

Back Plunger Type Dial Indicator

SERIES 1 and 2

Mitutoyo's back plunger type dial indicators are built with the measuring plunger (or spindle) protruding from the back of the body instead of the side. This type of indicator offers the same precision and durability as all other Mitutoyo dial indicators, and operates very effectively with optional holding bars.

- Back plunger type dial gauges are suitable for mounting onto leveling machine tool tables or inspection jigs, and for use in small spaces where the graduations of standard dial gauges are difficult to see.
- Model No. 1960, which uses Mitutoyo's proprietary shock-proofing mechanism, has excellent durability and shock resistance.
- Model No. 2990 provides 0.001mm resolution.



(Refer to page VIII for details.)



1160



1960



2960F



2990

Optional Accessories

- 136567:** Holding bar (ø6mm, L=81mm)
21AAA166: Holding bar (ø6mm, L=42mm)
136568: Holding bar (ø8mm, L=81mm)
21AAA168: Holding bar (ø8mm, L=42mm)
124625: Holding bar (.25" DIA, L=3.19")
21AAA167: Holding bar (.25" DIA, L=1.65")



One revolution type



Shockproof type



Jeweled bearing type



Reverse reading type

FEATURES

Metric

Order No.						
1960	✓	✓	—	—	—	—
1160	—	—	—	—	—	—
1162	—	—	✓	—	—	—

Inch

Order No.						
1961	✓	✓	—	—	—	—
1166	—	—	—	—	—	—
1167	—	—	—	—	—	—
1168	—	—	✓	—	—	—

Metric

Order No.						
2960F	✓	✓	—	—	—	—
2990	✓	✓	✓	—	—	—

Inch

Order No.						
2961	✓	✓	—	—	—	—
2991	✓	✓	✓	—	—	—

SPECIFICATIONS

Metric

Series 1

ISO/JIS type

Graduation	Order No.	Range (range/rev)	Accuracy				Repeatability	Dial reading	Measuring force
			Overall	Retrace	1/10 Rev	1 Rev			
0.01mm	1960	1mm (1.27mm)	±14μm	7μm	10μm	—	5μm	50-0-50	1.4N or less
0.01mm	1160	5mm (1mm)	±16μm	7μm	10μm	±14μm	5μm	0-100	1.4N or less
0.01mm	1162	5mm (1mm)	±16μm	7μm	10μm	±14μm	5μm	100-0	1.4N or less

Inch

Series 1

ANSI/AGD type

Graduation	Order No.	Range (range/rev)	Accuracy			Repeatability	Dial reading	Measuring force
			First 1 Rev / 2.5 Rev / 10 Rev	Retrace				
.001"	1961	.04" (.05")	±.001" / — / —	.0002"		±.0002"	20-0-20	1.4N or less
.001"	1166	.2" (.05")	±.001" / ±.001" / ±.001"	.00033"		±.0002"	0-50	1.4N or less
.001"	1167	.2" (.05")	±.001" / ±.001" / ±.001"	.00033"		±.0002"	0-25-0	1.4N or less
.001"	1168	.2" (.05")	±.001" / ±.001" / ±.001"	.00033"		±.0002"	50-0	1.4N or less

Metric

Series 2

ISO/JIS type

Graduation	Order No.	Range (range/full stroke)	Accuracy				Repeatability	Dial reading	Measuring force
			Overall	Retrace	1/10 Rev	1 Rev			
0.01mm	2960F	1mm (1.27mm)	±14μm	7μm	10μm	—	5μm	50-0-50	1.4N or less
0.001mm	2990	0.1mm (0.14mm)	±6.5μm	4μm	4μm	—	1μm	50-0-50	1.5N or less

Inch

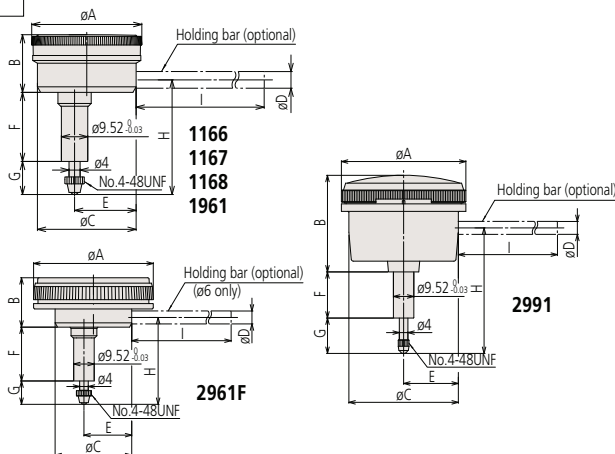
Series 2

ANSI/AGD type

Graduation	Order No.	Range (range/full stroke)	Accuracy			Repeatability	Dial reading	Measuring force
			First 1 Rev / 2.5 Rev / 10 Rev	Retrace				
.0005"	2961F	.04" / .05"	±.0005" / — / —	.0002"		±.0001"	20-0-20	1.4N or less
.0001"	2991	.008" / .01"	±.0002" / — / —	.0001"		±.00005"	4-0-4	1.5N or less

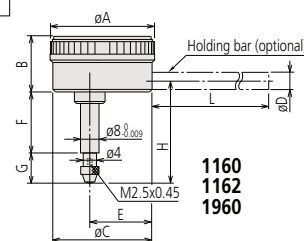
DIMENSIONS

ANSI/AGD Type



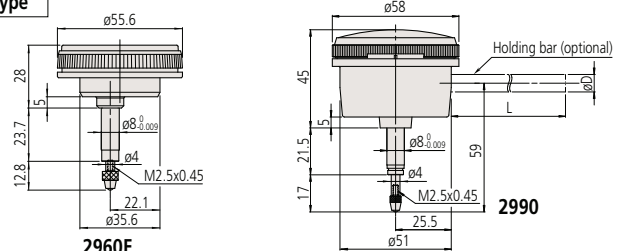
Order No.	A	B	C	D	E	F	G	H	I
1166	39.6	21.5	35	—	22	25	10.9	42	—
1167	39.6	21.5	35	—	22	25	10.9	42	—
1168	39.6	21.5	35	—	22	25	10.9	42	—
1961	39.6	21.5	35	—	22	25	10.9	40	—
2961F	55.6	23	35	—	22	25	10.9	40	—
2991	58	40	51	—	25.5	26.5	13.5	55.5	—

ISO/JIS Type



Order No.	A	B	C	E	F	G	H
1160	39	21.5	35	22	25	13.8	43.3
1162	39	21.5	35	22	25	13.8	43.3
1960	39	21.5	35	22	28.7	12.8	46

ISO/JIS Type



Note 1: Dimensions of the inch (ANSI/AGD Type) dial indicator partly differ from those of the metric (ISO/JIS Type) indicator.
 Note 2: Inch (ANSI/AGD Type) dial indicator is provided with a stem of 3/8" dia. and #4-48UNF thread mount for the contact point.