Standard Digital Indicator

ABS Digimatic Indicator ID-C

Catalog No. E4330-543

Digital indicators offer dramatically improved readability, usability and functionality

Mitutoyo

Digital indicators that offer dramatically improved ease of

ABS Digimatic Indicator ID-C

The Nakatsugawa plant is in the central industrial park of leafy Nakatsugawa city, in the Gifu prefecture. This plant specializes in manufacturing sensor products and handles the complete development-to-production cycle for measuring instruments such as dial gages, test indicators, Digimatic indicators, and bore gages. It was opened in 1997 as the 12th Mitutoyo plant in Japan. Using its state-of-the-art production techniques and facilities, this plant continues to provide Mitutoyo products that are praised around the world and used with confidence.

ABS Digimatic indicator **ID-C** is a standard digital indicator. A large LCD incorporating 11mm characters (existing products: 8.5mm) is used to improve visibility, and three large, easy-to-press buttons are used in the design to make operations easier to perform. In addition, this affordable product has various measurement functions, including the ability to perform scaling calculations, judge tolerance, hold data, and perform general comparison measurements.

Examples of use

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reading measurement values, usability and functionality

1. Large LCD

The large LCD incorporates 11mm characters giving 1.5 times the character area of existing products (which display 8.5mm characters) making measurement values much easier to read.

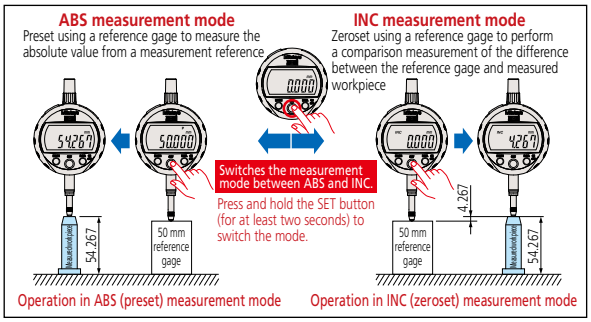
2. Three large buttons

The popular three-large-button design, which is used in products such as the ABS coolant proof Digimatic indicator **ID-N/ID-B**, makes buttons easier to press and operations easier to perform.

- Power switch
- Data output (when connected to an external device)
- Data hold (when no external device is connected)

- Parameter setting mode
  Count direction switching, tolerance judgment setting, resolution switching, scale factor setting, and function lock setting

- Switches between the ABS (preset) and INC (zeroset) measurement modes



3. Expanded lifting capability

The lifting function that moves the spindle up and down has been expanded to improve work efficiency when using the **ID-C** mounted on a stand.

For models that have a 12.7mm measuring range, a lifting lever (special accessory) can be mounted on the left or right side, improving work efficiency and smoothness of movement.

A lifting cable (special accessory) provides a maximum of approximately 25.4mm of spindle movement (twice that of existing models). So for models that have a 12.7mm or 25.4mm measuring range, the spindle can be moved through the entire measuring range. (Applied to models that have a 50.8mm measuring range, the spindle can be retracted by approximately 25.4mm from the extended position.)

Lifting knob (special accessory)

By using a lifting knob (special accessory) fitted to the the top of the spindle, you can perform full-stroke operation without directly touching the spindle.

Lifting lever (finger hook)
Standard accessory (only for models that have a measuring range of 25.4mm or 50.8mm)

If dust or coolant gets into the gap between the spindle and main unit while using the lifting knob, the spindle travel may become rough or the indicator may fail altogether. Therefore avoid using the **ID-C** in environments containing dust or coolant mist.

4. Functions that support measurement

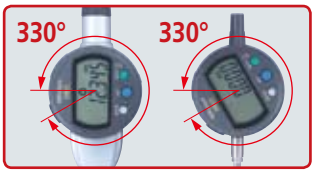
The **ID-C** has various functions, including the ability to hold data, output data, switch the measuring direction, judge tolerance, change the scale factor, and a lock to prevent misoperation.
(For details, see page 5.)

Measurement value and tolerance judgment

Enlarged display of the tolerance judgment result

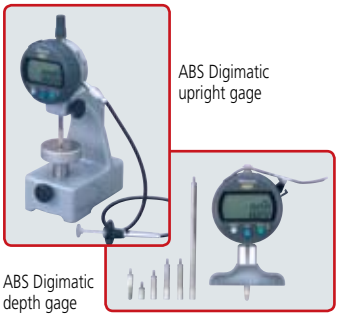
5. 330° rotary display

The display can be rotated 330°, allowing use at a position where you can easily read the measurement value.



6. Application products for one-touch quick measurement

Various application products are available that enable you to perform one-touch quick measurement of the thickness of small parts, papers, felt, lenses, and pipes, as well as the depth of narrow grooves on cylindrical workpieces, groove depth, and steps.
(For details, see pages 6 and 7.)



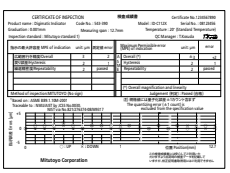
7. The ABS (ABSOLUTE) sensor

The original Mitutoyo ABS (ABSOLUTE) sensor, which is capable of relocating the origin even after turning the power off, enables you to quickly start multi-point measurement. Also, the ABS measurement mode can be restored even after measurement in the INC mode, where zerosetting is possible at any position, improving work efficiency.

ABSOLUTE®

8. Inspection certificate provided as standard

Mitutoyo provides an inspection certificate that includes inspection data as standard to guarantee that every product shipped is of high quality and safe to use. Upon request, we can also calibrate purchased measuring instruments and issue a calibration certificate that proves traceability to national (or international) standards for a fee. To minimize calibration uncertainty as much as possible, both the inspection certificate and calibration certificate are issued after measurement using dedicated testers developed with advanced Mitutoyo measurement technologies. Note that the inspection certificate cannot be used to obtain a calibration certificate because the former does not indicate the date of purchase.



ABS Digimatic Indicator ID-C

SPECIFICATIONS

Metric ISO/JIS Type

Order No.		Measuring range	Accuracy**[1]	Hysteresis*	Repeatability*	Measuring force	Mass	Remarks
Resolution 0.001mm/0.01mm								
543-390	**543-390B**	12.7mm	0.003mm	0.002mm	0.002mm	1.5N or less	170g	—
543-394	**543-394B**	12.7mm	0.003mm	0.002mm	0.002mm	0.7, 0.6, 0.4N or less	170g	Low measuring force
—	**543-470B**	25.4mm	0.003mm	0.002mm	0.002mm	1.8N or less	190g	—
—	**543-490B**	50.8mm	0.005mm	0.002mm	0.002mm	2.3N or less	260g	—
Resolution 0.01mm								
543-400	**543-400B**	12.7mm	0.02mm	0.02mm	0.01mm	0.9N or less	170g	—
543-404	**543-404B**	12.7mm	0.02mm	0.02mm	0.01mm	0.5, 0.4, 0.3, 0.2N or less	170g	Low measuring force
—	**543-474B**	25.4mm	0.02mm	0.02mm	0.01mm	1.8N or less	190g	—
—	**543-494B**	50.8mm	0.04mm	0.02mm	0.01mm	2.3N or less	260g	—

Inch/Metric ISO/JIS Type and ANSI/AGD Type

Order No.		Measuring range	Accuracy**[1]	Hysteresis*	Repeatability*	Measuring force	Mass	Remarks
Resolution .00005"/.0001"/.0005"/0.001mm/0.01mm								
543-391	**543-391B**	.5"	±.00010"/0.003mm	.00010"/0.002mm	.00010"/0.002mm	1.5N or less	170g	—
543-392	**543-392B**	.5"	±.00010"/0.003mm	.00010"/0.002mm	.00010"/0.002mm	1.5N or less	170g	—
543-395	**543-395B**	.5"	±.00010"/0.003mm	.00010"/0.002mm	.00010"/0.002mm	0.7, 0.6, 0.4N or less	170g	Low measuring force
543-396	**543-396B**	.5"	±.00010"/0.003mm	.00010"/0.002mm	.00010"/0.002mm	0.7, 0.6, 0.4N or less	170g	Low measuring force
—	**543-471B**	1"	±.00010"/0.003mm	.00010"/0.002mm	.00010"/0.002mm	1.8N or less	190g	—
—	**543-472B**	1"	±.00010"/0.003mm	.00010"/0.002mm	.00010"/0.002mm	1.8N or less	190g	—
—	**543-491B**	2"	±.00020"/0.005mm	.00010"/0.002mm	.00010"/0.002mm	2.3N or less	260g	—
—	**543-492B**	2"	±.00020"/0.005mm	.00010"/0.002mm	.00010"/0.002mm	2.3N or less	260g	—
Resolution .0005"/0.01mm								
543-401	**543-401B**	.5"	±.0010"/0.02mm	.0010"/0.02mm	.0005"/0.01mm	0.9N or less	170g	—
543-402	**543-402B**	.5"	±.0010"/0.02mm	.0010"/0.02mm	.0005"/0.01mm	0.9N or less	170g	—
543-405	**543-405B**	.5"	±.0010"/0.02mm	.0010"/0.02mm	.0005"/0.01mm	0.5, 0.4, 0.3, 0.2N or less	170g	Low measuring force
543-406	**543-406B**	.5"	±.0010"/0.02mm	.0010"/0.02mm	.0005"/0.01mm	0.5, 0.4, 0.3, 0.2N or less	170g	Low measuring force
—	**543-475B**	1"	±.0010"/0.02mm	.0010"/0.02mm	.0005"/0.01mm	1.8N or less	190g	—
—	**543-476B**	1"	±.0010"/0.02mm	.0010"/0.02mm	.0005"/0.01mm	1.8N or less	190g	—
—	**543-495B**	2"	±.0015"/0.04mm	.0010"/0.02mm	.0005"/0.01mm	2.3N or less	260g	—
—	**543-496B**	2"	±.0015"/0.04mm	.0010"/0.02mm	.0005"/0.01mm	2.3N or less	260g	—

☐ : ANS/AGD Type

Note) Products with an Order No. suffixed "B" have a flat back, and other models have a back with a lug.

* Overall hysteresis and repeatability specifications are valid for normal measurement at 20°C, and the quantizing error of ±1 count is excluded.

COMMON SPECIFICATIONS

- Display: 6-digit LCD, sign
- Contact point: Spherical tip SR = 1.5mm (carbide tipped),
  part No. 901312 (for ISO/JIS Type)
  part No. 21BZB005 (for ANSI/AGD Type)
- Spindle orientation for measurement:
  - Standard model that has a 12.7mm measuring range: No restrictions
  - Standard model that has a 25.4mm or 50.8mm measuring range: Normally at any position between the spindle pointing vertically downward to the spindle horizontal. To perform measurement with the spindle pointing above the horizontal requires a reverse-position coil spring (special accessory).
  - Low measuring force models: See 'Setting measuring force on low measuring force models' on page 4.
- Position detection method: Capacitance type absolute linear encoder
- Battery: SR44 (silver oxide button cell) × 1, part No. 938882
- Battery life: Approximately 7,000 hours of continuous use
- Maximum response speed: Not restricted (except for scanning measurement)
- Service temperature range: 0 to 40°C
- Storage temperature range: 0 to 60°C

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Setting measuring force on low measuring force models

•543-404/404B/405/405B/406/406B

Spindle orientation	Spring	Weight (approximately 0.1 N)	Maximum measuring force
Pointing vertically downward	Yes	Yes	0.5N
	Yes	No	0.4N
	No	Yes	0.3N
	No	No	0.2N
Horizontal	Yes	No	0.2N

Note) Operation using configurations other than shown above is not guaranteed.

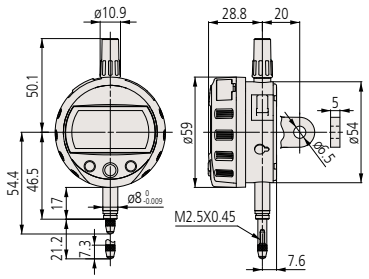
•543-394/394B/395/395B/396/396B

Spindle orientation	Spring	Weight (approximately 0.1 N)	Maximum measuring force
Pointing vertically downward	Yes	Yes	0.8N (0.3+0.4+0.1=0.8)
	Yes	No	0.6N
	No	Yes	0.4N
	No	No	Not guaranteed
Horizontal	Not guaranteed		

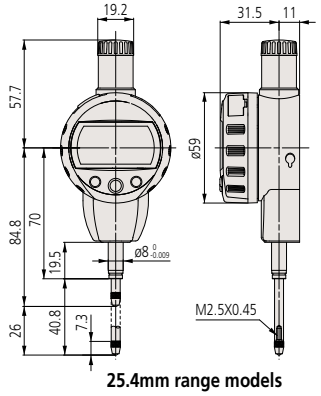
Note) Operation using configurations other than shown above is not guaranteed.

DIMENSIONS

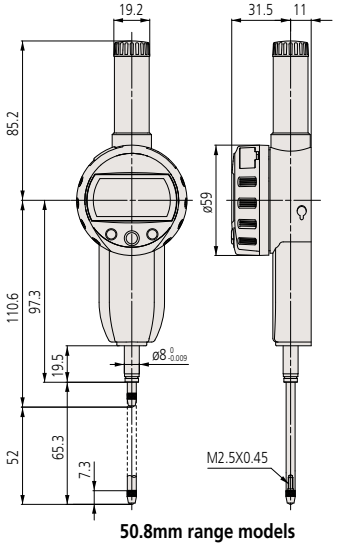
ISO/JIS Type



12.7mm range models

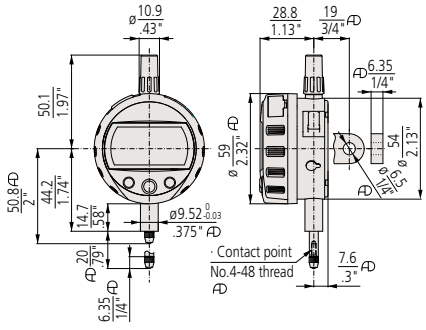


25.4mm range models

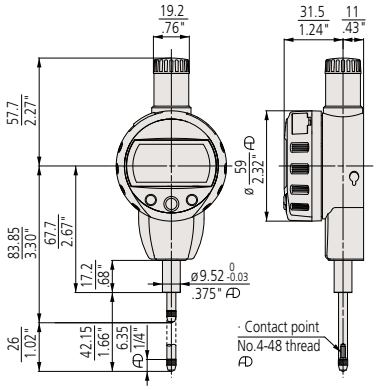


50.8mm range models

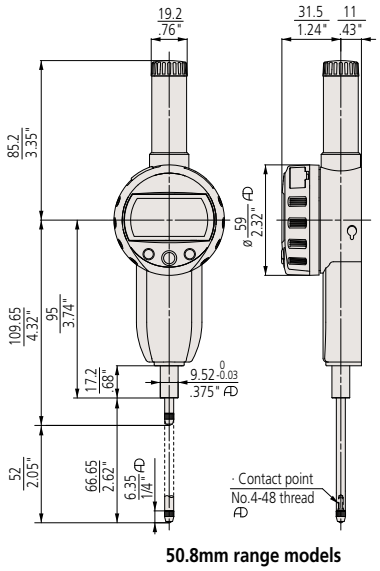
ANSI/AGD Type



12.7mm range models



25.4mm range models



50.8mm range models

*AD is the symbol denoting American Gage Design (AGD).
It shows conformance to certain dimensions for Dial Indicators, as specified in ASME / AGD 2, intended to promote interchangeability.
Only applicable to models with an "E" suffix.

Functions

- **Zero-setting function (INC measurement mode)**
- **Preset function (ABS scale origin setting)**

The preset value can be changed easily by using the SET (digit movement) and MODE (value change) buttons.

- **Switching the direction**

The measuring direction can be reversed.

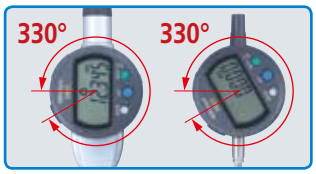
- **Judging the tolerance**

Performs judgment (OK, +NG, -NG) according to the set upper and lower limit values and displays the result as a symbol. Enlarged display of the OK and NG symbols is possible.

Measurement value and tolerance judgment

Enlarged display of the tolerance judgment result

- **330° rotary display**



- **Resolution switching (For 0.001mm or .00005" resolution models)**

Models with 0.001mm resolution are capable of displaying in 0.01mm resolution. Models with .00005" resolution are capable of displaying in .0001" and .0005" resolution. Select the resolution according to the application.

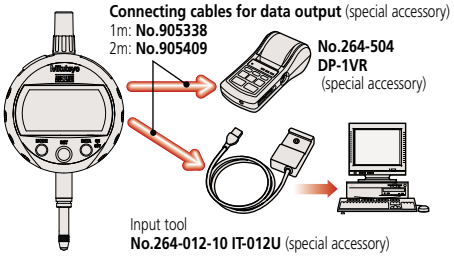
- **Display value holding (when no external device is connected)**

- **Calculation: f(x) = Ax**

Mounting the **ID-C** on a measuring jig and setting the calculation factor (to any value) allows direct measurement without using a conversion table and improves measurement efficiency.

- **Data output (when connected to an external device)**

From the output terminal, measurement data can be output to a PC via a compact printer, Digimatic mini processor DP-1VR, or input tool by pressing the button below the display. Wireless transmission of measurement data to a PC can also be performed using the measurement data wireless communication system U-WAVE.



- **Function locking**

Ensures reliability of measurement by locking the settings to prevent preset function settings from being changed by mistake.

- **Low battery voltage alarm**
- **Error alarm**

Standard accessories

- Operation manual
- Inspection certificate
- ① Lifting lever (finger hook)
  (Only for models that have a 25.4mm or 50.8mm measuring range)
- Silver oxide button cell for the monitor: SR44 × 1
  Part No. 938882
- Weight (only for low measuring force models)

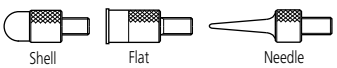
Special accessories

② Lifting lever
Part No. 21EZA198
(for models that have a 12.7mm measuring range ISO/JIS Type)
Part No. 21EZA199
(for models that have a 12.7mm measuring range ANSI/ADG Type)

③ Lifting cable, part No. 540774

④ Lifting knob
Part No. 21EZA105
(for models that have a 12.7mm measuring range ISO/JIS Type)
Part No. 21EZA150
(for models that have a 12.7mm measuring range ANSI/ADG Type)
Part No. 21EZA197
(for models that have a 25.4mm measuring range)
Part No. 21EZA200
(for models that have a 50.8mm measuring range)

- Interchangeable contact points for Mitutoyo dial gages



Various types of contact points are available.

- Various backs for standard Mitutoyo (2 series) dial gages
- Reverse-position coil spring
  Part No. 02ACA571
  (for models that have a 25.4mm measuring range)
  Part No. 02ACA773
  (for models that have a 50.8mm measuring range)
- Connecting cable (1m), part No. 905338
- Connecting cable (2m), part No. 905409

- U-WAVE
  (measurement data wireless communication system)
- Digimatic mini processor DP-1VR No. 264-504
- Multiplexer MUX-10F, No. 264-002
- Display unit EC-101D, No. 542-007
- Input tool (USB keyboard signal conversion type)
  IT-012U, No. 264-012-10

- Recommended stands

⑤ Dial gage stand, No. 7001 7002 7007
⑥ Granite comparator stand BSG-30, No. 215-154
⑦ Comparator stand BSC-30, No. 215-504
⑧ Comparator stand BSG-20, No. 215-151

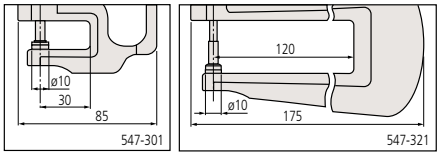
Application Products

ABS Digimatic Thickness Gage

- For one-touch quick measurement of the thickness of small parts, papers, and felt
- Rust-free ceramic contact point and anvil (except No. 547-401)

547-301 547-321 547-401

Unit: mm



Metric ISO/JIS Type

Order No.	Resolution	Measuring range	Throat depth	Contact point and anvil	Parallelism of contact point and anvil	Accuracy	Measuring force
547-301	0.01mm	0~10mm	30mm	ø10mm flat	10µm or less	±20µm	1.5N or less
547-321	0.01mm	0~10mm	120mm	ø10mm flat	10µm or less	±20µm	1.5N or less
547-401	0.001mm	0~12mm	21mm	ø6.3mm flat (carbide tipped)	3µm or less	± 3µm	3.5N or less

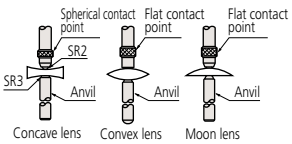
Inch/Metric ANSI/AGD Type

Order No.	Resolution	Measuring range	Throat depth	Contact point and anvil	Parallelism of contact point and anvil	Accuracy	Measuring force
547-300S	.0005"/0.01mm	0~.4"/0~10mm	30mm	ø10mm flat	.0005" or less	±.001"	1.5N or less
547-320S	.0005"/0.01mm	0~.4"/0~10mm	120mm	ø10mm flat	.0005" or less	±.001"	1.5N or less
547-400S	.00005"/0.001mm	0~.47"/0~12mm	21mm	ø6.3mm flat (carbide tipped)	.0001" or less	±.0001"	3.5N or less

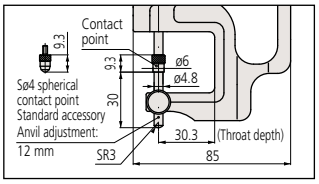
Note) 1. Changing the contact point requires total adjustment, including the main display unit. Contact Mitutoyo for advice.
2. The accuracy specification does not include the quantizing error of ±1 count.
3. Left-handed models can be supplied to special order.

ABS Digimatic Lens Meter

- Designed for measuring the thickness of concavo-convex lenses and flat objects
- The thickness of flat objects can be measured by replacing the anvil.
- Includes a spherical contact point.



Unit: mm



Metric ISO/JIS Type

Order No.	Resolution	Measuring range	Throat depth	Anvil adjustment	Accuracy	Measuring force
547-313	0.01mm	0~10mm	30mm	12mm	±20µm or less	1.5N or less

Inch/Metric ANSI/AGD Type

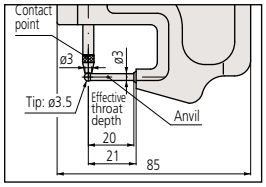
Order No.	Resolution	Measuring range	Throat depth	Anvil adjustment	Accuracy	Measuring force
547-312S	.0005"/0.01mm	0~.4"/0~10mm	30mm	12mm	±.001" or less	1.5N or less

Note) The accuracy specification does not include the quantizing error of ±1 count. Left-handed models can be supplied to special order.

ABS Digimatic Pipe Gage

- Designed for measuring the thickness of pipes and curved boards

Unit: mm



Metric ISO/JIS Type

Order No.	Resolution	Measuring range	Throat depth	Minimum inside diameter of pipe	Accuracy	Measuring force
547-360	0.01mm	0~10mm	20mm	ø3.5mm	±20µm or less	1.5N or less

Inch/Metric ANSI/AGD Type

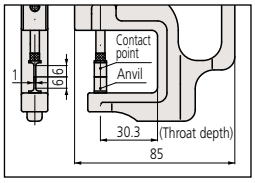
Order No.	Resolution	Measuring range	Throat depth	Minimum inside diameter of pipe	Accuracy	Measuring force
547-361S	.0005"/0.01mm	0~.4"/0~10mm	20mm	ø3.5mm	±.001" or less	1.5N or less

Note) 1. Changing the contact point requires total adjustment, including the main display unit. Contact Mitutoyo for advice.
2. The accuracy specification does not include the quantizing error of ±1 count.
3. Left-handed models can be supplied to special order.

ABS Digimatic Groove Gage

- Best suited for measuring the depth of narrow grooves on cylindrical workpieces
- The contact point and measuring face of the anvil are 1mm thick blade blades.

Unit: mm



Metric ISO/JIS Type

Order No.	Resolution	Measuring range	Throat depth	Contact point and anvil dimensions (W x D)	Accuracy	Measuring force
547-315	0.01mm	0~10mm	30mm	6.5mm x 1mm	±20µm or less	1.5N or less

Inch/Metric ANSI/AGD Type

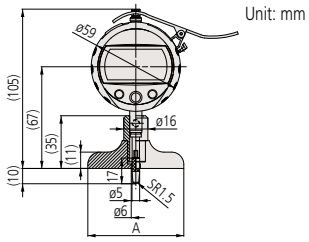
Order No.	Resolution	Measuring range	Throat depth	Contact point and anvil dimensions (W x D)	Accuracy	Measuring force
547-316S	.0005"/0.01mm	0~4"/0~10mm	30mm	6.5mm x 1mm	±.001" or less	1.5N or less

Note) 1. Changing the contact point requires total adjustment, including the main display unit. Contact Mitutoyo for advice.
2. The accuracy specification does not include the quantizing error of ±1 count.
3. Left-handed models can be supplied to special order.

ABS Digimatic Depth Gage

- Suitable for measuring the depth of holes, narrow grooves, and steps.
- The lifting lever can be used either on the left or right sides.

Unit: mm



Metric ISO/JIS Type

Order No.	Resolution	Measuring range	Stroke	Accuracy	Measuring force	Base			Contact point: Carbide-tipped ball	Extension rods
						Length	Width	Flatness		
547-211	0.01mm	0~200mm	12mm	±20µm	1.5N or less	63.5mm	16mm	5µm or less	21JAA224	5 pcs. (10, 20, 30, 30, 100mm)
547-212						101.6mm				
547-251	0.001mm			±5µm	1.5N or less	63.5mm		2µm or less		
547-252						101.6mm				

Inch/Metric ANSI/AGD Type

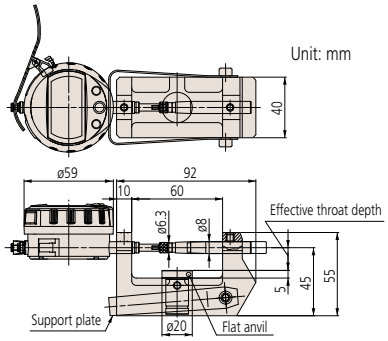
Order No.	Resolution	Measuring range	Stroke	Accuracy	Measuring force	Base			Contact point: Carbide-tipped ball	Extension rods
						Length	Width	Flatness		
547-217S	.0005"/0.01mm	0~8"	.5"	±.001" or less	1.5N or less	2.5"	.63"	.0002" or less	21JAZA242	4 pcs. (.5",1",2",4")
547-218S	.0005"/0.01mm	0~8"	.5"	±.001" or less	1.5N or less	4"	.63"	.0002" or less		4 pcs. (.5",1",2",4")
547-257S	.00005"/0.001mm	0~8"	.5"	±.0002" or less	1.5N or less	2.5"	.63"	.00008" or less		4 pcs. (.5",1",2",4")
547-258S	.00005"/0.001mm	0~8"	.5"	±.0002" or less	1.5N or less	4"	.63"	.00008" or less		4 pcs. (.5",1",2",4")

Note) The accuracy specification does not include the quantizing error of ±1 count.

Mitutoyo

ABS Digimatic Bench Gage

- The support plate allows easy reading by tilting the anvil.
- Carbide measuring faces (for the contact point and anvil)
- The lifting lever can be used either on the left or right sides.



Metric ISO/JIS Type

Order No.	Indicator stroke	Resolution	Workpiece height	Effective throat depth	Anvil adjustment	Accuracy	Measuring force
547-064	12mm	0.01mm	ø20mm	15mm	13mm	±20µm or less	1.5N or less

Inch/Metric ANSI/AGD Type

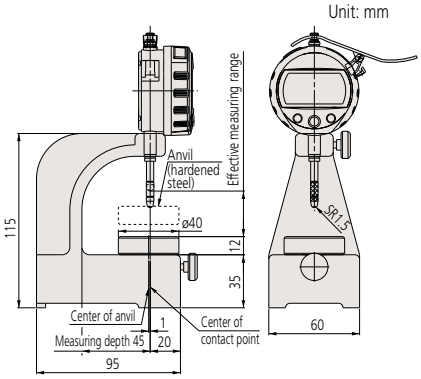
Order No.	Indicator stroke	Resolution	Remarks (contact point)	Effective throat depth	Workpiece height	Accuracy	Measuring force
547-066S	.5"	.0005"/0.01mm	.248" DIA flat type	.59"	1"	±.001" or less	1.5N or less

Note) The accuracy specification does not include the quantizing error of ±1 count.

ABS Digimatic Upright Gage

- Best suited for inspection of small parts at a site
- Carbide ball contact point
- The lifting lever that is a standard accessory for **No. 547-054, 547-034S** can be used either on the left or right sides.

547-055



Metric ISO/JIS Type

Order No.	Resolution	Measuring range	Anvil	Workpiece height	Accuracy	Measuring force
547-054	0.01mm	12.7mm	ø40mm (steel type)	30mm	±20µm or less	1.5N or less
547-053	0.001mm	12.7mm	ø50mm (ceramic type)		± 3µm or less	
547-055	0.001mm	12.7mm	ø40mm (steel type)		± 3µm or less	

Inch/Metric ANSI/AGD Type

Order No.	Resolution	Measuring range	Anvil	Workpiece height	Accuracy	Measuring force
547-034S	.0005"/0.01mm	.5"	1.57" DIA steel type	1.2"	±.001" or less	1.5N or less
547-033S	.00005"/0.001mm	.5"	1.97" DIA ceramic type	1.2"	±.0001" or less	
547-035S	.00005"/0.001mm	.5"	1.57" DIA steel type	1.2"	±.0001" or less	

Note) 1. The lifting lever (part No. 21EZA198) is a standard accessory for **547-054**.
2. The lifting lever (part No. 21EZA199) is a standard accessory for **547-034S**.
3. The lifting cable (part No. 540774) is a standard accessory for **547-055**, **547-033S**, **547-035S**.
4. The accuracy specification does not include the quantizing error of ±1 count.

- The ABS (ABSOLUTE) scale used in these products is a capacitance type absolute encoder. Its patent has been registered in Japan, the U.S., the U.K., Germany, and China.

Various Digimatic Indicators

① **ID-C**: Standard Digital Indicator
② **ID-N/B**: waterproof, 35mm slim body with various functions
③ **ID-H**: infrared remote controller, high accuracy, and various functions
④ **ID-S**: cost-effective type that has basic functions
⑤ **ID-U1025**: general-purpose type that has a 25.4mm measuring range
⑥ **ID-C112RB**: has a built-in calculation function
⑦ **ID-C112A**: has a peak hold function
⑧ **ID-C112GB**: internal diameter measuring instrument dedicated to cylinder gages

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