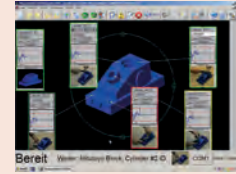


Quality Management Software Page 13



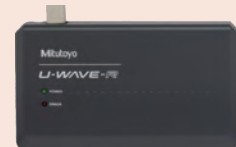
Digimatic Mini Processor Page 18



Signal Cables Page 19



Wireless Data Transmission Page 23



Digimatic Interface Page 25



Tolerancing, Timing, Display Units and Data Logger Page 29



MeasurLink 7

An Integrated Solution for Quality Data Management

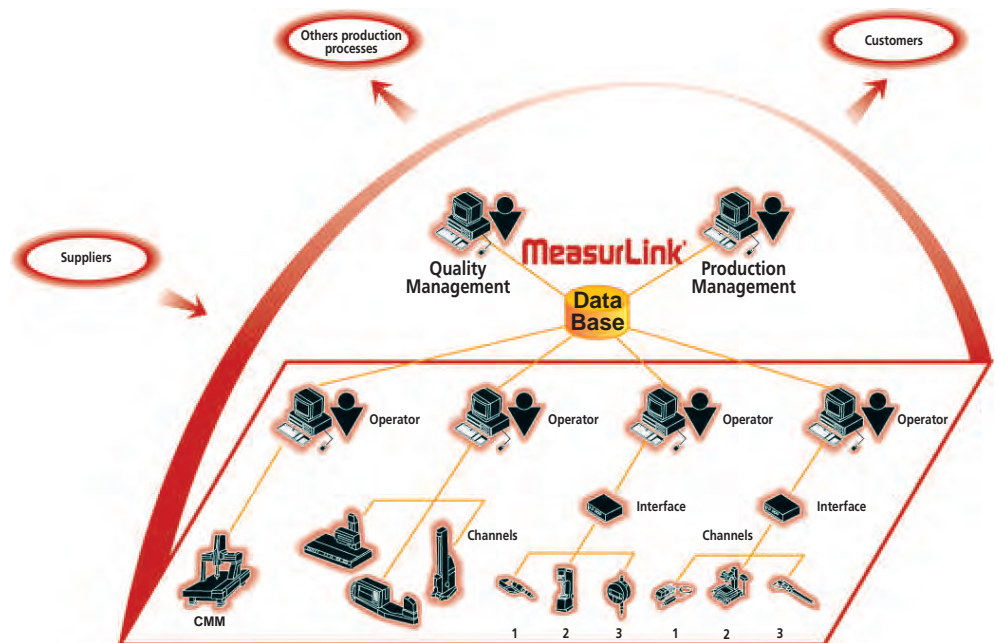
Most of Mitutoyo's electronic instruments can output data via optional connecting cables or wireless transmitters & receivers in the form of the Digimatic code. The Digimatic code can also be converted in RS-232C format by any of several available gage multiplexers. In this way, digital data can be sent to PCs for data acquisition and advanced statistical analysis.

As a client/server application, MeasurLink gives you the performance you need through distributed processing. Combined with a multi-user relational database, MeasurLink delivers a safe and organized data warehousing system making quality data available for viewing and analysis by any member of the production, engineering and managerial staff throughout your company. Inspection in the factory produces data for analysis, corrective action, and various reporting needs. As the backbone of your quality efforts, MeasurLink is guaranteed to reduce your production costs and increase your bottom line.

MeasurLink is capable of linking and managing multiple "islands" of inspection into a common database of part information, statistical data, gage information, process, etc. Information is shared across an entire manufacturing facility.

Group Licensing

MeasurLink is available in several modules offering you a wide range of solutions, from data acquisition to manager views and gage management. Details about all modules can be found on the next pages. However, you can create your own package and combine modules by choosing one of the following license bundles:



No.	Description
64AAB184R	MeasurLink 7 State License - 30 Pack
64AAB185R	MeasurLink 7 Workgroup License - 15 Pack
64AAB263R	MeasurLink 7 Workgroup License - 10 Pack
64AAB264R	MeasurLink 7 Workgroup License - 5 Pack
64AAB265R	MeasurLink 7 Academic License - 20 Pack



Measurlink brochure available on request

MeasurLink 7

MeasurLink Real-Time Standard Edition

Designed for customers who want to acquire and analyze data in real-time from Small Tools like calipers and micrometers.

Features:

- Variable and attributive inspection
- Real-time graphics
- Run charts
- Control charts
- Histograms
- Statistics
- Customized Info View
- Full Reporting Template

Supported data sources: keyboard, RS232-C, USB devices

No.	Description
64AAB177R	MeasurLink 7 Real-Time Standard Edition



MeasurLink Real-Time Professional Edition

On-line Real-Time Data Collection

Acquire data directly from Mitutoyo devices such as:

- Coordinate Measuring Machines
- Form Measuring Instruments
- Vision Measurement Machines

Import data from other devices via:

- ASCII
- QMD (xml based)

Features:

- Variable and attributive inspection
- Real-time graphics
- Run charts
- Control charts
- Histograms
- Statistics
- Customized Info View
- Full Reporting Template
- **Data filter**

Supported data sources: keyboard, RS232, USB devices, **Mitutoyo DDE, ASCII, QMD.**



No.	Description
64AAB178R	MeasurLink 7 Real-Time Professional Edition

MeasurLink 7

MeasurLink Real-Time Professional 3D Edition

On-line Real-Time Data Collection

Designed for customers who wish to collect data using the Hoops 3D graphics view. Hoops 3D files can be exported from most CAD systems and provide the operator with a real view of the part. Acquire data directly from Mitutoyo devices such as:

- Coordinate Measuring Machines
- Form Measuring Instruments
- Vision Measurement Machines

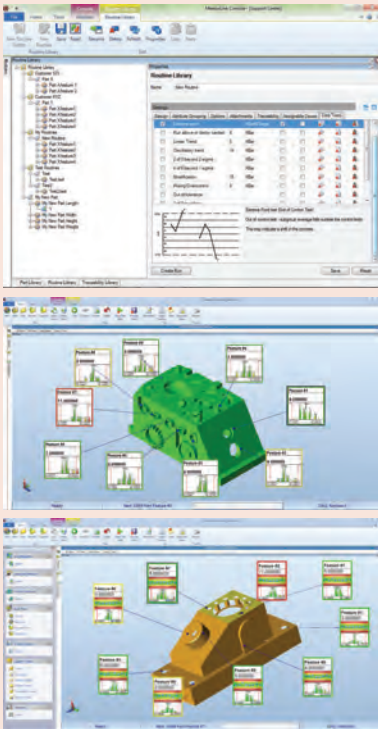
Import data from other devices via:

- ASCII
- QMD (xml based)

Features:

- Variable and attributive inspection
- Real-time graphics
- Run charts
- Control charts
- Histograms
- Statistics
- Customized Info View
- Full Reporting Template
- **Data filter**
- **3D View**
- **Flexible callout design**
- **Guided sequence**

Supported data sources: keyboard, RS232, USB devices, **Mitutoyo DDE, ASCII, QMD.**



No.	Description
64AAB179R	MeasurLink 7 Real-Time Professional 3D Edition

MeasurLink Process Analyzer Lite Edition

Data Analysis Software

Designed for offline viewing of Real-Time data in a networked environment. The invaluable tool for your quality team!

- Analyze your process
- Identify problem areas
- Take corrective action
- Improve your product's quality!

Features:

- Review inspection data
- Switch between databases
- Tree control navigation
- Reporting

No.	Description
64AAB180R	MeasurLink 7 Process Analyzer Lite Edition

MeasurLink 7

MeasurLink Process Analyzer Professional Edition

Data Analysis Software

Designed for more robust manipulation of Real-Time data in a networked environment.

- **Slice and dice data in meaningful ways**
- **Contribute to quality control initiatives!**
- Analyze your process
- Identify problem areas
- Take corrective action
- Improve your product's quality!

Features:

- Review inspection data
- Switch between databases
- Tree control navigation
- Reporting
- **Group, search and sort data**
- **Merge data**
- **Scatter plots**
- **Electronic signatures**

No.	Description
64AAB181R	MeasurLink 7 Process Analyzer Professional Edition



MeasurLink Process Manager Standard Edition

Network Monitoring Software

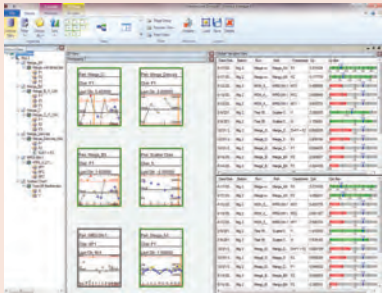
Real-time monitoring of data as it is collected.
The perfect tool for QC and Production Managers!

- Organize and maintain a shop-wide quality program at aglance.
- Audit the entire shop floor inspection activity from a single PC
- Get process information without leaving the office
- View current production across all machines
- Show clients your quality operation for the entire facility
- Establish C_{pk} thresholds for acceptability
- Stay up to the minute on production problems

Drill down for details on certain

- traceability
- assignable cause
- failed tests
- serial numbers

No.	Description
64AAB182R	MeasurLink 7 Process Manager Standard Edition



MeasurLink 7

MeasurLink Gage R&R

Measurement Systems Analysis

Designed according to standard ISO/TS 16949,

Gage R&R allows you to use the methods of study AIAG :

- Range
- Average and Range
- Average and Range including part variation
- Variance analysis
- Short method for attributive gages
- Bias study
- Linearity study
- Stability study

Features :

Graphical analysis tools :

- Xbar R chart
- Part by appraiser plot

No.	Description
64AAS941DR	MeasurLink Gage R&R 6

MeasurLink Gage Management

Gage Inventory and Calibration Control

MeasurLink Gage Management allows customers to build a complete gage and fixture inventory.

Calibration is made simple by supporting digital gages for both, variable and attributive features.

Achieve optimal calibration frequencies - set-up individual calendars with:

- Gage in-service dates
- Calibration recall dates
- Gage R&R dates

Features:

- Vendor contact lists
- User lists
- Print and archive calibration certificates
- Incremental response methods
- Customized gage label printing

No.	Description
64AAS007DR	MeasurLink Gage Management 6

Digimatic Printer/Statistic Processor DP1-VR

Series 264

This DP-1VR printer allows you to print statistical evaluations, and is so compact it fits right in the palm of your hand.

The DP-1VR offers the following benefits:

To print statistical evaluations

- You can print data from calipers, micrometers and other measuring devices equipped with a Digimatic port, and even perform statistical evaluations.
- Printing speed is excellent, it prints from a one-touch start and with the built-in thermal line printer there's almost no noise. The thermosensitive paper has outstanding durability and chemical resistance for long-term storage.
- The DP-1VR even lets you transmit the data to a computer using an RS-232C connecting cable.
- Clock function for loading measurement data.
- Processing capacity for up to 9999 data subgroups.



264-504-5D

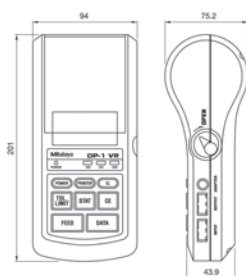


Example application

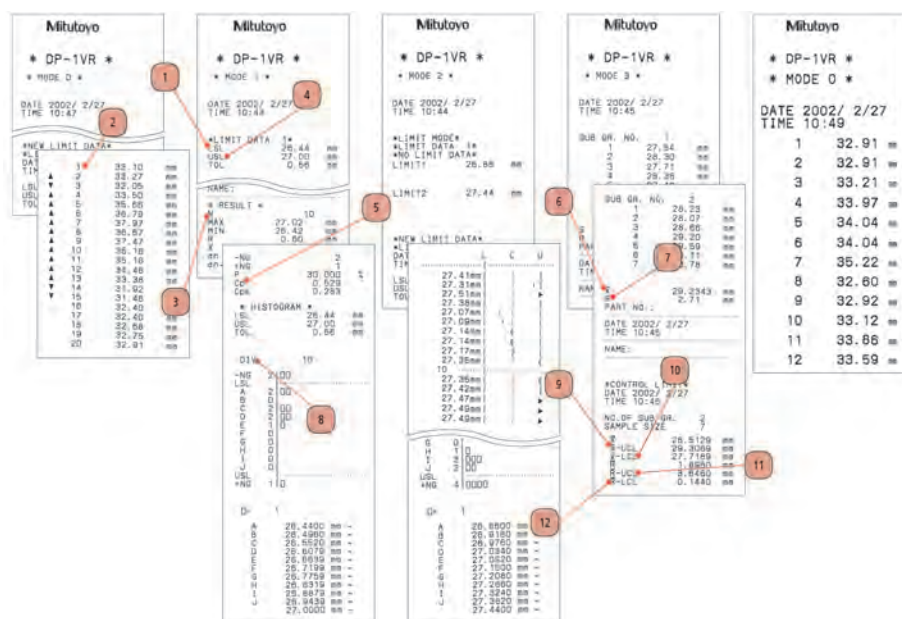
No.	Remarks	Price [€]
264-504-5D	DP-1VR	445.00



Footswitch - 937179T



Dimensions in mm



Specifications

Printer type	Thermal line printer
Printing method	384 dot (8 dot / mm)
Print speed	6,5 mm/s (using AC adapter)
Printing paper	48 m per roll
Capacity	ca. 6,500 lines for large characters, 12,000 lines for normal characters
Processing capacity	Mode 1/2/3: 9,999 data subgroups; Mode 0: 100,000 data subgroups
Printable data	Measurement data, GO/±NO GO judgement, number of data, maximum/minimum value, range, average, standard deviation, number of defective, fraction defective, process capability, index, histogram, D-chart, control chart, generation for Xd-bar and control limit data, date and time
Output function	Outputs the measurement data (RS-232C) or GO/±NO GO judgement
Power	AC adapter 6V, battery: LR6 x 4 (alkaline), NiMH (rechargeable, battery is not charged in the device)
Timer function	0,25 s; 1 s; 5 s; 30 s; 1 min; 30 min; 60 min (0,25 s only statistical function)

Standard accessories

No.	Description
06AEG180D	AC Adapter 6V DC, 2A
09EAA069D	Printer paper (1 roll)

Optional accessories

No.	Description	Price €
937179T	Footswitch	41.50
09EAA084	RS-232C Data cable 1 m (9-pin) for connection DP-1 VR to PC	309.00
09EAA094	RS-232C Data cable 1 m (25-pin) for connecting DP-1VR to Linear Scale KA counter	314.00
965516	GO/±NG Cable for sending the GO/±NG judgement to an external device e.g. red/green signal	89.50

09EAA084 and 965516 can not be used simultaneously.

Consumable spares

No.	Description	Price €
011037	4 batteries LR-6 (AA)	10.00
011348	Ni-MH Batteries (rechargeable)	
09EAA082-5	Printer paper (5 rolls)	25.00
09EAA069D	Printer paper (1 roll)	6.00



DP-1VR brochure available on request

- 1 - Lower limit
- 2 - Input data
- 3 - Number of data
- 4 - Upper limit
- 5 - Process capability index
- 6 - Average
- 7 - Range
- 8 - Number of Division of the histogram
- 9 - Upper control limit (x control)
- 10 - Lower control limit (x control)
- 11 - Upper control limit (R control)
- 12 - Lower control limit (R control)

Digimatic Data Cables

Digimatic measuring instruments require one of the following for initiating data transmission:

1. Footswitch
2. Data button on the instrument (if present)
3. Data request from the PC
4. Data cables with data button (if connectable to the measuring instrument)

These data cables allow you to connect measuring instruments with a Digimatic output to a PC or dedicated data processor.

Digimatic Data Cables offer you the following benefits:

- Connecting Mitutoyo measuring instruments that feature a Digimatic interface.
- You can also connect one or more Digimatic measuring instrument to an additional device, such as a DP-1VR, Counter or DMX Interface (PC).

No. / Price €		For use with	Measuring instrument plugs	
1 m	2 m			
05CZA624 70.50 €	05CZA625 79.50 €	IP65/66/67 ABSOLUTE DIGIMATIC Thickness Gauge (Series 547) IP65/66/67 ABSOLUTE DIGIMATIC Caliper (Series 500, 550, 551, 573) IP65/66/67 ABSOLUTE DIGIMATIC Scale (Series 572) IP65/66/67 ABSOLUTE DIGIMATIC Depth Gauge (Series 571)	With data key and screws	
905338 28.00 €	905409 34.00 €	ABSOLUTE DIGIMATIC Dial Indicator IDS/IDC (Series 543) ABSOLUTE DIGIMATIC Dial Indicator IDU (Series 575)	Straight	
905689 30.00 €	905690 36.00 €	ABSOLUTE DIGIMATIC Thickness Gauge (Series 547) DIGIMATIC Workshop Caliper (Series 552) ABSOLUTE DIGIMATIC Caliper (Series 500 except IP65/66/67 models) ABSOLUTE DIGIMATIC Caliper (Series 550, 551, 573)	Back side	
905691 30.00 €	905692 36.00 €	DIGIMATIC Height Gauge (Series 192, 570) ABSOLUTE DIGIMATIC Depth Gauge (Series 547)	Right	
905693 30.00 €	905694 36.00 €	Portable Hardness Tester (Series 811) ABSOLUTE DIGIMATIC Bore Gauge (Series 511) ABSOLUTE DIGIMATIC Depth Gauge (Series 571 except IP65/66/67 models) ABSOLUTE DIGIMATIC Scale (Series 572 except IP65/66/67 models)	Left	
959149 38.00 €	959150 43.50 €	ABSOLUTE DIGIMATIC Micrometer Head (Series 164)	With data key	
05CZA662 73.50 €	05CZA663 82.50 €	Digimatic micrometer IP65 (Series 293, 331, 340, 342, 695) Three-point Inside Micrometer DIGIMATIC Holtest (Series 468)	With data key and screws	
937387 47.00 €	965013 57.50 €	ABSOLUTE DIGIMATIC Quick Micrometer (Series 227, 293) DIGIMATIC Micrometers (Series 293, 314, 317, 323, 324, 326, 331, 340, 342, 343, 369, 389, 395, 406, 422) DIGIMATIC Micrometer Heads (Series 164, 350) DIGIMATIC Standard Micrometer (Series 121) DIGIMATIC Depth Micrometer (Series 329) DIGIMATIC Inside Micrometer with jaws (Series 345) DIGIMATIC Inside Micrometer (Series 337, 339) ABSOLUTE DIGIMATIC Borematic (Series 568) Height Micrometer Heightmaster (Series 515) Hardness Tester Wizhard (Series 810) Hardness Tester Micro Vickers HM/HV (Series 810)	6 pin	
936937 43.50 €	965014 57.50 €	ABSOLUTE DIGIMATIC Indicator ID-F/ID-H (Series 543) Portable Surface Roughness Tester SJ-210/301/401/402 (Series 178) Profile Projector PJ-Series (Series 303) Profile Projector PH-Series (Series 172) Height Micrometer CERA Heightmaster (Series 515) Linear Height and Height Gauge QM-Series (Series 518) Linear Gauge Counter (Series 542) LSM-6000 Counter for Laser Scan Micrometer (Series 544) Laser Scan Micrometer LSM-9506 DIGIMATIC Multi-unit (Series 572) MVK-H Hardness Tester (Series 810) DIGIMATIC Port for Linear-Scale Counter	Identical connectors on both ends	
21EAA194 51.50 €	21EAA190 62.00 €	ABSOLUTE DIGIMATIC Indicator ID-N/ID-B (Series 543)		
21EAA210 149.00 €	21EAA211 170.00 €	ABSOLUTE DIGIMATIC Indicator ID-N/ID-B (Series 543) with zero-setting terminal		

Digimatic Extension Cables

Series 011 / 936

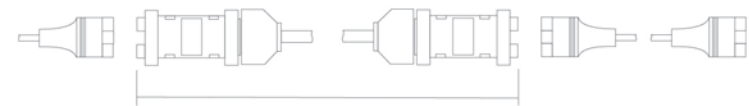
- These extension cables allow you to extend Digimatic data cables up to 14 metres, extending the working distance between a measuring instrument and an external device such as a PC or DP-1VR.



011393

DIGIMATIC measurement devices
with data output

DIGIMATIC transmitters or
Digimatic Miniprocessor



Digimatic Signal cable
to the measuring instruments
1 m or 2 m

Nr. 011391 5 m
Nr. 011392 8 m
Nr. 011393 10 m

DIGIMATIC Signal cable
Nr. 936937 1 m
Nr. 965014 2 m

No.	Length [m]	Price [€]
011391	5	121.00
011392	8	137.00
011393	10	152.00

Optional accessories

No.	Description	Price €
936937	Digimatic cable (1 m)	43.50
965014	Digimatic cable (2 m)	57.50

USB Input Tool Direct (Digimatic-USB cable)

Specifications

Cable length	2 m
Output	USB (HID/VCP)
OS compatibility	Windows® 2000 Professional (≥SP4), Windows® XP Professional (≥SP2), Windows® XP Home Edition (≥SP2), Windows Vista®/7 (32bit,64bit)
Max connectable devices	Windows® XP/2000: 108 devices (18 hubs with 7 ports and 1 software Dongle) Windows Vista®/7: 20 devices

Optional accessories

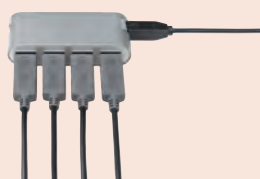
No.	Description	Price €
937179T	Footswitch	41.50
06ADV386	Software USB-ITPAK with Dongle	227.00



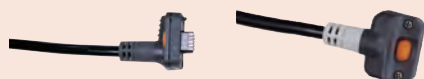
Typical USB cable



Footswitch connection for USB



Typical commercially available USB Hub



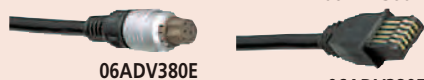
06ADV380A

06ADV380B



06ADV380C

06ADV380D



06ADV380E

06ADV380F



06ADV380G

Series 06ADV

This input tool allows you to directly connect Digimatic measuring devices to a USB interface, without needing additional software.

The USB Input Tool Direct offers the following benefits:

- Measurement data is converted into keyboard codes, enabling interaction with any program working with keyboard entries.
- You can also connect to a USB with fixed COM assignment in Microsoft® Windows® as channel identification (VCP).
- The USB-ITPAK software lets you easily create Microsoft® Excel® worksheets.
- Multi-channel input for measurement values, Microsoft® Excel®.
- Cables can be cascaded via a standard USB hub.



Data cable USB

No.	Model	Remarks	Price [€]
06ADV380A	A	IP USB Input Tool Direct Cable Straight With Data Switch (2m) e.g. for IP67 Caliper	115.00
06ADV380B	B	IP USB Input Tool Direct Cable Back Side With Data Switch (2m) e.g. for IP65 Micrometer	115.00
06ADV380C	C	USB Input Tool Direct Cable Straight With Data Switch (2m) e.g. for Standard Absolute Caliper	100.00
06ADV380D	D	USB Input Tool Direct Cable Plain (2m) e.g. for IDH/IDF Indicator	100.00
06ADV380E	E	USB Input Tool Direct Cable Round (2m) e.g. for Quick Micrometer	100.00
06ADV380F	F	USB Input Tool Direct Cable Straight (2m) e.g. for IDC/IDS Indicator	100.00
06ADV380G	G	IP USB Input Tool Direct Cable IDN/IDB (2m)	100.00

Advantages of the new Digimatic USB connections

Application	Situation	Software USB-ITPAK	Data format	Remarks
Arbitrary software which expects a keyboard code	Only a USB Input tools signal cable required.	Software is not needed.	Measured value as keyboard format (HID = Human Interface Device)	Foot switch can not be connected.
Commercial statistics software like e.g. Mitutoyo MeasurLink	A USB input tools signal cable and the software USB ITPAK are required.	For each measuring instrument (cable) a fixedly assigned virtual COM-Port is generated once; afterwards Software USB IT PAK becomes inactive.	MUX-10 Specification (e.g. 01A+138.626) with fixed COM assignment as channel identification	
Arbitrary software, which expects a keyboard code e.g. Word, txt-format		- Connected measuring instruments and foot switches are selected and assigned. - Terminator is determined. - Procedure is registered as a part program	Transmission of a measured value in text format (VCP = as virtual COM port)	
Microsoft® Excel®		- Connected measuring instruments and foot switches are selected and assigned. - Performs organization of the Microsoft® Excel®-table, i.e. the transferred measured values are written into the pre-defined cells.	Measuring report Microsoft® Excel®-format and character sequence of max. 31 characters (e.g. text input)	

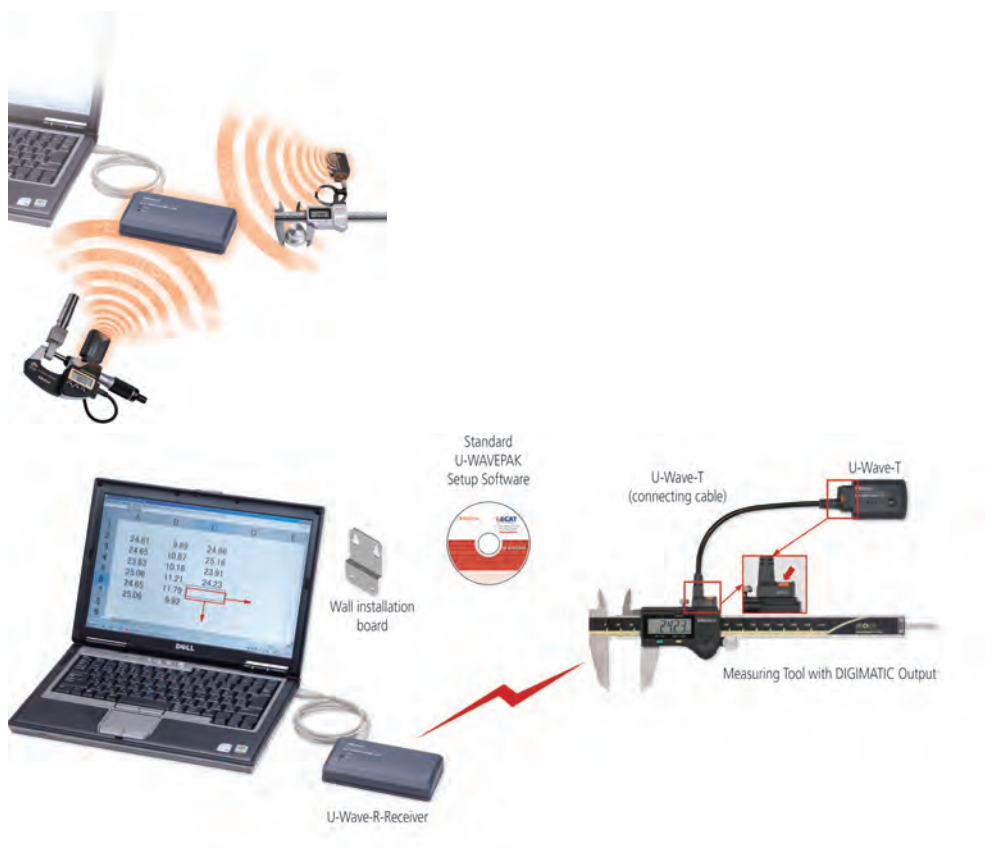
Wireless Communication System: U-WAVE

Series 02AZD

This wireless communication system transfers data directly from a Digimatic measuring instrument to a PC, meaning no more cables are needed.

The U-WAVE offers the following benefits:

- 20 metre communication distance.
- It allows easy data export straight to Microsoft® Excel® or other applications, using the bundled data interface software.
- Data transfer is confirmed by the transmitter through a buzzer or LED.
- An IP67 transmitter is available.
- You can make 400,000 data transmissions with a single battery.
- By using special software it will also support a data request from a PC (Event Drive mode). This is ideal if there is no one operating the measuring tool, or if it is installed at an inaccessible side.



Specifications

Wireless communication protocol	IEEE 802.15.4
Modulation method	DS-SS (Direct Sequence Spread Spectrum)
Communication distance	Approx. 20 m line of sight
Communication speed kbps	250
Communication frequency	2.4 GHz (ISM: universal frequency band)
User band	15 channels (2.405 to 2.475GHz at intervals of 5 MHz)
OS compatibility	Windows® 2000 Professional (≥SP4), Windows® XP Professional (≥SP2), Windows® XP Home Edition (≥SP2), Windows Vista®, Windows® 7 (32 bit, 64 bit)

Standard accessories

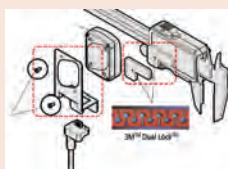
No.	Description
02AZD770	Clip for Cable fixing
05CZA619	Screw driver
055AA217D	Lithium battery CR-2032

Optional accessories

No.	Description	Price €
937179T	Footswitch	41.50
02AZE200	Holder for U-WAVE T. Contents: support plate, fixing pads, screws	20.00

Consumable spares

No.	Description	Price €
055AA217D	Lithium battery CR-2032	5.50



02AZE200 : Holder for caliper, micrometer and dial indicator.



U-Wave-R



U-WAVE-T

1 - Wall installation board

2 - U-Wave-T (Connecting cable)

3 - U-Wave-T

4 - Measuring Tool with Digimatic Output

Receiver U-WAVE R

No.	Software	Remarks	Number of U-WAVE-R units that can be connected to PC	Number of U-Wave-T units that can be connected	USB Cable length [m]	Power supply	Dimensions (WxDxH) [mm]	Mass [g]	Price [€]
02AZD810D	U-WAVE PAK	U-WAVE R + Software	Up to 16	Up to 100	1	USB bus power system	140 x 80 x 31.6	130	318.00

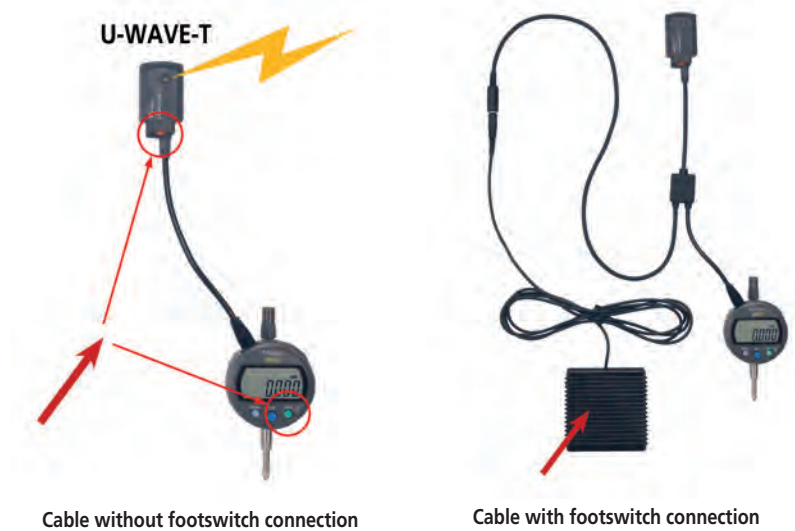
Transmitter U-WAVE T

No.	Data reception indication	Remarks	Power supply	Battery life	Dimensions (WxDxH) [mm]	Mass [g]	Price [€]
02AZD730D	LED	IP67 model	Battery CR2032	400.000 transmissions	44 x 29.6 x 18.5	23	160.00
02AZD880D	LED and buzzer	Standard model	Battery CR2032	400.000 transmissions	44 x 29.6 x 18.5	23	160.00

Wireless Communication System: U-WAVE

Series 02AZD / 02AZE

- There is a short cable that connects a measuring tool to its U-WAVE T unit. Choose the appropriate cable for your measuring tool from the seven types below, A to G.



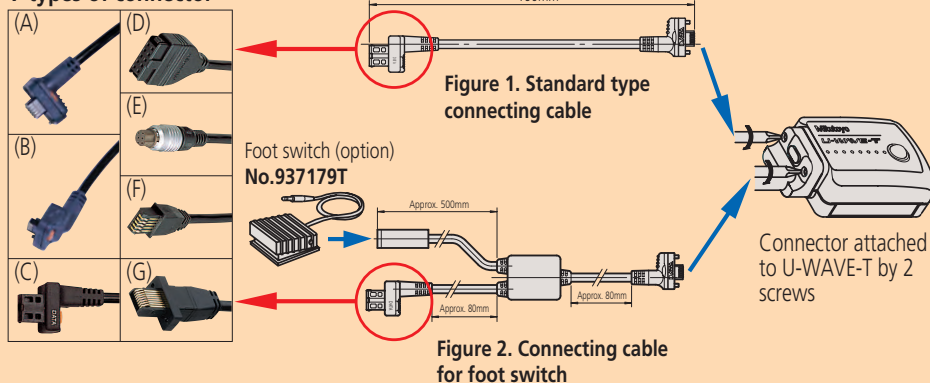
1 Cable without footswitch connection

No.	Model	Remarks	Price [€]
02AZD790A	A	IP U-WAVE Data Cable Straight With Data Switch e.g. for IP67 Caliper	95.00
02AZD790B	B	IP U-WAVE Data Cable Back Side With Data Switch e.g. for IP65 Micrometer	95.00
02AZD790C	C	U-WAVE Data Cable Straight With Data Switch e.g. for Standard Absolute Caliper	90.00
02AZD790D	D	U-WAVE Data Cable Plain e.g. for IDH/IDF Indicator	85.00
02AZD790E	E	U-WAVE Data Cable Round e.g. for Quick Micrometer	85.00
02AZD790F	F	U-WAVE Data Cable Straight e.g. for IDC/IDS Indicator	85.00
02AZD790G	G	IP U-WAVE Data Cable e.g. for IDN/IDB Indicator	90.00

2 Cable with footswitch connection

No.	Model	Remarks	Price [€]
02AZE140A	A	IP U-WAVE Data Cable Straight With Data Switch/FootSwitch Connector e.g. for IP67 Caliper	129.00
02AZE140B	B	IP U-WAVE Data Cable Back Side With Data Switch/FootSwitch Connector e.g. for IP65 Micrometer	129.00
02AZE140C	C	U-WAVE Data Cable Straight With Data Switch/FootSwitch Connector e.g. for standard Absolute Caliper	124.00
02AZE140D	D	U-WAVE Data Cable Plain With FootSwitch Connector e.g. for IDH/IDF Indicator	119.00
02AZE140E	E	U-WAVE Data Cable Round With FootSwitch Connector e.g. for Quick Micrometer	119.00
02AZE140F	F	U-WAVE Data Cable Straight With FootSwitch Connector e.g. for IDC/IDS Indicator	119.00
02AZE140G	G	IP U-WAVE Data Cable With FootSwitch Connector e.g. for IDN/IDB Indicator	119.00

7 types of connector



Super Caliper with 02AZD790A cable



QuantuMike with 02AZD790B cable



Standard Absolute Caliper with 02AZD790C cable



Digimatic Indicator ID-H with 02AZD790D cable



Quick Micrometer with 02AZD790E cable



Digimatic Height Gauge with 02AZD790F cable



ABS Digimatic Indicator ID-N with 02AZD790G cable



USB Input Tool

Series 264 - Keyboard Interface

- This USB input tool is a keyboard Interface for transmitting data from measuring instruments equipped with Digimatic interfaces to a PC. Measurement data is converted into keyboard codes, allowing you to easily access it with any program working with keyboard entries, regardless of the operating system. The USB and data conversation interfaces also allow you to directly input the measurement data into a spreadsheet.



264-014-10

No.	Data input	Data output	Output decimal mark	Footswitch connector	Mass [g]	Price [€]
264-012-10	1 x Digimatic	USB keyboard signal (HID)	point	Yes	61	205.00
264-013-10	1 x Digimatic	USB keyboard signal (HID)	comma	Yes	61	
264-014-10	1 x Digimatic	USB keyboard signal (HID)	Emulates the local setting	Yes	61	205.00

Specifications

Cable length	0.9 m
Dimensions (WxDxH)	72 x 44 x 23.5 mm
Power supply	5V from the USB
OS compatibility	Microsoft® Windows® 98, 2000, XP, Windows Vista®, 7 (32 bit), Pocket PC 2002

Optional accessories

No.	Description	Price €
937179T	Footswitch	41.50



	A	B	C	D	E
1	Height	Diameter 1	Diameter 2		
2	0.000	0.000	0.000		
3	2.734	5.031	13.526		
4	2.700	5.036	13.525		
5	2.701	5.036	13.525		
6	2.701	5.037	13.525		
7	2.702	5.037	13.525		
8	2.702	5.037	13.433		
9	2.702	5.037	13.432		
10	2.701	4.940	13.432		
11	2.357	4.940	12.129		

DMX-3T / FS2 USB

Series 011

Keyboard interface

- The DMX-3 T/FS2 USB is a keyboard interface that transmits measurement data from measuring instruments equipped with Digimatic interfaces to a PC. Measurement data is converted into keyboard codes, allowing you to easily access it with any program working with keyboard entries, regardless of the operating system. The USB and data conversation interfaces also allow you to directly input the measurement data into a spreadsheet.



011537



rear panel

Specifications

Dimensions (WxDxH)	112 x 122 x 45 mm
Power supply	5V from the USB
Timer function	0-99s (1s step) or 0-99min
OS compatibility	Microsoft® Windows® 2000, XP, Vista, 7
Max. no. of cascable interface	3 via optional link cable

Optional accessories

No.	Description	Price €
937179T	Footswitch	41.50
011538	Interface Link cable (300 mm)	

	A	B	C	D	E
1	Height	Diameter 1	Diameter 2		
2	0.000	0.000	0.000		
3	2.734	5.031	13.526		
4	2.700	5.036	13.525		
5	2.701	5.036	13.525		
6	2.701	5.037	13.525		
7	2.702	5.037	13.525		
8	2.702	5.037	13.433		
9	2.702	5.037	13.432		
10	2.701	4.940	13.432		
11	2.357	4.940	12.129		

No.	Data input	Data output	Output decimal mark	Footswitch connector	Mass [g]	Price [€]
011537	3 x Digimatic	USB keyboard signal (HID)	point or comma (selectable)	Yes	330	450.00

DMX-1

Series 011

This DMX-1 D-SUB9 serial interface is a microcontrolled interface for connecting one single measurement device, with Digimatic output, to the RS-232C interface of a computer. The DMX-1 offers the following benefits:

- Easily connect a measuring device to a computer's RS-232C serial port.
- No external power supply is needed, as the small level of power needed is supplied by the handshake lines RTS and DTR.

No.	Data input	Data output	Interface cable connection	Footswitch connector	Baud rate	Data bits	Stop bits	Parity	Price [€]
011216	1 x Digimatic	RS-232C	D-SUB 9	Yes	9600	8	1	none	79.00

DMX-1 USB

Series 011

• The DMX-1 USB is a micro-controlled interface for connecting 1 Digimatic-output measurement device to the USB interface of a computer. The device appears as a virtual COM-PORT (VCP) to the computer.



No.	Data input	Data output	Interface cable connection	Footswitch connector	Baud rate	Data bits	Stop bits	Parity	Price [€]
011506	1 x Digimatic	USB virtual COM-Port (VCP)	USB	Yes	9600	8	1	none	105.00

DMX-2 S

Series 011

This DMX-2 S D-SUB5 serial interface is a microcontrolled interface for connecting two measurement devices, with Digimatic output, to the RS-232C serial port of a computer. The DMX-1 offers the following benefits:

- Easily connect two measuring devices to a computer's RS-232C serial port.
- No external power supply is needed, as the small level of power needed is supplied by the handshake lines RTS and DTR.



No.	Data input	Data output	Interface cable connection	Footswitch connector	Baud rate	Data bits	Stop bits	Parity	Price [€]
011466	2 x Digimatic	RS-232C	D-SUB 25	Yes	9600	8	1	none	341.00

Specifications

Dimensions (WxDxH)	58 x 62 x 18 mm
--------------------	-----------------

Optional accessories

No.	Description	Price €
937179T	Footswitch	41.50
011196	Signal cable RS-232C DSub9-DSub9 (2 m)	15.00



011216

Specifications

Dimensions (WxDxH)	33 x 57 x 20 mm
OS compatibility	Microsoft® Windows® 2000, XP, Vista, 7 (32 bit, 64 bit)
Delivered	USB cable (1,8m) Driver Software

Optional accessories

No.	Description	Price €
937179T	Footswitch	41.50

Specifications

Dimensions (WxDxH)	58 x 62 x 18 mm
--------------------	-----------------

Optional accessories

No.	Description	Price €
011197	Adapter D-SUB25 - D-SUB9 (0,2 m)	15.00
937179T	Footswitch	41.50
011119	Signal cable RS-232C D-SUB 25 to D-SUB 9 (2m)	82.50



Sample application with footswitch (optional accessory)

DMX-2 USB

Series 011

ting two measurement devices, with Digimatic-output, to a USB port.

The DMX-2 HUSB offers the following benefits:

- It appears either as a virtual COM-Port (VCP) or as a keyboard (HID) on the computer.
- It has a mode switch available to easily swap between keyboard format (HID) and virtual COM-Port (VCP).



011443

Rear panel

No.	Data input	Data output	Interface cable connection	Footswitch connector	Baud rate	Data bits	Stop bits	Parity	Price [€]
011443	2 x Digimatic	USB virtual COM-Port (VCP) USB keyboard signal (HID) (switchable on the box)	USB	Yes	9600	8	1	none	341.00

DMX-3 USB

Series 011

The DMX-3 3 channel USB VCP interface/ D-SUB9 serial interface is a microcontrolled interface that connects three measurement devices, with Digimatic output, to either the RS-232C serial port or USB port of a computer.

The DMX-2 offers the following benefits:

- If the USB output is used, the measuring device will appear as a virtual COM-Port (VCP) on the computer.
- Power is supplied by an AC/DC adapter, which is a standard accessory only required for serial cable D-Sub 9 connection.



011505

rear panel

No.	Data input	Data output	Interface cable connection	Foot-switch connector	Baud rate	Data bits	Stop bits	Parity	Price [€]
011505	3 x Digimatic	USB virtual COM-Port (VCP), RS-232C	For serial cable: D-SUB 9 for USB: cable type B	Yes	1200/9600 (adjustable with jumper)	8	1	none	420.00

Specifications

Dimensions (WxDxH)	61 x 76 x 35 mm
OS compatibility	Microsoft® Windows® 2000, XP, Vista, 7 (32 bit, 64 bit)
Output decimal mark (HID)	point or comma
Delivered	USB cable (1,8 m) Driver software

Optional accessories

No.	Description	Price €
937179T	Footswitch	41.50

Specifications

Dimensions (WxDxH)	170 x 128 x 55 mm
OS compatibility	Microsoft® Windows® 2000, XP, Vista, 7 (32 bit, 64 bit)
Delivered	USB cable (1,8 mm) Driver Software AC Adapter (only for serial cable connection)

Optional accessories

No.	Description	Price €
937179T	Footswitch	41.50
011196	Signal cable RS-232C DSub9-DSub9 (2 m)	15.00

MUX-10F

Series 264

The MUX-10F 4 channel D-SUB9 serial interface is a microcontrolled interface that connects four measurement devices, with Digimatic output, to the RS-232C serial port of a computer. The MUX-10F offers the following benefits:

- You can connect four measurement devices to an RS-232C serial port.



264-002

rear-panel

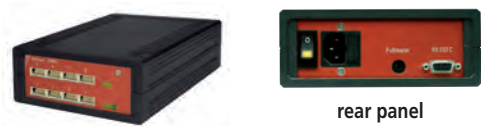
No.	Data input	Data output	Interface cable connection	Footswitch connector	Baud rate	Data bits	Stop bits	Parity
264-002	4 x Digimatic	RS-232C	D-SUB 9	Yes	300, 600, 1200, 2400, 9600, 19200	8	1	none

DMX-8/2

Series 011

The DMX-8/2 8 channel D-SUB9 serial interface is a microcontrolled interface for connecting eight measurement devices, with Digimatic output, to the RS-232C serial port of a computer. The DMX-8/2 offers the following benefits:

- It comes with a 220-240V 50 Hz power supply.



011318

rear panel

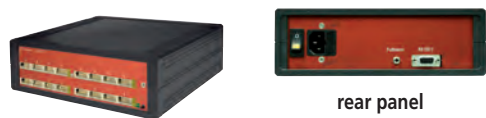
No.	Data input	Data output	Interface cable connection	Footswitch connector	Baud rate	Data bits	Stop bits	Parity	Price [€]
011318	8 x Digimatic	RS-232C	D-SUB 9	Yes	9600	8	1	none	1,000.00

DMX-16 / DMX-16C

Series 011

The DMX-16/16C offers the following benefits:

- It features integrated microprocessors for data processing, which means simultaneous input and output from all measurement instruments, as well as faster data processing speeds.



011255

rear panel

No.	Type	Data input	Data out-put	Interface cable con-nection	Foot-switch connector	Baud rate	Data bits	Stop bits	Parity	Price [€]
011191	DMX-16	16 x Digi-matic	RS-232C	D-SUB 9	Yes	9600	8	1	none	1,559.00
011255	DMX-16C	16 x Digi-matic	RS-232C	D-SUB 9	Yes	9600	8	1	none	2,240.00

Specifications

Dimensions (WxDxH)	91,4 x 92,5 x 50,4 mm
Delivered	AC Adapter

Optional accessories

No.	Description	Price €
937179T	Footswitch	41.50
011196	Signal cable RS-232C DSub9-DSub9 (2 m)	15.00

Specifications

Dimensions (WxDxH)	158 x 204 x 66 mm
Delivered	Power cable

Optional accessories

No.	Description	Price €
937179T	Footswitch	41.50
011196	Signal cable RS-232C DSub9-DSub9 (2 m)	15.00

Specifications

Dimensions (WxDxH)	225 x 204 x 75 mm
Delivered	Power cable

Optional accessories

No.	Description	Price €
937179T	Footswitch	41.50
011196	Signal cable RS-232C DSub9-DSub9 (2 m)	15.00

DMX-3-2 USB

Series 011

This DMX-3-2 USB is a three channel USB interface for connecting three measurement devices, with Digimatic output, and two devices with RS232C output (such as the Mitutoyo QM-Data 200) to the USB interface of a computer.

The DMX-3-2 USB offers the following benefits:

- It can connect more than 70 different measuring instruments with RS232C output, including Mitutoyo devices as well as other brands (a list is available on request).
- The interface converts the different signals from the connected measuring instruments into the same format: keyboard signal (HID) or virtual COM-Port MUX-10 or MUX-50 (VCP).



011552



Rear panel

No.	Data input	Data output	Interface cable connection	Footswitch connector	Baud rate	Data bits	Stop bits	Parity	Price [€]
011552	3 x Digimatic 2 x RS232C	USB virtual COM-Port (VCP) USB keyboard signal (HID)	USB	Yes	9,600	8	1	none	860.00

Digimatic Timerbox

Series 011

This timerbox allows you to connect to the footswitch connector of a Mitutoyo interface to trigger data transfer, based on a time interval.

The Digimatic Timerbox offers the following benefits:

- Software neutral for all applications.
- It can be used with all Mitutoyo interfaces featuring 3.5mm TRS Foot switch connectors (Mono) such as USB Input Tool Direct.
- It works as a time-controlled footswitch.



011540



Sample application with USB Input Tool Direct

No.	Price [€]
011540	310.00

Specifications

Dimensions (WxDxH)	170 x 128 x 55 mm
Timer function	interval 0-99s or 0-99 min
Mitutoyo measuring instruments with RS232C output	KA-Counter Protractor Series 950 EH, EF, EV-Counter DP1-VR Linear Height LH-600 QM-Data 200 Litematic VL-50 Laser Scan Micrometer LSM QM-Height MF-Microscope Series PJ A3000 Projector PJ H30 Projector ID-H Indicator
OS compatibility	Microsoft® Windows® 2000, XP, Vista, 7 (32 bit, 64 bit)
Output decimal mark (HID)	point or comma
Max. no. of cascable interface	3 via optional link cable
Delivered	USB cable (1,8 mm) Driver Software

Optional accessories

No.	Description	Price €
937179T	Footswitch	41.50
011538	Interface Link cable (300 mm)	

Specifications

Dimensions (WxDxH)	55 x 58 x 31 mm
Power supply	AC-Adaptor 10 V, 120mA or USB bus power
Timer function	1s-99h 59 min 59s (100h)
Timer tolerance	±8s/24h
Delivered	USB connection cable (0.8 m) AC adaptor Footswitch cable TTB1 (0.52 m)
Mass	84 g



Sample application with DMX Box

Digimatic Display Unit

Series 542

For devices equipped with SPC Digimatic output:

- Micrometer
- Indicator
- Caliper
- etc...



542-007D



542-072D



542-016



542-093-2

Digimatic Data Logger

Series 011

The Digimatic DL-1000 and 1000 M are data loggers designed for storing measurement data recorded by a Digimatic measuring instrument for subsequent output to a computer. They allow you to collect data when away from a PC, and transfer it later.

These Digimatic Data Loggers offer the following benefits:

- The measuring device is connected to the I/O port of the DL-1000/1000 M with a data cable, and you can transmit data either using the data button on the measuring device or on the DL-1000/1000 M.
- For data transfer the devices are connected via an interface to the target computer.
- Data transfer from the DL-1000/1000 M is executed with the data button or footswitch of an interface or upon request from the respective software. The DL-1000/1000 M is recognised by the measurement device as a Digimatic measurement instrument.
- You can output data directly to a printer equipped with a Digimatic interface.



011264 / 011264M

No.	Type	Mass [g]	Price [€]
011264	DL-1000	130	588.00
011264M	DL-1000 M	130	667.00



For more details (functions a.s.o) please refer to counters and displays under "Linear Gages".

Specifications

Memory	<p>DL-1000/1000 M: Up to 999 measurement values can be stored by these data loggers.</p> <p>DL-1000 M: Sample or feature-related operation is possible.</p> <p>A maximum of 100 features from 9 samples can be stored. If the number of features is reduced the number of samples available is increased.</p> <p>Based on the number of features, the DL-1000 M will automatically calculate how many samples are available.</p> <p>For example, 10 measured features means that a maximum of 99 samples can be stored.</p>
Data format	All data are loaded or output in Mitutoyo Digimatic compatible format.
Connection to measuring instrument	To output measurement values, a DL-1000/1000 M can be connected to any interface or protocol printer which allows connection to Mitutoyo Digimatic compatible measuring instruments.
Delivered	1 x 9V lithium battery Data cable 10-pole to 10-pole (0,25m)

Optional accessories

No.	Description	Price €
936937	Digimatic cable (1 m)	43.50
965014	Digimatic cable (2 m)	57.50
06ADV380D	USB Input Tool Direct cable (2 m)	100.00

Digimatic Switch Box

Series 011/939

This switch box is a distribution box that connects 3-5 Digimatic tools to one channel interface (for example a DMX-1 USB).

The Digimatic Switch Box offers the following benefits:

- It can connect 3-5 Digimatic tools to a single channel interface.
- This can be either a single Digimatic display unit or an interface box.



011235

939039

No.	Data output	Data input	Footswitch connector	Price [€]
011235	1 x Digimatic (1 channel)	5 x Digimatic	Yes	373.00
939039	1 x Digimatic (1 channel)	3 x Digimatic	No	263.00

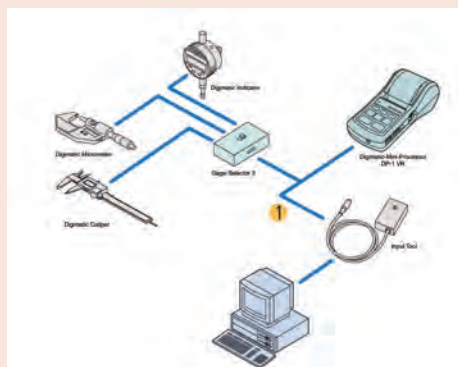
Specifications

Delivered AC-Adapter (011235 only)

Optional accessories

No.	Description	Price €
936937	Digimatic cable (1 m)	43.50
965014	Digimatic cable (2 m)	57.50
937179T	Footswitch	41.50

937179T only for 011235



1 - cable 936937 (1m), 965014 (2m)

Specifications

Dimensions (WxDxH) 134 x 134 x 102 mm

Delivered With AC adapter

Optional accessories

No.	Description	Price €
011037	4 batteries LR-6 (AA)	10.00

Digimatic Tolerance Box

Series 011

This tolerance box allows you to connect Digimatic measuring instruments for visual GO/NG evaluations.

The Digimatic Tolerance Box offers the following benefits:

- Simple connection to Digimatic measuring instruments.
- Simple representation of a tolerance evaluation -NG/GO/+NG.
- It can be powered by AC adapter (as a standard accessory) or two LR6 batteries.
- Tolerance setting with the measuring instrument.

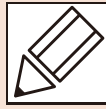


011516



No.	Price [€]
011516	168.00

Quick Guide to Precision Measuring Instruments



Quality Control

■ Quality control (QC)

A system for economically producing products or services of a quality that meets customer requirements.

■ Process quality control

Activities to reduce variation in product output by a process and keep this variation low. Process improvement and standardization as well as technology accumulation are promoted through these activities.

■ Statistical process control (SPC)

Process quality control through statistical methods.

■ Population

A group of all items that have characteristics to be considered for improving and controlling processes and quality of product. A group which is treated based on samples is usually the population represented by the samples.

■ Lot

Collection of product produced under the same conditions.

■ Sample

An item of product (or items) taken out of the population to investigate its characteristics.

■ Sample size

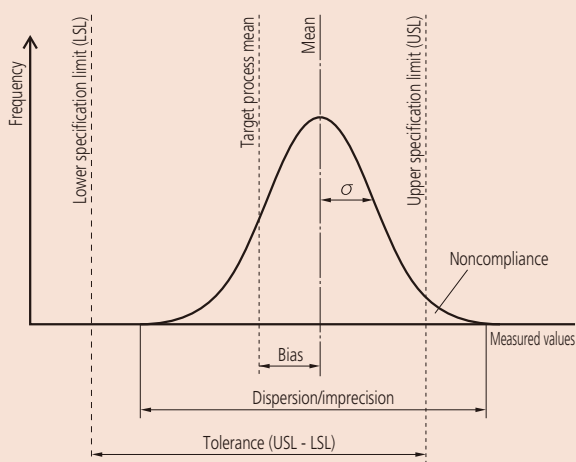
Number of product items in the sample.

■ Bias

Value calculated by subtracting the true value from the mean of measured values when multiple measurements are performed.

■ Dispersion

Variation in the values of a target characteristic in relation to the mean value. Standard deviation is usually used to represent the dispersion of values around the mean.



■ Histogram

A diagram that divides the range between the maximum and the minimum measured values into several divisions and shows the number of values (appearance frequency) in each division in the form of a bar graph. This makes it easier to understand the rough average or the approximate extent of dispersion. A bell-shaped symmetric distribution is called the normal distribution and is much used in theoretical examples on account of its easily calculable characteristics. However, caution should be observed because many real processes do not conform to the normal distribution, and error will result if it is assumed that they do.

■ Process capability

Process-specific performance demonstrated when the process is sufficiently standardized, any causes of malfunctions are eliminated, and the process is in a state of statistical control. The process capability is represented by $\pm 3\sigma$ or 6σ when the quality characteristic output from the process shows normal distribution. σ (sigma) indicates standard deviation.

■ Process capability index (PCI or Cp)

A measure of how well the process can operate within the tolerance limits of the target characteristic. It should always be significantly greater than one. The index value is calculated by dividing the tolerance of a target characteristic by the process capability (6σ). The value calculated by dividing the difference between the mean (\bar{X}) and the standard value by 3σ may be used to represent this index in cases of a unilateral tolerance. The process capability index assumes that a characteristic follows the normal distribution.

Notes: If a characteristic follows the normal distribution, 99.74% data is within the range $\pm 3\sigma$ from the mean.

Bilateral tolerance

$$C_p = \frac{USL - LSL}{6\sigma}$$

USL: Upper specification limit
LSL: Lower specification limit

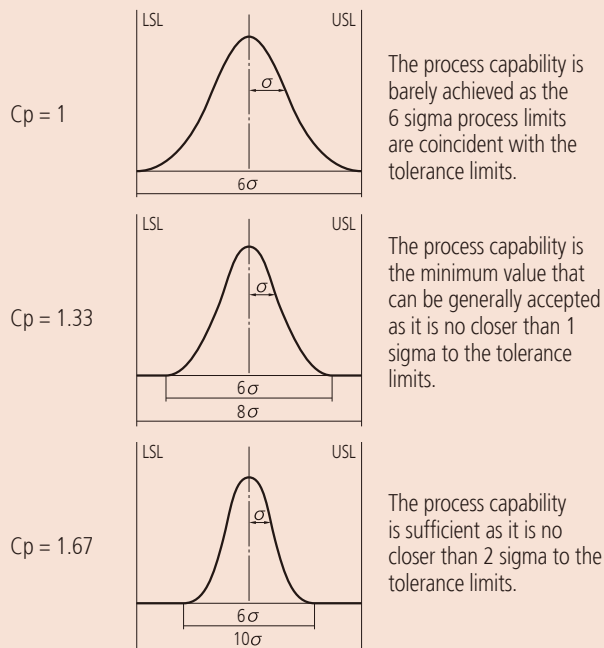
Unilateral tolerance ... If only the upper limit is stipulated

$$C_p = \frac{USL - \bar{X}}{3\sigma}$$

Unilateral tolerance ... If only the lower limit is stipulated

$$C_p = \frac{\bar{X} - LSL}{3\sigma}$$

Specific examples of a process capability index (Cp) (bilateral tolerance)

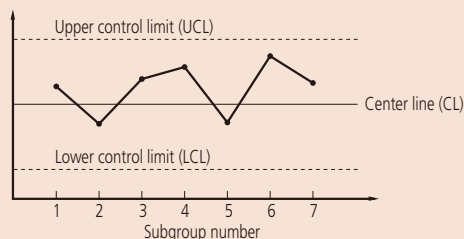


Note that Cp only represents the relationship between the tolerance limits and the process dispersion and does not consider the position of the process mean.

Notes: A process capability index that takes the difference between the process mean from the target process mean into consideration is generally called Cpk, which is the upper tolerance (USL minus the mean) divided by 3σ (half of process capability) or the lower tolerance (the mean value minus LSL) divided by 3σ, whichever is smaller.

Control chart

Used to control the process by separating the process variation into that due to chance causes and that due to a malfunction. The control chart consists of one center line (CL) and the control limit lines rationally determined above and below it (UCL and LCL). It can be said that the process is in a state of statistical control if all points are within the upper and lower control limit lines without notable trends when the characteristic values that represent the process output are plotted. The control chart is a useful tool for controlling process output, and therefore quality.



Chance causes

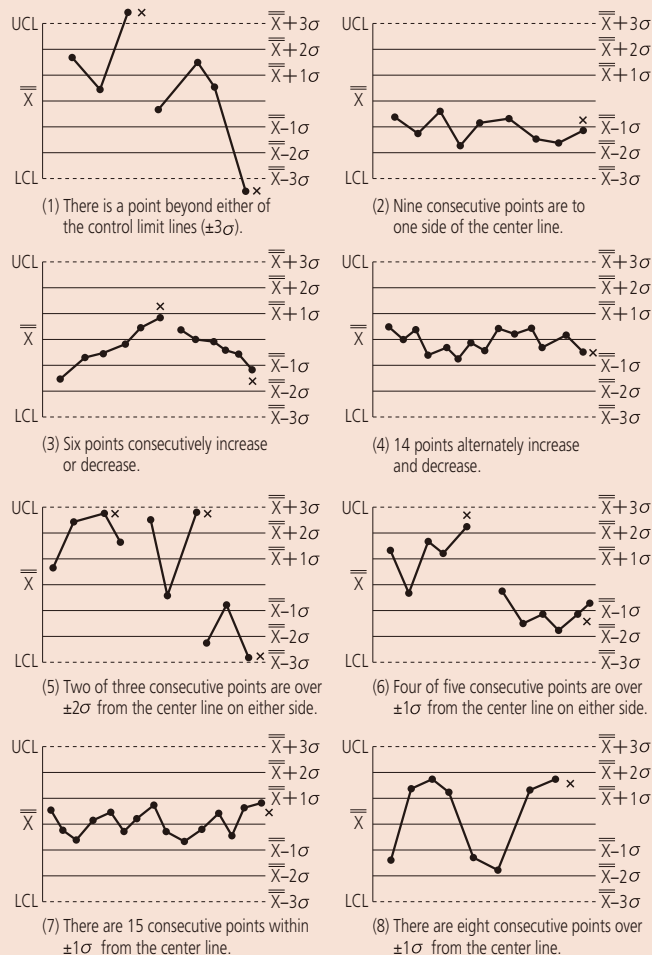
These causes of variation are of relatively low importance. Chance causes are technologically or economically impossible to eliminate even if they can be identified.

X-R control chart

A control chart used for process control that provides the most information on the process. The X-R control chart consists of the X control chart that uses the mean of each subgroup for control to monitor abnormal bias of the process mean and the R control chart that uses the range for control to monitor abnormal variation. Usually, both charts are used together.

How to read the control chart

Typical trends of successive point position in the control chart that are considered undesirable are shown below. These trends are taken to mean that a 'special cause' is affecting the process output and that action from the process operator is required to remedy the situation. These determination rules only provide a guideline. Take the process-specific variation into consideration when actually making determination rules. Assuming that the upper and the lower control limits are 3σ away from the center line, divide the control chart into six regions at intervals of 1σ to apply the following rules. These rules are applicable to the X control chart and the X control chart. Note that these 'trend rules for action' were formulated assuming a normal distribution. Rules can be formulated to suit any other distribution.



Digimatic Micrometers and Mechanical Micrometers
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Micrometer Heads
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Micrometer Head Accessories
Page 134



Absolute High-Accuracy Digimatic Micrometer

Series 293

This Micrometer enables 0.1µm resolution measurements and is ideal for customers who need to make highly accurate measurements with a hand-held tool (such as Gauge R & R analysis). The Absolute High-Accuracy Micrometer offers the following benefits:

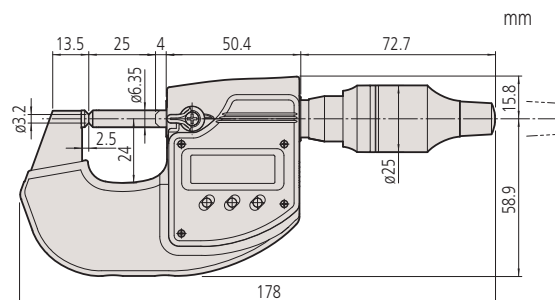
- It delivers higher accuracy without sacrificing operability, by using Mitutoyo's innovative 0.1 µm resolution ABS (absolute) rotary sensor and high accuracy screw machining technology which reduces instrumental error to just 0.5 µm.
- Its highly rigid frame and high-performance constant-force mechanism (7-9N) enable more stable measurement.



High Accuracy Micrometer
with heat insulating cover (standard accessory)

Metric

No.	Range [mm]	Digital step	Instrumental error	Power supply	Mass [g]	Price [€]
293-100	0-25	0.0001 mm/ 0.0005 mm (switchable)	±0.5 µm	Lithium battery (CR2032) x 1	400	1,400.00



Comparative sizes:
High Accuracy-Micrometer with a highly rigid frame
and a common Micrometer with a standard frame

Functions	Series 293
ON/OFF	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Function lock	●
HOLD	●
Data output	●
PRESET	●
Resolution switching	●

Specifications

Accuracy	Refer to the list of specifications (excluding quantizing error)
Flatness	0,3 µm
Parallelism	0,6 µm
Measuring surface	ø3.2 mm, carbide tipped, micro-lap finish
Measuring spindle	With spindle lock, ø6,35 mm, 0,5 mm spindle pitch
Measuring force	7-9 N
Measuring system	Electromagnetic induction type ABS rotary sensor
Battery life	approx. 2 years
Delivered	Including box, key, driver, 1 battery, heat insulating cover, certificate of inspection

Optional accessories

No.	Description	Price €
05CZA662	Digimatic cable with data switch (1 m)	73.50
05CZA663	Digimatic cable with data switch (2 m)	82.50
06ADV380B	USB Input Tool Direct cable with data switch (2 m)	115.00
02AZD790B	Connecting cable U-Wave with data switch	95.00

Consumable spares

No.	Description	Price €
055AA217D	Lithium battery CR-2032	5.50



0,1µm digital step

Digimatic Micrometer QuantuMike IP65

Series 293

This is a micrometer with a 2mm spindle pitch, offering movement four times as fast as standard micrometer.

The Digimatic Micrometer QuantuMike IP65 offers the following benefits:

- Faster measurement is achieved by using a coarser thread which feeds the spindle by 2mm per thimble rotation.
- It delivers approximately four times as fast as standard micrometer with 0.5mm spindle pitch.
- The device has outstanding accuracy, with only $\pm 1\mu\text{m}$ instrumental error (75mm or less measuring range models).
- The dual function offered by the ratchet on the thimble and the fast drive mechanism ensure easy single-handed or stand operation.
- Excellent resistance against water and dust (IP65 protection level) enables this micrometer to be used in machining situations that include splashing coolant fluid.

QuantuMike®



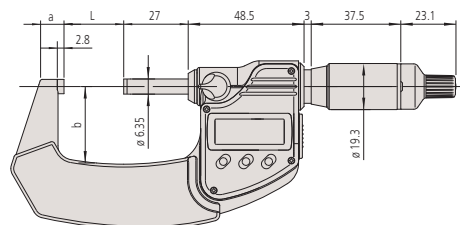
293-140



Coloured ratchet caps

Metric

No.	Range [mm]	Accuracy	Data output	L [mm]	a [mm]	b [mm]	Mass [g]	Price [€]
293-140	0-25	$\pm 1\mu\text{m}$		0	9	25	265	290.00
293-145	0-25	$\pm 1\mu\text{m}$		0	9	25	265	205.00
293-141	25-50	$\pm 1\mu\text{m}$		25	9.8	32	325	358.00
293-146	25-50	$\pm 1\mu\text{m}$		25	9.8	32	325	282.00
293-142	50-75	$\pm 1\mu\text{m}$		50	12.6	47	465	433.00
293-147	50-75	$\pm 1\mu\text{m}$		50	12.6	47	465	338.00
293-143	75-100	$\pm 2\mu\text{m}$		75	14	60	620	493.00
293-148	75-100	$\pm 2\mu\text{m}$		75	14	60	620	383.00



1 rotation

Standard

Spindel travel

0,5 mm

QuantuMike

2,0 mm



Only for 0-25, 25-50 mm

Functions	Series 293
ORIGIN (until 100 mm)	
ZERO/ABS	
Auto Power OFF after 20 min. non use	
Low voltage alarm	
Function lock	
HOLD	

Specifications

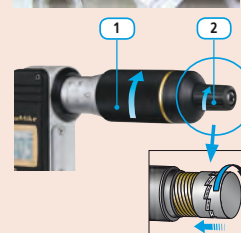
Accuracy	Refer to the list of specifications (excluding quantizing error)
Digital step	0,001 mm
Flatness	0,3 μm
Parallelism	1 μm for models up to 50 mm 2 μm for models up to 100 mm
Measuring surfaces	carbide-tipped, micro-lap finish
Measuring spindle	With spindle lock, ø6,35mm, 2 mm spindle pitch
Measuring force	7-12 N
Battery life	approx. 1.2 year
Delivered	Including box, key, 1 battery, setting standard (from 25 mm upward), certificate of inspection (0-50 mm range)

Optional accessories

No.	Description	Price €
05CZA662	Digimatic cable with data switch (1 m)	73.50
05CZA663	Digimatic cable with data switch (2 m)	82.50
02AZD790B	Connecting cable U-Wave with data switch	95.00
06ADV380B	USB Input Tool Direct cable with data switch (2 m)	115.00
04GAA900	Red ratchet cap	4.00
04GAA901	Yellow ratchet cap	4.00
04GAA902	Green ratchet cap	4.00
04GAA903	Blue ratchet cap	4.00
04AAB208	Grey ratchet cap	4.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50
04GAA899	Black ratchet cap	4.00



1 : Ratchet on thimble
2 : Ratchet on speeder

Digimatic Micrometer IP65 Metric

Series 293

This metric micrometer offers outstanding accuracy, with and without data input, and is highly robust.

The Digimatic Micrometer IP65 Metric offers the following benefits:

- Outstanding accuracy with just $\pm 1\mu\text{m}$ instrumental error (75mm or less measuring range models).



Only for 0-25, 25-50 mm



Functions	Series 293
ORIGIN (until 100 mm)	●
ZERO/ABS	●
2 x PRESET (over 100 mm)	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Function lock (over 100 mm)	●
HOLD	●

Specifications

Accuracy	Refer to the list of specifications (excluding quantizing error)
Digital step	0,001 mm
Scale	Thimble and sleeve satin chrome finish, $\phi 18$ mm
Flatness	0,3 μm
Parallelism	1 μm for models up to 50 mm 2 μm for models up to 100 mm 3 μm for models up to 175 mm 4 μm for models up to 275 mm 5 μm for models over 300 mm
Measuring surfaces	carbide-tipped, micro-lap finish
Measuring spindle	With spindle lock, $\phi 6,35$ mm, spindle pitch 0,5 mm
Measuring force	5-10 N
Battery life	approx. 1.2 years
Delivered	Including box, key, 1 battery, setting standard (from 25 mm upward) certificate of inspection (0-50mm range)

Optional accessories

No.	Description	Price €
05CZA662	Digimatic cable with data switch (1 m)	73.50
05CZA663	Digimatic cable with data switch (2 m)	82.50
02AZD790B	Connecting cable U-Wave with data switch	95.00
06ADV380B	USB Input Tool Direct cable with data switch (2 m)	115.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



293-230



293-252-10



With ratchet stop



With ratchet thimble



With friction thimble

Metric

With friction thimble

No.	Range [mm]	Accuracy	Data output	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
293-238	0-25	$\pm 1\mu\text{m}$	●	0	2.8	9	25	270	288.00
293-248	0-25	$\pm 1\mu\text{m}$	●	0	2.8	9	25	270	196.00

Metric

With ratchet stop

No.	Range [mm]	Accuracy	Data output	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
293-230	0-25	$\pm 1\mu\text{m}$	●	0	2.8	9	25	270	258.00
293-240	0-25	$\pm 1\mu\text{m}$	●	0	2.8	9	25	270	185.00
293-231	25-50	$\pm 1\mu\text{m}$	●	25	2.8	9.8	32	330	319.00
293-241	25-50	$\pm 1\mu\text{m}$	●	25	2.8	9.8	32	330	258.00
293-232	50-75	$\pm 1\mu\text{m}$	●	50	2.8	12.6	47	470	398.00
293-242	50-75	$\pm 1\mu\text{m}$	●	50	2.8	12.6	47	470	312.00
293-233	75-100	$\pm 2\mu\text{m}$	●	75	2.8	14	60	625	449.00
293-243	75-100	$\pm 2\mu\text{m}$	●	75	2.8	14	60	625	355.00
293-250-10	100-125	$\pm 2\mu\text{m}$	●	132.8	5.3	16.7	76.5	600	551.00
293-251-10	125-150	$\pm 2\mu\text{m}$	●	158.2	5.7	18.8	91	740	567.00
293-252-10	150-175	$\pm 3\mu\text{m}$	●	183.6	6.1	19.1	102	800	582.00
293-253-10	175-200	$\pm 3\mu\text{m}$	●	208.8	6.3	18.2	115	970	592.00
293-254-10	200-225	$\pm 3\mu\text{m}$	●	234.2	6.7	16.8	127	1100	603.00
293-255-10	225-250	$\pm 4\mu\text{m}$	●	258	5.5	18	139	1270	613.00
293-256-10	250-275	$\pm 4\mu\text{m}$	●	284	6.5	18	152	1340	623.00
293-257-10	275-300	$\pm 4\mu\text{m}$	●	309	6.5	18	166	1540	639.00

Metric

With ratchet thimble

No.	Range [mm]	Accuracy	Data output	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
293-234	0-25	$\pm 1\mu\text{m}$	●	0	2.8	9	25	270	288.00
293-244	0-25	$\pm 1\mu\text{m}$	●	0	2.8	9	25	270	196.00
293-235	25-50	$\pm 1\mu\text{m}$	●	25	2.8	9.8	32	330	355.00
293-245	25-50	$\pm 1\mu\text{m}$	●	25	2.8	9.8	32	330	268.00
293-236	50-75	$\pm 1\mu\text{m}$	●	50	2.8	12.6	47	470	433.00
293-246	50-75	$\pm 1\mu\text{m}$	●	50	2.8	12.6	47	470	355.00
293-237	75-100	$\pm 2\mu\text{m}$	●	75	2.8	14	60	625	489.00
293-247	75-100	$\pm 2\mu\text{m}$	●	75	2.8	14	60	625	405.00

Digimatic Micrometer IP65 Metric

Series 293 - Micrometers in set

This metric micrometer offers outstanding accuracy, with and without data input, and is highly robust.

The Digimatic Micrometer IP65 Metric offers the following benefits:

- With data output.



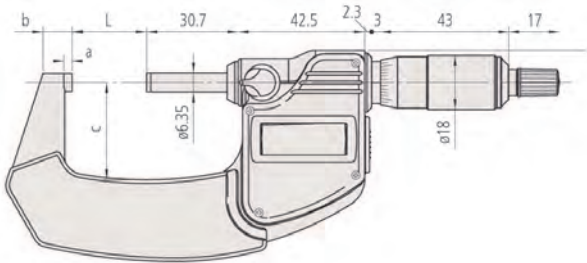
only for 0-25mm,
25-50mm



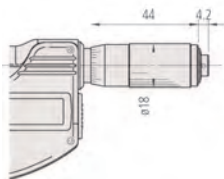
293-962

Metric Set/With ratchet stop

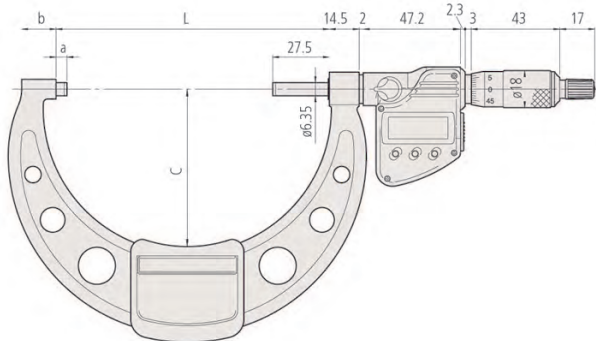
No.	Range [mm]	Data output	Set combination	Price [€]
293-966	0-50		293-230 / 293-231 + setting standard 25 mm made of ceramics	572.00
293-962	0-75		293-230 / 293-231 / 293-232 + setting standard 25 mm and 50 mm	979.00
293-963	0-100		293-230 / 293-231 / 293-232 / 293-233 + setting standard 25 mm, 50 mm and 75 mm	1,390.00



Ratchet stop type up to 100 mm



Ratchet thimble type / Friction thimble type



Ratchet stop type over 100 mm

Functions	Series 293 - Micrometers in set
ORIGIN (until 100 mm)	
ZERO/ABS	
Auto Power OFF after 20 min. non use	
Low voltage alarm	
HOLD	

Specifications

Accuracy	See individual types
Digital step	0,001 mm
Scale	Thimble and sleeve satin chrome finish, ø18 mm
Flatness	0,3 µm
Parallelism	1 µm for models up to 50 mm 2 µm for models up to 100 mm
Measuring surfaces	carbide-tipped, micro-lap finish
Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 0,5 mm
Measuring force	5-10 N
Battery life	approx. 1.2 years
Delivered	Including box, key, batteries, setting standard (from 25 mm upward) certificate of inspection (0-50 mm range)

Optional accessories

No.	Description	Price €
05CZA662	Digimatic cable with data switch (1 m)	73.50
05CZA663	Digimatic cable with data switch (2 m)	82.50
02AZD790B	Connecting cable U-Wave with data switch	95.00
06ADV380B	USB Input Tool Direct cable with data switch (2 m)	115.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50

Digimatic Micrometer

Series 293

This standard model Digimatic Micrometer is an affordable device that offers the following benefits:

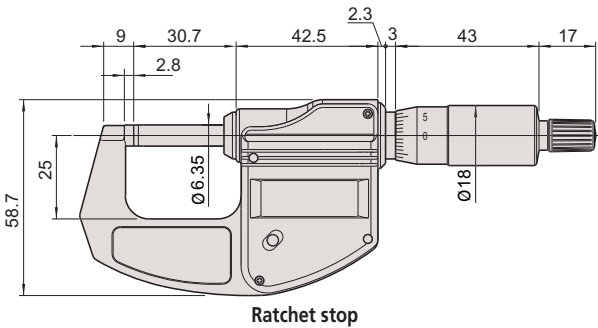
- Cost-effective with simplified functionality for standard applications.
- Without data output.
- It is available with a ratchet stop or friction thimble for a constant measuring force.



293-821

Metric With ratchet stop

No.	Range [mm]	Accuracy [μm]	Mass [g]	Price [€]
293-821	0-25	±2 μm	275	142.00



Functions	Series 293
ORIGIN	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●

Specifications

Accuracy	Refer to the list of specifications (excluding quantizing error)
Digital step	0,001 mm
Scale	Thimble and sleeve satin chrome finish ø18 mm
Flatness	0,3 μm
Parallelism	2 μm
Measuring surfaces	Carbide tipped, micro-lap finish
Measuring spindle	ø 6,35 mm, spindle pitch 0,5 mm
Measuring force	5-10 N
Battery life	approx. 1.2 years
Delivered	Including box, key, 1 battery Certificate of inspection

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



Outside Micrometer Non-Rotating Spindle Type

Series 406

This micrometer features a non-rotating spindle, and offers the following benefits:

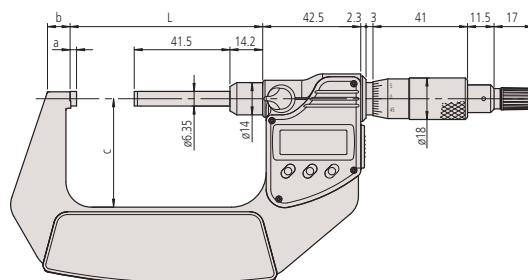
- Sliding spindle, not rotating.
- Ratchet stop.
- Data output.



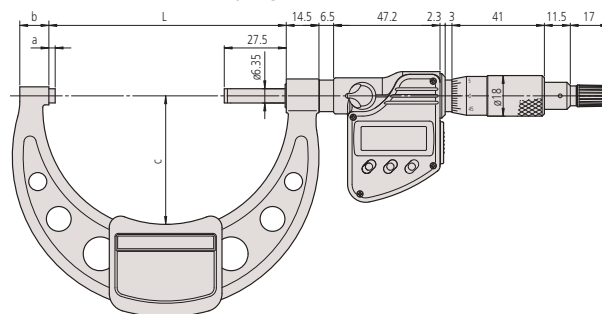
406-250

Metric

No.	Range [mm]	Accuracy	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
406-250	0-25	±3 µm	58.2	2.5	7.3	32	330	773.00
406-251	25-50	±3 µm	83.2	2.5	10.1	47	470	839.00
406-252	50-75	±3 µm	108.2	2.5	11.5	60	625	876.00
406-253	75-100	±4 µm	105.3	2.8	14.1	57	460	922.00



0 - 75 mm



75 - 100 mm

Functions	Series 406
ORIGIN	●
ZERO/ABS	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
HOLD	●
Data output	●

Specifications

Accuracy	Refer to the list of specifications (excluding quantizing error)
Digital step	0,001 mm
Scale	Thimble and sleeve satin chrome finish ø 18 mm
Flatness	0,3 µm
Parallelism	3 µm for models up to 75 mm 4 µm for models over 75 mm
Measuring surfaces	carbide-tipped, micro-lap finish
Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 0,5mm
Measuring force	3-8 N
Battery life	approx. 1.2 years
Delivered	Including box, setting standard (from 25 mm upward), key

Optional accessories

No.	Description	Price €
05CZA662	Digimatic cable with data switch (1 m)	73.50
05CZA663	Digimatic cable with data switch (2 m)	82.50
02AZD790B	Connecting cable U-Wave with data switch	95.00
06ADV380B	USB Input Tool Direct cable with data switch (2 m)	115.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50

ABSOLUTE Digimatic Micrometer QuickMike

Series 293

This quick-action type micrometer, with a non-rotating spindle, delivers much faster adjustment types than standard models. The ABSOLUTE Digimatic Micrometer QuickMike offers the following benefits:

- With 10mm feed per revolution (with 0.5mm spindle pitch), it delivers twenty times as fast as standard devices.
- IP54 protection allows a wider range of operating environments (this only applies when a data cable is not fitted).
- ABSOLUTE linear scale means no restriction on adjustment speed.
- It also has a larger measuring range - 30mm compared with 25mm - than standard micrometer.



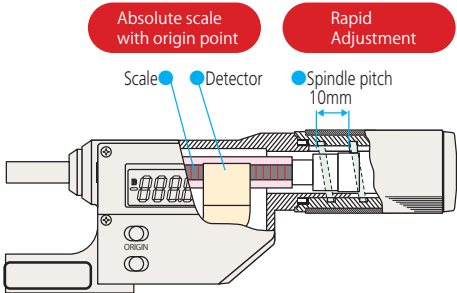
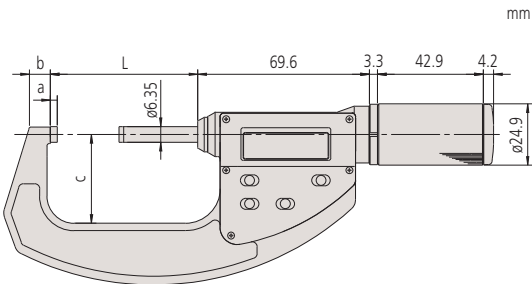
293-666



293-669

Metric

No.	Range [mm]	Accuracy	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
293-661-10	0-30	±2 µm	348	2.8	6.2	25	275	343.00
293-666	0-30	±2 µm	34.8	2.8	6.2	25	275	369.00
293-667	25-55	±2 µm	598	2.8	8.5	36	355	479.00
293-668	50-80	±3 µm	848	2.8	10.3	47	525	515.00
293-669	75-105	±3 µm	1098	2.8	10.7	60	625	551.00



This micrometer has a spindle mechanism enabling a spindle drive of 10 mm/rev (0.5mm spindle pitch). The drive rate is therefore twenty times as fast as conventional micrometers.

ABSOLUTE®



Series 293

	293-661-10	293-666	293-667 up to 293-669
Functions			
ORIGIN	●	●	●
ZERO/ABS ON/OFF	●	●	●
Low voltage alarm	●	●	●
HOLD	●	●	●
Data output		●	●

Specifications

Accuracy	Refer to the list of specifications (excluding quantizing error)
Digital step	0,001 mm
Flatness	0,3 µm
Parallelism	2 µm for models up to 80 mm 3 µm for models up to 105 mm
Measuring surfaces	Carbide tipped, micro-lap finish
Measuring spindle	ø6,35 mm, non-rotating, 10 mm pitch
Measuring force	5-10 N
Battery life	approx. 3 years (0-30 mm), 1 year (> 30 mm)
Delivered	Including box, setting standard (from 25 mm upward), 1 battery

Optional accessories

No.	Description	Price €
937387	Digimatic cable (1 m)	47.00
965013	Digimatic cable (2 m)	57.50
02AZD790E	Connecting cable U-Wave	85.00
06ADV380E	USB Input tool Direct cable (2 m)	100.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



293-666 with fixing device 156-105-10 (optional accessories)

ABSOLUTE Digimatic Micrometer QuickMike

ABSOLUTE®

Series 227

This micrometer has an adjustable measuring force to suit various kinds of workpieces.

The ABSOLUTE Digimatic Micrometer QuickMike offers the following benefits:

- It's dedicated to applications requiring a constant/low measuring force such as measuring wire, paper and plastic/rubber parts.
- Constant and low measuring force mechanism in the thimble.
- Non-rotating spindle.
- Speedy spindle feed of 10mm/rev.



227-201

Metric

No.	Range [mm]	Accuracy	Measuring force settings ⁽¹⁾ [N]	Measuring force accuracy ⁽¹⁾ [N]	Mass [g]	Price [€]
227-201	0-15	±2 µm	0,5; 1,0; 1,5; 2,0; 2,5	±0,1 + (force setting/10)	300	999.00
227-203	15-30	±2 µm	0,5; 1,0; 1,5; 2,0; 2,5	±0,1 + (force setting/10)	380	1,159.00
227-205	0-10	±2 µm	2; 4; 6; 8; 10	±0,4 + (force setting/10)	340	963.00
227-206	10-20	±2 µm	2; 4; 6; 8; 10	±0,4 + (force setting/10)	425	1,060.00
227-207	20-30	±2 µm	2; 4; 6; 8; 10	±0,4 + (force setting/10)	415	1,159.00

⁽¹⁾ Only valid for instrument orientation within ±3 degrees of horizontal when measuring.



Series 227		
	227-201	227-203 up to 227-207
Functions		
ORIGIN	●	
ZERO/ABS		●
ON/OFF	●	●
Low voltage alarm	●	●
HOLD	●	●
Data output	●	●
PRESET		●

Specifications

Measuring direction	horizontal
Accuracy	Refer to the list of specifications (excluding quantizing error)
Digital step	0,001 mm
Flatness	0,3 µm
Measuring surfaces	carbide-tipped, micro-lap finish
Measuring spindle	ø 6,35 mm, non-rotating, 10 mm pitch
Parallelism	2 µm
Battery life	Approx. 1 year, approx. 3 years (227-205, 227-215)
Delivered	Including box, setting standard (for 10-30 mm models), screwdriver, 1 battery

Optional accessories

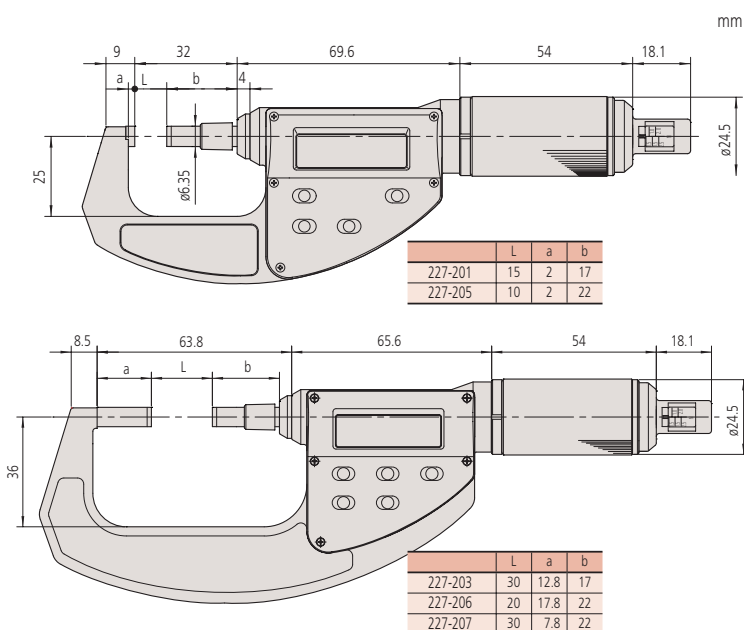
No.	Description	Price €
937387	Digimatic cable (1 m)	47.00
965013	Digimatic cable (2 m)	57.50
02AZD790E	Connecting cable U-Wave	85.00
06ADV380E	USB Input tool Direct cable (2 m)	100.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



Measuring force adjustable



Ratchet Thimble Micrometer

Series 102

This Ratchet Thimble Micrometer has a new mechanism that ensures consistent and reliable measurements, even for users inexperienced in operating a micrometer with one hand.

The Ratchet Thimble Micrometer offers you the following benefits:

- It works both from the thimble and the speeder, enabling easy, one-handed operation.
- The ratchet's clearly audible operation provides reassurance that measurements are being taken at a constant, preset measuring force.

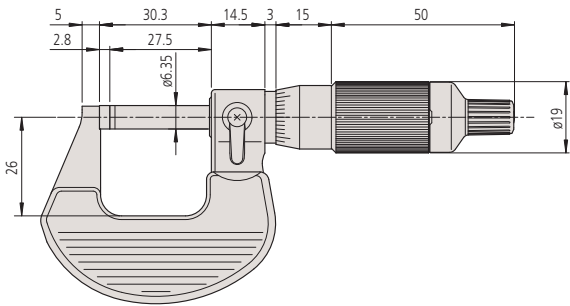


102-701

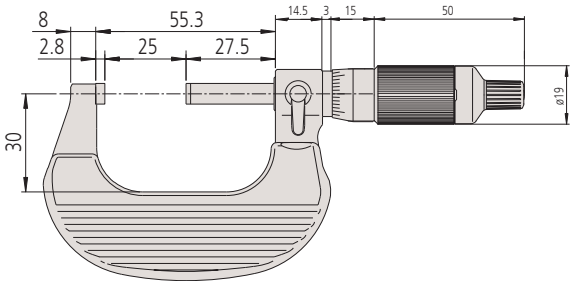
102-702

Metric

No.	Range [mm]	Graduation	Accuracy	Mass [g]	Price [€]
102-701	0-25	0,01 mm	±2 µm	180	53.50
102-707	0-25	0,001 mm	±2 µm	180	74.00
102-702	25-50	0,01 mm	±2 µm	270	80.00
102-708	25-50	0,001 mm	±2 µm	270	121.00



0-25 mm



25-50 mm



Coloured ratchet caps (optional accessories)

Specifications

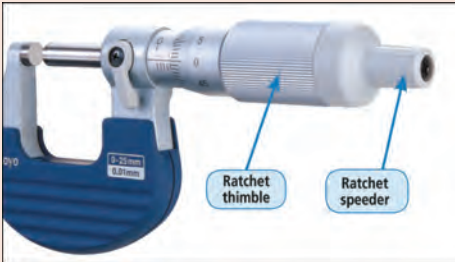
Accuracy	Refer to the list of specifications
Scale	Thimble and sleeve satin chrome finish $\varnothing 19$ mm
Flatness	0.6 µm
Measuring surfaces	Carbide tipped, micro-lap finish
Measuring spindle	With spindle lock, $\varnothing 6,35$ mm, spindle pitch 0.5 mm
Measuring force	5-10 N
Parallelism	2 µm
Delivered	Including box, key, setting standard (from 25 mm upward), certificate of inspection

Optional accessories

No.	Description	Price €
04GAA899	Black ratchet cap	4.00
04GAA900	Red ratchet cap	4.00
04GAA901	Yellow ratchet cap	4.00
04GAA902	Green ratchet cap	4.00
04GAA903	Blue ratchet cap	4.00

Consumable spares

No.	Description	Price €
04AAB208	Grey ratchet cap	4.00



Specifications

Accuracy	Refer to the list of specifications
Graduation	0.01 mm
Scale	Thimble and sleeve satin chrome finish $\phi 18$ mm
Flatness	0,6 μ m
Measuring surfaces	Carbide tipped, micro-lap finish
Measuring spindle	With spindle lock, $\phi 6,35$ mm, spindle pitch 0,5 mm
Measuring force	5-10 N
Parallelism	2 μ m for 0 to 75 mm model 3 μ m for models 75-100 mm
Delivered	Including box, key setting standard (from 25 mm upward), certificate of inspection (0-50 mm range)

Outside Micrometer

Series 102

This Outside Micrometer is a new generation, accurate and reliable device that offers you the following benefits:

- Its heat-insulated frame is tapered (on the anvil side), allowing you to access hard-to-reach places.
- A ratchet stop delivers a constant measuring force.



Only for 0-25,
25-50 mm



102-301

Metric

No.	Range [mm]	Accuracy	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Price [€]
102-301	0-25	$\pm 2 \mu$ m	30.3	2.8	5	26	6.35	48.00
102-302	25-50	$\pm 2 \mu$ m	55.3	2.8	8	32	6.35	72.50
102-303	50-75	$\pm 2 \mu$ m	80.3	2.8	9	45	6.35	93.00
102-304	75-100	$\pm 3 \mu$ m	105.3	2.8	10	58	6.35	113.00

Metric

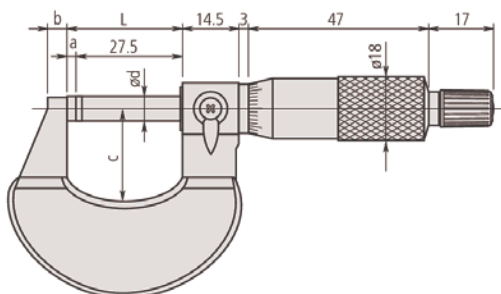
Micrometer set

No.	Range [mm]	Models included	Mass [g]
102-911-40	0-100	102-301, 102-302, 102-303, 102-304, 3 setting standards	1200



102-911-40

mm



Outside Micrometer

Series 103

This Outside Micrometer is a new generation, accurate and reliable device that offers you the following benefits:

- Lightweight workshop design.



103-137

Metric Graduation 0,001 mm

No.	Range [mm]	Accuracy	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
103-129	0-25	±2 µm	30.3	2.8	9	28	6.35	175	60.00
103-130	25-50	±2 µm	55.3	2.8	10	38	6.35	215	68.00

Metric Graduation 0,01 mm

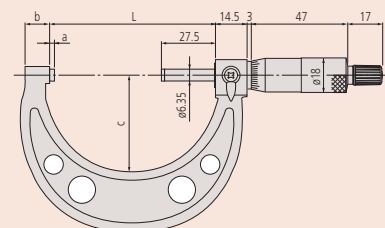
No.	Range [mm]	Accuracy	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
103-137	0-25	±2 µm	30.3	2.8	9	28	6.35	175	43.00
103-138	25-50	±2 µm	55.3	2.8	10	38	6.35	215	62.50
103-139-10	50-75	±2 µm	80.3	2.8	12	46	6.35	315	81.50
103-140-10	75-100	±3 µm	105.3	2.8	14	57	6.35	375	89.00
103-141-10	100-125	±3 µm	132.8	5.3	17	76	6.35	515	140.00
103-142-10	125-150	±3 µm	158.2	5.7	19	90	6.35	665	156.00
103-143-10	150-175	±4 µm	183.6	6.1	20	102	6.35	720	174.00
103-144-10	175-200	±4 µm	208.8	6.3	19	115	6.35	920	190.00
103-145-10	200-225	±4 µm	234.2	6.7	18	127	6.35	1080	213.00
103-146-10	225-250	±5 µm	258	5.5	18	139	6.35	1255	235.00
103-147-10	250-275	±5 µm	284	6.5	18	152	6.35	1405	248.00
103-148-10	275-300	±5 µm	309	6.5	18	166	6.35	1565	266.00
103-149	300-325	±6 µm	353	18	28	187	8	1985	337.00
103-150	325-350	±6 µm	378	18	28	199	8	2155	365.00
103-151	350-375	±6 µm	403	18	28	212	8	2305	393.00
103-152	375-400	±7 µm	428	18	28	224	8	2455	423.00
103-153	400-425	±7 µm	453	18	28	236	8	2715	454.00
103-154	425-450	±7 µm	478	18	28	248	8	2965	485.00
103-155	450-475	±8 µm	503	18	28	261	8	3215	515.00
103-156	475-500	±8 µm	528	18	28	273	8	3450	557.00
103-157	500-525	±9 µm	575	40	28	307	8	4060	623.00
103-158	525-550	±9 µm	575	15	28	307	8	4080	650.00
103-159	550-575	±9 µm	625	40	28	332	8	4500	687.00
103-160	575-600	±9 µm	625	15	28	332	8	4525	716.00
103-161	600-625	±9 µm	675	40	28	355	8	4915	767.00
103-162	625-650	±9 µm	675	15	28	355	8	4930	800.00
103-163	650-675	±9 µm	725	40	28	382	8	5200	838.00
103-164	675-700	±9 µm	725	15	28	382	8	5215	876.00
103-165	700-725	±9 µm	775	40	28	405	8	5835	917.00
103-166	725-750	±9 µm	775	15	28	405	8	5860	948.00
103-167	750-775	±9 µm	825	40	28	430	8	6385	999.00
103-168	775-800	±9 µm	825	15	28	430	8	6410	1,040.00
103-169	800-825	±9 µm	875	40	28	455	8	6925	1,070.00
103-170	825-850	±9 µm	875	15	28	455	8	6940	1,100.00
103-171	850-875	±9 µm	925	40	28	480	8	7565	1,143.00
103-172	875-900	±9 µm	925	15	28	480	8	7590	1,185.00
103-173	900-925	±9 µm	975	40	28	505	8	8215	1,230.00
103-174	925-950	±9 µm	975	15	28	505	8	8240	1,277.00
103-175	950-975	±9 µm	1025	40	28	530	8	8860	1,324.00
103-176	975-1,000	±9 µm	1025	15	28	530	8	8880	1,370.00



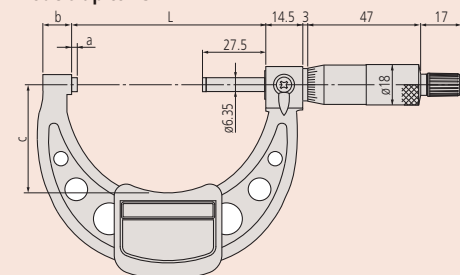
Only for 0-25 and 25-50 mm

Specifications

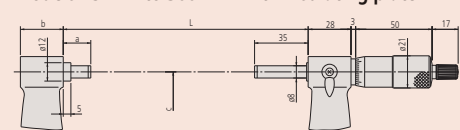
Accuracy	Refer to the list of specifications
Graduation	0.01 mm / 0.001 mm
Scale	Thimble and sleeve satin chrome finish
Flatness	0,6 µm for models up to 300 mm 1 µm for models over 300 mm
Measuring surfaces	Carbide tipped, micro-lap finish
Measuring spindle	with spindle lock, spindle pitch 0.5 mm
Parallelism	(2+L/100) µm, L = max. range (mm)
Delivered	Including box, setting standard (from 25 mm upward), key, certificate of inspection (0-50 mm range)



Models up to 75 mm



Models 75 mm to 300 mm with insulating plate



Models over 300 mm

Specifications

Graduation 0.01 mm

Outside Micrometers in Set

Series 103

This Outside Micrometer is a new generation, accurate and reliable device that offers you the following benefits:

- Lightweight workshop design.
- Supplied as a boxed set for your convenience.



103-913-50

Metric

Micrometer set

No.	Range [mm]	Models included	Mass [g]	Price [€]
103-927-10	0-75	103-137, 103-138, 103-139-10, 2 setting standards	750	215.00
103-913-50	0-150	103-137, 103-138, 103-139-10, 103-140-10, 103-141-10, 103-142-10, 5 setting standards	2260	458.00
103-915-10	150-300	103-143-10, 103-144-10, 103-145-10, 103-146-10, 103-147-10, 103-148-10, 6 setting standards	7695	1,155.00
103-914-50	0-300	All micrometers of 103-913-50 and 103-915-10 in one set, 11 setting standards	9300	1,790.00



Digit Outside Micrometer

Series 193

This Digit Outside Micrometer comes with a mechanical counter, and offers you the following benefits:

- Direct-reading outside the micrometer for quick and easy reading.
- Quick and error-free reading.



193-101

Metric

1. With ratchet stop (reading 0,01 mm)

No.	Range [mm]	Accuracy	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
193-101	0-25	±2 µm	30	2.5	5	26	224	118.00
193-102	25-50	±2 µm	55	2	8	32	275	175.00
193-103	50-75	±2 µm	80	2	9	45	379	221.00
193-104	75-100	±3 µm	105	2	9	57	489	242.00

Metric

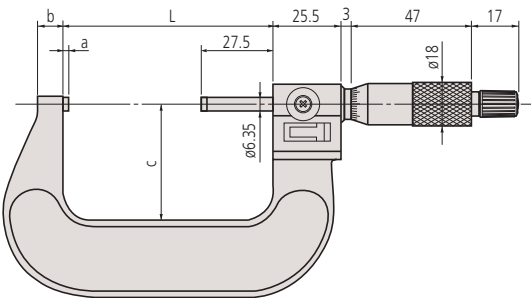
2. With ratchet stop (reading 0,001 mm is obtained with vernier)

No.	Range [mm]	Accuracy	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
193-111	0-25	±2 µm	30	2.5	5	26	224	160.00
193-112	25-50	±2 µm	55	2	8	32	275	196.00
193-113	50-75	±2 µm	80	2	9	45	379	242.00
193-114	75-100	±3 µm	105	2	9	57	489	268.00

Metric

3. Micrometer set

No.	Range [mm]	Models included	Mass [g]	Price [€]
193-901	0-75	193-101, 193-102, 193-103, 2 setting standards	820	505.00
193-902	0-100	193-101, 193-102, 193-103, 193-104, 3 setting standards	1367	742.00



Specifications

Accuracy	Refer to the list of specifications
Graduation	0,001 mm; 0,01 mm
Counter reading	0,01 mm
Scale	Thimble and sleeve satin chrome finish
Flatness	0,6 µm
Parallelism	(2+L/100) µm, L = max. range (mm)
Measuring surfaces	Carbide tipped, micro-lap finish
Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 0,5 mm
Measuring force	5-15 N
Delivered	Including box, setting standard (from 25 mm upward), key



193-902

Digimatic Micrometer with Interchangeable Anvils

Series 340

This Digimatic Micrometer offers you an extra wide measuring range, and has the following benefits:

- Easy, interchangeable anvils allow a wide range of measurements.
- Ratchet stop for constant force.



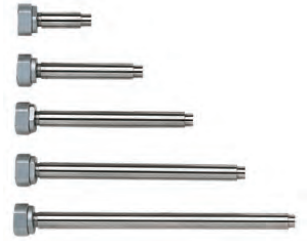
up 300 mm



up 300 mm

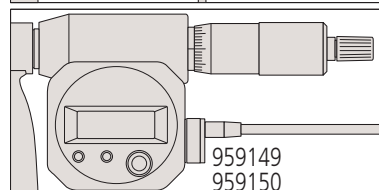
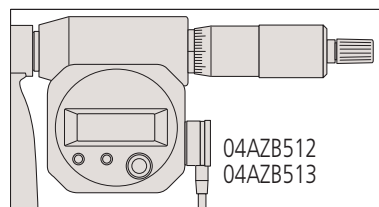


340-251-10



Metric

No.	Range [mm]	Setting standards pcs.	Interchangeable anvils pcs.	Protection IP65	Mass [kg]	Price [€]
340-251-10	0-150	5	6	●	0.96	834.00
340-252-10	150-300	6	6	●	1.88	1,040.00
340-520	300-400	4	4		2.6	1,082.00
340-521	400-500	4	4		4.1	1,123.00
340-522	500-600	4	4		5.5	1,267.00
340-523	600-700	4	4		6.8	1,360.00
340-524	700-800	4	4		8.2	1,432.00
340-525	800-900	4	4		9.5	1,514.00
340-526	900-1,000	4	4		10.9	1,586.00



Models over 300 mm

Series 340			
	340-251-10	340-252-10	340-520 up to 340-526
Functions			
ZERO/ABS ON	●		●
Auto Power OFF after 20 min. non use	●		●
2 x PRESET	●	●	●
Low voltage alarm	●	●	●
Function lock HOLD	●	●	●
Data output	●		●

Specifications

Accuracy	$\pm(4+L/75) \mu\text{m}$, L = max. range (mm) (excluding quantizing error)
Digital step	0,001 mm; 0,001 mm; 0,001 mm (340-351-10)
Scale	Thimble and sleeve satin chrome finish $\phi 18$ mm, $\phi 21$ mm (over 300 mm)
Flatness	0,6 μm , 1 μm (over 300 mm)
Parallelism	2 μm for models up to 75 mm 3 μm for models up to 150 mm (2+L/100) μm for models over 150 mm, L = max. range (mm)
Measuring surfaces	Hardened, lapped (anvil), carbide tipped, lapped (spindle side)
Measuring spindle	With spindle lock, $\phi 6,35$ mm, $\phi 8$ mm (over 300 mm), spindle pitch 0,5 mm
Battery life	approx. 1.2 years, approx. 1.8 years (over 300 mm)
Delivered	Including box, setting standard, anvils, key, 1 battery (2 batteries over 300 mm)

Optional accessories

No.	Description	Price €
05CZA662	Digimatic cable with data switch (1 m)	73.50
05CZA663	Digimatic cable with data switch (2 m)	82.50
02AZD790B	Connecting cable U-Wave with data switch	95.00
06ADV380B	USB Input Tool Direct cable with data switch (2 m)	115.00
04AZB512	Digimatic cable with data switch (1 m)	75.00
04AZB513	Digimatic cable with data switch (2 m)	84.50
959149	Digimatic cable with data switch (1 m)	38.00
959150	Digimatic cable with data switch (2 m)	43.50
02AZD790C	U-WAVE Data Cable with data switch	90.00
06ADV380C	USB Input tool Direct cable with data switch (2 m)	100.00

05CZA662/05CZA663/02AZD790B/06ADV380B for models up to 300 mm
04AZB512/04AZB513/959149/959150/02AZD790C/06ADV380C for models over 300 mm

Consumable spares

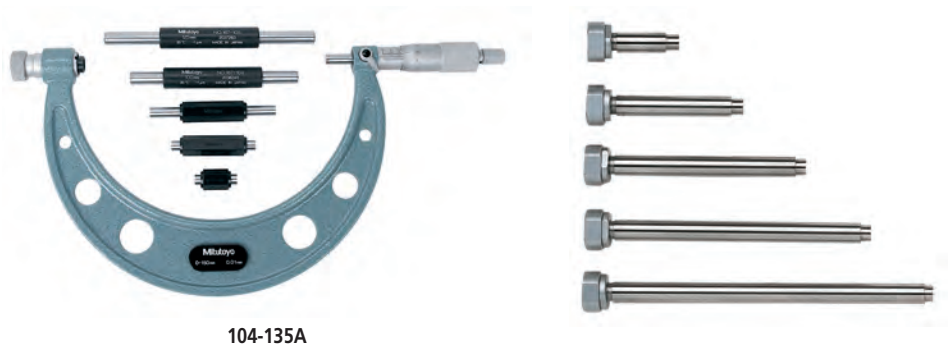
No.	Description	Price €
938882	Battery SR44	5.50

Outside Micrometer with Interchangeable Anvils

Series 104

This Outside Micrometer offers you an extra wide measuring range, and has the following benefits:

- Easy, interchangeable anvils allow a wide range of measurements.
- Ratchet stop for consistent measurements.



Metric

No.	Range [mm]	Setting standards pcs.	Interchangeable anvils pcs.	Mass [kg]	Price [€]
104-171	0-50	-	1	0.32	175.00
104-135A	0-150	5	6	1.35	550.00
104-161A	50-150	4	4	1.35	520.00
104-140A	100-200	4	4	1.38	479.00
104-136A	150-300	6	6	2.65	700.00
104-141A	200-300	4	4	2.22	520.00
104-142A	300-400	4	4	3.31	670.00
104-143A	400-500	4	4	4.81	736.00
104-144A	500-600	4	4	6.35	1,050.00
104-145A	600-700	4	4	7.72	1,169.00
104-146A	700-800	4	4	9.08	1,267.00
104-147A	800-900	4	4	10.41	1,416.00
104-148A	900-1,000	4	4	11.78	1,524.00

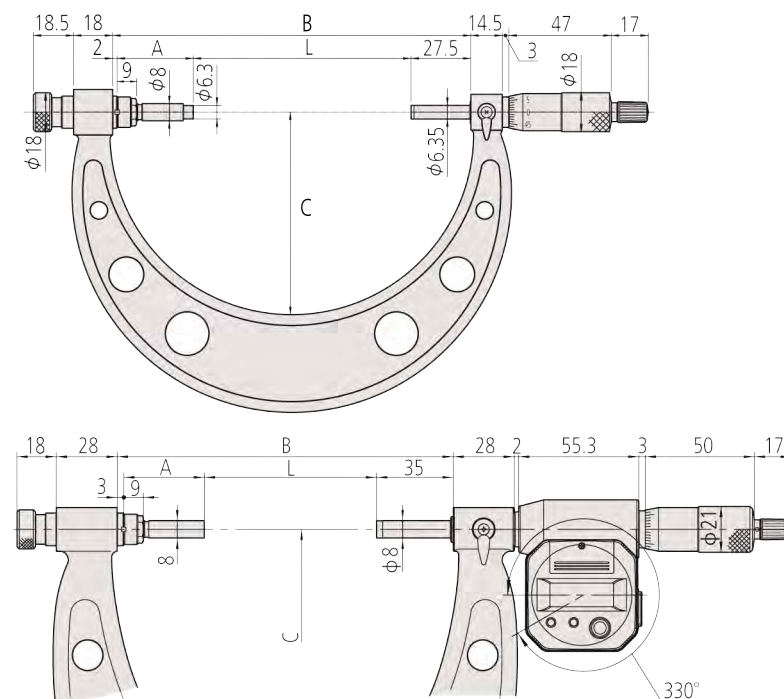


Specifications	
Accuracy	$\pm(4+L/75) \mu\text{m}$, L = max. range (mm)
Graduation	0.01 mm
Scale	Thimble and sleeve satin chrome finish $\varnothing 18$ mm (up to 300 mm) $\varnothing 21$ mm (over 300 mm)
Flatness	0,6 μm for models up to 300 mm 1 μm for models over 300 mm
Parallelism	2 μm for models up to 75 mm 3 μm for models up to 150 mm (2+L/100) μm for models over 150 mm L = max. range (mm)
Measuring surfaces	Hardened, lapped (anvil), carbide tipped, lapped (spindle side)
Measuring spindle	With spindle lock, $\varnothing 6,35$ mm (up to 300 mm) $\varnothing 8$ mm (over 300 mm), spindle pitch 0,5 mm
Delivered	Including box, setting standard, anvils, key

Outside Micrometer with Interchangeable Anvils

Series 104/340

These are optional interchangeable anvils you can use with the 104 and 340 series.



Note: The values for B mm and C mm are valid for all products shown in the tables below:

B mm:

Value for measuring range:

0/150 mm: 164,5; 150/300 mm: 314,5; 300/400 mm: 425; 400/500 mm: 525; 500/600 mm: 625; 600/700 mm: 725; 700/800 mm: 825; 800/900 mm: 925; 900/1000 mm: 1025

C mm:

Value for measuring range:

0/150 mm: 93; 150/300 mm: 166; 300/400 mm: 224; 400/500 mm: 273; 500/600 mm: 332; 600/700 mm: 382; 700/800 mm: 430; 800/900 mm: 480; 900/1000 mm: 530

0 - 300 mm

Interchangeable anvil ident	M1 mm	M2 mm	M3 mm	M4 mm	M5 mm	M6 mm
No.	303950	303951	303952	303953	303954	303955
L=0/150 mm	0-25	25-50	50-75	75-100	100-125	125-150
L=150/300 mm	150-175	175-200	200-225	225-250	250-275	275-300
A mm	135	110	85	60	35	10

300 - 1000 mm

Interchangeable anvil ident	M3 mm	M4 mm	M5 mm	M6 mm
No.	304001	304002	304003	304004
L=300/400 mm	300-325	325-350	350-375	375-400
L=400/500 mm	400-425	425-450	450-475	475-500
L=500/600 mm	500-525	525-550	550-575	575-600
L=600/700 mm	600-625	625-650	650-675	675-700
L=700/800 mm	700-725	725-750	750-775	775-800
L=800/900 mm	800-825	825-850	850-875	875-900
L=900/1000 mm	900-925	925-950	950-975	975-1000
A mm	87	62	37	12

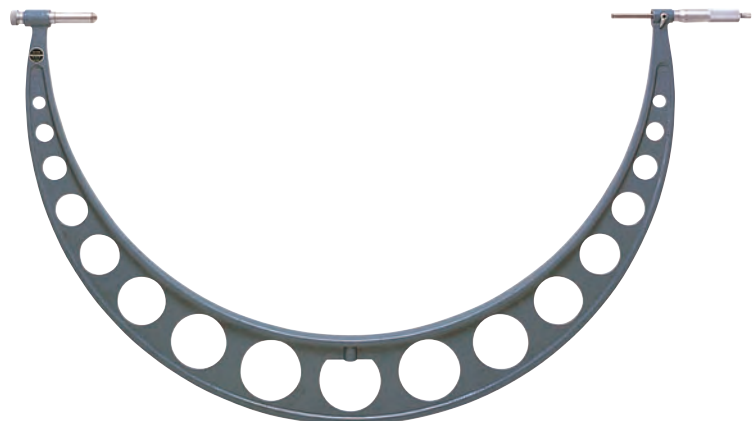
Outside Micrometer with Extension Anvil Collars

Series 105

This Outside Micrometer comes with Extension Anvil Collars.

It offers you the following benefits:

- The collars have a stable and rugged yet lightweight tube construction, and are ideal for large micrometers.
- The 50mm spindle stroke gives you extended range compared to standard spindle types.
- Anvil collars extend the measuring range even further.
- The setting standards supplied cover the whole measuring range.



105-105

Metric

Extension Collar: 50 mm

No.	Range [mm]	Extension collar [mm]	Mass [kg]	Price [€]
105-103	500-600	50	5.53	1,125.00
105-104	600-700	50	6.35	1,169.00
105-105	700-800	50	7.17	1,220.00
105-106	800-900	50	7.99	1,349.00
105-107	900-1,000	50	8.81	1,535.00
105-408	1,000-1,100	50	10.49	2,280.00
105-409	1,100-1,200	50	11.28	2,570.00
105-410	1,200-1,300	50	12.05	2,930.00
105-411	1,300-1,400	50	12.72	3,210.00
105-412	1,400-1,500	50	13.4	3,620.00
105-413	1,500-1,600	50	14.33	3,919.00
105-414	1,600-1,700	50	15.26	4,259.00
105-415	1,700-1,800	50	16.44	4,465.00
105-416	1,800-1,900	50	18.1	5,040.00
105-417	1,900-2,000	50	19.76	5,356.00

Metric

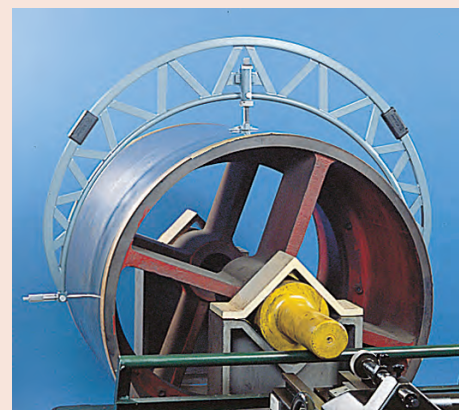
Extension Collar: 50 mm, 100 mm

No.	Range [mm]	Extension collar [mm]	Mass [kg]	Price [€]
105-418	1,000-1,200	50, 100	13.77	2,800.00
105-419	1,200-1,400	50, 100	15.77	3,470.00
105-420	1,400-1,600	50, 100	17.91	4,140.00
105-421	1,600-1,800	50, 100	20.8	4,769.00
105-422	1,800-2,000	50, 100	22.76	5,459.00

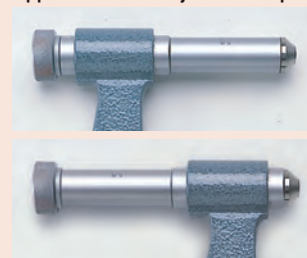


Specifications

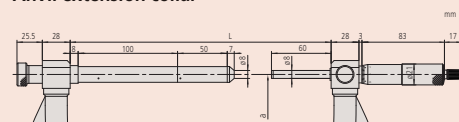
Accuracy	$\pm(6+L/75) \mu\text{m}$, L = max. range (mm)
Graduation	0.01 mm
Scale	Thimble and sleeve satin chrome finish, $\varnothing 21$ mm
Flatness	1,3 μm
Parallelism	$(2+L/100) \mu\text{m}$ (mm), L = max. range (mm)
Measuring surfaces	Carbide tipped, micro-lap finish
Measuring spindle	With spindle lock, $\varnothing 8$ mm spindle pitch 0,5 mm
Measuring force	5-10 N
Delivered	Including box, setting standards (2 pieces), adjustable stop (for models over 1000 mm range)



Application with adjustable stop on workpiece



Anvil extension collar



Range	L	a (distance to workpiece stopper)
1000 - 1200 mm	1225	500 - 600
1200 - 1400 mm	1425	600 - 700
1400 - 1600 mm	1625	700 - 800
1600 - 1800 mm	1825	800 - 900
1800 - 2000 mm	2025	900 - 1000

Digimatic Sheet Metal Micrometer

Series 389

This Digimatic Sheet Metal Micrometer is designed with a deep frame, for measuring the thickness of sheet material.



Series 389			
	389-251	up to 389-272	389-514
Functions			
ORIGIN		●	●
ZERO/ABS		●	●
Auto Power OFF after 20 min. non use		●	●
2 x PRESET		●	●
Low voltage alarm		●	●
HOLD		●	●
Data output		●	●

Specifications

Accuracy	Refer to the list of specifications (excluding quantizing error)
Digital step	0,001 mm
Measuring force	3-8, 10-14 (389-514) N
Scale	Thimble and sleeve satin chrome finish, ø 18 mm/ ø 21 mm
Flatness	0,6 µm for models with 160/165 mm throat 1 µm for models with 330 mm throat
Parallelism	3 µm
Measuring surfaces	Carbide tipped, micro-lap finish
Measuring spindle	With spindle lock, ø 6,35 mm/ø 8 mm (389-514), spindle pitch 0,5 mm
Battery life	approx. 1.2 years/ approx. 1.8 years (389-514)
Delivered	Including box, key, 1 battery/ 2 batteries (389-514)

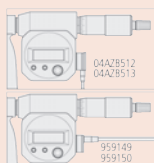
Optional accessories

No.	Description	Price €
05CZA662	Digimatic cable with data switch (1 m)	73.50
05CZA663	Digimatic cable with data switch (2 m)	82.50
02AZD790B	Connecting cable U-Wave with data switch	95.00
06ADV380B	USB Input Tool Direct cable with data switch (2 m)	115.00
04AZB512	Digimatic cable with data switch (1 m)	75.00
04AZB513	Digimatic cable with data switch (2 m)	84.50
959149	Digimatic cable with data switch (1 m)	38.00
959150	Digimatic cable with data switch (2 m)	43.50
02AZD790C	U-WAVE Data Cable with data switch	90.00
06ADV380C	USB Input tool Direct cable with data switch (2 m)	100.00

04AZB512/04AZB513/959149/959150/02AZD790C/06ADV380C for 389-514

Consumable spares

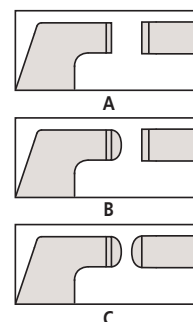
No.	Description	Price €
938882	Battery SR44	5.50



Digimatic cable for 389-514

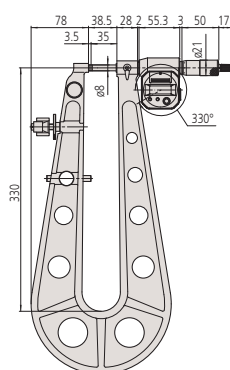


389-251

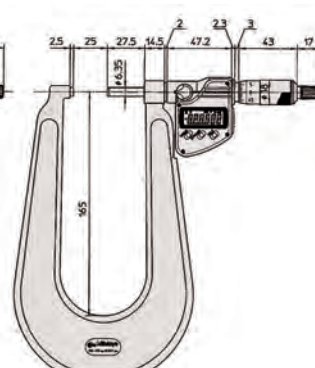
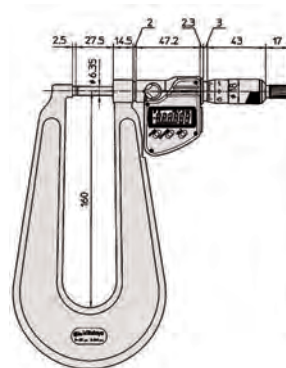


Metric

No.	Range [mm]	Anvil/ Tip	Accuracy	IP65	Mass [g]	Price [€]
389-251	0-25	A	±4 µm	●	840	582.00
389-261	0-25	B	±4 µm	●	840	582.00
389-271	0-25	C	±4 µm	●	840	582.00
389-514	0-25	A	±5 µm	●	2750	1,040.00
389-252	25-50	A	±4 µm	●	920	628.00
389-262	25-50	B	±4 µm	●	920	628.00
389-272	25-50	C	±4 µm	●	920	628.00



389-514



0-25 mm / 25-50 mm

Sheet Metal Micrometer

Series 118

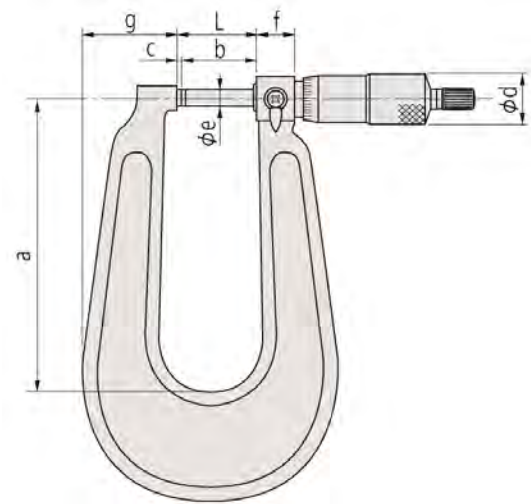
This Sheet Metal Micrometer is designed with a deep frame for measuring the thickness of sheet material.



118-102

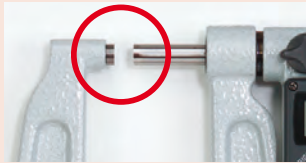
Metric

No.	Range [mm]	Anvil/ Tip	Accuracy	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	f [mm]	g [mm]	Mass [g]	Price [€]
118-101	0-25	A	±4 µm	30.3	110	27.5	2.8	18	6.35	14.5	39	445	213.00
118-102	0-25	A	±4 µm	30.3	160	27.5	2.8	18	6.35	14.5	48	740	213.00
118-103	0-25	A	±5 µm	38.5	330	35	3.5	21	8	28	84	2650	432.00
118-110	25-50	A	±4 µm	55.3	165	27.5	2.5	18	6.35	14.5	45	820	227.00
118-114	0-25	B	±4 µm	30.3	160	27.5	2.8	18	6.35	14.5	48	740	281.00
118-118	0-25	C	±4 µm	30.3	160	27.5	2.8	18	6.35	14.5	48	740	281.00
118-126	25-50	C	±4 µm	55.3	165	27.5	2.5	18	6.35	14.5	48	820	227.00

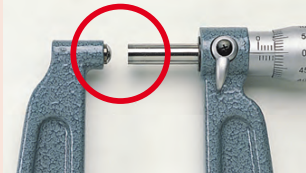


Specifications

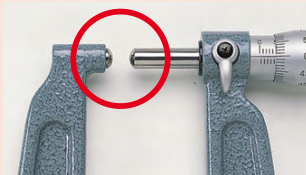
Accuracy	Refer to the list of specifications
Graduation	0,01mm
Scale	Thimble and sleeve satin chrome finish, ø18 mm or ø21 mm
Flatness	0,6 µm for models with 110, 160, 165 mm throat 1 µm for models with 300 mm throat
Parallelism	3 µm
Measuring surfaces	Carbide-tipped, micro-lap finish
Measuring spindle	With spindle lock, throat depth up to 150 mm : ø 6.35 mm throat depth up to 300 mm : ø 8 mm, spindle pitch 0.5 mm
Measuring force	3-8 N
Delivered	Including box, key, setting standard (from 25 mm upward)



Type A
Flat-Flat



Type B
Spherical-Flat



Type C
Spherical-Spherical

Sheet Metal Micrometer Graduated Dial

Specifications

Accuracy	Refer to the list of specifications
Graduation	0.01 mm
Scale	Thimble and sleeve satin chrome finish
Measuring surfaces	Convex anvil and flat spindle
Measuring spindle	With spindle lock, Ø 6,35 mm



The Series 119 is provided with a dial for making easy and quick reading.

Series 119

This Sheet Metal Micrometer comes with a graduated dial.

It offers you the following features:

- A deep frame that enables you to measure the thickness of sheet material.
- Easy-to-read graduated dial.

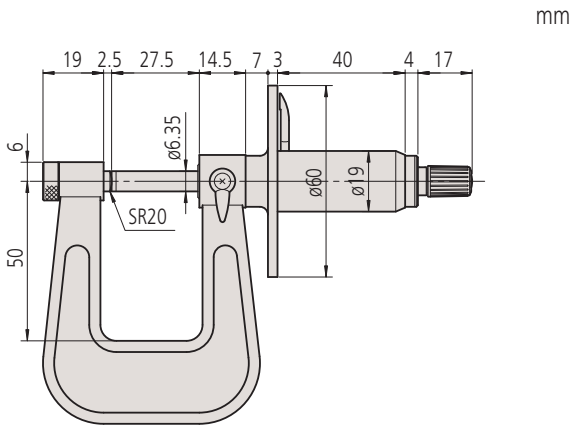


119-202

Metric

Dial reading model

No.	Range [mm]	Accuracy	Throat [mm]	Mass [g]	Price [€]
119-202	0-25	±4 µm	50	305	292.00



Digimatic Caliper Jaw Micrometer

Series 343

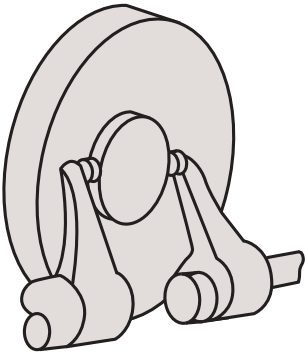
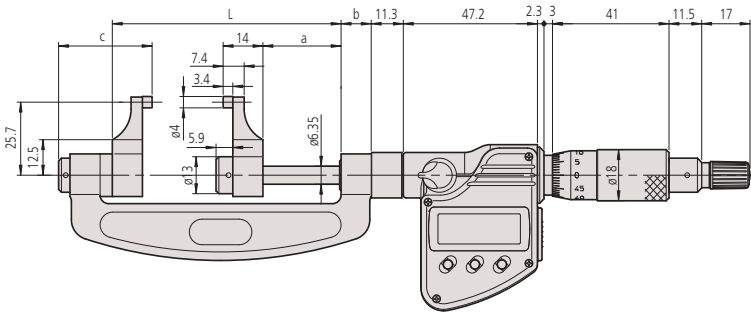
This Digimatic Caliper Jaw Micrometer has been specially designed for measuring in hard-to-reach places.



343-250

Metric

No.	Range [mm]	Accuracy	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
343-250	0-25	±5 µm	55.5	27.5	10.6	32.9	320	706.00
343-251	25-50	±6 µm	80.5	27.5	10.6	32.9	340	767.00
343-252	50-75	±7 µm	105.5	27.5	10.6	32.9	390	809.00
343-253	75-100	±8 µm	130.5	27.5	10.6	32.9	440	845.00



Functions	Series 343
ORIGIN	●
ZERO/ABS	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
HOLD	●
Data output	●

Specifications

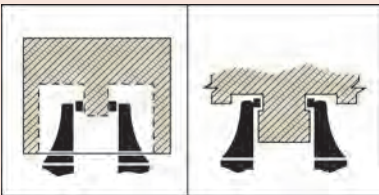
Accuracy	Refer to the list of specifications (excluding quantizing error)
Digital step	0,001 mm
Scale	Thimble and sleeve satin chrome finish, ø18 mm
Flatness	0,3 µm
Parallelism	(3+L/75) µm, L = max. range (mm)
Measuring surfaces	Carbide tipped, micro-lap finish
Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 0,5 mm
Measuring force	1-6 N
Battery life	approx. 1.2 years
Delivered	Including box, setting standard (from 25 mm upward), key, 1 battery

Optional accessories

No.	Description	Price €
05CZA662	Digimatic cable with data switch (1 m)	73.50
05CZA663	Digimatic cable with data switch (2 m)	82.50
02AZD790B	Connecting cable U-Wave with data switch	95.00
06ADV380B	USB Input Tool Direct cable with data switch (2 m)	115.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



Caliper Jaw Micrometer

Series 143

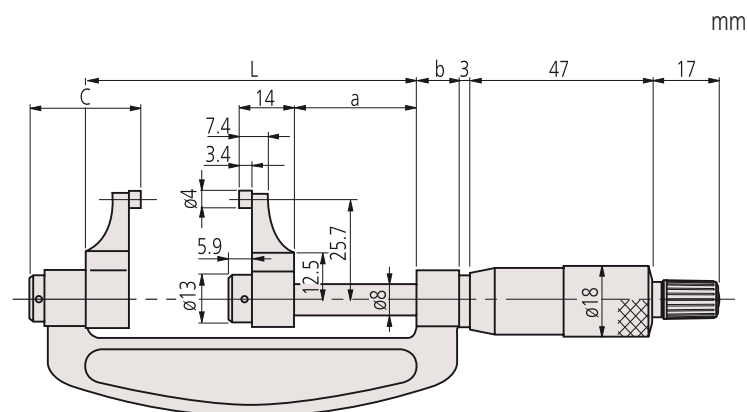
This Caliper Jaw Micrometer has been specially designed for measuring in hard-to-reach places.



143-101

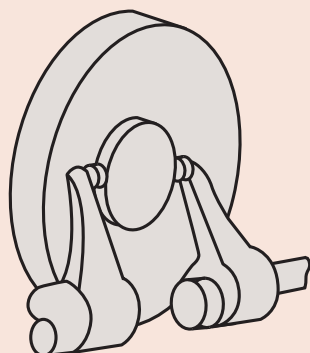
Metric

No.	Range [mm]	Accuracy	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
143-101	0-25	$\pm 5 \mu\text{m}$	59.8	31.8	10.6	28.6	210	304.00
143-102	25-50	$\pm 6 \mu\text{m}$	84.8	31.8	10.6	28.6	230	321.00
143-103	50-75	$\pm 7 \mu\text{m}$	109.8	31.8	10.6	28.6	280	382.00
143-104	75-100	$\pm 8 \mu\text{m}$	134.8	31.8	10.6	28.6	330	403.00
143-105	100-125	$\pm 9 \mu\text{m}$	159.8	31.8	10.6	28.6	400	410.00
143-106	125-150	$\pm 9 \mu\text{m}$	184.8	31.8	10.6	28.6	450	425.00
143-107	150-175	$\pm 10 \mu\text{m}$	209.8	31.8	10.6	28.6	520	460.00
143-108	175-200	$\pm 10 \mu\text{m}$	234.8	31.8	10.6	28.6	600	494.00
143-109	200-225	$\pm 11 \mu\text{m}$	255.8	27.8	14.5	32.5	690	510.00
143-110	225-250	$\pm 11 \mu\text{m}$	280.8	27.8	14.5	32.5	790	523.00
143-111	250-275	$\pm 12 \mu\text{m}$	305.8	27.8	14.5	32.5	900	580.00
143-112	275-300	$\pm 12 \mu\text{m}$	330.8	27.8	14.5	32.5	920	617.00



Specifications

Accuracy	Refer to the list of specifications
Graduation	0.01mm
Scale	Thimble and sleeve satin chrome finish, ø18 mm
Flatness	0,3 μm
Parallelism	(3+L/75) μm (mm), L = max. range (mm)
Measuring surfaces	Carbide tipped, micro-lap finish
Measuring spindle	ø 6,35 mm, spindle pitch 0,5 mm
Measuring force	1-6 N
Delivered	Including box, setting standard (from 25 mm upward), key



Universal Micrometer

Series 116

This Universal Micrometer comes with interchangeable tips. It offers you the following benefits:

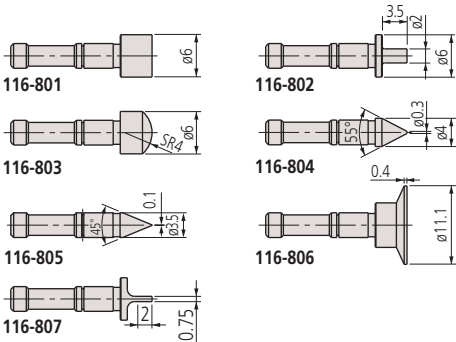
- Its non-rotating spindle accepts seven forms of optional interchangeable anvil/spindle tip (including flat, spline, spherical, point, knife-edge, disc, and blade) allowing you to use it in a wide range of applications.
- Optional anvils/spindle-tips for screw thread measurement (matching V and cone) are also available.



116-101

Metric

No.	Range [mm]	Accuracy	Mass [g]	Price [€]
116-101	0-25	±4 µm	250	380.00
116-102	25-50	±4 µm	300	462.00



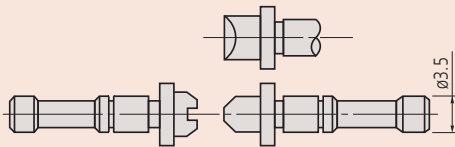
Specifications

Accuracy	Refer to the list of specifications
Graduation	0.01mm
Scale	Thimble and sleeve satin chrome finish, ø18 mm
Measuring spindle	Ø 8 mm, spindle pitch 0.5 mm
Measuring force	5-10 N
Delivered	Including box, plain and 60° thread setting standard (from 25 mm upward), key Interchangeable anvils/spindle-tips not included

Optional accessories

No.	Description	Price €
116-801	Matched pair anvilspindle-tip (flat)	59.00
116-802	Matched pair anvilspindle-tip (spline)	59.00
116-803	Matched pair anvilspindle-tip (spherical)	59.00
116-804	Matched pair anvilspindle-tip (point)	59.00
116-805	Matched pair anvilspindle-tip (knife-edge)	59.00
116-806	Matched pair anvilspindle-tip (disc)	59.00
116-807	Matched pair anvilspindle-tip (blade)	59.00
116-800	7 pairs of anvilspindle-tips No. 116-801 to -807	340.00
116-830	6 pairs of anvilspindle-tips for measuring metric threads, unified threads (60°)	340.00

116-830 :
- 0,4-0,5 mm/64-48TPI (116-831)
- 0,6-0,9 mm/44-28TPI (116-832)
- 1-1,75 mm/24-14TPI (116-833)
- 2-3 mm/13-9TPI (116-834)
- 3,5-5mm/8-5TPI (116-835)
- 5,5-7mm/4.5-3.5TPI (116-836)



Interchangeable anvils/spindle-tips are available in sets and pairs

Digimatic Screw Thread Micrometer with Interchangeable Tips

Series 326

This Digimatic Screw Thread Micrometer comes with optional, interchangeable, anvils/spindle-tips that allow you to measure a wide range of metric/unified and Whitworth screw-thread pitch diameters.



326-251-10



Interchangeable anvils/spindle tips in matching pairs

Metric

No.	Range [mm]	Accuracy	A [mm]	B [mm]	Mass [g]	Price [€]
326-251-10	0-25	±4 µm	39.5	25	350	819.00
326-252-10	25-50	±4 µm	64.5	32	380	839.00
326-253-10	50-75	±4 µm	90	45	470	860.00
326-254-10	75-100	±5 µm	115.6	65	510	906.00



Functions	Series 326
ZERO/ABS	●
Auto Power OFF after 20 min. non use	●
2 x PRESET	●
Low voltage alarm	●
Function lock	●
HOLD	●
Data output	●

Specifications

Accuracy	Refer to the list of specifications (excluding quantizing error)
Digital step	0,001 mm
Scale	Thimble and sleeve satin chrome finish, ø18 mm
Measuring spindle	With spindle lock, ø6,35 mm, spindle pitch 0,5 mm
Measuring force	5-10 N
Battery life	approx. 1.2 years
Delivered	Including box, setting standard (60°) (from 25 mm upward), key, 1 battery Interchangeable anvils/spindle tips not included

Standard accessories

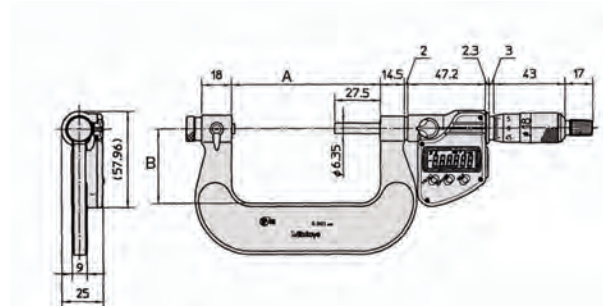
No.	Description
167-261	Setting standard 25 mm/60°
167-262	Setting standard 50 mm/60°
167-263	Setting standard 75 mm/60°

Optional accessories

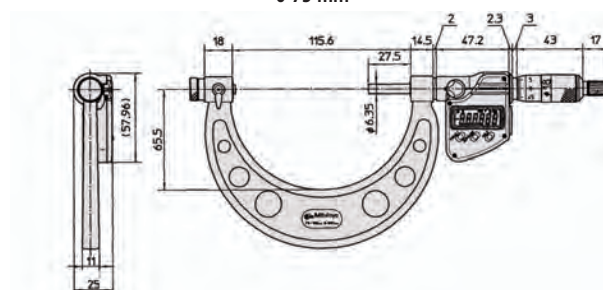
No.	Description	Price €
05CZA662	Digimatic cable with data switch (1 m)	73.50
05CZA663	Digimatic cable with data switch (2 m)	82.50
02AZD790B	Connecting cable U-Wave with data switch	95.00
06ADV380B	USB Input Tool Direct cable with data switch (2 m)	115.00
167-272	Setting standard 25 mm/55°	50.50
167-273	Setting standard 50 mm/55°	57.00
167-274	Setting standard 75 mm/55°	69.50
167-275	Setting standard 100 mm/55°	77.50

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



0-25 mm



25-50 mm



Anvil/spindle-tip matching pair

Screw Thread Micrometer with Interchangeable Tips

Series 126

This Screw Thread Micrometer comes with optional, interchangeable, anvils/spindle-tips that allow you to measure a wide range of metric/unified and Whitworth screw-thread pitch diameters.



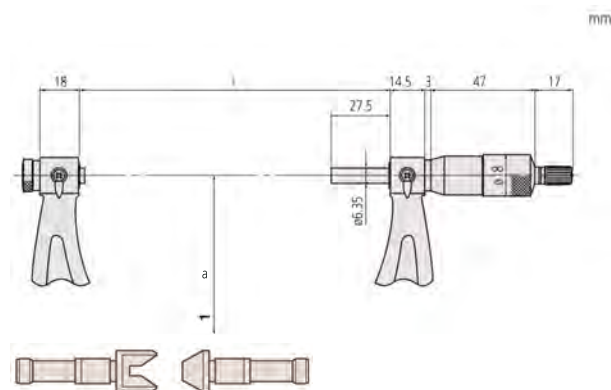
126-125



**Interchangeable anvils/spindle tips
in matching pairs**

Metric

No.	Range [mm]	Accuracy	L [mm]	a [mm]	Mass [g]	Price [€]
126-125	0-25	±4 µm	39.5	25	240	288.00
126-126	25-50	±4 µm	64.5	32	290	346.00
126-127	50-75	±4 µm	90	45	390	384.00
126-128	75-100	±5 µm	115.6	65	450	407.00
126-129	100-125	±5 µm	140.6	79	530	422.00
126-130	125-150	±5 µm	165.6	93	620	510.00
126-131	150-175	±6 µm	190.5	105	730	561.00
126-132	175-200	±6 µm	214.5	120	860	599.00
126-133	200-225	±6 µm	240.5	131	1030	626.00
126-134	225-250	±7 µm	265.5	144	1200	688.00
126-135	250-275	±7 µm	290.5	156	1370	752.00
126-136	275-300	±7 µm	314.5	171	1540	806.00



Anvil/spindle-tip matching pair

Specifications

Accuracy	Refer to the list of specifications
Graduation	0,01 mm
Scale	Thimble and sleeve satin chrome finish, $\varnothing 18$ mm
Measuring spindle	With spindle lock, $\varnothing 6,35$ mm, spindle pitch 0.5 mm
Measuring force	5-10 N
Delivered	Including box, setting standard (60°) (from 25 mm upward), key Interchangeable anvils/spindle tips not included

Standard accessories

No.	Description
167-261	Setting standard 25 mm/60°
167-262	Setting standard 50 mm/60°
167-263	Setting standard 75 mm/60°
167-264	Setting standard 100 mm/60°
167-265	Setting standard 125 mm/60°
167-266	Setting standard 150 mm/60°
167-267	Setting standard 175 mm/60°
167-268	Setting standard 200 mm/60°
167-269	Setting standard 225 mm/60°
167-270	Setting standard 250 mm/60°
167-271	Setting standard 275 mm/60°

Optional accessories

No.	Description	Price €
167-272	Setting standard 25 mm/55°	50.50
167-273	Setting standard 50 mm/55°	57.00
167-274	Setting standard 75 mm/55°	69.50
167-275	Setting standard 100 mm/55°	77.50
167-276	Setting standard 125 mm/55°	88.00
167-277	Setting standard 150 mm/55°	88.00
167-278	Setting standard 175 mm/55°	105.00
167-279	Setting standard 200 mm/55°	105.00
167-280	Setting standard 225 mm/55°	109.00
167-281	Setting standard 250 mm/55°	109.00
167-282	Setting standard 275 mm/55°	113.00

Screw Thread Micrometer with Interchangeable Tips

Series 126

Optional accessories anvils/spindle-tips



Individual measuring anvil/spindle-tip pairs

No.	Accuracy	Remarks	Metric pitch	UNF threads/inch	Whitworth threads/inch	Price [€]
126-801	±30'	M1 (U1)	0.4-0.5	48-64		58.50
126-802	±20'	M2 (U2)	0.6-0.9	28-44		58.50
126-803	±15'	M3 (U3)	1-1.75	14-24		58.50
126-804	±10'	M4 (U4)	2-3	9-13		58.50
126-805	±10'	M5 (U5)	3.5-5	5-8		58.50
126-806	±10'	M6 (U6)	5.5-7	3.5-4.5		58.50
126-811	±30'	W1			48-60	58.50
126-812	±30'	W2			40-48	58.50
126-813	±20'	W3			32-40	58.50
126-814	±20'	W4			24-32	58.50
126-815	±15'	W5			18-24	58.50
126-816	±15'	W6			14-18	58.50
126-817	±10'	W7			10-14	58.50
126-818	±10'	W8			7-10	58.50
126-819	±10'	W9			38,449	58.50
126-820	±10'	W10			3.5-4.5	58.50

Measuring anvil/spindle-tip set Metric UNF (consists of No. 126-801 to 126-806)

No.	Remarks	Price [€]
126-800	M1 to M6	321.00

Measuring anvil/spindle-tip set Whitworth (consists of No. 126-811 to 126-820)

No.	Remarks	Price [€]
126-810	W1 to W10	525.00

Ø	Thread pitch	Pitch
Nominal	P	Ø
		d2
M 1	0,25	0,838
M 1,2	0,25	1,038
M 1,4	0,30	1,205
M 1,7	0,35	1,473
M 2	0,40	1,740
M 2,3	0,40	2,040
M 2,6	0,45	2,308
M 3	0,50	2,675
M 3,5	0,60	3,110
M 4	0,70	3,545
M 5	0,80	4,480
M 6	1,00	5,350
M 8	1,25	7,188
M 10	1,50	9,026
M 12	1,75	10,863

Ø	Thread pitch	Pitch
Nominal	P	Ø
		d2
M 14	2,00	12,701
M 16	2,00	14,701
M 20	2,50	18,376
M 22	2,50	20,376
M 24	3,00	22,051
M 27	3,00	25,051
M 30	3,50	27,727
M 33	3,50	30,727
M 36	4,00	33,402
M 39	4,00	36,402
M 42	4,50	39,077
M 45	4,50	42,077
M 48	5,00	44,752
M 52	5,00	48,752
M 56	5,50	52,428
M 60	5,50	56,428

Screw Thread Micrometer

Series 125

This Screw Thread Micrometer has a fixed anvil, offering the following benefits:

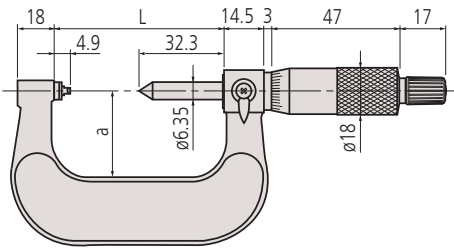
- Fixed anvil type.
- It directly indicates screw pitch diameter, meaning no need for calculation.



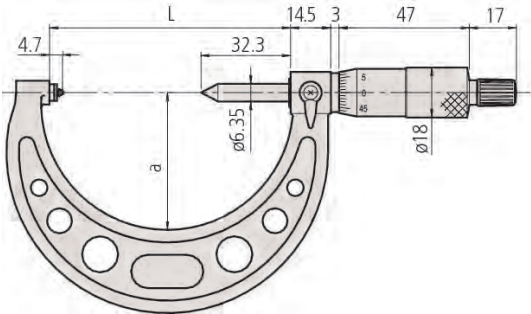
125-103

Metric

No.	Range [mm]	Thread to be measured (Metric/Unified)	L [mm]	a [mm]	Mass [g]	Price [€]
125-101	0-25	0,4-0,5 /64-48	37.2	25	200	179.00
125-102	0-25	0,6-0,9 /44-28	37.2	25	200	179.00
125-103	0-25	1-1,75 /24-14	37.2	25	200	179.00
125-104	0-25	2-3 /13-9	37.2	25	200	179.00
125-105	0-25	3,5-5/8-5	37.2	25	200	179.00
125-106	25-50	0,4-0,5/64-48	62.2	32	250	246.00
125-107	25-50	0,6-0,9 /44-28	62.2	32	250	246.00
125-108	25-50	1-1,75 /24-14	62.2	32	250	246.00
125-109	25-50	2-3 /13-9	62.2	32	250	246.00
125-110	25-50	3,5-5 /8-5	62.2	32	250	246.00
125-111	50-75	0,6-0,9 /44-28	87	49	260	276.00
125-112	50-75	1-1,75 /24-14	87	49	260	276.00
125-113	50-75	2-3 /13-9	87	49	260	276.00
125-114	50-75	3,5-5 /8-5	87	49	260	276.00
125-115	50-75	5,5-7 /4.5-3.5	87	49	260	276.00
125-116	75-100	0,6-0,9 /44-28	112	63	330	293.00
125-117	75-100	1-1,75 /24-14	112	63	330	293.00
125-118	75-100	2-3 /13-9	112	63	330	293.00
125-119	75-100	3,5-5 /8-5	112	63	330	293.00
125-120	75-100	5,5-7 /4.5-3.5	112	63	330	293.00



0-50 mm



50-100 mm

Specifications

Accuracy	$\pm(2+L/75) \mu\text{m}$ L = max. range (mm)
Graduation	0.01 mm
Delivered	Including box, setting standard 60° (from 25 mm upward), key



Gear Tooth Micrometer

Series 124/ 324

This Gear Tooth Micrometer has an interchangeable ball insert. It offers you the following features:

- Measuring the over-pin diameter of gears with precision.
- It has interchangeable ball inserts that allow you to measure modules sized between 0.5-5.25mm.



324-251-10



124-173

Series 124/ 324	
Functions	324-251-10 up to 324-254-10
ZERO/ABS	●
Auto Power OFF after 20 min. non use	●
2 x PRESET	●
Low voltage alarm	●
Function lock	●
HOLD	●
Data output	●

Specifications

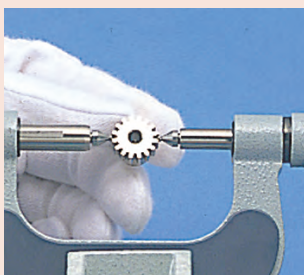
Accuracy	Refer to the list of specifications (excluding quantizing error)
Digital step	0,001 mm
Graduation	0.01 mm (analog type)
Scale	Thimble and sleeve satin chrome finish, ø18 mm
Measuring spindle	With spindle lock, ø6,35 mm, spindle pitch 0,5 mm
Measuring force	5-10 N
Battery life	approx. 1.2 years
Delivered	Including box, setting standard (from 25 mm upward), key, 1 battery Interchangeable anvils/spindle tips not included

Optional accessories

No.	Description	Price €
05CZA662	Digimatic cable with data switch (1 m)	73.50
05CZA663	Digimatic cable with data switch (2 m)	82.50
02AZD790B	Connecting cable U-Wave with data switch	95.00
06ADV380B	USB Input Tool Direct cable with data switch (2 m)	115.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50

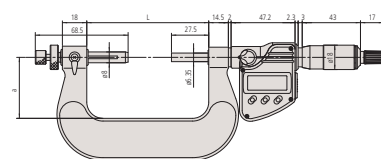


Metric Analog model

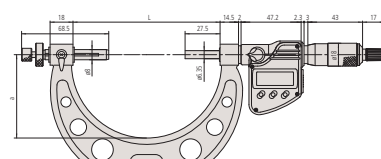
No.	Range [mm]	Accuracy	L [mm]	a [mm]	Mass [g]	Price [€]
124-173	0-25	±4 µm	64.5	32	295	319.00
124-174	25-50	±4 µm	90	45	400	341.00
124-175	50-75	±4 µm	115.6	65	460	363.00
124-176	75-100	±5 µm	140.6	79	540	379.00
124-177	100-125	±5 µm	165.6	93	640	396.00
124-178	125-150	±5 µm	190.5	105	760	433.00
124-179	150-175	±6 µm	214.5	120	900	541.00
124-180	175-200	±6 µm	240.5	131	1060	579.00
124-181	200-225	±6 µm	265.5	144	1230	617.00
124-182	225-250	±7 µm	290.5	156	1430	682.00
124-183	250-275	±7 µm	314.5	171	1620	719.00
124-195	275-300	±7 µm	353	187	2070	768.00

Metric Digital model

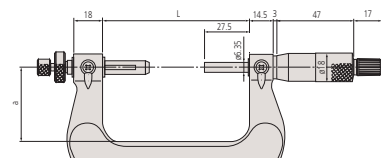
No.	Range [mm]	Accuracy	L [mm]	a [mm]	Mass [g]	Price [€]
324-251-10	0-25	±4 µm	64.5	32	400	803.00
324-252-10	25-50	±4 µm	90	45	490	819.00
324-253-10	50-75	±4 µm	115.6	65	530	839.00
324-254-10	75-100	±5 µm	140.6	79	600	860.00



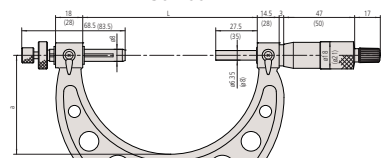
Series 324
0-50 mm



Series 324
50-100 mm



Series 124
0-50mm



Series 124
50-300 mm

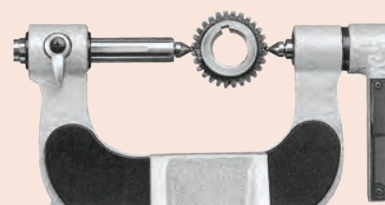
Interchangeable Ball Anvil/Spindle Tip Set

Series 124/ 324

These optional interchangeable anvils allow you to measure the over-pin diameter of gears with precision.

Metric

No.	Diameter	Gear module	Remarks	Dia. pitch	Price [€]
124-801	0,8 mm	0.5-0.55	carbide-tipped type	50	118.00
124-802	1 mm	0.6-0.65	carbide-tipped type	45	118.00
124-821	1,5 mm	0.9-1	carbide-tipped type	28-26	118.00
124-805	2 mm	1.25	carbide-tipped type	22	118.00
124-822	2,5 mm	1.5		17	118.00
124-807	3 mm	1.75		15	118.00
124-823	3,5 mm	2		13	118.00
124-810	4 mm	2.25		11	118.00
124-824	4,5 mm	2.5		10	118.00
124-812	5 mm	2.75		9	118.00
124-814	6 mm	3.5		7	118.00
124-816	7 mm	4		6.5	118.00
124-819	8 mm	4.75		5.5	118.00



Digimatic Disc Micrometer

Series 323

This Digimatic Disc Micrometer enables you to measure hard-to-reach features, offering you the following benefits:

- Measuring the root tangent length of spur and helical gears.
- You can measure recessed features that are difficult to reach with a standard micrometer.

Functions	Series 323
ORIGIN	●
ZERO/ABS	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
HOLD	●
Data output	●

Specifications

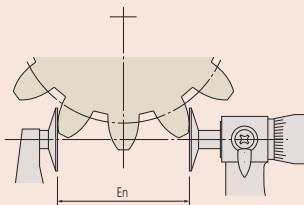
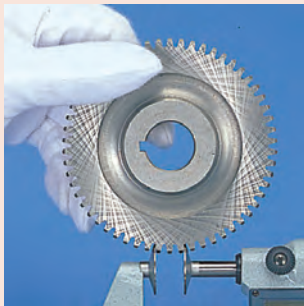
Accuracy	Refer to the list of specifications (excluding quantizing error)
Digital step	0,001 mm
Scale	Thimble and sleeve satin chrome finish, ø18 mm
Flatness	1 µm
Parallelism	4 µm for models up to 50 mm 6 µm for models up to 100 mm
Measuring spindle	With spindle lock, spindle pitch 0,5 mm
Measurable module	0.5-6
Measuring force	5-10 N
Battery life	approx. 1.2 years
Delivered	Including box, setting standard (from 25 mm upward), key, 1 battery

Optional accessories

No.	Description	Price €
05CZA662	Digimatic cable with data switch (1 m)	73.50
05CZA663	Digimatic cable with data switch (2 m)	82.50
02AZD790B	Connecting cable U-Wave with data switch	95.00
06ADV380B	USB Input Tool Direct cable with data switch (2 m)	115.00

Consumable spares

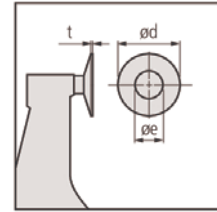
No.	Description	Price €
938882	Battery SR44	5.50



Root tangent length of gear (En)

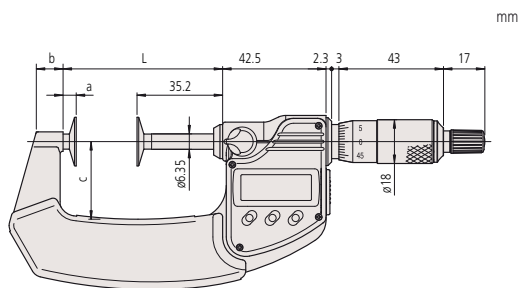


323-250

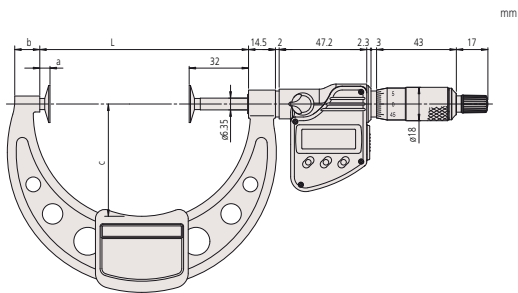


Metric

No.	Range [mm]	Accuracy	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	t [mm]	Mass [g]	Price [€]
323-250	0-25	±4 µm	39.7	4.5	9.2	25	20	8	0.7	290	654.00
323-251	25-50	±4 µm	65.6	5.4	11	31	20	8	0.7	355	726.00
323-252	50-75	±6 µm	90.7	5.5	12.2	50	20	8	0.7	555	773.00
323-253	75-100	±6 µm	112.5	5.5	13.5	60	20	8	0.7	610	803.00



0-75 mm



75-100 mm

Disc Micrometer

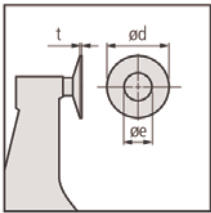
Series 123

This Disc Micrometer enables you to measure hard-to-reach features, offering you the following benefits:

- Measuring the root tangent length of spur and helical gears.
- You can measure recessed features that are difficult to reach with a standard micrometer.

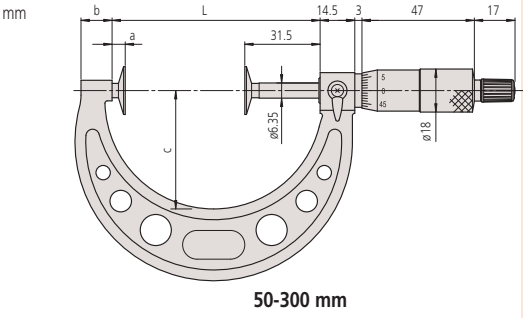
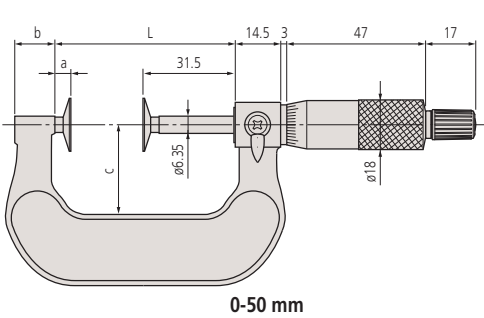


123-101



Metric

No.	Range [mm]	Accuracy	Remarks	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	t [mm]	Mass [g]	Price [€]
123-101	0-25	±4 µm		37.5	6	14	25	20	8	0.7	200	209.00
123-113	0-25	±4 µm	disks have carbide tips	39.7	4.5	9.2	25	20	9.8	0.7	200	292.00
123-102	25-50	±4 µm		62.5	6	14	32	20	8	0.7	250	233.00
123-114	25-50	±4 µm	disks have carbide tips	65.6	5.4	11	31	20	9.8	0.7	250	327.00
123-103	50-75	±6 µm		87	5.5	11	49	20	8	0.7	300	258.00
123-115	50-75	±6 µm	disks have carbide tips	90.7	5.5	12.2	50	20	9.8	0.7	300	361.00
123-104	75-100	±6 µm		112	5.5	11	63	20	8	0.7	375	300.00
123-116	75-100	±6 µm	disks have carbide tips	112.5	5.5	13.5	60	20	9.8	0.7	375	420.00
123-105	100-125	±7 µm		137.5	6	12	79	30	12	1	520	316.00
123-106	125-150	±7 µm		162.5	6	15	94	30	12	1	570	333.00
123-107	150-175	±8 µm		187.5	6	16	106	30	12	1	730	357.00
123-108	175-200	±8 µm		212.5	6	15	118	30	12	1	890	385.00
123-109	200-225	±8 µm		237.5	6	14	130	30	12	1	1000	395.00
123-110	225-250	±9 µm		262.5	6	14	143	30	12	1	1200	408.00
123-111	250-275	±9 µm		287.5	6	15	156	30	12	1	1410	428.00
123-112	275-300	±9 µm		312.5	6	15	169	30	12	1	1680	447.00



Specifications	
Accuracy	Refer to the list of specifications
Graduation	0.01 mm
Scale	Thimble and sleeve satin chrome finish, ø 18 mm
Flatness	1 µm for models up to 100 mm 1,6 µm for models over 100 mm
Parallelism	4 µm for models up to 50 mm 6 µm for models up to 100 mm (5+L/75) µm for models over 100 mm L = max. range (mm)
Measuring spindle	With spindle lock, spindle pitch 0.5 mm
Measurable module	0.5-6 (0.7-11 : models over 100 mm)
Measuring force	5-10 N
Delivered	Including box, setting standard (from 25 mm upward), key

Digimatic Disc Micrometer Non-Rotating Spindle Type

Series 369

This Digimatic Disc Micrometer allows you to measure a range of different materials. It offers you the following benefits:

- Non-rotating spindle and disc-shaped measuring surfaces.
- Suitable for measuring felt, rubber, cardboard, fabric etc.

Functions	Series 369
ORIGIN	●
ZERO/ABS	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
HOLD	●
Data output	●

Specifications

Accuracy	Refer to the list of specifications (excluding quantizing error)
Digital step	0,001 mm
Scale	Thimble and sleeve satin chrome finish, $\varnothing 18$ mm
Flatness	1 μ m
Parallelism	4 μ m for models up to 50 mm 6 μ m for models over 50 mm
Measuring spindle	With spindle lock, spindle pitch 0,5 mm
Measuring force	3-8 N
Battery life	approx. 1.2 years
Delivered	Including box, setting standard (from 25 mm upward), key, 1 battery

Optional accessories

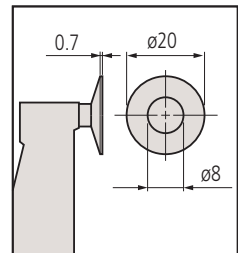
No.	Description	Price €
05CZA662	Digimatic cable with data switch (1 m)	73.50
05CZA663	Digimatic cable with data switch (2 m)	82.50
02AZD790B	Connecting cable U-Wave with data switch	95.00
06ADV380B	USB Input Tool Direct cable with data switch (2 m)	115.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50

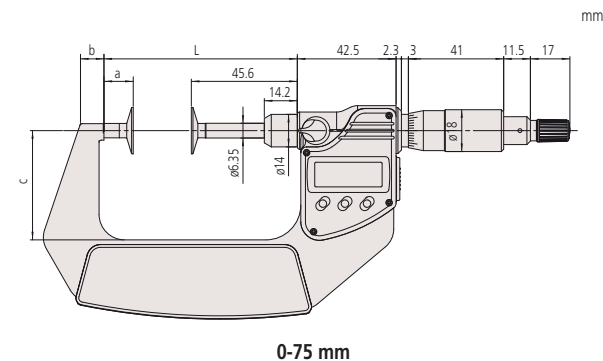


369-250

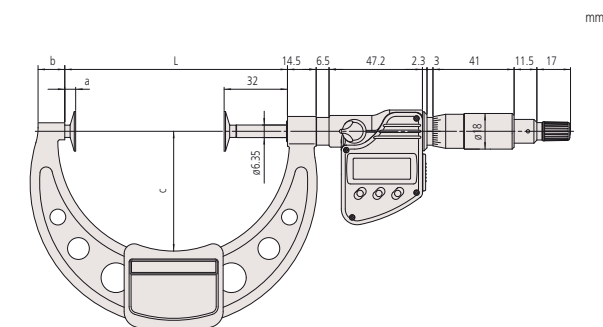


Metric

No.	Range [mm]	Accuracy	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
369-250	0-25	$\pm 4 \mu$ m	58.5	12.9	7	32	340	762.00
369-251	25-50	$\pm 4 \mu$ m	83.5	12.9	9.8	47	480	834.00
369-252	50-75	$\pm 6 \mu$ m	108.5	12.9	11.2	60	635	870.00
369-253	75-100	$\pm 6 \mu$ m	112.5	5.5	13.5	60	775	912.00



0-75 mm



75-100 mm

ABSOLUTE Digimatic Disc Micrometer QuickMike

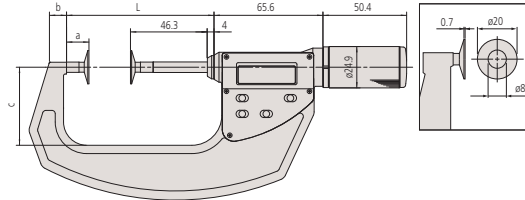
Series 369

The ABSOLUTE Digimatic Disco Micrometer QuickMike allows you measure a range of different materials. It offers you the following benefits:

- It has a fast spindle feed of 10mm/rev.
- Suitable for measuring felt, rubber, cardboard, fabric etc.
- It features a non-rotating spindle and disc-shaped measuring surfaces.



369-411



Metric

No.	Range [mm]	Accuracy	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
369-411	0-30	±4 µm	63.8	13.5	8.5	36	360	803.00
369-412	25-55	±4 µm	88.8	13.5	10.3	47	490	845.00



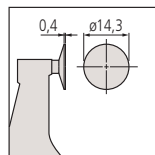
Series 227

This Micrometer comes with adjustable measuring force, allowing you to measure various kinds of workpiece. It offers the following benefits:

- It's designed for applications that require a constant, low measuring force such as measuring felt, fabric, paper and plastic and rubber parts.
- The thimble has a constant and low measuring force mechanism.
- It features a non-rotating spindle and disc-shaped measuring surfaces.
- It has a fast spindle feed of 10mm/rev.



227-221



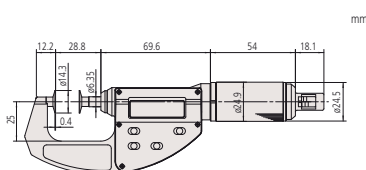
Circular Measuring Surface

Metric

QuickMike type adjustable measuring force

No.	Range [mm]	Accuracy	Measuring force settings ⁽¹⁾ [N]	Measuring force accuracy ⁽¹⁾ [N]	Mass [g]	Price [€]
227-223	0-10	±4 µm	2; 4; 6; 8; 10	±0,4 + (for setting/10)	340	1,030.00
227-221	0-15	±4 µm	0,5; 1,0; 1,5; 2,0; 2,5	±0,1 + (for setting/10)	300	1,123.00

⁽¹⁾ Only valid for instrument orientation within ±3 degrees of horizontal when measuring.



Force adjustable
0,5-2,5 N (227-221)



Force adjustable:
2-10 N (227-223)

ABSOLUTE®



Functions	Series 369
ORIGIN	●
ZERO/ABS	●
ON/OFF	●
Low voltage alarm	●
HOLD	●
Data output	●

Specifications

Accuracy	Refer to the list of specifications (excluding quantizing error)
Digital step	0,001 mm
Flatness	1 µm
Parallelism	4 µm
Measuring force	3-8 N
Battery life	approx. 5.000 hours
Delivered	Including box, setting standard (from 25 mm upward), 1 battery

Optional accessories

No.	Description	Price €
937387	Digimatic cable (1 m)	47.00
965013	Digimatic cable (2 m)	57.50
02AZD790E	Connecting cable U-Wave	85.00
06ADV380E	USB Input tool Direct cable (2 m)	100.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50

ABSOLUTE®

Functions	Series 227
ORIGIN	●
ON/OFF	●
Low voltage alarm	●
HOLD	●
Data output	●

Specifications

Measuring direction	Horizontal
Accuracy	Refer to the list of specifications (excluding quantizing error)
Digital step	0,001 mm
Flatness	1 µm
Parallelism	3 µm
Battery life	approx. 3 years
Delivered	Including box, screwdriver, 1 battery

Optional accessories

No.	Description	Price €
937387	Digimatic cable (1 m)	47.00
965013	Digimatic cable (2 m)	57.50
06ADV380E	USB Input tool Direct cable (2 m)	100.00
02AZD790E	Connecting cable U-Wave	85.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50

Disc Micrometer Non-Rotating Spindle Type

Series 169

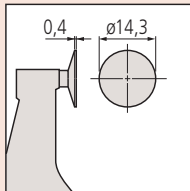
This Disk Micrometer has a non-rotating spindle and allows you measure a range of different materials.

It offers you the following benefits:

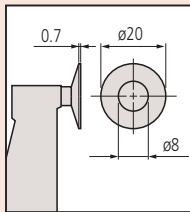
- It features a non-rotating spindle and disc-shaped measuring surfaces.
- It's suitable for measuring materials such as felt, rubber, cardboard and fabric.

Specifications

Accuracy	Refer to the list of specifications.
Graduation	0,01mm
Scale	Thimble and sleeve satin chrome finish, ø 18 mm
Flatness	1 µm, 3 µm (169-101, 169-103)
Parallelism	4 µm for models up to 50 mm 6 µm for models over 50 mm
Measuring spindle	ø 8 mm, spindle pitch 0.5 mm
Delivered	Including box, setting standard (from 25 mm upward), key



With circular measuring surfaces
169-101/103



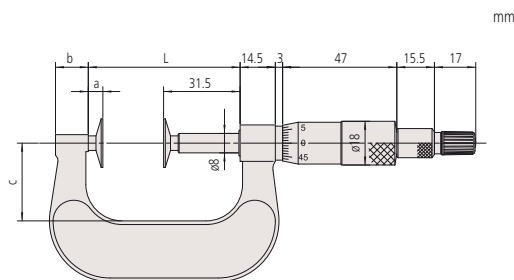
With annular measuring surfaces



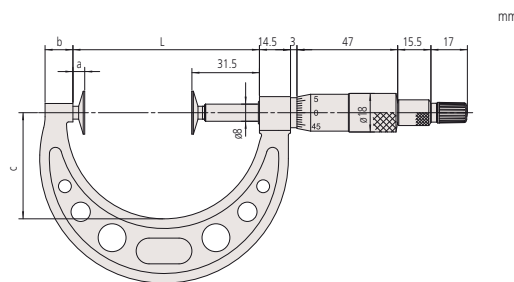
169-201

Metric

No.	Range [mm]	Accuracy	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
169-101	0-25	±4 µm	37.5	6	13.5	25	230	271.00
169-201	0-25	±4 µm	37.5	6	13.5	25	230	291.00
169-202	25-50	±4 µm	62.5	6	13.5	32	280	309.00
169-205	50-75	±6 µm	87	5.5	13	49	315	327.00
169-207	75-100	±6 µm	112	5.5	13	63	400	341.00



0-50 mm



50-100 mm

Digimatic Spline Micrometer

Series 331

This Digimatic Spline Micrometer makes it easy for you to measure grooves and shaped parts. It offers you the following benefits:

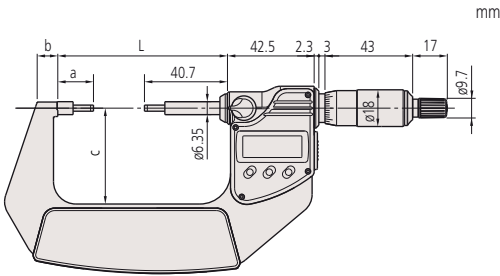
- Stepped measuring surfaces.
- Suitable for measuring grooves, splined shafts, recesses, shaped parts, etc.



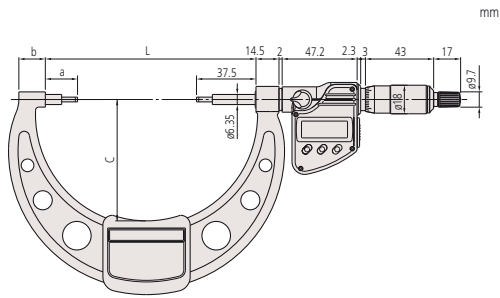
331-251

Metric

No.	Range [mm]	Anvil/ Tip	Accuracy	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
331-251	0-25	A	±2 µm	58.2	17.5	7.3	32	330	623.00
331-261	0-25	B	±2 µm	58.2	17.5	7.3	32	330	623.00
331-252	25-50	A	±2 µm	83.2	17.5	10.1	47	470	675.00
331-262	25-50	B	±2 µm	83.2	17.5	10.1	47	470	675.00
331-253	50-75	A	±2 µm	108.2	17.5	11.5	60	625	721.00
331-263	50-75	B	±2 µm	108.2	17.5	11.5	60	625	721.00
331-254	75-100	A	±3 µm	132.8	20.3	16.7	76	565	752.00
331-264	75-100	B	±3 µm	132.8	20.3	16.7	76	565	752.00



0-75 mm



75-100 mm

Functions	Series 331
ORIGIN	●
ZERO/ABS	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
HOLD	●
Data output	●

Specifications

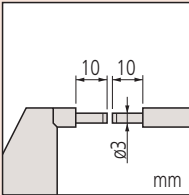
Accuracy	Refer to the list of specifications (excluding quantizing error)
Digital step	0,001 mm
Scale	Thimble and sleeve satin chrome finish, ø18 mm
Flatness	0,3µm
Parallelism	(2+L/100) µm, L = max. range (mm)
Measuring surfaces	Carbide tipped, micro-lap finish
Measuring spindle	With spindle lock, ø6,35 mm, spindle pitch 0,5 mm
Measuring force	5-10 N
Battery life	approx 1.2 years
Delivered	Including box, setting standard (from 25 mm upward), key, 1 battery

Optional accessories

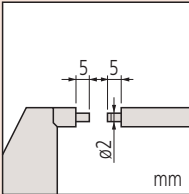
No.	Description	Price €
05CZA662	Digimatic cable with data switch (1 m)	73.50
05CZA663	Digimatic cable with data switch (2 m)	82.50
02AZD790B	Connecting cable U-Wave with data switch	95.00
06ADV380B	USB Input Tool Direct cable with data switch (2 m)	115.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



Type A



Type B

Spline Micrometer

Series 111

This Spline Micrometer makes it easy for you to measure grooves and shaped parts. It offers you the following benefits:

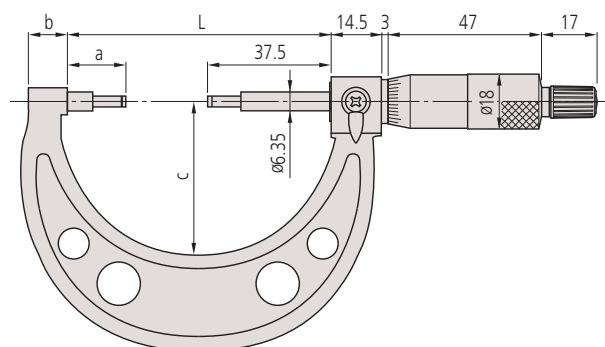
- Stepped measuring surfaces.
- Suitable for measuring grooves, splined shafts, recesses, shaped parts, etc.



111-115

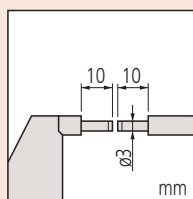
Metric

No.	Range [mm]	Anvil/ Tip	Accuracy	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
111-115	0-25	A	$\pm 3 \mu\text{m}$	55.3	17.8	10	38	205	186.00
111-215	0-25	B	$\pm 3 \mu\text{m}$	55.3	17.8	10	38	205	186.00
111-117	50-75	A	$\pm 3 \mu\text{m}$	105.3	17.8	14	60	370	260.00
111-118	75-100	A	$\pm 4 \mu\text{m}$	132.8	20.3	17	79	500	276.00
111-119	100-125	A	$\pm 4 \mu\text{m}$	158.2	20.7	19	94	655	315.00
111-120	125-150	A	$\pm 4 \mu\text{m}$	183.6	21.1	20	106	710	341.00
111-121	150-175	A	$\pm 5 \mu\text{m}$	208.8	21.3	19	118	900	376.00
111-122	175-200	A	$\pm 5 \mu\text{m}$	234.2	21.7	18	130	1040	412.00
111-123	200-225	A	$\pm 5 \mu\text{m}$					1245	486.00
111-124	225-250	A	$\pm 6 \mu\text{m}$					1395	529.00
111-125	250-275	A	$\pm 6 \mu\text{m}$					1555	573.00
111-126	275-300	A	$\pm 6 \mu\text{m}$					1975	628.00

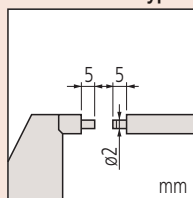


Specifications

Accuracy	Refer to the list of specifications
Graduation	0.01 mm
Scale	Thimble and sleeve satin chrome finish $\varnothing 18$ mm
Flatness	0,3 μm
Parallelism	(2+L/100) μm , L = max. range (mm)
Measuring surfaces	carbide-tipped, micro-lap finish, stepped
Measuring spindle	With spindle lock, $\varnothing 6,35$ mm, spindle pitch 0,5 mm
Measuring force	5-10 N
Delivered	Including box, setting standard (from 25 mm upward), key



Type A



Type B

Digimatic Tube Micrometer

Series 395

This Digimatic Tube Micrometer allows you to measure curved surfaces such as the wall thickness of tubes, bearings and rings.



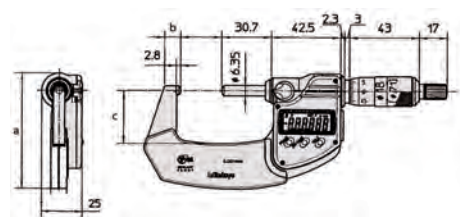
395-251

Metric Model with spherical anvil

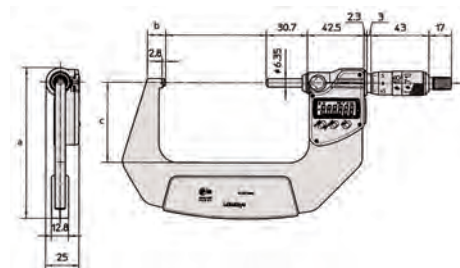
No.	Range [mm]	Anvil/ Tip	Accuracy	D [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
395-251	0-25	Type A	$\pm 2 \mu\text{m}$	15	59.8	9	25	270	505.00
395-252	25-50	Type A	$\pm 2 \mu\text{m}$	15	70.3	9.8	32	330	556.00
395-253	50-75	Type A	$\pm 2 \mu\text{m}$	19	91.9	12.6	47	470	633.00
395-254	75-100	Type A	$\pm 3 \mu\text{m}$	20	112.9	14	60	625	670.00

Metric Model with two spherical anvils

No.	Range [mm]	Anvil/ Tip	Accuracy	D [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
395-271	0-25	Type B	$\pm 2 \mu\text{m}$	15	59.8	9	25	270	520.00
395-272	25-50	Type B	$\pm 2 \mu\text{m}$	15	70.3	9.8	32	330	560.00
395-273	50-75	Type B	$\pm 2 \mu\text{m}$	19	91.9	12.6	32	470	644.00
395-274	75-100	Type B	$\pm 3 \mu\text{m}$	20	112.9	14	60	625	680.00



0-50 mm



50-100 mm

Functions	Series 395
ORIGIN	●
ZERO/ABS	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
HOLD	●
Data output	●

Specifications

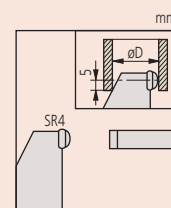
Accuracy	Refer to the list of specifications (excluding quantizing error)
Digital step	0,001 mm
Scale	Thimble and sleeve satin chrome finish, $\varnothing 18$ mm
Flatness	0,6 μm
Measuring surfaces	Carbide tipped, micro-lap finish
Measuring spindle	With spindle lock, $\varnothing 6.35$ mm, spindle pitch 0,5 mm
Measuring force	5-10 N
Battery life	approx. 1.2 years
Delivered	Including box, setting standard (from 25 mm upward), key, 1 battery

Optional accessories

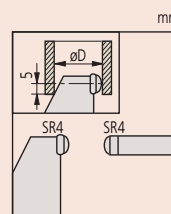
No.	Description	Price €
05CZA662	Digimatic cable with data switch (1 m)	73.50
05CZA663	Digimatic cable with data switch (2 m)	82.50
02AZD790B	Connecting cable U-Wave with data switch	95.00
06ADV380B	USB Input Tool Direct cable with data switch (2 m)	115.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



Type A



Type B

Digimatic Tube Micrometer

Series 395

This Digimatic Tube Micrometer allows you to measure curved surfaces such as the wall thickness of tubes, bearings and rings.



Functions	Series 395
ORIGIN	●
ZERO/ABS	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
HOLD	●
Data output	●

Specifications

Accuracy	Refer to the list of specifications (excluding quantizing error)
Digital step	0,001 mm
Scale	Thimble and sleeve satin chrome finish, ø18 mm
Flatness	0,6 µm
Measuring surfaces	Carbide tipped, micro-lap finish (spindle) anvil: hardened steel
Measuring spindle	with spindle lock, ø6.35 mm, spindle pitch 0,5 mm
Measuring force	3-8 N
Battery life	approx. 1.2 years
Delivered	Including box, setting standard (from 25 mm upward), key, 1 battery

Optional accessories

No.	Description	Price €
05CZA662	Digimatic cable with data switch (1 m)	73.50
05CZA663	Digimatic cable with data switch (2 m)	82.50
02AZD790B	Connecting cable U-Wave with data switch	95.00
06ADV380B	USB Input Tool Direct cable with data switch (2 m)	115.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



395-261



395-262



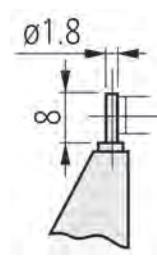
395-263



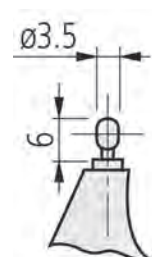
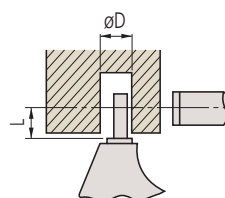
395-264

Metric

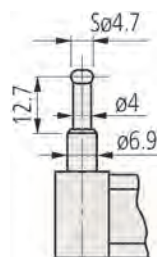
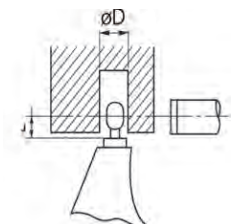
No.	Range [mm]	Anvil/ Tip	Accuracy	L [mm]	D [mm]	Mass [g]	Price [€]
395-261	0-25	Type A	±3 µm	4	2	270	520.00
395-262	0-25	Type B	±3 µm	4	3.6	270	520.00
395-263	0-25	Type C	±3 µm	12	4.8	310	520.00
395-264	0-25	Type D	±3 µm	22	8.2	310	520.00



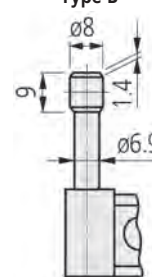
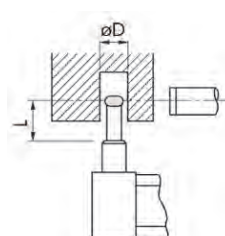
Type A



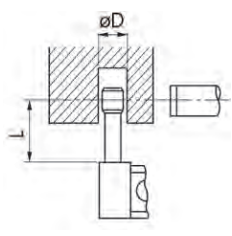
Type B



Type C



Type D



Tube Micrometer

Series 115

This Tube Micrometer allows you to measure curved surfaces such as the wall thickness of tubes, bearings and rings.



115-215

Metric

No.	Range [mm]	Accuracy	Remarks	L [mm]	D [mm]	Mass [g]	Price [€]
115-302	0-25	±3 μm	Type A	4	2	180	162.00
115-308	0-25	±3 μm	Type B	4	3.6	180	162.00
115-315	0-25	±3 μm	Type C	12	4.8	180	162.00
115-316	0-25	±3 μm	Type D	22	8.2	180	162.00
115-303	25-50	±3 μm	Type A	4	2	240	172.00
115-309	25-50	±3 μm	Type B	4	3.6	240	

Metric

Model with spherical anvil

No.	Range [mm]	Accuracy	D [mm]	Mass [g]	Price [€]
115-115	0-25	±3 μm	10	180	136.00
115-116	25-50	±3 μm	11	240	153.00
115-117	50-75	±3 μm	17	315	161.00
115-118	75-100	±4 μm	18	375	170.00

Metric

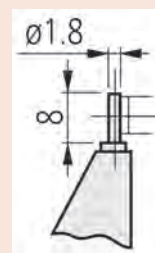
Model with spherical anvil and spindle face

No.	Range [mm]	Accuracy	D [mm]	Mass [g]	Price [€]
115-215	0-25	±3 μm	10	180	160.00
115-216	25-50	±3 μm	11	240	179.00
115-217	50-75	±3 μm	17	315	187.00
115-218	75-100	±4 μm	18	375	195.00

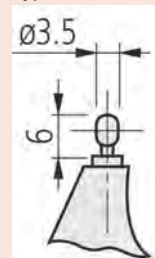


Specifications

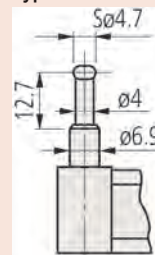
Accuracy	Refer to the list of specifications
Graduation	0.01 mm
Scale	Thimble and sleeve satin chrome finish, ø18 mm
Measuring surfaces	Spindle and anvil: carbide-tipped, micro-lap finish (115-1xx, 115-2xx) spindle: carbide tipped anvil: hardened steel (115-3xx)
Measuring spindle	With spindle lock, Ø 6.35 mm, spindle pitch 0.5 mm
Delivered	Including box, setting standard (from 25 mm upward), key



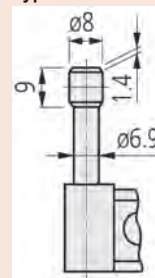
Type A



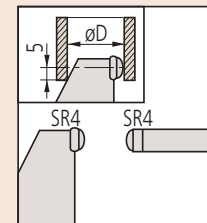
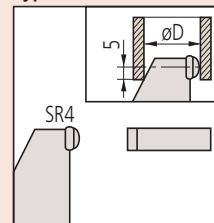
Type B



Type C



Type D



Digimatic Point Micrometer

Series 342

This Digimatic Point Micrometer features a pointed anvil and spindle, and offers the following benefits:

- Its pointed anvil and spindle has a choice of included angle, ending in small-radius contact points.
- You can use it to measure grooves, steps and similar.



342-251

Metric

No.	Range [mm]	Accuracy	L [mm]	a [mm]	b [mm]	c [mm]	Point	Mass [g]	Price [€]
342-251	0-25	±2 µm	58.2	12.5	7.3	32	15°	330	587.00
342-261	0-25	±2 µm	58.2	12.5	7.3	32	30°	330	587.00
342-252	25-50	±2 µm	83.2	12.5	10.1	47	15°	470	659.00
342-262	25-50	±2 µm	83.2	12.5	10.1	47	30°	470	659.00
342-253	50-75	±2 µm	108.2	12.5	11.5	60	15°	625	695.00
342-263	50-75	±2 µm	108.2	12.5	11.5	60	30°	625	695.00
342-254	75-100	±3 µm	132.8	15.3	16.7	76	15°	565	731.00
342-264	75-100	±3 µm	132.8	15.3	16.7	76	30°	565	731.00



Functions	Series 342
ORIGIN	●
ZERO/ABS	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Data output	●

Specifications

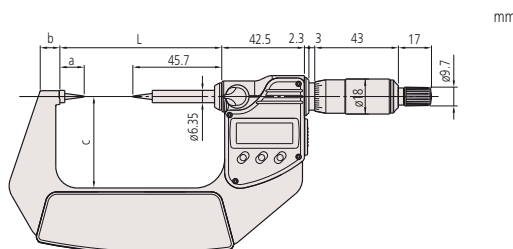
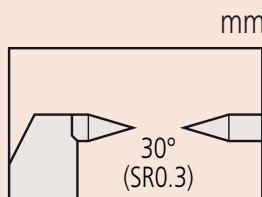
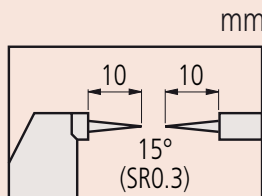
Accuracy	Refer to the list of specifications (excluding quantizing error)
Digital step	0,001 mm
Scale	Thimble and sleeve satin chrome finish, ø18 mm
Measuring surfaces	Carbide tipped and conical spindle and anvil, measuring point radius 0,3 mm
Measuring spindle	with spindle lock, ø 6,35 mm, spindle pitch 0,5 mm
Measuring force	3-8 N
Battery life	approx. 1.2 years
Delivered	Including box, setting standard (from 25 mm upward), key, 1 battery

Optional accessories

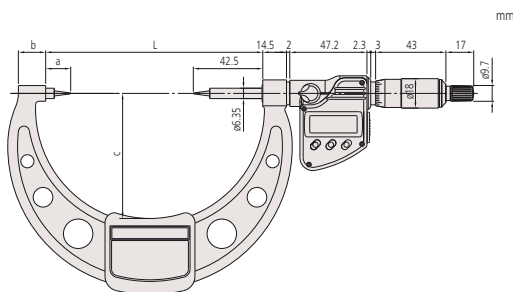
No.	Description	Price €
05CZA662	Digimatic cable with data switch (1 m)	73.50
05CZA663	Digimatic cable with data switch (2 m)	82.50
02AZD790B	Connecting cable U-Wave with data switch	95.00
06ADV380B	USB Input Tool Direct cable with data switch (2 m)	115.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



0-75 mm



75-100 mm

Point Micrometer

Series 112

- This Point Micrometer features a pointed anvil and spindle, and offers the following benefits:
- Its pointed anvil and spindle has a choice of included angle, ending in small-radius contact points.
 - You can use it to measure grooves, steps and similar.



112-201

Metric

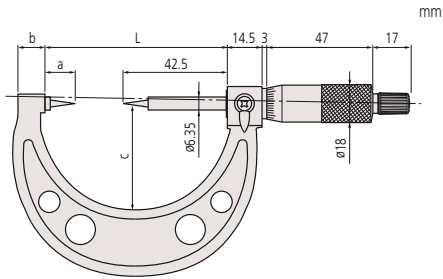
Carbide tip

No.	Range [mm]	Accuracy	Point	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
112-165	0-25	±3 µm	15°	55.3	12.8	10	38	205	206.00
112-213	0-25	±3 µm	30°	55.3	12.8	10	38	205	206.00
112-166	25-50	±3 µm	15°	80.3	12.8	12	49	305	247.00
112-214	25-50	±3 µm	30°	80.3	12.8	12	49	305	247.00
112-167	50-75	±3 µm	15°	105.3	12.8	14	60	370	268.00
112-215	50-75	±3 µm	30°	105.3	12.8	14	60	370	268.00
112-168	75-100	±4 µm	15°	132.8	15.3	17	79	500	304.00
112-216	75-100	±4 µm	30°	132.8	15.3	17	79	500	304.00

Metric

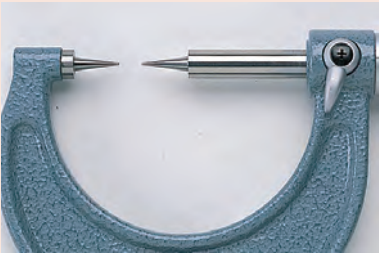
Hardened steel tip

No.	Range [mm]	Accuracy	Point	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
112-153	0-25	±3 µm	15°	55.3	12.8	10	38	205	186.00
112-201	0-25	±3 µm	30°	55.3	12.8	10	38	205	186.00
112-154	25-50	±3 µm	15°	80.3	12.8	12	49	305	227.00
112-202	25-50	±3 µm	30°	80.3	12.8	12	49	305	227.00
112-155	50-75	±3 µm	15°	105.3	12.8	14	60	370	242.00
112-203	50-75	±3 µm	30°	105.3	12.8	14	60	370	242.00
112-156	75-100	±4 µm	15°	132.8	15.3	17	79	500	294.00
112-204	75-100	±4 µm	30°	132.8	15.3	17	79	500	294.00

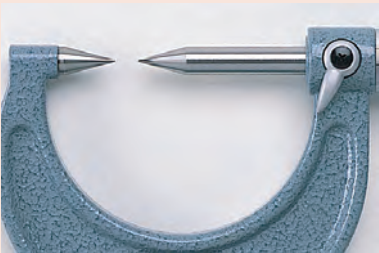
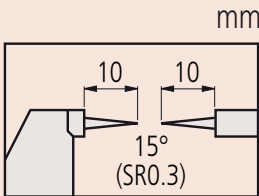


Specifications

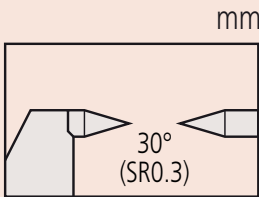
Accuracy	Refer to the list of specifications
Graduation	0.01 mm
Scale	Thimble and sleeve satin chrome finish ø18 mm
Measuring surfaces	Carbide pointed or hardened steel spindle and anvil, measuring point radius 0,3 mm
Measuring spindle	With spindle lock, spindle pitch 0,5 mm
Measuring force	3-8 N
Delivered	Including box, setting standard (from 25 mm upward), key



Type angle : 15°



Type angle : 30°



Crimp Height Micrometer

Series 342/ Series 112

This Crimp Height Micrometer features a flat anvil and pointed spindle, allowing you to measure the crimped height of electrical contacts.



342-271



342-451



342-451

Series 342/ Series 112		
	342-271	342-451
Functions		
ORIGIN	●	●
ZERO/ABS	●	●
ON/OFF		●
Auto Power OFF after 20 min. non use	●	
Low voltage alarm	●	●
HOLD	●	●
Data output	●	●

Specifications

Accuracy	Refer to the list of specifications
Digital step	0,001 mm
Graduation	0.01 mm
Measuring force	3-8 4-6 (342-451) N
Scale	Thimble and sleeve satin chrome finish, ø 18 mm (342-271, 342-371, 112-401)
Measuring surfaces	Hardened and precision ground
Measuring spindle	With spindle lock (342-271/342-371, 112-401), ø6,35 mm, spindle pitch 0,5 mm ø 6,35 mm, spindle pitch 10 mm (342-451)
Battery life	approx. 1.2 years (342-271, 342-371), 3 years (342-451)
Delivered	Including box, 1 battery

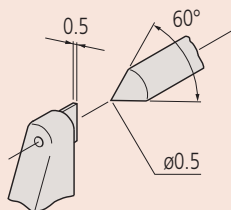
Optional accessories

No.	Description	Price €
937387	Digimatic cable (1 m)	47.00
965013	Digimatic cable (2 m)	57.50
02AZD790E	Connecting cable U-Wave	85.00
06ADV380E	USB Input tool Direct cable (2 m)	100.00
05CZA662	Digimatic cable with data switch (1 m)	73.50
05CZA663	Digimatic cable with data switch (2 m)	82.50
02AZD790B	Connecting cable U-Wave with data switch	95.00
06ADV380B	USB Input Tool Direct cable with data switch (2 m)	115.00

937387/965013/06ADV380E/02AZD790E: for 342-451

Consumable spares

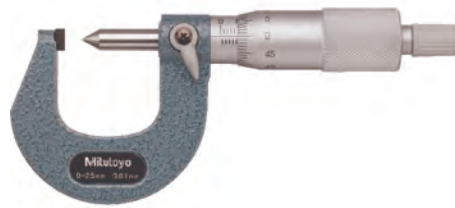
No.	Description	Price €
938882	Battery SR44	5.50



342-271/-371
112-401



342-271



112-401



342-451

Metric

Analog model

No.	Range [mm]	Accuracy	Mass [g]	Price [€]
112-401	0-25	±3 µm	165	233.00

Metric

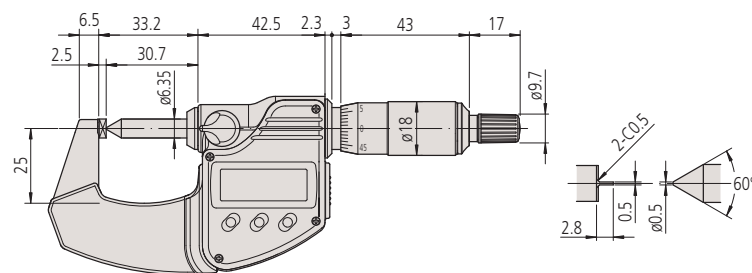
Digital model

No.	Range [mm]	Accuracy	Mass [g]	Price [€]
342-271	0-20	±3 µm	270	551.00

Metric

QuickMike type

No.	Range [mm]	Accuracy	Mass [g]	Price [€]
342-451	0-15	±3 µm	275	1,000.00



Digimatic Blade Micrometer

Series 422

This Digimatic Blade Micrometer is designed to help you measure hard-to-reach features. It offers the following benefits:

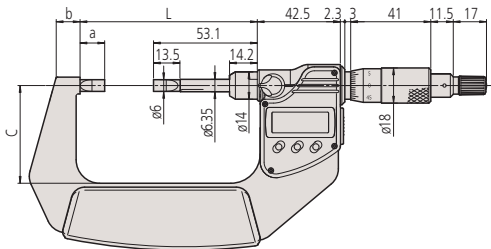
- Blade-shaped anvil and spindle for measuring the groove diameter of shafts, keyways, and other hard-to reach features.
- Non-rotating spindle.



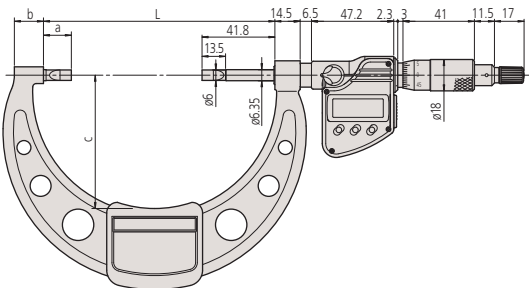
422-230

Metric

No.	Range [mm]	Anvil/ Tip	Accuracy	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
422-230	0-25	Type A	±3 μm	65.6	12.5	11	31	365	896.00
422-260	0-25	Type B	±3 μm	65.6	12.5	11	31	365	912.00
422-270	0-25	Type C	±3 μm	65.6	12.5	11	31	365	948.00
422-271	0-25	Type D	±3 μm	65.6	12.5	11	31	365	968.00
422-231	25-50	Type A	±3 μm	90.7	12.6	12.2	50	565	973.00
422-261	25-50	Type B	±3 μm	90.7	12.6	12.2	50	565	989.00
422-232	50-75	Type A	±3 μm	105.3	13.5	14.1	57	465	1,010.00
422-233	75-100	Type A	±4 μm	132.8	16	16.7	76	580	1,045.00



0-50 mm



50-100 mm

Functions	Series 422
ORIGIN	●
ZERO/ABS	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
HOLD	●
Data output	●

Specifications

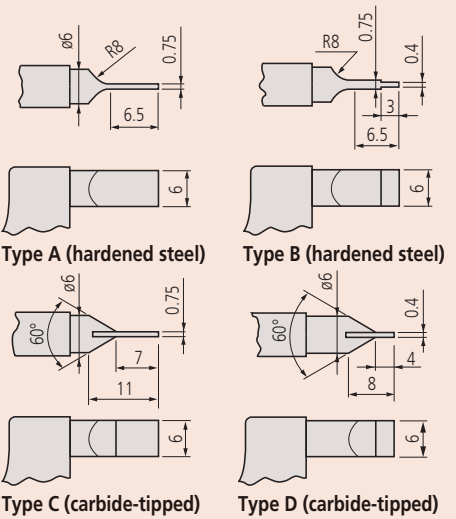
Accuracy	Refer to the list of specifications (excluding quantizing error)
Digital step	0,001 mm
Scale	Thimble and sleeve satin chrome finish, Ø18 mm
Parallelism	3 μm for models up to 75 mm 4 μm for models over 75 mm
Measuring spindle	With spindle lock, Ø 6,35 mm, spindle pitch 0,5 mm
Measuring force	3-8 N
Battery life	approx. 1.2 years
Delivered	Including box, setting standard (from 25 mm upward), key, 1 battery

Optional accessories

No.	Description	Price €
05CZA662	Digimatic cable with data switch (1 m)	73.50
05CZA663	Digimatic cable with data switch (2 m)	82.50
02AZD790B	Connecting cable U-Wave with data switch	95.00
06ADV380B	USB Input Tool Direct cable with data switch (2 m)	115.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



ABSOLUTE Digimatic Blade Micrometer QuickMike

Functions	Series 422
ORIGIN	●
ZERO/ABS	●
ON/OFF	●
Low voltage alarm	●
HOLD	●
Data output	●

Specifications

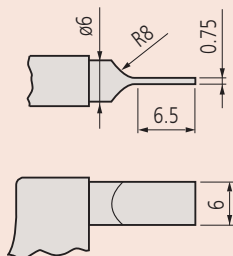
Accuracy	Refer to the list of specifications (excluding quantizing error)
Digital step	0,001 mm
Scale	Thimble, ø 24.9 mm
Parallelism	3 µm
Measuring spindle	ø6,35 mm, spindle pitch 10 mm
Measuring force	5-10 N
Battery life	approx. 1 year
Delivered	Including box, setting standard (from 25 mm upward), 1 battery

Optional accessories

No.	Description	Price €
937387	Digimatic cable (1 m)	47.00
965013	Digimatic cable (2 m)	57.50
02AZD790E	Connecting cable U-Wave	85.00
06ADV380E	USB Input tool Direct cable (2 m)	100.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



Series 422

This ABSOLUTE Digimatic Blade Micrometer QuickMike is designed to help you measure hard-to-reach features.

It offers the following benefits:

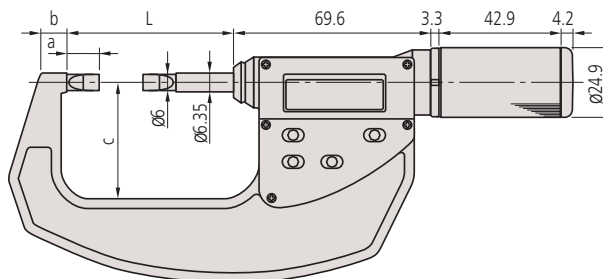
- Blade-shaped anvil and spindle for measuring the groove diameter of shafts, keyways, and other hard-to reach features.
- Non-rotating spindle.
- Fast spindle feed of 10mm/rev.



422-411

Metric

No.	Range [mm]	Accuracy	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
422-411	0-30	±3 µm	59.8	13.5	8.5	36	350	788.00
422-412	25-55	±3 µm	84.8	13.5	10.3	47	490	829.00



Blade Micrometer

Series 122

This Blade Micrometer is designed to help you measure hard-to-reach features. It offers the following benefits:

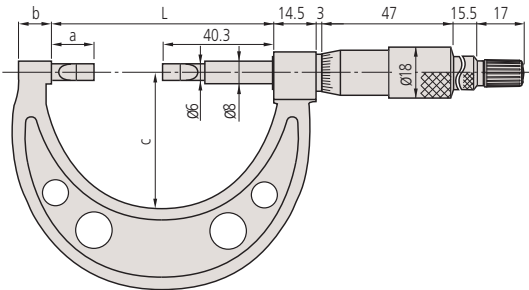
- Blade-shaped anvil and spindle for measuring the groove diameter of shafts, keyways, and other hard-to reach features.
- Non-rotating spindle.



122-101

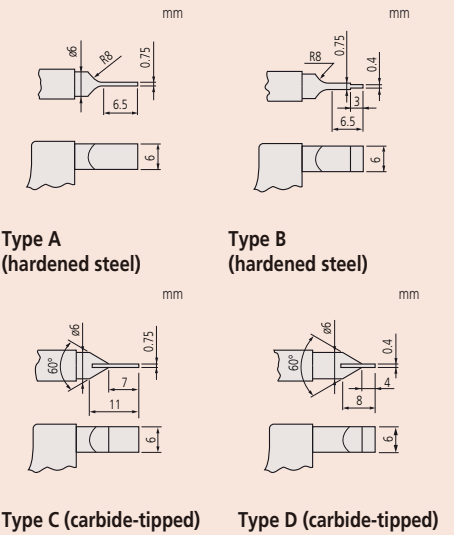
Metric

No.	Range [mm]	Anvil/ Tip	Accuracy	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
122-101	0-25	A	±3 µm	55.3	15	8	30	260	250.00
122-111	0-25	B	±3 µm	55.3	15	8	30	260	250.00
122-161	0-25	C	±3 µm	55.3	15	8	30	275	293.00
122-141	0-25	D	±3 µm	55.3	15	8	30	275	293.00
122-102	25-50	A	±3 µm	80.3	15	12	49	300	303.00
122-112	25-50	B	±3 µm	80.3	15	12	49	300	303.00
122-162	25-50	C	±3 µm	80.3	15	12	49	315	364.00
122-142	25-50	D	±3 µm	80.3	15	12	49	315	364.00
122-103	50-75	A	±3 µm	105.3	15	13	60	360	324.00
122-104	75-100	A	±4 µm	132.8	17.5	17	79	525	352.00
122-105	100-125	A	±4 µm	158.2	17.9	19	94	670	460.00
122-106	125-150	A	±4 µm	183.6	18.3	20	106	775	496.00
122-107	150-175	A	±5 µm	208.8	18.5	19	118	950	542.00
122-108	175-200	A	±5 µm	234.2	18.9	19	118	1140	598.00
122-109	200-225	A	±5 µm	258	17.7	18	143	1300	644.00
122-110	225-250	A	±6 µm	284	18.7	18	156	1450	686.00
122-115	250-275	A	±6 µm	309	18.7	18	169	1600	809.00
122-116	275-300	A	±6 µm	334	18.7	18	181	2020	862.00



Specifications

Accuracy	Refer to the list of specifications
Graduation	0.01 mm
Scale	Thimble and sleeve satin chrome finish, Ø18 mm
Parallelism	3 µm for models up to 75 mm (3+L/100) µm for models over 75 mm, L= max. range (mm)
Measuring spindle	Ø 8 mm, spindle pitch 0,5 mm
Measuring force	8-10 N
Delivered	Including box, setting standard (from 25 mm upward), key



Digimatic V-Anvil Micrometer

Series 314

This Digimatic V-Anvil Micrometer helps you measure cutting tools and taps. It offers the following benefits:

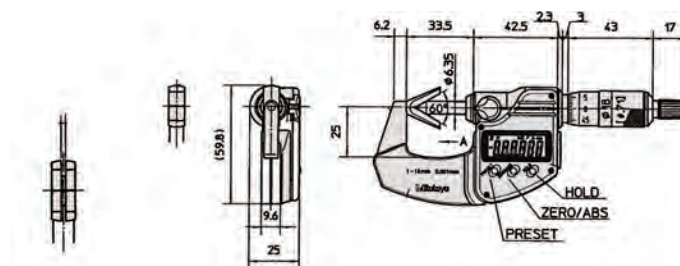
- It measures the outside diameter of cutting tools (such as taps, reamers, end mills) which have three or five flutes.
- V-anvils with a centreline groove are available for measuring the pitch diameter of taps by the single-wire method.



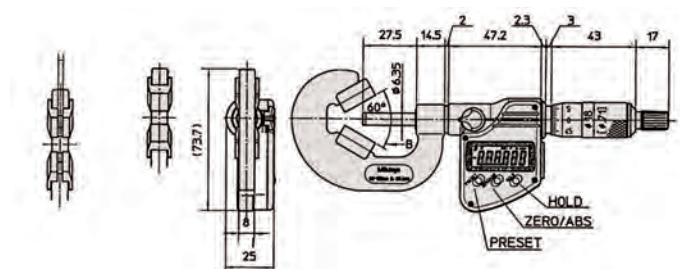
314-251-10

Metric

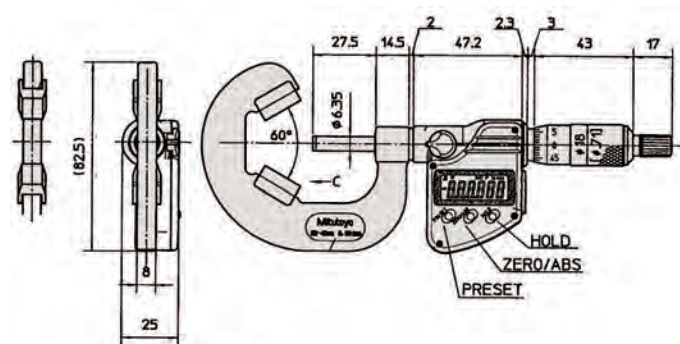
No.	Range [mm]	Accuracy	Remarks	Mass [g]	Price [€]
314-251-10	1-15	±4 µm	with groove	275	788.00
314-261-10	1-15	±4 µm	-	275	788.00
314-252-10	10-25	±4 µm	with groove	410	824.00
314-262-10	10-25	±4 µm	-	410	824.00
314-253-10	25-40	±5 µm	-	465	845.00



1 - 15 mm



10 - 25 mm



25 - 40 mm

Functions	Series 314
ZERO/ABS	●
Auto Power OFF after 20 min. non use	●
2 x PRESET	●
Low voltage alarm	●
Function lock	●
HOLD	●
Data output	●

Specifications

Accuracy	Refer to the list of specifications (excluding quantizing error)
Digital step	0,001 mm
Scale	Thimble and sleeve satin chrome finish, ø 18 mm
Flatness	0,3 µm (spindle) 1 µm (anvil)
Measuring surfaces	Prism angle 60°
Measuring spindle	With spindle lock; ø6,35 mm, spindle pitch 0,75 mm
Measuring force	5-10 N
Battery life	approx. 1.2. years
Delivered	Including box, setting standard, key, 1 battery

Optional accessories

No.	Description	Price €
05CZA662	Digimatic cable with data switch (1 m)	73.50
05CZA663	Digimatic cable with data switch (2 m)	82.50
02AZD790B	Connecting cable U-Wave with data switch	95.00
06ADV380B	USB Input Tool Direct cable with data switch (2 m)	115.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50

V-Anvil Micrometer

Series 114

This V-Anvil Micrometer helps you measure cutting tools and taps. It offers the following benefits:

- It measures the outside diameter of cutting tools (such as taps, reamers, end mills) which have three or five flutes.
- V-anvils with a centreline groove are available for measuring the pitch diameter of taps by the single-wire method.



114-102



114-121

Metric For 3-flute cutting tools (60°)

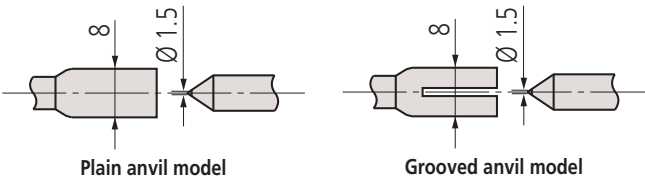
No.	Range [mm]	Accuracy	Remarks	Setting standard	a [mm]	Mass [g]	Price [€]
114-101	1-15	±4 µm	with groove	167-327 ø 5 mm	0.5	120	316.00
114-161	1-15	±4 µm	-	167-327 ø 5 mm	0.5	120	296.00
114-204	2.3-25	±4 µm	-	167-327 ø 5 mm	0.5	290	433.00
114-102	10-25	±4 µm	with groove	167-328 ø 10 mm	6.2	280	371.00
114-162	10-25	±4 µm	-	167-328 ø 10 mm	6.2	280	365.00
114-103	25-40	±5 µm	-	167-329 ø 25 mm	19.14	400	377.00
114-104	40-55	±6 µm	-	167-330 ø 40 mm	32.13	465	426.00
114-105	55-70	±6 µm	-	167-331 ø 55 mm	45.12	675	461.00
114-106	70-85	±7 µm	-	167-332 ø 70 mm	58.11	910	519.00
114-107	85-100	±7 µm	-	167-333 ø 85 mm	71.1	1160	576.00

114-204, 114-137: carbide-tipped anvil and spindle
others: carbide tipped spindle

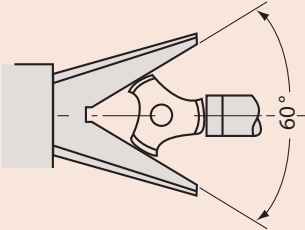
Metric For 5-flute cutting tools (108°)

No.	Range [mm]	Accuracy	Remarks	Setting standard	Mass [g]	Price [€]
114-121	5-25	±4 µm	with groove	167-327 ø 5 mm	255	425.00
114-165	5-25	±4 µm	-	167-327 ø 5 mm	255	411.00
114-137	2.3-25	±4 µm	-	167-327 ø 5 mm	220	474.00
114-122	25-45	±5 µm	-	167-329 ø 25 mm	400	590.00
114-123	45-65	±6 µm	-	167-331 ø 55 mm	540	625.00
114-124	65-85	±7 µm	-	167-332 ø 70 mm	760	786.00

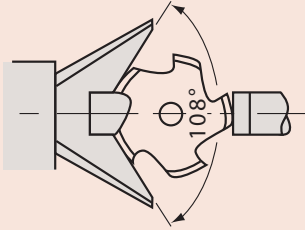
114-204, 114-137: carbide-tipped anvil and spindle
others: carbide tipped spindle



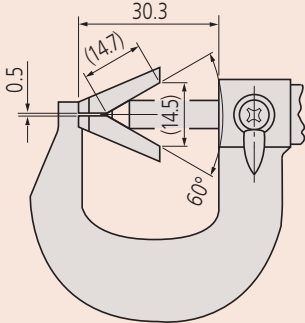
Specifications	
Accuracy	Refer to the list of specifications
Graduation	0.01 mm
Scale	Thimble and sleeve satin chrome finish, ø18 mm
Flatness	0,6 µm (spindle) 1,3 µm (anvil)
Measuring surfaces	Prism angle 60°/108°
Measuring spindle	With spindle lock, ø6,35 mm, spindle pitch 0,75 mm
Measuring force	5-10 N
Delivered	Including box, setting standard, key



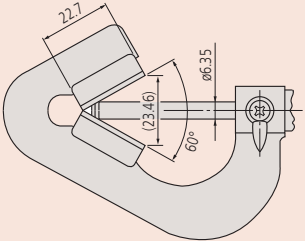
For 3-flute cutting tools



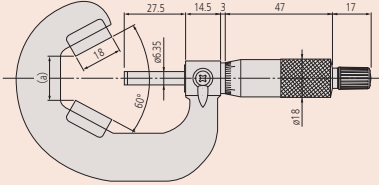
For 5-flute cutting tools



114-101/114-161



114-204



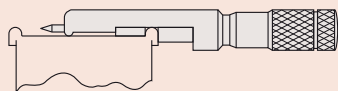
114-102 to 114-107

Series 147

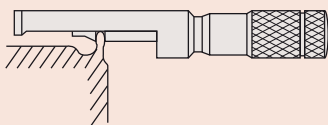
Accuracy	3 μm
Graduation	0.01mm
Scale	Thimble and sleeve satin chrome finish, ø13 mm
Delivered	Including box, key



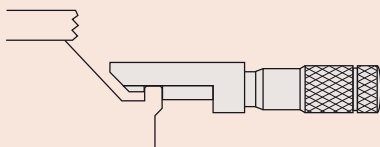
No.	Range [mm]	Remarks	Mass [g]	Price [€]
147-103	0-13	For steel cans	65	211.00
147-105	0-13	For aluminium cans	65	221.00
147-202	0-13	For spray cans	65	202.00



147-103 / 147-104
For steel cans



147-105 / 147-106
For aluminium cans



147-202 / 147-201
For spray cans



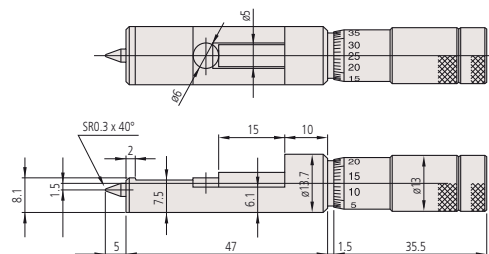
147-103



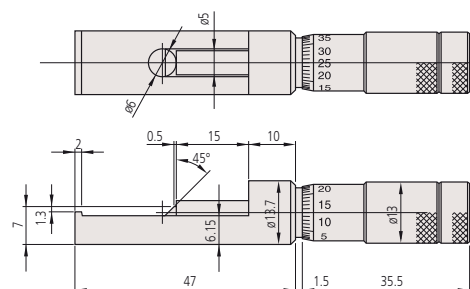
147-105



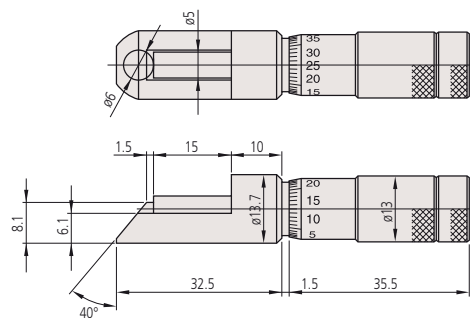
147-202



147-103 / 147-104



147-105 / 147-106



147-202 / 147-201

Wire Micrometer

Series 147

This Wire Micrometer takes easy, accurate measurements and offers the following benefits:

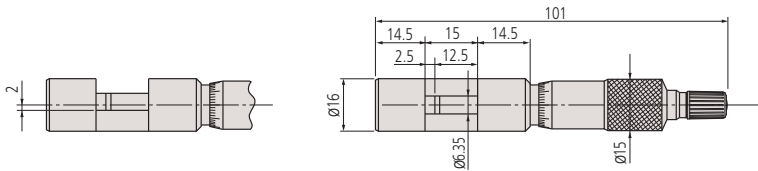
- Designed for measuring wire thickness.
- You can also use it to measure the diameter of small balls.



147-401

Metric

No.	Range [mm]	Accuracy	Mass [g]	Price [€]
147-401	0-10	±3 µm	65	217.00



Hub Micrometer

Series 147

This Hub Micrometer is designed with a very small throat depth, allowing you to measure hub thickness, shouldered features inside a bore and bearing bushings.



147-301

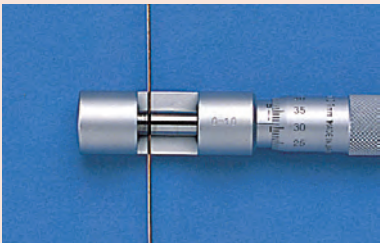
Metric

No.	Range [mm]	Accuracy	H [mm]	h1 [mm]	h2 [mm]	h3 [mm]	Mass [g]	Price [€]
147-301	0-25	±2 µm	17.5	6	8.5	13.5	135	244.00
147-302	25-50	±2 µm	20.5	6.5	11	14	150	263.00
147-303	50-75	±2 µm	20.5	6.5	11	13	170	327.00
147-304	75-100	±3 µm	20.5	6.5	11	13	185	368.00



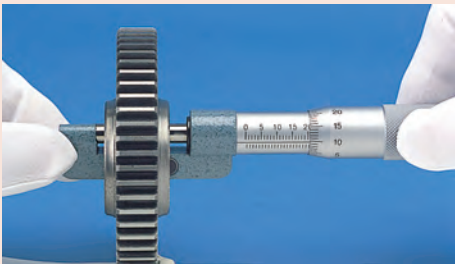
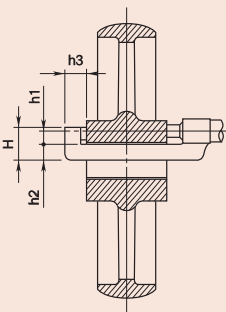
Specifications

Accuracy	Refer to the list of specifications
Graduation	0.01 mm
Scale	Thimble and sleeve satin chrome finish, Ø15 mm
Flatness	0,6 µm
Parallelism	1,3 µm
Measuring surfaces	Carbide tipped, micro-lap finish
Measuring spindle	Ø 6.35 mm, spindle pitch 0,5 mm
Measuring force	5-10 N
Delivered	Including box, key



Specifications

Accuracy	Refer to the list of specifications
Graduation	0.01 mm
Scale	Thimble and sleeve satin chrome finish, Ø18 mm
Flatness	0,6 µm
Parallelism	(2+L/100) µm L=max. range (mm)
Measuring surfaces	carbide-tipped, micro-lap finish
Measuring spindle	Ø6,35 mm, spindle pitch 0,5 mm
Measuring force	5-10 N
Delivered	Including box, setting standard (from 25 mm upward), key



Digimatic Micrometer Interchangeable Anvil Type

Series 317

This Digimatic Micrometer Interchangeable Anvil Type lets you measure a range of different features.

It offers the following benefits:

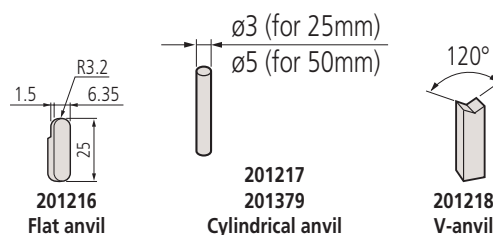
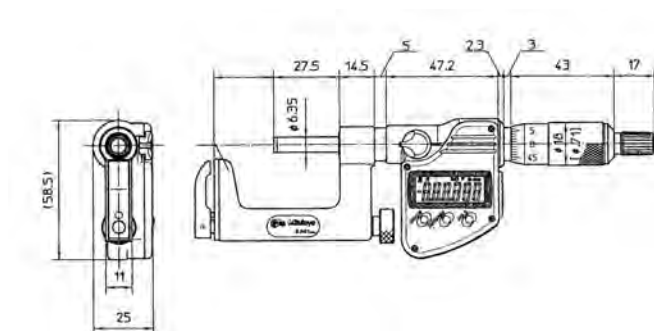
- It is designed to accept interchangeable anvils shaped for specific tasks.
- You can use it to measure the wall thickness of tubes, as well as openings and slots from edge to edge, and features in hard-to-reach locations.



317-251

Metric

No.	Range [mm]	Accuracy	Anvils included	Mass [g]	Price [€]
317-251	0-25	±4 µm	201217, 201216	335	556.00
317-252	25-50	±4 µm	201379, 201216	360	618.00



Functions	Series 317
ORIGIN	●
ZERO/ABS	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
HOLD	●
Data output	●

Specifications

Accuracy	Refer to the list of specifications (excluding quantizing error)
Digital step	0,001 mm
Scale	Thimble and sleeve satin chrome finish, ø18 mm
Flatness	0,6 µm (spindle) 2 µm (anvil)
Parallelism	3 µm
Measuring surfaces	Carbide tipped (spindle)
Measuring spindle	With spindle lock, ø6,35 mm, spindle pitch 0,5 mm
Measuring force	5-10 N
Battery life	approx. 1.2 years
Delivered	Including box, setting standard (from 25 mm upward), key, 1 battery, anvils

Optional accessories

No.	Description	Price €
05CZA662	Digimatic cable with data switch (1 m)	73.50
05CZA663	Digimatic cable with data switch (2 m)	82.50
02AZD790B	Connecting cable U-Wave with data switch	95.00
06ADV380B	USB Input Tool Direct cable with data switch (2 m)	115.00
950758	Round platten (only for measuring range 0-25)	108.00
950759	Round platten (only for measuring range 25-50)	
201218	V-anvil	21.00

Consumable spares

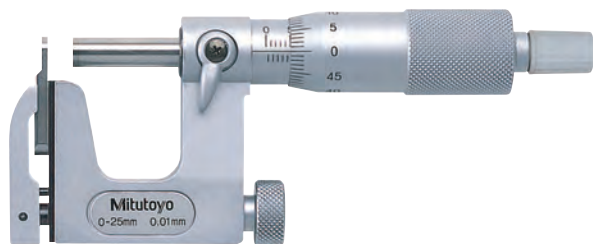
No.	Description	Price €
938882	Battery SR44	5.50
201217	Cylindrical anvil ø 3	4.50
201379	Cylindrical anvil ø 5	4.50
201216	Flat anvil	26.00



950758 with micrometer

Series 117

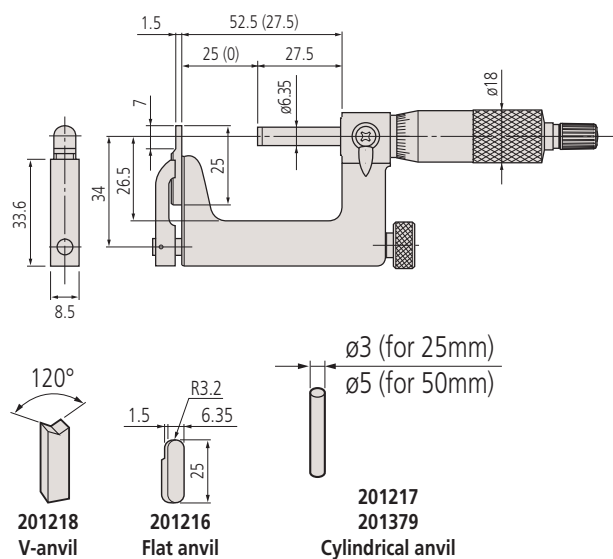
- It is designed to accept interchangeable anvils shaped for specific tasks.
- You can use it to measure the wall thickness of tubes, as well as openings and slots from edge to edge, and features in hard-to-reach locations.



117-101

Metric

No.	Range [mm]	Accuracy	Anvils included	Mass [g]	Price [€]
117-101	0-25	±4 µm	201217, 201216	255	260.00
117-102	25-50	±4 µm	201379, 201216	320	327.00



Specifications

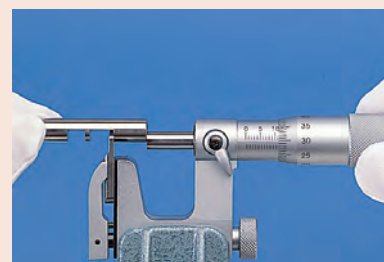
Accuracy	Refer to the list of specifications
Graduation	0.01 mm
Scale	Thimble and sleeve satin chrome finish, \varnothing 18 mm
Flatness	0,6 μ m (spindle) 2 μ m (anvil)
Parallelism	3 μ m
Measuring surfaces	Carbide tipped (spindle)
Measuring spindle	With spindle lock, \varnothing 6,35 mm, spindle pitch 0,5 mm
Measuring force	5-10 N
Delivered	Including box, setting standard (from 25 mm upward), key, anvils

Optional accessories

No.	Description	Price €
950758	Round platten (only for measuring range 0-25)	108.00
950759	Round platten (only for measuring range 25-50)	
201218	V-anvil	21.00

Consumable spares

No.	Description	Price €
201217	Cylindrical anvil ø 3	4.50
201379	Cylindrical anvil ø 5	4.50
201216	Flat anvil	26.00



950758 with micrometer

Limit Micrometer

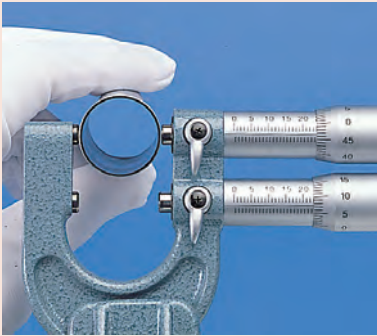
Series 113

This Limit Micrometer offers the following benefits:

- Spindle and Anvil with chamfered edge.
- You can use it as a GO/±NG gauge by setting the upper and lower limits of dimension.

Specifications

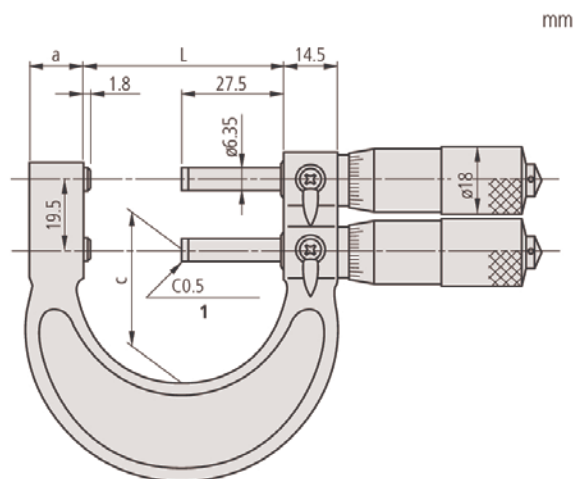
Accuracy	Refer to the list of specifications
Graduation	0.01 mm
Scale	Thimble and sleeve satin chrome finish, ø18 mm
Flatness	0,6 µm
Parallelism	(3+L/100) µm, L = max. range (mm)
Measuring surfaces	Carbide tipped with chamfer micro-lap finish
Measuring spindle	With spindle lock, Ø 6,35 mm, spindle pitch 0,5 mm
Measuring force	5-10 N
Delivered	Including box, setting standard (from 25 mm upward), key



113-102

Metric

No.	Range [mm]	Accuracy	L [mm]	a [mm]	c [mm]	Mass [g]	Price [€]
113-102	0-25	±3 µm	29.3	15	23	340	371.00
113-103	25-50	±3 µm	54.3	15	37	380	444.00

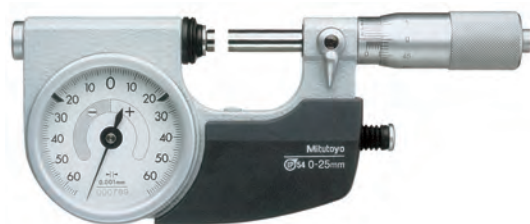


Indicating Micrometer

Series 510

This is a Micrometer screw with a dial comparator that enables you to take fast and highly accurate measurements. It offers the following benefits:

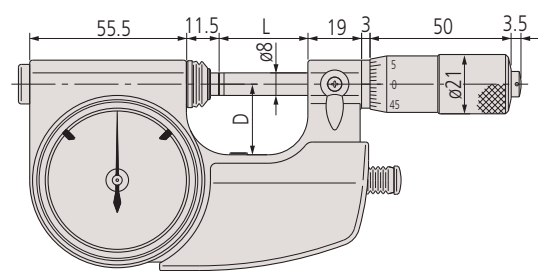
- A self-setting micrometer gauge lets you take rapid measurement of workpieces, especially cylindrical shapes, in batch or mass production situations.
- In the 25mm measuring range, the model line-up offers a choice of having the anvil retraction button positioned on the left or the right.
- Large dial comparator for easy reading ($\pm 0.06\text{mm}$).
- Tolerance markers for GO/NG measurements.
- 8mm spindle diameter gives you easy positioning and highly accurate measurements.



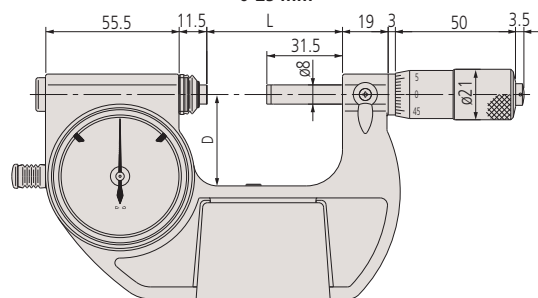
510-121

Metric

No.	Range [mm]	Anvil retracting stroke	Indicating range	Operating button	L [mm]	D [mm]	Mass [g]	Price [€]
510-121	0-25	2 mm	$\pm 0,060$ mm	Right	31.5	25	520	659.00
510-141	0-25	2 mm	$\pm 0,060$ mm	Left	31.5	25	520	659.00
510-122	25-50	2 mm	$\pm 0,060$ mm	Left	56.5	38	670	742.00
510-123	50-75	2 mm	$\pm 0,060$ mm	Left	81.5	50	820	901.00
510-124	75-100	2 mm	$\pm 0,060$ mm	Left	106.5	63	970	958.00



0-25 mm



25-100 mm



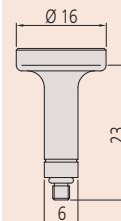
Specifications

Graduation	0.001 mm
Graduation dial comparator	0,001 mm
Accuracy micrometer	2 μm
Accuracy dial comparator	1 μm
Scale	Thimble and sleeve satin chrome finish, $\varnothing 21$ mm
Flatness	0,3 μm
Parallelism	0,6 μm for models up to 50 mm 1 μm for models over 50 mm
Measuring surfaces	carbide-tipped, micro-lap finish, $\varnothing 8$ mm
Measuring force	5-10 N
Delivered	Including box, key

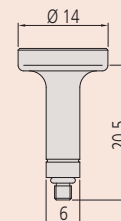
Optional accessories

No.	Description	Price €
04AZA124	$\varnothing 16$ workpiece stop A	13.50
04AZA125	$\varnothing 14$ workpiece stop B	13.50
04AZA126	$\varnothing 14$ workpiece stop C	13.50

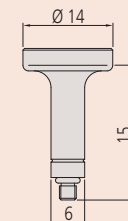
Measuring range mm	Nr.	Diameter range of workpiece supported		
		A \varnothing mm	B \varnothing mm	C \varnothing mm
0- 25	510-121	—	4-16	15- 25
25- 50	510-122	25-37	30-42	41- 50
50- 75	510-123	50-61	54-66	65- 75
75-100	510-124	75-87	80-92	91-100



04AZA124
Workpiece stop A



04AZA125
Workpiece stop B



04AZA126
Workpiece stop C



Adjusting screw for dial comparator $\pm 5 \mu\text{m}$

Specifications

Graduation dial comparator	0,001 mm
Accuracy dial comparator	1 µm
Flatness	0,3 µm
Parallelism	0,6 µm for models up to 50 mm 1 µm for models over 50 mm
Measuring surfaces	Carbide tipped, micro-lap finish ø 10.8 mm
Measuring force	5-10 N
Delivered	Including box, workpiece rest



Indicating Snap Gauge

Series 523

This Snap Gauge designed to mount an indicator to suit the measurement application, and offers the following benefits:

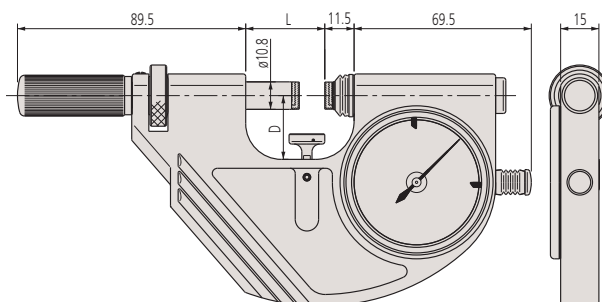
- It's ideal for rapidly inspecting workpieces, especially cylindrical, in batch or mass production situations, when you need an indication of where a measurement falls within the tolerance band.
- You can set it with external length standards such as block gauges.
- Easy-to-operate retracting button.



523-121

Metric

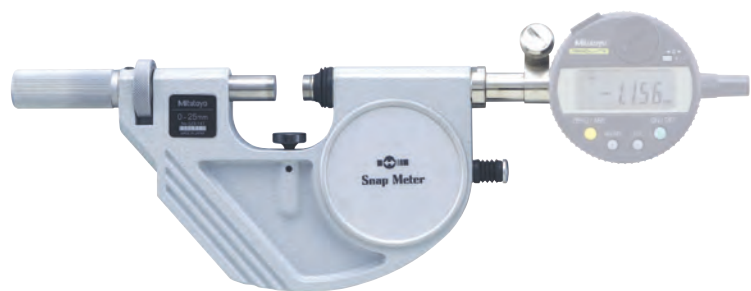
No.	Range [mm]	Anvil retracting stroke	Indicating range	L [mm]	D [mm]	Mass [g]	Price [€]
523-121	0-25	2 mm	±0,060 mm	31	25	740	546.00
523-122	25-50	2 mm	±0,060 mm	56	35	840	628.00
523-123	50-75	2 mm	±0,060 mm	81	47.5	950	690.00
523-124	75-100	2 mm	±0,060 mm	106	60	1080	762.00



Snap Gauge

Series 523

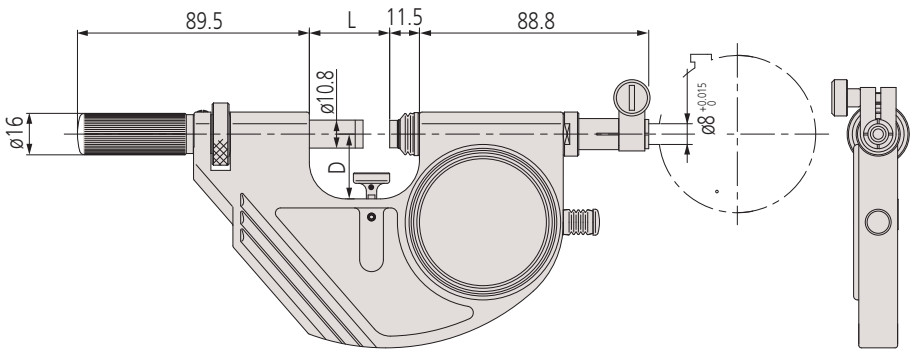
- Designed to mount an indicator to suit the measurement application.
- Suitable for rapid inspection of workpieces, especially cylindrical, in batch or mass production situations when an indication of where a measurement falls within the tolerance band is desirable.
- Settable with external length standards such as block gauges.
- Easy-to-operate retracting button.



523-141
(Indicator: optional)

Metric

No.	Range [mm]	Anvil retracting stroke	Repeatability [μm]	L [mm]	D [mm]	Mass [g]	Price [€]
523-141	0-25	2 mm	0.4	31	25	710	458.00
523-142	25-50	2 mm	0.4	56	35	810	530.00
523-143	50-75	2 mm	0.4	81	47.5	920	582.00
523-144	75-100	2 mm	0.4	106	60	1050	644.00



Sample application:
with dial indicator



Sample application:
with digital indicator



Sample application:
with Linear Gauge

Specifications

Flatness	0,3 μm
Parallelism	0,6 μm for models up to 50 mm 1 μm for models over 50 mm
Measuring surfaces	carbide-tipped, micro-lap finish, Ø 10,8 mm
Optional accessories	See dial gauges section
Measuring force	5-10 N
Delivered	Including box, workpiece rest, without indicator

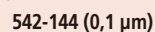
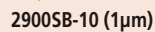
Series 107

Accuracy	Refer to the list of specifications
Graduation	0,01 mm
Anvil retracting stroke	3 mm
Scale	Thimble and sleeve satin chrome finish, $\varnothing 18$ mm
Flatness	0.6 μ m
Parallelism	$(2+L/100)$ μ m (mm) L = max. range
Measuring surfaces	carbide-tipped, micro-lap finish
Measuring spindle	With spindle lock, $\varnothing 6.35$ mm, spindle pitch 0.5 mm
Measuring force	5-10 N
Delivered	Including box, setting standard (from 25 mm upward), key



107-201 with optional dial indicator

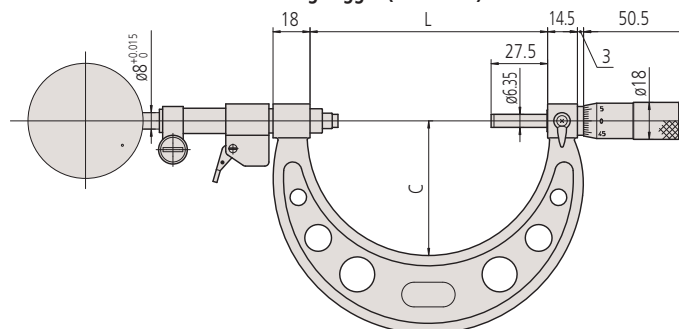
No.	Range [mm]	Accuracy	L [mm]	C [mm]	Mass [g]	Price [€]
107-201	0-25	±2 μm	39.5	30	480	345.00
107-202	25-50	±2 μm	64.5	38	520	386.00
107-203	50-75	±2 μm	90	45	585	407.00
107-204	75-100	±3 μm	115.6	65	630	417.00
107-205	100-125	±3 μm	140.6	79	725	427.00
107-206	125-150	±3 μm	165.6	93	810	443.00
107-207	150-175	±4 μm	190.5	105	1050	464.00
107-208	175-200	±4 μm	215.5	120	1170	484.00



Technical drawing of a mechanical part, likely a bracket or support, showing dimensions and labels. The drawing includes a side view and a top view. Key dimensions and labels are:

- Overall length: 50.5
- Distance from left end to center of hole: 28.5
- Distance from center of hole to right end: 14.5
- Distance from center of hole to center of hole: 27.5
- Distance from center of hole to right end: 3
- Overall width: 1.8
- Inner width: 0.35
- Labels: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

1: dial indicator - 2: retracting trigger (0 - 50 mm)



50 - 200 mm

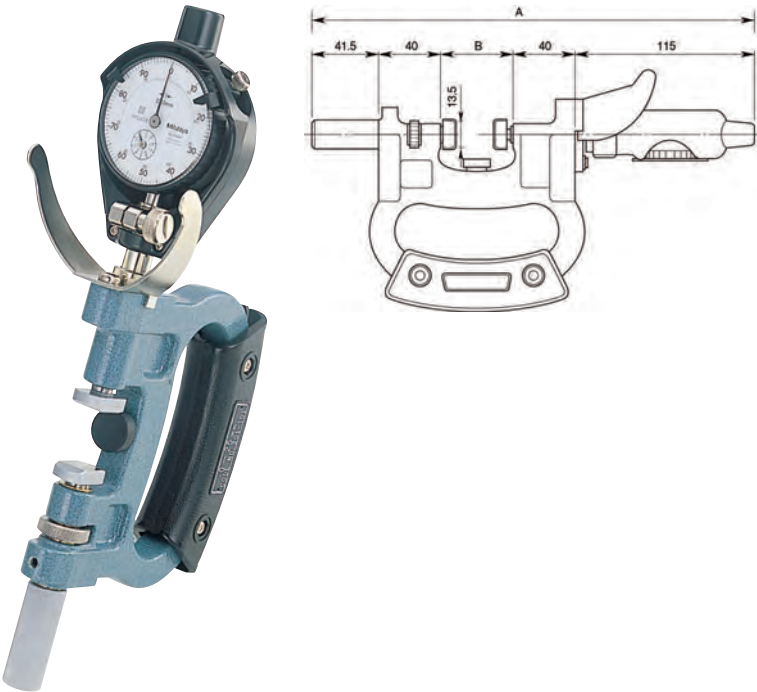
Dial Snap Gauges

Series 201

These Dial Snap Gauges are designed to let you quickly carry out GO/NG judgement of the diameters of cylinders and shafts in machining processes.

They offer the following benefits:

- Wide, flat carbide anvils.
- 2mm anvil retracting stroke.
- You can adjust the measuring range with an adjustment nut.



Metric

No.	Range [mm]	A [mm]	B [mm]	Mass [g]	Price [€]
201-101	0-25	277	42	680	395.00
201-102	25-50	302	67	730	410.00
201-103	50-75	328	93	780	424.00
201-104	75-100	353	118	870	433.00
201-105	100-125	379	144	950	455.00
201-106	125-150	404	169	1000	479.00
201-107	150-175	429	194	1100	502.00
201-108	175-200	455	220	1200	525.00
201-109	200-225	480	245	1340	548.00
201-110	225-250	506	271	1540	572.00
201-111	250-275	531	296	1750	594.00
201-112	275-300	556	321	2050	617.00



Specifications

Accuracy	Refer to the list of specifications
Recommended dial indicator (optional)	2046SB (0,01 mm reading), 2109SB-10 (0,001 mm reading)
Anvil retracting stroke	2 mm
Anvil positioning range	25 mm
Flatness	1 µm
Parallelism	5 µm
Measuring force	15 N
Delivered	Including hand guard Adjustable workpiece stop Suitable for dial indicators with ø 8 mm stem (metric)

Optional accessories

No.	Description	Price €
2972	One Revolution Dial Indicator	51.50
2046SB	Dial Indicator 10µm	31.50
2109SB-10	Dial Indicator 1µm	85.00
21DZA000	Protector for dial indicator	12.50

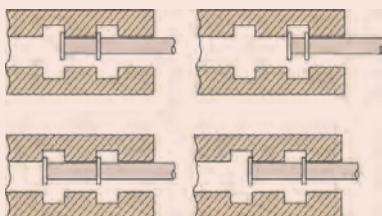
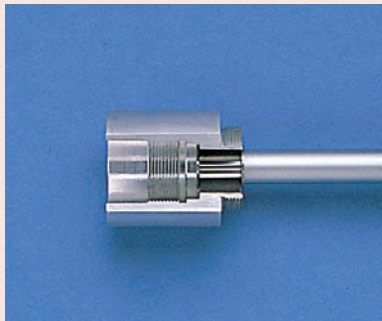


201-101 with holder 156-101 and dial indicator

Delivered without dial indicator and without holder

Specifications

Accuracy	±10 μm
Graduation	0.01
Scale	Thimble and sleeve satin chrome finish, ø18 mm
Parallelism	10 μm
Measuring surfaces	hardened
Measuring spindle	Spindle pitch 0,5 mm
Ratchet	Can be used in both directions
Delivered	Including box, key



Internal Groove Micrometer

Series 146

This Internal Groove Micrometer is designed to measure the width and location of grooves cut into bore walls.

It offers the following features:

- Two-directional ratchet stop.
- Non-rotating spindle models are also available.



Metric

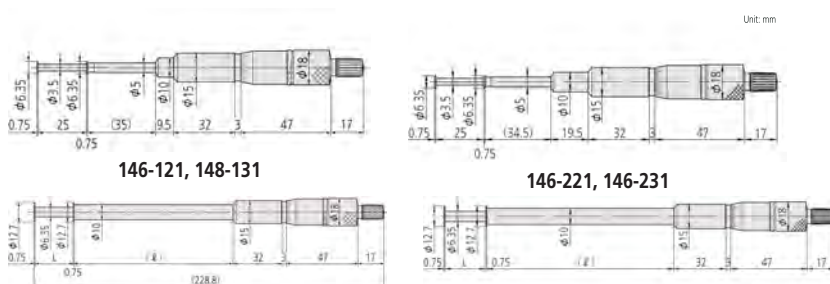
Non-rotating spindle type

No.	Range Outside	Range Inside	Diameter of measuring plate [mm]	l [mm]	L [mm]	Mass [g]	Price [€]
146-221	0-25 mm	1.6-26.5 mm	6.35			135	423.00
146-222	0-25 mm	1.6-26.5 mm	12.7	115	25	185	476.00
146-223	25-50 mm	26.5-51.5 mm	12.7	90	50	175	505.00
146-224	50-75 mm	51.5-76.5 mm	12.7	65	75	165	534.00
146-225	75-100 mm	76.5-101.5 mm	12.7	40	100	160	569.00

Metric

Rotating spindle type

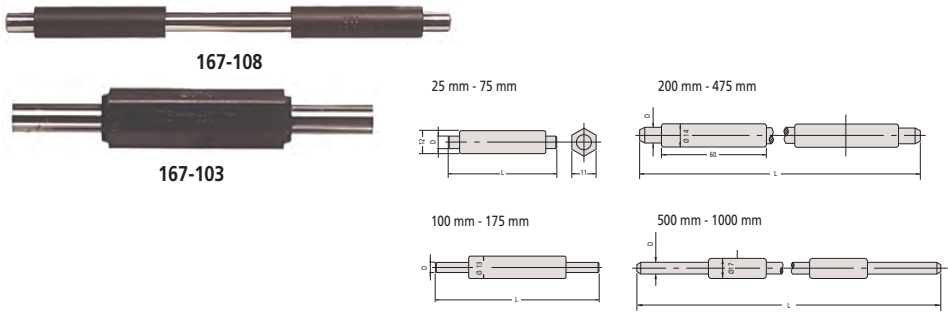
No.	Range Outside	Range Inside	Diameter of measuring plate [mm]	l [mm]	L [mm]	Mass [g]	Price [€]
146-121	0-25 mm	1.6-26.5 mm	6.35			135	258.00
146-122	0-25 mm	1.6-26.5 mm	12.7	103.3	25	185	358.00
146-123	25-50 mm	26.5-51.5 mm	12.7	78.3	50	175	358.00
146-124	50-75 mm	51.5-76.5 mm	12.7	53.3	75	165	378.00
146-125	75-100 mm	76.5-101.5 mm	12.7	28.3	100	160	403.00



Micrometer Setting Standards ≤ 1000 mm

Series 167

This Micrometer Setting Standards 1000mm lets you accurately set outside micrometers at either end of the measuring range.



Metric

No.	Length (L) [mm]	Accuracy	Diameter (D) [mm]	Price [€]
167-101	25	±1.5 μm	6.35	23.50
167-102	50	±2.0 μm	6.35	24.50
167-103	75	±2.5 μm	6.35	25.50
167-104	100	±3.0 μm	7.9	27.00
167-105	125	±3.5 μm	7.9	28.50
167-106	150	±4.0 μm	7.9	30.50
167-107	175	±4.5 μm	7.9	33.00
167-108	200	±5.0 μm	9.4	37.50
167-109	225	±5.5 μm	9.4	41.50
167-110	250	±6.0 μm	9.4	45.50
167-111	275	±6.5 μm	9.4	51.50
167-112	300	±7.0 μm	9.4	57.00
167-113	325	±7.5 μm	9.4	62.00
167-114	350	±8.0 μm	9.4	72.50
167-115	375	±8.5 μm	9.4	77.50
167-116	400	±9.0 μm	9.4	88.00
167-117	425	±9.5 μm	9.4	93.00
167-118	450	±10.0 μm	9.4	103.00
167-119	475	±10.5 μm	9.4	118.00
167-120	500	±11.0 μm	11.9	124.00
167-121	525	±11.5 μm	11.9	134.00
167-122	550	±12.0 μm	11.9	139.00
167-123	575	±12.5 μm	11.9	149.00
167-124	600	±13.0 μm	11.9	160.00
167-125	625	±13.5 μm	11.9	175.00
167-126	650	±14.0 μm	11.9	185.00
167-127	675	±14.5 μm	11.9	196.00
167-128	700	±15.0 μm	11.9	206.00
167-129	725	±15.5 μm	11.9	216.00
167-130	750	±16.0 μm	11.9	221.00
167-131	775	±16.5 μm	11.9	232.00
167-132	800	±17.0 μm	11.9	247.00
167-133	825	±17.5 μm	11.9	258.00
167-134	850	±18.0 μm	11.9	278.00
167-135	875	±18.5 μm	11.9	283.00
167-136	900	±19.0 μm	11.9	304.00
167-137	925	±19.5 μm	11.9	309.00
167-138	950	±20.0 μm	11.9	330.00
167-139	975	±20.5 μm	11.9	340.00
167-140	1000	±21.0 μm	11.9	438.00

Metric

Sets

No.	Length (L) [mm]	Number of standards	Price [€]
167-902	25-125	5	113.00
167-903	25-275	11	330.00

Specifications

Accuracy	Refer to the list of specifications (Tolerance on deviation of measured central length from nominal at 20°C.)
Flatness	0.3 μm
Parallelism	2 μm
Measuring surfaces	micro-lap finish



Micrometer Setting Standards > 1000 mm

Specifications

Accuracy	$\pm(1+L/50) \mu\text{m}$
Flatness	$0.3 \mu\text{m}$
Parallelism	$2 \mu\text{m}$
Measuring surfaces	Micro-lap finish

Series 167

This Micrometer Setting Standards 1000mm lets you accurately set outside micrometers at either end of the measuring range.



Metric

No.	Length (L) [mm]	Diameter (D) [mm]	Price [€]
167-365	1025	11.9	464.00
167-366	1050	11.9	474.00
167-367	1075	11.9	484.00
167-368	1100	11.9	505.00
167-369	1125	11.9	515.00
167-370	1150	11.9	520.00
167-371	1175	11.9	530.00
167-372	1200	11.9	536.00
167-373	1225	11.9	556.00
167-374	1250	11.9	567.00
167-375	1275	11.9	582.00
167-376	1300	11.9	592.00
167-377	1325	11.9	603.00
167-378	1350	11.9	608.00
167-379	1375	11.9	628.00
167-380	1400	11.9	649.00
167-381	1425	11.9	659.00
167-382	1450	11.9	670.00
167-383	1475	11.9	680.00
167-384	1500	11.9	695.00
167-385	1525	11.9	706.00
167-386	1550	11.9	716.00
167-387	1575	11.9	726.00
167-388	1600	11.9	742.00
167-389	1625	11.9	752.00
167-390	1650	11.9	762.00
167-391	1675	11.9	783.00
167-392	1700	11.9	793.00
167-393	1725	11.9	803.00
167-394	1750	11.9	814.00
167-395	1775	11.9	824.00
167-396	1800	11.9	834.00
167-397	1825	11.9	845.00
167-398	1850	11.9	855.00
167-399	1875	11.9	876.00
167-400	1900	11.9	886.00
167-401	1925	11.9	896.00
167-402	1950	11.9	906.00
167-403	1975	11.9	917.00
167-404	2000	11.9	937.00

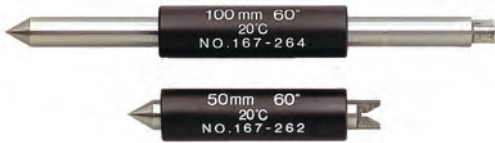
Setting Standards for Screw Thread Micrometers

Series 167

These Setting Standards are specially designed to allow you to accurately set Screw Thread Micrometers.

Metric		Angle 55°	
No.	Accuracy	Length [mm]	Price [€]
167-272	±4 µm	25	50.50
167-273	±5 µm	50	57.00
167-274	±6 µm	75	69.50
167-275	±7 µm	100	77.50
167-276	±8 µm	125	88.00
167-277	±9 µm	150	88.00
167-278	±10 µm	175	105.00
167-279	±11 µm	200	105.00
167-280	±12 µm	225	109.00
167-281	±13 µm	250	109.00
167-282	±14 µm	275	113.00

Metric		Angle 60°	
No.	Accuracy	Length [mm]	Price [€]
167-261	±4 µm	25	50.50
167-262	±5 µm	50	57.00
167-263	±6 µm	75	69.50
167-264	±7 µm	100	77.50
167-265	±8 µm	125	88.00
167-266	±9 µm	150	88.00
167-267	±10 µm	175	105.00
167-268	±11 µm	200	105.00
167-269	±12 µm	225	109.00
167-270	±13 µm	250	109.00
167-271	±14 µm	275	113.00



Setting Standards for V-Anvil Micrometers

Series 167

These Setting Standards are designed so you can accurately set V-Anvil Micrometers.

Metric			
No.	Accuracy	Length [mm]	Price [€]
167-327	±2 µm	5 mm	48.50
167-328	±2 µm	10 mm	53.00
167-329	±2 µm	25 mm	80.50
167-330	±3 µm	40 mm	136.00
167-331	±3 µm	55 mm	190.00
167-332	±3 µm	70 mm	237.00
167-333	±3 µm	85 mm	280.00



167-329



Specifications

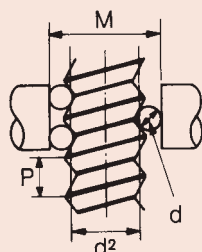
Accuracy	Refer to the list of specifications
----------	-------------------------------------

Specifications

Accuracy	Refer to the list of specifications
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Specifications

Accuracy wires	DIN 2269, Grade 1
Tolerance wires	±1 µm
Contents	18 pairs of wires ø 0,170 mm up to ø 3,200 mm
Delivered	Sets including wooden box



P = thread pitch
 d_0 = measuring wire Ø
 d_2 = pitch diameter
 M = theoretical dimension at measuring pressure δ
 α = pitch angle
 δ = correction factor

$$M = d_2 + \frac{d_0}{\sin \frac{\alpha}{2}} - \frac{P}{2 \tan \frac{\alpha}{2}} + d_0 + \delta$$

$$\delta = \frac{d_0}{2} \cdot \frac{P^2}{\pi^2} \cdot \frac{\cos \frac{\alpha}{2} \cdot \cot \frac{\alpha}{2}}{d_2^2}$$

ø Nominal	Thread pitch P	Pitch ø d2	Measuring wire ø d0	Measurement over wire M	(M-d2)
M 1	0,25	0,838	0,170	1,133	0,295
M 1,2	0,25	1,038	0,170	1,332	0,294
M 1,4	0,30	1,205	0,170	1,456	0,251
M 1,7	0,35	1,473	0,220	1,831	0,358
M 2	0,40	1,740	0,250	2,145	0,405
M 2,3	0,40	2,040	0,250	2,444	0,404
M 2,6	0,45	2,308	0,290	2,789	0,481
M 3	0,50	2,675	0,290	3,113	0,438
M 3,5	0,60	3,110	0,335	3,596	0,486
M 4	0,70	3,545	0,455	4,305	0,760
M 5	0,80	4,480	0,455	5,153	0,673
M 6	1,00	5,350	0,620	6,346	0,996
M 8	1,25	7,188	0,725	8,282	1,094
M 10	1,50	9,026	0,895	10,414	1,388
M 12	1,75	10,863	1,100	12,650	1,787

ø Nominal	Thread pitch P	Pitch ø d2	Measuring wire ø d0	Measurement over wire M	(M-d2)
M 14	2,00	12,701	1,350	15,021	2,320
M 16	2,00	14,701	1,350	17,021	2,320
M 20	2,50	18,376	1,650	21,163	2,787
M 22	2,50	20,376	1,650	23,163	2,787
M 24	3,00	22,051	2,050	25,606	3,555
M 27	3,00	25,051	2,050	28,605	3,554
M 30	3,50	27,727	2,050	30,848	3,121
M 33	3,50	30,727	2,050	33,848	3,121
M 36	4,00	33,402	2,550	37,591	4,189
M 39	4,00	36,402	2,550	40,590	4,188
M 42	4,50	39,077	2,550	42,832	3,755
M 45	4,50	42,077	2,550	45,832	3,755
M 48	5,00	44,752	3,200	50,025	5,273
M 52	5,00	48,752	3,200	54,024	5,272
M 56	5,50	52,428	3,200	57,267	4,839
M 60	5,50	56,428	3,200	61,267	4,839

Unit: mm

3-Wire Measuring Process

Series 313

This three-wire measuring process is one of the most precise procedures for determining the pitch diameter of threads. It offers you the following benefits:

- The measuring wires are hardened and precision-lapped.
- They are placed onto the spindle and anvil of an outside micrometer, allowing you to measure the pitch diameter of threads.



313-101

1) Wire in set

No.	Spindle diameter [mm]	Price [€]
313-101	6.35	1,700.00
313-102	8	

Details of N° 313-101

Wire delivered by pair for ø 6,35

No.	Measuring wire ø [mm]	Price [€]
952131	0.17	101.00
952132	0.195	101.00
952133	0.22	101.00
952134	0.25	101.00
952135	0.29	101.00
952136	0.335	101.00
952137	0.39	101.00
952138	0.455	101.00
952139	0.53	101.00
952140	0.62	101.00
952141	0.725	101.00
952142	0.895	101.00
952143	1.1	101.00
952144	1.35	101.00
952145	1.65	101.00
952146	2.05	101.00
952147	2.55	101.00
952148	3.2	101.00

Details of N° 313-102

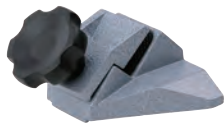
Wire delivered by pair for ø 8

No.	Measuring wire ø [mm]	Price [€]
952149	0.17	101.00
952150	0.195	101.00
952151	0.22	101.00
952152	0.25	101.00
952153	0.29	101.00
952154	0.335	101.00
952155	0.39	101.00
952156	0.455	101.00
952157	0.53	101.00
952158	0.62	101.00
952159	0.725	101.00
952160	0.895	101.00
952161	1.1	101.00
952162	1.35	101.00
952163	1.65	101.00
952164	2.05	101.00
952165	2.55	101.00
952166	3.2	101.00

Micrometer Stands

Series 156

- Keeps both hands free for operating the micrometer and positioning the workpiece.
- Designed for batch or mass production measurements in manufacturing and quality assurance.



156-105-10

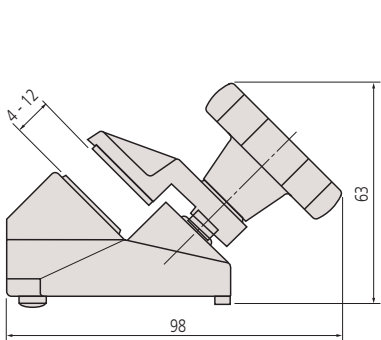


156-101-10

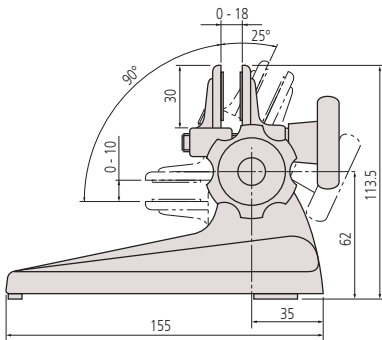


156-102

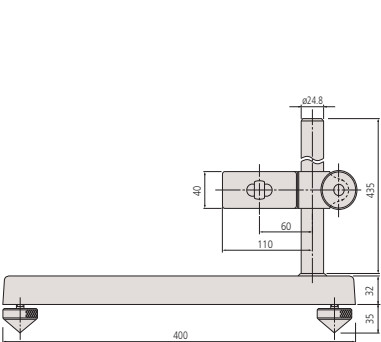
No.	Micrometer ranges	Remarks	Mass [g]	Price [€]
156-105-10	0-50 mm	Fixed angle type 45°	700	42.50
156-101-10	0 - 100 mm	Adjustable angle type	1210	54.00
156-102	100-300 mm	Vertical type	9000	505.00
156-103	300-1000 mm	Vertical type	8500	948.00



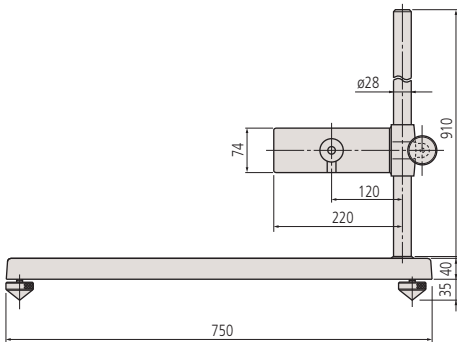
156-105-10



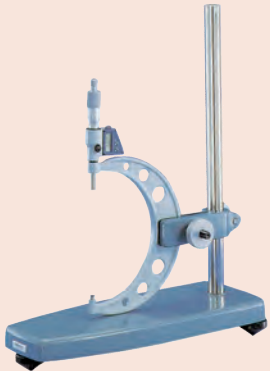
156-101-10



156-102



156-103



Colour Coded Ratchets and Speeders

Micrometer accessories



Colour-coded ratchets



Colour-coded speeders for Ratchet Thimble
Micrometer series 102-7XX and QuantuMike
Series 293



Colour-coded ratchets for analogue micrometer 0-300 mm

No.	Colour	Price [€]
985056	Black	7.50
985061	Red	7.50
985081	Blue	7.50
985071	Yellow	7.50
985076	Green	7.50
985066	Brown	7.50
04GZA239	Grey	5.50

Colour-coded ratchets for analogue micrometer 300-1000 mm

No.	Colour	Price [€]
04GZA243	Grey	5.50

Colour-coded speeders for digital micrometer 0-300 mm

No.	Colour	Price [€]
04GZA241	Grey	5.50

Colour-coded speeders for series 102-7XX and QuantuMike

No.	Colour	Price [€]
04AAB208	Grey	4.00
04GAA899	Black	4.00
04GAA900	Red	4.00
04GAA901	Yellow	4.00
04GAA902	Green	4.00
04GAA903	Blue	4.00

Micrometer Oil

Micrometer accessory

- Lubricates measuring instruments
- Lubricates spindle of micrometer
- Acid and resing free

No.	Remarks	Price [€]
207000D	500 ml spray	24.00

Spindle attachment tips

Micrometer accessories

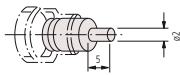
These spindle attachment tips give you an economical way to adapt a micrometer spindle for different tasks.

They offer the following benefits:

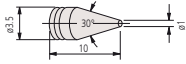
- You can use the tips on a micrometer spindle as an economical adaptation for particular measurement applications.
- They can also be mounted on micrometer anvils \varnothing 6.35mm.
- The measuring range changes when a spindle attachment tip is mounted.



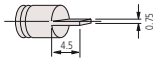
No.	Description	Price [€]
208062	Spline	36.50
208063	Spherical	36.50
208064	Knife edge	36.50
208065	Knife edge	36.50
208066	Tray	39.50



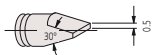
208062



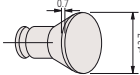
208063



208064



208065



208066

Ball attachment

Micrometer accessories

- Ball attachment to fit micrometer anvils (\varnothing 6,35 mm only)



Sample application

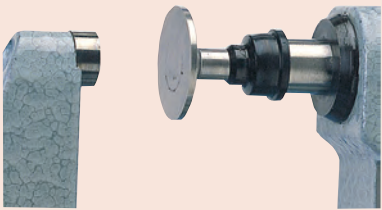
101468M

Metric

No.	\varnothing ball [mm]	Price [€]
101468M	5	31.00

Specifications

Tip length	10 mm \pm 5 μ m
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208066

Specifications

Flatness	0.1 μm
Parallelism	0.2 μm
Diameter	30 mm



Optical parallels

Series 157

These Optical Parallels allow you to inspect micrometers and other measuring tools.

They offer the following benefits:

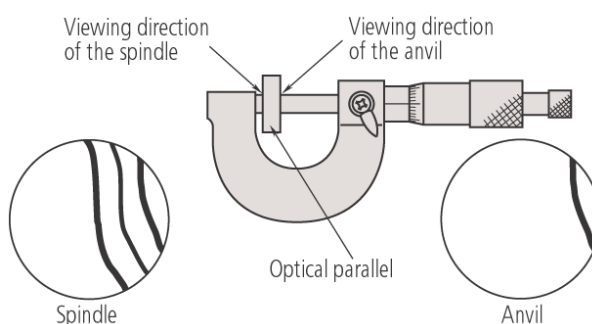
- Using optical interference, they can inspect the measuring faces of micrometers for parallelism and flatness.
- Each set consists of 4 sizes designed for testing at each quarter revolution.



157-903

Metric

No.	Contents	Range of micrometer to be checked	Sizes of parallels included in set	Price [€]
157-903	157-101	0-25 mm	12 mm	464.00
	157-102		12,12 mm	
	157-103		12,25 mm	
	157-104		12,37 mm	
157-904	157-105	25-50 mm	25 mm	690.00
	157-106		25,12 mm	
	157-107		25,25 mm	
	157-108		25,37 mm	



Testing a micrometer for flatness and parallelism of anvil and spindle faces : flatness is indicated by straightness and regular spacing of interference fringes, and parallelism by how many fringes are visible.

Optical flats

Series 158

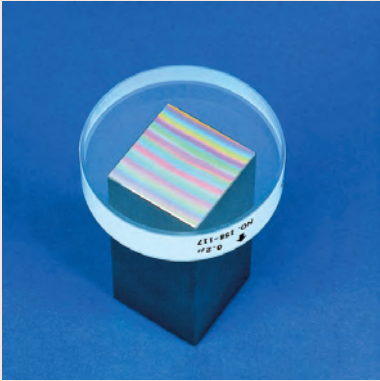
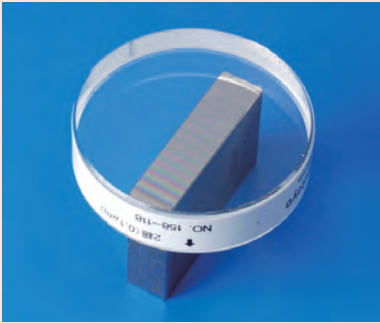
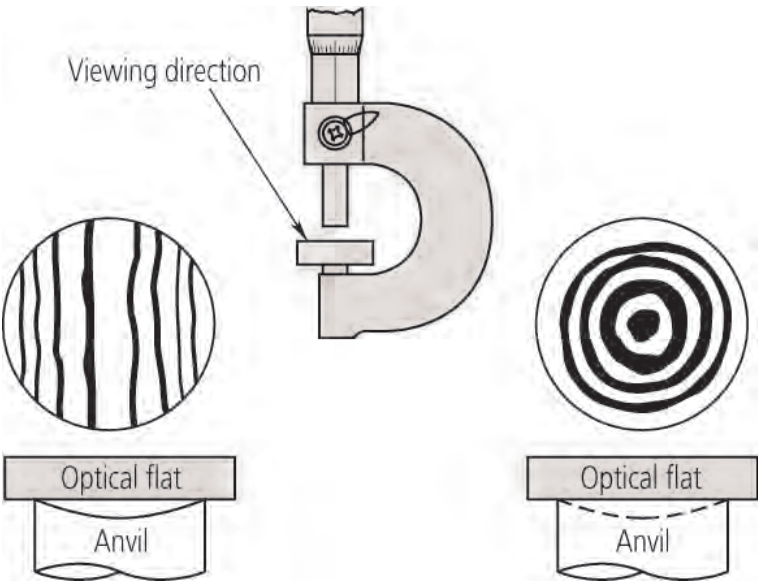
These optical flats are an essential tool for you to test the flatness of reflective surfaces such as gauge blocks and setting standards, through optical interference technology.



158-118

Metric

No.	Flatness	Diameter/Thickness	Price [€]
158-117	0,2 μm	45 mm/12 mm	268.00
158-119	0,2 μm	60 mm/15 mm	373.00
158-118	0,1 μm	45 mm/12 mm	327.00
158-120	0,1 μm	60 mm/15 mm	478.00



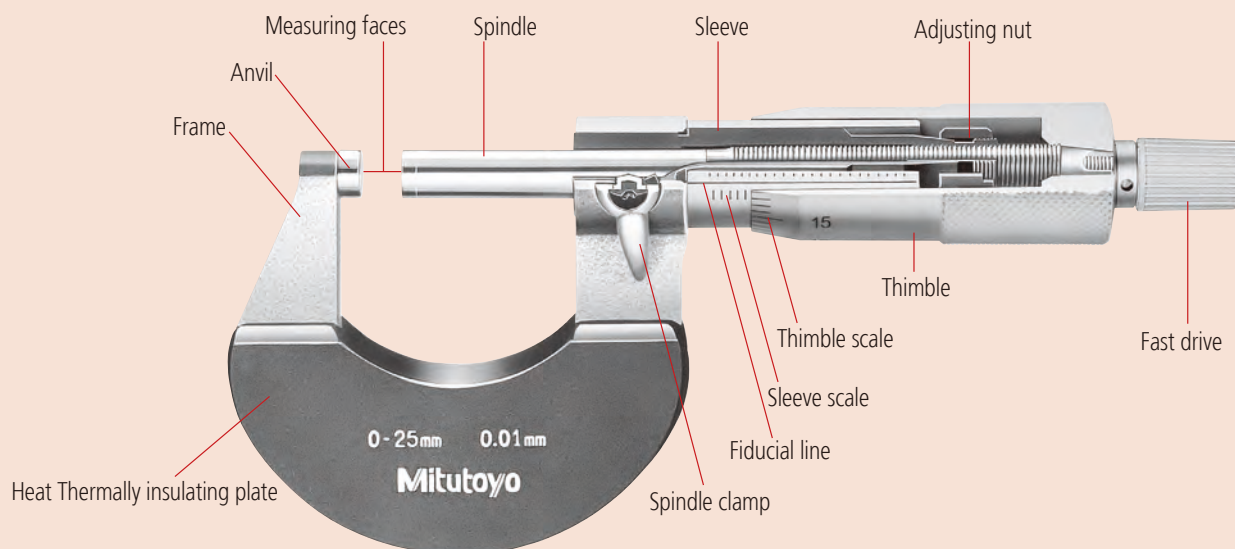
Quick Guide to Precision Measuring Instruments



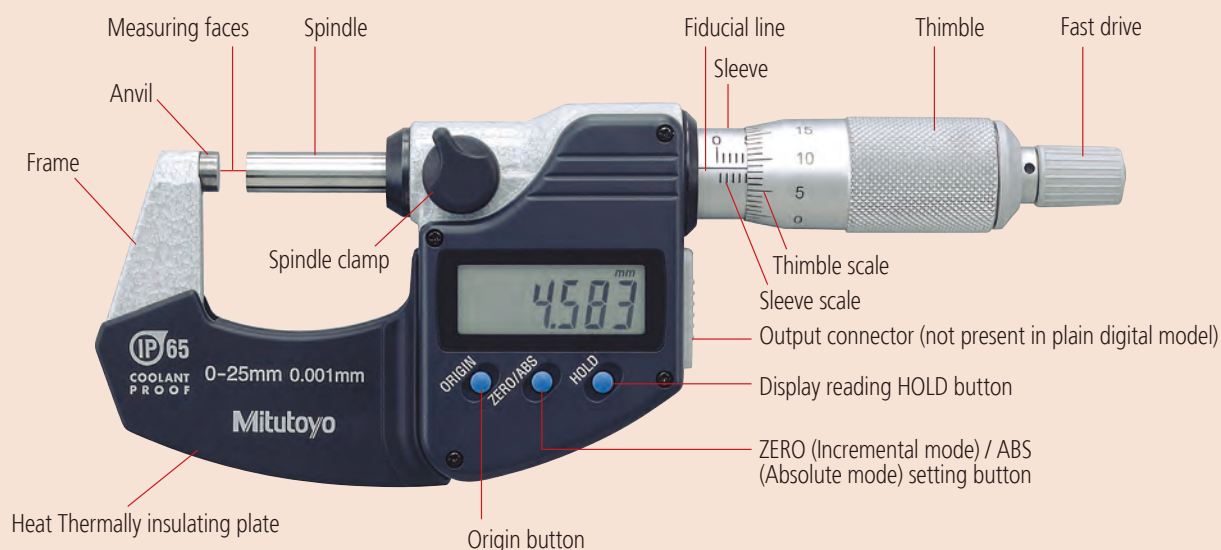
Micrometers

Nomenclature

Standard Analogue Outside Micrometer

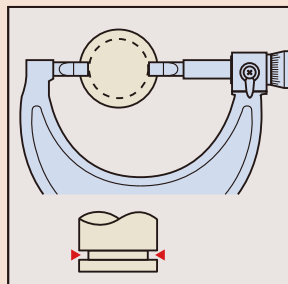


Digimatic Outside Micrometer



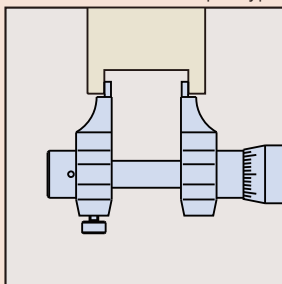
■ Special Purpose Micrometer Applications

Blade micrometer



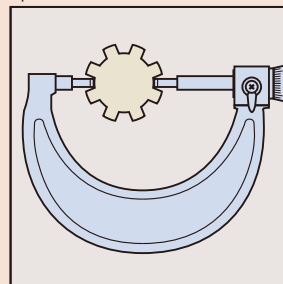
For diameter inside narrow groove measurement

Inside micrometer, caliper type



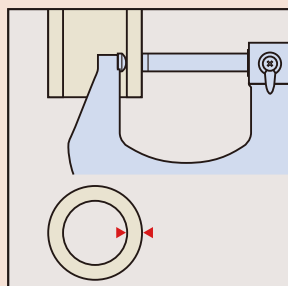
For small internal diameter, and groove width measurement

Spline micrometer



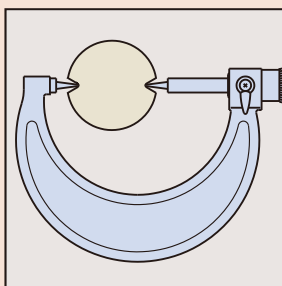
For splined shaft diameter measurement

Tube micrometer



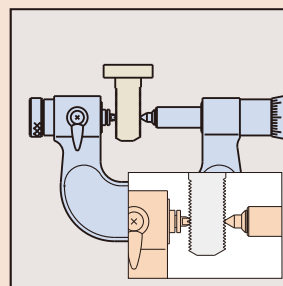
For pipe thickness measurement

Point micrometer



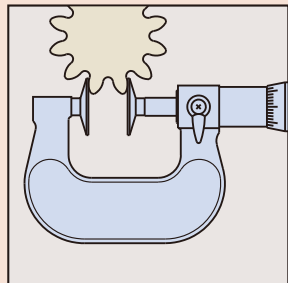
For root diameter measurement

Screw thread micrometer



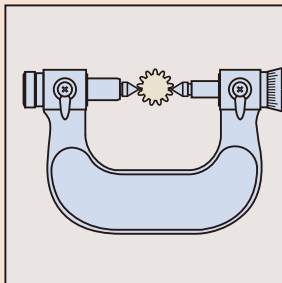
For effective thread diameter measurement

Disc type outside micrometer



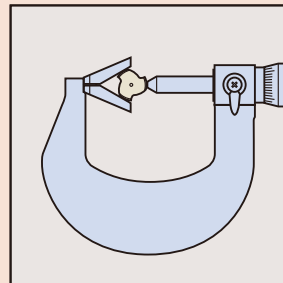
For root tangent measurement on spur gears and helical gears.

Ball tooth thickness micrometer



Measurement of gear over-pin diameter

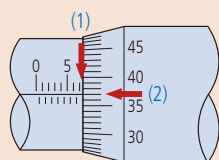
V-anvil micrometer



For measurement of 3- or 5-flute cutting tools

How to Read the Scale

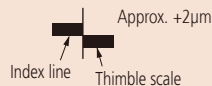
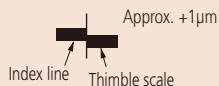
Micrometer with standard scale (graduation: 0.01mm)



- (1) Sleeve scale reading 7. mm
(2) Thimble scale reading + 0.37 mm
Micrometer reading 7.37 mm

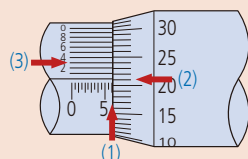
Note) 0.37 mm (2) is read at the position where the sleeve fiducial line is aligned to the thimble graduations.

The thimble scale can be read directly to 0.01mm, as shown above, but may also be estimated to 0.001mm when the lines are nearly coincident because the line thickness is 1/5 of the spacing between them.



Micrometer with vernier scale (graduation: 0.001mm)

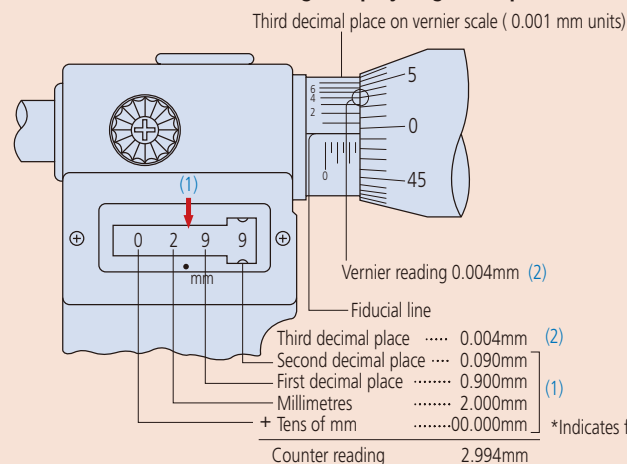
The vernier scale provided above the sleeve index line enables direct readings to be made to within 0.001mm.



- (1) Sleeve scale reading 6.000 mm
(2) Thimble scale reading 0.210 mm
(3) Reading from the vernier scale marking and thimble graduation line + 0.003 mm
Micrometer reading 6.213 mm

Note) 0.21 mm (2) is read at the position where the index line is between two graduations (21 and 22 in this case). 0.003 mm (3) is read at the position where one of the vernier graduations aligns with one of the thimble graduations.

Micrometer with mechanical-digit display (digital step: 0.001mm)

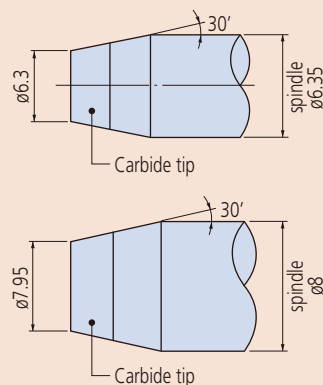


Note) 0.004 mm (2) is read at the position where a vernier graduation line corresponds with one of the thimble graduation lines.

Measuring Force Limiting Device

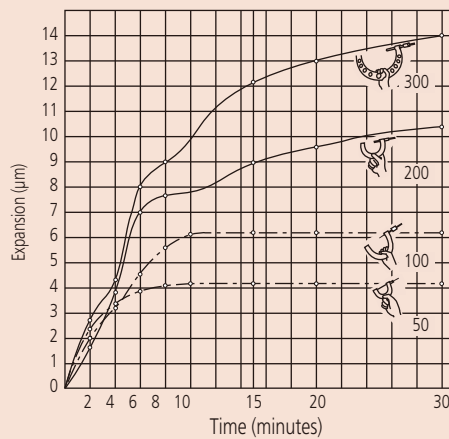
	Audible in operation	One-handed operation	Remarks
Ratchet stop	Yes	Unsuitable	Audible clicking operation causes micro-shocks
Friction thimble (F type)	No	Suitable	Smooth operation without shock or sound
Ratchet thimble (T type)	Yes	Suitable	Audible operation provides confirmation of constant measuring force
Ratchet thimble	Yes	Suitable	Audible operation provides confirmation of constant measuring force

Measuring Face Detail



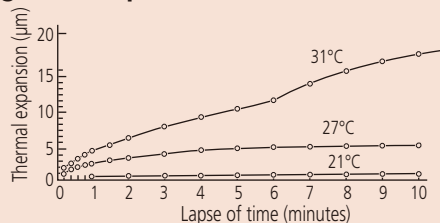
These drawings above are for illustration only and are not to scale

■ Micrometer Expansion due to Holding Frame with the Bare Hand



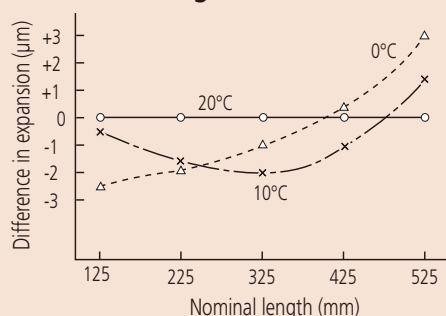
The above graph shows micrometer frame expansion due to heat transfer from hand to frame when the frame is held in the bare hand which, as can be seen, may result in a significant measurement error due to temperature-induced expansion. If the micrometer must be held by hand during measurement then try to minimize contact time. A heat insulator will reduce this effect considerably if fitted, or gloves may be worn. (Note that the above graph shows typical effects, and is not guaranteed).

■ Length Standard Expansion with Change of Temperature (for 200mm bar initially at 20°C)



The above experimental graph shows how a particular micrometer standard expanded with time as people whose hand temperatures were different (as shown) held the end of it at a room temperature of 20°C. This graph shows that it is important not to set a micrometer while directly holding the micrometer standard but to make adjustments only while wearing gloves or lightly supporting the length standard by its heat insulators. When performing a measurement, note also that it takes time until the expanded micrometer standard returns to the original length. (Note that the graph values are not guaranteed values but experimental values.)

■ Difference in Thermal Expansion between Micrometer and Length Standard



In the above experiment, after the micrometer and its standard were left at a room temperature of 20°C for about 24 hours for temperature stabilization, the start point was adjusted using the micrometer standard. Then, the micrometer with its standard were left at the temperatures of 0°C and 10°C for about the same period of time, and the start point was tested for shift. The above graph shows the results for each of the sizes from 125 through 525 mm at each temperature. This graph shows that both the micrometer and its standard must be left at the same location for at least several hours before adjusting the start point. (Note that the graph values are not guaranteed values but experimental values.)

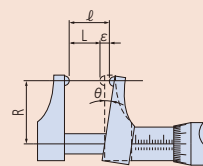
■ Effect of Changing Support Method and Orientation (Unit: μm)

Changing the support method and/or orientation of a micrometer after zero setting affects subsequent measuring results. The tables below highlight the measurement errors to be expected in three other cases after micrometers are zero-set in the 'Supported at the bottom and center' case. These actual results show that it is best to set and measure using the same orientation and support method.

Supporting method	Supported at the bottom and center	Supported only at the center
Attitude		
Maximum measuring length (mm)		
325	0	-5.5
425	0	-2.5
525	0	-5.5
625	0	-11.0
725	0	-9.5
825	0	-18.0
925	0	-22.5
1025	0	-26.0

Supporting method	Supported at the center in a lateral orientation.	Supported by hand downward.
Attitude		
Maximum measuring length (mm)		
325	+1.5	-4.5
425	+2.0	-10.5
525	-4.5	-10.0
625	0	-5.5
725	-9.5	-19.0
825	-5.0	-35.0
925	-14.0	-27.0
1025	-5.0	-40.0

■ Abbe's Principle



Abbe's principle states that "maximum accuracy is obtained when the scale and the measurement axes are common".

This is because any variation in the relative angle (θ) of the moving measuring jaw on an instrument, such as a caliper jaw micrometer, causes displacement that is not measured

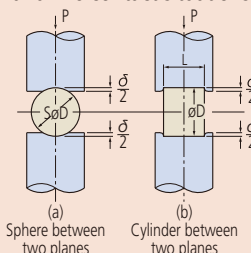
on the instrument's scale and this is an Abbe error ($\epsilon = l - L$ in the diagram). Spindle straightness error, play in the spindle guide or variation of measuring force can all cause (θ) to vary and the error increases with R.

■ Hooke's Law

Hooke's law states that strain in an elastic material is proportional to the stress causing that strain, providing the strain remains within the elastic limit for that material.

■ Hertz's Formulae

Hertz's formulae give the apparent reduction in diameter of spheres and cylinders due to elastic compression when measured between plane surfaces. These formulae are useful for determining the deformation of a workpiece caused by the measuring force in point and line contact situations.



Assuming that the material is steel and units are as follows:

Modulus of elasticity: $E = 205 \text{ GPa}$

Amount of deformation: $\delta \text{ (}\mu\text{m)}$

Diameter of sphere or cylinder: $D \text{ (mm)}$

Length of cylinder: $L \text{ (mm)}$

Measuring force: $P \text{ (N)}$

a) Apparent reduction in diameter of sphere

$$\delta_1 = 0.82 \sqrt{P/D}$$

b) Apparent reduction in diameter of cylinder

$$\delta_2 = 0.094 \cdot P/L \sqrt{1/D}$$

Screw pitch diameter measurement

Three-wire method

The screw pitch diameter can be measured with the three-wire method as shown in the figure.

Calculate the pitch diameter (E) with equations (1) and (2).

Metric thread or unified screw (60°)

$$E = M - 3d + 0.866025P \quad \text{.....(1)}$$

Whitworth thread (55°)

$$E = M - 3.16568d + 0.960491P \quad \text{.....(2)}$$

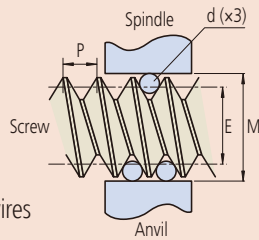
d = Wire diameter

E = Screw pitch diameter

M = Micrometer reading including three wires

P = Screw pitch

(Convert inches to millimeters for unified screws.)



Thread type	Optimal wire size at D
Metric thread or unified screw (60°)	0.577P
Whitworth thread (55°)	0.564P

Major measurement errors of the three-wire method

Error cause	Precautions for eliminating errors	Possible error	Error that might not be eliminated even with precautions
Pitch error (workpiece)	1. Correct the pitch error ($\Delta p = \Delta E$) 2. Measure several points and adopt their average. 3. Reduce single pitch errors.	$\pm 18\mu\text{m}$ assuming that the pitch error is 0.02 mm.	$\pm 3\mu\text{m}$
Error of half angle (workpiece)	1. Use the optimal wire diameter. 2. No correction is needed.	$\pm 0.3\mu\text{m}$	$\pm 0.3\mu\text{m}$
Due to anvil difference	1. Use the optimal wire diameter. 2. Use the wire which has a diameter close to the average at the one wire side.	$\pm 8\mu\text{m}$	$\pm 1\mu\text{m}$
Wire diameter error	1. Use the predetermined measuring force appropriate for the pitch. 2. Use the predetermined width of measurement edge. 3. Use a stable measuring force.	$-3\mu\text{m}$	$-1\mu\text{m}$
Cumulative error		In the worst case $+20\mu\text{m}$ $-35\mu\text{m}$	When measured carefully $+3\mu\text{m}$ $-5\mu\text{m}$

One-wire method

The pitch diameter of odd-fluted tap can be measured using the V-anvil micrometer with the one-wire method. Obtain the measured value (M₁) and calculate M with equation (3) or (4).

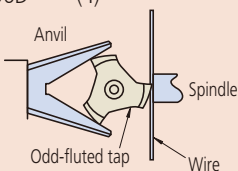
M₁ = Micrometer reading during one-wire measurement

D = Odd-fluted tap diameter

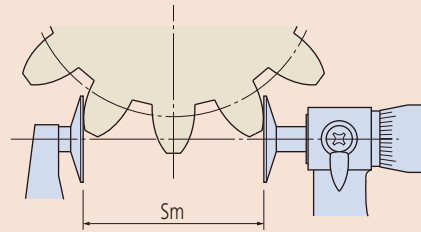
Tap with three flutes : $M = 3M_1 - 2D$ (3)

Tap with five flutes : $M = 2.2360M_1 - 1.23606D$ (4)

Then, assign the calculated M to equation (1) or (2) to calculate the pitch diameter (E).



Root tangent length



Formula for calculating a root tangent length (Sm):

$$S_m = m \cos \alpha_0 \{ \pi (Z_m - 0.5) + Z \operatorname{inv} \alpha_0 \} + 2Xm \sin \alpha_0$$

Formula for calculating the number of teeth within the root tangent length (Zm):

$$Z_m' = Z \cdot K(f) + 0.5 \quad (Z_m \text{ is the integer closest to } Z_m')$$

where, $K(f) = \frac{1}{\pi} \{ \sec \alpha_0 \sqrt{(1+2f)^2 - \cos^2 \alpha_0} - \operatorname{inv} \alpha_0 - 2f \tan \alpha_0 \}$

$$\text{and, } f = \frac{X}{Z}$$

$$\begin{aligned} \operatorname{inv} 20^\circ &\doteq 0.014904 \\ \operatorname{inv} 14.5^\circ &\doteq 0.0055448 \end{aligned}$$

m: Module

α_0 : Pressure angle

Z: Number of teeth

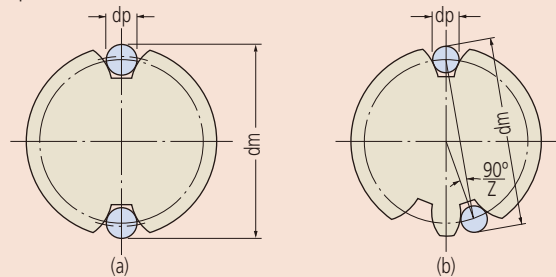
X: Addendum modification coefficient

S_m: Root tangent length

Z_m: Number of teeth within the root tangent length

Gear measurement

Over-pin method



For a gear with an even number of teeth:

$$d_m = dp + \frac{dp}{\cos \theta} = dp + \frac{Z \cdot m \cdot \cos \alpha_0}{\cos \theta}$$

For a gear with an odd number of teeth:

$$d_m = dp + \frac{dp}{\cos \theta} \cdot \cos \left(\frac{90^\circ}{Z} \right) = dp + \frac{Z \cdot m \cdot \cos \alpha_0}{\cos \theta} \cdot \cos \left(\frac{90^\circ}{Z} \right)$$

however,

$$\operatorname{inv} \theta = \frac{dp}{dg} - \frac{X}{Z} = \frac{dp}{Z \cdot m \cdot \cos \alpha_0} - \left(\frac{\pi}{2Z} - \operatorname{inv} \alpha_0 \right) + \frac{2 \tan \alpha_0}{Z} \cdot X$$

Obtain θ (inv θ) from the involute function table.

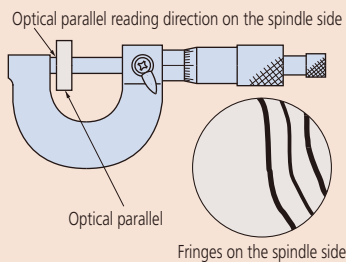
Z: Number of teeth

α_0 : Pressure angle teeth

m: Module

X: Addendum modification coefficient

■ Testing Parallelism of Micrometer Measuring Faces

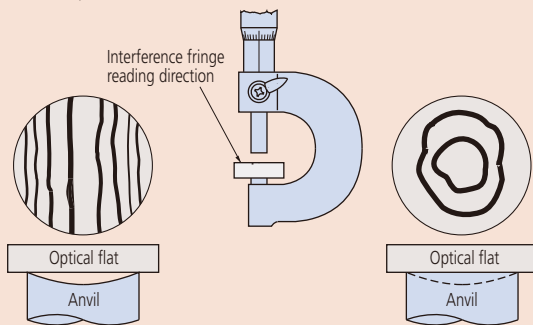


Parallelism can be estimated using an optical parallel held between the faces. Firstly, bring the parallel to the anvil measuring face. Then close the spindle on the parallel using normal measuring force and count the number of red interference fringes seen on the measuring face of the spindle in white light. Each fringe represents a half wavelength difference in height ($0.32\mu\text{m}$ for red fringes).

In the above figure a parallelism of approximately $1\mu\text{m}$ is obtained from $0.32\mu\text{m} \times 3 = 0.96\mu\text{m}$.

■ Testing Flatness of Micrometer Measuring Faces

Flatness can be estimated using an optical flat (or parallel) held against a face. Count the number of red interference fringes seen on the measuring face in white light. Each fringe represents a half wavelength difference in height ($0.32\mu\text{m}$ for red).

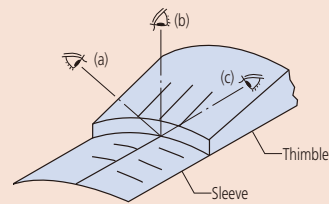


Measuring face is curved by approximately $1.3\mu\text{m}$. ($0.32\mu\text{m} \times 4$ paired red fringes.)

Measuring face is concave (or convex) approximately $0.6\mu\text{m}$ deep. ($0.32\mu\text{m} \times 2$ continuous fringes)

■ General notes on using the micrometer

1. Carefully check the type, measuring range, accuracy, and other specifications to select the appropriate model for your application.
2. Leave the micrometer and workpiece at room temperature long enough for their temperatures to equalize before making a measurement.
3. Look directly at the fiducial line when taking a reading against the thimble graduations. If the graduation lines are viewed from an angle, the correct alignment position of the lines cannot be read due to parallax error.



(a) From above the index line



(b) Looking directly at the index line

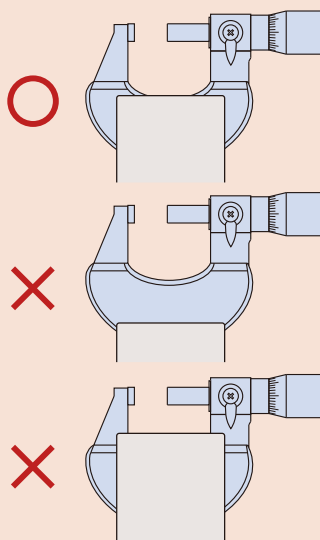


(c) From below the index line

4. Wipe off the measuring faces of both the anvil and spindle with lint-free paper set the start (zero) point before measuring.



5. Wipe away any dust, chips and other debris from the circumference and measuring face of the spindle as part of daily maintenance. In addition, sufficiently wipe off any stains and fingerprints on each part with dry cloth.
6. Use the constant-force device correctly so that measurements are performed with the correct measuring force.
7. When attaching the micrometer onto a micrometer stand, the stand should clamp the center of the micrometer frame. Do not clamp it too tightly.



8. Be careful not to drop or bump the micrometer on anything. Do not rotate the micrometer thimble using excessive force. If you believe a micrometer may have been damaged due to accidental mishandling, ensure that it is inspected for accuracy before further use.
9. After a long storage period or when there is no protective oil film visible, lightly apply anti-corrosion oil to the micrometer by wiping with a cloth soaked in it.
10. Notes on storage:
 - Avoid storing the micrometer in direct sunlight.
 - Store the micrometer in a ventilated place with low humidity.
 - Store the micrometer in a place with little dust.
 - Store the micrometer in a case or other container, which should not be kept on the floor.
 - When storing the micrometer, always leave a gap of 0.1 to 1 mm between the measuring faces.
 - Do not store the micrometer in a clamped state.

Survey Micrometer Head

Micrometer Head Selector

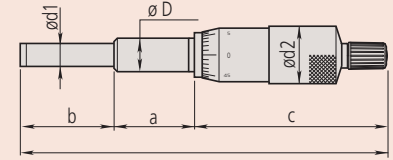
Stem w/ locknut No.	Plain stem No.	Range mm	1)	2)	4)	5)	6)	Grad. mm	x mm	y mm	a mm	b mm	c mm	Ø D mm	Ø d1 mm	Ø d2 mm
110-105.		0-1				●	●	0.001			12.7	25	62.5	12	8	21
110-106.		0-1				●	●	0.0001			12.7	25	62.5	12	8	21
110-107.		0-1	●			●	●	0.001			12.7	25	62.5	12	8	21
110-108.		0-1	●			●	●	0.0001			12.7	25	62.5	12	8	21
110-101.		0-2.5				●	●	0.001			12.7	25	70	12	8	21
110-102.		0-2.5				●	●	0.0001			12.7	25	70	12	8	21
148-216.	148-215.	0-5	●					0.02	5.5	1.8	5	6.5	20.5	3.5	2	6
	148-201.	0-6.5						0.01			6	9	21.7	6	3.5	9.3
148-203.		0-6.5						0.01	8	3	7.5	7.5	21.7	6	3.5	9.3
148-302.	148-301.	0-6.5						0.01	14	4	9.5	9	23.5	9.5	6.35	15
148-304.	148-303.	0-6.5						0.01	14	4	9.5	9	23.5	9.5	6.35	20
148-306.	148-305.	0-6.5						0.01	14	4	9.5	9	23.5	9.5	6.35	29
148-221.	148-220.	0-6.5		●				0.01			15	9	22.5	6	3.5	9.3
148-223.	148-222.	0-6.5		●				0.01			17	7.5	22.5	6	3.5	9.3
148-317.	148-316.	0-6.5		●				0.01			18.7	9	22.5	9.5	6.35	15
148-319.	148-318.	0-6.5		●				0.01			18.7	9	22.5	9.5	6.35	15
148-207.	148-205.	0-6.5	●					0.01	8	3	7.5	7.5	21.7	6	3.5	9.3
148-323.	148-322.	0-6.5	●					0.01	14	4	9.5	9	23.5	9.5	6.35	15
148-143.	148-142.	0-6.5	●					0.002	14	4	9.5	14	31.5	9.5	5	13
148-343.	148-342.	0-6.5	●					0.002	14	4	9.5	9	23.5	9.5	6.35	15
148-243.	148-242.	0-6.5	●					0.002	8	3	6	9	21.9	6	3.5	9.3
152-283.		0-10				●		0.002	16	4	26	19	53	12	6.35	49
110-502.		0-13	●			●		0.0005			15	15	67.5	9.5	5	13
148-133.	148-132.	0-13	●					0.01	14	4	9.5	17.5	31.5	9.5	5	13
148-802.	148-801.	0-13	●					0.01	14	4	9.5	17.5	31.5	9.5	5	13
	148-853.	0-13	●					0.01			9.5	15.5	37	9.5	5	13
148-804.	148-803.	0-13	●	●				0.01	14	4	9.5	17.5	40	9.5	5	13
148-854.		0-13	●	●				0.01	14	4	9.5	15.5	45.5	9.5	5	13
	148-104.	0-13						0.001	14	4	9.5	17.5	31.5	9.5	5	13
148-103.		0-13						0.01	14	4	9.5	17.5	31.5	9.5	5	13
148-308.	148-307.	0-13						0.01	14	4	9.5	15.5	30	9.5	6.35	15
148-310.	148-309.	0-13						0.01	14	4	9.5	15.5	30	9.5	6.35	20
148-312.	148-311.	0-13						0.01	14	4	9.5	15.5	30	9.5	6.35	29
148-508.	148-503.	0-13						0.01	14	4	9.5	15.5	37	9.5	5	13
	148-513.	0-13						0.01			9.5	15.5	37	9.5	5	13
148-120.	148-121.	0-13		●				0.01	14	4	9.5	17.5	40.1	9.5	5	13
148-504.	148-506.	0-13		●				0.01	14	4	9.5	15.5	45.6	9.5	5	13
148-151.	148-150.	0-13		●				9.5			18.7	17.5	31	12	5	13
148-153.	148-152.	0-13		●		●		9.5			18.7	17.5	31	12	5	13
149-131.	149-132.	0-15				●		0.01	14	4	15	17	43.5	9.5	6.35	15
	152-101.	0-15				●		0.01			16	18	60	12	8	30
	153-101.	0-15				●	●	0.01			10	17	58.5	9.5	6.35	15.3
149-184.	149-183.	0-15		●		●		0.01	14	4	9.5	17	49	9.5	6.35	15
149-802.	149-801.	0-15	●			●		0.01	14	4	15	17	43.5	9.5	6.35	15
150-189.	150-190.	0-25			●	●		0.001	14	4	15	27	67	10	6.35	18
151-221.	151-222.	0-25			●	●		0.001	16	4	29	34	70	12	8	21
150-191.	150-192.	0-25			●	●		0.01	14	4	15	27	67	10	6.35	18
151-223.	151-224.	0-25			●	●		0.01	16	4	29	34	70	12	8	21
150-195.	150-196.	0-25				●		0.01	14	4	15	27	54	10	6.35	18
	152-102.	0-25				●		0.01			16	28	69	12	8	30
	152-332.	0-25				●		0.002			29	34	66	12	8	49

1) Spherical measuring surface 2) With spindle lock 4) With ratchet 5) With non-rotating spindle
6) Carbide tipped

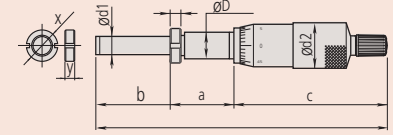
x and y apply to heads with clamp nut

Specifications

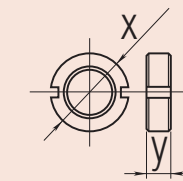
Graduation 0.001mm. 0.0005mm. 0.0001mm.



Total length $l = a + b + c$



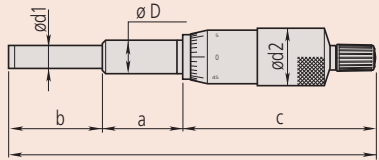
Total length $l = a + b + c$



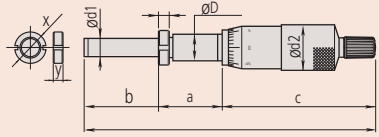
Survey Micrometer Head

Specifications

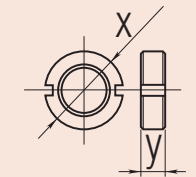
Graduation 0.001mm. 0.0005mm. 0.0001mm



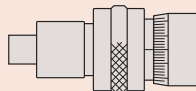
Total length $l = a + b + c$



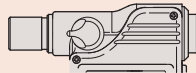
Total length $l = a + b + c$



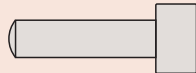
With clamp nut



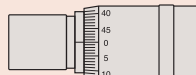
With spindle lock



With spindle lock 250-301 / 350-2XX



With spherical measuring surfaces



With reverse reading

Micrometer Head Selector

Stem w/ locknut No.	Plain stem No.	Range mm	1)	2)	3)	4)	5)	6)	7)	Grad. mm	x mm	y mm	a mm	b mm	c mm	Ø D mm	Ø d1 mm	Ø d2 mm
150-220.	150-219.	0-25								0.01	14	4	15	65	53.5	10	6.35	18
	153-203.	0-25								0.01			10	27	70.5	12	8	18
	153-204.	0-25								0.001			10	27	71	12	8	18
	153-301.	0-25								0.0005				28.6	31.8	18	8	85.5
	153-201.	0-25								0.01			10	27	87.5	12	8	18
	153-202.	0-25								0.001			10	27	88	12	8	18
150-210.	150-209.	0-25								0.01	14	4	15	27	78.5	10	6.35	18
	250-301.	0-25								0.01			15	27	94	10	6.35	18
350-252-10.	350-251-10.	0-25								0.001	14	4	15	27	114.5	10	6.35	18
350-272-20.	350-271-10.	0-25								0.001			16	27	113.5	12	6.35	18
350-282-10.	350-281-10.	0-25								0.001	16	4	15	27	114.5	12	6.35	18
150-212.	150-211.	0-25								0.01	14	4	15	27	65	10	6.35	18
151-226.	151-225.	0-25								0.01	16	4	19	34.5	66	12	8	21
350-261-10.		0-25								0.001			14	38.7	101	12	6.35	18
150-802.	150-801.	0-25								0.01	14	4	15	27	67	10	6.35	18
350-254-10.	350-253-10.	0-25								0.001	14	4	15	27	113.5	10	6.35	18
350-274-20.	350-273-10.	0-25								0.001	16	4	16	27	113.5	12	6.35	18
350-284-10.	350-283-10.	0-25								0.001	16	4	15	27	114.5	12	6.35	18
	152-348.	0-25-0								0.002			29	34	66	12	8	49
	152-401.	0-25-0								0.001			14	41.7	84.3	18	8	49
151-255.	151-256.	0-50								0.01	16	4	29	59	103	12	8	21
151-259.	151-260.	0-50								0.01	16	4	29	59	90	12	8	21
	152-103.	0-50								0.01			16	53	94	12	8	30
	164-161.	0-50								0.001			14	65	143	18	11	49
	197-101.	0-50								0.005			14	65	64	18	8	49
	152-380.	0-50-0								0.002			29	34	66	12	8	49
148-211.	148-209.	6,5-0								0.01	8	3	7.5	7.5	21.7	6	3.5	9
148-822.	148-821.	13-0								0.01	14	4	9.5	17.5	31.5	9.5	5	13
	148-863.	13-0								0.01			9.5	15.5	37	9.5	5	13
148-824.	148-823.	13-0								0.01	16	4	9.5	17.5	40.1	9.5	5	13
	148-864.	13-0								0.01			9.5	15.5	45.6	9.5	5	13
149-822.	149-821.	15-0								0.01	16	4	15	17	43.5	9.5	6.35	15
150-822.	150-821.	25-0								0.01	16	4	15	27	84	10	6.35	18

1) Spherical measuring surface 2) With spindle lock 3) Reverse reading 4) With ratchet 5) With non-rotating spindle 6) Carbide tipped 7) Non-rotating measuring surface

x and y apply to heads with clamp nut

Digital Micrometer Head

Series 164

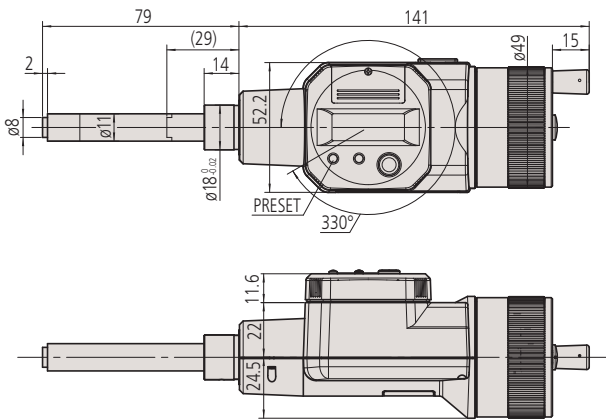
- Display and operating unit may be rotated by 330° for convenience.
- For integration into machinery and measuring instruments.
- Digital micrometer head with non-rotating spindle.



164-163

Metric

No.	Range [mm]	Spindle end	Stem Ø	Accuracy	Remarks	Mass [g]	Price [€]
164-163	0-50	Carbide tipped	18 mm	±3 µm	Non-rotating spindle	490	742.00



164-163
(): with spindle full retracted

Functions	Series 164
ZERO/ABS	●
Auto Power OFF after 20 min. non use	●
2 x PRESET	●
Data output	●
Counting direction switchable	●

Specifications

Accuracy	Refer to the list of specifications (excluding quantizing error)
Measuring spindle	spindle pitch 0.5 mm
Display	LCD character height 7.5 mm
Power supply	2 batteries SR-44
Digital step	0,001 mm
Battery life	approx. 1.8 years

Optional accessories

No.	Description	Price €
959149	Digimatic cable with data switch (1 m)	38.00
959150	Digimatic cable with data switch (2 m)	43.50
06ADV380C	USB Input tool Direct cable with data switch (2 m)	100.00
02AZD790C	U-WAVE Data Cable with data switch	90.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



Digital Micrometer Head with 10mm Stem

Series 350

This Micrometer Head has a 25mm range and a 10mm stem, and offers the following benefits:

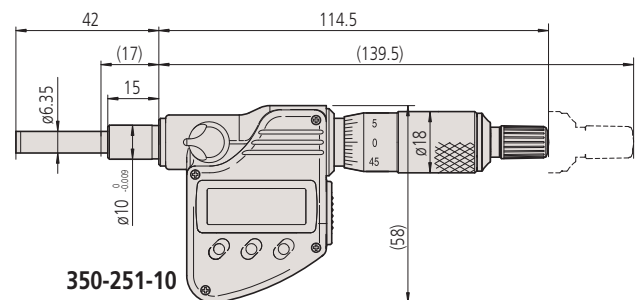
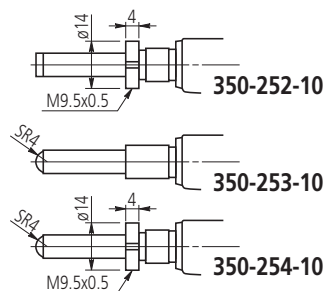
- You can integrate it into machinery and measuring instruments.
- Measurement values are clearly displayed in 0.001mm increments.
- Stem diameter: 10mm.



350-251-10

Metric

No.	Range [mm]	Spindle end	Stem	Stem Ø	Fixture thickness for clamp nut [mm]	Mass [g]	Price [€]
350-251-10	0-25	Flat (carbide tip)	Plain	10 mm		230	400.00
350-252-10	0-25	Flat (carbide tip)	w/ clamp nut	10 mm	11,5	230	412.00
350-253-10	0-25	Spherical (SR4)	Plain	10 mm		230	448.00
350-254-10	0-25	Spherical (SR4)	w/ clamp nut	10 mm	11,5	230	453.00



(): with spindle full retracted

Functions	Series 350
ZERO/ABS	●
Auto Power OFF after 20 min. non use	●
2 x PRESET	●
Function lock	●
HOLD	●
Data output	●

Specifications

Accuracy	±2 µm (excluding quantizing error)
Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 0,5 mm
Display	LCD, Character Height 7.5 mm
Digital step	0,001 mm
Power supply	Battery SR-44
Battery life	approx. 1.2 years

Optional accessories

No.	Description	Price €
05CZA662	Digimatic cable with data switch (1 m)	73.50
05CZA663	Digimatic cable with data switch (2 m)	82.50
02AZD790B	Connecting cable U-Wave with data switch	95.00
06ADV380B	USB Input Tool Direct cable with data switch (2 m)	115.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50

Specifications

Scale	Thimble and sleeve satin chrome
Measuring spindle	With spindle lock, \varnothing 6,35 mm, spindle pitch 0,5 mm
Graduation	0.01mm

Micrometer Head with Counter

Series 250 - Digit counter type

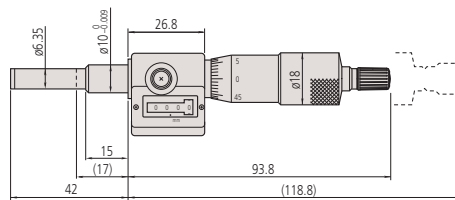
This Digit counter type is a micrometer head with a mechanical counter.



250-301

Metric

No.	Range [mm]	Spindle end	Stem \varnothing	Accuracy	Stem	Mass [g]	Price [€]
250-301	0-25	Flat (carbide tip)	10 mm	$\pm 2 \mu\text{m}$	Plain	165	170.00



250-301

Micro Jack

Series 7

This Micro Jack allows you to make easy adjustments under a heavy load.

It offers the following benefits:

- Adjustments can easily be made under a heavy load.
- You can use it to accurately level machines, surface plates, and other precision instruments.



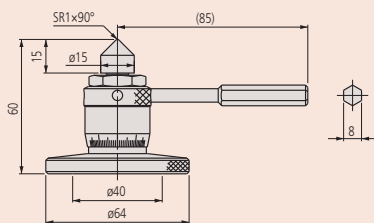
7850

Metric

No.	Range [mm]	Remarks	Price [€]
7850	60-75	Max. load : 400kg	402.00

Specifications

Graduation	0.01mm
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7850

Fine Spindle Feed Micrometer Head 5mm and 6,5mm Range

Series 148 - Very fine spindle feed of 0,1/rev

These micrometer heads have a very fine spindle feed of 0.1mm/rev.

They offer the following benefits:

- Small size micrometer heads with extremely fine pitch of 0.1mm.
- Ideal for fine adjustment applications in scientific apparatus.



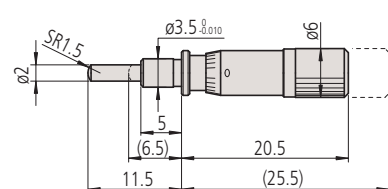
148-143



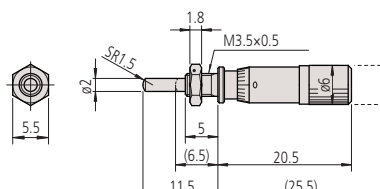
148-243

Metric

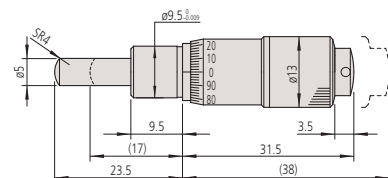
No.	Range [mm]	Spindle end	Accuracy	Stem	Stem Ø	Fixture thickness for clamp nut [mm]	Mass [g]	Price [€]
148-244	0-5	Spherical (SR1.5)	±5 µm	Plain	3,5 mm		4	181.00
148-245	0-5	Spherical (SR1.5)	±5 µm	w/ clamp nut	3,5 mm	3	5	190.00
148-142	0-6.5	Spherical (SR4)	±2 µm	Plain	9,5 mm		31	89.00
148-143	0-6.5	Spherical (SR4)	±2 µm	w/ clamp nut	9,5 mm	6	34	94.00
148-342	0-6.5	Spherical (SR4)	±2 µm	Plain	9,5 mm		29	91.50
148-343	0-6.5	Spherical (SR4)	±2 µm	w/ clamp nut	9,5 mm	6	31	96.50
148-242	0-6.5	Spherical (SR3)	±5 µm	Plain	6 mm		10	90.00
148-243	0-6.5	Spherical (SR3)	±5 µm	w/ clamp nut	6 mm	4	10	95.00



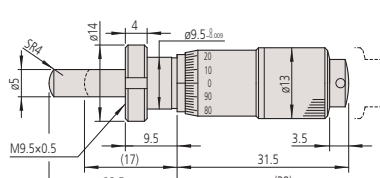
148-244



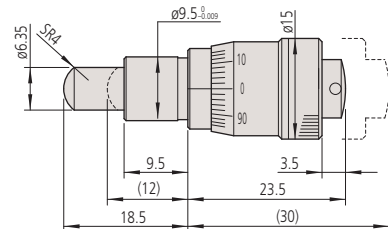
148-245



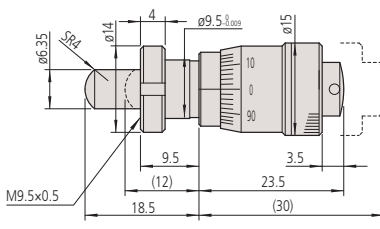
148-142



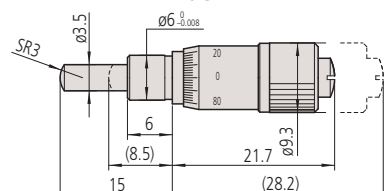
148-143



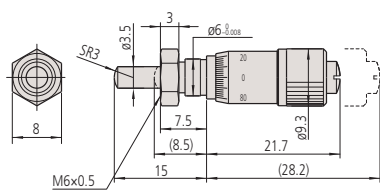
148-342



148-343



148-242

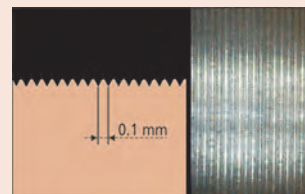


148-243

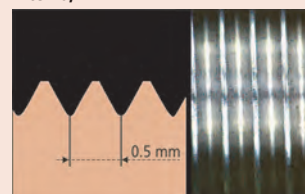
(): with spindle full retracted

Specifications

Spindle pitch	0,1 mm
Scale	Thimble and sleeve satin chrome finish
Measuring surfaces	Hardened steel (>60 HRC)
Graduation	0.002 mm / 0.004 mm (148-244, 148-245)



Pitch 0,1 mm



Pitch 0,5 mm

Micrometer Head 5mm and 6,5mm Range

Specifications

Accuracy	±5 µm
Spindle pitch	0,5 mm
Scale	Thimble and sleeve satin chrome finish
Measuring surfaces	Hardened steel (>60 HRC)
Graduation	0.02 mm (148-215, 148-216) 0.01 mm



Series 148 - Ultra small

These ultra small, miniature micrometer heads allow you to easily incorporate them into machines.



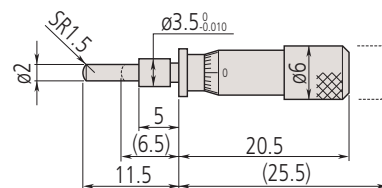
148-201



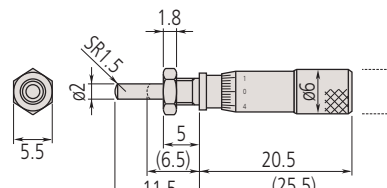
148-215

Metric

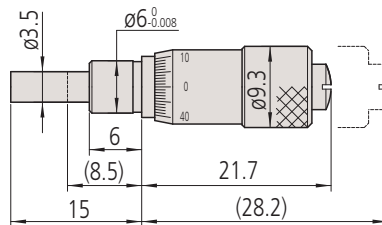
No.	Range [mm]	Spindle end	Stem Ø	Stem	Fixture thickness for clamp nut [mm]	Special features	Mass [g]	Price [€]
148-215	0-5	Spherical (SR1.5)	3,5 mm	Plain		-	4	92.50
148-216	0-5	Spherical (SR1.5)	3,5 mm	w/ clamp nut	3	-	4	96.50
148-201	0-6.5	Flat	6 mm	Plain		-	10	57.50
148-203	0-6.5	Flat	6 mm	w/ clamp nut	4	-	10	64.00
148-205	0-6.5	Spherical (SR3)	6 mm	Plain		-	10	62.50
148-207	0-6.5	Spherical (SR3)	6 mm	w/ clamp nut	4	-	10	65.00
148-209	0-6.5	Flat	6 mm	Plain		Reverse reading	10	57.50
148-211	0-6.5	Flat	6 mm	w/ clamp nut	4	Reverse reading	10	65.50



148-215

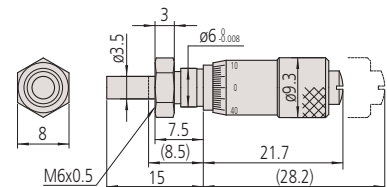


148-216



148-201

(): with spindle full retracted



148-203

Micrometer Head 6.5mm and 13mm

Series 148 - Fine spindle feed of 0,25/rev

These micrometer heads are a standard, small-sized type with a 13mm measuring range. They offer the following benefits:

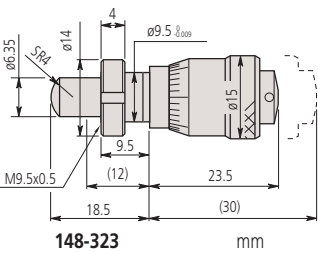
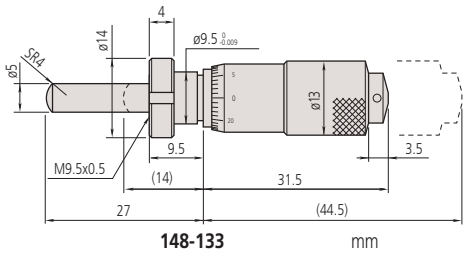
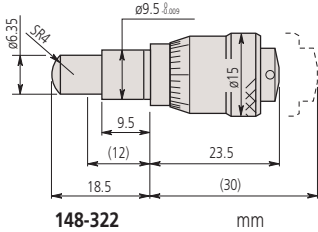
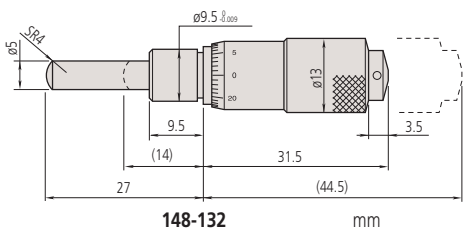
- Carbide-tipped spindle
- The small micrometer head gives you a 15mm measuring range and a tungsten carbide measuring surface.



148-132

Metric

No.	Range [mm]	Spindle end	Stem	Stem Ø	Fixture thickness for clamp nut [mm]	Mass [g]	Price [€]
148-322	0-6.5	Spherical (SR4)	Plain	9,5 mm		30	87.00
148-323	0-6.5	Spherical (SR4)	w/ clamp nut	9,5 mm	6	35	94.50
148-132	0-13	Spherical (SR4)	Plain	9,5 mm		30	63.00
148-133	0-13	Spherical (SR4)	w/ clamp nut	9,5 mm	6	35	70.00



(): with spindle full retracted

Specifications

Accuracy	±2 µm
Spindle pitch	0,25 mm
Scale	Thimble and sleeve satin chrome finish
Measuring surfaces	Hardened steel (> 60 HRC)
Graduation	0.01 mm

Specifications

Accuracy	±2 μm
Spindle pitch	0,5 mm
Scale	Thimble and sleeve satin chrome finish
Measuring surfaces	Hardened steel (>60 HRC)
Graduation	0.01 mm



148-301



148-303



148-305



148-313



148-314

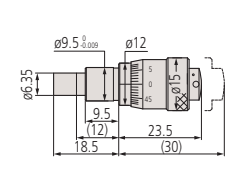
Micrometer Head 6.5mm and 13 mm Range

Series 148 - Large Thimble Diameter for Easy Reading

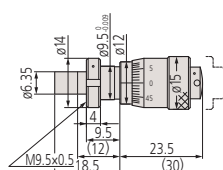
These micrometer heads feature a locking screw so you can lock the spindle in any position with the knurled locking screw.

Metric

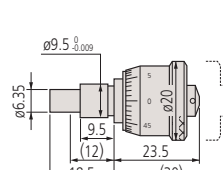
No.	Range [mm]	Spindle end	Stem Ø	Stem	Fixture thickness for clamp nut [mm]	Thimble ø	Mass [g]	Price [€]
148-301	0-6.5	Flat	9,5 mm	Plain		15 mm	26	58.50
148-302	0-6.5	Flat	9,5 mm	w/ clamp nut	6	15 mm	26	62.50
148-303	0-6.5	Flat	9,5 mm	Plain		20 mm	39	71.50
148-304	0-6.5	Flat	9,5 mm	w/ clamp nut	6	20 mm	39	75.00
148-305	0-6.5	Flat	9,5 mm	Plain		29 mm	71	86.00
148-306	0-6.5	Flat	9,5 mm	w/ clamp nut	6	29 mm	71	90.00
148-313	0-6.5	Spherical (SR4)	9,5 mm	Plain		15 mm	26	50.00
148-314	0-6.5	Spherical (SR4)	9,5 mm	w/ clamp nut	6	15 mm	26	54.00
148-307	0-13	Flat	9,5 mm	Plain		15 mm	35	60.00
148-308	0-13	Flat	9,5 mm	w/ clamp nut	6	15 mm	35	68.00
148-309	0-13	Flat	9,5 mm	Plain		20 mm	55	65.00
148-310	0-13	Flat	9,5 mm	w/ clamp nut	6	20 mm	55	69.00
148-311	0-13	Flat	9,5 mm	Plain		29 mm	103	68.50
148-312	0-13	Flat	9,5 mm	w/ clamp nut	6	29 mm	103	72.50



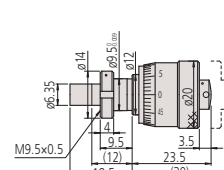
148-301



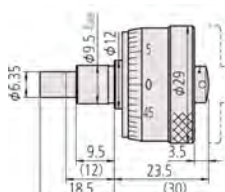
148-302



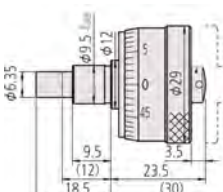
148-303



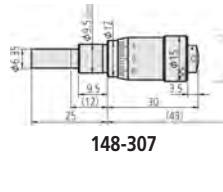
148-304



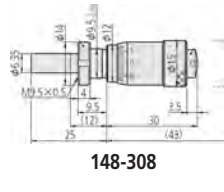
148-305



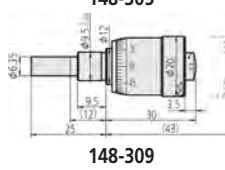
148-306



148-307

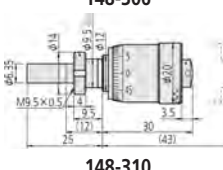


148-308

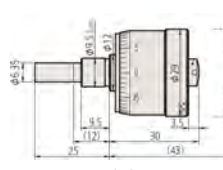


148-309

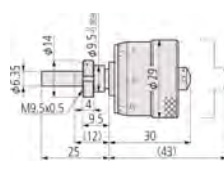
(): with spindle full retracted



148-310



148-311



148-312

Micrometer Head 6.5mm Range with Spindle Lock

Series 148 - Locking screw Type

These micrometer heads feature a knurled locking screw so you can lock the spindle in any position with the knurled locking screw.



148-223



148-319



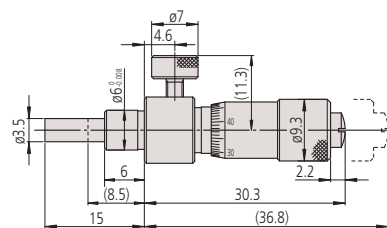
148-220



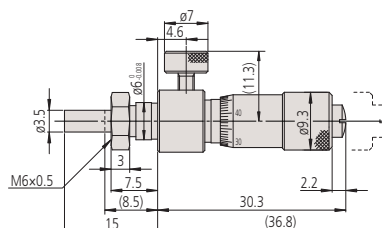
148-316

Metric

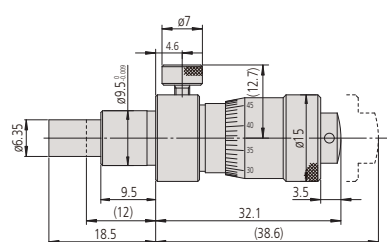
No.	Range [mm]	Spindle end	Stem Ø	Accuracy	Stem	Fixture thickness for clamp nut [mm]	Mass [g]	Price [€]
148-220	0-6.5	Flat	6 mm	±5 µm	Plain		16	61.00
148-221	0-6.5	Flat	6 mm	±5 µm	w/ clamp nut	4	17	65.00
148-222	0-6.5	Spherical (SR3)	6 mm	±5 µm	Plain		16	64.50
148-223	0-6.5	Spherical (SR3)	6 mm	±5 µm	w/ clamp nut	4	17	68.00
148-316	0-6.5	Flat	9,5 mm	±2 µm	Plain		40	71.00
148-317	0-6.5	Flat	9,5 mm	±2 µm	w/ clamp nut	6	43	75.00
148-318	0-6.5	Spherical (SR4)	9,5 mm	±2 µm	Plain		40	74.50
148-319	0-6.5	Spherical (SR4)	9,5 mm	±2 µm	w/ clamp nut	6	43	78.00



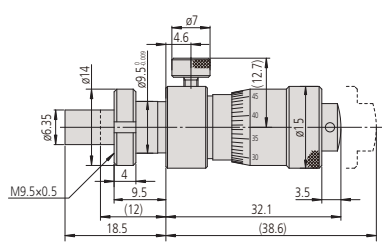
148-220



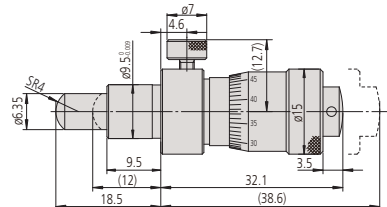
148-221



148-316

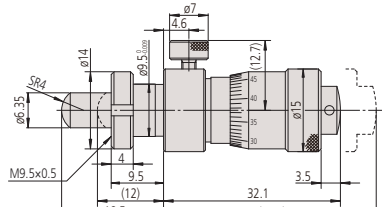


148-317



148-318

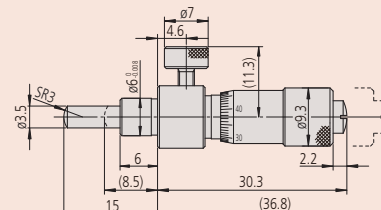
(): with spindle full retracted



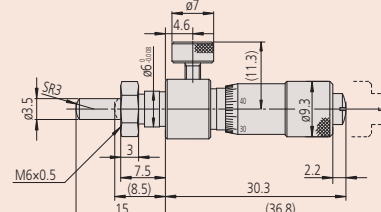
148-319

Specifications

Spindle pitch	0,5 mm
Scale	Thimble and sleeve satin chrome finish
Measuring surfaces	Hardened steel (>60 HRC)
Graduation	0.01 mm



148-222



148-223

Micrometer Head 13mm Range with Spindle Lock

Specifications

Accuracy	±2 μm
Spindle pitch	0,5 mm
Scale	Thimble and sleeve satin chrome finish
Measuring surfaces	Hardened steel (>60 HRC)
Graduation	0.01 mm

Series 148 - Locking screw Type

These micrometer heads feature a locking screw so you can lock the spindle in any position with the knurled locking screw.

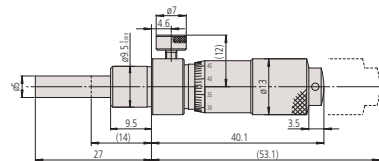


148-150

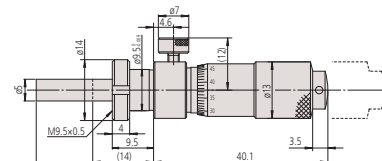
148-153

Metric

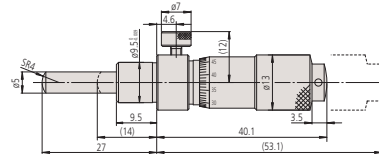
No.	Range [mm]	Spindle end	Stem Ø	Stem	Fixture thickness for clamp nut [mm]	Mass [g]	Price [€]
148-150	0-13	Flat	9,5 mm	Plain		40	70.00
148-151	0-13	Flat	9,5 mm	w/ clamp nut	6	43	74.00
148-152	0-13	Spherical (SR4)	9,5 mm	Plain		40	73.50
148-153	0-13	Spherical (SR4)	9,5 mm	w/ clamp nut	6	43	77.00



148-150

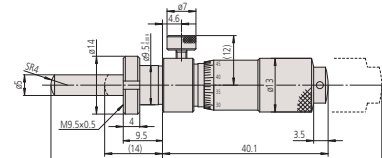


148-151



148-152

(): with spindle full retracted



148-153

Micrometer Head 13mm Range with Zero Thimble

Series 148 - Standard type, small size with zero-adjustable thimble.

These are a standard type of small size micrometer heads with a zero-adjustable thimble. They offer the following benefits:

- You can make a zero-setting at any position by loosening the setscrew in the thimble.

Metric

No.	Range [mm]	Spindle end	Stem	Stem Ø	Fixture thickness for clamp nut [mm]	Special features	Mass [g]	Price [€]
148-503	0-13	Flat	Plain	9,5 mm		-	35	69.50
148-513	0-13	Flat	Plain	9,5 mm		Stainless steel	35	80.50
148-508	0-13	Flat	w/ clamp nut	9,5 mm	6	-	40	73.50
148-853	0-13	Spherical (SR4)	Plain	9,5 mm		-	40	74.50
148-518	0-13	Flat	w/ clamp nut	9,5 mm	6	Stainless steel	40	192.00
148-858	0-13	Spherical (SR4)	w/ clamp nut	9,5 mm	6	-	40	160.00

Metric

Reverse reading

No.	Range [mm]	Spindle end	Stem	Stem Ø	Fixture thickness for clamp nut [mm]	Mass [g]	Price [€]
148-863	0-13	Flat	Plain	9,5 mm		35	78.00
148-868	0-13	Flat	w/ clamp nut	9,5 mm	6	40	202.00

Metric

Reverse reading / with spindle lock

No.	Range [mm]	Spindle end	Stem	Stem Ø	Fixture thickness for clamp nut [mm]	Mass [g]	Price [€]
148-864	0-13	Flat	w/ clamp nut	9,5 mm	6	40	82.00
148-866	0-13	Flat	Plain	9,5 mm		35	215.00

Metric

With spindle lock

No.	Range [mm]	Spindle end	Stem	Stem Ø	Fixture thickness for clamp nut [mm]	Mass [g]	Price [€]
148-506	0-13	Flat	Plain	9,5 mm		35	73.50
148-504	0-13	Flat	w/ clamp nut	9,5 mm	6	40	77.50
148-854	0-13	Spherical (SR4)	w/ clamp nut	9,5 mm	6	40	78.50
148-856	0-13	Spherical (SR4)	Plain	9,5 mm		35	174.00



Specifications

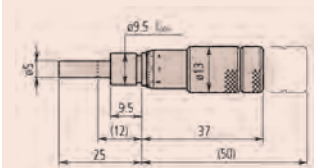
Accuracy	±2 µm
Spindle pitch	0,5 mm
Scale	Thimble and sleeve satin chrome finish
Measuring surfaces	Hardened steel (> 60 HRC)
Graduation	0.01 mm



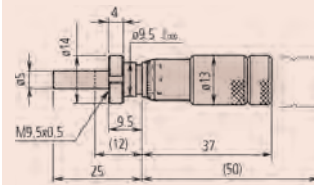
148-503



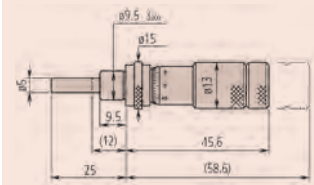
148-504



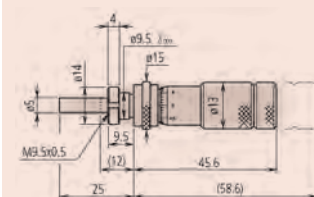
148-503



148-508



148-506



148-504

(): with spindle full retracted

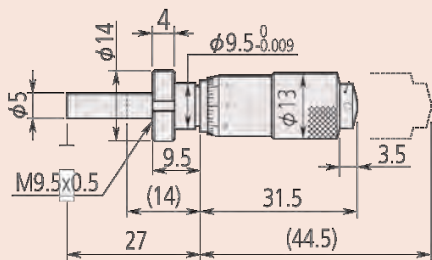
Micrometer Head 13mm Range

Series 148 - Small standard type

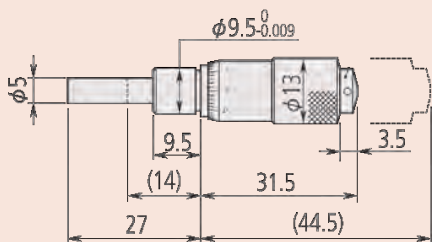
These micrometer heads are a standard, small-sized type with a 13mm measuring range.

Specifications

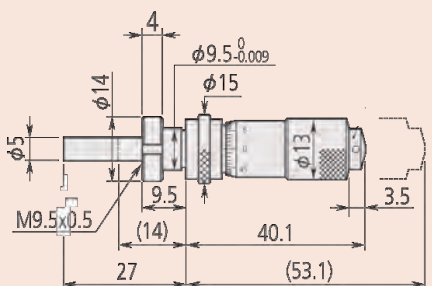
Accuracy	±2 μm
Spindle pitch	0,5 mm
Scale	Thimble and sleeve satin chrome finish
Measuring surfaces	Hardened steel (> 60 HRC)
Graduation	0.01 mm



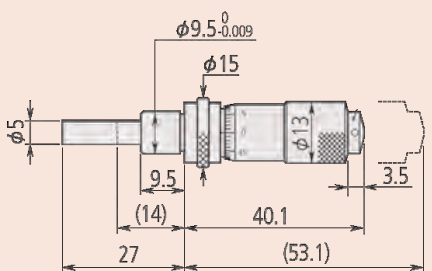
148-103



148-104



148-120



148-121

() with spindle full retracted



148-104



148-103



148-121



148-120

Metric

No.	Range [mm]	Spindle end	Stem	Stem Ø	Fixture thickness for clamp nut [mm]	Special features	Mass [g]	Price [€]
148-104	0-13	Flat	Plain	9,5 mm		-	30	55.00
148-103	0-13	Flat	w/ clamp nut	9,5 mm	6	-	35	64.50
148-801	0-13	Spherical (SR4)	Plain	9,5 mm		-	30	61.50
148-802	0-13	Spherical (SR4)	w/ clamp nut	9,5 mm	6	-	35	68.00
148-821	0-13	Flat	Plain	9,5 mm		Reverse reading	30	62.50
148-822	0-13	Flat	w/ clamp nut	9,5 mm	6	Reverse reading	35	68.50

Metric

With spindle lock

No.	Range [mm]	Spindle end	Stem	Stem Ø	Fixture thickness for clamp nut [mm]	Special features	Mass [g]	Price [€]
148-121	0-13	Flat	Plain	9,5 mm		-	40	68.00
148-120	0-13	Flat	w/ clamp nut	9,5 mm	6	-	45	72.00
148-803	0-13	Spherical (SR4)	Plain	9,5 mm		-	40	69.50
148-804	0-13	Spherical (SR4)	w/ clamp nut	9,5 mm	6	-	45	74.50
148-823	0-13	Flat	Plain	9,5 mm		Reverse reading	40	66.50
148-824	0-13	Flat	w/ clamp nut	9,5 mm	6	Reverse reading	45	72.00



Micrometer Head 15mm Range

Series 149 - Small standard type with carbide-tipped spindle

- Small micrometer head with 15 mm measuring range and tungsten carbide measuring surface.



149-132



149-184

Metric

No.	Range [mm]	Spindle end	Stem Ø	Stem	Fixture thickness for clamp nut [mm]	Special features	Mass [g]	Price [€]
149-132	0-15	Flat (carbide tip)	9,5 mm	Plain		-	55	66.00
149-131	0-15	Flat (carbide tip)	9,5 mm	w/ clamp nut	11,5	-	60	69.50
149-801	0-15	Spherical (SR4)	9,5 mm	Plain		-	55	67.00
149-802	0-15	Spherical (SR4)	9,5 mm	w/ clamp nut	11,5	-	60	70.50
149-821	0-15	Flat (carbide tip)	9,5 mm	Plain		Reverse reading	55	68.50
149-822	0-15	Flat (carbide tip)	9,5 mm	w/ clamp nut	11,5	Reverse reading	60	72.50

Metric

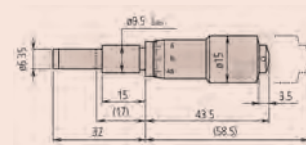
With spindle lock

No.	Range [mm]	Spindle end	Stem Ø	Stem	Fixture thickness for clamp nut [mm]	Special features	Mass [g]	Price [€]
149-183	0-15	Flat (carbide tip)	9,5 mm	Plain		-	55	65.50
149-184	0-15	Flat (carbide tip)	9,5 mm	w/ clamp nut	6	-	60	69.50
149-803	0-15	Spherical (SR4)	9,5 mm	Plain		-	55	92.50
149-804	0-15	Spherical (SR4)	9,5 mm	w/ clamp nut	6	-	60	108.00
149-823	0-15	Flat (carbide tip)	9,5 mm	Plain		Reverse reading	55	115.00
149-824	0-15	Flat (carbide tip)	9,5 mm	w/ clamp nut	6	Reverse reading	60	129.00

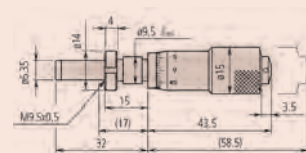


Specifications

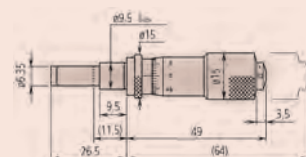
Accuracy	±2 µm
Spindle pitch	0,5 mm
Scale	Thimble and sleeve satin chrome finish
Measuring surfaces	Carbide tipped
Graduation	0.01mm



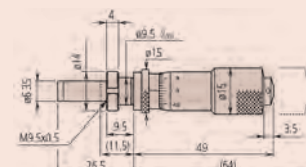
149-132



149-131



149-183



149-184

(): with spindle full retracted

Micrometer Head 25mm Range

Series 150 - Medium-sized standard type

These micrometer heads are a standard, medium-size type with a 25mm measuring range.

Specifications

Accuracy	±2 µm
Spindle pitch	0,5 mm
Scale	Thimble and sleeve satin chrome finish
Measuring surfaces	Carbide tipped
Graduation	0.01 mm



150-801



150-191



150-195



150-196

Metric

No.	Range [mm]	Spindle end	Stem Ø	Stem	Fixture thickness for clamp nut [mm]	Special features	Mass [g]	Price [€]
150-192	0-25	Flat (carbide tip)	10 mm	Plain		-	95	54.50
150-191	0-25	Flat (carbide tip)	10 mm	w/ clamp nut	11,5	-	100	64.50
150-801	0-25	Spherical (SR4)	10 mm	Plain		-	95	66.00
150-802	0-25	Spherical (SR4)	10 mm	w/ clamp nut	11,5	-	100	71.50
150-190	0-25	Flat (carbide tip)	10 mm	Plain		Graduation 0,001 mm	95	68.00
150-189	0-25	Flat (carbide tip)	10 mm	w/ clamp nut	11,5	Graduation 0,001 mm	100	72.00
150-196	0-25	Flat (carbide tip)	10 mm	Plain		w/o ratchet stop	95	58.00
150-195	0-25	Flat (carbide tip)	10 mm	w/ clamp nut	11,5	w/o ratchet stop	110	61.50
150-219	0-25	Flat	10 mm	Plain		Long spindle	95	77.50
150-220	0-25	Flat	10 mm	w/ clamp nut	11,5	Long spindle	100	87.00
150-821	0-25	Flat (carbide tip)	10 mm	Plain		Reverse reading	95	74.00
150-822	0-25	Flat (carbide tip)	10 mm	w/ clamp nut	11,5	Reverse reading	100	78.50

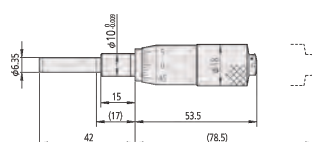
Metric

With spindle lock

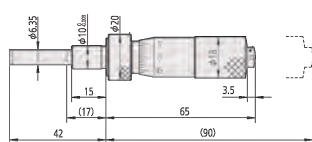
No.	Range [mm]	Spindle end	Stem Ø	Stem	Fixture thickness for clamp nut [mm]	Special features	Mass [g]	Price [€]
150-209	0-25	Flat (carbide tip)	10 mm	Plain		-	110	90.50
150-183	0-25	Flat (carbide tip)	10 mm	Plain		Graduation 0.001	110	170.00
150-184	0-25	Flat (carbide tip)	10 mm	w/ clamp nut	11,5	Graduation 0.001	115	180.00
150-211	0-25	Flat (carbide tip)	10 mm	Plain		w/o ratchet stop	115	86.50
150-210	0-25	Flat (carbide tip)	10 mm	w/ clamp nut	11,5	-	115	98.00
150-212	0-25	Flat (carbide tip)	10 mm	w/ clamp nut	11,5	w/o ratchet stop	115	94.00
150-803	0-25	Spherical (SR4)	10 mm	Plain		-	110	170.00
150-804	0-25	Spherical (SR4)	10 mm	w/ clamp nut	11,5	-	115	180.00
150-823	0-25	Flat (carbide tip)	10 mm	Plain		Reverse reading	110	170.00
150-824	0-25	Flat (carbide tip)	10 mm	w/ clamp nut	11,5	Reverse reading	115	180.00
150-223	0-25	Flat (carbide tip)	10 mm	Plain		Long spindle/ w/o/ratched stop	110	221.00
150-224	0-25	Flat (carbide tip)	10 mm	w/ clamp nut	11,5	Long spindle/ w/o/ratched stop	115	232.00



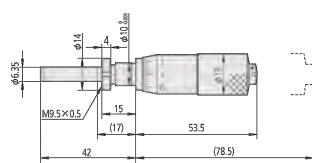
Micrometer Head 25mm Range



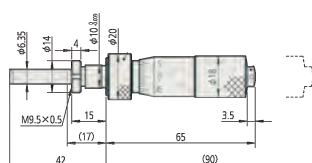
150-196



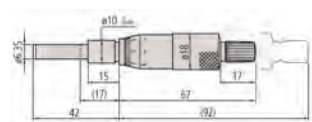
150-211



150-195



150-212



150-192

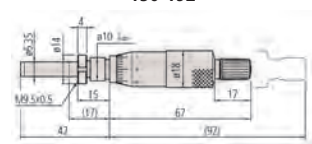


150-801

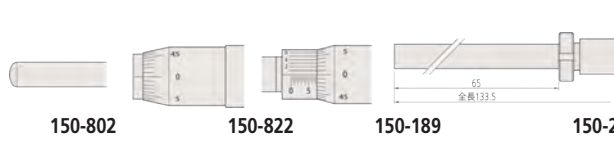
150-821

150-190

150-219



150-191

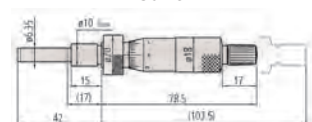


150-802

150-822

150-189

150-220



150-209

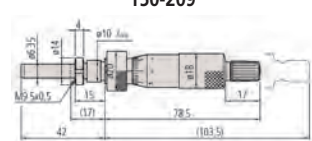


150-803

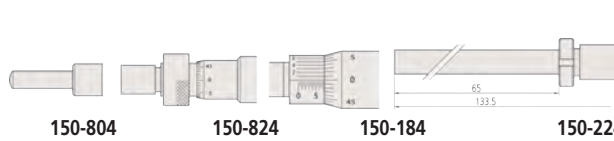
150-823

150-183

150-223



150-210



150-804

150-824

150-184

150-224

(): with spindle full retracted

Accuracy	±2 µm ±4 µm (50 mm)
Spindle pitch	0,5 mm
Scale	Thimble and sleeve satin chrome finish
Measuring surfaces	Carbide tipped
Graduation	0.01 mm/ 0.001 mm



Mitutoyo

Micrometer Heads with Large Thimble

Series 152 - Large thimble type for fine adjustment

These micrometer heads come with a large thimble, allowing you to make fine adjustments. They offer the following benefits:

- Black and red scaling in both directions (152-348/380).
- The large scale drum allows fine graduation and very easy rotation.



152-283



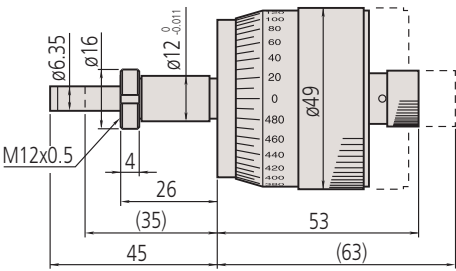
152-348

Specifications

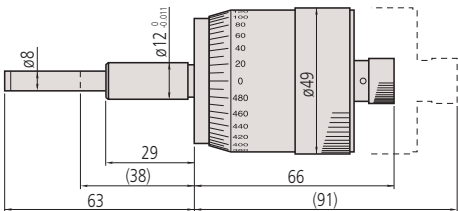
Accuracy	0.002 mm
Spindle pitch	0,5 mm
Scale	White anodized aluminium
Measuring surfaces	Carbide tipped

Metric

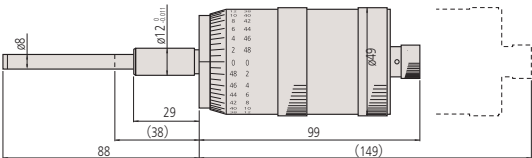
No.	Range [mm]	Spindle end	Accuracy	Stem	Stem Ø	Fixture thickness for clamp nut [mm]	Special features	Mass [g]	Price [€]
152-283	0-10 mm	Flat (carbide tip)	±2 µm	w/ clamp nut	12 mm	22,5	-	190	174.00
152-332	0-25 mm	Flat (carbide tip)	±2 µm	Plain	12 mm		-	310	232.00
152-348	0-25 mm/ 25-0 mm	Flat (carbide tip)	±2 µm	Plain	12 mm		Bidirectional graduation	310	281.00
152-380	0-50 mm/ 50-0 mm	Flat (carbide tip)	±4 µm	Plain	12 mm		Bidirectional graduation	460	470.00



152-283



152-332

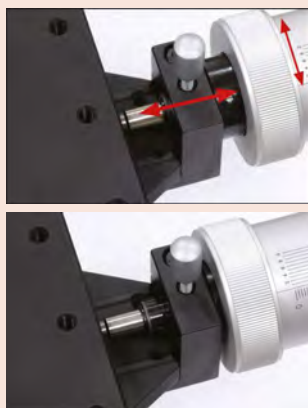


152-380

(): with spindle full retracted

Specifications

Accuracy	±2 µm
Spindle pitch	1 mm
Scale	White anodized aluminium
Measuring surfaces	Hardened steel (>60HRC) 152-390, 152-389, 152-392, 152-391 Carbide tipped 152-402, 152-401
Graduation	0,005 (152-390, 152-389) 0,001 (152-402, 152-401)



152-402, 152-401

The zero point setting ring allows spindle travel without changing the scale drum position, thus simplifying zero point setting.

Micrometer Head for XY-Stage

Series 152 - XY Stage type

These XY Stage type micrometer heads let you read measurement values easily.

They offer the following benefits:

- Micrometer head with rotating spindle, non-rotating measuring surface and bidirectional reading 152-390/389.
- Graduations for each direction are engraved in a different colour (black or red).
- You can read measurement values directly from the 100-step graduation thimble without having to consider 1/2mm values, reducing the chance of error.



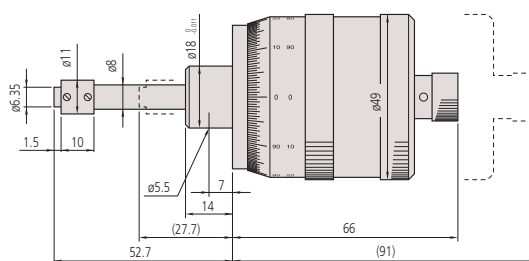
152-390



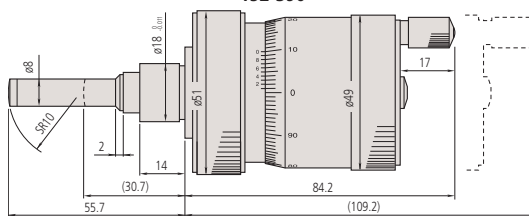
152-402

Metric

No.	Range [mm]	Spindle end	Stem	Stem Ø	Special features	Mass [g]	Price [€]
152-390	0-25 mm/25-0 mm	Flat (hardened) with non-rotating device	Plain	18 mm	For X-axis Bidirectional grad.	270	229.00
152-389	0-25 mm/25-0 mm	Flat (hardened) with non-rotating device	Plain	18 mm	For Y-axis Bidirectional grad.	270	229.00
152-402	0-25 mm	Spherical with carbide tip (SR10)	Plain	18 mm	For X-axis	460	451.00
152-401	0-25 mm	Spherical with carbide tip (SR10)	Plain	18 mm	For Y-axis	460	451.00

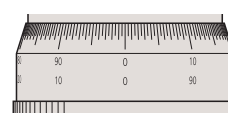


152-390

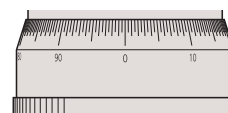


152-402

(): with spindle full retracted



152-389



152-401

Quick Spindle Feed Micrometer Head

Series 152 - Quick spindle feed of 1/rev

This is a differential screw translator (extra-fine feed) type of micrometer head. It offers you the following benefits:

- Micrometer head with ultra-fine rate of travel.
- With its non-rotating spindle it is particularly suited to fine adjustments.
- The differential travel mechanism with double spindle enables ultra-sensitive travel of 0.05mm/rev.

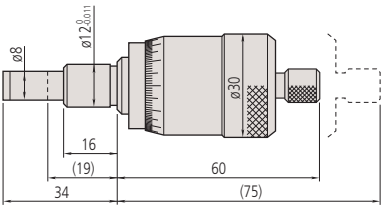


152-102

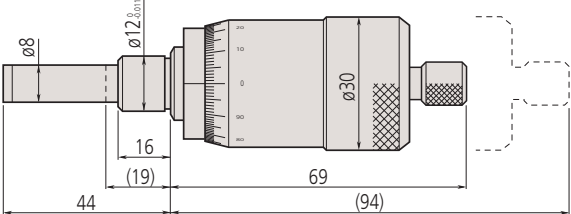
152-103

Metric

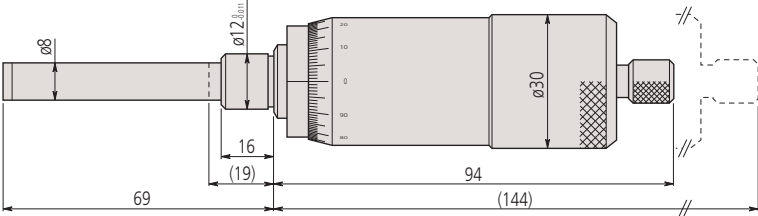
No.	Range [mm]	Spindle end	Accuracy	Stem	Stem Ø	Mass [g]	Price [€]
152-101	0-15	Flat (carbide tip)	±2 µm	Plain	12 mm	205	96.50
152-102	0-25	Flat (carbide tip)	±2 µm	Plain	12 mm	230	156.00
152-103	0-50	Flat (carbide tip)	±4 µm	Plain	12 mm	355	228.00



152-101



152-102



152-103

(): with spindle full retracted

Specifications

Spindle pitch	1 mm
Scale	Thimble and sleeve satin chrome finish
Measuring surfaces	Carbide tipped
Graduation	0.01mm

Micrometer Head with Non-Rotating Spindle

Series 153



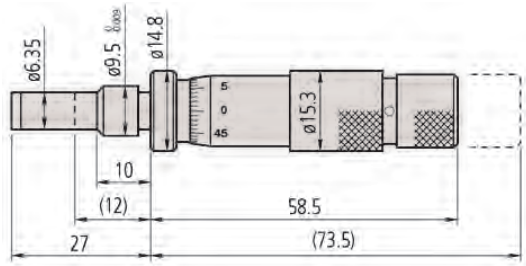
Metric

No.	Range [mm]	Graduation	Spindle end	Stem Ø	Stem	Special features	Mass [g]	Price [€]
153-101	0-15	0,01 mm	Flat (carbide tip)	9,5 mm	Plain		70	132.00
153-203	0-25	0,01 mm	Flat (carbide tip)	9,5 mm	Plain		125	138.00
153-204	0-25	0,001 mm	Flat (carbide tip)	9,5 mm	Plain	Graduation with vernier	125	147.00

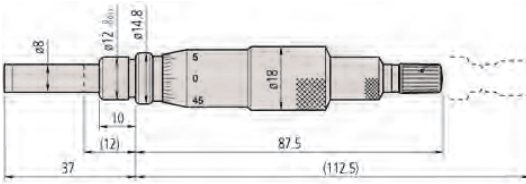
Metric

With ratchet stop

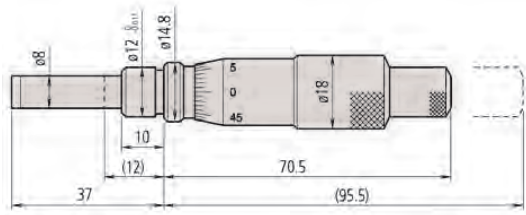
No.	Range [mm]	Graduation	Spindle end	Stem Ø	Stem	Special features	Mass [g]	Price [€]
153-201	0-25	0,01 mm	Flat (carbide tip)	9,5 mm	Plain		125	146.00
153-202	0-25	0,001 mm	Flat (carbide tip)	9,5 mm	Plain	Graduation with vernier	125	155.00



153-101



153-201 + 153-202



153-203 + 153-204 (): with spindle full retracted

Specifications

Accuracy	±3 µm
Spindle pitch	0,5 mm
Scale	Thimble and sleeve satin chrome finish
Measuring surfaces	Carbide tipped



Version with non-rotating spindle

Mitutoyo

Fixtures for Micrometer Head

Mitutoyo offers various types of fixture designed for micrometer heads, which you can use for a wide range of applications, that have the following benefits:

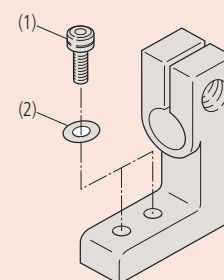
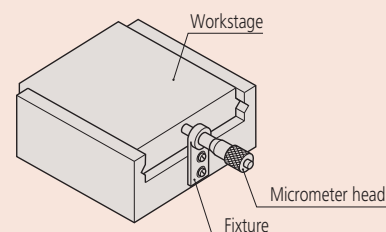
- These fixtures are high quality and durable, manufactured from nickel-plated cast iron.
- Two types of fixture for micrometer heads are available, depending on whether the head has a plain stem or is a clamp nut type.

Fixtures for micrometer heads with clamp nut

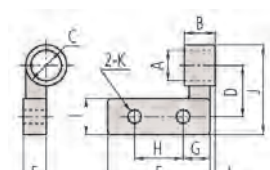
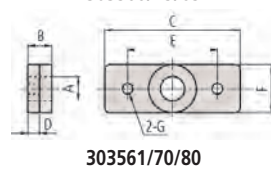
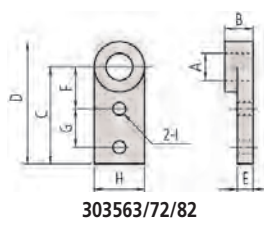
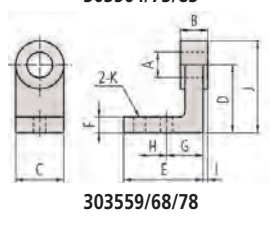
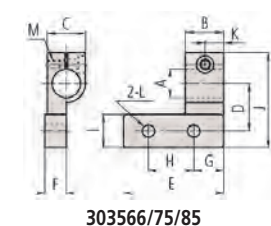
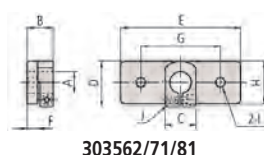
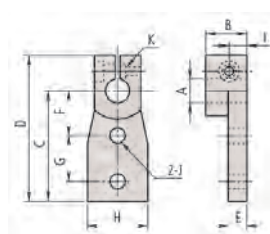
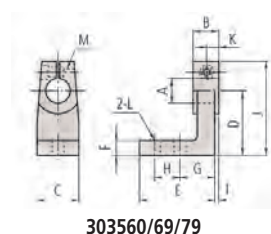
No.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]	J [mm]	K [mm]	L [mm]	Price [€]
303559	9.5	6	15	20	24	5	11	8	0.5	27.5	3.4		31.00
303568	9.5	11.5	20	30	35	7	16	12	1.75	40	4.5		34.00
303578	10	11.5	20	30	35	7	16	12	1.75	40	4.5		37.50
303563	9.5	6	30	37.5	4.5	15	10	15	3.4				31.00
303572	9.5	11.5	40	50	6.5	18	15	20	4.5				34.00
303582	10	11.5	40	50	6.5	18	15	20	4.5				37.50
303561	9.5	6	40	3.5	30	15	3.4						31.00
303570	9.5	11.5	60	5.5	40	20	4.5						34.00
303580	10	11.5	60	5.5	40	20	4.5						37.50
303565	9.5	6	15	15	25	8.5	7.5	10	10	27.5	3.4	0.75	31.00
303574	9.5	11.5	15	20	40	8.5	10	20	15	35	4.5	1.25	34.00
303584	10	11.5	15	20	40	8.5	10	20	15	35	4.5	1.25	37.50

Fixtures for plain stem type micrometer heads

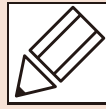
No.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]	J [mm]	K [mm]	L [mm]	M [mm]	Price [€]
303560	9.5	9	15	20	23	5	11	8	1.5	32.5	4.5	ø3.4	M3x0.5	31.00
303569	9.5	14.5	20	30	35	7	16	12	3.25	42.5	7.25	4.5	M3x0.5	34.00
303579	10	14.5	20	30	35	7	16	12	3.25	42.5	7.25	4.5	M3x0.5	37.50
303564	9.5	9	30	42.5	4	15	10	15	4.5	3.4	M3x0.5			31.00
303573	9.5	14.5	40	52.5	6	18	15	20	7.25	4.5	M3x0.5			34.00
303583	10	14.5	40	52.5	6	18	15	20	7.25	4.5	M3x0.5			37.50
303562	9.5	9	15	20	40	3	30	15	3.4	M3x0.5				31.00
303571	9.5	14.5	15	22.5	60	5	40	20	4.5	M3x0.5				34.00
303581	10	14.5	15	22.5	60	5	40	20	4.5	M3x0.5				37.50
303566	9.5	9	15	15	25	8.5	7.5	10	10	32.5	4.5	3.4	M3x0.5	31.00
303575	9.5	14.5	15	20	40	8.5	10	20	15	40	7.25	4.5	M3x0.5	34.00
303585	10	14.5	15	20	40	8.5	10	20	15	40	7.25	4.5	M3x0.5	37.50



Fixtures for use with plain stem type micrometer heads are split, and clamp the stem by tightening a socket head screw (M3x0.5x12 mm).



Quick Guide to Precision Measuring Instruments



Micrometer Heads

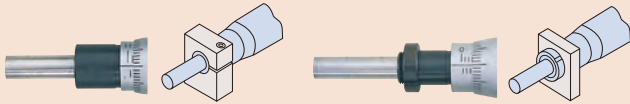
Key Factors in Selection

Key factors in selecting a micrometer head are the measuring range, spindle face, stem, graduations, thimble diameter, etc.

■ Stem

Plain stem

Stem locknut type



- The stem used to mount a micrometer head is classified as a "plain type" or "clamp nut type" as illustrated above. The stem diameter is manufactured to a nominal Metric or Imperial size with an h6 tolerance.
- The clamp nut stem allows fast and secure clamping of the micrometer head. The plain stem has the advantage of wider application and slight positional adjustment in the axial direction on final installation, although it does require a split-fixture clamping arrangement or adhesive fixing.
- General-purpose mounting fixtures are available as optional accessories.

■ Measuring Face



Flat face

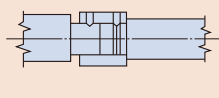
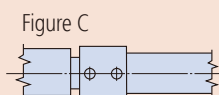
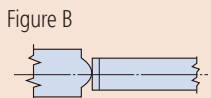
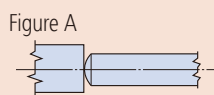


Spherical face



Anti-rotation device

- A flat measuring face is often specified where a micrometer head is used in measurement applications.
- When a micrometer head is used as a feed device, a spherical face can minimize errors due to misalignment (Figure A). Alternatively, a flat face on the spindle can bear against a sphere, such as a carbide ball (Figure B).
- A non-rotating spindle type micrometer head or one fitted with an anti-rotation device on the spindle (Figure C) can be used if a twisting action on the workpiece must be avoided.
- If a micrometer head is used as a stop then a flat face both on the spindle and the face it contacts provides durability.



■ Non-Rotating Spindle

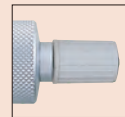
- A non-rotating spindle type head does not exert a twisting action on a workpiece, which may be an important factor in some applications.

■ Spindle Thread Pitch

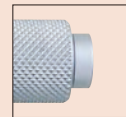
- The standard type head has 0.5mm pitch.
- 1mm-pitch type: quicker to set than standard type and avoids the possibility of a 0.5mm reading error. Excellent load-bearing characteristics due to larger screw thread.
- 0.25mm or 0.1mm-pitch type
This type is the best for fine-feed or fine-positioning applications.

■ Constant-force Device

- A micrometer head fitted with a constant-force device (ratchet or friction thimble) is recommended for measurement applications.
- If using a micrometer head as a stop, or where saving space is a priority, a head without a ratchet is probably the best choice.



Micrometer head with constant-force device



Micrometer head without constant-force device (no ratchet)

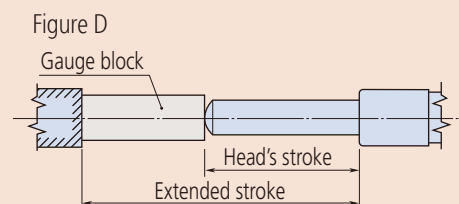
■ Spindle Lock

- If a micrometer head is used as a stop it is desirable to use a head fitted with a spindle lock so that the setting will not change even under repeated shock loading.



■ Measuring Range (Stroke)

- When choosing a measuring range for a micrometer head, allow an adequate margin in consideration of the expected measurement stroke. Six stroke ranges, 5 to 50mm, are available for standard micrometer heads.
- Even if an expected stroke is small, such as 2mm to 3mm, it will be cost effective to choose a 25mm-stroke model as long as there is enough space for installation.
- If a long stroke of over 50mm is required, the concurrent use of a gauge block can extend the effective measuring range. (Figure D)



- In this guide, the range (or stroke end) of the thimble is indicated by a dashed line. For stroke ends, consider the thimble as moving to the position indicated by the line when designing the jig.

■ Ultra-fine Feed Applications

- Dedicated micrometer heads are available for manipulator applications, etc., which require ultra-fine feed or adjustment of spindle.

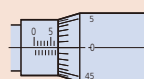
Thimble Diameter

- The diameter of a thimble greatly affects its usability and the "fineness" of positioning. A small-diameter thimble allows quick positioning whereas a large-diameter thimble allows fine positioning and easy reading of the graduations. Some models combine the advantages of both features by mounting a coarse-feed thimble (speeder) on the large-diameter thimble.

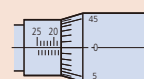


Graduation Styles

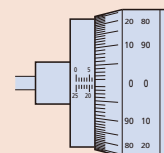
- Care is needed when taking a reading from a mechanical micrometer head, especially if the user is unfamiliar with the model.
- The "normal graduation" style, identical to that of an outside micrometer, is the standard. For this style the reading increases as the spindle retracts into the body.
- On the contrary, in the "reverse graduation" style the reading increases as the spindle advances out of the body.
- The "bidirectional graduation" style is intended to facilitate measurement in either direction by using black numerals for normal, and red numerals for reverse, operation.
- Micrometer heads with a mechanical or electronic digital display, which allow direct reading of a measurement value, are also available. These types are free from misreading errors. A further advantage is that the electronic digital display type can enable computer-based storage and statistical processing of measurement data.



Normal graduation style



Reverse graduation style

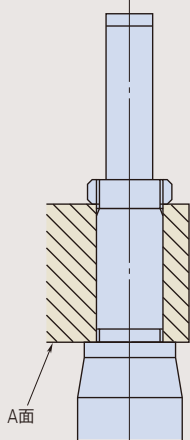
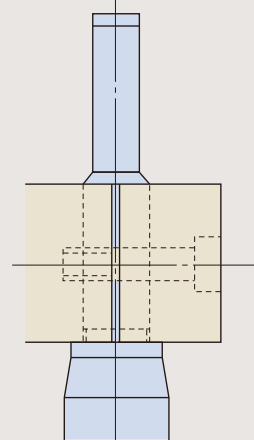
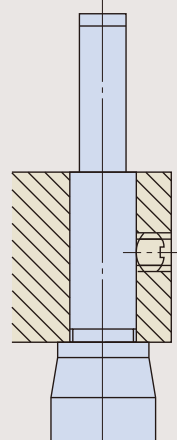


Bidirectional graduation style

Guidelines for Self-made Fixtures

A micrometer head should be mounted by the stem in an accurately machined hole using a clamping method that does not exert excessive force on the stem. There are three common mounting methods as shown below. Method 3 is not recommended. Adopt methods (1) or (2) wherever possible.

(Unit: mm)

Mounting method	(1) Clamp nut				(2) Split-body clamp				(3) Setscrew clamp			
												
	Points to keep in mind											
	Stem diameter				Stem diameter				Stem diameter			
	Mounting hole Fitting tolerance				Mounting hole Fitting tolerance				Mounting hole Fitting tolerance			
<div>Precautions</div>												

■ Maximum Loading Capacity on Micrometer Heads

The maximum loading capacity of a micrometer head depends mainly on the method of mounting and whether the loading is static or dynamic (used as a stop, for example). Therefore the maximum loading capacity of each model cannot be definitively specified. The loading limits recommended by Mitutoyo (at less than 100,000 revolutions if used for measuring within the accuracy range) and the results of static load tests using a small micrometer head are given below.

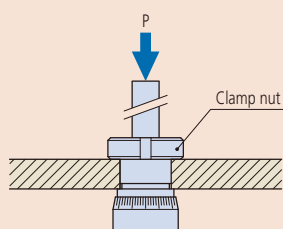
1. Recommended maximum loading limit

		Maximum loading limit
Standard type	(spindle pitch: 0.5mm)	Up to approx. 39,227N / 4kgf *
	Spindle pitch: 0.1mm/0.25mm	Up to approx. 19,613N / 2kgf
High-functionality type	Spindle pitch: 0.5mm	Up to approx. 39,227N / 4kgf
	Spindle pitch: 1.0mm	Up to approx. 58,840N / 6kgf
	Non-rotating spindle	Up to approx. 19,613N / 2kgf
	Series 110 micro-fine feed type (with a differential mechanism)	Up to approx. 19,613N / 2kgf

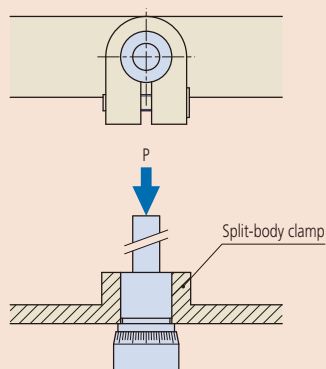
* Up to approx. **19,613N** / 2kgf only for ultra small models

2. Static load test for micrometer heads (using 148-104 / 148-103 for this test)

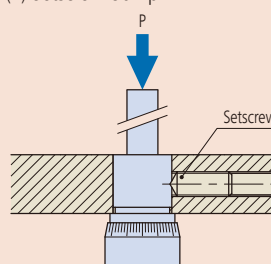
(1) Clamp nut



(2) Split-body clamp



(3) Setscrew clamp



Test method

Micrometer heads were set up as shown and the force at which the head was damaged or pushed out of the fixture when a static load was applied, in direction P, was measured. (In the tests no account was taken of the accuracy range.)

Mounting method	Damaging / dislodging load*
(1) Clamp nut	Damage to the main unit will occur at 8.63 to 9.8kN (880 to 1000kgf).
(2) Split-body clamp	The main unit will be pushed out of the fixture at 0.69 to 0.98kN (70 to 100kgf).
(3) Setscrew clamp	Damage to the setscrew will occur at 0.69 to 1.08kN (70 to 110kgf).

* These load values should only be used as an approximate guide.

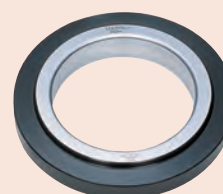
**Inside Micrometer
Page 139**



**Bore Gauges
Page 161**



**Inside Measuring Instruments Accessories
Page 175**



Digimatic Holtest Individual

Series 468

These are three-point internal micrometers that offer you the following benefits:

- Individual micrometer.
- Titanium-coated measuring pins give you excellent durability and impact resistance.
- They also have excellent resistance against water and dust (IP65 protection level), allowing you to use this product in machining situations that include splashing coolant fluid.
- Large LCD display with character height of 7.5mm enables you to read measurements easily.
- Without setting rings or extensions.



Titanium coated measuring surfaces for durability

Metric

No.	Range [mm]	Mass [g]	Price [€]
468-161	6-8	370	885.00
468-162	8-10	370	905.00
468-163	10-12	370	920.00
468-164	12-16	400	940.00
468-165	16-20	400	950.00
468-166	20-25	470	1,030.00
468-167	25-30	480	1,030.00
468-168	30-40	480	1,060.00
468-169	40-50	500	1,080.00
468-170	50-63	620	1,130.00
468-171	62-75	630	1,140.00
468-172	75-88	960	1,150.00
468-173	87-100	970	1,195.00
468-174	100-125	940	1,530.00
468-175	125-150	1030	1,640.00
468-176	150-175	1120	1,800.00
468-177	175-200	1210	1,900.00
468-178	200-225	1300	2,010.00
468-179	225-250	1390	2,070.00
468-180	250-275	1480	2,130.00
468-181	275-300	1570	2,235.00



Functions	Series 468
ZERO/ABS	●
Auto Power OFF after 20 min. non use	●
2 x PRESET	●
Low voltage alarm	●
Function lock	●
HOLD	●
Data output	●

Specifications

Accuracy	6-20 mm : $\pm 2 \mu\text{m}$ 20-100 mm : $\pm 3 \mu\text{m}$ 100-300 : $\pm 5 \mu\text{m}$ (excluding quantizing error) - The given values require close contact of the measuring surfaces.
Measuring pins	Titanium coated tungsten carbide (6-12 mm) Titanium coated hardened steel (12-300 mm) Taper: tungsten carbide
Digital step	0,001 mm
Display	LCD, character height 7.5 mm
Battery life	approx. 1.2 years
Delivered	Including box, key, 1 battery, certificate of inspection

Optional accessories

No.	Description	Price €
04AZB157	Holder for micrometer stand	47.00
156-101-10	Micrometer stand	54.00
264-504-5D	Digimatic Mini-Processor	445.00

Cables

05CZA662	Digimatic cable with data switch (1 m)	73.50
05CZA663	Digimatic cable with data switch (2 m)	82.50
06ADV380B	USB Input Tool Direct cable with data switch (2 m)	115.00
02AZD790B	Connecting cable U-Wave with data switch	95.00

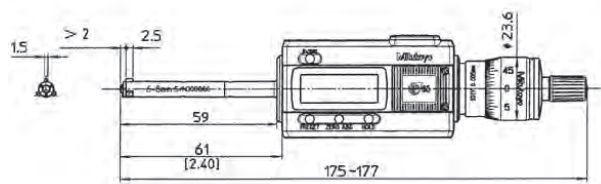
Extensions

952322	Extension 100 mm for 6 - 12 mm	91.00
952621	Extension 150 mm for 12 - 20 mm	91.00
952622	Extension 150 mm for 20 - 50 mm	101.00
952623	Extension 150 mm for 50 - 300 mm	175.00

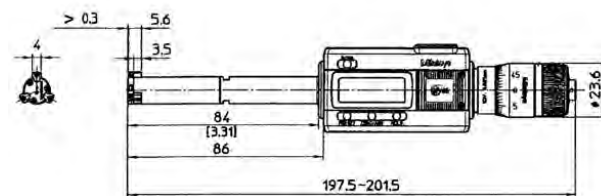
Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50

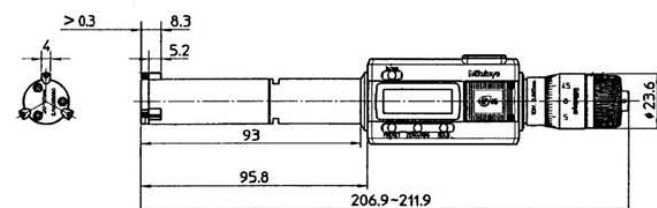
Digimatic Holtest Individual



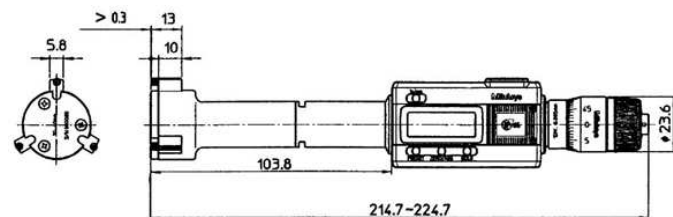
468-161/162/163



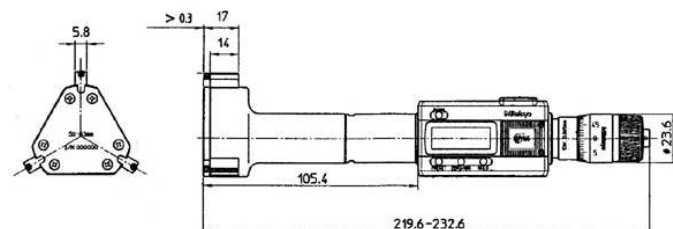
468-164/165/166



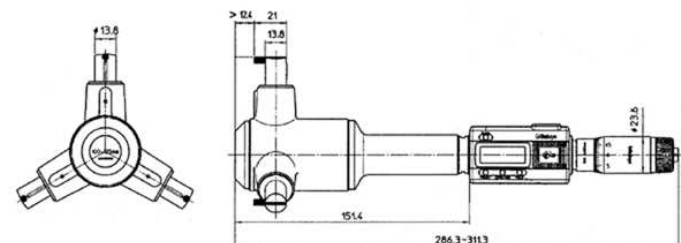
468-167/168



468-169/170



468-171/172/173/174



468-175/176/177/178/179/180/181



156-101-10+264-504-5D+04AZB157



04AZB157



Extension rod for deep holes

Digimatic Holtest Interchangeable Head Set

Series 468

These are three-point internal micrometers that offer you the following benefits:

- Interchangeable head set.
- Titanium-coated measuring pins give you excellent durability and impact resistance.
- They also have excellent resistance against water and dust (IP65 protection level), allowing you to use this product in machining situations that include splashing coolant fluid.
- Large LCD display with character height of 7.5mm enables you to read measurements easily.
- With setting rings and extensions.



Functions	Series 468
ZERO/ABS	●
Auto Power OFF after 20 min. non use	●
2 x PRESET	●
Low voltage alarm	●
Function lock	●
HOLD	●
Data output	●

Specifications

Accuracy	6-20 mm : $\pm 2 \mu\text{m}$ 20-100 mm : $\pm 3 \mu\text{m}$ 100-200 mm : $\pm 5 \mu\text{m}$ (excluding quantizing error) - The given value require close contact of the measuring surfaces.
Measuring pins	Titanium coated tungsten carbide (6-12 mm) Titanium coated hardened steel (12-200 mm) Taper: tungsten carbide
Digital step	0,001 mm
Display	LCD, character height 7,5 mm
Battery life	approx. 1.2 years
Delivered	Including box, key, 1 battery, setting ring, extension, certificate of inspection

Optional accessories

No.	Description	Price €
156-101-10	Micrometer stand	54.00
04AZB157	Holder for micrometer stand	47.00
Cables		
05CZA662	Digimatic cable with data switch (1 m)	73.50
05CZA663	Digimatic cable with data switch (2 m)	82.50
06ADV380B	USB Input Tool Direct cable with data switch (2 m)	115.00
02AZD790B	Connecting cable U-Wave with data switch	95.00
Extensions		
952322	Extension 100 mm for 6 - 12 mm	91.00
952621	Extension 150 mm for 12 - 20 mm	91.00
952622	Extension 150 mm for 20 - 50 mm	101.00
952623	Extension 150 mm for 50 - 300 mm	175.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



468-973



Titanium coated measuring surfaces for durability

Metric

No.	Range [mm]	Individual ranges	Setting rings included	Length of extensions [mm]	Mass [g]	Price [€]
468-971	6-12	6-8, 8-10, 10-12 mm	ø8 mm (177-125) ø10 mm (177-126)	100	420	1,647.00
468-972	12-20	12-16, 16-20 mm	ø16 mm (177-177)	150	560	1,441.00
468-973	20-50	20-25, 25-30, 30-40, 40-50 mm	ø25 mm (177-139) ø40 mm (177-290)	150	1170	2,390.00
468-974	50-100	50-63, 62-75, 75-88, 87-100 mm	ø62 mm (177-314) ø87 mm (177-318)	150	2420	3,420.00
468-975	100-200	100-125, 125-150, 150-175, 175-200 mm	ø125 mm (177-298) ø175 mm (177-302)	150	3540	4,944.00



04AZB157



Extension



156-101-10
264-504-5D
04AZB157

Digimatic Holtest Complete Unit Set

Series 468

These are three-point internal micrometers that offer you the following benefits:

- Complete unit set.
- Titanium-coated measuring pins give you excellent durability and impact resistance.
- They also have excellent resistance against water and dust (IP65 protection level), allowing you to use this product in machining situations that include splashing coolant fluid.
- Large LCD display with character height of 7.5mm enables you to read measurements easily.
- With setting rings but without extensions.



468-983



Titanium coated measuring surfaces for durability

Metric

Measuring surfaces titanium coated. Carbide taper and contact points.

No.	Range [mm]	Individual ranges	Models included	Setting rings included	Mass [g]	Price [€]
468-981	6-12	6-8, 8-10, 10-12 mm	468-161 / 468-162 / 468-163	ø8 mm (177-125) ø10 mm (177-126)	1160	2,596.00
468-982	12-25	12-16, 16-20, 20-25 mm	468-164 / 468-165 / 468-166	ø16 mm (177-177) ø20 mm (177-286)	1290	2,884.00
468-983	25-50	25-30, 30-40, 40-50 mm	468-167 / 468-168 / 468-169	ø30 mm (177-288) ø40 mm (177-290)	1480	3,039.00
468-984	50-75	50-63, 62-75 mm	468-170 / 468-171	ø62 mm (177-314)	1270	2,390.00
468-985	75-100	75-88, 87-100 mm	468-172 / 468-173	ø87 mm (177-318)	1990	2,657.00



Functions	Series 468
ZERO/ABS	●
Auto Power OFF after 20 min. non use	●
2 x PRESET	●
Low voltage alarm	●
Function lock	●
HOLD	●
Data output	●

Specifications

Accuracy	6-20 mm : $\pm 2 \mu\text{m}$ 20-100 mm : $\pm 3 \mu\text{m}$ (excluding quantizing error) - The given values require close contact of the measuring surfaces.
Measuring pins	Titanium coated tungsten carbide (6-12 mm) Titanium coated hardened steel (12-100 mm) Taper: tungsten carbide
Digital step	0,001 mm
Display	LCD, character height 7,5 mm
Battery life	approx. 1.2 years
Delivered	Including box, key, 1 battery, setting ring, certificate of inspection

Optional accessories

No.	Description	Price €
04AZB157	Holder for micrometer stand	47.00
156-101-10	Micrometer stand	54.00
Cables		
05CZA662	Digimatic cable with data switch (1 m)	73.50
05CZA663	Digimatic cable with data switch (2 m)	82.50
06ADV380B	USB Input Tool Direct cable with data switch (2 m)	115.00
02AZD790B	Connecting cable U-Wave with data switch	95.00

Extensions

952322	Extension 100 mm for 6 - 12 mm	91.00
952621	Extension 150 mm for 12 - 20 mm	91.00
952622	Extension 150 mm for 20 - 50 mm	101.00
952623	Extension 150 mm for 50 - 300 mm	175.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



04AZB157



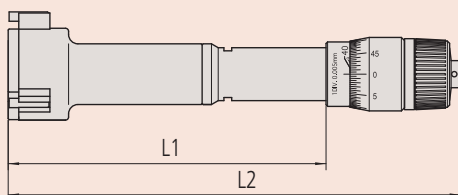
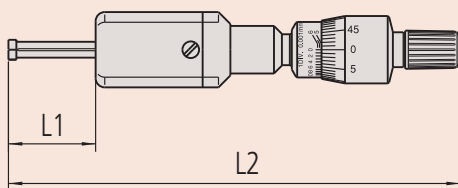
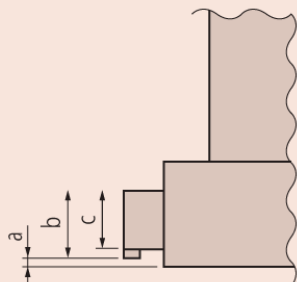
Extension

Specifications

Accuracy	2-20 mm : $\pm 2 \mu\text{m}$ 20-100 mm : $\pm 3 \mu\text{m}$ 100-300 mm : $\pm 5 \mu\text{m}$
Scale	Thimble and sleeve satin chrome finish, Up to 12 mm : $\varnothing 17 \text{ mm}$ Over 12 mm : $\varnothing 23 \text{ mm}$
Measuring Surface/Pins	2 - 6 mm: carbide 6 - 12 mm: titanium coated tungsten carbide 12 - 300 mm: titanium coated hardened steel taper: tungsten carbide
Measuring spindle	Spindle pitch 0,5 mm
Graduation	up to 12 mm: 0.001 mm over 12 mm: 0.005 mm
Measuring method	2-6 mm : 2-point 6-300 mm : 3-point
Delivered	Including box, key, certificate of inspection

Optional accessories

No.	Description	Price €
952621	Extension 150 mm for 12 - 20 mm	91.00
952622	Extension 150 mm for 20 - 50 mm	101.00
952623	Extension 150 mm for 50 - 300 mm	175.00
952322	Extension 100 mm for 6 - 12 mm	91.00

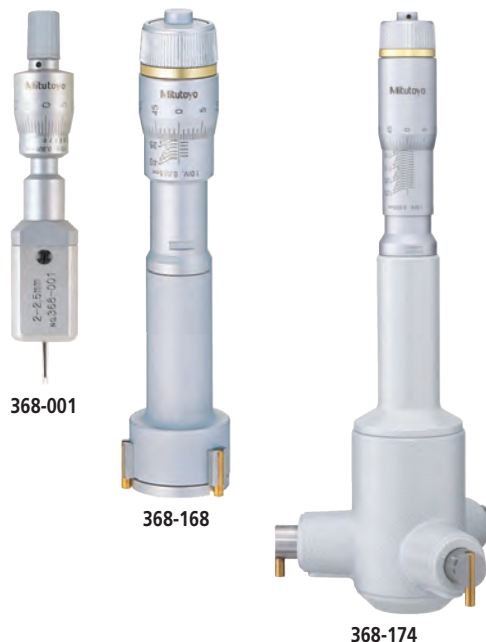


Holtest Metric

Series 368 - Metric

These are metric three-point and two-point internal micrometers that offer you the following benefits:

- Individual micrometer.
- Titanium-coated measuring pins (> 6mm range) give you excellent durability and impact resistance.
- Three-point micrometer (> 6mm range) allows stable measurement through automatic centring.
- Without setting rings or extensions.



Metric

No.	Range [mm]	L1 [mm]	L2 [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
368-001	2-2.5	12	103.5-104			2	88	855.00
368-002	2.5-3	12	103.5-104			2	88	855.00
368-003	3-4	22	113-114			2	91	644.00
368-004	4-5	22	113-114			2	91	644.00
368-005	5-6	22	113-114			2	91	644.00
368-161	6-8	59	102-104	2		2.5	60	318.00
368-162	8-10	59	102-104	2		2.5	60	318.00
368-163	10-12	59	102-104	2		2.5	60	318.00
368-164	12-16	82	126-130	0.3	5.6	3.5	150	375.00
368-165	16-20	82	126-130	0.3	5.6	3.5	160	385.00
368-166	20-25	94	126-130	0.3	8.3	5.2	260	395.00
368-167	25-30	94	137-142	0.3	8.3	5.2	280	405.00
368-168	30-40	102	145-155	0.3	13	10	290	415.00
368-169	40-50	102	145-155	0.3	13	10	330	425.00
368-170	50-63	105	150-163	0.3	17	14	440	479.00
368-171	62-75	105	150-163	0.3	17	14	450	500.00
368-172	75-88	105	150-165	0.3	17	14	570	510.00
368-173	87-100	105	150-165	0.3	17	14	580	520.00
368-174	100-125	161	227-252	12.4	21	13.8	1030	778.00
368-175	125-150	161	227-252	12.4	21	13.8	1120	829.00
368-176	150-175	161	227-252	12.4	21	13.8	1210	870.00
368-177	175-200	161	227-252	12.4	21	13.8	1320	891.00
368-178	200-225	161	227-252	12.4	21	13.8	1430	963.00
368-179	225-250	161	227-252	12.4	21	13.8	1550	989.00
368-180	250-275	161	227-252	12.4	21	13.8	1700	1,030.00
368-181	275-300	161	227-252	12.4	21	13.8	1870	1,135.00



Holtest Set

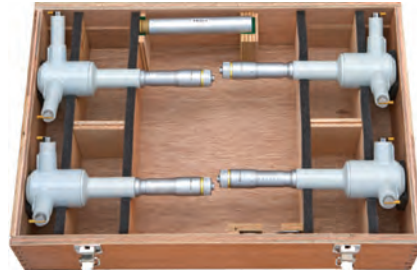
Series 368

This is a set of three-point internal micrometers that offers you the following benefits:

- Complete unit set.
- Carbide measuring surface (2-6mm range)
- Titanium-coated measuring pins (> 6mm range) give you excellent durability and impact resistance.
- With setting rings and extensions, except for models 368-906/07 which are supplied with setting rings only.



368-914



368-915

Metric

No.	Range [mm]	Individual ranges	Models included	Setting rings included	Extension rod	Mass [g]	Price [€]
368-906	2-3	2-2.5, 2.5-3 mm	368-001 / 368-002	ø2.5 mm (177-208)		310	1,700.00
368-907	3-6	3-4, 4-5, 5-6 mm	368-003 / 368-004 / 368-005	ø4 mm (177-204) ø5 mm (177-205)		505	1,950.00
368-911	6-12	6-8, 8-10, 10-12 mm	368-161 / 368-162 / 368-163	ø8 mm (177-125) ø10 mm (177-126)	952322	180	845.00
368-912	12-20	12-16, 16-20 mm	368-164 / 368-165	ø16 mm (177-177)	952621	280	730.00
368-913	20-50	20-25, 25-30, 30-40, 40-50 mm	368-166 / 368-167 / 368-168 / 368-169	ø25 mm (177-139) ø40 mm (177-290)	952622	960	1,675.00
368-914	50-100	50-63, 62-75, 75-88, 87-100 mm	368-170 / 368-171 / 368-172 / 368-173	ø62 mm (177-314) ø87 mm (177-318)	952623	2030	1,970.00
368-915	100-200	100-125, 125-150, 150-175, 175-200 mm	368-174 / 368-175 / 368-176 / 368-177	ø125 mm (177-298) ø175 mm (177-302)	952623	4680	4,015.00



Specifications

Accuracy	2-20 mm : 2 µm 20-100 mm : 3 µm 100-300 mm : 5 µm
Scale	Thimble and sleeve satin chrome finish, Up to 12 mm : ø17 mm Over 12 mm : ø23 mm
Graduation	0.001 mm. 0.005 mm (models over 12 mm)
Delivered	Including box, key, setting ring, extension, certificate of inspection



368-906



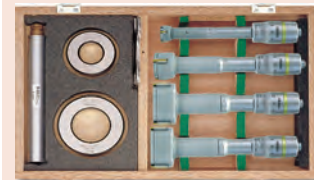
368-907



368-911



368-912



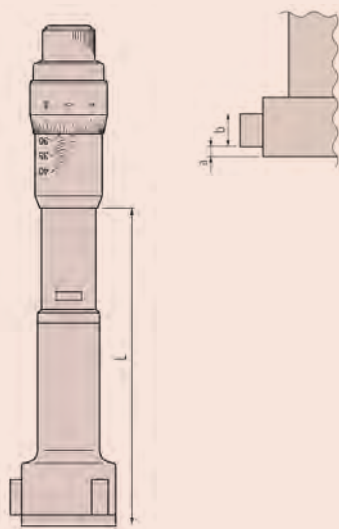
368-913

Specifications

Accuracy	12-20 mm : $\pm 2 \mu\text{m}$ 20-100 mm : $\pm 3 \mu\text{m}$ 100-300 mm : $\pm 5 \mu\text{m}$
Scale	Thimble and sleeve satin chrome finish, Up to 12 mm : $\varnothing 17 \text{ mm}$ Over 12 mm : $\varnothing 23 \text{ mm}$
Measuring surfaces	hardened steel
Measuring spindle	Taper: hardened steel Spindle pitch 0,5 mm
Graduation	0.005 mm
Measuring method	3-point
Delivered	Including box, key, certificate of inspection

Optional accessories

No.	Description	Price €
952621	Extension 150 mm for 12 - 20 mm	91.00
952622	Extension 150 mm for 20 - 50 mm	101.00
952623	Extension 150 mm for 50 - 300 mm	175.00



Economy Holtest

Series 368

This is an economy version of a three-point internal micrometer, that offers you the following benefits:

- Hardened tool steel anvils and tapers allow a more economically priced and affordable tool.
- Individual types without setting rings or extensions.



368-769



368-770



368-774

Metric

No.	Range [mm]	L [mm]	a [mm]	b [mm]	Mass [g]	Price [€]
368-764	12-16	82	2.6	3.5	150	308.00
368-765	16-20	82	2.6	3.5	150	311.00
368-766	20-25	94	3.4	5.2	260	314.00
368-767	25-30	94	3.4	5.2	280	335.00
368-768	30-40	102	3.4	10	290	371.00
368-769	40-50	102	3.4	10	330	376.00
368-770	50-63	105	3.4	14	440	417.00
368-771	62-75	105	3.4	14	450	427.00
368-772	75-88	105	3.4	14	560	438.00
368-773	87-100	105	3.4	14	570	464.00
368-774	100-125	161	19.6	13.8	1020	721.00
368-775	125-150	161	19.6	13.8	1110	773.00
368-776	150-175	161	19.6	13.8	1200	850.00
368-777	175-200	161	19.6	13.8	1300	860.00
368-778	200-225	161	19.6	13.8	1420	906.00
368-779	225-250	161	19.6	13.8	1540	917.00
368-780	250-275	161	19.6	13.8	1690	963.00
368-781	275-300	161	19.6	13.8	1860	1,085.00



Economy Holtest Set

Series 368

This is an economy version of a three-point internal micrometer, that offers you the following benefits:

- Hardened tool steel anvils and tapers allow a more economically priced and affordable tool.
- Individual types without setting rings or extensions.
- Sets with setting rings and extensions.



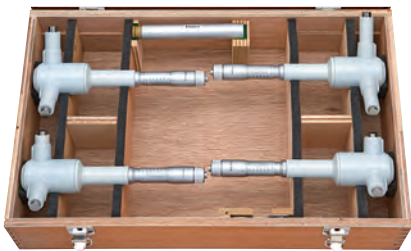
368-991



368-992



368-993



368-994

Metric							
No.	Range [mm]	Individual ranges	Models included	Setting rings included	Extension rod	Mass [g]	Price [€]
368-991	12-20	12-16, 16-20 mm	368-764 / 368-765	ø16 mm (177-177)	952621	310	649.00
368-992	20-50	20-25, 25-30, 30-40, 40-50 mm	368-766 / 368-767 368-768 / 368-769	ø25 mm (177-139) ø40 mm (177-290)	952622	1160	1,560.00
368-993	50-100	50-63, 62-75, 75-88, 87-100 mm	368-770 / 368-771 / 368-772 / 368-773	ø62 mm (177-314) ø87 mm (177-318)	952623	2020	1,895.00
368-994	100-200	100-125, 125-150, 150-175, 175-200 mm	368-774 / 368-775 / 368-776 / 368-777	ø125 mm (177-298) ø175 mm (177-302)	952623	4630	3,790.00



Specifications

Accuracy	12-20 mm : $\pm 2 \mu\text{m}$ 20-100 mm : $\pm 3 \mu\text{m}$ 100-300 mm : $\pm 5 \mu\text{m}$
Scale	Thimble and sleeve satin chrome finish, Up to 12 mm : $\varnothing 17 \text{ mm}$ Over 12 mm : $\varnothing 23 \text{ mm}$
Graduation	up to 12 mm: 0.001 mm over 12 mm: 0.005 mm
Delivered	Including box, key, setting ring, extension, certificate of inspection

Optional accessories

No.	Description	Price €
952621	Extension 150 mm for 12 - 20 mm	91.00
952622	Extension 150 mm for 20 - 50 mm	101.00
952623	Extension 150 mm for 50 - 300 mm	175.00



Extension

ABSOLUTE Borematic

ABSOLUTE®



Series 568

This is a three-point Digimatic snap open bore gauge.

The Absolute Borematic offers you the following benefits:

- It enables you to take measurements easily and quickly.
- Titanium-coated measuring pins gives you excellent durability and impact resistance.
- A large LCD display with character height of 11mm makes measurements easy to read.
- 330° rotatable display unit also gives you easy reading at any angle.
- GO/NG tolerance judgement function.
- It has a function lock to protect the setup against unauthorised use.



Metric

No.	Range [mm]	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
568-361	6-8	83	2		2.5	480	1,125.00
568-362	8-10	83	2		2.5	485	1,125.00
568-363	10-12	83	2		2.5	485	1,125.00
568-364	12-16	53	0.3	5.6	3.5	475	1,150.00
568-365	16-20	53	0.3	5.6	3.5	480	1,150.00
568-366	20-25	59.3	0.3	8.3	5.2	540	1,225.00
568-367	25-30	59.3	0.3	8.3	5.2	555	1,225.00
568-368	30-40	67.3	0.3	8.3	5.2	565	1,330.00
568-369	40-50	67.3	0.3	13	10	610	1,330.00
568-370	50-63	75.4	0.3	17	14	730	1,390.00
568-371	62-75	75.4	0.3	17	14	740	1,420.00
568-372	75-88	75.4	0.3	17	14	790	1,465.00
568-373	87-100	75.4	0.3	17	14	800	1,465.00
568-374	100-113	75.4	0.3	17	14	900	1,550.00
568-375	112-125	75.4	0.3	17	14	910	1,575.00



Functions	Series 568
ZERO/ABS	●
GO/NG judgement	●
ON/OFF	●
DATA/HOLD	●
2 x PRESET	●
Function lock	●
Data output	●

Specifications

Accuracy	6-20 mm : $\pm 5 \mu\text{m}$ 20-125 mm : $\pm 6 \mu\text{m}$ (excluding quantizing error)
Measuring pins	Titanium coated tungsten carbide (6 - 12 mm) Titanium coated hardened steel (12 - 125 mm)
Digital step	0,001 mm
Display	LCD, character height: 11 mm
Battery life	approx. 5.000 hours
Delivered	Including box, key, 1 battery, certificate of inspection

Optional accessories

No.	Description	Price €
905338	Digimatic cable (1 m)	28.00
905409	Digimatic cable (2 m)	34.00
02AZD790F	Connecting cable U-Wave	85.00
06ADV380F	USB Input Tool Direct cable (2 m)	100.00

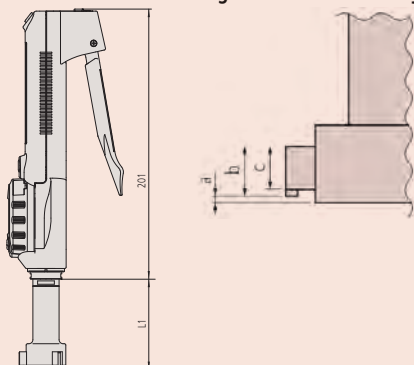
Extensions		
952621	Extension 150 mm for 12 - 20 mm	91.00
952622	Extension 150 mm for 20 - 50 mm	101.00
952623	Extension 150 mm for 50 - 300 mm	175.00
952322	Extension 100 mm for 6 - 12 mm	91.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



Titanium coated measuring surfaces for durability



ABSOLUTE Borematic

Series 568

This is a three-point Digimatic snap open bore gauge.

The Absolute Borematic offers you the following benefits:

- It enables you to take measurements easily and quickly.
- Titanium-coated measuring pins gives you excellent durability and impact resistance.
- A large LCD display with character height of 11mm makes measurements easy to read.
- 330° rotatable display unit also gives you easy reading at any angle.
- GO/NG tolerance judgement function.
- It has a function lock to protect the setup against unauthorised use.



568-924



568-926

Metric

No.	Range [mm]	Individual ranges	Setting rings included	Mass [g]	Price [€]
568-924	6-12	6-8 mm 8-10 mm 10-12 mm	Ø8 mm (177-125) Ø10 mm (177-126)	530	1,630.00
568-925	12-25	12-16 mm 16-20 mm 20-25 mm	Ø16 mm (177-177) Ø20 mm (177-286)	690	1,750.00
568-926	25-50	25-30 mm 30-40 mm 40-50 mm	Ø30 mm (177-288) Ø40 mm (177-290)	930	2,060.00
568-927	50-100	50-63 mm 62-75 mm 75-88 mm 87-100 mm	Ø62 mm (177-314) Ø87 mm (177-318)	1850	3,500.00



ABSOLUTE®



Functions	Series 568
ZERO/ABS	●
GO/±NG judgement	●
ON/OFF	●
DATA/HOLD	●
2 x PRESET	●
Function lock	●
Data output	●

Specifications

Accuracy	6-20 mm : ±5 µm 20-125 mm : ±6 µm (excluding quantizing error)
Measuring pins	Titanium coated tungsten carbide (6 - 12 mm) Titanium coated hardened steel (12 - 125 mm)
Digital step	0,001 mm
Display	LCD, character height: 11 mm
Battery life	approx. 5.000 hours
Delivered	Including box, key, 1 battery, setting ring, certificate of inspection

Optional accessories

No.	Description	Price €
905338	Digimatic cable (1 m)	28.00
905409	Digimatic cable (2 m)	34.00
02AZD790F	Connecting cable U-Wave	85.00
06ADV380F	USB Input Tool Direct cable (2 m)	100.00

Extensions

952322	Extension 100 mm for 6 - 12 mm	91.00
952621	Extension 150 mm for 12 - 20 mm	91.00
952622	Extension 150 mm for 20 - 50 mm	101.00
952623	Extension 150 mm for 50 - 300 mm	175.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



Titanium coated measuring surfaces for durability

ABSOLUTE Borematic

ABSOLUTE®



Series 568

This is a three-point Digimatic snap open bore gauge.

The Absolute Borematic offers you the following benefits:

- It enables you to take measurements easily and quickly.
- Titanium-coated measuring pins gives you excellent durability and impact resistance.
- A large LCD display with character height of 11mm makes measurements easy to read.
- 330° rotatable display unit also gives you easy reading at any angle.
- GO/NG tolerance judgement function.
- It has a function lock to protect the setup against unauthorised use.



568-959

Metric

No.	Range [mm]	Individual ranges	Setting rings included	Mass [g]	Price [€]
568-955	6-12	6-8 mm 8-10 mm 10-12 mm	Ø8 mm (177-125) Ø10 mm (177-126)	1450	3,500.00
568-956	12-25	12-16 mm 16-20 mm 20-25 mm	Ø16 mm (177-177) Ø20 mm (177-286)	1520	3,680.00
568-957	25-50	25-30 mm 30-40 mm 40-50 mm	Ø30 mm (177-288) Ø40 mm (177-290)	1750	4,060.00
568-958	50-75	50-63 mm 62-75 mm	Ø62 mm (177-314)	1490	2,925.00
568-959	75-100	75-88 mm 87-100 mm	Ø87 mm (177-318)	1610	3,250.00



Functions	Series 568
ZERO/ABS	●
GO/±NG judgement	●
ON/OFF	●
DATA/HOLD	●
2 x PRESET	●
Function lock	●
Data output	●

Specifications

Accuracy	6-20 mm : ±5 µm 20-125 mm : ±6 µm (excluding quantizing error)
Measuring pins	Titanium coated tungsten carbide (6 - 12 mm) Titanium coated hardened steel (12 - 125 mm)
Digital step	0,001 mm
Display	LCD, character height: 11 mm
Battery life	approx. 5.000 hours
Delivered	Including box, key, battery, setting ring, certificate of inspection

Optional accessories

No.	Description	Price €
905338	Digimatic cable (1 m)	28.00
905409	Digimatic cable (2 m)	34.00
02AZD790F	Connecting cable U-Wave	85.00
06ADV380F	USB Input Tool Direct cable (2 m)	100.00

Extensions

952322	Extension 100 mm for 6 - 12 mm	91.00
952621	Extension 150 mm for 12 - 20 mm	91.00
952622	Extension 150 mm for 20 - 50 mm	101.00
952623	Extension 150 mm for 50 - 300 mm	175.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



Titanium coated measuring surfaces for durability

Measuring Heads for Borematic

Series 568



- 1 : Measuring head
- 2 : Adapter
- 3 : Display unit Borematic

Metric Display unit Borematic

No.	Price [€]
568-014	989.00

Metric Measuring heads

No.	Range [mm]	Price [€]
04AZB136	6-8	268.00
04AZB137	8-10	268.00
04AZB138	10-12	268.00
04AZA719	12-16	237.00
04AZA720	16-20	237.00
04AZA728	20-25	258.00
04AZA729	25-30	258.00
04AZA737	30-40	278.00
04AZA738	40-50	278.00
04AZA750	50-63	319.00
04AZA751	62-75	330.00
04AZA752	75-88	340.00
04AZA753	87-100	371.00
04AZA941	100-113	670.00
04AZA942	112-125	670.00

Adapter

No.	Range	Price [€]
954595	6-12 mm	124.00
216556	12-20 mm	29.00
216557	20-50 mm	29.00
216558	50-125 mm	29.00

Note : These adapters are necessary to adapt measuring heads to the Borematic display unit.



Digimatic Caliper Jaw Inside Micrometer

Series 345

The Digimatic Caliper Jaw Inside Micrometer offers you the following features:

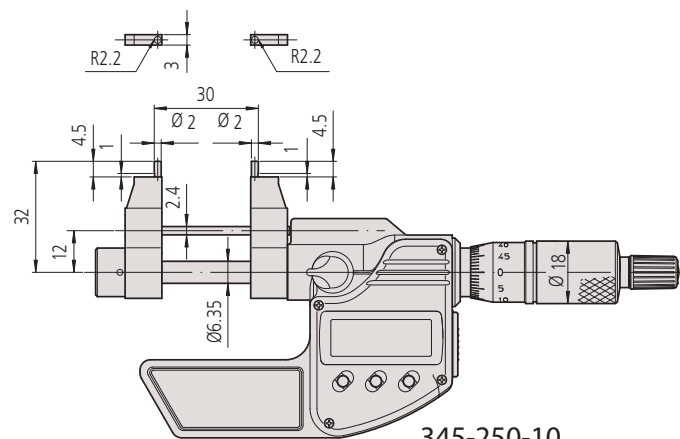
- You can measure surfaces in carbide, micro-lap finish.
- An inside-length standard is needed to accurately set the micrometer.



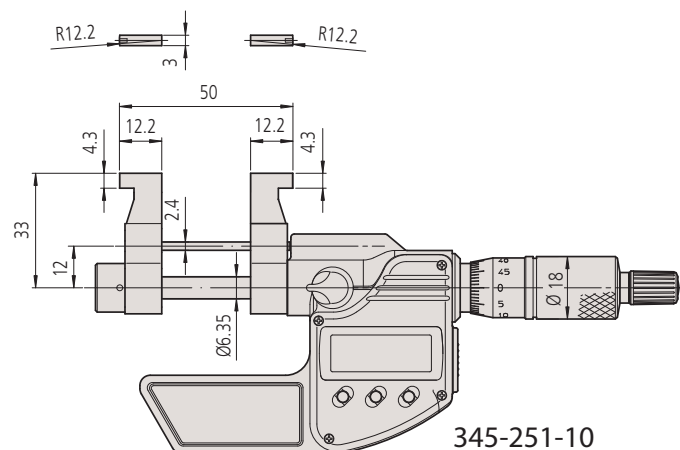
345-250-10

Metric

No.	Range [mm]	Accuracy	Mass [g]	Price [€]
345-250-10	5-30	±5 µm	305	716.00
345-251-10	25-50	±6 µm	310	752.00



345-250-10



345-251-10

Functions	Series 345
Auto Power OFF after 20 min. non use	●
DATA/HOLD	●
2 x PRESET	●
Low voltage alarm	●
Function lock	●
Data output	●

Specifications

Accuracy	Refer to the list of specifications (excluding quantizing error)
Scale	Thimble and sleeve satin chrome finish, Ø18 mm
Measuring surfaces	Carbide tipped
Measuring spindle	With spindle lock, spindle pitch 0,5 mm
Measuring force	1-6 N
Digital step	0,001 mm
Delivered	Including box, key, 1 battery.

Optional accessories

No.	Description	Price €
05CZA662	Digimatic cable with data switch (1 m)	73.50
05CZA663	Digimatic cable with data switch (2 m)	82.50
06ADV380B	USB Input Tool Direct cable with data switch (2 m)	115.00
02AZD790B	Connecting cable U-Wave with data switch	95.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50

Caliper Jaw Inside Micrometer

Series 145

The Digimatic Caliper Jaw Inside Micrometer offers you the following features:

- You can measure surfaces in carbide, micro-lap finish.
- An inside-length standard is needed to accurately set the micrometer.



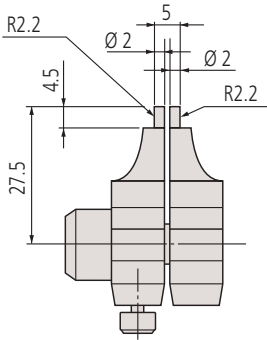
145-185



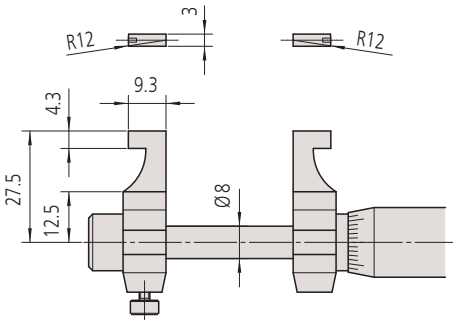
145-187

Metric

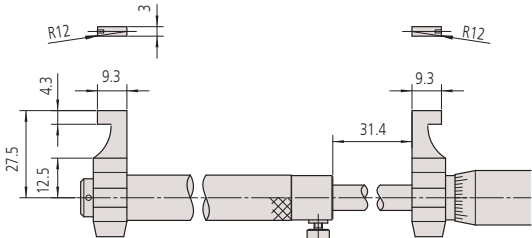
No.	Range [mm]	Accuracy	Mass [g]	Price [€]
145-185	5-30	±5 µm	130	227.00
145-186	25-50	±6 µm	140	264.00
145-187	50-75	±7 µm	160	274.00
145-188	75-100	±8 µm	180	314.00
145-189	100-125	±9 µm	210	423.00
145-190	125-150	±9 µm	230	476.00
145-191	150-175	±10 µm	250	499.00
145-192	175-200	±10 µm	270	530.00
145-217	200-225	±11 µm	310	595.00
145-218	225-250	±11 µm	330	639.00
145-219	250-275	±12 µm	350	692.00
145-220	275-300	±12 µm	370	747.00



145-185



145-186



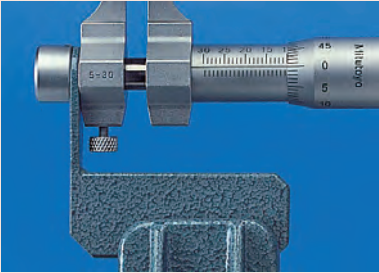
50-300 mm

Specifications

Accuracy	Refer to the list of specifications
Scale	Thimble and sleeve satin chrome finish, ø18 mm
Measuring surfaces	Carbide tipped
Measuring spindle	With spindle lock, spindle pitch 0,5 mm
Graduation	0.01 mm
Measuring force	1-6 N
Delivered	Including box, key

Optional accessories

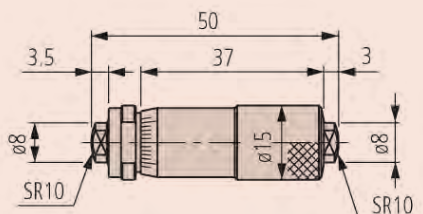
No.	Description
300400	Holder
300401	Cap



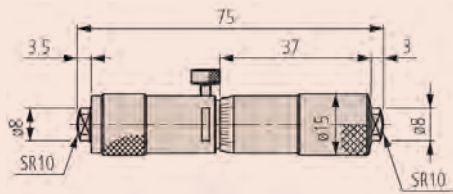
Holder and cap for:
145-185, 145-186, 145-193, 145-194

Specifications

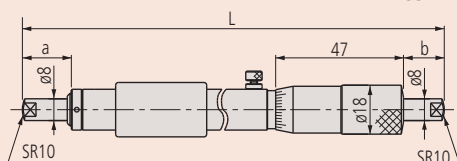
Accuracy	Refer to the list of specifications
Scale	Thimble and sleeve satin chrome finish, Ø18 mm
Measuring surfaces	Carbide tipped, crown lapped
Measuring spindle	With spindle lock (except 50-75 mm), spindle pitch 0,5 mm
Graduation	0.01mm
Delivered	Including box, insulation (from 100 mm), key



133-143



133-144



100-1000 mm

Tubular Inside Micrometer

Series 133

This is a standard single rod type inside micrometer, with the following features:

- Standard single rod.
- Carbide measuring faces.



133-149

Metric

No.	Range [mm]	Accuracy	L [mm]	a [mm]	b [mm]	Mass [g]	Price [€]
133-143	50-75	±3 µm				50	121.00
133-144	75-100	±4 µm				75	125.00
133-145	100-125	±5 µm	100	5	3	130	131.00
133-146	125-150	±5 µm	125	5	3	160	135.00
133-147	150-175	±5 µm	150	18	15	170	139.00
133-148	175-200	±5 µm	175	18	15	180	151.00
133-149	200-225	±5 µm	200	18	15	200	158.00
133-150	225-250	±6 µm	225	18	15	210	163.00
133-151	250-275	±6 µm	250	18	15	235	171.00
133-152	275-300	±6 µm	275	18	15	245	184.00
133-153	300-325	±7 µm	300	18	15	265	192.00
133-154	325-350	±7 µm	325	18	15	285	195.00
133-155	350-375	±7 µm	350	18	15	300	198.00
133-156	375-400	±8 µm	375	18	15	315	201.00
133-157	400-425	±8 µm	400	18	15	330	204.00
133-158	425-450	±8 µm	425	18	15	340	209.00
133-159	450-475	±9 µm	450	18	15	360	212.00
133-160	475-500	±9 µm	475	18	15	370	215.00
133-161	500-525	±9 µm	500	18	15	390	218.00
133-162	525-550	±10 µm	525	18	15	400	223.00
133-163	550-575	±10 µm	550	18	15	410	227.00
133-164	575-600	±10 µm	575	18	15	415	232.00
133-165	600-625	±11 µm	600	18	15	430	236.00
133-166	625-650	±11 µm	625	18	15	450	240.00
133-167	650-675	±11 µm	650	18	15	470	245.00
133-168	675-700	±12 µm	675	18	15	480	249.00
133-169	700-725	±12 µm	700	18	15	500	254.00
133-170	725-750	±12 µm	725	18	15	510	258.00
133-171	750-775	±13 µm	750	18	15	520	261.00
133-172	775-800	±13 µm	775	18	15	540	265.00
133-173	800-825	±13 µm	800	18	15	555	268.00
133-174	825-850	±14 µm	825	18	15	570	271.00
133-175	850-875	±14 µm	850	18	15	590	277.00
133-176	875-900	±14 µm	875	18	15	600	281.00
133-177	900-925	±15 µm	900	18	15	620	287.00
133-178	925-950	±15 µm	925	18	15	630	292.00
133-179	950-975	±15 µm	950	18	15	650	298.00
133-180	975-1,000	±16 µm	975	18	15	670	303.00



Tubular Inside Micrometer

Series 133

This is a standard single rod type inside micrometer, with the following features:

- Standard single rod.
- Carbide measuring faces.

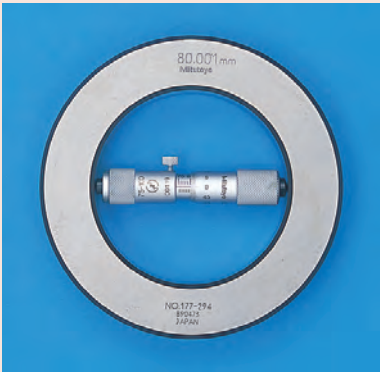


133-902

Metric		Micrometer set		
No.	Range [mm]	Models included	Mass [g]	Price [€]
133-901	50-150	133-143, 133-144, 133-145, 133-146	415	494.00
133-902	50-300	133-143, 133-144, 133-145, 133-146 133-147, 133-148, 133-149, 133-150, 133-151, 133-152	1655	1,420.00



Specifications	
Scale	Thimble and sleeve satin chrome finish, Ø18 mm
Measuring surfaces	Carbide tipped, crown lapped
Measuring spindle	With spindle lock (except 50-75 mm), spindle pitch 0,5 mm
Graduation	0.01mm
Delivered	Including box, insulation (from 100 mm), key

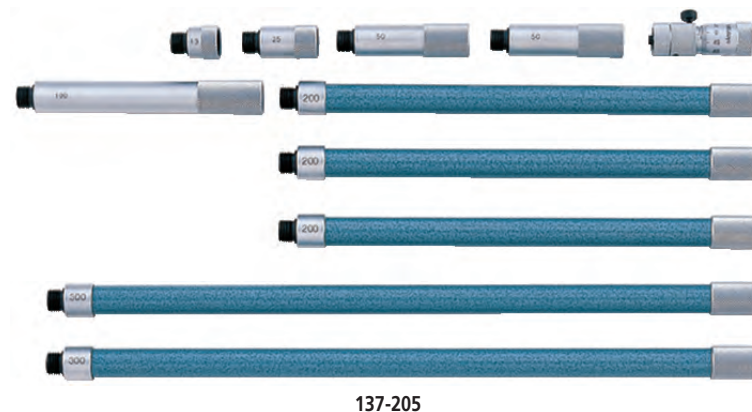


Tubular Inside Micrometer with Extensions

Series 137

This is an extension rod type inside micrometer that offers you the following benefits:

- Interchangeable extensions with cylindrical gage rods are spring-mounted in protective sleeves
- so you can extend the measuring range.
- Carbide measuring faces are available.



Metric With carbide measuring surface

No.	Range [mm]	Extension rods	Mass [g]	Price [€]
137-206	50-150	3 (13, 25, 50 mm)	145	274.00
137-207	50-300	5 (13, 25, 50 (2 pcs.), 100 mm)	305	387.00
137-208	50-500	6 (13, 25, 50 (2 pcs.), 100, 200 mm)	460	533.00
137-209	50-1,000	8 (13, 25, 50 (2 pcs.), 100, 200 (2 pcs.), 300 mm)	845	668.00
137-210	50-1,500	10 (13, 25, 50 (2 pcs.), 100, 200 (3 pcs.), 300 mm (2 pcs.))	1225	848.00

Metric With hardened measuring surface

No.	Range [mm]	Extension rods	Mass [g]	Price [€]
137-201	50-150	3 (13, 25, 50 mm)	145	213.00
137-202	50-300	5 (13, 25, 50 (2 pcs.), 100 mm)	305	304.00
137-203	50-500	6 (13, 25, 50 (2 pcs.), 100, 200 mm)	460	416.00
137-204	50-1,000	8 (13, 25, 50 (2 pcs.), 100, 200 (2 pcs.), 300 mm)	845	552.00
137-205	50-1,500	10 (13, 25, 50 (2 pcs.), 100, 200 (3 pcs.), 300 mm (2 pcs.))	1225	723.00



Specifications

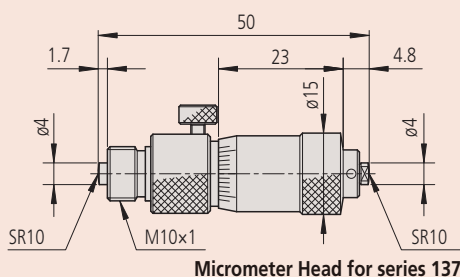
Accuracy	$\pm(3+n+L/50) \mu\text{m}$ n = Number of extensions, L = Maximum measuring length (mm)
Scale	Thimble and sleeve satin chrome finish, $\phi 15$ mm
Measuring spindle	Spindle pitch 0,5 mm
Measuring span	13 mm
Extension	$\phi 12,5$ mm
Graduation	0.01 mm
Delivered	Including box, key, extensions, micrometer head

Optional accessories

No.	Description	Price €
137-011	Inside Micrometer with hardened measuring surface	136.00
137-013	Inside Micrometer with carbide measuring surface	172.00

Consumable spares

No.	Description	Price €
980505	Extension 13 mm (metric/hardened type)	12.50
980507	Extension 25 mm (metric/hardened type)	21.00
980509	Extension 50 mm (metric/hardened type)	31.00
980511	Extension 100 mm (metric/hardened type)	36.50
980515	Extension 200 mm (metric/hardened type)	41.50
980517	Extension 300 mm (metric/hardened type)	46.50
980521	Extension 25 mm (metric/carbide type)	26.00
980523	Extension 50 mm (metric/carbide type)	31.00
980525	Extension 100 mm (metric/carbide type)	41.50
980529	Extension 200 mm (metric/carbide type)	51.50
980531	Extension 300 mm (metric/carbide type)	57.00



Micrometer Head for series 137

Tubular Inside Micrometer with Extensions

Series 139

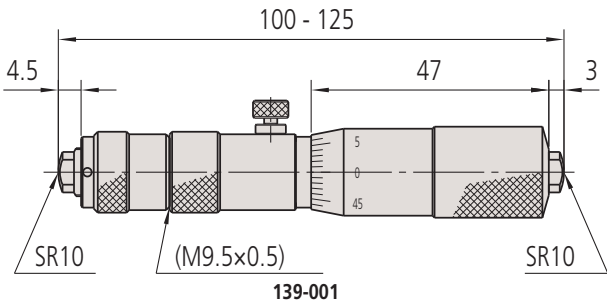
This is an extension pipe type inside micrometer that offers you the following benefits:

- Interchangeable extensions in a hollow pipe design.
- Carbide measuring faces.
- It has excellent resistance against water and dust (IP65 protection level) enabling you to use it in machining situations that include splashing coolant fluid.



Metric

No.	Range [mm]	Extension rods	Mass [g]	Price [€]
139-173	100-500	4 (25, 50, 100, 200 mm)	490	593.00
139-174	100-900	5 (25, 50, 100, 200, 400 mm)	790	711.00
139-175	100-1,300	6 (25, 50, 100, 200, 400 mm (2 pcs.))	1090	852.00
139-176	100-1,700	7 (25, 50, 100, 200, 400 mm (3 pcs.))	1390	1,000.00
139-177	100-2,100	8 (25, 50, 100, 200, 400 mm (4 pcs.))	1690	1,112.00
139-203	40-300	8 (10, 20, 30, 60, 90, 110, 120, 130 mm)	240	321.00
139-204	100-1,000	10 (25, 50, 75, 150, 225, 300, 350, 400, 425, 450 mm)	770	440.00



Specifications

Accuracy	$\pm(3+n+L/50) \mu\text{m}$ $\pm(6+L/50) \mu\text{m}$ (139-203, 139-204) n = number of extensions, L = Maximum measuring length (mm)
Scale	Thimble and sleeve satin chrome finish, $\phi 18 \text{ mm}$ $\phi 13 \text{ mm}$ (139-203, 139-204)
Measuring surfaces	Carbide Hardened (139-203, 139-204)
Measuring spindle	Spindle pitch 0,5 mm
Measuring span	25 mm 10 mm (139-203), 25 mm (139-204)
Extension	$\phi 17 \text{ mm}$ $\phi 10 \text{ mm}$ (139-203, 139-204)
Graduation	0.01 mm
Delivered	Including box, key, extensions, micrometer head

Consumable spares

No.	Description	Price €
981003	Extension 25 mm 139-173...-177	31.00
981005	Extension 50 mm 139-173...-177	36.50
981007	Extension 100 mm 139-173...-177	72.50
981009	Extension 200 mm 139-173...-177	82.50
981011	Extension 400 mm 139-173...-177	98.00
981981	Extension 10 mm 139-203	
981982	Extension 20 mm 139-203	
981983	Extension 30 mm 139-203	
981984	Extension 60 mm 139-203	
981985	Extension 90 mm 139-203	
981986	Extension 110 mm 139-203	
981987	Extension 120 mm 139-203	
981988	Extension 130 mm 139-203	
981991	Extension 25 mm 139-204	
981992	Extension 50 mm 139-204	
981993	Extension 75 mm 139-204	
981994	Extension 150 mm 139-204	
981995	Extension 225 mm 139-204	
981996	Extension 300 mm 139-204	
981997	Extension 350 mm 139-204	
981998	Extension 400 mm 139-204	
981999	Extension 425 mm 139-204	
982000	Extension 450 mm 139-204	

Optional accessories for 139-173 to 139-177

139-001	Analogue inside micrometer for 139-17x	194.00
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Optional accessories for 139-203/204

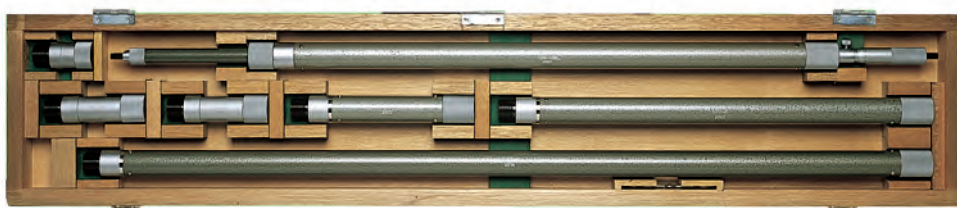
139-003	Analogue inside micrometer for 139-203	113.00
139-005	Analogue inside micrometer for 139-204	118.00

Tubular Inside Micrometer with Extensions

Series 140

This is a long range inside micrometer that offers you the following benefits:

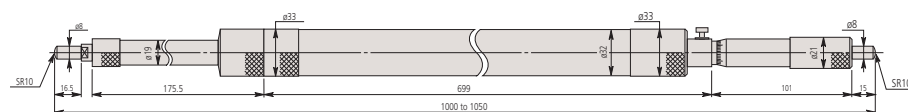
- It has a long measuring range of up to 5000mm
- Extension tube type design.
- Measuring surfaces in carbide, micro-lap finish



140-158

Metric

No.	Range [mm]	Extension rods	Mass [g]	Price [€]
140-157	1,000-2,000	5 (50, 100 (2 pcs.) 200, 500 mm)	3700	2,730.00
140-158	1,000-3,000	6 (50, 100 (2 pcs.), 200, 500, 1000 mm)	5200	3,030.00
140-159	1,000-4,000	7 (50, 100 (2 pcs.), 200, 500, 1000 mm (2 pcs.))	6700	4,069.00
140-160	1,000-5,000	8 (50, 100 (2 pcs.) 200, 500, 1000 mm (3 pcs.))	8260	5,026.00



Micrometer Head for series 140

Specifications

Accuracy	$\pm(7+n+L/50) \mu\text{m}$ n = number of extensions, L = Maximum measuring length (mm)
Scale	Thimble and sleeve satin chrome finish, $\phi 21$ mm
Measuring spindle	Spindle pitch 0,5 mm
Measuring span	50 mm
Extension	$\phi 32$ mm
Graduation	0.01 mm
Delivered	Including box, key

Consumable spares

No.	Description	Price €
04GZA394	Extension 50 mm (metric)	91.00
04GZA396	Extension 100 mm (metric)	118.00
04GZA398	Extension 200 mm (metric)	170.00
04GZA400	Extension 500 mm (metric)	304.00
04GZA402	Extension 1000 mm (metric)	422.00

Digimatic Tubular Inside Micrometer with Extensions

Series 337

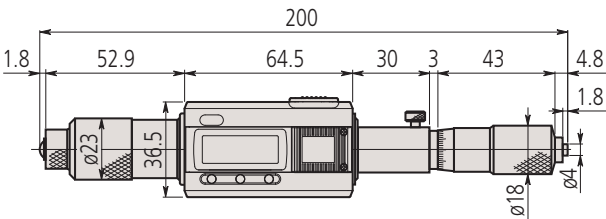
This is an extension rod type inside micrometer that offers you the following benefits:

- Interchangeable extensions with cylindrical gage rods are spring-mounted in protective sleeves so you can extend the measuring range.
- Carbide measuring faces.
- Digimatic type, with data output.
- It has excellent resistance against water and dust (IP65 protection level) enabling you to use it in machining situations that include splashing coolant fluid.



Metric

No.	Range [mm]	Extension rods	Mass [g]	Price [€]
337-301	200-1,000	6 (25, 50, 100 (2 pcs.), 200, 300 mm)	1040	1,390.00
337-302	200-1,500	7 (25, 50, 100, 200, 300 (3 pcs.))	1410	1,483.00



Micrometer Head for series 337



Functions	Series 337
ZERO/ABS	●
Auto Power OFF after 20 min. non use	●
2 x PRESET	●
Low voltage alarm	●
Function lock	●
Data output	●

Specifications

Accuracy	$\pm(3+n+L/50) \mu m$ n = Number of extensions, L = Maximum measuring length (mm) (excluding quantizing error)
Scale	Thimble and sleeve satin chrome finish, $\phi 18$ mm
Measuring spindle	Spindle pitch 0,5 mm
Measuring span	25 mm
Extension	$\phi 12,5$ mm
Digital step	0,001 mm
Display	LCD, character height 7,5 mm
Delivered	Including box, key, 1 battery, extensions, micrometer head

Optional accessories

No.	Description	Price €
05CZA662	Digimatic cable with data switch (1 m)	73.50
05CZA663	Digimatic cable with data switch (2 m)	82.50
06ADV380B	USB Input Tool Direct cable with data switch (2 m)	115.00
02AZD790B	Connecting cable U-Wave with data switch	95.00

Consumable spares

No.	Description	Price €
337-101	Digimatic Tubular Inside Micrometer (Metric)	1,025.00
938882	Battery SR44	5.50



Digimatic Tubular Inside Micrometer with Extensions

Series 339

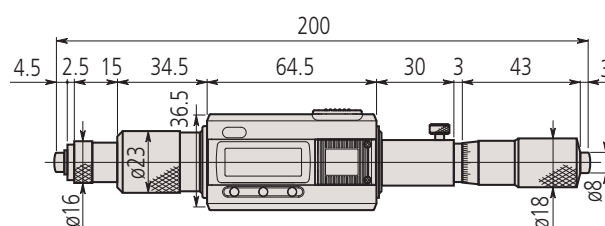
This is an extension pipe type inside micrometer that offers you the following benefits:

- Interchangeable extensions in a hollow pipe design.
- Carbide measuring faces.
- Digimatic type with data output.
- It has excellent resistance against water and dust (IP65 protection level) enabling you to use it in machining situations that include splashing coolant fluid.



Metric

No.	Range [mm]	Extension rods	Mass [g]	Price [€]
339-301	200-1,000	5 (25, 50, 100, 200, 400 mm)	1050	1,494.00
339-302	200-2,000	8 (25, 50, 100, 200 (2 pcs.), 400 mm (3 pcs.))	1800	1,710.00



Micrometer Head for series 339

Functions	Series 339
ZERO/ABS	●
Auto Power OFF after 20 min. non use	●
2 x PRESET	●
Low voltage alarm	●
Function lock	●
Data output	●

Specifications

Accuracy	$\pm(3+n+L/50) \mu m$ n = number of extensions, L = Maximum measuring length (mm) (excluding quantizing error)
Scale	Thimble and sleeve satin chrome finish, $\phi 18$ mm
Measuring spindle	Spindle pitch 0,5 mm
Measuring span	25 mm
Extension	$\phi 17$ mm
Digital step	0,001 mm
Display	LCD, character height 7,5 mm
Delivered	Including box, key, 1 battery, extensions, micrometer head

Optional accessories

No.	Description	Price €
05CZA662	Digimatic cable with data switch (1 m)	73.50
05CZA663	Digimatic cable with data switch (2 m)	82.50
06ADV380E	USB Input tool Direct cable (2 m)	100.00
02AZD790E	Connecting cable U-Wave	85.00

Consumable spares

No.	Description	Price €
339-101	Digimatic Tubular Inside Micrometers	1,025.00
339-102	Digimatic Tubular Inside Micrometers	1,025.00
938882	Battery 5R44	5.50
981003	Extension 25 mm 139-173...-177	31.00
981005	Extension 50 mm 139-173...-177	36.50
981007	Extension 100 mm 139-173...-177	72.50
981009	Extension 200 mm 139-173...-177	82.50
981011	Extension 400 mm 139-173...-177	98.00



Inside Micrometer with Interchangeable Rod

Series 141 - Interchangeable Rod Type

- This an interchangeable rod type inside micrometer that offers you the following benefits:
- Interchangeable measuring rods allow you to take inside measurements of up to 1000mm.
 - Each interchangeable rod is marked with its measuring range.
 - For models supplied with more than one interchangeable rod, you can achieve the full measuring range by combining spacing collars with the rods.
 - A practical handle to help you measure deep bores is included in sets up to 300mm range.



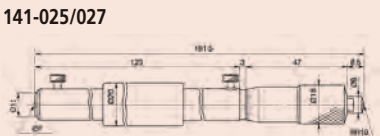
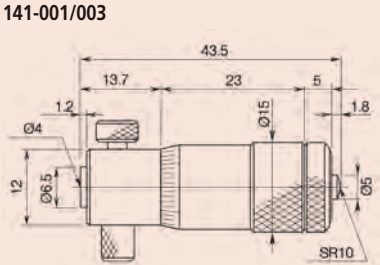
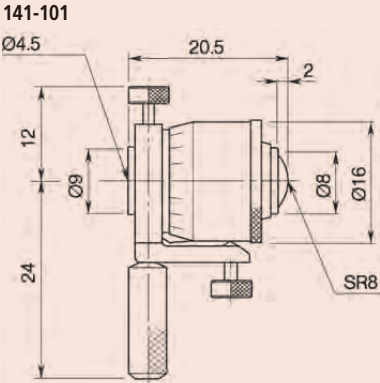
141-205

Metric							
No.	Range [mm]	Head adjustment range [mm]	Interchangeable rod	Extension collar	Accessories: inside micrometer (standard in the set) No.	Mass [g]	Price [€]
141-101	25-50	7	2 (13 mm)	1 (6 mm)	141-001	60	170.00
141-205	50-200	13	3 (50 mm)	1 (12 mm)	141-025	125	304.00
141-206	50-300	13	5 (50 mm)	1 (12 mm)	141-025	275	347.00
141-117	200-500	25	3 (100 mm)	2 (25/50 mm)	141-009	520	403.00
141-118	200-1,000	25	8 (100 mm)	2 (25/50 mm)	141-009	1940	610.00

Metric							
With carbide measuring surface							
No.	Range [mm]	Head adjustment range [mm]	Interchangeable rod	Extension collar	Accessories: inside micrometer (standard in the set) No.	Mass [g]	Price [€]
141-103	25-50	7	2 (13 mm)	1 (6 mm)	141-003	60	205.00
141-211	50-200	13	3 (50 mm)	1 (12 mm)	141-027	125	398.00
141-212	50-300	13	5 (50 mm)	1 (12 mm)	141-027	275	477.00
141-011	200-225	25				220	121.00



Specifications	
Accuracy	$\pm(6+L/50) \mu\text{m}$, L = Maximum measuring length (mm)
Scale	Thimble and sleeve satin chrome finish
Measuring surfaces	Hardened
Measuring spindle	Spindle pitch 0,5 mm with spindle lock
Graduation	0.01 mm
Delivered	Including box, key



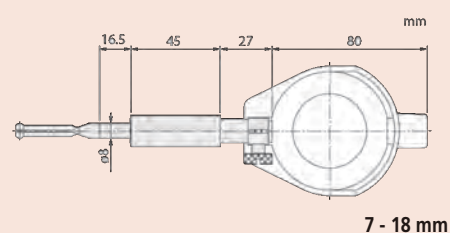
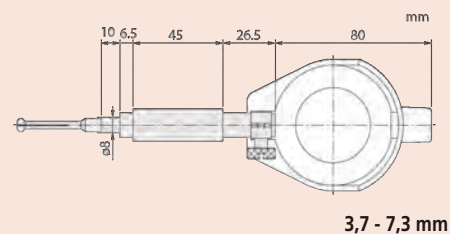
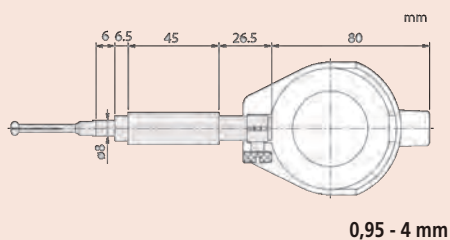
Specifications

Accuracy	4 μ m 6 μ m for range 10-18 mm
Repeatability	2 μ m
Delivered	In box including plastic cover for Dial Indicator

Optional accessories

No.	Description	Price €
215-120-10	Quick Stand 110	937.00
543-264B	ABSOLUTE Digimatic Indicator with Min Hold function	464.00

Setting rings are optional accessories. See Series 177 for details.



For details on indicators suitable for use with this instrument, refer to Dial Gauges section.

Bore Gauge for Extra Small Holes

Series 526

This is a two point split contact point ideally suited to smaller bore measurements. It offers you the following benefits:

- A precision bore gauge so you can make quick and accurate measurements of small hole diameters (0.95-18mm).
- You can replace the analogue indicator fitted to this instrument with a customer-supplied Digimatic indicator if you need.



Metric

No.	Range [mm]	Graduation	No. Dial Indicator	Measuring depth	Number of anvils	Price [€]
526-173-1	0.95-1.55	0.01 mm	2046SB	11,5 mm	5	706.00
526-163-1	1.5-4	0.01 mm	2046SB	17,5-22,5 mm ⁽¹⁾	9	839.00
526-153-1	3.7-7.3	0.01 mm	2046SB	32 mm	7	654.00
526-126	7-10	0.01 mm	2046SB	40-56 mm ⁽²⁾	6	288.00
526-127	10-18	0.01 mm	2046SB	62 mm	8	314.00
526-172-1	0.95-1.55	0.001 mm	2109SB-10	11,5 mm	5	759.00
526-162-1	1.5-4	0.001 mm	2109SB-10	17,5-22,5 mm ⁽¹⁾	9	893.00
526-152-1	3.7-7.3	0.001 mm	2109SB-10	32 mm	7	708.00
526-124	7-10	0.001 mm	2109SB-10	40-56 mm ⁽²⁾	6	342.00
526-125	10-18	0.001 mm	2109SB-10	62 mm	8	368.00

⁽¹⁾ Holes $\varnothing \leq 2,25$ mm : measuring depth 17,5 mm / holes $\varnothing > 2,25$ mm : measuring depth 22,5 mm

⁽²⁾ Holes $\varnothing \leq 8$ mm : measuring depth 40 mm / holes $\varnothing > 8$ mm : measuring depth 56 mm



Bore Gauge for Extra Small Holes

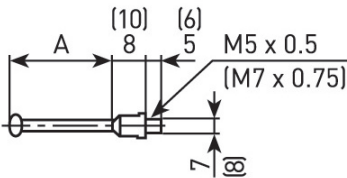
Series 526

Positioning of Bore Gauges

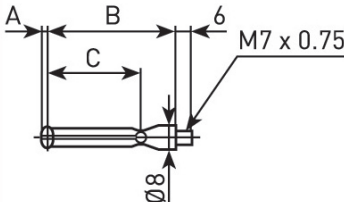
Bore Gauges for small holes feature contact points with a large curvature so they can be easily positioned for measuring the true diameter (in the direction a - a') of a hole. Bore Gauges (except those for small holes) are designed for easy alignment with the axis of the diameter to be measured.

Replacement contact points for Series 526

Replacement contact points						
No.	Range [mm]	Marking on the measuring head (engraved)	A [mm]	B [mm]	C [mm]	Price [€]
102469	7-7.5	1	1.8	40	29.2	48.00
102470	7.5-8	2	1.8	40	29.2	48.00
102471	8-8.5	3	1.8	40	29.2	48.00
102472	8.5-9	4	1.8	40	29.2	48.00
102473	9-9.5	5	1.8	40	29.2	48.00
102474	9.5-10	6	1.8	40	29.2	48.00
102454	10-11	1	2.1	46	38	48.00
102455	11-12	2	2.7	46	38	48.00
102456	12-13	3	2.7	46	38	48.00
102457	13-14	4	2.7	46	38	48.00
102458	14-15	5	2.7	46	38	48.00
102459	15-16	6	2.7	46	38	48.00
102460	16-17	7	2.7	46	38	48.00
102461	17-18	8	2.7	46	38	48.00
201414	0.95-1.15	1	11.5			124.00
201415	1.07-1.25	1.1	11.5			118.00
201416	1.17-1.35	1.2	11.5			93.00
201417	1.27-1.45	1.3	11.5			93.00
201418	1.37-1.55	1.4	11.5			93.00
201419	1.5-1.9	1.75	17.5			72.50
201420	1.8-2.2	2	17.5			72.50
201421	2.05-2.45	2.25	17.5			72.50
201422	2.25-2.75	2.5	22.5			72.50
201423	2.5-3	2.75	22.5			72.50
201424	2.75-3.25	3	22.5			72.50
201425	3-3.5	3.25	22.5			72.50
201426	3.25-3.75	3.5	22.5			72.50
201427	3.5-4	3.75	22.5			72.50
201428	3.7-4.3	4	32			62.00
201429	4.2-4.8	4.5	32			62.00
201430	4.7-5.3	5	32			62.00
201431	5.2-5.8	5.5	32			62.00
201432	5.7-6.3	6	32			62.00
201433	6.2-6.8	6.5	32			62.00
201434	6.7-7.3	7	32			62.00



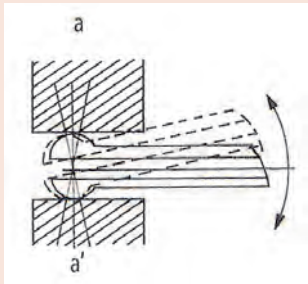
526-162-1, 526-163-1, 526-172-1, 526-173-1
() 526-152-1, 526-153-1



526-124, 526-125, 526-126, 526-127



526-153-1



Bore Gauge for Small Holes

Specifications

Accuracy	5 µm
Delivered	Including box, dial indicator, plastic cover for indicator

Optional accessories

No.	Description	Price €
543-264B	ABSOLUTE Digimatic Indicator with Min Hold function	464.00



543-264B (optional)

See ABSOLUTE Digimatic Indicator ID-C for bore gauges later in this section for details.

For details on indicators suitable for use with this instrument, refer to the Dial Gauges section.

Series 511

These are bore gauges that automatically self-centre via a centring bridge.

They offer you the following benefits:

- Easy to handle and adaptable to most bore gauging applications (6-400mm).
- A long plunger stroke gives you amazing accuracy.
- Interchangeable washers 0.5mm thick are supplied as standard accessories, so you can enable setting in small steps.
- Contact points are carbide (> 18mm range), giving you high durability and wear resistance.
- A large grip reduces heat transfer from the operator by 50%.



511-204



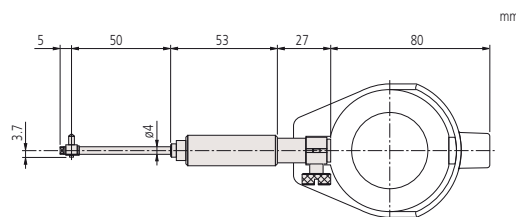
6 - 10mm



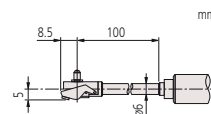
10 - 18.5mm

Metric

No.	Range [mm]	Graduation	No. Dial Indicator	Measuring depth	Stroke of contact point [mm]	Number of anvils	Mass [g]	Price [€]
511-211	6-10	0.01 mm	2046SB	50 mm	0.5	9	255	407.00
511-204	10-18.5	0.01 mm	2046SB	100 mm	0.6	9	264	391.00
511-210	6-10	0.001 mm	2109SB-10	50 mm	0.5	9	255	460.00
511-203	10-18.5	0.001 mm	2109SB-10	100 mm	0.6	9	268	445.00



6-10 mm



10-18,5 mm

Bore Gauge

Series 511

These are bore gauges that automatically self-centre via a centring bridge. They offer you the following benefits:

- Easy to handle and adaptable to most bore gauging applications (6-400mm).
- A long plunger stroke gives you amazing accuracy.
- Interchangeable washers 0.5mm thick are supplied as standard accessories, so you can enable setting in small steps.
- Contact points are carbide (> 18mm range), giving you high durability and wear resistance.
- A large grip reduces heat transfer from the operator by 50%.



511-713



Example of set



Plastic cover for Dial Indicator including

Metric

No.	Range [mm]	Graduation	No. Dial Indicator	Measuring depth	Number of anvils	Mass [g]	Price [€]
511-721	18-35	0.001 mm	2109SB-10	100 mm	9	330	290.00
511-722	35-60	0.001 mm	2109SB-10	150 mm	6	400	296.00
511-723	50-150	0.001 mm	2109SB-10	150 mm	11	420	306.00
511-724	100-160	0.001 mm	2109SB-10	150 mm	13	480	455.00
511-725	160-250	0.001 mm	2109SB-10	250 mm	6	850	548.00
511-726	250-400	0.001 mm	2109SB-10	250 mm	5	945	646.00
511-711	18-35	0.01 mm	2046SB	100 mm	9	330	237.00
511-712	35-60	0.01 mm	2046SB	150 mm	6	400	242.00
511-713	50-150	0.01 mm	2046SB	150 mm	11	420	252.00
511-714	100-160	0.01 mm	2046SB	150 mm	13	480	402.00
511-715	160-250	0.01 mm	2046SB	250 mm	6	850	494.00
511-716	250-400	0.01 mm	2046SB	250 mm	5	945	592.00

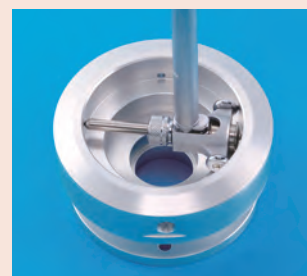


Specifications

Accuracy	2 µm
Repeatability	0,5 µm
Stroke of contact point	18 - 60 mm: 1,2 mm 50 - 400 mm: 1,6 mm
Delivered	Including box, dial indicator, plastic cover for indicator

Optional accessories

No.	Description	Price €
543-264B	ABSOLUTE Digimatic Indicator with Min Hold function	464.00
953549	Extension 125 mm for range 18-35 mm	180.00
953550	Extension 250 mm for range 18-35 mm	201.00
953551	Extension 500 mm for range 18-35 mm	314.00
953552	Extension 125 mm for range 35-160 mm	196.00
953553	Extension 250 mm for range 35-160 mm	216.00
953554	Extension 500 mm for range 35-160 mm	386.00
953555	Extension 750 mm for range 35-160 mm	515.00
953556	Extension 1000 mm for range 35-160 mm	716.00
953557	Extension 125 mm for range 160-800 mm	201.00
953558	Extension 500 mm for range 160-800 mm	489.00
953559	Extension 750 mm for range 160-800 mm	644.00
953560	Extension 1000 mm for range 160-800 mm	845.00
952361	Extension 250 mm for range 160-800 mm	206.00



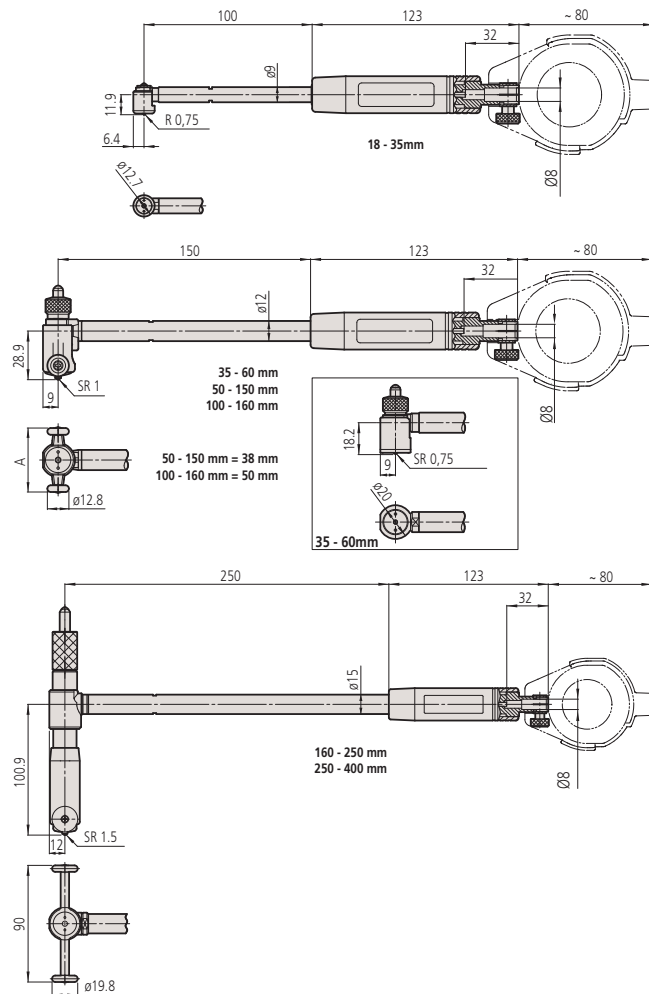
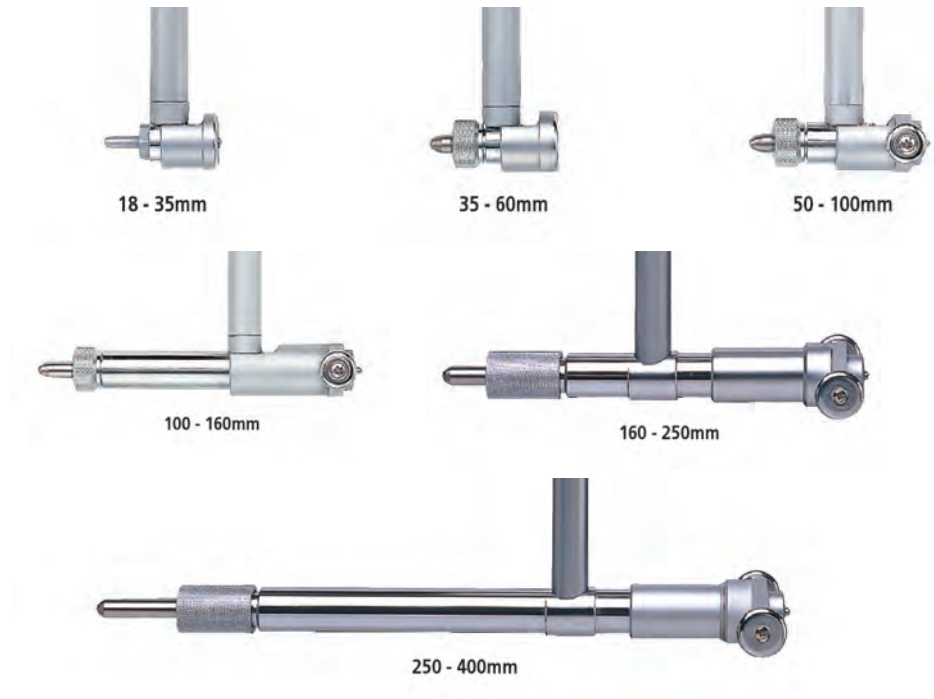
New grip improves accuracy during prolonged use

For details on indicators suitable for use with this instrument, refer to the Dial Gauges section. For a description of replacement contact points, see the Spare Parts section at end of catalogue.

Bore Gauge

Series 511

Example of measuring heads with different capacity.



Bore Gauge

Series 511

Bore gauge sets



511-921



Indicator 2046SB included in the set 511-921



Indicator 2109SB-10 included in the set 511-922



Indicator 543-264B included in the set 511-925

Metric

No.	Range [mm]	Graduation	No. Dial Indicator	Measuring depth	Price [€]
511-921	18-150	0.01 mm	2046SB	100/150 mm	422.00
511-922	18-150	0.001 mm	2109SB-10	100/150 mm	476.00
511-925	18-150	0.001 mm	543-264B	100/150 mm	752.00



Indicator 2922SB included in the set 511-931



Indicator 2923SB-10 included in the set 511-932

Specifications

Accuracy	2 µm
Repeatability	0,5 µm

Carbide-tipped anvils in sets

- For measuring range 50-150 mm (11 pcs)

- 21DZA232A : 50 mm
- 21DZA232B : 55 mm
- 21DZA232C : 60 mm
- 21DZA232D : 65 mm
- 21DZA232E : 70 mm
- 21DZA232F : 75 mm
- 21DZA232G : 80 mm
- 21DZA232H : 85 mm
- 21DZA232I : 90 mm
- 21DZA232L : 95 mm
- 21DZA232M : 100 mm

- For measuring range 35-60 mm (6 pcs)

- 21DZA232A : 35 mm
- 21DZA232B : 40 mm
- 21DZA232C : 45 mm
- 21DZA232D : 50 mm
- 21DZA232E : 55 mm
- 21DZA232F : 60 mm

- For measuring range 18-35 mm (9 pcs)

- 21DZA213A : 18 mm
- 21DZA213B : 20 mm
- 21DZA213C : 22 mm
- 21DZA213D : 24 mm
- 21DZA213E : 26 mm
- 21DZA213F : 28 mm
- 21DZA213G : 30 mm
- 21DZA213H : 32 mm
- 21DZA213J : 34 mm

Replacement washers in sets

- For measuring range 35-150 mm (4 pcs)

- 205457 : thickness 0,5 mm
- 205458 : thickness 1 mm
- 205459 : thickness 2 mm
- 205460 : thickness 3 mm

- For measuring range 18-35 mm (2 pcs)

- 205623 : thickness 0,5 mm
- 205624 : thickness 1 mm

Included in sets

- 102148 : spanner
- 102178 : sub-anvil 50 mm
- 21DZA000 : protector for indicator (plastic cover)

For details on indicators suitable for use with this instrument, refer to the Dial Gauges section.

Bore Gauge with Micrometer Head

Specifications

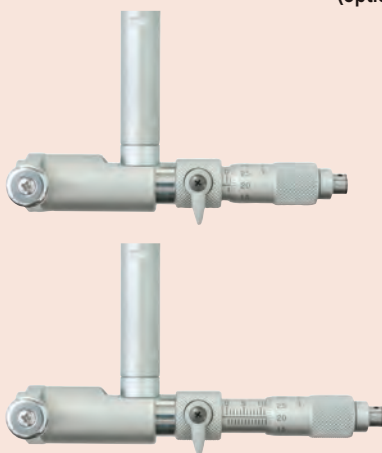
Accuracy	2 µm
Repeatability	0,5 µm
Delivered	Including box, dial indicator, plastic cover for indicator

Optional accessories

No.	Description	Price €
543-264B	ABSOLUTE Digimatic Indicator with Min Hold function	464.00
953552	Extension 125 mm for range 35-160 mm	196.00
953553	Extension 250 mm for range 35-160 mm	216.00
953554	Extension 500 mm for range 35-160 mm	386.00
953555	Extension 750 mm for range 35-160 mm	515.00
953556	Extension 1000 mm for range 35-160 mm	716.00
953557	Extension 125 mm for range 160-800 mm	201.00
952361	Extension 250 mm for range 160-800 mm	206.00
953558	Extension 500 mm for range 160-800 mm	489.00
953559	Extension 750 mm for range 160-800 mm	644.00
953560	Extension 1000 mm for range 160-800 mm	845.00



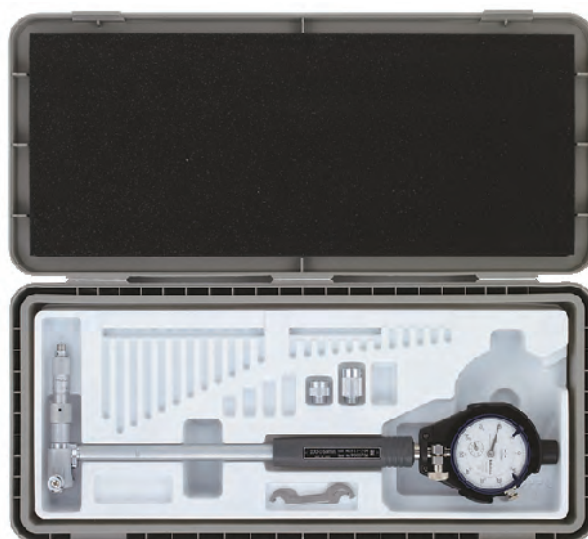
543-264B (optional)



Series 511

This is a micrometer head that enables measurements without interchangeable anvils. It offers you the following benefits:

- A long plunger stroke gives you amazing accuracy.
- Contact points are carbide (> 18mm range), giving you high durability and wear resistance.
- A large grip reduces heat transfer from the operator by 50%.
- Wide measuring range with sub-anvils.



Example of set

Metric

No.	Range [mm]	Graduation	No. Dial Indicator	Micrometer Head stroke	Sub anvils	Measuring depth	Mass [g]	Price [€]
511-823	60-100	0.001 mm	2109SB-10	10 mm	10, 20 mm	150 mm	430	466.00
511-824	100-160	0.001 mm	2109SB-10	13 mm	10, 20, 20 mm	150 mm	480	507.00
511-825	150-250	0.001 mm	2109SB-10	13 mm	10, 20, 20, 50 mm	150 mm	850	558.00
511-826	250-400	0.001 mm	2109SB-10	25 mm	25, 50, 50 mm	150 mm	950	661.00
511-827	400-600	0.001 mm	2109SB-10	50 mm	50, 100 mm	250 mm	1270	939.00
511-828	600-800	0.001 mm	2109SB-10	50 mm	50, 100 mm	250 mm	1670	1,065.00
511-813	60-100	0.01 mm	2046SB	10 mm	10, 20 mm	150 mm	430	412.00
511-814	100-160	0.01 mm	2046SB	13 mm	10, 20, 20 mm	150 mm	480	453.00
511-815	150-250	0.01 mm	2046SB	13 mm	10, 20, 20, 50 mm	150 mm	850	505.00
511-816	250-400	0.01 mm	2046SB	25 mm	25, 50, 50 mm	150 mm	950	608.00
511-817	400-600	0.01 mm	2046SB	50 mm	50, 100 mm	250 mm	1270	886.00
511-818	600-800	0.01 mm	2046SB	50 mm	50, 100 mm	250 mm	1670	1,010.00



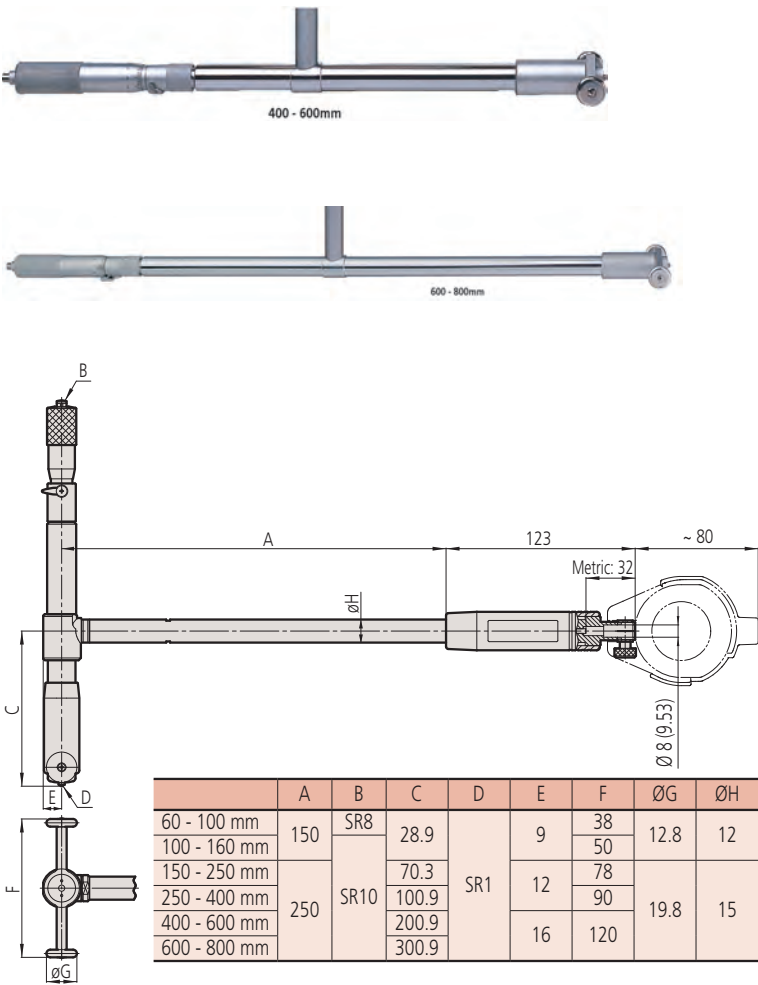
The Micrometer Head (measuring range between 10 and 50 mm, depending on the device) in the Bore allow you to work without interchanging measuring anvils.

For details on indicators suitable for use with this instrument, refer to the Dial Gauges section. For a description of replacement contact points, see the Spare Parts section at end of catalogue.

Bore Gauge with Micrometer Head

Series 511

Dimensions



Extension Rods

Accessories for Bore Gauges

These extension rods help you with deep-hole measurement, and offer you the following benefits:

- Using a single, longer extension rod rather than several short ones reduces error. When several extension rods are joined together there is the possibility of small errors arising from the extra joints involved. Therefore it is good practice not to connect more than 2 rods to a bore gauge at any one time.
- You can use extension rods up to 1,000mm.
- If you are using an extension rod longer than 500mm, use the bore gauge in the vertical orientation.
- You can confirm accurate and satisfactory operation after connecting an extension rod.

Applicable Range	.125 mm		.250 mm		.500 mm		.750 mm		1000 mm	
	No.	Price [€]	No.	Price [€]	No.	Price [€]	No.	Price [€]	No.	Price [€]
.18-35 mm	953549	180.00	953550	201.00	953551	314.00	—	—	—	—
.35-160 mm	953552	196.00	953553	216.00	953554	386.00	953555	515.00	953556	716.00
150-800 mm	953557	201.00	952361	206.00	953558	489.00	953559	644.00	953560	845.00



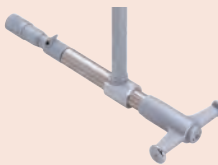
60 - 100 mm



100 - 160 mm



150 - 250 mm



250 - 400 mm

Specifications

Extension Rod Diameter	ø9 mm (range 18-35 mm)
	ø12 mm (range 35-160 mm)
	ø15 mm (range 150-800 mm)

Optional accessories

No.	Description
212556	Wrench for Bore Gauges (range ≥35 mm)
102148	Wrench for Bore Gauges (range ≤35 mm)



953549



953552



953557

Bore Gauge Short Length Type

Specifications

Accuracy	2 µm
Repeatability	0,5 µm
Stroke of contact point	18 - 60 mm: 1,2 mm 50 - 160 mm: 1,6 mm
Delivered	Including box, dial indicator, plastic cover for indicator

Optional accessories

No.	Description	Price €
543-264B	ABSOLUTE Digimatic Indicator with Min Hold function	464.00



543-264B
(optional)

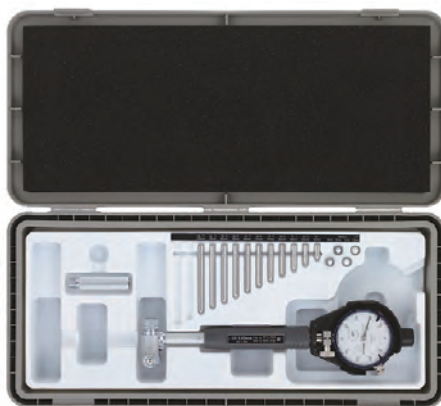


For details of indicators suitable for use with this instrument, refer to the Dial Gauges section.
For a description of replacement contact points, see the Spare Parts section at end of catalogue.

Series 511

This is a compact and lightweight bore gauge due to the short length below the grip. It offers you the following benefits:

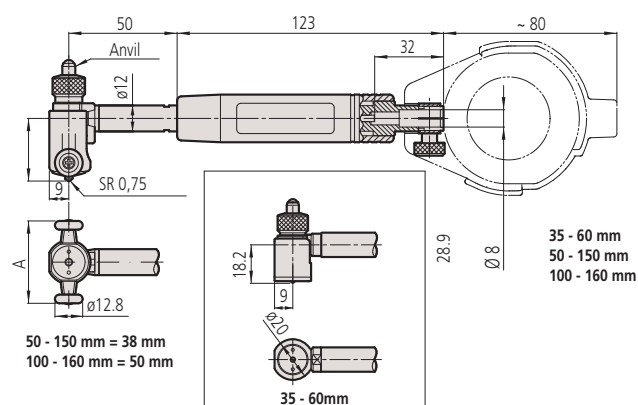
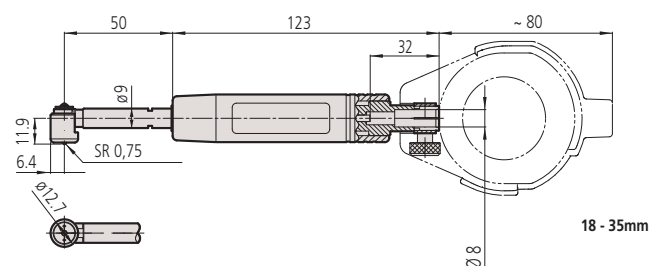
- A long plunger stroke gives you amazing accuracy.
- Contact points are carbide giving you high durability and wear resistance.
- A large grip reduces heat transfer from the operator by 50%.



Example of set

Metric

No.	Range [mm]	Graduation	No. Dial Indicator	Measuring depth	Number of anvils	Mass [g]	Price [€]
511-771	18-35	0.001 mm	2109SB-10	50 mm	9	320	296.00
511-772	35-60	0.001 mm	2109SB-10	50 mm	6	380	306.00
511-773	50-150	0.001 mm	2109SB-10	50 mm	11	400	321.00
511-774	100-160	0.001 mm	2109SB-10	50 mm	13	460	476.00
511-766	18-35	0.01 mm	2046SB	50 mm	9	320	242.00
511-767	35-60	0.01 mm	2046SB	50 mm	6	380	252.00
511-768	50-150	0.01 mm	2046SB	50 mm	11	400	268.00
511-769	100-160	0.01 mm	2046SB	50 mm	13	460	422.00

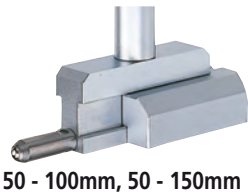


Bore Gauge for Blind Holes

Series 511

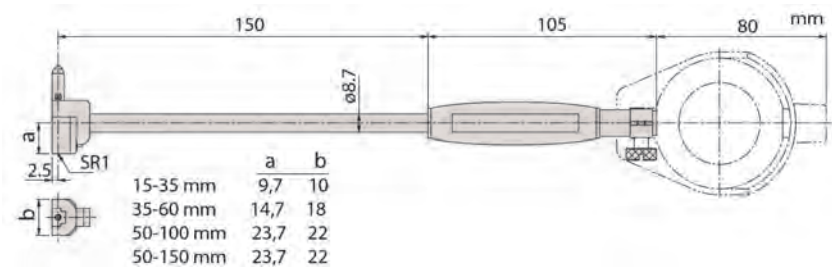
This is a bore gauge for measuring blind holes that offers you the following benefits:

- You can measure the inside diameter close to the bottom of blind holes.
- Contact points are carbide giving you high durability and wear resistance.



Metric

No.	Range [mm]	Graduation	No. Dial Indicator	Measuring depth	Mass [g]	Price [€]
511-411	15-35	0.01 mm	2046SB	150 mm	735	422.00
511-412	35-60	0.01 mm	2046SB	150 mm	760	438.00
511-413	50-100	0.01 mm	2046SB	150 mm	785	489.00
511-414	50-150	0.01 mm	2046SB	150 mm	815	597.00
511-421	15-35	0.001 mm	2109SB-10	150 mm	740	476.00
511-422	35-60	0.001 mm	2109SB-10	150 mm	765	491.00
511-423	50-100	0.001 mm	2109SB-10	150 mm	800	543.00
511-424	50-150	0.001 mm	2109SB-10	150 mm	820	651.00



Specifications

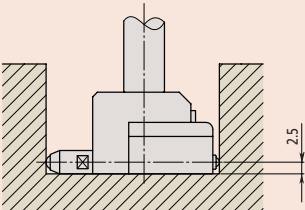
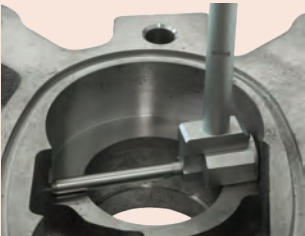
Accuracy	5 µm
Repeatability	2 µm
Delivered	Including box, dial indicator, plastic cover for indicator

Optional accessories

No.	Description	Price €
543-264B	ABSOLUTE Digimatic Indicator with Min Hold function	464.00



543-264B (optional)



For blind holes with minimum depth 2,5 mm

For details on indicators suitable for use with this instrument, refer to the Dial Gauges section. For a description of replacement contact points, see the Spare Parts section at end of catalogue.

ABSOLUTE Digimatic Indicator for Bore Gauges

ABSOLUTE®



Series 543

This indicator is exclusively designed for inside diameter measurement applications on bore gauges. The ABSOLUTE Digimatic Indicator ID-C offers you the following benefits:

- It features a minimum value holding function that allow you to easily detect the true hole diameter.
- When using a bore gauge fitted with this indicator, you can detect the reversal of the reading that occurs at the true diameter point, while oscillating the gauge, as well as the corresponding value held in display by the Minimum Value Hold function.
- An analogue bar graph enhances usability by providing dial gauge „feel“ to a measurement.

Functions	Series 543
PRESET (x3)	●
GO/±NG judgement	●
Digimatic data output	●
ON/OFF	●
DATA/HOLD	●
Min. Value Hold	●

Specifications

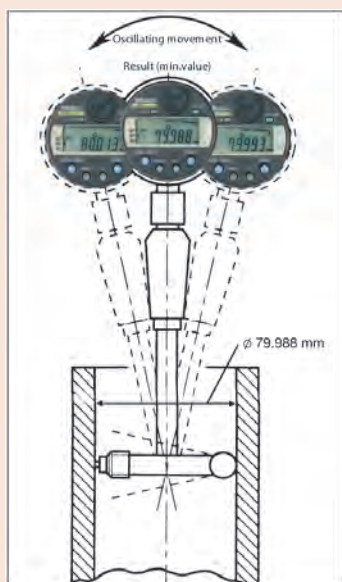
Accuracy	Refer to the list of specifications (excluding quantizing error)
Scale	Capacitance ABSOLUTE linear encoder
Max. response speed	Unlimited
Stem Ø	8 mm (ISO/JIS type)
Contact point	Carbide ball, thread M 2.5 x 0.45 mm (ISO/JIS type)
Alarm	Low voltage, counting value composition error, overflow error, tolerance limit setting error
Sampling frequency	50 times/sec*
Measuring force	≤ 1,5 N
Power supply	2 batteries SR-44
Display	LCD Character Height 7,5 mm
Battery life	approx. 2.000 hours

Optional accessories

No.	Description	Price €
905338	Digimatic cable (1 m)	28.00
905409	Digimatic cable (2 m)	34.00
02AZD790F	Connecting cable U-Wave	85.00
06ADV380F	USB Input Tool Direct cable (2 m)	100.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



Finding the true diameter (at reversal point) with a 2-point bore gauge

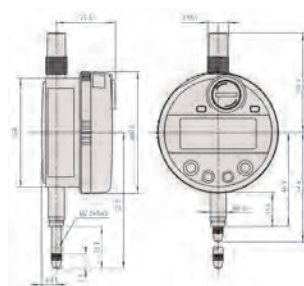
*if the detecting speed is > 50 µm/s the peak value may not be displayed correctly.



543-264B

Metric

No.	Range [mm]	Digital step	Accuracy	Mass [g]	Price [€]
543-264B	12.7	0,001 mm	0,003 mm	160	464.00



543-264B

Bore Gauge Checker

Specifications

Delivered | Delivery as complete set in soft box

Standard accessories

No.	Description
940088	1 receiver Type A for measuring range 18 - 35 mm, 35 - 60 mm
940089	1 receiver Type B for measuring range 50 - 100 mm, 100 - 160 mm
940090	1 receiver Type C for measuring range 100 - 250 mm, 250 - 400 mm
630030	2 flat jaws

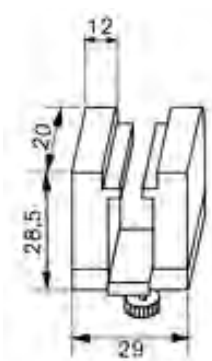
Series 515

- For setting 2-point bore gauges series 511.
- The Bore Gauge Checker allows easy setting of dial bore gauges with ranges of 18 mm through 400 mm using gauge blocks.
- Delivery as complete set in soft box, consisting of :

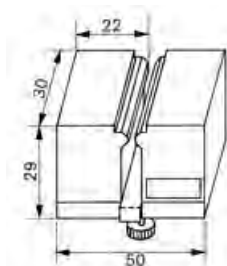


515-590
+ gauge block (optional)

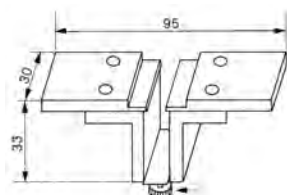
No.	Applicable Range	Mass [kg]	Price [€]
515-590	18-400 mm	4.51	1,290.00



940088



940089



940090

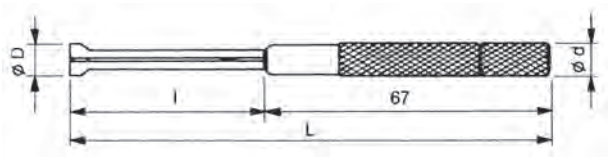
Gauge Set

Series 154 - Small Hole Gauge Set

- Designed to be locked in position (with knurled lockscrew) and the diameter measured across the two lobes with a micrometer after withdrawal from the hole.

Metric

No.	Gauges included	Range	L [mm]	Ø d [mm]	Ø D	Mass [g]	Price [€]
154-902	154-101	3-5 mm	90	5.5	2.8-5.2	17	113.00
	154-102	5-7.5 mm	97.6	5.5	4.8-7.8		
	154-103	7.5-10 mm	108	8.5	7.3-10.3		
	154-104	10-13 mm	108	8.5	9.8-13.2		



Series 155 - Telescopic Gauge Set

- Self-centering and satin chrome finish.
- Constant spring force on to the measuring surface. Locked in position by knurled lockscrew.

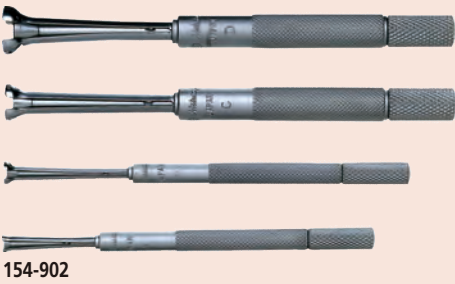
Metric

No.	Gauges included	Range	a [mm]	b [mm]	c [mm]	d [mm]	Price [€]
155-905	155-127	8-12.7 mm	110	4	3	5	258.00
	155-128	12.7-19 mm	110	5	3.5	5.5	
	155-129	19-32 mm	110	5	3.5	5.5	
	155-130	35-54 mm	150	7.5	6	8	
	155-131	54-90 mm	150	7.5	6	8	
	155-132	90-150 mm	150	7.5	6	8	



Specifications

Delivered	Including plastic wallet
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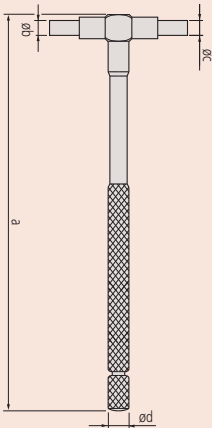
154-902

Specifications

Delivered	Including plastic wallet
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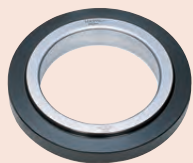
155-905



Specifications

Cylindricity

1.0 µm for ø1-60 mm
1.5 µm for ø62-90 mm
2.0 µm for ø100-150 mm
2.5 µm for ø175-225 mm
3.0 µm for ø250-300 mm



177-300



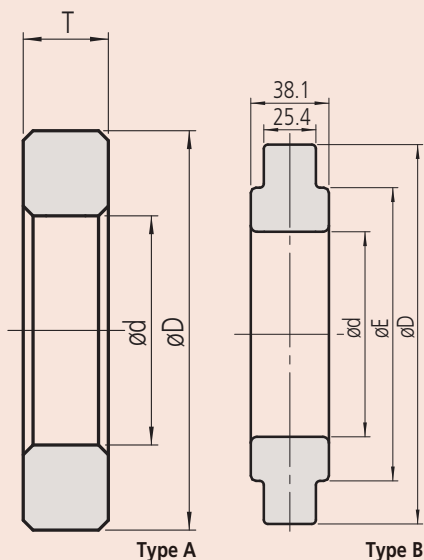
177-423



177-139



177-424



Type A

Type B

Tolerance from nominal diameter is ± 0.01 mm up to 45 mm, and ± 0.02 mm above. The calibrated diameter of each ring is marked on its upper face.

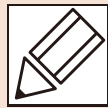
Setting Rings

Series 177

Metric

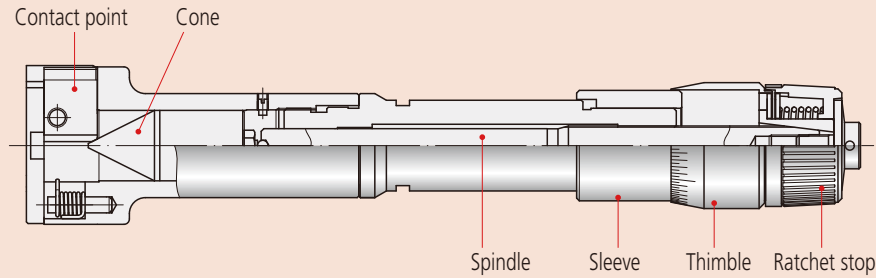
No.	Material	Nominal size ød	Type	Ø D [mm]	Ø E [mm]	T [mm]	Price [€]
177-220	Steel	1 mm	A	20		4	101.00
177-222	Steel	1.1 mm	A	20		4	101.00
177-225	Steel	1.2 mm	A	20		4	101.00
177-227	Steel	1.3 mm	A	20		4	101.00
177-230	Steel	1.4 mm	A	20		4	101.00
177-236	Steel	1.75 mm	A	25		5	101.00
177-239	Steel	2 mm	A	25		5	101.00
177-242	Steel	2.25 mm	A	25		5	101.00
177-208	Steel	2.5 mm	A	25		7	101.00
177-246	Steel	2.75 mm	A	25		7	101.00
177-248	Steel	3 mm	A	25		7	101.00
177-250	Steel	3.25 mm	A	25		7	101.00
177-252	Steel	3.5 mm	A	25		7	101.00
177-255	Steel	3.75 mm	A	25		7	101.00
177-204	Steel	4 mm	A	25		7	101.00
177-418	Ceramic	4 mm	A	25		7	214.00
177-257	Steel	4.5 mm	A	25		7	101.00
177-205	Steel	5 mm	A	25		7	101.00
177-263	Steel	5.5 mm	A	25		7	101.00
177-267	Steel	6 mm	A	25		7	101.00
177-420	Ceramic	6 mm	A	25		7	214.00
177-271	Steel	6.5 mm	A	25		7	101.00
177-275	Steel	7 mm	A	25		7	101.00
177-125	Steel	8 mm	A	32		10	101.00
177-423	Ceramic	8 mm	A	32		10	214.00
177-279	Steel	9 mm	A	32		10	101.00
177-126	Steel	10 mm	A	32		10	101.00
177-424	Ceramic	10 mm	A	32		10	214.00
177-284	Steel	12 mm	A	32		10	101.00
177-425	Ceramic	12 mm	A	32		10	216.00
177-132	Steel	14 mm	A	38		10	101.00
177-177	Steel	16 mm	A	45		10	101.00
177-427	Ceramic	16 mm	A	45		10	216.00
177-133	Steel	17 mm	A	45		10	101.00
177-285	Steel	18 mm	A	45		10	113.00
177-286	Steel	20 mm	A	45		10	113.00
177-429	Ceramic	20 mm	A	45		10	252.00
177-139	Steel	25 mm	A	53		15	118.00
177-430	Ceramic	25 mm	A	53		15	258.00
177-288	Steel	30 mm	A	71		15	139.00
177-431	Ceramic	30 mm	A	71		15	324.00
177-140	Steel	35 mm	A	71		15	170.00
177-432	Ceramic	35 mm	A	71		15	335.00
177-290	Steel	40 mm	A	71		15	165.00
177-433	Ceramic	40 mm	A	71		15	350.00
177-178	Steel	45 mm	A	85		15	170.00
177-434	Ceramic	45 mm	A	85		15	376.00
177-146	Steel	50 mm	A	85		20	170.00
177-292	Steel	60 mm	A	112		20	225.00
177-314	Steel	62 mm	A	112		20	235.00
177-147	Steel	70 mm	A	112		20	247.00
177-316	Steel	75 mm	A	125		25	283.00
177-294	Steel	80 mm	A	125		25	294.00
177-318	Steel	87 mm	A	140		25	324.00
177-148	Steel	90 mm	A	140		25	324.00
177-296	Steel	100 mm	A	160		25	417.00
177-298	Steel	125 mm	B	210	168	38.1	788.00
177-300	Steel	150 mm	B	235	187	38.1	829.00
177-302	Steel	175 mm	B	260	215	38.1	994.00
177-304	Steel	200 mm	B	311	244	38.1	1,566.00
177-306	Steel	225 mm	B	337	264	38.1	1,751.00
177-308	Steel	250 mm	B	362	290	38.1	1,895.00
177-310	Steel	275 mm	B	413	321	38.1	2,184.00
177-312	Steel	300 mm	B	438	340	38.1	2,663.00

Quick Guide to Precision Measuring Instruments



Internal Micrometers

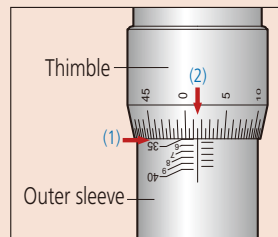
Nomenclature



How to Read the Scale

Graduation 0.005mm

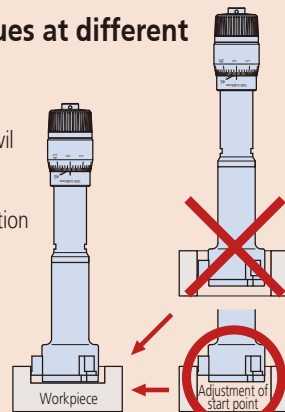
(1) Outer sleeve	35 mm
(2) Thimble	0.015 mm
Reading	35.015 mm



Changes in measured values at different measuring points

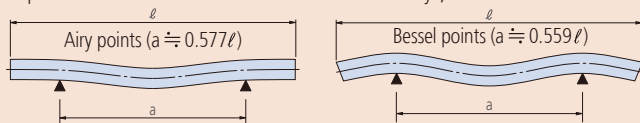
When Holtest is used, the measured value differs between measurement across the anvil and the measurement only at the tip of the anvil due to the product mechanism. Adjust the start point under the same condition before measurement.

When you use the tip of the anvil for measurement, adjust the start point for using the tip of the anvil.



Airy and Bessel Points

When a length standard bar or internal micrometer lies horizontally, supported as simply as possible at two points, it bends under its own weight into a shape that depends on the spacing of those points. There are two distances between the points that control this deformation in useful ways, as shown below.



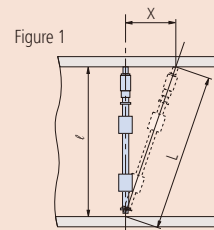
The ends of a bar (or micrometer) can be made exactly horizontal by spacing the two supports symmetrically as shown above. These points are known as the 'Airy Points' and are commonly used to ensure that the ends of a length bar are parallel to one another, so that the length is well defined.

The change in length of a bar (or micrometer) due to bending can be minimized by spacing the two supports symmetrically as shown above. These points are known as the 'Bessel Points' and may be useful when using a long inside micrometer.

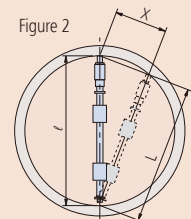
Measurement error due to temperature variation of micrometer

Heat transfer from the operator to the micrometer should be minimized to avoid any significant measuring error due to temperature difference between the workpiece and micrometer. If the micrometer is held directly by hand when measuring, use gloves or hold the heat-insulator (if fitted).

Misalignment Errors

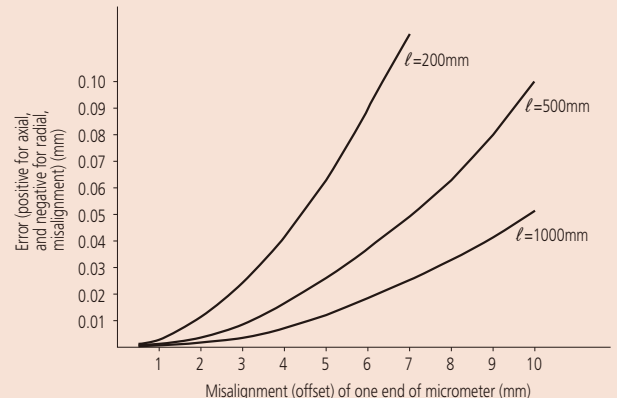


ℓ: Inside diameter to be measured
L: Length measured with axial offset X
X: Offset in axial direction
 $\Delta \ell$: Error in measurement
 $\Delta \ell$: $L - \ell = \sqrt{\ell^2 + X^2} - \ell$



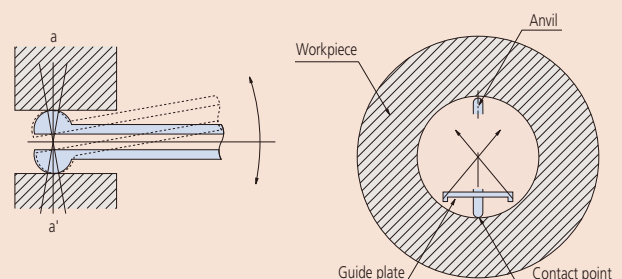
ℓ: Inside diameter to be measured
L: Length measured with radial offset X
X: Offset in radial direction
 $\Delta \ell$: Error in measurement
 $\Delta \ell$: $L - \ell = \sqrt{\ell^2 + X^2} - \ell$

If an inside micrometer is misaligned in the axial or radial direction by an offset distance X when a measurement is taken, as in Figures 1 and 2, then that measurement will be in error as shown in the graph below (constructed from the formulae given above). The error is positive for axial misalignment and negative for radial misalignment.



Bore Gages

● Mitutoyo bore gages for small holes feature contact elements with a large curvature so they can be easily positioned for measuring the true diameter (in the direction a-a') of a hole. The true diameter is the minimum value seen on the dial gage while rocking the bore gage as indicated by the arrow.



● The spring-loaded guide plate on a Mitutoyo two-point bore gage automatically ensures radial alignment so that only an axial rocking movement is needed to find the minimum reading (true diameter).



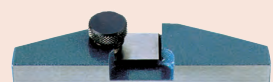
Absolute Digimatic Caliper
Page 178



Analog Caliper
Page 192



Special Purpose Caliper
Page 202



Caliper Accessories
Page 218

ABSOLUTE Digimatic Caliper IP67

Series 500

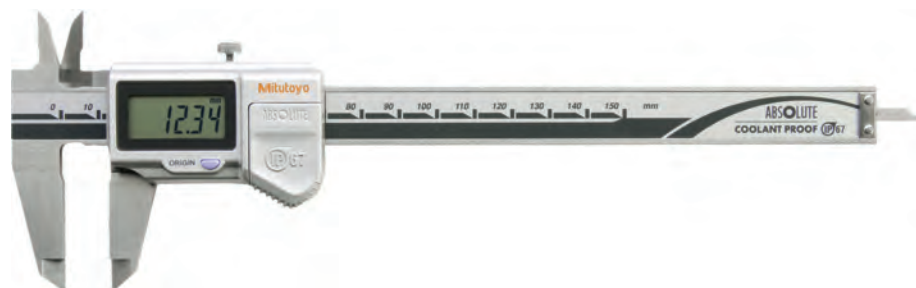
These robust calipers allow you to take reliable measurements in a wide range of situations.

The ABSOLUTE Digimatic Caliper IP67 offers you the following benefits:

- ABSOLUTE system delivers reliable measurements.
- It has excellent resistance against water and dust (IP67 protection level) enabling you to use it in machining situations that include splashing coolant fluid.
- Extremely resistant to coolants and lubricants.

ABSOLUTE®

IP67



500-706-11

Metric

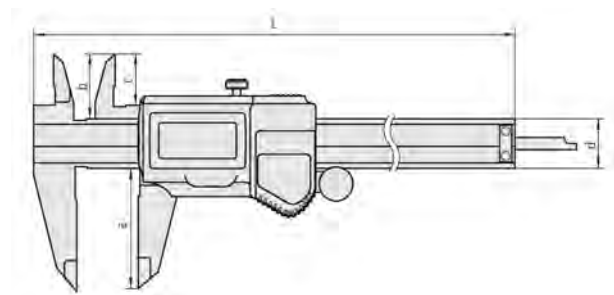
Without thumb roller

No.	Range [mm]	Depth bar	Data output	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
500-706-11	0-150	flat		233	40	21	16.5	16	164	160.00
500-709-11	0-150	Ø 1,9 mm		233	40	21	16.5	16	164	160.00
500-716-11	0-150	flat	●	233	40	21	16.5	16	164	205.00
500-720-11	0-150	Ø 1,9 mm	●	233	40	21	16.5	16	164	226.00
500-707-11	0-200	flat		290	50	24.5	20	16	194	225.00
500-717-11	0-200	flat	●	290	50	24.5	20	16	194	260.00
500-708-11	0-300	flat		404	64	27.5	21.8	20	345	310.00
500-718-11	0-300	flat	●	404	64	27.5	21.8	20	345	370.00

Metric

With thumb roller

No.	Range [mm]	Depth bar	Data output	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
500-702-10	0-150	flat		233	40	21	16.5	16	164	175.00
500-712-10	0-150	flat	●	233	40	21	16.5	16	164	225.00
500-719-10	0-150	Ø 1,9 mm	●	233	40	21	16.5	16	164	226.00
500-703-10	0-200	flat		290	50	24.5	20	16	194	249.00
500-713-10	0-200	flat	●	290	50	24.5	20	16	194	285.00
500-704-10	0-300	flat		404	64	27.5	21.8	20	345	345.00
500-714-10	0-300	flat	●	404	64	27.5	21.8	20	345	407.00



Functions	Series 500
ORIGIN (ABS-Zero)	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●

Specifications

Accuracy	≤ 200 mm : ±0,02 mm > 200 mm : ±0,03 mm (excluding quantizing error)
Max. response speed	Unlimited
Digital step	0,01 mm
Display	LCD, Character Height 7,5 mm (150, 200 mm) 10,2 mm (300 mm)
Battery life	approx. 15.000 hours (150 mm ,200 mm) 5.000 hours (300 mm)
Delivered	In a case, including 1 battery

Optional accessories

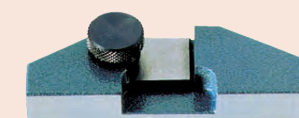
No.	Description	Price €
05CZA624	Digimatic cable with data switch (1 m)	70.50
05CZA625	Digimatic cable with data switch (2 m)	79.50
02AZD790A	Connecting cable U-Wave with data switch	95.00
06ADV380A	USB Input Tool Direct cable (2 m)	115.00
050083-10	75 base for depth measurement for models up to 200	44.50
050084-10	100 base for depth measurement for models up to 200	50.00
050085-10	125 base for depth measurement for 300 models	57.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50





Beam 150 and 200 mm or 300 mm



050083-10

ABSOLUTE Digimatic Caliper IP67 with Carbide Tipped Jaws

Functions	Series 500
ORIGIN (ABS-Zero)	
Auto Power OFF after 20 min. non use	
Low voltage alarm	

Specifications

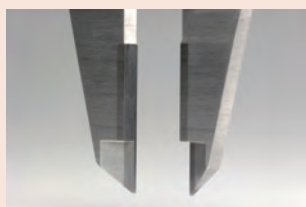
Accuracy	$\leq 200 \text{ mm} : \pm 0,02 \text{ mm}$ $> 200 \text{ mm} : \pm 0,03 \text{ mm}$ (excluding quantizing error)
Max. response speed	Unlimited
Depth bar	Flat
Digital step	0,01 mm
Display	LCD, Character height 7,5 mm
Battery life	approx. 15.000 hours
Delivered	In a case, including 1 battery

Optional accessories

No.	Description	Price €
05CZA624	Digimatic cable with data switch (1 m)	70.50
05CZA625	Digimatic cable with data switch (2 m)	79.50
02AZD790A	Connecting cable U-Wave with data switch	95.00
06ADV380A	USB Input Tool Direct cable (2 m)	115.00
050083-10	75 base for depth measurement for models up to 200	44.50
050084-10	100 base for depth measurement for models up to 200	50.00
050085-10	125 base for depth measurement for 300 models	57.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



Carbide-tipped jaws

Series 500

These robust calipers have carbide-tipped jaws and allow you to take reliable measurements in a wide range of situations.







The ABSOLUTE Digimatic Carbide Caliper IP67 offers you the following benefits:

- ABSOLUTE system delivers reliable measurements.
- It has excellent resistance against water and dust (IP67 protection level) enabling you to use it in machining situations that include splashing coolant fluid.
- Complies with EN60529, is dustproof and will even withstand temporary complete immersion in water without suffering any damage
- Extremely resistant to coolants and lubricants.
- Extraordinary battery life.



Metric

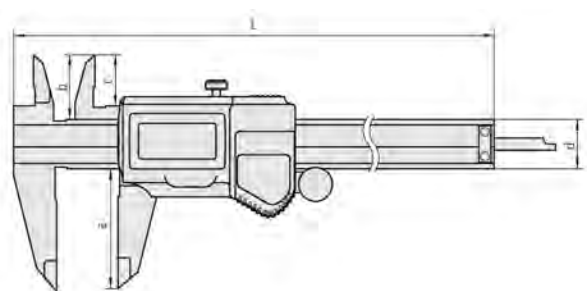
Carbide-tipped jaws for outside/inside measurement

No.	Range [mm]	Data output	Thumb roller	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
500-727-11	0-150			233	40	21	16.5	16	164	397.00
500-723-10	0-150			233	40	21	16.5	16	168	427.00
500-728-11	0-200			290	50	24.5	20	16	194	453.00
500-724-10	0-200			290	50	24.5	20	16	198	484.00

Metric

Carbide-tipped jaws for outside measurement

No.	Range [mm]	Data output	Thumb roller	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
500-721-10	0-150			233	40	21	16.5	16	168	330.00
500-722-10	0-200			290	50	24.5	20	16	198	371.00



ABSOLUTE Digimatic Caliper

Series 500

These Digimatic calipers allow you to take reliable measurements and offer you the following benefits:

- ABSOLUTE System delivers reliable measurements.
- A high quality guide surface finish gives you smooth slider movement.
- Large character height of 9mm makes measurements easy to read.
- Extraordinary battery life.

ABSOLUTE®



Metric

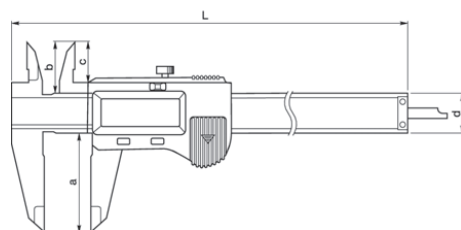
Without thumb roller

No.	Range [mm]	Depth bar	Data output	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
500-180-20	0-100	Ø 1,9 mm		182	40	21	16.5	16	142	185.00
500-201-21	0-100	Ø 1,9 mm	●	182	40	21	16.5	16	143	196.00
500-184-20	0-150	Ø 1,9 mm		233	40	21	16.5	16	164	105.00
500-203-21	0-150	Ø 1,9 mm	●	233	40	21	16.5	16	168	136.00
500-181-20	0-150	flat		233	40	21	16.5	16	164	105.00
500-161-20	0-150	flat	●	233	40	21	16.5	16	164	135.00
500-182-20	0-200	flat		290	50	24.5	20	16	194	165.00
500-162-20	0-200	flat	●	290	50	24.5	20	16	194	192.00
500-205	0-300	flat	●	404	64	27.5	22	20	350	359.00

Metric

With thumb roller

No.	Range [mm]	Depth bar	Data output	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
500-150-20	0-100	Ø 1,9 mm	●	182	40	21	16.5	16	143	215.00
500-151-20	0-150	flat	●	233	40	21	16.5	16	164	149.00
500-158-20	0-150	Ø 1,9 mm	●	233	40	21	16.5	16	164	149.00
500-152-20	0-200	flat	●	290	50	24.5	20	16	194	212.00
500-153	0-300	flat	●	404	64	27.5	22	20	350	394.00



Functions	Series 500
ORIGIN (ABS-Zero)	●
ZERO/ABS	●
ON/OFF	●
Low voltage alarm	●

Specifications

Accuracy	≤ 200 mm : ±0,02 mm / >> 200 mm : ±0,03 mm (excluding quantizing error)
Digital step	0,01 mm
Display	LCD, Character Height 9 mm
Max. response speed	Unlimited
Battery life	approx. 20.000 hours
Delivered	In a case, including 1 battery

Optional accessories

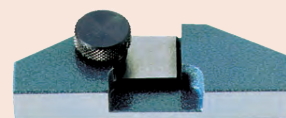
No.	Description	Price €
959149	Digimatic cable with data switch (1 m)	38.00
959150	Digimatic cable with data switch (2 m)	43.50
02AZD790C	U-WAVE Data Cable with data switch	90.00
06ADV380C	USB Input tool Direct cable with data switch (2 m)	100.00
959143	Data-hold unit	25.00
050083-10	75 base for depth measurement for models up to 200	44.50
050084-10	100 base for depth measurement for models up to 200	50.00
050085-10	125 base for depth measurement for 300 models	57.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



Round depth bar type



050083-10

ABSOLUTE Digimatic Caliper with Carbide Tipped Jaws

ABSOLUTE®



Series 500

These Digimatic calipers have carbide-tipped jaws and allow you to take reliable measurements and offer you the following benefits:

- ABSOLUTE System delivers reliable measurements.
- A high quality guide surface finish gives you smooth slider movement.
- Large character height of 9mm makes measurements easy to read.
- Extraordinary battery life.



Metric

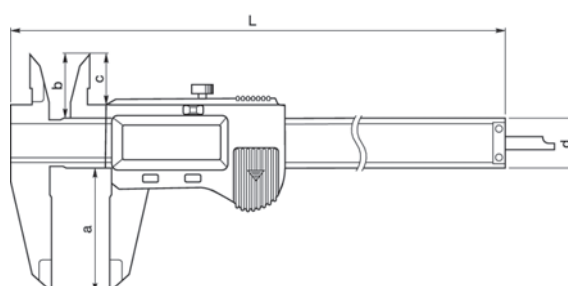
Carbide-tipped jaws for outside/inside measurement

No.	Range [mm]	Data output	Thumb roller	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
500-155-20	0-150	●	●	233	40	21	16.5	16	168	417.00
500-157-20	0-200	●	●	290	50	24.5	20	16	198	474.00

Metric

Carbide-tipped jaws for outside measurement

No.	Range [mm]	Data output	Thumb roller	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
500-233-21	0-150	●		233	40	21	16.5	16	168	227.00
500-154-20	0-150	●	●	233	40	21	16.5	16	168	258.00
500-235-21	0-200	●		290	50	24.5	20	16	198	268.00
500-156-20	0-200	●	●	290	50	24.5	20	16	198	299.00



Functions	Series 500
ORIGIN (ABS-Zero)	●
ZERO/ABS	●
ON/OFF	●
Low voltage alarm	●
Depth bar	

Specifications

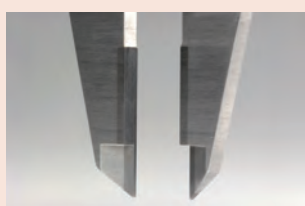
Accuracy	≤ 200 mm : ±0,02 mm > 200 mm : ±0,03 mm (excluding quantizing error)
Max. response speed	Unlimited
Digital step	0,01 mm
Display	LCD, Character Height 9 mm
Battery life	approx. 20.000 hours
Delivered	In a case, including 1 battery

Optional accessories

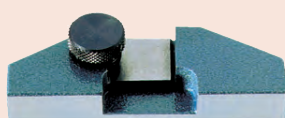
No.	Description	Price €
959149	Digimatic cable with data switch (1 m)	38.00
959150	Digimatic cable with data switch (2 m)	43.50
02AZD790C	U-WAVE Data Cable with data switch	90.00
06ADV380C	USB Input tool Direct cable with data switch (2 m)	100.00
959143	Data-hold unit	25.00
050083-10	75 base for depth measurement for models up to 200	44.50
050084-10	100 base for depth measurement for models up to 200	50.00
050085-10	125 base for depth measurement for 300 models	57.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



Carbide-tipped jaws



050083-10

ABSOLUTE Digimatic Solar Caliper IP67

Series 500

This solar-powered Digimatic SuperCaliper with ABSOLUTE system is a robust, high performance model.

The ABSOLUTE Digimatic Solar Caliper IP67 offers you the following benefits:

- High Performance Model
- Solar powered, eco-friendly SuperCaliper with ABSOLUTE System needs no battery.
- Operates in only 60 LUX ambient lighting.
- Even if the illumination is temporarily less than 60 LUX measuring can be performed by charging a super capacitor.
- It has excellent resistance against water and dust (IP67 protection level) enabling you to use it in machining situations that include splashing coolant fluid.

ABSOLUTE®

SOLAR

IP67



500-772

Metric

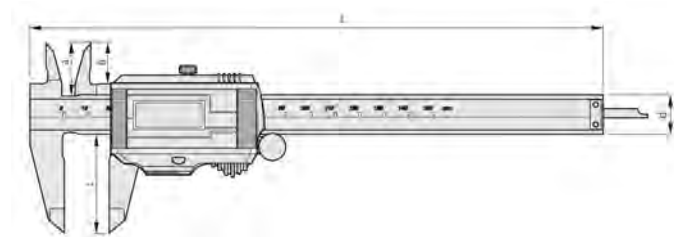
Without thumb roller

No.	Range [mm]	Depth bar	Data output	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
500-772	0-150	flat		233	21	16.5	40	16	180	185.00
500-792	0-150	Ø 1,9 mm		233	21	16.5	40	16	180	185.00
500-778	0-150	flat	●	233	21	16.5	40	16	180	242.00
500-773	0-200	flat		290	24.5	20	50	16	210	266.00
500-779	0-200	flat	●	290	24.5	20	50	16	210	305.00

Metric

With thumb roller

No.	Range [mm]	Depth bar	Data output	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
500-774	0-150	flat		233	21	16.5	40	16	180	204.00
500-776	0-150	flat	●	233	21	16.5	40	16	180	267.00
500-775	0-200	flat		290	24.5	20	50	16	210	293.00
500-777	0-200	flat	●	290	24.5	20	50	16	210	336.00



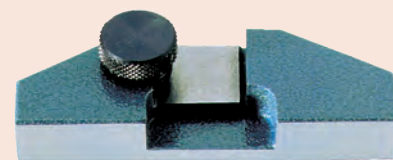
Functions	Series 500
ORIGIN (ABS-Zero)	●

Specifications

Accuracy	±0,02 mm (excluding quantizing error)
Max. response speed	Unlimited
Power	Solar cell
Digital step	0,01 mm
Display	LCD; Character Height 7,5 mm
Delivered	In a case

Optional accessories

No.	Description	Price €
05CZA624	Digimatic cable with data switch (1 m)	70.50
05CZA625	Digimatic cable with data switch (2 m)	79.50
02AZD790A	Connecting cable U-Wave with data switch	95.00
06ADV380A	USB Input Tool Direct cable (2 m)	115.00
050083-10	75 base for depth measurement for models up to 200	44.50
050084-10	100 base for depth measurement for models up to 200	50.00



050083-10

ABSOLUTE Digimatic Solar Caliper

Series 500

ABSOLUTE®



This solar-powered Digimatic caliper is a standard model that enables you to take reliable measurements. The ABSOLUTE Digimatic Solar Caliper offers you the following benefits:

- You can operate it in just 60 lux ambient lighting.



500-444



500-457

Metric

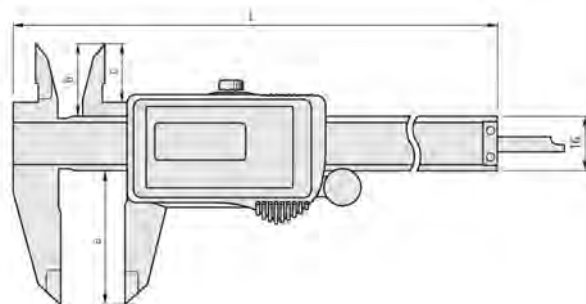
Without thumb roller

No.	Range [mm]	Depth bar	Data output	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
500-457	0-150	flat		233	40	21	16.5	150	139.00
500-458	0-200	flat		290	50	24	20	180	185.00

Metric

With thumb roller

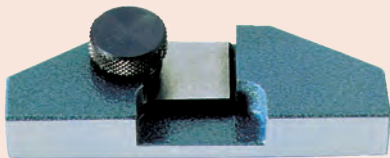
No.	Range [mm]	Depth bar	Data output	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
500-453	0-100	Ø 1,9 mm		182	40	21	16.5	125	215.00
500-443	0-100	Ø 1,9 mm		182	40	21	16.5	145	227.00
500-454	0-150	flat		233	40	21	16.5	150	185.00
500-444	0-150	flat		233	40	21	16.5	170	196.00
500-455	0-200	flat		290	50	24	20	180	225.00
500-445	0-200	flat		290	50	24	20	200	237.00



Functions	Series 500
ORIGIN (ABS-Zero)	
Specifications	
Accuracy	±0,02 mm (excluding quantizing error)
Max. response speed	Unlimited
Power	Solar cell
Digital step	0,01 mm
Display	LCD; Character Height 7,5 mm
Delivered	In a case

Optional accessories

No.	Description	Price €
959149	Digimatic cable with data switch (1 m)	38.00
959150	Digimatic cable with data switch (2 m)	43.50
02AZD790C	U-WAVE Data Cable with data switch	90.00
06ADV380C	USB Input tool Direct cable with data switch (2 m)	100.00
959143	Data-hold unit	25.00
050083-10	75 base for depth measurement for models up to 200	44.50
050084-10	100 base for depth measurement for models up to 200	50.00



050083-10

ABSOLUTE Digimatic Caliper for Long Range

Series 500

This is a standard model of Digimatic High Capacity Caliper that offers you the following benefits:

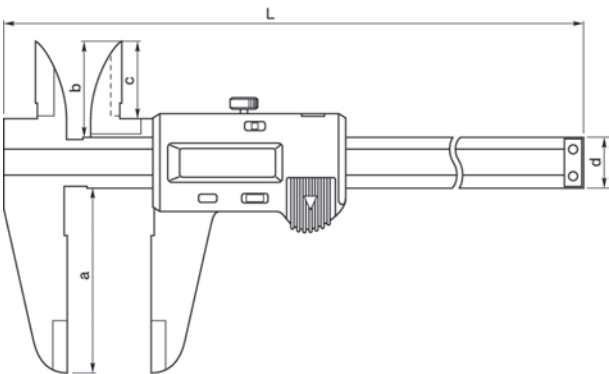
- It has a robust design for large measuring ranges, up to 1000mm.
- ABSOLUTE System delivers reliable measurements.



500-500-10

Metric

No.	Range [mm]	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
500-500-10	0-450	630	90	47	38	25	1170	788.00
500-501-10	0-600	780	90	47	38	25	1350	855.00
500-502-10	0-1000	1240	130	61	50	32	3300	1,485.00



Functions	Series 500
ORIGIN (ABS-Zero)	●
ZERO/ABS	●
ON/OFF	●
Low voltage alarm	●
Data output	●

Specifications

Accuracy	≤ 600 mm : ±0,05 mm ≤ 1000 mm : ±0,07 mm (excluding quantizing error)
Max. response speed	Unlimited
Digital step	0,01 mm
Display	LCD; Character Height 10 mm
Battery life	approx. 20.000 hours
Delivered	In a case, including 1 battery

Optional accessories

No.	Description	Price €
959149	Digimatic cable with data switch (1 m)	38.00
959150	Digimatic cable with data switch (2 m)	43.50
02AZD790C	U-WAVE Data Cable with data switch	90.00
06ADV380C	USB Input tool Direct cable with data switch (2 m)	100.00
959143	Data-hold unit	25.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50

ABSOLUTE Digimatic Caliper with Nib Style Jaws

Series 550

ABSOLUTE®



200/300 mm

This is a Digimatic caliper with nib-style jaws that lets you measure inside dimensions.

It offers you the following benefits:

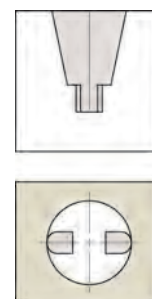
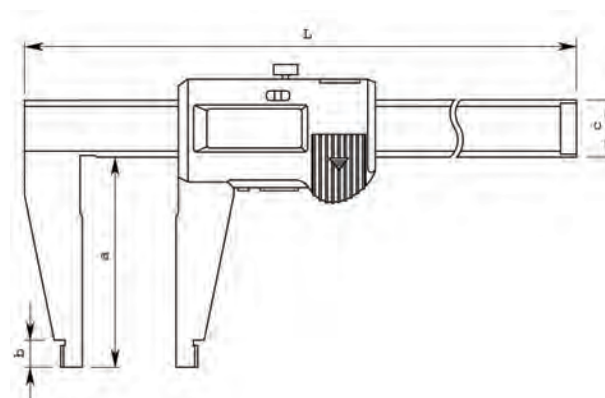
- Rounded measuring surfaces enable you to measure inside dimensions.
- ABSOLUTE System delivers reliable measurements.



550-301-10

Metric

No.	Range [mm]	Accuracy	Inside measuring from	Remarks	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
550-301-10	0-200	±0,03 mm	10 mm	IP67	290	60	8	16	180	330.00
550-331-10	0-300	±0,04 mm	10 mm	IP67	403	75	12	20	380	397.00
550-203-10	0-450	±0,05 mm	20 mm		630	100	18	25	1110	587.00
550-205-10	0-600	±0,05 mm	20 mm		780	100	18	25	1290	664.00
550-207-10	0-1000	±0,07 mm	20 mm		1240	140	24	32	3350	1,133.00



Round surfaces of jaws for measuring inside dimensions

Series 550				
	550-203-10	up to 550-207-10	550-301-10	550-331-10
Functions				
ORIGIN (ABS-Zero)	●		●	●
OFFSET*			●	●
ON/OFF	●			
Auto Power OFF after 20 min. non use			●	●
Low voltage alarm	●		●	●
Data output	●		●	●
PRESET				●

Specifications

Accuracy	Refer to the list of specifications (excluding quantizing error)
Max. response speed	Unlimited
Digital step	0,01 mm
Display	LCD, Character Height 7,5 mm (200 mm) 10,2 mm (300 mm) 10 mm (> 300 mm)
Battery life	approx. 3 years (200 mm), 1 year (300 mm), 3,5 years (>300 mm)
Delivered	In a case, including 1 battery

Optional accessories

No.	Description	Price €
959149	Digimatic cable with data switch (1 m)	38.00
959150	Digimatic cable with data switch (2 m)	43.50
02AZD790C	U-WAVE Data Cable with data switch	90.00
06ADV380C	USB Input tool Direct cable with data switch (2 m)	100.00
959143	Data-hold unit	25.00

Optional accessories for IP67

No.	Description	Price €
05CZA624	Digimatic cable with data switch (1 m)	70.50
05CZA625	Digimatic cable with data switch (2 m)	79.50
02AZD790A	Connecting cable U-Wave with data switch	95.00
06ADV380A	USB Input Tool Direct cable (2 m)	115.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



*10 mm

ABSOLUTE Digimatic Caliper with Nib Style and Standard Jaws

Series 551

This is a Digimatic caliper with nib-style and standard jaws. It offers you the following benefits:

- Knife-shaped measuring surfaces allow you to take outside measurements.
- Rounded measuring surfaces enable you to measure inside dimensions.
- ABSOLUTE System delivers reliable measurements.

ABSOLUTE®



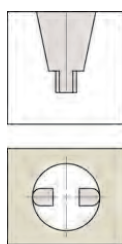
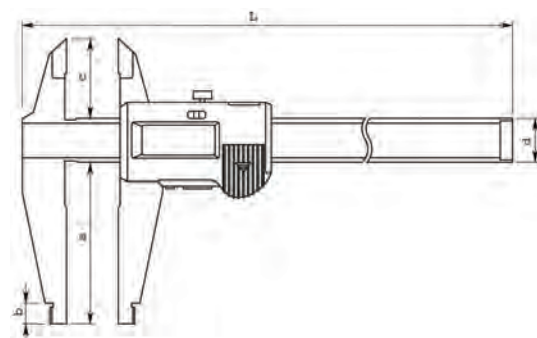
200/300 mm



551-301-10

Metric

No.	Range [mm]	Accuracy	Inside measuring from	Remarks	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
551-301-10	0-200	±0,03 mm	10 mm	IP67	290	60	8	30	16	196	355.00
551-331-10	0-300	±0,04 mm	10 mm	IP67	403	90	10	40	20	420	395.00
551-204-10	0-500	±0,06 mm	20 mm		680	150	18	56	25	1060	740.00
551-206-10	0-750	±0,06 mm	20 mm		963	150	18	56	25	1410	1,020.00
551-207-10	0-1000	±0,07 mm	20 mm		1230	150	20	56	32	3430	1,235.00



Round surface of jaws for measuring inside dimensions

Series 551				
	551-204-10	551-207-10	551-301-10	551-331-10
Functions				
ORIGIN (ABS-Zero)	●	●	●	●
OFFSET*		●	●	●
ON/OFF	●			
Auto Power OFF after 20 min. non use			●	●
Low voltage alarm	●	●	●	●
Data output	●	●	●	●
PRESET				●

Specifications

Accuracy	Refer to the list of specifications (excluding quantizing error)
Max. response speed	Unlimited
Digital step	0,01 mm
Display	LCD; Character Height 7.5 mm (200 mm) 10,2 mm (300 mm) 10 mm (> 300 mm)
Battery life	approx. 3 years (200 mm), 1 years (300 mm), 3,5 year (>300 mm)
Delivered	In a case, including 1 battery

Optional accessories

No.	Description	Price €
959149	Digimatic cable with data switch (1 m)	38.00
959150	Digimatic cable with data switch (2 m)	43.50
02AZD790C	U-WAVE Data Cable with data switch	90.00
06ADV380C	USB Input tool Direct cable with data switch (2 m)	100.00
959143	Data-hold unit	25.00

Optional accessories for IP67

No.	Description	Price €
05CZA624	Digimatic cable with data switch (1 m)	70.50
05CZA625	Digimatic cable with data switch (2 m)	79.50
02AZD790A	Connecting cable U-Wave with data switch	95.00
06ADV380A	USB Input Tool Direct cable (2 m)	115.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



*10 mm

ABSOLUTE Digimatic Carbon Fibre Caliper IP66

Series 552

ABSOLUTE®



This is a lightweight standard model of Digimatic caliper with steel jaws.

It offers you the following benefits:

- Its ultra-lightweight design (with carbon fibre reinforced material) reduces total weight by up to 50%.
- It has excellent resistance against water and dust (IP67 protection level) enabling you to use it in machining situations that include splashing coolant fluid.
- Direct readout of inside measurements from the LCD (you can easily set the offset value by using the offset button).
- Preset function lets you set a desired starting point.



552-304-10

Metric

No.	Range [mm]	Accuracy	Inside measuring from	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	f [mm]	Mass [g]	Price [€]
552-302-10	0-450	±0,04 mm	20 mm	640	100	18	41.2	91.8	25	10	715	886.00
552-303-10	0-600	±0,04 mm	20 mm	790	100	18	41.2	91.8	25	10	790	979.00
552-304-10	0-1000	±0,05 mm	20 mm	1230	150	24	62.8	113.8	32	10	1760	1,432.00
552-305-10	0-1500	±0,09 mm	20 mm	1740	150	24	62.8	113.8	32	10	2160	1,823.00
552-306-10	0-2000	±0,12 mm	20 mm	2250	150	24	62.8	113.8	32	10	2560	2,328.00



Functions	Series 552
ORIGIN (ABS-Zero)	●
OFFSET*	●
DATA/HOLD	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Data output	●
PRESET	●

Specifications

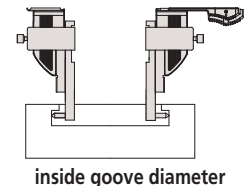
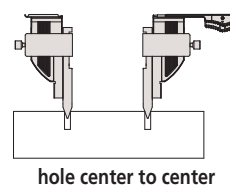
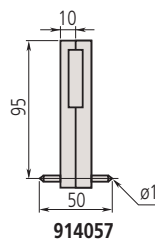
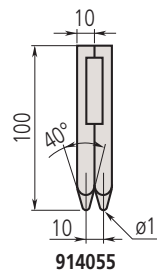
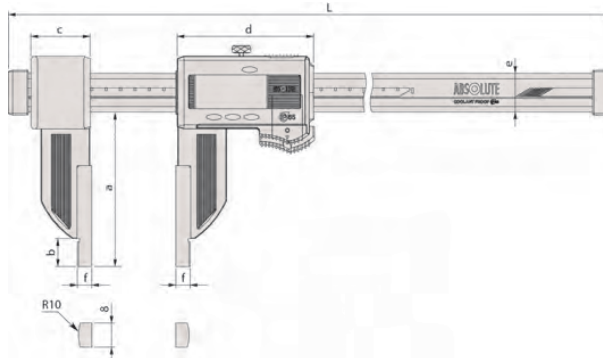
Accuracy	Refer to the list of specifications (excluding quantizing error)
Max. response speed	Unlimited
Digital step	0,01 mm
Display	LCD; Character Height 10 mm
Battery life	approx. 5.000 hours
Delivered	In a case, including 1 battery

Optional accessories

No.	Description	Price €
05CZA624	Digimatic cable with data switch (1 m)	70.50
05CZA625	Digimatic cable with data switch (2 m)	79.50
02AZD790A	Connecting cable U-Wave with data switch	95.00
06ADV380A	USB Input Tool Direct cable (2 m)	115.00
914055	Pair of jaws for measuring hole centre-to-centre dimensions (over 10)	216.00
914057	Pair of jaws for measuring inside groove diameter (over 50)	247.00
914053	Holders for special measurement jaws up to a measuring range of 600	165.00
914054	Holders for special measurement jaws up to a measuring range of 1000	170.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



ABSOLUTE Digimatic Carbon Fibre Caliper IP66 with Ceramic Jaws

Series 552

This is a lightweight standard model of Digimatic caliper with ceramic jaws.

It offers you the following benefits:

- Its ultra-lightweight design (with carbon fibre reinforced material) reduces total weight by up to 50%.
- It has excellent resistance against water and dust (IP67 protection level) enabling you to use it in machining situations that include splashing coolant fluid.
- Direct readout of inside measurements from the LCD (you can easily set the offset value by using the offset button).
- Preset function lets you set a desired starting point.

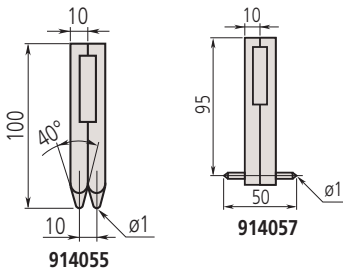
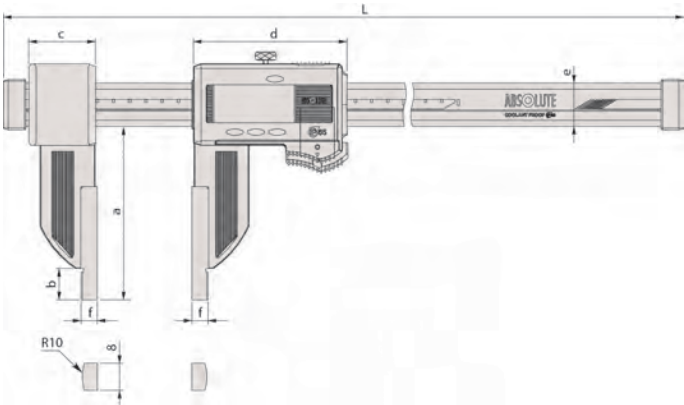
ABSOLUTE®



552-156-10

Metric

No.	Range [mm]	Accuracy	Inside measuring from	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	f [mm]	Mass [g]	Price [€]
552-155-10	0-450	±0,04 mm	20 mm	640	100	18	41.2	91.8	25	10	715	1,329.00
552-156-10	0-600	±0,04 mm	20 mm	790	100	18	41.2	91.8	25	10	790	1,442.00



Functions	Series 552
ORIGIN (ABS-Zero)	●
OFFSET*	●
DATA/HOLD	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Data output	●
PRESET	●

Specifications

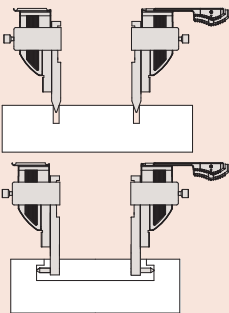
Accuracy	Refer to the list of specifications (excluding quantizing error)
Max. response speed	Unlimited
Digital step	0,01 mm
Display	LCD, Character Height 10 mm
Battery life	approx. 5.000 hours
Delivered	In a case, including 1 battery

Optional accessories

No.	Description	Price €
05CZA624	Digimatic cable with data switch (1 m)	70.50
05CZA625	Digimatic cable with data switch (2 m)	79.50
02AZD790A	Connecting cable U-Wave with data switch	95.00
06ADV380A	USB Input Tool Direct cable (2 m)	115.00
914055	Pair of jaws for measuring hole centre-to-centre dimensions (over 10)	216.00
914057	Pair of jaws for measuring inside groove diameter (over 50)	247.00
914053	Holders for special measurement jaws up to a measuring range of 600	165.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



* Metric: 20 mm

ABSOLUTE Digimatic Carbon Fibre Caliper IP66 with Extra Long Jaws

Series 552

ABSOLUTE®



This is a lightweight standard model of Digimatic caliper with extra-long jaws.

It offers you the following benefits:

- Its ultra-lightweight design (with carbon fibre reinforced material) reduces total weight by up to 50%.
- It has excellent resistance against water and dust (IP67 protection level) enabling you to use it in machining situations that include splashing coolant fluid.
- Direct readout of inside measurements from the LCD (you can easily set the offset value by using the offset button).
- Preset function lets you set a desired starting point.



552-151-10

Metric

No.	Range [mm]	Accuracy	Inside measuring from	A [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	Mass [g]	Price [€]
552-150-10	0-450	±0,06 mm	20 mm	680	89	91.8	65.5	173	25	8	1215	1,329.00
552-151-10	0-600	±0,06 mm	20 mm	830	89	91.8	65.5	173	25	8	1290	1,442.00
552-152-10	0-1000	±0,07 mm	20 mm	1,280	110	113.8	73	170.5	32	12	2090	1,854.00
552-153-10	0-1500	±0,11 mm	20 mm	1,790	110	113.8	73	170.5	32	12	2490	2,400.00
552-154-10	0-2000	±0,14 mm	20 mm	2,300	110	113.8	73	170.5	32	12	2890	3,020.00



Functions	Series 552
ORIGIN (ABS-Zero)	●
OFFSET*	●
DATA/HOLD	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Data output	●
PRESET	●

Specifications

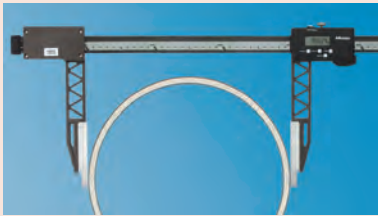
Accuracy	Refer to the list of specifications (excluding quantizing error)
Max. response speed	Unlimited
Digital step	0,01 mm
Display	LCD, Character Height 10 mm
Battery life	approx. 5.000 hours
Delivered	In a case, including 1 battery

Optional accessories

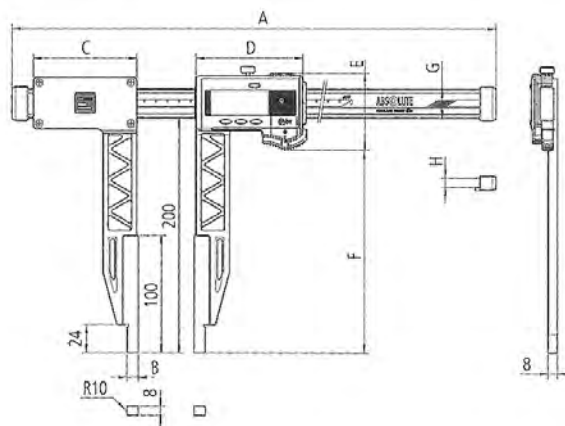
No.	Description	Price €
05CZA624	Digimatic cable with data switch (1 m)	70.50
05CZA625	Digimatic cable with data switch (2 m)	79.50
06ADV380A	USB Input Tool Direct cable (2 m)	115.00
02AZD790A	Connecting cable U-Wave with data switch	95.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



*	metric
≤ 600mm	20mm
≤ 1000mm	20mm



B = 10 mm

ABSOLUTE Digimatic Carbon Fibre Caliper IP66 with Interchangeable Jaws/ Scriber

Series 552

This is a lightweight standard model of Digimatic caliper with optional interchangeable jaws.

It offers you the following benefits:

- Its ultra-lightweight design (with carbon fibre reinforced material) reduces total weight by up to 50%.
- It has excellent resistance against water and dust (IP67 protection level) enabling you to use it in machining situations that include splashing coolant fluid.
- Direct readout of inside measurements from the LCD (you can easily set the offset value by using the offset button).
- Preset function lets you set a desired starting point.



552-182-10
with optional
accessories

Metric

No.	Range [mm]	Accuracy	Mass [g]	Price [€]
552-181-10	0-450	±0,04 mm	650	1,029.00
552-182-10	0-600	±0,04 mm	725	1,154.00
552-183-10	0-1000	±0,05 mm	1480	1,700.00
552-184-10	0-1500	±0,09 mm	1880	2,184.00
552-185-10	0-2000	±0,12 mm	2280	2,760.00

Accuracy: without jaws



Standard contact point	Measuring range	0-450 mm / 0-18"	0-600 mm / 0-24"	0-1000 mm / 0-40"	0-1500 mm / 0-60"	0-2500 mm / 0-80"
	Combination error	± 0,06 / ± 0.0025"	± 0,06 / ± 0.0025"	± 0,07 / ± 0.0030"	± 0,11 / ± 0.0045"	± 0,14 / ± 0.0055"
Inside Point type	Measuring range (mm)	IN 50-500 mm	50-650 mm	50-1050 mm	50-1550 mm	50-2550 mm
		OUT 0-450 mm	0-600 mm	0-1000 mm	0-1500 mm	0-2500 mm
	Measuring range (in)	IN 50,8-500,8 mm / 2-20"	50,8-650,8 mm / 2-26"	50,8-1050,8 mm / 2-42"	50,8-1550,8 mm / 2-62"	50,8-2550,8 mm / 2-82"
		OUT 0-450 mm / 0-18"	0-600 mm / 0-24"	0-1000 mm / 0-40"	0-1500 mm / 0-60"	0-2500 mm / 0-80"
	Combination error	± 0,09 mm / ± 0.0035"	± 0,09 mm / ± 0.0035"	± 0,10 mm / ± 0.0040"	± 0,14 mm / ± 0.0055"	± 0,17 mm / ± 0.0070"
Centerline type	Measuring range (mm)	30-480 mm	30-630 mm	30-1030 mm	30-1530 mm	30-2030 mm
	Measuring range (in)	30,48-480,8 mm / 1.2-19.2"	30,48-630,48 mm / 1.2-25.2"	30,48-1030,48 mm / 1.2-41.2"	30,48-1530,48 mm	30,48-2030,48 mm
	Combination error	± 0,08 mm / ± 0.0030"	± 0,08 mm / ± 0.0035"	± 0,09 mm / ± 0.0035"	± 0,13 mm / ± 0.0055"	± 0,16 mm / ± 0.0065"
Scriber type	Measuring range (mm)	30-480 mm	30-630 mm	30-1030 mm	30-1530 mm	30-2030 mm
	Measuring range (in)	30,48-480,8 mm / 1.2-19.2"	30,48-630,48 mm / 1.2-25.2"	30,48-1030,48 mm / 1.2-41.2"	30,48-1530,48 mm / 1.2-61.2"	30,48-2030,48 mm / 1.2-81.2"
	Combination error	± 0,10 / ± 0.0040"	± 0,10 / ± 0.0040"	± 0,11 / ± 0.0045"	± 0,15 / ± 0.0060"	± 0,18 / ± 0.0070"
Surface Plate type + Scriber	Measuring range	0-450 mm / 0-17"	0-600 mm / 0-23.7"	0-1000 mm / 0-39.4"	0-1500 mm / 0-59.4"	0-2500 mm / 0-79.6"
	Combination error	± 0,10 / ± 0.0040"	± 0,10 / ± 0.0040"	± 0,11 / ± 0.0045"	± 0,15 / ± 0.0060"	± 0,18 / ± 0.0070"
Surface Plate type + Inside Point type	Measuring range (mm)	25-475 mm	25-625 mm	25-1025 mm	25-1525 mm	25-2025 mm
		0-450 mm	0-600 mm	0-1000 mm	0-1500 mm	0-2000 mm
	Measuring range (in)	25,4-475,4 mm / 1-19"	25,4-625,4 mm / 1-24"	25,4-1025,4 mm / 1-41"	25,4-1525,4 mm / 1-62"	25,4-2025,4 mm / 1-81"
		0-450 mm / 0-18"	0-600 mm / 0-24"	0-1000 mm / 0-40"	0-1500 mm / 0-60"	0-2000 mm / 0-80"
	Combination error	± 0,12 mm / ± 0.0025"	± 0,12 mm / ± 0.0050"	± 0,13 mm / ± 0.0055"	± 0,17 mm / ± 0.0070"	± 0,20 mm / ± 0.0080"
Surface Plate type + Center Line type	Measuring range (mm)	15-465 mm	15-615 mm	15-1015 mm	15-1515 mm	15-2015 mm
		15,254-465,24 mm / 0,6-18,6"	15,24-615,24 mm / 0,6-24,6"	15,24-1015,24 mm / 0,6-40,6"	15,24-1515,24 mm / 0,6-60,6"	15,24-2015,24 mm / 0,6-80,6"
	Combination error	± 0,11 mm / ± 0.0045"	± 0,11 mm / ± 0.0045"	± 0,12 mm / ± 0.0050"	± 0,16 mm / ± 0.0066"	± 0,19 mm / ± 0.0075"

Accuracy with different Interchangeable Jaws

ABSOLUTE®



Functions	Series 552
ORIGIN (ABS-Zero)	●
OFFSET	●
DATA/HOLD	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Data output	●
PRESET	●

Specifications

Accuracy	Refer to the list of specifications (excluding quantizing error)
Max. response speed	Unlimited
Digital step	0,01 mm
Display	LCD, Character Height 10 mm
Battery life	approx. 5.000 hours
Delivered	In a case, including 1 battery, scriber clamps (2pcs.)

Standard accessories

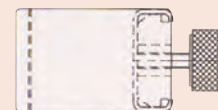
No.	Description
05GZA033	Scriber clamp (9 x 9 mm)

Optional accessories

No.	Description	Price €
05CZA624	Digimatic cable with data switch (1 m)	70.50
05CZA625	Digimatic cable with data switch (2 m)	79.50
02AZD790A	Connecting cable U-Wave with data switch	95.00
06ADV380A	USB Input Tool Direct cable (2 m)	115.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50

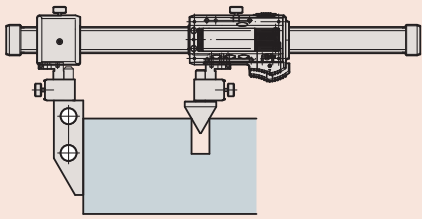


05GZA033

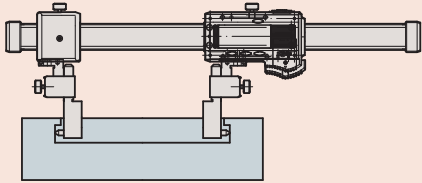
ABSOLUTE Digimatic Carbon Fibre Caliper IP66 with Interchangeable Jaws/ Scriber

Series 552

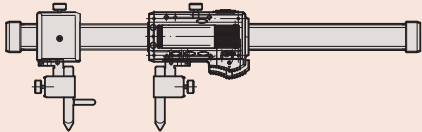
Interchangeable jaws (optional)



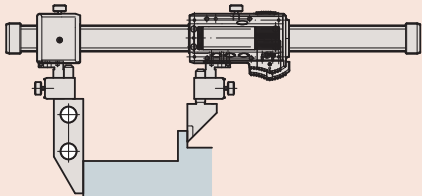
Surface plate type + Standard type



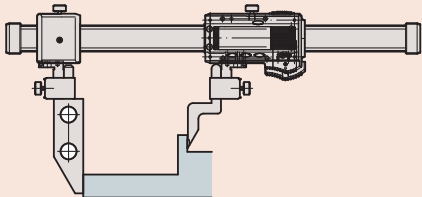
Inside point type



Scriber type



Surface plate type + Centerline type



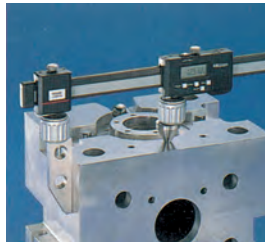
Surface plate type + Scriber for height gages



Standard type



Centreline type



Surface plate type

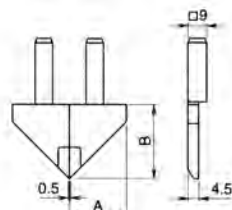


Inside point type

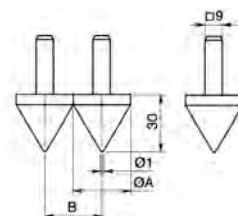


Scriber type

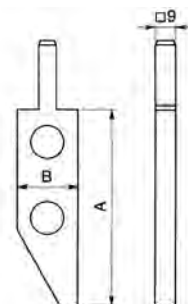
No.	Type	A	B	Mass [g]	Price [€]
07CZA056	Standard (pair)	28 mm	30 mm	90.6	289.00
07CZA057	Centreline (pair)	30 mm	30 mm	119.6	356.00
07CZA058	Inside point (pair)	25 mm	50 mm	98.8	335.00
07CZA055	Scriber (pair)	8 mm	30 mm	63.2	312.00
07GZA000	Scriber for height gauges			120	



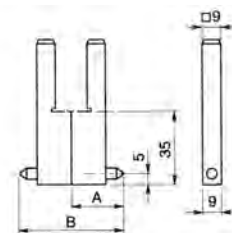
Standard type



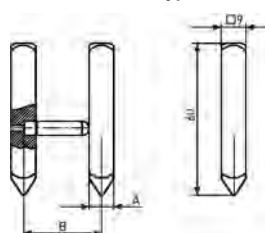
Centreline type



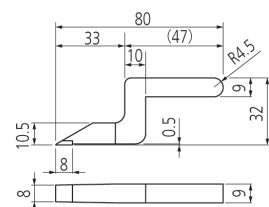
Surface plate type



Inside point type



Scriber type



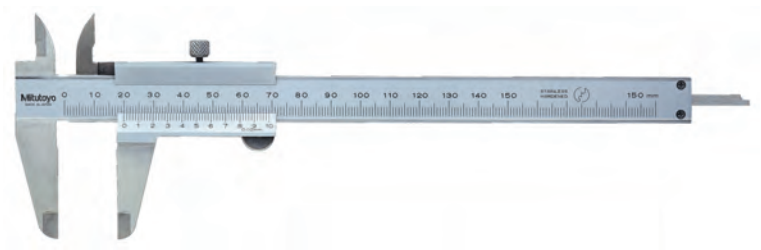
Scriber for height gages

Vernier Caliper

Series 530

These are a standard type of vernier caliper that offer you the following benefits:

- Main scale and vernier scale satin chrome finish gives you high readability.
- Raised sliding surfaces.



530-122

Metric

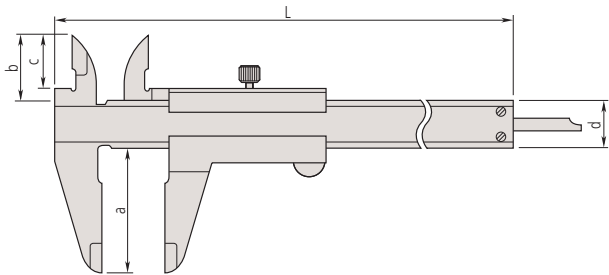
Graduation 0,02 mm

No.	Range [mm]	Accuracy	Depth bar	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
530-122	0-150	±0,03 mm	flat	229	40	21	17	16	143	33.50
530-123	0-200	±0,03 mm	flat	288	50	24.5	20.5	16	180	56.00
530-124	0-300	±0,04 mm	flat	404	64	27.5	22	20	355	178.00

Metric

Graduation 0,05 mm

No.	Range [mm]	Accuracy	Depth bar	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
530-100	0-100	±0,05 mm	Ø 1,9 mm	182	40	21.5	17	16	128	46.00
530-102	0-150	±0,05 mm	Ø 1,9 mm	229	40	21	17	16	144	43.00
530-101	0-150	±0,05 mm	flat	229	40	21	17	16	143	28.50
530-108	0-200	±0,05 mm	flat	288	50	24.5	20.5	16	180	74.00
530-109	0-300	±0,08 mm	flat	404	64	27.5	22	20	355	178.00
530-501	0-600	±0,10 mm	without	780	90	47	38	25	1300	546.00
530-502	0-1000	±0,15 mm	without	1240	130	60	50	32	3300	1,060.00

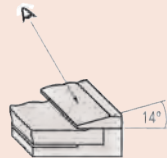


Specifications

Accuracy	Refer to the list of specifications
Delivered	In a case

Optional accessories

No.	Description	Price €
050083-10	75 base for depth measurement for models up to 200	44.50
050084-10	100 base for depth measurement for models up to 200	50.00
050085-10	125 base for depth measurement for 300 models	57.00



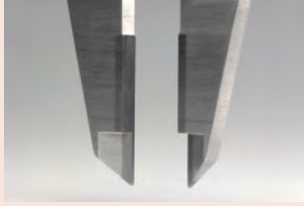
Easy reading due to vernier scales inclined by 14 degrees

Specifications

Accuracy	Refer to the list of specifications
Graduation	0.05 mm
Delivered	In a case

Optional accessories

No.	Description	Price €
050083-10	75 base for depth measurement for models up to 200	44.50
050084-10	100 base for depth measurement for models up to 200	50.00
050085-10	125 base for depth measurement for 300 models	57.00



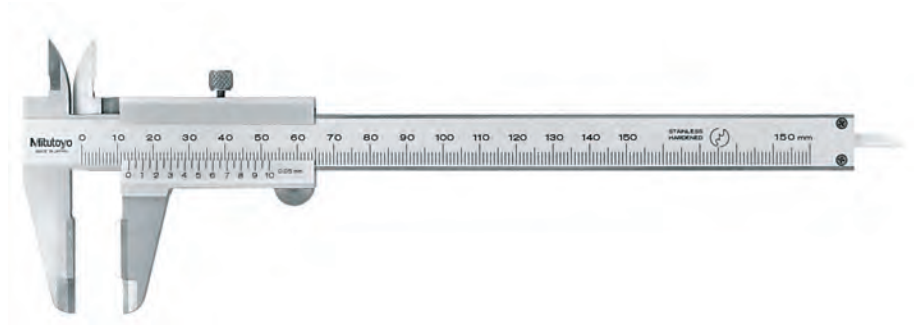
Carbide-tipped measuring surfaces

Vernier Caliper with Carbide Tipped Jaws

Series 530

This vernier caliper has carbide-tipped jaws and offers you the following benefits:

- Main scale and vernier scale satin chrome finish gives you high readability.
- Raised sliding surfaces.



530-320

Metric

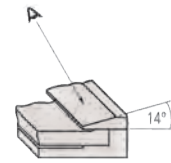
Carbide-tipped jaws for outside/inside measurement

No.	Range [mm]	Accuracy	Depth bar	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
530-335	0-150	±0,05 mm	flat	229	40	21	17	16	145	178.00

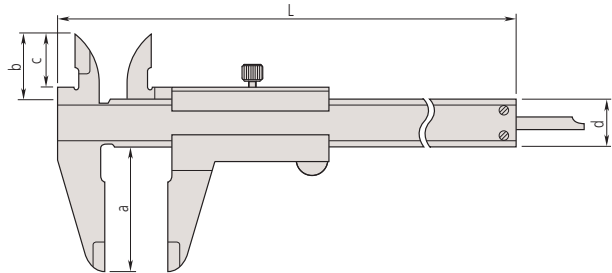
Metric

Carbide-tipped jaws for outside measurement

No.	Range [mm]	Accuracy	Depth bar	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
530-320	0-150	±0,05 mm	flat	229	40	21	17	16	145	113.00
530-321	0-200	±0,05 mm	flat	288	50	24.5	20.5	16	181	144.00
530-322	0-300	±0,08 mm	flat	404	64	27.5	22	20	355	314.00



Easy reading due to vernier scales inclined by 14 degrees



Vernier Caliper with Thumb Clamp

Series 531

This vernier caliper with thumb clamp and offers you the following benefits:

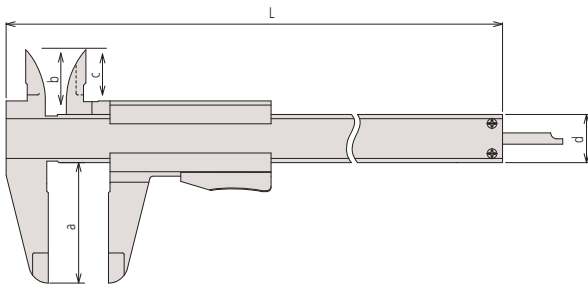
- The slider only moves when you depress the spring-loaded thumb grip.
- Main scale and vernier scale satin chrome finish gives you high readability.
- Raised sliding surfaces.



531-122

Metric

No.	Range [mm]	Graduation	Accuracy	Depth bar	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
531-101	0-150	0.05 mm	±0,05 mm	flat	229	40	21.5	17	16	142	33.00
531-102	0-200	0.05 mm	±0,05 mm	flat	288	50	25	20.5	16	175	82.50
531-103	0-300	0.05 mm	±0,08 mm	flat	403	64	27.5	22	20	360	191.00



Easy reading due to vernier scales inclined by 14 degrees

Specifications

Accuracy	Refer to the list of specifications
Delivered	In a case

Optional accessories

No.	Description	Price €
050083-10	75 base for depth measurement for models up to 200	44.50
050084-10	100 base for depth measurement for models up to 200	50.00
050085-10	125 base for depth measurement for 300 models	57.00

Specifications

Accuracy	Refer to the list of specifications
Graduation	0.02 mm
Delivered	In case

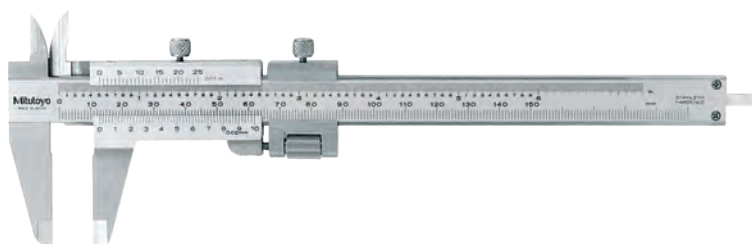
Optional accessories

No.	Description	Price €
050083-10	75 base for depth measurement for models up to 200	44.50
050084-10	100 base for depth measurement for models up to 200	50.00
050085-10	125 base for depth measurement for 300 models	57.00

Vernier Caliper with Fine Adjustment

Series 532

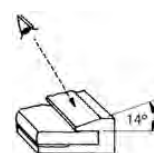
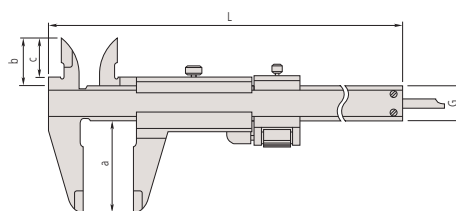
This is a vernier Caliper with fine-adjustment to help you with slider positioning.



532-119

Metric

No.	Range [mm]	Accuracy	Depth bar	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
532-101	0-130	±0,03 mm	flat	229	40	21.5	17	16	165	83.50
532-102	0-180	±0,03 mm	flat	288	50	25	20.5	16	202	110.00
532-103	0-280	±0,04 mm	flat	403	64	27.5	22	20	395	252.00

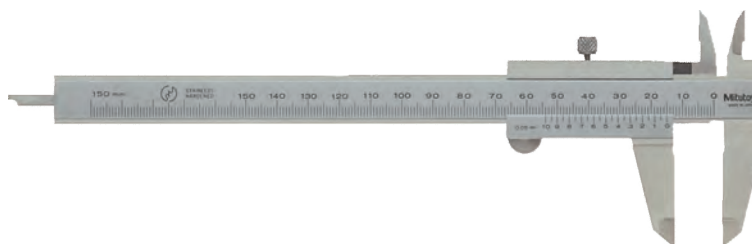


Easy reading due to vernier scales inclined by 14 degrees

Left-Handed Vernier Caliper

Series 536

These are Parallax-free vernier scales for easy and positive measurement.



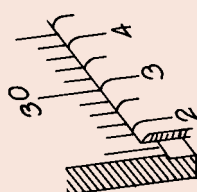
536-310

Metric

No.	Range [mm]	Accuracy	Depth bar	Jaw length [mm]	Mass [g]	Price [€]
536-310	0-150	±0,05 mm	flat	40	150	118.00

Specifications

Accuracy	Refer to the list of specifications
Graduation	0.05 mm
Delivered	In a case



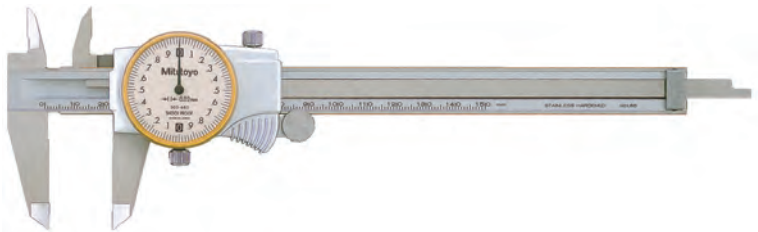
Reading free from parallax errors

Dial Caliper

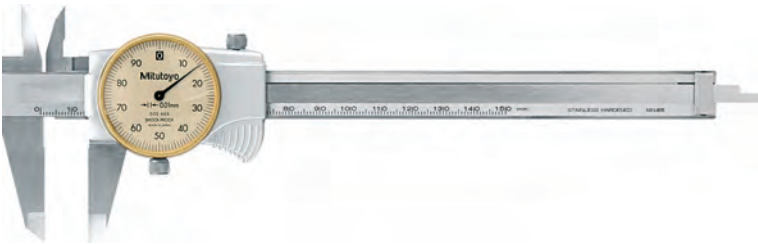
Series 505

This dial caliper offers you the following benefits:

- A titanium coating is applied to the sliding surfaces to give you enhanced durability.



505-683

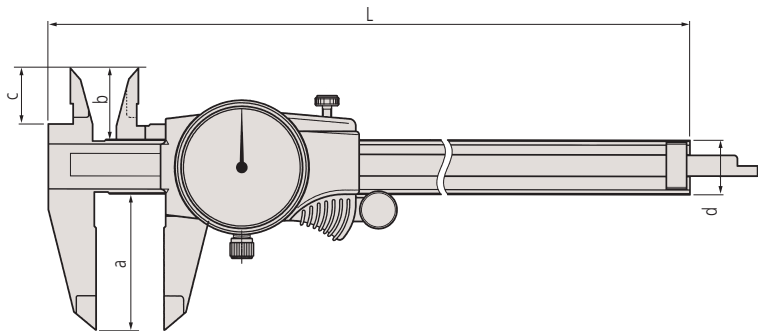


505-688

Metric

No.	Range [mm]	Graduation	Accuracy	Sliding titanium coated	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
505-683	0-150	0.02 mm. 2 mm/rev	±0,03 mm		231	40	21	16.5	16	175	93.00
505-685	0-150	0.01 mm. 1 mm/rev	±0,02 mm		231	40	21	16.5	16	176	108.00
505-688	0-150	0.01 mm. 1 mm/rev	±0,02 mm		231	40	21	16.5	16	176	108.00
505-684	0-200	0.02 mm. 2 mm/rev	±0,03 mm		288	50	24.5	20	16	185	191.00
505-686	0-200	0.01 mm. 1 mm/rev	±0,03 mm		288	50	24.5	20	16	186	206.00

505-688: Without thumb roller



Functions	Series 505
Locking screw	

Specifications



Accuracy	Refer to the list of specifications
Depth bar	flat
Delivered	In a case

Optional accessories

No.	Description	Price €
050083-10	75 base for depth measurement for models up to 200	44.50
050084-10	100 base for depth measurement for models up to 200	50.00
050085-10	125 base for depth measurement for 300 models	57.00



Titanium coating

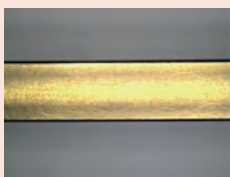
Functions	Series 505
Locking screw	
Thumb roller	

Specifications

Accuracy	Refer to the list of specifications
Delivered	In a case

Optional accessories

No.	Description	Price €
050083-10	75 base for depth measurement for models up to 200	44.50
050084-10	100 base for depth measurement for models up to 200	50.00
050085-10	125 base for depth measurement for 300 models	57.00



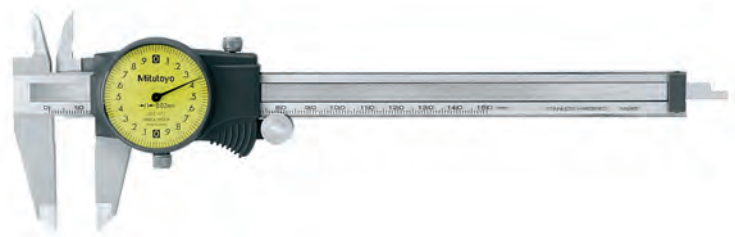
Titanium coating

Dial Caliper

Series 505

This dial caliper offers you the following benefits:

- A titanium coating is applied to the sliding surfaces to give you enhanced durability (except for 0-300mm model).



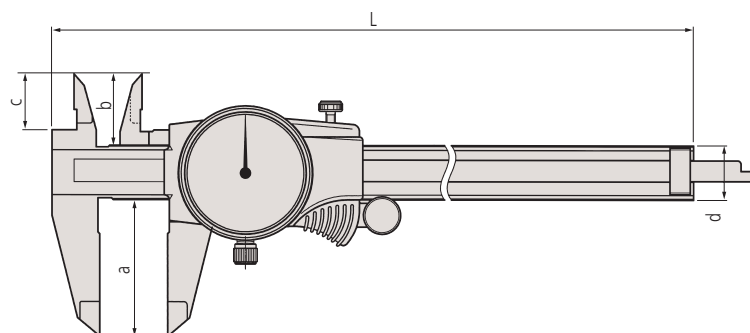
505-671



505-673

Metric

No.	Range [mm]	Graduation	Accuracy	Sliding titanium coated	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
505-680	0-100	0.01 mm. 1 mm/rev	±0,015 mm		180	40	21	16.5	16	151	
505-671	0-150	0.02 mm. 2 mm/rev	±0,03 mm		231	40	21	16.5	16	175	93.00
505-681	0-150	0.01 mm. 1 mm/rev	±0,02 mm		231	40	21	16.5	16	176	108.00
505-672	0-200	0.02 mm. 2 mm/rev	±0,03 mm		288	50	24.5	20	16	185	191.00
505-682	0-200	0.01 mm. 1 mm/rev	±0,03 mm		288	50	24.5	20	16	186	206.00
505-673	0-300	0.02 mm. 2 mm/rev	±0,04 mm		403	64	27.5	22	20	370	288.00

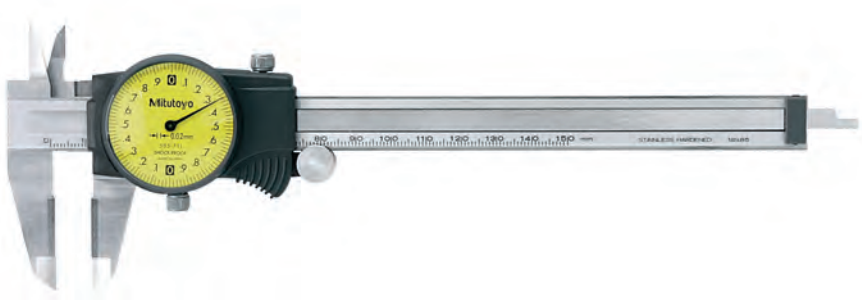


Dial Caliper with Carbide Tipped Jaws

Series 505

This dial caliper offers you the following benefits:

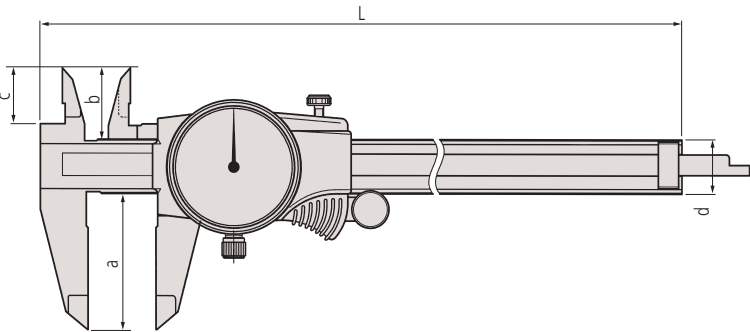
- A titanium coating is applied to the sliding surfaces to give you enhanced durability.



505-711

Metric Carbide-tipped jaws for outside/inside measurement												
No.	Range [mm]	Graduation	Accuracy	Sliding titanium coated	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]	
505-711	0-150	0.02 mm. 2 mm/rev	±0,03 mm		231	40	21	16.5	16	175	330.00	

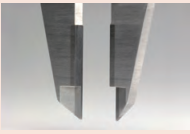
Metric Carbide-tipped jaws for outside measurement												
No.	Range [mm]	Graduation	Accuracy	Sliding titanium coated	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]	
505-707	0-150	0.02 mm. 2 mm/rev	±0,03 mm		231	40	21	16.5	16	175	273.00	



Functions	Series 505
Locking screw	
Thumb roller	

Specifications	
Accuracy	Refer to the list of specifications
Delivered	In a case

Optional accessories		
No.	Description	Price €
050083-10	75 base for depth measurement for models up to 200	44.50
050084-10	100 base for depth measurement for models up to 200	50.00
050085-10	125 base for depth measurement for 300 models	57.00



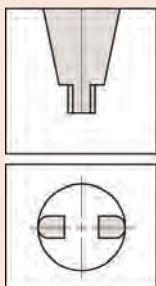
Carbide-tipped jaws



Titanium coating

Specifications

Accuracy	Refer to the list of specifications
Delivered	In a case



Round surface of jaws for measuring inside dimensions

Vernier Caliper with Nib Style and Standard Jaws

Series 533

These vernier calipers with nib style and standard jaws let you take easy, metric measurements. They offer you the following benefits:

- You can read inside and outside measurements directly from the upper and lower vernier scales.
- Main scale and vernier scale satin chrome finish gives you high readability.



Without fine adjustment

Metric

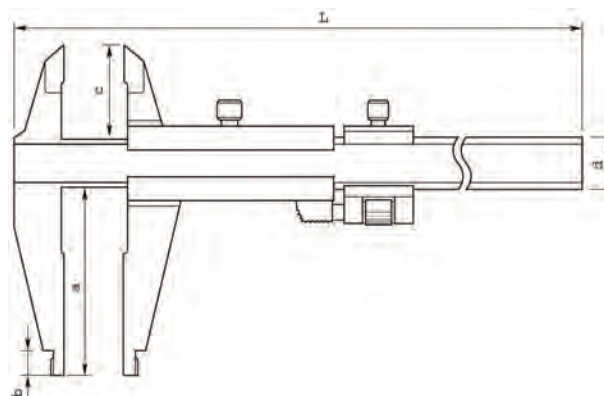
With fine adjustment

No.	Range [mm]	Graduation	Accuracy	Inside measuring from	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
533-504	0-500	0.02 mm	±0,05 mm	20 mm	680	150	15	56	25	1250	577.00
533-505	0-750	0.02 mm	±0,07 mm	20 mm	963	150	15	56	25	1550	839.00
533-506	0-1,000	0.02 mm	±0,08 mm	20 mm	1230	150	20	56	32	3450	1,010.00

Metric

Without fine adjustment

No.	Range [mm]	Graduation	Accuracy	Inside measuring from	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
533-404	0-500	0.05 mm	±0,10 mm	20 mm	680	150	15	56	25	1200	525.00
533-405	0-750	0.05 mm	±0,12 mm	20 mm	963	150	15	56	25	1500	736.00
533-406	0-1,000	0.05 mm	±0,15 mm	20 mm	1230	150	20	56	32	3300	891.00



Vernier Caliper with Nib Style Jaws

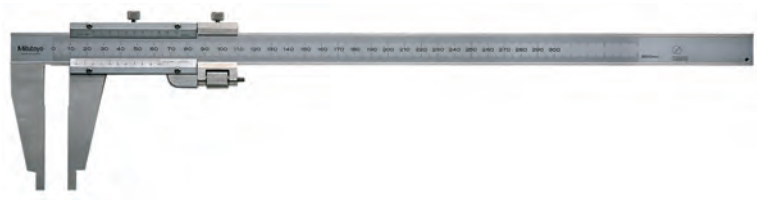
Series 160

These vernier calipers with nib style jaws come with or without fine adjustment. They offer you the following benefits:

- The top offset vernier scale allows you to directly read the inside dimensions without having to add the jaw blade width.
- Main scale and vernier scale satin chrome finish gives you high readability.



160-101



160-127

Metric With fine adjustment

No.	Range [mm]	Graduation	Accuracy	Inside measuring from	Price [€]
160-127	0 - 300	0,02 mm	± 0,04 mm	10 mm	324.00
160-128	0 - 450	0,02 mm	±0,05 mm	20 mm	515.00
160-101	0 - 600	0,02 mm	±0,05 mm	20 mm	587.00
160-104	0 - 1000	0,02 mm	±0,07 mm	20 mm	1,082.00
160-110	0 - 1500	0,02 mm	±0,10 mm	20 mm	2,215.00
160-113	0 - 2000	0,02 mm	±0,12 mm	20 mm	3,142.00

No.	L [mm]	R [mm]	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	f [mm]	Mass [g]
160-127	445	5	95	25	12	20	10	38	450
160-128	630	10	125	100	18	25	14.8	6	1200
160-101	780	10	125	100	18	25	14.8	6	1400
160-104	1240	10	172	140	24	32	17	10	3500
160-110	1800	10	212	180	30	32	19	10	4850
160-113	2300	10	220	180	30	40	23	12	10300

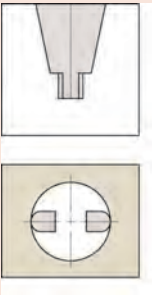
Metric Without fine adjustment

No.	Range [mm]	Graduation	Accuracy	Inside measuring from	Price [€]
160-130	0 - 450	0,05 mm	±0,10 mm	20 mm	515.00
160-131	0 - 600	0,05 mm	±0,10 mm	20 mm	587.00
160-132	0 - 1000	0,05 mm	±0,15 mm	20 mm	1,082.00
160-133	0 - 1500	0,05 mm	±0,22 mm	20 mm	2,215.00
160-134	0 - 2000	0,05 mm	±0,28 mm	20 mm	3,142.00

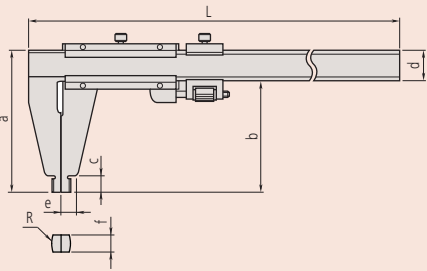
No.	L [mm]	R [mm]	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	f [mm]	Mass [g]
160-130	630	10	125	100	18	25	14.8	6	1100
160-131	780	10	125	100	18	25	14.8	6	1300
160-132	1240	10	172	140	24	32	17	10	3300
160-133	1800	10	212	180	30	32	19	10	4700
160-134	2300	10	220	180	30	40	23	12	9900

Specifications

Accuracy	Refer to the list of specifications
Note	Up to 300 mm: parallax-free design
Delivered	In a case

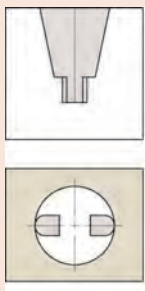
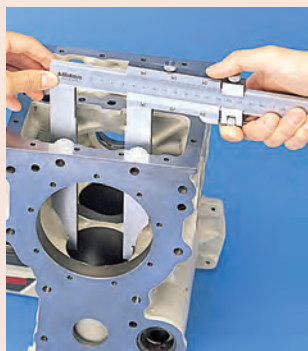


Rounded outside measuring surfaces for measuring inside dimensions

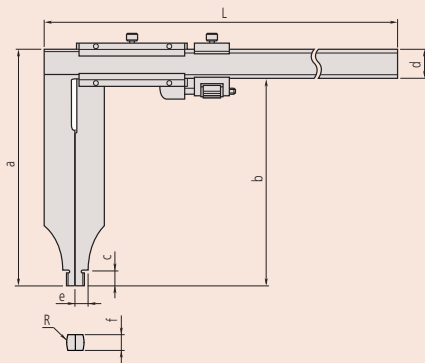


Specifications

Accuracy	Refer to the list of specifications
Delivered	In a case



Rounded outside measuring surfaces for measuring inside dimensions



Vernier Caliper with Long Jaws

Series 534

These vernier calipers with long jaws come with or without fine adjustment and let you measure hard-to-reach features.

They offer you the following benefits:

- Long jaws enable you to measure hard-to-reach workpiece features.
- The top offset vernier scale allows you to directly read the inside dimensions without having to add the jaw blade width.



534-110

Metric

With fine adjustment

No.	Range [mm]	Graduation	Accuracy	Inside measuring from	Price [€]
534-113	0 - 300	0.02 mm	±0,04 mm	10 mm	290.00
534-114	0 - 500	0.02 mm	±0,06 mm	20 mm	688.00
534-115	0 - 750	0.02 mm	±0,08 mm	20 mm	886.00
534-116	0 - 1000	0.02 mm	±0,10 mm	20 mm	1,154.00

No.	L [mm]	R [mm]	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	f [mm]	Mass [g]
534-113	445	5	110	90	12	20	7	3.8	460
534-114	682	10	225	200	18.5	25	12	6	1500
534-115	995	10	232	200	18.5	32	12	8	2900
534-116	1230	10	232	200	18.5	32	12	8	3500

Metric

Without fine adjustment

No.	Range [mm]	Graduation	Accuracy	Inside measuring from	Price [€]
534-109	0 - 300	0.05 mm	±0,07 mm	10 mm	276.00
534-110	0 - 500	0.05 mm	±0,13 mm	20 mm	654.00

No.	L [mm]	R [mm]	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	f [mm]	Mass [g]
534-109	445	5	110	90	12	20	7	3.8	400
534-110	682	10	225	200	18.5	25	12	6	1400



ABSOLUTE Digimatic Caliper with Constant Measuring Force

Series 573

These Digimatic calipers have a load cell and help you measure elastic workpieces. They offer you the following benefits:

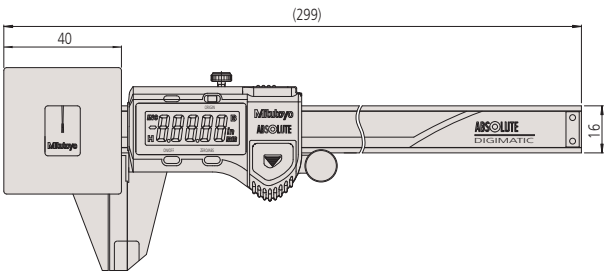
- Due to their low and constant measuring force these calipers are ideal for measuring elastic workpieces such as plastic and rubber parts that standard calipers cannot measure accurately.
- They allow fine feeding easily by using thump roller.



573-191-20

Metric

No.	Range [mm]	Accuracy	Mass [g]	Price [€]
573-191-20	0-180	±0,05 mm	253	886.00



ABSOLUTE®

Functions	Series 573
ORIGIN (ABS-Zero)	●
ZERO/ABS	●
ON/OFF	●
Low voltage alarm	●
Data output	●

Specifications

Accuracy	Refer to the list of specifications (excluding quantizing error)
Jaw retraction	0.3 mm
Max. response speed	Unlimited
Measuring force	0.5-1 N
Digital step	0,01 mm
Display	LCD, Character Height 9 mm
Battery life	approx. 20.000 hours
Delivered	In a case, including 1 battery

Optional accessories

No.	Description	Price €
959149	Digimatic cable with data switch (1 m)	38.00
959150	Digimatic cable with data switch (2 m)	43.50
959143	Data-hold unit	25.00
02AZD790C	U-WAVE Data Cable with data switch	90.00
06ADV380C	USB Input tool Direct cable with data switch (2 m)	100.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



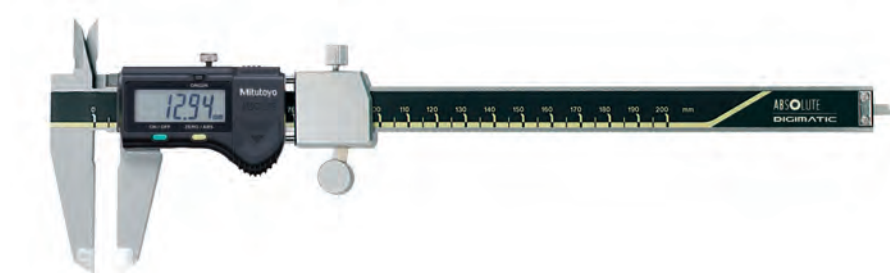
A consistently low measuring force can be guaranteed by only taking measurements when the pointer is between the two fiducial lines.
Measurement procedure

ABSOLUTE Digimatic Caliper for Tolerance Measurement

ABSOLUTE®

Series 573

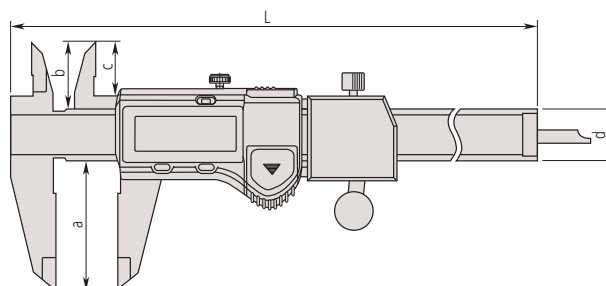
The ABSOLUTE Digimatic snap caliper features a spring-loaded mechanism to allow quick and efficient GO/±NO-GO inspection for mass produced parts.



573-182-20

Metric

No.	Range [mm]	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
573-181-20	0-100	233	40	21	16.5	16	213	350.00
573-182-20	0-150	290	50	24.5	20	16	233	402.00



Functions	Series 573
ORIGIN (ABS-Zero)	●
ZERO/ABS ON/OFF	●
Low voltage alarm	●
Data output	●

Specifications

Accuracy	±0,02 mm (excluding quantizing error)
Jaw retraction	2 mm
Max. response speed	Unlimited
Measuring force	7-14 N
Digital step	0,01 mm
Display	LCD, Character height 9 mm
Battery life	approx. 20.000 hours
Delivered	In a case, including 1 battery

Optional accessories

No.	Description	Price €
959149	Digimatic cable with data switch (1 m)	38.00
959150	Digimatic cable with data switch (2 m)	43.50
959143	Data-hold unit	25.00
02AZD790C	U-WAVE Data Cable with data switch	90.00
06ADV380C	USB Input tool Direct cable with data switch (2 m)	100.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



Scribing Caliper with Carbide Tipped Jaws

Series 573

These calipers are designed for scribing tasks.

They offer you the following benefits:

- Carbide-tipped jaws facilitate fine scribing on workpiece.
- With depth bar.



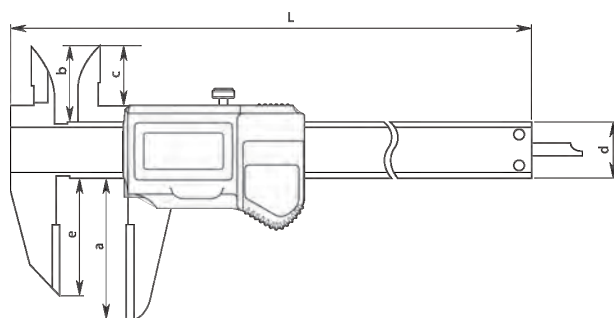
ABSOLUTE®



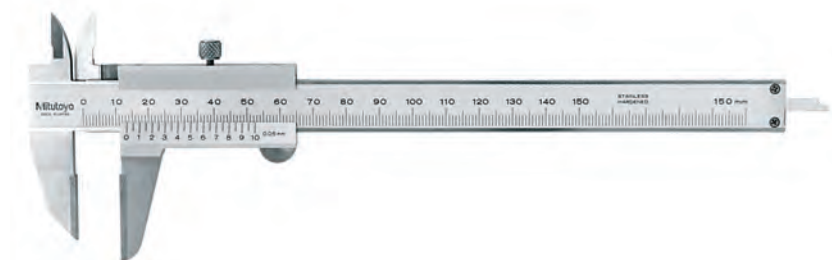
573-676

Metric

No.	Range [mm]	Accuracy	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	Mass [g]	Price [€]
573-676	0-150	±0,02 mm	229	46	21.5	17	16	33	166	304.00
573-677	0-200	±0,02 mm	288	50	25	20.5	16	43	196	397.00
573-679	0-300	±0,03 mm	403	64	27.5	22	20	54	345	896.00



Series 536



536-221

Metric

No.	Range [mm]	Accuracy	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	Mass [g]	Price [€]
536-221	0-150	±0,05 mm	229	40	21.5	17	16	33	150	133.00
536-222	0-200	±0,05 mm	288	50	25	20.5	16	43	180	161.00
536-223	0-300	±0,08 mm	403	64	27.5	22	20	54	400	342.00

Functions	Series 573
ORIGIN (ABS-Zero)	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Data output	●

Specifications

Accuracy	Refer to the list of specifications (excluding quantizing error)
Max. response speed	Unlimited
Digital step	0,01 mm
Display	LCD, Character Height 7,5 mm (150, 200 mm) 10,2 mm (300 mm)
Battery life	15.000 hours (150 mm, 200 mm) 5.000 hours (300 mm)
Delivered	In a case, including 1 battery

Optional accessories

No.	Description	Price €
05CZA624	Digimatic cable with data switch (1 m)	70.50
05CZA625	Digimatic cable with data switch (2 m)	79.50
02AZD790A	Connecting cable U-Wave with data switch	95.00
06ADV380A	USB Input Tool Direct cable (2 m)	115.00

Consumable spares

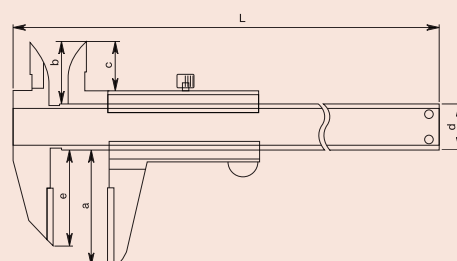
No.	Description	Price €
938882	Battery SR44	5.50



Sample application

Specifications

Accuracy	Refer to the list of specifications
Graduation	0.05mm
Delivered	In a case



Functions	Series 573
ORIGIN (ABS-Zero)	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Data output	●

Specifications

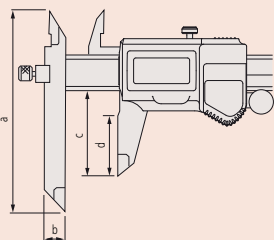
Accuracy	Refer to the list of specifications (excluding quantizing error)
Max. response speed	Unlimited
Digital step	0,01 mm
Display	LCD, Character Height 7,5 mm (150 mm, 200 mm) 10,2 mm (300 mm)
Battery life	approx. 15.000 hours (150 mm, 200 mm) 5.000 hours (300 mm)
Delivered	In a case, including 1 battery

Optional accessories

No.	Description	Price €
05CZA624	Digimatic cable with data switch (1 m)	70.50
05CZA625	Digimatic cable with data switch (2 m)	79.50
02AZD790A	Connecting cable U-Wave with data switch	95.00
06ADV380A	USB Input Tool Direct cable (2 m)	115.00

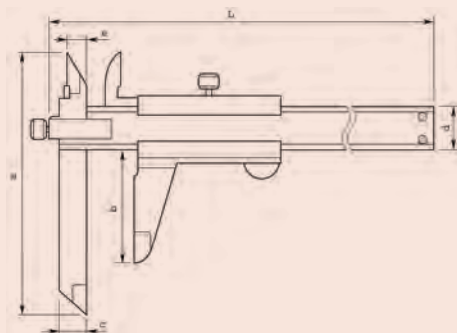
Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



Specifications

Accuracy	Refer to the list of specifications
Graduation	0.05 mm
Delivered	In a case



Offset Caliper

Series 573

These offset calipers enable you to measure stepped workpieces.

They offer you the following benefits:

- You can adjust the beam-mounted jaw to facilitate measurement of stepped sections and hard-to-reach workpiece features.



573-601

Metric

Without thumb roller

No.	Range [mm]	Accuracy	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
573-611	0-150	±0,02 mm	95	10	40	30	168	525.00
573-612	0-200	±0,02 mm	95	10	50	38.5	198	587.00
573-614	0-300	±0,03 mm	135	15	64	51	350	742.00

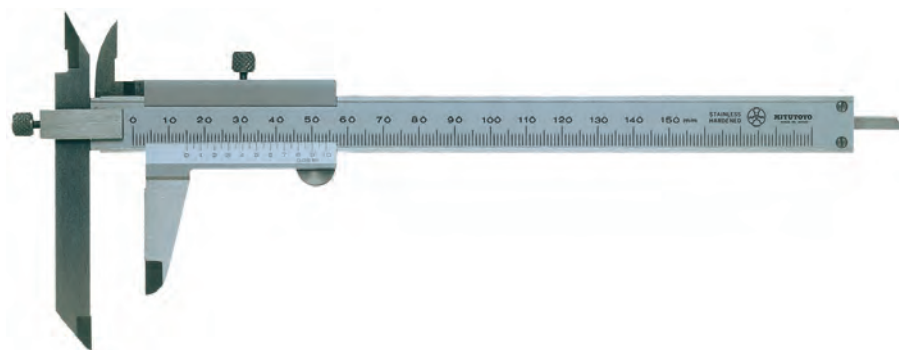
Metric

With thumb roller

No.	Range [mm]	Accuracy	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
573-601	0-150	±0,02 mm	95	10	40	30	168	577.00
573-604	0-300	±0,03 mm	135	15	64	51	350	793.00



Series 536



536-101

Metric

No.	Range [mm]	Accuracy	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	Mass [g]	Price [€]
536-101	0-150	±0,05 mm	229	95	40	10	16	7.5	150	251.00
536-102	0-200	±0,05 mm	286	95	50	10	16	8.5	200	305.00
536-103	0-300	±0,08 mm	403	135	64	15	20	12	400	408.00

Offset Centreline Caliper

Series 573

These offset centreline calipers enable you to measure centre to centre distance.

They offer you the following benefits:

- Specially designed for hole centre-to-centre measurements in the same plane, or between offset planes.
- You can also measure from an edge to a hole centre.
- Hole diameter should be in the range of 1.5mm-10mm .

ABSOLUTE®



573-615

Metric

Without thumb roller

No.	Range [mm]	Accuracy	a [mm]	t [mm]	Mass [g]	Price [€]
573-615	10-160	±0,03 mm	75	3	157	494.00
573-616	10-210	±0,03 mm	75	3	177	556.00
573-618	10-310	±0,04 mm	100	3.8	320	742.00

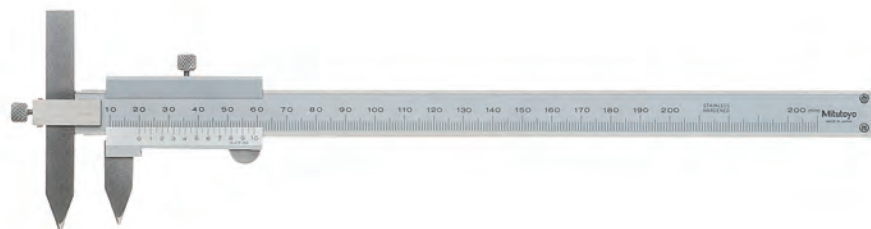
Metric

With thumb roller

No.	Range [mm]	Accuracy	a [mm]	t [mm]	Mass [g]	Price [€]
573-605	10-160	±0,03 mm	75	3	157	546.00
573-606	10-210	±0,03 mm	75	3	177	608.00
573-608	10-310	±0,04 mm	100	3.8	320	793.00



Series 536



536-106

Metric

No.	Range [mm]	Accuracy	L [mm]	a [mm]	d [mm]	t [mm]	Mass [g]	Price [€]
536-105	10-150	±0,05 mm	229	75	16	3	140	338.00
536-106	10-200	±0,05 mm	282	75	16	3	160	394.00
536-107	10-300	±0,08 mm	383	100	20	3.8	320	476.00

Functions	Series 573
ORIGIN (ABS-Zero)	●
OFFSET*	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Data output	●
PRESET	●

Specifications

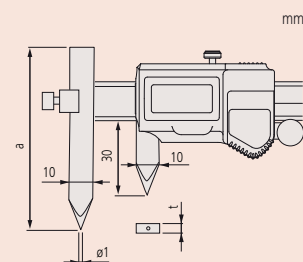
Accuracy	Refer to the list of specifications (excluding quantizing error)
Max. response speed	Unlimited
Digital step	0,01 mm
Display	LCD, Character Height 7,5 mm (150 mm, 200 mm) 10,2 (300 mm)
Battery life	approx. 15.000 hours (150 mm , 200 mm) 5.000 hours (300 mm)
Delivered	In a case, including 1 battery

Optional accessories

No.	Description	Price €
05CZA624	Digimatic cable with data switch (1 m)	70.50
05CZA625	Digimatic cable with data switch (2 m)	79.50
02AZD790A	Connecting cable U-Wave with data switch	95.00
06ADV380A	USB Input Tool Direct cable (2 m)	115.00

Consumable spares

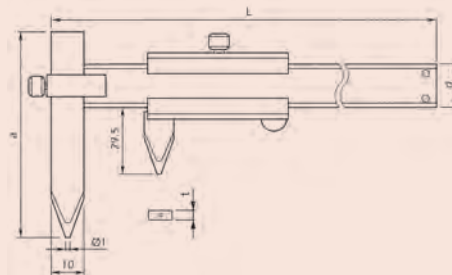
No.	Description	Price €
938882	Battery SR44	5.50



* 10 mm

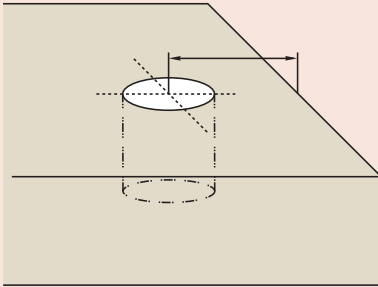
Specifications

Accuracy	Refer to the list of specifications
Graduation	0.02mm
Delivered	In a case



Specifications

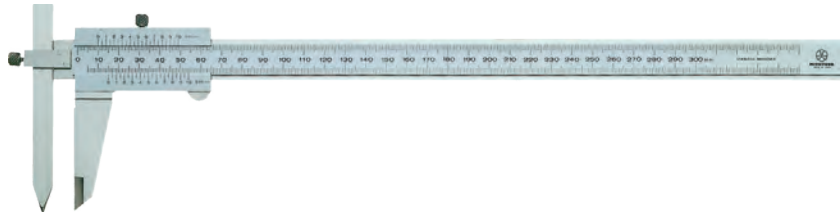
Accuracy	±0,05 mm
Graduation	0.05mm
Delivered	In a case



Edge Centreline Caliper

Series 536

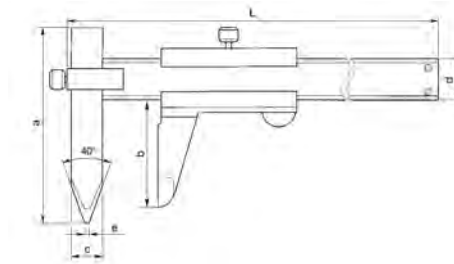
These edge centreline calipers enable you to measure the distance between an edge and the centre of a hole.



536-109

Metric

No.	Range [mm]	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	Mass [g]
536-109	5-300	393	100	64	10	20	1	320



Swivel Caliper

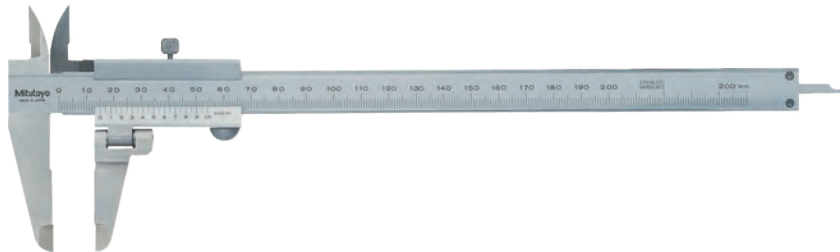
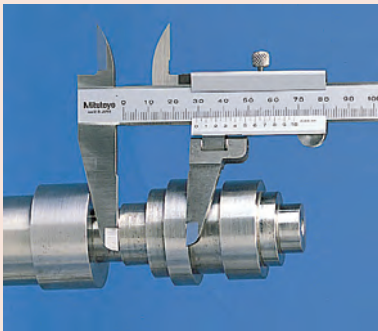
Series 536

These vernier calipers have a swivelling jaw. They offer you the following benefits:

- You can rotate the moving jaw to measure sectioned shafts.
- With depth bar.

Specifications

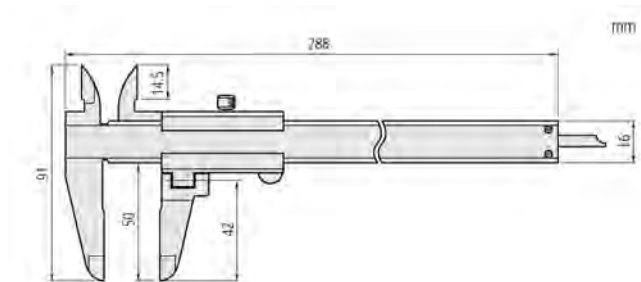
Accuracy	±0,05 mm
Graduation	0.05mm
Delivered	In a case



536-212

Metric

No.	Range [mm]	Rotation of	Mass [g]	Price [€]
536-212	0-200	Jaw: ±90°	190	539.00



ABSOLUTE Digimatic Back-Jaw Centreline Caliper

Series 573

These Digimatic back-jaw centreline calipers offer you the following benefits:

- Specially designed to allow you to measure hole centre-to-centre or edge-to-centre distances.
- You can read measurements more easily from above, thanks to the jaws being on the back of the slide.
- Direct reading of pitch measurements is also available due to the offset value setting function.

ABSOLUTE®



573-116-10
Centre-to-centre type



573-118-10
Edge-to-centre type

Metric

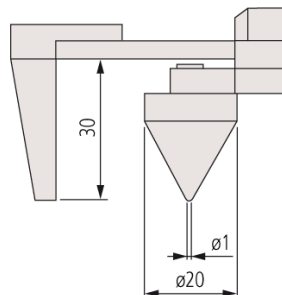
Centre-to-centre type

No.	Range [mm]	Accuracy	Mass [g]	Price [€]
573-116-10	10-200	±0,10 mm	485	1,226.00
573-117-10	10-300	±0,15 mm	580	1,339.00

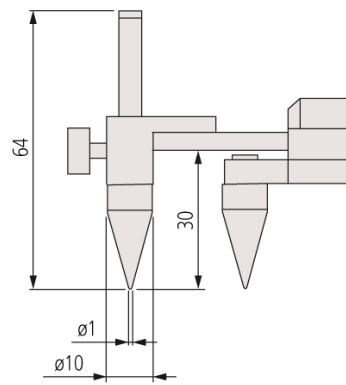
Metric

Edge-to-centre type

No.	Range [mm]	Accuracy	Mass [g]	Price [€]
573-118-10	10-200	±0,10 mm	490	1,123.00
573-119-10	10-300	±0,15 mm	585	1,236.00



573-118-10
573-119-10



573-116-10
573-117-10

Functions	Series 573
ORIGIN (ABS-Zero)	●
ZERO/ABS	●
OFFSET*	●
ON/OFF	●
Low voltage alarm	●
Data output	●
PRESET	●

Specifications

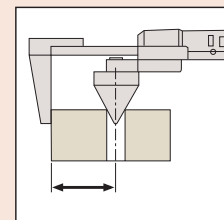
Accuracy	Refer to the list of specifications (excluding quantizing error)
Max. response speed	Unlimited
Digital step	0,01 mm
Display	LCD, Character Height 7 mm
Battery life	approx. 5.000 hours
Delivered	In a case, including 1 battery

Optional accessories

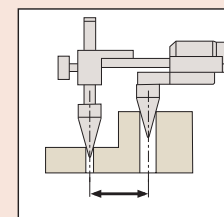
No.	Description	Price €
959149	Digimatic cable with data switch (1 m)	38.00
959150	Digimatic cable with data switch (2 m)	43.50
959143	Data-hold unit	25.00
02AZD790C	U-WAVE Data Cable with data switch	90.00
06ADV380C	USB Input tool Direct cable with data switch (2 m)	100.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



Edge-to-center type



Centre-to-centre type

* 10 mm

Point Caliper

Series 573

These point calipers have extra fine ground measuring jaws. They offer you the following benefits:

- Narrow-tip jaws fit into very small grooves and tracks, making it much easier for you to obtain many previously difficult outside measurements.



573-622

573-626

Metric

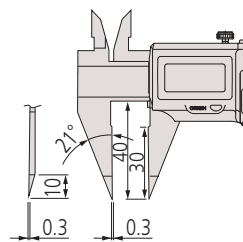
Fine measuring jaws

No.	Range [mm]	Accuracy	Thumb roller	Mass [g]	Price [€]
573-625	0-150	± 0,02 mm		163	515.00
573-626	0-150	± 0,02 mm		163	464.00

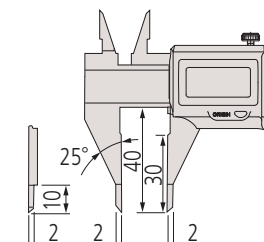
Metric

Pointed measuring jaws

No.	Range [mm]	Accuracy	Thumb roller	Mass [g]	Price [€]
573-621	0-150	± 0,02 mm		163	464.00
573-622	0-150	± 0,02 mm		163	412.00

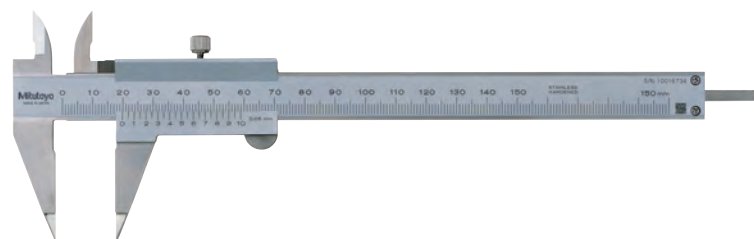


Fine measuring jaws



Pointed measuring jaws

Series 536



536-121

Metric

No.	Range [mm]	Mass [g]	Price [€]
536-121	0-150	150	180.00

Functions	Series 573
ORIGIN (ABS-Zero)	
Auto Power OFF after 20 min. non use	
Low voltage alarm	
Data output	

Specifications

Accuracy	Refer to the list of specifications (excluding quantizing error)
Max. response speed	Unlimited
Digital step	0,01 mm
Display	LCD, Character Height 7,5 mm
Battery life	approx. 15.000 hours
Delivered	In a case, including 1 battery

Optional accessories

No.	Description	Price €
05CZA624	Digimatic cable with data switch (1 m)	70.50
05CZA625	Digimatic cable with data switch (2 m)	79.50
02AZD790A	Connecting cable U-Wave with data switch	95.00
06ADV380A	USB Input Tool Direct cable (2 m)	115.00

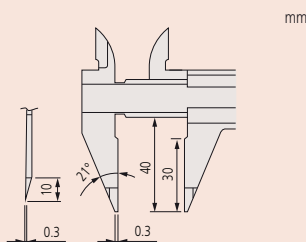
Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



Specifications

Accuracy	±0,05 mm
Graduation	0,05 mm
Delivered	In a case



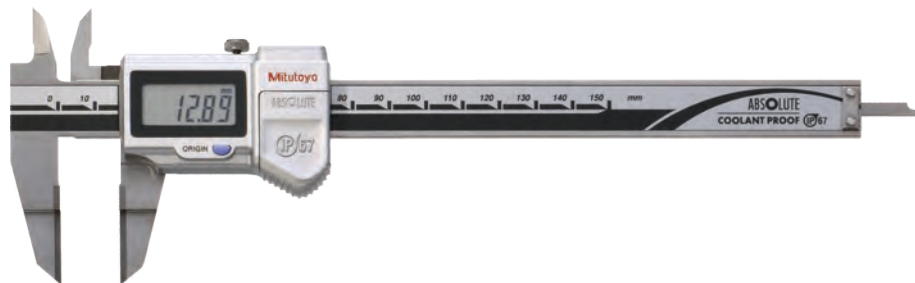
Blade Caliper

Series 573

These blade calipers have thin measuring jaws. They offer you the following benefits:

- The thin blade-type jaws fit into very small grooves making it much easier for you to obtain many previously difficult outside measurements.
- The outside measuring faces are carbide.

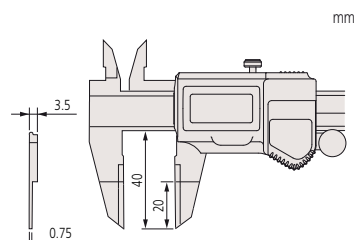
ABSOLUTE®



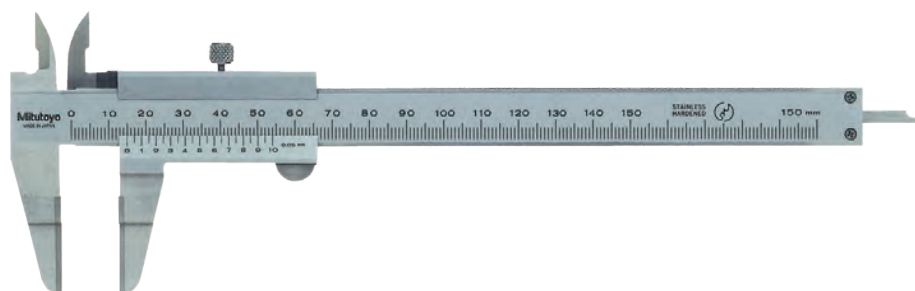
573-635

Metric

No.	Range [mm]	Accuracy	Thumb roller	Mass [g]	Price [€]
573-634	0-150	±0,02 mm		168	649.00
573-635	0-150	±0,02 mm		168	597.00



Series 536



536-134

Metric

No.	Range [mm]	Accuracy	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	Mass [g]	Price [€]
536-134	0-150	±0,05 mm	229	20	40	0.75	16	3	140	345.00
536-135	0-200	±0,05 mm	286	25	50	0.75	16	3	180	374.00
536-136	0-300	±0,08 mm	403	30	64	1	16	3.8	420	449.00

Functions	Series 573
ORIGIN (ABS-Zero)	
Auto Power OFF after 20 min. non use	
Low voltage alarm	
Data output	

Specifications

Accuracy	Refer to the list of specifications (excluding quantizing error)
Max. response speed	Unlimited
Digital step	0,01 mm
Display	LCD, Character Height 7,5 mm
Battery life	approx. 15.000 hours
Delivered	In a case, including 1 battery

Optional accessories

No.	Description	Price €
05CZA624	Digimatic cable with data switch (1 m)	70.50
05CZA625	Digimatic cable with data switch (2 m)	79.50
02AZD790A	Connecting cable U-Wave with data switch	95.00
06ADV380A	USB Input Tool Direct cable (2 m)	115.00

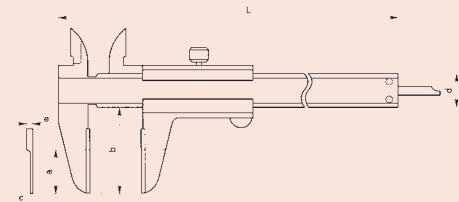
Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



Specifications

Accuracy	Refer to the list of specifications
Graduation	0.05mm
Delivered	In a case



ABSOLUTE Digimatic Neck Caliper

Series 573

ABSOLUTE®



These neck calipers enable measurements in hard to reach places. They offer you the following benefits:

- You can measure wall thickness inside bores and recesses.

Functions	Series 573
ORIGIN (ABS-Zero)	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Data output	●

Specifications

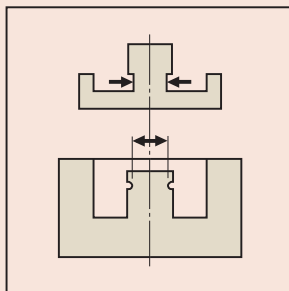
Accuracy	Refer to the list of specifications (excluding quantizing error)
Max. response speed	Unlimited
Digital step	0,01 mm
Display	LCD, Character Height 7,5 mm
Battery life	aprox. 15.000 hours
Delivered	In a case, including 1 battery

Optional accessories

No.	Description	Price €
05CZA624	Digimatic cable with data switch (1 m)	70.50
05CZA625	Digimatic cable with data switch (2 m)	79.50
02AZD790A	Connecting cable U-Wave with data switch	95.00
06ADV380A	USB Input Tool Direct cable (2 m)	115.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



573-651



573-654
Point jaw type

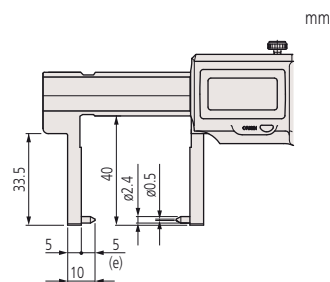
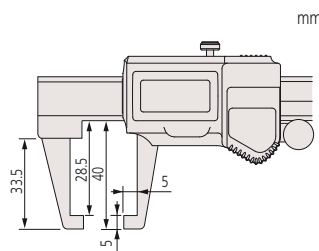
Metric

No.	Range [mm]	Accuracy	Thumb roller	Mass [g]	Price [€]
573-651	0-150	±0,03 mm	●	157	577.00
573-653	0-150	±0,03 mm		157	525.00

Metric

Point jaw type

No.	Range [mm]	Accuracy	Thumb roller	Mass [g]	Price [€]
573-652	0-150	±0,03 mm	●	157	670.00
573-654	0-150	±0,03 mm		157	618.00



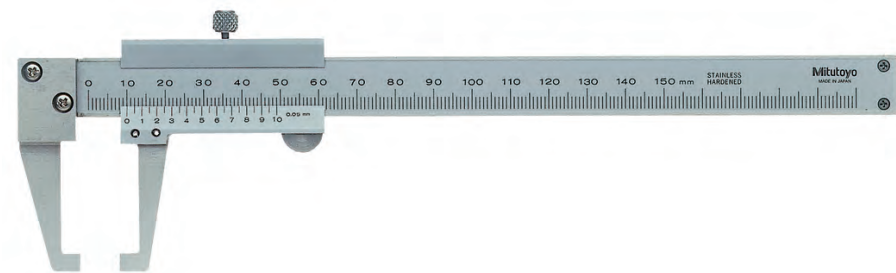
Point jaw type

Neck Caliper

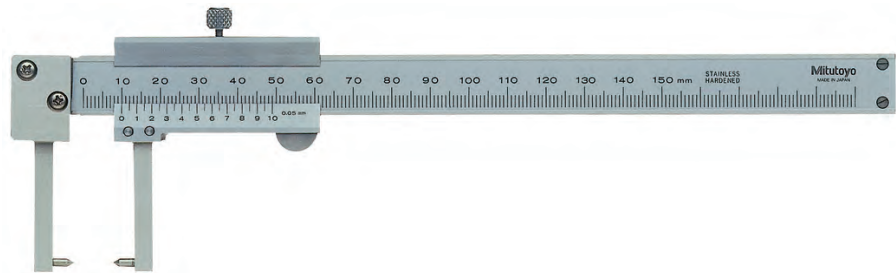
Series 536

These neck calipers enable measurements in hard to reach places.
They offer you the following benefits:

- You can measure wall thickness inside bores and recesses.



536-151



536-152
Point jaw type

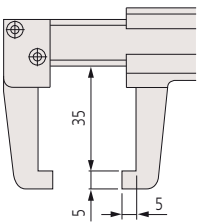
Metric

No.	Range [mm]	Mass [g]	Price [€]
536-151	0-150	140	337.00

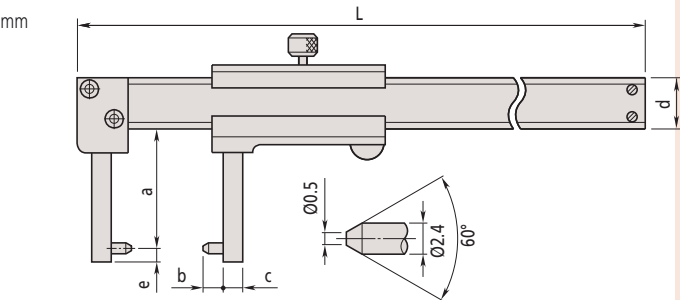
Metric

Point jaw type

No.	Range [mm]	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	Mass [g]	Price [€]
536-152	0-150	229	38	5	5	16	2	140	433.00



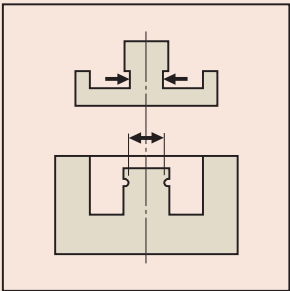
536-151



536-152
Point jaw type

Specifications

Accuracy	±0,05 mm
Graduation	0.05mm
Delivered	In a case



Knife-Edge Caliper

Series 573

These caliper are a knife-edge type and offer you the following benefits:

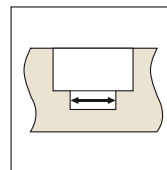
- Specially designed to let you take inside measurements in hard-to-reach places.
- With long narrow jaws.



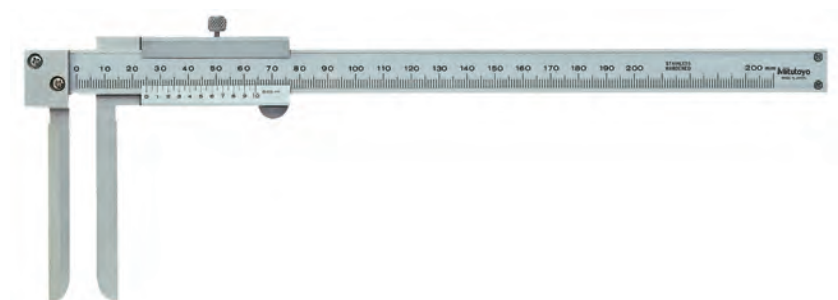
573-642

Metric

No.	Range [mm]	Accuracy	Thumb roller	Mass [g]	Price [€]
573-642	10-200	±0,05 mm	●	227	731.00
573-643	10-200	±0,05 mm		227	680.00



Series 536



536-142

Metric

No.	Range [mm]	Mass [g]	Price [€]
536-142	10-200	210	551.00

Functions	Series 573
ORIGIN (ABS-Zero)	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Data output	●

Specifications

Accuracy	Refer to the list of specifications (excluding quantizing error)
Max. response speed	Unlimited
Digital step	0,01 mm
Display	LCD, Character Height 7,5 mm
Battery life	approx. 15.000 hours
Delivered	In a case, including 1 battery

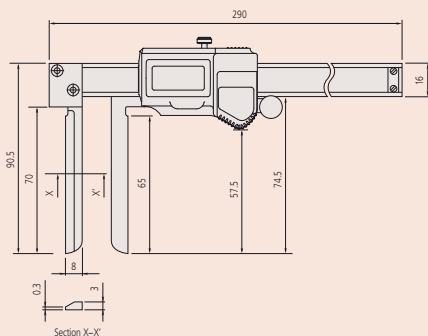
Optional accessories

No.	Description	Price €
05CZA624	Digimatic cable with data switch (1 m)	70.50
05CZA625	Digimatic cable with data switch (2 m)	79.50
02AZD790A	Connecting cable U-Wave with data switch	95.00
06ADV380A	USB Input Tool Direct cable (2 m)	115.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50

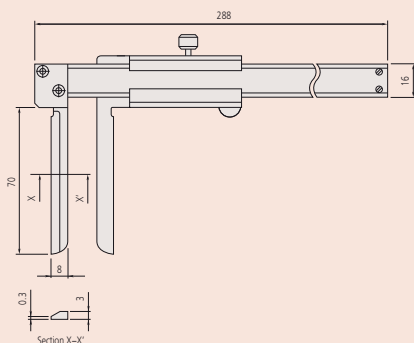
mm



Specifications

Accuracy	±0,12 mm
Graduation	0.05mm
Delivered	In a case

mm



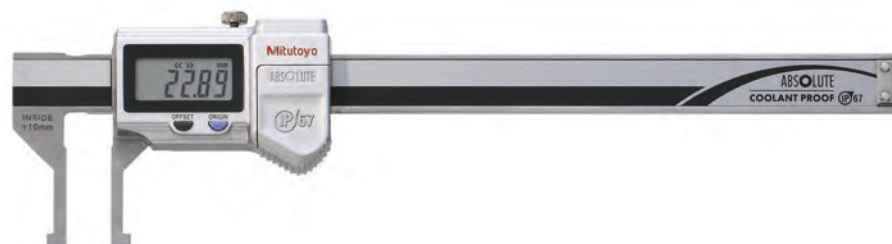
ABSOLUTE Digimatic Inside Caliper

Series 573

Inside groove type

- Specially designed for inside measurements in hard-to-reach places.

ABSOLUTE®



573-647



573-646
Point jaw type

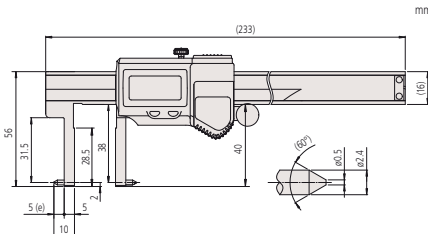
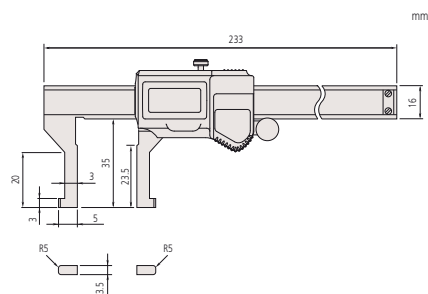
Metric

No.	Range [mm]	Accuracy	Thumb roller	Mass [g]	Price [€]
573-645	10-160	±0,05 mm	●	147	649.00
573-647	10-160	±0,05 mm		147	597.00

Metric

Point jaw type

No.	Range [mm]	Accuracy	Thumb roller	Mass [g]	Price [€]
573-646	20-170	±0,03 mm	●	157	680.00
573-648	20-170	±0,03 mm		157	628.00



Point jaw type

Functions	Series 573
ORIGIN (ABS-Zero)	●
OFFSET*	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Data output	●

Specifications

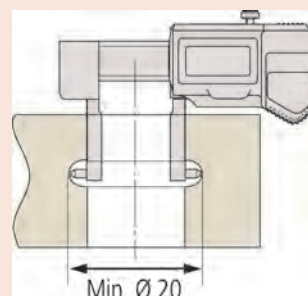
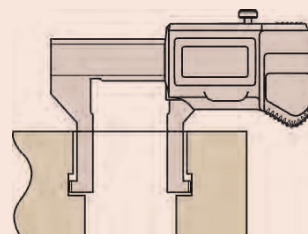
Accuracy	Refer to the list of specifications (excluding quantizing error)
Max. response speed	Unlimited
Digital step	0,01 mm
Display	LCD, Character Height 7,5 mm
Battery life	approx. 15.000 hours
Delivered	In a case, including 1 battery

Optional accessories

No.	Description	Price €
05CZA624	Digimatic cable with data switch (1 m)	70.50
05CZA625	Digimatic cable with data switch (2 m)	79.50
02AZD790A	Connecting cable U-Wave with data switch	95.00
06ADV380A	USB Input Tool Direct cable (2 m)	115.00

Consumable spares

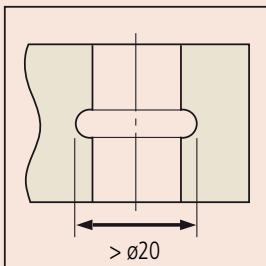
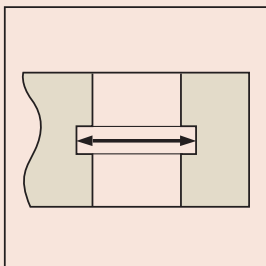
No.	Description	Price €
938882	Battery SR44	5.50



* 20 mm

Specifications

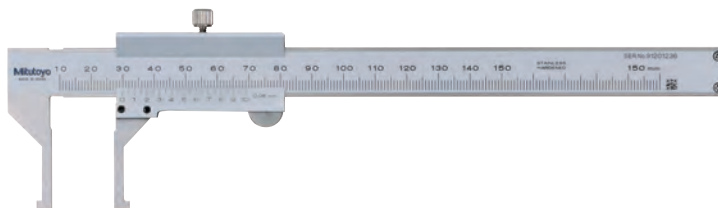
Accuracy	Refer to the list of specifications
Graduation	0.05mm
Delivered	In a case



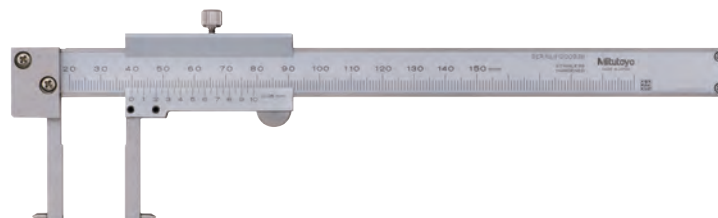
Inside Caliper

Series 536

- Specially designed for inside measurements in hard-to-reach places.



536-145



536-146
Point jaw type

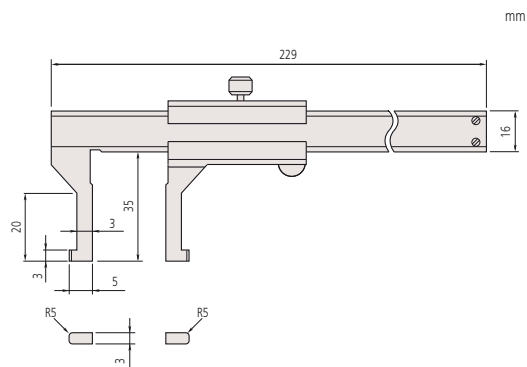
Metric

No.	Range [mm]	Accuracy	Mass [g]	Price [€]
536-145	10-150	±0,05 mm	130	412.00

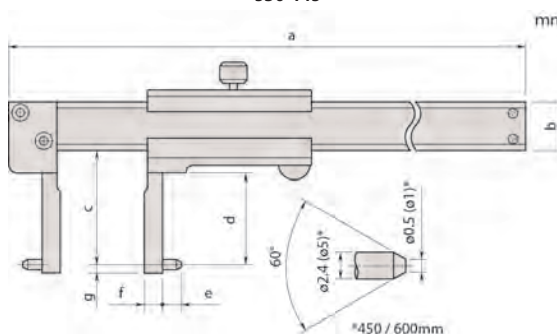
Metric

Point jaw type

No.	Range [mm]	Accuracy	Mass [g]	Price [€]
536-146	20-150	±0,05 mm	140	397.00
536-147	30-300	±0,08 mm	370	436.00
536-148	70-450	±0,10 mm	1250	820.00
536-149	70-600	±0,12 mm	1430	843.00



536-145



Point jaw type

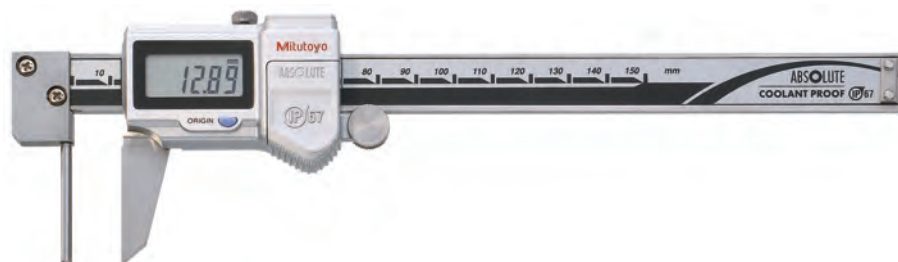
Tube Thickness Caliper

Series 573

These tube thickness calipers are designed especially for round-shaped workpieces. They offer you the following benefits:

- The beam-mounted jaw is a round bar that lets you easily measure tube wall thickness.

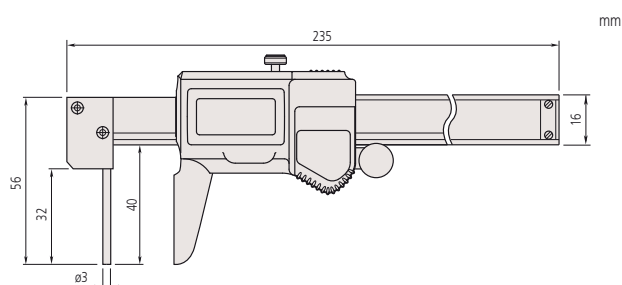
ABSOLUTE®



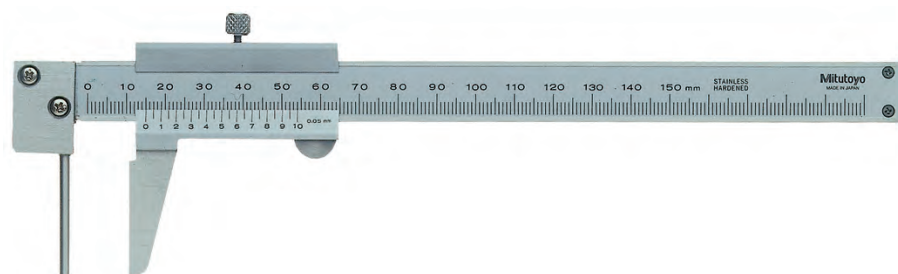
573-661

Metric

No.	Range [mm]	Accuracy	Thumb roller	Mass [g]	Price [€]
573-661	0-150	±0,05 mm		167	577.00
573-662	0-150	±0,05 mm		167	525.00



Series 536



536-161

Metric

No.	Range [mm]	Mass [g]	Price [€]
536-161	0-150	150	304.00

Functions	Series 573
ORIGIN (ABS-Zero)	
Auto Power OFF after 20 min. non use	
Low voltage alarm	
Data output	

Specifications

Accuracy	Refer to the list of specifications (excluding quantizing error)
Max. response speed	Unlimited
Digital step	0,01 mm
Display	LCD, Character Height 7,5 mm
Battery life	approx. 15.000 hours
Delivered	In a case, including 1 battery

Optional accessories

No.	Description	Price €
05CZA624	Digimatic cable with data switch (1 m)	70.50
05CZA625	Digimatic cable with data switch (2 m)	79.50
02AZD790A	Connecting cable U-Wave with data switch	95.00
06ADV380A	USB Input Tool Direct cable (2 m)	115.00

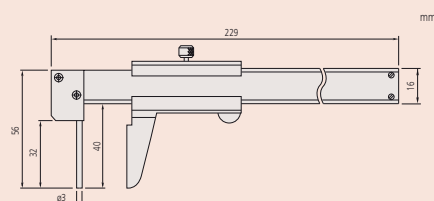
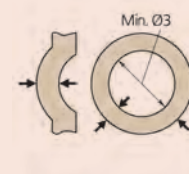
Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



Specifications

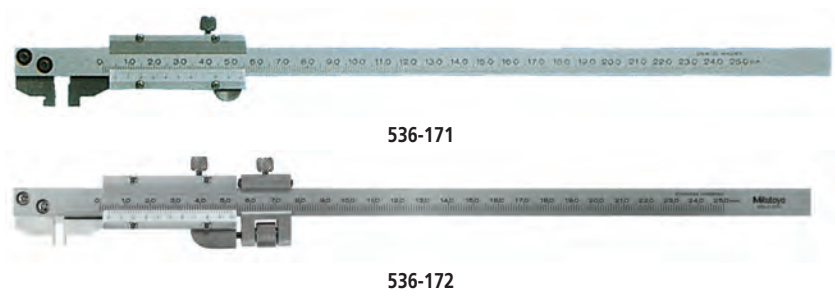
Accuracy	±0,05 mm
Graduation	0.05mm
Delivered	In a case



Vernier Hook Type Caliper

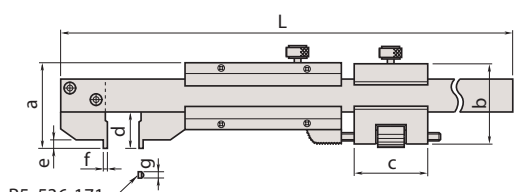
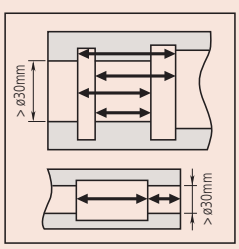
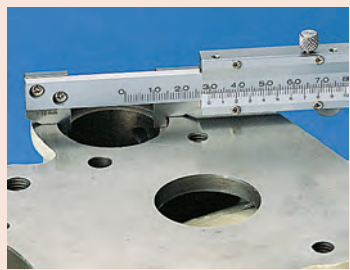
Series 536

These vernier hook type calipers enable you to measure the width of grooves and lands inside bores and recesses.



Metric

No.	Range [mm]	Inside measuring from	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	f [mm]	g [mm]	Mass [g]	Price [€]
536-171	0-200	10 mm	320	28			12	4	5	3.5	170	445.00
536-172	0-200	2 mm	320	28	28.5	20	12	4	1	3.5	200	562.00



R5: 536-171
(1): 536-172

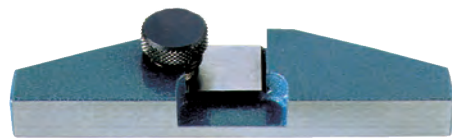
(1) flat touch for 536-172

Optional Accessory for Calipers

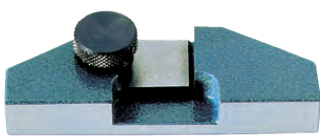
Depth base attachment

This is an optional depth base attachment for calipers. It offers you the following benefits:

- For digital, vernier and dial calipers which have a depth measuring bar.
- Finely ground base surface.
- Secure locking clamp.



050084-10

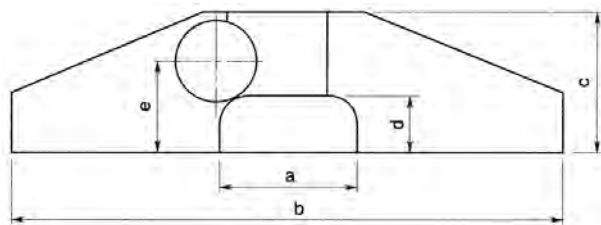


050083-10

No.	Size [mm]	Applicable measuring range of caliper	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	Mass [g]	Price [€]
050083-10	75	100, 150 and 200 mm	25	75	24.5	9	16	130	44.50
050084-10	100	100, 150 and 200 mm	25	100	24.5	9	16	160	50.00
050085-10	125	300 mm	30	125	28.5	11.5	20	270	57.00



Sample application



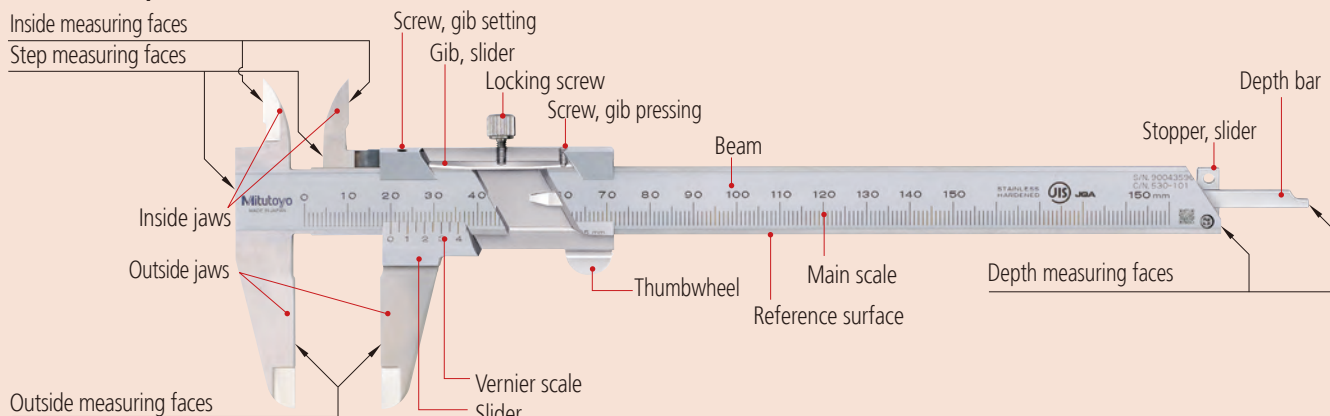
Quick Guide to Precision Measuring Instruments



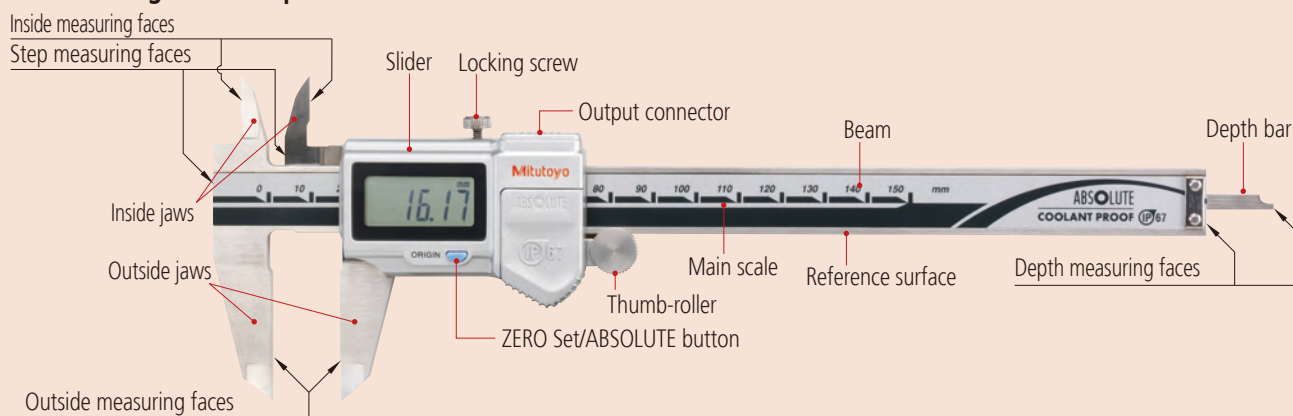
Calipers

Nomenclature

Vernier Caliper

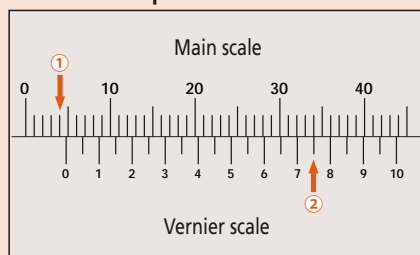


Absolute Digimatic Caliper



How to Read the Scale

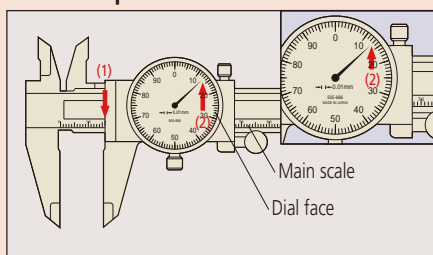
● Vernier Calipers



Graduation 0.05mm

(1) Main scale reading	4.00 mm
(2) Vernier scale reading	0.75 mm
Caliper reading	4.75 mm

● Dial Calipers

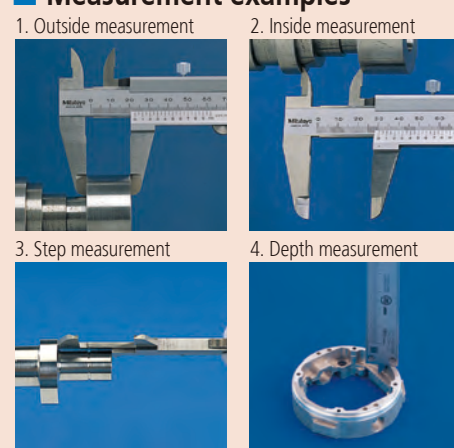


Graduation 0.01mm

(1) Main scale reading	16 mm
(2) Dial face reading	0.13 mm
Dial Caliper reading	16.13 mm

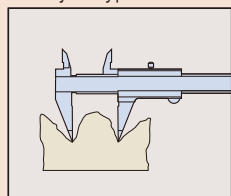
Note) Above left, 0.75 mm (2) is read at the position where a main scale graduation line corresponds with a vernier graduation line.

Measurement examples



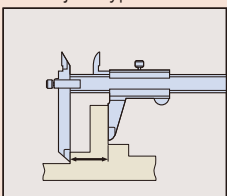
Special Purpose Caliper Applications

Point jaw type



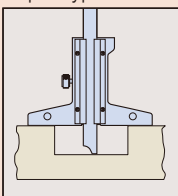
For uneven surface measurement

Offset jaw type



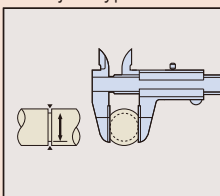
For stepped feature measurement

Depth type



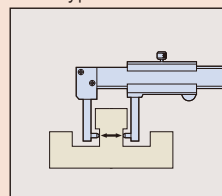
For depth measurement

Blade jaw type



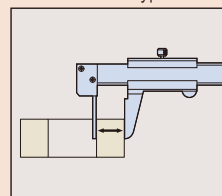
For diameter of narrow groove measurement

Neck type



For outside diameter measurement such as thickness of recess

Tube Thickness type

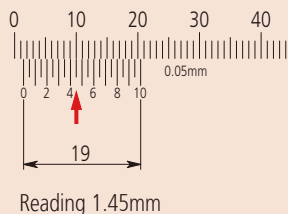


For pipe thickness measurement

Types of Vernier Scale

The Vernier scale is attached to the caliper's slider and each division on this scale is made 0.05mm shorter than one main scale division of 1 mm. This means that, as the caliper jaws open, each successive movement of 0.05mm brings the succeeding vernier scale line into coincidence with a main scale line and so indicates the number of 0.05mm units to be counted (although for convenience the scale is numbered in fractions of a mm). Alternatively, one vernier division may be made 0.05mm shorter than two divisions of the main scale to make a long vernier scale. This makes the scale easier to read but the principle, and graduation, is still the same.

Standard Vernier scale (graduation 0.05mm)



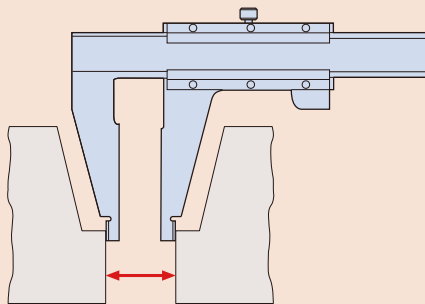
Long Vernier scale (graduation 0.05mm)



About Long Calipers

Steel rules are commonly used to roughly measure large workpieces but if a little more accuracy is needed then a long caliper is suitable for the job. A long caliper is very convenient for its user friendliness but does require some care in use. In the first place it is important to realize there is no relationship between resolution and accuracy. For details, refer to the values in our catalog. Resolution is constant whereas the accuracy obtainable varies dramatically according to how the caliper is used.

The measuring method with this instrument is a concern since distortion of the main beam causes a large amount of the measurement error, so accuracy will vary greatly depending on the method used for supporting the caliper at the time. Also, be careful not to use too much measuring force when using the outside measuring faces as they are furthest away from the main beam so errors will be at a maximum here. This precaution is also necessary when using the tips of the outside measuring faces of a long-jaw caliper.



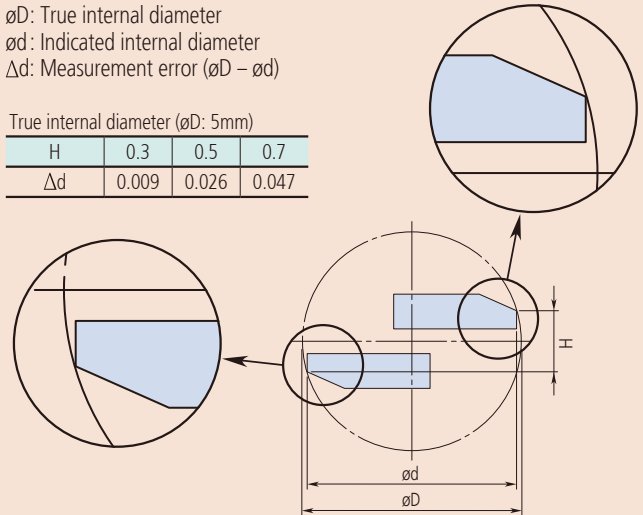
Small hole measurement with an standard caliper

A structural error d occurs when you measure the internal diameter of a small hole.

$\varnothing D$: True internal diameter
 $\varnothing d$: Indicated internal diameter
 Δd : Measurement error ($\varnothing D - \varnothing d$)

True internal diameter ($\varnothing D$: 5mm)

H	0.3	0.5	0.7
Δd	0.009	0.026	0.047

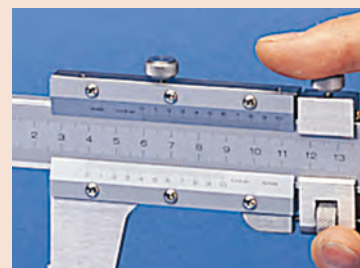
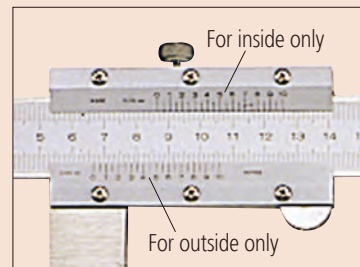


Inside Measurement with a Nib Style Caliper

Because the inside measuring faces of a caliper are at the tips of the jaws the measuring face parallelism is heavily affected by measuring force, and this becomes a large factor in the measurement accuracy attainable.

In contrast to a standard caliper, a Nib Style caliper cannot measure a very small hole diameter because it is limited to the size of the stepped jaws, although normally this is no inconvenience as it would be unusual to have to measure a very small hole with this type of caliper. Of course, the radius of curvature on the inside measuring faces is always small enough to allow correct hole diameter measurements right down to the lowest limit (jaw closure).

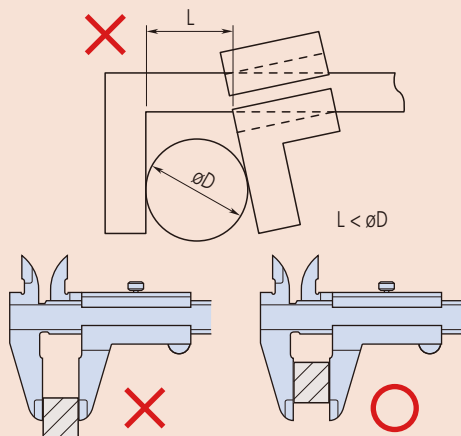
Mitutoyo Nib Style calipers are provided with an extra scale on the slider for inside measurements so they can be read directly without the need for calculation, just as for an outside measurement. This useful feature eliminates the possibility of error that occurs when having to add the inside-jaw-thickness correction on a single-scale caliper.



■ General notes on use of caliper

1. Potential causes of error

A variety of factors can cause errors when measuring with a caliper. Major factors include parallax effects, excessive measuring force due to the fact that a caliper does not conform to Abbe's Principle, differential thermal expansion due to a temperature difference between the caliper and workpiece, and the effect of the thickness of the knife-edge jaws and the clearance between these jaws during measurement of the diameter of a small hole. Although there are also other error factors such as graduation accuracy, reference edge straightness, main scale flatness on the main blade, and squareness of the jaws, these factors are included within the instrumental error tolerances. Therefore, these factors do not cause problems as long as the caliper satisfies the instrumental error tolerances. Handling notes are very important so that consumers can appreciate the error factors caused by the structure of the caliper before use. These notes relate to the measuring force and stipulate that "as the caliper does not have a constant-force device, you must measure a workpiece with an appropriate even measuring force. Take extra care when you measure it with the root or tip of the jaw because a large error could occur in such cases."



2. Inside measurement

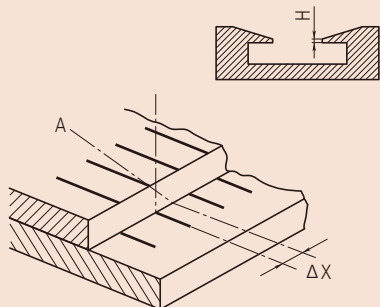
Insert the inside jaw as deeply as possible before measurement.
Read the maximum indicated value during inside measurement.
Read the minimum indicated value during groove width measurement.

3. Depth measurement

Read the minimum indicated value during depth measurement.

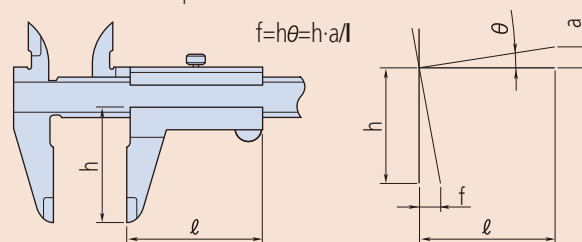
4. Parallax error when reading the scales

Look straight at the vernier graduation line when checking the alignment of vernier graduation lines to the main scale graduation lines.
If you look at a vernier graduation line from an oblique direction (A), the apparent alignment position is distorted by ΔX as shown in the figure below due to a parallax effect caused by the step height (H) between the planes of the vernier graduations and the main scale graduations, resulting in a reading error of the measured value.



5. Moving Jaw Tilt Error

If the moving jaw becomes tilted out of parallel with the fixed jaw, either through excessive force being used on the slider or lack of straightness in the reference edge of the beam, a measurement error will occur as shown in the figure. This error may be substantial due to the fact that a caliper does not conform to Abbe's Principle.



Example: Assume that the error slope of the jaws due to tilt of the slider is 0.01mm in 50mm and the outside measuring jaws are 40mm deep, then the error (at the jaw tip) is calculated as $(40/50) \times 0.01\text{mm} = 0.008\text{mm}$.
If the guide face is worn then an error may be present even using the correct measuring force.

6. Relationship between measurement and temperature

The main scale of a caliper is engraved (or mounted on) stainless steel, and although the linear thermal expansion coefficient is equal to that of the most common workpiece material, steel, i.e. $(10.2 \pm 1) \times 10^{-6} / \text{K}$, note that other workpiece materials, the room temperature and the workpiece temperature may affect measurement accuracy.

7. Handling

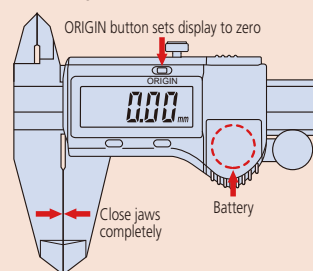
Caliper jaws are sharp, and therefore the instrument must be handled with care to avoid personal injury.
Avoid damaging the scale of a digital caliper and do not engrave an identification number or other information on it with an electric marker pen.
Avoid damaging a caliper by subjecting it to impact with hard objects or by dropping it on a bench or the floor.

8. Maintenance of beam sliding surfaces and measuring faces

Wipe away dust and dirt from the sliding surfaces and measuring faces with a dry soft cloth before using the caliper.

9. Checking and setting the origin before use

Clean the measuring surfaces by gripping a sheet of clean paper between the outside jaws and then slowly pulling it out. Close the jaws and ensure that the vernier scale (or display) reads zero before using the caliper. When using a Digimatic caliper, reset the origin (ORIGIN button) after replacing the battery.



10. Handling after use

After using the caliper, completely wipe off any water and oil. Then, lightly apply anti-corrosion oil and let it dry before storage.
Wipe off water from a waterproof caliper as well because it may also rust.

11. Notes on storage

Avoid direct sunlight, high temperatures, low temperatures, and high humidity during storage.
If a digital caliper will not be used for more than three months, remove the battery before storage.
Do not leave the jaws of a caliper completely closed during storage.

Depth Micrometer
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Depth Gauge
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Depth Gauge Accessories
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Depth Micrometer

Series 128

This micrometer allows you to measure depth and offers you the following features:

- $\varnothing 4$ mm measuring rod.
- Ratchet stop provides you with constant measuring force.
- Measuring rod lock.
- Carbide-tipped measuring rod model is available.



128-101

Metric

No.	Range [mm]	Base (W x T)	Mass [g]	Price [€]
128-101	0-25	63,5 x 16 mm	200	133.00
128-102	0-25	101,6 x 16 mm	250	167.00

Metric

Carbide-tipped measuring rod

No.	Range [mm]	Base (W x T)	Mass [g]	Price [€]
128-103	0-25	63,5 x 16 mm	200	159.00
128-104	0-25	101,6 x 16 mm	250	200.00



Specifications

Scale	thimble and sleeve satin chrome finish, $\varnothing 18$ mm
Measuring span	25 mm
Spindle pitch	0,5 mm with spindle lock
Micrometer Head Feed (0-25 mm)	$\pm 3 \mu\text{m}$
Flatness of reference surface (base)	1,3 μm (63,5 mm) 2 μm (101,6 mm)
Flatness of measuring face (rod)	0.3 μm
Parallelism between measuring face (rod) and reference surface (base)	$(4+L/50) \mu\text{m}$ L=max. measuring length (mm)
Measuring surfaces	Hardened, precision ground, micro-lap finish
Base	Hardened tool steel
Measuring force	5-10 N
Graduation	0.01 mm
Delivered	Including box and key



Digimatic Depth Micrometer with Interchangeable Rods

Series 329

This interchangeable rod type micrometer can be used for wide range measurements. It offers you the following benefits:

- $\varnothing 4$ mm interchangeable rods, with lapped measuring surfaces, enable you to make wide-range measurement
- The ratchet stop provides constant measuring force.
- Measuring rod lock.

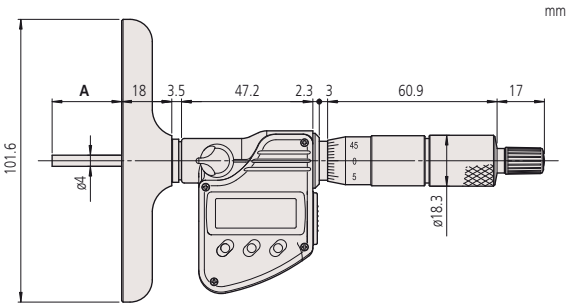


329-250-10



Metric

No.	Range [mm]	Base (W x T)	Number of rods	Mass [g]	Price [€]
329-250-10	0-150	101,6 x 16 mm	6	540	721.00
329-251-10	0-300	101,6 x 16 mm	12	790	937.00



A = Range

Functions	Series 329
ZERO/ABS	●
DATA/HOLD	●
Lock function	●
Auto Power OFF after 20 min. non use	●
2 x PRESET	●
Low voltage alarm	●
Data output	●

Specifications

Scale	Thimble and sleeve satin chrome finish, $\varnothing 18$ mm
Measuring span	25 mm
Spindle pitch	0,5 mm with spindle lock
Zero point errors of rods	$\pm 4 \mu\text{m}$ (0-150 mm) $\pm 6 \mu\text{m}$ (0-300 mm)
Micrometer Head Feed (0-25 mm) (excluding quantizing error)	$\pm 3 \mu\text{m}$
Flatness of reference surface (base)	2 μm
Flatness of measuring face (rod)	0.3 μm
Parallelism between measuring face (rod) and reference surface (base)	$(4+L/50) \mu\text{m}$ L = max. measuring length (mm)
Measuring surfaces	Hardened, precision ground, micro-lap finish
Base	Hardened tool steel
Measuring force	5-10 N
Digital step	0,001 mm
Battery life	approx. 1.2 years
Delivered	Including box, key and 1 battery

Optional accessories

No.	Description	Price €
05CZA662	Digimatic cable with data switch (1 m)	73.50
05CZA663	Digimatic cable with data switch (2 m)	82.50
02AZD790B	Connecting cable U-Wave with data switch	95.00
06ADV380B	USB Input Tool Direct cable with data switch (2 m)	115.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50

Specifications

Scale	Thimble and sleeve satin chrome finish $\varnothing 18$ mm
Measuring span	25 mm
Spindle pitch	0,5 mm, with spindle lock
Micrometer Head Feed (0-25 mm)	$\pm 3 \mu\text{m}$
Zero point errors of rods	$\pm 4 \mu\text{m}$ (0-150 mm) $\pm 6 \mu\text{m}$ (0-300 mm)
Flatness of reference surface (base)	1,3 μm for 63,5 mm 2 μm for 101,6 mm
Flatness of measuring face (rod)	0.3 μm
Parallelism between measuring face (rod) and reference surface (base)	$(4 + L/50) \mu\text{m}$ L=max. measuring length (mm)
Measuring surfaces	Hardened, precision ground, micro-lap finish
Base	Hardened tool steel
Measuring force	5-10 N
Graduation	0.01 mm
Delivered	Including box and key



Depth Micrometer with Interchangeable Rods

Series 129

This interchangeable rod type micrometer can be used for wide range measurements. It offers you the following benefits:

- $\varnothing 4$ mm interchangeable rods, with lapped measuring surfaces, enable you to make wide-range measurement
- The ratchet stop provides constant measuring force.
- Measuring rod lock.



129-112

Metric

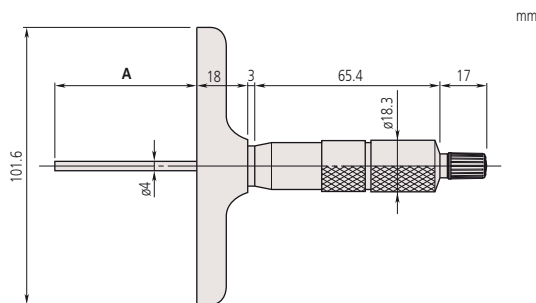
Base 101,6 x 16 mm

No.	Range [mm]	Number of rods	Mass [g]	Price [€]
129-155	0-25		290	179.00
129-113	0-50	2	310	183.00
129-114	0-75	3	330	195.00
129-115	0-100	4	355	227.00
129-116	0-150	6	410	298.00
129-153	0-300	12	640	456.00

Metric

Base 63,5 x 16 mm

No.	Range [mm]	Number of rods	Mass [g]	Price [€]
129-154	0-25		240	151.00
129-109	0-50	2	260	156.00
129-110	0-75	3	280	158.00
129-111	0-100	4	310	207.00
129-112	0-150	6	370	286.00
129-152	0-300	12	600	434.00



A = Range

ABSOLUTE Digimatic Depth Gauge

Series 571

This is a standard model depth gauge that lets you take accurate measurements. It offers you the following benefits:

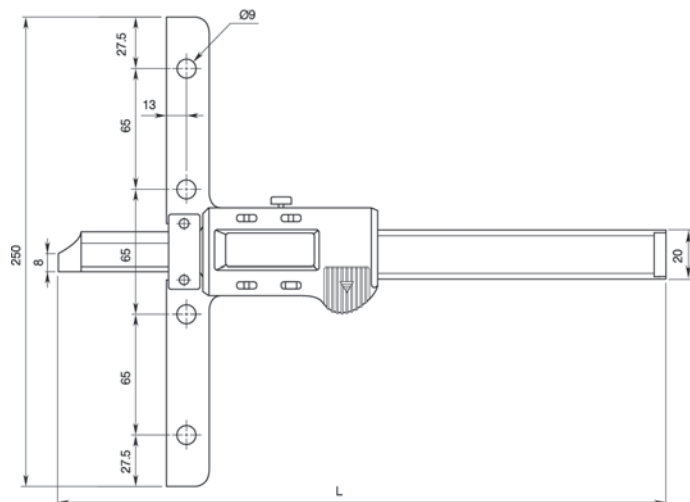
- ABSOLUTE System gives you reliable measurements.
- Its base and measuring faces are hardened and micro-lapped for robustness.
- Large character height of 9mm makes measurements easy to read.
- Exceptional battery life.



571-201-20

Metric

No.	Range [mm]	Accuracy	L [mm]	Base (W x T)	Mass [g]	Price [€]
571-201-20	0-150	±0,02 mm	237	100 x 6 mm	207	312.00
571-202-20	0-200	±0,02 mm	287	100 x 6 mm	227	371.00
571-203-20	0-300	±0,03 mm	403	100 x 6 mm	257	412.00
571-204-10	0-450	±0,05 mm	635	250 x 10 mm	1270	721.00
571-205-10	0-600	±0,05 mm	785	250 x 10 mm	1400	834.00
571-206-10	0-750	±0,06 mm	935	250 x 10 mm	1530	906.00
571-207-10	0-1000	±0,07 mm	1200	250 x 10 mm	1760	999.00



Over 300 mm range models

ABSOLUTE®

Functions	Series 571
ORIGIN (ABS-Zero)	●
ZERO/ABS	●
ON/OFF	●
Low voltage alarm	●
Data output	●

Specifications

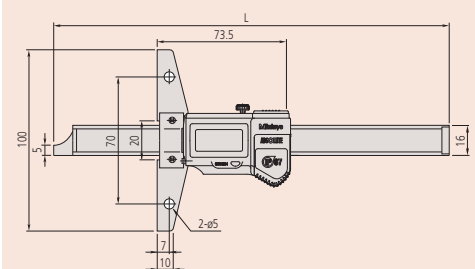
Accuracy	Refer to the list of specifications (excluding quantizing error)
Max. response speed	Unlimited
Repeatability	0.01 mm
Digital step	0,01 mm
Display	LCD; character height 9 mm (150/200/300 mm), 10 mm (> 300 mm)
Battery life	approx. 20.000 hours
Delivered	In a case (450/1000 mm) including 1 battery

Optional accessories

No.	Description	Price €
959149	Digimatic cable with data switch (1 m)	38.00
959150	Digimatic cable with data switch (2 m)	43.50
02AZD790C	U-WAVE Data Cable with data switch	90.00
06ADV380C	USB Input tool Direct cable with data switch (2 m)	100.00
959143	Data-hold unit	25.00
900370	Base length 180 for range up to 300 Thickness 8	51.50
900371	Base length 260 for range up to 300 Thickness 8	72.50
900372	Base length 320 for range up to 300 Thickness 8	80.50

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



Up to 300 mm range models

ABSOLUTE Digimatic Depth Gauge

Series 571

ABSOLUTE®



This depth gauge is IP67 coolant proof and offers you the following benefits:

- ABSOLUTE System gives you reliable measurements.
- Its base and measuring faces are hardened and micro-lapped for robustness.
- It has excellent resistance against water and dust (IP67 protection level) enabling you to use it in machining situations that include splashing coolant fluid.
- Extremely resistant to both coolants and lubricants.



571-251-10

Metric

No.	Range [mm]	Accuracy	L [mm]	Base (W x T)	Mass [g]	Price [€]
571-251-10	0-150	±0,02 mm	237	100x 6 mm	199	370.00
571-252-10	0-200	±0,02 mm	287	100 x 6 mm	219	421.00
571-253-10	0-300	±0,03 mm	404	100 x 6.3 mm	357	469.00



Functions	Series 571
ORIGIN (ABS-Zero)	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Data output	●

Specifications

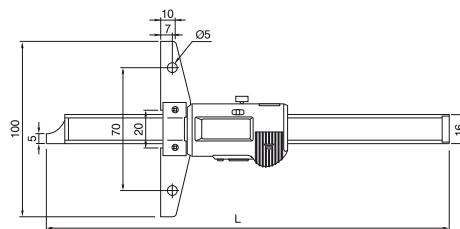
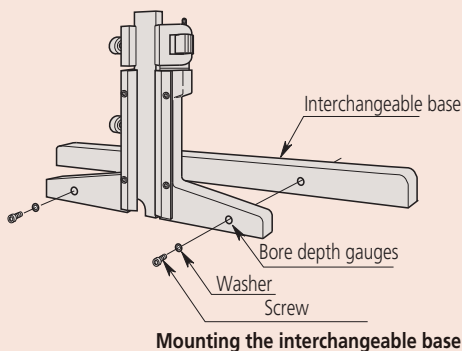
Accuracy	Refer to the list of specifications (excluding quantizing error)
Max. response speed	Unlimited
Repeatability	0.01 mm
Digital step	0,01 mm
Display	LCD, Character Height 7.5 mm (150, 200 mm) 10,2 mm (300 mm)
Battery life	approx. 15.000 hours (150, 200 mm) 5.000 hours (300 mm)
Delivered	In a case including 1 battery

Optional accessories

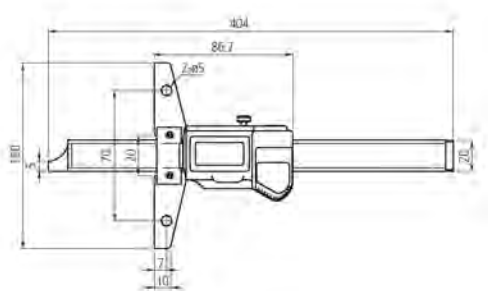
No.	Description	Price €
05CZA624	Digimatic cable with data switch (1 m)	70.50
05CZA625	Digimatic cable with data switch (2 m)	79.50
02AZD790A	Connecting cable U-Wave with data switch	95.00
06ADV380A	USB Input Tool Direct cable (2 m)	115.00
900370	Base length 180 for range up to 300 Thickness 8	51.50
900371	Base length 260 for range up to 300 Thickness 8	72.50
900372	Base length 320 for range up to 300 Thickness 8	80.50

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



Range : 0-150 mm, 0-200 mm



Range : 0-300 mm

ABSOLUTE Digimatic Depth Gauge IP67 Hook/Pin Type

Series 571

- Direct reading for either measuring surface is obtained by pressing the OFFSET function, which compensates for the 10 mm width of the hook.
- The ABSOLUTE feature of this gauge keeps track of the origin point (once set) for the entire life of the battery.

ABSOLUTE®



571-255-10



571-301-10

Metric

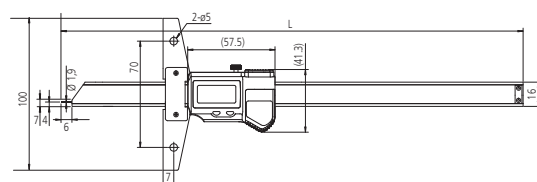
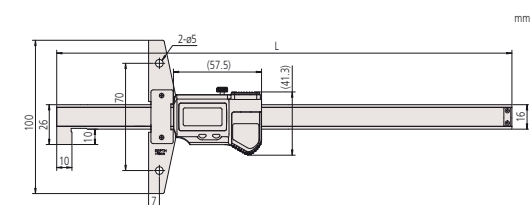
Hook Type

No.	Depth range	Hook range	Base (W x T)	L [mm]	Mass [g]	Price [€]
571-254-10	10-160 mm	0-150 mm	100 x 6 mm	247	216	402.00
571-255-10	10-210 mm	0-200 mm	100 x 6 mm	297	236	458.00

Metric

Pin Type

No.	Range [mm]	Base (W x T)	L [mm]	Mass [g]	Price [€]
571-301-10	0-150	100 x 6 mm	237	207	402.00
571-302-10	0-200	100 x 6 mm	287	227	458.00



Series 571			
	571-254-10	571-255-10	571-301-10
Functions			
ORIGIN (ABS-Zero)	●	●	●
OFFSET	●	●	●
Auto Power OFF after 20 min. non use	●	●	●
Low voltage alarm	●	●	●
Data output	●	●	●

Specifications

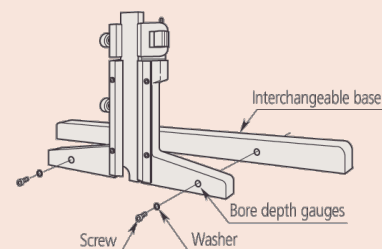
Accuracy	±0,03 mm (excluding quantizing error)
Max. response speed	Unlimited
Repeatability	0.01 mm
Digital step	0,01 mm
Display	LCD, Character Height 7.5 mm
Battery life	approx. 15.000 hours
Delivered	In a case including 1 battery

Optional accessories

No.	Description	Price €
05CZA624	Digimatic cable with data switch (1 m)	70.50
05CZA625	Digimatic cable with data switch (2 m)	79.50
02AZD790A	Connecting cable U-Wave with data switch	95.00
06ADV380A	USB Input Tool Direct cable (2 m)	115.00
900370	Base length 180 for range up to 300 Thickness 8	51.50
900371	Base length 260 for range up to 300 Thickness 8	72.50
900372	Base length 320 for range up to 300 Thickness 8	80.50

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



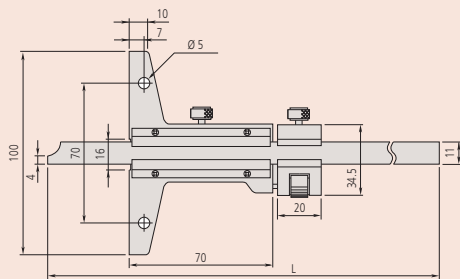
Mounting the interchangeable base

Specifications

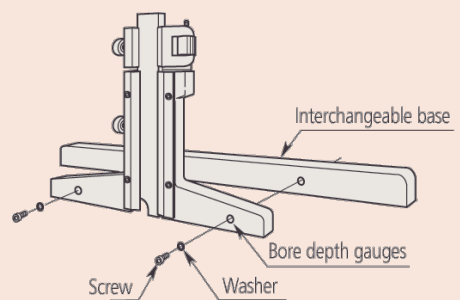
Accuracy Refer to the list of specifications

Optional accessories

No.	Description	Price €
900370	Base length 180 for range up to 300 Thickness 8	51.50
900371	Base length 260 for range up to 300 Thickness 8	72.50
900372	Base length 320 for range up to 300 Thickness 8	80.50



Up to 300 mm range models



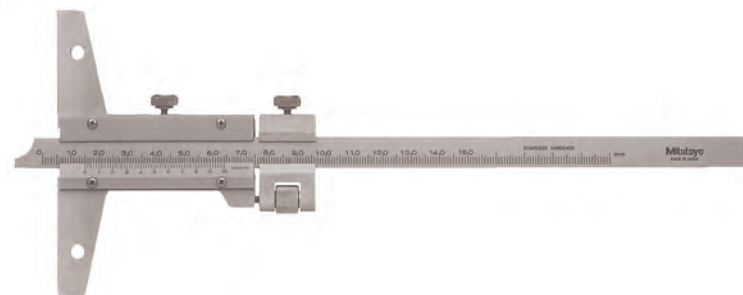
Mounting the interchangeable base

Vernier Depth Gauge

Series 527

This vernier depth gauge offers you the following benefits:

- Its base and measuring faces are hardened and micro-lapped for robustness.
- Fine adjustment models are available.



527-101

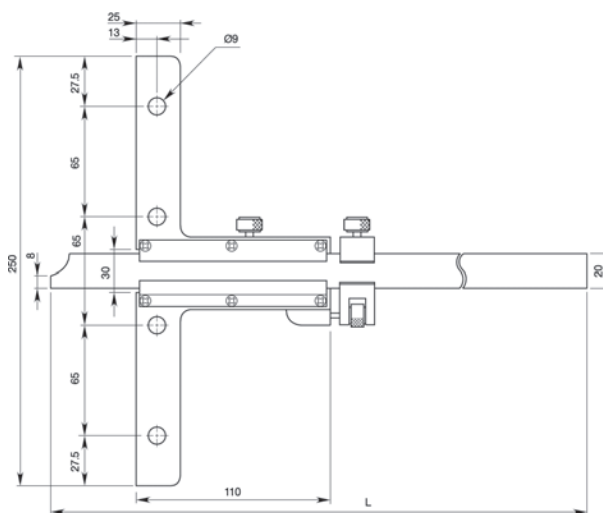
Metric

No.	Range [mm]	Graduation	Accuracy	Base (W x T)	L [mm]	Mass [g]	Price [€]
527-201	0-150	0.05 mm	±0,05 mm	100 x 6.5 mm	260	240	108.00
527-121	0-150	0.02 mm	±0,03 mm	100 x 6.5 mm	260	215	113.00
527-202	0-200	0.05 mm	±0,05 mm	100 x 6.5mm	310	260	118.00
527-122	0-200	0.02 mm	±0,03 mm	100 x 6.5mm	310	230	124.00
527-203	0-300	0.05 mm	±0,08 mm	100 x 6.5 mm	410	300	155.00
527-123	0-300	0.02 mm	±0,04 mm	100 x 6.5mm	410	265	160.00
527-204	0-600	0.05 mm	±0,10 mm	250 x 10 mm	800	1510	649.00
527-205	0-1,000	0.05 mm	±0,15 mm	250 x 10mm	1200	1880	700.00

Metric

With fine adjustment

No.	Range [mm]	Graduation	Accuracy	Base (W x T)	L [mm]	Mass [g]	Price [€]
527-101	0-150	0.02 mm	±0,03 mm	100 x 6.5mm	260	280	124.00
527-102	0-200	0.02 mm	±0,03 mm	100 x 6.5mm	310	300	129.00
527-103	0-300	0.02 mm	±0,04 mm	100 x 6.5mm	410	350	165.00
527-104	0-600	0.02 mm	±0,05 mm	250 x 10mm	800	1510	700.00
527-105	0-1,000	0.02 mm	±0,07 mm	250 x 10mm	1200	1880	742.00

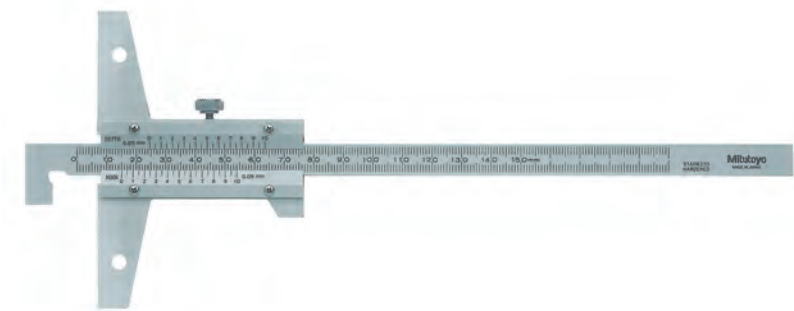


Over 300 mm range models

Vernier Depth Gauge Hook Type

Series 527

- This hook type vernier depth gauge offers you the following benefits:
- The end of the beam is hook-shaped so you can take depth and thickness measurements of a projected portion or lip in a hole, as well as standard depth measurements.
 - Fine adjustment models are available.



527-401

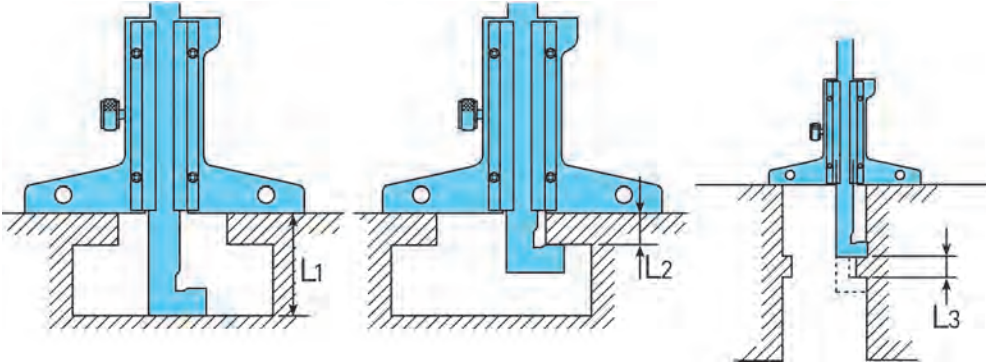
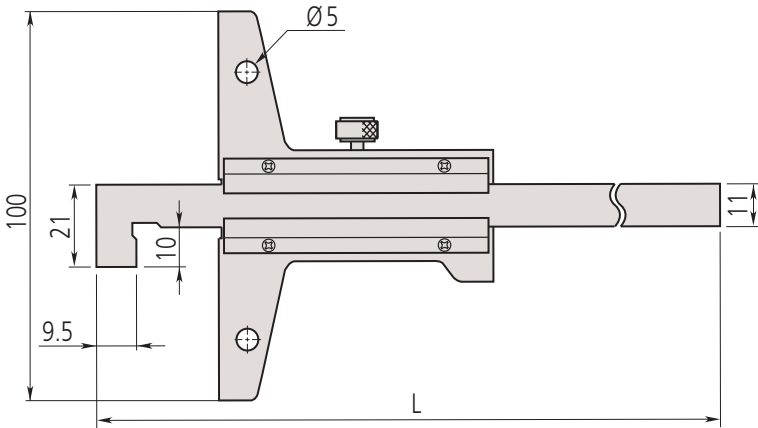
Metric

No.	Depth range	Hook range	Graduation	Accuracy	L [mm]	Mass [g]	Price [€]
527-401	10-150 mm	0-150 mm	0.05 mm	±0,05 mm	260	240	144.00
527-402	10-200 mm	0-200 mm	0.05 mm	±0,05 mm	310	240	155.00
527-403	10-300 mm	0-300 mm	0.05 mm	±0,08 mm	410	270	196.00

Metric

With fine adjustment

No.	Depth range	Hook range	Graduation	Accuracy	L [mm]	Mass [g]	Price [€]
527-411	10-150 mm	0-150 mm	0.02 mm	±0,03 mm	260	280	175.00
527-412	10-200 mm	0-200 mm	0.02 mm	±0,03 mm	310	300	196.00
527-413	10-300 mm	0-300 mm	0.02 mm	±0,04 mm	410	350	227.00



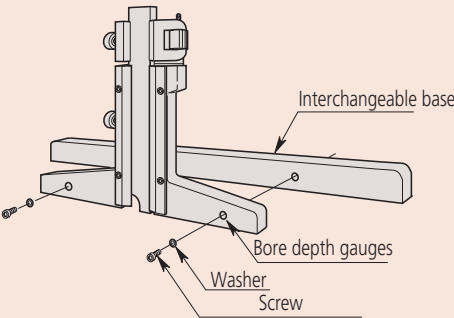
L1 = depth-vernier reading / L2 = hook-vernier reading / L3 = (depth-vernier reading) - (hook-vernier reading)

Specifications

Accuracy	Refer to the list of specifications
----------	-------------------------------------

Optional accessories

No.	Description	Price €
900370	Base length 180 for range up to 300 Thickness 8	51.50
900371	Base length 260 for range up to 300 Thickness 8	72.50
900372	Base length 320 for range up to 300 Thickness 8	80.50



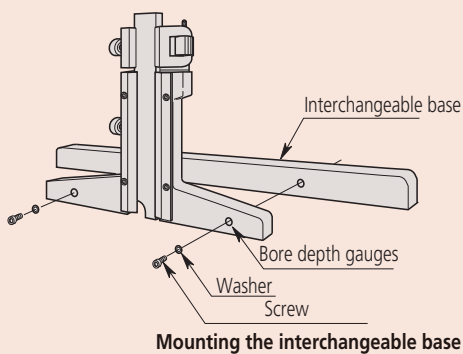
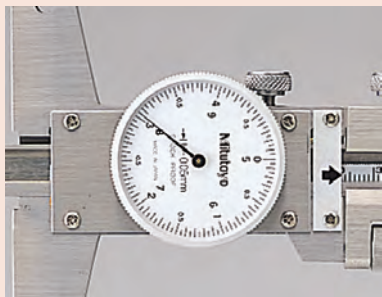
Mounting the interchangeable base

Specifications

Accuracy	Refer to the list of specifications
Graduation	0.05 mm
Base size	100 x 6,5 mm (W x T) mm

Optional accessories

No.	Description	Price €
900370	Base length 180 for range up to 300 Thickness 8	51.50
900371	Base length 260 for range up to 300 Thickness 8	72.50
900372	Base length 320 for range up to 300 Thickness 8	80.50

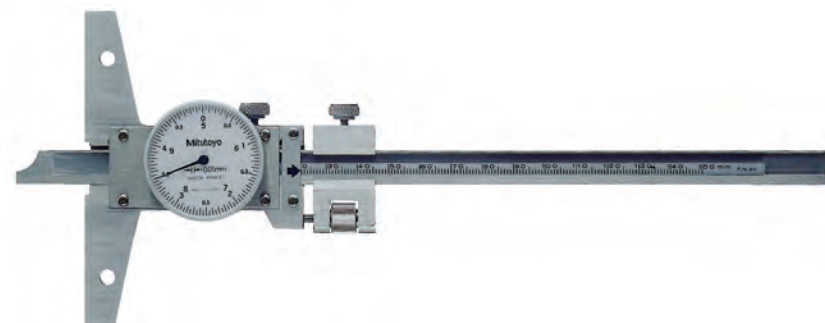


Dial Depth Gauge

Series 527

This dial depth gauge offers you the following benefits:

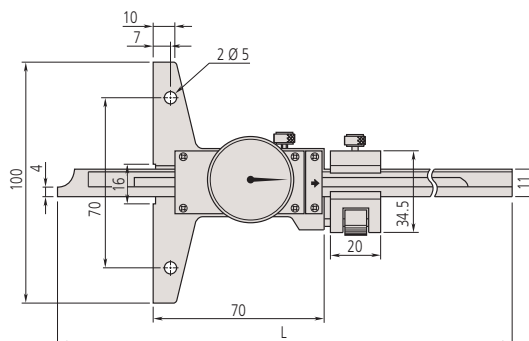
- The dial is very easy-to-read.
- Its base and measuring faces are hardened and micro-lapped for robustness.
- You can make fine adjustments.



527-301-50

Metric

No.	Range [mm]	Accuracy	L [mm]	Mass [g]	Price [€]
527-301-50	0-150	±0,05 mm	260	280	199.00
527-302-50	0-200	±0,05 mm	310	300	216.00
527-303-50	0-300	±0,08 mm	410	340	242.00



Tyre Tread Depth Gauge

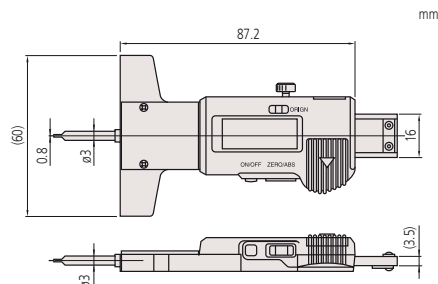
Series 571

This is designed to measure tyre tread depth and offers you the following benefits:

- The ABSOLUTE feature of this gauge keeps track of the origin point (once set) for the entire life of the battery.
- It gives you SPC data output.



571-100MOT-10



Metric

No.	Range [mm]	Accuracy	Mass [g]	Price [€]
571-100MOT-10	0-25	±0,02 mm	160	204.00

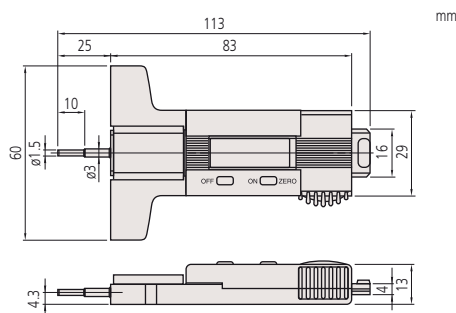


Series 700

- Specially designed to measure tyre tread depth.
- Plastic construction for lightweight use.



700-104



Metric

No.	Range	Accuracy	Mass [g]	Price [€]
700-104	0-25 mm	±0,2 mm	50	53.00



ABSOLUTE®

Functions	Series 571
ORIGIN (ABS-Zero)	●
ZERO/ABS	●
ON/OFF	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Data output	●

Specifications

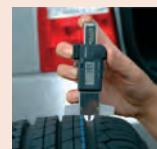
Accuracy	Refer to the list of specifications (excluding quantizing error)
Max. response speed	unlimited
Repeatability	0.01 mm
Digital step	0,01 mm
Display	LCD, Character height 7,5 mm
Battery life	approx. 20.000 hours
Delivered	Including 1 battery

Optional accessories

No.	Description	Price €
959149	Digimatic cable with data switch (1 m)	38.00
959150	Digimatic cable with data switch (2 m)	43.50
02AZD790C	U-WAVE Data Cable with data switch	90.00
06ADV380C	USB Input tool Direct cable with data switch (2 m)	100.00
959143	Data-hold unit	25.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



Functions	Series 700
ZERO	●
ON/OFF	●
Low voltage alarm	●

Specifications

Accuracy	Refer to the list of specifications (excluding quantizing error)
Digital step	0,1 mm
Delivered	Including 1 battery

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



Height Gauge Page 235



Height Gauge Accessories Page 242



Height Gauge with Data Processing Unit Page 244



Lightweight Vernier Height Gauge

Series 506

This vernier height gauge offers you the following benefits:

- You can take accurate and fast readings thanks to the satin chrome finished main and vernier scales.
- A carbide-tipped scriber is provided.

Functions	Series 506
Fine adjustment	

Specifications

Accuracy	Refer to the list of specifications.
Graduation	0.02 mm
Delivered	Including scriber and scriber clamp

Standard accessories

No.	Description
07GZA004	Scriber clamp with plastic screw (12.7 x 6.35 mm)
900173	Carbide-tipped scriber (12.7 x 6.35 mm) 47 mm length

Optional accessories

No.	Description	Price €
953639	Holding bar 50 mm (12.7 x 6.35 mm)	11.50
900321	Swivel clamp for Ø 4/ Ø 8 mm stem and dove tail	25.00



953639



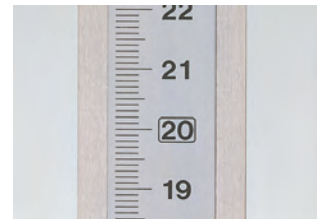
900321



506-207



Fine adjustment



Large digit

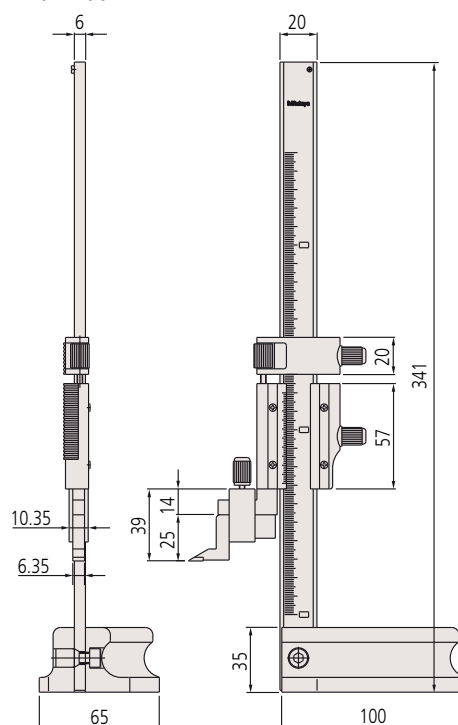
Metric

No.	Range [mm]	Accuracy	Mass [kg]	Price [€]
506-207	0-200	±0,03 mm	1.4	330.00



0 - 200mm

mm



Vernier Height Gauge

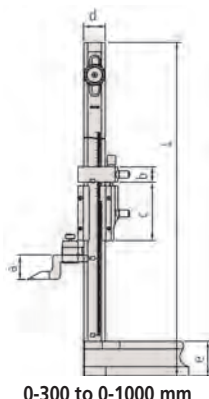
Series 514

This vernier height gauge offers you the following benefits:

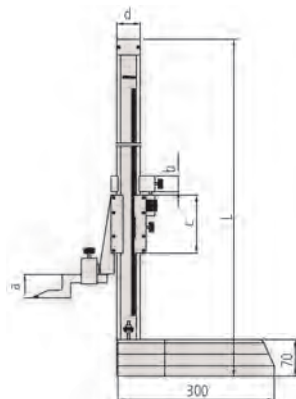
- You can take accurate and fast readings thanks to the satin chrome finished main and vernier scales.
- A carbide-tipped scriber is provided.



514-102



0-300 to 0-1000 mm



0-1500 mm

Metric

No.	Range [mm]	Accuracy	L [mm]	Fine adjustment	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	Mass [kg]	Price [€]
514-102	0-300	±0,04 mm	525	4 mm	32	20	70	28	45	3.1	397.00
514-104	0-450	±0,05 mm	675	4 mm	32	20	70	28	45	3.4	767.00
514-106	0-600	±0,05 mm	870	7 mm	32	24	85	35	54	7.4	1,056.00
514-108	0-1,000	±0,07 mm	1340	6 mm	42	30	110	45	65	20	2,245.00
514-170	0-1,500	±0,18 mm	1760	20 mm	45	30	110.5	45	70	26	5,550.00

1500mm delivered with magnifier



Functions	Series 514
Fine adjustment	
Specifications	
Accuracy	Refer to the list of specifications.
Graduation	0.02 mm
Scale adjustment	15 mm for models up to 600 mm 25mm for models 1000 and 1500 mm
Delivered	Including scriber, scriber clamp and cover

Standard accessories

No.	Description
05GZA033	Scriber clamp (9 x 9 mm)
07GZA000	Carbide-tipped scriber (9 x 9 mm) 80 mm length
905200	Carbide-tipped scriber (9 x 9 mm) 150 mm length
905008	Scriber Clamp (16 x 10 mm)
900390	Carbide-tipped scriber (16 x 10 mm) 144 mm length

07GZA033: for all except 514-170
 07GZA000: 514-102, 514-104, 514-106
 905200: 514-108, 514-109
 905008: 514-170, 514-103, 514-105, 514-107
 900390: 514-170

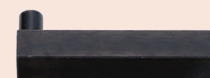
Optional accessories

No.	Description	Price €
953638	Holding bar 50 mm (9 x 9 mm)	16.50
900209	Holding bar 100 mm (9 x 9 mm)	18.00
900321	Swivel clamp for Ø 4/ Ø 8 mm stem and dove tail	25.00
07GZA003	Magnifier for reading scale (300/450/600 mm models)	31.00
07GZA015	Magnifier for reading scale (1000 mm models)	32.50

953638: except 514-170



900321



953638



Dial Height Gauge

Series 192

This dial height gauge offers you the following benefits:

- It allows you easy and error-free reading with both up and down digital counters as well as a dial.
- It comes with a hand wheel so you can easily make rough adjustments.
- A carbide-tipped scriber is provided.

Specifications

Accuracy	Refer to the list of specifications
Graduation	0.01 mm
Delivered	Including scriber, scriber clamp and cover

Standard accessories

No.	Description
05GZA033	Scriber clamp (9 x 9 mm)
07GZA000	Carbide-tipped scriber (9 x 9 mm) 80 mm length

Optional accessories

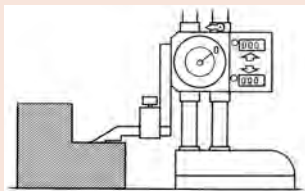
No.	Description	Price €
953638	Holding bar 50 mm (9 x 9 mm)	16.50
900321	Swivel clamp for Ø 4/ Ø 8 mm stem and dove tail	25.00



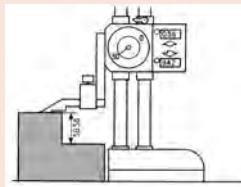
953638



900321



Reset



Reading off
Counter : 58,00 mm
Dial Gauge : 0,50 mm

Result : 58,50 mm



192-130



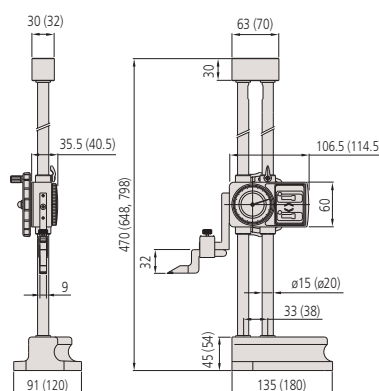
192-132



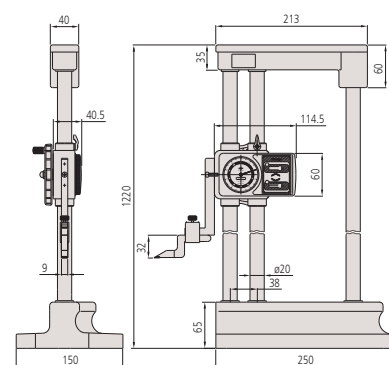
192-133

Metric

No.	Range [mm]	Accuracy	Mass [kg]	Price [€]
192-130	0-300	±0,03 mm	4.2	582.00
192-131	0-450	±0,05 mm	9.2	839.00
192-132	0-600	±0,05 mm	9.8	1,010.00
192-133	0-1,000	±0,07 mm	17	1,854.00



0 - 300 mm (0 - 450 mm, 0 - 600 mm)



0 - 1000 mm

ABSOLUTE Digimatic Height Gauge

Series 570

This Digimatic height gauge is very precise and reliable, and offers you the following benefits:

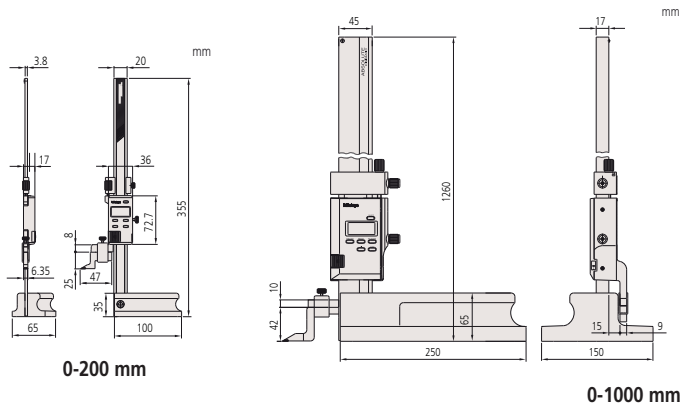
- Its built-in ABSOLUTE linear encoder means you don't have to set the reference point at every power-on, improving reliability as over-speed errors cannot occur.
- Fine-adjustment gives you precise positioning.
- It comes with large and smooth-acting slider hand wheel for coarse- and fine-adjustments (570-3xx only).
- A carbide-tipped scriber is provided.
- SPC data output.



570-227

Metric

No.	Range [mm]	Accuracy	Remarks	L [mm]	Mass [kg]	Price [€]
570-227	0-200	±0,03 mm	2 x PRESET	355	1.3	603.00
570-230	0-1,000	±0,07 mm		1.3	16.8	2,637.00



ABSOLUTE®

Functions	Series 570
ORIGIN	●
ZERO/ABS	●
±SWITCHING	●
ON/OFF	●
DATA/HOLD	●
Low voltage alarm	●
Data output	●
PRESET	●

Specifications

Accuracy	Refer to the list of specifications. (excluding quantizing error)
Scale	ABSOLUTE electrostatic linear encoder
Max. response speed	Unlimited
Digital step	0,01 mm
Display	LCD, 6-digit
Battery life	approx. 5.000 hours
Delivered	Including 1 battery, scriber and scriber clamp

Standard accessories

No.	Description
901338	Scriber Clamp (12.7 x 6.35 mm)
900173	Carbide-tipped scriber (12.7 x 6.35 mm) 47 mm length
05GZA033	Scriber clamp (9 x 9 mm)
905200	Carbide-tipped scriber (9 x 9 mm) 150 mm length

901338, 900173 : 570-227, 570-244
05GZA033, 905200: 570-230

Optional accessories

No.	Description	Price €
905338	Digimatic cable (1 m)	28.00
905409	Digimatic cable (2 m)	34.00
02AZD790F	Connecting cable U-Wave	85.00
06ADV380F	USB Input Tool Direct cable (2 m)	100.00
953639	Holding bar 50 mm (12.7 x 6.35 mm)	11.50
953638	Holding bar 50 mm (9 x 9 mm)	16.50
900209	Holding bar 100 mm (9 x 9 mm)	18.00
900321	Swivel clamp for Ø 4/ Ø 8 mm stem and dove tail	25.00

953639: 570-227, 570-244, 570-248
953638, 900209: 570-230

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



ABSOLUTE Digimatic Height Gauge

ABSOLUTE®

Series 570

This Digimatic height gauge is very precise and reliable, and offers you the following benefits:

- Its built-in ABSOLUTE linear encoder means you don't have to set the reference point at every power-on, improving reliability as over-speed errors cannot occur.
- Fine-adjustment gives you precise positioning.
- It comes with large and smooth-acting slider hand wheel for coarse- and fine-adjustments (570-3xx only).
- A carbide-tipped scriber is provided.
- SPC data output.

Functions	Series 570
ORIGIN	●
ZERO/ABS	●
ON/OFF	●
DATA/HOLD	●
Low voltage alarm	●
Data output	●

Specifications

Accuracy	Refer to the list of the specifications. (excluding quantizing error)
Scale	ABSOLUTE electrostatic linear encoder
Max. response speed	Unlimited
Digital step	0,01 mm
Display	LCD, Character Height 10 mm
Battery life	approx. 20.000 hours
Delivered	Including 1 battery, scriber and scriber clamp

Standard accessories

No.	Description
05GZA033	Scriber clamp (9 x 9 mm)
07GZA000	Carbide-tipped scriber (9 x 9 mm) 80 mm length

Optional accessories

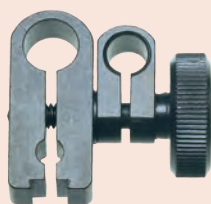
No.	Description	Price €
905338	Digimatic cable (1 m)	28.00
905409	Digimatic cable (2 m)	34.00
02AZD790F	Connecting cable U-Wave	85.00
06ADV380F	USB Input Tool Direct cable (2 m)	100.00
953638	Holding bar 50 mm (9 x 9 mm)	16.50
900321	Swivel clamp for Ø 4/ Ø 8 mm stem and dove tail	25.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



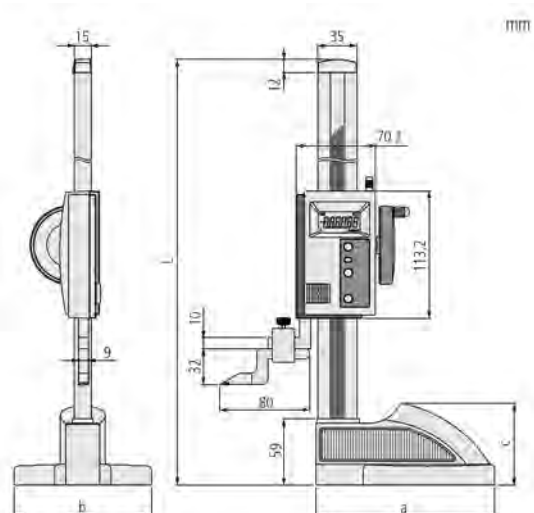
953638



900321



570-302



Metric

No.	Range [mm]	Accuracy	L [mm]	A [mm]	B [mm]	C [mm]	Mass [kg]	Price [€]
570-302	0-300	±0,03 mm	507	160	122	72.6	4.6	565.00
570-304	0-600	±0,05 mm	812	181	142	74.1	6.4	989.00



Large smooth slider handwheel



Large clamp lever



Fits the hand comfortably

Digimatic Height Gauge Double Column Type

Series 192

This is a high accuracy height gauge that comes with or without a connector for optional touch trigger probe.

It offers you the following benefits:

- Its double-column structure ensures high measuring accuracy.
- A carbide-tipped scriber is provided.
- Large character height of 11mm provides good readability.
- SPC data output.

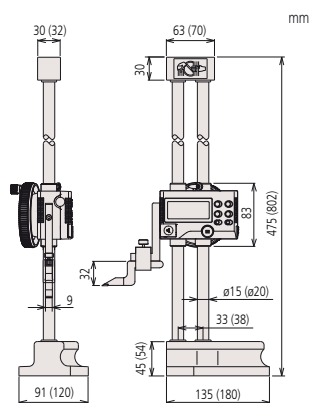


192-613-10

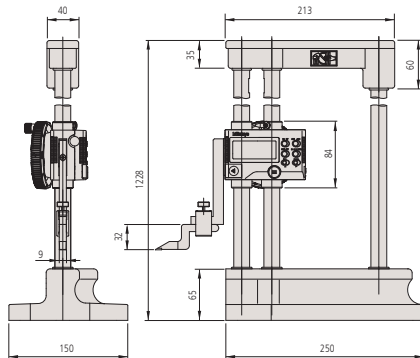


Metric

No.	Range [mm]	Accuracy	Mass [kg]	Price [€]
192-613-10	0-300	±0,02 mm	6.5	834.00
192-614-10	0-600	±0,05 mm	6.5	1,145.00
192-615-10	0-1,000	±0,07 mm	19.2	2,165.00



0-300 mm
(0-600 mm)



0-1000 mm

Functions	Series 192
ZERO/ABS	●
Preset (2 values)	●
±SWITCHING	●
ON/OFF	●
DATA/HOLD	●
Probe tip diameter compensation	●
Low voltage alarm	●
Data output	●

Specifications

Accuracy	Refer to the list of specifications. (excluding quantizing error)
Max. response speed	500 mm/s
Digital step	0,01/0,005 mm
Display	LCD, Character Height: 11 mm
Battery life	approx. 3.500 hours
Delivered	Including scriber, scriber holder, 1 battery and cover

Standard accessories

No.	Description
05GZA033	Scriber clamp (9 x 9 mm)
07GZA000	Carbide-tipped scriber (9 x 9 mm) 80 mm length
450291	Cover 300
450292	Cover 600
450290	Cover 1000

Optional accessories

No.	Description	Price €
905338	Digimatic cable (1 m)	28.00
905409	Digimatic cable (2 m)	34.00
02AZD790F	Connecting cable U-Wave	85.00
06ADV380F	USB Input Tool Direct cable (2 m)	100.00
953638	Holding bar 50 mm (9 x 9 mm)	16.50
900321	Swivel clamp for Ø 4/ Ø 8 mm stem and dove tail	25.00



953638



900321



Digimatic Height Gauge Double Column Type with Touch Trigger Probe Connector

Series 192

- Carbide-tipped long scriber is provided.
- Double-column structure ensures high measuring accuracy
- Bidirectional touch-trigger probe is an optional accessory. It can quickly and accurately measure steps as well as inside and outside dimensions.



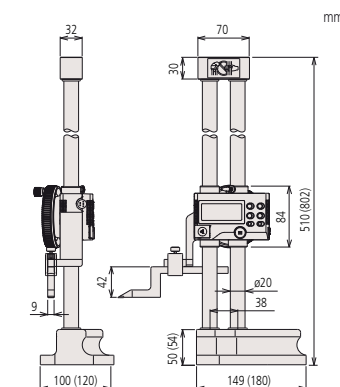
192-663-10



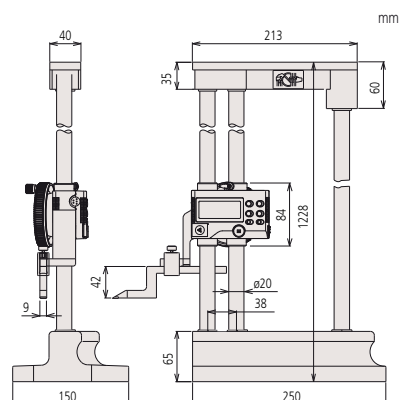
192-007

Metric

No.	Range [mm]	Accuracy	Mass [kg]	Price [€]
192-663-10	0-300	±0,02 mm	7.5	1,112.00
192-664-10	0-600	±0,04 mm	10.4	1,421.00
192-665-10	0-1,000	±0,06 mm	19.2	2,462.00



0-300 mm
(0-600 mm)



0-1000 mm

Functions	Series 192
ZERO/ABS	●
Preset (2 values)	●
±SWITCHING	●
ON/OFF	●
DATA/HOLD	●
Probe tip diameter compensation	●
Touch-trigger probe	●
Low voltage alarm	●
Data output	●

Specifications

Accuracy	Refer to the list of specifications. (excluding quantizing error)
Max. response speed	500 mm/s
Repeatability	0.01 mm
Digital step	0,01/0,005 mm
Display	LCD, Character Height: 11 mm
Battery life	approx. 3.500 hours
Delivered	Including scriber, scriber holder, 1 battery and cover

Standard accessories

No.	Description
05GZA033	Scriber clamp (9 x 9 mm)
905200	Carbide-tipped scriber (9 x 9 mm) 150 mm length
450291	Cover 300
05RAB130	Cover 450
450292	Cover 600
450290	Cover 1000

Optional accessories

No.	Description	Price €
905338	Digimatic cable (1 m)	28.00
905409	Digimatic cable (2 m)	34.00
02AZD790F	Connecting cable U-Wave	85.00
06ADV380F	USB Input Tool Direct cable (2 m)	100.00
192-007	Bidirectional touch-trigger probe metric	484.00
953638	Holding bar 50 mm (9 x 9 mm)	16.50
900209	Holding bar 100 mm (9 x 9 mm)	18.00
900321	Swivel clamp for Ø 4/ Ø 8 mm stem and dove tail	25.00

Consumable spares

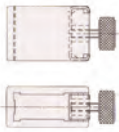
No.	Description	Price €
938882	Battery SR44	5.50

Spare Parts for Height Gauges

Standard accessories for Height Gauges

These are optional accessories and spare parts for height gauges, that you can use for different tasks.

- Various accessories are available for using height gauges in different applications.
- Hard-wearing carbide-tipped scribes are available for all height gauges.



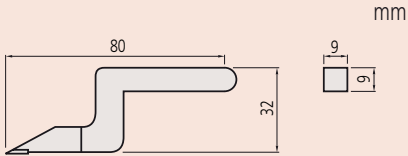
05GZA033

Carbide-tipped scribes

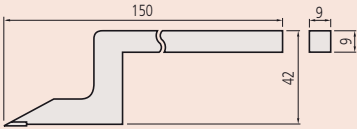
No.	Applicable height gauges	Description	Price [€]
07GZA000	192-130, 192-131, 192-132, 192-133 192-613-10, 192-614-10, 192-615-10 514-102, 514-104, 514-106 570-302, 570-304	Carbide tipped scriber (9 x 9 mm) 80 mm length	51.00
905200	192-663-10, 192-664-10, 192-665-10 514-108 570-230	Carbide tipped scriber (9 x 9 mm) 150 mm length	131.00
900173	570-227 506-207	Carbide tipped scriber (12.7 x 6.35 mm) 47 mm length	68.00
900390	514-170	Carbide tipped scriber (16 x 10 mm) 144 mm length	252.00

Scriber clamps

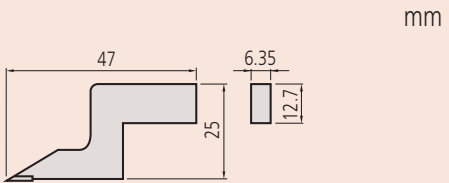
No.	Applicable height gauges	Description	Price [€]
905008	514-170	Scriber clamp (16 x 10 mm)	
07GZA004	570-227, 570-244, 506-207	Scriber clamp with plastic screw (12.7 x 6.35 mm)	15.00
05GZA033	192-130, 192-131, 192-132, 192-133 192-613-10, 192-614-10, 192-615-10 192-663-10, 192-664-10, 192-665-10 514-102, 514-104, 514-106, 514-108 570-230 570-302, 570-304	Scriber clamp (9 x 9 mm)	34.00



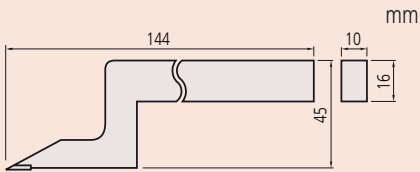
07GZA000



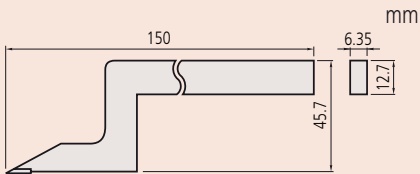
905200



900173



900390



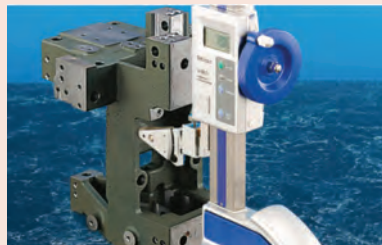
905201

Optional Accessories for Height Gauges

Optional accessories for Height Gauges

These are optional accessories and spare parts for height gauges, that you can use for different tasks.

- Various accessories are available for using height gauges in different applications.
- Hard-wearing carbide-tipped scribes are available for all height gauges.



Center master



Depth Gage Attachment



Electrical contact sensor
900872

Center master

No.	Applicable height gauges	Remarks	Price [€]
900581	570-227, 570-244 506-207	Center master (12.7 x 6.35 mm)	125.00
	192-630-10, 192-631-10, 192-632-10, 192-633-10 570-248		
951144	192-130, 192-131, 192-132, 192-133 192-613-10, 192-614-10, 192-632-10, 192-633-10 570-312, 570-313, 570-314 192-670-10, 192-671-10, 192-672-10, 192-673-10 514-108, 514-109	Center master (9 x 9 mm)	144.00

Depth measurement attachment

No.	Applicable height gauges	Remarks	Price [€]
900764	192-130, 192-131, 192-132, 192-133 192-613-10, 192-614-10, 192-615-10 514-102, 514-103, 514-104, 514-105, 514-106, 514-107 570-302, 570-304	Depth measurement attachment (9 x 9 mm)	42.50
	192-663-10, 192-664-10, 192-665-10 514-108, 514-109		
900878	570-227, 570-244 506-207 192-630-10, 192-631-10, 192-632-10, 192-633-10 570-248	Depth measurement attachment (12.7 mm x 6.35 mm)	42.50

Electrical contact sensor

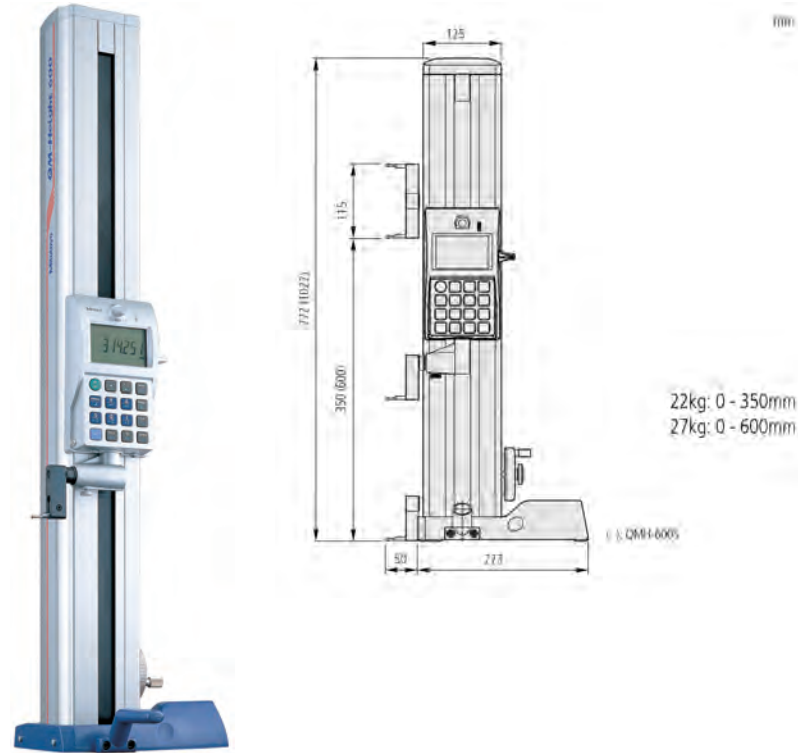
No.	Applicable height gauges	Price [€]
900872	For all height gauges on a granite surface plate. For electroconductive parts with a sufficient contact surface.	106.00

QM-Height

Series 518

This is a high precision ABSOLUTE digital height gauge that offers you the following benefits:

- It has a high accuracy, high resolution ABSOLUTE linear encoder for position detection.
- You can easily implement frequently used measurements, such as inside/outside diameter and pitch calculations, by icon-based commands that also support easy one-key operation.
- You can measure the inside/outside diameter via a unique process (detect the circle apex and process by tracing measurement).
- GO/±NG judgement is performed by setting the upper and lower tolerances. If a judgement result is out of tolerance the display backlighting changes from green to red, so you can see the issue immediately.



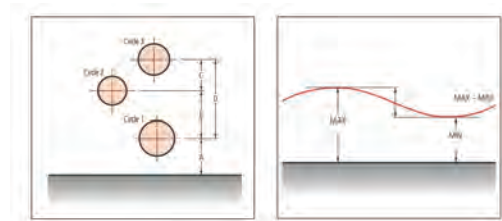
518-226
With Grip

() 0-600 mm

Metric

No.	Range	Perpendicularity	Power supply	Mass [kg]
518-224	0-350/115-465 ¹ mm	8 μm	AC Adapter (optional), Battery (LR6 x 4)	22
518-226	0-600/115-715 ¹ mm	13 μm	AC Adapter (optional), Battery (LR6 x 4)	27

*1 Range with probe turned to upwards position



ABSOLUTE®

Specifications

Repeatability (±2σ)	≤1,8 μm
Accuracy	±(2,8+5L/1000) μm L = Measuring length (mm)
Scale	ABSOLUTE electrostatic linear encoder
Measuring force	1,6 ± 0,5 N
Drive method	Manual
Guiding method	Roller bearing
Digital step	0,001mm/0,005mm;

Standard accessories

No.	Description
011037	4 batteries LR-6 (AA)
12AAA715	Setting block
05HZA148	Ball offset probe Ø5

Optional accessories

No.	Description	Price €
526688D	AC adapter 9V 500mA	
936937	Digimatic cable (1 m)	43.50
965014	Digimatic cable (2 m)	57.50
02AZD790D	Connecting cable U-Wave	85.00
06ADV380D	USB Input Tool Direct cable (2 m)	100.00



GO



±NG



Inside measurement



Height measurement



Digimatic and RS-232C data output port (standard)



Linear QM-Height on request

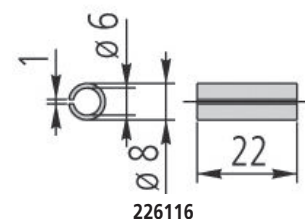
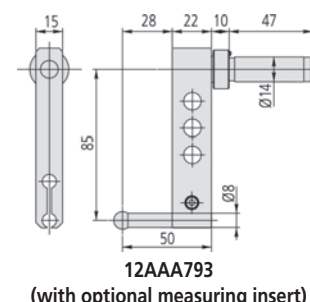
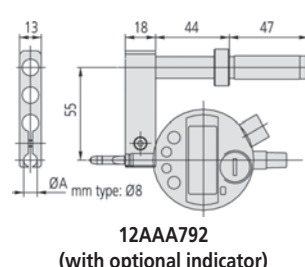
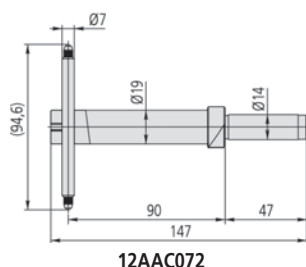
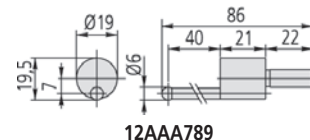
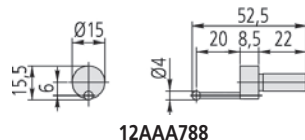
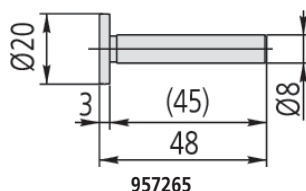
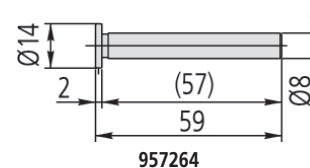
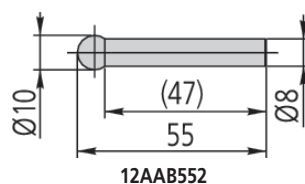
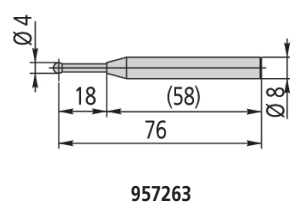
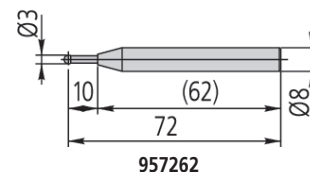
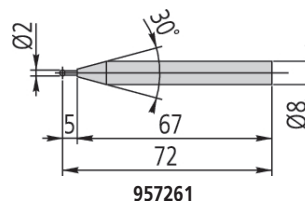
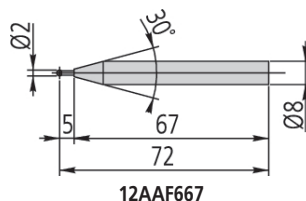
Optional Accessories for QM-Height

Optional accessories

No.	Description	Price €
12AAF667	Ø2 spherical measuring insert (coaxial type) Ruby ball	254.00
957261	Ø2 spherical measuring insert (coaxial type)	88.00
957262	Ø3 spherical measuring insert (coaxial type)	93.00
957263	Ø4 spherical measuring insert (coaxial type)	103.00
12AAB552	Ø10 spherical measuring insert (coaxial type)	146.00
957264	Ø14 disk measuring insert	185.00
957265	Ø20 disk measuring insert	232.00
12AAA788	Ø4 spherical measuring insert (eccentric type)	62.00
12AAA789	Ø6 spherical measuring insert (eccentric type)	68.00
12AAC072	Depth probe	160.00
12AAA792	Holder; for Dial Gage mm for Ø 8 mm stem	105.00
12AAA793	Holder; long	105.00
05HZA173	Scriber	252.00
226116	Ø 6 collar	14.50

Series 518

QM-Height



Linear Height LH-600E/EG

Series 518

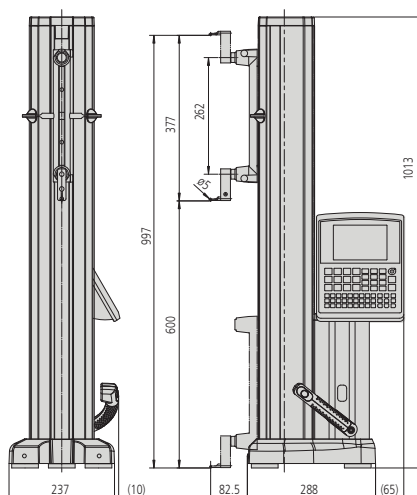
This is a high performance 2D measurement system.

The Linear Height Gauge LH-600E/EG offers you a huge range of features, including:

- Excellent accuracy.
- Pneumatic drive mechanism.
- Self-explanatory control pad with menu control in display.
- Easy-to-read LCD display.
- Automatic running of pre-learned part programs.
- GO/± NO GO display at each measurement.
- Mains-independent operation with rechargeable battery.
- Easy handling with low weight.
- RS-232C data output port.
- USB Data output (for storing data only).
- DIGIMATIC data input for when using a digital indicator (e.g. when testing perpendicularity).
- Statistic processing.



518-351D-21 518-352D-21

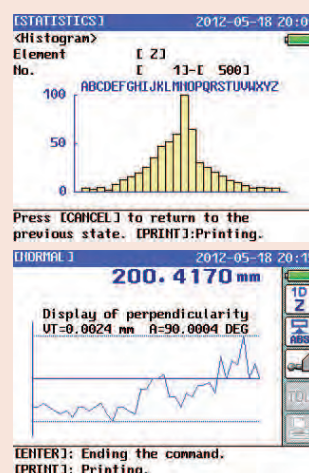


Specifications

Range	0-972 mm
Slider stroke	600 mm
Accuracy	(1,1 + 0,6L/600) μm L = length (mm)
Perpendicularity	5 μm (after compensation)
Straightness	4 μm (mechanical)
Language for display	English/German/French/Spanish/ Italian/Dutch//Portuguese/ Swedish/Turkish/Czech/ Hungarian/Slovenian/Polish/ Traditional Chinese (optional)/ Japanese
Drive method	Manual/motor (5-40 mm/s, 7 steps)
Suspension method	Full/semi-floating with built-in air compressor
Balancing method	Counter balance
No. of stored programs	50 programs (max.)
No. of stored data	60,000 (max.)
Battery operation time	approx. 5 hours
Probes	See specific chapter on Probes
Measuring force	1 N
Digital step	0,0001/0,001/0,01/0,1 mm
Display	Graphic LCD 320x240 dots (with back light)

Standard accessories

No.	Description
12AAA715	Setting block
12AAF634	Eccentric probe Ø 5 mm
12AAF712	Battery Pack
223587	Cover
357651	AC Adapter 9V



Linear Height LH-600E brochure on request

No.	Remarks	Mass [kg]
518-351D-21		24
518-352D-21	Power grip pre-installed	24

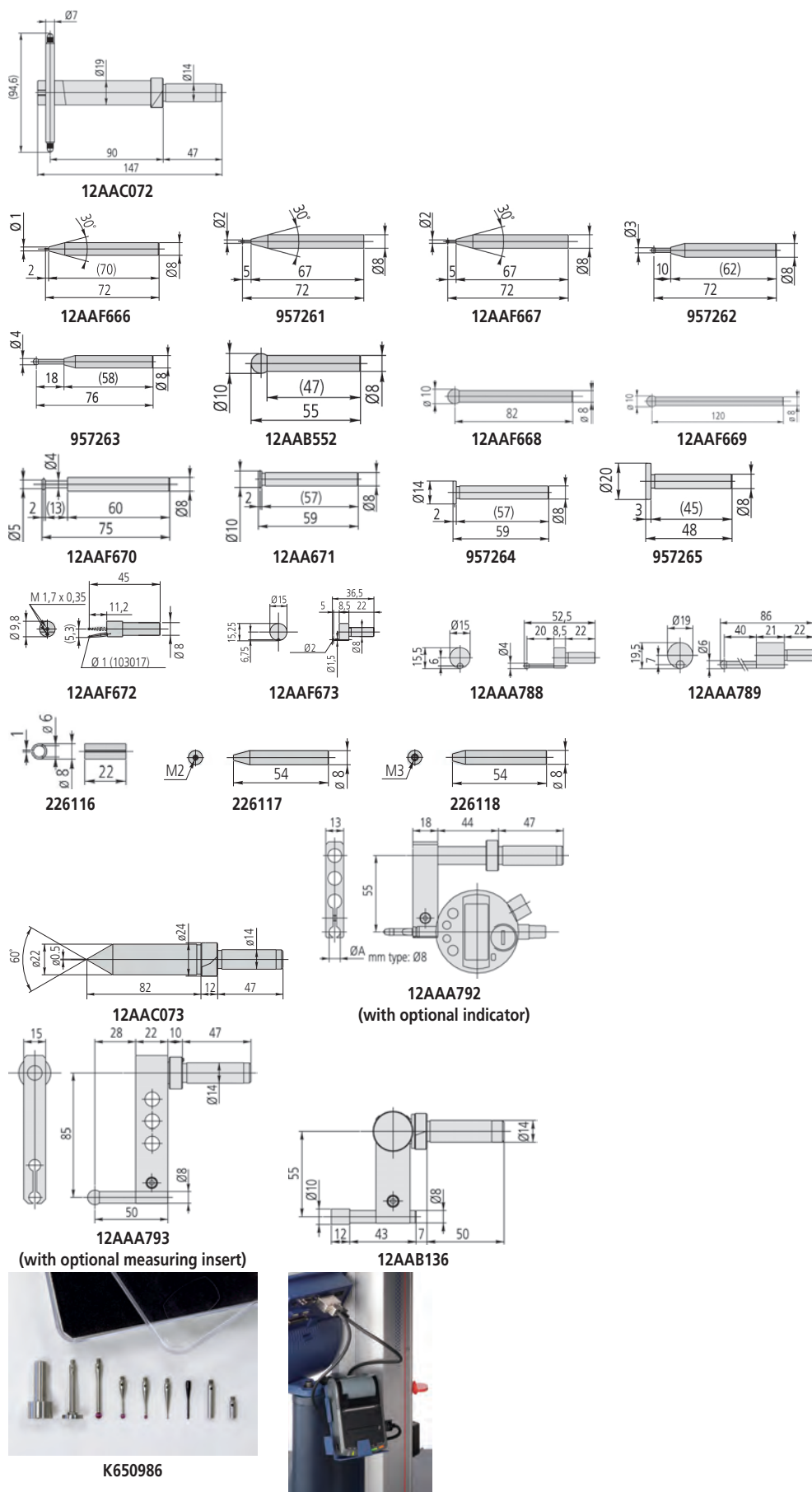
Optional Accessories for Linear Height

Optional accessories

No.	Description	Price €
1. Probe diameter calibration block		
12AAA787	Probe diameter calibration block (applicable to tapered probe)	227.00
2. Depth measurement		
12AAC072	Depth probe	160.00
3. Interchangeable measuring insert (or stylus) for eccentric probe (standard accessory)		
12AAF666	Ø1 spherical measuring insert (coaxial type)	160.00
957261	Ø2 spherical measuring insert (coaxial type)	88.00
12AAF667	Ø2 spherical measuring insert (coaxial type) Ruby ball	254.00
957262	Ø3 spherical measuring insert (coaxial type)	93.00
957263	Ø4 spherical measuring insert (coaxial type)	103.00
12AAB552	Ø10 spherical measuring insert (coaxial type)	146.00
12AAF668	Ø10 spherical measuring insert (coaxial type) L=82	183.00
12AAF669	Ø10 spherical measuring insert (coaxial type) L=120	199.00
12AAF670	Ø5 disk measuring insert	175.00
12AAF671	Ø10 disk measuring insert	140.00
957264	Ø14 disk measuring insert	185.00
957265	Ø20 disk measuring insert	232.00
12AAF672	Ø1 spherical measuring insert (eccentric type)	142.00
12AAF673	Ø2 spherical measuring insert (eccentric type)	190.00
12AAA788	Ø4 spherical measuring insert (eccentric type)	62.00
12AAA789	Ø6 spherical measuring insert (eccentric type)	68.00
226116	Ø 6 collar	14.50
226117	Shank with M2 thread for CMM stylus	40.50
226118	Shank with M3 thread for CMM stylus	40.50
4. Special holder, special probe		
12AAC073	Tapered measuring insert (Ø22 mm)	125.00
12AAA792	Holder; for Dial Gage mm for Ø 8 mm stem	105.00
12AAA793	Holder; long	105.00
12AAB136	Probe; Ø10 cylindrical universal	231.00
5. Others		
12AAF674	Auxiliary weight	27.00
K650986	Box probes	386.00
6. Printer and interface		
12AAN052	Printer paper for receipt printer (10 rolls pack)	
12AAA804	Printer cable; 2m (for A4 printer)	
12AAA807D	RS-232C cable (2m)	54.00
12AAN050	Receipt printer (for EU; except UK)	
7. Battery		
12AAF712	Battery Pack	123.00
12AAG245	Large battery pack	331.00
12AAF675	Large battery set (battery pack + cover)	774.00

Recommended model for A4 printer: EPSON LQ-590
K650986: holder M3/disk probe Ø 12 mm/
ruby ball probe Ø 1, 2, 3, 4 mm/extension 10, 20 mm

Series 518



No.
Linear Height

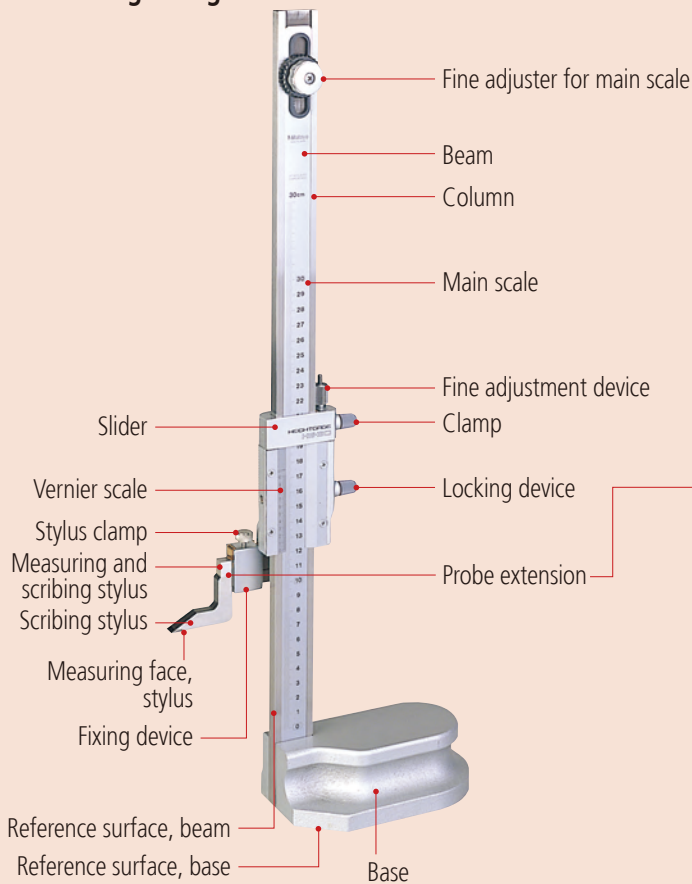
Quick Guide to Precision Measuring Instruments



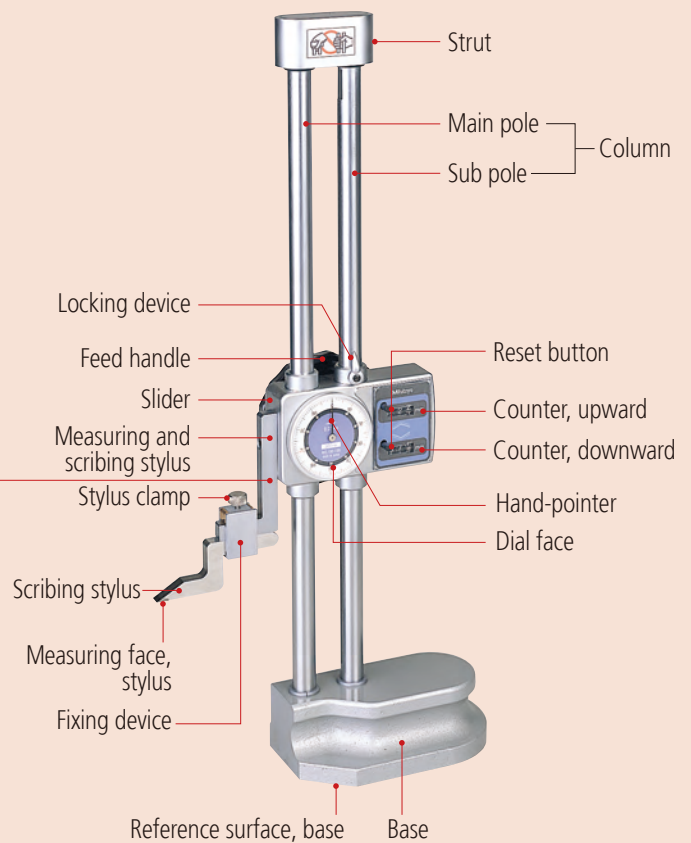
Height Gages

Nomenclature

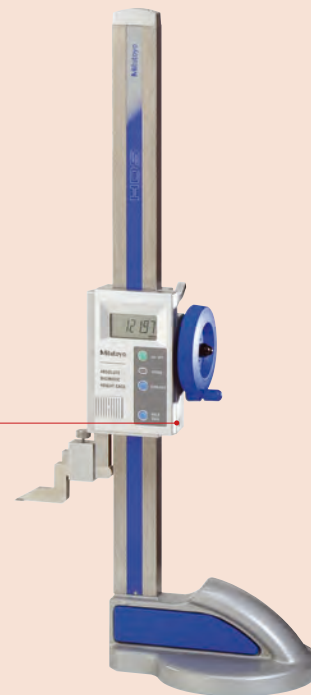
Vernier Height Gage



Mechanical Digit Height Gage



Digimatic Height Gages



Slider handwheel



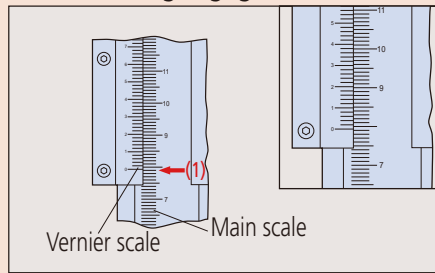
Slider clamping lever



Ergonomic base

■ How to read

● Vernier Height gage



Graduation	0.02mm
(1) Main scale	79 mm
(2) Vernier	0.36 mm
Reading	79.36 mm

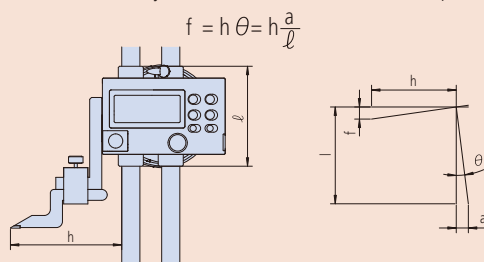
■ General notes on use of Height Gages

1. Potential causes of error

Like the caliper, the error factors involved include parallax effects, error caused by excessive measuring force due to the fact that a height gage does not conform to Abbe's Principle, and differential thermal expansion due to a temperature difference between the height gage and workpiece. There are also other error factors caused by the structure of the height gage. In particular, the error factors related to a warped reference edge and scriber installation described below should be studied before use.

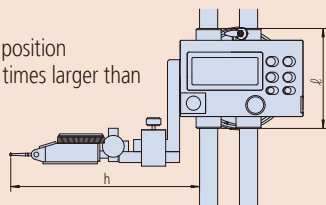
2. Reference edge (column) warping and scriber installation

Like the caliper, and as shown in the following figure, measurement errors result when using the height gage if the reference column, which guides the slider, becomes warped. This error can be represented by the same calculation formula for errors caused by nonconformance to Abbe's Principle.



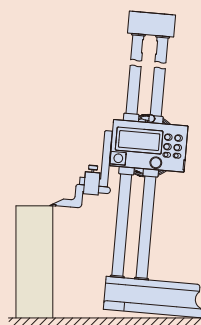
Installing the scriber (or a lever-type dial indicator) requires careful consideration because it affects the size of any error due to a warped reference column by increasing dimension h in the above formula. In other words, if an optional long scriber or lever-type dial indicator is used, the measurement error becomes larger.

Example: Effect of measuring point position
When h is 150 mm, the error is 1.5 times larger than when h is 100 mm.



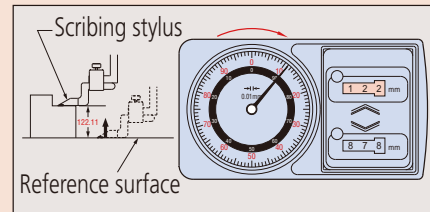
3. Lifting of the base from the reference surface

When setting the scriber height from a gauge block stack, or from a workpiece feature, the base may lift from the surface plate if excessive downwards force is used on the slider, and this results in measurement error. For accurate setting, move the slider slowly downwards while moving the scriber tip to and fro over the gauge block surface (or feature). The correct setting is when the scriber is just felt to lightly touch as it moves over the edge of the surface. It is also necessary to make sure that the surface plate and height gage base reference surface are free of dust or burrs before use.



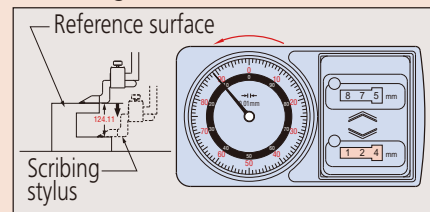
● Mechanical Digit Height gage

Measuring upwards from a reference surface



Counter	122 mm
Dial	0.11 mm
Reading	122.11 mm

Measuring downwards from a reference surface



Counter	124 mm
Dial	0.11 mm
Reading	124.11 mm

4. Relationship between accuracy and temperature

Height gages are made of several materials. Note that some combinations of workpiece material, room temperature, and workpiece temperature may affect measuring accuracy if this effect is not allowed for by performing a correction calculation.

5. The tip of a height gage scriber is very sharp and must be handled carefully if personal injury is to be avoided.

6. Do not damage a digital height gage scale by engraving an identification number or other information on it with an electric marker pen.

7. Carefully handle a height gage so as not to drop it or bump it against anything.

■ Notes on using the height gage

1. Keep the column, which guides the slider, clean. If dust or dirt accumulates on it, sliding becomes difficult, leading to errors in setting and measuring.
2. When scribing, securely lock the slider in position using the clamping arrangements provided. It is advisable to confirm the setting after clamping because the act of clamping on some height gages can alter the setting slightly. If this is so, allowance must be made when setting to allow for this effect.
3. Parallelism between the scriber measuring face and the base reference surface should be 0.01 mm or better.
Remove any dust or burrs on the mounting surface when installing the scriber or lever-type dial indicator before measurement. Keep the scriber and other parts securely fixed in place during measurement.
4. If the main scale of the height gage can be moved, move it as required to set the zero point, and securely tighten the fixing nuts.
5. Errors due to parallax error are not negligible. When reading a value, always look straight at the graduations.
6. Handling after use: Completely wipe away any water and oil. Lightly apply a thin coating of anti-corrosion oil and let dry before storage.
7. Notes on storage:
Avoid direct sunlight, high temperatures, low temperatures, and high humidity during storage.
If a digital height gage will not be used for more than three months, remove the battery before storage.
If a protective cover is provided, use the cover during storage to prevent dust from adhering to the column.

ABSOLUTE Digimatic Indicator Page 251



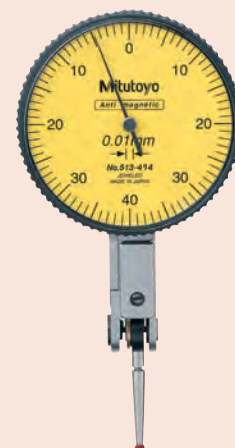
Dial Indicator Page 263



Accessories for Indicator Page 281



Dial Test Indicator Page 290



Accessories for Dial Test Indicators Page 298



Thickness Gauge, Depth Gauge, Caliper Gauge and Coating Thickness Gauge Page 300



ABSOLUTE Digimatic Solar Indicator ID-SS

Series 543

This solar-powered, standard model is environmentally friendly and very easy to use.

The ABSOLUTE Digimatic Solar Indicator ID-SS offers you the following benefits:

- The ABSOLUTE sensor means you don't have to carry out origin setting every time you power it on, saving you time and hassle.
- There's no battery to change.
- The price is the same as the battery model (ID-S).
- The solar cell is operates from just 40 LUX.
- Super-capacitor charge storage enables you to work in low-level lighting conditions of less than 40 LUX.
- You can access all functions by using the large, user-friendly buttons on the front of the indicator.
- Large character height of 9mm provides good readability.



Functions	Series 543
ORIGIN (ABS-Zero)	●
Digimatic data output	●
Counting direction switchable	●

Specifications

Accuracy	Refer to the list of specifications (excluding quantizing error)
Scale	Capacitance type, absolute linear encoder
Stem Ø	8 mm
Max. response speed	Unlimited
Contact point	Carbide ball, thread M 2,5 x 0,45 mm
Alarm	Counting value composition error
Power supply	Solar cell usable from 40 LUX illumination
Display	LCD character height 9 mm

Optional accessories

No.	Description	Price €
21EZA198	Spindle lifting lever (12,7 model)	8.00
540774	Spindle lifting cable	26.00
21EZA105	Spindle lifting knob (12,7 models)	26.00

Digimatic Signal Cables

905338	Digimatic cable (1 m)	28.00
905409	Digimatic cable (2 m)	34.00
02AZD790F	Connecting cable U-Wave	85.00
06ADV380F	USB Input Tool Direct cable (2 m)	100.00

For USB Input Tool Direct cable: a footswitch (no. 937179T), a USB- footswitch adapter (no. 06ADV384) and USB-ITPAK Software (no. 06ADV386) are required.

Consumable spares

No.	Description	Price €
901312	Standard contact point	11.00

Illuminance

2000 Lux
engraving
invisible mending

1500 Lux
clockmacker
electronic workshop

750-1000 Lux
technical drawing
precision mechanic work

500 Lux
bureau

200-300 Lux
working with
manufacturing machines

150 Lux
passages with vehicles
loading zone

100 Lux
lunch room, passages

50 Lux
warehouse
storage room



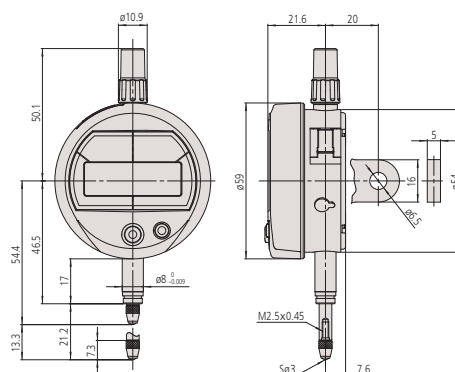
543-500B

543-505B

Metric

No.	No. Lug back plate	Range [mm]	Digital step	Accuracy	Measuring force [N]	Mass lug/plain [g]	Price [€]
543-500B	543-500	12.7	0,001 mm	0,003 mm	≤ 1,5	150/140	289.00
543-505B	543-505	12,7	0,01 mm	0,02 mm	≤ 1,5	150/140	145.00

No. with "B": Flat back plate



ABSOLUTE Digimatic Indicator ID-S

Series 543

This is a standard model of indicator that is reliable and easy to use. The ABSOLUTE Digimatic Indicator ID-S offers you the following benefits:

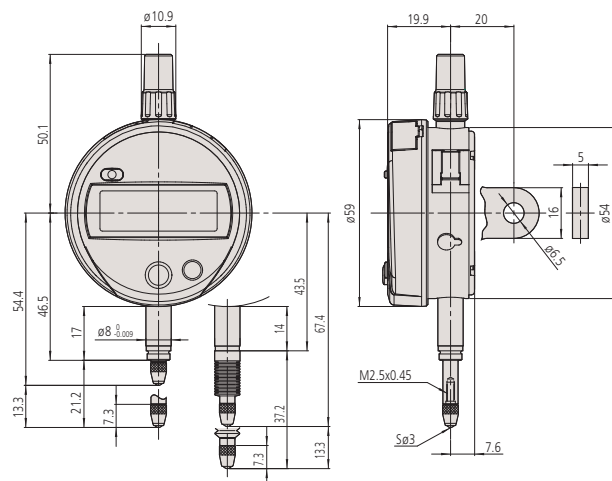
- The ABSOLUTE sensor means you don't have to carry out origin setting every time you power it on, saving you time and hassle.
- You can access all functions by using the large, user-friendly buttons on the front of the indicator.
- Large character height of 9mm provides good readability.
- Exceptional battery life.



Metric

No.	No. Lug back plate	Range [mm]	Digital step	Accuracy	Remarks	Measuring force [N]	Mass Lug/flat [g]	Price [€]
543-781B	543-781	12.7	0,01 mm	0,02 mm	IP42	≤ 1,5	140/150	142.00
543-790B	543-790	12.7	0,001 mm	0,003 mm	IP42	≤ 1,5	140/150	287.00
543-794B	543-794	12.7	0,001 mm	0,003 mm	IP53	≤ 2,5	140/150	329.00

No. with "B": Flat back plate



Functions	Series 543
ORIGIN (ABS-Zero)	●
Digimatic data output	●
ON/OFF	●
Counting direction switchable	●

Specifications

Accuracy	Refer to the list of specifications (excluding quantizing error)
Scale	Capacitance type, ABSOLUTE linear encoder
Stem Ø	8 mm
Max. response speed	Unlimited
Contact point	Carbide ball, thread M 2.5 x 0.45 mm
Alarm	Low voltage, counting value composition error
Power supply	1 battery SR-44
Battery life	approx. 18.000 hours (0,001 mm type) approx. 20.000 hours (0,01 mm type)
Display	LCD, character height 9 mm

Optional accessories

No.	Description	Price €
21EZA198	Spindle lifting lever (12,7 model)	8.00
540774	Spindle lifting cable	26.00
21EZA105	Spindle lifting knob (12,7 models)	26.00
238774°	Silicon rubber boot	
Digimatic Signal Cables		
905338	Digimatic cable (1 m)	28.00
905409	Digimatic cable (2 m)	34.00
02AZD790F	Connecting cable U-Wave	85.00
06ADV380F	USB Input Tool Direct cable (2 m)	100.00

For USB Input Tool Direct cable: a footswitch (no. 937179T), a USB-footswitch adapter (no. 06ADV384) and USB-ITPAK Software (no. 06ADV386) are required.

Consumable spares

No.	Description	Price €
901312	Standard contact point	11.00
938882	Battery SR44	5.50
02ACA376°	Rubber boot (NBR rubber)	



21EZA198



540774



21EZA105
°only for IP53 model

ABSOLUTE Digimatic Indicator ID-U



Series 575

This is a slim type of digital indicator with a 25mm range.

The ABSOLUTE Digimatic Indicator ID-U offers you the following benefits:

- The ABSOLUTE sensor means you don't have to carry out origin setting every time you power it on, saving you time and hassle.
- Its compact design makes it ideal for installing into measuring fixtures.
- Exceptional battery life.

Functions	Series 575
ORIGIN (ABS-Zero)	
Digimatic data output	
ON/OFF	
Counting direction switchable	

Specifications

Accuracy	Refer to the list of specifications (excluding quantizing error)
Scale	Capacitance type, ABSOLUTE linear encoder
Stem Ø	8 mm (ISO/JIS type)
Max. response speed	Unlimited
Contact point	Carbide ball, thread M 2.5 x 0.45 mm (ISO/JIS type)
Alarm	Low voltage, counting value composition error
Power supply	1 battery SR-44
Battery life	approx. 20.000 hours
Digital step	0,01 mm
Display	LCD, character height 8.5 mm

Standard accessories

No.	Description
137693	Lifting handle

Optional accessories

No.	Description	Price €
540774	Spindle lifting cable	26.00
Digimatic Signal Cables		
905338	Digimatic cable (1 m)	28.00
905409	Digimatic cable (2 m)	34.00
02AZD790F	Connecting cable U-Wave	85.00
06ADV380F	USB Input Tool Direct cable (2 m)	100.00

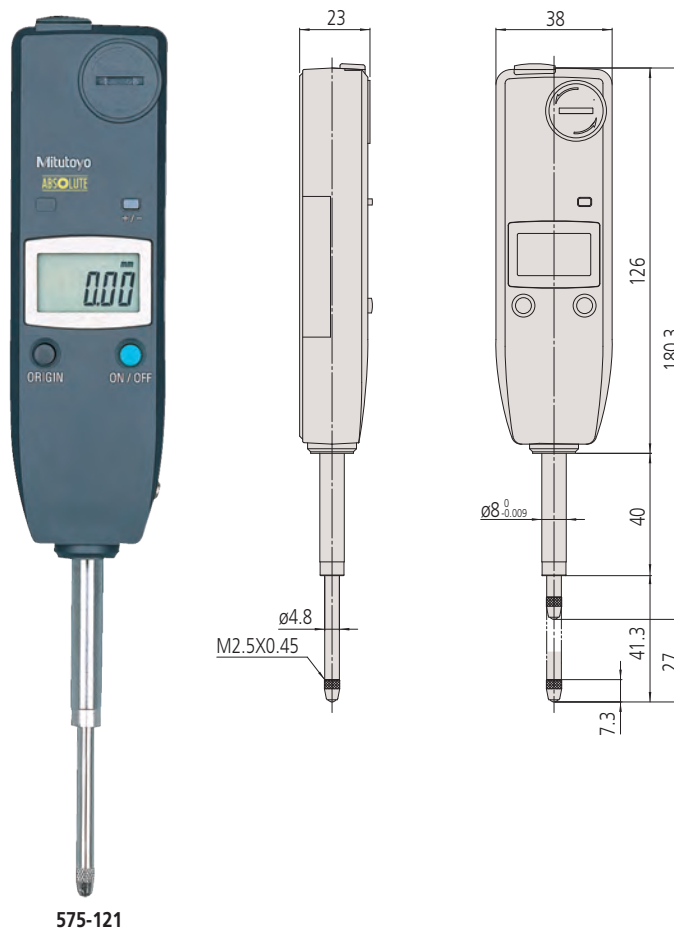
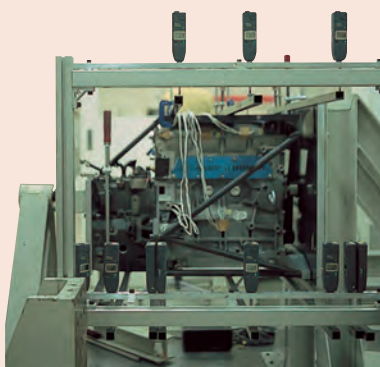
540774: moving measuring range max. 12mm

For USB Input Tool Direct cable:

a footswitch (no. 937179T), a USB- footswitch adapter (no. 06ADV384) and USB-ITPAK Software (no. 06ADV386) are required.

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50
901312	Standard contact point	11.00



Metric

No.	Range [mm]	Accuracy	Measuring force [N]	Mass [g]	Price [€]
575-121	25.4	0,02 mm	≤ 1,8	140	196.00

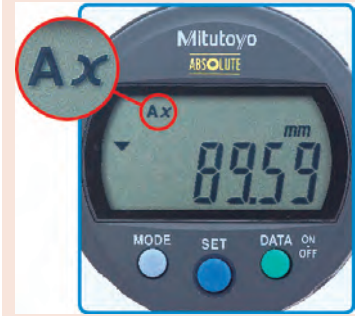


ABSOLUTE Digimatic Indicator ID-C

Series 543

This is a multifunction indicator that is reliable and easy to use.
The ABSOLUTE Digimatic Indicator ID-C offers you the following benefits:

- The ABSOLUTE sensor means you don't have to carry out origin setting every time you power it on, saving you time and hassle.
- GO/±NG judgement is performed by setting the upper and lower tolerances.
- You can make simple calculations by a user-definable factor using the formula Ax (x is spindle displacement).
- Large character height of 11mm provides good readability.
- Display 330° rotatable.
- A function lock protects the display against unauthorised use.



Calculation : $f(x) = Ax$

Mounting the ID-C on a measuring fixture and setting the multiplying factor "A" (between 0,0001 and 99,9999) allows direct measurement without using a conversion table and improves measurement efficiency



330° rotary display

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



Function locking

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



Large LCD

The large LCD incorporates 11 mm characters making measurement values much easier to read



Tolerance function

2 kinds of tolerance visualisation



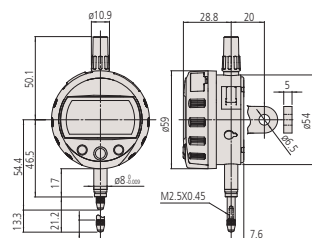
12,7 mm range model



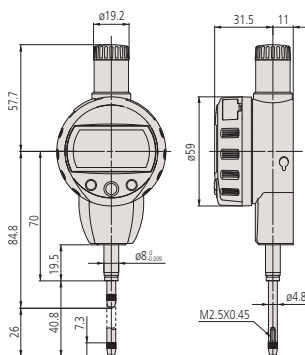
25,4 mm range model



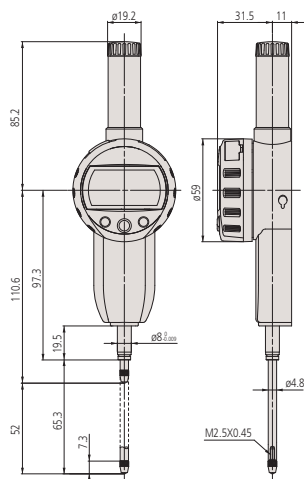
50,8 mm range model



12,7 mm range models



25,4 mm range models



50,8 mm range models

ABSOLUTE Digimatic Indicator ID-C

Series 543

Metric

No.	No. Lug back plate	Range [mm]	Digital step	Accuracy	Remarks	Measuring force [N]	Mass [g]	Price [€]
543-390B	543-390	12.7	0,001/0,01 mm	0,003 mm		≤ 1,5	170	330.00
543-394B	543-394	12.7	0,001/0,01 mm	0,003 mm	Low force	0,4-0,7	170	410.00
543-400B	543-400	12.7	0,01 mm	0,02 mm		≤ 0,9	170	249.00
543-404B	543-404	12.7	0,01 mm	0,02 mm	Low force	0,2-0,5	170	304.00
543-470B		25.4	0,001/0,01 mm	0,003 mm		≤ 1,8	190	400.00
543-474B		25.4	0,01 mm	0,02 mm		≤ 1,8	190	348.00
543-490B		50.8	0,001/0,01 mm	0,005 mm		≤ 2,3	260	597.00
543-494B		50.8	0,01 mm	0,04 mm		≤ 2,3	260	541.00

No. with "B": Flat back plate

Specification low measuring force models : see below



Setting measuring force on low measuring force models

•543-404/404B

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

•543-394/394B

Spindle orientation	Spring	Weight (approximately 0.1N)	Maximum measuring force
Pointing vertically downward	Yes	Yes	0.7N
	Yes	No	0.6N
	No	Yes	0.4N
	No	No	Not guaranteed
Horizontal	Not guaranteed		

Functions	Series 543
ZERO/ABS	●
GO/±NG judgement	●
Digimatic data output	●
ON/OFF	●
DATA/HOLD	●
Lock function	●
PRESET	●
Counting direction switchable	●
Calculation function	●
Selectable resolution*	●

Specifications

Accuracy	Refer to the list of specifications (excluding quantizing error)
Scale	Capacitance type, ABSOLUTE linear encoder
Stem Ø	8 mm (ISO/JIS type)
Max. response speed	Unlimited
Contact point	Carbide ball, thread M 2.5 x 0.45 mm (ISO/JIS type)
Alarm	Low voltage, counting value composition error, overflow error, tolerance limit setting error
Power supply	1 battery SR-44
Battery life	approx. 7.000 hours
Display	LCD character height 11 mm Rotatable 330°

Optional accessories

No.	Description	Price €
540774	Spindle lifting cable	26.00
21EZA198	Spindle lifting lever (12,7 model)	8.00
21EZA105	Spindle lifting knob (12,7 models)	26.00
21EZA200	Spindle lifting knob (50 models)	68.50
02ACA571	Auxiliary spindle spring (25,4 models)	9.50
02ACA773	Auxiliary spindle spring (50 models)	10.00

Digimatic Signal Cables

905338	Digimatic cable (1 m)	28.00
905409	Digimatic cable (2 m)	34.00
02AZD790F	Connecting cable U-Wave	85.00
06ADV380F	USB Input Tool Direct cable (2 m)	100.00

02ACA571/02ACA773 : required when orienting the indicator upside down
 21EZA105 : not available for low measuring force models
 540774 : moving measuring range max. 28 mm

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50
901312	Standard contact point	11.00

*0,001 mm type

ABSOLUTE Digimatic Indicator Calculator ID-C

Series 543

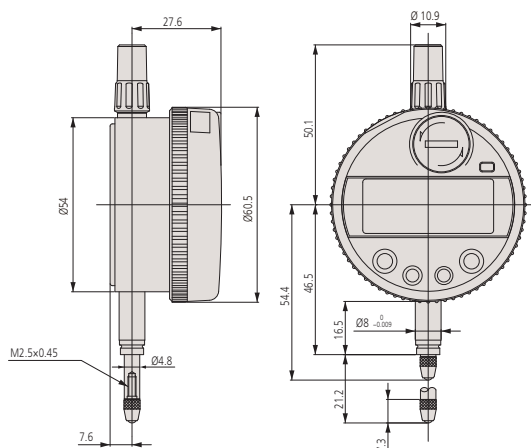
This Digimatic indicator calculator allows you to calculate the calculation function $Ax + B + Cx - 1$.

It offers you the following benefits:

- Multi-functional indicator with integrated calculation formula is useful in a variety of applications.
- Coefficients A, B and C are freely definable. X = displacement of plunger.
- The ABSOLUTE sensor means you don't have to carry out origin setting every time you power it on, saving you time and hassle.



543-285B



Specifications

The resolution can be selected from 12 classes:

Class	mm	Class	mm	Class	mm
1	0,0002	5	0,005	9	0,1
2	0,0005	6	0,01	10	0,2
3	0,001	7	0,02	11	0,5
4	0,002	8	0,05	12	1

Metric

No.	Range [mm]	Accuracy	Measuring force [N]	Mass [g]	Price [€]
543-285B	12.7	0,003 mm	≤ 1,5	160	505.00
543-480B	25.4	0,003 mm	≤ 1,8	190	582.00
543-485B	50.8	0,006 mm	≤ 2,3	230	700.00

Measuring bridges

No.	R	Price [€]
21FAJ394	25 - 70 mm	500.00
011394	50 - 100 mm	705.00
011395	100 - 200 mm	1,080.00
21FAJ395	outside : 45-140 mm / inside : 65-100 mm	567.00

The accuracy of a radial measurement using the measuring bridges depends on the size of the radius to be measured and the form error of the workpiece.



Functions	Series 543
ZERO/ABS	●
GO/±NG judgement	●
Digimatic data output	●
ON/OFF	●
DATA/HOLD	●
Max/Min value reading	●
Lock function	●
PRESET	●
Selectable resolution	●
Calculation function	●

Specifications

Accuracy	Refer to the list of specifications (excluding quantizing error)
Scale	Capacitance type, ABSOLUTE linear encoder
Max/Min function	At a speed of $\geq 10 \mu\text{m/sec}$, the peak value may not always be correctly displayed
Stem Ø	8 mm (ISO/JIS type)
Max. response speed	Unlimited
Contact point	Carbide ball, thread M 2.5 x 0.45 mm (ISO/JIS type)
Alarm	Low voltage, counting value composition error, overflow error, tolerance limit setting error
Power supply	1 battery SR-44
Battery life	approx. 12 months (8h/day)
Display	LCD, character height 8,5 mm Rotatable 330°

Optional accessories

No.	Description	Price €
540774	Spindle lifting cable	26.00
902011	Spindle lifting lever	6.00

Digimatic Signal Cables

905338	Digimatic cable (1 m)	28.00
905409	Digimatic cable (2 m)	34.00
02AZD790F	Connecting cable U-Wave	85.00
06ADV380F	USB Input Tool Direct cable (2 m)	100.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50
901312	Standard contact point	11.00



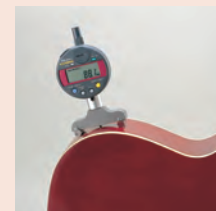
21FAJ394



011394



011395



21FAJ395

ABSOLUTE Digimatic Indicator Signal ID-C



Functions	Series 543
Signal output: NPN open-collector, (+NG, OK, -NG)	●
Signal input: No-voltage input, (PRESET_RECALL/ZERO, HOLD_RESET)	●
ZERO/ABS	●
GO/±NG judgement	●
ON/OFF	●
Max/Min/Runout value	●
Tolerance assessment via LED	●
PRESET	●
Counting direction switchable	●
Tolerance display	●

Specifications

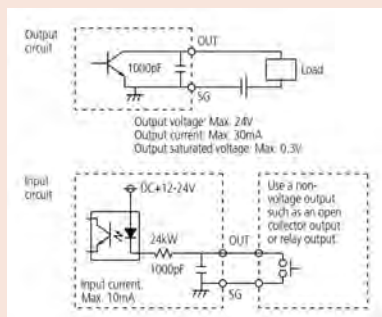
Accuracy	Refer to the list of specifications (excluding quantizing error)
Measuring force	≤ 2,0 N
Scale	Capacitance type, ABSOLUTE linear encoder
Max/Min function	At a speed of ≥ 50 µm/sec, the peak value may not always be correctly displayed
Max. response speed	Unlimited
Stem Ø	8 mm (ISO/JIS type)
Contact point	Carbide ball, thread M 2.5 x 0.45 mm (ISO/JIS type) or
Alarm	Counting value composition error, overflow error, tolerance limit setting error
Power supply	DC 12 - 24V±10%
Display	LCD, character height 8,5 mm
Delivered	With signal cable 4 m. One end is fixed to the main unit. no connector is supplied for the other end.

Optional accessories

No.	Description	Price €
540774	Spindle lifting cable	26.00
902011	Spindle lifting lever	6.00
238774	Silicon rubber boot	10.50

Consumable spares

No.	Description	Price €
02ACA376°	Rubber boot (NBR rubber)	
901312	Standard contact point	11.00

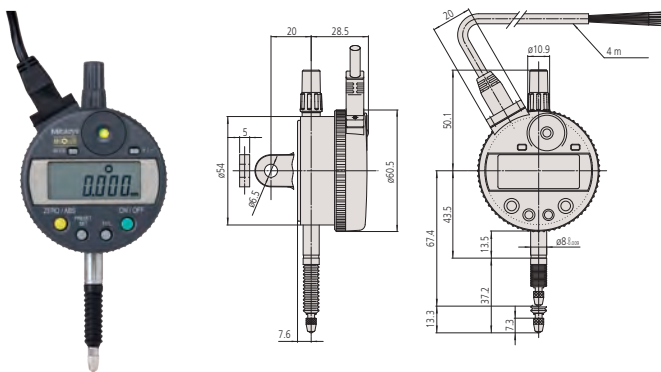


Series 543

This indicator signal has signal input „no voltage input (remote control)“ and signal output „NPN open collector“.

It offers you the following benefits:

- With the MAX/MIN value holding function, this indicator can output the signal of the GO/±NG judgement result against the peak value set.
- You can output the judgement signal to an external device, such as a sequencer, through the NPN open-collector connection.
- External power of DC 12-24V
- It comes with a 4m cable



543-280B

Metric

No.	No. Lug back plate	Range [mm]	Digital step	Accuracy	Mass [g]	Price [€]
543-280B	543-280	12.7	0,001 mm	0,003 mm	335	685.00

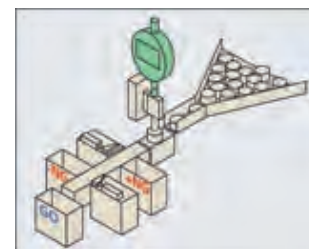


Wire colour	Signal name	I/O	Description
Black	- V (GND)	-	Connect to the minus (-) terminal
Red	+ V (plus power voltage)	I	Supply a power voltage between 12 VDC and 24 VDC
Orange	- NG	O	Tolerance judgement result output terminals (NPN open-collector output) : Only the terminal to a judgement result is set to the low level. (See the output circuit diagram)
Green	OK	O	
Brown	+ NG	O	
Yellow	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	HOLD_RESET	I	
Shield	FG (Frame Ground)	-	Connect to the ground.

I/O Specifications

Wire	-NG	OK	+NG	Composition error
Orange (-NG)	Low	High	High	High
Green (OK)	High	Low	High	High
Brown (+NG)	High	High	Low	High
LED	Red	Green	Red	Red (blinking)
LCD	<	O	>	"x.xx" indication

Output pattern



ABSOLUTE Digimatic Indicator Max/Min/RANGE ID-C

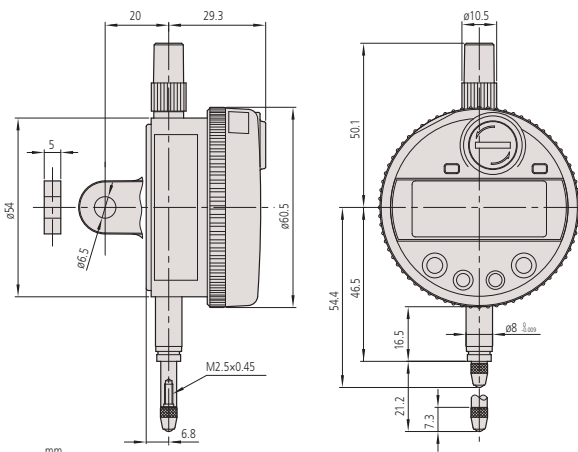
Series 543

This indicator is the max/min value holding function model, and offers you the following benefits:

- The maximum, minimum or range (runout value) can be displayed during measurement.
- High sampling rate of 50 times/s.
- The ABSOLUTE sensor means you don't have to carry out origin setting every time you power it on, saving you time and hassle.

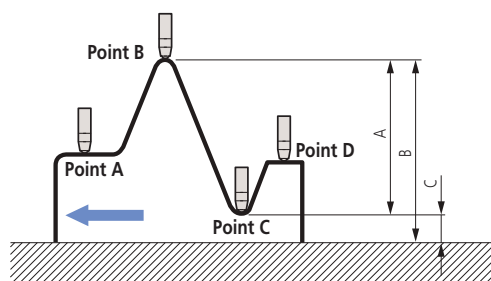


543-260B



Metric

No.	No. Lug back plate	Range [mm]	Digital step	Accuracy	Mass [g]	Price [€]
543-260B	543-260	12.7	0,001 mm	0,003 mm	160	448.00



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 measured with a simple key sequence.

Functions	Series 543
ZERO/ABS	●
GO/±NG judgement	●
Digimatic data output	●
ON/OFF	●
Max/Min/Runout value	●
PRESET	●
Counting direction switchable	●

Specifications

Accuracy	Refer to the list of specifications (excluding quantizing error)
Measuring force	≤ 1,5 N
Scale	Capacitance ABSOLUTE linear encoder
Max/Min function	At a speed of ≥ 50 µm/sec, the peak value may not always be correctly displayed
Stem Ø	8 mm (ISO/JIS type)
Max. response speed	Unlimited
Contact point	Carbide ball, thread M 2.5 x 0.45 mm (ISO/JIS type) or
Alarm	Low voltage, counting value composition error, overflow error, tolerance limit setting error
Power supply	2 batteries SR-44
Battery life	approx. 800 - 1.300 hours
Display	LCD, character height: 8,5 mm Rotatable 330°

Optional accessories

No.	Description	Price €
902011	Spindle lifting lever	6.00
540774	Spindle lifting cable	26.00
Digimatic Signal Cables		
905338	Digimatic cable (1 m)	28.00
905409	Digimatic cable (2 m)	34.00
02AZD790F	Connecting cable U-Wave	85.00
06ADV380F	USB Input Tool Direct cable (2 m)	100.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50
901312	Standard contact point	11.00

ABSOLUTE Digimatic Indicator ID-N

Series 543

ABSOLUTE®



This is a slim back-plunger model that is highly resilient and robust. The ABSOLUTE Digimatic Indicator ID-N offers you the following benefits:

- Its slim body design is ideal for multi-point measurements.
- The ABSOLUTE sensor means you don't have to carry out origin setting every time you power it on, saving you time and hassle.
- It has excellent resistance against water and dust (IP66 protection level) allowing you to use it in machining situations that include splashing coolant fluid.
- Switchable display orientation gives you more mounting options.
- You can perform GO/±NG judgement by setting the upper and lower tolerances.



543-575

Flexible installation options switchable display orientation (overhead use)



Width of 35 mm instead of 60 as standard Digimatic indicators

Functions	Series 543
GO/±NG judgement	●
Digimatic data output	●
ON/OFF	●
DATA/HOLD	●
Signal input	●
PRESET or external ZERO	●
PRESET	●
Counting direction switchable	●
Selectable resolution*	●

Specifications

Accuracy	Refer to the list of specifications (excluding quantizing error)
Scale	Capacitance type, ABSOLUTE linear encoder
Stem Ø	8 mm (ISO/JIS type)
Max. response speed	Unlimited
Contact point	Carbide ball, thread M 2.5 x 0.45 mm (ISO/JIS type) or
Alarm	Low voltage, counting value composition error, overflow error, tolerance limit setting error
Power supply	1 battery SR-44
Battery life	approx. 7.000 hours
Display	LCD, character height: 6,2 mm

Optional accessories

No.	Description	Price €
238774	Silicon rubber boot	10.50
Digimatic Signal Cables		
21EAA194	Digimatic cable 1 m	51.50
21EAA190	Digimatic cable 2 m	62.00
02AZD790G	Connecting cable U-Wave	90.00
06ADV380G	USB Input tool Direct cable (2 m)	100.00
21EAA210	Digimatic cable for external preset/zero (1 m)	149.00
21EAA211	Digimatic cable for external preset/zero (2 m)	170.00

Consumable spares

No.	Description	Price €
901312	Standard contact point	11.00
938882	Battery SR44	5.50
02ACA376°	Rubber boot (NBR rubber)	

Metric

No.	Range [mm]	Digital step	Accuracy	Measuring force [N]	Mass [g]	Price [€]
543-570	12.7	0,01 mm	0,02 mm	2,5	130	219.00
543-575	12.7	0,01 mm/0,001 mm	0,003/0,01 mm	2,5	130	300.00

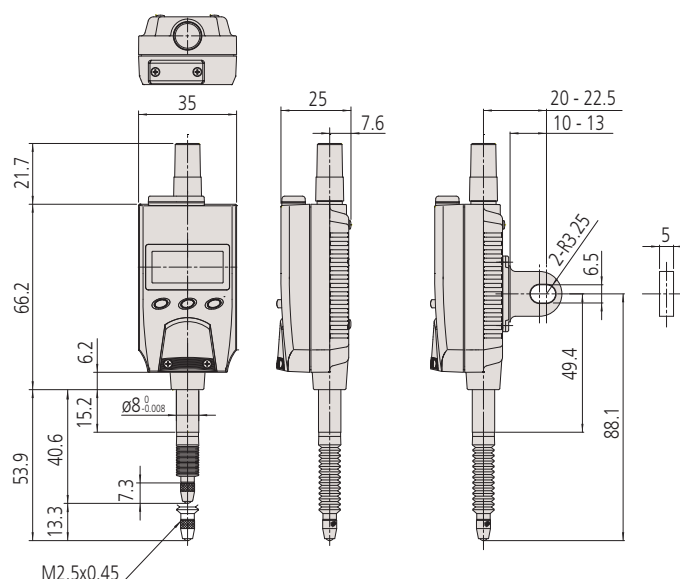


21EAA194



21EAA210

* 0.001 mm type



ABSOLUTE Digimatic Indicator ID-B

Series 543

This is a slim back-plunger model that is highly resilient and robust. The ABSOLUTE Digimatic Indicator ID-B offers you the following features:

- It is a back plunger type, with the display viewed from above.
- Its slim body design is ideal for multi-point measurements.
- The ABSOLUTE sensor means you don't have to carry out origin setting every time you power it on, saving you time and hassle.
- It has excellent resistance against water and dust (IP66 protection level) allowing you to use it in machining situations that include splashing coolant fluid.
- Switchable display orientation gives you more mounting options.
- You can perform GO/±NG judgement by setting the upper and lower tolerances.



543-580

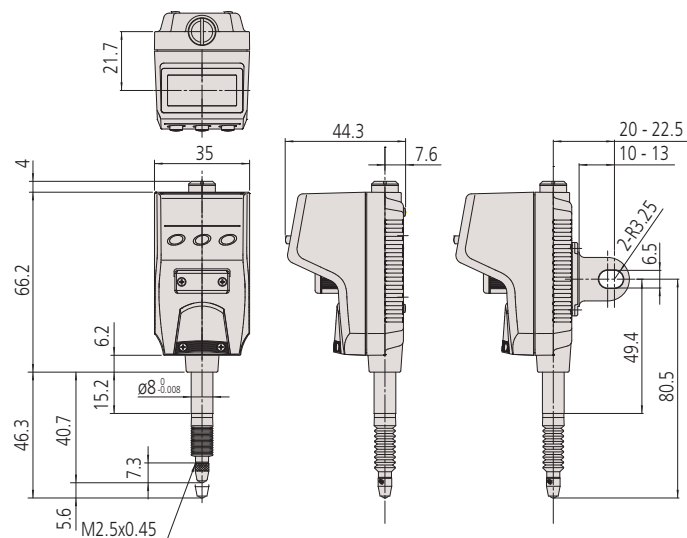
Flexible installation options with switchable display orientation (overhead use)



IP66

Metric

No.	Range [mm]	Digital step	Accuracy	Measuring force [N]	Mass [g]	Price [€]
543-580	5	0,01 mm	0,02 mm	≤ 2,0	130	243.00
543-585	5	0,001 mm/0,01 mm	0,01/0,003 mm	≤ 2,0	130	324.00



Functions	Series 543
GO/±NG judgement	●
Digimatic data output	●
ON/OFF	●
DATA/HOLD	●
Signal input	●
PRESET or external ZERO	●
PRESET	●
Counting direction switchable	●
Selectable resolution*	●

Specifications

Accuracy	Refer to the list of specifications (excluding quantizing error)
Scale	Capacitance type, ABSOLUTE linear encoder
Stem Ø	8 mm (ISO/JIS type)
Max. response speed	Unlimited
Contact point	Carbide ball, thread M 2.5 x 0.45 mm (ISO/JIS type)
Alarm	Low voltage, counting value composition error, overflow error, tolerance limit setting error
Power supply	1 battery SR-44
Battery life	approx. 7.000 hours
Display	LCD, character height: 6,2 mm

Optional accessories

No.	Description	Price €
21EAA212	Silicon rubber boot	10.00
Digimatic Signal Cables		
21EAA194	Digimatic cable 1 m	51.50
21EAA190	Digimatic cable 2 m	62.00
02AZD790G	Connecting cable U-Wave	90.00
06ADV380G	USB Input tool Direct cable (2 m)	100.00
21EAA210	Digimatic cable for external preset/zero (1 m)	149.00
21EAA211	Digimatic cable for external preset/zero (2 m)	170.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50
901312	Standard contact point	11.00
125317	Rubber boot (NBR Rubber)	6.00



21EAA194



21EAA210

*0.001 mm type

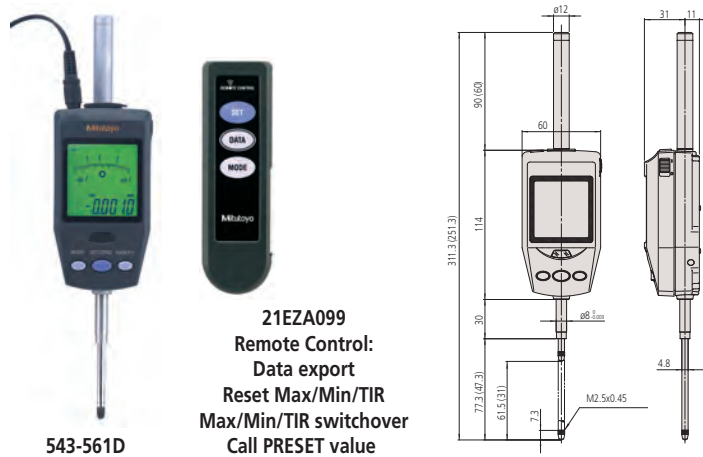
Digimatic Indicator ID-H

Series 543

This is a superior multi-function indicator that gives you high accuracy and high resolution of 0.0005mm.

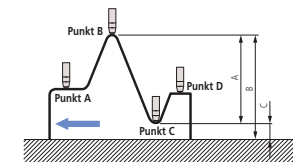
The Digimatic Indicator ID-H offers you the following benefits:

- 2-colour LCD backlight (green and red) provides you with visual GO/±NG tolerance judgement and analogue bar-graph display.
- You can display the maximum, minimum or range (runout value) during measurement.
- Lifting mechanism over 30mm with cable release (optional).
- You can carry out zero-setting and presetting with the optional remote controller, without having to touch the indicator.
- The remote control system can be implemented in advance with the built-in RS-232 interface and a PC.
- External power supply via AC-Adapter.



Metric

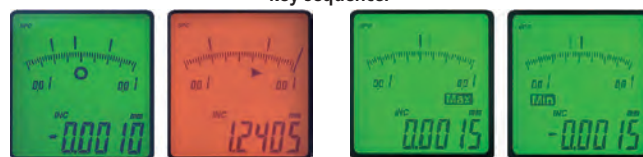
No.	Range [mm]	Accuracy	Measuring force [N]	Mass [g]	Price [€]
543-561D	30.4	0,0015 mm	≤ 2,0	290	608.00
543-563D	60.9	0,0025 mm	≤ 2,5	305	659.00



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.



The display switches from green to red backlight if the upper or lower tolerance limit is exceeded

Max/Min/TIR value measurement



Digimatic presetter (optional) : External keyboard for entering tolerance data or preselecting values

Functions	Series 543
ZERO	●
GO/±NG judgement	●
Digimatic data output	●
Digimatic data input	●
ON/OFF	●
DATA/HOLD	●
RS-232C data output*	●
Analogue measuring range switchable	●
Max/Min/Runout value	●
RS-232C data input*	●
Lock function	●
PRESET	●
Counting direction switchable	●
Selectable resolution	●

Specifications

Accuracy	Refer to the list of specifications (excluding quantizing error)
Scale	Photoelectric linear encoder
Stem Ø	8 mm (ISO/JIS type)
Max. response speed	1000 mm/s
Contact point	Carbide ball, thread M 2.5 x 0.45 mm (ISO/JIS type)
Alarm	Counting value composition error, overflow error, tolerance setting error
Power supply	AC adapter 6 V DC, 2A
Digital step	0,001 mm/0,0005 mm
Display	LCD, character height: 9,5 mm

Standard accessories

No.	Description
06AEG180D	AC Adapter 6V DC, 2A
137693	Lifting handle

Optional accessories

No.	Description	Price €
21EZA099	Remote control	74.50
540774	Spindle lifting cable	26.00
21EZA101	Spindle lifting knob	26.00
543-004D	Digimatic Presetter	283.00

Digimatic Signal Cables

936937	Digimatic cable (1 m)	43.50
965014	Digimatic cable (2 m)	57.50
02AZD790D	Connecting cable U-Wave	85.00
06ADV380D	USB Input Tool Direct cable (2 m)	100.00
21EAA130	RS-232C cable (1 m)	170.00
21EAA131	RS-232C cable (2 m)	191.00

540774 : moving measuring range max. 30 mm

Consumable spares

No.	Description	Price €
011511	Battery for remote control (4 x LR03)	10.00
901312	Standard contact point	11.00

* RS-232 Input/Output

Connect this instrument with an external device such as a PC using the RS-232 dedicated cable (optional accessory). With this connection it is possible to perform initial setup of the instrument, control of switching a measurement mode, etc., and processing such as measurement data transfer.

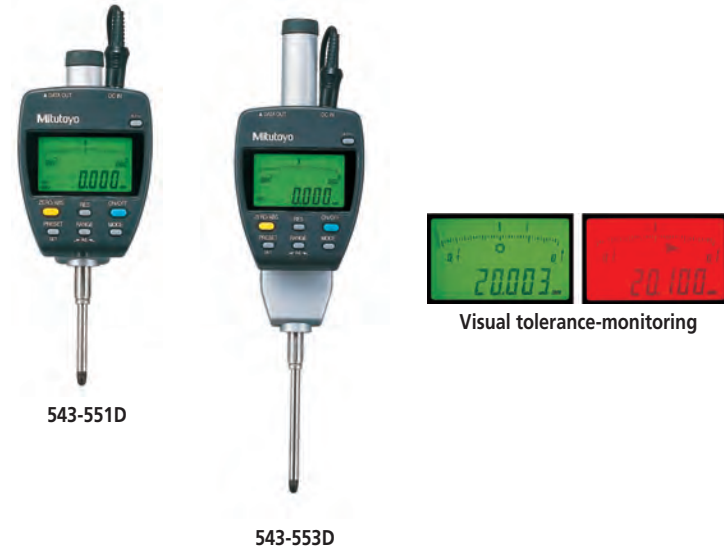
ABSOLUTE Digimatic Indicator ID-F

Series 543 - Superior multifunction indicator

This is a superior multifunction indicator.

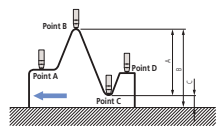
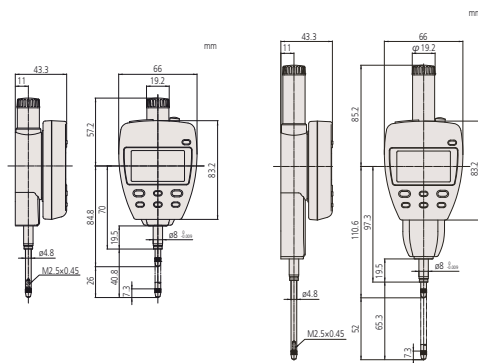
The ABSOLUTE Digimatic Indicator ID-F offers you the following benefits:

- 2-colour LCD backlight (green and red) provides you with visual GO/±NG tolerance judgement and analogue bar-graph display.
- You can display the maximum, minimum or range (runout value) during measurement.
- External power supply via AC-Adapter.



Metric

No.	Range [mm]	Accuracy	Measuring force [N]	Mass [g]	Price [€]
543-551D	25	0,003 mm	≤ 1,8	240	582.00
543-557D	50	0,003 mm	≤ 2,3	330	778.00
543-553D	50	0,006 mm	≤ 2,3	330	633.00



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 measured with a simple key sequence.

ABSOLUTE®

Functions	Series 543 - Superior multifunction indicator
ZERO/ABS	●
GO/±NG judgement	●
Digimatic data output	●
Digimatic data input	●
ON/OFF	●
Analogue measuring range switchable	●
Max/Min/Runout value	●
Lock function	●
PRESET	●
Counting direction switchable	●
Selectable resolution	●

Specifications

Accuracy	Refer to the list of specifications (excluding quantizing error)
Scale	Capacitance type, ABSOLUTE linear encoder
Stem Ø	8 mm (ISO/JIS type)
Max. response speed	Unlimited
Contact point	Carbide ball, thread M 2.5 x 0.45 mm (ISO/JIS type)
Alarm	Counting value composition error, overflow error, tolerance limit setting error
Power supply	AC adapter 9V DC, 500mA
Digital step	0,001 mm/0,01 mm
Display	LCD character height 8,5 mm

Standard accessories

No.	Description
06AEG302D	AC Adapter 9V, 500mA
137693	Lifting handle

Optional accessories

No.	Description	Price €
540774	Spindle lifting cable	26.00
02ACA571	Auxiliary spindle spring (25,4 models)	9.50
02ACA773	Auxiliary spindle spring (50 models)	10.00
543-004-1	Digimatic Presetter	283.00

Digimatic Signal Cables

936937	Digimatic cable (1 m)	43.50
965014	Digimatic cable (2 m)	57.50
02AZD790D	Connecting cable U-Wave	85.00
06ADV380D	USB Input Tool Direct cable (2 m)	100.00

540774 : moving measuring range max.12mm

02ACA571/02ACA773 : required when orienting the indicator upside down

Consumable spares

No.	Description	Price €
901312	Standard contact point	11.00



Digimatic presetter (optional) :

External keyboard for entering tolerance data or preselecting values

Dial Indicator Series 1

Series 1

This is a compact, small diameter metric indicator that offers you the following benefits:

- It is ideal for use in applications where space is limited.
- Bezel \varnothing 31mm, \varnothing 36mm, \varnothing 40mm



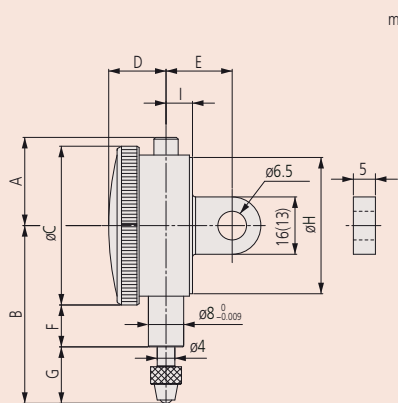
Series 1					
	1003B	1911B	1913B-10	1013SB-10	1109SB-10
Functions					
Balanced dial	●	●	●	●	●
Continuous dial					●
Shockproof				●	
Jeweled bearing		●	●	●	

Consumable spares

No.	Description	Price €
21AZA319	Standard contact point	3.00
901312	Standard contact point	11.00

901312 : for 1109S-10 / 1013S-10 / 1124S
21AZA319 : for 1913-10 / 1911 / 1003

For accessories and contact points, see end of dial indicators section



1913S-10

1003

1109S-10

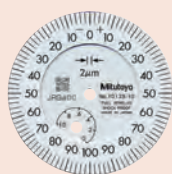
Metric

No.	No. Lug back plate	Range [mm]	Range per rev.	Graduation	Scale	Mass lug/plain [g]	Price [€]
1913B-10	1913-10	0.5	0,2 mm	0.002 mm	0-100-0	50/46	126.00
1109SB-10	1109S-10	1	0,2 mm	0.001 mm	0-100-0	95/75	139.00
1013SB-10	1013S-10	1	0,2 mm	0.002 mm	0-100-0	95/75	141.00
1911B	1911	2.5	1 mm	0.01 mm	0-50-0	50/46	113.00
1124SB	1124S	3.5	0,5 mm	0.005 mm	0-50 (50-0)	90/70	92.50
1003B	1003	4	1 mm	0.01 mm	0-50-0	51/48	84.00

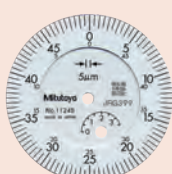
No.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]	Measuring force [N]
1913B-10	15.5	39.5	31	12.5	19	15	9	30	7	0.3 - 1.8
1109SB-10	32.5	49	40	14.5	20	13.8	15.2	38	6.6	0.4 - 1.5
1013SB-10	32.5	49	40	14.5	20	13.8	15.2	38	6.6	0.4 - 1.5
1911B	15.5	42	31	12.5	19	15	11.5	30	7	0.4 - 1.8
1124SB	32.5	46	40	14.5	20	13.8	12.2	38	6.6	0.4 - 1.4
1003B	20	40.3	36	13	15	9.5	12.8	32	6	0.3 - 1.4



1911B



1013S-10



1124S

No.	DIN 878 (1983)			EN ISO 463					
	fe μm	fges μm	fu μm	Errors of indication over a range of				Repeatability μm	Hysteresis error μm
				Any 1/10 revolution μm	Any 1/2 revolution μm	Any 1 revolution μm	Range μm		
1913B-10	5.0	7.0	2.0	2.5	4.5	5.0	5.5	1.0	2.5
1109SB-10	4.0	6.0	2.0	2.5	4.0	4.5	5.5	1.0	2.0
1013SB-10	8.0	4.0	2.0	2.5	4.0	4.5	5.5	1.0	2.0
1911B	10.0	13.0	3.0	6.5	10.0	11.0	13	3.0	3.5
1124SB	12.0	14.0	3.0	5.0	8.0	9.0	10	3.0	3.0
1003B	12.0	13.0	3.0	6.0	9.0	10.0	14	3.0	3.5

Dial Indicator Series 1

Series 1

This is a compact, small diameter metric indicator that offers you the following benefits:

- It is ideal for use in applications where space is limited.
- Bezel ø 40mm



Metric

No.	No. Lug back plate	Range [mm]	Range per rev.	Graduation	Scale	Mass lug/plain [g]	Price [€]
1040SB	1040S	3.5	0,5 mm	0.01 mm	0-50 (50-0)	90/70	79.50
1041SB	1041S	3.5	0,5 mm	0.01 mm	0-25-0	90/70	83.00
1044SB	1044S	5	1 mm	0.01 mm	0-100 (100-0)	90/70	50.00
1044SB-15	1044S-15	5	1 mm	0.01 mm	0-100 (100-0)	90/70	78.00
1044SB-60	1044S-60	5	1 mm	0.01 mm	0-100 (100-0)	90/70	97.00
1045SB	1045S	5	1 mm	0.01 mm	0-50-0	90/70	65.00

* Low measuring force model. Use in vertical position only (contact point downward)

No.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]	Measuring force [N]
1040SB	32.5	46	40	14.5	20	13.8	12.2	38	6.6	0.4 - 1.4
1041SB	32.5	46	40	14.5	20	13.8	12.2	38	6.6	0.4 - 1.4
1044SB	32.5	47.5	40	14.5	20	13.8	13.7	38	6.6	0.4 - 1.4
1044SB-15	32.5	47.5	40	14.5	20	13.8	13.7	38	6.6	0.1 - 0.4
1044SB-60	32.5	57	40	14.5	20	12.2	24.8	38	6.6	0.4 - 2.0
1045SB	32.5	47.5	40	14.5	20	13.8	13.7	38	6.6	0.4 - 1.4

No.	DIN 878 (1983)			EN ISO 463					
	fe µm	fges µm	fu µm	Errors of indication over a range of				Repeatability µm	Hysteresis error µm
				Any 1/10 revolution µm	Any 1/2 revolution µm	Any 1 revolution µm	Range µm		
1040SB	12.0	14.0	3.0	5.0	8.0	9.0	12	3.0	3.0
1041SB	12.0	14.0	3.0	5.0	8.0	9.0	10	3.0	3.0
1044SB	12.0	14.0	3.0	5.0	8.0	9.0	12	3.0	3.0
1044SB-15	12.0	14.0	3.0	5.0	9.0	10.0	12	3.0	3.0
1044SB-60	12.0	14.0	3.0	5.0	9.0	10.0	12	3.0	3.0
1045SB	12.0	14.0	3.0	5.0	9.0	10.0	12	3.0	3.0



Series 1					
	1040SB	1044SB	1044SB-60	1044SB-15	1041SB
Functions					
Balanced dial					
Continuous dial					
Jeweled bearing					
IP63					
Double scale spacing					

Consumable spares

No.	Description	Price €
901312	Standard contact point	11.00
136838	Rubber boot (NBR rubber)	7.00
902119	Standard contact point	15.50

136838 and 902119 : for 1044S-60 (IP model)

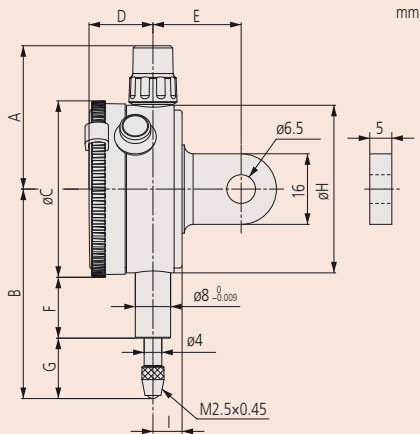
For accessories and contact points, see end of dial indicators section



1044S-60
IP63



1044S-15

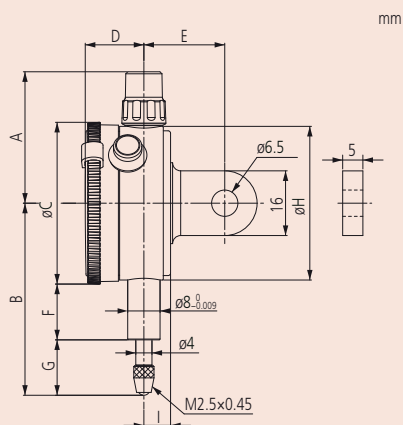


Series 1			
	1900SB-72	1929SB	1929SB-62
Functions			
Balanced dial	●	●	●
One revolution	●	●	●
Shockproof	●	●	●
Jeweled bearing	●		
Dustproof IP52	●		●

Consumable spares

No.	Description	Price €
901312	Standard contact point	11.00

For accessories and contact points, see end of dial indicators section.



One Revolution Dial Indicator Series 1

Series 1

This is a compact model of indicator that offers you the following benefits:

- By limiting the pointer rotation to one revolution, reading errors that can occur with other dial indicators are eliminated.
- Bezel ø 40mm.



1929S



1929S-62



1900S-72

Metric

No.	No. Lug back plate	Range [mm]	Range per rev.	Graduation	Scale	Mass lug/plain [g]	Price [€]
1929SB	1929S	1 (plunger stroke: 3.5)	1,4 mm	0.01 mm	50-0-50	90/70	88.00
1929SB-62	1929S-62	1 (plunger stroke: 3.5)	1,4 mm	0.01 mm	50-0-50	90/70	112.00
1900SB-72	1900S-72	0,1 (plunger stroke: 2)	0,14 mm	0.001 mm	50-0-50	95/75	157.00

No.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]	Measuring force [N]
1929SB	32.5	47.5	40	14.5	20	13.8	13.7	38	6.6	0.4 - 1,4
1929SB-62	32.5	47.5	40	14.5	20	13.8	13.7	38	6.6	0.4 - 1,4
1900SB-72	32.5	53.5	40	14.5	20	16.8	16.7	38	6.6	0.4 - 1.4

No.	DIN 878 (1983)			EN ISO 463					
	fe µm	fges µm	fu µm	Errors of indication over a range of				Repeatability µm	Hysteresis error µm
				Any 1/10 revolution µm	Any 1/2 revolution µm	Any 1 revolution µm	Range µm		
1929SB	10.0	13.0	3.0	5.0			7	3.0	3.0
1929SB-62	10.0	13.0	3.0	5.0			7	3.0	3.0
1900SB-72	3.0	5.0	2.0	2.0			4	1.0	2.0



Dial Indicator Series 2

Series 2

This is a standard type metric dial indicator with 0.01mm scale graduation, with bezel Ø 57mm, 5mm/10mm range



2044S(B)-60



2044S



2044S-60



2045S

Metric

No.	No. Lug back plate	Range [mm]	Range per rev.	Graduation	Scale	Mass lug/plain [g]	Price [€]
2044SB	2044S	5	1 mm	0.01 mm	0-100 (100-0)	145/136	58.00
2044SB-09	2044S-09	5	1 mm	0.01 mm	0-100 (100-0)	147/138	61.00
2044SB-60	2044S-60	5	1 mm	0.01 mm	0-100 (100-0)	147/138	100.00
2045SB	2045S	5	1 mm	0.01 mm	0-50-0	145/136	62.50

No.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]	Measuring force [N]
2044SB	48.8	65.2	57	17.7	20	16.9	19.8	52	7.6	0.4 - 1.4
2044SB-09	48.8	65.2	57	17.7	20	16.9	19.8	52	7.6	0.4 - 1.4
2044SB-60	48.8	70	57	17.7	20	12.3	29.2	52	7.6	0.4 - 2.5
2045SB	48.8	65.2	57	17.7	20	16.9	19.8	52	7.6	0.4 - 1.4

No.	DIN 878 (1983)			EN ISO 463					
	fe µm	fges µm	fu µm	Errors of indication over a range of				Repeatability µm	Hysteresis error µm
				Any 1/10 revolution µm	Any 1/2 revolution µm	Any 1 revolution µm	Range µm		
2044SB	10.0	13.0	3.0	5.0	9.0	10.0	12	3.0	3.0
2044SB-09	10.0	13.0	3.0	5.0	9.0	10.0	12	3.0	3.0
2044SB-60	10.0	13.0	3.0	5.0	9.0	10.0	12	3.0	3.0
2045SB	10.0	13.0	3.0	5.0	9.0	10.0	12	3.0	3.0

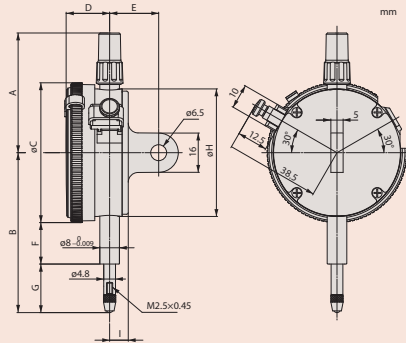
Series 2				
	2044SB	2044SB-60	2044SB-09	2045SB
Functions				
Balanced dial				
Continuous dial				
Shockproof				
IP64				

Consumable spares

No.	Description	Price €
901312	Standard contact point	11.00
125317	Rubber boot (NBR Rubber)	6.00
902119	Standard contact point	15.50

902119 and 125317 : for 2044S-60 (IP model)

For accessories and contact points, see end of dial indicators section



Dial Indicator Series 2

Series 2

This is a standard type metric dial indicator with 0.001mm scale graduation, with bezel Ø 57mm, 1mm range



IP64
2046S(B)-60

Series 2					
	2046SB	2046SB-60	2310SB-10	2046SB-09	2902SB
Functions					
Balanced dial					
Continuous dial					
Reverse reading					
Shockproof					
Jeweled bearing					
IP64					
Coaxial revolution counter					

Consumable spares

No.	Description	Price €
901312	Standard contact point	11.00
902119	Standard contact point	15.50
125317	Rubber boot (NBR Rubber)	6.00

902119 and 125317 : for 2046S-60 (IP model)

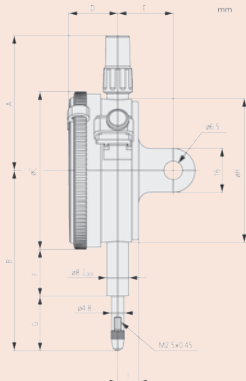
For accessories and contact points, see end of dial indicators section



2046S-60



2310S-10



2046S

2902S

2047S

Metric

No.	No. Lug back plate	Range [mm]	Range per rev.	Graduation	Scale	Mass lug/plain [g]	Price [€]
2046SB	2046S	10	1 mm	0.01 mm	0-100 (100-0)	144/135	31.50
2046SB-09	2046S-09	10	1 mm	0.01 mm	0-100 (100-0)	146/137	56.00
2046SB-60	2046S	10	1 mm	0.01 mm	0-100 (100-0)	146/137	114.00
2310SB-10	2310S-10	10	1 mm	0.01 mm	0-100 (100-0)	146/137	62.00
2902SB	2902S	10	1 mm	0.01 mm	100-0	144/135	68.00
2047SB	2047S	10	1 mm	0.01 mm	0-50-0	144/135	61.00

No.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]	Measuring force [N]
2046SB	48.8	65.2	57	17.7	20	16.9	19.8	52	7.6	0.4 - 1.4
2046SB-09	48.8	65.2	57	17.7	20	16.9	19.8	52	7.6	0.4 - 1.4
2046SB-60	48.8	70	57	17.7	20	12.3	29.2	52	7.6	0.4 - 2.5
2310SB-10	48.8	65.2	57	17.7	20	16.9	19.8	52	7.6	0.4 - 1.4
2902SB	48.8	65.2	57	17.7	20	16.9	19.8	52	7.6	0.4 - 1.4
2047SB	48.8	65.2	57	17.7	20	16.9	19.5	52	7.6	0.4 - 1.4

No.	DIN 878 (1983)			EN ISO 463					
	fe µm	fges µm	fu µm	Errors of indication over a range of				Repeatability µm	Hysteresis error µm
				Any 1/10 revolution µm	Any 1/2 revolution µm	Any 1 revolution µm	Range µm		
2046SB	12.0	15.0	3.0	5.0	9.0	10.0	13	3.0	3.0
2046SB-09	15.0	17.0	3.0	5.0	9.0	10.0	15	3.0	3.0
2046SB-60	12.0	15.0	3.0	5.0	9.0	10.0	13	3.0	3.0
2310SB-10	12.0	15.0	3.0	5.0	9.0	10.0	15	3.0	3.0
2902SB	12.0	15.0	3.0	5.0	9.0	10.0	13	3.0	3.0
2047SB	12.0	15.0	3.0	5.0	9.0	10.0	13	3.0	3.0

Dial Indicator Series 2

Series 2

This is a standard type metric dial indicator with 0.001mm scale graduation, with bezel Ø 57mm, 1mm range



Metric

No.	No. Lug back plate	Range [mm]	Range per rev.	Graduation	Scale	Mass lug/plain [g]	Price [€]
2110SB-10	2110S-10	1	0,1 mm	0.001 mm	0-100 (100-0)	149/140	110.00
2110SB-70	2110S-70	1	0,1 mm	0.001 mm	0-100 (100-0)	150/141	147.00
2109SB-10	2109S-10	1	0,2 mm	0.001 mm	0-100-0	148/139	85.00
2109SB-70	2109S-70	1	0,2 mm	0.001 mm	0-100-0	149/140	105.00

No.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]	Measuring force [N]
2110SB-10	48.8	66.5	57	17.7	20	16.9	21.2	52	7.6	0.9 - 1,5
2110SB-70	48.8	67.5	57	17.7	20	12.3	26.7	52	7.6	0.9 - 2.0
2109SB-10	48.8	60.5	57	17.7	20	16.9	15.1	52	7.6	0.9 - 1.5
2109SB-70	48.8	65.5	57	17.7	20	12.3	24.5	52	7.6	0.9 - 2,0

No.	DIN 878 (1983)			EN ISO 463					
	fe µm	fges µm	fu µm	Errors of indication over a range of				Repeatability µm	Hysteresis error µm
				Any 1/10 revolution µm	Any 1/2 revolution µm	Any 1 revolution µm	Range µm		
2110SB-10	3.0	5.0	2.0	2.5	4	4.5	5	1.0	2.0
2110SB-70	3.0	5.0	2.0	2.5	4	4.5	5	1.0	2.0
2109SB-10	3.0	5.0	2.0	2.5	4	4.5	5	1.0	2.0
2109SB-70	3.0	5.0	2.0	2.5	4	4.5	5	1.0	2.0



2109S-70
2110S-70

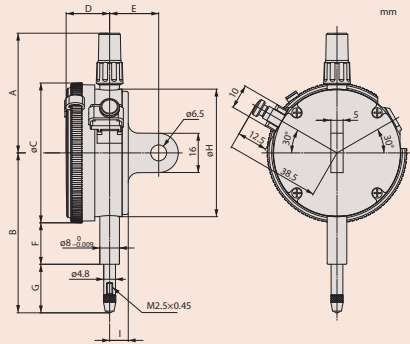
Series 2				
	2109SB-10	2109SB-70	2110SB-10	2110SB-70
Functions				
Balanced dial				
Continuous dial				
Shockproof				
Jeweled bearing				
IP64				
Double scale spacing				

Consumable spares

No.	Description	Price €
901312	Standard contact point	11.00
21AZA320	Standard contact point	8.00
902119	Standard contact point	15.50
136838	Rubber boot (NBR rubber)	7.00

902119 : for 2110S-70
21AZA320 and 136838 : for 2109S-70

For accessories and contact points, see end of dial indicators section.



Dial Indicator Series 2

Series 2

This is a standard type with 0.001mm/0.005mm scale graduation, with bezel Ø 57mm, 2/5mm range



Metric

No.	No. Lug back plate	Range [mm]	Range per rev.	Graduation	Scale	Mass lug/plain [g]	Price [€]
2113SB-10	2113S-10	2	0,2 mm	0.001 mm	0-100-0	148/139	118.00
2118SB-10	2118S-10	5	0,2 mm	0.001 mm	0-100-100	146/137	132.00
2119SB-10	2119S-10	5	0,2 mm	0.001 mm	0-100-0	146/137	135.00
2124SB-10	2124S-10	5	0,5 mm	0.005 mm	0-50 (50-0)	146/137	82.50

No.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]	Measuring force [N]
2113SB-10	48.8	61	57	17.7	20	16.9	15.6	52	7.6	0.4 - 1,5
2118SB-10	48.8	60.3	57	17.7	20	16.9	14.9	52	7.6	0.4 - 1,5
2119SB-10	48.8	60.3	57	17.7	20	16.9	14.9	52	7.6	0.4 - 1,5
2124SB-10	48.8	60.3	57	17.7	20	16.9	14.9	52	7.6	0.4 - 1,5

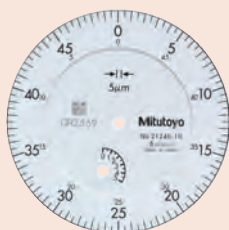
No.	DIN 878 (1983)			EN ISO 463					
	fe µm	fges µm	fu µm	Errors of indication over a range of				Repeatability µm	Hysteresis error µm
				Any 1/10 revolution µm	Any 1/2 revolution µm	Any 1 revolution µm	Range µm		
2113SB-10	5.0	7.0	2.0	2.5	4.0	4.5	7.0	1.0	2.0
2118SB-10	8.0	10.0	2.0	4.0	6.0	6.5	9.5	1.5	2.5
2119SB-10	8.0	10.0	2.0	4.0	6.0	6.5	9.5	1.5	2.5
2124SB-10	10.0	5.0	3.0	5.0	9.0	10.0	11	2.0	3.0

Series 2				
	2113SB-10	2119SB-10	2118SB-10	2124SB-10
Functions				
Balanced dial	●	●		
Continuous dial				●
Shockproof	●			
Jeweled bearing	●	●	●	●

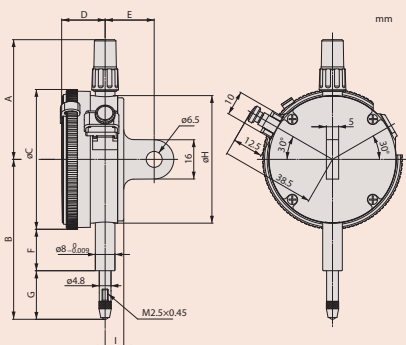
Consumable spares

No.	Description	Price €
901312	Standard contact point	11.00

For accessories and contact points, see end of dial indicators section.



2124S
mm



Dial Indicator with 20 mm Stroke Series 2

Series 2

This is a standard metric dial indicator that offers you the following benefits:

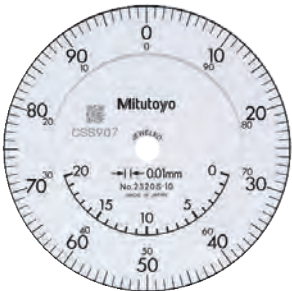
- 20mm stroke.
- Bezel ø 57mm, graduation 0.01mm



2050S(B)-60



2050S
2050S-19
2050S-60



2320S-10

Metric

No.	No. Lug back plate	Range [mm]	Range per rev.	Graduation	Scale	Mass lug/plain [g]	Price [€]
2050SB	2050S	20	1 mm	0.01 mm	0-100 (100-0)	149/140	82.50
2050SB-60	2050S-60	20	1 mm	0.01 mm	0-100 (100-0)	155/146	119.00
2050SB-19	2320S-10	20	1 mm	0.01 mm	0-100 (100-0)	149/140	82.50
2320SB-10	2320S-10	20	1 mm	0.01 mm	0-100 (100-0)	150/141	82.50

No.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]	Measuring force [N]
2050SB	38.8	75.2	57	17.7	20	16.9	29.8	52	7.6	0.4 - 2.0
2050SB-60	38.8	75.2	57	17.7	20	12.3	29.8	52	7.6	0.4 - 2.5
2050SB-19	38.8	75.2	57	17.7	20	16.9	29.8	52	7.6	0.4 - 2.0
2320SB-10	38.8	75.2	57	17.7	20	16.9	29.8	52	7.6	0.4 - 2.0

No.	DIN 878 (1983)			EN ISO 463					
	fe µm	fges µm	fu µm	Errors of indication over a range of				Repeatability µm	Hysteresis error µm
				Any 1/10 revolution µm	Any 1/2 revolution µm	Any 1 revolution µm	Range µm		
2050SB	25.0	30.0	4.0	6	10	11	20	3.0	4.0
2050SB-60	25.0	30.0	4.0	6	10	11	20	3.0	4.0
2050SB-19	25.0	30.0	4.0	6	10	11	20	3.0	4.0
2320SB-10	25.0	30.0	4.0	6	10	11	20	3.0	4.0

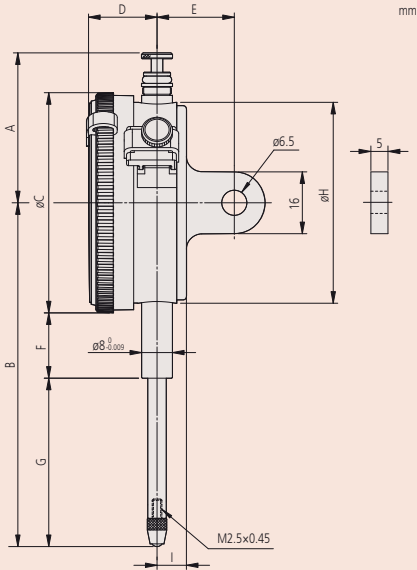
Series 2				
	2050SB	2320SB-10	2050SB-60	2050SB-19
Functions				
Continuous dial				
Shockproof				
Jeweled bearing				
IP64				
Cushioned end point				
Coaxial revolution counter				

Consumable spares

No.	Description	Price €
901312	Standard contact point	11.00
21AZA321	Standard contact point	13.00

21AZA321 : for 2050S-60 (IP model)

For accessories and contact points, see end of dial indicators section.



Dial Indicator with 30 mm Stroke Series 2

Series 2

This is a standard metric dial indicator that offers you the following benefits:

- 30mm stroke.
- Bezel ø 57mm, graduation 0.01mm



2052S
2052S-19



2952S



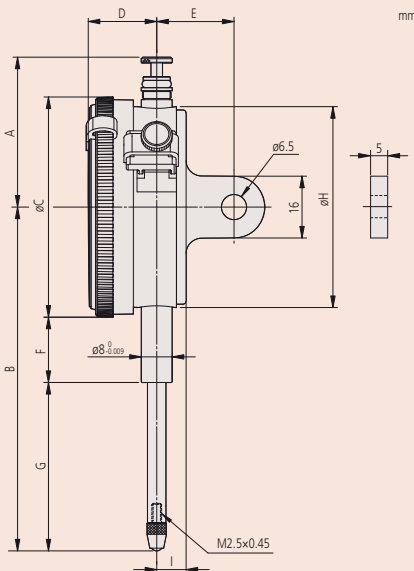
2330S-10

Series 2				
	2052SB	2330SB-10	2052SB-19	2952SB
Functions				
Continuous dial	●	●	●	●
Reverse reading	●	●	●	●
Shockproof	●	●	●	●
Jeweled bearing	●	●	●	●
Cushioned end point	●	●	●	●
Coaxial revolution counter	●	●	●	●

Consumable spares

No.	Description	Price €
901312	Standard contact point	11.00

For accessories and contact points, see end of dial indicators section.



Metric

No.	No. Lug back plate	Range [mm]	Range per rev.	Graduation	Scale	Mass lug/plain [g]	Price [€]
2052SB	2052S	30	1 mm	0.01 mm	0-100 (100-0)	152/143	91.00
2052SB-19	2052S-19	30	1 mm	0.01 mm	0-100 (100-0)	152/143	108.00
2330SB-10	2330S-10	30	1 mm	0.01 mm	0-100 (100-0)	150/141	108.00
2952SB	2952S	30	1 mm	0.01 mm	100-0	152/143	113.00

No.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]	Measuring force [N]
2052SB	38.8	75.2	57	17.7	20	16.9	29.8	52	7.6	0.4 - 2.5
2052SB-19	38.8	75.2	57	17.7	20	16.9	29.8	52	7.6	0.4 - 2.5
2330SB-10	38.8	75.2	57	17.7	20	16.9	29.8	52	7.6	0.4 - 2.5
2952SB	38.8	75.2	57	17.7	20	16.9	29.8	52	7.6	0.4 - 2.5

No.	DIN 878 (1983)			EN ISO 463					
	fe μm	fges μm	fu μm	Errors of indication over a range of				Repeatability μm	Hysteresis error μm
				Any 1/10 revolution μm	Any 1/2 revolution μm	Any 1 revolution μm	Range μm		
2052SB	30.0	35.0	4.0	7.0	11	12	20	3.0	5.0
2052SB-19	30.0	35.0	4.0	7.0	11	12	20	3.0	5.0
2330SB-10	30.0	35.0	4.0	7.0	11	12	20	3.0	5.0
2952SB	30.0	35.0	4.0	7.0	11	12	20	3.0	5.0

Special Dial Indicator Series 2

Series 2

This is a dial indicator with a special design that offers you the following benefits:

- Standard size
- Bezel Ø 57mm, Graduation 0.01



Metric

No.	No. Lug back plate	Range per rev.	Graduation	Scale	Mass lug/plain [g]	Measuring force [N]	Price [€]
2048SB-10	2048S-10	1 mm	0.01 mm	0-100 (100-0)	144/135	0,4 - 1,4	75.50
2046SB-80	2046S-80	1 mm	0.01 mm	0-100 (100-0)	158/149	0,4 - 5.0	127.00

No.	DIN 878 (1983)			EN ISO 463					
	fe µm	fges µm	fu µm	Errors of indication over a range of				Repeatability µm	Hysteresis error µm
				Any 1/10 revolution µm	Any 1/2 revolution µm	Any 1 revolution µm	Range µm		
2048SB-10	15.0	17.0	3.0	5.0	9.0	10.0	15	3.0	3.0
2046SB-80	12.0	15.0	3.0	5.0	9.0	10.0	15		



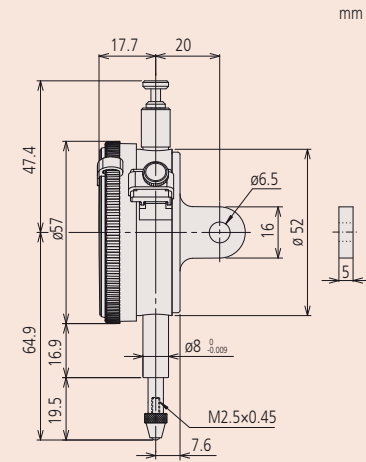
Series 2		
	2046SB-80	2048SB-10
Functions		
Balanced dial		
Continuous dial		
Jeweled bearing		
Peak retaining		
Coaxial revolution counter		
Adjustable pointer		

Consumable spares

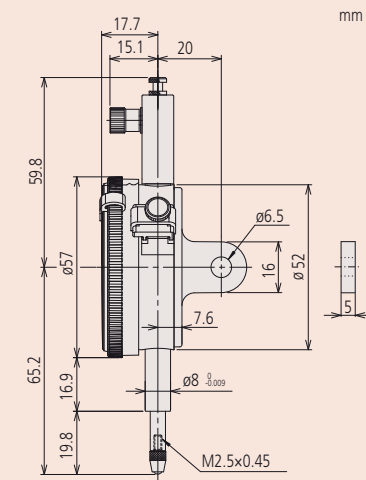
No.	Description	Price €
21AZA319	Standard contact point	3.00
901312	Standard contact point	11.00

901312 : for 2046S-80
21AZA319 : for 2048S-10

For accessories and contact points, see end of dial indicators section.



2048S-10



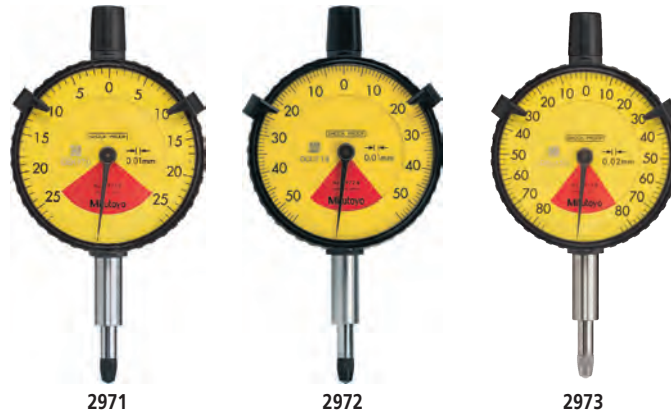
2046S-80

One Revolution Dial Indicator Series 2

Series 2

This is a lightweight one revolution dial indicator that gives you error-free reading. The Metric One Revolution Dial Indicator offers you the following benefits:

- Limiting the pointer rotation to one revolution eliminates the reading errors that can occur with other dial indicators that use multiple pointer revolutions for a full stroke.
- Graduation 0.01mm/ 0.02mm

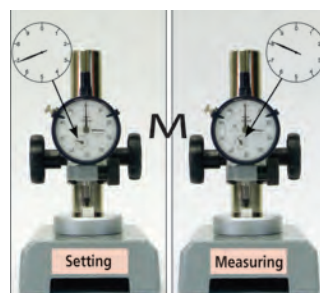


Metric

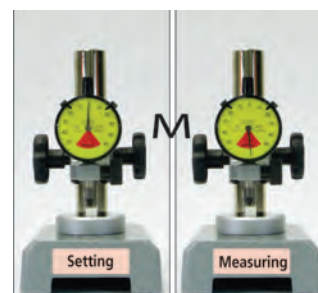
No.	Range [mm]	Range per rev.	Graduation	Scale	Mass lug/plain [g]	Price [€]
2971	0,5 (plunger stroke: 3,5)	0,7 mm	0.01 mm	25-0-25	75	62.50
2972	1 (plunger stroke: 3,5)	1,4 mm	0.01 mm	50-0-50	75	51.50
2973	1.6 (plunger stroke: 3.5)	2 mm	0.02 mm	80-0-80	75	60.50

No.	A [mm]	B [mm]	C [mm]	D [mm]	F [mm]	G [mm]	H [mm]	I [mm]	Measuring force [N]
2971	65.6	16.8	55.6	16.2	21	16.8	55	7.6	0,4 - 1,4
2972	43.2	66	55.6	16.2	21	17.2	55	7.6	0,4 - 1,4
2973	43.2	66.3	55.6	16.2	21	17.5	55	7.6	0,4 - 1,4

No.	DIN 878 (1983)			EN ISO 463					
	fe μm	fges μm	fu μm	Errors of indication over a range of				Repeatability μm	Hysteresis error μm
				Any 1/10 revolution μm	Any 1/2 revolution μm	Any 1 revolution μm	Range μm		
2971	8.0	11.0	3.0	5.0			7	3.0	3.0
2972	10.0	13.0	3.0	5.0			7	3.0	3.0
2973	15.0	19.0	4.0	8.0			15	5.0	4.0



Should the workpiece be approx. 1 mm larger than the nominal dimension, the part is assessed as good if the smaller pointer is ignored.



Fault-free identification of rejects.

One Revolution Dial Indicator Series 2

Series 2

This is a lightweight one revolution dial indicator that gives you error-free reading.
The One Revolution Type Metric Dial Indicator offers you the following benefits:

- Limiting the pointer rotation to one revolution eliminates the reading errors that can occur with other dial indicators that use multiple pointer revolutions for a full stroke.
- Graduation 0.01mm/ 0.1mm



Metric

No.	No. Lug back plate	Range [mm]	Range per rev.	Graduation	Scale	Mass lug/plain [g]	Price [€]
2929SB	2929S	0,8 (plunger stroke: 5)	1 mm	0.01 mm	40-0-40	145/136	83.50
2929SB-60	2929S-60	0,8 (plunger stroke: 5)	1 mm	0.01 mm	40-0-40	146/137	146.00
2929SB-62	2929S-62	0,8 (plunger stroke: 5)	1 mm	0.01 mm	40-0-40	145/136	128.00
2959SB	2959S	1,6 (plunger stroke: 5)	2 mm	0.01 mm	80-0-80	145/136	136.00
2928SB	2928S	4 (plunger stroke: 10)	5 mm	0.1 mm	2-0-2	145/136	142.00

No.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]	Measuring force [N]
2929SB	48.8	65.2	57	17.7	20	16.9	19.8	52	7.6	0.4 - 1.4
2929SB-60	48.8	70	57	17.7	20	12.3	29.2	52	7.6	0.4 - 2,0
2929SB-62	48.8	65.2	57	17.7	20	16.9	19.8	52	7.6	0.4 - 2.0
2959SB	48.8	65.2	57	17.7	20	16.9	19.8	52	7.6	0.4 - 1.4
2928SB	48.8	65.2	57	17.7	20	16.9	19.8	52	7.6	0.4 - 1.4

No.	DIN 878 (1983)			EN ISO 463					
	fe µm	fges µm	fu µm	Errors of indication over a range of				Repeatability µm	Hysteresis error µm
				Any 1/10 revolution µm	Any 1/2 revolution µm	Any 1 revolution µm	Range µm		
2929SB	7.0	10.0	3.0	5			7	3.0	3.0
2929SB-60	7.0	10.0	3.0	5			7	3.0	3.0
2929SB-62	7.0	10.0	3.0	5			7	3.0	3.0
2959SB	12.0	16.0	4.0	5			9	3.0	4.0
2928SB	40.0	50.0	5.0	15			25	20.0	12.0



2929S(B)-60

Series 2				
	2928SB up to 2959SB	2929SB-62	2929SB-60	
Functions				
One revolution	●	●	●	
Shockproof	●	●	●	
IP64			●	
Dustproof IP52		●		

Consumable spares

No.	Description	Price €
125317	Rubber boot (NBR Rubber)	6.00
902119	Standard contact point	15.50
901312	Standard contact point	11.00

902119 and 125317 : for 2929S-60 (IP model)

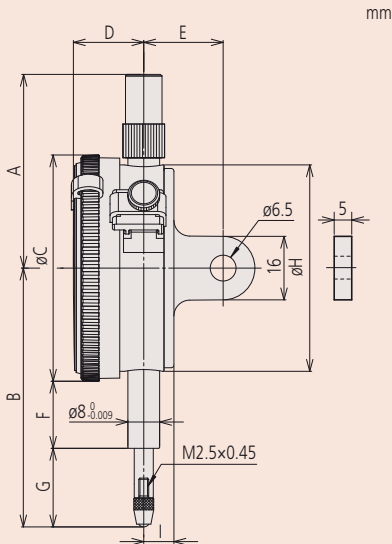
For accessories and contact points, see end of dial indicators section.



2959S



2928S



One Revolution Dial Indicator Series 2

Series 2

This is a lightweight one revolution dial indicator that gives you error-free reading.

The One Revolution Type Metric Dial Indicator offers you the following benefits:

- Limiting the pointer rotation to one revolution eliminates the reading errors that can occur with other dial indicators that use multiple pointer revolutions for a full stroke.
- Graduation 0.001mm



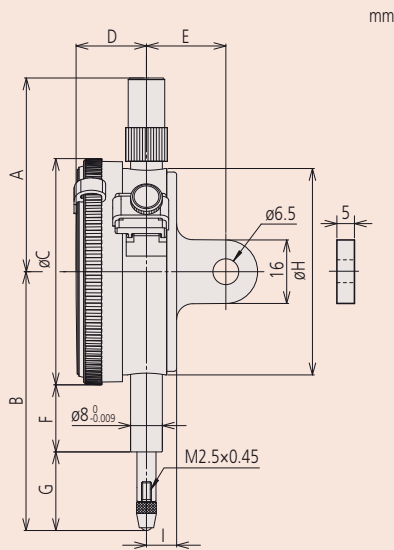
Series 2				
	2900SB-10	2901SB-10	2900SB-72	2900SB-70
Functions				
One revolution	●	●	●	●
Shockproof	●	●	●	●
Jeweled bearing	●	●	●	●
IP64				●
Dustproof IP52			●	

Consumable spares

No.	Description	Price €
901312	Standard contact point	11.00
902119	Standard contact point	15.50
125317	Rubber boot (NBR Rubber)	6.00

902119 and 125317 : for 2900S-70 (IP model)

For accessories and contact points, see end of dial indicators section.



2900S-10
2900S-72



2900S-70



2901S-10

Metric

No.	No. Lug back plate	Range [mm]	Range per rev.	Graduation	Scale	Mass lug/plain [g]	Price [€]
2900SB-10	2900S-10	0,08 (plunger stroke: 4,5)	0,1 mm	0.001 mm	40-0-40	149/140	142.00
2900SB-70	2900S-70	0,08 (plunger stroke: 4,5)	0,1 mm	0.001 mm	40-0-40	150/141	152.00
2900SB-72	2901S-72	0,08 (plunger stroke: 4,5)	0,1 mm	0.001 mm	40-0-40	149/140	144.00
2901SB-10	2901S-10	0,16 (plunger stroke: 4,5)	0,2 mm	0.001 mm	80-0-80	149/140	134.00

No.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]	Measuring force [N]
2900SB-10	48.8	66	57	17.7	20	16.9	20.6	52	7.6	0.4 - 1,4
2900SB-70	48.8	67	57	17.7	20	12.3	26.2	52	7.6	0.4 - 2,0
2900SB-72	48.8	66	57	17.7	20	16.9	20.6	52	7.6	0.4 - 2,0
2901SB-10	48.8	66.1	57	17.7	20	16.9	20.7	52	7.6	0.4 - 1,4

No.	DIN 878 (1983)			EN ISO 463					
	fe μm	fges μm	fu μm	Errors of indication over a range of				Repeatability μm	Hysteresis error μm
				Any 1/10 revolution μm	Any 1/2 revolution μm	Any 1 revolution μm	Range μm		
2900SB-10	2.0	3.0	1.5	2			3	1.0	2.0
2900SB-70	2.0	3.0	1.5	2			3	1.0	2.0
2900SB-72	2.0	3.0	1.5	2			3	1.0	2.0
2901SB-10	3.0	4.5	1.5	2			4	1.0	2.0

Dial Indicator Series 3

Series 3

This is a metric dial indicator that offers you the following benefits:

- Bezel ø 78mm.
- 10mm range with graduation 0.01mm and 1mm range with graduation 0.001mm.



3046S



3047



3109S-10

Metric

No.	No. Lug back plate	Range [mm]	Range per rev.	Graduation	Scale	Mass lug/plain [g]	Price [€]
3046SB	3046S	10	1 mm	0.01 mm	0-100 (100-0)	252/237	124.00
3047SB	3047S	10	1 mm	0.01 mm	0-50-0	252/237	124.00
3109SB-10	3109S-10	1	0,2 mm	0.001 mm	0-100-0	270/255	165.00

No.	A [mm]	B [mm]	C [mm]	D [mm]	Measuring force [N]
3046SB	61.2	75.5	15.9	20.6	0,4 - 1,4
3047SB	61.2	75.5	15.9	20.6	0,4 - 1,4
3109SB-10	61.2	75.5	25.9	14.1	0,4 - 1,5

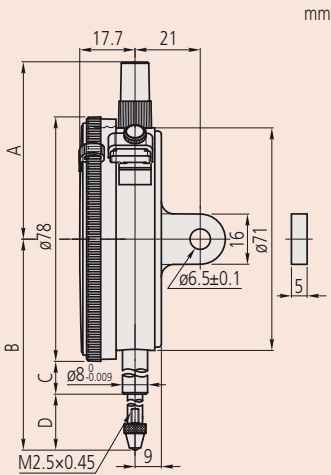
No.	DIN 878 (1983)			EN ISO 463					
	fe µm	fges µm	fu µm	Errors of indication over a range of				Repeatability µm	Hysteresis error µm
				Any 1/10 revolution µm	Any 1/2 revolution µm	Any 1 revolution µm	Range µm		
3046SB	15.0	17.0	3.0	5	9	10	15	3.0	3.0
3047SB	15.0	17.0	3.0	5	9	10	15	3.0	3.0
3109SB-10	3.0	5.0	2.0	2.5	4	4.5	5	1.0	2.0

Series 3			
	3046SB	3047SB	3109SB-10
Functions			
Balanced dial			
Continuous dial			
Shockproof			
Jeweled bearing			

Consumable spares

No.	Description	Price €
901312	Standard contact point	11.00

For accessories and contact points, see end of dial indicators section.

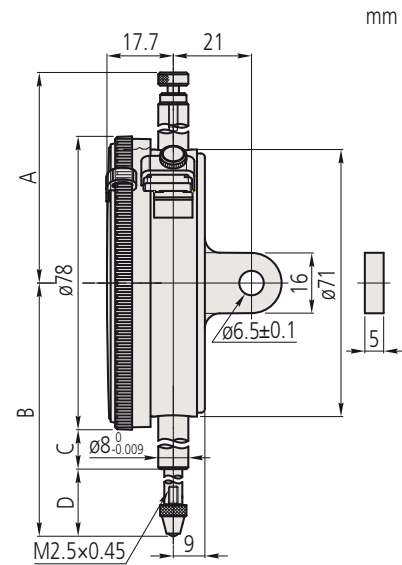


Dial Indicator with Large Diameter Scale Series 3

Series 3

This is a metric dial indicator that offers you the following benefits:

- Bezel ø 78mm.
- 20/30/50/80/100mm range with graduation 0.01mm



Metric

No.	No. Lug back plate	Range [mm]	Range per rev.	Graduation	Scale	Mass lug/plain [g]	Price [€]
3050SB	3050S	20	1 mm	0.01 mm	0-100 (100-0)	272/257	158.00
3052SB-19	3052S-19	30	1 mm	0.01 mm	0-100 (0-100)	285/270	165.00
3058SB-19	3058S-19	50	1 mm	0.01 mm	0-100 (100-0)	298/283	185.00
3060SB-19	3060S-19	80	1 mm*	0.01 mm	0-100 (0-100)	314/299	266.00
3062SB-19	3062S-19	100	1 mm*	0.01 mm	0-100 (100-0)	332/317	397.00

*3060S-19 and 3062S-19 : use in a vertical position only.

No.	A [mm]	B [mm]	C [mm]	D [mm]	Measuring force [N]
3050SB	52.6	94	25.9	29.1	0,4 - 2,0
3052SB-19	72.9	104.3	25.9	39.4	0,4 - 2,5
3058SB-19	81.9	142.3	43.9	59.4	0,4 - 3,0
3060SB-19	120.9	202.3	73.9	89.4	0,4 - 3,0
3062SB-19	141.9	243.3	94.9	109.4	0,4 - 3,2

No.	DIN 878 (1983)			EN ISO 463					
	fe μm	fges μm	fu μm	Errors of indication over a range of				Repeatability μm	Hysteresis error μm
				Any 1/10 revolution μm	Any 1/2 revolution μm	Any 1 revolution μm	Range μm		
3050SB	25.0	30.0	4.0	6	10	11	18	3.0	4.0
3052SB-19	30.0	35.0	4.0	7	11	12	20	3.0	4.0
3058SB-19	50.0	55.0	5.0	8	12	13	30	3.0	6.0
3060SB-19	50.0	60.0	9.0	10	14	15	33	3.0	8.0
3062SB-19	60.0	75.0	13.0	12	17	20	35	3.0	9.0

Series 3			
	3050SB	3052SB-19 up to 3062SB-19	
Functions			
Continuous dial	●	●	
Shockproof	●	●	
Jeweled bearing	●	●	
Cushioned end point	●	●	
Coaxial revolution counter		●	

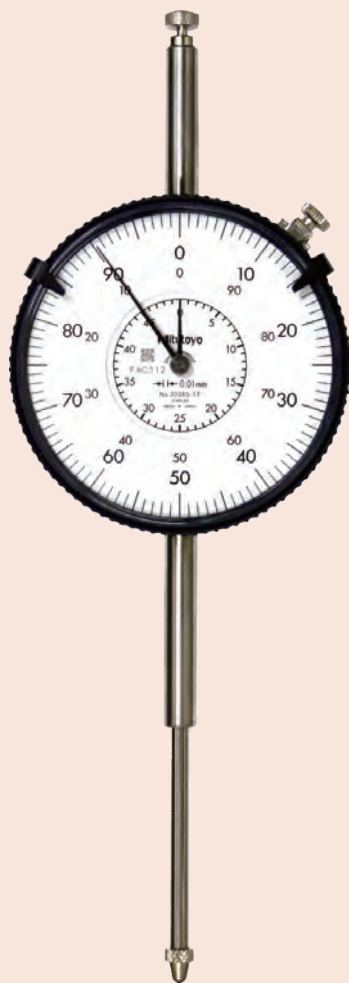
Consumable spares

No.	Description	Price €
21AZA319	Standard contact point	3.00
901312	Standard contact point	11.00

901312 : for 3050S

21AZA319 : for 3052S-19 / 3058S-19 / 3060S-19 / 3062S-19

For accessories and contact points, end of dial indicators section.



3058S-19

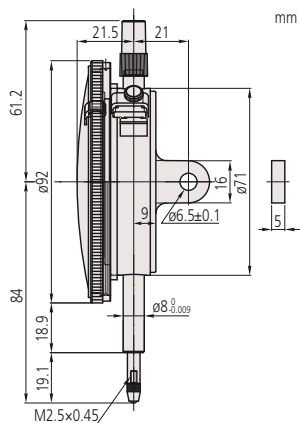
Dial Indicator Series 4

Series 4

- Bezel ø 92 mm



4046S



Series 4

4046SB

Functions

 Continuous dial

Consumable spares

No.	Description	Price €
901312	Standard contact point	11.00

For accessories and contact points, see end of dial indicators section.

Metric

No.	No. Lug back plate	Range [mm]	Range per rev.	Graduation	Scale	Mass lug/plain [g]	Measuring force [N]	Price [€]
4046SB	4046S	10	1 mm	0.01 mm	0-100 (100-0)	345/330	0.4 - 1.4	176.00

No.	DIN 878 (1983)			EN ISO 463					
	fe µm	fges µm	fu µm	Errors of indication over a range of				Repeatability µm	Hysteresis error µm
				Any 1/10 revolution µm	Any 1/2 revolution µm	Any 1 revolution µm	Range µm		
4046SB	15.0	16.0	3.0	5	9	10	15	3.0	3.0



Dial Indicator Back Plunger Type Series 1

Series 1

This is a back plunger type dial indicator with bezel ø 39mm.



Metric

No.	Range [mm]	Range per rev.	Graduation	Scale	Price [€]
1960	1 (plunger stroke: 4,5)	1,27 mm	0.01 mm	50-0-50	129.00
1160	5	1 mm	0.01 mm	0-100	111.00
1162	5	1 mm	0.01 mm	100-0	111.00

No.	A [mm]	B [mm]	C [mm]	E [mm]	F [mm]	G [mm]	H [mm]	Measuring force [N]	Mass [g]
1960	39	21.5	35.6	22	28.7	12.8	46	0,4 - 1,4	108
1160	39	21.5	35.6	22	25	13.8	43.3	0,4 - 1,4	105
1162	39	21.5	35	22	25	13.8	43.3	0,4 - 1,4	

No.	DIN 878 (1983)			EN ISO 463					
	fe µm	fges µm	fu µm	Errors of indication over a range of				Repeatability µm	Hysteresis error µm
				Any 1/10 revolution µm	Any 1/2 revolution µm	Any 1 revolution µm	Range µm		
1960	12.0	15.0	3.0	7.0			15	3.0	3.5
1160	15.0	19.0	4.0	7.0	11	12	18	3.0	4.0
1162	15.0	19.0	4.0	7.0	11	12	18	3.0	4.0



Series 1			
Functions	1160	1162	1960
Balanced dial			
Continuous dial			
Reverse reading			
One revolution			
Shockproof			

Specifications

Delivered Delivered with factory certificate

Optional accessories

No.	Description	Price €
136568	Holding bar Ø8 mm, L81 mm	4.50
21AAA168	Holding bar Ø8 mm, L42 mm	5.00
136567	Holding bar Ø6 mm, L81 mm	3.50
21AAA166	Holding bar Ø6 mm, L42 mm	5.00

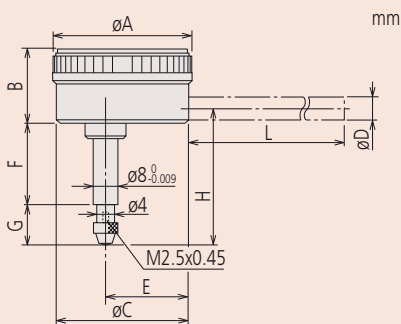
Consumable spares

No.	Description	Price €
901312	Standard contact point	11.00
21AZA319	Standard contact point	3.00

901312 : for 1960

21AZA319 : for 1160 and 1162

For accessories and contact points, see end of dial indicators section.



Dial Indicator Back Plunger Type Series 2

Series 2

This is a back plunger type dial indicator with bezel \varnothing 55 - 58mm



2990

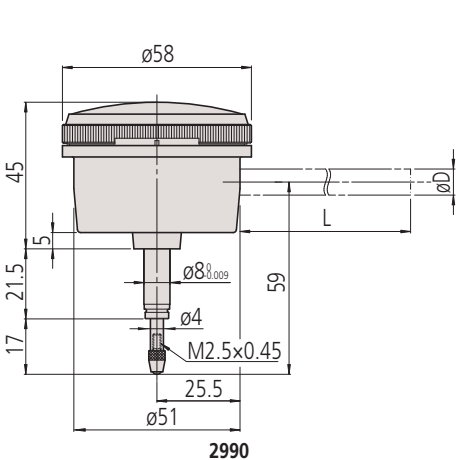


2960F

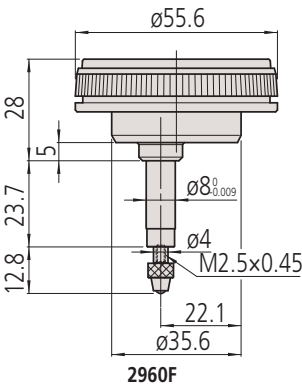
Metric

No.	Range [mm]	Range per rev.	Graduation	Scale	Measuring force [N]	Mass [g]	Price [€]
2990	0,1 (plunger stroke: 4)	0,14 mm	0.001 mm	50-0-50	0,4 - 1,5	220	211.00
2960F	1 (plunger stroke: 4,5)	1,27 mm	0.01 mm	50-0-50	0,4 - 1,4	215	143.00

No.	DIN 878 (1983)			EN ISO 463					
	fe μ m	fges μ m	fu μ m	Errors of indication over a range of				Repeatability μ m	Hysteresis error μ m
				Any 1/10 revolution μ m	Any 1/2 revolution μ m	Any 1 revolution μ m	Range μ m		
2990	3.0	5.0	2.0	2.0			4	1.0	2.0
2960F	12.0	15.0	3.0	7.0			15	3.0	3.5



2990



2960F

Series 2		
Functions	2960F	2990
One revolution		
Shockproof		
Jeweled bearing		

Specifications

Delivered | Delivered with factory certificate

Optional accessories

No.	Description	Price €
136568	Holding bar \varnothing 8 mm, L81 mm	4.50
21AAA168	Holding bar \varnothing 8 mm, L42 mm	5.00
136567	Holding bar \varnothing 6 mm, L81 mm	3.50
21AAA166	Holding bar \varnothing 6 mm, L42 mm	5.00

Consumable spares

No.	Description	Price €
901312	Standard contact point	11.00
21AZA319	Standard contact point	3.00

901312 : for 2990
21AZA319 : for 2960F

For accessories and contact points, see end of dial indicators section.



With optional holding bar

Contact Points

Ball Point

Metric

A: M2,5 x 0,45

L [mm]	Carbide		Carbide waterproof type		Plastic		Ruby		Sapphire	
	No.	Price [€]	No.	Price [€]	No.	Price [€]	No.	Price [€]	No.	Price [€]
12.1	—	—	21AZA320	8.00	—	—	—	—	—	—
14	21JAA225 21JZA242	6.00	—	—	—	—	—	—	—	—
15	120049	15.00	—	—	—	—	120051	12.00	120050	12.00
17	21JAA224	7.00	—	—	—	—	—	—	—	—
19.3	—	—	21AZA321	13.00	—	—	—	—	—	—
20	137391	23.00	—	—	—	—	137392	36.50	—	—
22	21JAA226	8.50	—	—	—	—	—	—	—	—
25	120053	15.00	—	—	—	—	120055	12.00	120054	12.00
30	21AAA252	22.00	—	—	—	—	21AAA253	32.50	—	—
7.3	901312	11.00	—	—	901994	10.50	120047	10.50	—	—
8	120045	10.00	—	—	—	—	—	—	120046	10.50
8.3	21AZA319	3.00	902119	15.50	—	—	—	—	—	—



Ball Point

Metric

A: M2,5 x 0,45

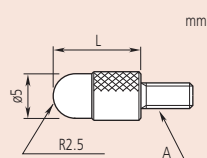
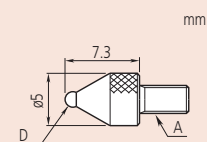
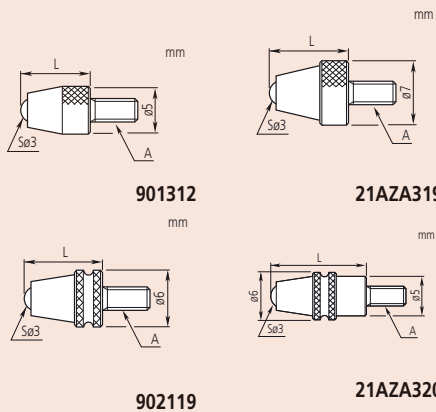
No.	Material	D Ø [mm]	Price [€]
21AAA349	Carbide	1	53.50
21AAA350	Carbide	1.5	45.00
101122	Steel	1.8	8.50
21AAA351	Carbide	2.5	45.00
21AAA352	Carbide	4	53.50

Shell Type Point - Steel

Metric

A: M2,5 x 0,45

No.	L [mm]	Price [€]
101386	5	8.50
101118	10	8.50
137393	15	5.00
101387	20	8.50
101388	25	8.50
21AAA254	30	17.50

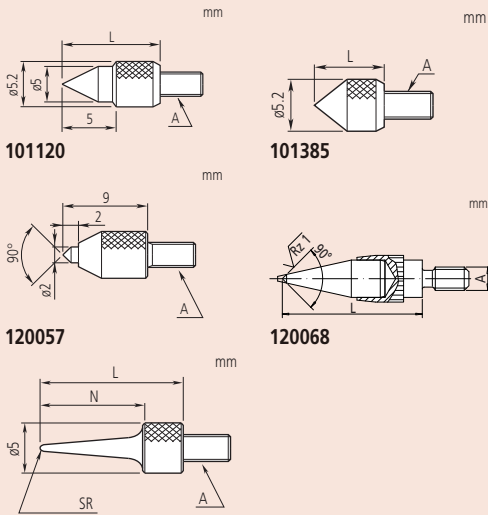


For all drawings
A = M 2,5 x 0,45 mm (metric)

Contact Points

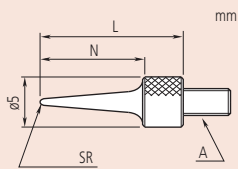
Conical Point

Metric				
A: M2,5 x 4,5				
No.	Material	Tip angle	L [mm]	Price [€]
101385	Steel	90°	5	8.50
101120	Steel	60°	10	8.50
120057	Carbide	90°	9	29.00
120068	Carbide	90°	15	51.00



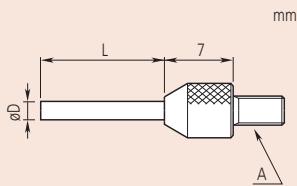
Needle Point - Steel

Metric				
A: M2,5 x 4,5				
No.	N [mm]	SR [mm]	L [mm]	Price [€]
101121	11	0.4	15	8.50
137413	13	0.2	17	7.00
21AAA255	21	0.4	25	7.50
21AAA256	31	0.4	35	10.50



Cylinder Point - Carbide

Metric			
A: M2,5 x 4,5			
No.	L [mm]	D Ø [mm]	Price [€]
120066	3	0.45	24.50
21AAA329	5	0.45	137.00
120065	3	1	19.00
21AAA330	5	1	98.00
21AAA331	8	1	102.00
21AAA332	10	1	110.00
21AAA333	20	1	124.00
21AAA334	40	1	156.00
21AAA335	5	1.5	93.00
21AAA336	10	1.5	137.00
120064	13	1.5	19.00
21AAA337	20	1.5	110.00
21AAA338	40	1.5	124.00
137257	8	2	34.00
21AAA257	18	2	58.50
21AAA258	28	2	59.00
21AAA339	40	2	134.00



For all drawings
A = M 2,5 x 0,45 mm (metric)

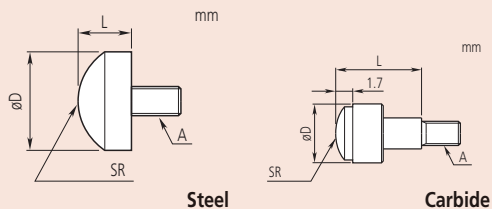
Contact Points

Spherical Point

Metric

A: M2,5 x 4,5

No.	Material	SR [mm]	L [mm]	D Ø [mm]	Price [€]
111460	Steel	5	3	5.5	14.00
120059	Carbide	7	10	7.5	42.00
125258	Steel	5	5	7.9	8.00
101119	Steel	7	5	10	8.50
120060	Carbide	10	10	10.5	52.00

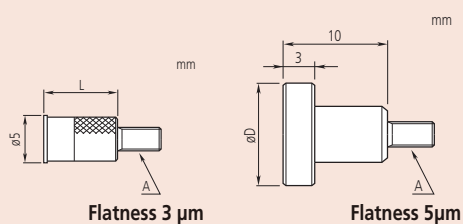


Flat Point - Steel

Metric

A: M2,5 x 4,5

No.	Flatness [µm]	L [mm]	D Ø [mm]	Price [€]
131365	3	8	5	8.00
21AAA340	3	10	5	44.00
101117	5	10	10	13.50
21AAA341	5	10	15	44.00
21AAA342	5	10	20	62.00
21AAA343	5	10	25	79.00
21AAA344	5	10	30	87.50

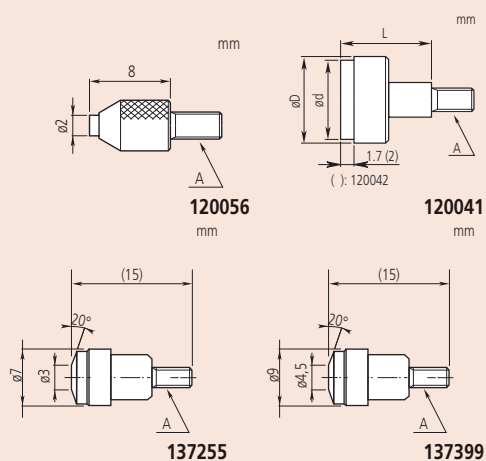


Flat Point - Carbide

Metric

A: M2,5 x 4,5

No.	Flatness [µm]	L [mm]	D Ø [mm]	Ø d [mm]	Price [€]
120056	3	8	5	2	16.50
120041	3	5	5.2	4.3	29.00
120042	3	10	7	6.5	33.00
120043	3	10	10.5	9.5	38.50
21AAA345	5	10	17	15	129.00
21AAA346	5	10	22	20	146.00
21AAA347	5	10	27	25	172.00
21AAA348	5	10	32	30	199.00
137255		10	7	6.4	63.00
137399		10	9	8	67.00



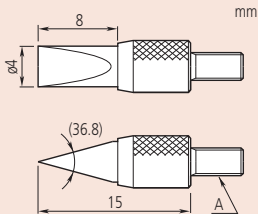
For all drawings
A = M 2,5 x 0,45 mm (metric)

Contact Points

Knife Edge Point - Carbide

Metric A: M2,5 x 4,5

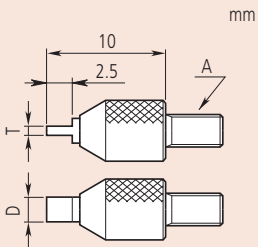
No.	Price [€]
120067	50.50



Blade Point - Carbide

Metric A: M2,5 x 4,5

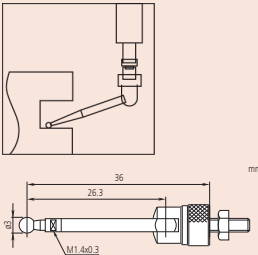
No.	D [mm]	T [mm]	Price [€]
120061	2	0.4	33.00
120062	2	0.6	37.50
120063	4	1	40.00



Lever Point - Steel

Metric A: M2,5 x 4,5

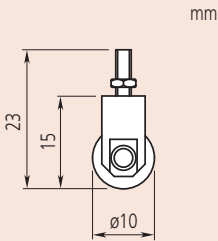
No.	Price [€]
900391	23.50



Roller Point - Steel

Metric A: M2,5 x 4,5

No.	Price [€]
901954	51.50



901954
For all drawings
A = M 2,5 x 0,45 mm (metric)

Interchangeable Contact Point Set

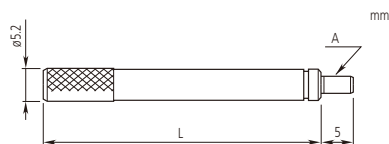


Metric A: M2,5 x 4,5

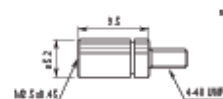
No.	Contact points included	Price [€]
7822	Flat point ø 5 mm (131365) Flat point ø 10 mm (101117) Needle point (101121) Spherical point (101119) Shell type point (101118) Shell type point (101387)	43.50

Extension Rods

Steel Ø 5



A = M 2,5 x 0,45 mm (metric)



21AAA011
Adapter Metric



Metric

No.	L [mm]	Price [€]
303611	10	3.00
21AAA259A	15	4.50
303612	20	4.50
21AAA259B	25	5.00
303613	30	5.50
21AAA259C	35	6.00
21AAA259D	40	7.50
21AAA259E	45	8.00
21AAA259F	50	9.00
21AAA259G	55	10.50
304146	60	12.50
21AAA259H	65	13.00
21AAA259J	70	14.50
21AAA259L	75	15.00
21AAA259M	80	16.00
304147	90	18.00
303614	100	18.00

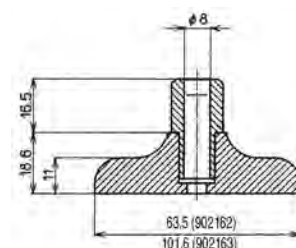
No.	L	Price [€]
21AAA011	9,5 mm	9.50



Bases for Indicators

Without screw

No.	Price [€]
902162	67.00
902163	67.00



Thickness : 16 mm

Optional accessories

No.	Description	Price €
21JAA269	Screw	2.00

Interchangeable Backs

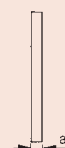
No.	Description	For Series	Dimensions [mm]	Price [€]
191559	Flat Back Plate	1 (1)	a = 1 mm	4.00
101211	Flat Back Plate	1	a = 2,2 mm	3.50
136872	Flat Back Plate	1 (waterproof)	a = 1,5 mm	7.00
137906	Flat Back Plate	1003	a = 1 mm	2.00
101039	Flat Back Plate	2/ ID-C/ ID-S/ ID-SS	a = 2,5 mm	3.00
21AZB231	Flat Back Plate	2 (waterproof S type)	a = 2,5 mm	8.00
100836	Flat Back Plate	3/ 4	a = 3,0 mm	3.50
190561	Back Plate with centre lug	1 (1)	a = 5 mm	9.00
101210	Back Plate with centre lug	1	a = 5 mm	8.50
137905	Back Plate with centre lug	for 1003	a = 5 mm	9.50
101040	Back Plate with centre lug	2/ ID-C/ ID-F/ ID-H/ ID-S/ ID-SS	a = 5 mm	8.00
21AZB230	Back Plate with centre lug	2 (waterproof S type)	a = 5 mm	5.50
100691	Back Plate with centre lug	3/ 4	a = 5 mm	9.00
21EZA145	Back Plate with centre lug	ID-N, ID-B, LGS(2)	5 mm	15.50
900928	Back Plate with magnet	2/ ID-C/ ID-F/ ID-H/ ID-S/ ID-SS		42.50
900929	Back Plate with magnet	3/ 4		67.00
101167	Back Plate with laterally offset back lug	2/ ID-C/ ID-F/ ID-H/ ID-S/ ID-SS		14.00
100837	Back Plate with laterally offset back lug	3/ 4		62.00
193172	Back Plate with post	1		43.50
101169	Back Plate with post	2/ ID-C/ ID-F/ ID-H/ ID-S/ ID-SS		14.00
100839	Back Plate with post	3/ 4		62.00
193173	Back Plate with threaded ring	1	M 6 x 1	43.50
136023	Back Plate with threaded ring	2/ ID-C/ ID-F/ ID-H/ ID-S/ ID-SS	M 6 x 1	14.00
136024	Back Plate with threaded ring	3/ 4	M 6 x 1	53.50
136025	Back Plate with adjustable stem	1	M 6 x 1	26.00
136026	Back Plate with adjustable stem	2/ ID-C/ ID-F/ ID-H/ ID-S/ ID-SS	M 6 x 1	14.00
136027	Back Plate with adjustable stem	3/ 4	M 6 x 1	53.50
129902	Back Plate with rack	2/ ID-C/ ID-F/ ID-H/ ID-S/ ID-SS		42.00
901963	Back Plate set including rear lid with rack and adjustable stem	2/ ID-C/ ID-F/ ID-H/ ID-S/ ID-SS		74.50
900008	Back Plate with Dovetail	2/ ID-C/ ID-F/ ID-H/ ID-S/ ID-SS		29.00

(1) for 1911, 1913-10, 1921, 1923, 1925-10, 1927-10

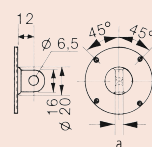
(2) for LGS 575-303, 575-304, 575-313



Flat Back Plate



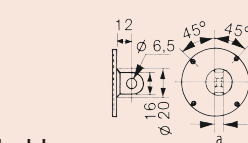
With centre lug



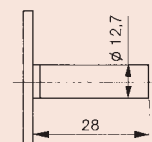
With magnet



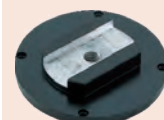
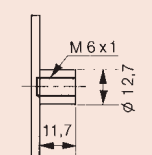
With laterally offset back lug



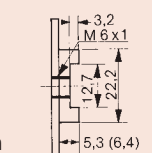
With post



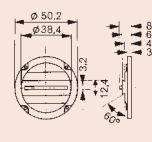
With threaded ring



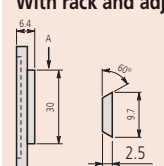
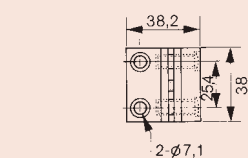
With adjustable stem



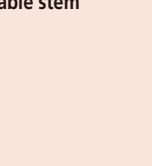
With rack



With rack and adjustable stem



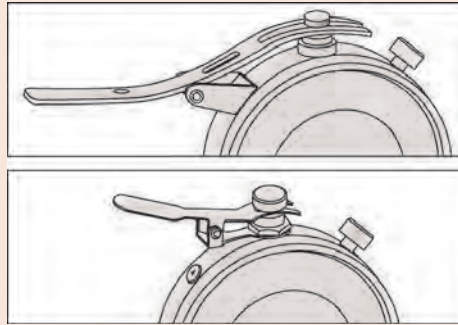
Back Plate with Dovetail



For old indicator models, please contact Mitutoyo

Spindle Lifting Accessories

- The spindle lifting lever is attached to the top end of the spindle for improved inspection efficiency when using a dial indicator mounted on a stand.



Spindle lifting cable

No.	Description	Price [€]
901975	With auto-stop function 300 mm length	22.00
540774	Without auto-stop function 500 mm length	26.00

IP-Protection (e.g. IP-64) is no longer guaranteed when using with lifting levers or spindle lifting cables

Spindle lifting knob

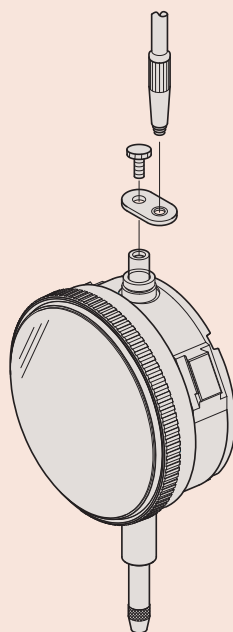
No.	Description	Price [€]
137693	Suitable for 4,8 mm spindle diameter	2.00

IP-Protection (e.g. IP-64) is no longer guaranteed when using with lifting levers or spindle lifting cables

Spindle lifting lever

No.	Use for	Price [€]
902100	S type Series 1 F type Series 2 (former model) (up to 5 mm range)	9.00
21AZB149	S type Series 2, 3 and 4 (up to 10 mm range)	5.00
21AZB150	S type Series 2 and 3 (from 10 mm up to 20 mm range)	5.50
21AZB151	S type No. 7322 / 7323	7.00
21BZA205	F type Series 1 (former model)	6.00
902011	F type Series 2 (former model up to 10 mm range) ID-C 543-285(B), 543-286(B), 543-287(B), 543-280(B), 543-281(B), 543-282, 543-283(B), 543-260 (B), 543-261(B), 543-262(B), 543-263(B)	6.00
21EZA198	Indicators ID-C (up to 12 mm range) ID-S, ID-SS	8.00
903424	F type Series 2 (former model up to 20 mm range) F type Series 3 and 4 (former model up to 10 mm range) ID-S (except solar type)	6.50

IP-Protection (e.g. IP-64) is no longer guaranteed when using with lifting levers or spindle lifting cables



Sample application
for No. 901975

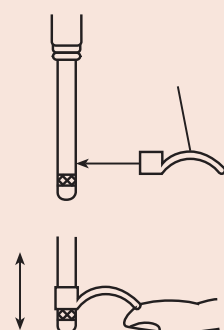


901975

540774



Sample application for
137693



Other Accessories for Dial Indicator



Colour-coded Spindle Caps

- 9 colour-coded spindle caps are available for dial indicators with a range of 10 mm or less.
- With the exception of 2971 / 2972 / 2973 / 2976 / 2977 / 2978.

Colour	Standard		Water-resistant	
	No.	Price [€]	No.	Price [€]
Black	193051	3.50	193595	3.50
Blue	193051B	3.50	193595B	3.50
Dark blue	193051S	3.50	193595S	3.50
Green	193051G	3.50	193595G	3.50
Orange	193051D	3.50	193595D	3.50
Pink	193051P	3.50	193595P	3.50
Red	193051R	3.50	193595R	3.50
White	193051W	3.50	193595W	3.50
Yellow	193051Y	3.50	193595Y	3.50



902066

Plastic cover

- Protection against oil and splash water.
- For dial indicators Series 2.
- 10 pieces per set.

No.	Price [€]
902066	13.50

Limit Stickers

- Tolerance markings.
- For dial indicators, Series 2 Ø 55,6 mm or 57 mm.
- 10 pieces per set.



136420



136421



136422

No.	Colour	Price [€]
136420	Red	9.50
136421	Green	9.50
136422	Yellow	9.50

Other Accessories for Dial Indicator

Crystal setter and assorted thrust pads

These crystal setters and thrust pads are used to make it easy to insert round dial glasses, and offer you the following benefits:

- You can use them to insert round dial glasses.
- Assorted thrust pads for diameters: 19.5/22.5/25.5/28.5/32.5/35/38/50mm.



7000

No.	Price [€]
7000	216.00

Specifications

Set configuration

No. 7823 :

1 - Spindle stage	129730
2 - Pin removing bar	129732
3 - Punch	129733
4 - Bearing adjuster	129734
5 - Pinion stage	129735
6 - Reamer for pointer ø1	129736
7 - Reamer for pointer ø0.6	193702
8 - Reamer for pointer ø0.5	21JAA273
9 - Pointer remover	126628
10 - Pliers	901180
11 - Nippers	901179
12 - Stage for pin rest	129731
14 - Hammer	901178
15 - Spear	21JAA314
16 - Brush	901177
17 - Brush	901176
18 - Phillips and plain screwdrivers	901174
19 - Pin vice	901175
20 - Tweezers	129729
21 - Phillips screwdriver	901173
23 - Pin ø0,8 mm	126630
24 - Pin ø0,5 mm	126630B
25 - Pin ø01,6 mm	126630C
26 - Nut	100699
27 - Wooden case	901182

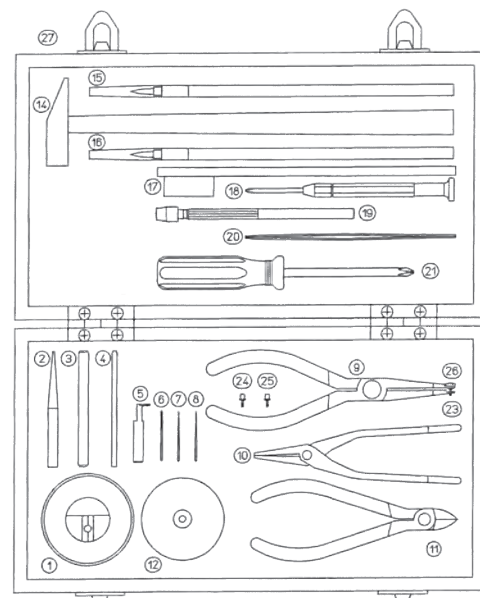
Tool set

- For repairing analogue dial indicators.



7823

No.
7823



Lever Indicator Horizontal Type - 0,01 mm

Series 513

This metric lever indicator helps you reach hard-to-access surfaces.

It offers you the following benefits:






















- It gives you easy access to shrouded surfaces that conventional indicators cannot reach.
- The no-clutch structure allows automatic reversal of the measuring direction.
- The one piece bezel and O-ring crystal seal make it highly resistant to water and dust.
- The glare-free flat crystal face has a scratch resistant coating.
- A rotatable scale enables easy zero setting.
- Jewelled bearings and precision gears and pinions give you smooth, accurate movement and quick response.



Metric Basic set												
No.	Range [mm]	Graduation	Scale	fe [μm]	fu [μm]	fges [μm]	Carbide stylus tip ø2 mm No.	L [mm]	Ø D [mm]	Measuring force [N]	Mass [g]	Price [€]
513-466E	0.5	0.01 mm	0-25-0	5	3	10	137557	22.3	28	≤ 0,3	39	134.00
513-424E	0.5	0.01 mm	0-25-0	5	3	10	137557	22.3	39	≤ 0,3	42	129.00
513-414E	0.5	0.01 mm	0-25-0	10	4	13	129949	36.8	39	≤ 0,2	42	132.00
513-464E	0.8	0.01 mm	0-40-0	8	3	13	103006	20.9	28	≤ 0,3	39	129.00
513-404E	0.8	0.01 mm	0-40-0	8	3	13	103006	20.9	39	≤ 0,3	42	80.00
513-415E	1	0.01 mm	0-50-0	10	4	13	136013	44.5	39	≤ 0,2	42	132.00
513-426E	1.5	0.01 mm	0-25-0	8	3	13	137557	22.3	39	≤ 0,4	42	136.00

Metric Basic set - Ruby contact point												
No.	Range [mm]	Graduation	Scale	fe [μm]	fu [μm]	fges [μm]	Ruby stylus tip ø2 mm No.	L [mm]	Ø D [mm]	Measuring force [N]	Mass [g]	Price [€]
513-478E	0.5	0.01 mm	0-25-0	5	3	10	21CZA210	22.3	39	≤ 0,3	42	149.00
513-474E	0.8	0.01 mm	0-40-0	8	3	13	21CZA201	20.9	39	≤ 0,3	42	98.00
513-477E	1	0.01 mm	0-50-0	10	4	13	21CZA211	44.5	39	≤ 0,3	42	152.00

Metric Full set												
No.	Range [mm]	Graduation	Scale	fe [μm]	fu [μm]	fges [μm]	Carbide stylus tip ø2 mm No.	L [mm]	Ø D [mm]	Measuring force [N]	Mass [g]	Price [€]
513-424T	0.5	0.01 mm	0-25-0	5	3	10	137557	22.3	39	≤ 0,3	42	149.00
513-414T	0.5	0.01 mm	0-25-0	10	4	13	129949	36.8	39	≤ 0,2	42	152.00
513-404T	0.8	0.01 mm	0-40-0	8	3	13	103006	20.9	39	≤ 0,3	42	111.00
513-415T	1	0.01 mm	0-50-0	10	4	13	136013	44.5	39	≤ 0,2	42	152.00

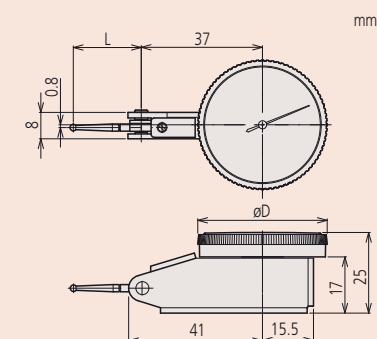
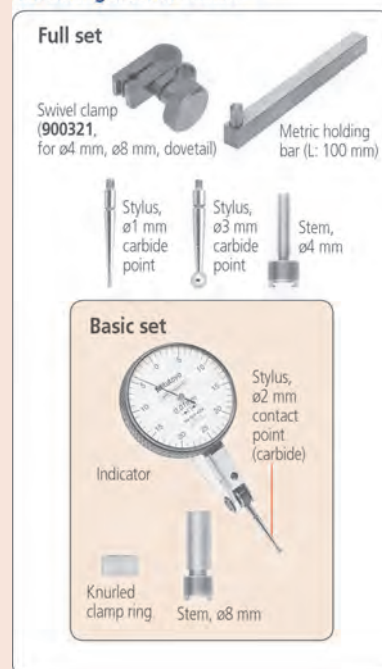
Series 513						
Functions	513-404E up to 513-474E	513-415E 513-477E	513-464E	513-414E	513-424E 513-478E	513-466E 513-426E
 Jeweled bearing						
 Double scale spacing						
 Coaxial revolution counter						
 Compact type						
 Long stylus						
 Nonmagnetic						

Specifications

Contact point Thread M 1,7 x 0,35

For optional accessories, see end of lever indicators section.

Set Configuration: Metric



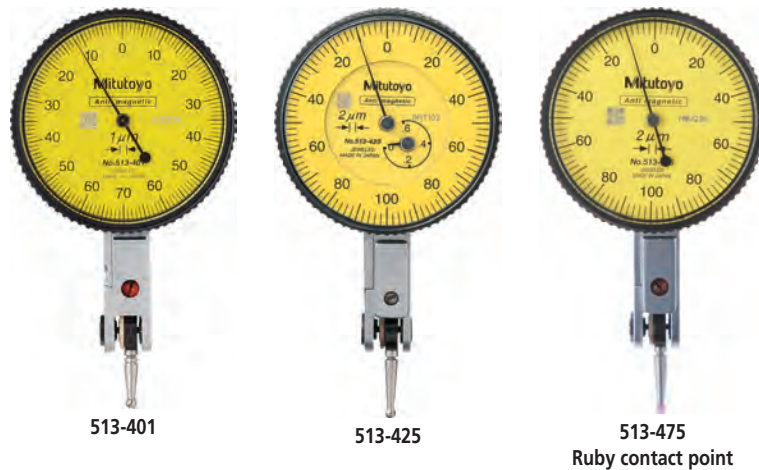
Lever Indicator - Horizontal Type - 0.001/0,002 mm

Series 513

This metric lever indicator helps you reach hard-to-access surfaces.

It offers you the following benefits:

- It gives you easy access to shrouded surfaces that conventional indicators cannot reach.
- The no-clutch structure allows automatic reversal of the measuring direction.
- The one piece bezel and O-ring crystal seal make it highly resistant to water and dust.
- The glare-free flat crystal face has a scratch resistant coating.
- The glare-free flat crystal face has a scratch resistant coating.
- A rotatable scale enables easy zero setting.
- Jewelled bearings and precision gears and pinions give you smooth, accurate movement and quick response.



Metric		Basic set										
No.	Range [mm]	Graduation	Scale	fe [μm]	fu [μm]	fges [μm]	Carbide stylus tip ø2 mm No.	L [mm]	Ø D [mm]	Measuring force [N]	Mass [g]	Price [€]
513-401E	0.14	0.001 mm	0-70-0	3	2	4	21CZA036	12.8	39	≤ 0,3	42	143.00
513-465E	0.2	0.002 mm	0-100-0	3	2	4	103010	14.7	28	≤ 0,3	39	139.00
513-405E	0.2	0.002 mm	0-100-0	3	2	4	103010	14.7	39	≤ 0,3	42	105.00
513-425E	0.6	0.002 mm	0-100-0	6	3	11	103010	14.7	39	≤ 0,4	42	143.00

Metric		Basic set - Ruby contact point										
No.	Range [mm]	Graduation	Scale	fe [μm]	fu [μm]	fges [μm]	Ruby stylus tip ø2 mm No.	L [mm]	Ø D [mm]	Measuring force [N]	Mass [g]	Price [€]
513-475E	0.2	0.002 mm	0-100-0	3	2	4	21CZA209	14.7	39	≤ 0,3	42	126.00

Metric		Full set										
No.	Range [mm]	Graduation	Scale	fe [μm]	fu [μm]	fges [μm]	Carbide stylus tip ø2 mm No.	L [mm]	Ø D [mm]	Measuring force [N]	Mass [g]	Price [€]
513-405T	0.2	0.002 mm	0-100-0	3	2	4	103010	14.7	39	≤ 0,3	42	136.00

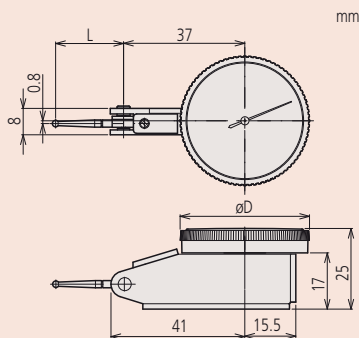
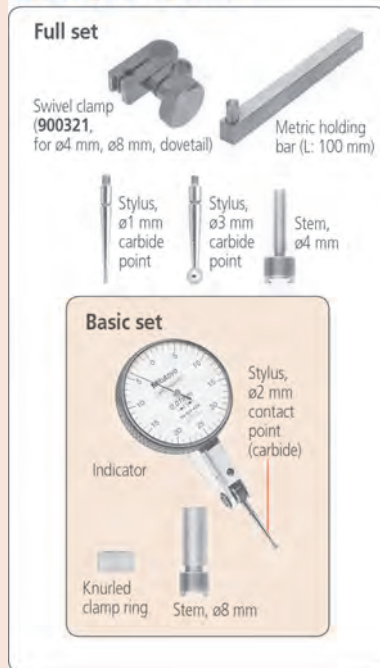
Series 513				
Functions	513-401E	up to 513-475E	513-465E	513-425E
Jeweled bearing				
Coaxial revolution counter				
Compact type				
Nonmagnetic				

Specifications

Contact point Thread M 1,7 x 0,35

For optional accessories, see end of lever indicators section.

Set Configuration: Metric



Lever Indicator and Magnet Stand

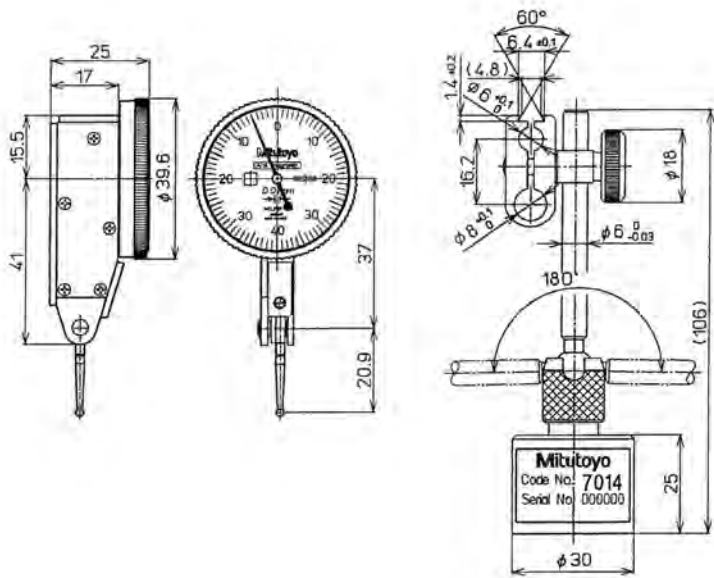
Series 513



513-908

Metric

No.	Contents include	Mass [g]	Price [€]
513-908	513-404E : Lever Indicator 7014 : Mini Magnetic Stand	222	126.00



513-908

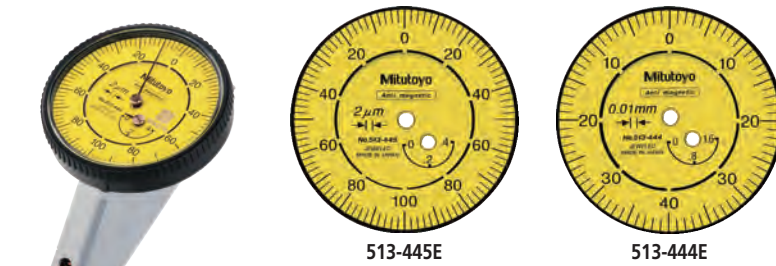
Indicator
Centered, bi-directional action for automatic reversal of measuring direction.
Jewelled bearings and precision gears and pinions for smooth, accurate movement and quick response.

Stand
Magnetic force : 150 N.
Mass : 180 g.

Lever Indicator Horizontal (20° Tilted Face) Type

Series 513

- Centered, bi-directional action for automatic reversal of measuring direction.
- Rotatable scale for easy zero setting. Jewelled bearings and precision gears and pinions for smooth, accurate movement and quick response.



513-445E

Metric

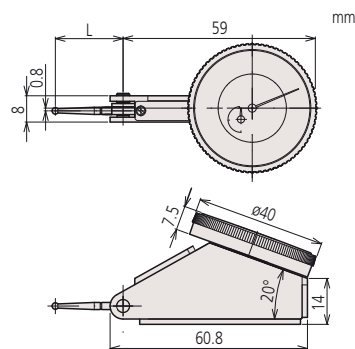
Basic set

No.	Range [mm]	Graduation	Scale	fe [μm]	fu [μm]	fges [μm]	Carbide stylus tip ø2 mm No.	L [mm]	Measuring force [N]	Mass [g]	Price [€]
513-445E	0.4	0.002 mm	0-100-0	5	3	10	103010	14.7	≤ 0,3	48	157.00
513-444E	1.6	0.01 mm	0-40-0	10	3	13	103006	20.9	≤ 0,3	48	139.00

Metric

Full set

No.	Range [mm]	Graduation	Scale	fe [μm]	fu [μm]	fges [μm]	Carbide stylus tip ø2 mm No.	L [mm]	Measuring force [N]	Mass [g]	Price [€]
513-445T	0.4	0.002 mm	0-100-0	5	3	10	103010	14.7	≤ 0,3	48	177.00
513-444T	1.6	0.01 mm	0-40-0	10	3	13	103006	20.9	≤ 0,3	48	160.00



Lever Indicator Vertical Type

Series 513

- Centered, bi-directional action for automatic reversal of measuring direction.
- Rotatable scale for easy zero setting.
- Jewelled bearings and precision gears and pinions for smooth, accurate movement and quick response.



513-455E



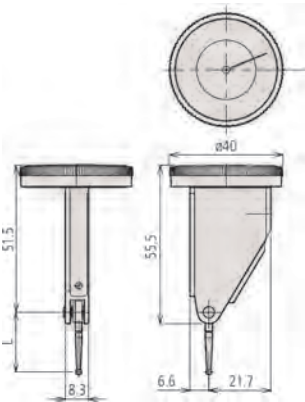
513-454E

Metric Basic set

No.	Range [mm]	Graduation	Scale	fe [μm]	fu [μm]	fges [μm]	Carbide stylus tip ø2 mm No.	L [mm]	Measuring force [N]	Mass [g]	Price [€]
513-455E	0.2	0.002 mm	0-100-0	3	2	6	103010	14.7	≤ 0,3	50	144.00
513-454E	0.8	0.01 mm	0-40-0	8	3	13	103006	20.9	≤ 0,3	50	98.00

Metric Full set

No.	Range [mm]	Graduation	Scale	fe [μm]	fu [μm]	fges [μm]	Carbide stylus tip ø2 mm No.	L [mm]	Measuring force [N]	Mass [g]	Price [€]
513-455T	0.2	0.002 mm	0-100-0	3	2	6	103010	14.7	≤ 0,3	50	165.00
513-454T	0.8	0.01 mm	0-40-0	8	3	13	103006	20.9	≤ 0,3	50	129.00



Series 513	
Functions	513-454E up to 513-455T
Jeweled bearing	
Nonmagnetic	

Specifications

Contact point	Thread M 1,7 x 0,35
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For optional accessories, see end of lever indicators section.

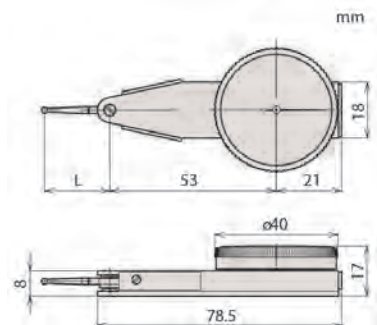
Lever Indicator Parallel Type

Series 513

- Centered, bi-directional action for automatic reversal of measuring direction.
- Rotatable scale for easy zero setting.
- Jewelled bearings and precision gears and pinions for smooth, accurate movement and quick response.



513-284GE



Metric

Basic set

No.	Range [mm]	Graduation	Scale	fe [μm]	fu [μm]	fges [μm]	Carbide stylus tip ø2 mm No.	L [mm]	Measuring force [N]	Mass [g]	Price [€]
513-284GE	0.8	0.01 mm	0-40-0	8	3	13	103006	20.9	≤ 0,3	68	111.00

Metric

Full set

No.	Range [mm]	Graduation	Scale	fe [μm]	fu [μm]	fges [μm]	Carbide stylus tip ø2 mm No.	L [mm]	Measuring force [N]	Mass [g]	Price [€]
513-284GT	0.8	0.01 mm	0-40-0	8	3	13	103006	20.9	≤ 0,3	68	130.00



Lever Indicator Universal Type

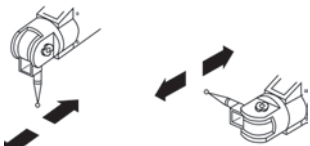
Series 513

This level indicator makes reading much easier as you can rotate its measuring head through 360°.

- Centered, bi-directional action for automatic reversal of measuring direction.
- Rotatable scale for easy zero setting.
- Jewelled bearings and precision gears and pinions for smooth, accurate movement and quick response.



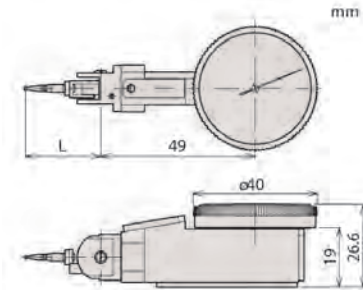
513-304GE



Stylus can be set at any angle while keeping the dial stationary

Metric		Basic set									
No.	Range [mm]	Graduation	Scale	fe [μm]	fu [μm]	fges [μm]	Carbide stylus tip ø2 mm No.	L [mm]	Measuring force [N]	Mass [g]	Price [€]
513-304GE	0.8	0.01 mm	0-40-0	8	3	13	102825	24	≤ 0,3	80	381.00

Metric		Full set									
No.	Range [mm]	Graduation	Scale	fe [μm]	fu [μm]	fges [μm]	Carbide stylus tip ø2 mm No.	L [mm]	Measuring force [N]	Mass [g]	Price [€]
513-304GT	0.8	0.01 mm	0-40-0	8	3	13	102825	24	≤ 0,3	80	407.00



Series 513	
513-304GE	513-304GT
Functions	
Jeweled bearing	

Specifications	
Contact point	Thread M 1,4 x 0,3
For optional accessories, see end of lever indicators section.	

Set Configuration: Metric

Full set

Stylus, ø1 mm carbide point

Stylus, ø3 mm carbide point

Stem, ø4 mm

Swivel clamp (900321 for ø4 mm stem, ø8 mm stem, dovetail)

Metric holding bar (L: 100 mm)

Spare stylus, ø2 mm carbide point

Basic set

Stylus, ø2 mm carbide point (102825)

Indicator

Knurled clamp ring

Spanner (102037)

ø8 mm stem

Lever Indicator Small Type

Series 513

This is a small type of metric lever indicator that offers you the following benefits:

- The switch lever allows you to change the measuring direction.
- A rotatable scale enables easy zero setting.
- Jewelled bearings and precision gears and pinions give you smooth, accurate movement and quick response.



Metric

Basic set

No.	Range [mm]	Graduation	Scale	fe [μm]	fu [μm]	fges [μm]	Carbide stylus tip ø2 mm No.	L [mm]	Measuring force [N]	Mass [g]	Price [€]
513-501E	0.14	0.001 mm	0-70-0	3	2	4	136104	12.1	≤ 0,4	41	177.00
513-503E	0.2	0.002 mm	0-100-0	3	2	4	103010	14.7	≤ 0,3	41	149.00
513-514E	0.5	0.01 mm	0-25-0	10	4	13	129949	36.8	≤ 0,3	41	144.00
513-517E	0.8	0.01 mm	0-40-0	8	3	13	103006	21	≤ 0,3	41	118.00
513-517WE	0.8	0.01 mm	0-40-0	8	3	13	21CZA097	21	≤ 0,3	41	174.00
513-527E	0.8	0.01 mm	0-40-0	8	3	13	103010	14.7	≤ 0,3	36	118.00

Metric

Full set

No.	Range [mm]	Graduation	Scale	fe [μm]	fu [μm]	fges [μm]	Carbide stylus tip ø2 mm No.	L [mm]	Measuring force [N]	Mass [g]	Price [€]
513-501T	0.14	0.001 mm	0-70-0	3	2	4	136104	12.1	≤ 0,4	41	198.00
513-503T	0.2	0.002 mm	0-100-0	3	2	4	103010	14.7	≤ 0,3	41	170.00
513-514T	0.5	0.01 mm	0-25-0	10	4	13	129949	36.8	≤ 0,3	41	165.00
513-517T	0.8	0.01 mm	0-40-0	8	3	13	103006	21	≤ 0,3	41	139.00
513-517WT	0.8	0.01 mm	0-40-0	8	3	13	21CZA097	21	≤ 0,3	41	195.00
513-527T	0.8	0.01 mm	0-40-0	8	3	13	103010	14.7	≤ 0,3	36	139.00
513-515T	1	0.01 mm	0-50-0	8	3	13	136013	44.5	≤ 0,3	41	170.00

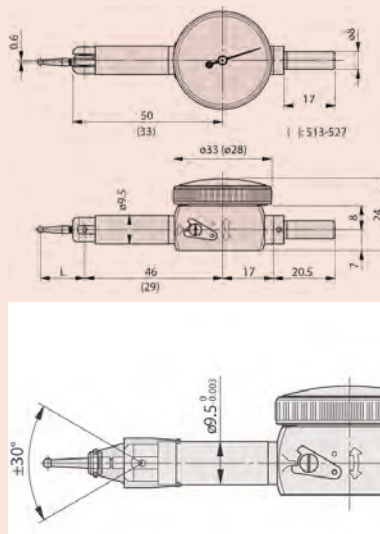
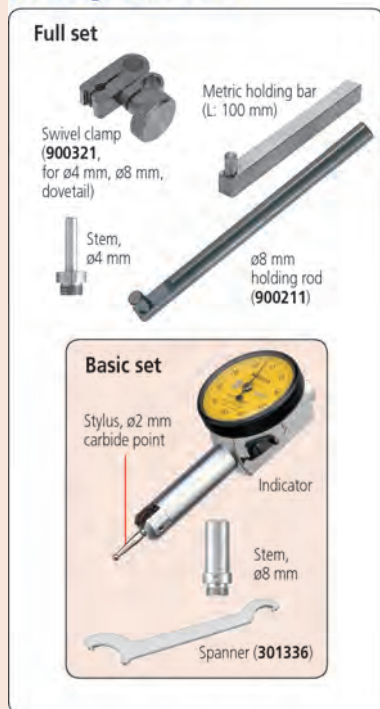
Series 513					
	513-501E	513-517T	513-517WE	513-514E	513-515T
Functions					
Jeweled bearing	●	●	●	●	●
Compact type					●
Long stylus				●	
Dustproof		●			

Specifications

Contact point Thread M 1,7 x 0,35

For optional accessories, see end of lever indicators section.

Set Configuration: Metric



The stylus angle should be restricted within the range $\pm 30^\circ$ (as shown above) for dustproof models 513-517WE/T.

Styli, Stems and Holders

Stylus length affects the scale factor of an indicator, and the styli provided to you as standard give a scale factor of unity.

Styli (for Metric Models)

No.	Standard models	Small type models	L [mm]	Ø ball point	Price [€]
190547	●	●	14.7	0,5 mm steel	20.50
190549	●	●	20.9	0,5 mm steel	20.50
190654	●	●	22.3	0,5 mm steel	20.50
190656	●	●	44.5	0,5 mm steel	22.50
190548	●	●	14.7	0,7 mm steel	17.00
190550	●	●	20.9	0,7 mm steel	17.00
190653	●	●	22.3	0,7 mm steel	17.00
190655	●	●	44.5	0,7 mm steel	19.50
136756		●	12.1	1 mm carbide	8.50
21CZA044	●		12.8	1 mm carbide	8.50
103017	●	●	14.7	1 mm carbide	8.50
103013	●	●	20.9	1 mm carbide	8.50
21CZA098		●	20.9	1 mm carbide	14.00
137558	●		22.3	1 mm carbide	8.50
102824	●		24	1 mm carbide* ²	8.50
137746	●		36.8	1 mm carbide	8.50
136235	●	●	44.5	1 mm carbide	8.50
136104		●	12.1	2 mm	10.50
21CZA036	●		12.8	2 mm carbide	8.50
103010	●	●	14.7	2 mm carbide	13.50
103006	●	●	20.9	2 mm carbide	13.50
21CZA097		●	20.9	2 mm carbide* ³	20.00
137557	●		22.3	2 mm carbide	13.50
102825	●		24	2 mm carbide* ²	13.50
129949	●		36.8	2 mm carbide	13.00
136013	●	●	44.5	2 mm carbide	10.50
21CZA212	●		12.8	2 mm ruby	23.50
21CZA209	●	●	14.7	2 mm ruby	23.50
21CZA201	●	●	20.9	2 mm ruby	23.50
21CZA210	●		20.3	2 mm ruby	23.50
21CZA211	●		44.5	2 mm ruby	23.50
136758		●	12.1	3 mm carbide	8.50
21CZA045	●		12.8	3 mm carbide	8.50
103018	●	●	14.7	3 mm carbide	8.50
103014	●	●	20.9	3 mm carbide	8.50
21CZA099		●	20.9	3 mm carbide	14.00
137559	●		22.3	3 mm carbide	8.50
102826	●		24	3 mm carbide* ²	8.50
137747	●		36.8	3 mm carbide	8.50
136236	●	●	44.5	3 mm carbide	8.50

*² : Used extension 209829

*³ : For 513-517W models



Ø 0,5 mm ball-point



Ø 0,7 mm ball-point



Ø 1 mm ball-point Carbide



Ø 2 mm ball-point Carbide



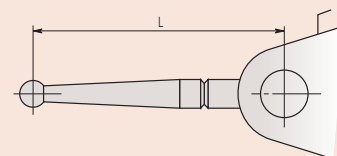
Ø 2 mm ball-point Ruby



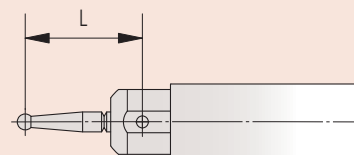
Ø 3 mm ball-point Carbide

Optional accessories

No.	Description	Price €
209829	Extension for universal type	3.50



Styli for Standard models




Styli for small type model

Styli, Stems and Holders

Styli, Stems and Holders

Centering Holder

No.	Standard models	Stem	Price [€]
901959		ø 8 mm	63.00

Centering Holder
901959









953638 - 900209





900211

Holding Bars

No.	Standard models	Small type models	L	Description	Price [€]
900209.			100 mm	9 x 9 mm	
953638.			50 mm	9 x 9 mm	
900211			115 mm	ø 8 mm	18.00

Spanner

No.	Standard models	Small type models	Price [€]
102037			3.00
301336			3.50


Spanner 102037



Spanner 301336



Stems

No.	Standard models	Small type models	Diameter	Description	Price [€]
902802			4 mm	With Knurled Clamp Ring	11.50
902803			6 mm	With Knurled Clamp Ring	10.50
902804			8 mm	With Knurled Clamp Ring	10.50
902806			4 mm, 8 mm	With Knurled Clamp Ring	20.00
902807			6 mm, 8 mm	With Knurled Clamp Ring	23.00
102036			4 mm		5.00
102389			6 mm		5.00
102822			8 mm		5.50
190318			4 mm		11.50
190319			6 mm		11.50
190320			8 mm		8.50
190322				Knurled Clamp Ring	6.00



902802



902804



102822





102389



190322





Swivel Clamps

No.	Standard models	Small type models	Description	Price [€]
900321			For ø 4, 8 mm stems and dovetail	25.00

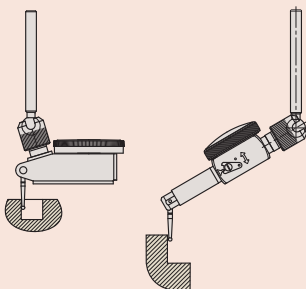


900321

Universal Holder

No.	Standard models	Small type models	Stem	Price [€]
901461			ø 6 mm	41.50
901916			ø 8 mm	48.50
901547			ø 6 mm	33.00
901917			ø 8 mm	48.50

Universal Holder



ABSOLUTE Digimatic Thickness Gauge

Series 547

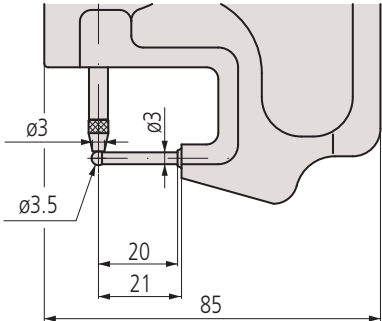
This ABSOLUTE Digimatic Thickness Gauge enables you to measure tube wall thickness.



547-360

Metric With indicator ID-C No. 543-400BS

No.	Range [mm]	Digital step	Indicator No.	Max. measuring depth [mm]	Mass [g]	Price [€]
547-360	0-10	0,01 mm	543-400BS (ID-C)	20	240	433.00



Functions	Series 547
ZERO/ABS	●
GO/±NG judgement	●
Digimatic data output	●
ON/OFF	●
DATA/HOLD	●
Lock function	●
PRESET	●
Counting direction switchable	●
Calculation function	●

Specifications

Accuracy	±20 µm (excluding quantizing error)
Measuring force	≤ 1,5 N
Scale	Capacitance type ABSOLUTE linear encoder
Max. response speed	Unlimited
Contact point	Carbide ball M 2,5 x 0,45 mm (ISO/JIS type)
Alarm	Low voltage, counting value composition error, overflow error, tolerance limit setting error (only ID-C)
Power supply	1 battery SR-44
Battery life	approx. 7.000 hours

Optional accessories

No.	Description	Price €
905338	Digimatic cable (1 m)	28.00
905409	Digimatic cable (2 m)	34.00
06ADV380F	USB Input Tool Direct cable (2 m)	100.00
02AZD790F	Connecting cable U-Wave	85.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50
21EZA198	Spindle lifting lever (12,7 model)	8.00

ABSOLUTE Digimatic Thickness Gauge

Series 547



Functions	Series 547
ZERO/ABS	●
GO/±NG judgement	●
Digimatic data output	●
ON/OFF	●
DATA/HOLD	●
Lock function	●
PRESET	●
Counting direction switchable	●
Calculation function	●

Specifications

Accuracy	±20 µm (excluding quantizing error)
Measuring force	≤ 1,5 N
Scale	Capacitance type ABSOLUTE linear encoder
Parallelism	10 µm
Max. response speed	Unlimited
Contact point	M 2,5 x 0,45 mm (ISO/JIS type)
Alarm	Low voltage, counting value composition error, overflow error, tolerance limit setting error (ID-C only)
Power supply	1 battery SR-44
Battery life	approx. 7.000 hours

Optional accessories

No.	Description	Price €
905338	Digimatic cable (1 m)	28.00
905409	Digimatic cable (2 m)	34.00
06ADV380F	USB Input Tool Direct cable (2 m)	100.00
02AZD790F	Connecting cable U-Wave	85.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50
21EZA198	Spindle lifting lever (12,7 model)	8.00



547-321



547-301



547-313

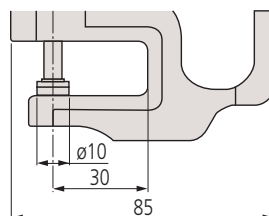


547-315

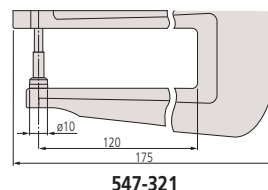
Metric

With indicator ID-C No. 543-400BS

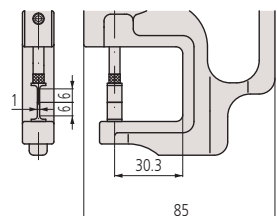
No.	Range [mm]	Digital step	Max. measuring depth [mm]	Type	Mass [g]	Price [€]
547-301	0-10	0,01 mm	30	Ceramic disc contact points	255	433.00
547-321	0-10	0,01 mm	120	Ceramic disc contact points and large jaw capacity	425	453.00
547-313	0-10	0,01 mm	30	Adjustable anvil ¹	275	443.00
547-315	0-10	0,01 mm	30	Blade steel contact point	270	464.00



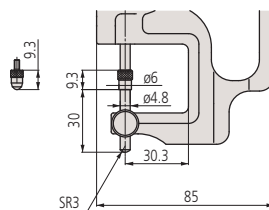
547-301



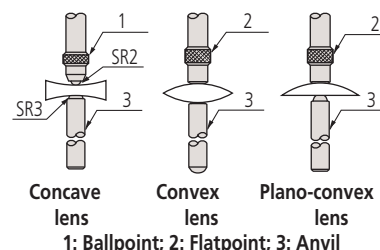
547-321



547-315



547-313



1: Ballpoint; 2: Flatpoint; 3: Anvil

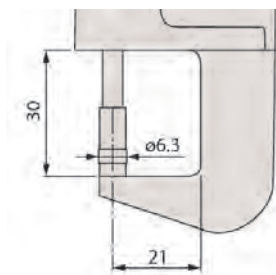
ABSOLUTE Digimatic Thickness Gauge

Series 547

For measuring film, paper, etc., with a resolution of 0,001 mm.



547-401



Metric

No.	Range [mm]	Digital step	Indicator No.	Max. measuring depth [mm]	Mass [g]	Price [€]
547-401	0-12	0,01 mm/0,001 mm	543-390BS (ID-C)	21	290	731.00



Functions	Series 547
ZERO/ABS	●
GO/±NG judgement	●
Digimatic data output	●
ON/OFF	●
DATA/HOLD	●
Lock function	●
PRESET	●
Counting direction switchable	●
Calculation function	●

Specifications

Accuracy	±4 µm (excluding quantizing error)
Measuring force	≤ 3,5 N
Scale	Capacitance type ABSOLUTE linear encoder
Parallelism	3 µm
Max. response speed	Unlimited
Contact point	M 2,5 x 0,45 mm (ISO/JIS type)
Alarm	Low voltage, counting value composition error, overflow error, tolerance limit setting error
Power supply	1 battery SR-44
Battery life	approx. 7.000 hours

Optional accessories

No.	Description	Price €
905338	Digimatic cable (1 m)	28.00
905409	Digimatic cable (2 m)	34.00
06ADV380F	USB Input Tool Direct cable (2 m)	100.00
02AZD790F	Connecting cable U-Wave	85.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50
21AZB149	Lifting lever	5.00

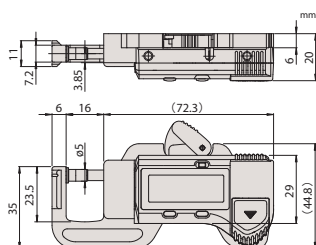
QUICK MINI Thickness Gauge

Series 700

This is a lightweight, palm-sized thickness gauge.



700-119-20



Metric

No.	Range [mm]	Digital step	Mass [g]	Price [€]
700-119-20	0-12	0,01 mm	70	111.00



Functions	Series 700
ORIGIN	●
ZERO/ABS	●
ON/OFF	●

Specifications

Accuracy	±0,02mm (excluding quantizing error)
Measuring force	2 N
Power supply	Battery SR-44
Display	LCD, Character height 9 mm
Battery life	approx. 20.000 hours
Delivered	In case

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50

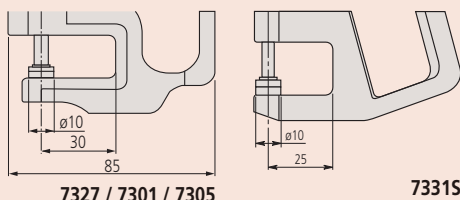
Specifications

Accuracy	Refer to the list of specifications
Parallelism	5 µm

Consumable spares

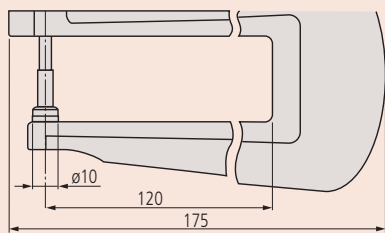
No.	Description	Price €
21AZB149	Lifting lever	5.00
21AZB150	Lifting Lever	5.50

21AZB149 : for 7301/7327/7321/7313/7315/7360
21AZB150 : for 7305/7323

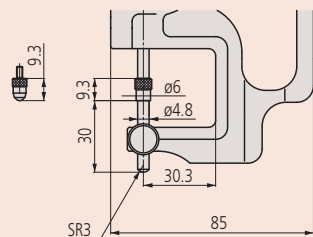


7327 / 7301 / 7305

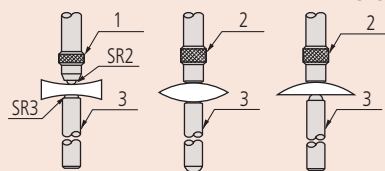
73315



7321 / 7323



7313

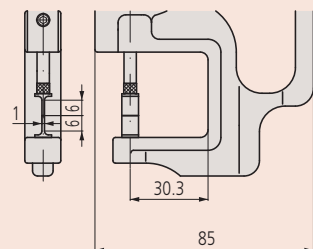


Concave lens

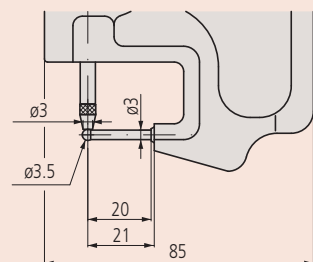
Convex lens

Plano-convex lens

1: Ballpoint; 2: Flatpoint; 3: Anvil



7315



7360

Dial Indicator Thickness Gauge

Series 7

This metric dial indicator thickness gauge 73315 has a lightweight design.



7327

73315

7321

7313

7315

7360

Metric

Adjustable anvil

No.	Range [mm]	Graduation	Accuracy	Indicator No.	Max. measuring depth	Measuring force [N]	Mass [g]	Price [€]
7313	0-10	0,01 mm	±0,015 mm	2046SB	30 mm	≤ 1,4	215	139.00

Metric

Ceramic disc contact points

No.	Range [mm]	Graduation	Accuracy	Indicator No.	Max. measuring depth	Measuring force [N]	Mass [g]	Price [€]
7327	0-1	0,001 mm	±0,005 mm	2109SB-10	30 mm	≤ 1,5	225	206.00
7301	0-10	0,01 mm	±0,015 mm	2046SB	30 mm	≤ 1,4	205	113.00
73315	0-10	0,01 mm	±0,020 mm		25 mm	≤ 1,4	140	77.50
7305	0-20	0,01 mm	±0,020 mm	2050SB	30 mm	≤ 2,0	220	144.00

Metric

Knife-edge contact point

No.	Range [mm]	Graduation	Accuracy	Indicator No.	Max. measuring depth	Measuring force [N]	Mass [g]	Price [€]
7315	0-10	0,01 mm	±0,015 mm	2046SB	30 mm	≤ 1,4	220	155.00

Metric

Large jaw capacity and ceramic disc contact points

No.	Range [mm]	Graduation	Accuracy	Indicator No.	Max. measuring depth	Measuring force [N]	Mass [g]	Price [€]
7321	0-10	0,01 mm	±0,015 mm	2046SB	120 mm	≤ 1,4	355	139.00
7323	0-20	0,01 mm	±0,022 mm	2050SB	120 mm	≤ 2,0	355	175.00

Metric

Tube thicknesses - Minimum inside diameter 3,5 mm

No.	Range [mm]	Graduation	Accuracy	Indicator No.	Max. measuring depth	Measuring force [N]	Mass [g]	Price [€]
7360	0-10	0,01 mm	±0,015 mm	2046SB	20 mm	≤ 1,4	200	118.00

Series 547

- It is equipped with the ABSOLUTE Digimatic Indicator ID-C.
- It has a hardened, precision ground and micro-lapped reference face on its base.



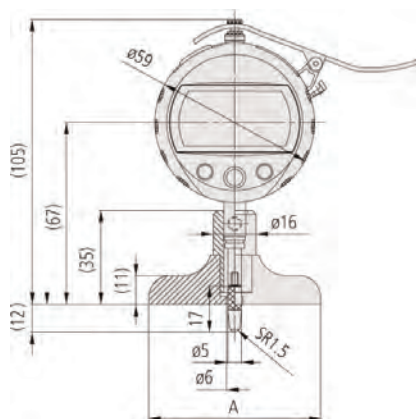
547-211

With indicator No. 543-390BD

No.	Range [mm]	Digital step	Base flatness	Accuracy	Base size [mm]	Mass [g]	Price [€]
547-251	0-200	0,001 mm/0,01mm	2 μm	±5 μm	63,5 x 16	290	443.00
547-252	0-200	0,001 mm/0,01 mm	2 μm	±5 μm	101,6 x 16	340	458.00










With indicator No. 543-400BD

No.	Range [mm]	Digital step	Base flatness	Accuracy	Base size [mm]	Mass [g]	Price [€]
547-211	0-200	0,01 mm	5 µm	±20 µm	63,5 x 16	290	412.00
547-212	0-200	0,01 mm	5 µm	±20 µm	101,6 x 16	340	422.00



547-211, 547-251 a=63.5 mm
547-212, 547-252 A=101.6 mm

ABSOLUTE®

Functions	Series 547
ZERO/ABS	
GO/±NG judgement	
Digimatic data output	
ON/OFF	
DATA/HOLD	
Lock function	
PRESET	
Counting direction switchable	
Calculation function	

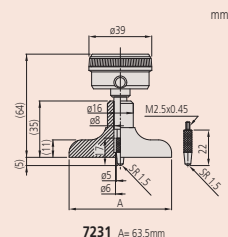
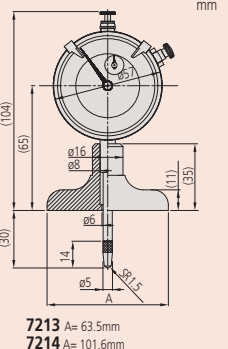
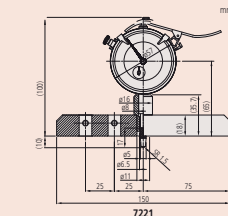
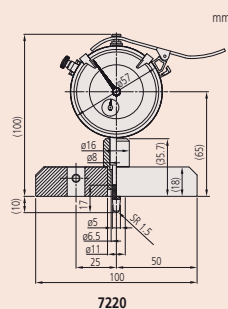
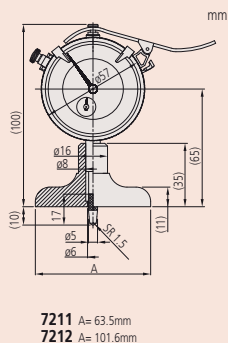
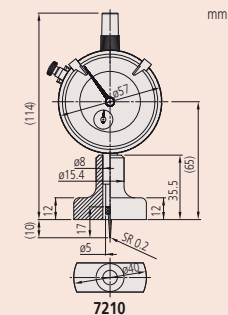
Accuracy	Refer to the list of specifications (excluding quantizing error)
Measuring force	≤ 1,5 N
Scale	Capacitance type ABSOLUTE linear encoder
Max. response speed	Unlimited
Contact point	Carbide ball
Alarm	Low voltage, counting value composition error, overflow error, tolerance limit setting error
Stroke	12,7 mm
Power supply	1 battery SR-44
Battery life	approx. 7.000 hours
Extensions	Metric 5 pcs : 10, 20, 30, 30, 100 mm
Delivered	Including Box and extensions

No.	Description	Price €
905338	Digimatic cable (1 m)	28.00
905409	Digimatic cable (2 m)	34.00
02AZD790F	Connecting cable U-Wave	85.00
06ADV380F	USB Input Tool Direct cable (2 m)	100.00

No.	Description	Price €
938882	Battery SR44	5.50
21AZB149	Lifting lever	5.00
21JAA224	Standard contact point 17 mm	7.00

Specifications

Graduation 0.01 mm



Dial Indicator Depth Gauge

Series 7

This rectangular base dial indicator depth gauge offers you the following benefits:

- Rectangular base.
- It has a hardened, precision ground and micro-lapped reference face on its base.



7211



7214



7231

Metric

With horizontal indicator No. 1162

No.	Range [mm]	Stroke	Base flatness [μm]	Accuracy	Base size [mm]	Probe tip	Extension rods	Measuring force [N]	Mass [g]	Price [€]
7231	0-200	5 mm	5	±15 μm	63,5 x 16	Ball R = 1,5 mm	10, 20, 30, 30, 100 mm	≤ 1,4	200	273.00

Metric

With indicator No. 2902SB

No.	Range [mm]	Stroke	Base flatness [μm]	Accuracy	Base size [mm]	Probe tip	Extension rods	Measuring force [N]	Mass [g]	Price [€]
7210	0-10	10 mm	5	±15 μm	40 x 16	Needle R = 0,2 mm		≤ 1,4	200	191.00
7211	0-200	10 mm	5	±15 μm	63,5 x 16	Ball R = 1,5 mm	10, 20, 30, 30, 100 mm	≤ 1,4	245	191.00
7212	0-200	10 mm	5	±15 μm	101,6 x 16	Ball R = 1,5 mm	10, 20, 30, 30, 100 mm	≤ 1,4	295	206.00
7220	0-200	10 mm	5	±15 μm	100 x 18	Ball R = 1,5 mm	10, 20, 30, 30, 100 mm	≤ 1,4	374	206.00
7221	0-200	10 mm	5	±15 μm	150 x 18	Ball R = 1,5 mm	10, 20, 30, 30, 100 mm	≤ 1,4	820	232.00

Metric

With indicator No. 2952SB

No.	Range [mm]	Stroke	Base flatness [μm]	Accuracy	Base size [mm]	Probe tip	Extension rods	Measuring force [N]	Mass [g]	Price [€]
7213	0-210	30 mm	5	±30 μm	63,5 x 16	Ball R = 1,5 mm	30, 60, 90 mm	≤ 2,5	265	268.00
7214	0-210	30 mm	5	±30 μm	101,6 x 16	Ball R = 1,5 mm	30, 60, 90 mm	≤ 2,5	315	278.00



Dial Indicator Depth Gauge

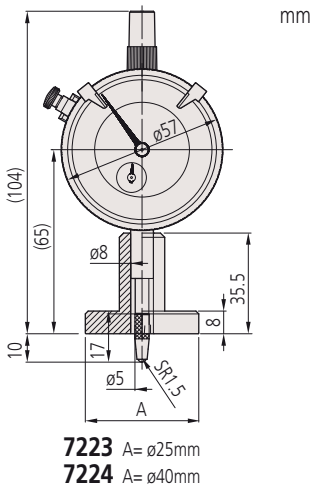
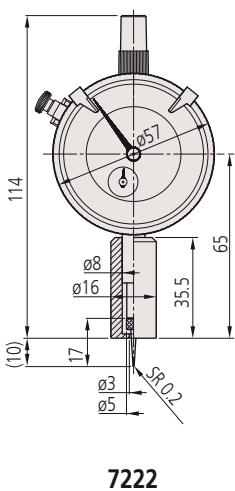
Series 7

This round base type dial indicator depth gauge offers you the following benefits:

- Round base type
- It has a hardened, precision ground and micro-lapped reference face on its base.



Metric									
Circular base with indicator No. 2902SB.									
No.	Range [mm]	Stroke	Base flatness [μm]	Accuracy	Base size [mm]	Probe tip	Measuring force [N]	Mass [g]	Price [€]
7222	10	10 mm	5	±15 μm	ø 16	Needle R = 0,2 mm	≤ 1,4	165	129.00
7223	10	10 mm	5	±15 μm	ø 25	Ball R = 1,5 mm	≤ 1,4	180	129.00
7224	10	10 mm	5	±15 μm	ø 40	Ball R = 1,5 mm	≤ 1,4	195	134.00

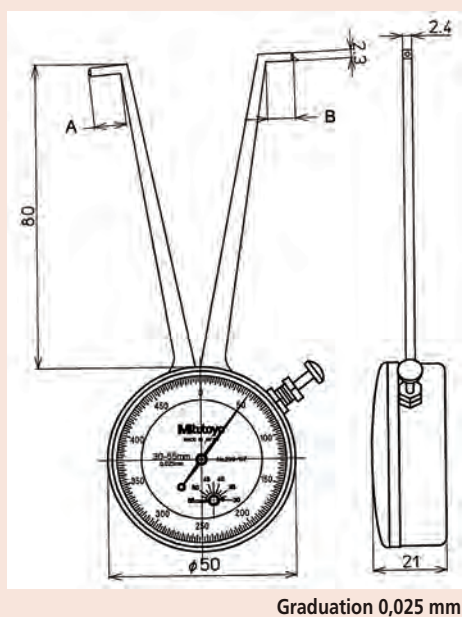
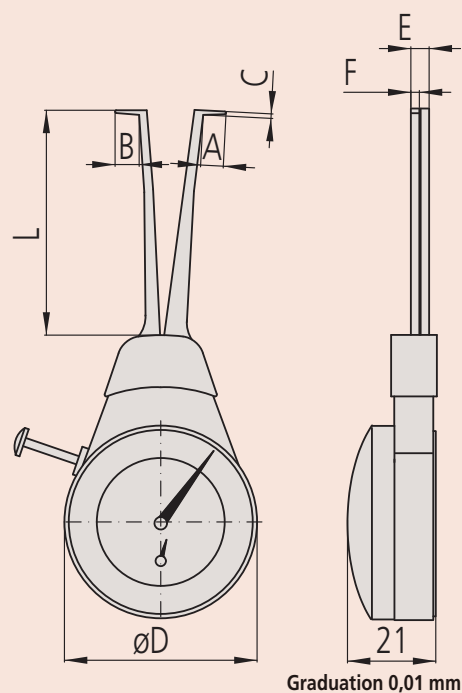


Specifications		
Graduation	0.01 mm	
Consumable spares		
No.	Description	Price €
137413	Needle point	7.00
21JAA224	Standard contact point 17 mm	7.00
21JAA226	Standard contact point 22 mm	8.50

Internal Dial Caliper Gauge

Specifications

Accuracy	Refer to the list of specifications
Measuring force	≤ 2,0
	N



Series 209

- Ideal for comparative internal measurements.
- Adjusted using a micrometer or a setting ring.
- Spring loaded for practically constant measuring force throughout measuring range.



209-125

Metric Measuring contacts : Ball $\varnothing 1,6$ mm - Graduation 0,025 mm

No.	Range [mm]	Scale	Accuracy	A [mm]	B [mm]	Mass [g]	Price [€]
209-106	10-35	0-500	$\pm 75 \mu\text{m}$	2.6	2.6	85	191.00
209-107	30-55	0-500	$\pm 75 \mu\text{m}$	8.5	7.5	85	227.00
209-108	50-75	0-500	$\pm 75 \mu\text{m}$	8.5	7.5	85	273.00

Metric Measuring contacts : Ball $\varnothing 1,6$ mm - Graduation 0,01 mm

No.	Range [mm]	Scale	Accuracy	L [mm]	A [mm]	B [mm]	C [mm]	Ø D [mm]	E [mm]	Mass [g]	Price [€]
209-125	6-18	0-100-100	$\pm 40 \mu\text{m}$	40	1.1	1.1	2.3	50	2.4	75	294.00
209-126	10-22	0-100-100	$\pm 40 \mu\text{m}$	40	2.7	2.3	2.3	50	2.4	75	263.00
209-127	20-32	0-100-100	$\pm 40 \mu\text{m}$	40	4.4	8	2.3	50	2.4	75	283.00

Metric Measuring contacts : Bevel (radius 0,2 mm) - Graduation 0,01 mm

No.	Range [mm]	Scale	Accuracy	L [mm]	A [mm]	B [mm]	C [mm]	Ø D [mm]	E [mm]	F [mm]	Mass [g]	Price [€]
209-155	5-15	0-100	$\pm 30 \mu\text{m}$	26	2.2	2.2	1.2	55	4.7	2.3	85	520.00
209-156	10-20	0-100	$\pm 30 \mu\text{m}$	28	5.5	5.5	1.5	55	4.7	2.3	85	520.00
209-175	10-30	0-100-100	$\pm 40 \mu\text{m}$	61	5.5	5.5	2.3	55	4.7	2.3	95	505.00
209-176	20-40	0-100-100	$\pm 40 \mu\text{m}$	61	10	10	2.3	55	4.7	2.3	95	541.00



Internal Dial Caliper Gauge

Series 209



209-896

Measuring contacts : Carbide ball $\varnothing 0,6$ mm

No.	Range [mm]	Measuring force	Graduation [mm]	Accuracy	A ⁽²⁾ [mm]	B ⁽³⁾ [mm]	Type	L [mm]	Mass [g]	Price [€]
209-301	5-15	0,8/1,2 N	0.005	0,015 mm	2.3	0.8	fig. 4	35	160	387.00

Measuring contacts : Carbide ball $\varnothing 1,0$ mm

No.	Range [mm]	Measuring force	Graduation [mm]	Accuracy	A ⁽²⁾ [mm]	B ⁽³⁾ [mm]	Type	L [mm]	Mass [g]	Price [€]
209-302	10-30	1,1/1,6 N	0.01	0,03 mm	5.2	1.2	fig. 4	85	180	387.00
209-303	20-40	1,1/1,6 N	0.01	0,03 mm	7	1.2	fig. 2	85	180	387.00
209-304	30-50	1,1/1,6 N	0.01	0,03 mm	7	1.2	fig. 2	85	185	387.00
209-305	40-60	1,1/1,6 N	0.01	0,03 mm	8.3	1.2	fig. 3	85	195	387.00
209-306	50-70	1,1/1,6 N	0.01	0,03 mm	8.3	1.2	fig. 3	85	195	387.00
209-307	60-80	1,1/1,6 N	0.01	0,03 mm	8.3	1.2	fig. 3	85	200	387.00
209-308	70-90	1,1/1,6 N	0.01	0,03 mm	8.3	1.2	fig. 3	85	200	387.00
209-309	80-100	1,1/1,6 N	0.01	0,03 mm	8.3	1.2	fig. 3	85	200	387.00

Measuring contacts : Carbide ball $\varnothing 1,5$ mm

No.	Range [mm]	Measuring force	Graduation [mm]	Accuracy	A ⁽²⁾ [mm]	B ⁽³⁾ [mm]	Type	L [mm]	Mass [g]	Price [€]
209-896	15-65	1,2/2,0 N	0.05	0,05 mm	4.5	1.8	fig. 4	175	400	444.00

Measuring contacts : Carbide ball $\varnothing 2,0$ mm

No.	Range [mm]	Measuring force	Graduation [mm]	Accuracy	A ⁽²⁾ [mm]	B ⁽³⁾ [mm]	Type	L [mm]	Mass [g]	Price [€]
209-897	40-90	1,2/2,0 N	0.05	0,05 mm	8	2.5	fig. 3	175	440	444.00
209-898	70-120	1,2/2,0 N	0.05	0,05 mm	8	2.5	fig. 3	175	440	512.00

Measuring contacts : Carbide bevel (radius 0,1 mm)

No.	Range [mm]	Measuring force	Graduation [mm]	Accuracy	A ⁽²⁾ [mm]	B ⁽³⁾ [mm]	Type	L [mm]	Mass [g]	Price [€]
209-300	2.5-12.5	0,8/1,2 N	0.005	0,015 mm	0.7	0.4	fig. 1	12	155	387.00

Measuring contacts : Interchangeable, carbide ball $\varnothing 1,0$ mm

No.	Range [mm]	Measuring force	Graduation [mm]	Accuracy	A ⁽²⁾ [mm]	B ⁽³⁾ [mm]	Type	L [mm]	Mass [g]	Price [€]
209-310	50-100	1,1/1,6 N	0.01	0,03 mm	8.3	1.2	fig. 5	85	220	585.00
209-311	90-140	1,1/1,6 N	0.01	0,03 mm	8.3	1.2	fig. 5	85	230	585.00
209-312	130-180	1,1/1,6 N	0.01	0,03 mm	8.3	1.2	fig. 5	85	230	627.00

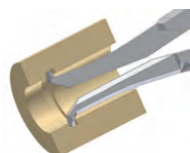


Figure 1

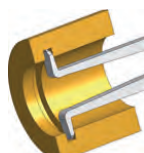


Figure 2

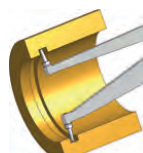


Figure 3

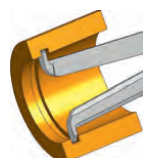


Figure 4



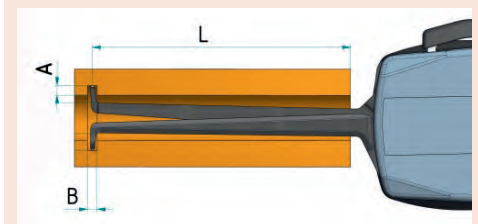
Figure 5



209-300



209-305



(1) Maximum reach of contact arms over workpiece

(2) Maximum groove depth

(3) Minimum groove width

Internal Digimatic Caliper Gauge

Series 209



209-505 up to 209-517



209-550 up to 209-558



Functions	Series 209
Mode key	●
SET key	●
DATA key	●
ON/OFF/0-Preset	●
Max. reading	●
Min. reading	●
ABS/INC switchable	●
HOLD function	●
Data output	●
Counting direction switchable	●
Tolerance LED (green/red)	●
Tolerance judgement	●

Specifications

Power supply	209-505 up to 209-517 : 1 battery AA 209-550 up to 209-558 : 2 batteries AAA
Delivered	Including battery and factory certificate

Optional accessories

No.	Description	Price €
937387	Digimatic cable (1 m)	47.00
965013	Digimatic cable (2 m)	57.50
06ADV380E	USB Input tool Direct cable (2 m)	100.00
02AZD790E	Connecting cable U-Wave	85.00

For 209-505 up to 209-517

011550	Digimatic interface adapter with cover
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For 209-505 up to 209-517

011449	Holder for stand	29.00
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For 209-550 up to 209-558

011530	Holder for stand	110.00
011551	Digimatic interface adapter	

Consumable spares

No.	Description	Price €
011037	4 batteries LR-6 (AA)	10.00



011449



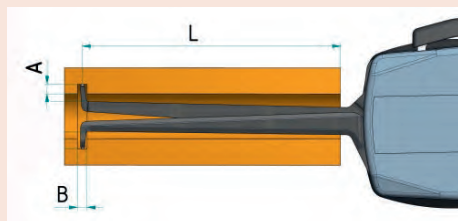
011530



011550



011551



- (1) Maximum reach of contact arms over workpiece
(2) Maximum groove depth
(3) Minimum groove width



209-516



209-550

Measuring contacts : Carbide ball $\phi 0,6$ mm

No.	Range [mm]	Measuring force	Graduation [mm]	Accuracy	A ⁽²⁾ [mm]	B ⁽³⁾ [mm]	Type	L [mm]	Mass [g]	Price [€]
209-551	5-15	0,8-1,2 N	0.005	0,015 mm	2.3	0.8	fig. 4	35	230	397.00

Measuring contacts : Carbide ball $\phi 1,0$ mm

No.	Range [mm]	Measuring force	Graduation [mm]	Accuracy	A ⁽²⁾ [mm]	B ⁽³⁾ [mm]	Type	L [mm]	Mass [g]	Price [€]
209-552	10-30	1,1-1,6 N	0.01	0,03 mm	5.2	1.2	fig. 4	85	250	397.00
209-553	20-40	1,1-1,6 N	0.01	0,03 mm	7	1.2	fig. 2	85	250	397.00
209-554	30-50	1,1-1,6 N	0.01	0,03 mm	7	1.2	fig. 2	85	255	397.00
209-555	40-60	1,1-1,6 N	0.01	0,03 mm	8.3	1.2	fig. 3	85	265	397.00
209-556	50-70	1,1-1,6 N	0.01	0,03 mm	8.3	1.2	fig. 3	85	265	397.00
209-557	60-80	1,1-1,6 N	0.01	0,03 mm	8.3	1.2	fig. 3	85	270	397.00
209-558	70-90	1,1-1,6 N	0.01	0,03 mm	8.3	1.2	fig. 3	85	270	397.00

Measuring contacts : Carbide ball $\phi 1,5$ mm

No.	Range [mm]	Measuring force	Graduation [mm]	Accuracy	A ⁽²⁾ [mm]	B ⁽³⁾ [mm]	Type	L [mm]	Mass [g]	Price [€]
209-505	15-55	1,2-1,7 N	0.02	0,04 mm	5	1.8	fig. 4	114	360	397.00
209-516	15-75	1,0-1,2 N	0.02	0,06 mm	5	1.8	fig. 4	175	440	545.00

Measuring contacts : Carbide ball $\phi 2,0$ mm

No.	Range [mm]	Measuring force	Graduation [mm]	Accuracy	A ⁽²⁾ [mm]	B ⁽³⁾ [mm]	Type	L [mm]	Mass [g]	Price [€]
209-511	35-75	1,3-1,8 N	0.02	0,04 mm	8	2.6	fig. 3	114	380	397.00
209-513	55-95	1,3-1,8 N	0.02	0,04 mm	8	2.6	fig. 3	114	380	397.00
209-514	75-115	1,3-1,8 N	0.02	0,04 mm	8	2.6	fig. 3	114	380	397.00
209-515	95-135	1,3-1,8 N	0.02	0,04 mm	8	2.6	fig. 3	114	380	397.00
209-517	40-100	1,0-1,2 N	0.02	0,06 mm	8.5	2.6	fig. 3	190	440	545.00

Measuring contacts : Carbide bevel (radius 0,1 mm)

No.	Range [mm]	Measuring force	Graduation [mm]	Accuracy	A ⁽²⁾ [mm]	B ⁽³⁾ [mm]	Type	L [mm]	Mass [g]	Price [€]
209-550	2.5-12.5	0,8-1,2 N	0.005	0,015 mm	0.7	0.4	fig. 1	12	225	397.00

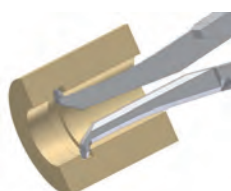


Figure 1

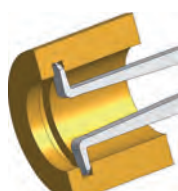


Figure 2

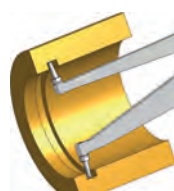


Figure 3

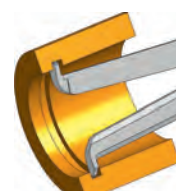


Figure 4

External Dial Caliper Gauge

Series 209



Measuring contacts : Ball $\phi 2$ mm/radius 0,5 mm

No.	Range [mm]	Measuring force	Graduation [mm]	Accuracy	Hb ⁽²⁾ [mm]	Contact radii	Type	L [mm]	Mass [g]	Price [€]
209-603	0-10	0,3/1,3 N	0.1	0,1 mm	5	1,00/0,50 mm	fig. 5	36	40	125.00

Measuring contacts : Carbide ball / carbide bevel

No.	Range [mm]	Measuring force	Graduation [mm]	Accuracy	Hb ⁽²⁾ [mm]	Contact radii	Type	L [mm]	Mass [g]	Price [€]
209-401	0-10	0,8/1,2 N	0.005	0,015 mm	18.8	0,75/0,75 mm	fig. 8	35	165	387.00
209-406	0-20	1,1/1,6 N	0.01	0,03 mm	24.7	0,40/0,75 mm	fig. 3	80	200	387.00

Measuring contacts : Carbide ball $\phi 1,5/2$ mm

No.	Range [mm]	Measuring force	Graduation [mm]	Accuracy	Hb ⁽²⁾ [mm]	Hf ⁽³⁾ [mm]	Contact radii	Type	L [mm]	Mass [g]	Price [€]
209-402	0-10	0,8/1,2 N	0.005	0,015 mm	19.1	18.6	0,75/0,75 mm	fig. 2	35	170	387.00
209-404	0-20	1,1/1,6 N	0.01	0,03 mm	24.7	24.6	0,75/0,75 mm	fig. 2	85	210	387.00
209-407	0-20	1,1/1,6 N	0.01	0,03 mm	24.7		0,75/0,75 mm	fig. 4	85	200	387.00
209-602	0-50	1,2/1,8 N	0.05	0,05 mm	31	35	1,00/1,00 mm	fig. 2	170	560	444.00

Measuring contacts : Carbide ball $\phi 2$ mm

No.	Range [mm]	Measuring force	Graduation [mm]	Accuracy	Hb ⁽²⁾ [mm]	Hf ⁽³⁾ [mm]	Type	L [mm]	Mass [g]	Price [€]
209-843	0-10	0,3/1,3 N	0.1	0,1 mm	5	5	fig. 7	36	40	110.00
209-604	0-50	1,2/1,8 N	0.05	0,05 mm	31		fig. 4	170	520	444.00

Measuring contacts : Carbide bevel

No.	Range [mm]	Measuring force	Graduation [mm]	Accuracy	Hb ⁽²⁾ [mm]	Hf ⁽³⁾ [mm]	Contact radii	Type	L [mm]	Mass [g]	Price [€]
209-405	0-20	1,1/1,6 N	0.01	0,03 mm	24.7	24.6	0,40/0,40 mm	fig. 1	81	210	387.00

Measuring contacts : Disc measuring faces $\phi 10$ mm

No.	Range [mm]	Measuring force	Graduation [mm]	Accuracy	Hb ⁽²⁾ [mm]	Hf ⁽³⁾ [mm]	Type	L [mm]	Mass [g]	Price [€]
209-403	0-10	0,8/1,2 N	0.005	0,02 mm	21.7	14.8	fig. 6	36	175	387.00

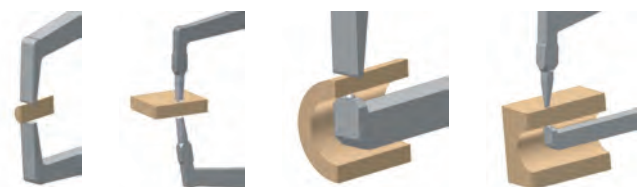


Figure 1

Figure 2

Figure 3

Figure 4



Figure 5



Figure 6



Figure 7



Figure 8

Optional accessories

No.	Description	Price €
011530	Holder for stand	110.00

Except 209-602, 209-603, 209-604, 209-843



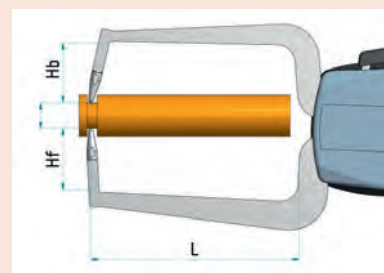
209-402



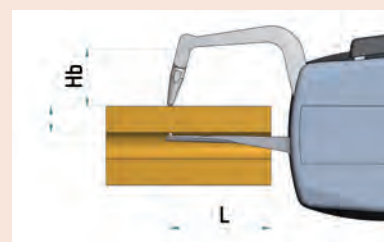
209-405



209-406



Figures 1/2/6/7



Figures 3/4/5/8

- (1) Maximum reach of contact arms over workpiece
- (2) Maximum penetration depth of upper contact
- (3) Maximum penetration depth of lower contact

External Digimatic Caliper Gauge

Series 209



209-531 up to 209-533



209-570 up to 209-573



Functions	Series 209
Mode key	●
SET key	●
DATA key	●
ON/OFF/0-Preset	●
Max. reading	●
Min. reading	●
ABS/INC switchable	●
HOLD function	●
Data output	●
Counting direction switchable	●
Tolerance LED (green/red)	●
Tolerance judgement	●

Specifications

Power supply	209-531 up to -533 : 1 battery AA 209-570 up to -573 : 2 batteries AAA
Delivered	Including battery and factory certificate

Optional accessories

No.	Description	Price €
937387	Digimatic cable (1 m)	47.00
965013	Digimatic cable (2 m)	57.50
06ADV380E	USB Input tool Direct cable (2 m)	100.00
02AZD790E	Connecting cable U-Wave	85.00
For 209-531 up to 209-533		
011449	Holder for stand	29.00
011550	Digimatic interface adapter with cover	
For 209-570 up to 209-573		
011530	Holder for stand	110.00
011551	Digimatic interface adapter	

Consumable spares

No.	Description	Price €
011037	4 batteries LR-6 (AA)	10.00



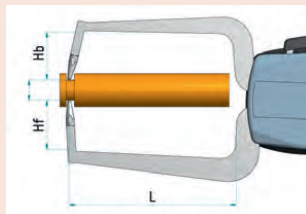
011449

011530



011550

011551



- (1) Maximum reach of contact arms over workpiece
(2) Maximum penetration depth of upper contact
(3) Maximum penetration depth of lower contact



209-572



Dial caliper gauge with optional stand No. 7001-10 and holder No. 011449



209-531

Measuring contacts : Carbide ball $\phi 1,5$ mm

No.	Range [mm]	Measuring force	Graduation [mm]	Accuracy	Hb ⁽²⁾ [mm]	Hf ⁽³⁾ [mm]	Type	L [mm]	Mass [g]	Price [€]
209-570	0-10	0,8/1,2 N	0.005	0,015 mm	19.1	18.6	fig. 1	35	240	397.00
209-572	0-20	1,1/1,6 N	0.01	0,03 mm	24.7	24.6	fig. 1	85	280	397.00
209-573	0-20	1,1/1,6 N	0.01	0,03 mm	24.7	2.5	fig. 2	80	270	397.00

Measuring contacts : Carbide ball $\phi 3,0$ mm

No.	Range [mm]	Measuring force	Graduation [mm]	Accuracy	Hb ⁽²⁾ [mm]	Hf ⁽³⁾ [mm]	Type	L [mm]	Mass [g]	Price [€]
209-531	0-40	1/1,5 N	0.02	0,04 mm	22	25.4	fig. 1	115	380	397.00
209-532	0-40	1/1,5 N	0.02	0,04 mm	22	1	fig. 2	115	380	397.00

Measuring contacts : Disc measuring faces $\phi 10$ mm

No.	Range [mm]	Measuring force	Graduation [mm]	Accuracy	Hb ⁽²⁾ [mm]	Hf ⁽³⁾ [mm]	Type	L [mm]	Mass [g]	Price [€]
209-571	0-10	0,8/1,2 N	0.005	0,02 mm	21.7	14.8	fig. 3	35	245	397.00

Measuring contacts : Disc measuring faces $\phi 50$ mm

No.	Range [mm]	Measuring force	Graduation [mm]	Accuracy	Hb ⁽²⁾ [mm]	Hf ⁽³⁾ [mm]	Type	L [mm]	Mass [g]	Price [€]
209-533	0-40	1/1,5 N	0.02	0,04 mm	30	19.4	fig. 4	115	380	397.00



Figure 1



Figure 2



Figure 3

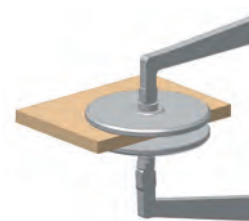


Figure 4

External Digimatic Caliper Gauge

Series 209



209-534

Measuring contacts : Carbide ball ø5 mm

No.	Range [mm]	Measuring force	Accuracy	Hb (2) [mm]	Hf (3) [mm]	Type	L [mm]	Mass [g]	Price [€]
209-535	0-60	0,9/1,2 N	0,06 mm	25	3.9	fig. 2	150	470	545.00
209-534	0-60	0,9/1,2 N	0,06 mm	25	25	fig. 1	190	470	545.00

Measuring contacts : Disc measuring faces ø50 mm

No.	Range [mm]	Measuring force	Accuracy	Hb (2) [mm]	Hf (3) [mm]	Type	L [mm]	Mass [g]	Price [€]
209-536	0-60	0,6/1 N	0,08 mm	27	19.5	fig. 3	190	470	545.00



Figure 1



Figure 2

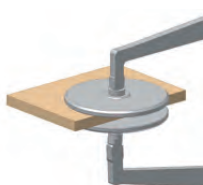
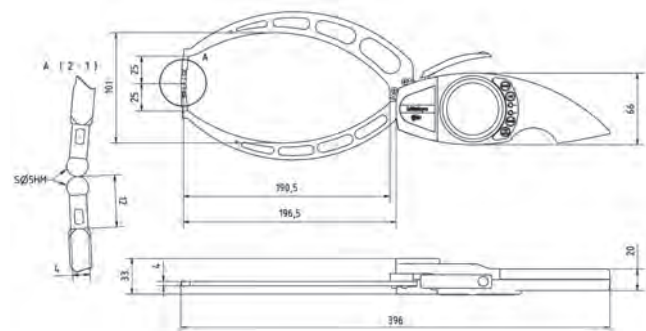
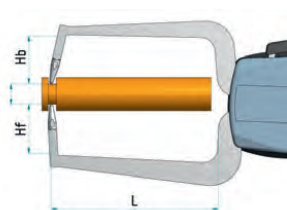
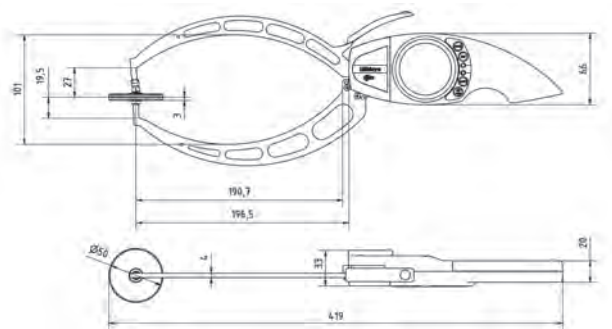


Figure 3



209-534



209-536

Functions	Series 209
Mode key	●
SET key	●
DATA key	●
ON/OFF/0-Preset	●
Max. reading	●
Min. reading	●
ABS/INC switchable	●
HOLD function	●
Data output	●
Counting direction switchable	●
Tolerance LED (green/red)	●
Tolerance judgement	●

Specifications

Graduation	0,02mm
Power supply	1 battery AA
Delivered	Delivered Including Battery and factory certificate

Optional accessories

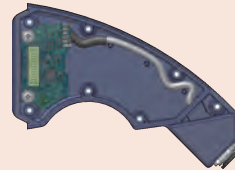
No.	Description	Price €
011449	Holder for stand	29.00
937387	Digimatic cable (1 m)	47.00
965013	Digimatic cable (2 m)	57.50
06ADV380E	USB Input tool Direct cable (2 m)	100.00
02AZD790E	Connecting cable U-Wave	85.00
011550	Digimatic interface adapter with cover	

Consumable spares

No.	Description	Price €
011037	4 batteries LR-6 (AA)	10.00



Digimatic caliper gauge with optional stand No. 7001-10 and holder No. 011449

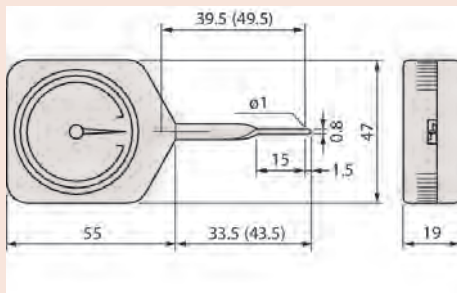
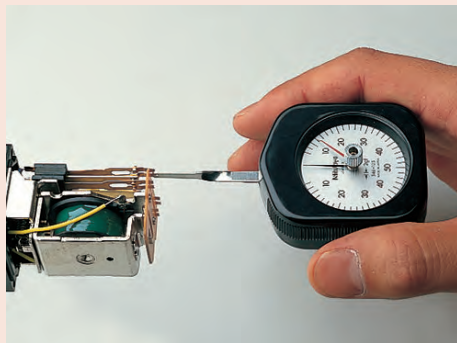


011550

- (1) Maximum reach of contact arms over workpiece
- (2) Maximum penetration depth of upper contact
- (3) Maximum penetration depth of lower contact

Specifications

Accuracy	1/2 graduation
Mass	56 g



Dimensions in brackets refer to No. 546-112,
546-113, 546-133

Spring Balance

Series 546

This spring balance has a range of applications, offering you the following benefits:

- You can set micro switches, relay springs and valves.
- It enables you testing the measuring force of dial indicators.
- You can also use it for adjusting tension and compression springs.
- A divided dial plate allows you to make measurements in both directions.



546-112



546-137

Peak Hold

No.	Range	Graduation	Price [€]
546-133	10-100 mN	5 mN	180.00
546-134	30-300 mN	10 mN	165.00
546-135	0,06-0,5 N	0.02 N	165.00
546-136	0,1-1 N	0.05 N	165.00
546-137	0,15-1,5 N	0.05 N	165.00
546-138	0,3-3 N	0.1 N	165.00
546-139	0,6-5 N	0.2 N	227.00

Standard

No.	Range	Graduation	Price [€]
546-112	6-50 mN	2 mN	201.00
546-113	10-100 mN	5 mN	139.00
546-114	30-300 mN	10 mN	124.00
546-115	0,06-0,5 N	0.02 N	124.00
546-116	0,1-1 N	0.05 N	124.00
546-117	0,15-1,5 N	0.05 N	124.00
546-118	0,3-3 N	0.1 N	124.00
546-119	0,6-5 N	0.2 N	206.00

Wet Film Thickness Gauge

This Wet-Film Thickness Gauge enables you to measure freshly applied, still-wet coatings.



No.	Price [€]
011030	36.50

Coating Thickness Gauge DIGI-DERM

Series 179

This coating thickness gauge lets you carry out accurate, non-destructive thickness measurements. The Coating Thickness Gauge DIGI-DERM offers you the following benefits:

- It enables non-destructive thickness measurement of non-magnetic coatings on magnetic substrates, or non-conductive coatings on non-magnetic substrates.
- Interchangeable sensors, with measuring ranges up to 15mm (DIGI-DERM 740), allow you the widest range of use.
- It has highly accurate characteristic curves thanks to up to 50 calibration points taken during manufacture.
- A large illuminated graphics display makes it easy to read, and you can rotate the display by 180°.



No.	Model	Sensor type	Measurement value memory	Number of storable measurement values	Mass [g]	Price [€]
179-720F5	DIGI-DERM 720	internal, fixed	10	max. 10 000	175	1,008.00
179-720FN5	DIGI-DERM 720	internal, fixed	10	max. 10 000	175	1,313.00
179-606-740	DIGI-DERM 740	external interchangeable	100	max. 100 000	175	1,271.00

Sensors for DIGI-DERM 720 (standard)

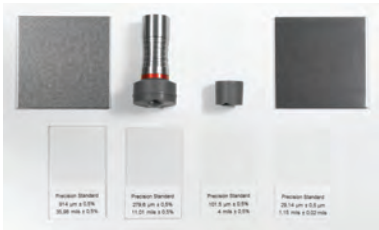
No.	Range	Sensor type	Measuring method
179-720F5 sensor	0 - 5 mm	F 5	magnetic-inductive**
179-720FN5 sensor	F 0... 5 mm N 0... 2,5 mm	FN 5	magnetic-inductive and eddy current**

Sensors for DIGI-DERM 740 (optional)

No.	Range	Sensor type	Measuring method	Price [€]
011507	0 - 1,5 mm	F 1.5	magnetic-inductive***	793.00
011508	0 - 5 mm	F 5	magnetic-inductive**	623.00
011509	F 0-1,5 mm N 0-0,7 mm	FN 1.5	magnetic-inductive and eddy current***	1,092.00
011510	0 - 0,7 mm	N 07	eddy current***	817.00



011508



011509

Specifications

Scale units	µm, mm, mils
Statistics functions	Number of measurement values, minimum, maximum, average, standard deviation, variation coefficient, block statistics
Limit gauging	Optical and acoustic signal when measurement is outside limits
Calibration modes	Factory calibration, Zero point, 2-point- or 3-point-calibration, freely adjustable offset
Dimensions [mm]	157 x 75,5 x 49 mm
Power supply	2 x AA (Mignon)-batteries
Standards	DIN EN ISO 1461, 2064, 2178, 2360, 2808, 3882, 19840 ASTM B244, B499, D7091, E376 AS 3894, 3, SS 1841 60, SSPC-PA 2
Delivered	Carrying bag

Material	Coatings	Sensor type		
		F	N	FN
Iron and steel : including alloyed and ferromagnetic steel	Insulating coatings : Varnish, enamel, plastic	●	-	●
	Non-ferrous metal coating : Chromium, copper, zinc, tin	●	-	●
Non ferrous metal : Aluminium, copper, zinc, austenitic steel	Insulating coatings : Varnish, enamel, plastic	-	●	●
	Non-ferrous metal coating : Chromium, copper, zinc, tin	-	-	-

**

- Standard sensor for general applications
- Accuracy according to DIN 55 350 Part 13 :
±(1,5 µm+0,75% of measurement value)
- Repeatability : ±(0,8 µm+0,5% of measurement value)
- Smallest target surface : ø 10 mm

- Applications : small parts, thin coatings
- Accuracy according to DIN 55 350 Part 13 :
±(1 µm+0,75% of measurement value)
- Repeatability : ±(0,5 µm+0,5% of measurement value)
- Smallest target surface : ø 5 mm

Coating Thickness Gauge MINI-DERM

Series 179

This coating thickness gauge lets you carry out accurate, non-destructive thickness measurements. The Coating Thickness Gauge MINI-DERM offers you the following benefit:

- It enables non-destructive thickness measurement of non-magnetic coatings, such as galvanic coatings (layers of zinc, copper, chromium, cadmium)
- You can also carry out non-destructive thickness measurements on coatings such as paints, enamels and plastics, on iron and steel substrates.



179-504

No.	Range [μm]	Accuracy ⁽¹⁾	Smallest target surface	Min. bend radius on the test piece	Application	Price [€]
179-503	0 - 100	± 1 μm (0... 20 μm) 5% (20... 100 μm)	ø 20 mm	5 mm convex 25 mm concave	galvanic coatings on steel and iron	583.00
179-504	0 - 1000	± 5 μm (0... 100 μm) 5% (100... 1000 μm)	ø 30 mm	8 mm convex 25 mm concave	paint, lacquer on steel and iron	583.00

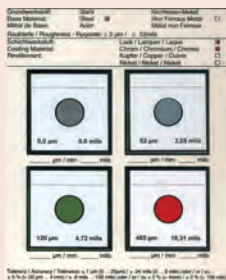
⁽¹⁾ % of measurement value

Specifications

Min. thickness of substrate testable	0.4 mm
Dimensions [mm]	220 x 120 x 50 mm
Mass	660 g

Optional accessories

No.	Description	Price €
179-551	Coating thickness standard 0-50 Nominal dimensions ≈ 0, 10, 20, 40 in each case chrome on steel	452.00
179-552	Coating thickness standard 0-400 Nominal dimensions ≈ 0, 40, 120, 400 40 chrome on steel 120 paint on steel 400 paint on steel	452.00
011029	Leather pouch for carrying on the belt	55.00
527599	Coating thickness 25	4.00
527600	Coating thickness 50	4.00
527601	Coating thickness 100	4.00
527602	Coating thickness 250	5.50
527603	Coating thickness 500	7.50
527604	Coating thickness 1000	9.00
527605	Coating thickness 2000	10.50



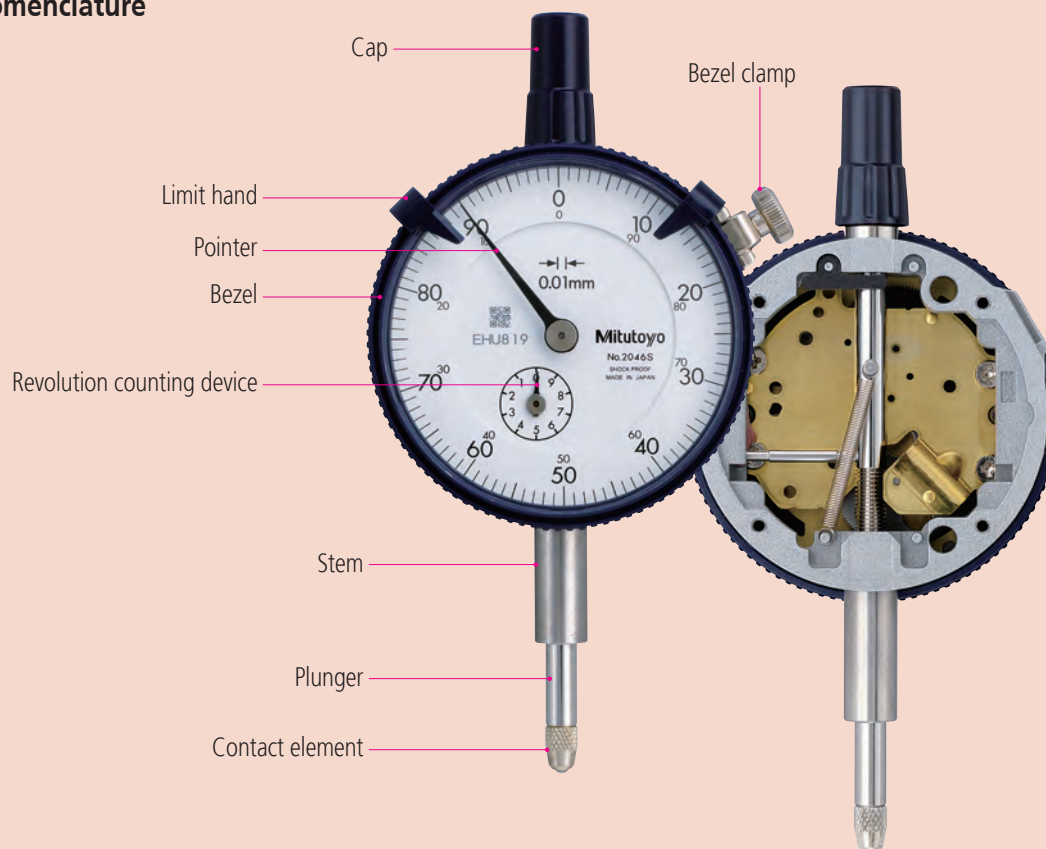
179-552

Quick Guide to Precision Measuring Instruments



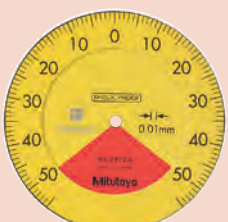
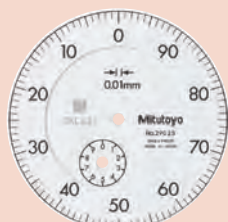
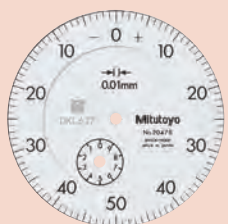
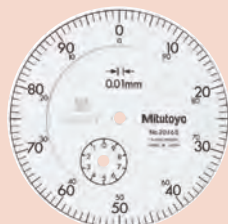
Dial Gages and Digital Indicators

Nomenclature

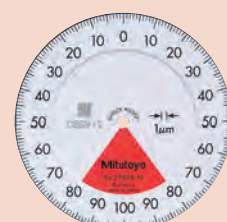
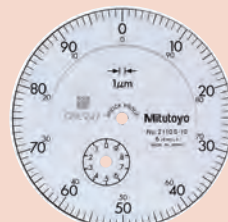
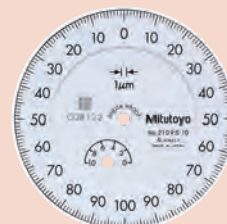
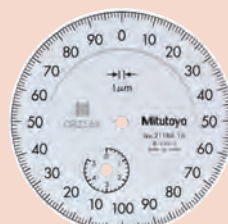


Dial faces

0.01mm

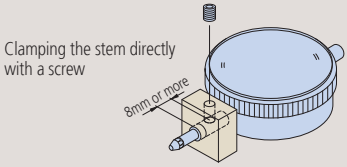
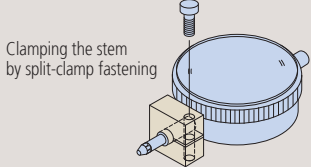
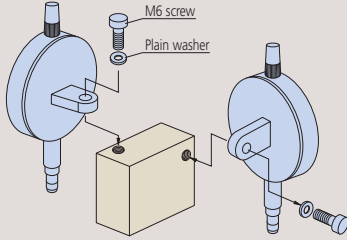


0.001mm



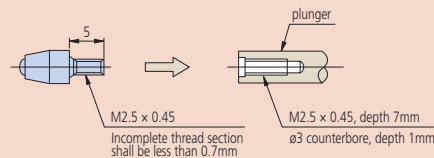
- Continuous dial: For direct reading
- Balanced dial: For reading the difference from a reference surface
- Reverse reading dial: For depth or bore gage measurement
- One revolution dial: For error-free reading of small differences

■ Mounting a Dial gage

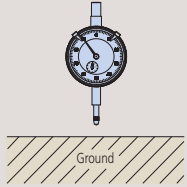
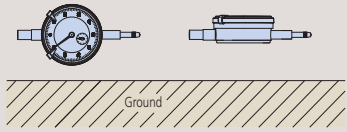
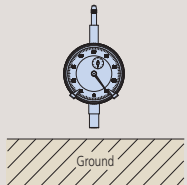
Stem mounting	Method	 <p>Clamping the stem directly with a screw</p> <p>8mm or more</p>	 <p>Clamping the stem by split-clamp fastening</p>
	Note	<ul style="list-style-type: none"> • Mounting hole tolerance: $\phi 8G7(+0.005 \text{ to } 0.02)$ • Clamping screw: M4 to M6 • Clamping position: 8mm or more from the lower edge of the stem • Maximum clamping torque: 150N-cm when clamping with a single M5 screw • Note that excessive clamping torque may adversely affect spindle movement. 	<ul style="list-style-type: none"> • Mounting hole tolerance: $\phi 8G7(+0.005 \text{ to } 0.02)$
Lug mounting	Method		
	Note	<ul style="list-style-type: none"> • Lugs can be changed 90 degrees in orientation according to the application. (The lug is set horizontally when shipped.) • Lugs of some Series 1 models (No.1911,1913-10&1003), however, cannot be altered to horizontal. • To avoid cosine-effect error, ensure that any type of gage or indicator is mounted with its spindle in line with the intended measurement direction. 	

■ Contact element

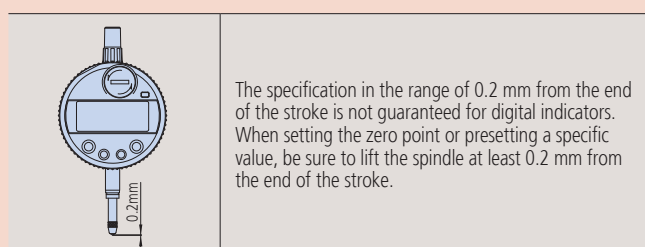
- Screw thread is standardized on M2.5x0.45 (Length: 5mm).
- Incomplete thread section at the root of the screw shall be less than 0.7mm when fabricating a contact point.



■ Effect of orientation on measuring force

Position	Remarks
Contact element down (normal position) 	If measurement is performed with the plunger horizontal or contact element up, the measuring force is less than when the contact element is down. In this case be sure to check the operation and repeatability of the indicator or digital display. For operation specifications according to positions of digital indicators and dial gages, refer to the product descriptions in a general catalog.
Plunger horizontal (lateral position) 	
Contact element up (upside-down position) 	

■ Setting the origin of a digital indicator

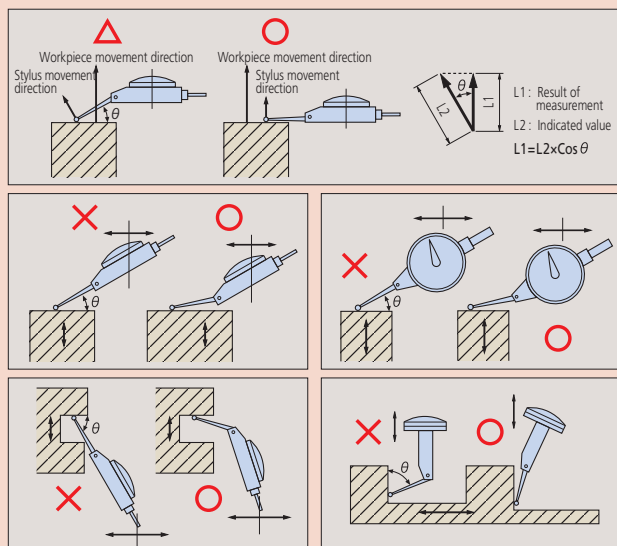


■ Care of the plunger

- Do not lubricate the plunger. Doing so might cause dust to accumulate, resulting in a malfunction.
- If the plunger movement is poor, wipe the upper and lower plunger surfaces with a dry or alcohol-soaked cloth. If the movement is not improved by cleaning, contact Mitutoyo for repair.
- Before making a measurement or calibration, please confirm if the spindle moves upward and downward smoothly, and stability of zero point.

Dial Test Indicators and the Cosine Effect

Always minimize the angle between movement directions during use.



The reading of any indicator will not represent an accurate measurement if its measuring direction is misaligned with the intended direction of measurement (cosine effect). Because the measuring direction of a dial test indicator is at right angles to a line drawn through the contact point and the stylus pivot, this effect can be minimized by setting the stylus to minimize angle θ (as shown in the figures). If necessary, the dial reading can be compensated for the actual θ value by using the table below to give the result of measurement.

Result of measurement = indicated value x compensation value

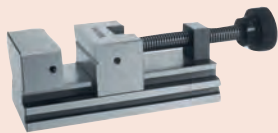
Compensating for a non-zero angle

Angle	Compensation value
10°	0.98
20°	0.94
30°	0.86
40°	0.76
50°	0.64
60°	0.50

Examples

If a 0.200mm measurement is indicated on the dial at various values of θ , the result of measurements are:
 For $\theta = 10^\circ$, $0.200\text{mm} \times 0.98 = 0.196\text{mm}$
 For $\theta = 20^\circ$, $0.200\text{mm} \times 0.94 = 0.188\text{mm}$
 For $\theta = 30^\circ$, $0.200\text{mm} \times 0.86 = 0.172\text{mm}$

Note: A special contact point of involute form can be used to apply compensation automatically and allow measurement to be performed without manual compensation for any angle θ from 0 to 30°. (This type of contact point is custom-made.)



**Stands, Bench Tools, Vices, V-Blocks, Plates,
Protectors, Levels, Squares, Rules, Spring Calipers**
Page 320

Gauge Stand with Hardened Steel Anvil

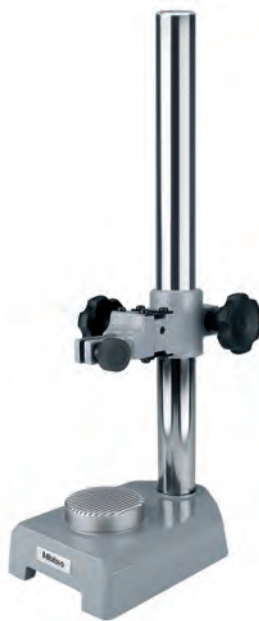
Series 7
Standard version



7001-10

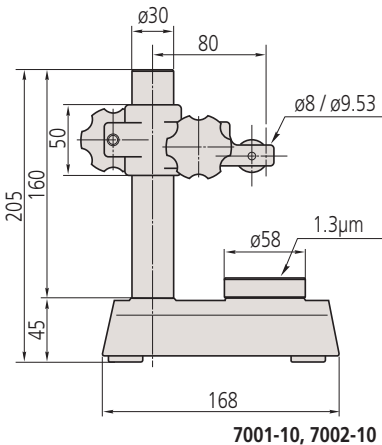


7002-10

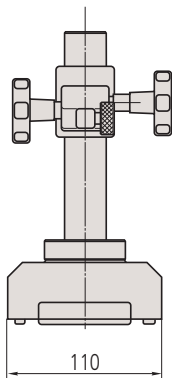


519-109-10

No.	Table dimensions [mm]	Column Ø [mm]	Max. measurement height [mm]	Measuring table	Stem hole ø [mm]	Mass [kg]	Price [€]
7001-10	Ø 58	30	95	Serrated (101462)	ø 3/8" (9,53 mm), 8 mm with bush (standard accessory)	4	422.00
7002-10	Ø 58	30	95	Flat (101461)	ø 3/8" (9,53 mm), 8 mm with bush (standard accessory)	4	391.00
519-109-10	Ø 58	30	318	Serrated (101462)	ø 3/8" (9,53 mm), 8 mm with bush (standard accessory)	6	608.00



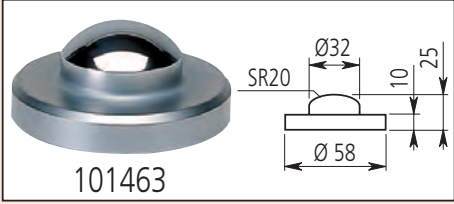
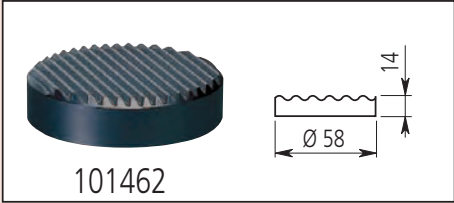
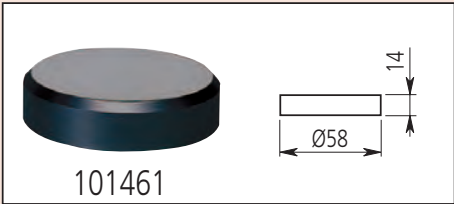
7001-10, 7002-10



Specifications	
Fine adjustment	1 mm
Table flatness	1.3 µm
Squareness table-stem hole	0.4/100 µm/mm

Standard accessories	
No.	Description
101461	Flat anvil
101462	Serrated anvil
21JAA316	Bushing Ø 8

Optional accessories		
No.	Description	Price €
101463	Convex anvil	98.50



Gauge Stand with Hardened Steel Anvil

Series 215, Series 7

Standard version

Specifications

Fine adjustment	1 mm (215-505-10: screw on column)
Table flatness	1.3 (7007-10) 2.3 (215-405-10, 215-505-10) μm
Squareness table-stem hole	0.4/100 μm/mm

Standard accessories

No.	Description
21JAA316	Bushing Ø 8
21JAA329	Bushing Ø 8
21JAA330	Bushing Ø 9,53

21JAA316 only for 7007-10 + 215-405-10

21JAA329 and 21JAA330 only for 215-505-10

Optional accessories

No.	Description	Price €
21JAA331	Bushing Ø 15	26.50

21JAA331 : only for 215-505-10



7007-10

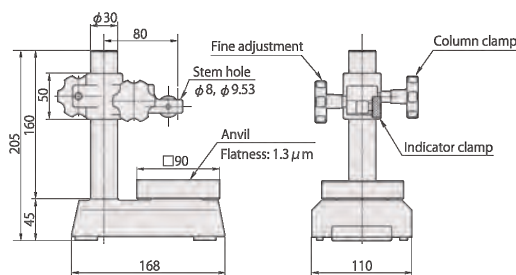


215-405-10

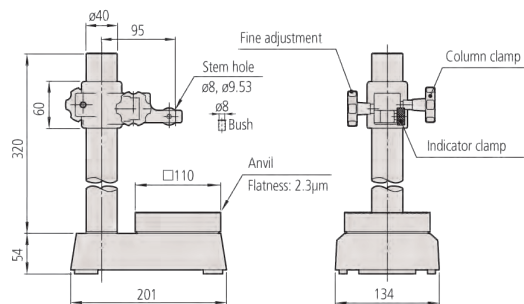


215-505-10

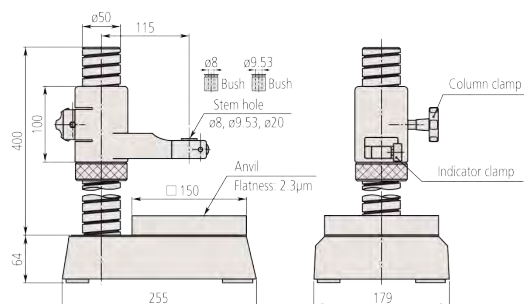
No.	Table dimensions [mm]	Column Ø [mm]	Max. measurement height [mm]	Stem hole ø [mm]	Mass [kg]	Price [€]
7007-10	90 x 90	30	90	ø 3/8" ø 9,53 mm / ø 8 mm with bush	5	433.00
215-405-10	110 x 110	40	235	ø 3/8" 9,53 mm/ø 8 mm with bush	10.9	520.00
215-505-10	150 x 150	50	275	ø 20 mm (ø 8 mm/ø 3/8" ø 9,53 mm with bush)	19.7	659.00



7007-10



215-405-10



215-505-10

Gauge Stand with Hardened Steel Anvil

Series 913

Standard version

- Simple standard version.



913-101

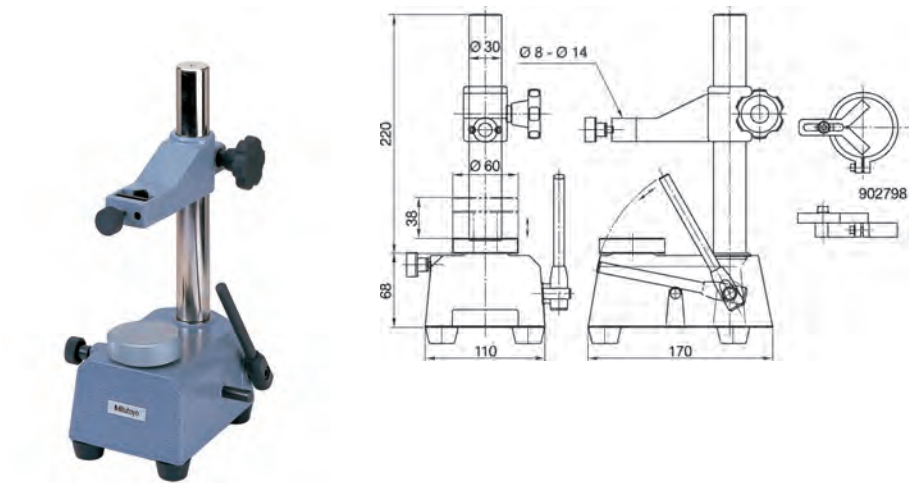
913-102

No.	Table dimensions [mm]	Max. measurement height [mm]	Stem hole ø [mm]	Price [€]
913-101	ø 50	100	8 mm	299.00
913-102	60 x 70	100	8 mm	427.00

Stand for Precision Bore Gauge

Series 215

- For batch-measurement of small parts.



215-120-10

No.	Maximum measuring height [mm]	Table dimensions [mm]	Measuring stroke [mm]	Mass [kg]	Price [€]
215-120-10	110	ø 60	max. 38	6.5	937.00

Specifications

Column Ø	22 mm
----------	-------

Optional accessories

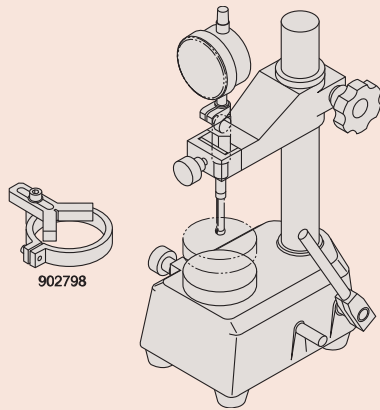
No.	Description	Price €
913-201	Horizontal measuring bow for comprehensive measuring applications. Centre distance : max. 45.	160.00



913-102 with 913-201

Optional accessories

No.	Description	Price €
902798	Detachable angle stop for safe and quick workpiece positioning under the measuring instrument, for Ø 8 - 16	149.00



Gauge Stand with Granite Base

Series 912

This gauge stand comes with a wear-resistant black granite table.



912-101

No.	Base size [mm]	Table dimensions [mm]	Column Ø [mm]	Max. measurement height [mm]	Throat [mm]	Arm ø [mm]	Stem hole ø [mm]	Mass [kg]	Table flatness [μm]	Price [€]
912-101	150 x 100 x 40	100 x 100	16	180	150	16	8	2.8	2	330.00

Series 912

- Black granite, fine diamond-lapped measuring table.
- Arm with 120 mm projection.



912-105

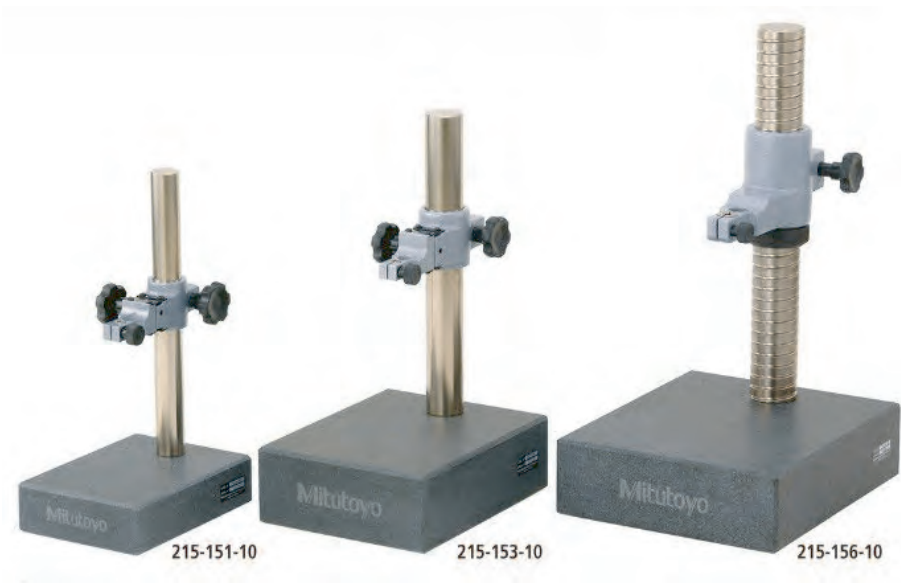
No.	Base size [mm]	Table dimensions [mm]	Column Ø [mm]	Max. measurement height [mm]	Throat [mm]	Fine adjustment	Stem hole ø [mm]	Mass [kg]	Table flatness [μm]	Price [€]
912-105	260 x 140 x 50	200 x 140	35	180	120	8 mm	8	9.5	2	747.00

Gauge Stand with Granite Base

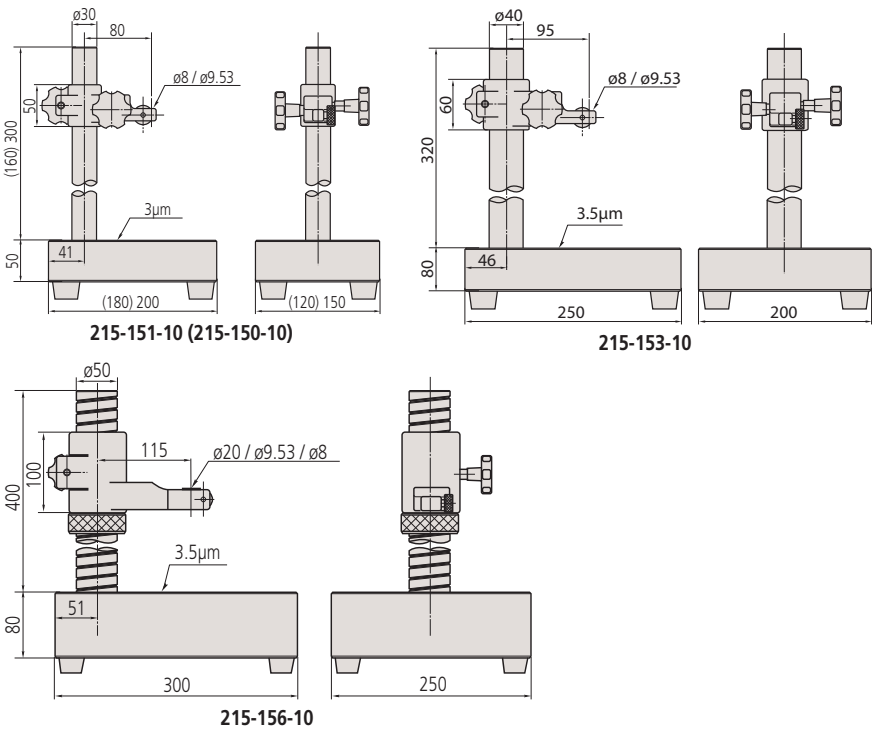
Series 215

This jointed magnetic stand offers you the following benefits:

- It comes with a mechanical locking system and allows fine adjustment.
- You can also fix a dial indicator in any position by mechanically clamping the articulated arm.



No.	Table dimensions [mm]	Column Ø [mm]	Max. measurement height [mm]	Fine adjustment	Stem hole ø [mm]	Mass [kg]	Table flatness [µm]	Squareness table-stem hole [µm/mm]	Price [€]
215-150-10	125 x 120	30	120	1	ø 3/8" / ø 9,53mm (ø 8 mm with bush)	5.4	3	0.2/100	443.00
215-151-10	141 x 150	30	260	1	ø 3/8" / ø 9,53mm (ø 8 mm with bush)	7.5	3	0.2/100	474.00
215-153-10	180 x 200	40	250	1	ø 3/8" / ø 9,53mm (ø 8 mm with bush)	16	3.5	0.2/100	520.00
215-156-10	210 x 250	50	300	1	ø 20 mm (ø 8 mm / 3/8" 9,53 mm with bush)	27.5	3.5	0.2/100	639.00



Standard accessories

No.	Description
21JAA316	Bushing Ø 8
21JAA329	Bushing Ø 8
21JAA330	Bushing Ø 9,53

21JAA316 for 215-150-10, 215-151-10, 215-153-10
21JAA329 and 21JAA330 for 215-156-10

Optional accessories

No.	Description	Price €
21JAA331	Bushing Ø 15	26.50

only for 215-156-10

Jointed Magnetic Stand

Series 011

- with mechanical locking system and fine adjustment
- Allows a dial indicator to be fixed in any position by mechanically clamping the articulated arm.



011533



011358

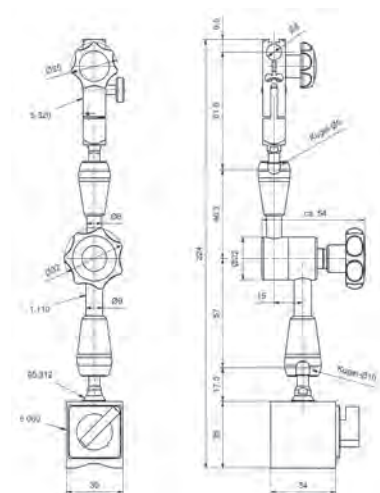


011359

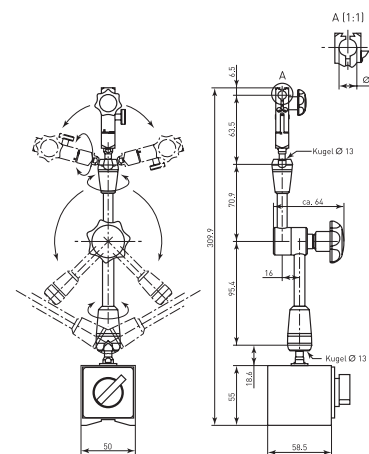


011360

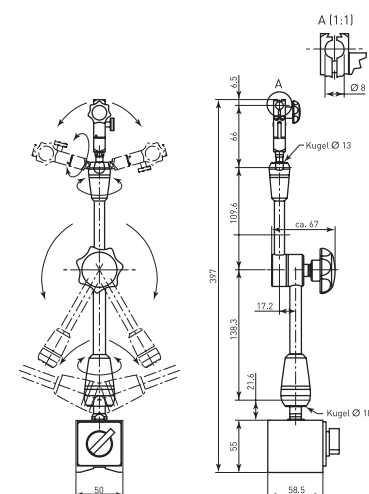
No.	Clamping device	Clamping force (vertical) [N]	Base size (LxWxH) [mm]	Total height [mm]	Stem hole ø [mm]	Working radius [mm]	Mass [kg]	Thread Arm/ Base	Price [€]
011533	magnetic	300	34 x 30 x 35	220	8	130	0.45	M6 x 1	180.00
011358	magnetic	750	60 x 50 x 55	310	8	200	1.55	M8 x 1.25	187.00
011359	magnetic	750	60 x 50 x 55	397	8	280	1.85	M8 x 1.25	232.00
011360	magnetic	900	75 x 50 x 55	517	8	400	2.1	M8 x 1.25	276.00



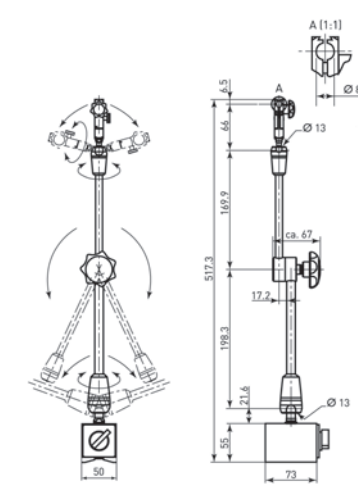
011533



011358



011359



011360

Jointed Magnetic Stand

Series 7

This jointed magnetic stand offers you the following benefits:

- It comes with a mechanical locking system and allows fine adjustment.
- You can also fix a dial indicator in any position by mechanically clamping the articulated arm.



No.	Clamping device	Clamping force (vertical) [N]	Base size (LxWxH) [mm]	Fine adjustment °	Total height [mm]	Working radius [mm]	Stem hole ø [mm]	Mass [kg]	Thread Arm/Base	Price [€]
7033B	magnetic	600	50 x 60 x 55	±4	425	320	6, 8, 3/8"	1.75	M8 x 1.25	180.00

Flexible Jointed Arm

Series 011 / 56A



56AAK793
Mechanical clamping
Dimensions: see 7033B



011361
Mechanical clamping
Dimensions : see 011359



011362
Mechanical clamping
Dimensions : see 011358

No.	Working radius [mm]	Stem hole ø [mm]	Price [€]
011361	±200	8	140.00
011362	±280	8	185.00
011363	±400	8	206.00

Magnetic Base

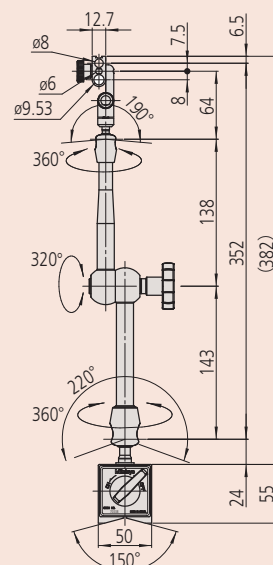
Series 011 / 7

- V-block type.

No.	Base size [mm]	Clamping force (vertical) [N]	Threaded bore	Mass [kg]	Price [€]
011364	75 x 50 x 55	900	M 8 x 1.25 mm	1.25	88.50
7013B	50 x 60 x 55	600	M 8 x 1.25 mm	1	51.50

Standard accessories

No.	Description
02AZA292	Bush for ø 8 stem



Specifications

Thread | M 8 x 1.25 mm



7013B

Magnetic Stand

Series 7

V-block base type.

Specifications

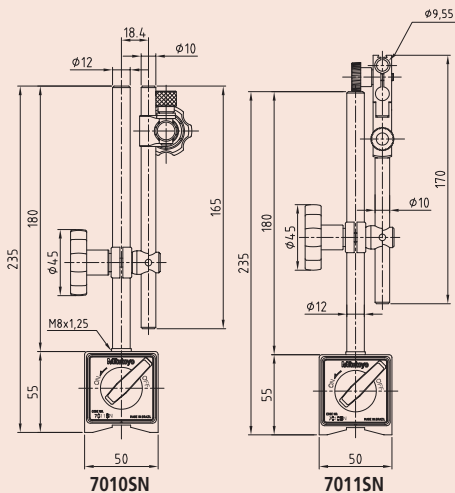
Base size (LxWxH)	59 x 50 x 55 mm
Stem hole \varnothing	$\varnothing 8\text{mm}$ with stem bush mm

Standard accessories

No.	Description
02AZC291	Reducing sleeve to hold 8 stems

Optional accessories

No.	Description	Price €
02AZC282	300 cross arm	16.50

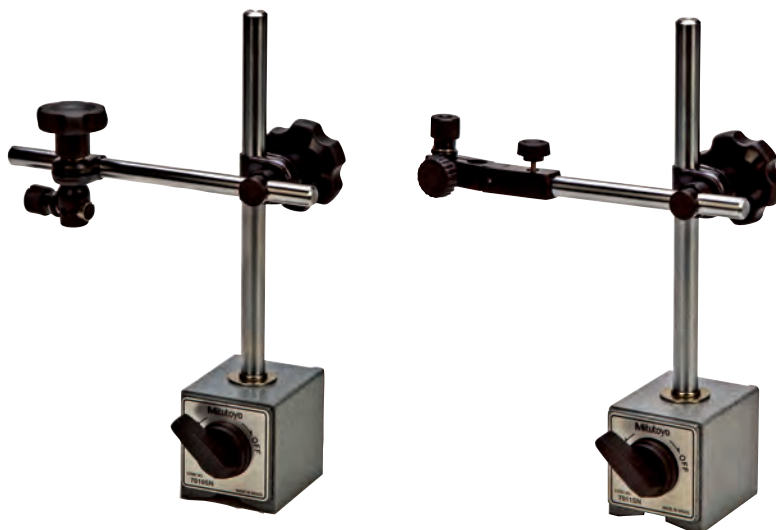
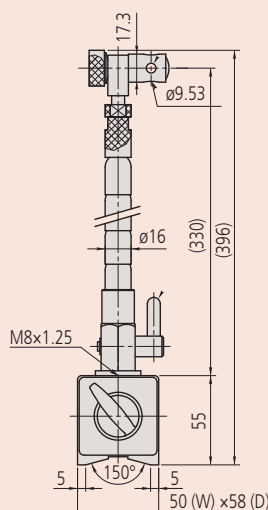


Specifications

Base size (LxWxH)	58 x 50 x 55 mm
Stem hole \varnothing	$\varnothing 8\text{mm}$ with stem bush mm

Standard accessories

No.	Description
02AZC291	Reducing sleeve to hold 8 stems



7010SN

7011SN

No.	Clamping device	Fine adjustment [mm]	Total height [mm]	Working radius [mm]	Mass [kg]	Thread Arm/Base	Price [€]
7010SN	magnetic	None	235	150	1.25	M8 x 1.25	77.50
7011SN	magnetic	yes	235	160	1.45	M8 x 1.25	85.50

Series 7

With V-block base and flexible arm.



7012-10

No.	Clamping device	Total height [mm]	Working radius [mm]	Mass [kg]	Thread Arm/Base	Price [€]
7012-10	magnetic	396	250	1.5	M8 x 1.25	160.00

Magnetic Stand

Series 7

- This is a mini type of magnetic stand that offers you the following benefits:
- Mini measuring stand without magnet ON/OFF.
 - It is designed to accept dial test indicators with 6mm or 8mm diameter stems, or dovetail.



7014

No.	Clamping device	Clamping force (vertical) [N]	Total height [mm]	Working radius [mm]	Mass [g]	Price [€]
7014	magnetic	150	106	68	170	67.00

Series 913

- Specially suitable for attaching to cylindrical parts.
- Magnetic base.



913-104

No.	Clamping device	Clamping force (vertical) [N]	Total height [mm]	Working radius [mm]	Minimum workpiece diameter [mm]	Mass [kg]	Price [€]
913-104	magnetic	400	150	120	36	0.9	309.00

Pneumatic Stand

Series 913

- Adheres to all smooth surfaces such as granite, polished steel, etc.

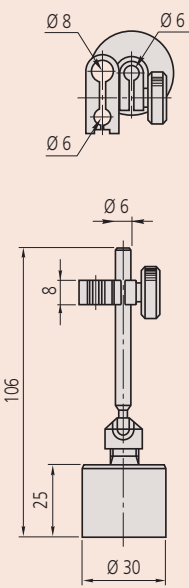


913-103

No.	Clamping device	Clamping force (vertical) [N]	Vertical arm	Cross arm	Total height [mm]	Mass [kg]	Price [€]
913-103	pneumatic	400	200 x ø16	200 x ø16	245	2.3	381.00

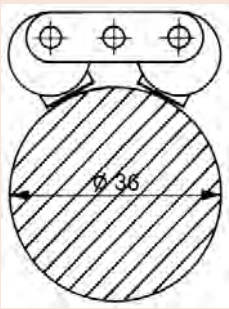
Specifications

Base size (LxWxH)	ø 30 mm
Stem hole ø	6 / 8 mm



Specifications

Base size (LxWxH)	114 x 88 x 38 mm
Stem hole ø	4 / 8 mm



Specifications

Base diameter	90 mm
Stem hole ø	8 mm

Precision Bench Centre

Specifications

Stem hole ϕ ϕ 8 mm with stem bush mm

Standard accessories

No.	Description
56AAK066	Stand
56AAK426	Stand
02AZA292	Bush for ϕ 8 stem

56AAK066 Stand for 967-203-10, 967-201-10

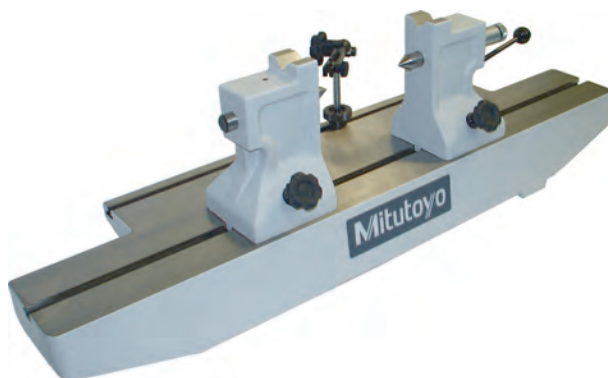
56AAK426 Stand for 967-202-10

Series 967

These precision bench centres are used for cylindrical and tapered parts.

They offer you the following benefits:

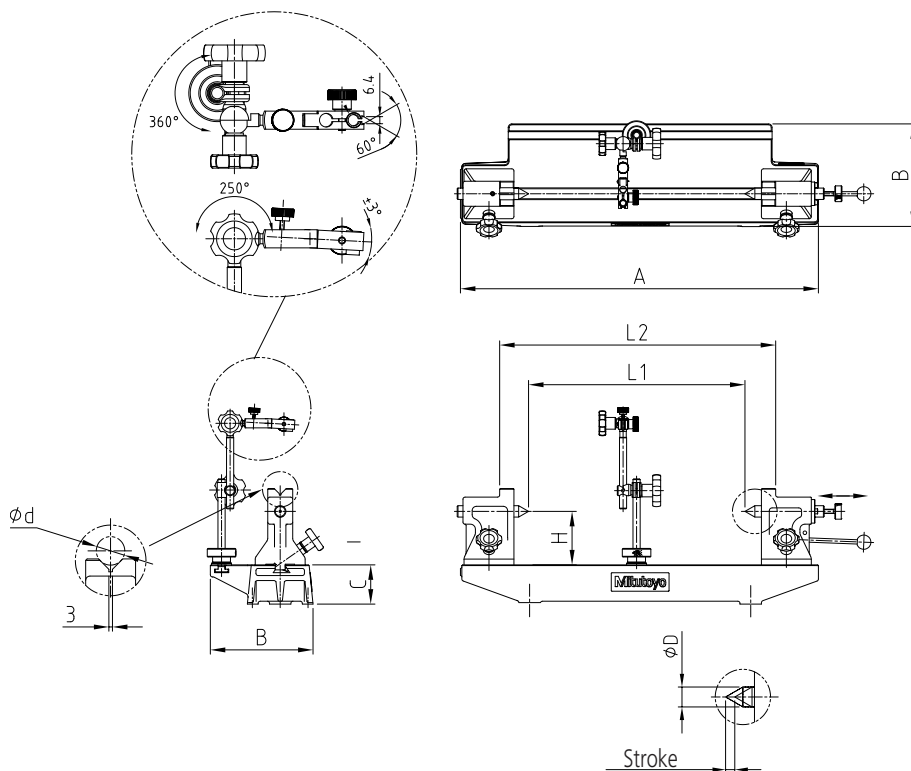
- You can make fast and precise checks of runout on cylindrical/tapered parts.
- The base and centre-stocks are manufactured from stress-relieved and aged cast iron.
- The centres are made from hardened and precision ground steel.



967-201-10

No.	Max. work-piece weight [kg]	Stand No.	ϕ d Min-Max [mm]	A [mm]	L1 [mm]	L2 [mm]	B [mm]	C [mm]	H [mm]	ϕ D [mm]	Stroke [mm]	Price [€]
967-203-10	7	56AAK066	22	310	150	220	113	40	50	16	10	970.00
967-201-10	13	56AAK066	22	500	300	400	144	55	75	16	12	1,320.00
967-202-10	70	56AAK426	30	900	600	730	222	100	125	20	15	2,630.00

No.	Mass [kg]
967-203-10	7
967-201-10	13
967-202-10	70

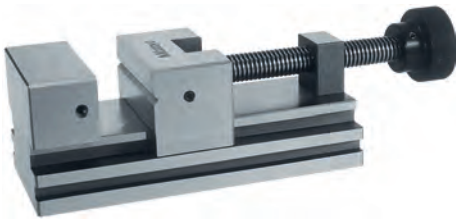


Precision Vice

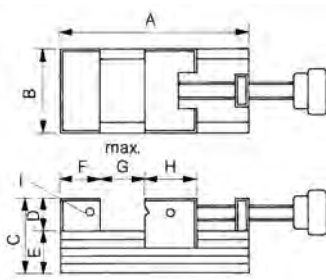
Series 930

This is a precision vice with a threaded spindle type that offers you the following benefits:

- It is made of tool steel, hardened and precision ground.
- It has a horizontally ground V-groove in the movable jaw.



930-602



No.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]	Mass [kg]	Price [€]
930-611	90	60	50	25	25	25	30	30	M 5	1.6	752.00
930-601	160	70	62	30	32	33	80	45	M 6	4	932.00
930-602	210	90	80	40	40	40	120	50	M 6	7.6	1,236.00
930-612	285	120	90	40	50	55	150	70	M 6	17.4	2,513.00

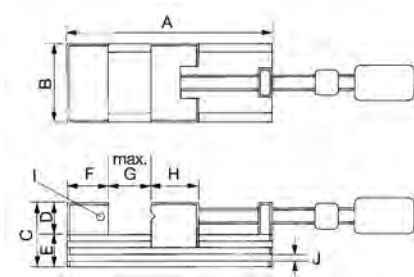
Series 930

This is a precision vice with a threaded spindle type that offers you the following benefits:

- It is made of tool steel, hardened and precision ground.
- It includes one key bar with hydraulic amplification of the clamping force.
- It has a horizontally ground V-groove in the movable jaw.



930-616



No.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G max. [mm]	H [mm]	I [mm]	J Height x Depth [mm]	Mass [kg]	Price [€]
930-616	285	120	90	40	50	55	150	70	M 6	10 x 7	17.7	3,389.00

Specifications

Parallelism	0.002 mm / 100 mm
Squareness	0.005 mm / 100 mm

Specifications

Parallelism	0.002 mm / 100 mm
Squareness	0.005 mm / 100 mm

Precision Vice

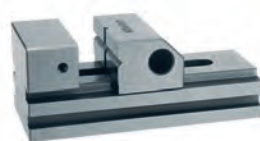
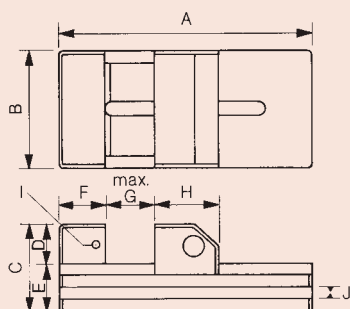
Series 930

This precision vice has a pull-down clamping action and offers you the following benefits:

- It gives you high accuracy for precision grinding, milling, measuring and eroding.
- It is made of tool steel, hardened and precision ground.

Specifications

Parallelism	0.002 mm / 100 mm
Squareness	0.005 mm / 100 mm



930-607



930-632

With horizontally ground V-groove in the movable jaw

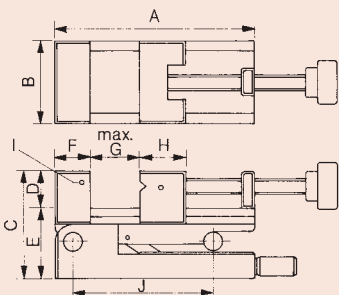
No.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G max. [mm]	H [mm]	I [mm]	J Height x Depth [mm]	Mass [kg]	Price [€]
930-630	70	30	35	15	20	20	25	25	M4	-	0.35	551.00
930-631	110	45	45	20	25	25	50	35	M5	8 x 6	1	814.00
930-632	285	120	90	40	50	60	150	70	M6	12 x 7	13.5	2,359.00
930-633	370	175	95	45	50	60	200	110	M8	12 x 10	28.7	4,460.00

With quick adjustment and vertically and horizontally ground V-groove in the movable jaw

No.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G max. [mm]	H [mm]	I [mm]	J Height x Depth [mm]	Mass [kg]	Price [€]
930-606	160	70	62	30	32	33	80	45	M 6	8 x 7	3	834.00
930-607	210	90	80	40	40	40	120	50	M 6	10 x 7	5.8	1,236.00

Specifications

Parallelism	0.002 mm / 100 mm
Squareness	0.005 mm / 100 mm



Series 930

This is a front axis sine vice that offers you the following benefits:

- It is made of tool steel, hardened and precision ground.
- Its bearing and holding bolt is hardened and ground.
- Using the clamping device you can lock the vice in any angular position within the adjustment range.
- Accurate angle setting is made by gauge blocks, max. 46°.



930-621

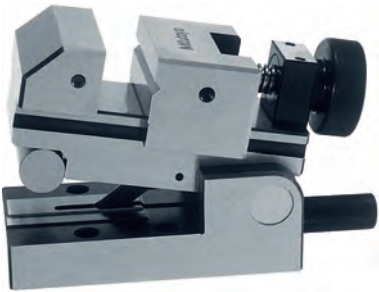
No.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G max. [mm]	H [mm]	I [mm]	J Height x Depth [mm]	Mass [kg]	Price [€]
930-620	100	50	75	25	50	25	40	30	M5	50	2.7	1,849.00
930-621	160	70	93	30	63	33	80	45	M5	100	5.3	2,585.00
930-622	210	90	113	40	73	40	120	50	M5	150	11	3,981.00

Precision Sine Vice

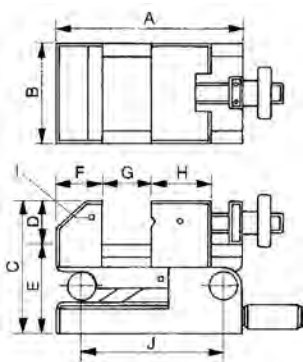
Series 930

This is a rear axis sine vice that offers you the following benefits:

- It is made of tool steel, hardened and precision ground.
- Its bearing and holding bolt is hardened and ground.
- Using the clamping device you can lock the vice in any angular position within the adjustment range.
- Accurate angle setting is made by gauge blocks, max. 46°.



930-623

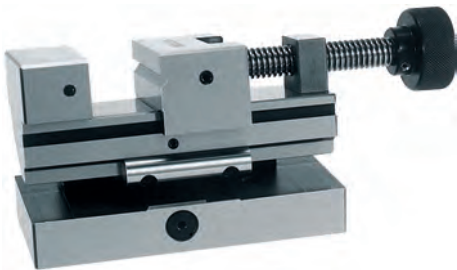


No.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G max. [mm]	H [mm]	I [mm]	J [mm]	Mass [kg]	Price [€]
930-623	130	70	93	30	63	33	50	40	M5	100	4.5	2,657.00

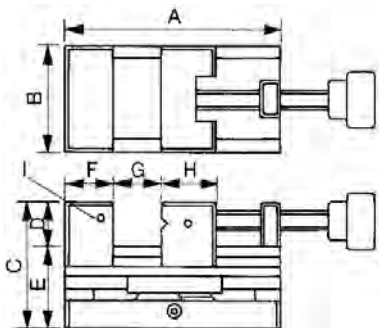
Series 930

This is a longitudinal axis sine vice that offers you the following benefits:

- It is made of tool steel, hardened and precision ground.
- Its bearing and holding bolt is hardened and ground.
- Using the clamping device you can lock the vice in any angular position within the adjustment range.
- Accurate angle setting is made by gauge blocks, max. 46°.



930-624



No.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G max. [mm]	H [mm]	I [mm]	Mass [kg]	Price [€]
930-624	160	75	93	30	63	33	80	45	M5	5.9	2,657.00

Specifications

Parallelism	0.002 mm / 100 mm
Squareness	0.005 mm / 100 mm
Setting accuracy at 45°	±15"

Specifications

Parallelism	0.002 mm / 100 mm
Squareness	0.005 mm / 100 mm
Setting accuracy at 45°	±15"

Specifications

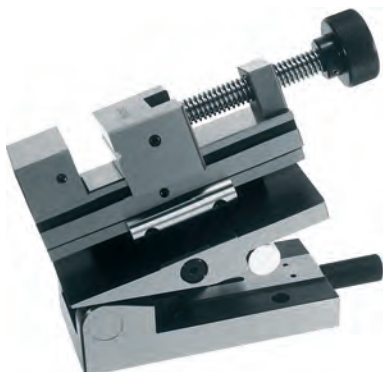
Parallelism	0.002 mm / 100 mm
Squareness	0.005 mm / 100 mm
Setting accuracy at 45°	±15"

Precision Sine Vice

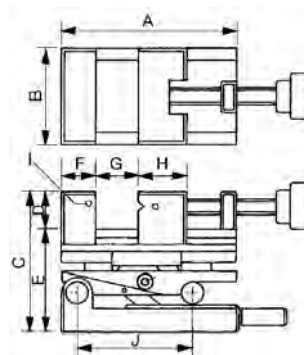
Series 930

This is a compound-axis sine vice that offers you the following benefits:

- It is made of tool steel, hardened and precision ground.
- Its bearing and holding bolt is hardened and ground.
- Using the clamping device you can lock the vice in any angular position within the adjustment range.
- Accurate angle setting is made by gauge blocks, max. 46°.



930-625



No.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G max. [mm]	H [mm]	I [mm]	J [mm]	Mass [kg]	Price [€]
930-625	160	75	124	30	94	33	80	45	M5	100	7.4	4,532.00

Specifications

Parallelism	0.002 mm / 100 mm
Squareness	0.005 mm / 100 mm
Setting accuracy at 45°	±15"

Precision Sine Plate

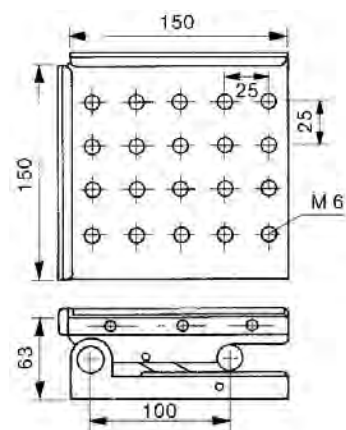
Series 930

This is a front axis sine vice that offers you the following benefits:

- It is made of tool steel, hardened and precision ground.
- Its bearing and holding bolt is hardened and ground.
- Using the clamping device you can lock the vice in any angular position within the adjustment range.
- Accurate angle setting is made by gauge blocks, max. 46°.



930-626



No.	Mass [kg]	Price [€]
930-626	7.6	2,791.00

Precision Sine Plate

Series 930

This is a Precision Sine Plate made of alloyed tool steel that offers you the following benefits:

- It is made of alloyed tool steel, hardened and precision ground.
- Its bearing and holding bolt is hardened and ground.
- Using the clamping device you can lock the vice in any angular position within the adjustment range.
- Accurate angle setting is made by gauge blocks, max. 46°.



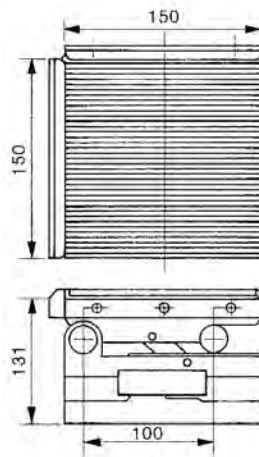
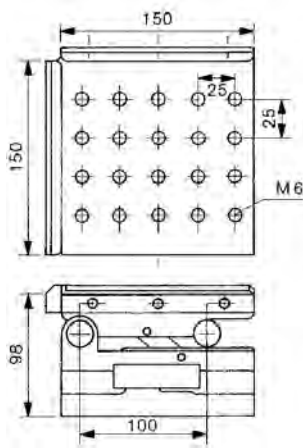
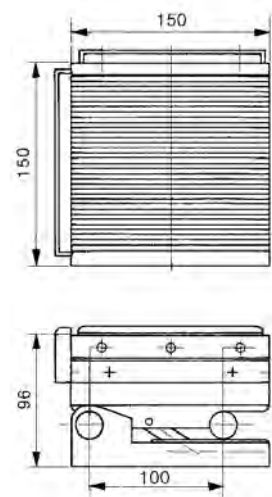
930-627



930-628



930-629



Compound-axis type
With M6 clamping holes

No.	Mass [kg]	Price [€]
930-628	11.3	5,150.00

Coumpound-axis type
With lever-operated magnetic chuck

No.	Mass [kg]	Price [€]
930-629	20	6,654.00

Front-axis type
With lever-operated magnetic chuck

No.	Mass [kg]	Price [€]
930-627	16.1	4,460.00

Specifications

Parallelism	0.002 mm / 100 mm
Squareness	0.005 mm / 100 mm
Setting accuracy at 45°	± 15 "

Specifications

Hardness	180-250 HBW
Parallelism between V-groove and base surface	16 µm
Difference of the height of the pair	16 µm
Delivered	in pairs

Cast Iron V-Block

Series 910

- Made of dense special cast iron, highly wear resistant.
- The 90° V-block cutting angle is parallel to the base and isometric in pairs.
- For scribing, adjusting and testing cylindrical parts.



910-112

No.	Length [mm]	Width [mm]	Height [mm]	Max. workpiece ø [mm]	Mass [kg]	Price [€]
910-111	100	40	30	6-40	1.5	77.50
910-112	150	50	40	8-50	3.5	108.00
910-113	200	70	50	8-70	6.5	170.00
910-114	250	85	60	12-85	10	345.00
910-115	300	100	70	12-100	15	402.00

Cast Iron V-Block

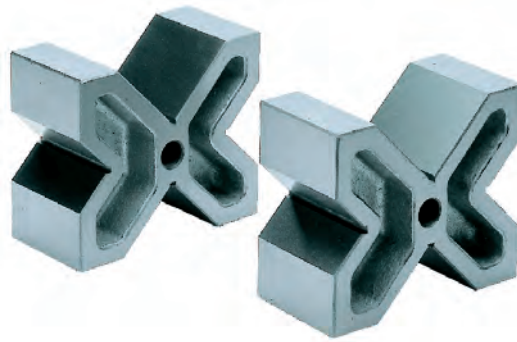
Specifications

Hardness	180-250 HBW
Parallelism between V-groove and base surface	16 µm
Difference of the height of the pair	16 µm
Delivered	in pairs

Series 911

These are quadruple-V type V-Blocks, that offer you the following benefits:

- 90° V-blocks enable you to scribe, adjust and test cylindrical parts.
- There are two V-blocks per set.



911-111

No.	Length [mm]	Width [mm]	Height [mm]	Max. workpiece ø [mm]	Mass [kg]	Price [€]
911-111	60	120	100	8-90	6.5	232.00
911-112	75	150	130	8-110	13.5	371.00
911-113	90	200	170	8-150	23	577.00

Hardened Steel V-Block

Series 181

These Hardened Steel V-Blocks have clamp brackets and offer you the following benefits:

- There are two V-blocks per set.
- The feature V-angle 90° clamping brackets.
- Contact faces are ground and lapped.
- Designed as a fixture to enable you to check cylindrical precision machined parts.



181-903-10



Sample application

No.	Length [mm]	Width [mm]	Height [mm]	Max. workpiece ø [mm]	Mass [kg]	Price [€]
181-902-10	41	31.8	31.8	25	0.75	221.00
181-903-10	75	58	58	50	3.6	333.00

Magnetic V-Block

Series 181

These Magnetic V-Blocks are a regular-length type and offer you the following benefits:

- Contact faces are ground and lapped.
- They are of regular length with two differently sized, 90° V-grooves.
- You can use them for holding ferromagnetic cylindrical parts for scribing, adjusting, testing, etc.



181-946

No.	Length [mm]	Width [mm]	Height [mm]	Max. receiver for work-piece V-groove 1 Ø [mm]	Max. receiver for work-piece V-groove 2 Ø [mm]	Magnetic force [N]	Mass [kg]	Price [€]
181-246	98	70	95	50.8	25.4	980	4	430.00
181-947	98	70	98	50.8	25.4	980	8	1,071.00
181-946	64	58	79	50.8	25.4	490	3.8	394.00

Specifications

Hardness	58-63 HRC
Parallelism between V-groove and all side surfaces	6 µm
Perpendicularity between V-grooves and back surface	9 µm
Difference of the height of the pair	12 µm
Symmetry of the V-grooves	6 µm
Delivered	In pairs

Specifications

Parallelism between V-groove and all side surfaces	10 µm
Perpendicularity between V-grooves and back surface	181-246 21 µm 181-947 21µm 181-946 11 µm µm
Difference of the height of the pair	10 µm
Symmetry of the V-grooves	10 µm
Delivered	In pairs (181-946 and 181-947) Individually (181-246)

Cast Iron Surface Plate

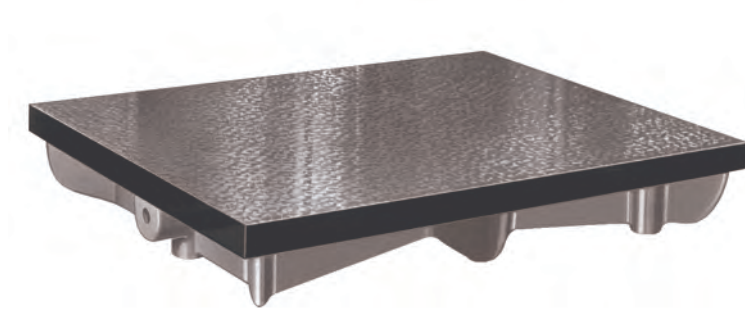
Specifications

Accuracy	According to DIN 876 Grade 1 : fine scraped Grade 3 : fine planed
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Series 902

These Cast Iron Surface Plates are rigid but not heavy, and offer you the following benefits:

- A ribbed design gives you rigidity with minimum weight, and a special cast iron confers a high degree of wear resistance.
- The working surface is finished to DIN 876 according to grade, with the outside edges milled clean.



902-304

Accuracy Grade 1

No.	Dimensions L x W x H [mm]	Mass [kg]	Price [€]
902-301	300 x 300 x 85	15	306.00
902-302	400 x 400 x 90	35	441.00
902-303	500 x 400 x 100	40	567.00
902-304	600 x 500 x 120	65	855.00
902-305	800 x 500 x 140	95	1,390.00
902-306	1000 x 750 x 170	210	2,400.00
902-307	1200 x 800 x 180	230	3,190.00
902-308	1500 x 1000 x 200	490	5,320.00
902-309	2000 x 1000 x 220	780	7,420.00

Accuracy Grade 3

No.	Dimensions L x W x H [mm]	Mass [kg]	Price [€]
902-101	300 x 300 x 85	15	180.00
902-102	400 x 400 x 90	35	260.00
902-103	500 x 400 x 100	40	335.00
902-104	600 x 500 x 120	65	500.00
902-105	800 x 500 x 140	95	773.00
902-106	1000 x 750 x 170	210	1,450.00
902-107	1200 x 800 x 180	230	1,930.00
902-108	1500 x 1000 x 200	490	3,220.00
902-109	2000 x 1000 x 220	780	4,470.00

Granite Surface Plate DIN876

Series 901

These Granite Surface Plates offer you the following benefits:

- They are made of exceptionally fine-grained black granite.
- Delivery is without a stand but with steel ball inserts.

Accuracy Grade 0

No.	Dimensions L x W x H [mm]	Max. Load [kg]	Mass [kg]	Price [€]
901-121	400 x 250 x 50	100	15	191.00
901-122	400 x 400 x 50	120	25	254.00
901-123	630 x 400 x 70	130	53	408.00
901-124	630 x 630 x 70	150	83	642.00
901-125	1000 x 630 x 100	300	189	1,190.00
901-126	1000 x 1000 x 100	500	300	1,875.00
901-127	1200 x 800 x 160	1,200	460	1,920.00
901-128	1600 x 1000 x 160	1,300	768	3,275.00
901-129	2000 x 1000 x 220	1,500	1,320	4,460.00

Accuracy Grade 00

No.	Dimensions L x W x H [mm]	Max. Load [kg]	Mass [kg]	Price [€]
901-131	400 x 250 x 50	50	15	214.00
901-132	400 x 400 x 50	60	25	285.00
901-133	630 x 400 x 70	65	53	455.00
901-134	630 x 630 x 70	75	83	714.00
901-135	1000 x 630 x 100	150	189	1,360.00
901-136	1000 x 1000 x 100	250	300	2,050.00
901-137	1200 x 800 x 160	600	460	2,100.00
901-138	1600 x 1000 x 160	650	768	3,575.00
901-139	2000 x 1000 x 220	750	1,320	4,875.00

Accuracy Grade 1

No.	Dimensions L x W x H [mm]	Max. Load [kg]	Mass [kg]	Price [€]
901-111	400 x 250 x 50	100	15	149.00
901-112	400 x 400 x 50	120	25	208.00
901-113	630 x 400 x 70	130	53	340.00
901-114	630 x 630 x 70	150	83	525.00
901-115	1000 x 630 x 100	300	189	1,050.00
901-116	1000 x 1000 x 100	500	300	1,720.00
901-117	1200 x 800 x 160	1,200	460	1,750.00
901-118	1600 x 1000 x 160	1,300	768	3,010.00
901-119	2000 x 1000 x 220	1,500	1,320	4,090.00

Accuracy Grade 2

No.	Dimensions L x W x H [mm]	Max. Load [kg]	Mass [kg]	Price [€]
901-101	400 x 250 x 50	100	15	138.00
901-102	400 x 400 x 50	120	25	191.00
901-103	630 x 400 x 70	130	53	314.00
901-104	630 x 630 x 70	150	83	485.00
901-105	1000 x 630 x 100	300	189	973.00
901-106	1000 x 1000 x 100	500	300	1,580.00
901-107	1200 x 800 x 160	1,200	460	1,600.00
901-108	1600 x 1000 x 160	1,300	768	2,760.00
901-109	2000 x 1000 x 220	1,500	1,320	3,750.00

Stand

No.	Plate dimensions L x W x H [mm]	Mass [kg]	Price [€]
901-931	630 x 400 x 50	22	296.00
901-932	630 x 630 x 70	25	323.00
901-933	1000 x 630 x 100	28	357.00
901-934	1000 x 1000 x 100	30	408.00
901-935	1200 x 800 x 160	30	408.00
901-936	1600 x 1000 x 160	35	512.00
901-937	2000 x 1000 x 220	40	570.00



Specifications

Accuracy	According to DIN 876
Vickers hardness	HV 850-900
Flexural strength	13-22 N/mm ²
Compressive strength	Approx. 280 N/mm ²
Linear coefficient of expansion	(5 to 7,5) x 10 ⁻⁶ x K ⁻¹

Optional accessories

No.	Description	Price €
517-660P	Granite cleaner	145.00



Granite plate and stand (optional)

- Stress relieved for maximum stability.
- Harder than steel.

Granite Surface Plate DIN876

Series 901

These Granite Surface Plates are made of exceptionally fine-grained black granite.



Specifications

Accuracy	According to DIN 876 Grade 0
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Optional accessories

No.	Description	Price €
517-660P	Granite cleaner	145.00



901-MC1000 / C-S1000

Accuracy Grade 0

No.	Dimensions L x W x H [mm]	Mass [kg]	Price [€]
901-MC400	400 x 250 x 60	20	149.00
901-MC404	400 x 400 x 60	40	216.00
901-MC630	630 x 400 x 80	61	381.00
901-MC636	630 x 630 x 100	25	484.00
901-MC800	800 x 500 x 100	123	608.00
901-MC1000	1000 x 630 x 140	300	824.00
901-MC1010	1000 x 1000 x 160	450	1,500.00
901-MC1200	1200 x 800 x 160	461	1,400.00
901-MC1600	1600 x 1000 x 180	1,000	2,830.00
901-MC2000	2000 x 1000 x 220	1,500	4,510.00

Stand

No.	Suitable for granite plate	Stand dimensions L x W x H [mm]	Mass [kg]	Price [€]
C-S630	901-MC630	630 x 400 x 790	23	618.00
C-S636	901-MC636	630 x 630 x 790	25	742.00
C-S800	901-MC800	800 x 500 x 790	25	742.00
C-S1000	901-MC1000	1000 x 630 x 790	30	742.00
C-S1010	901-MC1010	1000 x 1000 x 790	35	762.00
C-S1200	901-MC1200	1200 x 800 x 790 mm	40	762.00
C-S1600	901-MC1600	1600 x 1000 x 790 mm	55	876.00
C-S2000	901-MC2000	2000 x 1000 x 790 mm	70	886.00

Granite Square 90°

Series 972

This Granite Square 90° offers you the following benefits:

- It is made of natural hard stone, with two sides precision ground.
- It is hard and wear resistant.



972-106

Specifications

Accuracy	Grade 00
Flatness	DIN 876
Perpendicularity	DIN 875
Delivered	In a wooden case, with certificate of inspection

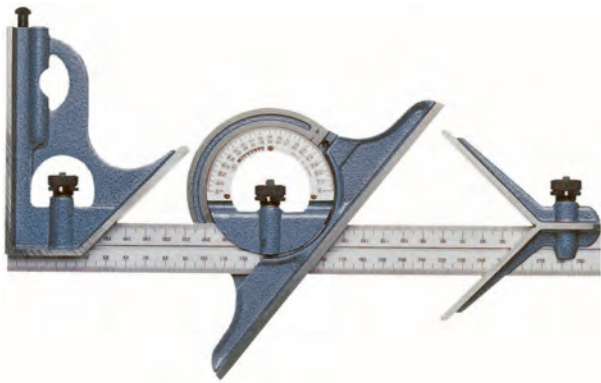
No.	Width [mm]	Leg length [mm]	Mass [kg]	Price [€]
972-106	50	300 x 200	6.5	443.00
972-107	50	400 x 250	10	608.00
972-108	60	500 x 300	17	773.00
972-109	70	600 x 400	30	1,215.00

Combination Square Set

Series 180

This Combination Square Set offers you the following benefits:

- Three heads are attachable to the stainless steel rule (blade), enabling you to take versatile measurements of various types of workpiece.
- The heads are hardened.



180-910U

Metric

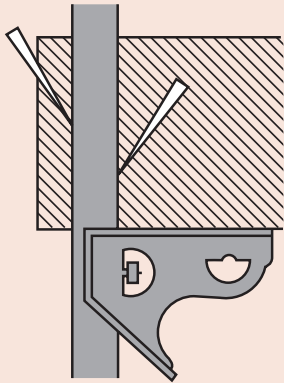
No.	Description	Mass [g]	Price [€]
180-910U	Combination set : square head (180-102U) center head (180-202U) protractor head (180-301U) 300 mm blade size (180-505U)	1110	266.00

Blade (individual)

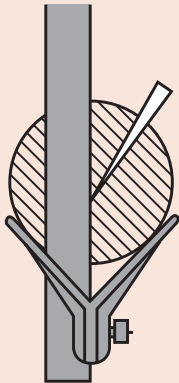
No.	Range	Graduation	Mass [g]	Price [€]
180-405U	150mm	1 mm. 0.5 mm. 1 mm. 0.5 mm	40	38.50
180-505U	300mm	1 mm. 0.5 mm. 1 mm. 0.5 mm	130	60.00

Head (individual)

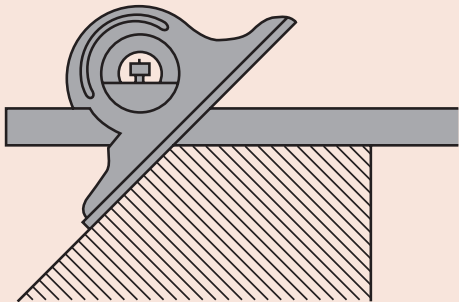
No.	Description	Mass [g]	Price [€]
180-102U	Square head, hardened and ground, with spirit level and scriber	350	60.00
180-202U	Centre head, hardened and quenched	150	54.00
180-301U	Reversible protractor head, with spirit level, bidirectional graduation from 0 to 180°	520	90.00



180-102U
Square head



180-202U
Center head



180-301U
Reversible protectorhead

Specifications

Graduation	5' (0° - 90° - 0°)
Circle division	4 x 90°
Delivery	In a box

Standard accessories

No.	Description
187-106	Blade 150
187-107	Blade 300
950750	Holder for Height Gauges with 9 x 9 scribe shaft

187-106 for 187-901, 187-908

187-107 for 187-901, 187-907

950750 for Height Gauge with 9x 9 mm scribe shaft

Optional accessories

No.	Description	Price €
187-105	Acute angle attachment	57.00

187-105 standard accessory for 187-901



Specifications

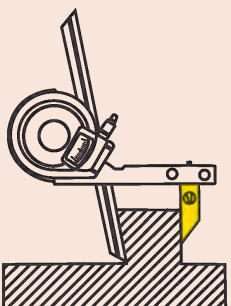
Graduation	5'
Circle division	4 x 90°
Delivered	in a box with acute angle attachment

Standard accessories

No.	Description
187-105	Acute angle attachment

Optional accessories

No.	Description	Price €
952624	Holder for height gauges with 9 x 9 scribe shaft	33.00



Application with acute angle attachment

Universal Bevel Protractor

Series 187

This Universal Bevel Protector offers you the following features:

- Its high-precision angle gauge enables you to take accurate angle measurements of machines, moulds and jigs.
- You can attach it to height gauges.
- It comes with a magnifying glass.



187-901
with magnifying glass



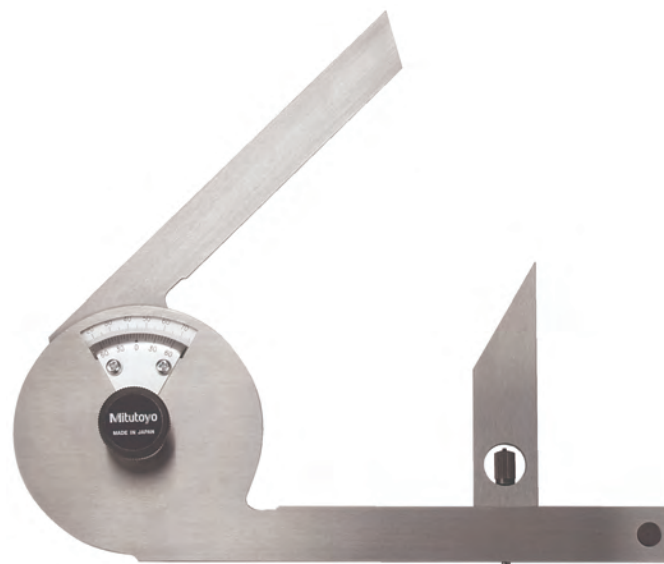
187-908
with height gage holder

Metric

No.	Blade edge angle	Blade length	Mass [g]	Price [€]
187-901	w/60°, 45° and 30° edges	150, 300 mm	195	319.00
187-907	w/60° and 45° edges	150 mm	885	205.00
187-908	w/60° and 45° edges	300 mm	1085	216.00



Series 187



187-201

No.	Fixed blade length [mm]	Adjustable blade length [mm]	Mass [g]	Price [€]
187-201	135	150	212	143.00

Digimatic Universal Protractor

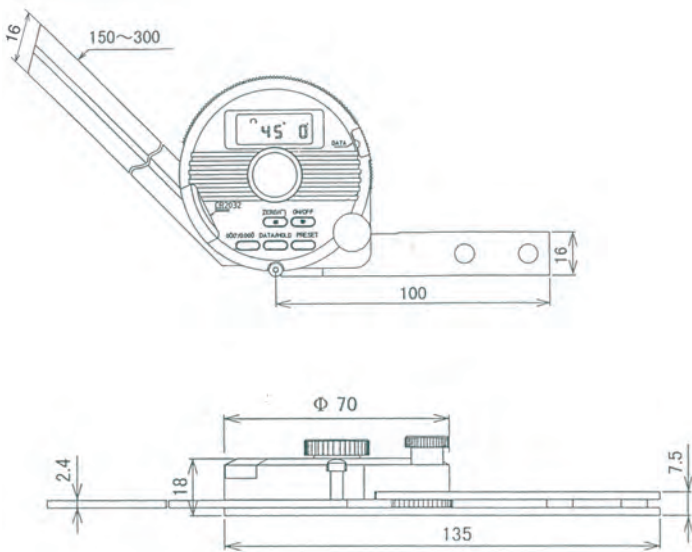
Series 187

This is a Digimatic Universal Protractor with data output that offers you the following features:

- It has an easy-to-read digital display.
- It automatically turns off after 10 minutes, and gives you fixed reference points for easy adjustment.
- You can slide and clamp the measuring blade over the entire length.
- You can make fine adjustments to precisely adjust arbitrary angle dimensions.
- It comes with a mounting facility on height gauges and tracers of series 192 via holder.



187-502



Metric

No.	Blade length	Mass [g]	Price [€]
187-501	150 mm	624	759.00
187-502	300 mm	662	782.00



Functions	Series 187
ON/OFF	●
DATA/HOLD	●
Data output	●
Zero set	●
PRESET	●
Angle sexagesimal/decimal	●

Specifications

Range	-360° - 360°
Repeatability	1' (0.01°)
Digital step	1' (0.01°)
Display	LCD with Character Height 6.5 mm
Max. permissible error	2' (0.03°)
Battery life	approx. 2.000 hours
Delivered	in a box including battery

Standard accessories

No.	Description
187-106	Blade 150
187-107	Blade 300
950750	Holder for Height Gauges with 9 x 9 scriber shaft

187-106 for 187-501
187-107 for 187-502
950750 for 187-501, 187-502

Optional accessories

No.	Description	Price €
187-105	Acute angle attachment	57.00
905338	Digimatic cable (1 m)	28.00
905409	Digimatic cable (2 m)	34.00
02AZD790F	Connecting cable U-Wave	85.00
06ADV380F	USB Input Tool Direct cable (2 m)	100.00

Consumable spares

No.	Description	Price €
055AA217D	Lithium battery CR-2032	5.50

Specifications

Dimensions (WxDxH)	200 x 44 x 38.2 mm
Vee angle	140°
Delivered	In a wooden case

Precision Level

Series 960

- For use in setting machined surfaces precisely horizontal



960-601

No.	Sensibility (mm/m per division)	Sensibility " (Arcsecond)	Max. Permissible Error (indication accuracy)	Flatness of reference face (bottom) [μm]	Mass [kg]	Price [€]
960-601	0.1	20"	±0.5 graduations = ±0.05 mm/m	5	1.45	340.00
960-602	0.05	10"	±0.5 graduations = ±0.025 mm/m	5	1.45	391.00
960-603	0.02	4"	±0.7 graduations = ±0.014 mm/m	5	1.45	417.00

Precision Frame Level

Series 960

This Precision Frame Level offers you the following benefits:

- You can set machined surfaces to precisely horizontal or vertical.
- It has 2 vee and 2 flat reference faces, and is precision ground.
- It features graduated main (longitudinal) and auxiliary (transverse) vials.



960-701

No.	Sensibility (mm/m per division)	Sensibility " (Arcsecond)	Max. Permissible Error (indication accuracy) [mm/m]	Flatness of reference faces [μm]	Parallelism of reference the faces [μm]	Perpendicularity of reference faces [μm]	Mass [kg]	Price [€]
960-701	0.1	20	±0.03 graduations = ±0.03 mm/m	5	50	25	4	628.00
960-702	0.05	10	±0.3 graduations = ±0.015 mm/m	5	25	25	4	685.00
960-703	0.02	4	±0.5 graduations = ±0.015 mm/m	3	10	15	4	721.00

Digital Precision Level

Series 950

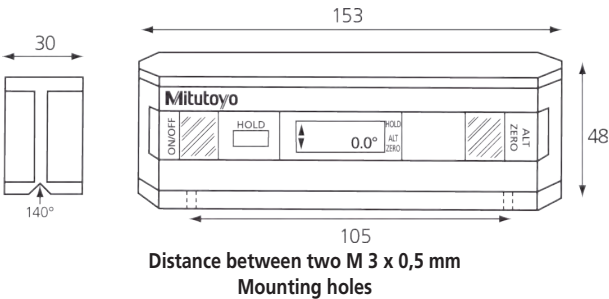
This Digital Precision Level offers you the following benefits:

- You can measure flatness, squareness and angularity.
- Precision support surfaces in aluminium frame provide you with high rigidity and low weight.



950-317

No.	Max. permissible error (degrees)	Repeatability (degrees)	Model	Data output	Sensitivity (degrees)	Mass [g]	Price [€]
950-317	Horizontal : 0.1 Vertical : 0.2	0.1	Pro 360		0.1	300	314.00
950-318	0.05 (0 to 10) 0.1 (80 to 90) 0.2 (10 to 80)	0.05	Pro 3600		0.01 (0 to 9.99) 0.1 (10 to 90)	300	577.00



Thickness Gauge

Series 184 - Thickness Gauge

- Size clearly stamped on each leaf.
- Leaves are easy to remove and can be individually locked open.

Metric

No.	Range	Accuracy	Number of leaves	Leaf length [mm]	Price [€]
184-3045	0.05-1.0 mm by 0.05 mm steps	0.05 up to 0.15 mm : ±0.005 mm 0.20 up to 0.50 mm : ±0.012 mm 0.55 up to 1.00 mm : ±0.020 mm	20	150	34.00

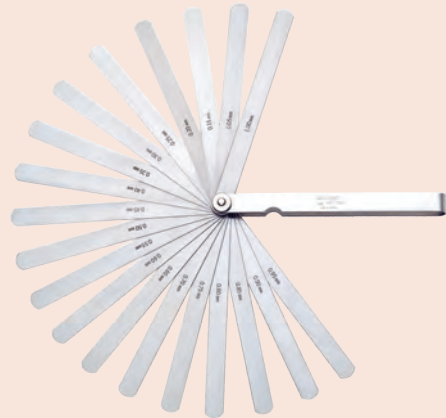
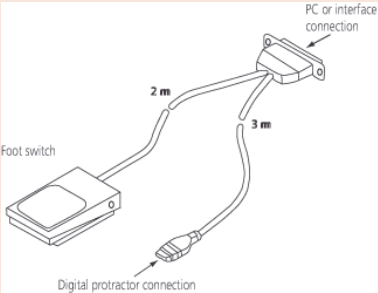
Specifications

Range	360° (4 x 90°)
Power supply	Standard battery (9 V) GLRG1
Battery life	ca. 500 hours
Delivered	Including box

Optional accessories

No.	Description	Price €
50AAA983A	RS-232C 25 pin signal cable with foot switch	196.00
64PPP794	Magnetic V-block for securing to magnetic workpieces	

- Note: 50AAA983A is for 950-318 only



184-3045

90° Steel Square

Series 916

This 90° Steel Square offers you the following benefits:

- Three types of square are available.
- It is hardened, and has precision ground edges.



916-102B



916-213B



916-402B

Bevelled-edge square

No.	Outside squareness [μm]	Inside squareness [μm]	Cross section [mm]	Leg length [mm]	Price [€]
916-100B	2.5	6	15 x 6	50 x 40	92.00
916-101B	3	7	15 x 6	75 x 50	118.00
916-102B	3	7	20 x 6	100 x 70	136.00
916-103B	4	8	25 x 7.5	150 x 100	162.00
916-104B	4	9	30 x 9	200 x 130	174.00

Bevelled-edge square with shoulders

No.	Outside squareness [μm]	Inside squareness [μm]	Leg length [mm]	Price [€]
916-421B	3	7	75 x 50	177.00
916-422B	3	7	100 x 70	193.00
916-423B	4	8	150 x 100	255.00
916-424B	4	9	200 x 130	281.00

Try square

No.	Outside squareness [μm]	Inside squareness [μm]	Cross section [mm]	Leg length [mm]	Price [€]
916-211B	6	12.5	15 x 4	50 x 40	68.00
916-212B	7	14	15 x 4	75 x 50	66.00
916-213B	7	15	20 x 4	100 x 70	87.50
916-214B	8	18	25 x 5.5	150 x 100	108.00
916-215B	9	20	30 x 5.5	200 x 130	136.00
916-216B	10	23	35 x 8	250 x 165	203.00
916-217B	11	25	40 x 8	300 x 200	265.00
916-218B	13	30	45 x 10	400 x 250	324.00

Try square with shoulders

No.	Outside squareness [μm]	Inside squareness [μm]	Leg length [mm]	Price [€]
916-401B	7	14	75 x 50	87.50
916-402B	7	15	100 x 70	107.00
916-403B	8	18	150 x 100	136.00
916-404B	9	20	200 x 130	160.00
916-405B	10	23	250 x 165	187.00
916-406B	11	25	300 x 200	240.00
916-407B	13	30	400 x 250	408.00
916-408B	15	35	500 x 300	1,075.00
916-409B	20	48	750 x 400	1,420.00
916-410B	25	60	1000 x 500	1,990.00

Specifications

Accuracy	According to DIN 875
Try type:	internal perpendicularity grade 1
	external perpendicularity grade 0
	flatness/straightness grade 0
Beveled edge type:	internal perpendicularity grade 0
	external perpendicularity grade 00
	flatness/straightness grade 00

Knife Edge Straight Edge

Series 528

- This Knife Edge Straight Edge offers you the following benefits:
- Its straight edges are especially suited to testing the flatness of surfaces.
 - It has a hardened, ground and micro lapped measuring edge.



Series 528

No.	Remarks	Length [mm]	Price [€]
528-101	-	75	31.00
528-100	-	50	31.00
528-102	-	100	33.00
528-110	-	125	38.50
528-103	-	150	43.50
528-104	-	200	57.00
528-105	Supplied in a wooden case	300	108.00
528-106	Supplied in a wooden case	400	170.00
528-107	Supplied in a wooden case	500	232.00

Steel Rules

Series 182

- These are fully and semi-flexible rules that offer you the following benefits:
- They have clear graduations on satin-chrome finish.
 - The rules are stainless tempered.

Metric Fully-flexible rule

No.	Range	Graduation	Width	Price [€]
182-211	150 mm	1 mm. 5 mm (on both sides)	12 mm	13.00
182-231	300 mm	1 mm. 5 mm (on both sides)	12 mm	25.50
182-251	450 mm	1 mm. 5 mm (on both sides)	18 mm	39.50
182-271	600 mm	1 mm. 5 mm (on both sides)	18 mm	60.00



Series 182

- These are wide, rigid types of steel rules that offer you the following benefits:
- They have clear graduations on satin-chrome finish.
 - The rules are stainless tempered.

Metric

No.	Range	Graduation	Width	Price [€]
182-131	300 mm	1 mm - 0,5 mm (on both faces)	25 mm	25.50
182-151	450 mm	1 mm - 0,5 mm (on both faces)	30 mm	39.50
182-171	600 mm	1 mm - 0,5 mm (on both faces)	30 mm	60.00



Specifications

Accuracy	According to DIN 874
Section	60°



Height Master
Page 348



Check Master
Page 352



Calibration Tools
Page 357

Digital Height Master

Series 515

This is a standard model with a digital display, that offers you the following benefits:

- It gives you all the essential specifications required for a versatile height standard.
- You can use it to calibrate and set height gauges and other measuring instruments.
- Models have two measuring faces on the same level, one facing up and the other down.



515-374

Metric

No.	Range [mm]	Feed error	Retrace error	Total height [mm]	Mass [kg]	Price [€]
515-374	10-310	±2,0 µm	2 µm	480	9.5	2,320.00
515-376	10-460	±2,0 µm	2 µm	630	13.6	3,500.00
515-378	10-610	±2,5 µm	2,5 µm	785	16	4,110.00



Functions	Series 515
ZERO/ABS	●
DATA/HOLD	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Data output	●
PRESET	●

Specifications

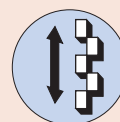
Block arrangement	Staggered
Block step	20 mm
Micrometer adjustment	20 mm
Micrometer feed	0,5 mm
Block pitch accuracy	0 < range ≤ 310 mm : ±1,5 µm 310 < range ≤ 450 mm : ±2,5 µm 450 < range ≤ 610 mm : ±3,5 µm
Parallelism of blocks	0 < range ≤ 310 mm : 2,0 µm 310 < range ≤ 610 mm : 2,5 µm
Graduation	0.002 mm
Digital step	0,001 mm
Battery life	approx. 1.8 years

Optional accessories

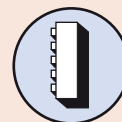
No.	Description	Price €
515-111	Auxiliary block kit for Digital Height Master	180.00
959149	Digimatic cable with data switch (1 m)	38.00
959150	Digimatic cable with data switch (2 m)	43.50
06ADV380C	USB Input tool Direct cable with data switch (2 m)	100.00
02AZD790C	U-WAVE Data Cable with data switch	90.00

Consumable spares

No.	Description	Price €
938882	Battery SR44	5.50



Staggered 20 mm blocks (movable)



Vertical orientation



Riser block (optional)

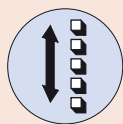
Specifications

Block arrangement	Straight
Block step	10 mm
Micrometer adjustment	20mm
Micrometer feed	0.5mm
Block pitch accuracy	0 < range ≤ 310mm: ±1.5µm 310 < range ≤ 610mm: ±2.5µm 610 < range ≤ 1010mm: ±3.5µm
Parallelism of blocks	0 < range ≤ 610mm: 1.5µm 610 < range ≤ 1010mm: 2µm
Graduation	0.001 mm

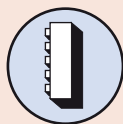
Optional accessories

No.	Description	Price €
900574	Supporting base for vertical operation	251.00
515-110	Auxiliary block kit for bore gauge	201.00

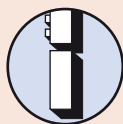
900574 : supplied as a standard for 515-523 and 515-513



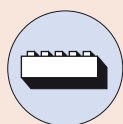
Single-row 10 mm blocks (movable)



Vertical orientation



Riser block (optional)



Horizontal orientation



900574 (optional)
Supporting base for vertical operation

Height Master

Series 515

This height master offers you the following benefits:

- You can use it to calibrate and set height gauges and other measuring instruments.
- Models with the staggered arrangement of blocks have two measuring faces on the same level, one facing up and the other down.
- It is supplied in a fitted wooden case.



515-520



Using in horizontal orientation

Metric

No.	Range [mm]	Feed error	Retrace error	Mass [kg]	Price [€]
515-520	5-610	±1,2 µm	1,2 µm	45	7,390.00
515-523	5-1,010	±1,5 µm	1.5 µm	63.5	12,770.00



Universal Height Master

Series 515

This Universal Height Master offers you the following benefits:

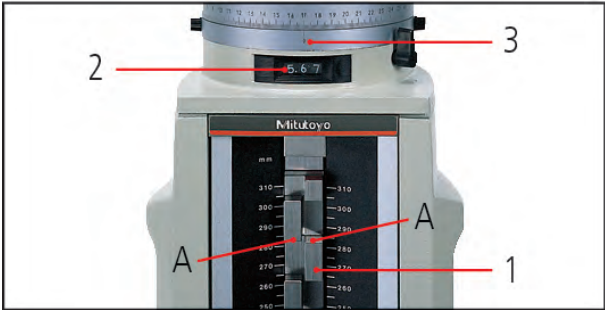
- It is designed for both vertical and horizontal orientations, enabling you to carry out a wide range of applications such as accuracy checking of machine tool table movements.
- It is supplied in a fitted wooden case.



515-322

Metric

No.	Range [mm]	Block step	Feed error	Retrace error	Mass [kg]	Price [€]
515-322	5-310	20 mm (staggered)	±1 µm	1 µm	23	3,190.00



- Height A
1. Scale 280.000 mm
 2. Counter 5.670 mm
 3. Thimble 0.000 mm

285.670 mm

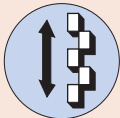


Specifications

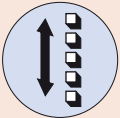
Block arrangement	Staggered (515-310 : straight)
Micrometer adjustment	20 mm
Micrometer feed	0,5 mm
Block pitch accuracy	±1,5 µm
Parallelism of blocks	1 µm
Graduation	0.001 mm

Optional accessories

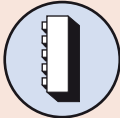
No.	Description	Price €
515-112	Auxiliary block kit for bore gauge	221.00



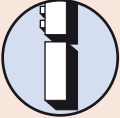
Staggered 20 mm blocks (movable)



Single-row 10 mm blocks (movable) 515-310



Vertical orientation



Riser block (optional)



Bore gage reference setting

Optional Accessories for Height Master

Series 515

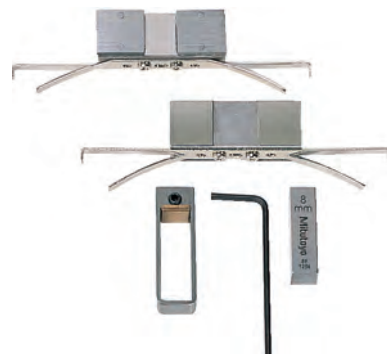
This is an auxiliary block kit that allows you to efficiently carry out reference-setting of dial bore gauges and tubular inside micrometers (18-150mm).

Metric

No.	Suitable for Height Master	Mass [g]	Price [€]
515-110	515-520 / 515-523	140	201.00
515-111	515-354 / 515-356 / 515-358	142	180.00
515-112	515-322	142	221.00



515-112



Content of set

Specifications

Hardness of feet	88 HRA (Carbide)
Hardness of upper support	64 HRC



Sample application

Series 515

These riser blocks offer you the following benefits:

- You can extend the measuring range up to 900mm by using 150, 300 or 600mm riser blocks.
- They can be used with both standard and digital Height Masters.



515-113



515-114

Metric

No.	Accuracy	Height [mm]	Parallelism	Mass [kg]	Price [€]
515-113	±0,6 μm	150 mm	0,6 μm	5.7	469.00
515-114	±1,0 μm	300 mm	0,8 μm	11.3	618.00
515-115	±2,0 μm	600 mm	1,0 μm	31	1,080.00



515-115

Depth Micro Checker

Series 515

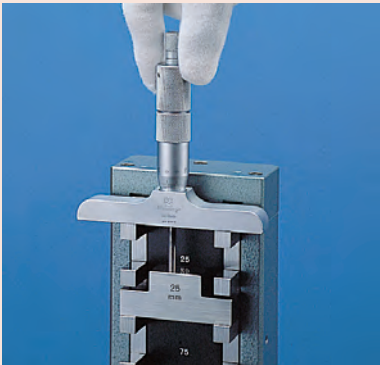
This Depth Micro Checker offers you the following benefits:

- The Depth Micro Checker is designed to let you check and help set the range-end points of a depth micrometer.
- A 25mm carbide gauge block is provided as the reference surface.



Specifications

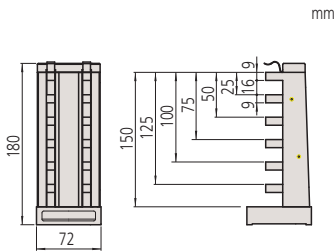
Anvil block accuracy	±0.5 μm
Block pitch accuracy	±(1+L/150)μm L= lenght to check (mm)



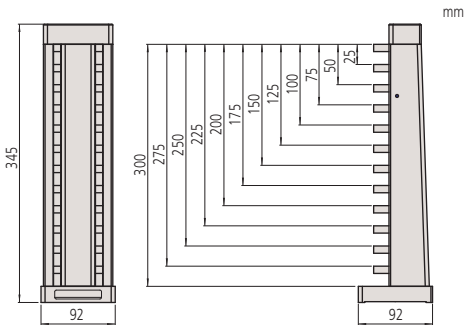
515-571

Metric

No.	Range [mm]	Reference checking lengths available	Mass [kg]	Price [€]
515-570	0-150	25, 50, 75, 100, 125, 150 mm	3	1,230.00
515-571	0-300	25, 50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300 mm	17	3,350.00



515-570



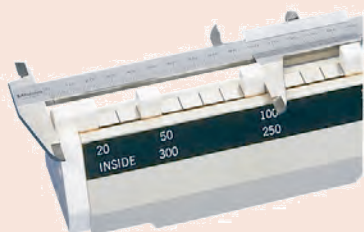
515-571

Specifications

Block pitch accuracy	Range ≤ 300 mm : $\pm 0,005$ mm Range ≤ 600 mm : $\pm 0,007$ mm
Parallelism of blocks	Range ≤ 300 mm : 0,002 mm Range ≤ 600 mm : 0,004 mm

Optional accessories

No.	Description
602162	Wooden case for 300 model
602164	Wooden case for 600 model



Checking a caliper



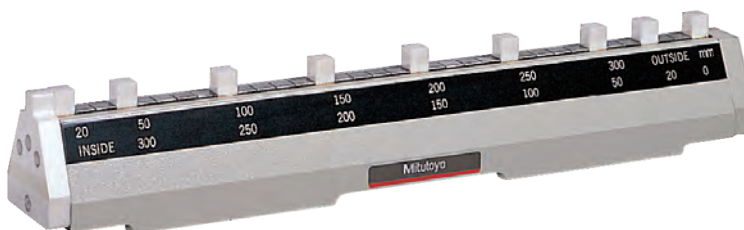
Checking a height gauge

CERA Caliper Checker

Series 515

This CERA Caliper Checker offers you the following benefits:

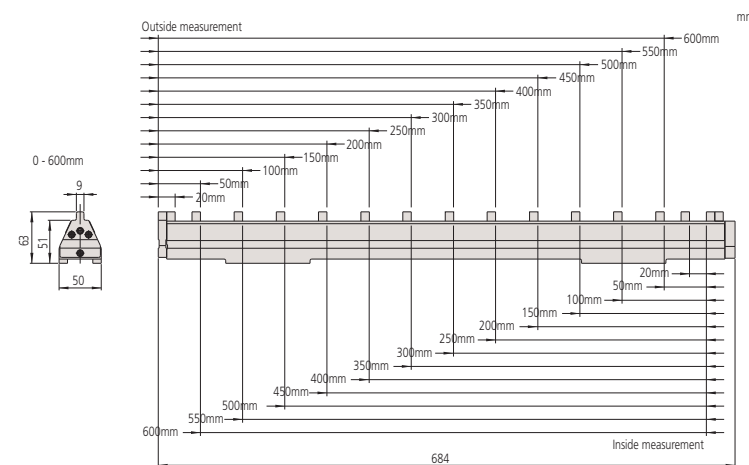
- You can set and inspect caliper and height gauges.
- It comes with ceramic gauge blocks.



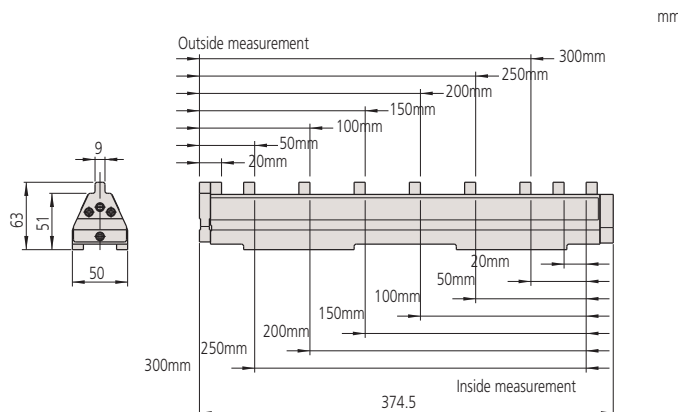
515-555

Metric

No.	Range [mm]	Reference checking lengths available for outside/inside measurement	Mass [kg]	Price [€]
515-555	0-300	20, 50, 100, 150, 200, 250 and 300 mm	4	1,780.00
515-556-2	0-600	20, 50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550 and 600 mm	8.5	4,110.00



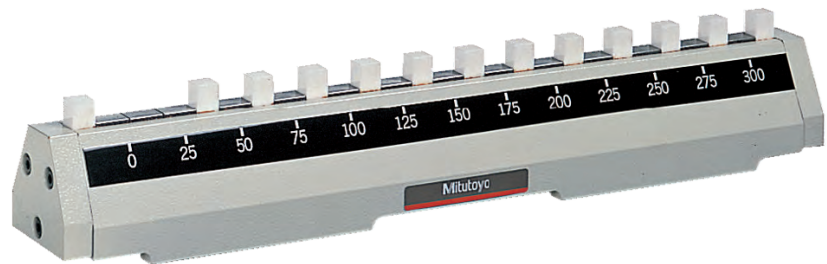
515-556-2



Inside Micro Checker

Series 515

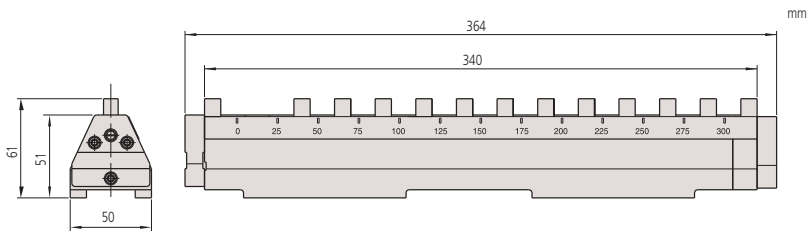
- This Inside Micro Checker offers you the following benefits:
- It designed to act as a setting standard for inside micrometers.
 - It comes with ceramic gauge blocks.



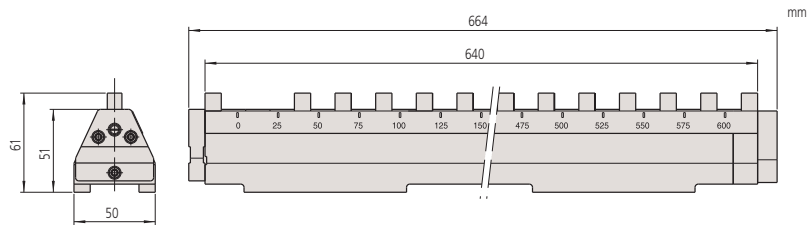
515-585



No.	Range [mm]	Reference checking lengths available	Mass [kg]	Price [€]
515-585	25-300	25, 50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300 mm	3.9	1,440.00
515-586	25-600	25, 50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375, 400, 425, 450, 475, 500, 525, 550, 575, 600 mm	7	3,040.00



515-585



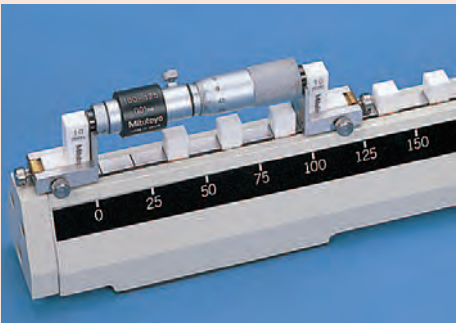
515-586

Specifications

Block pitch accuracy	$\pm(1+L/150) \mu\text{m}$ L = Length to check (mm)
Delivered	With accessory set

Optional accessories

No.	Description	Price €
602160	Wooden case for 300 Inside Micro Checker	191.00
602163	Wooden case for 600 Inside Micro Checker	229.00

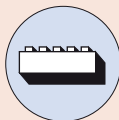


Specifications

Block step	10 mm
Block pitch accuracy	$0 < \text{range} \leq 310 \text{ mm} : \pm 2,5 \mu\text{m}$ $310 < \text{range} \leq 610 \text{ mm} : \pm 3,5 \mu\text{m}$ $610 < \text{range} \leq 1010 \text{ mm} : \pm 5,0 \mu\text{m}$ $1010 < \text{range} \leq 1510 \text{ mm} : \pm 8,0 \mu\text{m}$
Parallelism of blocks	$0 < \text{range} \leq 310 \text{ mm} : 1,2 \mu\text{m}$ $310 < \text{range} \leq 610 \text{ mm} : 1,5 \mu\text{m}$ $610 < \text{range} \leq 1010 \text{ mm} : 2,0 \mu\text{m}$ $1010 < \text{range} \leq 1510 \text{ mm} : 2,5 \mu\text{m}$
Hardness	More than 64 HRC
Delivered	In wooden box



Single-row
10 mm blocks



Horizontal
orientation



Vertical
orientation

Check Master

Series 515

This Check Master allows you to test precision tool and coordinate measuring machines, and offers you the following benefits:

- You can test the X, Y and Z-coordinate axes of precision tool machines and coordinate measuring machines.
- It consists of rigidly clamped gauge blocks with a step of 10mm.
- It is supplied in a fitted wooden case.



515-722

Metric

No.	Range [mm]	Mass [kg]	Price [€]
515-720	0-300	7	2,110.00
515-721	0-450	10	2,220.00
515-722	0-600	13	2,600.00
515-723	0-1,000	22	5,620.00
515-724	0-1,500	30	9,425.00



515-724

515-723

515-722

High Accuracy Check Master

Series 515

This High Accuracy Check Master offers you the following benefits:

- You can use it to check the accuracy of table movements of machine tools and calibrate CMMs.
- It features a permanently wrung stack of gauge blocks housed in a rigid frame.
- You can use it in either vertical or horizontal orientation.
- With the Ceramic Check Master, each measuring block is made of zirconia-based ceramic that requires no anti-corrosion treatment for measuring faces.



515-743

515-742

515-740

Metric		Ceramic blocks	
No.	Range [mm]	Mass [kg]	Price [€]
515-760	300	3.4	3,200.00
515-761	450	5.2	3,690.00
515-762	600	6.9	3,920.00
515-763	1,000	11.5	9,580.00
515-764	1,500	17.3	16,400.00

Metric		Steel blocks	
No.	Range [mm]	Mass [kg]	Price [€]
515-740	300	3.6	2,220.00
515-741	450	5.4	2,320.00
515-742	600	7.2	2,680.00
515-743	1,000	12	5,871.00
515-744	1,500	18	9,785.00



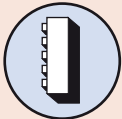
Specifications	
Block step	10 mm
Block pitch accuracy	0 < range ≤ 310 mm : ±1,2 µm 310 < range ≤ 610 mm : ±1,8 µm 610 < range ≤ 1010 mm : ±2,5 µm 1010 < range ≤ 1510 mm : ±4,0 µm
Parallelism of blocks	0 < range ≤ 450 mm : 1,0 µm 450 < range ≤ 1010 mm : 1,5 µm 1010 < range ≤ 1510 mm : 2,0 µm
Delivered	In a wooden box

Optional accessories

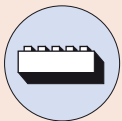
No.	Description	Price €
601167	Supporting base for vertical operation	340.00



Single-row
10 mm blocks



Vertical
orientation



Horizontal
orientation



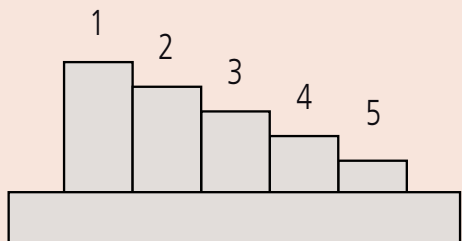
601167 (optional)
Supporting base for vertical operation

Step Master

Series 516

The Step Master is a gauge that provides you with four small increments in height and offers you the following benefits:

- It is constructed from an assembly of five highly accurate, steel or ceramic gauge blocks.
- Each adjacent step is calibrated to a resolution of 0.01 μm by using an interferometer with an accuracy tolerance of $\pm 0.20 \mu\text{m}$.
- Both steel and ceramic types are available.



	Step value			
	1/2	2/3	3/4	4/5
516-198, 516-498	10 μm	5 μm	2 μm	1 μm
516-199, 516-499	300 μm	100 μm	50 μm	20 μm



516-499 Ceramic type



516-498 Ceramic type



516-198 Steel type

Metric

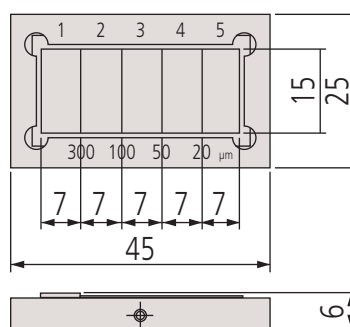
Ceramic blocks

No.	Remarks	Price [€]
516-498	Ceramic type (step: 10, 5, 2, 1 μm)	1,570.00
516-499	Ceramic type (step: 300, 100, 50, 20 μm)	1,570.00

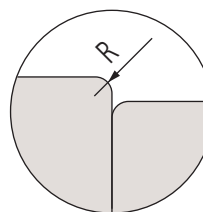
Metric

Steel blocks

No.	Remarks	Price [€]
516-198	Steel type (step: 10, 5, 2, 1 μm)	1,030.00
516-199	Steel type (step: 300, 100, 50, 20 μm)	1,030.00



mm



CERA Straight Master

Series 311

The CERA Straight master is used for inspecting the straightness of travel of moving elements and offers you the following benefits:

- You can use it on equipment such as machine tools, CMMs, form measuring machines and semiconductor related equipment.
- It has precision lapped reference surfaces.
- Three types are available: high accuracy, ultra high accuracy and a double face model.



311-302-22

Metric

Double faced model

No.	Nominal Length	Size (L x W x H) [mm]	Straightness [μm]	Mass [kg]	Price [€]
311-352-22	400 mm	440 x 45 x 80	0.3	3.2	4,110.00
311-355-22	700 mm	740 x 45 x 80	0.5	5.5	4,280.00
311-357-22	1000 mm	1040 x 45 x 80	1	8	5,380.00
311-359-22	1300 mm	1340 x 45 x 80	1.5	10	7,860.00

Metric

Standard model

No.	Nominal Length	Size (L x W x H) [mm]	Straightness [μm]	Mass [kg]	Price [€]
311-302-22	400 mm	440 x 35 x 50	0.3	1.8	3,170.00
311-305-22	700 mm	740 x 35 x 50	0.5	3	3,300.00
311-307-22	1000 mm	1040 x 45 x 80	1	8	4,140.00
311-309-22	1300 mm	1340 x 45 x 80	1.5	10	5,870.00

Metric

Ultra-high accuracy model

No.	Nominal Length	Size (L x W x H) [mm]	Straightness [μm]	Mass [kg]	Price [€]
311-332-22	400 mm	440 x 35 x 50	0.2	1.8	3,390.00
311-335-22	700 mm	740 x 35 x 50	0.4	3	3,530.00
311-337-22	1000 mm	1040 x 45 x 80	0.5	8	4,420.00
311-339-22	1300 mm	1340 x 45 x 80	0.7	10	6,430.00

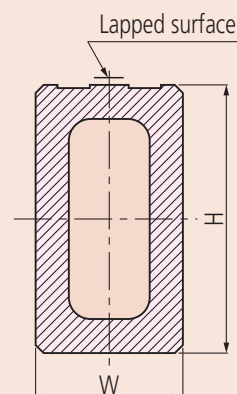


Specifications

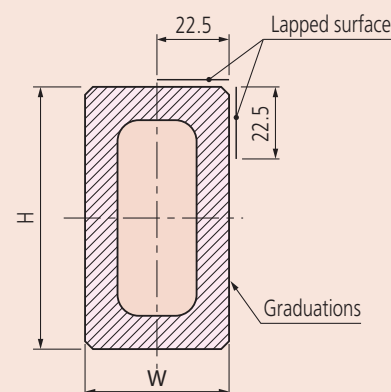
Double faced model	With two reference faces for checking straightness in two orthogonal directions
Graduation	50 mm step scale
Delivered	In a wooden box, with calibration certificate, 3pcs. support blocks (ceramic), gloves



311-352-22



High accuracy and ultra-high accuracy model



Double faced model

High Precision 4 Face Square Master

Specifications

Perpendicularity	Reference surface: 1 μm front/back surface: 5 μm
Straightness	Reference surface: 1 μm front/back surface: 5 μm
Delivered	In a wooden box

Series 311

This device is ideal for inspecting instrument accuracy, and offers you the following benefits:

- You can use it as the reference for inspecting the accuracy of high-precision measuring instruments and XY tables, such as straightness of each-axis motion and squareness between motions of two axes.
- The squareness and straightness of the four reference surfaces and two side surfaces are finished with ultra-high accuracy.



311-111



311-112



311-113

Metric

No.	Dimensions (WxLxT)	Mass [kg]
311-111	90 x 110 x 25 mm	1.5
311-112	160 x 210 x 25 mm	5
311-113	260 x 310 x 30 mm	14

Glass Scales

Series 182

These high precision glass scales offer you the following benefits:

- They are manufactured using Mitutoyo's leading-edge Linear Scale production technology.
- They are ideal for checking the magnification accuracy of profile projectors and microscopes, as well as the table feed accuracy of measuring equipment.



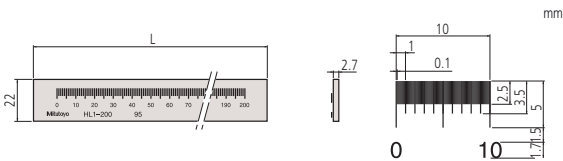
Specifications	
Accuracy	(1,5+2L/1000) μm L = measured length (mm)
Material	Sodium glass
Thermal expansion coefficient	(8±1) x 10 ⁻⁶ /K



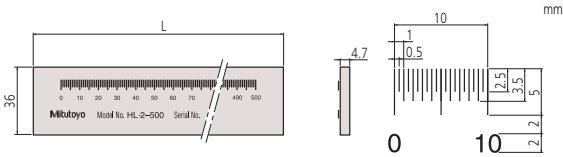
182-525-10 / 182-523-10 / 182-522-10 / 182-513-10

Metric

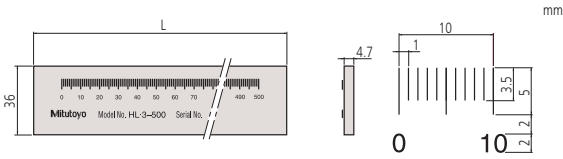
No.	Range [mm]	Graduation [mm]	Thickness of graduation line [μm]	L [mm]	Mass [kg]	Price [€]
182-511-10	50	0.1	20	75	0.23	726.00
182-512-10	100	0.1	20	125	0.24	757.00
182-521-10	100	0.5	50	130	0.27	778.00
182-513-10	150	0.1	20	175	0.35	783.00
182-514-10	200	0.1	20	225	0.36	809.00
182-522-10	200	0.5	50	230	0.32	850.00
182-531-10	250	1	100	280	0.55	937.00
182-523-10	300	0.5	50	330	0.57	984.00
182-524-10	400	0.5	50	430	0.71	1,076.00
182-525-10	500	0.5	50	530	0.86	1,143.00
182-532-10	500	1	100	530	0.86	1,143.00
182-533-10	750	1	100	780	1.22	1,421.00
182-534-10	1,000	1	100	1030	1.54	1,468.00



Graduation : 0,1 mm



Graduation : 0,5 mm



Graduation : 1 mm

Specifications

Accuracy	$(0,5+L/1000) \mu\text{m}$ L = measured length (mm)
Graduation	1 mm
Thickness of graduation line	4 μm
Material	Low expansion glass
Thermal expansion coefficient	$(0,00\pm0,02) \times 10^{-6}/\text{K}$

Low Expansion Glass Scales

Series 182

These high precision glass scales offer you the following benefits:

- They are manufactured using Mitutoyo's leading-edge Linear Scale production technology.
- You can use them as a standard for calibrating graduating scales, with high accuracy guaranteed.

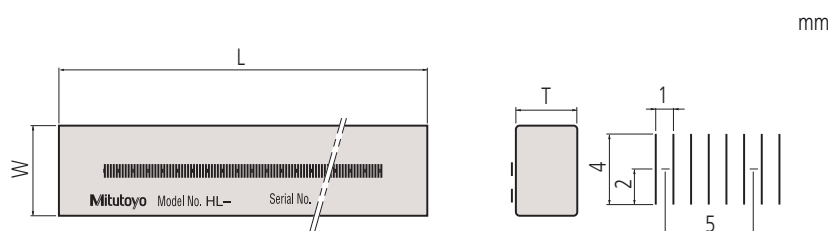


182-502-60
182-501-60

Metric

No.	Range [mm]	L [mm]	T [mm]	W [mm]	Mass [kg]	Price [€]
182-501-60	250	280	10	20	0.75	3,960.00
182-502-50	500	530	20	30	1.8	7,555.00
182-502-60	500	530	20	30	1.8	7,555.00

-60 : with JCSS certificate

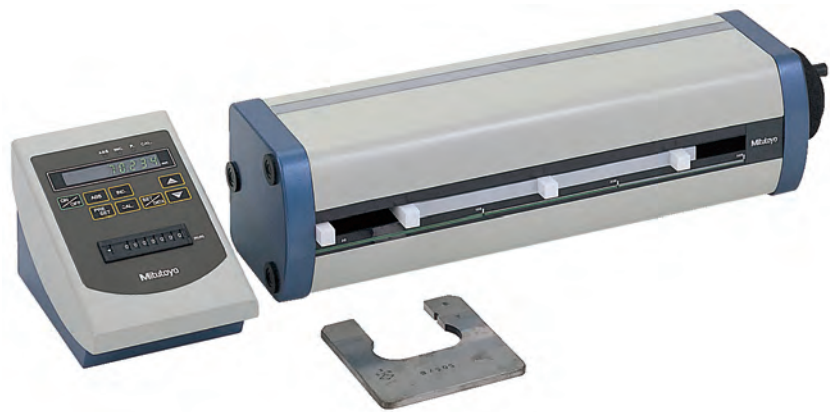


Snap Gauge Checker

Series 515

This Snap Gauge Checker offers you the following benefits:

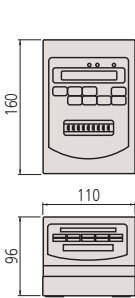
- It is capable of inspecting snap gauges quickly and accurately with resolution down to 0.0001mm.
- The digital display and constant-force measurement capability enables skill-free operation.
- Zirconia ceramic measuring blocks ensure a long service life with minimal maintenance.



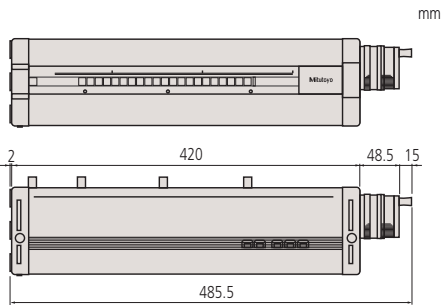
515-611D

Metric

No.	Range [mm]	Mass [kg]	Price [€]
515-611D	20-320	12.5	11,640.00



Display unit Measuring unit



Functions	Series 515
Data output	

Specifications	
Block adjustment	100 mm
Block pitch accuracy	±0.001mm
Parallelism of blocks	0,001 mm (between the anvil and the first measuring block)
Feed error	±0,002 mm
Digital step	0.0001mm / 0.001mm
Power supply	AC adapter

Optional accessories		
No.	Description	Price €
936937	Digimatic cable (1 m)	43.50
965014	Digimatic cable (2 m)	57.50
02AZD790D	Connecting cable U-Wave	85.00
990554	Workpiece rest	283.00
06ADV380D	USB Input Tool Direct cable (2 m)	100.00

Specifications

Graduation	0.001 mm
Measuring face	Carbide tipped, rotating

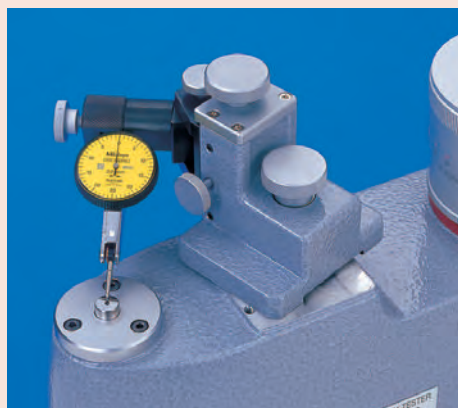
Optional accessories

No.	Description	Price €
12AAK824	Horizontal holder for bore gauge inspection	229.00



Specifications

Graduation	0.0002 mm
Repeatability	0.2
Clamping capacity (stem)	Ø 4-10 mm



Calibration Tester

Series 170

This Calibration Tester offers you the following benefits:

- It enables you to test dial indicators, lever gauges and bore gauges with 0.01mm scale graduation.
- Bore gauges can be supported both horizontally and vertically.

Metric

No.	Range [mm]	Accuracy	Mass [kg]	Price [€]
170-102-12	0-25	±2 µm	7.5	1,800.00



170-102-12

Series 521

This allows the calibration of digital and analogue indicators, lever gauges and measuring probes with a maximum measuring span of 5mm.



521-105

Metric

No.	Range [mm]	Accuracy	Mass [kg]	Price [€]
521-103	0-1	±0,2 µm	7	4,840.00
521-105	0-5	±0,8 µm	7.5	5,770.00



Calibration Tester I-Checker

Series 170

This universal measuring instrument enables you to calibrate all kinds of indicators, lever indicators and bore gauges.

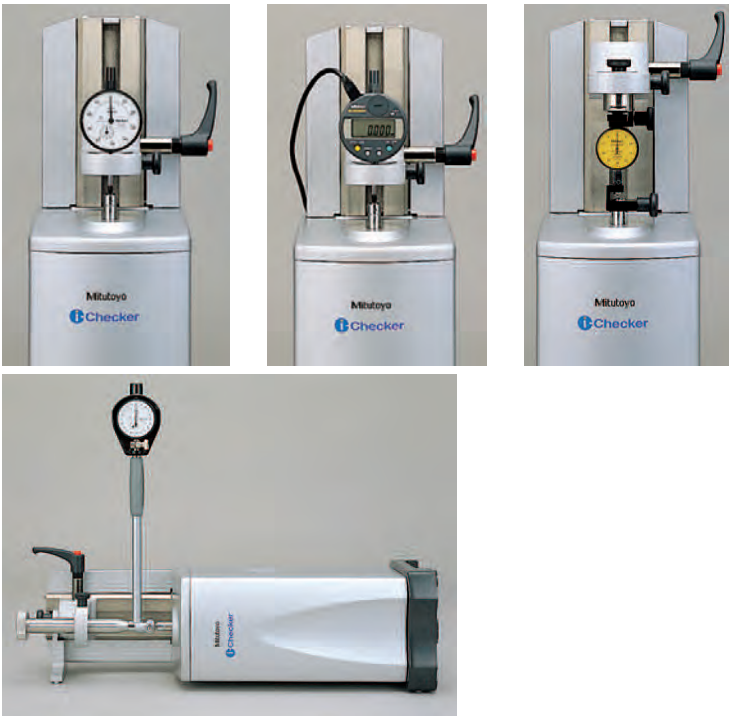
The Calibration Tester I-Checker offers you the following benefits:

- It has a measuring range of up to 100mm.
- I-Pak test and analysis software is provided.
- You can adjustment the measuring position very easily thanks to its semi-automatic and fully automatic measurement functions.
- Its measuring surface is carbide tipped.



170-311

Metric			
No.	Range	Accuracy	Remarks
170-321D	100 mm	$\pm(0,2+L/100) \mu\text{m}$ in vertical position $\pm(0,3+2L/100) \mu\text{m}$ in lateral position L = measured length (mm)	I-Pak software supports EN ISO 463 (2006), DIN 878 (1983), DIN 2270 (1985), DIN 879 (1983), VDI/VDE/DGQ 2618, JIS B7503 (2011) a.s.o.



Specifications	
Resolution [μm]	0,02 μm/0.8 μm
Drive method	Electric motor
Drive speed	Max. 4 mm/s
Accuracy	$\pm(0,2+L/100) \mu\text{m}$ in vertical position $\pm(0,3+2L/100) \mu\text{m}$ in lateral position L = measured length (mm)
Measuring unit	Reflective-type glass linear encoder
Expansion coefficient	$(8\pm1)\times10^{-6}/\text{K}$
Dimensions [mm]	184 x 225 x 532 mm (W x D x H)
Operation temperature	20°C±3°C
Power supply	100VAC to 240VAC ±10%, 50/60Hz
Mass	20 kg



i-Checker brochure on request
(specifications and accessories)

Gauge Block Interferometer GBI

Automatic Gauge Block Calibration

This is an automatic measuring instrument that enables you to perform automatic gauge block calibration.

The Gauge Block Interferometer GBI offers you the following benefits:

- It automatically measures the primary-level gauge block length determination for blocks between 0,1mm and 250mm using optical interference.
- The intensity and wavelength of the He-Ne laser light sources are highly stable, give you high accuracy measurement.
- Automatic remote measurement can be performed to reduce the effects of operator body heat.
- The GBI automatically detects the distribution of interference fringes and processes the data, eliminating human error.



No.	Range
GBI	0.5mm - 250mm

Gauge Block Comparator GBCE-250

Series 565

This Manual Comparator with Dual Gauge Heads offers you the following benefits:

- It performs gauge block calibration according to EN ISO 3650.
- You can easily compare gauge blocks between 0.1mm and 250mm with reference gauge blocks.
- The upper and lower gauging heads give you of easy, high-accuracy measurement.



Model No.	GBCE-250
No.	565-150D
Resolution [μm]	0,00001 mm (0,01 μm)
Range mm	0.1-250
Measuring unit	Laser Hologage (upper, lower)
Measuring force	0.7N (upper) 0.2N (lower)

Cylindrical Measuring Pin

Series 926

This is a complete incremental set of plug (or pin) gauges, that offers you the following benefits:

- It includes 91 or 273 pieces that you can use in the inspection room, or on the shop floor in tool and fixture making.
- A 91-piece set is available, with diameter range 1-10mm, rising by 0.1mm increments.
- A 273-piece set is available, with diameter range 0.99-10.01mm, rising by 0.1mm increments, each increment represented by three gauges: 0.00mm (size); +0.01mm (oversize); and -0.01mm (undersize).



926-222



926-210

Set of 273 pieces

No.	Accuracy grade	Price [€]
926-210	1	3,290.00
926-212	2	2,620.00

Set of 91 pieces

No.	Accuracy grade	Price [€]
926-220	1	1,480.00
926-222	2	1,040.00

Specifications

Accuracy	DIN 2269
Finish	Very fine ground, from Ø 3 mm inscribed
Roughness	≤ 0,1 µm Ra
Hardness	HRC 60-62
Length	up to Ø 6 mm = 50 mm over Ø 6 mm = 70 mm mm
Delivered	In a wooden box



Steel Gauge Block Sets Page 368



Steel individual Gauge Blocks Page 376



CERA Gauge Block Sets Page 378



CERA Individual Gauge Blocks Page 381



Special Gauge Blocks Page 382



Accessories for Gauge Blocks Page 384

Gauge Blocks Overview

Series 516

Precision gauge blocks are the primary standards vital to dimensional quality control in the manufacture of parts. Mitutoyo offers an extensive selection of gauge blocks available in a choice of rectangular or square, metric or inch, and steel or ceramic types.

Accuracy

Gauge blocks offered by Mitutoyo guarantee such a high accuracy that users can use them complete confidence. Needless to say, Mitutoyo has established a traceability system for our measurement products, up to the Metrology Management Center of the National Institute of Advanced Industrial Science and Technology (AIST) and we have been certified by the Japanese government as an accredited laboratory.

Wringing

The lapping technique is one of Mitutoyo's specialties. Our advanced technique, developed over more than a half century, enables us to achieve the best flatness and surface roughness needed for gauge blocks and thus maximize the wringing force.

Abrasion Resistance and Dimensional Stability of Steel blocks

High-carbon high-chrome steel is employed to satisfy a variety of the material characteristics required for gauge blocks. Our advanced heat treatment technology for steel blocks, which involves repeated high and low temperature cycles, simultaneously achieves excellent abrasion resistance and reduces change in length over time to the minimum.

CERA Blocks

CERA blocks are made of a ceramic material with a superior surface finish, created by Mitutoyo's ultra-precision machining techniques, that provides a premium quality block.

1. Corrosion Resistant

Anti-corrosion treatment is not required when handled normally (i.e. with fingers), resulting in simple maintenance and storage.

2. No Burrs Caused by Dents, etc.

Since the CERA Block is very hard, it will not scratch and is highly resistant to burrs. If a burr is formed, it can easily be removed with a ceramic deburring stone (Ceraston).

3. Abrasion Resistant

CERA Blocks have 10 times the abrasion resistance of steel gauge blocks.

4. Dimensionally Stable

CERA Blocks are free from dimensional change over time.

5. Sizes Clearly Marked

Black characters, indicating the nominal length, are inscribed by laser and are clearly visible against the white surface of the block.

6. Non-magnetic Nature Prevents Steel Swarf Contamination

7. High Wringing Force

Superior flatness and surface finish

8. Superior Material Characteristics of CERA Block

Property \ Material	CERA Block (ZrO ₂)	Steel (Fe)	Carbide (WC-Co)	Silicon nitride (Si ₃ N ₄)
Hardness (HV)	1350	800	1650	1500
Coefficient of thermal expansion (10 ⁻⁶ /K)	9,3±0,5	10,8±0,5	5,5±1,0	2
Flexural strength (MPa)	1270	1960	1960	580
Fracture toughness K _{1c} (MPa·m ^{1/2})	7	120	12	6,5
Young's modulus x10 ⁻⁴ (MPa)	20,6	20,6	61,8	28,4
Poisson's ratio	0,3	0,3	0,2	0,3
Specific gravity	6,0	7,8	14,8	3,2
Thermal conductivity (W/m·k)	2,9	54,4	79,5	16,7



CERA Blocks



CERA Blocks - Abrasion Resistant



CERA Blocks - Non magnetic

Selecting Gauge Blocks

- Gauge blocks are designed to offer the construction of practically any size, within the range of a set, using the minimum number of blocks. Long block sets are available if a longer length is required than is provided by the standard sets.
- Gauge block sets should be selected in accordance with the minimum length step required. Wear block sets should be used if the application is likely to involve rapid wear of the end blocks in a stack (and the minimum sizes required allow this). This will preserve the life of the set by confining wear to the wear blocks, whose cost of replacement is far less than that of a complete set.
- If a set containing a large number of gauge blocks is selected, the number of gauge blocks required for any particular length may be reduced and the number of combinations is increased. Accuracy will be retained and wear will be reduced.
- Dedicated gauge block sets for micrometer inspection and caliper inspection are available.

Gauge Blocks Overview

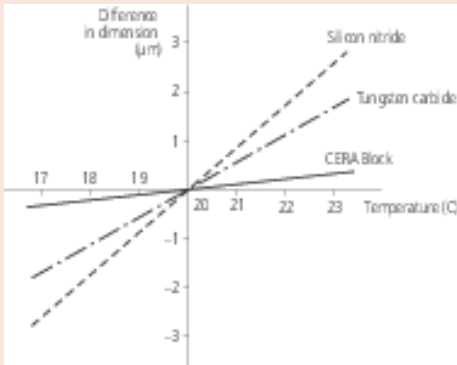
Series 516

9. Closest Expansion Coefficient to Steel

The thermal expansion coefficient of a CERA Block is quite similar to that of a steel gauge block.

10. Highly Resistant to Dropping and Impact

The CERA Block material is one of the toughest ceramics. It is extremely difficult to crack a CERA block in normal use.



Differences in the dimension between some materials and steel that are obtained when measuring testpieces with a length of 100 mm at each temperature.

Grade and Application

The following information can be used to select the gauge block grade according to usage (specified by DIN861, BS4311, JIS B 7506 and EN ISO 3650).

Grade 2:

These gauge blocks are intended for shop floor use to set and calibrate fixtures as well as precision instruments.

Grade 1:

This grade is used within an inspection area to verify the accuracy of plug and snap gauges as well as for setting electronic measuring devices.

Grade 0:

These higher accuracy gauges are intended for use within a controlled environment by skilled inspection staff. Mainly used as reference standards for setting high precision measuring equipment and for the calibration of lower grade gauge blocks.

Grade K:

Gauge blocks of this accuracy are intended for use within a temperature controlled inspection room or calibration laboratory. They should be used as masters with certificates against other gauge blocks which are calibrated by comparison.

Certificates

ILAC

The International Laboratory Accreditation Cooperation is an international cooperation of laboratory and inspection accreditation bodies. The member bodies signed the ILAC Mutual Recognition Arrangement (MRA) which guarantees a cross approval of certificates from accredited laboratories from other countries. The Signatories to the ILAC arrangement are almost all European countries.

JCSS

Mitutoyo Gauge Block Sets can be delivered with a JCSS Certificate of Calibration (Japan Calibration Service System). A JCSS Certificate of Calibration is comparable with e.g. DAKS, COFRAC, RvA or UKAS Certificate of Calibration. Refer to ILAC this calibration result may be accepted internationally.

Steel Gauge Block Set - 1 mm Base

Series 516 - 1 Base

This table shows the most popular configurations for this type of set. For details of other configurations available please contact Mitutoyo.



Inspection certificate



Steel 112-block set



Steel 103-block set



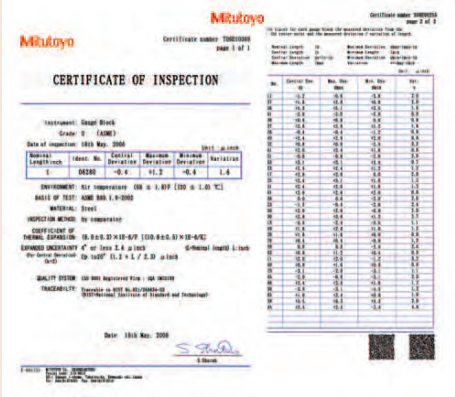
Steel 47-block set

Blocks per Set	No.	Grade	Price €	Block allocation		
				Size	Step	Quantity
122	516-597-10	0	4,020.00	1.0005	-	1
	516-598-10	1	3,400.00	1.001 - 1.009	0.001	9
	516-599-10	2	2,885.00	1.01 - 1.49	0.01	49
				1.6 - 1.9	0.1	4
				0.5 - 24.5	0.5	49
112	516-938-10	0	3,710.00	1.0005	-	1
	516-939-10	1	3,090.00	1.001 - 1.009	0.001	9
	516-940-10	2	2,575.00	1.01 - 1.49	0.01	49
				0.5 - 24.5	0.5	49
				25 - 100	25	4
103	516-942-10	0	3,193.00	1.005	-	1
	516-943-10	1	2,369.00	1.01 - 1.49	0.01	49
	516-944-10	2	2,060.00	0.5 - 24.5	0.5	49
				25 - 100	25	4
87	516-946-10	0	2,678.00	1.001 - 1.009	0.001	9
	516-947-10	1	1,751.00	1.01 - 1.49	0.01	49
	516-948-10	2	1,600.00	0.5 - 9.5	0.5	19
				10 - 100	10	10
47	516-958-10	0	1,700.00	1.005	-	1
	516-959-10	1	1,340.00	1.01 - 1.09	0.01	9
	516-960-10	2	1,185.00	1.1 - 1.9	0.1	9
				1 - 24	1	24
				25 - 100	25	4
47	516-962-10	0	1,524.00	1.005	-	1
	516-963-10	1	1,185.00	1.01 - 1.19	0.01	19
	516-964-10	2	1,030.00	1.2 - 1.9	0.1	8
				1 - 9	1	9
				10 - 100	10	10
46	516-995-10	0	1,630.00	1.001 - 1.009	0.001	9
	516-996-10	1	1,298.00	1.01 - 1.09	0.01	9
	516-997-10	2	1,100.00	1.1 - 1.9	0.1	9
				1 - 9	1	9
				10 - 100	10	10
32	516-966-10	0	1,051.00	1.005	-	1
	516-967-10	1	762.00	1.01 - 1.09	0.01	9
	516-968-10	2	670.00	1.1 - 1.9	0.1	9
				1 - 9	1	9
				10 - 30	10	3
8	516-115-10	0	1,288.00	25 - 200	25	8
	516-116-10	1	1,061.00			
	516-117-10	2	958.00			

Specifications

Accuracy

EN ISO 3650



Inspection Certificate

Steel Gauge Block Set - 1 mm Base with JCSS Certificate

Series 516 - 1 Base

This table shows the most popular configurations for this type of set.
For details of other configurations available please contact Mitutoyo.



Calibration certificate

Specifications

Accuracy EN ISO 3650



Steel 112-block set



Steel 103-block set



Steel 47-block set



JCSS Calibration Certificate

These Gauge Block Sets are delivered with a JCSS Calibration Certificate (Japan Calibration Service System).

A JCSS Certificate of Calibration is comparable with e.g. DAKKS COFRAC, RVA or UKAS Certificate of Calibration.

This calibration result is accepted internationally.

Blocks per Set	No.	Grade	Price €	Block allocation		
				Size	Step	Quantity
122	516-596-60	K	8,450.00	1.0005	-	1
	516-597-60	0	4,325.00	1.001 - 1.009	0.001	9
	516-598-60	1	3,700.00	1.01 - 1.49	0.01	49
	516-599-60	2	3,195.00	1.6 - 1.9	0.1	4
				0.5 - 24.5	0.5	49
112	516-937-60	K	7,725.00	1.0005	-	1
	516-938-60	0	4,020.00	1.001 - 1.009	0.001	9
	516-939-60	1	3,400.00	1.01 - 1.49	0.01	49
	516-940-60	2	2,890.00	0.5 - 24.5	0.5	49
				25 - 100	25	4
103	516-941-60	K	7,000.00	1.005	-	1
	516-942-60	0	3,710.00	1.01 - 1.49	0.01	49
	516-943-60	1	3,090.00	0.5 - 24.5	0.5	49
	516-944-60	2	2,575.00	25 - 100	25	4
87	516-945-60	K	6,080.00	1.001 - 1.009	0.001	9
	516-946-60	0	2,890.00	1.01 - 1.49	0.01	49
	516-947-60	1	2,320.00	0.5 - 9.5	0.5	19
	516-948-60	2	2,010.00	10 - 100	10	10
47	516-957-60	K	3,300.00	1.005	-	1
	516-958-60	0	1,900.00	1.01 - 1.09	0.01	9
	516-959-60	1	1,545.00	1.1 - 1.9	0.1	9
	516-960-60	2	1,290.00	1 - 24	1	24
				25 - 100	25	4
47	516-961-60	K	3,200.00	1.005	-	1
	516-962-60	0	1,625.00	1.01 - 1.19	0.01	19
	516-963-60	1	1,290.00	1.2 - 1.9	0.1	8
	516-964-60	2	1,135.00	1 - 9	1	9
				10 - 100	10	10
46	516-994-60	K	3,245.00	1.001 - 1.009	0.001	9
	516-995-60	0	1,840.00	1.01 - 1.09	0.01	9
	516-996-60	1	1,500.00	1.1 - 1.9	0.1	9
	516-997-60	2	1,298.00	1 - 9	1	9
				10 - 100	10	10
32	516-965-60	K	2,175.00	1.005	-	1
	516-966-60	0	1,130.00	1.01 - 1.09	0.01	9
	516-967-60	1	830.00	1.1 - 1.9	0.1	9
	516-968-60	2	730.00	1 - 9	1	9
				10 - 30	10	3
8	516-701-60	K	8,135.00	125 - 175	25	3
	516-702-60	0	3,810.00	200 - 250	50	2
	516-703-60	1	3,090.00	300 - 500	100	3
	516-704-60	2	2,780.00			
8	516-115-60	0	1,391.00	25 - 200	25	8
	516-116-60	1	1,164.00			
	516-117-60	2	1,061.00			

Steel Gauge Block Set - 2 mm Base

Series 516 - 2 Base

The 2mm-based gauge block, which take the base of the minimum length step as 2mm, are easy to handle and will not warp, as compared to the 1mm-based gauge blocks.



Steel 88-block set

Steel 33-block set

Blocks per Set	No.	Grade	Price €	Block allocation		
				Size	Step	Quantity
88	516-503-10	1		1.0005	-	1
				2.001 - 2.009	0.001	9
				2.01 - 2.49	0.01	49
				0.5 - 9.5	0.5	19
				10 - 100	10	10
46	516-507-10	1		2.001 - 2.009	0.001	9
	516-508-10	2		2.01 - 2.09	0.01	9
				2.1 - 2.9	0.1	9
				1 - 9	1	9
				10 - 100	10	10
33	516-510-10	0	1,270.00	2.005	-	1
	516-511-10	1		2.01 - 2.09	0.01	9
	516-512-10	2		2.1 - 2.9	0.1	9
				1 - 9	1	9
				10 - 30	10	3
				60, 100	-	2

Steel Gauge Block Set - Thin Blocks

Series 516

- Thin block set, 0,001 mm step, 0,05 mm step

Ordering example: To order an ISO Standard 18-block grade 1 set with calibration certificate, choose No. 516-975-60.

Blocks per Set	No.	Standard / grade available and Suffix No. *	Block allocation		
			Size	Step	Quantity
18	516-974	(Grade 0): -X0	0.991 - 0.999	0.001	9
	516-975	(Grade 1): -X0	1.001 - 1.009	0.001	9
	516-976	(Grade 2): -X0			
9	516-981	(Grade K): -X0	1.001 - 1.009	0.001	9
	516-982	(Grade 0): -X0			
	516-983	(Grade 1): -X0			
	516-984	(Grade 2): -X0			
9	516-985	(Grade K): -X0	0.991 - 0.999	0.001	9
	516-986	(Grade 0): -X0			
	516-987	(Grade 1): -X0			
	516-988	(Grade 2): -X0			
9	516-990	(Grade 0): -X0	0.10 - 0.50	0.05	9
	516-991	(Grade 1): -X0			
	516-992	(Grade 2): -X0			



Inspection Certificate

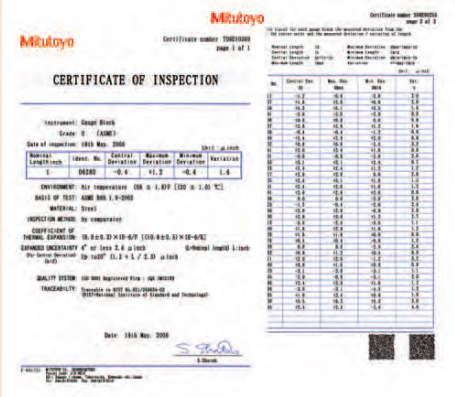


Calibration Certificate

Specifications

Accuracy

EN ISO 3650



Inspection Certificates

Specifications

Accuracy

EN ISO 3650

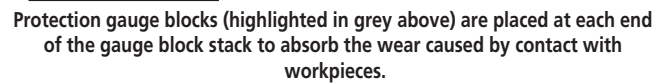
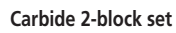
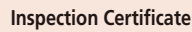


Steel 18-block set

Suffix No. (-X) for Selecting Certificate Provided		
ISO/DIN/JIS		
Suffix No.	Inspection Certificate	Calibration Certificate
		JCSS
1	○	—
6	○	○

Series 516 - Carbide Wear Block sets

EN ISO 3650

Mitutoyo

Steel Micrometer Inspection Gauge Block Set

Series 516



Calibration
certificate



Inspection
certificate

With calibration certificate

Blocks per Set	No.	Grade	Calibration/Standard applications	Price €	Block allocation
10	516-580-60	0	For Micrometer with 2 mm spindle pitch. (QuantuMike)	685.00	2.2, 4.8, 7.8, 10.4, 12, 15.2, 17.4, 19.6, 22.6, 25 mm
	516-581-60	1		597.00	
	516-582-60	2		510.00	
10	516-106-60	0	EN ISO 3611 DIN 863 (1999) VDI/VDE/DGQ 2618	618.00	2.5, 5.1, 7.7, 10.3, 12.9, 15, 17.6, 20.2, 22.8, 25 mm, optical parallel (thickness = 12 mm)
	516-107-60	1		546.00	
	516-108-60	2		474.00	
10	516-135-60	0	EN ISO 3611 DIN 863 (1999) VDI/VDE/DGQ 2618	1,288.00	2.5, 5.1, 7.7, 10.3, 12.9, 15, 17.6, 20.2, 22.8, 25 mm, Micro Checker, optical parallel (thickness = 12 mm)
	516-136-60	1		1,082.00	
	516-137-60	2		979.00	

With inspection certificate

Blocks per Set	No.	Grade	Calibration/Standard applications	Price €	Block allocation
10	516-580-10	0	For Micrometer with 2 mm spindle pitch. (QuantuMike)	600.00	2.2, 4.8, 7.8, 10.4, 12, 15.2, 17.4, 19.6, 22.6, 25 mm
	516-581-10	1		515.00	
	516-582-10	2		427.00	
10	516-106-10	0	EN ISO 3611 DIN 863 (1999) VDI/VDE/DGQ 2618	556.00	2.5, 5.1, 7.7, 10.3, 12.9, 15, 17.6, 20.2, 22.8, 25 mm, optical parallel (thickness = 12 mm)
	516-107-10	1		484.00	
	516-108-10	2		412.00	
10	516-135-10	0	EN ISO 3611 DIN 863 (1999) VDI/VDE/ DGQ 2618	1,185.00	2.5, 5.1, 7.7, 10.3, 12.9, 15, 17.6, 20.2, 22.8, 25 mm, Micro Checker, optical parallel (thickness = 12 mm)
	516-136-10	1		979.00	
	516-137-10	2		876.00	

Specifications

Accuracy

EN ISO 3650



516-581-10



Micro checker

(See separate entry later in this chapter for a detailed description)

Steel Caliper Inspection Gauge Block Set

Series 516



Inspection
certificate

With inspection certificate

Blocks per Set	No.	Grade	Mass	Calibration/Standard applications	Price €	Block allocation
4	516-526-10	1	1.72	EN ISO 13385-1	1,060.00	4 blocks : 10, 30, 50, 125 mm, setting ring (Ø4 mm, Ø10 mm), pin gauge (Ø 10 mm), glove
	516-527-10	2	1.72		890.00	
3	516-124-10	1	1.72	DIN 862 (1988)	783.00	3 blocks : 30, 41.3, 131.4 mm, setting ring (Ø4 mm, Ø25 mm), glove
	516-125-10	2	1.72	VDI/VDE/DGQ 2618	706.00	



516-526



516-124

Micrometer Inspection Gauge Block Stand

Series 516 - Micro Checker

This micro checker offers you the following benefits

- For securely holding a stack of gauge blocks to be used for micrometer inspection.
- Can be used vertically and horizontally.
- Parallelism of micrometer measuring faces is checked by optical parallel which can be attached to the stand for convenience in handling.



Metric

Micro Checker (stand only)

No.	Applicable gauge block sets	Applicable gauge block size [mm]	Price [€]
516-607	516-106-xx, 516-107-xx, 516-108-xx, 516-156-xx, 516-157-xx, 516-158-xx	2.5, 5.1, 7.7, 10.3, 12.9, 15, 17.6, 20.2, 22.8, 25	599.00

Steel Metric Individual Gauge Block

Metric Blocks ≤ 1.19 mm

Ordering example: To order a 0.1mm ISO Standard grade 1 block with JCSS calibration certificate, choose No. 611821-036.



Calibration
Certificate



Inspection
Certificate

Specifications

Accuracy

EN ISO 3650

Suffix No. (-XXX)
for Selecting Certificate Provided

ISO/DIN/JIS

Suffix No.	Grade	Inspection Certificate	Calibration Certificate
			JCSS
-016	K	○	○
-021	0	○	—
-026	0	○	○
-031	1	○	—
-036	1	○	○
-041	2	○	—
-046	2	○	○

Length [mm]	No.
0.1	611821
0.11	611860
0.12	611861
0.13	611862
0.14	611863
0.15	611822
0.16	611864
0.17	611865
0.18	611866
0.19	611867
0.2	611823
0.21	611868
0.22	611869
0.23	611870
0.24	611871
0.25	611824
0.26	611872
0.27	611873
0.28	611874
0.29	611875
0.3	611825
0.31	611876
0.32	611877
0.33	611878
0.34	611879
0.35	611826
0.36	611880
0.37	611881
0.38	611882
0.39	611883
0.4	611827
0.41	611884
0.42	611885
0.43	611886
0.44	611887
0.45	611828
0.46	611888
0.47	611889
0.48	611890
0.49	611891
0.5	611506
0.51	611892
0.52	611893

Length [mm]	No.
0.53	611894
0.54	611895
0.55	611896
0.56	611897
0.57	611898
0.58	611899
0.59	611900
0.6	611901
0.61	611902
0.62	611903
0.63	611904
0.64	611905
0.65	611906
0.66	611907
0.67	611908
0.68	611909
0.69	611910
0.7	611911
0.71	611912
0.72	611913
0.73	611914
0.74	611915
0.75	611916
0.76	611917
0.77	611918
0.78	611919
0.79	611920
0.8	611921
0.81	611922
0.82	611923
0.83	611924
0.84	611925
0.85	611926
0.86	611927
0.87	611928
0.88	611929
0.89	611930
0.9	611931
0.91	611932
0.92	611933
0.93	611934
0.94	611935
0.95	611936

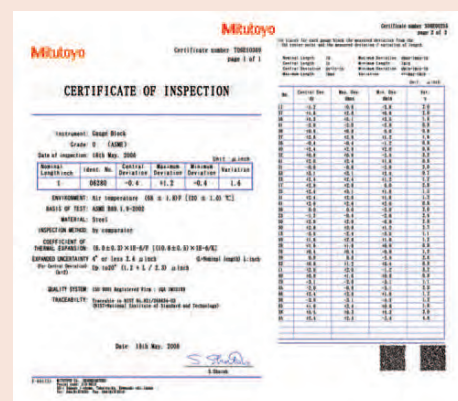
Length [mm]	No.
0.96	611937
0.97	611938
0.98	611939
0.99	611940
0.991	611551
0.992	611552
0.993	611553
0.994	611554
0.995	611555
0.996	611556
0.997	611557
0.998	611558
0.999	611559
1	611611
1.0005	611520
1.001	611521
1.002	611522
1.003	611523
1.004	611524
1.005	611525
1.006	611526
1.007	611527
1.008	611528
1.009	611529
1.01	611561
1.02	611562
1.03	611563
1.04	611564
1.05	611565
1.06	611566
1.07	611567
1.08	611568
1.09	611569
1.1	611570
1.11	611571
1.12	611572
1.13	611573
1.14	611574
1.15	611575
1.16	611576
1.17	611577
1.18	611578
1.19	611579

For prices please refer to the online catalogue

For prices please refer to the online catalogue

For prices please refer to the online catalogue

For prices please refer to the online catalogue



Inspection Certificate



JCSS Calibration Certificate

These Gauge Block Sets are delivered with a JCSS Certificate of Calibration (Japan Calibration Service System).

A JCSS Certificate of Calibration is comparable with e.g. DAKS COFRAC, RVA or UKAS Certificate of Calibration.

This calibration result is accepted internationally.

Steel Metric Individual Gauge Block

Metric Blocks ≤ 1000 mm



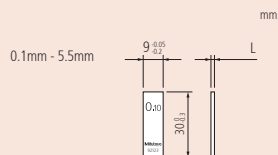
Inspection
certificate



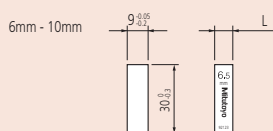
Calibration
certificate

Suffix No. (-XXX)
for Selecting Certificate Provided

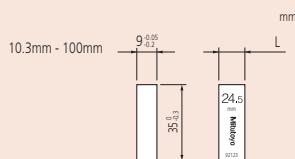
ISO/DIN/JIS			
Suffix No.	Grade	Inspection Certificate	Calibration Certificate
-016	K	○	○
-021	0	○	—
-026	0	○	○
-031	1	○	—
-036	1	○	○
-041	2	○	—
-046	2	○	○



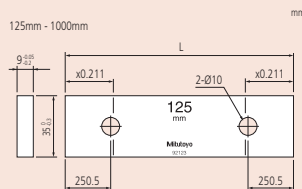
Nominal length: 0.1 mm - 5.5 mm



Nominal length: 6 mm - 10 mm



Nominal length: 10.3 mm - 100 mm



Nominal length: 125 mm - 1000 mm

Length [mm]	No.
1.2	611580
1.21	611581
1.22	611582
1.23	611583
1.24	611584
1.25	611585
1.26	611586
1.27	611587
1.28	611588
1.29	611589
1.3	611590
1.31	611591
1.32	611592
1.33	611593
1.34	611594
1.35	611595
1.36	611596
1.37	611597
1.38	611598
1.39	611599
1.4	611600
1.41	611601
1.42	611602
1.43	611603
1.44	611604
1.45	611605
1.46	611606
1.47	611607
1.48	611608
1.49	611609
1.5	611641
1.6	611516
1.7	611517
1.8	611518
1.9	611519
2	611612
2.0005	611690
2.001	611691
2.002	611692
2.003	611693
2.004	611694
2.005	611695
2.006	611696
2.007	611697
2.008	611698
2.009	611699
2.01	611701
2.02	611702
2.03	611703
2.04	611704
2.05	611705
2.06	611706
2.07	611707
2.08	611708
2.09	611709
2.1	611710
2.11	611711
2.12	611712
2.13	611713
2.14	611714

For prices please refer to the online catalogue

Length [mm]	No.
2.15	611715
2.16	611716
2.17	611717
2.18	611718
2.19	611719
2.2	611720
2.21	611721
2.22	611722
2.23	611723
2.24	611724
2.25	611725
2.26	611726
2.27	611727
2.28	611728
2.29	611729
2.3	611730
2.31	611731
2.32	611732
2.33	611733
2.34	611734
2.35	611735
2.36	611736
2.37	611737
2.38	611738
2.39	611739
2.4	611740
2.41	611741
2.42	611742
2.43	611743
2.44	611744
2.45	611745
2.46	611746
2.47	611747
2.48	611748
2.49	611749
2.5	611642
2.6	611750
2.7	611751
2.8	611752
2.9	611753
3	611613
3.5	611643
4	611614
4.5	611644
5	611615
5.1	611850
5.5	611645
6	611616
6.5	611646
7	611617
7.5	611647
7.7	611851
8	611618
8.5	611648
9	611619
9.5	611649
10	611671
10.3	611852
10.5	611650
11	611621

For prices please refer to the online catalogue

Length [mm]	No.
11.5	611651
12	611622
12.5	611652
12.9	611853
13	611623
13.5	611653
14	611624
14.5	611654
15	611625
15.5	611655
16	611626
16.5	611656
17	611627
17.5	611657
17.6	611854
18	611628
18.5	611658
19	611629
19.5	611659
20	611672
20.2	611855
20.5	611660
21	611631
21.5	611661
22	611632
22.5	611662
22.8	611856
23	611633
23.5	611663
24	611634
24.5	611664
25	611635
25.25	611754
30	611673
35	611755
40	611674
41.3	611857
45	611756
50	611675
60	611676
70	611677
75	611801
80	611678
90	611679
100	611681
125	611802
131.4	611858
150	611803
175	611804
200	611682
250	611805
300	611683
400	611684
500	611685
600	611840
700	611841
750	611842
800	611843
900	611844
1,000	611845

For prices please refer to the online catalogue

CERA Gauge Block Set

Series 516 - 1 Base

Ordering example: To order an ISO Standard 112-block grade 1 set with JCSS calibration certificate choose 516-339-60.



Calibration
certificate



Inspection
certificate

Blocks per Set	No.	Standard / grade available and Suffix No. *		Block allocation		
		ISO/DIN/JIS		Size	Step	Quantity
112	516-337	(Grade K): -X0		1.0005	-	1
	516-338	(Grade 0): -X0		1.001 - 1.009	0.001	9
	516-339	(Grade 1): -X0		1.01 - 1.49	0.01	49
	516-340	(Grade 2): -X0		0.5 - 24.5	0.5	49
103	516-341	(Grade K): -X0		25 - 100	25	4
	516-342	(Grade 0): -X0		1.005	-	1
	516-343	(Grade 1): -X0		1.01 - 1.49	0.01	49
	516-344	(Grade 2): -X0		0.5 - 24.5	0.5	49
88	516-370	(Grade 0): -X0		25 - 100	25	4
	516-371	(Grade 1): -X0		1.005	-	1
	516-372	(Grade 2): -X0		1.001 - 1.009	0.001	9
				1.01 - 1.49	0.01	49
87	516-345	(Grade K): -X0		0.5 - 9.5	0.5	19
	516-346	(Grade 0): -X0		10 - 100	10	10
	516-347	(Grade 1): -X0		1.001 - 1.009	0.001	9
	516-348	(Grade 2): -X0		1.01 - 1.49	0.01	49
76	516-349	(Grade K): -X0		0.5 - 9.5	0.5	19
	516-350	(Grade 0): -X0		10 - 100	10	10
	516-351	(Grade 1): -X0		1.001 - 1.009	0.001	9
	516-352	(Grade 2): -X0		1.01 - 1.49	0.01	49
56	516-353	(Grade K): -X0		0.5	-	1
	516-354	(Grade 0): -X0		1.001 - 1.009	0.001	9
	516-355	(Grade 1): -X0		1.01 - 1.09	0.01	9
	516-356	(Grade 2): -X0		1.1 - 1.9	0.1	9
47	516-357	(Grade K): -X0		1 - 24	1	24
	516-358	(Grade 0): -X0		25 - 100	25	4
	516-359	(Grade 1): -X0		1.005	-	1
	516-360	(Grade 2): -X0		1.01 - 1.09	0.01	9
47	516-361	(Grade K): -X0		1.1 - 1.9	0.1	9
	516-362	(Grade 0): -X0		1 - 24	1	24
	516-363	(Grade 1): -X0		25 - 100	25	4
	516-364	(Grade 2): -X0		1.005	-	1
46	516-394	(Grade K): -X0		1.01 - 1.19	0.01	19
	516-395	(Grade 0): -X0		1.2 - 1.9	0.1	8
	516-396	(Grade 1): -X0		1 - 9	1	9
	516-397	(Grade 2): -X0		10 - 100	10	10
34	516-178	(Grade K): -X0		1.001 - 1.009	0.001	9
	516-179	(Grade 0): -X0		1.01 - 1.09	0.01	9
	516-180	(Grade 1): -X0		1.1 - 1.9	0.1	9
	516-181	(Grade 2): -X0		1 - 5	1	5
32	516-365	(Grade K): -X0		10	-	1
	516-366	(Grade 0): -X0		1.005	-	1
	516-367	(Grade 1): -X0		1.01 - 1.09	0.01	9
	516-368	(Grade 2): -X0		1.1 - 1.9	0.1	9
8	516-731	(Grade K): -X0		1 - 9	1	9
	516-732	(Grade 0): -X0		10 - 30	10	3
	516-734	(Grade 2): -X0		60	-	1
	516-733	(Grade 1): -X0		125 - 175	25	3

Specifications

Accuracy

EN ISO 3650

Suffix No. (-X) for Selecting Certificate Provided

ISO/DIN/JIS		
Suffix No.	Inspection Certificate	Calibration Certificate
1	○	—
6	○	○

Suffix No. 1: Not available for Grade K sets.



CERA 112-block set



CERA 56-block set



CERA 32-block set

Specifications

Accuracy

EN ISO 3650

Suffix No. (-X) for Selecting Certificate Provided

ISO/DIN/JIS		
Suffix No.	Inspection Certificate	Calibration Certificate JCSS
1	○	—
6	○	○

Suffix No. 1: Not available for Grade K sets.

CERA Gauge Block Set - Thin Blocks

Series 516 - 0.001 step

These block sets offer you the following benefits:

- Thin block set, 0.001mm step.
- Ordering example: To order an ISO Standard 18-block grade 1 set with calibration certificate, choose 516-375-60.



Calibration certificate



Inspection certificate



CERA 18-block set



CERA 9-block

Blocks per Set	No.	Standard / grade available and Suffix No. *	Block allocation		
			Size	Step	Quantity
18	516-373	(Grade K): -X0	0.991 - 0.999	0.001	9
	516-374	(Grade 0): -X0	1.001 - 1.009	0.001	9
	516-375	(Grade 1): -X0			
	516-376	(Grade 2): -X0			
9	516-381	(Grade K): -X0	1.001 - 1.009	0.001	9
	516-382	(Grade 0): -X0			
	516-383	(Grade 1): -X0			
	516-384	(Grade 2): -X0			
9	516-385	(Grade K): -X0	0.991 - 0.999	0.001	9
	516-386	(Grade 0): -X0			
	516-387	(Grade 1): -X0			
	516-388	(Grade 2): -X0			

CERA Wear Block Set

Series 516 - Cera Wear block sets

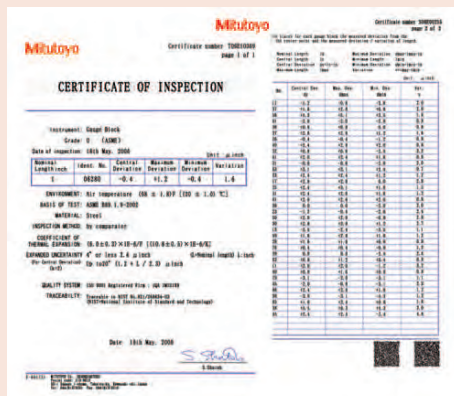


Inspection certificate

Specifications

Accuracy

EN ISO 3650



Mitutoyo Gauge Blocks and Inspection Certificates

A Inspection Certificate is furnished with all Mitutoyo gauge blocks with a serial number on the box (in the case of sets) and an identification number on each block. The deviation of each block from nominal length, at the time of inspection, is stated. For this inspection, each gauge block is measured relative to the upper level master using a gauge block comparator. Grade K gauge blocks are measured by a primary measurement method using an interferometer.



CERA 2-block set



Protection gauge blocks (highlighted in grey above) are placed at each end of the gauge block stack to absorb the wear caused by contact with workpieces.

Blocks per Set	No.	Grade	Price €	Block allocation		
				Size	Step	Quantity
2	516-832-10	0	122.00	1	-	2
	516-833-10	1	113.00			
2	516-830-10	0	122.00	2	-	2
	516-831-10	1	113.00			

CERA Micrometer Inspection Gauge Block Set

Series 516



Calibration
certificate



Inspection
certificate

With calibration certificate

Blocks per Set	No.	Grade	Calibration/Standard applications	Price €	Block allocation
10	516-390-60	0	Especially for Micrometer with 2 mm spindle pitch (QuantuMike)	1,135.00	2.2, 4.8, 7.8, 10.4, 12, 15.2, 17.4, 19.6, 22.6, 25 mm
	516-391-60	1		1,035.00	
	516-392-60	2		875.00	
10	516-156-60	0	EN ISO 3611 DIN 863 (1999) VDI/VDE/DGQ 2618	980.00	2.5, 5.1, 7.7, 10.3, 12.9, 15, 17.6, 20.2, 22.8, 25 mm, optical parallel (thickness = 12 mm)
	516-157-60	1		790.00	
	516-158-60	2		670.00	
10	516-185-60	0	EN ISO 3611 DIN 863 (1999) VDI/VDE/DGQ 2618	1,750.00	2.5, 5.1, 7.7, 10.3, 12.9, 15, 17.6, 20.2, 22.8, 25 mm, Micro Checker, optical parallel (thickness = 12 mm)
	516-186-60	1		1,495.00	
	516-187-60	2		1,235.00	

With inspection certificate

Blocks per Set	No.	Grade	Calibration/Standard applications	Price €	Block allocation
10	516-390-10	0	Especially for Micrometer with 2 mm spindle pitch. (QuantuMike)	1,050.00	2.2, 4.8, 7.8, 10.4, 12, 15.2, 17.4, 19.6, 22.6, 25 mm
	516-391-10	1		845.00	
	516-392-10	2		740.00	
10	516-156-10	0	EN ISO 3611 DIN 863 (1999) VDI/VDE/DGQ 2618	930.00	2.5, 5.1, 7.7, 10.3, 12.9, 15, 17.6, 20.2, 22.8, 25 mm, optical parallel (thickness = 12 mm)
	516-157-10	1		740.00	
	516-158-10	2		620.00	
10	516-185-10	0	EN ISO 3611 DIN 863 (1999) VDI/VDE/DGQ 2618	1,650.00	2.5, 5.1, 7.7, 10.3, 12.9, 15, 17.6, 20.2, 22.8, 25 mm, Micro Checker, optical parallel (thickness = 12 mm)
	516-186-10	1		1,390.00	
	516-187-10	2		1,135.00	

Specifications

Accuracy

EN ISO 3650



516-391-10



Micro checker 516-607
applicable gauge block sets
516-156, 516-157, 516-158

CERA Caliper Inspection Gauge Block Set

Series 516



Inspection
certificate

Blocks per Set	No.	Grade	Mass	Calibration/Standard applications	Price €	Block allocation
4	516-566-10	1	1.72	EN ISO 13385-1	3,200.00	4 blocks : 10, 30, 50, 125 mm, setting ring (Ø4 mm, Ø10 mm), pin gauge (Ø 10 mm), glove
	516-567-10	2	1.72		2,900.00	
3	516-150-10	1	1.72	DIN 862 (1988) VDI/VDE/DGQ 2618	1,420.00	3 blocks : 30, 41.3, 131.4 mm, setting ring (Ø4 mm, Ø25 mm), glove
	516-151-10	2	1.72		1,220.00	



516-566-10

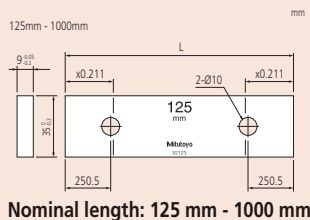
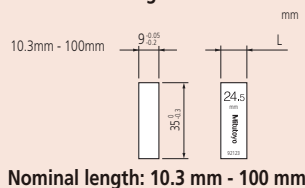
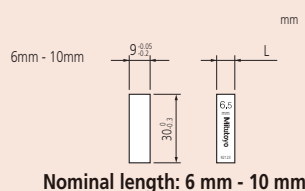
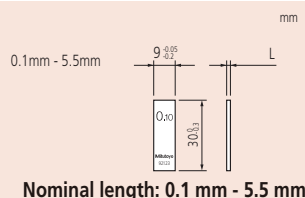
Specifications

Accuracy

EN ISO 3650

Suffix No. (-XXX)
for Selecting Certificate Provided

ISO/DIN/JIS			
Suffix No.	Grade	Inspection Certificate	Calibration Certificate
-016	K	○	○
-021	0	○	—
-026	0	○	○
-031	1	○	—
-036	1	○	○
-041	2	○	—
-046	2	○	○



CERA Individual Gauge Block

Metric Blocks

Ordering example: To order a 0.5mm ISO Standard grade 1 block with JCSS calibration certificate, choose 613506-036.



Calibration certificate



Inspection certificate

Length [mm]	No.
0.5	613506
0.991	613551
0.992	613552
0.993	613553
0.994	613554
0.995	613555
0.996	613556
0.997	613557
0.998	613558
0.999	613559
1	613611
1.0005	613520
1.001	613521
1.002	613522
1.003	613523
1.004	613524
1.005	613525
1.006	613526
1.007	613527
1.008	613528
1.009	613529
1.01	613561
1.02	613562
1.03	613563
1.04	613564
1.05	613565
1.06	613566
1.07	613567
1.08	613568
1.09	613569
1.1	613570
1.11	613571
1.12	613572
1.13	613573
1.14	613574
1.15	613575
1.16	613576
1.17	613577
1.18	613578
1.19	613579
1.2	613580
1.21	613581
1.22	613582
1.23	613583
1.24	613584
1.25	613585
1.26	613586
1.27	613587
1.28	613588
1.29	613589

For prices please refer to the online catalogue

Length [mm]	No.
1.3	613590
1.31	613591
1.32	613592
1.33	613593
1.34	613594
1.35	613595
1.36	613596
1.37	613597
1.38	613598
1.39	613599
1.4	613600
1.41	613601
1.42	613602
1.43	613603
1.44	613604
1.45	613605
1.46	613606
1.47	613607
1.48	613608
1.49	613609
1.5	613641
1.6	613516
1.7	613517
1.8	613518
1.9	613519
2	613612
2.5	613642
3	613613
3.5	613643
4	613614
4.5	613644
5	613615
5.1	613850
5.5	613645
6	613616
6.5	613646
7	613617
7.5	613647
7.7	613851
8	613618
8.5	613648
9	613619
9.5	613649
10	613671
10.3	613852
10.5	613650
11	613621
11.5	613651
12	613622
12.5	613652

For prices please refer to the online catalogue

Length [mm]	No.
12.9	613853
13	613623
13.5	613653
14	613624
14.5	613654
15	613625
15.5	613655
16	613626
16.5	613656
17	613627
17.5	613657
17.6	613854
18	613628
18.5	613658
19	613629
19.5	613659
20	613672
20.2	613855
20.5	613660
21	613631
21.5	613661
22	613632
22.5	613662
22.8	613856
23	613633
23.5	613663
24	613634
25	613635
25.25	613754
30	613673
35	613755
40	613674
41.3	613857
45	613756
50	613675
60	613676
70	613677
75	613801
80	613678
90	613679
100	613681
125	613802
131.4	613858
150	613803
175	613804
200	613682
250	613805
300	613683
400	613684
500	613685

For prices please refer to the online catalogue

For prices please refer to the online catalogue

Gauge Blocks with a Calibrated CTE

Gauge Blocks with a Calibrated Coefficient of Thermal Expansion

These are metric gauge blocks with a calibrated coefficient of thermal expansion. They offer you the following benefits:

- Mitutoyo offers top-level gauge blocks (steel and ceramic) which are superior to K class blocks, with their quality supported by Mitutoyo's best technologies.
- They feature an accurately calibrated thermal expansion coefficient measured with a proprietary double-faced interferometer (DFI).
- Each gauge block is calibrated for length on a highly accurate gauge block interferometer (GBI) system.
- Uncertainty of thermal expansion coefficient: $0.035 \times 10^{-6} / \text{K}$ ($k=2$).
- Uncertainty of length measurement: 30 nm ($k=2$), for 100mm blocks.



Cera

No.	Accuracy	Length [mm]	Price [€]
613681-01B	Grade K JIS/DIN/ISO	100	2,184.00
613802-01B	Grade K JIS/DIN/ISO	125	3,008.00
613803-01B	Grade K JIS/DIN/ISO	150	3,193.00
613804-01B	Grade K JIS/DIN/ISO	175	3,363.00
613682-01B	Grade K JIS/DIN/ISO	200	3,533.00
613805-01B	Grade K JIS/DIN/ISO	250	4,578.00
613683-01B	Grade K JIS/DIN/ISO	300	5,232.00
613684-01B	Grade K JIS/DIN/ISO	400	6,371.00
613685-01B	Grade K JIS/DIN/ISO	500	6,896.00

Steel

No.	Accuracy	Length [mm]	Price [€]
611681-01B	Grade K JIS/DIN/ISO	100	1,760.00
611802-01B	Grade K JIS/DIN/ISO	125	2,270.00
611803-01B	Grade K JIS/DIN/ISO	150	2,350.00
611804-01B	Grade K JIS/DIN/ISO	175	2,395.00
611682-01B	Grade K JIS/DIN/ISO	200	2,475.00
611805-01B	Grade K JIS/DIN/ISO	250	2,840.00
611683-01B	Grade K JIS/DIN/ISO	300	2,930.00
611684-01B	Grade K JIS/DIN/ISO	400	3,290.00
611685-01B	Grade K JIS/DIN/ISO	500	4,250.00



Calibration
Certificate

Specifications

Accuracy	Grade K JIS/DIN/ISO
Length	100-500 mm

Mitutoyo

Page 1 of 1 / 総数1頁中の1頁
Issue No. / 発行 No. 00001
Date of issue / 発行年月日 2009-01-29

Report of calibration
校正結果

Product name / 製品名	Gauge Block / ゲージブロック	Nominal Length / 呼び寸法	500mm
Order No. / コーポ No.	611685-01A	Date of calibration / 校正年月日	2009-01-29
Serial No. / 製造 No.	040605	Material / 材質	Steel / スチール

Calibration Item / 校正項目: Coefficient of thermal expansion / 熱膨張係数
Measurement expanded uncertainty (coverage factor: $k=2$) / 校正後の拡張不確かさ(包含係数 $k=2$): $U = 0.035 \times 10^{-6} / \text{K}$

Result of calibration / 校正結果

Coefficient of thermal expansion / 熱膨張係数 $\alpha = 10.818 \times 10^{-6} / \text{K}$

Using DFI (Double Facing Interferometer), at each temperature (setting value) of 17 °C, 20 °C, and 23 °C, size measurement is performed after sufficient temperature stable, and a Coefficient of thermal expansion is computed from the result.

計測室光沢GB校正装置 (DFI: Double Facing Interferometer)により、17℃、20℃、23℃の各温度(設定値)にて十分な温度安定後、寸法測定を行い、その結果から熱膨張係数を算出します。

Setting temperature / 設定温度 (°C)	17	20	23
Actual temperature / 実際の温度 (°C)	17.110	20.227	22.763
The amount of change of a length / 寸法変化量 (μm)	-16.860	0	13.715

It is based on a size with a setting temperature of 20 °C / 設定温度 20℃の寸法を基準とする。

the amount of change of a size / 寸法変化量

Chief inspector / S. Shukla
S. Shukla

Mitutoyo Corporation

To each final dimension a factory certificate is supplied.

Specifications

Material	Ultra-low thermal expansion fine ceramic
Accuracy	Grade K ISO/JIS/DIN
Grade*1	K
Standard accessories	Inspection certificate, Calibration certificate and custom-made aluminium case
Appearance	Rectangular black
Coefficient of thermal expansion*2	$0 \pm 0.02 \times 10^{-6}/K$ (at 20°C)
Density*2	2.5 g/cm ³
Vickers hardness*2	826HV10 (by JIS R 1610 "Testing Method for Vickers Hardness of High Performance Ceramics")
*1 : If you require a grade other than K, please contact Mitutoyo. *2 : Value claimed by the material supplier.	

ZERO CERA Blocks

Ultra-low Expansion Ceramic Gauge Blocks

These are ultra-low expansion ceramic gauge blocks.

The ZERO CERA Blocks offer you the following benefits:

- Thermal expansion at $20 \pm 1^\circ C$ is less than 1/500 that of steel.
- There is almost no secular change either in the dimension or coefficient of thermal expansion.
- You will find them light and easy to handle.
- They are rust free.
- They are magnetisation free.



Calibration
certificate



No.	Accuracy	Length [mm]	Price [€]
617673-016	Grade K ISO/JIS/DIN	30	3,234.00
617675-016	Grade K ISO/JIS/DIN	50	3,337.00
617681-016	Grade K ISO/JIS/DIN	100	3,698.00
617682-016	Grade K ISO/JIS/DIN	200	5,129.00
617683-016	Grade K ISO/JIS/DIN	300	6,365.00
617684-016	Grade K ISO/JIS/DIN	400	7,086.00
617685-016	Grade K ISO/JIS/DIN	500	8,292.00
617840-016	Grade K ISO/JIS/DIN	600	9,105.00
617841-016	Grade K ISO/JIS/DIN	700	10,094.00
617843-016	Grade K ISO/JIS/DIN	800	11,897.00
617844-016	Grade K ISO/JIS/DIN	900	13,225.00
617845-016	Grade K ISO/JIS/DIN	1000	14,544.00
516-771-60	Grade K ISO/JIS/DIN	Above set	82,300.00

Characteristics comparison of gauge block materials

	ZERO CERA BLOCK	Low expansion glass	CERA BLOCK	Steel	Tungsten carbide
Coefficient of thermal expansion ($10^{-6}/K$)	0 ± 0.02 *2) *3)	0 ± 0.02 *2) *3)	9.3 ± 0.5	10.8 ± 0.5	5.5 ± 1.0
Thermal conductivity (W/m*K)	3.7	1.7	2.9	54.4	79.5
Specify gravity	2.5	2.55	6.0	7.8	14.8
Young modulus (GPa)	130	90	206	206	618
Poisson ratio	0.3	0.25	0.3	0.3	0.2
Flexural strength (3 points) (MPa)	210	143	1270	1960	1960
Fracture toughness (MPa*m ^{1/2})	1.2	0.69 *4)	7	120	12
Vickers hardness (HV)	826 *3)	680	1350	800	1650

1) Material for Mitutoyo Products

2) Value at 20°C

3) Claimed value by the material supplier

4) Value measured by the material supplier (reference)

Gauge Block Accessories

Series 516

Specially designed for long gauge blocks over 100 mm which have two coupling holes on the body.

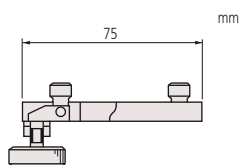


516-605

No.	Included in set	Price [€]
516-605	Holder A (619031)-1 pc Holder B (619032)-1 pc Holder C (619033)-1 pc Holder D (619034)-1 pc Holder E (619035)-1 pc Adapter (619036)-3 pcs Holder base 35mm (619009)-1 pc Half-round jaw 12mm (619013)-2 pcs Plain jaw (619018)-2 pcs Scriber point (619019)-1 pc	1,960.00



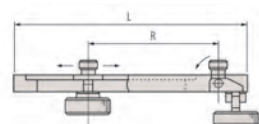
Holder A : 619031
Used for coupling two long gauge blocks.



619031



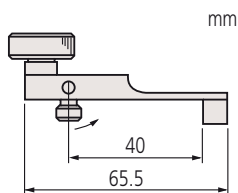
Holder B and C :
Used for coupling two long gauge blocks together with other gauge blocks up to 35 mm (Holder B) or 140 mm Holder C). Also used for attaching jaws with two adapters.
Holder B : 619032 (R max.= 90 mm- L= 126 mm)
Holder C : 619033 (R max.= 200 mm- L= 236 mm)



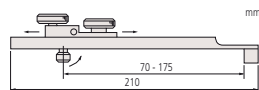
619032 / 619033



Holder D : 619034
Used for attaching to the holder base.



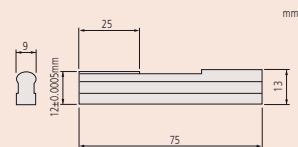
619034



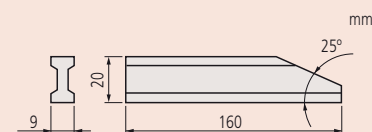
Holder E : 619035
Used for attaching to the holder base together with other gauge blocks up to 125 mm. Used for attaching jaws with one adapter.



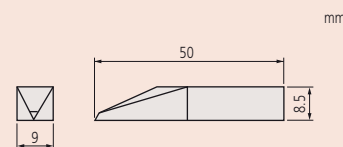
Holder base : 619009



Half-round jaw : 619013



Plain jaw : 619018



Scriber point : 619019

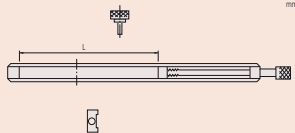


Adapter : 619036

Gauge Block Accessories

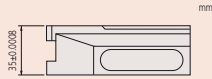
Series 619

These accessories are specially designed for long gauge blocks over 100mm which have two coupling holes on the body.



Holder : 619002 to 619005

Used to clamp plain jaws, a scriber point, etc., to a gauge block stack.



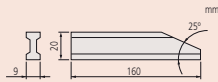
Holder base 35 mm : 619009

Acts as base for a stack of gauge blocks that carry one of the many types of point.



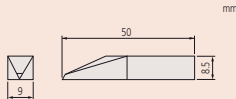
Half round jaw : 619010 to 619014

Used for gauging an outside or inside diameter if used when a pair of jaws in a holder.



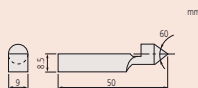
Plain jaw : 619018

Gauges outside and inside dimensions (not inside diameters) when used as a pair of jaws in a holder.



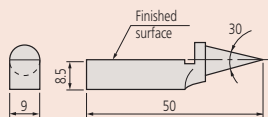
Scriber point : 619019

Scribes a straight line on a workpiece a known distance from a datum plane if used in a holder and holder base.



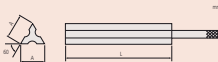
Centre point : 619020

Pushed into a small hole, or conical punch mark, this point provides the pivot for scribing a circular line with a gauge block trammel assembly.



Tram point : 619021

For checking distances between lines and points.



Triangular straight edge : 619022/619023

Can be used to indicate parallelism.



516-601J



516-602J

1. Set

No.	Included in set	Price [€]
516-601J	(1 x 619003; 1 x 619004; 1 x 619005; 1 x 619009; 2 x 619010; 2 x 619011; 2 x 619012; 2 x 619013; 2 x 619014; 2 x 619018; 1 x 619019; 1 x 619020; 2 x 619021; 1 x 619022; 1 x 619023)	3,965.00
516-602J	(1 x 619002; 1 x 619003; 1 x 619004; 1 x 619005; 1 x 619009; 2 x 619010; 2 x 619011; 2 x 619012; 1 x 619019; 1 x 619020; 1 x 619022)	2,425.00

2. Holder

No.	L [mm]	Price [€]
619002	15-60	157.00
619003	5-100	162.00
619004	15-160	178.00
619005	20-250	190.00

3. Holder base

No.	Description	Price [€]
619009	35 mm	245.00

4. Half-round jaw

No.	Size	A [mm]	B [mm]	C [mm]	H [mm]	Price [€]
619010	Half-round jaw 2 mm	5.5	40	7.5	2 ±0.0005	167.00
619011	Half-round jaw 5 mm	14	45	7.5	5 ±0.0005	167.00
619012	Half-round jaw 8 mm	18.5	50	8.5	8 ±0.0005	206.00
619013	Half-round jaw 12 mm	25	75	13	12 ±0.0005	245.00
619014	Half-round jaw 20 mm	25	125	20.5	20 ±0.0005	323.00

5. Miscellaneous jaws

No.	Description	Price [€]
619018	Plain jaw	184.00
619019	Scriber point	67.00
619020	Centre point	83.50
619021	Tram point	289.00

6. Triangular straight edge

No.	A [mm]	Price [€]
619022	16	167.00
619023	19.5	273.00

Ceraston

Accessory for Gauge Block Maintenance

This accessory for gauge block maintenance offers you the following benefits:

- Alumina-ceramic abrasive stone lets you remove burrs from hard materials such as ceramics, that ordinary stones cannot handle.
- You can use them for both steel gauge blocks and CERA Blocks.



No.	Dimensions (WxDxH)	Mass [g]	Price [€]
601645	100 x 25 x 12 mm	110	176.00
601644	150 x 50 x 20 mm	530	438.00



Removing burrs

- 1 Wipe any dust and oil films from the gauge block and the Ceraston (or Arkansas stone) using a solvent.
- 2 Place the gauge block on the Ceraston so that the measuring face that has burrs is on the abrasive surface of the stone. While applying light pressure, move the gauge block to and fro about ten times (Fig. 1). Use a block rubber for thin gauge blocks to apply even pressure (Fig. 2).
- 3 Check the measuring face for burrs with an optical flat. If the burrs have not been removed, repeat step 2. If burrs are too large, they may not be removed with an abrasive stone. If so, discard the gauge block.



Note: The abrasive surface of a Ceraston must be made flat by lapping it from time to time. After lapping the ceraston, the lapping powder must be completely removed from the surface of the stone to prevent the gauge block from being scratched. Mitutoyo does not offer Arkansas stones.

Maintenance Kit for Gauge Blocks

Series 516

This is a maintenance kit for gauge blocks that offers you the following benefits:

- It includes all maintenance tools needed for the daily care and storage of gauge blocks.
- It is supplied in a fitted wooden case for portable use.



No.	Tools and accessories included	Price [€]
516-650E	Ceraston (601645): Used for removing burrs on the measuring surface. Tweezers (600004): Used for handling thin gauge blocks. Blower brush (600005): Used for blowing dust off the measuring surface. Cleaning paper (600006): Used for wiping off rust preventive oil and contamination. Artificial leather mat (600007): Used as a gauge block mat. Reagent bottle (600008): Bottle for wiping solution (100 ml). Solution not included. Gloves (600009D)	495.00

Consumable spares

No.	Description	Price €
601645	Ceraston	176.00
600004	Tweezers	41.50
600005	Blower brush	33.00
600006	Cleaning paper	41.50
600007	Artificial leather mat	39.50
600008	Reagent bottle (100 ml)	7.50
600009D	Gloves	4.50

Quick Guide to Precision Measuring Instruments



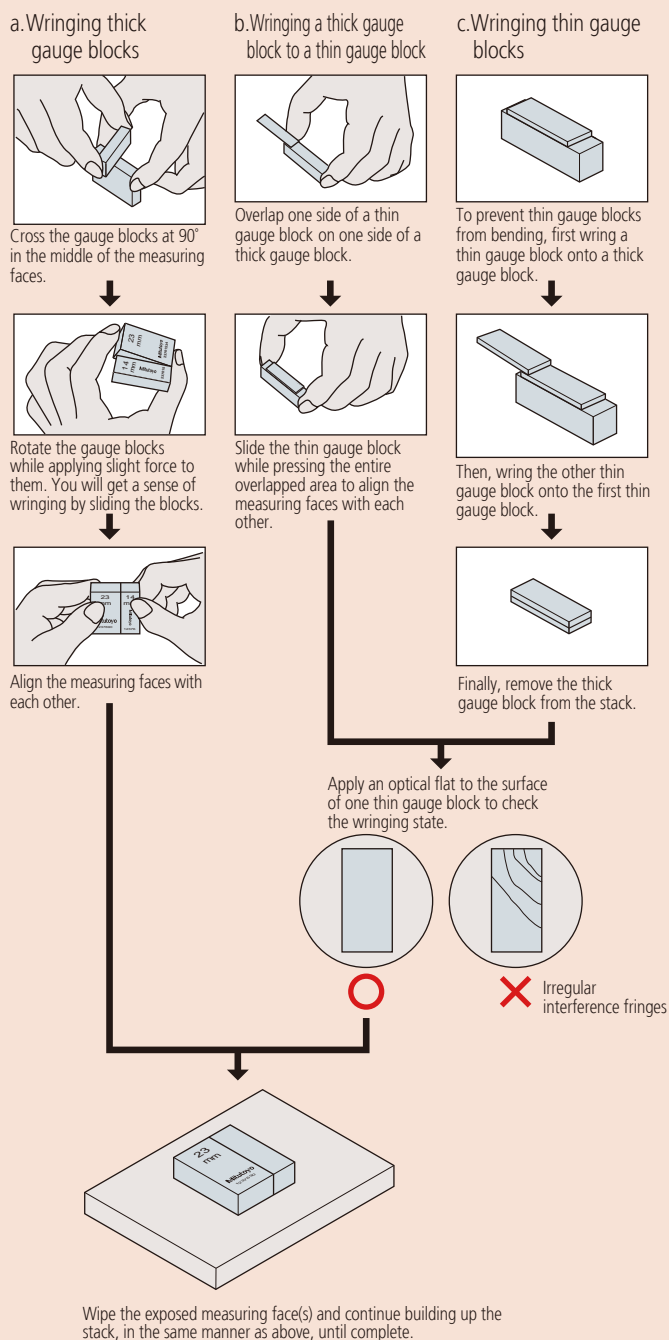
Gauge Blocks

Definition of the Meter

The 17th General Conference of Weights and Measures in 1983 decided on a new definition of the meter unit as the length of the path traveled by light in a vacuum during a time interval of $1/299\,792\,458$ of a second. The gauge block is the practical realization of this unit and as such is used widely throughout industry.

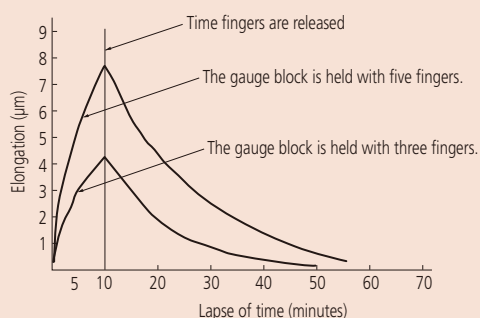
Perfect wringing of gauge blocks

- Wringing should always be performed in a clean place on a soft pad - if gauge blocks slip from your hand, they will not be damaged.
- Wipe off the oil film from the gauge blocks using a soft cloth and petroleum ether.
- After this "rough" cleaning the surfaces are cleaned with a cosmetic brush rinsed with petroleum ether and then "blown free" with an air blower.
- Never use alcohol or common benzene for cleaning; common benzene contains too many impurities and alcohol always has aqueous components which may cause corrosion.
- Best-suited for wiping gauge blocks are microfiber cloths.
- Check the cleaned gauge blocks for rust and scratches.
- If there are any burrs on the measuring surface remove them carefully using a special ceraston for gauge blocks. Move the dry gauge block over the ceraston exerting very low pressure.
- In case the measuring surfaces are in good condition, but wringing is still difficult, you may wipe them with medical cotton wool - its oily components will provide a fine film thus improving the grip of the measuring surfaces



Thermal Stabilization Time

The following figure shows the degree of dimensional change when handling a 100mm steel gauge block with bare hands.



SENSORPAK Page 389



Linear Gages EV Counter Page 390



Linear Gages EV-Counter Page 391



EG/EB Counters and Display Unit for Linear Gages Page 392



Linear Gauges Page 393



Counters and Display Units Page 406



Motorized Low Force High Precision Gauges LITEMATIC Page 410

Styli Kits Page 412



SENSORPAK

Optional accessories

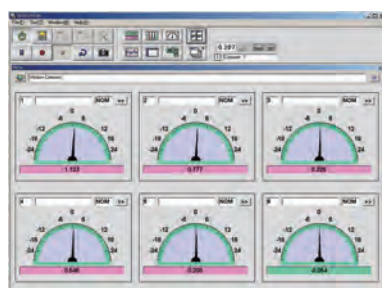
No.	Description	Price €
12AAA807D	RS-232C cable (2m)	54.00

The SENSORPAK supports the development of measuring facilities and measuring stations. It offers you the following benefits:

- It can simultaneously display measurement values from up to 60 sensors in real time.
- You can make calculations using measurement values from up to 30 sensors in real time.
- It enables a huge range of different graphical presentations of using measurement, such as number representation, pointer representation, scale representation.
- Data registration can be made in control cards or data tables.
- You can also carry out further data processing with external software, such as Microsoft® Excel® or MeasurLink.



Measurement screen



Meter screen

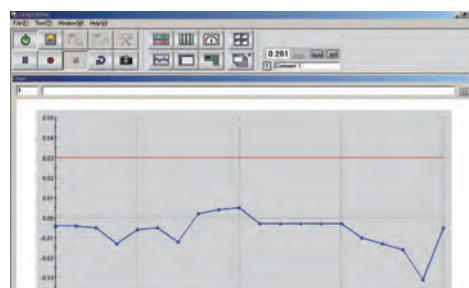


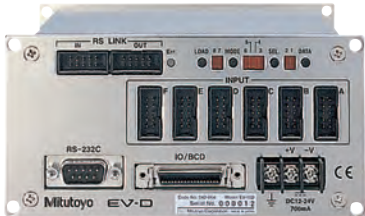
Chart screen

Model	SENSORPAK
No.	02NGB030
Price [€]	721.00
Output function	Direct output to Microsoft® Excel® spreadsheet, CSV file output (compatible with MeasurLink)
Calculation function	Calculation items : Sum, difference, total, average, maximum, minimum, range (maximum-minimum), calculation with a constant. Connectable gauges : Max. 30 calculation items (between desired gauges)
Total tolerance judgement	GO/NG judgement (by specifying gauges to be used for total tolerance judgement) GO/NG signal output with optional I/O cable
Input function	Trigger function : by means of keys timer or external TRG (with optional I/O cable). Data input frequency : Max. 9999 times (with 60 gauges connected) to 60000 times (with 6 gauges connected).
Connectable items	Various Mitutoyo counters (those compatible with RS LINK)
Applicable counter types	Counters with RS-232C interface, EH and EV
Display	Display type : Counter, bar graph, meter, chart (capable of simultaneous display). Tolerance judgement result : Color display (green/red) Connectable gauges : Max. 60 gauges

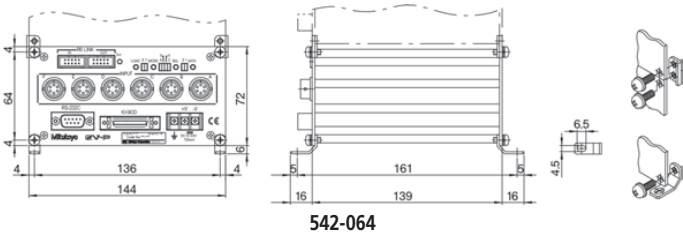
Linear Gages EV Counter

Series 542

- The Linear Gages EV Counter can connect to multiple gauges. It offers you the following benefits:
- You can connect up to six gauges, and by using the RS Link function, you can connect up to 10 EV Counters to one PC.
 - Multi-point measuring systems with a maximum of 60 gauges can be configured.
 - You can select several different output modes, including I/O output for tolerance judgement and segment output, BCD data output and RS-232C output.



542-064 EV-D



No.	Input signal type	Gage inputs	Resolution (internal) - no display capability	Mass [g]	Price [€]
542-064	Digimatic code (SPC)	6	0,001 mm, 0,01 mm	830	1,250.00

Functions	Series 542
Digimatic data input	●
Zero set	●
PRESET	●
Counting direction switchable	●
Sum/difference of two probes	●
Calculation of sum	●
ABS/INC	●
Error display	●
MAX / MIN / Difference measurement	●
mm / inch switching	●
Tolerance limit setting (3 or 5 step)	●
External control	●
RS-232C Output	●
I/O Output	●
+NG/-NG/GO Output on open collector	●
Error output	●
Tolerance limit input	●

Specifications

Power supply	Terminal connector (M3 screws), DC+12 to +24V,700 mA (max.)
RS link	Up to 10 EV counters can be connected via a single RS-232 port. (daisy chain) EV and EF counters can be mixed (in which case a total of six counters can be connected).

Optional accessories

No.	Description	Price €
02ADB440	BCD-I/O-Data connector	41.50
02ADD930	Three-wire cable for power supply via AC adapter	32.50
965014	Digimatic cable (2 m)	57.50
06ADV380D	USB Input Tool Direct cable (2 m)	100.00
02AZD790D	Connecting cable U-Wave	85.00
02ADD400	Display for series 542	417.00
12AAA807D	RS-232C cable (2m)	54.00
936937	Digimatic cable (1 m)	43.50
02ADN460	AC adapter	63.50
02ZAA020	AC cable	11.50



Refer to the Linear Gauge documentation for more details

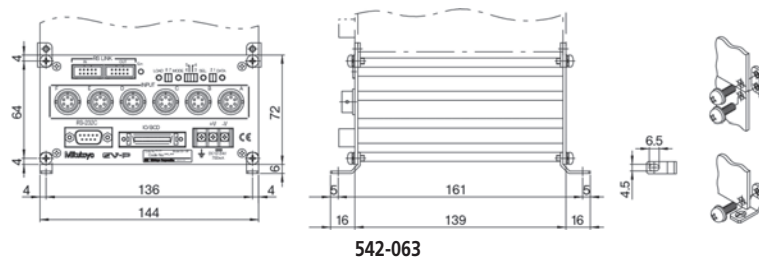
Linear Gages EV-Counter

Series 542

- Up to six gages can be connected. By using the RS Link function, up to 10 EV Counters can be connected to one PC. Multi-point measuring systems with a maximum of 60 gages can be configured.
- The following output modes are selectable : I/O output for tolerance judgement and segment output, BCD data output and RS-232C output.



542-063



542-063

Functions	Series 542
Counting direction switchable	●
MAX / MIN / Difference measurement	●
mm / inch switching	●
Tolerance judgement (3 or 5 step)	●

Specifications

Power supply	Terminal connector (M3 screws), DC+12 to +24V, 700 mA (max.)
Model	For 542-063
RS link	Up to 10 EV counters may be connected via a single RS-232 port (daisy chained) EV and EF counters can be mixed (in which case a total of six counters can be connected).

Optional accessories

No.	Description	Price €
02ADB440	BCD-I/O-Data connector	41.50
02ADD400	Display for series 542	417.00
02ADD930	Three-wire cable for power supply via AC adapter	32.50
02ADN460	AC adapter	63.50
02ZAA020	AC cable	11.50
936937	Digimatic cable (1 m)	43.50
965014	Digimatic cable (2 m)	57.50
06ADV380D	USB Input Tool Direct cable (2 m)	100.00
02AZD790D	Connecting cable U-Wave	85.00
12AAA807D	RS-232C cable (2m)	54.00

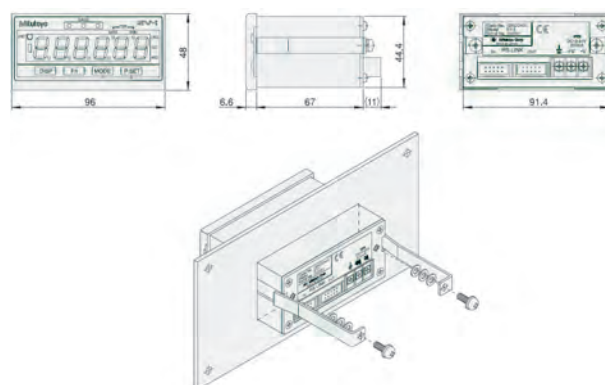


Refer to the Linear Gauge documentation for more details

No.	Input signal type	Gage inputs	Resolution (internal) - no display capability	Mass [g]	Price [€]
542-063	Differential square-wave	6	0,0001/0,0005/0,001/0,005/0,01 mm	910	1,250.00



02ADD400



02ADD400

EG/EB Counters and Display Unit for Linear Gages

Series 542

This is a compact counter with a control panel that offers you the following benefits:

- Control panel according to DIN (96 x 48 mm).
- Its I/O control function enables tolerance judgement evaluation (3 or 5 steps) or parallel BCD output function.



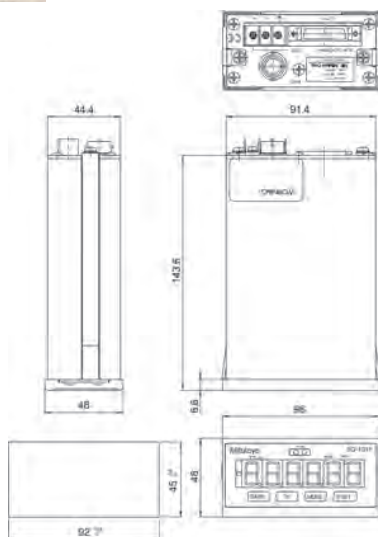
542-092-2



542-015



542-015



542-015 - 542-092-2

Model	EG	EB
No.	542-015	542-092-2
Price [€]	479.00	540.00
Resolution [μm]	0,0001/0,0005/0,001/0,005/0,01 mm	0,0001/0,0005/0,001/0,005/0,01 mm
Power supply	Terminal block (M3 screws) 12 to 24 VDC, 500 mA (max.) via an external supply	Terminal block (M3 screws) 12 to 24 VDC, 500 mA (max.) via an external supply
Display	LED (green) 6 digit and sign (-)	LED (green) 6 digit and sign (-)
Maximum input frequency	750 KHz (2-phase square wave)	750 KHz (2-phase square wave)
Input signal type	Differential square-wave	Differential square-wave
Applicable gage	LGK, LGF, LGB, LGM (excluding origin point and sine wave types)	LGK, LGF, LGB
Gage inputs	1	1
Mass g	400	400

Output applicable input for counter 542-092-2 Type EB

Gauge resolution setup	Range/resolution			Voltage per step
3 2 1	Linear Gauge 0,01 mm	Linear Gauge 0,005 mm	Linear Gauge 0,005 mm	
0 0 0	± 0,99/0,01	± 0,095/0,005	± 0,099/0,001	2,5 mV
0 0 1	± 9,99/0,01	± 0,995/0,005	± 0,999/0,001	25 mV
0 1 0	± 99,90/0,1	± 9,950/0,05	± 9,990/0,01	25 mV
0 1 1	± 999,00/1	± 99,500/0,5	± 99,900/0,1	25 mV
1 0 0	± 9990,00/10	± 995,000/5	± 999,000/1	25 mV

Series 542		
	542-015	542-092-2
Functions		
PRESET (preselection)	●	●
Digimatic data output	●	●
Counting direction switchable	●	●
Calculation of sum	●	●
Error display	●	●
GO/±NG signal output (3 or 5 step)	●	●
MAX / MIN / Difference measurement	●	●
mm / inch switching	●	●
Key lock	●	●
External control	●	●
Output I/O	●	●
Analogue output	●	●
Tolerance judgement (3 or 5 step)	●	●
Tolerance limit input	●	●

Specifications

Accuracy ± 5 % (0 V to 5 V) and ± 0.5 % (2.5 V ± 200 mV after setting the gap)

Specifications **For 542-092-2**

Charge resistance 300 kΩ or more

Output voltage 2.5 V + [Counting value x voltage resolution (25 mV or 2.5 mV)]

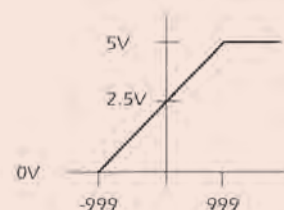
Full scale (*) 0 V to 5 V

Response time 5 ms to 10 Hz

(*) accuracy is indicated by full scale 5 V

Optional accessories

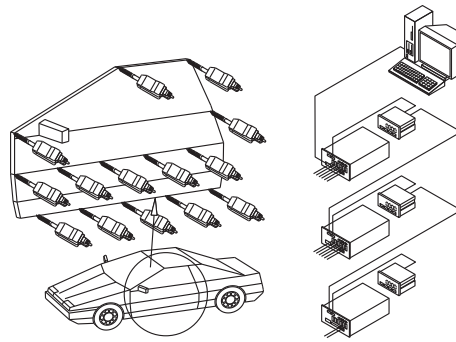
No.	Description	Price €
02ADB440	BCD-I/O-Data connector	41.50
02ADD930	Three-wire cable for power supply via AC adapter	32.50
02ADF180	10-key unit	237.00
02ADN460	AC adapter	63.50
02ZAA020	AC cable	11.50
For 542-092-2		
936937	Digimatic cable (1 m)	43.50
965014	Digimatic cable (2 m)	57.50
06ADV380D	USB Input Tool Direct cable (2 m)	100.00
02AZD790D	Connecting cable U-Wave	85.00



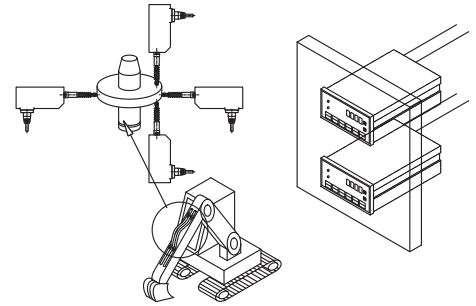
Refer to the Linear Gage brochure

Linear Gauge Application Examples

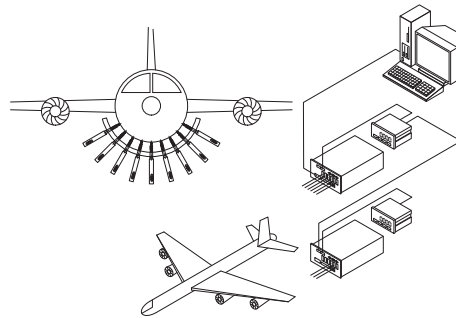
Linear Gage Applications



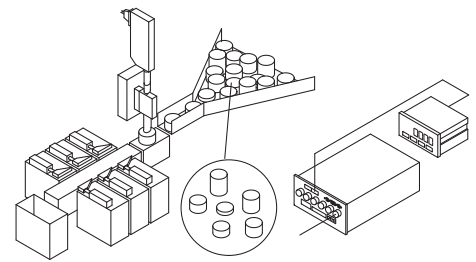
Multi-point measurement on car doors



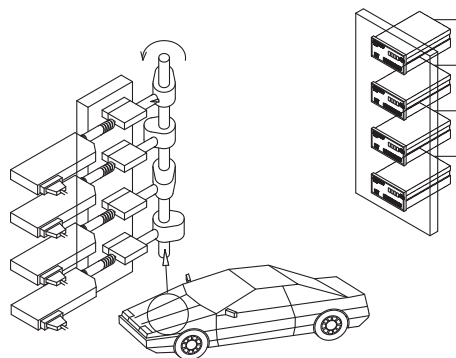
Dimensional measurement of fluid flywheels



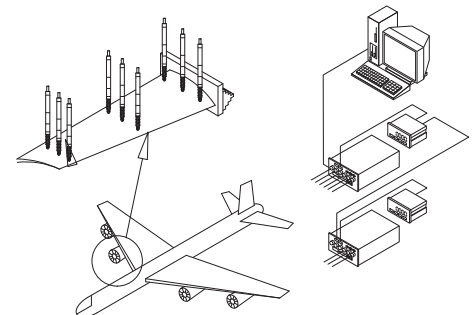
Measurement of aeroplane body deformation



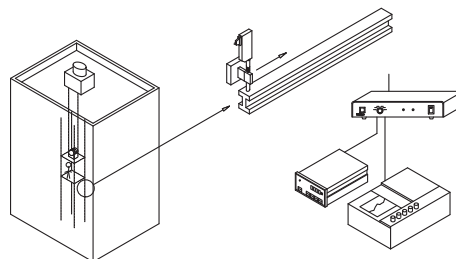
Sorting of parts according to size



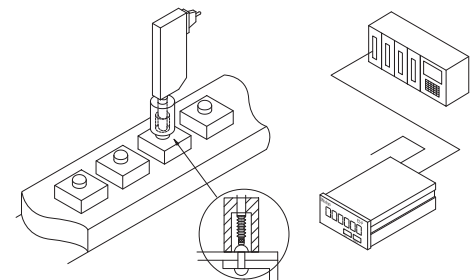
Cam measurement



Multi-point measurement on turbine blades



Measurement of deflection of lift guiding rails



Rivet head testing

ABSOLUTE Digimatic Linear Gauge LGS Series

Series 575

The ABSOLUTE Digimatic Linear Gauge LGD is compact measuring instrument that you can use for a wide range of measuring tasks. It offers you the following benefits:

- Built-in ABSOLUTE capacitive measuring system.
- Suitable for installation in machines, measuring devices and multi-position measurements.
- IP-66 protection class.
- Zero-setting via external display unit (542-007) is possible.
- You can output data in Digimatic format, so you can document and determine measurement values, as well as carry out statistical evaluation via connected Digimatic data processing units.

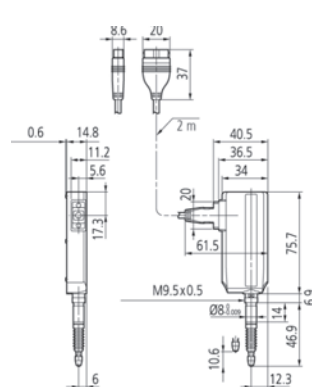


575-326

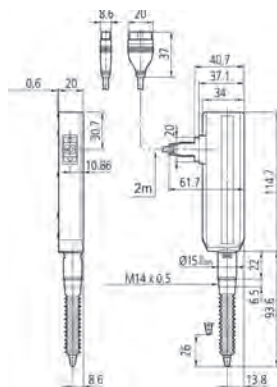
Metric

No.	Range [mm]	Measuring force *1	Stem Ø	Accuracy	Cable length [m]	Mass [g]	Price [€]
575-326	0-10	1.2 N/1.1 N/1.0 N	8 mm	20 µm	2	260	484.00
575-326-3	0-10	1.2 N/1.1 N/1.0 N	8 mm	20 µm	3	310	505.00
575-326-5	0-10	1.2 N/1.1 N/1.0 N	8 mm	20 µm	5	360	520.00
575-326-7	0-10	1.2 N/1.1 N/1.0 N	8 mm	20 µm	7	410	536.00
575-327	0-25	4.6 N/4.3 N/4.0 N	15 mm	20 µm	2	300	546.00
575-327-3	0-25	4.6 N/4.3 N/4.0 N	15 mm	20 µm	3	350	567.00
575-327-5	0-25	4.6 N/4.3 N/4.0 N	15 mm	20 µm	5	400	582.00
575-327-7	0-25	4.6 N/4.3 N/4.0 N	15 mm	20 µm	7	450	597.00
575-328	0-50	5.7 N/5.3 N/4.9 N	15 mm	30 µm	2	400	592.00
575-328-3	0-50	5.7 N/5.3 N/4.9 N	15 mm	30 µm	3	450	613.00
575-328-5	0-50	5.7 N/5.3 N/4.9 N	15 mm	30 µm	5	500	628.00
575-328-7	0-50	5.7 N/5.3 N/4.9 N	15 mm	30 µm	7	550	644.00

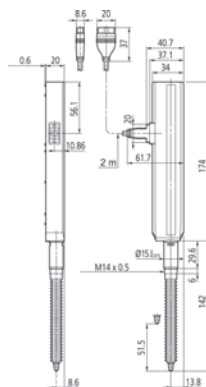
*1 Spindle DOWN/Horizontal/Spindle UP



10 mm



25 mm



50 mm

Specifications

Scale	Capacitance-type ABSOLUTE linear encoder
Max. response speed	Unlimited; measurement by scanning cannot be performed
Contact point	Ø3 mm carbide
Power supply	5 V (4.8 V to 5.2 V)
Digital step	0,01 mm
Output signal	Digimatic
Environmental conditions	0 °C to 40 °C (20 % to 80 % rel. humidity, no condensation)
External input	Origin-setting signal
Bearing type	Linear ball bearing

Standard accessories

No.	Description
538610	Wrench for contact point (for 10 range models)
04GAA857	Wrench for contact point (for 25/50 range models)

Optional accessories

No.	Description	Price €
Data cable		
02ADF640	SPC cable extension adapter	52.50
936937	Digimatic cable (1 m)	43.50
965014	Digimatic cable (2 m)	57.50
Fixing set		
02ADB680	Fixing set Ø 9,5 (for 10 models)	19.00
02ADN370	Fixing set Ø 18 (for 25/50 models)	24.00
Pneumatic drive		
02ADE230	Pneumatic drive CAP 10	304.00
02ADE250	Pneumatic drive CAP 25	438.00
02ADE270	Pneumatic drive CAP 50	484.00
Thrust stem		
02ADB683	Thrust stem wrench (for 10 range models)	11.50
02ADB693	Thrust stem wrench (for 25/50 range models)	11.50

Consumable spares

No.	Description	Price €
901312	Standard contact point	11.00
Rubber boots		
238772	10 rubber boot	8.00
962504	25 rubber boot	24.50
962505	50 rubber boot	26.00



02ADF640



Refer to the Linear Gauge brochure

Specifications

Scale	Capacitance-type ABSOLUTE linear encoder
Max. response speed	1600 mm/s; (measuring by scanning not possible)
Contact point	Ø3 mm carbide < (fixing thread : M 2.5 x 0.45 mm)
Cable length	2 m
Power supply	5 to 10 V, 5 mA max.
Digital step	0,01 mm
Output signal	Digimatic output
Environmental conditions	0 °C to 40 °C (20 % to 80 % rel. humidity, no condensation)
Bearing type	Slide bearing

Optional accessories

No.	Description	Price €
02ADF640	SPC cable extension adapter	52.50
936937	Digimatic cable (1 m)	43.50
965014	Digimatic cable (2 m)	57.50

Consumable spares

No.	Description	Price €
901312	Standard contact point	11.00
238774	Silicon rubber boot	10.50



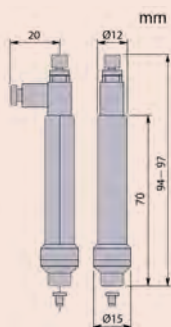
02ADF640



Refer to the Linear Gauge documentation for more details

Specifications

Throttle	Interior Ø 2,5 mm Exterior Ø 3,2 mm
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903594

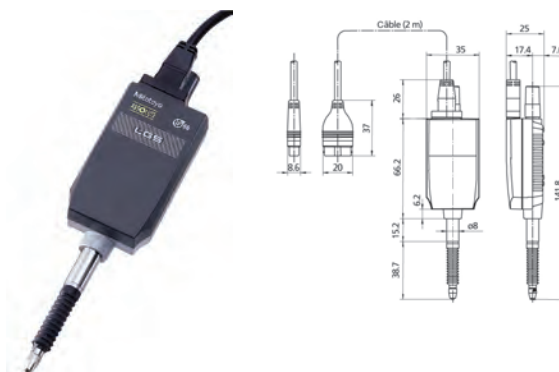
ABSOLUTE Digimatic Linear Gauge LGD Series

Series 575

The LGD is a compact ABS linear gauge that offers you the following benefits:

- Its patented ABSOLUTE Digimatic data output and IP-66 protection class give you best-of-breed technology.
- You can set up the LGD using holes in a plate or fixture, with its optional mounting accessories.

ABSOLUTE®



575-303

Metric

No.	Range [mm]	Measuring force *1	Stem Ø	Accuracy	Direction of counting	Price [€]
575-303	0-12.7	2.0 N/1.8 N/1.6 N	8 mm	0,015 mm	positive	177.00
575-304	0-12.7	2.0 N/1.8 N/1.6 N	8 mm	0,015 mm	negative	177.00

*1 Spindle DOWN/Horizontal/Spindle UP



Air Drive Unit

- Provides smooth lifting and lowering of the contact point of a gauge by pneumatic cylinder.
- The speed of lift can be regulated by the throttle on the remote cylinder.
- Enables automatic measurement by using a single solenoid valve.

No.	Range [mm]	Suitable for gage model	Air supply [MPa]	Mass [g]	Price [€]
903594	10	LGS	0.49	60	149.00

Linear Gauge LGF Series

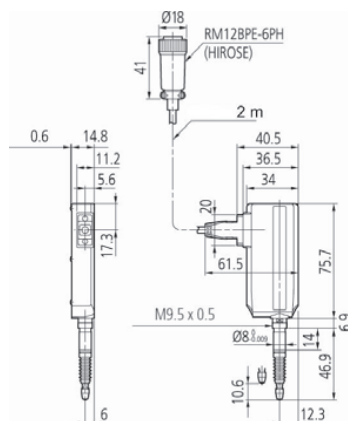
Series 542

This is very robust and economical linear gauge that offers you the following benefits:

- The advanced construction of the plunger guidance assembly makes it very resistant to external shocks and vibration.
- IP-66 protection class.
- Its differential square-wave signal output allows you to use it for a wide range of applications.
- It is very long lasting due to linear ball-bearings in the spindle unit.



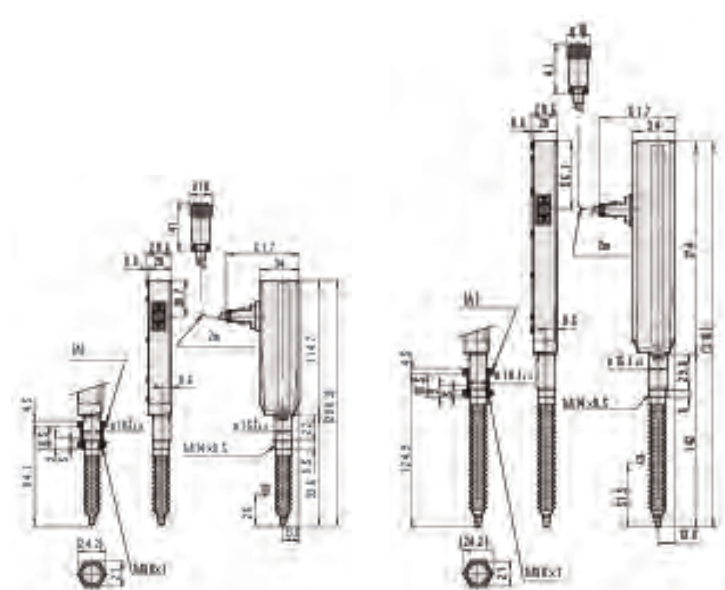
542-161



10 mm (A) Optional fixing set

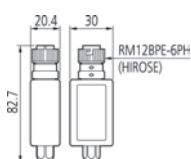
No.	Range [mm]	Measuring force *1	Resolution [mm]	Stem Ø	Max. re- sponse speed	Accuracy	Signal pitch [µm]	Mass [g]	Price [€]
542-612	0-25	4.6/4.3/4.0 N	0.005	15 mm	1500 mm	(7,5 + L/50) µm	20	300	460.00
542-613	0-50	4.6/4.3/4.0 N	0.005	15 mm	1500 mm	(7,5 + L/50) µm	20	400	515.00
542-161	0-10	1.2/1.1/1.0 N	0.001	8 mm	1500 mm	(1,5 + L/50) µm	4	260	515.00
542-162	0-25	4.6/4.3/4.0 N	0.001	15 mm	1500 mm	(1,5 + L/50) µm	4	300	730.00
542-163	0-50	5.7/5.3/4.9 N	0.001	15 mm	1500 mm	(1,5 + L/50) µm	4	400	740.00
542-123	0-50	5.7/5.3/4.9 N	0.001	15 mm	1500 mm	(1,5 + L/50) µm	4	380	
542-171	0-10	1.2/1.1/1.0 N	0.0005	8 mm	1500 mm	(1,5 + L/50) µm	2	260	540.00
542-172	0-25	4.6/4.3/4.0 N	0.0005	15 mm	1500 mm	(1,5 + L/50) µm	2	300	760.00
542-173	0-50	5.7/5.3/4.9 N	0.0005	15 mm	1500 mm	(1,5 + L/50) µm	2	400	798.00
542-181	0-10	1.2/1.1/1.0 N	0.0001	8 mm	400 mm	(0,8 + L/50) µm	0.4	310	855.00
542-182	0-25	4.6/4.3/4.0 N	0.0001	15 mm	400 mm	(0,8 + L/50) µm	0.4	350	1,080.00

*1 Spindle DOWN/Horizontal/Spindle UP



25 mm (A) Optional fixing set

50 mm (A) Optional fixing set



Connector 542-181/542-182

Functions	Series 542
Counting direction switchable	

Specifications

Scale	Photoelectric linear encoder
Contact point	Ø3 mm carbide (mounting threads M 2,5 x 0,45)
Cable length	2 m
Power supply	+ 5 V (4.8 V to 5.2 V), 120 mA max.
Output signal	90° phase difference, differential square wave (RS-422A equivalent), edge distance 200 ns for 1 µm model, 250 ns for 0,5 µm model, 200 mV p-p max.
Environmental conditions	0 °C to 40 °C (20 % to 80 % rel. humidity, no condensation)
Bearing type	Linear ball bearing

Standard accessories

No.	Description
538610	Wrench for contact point (for 10 range models)
04GAA857	Wrench for contact point (for 25/50 range models)

Optional accessories

No.	Description	Price €
Extension cable		
902432	Extension cable (20 m)	301.00
902433	Extension cable (10 m)	216.00
902434	Extension cable (5 m)	170.00
Fixing set		
02ADB680	Fixing set Ø 9,5 (for 10 models)	19.00
02ADN370	Fixing set Ø 18 (for 25/50 models)	24.00
Pneumatic drive		
02ADE230	Pneumatic drive CAP 10	304.00
02ADE250	Pneumatic drive CAP 25	438.00
02ADE270	Pneumatic drive CAP 50	484.00
Thrust stem		
02ADB683	Thrust stem wrench (for 10 range models)	11.50
02ADB693	Thrust stem wrench (for 25/50 range models)	11.50

Consumable spares

No.	Description	Price €
238772	10 rubber boot	8.00
962504	25 rubber boot	24.50
962505	50 rubber boot	26.00
901312	Standard contact point	11.00



Refer to the Linear Gauge brochure

Linear Gauge with Reference Point LGF-Z Series

Series 542

These counters and displays are easy to use and configure, and offer you the following benefits:

- DIN (144 x 72 mm) and mount-on-panel configuration make system integration quick and easy.
- You can use its counter on a desktop mounted on an included display stand.
- The standard RS-232C serial port and USB interfaces allow easy communication with an external PC.
- You can easily create a multi-point measuring system with the built-in networking function (RS link, max. 12 points).
- The 2-gage input type lets you perform 2-axis display and calculate additions and subtractions between two gauges.

	Series 542			
	542-017	542-094-2	542-067	542-073D
Functions				
ZERO/ABS			●	●
Digimatic data output		●	●	●
Digimatic data input		●		●
ON/OFF				●
PRESET	●	●	●	●
Counting direction switchable	●	●	●	●
Sum/difference of two probes			●	●
Calculation of sum	●			●
Diameter display				●
ABS/INC			●	
Error display	●	●	●	●
GO/NG Display	●	●	●	●
MAX / MIN / Difference measurement	●	●	●	●
mm / inch switching			●	●
Key lock	●	●	●	●
RS link		●	●	●
External control	●	●	●	●
RS-232C Output		●	●	●
I/O Output	●	●	●	●
+NG/-NG/GO Output on open collector	●	●	●	●
USB MITUTOYO SENSORPAK Output				●
Analogue output		●		
Error output	●	●	●	●
Tolerance judgement (3 or 5 step)	●	●	●	●
Tolerance limit input	●	●	●	●

Specifications

542-073D (EH-Z)	Same specifications as counters 542-075 and 542-071 Delivered with AC adapter
542-017 (EG-Z)	Same specifications as counter 542-015
542-094-2 (EB-Z)	Same specifications as counter 542-092-2
542-067 (EV-Z)	Same specifications as counter 542-063 Delivered with sector RS Link adapter Series Z counters may only be connected together
EH-Z	Up to six EH-Z counters may be connected together
EV-Z	Up to ten EV-Z counters may be connected together

Optional accessories

No.	Description	Price €
02ADB440	BCD-I/O-Data connector	41.50
936937	Digimatic cable (1 m)	43.50
965014	Digimatic cable (2 m)	57.50
02ADF180	10-key unit	237.00
For 542-067, 542-094-2 and 02ADD400		
02ADD930	Three-wire cable for power supply via AC adapter	32.50
02ZAA020	AC cable	11.50
02ADN460	AC adapter	63.50



Refer to the Linear Gage brochure



542-073



542-073



542-067



02ADD400



542-017



542-017



542-094-2



542-094-2

No.	Resolution [μm]	Input signal type	Gage inputs	Price [€]
542-073D	0,0001/0,0005/0,001/0,005/0,01 mm	Differential square-wave	2 (double display)	1,080.00
542-067	0,0001/0,0005/0,001/0,005/0,01 mm	Differential square-wave	6 (without display)	1,490.00
02ADD400.				
542-094-2	0,0001/0,0005/0,001/0,005/0,01 mm	Differential square-wave with origin point mark	1 (single display)	560.00
542-017	0,0001/0,0005/0,001/0,005/0,01 mm	Differential square-wave with origin point mark	1 (single display)	505.00

Slim Head Linear Gauge LGB Series

Series 542

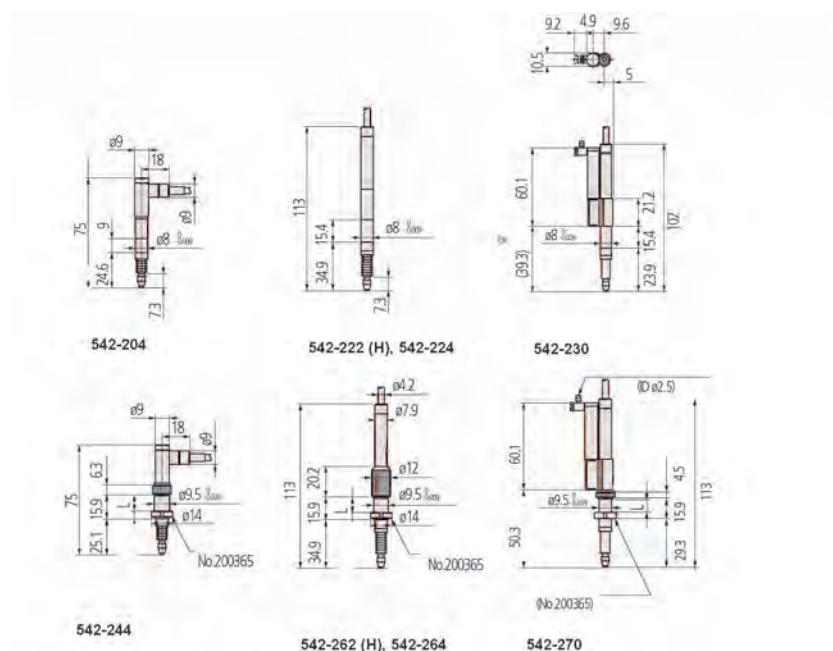
This is an extra slim linear gauge that offers you the following benefits:

- Its differential square-wave signal output allows you to use it for a wide range of applications.
- You can fit it into tight spaces due to its extra compact design and diameter of only 8 mm.
- Its photoelectric scale gives it high precision across the entire measuring range.
- It is very long lasting due to linear ball-bearings in the spindle unit.



No.	Range	Measuring force *1	Stem Ø	Accuracy	Remarks	Mass [g]	Price [€]
542-244	0-5 mm	0.65 N/0.6 N/0.55 N	9,5 mm	2 µm	-		830.00
542-204	0-5 mm	0.65 N/0.6 N/0.55 N	8 mm	2 µm	-	145	690.00
542-204H	0-5 mm	0.8 N/0.75 N/0.7 N	8 mm	1 µm	-	145	830.00
542-222	0-10 mm	0.8 N/0.75 N/0.7 N	8 mm	2 µm	-	150	690.00
542-222H	0-10 mm	0.8 N/0.75 N/0.7 N	8 mm	1 µm	-		920.00
542-224	0-10 mm	0.6 N/0.55 N/0.5 N	8 mm	2 µm	Low measuring force	165	730.00
542-230	0-10 mm	0.8 N/0.75 N/0.7 N	8 mm	2 µm	w/pneumatic cylinder		
542-223	0-10 mm	0.8 N/0.75 N/0.7 N	8 mm	2 µm	w/pneumatic cylinder	165	860.00
542-262	0-10 mm	0.8 N/0.75 N/0.7 N	9,5 mm	2 µm	-		999.00
542-262H	0-10 mm	0.8 N/0.75 N/0.7 N	9,5 mm	1 µm	-		1,190.00
542-264	0-10 mm	0.6 N/0.55 N/0.5 N	9,5 mm	2 µm	Low measuring force		750.00
542-270	0-10 mm	0.8 N/0.75 N/0.7 N	9,5 mm	2 µm	w/pneumatic cylinder		895.00

*1 Spindle DOWN/Horizontal/Spindle UP



Specifications

Resolution [µm]	0,001 mm
Scale	Photoelectric linear encoder
Max. response speed	900 mm/s
Contact point	Ø3 mm carbide Ø8 mm or Ø9,5 mm
Cable length	2 m
Power supply	5 V (4.5 V to 5.2 V), 80 mA max.
Output signal	90° phase difference, differential square wave (RS-422A equivalent) (Sine-wave output : 542-401, 542-421)
Environmental conditions	0°C to 40°C (20% to 80% rel. humidity, no condensation)
Bearing type	Linear ball bearing

Standard accessories

No.	Description
538610	Wrench for contact point (for 10 range models)

Optional accessories

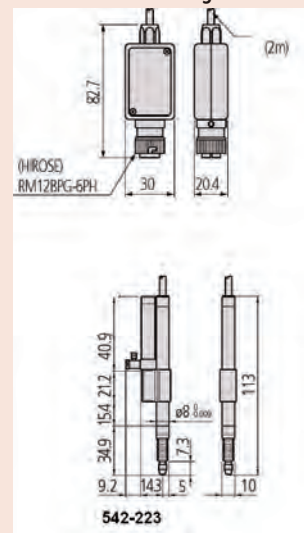
No.	Description	Price €
902434	Extension cable (5 m)	170.00
902433	Extension cable (10 m)	216.00
902432	Extension cable (20 m)	301.00
02ADE230	Pneumatic drive CAP 10	304.00

Consumable spares

No.	Description	Price €
238772	10 rubber boot	8.00
238773	5 rubber boot	
901312	Standard contact point	11.00



Refer to the Linear Gauge brochure



High Resolution Linear Gauge LGB Series



Specifications

Scale	Photoelectric linear encoder
Max. response speed	380 mm/s
Contact point	Ø3 mm carbide (mounting threads M 2,5 x 0,45)
Cable length	2 m
Power supply	5 V (4.5 V to 5.2 V), 150 mA max.
Digital step	0,1 mm
Output signal	90° phase difference, 200 mV p-p max.
Environmental conditions	0°C to 30°C (20% to 80% rel. humidity, no condensation)
Bearing type	Linear ball bearing

Standard accessories

No.	Description
538610	Wrench for contact point (for 10 range models)

Optional accessories

No.	Description	Price €
902434	Extension cable (5 m)	170.00
902433	Extension cable (10 m)	216.00
902432	Extension cable (20 m)	301.00

Consumable spares

No.	Description	Price €
901312	Standard contact point	11.00
238773	5 rubber boot	



Refer to the Linear Gauge documentation for more details

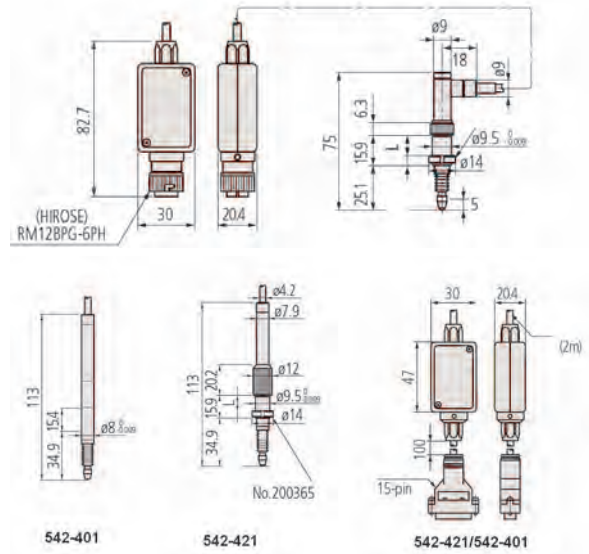
Series 542

The Linear Gauge LGB offers you the following benefits:

- It has an extra compact design, and its small photoelectric scale lets you measure at high precision across the entire range.
- Differential square-wave signal output allows you to use it for a wide range of applications.
- You can install it in machines and measuring devices.
- Very long life due to the linear ball-bearings in the spindle unit.



542-246



No.	Range	Measuring force *1	Stem Ø	Accuracy	Remarks	Mass [g]	Price [€]
542-401	0-10 mm	0.8 N/0.75 N/0.7 N	8 mm	2 µm	Sine wave output		
542-421	0-10 mm	0.8 N/0.75 N/0.7 N	9.5 mm	2 µm	Sine wave output		
542-246	0-5 mm	0.65 N/0.60 N/0.55 N	9.5 mm	0.8 µm		160	2,040.00

*1 Spindle DOWN/Horizontal/Spindle UP

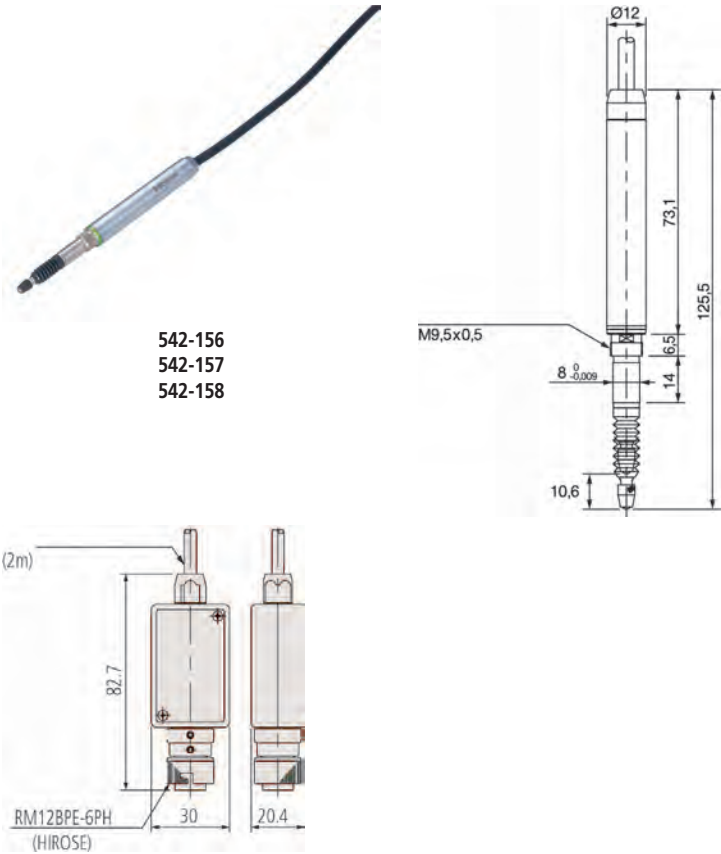
Slim Head Linear Gauge LGK Series

Series 542

This is a slim type linear gauge that allows you to meet a variety of measurement needs.

The Linear Gage SLIM HEAD LGK offers you the following benefits:

- Differential square-wave signal output enables to use it for a wide range of applications.
- You can install it even where space is restricted, thanks to its small size.
- IP-66 protection class.
- Its photoelectric scale gives it high precision across the entire measuring range.
- It is very long lasting due to linear ball-bearings in the spindle unit.



Specifications	
Scale	Photoelectric linear encoder
Max. response speed	1500 mm/s
Stem Ø	8 mm
Contact point	Ø 3 mm carbide (mounting threads M 2,5 x 0,45)
Cable length	2 m
Power supply	5 V (4.5 V to 5.2 V), 80 mA max.
Output signal	90° phase difference, differential square wave (RS-422A equivalent)
Environmental conditions	0° C to 40° C (20% to 80% rel. humidity, no condensation)
Bearing type	Linear ball bearing

Standard accessories	
No.	Description
538610	Wrench for contact point (for 10 range models)

Optional accessories		
No.	Description	Price €
902434	Extension cable (5 m)	170.00
902433	Extension cable (10 m)	216.00
902432	Extension cable (20 m)	301.00
02ADE230	Pneumatic drive CAP 10	304.00
02ADB680	Fixing set Ø 9,5 (for 10 models)	19.00
02ADB683	Thrust stem wrench (for 10 range models)	11.50

Consumable spares		
No.	Description	Price €
901312	Standard contact point	11.00
238772	10 rubber boot	8.00



Refer to the Linear Gauge documentation for more details

No.	Range	Measuring force *1	Resolution [mm]	Accuracy	Signal pitch [µm]	Mass [g]	Price [€]
542-156	0-10 mm	0.8 N/0.75 N/0.7 N	0.001	(1,5 + L/50) µm	4	175	620.00
542-157	0-10 mm	0.8 N/0.75 N/0.7 N	0.0005	(1,5 + L/50) µm	2	175	630.00
542-158	0-10 mm	0.8 N/0.75 N/0.7 N	0.0001	(0,8 + L/50) µm	0.4	175	970.00

*1 Spindle DOWN/Horizontal/Spindle UP

Large Measuring Range Linear Gauge LG / LGM Series

Specifications

Scale	Photoelectric linear encoder
Max. response speed	400 mm/s (542-312/542-313D/542-315D/542-316/542-314), 800 mm/s (542-332/542-333D/542-335D/542-336/542-334)
Contact point	Ø 3 mm carbide (mounting threads M 2,5 x 0,45)
Dimensions (WxDxH)	90 x 175 x 74 mm (control unit)
Cable length	2 m
Power supply	5 V (4,8 V to 5,2 V) (Control unit No. 542-313D: 230 V 50/60 Hz)
Output signal	90° phase difference, differential square wave (RS-422A equivalent)
Environmental conditions	0°C to 40°C (20% to 80% rel. humidity, no condensation)
Bearing type	Bearing type

Consumable spares

No.	Description	Price €
901312	Standard contact point	11.00
02ADA004	Rubber boot	90.50



Control unit for 542-313D/-315D/-333D/-335D (standard accessory)



Refer to the Linear Gauge documentation for more details

Series 542

This linear gauge has a large measuring range, and offers you the following benefits:

- Your options include both manual and motorised versions.
- It has a large measuring range of 100mm.



542-314/-334
542-315D/-335D



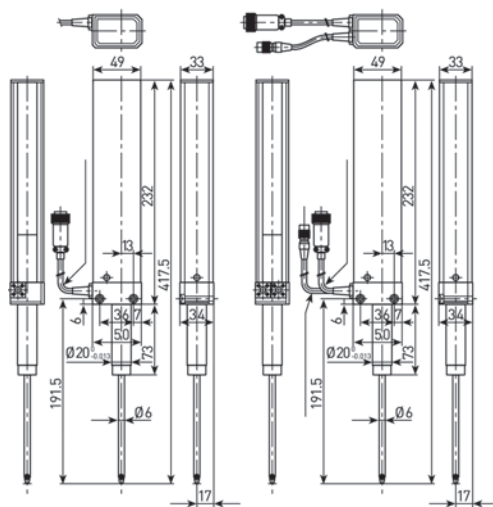
542-312



542-313D

No.	Range	Measuring force *1	Resolution [µm]	Stem Ø	Accuracy	Remarks	Mass [g]	Price [€]
542-312	0-100 mm	8.0 N/6.5 N/5.0 N	0.1	20 mm	$(2 + L/100) \mu\text{m} \leq 2,5 \mu\text{m}$	Standard	640	2,369.00
542-316	0-100 mm	3.0 N/-/-	0.1	20 mm	$(2 + L/100) \mu\text{m} \leq 2,5 \mu\text{m}$	Low measuring force	750	2,370.00
542-314	0-100 mm	8.0 N/6.5 N/5.0 N	0.1	20 mm	$(2 + L/100) \mu\text{m} \leq 2,5 \mu\text{m}$	w/ rubber boot	750	2,490.00
542-332	0-100 mm	8.0 N/6.5 N/5.0 N	1	20 mm	$(2,5 + L/100) \mu\text{m} \leq 3 \mu\text{m}$	Standard	750	2,300.00
542-336	0-100 mm	3.0 N/-/-	1	20 mm	$(2,5 + L/100) \mu\text{m} \leq 3 \mu\text{m}$	Low measuring force	750	2,300.00
542-334	0-100 mm	8.0 N/ 6.5 N/5.0 N	1	20 mm	$(2,5 + L/100) \mu\text{m} \leq 3 \mu\text{m}$	w/ rubber boot	750	2,485.00
542-313D	0-100 mm	3.0 N/ 6.5 N/ 9.5 N	0.1	20 mm	$(2 + L/100) \mu\text{m} \leq 2,5 \mu\text{m}$	Motor-driven type	1640	4,160.00
542-315D	0-100 mm	4.5 N/-/6.0 N	0.1	20 mm	$(2 + L/100) \mu\text{m} \leq 2,5 \mu\text{m}$	Motor-driven type	1640	4,950.00
542-333D	0-100 mm	3.0 N/6.5 N/9.5 N	1	20 mm	$(2,5 + L/100) \mu\text{m} \leq 3 \mu\text{m}$	Motor-driven type	940	3,795.00
542-335D	0-100 mm	4.5 N/-/6.0 N	1	20 mm	$(2,5 + L/100) \mu\text{m} \leq 3 \mu\text{m}$	Motor-driven type	1640	4,575.00

*1 Spindle DOWN/Horizontal/Spindle UP



542-312
542-332

542-313D
542-333D

Linear Gauge with Reference Point LGF-Z Series

Series 542

This is a very robust and economical linear gauge with a reference point.

The Linear Gauge LGF-Z offers you the following benefits:

- The advanced construction of the plunger guidance assembly makes it very resistant to external shocks and vibration.
- IP-66 protection class.
- Its differential square-wave signal output allows you to use it for a wide range of applications.
- It is very long lasting due to linear ball-bearings in the spindle unit.
- The origin point mark on its scale gives you a reference point.



Functions		Series 542
Counting direction switchable		
Specifications		
Scale	Photoelectric linear encoder	
Max. response speed	1500 mm/s	
Contact point	Ø3 mm carbide (mounting threads M 2,5 x 0,45)	
Cable length	2 m	
Power supply	+ 5 V (4.8 V to 5.2 V), 120 mA max.	
Display	6 digit	
Output signal	90° phase difference, differential square wave (RS-422A equivalent), edge distance 200 ns for 1 µm model, 250 ns for 0.5 µm model, 200 mV p-p max.	
Environmental conditions	0 °C to 40 °C (20 % to 80 % rel. humidity, no condensation)	
Bearing type	Linear ball bearing	

Standard accessories

No.	Description
538610	Wrench for contact point (for 10 range models)
04GAA857	Wrench for contact point (for 25/50 range models)

Optional accessories

No.	Description	Price €
Extension cable		
02ADF260	Extension cable (5 m)	268.00
02ADF280	Extension cable (10 m)	309.00
02ADF300	Extension cable (20 m)	402.00
Fixing set		
02ADB680	Fixing set Ø 9,5 (for 10 models)	19.00
02ADB690	Fixing set Ø 18 for 25/50 type	26.00
Pneumatic drive		
02ADE230	Pneumatic drive CAP 10	304.00
02ADE250	Pneumatic drive CAP 25	438.00
02ADE270	Pneumatic drive CAP 50	484.00
Thrust stem		
02ADB683	Thrust stem wrench (for 10 range models)	11.50
02ADB693	Thrust stem wrench (for 25/50 range models)	11.50

Consumable spares

No.	Description	Price €
901312	Standard contact point	11.00
238772	10 rubber boot	8.00
962504	25 rubber boot	24.50
962505	50 rubber boot	26.00



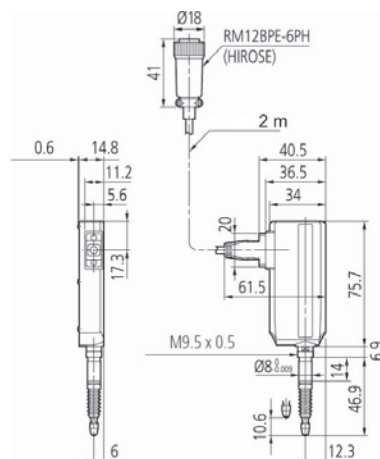
Refer to the Linear Gauge documentation for more details



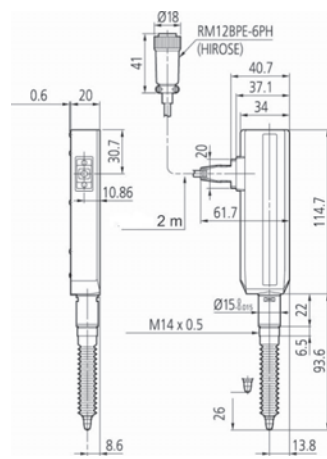
542-164

No.	Range [mm]	Measuring force *1	Resolution [mm]	Stem Ø	Accuracy	Signal pitch [µm]	Mass [g]	Price [€]
542-174	0-10	1.2 N/1.1 N/1.0 N	0.0005	8 mm	(1,5 + L/50) µm	2	260	630.00
542-164	0-10	1.2 N/1.1 N/1.0 N	0.001	8 mm	(1,5 + L/50) µm	4	260	600.00
542-175	0-25	4.6 N/4.3 N/4.0 N	0.0005	15 mm	(1,5 + L/50) µm	2	300	765.00
542-165	0-25	4.6 N/4.3 N/4.0 N	0.001	15 mm	(1,5 + L/50) µm	4	300	740.00
542-176	0-50	5.7 N/5.3 N/4.9 N	0.0005	15 mm	(1,5 + L/50) µm	2	400	940.00
542-166	0-50	5.7 N/5.3 N/4.9 N	0.001	15 mm	(1,5 + L/50) µm	4	400	920.00

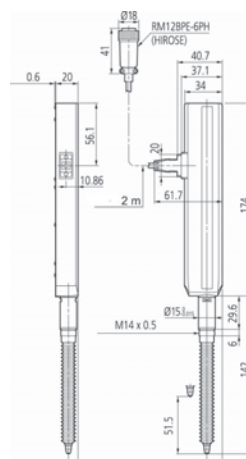
*1 Spindle DOWN/Horizontal/Spindle UP



542-164/542-174
10 mm



542-165/542-175
25 mm



542-166/542-176
50 mm

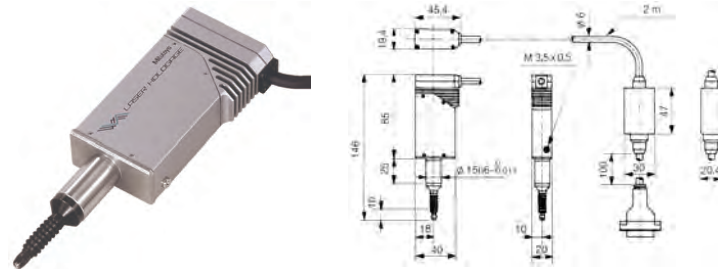
Laser Hologage LGH/LGB-S

Series 542

This is a highly precise dial gauge that uses optical interference so you can measure with unparalleled accuracy.

The Mitutoyo Laser Hologage offers you the following benefits:

- Through optical interference of laser light through a diffraction grating it gives you an extremely precise holographic scale with 0.0001mm resolution
- You can use the Laser Hologage for extremely precise measurements, as well as a transducer in ultra-precision positioning and control systems.



542-711-1

No.	Range	Measuring force *1	Resolution [μm]	Stem Ø	Accuracy	Mass [g]	Price [€]
542-711-1	0-10 mm	0.55 N/0.45 N/0.35 N	0.1	15 mm	0,2 μm	410	3,175.00
542-712-1	0-10 mm	0.1 N/-	0.1	15 mm	0,2 μm	410	3,175.00
542-074D						900	1,420.00

*1 Spindle DOWN/Horizontal/Spindle UP



542-074



542-074

Series 542	
	542-074D
Functions	
ZERO/ABS	●
Digitatic data output	●
ON/OFF	●
PRESET	●
Counting direction switchable	●
Sum/difference of two probes	●
Calculation of sum	●
Diameter display	●
ABS/INC	●
Error display	●
MAX/MIN difference measurement	●
mm / inch switching	●
Key lock	●
RS link	●
External control	●
RS-232C Output	●
I/O Output	●
USB MITUTOYO SENSORPAK Output	●
Tolerance judgement (3 or 5 step)	●
Tolerance limit input	●

Specifications

Scale	Laser-hologram measurement sensor
Max. response speed	250 mm/s
Contact point	R 1,5 mm carbide
Signal pitch	0.25 μm
Output signal	90° phase difference, differential square wave (RS-422A equivalent)
Bearing type	High precision linear ball bearing

Standard accessories

No.	Description
538610	Wrench for contact point (for 10 range models)

Optional accessories

No.	Description	Price €
971750	Comparator for Laser Hologage LGH	3,059.00
971753	Cable release	196.00
542-075D	EF-Counter with single display	798.00
542-071D	EH-Counter with double display	970.00
971751	Stem fixture for fixing to top surface	330.00
971752	Stem fixture for fixing to bottom surface	330.00

Consumable spares

No.	Description	Price €
901312	Standard contact point	11.00



Refer to the Linear Gage brochure



542-401
542-421

Laser Hologage LGH

Series 542

This is a highly precise dial gauge that uses optical interference so you can measure with unparalleled accuracy.

The Mitutoyo Laser Hologage offers you the following benefits:

- Through optical interference of laser light through a diffraction grating it gives you an extremely precise holographic scale with 0.0001mm resolution.
- The measuring head is very compact, enabling you to build it into various systems far less expensively than conventional laser technology.
- You can use the Laser Hologage for measuring extremely precise parts, as well as a transducer in ultra-precise positioning and control systems.

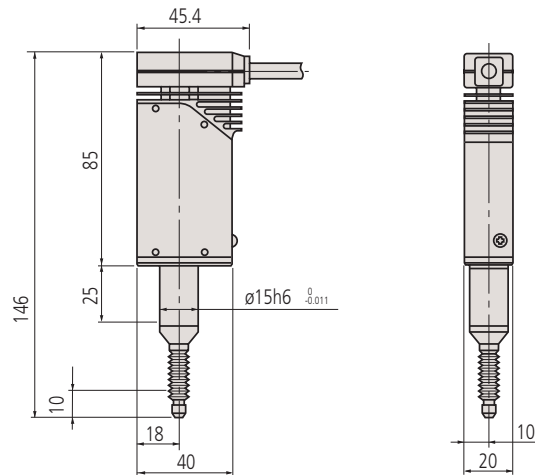


542-925

Laser Hologage supplied with Display Unit

No.	Range	Measuring force *1	Resolution [μm]	Stem Ø	Accuracy	Remarks	Mass [g]	Price [€]
542-925D	0-10 mm	0.55 N/0.45 N/0.35 N	0.01	15 mm	0,1 μm	Supplied with Display Unit 542-074D	900	7,000.00
542-926D	0-10 mm	0.1 N/-	0.01	15 mm	0,1 μm	Supplied with Display Unit 542-074D	900	7,000.00

*1 Spindle DOWN/Horizontal/Spindle UP



Functions	Series 542
ZERO/ABS	●
Digimatic data output	●
ON/OFF	●
Functions for Display unit	
Calculation of sum	●
Zero set	●
PRESET	●
Counting direction switchable	●
Diameter display	●
ABS/INC	●
Error display	●
MAX/MIN difference measurement	●
Key lock	●
mm / inch switching	●
RS link	●
RS-232C Output	●
I/O Output	●
USB MITUTOYO SENSORPAK Output	●
Error output	●
Analogue output	●
Tolerance judgement (3 or 5 step)	●
Tolerance limit input	●

Specifications

Specifications	Hologage
Scale	Laser-hologram measurement sensor
Max. response speed	250 mm/s
Contact point	R 5 mm carbide
Output signal	90° phase difference, two-phase sine wave
Signal pitch	0.25 μm
Bearing type	High precision linear ball bearing
Environmental conditions	10-30°
Specifications	Display unit
Model	EH
Display range	± 999.99999 mm
Dimensions (WxHxD)	144 x 68 x 158 mm

Standard accessories

No.	Description
538610	Wrench for contact point (for 10 range models)

Optional accessories

No.	Description	Price €
971750	Comparator for Laser Hologage LGH	3,059.00
971753	Cable release	196.00
971751	Stem fixture for fixing to top surface	330.00
971752	Stem fixture for fixing to bottom surface	330.00
02ADN460	AC adapter	63.50
02ZAA020	AC cable	11.50

Consumable spares

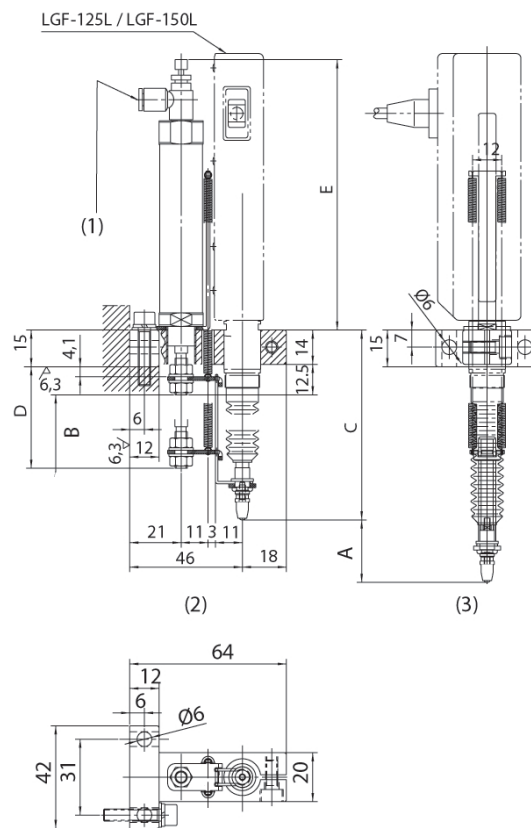
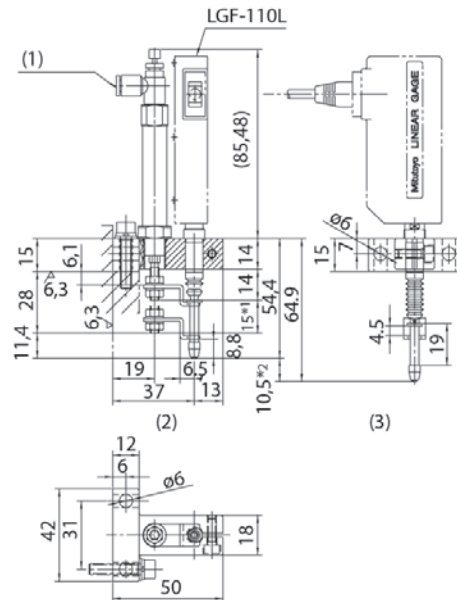
No.	Description	Price €
901312	Standard contact point	11.00



Refer to the Linear Gage brochure



Refer to the Linear Gage brochure



1. Speed controller
2. At air supply off
3. At air supply on

No.	Range [mm]	Air supply [MPa]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	Price [€]
02ADE230	0-10	0.2 to 0.4						304.00
02ADE250	0-25	0.2 to 0.4	25.5	30	77.6	41.5	110.5	438.00
02ADE270	0-50	0.2 to 0.4	51	50	95.9	66.5	159.5	484.00

EH/EC Counters for Linear Gages LGD and LGS

Series 542

This Digimatic display can be connected to any device with Digimatic output, including many micrometers, dial indicators and measuring gauges. It offers you the following benefits:

- DIN-compatible compact front panel assembly (96 x 48mm).
- It has a data output and tolerance evaluation function (542-007).



542-007



542-007

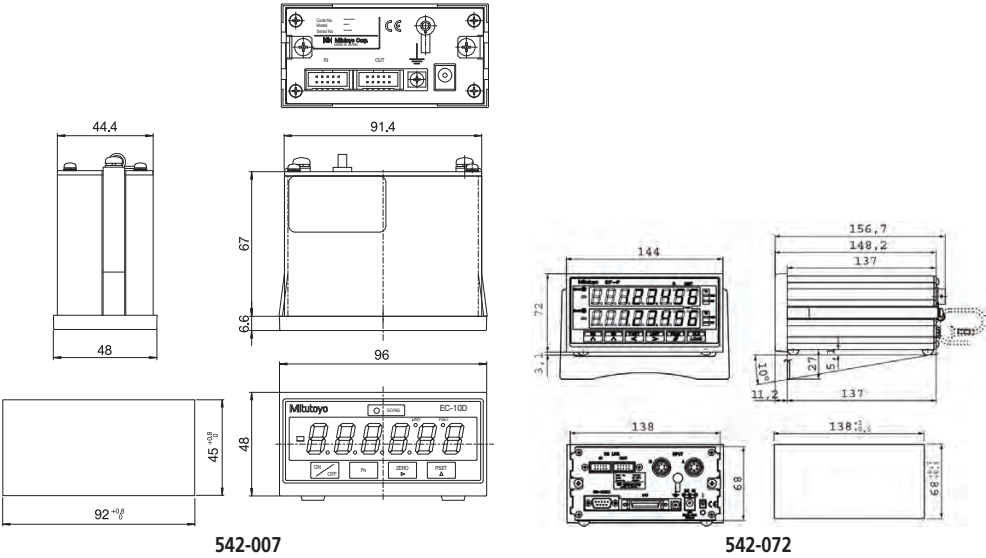


542-072



542-072

No.	Number of axis	Power supply	Description	Price [€]
542-007D	1	+ 9 - 12 V DC 400 mA or AC adapter	EC Counter	330.00
542-072D	2	+ 9 - 12 V DC 400 mA or AC adapter	EH Counter	970.00



Functions	Series 542
Digimatic data output	●
Digimatic data input	●
Zero set	●
Counting direction switchable	●
Key lock	●
mm / inch switching	●
Tolerance limit input	●

Specifications

Resolution [μm]	0,01 mm or 0,001 mm depending on the connected measuring instrument
Display	For 542-0007 Green LED display, 6 digits, with (-) sign
Applicable input	For 542-072 Differential square-wave Green LED display, 6 digits, with (-) sign

Standard accessories

No.	Description
526688D	AC adapter 9V 500mA
02ADN460	AC adapter
02ZAA020	AC cable

02ADN460/02ZAA020/02ZAA030 : for 542-072
526688D/526688UK : for 542-007

Optional accessories

No.	Description	Price €
06ADV380D	USB Input Tool Direct cable (2 m)	100.00
02AZD790D	Connecting cable U-Wave	85.00
936937	Digimatic cable (1 m)	43.50
965014	Digimatic cable (2 m)	57.50
For 542-007		
C162-155	I/O cable (2 m)	47.00
For 542-072		
12AAA807D	RS-232C cable (2m)	54.00
02ADB440	BCD-I/O-Data connector	41.50



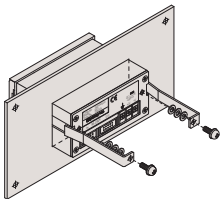
Refer to the Linear Gage brochure.
More details on EH counter, see further on in this chapter.

Display Unit for Multi-Gauge System

Series 542



02ADD400



02ADD400

Specifications for 02ADD400

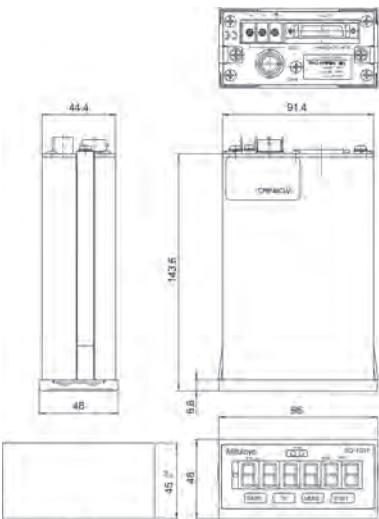
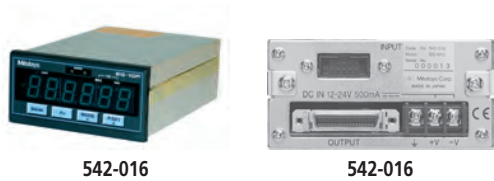
No.	Description	Price [€]
02ADD400	One display unit allows external display and setting for one EV counter LED display : Channel display. Measurement mode display (current, maximum, minimum, runout) Functions : Channel switching, measurement mode switching (current value, maximum value, minimum value, and runout), parameter setting, preset, and tolerance setting Input/output : RS Link connector : 1 in and 1 out Error display : Overspeed, Linear gage error and others	417.00

EG/EB Counter

Series 542

This is a compact counter with a control panel that offers you the following benefits:

- Control panel according to DIN (96 x 48 mm).
- Its I/O control function enables tolerance judgement evaluation (3 or 5 steps) or parallel BCD output function.



542-016 + 542-093-2

Output applicable input for counter 542-093-2 (series EB)

Specifications :

- Output voltage 2.5 V + [Counting value x voltage resolution (25 mV or 2.5 mV)]
- Full scale : 0 V to 5 V, accuracy is indicated by full scale 5 V
- Accuracy : $\pm 5 \%$ (0 V to 5 V) $\pm 0.5 \%$ (2.5 V \pm 200 mV after setting the gap)
- Charge resistance : 300 k Ω or more

No.	Gage inputs	Resolution (Depending on gage type connected)	Mass [g]	Price [€]
542-016	1	0,01 mm, 0,001 mm	400	479.00
542-093-2	1	0,01 mm, 0,001 mm	400	540.00



Series 542		
	542-016	542-093-2
Functions		
PRESET (preselection)	●	●
Digimatic data input	●	●
Counting direction switchable	●	●
Calculation of sum	●	●
Error display	●	●
GO/±NG signal output (3 or 5 step)	●	●
MAX / MIN / Difference measurement	●	●
mm / inch switching	●	●
Key lock	●	●
External control	●	●
Output I/O	●	●
Analogue output	●	●
Tolerance judgement (3 or 5 step)	●	●
Tolerance limit input	●	●

Specifications

For 542-016

Display	Green LED display, 6 digit, with (-) sign, character height : 15 mm
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542-093-2 has the same technical specifications as 542-092-2

Optional accessories

No.	Description	Price €
02ADB440	BCD-I/O-Data connector	41.50
02ADD930	Three-wire cable for power supply via AC adapter	32.50
02ZAA020	AC cable	11.50
For 542-093-2		
02ADF180	10-key unit	237.00
02ADN460	AC adapter	63.50
06ADV380D	USB Input Tool Direct cable (2 m)	100.00
02AZD790D	Connecting cable U-Wave	85.00
965014	Digimatic cable (2 m)	57.50
936937	Digimatic cable (1 m)	43.50



Refer to the Linear Gauge documentation for more details

EH Counter

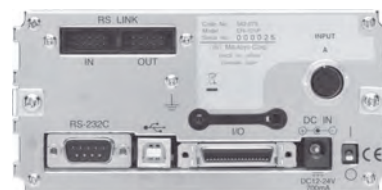
Series 542

This EH Counter is easy to use and gives you flexible options. It offers you the following benefits:

- It uses DIN (144 x 72mm) and panel-mount configuration to make system integration quicker and easier.
- You can use its counter on a desktop mounted on an included display stand.
- Counter can be used on a desktop mounted on a display stand (included).
- The standard RS-232C and USB interfaces allows easy communication with an external PC (the USB can only be used with SENSORPAK).
- The built-in networking function allows you to easily create a multi-point measuring system (RS link, max. 12 points).
- The 2-gage input type lets you perform 2-axis display and calculate additions and subtractions between two gauges.



542-075D



542-075D

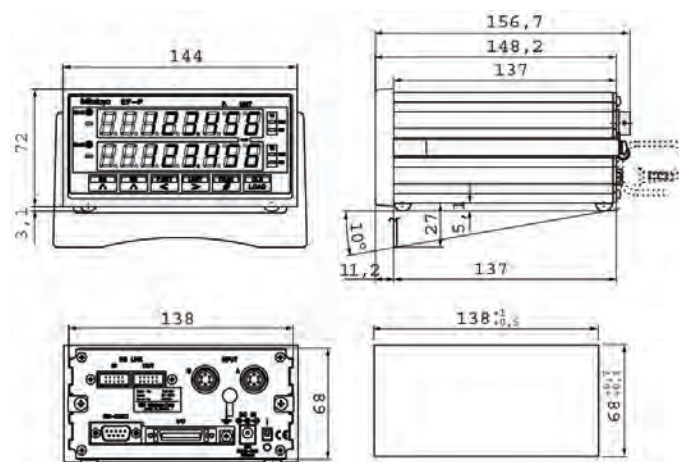


542-071D



542-071D

No.	Gage inputs	Resolution (Depending on gage type connected)	Mass [g]	Price [€]
542-075D	1 (single display)	0,0001/0,0005/0,001/0,005/0,01 mm	760	798.00
542-071D	2 (double display)	0,0001/0,0005/0,001/0,005/0,01 mm	800	970.00



Functions	Series 542
Zero set	●
mm / inch switching	●
Tolerance judgement (3 or 5 step)	●

Specifications

Power supply	Via AC Adapter (12-24 V DC, 700 mA No. 527428 Standard Accessories)
Display	8 digit and a negative [-] sign, LED (green)
RS-Link	Up to six EH counters may be connected via one RS-232C or USB port (daisy chained)
Maximum input frequency	2.5 MHz (2-phase square wave)

Standard accessories

No.	Description
02ADN460	AC adapter
02ZAA020	AC cable

Optional accessories

No.	Description	Price €
02ADB440	BCD-I/O-Data connector	41.50
936937	Digimatic cable (1 m)	43.50
965014	Digimatic cable (2 m)	57.50
12AAA807D	RS-232C cable (2m)	54.00
06ADV380D	USB Input Tool Direct cable (2 m)	100.00
02AZD790D	Connecting cable U-Wave	85.00



Refer to the Linear Gauge documentation for more details.

Motorized low force, high precision gages

LITEMATIC VL-50

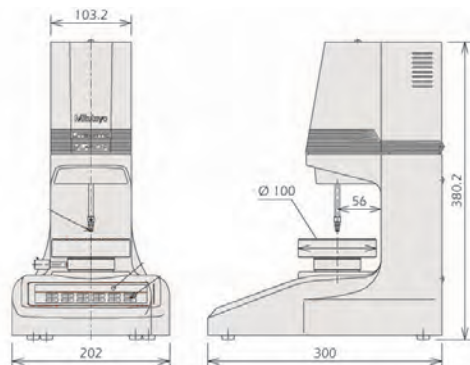
Series 318

This is a high-accuracy motorised measuring machine with safe and easy operation. The LITEMATIC VL-50 offers you the following benefits:

- It has a measuring force of 0.01 N (1 gf) and a resolution of 0.01 μm .
- Its constant and low measuring force makes it especially suitable for measuring soft materials such as rubber, plastic, film thicknesses or sensitive form parts.
- The motor driven plunger gives you a range of approach and retraction speeds for safe and easy operation.



318-22xD



318-22xD



318-217D

No.	Measuring force	Accuracy	Type
318-217D	0.01 N (1 gf)	$(0,1 + 0,5L/100) \mu\text{m}$ L = Measurement height	VL-50 AH
318-221D	0.01 N (1 gf)	$(0,5 + L/100) \mu\text{m}$ L = Measurement height	VL-50 B
318-222D	0.15 N (15 gf)	$(0,5 + L/100) \mu\text{m}$ L = Measurement height	VL-50-15-B
318-223D	1 N (102 gf)	$(0,5 + L/100) \mu\text{m}$ L = Measurement height	VL-50-100-B

Functions	Series 318
ZERO/ABS	●
Data output	●
PRESET	●
Counting direction switchable	●
mm / inch switching	●
Key lock	●
Tolerance input (3 or 5 levels)	●
Motorised plunger movement	●
Mode : max-min (TIR) reading	●
Max. value/Hold	●

Specifications

Measuring range (inside)	0-50 mm
Data output	Digimatic RS-232C INTERFACE I/O

Optional accessories

No.	Description	Price €
937179T	Footswitch	41.50
02ADB440	BCD-I/O-Data connector	41.50
936937	Digimatic cable (1 m)	43.50
965014	Digimatic cable (2 m)	57.50
12AAA807D	RS-232C cable (2m)	54.00
06ADV380D	USB Input Tool Direct cable (2 m)	100.00
02AZD790D	Connecting cable U-Wave	85.00

Consumable spares

No.	Description	Price €
901312	Standard contact point	11.00
357651	AC Adapter 9V	75.50
02ZAA020	AC cable	11.50



Refer to the Linear Gauge documentation for more details

Motorized low force, high precision gages LITEMATIC VL-50

Series 318

This is a high-accuracy gauge head with a separate controller.

The LITEMATIC VL-50 offers you the following benefits:

- It has a measuring force of **0.01 N** (1 gf) and a resolution of 0.01 μm .
- Its constant and low measuring force makes it especially suitable for measuring soft materials such as rubber, plastic, film thicknesses or sensitive form parts.
- The motor driven plunger gives you a range of approach and retraction speeds for safe and easy operation.
- The head is supplied with a separate controller so you can mount it in a measurement fixture, or on the optional comparator stand.

Functions	Series 318
ZERO/ABS	●
Data output	●
PRESET	●
Counting direction switchable	●
mm / inch switching	●
Key lock	●
Tolerance input (3 or 5 levels)	●
Motorised plunger movement	●
Mode : max-min (TIR) reading	●
Max. value/Hold	●

Specifications

Measuring range (inside)	0-50 mm
Data output	DIGIMATIC RS 232C INTERFACE I/O

Optional accessories

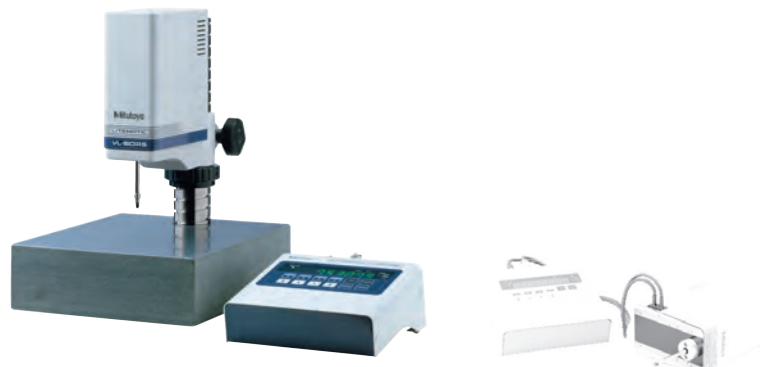
No.	Description	Price €
957460	Comparator stand for LITEMATIC VL-50S	3,461.00
937179T	Footswitch	41.50
02ADB440	BCD-I/O-Data connector	41.50
936937	Digimatic cable (1 m)	43.50
965014	Digimatic cable (2 m)	57.50
12AAA807D	RS-232C cable (2m)	54.00
06ADV380D	USB Input Tool Direct cable (2 m)	100.00
02AZD790D	Connecting cable U-Wave	85.00

Consumable spares

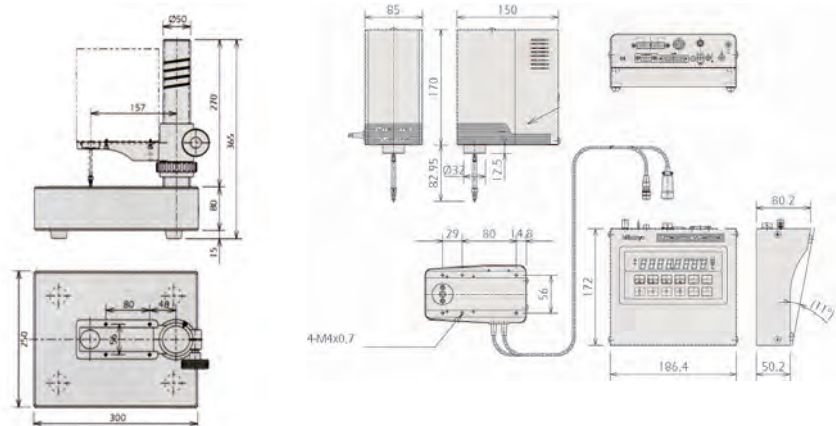
No.	Description	Price €
901312	Standard contact point	11.00
357651	AC Adapter 9V	75.50
02ZAA020	AC cable	11.50



Refer to the Linear Gauge documentation for more details



318-22xD (957460 is optional)



957460 Comparator stand

No.	Measuring force	Accuracy	Type
318-226D	0.01 N (1 gf)	(0,5 + L/100 μm) L = Measurement height	VL-50S-B
318-227D	0.15 N (15 gf)	(0,5 + L/100 μm) L = Measurement height	VL-50S-15-B
318-228D	1 N (102 gf)	(0,5 + L/100 μm) L = Measurement height	VL-50S-100-B

Styli Kits

Mitutoyo offers you over 600 styli plus highly specialised equipment within a wide range of selected materials like steel, aluminium, ceramics, ruby, zirconium oxide or silicon nitride.

Styli Kit M2 Addition

No.	Contents	Description	ø mm	L mm
K651382		wooden box		
	1x Part No. K651058	5-way stylus holder M2		7,5
	1x Part No. K651040	Extension steel M2		30
	1x Part No. K651039	Extension steel M2		20
	4x Part No. K651038	Extension steel M2		10
	1x Part No. K651022	Stylus steel-ruby M2	4	20
	1x Part No. K651021	Stylus steel-ruby M2	3	20
	5x Part No. K651019	Stylus steel-ruby M2	2	20
	1x Part No. K651012	Stylus steel-ruby M2	1	10
	2x Part No. K651223	Pin spanner ø 1,2 mm		23

Styli Kit M2 Basic 1

No.	Contents	Description	ø mm	L mm
K651377		wooden box		
	1x Part No. K651012	Stylus steel-ruby M2	1	10
	1x Part No. K651014	Stylus steel-ruby M2	2	10
	1x Part No. K651019	Stylus steel-ruby M2	2	20
	1x Part No. K651016	Stylus steel-ruby M2	3	10
	1x Part No. K651021	Stylus steel-ruby M2	3	20
	1x Part No. K651022	Stylus steel-ruby M2	4	20
	1x Part No. K651031	Cylinder stylus steel M2	3	13
	1x Part No. K651062	Adaptor M2		7
	1x Part No. K651054	5-way stylus M2	2	30
	1x Part No. K651083	Disk stylus steel M2	18	7,5
	1x Part No. K651085	Disk stylus steel - ruby M2	6	10
	1x Part No. K651038	Extension steel M2		10
	1x Part No. K651039	Extension steel M2		20
	2x Part No. K651223	Pin spanner ø 1,2 mm		23

Styli Kit M2 Basic 2

No.	Contents	Description	ø mm	L mm
K651354		wooden box		
	1x Part No. K651235	Stylus tungsten carbide-ruby M2	0,5	20
	1x Part No. K651249	Stylus tungsten carbide-ruby M2	1	20
	1x Part No. K651019	stylus steel-ruby M2	2	20
	1x Part No. K651347	Stylus carbon fiber-ruby M2	4	50
	1x Part No. K651348	Stylus carbon fiber-ruby M2	5	50
	1x Part No. K651349	Stylus carbon fiber-ruby M2	6	50
	1x Part No. K651350	Stylus extension CRP M2		40
	1x Part No. K651351	Stylus extension CRP M2		50
	1x Part No. K651352	Stylus extension CRP M2		70
	1x Art.:Nr.: K651353	Stylus extension CRP M2		90
	1x Part No. K651058	5-way stylus holder M2		7,5
	1x Part No. K651223	pin spanner ø 1,2 mm		

Styli Kit M2 Expansion

No.	Contents	Description	ø mm	L mm
K651378		wooden box		
	1x Part No. K651236	Stylus tungsten carbide-ruby M2	0,7	10
	1x Part No. K651248	Stylus tungsten carbide-ruby M2	1	20
	2x Part No. K651257	Stylus tungsten carbide-ruby M2	1,5	30
	1x Part No. K651233	Stylus tungsten carbide-ruby M2	0,3	10
	1x Part No. K651276	Stylus tungsten carbide-ruby M2	0,5	10
	1x Part No. K651012	Stylus steel-ruby M2	1	10
	1x Part No. K651013	Stylus steel-ruby M2	1,5	10
	1x Part No. K651014	Stylus steel-ruby M2	2	10
	1x Part No. K651015	Stylus steel-ruby M2	2,5	10
	2x Part No. K651020	Stylus steel-ruby M2	2,5	20
	1x Part No. K651032	Cylinder stylus-ruby M2	2	20
	1x Part No. K651052	4-way stylus-ruby M2	1	10
	1x Part No. K651098	Tip stylus tungsten carbide M2		10
	1x Part No. K651083	Disk stylus steel M2	18	7,5
	1x Part No. K651084	Disk stylus steel M2	25	7,5
	1x Part No. K651041	Extension steel M2		40
	2x Part No. K651223	Pin spanner ø 1,2 mm		23



Styli Kit M2 Addition



Styli Kit M2 Basic 1



Styli Kit M2 Basic 2



Styli Kit M2 Expansion

Styli Kits



Styli Kit M2 Professional



Styli Kit M2 Starter



Styli Kit M3 CRP 1



Styli Kit M3 CRP 2

Styli Kit M2 Professional

No.	Contents	Description	ø mm	L mm
		wooden box		
	1x Part No. K651236	Stylus tungsten carbide-ruby M2	0,7	10
	1x Part No. K651248	Stylus tungsten carbide-ruby M2	1	20
	1x Part No. K651233	Stylus tungsten carbide-ruby M2	0,3	10
	2x Part No. K651276	Stylus tungsten carbide-ruby M2	0,5	10
	2x Part No. K651012	Stylus steel-ruby M2	1	10
	1x Part No. K651013	Stylus steel-ruby M2	1,5	10
	3x Part No. K651014	Stylus steel-ruby M2	2	10
	5x Part No. K651019	Stylus steel-ruby M2	2	20
	1xPart No. K651015	Stylus steel-ruby M2	2,5	10
	2xPart No. K651020	Stylus steel-ruby M2	2,5	20
	1x Part No. K651016	Stylus steel-ruby M2	3	10
	2x Part No. K651021	Stylus steel-ruby M2	3	20
	3x Part No. K651017	Stylus steel-ruby M2	4	10
	3x Part No. K651022	Stylus steel-ruby M2	4	20
	2x Part No. K651018	Stylus steel-ruby M2	5	10
	2x Part No. K651024	Stylus steel-ruby M2	6	10
	1x Part No. K651025	Stylus steel-ruby M2	8	11
K651379	1x Part No. K651030	Cylinder stylus steel M2	1,5	11
	1x Part No. K651031	Cylinder stylus steel M2	3	13
	1x Part No. K651032	Cylinder stylus steel M2	2	20
	1x Part No. K651062	Adaptor M2		7
	1x Part No. K651052	4-way stylus-ruby M2	1	10
	1x Part No. K651053	5-way stylus-ruby M2	2	18
	1xPart No. K651054	5-way stylus-ruby M2	2	30
	1xPart No. K651097	Tip stylus steel M2		15
	1xPart No. K651098	Tip stylus tungsten carbide M2		10
	1x Part No. K651083	Disk stylus steel M2	18	7,5
	1x Part No. K651084	Disk stylus steel M2	25	7,5
	1xPart No. K651085	Disk stylus steel - ruby M2	6	10
	1xPart No. K651090	Hollow ball ceramic M2		11
	1xPart No. K651058	5-way stylus holder M2		7,5
	4xPart No. K651037	Extension steel M2		5
	2x Part No. K651038	Extension steel M2		10
	2x Part No. K651039	Extension steel M2		20
	2x Part No. K651040	Extension steel M2		30
	2x Part No. K651041	Extension steel M2		40
	2x Part No. K651223	Pin spanner ø 1,2 mm		23

Styli Kit M2 Starter

No.	Contents	Description	ø mm	L mm
		wooden box		
	1x Part No. K651012	Stylus steel-ruby M2	1	10
	1x Part No. K651019	Stylus steel-ruby M2	2	20
	1x Part No. K651021	Stylus steel-ruby M2	3	20
	1x Part No. K651022	Stylus steel-ruby M2	4	20
	1x Part No. K651038	Extension steel M2		10
	1x Part No. K651039	Extension steel M2		20
	2x Part No. K651223	Pin spanner ø 1,2 mm		23

Styli Kit M3 CRP 1

No.	Contents	Description	ø mm	L mm
		Wooden box		
	1x Part No. K651297	Stylus carbon fiber-ruby M3	3	21
	1x Part No. K651298	Stylus carbon fiber-ruby M3	4	21
	1x Part No. K651301	Stylus carbon fiber-SiNi M3	4	21
	1x Part No. K651299	Stylus carbon fiber-ruby M3	4	31
	1x Part No. K651300	Stylus carbon fiber-ruby M3	4	40
	1x Part No. K651303	Stylus carbon fiber-ruby M3	5	50
	1x Part No. K651223	pin spanner ø 1,2 mm		

Styli Kit M3 CRP 2

No.	Contents	Description	ø mm	L mm
		Wooden box		
	1x Part No. K651302	Stylus carbon fiber-ruby M3	5	21
	1x Part No. K651304	Stylus carbon fiber-ruby M3	5	21
	1x Part No. K651303	Stylus carbon fiber-ruby M3	5	50
	1x Part No. K651306	Stylus carbon fiber-ruby M3	6	50
	1x Part No. K651309	Stylus carbon fiber-ruby M3	6	75
	1x Part No. K651223	Pin spanner ø 1,2 mm		

Styli Kits

Styli Kit M3 CRP 3

No.	Contents	Description	ø mm	L mm
K651320		Wooden box		
	1x Part No. K651302	Stylus carbon fiber-ruby M3	5	21
	1x Part No. K651304	Stylus carbon fiber-ruby M3	5	21
	1x Part No. K651303	Stylus carbon fiber-ruby M3	5	50
	1x Part No. K651306	Stylus carbon fiber-ruby M3	6	75
	1x Part No. K651309	Stylus carbon fiber-ruby M3	8	100
	1x Part No. K651223	Pin spanner ø 1,2 mm		

Styli Kit M3 Linear Height

No.	Contents	Description	ø mm	L mm	Price [€]
K650986	1x Part No. K681867	s-reveiver			386.00
	1x Part No. K651223	Pin spanner ø 1,2 mm			
	1x Part No. K651157	extension steel M3		20	
	1x Part No. K651156	extension steel M3		10	
	1x Part No. K651172	disk stylus steel M3	12,7	33	
	1x Part No. K651151	Stylus steel-ruby M3	4	31	
	1x Part No. K651148	Stylus steel-ruby M3	3	21	
	1x Part No. K651147	Stylus steel-ruby M3	2	21	
	1x Part No. K651146	Stylus steel-ruby M3	1	21	

Styli Kit M3 Starter

No.	Contents	Description	ø mm	L mm
K651380		Wooden box		
	1x Part No. K651146	Stylus steel-ruby M3	1	21
	1x Part No. K651147	Stylus steel-ruby M3	2	21
	1x Part No. K651148	Stylus steel-ruby M3	3	21
	1x Part No. K651151	Stylus steel-ruby M3	4	31
	1x Part No. K651152	Stylus steel-ruby M3	5	33,5
	1x Part No. K651157	extension steel M3		20
	1x Part No. K651159	extension steel M3		35
	2x Part No. K651223	Pin spanner ø 1,2 mm		23

Styli Kit M4

No.	Contents	Description	ø mm	L mm
K651383		Wooden box		
	1x Part No. K651184	Stylus ceramic-ruby M4	8	100
	1x Part No. K651182	Stylus ceramic-ruby M4	8	50
	1x Part No. K651216	Adaptor ceramic M4/M3	7	100
	1x Part No. K651215	Adaptor ceramic M4/M3	7	75
	1x Part No. K651214	Adaptor ceramic M4/M3	7	50
	1x Part No. K651204	extension ceramic M4	7	50
	1x Part No. K651203	extension ceramic M4	7	30
	1x Part No. K651170	Adaptor M3/M2	4	5
	1x Part No. K651208	Adaptor M4/M3	7	9
	2x Part No. K650346	Pin spanner	1,7	49
	2x Part No. K651223	Pin spanner	1,2	23
	1x Part No. K651058	5-way stylus holder M2	7	7,5
	1x Part No. K651169	5-way stylus holder M3	10	13
	1x Part No. K651206	5-way stylus holder M4	15	18
	1x Part No. K651186	Stylus steel-ruby M4	1	19,5
	4x Part No. K651187	Stylus steel-ruby M4	2	19
	1x Part No. K651188	Stylus steel-ruby M4	4	18



Styli Kit M3 CRP 3



Styli Kit M3 Linear Height



Styli Kit M3 Starter

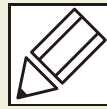


Styli Kit M4



Order the "Styli and Accessories Leaflet" now!
Your insight in the full range of Mitutoyo Styli and much more!

Quick Guide to Precision Measuring Instruments

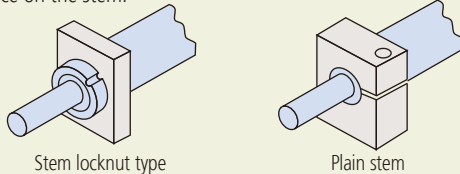


Linear Gages

Head

■ Plain Stem and Stem with Clamp Nut

The stem used to mount a linear gage head is classified as a "plain type" or "clamp nut type" as illustrated below. The clamp nut stem allows fast and secure clamping of the linear gage head. The plain stem has the advantage of wider application and slight positional adjustment in the axial direction on final installation, although it does require a split-fixture clamping arrangement or adhesive fixing. However, take care so as not to exert excessive force on the stem.



■ Measuring Force

This is the force exerted on a workpiece during measurement by the contact point of a linear gage head, at its stroke end, expressed in newtons.

■ Comparative Measurement

A measurement method where a workpiece dimension is found by measuring the difference in size between the workpiece and a master gage representing the nominal workpiece dimension.

■ Ingress Protection Code

IP54 protection code

Type	Level	Description
Protects the human body and protects against foreign objects	5: Dust protected	Protection against harmful dust
Protects against exposure to water	4: Splash-proof type	Water splashing against the enclosure from any direction shall have no harmful effect.

IP66 protection code

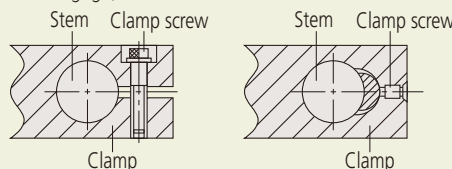
Type	Level	Description
Protection against contact with the human body and foreign objects	6: Dust tight	Protection from dust ingress Complete protection against contact
Protects against exposure to water	6: Water-resistant type	Water jets directed against the enclosure from any direction shall have no harmful effects.

■ Precautions in Mounting a Gage Head

- Insert the stem of the gage into the mounting clamp of a measuring unit or a stand and tighten the clamp screw.
- Notice that excessively tightening the stem can cause problems with spindle operation.
- Never use a mounting method in which the stem is clamped by direct contact with a screw.
- Never mount a linear gage by any part other than the stem.
- Mount the gage head so that it is in line with the intended direction of measurement. Mounting the head at an angle to this direction will cause an error in measurement.
- Exercise care so as not to exert a force on the gage through the cable.

■ Precautions in Mounting a Laser Hologage

To fix the Laser Hologage, insert the stem into the dedicated stand or fixture.



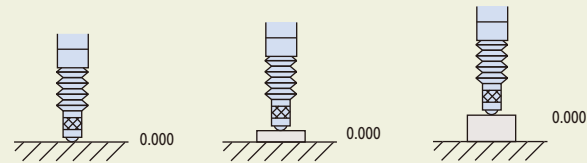
Recommended hole diameter on the fixing side: 15mm +0.034/-0.014

- Machine the clamping hole so that its axis is parallel with the measuring direction. Mounting the gage at an angle will cause a measuring error.
- When fixing the Laser Hologage, do not clamp the stem too tightly. Over-tightening the stem may impair the sliding ability of the spindle.
- If measurement is performed while moving the Laser Hologage, mount it so that the cable will not be strained and no undue force will be exerted on the gage head.

Display Unit

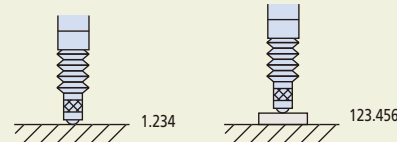
■ Zero-setting

A display value can be set to 0 (zero) at any position of the spindle.



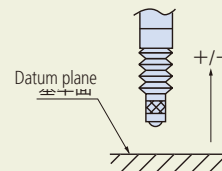
■ Presetting

Any numeric value can be set on the display unit for starting the count from this value.



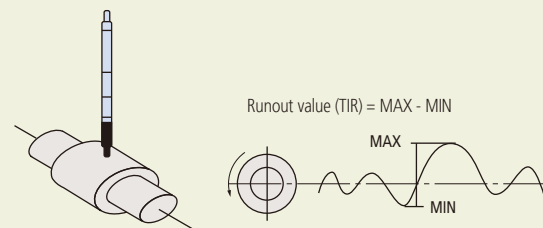
■ Direction changeover

The measuring direction of the gage spindle can be set to either plus (+) or minus (-) of count.



■ MAX, MIN, TIR Settings

The display unit can hold the maximum (MAX) and minimum (MIN) values, and MAX - MIN value during measurement.



■ Tolerance Setting

Tolerance limits can be set in various display units for automatically indicating if a measurement falls within those limits.

■ Open Collector Output

An external load, such as a relay or a logic circuit, can be driven from the collector output of an internal transistor which is itself controlled by a Tolerance Judgement result, etc.

■ Relay output

Contact signal that outputs the open/closed status.

■ Digimatic Code

A communication protocol for connecting the output of measuring tools with various Mitutoyo data processing units. This allows output connection to a Digimatic Mini Processor DP-1VR for performing various statistical calculations and creating histograms, etc.

■ BCD Output

A system for outputting data in binary-coded decimal notation.

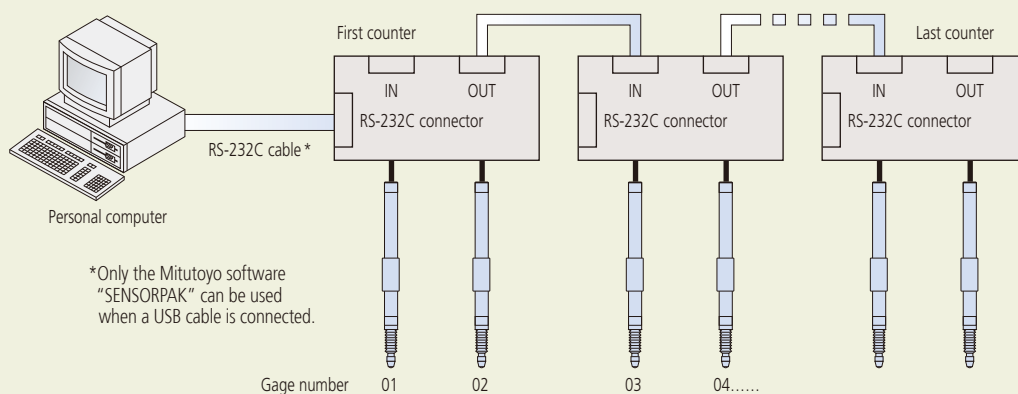
■ RS-232C Output

A serial communication interface in which data can be transmitted bi-directionally under the EIA Standards. For the transmission procedure, refer to the specifications of each measuring instrument.

RS Link Function Multi-point measurement can be performed by connecting multiple EH or EV counters with RS Link cables.

■ RS Link for EH Counter

It is possible to connect a maximum of 10 counter units and handle up to 20 channels of multi-point measurement at a time.
For this connection use a dedicated RS Link cable **No.02ADD950** (0.5m), **No.936937** (1m) or **No.965014** (2m).
(The total length of RS Link cables permitted for the entire system is up to 10m.)



■ RS Link for EV Counter

It is possible to connect a maximum of 10* counter units and handle up to 60 channels of multi-point measurement at a time.
For this connection use a dedicated RS Link cable **No.02ADD950** (0.5m), **No.936937** (1m) or **No.965014** (2m).
(The total length of RS Link cables permitted for the entire system is up to 10m.)

* The maximum number of counter units that can be connected is limited to 6 (six) if an EH counter is included in the chain.

