gauges later in this section for details.

For details on indicators suitable for use with this instrument, refer to the Dial Gauges section.



6 - 10mm

10 - 18.5mm

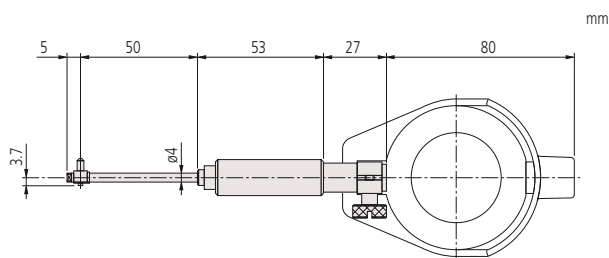
511-204

### Metric

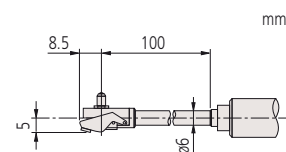
| No.     | Range      | Graduation | No. Dial Indicator | Number of measuring heads | Measuring depth | Mass g |
|---------|------------|------------|--------------------|---------------------------|-----------------|--------|
| 511-211 | 6-10 mm    | 0,01 mm    | 2046SB             | 9                         | 50 mm           | 255    |
| 511-204 | 10-18,5 mm | 0,01 mm    | 2046SB             | 9                         | 100 mm          | 264    |
| 511-210 | 6-10 mm    | 0,001 mm   | 2109SB-10          | 9                         | 50 mm           | 255    |
| 511-203 | 10-18,5 mm | 0,001 mm   | 2109SB-10          | 9                         | 100 mm          | 268    |

### Inch

| No.      | Range     | Graduation | No. Dial Indicator | Number of measuring heads | Measuring depth | Mass g |
|----------|-----------|------------|--------------------|---------------------------|-----------------|--------|
| 511-213* | 0.24-0.4" | 0.0005"    | 2922SB             | 9                         | 2"              | 260    |
| 511-207* | 0.4-0.74" | 0.0005"    | 2922SB             | 9                         | 4"              | 252    |
| 511-212* | 0.24-0.4" | 0.0001"    | 2923SB-10          | 9                         | 2"              | 260    |
| 511-206  | 0.4-0.74" | 0.0001"    | 2923SB-10          | 9                         | 4"              | 278    |



6-10 mm/0.24-0.4"



10-18,5 mm/0.4-0.74"



# Bore Gauge - Standard type

## Series 511

- Now offers a longer plunger stroke while maintaining original accuracy. Interchangeable washers 0,5 mm thick (standard accessories) are supplied to enable setting in small steps.
- Contact points are carbide, ensuring high durability and wear resistance.
- Large grip reduces heat transfer from the operator by 50%.



511-713



Example of set



Plastic cover for Dial Indicator including

### Metric

| No.     | Range      | Graduation | No. Dial Indicator | Number of measuring heads | Measuring depth | Mass g |
|---------|------------|------------|--------------------|---------------------------|-----------------|--------|
| 511-721 | 18-35 mm   | 0,001 mm   | 2109SB-10          | 9                         | 100 mm          | 330    |
| 511-722 | 35-60 mm   | 0,001 mm   | 2109SB-10          | 6                         | 150 mm          | 400    |
| 511-723 | 50-150 mm  | 0,001 mm   | 2109SB-10          | 11                        | 150 mm          | 420    |
| 511-724 | 100-160 mm | 0,001 mm   | 2109SB-10          | 13                        | 150 mm          | 480    |
| 511-725 | 160-250 mm | 0,001 mm   | 2109SB-10          | 6                         | 250 mm          | 850    |
| 511-726 | 250-400 mm | 0,001 mm   | 2109SB-10          | 5                         | 250 mm          | 945    |
| 511-711 | 18-35 mm   | 0,01 mm    | 2046SB             | 9                         | 100 mm          | 330    |
| 511-712 | 35-60 mm   | 0,01 mm    | 2046SB             | 6                         | 150 mm          | 400    |
| 511-713 | 50-150 mm  | 0,01 mm    | 2046SB             | 11                        | 150 mm          | 420    |
| 511-714 | 100-160 mm | 0,01 mm    | 2046SB             | 13                        | 150 mm          | 480    |
| 511-715 | 160-250 mm | 0,01 mm    | 2046SB             | 6                         | 250 mm          | 850    |
| 511-716 | 250-400 mm | 0,01 mm    | 2046SB             | 5                         | 250 mm          | 945    |

### Inch

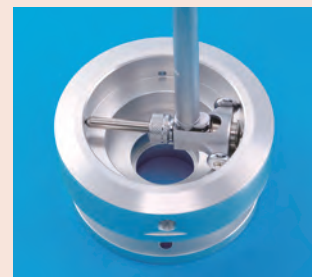
| No.      | Range    | Graduation | No. Dial Indicator | Number of measuring heads | Measuring depth | Mass g |
|----------|----------|------------|--------------------|---------------------------|-----------------|--------|
| 511-751  | 0.7-1.4" | 0.0001"    | 2923SB-10          | 9                         | 4"              | 330    |
| 511-752* | 1.4-2.5" | 0.0001"    | 2923SB-10          | 6                         | 6"              | 400    |
| 511-753  | 2-6"     | 0.0001"    | 2923SB-10          | 11                        | 6"              | 420    |
| 511-754  | 4-6.5"   | 0.0001"    | 2923SB-10          | 13                        | 6"              | 480    |
| 511-755  | 6.5-10"  | 0.0001"    | 2923SB-10          | 6                         | 10"             | 850    |
| 511-756  | 10-16"   | 0.0001"    | 2923SB-10          | 5                         | 10"             | 945    |
| 511-741* | 0.7-1.4" | 0.0005"    | 2922SB             | 9                         | 4"              | 330    |
| 511-742* | 1.4-2.5" | 0.0005"    | 2922SB             | 6                         | 6"              | 400    |
| 511-743  | 2-6"     | 0.0005"    | 2922SB             | 11                        | 6"              | 420    |
| 511-744* | 4-6.5"   | 0.0005"    | 2922SB             | 13                        | 6"              | 480    |
| 511-745  | 6.5-10"  | 0.0005"    | 2922SB             | 6                         | 10"             | 850    |
| 511-746* | 10-16"   | 0.0005"    | 2922SB             | 5                         | 10"             | 945    |

## Specifications

|               |   |
|---------------|---|
| Accuracy      | 2 µm/0.00008"                                     |
| Repeatability | 0,5 µm/0.00002"                                   |
| Delivered     | In box including plastic cover for Dial Indicator |

## Optional accessories

| No.      | Description   |
|----------|---|
| 543-264B | ABSOLUTE Digimatic Indicator with Min Hold function |
| 953549   | Extension 125 mm for range 18-35 mm/ 0.7-1.4"       |
| 953550   | Extension 250 mm for range 18-35 mm/ 0.7-1.4"       |
| 953551   | Extension 500 mm for range 18-35 mm/ 0.7-1.4"       |
| 953552   | Extension 125 mm for range 35-160mm/ 1.4-6.5"       |
| 953553   | Extension 250 mm for range 35-160mm/ 1.4-6.5"       |
| 953554   | Extension 500 mm for range 35-160mm/ 1.4-6.5"       |
| 953555   | Extension 750 mm for range 35-160mm/ 1.4-6.5"       |
| 953556   | Extension 1000 mm for range 35-160mm/1.4-6.5"       |
| 953557   | Extension 125 mm for range 160-800mm/6-32"          |
| 953558   | Extension 500 mm for range 160-800mm/6-32"          |
| 953559   | Extension 750 mm for range 160-800mm/6-32"          |
| 953560   | Extension 1000 mm for range 160-800mm/6-32"         |
| 952361   | Extension 250 mm for range 160-800mm/6-32"          |



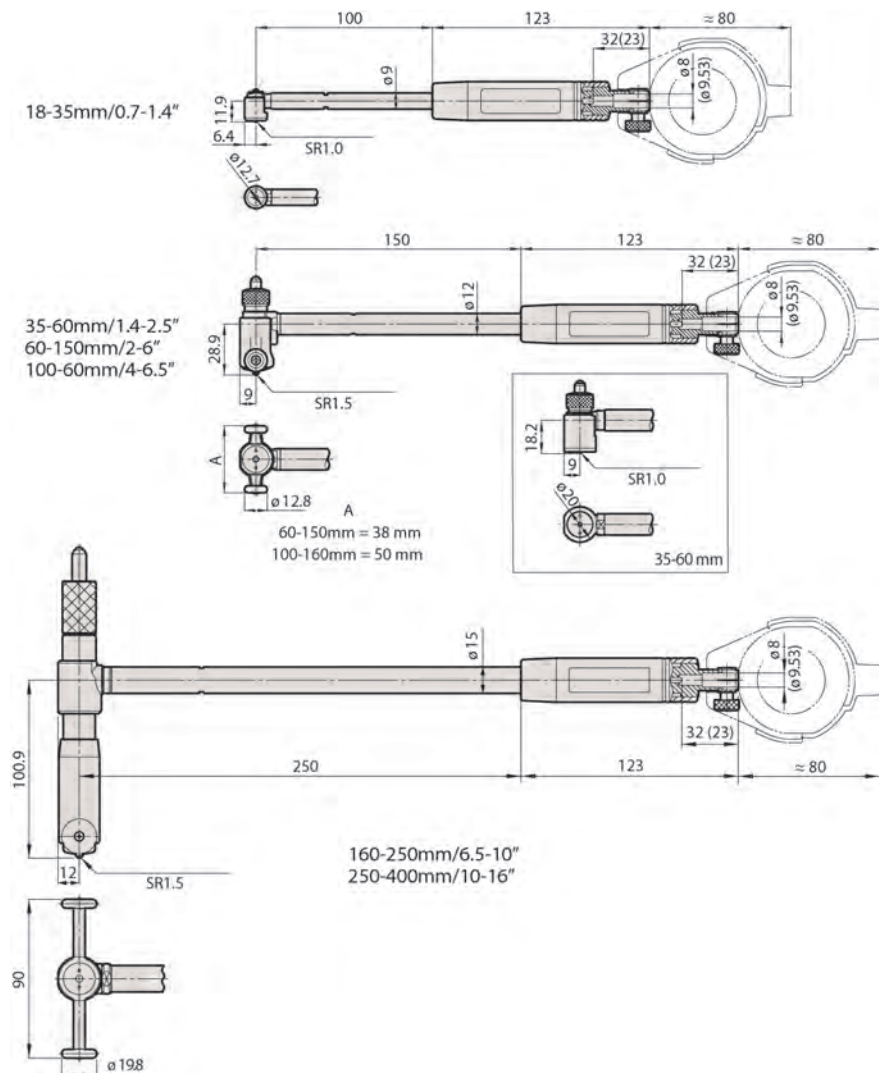
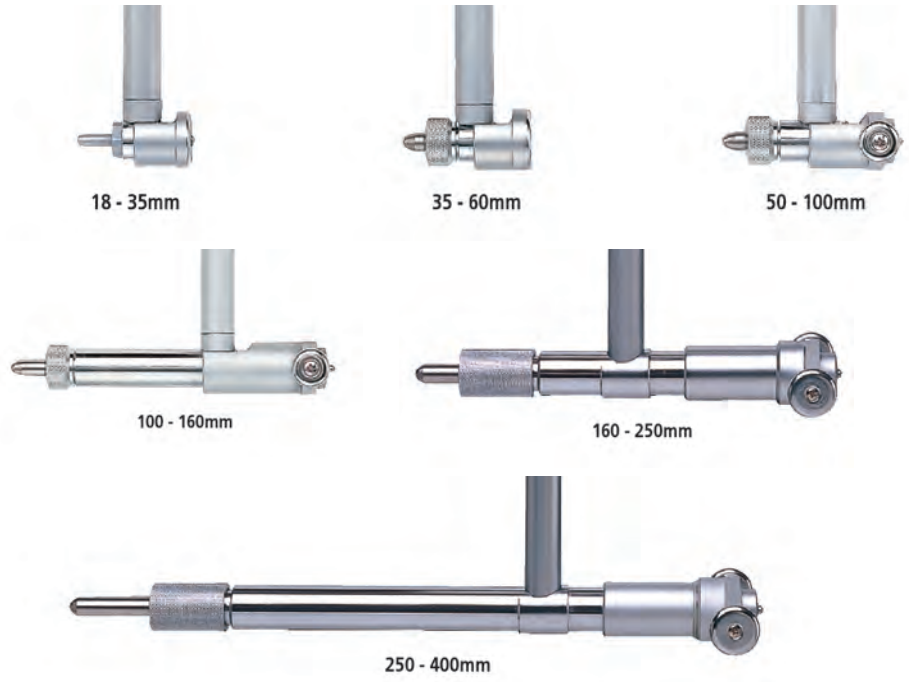
New grip improves accuracy during prolonged use

For details on indicators suitable for use with this instrument, refer to the Dial Gauges section. For a description of replacement contact points, see the Spare Parts section at end of catalogue.

# Bore Gauge - Standard type

Series 511

Example of measuring heads with different capacity.



Dimensions in parentheses apply to inch models

# Bore Gauge - Standard type

Series 511

Bore gauge sets



511-921



Indicator 2046SB included in the set 511-921



Indicator 2109SB-10 included in the set 511-922



Indicator 543-264B included in the set 511-925

## Metric

| No.     | Range     | Graduation | No. Dial Indicator | Measuring depth |
|---------|-----------|------------|--------------------|-----------------|
| 511-921 | 18-150 mm | 0,01 mm    | 2046SB             | 100/150 mm      |
| 511-922 | 18-150 mm | 0,001 mm   | 2109SB-10          | 100/150 mm      |
| 511-925 | 18-150 mm | 0,001 mm   | 543-264B           | 100/150 mm      |

## Inch

| No.      | Range  | Graduation | No. Dial Indicator | Measuring depth |
|----------|--------|------------|--------------------|-----------------|
| 511-931* | 0.7-6" | 0.0001"    | 2922SB             | 4-6"            |
| 511-932  | 0.7-6" | 0.0005"    | 2923SB-10          | 4-6"            |
| 511-935* | 0.7-6" | 0.0005"    | 543-266B           | 4-6"            |



Indicator 2922SB included in the set 511-931



Indicator 2923SB-10 included in the set 511-932

## Specifications

|               |                 |
|---------------|-----------------|
| Accuracy      | 2 μm/0.00008"   |
| Repeatability | 0,5 μm/0.00002" |

## Carbide-tipped anvils in sets

- For measuring range 50-150 mm (11 pcs)

21DZA232A : 50 mm

21DZA232B : 55 mm

21DZA232C : 60 mm

21DZA232D : 65 mm

21DZA232E : 70 mm

21DZA232F : 75 mm

21DZA232G : 80 mm

21DZA232H : 85 mm

21DZA232J : 90 mm

21DZA232L : 95 mm

21DZA232M : 100 mm

- For measuring range 35-60 mm (6 pcs)

21DZA232A : 35 mm

21DZA232B : 40 mm

21DZA232C : 45 mm

21DZA232D : 50 mm

21DZA232E : 55 mm

21DZA232F : 60 mm

- For measuring range 18-35 mm (9 pcs)

21DZA213A : 18 mm

21DZA213B : 20 mm

21DZA213C : 22 mm

21DZA213D : 24 mm

21DZA213E : 26 mm

21DZA213F : 28 mm

21DZA213G : 30 mm

21DZA213H : 32 mm

21DZA213J : 34 mm

## Replacement washers in sets

- For measuring range 35-150 mm (4 pcs)

205457 : thickness 0,5 mm

205458 : thickness 1 mm

205459 : thickness 2 mm

205460 : thickness 3 mm

- For measuring range 18-35 mm (2 pcs)

205623 : thickness 0,5 mm

205624 : thickness 1 mm

## Included in sets

102148 : spanner

102178 : sub-anvil 50 mm

21DZA000 : protector for indicator

For details on indicators suitable for use with this instrument, refer to the Dial Gauges section.

# Bore Gauge with Micrometer Head

## Series 511

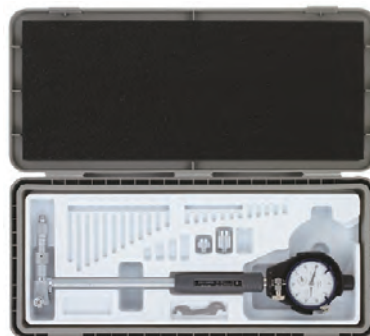
- Carbide is used for the contact point ensuring high durability and wear resistance.
- Wide measuring range with sub-anvils.

## Specifications

|               |   |
|---------------|---|
| Accuracy      | 2 µm/0.00008"                                     |
| Repeatability | 0,5 µm/0.00002"                                   |
| Delivered     | In box including plastic cover for Dial Indicator |

## Optional accessories

| No.      | Description   |
|----------|---|
| 543-264B | ABSOLUTE Digimatic Indicator with Min Hold function |
| 953552   | Extension 125 mm for range 35-160mm/1.4-6.5"        |
| 953553   | Extension 250 mm for range 35-160mm/1.4-6.5"        |
| 953554   | Extension 500 mm for range 35-160mm/1.4-6.5"        |
| 953555   | Extension 750 mm for range 35-160mm/1.4-6.5"        |
| 953556   | Extension 1000 mm for range 35-160mm/1.4-6.5"       |
| 953557   | Extension 125 mm for range 160-800mm/6-32"          |
| 953558   | Extension 500 mm for range 160-800mm/6-32"          |
| 953559   | Extension 750 mm for range 160-800mm/6-32"          |
| 953560   | Extension 1000 mm for range 160-800mm/6-32"         |
| 952361   | Extension 250 mm for range 160-800mm/6-32"          |



Example of set



Plastic cover for Dial Indicator including



543-264B (optional)

For details on indicators suitable for use with this instrument, refer to the Dial Gauges section.  
For a description of replacement contact points, see the Spare Parts section at end of catalogue.

## Metric

| No.      | Range      | Graduation | No. Dial Indicator | Range of the sub-anvil | Extension Rod | Measuring depth | Mass g |
|----------|------------|------------|--------------------|------------------------|---------------|-----------------|--------|
| 511-823* | 60-100 mm  | 0,001 mm   | 2109SB-10          | 10 mm                  | 10, 20 mm     | 100 mm          | 430    |
| 511-824  | 100-160 mm | 0,001 mm   | 2109SB-10          | 13 mm                  | 10, 20, 20 mm | 150 mm          | 480    |
| 511-825  | 150-250 mm | 0,001 mm   | 2109SB-10          | 25 mm                  | 25, 50 mm     | 150 mm          | 850    |
| 511-826  | 250-400 mm | 0,001 mm   | 2109SB-10          | 50 mm                  | 50, 50 mm     | 150 mm          | 950    |
| 511-827  | 400-600 mm | 0,001 mm   | 2109SB-10          | 50 mm                  | 50, 100 mm    | 250 mm          | 1,270  |
| 511-828  | 600-800 mm | 0,001 mm   | 2109SB-10          | 50 mm                  | 50, 100 mm    | 250 mm          | 1,670  |
| 511-813  | 60-100 mm  | 0,01 mm    | 2046SB             | 10 mm                  | 10, 20 mm     | 100 mm          | 430    |
| 511-814  | 100-160 mm | 0,01 mm    | 2046SB             | 13 mm                  | 10, 20, 20 mm | 150 mm          | 480    |
| 511-815  | 150-250 mm | 0,01 mm    | 2046SB             | 25 mm                  | 25, 50 mm     | 150 mm          | 850    |
| 511-816  | 250-400 mm | 0,01 mm    | 2046SB             | 50 mm                  | 50, 50 mm     | 150 mm          | 950    |
| 511-817  | 400-600 mm | 0,01 mm    | 2046SB             | 50 mm                  | 50, 100 mm    | 250 mm          | 1,270  |
| 511-818  | 600-800 mm | 0,01 mm    | 2046SB             | 50 mm                  | 50, 100 mm    | 250 mm          | 1,670  |

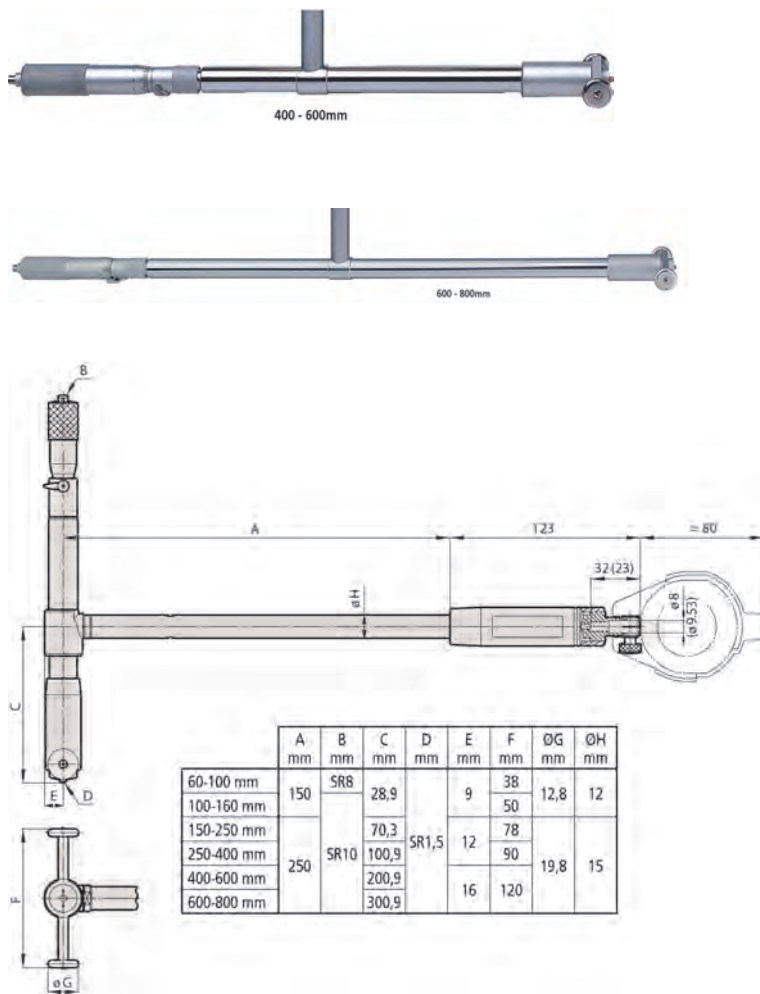
## Inch

| No.      | Range  | Graduation | No. Dial Indicator | Range of the sub-anvil | Extension Rod | Measuring depth | Mass g |
|----------|--------|------------|--------------------|------------------------|---------------|-----------------|--------|
| 511-853* | 2.4-4" | 0.0001"    | 2923SB-10          | 0.4"                   | 0.4, 0.8"     | 4"              | 430    |
| 511-854* | 4-6.4" | 0.0001"    | 2923SB-10          | 0.5"                   | 0.4, 0.8"     | 6"              | 480    |
| 511-855* | 6-10"  | 0.0001"    | 2923SB-10          | 0.5"                   | 0.4, 0.8, 2"  | 6"              | 850    |
| 511-856* | 10-16" | 0.0001"    | 2923SB-10          | 1"                     | 1, 2"         | 6"              | 950    |
| 511-857* | 16-24" | 0.0001"    | 2923SB-10          | 2"                     | 2, 4"         | 10"             | 1,270  |
| 511-858* | 24-34" | 0.0001"    | 2923SB-10          | 2"                     | 2, 4"         | 10"             | 1,670  |
| 511-843* | 2.4-4" | 0.0005"    | 2922SB             | 0.4"                   | 4, 8"         | 4"              | 430    |
| 511-844* | 4-6.4" | 0.0005"    | 2922SB             | 0.5"                   | 0.4, 0.8"     | 6"              | 480    |
| 511-845* | 6-10"  | 0.0005"    | 2922SB             | 0.5"                   | 0.4, 0.8, 2"  | 6"              | 850    |
| 511-846* | 10-16" | 0.0005"    | 2922SB             | 1"                     | 1, 2"         | 6"              | 950    |
| 511-847* | 16-24" | 0.0005"    | 2922SB             | 2"                     | 2, 4"         | 10"             | 1,270  |
| 511-848* | 24-34" | 0.0005"    | 2922SB             | 2"                     | 2, 4"         | 10"             | 1,670  |

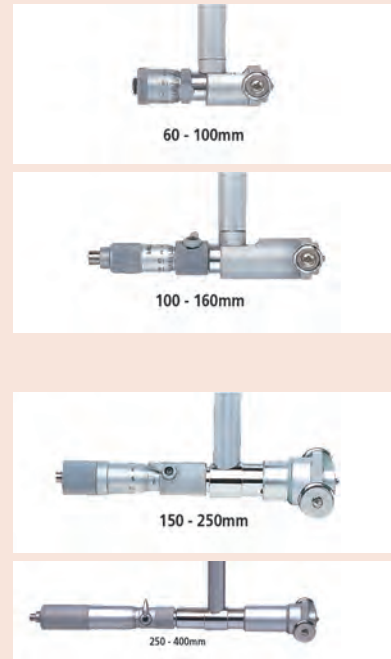
# Bore Gauge with Micrometer Head

Series 511

## Dimensions



Dimensions in parentheses apply to inch models



## Extension Rods

### Accessories for Bore Gauges

- Extension rods (optional) are available to assist in deep-hole measurement.
- When several extension rods are joined together there is the possibility of small errors arising from the extra joints involved. Therefore it is good practice not to connect more than 2 rods to a bore gauge at any one time. If possible use a single, longer, extension rod rather than several short ones.
- Extension rods can be used up to 1,000 mm.
- If using an extension rod longer than 500 mm, use the bore gauge in the vertical orientation.
- Accuracy and satisfactory operation can be confirmed after connecting an extension rod.

| Applicable Range   | .125 mm/5" | .250 mm/10" | .500 mm/20" | .750 mm/30" | 1000 mm/40" |
|--------------------|------------|-------------|-------------|-------------|-------------|
|                    | No.        | No.         | No.         | No.         | No.         |
| .18-35 mm/0.7-1.4" | 953549     | 953550      | 953551      | —           | —           |
| .35-160 mm/1.4-6"  | 953552     | 953553      | 953554      | 953555      | 953556      |
| 150-800 mm/6-32"   | 953557     | 952361      | 953558      | 953559      | 953560      |

### Specifications

|               |  |
|---------------|--|
| Extension Rod | ø9 mm (range 18-35 mm/0.7-1.4")                                      |
| Diameter      | ø12 mm (range 35-160 mm/1.4-6.5")<br>ø15 mm (range 150-800 mm/6-32") |

### Optional accessories

| No.    | Description                                |
|--------|--|
| 102148 | Wrench for Bore Gauges (range ≤35 mm/1.4") |
| 212556 | Wrench for Bore Gauges (range ≥35 mm/1.4") |

# Bore Gauge - Short Leg Type

## Series 511

- Compact and lightweight due to the short length below the grip.
- Interchangeable washers 0,5 mm thick (standard accessories) are supplied to enable setting in small steps.
- Large grip reduces heat transfer from the operator by 50%.

### Specifications

|               |   |
|---------------|---|
| Accuracy      | 2 µm/0.00008"                                     |
| Repeatability | 0,5 µm/0.00002"                                   |
| Delivered     | In box including plastic cover for Dial Indicator |

### Optional accessories

| No.      | Description   |
|----------|---|
| 543-264B | ABSOLUTE Digimatic Indicator with Min Hold function |



543-264B (optional)



For details of indicators suitable for use with this instrument, refer to the Dial Gauges section.  
For a description of replacement contact points, see the Spare Parts section at end of catalogue.



Example of set



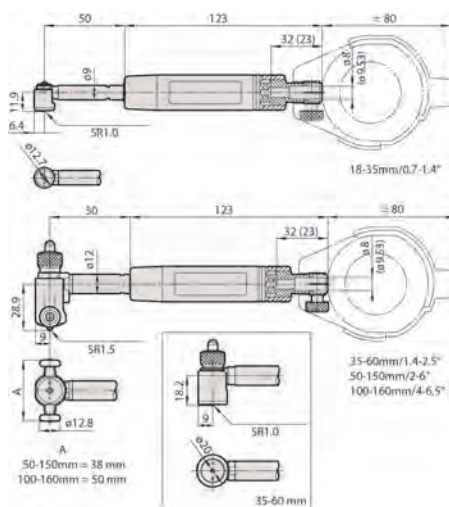
Plastic cover for Dial Indicator including

### Metric

| No.      | Range      | Graduation | No. Dial Indicator | Number of measuring heads | Measuring depth | Mass g |
|----------|------------|------------|--------------------|---------------------------|-----------------|--------|
| 511-771  | 18-35 mm   | 0,001 mm   | 2109SB-10          | 9                         | 50 mm           | 320    |
| 511-772  | 35-60 mm   | 0,001 mm   | 2109SB-10          | 6                         | 50 mm           | 380    |
| 511-773  | 50-150 mm  | 0,001 mm   | 2109SB-10          | 11                        | 50 mm           | 400    |
| 511-774* | 100-160 mm | 0,001 mm   | 2109SB-10          | 13                        | 50 mm           | 460    |
| 511-766  | 18-35 mm   | 0,01 mm    | 2046SB             | 9                         | 50 mm           | 320    |
| 511-767  | 35-60 mm   | 0,01 mm    | 2046SB             | 6                         | 50 mm           | 380    |
| 511-768  | 50-150 mm  | 0,01 mm    | 2046SB             | 11                        | 50 mm           | 400    |
| 511-769* | 100-160 mm | 0,01 mm    | 2046SB             | 13                        | 50 mm           | 460    |

### Inch

| No.      | Range    | Graduation | No. Dial Indicator | Number of measuring heads | Measuring depth | Mass g |
|----------|----------|------------|--------------------|---------------------------|-----------------|--------|
| 511-791* | 0.7-1.4" | 0.0001"    | 2923SB-10          | 9                         | 2"              | 320    |
| 511-792* | 1.4-2.5" | 0.0001"    | 2923SB-10          | 6                         | 2"              | 380    |
| 511-793* | 2-6"     | 0.0001"    | 2923SB-10          | 11                        | 2"              | 400    |
| 511-794* | 4-6.5"   | 0.0001"    | 2923SB-10          | 13                        | 2"              | 460    |
| 511-786* | 0.7-1.4" | 0.0005"    | 2922SB             | 9                         | 2"              | 320    |
| 511-787* | 1.4-2.5" | 0.0005"    | 2922SB             | 6                         | 2"              | 380    |
| 511-788* | 2-6"     | 0.0005"    | 2922SB             | 11                        | 2"              | 400    |
| 511-789* | 4-6.5"   | 0.0005"    | 2922SB             | 13                        | 2"              | 460    |



Dimensions in parentheses apply to inch models

# Bore Gauge for Blind Holes

## Series 511

- Can measure ID close to the bottom of blind holes.

### Metric

| No.      | Range     | Graduation | No. Dial Indicator | Measuring depth | Mass g |
|----------|-----------|------------|--------------------|-----------------|--------|
| 511-411  | 15-35 mm  | 0,01 mm    | 2046SB             | 150 mm          | 735    |
| 511-412  | 35-60 mm  | 0,01 mm    | 2046SB             | 150 mm          | 760    |
| 511-413* | 50-100 mm | 0,01 mm    | 2046SB             | 150 mm          | 785    |
| 511-414  | 50-150 mm | 0,01 mm    | 2046SB             | 150 mm          | 815    |
| 511-421  | 15-35 mm  | 0,001 mm   | 2109SB-10          | 150 mm          | 740    |
| 511-422  | 35-60 mm  | 0,001 mm   | 2109SB-10          | 150 mm          | 765    |
| 511-423  | 50-100 mm | 0,001 mm   | 2109SB-10          | 150 mm          | 800    |
| 511-424  | 50-150 mm | 0,001 mm   | 2109SB-10          | 150 mm          | 820    |

### Inch

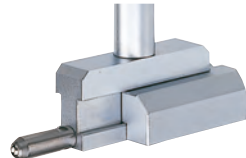
| No.      | Range    | Graduation | No. Dial Indicator | Measuring depth | Mass g |
|----------|----------|------------|--------------------|-----------------|--------|
| 511-431* | 0.6-1.4" | 0.0005"    | 2922SB             | 6"              | 730    |
| 511-432* | 1.4-2.4" | 0.0005"    | 2922SB             | 6"              | 755    |
| 511-433* | 2-4"     | 0.0005"    | 2922SB             | 6"              | 780    |
| 511-434* | 2-6"     | 0.0005"    | 2922SB             | 6"              | 810    |
| 511-441* | 0.6-1.4" | 0.0001"    | 2923SB-10          | 6"              | 740    |
| 511-442* | 1.4-2.4" | 0.0001"    | 2923SB-10          | 6"              | 765    |
| 511-443* | 2-4"     | 0.0001"    | 2923SB-10          | 6"              | 800    |
| 511-444* | 2-6"     | 0.0001"    | 2923SB-10          | 6"              | 820    |



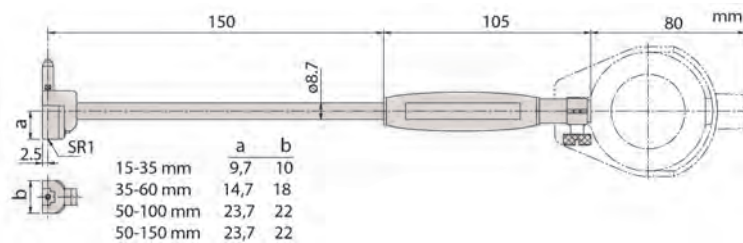
511-412



15 - 35mm



50 - 100mm, 50 - 150mm



## Specifications

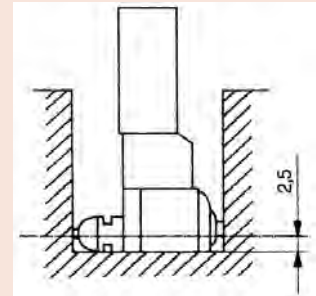
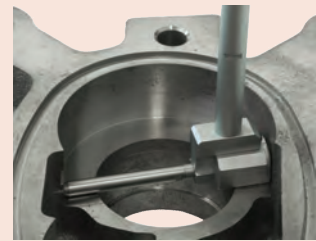
|               |   |
|---------------|---|
| Accuracy      | 5 µm  |
| Repeatability | 2 µm  |
| Delivered     | In box including plastic cover for Dial Indicator |

## Optional accessories

| No.      | Description   |
|----------|---|
| 543-264B | ABSOLUTE Digimatic Indicator with Min Hold function |



543-264B  
(optional)



For blind holes with minimum depth 2,5 mm

For details on indicators suitable for use with this instrument, refer to the Dial Gauges section.  
For a description of replacement contact points, see the Spare Parts section at end of catalogue.

# ABSOLUTE Digimatic Indicator ID-C for bore gauges



## Series 543

Exclusively designed for ID measurement applications on bore gauges.

- Features a minimum value holding function that provides easy detection of true hole diameter.
- When using a bore gauge fitted with this indicator the reversal of the reading that occurs at the true diameter point, while oscillating the gauge, is detected and the corresponding value held in display by the Minimum Value Hold function.
- An analogue bar graph enhances usability by providing dial gauge "feel" to a measurement.

| Functions             | Series 543 |
|-----------------------|------------|
| PRESET (x3)           | ●          |
| DATA/HOLD             | ●          |
| Minimum Value Hold    | ●          |
| GO/±NG judgement      | ●          |
| Digimatic data output | ●          |
| ON/OFF                | ●          |

### Specifications

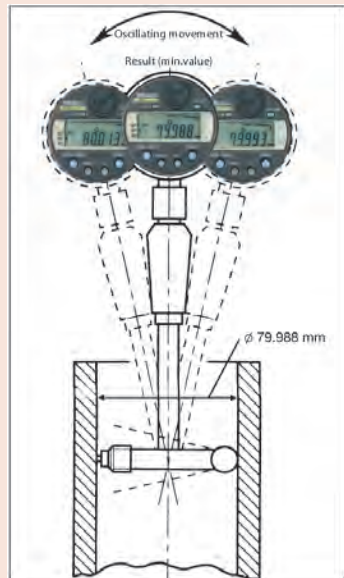
|                   |  |
|-------------------|--|
| Accuracy          | Refer to the list of specifications (excluding quantizing error)                             |
| LCD Display       | 6 digit  |
| Scale type        | Rotatable 330°   |
| Scale type        | ABSOLUTE electrostatic linear encoder  |
| Max. slider speed | Unlimited  |
| Measuring force   | ≤ 1,5 N  |
| Stem dia.         | 8 mm (ISO/JIS type) or 3/8" (ANSI/AGD type)  |
| Contact point     | Carbide ball, thread M 2.5 x 0.45 mm (ISO/JIS type) or 4-48 UNF (ANSI/AGD type)              |
| Alarm             | Low voltage, counting value composition error, overflow error, tolerance limit setting error |
| Power supply      | 2 batteries SR-44  |

### Optional accessories

| No.       | Description        |
|-----------|--------------------|
| 905338    | Data cable 1 m     |
| 905409    | Data cable 2 m     |
| 02AZD790F | Data cable U-Wave  |
| 06ADV380F | Data cable 2 m USB |

### Consumable spares

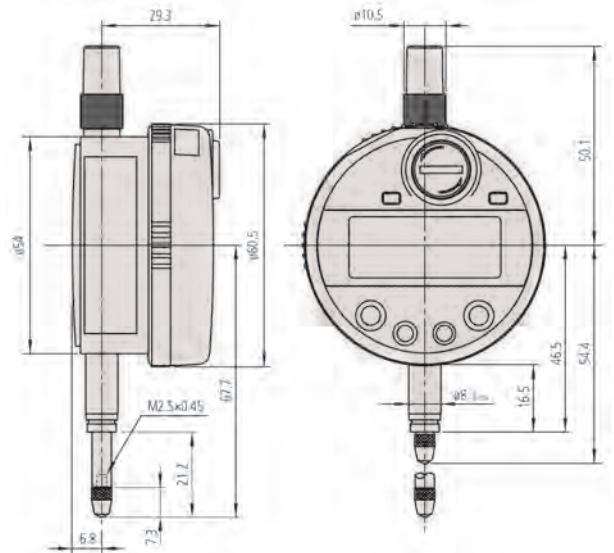
| No.    | Description  |
|--------|--------------|
| 938882 | Battery SR44 |



Finding the true diameter (at reversal point) with a 2-point bore gauge



543-264B



### ISO/JIS Type

Dimensions of the inch (ANSI/AGD Type) indicator partly differ from those of the metric (ISO/JIS Type) indicator.

### Metric Plain backplate

| No.      | Resolution | Range   | Accuracy | Mass g |
|----------|------------|---------|----------|--------|
| 543-264B | 0,001 mm   | 12,7 mm | 0,003 mm | 160    |

### Metric/Inch Plain backplate

| No.       | Resolution        | Range        | Accuracy         | Mass g |
|-----------|-------------------|--------------|------------------|--------|
| 543-265B* | 0,001 mm/0.00005" | 12,7 mm/0.5" | 0,003 mm/0.0012" | 160    |
| 543-267B* | 0,001 mm/0.0001"  | 12,7 mm/0.5" | 0,003 mm/0.0012" | 160    |

### Inch/Metric Plain backplate - ANSI/AGD type

| No.       | Resolution        | Range        | Accuracy         | Mass g |
|-----------|-------------------|--------------|------------------|--------|
| 543-266B* | 0,001 mm/0.00005" | 12,7 mm/0.5" | 0,003 mm/0.0012" | 160    |



# ABSOLUTE Digimatic Bore Gauge

## Series 511

- Precision bore gauge for easy diameter measurement in deep bores without loss of accuracy. In addition to the digital display an analogue bar graph is provided to enhance usability by providing dial gauge "feel" to a measurement.
- Up to 3 sets of master values and upper/lower tolerance values can be memorised and recalled at the push of a button.
- GO/±NG judgement can be set, and up to 4 extension rods (250 or 500 mm) can be used.



| Functions             | Series 511 |
|-----------------------|------------|
| PRESET (x3)           | ●          |
| DATA/HOLD             | ●          |
| Minimum Value Hold    | ●          |
| GO/±NG judgement      | ●          |
| Digimatic data output | ●          |
| ON/OFF                | ●          |

### Specifications

|                    |   |
|--------------------|---|
| Accuracy           | 0,003 mm/0.00012"   |
| Repeatability      | ±1 digit  |
| Plunger stroke     | 1,2 mm/0.048"   |
| Resolution         | 0,001 mm/0.00012"   |
| Measuring Force    | ≤5 N  |
| Display            | LCD 6 digits, Minus symbol, Tolerance judgement display, Analogue display |
| Sampling Frequency | 50 times/sec  |
| Battery            | 2 batteries SR-44   |

### Optional accessories

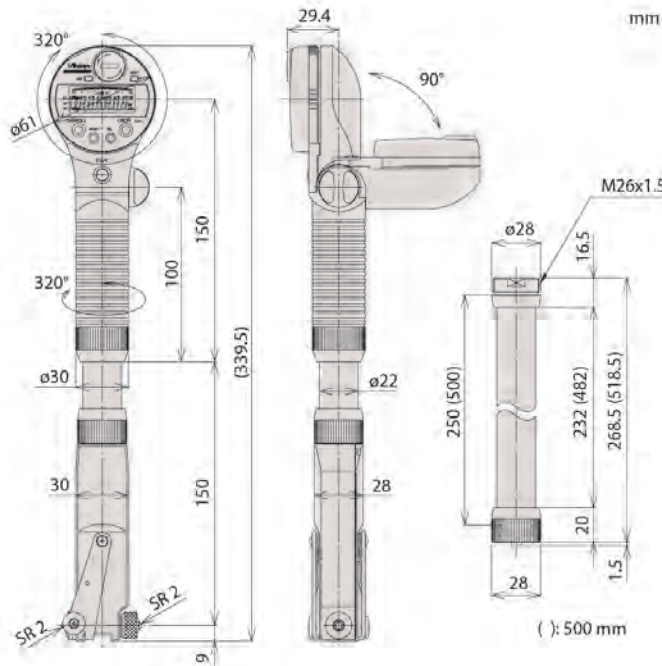
| No.       | Description            |
|-----------|------------------------|
| 905338    | Data cable 1 m         |
| 905409    | Data cable 2 m         |
| 21DZA081  | Extension rod (500 mm) |
| 21DZA089  | Extension rod (250 mm) |
| 02AZD790F | Data cable U-Wave      |
| 06ADV380F | Data cable 2 m USB     |

### Consumable spares

| No.    | Description  |
|--------|--------------|
| 938882 | Battery SR44 |



511-501

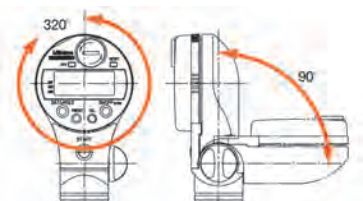


### Metric

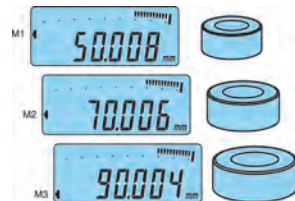
| No.     | Range      | Number of measuring heads | Mass g |
|---------|------------|---------------------------|--------|
| 511-501 | 45-100 mm  | 12                        | 500    |
| 511-502 | 100-160 mm | 13                        | 570    |

### Inch

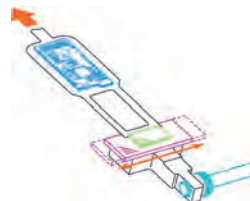
| No.      | Range  | Number of measuring heads | Mass g |
|----------|--------|---------------------------|--------|
| 511-521  | 1.8-4" | 12                        | 500    |
| 511-522* | 4-6.4" | 13                        | 570    |



The display can be rotated 320° and turned 90°. The handle can also be rotated 320°.



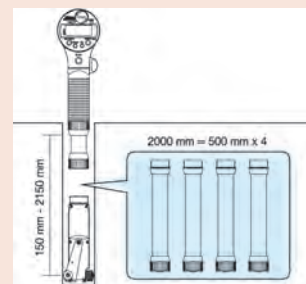
Up to 3 sets of reference values can be preset, including top/bottom tolerance limits.



Even during measurement with a 2 m extension the accuracy is guaranteed, as measured-value transmission is electronic.



The ABSOLUTE Digimatic Bore Gauge detects the minimum value (true diameter) and holds it automatically.



Four extension rods (500 mm each) connected together provide a 2 m extension.

# Digimatic HOLTEST Bore Micrometer

## Series 468

- Without setting rings or extensions.



| Functions         | Series 468 |
|-------------------|------------|
| Data output       | ●          |
| ZERO/ABS          | ●          |
| 2 PRESET          | ●          |
| Auto Power OFF    | ●          |
| HOLD              | ●          |
| Low voltage alarm | ●          |
| Function lock     | ●          |

### Specifications

|          |   |
|----------|---|
| Accuracy | 6-20 mm : $\pm 2 \mu\text{m} / 0.0001''$                            |
|          | 20-100 mm : $\pm 3 \mu\text{m} / 0.00015''$                         |
|          | - The given values require close contact of the measuring surfaces. |

|            |   |
|------------|---|
| Resolution | 0,001 mm, 0,001 mm / 0.00005" (models up to 4")<br>or 0,001 mm / 0.0001" (models over 5") |
|------------|---|

Measuring pins Titanium-coated tungsten carbide

Delivered Including box, key, 1 battery

### Optional accessories

| No.               | Description                          |
|-------------------|--------------------------------------|
| 156-101-10        | Mount for outside micrometer 100 mm  |
| 04AZB157          | Holder for outside micrometer        |
| 264-504-5D        | Digimatic Mini-Processor             |
| <b>Cables</b>     |                                      |
| 05CZA662          | Signal cable 1 m with data button    |
| 05CZA663          | Signal cable 2 m with data button    |
| 06ADV380B         | Signal cable 2 m USB                 |
| 02AZD790B         | Signal cable U-Wave with data button |
| <b>Extensions</b> |                                      |
| 952322            | Extension 100 mm for 6-12 mm         |
| 952621            | Extension 150 mm for 12-20 mm        |
| 952622            | Extension 150 mm for 20-50 mm        |
| 952623            | Extension 150 mm for 50-300 mm       |

### Consumable spares

| No.    | Description  |
|--------|--------------|
| 938882 | Battery SR44 |



156-101-10+  
264-504-5D



04AZB157



Extension



468-161



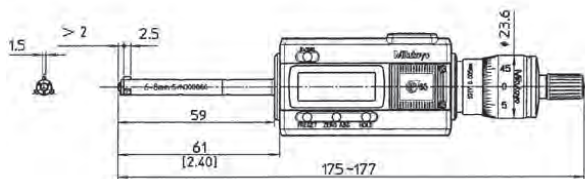
Titanium-coated measuring surfaces for durability

### Metric

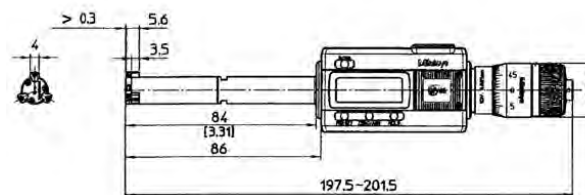
| No.     | Range    | Mass g |
|---------|----------|--------|
| 468-161 | 6-8 mm   | 370    |
| 468-162 | 8-10 mm  | 370    |
| 468-163 | 10-12 mm | 370    |
| 468-164 | 12-16 mm | 400    |
| 468-165 | 16-20 mm | 400    |
| 468-166 | 20-25 mm | 470    |

### Inch/Metric

| No.      | Range       | Mass g |
|----------|-------------|--------|
| 468-261  | 0.275-0.35" | 370    |
| 468-262* | 0.35-0.425" | 370    |
| 468-263  | 0.425-0.5"  | 370    |
| 468-264  | 0.5-0.65"   | 400    |
| 468-265  | 0.65-0.8"   | 400    |
| 468-266  | 0.8-1"      | 470    |



468-161/162/163



468-164/165/166

# Digimatic HOLTEST Bore Micrometer

## Series 468

- Without setting rings or extensions.



468-168



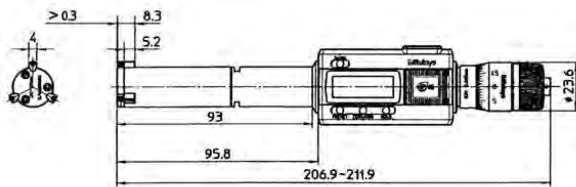
Titanium-coated measuring surfaces for durability

### Metric

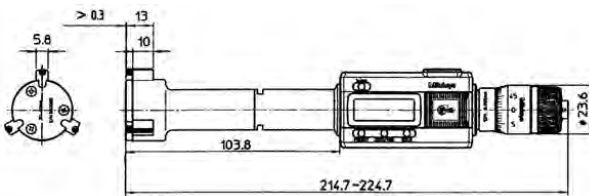
| No.     | Range    | Mass g |
|---------|----------|--------|
| 468-167 | 25-30 mm | 480    |
| 468-168 | 30-40 mm | 480    |
| 468-169 | 40-50 mm | 500    |
| 468-170 | 50-63 mm | 620    |

### Inch/Metric

| No.     | Range    | Mass g |
|---------|----------|--------|
| 468-267 | 1-1.2"   | 480    |
| 468-268 | 1.2-1.6" | 480    |
| 468-269 | 1.6-2"   | 500    |
| 468-270 | 2-2.5"   | 620    |



468-167/168



468-169/170

| Functions         | Series 468 |
|-------------------|------------|
| Data output       | ●          |
| ZERO/ABS          | ●          |
| 2 PRESET          | ●          |
| Auto Power OFF    | ●          |
| HOLD              | ●          |
| Low voltage alarm | ●          |
| Function lock     | ●          |

### Specifications

Accuracy 20-100 mm :  $\pm 3 \mu\text{m}$  / 0.00015"

- The given values require close contact of the measuring surfaces

Resolution 0,001 mm, 0,001 mm / 0.00005"  
(models up to 4")  
or 0,001 mm / 0.0001" (models over 5")

Measuring pins Titanium-coated tungsten carbide  
Measuring method 3-point method

Delivered Including box, key, 1 battery

### Optional accessories

| No.        | Description                         |
|------------|-------------------------------------|
| 156-101-10 | Mount for outside micrometer 100 mm |
| 04AZB157   | Holder for outside micrometer       |
| 264-504-5D | Digimatic Mini-Processor            |

#### Cables

|           |                                      |
|-----------|--------------------------------------|
| 05CZA662  | Signal cable 1 m with data button    |
| 05CZA663  | Signal cable 2 m with data button    |
| 06ADV380B | Signal cable 2 m USB                 |
| 02AZD790B | Signal cable U-Wave with data button |

#### Extensions

|        |                                |
|--------|--------------------------------|
| 952322 | Extension 100 mm for 6-12 mm   |
| 952621 | Extension 150 mm for 12-20 mm  |
| 952622 | Extension 150 mm for 20-50 mm  |
| 952623 | Extension 150 mm for 50-300 mm |



156-101-10 +  
264-504-5D



04AZB157



Extension

# Digimatic HOLTEST Bore Micrometer

## Series 468

- Without setting rings or extensions.



| Functions         | Series 468 |
|-------------------|------------|
| Data output       | ●          |
| ZERO/ABS          | ●          |
| 2 PRESET          | ●          |
| Auto Power OFF    | ●          |
| HOLD              | ●          |
| Low voltage alarm | ●          |
| Function lock     | ●          |

### Specifications

Accuracy 20-100 mm :  $\pm 3 \mu\text{m}$  / 0.00015"  
 100-300 mm :  $\pm 5 \mu\text{m}$  / 0.00025"

- The given values require close contact of the measuring surfaces.

Resolution 0,001 mm, 0,001 mm/0.00005" (models up to 4")  
 or 0,001 mm/0.0001" (models over 5")

Measuring pins Titanium-coated tungsten carbide

Delivered Including box, key, 1 battery

### Optional accessories

| No.               | Description                          |
|-------------------|--------------------------------------|
| 156-101-10        | Mount for outside micrometer 100 mm  |
| 04AZB157          | Holder for outside micrometer        |
| 264-504-5D        | Digimatic Mini-Processor             |
| <b>Cables</b>     |                                      |
| 05CZA662          | Signal cable 1 m with data button    |
| 05CZA663          | Signal cable 2 m with data button    |
| 06ADV380B         | Signal cable 2 m USB                 |
| 02AZD790B         | Signal cable U-Wave with data button |
| <b>Extensions</b> |                                      |
| 952322            | Extension 100 mm for 6-12 mm         |
| 952621            | Extension 150 mm for 12-20 mm        |
| 952622            | Extension 150 mm for 20-50 mm        |
| 952623            | Extension 150 mm for 50-300 mm       |



Extension



156-101-10 + 264-504-5D



04AZB157



468-174

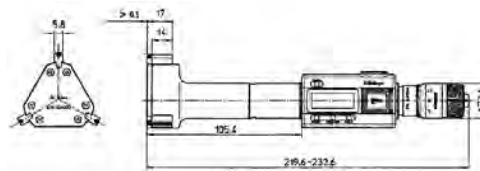
Titanium-coated contact surfaces for durability

### Metric

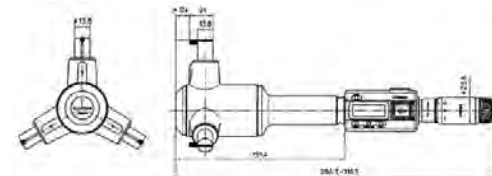
| No.     | Range      | Mass g |
|---------|------------|--------|
| 468-171 | 62-75 mm   | 630    |
| 468-172 | 75-88 mm   | 960    |
| 468-173 | 87-100 mm  | 970    |
| 468-174 | 100-125 mm | 940    |
| 468-175 | 125-150 mm | 1,030  |
| 468-176 | 150-175 mm | 1,120  |
| 468-177 | 175-200 mm | 1,210  |
| 468-178 | 200-225 mm | 1,300  |
| 468-179 | 225-250 mm | 1,390  |
| 468-180 | 250-275 mm | 1,480  |
| 468-181 | 275-300 mm | 1,570  |

### Inch/Metric

| No.      | Range  | Mass g |
|----------|--------|--------|
| 468-271* | 2.5-3" | 630    |
| 468-272* | 3-3.5" | 960    |
| 468-273  | 3.5-4" | 970    |
| 468-274* | 4-5"   | 940    |
| 468-275* | 5-6"   | 1,030  |
| 468-276* | 6-7"   | 1,120  |
| 468-277* | 7-8"   | 1,210  |
| 468-278* | 8-9"   | 1,300  |
| 468-279* | 9-10"  | 1,390  |
| 468-280* | 10-11" | 1,480  |
| 468-281* | 11-12" | 1,570  |



468-171/172/173/174



468-175/176/177/178/179/180/181

# Digimatic HOLTEST Bore Micrometer

## Series 468

- With setting ring and extensions.
- With Digimatic data output.



468-973



Titanium-coated measuring surfaces for durability

### Metric

Measuring surfaces titanium-coated. Carbide taper and contact points.

| No.     | Range      | Individual ranges                     | Setting rings included                 | Length of extensions | Mass g |
|---------|------------|---------------------------------------|--|----------------------|--------|
| 468-971 | 6-12 mm    | 6-8, 8-10, 10-12 mm                   | ø8 mm (177-125)<br>ø10 mm (177-126)    | 100 mm               | 420    |
| 468-972 | 12-20 mm   | 12-16, 16-20 mm                       | ø16 mm (177-177)                       | 150 mm               | 560    |
| 468-973 | 20-50 mm   | 20-25, 25-30, 30-40, 40-50 mm         | ø25 mm (177-139)<br>ø40 mm (177-290)   | 150 mm               | 1,170  |
| 468-974 | 50-100 mm  | 50-63, 62-75, 75-88, 87-100 mm        | ø62 mm (177-314)<br>ø87 mm (177-318)   | 150 mm               | 2,420  |
| 468-975 | 100-200 mm | 100-125, 125-150, 150-175, 175-200 mm | ø125 mm (177-298)<br>ø175 mm (177-302) | 150 mm               | 3,540  |

### Inch/Metric

| No.     | Range      | Individual ranges                    | Setting rings included | Length of extensions | Mass g |
|---------|------------|--------------------------------------|------------------------|----------------------|--------|
| 468-976 | 0.275-0.5" | 0.275-0.35", 0.35-0.425", 0.425-0.5" | ø0.35", ø0.425"        | 100 mm               | 420    |
| 468-977 | 0.5-0.8"   | 0.5-0.65", 0.65-0.8"                 | ø0.35"                 | 150 mm               | 560    |
| 468-978 | 0.8-2"     | 0.8-1", 1-1.2", 1.2-1.6", 1.6-2"     | ø1", ø1.6"             | 150 mm               | 1,170  |
| 468-979 | 2-4"       | 2-2.5", 2.5-3", 3-3.5", 3.5-4"       | ø2.5", ø3.5"           | 150 mm               | 2,420  |
| 468-980 | 4-8"       | 4-5", 5-6", 6-7", 7-8"               | ø5", ø7"               | 150 mm               | 3,540  |

| Functions         | Series 468 |
|-------------------|------------|
| Data output       | ●          |
| ZERO/ABS          | ●          |
| 2 PRESET          | ●          |
| Auto Power OFF    | ●          |
| HOLD              | ●          |
| Low voltage alarm | ●          |
| Function lock     | ●          |

### Specifications

|          |                              |
|----------|------------------------------|
| Accuracy | 6-20 mm : ±2 µm / 0.0001"    |
|          | 20-100 mm : ±3 µm / 0.00015" |
|          | 100-200 mm : ±5 µm/0.00025"  |

- The given value require close contact of the measuring surfaces.

Resolution 0,001 mm, 0,001 mm / 0.00005" (models up to 4")

or 0,001 mm / 0.0001" (models over 5")

Delivered Including box, key, 1 battery, setting ring Extension

### Optional accessories

| No.               | Description                          |
|-------------------|--------------------------------------|
| 156-101-10        | Mount for outside micrometer 100 mm  |
| 04AZB157          | Holder for outside micrometer        |
| <b>Cables</b>     |                                      |
| 05CZA662          | Signal cable 1 m with data button    |
| 05CZA663          | Signal cable 2 m with data button    |
| 06ADV380B         | Signal cable 2 m USB                 |
| 02AZD790B         | Signal cable U-Wave with data button |
| <b>Extensions</b> |                                      |
| 952322            | Extension 100 mm for 6-12 mm         |
| 952621            | Extension 150 mm for 12-20 mm        |
| 952622            | Extension 150 mm for 20-50 mm        |
| 952623            | Extension 150 mm for 50-300 mm       |

### Consumable spares

| No.    | Description  |
|--------|--------------|
| 938882 | Battery SR44 |

# Digimatic HOLTEST Bore Micrometer

## Series 468

- With setting rings but without extensions.



| Functions         | Series 468 |
|-------------------|------------|
| Data output       | ●          |
| ZERO/ABS          | ●          |
| 2 PRESET          | ●          |
| Auto Power OFF    | ●          |
| HOLD              | ●          |
| Low voltage alarm | ●          |
| Function lock     | ●          |

### Specifications

Accuracy 6-20 mm :  $\pm 2 \mu\text{m}$  / 0.0001"  
 20-100 mm :  $\pm 3 \mu\text{m}$  / 0.00015"

- The given values require close contact of the measuring surfaces.

Resolution 0,001 mm, 0,001 mm / 0.00005" (models up to 4")  
 or 0,001 mm / 0.0001" (models over 5")

Delivered Including box, key, 1 battery, setting ring

### Optional accessories

| No.               | Description                          |
|-------------------|--------------------------------------|
| 156-101-10        | Mount for outside micrometer 100 mm  |
| 04AZB157          | Holder for outside micrometer        |
| <b>Cables</b>     |                                      |
| 05CZA662          | Signal cable 1 m with data button    |
| 05CZA663          | Signal cable 2 m with data button    |
| 06ADV380B         | Signal cable 2 m USB                 |
| 02AZD790B         | Signal cable U-Wave with data button |
| <b>Extensions</b> |                                      |
| 952322            | Extension 100 mm for 6-12 mm         |
| 952621            | Extension 150 mm for 12-20 mm        |
| 952622            | Extension 150 mm for 20-50 mm        |
| 952623            | Extension 150 mm for 50-300 mm       |

### Consumable spares

| No.    | Description  |
|--------|--------------|
| 938882 | Battery SR44 |



468-983



Titanium-coated measuring surfaces for durability

### Metric

Measuring surfaces titanium-coated. Carbide taper and contact points.

| No.     | Range     | Individual ranges      | Models included             | Setting rings included               | Mass g |
|---------|-----------|------------------------|-----------------------------|--------------------------------------|--------|
| 468-981 | 6-12 mm   | 6-8, 8-10, 10-12 mm    | 468-161 / 468-162 / 468-163 | ø8 mm (177-125)<br>ø10 mm (177-126)  | 1,160  |
| 468-982 | 12-25 mm  | 12-16, 16-20, 20-25 mm | 468-164 / 468-165 / 468-166 | ø16 mm (177-177)<br>ø20 mm (177-286) | 1,290  |
| 468-983 | 25-50 mm  | 25-30, 30-40, 40-50 mm | 468-167 / 468-168 / 468-169 | ø30 mm (177-288)<br>ø40 mm (177-290) | 1,480  |
| 468-984 | 50-75 mm  | 50-63, 62-75 mm        | 468-170 / 468-171           | ø62 mm (177-314)                     | 1,270  |
| 468-985 | 75-100 mm | 75-88, 87-100 mm       | 468-172 / 468-173           | ø87 mm (177-318)                     | 1,990  |

### Inch/Metric

| No.      | Range      | Individual ranges                    | Models included             | Setting rings included                | Mass g |
|----------|------------|--------------------------------------|-----------------------------|---------------------------------------|--------|
| 468-986  | 0.275-0.5" | 0.275-0.35", 0.35-0.425", 0.425-0.5" | 468-261 / 468-262 / 468-263 | ø0.35" (177-179)<br>ø0.425" (177-283) | 1,160  |
| 468-987  | 0.5-1"     | 0.5-0.65", 0.65-0.8", 0.8-1"         | 468-264 / 468-265 / 468-266 | ø0.65" (177-182)<br>ø0.8" (177-287)   | 1,290  |
| 468-988* | 1-2"       | 1-1.2", 1.2-1.6", 1.6-2"             | 468-267 / 468-268 / 468-269 | ø1.2" (177-289)<br>ø1.6" (177-291)    | 1,480  |
| 468-989  | 2-3"       | 2-2.5", 2.5-3"                       | 468-270 / 468-271           | ø2.5" (177-315)                       | 1,270  |
| 468-990  | 3-4"       | 3-3.5", 3.5-4"                       | 468-272 / 468-273           | ø3.5" (177-319)                       | 1,990  |

# HOLTEST Bore Micrometer

## Series 368

- Without setting rings or extensions.



### Metric

| No.     | Range    | L1 mm | L2 mm | Mass g |
|---------|----------|-------|-------|--------|
| 368-001 | 2-2,5 mm | 12    | 93    | 88     |
| 368-002 | 2,5-3 mm | 12    | 93    | 88     |
| 368-003 | 3-4 mm   | 22    | 93    | 91     |
| 368-004 | 4-5 mm   | 22    | 93    | 91     |
| 368-005 | 5-6 mm   | 22    | 93    | 91     |

### Metric

With titanium-coated measuring surfaces

| No.     | Range      | Depth without extension mm | L mm | a mm | b mm | c mm | Mass g |
|---------|------------|----------------------------|------|------|------|------|--------|
| 368-161 | 6-8 mm     | 59                         | 59   | 2    |      | 2.5  | 60     |
| 368-162 | 8-10 mm    | 59                         | 59   | 2    |      | 2.5  | 60     |
| 368-163 | 10-12 mm   | 59                         | 59   | 2    |      | 2.5  | 60     |
| 368-164 | 12-16 mm   | 80                         | 82   | 0.3  | 5.6  | 3.5  | 150    |
| 368-165 | 16-20 mm   | 80                         | 82   | 0.3  | 5.6  | 3.5  | 160    |
| 368-166 | 20-25 mm   | 90                         | 94   | 0.3  | 8.3  | 5.2  | 260    |
| 368-167 | 25-30 mm   | 90                         | 94   | 0.3  | 8.3  | 5.2  | 280    |
| 368-168 | 30-40 mm   | 98                         | 102  | 0.3  | 13   | 10   | 290    |
| 368-169 | 40-50 mm   | 98                         | 102  | 0.3  | 13   | 10   | 330    |
| 368-170 | 50-63 mm   | 105                        | 105  | 0.3  | 17   | 14   | 440    |
| 368-171 | 62-75 mm   | 105                        | 105  | 0.3  | 17   | 14   | 450    |
| 368-172 | 75-88 mm   | 105                        | 105  | 0.3  | 17   | 14   | 570    |
| 368-173 | 87-100 mm  | 105                        | 105  | 0.3  | 17   | 14   | 580    |
| 368-174 | 100-125 mm | 158                        | 161  | 12.4 | 21   | 13.8 | 1,030  |
| 368-175 | 125-150 mm | 158                        | 161  | 12.4 | 21   | 13.8 | 1,120  |
| 368-176 | 150-175 mm | 158                        | 161  | 12.4 | 21   | 13.8 | 1,210  |
| 368-177 | 175-200 mm | 158                        | 161  | 12.4 | 21   | 13.8 | 1,320  |
| 368-178 | 200-225 mm | 158                        | 161  | 12.4 | 21   | 13.8 | 1,430  |
| 368-179 | 225-250 mm | 158                        | 161  | 12.4 | 21   | 13.8 | 1,550  |
| 368-180 | 250-275 mm | 158                        | 161  | 12.4 | 21   | 13.8 | 1,700  |
| 368-181 | 275-300 mm | 158                        | 161  | 12.4 | 21   | 13.8 | 1,870  |

## Specifications

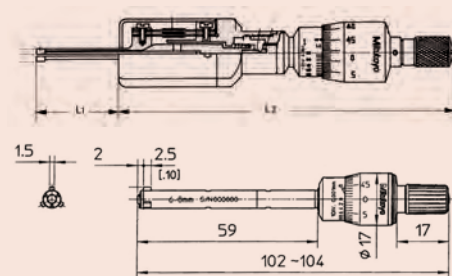
|                            |  |
|----------------------------|--|
| Accuracy                   | 2-20 mm : $\pm 2 \mu\text{m}$<br>20-100 mm : $\pm 3 \mu\text{m}$<br>100-300 mm : $\pm 5 \mu\text{m}$                       |
| Graduation                 | Up to 12 mm : 0,001 mm<br>Over 12 mm : 0,005 mm  |
| Scales                     | Thimble and sleeve satin chrome finish,<br>Up to 12 mm : $\phi 17$ mm<br>Over 12 mm : $\phi 23$ mm<br>Spindle pitch 0,5 mm |
| Measuring spindle          |  |
| Measuring method           | 2-6 mm : 2-point<br>6-300 mm : 3-point   |
| Measuring-surface material | 2-6 mm : Carbide<br>6-300 mm : Titanium coating (1700-2000Hv)  |
| Delivered                  | Including box, key   |

Measuring surfaces titanium-coated or carbide. Carbide taper and contact points.

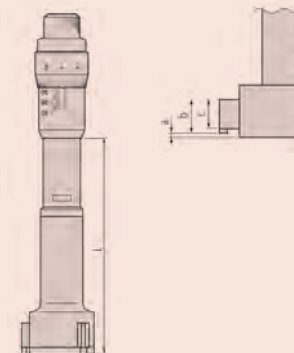
## Optional accessories

| No.    | Description                    |
|--------|--------------------------------|
| 952322 | Extension 100 mm for 6-12 mm   |
| 952621 | Extension 150 mm for 12-20 mm  |
| 952622 | Extension 150 mm for 20-50 mm  |
| 952623 | Extension 150 mm for 50-300 mm |

Except for 368-001/002/003/004/005



368-161/162/163



# HOLTEST Bore Micrometer Inch

## Series 368 Inch



### Specifications

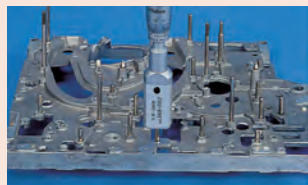
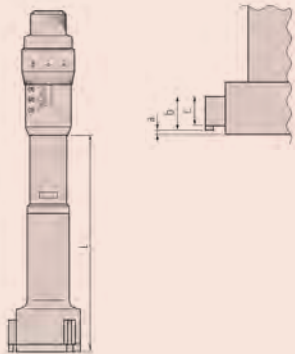
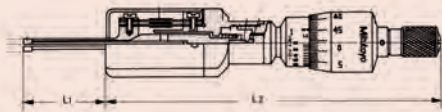
|                            |  |
|----------------------------|--|
| Accuracy                   | 0.08-0.8" : 0.0001"<br>0.8-4" : 0.00015"<br>4-12" : 0.00025"                                     |
| Graduation                 | Up to 0.5" : 0.0001"<br>Over 0.5" : 0.0002"  |
| Scales                     | Thimble and sleeve satin chrome finish,<br>Up to 0.5" : $\phi$ 17 mm<br>Over 0.5" : $\phi$ 23 mm |
| Measuring spindle          | Spindle pitch 0,5 mm   |
| Measuring method           | 0.08-0.28" : 2-point<br>0.275-0.5" : 3-point   |
| Measuring-surface material | 0.08-0.28" : Carbide<br>0.275-0.5" : Titanium coating (1700-2000Hv)                              |
| Delivered                  | Including box, key   |

Measuring surfaces titanium-coated or carbide. Carbide taper and contact point.

### Optional accessories

| No.    | Description                    |
|--------|--------------------------------|
| 952322 | Extension 100 mm for 6-12 mm   |
| 952621 | Extension 150 mm for 12-20 mm  |
| 952622 | Extension 150 mm for 20-50 mm  |
| 952623 | Extension 150 mm for 50-300 mm |

Except for 368-021/022/023/024/025/026



### Inch

| No.      | Range      | L1 mm | L2 mm | Mass g |
|----------|------------|-------|-------|--------|
| 368-021* | 0.08-0.1"  | 12    | 93    | 88     |
| 368-022* | 0.1-0.12"  | 12    | 93    | 88     |
| 368-023* | 0.12-0.16" | 22    | 93    | 91     |
| 368-024* | 0.16-0.2"  | 22    | 93    | 91     |
| 368-025* | 0.2-0.24"  | 22    | 93    | 91     |
| 368-026* | 0.24-0.28" | 22    | 93    | 91     |

### Inch

With titanium-coated measuring surfaces

| No.      | Range       | Depth without extension mm | L mm | a mm | b mm | c mm | Mass g |
|----------|-------------|----------------------------|------|------|------|------|--------|
| 368-261* | 0.275-0.35" | 59                         | 59   | 2    |      | 2.5  | 60     |
| 368-262* | 0.35-0.425" | 59                         | 59   | 2    |      | 2.5  | 60     |
| 368-263* | 0.425-0.5"  | 59                         | 59   | 2    |      | 2.5  | 60     |
| 368-264* | 0.5-0.65"   | 80                         | 82   | 0.3  | 5.6  | 3.5  | 150    |
| 368-265* | 0.65-0.8"   | 80                         | 82   | 0.3  | 5.6  | 3.5  | 160    |
| 368-266* | 0.8-1"      | 90                         | 94   | 0.3  | 8.3  | 5.2  | 260    |
| 368-267* | 1-1.2"      | 90                         | 94   | 0.3  | 8.3  | 5.2  | 280    |
| 368-268* | 1.2-1.6"    | 98                         | 102  | 0.3  | 13   | 10   | 290    |
| 368-269* | 1.6-2"      | 98                         | 102  | 0.3  | 13   | 10   | 330    |
| 368-270* | 2-2.5"      | 105                        | 105  | 0.3  | 17   | 14   | 440    |
| 368-271* | 2.5-3"      | 105                        | 105  | 0.3  | 17   | 14   | 450    |
| 368-272* | 3-3.5"      | 105                        | 105  | 0.3  | 17   | 14   | 570    |
| 368-273* | 3.5-4"      | 105                        | 105  | 0.3  | 17   | 14   | 580    |
| 368-274* | 4-5"        | 158                        | 161  | 12.4 | 21   | 13.8 | 1,030  |
| 368-275* | 5-6"        | 158                        | 161  | 12.4 | 21   | 13.8 | 1,120  |
| 368-276* | 6-7"        | 158                        | 161  | 12.4 | 21   | 13.8 | 1,210  |
| 368-277* | 7-8"        | 158                        | 161  | 12.4 | 21   | 13.8 | 1,320  |
| 368-278* | 8-9"        | 158                        | 161  | 12.4 | 21   | 13.8 | 1,430  |
| 368-279* | 9-10"       | 158                        | 161  | 12.4 | 21   | 13.8 | 1,550  |
| 368-280* | 10-11"      | 158                        | 161  | 12.4 | 21   | 13.8 | 1,700  |
| 368-281* | 11-12"      | 158                        | 161  | 12.4 | 21   | 13.8 | 1,870  |



# HOLTEST Bore Micrometer

## Series 368

- Features spring-loaded contacts that allow for precise bore measurements from 2-200 mm. With setting rings and extensions except for models 368-906/07/26/27, which are supplied with setting rings only.



### Metric

| No.     | Range  | Individual ranges | Setting rings included             | Models included             | Mass g |
|---------|--------|-------------------|------------------------------------|-----------------------------|--------|
| 368-906 | 2-3 mm | 2-2.5, 2.5-3 mm   | ø2.5 mm (177-208)                  | 368-001 / 368-002           | 310    |
| 368-907 | 3-6 mm | 3-4, 4-5, 5-6 mm  | ø4 mm (177-204)<br>ø5 mm (177-205) | 368-003 / 368-004 / 368-005 | 505    |

### Metric

With titanium-coated measuring surfaces

| No.     | Range      | Individual ranges                        | Setting rings included                 | Models included                          | Extension rod | Mass g |
|---------|------------|--|--|--|---------------|--------|
| 368-911 | 6-12 mm    | 6-8, 8-10, 10-12 mm                      | ø8 mm (177-125)<br>ø10 mm (177-126)    | 368-161 / 368-162 /<br>368-163           | 952322        | 180    |
| 368-912 | 12-20 mm   | 12-16, 16-20 mm                          | ø16 mm (177-177)                       | 368-164 / 368-165                        | 952621        | 280    |
| 368-913 | 20-50 mm   | 20-25, 25-30, 30-40,<br>40-50 mm         | ø25 mm (177-139)<br>ø40 mm (177-290)   | 368-166 / 368-167 /<br>368-168 / 368-169 | 952622        | 960    |
| 368-914 | 50-100 mm  | 50-63, 62-75, 75-88,<br>87-100 mm        | ø62 mm (177-314)<br>ø87 mm (177-318)   | 368-170 / 368-171 /<br>368-172 / 368-173 | 952623        | 2,030  |
| 368-915 | 100-200 mm | 100-125, 125-150,<br>150-175, 175-200 mm | ø125 mm (177-298)<br>ø175 mm (177-302) | 368-174 / 368-175 /<br>368-176 / 368-177 | 952623        | 4,680  |

### Inch

| No.      | Range      | Individual ranges                               | Setting rings included               | Models included             | Mass g |
|----------|------------|---|--------------------------------------|-----------------------------|--------|
| 368-926* | 0.08-0.12" | 0.08-0.1", 0.1-0.12"                            | ø0.1" (177-209)                      | 368-021 / 368-022           | 310    |
| 368-927  | 0.12-0.28" | 0.12-0.16", 0.16-0.2", 0.2-0.24",<br>0.24-0.28" | ø0.16" (177-206)<br>ø0.24" (177-207) | 368-023 / 368-024 / 368-025 | 505    |

### Inch

With titanium-coated measuring surfaces

| No.      | Range      | Individual ranges                       | Setting rings included              | Models included                          | Mass g |
|----------|------------|---|-------------------------------------|--|--------|
| 368-916* | 0.275-0.5" | 0.275-0.35", 0.35-0.425",<br>0.425-0.5" | ø0.35" (177-179)<br>ø0.5" (177-180) | 368-261 / 368-262 / 368-263              | 180    |
| 368-917* | 0.5-0.8"   | 0.5-0.65", 0.65-0.8"                    | ø0.65"                              | 368-264 / 368-265                        | 280    |
| 368-918* | 0.8-2"     | 0.8-1", 1-1.2", 1.2-1.6", 1.6-2"        | ø1"<br>ø1.6"                        | 368-266 / 368-267 / 368-268 /<br>368-269 | 960    |
| 368-919* | 2-4"       | 2-2.5", 2.5-3", 3-3.5", 3.5-4"          | ø2.5"<br>ø3.5"                      | 368-270 / 368-271 / 368-272 /<br>368-273 | 2,030  |
| 368-920* | 4-8"       | 4-5", 5-6", 6-7", 7-8"                  | ø5"<br>ø7"                          | 368-274 / 368-275 / 368-276 /<br>368-277 | 4,680  |

## Specifications

|            |   |
|------------|---|
| Accuracy   | 2-20 mm : 2 µm / 0.0001"<br>20-100 mm : 3 µm / 0.00015"<br>100-300 mm : 5 µm / 0.00025" |
| Graduation | 0,001 mm, 0,005 mm (models over 12 mm)<br>0.0001" or 0.0002" (models over 0.5")         |
| Scales     | Thimble and sleeve satin chrome finish,<br>Up to 12 mm : ø17 mm<br>Over 12 mm : ø23 mm  |
| Delivered  | Including box, key  |

Measuring surfaces titanium-coated.  
Carbide taper and contact points.  
Except 368-906/07/26/27 carbide.



368-906



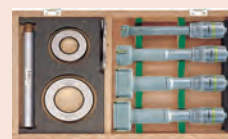
368-907



368-911



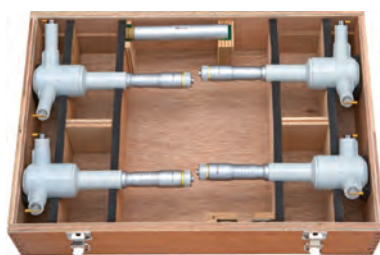
368-912



368-913



368-914



368-915

# HOLTEST Bore Micrometer

## Series 368

- Without setting rings or extensions.



### Specifications

|                   |   |
|-------------------|---|
| Accuracy          | 12-20 mm : $\pm 2 \mu\text{m}$ / 0.0001"<br>20-100 mm : $\pm 3 \mu\text{m}$ / 0.00015"<br>100-300 mm : $\pm 5 \mu\text{m}$ / 0.00025" |
| Graduation        | Up to 12 mm : 0,001 mm/0.0001"<br>Over 12 mm : 0,005 mm/0.0002"   |
| Scales            | Thimble and sleeve satin chrome finish,<br>Up to 12 mm : $\varnothing 17 \text{ mm}$<br>Over 12 mm : $\varnothing 23 \text{ mm}$      |
| Measuring spindle | Spindle pitch 0,5 mm  |
| Measuring method  | 3-point   |
| Delivered         | Including box, key  |

Measuring surfaces and tapers, hardened steel. Measuring surfaces and points are carbide-tipped.

### Optional accessories

| No.    | Description                    |
|--------|--------------------------------|
| 952621 | Extension 150 mm for 12-20 mm  |
| 952622 | Extension 150 mm for 20-50 mm  |
| 952623 | Extension 150 mm for 50-300 mm |



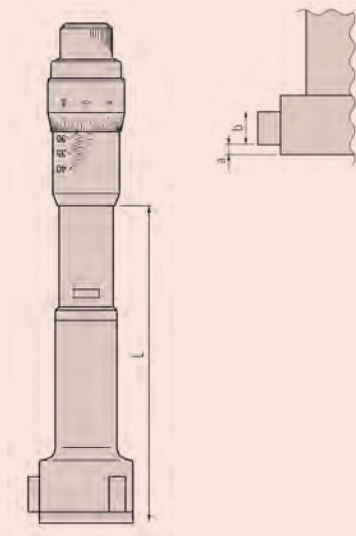
368-769



368-770



368-774



### Metric

| No.     | Range      | Depth without extension mm | L mm | a mm | b mm | Mass g |
|---------|------------|----------------------------|------|------|------|--------|
| 368-764 | 12-16 mm   | 80                         | 82   | 2.6  | 3.5  | 150    |
| 368-765 | 16-20 mm   | 80                         | 82   | 2.6  | 3.5  | 150    |
| 368-766 | 20-25 mm   | 90                         | 94   | 3.4  | 5.2  | 260    |
| 368-767 | 25-30 mm   | 90                         | 94   | 3.4  | 5.2  | 280    |
| 368-768 | 30-40 mm   | 98                         | 102  | 3.4  | 10   | 290    |
| 368-769 | 40-50 mm   | 98                         | 102  | 3.4  | 10   | 330    |
| 368-770 | 50-63 mm   | 105                        | 105  | 3.4  | 14   | 440    |
| 368-771 | 62-75 mm   | 105                        | 105  | 3.4  | 14   | 450    |
| 368-772 | 75-88 mm   | 105                        | 105  | 3.4  | 14   | 560    |
| 368-773 | 87-100 mm  | 105                        | 105  | 3.4  | 14   | 570    |
| 368-774 | 100-125 mm | 158                        | 161  | 19.6 | 13.8 | 1,020  |
| 368-775 | 125-150 mm | 158                        | 161  | 19.6 | 13.8 | 1,110  |
| 368-776 | 150-175 mm | 158                        | 161  | 19.6 | 13.8 | 1,200  |
| 368-777 | 175-200 mm | 158                        | 161  | 19.6 | 13.8 | 1,300  |
| 368-778 | 200-225 mm | 158                        | 161  | 19.6 | 13.8 | 1,420  |
| 368-779 | 225-250 mm | 158                        | 161  | 19.6 | 13.8 | 1,540  |
| 368-780 | 250-275 mm | 158                        | 161  | 19.6 | 13.8 | 1,690  |
| 368-781 | 275-300 mm | 158                        | 161  | 19.6 | 13.8 | 1,860  |

### Inch

| No.      | Range     | Depth without extension mm | L mm | a mm | b mm | Mass g |
|----------|-----------|----------------------------|------|------|------|--------|
| 368-864  | 0.5-0.65" | 80                         | 82   | 2.6  | 3.5  | 150    |
| 368-865  | 0.65-0.8" | 80                         | 82   | 2.6  | 3.5  | 150    |
| 368-866* | 0.8-1"    | 90                         | 94   | 3.4  | 5.2  | 260    |
| 368-867* | 1-1.2"    | 90                         | 94   | 3.4  | 5.2  | 280    |
| 368-868* | 1.2-1.6"  | 98                         | 102  | 3.4  | 10   | 290    |
| 368-869* | 1.6-2"    | 98                         | 102  | 3.4  | 10   | 330    |
| 368-870* | 2-2.5"    | 105                        | 105  | 3.4  | 14   | 440    |
| 368-871* | 2.5-3"    | 105                        | 105  | 3.4  | 14   | 450    |
| 368-872  | 3-3.5"    | 105                        | 105  | 3.4  | 14   | 560    |
| 368-873* | 3.5-4"    | 105                        | 105  | 3.4  | 14   | 570    |
| 368-874* | 4-5"      | 158                        | 161  | 19.6 | 13.8 | 1,020  |
| 368-875  | 5-6"      | 158                        | 161  | 19.6 | 13.8 | 1,110  |
| 368-876* | 6-7"      | 158                        | 161  | 19.6 | 13.8 | 1,200  |
| 368-877* | 7-8"      | 158                        | 161  | 19.6 | 13.8 | 1,300  |
| 368-878* | 8-9"      | 158                        | 161  | 19.6 | 13.8 | 1,420  |
| 368-879* | 9-10"     | 158                        | 161  | 19.6 | 13.8 | 1,540  |
| 368-880* | 10-11"    | 158                        | 161  | 19.6 | 13.8 | 1,690  |
| 368-881* | 11-12"    | 158                        | 161  | 19.6 | 13.8 | 1,860  |

# HOLTEST Bore Micrometer

## Series 368

- Analogue bore micrometer supplied in sets.
- Supplied with one or two setting rings and an extension to aid in measuring deep holes.



### Metric

| No.     | Range      | Individual ranges                     | Setting rings included                 | Models included                          | Extension rod | Mass g |
|---------|------------|---------------------------------------|--|--|---------------|--------|
| 368-991 | 12-20 mm   | 12-16, 16-20 mm                       | ø16 mm (177-177)                       | 368-764 / 368-765                        | 952621        | 310    |
| 368-992 | 20-50 mm   | 20-25, 25-30, 30-40, 40-50 mm         | ø25 mm (177-139)<br>ø40 mm (177-290)   | 368-766 / 368-767<br>368-768 / 368-769   | 952622        | 1,160  |
| 368-993 | 50-100 mm  | 50-63, 62-75, 75-88, 87-100 mm        | ø62 mm (177-314)<br>ø87 mm (177-318)   | 368-770 / 368-771 /<br>368-772 / 368-773 | 952623        | 2,020  |
| 368-994 | 100-200 mm | 100-125, 125-150, 150-175, 175-200 mm | ø125 mm (177-298)<br>ø175 mm (177-302) | 368-774 / 368-775 /<br>368-776 / 368-777 | 952623        | 4,630  |

### Inch

| No.      | Range    | Individual ranges                | Setting rings included | Remarks            | Mass g |
|----------|----------|----------------------------------|------------------------|--------------------|--------|
| 368-995  | 0.5-0.8" | 0.5-0.65", 0.65-0.8"             | ø0.65"                 | With extension rod | 260    |
| 368-996* | 0.8-2"   | 0.8-1", 1-1.2", 1.2-1.6", 1.6-2" | ø1"<br>ø1.6"           | With extension rod | 960    |
| 368-997* | 2-4"     | 2-2.5", 2.5-3", 3-3.5", 3.5-4"   | ø2.5"<br>ø3.5"         | With extension rod | 2,080  |
| 368-998* | 4-8"     | 4-5", 5-6", 6-7", 7-8"           | ø5"<br>ø7"             | With extension rod | 4,630  |

## Specifications

|            |   |
|------------|---|
| Accuracy   | 12-20 mm : ±2 µm / 0.0001"<br>20-100 mm : ±3 µm / 0.00015"<br>100-300 mm : ±5 µm / 0.00025" |
| Graduation | Up to 12 mm : 0,001 mm/0.0001"<br>Over 12 mm : 0,005 mm/0.0002"                             |
| Scales     | Thimble and sleeve satin chrome finish,<br>Up to 12 mm : Ø17 mm<br>Over 12 mm : Ø23 mm      |
| Delivered  | Including box, key  |

Measuring surfaces and tapers, hardened steel. Measuring surfaces and points are carbide-tipped.

## Optional accessories

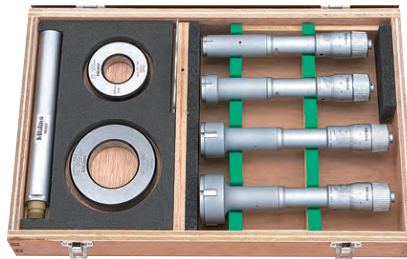
| No.    | Description                    |
|--------|--------------------------------|
| 952621 | Extension 150 mm for 12-20 mm  |
| 952622 | Extension 150 mm for 20-50 mm  |
| 952623 | Extension 150 mm for 50-300 mm |



Extension



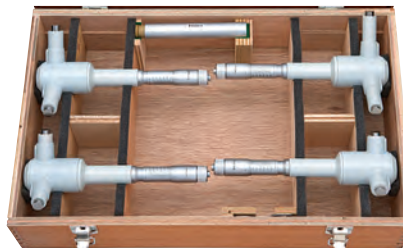
368-991



368-992



368-993



368-994

# ABSOLUTE BOREMATIC Bore Micrometer

## Series 568

ABSOLUTE  
Absolute System Released by MITUTOYO



- Features tolerance judgement and data hold functions.
- Provides Digimatic data output.

| Functions                 | Series 568 |
|---------------------------|------------|
| Data output               | ●          |
| ZERO / ABS switching      | ●          |
| PRESET function           | ●          |
| Input of tolerance limits | ●          |
| ON/OFF                    | ●          |
| DATA/HOLD                 | ●          |

### Specifications

|                |   |
|----------------|---|
| Accuracy       | 6-20 mm : $\pm 5 \mu\text{m}$ / 0.00025"<br>20-125 mm : $\pm 6 \mu\text{m}$ / 0.0003" |
| Resolution     | 0,001 mm or 0,001 mm / 0.00005"   |
| Measuring pins | Titanium coated   |

### Optional accessories

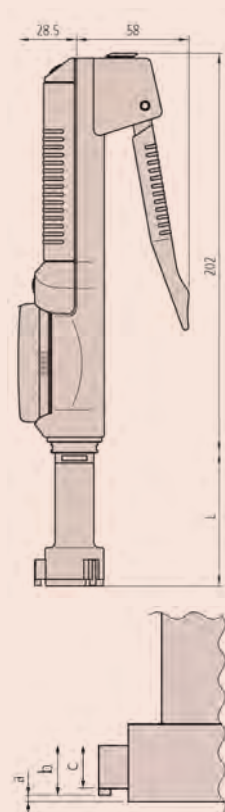
| No.       | Description          |
|-----------|----------------------|
| 937387    | Signal cable 1 m     |
| 965013    | Signal cable 2 m     |
| 02AZD790E | Signal cable U-Wave  |
| 06ADV380E | Signal cable 2 m USB |

### Extensions

|        |                                |
|--------|--------------------------------|
| 952322 | Extension 100 mm for 6-12 mm   |
| 952621 | Extension 150 mm for 12-20 mm  |
| 952622 | Extension 150 mm for 20-50 mm  |
| 952623 | Extension 150 mm for 50-300 mm |

### Consumable spares

| No.    | Description  |
|--------|--------------|
| 938882 | Battery SR44 |



568-333-10

568-338-10

Titanium-coated measuring surfaces for durability

### Metric

| No.         | Range      | L mm | a mm | b mm | c mm | Mass g |
|-------------|------------|------|------|------|------|--------|
| 568-331-10  | 6-8 mm     | 83   | 2    |      | 2.5  | 480    |
| 568-332-10  | 8-10 mm    | 83   | 2    |      | 2.5  | 485    |
| 568-333-10  | 10-12 mm   | 83   | 2    |      | 2.5  | 485    |
| 568-334-10  | 12-16 mm   | 53   | 0.3  | 5.6  | 3.5  | 475    |
| 568-335-10  | 16-20 mm   | 53   | 0.3  | 5.6  | 3.5  | 480    |
| 568-336-10  | 20-25 mm   | 59   | 0.3  | 8.3  | 5.2  | 540    |
| 568-337-10  | 25-30 mm   | 59   | 0.3  | 8.3  | 5.2  | 555    |
| 568-338-10  | 30-40 mm   | 67   | 0.3  | 13   | 10   | 565    |
| 568-339-10  | 40-50 mm   | 67   | 0.3  | 13   | 10   | 610    |
| 568-340-10  | 50-63 mm   | 75   | 0.3  | 17   | 14   | 730    |
| 568-346-10  | 50-75 mm   | 75   | 0.3  | 17   | 14   | 780    |
| 568-341-10* | 62-75 mm   | 75   | 0.3  | 17   | 14   | 740    |
| 568-342-10* | 75-88 mm   | 75   | 0.3  | 17   | 14   | 790    |
| 568-347-10  | 75-100 mm  | 75   | 0.3  | 17   | 14   | 850    |
| 568-343-10* | 87-100 mm  | 75   | 0.3  | 17   | 14   | 800    |
| 568-344-10* | 100-113 mm | 75   | 0.3  | 17   | 14   | 900    |
| 568-348-10  | 100-125 mm | 75   | 0.3  | 17   | 14   | 970    |
| 568-345-10* | 112-125 mm | 75   | 0.3  | 17   | 14   | 910    |

### Inch/Metric

| No.         | Range        | L mm | a mm | b mm | c mm | Mass g |
|-------------|--------------|------|------|------|------|--------|
| 568-431-10* | 0.275-0.350" | 83   | 2    |      | 2.5  | 480    |
| 568-432-10* | 0.350-0.425" | 83   | 2    |      | 2.5  | 485    |
| 568-433-10  | 0.425-0.500" | 83   | 2    |      | 2.5  | 485    |
| 568-434-10* | 0.50-0.65"   | 53   | 0.3  | 5.6  | 3.5  | 475    |
| 568-435-10* | 0.65-0.80"   | 53   | 0.3  | 5.6  | 3.5  | 480    |
| 568-436-10  | 0.8-1.0"     | 59   | 0.3  | 8.3  | 5.2  | 540    |
| 568-437-10  | 1.0-1.2"     | 59   | 0.3  | 8.3  | 5.2  | 555    |
| 568-438-10  | 1.2-1.6"     | 67   | 0.3  | 13   | 10   | 565    |
| 568-439-10  | 1.6-2.0"     | 67   | 0.3  | 13   | 10   | 610    |
| 568-440-10  | 2.0-2.5"     | 75   | 0.3  | 17   | 14   | 730    |
| 568-441-10* | 2.5-3.0"     | 75   | 0.3  | 17   | 14   | 740    |
| 568-442-10* | 3.0-3.5"     | 75   | 0.3  | 17   | 14   | 790    |
| 568-443-10  | 3.5-4.0"     | 75   | 0.3  | 17   | 14   | 800    |
| 568-444-10* | 4.0-4.5"     | 75   | 0.3  | 17   | 14   | 900    |
| 568-445-10* | 4.5-5.0"     | 75   | 0.3  | 17   | 14   | 910    |

# ABSOLUTE BOREMATIC Bore Micrometer

## Series 568

- Interchangeable head type Digimatic bore micrometer supplied in a set consisting of a display unit and 3 or 4 heads to cover the measuring range.
- Setting rings included but without extensions.



568-971-10



568-973-10



Titanium-coated measuring surfaces for durability

### Metric

| No.         | Range     | Individual ranges   | Setting rings included               | Mass g |
|-------------|-----------|---|--------------------------------------|--------|
| 568-971-10  | 6-12 mm   | 6-8 mm<br>8-10 mm<br>10-12 mm                             | Ø8 mm (177-125)<br>Ø10 mm (177-126)  | 530    |
| 568-972-10  | 12-25 mm  | 12-16 mm<br>16-20 mm<br>20-25 mm                          | Ø16 mm (177-177)<br>Ø20 mm (177-286) | 690    |
| 568-973-10  | 25-50 mm  | 25-30 mm<br>30-40 mm<br>40-50 mm                          | Ø30 mm (177-288)<br>Ø40 mm (177-290) | 930    |
| 568-974-10* | 50-100 mm | 50-63 mm<br>62-75 mm<br>75-88 mm<br>87-100 mm             | Ø62 mm (177-314)<br>Ø87 mm (177-318) | 1,850  |
| 568-975-10  | 50-100 mm | 50-63 mm<br>75-88 mm<br>(62-75, 87-100 mm) <sup>(1)</sup> | Ø62 mm (177-314)<br>Ø87 mm (177-318) | 1,270  |

<sup>(1)</sup> Using interchangeable measuring pins

### Inch

| No.         | Range      | Individual ranges                                   | Setting rings included              | Mass g |
|-------------|------------|---|-------------------------------------|--------|
| 568-976-10  | 0.275-0.5" | 0.275-0.35"<br>0.35-0.425"<br>0.425-0.5"            | Ø0.35"<br>Ø0.425"                   | 530    |
| 568-977-10  | 0.5-1"     | 0.5-0.65"<br>0.65-0.8"<br>0.8-1"                    | Ø0.65" (177-182)<br>Ø0.8" (177-287) | 690    |
| 568-978-10  | 1-2"       | 1-1.2"<br>1.2-1.6"<br>1.6-2"                        | Ø1.2" (177-289)<br>Ø1.6" (177-291)  | 930    |
| 568-980-10* | 2-4"       | 2-2.5"<br>3-3.5"<br>(2.5-3", 3.5-4") <sup>(1)</sup> | Ø2.5" (177-315)<br>Ø3.5" (177-319)  | 1,850  |
| 568-979-10* | 3-4"       | 2-2.5"<br>2.5-3"<br>3-3.5"<br>3.5-4"                | Ø2.5" (177-315)<br>Ø3.5" (177-319)  | 1,270  |

<sup>(1)</sup> Using interchangeable measuring pins

| Functions                 | Series 568 |
|---------------------------|------------|
| Data output               | ●          |
| ZERO / ABS switching      | ●          |
| PRESET function           | ●          |
| Input of tolerance limits | ●          |
| ON/OFF                    | ●          |
| DATA/HOLD                 | ●          |

### Specifications

|                |  |
|----------------|--|
| Accuracy       | 0,005 mm (measuring range 6-20 mm)<br>0,006 mm (measuring range 20-125 mm) |
| Resolution     | 0,001 mm or 0,001 mm / 0.00005"  |
| Measuring pins | Titanium coated  |

### Optional accessories

| No.               | Description                    |
|-------------------|--------------------------------|
| 937387            | Signal cable 1 m               |
| 965013            | Signal cable 2 m               |
| 02AZD790E         | Signal cable U-Wave            |
| 06ADV380E         | Signal cable 2 m USB           |
| <b>Extensions</b> |                                |
| 952322            | Extension 100 mm for 6-12 mm   |
| 952621            | Extension 150 mm for 12-20 mm  |
| 952622            | Extension 150 mm for 20-50 mm  |
| 952623            | Extension 150 mm for 50-300 mm |

### Consumable spares

| No.    | Description  |
|--------|--------------|
| 938882 | Battery SR44 |

# ABSOLUTE BOREMATIC Bore Micrometer

## Series 568

ABSOLUTE™  
Absolute System Formed by MITUTOYO



- Individual Digimatic bore micrometers supplied in sets of 2 or 3 to cover the measuring range.
- Setting rings included but without extensions.



| Functions                 | Series 568 |
|---------------------------|------------|
| Data output               | ●          |
| ZERO / ABS switching      | ●          |
| PRESET function           | ●          |
| Input of tolerance limits | ●          |
| ON/OFF                    | ●          |
| DATA/HOLD                 | ●          |

### Specifications

|                |  |
|----------------|--|
| Accuracy       | 0,005 mm (measuring range 6-20 mm)<br>0,006 mm (measuring range 20-125 mm) |
| Resolution     | 0,001 mm or 0,001 mm / 0.00005"  |
| Measuring pins | Titanium coated  |

### Optional accessories

| No.       | Description          |
|-----------|----------------------|
| 937387    | Signal cable 1 m     |
| 965013    | Signal cable 2 m     |
| 02AZD790E | Signal cable U-Wave  |
| 06ADV380E | Signal cable 2 m USB |

### Extensions

|        |                                |
|--------|--------------------------------|
| 952322 | Extension 100 mm for 6-12 mm   |
| 952621 | Extension 150 mm for 12-20 mm  |
| 952622 | Extension 150 mm for 20-50 mm  |
| 952623 | Extension 150 mm for 50-300 mm |

### Consumable spares

| No.    | Description  |
|--------|--------------|
| 938882 | Battery SR44 |

### Metric

| No.         | Range     | Individual ranges   | Setting rings included               | Mass g |
|-------------|-----------|---|--------------------------------------|--------|
| 568-981-10* | 6-12 mm   | 6-8 mm<br>8-10 mm<br>10-12 mm                             | Ø8 mm<br>Ø10 mm                      | 1,450  |
| 568-982-10* | 12-25 mm  | 12-16 mm<br>16-20 mm<br>20-25 mm                          | Ø16 mm (177-177)<br>Ø20 mm (177-286) | 1,520  |
| 568-983-10* | 25-50 mm  | 25-30 mm<br>30-40 mm<br>40-50 mm                          | Ø30 mm (177-288)<br>Ø40 mm (177-290) | 1,750  |
| 568-984-10* | 50-75 mm  | 50-63 mm<br>62-75 mm                                      | Ø62 mm (177-314)                     | 1,490  |
| 568-986-10* | 50-100 mm | 50-63 mm<br>75-88 mm<br>(62-75, 87-100 mm) <sup>(1)</sup> | Ø62 mm (177-314)<br>Ø87 mm (177-318) | 1,680  |
| 568-985-10* | 75-100 mm | 75-88 mm<br>87-100 mm                                     | Ø87 mm (177-318)                     | 1,610  |

<sup>(1)</sup> Using interchangeable measuring pins

### Inch

| No.         | Range      | Individual ranges                                   | Setting rings included              | Mass g |
|-------------|------------|---|-------------------------------------|--------|
| 568-987-10* | 0.275-0.5" | 0.275-0.35"<br>0.35-0.425"<br>0.425-0.5"            | Ø0.35"<br>Ø0.425"                   | 1,450  |
| 568-988-10* | 0.5-1"     | 0.5-0.65"<br>0.65-0.8"<br>0.8-1"                    | Ø0.65" (177-182)<br>Ø0.8" (177-287) | 1,520  |
| 568-989-10* | 1-2"       | 1-1.2"<br>1.2-1.6"<br>1.6-2"                        | Ø1.2" (177-289)<br>Ø1.6" (177-291)  | 1,750  |
| 568-990-10* | 2-3"       | 2-2.5"<br>2.5-3"                                    | Ø2.5" (177-315)                     | 1,490  |
| 568-992-10* | 2-4"       | 2-2.5"<br>3-3.5"<br>(2.5-3", 3.5-4") <sup>(1)</sup> | Ø2.5" (177-315)<br>Ø3.5" (177-319)  | 1,680  |
| 568-991-10* | 3-4"       | 3-3.5"<br>3.5-4"                                    | Ø3.5" (177-319)                     | 1,610  |

<sup>(1)</sup> Using interchangeable measuring pins

# Measuring heads for series 568

## Series 568



Display unit 568-012

- 1 : Measuring head
- 2 : Adapter
- 3 : Display unit Borematic

### Metric

| No.      | Range      |
|----------|------------|
| 04AZB136 | 6-8 mm     |
| 04AZB137 | 8-10 mm    |
| 04AZB138 | 10-12 mm   |
| 04AZA719 | 12-16 mm   |
| 04AZA720 | 16-20 mm   |
| 04AZA728 | 20-25 mm   |
| 04AZA729 | 25-30 mm   |
| 04AZA737 | 30-40 mm   |
| 04AZA738 | 40-50 mm   |
| 04AZA750 | 50-63 mm   |
| 04AZA935 | 50-75 mm   |
| 04AZA751 | 62-75 mm   |
| 04AZA752 | 75-88 mm   |
| 04AZA936 | 75-100 mm  |
| 04AZA753 | 87-100 mm  |
| 04AZA937 | 100-125 mm |

### Metric

Display unit Borematic

| No.     |
|---------|
| 568-012 |

### Inch/Metric

| No.       | Range                    |
|-----------|--------------------------|
| 04AZA721  | 12,7-16,51 mm/0.5-0.65"  |
| 04AZA722  | 16,51-20,32 mm/0.65-0.8" |
| 04AZA730  | 20,32-25,4 mm/0.8-1"     |
| 04AZA731  | 25,4-30,48 mm/1-1.2"     |
| 04AZA739  | 30,48-40,64 mm/1.2-1.6"  |
| 04AZA740* | 40,64-50,8 mm/1.6-2"     |
| 04AZA754  | 50,8-63,5 mm/2-2.5"      |
| 04AZA755  | 63,5-76,2 mm/2.5-3"      |
| 04AZA756* | 76,2-88,9 mm/3-3.5"      |
| 04AZA757  | 88,9-101,6 mm/3.5-4"     |

### Inch

Display unit Borematic

| No.      |
|----------|
| 568-013* |

| No.    | Range     |
|--------|-----------|
| 954595 | 6-12 mm   |
| 216556 | 12-20 mm  |
| 216557 | 20-50 mm  |
| 216558 | 50-125 mm |

\* Note : These adapters are necessary to adapt measuring heads to the Borematic display unit.

# Setting Rings

## Series 177

### Metric

| No.      | Nominal size $\phi d$ | $\phi D$ mm | $\phi E$ mm | T mm | Type | Material |
|----------|-----------------------|-------------|-------------|------|------|----------|
| 177-220  | 1 mm                  | 20          |             | 4    | A    | Steel    |
| 177-222  | 1.1 mm                | 20          |             | 4    | A    | Steel    |
| 177-225  | 1.2 mm                | 20          |             | 4    | A    | Steel    |
| 177-227  | 1.3 mm                | 20          |             | 4    | A    | Steel    |
| 177-230  | 1.4 mm                | 20          |             | 4    | A    | Steel    |
| 177-236  | 1.75 mm               | 25          |             | 5    | A    | Steel    |
| 177-239  | 2 mm                  | 25          |             | 5    | A    | Steel    |
| 177-242  | 2.25 mm               | 25          |             | 5    | A    | Steel    |
| 177-208  | 2.5 mm                | 25          |             | 7    | A    | Steel    |
| 177-246  | 2.75 mm               | 25          |             | 7    | A    | Steel    |
| 177-248  | 3 mm                  | 25          |             | 7    | A    | Steel    |
| 177-250  | 3.25 mm               | 25          |             | 7    | A    | Steel    |
| 177-252  | 3.5 mm                | 25          |             | 7    | A    | Steel    |
| 177-255  | 3.75 mm               | 25          |             | 7    | A    | Steel    |
| 177-204  | 4 mm                  | 25          |             | 7    | A    | Steel    |
| 177-418* | 4 mm                  | 25          |             | 7    | A    | Ceramic  |
| 177-257  | 4.5 mm                | 25          |             | 7    | A    | Steel    |
| 177-205  | 5 mm                  | 25          |             | 7    | A    | Steel    |
| 177-263  | 5.5 mm                | 25          |             | 7    | A    | Steel    |
| 177-267  | 6 mm                  | 25          |             | 7    | A    | Steel    |
| 177-420  | 6 mm                  | 25          |             | 7    | A    | Ceramic  |
| 177-271  | 6.5 mm                | 25          |             | 7    | A    | Steel    |
| 177-275  | 7 mm                  | 25          |             | 7    | A    | Steel    |
| 177-125  | 8 mm                  | 32          |             | 10   | A    | Steel    |
| 177-423  | 8 mm                  | 32          |             | 10   | A    | Ceramic  |
| 177-126  | 10 mm                 | 32          |             | 10   | A    | Steel    |
| 177-424  | 10 mm                 | 32          |             | 10   | A    | Ceramic  |
| 177-284  | 12 mm                 | 32          |             | 10   | A    | Steel    |
| 177-425  | 12 mm                 | 32          |             | 10   | A    | Ceramic  |
| 177-132  | 14 mm                 | 38          |             | 10   | A    | Steel    |
| 177-177  | 16 mm                 | 45          |             | 10   | A    | Steel    |
| 177-427  | 16 mm                 | 45          |             | 10   | A    | Ceramic  |
| 177-133  | 17 mm                 | 45          |             | 10   | A    | Steel    |
| 177-286  | 20 mm                 | 45          |             | 10   | A    | Steel    |
| 177-429  | 20 mm                 | 45          |             | 10   | A    | Ceramic  |
| 177-139  | 25 mm                 | 53          |             | 15   | A    | Steel    |
| 177-430  | 25 mm                 | 53          |             | 15   | A    | Ceramic  |
| 177-288  | 30 mm                 | 71          |             | 15   | A    | Steel    |
| 177-431  | 30 mm                 | 71          |             | 15   | A    | Ceramic  |
| 177-140  | 35 mm                 | 71          |             | 15   | A    | Steel    |
| 177-432  | 35 mm                 | 71          |             | 15   | A    | Ceramic  |
| 177-290  | 40 mm                 | 71          |             | 15   | A    | Steel    |
| 177-433  | 40 mm                 | 71          |             | 15   | A    | Ceramic  |
| 177-178  | 45 mm                 | 85          |             | 15   | A    | Steel    |
| 177-434  | 45 mm                 | 85          |             | 15   | A    | Ceramic  |
| 177-146  | 50 mm                 | 85          |             | 20   | A    | Steel    |
| 177-292  | 60 mm                 | 112         |             | 20   | A    | Steel    |
| 177-314  | 62 mm                 | 112         |             | 20   | A    | Steel    |
| 177-147  | 70 mm                 | 112         |             | 20   | A    | Steel    |
| 177-316  | 75 mm                 | 125         |             | 25   | A    | Steel    |
| 177-294  | 80 mm                 | 125         |             | 25   | A    | Steel    |
| 177-318  | 87 mm                 | 140         |             | 25   | A    | Steel    |
| 177-148  | 90 mm                 | 140         |             | 25   | A    | Steel    |
| 177-296  | 100 mm                | 160         |             | 25   | A    | Steel    |
| 177-298  | 125 mm                | 210         | 168         | 38.1 | B    | Steel    |
| 177-300  | 150 mm                | 235         | 187         | 38.1 | B    | Steel    |
| 177-302  | 175 mm                | 260         | 215         | 38.1 | B    | Steel    |
| 177-304  | 200 mm                | 311         | 244         | 38.1 | B    | Steel    |
| 177-306  | 225 mm                | 337         | 264         | 38.1 | B    | Steel    |
| 177-308  | 250 mm                | 362         | 290         | 38.1 | B    | Steel    |
| 177-310  | 275 mm                | 413         | 321         | 38.1 | B    | Steel    |
| 177-312  | 300 mm                | 438         | 340         | 38.1 | B    | Steel    |

### Specifications

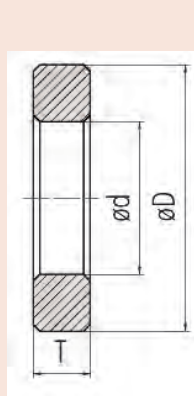
|   |  |
|---|--|
| Uncertainty in the diameter calibration value | $\pm 1.5 \mu\text{m}$ for $\phi 1-100$ mm<br>$\pm 2.5 \mu\text{m}$ for $\phi 125-300$ mm   |
| Cylindricity                                  | $1.0 \mu\text{m}$ for $\phi 1-60$ mm<br>$1.5 \mu\text{m}$ for $\phi 62-90$ mm<br>$2.0 \mu\text{m}$ for $\phi 100-150$ mm<br>$2.5 \mu\text{m}$ for $\phi 175-225$ mm<br>$3.0 \mu\text{m}$ for $\phi 250-300$ mm |



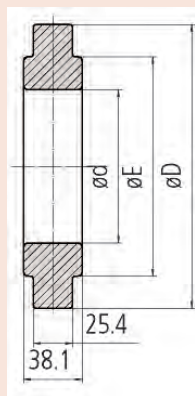
177-300



177-139



Type A



Type B

Standards used for setting inside and bore micrometers. Tolerance from nominal diameter is  $\pm 0.01$  mm up to 45 mm, and  $\pm 0.02$  mm above. The calibrated diameter of each ring is marked on its upper face.



# Setting Rings

## Series 177

Inch

| No.      | Nominal size $\phi$ D | $\phi$ D mm | $\phi$ E mm | T mm | Type | Material |
|----------|-----------------------|-------------|-------------|------|------|----------|
| 177-209* | 0.10"                 | 0.98        |             | 0.28 | A    | Steel    |
| 177-206* | 0.16"                 | 0.98        |             | 0.28 | A    | Steel    |
| 177-518* | 0.16"                 | 0.98        |             | 0.28 | A    | Ceramic  |
| 177-207* | 0.24"                 | 0.98        |             | 0.28 | A    | Steel    |
| 177-520* | 0.24"                 | 0.98        |             | 0.28 | A    | Ceramic  |
| 177-281* | 0.275"                | 0.98        |             | 0.28 | A    | Steel    |
| 177-522* | 0.275"                | 0.98        |             | 0.28 | A    | Ceramic  |
| 177-179* | 0.35"                 | 1.26        |             | 0.39 | A    | Steel    |
| 177-523* | 0.35"                 | 1.26        |             | 0.39 | A    | Ceramic  |
| 177-283* | 0.425"                | 1.26        |             | 0.39 | A    | Steel    |
| 177-524* | 0.425"                | 1.26        |             | 0.39 | A    | Ceramic  |
| 177-180* | 0.50"                 | 1.26        |             | 0.39 | A    | Steel    |
| 177-525* | 0.50"                 | 1.26        |             | 0.39 | A    | Ceramic  |
| 177-181* | 0.60"                 | 1.5         |             | 0.39 | A    | Steel    |
| 177-182  | 0.65"                 | 1.77        |             | 0.39 | A    | Steel    |
| 177-527* | 0.65"                 | 1.77        |             | 0.39 | A    | Ceramic  |
| 177-183* | 0.70"                 | 1.77        |             | 0.39 | A    | Steel    |
| 177-287  | 0.80"                 | 1.77        |             | 0.39 | A    | Steel    |
| 177-529* | 0.80"                 | 1.77        |             | 0.39 | A    | Ceramic  |
| 177-184  | 1.0"                  | 2.09        |             | 0.59 | A    | Steel    |
| 177-530* | 1.0"                  | 2.09        |             | 0.59 | A    | Ceramic  |
| 177-289* | 1.2"                  | 2.8         |             | 0.59 | A    | Steel    |
| 177-531* | 1.2"                  | 2.8         |             | 0.59 | A    | Ceramic  |
| 177-185* | 1.4"                  | 2.8         |             | 0.59 | A    | Steel    |
| 177-532* | 1.4"                  | 2.8         |             | 0.59 | A    | Ceramic  |
| 177-291* | 1.6"                  | 2.8         |             | 0.59 | A    | Steel    |
| 177-533* | 1.6"                  | 2.8         |             | 0.59 | A    | Ceramic  |
| 177-186* | 1.8"                  | 3.35        |             | 0.59 | A    | Steel    |
| 177-534* | 1.8"                  | 3.35        |             | 0.59 | A    | Ceramic  |
| 177-187* | 2.0"                  | 3.35        |             | 0.79 | A    | Steel    |
| 177-293* | 2.4"                  | 4.41        |             | 0.79 | A    | Steel    |
| 177-315  | 2.5"                  | 4.41        |             | 0.79 | A    | Steel    |
| 177-188* | 2.8"                  | 4.41        |             | 0.79 | A    | Steel    |
| 177-317* | 3.0"                  | 4.92        |             | 0.98 | A    | Steel    |
| 177-295* | 3.2"                  | 4.92        |             | 0.98 | A    | Steel    |
| 177-319  | 3.5"                  | 5.51        |             | 0.98 | A    | Steel    |
| 177-189* | 3.6"                  | 5.51        |             | 0.98 | A    | Steel    |
| 177-297* | 4.0"                  | 6.3         |             | 0.98 | A    | Steel    |
| 177-299* | 5.0"                  | 8.27        | 6.61        | 1.5  | B    | Steel    |
| 177-301* | 6.0"                  | 9.25        | 7.36        | 1.5  | B    | Steel    |
| 177-303* | 7.0"                  | 10.24       | 8.46        | 1.5  | B    | Steel    |
| 177-305* | 8.0"                  | 12.24       | 9.61        | 1.5  | B    | Steel    |
| 177-307* | 9.0"                  | 13.27       | 10.39       | 1.5  | B    | Steel    |
| 177-309* | 10.0"                 | 14.25       | 11.42       | 1.5  | B    | Steel    |
| 177-311* | 11.0"                 | 16.26       | 12.64       | 1.5  | B    | Steel    |
| 177-313* | 12.0"                 | 17.24       | 13.39       | 1.5  | B    | Steel    |

## Specifications

Uncertainty in the diameter calibration value  
Cylindricity

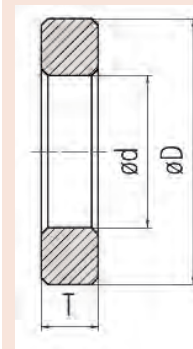
$\pm 0.00006$ " for  $\phi 0.1-4$ "  
 $\pm 0.00010$ " for  $\phi 5-12$ "  
0.00004" for  $\phi 0.1-2.4$ "  
0.00006" for  $\phi 2.5-3.6$ "  
0.00008" for  $\phi 4-6$ "  
0.00010" for  $\phi 7-9$ "  
0.00012" for  $\phi 10-12$ "



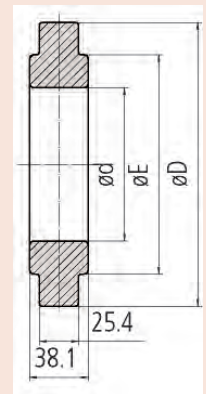
177-424



177-432



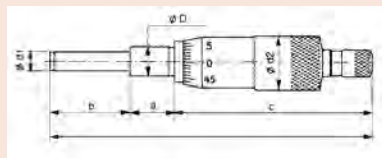
Type A



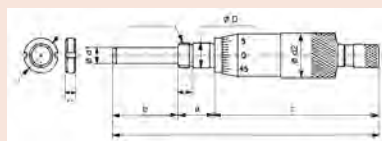
Type B

# Micrometer Heads

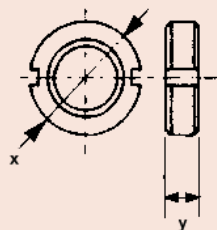
## Micrometer Head Selector



Total length  $l = a + b + c$



Total length  $l = a + b + c$



| Stem w/<br>locknut<br>No. | Plain stem<br>No.    | Range<br>mm | 1) | 2) | 4) | 5) | 6) | Grad.<br>mm | øD  | ød1  | a    | b    | c    | ød2  | x   | y   |
|---------------------------|----------------------|-------------|----|----|----|----|----|-------------|-----|------|------|------|------|------|-----|-----|
| 110-105.                  |                      | 0-1         |    |    |    | ●  | ●  | 0.001       | 12  | 8    | 12.7 | 25   | 62.5 | 21   |     |     |
| 110-106.                  |                      | 0-1         |    |    |    | ●  | ●  | 0.0001      | 12  | 8    | 12.7 | 25   | 62.5 | 21   |     |     |
| 110-107.                  |                      | 0-1         | ●  |    |    | ●  | ●  | 0.001       | 12  | 8    | 12.7 | 25   | 62.5 | 21   |     |     |
| 110-108.                  |                      | 0-1         | ●  |    |    | ●  | ●  | 0.0001      | 12  | 8    | 12.7 | 25   | 62.5 | 21   |     |     |
| 110-101.                  |                      | 0-2,5       |    |    |    | ●  | ●  | 0.001       | 12  | 8    | 12.7 | 25   | 70   | 21   |     |     |
| 110-102.                  |                      | 0-2,5       |    |    |    | ●  | ●  | 0.0001      | 12  | 8    | 12.7 | 25   | 70   | 21   |     |     |
| 148-216.                  | 148-215.             | 0-5         | ●  |    |    |    |    | 0.02        | 3.5 | 2    | 5    | 6.5  | 20.5 | 6    | 5.5 | 1.8 |
|                           | 148-201.             | 0-6,5       |    |    |    |    |    | 0.01        | 6   | 3.5  | 6    | 9    | 21.7 | 9.3  |     |     |
| 148-203.                  |                      | 0-6,5       |    |    |    |    |    | 0.01        | 6   | 3.5  | 7.5  | 7.5  | 21.7 | 9.3  | 8   | 3   |
| 148-302.                  | 148-301.             | 0-6,5       |    |    |    |    |    | 0.01        | 9.5 | 6.35 | 9.5  | 9    | 23.5 | 15   | 14  | 4   |
| 148-304.                  | 148-303.             | 0-6,5       |    |    |    |    |    | 0.01        | 9.5 | 6.35 | 9.5  | 9    | 23.5 | 20   | 14  | 4   |
| 148-306.                  | 148-305.             | 0-6,5       |    |    |    |    |    | 0.01        | 9.5 | 6.35 | 9.5  | 9    | 23.5 | 29   | 14  | 4   |
| 148-221.                  | 148-220.             | 0-6,5       |    | ●  |    |    |    | 0.01        | 6   | 3.5  | 15   | 9    | 22.5 | 9.3  |     |     |
| 148-223.                  | 148-222.             | 0-6,5       |    | ●  |    |    |    | 0.01        | 6   | 3.5  | 17   | 7.5  | 22.5 | 9.3  |     |     |
| 148-319.                  | 148-316.<br>148-318. | 0-6,5       |    | ●  |    |    |    | 0.01        | 9.5 | 6.35 | 18.7 | 9    | 22.5 | 15   |     |     |
| 148-207.                  | 148-205.             | 0-6,5       | ●  |    |    |    |    | 0.01        | 6   | 3.5  | 7.5  | 7.5  | 21.7 | 9.3  | 8   | 3   |
| 148-323.                  | 148-322.             | 0-6,5       | ●  |    |    |    |    | 0.01        | 9.5 | 6.35 | 9.5  | 9    | 23.5 | 15   | 14  | 4   |
| 148-143.                  | 148-142.             | 0-6,5       | ●  |    |    |    |    | 0.002       | 9.5 | 5    | 9.5  | 14   | 31.5 | 13   | 14  | 4   |
| 148-343.                  | 148-342.             | 0-6,5       | ●  |    |    |    |    | 0.002       | 9.5 | 6.35 | 9.5  | 9    | 23.5 | 15   | 14  | 4   |
| 148-243.                  | 148-242.             | 0-6,5       | ●  |    |    |    |    | 0.002       | 6   | 3.5  | 6    | 9    | 21.9 | 9.3  | 8   | 3   |
| 148-317.                  |                      | 0-6,5       |    | ●  |    |    |    | 0.01        | 9.5 | 6.35 | 18.7 | 9    | 22.5 | 15   |     |     |
| 152-283.                  |                      | 0-10        |    |    |    |    | ●  | 0.002       | 12  | 6.35 | 26   | 19   | 53   | 49   | 16  | 4   |
| 110-502.                  |                      | 0-13        | ●  |    |    | ●  |    | 0.0005      | 9.5 | 5    | 15   | 15   | 67.5 | 13   |     |     |
| 148-133.<br>148-802.      | 148-132.<br>148-801. | 0-13        | ●  |    |    |    |    | 0.01        | 9.5 | 5    | 9.5  | 17.5 | 31.5 | 13   | 14  | 4   |
|                           | 148-853.             | 0-13        | ●  |    |    |    |    | 0.01        | 9.5 | 5    | 9.5  | 15.5 | 37   | 13   |     |     |
| 148-804.                  | 148-803.             | 0-13        | ●  | ●  |    |    |    | 0.01        | 9.5 | 5    | 9.5  | 17.5 | 40   | 13   | 14  | 4   |
| 148-854.                  |                      | 0-13        | ●  | ●  |    |    |    | 0.01        | 9.5 | 5    | 9.5  | 15.5 | 45.5 | 13   | 14  | 4   |
|                           | 148-104.             | 0-13        |    |    |    |    |    | 0.001       | 9.5 | 5    | 9.5  | 17.5 | 31.5 | 13   | 14  | 4   |
| 148-103.                  |                      | 0-13        |    |    |    |    |    | 0.01        | 9.5 | 5    | 9.5  | 17.5 | 31.5 | 13   | 14  | 4   |
| 148-508.                  | 148-503.             | 0-13        |    |    |    |    |    | 0.01        | 9.5 | 5    | 9.5  | 15.5 | 37   | 13   | 14  | 4   |
|                           | 148-513.             | 0-13        |    |    |    |    |    | 0.01        | 9.5 | 5    | 9.5  | 15.5 | 37   | 13   |     |     |
| 148-308.                  | 148-307.             | 0-13        |    |    |    |    |    | 0.01        | 9.5 | 6.35 | 9.5  | 15.5 | 30   | 15   | 14  | 4   |
| 148-310.                  | 148-309.             | 0-13        |    |    |    |    |    | 0.01        | 9.5 | 6.35 | 9.5  | 15.5 | 30   | 20   | 14  | 4   |
| 148-312.                  | 148-311.             | 0-13        |    |    |    |    |    | 0.01        | 9.5 | 6.35 | 9.5  | 15.5 | 30   | 29   | 14  | 4   |
| 148-120.                  | 148-121.             | 0-13        |    | ●  |    |    |    | 0.01        | 9.5 | 5    | 9.5  | 17.5 | 40.1 | 13   | 14  | 4   |
| 148-504.                  | 148-506.             | 0-13        |    | ●  |    |    |    | 0.01        | 9.5 | 5    | 9.5  | 15.5 | 45.6 | 13   | 14  | 4   |
| 148-151.                  | 148-150.             | 0-13        |    | ●  |    |    |    | 9.5         | 12  | 5    | 18.7 | 17.5 | 31   | 13   |     |     |
| 148-153.                  | 148-152.             | 0-13        |    | ●  |    |    | ●  | 9.5         | 12  | 5    | 18.7 | 17.5 | 31   | 13   |     |     |
| 149-131.                  | 149-132.             | 0-15        |    |    |    |    | ●  | 0.01        | 9.5 | 6.35 | 15   | 17   | 43.5 | 15   | 14  | 4   |
|                           | 152-101.             | 0-15        |    |    |    |    | ●  | 0.01        | 12  | 8    | 16   | 18   | 60   | 30   |     |     |
|                           | 153-101.             | 0-15        |    |    |    | ●  | ●  | 0.01        | 9.5 | 6.35 | 10   | 17   | 58.5 | 15.3 |     |     |
| 149-184.                  | 149-183.             | 0-15        |    | ●  |    |    | ●  | 0.01        | 9.5 | 6.35 | 9.5  | 17   | 49   | 15   | 14  | 4   |
| 149-802.                  | 149-801.             | 0-15        | ●  |    |    |    | ●  | 0.01        | 9.5 | 6.35 | 15   | 17   | 43.5 | 15   | 14  | 4   |
| 150-189.                  | 150-190.             | 0-25        |    |    | ●  |    | ●  | 0.001       | 10  | 6.35 | 15   | 27   | 67   | 18   | 14  | 4   |
| 151-221.                  | 151-222.             | 0-25        |    |    | ●  |    | ●  | 0.001       | 12  | 8    | 29   | 34   | 70   | 21   | 16  | 4   |
| 150-191.                  | 150-192.             | 0-25        |    |    | ●  |    | ●  | 0.01        | 10  | 6.35 | 15   | 27   | 67   | 18   | 14  | 4   |
| 151-223.                  | 151-224.             | 0-25        |    |    | ●  |    | ●  | 0.01        | 12  | 8    | 29   | 34   | 70   | 21   | 16  | 4   |
| 150-195.                  | 150-196.             | 0-25        |    |    |    |    | ●  | 0.01        | 10  | 6.35 | 15   | 27   | 54   | 18   | 14  | 4   |
|                           | 152-102.             | 0-25        |    |    |    |    | ●  | 0.01        | 12  | 8    | 16   | 28   | 69   | 30   |     |     |
|                           | 152-332.             | 0-25        |    |    |    |    | ●  | 0.002       | 12  | 8    | 29   | 34   | 66   | 49   |     |     |

1) Spherical measuring surface 2) With spindle lock 4) With ratchet 5) With non-rotating spindle 6) Carbide tipped

x and y apply to heads with clamp nut

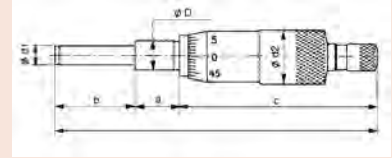
# Micrometer Heads

## Micrometer Head Selector

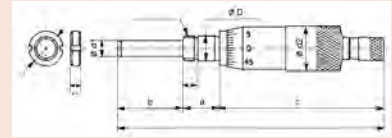
| Stem w/<br>locknut<br>No. | Plain stem<br>No. | Range<br>mm | 1) | 2) | 3) | 4) | 5) | 6) | 7) | Grad.<br>mm | øD  | ød1  | a   | b    | c     | ød2  | x  | y |
|---------------------------|-------------------|-------------|----|----|----|----|----|----|----|-------------|-----|------|-----|------|-------|------|----|---|
| 150-220.                  | 150-219.          | 0-25        |    |    |    |    |    |    |    | 0.01        | 10  | 6.35 | 15  | 65   | 53.5  | 18   | 14 | 4 |
|                           | 153-203.          | 0-25        |    |    |    |    | ●  | ●  |    | 0.01        | 12  | 8    | 10  | 27   | 70.5  | 18   |    |   |
|                           | 153-204.          | 0-25        |    |    |    |    | ●  | ●  |    | 0.001       | 12  | 8    | 10  | 27   | 71    | 18   |    |   |
|                           | 153-301.          | 0-25        |    |    |    |    | ●  | ●  |    | 0.0005      | 18  | 8    |     | 28.6 | 31.8  | 85.5 |    |   |
|                           | 153-201.          | 0-25        |    |    |    |    | ●  | ●  | ●  | 0.01        | 12  | 8    | 10  | 27   | 87.5  | 18   |    |   |
|                           | 153-202.          | 0-25        |    |    |    |    | ●  | ●  | ●  | 0.001       | 12  | 8    | 10  | 27   | 88    | 18   |    |   |
| 150-210.                  | 150-209.          | 0-25        | ●  |    |    | ●  | ●  | ●  |    | 0.01        | 10  | 6.35 | 15  | 27   | 78.5  | 18   | 14 | 4 |
|                           | 250-301.          | 0-25        | ●  |    |    | ●  | ●  | ●  |    | 0.01        | 10  | 6.35 | 15  | 27   | 94    | 18   |    |   |
| 350-252-10.               | 350-251-10.       | 0-25        | ●  |    |    | ●  | ●  | ●  |    | 0.001       | 10  | 6.35 | 15  | 27   | 114.5 | 18   | 14 | 4 |
| 350-272-20.               | 350-271-10.       | 0-25        | ●  |    |    | ●  | ●  | ●  |    | 0.001       | 12  | 6.35 | 16  | 27   | 113.5 | 18   |    |   |
| 350-282-10.               | 350-281-10.       | 0-25        | ●  |    |    | ●  | ●  | ●  |    | 0.001       | 12  | 6.35 | 15  | 27   | 114.5 | 18   | 16 | 4 |
| 150-212.                  | 150-211.          | 0-25        | ●  |    |    |    |    | ●  |    | 0.01        | 10  | 6.35 | 15  | 27   | 65    | 18   | 14 | 4 |
| 151-226.                  | 151-225.          | 0-25        | ●  |    |    |    |    | ●  |    | 0.01        | 12  | 8    | 19  | 34.5 | 66    | 21   | 16 | 4 |
| 350-261-10.               |                   | 0-25        | ●  |    |    |    |    |    | ●  | 0.001       | 12  | 6.35 | 14  | 38.7 | 101   | 18   |    |   |
| 150-802.                  | 150-801.          | 0-25        | ●  |    |    | ●  | ●  | ●  |    | 0.01        | 10  | 6.35 | 15  | 27   | 67    | 18   | 14 | 4 |
| 350-254-10.               | 350-253-10.       | 0-25        | ●  | ●  |    | ●  |    |    |    | 0.001       | 10  | 6.35 | 15  | 27   | 113.5 | 18   | 14 | 4 |
| 350-274-20.               | 350-273-10.       | 0-25        | ●  | ●  |    | ●  |    |    |    | 0.001       | 12  | 6.35 | 16  | 27   | 113.5 | 18   | 16 | 4 |
| 350-284-10.               | 350-283-10.       | 0-25        | ●  | ●  |    | ●  |    |    |    | 0.001       | 12  | 6.35 | 15  | 27   | 114.5 | 18   | 16 | 4 |
|                           | 152-348.          | 0-25-0      |    |    | ●  |    |    | ●  |    | 0.002       | 12  | 8    | 29  | 34   | 66    | 49   |    |   |
|                           | 152-401.          | 0-25-0      | ●  |    |    |    |    | ●  |    | 0.001       | 18  | 8    | 14  | 41.7 | 84.3  | 49   |    |   |
| 151-255.                  | 151-256.          | 0-50        |    |    |    | ●  | ●  | ●  |    | 0.01        | 12  | 8    | 29  | 59   | 103   | 21   | 16 | 4 |
| 151-259.                  | 151-260.          | 0-50        |    |    |    |    |    | ●  |    | 0.01        | 12  | 8    | 29  | 59   | 90    | 21   | 16 | 4 |
|                           | 152-103.          | 0-50        |    |    |    |    |    | ●  |    | 0.01        | 12  | 8    | 16  | 53   | 94    | 30   |    |   |
|                           | 164-161.          | 0-50        |    |    |    |    | ●  | ●  |    | 0.001       | 18  | 11   | 14  | 65   | 143   | 49   |    |   |
|                           | 197-101.          | 0-50        |    |    |    |    | ●  | ●  |    | 0.005       | 18  | 8    | 14  | 65   | 64    | 49   |    |   |
|                           | 152-380.          | 0-50-0      |    |    | ●  |    |    | ●  |    | 0.002       | 12  | 8    | 29  | 34   | 66    | 49   |    |   |
| 148-211.                  | 148-209.          | 6,5-0       |    |    | ●  |    |    |    |    | 0.01        | 6   | 3.5  | 7.5 | 7.5  | 21.7  | 9    | 8  | 3 |
| 148-822.                  | 148-821.          | 13-0        |    |    | ●  |    |    |    |    | 0.01        | 9.5 | 5    | 9.5 | 17.5 | 31.5  | 13   | 14 | 4 |
|                           | 148-863.          | 13-0        |    |    | ●  |    |    |    |    | 0.01        | 9.5 | 5    | 9.5 | 15.5 | 37    | 13   |    |   |
| 148-824.                  | 148-823.          | 13-0        |    | ●  | ●  |    |    |    |    | 0.01        | 9.5 | 5    | 9.5 | 17.5 | 40.1  | 13   | 16 | 4 |
|                           | 148-864.          | 13-0        | ●  | ●  |    |    | ●  |    |    | 0.01        | 9.5 | 5    | 9.5 | 15.5 | 45.6  | 13   |    |   |
| 149-822.                  | 149-821.          | 15-0        |    |    | ●  |    |    | ●  |    | 0.01        | 9.5 | 6.35 | 15  | 17   | 43.5  | 15   | 16 | 4 |
| 150-822.                  | 150-821.          | 25-0        |    |    | ●  | ●  |    | ●  |    | 0.01        | 10  | 6.35 | 15  | 27   | 84    | 18   | 16 | 4 |

1) Spherical measuring surface 2) With spindle lock 3) Reverse reading 4) With ratchet 5) With non-rotating spindle  
6) Carbide tipped 7) Non-rotating measuring surface

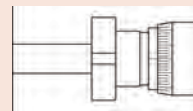
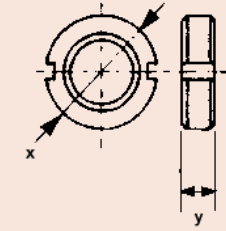
x and y apply to heads with clamp nut



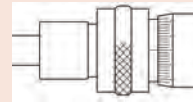
Total length  $l = a + b + c$



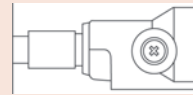
Total length  $l = a + b + c$



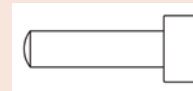
With clamp nut



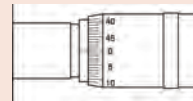
With spindle lock



With spindle lock 250-301 / 350-2XX



With spherical measuring surfaces



With reverse reading

# Digital Micrometer Heads

## Series 164

- Display and operating unit may be rotated by 330° for convenience.
- For integration into machinery and measuring instruments.
- Digital micrometer head with non-rotating spindle.
- Accurate and error free measurement.



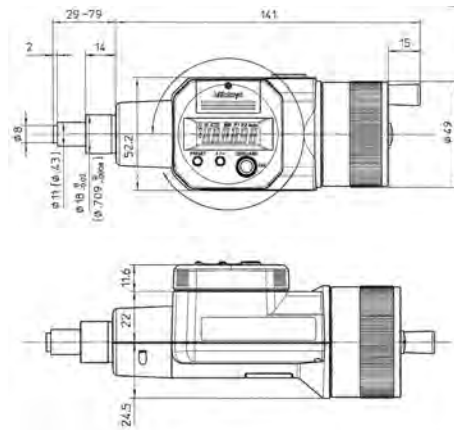
164-163

### Metric

| No.     | Range   | Accuracy | Stem dia. | Remarks              | Mass g |
|---------|---------|----------|-----------|----------------------|--------|
| 164-163 | 0-50 mm | ±3 μm    | 18 mm     | Non-rotating spindle | 500    |

### Inch/Metric

| No.     | Range | Accuracy | Stem dia. | Remarks              | Mass g |
|---------|-------|----------|-----------|----------------------|--------|
| 164-164 | 0-2"  | ±3 μm    | 18 mm     | Non-rotating spindle | 500    |



164-163

| Functions                        | Series 164 |
|----------------------------------|------------|
| Data output                      | ●          |
| ZERO/ABS                         | ●          |
| PRESET                           | ●          |
| Measurement direction switchable | ●          |

### Specifications

|                    |  |
|--------------------|--|
| Accuracy           | Refer to the list of specifications (excluding quantizing error) |
| Resolution         | 0,001 mm   |
| Measuring surfaces | Carbide tipped   |
| Power supply       | 2 batteries SR-44  |

### Optional accessories

| No.       | Description                              |
|-----------|--|
| 959149    | Signal cable 1 m with data switch        |
| 959150    | Signal cable 2 m with data switch        |
| 06ADV380C | Signal cable 2 m USB                     |
| 02AZD790C | Signal cable for U-Wave with data switch |

### Consumable spares

| No.    | Description  |
|--------|--------------|
| 938882 | Battery SR44 |

# Digital Micrometer Heads

## Series 350

- For integration into machinery and measuring instruments.
- Direct reading of clearly displayed measurement values in 0,001 mm steps.
- Accurate and error-free measuring.
- With rotating spindle.



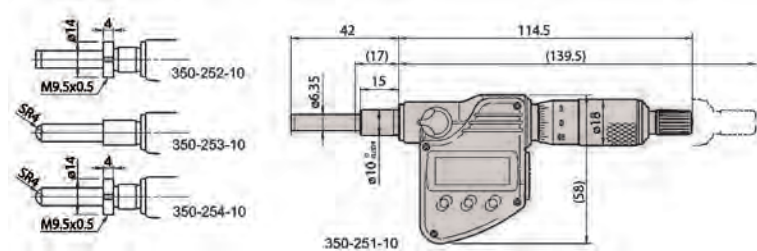
350-251-10

### Metric

| No.        | Range   | Stem dia. | Stem         | Spindle end        | Mass g |
|------------|---------|-----------|--------------|--------------------|--------|
| 350-251-10 | 0-25 mm | 10 mm     | Plain        | Flat (carbide tip) | 230    |
| 350-252-10 | 0-25 mm | 10 mm     | w/ clamp nut | Flat (carbide tip) | 230    |
| 350-253-10 | 0-25 mm | 10 mm     | Plain        | Spherical (SR4)    | 230    |
| 350-254-10 | 0-25 mm | 10 mm     | w/ clamp nut | Spherical (SR4)    | 230    |

### Inch/Metric

| No.         | Range        | Stem dia.    | Stem         | Spindle end        | Remarks                | Mass g |
|-------------|--------------|--------------|--------------|--------------------|------------------------|--------|
| 350-351-10  | 0-25 mm/0-1" | 10 mm/0.375" | Plain        | Flat (carbide tip) |                        | 230    |
| 350-352-10  | 0-25 mm/0-1" | 10 mm/0.375" | w/ clamp nut | Flat (carbide tip) |                        | 230    |
| 350-353-10* | 0-25 mm/0-1" | 10 mm/0.375" | Plain        | Spherical (SR4)    |                        | 230    |
| 350-354-10* | 0-25 mm/0-1" | 10 mm/0.375" | w/ clamp nut | Spherical (SR4)    |                        | 230    |
| 350-357-10* | 0-25 mm/0-1" | 10 mm/0.375" | Plain        | Spherical (SR4)    | w/ non-rotating device | 300    |



| Functions      | Series 350 |
|----------------|------------|
| Data output    | ●          |
| ZERO/ABS       | ●          |
| 2 X PRESET     | ●          |
| Auto Power OFF | ●          |
| HOLD           | ●          |
| Function lock  | ●          |

### Specifications

|            |                               |
|------------|-------------------------------|
| Accuracy   | ±2 μm                         |
| Resolution | 0,001 mm or 0,001 mm/0.00005" |
| Pitch      | 0,5 mm/rev.                   |
| Delivered  | With battery SR-44            |

### Optional accessories

| No.       | Description                          |
|-----------|--------------------------------------|
| 05CZA662  | Signal cable 1 m with data button    |
| 05CZA663  | Signal cable 2 m with data button    |
| 02AZD790B | Signal cable U-Wave with data button |
| 06ADV380B | Signal cable 2 m USB                 |

### Consumable spares

| No.    | Description  |
|--------|--------------|
| 938882 | Battery SR44 |

# Digital Micrometer Heads

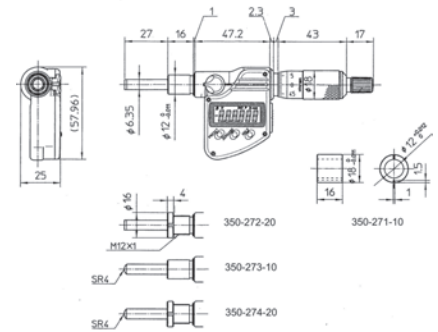


## Series 350

- For integration into machinery and measuring instruments.
- Direct reading of clearly displayed measurement values in 0,001 mm steps.
- Accurate and error-free measuring.



350-271-10  
IP65



| Functions      | Series 350 |
|----------------|------------|
| Data output    | ●          |
| ZERO/ABS       | ●          |
| 2 X PRESET     | ●          |
| Auto Power OFF | ●          |
| HOLD           | ●          |
| Function lock  | ●          |

### Specifications

|            |                               |
|------------|-------------------------------|
| Accuracy   | ±2 μm/0.0001"                 |
| Resolution | 0,001 mm or 0,001 mm/0.00005" |
| Pitch      | 0,5 mm/rev.                   |
| Delivered  | With battery SR-44            |

### Optional accessories

| No.       | Description                          |
|-----------|--------------------------------------|
| 05CZA662  | Signal cable 1 m with data button    |
| 05CZA663  | Signal cable 2 m with data button    |
| 02AZD790B | Signal cable U-Wave with data button |
| 06ADV380B | Signal cable 2 m USB                 |

### Consumable spares

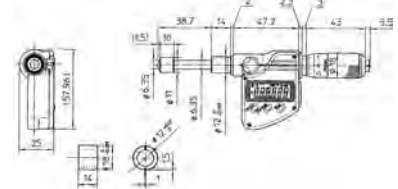
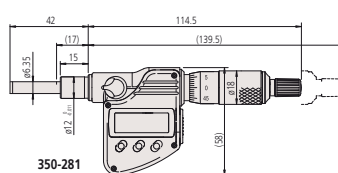
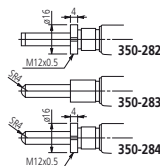
| No.    | Description   |
|--------|---------------|
| 305307 | Ring 12/18 mm |
| 938882 | Battery SR44  |

### Metric

| No.         | Range   | Stem dia.   | Stem         | Spindle end        | Remarks                      | Mass g |
|-------------|---------|-------------|--------------|--------------------|------------------------------|--------|
| 350-271-10  | 0-25 mm | 12 mm/18 mm | Plain        | Flat (carbide tip) | IP65                         | 300    |
| 350-272-20  | 0-25 mm | 12 mm       | w/ clamp nut | Flat (carbide tip) | -                            | 300    |
| 350-273-10  | 0-25 mm | 12 mm/18 mm | Plain        | Spherical (SR4)    | IP65                         | 300    |
| 350-274-20  | 0-25 mm | 12 mm       | w/ clamp nut | Spherical (SR4)    | -                            | 300    |
| 350-281-10  | 0-25 mm | 12 mm       | Plain        | Flat (carbide tip) | IP65                         | 230    |
| 350-282-10  | 0-25 mm | 12 mm       | w/ clamp nut | Flat (carbide tip) | IP65                         | 230    |
| 350-283-10* | 0-25 mm | 12 mm       | Plain        | Spherical (SR4)    | IP65                         | 230    |
| 350-284-10* | 0-25 mm | 12 mm       | w/ clamp nut | Spherical (SR4)    | IP65                         | 230    |
| 350-261-10  | 0-25 mm | 12 mm       | Plain        | Flat               | IP65, w/ non-rotating device | 305    |

### Inch/Metric

| No.         | Range        | Stem dia.  | Stem         | Spindle end        | Remarks                      | Mass g |
|-------------|--------------|------------|--------------|--------------------|------------------------------|--------|
| 350-381-10* | 0-25 mm/0-1" | 12 mm/0.5" | Plain        | Flat (carbide tip) | IP65                         | 230    |
| 350-382-10  | 0-25 mm/0-1" | 12 mm/0.5" | w/ clamp nut | Flat (carbide tip) | IP65                         | 230    |
| 350-383-10* | 0-25 mm/0-1" | 12 mm/0.5" | Plain        | Spherical (SR4)    | IP65                         | 230    |
| 350-384-10* | 0-25 mm/0-1" | 12 mm/0.5" | w/ clamp nut | Spherical (SR4)    | IP65                         | 230    |
| 350-361-10* | 0-25 mm/0-1" | 12 mm/0.5" | Plain        | Flat               | IP65, w/ non-rotating device | 305    |



350-261-10

# Micrometer Heads with counter

## Series 250 - Digit counter type

Micrometer head with mechanical counter and ratchet.



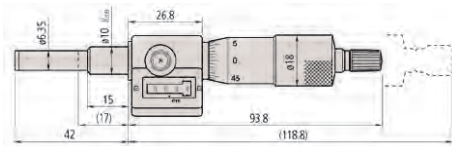
250-301

### Metric

| No.     | Range   | Accuracy            | Stem $\phi$ | Stem  | Spindle end        | Mass g |
|---------|---------|---------------------|-------------|-------|--------------------|--------|
| 250-301 | 0-25 mm | $\pm 2 \mu\text{m}$ | 10 mm       | Plain | Flat (carbide tip) | 165    |

### Inch

| No.     | Range | Accuracy            | Stem $\phi$ | Stem  | Spindle end        | Mass g |
|---------|-------|---------------------|-------------|-------|--------------------|--------|
| 250-312 | 0-1"  | $\pm 2 \mu\text{m}$ | 0.375"      | Plain | Flat (carbide tip) | 165    |



250-301

# Micro Jack

## Series 7

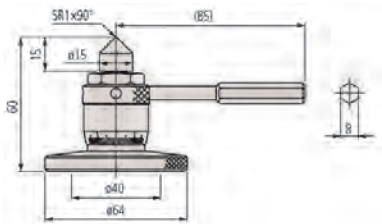
- Used for accurate leveling of machines, surface plates, and other precision instruments.
- Easy adjustment under heavy load.



7850

### Metric

| No.  | Range    | Remarks           | Mass g |
|------|----------|-------------------|--------|
| 7850 | 60-75 mm | Max. load : 400kg | 400    |



7850

### Specifications

|                    |  |
|--------------------|--|
| Graduation         | 0,01 mm or 0.0001"                     |
| Spindle pitch      | 0,5 mm or 0.025"                       |
| Scales             | Thimble and sleeve satin chrome finish |
| Measuring surfaces | Carbide tipped                         |
| Measuring spindle  | With spindle lock                      |

### Specifications

|            |        |
|------------|--------|
| Graduation | 0,01mm |
|------------|--------|



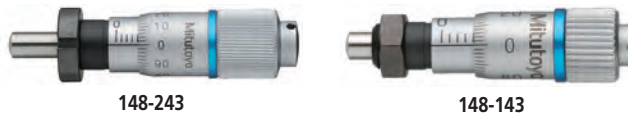
# Micrometer Heads 5 or 6,5 mm

## Series 148 - Very fine spindle feed of 0,1 mm/rev

- Small size micrometer heads with extremely fine pitch of 0,1 mm making them suited to fine adjustment applications in scientific apparatus.

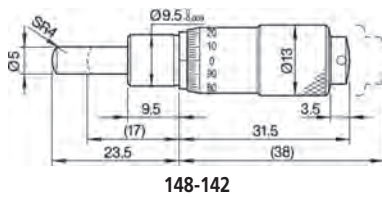
### Specifications

|                    |  |
|--------------------|--|
| Accuracy           | Refer to the list of specifications          |
| Graduation         | 0,002 mm or 0,004 mm<br>( 148-244, 148-245 ) |
| Spindle pitch      | 0,1 mm                                       |
| Scales             | Thimble and sleeve satin chrome finish       |
| Measuring surfaces | Tool steel                                   |

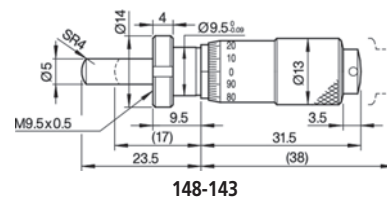


### Metric

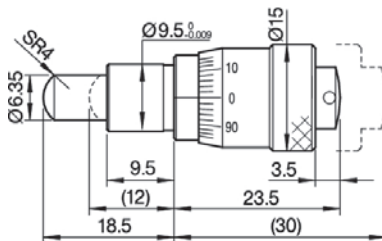
| No.      | Range    | Accuracy            | Stem $\phi$ | Stem         | Spindle end       | Mass g |
|----------|----------|---------------------|-------------|--------------|-------------------|--------|
| 148-244* | 0-5 mm   | $\pm 5 \mu\text{m}$ | 3,5 mm      | Plain        | Spherical (SR1.5) | 4      |
| 148-245* | 0-5 mm   | $\pm 5 \mu\text{m}$ | 3,5 mm      | w/ clamp nut | Spherical (SR1.5) | 5      |
| 148-142  | 0-6,5 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | Plain        | Spherical (SR4)   | 31     |
| 148-143  | 0-6,5 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | w/ clamp nut | Spherical (SR4)   | 34     |
| 148-342  | 0-6,5 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | Plain        | Spherical (SR4)   | 29     |
| 148-343  | 0-6,5 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | w/ clamp nut | Spherical (SR4)   | 31     |
| 148-242  | 0-6,5 mm | $\pm 5 \mu\text{m}$ | 6 mm        | Plain        | Spherical (SR3)   | 10     |
| 148-243  | 0-6,5 mm | $\pm 5 \mu\text{m}$ | 6 mm        | w/ clamp nut | Spherical (SR3)   | 10     |



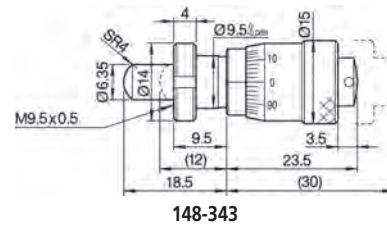
148-142



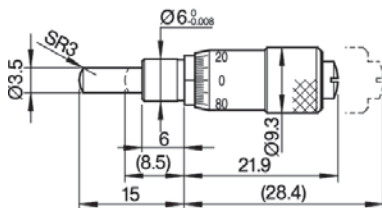
148-143



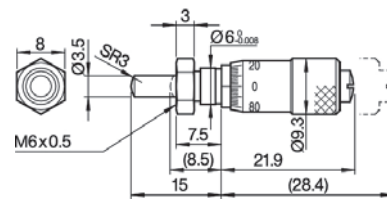
148-342



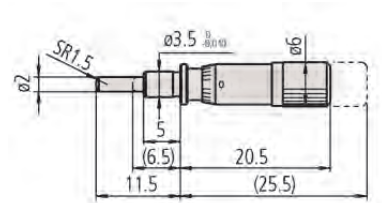
148-343



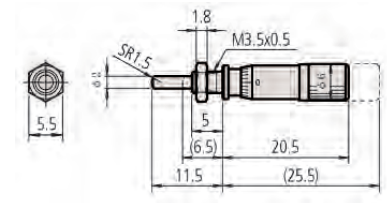
148-242



148-243



148-244



148-245



# Micrometer Heads 5 or 6,5 mm

## Series 148 - Ultra small

- Miniature micrometer heads for ease of incorporation into machines.



148-201

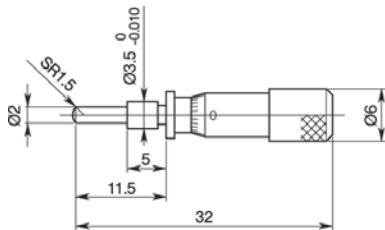
148-215

### Metric

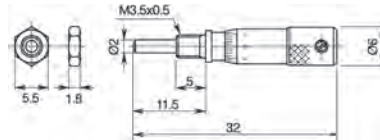
| No.     | Range    | Accuracy            | Stem $\phi$ | Stem         | Spindle end       | Special features | Mass g |
|---------|----------|---------------------|-------------|--------------|-------------------|------------------|--------|
| 148-215 | 0-5 mm   | $\pm 5 \mu\text{m}$ | 3,5 mm      | Plain        | Spherical (SR1.5) | -                | 4      |
| 148-216 | 0-5 mm   | $\pm 5 \mu\text{m}$ | 3,5 mm      | w/ clamp nut | Spherical (SR1.5) | -                | 5      |
| 148-201 | 0-6,5 mm | $\pm 5 \mu\text{m}$ | 6 mm        | Plain        | Flat              | -                | 10     |
| 148-203 | 0-6,5 mm | $\pm 5 \mu\text{m}$ | 6 mm        | w/ clamp nut | Flat              | -                | 10     |
| 148-205 | 0-6,5 mm | $\pm 5 \mu\text{m}$ | 6 mm        | Plain        | Spherical (SR3)   | -                | 10     |
| 148-207 | 0-6,5 mm | $\pm 5 \mu\text{m}$ | 6 mm        | w/ clamp nut | Spherical (SR3)   | -                | 10     |
| 148-209 | 6,5-0 mm | $\pm 5 \mu\text{m}$ | 6 mm        | Plain        | Flat              | Reverse reading  | 10     |
| 148-211 | 6,5-0 mm | $\pm 5 \mu\text{m}$ | 6 mm        | w/ clamp nut | Flat              | Reverse reading  | 10     |

### Inch

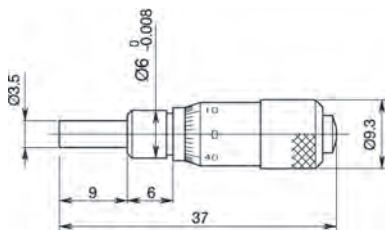
| No.      | Range   | Accuracy       | Stem $\phi$ | Stem         | Spindle end       | Special features | Mass g |
|----------|---------|----------------|-------------|--------------|-------------------|------------------|--------|
| 148-217* | 0-0.2"  | $\pm 0.00025"$ | 0.156"      | Plain        | Spherical (SR1.5) | -                | 4      |
| 148-218* | 0-0.2"  | $\pm 0.00025"$ | 0.156"      | w/ clamp nut | Spherical (SR1.5) | -                | 5      |
| 148-202* | 0-0.25" | $\pm 0.00025"$ | 0.25"       | Plain        | Flat              | -                | 10     |
| 148-204* | 0-0.25" | $\pm 0.00025"$ | 0.25"       | w/ clamp nut | Flat              | -                | 10     |
| 148-206* | 0-0.25" | $\pm 0.00025"$ | 0.25"       | Plain        | Spherical (SR3)   | -                | 10     |
| 148-208* | 0-0.25" | $\pm 0.00025"$ | 0.25"       | w/ clamp nut | Spherical (SR3)   | -                | 10     |
| 148-210* | 0.25-0" | $\pm 0.00025"$ | 0.25"       | Plain        | Flat              | Reverse reading  | 10     |
| 148-212* | 0.25-0" | $\pm 0.00025"$ | 0.25"       | w/ clamp nut | Flat              | Reverse reading  | 10     |



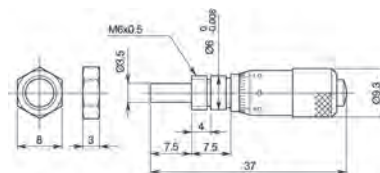
148-215



148-216



148-201



148-203

### Specifications

|                    |  |
|--------------------|--|
| Accuracy           | Refer to the list of specifications              |
| Graduation         | 0,02 mm (148-215, 148-216),<br>0,01 mm or 0.001" |
| Spindle pitch      | 0,5 mm or 0.025"                                 |
| Scales             | Thimble and sleeve satin chrome finish           |
| Measuring surfaces | Tool steel                                       |



# Micrometer Heads 6,5 or 13 mm

## Specifications

|               |  |
|---------------|--|
| Accuracy      | Refer to the list of specifications    |
| Graduation    | 0,01 mm                                |
| Spindle pitch | 0,25 mm                                |
| Scales        | Thimble and sleeve satin chrome finish |

## Series 148 - Fine spindle feed of 0,25 mm/rev

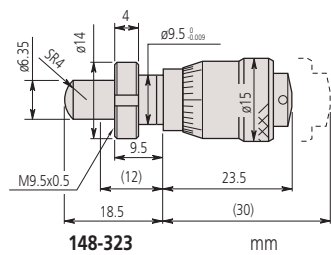
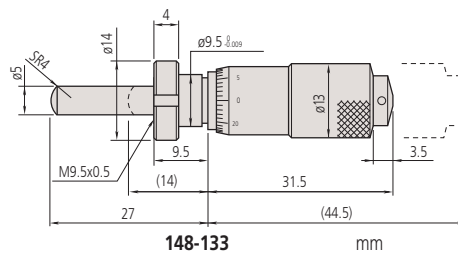
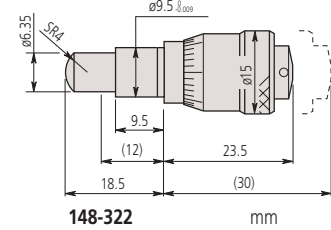
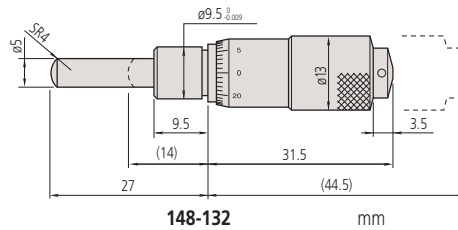
- Fine spindle feed of just 0,25 mm/rev for fine adjustment and positioning applications.



148-132

## Metric

| No.      | Range    | Accuracy            | Stem $\phi$ | Stem         | Spindle end     | Mass g |
|----------|----------|---------------------|-------------|--------------|-----------------|--------|
| 148-322  | 0-6,5 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | Plain        | Spherical (SR4) | 30     |
| 148-323* | 0-6,5 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | w/ clamp nut | Spherical (SR4) | 35     |
| 148-132* | 0-13 mm  | $\pm 2 \mu\text{m}$ | 9,5 mm      | Plain        | Spherical (SR4) | 30     |
| 148-133* | 0-13 mm  | $\pm 2 \mu\text{m}$ | 9,5 mm      | w/ clamp nut | Spherical (SR4) | 35     |



# Micrometer Heads 6,5 or 13 mm

## Series 148 - Large Thimble Diameter for Easy Reading

- Easy reading due to larger-than-standard thimbles. (Three thimble diameters are available.)



148-301



148-313



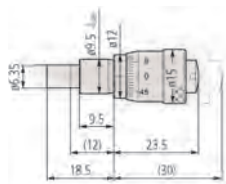
148-314

### Metric

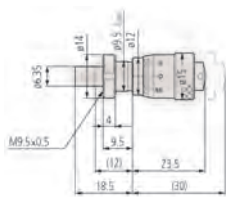
| No.      | Range    | Accuracy            | Stem $\phi$ | Stem         | Spindle end     | $\phi$ thimble | Mass g |
|----------|----------|---------------------|-------------|--------------|-----------------|----------------|--------|
| 148-301  | 0-6,5 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | Plain        | Flat            | 15 mm          | 26     |
| 148-302  | 0-6,5 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | w/ clamp nut | Flat            | 15 mm          | 26     |
| 148-303  | 0-6,5 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | Plain        | Flat            | 20 mm          | 39     |
| 148-304  | 0-6,5 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | w/ clamp nut | Flat            | 20 mm          | 39     |
| 148-305  | 0-6,5 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | Plain        | Flat            | 29 mm          | 71     |
| 148-306  | 0-6,5 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | w/ clamp nut | Flat            | 29 mm          | 71     |
| 148-313* | 0-6,5 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | Plain        | Spherical (SR4) | 15 mm          | 29     |
| 148-314* | 0-6,5 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | w/ clamp nut | Spherical (SR4) | 15 mm          | 32     |
| 148-307  | 0-13 mm  | $\pm 2 \mu\text{m}$ | 9,5 mm      | Plain        | Flat            | 15 mm          | 35     |
| 148-308  | 0-13 mm  | $\pm 2 \mu\text{m}$ | 9,5 mm      | w/ clamp nut | Flat            | 15 mm          | 35     |
| 148-309  | 0-13 mm  | $\pm 2 \mu\text{m}$ | 9,5 mm      | Plain        | Flat            | 20 mm          | 55     |
| 148-310  | 0-13 mm  | $\pm 2 \mu\text{m}$ | 9,5 mm      | w/ clamp nut | Flat            | 20 mm          | 55     |
| 148-311  | 0-13 mm  | $\pm 2 \mu\text{m}$ | 9,5 mm      | Plain        | Flat            | 29 mm          | 103    |
| 148-312  | 0-13 mm  | $\pm 2 \mu\text{m}$ | 9,5 mm      | w/ clamp nut | Flat            | 29 mm          | 103    |

### Inch

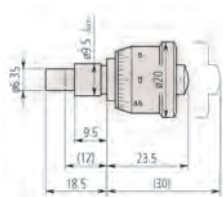
| No.      | Range   | Accuracy      | Stem $\phi$ | Stem         | Spindle end | $\phi$ thimble | Mass g |
|----------|---------|---------------|-------------|--------------|-------------|----------------|--------|
| 148-351* | 0-0.25" | $\pm 0.0001"$ | 0.375"      | Plain        | Flat        | 0.59"          | 26     |
| 148-352* | 0-0.25" | $\pm 0.0001"$ | 0.375"      | w/ clamp nut | Flat        | 0.59"          | 26     |
| 148-353* | 0-0.25" | $\pm 0.0001"$ | 0.375"      | Plain        | Flat        | 0.79"          | 39     |
| 148-354* | 0-0.25" | $\pm 0.0001"$ | 0.375"      | w/ clamp nut | Flat        | 0.79"          | 39     |
| 148-355* | 0-0.25" | $\pm 0.0001"$ | 0.375"      | Plain        | Flat        | 1.14"          | 71     |
| 148-356* | 0-0.25" | $\pm 0.0001"$ | 0.375"      | w/ clamp nut | Flat        | 1.14"          | 71     |
| 148-357* | 0-0.5"  | $\pm 0.0001"$ | 0.375"      | Plain        | Flat        | 0.59"          | 35     |
| 148-358* | 0-0.5"  | $\pm 0.0001"$ | 0.375"      | w/ clamp nut | Flat        | 0.59"          | 35     |
| 148-359* | 0-0.5"  | $\pm 0.0001"$ | 0.375"      | Plain        | Flat        | 0.79"          | 55     |
| 148-360* | 0-0.5"  | $\pm 0.0001"$ | 0.375"      | w/ clamp nut | Flat        | 0.79"          | 55     |
| 148-361* | 0-0.5"  | $\pm 0.0001"$ | 0.375"      | Plain        | Flat        | 1.14"          | 103    |
| 148-362* | 0-0.5"  | $\pm 0.0001"$ | 0.375"      | w/ clamp nut | Flat        | 1.14"          | 103    |



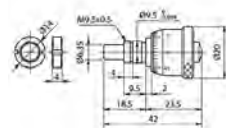
148-301



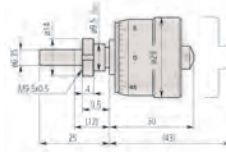
148-302



148-303



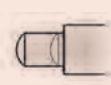
148-304



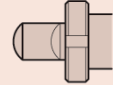
148-312

### Specifications

|                    |  |
|--------------------|--|
| Accuracy           | Refer to the list of specifications    |
| Graduation         | 0,01 mm or 0.001"                      |
| Spindle pitch      | 0,5 mm or 0.025"                       |
| Scales             | Thimble and sleeve satin chrome finish |
| Measuring surfaces | Tool steel                             |



148-313



148-314



148-303



148-305

For drawings not shown here, see beginning of chapter Micrometer Heads

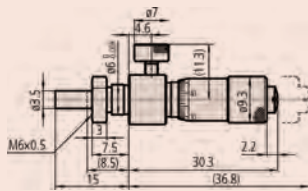
# Micrometer Heads 6,5 mm with spindle lock

## Specifications

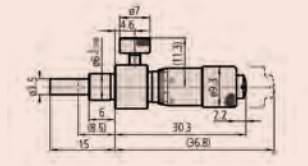
|                    |  |
|--------------------|--|
| Graduation         | 0,01 mm or 0.001"                      |
| Spindle pitch      | 0,5 mm or 0.025"                       |
| Scales             | Thimble and sleeve satin chrome finish |
| Measuring surfaces | Tool steel                             |

## Series 148 - Locking screw Type

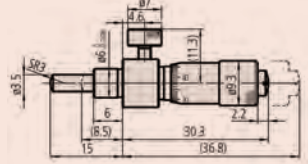
- The spindle can be locked in any position with the knurled locking screw.



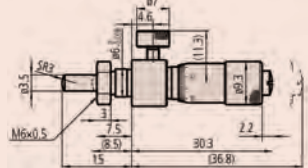
148-221



148-220



148-222



148-223



148-223



148-319



148-220



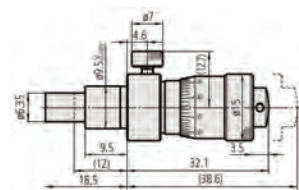
148-316

## Metric

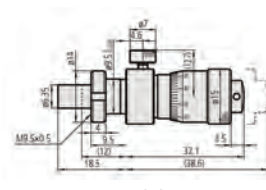
| No.      | Range    | Accuracy | Stem ø | Stem         | Spindle end     | Mass g |
|----------|----------|----------|--------|--------------|-----------------|--------|
| 148-220  | 0-6,5 mm | ±5 µm    | 6 mm   | Plain        | Flat            | 16     |
| 148-221* | 0-6,5 mm | ±5 µm    | 6 mm   | w/ clamp nut | Flat            | 17     |
| 148-222  | 0-6,5 mm | ±5 µm    | 6 mm   | Plain        | Spherical (SR3) | 16     |
| 148-223  | 0-6,5 mm | ±5 µm    | 6 mm   | w/ clamp nut | Spherical (SR3) | 17     |
| 148-316* | 0-6,5 mm | ±2 µm    | 9,5 mm | Plain        | Flat            | 40     |
| 148-317* | 0-6,5 mm | ±2 µm    | 9,5 mm | w/ clamp nut | Flat            | 43     |
| 148-318* | 0-6,5 mm | ±2 µm    | 9,5 mm | Plain        | Spherical (SR4) | 40     |
| 148-319* | 0-6,5 mm | ±2 µm    | 9,5 mm | w/ clamp nut | Spherical (SR4) | 43     |

## Inch

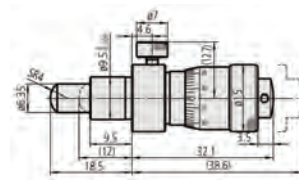
| No.      | Range   | Accuracy  | Stem ø | Stem         | Spindle end     | Mass g |
|----------|---------|-----------|--------|--------------|-----------------|--------|
| 148-230* | 0-0.25" | ±0.00025" | 0.25"  | Plain        | Flat            | 16     |
| 148-231* | 0-0.25" | ±0.00025" | 0.25"  | w/ clamp nut | Flat            | 17     |
| 148-232* | 0-0.25" | ±0.00025" | 0.25"  | Plain        | Spherical (SR3) | 16     |
| 148-233* | 0-0.25" | ±0.00025" | 0.25"  | w/ clamp nut | Spherical (SR3) | 17     |
| 148-326* | 0-0.25" | ±0.0001"  | 0.375" | Plain        | Flat            | 40     |
| 148-327* | 0-0.25" | ±0.0001"  | 0.375" | w/ clamp nut | Flat            | 43     |
| 148-328* | 0-0.25" | ±0.0001"  | 0.375" | Plain        | Spherical (SR4) | 40     |
| 148-329* | 0-0.25" | ±0.0001"  | 0.375" | w/ clamp nut | Spherical (SR4) | 43     |



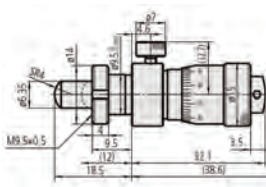
148-316



148-317



148-318



148-319

# Micrometer Heads 13 mm

## Series 148 - Locking screw Type

- The spindle can be locked in any position with the knurled locking screw.



148-150



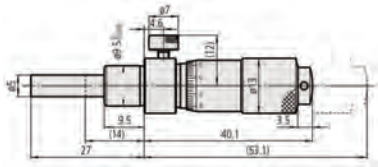
148-153

### Metric

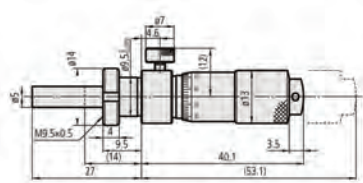
| No.     | Range   | Accuracy            | Stem $\phi$ | Stem         | Spindle end     | Mass g |
|---------|---------|---------------------|-------------|--------------|-----------------|--------|
| 148-150 | 0-13 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | Plain        | Flat            | 40     |
| 148-151 | 0-13 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | w/ clamp nut | Flat            | 43     |
| 148-152 | 0-13 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | Plain        | Spherical (SR4) | 40     |
| 148-153 | 0-13 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | w/ clamp nut | Spherical (SR4) | 43     |

### Inch

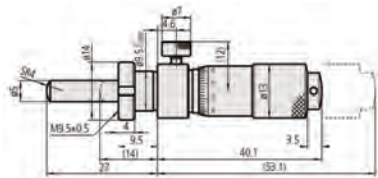
| No.      | Range  | Accuracy       | Stem $\phi$ | Stem         | Spindle end     | Mass g |
|----------|--------|----------------|-------------|--------------|-----------------|--------|
| 148-160* | 0-0.5" | $\pm 0.0001$ " | 0.375"      | Plain        | Flat            | 40     |
| 148-161* | 0-0.5" | $\pm 0.0001$ " | 0.375"      | w/ clamp nut | Flat            | 43     |
| 148-162* | 0-0.5" | $\pm 0.0001$ " | 0.375"      | Plain        | Spherical (SR4) | 40     |
| 148-163* | 0-0.5" | $\pm 0.0001$ " | 0.375"      | w/ clamp nut | Spherical (SR4) | 43     |



148-150



148-151



148-153

### Specifications

|                    |  |
|--------------------|--|
| Graduation         | 0,01 mm or 0.001"                      |
| Spindle pitch      | 0,5 mm or 0.025"                       |
| Scales             | Thimble and sleeve satin chrome finish |
| Measuring surfaces | Tool steel                             |

# Micrometer Heads 13 mm

## Series 148 - Standard type, small size with zero-adjustable thimble.

- Models with 13 mm / 0.5" stroke
- Zero-setting by setscrew in the thimble.

### Specifications

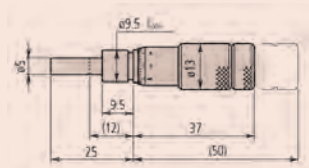
|                    |  |
|--------------------|--|
| Accuracy           | ±2 μm/0.0001"                          |
| Graduation         | 0,01 mm or 0.001"                      |
| Spindle pitch      | 0,5 mm or 0.025"                       |
| Scales             | Thimble and sleeve satin chrome finish |
| Measuring surfaces | Tool steel                             |



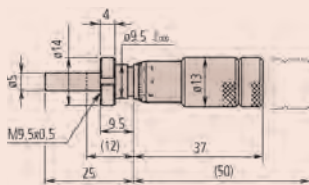
148-503



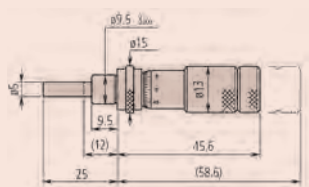
148-504



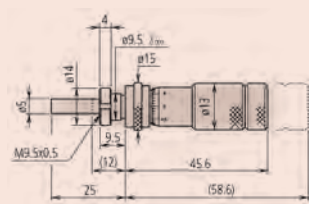
148-503



148-508



148-506



148-504

### Metric

| No.      | Range   | Stem ø | Stem         | Spindle end     | Special features           | Mass g |
|----------|---------|--------|--------------|-----------------|----------------------------|--------|
| 148-503  | 0-13 mm | 9,5 mm | Plain        | Flat            | -                          | 40     |
| 148-513  | 0-13 mm | 9,5 mm | Plain        | Flat            | Stainless steel throughout | 40     |
| 148-508  | 0-13 mm | 9,5 mm | w/ clamp nut | Flat            | -                          | 50     |
| 148-853  | 0-13 mm | 9,5 mm | Plain        | Spherical (SR4) | -                          | 40     |
| 148-518* | 0-13 mm | 9,5 mm | w/ clamp nut | Flat            | Stainless steel throughout | 50     |
| 148-858* | 0-13 mm | 9,5 mm | w/ clamp nut | Spherical (SR4) | -                          | 50     |

### Metric

With spindle lock

| No.      | Range   | Stem ø | Stem         | Spindle end     | Mass g |
|----------|---------|--------|--------------|-----------------|--------|
| 148-506  | 0-13 mm | 9,5 mm | Plain        | Flat            | 60     |
| 148-504  | 0-13 mm | 9,5 mm | w/ clamp nut | Flat            | 40     |
| 148-854  | 0-13 mm | 9,5 mm | w/ clamp nut | Spherical (SR4) | 40     |
| 148-856* | 0-13 mm | 9,5 mm | Plain        | Spherical (SR4) | 60     |

### Metric

Reverse reading

| No.      | Range   | Stem ø | Stem         | Spindle end | Mass g |
|----------|---------|--------|--------------|-------------|--------|
| 148-863  | 13-0 mm | 9,5 mm | Plain        | Flat        | 40     |
| 148-868* | 13-0 mm | 9,5 mm | w/ clamp nut | Flat        | 50     |

### Metric

Reverse reading / with spindle lock

| No.      | Range   | Stem ø | Stem         | Spindle end | Mass g |
|----------|---------|--------|--------------|-------------|--------|
| 148-864  | 13-0 mm | 9,5 mm | w/ clamp nut | Flat        | 40     |
| 148-866* | 13-0 mm | 9,5 mm | Plain        | Flat        | 60     |

### Inch

| No.      | Range  | Stem ø | Stem         | Spindle end     | Special features           | Mass g |
|----------|--------|--------|--------------|-----------------|----------------------------|--------|
| 148-501* | 0-0.5" | 0.375" | Plain        | Flat            | -                          | 40     |
| 148-511* | 0-0.5" | 0.375" | Plain        | Flat            | Stainless steel throughout | 40     |
| 148-507* | 0-0.5" | 0.375" | w/ clamp nut | Flat            | -                          | 50     |
| 148-851* | 0-0.5" | 0.375" | Plain        | Spherical (SR4) | -                          | 40     |

### Inch

With spindle lock

| No.      | Range  | Stem ø | Stem         | Spindle end     | Mass g |
|----------|--------|--------|--------------|-----------------|--------|
| 148-505* | 0-0.5" | 0.375" | Plain        | Flat            | 60     |
| 148-502  | 0-0.5" | 0.375" | w/ clamp nut | Flat            | 40     |
| 148-852* | 0-0.5" | 0.375" | w/ clamp nut | Spherical (SR4) | 40     |

### Inch

Reverse reading

| No.      | Range  | Stem ø | Stem  | Spindle end | Mass g |
|----------|--------|--------|-------|-------------|--------|
| 148-861* | 0.5-0" | 0.375" | Plain | Flat        | 40     |

### Inch

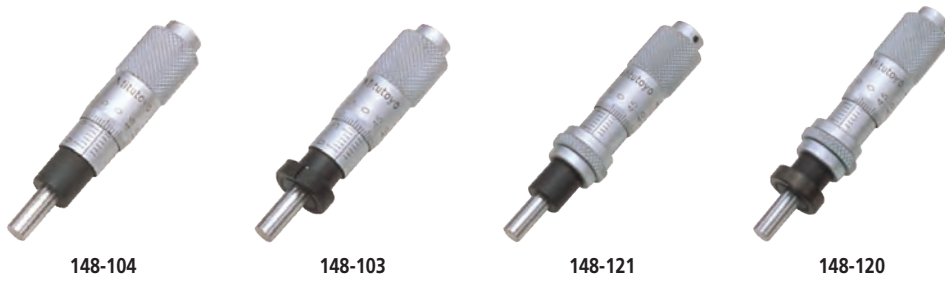
Reverse reading / with spindle lock

| No.      | Range  | Stem ø | Stem         | Spindle end | Mass g |
|----------|--------|--------|--------------|-------------|--------|
| 148-862* | 0.5-0" | 0.375" | w/ clamp nut | Flat        | 40     |

# Micrometer Heads 13 mm

## Series 148 - Small standard type

- Standard version, small design with 13 mm measuring range.



### Metric

| No.     | Range   | Accuracy            | Stem $\phi$ | Stem         | Spindle end     | Special features | Mass g |
|---------|---------|---------------------|-------------|--------------|-----------------|------------------|--------|
| 148-104 | 0-13 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | Plain        | Flat            | -                | 35     |
| 148-103 | 0-13 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | w/ clamp nut | Flat            | -                | 40     |
| 148-801 | 0-13 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | Plain        | Spherical (SR4) | -                | 35     |
| 148-802 | 0-13 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | w/ clamp nut | Spherical (SR4) | -                | 40     |
| 148-821 | 13-0 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | Plain        | Flat            | Reverse reading  | 35     |
| 148-822 | 13-0 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | w/ clamp nut | Flat            | Reverse reading  | 40     |

### Metric

With spindle lock

| No.     | Range   | Accuracy            | Stem $\phi$ | Stem         | Spindle end     | Special features | Mass g |
|---------|---------|---------------------|-------------|--------------|-----------------|------------------|--------|
| 148-121 | 0-13 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | Plain        | Flat            | -                | 50     |
| 148-120 | 0-13 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | w/ clamp nut | Flat            | -                | 50     |
| 148-803 | 0-13 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | Plain        | Spherical (SR4) | -                | 50     |
| 148-804 | 0-13 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | w/ clamp nut | Spherical (SR4) | -                | 50     |
| 148-823 | 13-0 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | Plain        | Flat            | Reverse reading  | 50     |
| 148-824 | 13-0 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | w/ clamp nut | Flat            | Reverse reading  | 50     |

### Inch

| No.      | Range  | Accuracy       | Stem $\phi$ | Stem         | Spindle end     | Special features | Mass g |
|----------|--------|----------------|-------------|--------------|-----------------|------------------|--------|
| 148-112  | 0-0.5" | $\pm 0.0001$ " | 0.375"      | Plain        | Flat            | -                | 35     |
| 148-111* | 0-0.5" | $\pm 0.0001$ " | 0.375"      | w/ clamp nut | Flat            | -                | 40     |
| 148-811* | 0-0.5" | $\pm 0.0001$ " | 0.375"      | Plain        | Spherical (SR4) | -                | 35     |
| 148-812* | 0-0.5" | $\pm 0.0001$ " | 0.375"      | w/ clamp nut | Spherical (SR4) | -                | 40     |
| 148-831* | 0.5-0" | $\pm 0.0001$ " | 0.375"      | Plain        | Flat            | Reverse reading  | 35     |
| 148-832* | 0.5-0" | $\pm 0.0001$ " | 0.375"      | w/ clamp nut | Flat            | Reverse reading  | 40     |

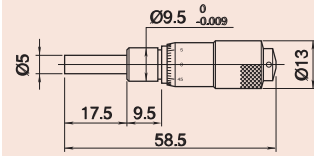
### Inch

With spindle lock

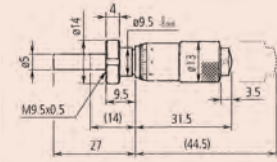
| No.      | Range  | Accuracy       | Stem $\phi$ | Stem         | Spindle end     | Special features | Mass g |
|----------|--------|----------------|-------------|--------------|-----------------|------------------|--------|
| 148-123* | 0-0.5" | $\pm 0.0001$ " | 0.375"      | Plain        | Flat            | -                | 50     |
| 148-122  | 0-0.5" | $\pm 0.0001$ " | 0.375"      | w/ clamp nut | Flat            | -                | 50     |
| 148-813* | 0-0.5" | $\pm 0.0001$ " | 0.375"      | Plain        | Spherical (SR4) | -                | 50     |
| 148-814  | 0-0.5" | $\pm 0.0001$ " | 0.375"      | w/ clamp nut | Spherical (SR4) | -                | 50     |
| 148-833* | 0.5-0" | $\pm 0.0001$ " | 0.375"      | Plain        | Flat            | Reverse reading  | 50     |
| 148-834* | 0.5-0" | $\pm 0.0001$ " | 0.375"      | w/ clamp nut | Flat            | Reverse reading  | 50     |

## Specifications

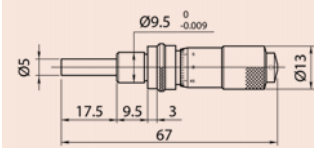
|                    |  |
|--------------------|--|
| Graduation         | 0,01 mm or 0.001"                      |
| Spindle pitch      | 0,5 mm or 0.025"                       |
| Scales             | Thimble and sleeve satin chrome finish |
| Measuring surfaces | Tool steel                             |



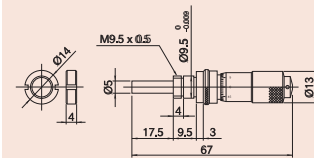
148-104



148-103



148-121



148-120

For drawings not shown here, see beginning of chapter Micrometer Heads

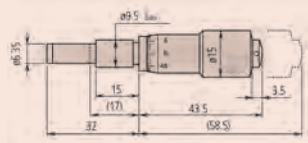
# Micrometer Heads 15 mm

## Series 149 - Small standard type with carbide-tipped spindle

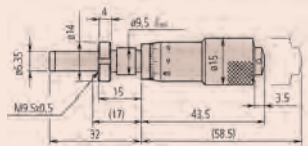
- Small micrometer head with 15 mm measuring range and tungsten carbide measuring surface.

### Specifications

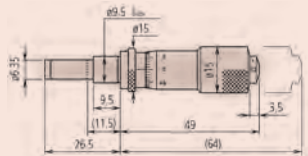
|                    |  |
|--------------------|--|
| Graduation         | 0,01 mm or 0.001"                      |
| Spindle pitch      | 0,5 mm or 0.025"                       |
| Scales             | Thimble and sleeve satin chrome finish |
| Measuring surfaces | Carbide tipped                         |



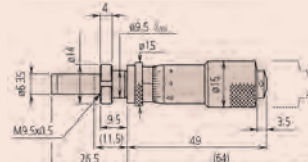
149-132



149-131



149-183



149-184



149-132

149-184

### Metric

| No.      | Range   | Accuracy            | Stem $\phi$ | Stem         | Spindle end        | Special features | Mass g |
|----------|---------|---------------------|-------------|--------------|--------------------|------------------|--------|
| 149-132  | 0-15 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | Plain        | Flat (carbide tip) | -                | 55     |
| 149-131  | 0-15 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | w/ clamp nut | Flat (carbide tip) | -                | 55     |
| 149-801  | 0-15 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | Plain        | Spherical (SR4)    | -                | 55     |
| 149-802  | 0-15 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | w/ clamp nut | Spherical (SR4)    | -                | 55     |
| 149-821* | 15-0 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | Plain        | Flat (carbide tip) | Reverse reading  | 55     |
| 149-822  | 15-0 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | w/ clamp nut | Flat (carbide tip) | Reverse reading  | 55     |

### Metric

With spindle lock

| No.     | Range   | Accuracy            | Stem $\phi$ | Stem         | Spindle end        | Special features | Mass g |
|---------|---------|---------------------|-------------|--------------|--------------------|------------------|--------|
| 149-183 | 0-15 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | Plain        | Flat (carbide tip) | -                | 75     |
| 149-184 | 0-15 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | w/ clamp nut | Flat (carbide tip) | -                | 75     |

### Metric

Specific models

| No.      | Range   | Accuracy            | Stem $\phi$ | Stem         | Spindle end        | Special features | Mass g |
|----------|---------|---------------------|-------------|--------------|--------------------|------------------|--------|
| 149-803* | 0-15 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | Plain        | Spherical (SR4)    | -                | 75     |
| 149-804* | 0-15 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | w/ clamp nut | Spherical (SR4)    | -                | 75     |
| 149-823* | 0-15 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | Plain        | Flat (carbide tip) | -                | 75     |
| 149-824* | 0-15 mm | $\pm 2 \mu\text{m}$ | 9,5 mm      | w/ clamp nut | Flat (carbide tip) | -                | 75     |

### Inch

| No.      | Range  | Accuracy       | Stem $\phi$ | Stem         | Spindle end        | Special features | Mass g |
|----------|--------|----------------|-------------|--------------|--------------------|------------------|--------|
| 149-148* | 0-0.5" | $\pm 0.0001$ " | 0.375"      | Plain        | Flat (carbide tip) | -                | 55     |
| 149-147* | 0-0.5" | $\pm 0.0001$ " | 0.375"      | w/ clamp nut | Flat (carbide tip) | -                | 70     |
| 149-811* | 0-0.5" | $\pm 0.0001$ " | 0.375"      | Plain        | Spherical (SR4)    | -                | 55     |
| 149-812* | 0-0.5" | $\pm 0.0001$ " | 0.375"      | w/ clamp nut | Spherical (SR4)    | -                | 55     |
| 149-831* | 0.5-0" | $\pm 0.0001$ " | 0.375"      | Plain        | Flat (carbide tip) | Reverse reading  | 55     |
| 149-832* | 0.5-0" | $\pm 0.0001$ " | 0.375"      | w/ clamp nut | Flat (carbide tip) | Reverse reading  | 55     |

### Inch

With spindle lock

| No.      | Range  | Accuracy       | Stem $\phi$ | Stem         | Spindle end        | Special features | Mass g |
|----------|--------|----------------|-------------|--------------|--------------------|------------------|--------|
| 149-185* | 0-0.5" | $\pm 0.0001$ " | 0.375"      | Plain        | Flat (carbide tip) | -                | 70     |
| 149-182  | 0-0.5" | $\pm 0.0001$ " | 0.375"      | w/ clamp nut | Flat (carbide tip) | -                | 55     |



# Micrometer Heads 25 mm

## Series 150 - Medium-sized standard type

- Standard Micrometer head with 25 mm measuring range.
- Ratchet stop for constant measuring force.



150-801



150-191

### Metric

| No.      | Range   | Accuracy            | Stem $\phi$ | Stem         | Spindle end        | Special features    | Mass g |
|----------|---------|---------------------|-------------|--------------|--------------------|---------------------|--------|
| 150-192  | 0-25 mm | $\pm 2 \mu\text{m}$ | 10 mm       | Plain        | Flat (carbide tip) | -                   | 90     |
| 150-191  | 0-25 mm | $\pm 2 \mu\text{m}$ | 10 mm       | w/ clamp nut | Flat (carbide tip) | -                   | 90     |
| 150-801  | 0-25 mm | $\pm 2 \mu\text{m}$ | 10 mm       | Plain        | Spherical (SR4)    | -                   | 90     |
| 150-802  | 0-25 mm | $\pm 2 \mu\text{m}$ | 10 mm       | w/ clamp nut | Spherical (SR4)    | -                   | 90     |
| 150-190  | 0-25 mm | $\pm 2 \mu\text{m}$ | 10 mm       | Plain        | Flat (carbide tip) | Graduation 0,001 mm | 90     |
| 150-189  | 0-25 mm | $\pm 2 \mu\text{m}$ | 10 mm       | w/ clamp nut | Flat (carbide tip) | Graduation 0,001 mm | 90     |
| 150-196  | 0-25 mm | $\pm 2 \mu\text{m}$ | 10 mm       | Plain        | Flat (carbide tip) | w/o ratchet stop    | 90     |
| 150-195  | 0-25 mm | $\pm 2 \mu\text{m}$ | 10 mm       | w/ clamp nut | Flat (carbide tip) | w/o ratchet stop    | 90     |
| 150-219* | 0-25 mm | $\pm 2 \mu\text{m}$ | 10 mm       | Plain        | Flat               | Long spindle        | 105    |
| 150-220* | 0-25 mm | $\pm 2 \mu\text{m}$ | 10 mm       | w/ clamp nut | Flat               | Long spindle        | 105    |
| 150-821  | 25-0 mm | $\pm 2 \mu\text{m}$ | 10 mm       | Plain        | Flat (carbide tip) | Reverse reading     | 90     |
| 150-822  | 25-0 mm | $\pm 2 \mu\text{m}$ | 10 mm       | w/ clamp nut | Flat (carbide tip) | Reverse reading     | 90     |

### Metric

With spindle lock

| No.     | Range   | Accuracy            | Stem $\phi$ | Stem         | Spindle end        | Special features | Mass g |
|---------|---------|---------------------|-------------|--------------|--------------------|------------------|--------|
| 150-209 | 0-25 mm | $\pm 2 \mu\text{m}$ | 10 mm       | Plain        | Flat (carbide tip) | -                | 125    |
| 150-211 | 0-25 mm | $\pm 2 \mu\text{m}$ | 10 mm       | Plain        | Flat (carbide tip) | w/o ratchet stop | 115    |
| 150-210 | 0-25 mm | $\pm 2 \mu\text{m}$ | 10 mm       | w/ clamp nut | Flat (carbide tip) | -                | 125    |
| 150-212 | 0-25 mm | $\pm 2 \mu\text{m}$ | 10 mm       | w/ clamp nut | Flat (carbide tip) | w/o ratchet stop | 115    |

### Metric

Specific models/With spindle lock

| No.      | Range   | Accuracy            | Stem $\phi$ | Stem         | Spindle end        | Special features | Mass g |
|----------|---------|---------------------|-------------|--------------|--------------------|------------------|--------|
| 150-183* | 0-25 mm | $\pm 2 \mu\text{m}$ | 10 mm       | Plain        | Flat (carbide tip) | -                | 125    |
| 150-184* | 0-25 mm | $\pm 2 \mu\text{m}$ | 10 mm       | w/ clamp nut | Flat (carbide tip) | -                | 125    |

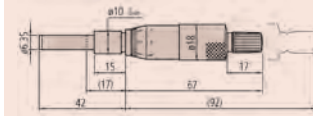
### Metric

Specific models

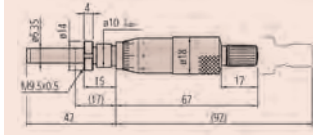
| No.      | Range   | Accuracy            | Stem $\phi$ | Stem         | Spindle end        | Special features | Mass g |
|----------|---------|---------------------|-------------|--------------|--------------------|------------------|--------|
| 150-803* | 0-25 mm | $\pm 2 \mu\text{m}$ | 10 mm       | Plain        | Spherical (SR4)    | -                | 125    |
| 150-804* | 0-25 mm | $\pm 2 \mu\text{m}$ | 10 mm       | w/ clamp nut | Spherical (SR4)    | -                | 125    |
| 150-823* | 0-25 mm | $\pm 2 \mu\text{m}$ | 10 mm       | Plain        | Flat (carbide tip) | -                | 125    |
| 150-824* | 0-25 mm | $\pm 2 \mu\text{m}$ | 10 mm       | w/ clamp nut | Flat (carbide tip) | -                | 125    |
| 150-223* | 0-25 mm | $\pm 2 \mu\text{m}$ | 10 mm       | Plain        | Flat (carbide tip) | -                | 135    |
| 150-224* | 0-25 mm | $\pm 2 \mu\text{m}$ | 10 mm       | w/ clamp nut | Flat (carbide tip) | -                | 135    |

## Specifications

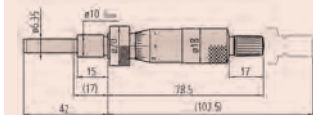
|                    |  |
|--------------------|--|
| Graduation         | 0,01 mm                                |
| Spindle pitch      | 0,5 mm                                 |
| Scales             | Thimble and sleeve satin chrome finish |
| Measuring surfaces | Carbide tipped                         |



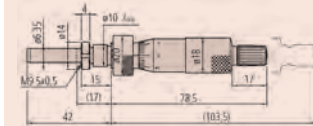
150-192



150-191



150-209



150-210

For drawings not shown here, see beginning of chapter Micrometer Heads

# Inch Micrometer Heads 1"

## Series 150 - Medium-sized standard type

- Standard Micrometer head with 1" measuring range.
- Ratchet stop for constant measuring force.

### Inch

| No.      | Range | Accuracy       | Stem $\phi$ | Stem         | Spindle end        | Special features   | Mass g |
|----------|-------|----------------|-------------|--------------|--------------------|--------------------|--------|
| 150-208* | 0-1"  | $\pm 0.0001$ " | 0.375"      | Plain        | Flat (carbide tip) | -                  | 90     |
| 150-207* | 0-1"  | $\pm 0.0001$ " | 0.375"      | w/ clamp nut | Flat (carbide tip) | -                  | 90     |
| 150-206* | 0-1"  | $\pm 0.0001$ " | 0.375"      | Plain        | Flat (carbide tip) | Graduation 0.0001" | 90     |
| 150-811* | 0-1"  | $\pm 0.0001$ " | 0.375"      | Plain        | Spherical (SR4)    | -                  | 90     |
| 150-205* | 0-1"  | $\pm 0.0001$ " | 0.375"      | w/ clamp nut | Flat (carbide tip) | Graduation 0.0001" | 90     |
| 150-812  | 0-1"  | $\pm 0.0001$ " | 0.375"      | w/ clamp nut | Spherical (SR4)    | -                  | 90     |
| 150-198* | 0-1"  | $\pm 0.0001$ " | 0.375"      | Plain        | Flat (carbide tip) | w/o ratchet stop   | 90     |
| 150-197* | 0-1"  | $\pm 0.0001$ " | 0.375"      | w/ clamp nut | Flat (carbide tip) | w/o ratchet stop   | 90     |
| 150-221* | 0-1"  | $\pm 0.0001$ " | 0.375"      | Plain        | Flat               | Long spindle       |        |
| 150-222* | 0-1"  | $\pm 0.0001$ " | 0.375"      | w/ clamp nut | Flat               | Long spindle       | 105    |
| 150-831* | 1-0"  | $\pm 0.0001$ " | 0.375"      | Plain        | Flat (carbide tip) | Reverse reading    | 90     |
| 150-832  | 1-0"  | $\pm 0.0001$ " | 0.375"      | w/ clamp nut | Flat (carbide tip) | Reverse reading    | 90     |

### Inch

With spindle lock

| No.      | Range | Accuracy       | Stem $\phi$ | Stem         | Spindle end        | Special features   | Mass g |
|----------|-------|----------------|-------------|--------------|--------------------|--------------------|--------|
| 150-213* | 0-1"  | $\pm 0.0001$ " | 0.375"      | Plain        | Flat (carbide tip) | -                  | 125    |
| 150-214* | 0-1"  | $\pm 0.0001$ " | 0.375"      | w/ clamp nut | Flat (carbide tip) | -                  | 125    |
| 150-215* | 0-1"  | $\pm 0.0001$ " | 0.375"      | Plain        | Flat (carbide tip) | Graduation 0.0001" | 125    |
| 150-216* | 0-1"  | $\pm 0.0001$ " | 0.375"      | w/ clamp nut | Flat (carbide tip) | Graduation 0.0001" | 125    |
| 150-217* | 0-1"  | $\pm 0.0001$ " | 0.375"      | Plain        | Flat (carbide tip) | w/o ratchet stop   | 115    |
| 150-218* | 0-1"  | $\pm 0.0001$ " | 0.375"      | w/ clamp nut | Flat (carbide tip) | w/o ratchet stop   | 115    |

## Specifications

|                    |  |
|--------------------|--|
| Graduation         | 0.0001"                                |
| Spindle pitch      | 0.025"                                 |
| Scales             | Thimble and sleeve satin chrome finish |
| Measuring surfaces | Carbide tipped                         |

# Micrometer Heads 25 mm and 50 mm

## Series 151 - Medium-sized standard type with 8 mm diameter spindle.

- Extremely sturdy micrometer head with/without ratchet and 8 mm spindle diameter.



### Metric

| No.     | Range   | Accuracy            | Stem $\phi$ | Stem         | Spindle end        | Special features    | Mass g |
|---------|---------|---------------------|-------------|--------------|--------------------|---------------------|--------|
| 151-224 | 0-25 mm | $\pm 2 \mu\text{m}$ | 12 mm       | Plain        | Flat (carbide tip) | -                   | 150    |
| 151-223 | 0-25 mm | $\pm 2 \mu\text{m}$ | 12 mm       | w/ clamp nut | Flat (carbide tip) | -                   | 160    |
| 151-222 | 0-25 mm | $\pm 2 \mu\text{m}$ | 12 mm       | Plain        | Flat (carbide tip) | Graduation 0,001 mm | 150    |
| 151-256 | 0-50 mm | $\pm 2 \mu\text{m}$ | 12 mm       | Plain        | Flat (carbide tip) | -                   | 240    |
| 151-255 | 0-50 mm | $\pm 2 \mu\text{m}$ | 12 mm       | w/ clamp nut | Flat (carbide tip) | -                   | 250    |
| 151-260 | 0-50 mm | $\pm 2 \mu\text{m}$ | 12 mm       | Plain        | Flat (carbide tip) | w/o ratchet stop    | 240    |
| 151-259 | 0-50 mm | $\pm 2 \mu\text{m}$ | 12 mm       | w/ clamp nut | Flat (carbide tip) | w/o ratchet stop    | 250    |

### Metric

#### Specific models/With spindle lock

| No.      | Range   | Accuracy            | Stem $\phi$ | Stem         | Spindle end        | Special features    | Mass g |
|----------|---------|---------------------|-------------|--------------|--------------------|---------------------|--------|
| 151-214* | 0-25 mm | $\pm 2 \mu\text{m}$ | 12 mm       | Plain        | Flat (carbide tip) | -                   | 165    |
| 151-213* | 0-25 mm | $\pm 2 \mu\text{m}$ | 12 mm       | w/ clamp nut | Flat (carbide tip) | -                   | 165    |
| 151-212* | 0-25 mm | $\pm 2 \mu\text{m}$ | 12 mm       | Plain        | Flat (carbide tip) | Graduation 0,001 mm | 165    |
| 151-211* | 0-25 mm | $\pm 2 \mu\text{m}$ | 12 mm       | w/ clamp nut | Flat (carbide tip) | Graduation 0,001 mm | 165    |

### Metric

#### Specific models

| No.      | Range   | Accuracy            | Stem $\phi$ | Stem         | Spindle end        | Special features | Mass g |
|----------|---------|---------------------|-------------|--------------|--------------------|------------------|--------|
| 151-227* | 0-25 mm | $\pm 2 \mu\text{m}$ | 12 mm       | Plain        | Flat (carbide tip) | w/o ratchet stop | 150    |
| 151-228* | 0-25 mm | $\pm 2 \mu\text{m}$ | 12 mm       | w/ clamp nut | Flat (carbide tip) | w/o ratchet stop | 160    |

### Metric

#### With spindle lock

| No.     | Range   | Accuracy            | Stem $\phi$ | Stem         | Spindle end        | Special features | Mass g |
|---------|---------|---------------------|-------------|--------------|--------------------|------------------|--------|
| 151-225 | 0-25 mm | $\pm 2 \mu\text{m}$ | 12 mm       | Plain        | Flat (carbide tip) | w/o ratchet stop | 165    |
| 151-226 | 0-25 mm | $\pm 2 \mu\text{m}$ | 12 mm       | w/ clamp nut | Flat (carbide tip) | w/o ratchet stop | 165    |

### Inch

| No.      | Range | Accuracy      | Stem $\phi$ | Stem         | Spindle end        | Special features   | Mass g |
|----------|-------|---------------|-------------|--------------|--------------------|--------------------|--------|
| 151-240* | 0-1"  | $\pm 0.0001"$ | 0.5"        | Plain        | Flat (carbide tip) | -                  | 150    |
| 151-239* | 0-1"  | $\pm 0.0001"$ | 0.5"        | w/ clamp nut | Flat (carbide tip) | -                  | 160    |
| 151-238  | 0-1"  | $\pm 0.0001"$ | 0.5"        | Plain        | Flat (carbide tip) | Graduation 0.0001" | 150    |
| 151-237* | 0-1"  | $\pm 0.0001"$ | 0.5"        | w/ clamp nut | Flat (carbide tip) | Graduation 0.0001" | 160    |
| 151-272* | 0-2"  | $\pm 0.0001"$ | 0.5"        | Plain        | Flat (carbide tip) | -                  | 240    |
| 151-271* | 0-2"  | $\pm 0.0001"$ | 0.5"        | w/ clamp nut | Flat (carbide tip) | -                  | 250    |

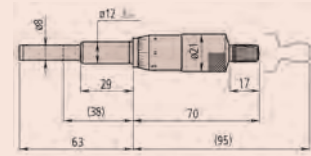
### Inch

#### With spindle lock

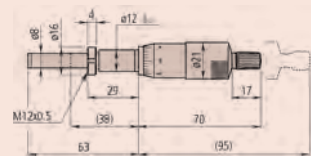
| No.      | Range | Accuracy      | Stem $\phi$ | Stem         | Spindle end        | Special features                     | Mass g |
|----------|-------|---------------|-------------|--------------|--------------------|--------------------------------------|--------|
| 151-241* | 0-1"  | $\pm 0.0001"$ | 0.5"        | Plain        | Flat (carbide tip) | w/o ratchet stop                     | 165    |
| 151-242* | 0-1"  | $\pm 0.0001"$ | 0.5"        | w/ clamp nut | Flat (carbide tip) | w/o ratchet stop                     | 165    |
| 151-243* | 0-1"  | $\pm 0.0001"$ | 0.5"        | Plain        | Flat (carbide tip) | w/o ratchet stop, graduation 0.0001" | 165    |
| 151-244* | 0-1"  | $\pm 0.0001"$ | 0.5"        | w/ clamp nut | Flat (carbide tip) | w/o ratchet stop, graduation 0.0001" | 165    |

### Specifications

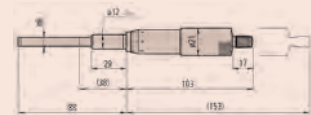
|                                 |  |
|---------------------------------|--|
| Graduation                      | 0,01 mm or 0,001 mm<br>0.001" or 0.0001" |
| Spindle pitch                   | 0,5 mm or 0.025"                         |
| Scales                          | Thimble and sleeve satin chrome finish   |
| Fixture thickness for clamp nut | 25,5 mm                                  |
| Measuring surfaces              | Carbide tipped                           |



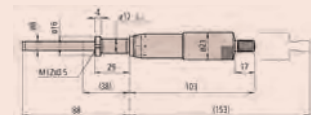
151-224



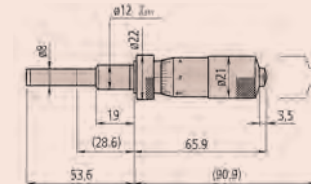
151-223



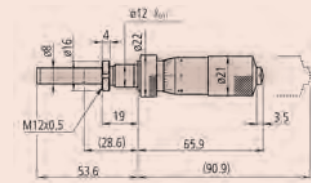
151-256



151-255



151-225



151-226

For drawings not shown here, see beginning of chapter Micrometer Heads

# Micrometer Heads

## Specifications

|                                 |                          |
|---------------------------------|--------------------------|
| Graduation                      | 0,002 mm or 0.0001"      |
| Spindle pitch                   | 0,5 mm or 0.025"         |
| Scales                          | White anodized aluminium |
| Fixture thickness for clamp nut | 22,5 mm                  |
| Measuring surfaces              | Carbide tipped           |

## Series 152 - Large thimble type for fine adjustment

- Micrometer head with 1 mm spindle pitch to simplify reading.
- Black and red scaling for both directions (152-348/380/372/388)
- The large scale drum allows fine graduation and very easy rotation.



152-283



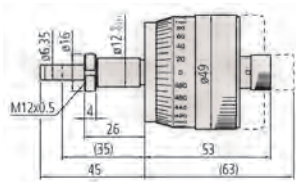
152-348

### Metric

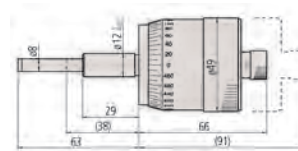
| No.      | Range        | Accuracy | Stem ø | Stem         | Spindle end        | Special features         | Mass g |
|----------|--------------|----------|--------|--------------|--------------------|--------------------------|--------|
| 152-283  | 0-10 mm      | ±2 µm    | 12 mm  | w/ clamp nut | Flat (carbide tip) | -                        | 190    |
| 152-332* | 0-25 mm      | ±2 µm    | 12 mm  | Plain        | Flat (carbide tip) | -                        | 310    |
| 152-348  | 0-25/25-0 mm | ±2 µm    | 12 mm  | Plain        | Flat (carbide tip) | Bidirectional graduation | 310    |
| 152-380  | 0-50/50-0 mm | ±4 µm    | 12 mm  | Plain        | Flat (carbide tip) | Bidirectional graduation | 460    |

### Inch

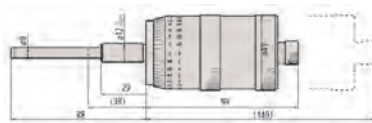
| No.      | Range    | Accuracy | Stem ø | Stem  | Spindle end        | Special features         | Mass g |
|----------|----------|----------|--------|-------|--------------------|--------------------------|--------|
| 152-372* | 0-1/1-0" | ±0.0001" | 0.5"   | Plain | Flat (carbide tip) | Bidirectional graduation | 310    |
| 152-388* | 0-2/2-0" | ±0.0002" | 0.5"   | Plain | Flat (carbide tip) | Bidirectional graduation | 420    |



152-283



152-332



152-380

# Micrometer Heads

## Series 152 - XY Stage type

- Micrometer head with rotating spindle, non-rotating measuring surface and bidirectional reading 152-390/389/392/391.
- Graduations for each direction engraved in a different colour (black or red).
- Measurement values can be read directly from the 100-step graduation thimble without the complication of having to consider 1/2 mm values, which simplifies reading and therefore reduces the chance of error.



152-390

## Specifications

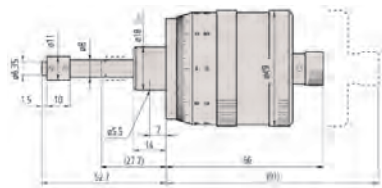
|                    |                          |
|--------------------|--------------------------|
| Spindle pitch      | 1 mm or 0.025"           |
| Scales             | White anodized aluminium |
| Measuring surfaces | Tool steel               |

## Metric

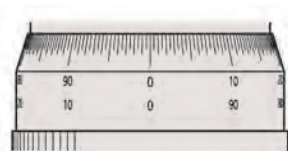
| No.     | Range        | Accuracy | Graduation | Stem ø | Stem  | Spindle end                              | Special features                  | Mass g |
|---------|--------------|----------|------------|--------|-------|--|-----------------------------------|--------|
| 152-390 | 0-25/25-0 mm | ±2 µm    | 0,005 mm   | 18 mm  | Plain | Flat (hardened) with non-rotating device | For X-axis<br>Bidirectional grad. | 270    |
| 152-389 | 0-25/25-0 mm | ±2 µm    | 0,005 mm   | 18 mm  | Plain | Flat (hardened) with non-rotating device | For Y-axis<br>Bidirectional grad. | 270    |
| 152-402 | 0-25 mm      | ±2 µm    | 0,001 mm   | 18 mm  | Plain | Spherical with carbide tip (SR10)        | For X-axis                        | 460    |
| 152-401 | 0-25 mm      | ±2 µm    | 0,001 mm   | 18 mm  | Plain | Spherical with carbide tip (SR10)        | For Y-axis                        | 460    |

## Inch

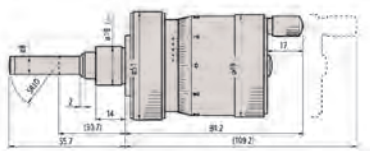
| No.      | Range    | Accuracy | Graduation | Stem ø | Stem  | Spindle end                              | Special features                  | Mass g |
|----------|----------|----------|------------|--------|-------|--|-----------------------------------|--------|
| 152-392* | 0-1/1-0" | ±0.0001" | 0.0001"    | 0.709" | Plain | Flat (hardened) with non-rotating device | For X-axis<br>Bidirectional grad. | 270    |
| 152-391* | 0-1/1-0" | ±0.0001" | 0.0001"    | 0.709" | Plain | Flat (hardened) with non-rotating device | For Y-axis<br>Bidirectional grad. | 270    |



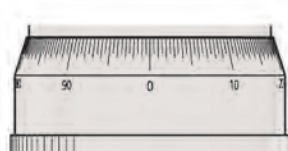
152-390



152-389



152-402



152-401

# Micrometer Heads

## Specifications

|                    |  |
|--------------------|--|
| Graduation         | 0,01 mm                                |
| Spindle pitch      | 1 mm                                   |
| Scales             | Thimble and sleeve satin chrome finish |
| Measuring surfaces | Carbide tipped                         |

For drawings not shown here, see beginning of chapter Micrometer Heads

## Series 152 - Quick spindle feed of 1mm/rev

- Micrometer head with 1 mm spindle pitch to simplify reading.
- Measurement values can be read directly from the 100-step graduation thimble without the complication of having to consider 1/2 mm lines.



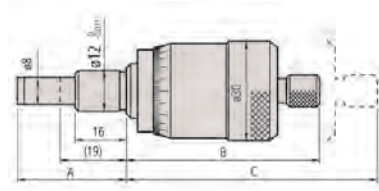
152-102



152-103

## Metric

| No.     | Range   | Accuracy            | Stem $\phi$ | Stem  | Spindle end        | A mm | B mm | C mm | Mass g |
|---------|---------|---------------------|-------------|-------|--------------------|------|------|------|--------|
| 152-101 | 0-15 mm | $\pm 2 \mu\text{m}$ | 12 mm       | Plain | Flat (carbide tip) | 34   | 60   | 75   | 205    |
| 152-102 | 0-25 mm | $\pm 2 \mu\text{m}$ | 12 mm       | Plain | Flat (carbide tip) | 44   | 69   | 94   | 230    |
| 152-103 | 0-50 mm | $\pm 2 \mu\text{m}$ | 12 mm       | Plain | Flat (carbide tip) | 69   | 94   | 144  | 355    |



152-101

# Micrometer Heads with non-rotating spindle

## Series 110 - Differential screw translator (Extra-fine feed) type

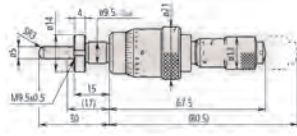
- Micrometer head with ultra-fine rate of travel.
- With non-rotating spindle, especially suited for fine adjustments.
- The differential travel mechanism with double spindle enables ultra-sensitive travel of 0,05 mm/ rev.
- A version with rotating spindle and large thimble scale is also available (110-502/110-504).
- Graduation 0,5  $\mu\text{m}$ , especially suited for fine adjustments (110-502/110-504).
- 0,025 mm/rev, 0.001/rev fine feed (110-502/110-504).



110-102

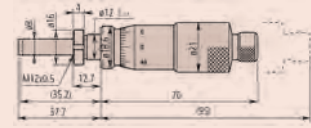


110-502



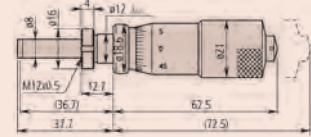
## Specifications

|                                 |  |
|---------------------------------|--|
| Scales                          | Thimble and sleeve satin chrome finish |
| Fixture thickness for clamp nut | 9,5 mm (11,5 mm : 110-502/110-504)     |
| Measuring surfaces              | Carbide tipped                         |



110-101

110-102



110-105

110-106

## Metric

| No.      | Range    | Accuracy            | Graduation       | Stem $\phi$ | Stem         | Spindle end        | Mass g |
|----------|----------|---------------------|------------------|-------------|--------------|--------------------|--------|
| 110-105* | 0-1 mm   | $\pm 3 \mu\text{m}$ | 0,001 mm         | 12 mm       | w/ clamp nut | Flat (carbide tip) | 150    |
| 110-106  | 0-1 mm   | $\pm 3 \mu\text{m}$ | 0,0001 mm        | 12 mm       | w/ clamp nut | Flat (carbide tip) | 150    |
| 110-107  | 0-1 mm   | $\pm 3 \mu\text{m}$ | 0,001 mm         | 12 mm       | w/ clamp nut | Spherical (SR10)   | 150    |
| 110-108  | 0-1 mm   | $\pm 3 \mu\text{m}$ | 0,0001 mm        | 12 mm       | w/ clamp nut | Spherical (SR10)   | 150    |
| 110-101  | 0-2,5 mm | $\pm 5 \mu\text{m}$ | 0,001 mm         | 12 mm       | w/ clamp nut | Flat (carbide tip) | 150    |
| 110-102  | 0-2,5 mm | $\pm 5 \mu\text{m}$ | 0,0001 mm        | 12 mm       | w/ clamp nut | Flat (carbide tip) | 150    |
| 110-502  | 0-13 mm  | $\pm 3 \mu\text{m}$ | 0,0005 mm/0,2 mm | 9,5 mm      | w/ clamp nut | Spherical (SR3)    | 100    |

## Inch

| No.      | Range   | Accuracy       | Graduation      | Stem $\phi$ | Stem         | Spindle end        | Mass g |
|----------|---------|----------------|-----------------|-------------|--------------|--------------------|--------|
| 110-115* | 0-0.02" | $\pm 0.00015"$ | 0.00005"        | 0.5"        | w/ clamp nut | Flat (carbide tip) | 150    |
| 110-116* | 0-0.02" | $\pm 0.00015"$ | 0.000005"       | 0.5"        | w/ clamp nut | Flat (carbide tip) | 150    |
| 110-117* | 0-0.02" | $\pm 0.00015"$ | 0.00005"        | 0.5"        | w/ clamp nut | Spherical (SR10)   | 150    |
| 110-118* | 0-0.02" | $\pm 0.00015"$ | 0.000005"       | 0.5"        | w/ clamp nut | Spherical (SR10)   | 150    |
| 110-111* | 0-0.05" | $\pm 0.00025"$ | 0.00005"        | 0.5"        | w/ clamp nut | Flat (carbide tip) | 150    |
| 110-112* | 0-0.05" | $\pm 0.00025"$ | 0.000005"       | 0.5"        | w/ clamp nut | Flat (carbide tip) | 150    |
| 110-504  | 0-0.5"  | $\pm 0.00015"$ | 0.00002"/0.006" | 0.375"      | w/ clamp nut | Spherical (SR3)    | 100    |

For drawings not shown here, see beginning of chapter Micrometer Heads

# Micrometer Heads with non-rotating spindle

## Specifications

|                    |  |
|--------------------|--|
| Spindle pitch      | 0,5 mm or 0.025"                       |
| Scales             | Thimble and sleeve satin chrome finish |
| Measuring surfaces | Carbide tipped                         |

## Series 153



153-101



153-203



153-201

### Metric

| No.     | Range   | Accuracy            | Graduation | Stem $\phi$ | Stem  | Spindle end        | Mass g |
|---------|---------|---------------------|------------|-------------|-------|--------------------|--------|
| 153-101 | 0-15 mm | $\pm 3 \mu\text{m}$ | 0,01 mm    | 9,5 mm      | Plain | Flat (carbide tip) | 70     |
| 153-203 | 0-25 mm | $\pm 3 \mu\text{m}$ | 0,01 mm    | 9,5 mm      | Plain | Flat (carbide tip) | 117    |
| 153-204 | 0-25 mm | $\pm 3 \mu\text{m}$ | 0,001 mm   | 9,5 mm      | Plain | Flat (carbide tip) | 117    |

### Metric

With ratchet stop

| No.     | Range   | Accuracy            | Graduation | Stem $\phi$ | Stem  | Spindle end        | Mass g |
|---------|---------|---------------------|------------|-------------|-------|--------------------|--------|
| 153-201 | 0-25 mm | $\pm 3 \mu\text{m}$ | 0,01 mm    | 9,5 mm      | Plain | Flat (carbide tip) | 122    |
| 153-202 | 0-25 mm | $\pm 3 \mu\text{m}$ | 0,001 mm   | 9,5 mm      | Plain | Flat (carbide tip) | 122    |

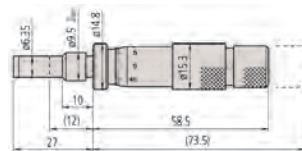
### Inch

| No.      | Range  | Accuracy        | Graduation | Stem $\phi$ | Stem  | Spindle end        | Mass g |
|----------|--------|-----------------|------------|-------------|-------|--------------------|--------|
| 153-108* | 0-0.5" | $\pm 0.00015$ " | 0.0001"    | 0.375"      | Plain | Flat (carbide tip) | 70     |
| 153-207* | 0-1"   | $\pm 0.00015$ " |            | 0.375"      | Plain | Flat (carbide tip) | 117    |
| 153-208* | 0-1"   | $\pm 0.00015$ " | 0.0001"    | 0.375"      | Plain | Flat (carbide tip) | 117    |

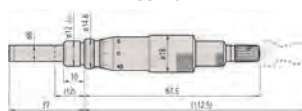
### Inch

With ratchet stop

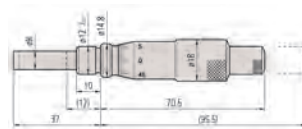
| No.      | Range | Accuracy        | Graduation | Stem $\phi$ | Stem  | Spindle end        | Mass g |
|----------|-------|-----------------|------------|-------------|-------|--------------------|--------|
| 153-205* | 0-1"  | $\pm 0.00015$ " | 0.001"     | 0.375"      | Plain | Flat (carbide tip) | 122    |
| 153-206  | 0-1"  | $\pm 0.00015$ " | 0.0001"    | 0.375"      | Plain | Flat (carbide tip) | 122    |



153-101



153-201 + 153-202



153-203 + 153-204



# Micrometer Heads with non-rotating spindle

## Series 197 - Non-rotating spindle and large thimble

- Micrometer Head with non-rotating spindle and 1 mm spindle pitch.
- Measurement values can be read directly from the 100-step graduation thimble without the complication of having to consider 1/2 mm values, which simplifies reading and therefore reduces the chance of error.
- The scale is set to zero by rotating the barrel.



197-101

### Metric

| No.     | Range        | Accuracy | Stem ø | Stem  | Spindle end        | Special features         | Mass g |
|---------|--------------|----------|--------|-------|--------------------|--------------------------|--------|
| 197-101 | 0-50/50-0 mm | ±5 µm    | 18 mm  | Plain | Flat (carbide tip) | Bidirectional graduation | 300    |

### Inch

| No.     | Range    | Accuracy | Stem ø | Stem  | Spindle end        | Special features         | Mass g |
|---------|----------|----------|--------|-------|--------------------|--------------------------|--------|
| 197-201 | 0-2/2-0" | ±5 µm    | 0.709" | Plain | Flat (carbide tip) | Bidirectional graduation | 300    |

## Series 153 - Fine graduation and high accuracy

- Extra-large-diameter micrometer head with non-rotating spindle.



153-301

### Metric

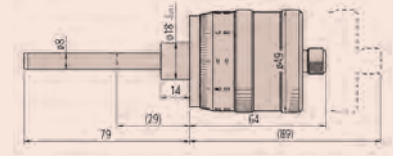
| No.     | Range        | Accuracy | Stem ø | Stem  | Spindle end        | Special features         | Mass g |
|---------|--------------|----------|--------|-------|--------------------|--------------------------|--------|
| 153-301 | 0-25/25-0 mm | ±1 µm    | 18 mm  | Plain | Flat (carbide tip) | Bidirectional graduation | 750    |

### Inch

| No.      | Range    | Accuracy  | Stem ø | Stem  | Spindle end        | Special features         | Mass g |
|----------|----------|-----------|--------|-------|--------------------|--------------------------|--------|
| 153-302* | 0-1/1-0" | ±0.00005" | 0.709" | Plain | Flat (carbide tip) | Bidirectional graduation | 750    |

### Specifications

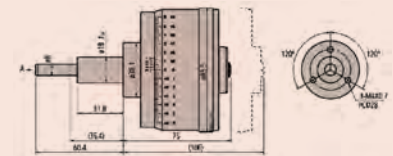
|                    |                          |
|--------------------|--------------------------|
| Graduation         | 0,005 mm or 0.0002"      |
| Spindle pitch      | 1 mm or 0.05"            |
| Scales             | White anodized aluminium |
| Measuring surfaces | Carbide tipped           |



197-101

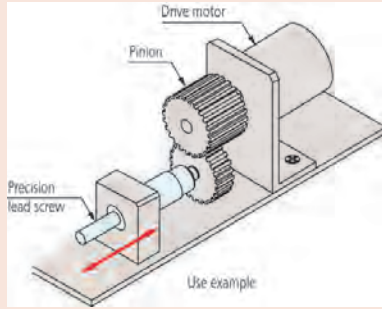
### Specifications

|                    |                          |
|--------------------|--------------------------|
| Graduation         | 0,0005 mm or 0.00001"    |
| Spindle pitch      | 0,5 mm or 0.025"         |
| Scales             | White anodized aluminium |
| Measuring surfaces | Carbide tipped           |



153-301

# Precision Leadscrews



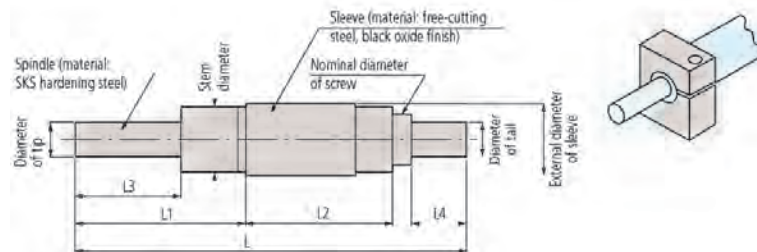
- AS type: Flat spindle tip without clamp nut
- BS type: Spherical spindle tip with clamp nut
- Durability: 100-thousand operations are guaranteed (use condition : 4 kgf load; 2 kgf for AS-6.5 and BS-6.5)
- Main applications
  - Precision feed stages
  - Fine adjustment of optical elements (mirrors)
  - Fibre-optic centering devices
  - Various assembly and adjustment jigs



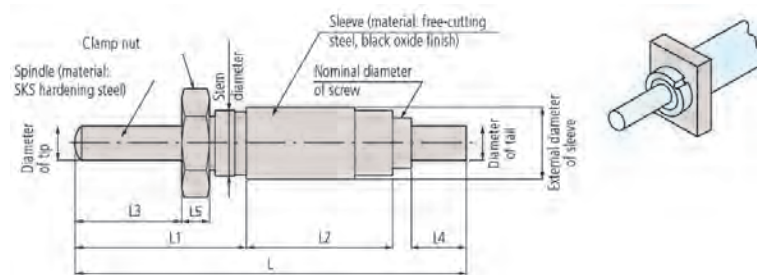
## 04AZA164 / 04AZA162 / 04AZA160 Precision Leadscrews Micrometer Head

Feed pitch 0,5 mm

| Model                  | AS-6.5             | BS-6.5             | AS-13                | BS-13                | AS-25               | BS-25               |
|------------------------|--------------------|--------------------|----------------------|----------------------|---------------------|---------------------|
| No.                    | 04AZA160*          | 04AZA161*          | 04AZA162*            | 04AZA163*            | 04AZA164*           | 04AZA165*           |
| Stroke                 | 6.5 mm             | 6.5 mm             | 13 mm                | 13 mm                | 25 mm               | 25 mm               |
| Feed accuracy          | ±5 µm              | ±5 µm              | ±2 µm                | ±2 µm                | ±2 µm               | ±2 µm               |
| Stem diameter          | ø 6<br>(+0/-0,008) | ø 6<br>(+0/-0,008) | ø 9.5<br>(+0/-0,009) | ø 9.5<br>(+0/-0,009) | ø 10<br>(+0/-0,009) | ø 10<br>(+0/-0,009) |
| Tip diameter           | ø 3.5              | ø 3.5              | ø 5                  | ø 5                  | ø 6.35              | ø 6.35              |
| Tail diameter          | ø 3 (+0/-0,01)     | ø 3 (+0/-0,01)     | ø 5<br>(+0/-0,012)   | ø 5<br>(+0/-0,012)   | ø 6<br>(+0/-0,015)  | ø 6<br>(+0/-0,015)  |
| Screw nominal diameter | M4.5 x 0.5         | M4.5 x 0.5         | M7.35 x 0.5          | M7.35 x 0.5          | M7.35 x 0.5         | M7.35 x 0.5         |
| Sleeve diameter        | ø 7                | ø 7                | ø 10.5               | ø 10.5               | ø 12                | ø 12                |
| Measuring face         | Hardened           | Hardened           | Hardened             | Hardened             | Carbide             | Carbide             |
| L mm                   | 39                 | 39                 | 57.5                 | 57.5                 | 96.5                | 96.5                |
| L1 mm                  | 15                 | 15                 | 25                   | 25                   | 42                  | 42                  |
| L2 mm                  | 14.5               | 14.5               | 21.5                 | 21.5                 | 39.5                | 39.5                |
| L3 mm                  | 9                  | 7.5                | 15.5                 | 15.5                 | 27                  | 27                  |
| L4 mm                  | 6                  | 6                  | 8                    | 8                    | 10                  | 10                  |
| L5 mm                  | -                  | 3                  | -                    | 4                    | -                   | 4                   |
| Mass g                 | 10                 | 11                 | 27                   | 30                   | 61                  | 64                  |



Type AS : Plain stem type



Type BS : Threaded stem with clamp nut type

# Fixtures for Micrometer Heads

- Mitutoyo offers various types of fixture designed for micrometer heads to meet a wide range of applications. These fixtures are manufactured from nickel-plated cast iron.
- There are two types of fixture for micrometer heads, depending on whether or not the head has a plain stem or is a clamp nut type.

## Fixtures for plain stem type micrometer heads

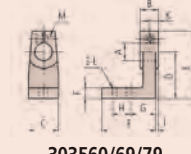
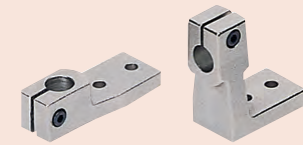
| No.     | A mm | B mm | C mm | D mm | E mm | F mm | G mm | H mm | I mm | J mm   | K mm   |
|---------|------|------|------|------|------|------|------|------|------|--------|--------|
| 303560* | ø9.5 | 9    | 15   | 20   | 23   | 5    | 11   | 8    | 1.5  | 32.5   | 4.5    |
| 303569* | ø9.5 | 14.5 | 20   | 30   | 35   | 7    | 16   | 12   | 3.25 | 42.5   | 7.25   |
| 303579* | ø10  | 14.5 | 20   | 30   | 35   | 7    | 16   | 12   | 3.25 | 42.5   | 7.25   |
| 303564  | ø9.5 | 9    | 30   | 42.5 | 4    | 15   | 10   | 15   | 4.5  | ø3.4   | M3x0.5 |
| 303573* | ø9.5 | 14.5 | 40   | 52.5 | 6    | 18   | 15   | 20   | 7.25 | ø4.5   | M3x0.5 |
| 303583* | ø10  | 14.5 | 40   | 52.5 | 6    | 18   | 15   | 20   | 7.25 | ø4.5   | M3x0.5 |
| 303562  | ø9.5 | 9    | 15   | 20   | 40   | 3    | 30   | 15   | ø3.4 | M3x0.5 |        |
| 303571* | ø9.5 | 14.5 | 15   | 22.5 | 60   | 5    | 40   | 20   | ø4.5 | M3x0.5 |        |
| 303581* | ø10  | 14.5 | 15   | 22.5 | 60   | 5    | 40   | 20   | ø4.5 | M3x0.5 |        |
| 303566* | ø9.5 | 9    | 15   | 15   | 25   | 8.5  | 7.5  | 10   | 10   | 32.5   | 4.5    |
| 303575* | ø9.5 | 14.5 | 15   | 20   | 40   | 8.5  | 10   | 20   | 15   | 40     | 7.25   |
| 303585* | ø10  | 14.5 | 15   | 20   | 40   | 8.5  | 10   | 20   | 15   | 40     | 7.25   |

| No.     | L mm | M mm   |
|---------|------|--------|
| 303560* | ø3.4 | M3x0.5 |
| 303569* | ø4.5 | M3x0.5 |
| 303579* | ø4.5 | M3x0.5 |
| 303564  |      |        |
| 303573* |      |        |
| 303583* |      |        |
| 303562  |      |        |
| 303571* |      |        |
| 303581* |      |        |
| 303566* | ø3.4 | M3x0.5 |
| 303575* | ø4.5 | M3x0.5 |
| 303585* | ø4.5 | M3x0.5 |

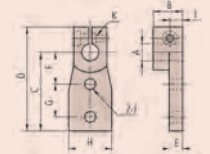
## Fixtures for micrometer heads with clamp nut

| No.     | A mm | B mm | C mm | D mm | E mm | F mm | G mm | H mm | I mm | J mm | K mm |
|---------|------|------|------|------|------|------|------|------|------|------|------|
| 303559  | ø9.5 | 6    | 15   | 20   | 24   | 5    | 11   | 8    | 0.5  | 27.5 | ø3.4 |
| 303568* | ø9.5 | 11.5 | 20   | 30   | 35   | 7    | 16   | 12   | 1.75 | 40   | ø4.5 |
| 303578* | ø10  | 11.5 | 20   | 30   | 35   | 7    | 16   | 12   | 1.75 | 40   | ø4.5 |
| 303563* | ø9.5 | 6    | 30   | 37.5 | 4.5  | 15   | 10   | 15   | ø3.4 |      |      |
| 303572  | ø9.5 | 11.5 | 40   | 50   | 6.5  | 18   | 15   | 20   | ø4.5 |      |      |
| 303582* | ø10  | 11.5 | 40   | 50   | 6.5  | 18   | 15   | 20   | ø4.5 |      |      |
| 303561  | ø9.5 | 6    | 40   | 3.5  | 30   | 15   | ø3.4 |      |      |      |      |
| 303570* | ø9.5 | 11.5 | 60   | 5.5  | 40   | 20   | ø4.5 |      |      |      |      |
| 303580* | ø10  | 11.5 | 60   | 5.5  | 40   | 20   | ø4.5 |      |      |      |      |
| 303565* | ø9.5 | 6    | ø15  | 15   | 25   | 8.5  | 7.5  | 10   | 10   | 27.5 | ø3.4 |
| 303574  | ø9.5 | 11.5 | ø15  | 20   | 40   | 8.5  | 10   | 20   | 15   | 35   | ø4.5 |
| 303584* | ø10  | 11.5 | ø15  | 20   | 40   | 8.5  | 10   | 20   | 15   | 35   | ø4.5 |

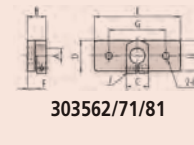
| No.     | L mm |
|---------|------|
| 303559  |      |
| 303568* |      |
| 303578* |      |
| 303563* |      |
| 303572  |      |
| 303582* |      |
| 303561  |      |
| 303570* |      |
| 303580* |      |
| 303565* | 0.75 |
| 303574  | 1.25 |
| 303584* | 1.25 |



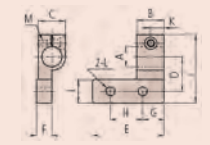
303560/69/79



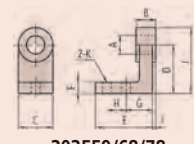
303564/73/83



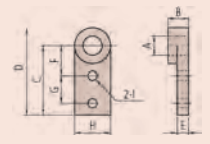
303562/71/81



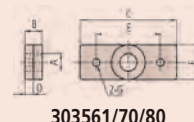
303566/75/85



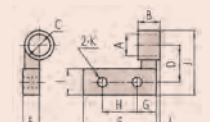
303559/68/78



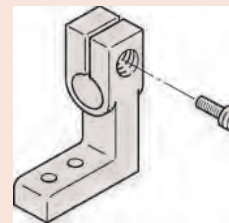
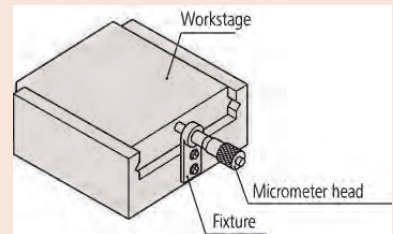
303563/72/82



303561/70/80



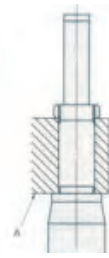
303565/74/84



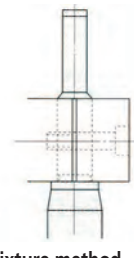
**Note :** Fixtures for use with plain stem type micrometer heads are split, and clamp the stem by tightening a socket head screw (M3x0.5x12 mm).

# Fixture self-production guide

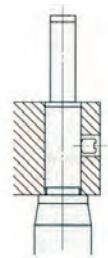
A micrometer head is clamped to a fixture by its stem. Although the three most popular clamping methods are shown on the right, Mitutoyo only recommends the Clamp Nut and Slotted Fixture methods for reasons of minimal risk of the clamping action affecting the spindle fit within the stem.



**Clamp Nut method**  
Mounting hole machining tolerance:  
To accept a  $\varnothing 9,5-10$  mm stem: G7 (+0,005 to +0,020 mm)  
To accept a  $\varnothing 12-18$  mm stem: G7 (+0,006 to +0,024 mm)  
Note: Ensure the face where the micrometer head locates on the fixture is perpendicularity to the mounting hole axis within the limit 0,16 mm in 6,5 mm



**Slotted Fixture method**  
Mounting hole machining tolerance:  
To accept a  $\varnothing 9,5-10$  mm stem: G7 (+0,005 to +0,020 mm)  
To accept a  $\varnothing 12-18$  mm stem: G7 (+0,006 to +0,024 mm)  
Note: Ensure the slot is free from burrs before inserting the head



**Setscrew Clamp method**  
Mounting hole machining tolerance:  
To accept a  $\varnothing 9,5-10$  mm stem: H5 (+0,000 to +0,006 mm)  
To accept a  $\varnothing 12-18$  mm stem: H5 (+0,000 to +0,008 mm)  
Notes:  
1) Suitable set screw sizes are M3x0.5 or M4x0.7  
2) The mounting hole should be countersunk  $90^\circ \times 0.5$  mm (or less) to receive the stem. When countersinking care should be taken to avoid stem deformation.

## Maximum allowable loading

The maximum loading capacity of a micrometer head cannot be quantified since it varies according to the clamping method, type of load applied (static or dynamic) and the operating conditions (used as a feeding device or as a stop).

When the micrometer head is used as a measuring instrument Mitutoyo recommends keeping the loading limits as per the table on the right to maintain guaranteed accuracy (within 1 million manual rotations). The result of tests to determine the static load needed to cause catastrophic failure of the mounting or head (for small micrometer heads) is also given below for reference.

### 1. Maximum loading to maintain accuracy specification

| Standard type | Micrometer head                    | Maximum load  |
|---------------|------------------------------------|---------------|
|               | 0.5mm spindle pitch models         | 4 kgf / 2kgf* |
| Other types   | 0.1mm, 0.25mm spindle pitch models | 2 kgf         |
|               | 1.0mm spindle pitch models         | 6 kgf         |
|               | Ultra-small/Small size models      | 2 kgf         |
|               | Non-rotating spindle models        | 2 kgf         |
|               | Fine-feed models                   | 2 kgf         |

\* Ultra-small and small size models

### 2. Static loading test results

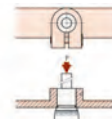
(148-104, 148-103)

#### Test conditions

After mounting micrometer heads by the three methods as described above, the test load (in direction 'P') was applied to each head using a properties of materials testing machine. As the test load was increased the load at the time when the micrometer head failed or was pushed out of the fixture was recorded.



**Clamp nut method**  
The micrometer heads failed at 8.63 to 9.8 kN (880 to 1000 kgf) load.



**Slotted fixture method**  
The micrometer heads were pushed out of the fixture at 0.69 to 0.98 kN (70 to 100 kgf) load.



**Setscrew clamp method**  
The setscrew failed at 0.69 to 1.08 kN (70 to 110 kgf) load.