New Products

ABSOLUTE Digimatic Indicator ID-C (Signal Output Function Type)
Refer to page F-13 for details.

Dial Test Indicator (Lever Type)
Refer to page F-61 for details.

Inspection Instruments for Indicators (i-Checker)
Refer to pages F-71 for details.
Mitutoyo reserves the right to change any or all aspects of any product specification, including prices, designs and service content, without notice.

INDEX

Digimatic Indicators
- ABSOLUTE, Solar-Powered, ID-SS - F-3
- ABSOLUTE, Economical, ID-SX - F-4
- ABSOLUTE, Standard, ID-EX - F-5
- ABSOLUTE, IP66 Waterproof, ID-NB - F-7
- ABSOLUTE, Peak-Value Hold, ID-C - F-9
- ABSOLUTE, for Bore Gage, ID-C - F-10
- ABSOLUTE, Calculation, ID-C - F-11
- ABSOLUTE, Signal Output Function, ID-C - F-13
- ABSOLUTE, Slim, Economical, ID-U - F-14
- High Accuracy, High Functionality, ID-H - F-15
- ABSOLUTE, Back-Lit Screen, ID-F - F-17
- EC Counter - F-18

Dial Indicators
- Dial Indicator Features - F-19
- Standard, 0.01mm Graduation - F-21
- Standard, 0.001 & 0.005mm Graduation - F-23
- Waterproof, 0.01mm & 0.001mm Graduation - F-25
- Standard, Inch Reading - F-27
- Standard, One Revolution - F-29
- Standard, One Revolution, Waterproof - F-31
- Standard, One Revolution, Lightweight - F-33
- Long Stroke - F-35
- Compact, Extra Small Diameter - F-37
- Compact, Small Diameter - F-39
- Compact, One Revolution - F-41
- Long Stroke, Large Diameter - F-43
- ANSI/AGD, Metric - F-45
- Special Feature Models - F-47
- Back Plunger - F-49
- Contact Points - F-51
- Interchangeable Backs - F-55
- Optional Accessories - F-56
- Measurement data storage using Digimatic Indicators - F-60

Dial Test Indicators
- Dial Test Indicator Features - F-61
- Horizontal - F-62
- Horizontal (20° tilted face), Vertical, and Parallel - F-64
- Universal - F-66
- Pocket - F-67
- Styli, stems and holders - F-69
- i-Checker, IC2000 - F-71
- UDT-2 Dial Indicator Tester - F-72
- Calibration Tester - F-72

Dial Indicator Applications
- Thickness gages - F-73
- Contact force gage - F-76
- Dial snap gage - F-77

Stands
- Magnetic base - F-78
- Dial gage - F-80
- Comparator, Granite Base - F-82
- Comparator, Cast Iron base - F-84
- Transfer - F-85
- V-block set - F-86
- Quick Guide to Precision Measuring Instruments - F-87
Digimatic Indicators

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

ABSOLUTE Solar-Powered Digimatic Indicator ID-SS

SERIES 543

- Solar powered
- An environmentally friendly measuring instrument that does not require batteries, eliminating the hassle and cost of battery replacement. Can operate down to a minimum light level of 40 lux – lower than the level in a warehouse.
- Built-in recharger
- The large-capacity built-in reservoir capacitor allows you to use the indicator for long periods of time under light conditions below the minimum level.*
- User-friendly buttons
- All functions can be accessed by using the two or three large buttons on the front of the indicator.
- Origin recorded even if display disappears.
  - The indicator includes an ABS (absolute) scale that allows the previously set origin to be restored even if the display disappears due to insufficient light, making it easy to resume measurement. This feature makes ID-SS ideal for long-time or multi-point measurement.

SPECIFICATIONS

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy**</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>543-500</td>
<td>12.7 mm</td>
<td>0.001 mm</td>
<td>0.003 mm</td>
<td>0.002 mm</td>
</tr>
<tr>
<td>543-500B</td>
<td></td>
<td></td>
<td></td>
<td>With lug</td>
</tr>
<tr>
<td>543-505</td>
<td>0.01 mm</td>
<td>0.2 mm</td>
<td>0.02 mm</td>
<td>0.01 mm</td>
</tr>
<tr>
<td>543-505B</td>
<td></td>
<td></td>
<td></td>
<td>With lug</td>
</tr>
<tr>
<td>543-506</td>
<td>50.1 mm</td>
<td>0.0001 mm</td>
<td>0.0001 mm</td>
<td>0.0001 mm</td>
</tr>
<tr>
<td>543-506B</td>
<td></td>
<td></td>
<td></td>
<td>With lug</td>
</tr>
<tr>
<td>543-507</td>
<td>0.001 mm</td>
<td>0.001 mm</td>
<td>0.0005 mm</td>
<td>0.001 mm</td>
</tr>
<tr>
<td>543-507B</td>
<td></td>
<td></td>
<td></td>
<td>With lug</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy**</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>543-501</td>
<td>0.5 in/12.7 mm</td>
<td>0.0005 in</td>
<td>±0.0001 in</td>
<td>Flat</td>
</tr>
<tr>
<td>543-501B</td>
<td></td>
<td>/0.01 mm</td>
<td>/0.003 mm</td>
<td>With lug</td>
</tr>
<tr>
<td>543-502</td>
<td>543-502B</td>
<td>0.0005 in</td>
<td>±0.0010 in</td>
<td>Flat</td>
</tr>
<tr>
<td>543-506</td>
<td>543-506B</td>
<td>0.001 mm</td>
<td>±0.0005 mm</td>
<td>With lug</td>
</tr>
<tr>
<td>543-507</td>
<td>543-507B</td>
<td>0.001 mm</td>
<td>±0.0005 mm</td>
<td>Flat</td>
</tr>
</tbody>
</table>

*1 Quantizing error of ±1 count is excluded.
*2 Overall magnification and linearity.

Dimensions

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 indicators are provided with a stem of 3/8 inch dia. and #4-48UNF thread mount for the contact point.

Technical Data

- Display: 6-digit LCD, sign
- Measuring force: 1.5 N or less
- Usable positions: All
- Power supply: Solar battery (for indoor use)
- Minimum Operating light: 40 lux
  - Note: A built-in reservoir capacitor allows a fully charged ID-SS to be used for about 3.5 hours under light illumination below the minimum level.
  - The charging time differs depending on the environment, but it usually takes about 1.5 hours for a fully discharged ID-SS to fully recharge under light conditions of 500 lux.
- Minimum response speed: No limit (scan-type measurement is not supported)

Functions

- Origin set (Zero-setting)
- Direction switching
- Tolerance judgment
- Data output
- Error alarm display

Optional Accessories

- Lifting lever
- Lifting knob
- Lifting cable

Optional Accessories

- Lifting lever:
  - 21EZA198 (12.7 mm/0.5 inch ISO/JIS type)
  - 21EZA199 (12.7 mm/0.5 inch ASME/ANSI/AGD type)
- Lifting knob:
  - 21EZA105 (12.7 mm/0.5 inch ISO/JIS type)*
  - 21EZA150 (12.7 mm/0.5 inch ASME/ANSI/AGD type)*
- 21EZA197 (25.4 mm/1 inch models)
- 21EZA200 (50.8 mm/2 inch models)

- Lifting cable: S40774

- Lifting lever: 137693 (for measuring range: 25.4 and 50.8 mm) (supplied with 25.4 mm and 50.8 mm models as standard.)
- * Not available for low measuring force models.

- Auxiliary spindle spring:
  - 02ACAS71 (25.4 mm/1 inch models)**
  - 02ACAS72 (50.8 mm/2 inch models)**
  - **Required when orienting the indicator upside down.
- Lug-on-senter back:
  - 101040 (25.4 mm/1 inch and 50.8 mm/2 inch, ISO/JIS type)
  - 101306 (25.4 mm/1 inch and 50.8 mm/2 inch, ASME/ANSI/AGD type)
  - 101306 (25.4 mm/1 inch and 50.8 mm/2 inch, ASME/ANSI/AGD type)*
- Regular visual work such as work carried out in a factory; monitoring work such as using instrument panels and control panels
- * ID-SS can be used in standard work environments.
- The following is excerpted from JIS Z9110:2010 General rules of recommended lighting levels; 5.4 Factories:

- Luminance (lx) | Location (permissible work)
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1500</td>
<td>Very detailed visual work</td>
</tr>
<tr>
<td>750</td>
<td>Detailed visual work, design and drawing work</td>
</tr>
<tr>
<td>900</td>
<td>Regular visual work such as work carried out in a factory, monitoring work such as using instrument panels and control panels</td>
</tr>
<tr>
<td>300</td>
<td>Administrative work carried out in a warehouse</td>
</tr>
<tr>
<td>200</td>
<td>Control rooms, bathrooms, and places where manual light work is carried out</td>
</tr>
<tr>
<td>150</td>
<td>Work such as loading, unloading, and shifting back</td>
</tr>
<tr>
<td>100</td>
<td>Railways, corridors, entrances and exits, and warehouses</td>
</tr>
<tr>
<td>50</td>
<td>Indoor emergency staircases</td>
</tr>
</tbody>
</table>

** Measured at the factory; monitoring work such as using instrument panels and control panels.

** Measured at the factory; monitoring work such as using instrument panels and control panels.

Mitutoyo reserves the right to change any of all aspects of any product specification, including prices, designs and service content, without notice.
ABSOLUTE Digimatic Indicator ID-SX Series 543

- Cost-effective oriented design: ID-SX indicators use a button-type battery (5R44) and come with the minimum of functionality for ease of use. There is a choice of models in the lineup allowing selection of 0.01 mm, 0.001 mm or inch-based measurement resolutions.
- IP53 dust/water protection level: The models listed below also provide IP53 dust/water protection level specifications: 543-794/94B/95/95B/96/96B
- ABS (absolute) scale: These Digimatic indicators employ Mitutoyo’s proprietary ABS (absolute) scale, which makes it possible to restore the origin point even if the power is turned off. This eliminates the need to perform origin restoration each time the power is turned on. Furthermore, this scale ensures that overshoot errors do not occur, which improves reliability.
- Equipped with a data output port that enables incorporation into measurement networking and statistical process control systems (refer to page A-3).

Optional Accessories
- Lifting lever 21EZA198 (ISO/JIS/DIN Type), 21EZA199 (ASME/ANSI/AGD Type)
- Lifting knob 21EZA105 (ISO/JIS/DIN Type), 21EZA150 (ASME/ANSI/AGD Type)
- Lifting cable S40774
- SPC Cable: 905338 (1 m), 905409 (2 m)
- USB Input Tool Direct (2 m): 06AFM380F
- *Please separately purchase USB-ITPAK since there is no data output switch on the measurement instrument. Refer to pages A-20 to A-22 for details.
- Connecting Cables for U-WAVE-T (160 mm): 264-505
- Connecting Cables for inch models: 21EZA198 (ISO/JIS/DIN Type), 21EZA199 (ASME/ANSI/AGD Type)
- Connecting Cables for INCH (inch models): 21EZA198 (ISO/JIS/DIN Type), 21EZA199 (ASME/ANSI/AGD Type)
- Contact points for Mitutoyo’s dial indicators (Refer to pages F-51 to F-54 for details.)
- Interchangeable backs for 2 series (Refer to page F-55 for details.)
- Measuring stands (Refer to pages F-78 to F-85 for details.)

IP53 dust/water protection level
Level 5: Dust protection
While complete protection against intrusion of dust is not provided, protection is adequate to prevent dust intrusion in amounts that would inhibit the prescribed operations and safety of the electronic equipment.

Level 3: Protection against spraying water
The product suffers no harmful effects when subjected to water sprayed at an angle of up to 90 degrees on both sides.

For details on the dust/water protection level test conditions, refer to IEC, 60529:2001 and JIS C 0920:2003. IP code is the degree of protection against the intrusion of solid foreign objects and water.
Mitutoyo offers a lineup of coolant proof, ID-N/B models in the lineup allowing selection of models in the lineup for environments that include splashing cutting fluid.

Specifications

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
<th>Back type</th>
<th>Measuring force</th>
<th>Battery life</th>
<th>Dust/Water protection level</th>
</tr>
</thead>
<tbody>
<tr>
<td>543-790</td>
<td>12.7 mm</td>
<td>0.001 mm</td>
<td>±0.003 mm</td>
<td>With lug</td>
<td>1.5N or less</td>
<td>Approx. 5 years (Normal use)</td>
<td>IP42</td>
</tr>
<tr>
<td>543-791B</td>
<td>0.001 mm</td>
<td>±0.0001 in</td>
<td>±0.001 in</td>
<td>Flat</td>
<td>2.5N or less</td>
<td>Approx. 5 years (Normal use)</td>
<td>IP53</td>
</tr>
<tr>
<td>543-792B</td>
<td>0.001 mm</td>
<td>±0.001 in</td>
<td>±0.001 in</td>
<td>Flat</td>
<td>2.5N or less</td>
<td>Approx. 5 years (Normal use)</td>
<td>IP42</td>
</tr>
<tr>
<td>543-793B</td>
<td>0.001 mm</td>
<td>±0.0005 in</td>
<td>±0.001 in</td>
<td>Flat</td>
<td>2.5N or less</td>
<td>Approx. 5 years (Normal use)</td>
<td>IP53</td>
</tr>
<tr>
<td>543-794B</td>
<td>0.0005 in</td>
<td>±0.001 in</td>
<td>±0.001 in</td>
<td>Flat</td>
<td>2.5N or less</td>
<td>Approx. 5 years (Normal use)</td>
<td>IP42</td>
</tr>
<tr>
<td>543-795B</td>
<td>0.0005 in</td>
<td>±0.0005 in</td>
<td>±0.001 in</td>
<td>Flat</td>
<td>2.5N or less</td>
<td>Approx. 5 years (Normal use)</td>
<td>IP53</td>
</tr>
<tr>
<td>543-796B</td>
<td>0.0005 in</td>
<td>±0.001 in</td>
<td>±0.001 in</td>
<td>Flat</td>
<td>2.5N or less</td>
<td>Approx. 5 years (Normal use)</td>
<td>IP42</td>
</tr>
<tr>
<td>543-797B</td>
<td>0.0005 in</td>
<td>±0.0005 in</td>
<td>±0.001 in</td>
<td>Flat</td>
<td>2.5N or less</td>
<td>Approx. 5 years (Normal use)</td>
<td>IP53</td>
</tr>
<tr>
<td>543-798B</td>
<td>0.0005 in</td>
<td>±0.0005 in</td>
<td>±0.001 in</td>
<td>Flat</td>
<td>2.5N or less</td>
<td>Approx. 5 years (Normal use)</td>
<td>IP42</td>
</tr>
<tr>
<td>543-799B</td>
<td>0.0005 in</td>
<td>±0.0005 in</td>
<td>±0.001 in</td>
<td>Flat</td>
<td>2.5N or less</td>
<td>Approx. 5 years (Normal use)</td>
<td>IP53</td>
</tr>
</tbody>
</table>

Technical Data
- Display: 6-digit LCD, sign
- Usable orientation: All
- Scale type: ABSOLUTE, electrostatic linear encoder
- Battery: 5R44 (1 pc.), 938882 for initial operational checks (standard accessory)
- Maximum response speed: No limit (except for scanning measurement)

Functions
- Origin set (Zero-setting)
- Direction switching
- Data output
- Low battery voltage alarm display
- Error alarm display

Mitutoyo reserves the right to change any or all aspects of any product specification, including prices, designs and service content, without notice.
Digimatic Indicators
Comparison measuring instruments which ensure high quality, high accuracy and reliability.

**ABOLUTE Digimatic Indicator ID-CX**
SERIES 543 — Standard Type

- The ABS (absolute) scale restores the last origin position automatically when the indicator is turned on.
- The large LCD incorporates 11 mm characters giving 1.5 times the character area of conventional products (which display 8.5 mm characters) making measurement values much easier to read.
- Three large buttons
  - 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
  - Increment conversion (inch/mm models)
- 330° rotary display
  - The display can be rotated 330°, allowing use at a position where you can easily read the measurement value.

**Measuring range** makes buttons easier to press and operations easier to perform.

- Battery life of approx. 7,000 hours in continuous use has been achieved with only one battery.
- Equipped with a data output port that enables incorporation into measurement networking and statistical process control systems (refer to page A-3).
- Large LCD
  - The large LCD incorporates 11 mm characters giving 1.5 times the character area of conventional products (which display 8.5 mm characters) making measurement values much easier to read.

**Technical Data**
- Display: 6-digit LCD, sign
- Battery: 3544 (1 pc.), 938882 for initial operational checks (standard accessory)
- Battery life: Approx. 7,000 hours of continuous use. Approx. 1.2 years under normal use.
- Depends on use of the indicator. The above values are reference values.
- *Maximum response speed: No limit (except for scanning measurement)

**Functions**
- Zero-setting (INC system)
- Pre-setting (ABS system)
- Direction switching
- Tolerance judgment
- Resolution switching (For 0.001 mm or 0.00005 inch resolution models)
- Calculation: f(x) = Ax
- Function locking
- Data output
- Display value holding
- Function locking
- Calculation: f(x) = Ax
- Resolution switching (For 0.001 mm or 0.00005 inch resolution models)

**Optional Accessories**
- Lifting lever:
  - 21E2A198 (12.7 mm/0.5 inch ISO/JIS type)
  - 21E2A199 (12.7 mm/0.5 inch ASME/ANSI/AGD type)
  - 21E2A105 (12.7 mm/0.5 inch ISO/JIS type)*
  - 21E2A150 (12.7 mm/0.5 inch ASME/ANSI/AGD type)*
  - 21E2A197 (25.4 mm/1 inch models)
  - 21E2A200 (50.8 mm/2 inch models)
  - Lifting cable: S40774
  - Lifting lever: 137693 (for measuring range: 25.4 and 50.8 mm) supplied with 25.4 mm and 50.8 mm models as standard.
- *Not available for low measuring force models.
- Auxiliary spindle spring:
  - 02ACASS1 (25.4 mm/1 inch models)**
  - 02ACASS7 (50.8 mm/2 inch models)**
- **Required when orienting the indicator upside down.
- Centering back:
  - 101040 (25.4 mm/1 inch and 50.8 mm/2 inch, ISO/JIS type)
  - 101036 (25.4 mm/1 inch and 50.8 mm/2 inch, ASME/ANSI/AGD type)
- SPC Cable:
  - 905338 (1 m)
  - 905409 (2 m)
- USB Input Tool Direct (2 m):
  - 06AFMI380F
- Input Tool Series
  - T-016U (USB Keyboard Signal Conversion Type) : 264-016-10
  - T-007R (RS-232C Communication Conversion Type) : 264-007
  - Refer to page F-60 for details.
- Connecting Cables for U-WAVE-T (160 mm):
  - 02AZD790F
  - For footswitch: 02AE140F
  - For data output:
    - Digimatic Mini-Processor DP-1VA LOGGER: 264-505
    - Connecting Cables for U-WAVE-T (160 mm):
      - 02AZD790F
      - For footswitch: 02AE140F
  - Refer to page F-60 for details.
- Contact points for Mitutoyo’s dial indicators
  - Interchangeable backs for 2 series
  - Interchangeable backs for 2 series
  - Measuring stands (Refer to pages F-78 to F-85 for details.)
  - Digimatic Mini-Processor DP-1VA LOGGER: 264-505
  - Digimatic Mini-Processor DP-1VA LOGGER: 264-505

**Measuring range**

- Measuring range (inch/mm models)
  - 543-394B: 12.7 mm
  - 543-490B: 25.4 mm
  - 543-490B: 50.8 mm

**Actual size**

- 11mm

**Usage example**

12.345

- Note: The measuring jig is not supplied with the ID-CX.
- Refer to page X for details.

Mitutoyo reserves the right to change any or all aspects of any product specification, including prices, designs and service content, without notice.
Mitutoyo reserves the right to change any or all aspects of any product specification, including prices, designs and service content, without notice.

### Inch/Metric

<table>
<thead>
<tr>
<th>Order No. (w/ lug, flat-back)</th>
<th>Range</th>
<th>Resolution</th>
<th>Overall accuracy*</th>
<th>Measuring force</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>543-391</td>
<td>12.7 mm</td>
<td>0.001 mm</td>
<td>0.003 mm</td>
<td>0.4 N - 0.7 N</td>
<td>Low measuring force</td>
</tr>
<tr>
<td>543-394</td>
<td>12.7 mm</td>
<td>0.01 mm</td>
<td>0.02 mm</td>
<td>0.9 N - 0.9 N</td>
<td>Low measuring force</td>
</tr>
<tr>
<td>543-396</td>
<td>12.7 mm</td>
<td>0.001 mm</td>
<td>0.004 mm</td>
<td>1.8 N - 0.9 N</td>
<td>Low measuring force</td>
</tr>
<tr>
<td>543-401</td>
<td>12.7 mm</td>
<td>0.001 mm</td>
<td>0.007 mm</td>
<td>1.5 N - 0.9 N</td>
<td>Low measuring force</td>
</tr>
<tr>
<td>543-402</td>
<td>12.7 mm</td>
<td>0.001 mm</td>
<td>0.009 mm</td>
<td>0.5 N - 0.9 N</td>
<td>Low measuring force</td>
</tr>
<tr>
<td>543-405</td>
<td>12.7 mm</td>
<td>0.001 mm</td>
<td>0.011 mm</td>
<td>1.8 N - 0.9 N</td>
<td>Low measuring force</td>
</tr>
<tr>
<td>543-406</td>
<td>12.7 mm</td>
<td>0.001 mm</td>
<td>0.012 mm</td>
<td>1.8 N - 0.9 N</td>
<td>Low measuring force</td>
</tr>
<tr>
<td>543-471B</td>
<td>1 in</td>
<td>1.8 mm</td>
<td>2.3 mm</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>543-472B</td>
<td>1 in</td>
<td>1.8 mm</td>
<td>2.3 mm</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>543-475B</td>
<td>1 in</td>
<td>1.8 mm</td>
<td>2.3 mm</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>543-476B</td>
<td>1 in</td>
<td>1.8 mm</td>
<td>2.3 mm</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>543-491B</td>
<td>2 in</td>
<td>0.002 mm</td>
<td>0.005 mm</td>
<td>2.3 mm</td>
<td>—</td>
</tr>
<tr>
<td>543-492B</td>
<td>2 in</td>
<td>0.002 mm</td>
<td>0.005 mm</td>
<td>2.3 mm</td>
<td>—</td>
</tr>
<tr>
<td>543-495B</td>
<td>2 in</td>
<td>0.002 mm</td>
<td>0.005 mm</td>
<td>2.3 mm</td>
<td>—</td>
</tr>
<tr>
<td>543-496B</td>
<td>2 in</td>
<td>0.002 mm</td>
<td>0.005 mm</td>
<td>2.3 mm</td>
<td>—</td>
</tr>
</tbody>
</table>

* Hysteresis: 0.0002 mm (0.001/0.01 mm resolution type)
* Repeatability: 0.0002 mm (0.001/0.01 mm resolution type)

### ISO/JIS Type

<table>
<thead>
<tr>
<th>Order No. (w/ lug, flat-back)</th>
<th>Range</th>
<th>Resolution</th>
<th>Overall accuracy*</th>
<th>Measuring force</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>543-391B</td>
<td>12.7 mm</td>
<td>0.001 mm</td>
<td>0.003 mm</td>
<td>1.5 N or less</td>
<td>—</td>
</tr>
<tr>
<td>543-394B</td>
<td>12.7 mm</td>
<td>0.01 mm</td>
<td>0.02 mm</td>
<td>0.9 N or less</td>
<td>—</td>
</tr>
<tr>
<td>543-396B</td>
<td>12.7 mm</td>
<td>0.001 mm</td>
<td>0.007 mm</td>
<td>1.8 N or less</td>
<td>—</td>
</tr>
<tr>
<td>543-401B</td>
<td>12.7 mm</td>
<td>0.001 mm</td>
<td>0.009 mm</td>
<td>1.5 N or less</td>
<td>—</td>
</tr>
<tr>
<td>543-402B</td>
<td>12.7 mm</td>
<td>0.001 mm</td>
<td>0.011 mm</td>
<td>0.5 N - 0.9 N</td>
<td>—</td>
</tr>
<tr>
<td>543-405B</td>
<td>12.7 mm</td>
<td>0.001 mm</td>
<td>0.012 mm</td>
<td>1.8 N or less</td>
<td>—</td>
</tr>
<tr>
<td>543-471B</td>
<td>1 in</td>
<td>1.8 mm</td>
<td>2.3 mm</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>543-472B</td>
<td>1 in</td>
<td>1.8 mm</td>
<td>2.3 mm</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>543-475B</td>
<td>1 in</td>
<td>1.8 mm</td>
<td>2.3 mm</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>543-476B</td>
<td>1 in</td>
<td>1.8 mm</td>
<td>2.3 mm</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>543-491B</td>
<td>2 in</td>
<td>0.002 mm</td>
<td>0.005 mm</td>
<td>2.3 mm</td>
<td>—</td>
</tr>
<tr>
<td>543-492B</td>
<td>2 in</td>
<td>0.002 mm</td>
<td>0.005 mm</td>
<td>2.3 mm</td>
<td>—</td>
</tr>
<tr>
<td>543-495B</td>
<td>2 in</td>
<td>0.002 mm</td>
<td>0.005 mm</td>
<td>2.3 mm</td>
<td>—</td>
</tr>
<tr>
<td>543-496B</td>
<td>2 in</td>
<td>0.002 mm</td>
<td>0.005 mm</td>
<td>2.3 mm</td>
<td>—</td>
</tr>
</tbody>
</table>

* Hysteresis: 0.0005 mm (0.001/0.01 mm resolution type)
* Repeatability: 0.0005 mm (0.001/0.01 mm resolution type)

### Dimensions

#### ISO/JIS Type

**12.7 mm range models**

- Model No.: ID-C1012X
- Code No.: 543-400

**50.8 mm range models**

- Model No.: ID-C1012X
- Code No.: 543-404

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 indicators are provided with a stem of 3/8 inch dia. and #4-48UNF thread mount for the contact point.

Note 3: Products with an Order No. suffixed "B" have a plain back, and other models have a center-lug back.

Refer to page F-55 for details of the backs.
Digimatic Indicators
Comparison measuring instruments which ensure high quality, high accuracy and reliability.

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Metric</th>
<th>Order No.</th>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy*</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>543-570</td>
<td>12.7 mm</td>
<td>0.01 mm</td>
<td>0.02 mm</td>
<td>Slim type ID-N</td>
</tr>
<tr>
<td></td>
<td>543-580</td>
<td>5.0 mm</td>
<td>0.01 mm</td>
<td>0.02 mm</td>
<td>Slim type ID-N</td>
</tr>
<tr>
<td></td>
<td>543-575</td>
<td>12.7 mm</td>
<td>0.01 mm / 0.001 mm</td>
<td>0.01 mm / 0.003 mm</td>
<td>Back Plunger type ID-B</td>
</tr>
<tr>
<td></td>
<td>543-585</td>
<td>5.0 mm</td>
<td>0.01 mm / 0.001 mm</td>
<td>0.01 mm / 0.003 mm</td>
<td>Back Plunger type ID-B</td>
</tr>
</tbody>
</table>

*Quantizing error of ±1 count is excluded

- **ORDER NO.**
- **RESOLUTION**
- **ACCURACY**
- **REMARKS**

**Units**

- **Metric**
- **Inch/Metric**

**Functions**

- Zero-setting (INC system)
- Presetting (ABS system)
- Direction switching
- Tolerance judgment
- LCD readout reversal
- Resolution switching (for 0.001 mm or 0.00005 inch resolution models)
- Data output
- Display value holding (when no external device is connected)
- Low battery voltage alarm display
- Error alarm display

**Optional Accessories**

- **SPC Cable:**
  - 905409 (2 m)
  - 905409 (1 m)
- **USB Input Tool Direct (2 m):**
  - 06AFM380F
- **Connecting Cables for U-WAVE-T (160 mm):**
  - 02AZD790F
  - 264-505
  - Refer to page F-60 for details.
- **Digimatic Mini-Processor DP-1VA LOGGER:**
  - 264-505
  - 21EZA105 (ASME/ANSWAGD type)*
  - 21EZA150 (ISO/JIS type)*

Spindle can be manually lifted. Remove the spindle cap for ID-N and attach the lifting knob to the spindle. Note that water resistance is not maintained in this configuration.

Available in Metric (ISO/JIS type) and Inch (ASME/ANSWAGD type).*

**Liquid**

- Lug
  - 21EZA145 (ISO/JIS type)
  - 21EZA146 (ASME/ANSWAGD type)
- Arm for ID-B (made-to-order)
- Rubber boot:
  - For oil resistance (NBR) 02ACA376 (for ID-N)
  - 125317 (for ID-B)
- For durability (silicon) 238774 (for ID-N)
  - 21EAA212 (for ID-B)
- **SPC cable:**
  - 21EAA194 (1 m)
  - 21EAA190 (2 m)
- **USB Input Tool Direct (2 m):**
  - 06AFM380G
- **Input Tool Series**
  - D-016U (USB Keyboard Signal Conversion Type) 264-016-10
  - D-017R (RS-232C Communication Conversion Type) 264-007
  - Refer to page F-60 for details.
- **Connecting Cables for U-WAVE-T (160 mm):**
  - 02AZD790G
  - 21EAA212 (for ID-B)

Two of the wires inside the cable are separated for zero setting without touching the SET switch on the main body. Use these wires in combination with commercially available switches. Zero setting is performed by briefly connecting these two wires together (less than a second), and ABS preset & recall by connecting for a second or more. Contact points for Mitutoyo’s dial indicators.

Refer to pages F-51 to F-54 for details.
Usage examples

Refer to the ABS Coolantproof Digimatic Indicator ID-N/ID-B brochure (E4302-543) for details.

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 indicators are provided with a stem of 3/8 inch dia. and #4-48UNF thread mount for the contact point.
Digimatic Indicators

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

ABSOLUTE Digimatic Indicator ID-C
SERIES 543 — Peak-Value Hold Type

- Run-out/MAX-MIN Hold function enables GO/±NG judgment for peak or difference values.
- Simple selection of many functions with five buttons and status icons.
- Wide LCD and new analog bar graph are now standard on all models.
- Sampling is performed fifty times per second for accurate detection of maximum and minimum values.
- The ABS (absolute) scale restores the last origin position automatically when the indicator is turned on, and realizes high reliability by eliminating over-speed errors.
- By using the parameter setup kit (optional) and the dedicated software, the functions and the parameters can be configured using a computer.
- Equipped with a data output port that enables incorporation into measurement networking and statistical process control systems (refer to page A-3).

Functions
- Peak value hold (maximum and minimum value)
- Runout value Hold (difference between maximum/minimum values)
- Zeroset (INC system)
- Preset function (ABS system)
- Counting direction switching
- Tolerance judgment (P1, P2, P3, and INC can be stored)
- Simple calculation f(x)=Ax
- Analog bar resolution selection
- Key lock
- in/mm conversion (inch/mm models)
- Display hold (when external device is connected)
- Data output
- External PC setting input
- Display rotation (330°)
- Low battery voltage alarm display
- Error alarm display

Optional Accessories
- Lifting
  - Lifting lever
    - 21EZA198 (ISO/JIS/Type), 21EZA199 (ASME/ANSI Type)
  - Lifting knob
    - 21EZA105 (ISO/JIS/Type), 21EZA150 (ASME/ANSI Type)
  - Lifting cable
    - 540774
- SPC Cable:
  - 905338 (1 m), 905409 (2 m)
- USB Input Tool Direct (2 m):
  - 06AFM380F
- Input Tool Series
  - IT-016U (USB Keyboard Signal Conversion Type): 264-016-10
  - IT-007R (RS-232C Communication Conversion Type): 264-007
- Connecting Cables for U-WAVE-T (160 mm): 02AZD790F
- For footswitch: 02AZE140F
- Digimatic Mini-Processor DP-1VA LOGGER: 264-505
- Parameter setup kit: 21EZA313

Note: Parameter setting software (can be downloaded for free from the Mitutoyo website) is also required.

SPECIFICATIONS

<table>
<thead>
<tr>
<th>Metric</th>
<th>ISO/JIS type</th>
<th>ASME/ANSI/AGD type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Order No.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(w/lug, flat-back)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resolution</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accuracy*1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall*2</td>
<td>Hysteresis</td>
<td>Repeatability</td>
</tr>
<tr>
<td>Power supply</td>
<td>Battery life</td>
<td>Net weight</td>
</tr>
<tr>
<td>(normal use)*3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>543-300</td>
<td>12.7 mm</td>
<td>0.001/0.01 mm</td>
</tr>
<tr>
<td>543-300B</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Inch/Metric     |              |                    |
| Order No.       |              |                    |
| (w/lug, flat-back) |              |                    |
| Range           |              |                    |
| Resolution      |              |                    |
| Accuracy*1      |              |                    |
| Overall*2       | Hysteresis   | Repeatability      |
| Power supply    | Battery life | Net weight         |
| (normal use)*3  |              |                    |
| 543-301         | 0.5 in/12.7 mm | 0.00005/0.00010/0.0005 in | 0.00010 in | 0.00010 in | 0.00010 in | CR2032 x 1 pc. | Approx. 1 year | 180 g |
| 543-301B        |              |                    |
| 543-302         | 195 g        | 170 g              |
| 543-302B        |              |                    |

DIMENSIONS

<table>
<thead>
<tr>
<th>ISO/JIS Type</th>
<th>Unit: mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diam.</td>
<td>ø10.9</td>
</tr>
<tr>
<td>Holes</td>
<td>20</td>
</tr>
<tr>
<td>Ø1.5</td>
<td>ø4.8</td>
</tr>
<tr>
<td>Ball contact</td>
<td>ø4.8</td>
</tr>
<tr>
<td>901312</td>
<td>7.6</td>
</tr>
</tbody>
</table>

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 indicators are provided with a stem of 3/8 inch dia. and #4-48UNF thread mount for the contact point.
ABSOLUTE Digimatic Indicator ID-C SERIES 543 — Bore Gage Type

- Dedicated to inside measurement with minimum-value Hold and tolerance judgment functions.
- Measurement data memory function (9 measurement results can be stored)
- Simple operation of many functions with five buttons and status icons.
- Wide LCD and new analog bar graph are now standard on all models.
- The ABS (absolute) scale restores the last origin position automatically when the indicator is turned on, and realizes high reliability by eliminating over-speed errors.
- By using the parameter setup kit (optional) and the dedicated software, the functions and the parameters can be configured using a computer.
- Equipped with a data output port that enables incorporation into measurement networking and statistical process control systems (refer to page A-3).

Optional Accessories
- SPC Cable: 905338 (1 m)  
  905409 (2 m)
- USB Input Tool Direct (2 m): 06AFM380F
- Input Tool Series
  IT-016U (USB Keyboard Signal Conversion Type): 264-016-10
  IT-007R (RS-232C Communication Conversion Type): 264-007
- Parameter setup kit: 21EZA313
  Note: Parameter setting software (can be downloaded for free from the Mitutoyo website) is also required.

Absolute Digimatic Bore Gages, which integrate the display with a bore gage measuring unit, are also available. Refer to pages C-43 and C-44 for details.

SPECIFICATIONS

<table>
<thead>
<tr>
<th>Metric</th>
<th>ISO/JIS Type</th>
<th>ASME/ANSI/AGD Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Order No.*</td>
<td>Range</td>
<td>Resolution</td>
</tr>
<tr>
<td>543-310B</td>
<td>12.7 mm</td>
<td>0.001/0.01 mm</td>
</tr>
<tr>
<td>543-311B</td>
<td>0.5 in/ 12.7 mm</td>
<td>0.0005/0.0001/0.0005 in</td>
</tr>
<tr>
<td>543-312B</td>
<td>0.5 in/ 12.7 mm</td>
<td>0.0005/0.0001/0.0005 in</td>
</tr>
</tbody>
</table>

*Flat back only

Inch/Metric

| Order No.* | Range | Resolution | Accuracy*1 | Power supply | Battery life (normal use)*2 | Net weight |
| 543-311B | 0.5 in/ 12.7 mm | 0.0005/0.0001/0.0005 in | ±0.00010 in | 0.00010 in | 0.00010 in | CR2032 x 1 pc. | Approx. 1 year | 170 g |
| 543-312B | 0.5 in/ 12.7 mm | 0.0005/0.0001/0.0005 in | ±0.00010 in | 0.00010 in | 0.00010 in | CR2032 x 1 pc. | Approx. 1 year | 170 g |

*Flat back only

1 Quantizing error of ±1 count is excluded. Valid for resolution set to 0.001 mm/0.00005 inch
2 Overall magnification and linearity.
3 Applies only if not connected to a data processor. Battery life depends on use of the indicator. Use the above value as a guide only.

DIMENSIONS

<table>
<thead>
<tr>
<th>ISO/JIS Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>ø10.9</td>
</tr>
<tr>
<td>ø59.1</td>
</tr>
<tr>
<td>ø54.4</td>
</tr>
<tr>
<td>ø4.8</td>
</tr>
<tr>
<td>ø8.3</td>
</tr>
<tr>
<td>ø28.6</td>
</tr>
<tr>
<td>ø13.3</td>
</tr>
<tr>
<td>ø16.8</td>
</tr>
<tr>
<td>ø1.2</td>
</tr>
<tr>
<td>ø4.8</td>
</tr>
<tr>
<td>ø9.01312</td>
</tr>
</tbody>
</table>

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 indicators are provided with a stem of 3/8 inch dia. and #4-48UNF thread mount for the contact point.
Digimatic Indicators
Comparison measuring instruments which ensure high quality, high accuracy and reliability.

ABSOLUTE Digimatic Indicator ID-C SERIES 543 — Calculation Type

- Calculation function operates on spindle displacement.
- Entering the appropriate formula factors for a fixture dedicated to the application enables direct measurement readout, thereby eliminating any need for the conversion tables previously needed for those applications where fixtures are typically used.
- Peak-Value Run-out/MAX/MIN Hold enables GO/±NG judgment for peak value.
- Simple operation of many functions with five buttons and status icons.
- Wide LCD and new analog bar graph are now standard on all models.
- The ABS (absolute) scale restores the last origin position automatically when the indicator is turned on, and realizes high reliability by eliminating over-speed errors.

SPECIFICATIONS

Inch/Metric

<table>
<thead>
<tr>
<th>Order No.*</th>
<th>Range (selectable)</th>
<th>Resolution (inch)</th>
<th>Accuracy (inch)</th>
<th>Hysteresis</th>
<th>Repeatability</th>
<th>Measuring force</th>
<th>Power supply</th>
<th>Battery life (normal use)**</th>
<th>Net Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>543-341B</td>
<td>0.5 in</td>
<td>±0.00001 in</td>
<td>±0.003 in</td>
<td>±0.002 mm</td>
<td>±0.002 mm</td>
<td>1.5 N or less</td>
<td>Approx. 1 year</td>
<td>CR2032 x 1 pc</td>
<td>170 g</td>
</tr>
<tr>
<td>543-342B</td>
<td>1 in</td>
<td>±0.00002 in</td>
<td>±0.003 in</td>
<td>±0.002 mm</td>
<td>±0.002 mm</td>
<td>1.8 N or less</td>
<td>CR2032 x 1 pc</td>
<td>190 g</td>
<td></td>
</tr>
<tr>
<td>543-343B</td>
<td>2 in</td>
<td>±0.000025 in</td>
<td>±0.003 in</td>
<td>±0.002 mm</td>
<td>±0.002 mm</td>
<td>2.3 N or less</td>
<td>CR2032 x 1 pc</td>
<td>260 g</td>
<td></td>
</tr>
</tbody>
</table>

* Flat back only

<table>
<thead>
<tr>
<th>Order No.*</th>
<th>Range (selectable)</th>
<th>Resolution (mm)</th>
<th>Accuracy (mm)</th>
<th>Hysteresis</th>
<th>Repeatability</th>
<th>Measuring force</th>
<th>Power supply</th>
<th>Battery life (normal use)**</th>
<th>Net weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>543-590B</td>
<td>12.7 mm</td>
<td>±0.003 mm</td>
<td>±0.002 mm</td>
<td>±0.002 mm</td>
<td>±0.002 mm</td>
<td>1.8 N or less</td>
<td>CR2032 x 1 pc</td>
<td>170 g</td>
<td></td>
</tr>
<tr>
<td>543-591B</td>
<td>25.4 mm</td>
<td>±0.006 mm</td>
<td>±0.002 mm</td>
<td>±0.002 mm</td>
<td>±0.002 mm</td>
<td>2.3 N or less</td>
<td>CR2032 x 1 pc</td>
<td>260 g</td>
<td></td>
</tr>
<tr>
<td>543-592B</td>
<td>50.8 mm</td>
<td>±0.010 mm</td>
<td>±0.002 mm</td>
<td>±0.002 mm</td>
<td>±0.002 mm</td>
<td>3.8 N or less</td>
<td>CR2032 x 1 pc</td>
<td>400 g</td>
<td></td>
</tr>
</tbody>
</table>

* Flat back only

Optional Accessories
- Lifting crane: 21EZA198 (ISO/JIS/DIN Type), 21EZA199 (ASME/ANSI/AGD Type)
- Lifting knob: 21EZA105 (ISO/JIS/DIN Type), 21EZA150 (ASME/ANSI/AGD Type)
- Lifting cable: 540774
- SPC Cable: 905338 (1 m), 905409 (2 m)
- USB Input Tool Direct (2 m): 06AFM380F
- USB Input Tool Series: 02AZD790F

Note: Parameter setting software (can be downloaded for free from the Mitutoyo website) is also required.
- Contact points for Mitutoyo’s dial indicators (Refer to pages F-51 to F-54 for details.)
- Measuring stands (Refer to pages F-78 to F-85 for details.)

DIMENSIONS

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 indicators are provided with a stem of 3/8 inch dia. and #4-40UNF thread mount for the contact point.
### Fixture examples

#### Ball diameter
- Outside diameter
- Outside radius
- Countersink diameter

### Examples of measuring various features

<table>
<thead>
<tr>
<th>Item</th>
<th>( D = \text{Countersink diameter} / \text{Groove width} ); ( H = \text{Countersink depth} / \text{Groove depth} )</th>
<th>( R = \text{Outside radius of round object} )</th>
<th>( R = \text{Inside radius of round object} )</th>
<th>( R = \text{Outside radius of round object} )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fixture type</strong>*</td>
<td>![ Fixture type examples ]</td>
<td>![ Fixture type examples ]</td>
<td>![ Fixture type examples ]</td>
<td>![ Fixture type examples ]</td>
</tr>
<tr>
<td><strong>Contact point</strong></td>
<td>Cone</td>
<td>Ball</td>
<td>Cone</td>
<td>Flat or radius to suit feature</td>
</tr>
<tr>
<td>( x = \text{Spindle displacement from ORIGIN set position (retraction is the positive-going direction)} )</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calculation ( x' = x + d )</td>
<td>( D = Ax )</td>
<td>( D = Ax' + B )</td>
<td>( H = Ax' + B )</td>
<td>( D = Ax' )</td>
</tr>
<tr>
<td><strong>Coefficient values</strong></td>
<td>A</td>
<td>(-2\tan\frac{\theta}{2})</td>
<td>(-2\tan\frac{\theta}{2})</td>
<td>(-1)</td>
</tr>
<tr>
<td>B</td>
<td>0</td>
<td>(2r\left{\frac{1}{\cos\frac{\theta}{2}} - \tan\frac{\theta}{2}\right})</td>
<td>(r\left{\frac{1}{\sin\frac{\theta}{2}}\right})</td>
<td>(-\frac{d}{2}\tan\frac{\theta}{2})</td>
</tr>
<tr>
<td>C</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Origin offset value</strong></td>
<td>d</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>ORIGIN-set position of spindle</strong></td>
<td>![ ORIGIN-set position examples ]</td>
<td>![ ORIGIN-set position examples ]</td>
<td>![ ORIGIN-set position examples ]</td>
<td>![ ORIGIN-set position examples ]</td>
</tr>
<tr>
<td><strong>Displayed measurement value at ORIGIN-set position of spindle</strong></td>
<td>0</td>
<td>Value of coefficient B</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**Notes:**
1. Fixtures suited to individual workpieces can be made to order.
2. Measuring accuracy is subject to fixture accuracy and workpiece form accuracy.
Digimatic Indicators

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

**ABSOLUTE** Digimatic Indicator ID-C
**SERIES 543 — Signal Output Function Type**

- Enables a tolerance judgment to be output to external equipment for a measurement result against user-defined limits. Solid-state switching provides high reliability by avoiding metallic switch contacts.
- Output is enabled by directly connecting to external devices (sequencers, etc., for which a logical invert is available if required). The measurement and judgment results are displayed on the LCD. The judgment result is also indicated by 2 LEDs.
- A peak-detection function is equipped for measuring and judging peak values, such as runout.
- Measurements are absolute (ABS system) relative to an origin point** as set by the user, which holds indefinitely so does not require resetting at every power-on.
- Provided with a 4 m cable.
- External power supply required is 5-24VDC / 100mA (max).
- Dust-water protection level: Conforms to IP54.

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Order No. (w/ lug, flat-back)</th>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy*2</th>
<th>Hysteresis</th>
<th>Repeatability</th>
<th>Measuring force</th>
</tr>
</thead>
<tbody>
<tr>
<td>S543-350</td>
<td>12.7 mm</td>
<td>0.0010/0.01 mm</td>
<td>0.003 mm or less</td>
<td>0.002 mm</td>
<td>0.002 mm</td>
<td>2.5 N or less</td>
</tr>
<tr>
<td>S543-350B</td>
<td>12.7 mm</td>
<td>0.0010/0.01 mm</td>
<td>0.003 mm or less</td>
<td>0.002 mm</td>
<td>0.002 mm</td>
<td>2.5 N or less</td>
</tr>
</tbody>
</table>

**Notes:**
1) LCD readout does not rotate.
2) Max/min. holding: sample rate is 100 readings/s; max. rate of change of reading is 100 μm/s.
3) Products with an Order No. suffixed “B” have a flat back.
4) Standard contact point: 901312 (ISO/JIS type), 21828005 (ANSI/AGD type)

**DIMENSIONS**

<table>
<thead>
<tr>
<th>ISO/JIS Type</th>
<th>Unit: mm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>543-350</td>
</tr>
<tr>
<td></td>
<td>12.7 mm</td>
</tr>
</tbody>
</table>

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

Mitutoyo reserves the right to change any or all aspects of any product specification, including prices, designs and service content, without notice.

**Output signals and LCD display**

- **Wire**
  - – NG
  - OK
  - + NG
  - Composition error

- **Back**
  - – V (GND)
  - Connected to minus (-) terminal

- **Red**
  - Power supply 5-24VDC

- **Green**
  - OK
  - D
  - Tolerance judgment
  - Result output: Only the terminal corresponding to a judgment result is set to the low level.

- **Brown**
  - + NG
  - D

- **Yellow**
  - PRESET_RECALL
  - ZERO
  - External input terminal. If the relevant terminal is set to the low level, its signal becomes true.

- **Blue**
  - PEAK_START
  - I
  - Connected to (GND [Earth])

**Note:** Measurement data cannot be output.

**I/O Specifications**

**Functions**

- Signal output (~NG/OK/+NG, N-ch open drain, logical invert is available)
- Remote control (peak start preset/zero-set)
- Peak detection (Max. / Min.)
- Zero-setting (INC system)
- Presetting (ABS system)
- Direction switching
- Tolerance judgment (3 pairs of ABS, INC memory function)
- Resolution switching
- Calculation: f(x) = Ax
- Key lock
- Calibration mode (Signal output in Digimatic code format)
- Error alarm display

**Optional Accessories**

- Lifting**
  - Lifting lever: 21EZA198 (ISO/JSDIN Type), 21EZA199 (ASME/ANSI AGD Type)
  - Lifting knob: 21EZA105 (ISO/JSDIN Type), 21EZA150 (ASME/ANSI AGD Type)
- Lifting cable: 21E774A
- **Dipgamic power supply unit:** 21EZA345
  - Note: To denote your AC power cable add the following suffixes to the order No.: A for UL/CSA, D for CEE, DC for CCC, E for KC. No suffix is required for JIS/100VAC.

- In the calibration mode when executing automatic inspection using i-Checker IC2000.
- In such a case, purchase connecting cable 21EAA194 (1 m), or 21EAA190 (2 m).
- * It can’t be used as a power supplier when using in the normal mode.
- **Contact points for Mitutoyo’s dial indicators:**
  - Interchangeable backs for Series 2 models. Dust-water protection is not guaranteed. Use the waterproof types for JIS/100VAC.

- Used in the calibration mode when executing automatic inspection using i-Checker IC2000.
- * Logical invert is available.

- **Inputs**
  - Shield
  - Earth

- **Output**
  - PEAK
  - Start (peak start preset/zero-set)
  - + NG
  - – NG
  - + OK
  - – OK

- **Shield, etc.**
  - Input current: Max. 20 mA

- **External power: 5-24DC at max.100 mA**

- **Input current: Max. 20 mA**

- **Cable:** 21EAA190 (1 m), or 21EAA194 (4 m), or 21EZA150 (ISO/JIS/DIN Type)
ABSOLUTE Digimatic Indicator ID-U SERIES 575 — Slim and Economical Design

• General purpose indicator with the measuring range of 25.4 mm / 1 inch.
• Cost-effective and user-friendly type which is equipped with only the basic functions necessary.
• The ABS (absolute) scale restores the last origin position automatically when the indicator is turned on, and realizes high reliability by eliminating over-speed errors. Regarding origin setting, refer to “Origin Setting of Digimatic Indicators” on page F-18.
• Battery life of 20,000 hours in continuous use has been achieved.
• Easy-to-read large LCD readout with a character height of 8 mm.
• Equipped with a data output port that enables incorporation into measurement networking and statistical process control systems (refer to page A-3).

SPECIFICATIONS

<table>
<thead>
<tr>
<th>Metric</th>
<th>Order No. (w/ lug, flat-back)</th>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy*</th>
<th>Measuring force</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>575-121</td>
<td>25.4 mm</td>
<td>0.01 mm</td>
<td>0.02 mm</td>
<td>1.8 N or less</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Inch/Metric</th>
<th>Order No. (w/ lug, flat-back)</th>
<th>Range (inch)</th>
<th>Resolution</th>
<th>Accuracy*</th>
<th>Measuring force</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>575-122</td>
<td>1 in / 25.4 mm</td>
<td>0.0005 in / 0.01 mm</td>
<td>0.001 in / 0.02 mm</td>
<td>1.8 N or less</td>
</tr>
<tr>
<td></td>
<td>575-123</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Quantizing error of ±1 count is excluded

DIMENSIONS

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 indicators are provided with a stem of 3/8 inch dia. and #4-48UNF thread mount for the contact point.
Digimatic Indicators
Comparison measuring instruments which ensure high quality, high accuracy and reliability.

Digimatic Indicator ID-H
SERIES 543 — High Accuracy and High Functionality Type

- This new-generation digital indicator offers the excellent accuracy and functionality expected from the top class of indicator.
- Take advantage of its high accuracy backed up by 0.0005 mm / 0.00002 inch inch resolution, remote control functionality via a handheld controller (or an RS-232C interface) and easy runout measurements with the well-established analog bar display.
- Functionality meets the needs of diverse measurement applications.

Tolerance judgment

<table>
<thead>
<tr>
<th>OK</th>
<th>NG</th>
</tr>
</thead>
</table>

Analog bar display

Resolution switching

- Measuring maximum value, minimum value and runout (difference between a maximum and a minimum value)

Maximum value / minimum value measurement

Difference/runout measurement

Example: Indicator traces between points <A> to <D>
Difference (or Total Runout) is displayed as <A>. Dimensions <B> (maximum value) and <C> (minimum value) can be recalled from memory with a simple key sequence.

- With the optional remote controller, operations such as zero-setting and presetting can be made without touching the indicator body, thereby avoiding disturbance to the set-up.
- An advanced, remote control system can be implemented with the built-in RS-232 interface and a PC.
- Equipped with a data output port that enables incorporation into measurement networking and statistical process control systems (refer to page A-3).

Technical Data
- Display: 7-digit LCD, sign, and analog bar with 2-color backlight
- Power supply: 6V DC (via AC adaptor) 06AE180
- To denote your AC power cable add the following suffixes to the order No.: A for UL/CSA, D for CEE/IEC, E for BS, K for KC.
- No suffix is required for JIS/100V
- Positional detection method: Photoelectric-type reflection linear encoder
- Maximum response speed: 1000 mm/min
- Lifting lever: 137693

Optional Accessories
- Lifting knob: 21EZA101
- Lifting cable: 540774 (stroke 30 mm)

Positional detection method: Photoelectric-type reflection linear encoder

Maximum response speed: 1000 mm/min
Lifting lever: 137693

EQUIPMENT SUPPLIED

- With the optional remote controller, operations such as zero-setting and presetting can be made without touching the indicator body, thereby avoiding disturbance to the set-up.
- An advanced, remote control system can be implemented with the built-in RS-232 interface and a PC.
- Equipped with a data output port that enables incorporation into measurement networking and statistical process control systems (refer to page A-3).
**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Metric</th>
<th>Order No.</th>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy**</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>543-561</td>
<td>30.4 mm</td>
<td>0.0005 mm, 0.0015 mm</td>
<td>0.0015 mm</td>
</tr>
<tr>
<td></td>
<td>543-563</td>
<td>60.9 mm</td>
<td>0.001 mm</td>
<td>0.0025 mm</td>
</tr>
</tbody>
</table>

* To denote your AC power cable add the following suffixes to the order No.: A for UL/CSA, D for CEE, DC for CCC, E for BS, K for KC. No suffix is required for JIS/100V

** Quantizing error of ±1 count is excluded.

<table>
<thead>
<tr>
<th>Inch/Metric</th>
<th>Order No.</th>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy**</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>543-562</td>
<td>1.2 in / 30.4 mm</td>
<td>0.00002 in, 0.00005 in, 0.0001 in</td>
<td>0.00015 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.4 in / 60.9 mm</td>
<td>0.00005 mm, 0.001 mm</td>
<td>0.0025 mm</td>
</tr>
</tbody>
</table>

* To denote your AC power cable add the following suffixes to the order No.: A for UL/CSA, D for CEE, DC for CCC, E for BS, K for KC. No suffix is required for JIS/100V

---

### DIMENSIONS

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 indicators are provided with a stem of 3/8 inch dia. and #4-48UNF thread mount for the contact point. Dimensions in parentheses ( ) apply to the 30.4 mm range model.
Digimatic Indicators
Comparison measuring instruments which ensure high quality, high accuracy and reliability.

ABSOLUTE Digimatic Indicator ID-F
SERIES 543 — with Back-lit LCD Screen

• GO/±NG judgment function: If a judgment result shows an out of tolerance condition, the display backlighting changes from green to red.
• An analog bar indicator has been integrated to make upper/lower limit and turnover point reading more comfortable.

Green indication for GO judgment  Red indication for ±NG judgment

• Equipped with a data output port that enables incorporation into measurement networking and statistical process control systems (refer to page A-3).
• Easy-to-read large LCD readout with the character height of 8.5 mm.
• External power supply type: an AC adapter is a standard accessory.

Multi-functional model

The resolution can be switched between 0.001 mm / 0.0005 inch / 0.00005 inch.

SPECIFICATIONS

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy**</th>
</tr>
</thead>
<tbody>
<tr>
<td>543-551</td>
<td>25 mm</td>
<td>0.003 mm</td>
<td></td>
</tr>
<tr>
<td>543-557</td>
<td>50 mm</td>
<td>0.003 mm</td>
<td></td>
</tr>
<tr>
<td>543-553</td>
<td>75 mm</td>
<td>0.006 mm</td>
<td></td>
</tr>
</tbody>
</table>

* To denote your AC power cable add the following suffixes to the order No.: A for UL/CSA, D for CEE, E for BS, K for KC, No suffix is required for JIS/100V
** Quantizing error of ±1 count is excluded.

Order No.  | Range   | Resolution | Accuracy** |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>543-552</td>
<td>1 inch</td>
<td>0.0005 in</td>
<td>0.0001 in</td>
</tr>
<tr>
<td>543-558</td>
<td>2 inch</td>
<td>0.001 in</td>
<td>0.0005 in</td>
</tr>
<tr>
<td>543-554</td>
<td>3 inch</td>
<td>0.001 in</td>
<td>0.0005 in</td>
</tr>
</tbody>
</table>

* To denote your AC power cable add the following suffixes to the order No.: A for UL/CSA, D for CEE, DC for CCC, E for BS, K for KC, No suffix is required for JIS/100V
** Quantizing error of ±1 count is excluded.

DIMENSIONS

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 indicators are provided with a stem of 3/8 inch dia. and #4-48UNF thread mount for the contact point.

Technical Data

• Display: 6-digit LCD, sign, and analog bar with 2-color backlight.
• Power supply: 9V DC (via AC adaptor) 06AEG302*
  * To denote your AC power cable add the following suffixes to the order No.: A for UL/CSA, D for CEE, DC for CCC, E for BS, K for KC, No suffix is required for JIS/100V
• Lifting lever: 137693

Functions

• Max/Min value hold
• Runout measurement
• Zero-setting (INC system)
• Presetting (ABS system)
• Direction switching
• Tolerance judgment
• Digital display switching (0.01 mm → 0.001 mm)
• Analog resolution selection
  (±0.02, ±0.04, ±0.1, ±0.2, ±0.4 mm)
• Function locking
• Data output
• Low battery voltage alarm display
• Error alarm display

Optional Accessories

• Lifting cable: 540774 (stroke 25.4 mm)
• Auxiliary spindle spring:
  02ACA571 (25.4 mm / 1 inch models)*
  02ACA773 (50.8 mm / 2 inch models)*
  * Required when orienting the indicator upside down.
• Lug-on-center back:
  101040 (ISO/JIS type)
  101306 (ASME/ANSI/AGD type)
• SPC cable:
  936937 (1 m)
  965014 (2 m)
• USB Input Tool Direct (2 m) : 06AFM380D
• Input Tool Series
  IT-016U (USB Keyboard Signal Conversion Type) : 264-016-10
  IT-007R (RS-232C Communication Conversion Type) : 264-007
  Refer to page F-60 for details.
• Connecting Cables for U-WAVE-T (160 mm) :
  02AZD790D
  For footswitch: 02AZD710D
  Refer to page F-60 for details.
• Digital Mini-Processor DP-1VA LOGGER: 264-505
• Auxiliary devices:
  264-007
  IT-016U (USB Keyboard Signal Conversion Type) :
  IT-007R (RS-232C Communication Conversion Type) :
  264-007
  Refer to page F-60 for details.
• Connecting Cables for U-WAVE-T (160 mm) :
  02AZD790D
  For footswitch: 02AZD710D
  Refer to page F-60 for details.
• Input Tool Series
  IT-016U (USB Keyboard Signal Conversion Type) :
  264-016-10
  IT-007R (RS-232C Communication Conversion Type) :
  264-007
  Refer to page F-60 for details.
• Connecting Cables for U-WAVE-T (160 mm) :
  02AZD790D
  For footswitch: 02AZD710D
  Refer to page F-60 for details.
• Input Tool Series
  IT-016U (USB Keyboard Signal Conversion Type) :
  264-016-10
  IT-007R (RS-232C Communication Conversion Type) :
  264-007
  Refer to page F-60 for details.
• Connecting Cables for U-WAVE-T (160 mm) :
  02AZD790D
  For footswitch: 02AZD710D
  Refer to page F-60 for details.
• Input Tool Series
  IT-016U (USB Keyboard Signal Conversion Type) :
  264-016-10
  IT-007R (RS-232C Communication Conversion Type) :
  264-007
  Refer to page F-60 for details.
• Connecting Cables for U-WAVE-T (160 mm) :
  02AZD790D
  For footswitch: 02AZD710D
  Refer to page F-60 for details.

Application

Difference/Runout measurement
Example: Indicator travel from points A to D
Difference (or Total Runout) is displayed as A. Dimensions B (maximum value) and C (minimum value) can be recalled from memory with a simple key sequence.

Mitutoyo reserves the right to change any of all aspects of any product specification, including prices, designs and service content, without notice.
Supplemental information on Digimatic Indicators

Origin setting of Digimatic Indicators

The stability of measurement within 0.2 mm from the start of spindle travel is not guaranteed, so this region should not be used during operation.

EC Counter
SERIES 542 — Low-cost, Modular Type Display Unit

- NG, OK and +NG tolerance judgment results can be displayed.
- Can be set to produce either tolerance judgment output or Digimatic output.
- Small size (96 x 48 mm) which conforms to DIN standards.

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Order No.</th>
<th>542-007*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantizing error</td>
<td>±1 count</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.01 mm (±9999.999) / 0.0005 in (±99.99995 in) / 0.001 in (±99.99999 in) / 0.00005 in (±9999.9999 in) / 0.00001 in (±99999.999 in) (automatic setting by gage)</td>
</tr>
<tr>
<td>Tolerance judgment display</td>
<td>LED display (3 steps: Amber, Green, Red)</td>
</tr>
<tr>
<td>External output (switching type)</td>
<td>Tolerance judgment output –NG, OK, +NG (open-collector) Data output Digimatic output</td>
</tr>
<tr>
<td>Control input</td>
<td>External PRESET, external HOLD</td>
</tr>
<tr>
<td>Operation temperature range</td>
<td>0 - 40°C (RH 20 to 80%, no condensation)</td>
</tr>
<tr>
<td>Storage temperature range</td>
<td>–10 to 50°C (RH 20 to 80%, no condensation)</td>
</tr>
<tr>
<td>External dimensions</td>
<td>96 (W) x 48 (H) x 84.6 (D) mm</td>
</tr>
<tr>
<td>AC adapter / AC cable</td>
<td>AC adapter: (Japan/North America) 06AEG302JA / (EU) 06AEG302D / (Britain) 06AEG302E / (Korea) 06AEG302K / (China) 06AEG302DC</td>
</tr>
<tr>
<td>Mass</td>
<td>220 g</td>
</tr>
</tbody>
</table>

* To denote your AC power cable add the following suffixes to the order No.: A for UL/CSA, D for CEE, DC for CCC, E for BS, K for KC, C and No suffix are required for PSE.