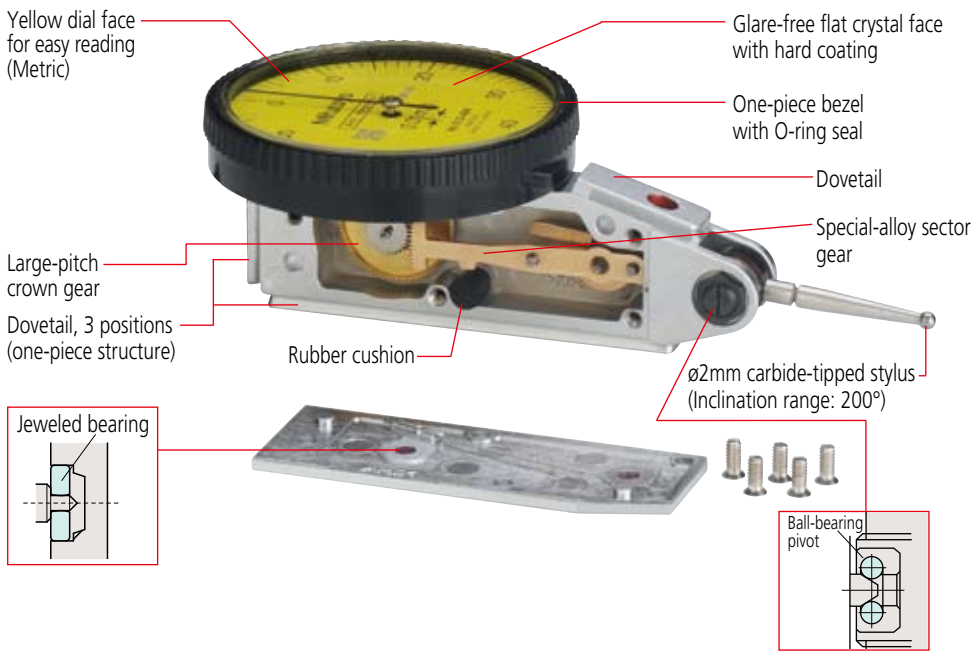


Dial Test Indicators

Comparison measuring instruments which ensure high quality, high accuracy and reliability.

SERIES 513 — Lever-Type Dial Indicators

- Designed to probe surfaces that cannot be reached with a normal dial gauge. Useful both for alignment and for measurement purposes.
- Mitutoyo's proprietary new design permits smooth pointer operation.
- Strong frame provides excellent rigidity and durability.
- Non-magnetic pointer and contact point permit reliable operation even in magnetic environments.
- Clear and concise wide dial face allows excellent visibility.
- The surface of the crystal is hard-coated for excellent scratch resistance.
- Flat crystal makes graduations easy to read. Moreover, the O-ring sealing method used for the bezel prevents water or oil penetration. (Note that this type is NOT waterproof.)
- Six types are available: horizontal, horizontal (20° tilted face) vertical, parallel, universal, and pocket, allowing users to select the model most suited to their needs.
 - Horizontal: Standard
 - Horizontal (20° Tilted Face): Dial face inclined 20°, compared with the vertical type, allows easy reading.
 - Vertical: Best suited for centering holes under the spindle of a machine tool.
 - Parallel: The scale can be read from the front, with the stylus pivoting in a plane parallel to that of the dial face.
 - Universal: The direction of the probe movement can be freely changed.
 - Pocket: Compact type



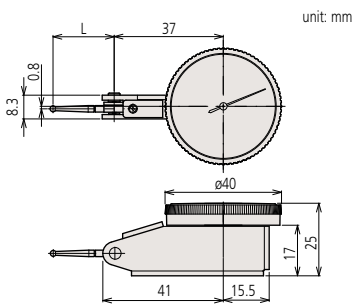
- Dial test indicators with a ruby contact point are available in the horizontal (standard) type.
- Benefits of ruby contact points:
 - Several times more resistant to wear than carbide.
 - Can be used on electrical discharge machines without special precautions.



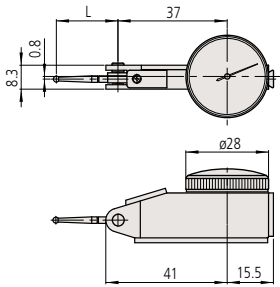
Feature icons

Icon	Feature description
	With revolution counter
	Long stylus
	Jeweled bearing
	Double scale spacing type, easy-on-the-eyes
	Compact
	Dustproof
	Anti-magnetic

DIMENSIONS



Order No.	L
513-424E/513-478E	22.3
513-404E/513-474E	20.9
513-415E/513-477E	44.5
513-426E	22.3
513-405E/513-475E	14.7
513-425E	14.7
513-401E/513-471E	12.8
513-414E	36.8
513-409	14.7



Order No.	L
513-466E	22.3
513-464E	20.9
513-465E	14.7

Special Set: No. 513-908 (mm)

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

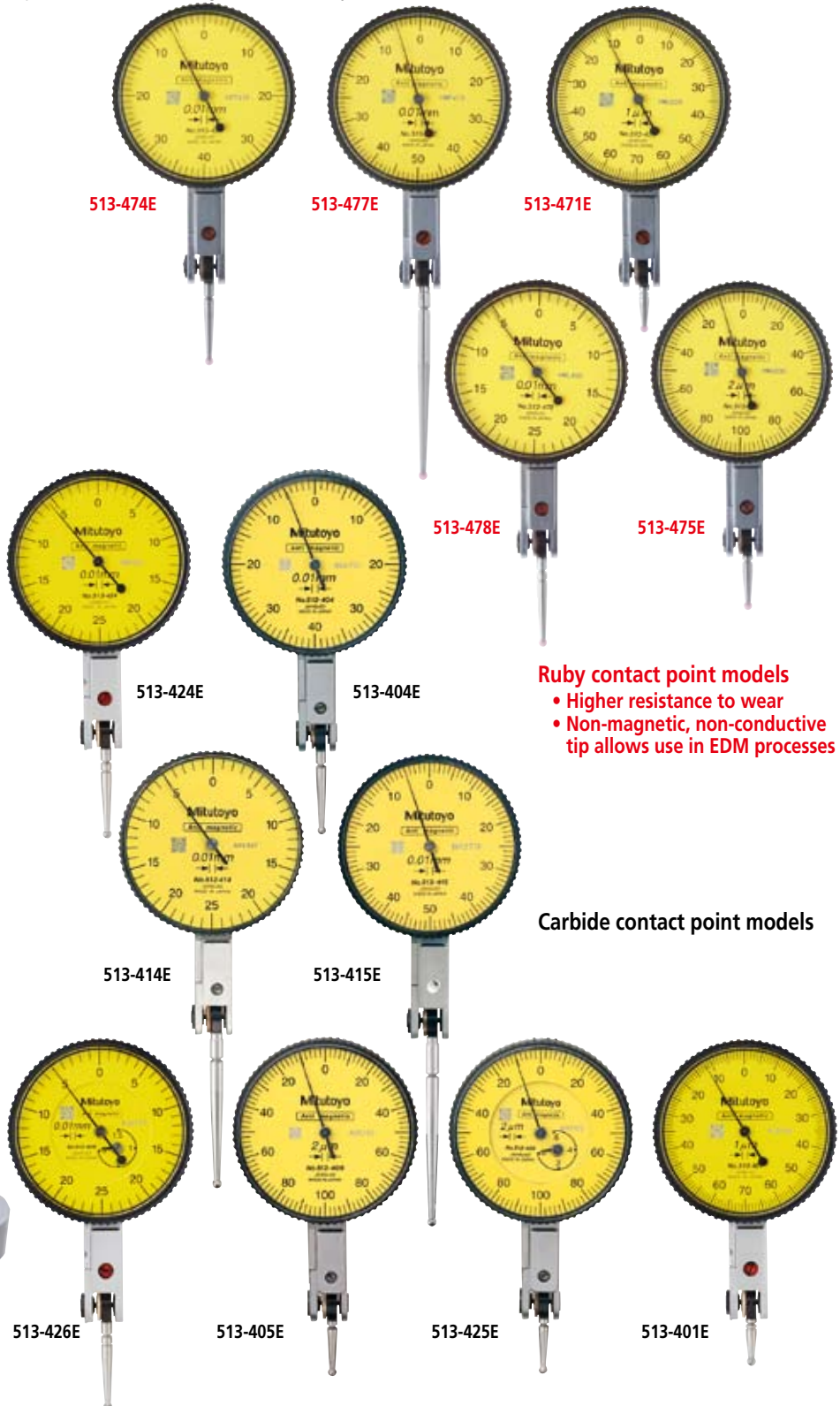
No. 513-907 (inch)

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



Dial Test Indicator SERIES 513 — Horizontal Type

- Provides easy access to shrouded surfaces that cannot be reached with conventional dial indicators.
- No-clutch structure for automatic reversal of measuring direction.
- Resistant to water and dust thanks to the one-piece bezel and O-ring seal for the crystal.
- The glare-free flat crystal face has a scratch-resistant coating.
- High sensitivity and quick response due to low-friction jeweled bearings.



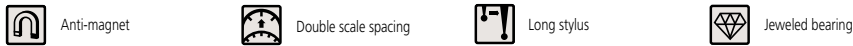
Ruby contact point models

- Higher resistance to wear
- Non-magnetic, non-conductive tip allows use in EDM processes

Carbide contact point models

Dial Test Indicators

Comparison measuring instruments which ensure high quality, high accuracy and reliability.



SPECIFICATIONS

Metric			Graduation	Range	Accuracy	Dial reading	Measuring force	Anti-magnet	Double scale spacing	Long stylus	Jeweled bearing	Compact	With revolution counter
Basic set	Plus set	Full set											
513-424E	513-424A	513-424T	0.01mm	0.5mm	5µm	0-25-0	0.3N or less	✓	✓	—	✓	—	—
513-478E	—	—	0.01mm	0.5mm	5µm	0-25-0	0.3N or less	✓	✓	—	✓	—	—
513-414E	513-414A	513-414T	0.01mm	0.5mm	10µm	0-25-0	0.2N or less	✓	✓	✓	✓	—	—
513-466E	—	—	0.01mm	0.5mm	5µm	0-25-0	0.3N or less	✓	✓	—	✓	✓	—
513-404E	513-404A	513-404T	0.01mm	0.8mm	8µm	0-40-0	0.3N or less	✓	—	—	✓	—	—
513-474E	—	—	0.01mm	0.8mm	8µm	0-40-0	0.3N or less	✓	—	—	✓	—	—
513-464E	—	—	0.01mm	0.8mm	8µm	0-40-0	0.3N or less	✓	—	—	✓	✓	—
513-415E	513-415A	513-415T	0.01mm	1mm	10µm	0-50-0	0.2N or less	✓	—	✓	✓	—	—
513-477E	—	—	0.01mm	1mm	10µm	0-50-0	0.2N or less	✓	—	✓	✓	—	—
513-426E	513-426A	—	0.01mm	1.5mm	8µm	0-25-0	0.4N or less	✓	✓	—	✓	—	✓
513-405E	513-405A	513-405T	0.002mm	0.2mm	3µm	0-100-0	0.3N or less	✓	—	—	✓	—	—
513-475E	—	—	0.002mm	0.2mm	3µm	0-100-0	0.3N or less	✓	—	—	✓	—	—
513-465E	—	—	0.002mm	0.2mm	3µm	0-100-0	0.3N or less	✓	—	—	✓	✓	—
513-425E	513-425A	—	0.002mm	0.6mm	6µm	0-100-0	0.4N or less	✓	—	—	✓	—	✓
513-401E	—	—	0.001mm	0.14mm	3µm	0-70-0	0.3N or less	✓	—	—	✓	—	—
513-471E	—	—	0.001mm	0.14mm	3µm	0-70-0	0.3N or less	✓	—	—	✓	—	—

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

Inch			Graduation	Range	Accuracy	Dial reading	Measuring force	Anti-magnet	Long stylus	Jeweled bearing	Compact	With revolution counter
Basic set	Plus set	Full set										
513-402	—	513-402T	.0005"	.03"	±.0005"	0-15-0	0.3N or less	✓	—	✓	—	—
513-472	—	—	.0005"	.03"	±.0005"	0-15-0	0.3N or less	✓	—	✓	—	—
513-412	—	513-412T	.0005"	.03"	±.0005"	0-15-0	0.2N or less	✓	✓	✓	—	—
513-479	—	—	.0005"	.03"	±.0005"	0-15-0	0.2N or less	✓	✓	✓	—	—
513-462	—	—	.0005"	.03"	±.0005"	0-15-0	0.3N or less	✓	—	✓	✓	—
513-403	—	513-403T	.0001"	.008"	±.0001"	0-4-0	0.3N or less	✓	—	✓	—	—
513-473	—	—	.0001"	.008"	±.0001"	0-4-0	0.3N or less	✓	—	✓	—	—
513-463	—	—	.0001"	.008"	±.0001"	0-4-0	0.3N or less	✓	—	✓	✓	—

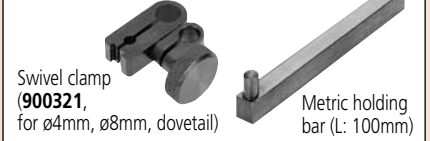
Provided with a .079" DIA ruby contact point as a substitute for .079" DIA carbide contact point.

Metric/inch			Graduation	Range	Accuracy	Dial reading	Measuring force	Anti-magnet	Jeweled bearing
Basic set	Plus set	Full set							
513-409	—	513-409T	0.002mm, .0001"	0.2mm, .0075"	3µm	0-10-0, 0-3.8-0	0.3N or less	✓	✓

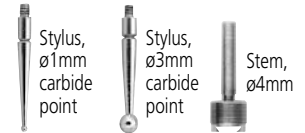
Inch/Metric			Graduation	Range	Accuracy	Dial reading	Measuring force	Anti-magnet	Jeweled bearing
Basic set	Plus set	Full set							
513-406	—	513-406T	.0005", 0.01mm	.03", 0.7mm	±.0005"	0-15-0, 0-35-0	0.3N or less	✓	✓

Set Configuration: Metric and Metric/Inch

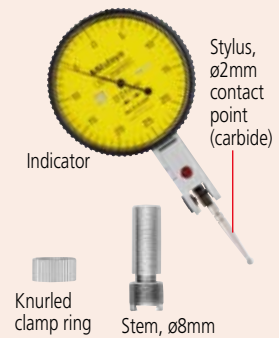
Full set



Plus set

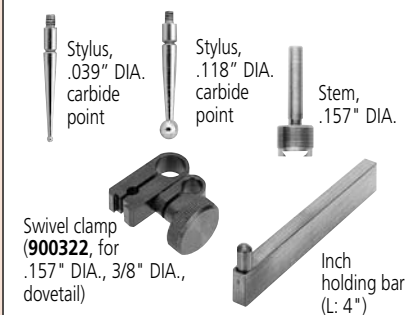


Basic set

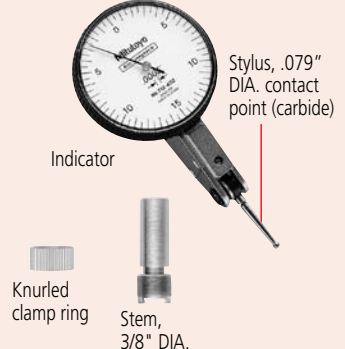


Set Configuration: Inch and Inch/Metric

Full set

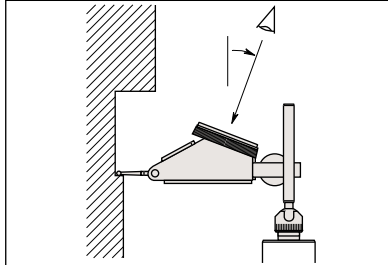


Basic set

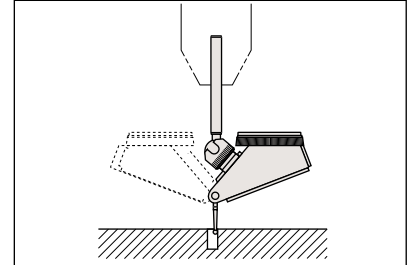


Dial Test Indicator SERIES 513 — Horizontal (20° Tilted Face), Vertical, and Parallel Types

- Specially designed for easy viewing of dial.



- The dial face obliquely faces upward, allowing users to read the graduations from the user's side. It is convenient when probing on the side of a large workpiece and the workbench is high.



- Using the universal holder allows easy hole centering. The dial face always faces upward when the indicator is rotated, which makes reading easy.



513-444E



513-445E



513-454E
513-284GE



513-455E



513-454E



513-455E



513-444E



513-445E



513-284GE



513-452

Optional Accessories

- : Swivel clamps (See page F-63.)
- : Holding bars (See page F-63.)
- : Stems (See page F-63.)
- : Styli (See page F-63.)

Dial Test Indicators

Comparison measuring instruments which ensure high quality, high accuracy and reliability.



Anti-magnet



With revolution counter



Jeweled bearing



Long stylus

SPECIFICATIONS

Metric			Horizontal (20° tilted face) type									
Order No.			Graduation	Range	Accuracy	Dial reading	Measuring force	Anti-magnet	With revolution counter	Jeweled bearing	Long stylus	Remarks
Basic set	Plus set	Full set										
513-444E	513-444A	513-444T	0.01mm	1.6mm	10µm	0-40-0	0.3N or less	✓	✓	✓	—	—
513-445E	513-445A	513-445T	0.002mm	0.4mm	5µm	0-100-0	0.3N or less	✓	✓	✓	—	—

Inch			Horizontal (20° tilted face) type									
Order No.			Graduation	Range	Accuracy	Dial reading	Measuring force	Anti-magnet	With revolution counter	Jeweled bearing	Long stylus	Remarks
Basic set	Plus set	Full set										
—	513-442	513-442T	.0005"	.06"	±.0005"	0-15-0	0.3N or less	✓	✓	✓	—	—
—	513-442-06	513-442T-06	.0005"	.06"	±.0005"	0-15-0	0.3N or less	✓	✓	✓	—	Black dial
—	513-446	513-446T	.0005"	.06"	±.0005"	0-15-0	0.2N or less	✓	✓	✓	✓	—
—	513-446-06	513-446T-06	.0005"	.06"	±.0005"	0-15-0	0.2N or less	✓	✓	✓	✓	Black dial
—	513-443	513-443T	.0001"	.016"	±.0002"	0-4-0	0.3N or less	✓	✓	✓	—	—
—	513-443-06	513-443T-06	.0001"	.016"	±.0002"	0-4-0	0.3N or less	✓	✓	✓	—	Black dial

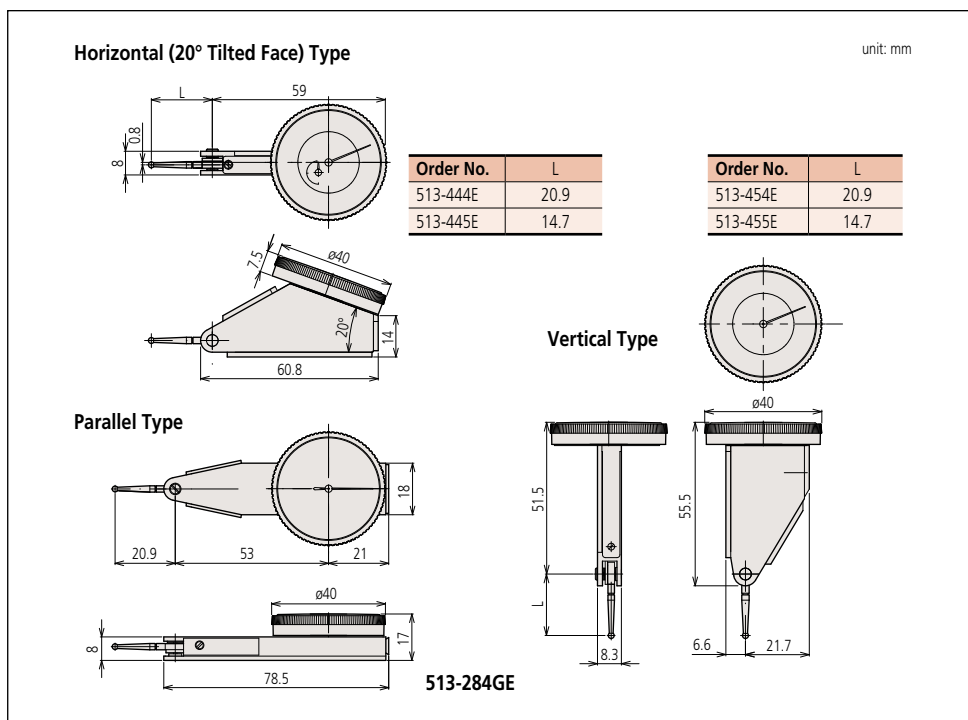
Metric			Vertical type								
Order No.			Graduation	Range	Accuracy	Dial reading	Measuring force	Anti-magnet	Jeweled bearing	Long stylus	Remarks
Basic set	Plus set	Full set									
513-454E	513-454A	513-454T	0.01mm	0.8mm	8µm	0-40-0	0.3N or less	✓	✓	—	—
513-455E	513-455A	513-455T	0.002mm	0.2mm	3µm	0-100-0	0.3N or less	✓	✓	—	—

Inch			Vertical type								
Order No.			Graduation	Range	Accuracy	Dial reading	Measuring force	Anti-magnet	Jeweled bearing	Long stylus	Remarks
Basic set	Plus set	Full set									
513-452	—	513-452T	.0005"	.03"	±.0005"	0-15-0	0.3N or less	✓	✓	—	—
513-453	—	513-453T	.0001"	.008"	±.0001"	0-4-0	0.3N or less	✓	✓	—	—

Metric			Parallel type								
Order No.			Graduation	Range	Accuracy	Dial reading	Measuring force	Anti-magnet	Jeweled bearing	Long stylus	Remarks
Basic set	Plus set	Full set									
513-284GE	513-284GA	513-284GT	0.01mm	0.8mm	8µm	0-40-0	0.3N or less	✓	—	—	—

Inch			Parallel type								
Order No.			Graduation	Range	Accuracy	Dial reading	Measuring force	Anti-magnet	Jeweled bearing	Long stylus	Remarks
Basic set	Plus set	Full set									
—	513-282G	513-282GT	.0005"	.03"	±.0005"	0-15-0	0.3N or less	✓	—	—	—

DIMENSIONS

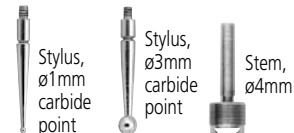


Set Configuration: Metric

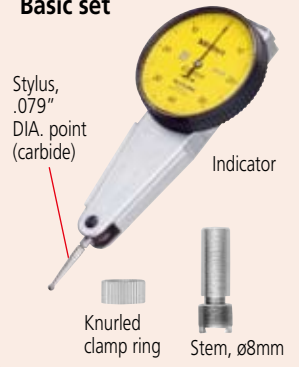
Full set



Plus set



Basic set

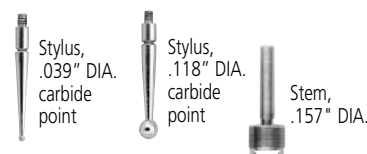


Set Configuration: Inch

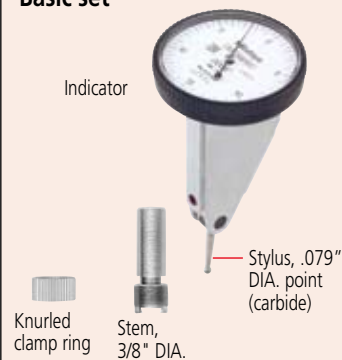
Full set



Plus set



Basic set



Set Configuration: Metric

Full set

- Swivel clamp (900321 for $\varnothing 4\text{mm}$ stem, $\varnothing 8\text{mm}$ stem, dovetail)
- Stylus, $\varnothing 1\text{mm}$ carbide point
- Stylus, $\varnothing 3\text{mm}$ carbide point
- Stem, $\varnothing 4\text{mm}$
- Spare stylus, $\varnothing 2\text{mm}$ carbide point
- Metric holding bar (L: 100mm)

Basic set

- Stylus, $\varnothing 2\text{mm}$ carbide point (102825)
- Indicator
- Knurled clamp ring
- Spanner (102037)
- $\varnothing 8\text{mm}$ stem

Set Configuration: Inch

Full set

- (900322 for .157" DIA stem, 3/8" DIA. stem, dovetail)
- Stylus, .039" DIA. carbide point
- Stylus, .118" DIA. carbide point
- Stem, .157" DIA.
- Spare stylus, .079" DIA. carbide point
- Inch holding bar (L: 4")

Basic set

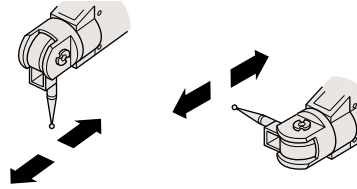
- Stylus, .079" DIA. carbide point (102825)
- Indicator
- Knurled clamp ring
- Spanner (102037)
- 3/8" DIA. stem

Optional Accessories

- : Swivel clamps (See page F-63.)
- : Holding bars (See page F-63.)
- : Stems (See page F-63.)
- 102824: Stylus, $\varnothing 1\text{mm}$ ball contact (carbide)
- 102825: Stylus, $\varnothing 2\text{mm}$ ball contact (carbide)
- 102826: Stylus, $\varnothing 3\text{mm}$ ball contact (carbide)

Dial Test Indicator SERIES 513 — Universal Type

- Universal application to 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

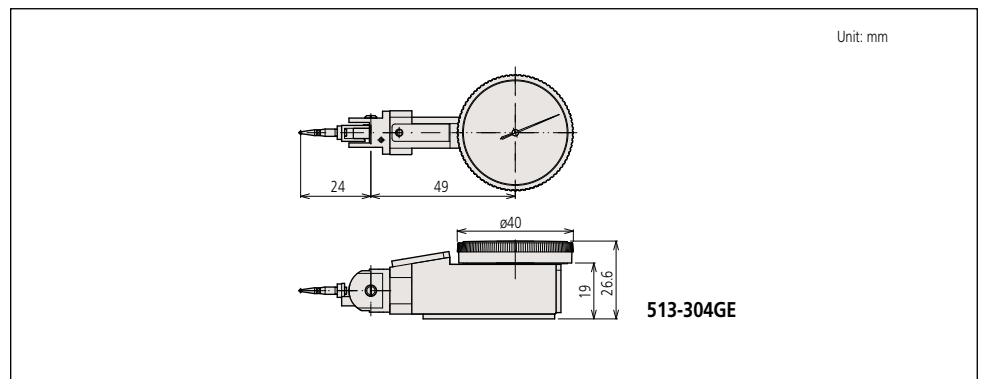
SPECIFICATIONS

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

Order No.		Graduation	Range	Accuracy	Dial reading	Measuring force	Jeweled bearing					
Basic set	Full set							—	—	—	—	—
513-302G	513-302GT	.0005"	.03"	$\pm .0005$ "	0-15-0	0.3N or less	✓	—	—	—	—	—



DIMENSIONS



Dial Test Indicators

Comparison measuring instruments which ensure high quality, high accuracy and reliability.

Pocket Type Dial Test Indicator SERIES 513

- Jeweled bearings assure higher sensitivity and accuracy. Indicator can be mounted by clamping the stem or the body (except for 513-517WE and 513-517WT).
- Reversible measuring direction (Clutch type).
- Two holding bars are supplied. (Full sets only.)
- Fully adjustable bezel/dial face.
- Stylus is adjustable within 220°.
- Bezel is sealed with an O-ring to keep out water and oil.



513-518



513-528



513-512



513-504



513-517E
513-517WE



513-515T



513-514E



513-503E



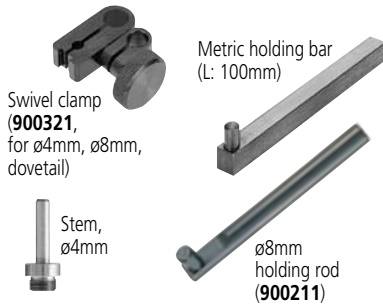
513-501E

Optional Accessories

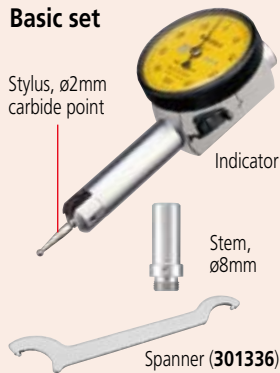
- : Swivel clamps (See page F-64.)
- : Holding bars (See page F-64.)
- : Stems (See page F-64.)
- : Styli (See page F-64.)

Set Configuration: Metric

Full set

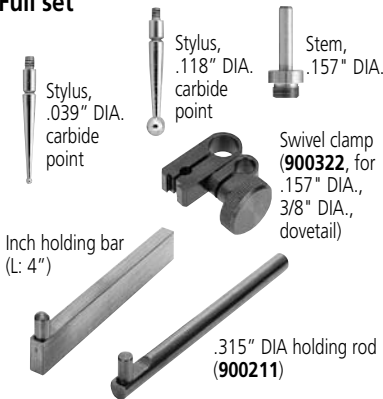


Basic set

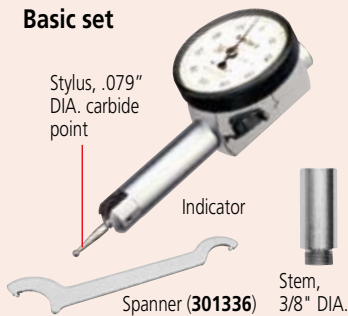


Set Configuration: Inch

Full set



Basic set



Long stylus



Jeweled bearing



Dustproof



Compact

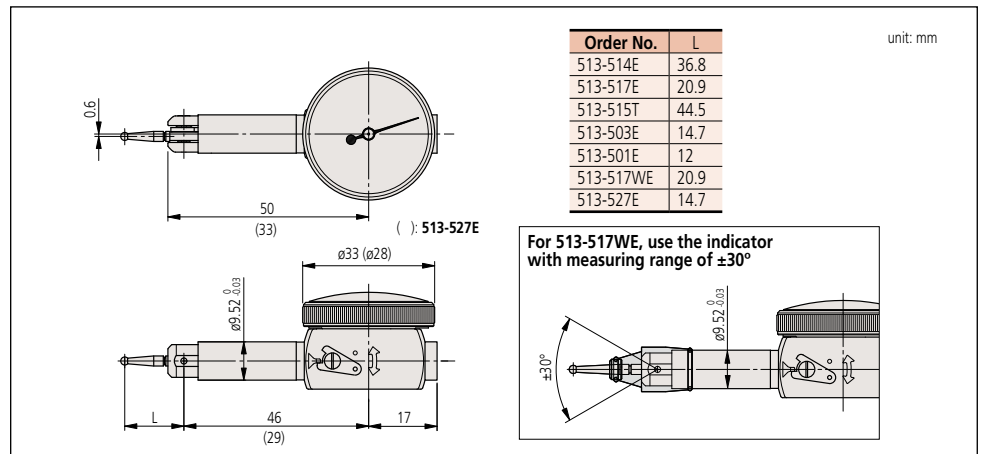
SPECIFICATIONS

Order No.		Graduation	Range	Accuracy	Dial reading	Measuring force	Long stylus	Jeweled bearing	Compact	Dustproof	—	—
Basic set	Full set											
513-514E	513-514T	0.01mm	0.5mm	10µm	0-25-0	0.3N or less	✓	✓	—	—	—	—
513-517E	513-517T	0.01mm	0.8mm	8µm	0-40-0	0.3N or less	—	✓	—	—	—	—
513-517WE	513-517WT	0.01mm	0.8mm	8µm	0-40-0	0.3N or less	—	✓	—	✓	—	—
513-527E	513-527T	0.01mm	0.8mm	8µm	0-40-0	0.3N or less	—	✓	✓	—	—	—
—	513-515T	0.01mm	1mm	10µm	0-50-0	0.3N or less	✓	✓	—	—	—	—
513-503E	513-503T	0.002mm	0.2mm	3µm	0-100-0	0.3N or less	—	✓	—	—	—	—
513-501E	513-501T	0.001mm	0.14mm	3µm	0-70-0	0.4N or less	—	✓	—	—	—	—

Inch

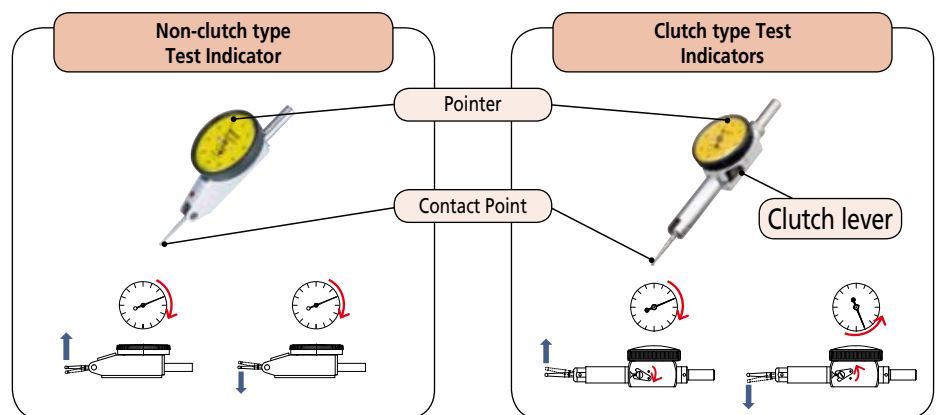
Order No.		Graduation	Range	Accuracy	Dial reading	Measuring force	Long stylus	Jeweled bearing	Compact	—	—	—
Basic set	Full set											
513-518	513-518T	.001"	.04"	±.001"	0-20-0	0.3N or less	—	✓	—	—	—	—
513-528	513-528T	.001"	.04"	±.001"	0-20-0	0.3N or less	—	✓	✓	—	—	—
513-512	513-512T	.0005"	.02"	±.0005"	0-10-0	0.3N or less	✓	✓	—	—	—	—
513-504	513-504T	.0001"	.01"	±.0002"	0-5-0	0.3N or less	—	✓	—	—	—	—

DIMENSIONS



There are two types of Mitutoyo Dial Test Indicator:

The non-clutch type (without a clutch lever) and the clutch type (with a two-position clutch lever)



In the non-clutch type, although the contact point may move either in the upward or downward direction, the pointer always rotates clockwise.

In the clutch type, if the clutch lever is set in one position the contact point moves in the upward direction and the pointer rotates clockwise. Conversely, if the lever is set in the other position the contact point moves in the downward direction and the pointer rotates counterclockwise.

Dial Test Indicators

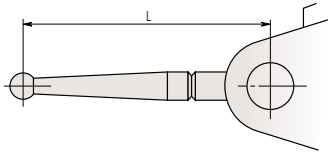
Comparison measuring instruments which ensure high quality, high accuracy and reliability.

Styli, Stems and Holders Optional Accessories for Dial Test Indicators

Styli (for Metric Models Only*)

* Except for universal type dial test indicator (513-304G).

- Stylus length affects the scale factor of an indicator. The styli provided as standard give a scale factor of unity.



ø0.5mm ball-point



190547 (L=14.7mm)
190549 (L=20.9mm)
190654 (L=22.3mm)
190656 (L=44.5mm)

ø0.7mm ball-point



190548 (L=14.7mm)
190550 (L=20.9mm)
190653 (L=22.3mm)
190655 (L=44.5mm)

ø1mm ball-point (Carbide)



21CZA044 (L=12.8mm)
103017 (L=14.7mm)
103013 (L=20.9mm)
137558 (L=22.3mm)
137746 (L=36.8mm)
136235 (L=44.5mm)

ø2mm ball-point (Carbide)



21CZA036 (L=12.8mm)
103010 (L=14.7mm)
103006 (L=20.9mm)
137557 (L=22.3mm)
129949 (L=36.8mm)
136013 (L=44.5mm)

ø2mm ball-point (Ruby)



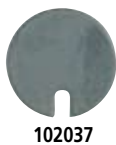
21CZA212 (L=12.8mm)
21CZA209 (L=14.7mm)
21CZA201 (L=20.9mm)
21CZA210 (L=22.3mm)
21CZA211 (L=44.5mm)

ø3mm ball-point (Carbide)



21CZA045 (L=12.8mm)
103018 (L=14.7mm)
103014 (L=20.9mm)
137559 (L=22.3mm)
137747 (L=36.8mm)
136236 (L=44.5mm)

Spanner



102037

Stems with Knurled Clamp Ring

ø4mm (.157" DIA.)



902802

ø8mm



902804

3/8" DIA.



902805

Swivel Clamps

- Can be used with Holding Bars.

For ø6mm stem, ø8mm stem, and dovetail



902053

For ø4mm stem, ø8mm stem, and dovetail



900321

For .157" DIA. stem, 3/8" DIA. stem, and dovetail



900322

Holding Bars



9 x 9mm

953638 (Length: 50mm)
900209 (Length: 100mm)



ø8mm (.315" DIA)

900211 (Length: 115mm/ 4.528")



.25" x .5"

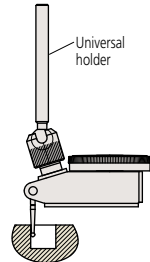
953639 (Length: 2")
900306 (Length: 4")

Universal Holder

- Allows the indicator to be set at the desired attitude to the workpiece.



21CZA233 (ø8mm stem)
21CZA231 (.25" DIA. stem)
21CZA229 (ø6mm stem)

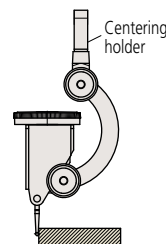


Centering Holder

- Allows large diameter cylinders or holes to be centered on a machine tool.



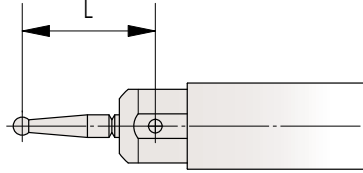
901959 (ø8mm stem)
901997 (.25" DIA. stem)



Styli, Stems and Holders Optional Accessories for Pocket Type Dial Test Indicators

Styli (for Metric Models Only)

- Stylus length affects the scale factor of an indicator. The styli provided as standard give a scale factor of unity.



ø0.5mm ball-point



190547 (L=14.7mm)
190549 (L=20.9mm)
190656 (L=44.5mm)

ø0.7mm ball-point



190548 (L=14.7mm)
190550 (L=20.9mm)
190655 (L=44.5mm)

ø1mm ball-point (Carbide)



136756 (L=12.1mm)
103017 (L=14.7mm)
103013 (L=20.9mm)
137746 (L=36.8mm)
136235 (L=44.5mm)

ø2mm ball-point (Carbide)



136104 (L=12.1mm)
103010 (L=14.7mm)
103006 (L=20.9mm)
129949 (L=36.8mm)
136013 (L=44.5mm)

ø2mm ball-point (Ruby)



21CZA209 (L=14.7mm)
21CZA201 (L=20.9mm)
21CZA211 (L=44.5mm)

ø3mm ball-point (Carbide)



136758 (L=12.1mm)
103018 (L=14.7mm)
103014 (L=20.9mm)
137747 (L=36.8mm)
136236 (L=44.5mm)

Stems

ø4mm (.157" DIA.)



102036

ø8mm



102822

3/8" DIA.



102081

Swivel Clamps

- Can be used with Holding Bars.

For ø6mm stem, ø8mm stem, and dovetail



902053

For ø4mm stem and ø8mm stem, and dovetail



900321

For .157" DIA. stem and 3/8" DIA. stem, and dovetail



900322

Holding Bars



9 x 9mm

953638 (Length: 50mm)
900209 (Length: 100mm)



ø8mm (.315" DIA)

900211 (Length: 115mm)



.25" x .5"

953639 (Length: 2")
900306 (Length: 4")

Spanner



301336

Universal Holder

- Allows the indicator to be set at the desired attitude to the workpiece.



21CZA234 (ø8mm stem)
21CZA232 (.25" DIA. stem)
21CZA230 (ø6mm stem)

