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IDC Series Absolute Digimatic Indicators

SERIES 543 — Standard Type with Multiple Functions



543-252



543-452B



543-462B

SPC

ABSOLUTE

Mitutoyo's new IDC Series Digimatic Indicator presents error-free digital readings in measurements. Its unique ABSOLUTE Linear Encoder keeps track of the origin point once set over the entire battery life, allowing the large LCD screen to display the actual spindle position from the origin point at power-on. Whenever turned on, the operator can take measurements with no need for preliminary absolute positioning.

FEATURES

- As compact as standard Series 2 dial indicators.
- Large, easy-to-read LCD.
- ZERO/ABS key: Allows the display to be Zero-Set at any spindle position for comparison measurements. This switch will also allow return to the absolute coordinate and display of the true position from the origin point.
- 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.
- The positive/negative count resulting from the spindle's up/down movement can be toggled.
- Unlimited response speed eliminates spindle over-speed errors.
- The IDC indicator face can be rotated 330° to an appropriate angle for easy reading.
- The measurement data can be output to an external data processor using the optional SPC cable.

Technical Data

Display: LCD
Functions: Origin-Set (preset), Zero-Set, power on/off, inch/mm conversion (inch/mm type only), SPC data output, counting direction switching, GO/±NG judgment
Battery: SR44 (1 pc.) (**938882**)
Battery life: Approx. 5000 hours in continuous use
Stem diameter: 8mm (ISO/JIS type) or 3/8" (ANSI/AGD type)
Contact point: Carbide ball with M2.5x0.45 thread (ISO/JIS type) or steel ball with #4-48UNF thread (ANSI/AGD type)
Alarm: Low battery voltage, scale contamination, over-flow error, tolerance limit setting error
Dust/Water protection level: Conforming to IP42
Operating temperature: 0°C to 40°C

OPTIONAL ACCESSORIES

Order No.	Description
905338	SPC cable (1m)
905409	SPC cable (2m)
902011	Spindle lifting lever (ISO/JIS type)*
902794	Spindle lifting lever (ANSI/AGD type)*
540774	Spindle lifting cable
101040	Lug-on-center back (ISO/JIS type)**
101306	Lug-on-center back (ANSI/AGD type)**
02ACA571	Auxiliary spindle spring (for 25mm IDC)***
02ACA773	Auxiliary spindle spring (for 50mm IDC)***

*Can be used on 12mm (.5") IDC only.
**Can be used on 25mm (1") IDC or 50mm (2") IDC.
***Required when orienting an IDC upside down.

SPECIFICATIONS

Metric

Resolution	Range	Order No. Back w/lug	Order No. Flat-back	Accuracy	Measuring force	Mass	Remarks
0.001mm	12mm	**543-250**	**543-250B**	0.003mm	1.5N or less	160g	ISO/JIS type
	25mm	—	**543-450B**	0.003mm	1.8N or less	190g	ISO/JIS type
	50mm	—	**543-460B**	0.006mm	2.3N or less	280g	ISO/JIS type
0.01mm	12mm	**543-290**	**543-290B**	0.005mm	1.5N or less	160g	ISO/JIS type
		543-270	**543-270B**	0.02mm	0.9N or less	160g	ISO/JIS type
	25mm	—	**543-457B**	0.005mm	1.8N or less	190g	ISO/JIS type
		—	**543-454B**	0.03mm	1.8N or less	190g	ISO/JIS type

Note: A 0.01mm reading type IDC is available with a measuring accuracy equal to that of the 0.001mm reading type.

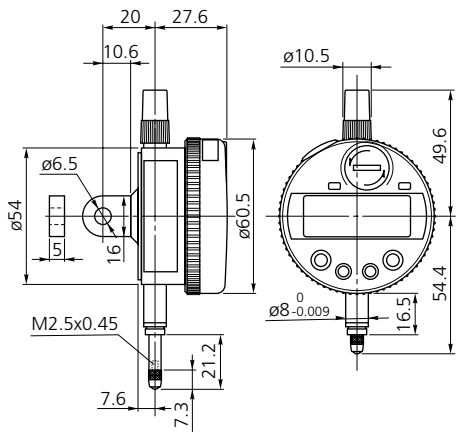
Inch/Metric

Resolution	Range	Order No. Back w/lug	Order No. Flat-back	Accuracy	Measuring force	Mass	Remarks
.00005"/0.001mm	.5" (12.7mm)	**543-251**	**543-251B**	.00012"	1.5N or less	.35 lbs.	ISO/JIS type
		543-252	**543-252B**	.00012"	1.5N or less	.35 lbs.	ANSI/AGD type
	1" (25.4mm)	—	**543-451B**	.00012"	1.8N or less	.42 lbs.	ISO/JIS type
		—	**543-452B**	.00012"	1.8N or less	.42 lbs.	ANSI/AGD type
	2" (50.8mm)	—	**543-461B**	.00025"	2.3N or less	.62 lbs.	ISO/JIS type
		—	**543-462B**	.00025"	2.3N or less	.62 lbs.	ANSI/AGD type
.0001"/0.001mm	.5" (12.7mm)	**543-253**	**543-253B**	.00012"	1.5N or less	.35 lbs.	ANSI/AGD type
	1" (25.4mm)	—	**543-453B**	.00012"	1.8N or less	.42 lbs.	ANSI/AGD type
	2" (50.8mm)	—	**543-463B**	.00025"	2.3N or less	.62 lbs.	ANSI/AGD type
.0005"/0.01mm	.5" (12.7mm)	**543-291**	**543-291B**	.0002"	1.5N or less	.35 lbs.	ISO/JIS type
		543-292	**543-292B**	.0002"	1.5N or less	.35 lbs.	ANSI/AGD type
		543-271	**543-271B**	.0008"	0.9N or less	.35 lbs.	ISO/JIS type
		543-272	**543-272B**	.0008"	0.9N or less	.35 lbs.	ANSI/AGD type
	1" (25.4mm)	—	**543-458B**	.0002"	1.8N or less	.42 lbs.	ISO/JIS type
		—	**543-459B**	.0002"	1.8N or less	.42 lbs.	ANSI/AGD type
		—	**543-455B**	.0012"	1.8N or less	.42 lbs.	ISO/JIS type
		—	**543-456B**	.0012"	1.8N or less	.42 lbs.	ANSI/AGD type
	2" (50.8mm)	—	**543-465B**	.0016"	2.3N or less	.62 lbs.	ISO/JIS type
		—	**543-466B**	.0016"	2.3N or less	.62 lbs.	ANSI/AGD type

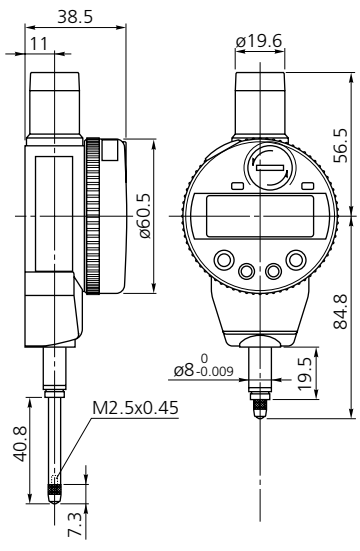
Note: A .0005"/0.01mm reading type IDC is available with a measuring accuracy equal to that of the .00005"/0.001mm reading type.

Unit: mm

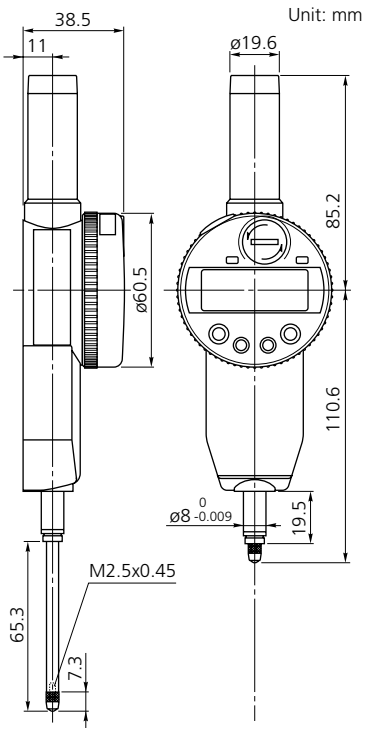
12mm IDC



25mm IDC



50mm IDC



Note 1: The lug is not provided for the Flat-back type.
Note 2: Dimensions of the ANSI/AGD type IDC indicator partly differ from those of the ISO/JIS type IDC.

IDC Series Absolute Digimatic Indicators

SERIES 543 — Calculation Type



543-285B

SPC ABSOLUTE

Metric

Resolution	Range	Stem diameter	**Order No.** (Flat-back)	Accuracy
0.0002mm - 1mm	12mm	8mm (ISO/JIS type)	**543-285B**	0.003mm
	25mm	8mm (ISO/JIS type)	**543-480B**	0.003mm
	50mm	8mm (ISO/JIS type)	**543-485B**	0.003mm

Inch/Metric

Resolution	Range	Stem diameter	**Order No.** (Flat-back)	Accuracy
.00001" - .05"/	.5" (12.7mm)	8mm (ISO/JIS type)	**543-286B**	.00012"
0.0002mm - 1mm	.5" (12.7mm)	3/8" (ANSI/AGD type)	**543-287B**	.00012"
	1" (25.4mm)	8mm (ISO/JIS type)	**543-481B**	.00012"
	1" (25.4mm)	3/8" (ANSI/AGD type)	**543-482B**	.00012"
	2" (50.8mm)	8mm (ISO/JIS type)	**543-486B**	.00012"
	2" (50.8mm)	3/8" (ANSI/AGD type)	**543-487B**	.00012"

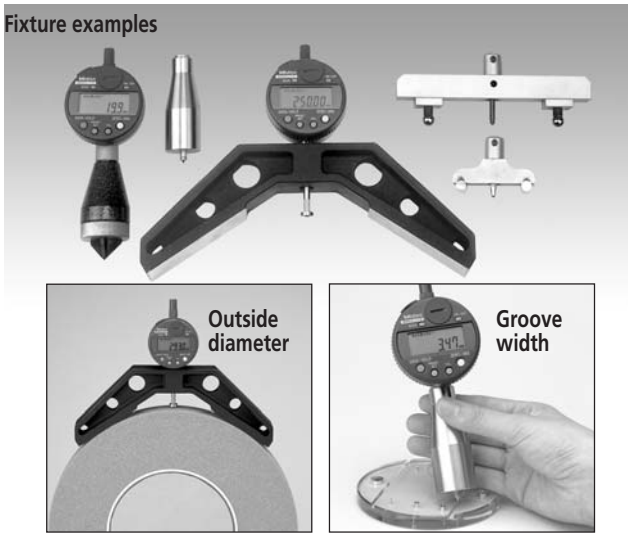
Technical Data

Display: LCD
Functions: Origin-Set (preset), Zero-Set, power on/off, calculation, inch/mm conversion (inch/mm type only), SPC data output, counting direction switching, GO/±NG judgment
Battery: SR44 (1 pc.) (**938882**)
Battery life: Approx. 5000 hours in continuous use
Contact point: Carbide ball with M2.5x0.45 thread (ISO/JIS type) or steel ball with #4-48UNF thread (ANSI/AGD type)
Alarm: Low battery voltage, scale contamination, over-flow error, tolerance limit setting error
Operating temperature: 0°C to 40°C

A conventional Digimatic indicator simply displays a spindle displacement, but the Calculation-Type Digimatic indicator incorporates an internal calculation function in place of spindle displacement. With fixtures, measurements such as feeler, inside diameter and radius of curvature measurement can easily be obtained without the hassle of conversion tables or equivalents.

FEATURES

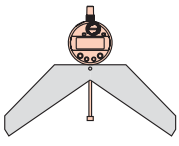
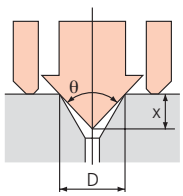
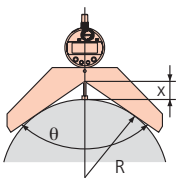
- The Absolute Digimatic indicator performs internal calculations using the formula $Ax+B+Cx^{-1}$ (assuming spindle displacement as x) while the specified coefficients A, B and, C can be set with respect to the purpose of measurement or dimensions of the fixtures. This unique features allows you to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



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

OPTIONAL ACCESSORIES

Order No.	Description
905338	SPC cable (1m)
905409	SPC cable (2m)
902011	Spindle lifting lever (ISO/JIS type)
540774	Spindle lifting cable

Fixture			
Contact point		Cone	—
Dimension X: Spindle displacement			
Measurement item		D= Diameter/Feeler/ Groove width H= Countersink depth	2R=Outside diameter
Calculation formula		D=Ax	R=Ax
Arithmetic Coefficient	A	$-2\tan\frac{\theta}{2}$	$-\frac{\sin\frac{\theta}{2}}{1-\sin\frac{\theta}{2}}$
	B	0	0
	C	0	0

IDC Series Absolute Digimatic Indicators

SERIES 543 — with Max./Min. Value Holding Function



543-262

With max./min. value holding function model of the IDC Series Digimatic Indicators.

FEATURES

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



Maximum value holding

- GO/±NG judgment is performed by setting the upper and lower tolerances for max., min. and runout values.
- High speed sampling ratio of 50 times/s.

Technical Data

Display: LCD
Functions: Origin-Set (preset), Zero-Set, power on/off, inch/mm conversion (inch/mm type only), SPC data output, counting direction switching, GO/±NG judgment, max./min./runout value holding
Battery: SR44 (1 pc.) (**938882**)
Battery life: Approx. 800-1,300 hours in continuous use
Stem diameter: 8mm (ISO/JIS type) or 3/8" (ANSI/AGD type)
Contact point: Carbide ball with M2.5x0.45 thread (ISO/JIS type) or steel ball with #4-48UNF thread (ANSI/AGD type)
Alarm: Low battery voltage, scale contamination, over-flow error, tolerance limit setting error
Dust/Water protection level: Conforming to IP42
Operating temperature: 0°C to 40°C

OPTIONAL ACCESSORIES

Order No.	Description
905338	SPC cable (1m)
905409	SPC cable (2m)
902011	Spindle lifting lever (ISO/JIS type)
902794	Spindle lifting lever (ANSI/AGD type)
540774	Spindle lifting cable

SPECIFICATIONS

Metric

Resolution	Range	**Order No.** Back w/lug	**Order No.** Flat-back	Accuracy	Measuring force	Mass	Remarks
0.001mm	12mm	**543-260**	—	0.003mm	1.5N or less	160g	ISO/JIS type

Inch/Metric

Resolution	Range	**Order No.** Back w/lug	**Order No.** Flat-back	Accuracy	Measuring force	Mass	Remarks
.00005"/0.001mm	.5" (12.7mm)	**543-261**	—	.00012"	1.5N or less	.35 lbs.	ISO/JIS type
		543-262	—	.00012"	1.5N or less	.35 lbs.	ANSI/AGD type
.0001"/0.001mm	.5" (12.7mm)	**543-263**	—	.00012"	1.5N or less	.35 lbs.	ANSI/AGD type

IDC Series Absolute Digimatic Indicators

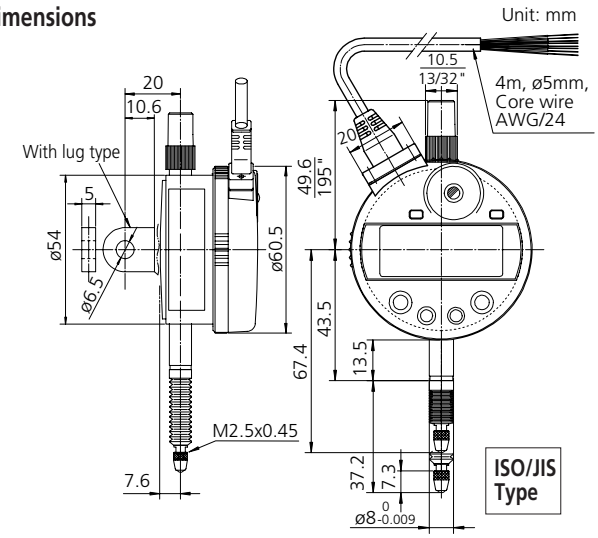
SERIES 543 — with Green/Red LED and GO/±NG Signal Output Function



SPC

ABSOLUTE

Dimensions



Note 1: The lug is not provided for the Flat-back type.
Note 2: Dimensions of the ANSI/AGD type IDS indicator partly differ from those of the ISO/JIS type IDS.

FEATURES

- With the max./min. value holding function, the signal IDC can output the signal of the GO/±NG judgment result against the peak values set. 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.
- Employing the absolute linear encoder, the Signal IDC always displays the spindle "Absolute Position" from the origin at power-on. Also unlimited response speed eliminates over-speed errors.
- The signal can be output to an external device like a sequencer through the NPN open-collector.
- The GO/±NG judgment result is also indicated by the green/red LED and the "<, O, >" signs on LCD.
- The Signal IDC achieves the IP54 protection level to resist dust and contaminants for safe operation in harsh machine shop environments.

Technical Data

Display: LCD
Functions:
- Signal output: -NG/OK/+NG (judgement result only), NPN open-collector,30mA/24V max. output currency/voltage
- Remote control: Hold-preset, Preset-recall, Zero-Set
- Other functions: Origin-Set, Zero-Set, power on/off, inch/mm conversion (inch/mm type only), counting direction switching, GO/±NG judgment, max./min./runout value holding

Signal cable length: 4m
Power supply: DC12 - 24V±10%
Stem diameter: 8mm (ISO/JIS type) or 3/8" (ANSI/AGD type)
Contact point: Carbide ball with M2.5x0.45 thread (ISO/JIS type) or steel ball with #4-48UNF thread (ANSI/AGD type)
Dust/Water protection level: Conforming to IP54
Operation temperature: 0°C to 40°C

OPTIONAL ACCESSORIES

Order No.	Description
540774	Spindle lifting cable
902011	Spindle lifting lever (ISO/JIS type)
902794	Spindle lifting lever (ANSI/AGD type)
125317	Rubber boot

SPECIFICATIONS

Metric

Resolution	Range	Order No. Back w/lug	Order No. Flat-back	Accuracy	Measuring force	Mass	Remarks
0.001mm	12.7mm	**543-280**	**543-280B**	0.003mm	2.0N or less	345g	ISO/JIS type

Inch/Metric

Resolution	Range	Order No. Back w/lug	Order No. Flat-back	Accuracy	Measuring force	Mass	Remarks
.00005"/0.001mm	.5" (12.7mm)	**543-281**	**543-281B**	.00012"	2.0N or less	.76 lbs.	ISO/JIS type
		543-282	**543-282B**	.00012"	2.0N or less	.76 lbs.	ANSI/AGD type
.0001"/0.001mm	.5" (12.7mm)	**543-283**	**543-283B**	.00012"	2.0N or less	.76 lbs.	ANSI/AGD type

IDC Series Absolute Digimatic Indicators

SERIES 543 — Dust-proof Type and Low Measuring Force Type



SPC ABSOLUTE

FEATURES

- The IP53 protection level structure of the dust-proof type IDC allows the indicator to resist dust and contaminants for safe operation in harsh machine shop environments.
- 1The low measuring force type IDC indicators are specially designed for elastic workpieces such as plastic parts.

Technical Data

Display: LCD
Functions: Origin-Set (preset), Zero-Set, power on/off, inch/mm conversion (inch/mm type only), SPC data output, counting direction switching, GO/±NG judgment
Battery: SR44 (1 pc.) (**938882**)
Battery life: Approx. 5000 hours in continuous use
Stem diameter: 8mm (ISO/JIS type) or 3/8" (ANSI/AGD type)
Contact point: Carbide ball with M2.5x0.45 thread (ISO/JIS type) or steel ball with #4-48UNF thread (ANSI/AGD type)
Alarm: Low battery voltage, scale contamination, over-flow error, tolerance limit setting error
Operating temperature: 0°C to 40°C

OPTIONAL ACCESSORIES

Order No.	Description
905338	SPC cable (1m)
905409	SPC cable (2m)
902011	Spindle lifting lever (ISO/JIS type)*
902794	Spindle lifting lever (ANSI/AGD type)*
540774	Spindle lifting cable

*Can not be used on the dust-proof type IDC.

SPECIFICATIONS

Metric Dust-proof Type IDC Series Digimatic Indicators

Resolution	Range	Order No. Back w/lug	Order No. Flat-back	Accuracy	Measuring force	Mass	Remarks
0.001mm	12mm	**543-257**	**543-257B**	0.003mm	2.0N or less	160g	ISO/JIS type
0.01mm	12mm	**543-277**	**543-277B**	0.02mm	2.0N or less	160g	ISO/JIS type

Inch/Metric Dust-proof Type IDC Series Digimatic Indicators

Resolution	Range	Order No. Back w/lug	Order No. Flat-back	Accuracy	Measuring force	Mass	Remarks
.00005"/0.001mm	.5" (12.7mm)	**543-258**	**543-258B**	.00012"	2.0N or less	.35 lbs.	ISO/JIS type
		543-259	**543-259B**	.00012"	2.0N or less	.35 lbs.	ANSI/AGD type
.0005"/0.01mm	.5" (12.7mm)	**543-278**	**543-278B**	.0008"	2.0N or less	.35 lbs.	ISO/JIS type
		543-279	**543-279B**	.0008"	2.0N or less	.35 lbs.	ANSI/AGD type

Metric Low Measuring Force Type IDC Series Digimatic Indicators

Resolution	Range	Order No. Back w/lug	Order No. Flat-back	Accuracy	Measuring force	Mass	Remarks
0.001mm	12mm	**543-254**	**543-254B**	0.003mm	0.4N - 0.7N	160g	ISO/JIS type
0.01mm	12mm	**543-274**	**543-274B**	0.02mm	0.2N - 0.5N	160g	ISO/JIS type

Inch/Metric Low Measuring Force Type IDC Series Digimatic Indicators

Resolution	Range	Order No. Back w/lug	Order No. Flat-back	Accuracy	Measuring force	Mass	Remarks
.00005"/0.001mm	.5" (12.7mm)	**543-255**	**543-255B**	.00012"	0.4N - 0.7N	.35 lbs.	ISO/JIS type
		543-256	**543-256B**	.00012"	0.4N - 0.7N	.35 lbs.	ANSI/AGD type
.0005"/0.01mm	.5" (12.7mm)	**543-275**	**543-275B**	.0008"	0.2N - 0.5N	.35 lbs.	ISO/JIS type
		543-276	**543-276B**	.0008"	0.2N - 0.5N	.35 lbs.	ANSI/AGD type

IDC Series Absolute Digimatic Indicators

SERIES 543 — with Economical Design

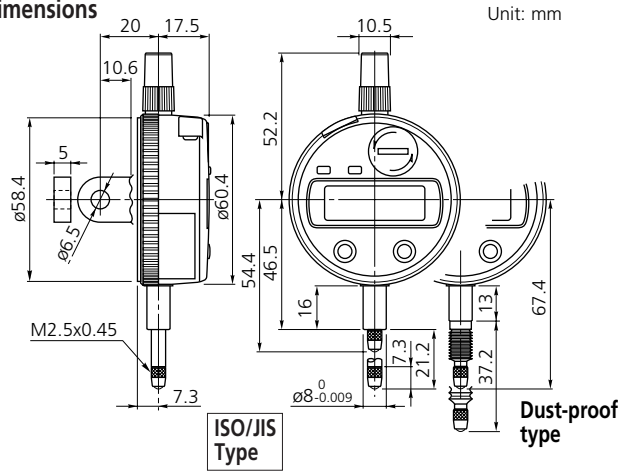


543-683

SPC ABSOLUTE

The IDS Series Digimatic Indicator offers simple, error-free digital readings in a basic and economical package.

Dimensions Unit: mm



Note 1: The lug is not provided for the Flat-back type.
Note 2: Dimensions of the ANSI/AGD type IDS indicator partly differ from those of the ISO/JIS type IDS.

FEATURES

- As compact as standard Series 2 dial indicators.
- The IDS indicates the absolute position of the spindle from the origin point at power-on, allowing to start measurements.
- After the initial zero-setting with the ORIGIN button, the repeated absolute positioning is no longer necessary over the entire battery life.
- Measurement error due to spindle over-speed is eliminated with the ABSOLUTE Encoder.

Technical Data

Display: LCD
Functions: Origin-Set, power on/off, counting direction switching, inch/mm conversion (inch/mm type only), SPC data output
Battery: SR44 (1 pc.) (**938882**)
Battery life: Approx. 20000 hours in continuous use
Stem diameter: 8mm (ISO/JIS type) or 3/8" (ANSI/AGD type)
Contact point: Carbide ball with M2.5x0.45 thread (ISO/JIS type) or steel ball with #4-48UNF thread (ANSI/AGD type)
Dust/Water protection level: Conforming to IP42
Alarm: Low battery voltage, scale contamination
Operating temperature: 0°C to 40°C

OPTIONAL ACCESSORIES

Order No.	Description
905338	SPC cable (1m)
905409	SPC cable (2m)
903424	Spindle lifting lever (ISO/JIS type)
903425	Spindle lifting lever (ANSI/AGD type)
540774	Spindle lifting cable
125317	Spare rubber boot (for dust-proof type)
02ACB420	Lug-on-center back (ISO/JIS type)
02ACB430	Lug-on-center back (ANSI/AGD type)
02ACB440	Flat back
02ACB610	Back with post
02ACB630	Adjustable back (ISO/JIS type)
02ACB620	Adjustable back (ANSI/AGD type)
02ACB640	Back with offset lug
02ACB650	Magnetic back
02ACB670	Back with screw mount (ISO/JIS type)
02ACB660	Back with screw mount (ANSI/AGD type)
02ACB680	Back with adjustable bracket

SPECIFICATIONS

Metric

Resolution	Range	Order No. Back w/lug	Flat-back	Accuracy	Measuring force	Mass	Remarks
0.001mm	12mm	**543-690**	**543-690B**	0.003mm	2.0N or less	150g	ISO/JIS type
	12mm	**543-694**	**543-694B**	0.003mm	2.0N or less	150g	ISO/JIS type, Dust-proof
0.01mm	12mm	**543-681**	**543-681B**	0.02mm	2.0N or less	120g	ISO/JIS type

Inch/Metric

Resolution	Range	Order No. Back w/lug	Flat-back	Accuracy	Measuring force	Mass	Remarks
.00005"/0.001mm	.5" (12.7mm)	**543-691**	**543-691B**	.00012"	2.0N or less	.33 lbs.	ISO/JIS type
		543-695	**543-695B**	.00012"	2.0N or less	.33 lbs.	ISO/JIS type, Dust-proof
	.5" (12.7mm)	**543-692**	**543-692B**	.00012"	2.0N or less	.33 lbs.	ANSI/AGD type
		543-696	**543-696B**	.00012"	2.0N or less	.33 lbs.	ANSI/AGD type, Dust-proof
.0001"/0.001mm	.5" (12.7mm)	**543-693**	**543-693B**	.00012"	2.0N or less	.33 lbs.	ANSI/AGD type
.0005"/0.01mm	.5" (12.7mm)	**543-682**	**543-682B**	.0008"	2.0N or less	.26 lbs.	ISO/JIS type
		543-683	**543-683B**	.0008"	2.0N or less	.26 lbs.	ANSI/AGD type

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