

Dial Indicators

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

Back Plunger Type Dial Indicators SERIES 2

- Back Plunger type dial indicators are suitable for mounting onto leveling machine tool tables or inspection jigs, and for use in small spaces where the graduations of standard dial indicators are difficult to see.
- Mitutoyo's proprietary shock-proofing mechanism provides excellent durability and shock resistance.
- Model **2990T-10** provides 0.001 mm graduation.



An inspection certificate is supplied as standard. Refer to page U-11 for details.



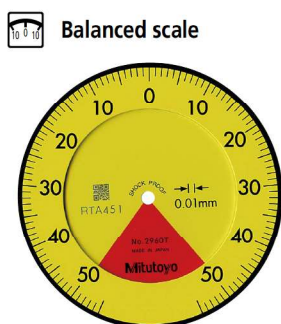
Holding bar (optional)

Order No.	øD (mm)	L (mm)
21AAA166	ø6	42
136567	ø6	81
124625	ø6.35	81
21AAA167	ø6.35	42
21AAA168	ø8	42
136568	ø8	81

Note: øD and L: detail shown in drawing below.



2960T



Balanced scale

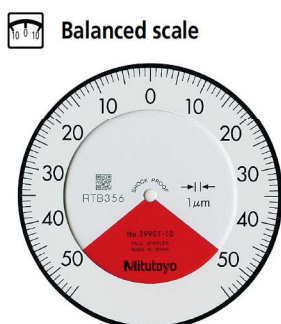
Graduation: 0.01 mm,
Measuring range: 1 mm

2960T

- One revolution
- Shockproof
- Back Plunger



2990T-10



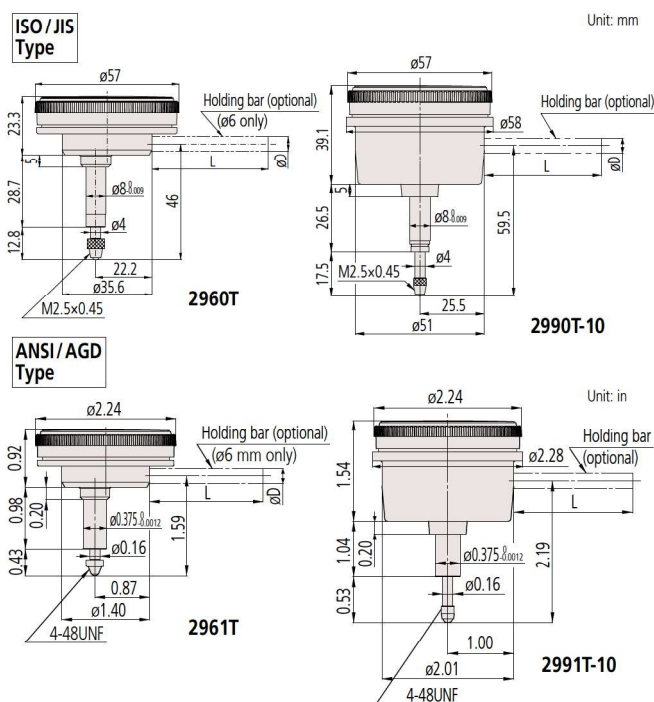
Balanced scale

Graduation: 0.01 mm,
Measuring range: 1 mm

2990T-10

- One revolution
- Shockproof
- Back Plunger
- Jeweled bearing

DIMENSIONS



Note 1: The shoulder on a contact point (standard accessory) for **2960T** and **2961T** acts as a stop to prevent spindle overrun that may otherwise damage the indicator. For this reason, if you need to install an optional contact point with an outside diameter smaller than 7 mm, use a washer (with outside diameter of at least 7 mm, inside diameter of 3 mm, and thickness of approx. 0.5 mm) placed between the contact point and the spindle.

Note 2: Refer to pages F-57 to F-60 for details of contact points.

Metric		ISO/JIS type								
Order No.	Graduation (mm)	Range (range/rev) (mm)	Maximum permissible error (MPE) (μm)					Dial reading	Measuring force (N)	
			Indication error				Hysteresis			Repeat-ability
			1/10 Rev	1/2 Rev	1 Rev	Measuring range				
2960T	0.01	1 (1.27)	8	—	—	14	4	3	50-0-50	1.4 or less
2990T-10	0.001	0.1 (0.14)	2.5	—	—	5	2	1	50-0-50	1.5 or less

Note: Completed products inspection is performed in the vertical orientation (contact point downward) and the stated accuracy is guaranteed.

Inch		<div><div></div> ANSI/AGD type</div>						
Order No.	Graduation (in)	Range (range/rev) (in)	Accuracy (in)			Repeatability (in)	Dial reading	Measuring force (N)
			First 1 Rev/2.5 Rev/10 Rev		Retrace			
2961T	0.0005	0.04/0.05	±0.0005/—/—		0.00016	±0.0001	20-0-20	1.4 or less
2991T-10	0.0001	0.008/0.01	±0.0002/—/—		0.0001	±0.00005	4-0-4	1.5 or less

Note: Completed products inspection is performed in the vertical orientation (contact point downward) and the stated accuracy is guaranteed.



An inspection certificate is supplied as standard.
Refer to page U-11 for details.



Holding bar

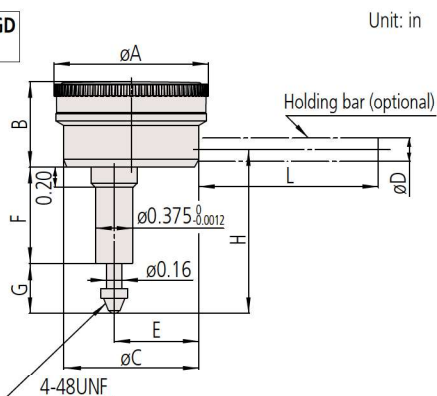
Holding bar (optional)

Order No.	øD (mm)	L (mm)
21AAA166	ø6	42
136567	ø6	81
124625	ø6.35	81
21AAA167	ø6.35	42
21AAA168	ø8	42
136568	ø8	81

Note: øD and L: detail shown in drawing below.

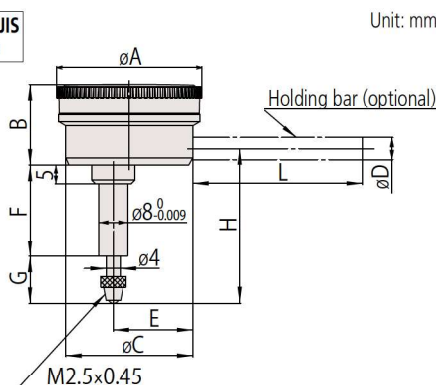
DIMENSIONS

ANSI/AGD
Type



Unit: in

ISO/JIS
Type



Unit: mm

Order No.	A	B	C	E	F	G	H	Mass (g) (Bar excluded)
1166T	1.57	0.87	1.40	7/8	0.98	0.43	1.65	80
1167T	1.57	0.87	1.40	7/8	0.98	0.43	1.65	80
1168T	1.57	0.87	1.40	7/8	0.98	0.43	1.65	80
1961T	1.57	0.87	1.40	7/8	0.98	0.43	1.57	80

Order No.	A	B	C	E	F	G	H	Mass (g) (Bar excluded)
1160T	40	22.1	35.6	22.2	25	13.8	43.3	80
1162T	40	22.1	35.6	22.2	25	13.8	43.3	80
1960T	40	22.1	35.6	22.2	28.7	12.8	46	80

Note 1: Contact point (standard accessory) for all products in this page has a role as a top dead point stopper. For this reason, if you need to install an optional contact point with an outside diameter smaller than 7 mm, use a washer (with outside diameter of at least 7 mm, inside diameter of 3 mm, and thickness of approx. 0.5 mm) placed between the contact point and the spindle.

Note 2: Refer to pages F-57 to F-60 for details of contact points.

FEATURES

Metric

Order No.	Continuous scale	Reverse reading	Balanced scale	Shockproof	Back Plunger
1960T	✓	✓	✓	✓	✓
1160T	✓				✓
1162T					✓

Inch

Order No.	Continuous scale	Reverse reading	Balanced scale	Shockproof	Back Plunger
1961T		✓	✓	✓	✓
1166T	✓				✓
1167T		✓			✓
1168T				✓	✓

Back Plunger Type Dial Indicators SERIES 1

- Back Plunger type dial indicators are suitable for mounting onto leveling machine tool tables or inspection jigs, and for use in situations where standard dial indicators are difficult to read.
- Model **1960T** and **1961T**, which uses Mitutoyo's proprietary shock-proofing mechanism, has excellent durability and shock resistance.



1160T



Continuous scale



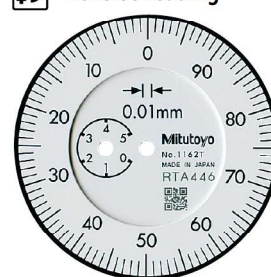
Graduation: 0.01 mm,
Measuring range: 5 mm

1160T

Back Plunger



Reverse reading



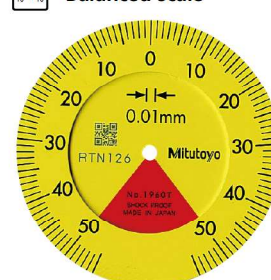
1162T

Graduation: 0.01 mm,
Measuring range: 5 mm

Back Plunger



Balanced scale



Graduation: 0.01 mm,
Measuring range: 1 mm

1960T

One revolution

Shockproof

Back Plunger

SPECIFICATIONS

Metric

ISO/JIS type

Order No.	Graduation (mm)	Range (range/rev) (mm)	Maximum permissible error (MPE) (μm)						Dial reading	Measuring force (N)
			Indication error				Hysteresis	Repeat- ability		
			1/10 Rev	1/2 Rev	1 Rev	Measuring range				
1960T	0.01	1 (1.27)	8	—	—	14	4	3	50-0-50	1.4 or less
1160T	0.01	5 (1)	8	12	14	16	4	3	±0-100	1.4 or less
1162T	0.01	5 (1)	8	12	14	16	4	3	100-0	1.4 or less

Note: Completed products inspection is performed in the vertical orientation (contact point downward) and the stated accuracy is guaranteed.

Inch

ANSI/AGD type

Order No.	Graduation (in)	Range (range/rev) (in)	Accuracy (in)		Repeatability (in)	Dial reading	Measuring force (N)
			First 1 Rev/2.5 Rev/10 Rev	Retrace			
1961T	0.001	0.04 (0.05)	±0.001/—/—	0.0002	±0.0002	20-0-20	1.4 or less
1166T	0.001	0.2 (0.05)	±0.001/±0.001/±0.001	0.00033	±0.0002	±0-50	1.4 or less
1167T	0.001	0.2 (0.05)	±0.001/±0.001/±0.001	0.00033	±0.0002	0-25-0	1.4 or less
1168T	0.001	0.2 (0.05)	±0.001/±0.001/±0.001	0.00033	±0.0002	50-0	1.4 or less

Note: Completed products inspection is performed in the vertical orientation (contact point downward) and the stated accuracy is guaranteed.