Indicators

MeasurLink® ENABLED
Data Management Software by Mitutoyo

ABSOLUTE™

PROPRIETARY INSPECTION CERTIFICATE

ABSOLUTE Digimatic Indicator ID-CRX SERIES 543 — Calculation Type

- This expandable indicator incorporates an internal calculation function that operates from plunger displacement. Using dedicated fixtures and setting the calculation coefficients, you can read your measurements directly without the need for conversions.
- By using the parameter setup kit (optional) and the dedicated software, the functions and the parameters can be configured using a computer.
- Five buttons, status icons, and clear button indications allow easy operation and various functions.

543-342B-10

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SPECIFICATIONS

Inch / Metric ASME / ANSI / AGD type

Order No.	Range	Resolution (selectable)	Accuracy (in)	Hysteresis	Repeatability	Measuring force (N)	Battery life (normal use)	Mass (g)
543-342B-10	0.5 in/ 12.7 mm	12 steps	±0.00010	0.00010	0.00010	1.5 or less	Approx. 1 year	170
543-592B-10	1 in/ 25.4 mm					1.8 or less		190
543-597B-10	2 in/ 50.8 mm		±0.00025			2.3 or less		260

Inch / Metric ISO / JIS Type

Order No.	Range	Resolution (selectable)	Accuracy (mm)	Hysteresis H_{MPE}	Repeatability R_{MPE}	Measuring force (N)	Battery life (normal use)	Mass (g)
543-341B-10	0.5 in/ 12.7 mm	12 steps	0.003	0.003	0.002	1.5 or less	Approx. 1 year	170
543-591B-10	1 in/ 25.4 mm					1.8 or less		190
543-596B-10	2 in/ 50.8 mm		0.006			2.3 or less		260

Metric ISO / JIS Type

Order No.	Range (mm)	Resolution (selectable)	Accuracy (mm)	Hysteresis H_{MPE}	Repeatability R_{MPE}	Measuring force (N)	Battery life (normal use)	Mass (g)
543-340B-10	12.7	12 steps	0.003	0.003	0.002	1.5 or less	Approx. 1 year	170
543-590B-10	25.4					1.8 or less		190
543-595B-10	50.8		0.006			2.3 or less		260

- Power source: CR2032 battery (1 pc.), included as standard

Typical application

Functions

- Calculation f (x') =Ax'+B+Cx'$^{-1}$ (x'=x+offset)
- Peak detection (MAX/MIN)
- Runout (MAX - MIN) Hold

Note: Peak detection
1) Sampling rate: 10 readings/s
2) Capturing speed: 10 µm/s (max.)

Settings can be changed to:
1) Sampling rate: 50 readings/s
2) Capturing speed: 50 µm/s (max.)

- Zero-setting (INC system)
- Preset (ABS system)
- Tolerance judgment (3 pairs of ABS, INC memory function)
- Analog bar resolution selectable
- Key lock
- Display hold (when no external device is connected)
- Data output
- External PC setting input
- Display rotation (330°)
- Low battery voltage alarm display
- Error alarm display
- Resolution switching*

Resolution (mm)		
0.0002	0.005	0.1
0.0005	0.01	0.2
0.001	0.02	0.5
0.002	0.05	1

Resolution (in)		
0.00001	0.0002	0.005
0.00002	0.0005	0.01
0.00005	0.001	0.02
0.0001	0.002	0.05

* Since the calculation resolution is one micrometer (0.001 mm), using sub-micrometer resolution settings may result in the 4th-place digit being unreliable, particularly when B is set to a very low value and C=0. It does not change at all with certain combinations of calculation coefficient (for example, A=1, B=C=0). The 3rd-place digit representing micrometers (if displayed) is always reliable.

Optional Accessories

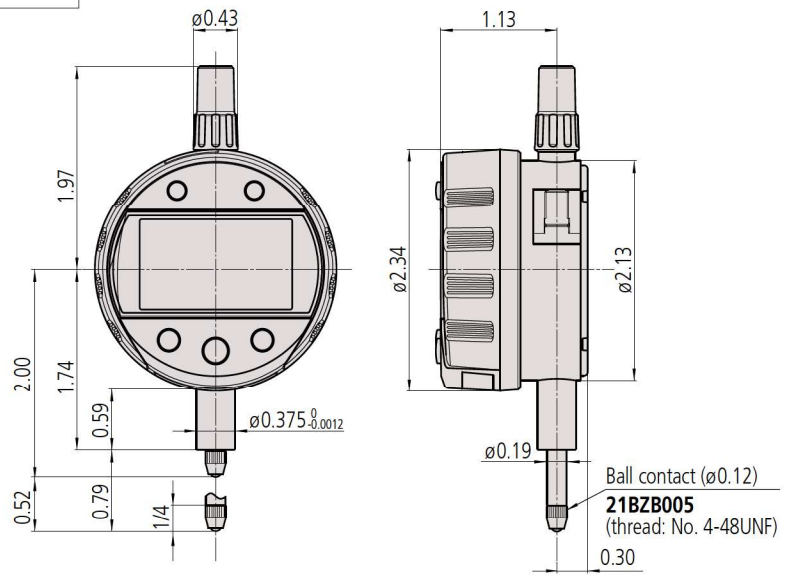
Refer to page F-13.

- Lifting
  Lifting lever **21EZA198** (0.5 inch / 12.7 mm type)
  Lifting knob **21EZA105** (0.5 inch / 12.7 mm type)
  21EZA197 (1 inch / 25.4 mm type)
  21EZA200 (2 inch / 50.8 mm type)
- Parameter setup kit (optional)
  Refer to page F-13 for details.

DIMENSIONS

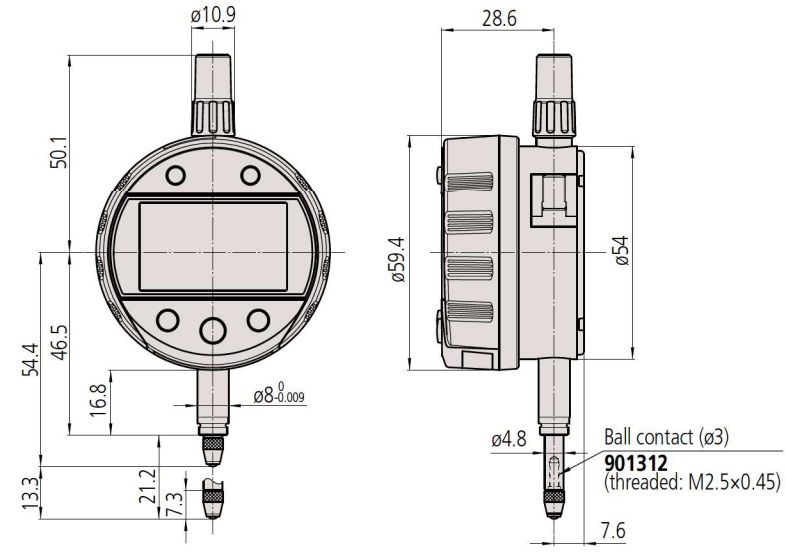
ASME / ANSI / AGD Type

Unit: in



ISO / JIS Type

Unit: mm



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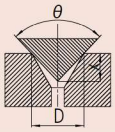
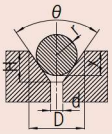
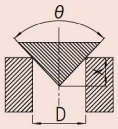
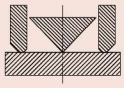
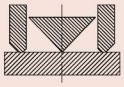
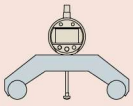
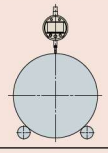
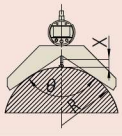
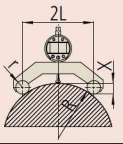
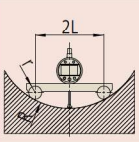
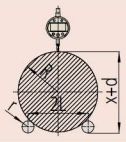
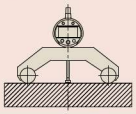
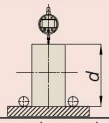
Indicators

Examples of measuring various features

Item		D=Countersink diameter/Groove width; H=Countersink depth/Groove depth			
Fixture type*1					
Contact point		Cone	Ball		Cone
Measuring method x: Spindle displacement					
Calculation		D=Λx	D=Λx+B	H=Λx+B	D=Λx
Coefficient values	A	$-2\tan\frac{\theta}{2}$	$-2\tan\frac{\theta}{2}$	-1	$-2\tan\frac{\theta}{2}$
	B	0	$2r\left(\frac{1}{\cos\frac{\theta}{2}}-\tan\frac{\theta}{2}\right)$	$r\left(\frac{1}{\sin\frac{\theta}{2}}-1\right)-\frac{d}{2\tan\frac{\theta}{2}}$	0
	C	0	0	0	0
Origin offset value (function ON/OFF)	d	0 (OFF)	0 (OFF)	0 (OFF)	0 (OFF)
ORIGIN-set position (x=0 position)					
Displayed measurement value at ORIGIN-set position (Value displayed when x=0)		0	Value of coefficient B	0	0

Item		R=Outside radius of round object		R=Inside radius of round object	R=Outside radius of round object
Fixture type*1					
Contact point		—			
Measuring method x: Spindle displacement					
Calculation		R=Ax	R=Ax+B+Cx^{-1}		R=A(x+d)+B+C(x+d)$^{-1}$
Coefficient values	A	$-\frac{\sin\frac{\theta}{2}}{1-\sin\frac{\theta}{2}}$	$\frac{1}{2}$	$-\frac{1}{2}$	$\frac{1}{2}$
	B	0	$-r$	r	$-r$
	C	0	$\frac{L^2}{2}$	$-\frac{L^2}{2}$	$\frac{L^2}{2}$
Origin offset value (function ON/OFF)	d	0 (OFF)	0 (OFF)	0 (OFF)	d (ON)
ORIGIN-set position (x=0 position)					
Displayed measurement value at ORIGIN-set position (Value displayed when x=0)		0	Err 30*2 (Overflow error of Display value)		Depends on value of d

*1 A dedicated fixture for a workpiece can be made to order.
*2 The error is cleared when the measured value returns to the displayable range as a result of moving the spindle.

Custom fixture examples