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ABSOLUTE IDC

Standard .5"/12.7mm, 1"/25.4mm, 2"/50.8mm range models
Various designs for a wide range of applications



Peak Holding Type
543-260



Standard Type
543-250



Dust-proof Type
543-259



Signal Output Type
543-282



Designed for Bore Gage
543-264B

Standard Type

FEATURES

Tolerance judgment

- GO/±NG judgment can be performed by setting upper and lower tolerance limits. The judgment result (GO/±NG) can be displayed in full-size characters.

Technical Data

- Display: LCD (indicator face: 330˚ rotation)
- Functions: Origin set (preset), Power on/off, Zero setting, Counting direction switching, GO/±NG judgment, inch/mm conversion (inch/mm type), SPC data output
- Battery: SR44 (1pc.) (938882)
- Battery life: 5,000 hours in continuous use
- Stem diameter: 3/8" (ANSI/AGD type) or 8mm (ISO/JIS type)
- Contact point: Carbide ball (ISO/JIS type) or steel ball (ANSI/AGD type)
- Measuring force: 1.5N/0.9N* or less (.5"/12.7mm range models), 1.8N or less (1"/25.4mm range models), 2.3N or less (2"/50.8mm range models)

*543-270/543-270B/543-271/543-271B/543-272/543-272B

- Dust-water protection level: Conforming to IP42
- Alarm: Low battery voltage, Scale contaminations, Over flow error, Tolerance limit setting error
- Operating temperature: 0˚F to 104˚F (0˚C to 40˚C)
- Mass: .35 lbs./160g (.5"/12.7mm range models), .42 lbs./190g (1"/25.4mm range models), .62 lbs./280g (2"/50.8mm range models)

Specifications (ISO/JIS type)

Order No.		Accuracy	Resolution	Range
Back w/lug	Flat-back			
543-250	543-250B	0.003mm	0.001mm	12.7mm
–	543-450B	0.003mm		25.4mm
–	543-460B	0.006mm		50.8mm
543-290	543-290B	0.005mm	0.01mm	12.7mm
543-270	543-270B	0.02mm		
–	543-457B	0.005mm		25.4mm
–	543-454B	0.03mm		
–	543-464B	0.04mm		50.8mm
543-251	543-251B	.00012"	.00005"/0.001mm	.5"/12.7mm
–	543-451B	.00012"		1"/25.4mm
–	543-461B	.00025"		2"/50.8mm
543-291	543-291B	.0002"	.0005"/0.01mm	.5"/12.7mm
543-271	543-271B	.0008"		
–	543-458B	.0002"		1"/25.4mm
–	543-455B	.0012"		
–	543-465B	.0016"		2"/50.8mm

Specifications (ANSI/AGD type)

Order No.		Accuracy	Resolution	Range
Back w/lug	Flat-back			
543-252	543-252B	.00012"	.00005"/0.001mm	.5"/12.7mm
–	543-452B	.00012"		1"/25.4mm
–	543-462B	.00025"		2"/50.8mm
543-253	543-253B	.00012"	.0001"/0.001mm	.5"/12.7mm
–	543-453B	.00012"		1"/25.4mm
–	543-463B	.00025"		2"/50.8mm
543-292	543-292B	.0002"	.0005"/0.01mm	.5"/12.7mm
543-272	543-272B	.0008"		
–	543-459B	.0002"		1"/25.4mm
–	543-456B	.0012"		
–	543-466B	.0016"		2"/50.8mm

Low measuring force type

FEATURES

Low measuring force of 0.4N - 0.7N

- The low measuring force type is specially designed for elastic workpieces such as plastic parts.

Technical Data

- Measuring force: 0.4N to 0.7N

Note: Other specifications are same as those of the above standard type.

Specifications

Order No.		Accuracy	Resolution	Range
Back w/lug	Flat-back			
543-254	543-254B	0.003mm	0.001mm	12.7mm
543-274	543-274B	0.02mm	0.01mm	12.7mm
543-255	543-255B	.00012"	.00005"/0.001mm	.5"/12.7mm
543-256*	543-256B*	.00012"		
543-275	543-275B	.0008"	.0005"/0.01mm	.5"/12.7mm
543-276*	543-276B*	.0008"		

*ANSI/AGD type

Dust-proof type

FEATURES

IP53 dust/water protection level

- The IP53 protection level structure of the dust-proof type allows the indicator to resist dust and contaminants for safe operation in harsh machine shop environments.

Technical Data

- Measuring force: 2.0N or less
- Dust/Water protection level: Conforming to IP53

Note: Other specifications are same as those of above standard type.

Specifications

Order No.		Accuracy	Resolution	Range
Back w/lug	Flat-back			
543-257	543-257B	0.003mm	0.001mm	12.7mm
543-277	543-277B	0.02mm	0.01mm	12.7mm
543-258	543-258B	.00012"	.00005"/0.001mm	.5"/12.7mm
543-259*	543-259B*	.00012"		
543-278	543-278B	.0008"	.0005"/0.01mm	.5"/12.7mm
543-279*	543-279B*	.0008"		

*ANSI/AGD type

Peak Holding Type

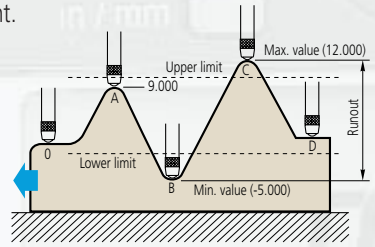
FEATURES

Tolerance judgment

- GO/±NG judgment is performed by setting the upper and lower tolerances for maximum, minimum and runout values.
- High-speed sampling ratio of 50 times per second.

Peak hold function

- The maximum, minimum, or runout value can be displayed during measurement.



Spindle position	0	–	A	–	B	–	C	–	D
Normal mode	0.000	↗	5.000	↘	-5.000	↗	10.000	↘	0.000
Max. mode	0.000	↗	5.000	→	5.000	↗	10.000	→	10.000
Min. mode	0.000	→	0.000	↘	-5.000	→	-5.000	→	-5.000
TIR mode	0.000	↗	5.000	↗	10.000	↗	15.000	→	15.000

Technical Data

- Functions: Origin set (preset), Power on/off, Zero setting, Counting direction switching, GO/±NG judgment, max./min./runout value holding inch/mm conversion (inch/mm type), SPC data output, Function lock

Note: Other specifications are the same as those of the standard type.

Specifications

Order No.		Accuracy	Resolution	Range
Back w/lug	Flat-back			
543-260	543-260B	0.003mm	0.001mm	12.7mm
543-261	543-261B	.00012"	.00005"/0.001mm	.5"/12.7mm
543-262*	543-262B*	.00012"		
543-263*	543-263B*	.00012"	.0001"/0.001mm	.5"/12.7mm

*ANSI/AGD type

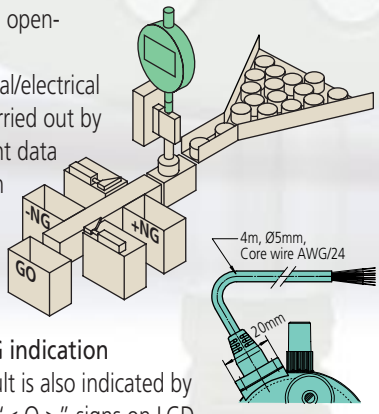
Signal Output Type

FEATURES

GO/±NG signal output

- With the max./min. value holding function, this indicator can output the signal of the GO/±NG judgment result against the peak values set to an external device like a sequencer through the NPN open-collector.

Substitute for the mechanical/electrical contact, the judgment is carried out by calculating the measurement data obtained. This provides high reliability with no deterioration of the contact point and volume adjustment.



Green/red LED for GO/±NG indication

- The GO/±NG judgment result is also indicated by the green/red LED and the "<,O,>" signs on LCD.

IP54 dust/water protection level

- This indicator achieves IP54 protection level to resist dust and contaminants for safe operation in harsh shop environments.

Technical Data

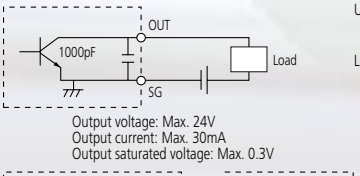
- Functions: Origin set (preset), Power on/off, Zero setting, Counting direction switching, GO/±NG judgment, max./min./runout value holding, inch/mm conversion (inch/mm type), Function lock
- Dust-water protection level: Conforms to IP54

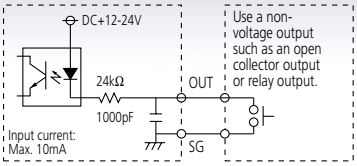
Note: Other specifications are the same as those of the standard type.

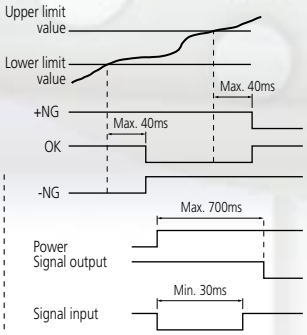
Specifications

Order No.		Accuracy	Resolution	Range
Back w/lug	Flat-back			
543-280	543-280B	0.003mm	0.001mm	12.7mm
543-281	543-281B	.00012"	.00005"/0.001mm	.5"/12.7mm
543-282*	543-282B*	.00012"		
543-283*	543-283B*	.00012"	.0005"/0.01mm	.5"/12.7mm

*ANSI/AGD type







Signal output

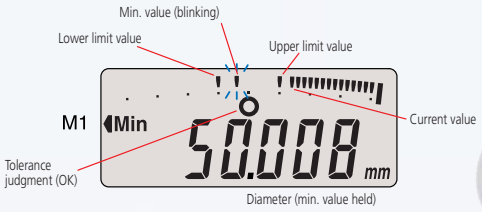
Wire color	Signal	I/O	Description
Black	-V (GND)	–	Connected to minus (-) terminal
Red	+V (plus power voltage)	I	Supply power voltage (12VDC - 24VDC)
Orange	$\overline{\text{-NG}}$	O	Tolerance judgment result output terminals (NPN open-collector output): Only the terminal corresponding to a judgment result is set to the low level. (See the output circuit diagram.)
Green	$\overline{\text{OK}}$	O	
Brown	$\overline{\text{+NG}}$	O	
Yellow	$\overline{\text{PRESET_RECALL/ZERO}}$	I	External input terminals (no-voltage input): If the relevant terminal is set to the low level, its signal becomes true. (See the input circuit diagram.)
Blue	$\overline{\text{HOLD_RESET}}$	I	
Shield	FG (Frame Ground)	–	Connected to the ground.

Designed for Bore Gage

FEATURES

Exclusive design for bore gage use

- The minimum value holding function provides simple, accurate and stable ID measurement.
- Up to three sets of reference diameter and upper/lower tolerance values can be stored to simplify the start-up key operation in the repeatable hole inspection of mixed diameter sizes.
- An analog bar indication is integrated to enhance readability.







Detecting a minimum point for diameter

Technical Data

- Functions: Origin set (preset), Power on/off, Data hold, GO/±NG judgment, min. value holding, inch/mm conversion (inch/mm type), SPC data output, function lock

Note: Other specifications are same as those of the standard type.

Specifications

Order No.		Accuracy	Resolution	Range
Back w/lug	Flat-back			
–	543-264B	0.003mm	0.001mm	12.7mm
–	543-265B	.00012"	.00005"/0.001mm	.5"/12.7mm

Specifications (ANSI/AGD type)

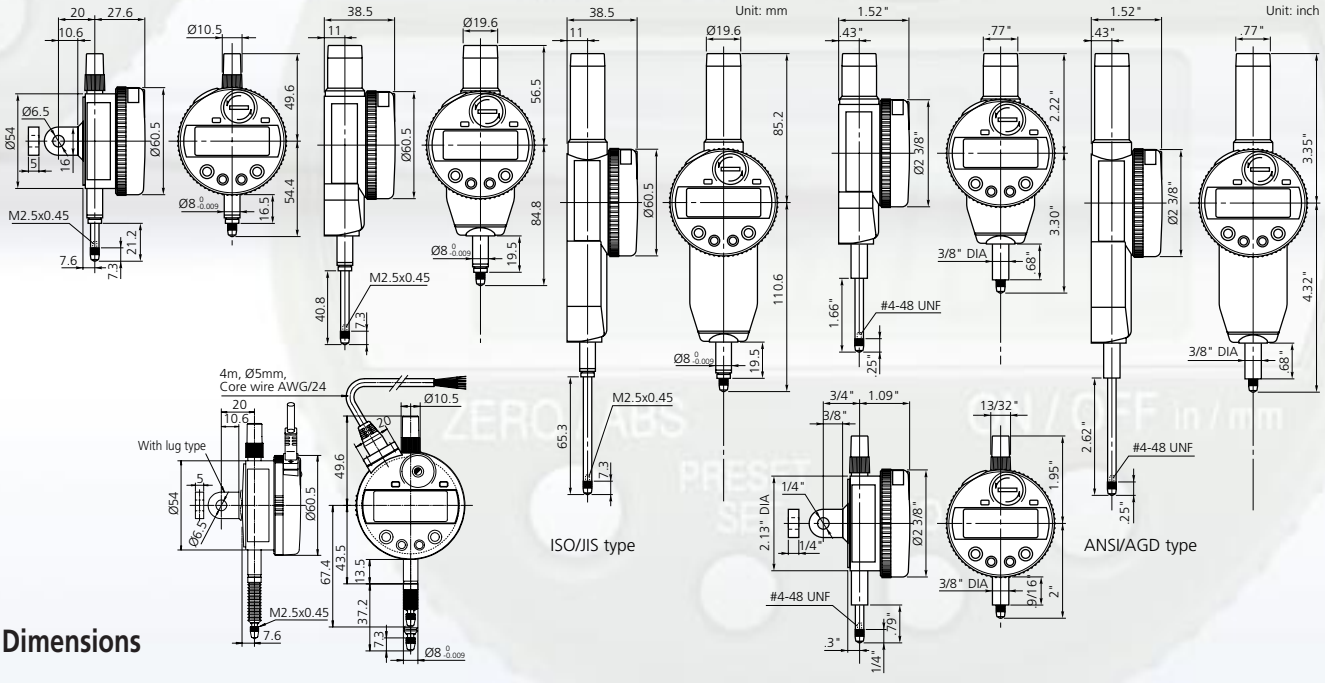
Order No.		Accuracy	Resolution	Range
Back w/lug	Flat-back			
–	543-266B	0.003mm	.00005"/0.001mm	12.7mm
–	543-267B	.00012"	.0001"/0.001mm	.5"/12.7mm

Optional bore gage

Order No.	Range
526-170	0.95 - 1.55mm
526-160	1.5 - 4.0mm
526-150	3.7 - 7.3mm
526-101	7.0 - 10.0mm
526-102	10 - 18mm
511-126	18 - 35mm
511-127	35 - 60mm
511-132	50 - 150mm

* Set No. with IDC 18-150mm: 511-905 .7"-6": 511-915

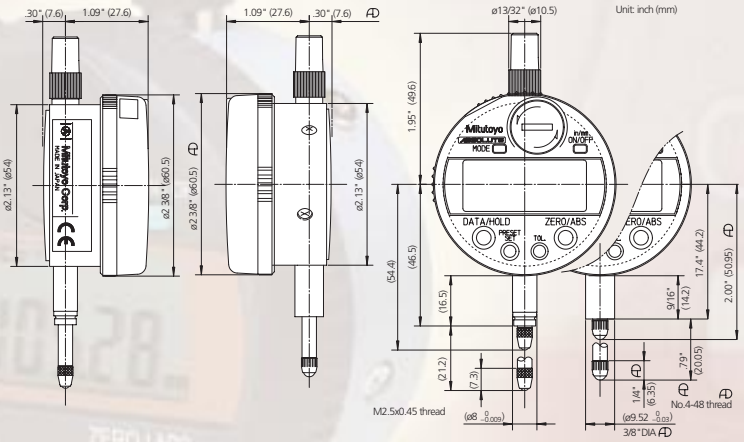
Dimensions



CALCULATION-TYPE DIGIMATIC INDICATOR



The Calculation-Type Digimatic indicator incorporates an internal calculation function in place of spindle displacement. With fixtures, measurements such as inside diameter and radius of curvature measurement can easily be obtained without the trouble of conversion tables or equivalents.



Technical Data

- Display: LCD
- Functions: Calculation, Zero set, Presetting, Tolerance judgment, Hold button, Output and Switching ABS/INC conversion
- Battery: SR44 x 1pc.
- Battery life: 120months under normal use
- Stem diamter: 3/8" DIA or ø8mm (ø9.525mm)
- Contact point: Carbide ball (ISO/JIS type) or steel ball (ANSI/AGD type)
- Measuring force: 1.5N or less
- Dust/Water protection level: Conforming to IP42
- Alarm: Low battery voltage, Scale contaminations, Tolerance limit setting error, ABS data composition error, Over flow error
- Operating temperature: 0˚F to 104˚F (0˚C to 40˚C)
- Mass: .35lbs / 160g

Fixture example



Hole diameter



Groove width



Chamfer hole diameter

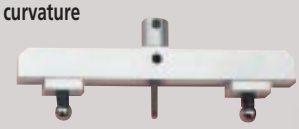


Outside diameter





Radius of curvature





Inside diameter

Specifications

Order No.	Accuracy	Resolution	Range
543-285B	0.003mm (0.00012") or less	0.002mm to 1mm	12.7mm
543-286B	0.003mm (0.00012") or less	.00001"/0.003mm to .05"/1mm	.5"/12.7mm
543-287B			

All instruments in this series are of the flat-back type.

Calculation function

The Absolute Digimatic indicator performs internal calculations using the formula $Ax+B+Cx^{-1}$ (assuming spindle displacement as x) while the specified coefficients A, B and, C can be set with respect to the purpose of measurement or dimensions of the fixtures. This unique feature allows you to read your measurements directly, without making conversions.

Data output

The Absolute Digimatic indicator can output data to a data processor. This allows the recording of measuring results and the configuration of a system that includes process control via the data processor. Additionally, arithmetic coefficients can be set from a connected personal computer rather than the indicator itself.

Tolerance judgment

Setting the upper/lower limits produces a display of tolerance judgments, thus making it easy to calculate for extreme accuracy.

Large display LCD

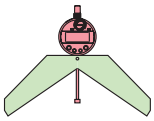
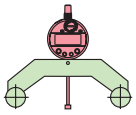
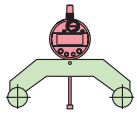
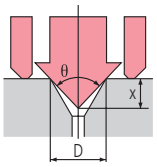
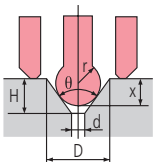
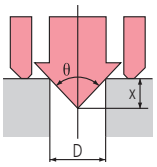
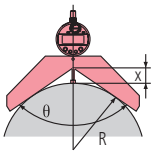
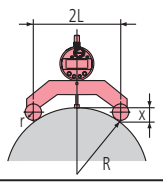
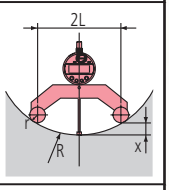
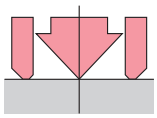
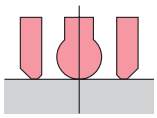
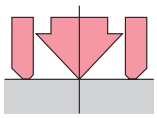
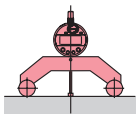
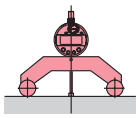
A large LCD makes it easy to read the settings of arithmetic coefficients, as well as tolerance judgments and other aspects of the measuring process.

Display hold

The Display Hold function is useful when LCD viewing is difficult during measurement.
Maximum value and minimum value can be held, as well.

Calculation examples of arithmetic coefficients

(Calculate arithmetic coefficients A, B, and C with a scientific calculator and then set the value you've determined. For details, refer to the table below.)

Fixture							
Contact point		Cone	Ball		Cone	—	—	—
Dimension X: Spindle displacement							
Measurement item		D= Diameter/Feeler/ Groove width H= Countersink depth	D= Diameter/Feeler/ Groove width H= Countersink depth		D= Hole diameter/ Feeler/ Groove width	2R=Outside diameter	2R=Outside diameter	2R=Inside diameter
Calculation formula		D=Ax	D=Ax+B	H=Ax+B	D=Ax	R=Ax	$R=Ax+B+Cx^{-1}$	$R=Ax+B+Cx^{-1}$
Arithmetic Coefficient	A	$-2\tan\frac{\theta}{2}$	$-2\tan\frac{\theta}{2}$	−1	$-2\tan\frac{\theta}{2}$	$-\frac{\sin\frac{\theta}{2}}{1-\sin\frac{\theta}{2}}$	$\frac{1}{2}$	$-\frac{1}{2}$
	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	0	−r	r
	C	0	0		0	0	$\frac{L^2}{2}$	$-\frac{L^2}{2}$
Origin setting position (the position when x=0)					 Contact point free		
Indicated value when origin setting (indicated value when x=0)		0	Value for coefficient B		0	0	(Overflow)	(Overflow)

Various fixtures suited for individual workpieces can be prepared.
Measuring accuracy is subject to fixture accuracy.

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