Dial Test Indicators

SERIES 513

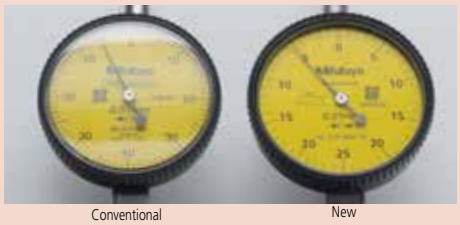
FEATURES

- 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 ø8mm (ø0.315 in) plain stem (21CAB104) for the Metric models or a ø9.52mm (ø3/8 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:
  ø4mm (ø0.157 in) stem: **21CAB106**
  ø6mm (ø0.236 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° tilted face): dial is on top of the frame but tilted 20°.
  – 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.

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



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



Conventional New

Newly designed contact point holder prevents backlash



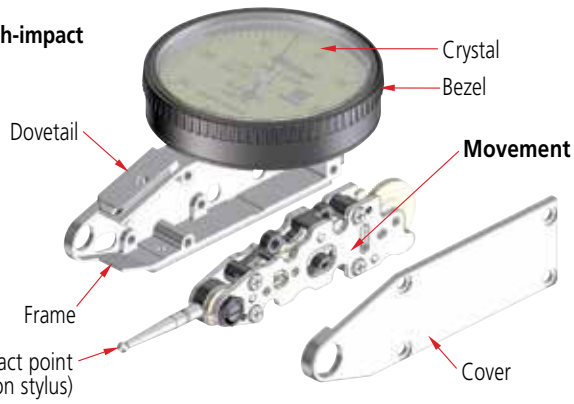
Includes NIST-traceable Certificate of Inspection - bidirectional





Impact-resistant bezel

One piece movement for high-impact resistance and durability



Four models are available:



Standard Vertical Standard (20° Tilted face) Parallel

Mitutoyo

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

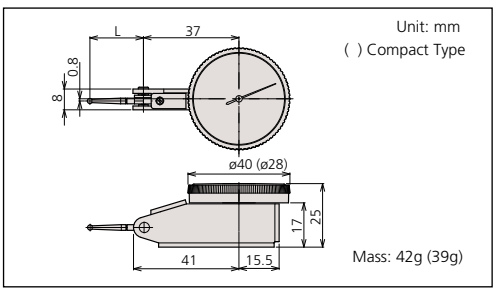


513-404-10E



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



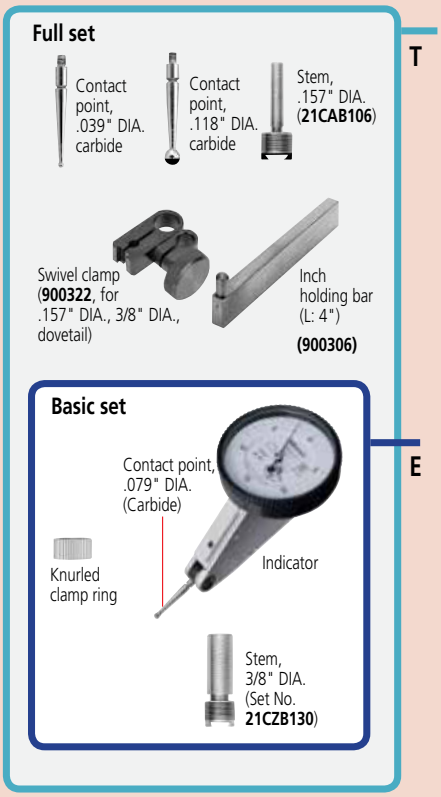


Description of Icon

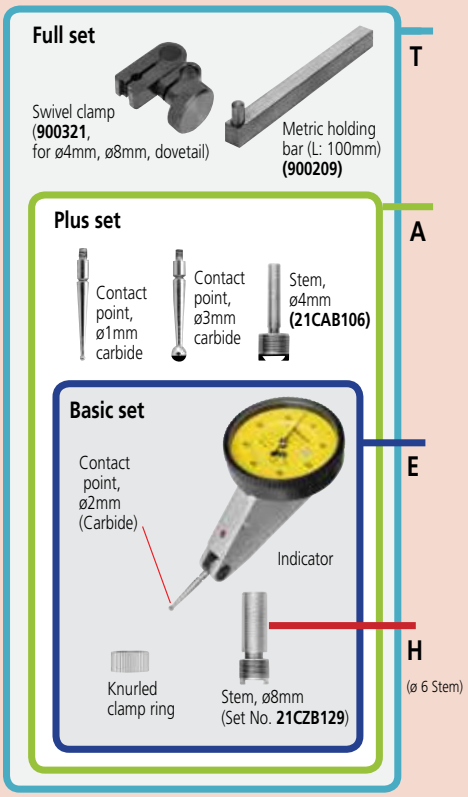
Icon	Description
	With revolution counter
	Long contact point
	Jeweled bearing
	Double scale spacing, easy to read
	Compact
	Dustproof
	Anti-magnetic

Set Configuration: Test Indicators

Inch



Metric



Anti-magnet type | Double scale spacing type | Long contact point type | Jeweled bearing type | Compact type | With revolution counter type


513-466-10E


513-464-10E


513-463-10E

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	✔	✔	—	—	—	—

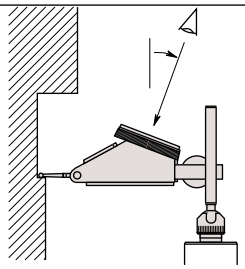
Mitutoyo

Dial Test Indicators

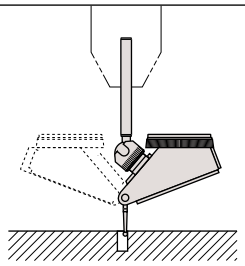
SERIES 513 — Horizontal (20° Tilted Face), Vertical and Parallel

FEATURES

- Specially designed for easy viewing of measurements.



- The dial face points upward, allowing users to read the graduations from the user's side. It is convenient when measuring 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 for easy reading.



513-452-10E



513-482-10A



513-444-10E



513-455-10E



513-484-10E



513-442-10A



513-446-10A

PROPRIETARY INSPECTION CERTIFICATE

Mitutoyo guarantees the product quality. Mitutoyo guarantees the product quality.



513-444-10E



513-445-10E



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



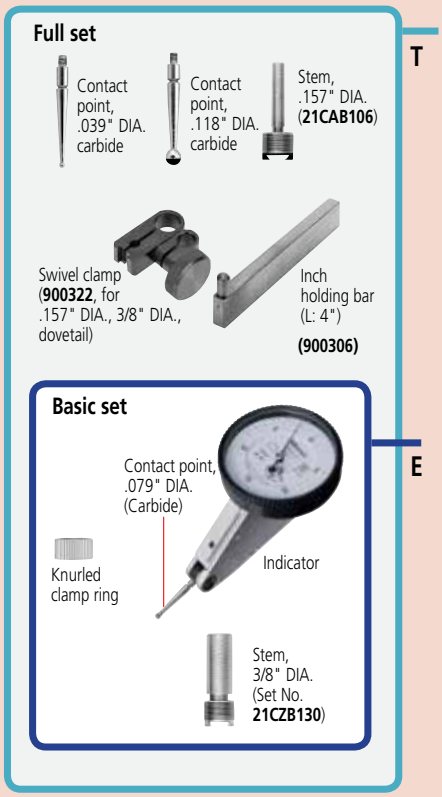
513-455-10E

Optional Accessories

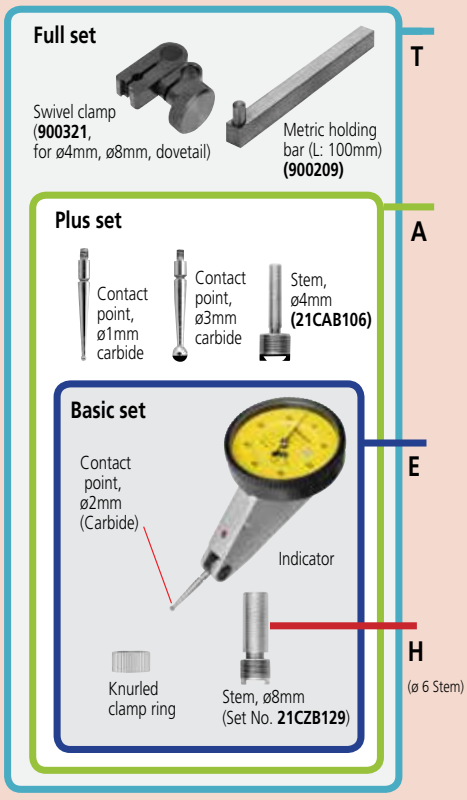
———: Swivel clamp
———: Holding bar
———: Stem
———: Contact points

Set Configuration: Test Indicators

Inch



Metric



Anti-magnet type | With revolution counter type | Jeweled bearing type | Long contact point type

SPECIFICATIONS

Metric Horizontal (20° tilted face) type

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

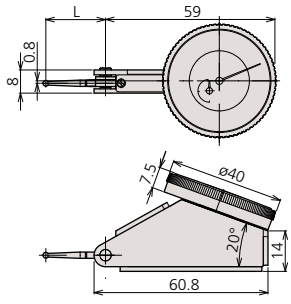
Inch Parallel type

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

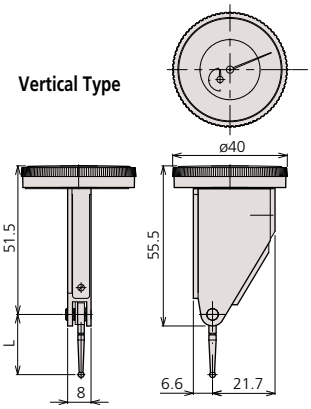
DIMENSIONS

unit: mm

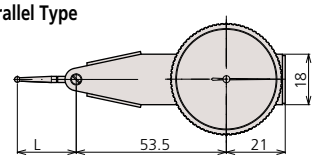
Horizontal (20° Tilted Face) Type

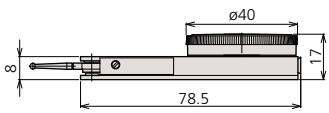


Vertical Type



Parallel Type





Mitutoyo

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 on O-ring to keep out water / oil.


513-517E


513-514E


513-527E


513-501E


513-515T


513-503E


513-518


513-504


513-528


513-512


513-514E


513-517E
513-527E


513-515T


513-503E

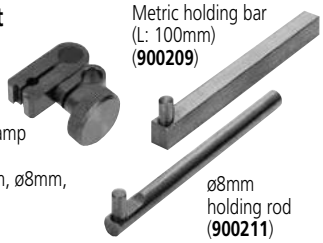

513-501E

Optional Accessories

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

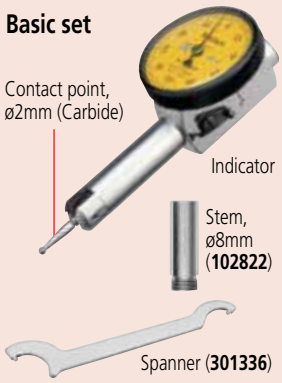
Set Configuration: Metric

Full set



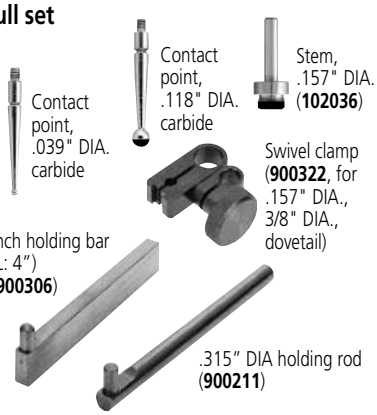


Basic set

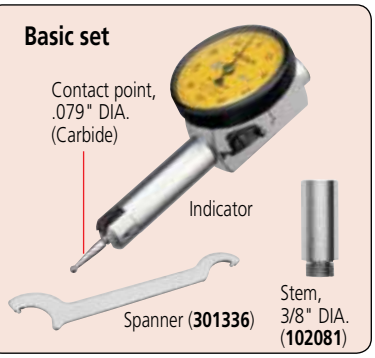


Set Configuration: Inch

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	—	✔	—

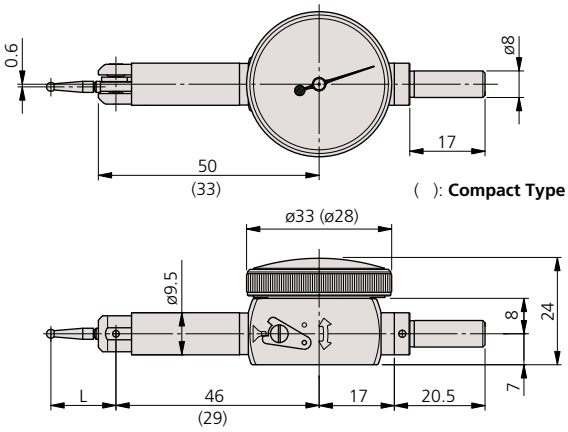
Optional Contact Points

Pocket Type

Order No.		1mm	2mm	3mm	0.5mm	0.7mm
513-501E		136756	136104	136758	—	—
513-503E	**513-527E**	103017	103010	103018	190547	190548
513-504	**513-528**	131314	103011	131315	—	—
513-512		131316	131324	131317	—	—
513-514E		137746	129949	137747	—	—
513-515T		136235	136013	136236	190656	190655
513-517E		103013	103006	103014	190549	190550
513-518		103008	103007	103009	—	—

DIMENSIONS AND MASS

unit: mm



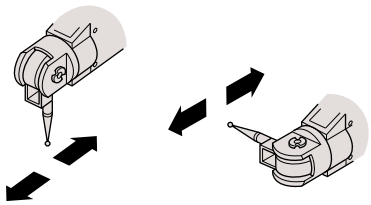
Mass: 45g (40g)
( ): Compact Type

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

Jeweled bearing type

Metric

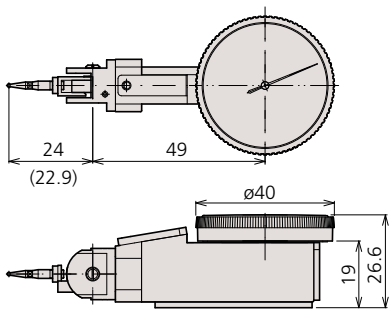
Graduation	Order No.		Range	Accuracy	Dial reading	Measuring force	
	Basic set	Full set					
0.01mm	**513-304GE**	**513-304GT**	0.8mm	8μm	0-40-0	0.3N or less	✔

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

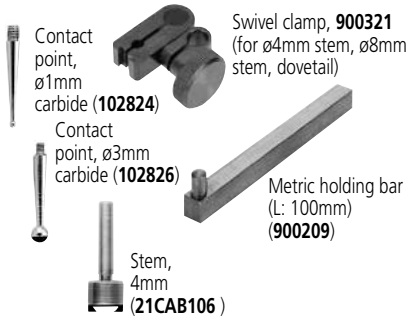
Unit: mm



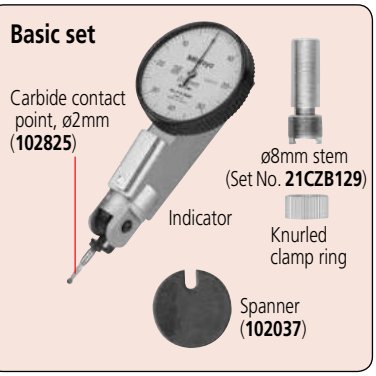
Mass: 80g
( ): 513-302G

Set Configuration: Metric

Full set

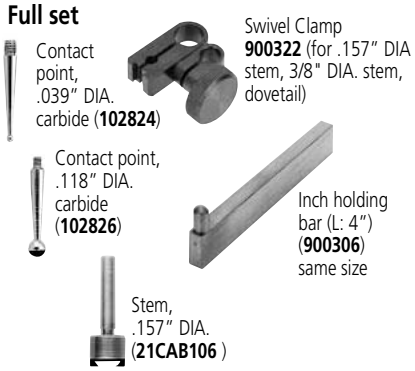


Basic set

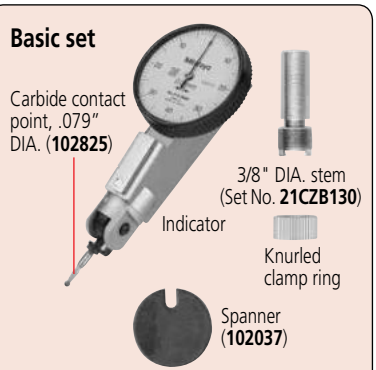


Set Configuration: Inch

Full set



Basic set

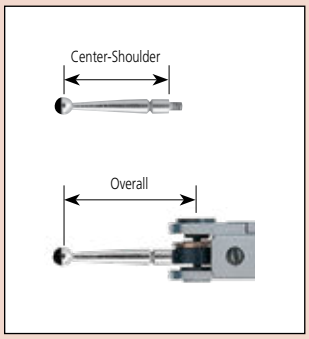


Optional Accessories

———: Swivel clamp
———: Holding bar
———: Stem

Contact Points and Clamp Holders

Optional Accessories for Dial Test Indicator



Inch

Length (mm)		Part No.						Test Indicator Code No.		
Center-Shoulder	Overall	ø0.5	ø0.7	ø1	ø2	ø3	Ruby Ø2mm			
11.5	15.0	—	—	136076	136075	136077	21CZA213	**513-403-10E** **513-453-10E**	**513-443-10A** **513-463-10E**	**513-473-10E***3 **513-443-16A**
16.4	19.9	—	—	133196	133195	133197	21CZA204	**513-401-10E** **513-406-10E** **513-452-10E**	**513-442-10A** **513-462-10E**	**513-472-10E***3 **513-442-16A** **513-482-10A**
30.4	33.9	—	—	136291	136290	136292	21CZA214	**513-412-10E** **513-446-16A**	**513-446-10A**	
15.2	18.7	—	—	131314	103011	131315	—	**513-504***1	**513-528***1	
23.0	26.5	—	—	103008	103007	103009	—	**513-518***1		
33.9	37.4	—	—	131316	131324	131317	—	**513-512***1		

Metric

Length (mm)		Part No.								
9.4	12.9	—	—	21CZA044	21CZA036	21CZA045	21CZA212	**513-401-10E**	**513-471-10E**	
11.2	14.7	190547	190548	103017	103010	103018	21CZA209	**513-405-10E** **513-503E** **513-527E**	**513-425-10E** **513-455-10E** **513-455-10E**	**513-445-10E**
17.4	20.9	190549	190550	103013	103006	103014	21CZA201	**513-404-10E** **513-464-10E** **513-484-10E**	**513-444-10E** **513-517E***1	**513-454-10E** **513-474-10E***3
18.7	22.2	190654	190653	137558	137557	137559	21CZA210	**513-424-10E** **513-478-10H***3	**513-426-10E**	**513-466-10E**
41.0	44.5	190656	190655	136235	136013	136236	21CZA211	**513-415-10E**	**513-515T***1	
33.3	36.8	—	—	137746	129949	137747	—	**513-414-10E**	**513-514E***1	
8.6	12.0	—	—	136756	136104	136758	—	**513-501E***1		
6.5	24.0	—	—	102824	102825	102826	—	**513-304GE***2	**513-302G***2	

*1 Denotes Pocket Indicators
*2 Denotes Universal Indicator
*3 Indicator Ships with Ruby Contact

Holding Bars (with 6mm mounting pin)

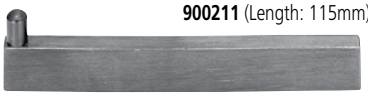


9 x 9mm

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



900211 (Length: 115mm)



.25" x .5"
ø8mm

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



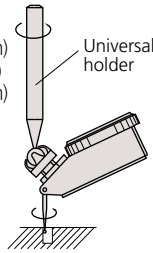
Spanner (**102037**)

Universal Holder

- Allows the indicator to be set at a desired position.



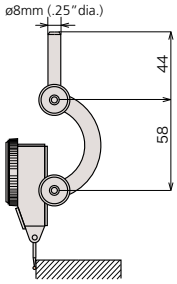
21CZA233 (ø8mm stem, Length: 80mm)
21CZA231 (.25" DIA. stem, Length: 3")
21CZA229 (ø6mm stem, Length: 80mm)



Centering Holder

- Allows large diameter cylinders or holes to be centered.





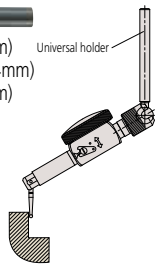
901959 (ø8mm stem)
901997 (.25" DIA. stem)

Universal Holder (pocket type)

- Since the Dial Test Indicator can be swiveled to a desired angle, the holder is useful for centering workpieces and installing workpieces on a milling machine.



21CZA234 (ø8mm stem, Length: 84mm)
21CZA232 (.25" DIA. stem, Length: 84mm)
21CZA230 (ø6mm stem, Length: 84mm)



Mitutoyo