

# Dial Test Indicators

## SERIES 513

### FEATURES

Contact point length is printed on dial face to avoid accuracy issues



Scratch and smudge-resistant, anti-glare crystal for easy-to-read dial



Newly designed contact point holder prevents backlash



Includes NIST-traceable Certificate of Inspection - bidirectional



- One piece movement for high-impact resistance and durability
- Contact point length is printed on dial face to avoid accuracy issues
- Scratch and smudge-resistant, anti-glare crystal for easy-to-read dial
- Newly designed contact point holder prevents backlash
- Includes NIST-traceable Certificate of Inspection - bidirectional
- Limit hands (optional) can be attached to the bezel, allowing easy identification of the upper and lower limits of tolerance.
- A  $\varnothing 8\text{mm}$  ( $\varnothing 0.315$  in) plain stem (21CAB104) for the Metric models or a  $\varnothing 9.52\text{mm}$  ( $\varnothing 3/8$  in) plain stem (21CAB105) for the Inch models that attaches to any dovetail on the frame is supplied as a standard accessory. Other sizes are available as optional accessories:
  - $\varnothing 4\text{mm}$  ( $\varnothing 0.157$  in) stem: **21CAB106**
  - $\varnothing 6\text{mm}$  ( $\varnothing 0.236$  in) stem: **21CAB103**
- Optional ruby tip has wear-resistance several times greater than a carbide tip and, since it is nonconductive, it can be used safely on an electrical discharge machine.
- Using universal fonts, changing dial face color and reviewing the relationship between pointer and scale marks have drastically improved readability.
- The O-ring seal on the bezel provides smooth rotation and prevents dust and oil from penetrating the dial face.
- Bonding the bezel and crystal eliminates a gap for cutting fluid or oil to penetrate the dial face.
- A flange prevents the bezel from unintentionally being removed during handling.
- Four models are available, each with a different orientation of the dial to allow the best visibility in any situation.
  - Standard - dial is on top of the frame.
  - Vertical: dial is on the end of the frame.
  - Standard ( $20^\circ$  tilted face): dial is on top of the frame but tilted  $20^\circ$ .
  - Horizontal: dial is on the side of the frame.
- The conventional method of mounting the stylus pivot bearing screw in the frame is prone to loosen with prolonged use. A unique sub-plate structure has been incorporated in all models to eliminate this issue.

One piece movement for high-impact resistance and durability



Four models are available:



# Dial Test Indicators

## SERIES 513 — Horizontal Type

### FEATURES

- Performs easy and accurate measurement of narrow or recessed areas, plus inside and outside diameters that dial indicators cannot access.
- No-clutch structure for automatic reversal of measuring direction.
- One-piece bezel and crystal design with O-ring provide resistance to water and dust.
- The glare-free flat crystal face has a scratch-resistant coating.
- High sensitivity and quick response because of jeweled bearings.
- Standard carbide contact point provide.



513-424-10E



513-414-10E

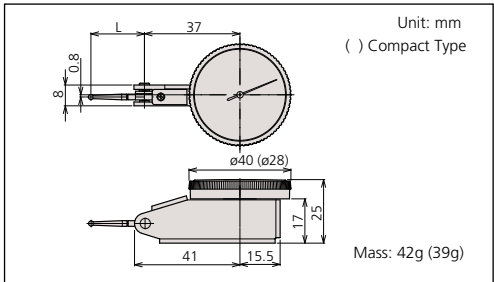


513-404-10E



513-402-10E

### DIMENSIONS AND MASS



### Optional Accessories

- Swivel clamp
- Holding bar
- Stem
- Contact points

### Special Set: No. 513-908-10E (mm)

- 513-404-10E: Dial test indicator
- 7014-10E: Mini magnetic stand

### No. 513-907-10E (inch)

- 513-402-10E: Dial test indicator
- 7014E-10: Mini magnetic stand



### Description of Icon

| Icon | Description                        |
|------|------------------------------------|
|      | With revolution counter            |
|      | Long contact point                 |
|      | Jeweled bearing                    |
|      | Double scale spacing, easy to read |
|      | Compact                            |
|      | Dustproof                          |
|      | Anti-magnetic                      |

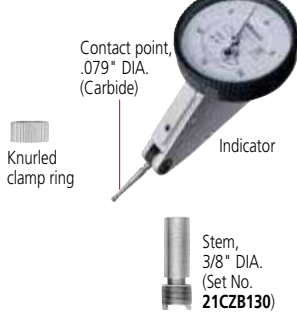
## Set Configuration: Test Indicators

### Inch

#### Full set



#### Basic set



### Metric

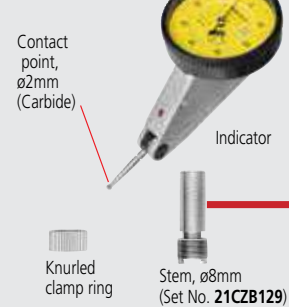
#### Full set



#### Plus set



#### Basic set



Anti-magnet type



Double scale spacing type



Long contact point type



Jeweled bearing type



Compact type



With revolution counter type



## SPECIFICATIONS

### Inch

| Graduation | Order No.    |             | Range | Accuracy | Dial reading | Measuring force | L (mm) |   |   |   |   |   |   |   |   |
|------------|--------------|-------------|-------|----------|--------------|-----------------|--------|---|---|---|---|---|---|---|---|
|            | Basic set    | Full set    |       |          |              |                 |        |   |   |   |   |   |   |   |   |
| .00005"    | 513-407-10E  | 513-407-10T | .008" | ±.0001"  | 0-4-0        | 0.3N or less    | 19     | ✓ | — | ✓ | — | — | — | — | — |
| .0005"     | 513-402-10E  | 513-402-10T | .03"  | ±.0005"  | 0-15-0       | 0.3N or less    | 19.9   | ✓ | — | ✓ | — | — | — | — | — |
| .0005"     | 513-472-10E* |             | .03"  | ±.0005"  | 0-15-0       | 0.3N or less    | 19.9   | ✓ | — | ✓ | — | — | — | — | — |
| .0005"     | 513-412-10E  | 513-412-10T | .03"  | ±.0005"  | 0-15-0       | 0.2N or less    | 33.9   | ✓ | ✓ | ✓ | — | — | — | — | — |
| .0005"     | 513-479-10E* |             | .03"  | ±.0005"  | 0-15-0       | 0.2N or less    | 33.9   | ✓ | ✓ | ✓ | — | — | — | — | — |
| .0005"     | 513-462-10E  |             | .03"  | ±.0005"  | 0-15-0       | 0.3N or less    | 19.9   | ✓ | — | ✓ | ✓ | — | — | — | — |
| .0001"     | 513-403-10E  | 513-403-10T | .008" | ±.0001"  | 0-4-0        | 0.3N or less    | 19     | ✓ | — | ✓ | — | — | — | — | — |
| .0001"     | 513-473-10E* |             | .008" | ±.0001"  | 0-4-0        | 0.3N or less    | 19     | ✓ | — | ✓ | — | — | — | — | — |
| .0001"     | 513-463-10E  |             | .008" | ±.0001"  | 0-4-0        | 0.3N or less    | 15     | ✓ | — | ✓ | ✓ | — | — | — | — |

\*Provided with a ø2mm ruby contact point as a substitute for ø2mm carbide contact point.

### Metric

| Graduation | Order No.    |             | Range  | Accuracy | Dial reading | Measuring force | L (mm) |   |   |   |   |   |   |   |   |
|------------|--------------|-------------|--------|----------|--------------|-----------------|--------|---|---|---|---|---|---|---|---|
|            | Basic set    | Full set    |        |          |              |                 |        |   |   |   |   |   |   |   |   |
| 0.01mm     | 513-424-10E  | 513-424-10T | 0.5mm  | 5μm      | 0-25-0       | 0.3N or less    | 22.3   | ✓ | ✓ | — | ✓ | — | — | — | — |
| 0.01mm     | 513-414-10E  | 513-414-10T | 0.5mm  | 10μm     | 0-25-0       | 0.2N or less    | 36.8   | ✓ | ✓ | ✓ | ✓ | — | — | — | — |
| 0.01mm     | 513-466-10E  | -           | 0.5mm  | 5μm      | 0-25-0       | 0.3N or less    | 22.3   | ✓ | ✓ | — | ✓ | ✓ | — | — | — |
| 0.01mm     | 513-478-10E* | -           | 0.5mm  | 5μm      | 0-25-0       | 0.3N or less    | 22.3   | ✓ | — | — | ✓ | — | — | — | — |
| 0.01mm     | 513-404-10E  | 513-404-10T | 0.8mm  | 8μm      | 0-40-0       | 0.3N or less    | 20.9   | ✓ | — | — | ✓ | — | — | — | — |
| 0.01mm     | 513-474-10E* | -           | 0.8mm  | 8μm      | 0-40-0       | 0.3N or less    | 20.9   | ✓ | — | — | ✓ | — | — | — | — |
| 0.01mm     | 513-464-10E  | -           | 0.8mm  | 8μm      | 0-40-0       | 0.3N or less    | 20.9   | ✓ | — | — | ✓ | ✓ | — | — | — |
| 0.01mm     | 513-415-10E  | 513-415-10T | 1mm    | 10μm     | 0-50-0       | 0.2N or less    | 44.5   | ✓ | — | ✓ | ✓ | — | — | — | — |
| 0.01mm     | 513-477-10E* | -           | 1mm    | 10μm     | 0-50-0       | 0.2N or less    | 44.5   | ✓ | — | ✓ | ✓ | — | — | — | — |
| 0.01mm     | 513-426-10E  | -           | 1.5mm  | 16μm     | 0-25-0       | 0.4N or less    | 22.3   | ✓ | ✓ | — | ✓ | — | — | ✓ | — |
| 0.002mm    | 513-405-10E  | 513-405-10T | 0.2mm  | 4μm      | 0-100-0      | 0.3N or less    | 14.7   | ✓ | — | — | ✓ | — | — | — | — |
| 0.002mm    | 513-465-10E  | -           | 0.2mm  | 4μm      | 0-100-0      | 0.3N or less    | 14.7   | ✓ | — | — | ✓ | ✓ | — | — | — |
| 0.002mm    | 513-475-10H* | -           | 0.2mm  | 4μm      | 0-100-0      | 0.3N or Less    | 18.7   | ✓ | — | — | ✓ | — | — | — | — |
| 0.002mm    | 513-425-10E  | -           | 0.6mm  | 7μm      | 0-100-0      | 0.4N or less    | 14.7   | ✓ | — | — | ✓ | — | — | ✓ | — |
| 0.001mm    | 513-401-10E  | -           | 0.14mm | 4μm      | 0-70-0       | 0.3N or less    | 12.8   | ✓ | — | — | ✓ | — | — | — | — |
| 0.001mm    | 513-471-10E* | -           | 0.14mm | 4μm      | 0-70-0       | 0.3N or less    | 12.8   | ✓ | — | — | ✓ | — | — | — | — |

\*Provided with a ø2mm ruby contact point as a substitute for ø2mm carbide contact point.

### Metric/inch

| Graduation      | Order No.   |             | Range         | Accuracy | Dial reading   | Measuring force | L (mm) |   |   |   |   |   |   |
|-----------------|-------------|-------------|---------------|----------|----------------|-----------------|--------|---|---|---|---|---|---|
|                 | Basic set   | Full set    |               |          |                |                 |        |   |   |   |   |   |   |
| 0.002mm, .0001" | 513-409-10E | 513-409-10T | 0.2mm, .0075" | 3μm      | 0-10-0, 0-38-0 | 0.3N or less    | 14.7   | ✓ | ✓ | — | — | — | — |

### Inch/Metric

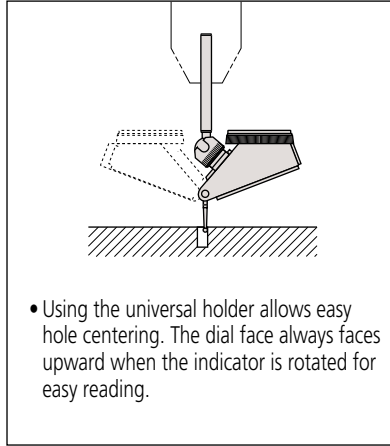
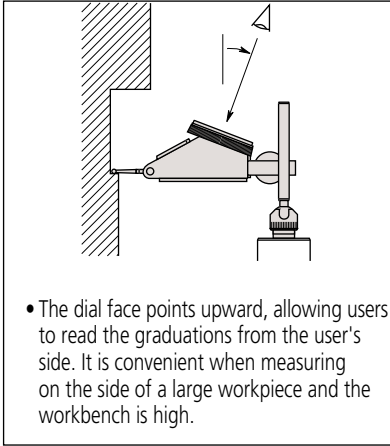
| Graduation     | Order No.   |             | Range       | Accuracy | Dial reading   | Measuring force | L (mm) |   |   |   |   |   |   |
|----------------|-------------|-------------|-------------|----------|----------------|-----------------|--------|---|---|---|---|---|---|
|                | Basic set   | Full set    |             |          |                |                 |        |   |   |   |   |   |   |
| .0005", 0.01mm | 513-406-10E | 513-406-10T | .03", 0.7mm | ±.0005"  | 0-15-0, 0-35-0 | 0.3N or less    | 19.9   | ✓ | ✓ | — | — | — | — |

# Dial Test Indicators

## SERIES 513 — Horizontal (20° Tilted Face), Vertical and Parallel

### FEATURES

- Specially designed for easy viewing of measurements.



513-444-10E



513-445-10E



513-454-10E  
513-484-10E



513-455-10E



513-452-10E



513-482-10A



513-444-10E



513-455-10E



513-484-10E



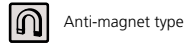
513-442-10A



513-446-10A

### Optional Accessories

- : Swivel clamp
- : Holding bar
- : Stem
- : Contact points



Anti-magnet type



With revolution counter type



Jeweled bearing type

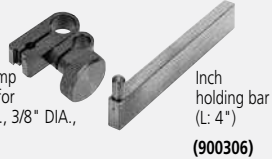


Long contact point type

## Set Configuration: Test Indicators

## Inch

## Full set

Swivel clamp  
(900322, for  
.157" DIA., 3/8" DIA.,  
dovetail)

## Basic set



## Metric

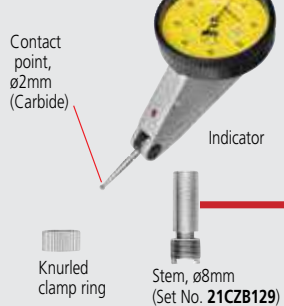
## Full set



## Plus set



## Basic set



## SPECIFICATIONS

## Metric Horizontal (20° tilted face) type

| Graduation | Order No.   |             | Range | Accuracy | Dial reading | Measuring force | Mass (g) | L (mm) |   |   |   |
|------------|-------------|-------------|-------|----------|--------------|-----------------|----------|--------|---|---|---|
|            | Basic set   | Full set    |       |          |              |                 |          |        |   |   |   |
| 0.01mm     | 513-444-10E | 513-444-10T | 1.6mm | 10µm     | 0-40-0       | 0.3N or less    | 48       | 20.9   | ✓ | ✓ | ✓ |
| 0.002mm    | 513-445-10E | 513-445-10T | 0.4mm | 5µm      | 0-100-0      | 0.3N or less    | 48       | 14.7   | ✓ | ✓ | ✓ |

## Inch Horizontal (20° tilted face) type

| Graduation | Order No.   |             | Range | Accuracy | Dial reading | Measuring force | Mass (g) | L (mm) |   |   |   |   | Remarks    |
|------------|-------------|-------------|-------|----------|--------------|-----------------|----------|--------|---|---|---|---|------------|
|            | Basic set   | Full set    |       |          |              |                 |          |        |   |   |   |   |            |
| .0005"     | 513-442-10A | 513-442-10T | .06"  | ±.0005"  | 0-15-0       | 0.3N or less    | 48       | 19.9   | ✓ | ✓ | ✓ | — | —          |
| .0005"     | 513-442-16A | 513-442-16T | .06"  | ±.0005"  | 0-15-0       | 0.3N or less    | 48       | 19.9   | ✓ | ✓ | ✓ | — | Black dial |
| .0005"     | 513-446-10A | 513-446-10T | .06"  | ±.0005"  | 0-15-0       | 0.2N or less    | 48       | 33.9   | ✓ | ✓ | ✓ | ✓ | —          |
| .0005"     | 513-446-16A | 513-446-16T | .06"  | ±.0005"  | 0-15-0       | 0.2N or less    | 48       | 33.9   | ✓ | ✓ | ✓ | ✓ | Black dial |
| .0001"     | 513-443-10A | 513-443-10T | .016" | ±.0002"  | 0-4-0        | 0.3N or less    | 48       | 15     | ✓ | ✓ | ✓ | — | —          |
| .0001"     | 513-443-16A | 513-443-16T | .016" | ±.0002"  | 0-4-0        | 0.3N or less    | 48       | 15     | ✓ | ✓ | ✓ | — | Black dial |

## Metric Vertical type

| Graduation | Order No.   |             | Range | Accuracy | Dial reading | Measuring force | Mass (g) | L (mm) |   |   |
|------------|-------------|-------------|-------|----------|--------------|-----------------|----------|--------|---|---|
|            | Basic set   | Full set    |       |          |              |                 |          |        |   |   |
| 0.01mm     | 513-454-10E | 513-454-10T | 0.8mm | 8µm      | 0-40-0       | 0.3N or less    | 50       | 20.9   | ✓ | ✓ |
| 0.002mm    | 513-455-10E | 513-455-10T | 0.2mm | 3µm      | 0-100-0      | 0.3N or less    | 50       | 14.7   | ✓ | ✓ |

## Inch Vertical type

| Graduation | Order No.   |             | Range | Accuracy | Dial reading | Measuring force | Mass (g) | L (mm) |   |   |
|------------|-------------|-------------|-------|----------|--------------|-----------------|----------|--------|---|---|
|            | Basic set   | Full set    |       |          |              |                 |          |        |   |   |
| .0005"     | 513-452-10E | 513-452-10T | .03"  | ±.0005"  | 0-15-0       | 0.3N or less    | 50       | 19.9   | ✓ | ✓ |
| .0001"     | 513-453-10E | 513-453-10T | .008" | ±.0001"  | 0-4-0        | 0.3N or less    | 50       | 19     | ✓ | ✓ |

## Metric Parallel type

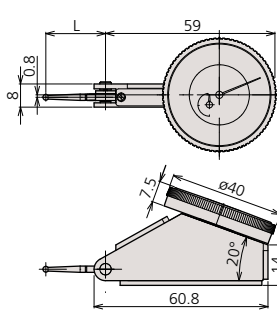
| Graduation | Order No.   |             | Range | Accuracy | Dial reading | Measuring force | Mass (g) | L (mm) |   |
|------------|-------------|-------------|-------|----------|--------------|-----------------|----------|--------|---|
|            | Basic set   | Full set    |       |          |              |                 |          |        |   |
| 0.01mm     | 513-484-10E | 513-484-10T | 0.8mm | 8µm      | 0-40-0       | 0.3N or less    | 68       | 20.9   | ✓ |

## Inch Parallel type

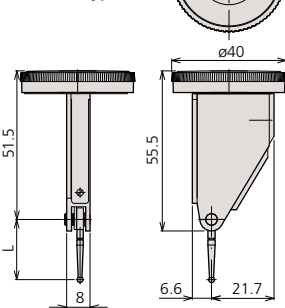
| Graduation | Order No.   |             | Range | Accuracy | Dial reading | Measuring force | Mass (g) | L (mm) |   |
|------------|-------------|-------------|-------|----------|--------------|-----------------|----------|--------|---|
|            | Basic set   | Full set    |       |          |              |                 |          |        |   |
| .0005"     | 513-482-10A | 513-482-10T | .03"  | ±.0005"  | 0-15-0       | 0.3N or less    | 68       | 20     | ✓ |

## DIMENSIONS

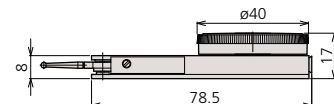
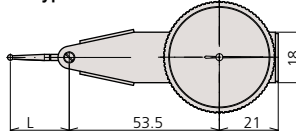
## Horizontal (20° Tilted Face) Type



## Vertical Type



## Parallel Type



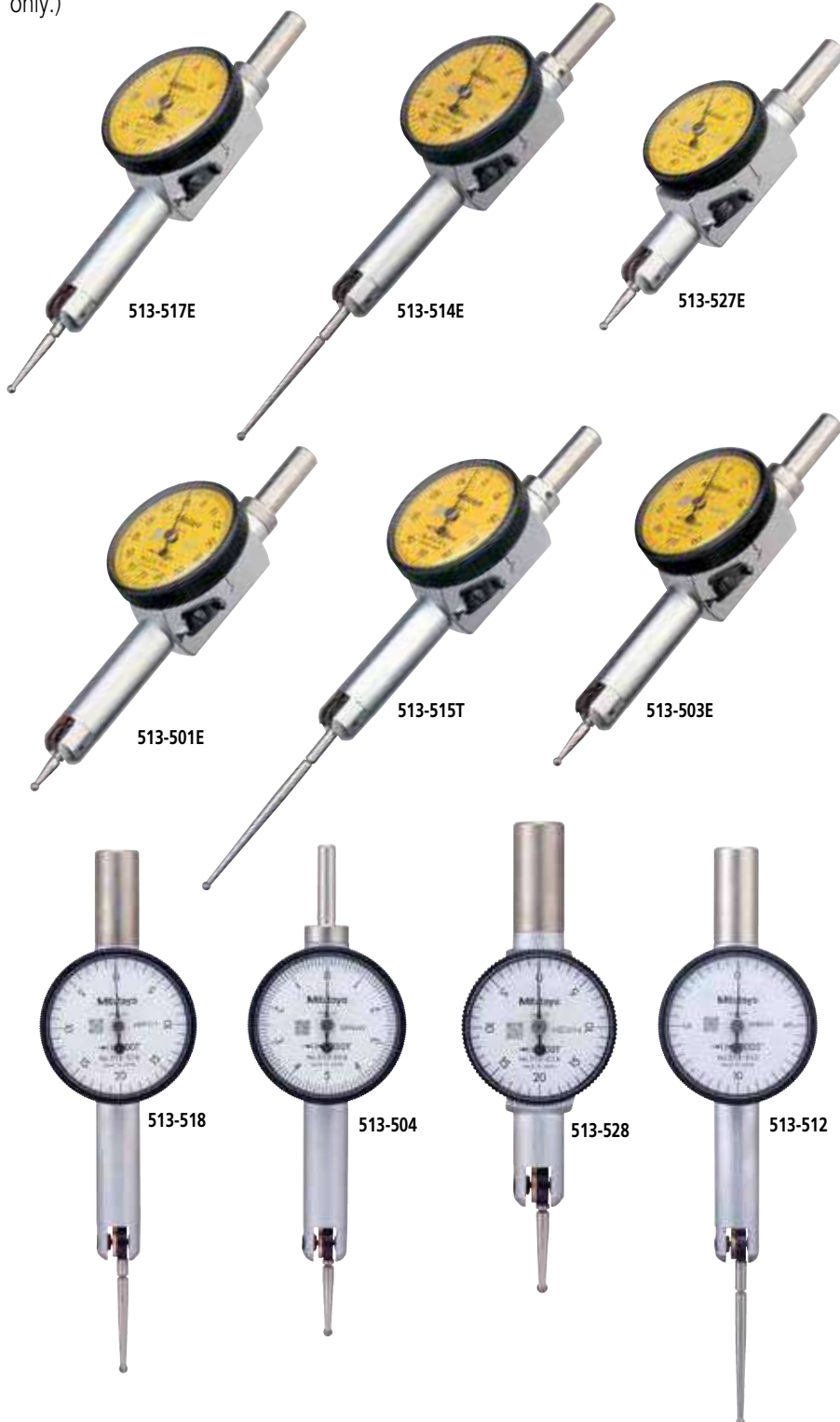
unit: mm

# Pocket Dial Test Indicators

## SERIES 513

### FEATURES

- Jeweled bearings ensure high sensitivity and accuracy.
- Reversible measuring direction.
- Two holding bars are supplied. (Full sets only.)
- Fully adjustable bezel/dial face.
- Contact point is adjustable within 220°.
- Bezel is sealed with an O-ring to keep out water / oil.



513-514E



513-517E  
513-527E



513-515T



513-503E



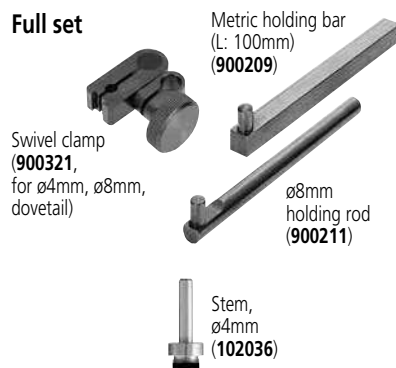
513-501E

### Optional Accessories

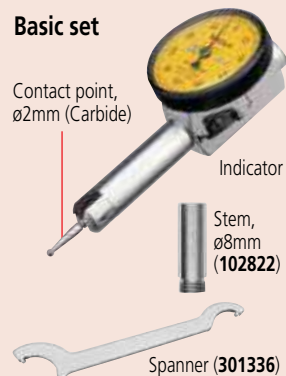
- : Swivel clamp
- : Holding bar
- : Stem
- : Contact points

## Set Configuration: Metric

### Full set

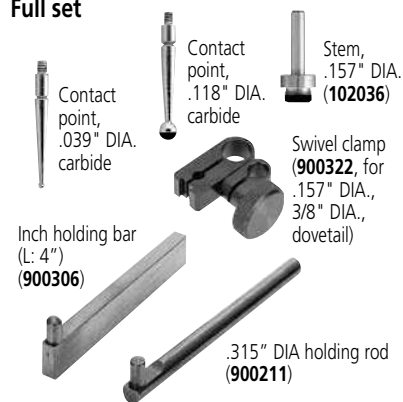


### Basic set

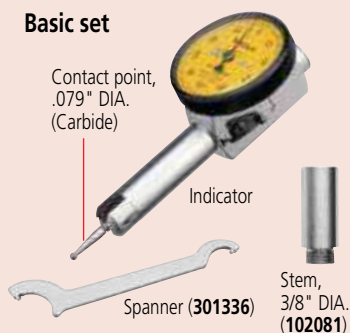


## Set Configuration: Inch

### Full set



### Basic set



Long contact point type



Jeweled bearing type



Compact type

## SPECIFICATIONS

### Metric

| Graduation | Order No. |          | Range  | Accuracy | Dial reading | Measuring force | L (mm) |   |   |   |
|------------|-----------|----------|--------|----------|--------------|-----------------|--------|---|---|---|
|            | Basic set | Full set |        |          |              |                 |        |   |   |   |
| 0.01mm     | 513-514E  | 513-514T | 0.5mm  | 10μm     | 0-25-0       | 0.3N or less    | 36.8   | ✓ | ✓ | — |
| 0.01mm     | 513-517E  | 513-517T | 0.8mm  | 8μm      | 0-40-0       | 0.3N or less    | 20.9   | — | ✓ | — |
| 0.01mm     | 513-527E  | 513-527T | 0.8mm  | 8μm      | 0-40-0       | 0.3N or less    | 14.7   | — | ✓ | ✓ |
| 0.01mm     | —         | 513-515T | 1mm    | 10μm     | 0-50-0       | 0.3N or less    | 44.5   | ✓ | ✓ | — |
| 0.002mm    | 513-503E  | 513-503T | 0.2mm  | 3μm      | 0-100-0      | 0.3N or less    | 14.7   | — | ✓ | — |
| 0.001mm    | 513-501E  | 513-501T | 0.14mm | 3μm      | 0-70-0       | 0.4N or less    | 12     | — | ✓ | — |

### Inch

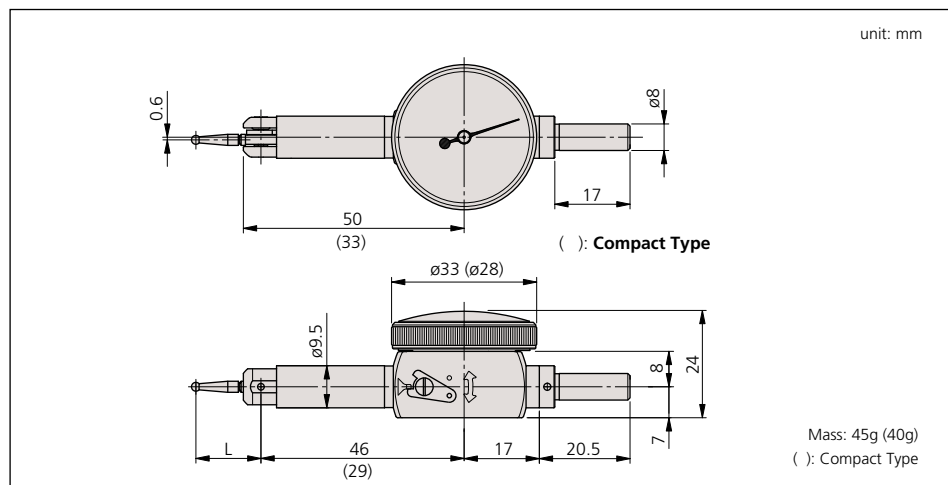
| Graduation | Order No. |          | Range | Accuracy | Dial reading | Measuring force | L (mm) |   |   |   |
|------------|-----------|----------|-------|----------|--------------|-----------------|--------|---|---|---|
|            | Basic set | Full set |       |          |              |                 |        |   |   |   |
| .001"      | 513-518   | 513-518T | .04"  | ±.001"   | 0-20-0       | 0.3N or less    | 26.5   | — | ✓ | — |
| .001"      | 513-528   | 513-528T | .04"  | ±.001"   | 0-20-0       | 0.3N or less    | 18.7   | — | ✓ | ✓ |
| .0005"     | 513-512   | 513-512T | .02"  | ±.0005"  | 0-10-0       | 0.3N or less    | 37.4   | ✓ | ✓ | — |
| .0001"     | 513-504   | 513-504T | .01"  | ±.0002"  | 0-5-0        | 0.3N or less    | 18.7   | — | ✓ | — |

## Optional Contact Points

### Pocket Type

| Order No. | 1mm      | 2mm    | 3mm    | 0.5mm  | 0.7mm  |
|-----------|----------|--------|--------|--------|--------|
| 513-501E  | 136756   | 136104 | 136758 | —      | —      |
| 513-503E  | 513-527E | 103017 | 103010 | 103018 | 190547 |
| 513-504   | 513-528  | 131314 | 103011 | 131315 | —      |
| 513-512   | —        | 131316 | 131324 | 131317 | —      |
| 513-514E  | —        | 137746 | 129949 | 137747 | —      |
| 513-515T  | —        | 136235 | 136013 | 136236 | 190656 |
| 513-517E  | —        | 103013 | 103006 | 103014 | 190549 |
| 513-518   | —        | 103008 | 103007 | 103009 | —      |

## DIMENSIONS AND MASS

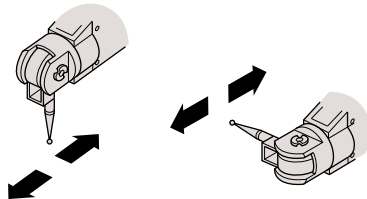


# Dial Test Indicators

## SERIES 513 — Universal Type

### FEATURES

- Universal application for all directions. Not only the direction of the measuring point, but also the direction of measurement itself can be adjusted 360 degrees without moving the indicator.



513-304GE

### SPECIFICATIONS

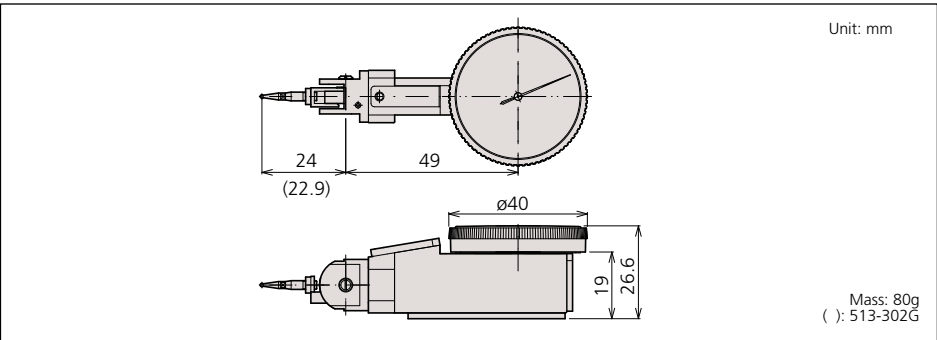
#### Metric

| Graduation | Order No. |           | Range | Accuracy | Dial reading | Measuring force |  |
|------------|-----------|-----------|-------|----------|--------------|-----------------|-------------------------------------------------------------------------------------|
|            | Basic set | Full set  |       |          |              |                 |                                                                                     |
| 0.01mm     | 513-304GE | 513-304GT | 0.8mm | 8µm      | 0-40-0       | 0.3N or less    | ✓                                                                                   |

#### Inch

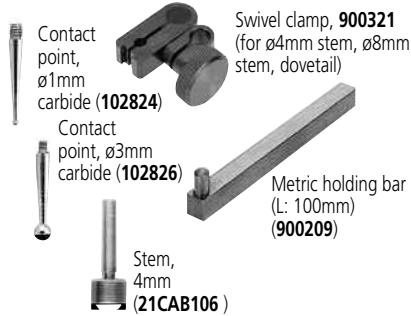
| Graduation | Order No. |           | Range | Accuracy | Dial reading | Measuring force |  |
|------------|-----------|-----------|-------|----------|--------------|-----------------|-------------------------------------------------------------------------------------|
|            | Basic set | Full set  |       |          |              |                 |                                                                                     |
| .0005"     | 513-302G  | 513-302GT | .03"  | ±.0005"  | 0-15-0       | 0.3N or less    | ✓                                                                                   |

### DIMENSIONS AND MASS

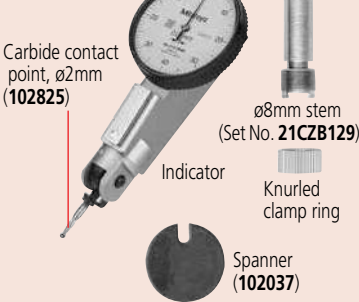


### Set Configuration: Metric

#### Full set

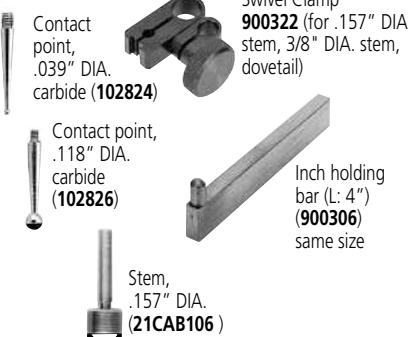


#### Basic set

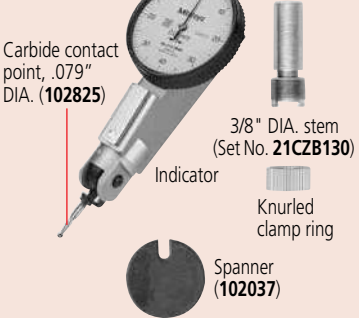


### Set Configuration: Inch

#### Full set



#### Basic set



### Optional Accessories

- : Swivel clamp
- : Holding bar
- : Stem