



An inspection certificate is supplied as standard.  
Refer to page U-9 for details.

# Dial Indicators

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

## SERIES 2 — Standard Type, 0.01 mm Graduation

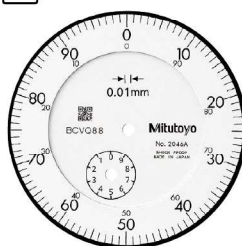
- Standard 0.01 mm graduation dial gages having a bezel with an outside diameter of 57 mm.
- The bezel clamp and lifting lever (optional) can be attached to either the right or left side. These parts can be easily installed and removed without tools.
- Watertight assembly of bezel and crystal as well as the use of an O-ring prevents water or oil penetration.
- The stem and spindle are made of high-strength quench-hardened stainless steel suitable for heavy-duty use.
- A carbide contact point is used.
- The grand gear is made of stainless steel with high resistance to wear and deformation.
- Application of an anti-reflective and hard surface coating improves scale visibility along with scratch and chemical resistance.



2046A



Continuous scale



Graduation: 0.01 mm,  
Measuring range: 10 mm

2046A

With damper at  
top rest point

2046A-09

Shockproof



Balanced scale



Graduation: 0.01 mm,  
Measuring range: 10 mm

2047A

With damper at  
top rest point



Reverse reading type. Suitable  
for depth and step measurement.



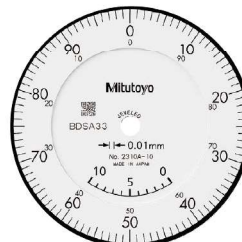
Graduation: 0.01 mm,  
Measuring range: 10 mm

2902A

With damper at  
top rest point



Continuous scale



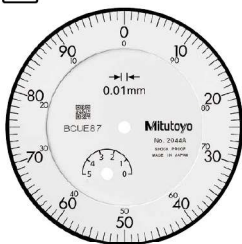
Graduation: 0.01 mm,  
Measuring range: 10 mm

2310A-10

With coaxial revolution counter  
Jeweled bearing



Continuous scale



Graduation: 0.01 mm,  
Measuring range: 5 mm

2044A

With damper at  
top rest point

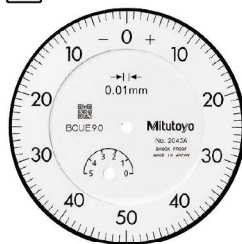
2044A-09

With damper at  
top rest point

Shockproof



Balanced scale



Graduation: 0.01 mm,  
Measuring range: 5 mm

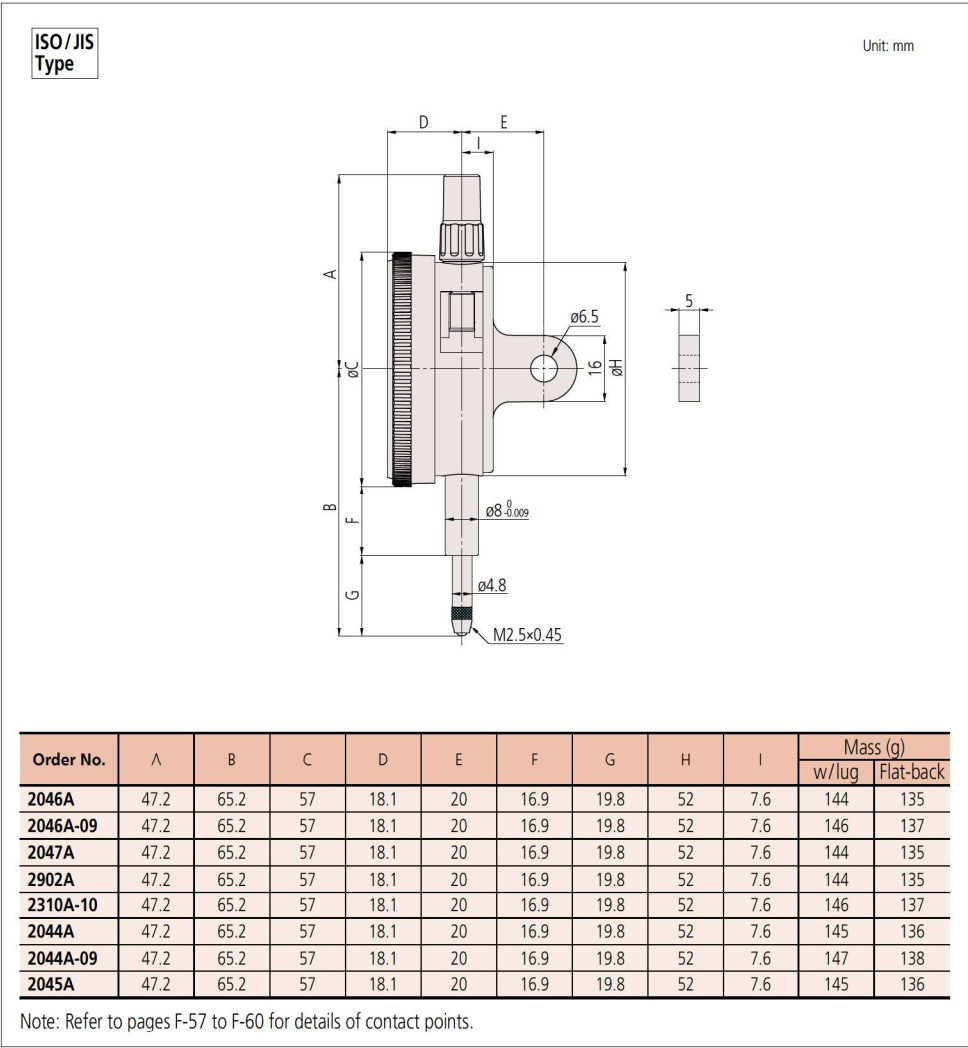
2045A

With damper at  
top rest point

# Dial Indicators

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

## DIMENSIONS



### Optional Accessories

- Limit hand (2 pcs.): **21AZB195**
- Bezel clamp: **21AZB148**

## FEATURES

Metric									
Order No.									
w/lug	Flat-back	ISO/JIS	Flat-back	Flat-back	Flat-back	Flat-back	Flat-back	Flat-back	Flat-back
2046A	2046AB	✓						✓	
2046A-09	2046AB-09	✓			✓				
2047A	2047AB		✓					✓	
2902A	2902AB			✓				✓	
2310A-10	2310AB-10	✓						✓	✓
2044A	2044AB	✓						✓	
2044A-09	2044AB-09	✓			✓				
2045A	2045AB		✓					✓	

## SPECIFICATIONS

Metric												ISO/JIS type	
Order No.		Graduation (mm)	Range (range/rev) (mm)	Maximum permissible error (MPE) (μm)						Dial reading	Measuring force (N)		
w/lug	Flat-back			Indication error				Hysteresis	Repeat- ability				
				1/10 Rev	1/2 Rev	1 Rev	Measuring range						
2046A	2046AB	0.01	10 (1)	5	9	10	13	3	3	±0-100	1.4 or less		
2046A-09	2046AB-09	0.01	10 (1)	5	9	10	15	3	3	±0-100	1.4 or less		
2047A	2047AB	0.01	10 (1)	5	9	10	13	3	3	0-50-0	1.4 or less		
2902A	2902AB	0.01	10 (1)	5	9	10	13	3	3	100-0	1.4 or less		
2310A-10	2310AB-10	0.01	10 (1)	5	9	10	15	3	3	±0-100	1.4 or less		
2044A	2044AB	0.01	5 (1)	5	9	10	12	3	3	±0-100	1.4 or less		
2044A-09	2044AB-09	0.01	5 (1)	5	9	10	12	3	3	±0-100	1.4 or less		
2045A	2045AB	0.01	5 (1)	5	9	10	12	3	3	0-50-0	1.4 or less		

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



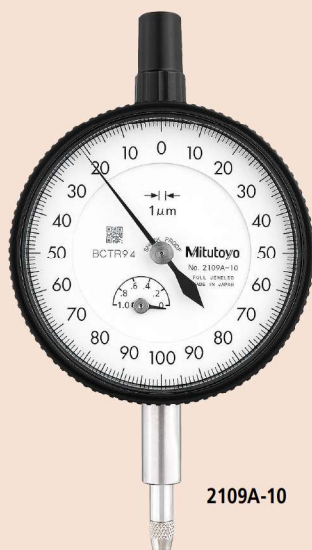
An inspection certificate is supplied as standard.  
Refer to page U-9 for details.

# Dial Indicators

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

## SERIES 2 — Standard Type, 0.001 mm & 0.005 mm Graduation

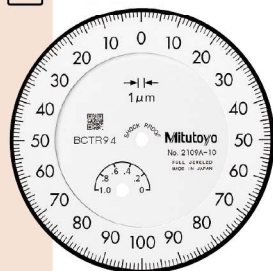
- Standard 0.001 mm and 0.005 mm graduation dial indicators having a bezel with an outside diameter of 57 mm.
- The bezel clamp and lifting lever (optional) can be attached to either the right or left side. These parts can be easily installed and removed without tools.
- Watertight assembly of bezel and crystal as well as the use of an O-ring prevents water or oil penetration.
- The stem and spindle are made of high-strength quench-hardened stainless steel suitable for heavy-duty use.
- A carbide contact point is used.
- A special alloy is used for the sector gears to provide improved wear resistance.
- The indicator uses jeweled bearings, providing excellent indication sensitivity and durability.
- Application of an anti-reflective and hard surface coating improves scale visibility along with scratch and chemical resistance.



2109A-10



Balanced scale



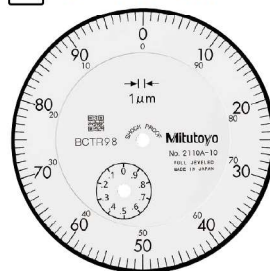
Graduation: 0.001 mm, Measuring range: 1 mm

Shockproof

Jeweled bearing



Continuous scale



Graduation: 0.001 mm, Measuring range: 1 mm

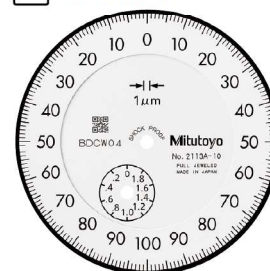
Double scale spacing

Shockproof

Jeweled bearing



Balanced scale



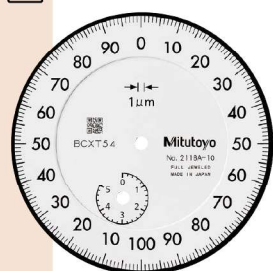
Graduation: 0.001 mm, Measuring range: 2 mm

Shockproof

Jeweled bearing



Continuous scale

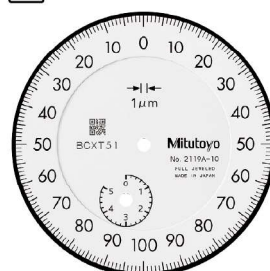


Graduation: 0.001 mm, Measuring range: 5 mm

Jeweled bearing



Balanced scale

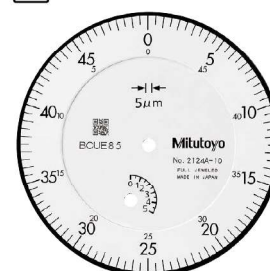


Graduation: 0.001 mm, Measuring range: 5 mm

Jeweled bearing



Continuous scale



Graduation: 0.005 mm, Measuring range: 5 mm

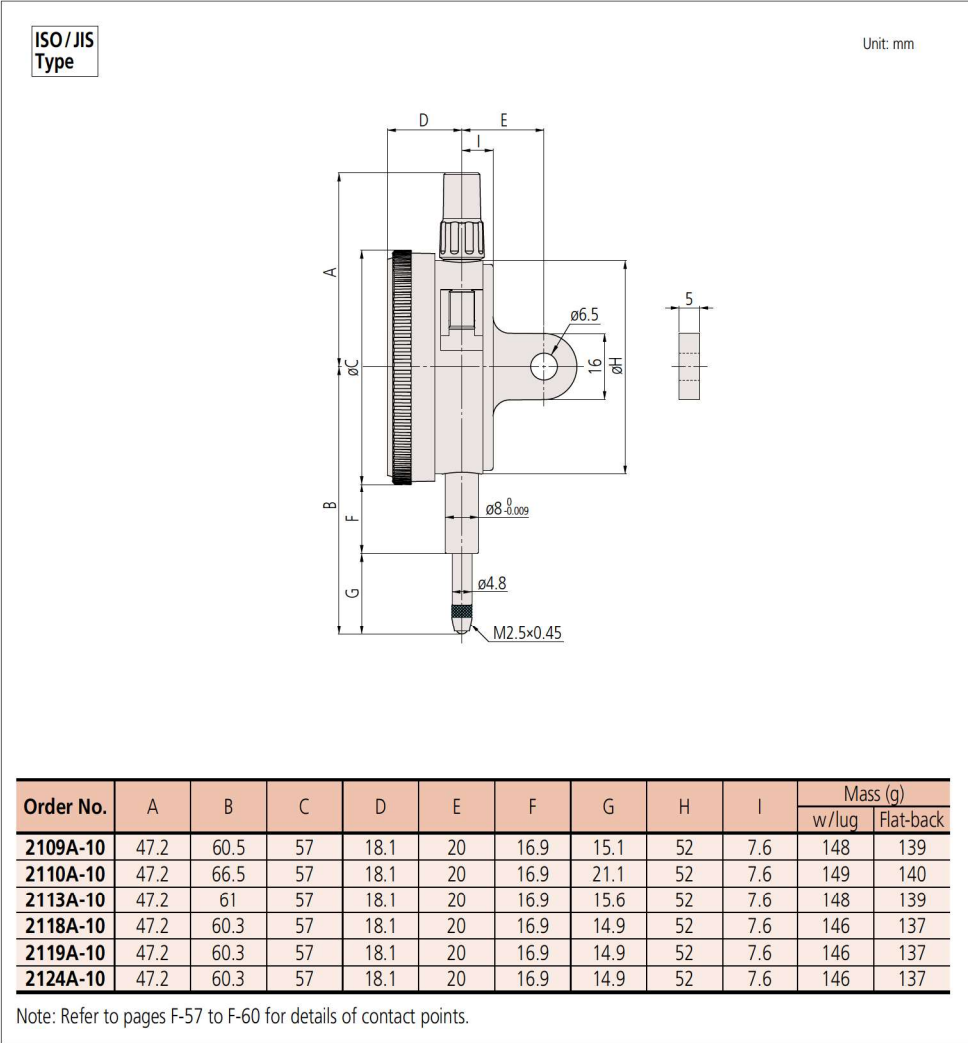
Jeweled bearing



# Dial Indicators

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

## DIMENSIONS



### Optional Accessories

- Limit hand (2 pcs.): 21AZB195
- Bezel clamp: 21AZB148

## FEATURES

Metric							
Order No.							
w/lug	Flat-back	10/10	10/10	64	64	64	64
2109A-10	2109AB-10	✓	✓	✓	✓	✓	✓
2110A-10	2110AB-10	✓	✓	✓	✓	✓	✓
2113A-10	2113AB-10	✓	✓	✓	✓	✓	✓
2118A-10	2118AB-10	✓	✓	✓	✓	✓	✓
2119A-10	2119AB-10	✓	✓	✓	✓	✓	✓
2124A-10	2124AB-10	✓	✓	✓	✓	✓	✓

## SPECIFICATIONS

Metric												ISO/JIS type	
Order No.		Graduation (mm)	Range (range/rev) (mm)	Maximum permissible error (MPE) (μm)						Dial reading	Measuring force (N)		
w/lug	Flat-back			Indication error				Hysteresis	Repeat-ability				
				1/10 Rev	1/2 Rev	1 Rev	Measuring range						
2109A-10	2109AB-10	0.001	1 (0.2)	2	3	4	5	2	0.5	0-100-0	1.5 or less		
2110A-10	2110AB-10	0.001	1 (0.1)	2	3	4	5	2	0.5	±0-100	1.8 or less		
2113A-10	2113AB-10	0.001	2 (0.2)	2	4	5	7	2	0.5	0-100-0	1.5 or less		
2118A-10	2118AB-10	0.001	5 (0.2)	3.5	5	6	10	3	1	0-100-100	1.5 or less		
2119A-10	2119AB-10	0.001	5 (0.2)	3.5	5	6	10	3	1	0-100-0	1.5 or less		
2124A-10	2124AB-10	0.005	5 (0.5)	5	8	9	12	3	3	±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.





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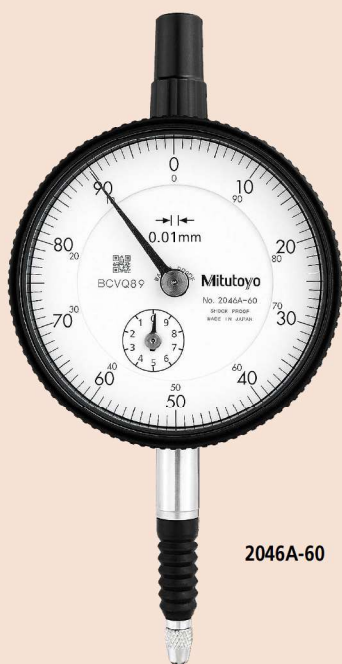
IP64

# Dial Indicators

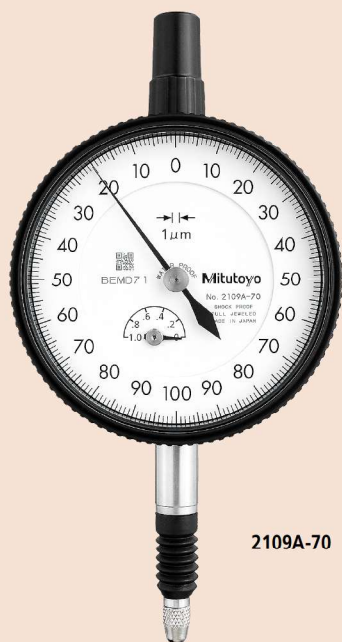
Comparison measuring instruments which ensure high quality, high accuracy and reliability.

## SERIES 2 — Water-proof Type, 0.01 mm & 0.001 mm Graduation

- Water-proof type dial indicators having a bezel with an outside diameter of 57 mm.
- O-rings and rubber bellows are used to prevent water and oil penetration.
- The bezel clamp can be attached to either the right or left side. These parts can be easily installed and removed without tools.
- The stem and spindle are made of high-strength quench-hardened stainless steel suitable for heavy-duty use.
- A carbide contact point is used.
- Application of an anti-reflective and hard surface coating improves scale visibility along with scratch and chemical resistance.

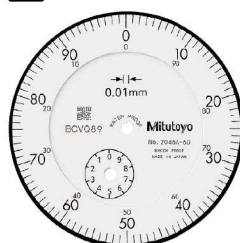


2046A-60



2109A-70

Continuous scale



Graduation: 0.01 mm,  
Measuring range: 10 mm

2046A-60

Waterproof

With damper at top rest point

Continuous scale



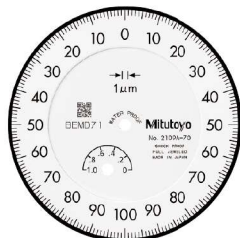
Graduation: 0.01 mm,  
Measuring range: 5 mm

2044A-60

Waterproof

With damper at top rest point

Balanced scale



Graduation: 0.001 mm,  
Measuring range: 1 mm

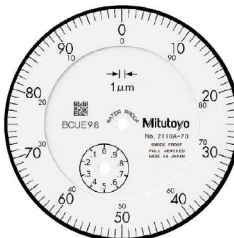
2109A-70

Waterproof

Shockproof

Jeweled bearing

Continuous scale



Graduation: 0.001 mm,  
Measuring range: 1 mm

2110A-70

Waterproof

Double scale spacing

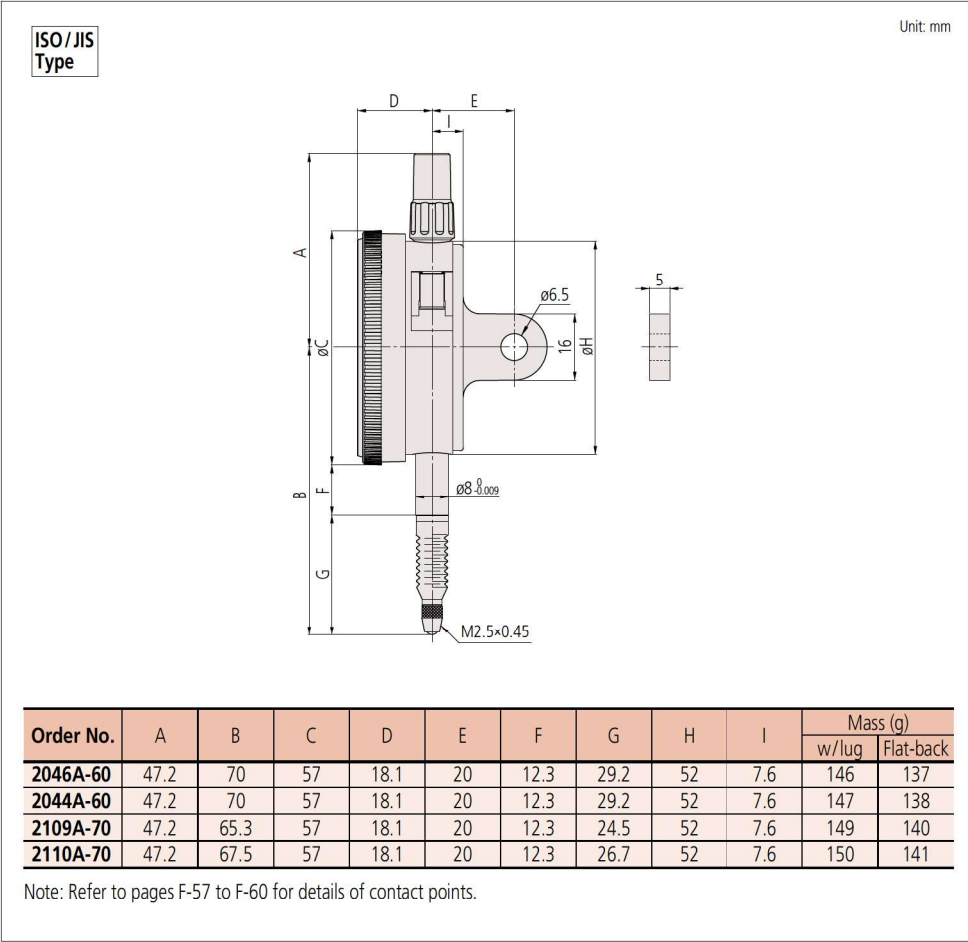
Shockproof

Jeweled bearing

# Dial Indicators

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

## DIMENSIONS



### Optional Accessories

- Limit hand (2 pcs.): **21AZB195**
- Bezel clamp: **21AZB148**

## FEATURES

Metric									
Order No.									
w/lug	Flat-back								
2046A-60	2046AB-60	✓				✓	✓		
2044A-60	2044AB-60	✓				✓	✓		
2109A-70	2109AB-70		✓	✓	✓			✓	
2110A-70	2110AB-70	✓		✓	✓			✓	✓

## SPECIFICATIONS

Metric												ISO/JIS type	
Order No.		Graduation (mm)	Range (range/rev) (mm)	Maximum permissible error (MPE) (μm)						Dial reading	Measuring force (N)		
w/lug	Flat-back			Indication error				Hysteresis	Repeat-ability				
				1/10 Rev	1/2 Rev	1 Rev	Measuring range						
2046A-60	2046AB-60	0.01	10 (1)	5	9	10	13	3	3	±0-100	2.5 or less		
2044A-60	2044AB-60	0.01	5 (1)	5	9	10	12	3	3	±0-100	2.5 or less		
2109A-70	2109AB-70	0.001	1 (0.2)	2	3	4	5	2	0.5	0-100-0	2.0 or less		
2110A-70	2110AB-70	0.001	1 (0.1)	2	3	4	5	2	0.5	±0-100	2.0 or less		

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



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# Dial Indicators

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




## SERIES 2 — Standard Type, Inch Reading

### SPECIFICATIONS

Inch				ANSI/AGD type				
Order No.		Graduation (in)	Range (range/rev) (in)	Accuracy (in)		Repeat- ability (in)	Dial reading	Measuring force (N)
w/lug	Flat-back			First 1 Rev/2.5 Rev/10 Rev	Retrace			
2414A	2414AB	0.001	0.5 (0.1)	±0.001/±0.001/±0.001	0.0002	±0.0002	±0-100	1.8 or less
2415A	2415AB	0.001	0.5 (0.1)	±0.001/±0.001/±0.001	0.0002	±0.0002	0-50-0	1.8 or less
2914A	2914AB	0.001	0.5 (0.1)	±0.001/±0.001/±0.001	0.0002	±0.0002	100-0	1.8 or less
2506A	2506AB	0.0005	0.125 (0.05)	±0.0005/±0.0005/—	0.00016	±0.0001	±0-50	1.8 or less
2507A	2507AB	0.0005	0.125 (0.05)	±0.0005/±0.0005/—	0.00016	±0.0001	0-25-0	1.8 or less
2514A	2514AB	0.0005	0.5 (0.05)	±0.0005/±0.0005/±0.0015	0.00016	±0.0001	±0-50	1.8 or less
2922A	2922AB	0.0005	0.125 (0.05)	±0.0005/±0.0005/—	0.00016	±0.0001	0-25-0	1.8 or less
2356A-10	2356AB-10	0.0001	0.25 (0.01)	±0.0002/±0.0002/±0.0003/±0.0004 (First 20rev)/±0.0005 (Over 20rev)	0.0001	±0.00003	0-10	2.0 or less
2358A-10	2358AB-10	0.0001	0.5 (0.01)	±0.0002/±0.0002/±0.0003/±0.0004 (First 20rev)/±0.0008 (Over 20rev)	0.00015	±0.00003	0-10	2.0 or less
2802A-10	2802AB-10	0.0001	0.025 (0.01)	±0.0001/±0.0001/—	0.0001	±0.00003	0-10	2.0 or less
2803A-10	2803AB-10	0.0001	0.025 (0.01)	±0.0001/±0.0001/—	0.0001	±0.00003	0-5-0	2.0 or less
2804A-10	2804AB-10	0.0001	0.05 (0.01)	±0.0001/±0.0001/±0.0002	0.0001	±0.00003	0-10	2.0 or less
2805A-10	2805AB-10	0.0001	0.05 (0.01)	±0.0001/±0.0001/±0.0002	0.0001	±0.00003	0-5-0	2.0 or less
2905A-10	2905AB-10	0.0001	0.05 (0.01)	±0.0001/±0.0001/±0.0002	0.0001	±0.00003	10-0	2.0 or less
2923A-10	2923AB-10	0.0001	0.05 (0.01)	±0.0001/±0.0001/±0.0002	0.0001	±0.00003	0-5-0	2.0 or less

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

### FEATURES

Inch				
Order No.				
w/lug	Flat-back			
2414A	2414AB			
2415A	2415AB			
2914A	2914AB		✓	
2506A	2506AB			
2507A	2507AB			
2514A	2514AB			
2922A	2922AB			
2356A-10	2356AB-10			✓
2358A-10	2358AB-10			✓
2802A-10	2802AB-10	✓		✓
2803A-10	2803AB-10	✓		✓
2804A-10	2804AB-10	✓		✓
2805A-10	2805AB-10	✓		✓
2905A-10	2905AB-10	✓	✓	✓
2923A-10	2923AB-10	✓		✓



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

ANSI/AGD  
Type

Unit: in

Ball contact (ø0.12)  
**218ZB005**  
(thread: No. 4-48 UNF)

Order No.	A	B	C	D	E	F	G	H	I	Mass (g)	
										w/lug	Flat-back
<b>2414A</b>	1.53	2.52	2.24	0.71	3/4	0.54	0.87	2.05	0.30	164	139
<b>2415A</b>	1.53	2.52	2.24	0.71	3/4	0.54	0.87	2.05	0.30	164	139
<b>2914A</b>	1.53	2.52	2.24	0.71	3/4	0.54	0.87	2.05	0.30	164	139
<b>2506A</b>	1.86	2.14	2.24	0.71	3/4	0.54	0.48	2.05	0.30	164	139
<b>2507A</b>	1.86	2.14	2.24	0.71	3/4	0.54	0.48	2.05	0.30	164	139
<b>2514A</b>	1.53	2.52	2.24	0.71	3/4	0.54	0.87	2.05	0.30	164	139
<b>2922A</b>	1.86	2.14	2.24	0.71	3/4	0.54	0.48	2.05	0.30	164	139
<b>2356A-10</b>	1.86	2.25	2.24	0.71	3/4	0.54	0.59	2.05	0.30	163	138
<b>2358A-10</b>	1.53	2.50	2.24	0.71	3/4	0.54	0.85	2.05	0.30	164	139
<b>2802A-10</b>	1.86	2.02	2.24	0.71	3/4	0.54	0.37	2.05	0.30	164	139
<b>2803A-10</b>	1.86	2.02	2.24	0.71	3/4	0.54	0.37	2.05	0.30	164	139
<b>2804A-10</b>	1.86	2.04	2.24	0.71	3/4	0.54	0.38	2.05	0.30	166	141
<b>2805A-10</b>	1.86	2.04	2.24	0.71	3/4	0.54	0.38	2.05	0.30	166	141
<b>2905A-10</b>	1.86	2.04	2.24	0.71	3/4	0.54	0.38	2.05	0.30	164	139
<b>2923A-10</b>	1.86	2.04	2.24	0.71	3/4	0.54	0.38	2.05	0.30	164	139



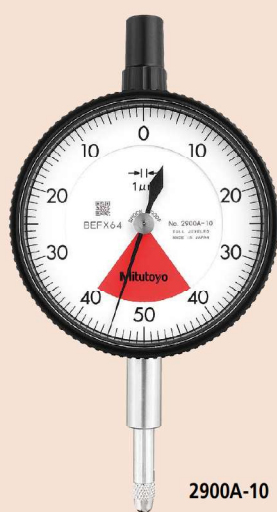
An inspection certificate is supplied as standard.  
Refer to page U-9 for details.

# Dial Indicators

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

## SERIES 2 — Standard One Revolution Type for Error-free Reading

- Mitutoyo's unique shock-proof mechanism is incorporated, providing improved resistance to shock due to sudden spindle retraction caused by impact.
- This series has been developed to eliminate the possibility of reading errors due to miscounting multiple revolutions.
- The bezel clamp and lifting lever (optional) can be attached to either the right or left side. These parts can be easily installed and removed without tools.
- The stem and spindle are made of high-strength quench-hardened stainless steel suitable for heavy-duty use.
- A carbide contact point is used.
- Application of an anti-reflective and hard surface coating improves scale visibility along with scratch and chemical resistance.
- The dead zone in red indicates "accuracy not guaranteed".



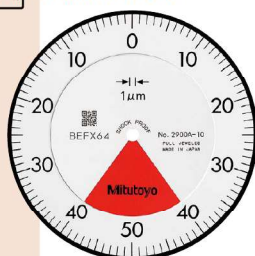
2900A-10



2929A



Balanced scale



Graduation: 0.001 mm,  
Measuring range: 0.08 mm

2900A-10

One revolution

Shockproof

Jeweled bearing

2900A-72

One revolution

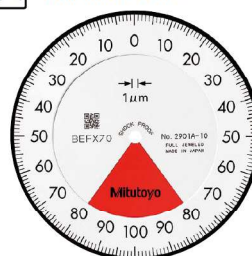
Shockproof

Dustproof

Jeweled bearing



Balanced scale



Graduation: 0.001 mm,  
Measuring range: 0.16 mm

2901A-10

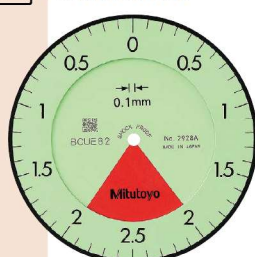
One revolution

Shockproof

Jeweled bearing



Balanced scale



Graduation: 0.1 mm,  
Measuring range: 4 mm

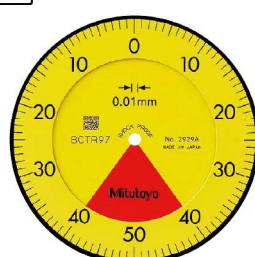
2928A

One revolution

Shockproof



Balanced scale



Graduation: 0.01 mm,  
Measuring range: 0.8 mm

2929A

One revolution

Shockproof

2929A-62

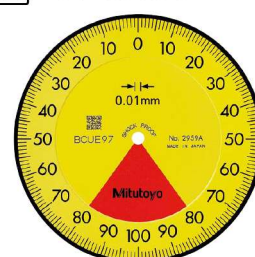
One revolution

Shockproof

Dustproof



Balanced scale



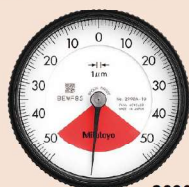
Graduation: 0.01 mm,  
Measuring range: 1.6 mm

2959A

One revolution

Shockproof

One revolution type Back Plunger dial gages are also available. (Refer to pages F-55 to F-56 for details.)



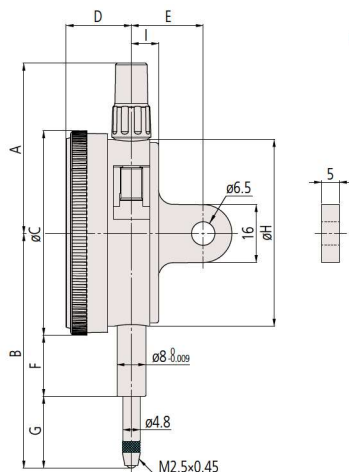
2990A-10

# Dial Indicators

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

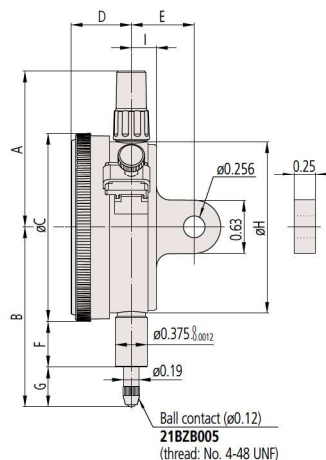
## DIMENSIONS

ISO/JIS  
Type



Unit: mm

ANSI/AGD  
Type



Unit: in

Order No.	A	B	C	D	E	F	G	H	I	Mass (g)	
										w/lug	Flat-back
2928A	47.2	65.2	57	18.1	20	16.9	19.8	52	7.6	145	136
2929A	47.2	65.2	57	18.1	20	16.9	19.8	52	7.6	145	136
2929A-62	47.2	65.2	57	18.1	20	16.9	19.8	52	7.6	145	136
2959A	47.2	65.2	57	18.1	20	16.9	19.8	52	7.6	145	136
2900A-10	47.2	66	57	18.1	20	16.9	20.6	52	7.6	149	140
2900A-72	47.2	66	57	18.1	20	16.9	20.6	52	7.6	149	140
2901A-10	47.2	66.1	57	18.1	20	16.9	20.7	52	7.6	149	140

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

Order No.	A	B	C	D	E	F	G	H	I	Mass (g)	
										w/lug	Flat-back
2909A-62	1.86	2.04	2.24	0.71	3/4	0.54	0.39	2.05	0.30	163	138
2910A-10	1.86	2.02	2.24	0.71	3/4	0.54	0.36	2.05	0.30	164	139

## FEATURES

Metric

Order No.	w/lug	Flat-back	10 0.10	10 0.05	10 0.02	10 0.01	10 0.005	10 0.002	10 0.001
2928A	2928AB	✓	✓	✓	✓	✓	✓	✓	✓
2929A	2929AB	✓	✓	✓	✓	✓	✓	✓	✓
2929A-62	2929AB-62	✓	✓	✓	✓	✓	✓	✓	✓
2959A	2959AB	✓	✓	✓	✓	✓	✓	✓	✓
2900A-10	2900AB-10	✓	✓	✓	✓	✓	✓	✓	✓
2900A-72	2900AB-72	✓	✓	✓	✓	✓	✓	✓	✓
2901A-10	2901AB-10	✓	✓	✓	✓	✓	✓	✓	✓

## SPECIFICATIONS

Metric

Order No.		Graduation (mm)	Range (range/rev) (mm)	Maximum permissible error (MPE) (μm)						Dial reading	Measuring force (N)
w/lug	Flat-back			Indication error				Hysteresis	Repeat- ability		
				1/10 Rev	1/2 Rev	1 Rev	Measuring range				
2928A	2928AB	0.1	4 (5)	20	—	—	40	20	20	2-0-2	1.4 or less
2929A	2929AB	0.01	0.8 (1)	5	—	—	8	3	3	40-0-40	1.4 or less
2929A-62	2929AB-62	0.01	0.8 (1)	5	—	—	8	3	3	40-0-40	2.0 or less
2959A	2959AB	0.01	1.6 (2)	5	—	—	10	3	3	80-0-80	1.4 or less
2900A-10	2900AB-10	0.001	0.08 (0.1)	2	—	—	3	2	0.5	40-0-40	1.5 or less
2900A-72	2900AB-72	0.001	0.08 (0.1)	2	—	—	3	2	0.5	40-0-40	2.0 or less
2901A-10	2901AB-10	0.001	0.16 (0.2)	2	—	—	4	2	0.5	80-0-80	1.5 or less

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

Inch

Order No.	w/lug	Flat-back	10 0.10	10 0.05	10 0.02	10 0.01	10 0.005	10 0.002	10 0.001
2909A-62	2909AB-62	✓	✓	✓	✓	✓	✓	✓	✓
2910A-10	2910AB-10	✓	✓	✓	✓	✓	✓	✓	✓

Inch

Order No.		Graduation (in)	Range (range/rev) (in)	Accuracy (in)		Repeat- ability (in)	Dial reading	Measuring force (N)
w/lug	Flat-back			First 1 Rev/2.5 Rev/10 Rev	Retrace			
2909A-62	2909AB-62	0.0005	0.04/0.05	±0.0005/—/—	0.00016	±0.0001	20-0-20	2.5 or less
2910A-10	2910AB-10	0.0001	0.008/0.01	±0.0001/—/—	0.0001	±0.00003	4-0-4	1.8 or less

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

## Optional Accessories

- Limit hand (2 pcs.): **21AZB195**
- Bezel clamp: **21AZB148**





An inspection certificate is supplied as standard.  
Refer to page U-9 for details.

IP64

# Dial Indicators

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

## SERIES 2 — Standard One Revolution Type for Error-free Reading, Water-proof Type

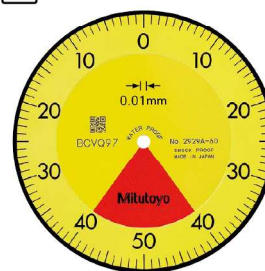
- Mitutoyo's unique shock-proof mechanism is incorporated, providing improved resistance to shock due to sudden spindle retraction caused by impact.
- This series has been developed to eliminate the possibility of reading errors due to miscounting multiple revolutions.
- The bezel clamp and lifting lever (optional) can be attached to either the right or left side. These parts can be easily installed and removed without tools.
- The stem and spindle are made of high-strength quench-hardened stainless steel suitable for heavy-duty use.
- A carbide contact point is used.
- Application of an anti-reflective and hard surface coating improves scale visibility along with scratch and chemical resistance.
- The dead zone in red indicates "accuracy not guaranteed".



2929A-60



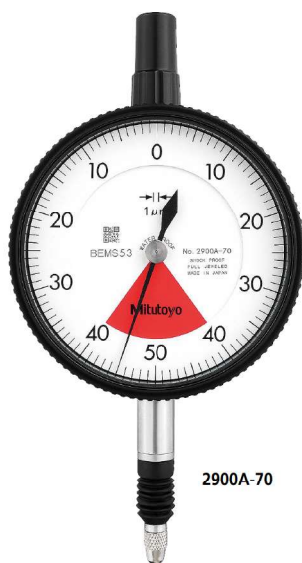
Balanced scale



Graduation: 0.01 mm,  
Measuring range: 0.8 mm

2929A-60

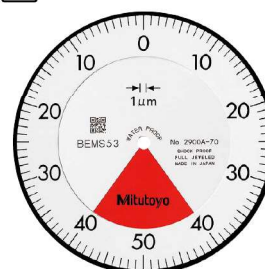
- One revolution
- Shockproof
- Waterproof



2900A-70



Balanced scale



Graduation: 0.001 mm,  
Measuring range: 0.08 mm

2900A-70

- One revolution
- Shockproof
- Waterproof
- Jeweled bearing

# Dial Indicators

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

## DIMENSIONS

ISO / JIS  
Type

Unit: mm

Technical drawing of ISO/JIS type dial indicator. Dimensions: A (total height), B (height to start of thread), C (height to start of graduation), D (height to start of contact point), E (height to top of contact point), F (height to bottom of contact point), G (height to bottom of contact point), H (height to bottom of contact point), I (height to bottom of contact point). Contact point:  $\phi 3$  902119 (29005-70) (threaded: M2.5x0.45).

ANSI / AGD  
Type

Unit: in

Technical drawing of ANSI/AGD type dial indicator. Dimensions: A (total height), B (height to start of thread), C (height to start of graduation), D (height to start of contact point), E (height to top of contact point), F (height to bottom of contact point), G (height to bottom of contact point), H (height to bottom of contact point), I (height to bottom of contact point). Contact point:  $\phi 0.12$  21BZB005 (thread: No. 4-48 UNF).

Order No.	A	B	C	D	E	F	G	H	I	Mass (g)	
										w/lug	Flat-back
2929A-60	47.2	70	57	18.1	20	12.3	29.2	52	7.6	146	137
2900A-70	47.2	67	57	18.1	20	12.3	26.2	52	7.6	150	141

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

ANSI / AGD  
Type

Unit: in

Technical drawing of ANSI/AGD type dial indicator. Dimensions: A (total height), B (height to start of thread), C (height to start of graduation), D (height to start of contact point), E (height to top of contact point), F (height to bottom of contact point), G (height to bottom of contact point), H (height to bottom of contact point), I (height to bottom of contact point). Contact point:  $\phi 0.12$  21BZB005 (thread: No. 4-48 UNF).

Order No.	A	B	C	D	E	F	G	H	I	Mass (g)	
										w/lug	Flat-back
2910A-72	1.86	2.02	2.24	0.71	3/4	0.54	0.36	2.05	0.30	150	141

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

## FEATURES

Metric							
Order No.		10 0 10	10 0 10	10 0 10	10 0 10	10 0 10	10 0 10
2929A-60	2929AB-60	✓	✓	✓	✓	✓	✓
2900A-70	2900AB-70	✓	✓	✓	✓	✓	✓

Inch							
Order No.		10 0 10	10 0 10	10 0 10	10 0 10	10 0 10	10 0 10
2910A-72	2910AB-72	✓	✓	✓	✓	✓	✓

## SPECIFICATIONS

Metric									ISO/JIS type		
Order No.		Graduation (mm)	Range (range/rev) (mm)	Maximum permissible error (MPE) (μm)					Dial reading	Measuring force (N)	
w/lug	Flat-back			Indication error				Hysteresis			Repeat- ability
				1/10 Rev	1/2 Rev	1 Rev	Measuring range				
2929A-60	2929AB-60	0.01	0.8 (1)	5	—	—	8	3	3	40-0-40	2.0 or less
2900A-70	2900AB-70	0.001	0.08 (0.1)	2	—	—	3	2	0.5	40-0-40	2.0 or less

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

Inch				<input type="checkbox"/> ANSI/AGD type				
Order No.		Graduation (in)	Range (range/rev) (in)	Accuracy (in)		Repeat- ability (in)	Dial reading	Measuring force (N)
w/lug	Flat-back			First 1 Rev/2.5 Rev/10 Rev	Retrace			
2910A-72	2910AB-72	0.0001	0.008/0.01	±0.0001/—/—	0.0001	±0.00003	4-0-4	2.5 or less

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

## Optional Accessories

- Limit hand (2 pcs.): 21AZB195
- Bezel clamp: 21AZB148



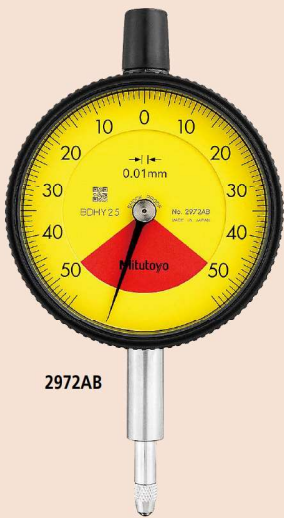
An inspection certificate is supplied as standard.  
Refer to page U-9 for details.

# Dial Indicators

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

## SERIES 2 — Standard One Revolution Type for Error-free Reading, Lightweight Type

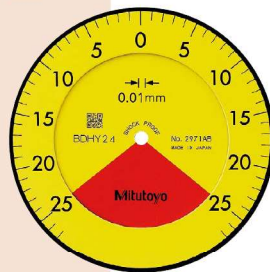
- Mitutoyo's unique shock-proof mechanism is incorporated, providing improved resistance to shock due to sudden spindle retraction caused by impact.
- This series has been developed to eliminate the possibility of reading errors due to miscounting multiple revolutions.
- The stem and spindle are made of high-strength quench-hardened stainless steel suitable for heavy-duty use.
- A carbide contact point is used.
- Application of an anti-reflective and hard surface coating improves scale visibility along with scratch and chemical resistance.
- Lightweight type (70 g).
- The dead zone in red indicates "accuracy not guaranteed".



2972AB



Balanced scale



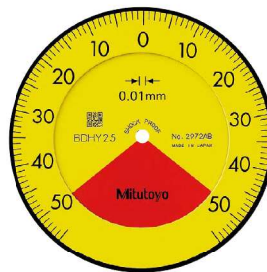
Graduation: 0.01 mm,  
Measuring range: 0.5 mm

2971AB

- One revolution
- Shockproof
- Dustproof



Balanced scale



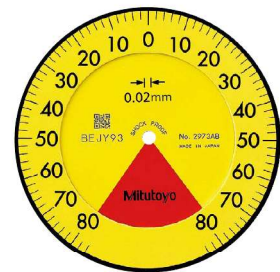
Graduation: 0.01 mm,  
Measuring range: 1 mm

2972AB

- One revolution
- Shockproof
- Dustproof



Balanced scale



Graduation: 0.02 mm,  
Measuring range: 1.6 mm

2973AB

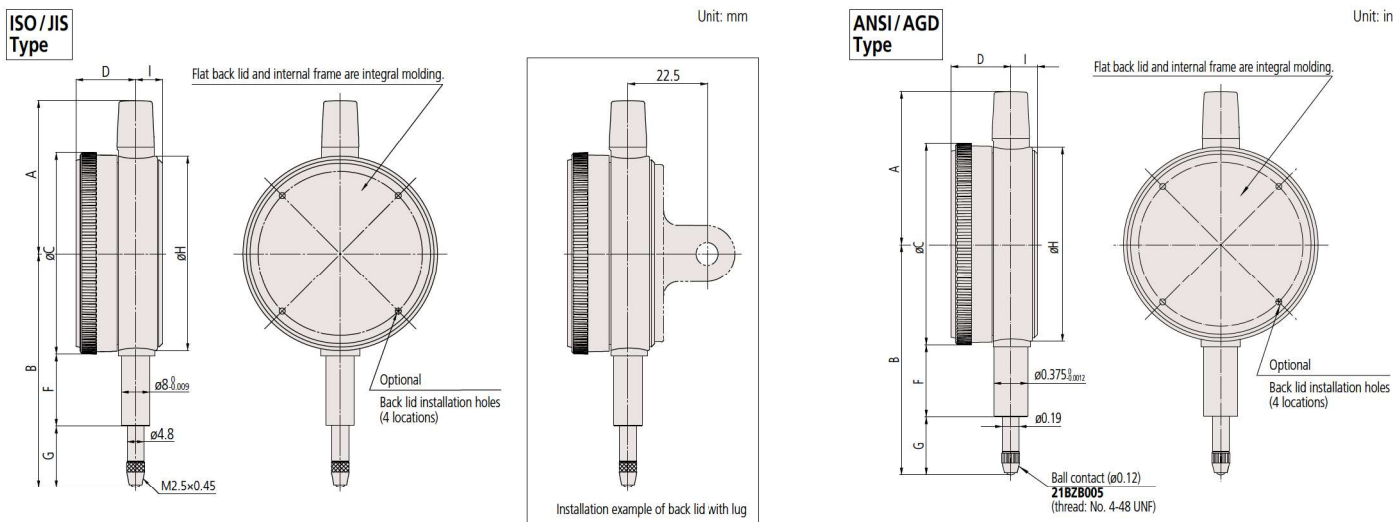
- One revolution
- Shockproof
- Dustproof



# Dial Indicators

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

## DIMENSIONS



Note 1: When installing an optional back (refer to page F-61 for details) 4 retaining screws must also be obtained (**546666**: Self-tapping screw only for plastic).  
Do not apply a tightening torque of more than 20 N-cm in order to avoid stripping the screw threads.  
Note 2: An optional lifting lever, release or bezel clamp cannot be installed.

Metric									
Order No.	A	B	C	D	F	G	H	I	Mass (g)
<b>2971AB</b>	43.2	65.6	57	16.5	21	16.8	55	7.6	70
<b>2972AB</b>	43.2	66	57	16.5	21	17.2	55	7.6	
<b>2973AB</b>	43.2	66.3	57	16.5	21	17.5	55	7.6	

Inch									
Order No.	A	B	C	D	F	G	H	I	Mass (g)
<b>2976AB</b>	1.70	2.55	2.24	0.65	0.80	0.63	2.17	0.30	70
<b>2977AB</b>	1.70	2.56	2.24	0.65	0.80	0.64	2.17	0.30	
<b>2978AB</b>	1.70	2.57	2.24	0.65	0.80	0.65	2.17	0.30	

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

## FEATURES

Metric					
Order No.	Flat-back	10 0 10	10 0 10	10 0 10	10 0 10
— <b>2971AB</b>	✓	✓	✓	✓	✓
— <b>2972AB</b>	✓	✓	✓	✓	✓
— <b>2973AB</b>	✓	✓	✓	✓	✓

## SPECIFICATIONS

Metric										ISO/JIS type	
Order No.		Graduation (mm)	Range (range/rev) (mm)	Maximum permissible error (MPE) (μm)						Dial reading	Measuring force (N)
w/lug	Flat-back			Indication error				Hysteresis	Repeat-ability		
				1/10 Rev	1/2 Rev	1 Rev	Measuring range				
—	2971AB	0.01	0.5 (0.7)	5	—	—	8	3	3	25-0-25	1.4 or less
—	2972AB	0.01	1 (1.4)	5	—	—	8	3	3	50-0-50	1.4 or less
—	2973AB	0.02	1.6 (2)	8	—	—	16	6	5	80-0-80	1.4 or less

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

Inch					
Order No.	Flat-back	10 0 10	10 0 10	10 0 10	10 0 10
— <b>2976AB</b>	✓	✓	✓	✓	✓
— <b>2977AB</b>	✓	✓	✓	✓	✓
— <b>2978AB</b>	✓	✓	✓	✓	✓

Inch										ANSI/AGD type		
Order No.	w/lug	Flat-back	Graduation (in)	Range (range/rev) (in)	Accuracy (in)			Repeat-ability (in)	Dial reading	Measuring force (N)		
					First 1 Rev/2.5 Rev/10 Rev	Retrace						
— <b>2976AB</b>			0.0005	0.02 (0.028)	±0.0005/—/—	0.00016	±0.0001	±0.0001	10-0-10	1.4 or less		
— <b>2977AB</b>			0.0005	0.04 (0.055)	±0.0005/—/—	0.00016	±0.0001	±0.0001	20-0-20	1.4 or less		
— <b>2978AB</b>			0.001	0.06 (0.079)	±0.001/—/—	0.0002	±0.0002	±0.0002	30-0-30	1.4 or less		

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

## Optional Accessory

- Limit hand (2 pcs.): **21AZB195**



An inspection certificate is supplied as standard.  
Refer to page U-9 for details.

# Dial Indicators

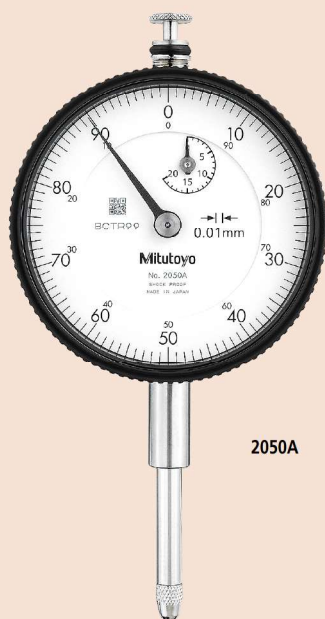
Comparison measuring instruments which ensure high quality, high accuracy and reliability.

## SERIES 2 — Long Stroke Type

- Long stroke dial indicators with a  $\varnothing 57$  mm bezel.
- Watertight assembly of bezel and crystal as well as the use of an O-ring prevents water or oil penetration.
- The stem and the spindle are made of high-strength quench-hardened stainless steel suitable for heavy-duty use.
- A carbide contact point is employed.
- The grand gear is made of stainless steel with high resistance to wear and deformation.

- Application of an anti-reflective and hard surface coating improves scale visibility along with scratch and chemical resistance.
- The bezel clamp and lifting lever\* (optional) can be attached to either the right or left side. These parts can be easily installed and removed without any tools.

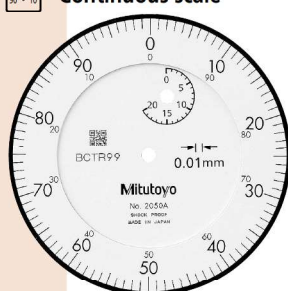
\* These cannot be used on water-proof models and models with a measuring range of 30 mm.



2050A



Continuous scale



Graduation: 0.01 mm,  
Measuring range: 20 mm

2050A

- With damper at lowest rest point

2050A-19

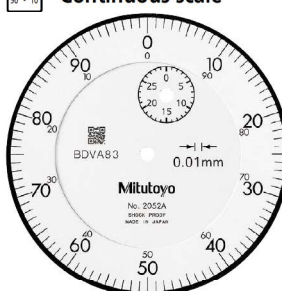
- Shockproof
- Jeweled bearing
- With damper at lowest rest point

2050A-60

- Waterproof



Continuous scale



Graduation: 0.01 mm,  
Measuring range: 30 mm

2052A

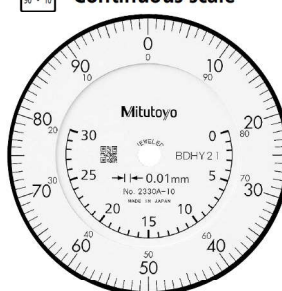
- With damper at lowest rest point

2052A-19

- Shockproof
- Jeweled bearing
- With damper at lowest rest point



Continuous scale



Graduation: 0.01 mm,  
Measuring range: 30 mm

2330A-10

- With coaxial revolution counter

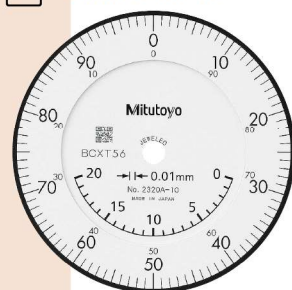
- With damper at lowest rest point
- Jeweled bearing



2050A-60



Continuous scale



Graduation: 0.01 mm,  
Measuring range: 20 mm

2320A-10

- With coaxial revolution counter

- With damper at lowest rest point
- Jeweled bearing



Reverse reading



Graduation: 0.01 mm,  
Measuring range: 30 mm

2952A

- With damper at lowest rest point



# Dial Indicators

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

## FEATURES

Metric									
Order No.		ISO/JIS Type	Flat-back	60°	60°	60°	60°	60°	60°
2050A	2050AB	✓							
2050A-60	2050AB-60	✓							
2050A-19	2050AB-19	✓							
2320A-10	2320AB-10	✓							
2052A	2052AB	✓							
2052A-19	2052AB-19	✓							
2330A-10	2330AB-10	✓							
2952A	2952AB	✓							

## SPECIFICATIONS

Metric										ISO/JIS type	
Order No.		Graduation (mm)	Range (range/rev) (mm)	Maximum permissible error (MPE) (μm)						Dial reading	Measuring force (N)
w/lug	Flat-back			Indication error				Hysteresis	Repeat-ability		
				1/10 Rev	1/2 Rev	1 Rev	Measuring range				
2050A	2050AB	0.01	20 (1)	8	10	15	20	5	4	±0-100	2.0 or less
2050A-60*	2050AB-60*	0.01	20 (1)	8	10	15	20	5	4	±0-100	2.5 or less
2050A-19	2050AB-19	0.01	20 (1)	8	10	15	20	5	4	±0-100	2.0 or less
2320A-10	2320AB-10	0.01	20 (1)	8	10	15	20	5	4	±0-100	2.0 or less
2052A	2052AB	0.01	30 (1)	10	12	15	25	7	5	±0-100	2.5 or less
2052A-19	2052AB-19	0.01	30 (1)	10	12	15	25	7	5	±0-100	2.5 or less
2330A-10	2330AB-10	0.01	30 (1)	10	12	15	25	7	5	±0-100	2.5 or less
2952A	2952AB	0.01	30 (1)	10	12	15	25	7	5	100-0	2.5 or less

\* 2050A-60 and 2050AB-60 are water-proof types that use a rubber bellows to cover the spindle.

Note: The outer diameter of the bellows (ø9.5) is larger than that of the stem (ø8).

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

Inch									
Order No.		ANSI/AGD Type	Flat-back	60°	60°	60°	60°	60°	60°
2416A	2416AB	✓							
2416A-06	2416AB-06	✓							
2416A-10	2416AB-10	✓							
2417A	2417AB	✓							
2424A-19	2424AB-19	✓							
2776A	2776AB	✓							
2904A	2904AB	✓							

Inch		ANSI/AGD type							
Order No.		Graduation (in)	Range (range/rev) (in)	Accuracy (in)		Repeat-ability (in)	Dial reading	Measuring force (N)	
w/lug	Flat-back			First 1 Rev/2.5 Rev/10 Rev					Retrace
2416A	2416AB	0.001	1 (0.1)	±0.001/±0.001/±0.002		0.0002	±0.0002	±0-100	1.8 or less
2416A-06	2416AB-06	0.001	1 (0.1)	±0.001/±0.001/±0.002		0.0002	±0.0002	±0-100	1.8 or less
2416A-10	2416AB-10	0.001	1 (0.1)	±0.001/±0.001/±0.002		0.0002	±0.0002	±0-100	1.8 or less
2417A	2417AB	0.001	1 (0.1)	±0.001/±0.001/±0.002		0.0002	±0.0002	0-50-0	1.8 or less
2424A-19	2424AB-19	0.001	2 (0.1)	±0.001/±0.001/±0.002/±0.003 (First 20 Rev)		0.00033	±0.0002	±0-100	2.5 or less
2776A	2776AB	0.0005	1 (0.05)	±0.0005/±0.0005/±0.0015/±0.002 (First 20 Rev)		0.0002	±0.0001	±0-50	2.5 or less
2904A	2904AB	0.001	1 (0.1)	±0.001/±0.001/±0.002		0.0002	±0.0002	100-0	1.8 or less

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

## DIMENSIONS

ISO/JIS Type		Unit: mm										ANSI/AGD Type		Unit: in									
Order No.		A	B	C	D	E	F	G	H	I	Mass (g)	Order No.		A	B	C	D	E	F	G	H	I	Mass (g)
2050A	2050AB	38.8	75.2	57	17.7	20	16.9	29.8	52	7.6	149	2416A	2416AB	1.53	3.02	2.24	0.70	3/4	0.54	1.37	2.05	0.30	164
2050A-60	2050AB-60	59.8	87.2	57	17.7	20	12.3	46.4	52	7.6	155	2416A-06	2416AB-06	1.53	3.02	2.24	0.70	3/4	0.54	1.37	2.05	0.30	164
2050A-19	2050AB-19	38.8	75.2	57	17.7	20	16.9	29.8	52	7.6	149	2416A-10	2416AB-10	1.53	3.02	2.24	0.70	3/4	0.54	1.37	2.05	0.30	164
2320A-10	2320AB-10	38.8	75.2	57	17.7	20	16.9	29.8	52	7.6	150	2417A	2417AB	1.53	3.02	2.24	0.70	3/4	0.54	1.37	2.05	0.30	164
2052A	2052AB	38.8	88.7	57	17.7	20	16.9	43.3	52	7.6	152	2424A-19	2424AB-19	4.65	5.61	2.24	0.70	5/6	2.14	2.35	2.05	0.37	248
2052A-19	2052AB-19	38.8	88.7	57	17.7	20	16.9	43.3	52	7.6	152	2776A	2776AB	1.53	3.02	2.24	0.70	3/4	0.54	1.37	2.05	0.30	164
2330A-10	2330AB-10	38.8	88.7	57	17.7	20	16.9	43.3	52	7.6	153	2904A	2904AB	1.53	3.02	2.24	0.70	3/4	0.54	1.37	2.05	0.30	164
2952A	2952AB	38.8	88.7	57	17.7	20	16.9	43.3	52	7.6	152												

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

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





An inspection certificate is supplied as standard.  
Refer to page U-9 for details.

# Dial Indicators

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

## SERIES 1 — Compact Type, Extra Small Diameter

- Compact dial indicators with bezel diameters of 31 or 36 mm for restricted-space applications in gaging jigs.



1911A-10



Balanced scale



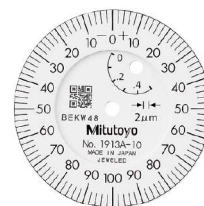
Graduation: 0.01 mm,  
Measuring range: 2.5 mm

1911A-10

Jeweled bearing



Balanced scale



Graduation: 0.02 mm,  
Measuring range: 0.5 mm

1913A-10

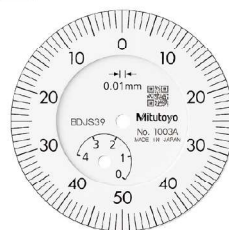
Jeweled bearing



1003A



Balanced scale



Graduation: 0.01 mm,  
Measuring range: 4 mm

1003A

# Dial Indicators

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



An inspection certificate is supplied as standard. Refer to page U-9 for details.

## DIMENSIONS

ISO/JIS  
Type

1911A-10/1913A-10

1003A

ANSI/AGD  
Type

1921A-10/1923A-10/1925A-10

Unit: mm

Unit: in

Metric

Unit: mm

Order No.	A	B	C	D	E	F	G	H	I	Mass (g)	
										w/lug	Flat-back
1911A-10	15.5	42	31	13.2	19.2	15	11.5	30	5.9	56	52
1913A-10	15.5	39.5	31	13.2	19.2	15	9	30	5.9	56	52
1003A	18	40.3	36	13.5	15	9.5	12.8	32	6	61	58

Inch

Unit: in

Order No.	A	B	C	D	E	F	G	H	I	Mass (g)	
										w/lug	Flat-back
1921A-10	0.61	1.57	1.22	0.52	3/4	0.59	0.37	1.18	0.27	56	52
1923A-10	0.61	1.51	1.22	0.52	3/4	0.59	0.31	1.18	0.27	56	52
1925A-10	0.61	1.48	1.22	0.53	3/4	0.59	0.28	1.18	0.27	56	52

Note 1: Limit hands, bezel clamps and lifting levers cannot be installed.

Note 2: The shoulder on a contact point (standard accessory) 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 3: Being fixed by only two retaining screws, the back cannot be rotated by 90° to change the orientation of the lug.

## SPECIFICATIONS

Metric

ISO/JIS type

Order No.	w/lug	Flat-back	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				
1911A-10	1911AB-10	0.01	2.5 (1)	8	9	10	12	4	3	0-50-0	1.8 or less	
1913A-10	1913AB-10	0.002	0.5 (0.2)	2.5	4	5	6	2.5	1	0-100-0	1.8 or less	
1003A	1003AB	0.01	4 (1)	8	10	11	13	4	3	0-50-0	1.4 or less	

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

Inch

ANSI/AGD type

Order No.	w/lug	Flat-back	Graduation (in)	Range (range/rev) (in)	Accuracy (in)			Repeat-ability (in)	Dial reading	Measuring force (N)
					First 1 Rev/2.5 Rev/10 Rev		Retrace			
					First 1 Rev	2.5 Rev				
1921A-10	1921AB-10	0.001	0.1 (0.04)	±0.001	±0.001	—	0.0002	±0.0002	0-20-0	1.8 or less
1923A-10	1923AB-10	0.0005	0.05 (0.02)	±0.0005	±0.0005	—	0.00016	±0.0001	0-10-0	1.8 or less
1925A-10	1925AB-10	0.0001	0.025 (0.01)	±0.0002	±0.0002	—	0.0001	±0.00003	0-5-0	1.8 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-9 for details.

# Dial Indicators

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

## SERIES 1 — Compact Type, Small Diameter

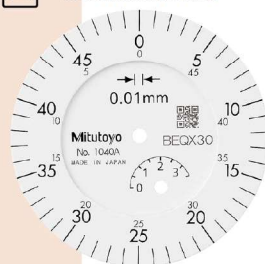
- Compact dial indicators ideal for restricted-space applications in gaging jigs.
- Watertight assembly of bezel and crystal as well as the use of an O-ring prevents water or oil penetration.
- The stem and spindle are made of high-strength quench-hardened stainless steel suitable for heavy-duty use.
- A carbide contact point is used.
- Application of an anti-reflective and hard surface coating improves scale visibility along with scratch and chemical resistance.



1044A

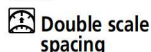


Continuous scale



Graduation: 0.01 mm,  
Measuring range: 3.5 mm

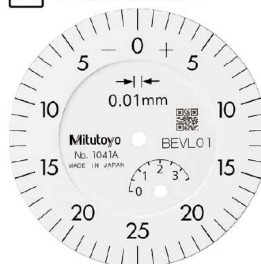
1040A



Double scale spacing

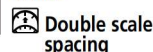


Balanced scale



Graduation: 0.01 mm,  
Measuring range: 3.5 mm

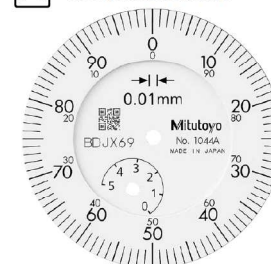
1041A



Double scale spacing



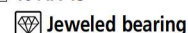
Continuous scale



Graduation: 0.01 mm,  
Measuring range: 5 mm

1044A

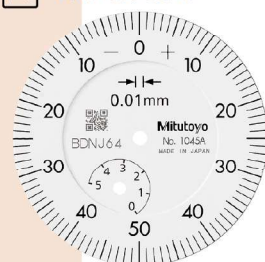
1044A-15



Jeweled bearing



Balanced scale

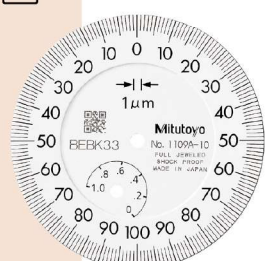


Graduation: 0.01 mm,  
Measuring range: 5 mm

1045A



Balanced scale



Graduation: 0.001 mm,  
Measuring range: 1 mm

1109A-10



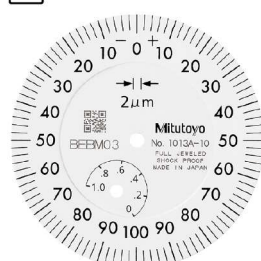
Shockproof



Jeweled bearing



Balanced scale



Graduation: 0.002 mm,  
Measuring range: 1 mm

1013A-10



Shockproof



Jeweled bearing



Continuous scale



Graduation: 0.005 mm,  
Measuring range: 3.5 mm

1124A



1109A-10



# Dial Indicators

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



Continuous scale



Graduation: 0.01 mm, Measuring range: 5 mm

1044A-60

Waterproof

1044A-60

## SPECIFICATIONS

Metric		ISO/JIS type									
Order No.		Graduation (mm)	Range (range/rev) (mm)	Maximum permissible error (MPE) (μm)						Dial reading	Measuring force (N)
w/lug	Flat-back			Indication error				Hysteresis	Repeat- ability		
				1/10 Rev	1/2 Rev	1 Rev	Measuring range				
1013A-10	1013AB-10	0.002	1 (0.2)	2.5	4	5	6	2.5	1	0-100-0	1.5 or less
1040A	1040AB	0.01	3.5 (0.5)	8	10	11	13	4	3	±0-50	1.4 or less
1041A	1041AB	0.01	3.5 (0.5)	8	10	11	13	4	3	0-25-0	1.4 or less
1044A	1044AB	0.01	5 (1)	8	10	11	13	4	3	±0-100	1.4 or less
1044A-15	1044AB-15	0.01	5 (1)	8	10	11	13	4	3	±0-100	0.4 or less*
1044A-60	1044AB-60	0.01	5 (1)	8	10	11	13	4	3	±0-100	2.0 or less
1045A	1045AB	0.01	5 (1)	8	10	11	13	4	3	0-50-0	1.4 or less
1109A-10	1109AB-10	0.001	1 (0.2)	2.5	3.5	4.5	5	2	1	0-100-0	1.5 or less
1124A	1124AB	0.005	3.5 (0.5)	6	9	10	12	3.5	3	±0-50	1.4 or less

\* For low measuring force type, use in the vertical orientation.

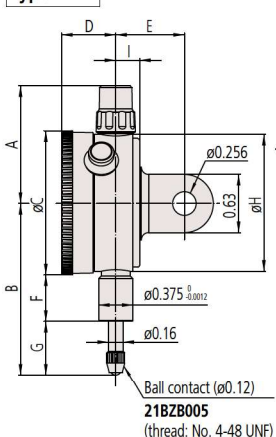
Note: Completed products inspection is performed in the vertical orientation (contact point downward) and the stated accuracy is guaranteed.

Inch		ANSI/AGD type									
Order No.		Graduation (in)	Range (range/rev) (in)	Accuracy (in)			Repeat-ability (in)	Dial reading	Measuring force (N)		
w/lug	Flat-back			First 1 Rev/2.5 Rev/10 Rev	Retrace						
1410A	1410AB	0.001	0.25 (0.1)	±0.001/±0.001/—	0.0002	±0.0002	0-100	1.4 or less			
1411A	1411AB	0.001	0.25 (0.1)	±0.001/±0.001/—	0.0002	±0.0002	0-50-0	1.4 or less			
1410A-10	1410AB-10	0.001	0.25 (0.1)	±0.001/±0.001/—	0.0002	±0.0002	0-100	1.4 or less			
1780A	1780AB	0.001	0.125 (0.05)	±0.001/±0.001/—	0.0002	±0.0002	0-50	1.4 or less			
1781A	1781AB	0.001	0.125 (0.05)	±0.001/±0.001/—	0.0002	±0.0002	0-25-0	1.4 or less			
1506A	1506AB	0.0005	0.125 (0.05)	±0.0005/±0.0005/—	0.00016	±0.0001	0-50	1.4 or less			
1507A	1507AB	0.0005	0.125 (0.05)	±0.0005/±0.0005/—	0.00016	±0.0001	0-25-0	1.4 or less			
1670A	1670AB	0.0005	0.1 (0.04)	±0.0005/±0.0005/—	0.00016	±0.0001	0-40	1.4 or less			
1671A	1671AB	0.0005	0.1 (0.04)	±0.0005/±0.0005/—	0.00016	±0.0001	0-20-0	1.4 or less			
1802A-10	1802AB-10	0.0001	0.025 (0.01)	±0.0001/±0.0001/—	0.0001	±0.00003	0-10	1.5 or less			
1803A-10	1803AB-10	0.0001	0.025 (0.01)	±0.0001/±0.0001/—	0.0001	±0.00003	0-5-0	1.5 or less			

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

## DIMENSIONS

ANSI/AGD Type

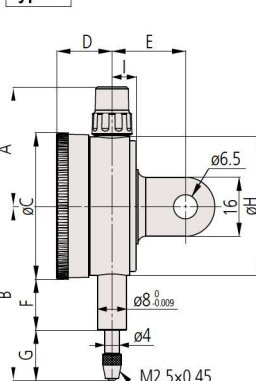


Unit: in

Order No.	A	B	C	D	E	F	G	H	I
1410A	1.28	1.87	1.57	0.57	3/4	0.50	0.58	1.50	0.26
1411A	1.28	1.87	1.57	0.57	3/4	0.50	0.58	1.50	0.26
1410A-10	1.28	1.87	1.57	0.57	3/4	0.50	0.58	1.50	0.26
1780A	1.28	1.74	1.57	0.57	3/4	0.50	0.44	1.50	0.26
1781A	1.28	1.74	1.57	0.57	3/4	0.50	0.44	1.50	0.26
1506A	1.28	1.74	1.57	0.57	3/4	0.50	0.44	1.50	0.26
1507A	1.28	1.74	1.57	0.57	3/4	0.50	0.44	1.50	0.26
1670A	1.28	1.71	1.57	0.57	3/4	0.50	0.42	1.50	0.26
1671A	1.28	1.71	1.57	0.57	3/4	0.50	0.42	1.50	0.26
1802A-10	1.28	1.63	1.57	0.57	3/4	0.50	0.33	1.50	0.26
1803A-10	1.28	1.63	1.57	0.57	3/4	0.49	0.33	1.50	0.26

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

ISO/JIS Type



Unit: mm

Order No.	A	B	C	D	E	F	G	H	I
1013A-10	32.5	49	40	14.5	20	13.8	15.2	38	6.6
1040A	32.5	46	40	14.5	20	13.8	12.2	38	6.6
1041A	32.5	46	40	14.5	20	13.8	12.2	38	6.6
1044A	32.5	47.5	40	14.5	20	13.8	13.7	38	6.6
1044A-15*	32.5	47.5	40	14.5	20	13.8	13.7	38	6.6
1044A-60	32.5	57	40	14.5	20	12.2	24.8	38	6.6
1045A	32.5	47.5	40	14.5	20	13.8	13.7	38	6.6
1109A-10	32.5	49	40	14.5	20	13.8	15.2	38	6.6
1124A	32.5	46	40	14.5	20	13.8	12.2	38	6.6

\* 3 Use in the vertical orientation (contact point downward) for the low measuring force model.

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








An inspection certificate is supplied as standard. Refer to page U-9 for details.

## Optional Accessories

- Limit hand (2 pcs.): 21AAB363
- Bezel clamp: 21RZA149

## FEATURES

Metric							
Order No.							
w/lug	Flat-back						
1013A-10	1013AB-10		✓		✓	✓	
1040A	1040AB	✓		✓			
1041A	1041AB		✓	✓			
1044A	1044AB	✓					
1044A-15	1044AB-15	✓			✓		
1044A-60	1044AB-60	✓				✓	
1045A	1045AB		✓				
1109A-10	1109AB-10		✓		✓		
1124A	1124AB	✓					



An inspection certificate is supplied as standard.  
Refer to page U-9 for details.

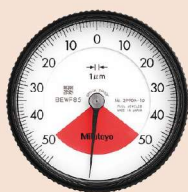
# Dial Indicators

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

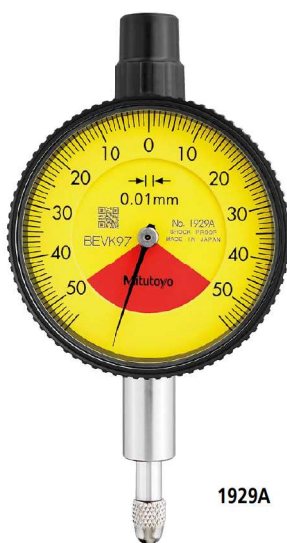
## SERIES 1 — Compact One Revolution Type for Error-free Reading

- Compact dial indicators ideal for restricted-space applications in gaging jigs.
- Mitutoyo's unique shock-proof mechanism is incorporated, providing improved resistance to shock due to sudden spindle retraction caused by impact.
- This series has been developed to eliminate the possibility of reading errors due to miscounting multiple revolutions.
- The dead zone in red indicates "accuracy not guaranteed".
- One revolution type Back Plunger dial gages are also available. (Refer to pages F-55 to F-56 for details)

One revolution type Back plunger dial gages are also available. (Refer to pages F-55 to F-56 for details.)



2990A-10



1929A



Balanced scale



Graduation: 0.01 mm,  
Measuring range: 1 mm

1929A

One revolution

Shockproof

1929A-62

One revolution

Shockproof

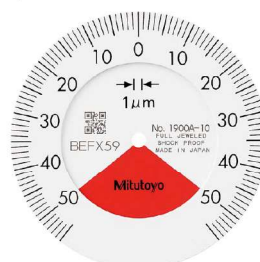
Dustproof



1900A-10



Balanced scale



Graduation: 0.001 mm,  
Measuring range: 0.1 mm

1900A-10

One revolution

Shockproof

Jeweled bearing

1900A-72

One revolution

Shockproof

Dustproof

Jeweled bearing



# Dial Indicators

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

## FEATURES

Metric						
Order No.						
w/lug	Flat-back					
1929A	1929AB	✓	✓			✓
1929A-62	1929AB-62	✓	✓		✓	✓
1900A-10	1900AB-10	✓	✓	✓		✓
1900A-72	1900AB-72	✓	✓	✓	✓	✓

## SPECIFICATIONS

Metric		ISO/JIS type									
Order No.		Graduation (mm)	Range (range/rev) (mm)	Maximum permissible error (MPE) (μm)				Hysteresis	Repeat-ability	Dial reading	Measuring force (N)
w/lug	Flat-back			Indication error							
				1/10 Rev	1/2 Rev	1 Rev	Measuring range				
1929A	1929AB	0.01	1 (1.4)	7	—	—	11	4	3	50-0-50	1.4 or less
1929A-62	1929AB-62	0.01	1 (1.4)	7	—	—	11	4	3	50-0-50	1.4 or less
1900A-10	1900AB-10	0.001	0.1 (0.14)	2.5	—	—	5	2	1	50-0-50	1.5 or less
1900A-72	1900AB-72	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						
Order No.						
w/lug	Flat-back					
1909A-62	1909AB-62	✓	✓		✓	✓
1910A-72	1910AB-72	✓	✓	✓	✓	✓

Inch				ANSI/AGD type						
Order No.		Graduation (in)	Range (range/rev) (in)	Accuracy (in)		Repeat-ability (in)	Dial reading	Measuring force (N)		
w/lug	Flat-back			First 1 Rev/2.5 Rev/10 Rev	Retrace					
1909A-62	1909AB-62	0.0005	0.04 (0.056)	±0.0005/—/—	0.00016	±0.0001	20-0-20	1.4 or less		
1910A-72	1910AB-72	0.0001	0.006 (0.008)	±0.0001/—/—	0.0001	±0.00003	3-0-3	1.5 or less		

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

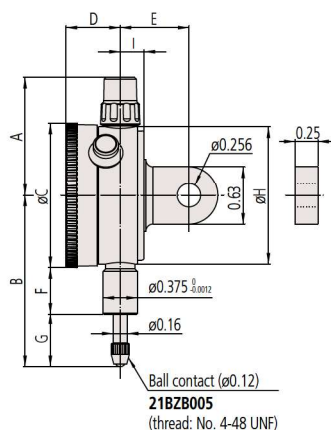
## DIMENSIONS

ANSI/AGD Type

Unit: in

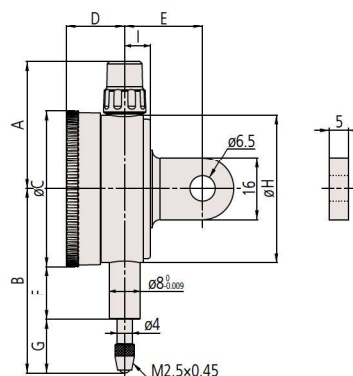
ISO/JIS Type

Unit: mm



Order No.	A	B	C	D	E	F	G	H	I	Mass (g)	
										w/lug	Flat-back
1909A-62	1.28	1.64	1.57	0.57	0.75	0.50	0.35	1.50	0.26	90	70
1910A-72	1.28	1.61	1.57	0.57	0.75	0.50	0.31	1.50	0.26	90	70

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



Order No.	A	B	C	D	E	F	G	H	I	Mass (g)	
										w/lug	Flat-back
1929A	32.5	47.5	40	14.5	20	13.8	13.7	38	6.6	90	70
1929A-62	32.5	47.5	40	14.5	20	13.8	13.7	38	6.6	90	70
1900A-10	32.5	53.5	40	14.5	20	16.8	16.7	38	6.6	95	75
1900A-72	32.5	53.5	40	14.5	20	16.8	16.7	38	6.6	95	75

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

## Optional Accessories

- Limit hand (2 pcs.): **21AAB363**
- Bezel clamp: **21RZA149**





An inspection certificate is supplied as standard.  
Refer to page U-9 for details.

# Dial Indicators

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

## SERIES 3, 4 — Long StrokeType, Large Diameter

### Optional Accessories

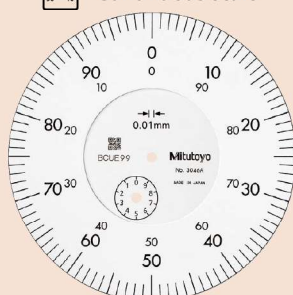
- Limit hand (2 pcs.): **21AZB195**
- Bezel clamp: **21AZB148**

- Dial indicators with a large-diameter dial face for easy reading.
- Models with longer measuring ranges are also available.
- All types are supplied with limit markers and a bezel clamp as standard.
- The stem and spindle are made of high-strength quench-hardened stainless steel suitable for heavy-duty use.
- A carbide contact point is used.
- The bezel clamp and lifting lever\* (optional) can be attached to either the right or left side. These parts can be easily installed and removed without tools.

\* Can be attached only to  
**3046A, 3047A, 3050A, 3109A-10 and 4046A.**



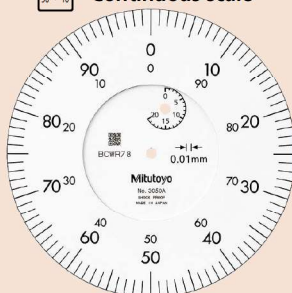
Continuous scale



Graduation: 0.01 mm, Measuring range: 10 mm **3046A**



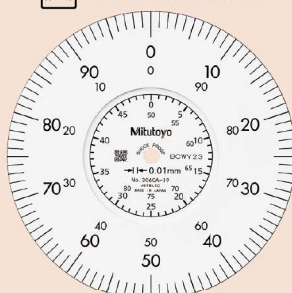
Continuous scale



Graduation: 0.01 mm, Measuring range: 20 mm **3050A**



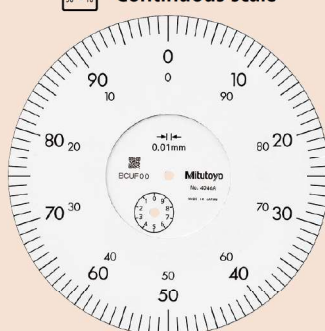
Continuous scale



Graduation: 0.01 mm, Measuring range: 80 mm **3060A-19**



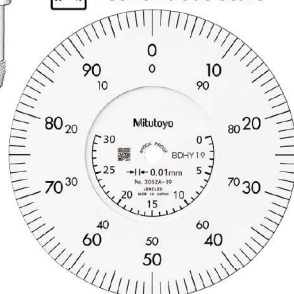
Continuous scale



Graduation: 0.01 mm, Measuring range: 10 mm **4046A**



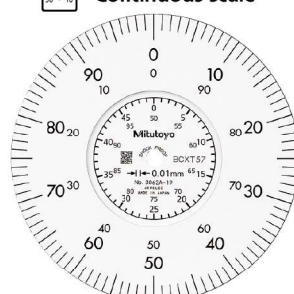
Continuous scale



Graduation: 0.01 mm, Measuring range: 30 mm **3052A-19**



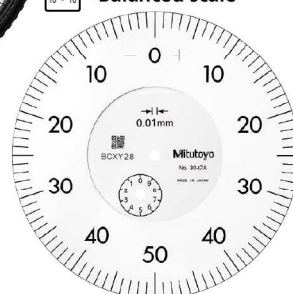
Continuous scale



Graduation: 0.01 mm, Measuring range: 100 mm **3062A-19**



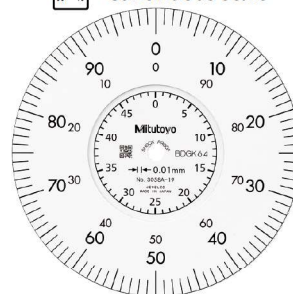
Balanced scale



Graduation: 0.01 mm, Measuring range: 10 mm **3047A**



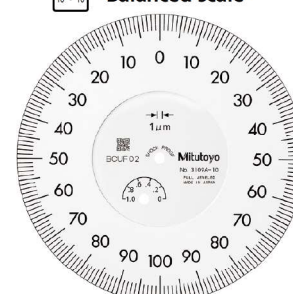
Continuous scale



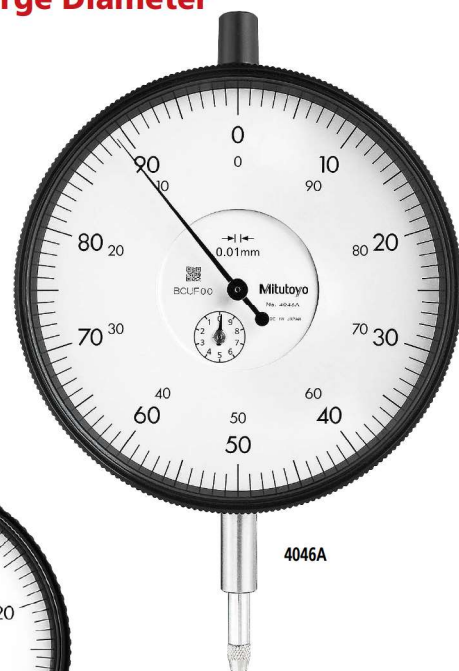
Graduation: 0.01 mm, Measuring range: 50 mm **3058A-19**



Balanced scale



Graduation: 0.001 mm, Measuring range: 1 mm **3109A-10**



**4046A**

**3058A-19**

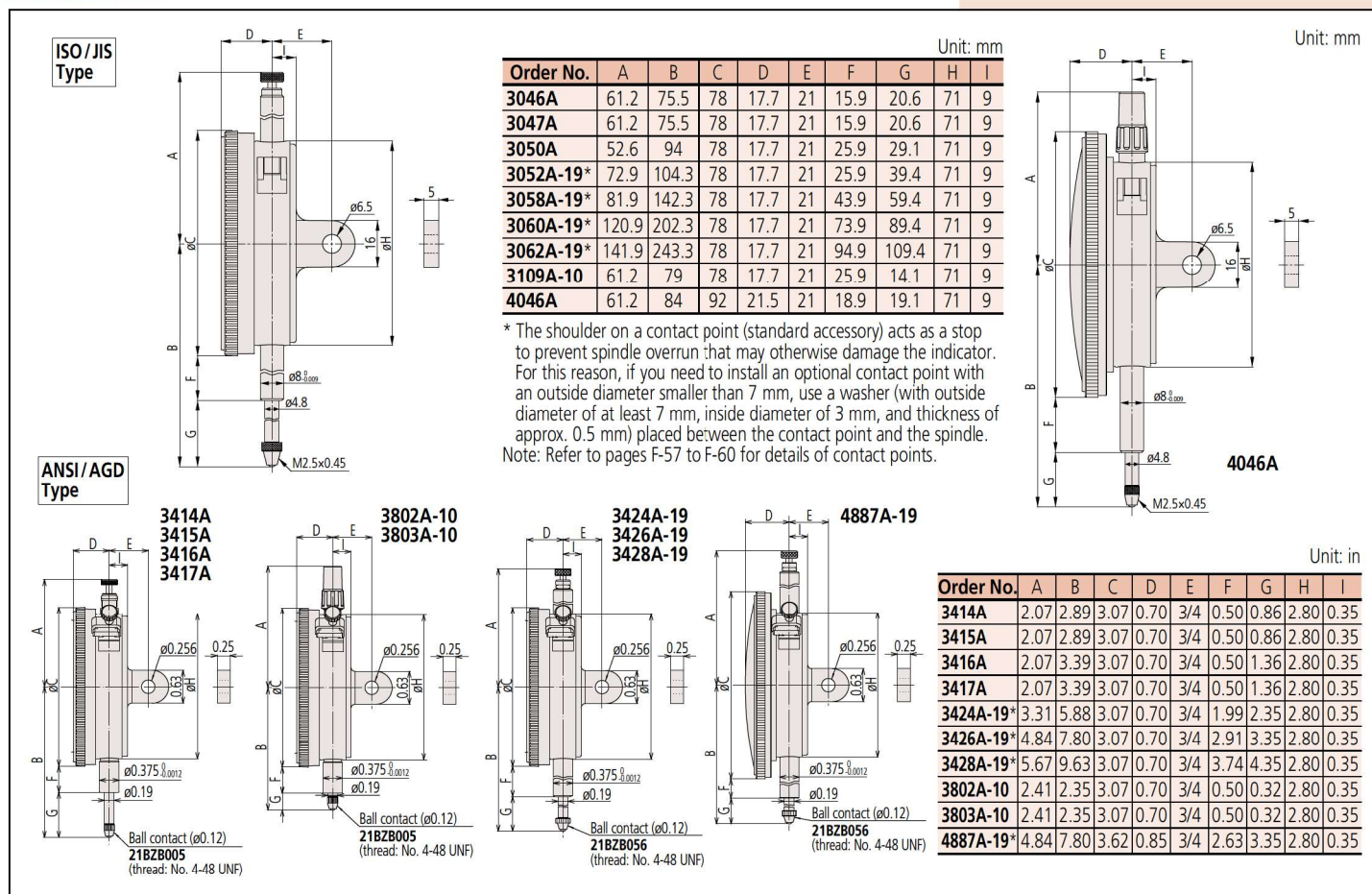
**3109A-10**



# Dial Indicators

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

## DIMENSIONS



## FEATURES

Metric							
Order No.		w/lug	Flat-back	30°	15°	3	1
3046A	3046AB	✓					
3047A	3047AB		✓				
3050A	3050AB	✓				✓	
3052A-19	3052AB-19	✓			✓		✓
3058A-19	3058AB-19	✓			✓		✓
3060A-19	3060AB-19	✓			✓		✓
3062A-19	3062AB-19	✓			✓		✓
3109A-10	3109AB-10		✓	✓			✓
4046A	4046AB	✓					

Inch							
Order No.		w/lug	Flat-back	30°	15°	3	1
3414A	3414AB	✓					
3415A	3415AB		✓				
3416A	3416AB	✓					
3417A	3417AB		✓				
3424A-19	3424AB-19	✓			✓		✓
3426A-19	3426AB-19	✓			✓		✓
3428A-19	3428AB-19	✓			✓		✓
3802A-10	3802AB-10	✓			✓		✓
3803A-10	3803AB-10		✓	✓			✓
4887A-19	4887AB-19	✓					✓

## SPECIFICATIONS

Metric												ISO/JIS type	
Order No.		Graduation (mm)	Range (range/rev) (mm)	Maximum permissible error (MPE) (μm)						Dial reading	Measuring force (N)		
w/lug	Flat-back			Indication error				Hysteresis	Repeat- ability				
				1/10 Rev	1/2 Rev	1 Rev	Measuring range						
3046A	3046AB	0.01	10 (1)	5	9	10	15	3	3	±0-100	1.4 or less		
3047A	3047AB	0.01	10 (1)	5	9	10	15	3	3	0-50-0	1.4 or less		
3050A	3050AB	0.01	20 (1)	8	10	15	20	5	4	±0-100	2.0 or less		
3052A-19	3052AB-19	0.01	30 (1)	10	12	15	25	7	5	±0-100	2.5 or less		
3058A-19	3058AB-19	0.01	50 (1)	10	12	15	30	8	5	±0-100	3.0 or less		
3060A-19 <sup>*1</sup>	3060AB-19 <sup>*1</sup>	0.01	80 (1)	12	17	20	45	9	5	±0-100	3.0 or less		
3062A-19 <sup>*1</sup>	3062AB-19 <sup>*1</sup>	0.01	100 (1)	12	17	20	50	9	5	±0-100	3.2 or less		
3109A-10	3109AB-10	0.001	1 (0.2)	2	3.5	4	5	2	0.5	0-100-0	1.5 or less		
4046A	4046AB	0.01	10 (1)	5	9	10	15	3	3	±0-100	1.4 or less		

\*1 Use in a vertical orientation (contact point downward) for the long stroke model.

\*2 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*2 (in)		Repeat- ability (in)	Dial reading	Measuring force (N)
w/lug	Flat-back			First 1 Rev/2.5 Rev/10 Rev				
3414A	3414AB	0.001	0.5 (0.1)	±0.001/±0.001/±0.001		0.0002	±0-100	1.8 or less
3415A	3415AB	0.001	0.5 (0.1)	±0.001/±0.001/±0.001		0.0002	±0-100	1.8 or less
3416A	3416AB	0.001	1 (0.1)	±0.001/±0.001/±0.002		0.0002	±0-100	1.8 or less
3417A	3417AB	0.001	1 (0.1)	±0.001/±0.001/±0.002		0.0002	±0-100	1.8 or less
3424A-19	3424AB-19	0.001	2 (0.1)	±0.001/±0.001/±0.002 /±0.003 (20 Rev)		0.00033	±0-100	3.0 or less
3426A-19*1	3426AB-19*1	0.001	3 (0.1)	±0.001/±0.001/±0.002/±0.003 (20 Rev)/±0.005 (Over 20 Rev)		0.00033	±0-100	3.0 or less
3428A-19*1	3428AB-19*1	0.001	4 (0.1)	±0.001/±0.001/±0.002/±0.003 (20 Rev)/±0.005 (Over 20 Rev)		0.00033	±0-100	3.2 or less
3802A-10	3802AB-10	0.0001	0.025 (0.01)	±0.0001/±0.0001/—		0.0001	±0.00003	0-10
3803A-10	3803AB-10	0.0001	0.025 (0.01)	±0.0001/±0.0001/—		0.0001	±0.00003	0-5-0
4887A-19*1	4887AB-19*1	0.001	3 (0.1)	±0.001/±0.001/±0.002/±0.003 (20 Rev)/±0.005 (Over 20 Rev)		0.00033	±0-100	3.0 or less

\*1 Use in a vertical orientation (contact point downward) for the long stroke model.

\*2 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-9 for details.

# Dial Indicators

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

## ANSI/AGD Type Metric Dial Indicators with $\varnothing 3/8$ inch Stem and #4-48UNF-Thread Contact Point Compatible Type

### SPECIFICATIONS

Metric		SERIES 1		ANSI/AGD type				
Order No.		Graduation (mm)	Range (range/rev) (mm)	Accuracy ( $\mu\text{m}$ )		Repeat-ability ( $\mu\text{m}$ )	Dial reading	Measuring force (N)
w/lug	Flat-back			First 1 Rev/2.5 Rev/10 Rev	Retrace			
1230A-01	1230AB-01	0.01	2.5 (1)	$\pm 10/\pm 10/-$	3	$\pm 2$	0-100	1.4 or less
1231A-01	1231AB-01	0.01	2.5 (1)	$\pm 10/\pm 10/-$	3	$\pm 2$	0-50-0	1.4 or less
1044A-01	1044AB-01	0.01	5 (1)	$\pm 10/\pm 10/\pm 13$	3	$\pm 3$	$\pm 0-100$	1.4 or less
1045A-01	1045AB-01	0.01	5 (1)	$\pm 10/\pm 10/\pm 13$	3	$\pm 3$	0-50-0	1.4 or less
1010A-11	1010AB-11	0.002	0.5 (0.2)	$\pm 2/\pm 2/-$	2	$\pm 1$	0-20	1.5 or less
1011A-11	1011AB-11	0.002	0.5 (0.2)	$\pm 2/\pm 2/-$	2	$\pm 1$	0-10-0	1.5 or less

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

Metric		SERIES 2		ANSI/AGD type				
Order No.		Graduation (mm)	Range (range/rev) (mm)	Accuracy ( $\mu\text{m}$ )		Repeat-ability ( $\mu\text{m}$ )	Dial reading	Measuring force (N)
w/lug	Flat-back			First 1 Rev/2.5 Rev/10 Rev	Retrace			
2231A-01	2231AB-01	0.01	2.5 (1)	$\pm 10/\pm 10/-$	3	$\pm 3$	0-50-0	1.4 or less
2046A-01	2046AB-01	0.01	10 (1)	$\pm 10/\pm 10/\pm 13$	3	$\pm 3$	$\pm 0-100$	1.4 or less
2046A-11	2046AB-11	0.01	10 (1)	$\pm 10/\pm 10/\pm 13$	3	$\pm 3$	$\pm 0-100$	1.4 or less
2047A-01	2047AB-01	0.01	10 (1)	$\pm 10/\pm 10/\pm 13$	3	$\pm 3$	0-50-0	1.4 or less
2047A-11	2047AB-11	0.01	10 (1)	$\pm 10/\pm 10/\pm 13$	3	$\pm 3$	0-50-0	1.4 or less
2902A-01	2902AB-01	0.01	10 (1)	$\pm 10/\pm 10/\pm 13$	3	$\pm 3$	100-0	1.4 or less
2050A-01	2050AB-01	0.01	20 (1)	$\pm 10/\pm 10/\pm 15/\pm 20$ (20 Rev)	4	$\pm 3$	$\pm 0-100$	2.0 or less
2056A-01	2056AB-01	0.01	25 (1)	$\pm 10/\pm 10/\pm 15/\pm 20$ (20 Rev)/ $\pm 25$ (Over 20 Rev)	4	$\pm 3$	$\pm 0-100$	2.5 or less
2109A-11	2109AB-11	0.001	1 (0.2)	$\pm 3/\pm 3/\pm 4$	2	$\pm 0.3$	0-10-0	1.5 or less
2119A-11	2119AB-11	0.001	5 (0.2)	$\pm 7/\pm 7/\pm 8/\pm 10$ (20 Rev)/ $\pm 10$ (Over 20 Rev)	2.5	$\pm 0.3$	0-10-0	1.5 or less

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

### FEATURES

Metric									
Order No.		w/lug	Flat-back						
1230A-01	1230AB-01								
1231A-01	1231AB-01								
1044A-01	1044AB-01								
1045A-01	1045AB-01								
1010A-11	1010AB-11								
1011A-11	1011AB-11								

Metric											
Order No.		w/lug	Flat-back								
2231A-01	2231AB-01										
2046A-01	2046AB-01										
2046A-11	2046AB-11										
2047A-01	2047AB-01										
2047A-11	2047AB-11										
2902A-01	2902AB-01										
2050A-01	2050AB-01										
2056A-01	2056AB-01										
2109A-11	2109AB-11										
2119A-11	2119AB-11										

### Optional Accessories

- Backs (See page F-61)
- Contact points (See pages F-57 to F-60)



# Dial Indicators

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

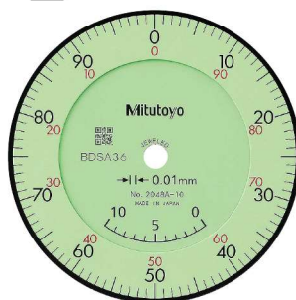
## SERIES 2 — Special Dial Indicators

### Adjustable hand dial indicator

- The hand position can be adjusted independently of the position of the spindle by rotating the top knob.



Continuous scale



Graduation: 0.01 mm,  
Measuring range: 10 mm

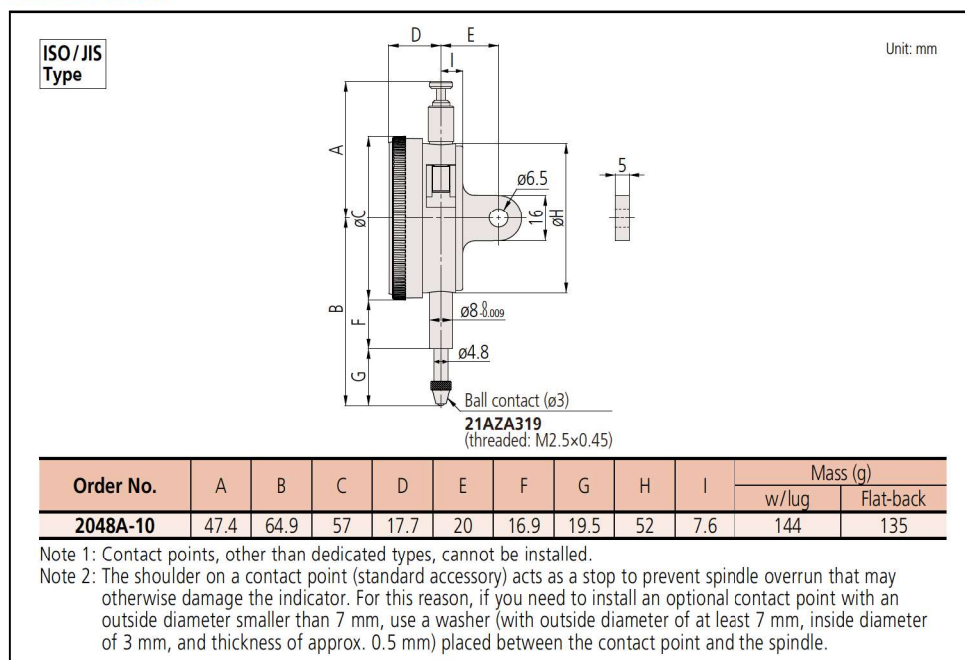
**2048A-10**

With coaxial revolution counter

Adjustable hand

Jeweled bearing

### DIMENSIONS



### SPECIFICATIONS

Metric □ ISO/JIS type

Order No.		Graduation (mm)	Range (range/rev) (mm)	Maximum permissible error (MPE) (μm)						Dial reading	Measuring force (N)
w/lug	Flat-back			Indication error				Hysteresis	Repeat- ability		
				1/10 Rev	1/2 Rev	1 Rev	Measuring range				
2048A-10	2048AB-10	0.01	10 (1)	5	9	10	15	3	3	±0-100	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)			Repeat-ability (in)	Dial reading	Measuring force (N)
			First 1 Rev/2.5 Rev/10 Rev		Retrace			
w/lug	Flat-back							
<b>2915A-10</b>	<b>2915AB-10</b>	0.001	0.5 (0.1)	±0.001/±0.001/±0.001	0.0002	±0.0002	±0-100	1.8 or less
<b>2918A-10</b>	<b>2918AB-10</b>	0.001	0.5 (0.1)	±0.001/±0.001/±0.001	0.0002	±0.0002	0-50-0	1.8 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-9 for details.

### Optional Accessories

- Limit hand (2 pcs.): **21AZB195**
- Bezel clamp: **21AZB148**

### FEATURES

Metric		Order No.				
w/lug	Flat-back					
<b>2048A-10</b>	<b>2048AB-10</b>	✓	✓	✓	✓	✓

Inch		Order No.				
w/lug	Flat-back					
<b>2915A-10</b>	<b>2915AB-10</b>	✓	✓	✓	✓	✓
<b>2918A-10</b>	<b>2918AB-10</b>	✓	✓	✓	✓	✓



An inspection certificate is supplied as standard.  
Refer to page U-9 for details.

Optional Accessories

- Limit hand (2 pcs.): **21AZB195**
- Bezel clamp: **21AZB148**

SERIES 2 — Special Dial Indicators

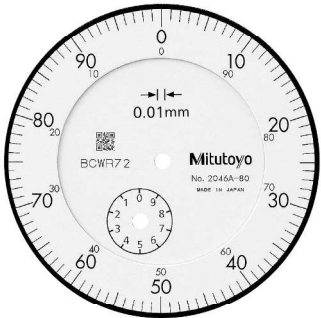
- A mechanism holds the pointer and the spindle at the position of maximum depression and hence displays the maximum value.

Note: Clearance of peak hold: Push the mechanism release in the direction of the arrow indicated in the dimensional drawing below.



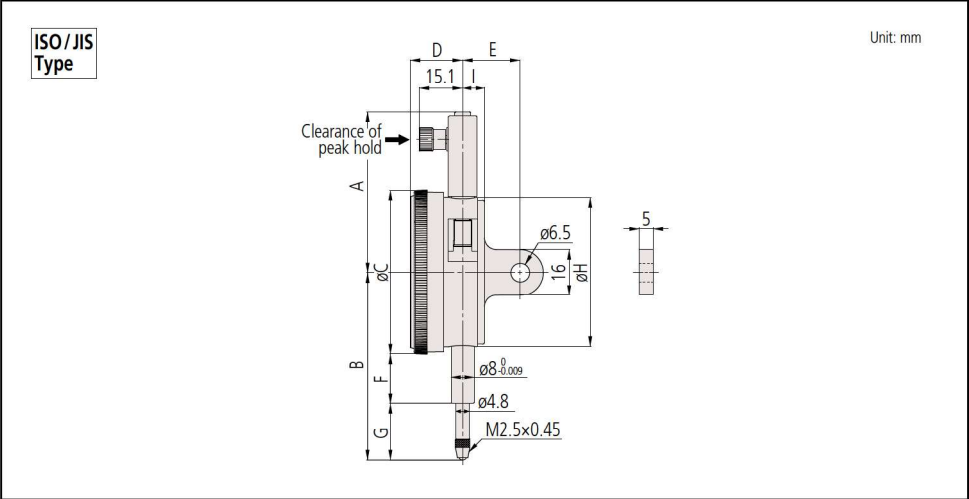
2046A-80

Continuous scale



Graduation: 0.01 mm, Measuring range: 10 mm **2046A-80**  
 Peak retaining

DIMENSIONS



FEATURES

Metric					
Order No.					
w/lug	Flat-back				
2046A-80	2046AB-80	✓		✓	

SPECIFICATIONS

Metric		ISO/JIS type									
Order No.		Graduation (mm)	Range (range/rev) (mm)	Maximum permissible error (MPE) (μm)					Dial reading	Measuring force (N)	
w/lug	Flat-back			Indication error				Hysteresis			Repeat- ability
				1/10 Rev	1/2 Rev	1 Rev	Measuring range				
2046A-80	2046AB-80	0.01	10 (1)	5	9	10	15	—	—	±0-100	5.0 or less

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



# 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 **2990A-10** provides 0.001 mm graduation.



An inspection certificate is supplied as standard. Refer to page U-9 for details.



Holding bar

### Holding bar (optional)

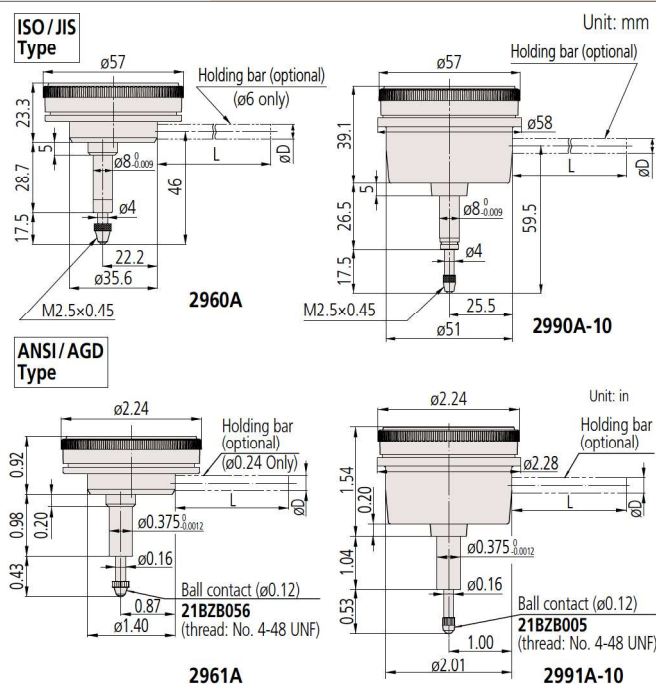
Order No.	øD (mm)	L (mm)
21AAA166	ø6	42
136567	ø6	81
124625	ø6.35	81
21AAA167	ø6.35	42
21AAA168	ø8	42
136568	ø8	81

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

### Optional Accessory

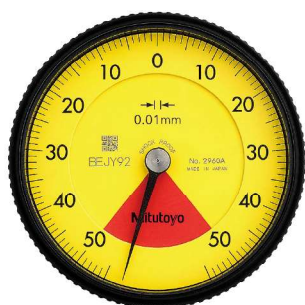
- Limit hand (2 pcs.): **21AZB195**

## DIMENSIONS

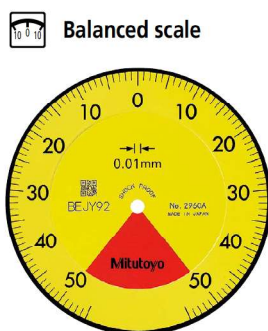


Note 1: The shoulder on a contact point (standard accessory) for **2960A** and **2961A** acts as a stop to prevent spindle overrun that may otherwise damage the indicator. For this reason, if you need to install an optional contact point with an outside diameter smaller than 7 mm, use a washer (with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



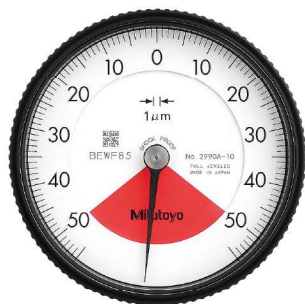
2960A



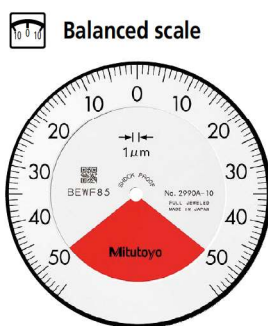
Graduation: 0.01 mm,  
Measuring range: 1 mm

**2960A**

- One revolution
- Shockproof
- Back Plunger



2990A-10



Graduation: 0.01 mm,  
Measuring range: 1 mm

**2990A-10**

- One revolution
- Shockproof
- Back Plunger
- Jeweled bearing

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				
2960A	0.01	1 (1.27)	8	—	—	14	4	3	50-0-50	1.4 or less
2990A-10	0.001	0.1 (0.14)	2.5	—	—	5	2	1	50-0-50	1.5 or less

Note 1: Completed products inspection is performed in the vertical orientation (contact point downward) and the stated accuracy is guaranteed.

Note 2: The bezel clamp cannot be used.

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					
2961A	0.0005	0.04/0.05	±0.0005/—/—	0.00016	±0.0001	20-0-20	1.4 or less		
2991A-10	0.0001	0.008/0.01	±0.0002/—/—	0.0001	±0.00005	4-0-4	1.5 or less		

Note 1: Completed products inspection is performed in the vertical orientation (contact point downward) and the stated accuracy is guaranteed.

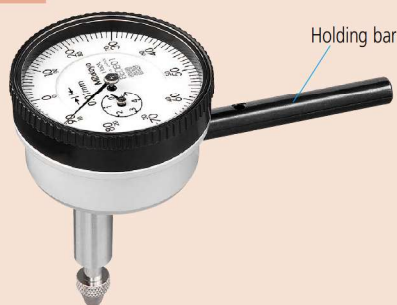
Note 2: The bezel clamp cannot be used.

**Mitutoyo**





An inspection certificate is supplied as standard.  
Refer to page U-9 for details.



Holding bar

## Holding bar (optional)

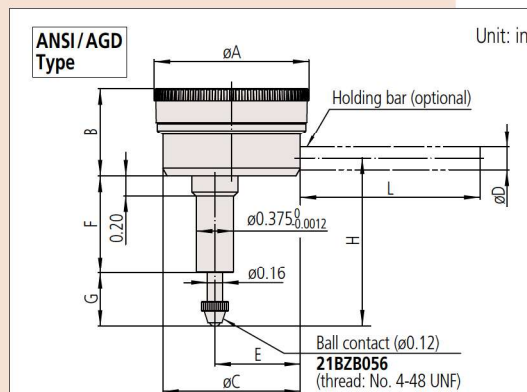
Order No.	øD (mm)	L (mm)
21AAA166	ø6	42
136567	ø6	81
124625	ø6.35	81
21AAA167	ø6.35	42
21AAA168	ø8	42
136568	ø8	81

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

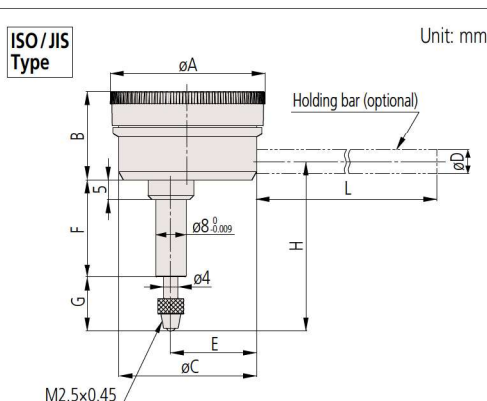
## Optional Accessory

- Limit hand (2 pcs.): 21AAB363

## DIMENSIONS



Order No.	A	B	C	E	F	G	H	Mass (g) (Bar excluded)
1166A	1.57	0.87	1.40	7/8	0.98	0.43	1.67	80
1167A	1.57	0.87	1.40	7/8	0.98	0.43	1.67	80
1168A	1.57	0.87	1.40	7/8	0.98	0.43	1.67	80
1961A	1.57	0.87	1.40	7/8	0.98	0.43	1.59	80



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

Order No.	10 0 10	10 0 10	10 0 10	10 0 10	10 0 10	10 0 10
1960A		✓	✓	✓		✓
1160A	✓					✓
1162A					✓	✓

Order No.	10 0 10	10 0 10	10 0 10	10 0 10	10 0 10	10 0 10
1961A		✓	✓	✓		✓
1166A	✓					✓
1167A		✓				✓
1168A					✓	✓

## 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				
1960A	0.01	1 (1.27)	8	—	—	14	4	3	50-0-50	1.4 or less
1160A	0.01	5 (1)	8	12	14	16	4	3	±0-100	1.4 or less
1162A	0.01	5 (1)	8	12	14	16	4	3	100-0	1.4 or less

Note 1: Completed products inspection is performed in the vertical orientation (contact point downward) and the stated accuracy is guaranteed.  
Note 2: The bezel clamp cannot be used.

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				
1961A	0.001	0.04 (0.05)	±0.001/—/—		0.0002	±0.0002	20-0-20	1.4 or less
1166A	0.001	0.2 (0.05)	±0.001/±0.001±0.001		0.00033	±0.0002	±0-50	1.4 or less
1167A	0.001	0.2 (0.05)	±0.001/±0.001/±0.001		0.00033	±0.0002	0-25-0	1.4 or less
1168A	0.001	0.2 (0.05)	±0.001/±0.001±0.001		0.00033	±0.0002	50-0	1.4 or less

Note 1: Completed products inspection is performed in the vertical orientation (contact point downward) and the stated accuracy is guaranteed.  
Note 2: The bezel clamp cannot be used.

## 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 **1960A** and **1961A**, which uses Mitutoyo's proprietary shock-proofing mechanism, has excellent durability and shock resistance.



Continuous scale



1160A

Graduation: 0.01 mm,  
Measuring range: 5 mm

1160A

Back Plunger



Reverse reading



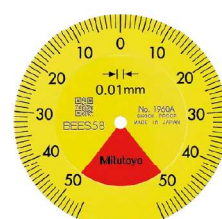
1162A

Graduation: 0.01 mm,  
Measuring range: 5 mm

Back Plunger



Balanced scale



1960A

Graduation: 0.01 mm,  
Measuring range: 1 mm

One revolution

Shockproof

Back Plunger